1 UNITED STATES PATENT AND TRADEMARK OFFICE

2 BEFORE THE PATENT TRIAL AND APPEAL BOARD

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4 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ CASE NO.:

5 COMCAST CABLE COMMUNICATIONS, LLC, IPR2024-00432
IPR2024-00435
6 Petitioner, IPR2024-00438

7 vs.

8 ENTROPIC COMMUNICATIONS, LLC,

9 Patent Owner.
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14 DEPOSITION OF
DAVID B. LETT - VOLUME II

15

16 DECEMBER 11, 2024
9:14 A.M. TO 1:06 P.M.

17

18 VIRTUAL DEPOSITION VIA ZOOM

19 LOS ANGELES, CALIFORNIA

20

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INDEX OF EXAMINATION

WITNESS:
DAVID B. LETT - VOLUME II

EXAMINATION BY:	PAGE
BY MR. HENDIFAR	4

INFORMATION REQUESTED
NONE

INSTRUCTION NOT TO ANSWER
NONE

INDEX OF EXHIBITS

NONE

DEPOSITION OF DAVID B. LETT - VOLUME II
WEDNESDAY, DECEMBER 11, 2024

DAVID B. LETT - VOLUME II,
having been duly administered an oath by the Court Reporter, was examined and testified as follows:

EXAMINATION

BY MR. HENDIFAR:
Q Good morning or good afternoon, Mr. Lett, depending on where you're located, and thank you for your time today.
Do you understand that this is a continuation of the deposition we conducted yesterday?
A Yes.
Q And you understand that all the rules and procedures we discussed yesterday in connection with the deposition still apply today?
A That's right.
Q And do you understand that you're still not permitted to speak with anybody regarding the substance of this deposition until my cross-examination is concluded.
Do you understand that?

A I do.
Q Okay. After we concluded yesterday's session of the deposition, did you do anything in preparation for today's deposition?
A I looked at my materials considered a little bit more this morning that, you know, that include all the -- my declarations and some of the materials that we talked about yesterday.
Q And did you meet anybody in preparation for today's deposition between yesterday evening and today?
A No.
Q Did you review any documents other than what you identified you have in front of you yesterday?
A No.
Q Do you have any documents accessible to you now other than what you identified yesterday morning?
A No.
Q Okay. May I please refer you to Figure 5 of the Zhang reference? And please let me know when you have it.
A Okay. I have it.
Q Thank you.
Where would a POSITA understand the logic -- in Figure 5, the selector and by M selector selects China's D1 through Dm from China's C1 through Cn, correct?

Page 6

1 A That's right.
2 Q Okay. And where would a POSITA understand that
3 the logic is located for making the selection of D1
4 through Dm from C1 through Cn?
5 A Zhang doesn't really disclose where the logic
6 would be. It could be anywhere. So my understanding is
7 Zhang is describing the implementation of a CMOS
8 integrated circuit that includes its functionality. So
9 the logic a POSITA would understand would be somewhere
10 on that integrated circuit.
11 Q On what integrated circuit?
12 A The integrated circuit that comprises the
13 disclosure of Zhang's receiver.
14 Q And what is the algorithm used to determine
15 which channels D1 through Dm are selected from the
16 channels C1 through Cn?
17 A Zhang does not disclose the algorithm used.
18 Instead, he shows the flexibility of the architecture
19 and the capabilities of the architecture.
20 Q And what happens to channels C1 through Cn to
21 the ones that are not transmitted to the demodulators
22 through D1 to Dm channels?
23 Let me rephrase that question.
24 What happens to the channels C1 through Cn that
25 are not selected for transmission to the demodulators in

Page 7

1 D1 to Dm?
2 A I'm not sure that Zhang discloses what happens
3 to those channels.
4 Q As an expert, are you able to make a
5 determination?
6 A So -- so as Zhang discloses, desired and
7 undesired channels come in and desired channels are
8 output the demodulator as a digital data stream. So he
9 doesn't say. And I suppose those undesired channels
10 just don't get sent out of the -- to the demodulator.
11 Q So the demultiplexing of those undesired
12 channels are just going to waste?
13 A Going to what, I'm sorry?
14 Q Going to waste.
15 A Wait.
16 Q Waste.
17 A Waste, w-a-s-t-e?
18 Q Right. So the demultiplexing of those
19 undesired channels just goes to waste?
20 A I'm not sure I would characterize it as waste.
21 So the way the system works is, it's a bunch of channels
22 coming in and when a subscriber wants to watch or record
23 a channel, then that channel is output the demodulator.
24 If the channel -- if -- so the channel is still there so
25 that if the -- if a subscriber later wants to watch that

Page 8

1 channel, he can -- he can have that channel output to
2 the demodulators. But at the particular time that he's
3 not wanting to watch that channel or record, it's not
4 being sent to the demodulators, but it's -- I don't
5 think it's wasted. It's really -- it's there for a
6 quick channel change to the new -- to the new desired
7 channel that may be going from an undesired to a desired
8 channel.
9 It's like I'm watching television programs and
10 I'm not watching ESPN right now and then so it's
11 undesired. And then I want to watch ESPN, so then I
12 would select that I want to watch ESPN and it would come
13 out as a desired channel out of the demodulators.
14 Q And I appreciate that explanation. So did I
15 understand correctly that Zhang demultiplexes more
16 channels that at one time may be sent to the demodulator
17 so that the user can switch between the desired channels
18 at a faster speed?
19 A Yeah. So Zhang discloses the digital selector
20 provides the subscriber with fast channel search
21 capabilities. That's in paragraph 5 in 28 cited in
22 Zhang.
23 Q Understood.
24 Okay. Now, you recall yesterday we discussed
25 on Page 84 of your declaration, I believe for the '866

