

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

COMCAST CABLE COMMUNICATIONS, LLC,

Petitioner,

v.

ENTROPIC COMMUNICATIONS LLC,

Patent Owner.

---

Case IPR2024-00438

Patent 11,399,206

VIDEOCONFERENCE DEPOSITION OF

DAVID B. LETT

TAKEN ON MAY 20, 2025

REPORTED BY:

PATRICIA L. HUBBARD, CSR #3400

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

COMCAST CABLE COMMUNICATIONS, LLC,

Petitioner,

v.

ENTROPIC COMMUNICATIONS LLC,

Patent Owner.

Case IPR2024-00432  
Patent 9,210,362

REMOTE VIDEOCONFERENCE DEPOSITION  
OF DAVID B. LETT, who is at the  
time of this proceeding located in  
Duluth, Georgia, taken on behalf  
of the Patent Owner, commencing at  
8:57 A.M. (Pacific Time) on  
May 20, 2025, before PATRICIA L.  
HUBBARD, CSR #3400, a Certified  
Shorthand Reporter in and for the  
State of California, pursuant to  
Notice.

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

COMCAST CABLE COMMUNICATIONS, LLC,

Petitioner,

v.

ENTROPIC COMMUNICATIONS LLC,

Patent Owner.

Case IPR2024-00435  
Patent 11,381,866

APPEARANCES OF COUNSEL:

For the Petitioner:

BANNER WITCOFF

BY: MICHAEL S. CUVIELLO, ESQ.

FREDERIC MEEKER, ESQ.

1100 13th Street NW

Suite 1200

Washington, DC 20005

202.824.3000

mcuviello@bannerwitcoff.com

(Present via videoconference)

For the Patent Owner:

LOWENSTEIN AND WEATHERWAX

BY: PARHAM HENDIFAR, ESQ.

1016 Pico Boulevard

Santa Monica, California 90405

310.307.4514

hendifar@lowensteinweatherwax.com

(Present via videoconference)

## I N D E X

## WITNESS PAGE

DAVID B. LETT

(By Mr. Hendifar)

8

## EXHIBITS:

(NONE)

## INFORMATION REQUESTED:

(NONE)

## WITNESS INSTRUCTED NOT TO ANSWER:

(NONE)

MR. HENDIFAR: Parham Hendifar for  
Patent Owner Entropic.

MR. CUVIELLO: And Michael CuvIELLO for  
Petitioner Comcast.

And I have Fred Meeker here with me, as  
well.

MR. MEEKER: Fred Meeker with the Law  
Firm of Banner and Witcoff representing Comcast  
Communications, LLC.

THE REPORTER: Okay, Counsel. You're  
good to go.

DAVID B. LETT,  
called as a witness, having been  
sworn, was examined and testified  
as follows:

## EXAMINATION

BY MR. HENDIFAR:

Q. Okay. Good morning, Mr. Lett.

Thank you for your time.

A. Good morning.

Q. You understand that today's deposition  
is a combined deposition for three matters  
IPR2024-00432 00435 and 00438, correct?

MAY 20, 2025  
7:57 A.M. (PACIFIC TIME)  
\* \* \*

THE REPORTER: Good morning. My name is  
Patricia Hubbard. I am California CSR Number 3400.

Mr. Lett, can you tell me the city and  
state you are currently located in.

THE WITNESS: Duluth, Georgia. Duluth,  
D-u-l-u-t-h.

THE REPORTER: Okay. I am not at the  
same location as the witness.

Does anyone have any objection to my  
administering the oath to the witness remotely?

MR. HENDIFAR: No objections from me.

MR. CUVIELLO: No objections.

THE REPORTER: Okay. Would you please  
raise your right hand, sir.

Do you solemnly swear that the testimony  
you are about to give in this deposition will be the  
truth, the whole truth, and nothing but the truth  
under penalty of perjury?

THE WITNESS: I do.

THE REPORTER: Counsel, would you make  
your appearances for the record, please.

A. Yes. I understand.

Q. Okay. For simplicity, I will use the  
exhibit numbers in the first IPR2024-00432 unless I  
note otherwise.

If at any point you have any questions  
or concerns or confusions let me know, and I'll  
clarify the exhibit numbers.

Is that fair?

A. Yes.

Q. Okay. And you were already deposed once  
in connection with these three IPRs, correct?

A. Yes.

Q. And do you recall the procedure for  
these IPRs we discussed in the prior deposition?

A. I think so, yes.

Q. Do you have any questions about the  
deposition process for today's deposition?

A. No.

Q. Okay. And do you understand that during  
the breaks you are not allowed to speak with  
counsel, correct?

A. I think --

Q. Withdraw that.

You're not -- you understand that during  
the breaks you're not allowed to speak with counsel

1 regarding the substance of your testimony, correct?

2 A. Yes. I understand.

3 Q. Okay. If I ask you a question and you  
4 have any questions, concerns or ambiguities, please  
5 let me know. But if you do answer the question, I  
6 will assume that you have understood my question.

7 Is that fair?

8 A. Yes.

9 Q. And what did you do to prepare for  
10 today's deposition?

11 A. I reviewed the three reply declarations  
12 that I had submitted, as well as some of the other  
13 materials that were used in the first deposition --  
14 first declaration and supporting materials.

15 Q. And in connection with preparing for  
16 today's deposition did you review any document that  
17 is not cited in your declarations in this matter?

18 A. No, not that I'm aware of.

19 Q. And how many hours did you approximately  
20 spend preparing for today's deposition?

21 A. I'm thinking maybe around -- let's call  
22 it eight hours. That's just ballpark. I don't -- I  
23 don't really know exactly.

24 Q. And did you meet anyone in connection  
25 with preparing for today's deposition?

1 A. Yes. I had some -- some preparation  
2 sessions with Michael and other attorneys.

3 Q. Okay. Anybody else other than  
4 attorneys?

5 A. No.

6 Q. And how many hours did you approximately  
7 meet with others in connection with preparing for  
8 today's deposition?

9 A. I'm thinking maybe -- maybe three hours  
10 of the eight.

11 Q. And you submitted a reply declaration in  
12 each of the three IPRs that are the subject of  
13 today's deposition, correct?

14 A. That's right.

15 Q. And I believe in each of the IPRs those  
16 reply declarations are filed as Exhibit 1078.

17 So, for -- for everyone's convenience  
18 when I refer to a reply declaration I mean the reply  
19 declarations filed as Exhibit 1078 in each of the  
20 three matters.

21 Is that fair?

22 A. That's fair with me.

23 I wasn't sure if that question was for  
24 me or for counsel. So, sorry for my delay.

25 Q. No worries.

1 And do you have any documents -- do you  
2 have any hard copy documents available to you in the  
3 room where you are currently located?

4 A. Yes.

5 Q. And will you please let me know what  
6 hard copy documents you have?

7 A. Yes. I have all three Exhibits 1078  
8 that you just referred to. I have Exhibit 1013 --

9 You want me to tell you the titles or  
10 just the exhibit numbers?

11 Q. Exhibit number is fine.

12 A. Okay. I have Exhibit -- actually all  
13 three exhibits, 1001, which are the reference -- the  
14 patents and AMs that we're talking about, and I also  
15 have printouts of a subsection of my first  
16 declaration that I have both the claim listing  
17 appendix and the exhibits list. I have printouts of  
18 all three of those of each of those two subsections  
19 of my first declarations.

20 Q. And are all the documents that you just  
21 described clean copies or do they have writings on  
22 them?

23 A. They do not have writings.

24 Q. Other than the documents you mentioned  
25 from these IPRs, do you have any other documents,

1 such as an outline, notes or something similar?

2 A. No. I don't have any other written  
3 documents or printed documents in front of me or  
4 notes or anything.

5 Q. Now, same question for electronic  
6 documents.

7 Do you also have access to electronic  
8 documents on your computer?

9 A. I do. I have -- would you like to know  
10 what they are?

11 Q. Let me -- I don't want to waste your  
12 time.

13 Other than matter -- other than  
14 documents that are found in these IPRs, do you have  
15 access to any other documents on your computer for  
16 today's deposition?

17 A. The only folders -- the only folder I  
18 have open other than Zoom is the -- the thumb drive  
19 that I was provided with all the materials  
20 considered that has all the exhibit numbers, and  
21 within that thumb drive are three folders. And on  
22 those folders, they also have some other -- they  
23 have all the exhibit numbers for each folder.

24 Right.

25 But then each one of the folders also

1 has documents numbered 1 through something, like  
2 maybe 30 in one example. And it seems to be  
3 prosecution history documents and filings and stuff  
4 like that.

5 But I haven't looked at any of those,  
6 honestly. I've only looked at the exhibit numbers.

7 MR. CUVIELLO: And, Counsel, what was  
8 provided is simply what's in the record in each  
9 case.

10 MR. HENDIFAR: Thank you so much.

11 MR. CUVIELLO: Thank you.

12 MR. HENDIFAR: I don't mean to waste his  
13 time. That's why I was --

14 MR. CUVIELLO: I understand.

15 MR. HENDIFAR: I appreciate that.

16 BY MR. HENDIFAR:

17 Q. So, Mr. Lett, how many hours did you  
18 approximately spend in connection with preparing  
19 your reply declarations in these three matters?

20 A. I will really don't remember.

21 Would you like me to kind of guess as my  
22 best recollection?

23 Q. I would like you to estimate, not --  
24 obviously I don't want you to just make a blind  
25 guess. But if you can estimate, I would appreciate

1 that.

2 A. Well, I probably testified in my  
3 previous deposition a number in this regard. And I  
4 haven't looked back at those estimates, which --

5 Actually you're asking me about the  
6 second declaration. Excuse me.

7 So-s let me just -- just say maybe  
8 ballpark let's call it four hours for each of them.

9 Q. And did you draft your reply  
10 declarations in these matters?

11 A. I -- I did not the first draft. The  
12 first draft was supplied by the attorneys to me.

13 And I edited and commented in a  
14 collaborative process to produce the final document  
15 that is my opinion that I signed.

16 Q. Prior to receiving your draft  
17 declarations did you conduct any analysis of what  
18 arguments you would like to be in your draft  
19 declaration?

20 MR. CUVIELLO: Objection. Form.

21 THE WITNESS: I'm sorry. I didn't quite  
22 understand that last part.

23 Can you repeat that part or restate it  
24 for me?

25 ///

1 BY MR. HENDIFAR:

2 Q. Of course.

3 You testified that approximately you  
4 spent about four hours in connection with each of  
5 the three reply declarations.

6 Correct?

7 A. In preparing them was the question. So,  
8 yes, I think that's correct.

9 Q. And you also testified that you received  
10 a draft of your reply declaration which you edited.

11 Is that also correct?

12 A. Yes.

13 Q. My question is prior to receiving the  
14 drafts of your reply declarations which you edited,  
15 did you conduct any analysis to create maybe an  
16 outline of the arguments that would be in your reply  
17 declaration?

18 MR. CUVIELLO: Objection. Form.

19 By MR. HENDIFAR:

20 Q. I withdraw the question.

21 Here is the question for -- I withdraw  
22 that question.

23 Did you determine what arguments would  
24 be included in your reply declarations?

25 MR. CUVIELLO: Objection. Form.

1 THE WITNESS: I made some comments that  
2 I shared with my attorneys that were used and  
3 incorporated in the draft of the second reply  
4 declarations.

5 BY MR. HENDIFAR:

6 Q. And were those comments made before or  
7 after you received the first draft of your  
8 declaration?

9 MR. CUVIELLO: Objection. Form and  
10 scope.

11 THE WITNESS: I provided some comments  
12 before I received the second reply declaration first  
13 draft.

14 BY MR. HENDIFAR:

15 Q. And did you make the determination as to  
16 what specific issues would be addressed in your  
17 declarations?

18 MR. CUVIELLO: Objection. Form, scope.

19 THE WITNESS: I provided some input that  
20 I think resulted in the points that were put in the  
21 supplied -- reply declaration.

22 BY MR. HENDIFAR:

23 Q. Does your reply declaration contain all  
24 the points and issues that you intended to address?

25 MR. CUVIELLO: Objection. Form, scope.

1 THE WITNESS: I don't remember.

2 BY MR. HENDIFAR:

3 Q. What is the plain and ordinary meaning  
4 of the word "select" in the context of this  
5 technology?

6 MR. CUVIELLO: Objection. Form.

7 BY MR. HENDIFAR:

8 Q. Actually I withdraw the question. I'll  
9 ask a different question.

10 In the -- in the field of this  
11 technology are the words "selecting" and  
12 "demultiplexing" synonymous?

13 MR. CUVIELLO: Objection. Form.

14 THE WITNESS: Perhaps you could give me  
15 a more specific question perhaps related to a claim  
16 element or citation so I can comment. Because it's  
17 a very, let's say, broad question.

18 BY MR. HENDIFAR:

19 Q. Are you unable to answer the question?

20 Let me ask you this, do you know if in  
21 this field the words "selecting" and  
22 "demultiplexing" are synonymous?

23 MR. CUVIELLO: Objection. Form.

24 THE WITNESS: Can you please ask me a  
25 question about specific citations so I can

1 understand the question?

2 BY MR. HENDIFAR:

3 Q. Which part of my question you don't  
4 understand?

5 A. Perhaps the "in this field."

6 Because a field is a very wide scope.  
7 And I think that I need to have a more narrow  
8 question related to exactly what we're talking about  
9 to answer your question that I don't understand how  
10 to answer otherwise.

11 Q. Are you an expert in the field of  
12 digital signal processing and radio frequency tuning  
13 systems?

14 A. Yes.

15 Q. In the field of digital signal  
16 processing and radio frequency tuning systems are  
17 the words "selecting" and "demultiplexing"  
18 synonymous?

19 MR. CUVIELLO: Objection. Form.

20 THE WITNESS: Again I need a more  
21 specific scope so I can understand your question.

22 BY MR. HENDIFAR:

23 Q. Which part of my question you don't  
24 understand?

25 A. Are you asking me about the -- the

1 patents or are you asking me about Zhang?

2 Are you asking about my second  
3 declaration?

4 Perhaps you could point me to what  
5 you're asking so I can understand the context of  
6 what you're asking.

7 Q. Fair. In the field of digital signal  
8 processing and radio frequency, have you ever heard  
9 the word "selecting"?

10 A. Yes. But I've also heard the word  
11 "selecting" for selecting items from the grocery  
12 store.

13 Q. Very good.

14 Have you also heard the word  
15 "demultiplexing"?

16 A. Yes.

17 Q. Now, in the following questions going  
18 forward when I say "this field," I will be referring  
19 to the field of digital signal processing and radio  
20 frequency tuning systems.

21 Do you understand that?

22 A. Yes.

23 Q. Okay. In this field are the phrases  
24 "selecting a channel" and "demultiplexing channels"  
25 synonymous?

1 A. I'm sorry. In the context of the  
2 patents we're talking about I need a more narrow  
3 question.

4 Q. Mr. Lett, I get to ask the questions I  
5 want to ask.

6 If you don't know the answer, you can  
7 say "I don't know the answer." If you know the  
8 answer, you're required to answer.

9 But you can't dictate to me what  
10 questions I can ask.

11 So, the question that is pending is, in  
12 the field of digital signal processing and radio  
13 frequency tuning systems are the phrases "selecting  
14 channels" and "demultiplexing channels" synonymous?

15 Do you know the answer to that question?

16 A. So, in the -- in the Zhang patent that  
17 we used as -- we cite one of the references,  
18 Exhibit 1013, it uses demultiplexing digital  
19 channel, DEMUX --

20 Q. I'm not asking about --

21 A. -- for a selector.

22 Q. Mr. Lett, I'm not asking about Zhang.  
23 Just answer my question.

24 So I'll repeat the question so you're  
25 clear what the question is.

1 I'm not asking you what Zhang says. I'm  
2 not asking you what the patent says. I'm asking you  
3 as an expert in this field, if those words have the  
4 same meaning. So I'll repeat the question.

5 Mr. Lett, as an expert in this field of  
6 digital signal processing and radio frequency tuning  
7 systems, do you have an opinion as to whether the  
8 phrases "selecting channels" and "demultiplexing  
9 channels" are synonymous?

10 MR. CUVIELLO: Objection. Form and  
11 scope.

12 THE WITNESS: So, the one example that I  
13 know of very intimately is that Zhang uses the words  
14 "demultiplexing" for selecting.

15 BY MR. HENDIFAR:

16 Q. That wasn't my question.

17 A. And that's in the digital channel  
18 demultiplexer 230, and then he shows the inside of  
19 what's 230, which is a channel selector.

20 Q. So, Mr. Lett, let me be clear. So,  
21 I'm -- we went through the deposition last time, and  
22 I'm familiar with how you would be trained. But I  
23 will -- if you don't answer my questions, I will  
24 call the Board.

25 I'm not asking about what Zhang does. I

1 am -- I am very familiar that you're instructed to  
2 whatever question go read your declaration from  
3 Zhang. I'm familiar with that instruction.

4 But I am not intending to just allow  
5 this deposition to go the way --

6 MR. CUVIELLO: And, Counsel, if I can  
7 just interrupt, if you want to call the Board, we're  
8 comfortable with that. Because your line of  
9 questions are out of scope. This deposition is  
10 about the replies that he filed --

11 MR. HENDIFAR: You don't get to give  
12 speaking objections here. If you have an objection,  
13 you just say "objection, scope" and that's the  
14 extent of it.

15 And actually you cannot instruct the  
16 witness not to answer a question based on scope.

17 MR. CUVIELLO: I have not instructed him  
18 not to answer the question.

19 MR. HENDIFAR: Very good. But I can ask  
20 the questions I need to ask and he's required to  
21 answer.

22 Okay?

23 BY MR. HENDIFAR:

24 Q. So, Mr. Lett, as I'm explaining, I am  
25 familiar with the process. And I don't intend to

1 allow it to go the way you're playing it.

2 So, I'll ask the question, and I expect  
3 an answer to the question.

4 Okay?

5 My question is not about what Zhang  
6 does. My question is not about what terminologies  
7 Zhang uses. My question is very simple.

8 As an expert in this field, Mr. Lett, in  
9 the field of digital signal processing and radio  
10 frequency tuning systems, do you have an opinion as  
11 to whether the phrases "selecting channels" and  
12 "demultiplexing channels" are synonymous?

13 Do you have an opinion as to that  
14 question?

15 MR. CUVIELLO: Objection. Form and  
16 scope.

17 THE WITNESS: I'm trying to answer your  
18 question.

19 BY MR. HENDIFAR:

20 Q. Do you have an opinion?

21 A. My opinion is that at least one example  
22 that I know of, and I looked at it from a -- from a  
23 viewpoint of a POSITA that would have access to  
24 documents in this field such as Zhang, I'm giving  
25 you one example where Zhang says one word and means

1 the other.

2 Because if you look at the inside of  
3 what he's -- the details of what he's describing,  
4 it's perhaps different than one would expect.

5 BY MR. HENDIFAR:

6 Q. So is it your opinion that Zhang's use  
7 of the word "demultiplexing" is different than the  
8 ordinary usage of that word in this field?

9 MR. CUVIELLO: Objection. Form.

10 THE WITNESS: No. What I'm saying is  
11 that at least one example of Zhang uses the word  
12 "DEMUX," "demultiplexer" for block 230. And  
13 block 230, if you look at it, is a channel selector,  
14 because it has mixers and numerically controlled  
15 oscillators and low-pass filters that select  
16 channels.

17 So in this case what he calls a  
18 demultiplexer is a selector.

19 BY MR. HENDIFAR:

20 Q. Okay. Is it your opinion that Zhang's,  
21 in your view, use of the phrase "demultiplexing" to  
22 mean selecting, is it your opinion that that usage  
23 of the word "demultiplexing" is consistent with the  
24 plain meaning of "demultiplexing" in the field of  
25 digital signal processing?

MR. CUVIELLO: Objection. Form.

THE WITNESS: So, Zhang also uses the word "demultiplexing" in another context. He's talking about time division demultiplexing.

And in that case it's basically different than what we described earlier -- or he called as a demultiplexer, which was actually a selector.

In the case of time division demultiplexing, he's describing the serialization of data with one selected channel data followed by another channel selected data output to demodulators.

Q. Does the phrase "demultiplexing" have an understood meaning by a POSITA in the field of digital signal processing and radio frequency tuning systems?

A. So, I think that it's a little loose in terms of what exactly "demultiplexing" means in the field.

And so one would as a POSITA maybe see the word "demultiplexing" and see if they understood what it really is.

Right?

In this case, you know, that I described

"DEMUX" so that he's talking about basically picking out certain of those channels as the output C1 through CN from that block.

And then clearly if you look at the next diagram, which is Figure 3, that's exactly what he's doing.

Q. So my question was why is it that Zhang's use of the word "demultiplexing" to mean selecting in your view, quote, not one -- not what one would expect, end quote?

Why is that usage of "demultiplexing" not what one would expect as you mentioned?

MR. CUVIELLO: Objection. Form.

THE WITNESS: So I probably should have said without looking at further detail, we might -- we might not understand what he means by that exactly.

And then -- then he goes on to describe in detail what that block is. And so we totally understand that each path includes a mixer, a filter and an NCO that takes out, let's call it, one channel for each one of those strings. And there's multiple of those, one for each C element and, you know, outputs that channel in its own baseband the output path.

a minute ago with Zhang, he calls it a demult- -- DEMUX, but it's actually channel selecting.

So, I think a POSITA would need to look at the case that we're talking about and -- or he's looking at a particular case to see what is exactly meant by those terms.

Q. And you testified that Zhang's use of "demultiplexer" as -- to mean selector was not, quote, what one would expect, end quote.

Do you recall that?

A. I do, yes.

Q. Okay. And why is that?

A. So, what he shows in his figure -- Figure 2 is the output of the high-speed analog to digital converter coming into the digital channel DEMUX. And then coming out are selected channels C1, C2 . . . CN.

So, I think what he used the terminology for in this case, DEMUX, is he's taking, let's call it, signals on one -- let's call it one signal.

Right?

The one signal in this case is the -- the digitized full frequency spectrum -- right? -- as the input. And the output are selected channels.

So, he might have chosen the word

BY MR. HENDIFAR:

Q. Outside of Zhang have you ever seen in this field the word "demultiplexing channels" to mean selecting channels?

A. I don't remember.

Q. Sitting here now you have no recollection of any other instance outside of Zhang where "demultiplexing channels" meant selecting channels, correct?

MR. CUVIELLO: Objection. Form.

THE WITNESS: Would you mind restating that for me?

BY MR. HENDIFAR:

Q. Sure.

Sitting here now you have no recollection of any other instance that, outside of Zhang, the word "demultiplexing channel" in this field was used to mean selecting channel, correct?

MR. CUVIELLO: Objection. Form.

THE WITNESS: I don't recall. There might have been, but I just -- I don't recall.

I've been focused on these patents and this issue for a while, and so I really haven't thought about that.

///



1 BY MR. HENDIFAR:

2 Q. Is there a device in the field of  
3 digital processing called a demultiplexer?

4 A. I've heard the word "demultiplexer,"  
5 yes. So, I think that you would have to look at the  
6 device to see what it is exactly in a similar manner  
7 to what I just described with the Zhang -- Zhang  
8 patent.

9 Q. So you had heard the phrase  
10 "demultiplexer" prior to your engagement in these  
11 IPRs, correct?

12 A. Yes.

13 Q. And prior to your engagement in these  
14 IPRs did you know what a "demultiplexer" means?

15 A. I think so.

16 MR. CUVIELLO: Objection. Form.

17 BY MR. HENDIFAR:

18 Q. I'm sorry. You both spoke. I could  
19 not --

20 MR. CUVIELLO: Yes. Objection. Form.

21 THE WITNESS: So, when I was in college,  
22 for example, and took my very first digital design  
23 class, I remember they had like a book of logic  
24 parts that you could pick from. Like Texas  
25 Instruments had this very nice yellow book, you

1 probably remember it, that we all loved.

2 No.

3 BY MR. HENDIFAR:

4 Q. I didn't know enough of electronics in  
5 college.

6 A. So anyway, you know, I think there were  
7 devices in there that were called demultiplexers.

8 Q. And so what was the book name? I'm  
9 sorry.

10 A. "TTL Cookbook" from Texas Instruments.

11 Q. Could you spell that?

12 A. T-T-L Cookbook.

13 Q. Cookbook. Okay. So I didn't mishear  
14 you. It's actually called that, "TTL Cookbook."

15 And was that a graduate level book or an  
16 undergrad level book?

17 MR. CUVIELLO: Objection. Scope.

18 THE WITNESS: Well, it's a vendor's  
19 publication of parts that they had for sale, let's  
20 say.

21 BY MR. HENDIFAR:

22 Q. I see. Oh, so it's a -- it's an index  
23 to Texas Instrument's chips or other circuit  
24 elements?

25 A. Yeah. So it's like a book of all --

1 like all the data sheets of all the parts they  
2 offer. I think would be a best way to describe it.

3 Q. Okay.

4 A. But I remember it had demultiplexers in  
5 there.

6 Q. And when you saw a demultiplexer in the  
7 Texas Instruments index --

8 A. Cookbook.

9 Q. Cookbook. Is that a term that is  
10 normally used for that? I just don't know.

11 A. Yes.

12 Q. So, when you saw the demultiplexer  
13 device in the Texas Instruments cookbook, did you  
14 understand what that device does?

15 MR. CUVIELLO: Objection. Scope.

16 THE WITNESS: Yes.

17 BY MR. HENDIFAR:

18 Q. And what did it do?

19 A. It received one signal and split it up  
20 into other signals.

21 Q. Would it -- so would the split-up  
22 signals contain all the frequencies in the input  
23 signal or would it cut out some of them?

24 MR. CUVIELLO: Objection. Form. Scope.

25 THE WITNESS: Yeah. So I'm not talking

1 about an RF device. I'm talking about just digital  
2 logic.

3 So, I'm not sure the context of your  
4 question makes a whole lot of sense to me.

5 BY MR. HENDIFAR:

6 Q. Prior to your engagement in these IPRs  
7 were you familiar with demultiplexer in RF systems?

8 A. I mean I think so. But, again, it's  
9 kind of a concept where to understand exactly what  
10 you're talking about, you need to look at the  
11 details.

12 Q. You testified that in the logic context  
13 the demultiplexer would take an input and then it  
14 would separate out the inputs into distinct parts as  
15 the output.

16 Did I understand you correctly?

17 MR. CUVIELLO: Objection. Form.

18 THE WITNESS: I'm sorry. Can you repeat  
19 that?

20 BY MR. HENDIFAR:

21 Q. Of course.

22 Did I understand you correctly that in  
23 the logical -- logic circuitry context that the  
24 demultiplexer would take an input and then it would  
25 separate out the input into distinct parts?

1 Did I understand you correctly?

2 A. Yes. So, again, it's just that one case  
3 of a digital demultiplexer part that was in the "TTL  
4 Cookbook" that I referred to.

5 And so every time you see the word  
6 "demultiplexer," I think a POSITA would look and see  
7 what exactly is meant by that.

8 Q. But is it your testimony that in its  
9 ordinary usage in this field, a demultiplexer would  
10 not generally be understood as a device that  
11 separates out the input signal?

12 MR. CUVIELLO: Objection. Form.

13 THE WITNESS: It could -- I think  
14 that -- you know, there are so many variations of  
15 what we're talking about here with "demultiplexer."  
16 Right? You know, that term is used a lot.

17 And I think that, again, if we could  
18 focus on more specifically what we're talking about,  
19 an example or -- or a citation or something, I think  
20 I could probably answer the question.

21 Because I'm having trouble understanding  
22 how to answer the question other than what we've  
23 already discussed, which is when you see the word  
24 "demultiplexer," a POSITA would look at the details  
25 to understand what that means.

1 Q. So is your testimony that a POSITA would  
2 generally not know what a demultiplexer in this  
3 field is unless the POSITA looks at the details of  
4 the circuitry?

5 A. I'm sorry. I still didn't understand  
6 what you said.

7 Q. Is it your testimony that a POSITA would  
8 not know what a demultiplexer is unless the POSITA  
9 looks at the details of that circuitry?

10 A. It's hard to say. Because sometimes it  
11 might be clear, and sometimes you might need to look  
12 at the details of the circuitry.

13 So I'm having trouble answering the  
14 question in any other way other than what I've  
15 testified so far.

16 Q. And I'm sorry if I don't quite remember,  
17 do you teach any courses in any institution or are  
18 you in the industry?

19 A. I have taught classes. And I'm  
20 currently not working for a company other than on  
21 cases like this.

22 Did that answer your question?

23 Q. Yes. Thank you so much.

24 And when was the last time you taught a  
25 course?

1 A. So, you have my C.V. Let me just pull  
2 it up, and I can perhaps look at the date and see if  
3 that helps me answer the question.

4 Yeah. So, March 1983 through June 2,  
5 1985 I worked as an assistant professor while  
6 working at night -- I did that at night. I helped  
7 taught evening -- evening school courses while I was  
8 working at Scientific Atlanta.

9 Q. Got it.

10 And what -- did you teach graduate level  
11 courses or undergraduate level courses?

12 A. They were considered undergraduate  
13 courses.

14 Q. And what courses did you teach?

15 A. It's been a long time, so I'm just  
16 reading what my C.V. says.

17 The microprocessor hardware, software  
18 and electronics.

19 There were several courses, and I don't  
20 remember exactly the names of the courses, but those  
21 are the subject matters they included.

