

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

HONORABLE JOHN W. HOLCOMB, JUDGE PRESIDING

ENTROPIC COMMUNICATIONS, LLP	)	
	)	
	)	
	)	
Plaintiff,	)	
	)	
	)	
	)	
Vs.	)	No. CV23-01049-JWH
	)	
	)	
	)	
COX COMMUNICATIONS, INC., ET AL.,	)	
	)	
	)	
	)	
Defendants.	)	
	)	
	)	

REPORTER'S TRANSCRIPT OF PROCEEDINGS

MARKMAN HEARING

SANTA ANA, CALIFORNIA

TUESDAY, JULY 23, 2024

MIRIAM V. BAIRD, CSR 11893, CCRA
OFFICIAL U.S. DISTRICT COURT REPORTER
350 WEST FIRST STREET
FOURTH FLOOR
LOS ANGELES, CALIFORNIA 90012
MVB11893@aol.com

A P P E A R A N C E S

**ON BEHALF OF THE PLAINTIFF,
ENTROPIC COMMUNICATIONS:**

MICHAEL T. PIEJA
GOLDMAN ISMAIL TOMASELLI
BRENNAN AND BAUM LLP
200 SOUTH WACKER DRIVE 22ND
FLOOR
CHICAGO, IL 60606

VINCENT JOHN GALLUZZO
K AND L GATES LLP
300 SOUTH TRYON STREET
SUITE 1000
CHARLOTTE, NC 28202

**ON BEHALF OF THE DEFENDANT,
COX COMMUNICATIONS, INC., ET
AL., :**

KRISHNAN PADMANABHAN
WINSTON AND STRAWN LLP
200 PARK AVENUE
NEW YORK, NY 10166

ASHOK RAMANI
DAVIS POLK AND WARDWELL LLP
1600 EL CAMINO REAL
MENLO PARK, CA 94025

DAVID J. LISSON
DAVIS POLK AND WARDWELL LLP
1600 EL CAMINO REAL
MENLO PARK, CA 94025

APRIL ELIZABETH ISAACSON
KILPATRICK TOWNSEND AND
STOCKTON LLP
2 EMBARCADERO CENTER, SUITE
1900
SAN FRANCISCO, CA 94111

ALSO APPEARING: NATHAN FULLER
CHRISTINA GOODRICH
JASON ENGEL
DIANA LEIDMAN
MICHAEL TURTON
SARAH KAMRAN
JOHN LANHAM

1 SANTA ANA, CALIFORNIA; TUESDAY, JULY 23, 2024; 10:00 A.M.

2 ---

3 THE COURT: Good morning, everybody. Please have a
4 seat.

5 THE CLERK: Calling item number one, CV-23-01049,
6 Entropic Communications, LLC, versus Cox Communications,
7 Inc., et al.

8 Counsel, please state your appearances.

9 MR. GALLUZZO: Good morning, Your Honor. Vince
10 Galluzzo from K&L Gates on behalf of plaintiff. With me is
11 Michael Pieja from Goldman Ismail firm and Nathan Fuller from
12 K&L Gates.

13 We also have Christina Goodrich, Jason Engel, and
14 Matthew Blair from K&L Gates. Good morning, Your Honor.

15 THE COURT: All right. Good morning to all of you.
16 Who will be primarily arguing this morning?

17 MR. GALLUZZO: Mr. Pieja and I will be splitting up
18 the terms.

19 THE COURT: Okay.

20 MR. GALLUZZO: I'll be taking the '775 and '690,
21 and Mr. Pieja will be taking the '682 terms.

22 THE COURT: Got it.

23 All right. Good morning. Thank you.

24 Who would like to start?

25 MR. RAMANI: Good morning, Your Honor. Why don't I

1 begin.

2 THE COURT: Sure.

3 MR. RAMANI: Ashok Ramani from Davis Polk on behalf
4 of Comcast. I'm joined by my partner David Lisson and our
5 co-counsel from Winston & Strawn, Krishnan Padmanabhan, Diana
6 Leiden; and in the first row of the pews, Louis Campbell.

7 THE COURT: Okay. Good morning to all of you.

8 Who will be primarily arguing today?

9 MR. RAMANI: So Mr. Padmanabhan will be arguing the
10 '682 patent terms, and Mr. Lisson and I will be doing one of
11 each of the others, '690 for myself.

12 THE COURT: And Mr. Lisson has got '775?

13 MR. RAMANI: Correct.

14 THE COURT: All right. Good morning to all of you.
15 Anybody else?

16 MR. LANHAM: Good morning, Your Honor. John Lanham
17 with Morrison Foerster on behalf of counterclaim defendants
18 MaxLinear.

19 THE COURT: Mr. Lanham, good morning.

20 Do you plan to be arguing at all?

21 MR. LANHAM: No, Your Honor.

22 THE COURT: Okay. I'm happy to have you here.

23 MS. ISAACSON: Good morning, Your Honor. April
24 Isaacson from Kilpatrick on behalf of the Cox defendants.
25 Along with me is my colleague Michael Turton, Sarah Kamran,

1 and our client Stephanie Allen.

2 THE COURT: Client? Welcome. Welcome to all of
3 you, counsel. And you'll be arguing as well?

4 MS. ISAACSON: No, Your Honor.

5 THE COURT: Okay. You're going to leave it to
6 Mr. -- the harder names to pronounce for me.

7 MR. RAMANI: It's Ramani for me and Padmanabhan for
8 my co-counsel. And Lisson I think is a little bit easier.

9 THE COURT: Okay. Thank you all. Forgive me
10 for -- I always have trouble pronouncing names.

11 MR. RAMANI: No problem.

12 THE COURT: So, great. Good morning. Did we get
13 everybody? Anybody else need to make an appearance? Okay.
14 Great.

15 So we're here on claim construction for four
16 limitations. I asked my fill-in clerk to transmit to all of
17 you yesterday a tentative. Did everybody get it? I see nods
18 all around. Anybody who didn't get it who needs it? Okay.
19 Good.

20 Have you had enough time to review it and prepare
21 for this morning?

22 MR. GALLUZZO: Yes, Your Honor.

23 THE COURT: Okay. I see all nods. That's good. I
24 think you've -- I think I've issued tentatives before in
25 these multiple and somewhat consolidated cases. So you know

1 it's truly a tentative. Feel free to push back on anything
2 as minor as a typo or as major as, no, you completely
3 misunderstood what this patent is about. As long as you say
4 it respectfully, I want to hear it, because it's my object to
5 get it right.

6 I thank you for the tutorials. I have reviewed
7 carefully both sides' materials. I don't think that you need
8 to repeat that. If there's something you want to emphasize
9 or review, of course, feel free. I don't want to curtail
10 your presentation, but I did want to let you know that I have
11 been through those.

12 So my thought was we just jump into argument on the
13 tentative. I know sometimes counsel want to go limitation by
14 limitation. I prefer just to hear everything from one side
15 because some of the limitations might go your way, the
16 construction.

17 Let me hear all from one side. Talk about whatever
18 you want. All from the other side. And then I'll let you go
19 back and forth and reply to each. As you probably know, I
20 believe in letting you make a full record.

21 I'm hoping that we can get this done by noon. If
22 we cannot, then we will take a lunch break and come back,
23 much to everyone else's chagrin. But let's try to get it
24 done in two hours.

25 I think it's apparent that I've studied this a bit,

1 but again please push back and tell me why it's hopelessly
2 wrong if you think it is.

3 I thought I would start with Entropic but,
4 Mr. Ramani, you're standing. You're eager to go first?

5 MR. RAMANI: I'm eager to go first, Your Honor, but
6 not about the specific claim terms.

7 THE COURT: Okay. You've got something else?

8 MR. RAMANI: I've got something else, but it's at
9 issue in your tentative. First time in Your Honor's court.
10 Do you prefer that we go to the podium to address you?

11 THE COURT: Yes.

12 MR. RAMANI: Okay.

13 THE COURT: Lectern.

14 MR. RAMANI: Lectern. I had a patent case about
15 that once upon a time. I should know better.

16 THE COURT: How did it come out?

17 MR. RAMANI: Settled. Settled after we won claim
18 construction.

19 THE COURT: On the lectern-versus-podium dichotomy,
20 how did that come out?

21 MR. RAMANI: That came out in our favor. We were
22 arguing there was a place where a presenter would stand, and
23 there was a debate as to whether it should be described as a
24 podium or a lectern. We had the patentholder. We said it
25 should be a podium. The other side said it should be

1 lectern.

2 To this day I don't understand why they were trying
3 to draw that distinction, but we ended up prevailing and then
4 it settled sometime after that.

5 THE COURT: So the way I view it, and I think I got
6 this from -- well, he was never my colleague. We didn't
7 serve at the same time. Judge Real felt pretty strongly
8 about the issue, as some of you may know, and the piece of
9 furniture is a lectern.

10 Now, a podium is -- I think of the Olympics which
11 are coming up here just in a few days. When you step up onto
12 a raised platform, that's a podium. That's kind of -- that
13 was his view, and he felt very strongly about it. I don't
14 feel as strongly. Nevertheless, I consider it a lectern.

15 So, we digress -- which I often do.

16 MR. RAMANI: As you've gathered, Your Honor, we
17 didn't argue that case before Judge Real. So what brings me
18 here, before we get to the specifics of the terms,
19 Your Honor, is footnote one of your tentative.

20 THE COURT: Oh, yes. Yes. Thank you. I know I'm
21 behind on adjudicating some of these other issues, and I'm --
22 I can tell you I've made some progress, and I hope later
23 today or later this week to get the Markman order out on the
24 '775 case.

25 I know it's been sitting for a while and it's -- I

1 thought I was going to finish it yesterday and I didn't quite
2 do it. I also know I've got some sort of housekeeping type
3 issues. But please tell me. What's going on with footnote
4 one? What's your issue?

5 MR. RAMANI: So our issue is that there isn't a
6 live complaint pending against Comcast. As Your Honor notes
7 in footnote 1, there's a proposed third amended complaint.
8 Comcast would like to move to dismiss it because, in keeping
9 with Your Honor's prior motion to dismiss order where
10 Your Honor held that the covenant not to sue runs with the
11 patents and so on, we think that the attempted pleading is
12 feeble and isn't going to survive a motion to dismiss.

13 So we do think there's an actual subject matter
14 jurisdiction question present as to whether or not any
15 patents can even be adjudicated against Comcast at this
16 point. I will note in particular there are four patents of
17 the ten in the third amended complaint that are being
18 proposed that have no willfulness allegations whatsoever,
19 pre-filing willfulness allegations whatsoever, attached to
20 them.

21 So certainly as to those patents, there isn't an
22 ability to proceed. None of those patents is at issue here
23 today, but it raises the broader question of the ability to
24 proceed against Comcast at all until that question has been
25 adjudicated.

1 THE COURT: Hold on one second.

2 (Pause in proceedings)

3 THE COURT: So we're talking the 1050 case?

4 MR. RAMANI: Yes, Your Honor.

5 THE COURT: And momentarily I will have the docket
6 in front of me. What's pending on there that needs to be
7 adjudicated?

8 MR. RAMANI: So it's --

9 THE COURT: And are you telling me that that needs
10 to be done before you can even argue these claim construction
11 issues?

12 MR. RAMANI: Strictly speaking, yes. That's
13 Comcast's view. Obviously we're happy to proceed. Everyone
14 has put in a lot of work, and the Court has put in a lot of
15 work. Our view is that there isn't subject matter
16 jurisdiction as to Comcast, and we haven't been able to tee
17 that up because we haven't had an active complaint.

18 THE COURT: What is the operative pleading right
19 now?

20 MR. RAMANI: There isn't one. So what happens --

21 THE COURT: There was one.

22 MR. RAMANI: There was one. There was a first
23 amended complaint. Comcast moved to dismiss it, and
24 Your Honor on November 20th granted the motion to dismiss the
25 first amended complaint with leave to amend.

1 And then about three plus weeks later on
2 December 15th, Entropic moved for leave to file a third
3 amended complaint. Comcast subsequently moved to dismiss
4 that at the end of December.

5 THE COURT: Hold on one second.

6 MR. RAMANI: Yep.

7 THE COURT: So on November 20th I issued an order
8 granting Comcast's motion to dismiss the second amended
9 complaint.

10 MR. RAMANI: The first amended complaint.

11 THE COURT: First amended complaint.

12 MR. RAMANI: I've cut out the second amended
13 complaint, Your Honor, because there was an attempt to put
14 the second amended complaint before the Court by Entropic but
15 then overridden by a subsequent attempt to put in this third
16 amended complaint.

17 THE COURT: Well, did -- just so I get the sequence
18 here, did Entropic file a second amended complaint?

19 MR. RAMANI: They sought -- they did, yes. They
20 did.

21 THE COURT: And then sought leave to file a third
22 amended complaint?

23 MR. RAMANI: Correct.

24 THE COURT: And I haven't -- I have not yet acted
25 on that?

1 MR. RAMANI: Well, you did. So if I could just
2 give you a little bit more of the timeline, at the end of
3 December Comcast moved to dismiss that third amended
4 complaint.

5 Then Your Honor on February 15th -- it's docket
6 entry 244 -- dismissed Comcast's motion to dismiss without
7 prejudice and you referred the question to the special
8 master, asking the special master to provide a report and
9 recommendation and as to whether or not to permit Entropic to
10 file its third amended complaint.

11 Ultimately Comcast didn't oppose that request, and
12 so the special master -- docket entry 277, on March 6th.

13 THE COURT: 277 in 1050?

14 MR. RAMANI: Correct.

15 THE COURT: Hold on one second. It must be 277 in
16 1049.

17 MR. RAMANI: Yes, 1049. Excuse me, Your Honor.

18 THE COURT: Okay. I'm looking at the docket.
19 Okay. Go ahead. 277.

20 MR. RAMANI: 277 on March 6th the special master
21 recommended granting the motion.

22 THE COURT: Yes.

23 MR. RAMANI: And that's where we've been.

24 THE COURT: Didn't we have a hearing set for last
25 week and then everybody wanted me to take it off calendar?

1 MS. ISAACSON: I can speak to that, Your Honor.

2 THE COURT: Please. Go ahead, Ms. Isaacson.

3 You can have a seat. Ordinarily I like people to
4 stand, but it's more important that we get this on the
5 record.

6 Turn on your microphone.

7 MS. ISAACSON: That was actually related to Cox
8 where we had R&Rs pertaining to the counterclaims and we had
9 objected to certain things. And that was -- that was what
10 that joint stipulation was related to, not related to this
11 case.

12 THE COURT: Okay, but what I'm hearing is there's a
13 significant amount of housekeeping to do to get the pleadings
14 in order -- the claims, the counterclaims -- on the different
15 patents, on the different cases, on the different defendants.
16 Right?

17 MR. RAMANI: I would say that's right. And I don't
18 mean to quibble with Your Honor, but we would -- Comcast says
19 it's more than housekeeping because we do think there's a
20 serious question as to whether or not the case can proceed at
21 all as to Comcast.

22 THE COURT: There's a subject matter jurisdiction
23 issue.

24 MR. RAMANI: There is.

25 THE COURT: Okay. So let's say I conclude that

1 you're absolutely right that there's an issue here. Should
2 we not go forward today?

3 MR. RAMANI: We should go forward today. Everybody
4 is here. The Court has put in a lot of time. We don't have
5 an issue with that.

6 It's, of course, however Your Honor chooses to
7 proceed, because if Your Honor were to grant and to accept
8 the special master's report and recommendation and Entropic's
9 motion -- third amended complaint -- say, were filed even
10 today, we would be in a position to file a motion to dismiss
11 within a week of whenever it's on file.

12 And so --

13 THE COURT: But since we've -- since we all have
14 done this work, let's say I adopt the special master's report
15 and recommendation.

16 There is a third amended complaint on file as
17 against the Comcast entities. You file a motion to dismiss
18 -- that may or may not be granted -- these limitations still
19 need to be construed with respect to Cox.

20 MR. RAMANI: That's correct.

21 THE COURT: So, yeah, I think we should go forward.
22 Is there any -- what I want to avoid is if there's a
23 jurisdictional problem, if I don't have jurisdiction to
24 construe these claims, that's a big issue. I don't think
25 that's the case. And you're not arguing that?

1 MR. RAMANI: I'm not arguing that because there's
2 another defendant in the case. If it were a Comcast-only
3 case, I would be arguing that.

4 THE COURT: But speaking of argument, you're going
5 to present defendants' collective argument here today?

6 MR. RAMANI: Correct.

7 THE COURT: And that's okay with Cox? You have
8 discussed this, Ms. Isaacson and --

9 MS. ISAACSON: Yes, Your Honor.

10 THE COURT: Okay. Well, I'm okay with that.

11 Entropic, is there any objection that, oh, no,
12 Comcast shouldn't be arguing this?

13 MR. PIEJA: No, Your Honor. But if I might have
14 the Court's indulgence, I do want to speak because I think I
15 can cut through some of the things that Mr. Ramani was
16 saying.

17 THE COURT: Sure. Go ahead, please.

18 MR. PIEJA: I think that the defendants have made
19 what is very simple like really complicated. There is an
20 operative complaint. There is a second amended complaint.
21 It is on the docket. It has not been dismissed. So that is
22 the operative pleading against Comcast, and there's no
23 question about that.

24 THE COURT: And Entropic has sought leave to file a
25 third amended complaint, and that request has not yet been

1 acted on.

2 MR. PIEJA: It has been acted on by the special
3 master to whom Your Honor referred it. The special master's
4 R&R recommended allowing Entropic to file that complaint. So
5 Your Honor quite rightly described what remains as a bit of
6 housekeeping. It's just -- if you're assuming Your Honor
7 gets to the R&R and approves of it, to enter such an order,
8 Entropic has no objection to Your Honor doing so. We're
9 happy to file the complaint on the docket.

10 THE COURT: As soon as you do that, Comcast tells
11 me that Comcast is going to file a motion to dismiss. Have
12 you met and conferred over that?

13 MR. PIEJA: Well, we haven't. Since the complaint
14 hasn't been filed on the docket, I don't think that would
15 have been possible in discussing -- they've raised this issue
16 before. They attempted to move to dismiss the third amended
17 complaint before we even filed it.

18 So there have been discussions about it. I'm sure
19 we will talk to them again. You know, they'll ask us to
20 confer. We'll do so promptly, and they can file, you know,
21 whatever motion they deem fit.

22 THE COURT: All right. Where I was going is
23 Entropic does not concede that Comcast is going to prevail on
24 Comcast's anticipated motion to dismiss the not-yet-filed
25 third amended complaint, correct?

1 MR. PIEJA: Certainly not. Nor do we concede that
2 it has anything to do with subject matter jurisdiction. I do
3 want to be quite clear about this. Assuming --

4 THE COURT: Slow down just a bit.

5 MR. PIEJA: Assuming they file what we anticipate
6 they're going to file, I know they are going to characterize
7 this as an Article III issue. But they have what I would
8 describe as a garden variety license defense. Their position
9 is that through operation of a commercial contract between
10 their client and the prior owner of the patents --

11 THE COURT: MaxLinear.

12 MR. PIEJA: -- MaxLinear. So between MaxLinear --

13 THE COURT: Whose counsel is here.

14 MR. PIEJA: Whose counsel is here -- their position
15 is -- and I don't want to put words in their mouth, but I
16 am confident Mr. Ramani will correct me if I err here. Their
17 position is that that contract granted them a license to the
18 patents that they believe precludes us from prevailing on the
19 infringement claim.

20 I'm not aware of, and they have not pointed us to,
21 any authority in any jurisdiction that holds that a Court
22 cannot proceed with claim construction simply because a
23 defendant asserts a license defense.

24 Whether that is characterized as a standing issue,
25 whether it's characterized as a license defense, I am not

1 aware of any authority that would preclude the Court from
2 going forward today. I agree that it is proper and
3 appropriate to proceed with the hearing today.

4 Unless you have any questions, that is all I have,
5 Your Honor.

6 THE COURT: Okay. Well, what I -- what concerned
7 me was, is there a jurisdictional impediment to proceeding
8 with a Markman hearing today. What I'm hearing from Comcast,
9 who believes there may be a subject matter jurisdiction issue
10 in the wings, even Comcast is not saying do not proceed
11 today. Plaintiff is not saying do not proceed. Cox is
12 urging me to proceed. So I think we should proceed.

13 Other nonsubstantive Markman hearing issues? What
14 else?

15 MR. RAMANI: I agree with the summary Your Honor
16 just gave. It's -- everyone is in agreement. We should
17 proceed today. I will just state one clarification, which
18 was that as to the second amended complaint, Comcast did seek
19 to dismiss it and was not permitted to because the third
20 amended complaint was seen as forthcoming.

21 THE COURT: Very well. Okay.

22 MR. RAMANI: Thank you, Your Honor.

23 THE COURT: I thought I would hear from Entropic
24 first. Entropic is the plaintiff.

25 Is there any major objection to that? I will hear

1 out everybody on everything that everybody wishes to say.

2 MR. RAMANI: No objection, Your Honor.

3 THE COURT: Okay.

4 Entropic, go ahead. Tell me what you wish to tell
5 me.

6 MR. GALLUZZO: Good morning, Your Honor. Vince
7 Galluzzo again. Since I'll be handing the '775 and '690
8 terms, I'll be relatively brief now.

9 We think Your Honor was entirely right in your
10 tentatives on the constructions of the '775 patent term and
11 the '690 patent term. We think Your Honor's tentative had
12 captured the spirit of the dispute between the parties and
13 resolved that correctly per the patent claim terms, the
14 specification, the prosecution history, and the law.

15 With that, I don't think Entropic has anything
16 further to say or add unless Your Honor has specific
17 questions. I'd like to reserve any rebuttal time on those
18 two terms after hearing from defendants' counsel.

19 THE COURT: Yes. I'm not that formal with
20 so-called rebuttal time. You're going to be welcome to
21 respond to whatever Comcast or Cox wishes to say about any of
22 those issues. And they can respond to you as well.

23 MR. GALLUZZO: Thank you, Your Honor. With that,
24 I'm going to turn it over to my colleague, Mr. Pieja, who
25 will be covering the '682 terms.

1 THE COURT: All right.

2 MR. PIEJA: Good morning, again, Your Honor.
3 Michael Pieja for Entropic. I will also try to be brief,
4 although I suspect it's more important that I be slow.

5 We'll take the two terms in order. With respect to
6 the first of the two terms in the '682 patent, this is the
7 term cable modem termination system or CMTS. Although the
8 order does include a fair bit of language from defendants'
9 proposed construction, I suspect that they are going to have
10 more to say about trying to change that construction than we
11 are.

12 I want to briefly emphasize a handful of things
13 that I think we agree with in the tentative and that I think
14 flow from the Court's reasoning in the tentative.

15 First, at the outset Entropic firmly agrees that
16 the Court properly focused on the intrinsic record. The
17 intrinsic evidence in this case is sufficient to resolve the
18 disputes between the parties about what a CMTS is. The
19 language in column two stating that a CMTS may comprise
20 circuitry and defining that circuitry as including hardware
21 and a variety of software, including software associated with
22 the hardware, is sufficient to support the Court's
23 construction and resolve the disputes between the parties.

24 The Court properly declines to consider the
25 extrinsic evidence offered by defendants and by

1 Dr. Chatterjee. So at the outset we completely agree with
2 the Court in focusing on the intrinsic evidence, and we
3 believe that the material in column two fully supports a
4 resolution of the parties' disputes.

5 THE COURT: And after the Dr. Chatterjee piece --
6 hold on one second. Let me get the tentative in front of me
7 here. It was with respect to the next issue, the SNR-related
8 metric that I kind of gave him a shout out.

9 MR. PIEJA: It was, Your Honor.

10 THE COURT: Okay. I'm with you. Go ahead, please.

11 MR. PIEJA: An administrative test that I thank
12 Mr. Galluzzo for reminding me of. May we have permission to
13 approach to distribute hard copies of our demonstratives to
14 the Court and to opposing counsel?

15 THE COURT: Certainly give them to opposing
16 counsel. I have --

17 MR. PIEJA: You have those?

18 THE COURT: I have them. You're welcome to give
19 them to my law clerk, please.

20 MR. PIEJA: Would Your Honor prefer that we use and
21 refer to the hard copy, or would you prefer that we walk
22 through them on the screen?

23 THE COURT: Well, I'll be looking at the hard copy.

24 MR. PIEJA: All right. So I'll endeavor to keep
25 the screen synced, but I will proceed with the understanding

1 that Your Honor is looking at the hard copy that we gave
2 Your Honor. Very well.

3 Beyond the tentative's focus on the intrinsic
4 record, there are two particular parts of the tentative that
5 I want to emphasize Entropic's agreement with. First, the
6 tentative notes that the CMTS has to include hardware and
7 hardware located at the point where the modem's connection to
8 the network terminates. I just want to be very clear that
9 Entropic doesn't dispute that.

10 We agree that a CMTS must include hardware and must
11 include hardware located at the termination point. I think
12 that some of the dispute, to be honest, Your Honor, and some
13 of the back and forth between the parties in their briefing,
14 may have arisen because we, Entropic, were not as clear as we
15 could have been in our opening brief. It could have been
16 read to suggest that we thought a CMTS could be implemented
17 entirely in software and could be completely divorced from
18 the network point.

19 I can see why that impression may have been given,
20 but I want to be clear that is not our position. We agree
21 that a CMTS includes hardware and that it includes at least
22 some of that hardware at the termination point.

23 THE COURT: To cut to the chase, now that you've
24 seen the analysis in the tentative, which is tentative, do
25 you disagree with the construction that I have in the

1 tentative?

2 MR. PIEJA: There's one point that -- I want to lay
3 out for Your Honor our understanding of the Court's
4 reasoning. And if the -- if we are correct in how we
5 understand the Court's reasoning, then I would have no
6 further argument to offer today.

7 THE COURT: Focusing first on the language of the
8 construction -- then we can back up to how I got there -- do
9 you have a problem with the language of the construction?

10 MR. PIEJA: So if the -- our understanding is that
11 the language of the construction does not preclude the
12 existence of hardware that is used, for instance, to support
13 software running or controlling the CMTS functions even if
14 that hardware is not all at the termination point.

15 In other words, the only problem we would have is
16 to the extent that the construction suggests that while there
17 can be -- while the CMTS can have software that is located in
18 other locations, that there can't be any hardware at those
19 locations, we do disagree with that if only for the reason
20 that any software must necessarily run on hardware.

21 We agree with the construction's conclusion as
22 stated on pages 20 to 21. The CMTS can comprise accompanying
23 software which does not necessarily have a physical location
24 and that that software could potentially be decentralized in
25 the sense that the software is at different locations in

1 controlling it.

2 What we think flows from that is that there is
3 necessarily at least some hardware that is not located at the
4 network termination point. We think that flows from the
5 Court's reasoning because there has to be hardware to support
6 the offsite software. So while we don't dispute that there
7 is some hardware located at the network termination point, we
8 do believe that it is important to make clear that there can
9 be hardware located elsewhere as long as there is some
10 hardware at the network termination point.

11 I think that is --

12 THE COURT: Forgive me for interrupting you. What
13 I'm hearing is you would take the construction in the
14 tentative and you would change it such that it might say
15 hardware and accompanying software with at least some of the
16 hardware located at the point, et cetera?

17 MR. PIEJA: Yes. Or another way of -- that would
18 be perfectly fine, Your Honor. Also, I think accomplishing
19 the same thing would be the language in the tentative on
20 page 20, rolling over to page 21, that states: The CMTS
21 comprises hardware at a specific physical location.

22 Comprises, you know, in patent parlance typically
23 means includes but is not limited to. So if the Court wanted
24 to say that CMTS is defined as hardware and accompanying
25 software where the CMTS comprises hardware located at the

1 point at which the cable modem's connection terminates, we
2 would be fine with that.

3 THE COURT: And did I understand you to say that in
4 general if there is software and under the tentative the
5 software can be somewhere other than at the cable modem's
6 connection point, did I understand you to say if there is
7 software, software has to be running on hardware? So if
8 there's software, there must be accompanying hardware where
9 the software is?

10 MR. PIEJA: Yes, Your Honor.

11 THE COURT: So if you're right, this construction
12 tentative doesn't make any sense because it's -- the
13 construction in the tentative seems to say hardware has got
14 to be at a particular place, physical place; software can be
15 anywhere.

16 MR. PIEJA: I -- Your Honor, I do think it makes
17 sense if it's rephrased or it's read in the way we've been
18 discussing, in that a CMTS includes hardware and accompanying
19 software wherein some of the hardware at least must be at the
20 termination point.

21 So I read the construction to say that there has to
22 be hardware and software in the CMTS. The mandatory element
23 of the hardware part of the CMTS is that there has to be
24 something at a network termination point.

25 The software that controls that hardware as stated

1 in page 20 and 21 of the tentative could be elsewhere, and
2 that software, simply because software cannot live in a
3 disembodied form, it has to be in memory, a processor. There
4 probably has to be a power supply to that unit. So there has
5 to be some tangible object that is hosting and running that
6 software.

7 I think that the construction's logic makes sense
8 especially if we make the slight change that I proposed.

9 THE COURT: Okay. Thank you. I understand that
10 point.

11 I interrupted you. Please go back to where you
12 were.

13 MR. PIEJA: Well, Your Honor --

14 THE COURT: Maybe that resolved it.

15 MR. PIEJA: If Your Honor in fact made that change
16 to the tentative, we would be satisfied with that. We agree
17 that that's in accord with the intrinsic record.

18 I am not -- at this point what I would suggest,
19 then, is I think we should hear from defendants because I
20 suspect that they will have some comments on this. But I
21 don't want to belabor points that may not be an issue.

22 THE COURT: Okay. I'll give you a chance to
23 respond to whatever they say.

24 Let's exhaust Entropic's presentation. Please move
25 on to SNR-related metric.

1 MR. PIEJA: Very well, Your Honor. Hopefully it
2 will not surprise you that we also have relatively little to
3 say in the first instance about this. We agree fulsomely
4 with the Court's reasoning here, not just the result, which,
5 I am sure it will not be a shock that the plaintiff likes the
6 result of not indefinite. We think that the reasoning is
7 particularly well grounded for a couple of reasons.

8 First, the reasoning properly focuses on the
9 intrinsic evidence. The Federal Circuit has in fact held
10 that the written description in the intrinsic record is key
11 to resolving these types of indefiniteness disputes. That's
12 a holding of the Sonix Technologies case which is cited in
13 our briefs and reproduced on page 17 of the physical
14 demonstratives before you.

15 At the outset, then, we think that the tentative
16 correctly declines with a, you know, a minor exception to
17 delve into the back and forth between Dr. Chatterjee and
18 Mr. Holobinko as to what those particular experts think an
19 SNR-related metric is.

20 We think also that the Court properly focused on
21 the examples in the specification and the commonality between
22 those examples. We think that in particular, in analyzing
23 whether symbol error rate is a SNR-related metric as the
24 tentative did, we think the Court got the reasoning exactly
25 right in that the Court reasoned that noise affects that

1 error rate. And that is exactly the direction of causality
2 that we think defines an SNR-related metric.

3 As we mentioned in our briefing, SNR-related
4 metrics are measures of channel quality. Signal-to-noise is
5 the fundamental measure of channel quality, signal-to-noise
6 ratio.

7 THE COURT: So SNR is the shortcut we're using
8 signal hyphen, to hyphen, noise.

9 Go ahead, counsel.

10 MR. PIEJA: So the SNR-related metric is one whose
11 value changes when, as Your Honor put it in the tentative,
12 the signal or the noise level changes; or, as Mr. Holobinko
13 put it, the channel quality changes.