Page 9

1 patent, you had two annotations of Zhang's Figure 5 for
2 how the different channels may be transmitted through
3 the boss interface?
4 Do you recall that?
5 A Can you tell me the page number again?
6 Q Sure. I believe it was Page 84 of your
7 declaration for the '866 patent.
8 A I'm not sure that's correct. What I'm seeing
9 is --
10 Q You're right --
11 A Serial and parallel -- parallel versus serial
12 explanation.
13 Q I apologize. Give me one moment.
14 Let me ask you the question this way then.
15 Sitting here now, are you able to provide an
16 example of how Figure 5 may work where the channels
17 multiplexed are on data buses, either data buses are
18 actually demultiplexed in the time division DeMux 530
19 before being sent out?
20 A Are you referring to a particular claim element
21 because, as I recall, I don't remember a case where I
22 looked at that particular situation? And if it's in a
23 claim element, maybe you could tell me which one. I'll
24 look at it.
25 Q No, I'm trying to ascertain what the function

Page 10

1 of the time division DeMux is and -- so my question is
2 as follows: Sitting here now, are you able to provide
3 any example on how the Figure 5 n x m selector works
4 where the time division DeMux 530 actually demultiplexes
5 channels from any data bus before being sent out?
6 MR. QUALEY: Objection to form.
7 THE WITNESS: Sorry, my computer hung up
8 momentarily and I couldn't see any of the documents. So
9 give me just a second to reopen -- reopen the documents.
10 I'm sorry I may have to completely close out
11 Adobe and start all over. I apologize for the delay. I
12 can't see -- I can't see my documents that I've been
13 able to see up to this point.
14 BY MR. HENDIFAR:
15 Q It happens. No worries.
16 A Okay. Can you please reread that question?
17 Q Happily, I'll repeat the question.
18 Sitting here now, are you able to provide any
19 example of how Figure 5 in Zhang works where the time
20 division DeMux 530 actually demultiplexes the channels
21 on a given data bus before those channels are sent out?
22 A So if you look at my paragraph 129 of my '362
23 declaration.
24 Q What paragraph, I'm sorry?
25 A 129.

Page 11

1 Q Okay.
2 A So as you can see, on the left side of that
3 figure, the multiplexed -- time division multiplexed
4 data is shown on data bus 1 and the output D1, D2, Dm is
5 being shown on the right side of that time division
6 multiplex -- I should say on the left diagram out of the
7 time division multiplex block.
8 Q Okay. Now, on the annotation you have shown on
9 Page 90 of your declaration that you just pointed to, on
10 the left-hand side --
11 A Yes.
12 Q Why would the n x m selector multiplex three
13 channels on data bus 1 only then to demultiplex it
14 before it's being sent out by the n x m selector?
15 A So there could be a number of reasons, but
16 Zhang does not disclose why. He's saying that the
17 architecture is very flexible. And as I discussed later
18 with Pandey, the integrated circuit implementation, one
19 might be limited in the number of lines that go from a
20 particular logic block to another. And I'm talking
21 about in the layout of the IC, right. And so as Pandey
22 teaches, the -- you can optimize the CMOS circuit design
23 so that sometimes between blocks you might send signals
24 in a time division multiplex fashion and then
25 demultiplex them later in another block. So multiplex

Page 12

1 send it through a limited set of wires, or traces, and
2 then demultiplex in that second module.
3 Q Are signals necessarily demultiplexed in time
4 division DeMux 530?
5 A I'm sorry, could you repeat that again?
6 Q Sure.
7 Are signals necessarily demultiplexed in the
8 time division DeMux 530?
9 MR. QUALEY: Objection to form.
10 THE WITNESS: I'm sorry, I'm not sure I caught
11 every word. Can you say it one more time, please?
12 BY MR. HENDIFAR:
13 Q Of course.
14 Are signals necessarily demultiplexed in the
15 time division DeMux 530?
16 MR. QUALEY: Same objection.
17 THE WITNESS: So as I show in paragraph 125 on
18 Page 87 of my declaration, another example of this
19 flexible architecture where the time division DeMux is
20 outputting the time division multiplex data as a serial
21 output to go to a demodulator.
22 BY MR. HENDIFAR:
23 Q Got it.
24 Now, may I please refer you to the '362 patent,
25 Column 2. And please let me know when you have it.

Page 13

1 A Okay.
2 Q So if you please look at the '362 patent,
3 Column 2, lines 20 to 22. And the question is: Why
4 would the bandwidth of Figure 1 require very expensive
5 digital processing circuitry?
6 A I'm not sure I opined on that in my
7 declaration. If I did, maybe you could point me to it
8 and then I'll be happy to answer a question about it.
9 Q Again, we've discussed this. I'm not limited
10 in asking you questions only about sentences you have
11 articulated in your declaration. So you are here as an
12 expert on the subject matter.
13 Let me ask you this: Did you fully review the
14 '362 patent before providing your opinions?
15 A Sure, I did.
16 Q And did you fully understand the '362 patent
17 before providing your opinions?
18 A Yes.
19 Q And did you review the Zhang reference in full
20 before providing your opinions?
21 A Yes.
22 Q And did you fully understand the Zhang
23 reference before providing your opinions?
24 A Yes.
25 Q Okay. So I am entitled to ask you about that