22 Q. And if in your classes a student showed  
23 up and asked, "Mr. Lett, what is a demultiplexer,"  
24 how would you explain that?

25 MR. CUVIELLO: Objection. Scope.

1 THE WITNESS: So, I think I would  
2 understand the context of the question based on what  
3 I had been teaching. So I would have understood the  
4 details of the demultiplexer.

5 And so I think kind of like what I said,  
6 a POSITA would need to look into the details of what  
7 is meant by demultiplexer. And given that I would  
8 have been teaching what a demultiplexer is, then I  
9 would have understand -- understood the details of  
10 that, what was meant by demultiplexer.

11 BY MR. HENDIFAR:

12 Q. So is it your testimony that in Zhang,  
13 "selecting" and "demultiplexing" are synonymous?

14 A. I think I answered this question. But  
15 if you'd like, I can try again.

16 Q. It's a "yes" or "no" question.

17 Is it your testimony that in Zhang  
18 "demultiplexing" and "selecting" are synonymous?

19 A. I don't think synonymous is right -- is  
20 correct. So, I think what he does is he describes a  
21 box as a DEMUX. That's the block 230. And then he  
22 describes what's in that box. And it's a channel  
23 selector, it selects channels, selects desired  
24 television channels.

25 Q. What does it mean to select a channel?

1 A. So, I would say picking which channel  
2 that I'm interested in. In the -- in both the  
3 patent and in Zhang, what is done is -- is there  
4 are -- there are mixers and low-pass filters and  
5 numerically controlled oscillators that take the  
6 input -- take the input that came from a digitized  
7 full spectrum of frequencies, and it -- and it picks  
8 one of those frequencies with one of those chains of  
9 mixers, numerically controlled oscillators and  
10 demultiplexers and that as shown in the Figure 3 in  
11 Zhang and also shown in the patents that we're  
12 talking about, they do the exact same thing as  
13 Zhang; and that is, they select one channel on its  
14 own output path that is baseband that has one  
15 channel on it instead of all the channels that are  
16 represented by the fully digitized frequency  
17 spectrum.

18 Q. Okay. If a hypothetical system as  
19 posited was to take an input signal that has ten  
20 channels and it would separate out that input signal  
21 into ten -- ten distinct channels, would that be  
22 considered selecting the channels?

23 MR. CUVIELLO: Objection. Form.

24 THE WITNESS: So, again, one of these  
25 elements selects a channel.

1 Right?

2 So that one element of -- and I'm  
3 talking about the chain I described, the mixer, NCO  
4 and the low-pass filter, selects a channel. And if  
5 you have more than one of these elements, you had  
6 two of the chain of elements, you could select two  
7 channels and so on and so forth.

8 So it really depends on how many  
9 selector elements you have.

10 And as I described through my first  
11 declaration and test- -- and depositions and all of  
12 that is that the number of channels selected depends  
13 on the number of these three elements that I just  
14 described as shown in Figure 3 of Zhang. And that's  
15 for the patents, as well as Zhang.

16 BY MR. HENDIFAR:

17 Q. So that was not my question. And I move  
18 to strike that.

19 So, please focus on the question and  
20 please answer my question.

21 My question was if in the hypothetical  
22 system a signal went into -- went in and had ten  
23 channels and all that circuitry did was to separate  
24 out the input signal into its ten channels, would  
25 that be considered selecting?

1 MR. CUVIELLO: Objection. Form.

2 THE WITNESS: So, I think I described  
3 that scenario in my depositions and declarations.  
4 BY MR. HENDIFAR:

5 Q. You talked about --

6 A. The number of input channels can be  
7 equal to the number of channels selected.

8 But also, the number in Zhang, actually  
9 also in the patents -- the patents both describe the  
10 scenario where the number of input channels --

11 Q. That's not my question.

12 A. -- is equal to the number of output  
13 channels --

14 Q. If you want to --

15 (Indecipherable simultaneous  
16 colloquy.)

17 MR. CUVIELLO: Counsel, can you let him  
18 finish answering the question, please.

19 MR. HENDIFAR: Well, he's not answering  
20 the question.

21 BY MR. HENDIFAR:

22 Q. I'm not asking about what the patent  
23 does. I'm not asking about what Zhang does.

24 Again, I'm familiar with the  
25 instructions for you to go back to what you have

1 memorized, but that's not my question, Mr. Lett.

2 So I'm not asking you about what Zhang  
3 does. I'm not asking what the patent does. I'm not  
4 asking about mixers, filters, how many mixers are  
5 there. None of that is my question.

6 My question is if a hypothetical system  
7 takes an input with ten channels and all it does is  
8 that it separates out the input signal into its ten  
9 channels, would that be understood as selecting the  
10 channels?

11 MR. CUVIELLO: Objection. Form and  
12 scope.

13 THE WITNESS: By the way, my testimony  
14 is my opinion. And so you keep saying something  
15 about I've been told to say this or that. This is  
16 my testimony and my opinion. Just to be clear.

17 BY MR. HENDIFAR:

18 Q. Please answer my question.

19 In a hypothetical system -- well, if --  
20 if that's the case, I expect that you would actually  
21 answer my questions, Mr. Lett.

22 So the question is if in a hypothetical  
23 system there is an input signal with ten channels  
24 and all that circuitry does is that it separates the  
25 input signal into its ten constituent channels, is

1 that considered selecting?

2 MR. CUVIELLO: Objection. Form and  
3 scope.

4 THE WITNESS: So is this hypothetical  
5 system a television system?

6 BY MR. HENDIFAR:

7 Q. Sure.

8 A. Is it like a set top box?

9 Q. Yes.

10 A. So, again, each channel is selected in  
11 that hypothetical system up to and including -- up  
12 to the number of input channels. It can be less  
13 than or equal to the number of input channels.

14 Q. So my hypothetical was -- maybe you  
15 misunderstood my hypothetical. So let me then  
16 repeat it again.

17 So, in this hypothetical all the  
18 circuitry does always indiscriminately just  
19 separates out the input signal into its ten  
20 constituent channels. That's all it does,  
21 indiscriminately that variation.

22 So, let me repeat maybe the hypothetical  
23 if that helps?

24 So in a television system, as you asked  
25 for the context, if there is a circuitry and all

1 So that's not my question.

2 A. No. That's not what I said.

3 Q. Okay.

4 A. Zhang can select up to or less than the  
5 number of channels based on the number of these  
6 elements, mixers, low-pass filters and NCOs. And  
7 they can select one channel for each of those string  
8 of elements.

9 Q. Right. And I'm not asking about Zhang  
10 and I'm not asking about a system that can select  
11 less than and up to the number of channels.

12 So maybe -- I'm not sure which part of  
13 my question is ambiguous to you.

14 I'm not asking about a system that  
15 selects up to all the channels. I'm not asking  
16 about a system that selects some channels and it may  
17 happen sometimes to select all the channels. That's  
18 not my question.

19 So I'll repeat the question. If you  
20 don't understand it, let me know which part and we  
21 can elaborate. But just answer my question.

22 In a hypothetical television system if  
23 all that a circuitry does is that it separates out  
24 an input signal into all of its constituent  
25 channels, always indiscriminately, is that

1 that circuitry does is that it takes an input signal  
2 with ten channels and invariably and  
3 indiscriminately all it does is that it separates  
4 that input signal into its ten channels, is that  
5 considered selecting?

6 MR. CUVIELLO: Objection. Form and  
7 scope.

8 THE WITNESS: So, as I explained in my  
9 depositions and declarations, selecting includes  
10 selecting all of the channels, but it also can  
11 include selecting less channels and can be any value  
12 up to the total number of channels in the signal  
13 band.

14 And that's for Zhang and that's also for  
15 the patents.

16 BY MR. HENDIFAR:

17 Q. Again, you're going back to your  
18 discussion of Zhang, correct?

19 A. So, the discussion of Zhang that I just  
20 described, if you had ten channels is your  
21 hypothetical scenario.

22 Q. So it is your view that Zhang can select  
23 less than and up to all of the channels, and it  
24 depends on the instance where -- how many channels  
25 it wants, right?

1 considered selection?

2 MR. CUVIELLO: Objection. Form and  
3 scope.

4 THE WITNESS: I don't know. I don't  
5 know if that's selecting. Because -- I'm not sure.

6 Because if you were not specifically  
7 picking the channels, I don't see a need for a  
8 numerically controlled oscillator to go -- to move  
9 around and pick out a channel.

10 So I'm getting confused because of your  
11 hypothetical scenario.

12 And you don't want me to talk about the  
13 architecture or construction of devices that we've  
14 been discussing with both patents and Zhang.

15 So, you know, I think your hypothetical  
16 scenario may be a different design. I'm not sure.  
17 BY MR. HENDIFAR:

18 Q. Is it possible -- is it possible to  
19 select channels just by mixers and numerical  
20 oscillators?

21 A. I think that's what we're doing with --  
22 with both Zhang and the patents, is we're selecting  
23 a channel of a number of channels with -- with a  
24 mixer and oscillator and low-pass filter.

25 Q. Now, in your declarations you testified

1 that -- let me step back.

2 If you have a television system that  
3 takes an input signal with ten channels and outputs  
4 two channels, is it your opinion that that circuitry  
5 is necessarily selecting channels?

6 MR. CUVIELLO: Objection. Form.

7 THE WITNESS: I don't know. You know,  
8 if the -- if the -- if it only selects two channels  
9 that are always the same, I don't know if that's  
10 selecting or not. If, you know, by design, the  
11 design always picks a certain two, you know, I'm not  
12 sure.

13 But selecting to me means that, you  
14 know, you've got a bunch of choices and you're  
15 picking one of them. Right?

16 Where -- so, and that's exactly what  
17 architecture we've been talking about.

18 BY MR. HENDIFAR:

19 Q. So, if you have a hypothetical  
20 television system that takes an input signal and all  
21 it does is that it separates out that input signal  
22 into its constituent channel, all of them, without  
23 exception, without variation, that wouldn't be  
24 selecting, correct?

25 MR. CUVIELLO: Objection. Form.

1 THE WITNESS: I don't know. Because is  
2 the selecting done by -- by the design ahead of  
3 time?

4 I mean or is it -- so, unless you have,  
5 in my opinion, the numerically controlled  
6 oscillators to move around and, you know, pick one  
7 of many choices -- and again, you can pick -- you  
8 can pick one, two, three, four, five, six, seven,  
9 eight, nine, ten, right? With ten of these  
10 elements, right?

11 But if they are always doing the same  
12 thing and -- and perhaps you don't even have  
13 numerically controlled oscillators, perhaps it just  
14 always, you know -- it wouldn't have the structure  
15 of either the patent or the Zhang reference, I'm not  
16 sure if that's selecting or not.

17 I really haven't thought about that or  
18 rendered an opinion on it, I don't think.

19 BY MR. HENDIFAR:

20 Q. So, just so I make sure I understand you  
21 correctly, and if I misunderstand, please correct  
22 me, you don't --

23 Let's start if you have a hypothetical  
24 system and that -- a television system and all that  
25 circuitry does is that it takes an input signal and

1 separates it out into its constituent parts,  
2 invariably without exception always separates out  
3 the input signal into all of its constituent parts,  
4 you don't have -- actually, we said channel. So  
5 strike that and let me repeat my question. I'll  
6 restate the question.

7 Did I understand you correctly that  
8 sitting here now with the hypothetical of a  
9 television channel -- a television system that takes  
10 an input signal and, as a matter of design, all it  
11 does invariably all the time is that it separates  
12 out the input signal into its constituent channels  
13 and that's all it does, sitting here now you do not  
14 have an opinion whether that is selecting or not?

15 MR. CUVIELLO: Objection, Counsel. He's  
16 answered -- you've asked this and he's answered.

17 MR. HENDIFAR: Don't interrupt me.  
18 Don't interrupt me.

19 BY MR. HENDIFAR:

20 Q. Sitting here now you do not have an  
21 opinion about that -- whether that's selecting or  
22 not, correct?

23 MR. CUVIELLO: Objection. Form, scope,  
24 asked and answered.

25 MR. HENDIFAR: That's not a -- that's a

1 speaking objection, Counsel.

2 BY MR. HENDIFAR:

3 Q. So because of counsel's speaking  
4 objection. I'll repeat my question.

5 MR. HENDIFAR: And, Mr. CuvIELLO, please  
6 only put your objections. Asked and answered is a  
7 speaking objection.

8 And don't give me a lecture in the  
9 middle because -- don't interrupt my question.

10 BY MR. HENDIFAR:

11 Q. So, Mr. Lett, I want to make sure I  
12 understood you correctly.

13 In a hypothetical with a television  
14 system where a circuitry, all it does is that it  
15 takes an input signal and indiscriminately separates  
16 out that input signal into its constituent channels,  
17 all of its constituent channels without exception,  
18 sitting here now you do not have an opinion as to  
19 whether that is selecting or not?

20 Did I understand you correctly?

21 MR. CUVIELLO: Objection. Form and  
22 scope.

23 THE WITNESS: Yeah. I do not have an  
24 opinion on that hypothetical system, because I have  
25 not seen the details of that hypothetical system.

1 I've only really been looking at the --  
2 in detail, and I thought I was going to answer  
3 questions about my reply declarations having to do  
4 with the patents that we've been talking about, the  
5 three subject patents and the -- and the background  
6 references.

7 BY MR. HENDIFAR:

8 Q. Now may I please refer you to the  
9 '362 Patent.

10 A. I'm sorry. Could we take a break for a  
11 few minutes, if you don't mind.

12 Q. No. Of course. It can be longer. I'm  
13 sorry I didn't offer. I lost track of time.

14 How much of a break would you like?

15 A. I'm good with five minutes unless y'all  
16 want longer.

17 MR. CUVIELLO: Can we do ten?

18 MR. HENDIFAR: Sure.

19 THE WITNESS: Okay.

20 MR. HENDIFAR: Let's come back at ten  
21 minutes past the hour.

22 (Brief recess.)

23 BY MR. HENDIFAR:

24 Q. Mr. Lett, welcome back.

25 During the break did you speak with

1 desired and undesired channels and that complete  
2 input signal with both desired and undesired  
3 channels were sent to the demodulator, and it was  
4 the demodulator that had to first select the desired  
5 channels before demodulating them and, as explained  
6 in column 2 line 20, that process would require very  
7 expensive circuitry within the demodulator because  
8 the demodulator received both desired and undesired  
9 channels?

10 Did I understand these aspects of the  
11 background of the '362 Patent correctly?

12 MR. CUVIELLO: Objection. Form.

13 THE WITNESS: I'm sorry. I sort of lost  
14 you on that long question.

15 Would you mind breaking it up into  
16 sections for me?

17 BY MR. HENDIFAR:

18 Q. Sure. Of course.

19 So, column -- what I was trying to save  
20 time, but we can go sentence by sentence. That's  
21 not a problem.

22 May I please refer you to column 1 of  
23 the '362 Patent lines 29 to 31.

24 A. Okay.

25 Q. And this is in the Background of the

1 anybody about the contents of your deposition?

2 A. No.

3 Q. May I please refer you to the  
4 '362 Patent.

5 A. Okay.

6 Q. And please let me know when you have it.

7 A. Okay. I have it.

8 Q. So, column one lines 29 to 31 reads,  
9 quote,

10 "Because the swath of channels is  
11 not contiguous, the swath includes  
12 the desired channels as well as  
13 undesired channels," end quote.

14 Do you see that?

15 A. Yes. Do you mind if I highlight it on  
16 my paper copy?

17 Q. Sure. Go ahead.

18 A. Okay. Okay.

19 Q. And have you reviewed the Background  
20 section of the '362 Patent column 1 line 15 to  
21 column 2 line 27?

22 A. Not just now, but previously I have.

23 Q. Okay. Do I understand it correctly that  
24 what the Background section of the '362 Patent  
25 explains was that the incoming signal includes both

1 invention in the '362 Patent, correct?

2 A. It's in the Background section of the  
3 '362 Patent, yes.

4 Q. And this Background section discusses  
5 what the '362 Patent considers to be its prior art,  
6 correct?

7 A. I think so.

8 Q. And Figure 1 of the '362 Patent  
9 discussed in the Background of the invention is what  
10 the '362 Patent considers to be its prior art,  
11 correct?

12 A. Yes. It says Figure 1 shows a  
13 conventional wideband tuner 100.

14 Q. And on column 2 starting on line 20, it  
15 states, quote,

16 "The wide bandwidth of 800  
17 megahertz would require a very  
18 expensive digital processing  
19 circuitry such as very high-speed  
20 analog to digital conversion and  
21 high-speed processor in the  
22 demodulator," end quote.

23 Do you see that?

24 A. Yes.

25 Q. Okay. How does the '362 Patent

1 architecture address the issue of the requirement  
2 for very expensive circuitry within the demodulator  
3 that it identifies as an issue in this prior art?

4 MR. CUVIELLO: Objection. Form.

5 THE WITNESS: So, I think you asked me  
6 the same question in my first deposition.

7 Could we just refer to that answer?

8 BY MR. HENDIFAR:

9 Q. I honestly don't know what question  
10 you're referring to.

11 So if you know the answer, please  
12 provide the answer. If you don't -- let me -- let  
13 me ask you --

14 A. I believe I answered in my first  
15 deposition that question.

16 Q. Do you have a line number for that  
17 question?

18 A. I will find it.

19 Do you happen to remember the exhibit  
20 number?

21 Q. 2018.

22 A. Thank you.

23 Q. But if it's going to take more than a  
24 minute or so, I don't want to waste time so I want  
25 to -- because you would have to answer -- you would

1 have answered the question already.

2 A. Yeah. So if you look at Exhibit 2019,  
3 starting with -- let's see.

4 How do I refer to it? By page number?

5 Q. Sure.

6 A. Okay. Page number 13. That's the  
7 beginning of the questioning on line -- let's call  
8 it, line two.

9 Q. I don't see a question identical to the  
10 one I just asked you.

11 A. I think if we follow this section, we'll  
12 find this was leading to that question.

13 Why would the band -- the bandwidth of  
14 Figure 1 require very expensive digital processing  
15 circuitry. And then --

16 Yeah. Look at page 15 starting with  
17 line 20.

18 Q. That's not the same question I just  
19 asked you.

20 A. It says,

21 "How would the receiver achieve  
22 this without expensive data  
23 conversion filtering and channel  
24 selection at the demodulator?"

25 Is that not the same question?

1 Q. No.

2 A. I'm having a hard time figuring out what  
3 the difference is.

4 Q. That's fine.

5 You can answer -- so let's go back and  
6 actually answer my questions. I don't believe it is  
7 proper procedure for you to try to deflect from my  
8 questions and say go look at my last deposition.

9 A. I was trying to save time because I  
10 thought I had answered this question.

11 Q. You just wasted five minutes looking for  
12 a non-existent question. So I don't know if that  
13 achieved your purpose.

14 A. I disagree. It's the same question.  
15 But go ahead.

16 Q. Sure.

17 Going to figure -- I'm going to go back  
18 and repeat the question, but I want to make it  
19 easier for you.

20 Going to Figure 1 of the '362 Patent.

21 And you agree that in Figure 1 the  
22 hashed frequencies are the desired channels and the  
23 blank frequencies are the undesired channels as the  
24 '362 Patent refers to them.

25 Correct?

1 A. I don't remember saying that.

2 Q. I'm asking a question. I'm not saying  
3 you said or understood that --

4 A. I thought you said "you agreed."

5 Q. I'm asking if you agree. Right. So --

6 A. I'm sorry. I misunderstood your  
7 question.

8 Q. I'll repeat the question.

9 Looking at Figure 1 of the '362 Patent,  
10 you agree that the hashed frequencies are what the  
11 '362 Patent refers to as desired channels and the  
12 blank frequencies are what the '362 Patent refers to  
13 as undesired channels, correct?

14 A. I don't really know if he says that the  
15 ones that are hashed are marked other than white --  
16 other than blank in Figure 1, element 110 is the  
17 desired channels, but I think that's the way I  
18 understand it.

19 Q. And in Figure 1, what is added to the  
20 demodulator is the bandwidth BW1 which contains both  
21 what the '362 Patent describes as desired and  
22 undesired channels, correct?

23 A. Well, I think what Figure 1 is showing  
24 that the input BW1 that shows ten channels that  
25 were -- it's frequency shifting the ten channels to

1 an IF output presumably at a different frequency,  
2 probably a lower frequency than the RF input.

3 Q. And that IF output goes to the  
4 demodulator, right?

5 A. This says IF output to demodulators.

6 Q. So let me repeat my question.

7 In Figure 1 of the '362 Patent, the  
8 frequency bandwidth BW1 that is output to the  
9 demodulator contains both the desired and undesired  
10 channels, correct?

11 A. It contains all ten channels that were  
12 input.

13 Q. Okay. Now --

14 A. They're shifted in frequency.

15 Q. Right. Now going to now Figure 4 of the  
16 '362 Patent, and it's in one of the embodiments.

17 Do you see that?

18 A. Yes.

19 Q. And do you see on the right-hand side of  
20 Figure 2 "IF output"?

21 A. Yes. You -- I'm sorry. You said Figure  
22 2. I think you meant Figure 4.

23 Q. No. I did say four. I'm sorry if I --  
24 I did mean four. If I said two, I'm sorry.

25 So, looking at Figure 4 of the

1 contains the ten channels, some of it  
2 hashed/desired, some of it blank/undesired, correct?

3 A. Yeah. Some of them are hashed and some  
4 of them are not hashed.

5 Q. Okay. And the '362 Patent explains that  
6 the hashed ones are the desired channels, correct?

7 A. That's what I wasn't sure about. But I  
8 couldn't find it in that previous section.

9 Q. Okay. Let me help you out.

10 A. But I can look for that to see if that's  
11 correct.

12 Q. Yes. Look for that.

13 And I think I know where it is. Let me  
14 find it. But feel free to also look if you like.

15 So, if you look at column 4 of the  
16 '362 Patent, starting on line 27 in the example  
17 shown, and that's the discussion of Figure 2,

18 "RF signal 102 includes four  
19 desired RF channels having the  
20 respective carrier frequencies 1,  
21 2, 3 and 4."

22 Do you see that.

23 A. "Includes four desired RF channels  
24 having the respective carrier  
25 frequencies."

1 '362 Patent.

2 And do you see on the right-hand side it  
3 says "IF output"?

4 A. Yes.

5 Q. And that's an output to the demodulator,  
6 correct?

7 MR. CUVIELLO: Objection. Form.

8 THE WITNESS: I didn't quite understand  
9 a word you said.

10 Can you say it again.

11 BY MR. HENDIFAR:

12 Q. Of course.

13 The IF output in the Figure 4 is the  
14 output to the demodulators, correct?

15 A. I don't know. I'll have to look.  
16 Because I don't remember.

17 Q. Okay. So let's look at Figure 2, so if  
18 that makes it easier for you.

19 A. Okay.

20 Q. In Figure 2 of the '362 Patent, on the  
21 right-hand side there is the serial or parallel data  
22 interface to demodulator.

23 Do you see that?

24 A. Yes.

25 Q. Okay. And in Figure 2 the RF input

1 Yes, I see that.

2 Q. Okay. And going to Figure 2, do you see  
3 that the hashed channels are shown having  
4 frequencies of FR, F1, 2, 3 and 4?

5 A. Yes.

6 Q. Okay. So in Figure 2 the RF input  
7 signal contains ten channels which consists of the  
8 four hashed ones that are desired channels and the  
9 remaining ones that are undesired channels, correct?

10 A. That seems correct, yes.

11 Q. And in the embodiment of Figure 2 in the  
12 '362 Patent, what's output to the demodulators on  
13 the right-hand side contains only the desired  
14 channels and none of the undesired channels,  
15 correct?

16 A. So, what figure are you referring to?

17 Q. Figure 2.

18 A. Okay. Ask your question again, please.

19 Q. Of course.

20 And in Figure 2 of the '362 Patent,  
21 what's output to the demodulators contains only the  
22 desired channels and none of the undesired channels,  
23 correct?

24 A. So, there was a case where I cited from  
25 the '362 in my second declaration that all the



1 channels input in the '362 specification output to  
2 the demodulator.

3 Q. So I'm discussing the Figure 2  
4 embodiment. So I'm discussing the Figure 2  
5 embodiment. So if you'd like to review the Figure 2  
6 embodiment, please feel free.

7 The question is in the Figure 2  
8 embodiment, what's output to the demodulators are  
9 only the desired channels and none of the undesired  
10 channels, correct?

11 A. So, the '362 Patent gives an example  
12 where all the input channels are output to the  
13 demodulator. That's in 5, 36 through 39, where it  
14 says,

15 "N is equal to the number of all  
16 available channels that exist in  
17 the licensed frequency spectrum, or  
18 all receivable channels within a  
19 geographic area."

20 So, all channels include the undesired  
21 channels in that example of the '362 Patent.

22 Q. And you see that in column 5 --

23 A. I'm sorry. Hang on. That might be --  
24 yeah. That's the '206 I was quoting there.

25 Let me see if that quotes in the '362.

1 I think it is because it's the same specification.  
2 So let me find that.

3 Yes. That same -- that same quote is in  
4 the '362.

5 Q. Okay. And in column 5 of the '362  
6 starting on line 43, the same paragraph that you  
7 were reading from says,

8 "In the exemplary embodiment shown  
9 in Figure 2, the number of desired  
10 channels is four."

11 Do you see that?

12 A. I'm sorry. What line numbers again?

13 Q. Column 5, line 43.

14 A. Yes. I see that.

15 Q. Okay. And regardless of whether the  
16 desired channels is four or it's all the channels or  
17 whatever the number is, all of the desired channels  
18 are transmitted to a demodulator in the embodiment  
19 of Figure 2, correct?

20 A. This says,

21 "In an embodiment each of the  
22 filter signals 260a to 260n may be  
23 sent to an associated demodulator."

24 That's in column 5 row 54 through 56.

25 Q. So, I'm sorry if I was not right

1 following the link, but the question was in the  
2 Figure 2 embodiment of the '362 Patent, all the  
3 undesired channels are transmitted to the  
4 demodulators, correct?

5 A. Yes. But it also could be all the  
6 channels according to what I just read.

7 Q. Right. And in -- and in the case where  
8 all the channels are desired channels, then all the  
9 channels are transmitted to the demodulator -- let  
10 me step back.

11 In -- is it your -- let me step --

12 My understanding of the '362 Patent was  
13 that capital letter "N" denotes desired channels  
14 whether that's four, eight or happens to be all the  
15 channels, a capital "N" is the desired.

16 Did I misunderstand or do you have the  
17 same view?

18 MR. CUVIELLO: Objection. Form.

19 THE WITNESS: So, according to the  
20 citations I just read and also Figure 2 on the right  
21 side, it says,

22 "N filtered and decimated baseband  
23 channels."

24 It doesn't say anything about desired or  
25 undesired.

1 And what I just read basically says it  
2 can be up to or less than -- and can be up to or  
3 less than the number of RF channels on the input.

4 Q. But is it your testimony that the  
5 patent -- the '362 Patent's embodiments, at least  
6 some embodiments transmit both the desired and  
7 undesired channels to the demodulators?

8 A. They can, yes. That's what I just read  
9 in those citations.

10 Q. And how would that be different from the  
11 prior art that the patent had -- said has  
12 deficiencies in the Background of the invention?

13 A. So, as I show in my declaration -- or my  
14 second declaration, on page three with the diagram,  
15 which includes Figure 2 that we just talked about,  
16 it's the same between Zhang and the '362 Patent.  
17 And similarly these diagrams are in the other two  
18 patents.

19 Q. Mr. Lett, was my -- did my question say  
20 anything about Zhang?

21 A. Zhang is prior art, correct?

22 Q. Did I say generally prior art?

23 My question was how would an embodiment  
24 of the '362 patent that transmits both in your view  
25 desired and undesired channels to demodulators be

different from the prior art that the patent discusses in its Background of the invention?

A. I -- as a POSITA, one would look at a patent, I think, and not necessarily go and look at all the background references and prior art references.

I think a POSITA would take the patent at face value and read it and understand it.

So, I don't -- I have not looked at -- I may have, but I don't remember looking at the prior art -- all the prior art references. But there's quite a bit.

Q. You are misunderstanding my question.

Let me help you. I think you may have misunderstood my question.

Let me -- let me step back.

Do you recall we discussed the patent's discussion of -- in its Figure 1 of what it described as prior art?

A. Yes.

Q. Okay. And in the patent's Background of the invention columns 1 and 2, the patent describes what it considers its prior art, including its Figure 1, correct?

A. I'm sorry. That last part I didn't

hear.

Q. And in its Background of the invention, the '362 Patent discusses what it considers to be its prior art, including its Figure 1, correct?

A. Yes.

Q. And in what the '362 Patent discusses to be its prior art in its Background of the invention, it explains that one of the shortcomings of those prior art systems was that they would transmit both desired and undesired channels to the demodulators.

Do you recall that?

A. I don't know if I do.

Can you point me to that?

Q. Sure. So, we walk -- let me walk through it again. No worries.

So column 1 line 29 states,

"Because the swath of channels is not contiguous, this swath includes the desired channels as well as undesired channels."

Do you see that?

A. Yes.

Q. And then we looked at Figure 1 where we discussed what goes out of Figure 1 to the demodulator includes both the desired and undesired

channels.