14 I think that distinction which is reflected in the
15 tentative makes short work of some of the hypotheticals
16 defendant presented, like if the cable plant gets very hot or
17 if, I guess, someone is pouring water into the system and
18 it's causing interference, because a change in the channel
19 quality, a change in the signal or the noise, doesn't change
20 how hot the system is and it doesn't change how much water is
21 in it.

22 The things that defendant is pointing to and
23 saying, well, these are a little confusing, those are inputs
24 that in some cases can impact the operation of the plant.
25 They are not substitutes or equivalents for signal-to-noise

1 ratio in that they do not change when the signal-to-noise
2 ratio changes or the channel quality changes.

3 So looking at temperature or water would not give
4 you any information about how good the channel is or how high
5 the signal strength is or how high the noise is. For all
6 those reasons, Your Honor, we think that the Court's
7 tentative on signal-to-noise ratio is correct, and it's
8 correct for the reasons stated in the opinion.

9 So with that, Your Honor, I will step down unless
10 you have any questions you wanted to address to me.

11 THE COURT: One quick, properly referred to as a
12 housekeeping question or not, the '401 application, I
13 actually pulled that up from the PTO website. Where is that
14 in the record?

15 MR. PIEJA: You mean what exhibit number is it at,
16 Your Honor?

17 THE COURT: Yes, if it's an exhibit number.

18 MR. PIEJA: I don't have that to hand. I will find
19 it for you and I will get you an answer on that by the end of
20 the hearing.

21 THE COURT: Okay. All right. Thank you.

22 So that covers everything for Entropic for now. Of
23 course, I'll give you a chance to reply.

24 MR. PIEJA: My colleague has kindly pointed out
25 that that application is the Galluzzo declaration, Exhibit G.

1 So it's an exhibit to our opening claim construction brief.

2 THE COURT: And it's, you said, Exhibit G as in
3 golf?

4 MR. PIEJA: Yes, Your Honor.

5 THE COURT: What ECF number is that?

6 MR. PIEJA: 325.

7 THE COURT: Dash what?

8 MR. PIEJA: I believe it is 325-8. If I'm in error
9 on that, we will correct it.

10 THE COURT: So 325-8 is the '765 patent.

11 MR. PIEJA: Your Honor, what I would propose is we
12 can get you that cite. I don't want to hold up the hearing.
13 If there's a question that you have on that right now, I want
14 to be able to -- I am able to address it. But we will get
15 you, I promise, an exact cite for that.

16 THE COURT: The most minor of details but, yes, I'd
17 like that. Okay. Thank you.

18 MR. PIEJA: Certainly.

19 THE COURT: Okay. Who wishes to go first for
20 defendants?

21 MR. LISSON: Good morning, Your Honor. David
22 Lisson on behalf of Comcast and the defendants. Does
23 Your Honor have a copy of the slides?

24 THE COURT: Yes, I do.

25 MR. LISSON: Your Honor, I'll start with the '775

1 patent -- if I can figure out the toggle switch.

2 (Pause in proceedings)

3 MR. LISSON: I thank you for your patience,
4 Your Honor. I think I should be all set.

5 THE COURT: Very well. Go ahead, please.

6 MR. LISSON: As I said, I'll be addressing the '775
7 term. The issue is if the construction means that the two
8 engines can share a physical device like a processor, that's
9 inconsistent with the claim and the patent.

10 Now, the Court in the Charter case that adopted
11 this construction never said that the engines could share a
12 processor, and it wasn't really addressing that issue. It
13 was addressing a separate issue. So really it may come down
14 to some ambiguity as to what it means to be separate.

15 Can they be shared? The answer is no. Can they be
16 connected? The answer is yes. We know that because there's
17 a data bus in the claim that connects the two.

18 What I thought I would do is just start with the
19 claim and then walk through how that implies physical
20 separation of physical elements like a processor. So the
21 claim as we all know recites a data networking engine
22 implemented in the first circuit that includes at least one
23 processor.

24 Then it recites the cable modem engine implemented
25 in a second circuit that includes at least one processor.

1 Then it recites that the second circuit being separate from
2 the first circuit. So we have two circuits that each have a
3 processor and that are separate from each other.

4 That means that the processors have to be separate
5 or else the circuits wouldn't be separate. I think we're
6 mostly on the same page to that point, but the key is that a
7 processor is a physical element. The patent makes that
8 clear, and it starts from Fig. 1.

9 Fig. 1 is a physical architecture document, a block
10 diagram of the cable modem engine and the data networking
11 engine. The cable modem engine is on the bottom in yellow.
12 The data networking engine is in blue at the top.

13 You can see the reference to ARM number one, ARM
14 number two, ARM number three. Those are all ARM processors.
15 The engines, the two engines, are implemented on different
16 processors. We know that those ARM one, ARM two, ARM three,
17 are processors because the specification explains that.

18 Here's one instance at column four, lines 41 to 49,
19 where it explains that the functions are rationally
20 distributed among three different processors: the DOCSIS MAC
21 processor and DOCSIS controller, which are ARMs one and two.

22 THE COURT: For the purposes of the record, you're
23 saying DOCSIS, D-O-C-S-I-S, and MAC, M-A-C.

24 MR. LISSON: That's correct. Thank you,
25 Your Honor. And ARM is A-R-M, all capitalized. And then the

1 data networking engine is in a separate ARM processor. The
2 specification goes further to make clear that these
3 processors are hardware.

4 Later on in the same column, column four, at lines
5 58 to 62, it's talking about one of the benefits of the
6 invention. It says: a chip implementing cable modem system
7 100 will have only a small incremental hardware cost.

8 Then the next sentence explains that the major cost
9 difference relative to current chips is the addition of
10 another ARM-type processor. So we know these processors are
11 physical hardware elements, and we know that they have to be
12 separate.

13 Even in the portion of the specification identified
14 in Your Honor's tentative, the processors play an important
15 role and the separate processors play an important role. In
16 the portion of the specification describing functional
17 partitioning, it first talks about partitioning the functions
18 of the two engines. Then it states clearly this is
19 accomplished by localizing data networking functions in the
20 data networking engine processor and localizing cable modem
21 functions in the cable modem engine processor.

22 So the whole point is to have the functions in
23 different processors. And if saying they are not necessarily
24 separate means they're not necessarily different, that's
25 inconsistent with the claim language we saw and the

1 specification.

2 I know Your Honor spent, I'm sure, a lot of time
3 reviewing the Charter decision. The Court in the Charter
4 case didn't say anything different. In the portion of the
5 decision that Your Honor highlighted in the tentative, the
6 Court found that they could be on -- they don't have to be on
7 separate chips. That may be true so long as the other claim
8 limitations are met.

9 In fact, we saw in the specification, you know,
10 that it describes putting another processor on the chip.
11 It's another physical element. So the -- we're not saying
12 they can't be connected, they can't share connecting
13 circuitry or hardware elements, but they themselves have to
14 have different elements.

15 The reason maybe there's some disconnect is that
16 the Court in the Charter case was addressing a different
17 question. Right. It was addressing the connection question
18 whether they could share any connecting circuitry, data pass,
19 or memory devices.

20 It was doing that in the context of an
21 indefiniteness argument where the defendants in that case
22 were arguing that this limitation is inconsistent with the
23 data bus. That is not our argument. We are not saying they
24 cannot share any connecting circuitry, data pass, or memory
25 devices.

1 The problem is when that construction is divorced
2 from that dispute, it could arguably be read broader to mean
3 that the cable engine and the data networking engine could
4 share physical elements. At root I think it's because the
5 construction is construing more parts of the claim than the
6 limitation that it's actually purporting to construe.

7 So the limitation itself is talking about
8 functional partitioning, right. Just the functions. And
9 that's really what the second clause of the construction is
10 getting at. It's explaining what functional partitioning
11 means.

12 The first clause is broader than that, and it's
13 describing the cable modem engine and the data networking
14 engine that are not really addressed in this claim
15 limitation. They're addressed previously with a whole bunch
16 of other limitations including the circuits, the processors,
17 what each one has to do.

18 So, you know, we're -- defendants are fine with the
19 second half of the construction if the Court feels that a
20 jury would help -- that it would help a jury understand what
21 the limitation at issue means. The problem is if the first
22 construction is interpreted to mean that they can share
23 physical elements.

24 THE COURT: So if I were to actually construe this
25 limitation as opposed to adopting plain and ordinary meaning,

1 which I think is what defendants suggest, you would have me
2 take the present tentative construction and change it so it
3 reads something like: Wherein the cable modem engine and the
4 data networking engine are physically separate and are
5 functionally separate, et cetera?

6 MR. LISSON: Well --

7 THE COURT: Is that what you're asking?

8 MR. LISSON: No, Your Honor. I think the
9 conception of the engines being separate in this context is a
10 little confusing because there are other limitations that
11 address that issue.

12 What we would suggest is you could start the
13 construction as it is just right at: The cable modem
14 functions are performed only by the cable modem engine, and
15 the home networking functions are performed only by the data
16 networking engines, because that's what the limitation is
17 getting at.

18 The first piece simply adds confusion and is
19 arguably inconsistent, depending on what separate means in
20 this context. It's inconsistent with the limitations
21 previous that say they need to have separate processors which
22 are physical elements.

23 THE COURT: So what we're really talking about here
24 is a noninfringement argument, right?

25 MR. LISSON: Well, I think what we're talking about

1 is trying to construe the limitation that's at issue and then
2 ensuring that the other limitations aren't undermined by the
3 first clause. I think the parties will, I'm sure, dispute
4 how the engines with the circuits and the processors, you
5 know, function and what those engines are.

6 But here what is actually being construed is just
7 what it means to functionally separate or -- sorry, partition
8 the functions, not what the cable modem engines are doing.
9 That's earlier in the claim where we know they have to have
10 at least separate physical processors.

11 THE COURT: And is that your noninfringement
12 argument, that Comcast's devices are not physically separate
13 in the way that you say the first two indented limitations of
14 Claim 18 seem to call out?

15 MR. LISSON: I believe that will be one. We
16 haven't -- you know, there are still more detailed
17 infringement contentions to come, but I would say that there
18 will be a noninfringement argument that there are not two
19 separate -- sorry, two engines each with separate circuits
20 and each with a processor.

21 THE COURT: So if your interpretation is correct
22 that the completely partitioned language in the last indented
23 limitation does not mean -- doesn't have anything to do with
24 physical separation, what does it mean?

25 Let me put it this way. Your reading of the first

1 two indented limitations of claim 18 is that there is
2 physical separation. There's a first circuit that has a
3 processor. There's a second circuit that has at least one
4 processor.

5 Second circuit is separate from the first circuit.
6 The first circuit is the -- I'm losing track -- the one
7 engine; the second circuit is the other engine. Doesn't --
8 under your view doesn't this last limitation, this last
9 indented limitation, completely undermine what the first two
10 limitations are doing in terms of separateness?

11 MR. LISSON: I don't think so, Your Honor, because
12 first you identify the data networking engine implemented in
13 a first circuit with a processor. Then you identify the
14 cable modem engine implemented in the second circuit with a
15 processor. That second circuit has to be separate from the
16 first circuit.

17 Then, pursuant to the limitation being construed,
18 the cable -- I want to make sure the order is right. The
19 cable modem functions are only performed by that second
20 circuit with a processor, and the home networking functions
21 are performed only by the data networking engine, the first
22 circuit with a processor.

23 THE COURT: So not only are they physically
24 separate, but neither does the other's work?

25 MR. LISSON: Correct. Correct.

1 THE COURT: That's what you say the last
2 limitation, indented limitation, here essentially adds?

3 MR. LISSON: Correct -- or else it's a little
4 tautological, because to say -- you could just separate the
5 functions out and they would by definition be a cable modem
6 function and cable networking function. Again, those two
7 engines can have a data bus connecting them. Actually we
8 know it has to have a date bus connecting them.

9 But the engines themselves must each have a circuit
10 or it be implemented in a circuit including a processor, and
11 they have to be separate.

12 THE COURT: Okay. I understand your argument.

13 MR. LISSON: Thank you, Your Honor.

14 MR. RAMANI: Your Honor, let me start by saying we
15 agree with Your Honor's tentative that the parties don't have
16 a major dispute as to the '690 patent term.

17 This is Ashok Ramani on behalf of defendants. So
18 for that reason I don't have any slides for this term, Your
19 Honor. But I will say that we took a wrong turn on the way
20 towards the proposed compromise proposal that Entropic made
21 before they put in their reply brief and that Your Honor
22 ultimately adopted.

23 I think we can see that we took a wrong turn by
24 looking at the purpose of this invention that Your Honor
25 describes correctly on page 5 of your tentative where

1 Your Honor notes that: It is helpful to characterize the
2 communication channel over which data is to be sent between
3 nodes of the network.

4 That's what we're talking about. That's what this
5 invention purports to address. So that is the reason why
6 Comcast -- the defendants, excuse me -- included the term
7 data in the proposed construction.

8 As for the proposal that Your Honor ultimately
9 adopted, that proposal takes us away from the very claim
10 language that we're construing here, which is content
11 payload. The way that I've always been taught in the OSI
12 framework is that you have the payload and you have a
13 preamble, header, however you want to describe it, that says
14 where to take the payload.

15 So the analogy, of course, is that the payload is
16 the letter; and the header, preamble, et cetera, constitutes
17 the envelope. So the term that we're construing here
18 modifies payload, is content to payload. That's like
19 describing what the letter says or the content of the letter.

20 So the construction that is in Your Honor's
21 tentative tries to answer the question backwards by starting
22 more broadly and talking about the contents of the probe.
23 That's already gone too far because we begin with the payload
24 and we're modifying the payload by focusing on just its
25 contents.

1 So the proposal that Entropic put in their reply
2 tries to get at the question backwards by offering this broad
3 statement contents of the probe that's basically meaningless
4 and then purporting to use negative limitations to say what's
5 not covered. There's a reason why Courts usually stay away
6 from negative limitations. They tend to be disfavored. You
7 don't know if you're going to cover everything ultimately,
8 and it's really getting at the issue backwards. The better
9 way to get at it is by affirmatively stating what the content
10 payload should be.

11 So I think we have a potential compromise here.
12 Now, I say that I have no slides, but I'm going to actually
13 borrow my friend's from Entropic, one of their slides. If
14 you could look at slide 40 from their presentation.

15 THE COURT: Okay. I'm there.

16 MR. RAMANI: This tries to justify what I'm
17 describing as a backwards attempt to define these phrases.
18 We agree that contents is what is being transmitted. We
19 disagree that -- actually we're also willing to say that data
20 is only one type of content. As I pointed out, that's really
21 at the heart of what this invention is about.

22 But if what we're talking about is including
23 symbols, we think that's fine. So we could go with Comcast's
24 proposal, which is data including symbols to be transmitted.

25 THE COURT: So you're advocating that if we're

1 looking at the tentative's construction, you would say --
2 would you say the content of a probe which includes data and
3 symbols or data which may include symbols?

4 MR. RAMANI: No. We would move away from the
5 content of the probe because the content of the probe already
6 goes way too broad. By saying content of the probe, you're
7 already going well beyond content payload.

8 THE COURT: So you would go back to your original
9 proposed construction, but instead of saying data, you would
10 say something like data which includes symbols?

11 MR. RAMANI: Sure.

12 THE COURT: Data which includes symbols to be
13 transmitted in the probe.

14 MR. RAMANI: Yes. And then one housekeeping
15 matter, Your Honor, and truly a housekeeping matter, is I
16 think all of the proposals include of the probe for the
17 proposed construction of content payload. But the claim
18 language goes on to say content payload of the probe.

19 So either -- whatever Your Honor adopts should
20 strike of the probe, or the term being construed should be
21 broadened to include of the probe.

22 THE COURT: You don't need of the probe in the
23 probe?

24 MR. RAMANI: Correct.

25 THE COURT: Got it.

1 MR. RAMANI: Unless Your Honor has any questions,
2 that's all I have.

3 THE COURT: No. I've got to think about that.
4 Thank you very much.

5 MR. RAMANI: Thank you, Your Honor.

6 THE COURT: Mr. Padmanabhan -- did I get that
7 right?

8 MR. PADMANABHAN: You got it, Your Honor.

9 THE COURT: Okay. I'm doing my best.

10 MR. RAMANI: Your Honor, I'm sorry. I have to
11 intercede. It's Padmanabhan. If he's not going to say it,
12 I'll say it. Padmanabhan is the way to pronounce it.

13 MR. PADMANABHAN: I'll take it either way,
14 Your Honor.

15 THE COURT: Padmanabhan.

16 MR. PADMANABHAN: Perfect.

17 THE COURT: Okay. I'm doing my best to pronounce
18 your name.

19 MR. PADMANABHAN: That is excellent, Your Honor. I
20 didn't want to disrupt the hearing. Mr. Ramani did a much
21 better job than I could in getting you there.

22 In any event, let's talk about cable modem
23 termination system, Your Honor.

24 THE COURT: Please.

25 MR. PADMANABHAN: First off, Your Honor, the

1 tentative was extremely helpful. We appreciate that. We
2 obviously agree with the portion of Your Honor's tentative
3 that talks about the hardware located at the point at which
4 the cable modem's connection to the hybrid fiber-coaxial
5 network terminates. That's what's depicted in the '682
6 patent. It's very clear. Makes a lot of sense.

7 The portion of the construction, the proposed
8 construction from the Court, that says accompanying software
9 is -- we just want to look at that for a moment if you will,
10 Your Honor. So in Your Honor's tentative at page 20 you say,
11 quote: But the CMTS may also include software -- and then
12 you quote the patent -- otherwise associated with, close
13 quote, that hardware.

14 It cites to the '682 patent at column two, lines 35
15 to 36. Now, Your Honor, if you look at that portion of the
16 specification which I've put up here on slide 15 of our deck,
17 Your Honor, that is absolute boilerplate. It appears in over
18 1,200 patents, a large majority of the patents from this same
19 prosecution firm.

20 It discusses not the CMTS specifically or anything
21 about a CMTS specifically but just circuitry in general and
22 attempts to effectively put in some boilerplate language to
23 later argue what is or is not circuitry.

24 The CMTS itself, though, Your Honor, is repeatedly
25 and solely discussed as being a device that sits at the

1 termination point of the cable modem's connection to the
2 hybrid fiber-coaxial network.

3 I look at Fig. 1, Your Honor, which is on slide 19
4 of our deck. It really is this simple, Your Honor. There
5 are these cable modems, elements 112, and they connect
6 through this various equipment that is colored in red here.
7 That's the hybrid fiber-coaxial network. And they land at
8 this thing called the CMTS.

9 There's nothing in the '682 specification that
10 redefines a CMTS or explains any new type of CMTS or, in
11 fact, provides any details regarding where the software in a
12 CMTS would be. Now, Your Honor, given that the '682 doesn't
13 tell us anything new about a CMTS, we just take a moment to
14 look at what a CMTS was in 2012.

15 So if you go to slide 16 of our deck -- this is
16 from the Chatterjee declaration -- the CMTS was a specialized
17 piece of equipment in 2012. It was this thing you could buy
18 from a particular set of vendors, Cisco or ARRIS. It was a
19 piece of equipment. It's really that simple.

20 It's hardware. There is software that ran on it,
21 sure, but it physically was a thing at which the cable
22 modem's connection to the hybrid fiber-coax network
23 terminated. It's really that simple.

24 So the language that the Court is relying on in the
25 tentative to say, well, this associated software may be

1 elsewhere really is just boilerplate. You can't change what
2 a CMTS was at that time or what it was understood to be.

3 THE COURT: To know that, do I have to go to the
4 extrinsic record, though?

5 MR. PADMANABHAN: Well, Your Honor, what you can
6 do, I think, is you can stay with the intrinsic record, which
7 does not in the '682 patent tell you anything about a CMTS
8 other than it being a device, a piece of equipment at which
9 this connection terminates.

10 I think you actually have to read the intrinsic
11 record of the '682 patent in a somewhat tortured fashion to
12 take that boilerplate language and say, well, someone could
13 say that this might mean that this CMTS has software that
14 sits somewhere other than on this CMTS. Does that make
15 sense, Your Honor?

16 THE COURT: I understand what you're saying.
17 You're probably going to get there, but are you going to
18 address Entropic's point that if there is software that is
19 elsewhere, it must be running on some hardware? It must have
20 some hardware associated with it.

21 So Entropic wants the construction to make it clear
22 that that software that is at a distance away from the
23 termination point can have that associated hardware, and
24 that's perfectly fine.

25 MR. PADMANABHAN: Yes. So, Your Honor, let me

1 address that actually. I appreciate you bringing that up.
2 You'll notice that when Entropic discussed the fact that they
3 would love the construction to be explicit about that point,
4 they didn't point to anything in the specification that talks
5 about any such software. There's no discussion of that.

6 Now, they would like software that is not part of
7 the CMTS, that lives outside the CMTS, to be part of the
8 CMTS, because that's what they're going to accuse. There's
9 no surprises here. I'm sure Your Honor has already guessed
10 that that is the tension here.

11 But that's not a CMTS. And, Your Honor, the key is
12 the claim, if you go to claim 1 -- we have it on slide 14 of
13 our deck -- it recites a CMTS and requires a number of
14 functions specifically be performed by a CMTS, not some
15 software that lives outside of a CMTS or elsewhere.

16 It requires very specifically that a CMTS perform a
17 number of functions, and the only CMTS disclosed, described,
18 or shown in the '682 patent is the equipment at which the
19 cable modem's connection to the hybrid fiber-coaxial network
20 terminates. It's really that simple.

21 They can't take some boilerplate language and try
22 to concoct or basically hold onto the ability to accuse
23 something other than a CMTS as being a CMTS.

24 THE COURT: Okay. I think I understand your
25 argument there.

1 MR. PADMANABHAN: Thank you, Your Honor.

2 Let's go to SNR-related metric. Okay. So on
3 SNR-related metric, Your Honor, again we have to thank you
4 for your tentative order. That is because it really does
5 help crystallize the very issue that I think defendants
6 believe is problematic with this term.

7 So as Your Honor recognizes -- and I'm actually
8 going to go straight to the portion of your tentative. Let's
9 skip past some of this background and go straight to the
10 portion of the tentative and the relevant portion of the
11 specification.

12 So on page 23 of Your Honor's tentative order, you
13 state that -- actually, starting on page 22. Let's do that.
14 You point to the portion of the '682 specification that
15 discusses four metrics that are explicitly discussed as being
16 SNR related: SNR at a particular frequency, SNR over a range
17 of frequencies, noise levels, and strength of the desired
18 signals.

19 Now, all of those four things are either using SNR
20 directly, like SNR at a particular frequency, or they are the
21 constituent parts of SNR, signal strength or noise.

22 Then on page 23 you discuss the '401 application.
23 Your Honor, just for the benefit of your ability to refer to
24 it, it is contained in the Chatterjee declaration. The
25 relevant portion of the '401 application is contained in the

1 Chatterjee declaration, which is 325-7 at paragraph 84.

2 THE COURT: 325-7? Not 332-7?

3 MR. PADMANABHAN: I have written here 325-7, Your
4 Honor, so I'm going to stand by that.

5 THE COURT: Yes. Okay. So 325-7 is the
6 Chatterjee.

7 MR. PADMANABHAN: And if you go to paragraph 84,
8 Dr. Chatterjee excerpted a portion of the '401 application
9 that talks about these two additional metrics, bit error rate
10 and symbol error rate.

11 THE COURT: So paragraph 84 of the Chatterjee
12 declaration, ECF 325-7, page 34 of 38, lines 11 through 13
13 and a half, that's the '401 -- that's a quote, an excerpt
14 from the '401 application?

15 MR. PADMANABHAN: Correct.

16 THE COURT: And is it paragraph 0030?

17 MR. PADMANABHAN: Of the '401 application?

18 THE COURT: Yes.

19 MR. PADMANABHAN: If that is what's cited there,
20 Your Honor, again I stand by it. I don't have it memorized,
21 I'll be honest, but we can confirm for Your Honor.

22 THE COURT: Okay. But in any event, that helps.
23 Hold on a second. All right.

24 MR. PADMANABHAN: And as Your Honor's tentative
25 recognizes, the '401 application which is incorporated by

1 reference into the '682 patent identifies two additional
2 SNR-related metrics: bit error rate and symbol error rate.

3 As Your Honor's tentative also acknowledges, there
4 are things other than signal and noise that impact bit error
5 rate. But what the tentative says is that: While it is true
6 that other factors could affect the bit error rate, the
7 context here adequately clarifies that noise is important.
8 In that way, the Court finds this example sufficiently
9 related to the others.

10 This raises two problems which are at the heart of
11 defendants' indefiniteness position. Okay. The problem is
12 not the breadth of SNR-related metric. The problem is that
13 we don't know what the bounds are. A person of ordinary
14 skill in the art would not know what the bounds are. They
15 would not know what does and does not constitute as an
16 SNR-related metric.

17 So while the tentative recognizes that noise is
18 important to bit error rate, this raises the question of how
19 important does SNR or noise or signal strength need to be to
20 a particular metric for it to be an SNR-related metric.

21 These are the exact questions that Dr. Chatterjee
22 raised when he discussed the two terms through put and
23 latency. He said these are metrics that may or may not be
24 impacted by SNR, and it is not clear to me whether they are
25 SNR-related metrics.

1 The second issue is, if you look, Your Honor, at
2 the tentative on pages 23 and 24, it says: In that way the
3 Court finds this example sufficiently related to the others.

4 The question, Your Honor, is not whether these
5 various metrics listed in the specification or incorporated
6 into the specification are in some way sufficiently related
7 but whether or not they provide a person of skill in the art
8 criteria by which they can determine whether other metrics
9 fall within the bounds of SNR-related metric. That's the
10 difficulty.

11 They don't provide any common thread, and the '682
12 specification does not provide any disclosure that says that
13 these are the hallmarks of an SNR-related metric. These are
14 the things that tell you whether something is or is not an
15 SNR-related metric. That's the difficulty.

16 THE COURT: Sorry. What flashed into my mind was
17 Sesame Street. Which one of these is not like the others?

18 MR. PADMANABHAN: Your Honor, we have discussed
19 that exact analogy. You know, but to Your Honor's point on
20 that, it's not -- you've got to be able to figure out whether
21 it belongs in or out based on some rule. That's the Federal
22 Circuit's guidance.

23 So there has got to be sufficient guidance in the
24 specification for a person of skill to tell you whether
25 something is in or out, and the '682 doesn't have any such

1 guidance. So with that, I'll wait to respond to my
2 colleagues from Entropic.

3 THE COURT: Okay. Thank you. That was helpful.

4 (Off-the-record discussion)

5 THE COURT: Okay. Let me hear back from Entropic.

6 MR. GALLUZZO: Thank you, Your Honor. Vince
7 Galluzzo again. I'll try to keep it to 15 minutes for Madam
8 Court Reporter so we can take a break. And after my portion
9 perhaps we could turn to Mr. Pieja for '682.

10 I'll start with '775 claim term, Your Honor. To be
11 honest, I'm a bit confused about what defendants' position
12 is, so I'll try my best to respond to what I think it is. Of
13 course, if counsel can correct me afterward if I misstate
14 anything, that would be much appreciated.

15 I would like to turn first to slide 33 of our
16 presentation. There we are. So what we see on this slide,
17 Your Honor, is a comparison of claim 18 on the left
18 highlighted and excerpted in certain ways and a portion of
19 the specification on the right.

20 I think the dispute as far as defendants have with
21 Your Honor's tentative has a couple of different aspects, the
22 first being whether the construction changes the language
23 that comes before it. We don't read it that way. We didn't
24 understand the Charter Court's ruling on the construction to
25 be that way.

1 The claim language still requires that the second
2 circuit being separate from the first circuit, and there are
3 a number of requirements in the claims that explain what that
4 separateness means.

5 One of the things it doesn't mean, as we know from
6 the specification, is physically separate. The portion on
7 the right of the slide here is one portion of the
8 specification at column four, lines 58 to 62. It basically
9 describes the manufacturing process, how you could take the
10 old chips before the invention and upgrade them to the
11 invention.

12 Under defendants' understanding you would have to
13 essentially create a whole new chip or make the chip larger
14 such that it could fit this entirely new and physically
15 distinct and separate, you know, no-connection circuit. But
16 what the specification says is you just have to add another
17 ARM-type processor.

18 ARM is essentially just a specific type of reduced
19 instruction set processor. It's a simpler processor that's
20 cheaper. But it doesn't say do all of those things. It says
21 just to add a processor.

22 So we know from at least this that, yes, there are
23 separate processors, as the claim itself requires, but they
24 can be on the same chip. The reason why that's true is
25 because circuits are very complex.

1 Integrated circuits, if you look at them, look very
2 complex, but there's further layers to the circuit you don't
3 even see. Persons of skill in the art are well equipped to
4 look at a circuit, draw a line, and say this part is circuit
5 number one and this part is circuit number two.

6 If you go to --

7 THE COURT: If they're on the same chip and even if
8 they're on the same ARM?

9 MR. GALLUZZO: Even if they're on the same chip,
10 Your Honor. An ARM is essentially -- think of it as a
11 processor. So if they're on the same chip, you can
12 absolutely draw your circuit number one and circuit number
13 two.

14 If we go to the next slide, this comes directly
15 from Judge Gilstrap's construction. What I want to highlight
16 here -- and I apologize, it might be small on the slide -- is
17 the image on the right which I borrowed from Apple. It's
18 their M1 Pro, which is a newer system on a chip, basically a
19 complicated integrated circuit.

20 What it shows here is that this has a number of
21 different cores on them, cores essentially being a processor.
22 So this is a single chip that has numerous cores for
23 processing and graphics. Each core is a processor, yet
24 they're all on the same chip and they can all be -- if you
25 were to draw your lines however you would like, you could say

1 this is one circuit and this is another circuit.

2 So I think what's very clear from the specification
3 and just the practical realities of how these things are made
4 and built is that these two circuits in the claim can, of
5 course, be on a single chip. The physical separateness
6 requirement as Judge Gilstrap found doesn't mean that they
7 have to be on separate chips.

8 The second issue I think defendants have with
9 Your Honor's tentative -- and I think I heard this right --
10 is that the claim construction construes more than is
11 necessary. What I want to talk about here is completely
12 partitioned is really at the heart of the construction of the
13 claim term.

14 And I'll be honest, you know. To a layperson,
15 completely partitioned, as we say in our briefing, can have a
16 number of different meanings. I think it's really important
17 if we go back to the reason.

18 One of the reasons why we construe claim terms is
19 to make it easy for the jury to understand the technical
20 nature of things when the plain words don't necessarily mean,
21 have the lay understanding, is to tell them that completely
22 partitioned as used in this claim term under construction is
23 about functional partitioning, not necessarily physical
24 partitioning. And other parts of the claim can handle other
25 issues related to physical separation.

1 In terms of confusion, I know counsel raised the
2 issue of confusion. Let's think about how this would
3 actually go to the jury at trial. I mean, Your Honor would
4 read an instruction that says the Court has construed this
5 term, including the words completely partitioned, to mean,
6 and you would be explaining to the jury what you have
7 construed that term to mean.

8 You aren't going to tell the jury, forget about
9 everything else in the claim. In fact, you're going to have
10 another instruction that tells the jury for purposes of
11 infringement and invalidity, they have to consider every word
12 of the claim. So I don't think there will be any confusion
13 there.

14 I think it's important, as did Judge Gilstrap in
15 Charter, to specify that this requirement is about functional
16 separation, not necessarily physical separation, lest the
17 jury potentially be confused on that point, and also to
18 accord the specification's disclosure that these two circuits
19 can indeed be on the same chip.