Page 14

1 understanding of the patent and the references. So I'll
2 ask the question again.
3 In the '362 patent, Column 2, lines 20 to 22,
4 why would the bandwidth of 800 megahertz in Figure 1
5 require very expensive digital processing circuitry?
6 MR. QUALEY: Objection to form.
7 THE WITNESS: So this is in the prior arch
8 section describing what was going on before the '362
9 patent. I'm sorry, I spent most of my time looking at
10 the claims of the '362 patent and disclosing how the
11 background references render obvious those claims.
12 So -- but I'll have to go back and reread the entire
13 background section to make sure I totally understand the
14 context.
15 BY MR. HENDIFAR:
16 Q Okay. So sitting here now, you don't know why
17 the bandwidth of 800 megahertz in Figure 1 of the '362
18 patent requires very expensive digital processing
19 circuitry?
20 MR. QUALEY: Objection to form.
21 THE WITNESS: I think what he's saying is that
22 the output of Figure 1 could have a bandwidth of
23 800 megahertz, and per the Nyquist theorem, one would
24 have to sample at least twice the bandwidth or twice the
25 highest frequency. So I would have to have double that

Page 15

1 speed at least, and some extra, right, for practical
2 implementations. And so I think what he's saying at
3 this point in time that would be an expensive component.
4 BY MR. HENDIFAR:
5 Q And expensive, is that reference to money or
6 expensive in a different way?
7 A I think he's saying money.
8 Q Okay. And do you agree with this
9 characterization in Column 2, lines 20 to 22, as of
10 2009?
11 A I have no reason to doubt that.
12 Q Now, moving on for the '362 patent, Column 2,
13 same column, lines 24 to 27. The sentence that says
14 quote: "It is desirable to have wideband receiver
15 systems that can increase the dynamic range without
16 requiring expensive data conversion, filtering, and
17 channel selection at the demodulator," end quote.
18 Do you see that sentence?
19 A Yes.
20 Q How does the patent's embodiments explain they
21 achieve this objective of a wideband receiver system
22 that can increase the dynamic range without requiring
23 expensive data conversion, filtering, and channel
24 selection at the demodulator?
25 MR. QUALEY: Objection to form.

Page 16

1 THE WITNESS: So in paragraph -- excuse me --
2 Column 6, starting on line 55, the reduced sampling rate
3 of N desired baseband channels will be sent as serial or
4 parallel data stream to a demodulator using a serial or
5 parallel data interface, according to commonly known
6 methods as shown in Figure 2. This approach provides
7 several advantages over tuner architecture.
8 First, it eliminates the need of expensive data
9 conversion filtering and channel selection on the
10 demodulator side. And that's what Zhang discloses, as I
11 showed in my declaration.
12 MR. QUALEY: David, just for the court
13 reporter's sake, when you're reading something, don't
14 read quite so fast.
15 THE WITNESS: I'm sorry, I'm usually not
16 accused of talking too fast.
17 MR. HENDIFAR: I'll share that document
18 obviously with the court reporter for the...
19 BY MR. HENDIFAR:
20 Q When the '362 patent, in Column 2, lines 24 to
21 27, refers to expensive data conversion, is that an
22 analog-to-digital data conversion or is it referencing a
23 different data conversion?
24 A I don't think he says either way.
25 Q As an expert, are you able to determine what

Page 17

1 the patent means in Column 2, 24 through 27?
2 A He doesn't say whether it's analog-to-digital
3 or other expensive data conversion. But the paragraph I
4 just read -- excuse me -- the sentences that I just read
5 is telling how he addresses this problem and -- by
6 providing serial or parallel data stream to a
7 demodulator.
8 Q So in your opinion, the '362 patent achieves
9 the objective of a wideband receiver system that can
10 increase the dynamic range without requiring expensive
11 data conversion, filtering, and channel selection at the
12 demodulator by providing a serial or parallel interface
13 to the demodulator? Is that your opinion?
14 MR. QUALEY: Objection to form.
15 THE WITNESS: Zhang describes a wideband
16 receiver where the output of the digital data stream is
17 a serial or parallel interface.
18 BY MR. HENDIFAR:
19 Q Mr. Lett, we're having the same problem as
20 yesterday. I'm asking you a question about what the
21 '362 patent means, and you have a habit by training or
22 habit -- I don't want to speculate -- of going back to
23 the declaration, reading an irrelevant portion about
24 what Zhang says. I'm not asking you about what Zhang
25 says. I'm asking you what the '362 patent is.

Page 18

1 A I read to you what the '362 patent says.
2 Q And I asked you a follow-up question and your
3 response was to read something about Zhang from your
4 declaration. That's nonresponsive to my question. So
5 I'd ask my question again. Okay?
6 Is it your opinion that using a serial or
7 parallel data interface is how the '362 patent achieves
8 the objective of a wideband receiver system that can
9 increase the dynamic range without requiring expensive
10 data conversion, filtering, and channel selection at the
11 demodulator?
12 MR. QUALEY: Objection to form.
13 THE WITNESS: I have no reason to dispute the
14 patent '362, Column 6, 55 -- lines 55 through 62, which
15 is describing how he's solving this problem by using
16 serial or parallel data stream to a demodulator.
17 BY MR. HENDIFAR:
18 Q Okay. Thank you.
19 In the portion that you relied upon in Column
20 6, lines 50 forward, for your reasoning, it references
21 expensive data conversion.
22 Do you see that?
23 A I do see that, yes.
24 Q Okay. Now, here, since you are saying this
25 sentence provides support for your opinion, what do you