Do you recall that?

A. Yes.

Q. Okay. And going back to column two of the '362 Patent, we discussed that the patent says starting on line 20 column 2 that this approach of sending the entirety of the input signal both desired and undesired channels, quote,

"Would require a very expensive digital processing circuitry such as very high-speed analog to digital conversion and high-speed processor in the demodulator."

Do you recall that discussion?

A. Yes. But I think you maybe reversed the column and line numbers in that question. So in column 2 line 20 --

Q. Correct.

A. -- instead of column 20 line 2.

Q. I'm sorry if I misspoke.

But do you recall that discussion?

A. Yes.

Q. Okay. So my question is how would embodiments of the patent that in your view transmit both the desired and undesired channels to the

demodulator be different from the patent's Figure 1 embodiment which the patent says is its prior art and it's deficient in part because it transmits both desired and undesired channels to the demodulator?

MR. CUVIELLO: Objection. Form.

THE WITNESS: I mean are you asking me the difference between Figure 1 and Figure 2?

BY MR. HENDIFAR:

Q. I am asking -- well, no. I am asking -- let me rephrase the question.

If the patent's embodiments transmit both the desired and undesired channels to the demodulator, how would they overcome the issue that the patent identified in its prior art of requiring expensive circuitry when you transmit both desired and undesired channels to the demodulator?

MR. CUVIELLO: Objection. Form.

THE WITNESS: So, the prior art in Figure 1 that he's talking about seems to be just a straight RF mixer, you know, followed by, you know, amplification and filtering.

BY MR. HENDIFAR:

Q. Uh-huh.

A. And in other words, it doesn't show any analog to digital converter in -- in number one.

1 And as we discussed in my previous  
2 testimony with another deposition, if you use the  
3 architecture of Figure 2 or Figure 3 of Zhang, which  
4 is the mixers and the -- and the -- you know,  
5 numerically controlled oscillators and so on -- I'm  
6 sorry. You -- I'm sorry.

7 Scratch that answer. I was -- that's  
8 not correct.

9 Let me restate that.

10 So, if you look at Figure 2 of the  
11 '362 Patent, the radio front end, the output is an I  
12 and Q signal. And the I and Q signal requires half  
13 the bandwidth -- half the sampling rate for the  
14 analog to digital converters, you know, with a  
15 little margin.

16 But let's just say instead of  
17 800 megahertz, those ADCs need 400 megahertz  
18 sampling rate plus a little bit of margin.

19 So that's the advantage, you know, of  
20 the very high-speed analog to digital conversion  
21 that he's talking about.

22 Q. Why is he talking about digital  
23 circuitry in the demodulator being expensive in  
24 column 2 line 20?

25 A. Because the digital circuitry in the

1 demodulator in Figure 1 would have to demodulate  
2 a -- well, again, he didn't really say, you know,  
3 what is the architecture of the demodulator.

4 Right?

5 But presumably what he's talking about  
6 there is that since the prior art is all analog, all  
7 RF -- right? -- not -- in other words, not  
8 digitized, you know, and then -- you know, what he's  
9 showing here is the I/Q demodulator at the front end  
10 that requires half the bandwidth before the ADC so  
11 that the ADC sampling rate could be lower.

12 I think that's what he's talking about  
13 there, is that if the demodulator, if he did it all,  
14 you know, at one, two, three, four, five, six,  
15 seven, eight, nine, ten channels of bandwidth, you  
16 know, if you're going to essentially demodulate  
17 that, and if you wanted to use analog to digital  
18 converters and presumably didn't have I/Q  
19 demodulators in the demodulator, that he probably is  
20 saying that -- that it would probably require a more  
21 expensive analog to digital converter.

22 It's hard to say because he doesn't  
23 really describe what he's talking about in the  
24 demodulator.

25 Q. Now, you testified in Figure 2 of the

1 '362 Patent in your view both desired and undesired  
2 channels could be in an embodiment transmitted or  
3 output to the demodulator.

4 Correct? Did I understand correctly?

5 MR. CUVIELLO: Objection. Form.

6 BY MR. HENDIFAR:

7 Q. I'm sorry. I couldn't hear your answer,  
8 Mr. Lett.

9 A. Can you re-ask the question?

10 Q. Of course.

11 Did I understand you correctly that in  
12 your view, in the embodiment in Figure 2 of the '362  
13 Patent, both the desired and undesired channels  
14 could be output to the demodulator?

15 MR. CUVIELLO: Objection. Form.

16 THE WITNESS: That's probably -- sorry.

17 MR. CUVIELLO: Sorry. I wasn't quick  
18 enough.

19 Objection. Form.

20 THE WITNESS: Yeah. So, I said in  
21 section specifically in column 5 that -- that it  
22 said that it did. So that's what I'm basing it on.

23 BY MR. HENDIFAR:

24 Q. Now, in the embodiments of the  
25 '362 Patent, what does it mean for a channel to be a

1 desired channel?

2 A. I'm not sure he defines what desired and  
3 undesired are in the '362 or the other two patents  
4 or the specification. It just talks about there are  
5 desired channels and there are undesired channels,  
6 as far as I remember.

7 Q. Would a person of ordinary skill in the  
8 art understand reading the '362 Patent embodiments  
9 when the patent refers to desired channels, from  
10 whose perspective or from what perspective are those  
11 channels desired?

12 MR. CUVIELLO: Objection. Form.

13 THE WITNESS: So, I don't know what a  
14 POSITA would understand. But if you read this  
15 patent -- well, no. Let me rephrase that.

16 A POSITA would look at this Figure 2 and  
17 description of desired and undesired channels and  
18 understand that as we've discussed that the ones  
19 that are shaded in one form or another in this  
20 diagram are -- are what he calls desired and the  
21 ones in white are undesired.

22 BY MR. HENDIFAR:

23 Q. But what does it mean for the channel to  
24 be desired? Desired by who?

25 MR. CUVIELLO: Objection. Form.

1 THE WITNESS: I don't think the patent  
2 says desired by who or who desires it. I suppose  
3 the patent inventor desires it or doesn't desire it.

4 I'm not sure, to answer your question.

5 BY MR. HENDIFAR:

6 Q. Would a person of ordinary skill reading  
7 the '362 Patent understand what the distinction is  
8 between desired and undesired channels?

9 A. So, yes. As I described, I think that  
10 one would understand that what the patent inventor  
11 meant by desired is shown in those shaded sections  
12 of Figure 2, and what he meant as undesired are  
13 shown in the white sections representing those  
14 channels of Figure 2.

15 Q. If the '362 Patent -- strike that.

16 What does -- what do the embodiments of  
17 the '362 Patent achieve by dividing the channels  
18 into desired and undesired and treating them  
19 separately?

20 MR. CUVIELLO: Objection. Form.

21 THE WITNESS: I think what the inventor  
22 is trying to describe is that you have a bunch of  
23 channels coming in and you're selecting certain of  
24 those channels to go to the next stage. Or -- and  
25 eventually either some or all of those can be output

1 to a demodulator.

2 BY MR. HENDIFAR:

3 Q. Is it possible that a desired channel is  
4 not output to the demodulator?

5 MR. CUVIELLO: Objection. Form.

6 THE WITNESS: I suppose it is possible.  
7 I don't know if he describes that.

8 BY MR. HENDIFAR:

9 Q. Then let me phrase my question.

10 Would a POSITA reading the '362 Patent  
11 understand that the desired channels are always  
12 output to the demodulator?

13 MR. CUVIELLO: Objection. Form.

14 THE WITNESS: I don't have an opinion on  
15 that.

16 BY MR. HENDIFAR:

17 Q. Now, in order -- if you were to watch a  
18 television channel in this field, the channel would  
19 first have to be demodulated, correct?

20 A. I think that's the normal understanding.  
21 I was trying to think if there's a case. I don't  
22 know. Maybe there is.

23 Q. I'm not asking that question. I'm just  
24 laying the foundation for the technology.

25 A. Okay.

1 Q. It's not to be a trick question.

2 A. Perhaps there's some technology I don't  
3 know about.

4 Q. Okay. But as far as you know, in order  
5 for a viewer to watch a television channel in this  
6 field, the channel has to be demodulated, correct?

7 A. Yeah. In the context of these patents,  
8 yes.

9 Q. Now, in Zhang's selector 240, what  
10 criteria does Zhang use to select the M channels  
11 from the N channels output from the demultiplexer?

12 MR. CUVIELLO: Objection. Form.

13 THE WITNESS: Can you restate that,  
14 please?

15 BY MR. HENDIFAR:

16 Q. Sure.

17 In Zhang's selector 240, what criteria  
18 does that selector 240 use to select the M channels  
19 from the N channels output from the demultiplexer?

20 MR. CUVIELLO: Objection. Form.

21 THE WITNESS: The selecting is done by  
22 230, not 240.

23 BY MR. HENDIFAR:

24 Q. Is it your view that selector 240  
25 performs no selection?

1 A. 240 is a switch. And it also includes  
2 time division multiplexing circuitry. And it  
3 outputs serial data and/or parallel data.

4 And I know I said it's very flexible in  
5 our last deposition, which it is. So this switch  
6 can perform a number of functions.

7 It's essentially representative, as I  
8 show on page three of my second declaration, the  
9 diagram where the orange part of -- which is --  
10 which is 240 is represented by the orange line of  
11 the patent, which -- that provides serial or  
12 parallel data interface to the demodulator.

13 Q. Well, that did not answer my question.

14 Is it your testimony that Zhang's  
15 selector 240 does not perform any selection?

16 A. It can select from the C1 through CN  
17 that are input. And the C1 and CN are the desired  
18 channels based on the number of elements of mixers,  
19 NCOs and low-pass filters.

20 The selecting is done by -- by 230. And  
21 there is some further -- further flexibility  
22 provided by block 240.

23 And so one of the reasons that Zhang  
24 shows the embodiment of 240, as he says for fast  
25 channel change, so one might select from among --

1 so, let's call them desired channels, C1, CN.  
2 Right?

3 From those -- and it may be only able to  
4 watch one channel at a time. So one of the  
5 applications that Zhang describes that's achieved by  
6 this flexible architecture is that those channels  
7 can be essentially available for demodulation --

8 Q. Look, I understand --

9 A. -- for fast channel change.

10 Q. Again, I know you take offense to my  
11 comment, but I don't need a memorized answer to my  
12 question that is not responsive.

13 My question is really yes or no.

14 Is it your testimony that Zhang's  
15 selector 240 performs any selecting? Does it or  
16 does it not?

17 MR. CUVIELLO: Objection. Form.

18 THE WITNESS: I think it provides the  
19 output to the demodulator. The selecting is done  
20 by 230.

21 BY MR. HENDIFAR:

22 Q. Is your testimony --

23 A. Providing the output to the demodulator  
24 is done by block 240.

25 Q. So it's your testimony that Zhang's

1 more capability --

2 Q. That is also not my --

3 A. -- than is described by the patents.

4 Q. That is also not my question.

5 A. And so mapping the claim elements to  
6 Zhang, the selection is done by Zhang in the  
7 block 230. The providing the outputs is provided is  
8 by block 240.

9 Zhang's 240 can do a lot more than that.

10 Q. So which is my question. Is it your  
11 testimony that Zhang selector 240 performs any  
12 selection? Yes or no?

13 MR. CUVIELLO: Objection. Form.

14 THE WITNESS: It can provide with a --  
15 it's a switch. Right? It can provide some routing,  
16 let's call it, of signals to the output in a very  
17 flexible way.

18 BY MR. HENDIFAR:

19 Q. I didn't ask --

20 A. It certainly implements the  
21 functionality of the '362 Patent and the other two  
22 patents in this embodiment.

23 Q. Did I ask you if the selector provides  
24 routing?

25 A. I'm sorry. I didn't understand what you

1 selector 240 does not perform any selection,  
2 correct?

3 THE CLERK: Objection to form.

4 THE WITNESS: Again, 240 provides the  
5 output that's selected from --

6 BY MR. HENDIFAR:

7 Q. My --

8 A. -- the block 230. The selecting is done  
9 by 230.

10 Q. I'm not asking whether or not 230 also  
11 selects. I'm asking if 240 selects or not.

12 So, I'll repeat the question.

13 It's not a complicated question, and I  
14 request that you actually answer my question.

15 Is it your testimony -- well, strike  
16 that.

17 Your testimony is that the selector 240  
18 in Zhang performs no selection, correct?

19 MR. CUVIELLO: Objection. Form.

20 THE WITNESS: So, what I did was I  
21 looked at the prior art and I mapped it to the claim  
22 elements.

23 BY MR. HENDIFAR:

24 Q. That's not my question.

25 A. And the architecture of Zhang has much

1 said.

2 Q. Did I ask you if the Zhang selector  
3 provides routing?

4 A. I don't remember.

5 Q. Did I ask you if Zhang's demultiplexer  
6 performs selection?

7 I did not.

8 A. I don't know.

9 Q. Did I ask you how you mapped Zhang to  
10 the claim?

11 MR. CUVIELLO: Objection. Form.

12 THE WITNESS: What I'm trying to explain  
13 is what you're calling selecting of the block -- the  
14 box 240 in Zhang is more like a switch.

15 BY MR. HENDIFAR:

16 Q. But does it select?

17 A. So, we've been talking about selecting  
18 in the context of selecting a desired channel from a  
19 swath of frequencies, a whole bunch of channels.  
20 And the selecting is done by those elements I keep  
21 talking about; the mixer, the NCO and the low-pass  
22 filter.

23 The box 240, even though it's named N by  
24 N selector, it's really a switch, and it also has  
25 some capability to provide serial or parallel

1 outputs of the desired channels that are selected by  
2 block 230 in the desired channels being C1 through  
3 CN.

4 Q. So is it your testimony that  
5 selector 240 performs no selections and all it is  
6 described as doing is providing an output  
7 potentially to a serial interface?

8 MR. CUVIELLO: Objection. Form.

9 THE WITNESS: So I would say that  
10 box 240 does switching and -- and converting the  
11 signal to the proper format for output, providing  
12 those signals to the output.

13 BY MR. HENDIFAR:

14 Q. But that doesn't answer if it does  
15 selection or not.

16 A. In the context that we've been talking  
17 about selection, it does not. The selection is done  
18 by box 230.

19 Q. Is there any context in which the  
20 selector 240 in Zhang be considered as performing a  
21 selection in your opinion?

22 MR. CUVIELLO: Objection to form.

23 THE WITNESS: Again --

24 BY MR. HENDIFAR:

25 Q. Go ahead.

1 A. The definition of "selection" in this --  
2 in this discussion, this whole testimony, is about  
3 choosing from a swath of frequencies, all the input  
4 frequencies or multiple frequencies and multiple  
5 channels, picking one or more of those to move on to  
6 the next stage. And that's exactly what 230 does.  
7 That is selecting per the context of all these  
8 patents.

9 Q. In your declarations you have relied on  
10 the plain and ordinary meet meaning of "selecting,"  
11 correct?

12 A. So, as I say in paragraph 27 of my  
13 second reply declaration, a POSITA would have  
14 understood that plain and ordinary meaning of select  
15 said polarity -- plurality of desired television  
16 channels is what each signal path shown in Figure 2  
17 and 3 of the '362 does.

18 Q. That wasn't my question.

19 The question was in your analysis you  
20 relied upon the plain and ordinary meaning of  
21 "selecting," correct?

22 A. A POSITA would have understood the plain  
23 and ordinary meaning, yes.

24 Q. And you have not provided a explicit  
25 construction for the plain and ordinary meaning of

1 "selecting," correct?

2 MR. CUVIELLO: Objection. Form.

3 THE WITNESS: I mean I'm not an  
4 attorney. When you talk about constructions, that  
5 sounds like I need to be an attorney to understand  
6 it.

7 BY MR. HENDIFAR:

8 Q. I'm asking if you have provided one.

9 In your declarations have you provided  
10 the construction for the word "selecting"?

11 MR. CUVIELLO: Objection. Form.

12 THE WITNESS: I'm not sure that I have.  
13 Perhaps I did. And if I did, maybe you can point me  
14 to it.

15 BY MR. HENDIFAR:

16 Q. It's your declarations.

17 I'm asking if you have provided a  
18 construction for selecting.

19 THE CLERK: Objection. Form.

20 THE WITNESS: So I used the plain and  
21 ordinary meaning of "select" consistent with the  
22 '362 Patent disclosure.

23 BY MR. HENDIFAR:

24 Q. Have you provided a construction for  
25 that -- for what that plain and ordinary meaning is?

1 A. What do you mean by "construction"?

2 Q. Okay. Do you understand what  
3 "construction" means?

4 A. I'm not sure I do.

5 MR. CUVIELLO: Objection.

6 BY MR. HENDIFAR:

7 Q. So, sitting here you don't know what it  
8 means when I ask you if you have provided a  
9 construction for the word "selecting"?

10 Is that your testimony?

11 MR. CUVIELLO: Objection. Form.

12 THE WITNESS: Can you tell me what you  
13 mean by "construction"?

14 BY MR. HENDIFAR:

15 Q. I am asking if you understand my  
16 question.

17 So, is it your testimony that sitting  
18 here now you don't know what it means when I ask you  
19 if you have provided a construction for "selecting"?

20 A. I don't know what you mean --

21 MR. CUVIELLO: Objection.

22 THE WITNESS: -- by that.

23 MR. CUVIELLO: Objection. Form.

24 BY MR. HENDIFAR:

25 Q. You don't know what I mean when I ask

1 you if you have provided a construction for  
2 "selecting"?

3 Is that your testimony?

4 MR. CUVIELLO: Objection. Form.

5 THE WITNESS: I think "construction" has  
6 a very legal term, legal definition. And me not  
7 being a lawyer, I'm not sure I fully understand  
8 exactly what that means.

9 So I would appreciate it if you could  
10 define it for me, and then perhaps I can answer your  
11 question better.

12 BY MR. HENDIFAR:

13 Q. If I may refer you to Exhibit 1002, your  
14 first declaration for the '362 Patent.

15 A. Okay.

16 Q. And on page 18 do you see that you have  
17 a section titled "Claim Construction"?

18 A. Yes.

19 Q. And do you see paragraph 34, you  
20 testified that, quote,

21 "I have been asked to consider a  
22 potential construction of 'digital  
23 circuitry'"?

24 A. Yes.

25 Q. On page 133 of your declaration --

1 A. I'm sorry. We were on page 19.

2 Did you switch to a different page?

3 Q. I'm now on page 133 of that declaration.

4 Do you see the heading says,

5 "Alternate grounds based on means  
6 plus function construction of the  
7 digital circuitry"?

8 A. Yes.

9 Q. Is it your testimony that sitting here  
10 now you don't know what providing a construction for  
11 a term means?

12 MR. CUVIELLO: Objection to form.

13 THE WITNESS: I understand this -- this  
14 context in the section we just talked about starting  
15 with paragraph 212.

16 BY MR. HENDIFAR:

17 Q. And do you understand that on page 18 of  
18 your declaration, you provide a section titled  
19 "Claim Construction"?

20 A. Yes.

21 Q. What did you understand "claim  
22 construction" to mean when you discussed it on page  
23 18 of your declaration?

24 A. So I was talking about the structure of  
25 the -- of the figures. And so -- so I was basically

1 saying that, you know, how does it -- how does the  
2 backgrounds, you know, compare to the -- to the  
3 structure of the '362 Patent. And I continued to  
4 explain that.

5 You know, in fact, the diagram I've been  
6 referring to on page three of my second declaration  
7 lays out the structure to be identical between Zhang  
8 and the '362 Patent, as well as similar figures for  
9 the other patents.

10 Q. Now, on paragraph 35 of your declaration  
11 you also discuss claim constructions in various  
12 District Court litigation?

13 A. Which declaration are we talking about?

14 Q. The '362 Patent.

15 A. The first one or the second?

16 Q. The first one, the one we were just  
17 discussing, Exhibit 1002.

18 A. I was referring to the second  
19 declaration in my answer previously just now, just  
20 to be clear.

21 Q. So going to Exhibit 1002, the  
22 declaration I've been asking questions about,  
23 paragraph 35, you also discuss claim constructions  
24 in various District Court litigation, correct?

25 A. Yes.

1 Q. So let me ask you again. Do you  
2 understand what it means to provide a construction  
3 for a term?

4 A. I think so.

5 Q. Thank you.

6 Have you provided a construction in any  
7 of your declarations for the claim term "selecting"?

8 MR. CUVIELLO: Objection to form.

9 THE WITNESS: I don't know if I have.  
10 Perhaps I have. If I have, could you refer me to  
11 it?

12 BY MR. HENDIFAR:

13 Q. I'm sorry. I am the one who asks  
14 questions.

15 If you need to review declarations,  
16 review them.

17 But the question is have you provided a  
18 construction for "selecting" in either of your  
19 declarations?

20 A. I need to look through my declaration.  
21 I don't recall.

22 Q. Do whatever you have to do.

23 A. Okay.

24 Q. My question is have you provided a  
25 construction for "selecting" in either of your

1 declarations?

2 A. I'm going to go through my declaration  
3 now and look for it.

4 So, in paragraph 115 --

5 Q. Of?

6 A. -- of my '362 declaration Exhibit 1002,  
7 I provided a figure to illustrate an example of  
8 selecting a plurality of television channels from  
9 digitized plurality of frequencies.

10 Q. Where are you reading from?

11 A. Paragraph 115, page 80.

12 Q. Of the '362 declaration? Oh, okay.  
13 Okay.

14 Is that a construction for "selecting"  
15 that is provided?

16 A. Well, it's an example of the --

17 Q. I --

18 A. -- of selecting.

19 Q. Let's do this.

20 A. A plurality of desired television  
21 channels from digitized plurality of frequencies.

22 Q. My question is not about examples. So  
23 if you need to review, review. And I don't need  
24 additional commentary.

25 My question is have you in either of

1 your declarations provided a construction for the  
2 claim term "selecting"?

3 MR. CUVIELLO: Objection. Form.

4 THE WITNESS: Is there a particular  
5 format that you're looking for? Because I think,  
6 you know, I've pointed to the patent claims, I've  
7 described what selecting is, I've showed that Zhang  
8 has the same structure for selecting as the '362  
9 patents.

10 I'm not sure what you're asking for,  
11 because I think I've in those numerous ways provided  
12 the construction.

13 BY MR. HENDIFAR:

14 Q. Okay. What is the construction you  
15 believe you have provided for what "selecting"  
16 means?

17 Give me that definition.

18 MR. CUVIELLO: Objection. Form.

19 THE WITNESS: Outputting desires --  
20 desired channel C1 through CN.

21 BY MR. HENDIFAR:

22 Q. Okay. But the construction is provided  
23 for "selection."

24 So, selecting means desired channels to  
25 see what you're seeing?

1 MR. CUVIELLO: Objection. Form.

2 THE WITNESS: Using a banks -- bank of  
3 mixers to frequency shift a digitized version of the  
4 down converted wideband signal so that each mixer  
5 outputs a different desired channel shifted to  
6 baseband and then filtered out the undesired  
7 channels with a low-pass filter so that only the  
8 desired channels remain.

9 BY MR. HENDIFAR:

10 Q. What are you reading from? I'm sorry.

11 A. Paragraph 114 of the '362 declaration,  
12 first declaration Exhibit 1002.

13 Q. So is it your testimony that in  
14 paragraph 114 of Exhibit 1002, your first  
15 declaration for the '362 Patent, you have provided a  
16 construction for the term "selecting"?

17 A. So a POSITA would understand this as  
18 selecting.

19 Q. That's not my question.

20 Is it your testimony that in  
21 paragraph 114 of your first declaration for the  
22 '362 Patent you have provided a construction for  
23 "selecting"?

24 A. I mean it sounds like a trick question  
25 that an attorney's trying to get me to say

1 something, because I -- I think I've described many,  
2 many times what Zhang is doing, what the '362 is  
3 doing, how the structure of the elements of the  
4 mixer, low-pass filter and numerically controlled  
5 oscillators are identical. Both of them are  
6 selecting. I've provided multiple diagrams,  
7 examples.

8 I'm not sure what's going on here.

9 Q. But that's -- excuse my language, but  
10 it's not your prerogative to question what's going  
11 on here. You are here as an expert. You've  
12 provided opinions, and you're required to answer my  
13 questions.

14 And my question is not a complicated  
15 question.

16 You testified that you understand what  
17 claim construction means.

18 The question is have you provided in  
19 either of your declarations a construction for the  
20 claim term "selecting."

21 Either you have or you have not.

22 A. I think I have. Example is the one I  
23 just showed you in paragraph 114.

24 Q. So it's your testimony that in paragraph  
25 114 of Exhibit 1002 for the '362 Patent, you have



1 provided a construction for the claim term  
2 "selecting"?

3 A. Again, I'm not an attorney. I may not  
4 know your exact definition that you're looking for.  
5 But in my mind and as a POSITA, I have described  
6 "selecting" in the context of the patents and in the  
7 context of the prior art, including Zhang.

8 And an example of that, among many  
9 examples throughout all my testimony and depositions  
10 and declarations, is in paragraph 114 of my first  
11 declaration.

12 Q. That doesn't answer my question. It  
13 doesn't. Because either you have provided a  
14 construction or you have not.

15 A. I told you I think I have.

16 Q. Okay. So your testimony is  
17 paragraph 114 of Exhibit 1002 for the '362 Patent  
18 provides a construction for "selecting"? That's  
19 your testimony; is that --

20 MR. CUVIELLO: Objection. Form.

21 THE WITNESS: I think I've answered  
22 multiple times.

23 BY MR. HENDIFAR:

24 Q. Mr. Lett, you don't get to provide  
25 objections.

1 Is it your testimony that in  
2 paragraph 114 of Exhibit 1002 for the '362 Patent  
3 you have provided a construction for the claim term  
4 "selecting"?

5 A. I didn't say I objected, by the way.

6 Did I say I objected?

7 Q. Mr. Lett, answer my question.

8 Is it your testimony that in  
9 paragraph 114 of Exhibit 1002 for the '362 Patent  
10 you have provided a construction for the claim term  
11 "selecting"?

12 A. I think I have, given the caveats that  
13 I'm not an attorney, I'm a -- I'm an engineer.

14 Q. Okay.

15 A. Can we take a break for a few minutes?

16 Q. How much of a break would you like?

17 A. Let's go with 15.

18 MR. HENDIFAR: Sure. Come back at  
19 40 minutes past the hour?

20 THE WITNESS: 40 minutes past the hour?  
21 That's fine with me.

22 MR. CUVIELLO: 2:40.

23 THE WITNESS: Okay. Yes. Thank you.  
24 (Brief recess.)

25 ///

1 BY MR. HENDIFAR:

2 Q. Mr. Lett, during the break did you speak  
3 with anybody about the contents of the deposition?

4 A. No.

5 Q. Did you review any documents?

6 A. No.

7 Q. Prior to the break you testified that in  
8 paragraph 114 of Exhibit 1002, your first  
9 declaration for the '362 Patent, you provided  
10 construction for "selecting."

11 You recall that?

12 A. I said I think I did.

13 Q. What is that construction?

14 A. You want me to read the -- the  
15 paragraph?

16 Q. No. I want you to tell me what is the  
17 construction for "selecting" that you believe you  
18 have provided?

19 A. Outputting desired channel C1 to CN  
20 first using a bank of mixers to frequency shift a  
21 digitized version of the down converted wideband  
22 signal so that each mixer outputs a different  
23 desired channel shifted to baseband and then  
24 filtering out undesired channels with a low-pass  
25 filter so that only the desired channels remain.

1 Q. In your opinion, what you just read from  
2 paragraph 114 is the correct construction of  
3 "selecting" in the context of the '362 Patent?

4 A. So in my -- yes. And in my declarations  
5 and all of my testimony I have been consistent in  
6 what I consider or what a POSITA would consider the  
7 plain and ordinary meaning into the context of these  
8 patents to be what I just read.

9 Q. Okay.

10 A. Again, I'm not an attorney. And  
11 construction to me may have some legal terms that I  
12 don't understand.

13 Q. In Zhang the number of channels DM can  
14 be different from the number of channels CN,  
15 correct?

16 A. That's right.

17 Q. Can M be larger than N?

18 A. I mean I suppose you could output a  
19 given C to multiple outputs given this switch that  
20 Zhang has.

21 But as I've been through, you know, all  
22 my declarations and testimony, I've been -- I have  
23 not been talking about that case that Zhang is  
24 capable of doing, it seems. I've been talking about  
25 the cases where M is equal to N, but mostly when M

1 is less than N.

2 Q. But M can be greater than N, correct, in  
3 your opinion?

4 A. Like I said, I think so given that the  
5 fact that you could -- you could take, for example,  
6 C2 and you could output it on several -- like you  
7 could output it on D2 and maybe you could output it  
8 on D20 -- right? -- when given this in N by M  
9 selector. Because it's very flexible, as you can  
10 see in the diagram on page three of my second  
11 declaration and also in Figure 5 of Zhang, every  
12 input to this bus selector can be connected to one  
13 or multiple outputs.

14 Q. And why have you focused more on the  
15 scenario where M is less than N in your analysis?

16 MR. CUVIELLO: Objection. Form.

17 THE WITNESS: So, I was mapping the  
18 claim elements to the prior art, and the claim  
19 elements are sometimes, but not always, when M is  
20 less than N.