20 Your Honor, if you have any --

21 THE COURT: I do have a question.

22 MR. GALLUZZO: Yes.

23 THE COURT: So as I understand defendants' argument
24 at least in part here, it is if I construe the limitation at
25 issue here in claim 18 of the '775 patent as Entropic wants

1 or as the tentative does, what I understand defendants to be
2 saying is the claim becomes hopelessly inconsistent because
3 the first two indented limitations deal with a certain type
4 of separateness: a first circuit with at least one
5 processor, and that's the data networking engine; and then a
6 second circuit with at least one processor, and that's the
7 cable modem engine.

8 Judge Gilstrap in his construction says, well, they
9 can be on the same chip. Okay. That's fine. But the
10 construction in the tentative says, kind of gets rid of that
11 separateness that seems to be called out by the first two
12 indented limitations.

13 If there's no physical separation, there's merely
14 functional separation in what the engine is doing. Doesn't
15 that, like I say, undermine the first two limitations?

16 MR. GALLUZZO: I don't believe so, Your Honor,
17 because those two limitations still stand. The claim is
18 going to be read in its entirety including that construction.
19 Perhaps the issue here is that we're construing a number of
20 words of the claim as opposed to just the phrase "completely
21 partitioned."

22 I think the point still stands that the entire
23 claim needs to be read together, the claim saying up at the
24 top the second circuit being separate from the first circuit.
25 There are a lot of requirements discussing how that

1 separateness is enacted and what you can do with that
2 separateness.

3 Then the last talks about the data bus connecting
4 wherein the cable modem functions in the CME, the cable modem
5 engine, are completely partitioned from the functions on the
6 home networking or the data networking engine side. That
7 portion is just about what you do functionally.

8 I think the reason why it says completely
9 partitioned to the functions there is because there is the
10 data bus obviously connecting them, so we're talking about
11 functional separation.

12 But there are more connections that the
13 specification allows between the two engines beyond just the
14 data bus. If we were to go to slide 31, please, Mr. Fuller,
15 here we've highlighted the cable modem engine in red and the
16 data networking engine in blue in both Figs. 1 and 2 of the
17 patent. We've highlighted like we did in our tech tutorial
18 the data bus in green.

19 There's also other connections we've highlighted
20 here in purple which are other connections between the
21 engines and between even a third unit called the advanced
22 crypto engine.

23 The specification tells us that doesn't do any
24 cable modem processing. It doesn't do any data networking
25 processing. It helps with security, you know. Cryptography.

1 Yet those elements provide connections and perhaps, as Judge
2 Gilstrap found, shared memory resources as well.

3 But, no, Your Honor, we don't read the tentative or
4 its placement in the claim to read out the requirement the
5 second circuit being separate from the first circuit.

6 THE COURT: And yet the tentative construction says
7 that the two engines need not necessarily be physically
8 separate. What does it mean to be -- maybe the construction
9 shouldn't say anything about physically separate. Does that
10 introduce ambiguity?

11 MR. GALLUZZO: I don't think it introduces
12 ambiguity, Your Honor. The parties obviously didn't brief
13 other alternatives. We had proposed the construction from
14 Charter, and defendants had proposed plain and ordinary.

15 THE COURT: Okay. I need to think about this.

16 Any more on this issue?

17 MR. GALLUZZO: Not on '775, Your Honor. I'm not
18 sure on time on the clock. For '690 I'll probably need five
19 or ten minutes, tops.

20 THE COURT: Let's take our break now for ten
21 minutes and then we'll come back. We'll probably go past
22 noon but hopefully not too far. All right. Any reason we
23 can't take a ten-minute break right now?

24 MR. GALLUZZO: No, Your Honor.

25 THE COURT: Okay.

1 THE CLERK: All rise.

2 (Recess taken from 11:30 a.m. until 11:40 a.m.)

3 THE COURT: All right. Have a seat, please,
4 everybody. Let's just pick up where we left off.

5 Entropic, you were going to argue the '690.

6 MR. GALLUZZO: Yes, Your Honor. If you would
7 indulge me for a moment before we do, just a few more words
8 on '775 after thinking about it a bit on break.

9 THE COURT: Yes. Please.

10 MR. GALLUZZO: Thank you. Just to be clear, Your
11 Honor, the claim language of claim 18 does require the two
12 processors with separate circuits. And to make very clear,
13 what we would absolutely oppose -- I don't know if defendants
14 are proposing this, but to make very clear is any additional
15 requirement in the claim construction about physical
16 separation that is not already in the claims.

17 The claims already describe the separation required
18 in the other claim language. When we're talking about
19 completely partitioned, I think the tentative gets it right.
20 If defendants are proposing to add words to the tentative
21 that are not already there, I would want to hear them. But
22 we would oppose.

23 As a bit of background, why the proposed
24 construction here came about in the Charter case, the
25 defendant in the Charter case had argued that they didn't

1 infringe because the two processors that Entropic had pointed
2 to were on the same chip.

3 Entropic is concerned that that is going to be a
4 noninfringement argument here. To the extent that that is
5 going to be a noninfringement argument that there is no
6 separation of circuits because the two circuits are on the
7 same chip, then, of course, the Charter construction would
8 dispose of that, and I think the specification does, too.

9 THE COURT: Okay. So I was inclined not to talk
10 about physical separation in the construction of this
11 limitation. We're back to where I think you started, which
12 is just say cable modem functions are performed only by the
13 cable modem engine, and the home networking functions are
14 performed only by the data networking engine, and say nothing
15 about potential physical separation. That's where Entropic
16 is.

17 MR. GALLUZZO: Your Honor, we still propose the
18 proposed construction we had from the Charter case, that was
19 adopted in the Charter case, the reason being, as I said, for
20 a jury understanding of what completely partitioned mean, I
21 think it's important to tell the jury that it is functional
22 partitioning or functional separation, not necessarily
23 physical separation as to that term.

24 THE COURT: Okay. All right. Thank you.

25 MR. GALLUZZO: Okay. Thank you, Your Honor. So

1 now if there are any further questions, I'm happy to answer
2 them. Otherwise, if we could turn to the '690?

3 THE COURT: Please.

4 MR. GALLUZZO: So just to start off with what I
5 don't think is in dispute, the "of the probe" language being
6 redundant, of course we'd want to remove any redundancy for
7 helpfulness and ease of the jury.

8 THE COURT: I always say help stamp out and abolish
9 redundancy.

10 MR. GALLUZZO: Good belt-and-suspenders approach to
11 that, Your Honor.

12 So I think where counsel started argument was about
13 how probes can help characterize a channel on which data is
14 to be sent. I want to make sure that Your Honor understands
15 what is being discussed there about probes.

16 So if we could turn to slide 39, Mr. Fuller. Here
17 we have some repeats from our tech tutorial, but I think it's
18 important here. In the normal operation of these networks,
19 of course there is data being sent. There is internet data.
20 There's television data. There's various types of data.
21 That's during normal operation.

22 What a probe is meant to do is to help characterize
23 the communication channel, to look in there and see what's
24 going on. Is it working well; is it not working well? Probe
25 is actually an interesting word because when you hear probe,

1 you might think of the types of probes you might use in
2 engineering or cooking.

3 You know, I've gotten really into smoking meats
4 recently. You can put a temperature probe into the meat
5 while it's cooking because you can't, you know, touch the
6 outside and see what's going on in the inside. So you put
7 the probe in to figure out what's going on inside, what the
8 internal temperature is.

9 I think the probes in this are a bit akin to that
10 where you're putting something in the network to see what's
11 going on inside and understand what's going on inside. So if
12 you want to know what a particular channel in a network is
13 doing, you put in a probe to find out what's going on in that
14 channel.

15 Now, so there is -- to be very clear, there's no
16 dispute that data is sent in the network. I think the
17 dispute is whether the probe has to contain data in its
18 content payload.

19 So let's turn to the next slide, slide 40. This
20 one was shown to Your Honor earlier. This is our attempt to
21 show that the two words have different potential disputes
22 between the parties. I think, although I didn't hear, that
23 the payload portion is not in dispute. Counsel can correct
24 me if I'm wrong when he gets back up, but payload essentially
25 distinguishing for other potential parts of the probe.

1 Where I think the remaining dispute is is on
2 content. So what can be the content of the content payload
3 of a probe. Defendants say it has to be data, including a
4 symbol, but what the specification and just general
5 technology says is it doesn't have to be data. It can be.
6 It doesn't have to be a symbol. It can be. It can be
7 something as simple as a signal.

8 Now, I'll get to that in a moment. To address the
9 negative limitation issue or negative construction, there's
10 no per se rule against negative constructions. That's been
11 said by the Federal Circuit numerous times, most recently
12 that I could find in a published decision was in the Intel v.
13 Qualcomm case, 21 F.4th 801, pine cite 811. The question
14 about when a Court adopts a negative construction is does it
15 resolve the parties' dispute on that issue or not.

16 In the Intel case it didn't resolve the parties'
17 dispute because the Court had left open an ambiguity and used
18 some terms that weren't that well known in the art. Here the
19 negative construction does resolve the dispute because it
20 uses known terms in the art that have a common understanding
21 in the field to resolve at least for payload what I think the
22 dispute is.

23 So let's go to slide 41 and now talk about content.
24 Now, signals, data, and symbols are related, but they aren't
25 necessarily the same thing. So what we have shown here in

1 the top left of our slide is a signal. This is just a basic
2 sign wave. You might have seen this in textbooks or in
3 engineering manuals, but it doesn't necessarily need to carry
4 any information.

5 Think of it like a foghorn or a police siren or,
6 you know, perhaps the starter pistol that's going to be going
7 off in the Olympics next week. It doesn't necessarily convey
8 any information. You know, it doesn't have an encoded
9 message in it, but it signals something. The sign wave here
10 doesn't encode any information, but it is a signal.

11 THE COURT: It demonstrates that it's on.

12 MR. GALLUZZO: Sure. That could be one use of a
13 signal. A signal can be -- you know, it can carry data, and
14 I'll talk about that in a second, but it need not necessarily
15 carry data.

16 If we look in the middle, we see data. There's two
17 representations here. There's the digital data represented
18 in binary. Those are the zeros and ones. And there's a
19 digital signal of some square waves beneath it.

20 What data is is information you want to convey. So
21 if I want to convey the message, "hello, world," I can type
22 it out in ones and zeros. I can modulate that onto a signal,
23 which means I can have those zeros and ones converted to
24 something that's on the signal medium and send it, and I can
25 transmit, "hello, world."

1 To go back to my foghorn example, I can toot the
2 foghorn once and not convey any data, or I can toot the
3 foghorn in Morse code. Now I am modulating essentially the
4 hello, world, message through the foghorn, and now that
5 signal does contain data. The single toot doesn't; the Morse
6 code toot does.

7 Symbol is in the bottom right here. A symbol is
8 essentially a modulation of data onto a signal with specific
9 parameters. A symbol is basically a representation of a
10 quantum of information or time. So, for example, in my
11 foghorn example it could be like the H in hello, world. That
12 could be a symbol. I have modulated the data for H onto the
13 signal.

14 So if we turn to slide 42, we can see that in a
15 number of different instances not only is the probe discussed
16 as having symbols, which I think I heard defendants concede
17 today, but the probe can also just be a signal.

18 So in that way a probe request can say send me this
19 data as your data, content payload. It can say send me this
20 symbol as your content payload. But it could also say send
21 me this signal that means nothing but I know what it is, and
22 I'll check it against my reference signal, the reference
23 signal being from column one, line 52 to 54. That's kind of
24 what a probe is for.

25 You adds the node wanting to receive the probe.

1 You say you other node send me this so I know what to expect,
2 and I will compare it to what I expect. Was -- you know, was
3 there so much noise on the system that it was indecipherable?
4 Did you lose some information along the way? How is that
5 channel doing?

6 There's other portions of the specification that
7 also talk about how the content payload of the probe doesn't
8 have to carry any data. It doesn't have to necessarily mean
9 anything in normal data operations.

10 I'll start with column five, lines 47 to 49. This
11 is where -- I'll give Your Honor a second and me a second to
12 get there.

13 THE COURT: Column five?

14 MR. GALLUZZO: Yes, Your Honor, column five, line
15 47 of the '690 patent. It starts: In this case.

16 THE COURT: I'm there.

17 MR. GALLUZZO: So: In this case the -- I'll
18 summarize, but the probe can, quote, emulate an OFDMA
19 transmission from node two to node one, OFDMA transmission
20 being a certain type of modulated transmission.

21 It doesn't say the probe can send one. It says it
22 can emulate one. Emulate is a technical word that basically
23 means you can make it look like it is one. So from that,
24 it's broad enough to encompass just sending a signal that is
25 modulated per OFDMA transmission scheme you've selected. The

1 message doesn't have to mean anything. It can just be an
2 emulation of one during normal operation.

3 The second portion of the specification is -- if
4 you turn a page, column nine, line 17. The sentence starts:
5 For example.

6 THE COURT: Okay.

7 MR. GALLUZZO: It says: For example, a probe
8 request may specify a payload that modulates only a single
9 subcarrier with the maximum available payload scaling factor,
10 in parentheses, amplification in order to reach or identify a
11 distant or hidden node.

12 To go back to my foghorn example, this is blare the
13 foghorn as loud as you possibly can for as long as you
14 possibly can so some lost ship way down the river can hear
15 it. That foghorn doesn't necessarily carry information.
16 You're sending the volume of the signal, so to speak, at such
17 a high volume that you're going to make sure you get to lost
18 nodes that haven't been found.

19 The last portion of the specification that shows
20 that a content payload for a probe can just be a signal
21 doesn't necessarily have to have any data or symbols is same
22 column, line 56. It again starts: For example.

23 THE COURT: Okay.

24 MR. GALLUZZO: It says: For example, a probe
25 request may specify a time domain probe to generate a square

1 wave or other easily analyzed signal for channel estimate
2 purposes, square wave being one like the one we looked at
3 earlier, but essentially send a type of wave or send a type
4 of signal through the channel that is easily understood. It
5 doesn't necessarily need to contain data. It can just be a
6 square wave.

7 So again this portion of the specification shows
8 that the payload need not carry data. It need not carry
9 information useful in the system during normal operation. It
10 can just be a signal that both the receiving node and the
11 sending node know so it can be compared and see how, what
12 happens in the channel when it's sent through it.

13 So, Your Honor, I think for that reason, while I
14 appreciate defendants aren't disputing that the content
15 payload can include a symbol, we think that is true. It can
16 include a symbol. I think the dispute remains of whether the
17 content payload can just be a signal, meaning a signal that
18 is not in fact modulated to carry data or to mean something
19 in normal operation of the system.

20 THE COURT: So you would have content payload to be
21 construed to mean data or signal or symbol or some of all of
22 them?

23 MR. GALLUZZO: Well, so, Your Honor, what I think I
24 would propose is what our compromise proposal was, which is
25 -- bear with me while I get to it -- the content of a probe.

1 And then what I understand the dispute on payload to be is
2 what continues.

3 At the very least, Your Honor, the content should
4 include or should be construed broadly enough to also include
5 signals. So under defendants' proposal here today, the data
6 including symbols might exclude that, and I think that would
7 be too narrow.

8 THE COURT: But you would be okay with what I just
9 said?

10 MR. GALLUZZO: I'm sorry. The -- if I heard you
11 correctly, Your Honor, it would be signal or symbol or data?

12 THE COURT: Right.

13 MR. GALLUZZO: And then it would include -- which
14 does not include the prefix, preamble, or overhead
15 information?

16 THE COURT: No.

17 MR. GALLUZZO: Okay. So content payload would be
18 construed as signal or symbol or data?

19 THE COURT: Or a combination of them.

20 MR. GALLUZZO: Bear with me, Your Honor. I have to
21 confer with my colleagues. Or if you would like, we can do
22 it at a later time and not waste everybody's time.

23 THE COURT: No. If you think it will be quick, go
24 ahead and check with the brain trust.

25 (Counsel conferring)

1 MR. GALLUZZO: I think as to content, that would be
2 sufficient, Your Honor. My concern is that there would still
3 be a need to distinguish payload from other portions, as the
4 defendants have raised. I would be interested to hear their
5 position on it. But for the construction of the word
6 content, I think we would be okay with that.

7 THE COURT: But for the whole limitation content
8 payload which the parties have asked me to construe, you
9 think the construction needs to say more about excluding
10 prefix, preamble, or overhead information?

11 MR. GALLUZZO: To be clear, we had originally
12 proposed the plain and ordinary meaning. That is still on
13 the table, so to speak, Your Honor. Our compromise proposal
14 was to address what we thought wasn't in dispute between the
15 parties, that being what payload means.

16 So to the extent defendants would require that in
17 the construction to obviate any dispute, we would be fine
18 with inclusion of that.

19 THE COURT: Okay. All right. Thank you.

20 Did you want to say anything about CMTS or
21 SNR-related metric?

22 MR. GALLUZZO: Yes, Your Honor. I'll be passing
23 that over to Mr. Pieja.

24 THE COURT: Very well.

25 MR. PIEJA: Michael Pieja again for Entropic,

1 Your Honor. Your Honor, before I begin, let me address the
2 housekeeping question you posed to me when I was here before.
3 You had asked for a record citation for the patent
4 application that included the final two examples of an
5 SNR-related metric. It is in fact docket 325-8.

6 The reason that that is a patent is because that is
7 the patent that the application we cited eventually issued
8 as. So if you look, the application number for the patent
9 that appears there is 13,948,401. That is the patent
10 application that we were referring to earlier.

11 THE COURT: You think that is better than the
12 citation to Dr. Chatterjee's declaration?

13 MR. PIEJA: I think defendants mentioned that
14 Dr. Chatterjee excerpted a portion of that. So if Your Honor
15 would like the full patent, the 325-8 is the complete patent
16 for it.

17 THE COURT: Okay. Got it. Thank you.

18 MR. PIEJA: So I want to take the two '682 patent
19 terms in order now, starting with CMTS. If I understand
20 defendants' construction correctly, their proposal would
21 limit not only the hardware but the software components of a
22 CMTS and require them to be contained within a single
23 basically box that sits at a single point.

24 There is no intrinsic evidence supporting that and
25 for good reason. I want to walk through one by one the

1 points that they raised because I think all of them either
2 misstate or overlook critical evidence.

3 The first thing that defendants said was they took
4 issue with Your Honor's citation to the definition of
5 circuitry in column two, line 29 of the patent, and they
6 said, oh, well, this is boilerplate, and they put in big red
7 letters that it appears in, I think, 1,200 patents. There's
8 a couple of problems with that.

9 First of all, the fact that the term circuitry is
10 given a consistent definition across multiple patents isn't a
11 problem. It simply reflects the fact that it's a common term
12 and it has a well-understood definition. There's nothing
13 wrong or even particularly surprising that a particular term
14 of art would have the same definition in multiple patents if
15 in fact, you know, that statement is true.

16 I will say that this is the first time we've heard
17 this particular assertion, so I will take defendants at their
18 word that it does appear in that many patents. But even if
19 it does, that is certainly not a cause for concern.

20 Second of all, as we see on slide eight of our
21 demonstratives, Entropic's demonstratives, the relevant
22 definitions in the '682 patent are far from boilerplate.
23 While the '682 patent does include a definition of circuitry,
24 which was cited, it also explicitly links that definition to
25 a claim term, the term CMTS.

1 So on slide eight we see on the left-hand side at
2 column two, line 32 -- we see that the patent at column two
3 says the CMTS 102 may comprise circuitry. That's actually at
4 column two, line 61.

5 So what defendants are calling boilerplate is
6 actually the reverse. It is a definition that the '682
7 patent adopted for the specific term in dispute. So
8 presumably the drafters of the patent knowingly and
9 intentionally chose to incorporate that definition as part of
10 the definition of CMTS.

11 The other thing I want to point to is the
12 defendants -- if we go to slide 14 of our demonstratives.
13 Although they didn't raise it here today, the defendants did
14 cite in their brief two cases that they believe stand for the
15 proposition that the Court is entitled to ignore parts of the
16 specification if they're boilerplate, what they call
17 boilerplate.

18 We obviously disagree with that. I don't think
19 there's any authority from the Federal Circuit that would
20 allow a Court to disregard the specification regardless of
21 how many patents it's repeated in. I also think, though,
22 that the cases they cited actually show a sharp distinction
23 with what the '682 patent is doing.

24 The left-hand side of column 14 -- slide 14,
25 reproduces the language that the Federal Circuit

1 characterized or that the defendants characterized in prior
2 cases as boilerplate. So first in the Wireless Agents case,
3 there's a reference to, quote, various modifications, and,
4 quote, alternative embodiments.

5 So those are generic, you know, statements that are
6 untethered to any particular claim term or any particular
7 definition. Similarly, the second case they cite is this
8 Cultor versus Staley case. The patent at issue in there is
9 U.S. patent 5,667,593. They didn't show the Court the
10 language in that patent that was -- that they're describing
11 as boilerplate.

12 Again, when you read it -- and we've reproduced it
13 here -- it's highly generic. It just -- that language just
14 says the invention is not limited to the specific details of
15 examples. It may well be that that language, language of
16 that type doesn't have much of an impact on interpretation,
17 but that language is a far cry from the language that we see
18 on slide eight in the '682 patent that provides a specific
19 technical definition for a term, circuitry, and links it to a
20 claim element.

21 So I think despite the size and color of their
22 argument on slide 15 of their deck about boilerplate, I don't
23 think that's entitled to any weight under controlling Federal
24 Circuit law. They are essentially asking the Court to ignore
25 the specification and to create a rule that as far as I'm

1 aware is not supported by any published case in any
2 jurisdiction that the number of times a definition appears in
3 different patents influences what the Court should do with
4 it.

5 So next, I heard my learned colleague say that the
6 CMTS is repeatedly and solely discussed as being a device
7 that sits at the connection to the HFC network. I wrote that
8 down when I heard that because I was surprised. The reason I
9 was surprised is that that definition is never described in a
10 specification.

11 It's not repeatedly described. The specification
12 doesn't talk about any of the parts of their definition.
13 Their definition uses the term equipment. That's not used in
14 defining CMTS. They talk about the termination of a
15 connection to the HFC network. The spec doesn't use that.

16 What were defendants able to muster? Well, after
17 saying that the spec repeatedly describes the CMTS the way
18 that they want it to be, all they pointed to was Fig. 1. So
19 they showed the Court Fig. 1, which is a logical diagram of a
20 network. They didn't read the Court the specification's
21 description of Fig. 1.

22 When the spec describes Fig. 1 at column two, line
23 11, at column two, line 56, it says it's an example. It
24 doesn't say it's a definition. It doesn't include any of the
25 words that they have in their construction. It's an example

1 logical diagram of boxes and lines connecting them.

2 So that is certainly not a repeated discussion, and
3 it is certainly not language that is definitional or purports
4 to be the only instantiation of a CMTS.

5 So the next thing they did that I want to address
6 is they asked the Court rhetorically: What is a CMTS? My
7 colleague put up on slide 16 of their presentation this
8 picture. It is a picture that I would admit was of a real
9 CMTS. It's an example of one, and it was a box. And they
10 said, well, everybody knew that's what CMTSs were.

11 Now, they didn't say this, but I think what they're
12 getting to is they were citing -- they're getting that from
13 Dr. Chatterjee, because their source of extrinsic evidence is
14 their expert, Dr. Chatterjee. And he cites in his
15 declaration a bunch of documents that purport in his view to
16 establish that a CMTS is what they call that box. It is one
17 thing, and it sits at the network termination point.

18 Well, one of the things that emerged when
19 Dr. Chatterjee was deposed was that in forming that opinion,
20 he hadn't looked for or read patents that talk about
21 distributed CMTSs.

22 Indeed there were such patents at the time that
23 Dr. Chatterjee was preparing his deposition. They are in the
24 record before the Court today. At docket 333-3, which is
25 Exhibit J to Entropic's reply claim construction declaration,

1 is U.S. patent publication 2003, 66087. This is published in
2 April of 2003. The first sentence of the abstract refers to
3 a hybrid distributed cable modem termination system.

4 In the record at docket 333-4, Exhibit K to
5 Entropic's reply declaration, is patent publication 2004,
6 545035. The first sentence of the abstract of that patent:
7 A distributed CMTS in a typical or in a hybrid fiber-coaxial
8 plan.

9 When defendants tell the Court that a CMTS was that
10 box, the only reason that they can say that is because
11 Dr. Chatterjee didn't look at these documents and because
12 they haven't included them in the analysis. So it is simply
13 not true that the extrinsic evidence at the time of the
14 patent indicated that a CMTS could not be distributed or had
15 to be limited to a single box.

16 The final thing that I wanted to point to is that
17 the defendant said that there is nothing in the intrinsic
18 record that tells you anything different than basically their
19 construction. It says the definition of CMTS is basically
20 what they said, and there's nothing in the intrinsic record.

21 I have to respectfully disagree. As we see on
22 slide eight, Your Honor hit on exactly one of the points in
23 the specification, which is the definition of circuitry. I
24 would also urge the Court to potentially reconsider the
25 finding in the tentative that the language of column seven is

1 not also relevant here.

2 Column seven, which is reproduced on our slide
3 number 12, is a portion from the specification that states
4 that the present invention may be realized in hardware,
5 software, or a combination. The present invention may be
6 realized in a centralized fashion or distributed fashion.

7 Now, the defendants have said that again that's
8 boilerplate, that that is not allegedly linked to the CMTS.
9 As we see on slide 13 of our presentation, that isn't right.

10 The claims of a patent, it's well known, define the
11 invention. So what is the invention of the '682? It is what
12 is recited in claim 1. What is recited in claim 1? It's a
13 series of steps performed by a CMTS.

14 When column seven, lines 31 to 32 of the patent say
15 that the present invention can be realized in a centralized
16 fashion or a distributed fashion, the present invention is
17 claim 1. And the present invention is a series of steps each
18 of which is performed by a CMTS.

19 So respectfully, Your Honor, when the defendants
20 say there's nothing in the '682 patent that says that the
21 CMTS is anything other than a box, that is not correct.

22 THE COURT: One of your first arguments was, in
23 challenging the construction in the tentative, I understood
24 one of your first arguments to be you don't have software
25 without accompanying hardware. But doesn't your own proposed

1 construction undermine that argument, because your own
2 proposed construction and what you're pointing to now says
3 CMTS may be realized in hardware, software, or a combination
4 of hardware and software, which suggests that software can
5 exist without hardware. So doesn't that undermine what you
6 argued earlier?

7 MR. PIEJA: I don't think, so, Your Honor. The
8 reason is that I think a person of skill in the art
9 understands -- and I don't think defendants dispute this --
10 that a reference to software necessarily implies some
11 hardware or some physical object that the software is stored
12 in or running on.

13 It's literally a physical impossibility for
14 software to exist unless it's a transient signal that's being
15 sent over the air. It's otherwise impossible for software to
16 exist and be executed without some physical device that is
17 executing it.

18 So I would say that because this patent is directed
19 to a person of skill, the reference in column seven to the
20 CMTS being implemented in software or hardware would be taken
21 to mean that the relevant functionalities of the CMTS can be
22 implemented in software or hardware. The software, of
23 course, would have to be given something to run on because
24 otherwise it couldn't actually do anything.

25 THE COURT: That's simply understood.

1 MR. PIEJA: I believe so, Your Honor. I haven't
2 heard defendants dispute it. If they have a dispute, I would
3 certainly be happy to hear it, but I think that's a
4 well-accepted principle.

5 THE COURT: But if that's true, then what's wrong
6 with the construction in the tentative, hardware and
7 accompanying software with the hardware located at the point,
8 et cetera?

9 MR. PIEJA: As long as it's understood that the
10 software that is located away from the connection point can
11 be using hardware at that point so that there can be -- well,
12 I just mucked that all up, so I'll start again.

13 As long as there's an understanding that because
14 there can be software located away from the connection point,
15 there can also be hardware located away from the connection
16 point, then I don't have a problem with the construction.
17 But I suspect that defendants would read the construction to
18 mean there cannot be any other hardware that is part of the
19 CMTS that is not at the connection point.

20 I suspect that they would say that the construction
21 is limiting in that way, and I don't think that's a valid
22 reading because of the fact that software must run on
23 hardware.

24 If the defendants are willing to agree that the
25 intent of the construction is not to exclude the existence of

1 hardware away from the termination point but that it merely
2 is to require that there be CMTS hardware at that point, in
3 that case I would agree and I don't think we have a dispute
4 with the tentative.

5 THE COURT: All right. I understand your position.

6 MR. PIEJA: Okay. So I want to -- I will be more
7 brief on SNR-related metric than I was on CMTS, but I do want
8 to talk about that a little bit.

9 THE COURT: Please.

10 MR. PIEJA: So there was one thing, Your Honor,
11 that I found noticeably absent from defendants' presentation,
12 and that was law. There were a lot discussions about
13 deposition testimony and examples and that sort of thing, but
14 there really wasn't a reference to the governing framework,
15 and I think it's worth taking a step back.

16 I know Your Honor has done many, many of these, but
17 I think in this dispute it is worth taking a step back at
18 what the Supreme Court has said and the Federal Circuit has
19 said about the types of arguments defendants are raising.

20 In Nautilus, which is the Supreme Court case that
21 defined the modern indefiniteness standards, the Supreme
22 Court took care to say that the definiteness requirement must
23 take into account the inherent limitations of language. They
24 then said that the certainty that the law requires is not
25 greater than reasonable.

1 In other words, it's not mathematical certainty.
2 It's not absolute certainty. The Federal Circuit echoed that
3 in the Sonix Tech case where they said that a patentee need
4 not define an invention with mathematical precision.

5 Why I bring that up is I think that a lot of
6 defendants' arguments are of the nature of saying we want
7 absolute precision. We want a hundred percent precision in
8 the language that defines with mathematical certainty what
9 all of the possible SNR-related metrics are. That is just
10 not what the law requires.

11 It's not -- Nautilus says the law doesn't require
12 that. Sonix says that it doesn't require that. What the law
13 requires, as we see on page 17 of our demonstratives, is that
14 the patents must give a person of ordinary skill general
15 guidelines examples sufficient to enable a person of skill to
16 determine the scopes of the claim.

17 It must provide guidance, as the Federal Circuit
18 said in the Sonix Tech case. The spec must provide guidance
19 on how to create examples of the claim term and specific
20 examples that provide points of comparison for the result.

21 So at the outset I think a lot of defendants'
22 arguments are really just requests for absolute precision,
23 and that is a request that the Supreme Court has said is
24 inappropriate in this context.

25 THE COURT: So the Sesame Street standard is good

1 enough.

2 MR. PIEJA: I think, Your Honor, in this case
3 it's -- our expert was able to look at all of the examples in
4 the spec and was clearly able to find the common thread. All
5 of the six examples are linked because they're all measures
6 of signal quality. That is just another way I think of
7 expressing what Your Honor said in the tentative, which is
8 that noise and signal impact those metrics because signal and
9 noise are the two components of SNR, and SNR is the basic
10 measure of channel quality.

11 My colleague took issue with language in
12 Your Honor's tentative that referred to whether noise was a
13 sufficiently important input or factor in error rate. He
14 basically said, you know, that's part of the problem to him
15 because how much is sufficient.

16 That's an issue that has come up many times before,
17 and it's an issue where Courts have repeatedly found that
18 terms that require an ascertainment of, like, a term of
19 degree like that are definite.

20 Again, Sonix Tech and Enzo Biochem, the two cases
21 we cite in our brief, are good examples of this. In Enzo
22 Biochem the disputed term was a limitation that required a
23 particular group of atoms in a molecule not substantially
24 interfere with certain chemical processes.

25 Substantially is obviously a term of degree, but

1 the Court, the Federal Circuit, looked at a bunch of examples
2 in the spec and said, look, I can see how those examples
3 work. I know what degree they would interfere with the
4 chemical properties. So even though, yes, this a term of
5 degree, not mathematically precise, it's definite.