Page 19

1 understand data conversion to refer to?
2 MR. QUALEY: Objection to form.
3 THE WITNESS: My opinion is in my declaration,
4 and I did not address this question in my opinion.
5 That's a new opinion you're asking me to render.
6 BY MR. HENDIFAR:
7 Q Okay. That's fine. I can ask you that.
8 So sitting here now -- is it your testimony
9 that, sitting here now, you don't know what data
10 conversion the '362 patent is referring to in Column 6,
11 line 61?
12 MR. QUALEY: Objection to form.
13 THE WITNESS: I don't feel comfortable
14 rendering a new opinion. I can read exactly what the
15 patent says, and he says that he's solving this problem
16 with serial parallel data interfaces and that it
17 eliminates the need of expensive data conversion,
18 filtering in channel selection on the demodulator side.
19 And he does not go to explain whether what data
20 conversion he means.
21 BY MR. HENDIFAR:
22 Q Now, that's not responsive to my question.
23 Do you recall yesterday in response to a
24 question I asked, you flatly stated that you refuse to
25 answer because it is not an opinion that is stated in

Page 20

1 your declaration?
2 A I'm not sure that's what I said exactly.
3 Q And do you recall that counsel for Comcast
4 requested that you do provide a response to my question
5 at that time?
6 Do you recall that?
7 A Yes.
8 Q Okay. Do you understand that I can ask you
9 questions about the references, even though you may not
10 have stated a specific opinion in your declaration about
11 the question I'm asking?
12 A Can you repeat that question?
13 Q Yes.
14 Do you understand that I am permitted to ask
15 you questions about the references that you've relied
16 upon, even though you may not have a specific sentence
17 in your declaration about the question I've asked you?
18 A I don't know if that's true or not. If you say
19 it is, I'll take your word for it.
20 Q Okay. And do you understand that you cannot
21 refuse to answer a question unless it's specifically
22 advised by counsel on the basis of privilege?
23 A I think so, yes.
24 Q So please --
25 A My answer is I don't know what data conversion

Page 21

1 he means.
2 Q Thank you. And that's what I was asking. If
3 you don't know, you don't know.
4 And if I ask you a question --
5 A He doesn't explain it.
6 Q That's fine. And if I ask you a question and
7 you're willing to sit here and say "Even though I'm an
8 expert, I don't know what this sentence means," that's
9 fine. As long as you provide that statement, I'll move
10 on.
11 Just to be clear then, sitting here now, you
12 don't know what the '362 patent means by data conversion
13 in Column 6, line 61?
14 A Correct.
15 MR. QUALEY: Objection to form.
16 BY MR. HENDIFAR:
17 Q Now, is there a benefit in performing
18 analog-to-digital data conversion in the tuner as
19 opposed to the demodulator?
20 A That's a very broad question. Can you give me
21 a more specific question?
22 Q Sure.
23 Do you understand what a tuner is?
24 A In the context of the patents we've been
25 talking about it, I think I do, yes.

Page 22

1 Q Yes. And do you understand what the
2 demodulator is in the context of the technology we've
3 been discussing today and yesterday?
4 A Yes.
5 Q Okay. Now, in the context of the technology
6 we've been discussing today and yesterday, is there a
7 benefit in performing analog-to-digital data conversion
8 in a tuner as opposed to in a demodulator?
9 MR. QUALEY: Objection to form.
10 THE WITNESS: There are many design tradeoffs
11 that one can make in designs and one can put components
12 in different places, depending on the system
13 requirements and the requirements for the design. So
14 the answer is you might want to put it one time one
15 place, and one another.
16 BY MR. HENDIFAR:
17 Q And are you able to provide a few examples of
18 the tradeoffs for placing the analog-to-digital
19 converter in a tuner as opposed to in a demodulator?
20 A So the context of what we've been talking about
21 is, you do analog-to-digital conversion and you output a
22 digital data stream to a demodulator and all the
23 benefits thereof, including the sentences we just read
24 in Column 6. I don't know if we looked at or it's
25 addressed in these documents a design where you would

Page 23

1 output an analog signal to a demodulator and have an A
2 to D converter in a demodulator. Perhaps it is. And if
3 it is, maybe you can point me to it.
4 Q Sure. We can discuss in more detail that same
5 sentence you've been relying upon.
6 So going back to the '362 patent, Column 6,
7 lines 60 to 61, where you say one of the benefits of the
8 system disclosed in the '362 patent is, quote: "It
9 eliminates the need of expensive data conversion,
10 filtering, and channel selection on the demodulator
11 side," end quote.
12 Do you see that?
13 A Yeah, that's not my quote. That's stated in
14 the patent.
15 Q Right. Right. I'm reading from the lines I
16 mentioned.
17 Now, why is it beneficial to have data
18 conversion, filtering, and channel selection not on the
19 demodulator side?
20 MR. QUALEY: Objection to form.
21 THE WITNESS: Can you restate the question?
22 BY MR. HENDIFAR:
23 Q Of course.
24 Do you understand that in the portion of the
25 patent you relied upon as support for the response to my

Page 24

1 previous question, it states in Column 6, line 60, that
2 one of the benefits of the invention is, quoting the
3 patent, "It eliminates the need of expensive data
4 conversion, filtering, and channel selection on the
5 demodulator side," end quote.
6 Do you see that sentence?
7 A Yes.
8 Q Okay. Why is it beneficial not to have data
9 conversion, filtering, and channel selection on the
10 demodulator side?
11 MR. QUALEY: Objection to form.
12 THE WITNESS: Well, it says it eliminates the
13 need of expensive, so it's not saying that there's no
14 data conversion, filtering, and channel selection on the
15 demodulator side.
16 BY MR. HENDIFAR:
17 Q So you are reading expensive to be modifying
18 data conversion and filtering and channel selection?
19 A I'm just reading the sentence.
20 Q Right.
21 A And the previous sentence is talking about
22 outputting digital data in parallel or serial form to a
23 demodulator. And the very next sentence is talking
24 about eliminates expensive data conversion. And you can
25 read that as expensive filtering and expensive channel