21 And so that was the focus of the  
22 declarations and testimony.

23 BY MR. HENDIFAR:

24 Q. What logic does Zhang use to output the  
25 M channels from the N channels?

1 MR. CUVIELLO: Objection. Form.

2 THE WITNESS: I don't know the answer,  
3 because I don't think he's disclosed what logic he  
4 used.

5 Perhaps you could define "logic" for me  
6 if it's different than what I'm understanding.

7 BY MR. HENDIFAR:

8 Q. What do you understand "logic" to be?

9 A. Well, I think maybe you meant what  
10 circuitry is used. I'm not sure.

11 Q. And what criteria does Zhang use to  
12 output the M channels from the N channels?

13 MR. CUVIELLO: Objection. Form.

14 THE WITNESS: So, he probably does not  
15 give an exhaustive list, but he does describe that  
16 for the sake of fast channel change, even if  
17 someone's not watching a particular channel, might  
18 want to have those available to be output quickly  
19 for fast channel change and, thus, this switch, this  
20 bus selector switch, has some value.

21 BY MR. HENDIFAR:

22 Q. How does Zhang choose which channels DM  
23 are output from the collection of channels C1 to N?

24 MR. CUVIELLO: Objection. Form.

25 THE WITNESS: Again, Zhang doesn't

1 choose. Zhang chose an architecture with a switch  
2 where the desired channels C1 through CN can be --  
3 are input to the bus selector so that that switch  
4 can provide those outputs to the demodulator.

5 BY MR. HENDIFAR:

6 Q. Right. But there is a determination  
7 made as to which output goes to which demodulator,  
8 correct?

9 A. So, Zhang is describing the  
10 implementation of the -- of the circuit. He doesn't  
11 say, you know, "how do I choose what channel I'm  
12 going to watch?"

13 I mean he's -- he's basically saying  
14 that any of those -- those desired channels and  
15 multiple of those desired channels can be output to  
16 the demodulator. He's not saying, "oh, this is how  
17 I'm choosing which one I'm going to watch."

18 Q. So not all channels C in Zhang are  
19 necessarily transmitted to the demodulators,  
20 correct?

21 A. Zhang's architecture is flexible. All  
22 of the CN channels or a subset of the CN channels  
23 can be output to the demodulator.

24 Q. Okay. So, what is the criteria you have  
25 used to determine that Zhang's channel C's are

1 desired channels?

2 What makes Zhang's channels C1 to N  
3 desired?

4 MR. CUVIELLO: Objection. Form.

5 THE WITNESS: Well, just like the  
6 '362 Patent and the other patents describe, desired  
7 is one thing, undesired is the other. And both  
8 desired and undesired are input to the -- to the  
9 device.

10 And then what -- what I was showing in  
11 that figure on page three of my second declaration  
12 is after the A to D converters with I and Q signals  
13 coming in, the -- the desired are picked from the  
14 entire spectrum of channels, with each one of those  
15 elements, a mixer, low-pass filter and, NCO, just  
16 like in the '362 Patent with the complex mixer and  
17 the low-pass filter and, of course, NCO is in there  
18 also, the -- just like the '362 Patent, Zhang is  
19 saying, you know, you can -- you can tune one of the  
20 channels, you can select it, you can tune another  
21 channel, you can select it and so on and so forth.

22 It doesn't really say, you know, "why  
23 would I want to watch HBO versus CBS?"

24 Q. So, you mentioned that a subset of  
25 channels C1 to CN may be sent to the demodulators,

1 correct?

2 That may be a scenario, correct?

3 A. Yes. It can output all or fewer than  
4 all. Again, it's a very flexible architecture.

5 So the way it maps to the '362 and the  
6 other patents is it provides the output C1 to CN to  
7 the demodulator. And that's certainly a  
8 configuration that's supported by Zhang.

9 Q. So how do you know -- if not all  
10 channels C are necessarily transmitted to  
11 demodulators or watched by users, how do you know  
12 that Zhang's channels C do not contain any undesired  
13 channels?

14 A. Well, by definition, desired are the  
15 ones that the mixer, low-pass filter and NCO tune  
16 to. And undesired are the ones that they don't tune  
17 to.

18 Q. So your definition is whatever is  
19 extracted from an input signal is necessarily by  
20 definition a desired channel?

21 A. I think that's consistent with the  
22 patents, yes.

23 Q. Now, in your -- let me find the correct  
24 paragraph. One moment.

25 A. Again, I want to make sure that what I

1 just said was correct.

2 I was talking about the output C1  
3 through CN. I think you were -- used the word  
4 "channel." So I just want to make sure I'm exact on  
5 what we're talking about.

6 Q. Now, may I please refer you to  
7 paragraph 19 of your first declaration for the  
8 '362 Patent.

9 A. Okay.

10 Q. And you see the first two grounds of  
11 anticipation and obviousness based on Zhang alone?

12 A. Yeah. I see those first two lines,  
13 ground A and ground B.

14 Q. The question is, in your analysis for  
15 the grounds that rely only on Zhang, you have relied  
16 on an unmodified version of Zhang as opposed to  
17 proposing specific modifications to Zhang's  
18 disclosure, correct?

19 MR. CUVIELLO: Objection. Form.

20 THE WITNESS: I don't think that I  
21 proposed that another prior art element -- prior art  
22 reference would modify the structure of Zhang in  
23 ground A and ground B.

24 BY MR. HENDIFAR:

25 Q. So my question is not about if the

1 modification is based on another prior art. My  
2 question was more general.

3 So the question is, in your analysis for  
4 grounds that are based on Zhang alone, have you  
5 relied on any modification to Zhang or are you  
6 relying on Zhang in unmodified form?

7 A. I think it's unmodified. But I think  
8 my -- my understanding of what unmodified means is  
9 that I didn't rely on any prior art to modify the  
10 structure or functionality of Zhang in my analysis.

11 Q. So then let me make it correct  
12 adjustment to your understanding.

13 So, modification doesn't have to be  
14 based on another prior art. It could just be based  
15 on knowledge of a POSITA to modified something.

16 So when I say unmodified, I'm not  
17 limiting it to modification based on another  
18 reference. It can be modification based on whatever  
19 a POSITA wants to do --

20 Does that make sense?

21 A. Yes.

22 (A clarification was requested by  
23 the reporter.)

24 Q. A POSITA may wish to do?

25 So the question -- let me then ask the

1 question again.

2 In your analysis for the grounds that  
3 are based on Zhang alone, have you relied on any  
4 modification to Zhang or are you relying on an  
5 unmodified disclosure in Zhang?

6 A. We're talking about ground A and  
7 ground B still?

8 Q. Right. The grounds that are based on  
9 Zhang alone.

10 A. Okay.

11 MR. CUVIELLO: Objection. Form.

12 THE WITNESS: So, I don't think I have.  
13 If you saw that I did, maybe you could point me to  
14 it, save us a little time.

15 BY MR. HENDIFAR:

16 Q. I don't believe you have. But I don't  
17 want to put words in your mouth and I need a  
18 straight answer.

19 So, I don't -- I don't believe you have,  
20 but I don't want you to rely on me because I don't  
21 want to put words in your mouth. I really just want  
22 an actual answer.

23 So the question is, in your analysis for  
24 the grounds that rely on Zhang alone, have you  
25 relied on any modification to Zhang or have you

1 relied on unmodified embodiments of Zhang?

2 MR. CUVIELLO: Objection. Form.

3 THE WITNESS: I don't think I have. But  
4 to be sure, I think I may need to read the entire  
5 analysis to make sure.

6 So, I'll be happy to do that. I just --  
7 I don't think I have. But I may have.

8 BY MR. HENDIFAR:

9 Q. So sitting here now, you don't believe  
10 you have relied on any modification to Zhang's  
11 embodiments for the grounds that rely on Zhang  
12 alone; is that accurate?

13 A. That's correct.

14 MR. CUVIELLO: Objection to form.

15 THE WITNESS: Sorry.

16 BY MR. HENDIFAR:

17 Q. I'm sorry. I didn't get your answer,  
18 Mr. Lett.

19 A. Can you repeat it again?

20 Q. Sure.

21 THE REPORTER: I did get an answer. Do  
22 you want me to read --

23 MR. HENDIFAR: If you got it.

24 (Whereupon the answer was read as  
25 follows:

1 "Answer: That's correct."

2 BY MR. HENDIFAR:

3 Q. So that's fine.

4 THE WITNESS: Can you re-read that  
5 question to make sure I understand?

6 (Whereupon the question was read  
7 as follows:

8 "Question: So sitting here now,  
9 you don't believe you have relied

10 on any modification to Zhang's  
11 embodiments for the grounds that  
12 rely on Zhang alone; is that

13 accurate?

14 "Answer: That's correct.")

15 THE WITNESS: Again, I was just talking  
16 about the '362. And I have not looked at the other  
17 ones. So -- and we were talking about ground A and  
18 ground B of the '362 declaration on my answer.

19 MR. CUVIELLO: Did my objection get  
20 noted?

21 THE REPORTER: Yes. There was an  
22 objection to form.

23 BY MR. HENDIFAR:

24 Q. Now, Mr. Lett, is the term "digital  
25 front end" a term of art that a POSITA would know

1 what it means in general in this field?

2 MR. CUVIELLO: Objection. Form.

3 THE WITNESS: Well, I think one would  
4 need to put it in the context of the type of product  
5 we're talking about to get a general idea.

6 So, digital front end in one type of  
7 product may be totally different than another. But  
8 I think it kind of implies something at the front  
9 end of the product or the beginning of the entry  
10 point of signals that has some digital circuitry in  
11 it.

12 BY MR. HENDIFAR:

13 Q. Is anything that has some digital  
14 circuitry in it considered digital front end?

15 A. I don't think so. I mean I think you'd  
16 have to be more specific than that.

17 You know, so I think a POSITA would  
18 kinds of, you know, have a product and would kind of  
19 design something and kind of come up with a name for  
20 it. And -- and, oh, it's got some digital  
21 components in it and it's here near the beginning of  
22 the circuit flow, so let's call it digital front  
23 end.

24 And then similar to our -- my answer  
25 earlier when I was talking about you kind of need to

1 look into details to understand exactly what's meant  
2 by digital front end for the particular use of that  
3 term.

4 Q. Now, in Zhang what happens if a user  
5 wants to watch a channel that has not been extracted  
6 by the demultiplexer as one of the channels C1 to  
7 CN?

8 MR. CUVIELLO: Objection to form.

9 THE WITNESS: I'm not sure I understand  
10 what you mean by "what happens if."

11 BY MR. HENDIFAR:

12 Q. So, you testified that Zhang does not  
13 necessarily extract all the channels in the input  
14 signal in its demultiplexer.

15 Correct?

16 A. That's right.

17 Q. So there might be a channel in the input  
18 signal in Zhang that is not extracted by the  
19 demultiplexer as one of channels C1 to CN in your  
20 opinion, correct?

21 A. Yes. So, if you have a whole bunch of  
22 channels coming in and you only select some of them  
23 with these mixer, low-pass filter, NCO elements,  
24 that is true.

25 Q. Now, how would Zhang deal with the

1 situation where a user may wish to watch a channel  
2 that has not been -- that is one of the channels  
3 that was not extracted by Zhang's demultiplexer?

4 MR. CUVIELLO: Objection. Form.

5 THE WITNESS: So, suppose it's a set top  
6 box or whatever it is, right, that we're going to  
7 watch television on. And I'm watching a channel  
8 that has my -- let's call it C2, right?

9 So my C2 set of mixers, NCOs and  
10 low-pass filters is tuned to that channel. Right?

11 If -- if I want it to go to a different  
12 channel, you know, somebody probably pressed the  
13 remote, you know, select a different channel number  
14 or channel up, down or something and cause that  
15 mixer -- that NCO that's part of the chain to switch  
16 to a new target frequency so that it would tune to  
17 the frequency of the channel that we decided we want  
18 to watch now instead of the one we've been watching.

19 Q. How long would it take for Zhang's  
20 system, if implemented in 2011 with the technology  
21 at the time, to switch the channel to a channel that  
22 had not been extracted yet?

23 MR. CUVIELLO: Objection. Form.

24 THE WITNESS: It's hard to say. I don't  
25 recall.

1 I mean it would be certainly fast enough  
2 so the user who wanted to select a different channel  
3 than the one that's selected that he's watching or  
4 whatever would not be too objectionable.

5 I don't know. Maybe a half -- I don't  
6 know. Less than half a second, less than a second,  
7 I don't know. Something like that. Whatever one  
8 would think would be acceptable.

9 BY MR. HENDIFAR:

10 Q. Other than the documents provided by  
11 Patent Owner regarding Zhang's European prosecution  
12 history, did you review any other documents from  
13 Zhang's European prosecution history?

14 A. I did not review the prior art  
15 references D1 and D2 because I don't think they were  
16 provided.

17 And I followed Dr. Russ's declaration  
18 where he was talking about this. And he referenced  
19 some other document related to the EPO, I think.  
20 And I looked at that. I looked at the quote that he  
21 put in his -- Dr. Russ put in his declaration that  
22 was part of the -- the document -- I can't remember  
23 the name of the document. But anyway, he references  
24 it explicitly, and I looked at that.

25 So other than that, I didn't look at any

1 other --

2 Was the question European --

3 Q. Yes. Right.

4 A. -- patents?

5 I don't think I looked at any other  
6 European patents or documents about European  
7 applications other than the ones that Dr. Russ  
8 referenced.

9 Q. Did you try to locate either the  
10 application or the references cited or anything else  
11 from the European prosecution of Zhang?

12 A. So I looked at this analysis from the  
13 view of a POSITA. And so the answer is no, I did  
14 not.

15 So, and the reason I did not is because  
16 from the position of a POSITA, I think one would  
17 look at Zhang and read it and -- and perhaps use it  
18 to -- to implement a product or whatever.

19 So -- so, I don't think that a POSITA  
20 would go and look at all the background references  
21 and the applications and all that. A POSITA would  
22 normally just look at the patent and -- and use that  
23 in his -- to whatever use he wants to use it.

24 Q. Okay. Do you recall when you read for  
25 me your construction of "selecting" from

1 paragraph 114 of your first declaration for the  
2 '362 Patent?

3 A. Yes. Paragraph 114, I remember reading  
4 it.

5 Q. Okay. Is the construction you read for  
6 me from paragraph 114 of your first declaration for  
7 the '362 Patent which you said you believe is the  
8 correct construction for "selecting," is that the  
9 plain and ordinary meaning of "selecting" or is that  
10 the construction of "selecting" in the context of  
11 the '362 Patent?

12 MR. CUVIELLO: Objection. Form.

13 THE WITNESS: So, as I stated on  
14 paragraph 27 in my second reply declaration for the  
15 '362, a POSITA would have understood the plain and  
16 ordinary meaning of "select" said plurality of  
17 desired television channels is what each signal path  
18 in Figures 2 and 3 do -- does.

19 And then this plain and ordinary meaning  
20 of "select" that is the same that's used between  
21 Zhang and the '362 patents and other -- those other  
22 patents.

23 So that's the meaning of "select" that I  
24 was using as the plain and ordinary meaning through  
25 all of my analysis.

1 Q. In your opinion, does the plain and  
2 ordinary meaning of "select" require the use of  
3 mixers and filters?

4 A. So, the mixers and filters are picking  
5 something out.

6 Right?

7 So, picking a channel that I want as  
8 desired -- right? -- out of a whole bunch of  
9 channels is selecting. And it just happened to use  
10 mixers and the low-pass filters and NCOs to do that  
11 picking.

12 So that is selecting in the plain and  
13 ordinary meaning.

14 Q. Picking a channel from a signal or  
15 selecting -- I guess you used the word picking  
16 instead -- so let me ask the question again.

17 So, selecting or picking a channel from  
18 an input signal is different from separating out all  
19 the channels in that input signal, correct?

20 MR. CUVIELLO: Objection. Form.

21 THE WITNESS: It can be the same if --  
22 if you want to pick all the channels. If you had  
23 enough of those elements, those -- those mixer,  
24 low-pass, filter, NCO elements, one for each  
25 channel, you could -- and that's when you could --

1 you could select all of the channels.

2 But that's in general not what is  
3 practical, you know, for a number of reasons.  
4 Right? One is it would require a whole bunch of  
5 circuitry to duplicate those elements for every  
6 single channel.

7 You could imagine that, you know, a  
8 cable system that would have 150 channels, are you  
9 going to have 150 mixers and low-pass filters and  
10 NCOs so you could select all 150? Probably not.

11 And secondly, you know, once you  
12 selected all those channels, what would you do with  
13 it? Right?

14 So, how many channels can somebody watch  
15 simultaneously. Probably not 150, right?

16 So, for -- for practical reasons, most  
17 of the time you would have fewer selected channels  
18 than you would all the channels.

19 And furthermore -- and I think I said  
20 this in my second declaration -- there wouldn't be  
21 any point in having NCOs. You would -- you  
22 essentially have mix -- if you want to select all  
23 those channels, you would have fixed numbers for  
24 NCOs for every single channel, and there would be no  
25 point in them -- it being programmable by --

1 You know, an NCO by definition is  
2 programmable. So you change the numbers to hit  
3 different target frequencies.

4 If you're going to always tune all the  
5 channels, which, again, I said is not practical or  
6 needed or wanted, then you wouldn't even -- you'd  
7 just have an oscillator with fixed frequencies for  
8 each one of those mixers.

9 Q. So Zhang's device can be used with  
10 satellite or cable or whatnot; is that accurate?

11 MR. CUVIELLO: Objection. Form.

12 THE WITNESS: Yeah. So, Zhang talks  
13 about cable and satellite systems. So I think that  
14 answer is yes.

15 BY MR. HENDIFAR:

16 Q. How would the manufacturer of a device  
17 implementing Zhang know in advance what exact  
18 frequencies are the channels in the signal that  
19 Zhang's device is going to receive?

20 (A clarification was requested by  
21 the reporter.)

22 BY MR. HENDIFAR:

23 Q. In the signals that the device is going  
24 to receive?

25 A. And the device is what? What was the

1 last word?

2 Q. Let me step -- I'll withdraw that  
3 question. I'll ask it in smaller pieces.

4 So, Zhang's input signal contains a  
5 number of channels, correct?

6 A. I mean I think it can. Or it could be  
7 less -- I mean it could be one, I suppose, right?

8 Q. It was a number -- I was not trying to  
9 limit it.

10 My question was Zhang's input signal has  
11 one or more channels, correct?

12 A. I think so, yes.

13 Q. And the frequency location where a  
14 channel is located can be different depending on the  
15 nature of the input; for example, satellite versus  
16 cable versus broadcast, correct?

17 A. Yes.

18 Q. So, even if Zhang were to demultiplex  
19 and extract all channels in the signal band, it  
20 would still require adjustable oscillators. Because  
21 he would need to tune each of the extraction path to  
22 the frequency of the channels in the input signal,  
23 correct?

24 MR. CUVIELLO: Objection. Form.

25 THE WITNESS: No. You wouldn't build

1 a -- you wouldn't build one product that's used for  
2 cable and satellite and off air terrestrial. You  
3 would build three different products and -- and  
4 using the illustration where I said you would have  
5 fixed frequency select.

6 So, you know, the cable may have one set  
7 of frequencies and the satellite may have another.  
8 But essentially they would be different products.  
9 And there's, you know, other differences between  
10 cable and satellite, too, that, you know --  
11 especially terrestrial, like, you know, decoding a  
12 digital signal, you would have a different product  
13 that would -- would you know, decode, demultiplex  
14 and decompress and everything per ATSC standards,  
15 for example, right? Instead of, you know, like  
16 mpeg-2 or whatever that -- that would be used in a  
17 cable system.

18 So they're different products.

19 BY MR. HENDIFAR:

20 Q. Then it's say it's just for satellite  
21 for the sake of this argument.

22 Is it the case that -- a device built  
23 based upon Zhang for a satellite system, is it the  
24 case that the input signal always had -- the  
25 channels and the input signal are always at

1 previously known fixed frequencies regardless off  
2 the -- let me strike that -- let me ask a better  
3 question.

4 So you mentioned that the -- if the  
5 input signal --

6 A. Could we take a break just a second?

7 Q. It's my last question.

8 A. Five minutes?

9 Q. Sure.

10 A. I can take it now or answer this one and  
11 take it.

12 MR. HENDIFAR: Yeah, let's take a break.  
13 That's fine.

14 I know Mike is like very --

15 MR. CUVIELLO: That's okay. Five  
16 minutes?

17 THE WITNESS: Thank you.

18 (Brief recess.)

19 BY MR. HENDIFAR:

20 Q. So, Mr. Lett, the question is assuming a  
21 Zhang device that is built for satellites, is it the  
22 case that all the channels in the -- whatever  
23 satellite signal the device may receive are always  
24 going to get fixed previously known frequencies?

25 A. Well, so each satellite provider has

1 their own kind of frequency plan.

2 You know, Dish is one thing who I worked  
3 for. I worked for EchoStar building products for  
4 Dish to be clear. You know, DirecTV has another.  
5 And, you know, those are based on their channel  
6 lineups and so on and so forth.

7 So, once you get down to a particular  
8 implementation, it's pretty much fixed.

9 But, again, like I was talking about,  
10 building a product with all these mixers, what would  
11 it be for?

12 My answer is I don't think it's very  
13 useful, because you're not going to -- you're not  
14 going to watch 150 channels, for example,  
15 simultaneously. You're not going to record 150  
16 channels, because it would eat up all your hard disk  
17 drive space in this, you know, kind of set top box.

18 Right?

19 And so there's lots of reasons why you  
20 would implement Zhang with the numerically  
21 controlled oscillators that would, you know, pick or  
22 select the channel from the -- from the plurality of  
23 input channels that -- that you wanted that was  
24 desired.

25 Q. Now, are generally the devices built by

1 manufacturers specifically for a given Dish  
2 provider?

3 So, for instance, does the manufacturer  
4 manufacture a device that's just specifically for  
5 Dish as opposed to -- was it DirecTV you mentioned?

6 A. I think so. So, I don't have any  
7 experience building a satellite product for both  
8 Dish and EchoStar, for example -- I mean both Dish  
9 and DirecTV, I meant to say. I don't -- I'm not  
10 sure. But I don't think so.

11 You know, we built products for Dish,  
12 and they would not work with -- with a DirecTV  
13 system, because there's certain -- usually there's  
14 other things that make their systems proprietary,  
15 like the encryption methodology that's used on their  
16 particular type of system which requires a whole  
17 different set of circuitry.

18 And so I think -- I think the answer is  
19 you build the product for the -- for the provider,  
20 the service provider.

21 Q. Okay.

22 MR. HENDIFAR: I have no further  
23 questions.

24 MR. CUVIELLO: And we have no redirect.

25 MR. HENDIFAR: All right. Well, thank

1 you very much, Mr. Lett.

2 Sorry it got a bit heated at times. But  
3 it's remote, so there is a limit to that, I suppose.  
4 Take care.

5 MR. CUVIELLO: Reporter, if you could  
6 stay on for a minute. I just wanted to talk about  
7 ordering a copy.

8 MR. HENDIFAR: Do you need me? Any  
9 questions for me?

10 MR. CUVIELLO: No. I think you're  
11 ordering one day, right, turn around?

12 MR. HENDIFAR: Yes okay. So I'll take  
13 off.

14 (Off-the-record discussion.)

15 MR. CUVIELLO: And as far as ordering  
16 the transcript, can we get a copy by Friday?

17 THE REPORTER: No problem.

18  
19 (Whereupon at 12:30 P.M. the  
20 deposition proceedings were  
21 concluded.)

22 \* \* \*

1 I, DAVID B. LETT, say I have read the  
2 foregoing deposition and declare under penalty of  
3 perjury under the laws of the State of California:

4 That the foregoing is my deposition under  
5 oath;

6 That I have read same and have made the  
7 necessary corrections, additions or changes to my  
8 answers that I deem necessary;

9 That my answers as indicated are true and  
10 correct.

11 Executed at \_\_\_\_\_,  
12 California, this \_\_\_\_\_ day of \_\_\_\_\_,  
13 20\_\_\_\_.

14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
DAVID B. LETT

1 REPORTER'S CERTIFICATE

2  
3 I, PATRICIA L. HUBBARD, do hereby certify:

4  
5 That I am a duly qualified Certified  
6 Shorthand Reporter in and for the State of California,  
7 holder of Certificate Number 3400, which is in full  
8 force and effect, and that I am authorized to  
9 administer oaths and affirmations;

10  
11 That the foregoing deposition testimony of  
12 the herein named witness, to wit, DAVID B. LETT, was  
13 taken before me at the time and place herein set  
14 forth;

15  
16 That prior to being examined, DAVID B.  
17 LETT was duly sworn or affirmed by me to testify the  
18 truth, the whole truth, and nothing but the truth;

19  
20 That the testimony of the witness and all  
21 objections made at the time of examination were  
22 recorded stenographically by me and were thereafter  
23 transcribed by me or under my direction and  
24 supervision;

1 That the foregoing pages contain a full,  
2 true and accurate record of the proceedings and  
3 testimony to the best of my skill and ability;

4  
5 I further certify that I am not a relative  
6 or employee or attorney or counsel of any of the  
7 parties, nor am I a relative or employee of such  
8 attorney or counsel, nor am I financially interested  
9 in the outcome of this action.

10  
11 IN WITNESS WHEREOF, I have subscribed my  
12 name this 21st day of May, 2025.