6 Similarly in Sonix, the claim term there was a
7 visually negligible. So you had -- it was a patent that was
8 about you had some computer system and you were going to
9 basically imprint or implant a barcode-like piece of
10 information into an image in a way that the user couldn't
11 see.

12 The claim term used the word visually negligible.
13 I may have misordered those words, but the word negligible,
14 like what defendants are complaining about here, it's a term
15 of degree. It's not a mathematically precise term. But the
16 Federal Circuit said that the term was still definite. Why?
17 Because there were examples in the specification and there
18 were clear commonalities between them.

19 This leads me to actually the last point that I
20 want to raise here today. One of the last things that my
21 colleague for defendants said before he sat down was that the
22 patent doesn't provide a common thread between its examples.
23 There's nothing to show what the boundaries are.

24 Again, I respectfully disagree with that. The
25 patent -- in addition to providing the examples, the patent

1 provides specific characteristics that link them. Let's look
2 if we could at slide 20 of the defendants' presentation.

3 The '682 patent gives specific characteristics that
4 relate to all these examples of SNR-related metrics. It says
5 they have to be measured. That in and of itself is a
6 limitation because it has to be something that the system can
7 measure. The spec says that it has to be a measure of
8 performance. So it's a performance metric.

9 That links back to Mr. Holobinko's declaration
10 where he explained that that's talking about the quality, how
11 good is your channel. If you have a bad channel, your
12 performance is going to be poor. So those are two metrics.
13 They have to be measured; they have to be performance
14 metrics.

15 Third, they have to be for a particular cable
16 modem. That is an easy way to distinguish some of
17 defendants' examples; for instance, outdoor temperature, that
18 is not for a specific cable modem.

19 Finally, the claims provide guidance because they
20 say that the metric has to be something that can be used to
21 set communication parameters at a physical level. So a
22 person of skill is not left adrift to guess at what an
23 SNR-related metric can be. There's plenty of guidance in the
24 spec, in the examples, in characteristics.

25 Mr. Holobinko's testimony confirms that a person of

1 skill reading this would recognize SNR-related metrics are
2 ones that, like SNR, vary when the channel quality varies.
3 That's what Your Honor's tentative recognized. We submit
4 that Your Honor got it right, and we would ask that
5 Your Honor maintain its tentative on this term.

6 THE COURT: All right. Counsel, thank you very
7 much.

8 Defendants care to respond?

9 MR. LISSON: Thank you, Your Honor. David Lisson
10 on the '775 patent. I don't have much to say. I think
11 Your Honor grasps our concern. We're not trying to build in
12 more limitations or restrictions on separateness. We want to
13 ensure that the construction of this term is not inconsistent
14 with the limitations earlier in the claim.

15 We would be fine with the tentative construction if
16 it started at: The cable modem functions are performed only
17 by the cable modem engines and so on. Let the other
18 limitations speak for themselves. I think Your Honor gets
19 the issue, and I don't really have much else to say unless
20 you have any questions.

21 THE COURT: No. You've given me lots to think
22 about, but I have no questions at this point.

23 MR. LISSON: Thank you, Your Honor.

24 THE COURT: Thank you very much.

25 MR. RAMANI: Your Honor, Ashok Ramani for

1 defendants on the '690 patent term content payload.

2 Let me begin where Your Honor left off, which is in
3 formulating what I think was a revised proposed construction.
4 If I understood it right, data, symbol, or signal, or a
5 combination thereof. We are okay with that except for
6 signal. So we think signal needs to be excluded and should
7 be.

8 This is the first time during this hearing today
9 that Entropic has suggested that signal should constitute the
10 understanding of content and content payload. It wasn't
11 mentioned in either of their briefs. That's fine. These
12 things are sometimes fluid.

13 So we can address it now. What Entropic is trying
14 to do at base is backdoor an infringement argument,
15 Your Honor, because all of the citations that you were given
16 described a probe as a signal. We don't disagree with that.

17 If you'll turn, for example, to Entropic's slide
18 42, you can see from the heading: The specification
19 describes a probe as a signal and thus is not limited to
20 data. But that's a bit of sleight of hand. We're talking
21 about content payload, which is a portion of the probe.

22 So all of these citations and the other citations
23 you were given are irrelevant. They're meaningless. They
24 talk about the broader probe potentially being a signal.
25 Nobody is disputing that. In fact, I think the best

1 statement that I heard from Entropic's counsel was this
2 example: Blare the foghorn as loud as you possibly can.

3 That is not a -- that is not a signal. That is a
4 statement, a request from the receiving node when it sends
5 the probe request to the transmitting node. Blare the
6 foghorn as loud as you can. That's data or that's a symbol
7 that's providing that request. The request itself very well
8 could be a signal, but that's not what we're talking about.

9 So unless Your Honor has any further questions, I
10 can pass it to my colleague to address the '682 patent terms.

11 THE COURT: Can be the request be send me a signal?

12 MR. RAMANI: Sure.

13 THE COURT: So isn't the content payload then a
14 signal?

15 MR. RAMANI: No. The content payload is not a
16 signal because we're talking about the content payload of the
17 probe request.

18 So the probe request is going to, as all of the
19 examples are suggesting, ask for something. And in asking
20 for something, it very well could be asking for a signal, but
21 it's not asking for a signal with a signal, if you will.

22 THE COURT: You're saying there necessarily has to
23 be some information in the content payload so that the
24 responding node knows what to send, which may be an
25 information-laden response?

1 MR. RAMANI: Correct.

2 THE COURT: Or it may be an information-absent
3 response. Just any response.

4 MR. RAMANI: You got it, Your Honor.

5 THE COURT: But if the receiving node is sending a
6 mere signal which is defined in these terms to be absent
7 information, that tells the responding node nothing about
8 what to do.

9 MR. RAMANI: It's not -- that's not how the process
10 is described, Your Honor. When -- the process is described
11 as the requesting node providing a plurality of parameters --

12 THE COURT: Yeah. We should probably look at the
13 claim.

14 MR. RAMANI: Yes. Getting back to the language of
15 claim 1 of the '690 patent, it's 1-A. It describes a probe
16 request specifying a first plurality of parameters associated
17 with the generation and transmission of a probe wherein the
18 first plurality of parameters at least specify content
19 payload of the probe and a second node.

20 So it's nonsensical to say that the probe requests
21 first plurality of parameters, which necessarily at least
22 specifies content payload of the probe is a foghorn blow.

23 THE COURT: So backing up, so you've got -- let's
24 look at -- we were on slide 42 --

25 MR. RAMANI: Yes, Your Honor.

1 THE COURT: -- left-hand side there. You've got
2 probe receiver and you've got probe transmitter.

3 Is the -- so the probe receiver sends something to
4 the probe transmitter to tell the probe transmitter what the
5 probe receiver wants.

6 MR. RAMANI: Correct.

7 THE COURT: What is the probe? Is the probe the
8 transmission from the receiver to the transmitter, or is the
9 probe the response from the transmitter to the receiver?

10 MR. RAMANI: The latter. The probe that's
11 described in the claim is the response from the transmitter
12 to the receiver. What -- the content payload we've been
13 discussing in claim limitation 1-A is the arrow. It's what's
14 being sent.

15 THE COURT: The southwest arrow --

16 MR. RAMANI: Exactly.

17 THE COURT: -- on the bottom.

18 MR. RAMANI: Oh, no, Your Honor. It's the top one.
19 It's the arrow from 200 to 201. That's what's being --
20 that's indicating the probe request.

21 THE COURT: That's the probe request. Okay. But
22 looking at the claim language, at least specify content
23 payload of the probe. So if you're telling me the probe is
24 the response, the content payload of the probe we just said
25 could be merely send me a signal so I know that you're there.

1 I don't need any information from you other than on/off,
2 other than I exist. So that could be a signal as I
3 understand the way we're using these terms -- signal, data,
4 and symbol.

5 MR. RAMANI: What could be a signal is the probe
6 itself, which, as Your Honor described in slide 42, which is
7 Fig. 4 from the patent, the southwest arrow.

8 THE COURT: That's the probe?

9 MR. RAMANI: That's the probe. The probe itself
10 absolutely could be a signal. We're not disputing that.

11 THE COURT: The claim language says content payload
12 of the probe, and we're discussing what does content payload
13 mean. Can it be merely a signal? And aren't we coming to
14 the conclusion that, yes, it can be merely a signal? That
15 may be all that is asked for in the probe request.

16 MR. RAMANI: But it's in the context of the --
17 that's right, Your Honor. It's in the context of the probe
18 request. I just want to make sure that we're aligned that
19 the probe request itself cannot merely be a signal.

20 THE COURT: That sounds right from the discussion
21 that we have had, but what is -- what I'm asked to construe
22 is content payload. Here it's content payload of what?
23 Content payload of the probe. If it's the content payload of
24 the probe request, that's a different thing. That requires
25 more -- that requires some information which I'm told signals

1 don't necessarily have.

2 MR. RAMANI: I think we're okay, then, Your Honor.

3 THE COURT: Because you're -- well, we're getting
4 ahead of ourselves. I'll tell you the same thing I told my
5 law clerk; that is, it used to annoy me when I was on your
6 side when the Court would go to, well, how does this affect
7 the infringement analysis? How does it affect the
8 noninfringement analysis? The invalidity analysis? We
9 shouldn't be thinking about that, and yet here I am -- here
10 we are talking about infringement.

11 So basically, to cut to the chase, your
12 noninfringement argument is that the probe request has to
13 have more than a mere signal.

14 MR. RAMANI: That's --

15 THE COURT: So if I construe content payload and
16 it's clear that content payload pertains to the probe, you
17 don't care if the content payload of a probe is merely a
18 signal?

19 MR. RAMANI: Yes.

20 THE COURT: Well, what am I missing? Why did we
21 spend so much time then talking about content payload? Is
22 content payload used elsewhere in this claim or some other
23 claim to talk about content payload of the probe request?

24 MR. RAMANI: No. It's just described as -- to be
25 clear, the first plurality of parameters of the probe request

1 must at least specify the content payload of the probe.

2 So all that I'm saying is that the -- one of the
3 probe request parameters can be send me a signal.

4 THE COURT: Which is data.

5 MR. RAMANI: Correct.

6 THE COURT: Okay. So we may not really -- we may
7 not really have a genuine dispute. Obviously I want to hear
8 from Entropic on this, but there may be no big dispute on
9 this. Or it may be the case that we're construing the wrong
10 limitation. I don't know.

11 MR. RAMANI: We'd be content with what I've
12 described, Your Honor. I'm sorry. I wish I could provide
13 more clarity.

14 THE COURT: That's okay. Well, I -- yeah, I need
15 to hear from Entropic on this. But let's keep going on --
16 unless you had more on content payload, let's move on to CMTS
17 and SNR-related metric from defendants' perspective.

18 MR. RAMANI: I do not, Your Honor. Thank you.

19 THE COURT: Thank you.

20 MR. PADMANABHAN: Your Honor, Krishnan Padmanabhan.
21 Let's start with CMTS, Your Honor.

22 Here is what the '682 patent says pretty clearly --
23 if you go to column three at line 47.

24 THE COURT: I'm there.

25 MR. PADMANABHAN: It says: The components,

1 including fiber optic cables, coaxial cables, amplifiers,
2 directional couplers --

3 THE COURT: Slow down.

4 MR. PADMANABHAN: I will. Sorry about that,
5 Your Honor -- directional couplers, splitters, and/or other
6 devices between the CMTS and the CMs may be referred to as
7 the hybrid fiber-coaxial, HFC, network. Okay.

8 So the thing that is the HFC is what exists between
9 the CMTS and the cable modems. It's pretty clear. So when
10 Entropic says that there is no evidence in the specification
11 that the cable modem's connection to the hybrid fiber-coaxial
12 network terminates at the CMTS, that's just incorrect. It
13 says it here. It shows it in Fig. 1. I actually don't even
14 know why there's a dispute about that.

15 The other point that Entropic raised regarding the
16 CMTS and the Court's tentative construction is they said that
17 the portion column two regarding the term circuitry, it's not
18 boilerplate. In fact, the fact that this same verbiage has
19 been copied and pasted time and again just means that that's
20 an accepted definition of circuitry.

21 Well, it still doesn't tell us of any CMTS that has
22 any form other than as shown in Fig. 1 and as described in
23 column three, lines 47 to 50, as this thing at the end of the
24 HFC. So if it's meant to be some savings language so a
25 plaintiff can later say anything or everything is a CMTS, I

1 don't think that's the intention of including verbiage like
2 that, or I don't think they have the ability to change what a
3 CMTS means based on verbiage like that.

4 Mr. Pieja also identified some portions of the
5 rebuttal declaration from Mr. Holobinko and said that, well,
6 that wasn't considered by Dr. Chatterjee. Those are merely
7 citations or discussions of what are called modular CMTSs.
8 They were addressed in Dr. Chatterjee's declaration in
9 paragraphs 54 to 56.

10 So my colleague is incorrect on that point. The
11 fact that he didn't talk about those particular patents is
12 not relevant. Your Honor, it just really is pretty simple
13 with respect to CMTS. Shall we move to SNR-related metric?

14 THE COURT: Yes, please.

15 MR. PADMANABHAN: Okay. So with respect to
16 SNR-related metric, I heard counsel for Entropic say that
17 there is no case law discussed. Well, I think Your Honor
18 knows the case law. It is cited in our brief, but I'll point
19 Your Honor to docket 332, pages 19 to 20, the Iridescent
20 Networks case, for example, which says that the specification
21 needs to provide objective boundaries. That's the standard.

22 As we've termed it, you need to be able to read the
23 specification to understand what's in and what's out, as
24 Your Honor termed it and as we like the formulation, the
25 Sesame Street test. That really is the test, as given by the

1 Federal Circuit and as explained in Iridescent Networks.

2 The problem is -- is it possible for me to get the
3 slides? The problem is, Your Honor, that there aren't
4 objective boundaries, and that's the reason that there are
5 disagreements between the experts. So what I heard
6 Entropic's counsel say is that what is important is that
7 something has to be impacted by SNR in order to be SNR
8 related, but that is not what their own expert said. He said
9 it has to be similar to, as in SNR-like. The same
10 subjectivity, the same boundary-less sort of analysis is what
11 their own expert is applying.

12 Things that are impacted by SNR are correlated to
13 SNR, as the Court can appreciate. If you look at slide -- I
14 can't read my slide numbers. The next slide, Your Honor,
15 which is in front of you, we asked Mr. Holobinko whether if
16 something is correlated to SNR, that would make it SNR
17 related, and he says: No. Correlated is too vague.

18 There are no objective boundaries here. In fact,
19 the term latency or the metric latency, which is impacted by
20 SNR and which under what Mr. Pieja said would be an
21 SNR-related metric because it's impacted by SNR, their own
22 expert, Mr. Holobinko, says is not an SNR-related metric. He
23 says it's too far removed. We just don't know what is or is
24 not too far removed because there are no objective
25 boundaries.

1 And I will point out Entropic hasn't identified any
2 objective boundaries. So thank you, Your Honor.

3 THE COURT: Thank you.

4 I think you all know I let you all make your
5 record. Entropic, would you like to make another response?

6 MR. GALLUZZO: Your Honor, only because you had
7 signaled it on '690, I'm just going to briefly go there. I'm
8 a bit confused, too, Your Honor. I thought we were disputing
9 content payload of the probe.

10 All of our briefing was about content payload of
11 the probe. There was no discussion of probe request or
12 what's in that. So if defendants are withdrawing any dispute
13 on that and if this was maybe a mistaken two ships passing in
14 the night, us not communicating, we'll as counsel take
15 responsibility for that.

16 To be clear, we were construing and want construed
17 -- or at least the parties want construed content payload of
18 the probe as recited in the claims.

19 THE COURT: And Entropic understands the probe to
20 be the response that the probe transmitter sends to the probe
21 receiver in Fig. 4, what I've called the southwest arrow?

22 MR. GALLUZZO: Exactly right, Your Honor, southwest
23 arrow. It's a receiver-determined probe. Sounds a little
24 backwards, but the node who wants to receive a probe sends a
25 request, and the transmitter sends the probe back to the one

1 who sent the request.

2 THE COURT: Well, sounds like we are all -- I hate
3 to use the term -- on the same page, but I think we are on
4 the same page with respect to content payload. So therefore,
5 what? Should I say this does not -- should I say after this
6 hearing we have collectively decided it does not require
7 construction? What is Entropic's position on that?

8 MR. GALLUZZO: Our original position was plain and
9 ordinary meaning, so we would be perfectly fine with that,
10 Your Honor.

11 MR. RAMANI: Ashok Ramani for defendants. May I
12 confer with my colleagues, Your Honor?

13 THE COURT: Yes, of course. Please do.

14 (Counsel conferring)

15 MR. RAMANI: We may have our first victory for
16 everybody, Your Honor. We're fine with that, too.

17 THE COURT: Very well. Thank you.

18 Okay. Did Entropic wish to respond on anything
19 else?

20 MR. PIEJA: Very briefly, Your Honor.

21 THE COURT: Please.

22 MR. GALLUZZO: I don't think there's anything I
23 need to respond to on CMTS, but very briefly on SNR-related
24 metric. They put up slide 33 from their presentation, and
25 they quoted from our expert, Mr. Holobinko's, deposition

1 transcript a portion of an answer when he said that a metric
2 has to be, quote, similar to as in SNR-like. They said that
3 allegedly proves that he doesn't have an objective boundary.

4 Respectfully, the objective boundary or objective
5 criteria is set forth in the first sentence of that answer of
6 the deposition, reproduced on their slide 33, which is
7 consistent with the testimony Mr. Holobinko has given in all
8 of our arguments. The metric has to be related to signal
9 quality.

10 I think all of the things, all of the times where
11 the defendants have tried to say, well, you've strayed a
12 little bit. You've said -- you used slightly different
13 words. All of those are -- all those formulations are simply
14 different ways of expressing the concept that the metric has
15 to be related to signal quality. So it has to be related to
16 the signal-to-noise ratio because that is a metric of signal
17 quality.

18 The quibbles defendants have are simply quibbles
19 with the inherent limitations of the language which the
20 Supreme Court recognized in *Nautilus* are not a basis for
21 indefiniteness.

22 With that we will submit.

23 THE COURT: I understand your argument. Okay.

24 Anything else from Entropic at this point?

25 MR. PIEJA: No, Your Honor.

1 THE COURT: Anything else from defendants?

2 MR. RAMANI: I can speak for Comcast, Your Honor.
3 Nothing from us.

4 THE COURT: Anything from Cox? Anything you wish
5 to add?

6 MS. ISAACSON: No, Your Honor. Thank you.

7 THE COURT: Okay. Anything else we need to
8 accomplish in this hearing today?

9 MR. PIEJA: Nothing from plaintiffs' perspective,
10 Your Honor.

11 MR. RAMANI: Nothing from Comcast, Your Honor.

12 THE COURT: Okay.

13 I know I owe you on this case and the others some
14 responses, so I am going to try to get to those as quickly as
15 I can. I don't think we need any additional briefing on
16 today's issues for claim construction. I think I've
17 exhausted you, and I'm somewhat exhausted.

18 So I'm going to take this issue under submission
19 and try to get you an order as quickly as I can, hopefully
20 more quickly than some of the previous orders.

21 So with that, counsel, thank you very much as
22 always for the robust argument and interesting issues that
23 you've presented to me. I find it thoroughly interesting
24 and, as I say, the object is to try to get it right.

25 So, thank you. Have a good rest of the day. I

1 will -- I'm not sure when I'll see you again, but I look
2 forward to it. Thank you.

3 MR. RAMANI: Thank you, Your Honor.

4 MR. PIEJA: Thank you, Your Honor.

5 MR. GALLUZZO: Thank you, Your Honor.

6 THE CLERK: All rise.

7 (Proceedings concluded at 12:46 p.m.)

8 CERTIFICATE

9 I HEREBY CERTIFY THAT THE FOREGOING IS A TRUE AND CORRECT
10 TRANSCRIPT OF THE STENOGRAPHICALLY RECORDED PROCEEDINGS IN
11 THE ABOVE MATTER.

12 FEES CHARGED FOR THIS TRANSCRIPT, LESS ANY CIRCUIT FEE
13 REDUCTION AND/OR DEPOSIT, ARE IN CONFORMANCE WITH THE
14 REGULATIONS OF THE JUDICIAL CONFERENCE OF THE UNITED STATES.

15
16 /s/ Miriam V. Baird

08/02/2024

17 MIRIAM V. BAIRD
18 OFFICIAL REPORTER

DATE

'	17 [3] - 27:13, 68:4, 83:13 18 [5] - 37:14, 38:1, 52:17, 56:25, 60:11 19 [2] - 45:3, 96:19 1900 [1] - 2:19	47 [4] - 67:10, 67:15, 94:23, 95:23 49 [2] - 32:18, 67:10	accord [2] - 26:17, 56:18 account [1] - 82:23 accuse [2] - 47:8, 47:22 acknowledges [1] - 50:3 acted [3] - 11:24, 16:1, 16:2 active [1] - 10:17 actual [1] - 9:13 add [5] - 19:16, 53:16, 53:21, 60:20, 101:5 addition [2] - 33:9, 85:25 additional [4] - 49:9, 50:1, 60:14, 101:15 address [13] - 7:10, 29:10, 30:14, 36:11, 40:5, 46:18, 47:1, 64:8, 71:14, 72:1, 77:5, 88:13, 89:10 addressed [3] - 35:14, 35:15, 96:8 addressing [5] - 31:6, 31:12, 31:13, 34:16, 34:17 adds [3] - 36:18, 39:2, 66:25 adequately [1] - 50:7 adjudicated [3] - 9:15, 9:25, 10:7 adjudicating [1] - 8:21 administrative [1] - 21:11 admit [1] - 77:8 adopt [1] - 14:14 adopted [5] - 31:10, 39:22, 40:9, 61:19, 74:7 adopting [1] - 35:25 adopts [2] - 42:19, 64:14 adrift [1] - 86:22 advanced [1] - 58:21 advocating [1] - 41:25 affect [3] - 50:6, 93:6, 93:7 affects [1] - 27:25 affirmatively [1] - 41:9 Agents [1] - 75:2 agree [14] - 18:2, 18:15, 20:13, 21:1, 22:10, 22:20, 23:21, 26:16, 27:3, 39:15, 41:18, 44:2, 81:24, 82:3 agreement [2] - 18:16, 22:5 agrees [1] - 20:15 ahead [9] - 12:19, 13:2, 15:17, 19:4, 21:10, 28:9, 31:5, 70:24, 93:4 air [1] - 80:15 akin [1] - 63:9 al [1] - 3:7 AL [2] - 1:10, 2:11 aligned [1] - 92:18 allegations [2] - 9:18, 9:19 allegedly [2] - 79:8, 100:3 Allen [1] - 5:1 allow [1] - 74:20 allowing [1] - 16:4 allows [1] - 58:13	
'401 [8] - 29:12, 48:22, 48:25, 49:8, 49:13, 49:14, 49:17, 49:25 '682 [27] - 3:21, 4:10, 19:25, 20:6, 44:5, 44:14, 45:9, 45:12, 46:7, 46:11, 47:18, 48:14, 50:1, 51:11, 51:25, 52:9, 72:18, 73:22, 73:23, 74:6, 74:23, 75:18, 79:11, 79:20, 86:3, 89:10, 94:22 '690 [12] - 3:20, 4:11, 19:7, 19:11, 39:16, 59:18, 60:5, 62:2, 67:15, 88:1, 90:15, 98:7 '765 [1] - 30:10 '775 [12] - 3:20, 4:12, 8:24, 19:7, 19:10, 30:25, 31:6, 52:10, 56:25, 59:17, 60:8, 87:10	2 2 [2] - 2:19, 58:16 20 [6] - 23:22, 24:20, 26:1, 44:10, 86:2, 96:19 200 [3] - 2:4, 2:11, 91:19 2003 [2] - 78:1, 78:2 2004 [1] - 78:5 201 [1] - 91:19 2012 [2] - 45:14, 45:17 2024 [2] - 1:19, 3:1 20th [2] - 10:24, 11:7 21 [4] - 23:22, 24:20, 26:1, 64:13 22 [1] - 48:13 22ND [1] - 2:4 23 [5] - 1:19, 3:1, 48:12, 48:22, 51:2 24 [1] - 51:2 244 [1] - 12:6 277 [5] - 12:12, 12:13, 12:15, 12:19, 12:20 28202 [1] - 2:8 29 [1] - 73:5	5 5 [1] - 39:25 5,667,593 [1] - 75:9 50 [1] - 95:23 52 [1] - 66:23 54 [2] - 66:23, 96:9 545035 [1] - 78:6 56 [3] - 68:22, 76:23, 96:9 58 [2] - 33:5, 53:8		
/		6 60606 [1] - 2:5 61 [1] - 74:4 62 [2] - 33:5, 53:8 66087 [1] - 78:1 6th [2] - 12:12, 12:20		
/s [1] - 102:16		8 801 [1] - 64:13 811 [1] - 64:13 84 [3] - 49:1, 49:7, 49:11		
0		9 90012 [1] - 1:25 94025 [2] - 2:14, 2:16 94111 [1] - 2:20		
0030 [1] - 49:16 08/02/2024 [1] - 102:16		A A.M [1] - 3:1 a.m [2] - 60:2 ability [5] - 9:22, 9:23, 47:22, 48:23, 96:2 able [8] - 10:16, 30:14, 51:20, 76:16, 84:3, 84:4, 96:22 abolish [1] - 62:8 ABOVE [1] - 102:11 absent [3] - 82:11, 90:2, 90:6 absolute [4] - 44:17, 83:2, 83:7, 83:22 absolutely [4] - 14:1, 54:12, 60:13, 92:10 abstract [2] - 78:2, 78:6 accept [1] - 14:7 accepted [2] - 81:4, 95:20 accompanying [8] - 23:22, 24:15, 24:24, 25:8, 25:18, 44:8, 79:25, 81:7 accomplish [1] - 101:8 accomplished [1] - 33:19 accomplishing [1] - 24:18		
1	1 [16] - 9:7, 32:8, 32:9, 45:3, 47:12, 58:16, 76:18, 76:19, 76:21, 76:22, 79:12, 79:17, 90:15, 95:13, 95:22 1,200 [2] - 44:18, 73:7 1-A [2] - 90:15, 91:13 100 [1] - 33:7 1000 [1] - 2:8 10166 [1] - 2:11 102 [1] - 74:3 1049 [2] - 12:16, 12:17 1050 [2] - 10:3, 12:13 10:00 [1] - 3:1 11 [2] - 49:12, 76:23 112 [1] - 45:5 11893 [1] - 1:23 11:30 [1] - 60:2 11:40 [1] - 60:2 12 [1] - 79:3 12:46 [1] - 102:7 13 [2] - 49:12, 79:9 13,948,401 [1] - 72:9 14 [4] - 47:12, 74:12, 74:24 15 [3] - 44:16, 52:7, 75:22 15th [2] - 11:2, 12:5 16 [2] - 45:15, 77:7 1600 [2] - 2:13, 2:16	3 300 [1] - 2:7 31 [2] - 58:14, 79:14 32 [2] - 74:2, 79:14 325 [1] - 30:6 325-7 [5] - 49:1, 49:2, 49:3, 49:5, 49:12 325-8 [4] - 30:8, 30:10, 72:5, 72:15 33 [3] - 52:15, 99:24, 100:6 332 [1] - 96:19 332-7 [1] - 49:2 333-3 [1] - 77:24 333-4 [1] - 78:4 34 [1] - 49:12 35 [1] - 44:14 350 [1] - 1:24 36 [1] - 44:15 38 [1] - 49:12 39 [1] - 62:16		
	4 4 [2] - 92:7, 98:21 40 [2] - 41:14, 63:19 41 [2] - 32:18, 64:23 42 [4] - 66:14, 88:18, 90:24, 92:6			