Page 25

1 selection on the demodulator side or you could read it
2 first it eliminates the need of any data conversion, any
3 filtering, any channel selection on the demodulator
4 side, right. So it's -- you could read the sentence
5 either way, I think, and I'm not sure which way he
6 means.
7 Q Okay. So -- okay.
8 Now, in the embodiment of Figure 2 in the '362
9 patent, is there a need for filtering and channel
10 selection on the demodulator side?
11 A Well, again, this section is talking about
12 outputting digital data to a demodulator. He then says
13 it eliminates the need of expensive data conversion,
14 filtering, and channel selection on the demodulator
15 side. I'm not sure he talks about the architecture of
16 the design of the demodulator. Perhaps he did and maybe
17 you can point me to it.
18 Q Again, that's nonresponsive to my question. So
19 if you don't know the answer to my question, you can
20 just say I don't know and that's fine, but I need an
21 actual response.
22 So the question is: In the '362 patent in the
23 embodiment of Figure 2, is there a need for channel
24 selection on the demodulator side?
25 MR. QUALEY: Objection to form.

Page 26

1 THE WITNESS: So the design, and also in Zhang,
2 outputs multiple channels via a serial or parallel
3 interface. So as a POSITA would understand, when I
4 select a channel to view, I would be selecting the
5 channel to view that's coming from multiple channels
6 from the receiver.
7 BY MR. HENDIFAR:
8 Q So does that mean there is channel selection on
9 the demodulator side in the embodiment of Figure 2 of
10 the '362 patent?
11 MR. QUALEY: Objection to form.
12 THE WITNESS: It doesn't disclose that so I
13 don't know.
14 BY MR. HENDIFAR:
15 Q Okay.
16 A But in the context of selection, the user is
17 selecting what he wants to watch.
18 Q As an expert here now, are you able to
19 articulate and explain the benefit that the embodiment
20 of Figure 2 of the '362 patent has over the direct
21 conversion tuner of Figure 1 in the '362 patent?
22 A I thought we talked about this yesterday. Did
23 we not talk about this yesterday and answer all those
24 questions?
25 Q So yesterday you explained -- well, first, you

Page 27

1 mentioned you don't recall what a direct conversion
2 tuner is and you don't recall the details. So you
3 pointed me to Mirabbassi, we reviewed what Mirabbassi
4 says about what a direct conversion tuner is, but I
5 don't believe we discussed the specific question I'm
6 asking now. So I'll repeat the question.
7 As an expert sitting here, are you able to
8 articulate the benefits of the embodiment in Figure 2 of
9 the '362 patent over the direct conversion tuner of
10 Figure 1 of the '362 patent?
11 MR. QUALEY: Objection to form.
12 THE WITNESS: So in the '362 patent, the
13 section we read in Column 2, line 20 is talking about
14 the design of Figure 1, essentially, and it would
15 require very expensive digital circuitry, such as very
16 high speed analog digital conversion and high speed
17 processor in the demodulator. And I think that's
18 because the signal is not a digital data stream on
19 Figure 1 output to the demodulator.
20 BY MR. HENDIFAR:
21 Q Now, Figure 2 of the '362 patent still performs
22 analog-to-digital conversion but does it before the
23 signal is sent to the demodulator, correct?
24 A That's right. It converts it to digital before
25 it goes to the demodulator.

Page 28

1 Q Okay. Now as an expert, are you able to
2 articulate why there may be a benefit in performing the
3 analog-to-digital conversion before the signal is sent
4 to the demodulator as opposed to after the signal is
5 sent to the demodulator?
6 A I think it's what we've been talking about,
7 essentially, because it's a digital data stream, and if
8 it was analog it would require, according to the '362
9 patent, very expensive digital processing circuitry,
10 such as very high speed analog-to-digital conversion and
11 high speed processing in the demodulator. And again,
12 that's -- it's an analog output referring to Figure 1.
13 Q So my confusion is channel selection and
14 analog-to-digital conversion still has to be done
15 somewhere. You can't watch a program without conversion
16 and without channel selection.
17 So my question is: Why does the '362 patent
18 seem to suggest that it's beneficial to perform the
19 analog-to-digital conversion and channel selection
20 before the data is sent to the demodulator as opposed to
21 within the demodulator?
22 MR. QUALEY: Objection to form.
23 THE WITNESS: Because if it was in the
24 demodulator, it would require very expensive digital
25 processing circuitry, such as a very high speed analog

Page 29

1 digital conversion and high speed processor in the
2 demodulator.
3 BY MR. HENDIFAR:
4 Q Okay. So is it your opinion that
5 analog-to-digital conversion is less expensive if done
6 outside of the demodulator as opposed to if done within
7 the demodulator?
8 A I'm just reading the statement from the '362
9 patent, and I don't have any reason to dispute Column 2,
10 row 20 through 23.
11 Q Sure. And I'm able to read the patent; I
12 understand what it says. I'm asking you about if you're
13 able to articulate why -- why the patent explains this
14 was the situation. So let me ask you a bit differently.
15 Do you know why it would be more expensive to
16 perform analog-to-digital conversion within the
17 demodulator as opposed to outside the demodulator?
18 A The situation he's talking about is, if I have
19 an 800-megahertz analog signal come in out of Figure 1
20 and I digitize it, I have, to, again, as I explained
21 previously, I have to have an A to D converter to
22 digitize that that is at least twice the highest
23 frequency or the bandwidth of the signal. So I have to
24 have at least double 800-megahertz clock speed on my
25 analog-to-digital converter.