13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
PATRICIA L. HUBBARD, CSR #3400



1 ERRATA SHEET FOR THE TRANSCRIPT OF:  
 2 Case Name: COMCAST CABLE vs ENTROPIC  
 3 Dep. Date: MAY 20, 2025  
 4 Deponent: DAVID B. LETT

5 Page Line Now Reads Should Read Reason

6	_____	_____	_____	_____	_____
7	_____	_____	_____	_____	_____
8	_____	_____	_____	_____	_____
9	_____	_____	_____	_____	_____
10	_____	_____	_____	_____	_____
11	_____	_____	_____	_____	_____
12	_____	_____	_____	_____	_____
13	_____	_____	_____	_____	_____
14	_____	_____	_____	_____	_____
15	_____	_____	_____	_____	_____
16	_____	_____	_____	_____	_____
17	_____	_____	_____	_____	_____
18	_____	_____	_____	_____	_____
19	_____	_____	_____	_____	_____
20	_____	_____	_____	_____	_____
21	_____	_____	_____	_____	_____
22	_____	_____	_____	_____	_____
23	_____	_____	_____	_____	_____
24	_____	_____	_____	_____	_____

25 Signature of Deponent Date

A			
<b>ability</b> 125:3 <b>able</b> 78:3 <b>about</b> 7:20 9:16 12:14 15:5 16:4 18:25 19:8,25 20:1,2 21:2,20,22 22:25 23:10 24:5,6 26:4 27:4 28:1 29:24 33:1,1,10 34:15,18 38:12 39:3 40:5,22,23 41:2,4 41:15 44:9,10,14,16 45:12 46:17 47:17 48:21 50:3,4 51:1 60:7 64:24 65:15,20 69:19 70:21,22 71:5 71:12,23 73:4 76:3 81:17,21 82:17 83:2 84:4 87:14,24 88:13 88:22 90:22 96:3 97:23,24 103:2,5,25 105:6 107:16,17 108:5,25 111:18 112:6 116:13 120:9 122:6 <b>acceptable</b> 111:8 <b>access</b> 13:7,15 24:23 <b>according</b> 64:6,19 <b>accurate</b> 106:12 107:13 116:10 125:2 <b>achieve</b> 55:21 74:17 <b>achieved</b> 56:13 78:5 <b>action</b> 125:9 <b>actual</b> 105:22	<b>actually</b> 12:12 15:5 18:8 23:15 26:7 27:2 31:14 40:8 41:20 48:4 56:6 79:14 <b>ADC</b> 71:10,11 <b>ADCs</b> 70:17 <b>added</b> 57:19 <b>additional</b> 90:24 <b>additions</b> 123:7 <b>address</b> 17:24 54:1 <b>addressed</b> 17:16 <b>adjustable</b> 117:20 <b>adjustment</b> 104:12 <b>administer</b> 124:9 <b>administering</b> 7:14 <b>advance</b> 116:17 <b>advantage</b> 70:19 <b>affirmations</b> 124:9 <b>affirmed</b> 124:17 <b>after</b> 17:7 101:12 <b>again</b> 19:20 33:8 34:2,17 37:15 38:24 40:24 42:10,16 43:17 47:7 59:10 61:18 63:12 67:15 71:2 78:10 79:4 82:23 89:1 94:3 97:10 99:25 102:4,25 105:1	106:19 107:15 114:16 116:5 120:9 <b>ago</b> 27:1 <b>agree</b> 56:21 57:5,10 <b>agreed</b> 57:4 <b>ahead</b> 47:2 51:17 56:15 82:25 <b>air</b> 118:2 <b>all</b> 12:7,12,18,20 13:19 13:20,23 17:23 31:1 31:25 32:1,1,22 38:15 39:11,23 41:7 41:24 42:17,20,25 43:3,10,23 44:15,17 44:23,24 46:20,22 47:24 48:3,10,11,13 49:14,17 58:11 61:25 62:12,15,18 62:20 63:16,17 64:2 64:5,8,8,14 66:5,11 71:6,6,13 74:25 82:5 83:3,7 94:9 97:5,21 100:18,21 102:3,4,9 109:13 112:20,21 113:25 114:18,22 115:1,10 115:12,18,22 116:4 117:19 119:22 120:10,16 121:25 124:20 <b>allow</b> 23:4 24:1 <b>allowed</b> 9:20,25 <b>alone</b> 103:11 104:4 105:3,9 105:24 106:12 107:12 <b>already</b> 9:10 34:23 55:1	<b>also</b> 12:14 13:7,22,25 16:9,11 20:10,14 26:2 38:11 40:8,9 43:10,14 60:14 64:5 64:20 77:1 79:10 80:2,4 81:24 88:11 88:23 98:11 101:18 <b>Alternate</b> 87:5 <b>always</b> 42:18 44:25 46:9,11 47:11,14 48:2 75:11 98:19 116:4 118:24 118:25 119:23 <b>am</b> 7:6,11 23:1,1,4,24 69:9,9 85:15 89:13 124:5,8 125:5,7,8 <b>ambiguities</b> 10:4 <b>ambiguous</b> 44:13 <b>among</b> 77:25 94:8 <b>amplification</b> 69:21 <b>AMs</b> 12:14 <b>an</b> 13:1 16:15 19:11 22:3,5,7 23:12 24:3 24:8,10,13,20 26:14 28:21 31:15,22 33:1 33:13,24 34:19 36:5 38:19 41:7,23 43:1 44:24 46:3,20 47:18 47:25 48:10,14,20 49:15,18,23 54:3 58:1 59:5 62:11 63:21,23 65:23 70:11 72:2 75:14 82:6 84:3,5 90:7,16 92:25 93:11 94:3,8 95:13,13 97:10 99:15 100:1 102:19

103:16 105:4,22 106:21 107:21 114:18 116:1,7 <b>analog</b> 27:14 53:20 68:11 69:25 70:14,20 71:6 71:17,21 <b>analysis</b> 15:17 16:15 83:19 98:15 103:14 104:3 104:10 105:2,23 106:5 112:12 113:25 <b>and/or</b> 77:3 <b>another</b> 26:3,12 70:2 73:19 101:20 103:21 104:1,14,17 108:7 118:7 120:4 <b>answer</b> 6:18 10:5 18:19 19:9 19:10 21:6,7,8,8,15 21:23 22:23 23:16 23:18,21 24:3,17 34:20,22 35:22 36:3 39:20 41:18,21 44:21 50:2 54:7,11 54:12,25 56:5,6 70:7 72:7 74:4 77:13 78:11 79:14 82:14 86:10 88:19 93:12 94:12 95:7 99:2 105:18,22 106:17,21,24 107:1 107:14,18 108:24 112:13 116:14 119:10 120:12 121:18 <b>answered</b> 37:14 48:16,16,24 49:6 54:14 55:1 56:10 94:21 <b>answering</b> 35:13 40:18,19 <b>answers</b>	123:8,9 <b>anticipation</b> 103:11 <b>any</b> 7:13 9:5,5,16 10:4,16 12:1,2,25 13:2,15 14:5 15:17 16:15 29:7,16 35:14,17,17 43:11 69:24 77:15 78:15 79:1 80:11 82:19 89:6 96:5 100:14 102:12 104:5,9 105:3,25 106:10 107:10 111:12,25 112:5 115:21 121:6 122:8 125:6 <b>anybody</b> 11:3 51:1 96:3 <b>anyone</b> 7:13 10:24 <b>anything</b> 13:4 64:24 65:20 108:13 112:10 <b>anyway</b> 31:6 111:23 <b>APPEAL</b> 1:3 2:3 3:3 <b>appearances</b> 5:1 7:25 <b>appendix</b> 12:17 <b>application</b> 112:10 <b>applications</b> 78:5 112:7,21 <b>appreciate</b> 14:15,25 86:9 <b>approach</b> 68:6 <b>approximately</b> 10:19 11:6 14:18 16:3 <b>architecture</b> 45:13 46:17 54:1 70:3 71:3 78:6	79:25 100:1,21 102:4 <b>area</b> 62:19 <b>argument</b> 118:21 <b>arguments</b> 15:18 16:16,23 <b>around</b> 10:21 45:9 47:6 122:11 <b>art</b> 53:5,10 54:3 65:11 65:21,22 66:1,5,11 66:11,19,23 67:4,7 67:9 69:2,14,18 71:6 73:8 79:21 94:7 98:18 103:21 103:21 104:1,9,14 107:25 111:14 <b>as</b> 7:12 8:5,14,16 10:12 10:12 11:16,19 13:1 14:21 17:15 21:17 22:3,5,7 23:24 24:8 24:10,13,24 26:7,21 27:8,24 28:2,12 33:14 34:10 36:5 37:21 38:10,12,18 39:10,14,15,15 41:9 42:24 43:8 48:10 49:18 51:12,12 52:5 53:19 54:3 56:23 57:11,13,21 65:13 66:3,19 67:19,19 68:11 70:1 73:6,6 73:18 74:9,12 76:4 76:4 77:7,24 82:6 82:20 83:12 88:8,8 91:8 92:17 93:11 94:5 97:21 98:9 100:7 103:16 106:24 107:7 109:6 109:19 113:13,24 114:7 121:5 122:15 122:15 123:9	<b>ask</b> 10:3 18:9,20,24 21:4 21:5,10 23:19,20 24:2 54:13 61:18 80:19,23 81:2,5,9 85:8,18,25 89:1 104:25 114:16 117:3 119:2 <b>asked</b> 36:23 42:24 48:16,24 49:6 54:5 55:10,19 86:21 <b>asking</b> 15:5 19:25 20:1,2,5,6 21:20,22 22:1,2,2 22:25 40:22,23 41:2 41:3,4 44:9,10,14 44:15 57:2,5 69:6,9 69:9 75:23 79:10,11 84:8,17 85:15 88:22 91:10 <b>asks</b> 89:13 <b>aspects</b> 52:10 <b>assistant</b> 36:5 <b>associated</b> 63:23 <b>assume</b> 10:6 <b>assuming</b> 119:20 <b>at</b> 4:3,6 7:11 9:5 14:5,6 15:4 24:21,22 25:2 25:11,13 27:4,5 28:4,15 30:5 33:10 34:24 35:3,9,12 36:2,6,6,8 50:1,20 55:2,16,24 56:8 57:9 58:1,25 59:17 60:15 65:5 66:3,4,8 66:9,10 67:23 70:10 71:9,14 73:16 78:4 79:21 95:18 107:16
---	--	--	--

108:8 110:21 111:20,20,24,25 112:5,12,17,20,22 118:25 122:2,19 123:12 124:13,21 <b>Atlanta</b> 36:8 <b>ATSC</b> 118:14 <b>attorney</b> 84:4,5 94:3 95:13 97:10 125:6,8 <b>attorneys</b> 11:2,4 15:12 17:2 <b>attorney's</b> 92:25 <b>authorized</b> 124:8 <b>available</b> 12:2 62:16 78:7 99:18 <b>aware</b> 10:18 <b>A.M</b> 4:7 7:2	<b>band</b> 43:13 55:13 117:19 <b>bandwidth</b> 53:16 55:13 57:20 58:8 70:13 71:10,15 <b>bank</b> 92:2 96:20 <b>banks</b> 92:2 <b>Banner</b> 5:3 8:8 <b>baseband</b> 28:24 38:14 64:22 92:6 96:23 <b>based</b> 23:16 37:2 44:5 77:18 87:5 103:11 104:1,4,14,14,17,18 105:3,8 118:23 120:5 <b>basically</b> 26:5 28:1 65:1 87:25 100:13 <b>basing</b> 72:22 <b>be</b> 7:20 14:2 15:18 16:16,24 17:16 20:18 22:20,22 32:2 34:10 35:11 38:21 39:25 40:6 41:9,16 42:12 43:11 45:16 46:23 50:12 53:5,10 62:23 63:22 64:5,14 65:2,2,10,25 67:3,7 69:1,19 71:11 72:2 72:14,25 73:24 74:25 75:19 76:1,6 78:3,7 82:20 84:5 88:7,20 97:8,14,17 98:2,12 99:8,18 100:2,15,23 101:25 102:2 104:13,14,18 106:4,6 108:7,16 109:17 111:1,4,8 114:21 115:20,24	116:9 117:6,7,14 118:8,16 120:4,11 <b>because</b> 18:16 19:6 23:8 25:2 25:14 34:21 35:10 45:5,6,10 47:1 49:3 49:9,24 51:10 52:7 54:25 56:9 59:16 63:1 67:17 69:3 70:25 71:22 91:5,11 93:1 94:13 98:9 99:3 105:20 111:15 112:15 117:20 120:13,16 121:13 <b>been</b> 8:14 29:21,22 36:15 37:3,8 41:15 45:14 46:17 50:1,4 81:17 82:16 86:21 88:5,22 97:5,21,22,23,24 109:5 110:2,18,22 <b>before</b> 1:3 2:3 3:3 4:8 17:6 17:12 52:5 71:10 124:13 <b>beginning</b> 55:7 108:9,21 <b>behalf</b> 4:5 <b>being</b> 70:23 82:2 86:7 115:25 124:16 <b>believe</b> 11:15 54:14 56:6 91:15 96:17 105:16 105:19 106:9 107:9 113:7 <b>best</b> 14:22 32:2 125:3 <b>better</b> 86:11 119:2 <b>between</b> 65:16 69:7 74:8 88:7 113:20 118:9 <b>bit</b> 66:12 70:18 122:2	<b>blank</b> 56:23 57:12,16 <b>blank/undesired</b> 60:2 <b>blind</b> 14:24 <b>block</b> 25:12,13 28:3,19 37:21 77:22 78:24 79:8 80:7,8 81:13 82:2 <b>Board</b> 1:3 2:3 3:3 22:24 23:7 <b>book</b> 30:23,25 31:8,15,16 31:25 <b>both</b> 12:16 30:18 38:2 40:9 45:14,22 51:25 52:2,8 57:20 58:9 65:6,24 67:9,25 68:7,25 69:3,12,15 72:1,13 93:5 101:7 121:7,8 <b>Boulevard</b> 5:16 <b>box</b> 37:21,22 42:8 81:14 81:23 82:10,18 110:6 120:17 <b>break</b> 50:10,14,25 95:15,16 96:2,7 119:6,12 <b>breaking</b> 52:15 <b>breaks</b> 9:20,25 <b>Brief</b> 50:22 95:24 119:18 <b>broad</b> 18:17 <b>broadcast</b> 117:16 <b>build</b> 117:25 118:1,3
<b>B</b>			
<b>B</b> 1:14 4:3 6:4 8:13 103:13,23 105:7 107:18 123:1,17 124:12,16 126:4 <b>back</b> 15:4 40:25 43:17 46:1 50:20,24 56:5 56:17 64:10 66:16 68:4 95:18 <b>background</b> 50:5 51:19,24 52:11 52:25 53:2,4,9 65:12 66:2,5,21 67:2,7 112:20 <b>backgrounds</b> 88:2 <b>ballpark</b> 10:22 15:8			

121:19 <b>building</b> 120:3,10 121:7 <b>built</b> 118:22 119:21 120:25 121:11 <b>bunch</b> 46:14 74:22 81:19 109:21 114:8 115:4 <b>bus</b> 98:12 99:20 100:3 <b>but</b> 7:21 10:5 13:25 14:5 14:25 20:10 21:9 22:22 23:4,19 27:2 29:21 32:4 33:8 34:8 36:20 37:14 40:8 41:1 43:10 44:21 46:13 47:11 51:22 52:20 54:23 56:15,18 57:17 60:7 60:10,14 64:1,5 65:4 66:10,11 68:15 68:21 70:16 71:5 73:14,23 76:4 78:11 81:16 82:14 89:17 91:22 93:9,9 94:5 97:21,25 98:2,19 99:15 100:6 104:7 105:16,20 106:3,7 108:7 111:23 115:2 118:8 120:9 121:10 122:2 124:18 <b>BW1</b> 57:20,24 58:8 <hr/> <b>C</b> <hr/> <b>C</b> 28:23 97:19 100:18 102:10,12 <b>cable</b> 1:5 2:4 3:4 115:8 116:10,13 117:16 118:2,6,10,17 126:2 <b>California</b> 4:11 5:17 7:6 123:3	123:13 124:6 <b>call</b> 10:21 15:8 22:24 23:7 27:19,20 28:21 55:7 78:1 80:16 108:22 110:8 <b>called</b> 8:14 26:7 30:3 31:7 31:14 <b>calling</b> 81:13 <b>calls</b> 25:17 27:1 73:20 <b>came</b> 38:6 <b>can</b> 7:7 14:25 15:23 18:16,24,25 19:21 20:5 21:6,10 23:6 23:19 33:18 36:2 37:15 40:6,17 42:12 43:10,11,22 44:4,7 44:10,21 47:7,8 50:12,17 52:20 56:5 59:10 60:10 65:2,2 65:8 67:13 72:9 74:25 76:13 77:6,16 78:7 80:9,14,15 84:13 85:12 86:10 95:15 97:13,17 98:2 98:9,12 100:2,4,15 100:23 101:19,19 101:20,20,21 102:3 104:18 106:19 107:4 114:21 115:14 116:9 117:6 117:14 119:10 122:16 <b>cannot</b> 23:15 <b>can't</b> 21:9 111:22 <b>capability</b> 80:1 81:25 <b>capable</b> 97:24	<b>capital</b> 64:13,15 <b>care</b> 122:4 <b>carrier</b> 60:20,24 <b>case</b> 1:10 2:10 3:10 14:9 25:17 26:5,9,25 27:4,5,19,22 34:2 41:20 61:24 64:7 75:21 97:23 118:22 118:24 119:22 126:2 <b>cases</b> 35:21 97:25 <b>cause</b> 110:14 <b>caveats</b> 95:12 <b>CBS</b> 101:23 <b>certain</b> 28:2 46:11 74:23 121:13 <b>certainly</b> 80:20 102:7 111:1 <b>Certificate</b> 124:1,7 <b>Certified</b> 4:9 124:5 <b>certify</b> 124:3 125:5 <b>chain</b> 39:3,6 110:15 <b>chains</b> 38:8 <b>change</b> 77:25 78:9 99:16,19 116:2 <b>changes</b> 123:7 <b>channel</b> 20:24 21:19 22:17,19 25:13 26:11,12 27:2 27:15 28:22,24	29:17,18 37:22,25 38:1,13,15,25 39:4 42:10 44:7 45:9,23 46:22 48:4,9 55:23 72:25 73:1,23 75:3 75:18,18 76:5,6 77:25 78:4,9 81:18 91:20 92:5 96:19,23 99:16,17,19 100:11 100:25 101:21 102:20 103:4 109:5 109:17 110:1,7,10 110:12,13,14,17,21 110:21 111:2 114:7 114:14,17,25 115:6 115:24 117:14 120:5,22 <b>chips</b> 31:23 <b>choices</b> 46:14 47:7 <b>choose</b> 99:22 100:1,11 <b>choosing</b> 83:3 100:17 <b>chose</b> 100:1 <b>chosen</b> 27:25 <b>circuit</b> 31:23 100:10 108:22 <b>circuitry</b> 33:23 35:4,9,12 39:23 41:24 42:18 42:25 43:1 44:23 46:4 47:25 49:14 52:7 53:19 54:2 55:15 68:10 69:15 70:23,25 77:2 86:23 87:7 99:10 108:10 108:14 115:5 121:17 <b>citation</b> 18:16 34:19 <b>citations</b> 18:25 64:20 65:9
---	--	---	--

<b>cite</b> 21:17	40:16	13:8,15	96:10,13,17 97:2,11
<b>cited</b> 10:17 61:24 112:10	<b>column</b> 51:8,20,21 52:6,19	<b>concept</b> 33:9	112:25 113:5,8,10
<b>city</b> 7:7	52:22 53:14 60:15	<b>concerns</b> 9:6 10:4	<b>constructions</b> 84:4 88:11,23
<b>claim</b> 12:16 18:15 79:21	62:22 63:5,13,24	<b>concluded</b> 122:21	<b>contain</b> 17:23 32:22 102:12
80:5 81:10 86:17	67:16 68:4,6,16,17	<b>conduct</b> 15:17 16:15	125:1
87:19,21 88:11,23	68:19 70:24 72:21	<b>configuration</b> 102:8	<b>contains</b> 57:20 58:9,11 60:1
89:7 91:2 93:17,20	<b>columns</b> 66:22	<b>confused</b> 45:10	61:7,13,21 117:4
94:1 95:3,10 98:18	<b>combined</b> 8:24	<b>confusions</b> 9:6	<b>contents</b> 51:1 96:3
<b>claims</b> 91:6	<b>Comcast</b> 1:5 2:4 3:4 8:4,8	<b>connected</b> 98:12	<b>context</b> 18:4 20:5 21:1 26:3
<b>clarification</b> 104:22 116:20	126:2	<b>connection</b> 9:11 10:15,24 11:7	33:3,12,23 37:2
<b>clarify</b> 9:7	<b>come</b> 50:20 95:18 108:19	14:18 16:4	42:25 76:7 81:18
<b>class</b> 30:23	<b>comfortable</b> 23:8	<b>consider</b> 86:21 97:6,6	82:16,19 83:7 87:14
<b>classes</b> 35:19 36:22	<b>coming</b> 27:15,16 74:23	<b>considered</b> 13:20 36:12 38:22	94:6,7 97:3,7 108:4
<b>clean</b> 12:21	101:13 109:22	39:25 42:1 43:5	113:10
<b>clear</b> 21:25 22:20 35:11	<b>commencing</b> 4:6	45:1 82:20 108:14	<b>contiguous</b> 51:11 67:18
41:16 88:20 120:4	<b>comment</b> 18:16 78:11	<b>considers</b> 53:5,10 66:23 67:3	<b>continued</b> 88:3
<b>clearly</b> 28:4	<b>commentary</b> 90:24	<b>consistent</b> 25:23 84:21 97:5	<b>controlled</b> 25:14 38:5,9 45:8
<b>CLERK</b> 79:3 84:19	<b>commented</b> 15:13	102:21	47:5,13 70:5 93:4
<b>CN</b> 27:17 28:3 77:16,17	<b>comments</b> 17:1,6,11	<b>consists</b> 61:7	120:21
78:1 82:3 91:20	<b>Communications</b> 1:5,8 2:4,7 3:4,7 8:9	<b>constituent</b> 41:25 42:20 44:24	<b>convenience</b> 11:17
96:19 97:14 100:2	<b>company</b> 35:20	46:22 48:1,3,12	<b>conventional</b> 53:13
100:22,22 101:25	<b>compare</b> 88:2	49:16,17	<b>conversion</b> 53:20 55:23 68:12
102:6 103:3 109:7	<b>complete</b> 52:1	<b>construction</b> 45:13 83:25 84:10,18	70:20
109:19	<b>complex</b> 101:16	84:24 85:1,3,9,13	<b>converted</b> 92:4 96:21
<b>collaborative</b> 15:14	<b>complicated</b> 79:13 93:14	85:19 86:1,5,17,22	<b>converter</b> 27:15 69:25 71:21
<b>collection</b> 99:23	<b>components</b> 108:21	87:6,10,19,22 89:2	<b>converters</b> 70:14 71:18 101:12
<b>college</b> 30:21 31:5	<b>computer</b>	89:6,18,25 90:14	<b>converting</b> 82:10
<b>colloquy</b>		91:1,12,14,22 92:16	<b>cookbook</b> 31:10,12,13,14 32:8
		92:22 93:17,19 94:1	32:9,13 34:4
		94:14,18 95:3,10	<b>copies</b>

12:21	5:1 7:24 8:10 9:21,25	<b>date</b>	<b>decompress</b>
<b>copy</b>	11:24 14:7 23:6	36:2 126:3,25	118:14
12:2,6 51:16 122:7	40:17 48:15 49:1	<b>DAVID</b>	<b>deem</b>
122:16	125:6,8	1:14 4:3 6:4 8:13	123:8
<b>correct</b>	<b>counsel's</b>	123:1,17 124:12,16	<b>deficiencies</b>
8:25 9:11,21 10:1	49:3	126:4	65:12
11:13 16:6,8,11	<b>course</b>	<b>day</b>	<b>deficient</b>
29:9,18 30:11 37:20	16:2 33:21 35:25	122:11 123:13	69:3
43:18 46:24 47:21	50:12 52:18 59:12	125:12	<b>define</b>
48:22 53:1,6,11	61:19 72:10 101:17	<b>DC</b>	86:10 99:5
56:25 57:13,22	<b>courses</b>	5:8	<b>defines</b>
58:10 59:6,14 60:2	35:17 36:7,11,11,13	<b>deal</b>	73:2
60:6,11 61:9,10,15	36:14,19,20	109:25	<b>definition</b>
61:23 62:10 63:19	<b>Court</b>	<b>decided</b>	83:1 86:6 91:17 94:4
64:4 65:21 66:24	88:12,24	110:17	102:14,18,20 116:1
67:4 68:18 70:8	<b>create</b>	<b>decimated</b>	<b>deflect</b>
72:4 75:19 76:6	16:15	64:22	56:7
79:2,18 83:11,21	<b>criteria</b>	<b>declaration</b>	<b>delay</b>
84:1 88:24 97:2,15	76:10,17 99:11	10:14 11:11,18 12:16	11:24
98:2 100:8,20 102:1	100:24	15:6,19 16:10,17	<b>demodulate</b>
102:2,23 103:1,18	<b>CSR</b>	17:8,12,21,23 20:3	71:1,16
104:11 106:13	1:25 4:9 7:6 125:15	23:2 39:11 61:25	<b>demodulated</b>
107:1,14 109:15,20	<b>currently</b>	65:13,14 77:8 83:13	75:19 76:6
113:8 114:19 117:5	7:8 12:3 35:20	86:14,25 87:3,18,23	<b>demodulating</b>
117:11,16,23	<b>cut</b>	88:6,10,13,19,22	52:5
123:10	32:23	89:20 90:2,6,12	<b>demodulation</b>
<b>corrections</b>	<b>C's</b>	92:11,12,15,21	78:7
123:7	100:25	94:11 96:9 98:11	<b>demodulator</b>
<b>correctly</b>	<b>C.V</b>	101:11 103:7	52:3,4,7,8 53:22 54:2
33:16,22 34:1 47:21	36:1,16	107:18 111:17,21	55:24 57:20 58:4,9
48:7 49:12,20 51:23	<b>C1</b>	113:1,6,14 115:20	59:5,22 62:2,13
52:11 72:4,11	27:17 28:2 77:16,17	<b>declarations</b>	63:18,23 64:9 67:25
<b>could</b>	78:1 82:2 91:20	10:11,17 11:16,19	68:13 69:1,4,13,16
18:14 20:4 30:18,24	96:19 99:23 100:2	12:19 14:19 15:10	70:23 71:1,3,9,13
31:11 34:13,17,20	101:2,25 102:6	15:17 16:5,14,24	71:19,24 72:3,14
39:6 50:10 54:7	103:2 109:6,19	17:4,17 40:3 43:9	75:1,4,12 77:12
64:5 71:11 72:2,14	<b>C2</b>	45:25 50:3 83:9	78:19,23 100:4,7,16
86:9 89:10 97:18	27:17 98:6 110:8,9	84:9,16 89:7,15,19	100:23 102:7
98:5,5,6,7,7 99:5		90:1 91:1 93:19	<b>demodulators</b>
104:14 105:13	<b>D</b>	94:10 97:4,22 98:22	26:13 58:5 59:14
114:25,25 115:1,7	<b>D</b>	<b>declare</b>	61:12,21 62:8 64:4
115:10 117:6,7	6:1 101:12	123:2	65:7,25 67:10 71:19
119:6 122:5	<b>data</b>	<b>decode</b>	100:19 101:25
<b>couldn't</b>	26:11,11,12 32:1	118:13	102:11
60:8 72:7	55:22 59:21 77:3,3	<b>decoding</b>	<b>demult</b>
<b>counsel</b>	77:12	118:11	27:1

<b>demultiplex</b> 117:18 118:13	28:18 32:2 40:9 71:23 74:22 99:15 101:6	25:3 33:11 34:24 35:3,9,12 37:4,6,9 49:25 109:1	<b>difference</b> 56:3 69:7
<b>demultiplexer</b> 22:18 25:12,18 26:7 27:8 30:3,4,10,14 32:6,12 33:7,13,24 34:3,6,9,15,24 35:2 35:8 36:23 37:4,7,8 37:10 76:11,19 81:5 109:6,14,19 110:3	<b>described</b> 12:21 26:6,25 30:7 39:3,10,14 40:2 43:20 66:19 74:9 80:3 82:6 91:7 93:1 94:5	<b>determination</b> 17:15 100:6	<b>differences</b> 118:9
<b>demultiplexers</b> 31:7 32:4 38:10	<b>describes</b> 37:20,22 57:21 66:22 75:7 78:5	<b>determine</b> 16:23 100:25	<b>different</b> 18:9 25:4,7 26:6 45:16 58:1 65:10 66:1 69:1 87:2 92:5 96:22 97:14 99:6 108:7 110:11,13 111:2 114:18 116:3 117:14 118:3,8,12 118:18 121:17
<b>demultiplexing</b> 18:12,22 19:17 20:15 20:24 21:14,18 22:8 22:14 24:12 25:7,21 25:23,24 26:3,4,10 26:14,19,22 28:8,11 29:3,8,17 37:13,18	<b>describing</b> 25:3 26:10 100:9	<b>device</b> 30:2,6 32:13,14 33:1 34:10 101:9 116:9 116:16,19,23,25 118:22 119:21,23 121:4	<b>digital</b> 19:12,15 20:7,19 21:12,18 22:6,17 24:9 25:25 26:16 27:15,15 30:3,22 33:1 34:3 53:18,20 55:14 68:10,12 69:25 70:14,20,22 70:25 71:17,21 86:22 87:7 107:24 108:6,10,13,14,20 108:22 109:2 118:12
<b>DEMUX</b> 21:19 25:12 27:2,16 27:19 28:1 37:21	<b>description</b> 73:17	<b>devices</b> 31:7 45:13 120:25	<b>digitized</b> 27:23 38:6,16 71:8 90:9,21 92:3 96:21
<b>denotes</b> 64:13	<b>design</b> 30:22 45:16 46:10,11 47:2 48:10 108:19	<b>diagram</b> 28:5 65:14 73:20 77:9 88:5 98:10	<b>direction</b> 124:23
<b>Dep</b> 126:3	<b>desire</b> 74:3	<b>diagrams</b> 65:17 93:6	<b>DirecTV</b> 120:4 121:5,9,12
<b>depending</b> 117:14	<b>desired</b> 37:23 51:12 52:1,2,4 52:8 56:22 57:11,17 57:21 58:9 60:6,19 60:23 61:8,13,22 62:9 63:9,16,17 64:8,13,15,24 65:6 65:25 67:10,19,25 68:8,25 69:4,12,15 72:1,13 73:1,2,5,9 73:11,17,20,24,24 74:2,8,11,18 75:3 75:11 77:17 78:1 81:18 82:1,2 83:15 90:20 91:20,24 92:5 92:8 96:19,23,25 100:2,14,15 101:1,3 101:6,8,13 102:14 102:20 113:17 114:8 120:24	<b>dictate</b> 21:9	<b>disagree</b> 56:14
<b>depends</b> 39:8,12 43:24	<b>desires</b> 74:2,3 91:19	<b>did</b> 10:9,16,19,24 11:6 14:17 15:9,11,17 16:15,23 17:15 30:14 32:13,18 33:16,22 34:1 35:22 36:6,10,14 39:23 48:7 49:20 50:25 52:10 58:23,24 64:16 65:19,22 71:13 72:4,11,22 77:13 79:20 80:23 81:2,5,7,9 84:13,13 87:2,21 95:6 96:2,5 96:12 105:13 106:21 107:19 111:12,14 112:9,13 112:15	<b>disclosed</b> 99:3
<b>Deponent</b> 126:4,25	<b>detail</b> 28:15,19 50:2	<b>didn't</b> 15:21 31:4,13 35:5 50:13 59:8 66:25 71:2,18 80:19,25 95:5 104:9 106:17 111:25	<b>disclosure</b> 84:22 103:18 105:5
<b>deposed</b> 9:10	<b>details</b>		<b>discuss</b> 88:11,23
<b>deposition</b> 1:13 4:2 7:20 8:23,24 9:14,17,17 10:10,13 10:16,20,25 11:8,13 13:16 15:3 22:21 23:5,9 51:1 54:6,15 56:8 70:2 77:5 96:3 122:20 123:2,4 124:11			<b>discussed</b> 9:14 34:23 53:9 66:17 67:24 68:5 70:1 73:18 87:22
<b>depositions</b> 39:11 40:3 43:9 94:9			<b>discusses</b>
<b>describe</b>			