ALSO [1] - 2:22 alternative [1] - 75:4 alternatives [1] - 59:13 ambiguity [4] - 31:14, 59:10, 59:12, 64:17 amend [1] - 10:25 amended [23] - 9:7, 9:17, 10:23, 10:25, 11:3, 11:8, 11:10, 11:11, 11:12, 11:14, 11:16, 11:18, 11:22, 12:3, 12:10, 14:9, 14:16, 15:20, 15:25, 16:16, 16:25, 18:18, 18:20 amount [1] - 13:13 amplification [1] - 68:10 amplifiers [1] - 95:1 ANA [2] - 1:18, 3:1 analogy [2] - 40:15, 51:19 analysis [6] - 22:24, 78:12, 93:7, 93:8, 97:10 analyzed [1] - 69:1 analyzing [1] - 27:22 AND [7] - 2:4, 2:7, 2:10, 2:13, 2:15, 2:18, 102:9 AND/OR [1] - 102:13 ANGELES [1] - 1:25 annoy [1] - 93:5 answer [7] - 29:19, 31:15, 31:16, 40:21, 62:1, 100:1, 100:5 anticipate [1] - 17:5 anticipated [1] - 16:24 ANY [1] - 102:12 apologize [1] - 54:16 apparent [1] - 6:25 appear [1] - 73:18 appearance [1] - 5:13 appearances [1] - 3:8 APPEARING [1] - 2:22 Apple [1] - 54:17 application [12] - 29:12, 29:25, 48:22, 48:25, 49:8, 49:14, 49:17, 49:25, 72:4, 72:7, 72:8, 72:10 applying [1] - 97:11 appreciate [4] - 44:1, 47:1, 69:14, 97:13 appreciated [1] - 52:14 approach [2] - 21:13, 62:10 appropriate [1] - 18:3 approves [1] - 16:7 APRIL [1] - 2:17 April [2] - 4:23, 78:2 architecture [1] - 32:9 ARE [1] - 102:13 arguably [2] - 35:2, 36:19 argue [4] - 8:17, 10:10, 44:23, 60:5 argued [2] - 60:25, 80:6	arguing [11] - 3:16, 4:8, 4:9, 4:20, 5:3, 7:22, 14:25, 15:1, 15:3, 15:12, 34:22 argument [21] - 6:12, 15:4, 15:5, 23:6, 34:21, 34:23, 36:24, 37:12, 37:18, 39:12, 47:25, 56:23, 61:4, 61:5, 62:12, 75:22, 80:1, 88:14, 93:12, 100:23, 101:22 arguments [6] - 79:22, 79:24, 82:19, 83:6, 83:22, 100:8 arisen [1] - 22:14 ARM [15] - 32:13, 32:14, 32:16, 32:25, 33:1, 33:10, 53:17, 53:18, 54:8, 54:10 ARM-type [2] - 33:10, 53:17 ARMs [1] - 32:21 ARRIS [1] - 45:18 arrow [6] - 91:13, 91:15, 91:19, 92:7, 98:21, 98:23 art [7] - 50:14, 51:7, 54:3, 64:18, 64:20, 73:14, 80:8 Article [1] - 17:7 ascertainment [1] - 84:18 Ashok [4] - 4:3, 39:17, 87:25, 99:11 ASHOK [1] - 2:12 aspects [1] - 52:21 assertion [1] - 73:17 asserts [1] - 17:23 associated [6] - 20:21, 44:12, 45:25, 46:20, 46:23, 90:16 assuming [3] - 16:6, 17:3, 17:5 atoms [1] - 84:23 attached [1] - 9:19 attempt [4] - 11:13, 11:15, 41:17, 63:20 attempted [2] - 9:11, 16:16 attempts [1] - 44:22 authority [3] - 17:21, 18:1, 74:19 available [1] - 68:9 AVENUE [1] - 2:11 avoid [1] - 14:22 aware [3] - 17:20, 18:1, 76:1	barcode-like [1] - 85:9 base [1] - 88:14 based [2] - 51:21, 96:3 basic [2] - 65:1, 84:9 basis [1] - 100:20 BAUM [1] - 2:4 bear [2] - 69:25, 70:20 becomes [1] - 57:2 begin [4] - 4:1, 40:23, 72:1, 88:2 BEHALF [2] - 2:3, 2:10 behalf [6] - 3:10, 4:3, 4:17, 4:24, 30:22, 39:17 behind [1] - 8:21 belabor [1] - 26:21 believes [1] - 18:9 belongs [1] - 51:21 belt [1] - 62:10 belt-and-suspenders [1] - 62:10 beneath [1] - 65:19 benefit [1] - 48:23 benefits [1] - 33:5 best [4] - 43:9, 43:17, 52:12, 88:25 better [4] - 7:15, 41:8, 43:21, 72:11 between [19] - 17:9, 17:12, 19:12, 20:18, 20:23, 22:13, 27:17, 27:21, 40:2, 58:13, 58:20, 58:21, 63:22, 71:14, 85:18, 85:22, 95:6, 95:8, 97:5 beyond [3] - 22:3, 42:7, 58:13 big [3] - 14:24, 73:6, 94:8 binary [1] - 65:18 Biochem [2] - 84:20, 84:22 bit [19] - 5:8, 6:25, 12:2, 16:5, 17:4, 20:8, 49:9, 50:2, 50:4, 50:6, 50:18, 52:11, 60:8, 60:23, 63:9, 82:8, 88:20, 98:8, 100:12 Blair [1] - 3:14 blare [3] - 68:12, 89:2, 89:5 block [1] - 32:9 blow [1] - 90:22 blue [2] - 32:12, 58:16 boilerplate [15] - 44:17, 44:22, 46:1, 46:12, 47:21, 73:6, 73:22, 74:5, 74:16, 74:17, 75:2, 75:11, 75:22, 79:8, 95:18 borrow [1] - 41:13 borrowed [1] - 54:17 bottom [3] - 32:11, 66:7, 91:17 boundaries [6] - 85:23, 96:21, 97:4, 97:18, 97:25, 98:2	boundary [3] - 97:10, 100:3, 100:4 boundary-less [1] - 97:10 bounds [3] - 50:13, 50:14, 51:9 box [6] - 72:23, 77:9, 77:16, 78:10, 78:15, 79:21 boxes [1] - 77:1 brain [1] - 70:24 breadth [1] - 50:12 break [5] - 6:22, 52:8, 59:20, 59:23, 60:8 BRENNAN [1] - 2:4 brief [10] - 19:8, 20:3, 22:15, 30:1, 39:21, 59:12, 74:14, 82:7, 84:21, 96:18 briefing [5] - 22:13, 28:3, 55:15, 98:10, 101:15 briefly [4] - 20:12, 98:7, 99:20, 99:23 briefs [2] - 27:13, 88:11 bring [1] - 83:5 bringing [1] - 47:1 brings [1] - 8:17 broad [3] - 41:2, 42:6, 67:24 broadened [1] - 42:21 broader [4] - 9:23, 35:2, 35:12, 88:24 broadly [2] - 40:22, 70:4 build [1] - 87:11 built [1] - 55:4 bunch [3] - 35:15, 77:15, 85:1 bus [8] - 31:17, 34:23, 39:7, 39:8, 58:3, 58:10, 58:14, 58:18 buy [1] - 45:17
	B		C
	backdoor [1] - 88:14 background [2] - 48:9, 60:23 backing [1] - 90:23 backwards [5] - 40:21, 41:2, 41:8, 41:17, 98:24 bad [1] - 86:11 BAIRD [2] - 1:23, 102:17 Baird [1] - 102:16 barcode [1] - 85:9		CA [3] - 2:14, 2:16, 2:20 cable [41] - 20:7, 25:1, 25:5, 28:16, 31:24, 32:10, 32:11, 33:6, 33:20, 33:21, 35:3, 35:13, 36:3, 36:13, 36:14, 37:8, 38:14, 38:18, 38:19, 39:5, 39:6, 43:22, 44:4, 45:1, 45:5, 45:21, 47:19, 57:7, 58:4, 58:15, 58:24, 61:12, 61:13, 78:3, 86:15, 86:18, 87:16, 87:17, 95:9, 95:11 cables [2] - 95:1 calendar [1] - 12:25 CALIFORNIA [4] - 1:2, 1:18, 1:25, 3:1 CAMINO [2] - 2:13, 2:16 Campbell [1] - 4:6 cannot [6] - 6:22, 17:22, 26:2, 34:24, 81:18, 92:19

capitalized [1] - 32:25
captured [1] - 19:12
care [3] - 82:22, 87:8, 93:17
carefully [1] - 6:7
carry [8] - 65:3, 65:13, 65:15, 67:8, 68:15, 69:8, 69:18
case [37] - 7:14, 8:17, 8:24, 10:3, 13:11, 13:20, 14:25, 15:2, 15:3, 20:17, 27:12, 31:10, 34:4, 34:16, 34:21, 60:24, 60:25, 61:18, 61:19, 64:13, 64:16, 67:15, 67:17, 75:2, 75:7, 75:8, 76:1, 82:3, 82:20, 83:3, 83:18, 84:2, 94:9, 96:17, 96:18, 96:20, 101:13
cases [7] - 5:25, 13:15, 28:24, 74:14, 74:22, 75:2, 84:20
causality [1] - 28:1
causing [1] - 28:18
CCRA [1] - 1:23
CENTER [1] - 2:19
CENTRAL [1] - 1:2
centralized [2] - 79:6, 79:15
certain [5] - 13:9, 52:18, 57:3, 67:20, 84:24
certainly [8] - 9:21, 17:1, 21:15, 30:18, 73:19, 77:2, 77:3, 81:3
certainty [4] - 82:24, 83:1, 83:2, 83:8
CERTIFICATE [1] - 102:8
CERTIFY [1] - 102:9
cetera [4] - 24:16, 36:5, 40:16, 81:8
chagrin [1] - 6:23
challenging [1] - 79:23
chance [2] - 26:22, 29:23
change [12] - 20:10, 24:14, 26:8, 26:15, 28:18, 28:19, 28:20, 29:1, 36:2, 46:1, 96:2
changes [6] - 28:11, 28:12, 28:13, 29:2, 52:22
channel [19] - 28:4, 28:5, 28:13, 28:18, 29:2, 29:4, 40:2, 62:13, 62:23, 63:12, 63:14, 67:5, 69:1, 69:4, 69:12, 84:10, 86:11, 87:2
characteristics [3] - 86:1, 86:3, 86:24
characterize [4] - 17:6, 40:1, 62:13, 62:22
characterized [4] - 17:24, 17:25, 75:1
CHARGED [1] - 102:12
CHARLOTTE [1] - 2:8
Charter [12] - 31:10, 34:3, 34:16, 52:24, 56:15, 59:14,

60:24, 60:25, 61:7, 61:18, 61:19
chase [2] - 22:23, 93:11
Chatterjee [17] - 21:1, 21:5, 27:17, 45:16, 48:24, 49:1, 49:6, 49:8, 49:11, 50:21, 72:14, 77:13, 77:14, 77:19, 77:23, 78:11, 96:6
Chatterjee's [2] - 72:12, 96:8
cheaper [1] - 53:20
check [2] - 66:22, 70:24
chemical [2] - 84:24, 85:4
CHICAGO [1] - 2:5
chip [16] - 33:6, 34:10, 53:13, 53:24, 54:7, 54:9, 54:11, 54:18, 54:22, 54:24, 55:5, 56:19, 57:9, 61:2, 61:7
chips [4] - 33:9, 34:7, 53:10, 55:7
chooses [1] - 14:6
chose [1] - 74:9
Christina [1] - 3:13
CHRISTINA [1] - 2:22
CIRCUIT [1] - 102:12
circuit [36] - 31:22, 31:25, 32:1, 32:2, 38:2, 38:3, 38:5, 38:6, 38:7, 38:13, 38:14, 38:15, 38:16, 38:20, 38:22, 39:9, 39:10, 53:2, 53:15, 54:2, 54:4, 54:5, 54:12, 54:19, 55:1, 57:4, 57:6, 57:24, 59:5
Circuit [11] - 27:9, 64:11, 74:19, 74:25, 75:24, 82:18, 83:2, 83:17, 85:1, 85:16, 97:1
Circuit's [1] - 51:22
circuitry [15] - 20:20, 34:13, 34:18, 34:24, 44:21, 44:23, 73:5, 73:9, 73:23, 74:3, 75:19, 78:23, 95:17, 95:20
circuits [12] - 32:2, 32:5, 35:16, 37:4, 37:19, 53:25, 54:1, 55:4, 56:18, 60:12, 61:6
Cisco [1] - 45:18
citation [3] - 72:3, 72:12, 73:4
citations [4] - 88:15, 88:22, 96:7
cite [6] - 30:12, 30:15, 64:13, 74:14, 75:7, 84:21
cited [6] - 27:12, 49:19, 72:7, 73:24, 74:22, 96:18
cites [2] - 44:14, 77:14
citing [1] - 77:12
Claim [1] - 37:14
claim [66] - 5:15, 7:6, 7:17, 10:10, 17:19, 17:22, 19:13, 30:1, 31:9, 31:17, 31:19,

31:21, 33:25, 34:7, 35:5, 35:14, 37:9, 38:1, 40:9, 42:17, 47:12, 52:10, 52:17, 53:1, 53:23, 55:4, 55:10, 55:13, 55:18, 55:22, 55:24, 56:9, 56:12, 56:25, 57:2, 57:17, 57:20, 57:23, 59:4, 60:11, 60:15, 60:18, 73:25, 75:6, 75:20, 77:25, 79:12, 79:17, 83:16, 83:19, 85:6, 85:12, 87:14, 90:13, 90:15, 91:11, 91:13, 91:22, 92:11, 93:22, 93:23, 101:16
claims [8] - 13:14, 14:24, 53:3, 60:16, 60:17, 79:10, 86:19, 98:18
clarification [1] - 18:17
clarifies [1] - 50:7
clarity [1] - 94:13
clause [3] - 35:9, 35:12, 37:3
clear [21] - 17:3, 22:8, 22:14, 22:20, 24:8, 32:8, 33:2, 44:6, 46:21, 50:24, 55:2, 60:10, 60:12, 60:14, 63:15, 71:11, 85:18, 93:16, 93:25, 95:9, 98:16
clearly [3] - 33:18, 84:4, 94:22
clerk [3] - 5:16, 21:19, 93:5
CLERK [3] - 3:5, 60:1, 102:6
client [3] - 5:1, 5:2, 17:10
clock [1] - 59:18
close [1] - 44:12
CME [1] - 58:4
CMs [1] - 95:6
CMTS [80] - 20:7, 20:18, 20:19, 22:6, 22:10, 22:16, 22:21, 23:13, 23:17, 23:22, 24:20, 24:24, 24:25, 25:18, 25:22, 25:23, 44:11, 44:20, 44:21, 44:24, 45:8, 45:10, 45:12, 45:13, 45:14, 45:16, 46:2, 46:7, 46:13, 46:14, 47:7, 47:8, 47:11, 47:13, 47:14, 47:15, 47:16, 47:17, 47:23, 71:20, 72:19, 72:22, 73:25, 74:3, 74:10, 76:6, 76:14, 76:17, 77:4, 77:6, 77:9, 77:16, 78:7, 78:9, 78:14, 78:19, 79:8, 79:13, 79:18, 79:21, 80:3, 80:20, 80:21, 81:19, 82:2, 82:7, 94:16, 94:21, 95:6, 95:9, 95:12, 95:16, 95:21, 95:25, 96:3, 96:13, 99:23
CMTSs [3] - 77:10, 77:21, 96:7
co [2] - 4:5, 5:8
co-counsel [2] - 4:5, 5:8
coax [1] - 45:22

coaxial [8] - 44:4, 45:2, 45:7, 47:19, 78:7, 95:1, 95:7, 95:11
code [2] - 66:3, 66:6
colleague [10] - 4:25, 8:6, 19:24, 29:24, 76:5, 77:7, 84:11, 85:21, 89:10, 96:10
colleagues [3] - 52:2, 70:21, 99:12
collective [1] - 15:5
collectively [1] - 99:6
color [1] - 75:21
colored [1] - 45:6
column [27] - 20:19, 21:3, 32:18, 33:4, 44:14, 53:8, 66:23, 67:10, 67:13, 67:14, 68:4, 68:22, 73:5, 74:2, 74:4, 74:24, 76:22, 76:23, 78:25, 79:2, 79:14, 80:19, 94:23, 95:17, 95:23
combination [4] - 70:19, 79:5, 80:3, 88:5
Comcast [27] - 4:4, 9:6, 9:8, 9:15, 9:24, 10:16, 10:23, 11:3, 12:3, 12:11, 13:18, 13:21, 14:17, 15:2, 15:12, 15:22, 16:10, 16:11, 16:23, 18:8, 18:10, 18:18, 19:21, 30:22, 40:6, 101:2, 101:11
Comcast's [6] - 10:13, 11:8, 12:6, 16:24, 37:12, 41:23
Comcast-only [1] - 15:2
coming [2] - 8:11, 92:13
comments [1] - 26:20
commercial [1] - 17:9
common [5] - 51:11, 64:20, 73:11, 84:4, 85:22
commonalities [1] - 85:18
commonality [1] - 27:21
communicating [1] - 98:14
communication [3] - 40:2, 62:23, 86:21
COMMUNICATIONS [4] - 1:4, 1:10, 2:3, 2:10
Communications [2] - 3:6
compare [1] - 67:2
compared [1] - 69:11
comparison [2] - 52:17, 83:20
complaining [1] - 85:14
complaint [29] - 9:6, 9:7, 9:17, 10:17, 10:23, 10:25, 11:3, 11:9, 11:10, 11:11, 11:13, 11:14, 11:16, 11:18, 11:22, 12:4, 12:10, 14:9, 14:16, 15:20, 15:25, 16:4, 16:9, 16:13, 16:17, 16:25, 18:18, 18:20
complete [1] - 72:15
completely [14] - 6:2, 21:1,

22:17, 37:22, 38:9, 55:11, 55:15, 55:21, 56:5, 57:20, 58:5, 58:8, 60:19, 61:20 complex [2] - 53:25, 54:2 complicated [2] - 15:19, 54:19 components [3] - 72:21, 84:9, 94:25 comprise [3] - 20:19, 23:22, 74:3 comprises [3] - 24:21, 24:22, 24:25 compromise [4] - 39:20, 41:11, 69:24, 71:13 computer [1] - 85:8 concede [3] - 16:23, 17:1, 66:16 concept [1] - 100:14 conception [1] - 36:9 concern [3] - 71:2, 73:19, 87:11 concerned [2] - 18:6, 61:3 conclude [1] - 13:25 concluded [1] - 102:7 conclusion [2] - 23:21, 92:14 concoct [1] - 47:22 confer [3] - 16:20, 70:21, 99:12 CONFERENCE [1] - 102:14 conferred [1] - 16:12 conferring [2] - 70:25, 99:14 confident [1] - 17:16 confirm [1] - 49:21 confirms [1] - 86:25 CONFORMANCE [1] - 102:13 confused [3] - 52:11, 56:17, 98:8 confusing [2] - 28:23, 36:10 confusion [4] - 36:18, 56:1, 56:2, 56:12 connect [1] - 45:5 connected [2] - 31:16, 34:12 connecting [8] - 34:12, 34:18, 34:24, 39:7, 39:8, 58:3, 58:10, 77:1 connection [17] - 22:7, 25:1, 25:6, 34:17, 44:4, 45:1, 45:22, 46:9, 47:19, 53:15, 76:7, 76:15, 81:10, 81:14, 81:15, 81:19, 95:11 connections [4] - 58:12, 58:19, 58:20, 59:1 connects [1] - 31:17 consider [3] - 8:14, 20:24, 56:11 considered [1] - 96:6 consistent [2] - 73:10, 100:7 consolidated [1] - 5:25 constituent [1] - 48:21	constitute [2] - 50:15, 88:9 constitutes [1] - 40:16 construction [77] - 5:15, 6:16, 7:18, 10:10, 17:22, 20:9, 20:10, 20:23, 22:25, 23:8, 23:9, 23:11, 23:16, 24:13, 25:11, 25:13, 25:21, 30:1, 31:7, 31:11, 35:1, 35:5, 35:9, 35:19, 35:22, 36:2, 36:13, 40:7, 40:20, 42:1, 42:9, 42:17, 44:7, 44:8, 46:21, 47:3, 52:22, 52:24, 54:15, 55:10, 55:12, 55:22, 57:8, 57:10, 57:18, 59:6, 59:8, 59:13, 60:15, 60:24, 61:7, 61:10, 61:18, 64:9, 64:14, 64:19, 71:5, 71:9, 71:17, 72:20, 76:25, 77:25, 78:19, 79:23, 80:1, 80:2, 81:6, 81:16, 81:17, 81:20, 81:25, 87:13, 87:15, 88:3, 95:16, 99:7, 101:16 construction's [2] - 23:21, 26:7 constructions [2] - 19:10, 64:10 construe [9] - 14:24, 35:6, 35:24, 37:1, 55:18, 56:24, 71:8, 92:21, 93:15 construed [11] - 14:19, 37:6, 38:17, 42:20, 56:4, 56:7, 69:21, 70:4, 70:18, 98:16, 98:17 construes [1] - 55:10 construing [6] - 35:5, 40:10, 40:17, 57:19, 94:9, 98:16 contain [3] - 63:17, 66:5, 69:5 contained [3] - 48:24, 48:25, 72:22 content [62] - 40:10, 40:18, 40:19, 41:9, 41:20, 42:2, 42:5, 42:6, 42:7, 42:17, 42:18, 63:18, 64:2, 64:23, 66:19, 66:20, 67:7, 68:20, 69:14, 69:17, 69:20, 69:25, 70:3, 70:17, 71:1, 71:6, 71:7, 88:1, 88:10, 88:21, 89:13, 89:15, 89:16, 89:23, 90:18, 90:22, 91:12, 91:22, 91:24, 92:11, 92:12, 92:22, 92:23, 93:15, 93:16, 93:17, 93:21, 93:22, 93:23, 94:1, 94:11, 94:16, 98:9, 98:10, 98:17, 99:4 contentions [1] - 37:17 contents [4] - 40:22, 40:25, 41:3, 41:18 context [7] - 34:20, 36:9, 36:20, 50:7, 83:24, 92:16,	92:17 continues [1] - 70:2 contract [2] - 17:9, 17:17 controller [1] - 32:21 controlling [3] - 23:13, 24:1, 75:23 controls [1] - 25:25 converted [1] - 65:23 convey [4] - 65:7, 65:20, 65:21, 66:2 cooking [2] - 63:2, 63:5 copied [1] - 95:19 copies [1] - 21:13 copy [4] - 21:21, 21:23, 22:1, 30:23 core [1] - 54:23 cores [3] - 54:21, 54:22 correct [24] - 4:13, 11:23, 12:14, 14:20, 15:6, 16:25, 17:16, 23:4, 29:7, 29:8, 30:9, 32:24, 37:21, 38:25, 39:3, 42:24, 49:15, 52:13, 63:23, 79:21, 90:1, 91:6, 94:5 CORRECT [1] - 102:9 correctly [5] - 19:13, 27:16, 39:25, 70:11, 72:20 correlated [3] - 97:12, 97:16, 97:17 cost [2] - 33:7, 33:8 Counsel [2] - 70:25, 99:14 counsel [21] - 3:8, 4:5, 5:3, 5:8, 6:13, 17:13, 17:14, 19:18, 21:14, 21:16, 28:9, 52:13, 56:1, 62:12, 63:23, 87:6, 89:1, 96:16, 97:6, 98:14, 101:21 counterclaim [1] - 4:17 counterclaims [2] - 13:8, 13:14 couple [3] - 27:7, 52:21, 73:8 couplers [2] - 95:2, 95:5 course [11] - 6:9, 14:6, 29:23, 40:15, 52:13, 55:5, 61:7, 62:6, 62:19, 80:23, 99:13 Court [45] - 10:14, 11:14, 14:4, 17:21, 18:1, 20:16, 20:24, 21:2, 21:14, 24:23, 27:20, 27:24, 27:25, 31:10, 34:3, 34:6, 34:16, 35:19, 44:8, 45:24, 50:8, 51:3, 52:8, 56:4, 64:14, 64:17, 74:15, 74:20, 75:9, 75:24, 76:3, 76:19, 76:20, 77:6, 77:24, 78:9, 78:24, 82:18, 82:20, 82:22, 83:23, 85:1, 93:6, 97:13, 100:20 COURT [195] - 1:1, 1:23, 3:3, 3:15, 3:19, 3:22, 4:2, 4:7,	4:12, 4:14, 4:19, 4:22, 5:2, 5:5, 5:9, 5:12, 5:23, 7:7, 7:11, 7:13, 7:16, 7:19, 8:5, 8:20, 10:1, 10:3, 10:5, 10:9, 10:18, 10:21, 11:5, 11:7, 11:11, 11:17, 11:21, 11:24, 12:13, 12:15, 12:18, 12:22, 12:24, 13:2, 13:12, 13:22, 13:25, 14:13, 14:21, 15:4, 15:7, 15:10, 15:17, 15:24, 16:10, 16:22, 17:4, 17:11, 17:13, 18:6, 18:21, 18:23, 19:3, 19:19, 20:1, 21:5, 21:10, 21:15, 21:18, 21:23, 22:23, 23:7, 24:12, 25:3, 25:11, 26:9, 26:14, 26:22, 28:7, 29:11, 29:17, 29:21, 30:2, 30:5, 30:7, 30:10, 30:16, 30:19, 30:24, 31:5, 32:22, 35:24, 36:7, 36:23, 37:11, 37:21, 38:23, 39:1, 39:12, 41:15, 41:25, 42:8, 42:12, 42:22, 42:25, 43:3, 43:6, 43:9, 43:15, 43:17, 43:24, 46:3, 46:16, 47:24, 49:2, 49:5, 49:11, 49:16, 49:18, 49:22, 51:16, 52:3, 52:5, 54:7, 56:21, 56:23, 59:6, 59:15, 59:20, 59:25, 60:3, 60:9, 61:9, 61:24, 62:3, 62:8, 65:11, 67:13, 67:16, 68:6, 68:23, 69:20, 70:8, 70:12, 70:16, 70:19, 70:23, 71:7, 71:19, 71:24, 72:11, 72:17, 79:22, 80:25, 81:5, 82:5, 82:9, 83:25, 87:6, 87:21, 87:24, 89:11, 89:13, 89:22, 90:2, 90:5, 90:12, 90:23, 91:1, 91:7, 91:15, 91:17, 91:21, 92:8, 92:11, 92:20, 93:3, 93:15, 93:20, 94:4, 94:6, 94:14, 94:19, 94:24, 95:3, 96:14, 98:3, 98:19, 99:2, 99:13, 99:17, 99:21, 100:23, 101:1, 101:4, 101:7, 101:12 court [1] - 7:9 Court's [10] - 15:14, 20:14, 20:22, 23:3, 23:5, 24:5, 27:4, 29:6, 52:24, 95:16 Courts [2] - 41:5, 84:17 covenant [1] - 9:10 cover [1] - 41:7 covered [1] - 41:5 covering [1] - 19:25 covers [1] - 29:22 Cox [8] - 3:6, 4:24, 13:7, 14:19, 15:7, 18:11, 19:21, 101:4
--	--	---	---

COX [2] - 1:10, 2:10 create [3] - 53:13, 75:25, 83:19 criteria [2] - 51:8, 100:5 critical [1] - 73:2 cry [1] - 75:17 crypto [1] - 58:22 cryptography [1] - 58:25 crystallize [1] - 48:5 CSR [1] - 1:23 Cultor [1] - 75:8 current [1] - 33:9 curtail [1] - 6:9 cut [4] - 11:12, 15:15, 22:23, 93:11 CV-23-01049 [1] - 3:5 CV23-01049-JWH [1] - 1:8	declines [2] - 20:24, 27:16 deem [1] - 16:21 DEFENDANT [1] - 2:10 defendant [6] - 15:2, 17:23, 28:16, 28:22, 60:25, 78:17 Defendants [1] - 1:12 defendants [50] - 4:17, 4:24, 13:15, 15:18, 20:25, 26:19, 30:20, 30:22, 34:21, 35:18, 36:1, 39:17, 40:6, 48:5, 52:20, 55:8, 57:1, 59:14, 60:13, 60:20, 64:3, 66:16, 69:14, 71:4, 71:16, 72:13, 73:3, 73:17, 74:5, 74:12, 74:13, 75:1, 76:16, 78:9, 79:7, 79:19, 80:9, 81:2, 81:17, 81:24, 82:19, 85:14, 85:21, 87:8, 88:1, 98:12, 99:11, 100:11, 100:18, 101:1 defendants' [15] - 15:5, 19:18, 20:8, 50:11, 52:11, 53:12, 56:23, 70:5, 72:20, 82:11, 83:6, 83:21, 86:2, 86:17, 94:17 defense [3] - 17:8, 17:23, 17:25 define [3] - 41:17, 79:10, 83:4 defined [3] - 24:24, 82:21, 90:6 defines [2] - 28:2, 83:8 defining [2] - 20:20, 76:14 definite [3] - 84:19, 85:5, 85:16 definiteness [1] - 82:22 definition [20] - 39:5, 73:4, 73:10, 73:12, 73:14, 73:23, 73:24, 74:6, 74:9, 74:10, 75:7, 75:19, 76:2, 76:9, 76:12, 76:13, 76:24, 78:19, 78:23, 95:20 definitional [1] - 77:3 definitions [1] - 73:22 degree [5] - 84:19, 84:25, 85:3, 85:5, 85:15 delve [1] - 27:17 demonstrates [1] - 65:11 demonstratives [6] - 21:13, 27:14, 73:21, 74:12, 83:13 depicted [1] - 44:5 deposed [1] - 77:19 DEPOSIT [1] - 102:13 deposition [4] - 77:23, 82:13, 99:25, 100:6 describe [3] - 17:8, 40:13, 60:17 described [13] - 7:23, 16:5, 47:17, 76:9, 76:11, 88:16, 90:10, 91:11, 92:6, 93:24,	94:12, 95:22 describes [7] - 34:10, 39:25, 53:9, 76:17, 76:22, 88:19, 90:15 describing [5] - 33:16, 35:13, 40:19, 41:17, 75:10 description [2] - 27:10, 76:21 desired [1] - 48:17 despite [1] - 75:21 detailed [1] - 37:16 details [3] - 30:16, 45:11, 75:14 determine [2] - 51:8, 83:16 determined [1] - 98:23 device [5] - 31:8, 44:25, 46:8, 76:6, 80:16 devices [4] - 34:19, 34:25, 37:12, 95:6 diagram [3] - 32:10, 76:19, 77:1 DIANA [1] - 2:23 Diana [1] - 4:5 dichotomy [1] - 7:19 difference [1] - 33:9 different [21] - 13:14, 13:15, 23:25, 32:15, 32:20, 33:23, 33:24, 34:4, 34:14, 34:16, 52:21, 54:21, 55:16, 63:21, 66:15, 76:3, 78:18, 92:24, 100:12, 100:14 difficulty [2] - 51:10, 51:15 digital [2] - 65:17, 65:19 digress [1] - 8:15 directed [1] - 80:18 direction [1] - 28:1 directional [2] - 95:2, 95:5 directly [2] - 48:20, 54:14 disagree [7] - 22:25, 23:19, 41:19, 74:18, 78:21, 85:24, 88:16 disagreements [1] - 97:5 disclosed [1] - 47:17 disclosure [2] - 51:12, 56:18 disconnect [1] - 34:15 discuss [1] - 48:22 discussed [10] - 15:8, 44:25, 47:2, 48:15, 50:22, 51:18, 62:15, 66:15, 76:6, 96:17 discusses [2] - 44:20, 48:15 discussing [5] - 16:15, 25:18, 57:25, 91:13, 92:12 discussion [5] - 47:5, 52:4, 77:2, 92:20, 98:11 discussions [3] - 16:18, 82:12, 96:7 disembodied [1] - 26:3 disfavored [1] - 41:6 dismiss [15] - 9:8, 9:9, 9:12, 10:23, 10:24, 11:3, 11:8,	12:3, 12:6, 14:10, 14:17, 16:11, 16:16, 16:24, 18:19 dismissed [2] - 12:6, 15:21 dispose [1] - 61:8 dispute [31] - 19:12, 22:9, 22:12, 24:6, 35:2, 37:3, 39:16, 52:20, 62:5, 63:16, 63:17, 63:23, 64:1, 64:15, 64:17, 64:19, 64:22, 69:16, 70:1, 71:14, 71:17, 74:7, 80:9, 81:2, 82:3, 82:17, 94:7, 94:8, 95:14, 98:12 disputed [1] - 84:22 disputes [5] - 20:18, 20:23, 21:4, 27:11, 63:21 disputing [4] - 69:14, 88:25, 92:10, 98:8 disregard [1] - 74:20 disrupt [1] - 43:20 distance [1] - 46:22 distant [1] - 68:11 distinct [1] - 53:15 distinction [3] - 8:3, 28:14, 74:22 distinguish [2] - 71:3, 86:16 distinguishing [1] - 63:25 distribute [1] - 21:13 distributed [7] - 32:20, 77:21, 78:3, 78:7, 78:14, 79:6, 79:16 DISTRICT [3] - 1:1, 1:2, 1:23 divorced [2] - 22:17, 35:1 docket [11] - 10:5, 12:5, 12:12, 12:18, 15:21, 16:9, 16:14, 72:5, 77:24, 78:4, 96:19 DOCSIS [4] - 32:20, 32:21, 32:23 document [1] - 32:9 documents [2] - 77:15, 78:11 domain [1] - 68:25 done [5] - 6:21, 6:24, 10:10, 14:14, 82:16 down [7] - 17:4, 29:9, 31:13, 68:14, 76:8, 85:21, 95:3 Dr [14] - 21:1, 21:5, 27:17, 49:8, 50:21, 72:12, 72:14, 77:13, 77:14, 77:19, 77:23, 78:11, 96:6, 96:8 drafters [1] - 74:8 draw [4] - 8:3, 54:4, 54:12, 54:25 DRIVE [1] - 2:4 during [4] - 62:21, 68:2, 69:9, 88:8
D			
dash [1] - 30:7 data [71] - 31:17, 31:21, 32:10, 32:12, 33:1, 33:19, 33:20, 34:18, 34:23, 34:24, 35:3, 35:13, 36:4, 36:15, 38:12, 38:21, 39:7, 40:2, 40:7, 41:19, 41:24, 42:2, 42:3, 42:9, 42:10, 42:12, 57:5, 58:3, 58:6, 58:10, 58:14, 58:16, 58:18, 58:24, 61:14, 62:13, 62:19, 62:20, 63:16, 63:17, 64:3, 64:5, 64:24, 65:13, 65:15, 65:16, 65:17, 65:20, 66:2, 66:5, 66:8, 66:12, 66:19, 67:8, 67:9, 68:21, 69:5, 69:8, 69:18, 69:21, 70:5, 70:11, 70:18, 88:4, 88:20, 89:6, 92:3, 94:4 DATE [1] - 102:17 date [1] - 39:8 David [3] - 4:4, 30:21, 87:9 DAVID [1] - 2:15 Davis [1] - 4:3 DAVIS [2] - 2:13, 2:15 days [1] - 8:11 deal [1] - 57:3 debate [1] - 7:23 December [3] - 11:2, 11:4, 12:3 decentralized [1] - 23:24 decided [1] - 99:6 decision [3] - 34:3, 34:5, 64:12 deck [5] - 44:16, 45:4, 45:15, 47:13, 75:22 declaration [12] - 29:25, 45:16, 48:24, 49:1, 49:12, 72:12, 77:15, 77:25, 78:5, 86:9, 96:5, 96:8			
E			
eager [2] - 7:4, 7:5			