Page 30

1 And I think that's what he means when he says
2 very expensive, such as a very high speed
3 analog-to-digital conversion, in that sentence I've been
4 talking about in Column 2, lines 20 through 23.
5 Q Okay. Now, doesn't Figure 2 of the '362 patent
6 have to convert the same bandwidth of 800 megahertz from
7 analog to digital?
8 A It's a different architecture than Figure 1.
9 Q Okay. But both Figure 1 and Figure 2 require a
10 conversion from analog to digital of the same bandwidth,
11 but in Figure 1, that's done within the demodulator and
12 Figure 2, that's done before the demodulator; am I
13 mistaken?
14 A Can you say that again, please?
15 Q Sure.
16 In both Figures 1 and 2, there is a requirement
17 to convert the same frequency bandwidth from analog to
18 digital, with the difference being that in Figure 1,
19 that conversion would have to be done within the
20 demodulator, but in Figure 2, it is done before the
21 demodulator; am I mistaken?
22 MR. QUALEY: Objection to form.
23 THE WITNESS: Can you break that question up
24 for me, please?
25 ///

Page 31

1 BY MR. HENDIFAR:
2 Q Sure.
3 Is it -- isn't it true that both Figures 1 and
4 2 -- never mind.
5 In Figure 2, do you see the analog-to-digital
6 converters 1 and 2?
7 A Let's see, ADC1, ADC2, yes.
8 Q Okay. And those analog-to-digital converters
9 digitize the same frequency band that is input in the RF
10 input signal, correct?
11 A Well, it's doing it based on the I and Q
12 signals, which require half the bandwidth for the
13 analog-to-digital converters.
14 Q I see.
15 A Excuse me -- half the -- half the sampling
16 frequencies as if you were to, you know, 400 megahertz
17 in the example we've been talking about instead of 800
18 megahertz.
19 Q Right. But collectively, they convert to
20 digital the same bandwidth as the frequency bandwidth of
21 the RF frequency signal, correct?
22 A Yeah, that's right.
23 Q And if the RF input signal is 800 megahertz in
24 bandwidth, the ADCs 1 and 2 collectively digitize that
25 same 800-megahertz bandwidth, correct?

Page 32

1 A Yeah, but they don't require the expensive A to
2 Ds because they require half the sampling frequency.
3 Q I see. So it's your testimony that because
4 Figure 2 is using a complex mixer to down-convert into I
5 and Q portions, the digitization is less extensive than
6 in Figure 1?
7 A I'm just -- yeah, I'm just reading what they
8 say about Figure 1. He says very little about it. But
9 I think I understand what he's saying.
10 Q Okay. Thank you.
11 Is it a good time for a five-minute or so
12 break? We've been going for a bit. Yes, Madam Court
13 Reporter is saying yes.
14 MR. HENDIFAR: Let's come back at 25 minutes
15 past the hour.
16 (Recess.)
17 BY MR. HENDIFAR:
18 Q Mr. Lett, may I please refer you to the '362
19 patent, Column 2, lines 56 to 58. And the question is:
20 What is a decimator?
21 A I'm sorry, column and line number please again?
22 Q Sure.
23 The '362 patent, Column 2, lines 56 to 58. And
24 the question is: What is a decimator?
25 A So as I explain in 206 of my declaration, the

Page 33

1 decimator was commonly used to reduce the sampling rate
2 of a digital signal.
3 Q And why would one want to reduce the sampling
4 rate of the digital signal in an RF receiver?
5 A Well, the ADC must sample the signal at least
6 twice the rate of the highest frequency and the signal,
7 according to the Nyquist theorem that we talked about.
8 The -- when the RF signal has sampled a number of
9 channels, it requires a high sampling rate. Okay? So
10 it's a large amount of data.
11 But then if you are now -- so, originally,
12 sample at a really high rate, right, and now I'm going
13 to output some data that is a lot less data and a lot
14 fewer channels, I should say, then we don't need that
15 very, very high clock rate for those signals. So what
16 we do is we -- we sample at a much lower rate, right.
17 So we take -- for example, you know, if I was going to
18 reduce it by half, I would take the first sample and
19 then skip one and then take the next sample and take
20 every other sample, for example, and therefore, the data
21 that I would output would be a lot less data. We
22 don't -- so if you sent out the whole thing with a very
23 high sampling rate, you would have a lot of extra data
24 that's not really useful.
25 Q Okay. Now, is there a typical sign used in

Page 34

1 electrical circuits for a decimator?
2 A I don't know if it's universally true, but I've
3 seen, like, the down arrow in a box.
4 Q So if I refer you to Figure 2 of the '362
5 patent, box says 270A to 270N, do you see the boxes with
6 the down arrow?
7 A Yes.
8 Q Okay. And is that the sign for a decimator
9 based on your understanding?
10 A Just let me double-check. I believe he even
11 refers to 270 as a decimator. Let me just double-check
12 that.
13 I'm confused in the -- in the '362 patent, it
14 says 270A -- filter signals 260A through 260N may be
15 sent directly to an associated demodulator identified as
16 270A to 270N. Oh, the demodulator is not 270A to 270 --
17 well, I don't know, the way that sentence reads what
18 he's saying.
19 Q So let me ask you. That was actually what I
20 was trying to get at.
21 Looking at Figure 2, do you see that the output
22 of the digital front end after decimators 270A to 270N
23 is a serial or parallel data interface to demodulator?
24 A I see serial or parallel interface to
25 demodulator. But what I haven't found is, yet, and