53:4 66:2 67:3,6	114:10 115:12	46:7,9 47:1,12,18	98:8
<b>discussing</b>	122:8 124:3	47:22 48:4,17,18	
45:14 62:3,4 88:17	<b>document</b>	49:8,9 50:11 54:9	<b>E</b>
<b>discussion</b>	10:16 15:14 111:19	54:12,24 55:9 56:6	<b>E</b>
43:18,19 60:17 66:18	111:22,23	56:12 57:1,14 59:15	6:1
68:14,21 83:2	<b>documents</b>	59:16 66:9,10 67:12	<b>each</b>
122:14	12:1,2,6,20,24,25	73:13 74:1 75:7,14	11:12,15,19 12:18
<b>Dish</b>	13:3,3,6,8,14,15	75:21 76:2 78:11	13:23,25 14:8 15:8
120:2,4 121:1,5,8,8	14:1,3 24:24 96:5	81:4,8 85:7,18,20	16:4 28:20,22,23
121:11	111:10,12 112:6	85:25 87:10 89:9,21	42:10 44:7 63:21
<b>disk</b>	<b>does</b>	90:23 94:24 97:12	83:16 92:4 96:22
120:16	7:13 17:23 22:25	99:2,3 102:16	101:14 113:17
<b>distinct</b>	24:6 26:14 32:14	103:20 105:12,16	114:24 116:8
33:14,25 38:21	37:20,25 40:23,23	105:16,19,19,20,20	117:21 119:25
<b>distinction</b>	41:3,3,7,24 42:18	106:3,7,9 107:9	<b>earlier</b>
74:7	42:20 43:1,3 44:23	108:15 110:24	26:6 108:25
<b>District</b>	46:21 47:25 48:11	111:5,5,7,15 112:5	<b>easier</b>
88:12,24	48:13 49:14 53:25	112:19 120:12	56:19 59:18
<b>dividing</b>	72:25 73:23 74:16	121:6,9,10	<b>eat</b>
74:17	76:10,18 77:15	<b>down</b>	120:16
<b>division</b>	78:15,16 79:1 81:16	92:4 96:21 110:14	<b>EchoStar</b>
26:4,9 77:2	82:10,14,17 83:6,17	120:7	120:3 121:8
<b>DM</b>	88:1,1 98:24 99:11	<b>Dr</b>	<b>edited</b>
97:13 99:22	99:14,15,22 104:20	111:17,21 112:7	15:13 16:10,14
<b>do</b>	109:12 113:18	<b>draft</b>	<b>effect</b>
7:19,23 9:13,16,19	114:1 121:3	15:9,11,12,16,18	124:8
10:5,9 12:1,1,21,23	<b>doesn't</b>	16:10 17:3,7,13	<b>eight</b>
12:25 13:7,9,14	64:24 69:24 71:22	<b>drafts</b>	10:22 11:10 47:9
18:20 20:21 21:15	74:3 82:14 94:12,13	16:14	64:14 71:15
22:7 24:10,13,20	99:25 100:10	<b>drive</b>	<b>either</b>
27:10,11 32:18	101:22 104:13	13:18,21 120:17	47:15 74:25 89:18,25
35:17 38:12 48:13	<b>doing</b>	<b>Duluth</b>	90:25 93:19,21
48:20 49:18,23 50:3	28:6 45:21 47:11	4:5 7:9,9	94:13 112:9
50:17 51:14,15,23	82:6 93:2,3 97:24	<b>duly</b>	<b>elaborate</b>
53:23 54:16,19 55:4	<b>done</b>	124:5,17	44:21
58:17,19 59:2,23	38:3 47:2 76:21	<b>duplicate</b>	<b>electronic</b>
60:22 61:2 63:11	77:20 78:19,24 79:8	115:5	13:5,7
64:16 66:17 67:11	80:6 81:20 82:17	<b>during</b>	<b>electronics</b>
67:12,21 68:2,14,21	<b>don't</b>	9:19,24 50:25 96:2	31:4 36:18
74:16 80:9 85:1,2,4	10:22,23 13:2,11	<b>D-u-l-u-t-h</b>	<b>element</b>
86:16,19 87:4,17	14:12,20,24 18:1	7:10	18:16 28:23 39:2
89:1,22,22 90:19	19:3,9,23 21:6,7	<b>D1</b>	57:16 103:21
99:8 100:11 102:9	22:23 23:11,25 29:5	111:15	<b>elements</b>
102:11,12 104:19	29:20,21 32:10	<b>D2</b>	31:24 38:25 39:5,6,9
104:24 106:6,21	35:16 36:19 37:19	98:7 111:15	39:13 44:6,8 47:10
112:24 113:18	44:20 45:4,4,7,12	<b>D20</b>	77:18 79:22 80:5

81:20 93:3 98:18,19 101:15 109:23 114:23,24 115:5 <b>else</b> 11:3 112:10 <b>embodiment</b> 61:11 62:4,5,6,8 63:8 63:18,21 64:2 65:23 69:2 72:2,12 77:24 80:22 <b>embodiments</b> 58:16 65:5,6 68:24 69:11 72:24 73:8 74:16 106:1,11 107:11 <b>employee</b> 125:6,7 <b>encryption</b> 121:15 <b>end</b> 27:9 28:10 51:13 53:22 70:11 71:9 107:25 108:6,9,14 108:23 109:2 <b>engagement</b> 30:10,13 33:6 <b>engineer</b> 95:13 <b>enough</b> 31:4 72:18 111:1 114:23 <b>entire</b> 101:14 106:4 <b>entirety</b> 68:7 <b>Entropic</b> 1:8 2:7 3:7 8:2 126:2 <b>entry</b> 108:9 <b>EPO</b> 111:19 <b>equal</b> 40:7,12 42:13 62:15 97:25 <b>ERRATA</b> 126:1	<b>especially</b> 118:11 <b>ESQ</b> 5:4,5,15 <b>essentially</b> 71:16 77:7 78:7 115:22 118:8 <b>estimate</b> 14:23,25 <b>estimates</b> 15:4 <b>European</b> 111:11,13 112:2,6,6 112:11 <b>even</b> 47:12 81:23 99:16 116:6 117:18 <b>evening</b> 36:7,7 <b>eventually</b> 74:25 <b>ever</b> 20:8 29:2 <b>every</b> 34:5 98:11 115:5,24 <b>everyone's</b> 11:17 <b>everything</b> 118:14 <b>exact</b> 38:12 94:4 103:4 116:17 <b>exactly</b> 10:23 19:8 26:19 27:5 28:5,17 30:6 33:9 34:7 36:20 46:16 83:6 86:8 109:1 <b>examination</b> 8:18 124:21 <b>examined</b> 8:15 124:16 <b>example</b> 14:2 22:12 24:21,25 25:11 30:22 34:19 60:16 62:11,21 90:7	90:16 93:22 94:8 98:5 117:15 118:15 120:14 121:8 <b>examples</b> 90:22 93:7 94:9 <b>exception</b> 46:23 48:2 49:17 <b>excuse</b> 15:6 93:9 <b>Executed</b> 123:12 <b>exemplary</b> 63:8 <b>exhaustive</b> 99:15 <b>exhibit</b> 9:3,7 11:16,19 12:8 12:10,11,12 13:20 13:23 14:6 21:18 54:19 55:2 86:13 88:17,21 90:6 92:12 92:14 93:25 94:17 95:2,9 96:8 <b>exhibits</b> 6:9 12:7,13,17 <b>exist</b> 62:16 <b>expect</b> 24:2 25:4 27:9 28:10 28:12 41:20 <b>expensive</b> 52:7 53:18 54:2 55:14,22 68:9 69:15 70:23 71:21 <b>experience</b> 121:7 <b>expert</b> 19:11 22:3,5 24:8 93:11 <b>explain</b> 36:24 81:12 88:4 <b>explained</b> 43:8 52:5 <b>explaining</b> 23:24 <b>explains</b>	51:25 60:5 67:8 <b>explicit</b> 83:24 <b>explicitly</b> 111:24 <b>extent</b> 23:14 <b>extract</b> 109:13 117:19 <b>extracted</b> 102:19 109:5,18 110:3,22 <b>extraction</b> 117:21 <hr/> <b>F</b> <hr/> <b>face</b> 66:8 <b>fact</b> 88:5 98:5 <b>fair</b> 9:8 10:7 11:21,22 20:7 <b>familiar</b> 22:22 23:1,3,25 33:7 40:24 <b>far</b> 35:15 73:6 76:4 122:15 <b>fast</b> 77:24 78:9 99:16,19 111:1 <b>feel</b> 60:14 62:6 <b>few</b> 50:11 95:15 <b>fewer</b> 102:3 115:17 <b>field</b> 18:10,21 19:5,6,11 19:15 20:7,18,19,23 21:12 22:3,5 24:8,9 24:24 25:8,24 26:15 26:20 29:3,18 30:2 34:9 35:3 75:18 76:6 108:1
---	---	--	---

<b>figure</b> 27:13,14 28:5 38:10 39:14 53:8,12 55:14 56:17,20,21 57:9,16 57:19,23 58:7,15,20 58:21,22,25 59:13 59:17,20,25 60:17 61:2,6,11,16,17,20 62:3,4,5,7 63:9,19 64:2,20 65:15 66:18 66:24 67:4,23,24 69:1,7,7,19 70:3,3 70:10 71:1,25 72:12 73:16 74:12,14 83:16 90:7 98:11 101:11	12:11 56:4 95:21 107:3 119:13 <b>finish</b> 40:18 <b>Firm</b> 8:8 <b>first</b> 9:3 10:13,14 12:15 12:19 15:11,12 17:7 17:12 30:22 39:10 52:4 54:6,14 75:19 86:14 88:15,16 92:12,14,21 94:10 96:8,20 103:7,10,12 113:1,6 <b>five</b> 47:8 50:15 56:11 71:14 119:8,15 <b>fixed</b> 115:23 116:7 118:5 119:1,24 120:8 <b>flexibility</b> 77:21 <b>flexible</b> 77:4 78:6 80:17 98:9 100:21 102:4 <b>flow</b> 108:22 <b>focus</b> 34:18 39:19 98:21 <b>focused</b> 29:22 98:14 <b>folder</b> 13:17,23 <b>folders</b> 13:17,21,22,25 <b>follow</b> 55:11 <b>followed</b> 26:11 69:20 111:17 <b>following</b> 20:17 64:1 <b>follows</b> 8:16 106:25 107:7 <b>force</b> 124:8	<b>foregoing</b> 123:2,4 124:11 125:1 <b>form</b> 15:20 16:18,25 17:9 17:18,25 18:6,13,23 19:19 22:10 24:15 25:9 26:1 28:13 29:10,19 30:16,20 32:24 33:17 34:12 38:23 40:1 41:11 42:2 43:6 45:2 46:6 46:25 48:23 49:21 52:12 54:4 59:7 64:18 69:5,17 72:5 72:15,19 73:12,19 73:25 74:20 75:5,13 76:12,20 78:17 79:3 79:19 80:13 81:11 82:8,22 84:2,11,19 85:11,23 86:4 87:12 89:8 91:3,18 92:1 94:20 98:16 99:1,13 99:24 101:4 103:19 104:6 105:11 106:2 106:14 107:22 108:2 109:8 110:4 110:23 113:12 114:20 116:11 117:24 <b>format</b> 82:11 91:5 <b>forth</b> 39:7 101:21 120:6 124:14 <b>forward</b> 20:18 <b>found</b> 13:14 <b>foundation</b> 75:24 <b>four</b> 15:8 16:4 47:8 58:23 58:24 60:18,23 61:8 63:10,16 64:14 71:14 <b>FR</b>	61:4 <b>Fred</b> 8:5,7 <b>FREDERIC</b> 5:5 <b>free</b> 60:14 62:6 <b>frequencies</b> 32:22 38:7,8 56:22 56:23 57:10,12 60:20,25 61:4 81:19 83:3,4,4 90:9,21 116:3,7,18 118:7 119:1,24 <b>frequency</b> 19:12,16 20:8,20 21:13 22:6 24:10 26:16 27:23 38:16 57:25 58:1,2,8,14 62:17 92:3 96:20 110:16,17 117:13 117:22 118:5 120:1 <b>Friday</b> 122:16 <b>from</b> 7:15 12:25 20:11 23:2 24:22,22 28:3 30:24 31:10 38:6 56:7 61:24 63:7 65:10 66:1 69:1 73:9,10 76:11,11,19 76:19 77:16,25 78:3 79:5 81:18 83:3 90:8,10,21 92:10 97:1,14 98:25 99:12 99:23 101:13 102:19 111:12 112:11,12,16,25 113:6 114:14,17,18 120:22,22 <b>front</b> 13:3 70:11 71:9 107:25 108:6,8,14 108:22 109:2 <b>full</b> 27:23 38:7 124:7
---	---	---	--

125:1	8:11 23:2,5 24:1	110:22 114:22	22:18 23:10 25:17
<b>fully</b>	40:25 45:8 51:17	118:24	26:6 27:1,13,18,25
38:16 86:7	52:20 56:5,8,15,17	<b>half</b>	28:16,18 37:20,20
<b>function</b>	66:4 74:24 82:25	70:12,13 71:10 111:5	37:21 57:14 70:22
87:6	90:2 95:17 110:11	111:6	71:2,13,19,22 73:2
<b>functionality</b>	112:20	<b>hand</b>	73:20 74:12 75:7
80:21 104:10	<b>goes</b>	7:18	77:24 99:3,14,15
<b>functions</b>	28:18 58:3 67:24	<b>Hang</b>	100:10 111:18,18
77:6	100:7	62:23	111:20,23 112:23
<b>further</b>	<b>going</b>	<b>happen</b>	117:21
28:15 77:21,21	20:17 43:17 50:2	44:17 54:19	<b>heading</b>
121:22 125:5	54:23 56:17,17,20	<b>happened</b>	87:4
<b>furthermore</b>	58:15 61:2 68:4	114:9	<b>hear</b>
115:19	71:16 88:21 90:2	<b>happens</b>	67:1 72:7
<b>F1</b>	93:8,10 100:12,17	64:14 109:4,10	<b>heard</b>
61:4	110:6 115:9 116:4	<b>happy</b>	20:8,10,14 30:4,9
	116:19,23 119:24	106:6	<b>heated</b>
	120:13,14,15	<b>hard</b>	122:2
<b>G</b>	<b>good</b>	12:2,6 35:10 56:2	<b>help</b>
<b>general</b>	7:5 8:11,20,22 20:13	71:22 110:24	60:9 66:14
104:2 108:1,5 115:2	23:19 50:15	120:16	<b>helped</b>
<b>generally</b>	<b>got</b>	<b>hardware</b>	36:6
34:10 35:2 65:22	36:9 46:14 106:23	36:17	<b>helps</b>
120:25	108:20 122:2	<b>has</b>	36:3 42:23
<b>geographic</b>	<b>graduate</b>	13:20 14:1 25:14	<b>hendifar@lowenst...</b>
62:19	31:15 36:10	38:14,19 65:11 76:6	5:19
<b>Georgia</b>	<b>greater</b>	79:25 81:24 86:5	<b>here</b>
4:5 7:9	98:2	91:8 97:20 99:20	8:5 16:21 23:12 29:6
<b>get</b>	<b>grocery</b>	108:10,13 109:5	29:15 34:15 48:8,13
21:4 23:11 92:25	20:11	110:2,8 117:10	48:20 49:18 71:9
94:24 106:17,21	<b>ground</b>	119:25 120:4	85:7,18 87:9 93:8
107:19 108:5	103:13,13,23,23	<b>hashed</b>	93:11,11 106:9
119:24 120:7	105:6,7 107:17,18	56:22 57:10,15 60:3	107:8 108:21
122:16	<b>grounds</b>	60:4,6 61:3,8	<b>hereby</b>
<b>getting</b>	87:5 103:10,15 104:4	<b>hashed/desired</b>	124:3
45:10	105:2,8,24 106:11	60:2	<b>herein</b>
<b>give</b>	107:11	<b>haven't</b>	124:12,13
7:20 18:14 23:11	<b>guess</b>	14:5 15:4 29:23	<b>he's</b>
49:8 91:17 99:15	14:21,25 114:15	47:17	23:20 25:3,3 26:3,10
<b>given</b>		<b>having</b>	27:4,19 28:1,5
37:7 95:12 97:19,19	<b>H</b>	8:14 34:21 35:13	40:19 48:15,16
98:4,8 121:1	<b>had</b>	50:3 56:2 60:19,24	69:19 70:21 71:5,8
<b>gives</b>	10:12 11:1 30:9,23	61:3 115:21	71:12,23 99:3
62:11	30:25 31:19 32:4	<b>HBO</b>	100:13,13,16 111:3
<b>giving</b>	37:3 39:5,22 43:20	101:23	<b>highlight</b>
24:24	52:4 56:10 65:11	<b>he</b>	51:15
<b>go</b>			

<b>high-speed</b> 27:14 53:19,21 68:11 68:12 70:20 <b>him</b> 23:17 40:17 <b>his</b> 14:12 27:13 111:21 111:21 112:23 <b>history</b> 14:3 111:12,13 <b>hit</b> 116:2 <b>holder</b> 124:7 <b>honestly</b> 14:6 54:9 <b>hour</b> 50:21 95:19,20 <b>hours</b> 10:19,22 11:6,9 14:17 15:8 16:4 <b>how</b> 10:19 11:6 14:17 19:9 22:22 34:22 36:24 39:8 41:4 43:24 50:14 53:25 55:4,21 65:10,23 68:23 69:13 81:9 88:1,1 93:3 95:16 99:22 100:11,16 102:9,11 109:25 110:19 115:14 116:16 <b>Hubbard</b> 1:25 4:9 7:6 124:3 125:15 <b>hypothetical</b> 38:18 39:21 41:6,19 41:22 42:4,11,14,15 42:17,22 43:21 44:22 45:11,15 46:19 47:23 48:8 49:13,24,25 <hr/> <b>I</b> <hr/> <b>idea</b>	108:5 <b>identical</b> 55:9 88:7 93:5 <b>identified</b> 69:14 <b>identifies</b> 54:3 <b>illustrate</b> 90:7 <b>illustration</b> 118:4 <b>imagine</b> 115:7 <b>implement</b> 112:18 120:20 <b>implementation</b> 100:10 120:8 <b>implemented</b> 110:20 <b>implementing</b> 116:17 <b>implements</b> 80:20 <b>implies</b> 108:8 <b>include</b> 43:11 62:20 <b>included</b> 16:24 36:21 <b>includes</b> 28:20 43:9 51:11,25 60:18,23 65:15 67:18,25 77:1 <b>including</b> 42:11 66:23 67:4 94:7 <b>incoming</b> 51:25 <b>incorporated</b> 17:3 <b>Indecipherable</b> 40:15 <b>index</b> 31:22 32:7 <b>indicated</b> 123:9	<b>indiscriminately</b> 42:18,21 43:3 44:25 49:15 <b>industry</b> 35:18 <b>INFORMATION</b> 6:14 <b>input</b> 17:19 27:24 32:22 33:13,24,25 34:11 38:6,6,19,20 39:24 40:6,10 41:7,8,23 41:25 42:12,13,19 43:1,4 44:24 46:3 46:20,21 47:25 48:3 48:10,12 49:15,16 52:2 57:24 58:2,12 59:25 61:6 62:1,12 65:3 68:7 77:17 83:3 98:12 100:3 101:8 102:19 109:13,17 114:18 114:19 117:4,10,15 117:22 118:24,25 119:5 120:23 <b>inputs</b> 33:14 <b>inside</b> 22:18 25:2 <b>instance</b> 29:7,16 43:24 121:3 <b>instead</b> 38:15 68:19 70:16 110:18 114:16 118:15 <b>institution</b> 35:17 <b>instruct</b> 23:15 <b>instructed</b> 6:18 23:1,17 <b>instruction</b> 23:3 <b>instructions</b> 40:25 <b>Instruments</b>	30:25 31:10 32:7,13 <b>Instrument's</b> 31:23 <b>intend</b> 23:25 <b>intended</b> 17:24 <b>intending</b> 23:4 <b>interested</b> 38:2 125:8 <b>interface</b> 59:22 77:12 82:7 <b>interrupt</b> 23:7 48:17,18 49:9 <b>intimately</b> 22:13 <b>into</b> 27:15 32:20 33:14,25 37:6 38:21 39:22,24 41:8,25 42:19 43:4 44:24 46:22 48:1,3 48:12 49:16 52:15 74:18 97:7 109:1 <b>invariably</b> 43:2 48:2,11 <b>invention</b> 53:1,9 65:12 66:2,22 67:2,7 <b>inventor</b> 74:3,10,21 <b>IPRs</b> 9:11,14 11:12,15 12:25 13:14 30:11 30:14 33:6 <b>IPR2024-00432</b> 2:10 8:25 9:3 <b>IPR2024-00435</b> 3:10 <b>IPR2024-00438</b> 1:10 <b>issue</b> 29:23 54:1,3 69:13 <b>issues</b> 17:16,24 <b>items</b>
---	--	--	---



88:12,24	<b>lot</b> 33:4 34:16 80:9	94:8 115:14	29:12 33:4 36:1,3
<b>little</b>	<b>lots</b> 120:19	<b>mapped</b> 79:21 81:9	42:15,22 44:20
26:18 70:15,18	<b>loved</b> 31:1	<b>mapping</b> 80:5 98:17	45:12 46:1,13 47:22
105:14	<b>LOWENSTEIN</b> 5:14	<b>maps</b> 102:5	48:5,17,18 49:8
<b>LLC</b> 1:5,8 2:4,7 3:4,7 8:9	<b>lower</b> 58:2 71:11	<b>March</b> 36:4	51:6 52:16 54:5,12
<b>locate</b> 112:9	<b>low-pass</b> 25:15 38:4 39:4 44:6	<b>margin</b> 70:15,18	54:13 58:6 60:9,13
<b>located</b> 4:4 7:8 12:3 117:14	45:24 77:19 81:21	<b>marked</b> 57:15	62:25 63:2 64:10,11
<b>location</b> 7:12 117:13	92:7 93:4 96:24	<b>materials</b> 10:13,14 13:19	66:14,16,16 67:13
<b>logic</b> 30:23 33:2,12,23	101:15,17 102:15	<b>matter</b> 10:17 13:13 48:10	67:14 69:6,10 70:9
98:24 99:3,5,8	109:23 110:10	<b>matters</b> 8:24 11:20 14:19	73:15 75:9 84:13
<b>logical</b> 33:23	114:10,24 115:9	15:10 36:21	85:12 86:6,10 89:1
<b>long</b> 36:15 52:14 110:19	<b>M</b>	<b>may</b> 1:15 4:8 7:1 44:16	89:10 91:17 92:25
<b>longer</b> 50:12,16	<b>M</b> 76:10,18 97:17,25,25	45:16 50:8 51:3	95:21 96:14,16
<b>look</b> 25:2,13 27:3 28:4	98:2,8,15,19,25	52:22 63:22 66:10	97:11 99:5 102:23
30:5 33:10 34:6,24	99:12	66:14 78:3 86:13	104:11,25 105:13
35:11 36:2 37:6	<b>made</b> 17:1,6 100:7 123:6	94:3 97:11 101:25	105:20 106:22
55:2,16 56:8 59:15	124:21	102:2 103:6 104:24	112:25 113:6
59:17 60:10,12,14	<b>make</b> 7:24 14:24 17:15	106:4,7 108:7 110:1	114:16 117:2 119:2
60:15 66:3,4 70:10	47:20 49:11 56:18	118:6,7 119:23	119:2 122:8,9
73:16 78:8 89:20	102:25 103:4	125:12 126:3	124:13,17,22,23
90:3 109:1 111:25	104:11,20 106:5	<b>maybe</b> 10:21 11:9,9 14:2	<b>mean</b> 11:18 14:12 25:22
112:17,20,22	107:5 121:14	15:7 16:15 26:21	27:8 28:8 29:4,18
<b>looked</b> 14:5,6 15:4 24:22	<b>makes</b> 33:4 59:18 101:2	42:14,22 44:12	33:8 37:25 47:4
66:9 67:23 79:21	<b>manner</b> 30:6	68:15 75:22 84:13	58:24 69:6 72:25
107:16 111:20,20	<b>manufacture</b> 121:4	98:7 99:9 105:13	73:23 84:3 85:1,13
111:24 112:5,12	<b>manufacturer</b> 116:16 121:3	111:5	85:20,25 87:22
<b>looking</b> 27:5 28:15 50:1	<b>manufacturers</b> 121:1	<b>mcuviello@banner...</b> 5:10	92:24 97:18 100:13
56:11 57:9 58:25	<b>many</b> 10:19 11:6 14:17	<b>me</b> 7:7,15 8:5 9:6 10:5	108:15 109:10
66:10 91:5 94:4	34:14 39:8 41:4	11:22,24 12:5,9	111:1 117:6,7 121:8
<b>looks</b> 35:3,9	43:24 47:7 93:1,2	13:3,11 14:21 15:5	<b>meaning</b> 18:3 22:4 25:24
<b>loose</b> 26:18		15:6,7,12,24 18:14	26:15 83:10,14,20
<b>lost</b> 50:13 52:13		18:20,24 19:25 20:1	83:23,25 84:21,25
		20:4 21:9 22:20	97:7 113:9,16,19,23
			113:24 114:2,13
			<b>means</b> 24:25 26:19 28:16
			30:14 34:25 46:13
			85:3,8,18 86:8 87:5
			87:11 89:2 91:16,24
			93:17 104:8 108:1
			<b>meant</b> 27:6 29:8 34:7 37:7
			37:10 58:22 74:11
			74:12 99:9 109:1

<p>121:9</p> <p><b>Meeker</b></p> <p>5:5 8:5,7</p> <p><b>meet</b></p> <p>10:24 11:7 83:10</p> <p><b>megahertz</b></p> <p>53:17 70:17,17</p> <p><b>memorized</b></p> <p>41:1 78:11</p> <p><b>mentioned</b></p> <p>12:24 28:12 101:24</p> <p>119:4 121:5</p> <p><b>methodology</b></p> <p>121:15</p> <p><b>Michael</b></p> <p>5:4 8:3 11:2</p> <p><b>microprocessor</b></p> <p>36:17</p> <p><b>middle</b></p> <p>49:9</p> <p><b>might</b></p> <p>27:25 28:15,16 29:21</p> <p>35:11,11 62:23</p> <p>77:25 99:17 109:17</p> <p><b>Mike</b></p> <p>119:14</p> <p><b>mind</b></p> <p>29:11 50:11 51:15</p> <p>52:15 94:5</p> <p><b>minute</b></p> <p>27:1 54:24 122:6</p> <p><b>minutes</b></p> <p>50:11,15,21 56:11</p> <p>95:15,19,20 119:8</p> <p>119:16</p> <p><b>mishear</b></p> <p>31:13</p> <p><b>misspoke</b></p> <p>68:20</p> <p><b>misunderstand</b></p> <p>47:21 64:16</p> <p><b>misunderstanding</b></p> <p>66:13</p> <p><b>misunderstood</b></p> <p>42:15 57:6 66:15</p> <p><b>mix</b></p>	<p>115:22</p> <p><b>mixer</b></p> <p>28:20 39:3 45:24</p> <p>69:20 81:21 92:4</p> <p>93:4 96:22 101:15</p> <p>101:16 102:15</p> <p>109:23 110:15</p> <p>114:23</p> <p><b>mixers</b></p> <p>25:14 38:4,9 41:4,4</p> <p>44:6 45:19 70:4</p> <p>77:18 92:3 96:20</p> <p>110:9 114:3,4,10</p> <p>115:9 116:8 120:10</p> <p><b>modification</b></p> <p>104:1,5,13,17,18</p> <p>105:4,25 106:10</p> <p>107:10</p> <p><b>modifications</b></p> <p>103:17</p> <p><b>modified</b></p> <p>104:15</p> <p><b>modify</b></p> <p>103:22 104:9</p> <p><b>moment</b></p> <p>102:24</p> <p><b>Monica</b></p> <p>5:17</p> <p><b>more</b></p> <p>18:15 19:7,20 21:2</p> <p>34:18 39:5 54:23</p> <p>71:20 80:1,9 81:14</p> <p>83:5 98:14 104:2</p> <p>108:16 117:11</p> <p><b>morning</b></p> <p>7:5 8:20,22</p> <p><b>most</b></p> <p>115:16</p> <p><b>mostly</b></p> <p>97:25</p> <p><b>mouth</b></p> <p>105:17,21</p> <p><b>move</b></p> <p>39:17 45:8 47:6 83:5</p> <p><b>mpeg-2</b></p> <p>118:16</p>	<p><b>much</b></p> <p>14:10 35:23 50:14</p> <p>79:25 95:16 120:8</p> <p>122:1</p> <p><b>multiple</b></p> <p>28:23 83:4,4 93:6</p> <p>94:22 97:19 98:13</p> <p>100:15</p> <p><b>multiplexing</b></p> <p>77:2</p> <hr/> <p><b>N</b></p> <hr/> <p><b>N</b></p> <p>6:1 62:15 64:13,15</p> <p>64:22 76:11,19</p> <p>81:23,24 97:17,25</p> <p>98:1,2,8,15,20,25</p> <p>99:12,23 101:2</p> <p><b>name</b></p> <p>7:5 31:8 108:19</p> <p>111:23 125:12</p> <p>126:2</p> <p><b>named</b></p> <p>81:23 124:12</p> <p><b>names</b></p> <p>36:20</p> <p><b>narrow</b></p> <p>19:7 21:2</p> <p><b>nature</b></p> <p>117:15</p> <p><b>NCO</b></p> <p>28:21 39:3 81:21</p> <p>101:15,17 102:15</p> <p>109:23 110:15</p> <p>114:24 116:1</p> <p><b>NCOs</b></p> <p>44:6 77:19 110:9</p> <p>114:10 115:10,21</p> <p>115:24</p> <p><b>near</b></p> <p>108:21</p> <p><b>necessarily</b></p> <p>46:5 66:4 100:19</p> <p>102:10,19 109:13</p> <p><b>necessary</b></p> <p>123:7,8</p>	<p><b>need</b></p> <p>19:7,20 21:2 23:20</p> <p>27:3 33:10 35:11</p> <p>37:6 45:7 70:17</p> <p>78:11 84:5 89:15,20</p> <p>90:23,23 105:17</p> <p>106:4 108:4,25</p> <p>117:21 122:8</p> <p><b>needed</b></p> <p>116:6</p> <p><b>new</b></p> <p>110:16</p> <p><b>next</b></p> <p>28:4 74:24 83:6</p> <p><b>nice</b></p> <p>30:25</p> <p><b>night</b></p> <p>36:6,6</p> <p><b>nine</b></p> <p>47:9 71:15</p> <p><b>no</b></p> <p>7:15,16 9:18 10:18</p> <p>11:5,25 13:2 25:10</p> <p>29:6,15 31:2 37:16</p> <p>44:2 50:12 51:2</p> <p>56:1 58:23 67:15</p> <p>69:9 73:15 76:25</p> <p>78:13 79:18 80:12</p> <p>82:5 96:4,6,16</p> <p>112:13 115:24</p> <p>117:25 121:22,24</p> <p>122:10,17</p> <p><b>none</b></p> <p>6:10,15,19 41:5</p> <p>61:14,22 62:9</p> <p><b>non-existent</b></p> <p>56:12</p> <p><b>nor</b></p> <p>125:7,8</p> <p><b>normal</b></p> <p>75:20</p> <p><b>normally</b></p> <p>32:10 112:22</p> <p><b>note</b></p> <p>9:4</p> <p><b>noted</b></p>
---	--	---	--