ease [1] - 62:7
easier [1] - 5:8
easily [2] - 69:1, 69:4
easy [2] - 55:19, 86:16
ECF [2] - 30:5, 49:12
echoed [1] - 83:2
effectively [1] - 44:22
eight [4] - 73:20, 74:1, 75:18, 78:22
either [5] - 42:19, 43:13, 48:19, 73:1, 88:11
EL [2] - 2:13, 2:16
element [4] - 25:22, 32:7, 34:11, 75:20
elements [9] - 31:20, 33:11, 34:13, 34:14, 35:4, 35:23, 36:22, 45:5, 59:1
ELIZABETH [1] - 2:17
elsewhere [6] - 24:9, 26:1, 46:1, 46:19, 47:15, 93:22
EMBARCADERO [1] - 2:19
embodiments [1] - 75:4
emerged [1] - 77:18
emphasize [3] - 6:8, 20:12, 22:5
emulate [3] - 67:18, 67:22
emulation [1] - 68:2
enable [1] - 83:15
enacted [1] - 58:1
encode [1] - 65:10
encoded [1] - 65:8
encompass [1] - 67:24
end [4] - 11:4, 12:2, 29:19, 95:23
endeavor [1] - 21:24
ended [1] - 8:3
ENGEL [1] - 2:23
Engel [1] - 3:13
engine [31] - 31:21, 31:24, 32:10, 32:11, 32:12, 33:1, 33:20, 33:21, 35:3, 35:13, 35:14, 36:3, 36:4, 36:14, 38:7, 38:12, 38:14, 38:21, 57:5, 57:7, 57:14, 58:5, 58:6, 58:15, 58:16, 58:22, 61:13, 61:14
engineering [2] - 63:2, 65:3
engines [17] - 31:8, 31:11, 32:15, 33:18, 36:9, 36:16, 37:4, 37:5, 37:8, 37:19, 39:7, 39:9, 58:13, 58:21, 59:7, 87:17
ensure [1] - 87:13
ensuring [1] - 37:2
enter [1] - 16:7
entire [1] - 57:22
entirely [3] - 19:9, 22:17, 53:14
entirety [1] - 57:18
entities [1] - 14:17

entitled [2] - 74:15, 75:23
Entropic [45] - 3:6, 7:3, 11:2, 11:14, 11:18, 12:9, 15:11, 15:24, 16:4, 16:8, 16:23, 18:23, 18:24, 19:4, 19:15, 20:3, 20:15, 22:9, 22:14, 29:22, 39:20, 41:1, 41:13, 46:21, 47:2, 52:2, 52:5, 56:25, 60:5, 61:1, 61:3, 61:15, 71:25, 88:9, 88:13, 94:8, 94:15, 95:10, 95:15, 96:16, 98:1, 98:5, 98:19, 99:18, 100:24
ENTROPIC [2] - 1:4, 2:3
Entropic's [11] - 14:8, 22:5, 26:24, 46:18, 73:21, 77:25, 78:5, 88:17, 89:1, 97:6, 99:7
entry [2] - 12:6, 12:12
envelope [1] - 40:17
Enzo [2] - 84:20, 84:21
equipment [6] - 45:6, 45:17, 45:19, 46:8, 47:18, 76:13
equipped [1] - 54:3
equivalents [1] - 28:25
err [1] - 17:16
error [11] - 27:23, 28:1, 30:8, 49:9, 49:10, 50:2, 50:4, 50:6, 50:18, 84:13
especially [1] - 26:8
essentially [10] - 39:2, 53:13, 53:18, 54:10, 54:21, 63:24, 66:3, 66:8, 69:3, 75:24
establish [1] - 77:16
estimate [1] - 69:1
et [5] - 3:7, 24:16, 36:5, 40:16, 81:8
ET [2] - 1:10, 2:10
event [2] - 43:22, 49:22
eventually [1] - 72:7
evidence [9] - 20:17, 20:25, 21:2, 27:9, 72:24, 73:2, 77:13, 78:13, 95:10
exact [3] - 30:15, 50:21, 51:19
exactly [5] - 27:24, 28:1, 78:22, 91:16, 98:22
example [16] - 50:8, 51:3, 66:1, 66:10, 66:11, 68:5, 68:7, 68:12, 68:22, 68:24, 76:23, 76:25, 77:9, 88:17, 89:2, 96:20
examples [20] - 27:21, 27:22, 72:4, 75:15, 82:13, 83:15, 83:19, 83:20, 84:3, 84:5, 84:21, 85:1, 85:2, 85:17, 85:22, 85:25, 86:4, 86:17, 86:24, 89:19
excellent [1] - 43:19
except [1] - 88:5

exception [1] - 27:16
excerpt [1] - 49:13
excerpted [3] - 49:8, 52:18, 72:14
exclude [2] - 70:6, 81:25
excluded [1] - 88:6
excluding [1] - 71:9
excuse [2] - 12:17, 40:6
executed [1] - 80:16
executing [1] - 80:17
exhaust [1] - 26:24
exhausted [2] - 101:17
Exhibit [4] - 29:25, 30:2, 77:25, 78:4
exhibit [3] - 29:15, 29:17, 30:1
exist [4] - 80:5, 80:14, 80:16, 92:2
existence [2] - 23:12, 81:25
exists [1] - 95:8
expect [2] - 67:1, 67:2
expert [6] - 77:14, 84:3, 97:8, 97:11, 97:22, 99:25
experts [2] - 27:18, 97:5
explain [1] - 53:3
explained [2] - 86:10, 97:1
explaining [2] - 35:10, 56:6
explains [4] - 32:17, 32:19, 33:8, 45:10
explicit [1] - 47:3
explicitly [2] - 48:15, 73:24
expressing [2] - 84:7, 100:14
extent [3] - 23:16, 61:4, 71:16
extremely [1] - 44:1
extrinsic [4] - 20:25, 46:4, 77:13, 78:13

F

F.4th [1] - 64:13
fact [17] - 26:15, 27:9, 34:9, 45:11, 47:2, 56:9, 69:18, 72:5, 73:9, 73:11, 73:15, 81:22, 88:25, 95:18, 96:11, 97:18
factor [2] - 68:9, 84:13
factors [1] - 50:6
fair [1] - 20:8
fall [1] - 51:9
far [8] - 40:23, 52:20, 59:22, 73:22, 75:17, 75:25, 97:23, 97:24
fashion [5] - 46:11, 79:6, 79:16
favor [1] - 7:21
February [1] - 12:5
Federal [12] - 27:9, 51:21, 64:11, 74:19, 74:25, 75:23, 82:18, 83:2, 83:17, 85:1,

85:16, 97:1
FEE [1] - 102:12
feeble [1] - 9:12
FEES [1] - 102:12
felt [2] - 8:7, 8:13
few [2] - 8:11, 60:7
fiber [9] - 44:4, 45:2, 45:7, 45:22, 47:19, 78:7, 95:1, 95:7, 95:11
fiber-coax [1] - 45:22
fiber-coaxial [7] - 44:4, 45:2, 45:7, 47:19, 78:7, 95:7, 95:11
field [1] - 64:21
Fig [10] - 32:8, 45:3, 76:18, 76:19, 76:21, 76:22, 92:7, 95:13, 95:22, 98:21
fig [1] - 32:9
Figs [1] - 58:16
figure [3] - 31:1, 51:20, 63:7
file [15] - 11:2, 11:18, 11:21, 12:10, 14:10, 14:11, 14:16, 14:17, 15:24, 16:4, 16:9, 16:11, 16:20, 17:5, 17:6
filed [4] - 14:9, 16:14, 16:17, 16:24
filing [1] - 9:19
fill [1] - 5:16
fill-in [1] - 5:16
final [2] - 72:4, 78:16
finally [1] - 86:19
fine [11] - 24:18, 25:2, 35:18, 41:23, 46:24, 57:9, 71:17, 87:15, 88:11, 99:9, 99:16
finish [1] - 9:1
firm [2] - 3:11, 44:19
firmlly [1] - 20:15
first [58] - 4:6, 7:4, 7:5, 7:9, 10:22, 10:25, 11:10, 11:11, 18:24, 20:6, 20:15, 22:5, 23:7, 27:3, 27:8, 30:19, 31:22, 32:2, 33:17, 35:12, 35:21, 36:18, 37:3, 37:13, 37:25, 38:2, 38:5, 38:6, 38:9, 38:12, 38:13, 38:16, 38:21, 43:25, 52:15, 52:22, 53:2, 57:3, 57:4, 57:11, 57:15, 57:24, 59:5, 73:3, 73:9, 73:16, 75:2, 78:2, 78:6, 79:22, 79:24, 88:8, 90:16, 90:18, 90:21, 93:25, 99:15, 100:5
FIRST [1] - 1:24
fit [2] - 16:21, 53:14
five [4] - 59:18, 67:10, 67:13, 67:14
flashed [1] - 51:16
FLOOR [2] - 1:24, 2:5
flow [1] - 20:14
flows [2] - 24:2, 24:4

fluid [1] - 88:12 focus [1] - 22:3 focused [2] - 20:16, 27:20 focuses [1] - 27:8 focusing [3] - 21:2, 23:7, 40:24 Foerster [1] - 4:17 foghorn [12] - 65:5, 66:1, 66:2, 66:3, 66:4, 66:11, 68:12, 68:13, 68:15, 89:2, 89:6, 90:22 footnote [3] - 8:19, 9:3, 9:7 FOR [1] - 102:12 FOREGOING [1] - 102:9 forget [1] - 56:8 forgive [2] - 5:9, 24:12 form [2] - 26:3, 95:22 formal [1] - 19:19 forming [1] - 77:19 formulating [1] - 88:3 formulation [1] - 96:24 formulations [1] - 100:13 forth [4] - 6:19, 22:13, 27:17, 100:5 forthcoming [1] - 18:20 forward [5] - 14:2, 14:3, 14:21, 18:2, 102:2 four [7] - 5:15, 9:16, 32:18, 33:4, 48:15, 48:19, 53:8 FOURTH [1] - 1:24 framework [2] - 40:12, 82:14 FRANCISCO [1] - 2:20 free [2] - 6:1, 6:9 frequencies [1] - 48:17 frequency [2] - 48:16, 48:20 friend's [1] - 41:13 front [3] - 10:6, 21:6, 97:15 full [2] - 6:20, 72:15 Fuller [3] - 3:11, 58:14, 62:16 FULLER [1] - 2:22 fully [1] - 21:3 fulsomely [1] - 27:3 function [3] - 37:5, 39:6 functional [9] - 33:16, 35:8, 35:10, 55:23, 56:15, 57:14, 58:11, 61:21, 61:22 functionalities [1] - 80:21 functionally [3] - 36:5, 37:7, 58:7 functions [21] - 23:13, 32:19, 33:17, 33:19, 33:21, 33:22, 35:8, 36:14, 36:15, 37:8, 38:19, 38:20, 39:5, 47:14, 47:17, 58:4, 58:5, 58:9, 61:12, 61:13, 87:16 fundamental [1] - 28:5 furniture [1] - 8:9	G Galluzzo [5] - 3:10, 19:7, 21:12, 29:25, 52:7 GALLUZZO [38] - 2:6, 3:9, 3:17, 3:20, 5:22, 19:6, 19:23, 52:6, 54:9, 56:22, 57:16, 59:11, 59:17, 59:24, 60:6, 60:10, 61:17, 61:25, 62:4, 62:10, 65:12, 67:14, 67:17, 68:7, 68:24, 69:23, 70:10, 70:13, 70:17, 70:20, 71:1, 71:11, 71:22, 98:6, 98:22, 99:8, 99:22, 102:5 garden [1] - 17:8 GATES [1] - 2:7 Gates [3] - 3:10, 3:12, 3:14 gathered [1] - 8:16 general [4] - 25:4, 44:21, 64:4, 83:14 generate [1] - 68:25 generation [1] - 90:17 generic [2] - 75:5, 75:13 genuine [1] - 94:7 Gilstrap [4] - 55:6, 56:14, 57:8, 59:2 Gilstrap's [1] - 54:15 given [9] - 22:19, 45:12, 73:10, 80:23, 87:21, 88:15, 88:23, 96:25, 100:7 GOLDMAN [1] - 2:3 Goldman [1] - 3:11 golf [1] - 30:3 Goodrich [1] - 3:13 GOODRICH [1] - 2:22 governing [1] - 82:14 grant [1] - 14:7 granted [3] - 10:24, 14:18, 17:17 granting [2] - 11:8, 12:21 graphics [1] - 54:23 grasps [1] - 87:11 great [2] - 5:12, 5:14 greater [1] - 82:25 green [1] - 58:18 grounded [1] - 27:7 group [1] - 84:23 guess [2] - 28:17, 86:22 guessed [1] - 47:9 guidance [7] - 51:22, 51:23, 52:1, 83:17, 83:18, 86:19, 86:23 guidelines [1] - 83:15 H half [2] - 35:19, 49:13 hallmarks [1] - 51:13 hand [5] - 29:18, 74:1, 74:24, 88:20, 91:1	handful [1] - 20:12 handing [1] - 19:7 handle [1] - 55:24 happy [5] - 4:22, 10:13, 16:9, 62:1, 81:3 hard [4] - 21:13, 21:21, 21:23, 22:1 harder [1] - 5:6 hardware [57] - 20:20, 20:22, 22:6, 22:7, 22:10, 22:11, 22:21, 22:22, 23:12, 23:14, 23:18, 23:20, 24:3, 24:5, 24:7, 24:9, 24:10, 24:15, 24:16, 24:21, 24:24, 24:25, 25:7, 25:8, 25:13, 25:18, 25:19, 25:22, 25:23, 25:25, 33:3, 33:7, 33:11, 34:13, 44:3, 44:13, 45:20, 46:19, 46:20, 46:23, 72:21, 79:4, 79:25, 80:3, 80:4, 80:5, 80:11, 80:20, 80:22, 81:6, 81:7, 81:11, 81:15, 81:18, 81:23, 82:1, 82:2 hate [1] - 99:2 header [2] - 40:13, 40:16 heading [1] - 88:18 hear [15] - 6:4, 6:14, 6:17, 18:23, 18:25, 26:19, 52:5, 60:21, 62:25, 63:22, 68:14, 71:4, 81:3, 94:7, 94:15 heard [10] - 55:9, 66:16, 70:10, 73:16, 76:5, 76:8, 81:2, 89:1, 96:16, 97:5 hearing [14] - 12:24, 13:12, 18:3, 18:8, 18:13, 19:18, 24:13, 29:20, 30:12, 43:20, 88:8, 99:6, 101:8 HEARING [1] - 1:17 heart [3] - 41:21, 50:10, 55:12 held [2] - 9:10, 27:9 hello [4] - 65:21, 65:25, 66:4, 66:11 help [6] - 35:20, 48:5, 62:8, 62:13, 62:22 helpful [3] - 40:1, 44:1, 52:3 helpfulness [1] - 62:7 helps [2] - 49:22, 58:25 HEREBY [1] - 102:9 HFC [5] - 76:7, 76:15, 95:7, 95:8, 95:24 hidden [1] - 68:11 high [3] - 29:4, 29:5, 68:17 highlight [1] - 54:15 highlighted [5] - 34:5, 52:18, 58:15, 58:17, 58:19 highly [1] - 75:13 history [1] - 19:14 hit [1] - 78:22 HOLCOMB [1] - 1:3	hold [7] - 10:1, 11:5, 12:15, 21:6, 30:12, 47:22, 49:23 holding [1] - 27:12 holds [1] - 17:21 Holobinko [6] - 27:18, 28:12, 96:5, 97:15, 97:22, 100:7 Holobinko's [3] - 86:9, 86:25, 99:25 home [4] - 36:15, 38:20, 58:6, 61:13 honest [4] - 22:12, 49:21, 52:11, 55:14 Honor [186] - 3:9, 3:14, 3:25, 4:16, 4:21, 4:23, 5:4, 5:22, 7:5, 8:16, 8:19, 9:6, 9:10, 10:4, 10:24, 11:13, 12:5, 12:17, 13:1, 13:18, 14:6, 14:7, 15:9, 15:13, 16:3, 16:5, 16:6, 16:8, 18:5, 18:15, 18:22, 19:2, 19:6, 19:9, 19:16, 19:23, 20:2, 21:9, 21:20, 22:1, 22:2, 22:12, 23:3, 24:18, 25:10, 25:16, 26:13, 26:15, 27:1, 28:11, 29:6, 29:9, 29:16, 30:4, 30:11, 30:21, 30:23, 30:25, 31:4, 32:25, 34:2, 34:5, 36:8, 38:11, 39:13, 39:14, 39:19, 39:21, 39:24, 40:1, 40:8, 42:15, 42:19, 43:1, 43:5, 43:8, 43:10, 43:14, 43:19, 43:23, 43:25, 44:10, 44:15, 44:17, 44:24, 45:3, 45:4, 45:12, 46:5, 46:15, 46:25, 47:9, 47:11, 48:1, 48:3, 48:7, 48:23, 49:4, 49:20, 49:21, 51:1, 51:4, 51:18, 52:6, 52:10, 52:17, 54:10, 56:3, 56:20, 57:16, 59:3, 59:12, 59:17, 59:24, 60:6, 60:11, 61:17, 61:25, 62:11, 62:14, 63:20, 67:11, 67:14, 69:13, 69:23, 70:3, 70:11, 70:20, 71:2, 71:13, 71:22, 72:1, 72:14, 78:22, 79:19, 80:7, 81:1, 82:10, 82:16, 84:2, 84:7, 87:4, 87:5, 87:9, 87:11, 87:18, 87:23, 87:25, 88:2, 88:15, 89:9, 90:4, 90:10, 90:25, 91:18, 92:6, 92:17, 93:2, 94:12, 94:18, 94:20, 94:21, 95:5, 96:12, 96:17, 96:19, 96:24, 97:3, 97:14, 98:2, 98:6, 98:8, 98:22, 99:10, 99:12, 99:16, 99:20, 100:25, 101:2, 101:6, 101:10, 101:11, 102:3, 102:4, 102:5 Honor's [17] - 7:9, 9:9, 19:11,
--	---	--	---

33:14, 39:15, 40:20, 44:2, 44:10, 48:12, 49:24, 50:3, 51:19, 52:21, 55:9, 73:4, 84:12, 87:3 HONORABLE [1] - 1:3 hope [1] - 8:22 hopefully [3] - 27:1, 59:22, 101:19 hopelessly [2] - 7:1, 57:2 hoping [1] - 6:21 hosting [1] - 26:5 hot [2] - 28:16, 28:20 hours [1] - 6:24 housekeeping [8] - 9:2, 13:13, 13:19, 16:6, 29:12, 42:14, 42:15, 72:2 hundred [1] - 83:7 hybrid [9] - 44:4, 45:2, 45:7, 45:22, 47:19, 78:3, 78:7, 95:7, 95:11 hyphen [2] - 28:8 hypotheticals [1] - 28:15	42:21, 44:11, 69:15, 69:16, 70:4, 70:13, 70:14, 73:23, 76:24 included [3] - 40:6, 72:4, 78:12 includes [9] - 22:21, 24:23, 25:18, 31:22, 31:25, 42:2, 42:10, 42:12 including [12] - 20:20, 20:21, 35:16, 39:10, 41:22, 41:24, 56:5, 57:18, 64:3, 70:6, 95:1, 96:1 inclusion [1] - 71:18 inconsistent [7] - 31:9, 33:25, 34:22, 36:19, 36:20, 57:2, 87:13 incorporate [1] - 74:9 incorporated [2] - 49:25, 51:5 incorrect [2] - 95:12, 96:10 incremental [1] - 33:7 indecipherable [1] - 67:3 indeed [2] - 56:19, 77:22 indefinite [1] - 27:6 indefiniteness [5] - 27:11, 34:21, 50:11, 82:21, 100:21 indented [7] - 37:13, 37:22, 38:1, 38:9, 39:2, 57:3, 57:12 indicated [1] - 78:14 indicating [1] - 91:20 indulge [1] - 60:7 indulgence [1] - 15:14 influences [1] - 76:3 information [18] - 29:4, 65:4, 65:8, 65:10, 65:20, 66:10, 67:4, 68:15, 69:9, 70:15, 71:10, 85:10, 89:23, 89:25, 90:2, 90:7, 92:1, 92:25 information-absent [1] - 90:2 information-laden [1] - 89:25 infringe [1] - 61:1 infringement [6] - 17:19, 37:17, 56:11, 88:14, 93:7, 93:10 inherent [2] - 82:23, 100:19 input [1] - 84:13 inputs [1] - 28:23 inside [4] - 63:6, 63:7, 63:11 instance [4] - 23:12, 27:3, 32:18, 86:17 instances [1] - 66:15 instantiation [1] - 77:4 instead [1] - 42:9 instruction [3] - 53:19, 56:4, 56:10 integrated [2] - 54:1, 54:19	Intel [2] - 64:12, 64:16 intent [1] - 81:25 intention [1] - 96:1 intentionally [1] - 74:9 intercede [1] - 43:11 interested [1] - 71:4 interesting [3] - 62:25, 101:22, 101:23 interfere [2] - 84:24, 85:3 interference [1] - 28:18 internal [1] - 63:8 internet [1] - 62:19 interpretation [2] - 37:21, 75:16 interpreted [1] - 35:22 interrupted [1] - 26:11 interrupting [1] - 24:12 intrinsic [12] - 20:16, 20:17, 21:2, 22:3, 26:17, 27:9, 27:10, 46:6, 46:10, 72:24, 78:17, 78:20 introduce [1] - 59:10 introduces [1] - 59:11 invalidity [2] - 56:11, 93:8 invention [15] - 33:6, 39:24, 40:5, 41:21, 53:10, 53:11, 75:14, 79:4, 79:5, 79:11, 79:15, 79:16, 79:17, 83:4 Iridescent [2] - 96:19, 97:1 irrelevant [1] - 88:23 IS [1] - 102:9 Isaacson [3] - 4:24, 13:2, 15:8 ISAACSON [7] - 2:17, 4:23, 5:4, 13:1, 13:7, 15:9, 101:6 ISMAIL [1] - 2:3 Ismail [1] - 3:11 issue [38] - 7:9, 8:8, 9:4, 9:5, 9:22, 13:23, 14:1, 14:5, 14:24, 16:15, 17:7, 17:24, 18:9, 21:7, 26:21, 31:7, 31:12, 31:13, 35:21, 36:11, 37:1, 41:8, 48:5, 51:1, 55:8, 56:2, 56:25, 57:19, 59:16, 64:9, 64:15, 73:4, 75:8, 84:11, 84:16, 84:17, 87:19, 101:18 issued [3] - 5:24, 11:7, 72:7 issues [8] - 8:21, 9:3, 10:11, 18:13, 19:22, 55:25, 101:16, 101:22 item [1] - 3:5 itself [8] - 35:7, 44:24, 53:23, 86:5, 89:7, 92:6, 92:9, 92:19	job [1] - 43:21 JOHN [3] - 1:3, 2:6, 2:25 John [1] - 4:16 joined [1] - 4:4 joint [1] - 13:10 judge [1] - 8:7 JUDGE [1] - 1:3 Judge [6] - 8:17, 54:15, 55:6, 56:14, 57:8, 59:1 JUDICIAL [1] - 102:14 JULY [2] - 1:19, 3:1 jump [1] - 6:12 jurisdiction [8] - 9:14, 10:16, 13:22, 14:23, 17:2, 17:21, 18:9, 76:2 jurisdictional [2] - 14:23, 18:7 jury [11] - 35:20, 55:19, 56:3, 56:6, 56:8, 56:10, 56:17, 61:20, 61:21, 62:7 justify [1] - 41:16
I			
identified [3] - 33:13, 96:4, 98:1 identifies [1] - 50:1 identify [3] - 38:12, 38:13, 68:10 ignore [2] - 74:15, 75:24 Ill [1] - 17:7 IL [1] - 2:5 image [2] - 54:17, 85:10 impact [4] - 28:24, 50:4, 75:16, 84:8 impacted [5] - 50:24, 97:7, 97:12, 97:19, 97:21 impediment [1] - 18:7 implant [1] - 85:9 implemented [9] - 22:16, 31:22, 31:24, 32:15, 38:12, 38:14, 39:10, 80:20, 80:22 implementing [1] - 33:6 implies [2] - 31:19, 80:10 important [14] - 13:4, 20:4, 24:8, 33:14, 33:15, 50:7, 50:18, 50:19, 55:16, 56:14, 61:21, 62:18, 84:13, 97:6 impossibility [1] - 80:13 impossible [1] - 80:15 impression [1] - 22:19 imprint [1] - 85:9 IN [2] - 102:10, 102:13 inappropriate [1] - 83:24 Inc [1] - 3:7 INC [2] - 1:10, 2:10 inclined [1] - 61:9 include [16] - 20:8, 22:6, 22:10, 22:11, 42:3, 42:16,			
K			
K&L [3] - 3:10, 3:12, 3:14 Kamran [1] - 4:25 KAMRAN [1] - 2:24 keep [3] - 21:24, 52:7, 94:15 keeping [1] - 9:8 key [3] - 27:10, 32:6, 47:11 KILPATRICK [1] - 2:18 Kilpatrick [1] - 4:24 kind [4] - 8:12, 21:8, 57:10, 66:23 kindly [1] - 29:24 knowingly [1] - 74:8 known [3] - 64:18, 64:20, 79:10 knows [2] - 89:24, 96:18 Krishnan [2] - 4:5, 94:20 KRISHNAN [1] - 2:10			
L			
laden [1] - 89:25 land [1] - 45:7 language [36] - 20:8, 20:19, 23:7, 23:9, 23:11, 24:19, 33:25, 37:22, 40:10, 42:18, 44:22, 45:24, 46:12, 47:21, 52:22, 53:1, 60:11, 60:18, 62:5, 74:25, 75:10, 75:13, 75:15, 75:17, 77:3, 78:25, 82:23, 83:8, 84:11, 90:14, 91:22, 92:11, 95:24, 100:19 LANHAM [3] - 2:25, 4:16, 4:21 Lanham [2] - 4:16, 4:19 large [1] - 44:18			
J			
JASON [1] - 2:23 Jason [1] - 3:13			

larger [1] - 53:13 last [9] - 12:24, 37:22, 38:8, 39:1, 58:3, 68:19, 85:19, 85:20 latency [3] - 50:23, 97:19 latter [1] - 91:10 law [11] - 19:14, 21:19, 75:24, 82:12, 82:24, 83:10, 83:11, 83:12, 93:5, 96:17, 96:18 lay [2] - 23:2, 55:21 layers [1] - 54:2 layperson [1] - 55:14 leads [1] - 85:19 learned [1] - 76:5 least [19] - 22:21, 24:3, 24:15, 25:19, 31:22, 31:25, 37:10, 38:3, 53:22, 56:24, 57:4, 57:6, 64:21, 70:3, 90:18, 90:21, 91:22, 94:1, 98:17 leave [5] - 5:5, 10:25, 11:2, 11:21, 15:24 lectern [7] - 7:13, 7:14, 7:19, 7:24, 8:1, 8:9, 8:14 lectern-versus-podium [1] - 7:19 left [9] - 52:17, 60:4, 64:17, 65:1, 74:1, 74:24, 86:22, 88:2, 91:1 left-hand [3] - 74:1, 74:24, 91:1 Leiden [1] - 4:6 LEIDMAN [1] - 2:23 less [1] - 97:10 LESS [1] - 102:12 lest [1] - 56:16 letter [3] - 40:16, 40:19 letters [1] - 73:7 letting [1] - 6:20 level [2] - 28:12, 86:21 levels [1] - 48:17 license [4] - 17:8, 17:17, 17:23, 17:25 limit [1] - 72:21 limitation [24] - 6:13, 6:14, 34:22, 35:6, 35:7, 35:15, 35:21, 35:25, 36:16, 37:1, 37:23, 38:8, 38:9, 38:17, 39:2, 56:24, 61:11, 64:9, 71:7, 84:22, 86:6, 91:13, 94:10 limitations [22] - 5:16, 6:15, 14:18, 34:8, 35:16, 36:10, 36:20, 37:2, 37:13, 38:1, 38:10, 41:4, 41:6, 57:3, 57:12, 57:15, 57:17, 82:23, 87:12, 87:14, 87:18, 100:19 limited [4] - 24:23, 75:14,	78:15, 88:19 limiting [1] - 81:21 line [11] - 54:4, 66:23, 67:14, 68:4, 68:22, 73:5, 74:2, 74:4, 76:22, 76:23, 94:23 lines [10] - 32:18, 33:4, 44:14, 49:12, 53:8, 54:25, 67:10, 77:1, 79:14, 95:23 link [1] - 86:1 linked [2] - 79:8, 84:5 links [3] - 73:24, 75:19, 86:9 Lisson [6] - 4:4, 4:10, 4:12, 5:8, 30:22, 87:9 LISSON [16] - 2:15, 30:21, 30:25, 31:3, 31:6, 32:24, 36:6, 36:8, 36:25, 37:15, 38:11, 38:25, 39:3, 39:13, 87:9, 87:23 listed [1] - 51:5 literally [1] - 80:13 live [2] - 9:6, 26:2 lives [2] - 47:7, 47:15 LLC [1] - 3:6 LLP [7] - 1:4, 2:4, 2:7, 2:10, 2:13, 2:15, 2:18 localizing [2] - 33:19, 33:20 located [13] - 22:7, 22:11, 23:17, 24:3, 24:7, 24:9, 24:16, 24:25, 44:3, 81:7, 81:10, 81:14, 81:15 location [2] - 23:23, 24:21 locations [3] - 23:18, 23:19, 23:25 logic [1] - 26:7 logical [2] - 76:19, 77:1 look [21] - 41:14, 44:9, 44:15, 45:3, 45:14, 51:1, 54:1, 54:4, 62:23, 65:16, 67:23, 72:8, 78:11, 84:3, 85:2, 86:1, 90:12, 90:24, 97:13, 102:1 looked [3] - 69:2, 77:20, 85:1 looking [7] - 12:18, 21:23, 22:1, 29:3, 39:24, 42:1, 91:22 LOS [1] - 1:25 lose [1] - 67:4 losing [1] - 38:6 lost [2] - 68:14, 68:17 loud [3] - 68:13, 89:2, 89:6 Louis [1] - 4:6 love [1] - 47:3 lunch [1] - 6:22	maintain [1] - 87:5 major [4] - 6:2, 18:25, 33:8, 39:16 majority [1] - 44:18 mandatory [1] - 25:22 manuals [1] - 65:3 manufacturing [1] - 53:9 March [2] - 12:12, 12:20 MARKMAN [1] - 1:17 Markman [3] - 8:23, 18:8, 18:13 master [5] - 12:8, 12:12, 12:20, 16:3 master's [3] - 14:8, 14:14, 16:3 material [1] - 21:3 materials [1] - 6:7 mathematical [3] - 83:1, 83:4, 83:8 mathematically [2] - 85:5, 85:15 matter [7] - 9:13, 10:15, 13:22, 17:2, 18:9, 42:15 MATTER [1] - 102:11 Matthew [1] - 3:14 maximum [1] - 68:9 MaxLinear [4] - 4:18, 17:11, 17:12 mean [22] - 13:18, 29:15, 35:2, 35:22, 37:23, 37:24, 46:13, 53:5, 55:6, 55:20, 56:3, 56:5, 56:7, 59:8, 61:20, 67:8, 68:1, 69:18, 69:21, 80:21, 81:18, 92:13 meaning [4] - 35:25, 69:17, 71:12, 99:9 meaningless [2] - 41:3, 88:23 meanings [1] - 55:16 means [16] - 24:23, 31:7, 31:14, 32:4, 33:24, 35:11, 35:21, 36:19, 37:7, 53:4, 65:23, 66:21, 67:23, 71:15, 95:19, 96:3 meant [2] - 62:22, 95:24 measure [4] - 28:5, 84:10, 86:7 measured [2] - 86:5, 86:13 measures [2] - 28:4, 84:5 meat [1] - 63:4 meats [1] - 63:3 medium [1] - 65:24 memorized [1] - 49:20 memory [4] - 26:3, 34:19, 34:24, 59:2 MENLO [2] - 2:14, 2:16 mentioned [3] - 28:3, 72:13, 88:11 mere [2] - 90:6, 93:13 merely [8] - 57:13, 82:1,	91:25, 92:13, 92:14, 92:19, 93:17, 96:6 message [4] - 65:9, 65:21, 66:4, 68:1 met [2] - 16:12, 34:8 metric [32] - 21:8, 26:25, 27:19, 27:23, 28:2, 28:10, 48:2, 48:3, 50:12, 50:16, 50:20, 51:9, 51:13, 51:15, 71:21, 72:5, 82:7, 86:8, 86:20, 86:23, 94:17, 96:13, 96:16, 97:19, 97:21, 97:22, 99:24, 100:1, 100:8, 100:14, 100:16 metrics [14] - 28:4, 48:15, 49:9, 50:2, 50:23, 50:25, 51:5, 51:8, 83:9, 84:8, 86:4, 86:12, 86:14, 87:1 Michael [4] - 3:11, 4:25, 20:3, 71:25 MICHAEL [2] - 2:3, 2:24 microphone [1] - 13:6 middle [1] - 65:16 might [9] - 6:15, 15:13, 24:14, 46:13, 54:16, 63:1, 65:2, 70:6 mind [1] - 51:16 minor [3] - 6:2, 27:16, 30:16 minute [1] - 59:23 minutes [3] - 52:7, 59:19, 59:21 Miriam [1] - 102:16 MIRIAM [2] - 1:23, 102:17 misordered [1] - 85:13 missing [1] - 93:20 misstate [2] - 52:13, 73:2 mistaken [1] - 98:13 misunderstood [1] - 6:3 modem [28] - 20:7, 31:24, 32:10, 32:11, 33:6, 33:20, 33:21, 35:13, 36:3, 36:13, 36:14, 37:8, 38:14, 38:19, 39:5, 43:22, 57:7, 58:4, 58:15, 58:24, 61:12, 61:13, 78:3, 86:16, 86:18, 87:16, 87:17 modem's [8] - 22:7, 25:1, 25:5, 44:4, 45:1, 45:22, 47:19, 95:11 modems [2] - 45:5, 95:9 modern [1] - 82:21 modifications [1] - 75:3 modifies [1] - 40:18 modifying [1] - 40:24 modular [1] - 96:7 modulate [1] - 65:22 modulated [4] - 66:12, 67:20, 67:25, 69:18 modulates [1] - 68:8 modulating [1] - 66:3
--	--	---	---