Page 35

1 maybe it's in here, is if he's calling 270 a decimator.
2 I think it may be a typo perhaps in his patent.
3 Q I actually agree with that. I wanted to
4 understand your view. So the question then -- let me
5 ask you the question.
6 Is it fair to say that in the '362 patent,
7 Column 5, lines 54 to 58, it appears to be a
8 typographical error where it refers to items 270 as
9 demodulators because they are meant to be decimators?
10 A I think that's correct, yes.
11 Q Okay.
12 A Because, you know, on the lower part of that
13 diagram, it says filtered and decimated.
14 Q Right. Again, I don't disagree, but I still
15 have to ask you this. A lot of the questions I ask you
16 I don't necessarily disagree. The idea is I just need
17 to ask you to build up on it.
18 May I now please refer you to the '362 patent,
19 Column 2, line 66 through Column 3, line 1? And please
20 let me know when you have it.
21 A Column 2, 66? Yeah, let me -- let me look at
22 the electronic version. It's easier, I think, to see.
23 Q Sure.
24 A Okay. I have it.
25 Q Okay. The question is: Why would frequency

Page 36

1 shifting the desired channels to the IF spectrum allow
2 the wideband receiver system to directly interface with
3 demodulators commercially available in 2009?
4 A I suppose he's saying that commercially
5 available demodulators had an IF input.
6 Q What does IF input mean?
7 A It means a frequency, you know, not zero and
8 not -- not real high, you know -- I don't know, maybe
9 20, 30, 40 megahertz, something like that. I don't --
10 you know, IF could be anything. You know, it's kind of
11 an intermediate frequency in between low and high.
12 Q You were active in the field in 2009, correct?
13 A Yes.
14 Q Based on your experience, is it true that
15 frequency shifting -- well, strike that.
16 Based on your experience in the field, is it
17 true that commercially available demodulators in 2009
18 required frequency shifting desired channels to the IF
19 spectrum?
20 MR. QUALEY: Objection to form.
21 THE WITNESS: I'm sorry, I don't understand
22 that question.
23 BY MR. HENDIFAR:
24 Q Sure.
25 You were an expert in the field of receivers

Page 37

1 and the field of these patents in 2009 as well, correct?
2 A Yes.
3 Q Based on your experience in 2009, is it true
4 that commercially available demodulators in 2009
5 required frequency shifting the desired channels to the
6 IF spectrum as an input?
7 A I'm confused by the question. There were IF --
8 there were demodulators at IF inputs; is that what
9 you're asking?
10 Q I'm asking if the commercially available
11 demodulators in 2009 required IF input?
12 A Some had IF input. Some had multiple inputs.
13 You know, there were some demodulators that had IF
14 inputs. They probably also had other inputs also, so
15 interfacing to demodulators. And we're talking about,
16 you know, demodulators could be -- is very broad term,
17 right. You know, you've got, you know, very expensive
18 ones that go in racks, you know, commercial, really
19 fancy ones and they have multiple inputs. And, you
20 know, a demodulator could be like a circuit on a board,
21 so it probably wouldn't have an -- I mean, it could or
22 could not, but it probably wouldn't have multiple
23 inputs, right.
24 So I'm kind of answering the question in the
25 context of kind of a rack-mount demodulator that you

Page 38

1 could purchase commercially.
2 Q I actually said that. Thank you.
3 Now, in Figure 2 of the '362 patent, the
4 complex mixer divides the signal into an in-phase and
5 quadrature component, correct?
6 A I'm sorry, I have Figure 2 now. Can you ask
7 your question again?
8 Q Sure.
9 The complex mixer in Figure 2 of the '362
10 patent divides the signal into an in-phase and a
11 quadrature component, correct, the I and Q?
12 A Well, there's two sets of complex mixers, so
13 which one are you talking about? Which ones are you
14 talking about?
15 Q Let me answer you this way.
16 Can I please refer you to Column 4 of the
17 patent, line 48? And please let me know when you're
18 there.
19 A I'm in Column 4. Okay.
20 Q And is it the case that mixer 211 downconverts
21 the in-phase component and mixer 221 downconverts the
22 quadrature component of the input RF signal?
23 A Well, it generates an in-phase 212 and a
24 quadrature signal 222, under output of the
25 demodulators -- excuse me -- at the output of the

Page 39

1 mixers.
2 Q Thank you.
3 Now, what information does the in-phase
4 component of an input RF signal convey?
5 A It's in phase with the input signal?
6 Q Yes. And what information does it convey?
7 A It conveys the in-phase portion of that signal,
8 component of the signal.
9 Q Is the input RF signal -- strike that.
10 If an input RF signal is only amplitude
11 modulated, would it have an in-phase and a quadrature
12 component?
13 A I don't -- I can't really -- I don't really
14 think of it that way, so I'm sorry I don't know the
15 answer without thinking about it. I've been thinking
16 along the context of QAM modulation.
17 Q Okay. So maybe if you can explain it to me
18 that way.
19 What is QAM modulation?
20 A Well, I have a section in my declaration that
21 explains all that. I can go back to that and read it to
22 you.
23 So starting in section 8.2 of the '362
24 declaration, talking about modulated signals, BPSK, and
25 QPSK, and that's considered QAM modulation with four

Page 40

1 components, four -- four symbols.
2 Do you want me to read all that?
3 Q No, I'm able to read your declaration. I'm
4 trying to ask you a question, which you said you don't
5 know, so that's fine.
6 What information does the quadrature component
7 of an RF signal convey?
8 A You froze.
9 MR. QUALEY: Can't hear you. Your audio is
10 fading out.
11 MR. HENDIFAR: Mine?
12 MR. QUALEY: Yeah, your audio was, like, all
13 choppy.
14 MR. HENDIFAR: I'm sorry, I'll repeat the
15 question. I'm sorry. Thank you.
16 I'll repeat the question.
17 BY MR. HENDIFAR:
18 Q What information does the quadrature component
19 of an RF input signal convey?
20 I think Mr. Lett is froze --
21 A So the in-phase is I. It's -- you know, it's
22 multiplied by oscillator cosign, but -- can you hear me
23 now? Can you hear me?
24 Q Yes, now we can hear you. Now, we can hear
25 you, yes.