107:20	<b>O</b>	118:2 119:1 122:13	86:16,25 87:1,3,5
<b>notes</b>	<b>oath</b>	<b>offense</b>	87:17,22 88:6,10
13:1,4	7:14 123:5	78:10	93:8,11 98:6,7,8,10
<b>nothing</b>	<b>oaths</b>	<b>offer</b>	98:14 101:11,21
7:21 124:18	124:9	32:2 50:13	103:4,11,15,16
<b>Notice</b>	<b>objected</b>	<b>OFFICE</b>	104:1,4,5,6,9,14,15
4:12	95:5,6	1:2 2:1 3:1	104:17,18 105:3,3,4
<b>now</b>	<b>objection</b>	<b>Off-the-record</b>	105:8,20,24,25
13:5 20:17 29:6,15	7:13 15:20 16:18,25	122:14	106:1,10,11 107:10
45:25 48:8,13,20	17:9,18,25 18:6,13	<b>oh</b>	107:12,18 110:7
49:18 50:8 51:22	18:23 19:19 22:10	31:22 90:12 100:16	113:13 117:14
58:13,15,15 71:25	23:12,13 24:15 25:9	108:20	120:5,6 121:15
72:24 75:17 76:9	26:1 28:13 29:10,19	<b>okay</b>	122:6
85:18 87:3,10 88:10	30:16,20 31:17	7:11,17 8:10,20 9:2	<b>once</b>
88:19 90:3 102:23	32:15,24 33:17	9:10,19 10:3 11:3	9:10 115:11 120:7
103:6 106:9 107:8	34:12 36:25 38:23	12:12 20:23 23:22	<b>one</b>
107:24 109:4,25	40:1 41:11 42:2	24:4 25:20 27:12	13:25 14:2 21:17
110:18 119:10	43:6 45:2 46:6,25	31:13 32:3 38:18	22:12 24:21,25,25
120:25 126:5	48:15,23 49:1,4,7	44:3 50:19 51:5,7	25:4,11 26:11,21
<b>number</b>	49:21 52:12 54:4	51:18,18,23 52:24	27:9,20,20,22 28:9
7:6 12:11 15:3 39:12	59:7 64:18 69:5,17	53:25 55:6 58:13	28:10,12,21,22,23
39:13 40:6,7,8,10	72:5,15,19 73:12,25	59:17,19,25 60:5,9	32:19 34:2 38:8,8
40:12 42:12,13	74:20 75:5,13 76:12	61:2,6,18 63:5,15	38:13,14,24 39:2,5
43:12 44:5,5,11	76:20 78:17 79:3,19	66:21 68:4,23 75:25	44:7 46:15 47:6,8
45:23 54:16,20 55:4	80:13 81:11 82:8,22	76:4 85:2 86:15	51:8 55:10 58:16
55:6 62:15 63:9,17	84:2,11,19 85:5,11	89:23 90:12,13	66:3 67:8 69:25
65:3 69:25 77:6,18	85:21,23 86:4 87:12	91:14,22 94:16	71:14 73:19 74:10
97:13,14 110:13	89:8 91:3,18 92:1	95:14,23 97:9	77:23,25 78:4,4
115:3 117:5,8 124:7	94:20 98:16 99:1,13	100:24 103:9	83:5 84:8 88:15,16
<b>numbered</b>	99:24 101:4 103:19	105:10 112:24	88:16 89:13 93:22
14:1	105:11 106:2,14	113:5 119:15	98:12 100:17 101:7
<b>numbers</b>	107:19,22 108:2	121:21 122:12	101:14,19 102:24
9:3,7 12:10 13:20,23	109:8 110:4,23	<b>on</b>	108:3,6 109:6,19
14:6 63:12 68:16	113:12 114:20	1:15 4:5,7 12:21 13:8	110:2,18 111:3,7
115:23 116:2	116:11 117:24	13:15,21 23:16	112:16 114:24
<b>numerical</b>	<b>objectionable</b>	27:20 28:18 29:22	115:4 116:8 117:7
45:19	111:4	34:18 35:20 37:2	117:11 118:1,6
<b>numerically</b>	<b>objections</b>	38:13,15 39:7,8,13	119:10 120:2
25:14 38:5,9 45:8	7:15,16 23:12 49:6	39:19 43:24 44:5	122:11
47:5,13 70:5 93:4	94:25 124:21	47:18 49:24 51:15	<b>ones</b>
120:20	<b>obviously</b>	52:14 53:14,14 55:7	57:15 60:6 61:8,9
<b>numerous</b>	14:24	58:19 59:2,20 60:16	73:18,21 102:15,16
91:11	<b>obviousness</b>	61:12 62:23 63:6	107:17 112:7
<b>NW</b>	103:11	64:20 65:3,14 68:6	<b>only</b>
5:6	<b>off</b>	70:5 72:22 75:14	13:17,17 14:6 46:8
		77:8,18 83:5,9	49:6 50:1 61:13,21

62:9 78:3 92:7 96:25 103:15 109:22 <b>open</b> 13:18 <b>opinion</b> 15:15 22:7 24:10,13 24:20,21 25:6,20,22 41:14,16 46:4 47:5 47:18 48:14,21 49:18,24 75:14 82:21 97:1 98:3 109:20 114:1 <b>opinions</b> 93:12 <b>opposed</b> 103:16 121:5 <b>orange</b> 77:9,10 <b>order</b> 75:17 76:4 <b>ordering</b> 122:7,11,15 <b>ordinary</b> 18:3 25:8 34:9 73:7 74:6 83:10,14,20,23 83:25 84:21,25 97:7 113:9,16,19,24 114:2,13 <b>oscillator</b> 45:8,24 116:7 <b>oscillators</b> 25:15 38:5,9 45:20 47:6,13 70:5 93:5 117:20 120:21 <b>other</b> 10:12 11:2,3 12:24 12:25 13:2,13,13,15 13:18,22 25:1 29:7 29:16 31:23 32:20 34:22 35:14,14,20 57:15,16 65:17 69:24 71:7 73:3 80:21 88:9 101:6,7 102:6 107:16 111:10,12,19,25	112:1,5,7 113:21,21 118:9 121:14 <b>others</b> 11:7 <b>otherwise</b> 9:4 19:10 <b>our</b> 77:5 108:24 <b>out</b> 23:9 27:16 28:2,21 32:23 33:14,25 34:11 38:20 39:24 41:8 42:19 44:23 45:9 46:21 48:1,2 48:12 49:16 56:2 60:9 67:24 88:7 92:6 96:24 114:5,8 114:18 <b>outcome</b> 125:9 <b>outline</b> 13:1 16:16 <b>output</b> 26:12 27:14,24 28:2 28:25 33:15 38:14 40:12 58:1,3,5,8,20 59:3,5,13,14 61:12 61:21 62:1,8,12 70:11 72:3,14 74:25 75:4,12 76:11,19 78:19,23 79:5 80:16 82:6,11,12 97:18 98:6,7,7,24 99:12 99:18,23 100:7,15 100:23 102:3,6 103:2 <b>outputs</b> 28:24 46:3 77:3 80:7 82:1 92:5 96:22 97:19 98:13 100:4 <b>Outputting</b> 91:19 96:19 <b>outside</b> 29:2,7,16 <b>overcome</b> 69:13	<b>own</b> 28:24 38:14 120:1 <b>Owner</b> 1:9 2:8 3:8 4:6 5:13 8:2 111:11 <hr/> <b>P</b> <hr/> <b>Pacific</b> 4:7 7:2 <b>page</b> 6:3 55:4,6,16 65:14 77:8 86:16,25 87:1 87:2,3,17,22 88:6 90:11 98:10 101:11 126:5 <b>pages</b> 125:1 <b>paper</b> 51:16 <b>paragraph</b> 63:6 83:12 86:19 87:15 88:10,23 90:4 90:11 92:11,14,21 93:23,24 94:10,17 95:2,9 96:8,15 97:2 102:24 103:7 113:1 113:3,6,14 <b>parallel</b> 59:21 77:3,12 81:25 <b>Parham</b> 5:15 8:1 <b>part</b> 15:22,23 19:3,23 34:3 44:12,20 66:25 69:3 77:9 110:15 111:22 <b>particular</b> 27:5 91:4 99:17 109:2 120:7 121:16 <b>parties</b> 125:7 <b>parts</b> 30:24 31:19 32:1 33:14,25 48:1,3 <b>past</b> 50:21 95:19,20	<b>patents</b> 12:14 20:1 21:2 29:22 38:11 39:15 40:9,9 43:15 45:14 45:22 50:4,5 65:18 73:3 76:7 80:3,22 83:8 88:9 91:9 94:6 97:8 101:6 102:6,22 112:4,6 113:21,22 <b>patent's</b> 65:5 66:17,21 69:1 69:11 <b>path</b> 28:20,25 38:14 83:16 113:17 117:21 <b>Patricia</b> 1:25 4:8 7:6 124:3 125:15 <b>penalty</b> 7:22 123:2 <b>pending</b> 21:11 <b>per</b> 83:7 118:14 <b>perform</b> 77:6,15 79:1 <b>performing</b> 82:20 <b>performs</b> 76:25 78:15 79:18 80:11 81:6 82:5 <b>perhaps</b> 18:14,15 19:5 20:4 25:4 36:2 47:12,13 76:2 84:13 86:10 89:10 99:5 112:17 <b>perjury</b> 7:22 123:3 <b>person</b> 73:7 74:6 <b>perspective</b> 73:10,10 <b>Petitioner</b> 1:6 2:5 3:5 5:2 8:4 <b>phrase</b> 25:21 26:14 30:9
--	---	---	--

75:9	<b>pointed</b>	15:3 60:8 70:1	121:7,19
<b>phrases</b>	91:6	<b>previously</b>	<b>products</b>
20:23 21:13 22:8	<b>points</b>	51:22 88:19 119:1,24	118:3,8,18 120:3
24:11	17:20,24	<b>printed</b>	121:11
<b>pick</b>	<b>polarity</b>	13:3	<b>professor</b>
30:24 45:9 47:6,7,8	83:15	<b>printouts</b>	36:5
114:22 120:21	<b>POSITA</b>	12:15,17	<b>programmable</b>
<b>picked</b>	24:23 26:15,21 27:3	<b>prior</b>	115:25 116:2
101:13	34:6,24 35:1,3,7,8	9:14 15:16 16:13	<b>proper</b>
<b>picking</b>	37:6 66:3,7 73:14	30:10,13 33:6 53:5	56:7 82:11
28:1 38:1 45:7 46:15	73:16 75:10 83:13	53:10 54:3 65:11,21	<b>proposed</b>
83:5 114:4,7,11,14	83:22 92:17 94:5	65:22 66:1,5,10,11	103:21
114:15,17	97:6 104:15,19,24	66:19,23 67:4,7,9	<b>proposing</b>
<b>picks</b>	107:25 108:17	69:2,14,18 71:6	103:17
38:7 46:11	112:13,16,19,21	79:21 94:7 96:7	<b>proprietary</b>
<b>Pico</b>	113:15	98:18 103:21,21	121:14
5:16	<b>posited</b>	104:1,9,14 111:14	<b>prosecution</b>
<b>pieces</b>	38:19	124:16	14:3 111:11,13
117:3	<b>position</b>	<b>probably</b>	112:11
<b>place</b>	112:16	15:2 28:14 31:1	<b>provide</b>
124:13	<b>possible</b>	34:20 58:2 71:19,20	54:12 80:14,15 81:25
<b>plain</b>	45:18,18 75:3,6	72:16 99:14 110:12	87:18 89:2 94:24
18:3 25:24 83:10,14	<b>potential</b>	115:10,15	100:4
83:20,22,25 84:20	86:22	<b>problem</b>	<b>provided</b>
84:25 97:7 113:9,15	<b>potentially</b>	52:21 122:17	13:19 14:8 17:11,19
113:19,24 114:1,12	82:7	<b>procedure</b>	77:22 80:7 83:24
<b>plan</b>	<b>practical</b>	9:13 56:7	84:8,9,17,24 85:8
120:1	115:3,16 116:5	<b>proceeding</b>	85:19 86:1 89:6,17
<b>playing</b>	<b>preparation</b>	4:4	89:24 90:7,15 91:1
24:1	11:1	<b>proceedings</b>	91:11,15,22 92:15
<b>please</b>	<b>prepare</b>	122:20 125:2	92:22 93:6,12,18
7:17,25 10:4 12:5	10:9	<b>process</b>	94:1,13 95:3,10
18:24 39:19,20	<b>preparing</b>	9:17 15:14 23:25	96:9,18 111:10,16
40:18 41:18 47:21	10:15,20,25 11:7	52:6	<b>provider</b>
49:5 50:8 51:3,6	14:18 16:7	<b>processing</b>	119:25 121:2,19,20
52:22 54:11 61:18	<b>prerogative</b>	19:12,16 20:8,19	<b>provides</b>
62:6 76:14 103:6	93:10	21:12 22:6 24:9	77:11 78:18 79:4
<b>plurality</b>	<b>Present</b>	25:25 26:16 30:3	80:23 81:3 94:18
83:15 90:8,9,20,21	5:11,20	53:18 55:14 68:10	102:6
113:16 120:22	<b>pressed</b>	<b>processor</b>	<b>providing</b>
<b>plus</b>	110:12	53:21 68:13	78:23 80:7 82:6,11
70:18 87:6	<b>presumably</b>	<b>produce</b>	87:10
<b>point</b>	58:1 71:5,18	15:14	<b>publication</b>
9:5 20:4 67:13 84:13	<b>pretty</b>	<b>product</b>	31:19
105:13 108:10	120:8	108:4,7,9,18 112:18	<b>pull</b>
115:21,25	<b>previous</b>	118:1,12 120:10	36:1

<p><b>purpose</b> 56:13</p> <p><b>pursuant</b> 4:11</p> <p><b>put</b> 17:20 49:6 105:17,21 108:4 111:21,21</p> <p><b>P.M</b> 122:19</p> <hr/> <p style="text-align: center;"><b>Q</b></p> <hr/> <p><b>qualified</b> 124:5</p> <p><b>questioning</b> 55:7</p> <p><b>questions</b> 9:5,16 10:4 20:17 21:4,10 22:23 23:9 23:20 41:21 50:3 56:6,8 88:22 89:14 93:13 121:23 122:9</p> <p><b>quick</b> 72:17</p> <p><b>quickly</b> 99:18</p> <p><b>quite</b> 15:21 35:16 59:8 66:12</p> <p><b>quote</b> 27:9,9 28:9,10 51:9 51:13 53:15,22 63:3 68:8 86:20 111:20</p> <p><b>quotes</b> 62:25</p> <p><b>quoting</b> 62:24</p> <hr/> <p style="text-align: center;"><b>R</b></p> <hr/> <p><b>radio</b> 19:12,16 20:8,19 21:12 22:6 24:9 26:16 70:11</p> <p><b>raise</b> 7:18</p> <p><b>rate</b> 70:13,18 71:11</p>	<p><b>read</b> 23:2 64:6,20 65:1,8 66:8 73:14 96:14 97:1,8 106:4,22,24 107:6 112:17,24 113:5 123:1,6 126:5</p> <p><b>reading</b> 36:16 63:7 73:8 74:6 75:10 90:10 92:10 113:3</p> <p><b>reads</b> 51:8 126:5</p> <p><b>really</b> 10:23 14:20 26:23 29:23 39:8 47:17 50:1 57:14 71:2,23 78:13 81:24 101:22 105:21</p> <p><b>reason</b> 112:15 126:5</p> <p><b>reasons</b> 77:23 115:3,16 120:19</p> <p><b>recall</b> 9:13 27:10 29:20,21 66:17 67:11 68:2,14 68:21 89:21 96:11 110:25 112:24</p> <p><b>receivable</b> 62:18</p> <p><b>receive</b> 116:19,24 119:23</p> <p><b>received</b> 16:9 17:7,12 32:19 52:8</p> <p><b>receiver</b> 55:21</p> <p><b>receiving</b> 15:16 16:13</p> <p><b>recess</b> 50:22 95:24 119:18</p> <p><b>recollection</b> 14:22 29:7,16</p> <p><b>record</b> 7:25 14:8 120:15 125:2</p>	<p><b>recorded</b> 124:22</p> <p><b>redirect</b> 121:24</p> <p><b>refer</b> 11:18 50:8 51:3 52:22 54:7 55:4 86:13 89:10 103:6</p> <p><b>reference</b> 12:13 47:15 103:22 104:18</p> <p><b>referenced</b> 111:18 112:8</p> <p><b>references</b> 21:17 50:6 66:5,6,11 111:15,23 112:10 112:20</p> <p><b>referred</b> 12:8 34:4</p> <p><b>referring</b> 20:18 54:10 61:16 88:6,18</p> <p><b>refers</b> 56:24 57:11,12 73:9</p> <p><b>regard</b> 15:3</p> <p><b>regarding</b> 10:1 111:11</p> <p><b>regardless</b> 63:15 119:1</p> <p><b>related</b> 18:15 19:8 111:19</p> <p><b>relative</b> 125:5,7</p> <p><b>relied</b> 83:9,20 103:15 104:5 105:3,25 106:1,10 107:9</p> <p><b>rely</b> 103:15 104:9 105:20 105:24 106:11 107:12</p> <p><b>relying</b> 104:6 105:4</p> <p><b>remain</b> 92:8 96:25</p>	<p><b>remaining</b> 61:9</p> <p><b>remember</b> 14:20 18:1 29:5 30:23 31:1 32:4 35:16 36:20 54:19 57:1 59:16 66:10 73:6 81:4 111:22 113:3</p> <p><b>remote</b> 4:2 110:13 122:3</p> <p><b>remotely</b> 7:14</p> <p><b>rendered</b> 47:18</p> <p><b>repeat</b> 15:23 21:24 22:4 33:18 42:16,22 44:19 48:5 49:4 56:18 57:8 58:6 79:12 106:19</p> <p><b>rephrase</b> 69:10 73:15</p> <p><b>replies</b> 23:10</p> <p><b>reply</b> 10:11 11:11,16,18,18 14:19 15:9 16:5,10 16:14,16,24 17:3,12 17:21,23 50:3 83:13 113:14</p> <p><b>REPORTED</b> 1:24</p> <p><b>reporter</b> 4:10 7:5,11,17,24 8:10 104:23 106:21 107:21 116:21 122:5,17 124:6</p> <p><b>REPORTER'S</b> 124:1</p> <p><b>representative</b> 77:7</p> <p><b>represented</b> 38:16 77:10</p> <p><b>representing</b> 8:8 74:13</p>
--	---	---	---

<b>request</b> 79:14	34:16 37:19 39:1 43:25 44:9 46:15	114:21 123:6	22:11 23:9,13,16
<b>requested</b> 6:14 104:22 116:20	47:9,10 57:5 58:4 58:15 63:25 64:7,20	<b>sampling</b> 70:13,18 71:11	24:16 31:17 32:15
<b>require</b> 52:6 53:17 55:14 68:9 71:20 114:2 115:4 117:20	71:4,7 78:2 80:15 97:16 98:8 100:6 105:8 109:16 110:6 110:8,10 112:3 114:6,8 115:4,13,15 117:7 118:15 120:18 121:25 122:11	<b>Santa</b> 5:17	32:24 36:25 41:12 42:3 43:7 45:3 48:23 49:22
<b>required</b> 21:8 23:20 93:12	<b>right-hand</b> 58:19 59:2,21 61:13	<b>satellite</b> 116:10,13 117:15 118:2,7,10,20,23 119:23,25 121:7	<b>Scratch</b> 70:7
<b>requirement</b> 54:1	<b>room</b> 12:3	<b>satellites</b> 119:21	<b>second</b> 15:6 17:3,12 20:2 61:25 65:14 77:8 83:13 88:6,15,18 98:10 101:11 111:6 111:6 113:14 115:20 119:6
<b>requires</b> 70:12 71:10 121:16	<b>routing</b> 80:15,24 81:3	<b>save</b> 52:19 56:9 105:14	<b>secondly</b> 115:11
<b>requiring</b> 69:14	<b>row</b> 63:24	<b>saw</b> 32:6,12 105:13	<b>section</b> 51:20,24 53:2,4 55:11 60:8 72:21 86:17 87:14,18
<b>respective</b> 60:20,24	<b>Russ</b> 111:21 112:7	<b>say</b> 15:7 18:17 20:18 21:7 23:13 31:20 35:10 38:1 41:15 56:8 58:23 59:10 64:24 65:19,22 70:16 71:2,22 82:9 83:12 92:25 95:5,6 100:11 101:22 104:16 110:24 118:20 121:9 123:1	<b>sections</b> 52:16 74:11,13
<b>responsive</b> 78:12	<b>Russ's</b> 111:17	<b>saying</b> 25:10 41:14 57:1,2 71:20 88:1 100:13 100:16 101:19	<b>see</b> 26:21,22 27:5 30:6 31:22 34:5,6,23 36:2 45:7 51:14 53:23 55:3,9 58:17 58:19 59:2,23 60:10 60:22 61:1,2 62:22 62:25 63:11,14 67:21 86:16,19 87:4 91:25 98:10 103:10 103:12
<b>restate</b> 15:23 48:6 70:9 76:13	<hr/> <b>S</b> <hr/>	<b>says</b> 22:1,2 24:25 36:16 53:12 55:20 57:14 58:5 59:3 62:14 63:7,20 64:21 65:1 68:5 69:2 74:2 77:24 87:4	<b>seeing</b> 91:25
<b>restating</b> 29:11		<b>scenario</b> 40:3,10 43:21 45:11 45:16 98:15 102:2	<b>seems</b> 14:2 61:10 69:19 97:24
<b>resulted</b> 17:20	<b>sake</b> 99:16 118:21	<b>school</b> 36:7	<b>seen</b> 29:2 49:25
<b>reversed</b> 68:15	<b>sale</b> 31:19	<b>Scientific</b> 36:8	<b>select</b> 18:4 25:15 37:25 38:13 39:6 43:22 44:4,7,10,17 45:19 52:4 76:10,18 77:16 77:25 81:16 83:14
<b>review</b> 10:16 62:5 89:15,16 90:23,23 96:5 111:12,14	<b>same</b> 7:12 13:5 22:4 38:12 46:9 47:11 54:6 55:18,25 56:14 63:1 63:3,3,6 64:17 65:16 91:8 113:20	<b>scope</b> 17:10,18,25 19:6,21	
<b>reviewed</b> 10:11 51:19			
<b>re-ask</b> 72:9			
<b>re-read</b> 107:4			
<b>RF</b> 33:1,7 58:2 59:25 60:18,19,23 61:6 65:3 69:20 71:7			
<b>right</b> 7:18 11:14 13:24 26:24 27:21,23			

84:21 101:20,21 109:22 110:13 111:2 113:16,20,23 114:2 115:1,10,22 118:5 120:22 <b>selected</b> 26:11,12 27:16,24 39:12 40:7 42:10 79:5 82:1 111:3 115:12,17 <b>selecting</b> 18:11,21 19:17 20:9 20:11,11,24 21:13 22:8,14 24:11 25:22 27:2 28:9 29:4,8,18 37:13,18 38:22 39:25 41:9 42:1 43:5,9,10,11 45:5 45:22 46:5,10,13,24 47:2,16 48:14,21 49:19 74:23 76:21 77:20 78:15,19 79:8 81:13,17,18,20 83:7 83:10,21 84:1,10,18 85:9,19 86:2 89:7 89:18,25 90:8,14,18 91:2,7,8,15,24 92:16,18,23 93:6,20 94:2,6,18 95:4,11 96:10,17 97:3 112:25 113:8,9,10 114:9,12,15,17 <b>selection</b> 45:1 55:24 76:25 77:15 79:1,18 80:6 80:12 81:6 82:15,17 82:17,21 83:1 91:23 <b>selections</b> 82:5 <b>selector</b> 21:21 22:19 25:13,18 26:8 27:8 37:23 39:9 76:9,17,18,24 77:15 78:15 79:1,17 80:11,23 81:2,24 82:5,20 98:9,12	99:20 100:3 <b>selects</b> 37:23,23 38:25 39:4 44:15,16 46:8 79:11 79:11 <b>sending</b> 68:7 <b>sense</b> 33:4 104:20 <b>sent</b> 52:3 63:23 101:25 <b>sentence</b> 52:20,20 <b>separate</b> 33:14,25 38:20 39:23 <b>separately</b> 74:19 <b>separates</b> 34:11 41:8,24 42:19 43:3 44:23 46:21 48:1,2,11 49:15 <b>separating</b> 114:18 <b>serial</b> 59:21 77:3,11 81:25 82:7 <b>serialization</b> 26:10 <b>service</b> 121:20 <b>sessions</b> 11:2 <b>set</b> 42:8 110:5,9 118:6 120:17 121:17 124:13 <b>seven</b> 47:8 71:15 <b>several</b> 36:19 98:6 <b>shaded</b> 73:19 74:11 <b>shared</b> 17:2 <b>SHEET</b> 126:1	<b>sheets</b> 32:1 <b>shift</b> 92:3 96:20 <b>shifted</b> 58:14 92:5 96:23 <b>shifting</b> 57:25 <b>shortcomings</b> 67:8 <b>Shorthand</b> 4:10 124:6 <b>should</b> 28:14 126:5 <b>show</b> 65:13 69:24 77:8 <b>showed</b> 36:22 91:7 93:23 <b>showing</b> 57:23 71:9 101:10 <b>shown</b> 38:10,11 39:14 60:17 61:3 63:8 74:11,13 83:16 <b>shows</b> 22:18 27:13 53:12 57:24 77:24 <b>side</b> 58:19 59:2,21 61:13 64:21 <b>signal</b> 19:12,15 20:7,19 21:12 22:6 24:9 25:25 26:16 27:20 27:22 32:19,23 34:11 38:19,20 39:22,24 41:8,23,25 42:19 43:1,4,12 44:24 46:3,20,21 47:25 48:3,10,12 49:15,16 51:25 52:2 60:18 61:7 68:7 70:12,12 82:11 83:16 92:4 96:22 102:19 109:14,18 113:17 114:14,18	114:19 116:18 117:4,10,19,22 118:12,24,25 119:5 119:23 <b>signals</b> 27:20 32:20,22 63:22 80:16 82:12 101:12 108:10 116:23 <b>Signature</b> 126:25 <b>signed</b> 15:15 <b>similar</b> 13:1 30:6 88:8 108:24 <b>similarly</b> 65:17 <b>simple</b> 24:7 <b>simplicity</b> 9:2 <b>simply</b> 14:8 <b>simultaneous</b> 40:15 <b>simultaneously</b> 115:15 120:15 <b>since</b> 71:6 <b>single</b> 115:6,24 <b>sir</b> 7:18 <b>sitting</b> 29:6,15 48:8,13,20 49:18 85:7,17 87:9 106:9 107:8 <b>situation</b> 110:1 <b>six</b> 47:8 71:14 <b>skill</b> 73:7 74:6 125:3 <b>smaller</b> 117:3 <b>software</b>
---	---	--	---