modulation [1] - 66:8
molecule [1] - 84:23
moment [4] - 44:9, 45:13, 60:7, 64:8
momentarily [1] - 10:5
morning [17] - 3:3, 3:9, 3:14, 3:15, 3:16, 3:23, 3:25, 4:7, 4:14, 4:16, 4:19, 4:23, 5:12, 5:21, 19:6, 20:2, 30:21
Morrison [1] - 4:17
Morse [2] - 66:3, 66:5
most [2] - 30:16, 64:11
mostly [1] - 32:6
motion [12] - 9:9, 9:12, 10:24, 11:8, 12:6, 12:21, 14:9, 14:10, 14:17, 16:11, 16:21, 16:24
mouth [1] - 17:15
move [6] - 9:8, 16:16, 26:24, 42:4, 94:16, 96:13
moved [4] - 10:23, 11:2, 11:3, 12:3
MR [191] - 3:9, 3:17, 3:20, 3:25, 4:3, 4:9, 4:13, 4:16, 4:21, 5:7, 5:11, 5:22, 7:5, 7:8, 7:12, 7:14, 7:17, 7:21, 8:16, 9:5, 10:4, 10:8, 10:12, 10:20, 10:22, 11:6, 11:10, 11:12, 11:19, 11:23, 12:1, 12:14, 12:17, 12:20, 12:23, 13:17, 13:24, 14:3, 14:20, 15:1, 15:6, 15:13, 15:18, 16:2, 16:13, 17:1, 17:5, 17:12, 17:14, 18:15, 18:22, 19:2, 19:6, 19:23, 20:2, 21:9, 21:11, 21:17, 21:20, 21:24, 23:2, 23:10, 24:17, 25:10, 25:16, 26:13, 26:15, 27:1, 28:10, 29:15, 29:18, 29:24, 30:4, 30:6, 30:8, 30:11, 30:18, 30:21, 30:25, 31:3, 31:6, 32:24, 36:6, 36:8, 36:25, 37:15, 38:11, 38:25, 39:3, 39:13, 39:14, 41:16, 42:4, 42:11, 42:14, 42:24, 43:1, 43:5, 43:8, 43:10, 43:13, 43:16, 43:19, 43:25, 46:5, 46:25, 48:1, 49:3, 49:7, 49:15, 49:17, 49:19, 49:24, 51:18, 52:6, 54:9, 56:22, 57:16, 59:11, 59:17, 59:24, 60:6, 60:10, 61:17, 61:25, 62:4, 62:10, 65:12, 67:14, 67:17, 68:7, 68:24, 69:23, 70:10, 70:13, 70:17, 70:20, 71:1, 71:11, 71:22, 71:25, 72:13, 72:18, 80:7, 81:1, 81:9, 82:6, 82:10, 84:2, 87:9,

87:23, 87:25, 89:12, 89:15, 90:1, 90:4, 90:9, 90:14, 90:25, 91:6, 91:10, 91:16, 91:18, 92:5, 92:9, 92:16, 93:2, 93:14, 93:19, 93:24, 94:5, 94:11, 94:18, 94:20, 94:25, 95:4, 96:15, 98:6, 98:22, 99:8, 99:11, 99:15, 99:20, 99:22, 100:25, 101:2, 101:9, 101:11, 102:3, 102:4, 102:5
MS [6] - 4:23, 5:4, 13:1, 13:7, 15:9, 101:6
mucked [1] - 81:12
multiple [3] - 5:25, 73:10, 73:14
must [15] - 12:15, 22:10, 23:20, 25:8, 25:19, 39:9, 46:19, 81:22, 82:22, 83:14, 83:17, 83:18, 94:1
muster [1] - 76:16
MVB11893@aol.com [1] - 1:25

N

name [1] - 43:18
names [2] - 5:6, 5:10
narrow [1] - 70:7
Nathan [1] - 3:11
NATHAN [1] - 2:22
nature [2] - 55:20, 83:6
Nautilus [3] - 82:20, 83:11, 100:20
NC [1] - 2:8
necessarily [22] - 23:20, 23:23, 24:3, 33:23, 33:24, 55:20, 55:23, 56:16, 59:7, 61:22, 64:25, 65:3, 65:7, 65:14, 67:8, 68:15, 68:21, 69:5, 80:10, 89:22, 90:21, 93:1
necessary [1] - 55:11
need [22] - 5:13, 6:7, 14:19, 36:21, 42:22, 50:19, 59:7, 59:15, 59:18, 65:3, 65:14, 69:5, 69:8, 71:3, 83:3, 92:1, 94:14, 96:22, 99:23, 101:7, 101:15
needs [7] - 5:18, 10:6, 10:9, 57:23, 71:9, 88:6, 96:21
negative [7] - 41:4, 41:6, 64:9, 64:10, 64:14, 64:19
negligible [3] - 85:7, 85:12, 85:13
network [21] - 22:8, 22:18, 24:4, 24:7, 24:10, 25:24, 40:3, 44:5, 45:2, 45:7, 45:22, 47:19, 63:10, 63:12, 63:16, 76:7, 76:15, 76:20,

77:17, 95:7, 95:12
networking [22] - 31:21, 32:10, 32:12, 33:1, 33:19, 33:20, 35:3, 35:13, 36:4, 36:15, 36:16, 38:12, 38:20, 38:21, 39:6, 57:5, 58:6, 58:16, 58:24, 61:13, 61:14
Networks [2] - 96:20, 97:1
networks [1] - 62:18
never [3] - 8:6, 31:11, 76:9
nevertheless [1] - 8:14
NEW [1] - 2:11
new [4] - 45:10, 45:13, 53:13, 53:14
newer [1] - 54:18
next [8] - 21:7, 33:8, 54:14, 63:19, 65:7, 76:5, 77:5, 97:14
night [1] - 98:14
nine [1] - 68:4
no-connection [1] - 53:15
nobody [1] - 88:25
node [15] - 66:25, 67:1, 67:19, 68:11, 69:10, 69:11, 89:4, 89:5, 89:24, 90:5, 90:7, 90:11, 90:19, 98:24
nodes [2] - 40:3, 68:18
noise [21] - 27:25, 28:4, 28:5, 28:8, 28:12, 28:19, 28:25, 29:1, 29:5, 29:7, 48:17, 48:21, 50:4, 50:7, 50:17, 50:19, 67:3, 84:8, 84:9, 84:12, 100:16
none [1] - 9:22
noninfringement [7] - 36:24, 37:11, 37:18, 61:4, 61:5, 93:8, 93:12
nonsensical [1] - 90:20
nonsubstantive [1] - 18:13
noon [2] - 6:21, 59:22
normal [6] - 62:18, 62:21, 67:9, 68:2, 69:9, 69:19
not-yet-filed [1] - 16:24
note [1] - 9:16
notes [3] - 9:6, 22:6, 40:1
nothing [12] - 45:9, 61:14, 66:21, 73:12, 78:17, 78:20, 79:20, 85:23, 90:7, 101:3, 101:9, 101:11
notice [1] - 47:2
noticeably [1] - 82:11
November [2] - 10:24, 11:7
number [21] - 3:5, 29:15, 29:17, 30:5, 32:13, 32:14, 47:13, 47:17, 53:3, 54:5, 54:12, 54:20, 55:16, 57:19, 66:15, 72:8, 76:2, 79:3
numbers [1] - 97:14
numerous [2] - 54:22, 64:11
NY [1] - 2:11

O

object [4] - 6:4, 26:5, 80:11, 101:24
objected [1] - 13:9
objection [4] - 15:11, 16:8, 18:25, 19:2
objective [8] - 96:21, 97:4, 97:18, 97:24, 98:2, 100:3, 100:4
obviate [1] - 71:17
obviously [7] - 10:13, 44:2, 58:10, 59:12, 74:18, 84:25, 94:7
OF [7] - 1:2, 1:16, 2:3, 2:10, 102:10, 102:14
OFDMA [3] - 67:18, 67:19, 67:25
Off-the-record [1] - 52:4
offer [1] - 23:6
offered [1] - 20:25
offering [1] - 41:2
OFFICIAL [2] - 1:23, 102:17
offsite [1] - 24:6
often [1] - 8:15
old [1] - 53:10
Olympics [2] - 8:10, 65:7
ON [2] - 2:3, 2:10
on/off [1] - 92:1
once [2] - 7:15, 66:2
one [63] - 3:5, 4:10, 6:14, 6:17, 8:19, 9:4, 10:1, 10:20, 10:21, 10:22, 11:5, 12:15, 18:17, 21:6, 23:2, 28:10, 29:11, 31:22, 31:25, 32:13, 32:16, 32:18, 32:21, 33:5, 35:17, 37:15, 38:3, 38:6, 41:13, 41:20, 42:14, 51:17, 53:5, 53:7, 54:5, 54:12, 55:1, 55:18, 57:4, 57:6, 63:20, 65:12, 66:23, 67:19, 67:21, 67:22, 67:23, 68:2, 69:2, 72:25, 77:9, 77:16, 77:18, 78:22, 79:22, 79:24, 82:10, 85:20, 91:18, 94:2, 98:25
ones [4] - 65:18, 65:22, 65:23, 87:2
open [1] - 64:17
opening [2] - 22:15, 30:1
operation [7] - 17:9, 28:24, 62:18, 62:21, 68:2, 69:9, 69:19
operations [1] - 67:9
operative [3] - 10:18, 15:20, 15:22
opinion [2] - 29:8, 77:19
oppose [3] - 12:11, 60:13, 60:22
opposed [2] - 35:25, 57:20

opposing [2] - 21:14, 21:15 optic [1] - 95:1 order [14] - 8:23, 9:9, 11:7, 13:14, 16:7, 20:5, 20:8, 38:18, 48:4, 48:12, 68:10, 72:19, 97:7, 101:19 orders [1] - 101:20 ordinarily [1] - 13:3 ordinary [6] - 35:25, 50:13, 59:14, 71:12, 83:14, 99:9 original [2] - 42:8, 99:8 originally [1] - 71:11 OSI [1] - 40:11 otherwise [4] - 44:12, 62:2, 80:15, 80:24 ourselves [1] - 93:4 outdoor [1] - 86:17 outset [4] - 20:15, 21:1, 27:15, 83:21 outside [3] - 47:7, 47:15, 63:6 overhead [2] - 70:14, 71:10 overlook [1] - 73:2 overridden [1] - 11:15 owe [1] - 101:13 own [5] - 79:25, 80:1, 97:8, 97:11, 97:21 owner [1] - 17:10	25:14, 27:18, 27:22, 45:18, 48:16, 48:20, 50:20, 63:12, 73:13, 73:17, 75:6, 84:23, 86:15, 96:11 particularly [2] - 27:7, 73:13 parties [11] - 19:12, 20:18, 20:23, 22:13, 37:3, 39:15, 59:12, 63:22, 71:8, 71:15, 98:17 parties' [3] - 21:4, 64:15, 64:16 partition [1] - 37:7 partitioned [10] - 37:22, 55:12, 55:15, 55:22, 56:5, 57:21, 58:5, 58:9, 60:19, 61:20 partitioning [7] - 33:17, 35:8, 35:10, 55:23, 55:24, 61:22 partner [1] - 4:4 parts [7] - 22:4, 35:5, 48:21, 55:24, 63:25, 74:15, 76:12 pass [3] - 34:18, 34:24, 89:10 passing [2] - 71:22, 98:13 past [2] - 48:9, 59:21 pasted [1] - 95:19 patent [61] - 4:10, 6:3, 7:14, 19:10, 19:11, 19:13, 20:6, 24:22, 30:10, 31:1, 31:9, 32:7, 39:16, 44:6, 44:12, 44:14, 46:7, 46:11, 47:18, 50:1, 56:25, 58:17, 67:15, 72:3, 72:6, 72:7, 72:8, 72:9, 72:15, 72:18, 73:5, 73:22, 73:23, 74:2, 74:7, 74:8, 74:23, 75:8, 75:9, 75:10, 75:18, 78:1, 78:5, 78:6, 78:14, 79:10, 79:14, 79:20, 80:18, 85:7, 85:22, 85:25, 86:3, 87:10, 88:1, 89:10, 90:15, 92:7, 94:22 patentee [1] - 83:3 patentholder [1] - 7:24 patents [20] - 9:11, 9:15, 9:16, 9:21, 9:22, 13:15, 17:10, 17:18, 44:18, 73:7, 73:10, 73:14, 73:18, 74:21, 76:3, 77:20, 77:22, 83:14, 96:11 patience [1] - 31:3 Pause [2] - 10:2, 31:2 payload [62] - 40:11, 40:12, 40:14, 40:15, 40:18, 40:23, 40:24, 41:10, 42:7, 42:17, 42:18, 63:18, 63:23, 63:24, 64:2, 64:21, 66:19, 66:20, 67:7, 68:8, 68:9, 68:20, 69:8, 69:15, 69:17, 69:20, 70:1, 70:17, 71:3, 71:8, 71:15, 88:1, 88:10, 88:21,	89:13, 89:15, 89:16, 89:23, 90:19, 90:22, 91:12, 91:23, 91:24, 92:11, 92:12, 92:22, 92:23, 93:15, 93:16, 93:17, 93:21, 93:22, 93:23, 94:1, 94:16, 98:9, 98:10, 98:17, 99:4 pending [2] - 9:6, 10:6 people [1] - 13:3 per [3] - 19:13, 64:10, 67:25 percent [1] - 83:7 perfect [1] - 43:16 perfectly [3] - 24:18, 46:24, 99:9 perform [1] - 47:16 performance [4] - 86:8, 86:12, 86:13 performed [10] - 36:14, 36:15, 38:19, 38:21, 47:14, 61:12, 61:14, 79:13, 79:18, 87:16 perhaps [4] - 52:9, 57:19, 59:1, 65:6 permission [1] - 21:12 permit [1] - 12:9 permitted [1] - 18:19 person [9] - 50:13, 51:7, 51:24, 80:8, 80:19, 83:14, 83:15, 86:22, 86:25 persons [1] - 54:3 perspective [2] - 94:17, 101:9 pertaining [1] - 13:8 pertains [1] - 93:16 pews [1] - 4:6 phrase [1] - 57:20 phrases [1] - 41:17 physical [30] - 23:23, 24:21, 25:14, 27:13, 31:8, 31:19, 31:20, 32:7, 32:9, 33:11, 34:11, 35:4, 35:23, 36:22, 37:10, 37:24, 38:2, 55:5, 55:23, 55:25, 56:16, 57:13, 60:15, 61:10, 61:15, 61:23, 80:11, 80:13, 80:16, 86:21 physically [8] - 36:4, 37:12, 38:23, 45:21, 53:6, 53:14, 59:7, 59:9 pick [1] - 60:4 picture [2] - 77:8 piece [7] - 8:8, 21:5, 36:18, 45:17, 45:19, 46:8, 85:9 PIEJA [45] - 2:3, 15:13, 15:18, 16:2, 16:13, 17:1, 17:5, 17:12, 17:14, 20:2, 21:9, 21:11, 21:17, 21:20, 21:24, 23:2, 23:10, 24:17, 25:10, 25:16, 26:13, 26:15, 27:1, 28:10, 29:15, 29:18, 29:24, 30:4, 30:6, 30:8,	30:11, 30:18, 71:25, 72:13, 72:18, 80:7, 81:1, 81:9, 82:6, 82:10, 84:2, 99:20, 100:25, 101:9, 102:4 Pieja [10] - 3:11, 3:17, 3:21, 19:24, 20:3, 52:9, 71:23, 71:25, 96:4, 97:20 pine [1] - 64:13 pistol [1] - 65:6 place [3] - 7:22, 25:14 placement [1] - 59:4 plain [5] - 35:25, 55:20, 59:14, 71:12, 99:8 plaintiff [5] - 3:10, 18:11, 18:24, 27:5, 95:25 Plaintiff [1] - 1:6 PLAINTIFF [1] - 2:3 plaintiffs' [1] - 101:9 plan [2] - 4:20, 78:8 plant [2] - 28:16, 28:24 platform [1] - 8:12 play [2] - 33:14, 33:15 pleading [3] - 9:11, 10:18, 15:22 pleadings [1] - 13:13 plenty [1] - 86:23 plurality [5] - 90:11, 90:16, 90:18, 90:21, 93:25 plus [1] - 11:1 podium [6] - 7:10, 7:19, 7:24, 7:25, 8:10, 8:12 point [48] - 9:16, 22:7, 22:11, 22:18, 22:22, 23:2, 23:14, 24:4, 24:7, 24:10, 24:16, 25:1, 25:6, 25:20, 25:24, 26:10, 26:18, 32:6, 33:22, 44:3, 45:1, 46:18, 46:23, 47:3, 47:4, 48:14, 51:19, 56:17, 57:22, 72:23, 74:11, 77:17, 78:16, 81:7, 81:10, 81:11, 81:14, 81:16, 81:19, 82:1, 82:2, 85:19, 87:22, 95:15, 96:10, 96:18, 98:1, 100:24 pointed [5] - 17:20, 29:24, 41:20, 61:1, 76:18 pointing [2] - 28:22, 80:2 points [4] - 26:21, 73:1, 78:22, 83:20 police [1] - 65:5 POLK [2] - 2:13, 2:15 Polk [1] - 4:3 poor [1] - 86:12 portion [26] - 33:13, 33:16, 34:4, 44:2, 44:7, 44:15, 48:8, 48:10, 48:14, 48:25, 49:8, 52:8, 52:18, 53:6, 53:7, 58:7, 63:23, 68:3, 68:19, 69:7, 72:14, 79:3, 88:21, 95:17, 100:1
P			
p.m [1] - 102:7 PADMANABHAN [20] - 2:10, 43:8, 43:13, 43:16, 43:19, 43:25, 46:5, 46:25, 48:1, 49:3, 49:7, 49:15, 49:17, 49:19, 49:24, 51:18, 94:20, 94:25, 95:4, 96:15 Padmanabhan [8] - 4:5, 4:9, 5:7, 43:6, 43:11, 43:12, 43:15, 94:20 page [15] - 24:20, 26:1, 27:13, 32:6, 39:25, 44:10, 48:12, 48:13, 48:22, 49:12, 68:4, 83:13, 99:3, 99:4 pages [3] - 23:22, 51:2, 96:19 paragraph [4] - 49:1, 49:7, 49:11, 49:16 paragraphs [1] - 96:9 parameters [8] - 66:9, 86:21, 90:11, 90:16, 90:18, 90:21, 93:25, 94:3 parentheses [1] - 68:10 PARK [3] - 2:11, 2:14, 2:16 parlance [1] - 24:22 part [9] - 25:23, 47:6, 47:7, 54:4, 54:5, 56:24, 74:9, 81:18, 84:14 particular [17] - 9:16, 22:4,			

portions [3] - 67:6, 71:3, 96:4 posed [1] - 72:2 position [11] - 14:10, 17:8, 17:14, 17:17, 22:20, 50:11, 52:11, 71:5, 82:5, 99:7, 99:8 possible [3] - 16:15, 83:9, 97:2 possibly [3] - 68:13, 68:14, 89:2 potential [4] - 41:11, 61:15, 63:21, 63:25 potentially [4] - 23:24, 56:17, 78:24, 88:24 pouring [1] - 28:17 power [1] - 26:4 practical [1] - 55:3 pre [1] - 9:19 pre-filing [1] - 9:19 preamble [4] - 40:13, 40:16, 70:14, 71:10 precise [2] - 85:5, 85:15 precision [4] - 83:4, 83:7, 83:22 preclude [2] - 18:1, 23:11 precludes [1] - 17:18 prefer [4] - 6:14, 7:10, 21:20, 21:21 prefix [2] - 70:14, 71:10 prejudice [1] - 12:7 prepare [1] - 5:20 preparing [1] - 77:23 present [8] - 9:14, 15:5, 36:2, 79:4, 79:5, 79:15, 79:16, 79:17 presentation [9] - 6:10, 26:24, 41:14, 52:16, 77:7, 79:9, 82:11, 86:2, 99:24 presented [2] - 28:16, 101:23 presenter [1] - 7:22 PRESIDING [1] - 1:3 presumably [1] - 74:8 pretty [4] - 8:7, 94:22, 95:9, 96:12 prevail [1] - 16:23 prevailing [2] - 8:3, 17:18 previous [2] - 36:21, 101:20 previously [1] - 35:15 primarily [2] - 3:16, 4:8 principle [1] - 81:4 Pro [1] - 54:18 probe [90] - 40:22, 41:3, 42:2, 42:5, 42:6, 42:13, 42:16, 42:18, 42:20, 42:21, 42:22, 42:23, 62:5, 62:22, 62:24, 62:25, 63:4, 63:7, 63:13, 63:17, 63:25, 64:3, 66:15, 66:17, 66:18, 66:24,	66:25, 67:7, 67:18, 67:21, 68:7, 68:20, 68:24, 68:25, 69:25, 88:16, 88:19, 88:21, 88:24, 89:5, 89:17, 89:18, 90:15, 90:17, 90:19, 90:20, 90:22, 91:2, 91:3, 91:4, 91:5, 91:7, 91:9, 91:10, 91:20, 91:21, 91:23, 91:24, 92:5, 92:8, 92:9, 92:12, 92:15, 92:17, 92:19, 92:23, 92:24, 93:12, 93:16, 93:17, 93:23, 93:25, 94:1, 94:3, 98:9, 98:11, 98:18, 98:19, 98:20, 98:23, 98:24, 98:25 probes [4] - 62:13, 62:15, 63:1, 63:9 problem [13] - 5:11, 14:23, 23:9, 23:15, 35:1, 35:21, 50:11, 50:12, 73:11, 81:16, 84:14, 97:2, 97:3 problematic [1] - 48:6 problems [2] - 50:10, 73:8 proceed [13] - 9:22, 9:24, 10:13, 13:20, 14:7, 17:22, 18:3, 18:10, 18:11, 18:12, 18:17, 21:25 proceeding [1] - 18:7 PROCEEDINGS [2] - 1:16, 102:10 proceedings [3] - 10:2, 31:2, 102:7 process [3] - 53:9, 90:9, 90:10 processes [1] - 84:24 processing [3] - 54:23, 58:24, 58:25 processor [31] - 26:3, 31:8, 31:12, 31:20, 31:23, 31:25, 32:3, 32:7, 32:21, 33:1, 33:10, 33:20, 33:21, 34:10, 37:20, 38:3, 38:4, 38:13, 38:15, 38:20, 38:22, 39:10, 53:17, 53:19, 53:21, 54:11, 54:21, 54:23, 57:5, 57:6 processors [17] - 32:4, 32:14, 32:16, 32:17, 32:20, 33:3, 33:10, 33:14, 33:15, 33:23, 35:16, 36:21, 37:4, 37:10, 53:23, 60:12, 61:1 progress [1] - 8:22 promise [1] - 30:15 promptly [1] - 16:20 pronounce [3] - 5:6, 43:12, 43:17 pronouncing [1] - 5:10 proper [1] - 18:2 properly [5] - 20:16, 20:24, 27:8, 27:20, 29:11 properties [1] - 85:4 proposal [9] - 39:20, 40:8,	40:9, 41:1, 41:24, 69:24, 70:5, 71:13, 72:20 proposals [1] - 42:16 propose [3] - 30:11, 61:17, 69:24 proposed [17] - 9:7, 9:18, 20:9, 26:8, 39:20, 40:7, 42:9, 42:17, 44:7, 59:13, 59:14, 60:23, 61:18, 71:12, 79:25, 80:2, 88:3 proposing [2] - 60:14, 60:20 proposition [1] - 74:15 prosecution [2] - 19:14, 44:19 proves [1] - 100:3 provide [12] - 12:8, 51:7, 51:11, 51:12, 59:1, 83:17, 83:18, 83:20, 85:22, 86:19, 94:12, 96:21 provides [3] - 45:11, 75:18, 86:1 providing [3] - 85:25, 89:7, 90:11 PTO [1] - 29:13 publication [2] - 78:1, 78:5 published [3] - 64:12, 76:1, 78:1 pulled [1] - 29:13 purple [1] - 58:20 purport [1] - 77:15 purporting [2] - 35:6, 41:4 purports [2] - 40:5, 77:3 purpose [1] - 39:24 purposes [3] - 32:22, 56:10, 69:2 pursuant [1] - 38:17 push [2] - 6:1, 7:1 put [20] - 10:14, 11:13, 11:15, 14:4, 17:15, 28:11, 28:13, 37:25, 39:21, 41:1, 44:16, 44:22, 50:22, 63:4, 63:6, 63:13, 73:6, 77:7, 99:24 putting [2] - 34:10, 63:10	quite [3] - 9:1, 16:5, 17:3 quote [8] - 44:11, 44:12, 44:13, 49:13, 67:18, 75:3, 75:4, 100:2 quoted [1] - 99:25
R			
R&R [2] - 16:4, 16:7 R&Rs [1] - 13:8 raise [2] - 74:13, 85:20 raised [7] - 8:12, 16:15, 50:22, 56:1, 71:4, 73:1, 95:15 raises [3] - 9:23, 50:10, 50:18 raising [1] - 82:19 Ramani [9] - 4:3, 5:7, 7:4, 15:15, 17:16, 39:17, 43:20, 87:25, 99:11 RAMANI [75] - 2:12, 3:25, 4:3, 4:9, 4:13, 5:7, 5:11, 7:5, 7:8, 7:12, 7:14, 7:17, 7:21, 8:16, 9:5, 10:4, 10:8, 10:12, 10:20, 10:22, 11:6, 11:10, 11:12, 11:19, 11:23, 12:1, 12:14, 12:17, 12:20, 12:23, 13:17, 13:24, 14:3, 14:20, 15:1, 15:6, 18:15, 18:22, 19:2, 39:14, 41:16, 42:4, 42:11, 42:14, 42:24, 43:1, 43:5, 43:10, 87:25, 89:12, 89:15, 90:1, 90:4, 90:9, 90:14, 90:25, 91:6, 91:10, 91:16, 91:18, 92:5, 92:9, 92:16, 93:2, 93:14, 93:19, 93:24, 94:5, 94:11, 94:18, 99:11, 99:15, 101:2, 101:11, 102:3 ran [1] - 45:20 range [1] - 48:16 rate [10] - 27:23, 28:1, 49:9, 49:10, 50:2, 50:5, 50:6, 50:18, 84:13 ratio [5] - 28:6, 29:1, 29:2, 29:7, 100:16 rationality [1] - 32:19 reach [1] - 68:10 read [17] - 22:16, 25:17, 25:21, 35:2, 46:10, 52:23, 56:4, 57:18, 57:23, 59:3, 59:4, 75:12, 76:20, 77:20, 81:17, 96:22, 97:14 reading [3] - 37:25, 81:22, 87:1 reads [1] - 36:3 REAL [2] - 2:13, 2:16 Real [2] - 8:7, 8:17 real [1] - 77:8 realities [1] - 55:3			
Q			
Qualcomm [1] - 64:13 quality [12] - 28:4, 28:5, 28:13, 28:19, 29:2, 84:6, 84:10, 86:10, 87:2, 100:9, 100:15, 100:17 quantum [1] - 66:10 questions [9] - 18:4, 19:17, 29:10, 43:1, 50:21, 62:1, 87:20, 87:22, 89:9 quibble [1] - 13:18 quibbles [2] - 100:18 quick [2] - 29:11, 70:23 quickly [3] - 101:14, 101:19, 101:20			

realized [4] - 79:4, 79:6, 79:15, 80:3 really [24] - 15:19, 31:12, 31:13, 35:9, 35:14, 36:23, 41:8, 41:20, 45:4, 45:19, 45:23, 46:1, 47:20, 48:4, 55:12, 55:16, 63:3, 82:14, 83:22, 87:19, 94:6, 94:7, 96:12, 96:25 reason [17] - 23:19, 34:15, 39:18, 40:5, 41:5, 53:24, 55:17, 58:8, 59:22, 61:19, 69:13, 72:6, 72:25, 76:8, 78:10, 80:8, 97:4 reasonable [1] - 82:25 reasoned [1] - 27:25 reasoning [8] - 20:14, 23:4, 23:5, 24:5, 27:4, 27:6, 27:8, 27:24 reasons [4] - 27:7, 29:6, 29:8, 55:18 rebuttal [3] - 19:17, 19:20, 96:5 receive [2] - 66:25, 98:24 receiver [8] - 91:2, 91:3, 91:5, 91:8, 91:9, 91:12, 98:21, 98:23 receiver-determined [1] - 98:23 receiving [3] - 69:10, 89:4, 90:5 recently [2] - 63:4, 64:11 Recess [1] - 60:2 recited [3] - 79:12, 98:18 recites [4] - 31:21, 31:24, 32:1, 47:13 recognize [1] - 87:1 recognized [2] - 87:3, 100:20 recognizes [3] - 48:7, 49:25, 50:17 recommendation [3] - 12:9, 14:8, 14:15 recommended [2] - 12:21, 16:4 reconsider [1] - 78:24 record [18] - 6:20, 13:5, 20:16, 22:4, 26:17, 27:10, 29:14, 32:22, 46:4, 46:6, 46:11, 52:4, 72:3, 77:24, 78:4, 78:18, 78:20, 98:5 RECORDED [1] - 102:10 red [3] - 45:6, 58:15, 73:6 redefines [1] - 45:10 reduced [1] - 53:18 REDUCTION [1] - 102:13 redundancy [2] - 62:6, 62:9 redundant [1] - 62:6 refer [2] - 21:21, 48:23 reference [8] - 32:13, 50:1, 66:22, 75:3, 80:10, 80:19,	82:14 referred [5] - 12:7, 16:3, 29:11, 84:12, 95:6 referring [1] - 72:10 refers [1] - 78:2 reflected [1] - 28:14 reflects [1] - 73:11 regarding [3] - 45:11, 95:15, 95:17 regardless [1] - 74:20 REGULATIONS [1] - 102:14 relate [1] - 86:4 related [44] - 13:7, 13:10, 21:7, 26:25, 27:19, 27:23, 28:2, 28:3, 28:10, 48:2, 48:3, 48:16, 50:2, 50:9, 50:12, 50:16, 50:20, 50:25, 51:3, 51:6, 51:9, 51:13, 51:15, 55:25, 64:24, 71:21, 72:5, 82:7, 83:9, 86:4, 86:23, 87:1, 94:17, 96:13, 96:16, 97:8, 97:17, 97:21, 97:22, 99:23, 100:8, 100:15 relative [1] - 33:9 relatively [2] - 19:8, 27:2 relevant [6] - 48:10, 48:25, 73:21, 79:1, 80:21, 96:12 relying [1] - 45:24 remaining [1] - 64:1 remains [2] - 16:5, 69:16 reminding [1] - 21:12 remove [1] - 62:6 removed [2] - 97:23, 97:24 repeat [1] - 6:8 repeated [2] - 74:21, 77:2 repeatedly [5] - 44:24, 76:6, 76:11, 76:17, 84:17 repeats [1] - 62:17 rephrased [1] - 25:17 reply [6] - 6:19, 29:23, 39:21, 41:1, 77:25, 78:5 report [3] - 12:8, 14:8, 14:14 Reporter [1] - 52:8 REPORTER [2] - 1:23, 102:17 REPORTER'S [1] - 1:16 representation [1] - 66:9 representations [1] - 65:17 represented [1] - 65:17 reproduced [4] - 27:13, 75:12, 79:2, 100:6 reproduces [1] - 74:25 request [27] - 12:11, 15:25, 66:18, 68:8, 68:25, 83:23, 89:4, 89:5, 89:7, 89:11, 89:17, 89:18, 90:16, 91:20, 91:21, 92:15, 92:18, 92:19, 92:24, 93:12, 93:23, 93:25, 94:3, 98:11, 98:25, 99:1	requesting [1] - 90:11 requests [2] - 83:22, 90:20 require [8] - 60:11, 71:16, 72:22, 82:2, 83:11, 83:12, 84:18, 99:6 required [2] - 60:17, 84:22 requirement [5] - 55:6, 56:15, 59:4, 60:15, 82:22 requirements [2] - 53:3, 57:25 requires [9] - 47:13, 47:16, 53:1, 53:23, 82:24, 83:10, 83:13, 92:24, 92:25 reserve [1] - 19:17 resolution [1] - 21:4 resolve [6] - 20:17, 20:23, 64:15, 64:16, 64:19, 64:21 resolved [2] - 19:13, 26:14 resolving [1] - 27:11 resources [1] - 59:2 respect [6] - 14:19, 20:5, 21:7, 96:13, 96:15, 99:4 respectfully [5] - 6:4, 78:21, 79:19, 85:24, 100:4 respond [8] - 19:21, 19:22, 26:23, 52:1, 52:12, 87:8, 99:18, 99:23 responding [2] - 89:24, 90:7 response [8] - 89:25, 90:3, 91:9, 91:11, 91:24, 98:5, 98:20 responses [1] - 101:14 responsibility [1] - 98:15 rest [1] - 101:25 restrictions [1] - 87:12 result [3] - 27:4, 27:6, 83:20 reverse [1] - 74:6 review [2] - 5:20, 6:9 reviewed [1] - 6:6 reviewing [1] - 34:3 revised [1] - 88:3 rhetorically [1] - 77:6 rid [1] - 57:10 rightly [1] - 16:5 rise [2] - 60:1, 102:6 river [1] - 68:14 robust [1] - 101:22 role [2] - 33:15 rolling [1] - 24:20 root [1] - 35:4 row [1] - 4:6 rule [3] - 51:21, 64:10, 75:25 ruling [1] - 52:24 run [3] - 23:20, 80:23, 81:22 running [5] - 23:13, 25:7, 26:5, 46:19, 80:12 runs [1] - 9:10	S SAN [1] - 2:20 SANTA [2] - 1:18, 3:1 Sarah [1] - 4:25 SARAH [1] - 2:24 sat [1] - 85:21 satisfied [1] - 26:16 savings [1] - 95:24 saw [2] - 33:25, 34:9 scaling [1] - 68:9 scheme [1] - 67:25 scopes [1] - 83:16 screen [2] - 21:22, 21:25 se [1] - 64:10 seat [3] - 3:4, 13:3, 60:3 second [34] - 10:1, 11:5, 11:8, 11:12, 11:14, 11:18, 12:15, 15:20, 18:18, 21:6, 31:25, 32:1, 35:9, 35:19, 38:3, 38:5, 38:7, 38:14, 38:15, 38:19, 49:23, 51:1, 53:1, 55:8, 57:6, 57:24, 59:5, 65:14, 67:11, 68:3, 73:20, 75:7, 90:19 security [1] - 58:25 see [24] - 5:17, 5:23, 22:19, 32:13, 39:23, 52:16, 54:3, 62:23, 63:6, 63:10, 65:16, 66:14, 69:11, 73:20, 74:1, 74:2, 75:17, 78:21, 79:9, 83:13, 85:2, 85:11, 88:18, 102:1 seek [1] - 18:18 seem [1] - 37:14 selected [1] - 67:25 send [12] - 65:24, 66:18, 66:19, 66:20, 67:1, 67:21, 69:3, 89:11, 89:24, 91:25, 94:3 sending [4] - 67:24, 68:16, 69:11, 90:5 sends [5] - 89:4, 91:3, 98:20, 98:24, 98:25 sense [6] - 23:25, 25:12, 25:17, 26:7, 44:6, 46:15 sent [8] - 40:2, 62:14, 62:19, 63:16, 69:12, 80:15, 91:14, 99:1 sentence [5] - 33:8, 68:4, 78:2, 78:6, 100:5 separate [36] - 31:13, 31:14, 32:1, 32:3, 32:4, 32:5, 33:1, 33:12, 33:15, 33:24, 34:7, 36:4, 36:5, 36:9, 36:19, 36:21, 37:7, 37:10, 37:12, 37:19, 38:5, 38:15, 38:24, 39:4, 39:11, 53:2, 53:6, 53:15, 53:23, 55:7, 57:24, 59:5, 59:8, 59:9,
---	---	---	--

60:12 separateness [8] - 38:10, 53:4, 55:5, 57:4, 57:11, 58:1, 58:2, 87:12 separation [16] - 31:20, 37:24, 38:2, 55:25, 56:16, 57:13, 57:14, 58:11, 60:16, 60:17, 61:6, 61:10, 61:15, 61:22, 61:23 sequence [1] - 11:17 series [2] - 79:13, 79:17 serious [1] - 13:20 serve [1] - 8:7 Sesame [3] - 51:17, 83:25, 96:25 set [6] - 12:24, 31:4, 45:18, 53:19, 86:21, 100:5 settled [3] - 7:17, 8:4 seven [4] - 78:25, 79:2, 79:14, 80:19 shall [1] - 96:13 share [7] - 31:8, 31:11, 34:12, 34:18, 34:24, 35:4, 35:22 shared [2] - 31:15, 59:2 sharp [1] - 74:22 ship [1] - 68:14 ships [1] - 98:13 shock [1] - 27:5 short [1] - 28:15 shortcut [1] - 28:7 shout [1] - 21:8 show [4] - 63:21, 74:22, 75:9, 85:23 showed [1] - 76:19 shown [4] - 47:18, 63:20, 64:25, 95:22 shows [4] - 54:20, 68:19, 69:7, 95:13 side [9] - 6:14, 6:17, 6:18, 7:25, 58:6, 74:1, 74:24, 91:1, 93:6 sides' [1] - 6:7 sign [2] - 65:2, 65:9 signal [73] - 28:4, 28:5, 28:8, 28:12, 28:19, 28:25, 29:1, 29:5, 29:7, 48:21, 50:4, 50:19, 64:7, 65:1, 65:10, 65:13, 65:19, 65:22, 65:24, 66:5, 66:8, 66:13, 66:17, 66:21, 66:22, 66:23, 67:24, 68:16, 68:20, 69:1, 69:4, 69:10, 69:17, 69:21, 70:11, 70:18, 80:14, 84:6, 84:8, 88:4, 88:6, 88:9, 88:16, 88:19, 88:24, 89:3, 89:8, 89:11, 89:14, 89:16, 89:20, 89:21, 90:6, 91:25, 92:2, 92:3, 92:5, 92:10, 92:13, 92:14, 92:19, 93:13, 93:18,	94:3, 100:8, 100:15, 100:16 signal-to-noise [6] - 28:4, 28:5, 28:25, 29:1, 29:7, 100:16 signaled [1] - 98:7 signals [5] - 48:18, 64:24, 65:9, 70:5, 92:25 significant [1] - 13:13 similar [2] - 97:9, 100:2 similarly [2] - 75:7, 85:6 simple [7] - 15:19, 45:4, 45:19, 45:23, 47:20, 64:7, 96:12 simpler [1] - 53:19 simply [8] - 17:22, 26:2, 36:18, 73:11, 78:12, 80:25, 100:13, 100:18 single [7] - 54:22, 55:5, 66:5, 68:8, 72:22, 72:23, 78:15 siren [1] - 65:5 sits [5] - 44:25, 46:14, 72:23, 76:7, 77:17 sitting [1] - 8:25 six [1] - 84:5 size [1] - 75:21 skill [10] - 50:14, 51:7, 51:24, 54:3, 80:8, 80:19, 83:14, 83:15, 86:22, 87:1 skip [1] - 48:9 sleight [1] - 88:20 slide [36] - 41:14, 44:16, 45:3, 45:15, 47:12, 52:15, 52:16, 53:7, 54:14, 54:16, 58:14, 62:16, 63:19, 64:23, 65:1, 66:14, 73:20, 74:1, 74:12, 74:24, 75:18, 75:22, 77:7, 78:22, 79:2, 79:9, 86:2, 88:17, 90:24, 92:6, 97:13, 97:14, 99:24, 100:6 slides [5] - 30:23, 39:18, 41:12, 41:13, 97:3 slight [1] - 26:8 slightly [1] - 100:12 slow [3] - 17:4, 20:4, 95:3 small [2] - 33:7, 54:16 smoking [1] - 63:3 SNR [52] - 21:7, 26:25, 27:19, 27:23, 28:2, 28:3, 28:7, 28:10, 48:2, 48:3, 48:16, 48:19, 48:20, 48:21, 50:2, 50:12, 50:16, 50:19, 50:20, 50:24, 50:25, 51:9, 51:13, 51:15, 51:15, 71:21, 72:5, 82:7, 83:9, 83:9, 84:9, 86:4, 86:23, 87:1, 87:2, 94:17, 96:13, 96:16, 97:7, 97:9, 97:12, 97:13, 97:16, 97:20, 97:21, 97:22, 99:23, 100:2 SNR-like [2] - 97:9, 100:2	SNR-related [30] - 21:7, 26:25, 27:19, 27:23, 28:2, 28:3, 28:10, 48:2, 48:3, 50:2, 50:12, 50:16, 50:20, 50:25, 51:9, 51:13, 51:15, 71:21, 72:5, 82:7, 83:9, 86:4, 86:23, 87:1, 94:17, 96:13, 96:16, 97:21, 97:22, 99:23 so-called [1] - 19:20 software [53] - 20:21, 22:17, 23:13, 23:17, 23:20, 23:23, 23:24, 23:25, 24:6, 24:15, 24:25, 25:4, 25:5, 25:7, 25:8, 25:9, 25:14, 25:19, 25:22, 25:25, 26:2, 26:6, 44:8, 44:11, 45:11, 45:20, 45:25, 46:13, 46:18, 46:22, 47:5, 47:6, 47:15, 72:21, 79:5, 79:24, 80:3, 80:4, 80:10, 80:11, 80:14, 80:15, 80:20, 80:22, 81:7, 81:10, 81:14, 81:22 solely [2] - 44:25, 76:6 someone [2] - 28:17, 46:12 sometime [1] - 8:4 sometimes [2] - 6:13, 88:12 somewhat [3] - 5:25, 46:11, 101:17 somewhere [2] - 25:5, 46:14 sonix [1] - 83:12 Sonix [5] - 27:12, 83:3, 83:18, 84:20, 85:6 soon [1] - 16:10 sorry [7] - 37:7, 37:19, 43:10, 51:16, 70:10, 94:12, 95:4 sort [3] - 9:2, 82:13, 97:10 sought [3] - 11:19, 11:21, 15:24 sounds [3] - 92:20, 98:23, 99:2 source [1] - 77:13 SOUTH [2] - 2:4, 2:7 southwest [4] - 91:15, 92:7, 98:21, 98:22 speaking [2] - 10:12, 15:4 spec [8] - 76:15, 76:17, 76:22, 83:18, 84:4, 85:2, 86:7, 86:24 special [8] - 12:7, 12:8, 12:12, 12:20, 14:8, 14:14, 16:2, 16:3 specialized [1] - 45:16 specific [12] - 7:6, 19:16, 24:21, 53:18, 66:8, 74:7, 75:14, 75:18, 83:19, 86:1, 86:3, 86:18 specifically [4] - 44:20, 44:21, 47:14, 47:16 specification [42] - 19:14,	27:21, 32:17, 33:2, 33:13, 33:16, 34:1, 34:9, 44:16, 45:9, 47:4, 48:11, 48:14, 51:5, 51:6, 51:12, 51:24, 52:19, 53:6, 53:8, 53:16, 55:2, 58:13, 58:23, 61:8, 64:4, 67:6, 68:3, 68:19, 69:7, 74:16, 74:20, 75:25, 76:10, 76:11, 78:23, 79:3, 85:17, 88:18, 95:10, 96:20, 96:23 specification's [2] - 56:18, 76:20 specifics [1] - 8:18 specifics [1] - 90:22 specify [6] - 56:15, 68:8, 68:25, 90:18, 91:22, 94:1 specifying [1] - 90:16 spend [1] - 93:21 spent [1] - 34:2 spirit [1] - 19:12 splitters [1] - 95:5 splitting [1] - 3:17 square [4] - 65:19, 68:25, 69:2, 69:6 Staley [1] - 75:8 stamp [1] - 62:8 stand [6] - 7:22, 13:4, 49:4, 49:20, 57:17, 74:14 standard [2] - 83:25, 96:21 standards [1] - 82:21 standing [2] - 7:4, 17:24 stands [1] - 57:22 start [11] - 3:24, 7:3, 30:25, 31:18, 36:12, 39:14, 52:10, 62:4, 67:10, 81:12, 94:21 started [3] - 61:11, 62:12, 87:16 starter [1] - 65:6 starting [3] - 40:21, 48:13, 72:19 starts [4] - 32:8, 67:15, 68:4, 68:22 state [3] - 3:8, 18:17, 48:13 statement [4] - 41:3, 73:15, 89:1, 89:4 statements [1] - 75:5 states [3] - 24:20, 33:18, 79:3 STATES [2] - 1:1, 102:14 stating [2] - 20:19, 41:9 stay [2] - 41:5, 46:6 STENOGRAPHICALLY [1] - 102:10 step [4] - 8:11, 29:9, 82:15, 82:17 Stephanie [1] - 5:1 steps [2] - 79:13, 79:17 still [10] - 14:18, 37:16, 53:1, 57:17, 57:22, 61:17, 71:2,
---	--	---	---

71:12, 85:16, 95:21 stipulation [1] - 13:10 STOCKTON [1] - 2:18 stored [1] - 80:11 straight [2] - 48:8, 48:9 STRAWN [1] - 2:10 Strawn [1] - 4:5 strayed [1] - 100:11 Street [3] - 51:17, 83:25, 96:25 STREET [2] - 1:24, 2:7 strength [4] - 29:5, 48:17, 48:21, 50:19 strictly [1] - 10:12 strike [1] - 42:20 strongly [3] - 8:7, 8:13, 8:14 studied [1] - 6:25 subcarrier [1] - 68:9 subject [5] - 9:13, 10:15, 13:22, 17:2, 18:9 subjectivity [1] - 97:10 submission [1] - 101:18 submit [2] - 87:3, 100:22 subsequent [1] - 11:15 subsequently [1] - 11:3 substantially [2] - 84:23, 84:25 substitutes [1] - 28:25 sue [1] - 9:10 sufficient [6] - 20:17, 20:22, 51:23, 71:2, 83:15, 84:15 sufficiently [4] - 50:8, 51:3, 51:6, 84:13 suggest [4] - 22:16, 26:18, 36:1, 36:12 suggested [1] - 88:9 suggesting [1] - 89:19 suggests [2] - 23:16, 80:4 SUITE [2] - 2:8, 2:19 summarize [1] - 67:18 summary [1] - 18:15 supply [1] - 26:4 support [3] - 20:22, 23:12, 24:5 supported [1] - 76:1 supporting [1] - 72:24 supports [1] - 21:3 Supreme [5] - 82:18, 82:20, 82:21, 83:23, 100:20 surprise [1] - 27:2 surprised [2] - 76:8, 76:9 surprises [1] - 47:9 surprising [1] - 73:13 survive [1] - 9:12 suspect [5] - 20:4, 20:9, 26:20, 81:17, 81:20 suspenders [1] - 62:10 switch [1] - 31:1 symbol [18] - 27:23, 49:10,	50:2, 64:4, 64:6, 66:7, 66:9, 66:12, 66:20, 69:15, 69:16, 69:21, 70:11, 70:18, 88:4, 89:6, 92:4 symbols [10] - 41:23, 41:24, 42:3, 42:10, 42:12, 64:24, 66:16, 68:21, 70:6 synced [1] - 21:25 system [12] - 20:7, 28:17, 28:20, 33:6, 43:23, 54:18, 67:3, 69:9, 69:19, 78:3, 85:8, 86:6 T table [1] - 71:13 talks [5] - 33:17, 44:3, 47:4, 49:9, 58:3 tangible [1] - 26:5 taught [1] - 40:11 tautological [1] - 39:4 tech [2] - 58:17, 62:17 Tech [3] - 83:3, 83:18, 84:20 technical [3] - 55:19, 67:22, 75:19 Technologies [1] - 27:12 technology [1] - 64:5 tee [1] - 10:16 television [1] - 62:20 temperature [4] - 29:3, 63:4, 63:8, 86:17 ten [4] - 9:17, 59:19, 59:20, 59:23 ten-minute [1] - 59:23 tend [1] - 41:6 tension [1] - 47:10 tentative [63] - 5:17, 6:1, 6:13, 7:9, 8:19, 19:11, 20:13, 20:14, 21:6, 22:4, 22:6, 22:24, 23:1, 24:14, 24:19, 25:4, 25:12, 25:13, 26:1, 26:16, 27:15, 27:24, 28:11, 28:15, 29:7, 33:14, 34:5, 36:2, 39:15, 39:25, 40:21, 44:1, 44:2, 44:10, 45:25, 48:4, 48:8, 48:10, 48:12, 49:24, 50:3, 50:5, 50:17, 51:2, 52:21, 55:9, 57:1, 57:10, 59:3, 59:6, 60:19, 60:20, 78:25, 79:23, 81:6, 82:4, 84:7, 84:12, 87:3, 87:5, 87:15, 95:16 tentative's [2] - 22:3, 42:1 tentatives [2] - 5:24, 19:10 term [41] - 19:10, 19:11, 20:7, 31:7, 39:16, 39:18, 40:6, 40:17, 42:20, 48:6, 52:10, 55:13, 55:22, 56:5, 56:7, 61:23, 73:9, 73:11, 73:13, 73:25, 74:7, 75:6,	75:19, 76:13, 83:19, 84:18, 84:22, 84:25, 85:4, 85:6, 85:12, 85:14, 85:15, 85:16, 87:5, 87:13, 88:1, 95:17, 97:19, 99:3 termed [2] - 96:22, 96:24 terminated [1] - 45:23 terminates [6] - 22:8, 25:1, 44:5, 46:9, 47:20, 95:12 termination [16] - 20:7, 22:11, 22:22, 23:14, 24:4, 24:7, 24:10, 25:20, 25:24, 43:23, 45:1, 46:23, 76:14, 77:17, 78:3, 82:1 terms [22] - 3:18, 3:21, 4:10, 7:6, 8:18, 19:8, 19:13, 19:18, 19:25, 20:5, 20:6, 38:10, 50:22, 55:18, 56:1, 64:18, 64:20, 72:19, 84:18, 89:10, 90:6, 92:3 test [3] - 21:11, 96:25 testimony [3] - 82:13, 86:25, 100:7 textbooks [1] - 65:2 THAT [1] - 102:9 THE [204] - 2:3, 2:10, 3:3, 3:5, 3:15, 3:19, 3:22, 4:2, 4:7, 4:12, 4:14, 4:19, 4:22, 5:2, 5:5, 5:9, 5:12, 5:23, 7:7, 7:11, 7:13, 7:16, 7:19, 8:5, 8:20, 10:1, 10:3, 10:5, 10:9, 10:18, 10:21, 11:5, 11:7, 11:11, 11:17, 11:21, 11:24, 12:13, 12:15, 12:18, 12:22, 12:24, 13:2, 13:12, 13:22, 13:25, 14:13, 14:21, 15:4, 15:7, 15:10, 15:17, 15:24, 16:10, 16:22, 17:4, 17:11, 17:13, 18:6, 18:21, 18:23, 19:3, 19:19, 20:1, 21:5, 21:10, 21:15, 21:18, 21:23, 22:23, 23:7, 24:12, 25:3, 25:11, 26:9, 26:14, 26:22, 28:7, 29:11, 29:17, 29:21, 30:2, 30:5, 30:7, 30:10, 30:16, 30:19, 30:24, 31:5, 32:22, 35:24, 36:7, 36:23, 37:11, 37:21, 38:23, 39:1, 39:12, 41:15, 41:25, 42:8, 42:12, 42:22, 42:25, 43:3, 43:6, 43:9, 43:15, 43:17, 43:24, 46:3, 46:16, 47:24, 49:2, 49:5, 49:11, 49:16, 49:18, 49:22, 51:16, 52:3, 52:5, 54:7, 56:21, 56:23, 59:6, 59:15, 59:20, 59:25, 60:1, 60:3, 60:9, 61:9, 61:24, 62:3, 62:8, 65:11, 67:13, 67:16, 68:6, 68:23, 69:20, 70:8, 70:12,	70:16, 70:19, 70:23, 71:7, 71:19, 71:24, 72:11, 72:17, 79:22, 80:25, 81:5, 82:5, 82:9, 83:25, 87:6, 87:21, 87:24, 89:11, 89:13, 89:22, 90:2, 90:5, 90:12, 90:23, 91:1, 91:7, 91:15, 91:17, 91:21, 92:8, 92:11, 92:20, 93:3, 93:15, 93:20, 94:4, 94:6, 94:14, 94:19, 94:24, 95:3, 96:14, 98:3, 98:19, 99:2, 99:13, 99:17, 99:21, 100:23, 101:1, 101:4, 101:7, 101:12, 102:6, 102:9, 102:10, 102:11, 102:13, 102:14 themselves [3] - 34:13, 39:9, 87:18 therefore [1] - 99:4 thereof [1] - 88:5 they've [1] - 16:15 thinking [2] - 60:8, 93:9 third [15] - 9:7, 9:17, 11:2, 11:15, 11:21, 12:3, 12:10, 14:9, 14:16, 15:25, 16:16, 16:25, 18:19, 58:21, 86:15 THIS [1] - 102:12 thoroughly [1] - 101:23 thread [3] - 51:11, 84:4, 85:22 three [6] - 11:1, 32:14, 32:16, 32:20, 94:23, 95:23 timeline [1] - 12:2 today [20] - 4:8, 8:23, 9:23, 14:2, 14:3, 14:10, 15:5, 18:2, 18:3, 18:8, 18:11, 18:17, 23:6, 66:17, 70:5, 74:13, 77:24, 85:20, 88:8, 101:8 today's [1] - 101:16 together [1] - 57:23 toggle [1] - 31:1 TOMASELLI [1] - 2:3 took [5] - 39:19, 39:23, 73:3, 82:22, 84:11 toot [4] - 66:1, 66:2, 66:5, 66:6 top [4] - 32:12, 57:24, 65:1, 91:18 tops [1] - 59:19 tortured [1] - 46:11 touch [1] - 63:5 towards [1] - 39:20 TOWNSEND [1] - 2:18 track [1] - 38:6 TRANSCRIPT [3] - 1:16, 102:10, 102:12 transcript [1] - 100:1 transient [1] - 80:14 transmission [6] - 67:19,
---	---	---	---

67:20, 67:25, 90:17, 91:8 transmit [2] - 5:16, 65:25 transmitted [3] - 41:18, 41:24, 42:13 transmitter [8] - 91:2, 91:4, 91:8, 91:9, 91:11, 98:20, 98:25 transmitting [1] - 89:5 trial [1] - 56:3 tried [1] - 100:11 tries [3] - 40:21, 41:2, 41:16 trouble [1] - 5:10 true [7] - 34:7, 50:5, 53:24, 69:15, 73:15, 78:13, 81:5 TRUE [1] - 102:9 truly [2] - 6:1, 42:15 trust [1] - 70:24 try [8] - 6:23, 20:3, 47:21, 52:7, 52:12, 101:14, 101:19, 101:24 trying [5] - 8:2, 20:10, 37:1, 87:11, 88:13 TRYON [1] - 2:7 TUESDAY [2] - 1:19, 3:1 turn [12] - 13:6, 19:24, 39:19, 39:23, 52:9, 52:15, 62:2, 62:16, 63:19, 66:14, 68:4, 88:17 Turton [1] - 4:25 TURTON [1] - 2:24 tutorial [2] - 58:17, 62:17 tutorials [1] - 6:6 two [56] - 6:24, 19:18, 20:5, 20:6, 20:19, 21:3, 22:4, 31:7, 31:17, 32:2, 32:14, 32:15, 32:16, 32:21, 33:18, 37:13, 37:18, 37:19, 38:1, 38:9, 39:6, 44:14, 49:9, 50:1, 50:10, 50:22, 54:5, 54:13, 55:4, 56:18, 57:3, 57:11, 57:15, 57:17, 58:13, 59:7, 60:11, 61:1, 61:6, 63:21, 65:16, 67:19, 72:4, 72:18, 73:5, 74:2, 74:4, 74:14, 76:22, 76:23, 84:9, 84:20, 86:12, 95:17, 98:13 type [12] - 9:2, 33:10, 41:20, 45:10, 53:17, 53:18, 57:3, 65:21, 67:20, 69:3, 75:16 types [4] - 27:11, 62:20, 63:1, 82:19 typical [1] - 78:7 typically [1] - 24:22 typo [1] - 6:2	under [8] - 25:4, 38:8, 53:12, 55:22, 70:5, 75:23, 97:20, 101:18 undermine [4] - 38:9, 57:15, 80:1, 80:5 undermined [1] - 37:2 understood [7] - 46:2, 69:4, 73:12, 79:23, 80:25, 81:9, 88:4 unit [2] - 26:4, 58:21 UNITED [2] - 1:1, 102:14 unless [8] - 18:4, 19:16, 29:9, 43:1, 80:14, 87:19, 89:9, 94:16 untethered [1] - 75:6 up [19] - 3:17, 8:3, 8:11, 10:17, 23:8, 29:13, 30:12, 44:16, 47:1, 57:23, 60:4, 63:24, 77:7, 81:12, 83:5, 84:16, 90:23, 99:24 upgrade [1] - 53:10 urge [1] - 78:24 urging [1] - 18:12 useful [1] - 69:9 user [1] - 85:10 uses [2] - 64:20, 76:13	wave [6] - 65:2, 65:9, 69:1, 69:2, 69:3, 69:6 waves [1] - 65:19 ways [2] - 52:18, 100:14 website [1] - 29:13 week [4] - 8:23, 12:25, 14:11, 65:7 weeks [1] - 11:1 weight [1] - 75:23 welcome [4] - 5:2, 19:20, 21:18 well-accepted [1] - 81:4 well-understood [1] - 73:12 WEST [1] - 1:24 whatsoever [2] - 9:18, 9:19 wherein [4] - 25:19, 36:3, 58:4, 90:17 whole [4] - 33:22, 35:15, 53:13, 71:7 willfulness [2] - 9:18, 9:19 willing [2] - 41:19, 81:24 wings [1] - 18:10 WINSTON [1] - 2:10 Winston [1] - 4:5 Wireless [1] - 75:2 wish [4] - 19:4, 94:12, 99:18, 101:4 wishes [3] - 19:1, 19:21, 30:19 WITH [1] - 102:13 withdrawing [1] - 98:12 won [1] - 7:17 word [7] - 56:11, 62:25, 67:22, 71:5, 73:18, 85:12, 85:13 words [12] - 17:15, 23:15, 55:20, 56:5, 57:20, 60:7, 60:20, 63:21, 76:25, 83:1, 85:13, 100:13 world [4] - 65:21, 65:25, 66:4, 66:11 worth [2] - 82:15, 82:17 written [2] - 27:10, 49:3 wrote [1] - 76:7
V		
vague [1] - 97:17 valid [1] - 81:21 value [1] - 28:11 varies [1] - 87:2 variety [2] - 17:8, 20:21 various [4] - 45:6, 51:5, 62:20, 75:3 vary [1] - 87:2 vendors [1] - 45:18 verbiage [3] - 95:18, 96:1, 96:3 versus [3] - 3:6, 7:19, 75:8 victory [1] - 99:15 view [6] - 8:5, 8:13, 10:13, 10:15, 38:8, 77:15 Vince [3] - 3:9, 19:6, 52:6 VINCENT [1] - 2:6 visually [2] - 85:7, 85:12 volume [2] - 68:16, 68:17 Vs [1] - 1:8		
W		
WACKER [1] - 2:4 wait [1] - 52:1 walk [3] - 21:21, 31:19, 72:25 wants [4] - 46:21, 56:25, 91:5, 98:24 WARDWELL [2] - 2:13, 2:15 waste [1] - 70:22 water [3] - 28:17, 28:20, 29:3		
U		
U.S [3] - 1:23, 75:9, 78:1 ultimately [4] - 12:11, 39:22, 40:8, 41:7		
Y		
yellow [1] - 32:11 yesterday [2] - 5:17, 9:1 YORK [1] - 2:11		
Z		
zeros [3] - 65:18, 65:22, 65:23		