36:17 <b>solemnly</b> 7:19 <b>some</b> 10:12 11:1,1 13:22 17:1,11,19 32:23 44:16 60:1,2,3,3 65:6 74:25 76:2 77:21 80:15 81:25 97:11 99:20 108:10 108:13,20 109:22 111:19 <b>somebody</b> 110:12 115:14 <b>someone's</b> 99:17 <b>something</b> 13:1 14:1 34:19 41:14 93:1 104:15 108:8,19 110:14 111:7 114:5 <b>sometimes</b> 35:10,11 44:17 98:19 <b>sorry</b> 11:24 15:21 21:1 30:18 31:9 33:18 35:5,16 50:10,13 52:13 57:6 58:21,23 58:24 62:23 63:12 63:25 66:25 68:20 70:6,6 72:7,16,17 80:25 87:1 89:13 92:10 106:15,17 122:2 <b>sort</b> 52:13 <b>sounds</b> 84:5 92:24 <b>So-s</b> 15:7 <b>space</b> 120:17 <b>speak</b> 9:20,25 50:25 96:2 <b>speaking</b> 23:12 49:1,3,7	<b>specific</b> 17:16 18:15,25 19:21 103:17 108:16 <b>specifically</b> 34:18 45:6 72:21 121:1,4 <b>specification</b> 62:1 63:1 73:4 <b>spectrum</b> 27:23 38:7,17 62:17 101:14 <b>spell</b> 31:11 <b>spend</b> 10:20 14:18 <b>spent</b> 16:4 <b>split</b> 32:19 <b>split-up</b> 32:21 <b>spoke</b> 30:18 <b>stage</b> 74:24 83:6 <b>standards</b> 118:14 <b>start</b> 47:23 <b>starting</b> 53:14 55:3,16 60:16 63:6 68:6 87:14 <b>state</b> 4:11 7:8 123:3 124:6 <b>stated</b> 113:13 <b>states</b> 1:2 2:1 3:1 53:15 67:16 <b>stay</b> 122:6 <b>stenographically</b> 124:22 <b>step</b> 46:1 64:10,11 66:16 117:2	<b>still</b> 35:5 105:7 117:20 <b>store</b> 20:12 <b>straight</b> 69:20 105:18 <b>Street</b> 5:6 <b>strike</b> 39:18 48:5 74:15 79:15 119:2 <b>string</b> 44:7 <b>strings</b> 28:22 <b>structure</b> 47:14 87:24 88:3,7 91:8 93:3 103:22 104:10 <b>student</b> 36:22 <b>stuff</b> 14:3 <b>subject</b> 11:12 36:21 50:5 <b>submitted</b> 10:12 11:11 <b>subscribed</b> 125:11 <b>subsection</b> 12:15 <b>subsections</b> 12:18 <b>subset</b> 100:22 101:24 <b>substance</b> 10:1 <b>such</b> 13:1 24:24 53:19 68:10 125:7 <b>Suite</b> 5:7 <b>supervision</b> 124:24 <b>supplied</b> 15:12 17:21	<b>supported</b> 102:8 <b>supporting</b> 10:14 <b>suppose</b> 74:2 75:6 97:18 110:5 117:7 122:3 <b>sure</b> 11:23 29:14 33:3 42:7 44:12 45:5,16 46:12 47:16,20 49:11 50:18 51:17 52:18 55:5 56:16 60:7 67:14 73:2 74:4 76:16 84:12 85:4 86:7 91:10 93:8 95:18 99:10 102:25 103:4 106:4 106:5,20 107:5 109:9 119:9 121:10 <b>swath</b> 51:10,11 67:17,18 81:19 83:3 <b>swear</b> 7:19 <b>switch</b> 77:1,5 80:15 81:14 81:24 87:2 97:19 99:19,20 100:1,3 110:15,21 <b>switching</b> 82:10 <b>sworn</b> 8:15 124:17 <b>synonymous</b> 18:12,22 19:18 20:25 21:14 22:9 24:12 37:13,18,19 <b>system</b> 38:18 39:22 41:6,19 41:23 42:5,5,11,24 44:10,14,16,22 46:2 46:20 47:24,24 48:9 49:14,24,25 110:20 115:8 118:17,23 121:13,16
---	--	--	--

<b>systems</b> 19:13,16 20:20 21:13 22:7 24:10 26:17 33:7 67:9 116:13 121:14	37:3,8 <b>technology</b> 18:5,11 75:24 76:2 110:20 <b>television</b> 37:24 42:5,24 44:22 46:2,20 47:24 48:9 48:9 49:13 75:18 76:5 83:15 90:8,20 110:7 113:17	78:14,22,25 79:15 79:17 80:11 82:4 83:2 85:10,17 86:3 87:9 92:13,20 93:24 94:9,16,19 95:1,8 97:5,22 98:22 124:11,20 125:3	119:13,15 121:4,15
<b>T</b>		<b>Texas</b> 30:24 31:10,23 32:7 32:13	<b>their</b> 120:1,5 121:14,15
<b>take</b> 33:13,24 38:5,6,19 50:10 54:23 66:7 78:10 95:15 98:5 110:19 119:6,10,11 119:12 122:4,12	<b>tell</b> 7:7 12:9 85:12 96:16	<b>than</b> 11:3 12:24 13:13,13 13:18 25:4,7 26:6 34:22 35:14,20 39:5 42:13 43:23 44:4,11 54:23 57:15,16 58:2 65:2,3 80:3,9 97:17 98:1,2,15,20 99:6 102:3 108:7,16 111:3,6,6,10,25 112:7 115:18	<b>them</b> 12:22 15:8 16:7 32:23 46:15,22 52:5 56:24 60:3,4 74:18 78:1 89:16 93:5 109:22 115:25
<b>taken</b> 1:15 4:5 124:13	<b>ten</b> 38:19,21,21 39:22,24 41:7,8,23,25 42:19 43:2,4,20 46:3 47:9 47:9 50:17,20 57:24 57:25 58:11 60:1 61:7 71:15	<b>thank</b> 8:21 14:10,11 35:23 54:22 89:5 95:23 119:17 121:25	<b>then</b> 13:25 22:18 27:16 28:4,18,18 33:13,24 37:8,21 42:15 55:15 64:8 67:23 71:8 75:9 86:10 92:6 96:23 101:10 104:11,25 108:24 113:19 116:6 118:20
<b>takes</b> 28:21 41:7 43:1 46:3 46:20 47:25 48:9 49:15	<b>term</b> 32:9 34:16 86:6 87:11 89:3,7 91:2 92:16 93:20 94:1 95:3,10 107:24,25 109:3	<b>that's</b> 10:22 11:14,22 14:13 16:8 22:17 23:13 28:5 37:21 39:14 40:11 41:1,20 42:20 43:14,14 44:1,2,17 45:5,21 46:9,16 47:16 48:13,21,25 48:25 52:20 55:6,18 56:4 57:17 59:5 60:7,10,17 62:13,24 63:24 64:14 65:8 70:7,19 71:12 72:16 72:22 75:20 78:5 79:5,24 83:6 92:19 93:9 94:18 95:21 97:16 102:7,8,21 106:13 107:1,3,14 109:16 110:15 111:3 113:20,23 114:25 115:2 118:1	<b>there</b> 29:20 30:2 31:6,7 32:5 34:14 36:19 38:3,4 41:5,23 42:25 59:21 61:24 62:24 71:6,13 73:4 73:5 75:22 77:21 82:19 91:4 100:6 101:17 107:21 109:17 115:20,24 122:3
<b>taking</b> 27:19	<b>terminologies</b> 24:6		<b>thereafter</b> 124:22
<b>talk</b> 45:12 84:4 122:6	<b>terminology</b> 27:18		<b>there's</b> 28:22 66:11 75:21 76:2 118:9 120:19 121:13,13
<b>talked</b> 40:5 65:15 87:14	<b>terms</b> 26:19 27:6 97:11		<b>these</b> 9:11,14 12:25 13:14 14:19 15:10 29:22 30:10,13 33:6 38:24 39:5,13 44:5 47:9 52:10 65:17 76:7 83:7 97:7 109:23 120:10
<b>talking</b> 12:14 19:8 21:2 26:4 27:4 28:1 32:25 33:1,10 34:15,18 38:12 39:3 46:17 50:4 69:19 70:21,22 71:5,12,23 81:17,21 82:16 87:24 88:13 97:23,24 103:2,5 105:6 107:15,17 108:5,25 111:18 120:9	<b>terrestrial</b> 118:2,11		<b>they</b> 12:21,23 13:10,22,22
<b>talks</b> 73:4 116:12	<b>test</b> 39:11		
<b>target</b> 110:16 116:3	<b>testified</b> 8:15 15:2 16:3,9 27:7 33:12 35:15 45:25 71:25 86:20 93:16 96:7 109:12		
<b>taught</b> 35:19,24 36:7	<b>testify</b> 124:17		
<b>teach</b> 35:17 36:10,14	<b>testimony</b> 7:19 10:1 34:8 35:1,7 37:12,17 41:13,16 65:4 70:2 77:14		
<b>teaching</b>			



26:22 30:23 31:19 32:1 36:12,21 38:12 38:13 44:7 47:11 65:8 67:9 69:13 102:16 111:15 118:8 121:12 <b>they're</b> 58:14 118:18 <b>thing</b> 38:12 47:12 101:7 120:2 <b>things</b> 121:14 <b>think</b> 9:15,22 16:8 17:20 19:7 26:18 27:3,18 30:5,15 31:6 32:2 33:8 34:6,13,17,19 37:1,5,14,19,20 40:2 45:15,21 47:18 53:7 54:5 55:11 57:17,23 58:22 60:13 63:1 66:4,7 66:14 68:15 71:12 74:1,9,21 75:20,21 78:18 86:5 89:4 91:5,11 93:1,22 94:15,21 95:12 96:12 98:4 99:3,9 102:21 103:3,20 104:7,7 105:12 106:3,4,7 108:3,8 108:15,15,17 111:8 111:15,19 112:5,16 112:19 115:19 116:13 117:6,12 120:12 121:6,10,18 121:18 122:10 <b>thinking</b> 10:21 11:9 <b>this</b> 4:4 7:20 10:17 15:3 18:4,10,20,21 19:5 20:18,23 22:3,5 23:5,9 24:8,24 25:8 25:17 26:25 27:19	27:22 29:3,17,23 30:25 34:9 35:2,21 37:14 41:15,15 42:4 42:17 48:16 52:25 53:4 54:3 55:11,12 55:22 56:10 58:5 63:20 67:18 68:6 73:14,16,19 75:18 76:5 77:5 78:6 80:22 83:1,2,2 87:13,13 90:19 92:17 97:19 98:8,12 99:19,19 100:16 108:1 111:18 112:12 113:19 115:20 118:21 119:10 120:17 123:13 125:9,12 <b>those</b> 11:15 12:18,18 13:22 14:5 15:4 17:6 22:3 27:6 28:2,22,23 36:20 38:8,8 44:7 65:9 67:8 70:17 73:10 74:11,13,24 74:25 78:3,6 81:20 82:12 83:5 91:11 99:18 100:4,14,14 100:15 101:14 103:12 113:21 114:23,23,23 115:5 115:12,23 116:8 120:5 <b>though</b> 81:23 <b>thought</b> 29:24 47:17 50:2 56:10 57:4 <b>three</b> 8:24 9:11 10:11 11:9 11:12,20 12:7,13,18 13:21 14:19 16:5 39:13 47:8 50:5 65:14 71:14 77:8 88:6 98:10 101:11 118:3	<b>through</b> 14:1 22:21 28:3 36:4 39:10 62:13 63:24 67:15 77:16 82:2 89:20 90:2 91:20 97:21 100:2 103:3 113:24 <b>throughout</b> 94:9 <b>thumb</b> 13:18,21 <b>thus</b> 99:19 <b>time</b> 4:4,7 7:2 8:21 13:12 14:13 22:21 26:4,9 34:5 35:24 36:15 47:3 48:11 50:13 52:20 54:24 56:2,9 77:2 78:4 105:14 110:21 115:17 124:13,21 <b>times</b> 93:2 94:22 122:2 <b>titled</b> 86:17 87:18 <b>titles</b> 12:9 <b>today's</b> 8:23 9:17 10:10,16 10:20,25 11:8,13 13:16 <b>told</b> 41:15 94:15 <b>too</b> 111:4 118:10 <b>took</b> 30:22 <b>top</b> 42:8 110:5 120:17 <b>total</b> 43:12 <b>totally</b> 28:19 108:7 <b>track</b> 50:13	<b>TRADEMARK</b> 1:2 2:1 3:1 <b>trained</b> 22:22 <b>transcribed</b> 124:23 <b>transcript</b> 122:16 126:1 <b>transmit</b> 65:6 67:9 68:24 69:11,15 <b>transmits</b> 65:24 69:3 <b>transmitted</b> 63:18 64:3,9 72:2 100:19 102:10 <b>treating</b> 74:18 <b>TRIAL</b> 1:3 2:3 3:3 <b>trick</b> 76:1 92:24 <b>trouble</b> 34:21 35:13 <b>true</b> 109:24 123:9 125:2 <b>truth</b> 7:21,21,21 124:18,18 124:18 <b>try</b> 37:15 56:7 112:9 <b>trying</b> 24:17 52:19 56:9 74:22 75:21 81:12 92:25 117:8 <b>TTL</b> 31:10,14 34:3 <b>tune</b> 101:19,20 102:15,16 110:16 116:4 117:21 <b>tuned</b> 110:10 <b>tuner</b> 53:13 <b>tuning</b>
---	---	--	--

19:12,16 20:20 21:13 22:6 24:10 26:16 <b>turn</b> 122:11 <b>two</b> 12:18 39:6,6 46:4,8 46:11 47:8 55:8 58:24 65:17 68:4 71:14 73:3 80:21 103:10,12 <b>type</b> 108:4,6 121:16 <b>T-T-L</b> 31:12	99:6 104:8,12 <b>understood</b> 10:6 26:15,22 34:10 37:3,9 41:9 49:12 57:3 83:14,22 113:15 <b>undesired</b> 51:13 52:1,2,8 56:23 57:13,22 58:9 61:9 61:14,22 62:9,20 64:3,25 65:7,25 67:10,20,25 68:8,25 69:4,12,16 72:1,13 73:3,5,17,21 74:8 74:12,18 92:6 96:24 101:7,8 102:12,16 <b>UNITED</b> 1:2 2:1 3:1 <b>unless</b> 9:3 35:3,8 47:4 50:15 <b>unmodified</b> 103:16 104:6,7,8,16 105:5 106:1 <b>up</b> 32:19 36:2,23 42:11 42:11 43:12,23 44:4 44:11,15 52:15 65:2 65:2 108:19 110:14 120:16 <b>upon</b> 83:20 118:23 <b>us</b> 105:14 <b>usage</b> 25:8,22 28:11 34:9 <b>use</b> 9:2 25:6,21 27:7 28:8 70:2 71:17 76:10,18 98:24 99:11 109:2 112:17,22,23,23 114:2,9 <b>used</b> 10:13 17:2 21:17 27:18 29:18 32:10 34:16 84:20 99:4,10 100:25 103:3	113:20 114:15 116:9 118:1,16 121:15 <b>useful</b> 120:13 <b>user</b> 109:4 110:1 111:2 <b>users</b> 102:11 <b>uses</b> 21:18 22:13 24:7 25:11 26:2 <b>using</b> 92:2 96:20 113:24 118:4 <b>usually</b> 121:13	<b>videoconference</b> 1:13 4:2 5:11,20 <b>view</b> 25:21 28:9 43:22 64:17 65:24 68:24 72:1,12 76:24 112:13 <b>viewer</b> 76:5 <b>viewpoint</b> 24:23 <b>vs</b> 126:2
<hr/> <b>U</b> <hr/>		<hr/> <b>V</b> <hr/>	
<b>Uh-huh</b> 69:23 <b>unable</b> 18:19 <b>under</b> 7:22 123:2,3,4 124:23 <b>undergrad</b> 31:16 <b>undergraduate</b> 36:11,12 <b>understand</b> 8:23 9:1,19,24 10:2 14:14 15:22 19:1,4 19:9,21,24 20:5,21 28:16,20 32:14 33:9 33:16,22 34:1,25 35:5 37:2,9 44:20 47:20 48:7 49:20 51:23 52:10 57:18 59:8 66:8 72:4,11 73:8,14,18 74:7,10 75:11 78:8 80:25 84:5 85:2,15 86:7 87:13,17,21 89:2 92:17 93:16 97:12 99:8 107:5 109:1,9 <b>understanding</b> 34:21 64:12 75:20	<hr/> <b>W</b> <hr/>		
		<b>walk</b> 67:14,14 <b>want</b> 12:9 13:11 14:24 21:5 23:7 40:14 45:12 49:11 50:16 54:24,24 56:18 96:14,16 99:18 101:23 102:25 103:4 105:17,20,21 105:21 106:22 110:11,17 114:7,22 115:22 <b>wanted</b> 71:17 111:2 116:6 120:23 122:6 <b>wants</b> 43:25 104:19 109:5 112:23 <b>was</b> 8:15 11:23 13:19 14:7,13 15:12 16:7 26:7 27:8 28:7 29:18 30:21 31:8,15 34:3 35:24 36:7 37:10 38:19 39:17 39:21,23 42:14 50:2 51:25 52:3,19 55:12 56:9 61:24 62:24 63:25 64:1,12 65:19 65:23 67:9 70:7	

87:24,25 88:18 98:17,21 101:10 103:1,2 104:2,22 106:24 107:6,15,21 108:25 110:3 111:18,22 112:2 113:24 116:20,25 117:8,8,10 120:9,23 121:5 124:12,17 <b>Washington</b> 5:8 <b>wasn't</b> 11:23 22:16 60:7 72:17 83:18 <b>waste</b> 13:11 14:12 54:24 <b>wasted</b> 56:11 <b>watch</b> 75:17 76:5 78:4 100:12,17 101:23 109:5 110:1,7,18 115:14 120:14 <b>watched</b> 102:11 <b>watching</b> 99:17 110:7,18 111:3 <b>way</b> 23:5 24:1 32:2 35:14 41:13 57:17 80:17 95:5 102:5 <b>ways</b> 91:11 <b>we</b> 9:14 21:17,17 22:21 26:6 28:15,16,19 31:1 34:17 44:20 48:4 50:10,17 52:20 54:7 55:11 65:15 66:17 67:14,23,23 68:5 70:1 87:1,14 88:13,16 95:15 107:17 110:17,17 119:6 121:11,24 122:16 <b>WEATHERWAX</b>	5:14 <b>welcome</b> 50:24 <b>well</b> 8:6 10:12 15:2 31:18 39:15 40:19 41:19 51:12 57:23 67:19 69:9 71:2 73:15 77:13 79:15 88:8 90:16 99:9 101:5 102:14 108:3 119:25 121:25 <b>went</b> 22:21 39:22,22 <b>were</b> 9:10 10:13 17:2,6,20 31:6,7 33:7 36:12 36:19 45:6 52:3 57:25 58:11 63:7 75:17 87:1 88:16 103:3 107:17 111:15 117:18 122:20 124:21,22 <b>we'll</b> 55:11 <b>we're</b> 12:14 19:8 21:2 23:7 27:4 34:15,18 38:11 45:21,22 103:5 105:6 108:5 110:6 <b>we've</b> 34:22 45:13 46:17 50:4 73:18 81:17 82:16 110:18 <b>whatever</b> 23:2 63:17 89:22 102:18 104:18 110:6 111:4,7 112:18,23 118:16 119:22 <b>whatnot</b> 116:10 <b>what's</b> 14:8 22:19 37:22 61:12,21 62:8 93:8 93:10 109:1	<b>when</b> 11:18 20:18 30:21 32:6,12 34:23 35:24 51:6 69:15 73:9 84:4 85:8,18,25 87:22 97:25 98:8,19 104:16 108:25 112:24 114:25 <b>where</b> 12:3 24:25 29:8 33:9 40:10 43:24 46:16 49:14 60:13 61:24 62:12,13 64:7 67:23 77:9 90:10 97:25 98:15 100:2 110:1 111:18 117:13 118:4 <b>WHEREOF</b> 125:11 <b>Whereupon</b> 106:24 107:6 122:19 <b>whether</b> 22:7 24:11 48:14,21 49:19 63:15 64:14 79:10 <b>which</b> 12:13 15:4 16:10,14 19:3,23 22:19 26:7 28:5 34:23 38:1 44:12,20 57:20 61:7 65:15 69:2 70:3 77:5,9,10,11 80:10 82:19 88:13 99:22 100:7,7,17 113:7 116:5 121:16 124:7 <b>while</b> 29:23 36:5,7 <b>white</b> 57:15 73:21 74:13 <b>who</b> 4:3 73:24 74:2,2 89:13 111:2 120:2 <b>whole</b> 7:21 33:4 81:19 83:2 109:21 114:8 115:4 121:16 124:18	<b>whose</b> 73:10 <b>why</b> 14:13 27:12 28:7,11 55:13 70:22 98:14 101:22 120:19 <b>wide</b> 19:6 53:16 <b>wideband</b> 53:13 92:4 96:21 <b>will</b> 7:20 9:2 10:6 12:5 14:20 20:18 22:23 22:23 54:18 <b>wish</b> 104:24 110:1 <b>wit</b> 124:12 <b>Witcoff</b> 5:3 8:8 <b>with</b> 8:5,7 9:11,20,25 10:15,25 11:2,7,7 11:22 13:19 14:18 16:4 17:2 22:22 23:3,8,25 25:23 26:11 27:1 30:7 33:7 34:15 38:8 40:24 41:7,23 43:2 45:14,21,22,23,23 46:3 47:9 48:8 49:13 50:4,15,25 52:2 55:3,16 65:14 70:2,14 80:14 84:21 87:15 92:7 95:17,21 96:3,24 100:1 101:12,14,16 102:21 108:19 109:23,25 110:20 115:12 116:7,9 120:10,20 121:12 121:12 <b>withdraw</b> 9:23 16:20,21 18:8 117:2 <b>within</b>
--	--	--	--

13:21 52:7 54:2 62:18 <b>without</b> 28:15 46:22,23 48:2 49:17 55:22 <b>witness</b> 6:3,18 7:9,12,14,23 8:14 15:21 17:1,11 17:19 18:1,14,24 19:20 22:12 23:16 24:17 25:10 26:2 28:14 29:11,20 30:21 31:18 32:16 32:25 33:18 34:13 37:1 38:24 40:2 41:13 42:4 43:8 45:4 46:7 47:1 49:23 50:19 52:13 54:5 59:8 64:19 69:6,18 72:16,20 73:13 74:1,21 75:6 75:14 76:13,21 78:18 79:4,20 80:14 81:12 82:9,23 84:3 84:12,20 85:12,22 86:5 87:13 89:9 91:4,19 92:2 94:21 95:20,23 98:17 99:2 99:14,25 101:5 103:20 105:12 106:3,15 107:4,15 108:3 109:9 110:5 110:24 113:13 114:21 116:12 117:25 119:17 124:12,20 125:11 <b>word</b> 18:4 20:9,10,14 24:25 25:7,8,11,23 26:3,22 27:25 28:8 29:3,17 30:4 34:5 34:23 59:9 84:10 85:9 103:3 114:15 117:1 <b>words</b> 18:11,21 19:17 22:3	22:13 69:24 71:7 105:17,21 <b>work</b> 121:12 <b>worked</b> 36:5 120:2,3 <b>working</b> 35:20 36:6,8 <b>worries</b> 11:25 67:15 <b>wouldn't</b> 46:23 47:14 115:20 116:6 117:25 118:1 <b>writings</b> 12:21,23 <b>written</b> 13:2  <hr/> <b>X</b> <hr/> <b>X</b> 6:1  <hr/> <b>Y</b> <hr/> <b>yeah</b> 31:25 32:25 36:4 49:23 55:2,16 60:3 62:24 72:20 76:7 103:12 116:12 119:12 <b>yellow</b> 30:25 <b>yes</b> 9:1,9,12,15 10:2,8 11:1 12:4,7 16:8,12 19:14 20:10,16,22 27:11 30:5,12,20 32:11,16 34:2 35:23 37:16 42:9 51:15 53:3,12,24 58:18,21 59:4,24 60:12 61:1 61:5,10 63:3,14 64:5 65:8 66:20 67:5,22 68:3,15,22 74:9 76:8 78:13 80:12 83:23 86:18 86:24 87:8,20 88:25	95:23 97:4 102:3,22 104:21 107:21 109:21 112:3 113:3 116:14 117:12,17 122:12 <b>yet</b> 110:22 <b>you'd</b> 37:15 62:5 108:15 116:6 <b>you're</b> 8:10 9:24,25 15:5 20:5,6 21:8,24 23:1 24:1 33:10 43:17 46:14 54:10 71:16 74:23 81:13 91:5,10 91:25 93:12 94:4 116:4 120:13,13,15 122:10 <b>you've</b> 46:14 48:16 93:11 <b>y'all</b> 50:15  <hr/> <b>Z</b> <hr/> <b>Zhang's</b> 25:6,20 27:7 28:8 76:9,17 77:14 78:14 78:25 80:9 81:5 100:21,25 101:2 102:12 103:17 106:10 107:10 110:3,19 111:11,13 116:9,19 117:4,10 <b>Zoom</b> 13:18  <hr/> <b>#</b> <hr/> <b>#3400</b> 1:25 4:9 125:15  <hr/> <b>0</b> <hr/> <b>00435</b> 8:25 <b>00438</b> 8:25	<hr/> <b>1</b> <hr/> <b>1</b> 14:1 51:20 52:22 53:8,12 55:14 56:20 56:21 57:9,16,19,23 58:7 60:20 66:18,22 66:24 67:4,16,23,24 69:1,7,19 71:1 <b>100</b> 53:13 <b>1001</b> 12:13 <b>1002</b> 86:13 88:17,21 90:6 92:12,14 93:25 94:17 95:2,9 96:8 <b>1013</b> 12:8 21:18 <b>1016</b> 5:16 <b>102</b> 60:18 <b>1078</b> 11:16,19 12:7 <b>11,381,866</b> 3:10 <b>11,399,206</b> 1:11 <b>110</b> 57:16 <b>1100</b> 5:6 <b>114</b> 92:11,14,21 93:23,25 94:10,17 95:2,9 96:8 97:2 113:1,3,6 <b>115</b> 90:4,11 <b>12:30</b> 122:19 <b>1200</b> 5:7 <b>13</b> 55:6 <b>13th</b>
--	--	--	---

5:6 <b>133</b> 86:25 87:3 <b>15</b> 51:20 55:16 95:17 <b>150</b> 115:8,9,10,15 120:14 120:15 <b>18</b> 86:16 87:17,23 <b>19</b> 87:1 103:7 <b>1983</b> 36:4 <b>1985</b> 36:5 <hr/> <b>2</b> <hr/> <b>2</b> 27:14 36:4 51:21 52:6 53:14 58:20,22 59:17,20,25 60:17 60:21 61:2,4,6,11 61:17,20 62:3,4,5,7 63:9,19 64:2,20 65:15 66:22 68:6,17 68:19 69:7 70:3,10 70:24 71:25 72:12 73:16 74:12,14 83:16 113:18 <b>2:40</b> 95:22 <b>20</b> 1:15 4:8 7:1 52:6 53:14 55:17 68:6,17 68:19 70:24 123:14 126:3 <b>20005</b> 5:8 <b>2011</b> 110:20 <b>2018</b> 54:21 <b>2019</b> 55:2 <b>202.824.3000</b>	5:9 <b>2025</b> 1:15 4:8 7:1 125:12 126:3 <b>206</b> 62:24 <b>21st</b> 125:12 <b>212</b> 87:15 <b>230</b> 22:18,19 25:12,13 37:21 76:22 77:20 78:20 79:8,9,10 80:7 82:2,18 83:6 <b>240</b> 76:9,17,18,22,24 77:1,10,15,22,24 78:15,24 79:1,4,11 79:17 80:8,9,11 81:14,23 82:5,10,20 <b>260a</b> 63:22 <b>260n</b> 63:22 <b>27</b> 51:21 60:16 83:12 113:14 <b>29</b> 51:8 52:23 67:16 <hr/> <b>3</b> <hr/> <b>3</b> 28:5 38:10 39:14 60:21 61:4 70:3 83:17 113:18 <b>30</b> 14:2 <b>31</b> 51:8 52:23 <b>310.307.4514</b> 5:18 <b>34</b> 86:19 <b>3400</b> 7:6 124:7	<b>35</b> 88:10,23 <b>36</b> 62:13 <b>362</b> 50:9 51:4,20,24 52:11,23 53:1,3,5,8 53:10,25 56:20,24 57:9,11,12,21 58:7 58:16 59:1,20 60:5 60:16 61:12,20,25 62:1,11,21,25 63:4 63:5 64:2,12 65:5 65:16,24 67:3,6 68:5 70:11 72:1,12 72:25 73:3,8 74:7 74:15,17 75:10 80:21 83:17 84:22 86:14 88:3,8,14 90:6,12 91:8 92:11 92:15,22 93:2,25 94:17 95:2,9 96:9 97:3 101:6,16,18 102:5 103:8 107:16 107:18 113:2,7,11 113:15,21 <b>39</b> 62:13 <hr/> <b>4</b> <hr/> <b>4</b> 58:15,22,25 59:13 60:15,21 61:4 <b>40</b> 95:19,20 <b>400</b> 70:17 <b>43</b> 63:6,13 <hr/> <b>5</b> <hr/> <b>5</b> 62:13,22 63:5,13,24 72:21 98:11 <b>54</b> 63:24	<b>56</b> 63:24 <hr/> <b>7</b> <hr/> <b>7:57</b> 7:2 <hr/> <b>8</b> <hr/> <b>8</b> 6:5 <b>8:57</b> 4:7 <b>80</b> 90:11 <b>800</b> 53:16 70:17 <hr/> <b>9</b> <hr/> <b>9,210,362</b> 2:10 <b>90405</b> 5:17
--	--	---	--