Page 41

1 A I can't hear him.
2 MR. HENDIFAR: Madam?
3 THE WITNESS: Should we all log off and get
4 back on?
5 MR. HENDIFAR: I think it may be a network
6 issue on your office part.
7 Sure. Let's go off the record.
8 (Audio/technical issues.)
9 MR. HENDIFAR: Let's go back on the record.
10 BY MR. HENDIFAR:
11 Q So, Mr. Lett, the question is: What does the
12 quadrature component of an input RF signal convey?
13 A So it's a component of the signal that's
14 90 degrees out of phase with the in- phase component.
15 Q Okay. Have you -- okay. What is a complex
16 number?
17 A An imaginary number, square root of minus one.
18 Q Okay. And is there a correlation -- strike
19 that.
20 I'll come back to this question.
21 Can I please refer you to the '362 patent,
22 Column 4, starting on line 67?
23 A Okay.
24 Q What is the source of the unwanted frequency
25 components of the signals 214 and 224?

Page 42

1 A That's an image frequency.
2 Q Okay. What is an image frequency?
3 A So Mirabbassi is a great reference for this and
4 explains all this. But essentially, depending on which
5 kind of architecture we're talking about, there is a
6 desired band and an image band that's generated as a
7 result of mixing. And the top receiver that we've been
8 talking about that's implemented by Zhang is low-IF
9 receiver, tends to have a better performance in terms of
10 image band rejection.
11 Q On the '362 patent, may I please refer you to
12 Column 5, line 49 -- starting on line 49?
13 A Column 5. Okay. I see it.
14 Q Does a desire channel refer to an RF channel or
15 a content channel like C-SPAN?
16 A So again, I don't think that the '362 channel
17 defines desired channels. But I would read a desired
18 channel to be one that -- well, actually in my
19 declaration, I quote a source that explains, I believe,
20 what a POSITA would be aware of as a designed channel.
21 And that is -- now, look at paragraph 61 of my '362
22 declaration, desired channels, channels selected for
23 viewing by a consumer. And I'm citing the Ciciora, Jim
24 Farmer reference as well as the Kelly patent -- I'm
25 sorry -- yeah, the Kelly patent and the Tuttle patent.

Page 43

1 Q Thank you for reading from your declaration,
2 but I don't believe that answered my question. So let
3 me approach it a bit differently.
4 Do you understand the distinction between an RF
5 channel and a content channel?
6 A I thought you asked me what was a desired
7 channel.
8 Q Well, this is -- I'll get there, and your
9 response is not responsive so I'm going to break it
10 down. So the question --
11 A And I read the answer as channel selected for
12 viewing by the consumer is a desired channel.
13 Q And I appreciate you reading from your
14 declaration, but that was not responsive. So let me ask
15 this question and I'll get there again.
16 The question is: Do you understand the
17 distinction between an RF channel and a content channel?
18 MR. QUALEY: Objection to form.
19 THE WITNESS: I don't know. A content channel?
20 What do you mean by that?
21 BY MR. HENDIFAR:
22 Q Okay. Such as a C-SPAN or CNN or Fox or a
23 content channel such as those?
24 A And do you mean -- do you mean for an RF
25 channel that may contain any number of content channels

Page 44

1 as part of the digital stream, like maybe six or ten
2 channels in 6 megahertz? Is that what you mean?
3 Q Well, I am asking you the question: Do you
4 know the difference? If there's a difference, I want to
5 know.
6 Do you understand there to be a difference
7 between an RF channel and a content channel?
8 A And I'm asking you: What do you mean by
9 content channel, and then I'll be able to answer the
10 question?
11 Q Sure.
12 A content channel is a channel like C-SPAN.
13 A Do you mean it's a -- for example, an mpeg data
14 stream that represents a C-SPAN program?
15 Q Let me -- maybe I -- I may be able to help you.
16 One moment, please.
17 May I please refer you to paragraph 24 of
18 Zhang?
19 A Okay. I have it.
20 Q Okay. And do you see the phrase content
21 channel?
22 A I do. And it's in quotes. To me, it's like --
23 yeah, you could call it that, but it may or may not be
24 normally called that. Now, I understand what he's
25 talking about here. That's what -- that's the question

Page 45

1 I was asking you, is that what you mean.
2 Q So what is a content channel as Zhang uses it
3 normally called?
4 A I mean, I don't know. We can use that term if
5 you want to.
6 Q Okay. What is a distinction between an RF
7 channel and a content channel?
8 A So what he's describing here, and I agree with
9 it, is that the RF spectrum includes multiple RF
10 channels, which are carriers that contain information,
11 and the -- it falls within a frequency band. So an RF
12 channel in the examples we've been talking about are
13 around 6-megahertz bandwidth in North America.
14 A given RF channel carries one or more content
15 channels. In other words that 6 megahertz could contain
16 a data stream that is a multiplexed -- a transport
17 multiplex that includes transport stream that includes
18 multiple channels. So part of the stream is for -- I
19 think it was CNN, you said, and another part of the
20 stream is another channel, like HBO or something. But
21 this was typical. So in a cable system when we're, you
22 know, in this time frame with digital video, you know,
23 you would put multiple content channels in a single
24 6-megahertz RF channel.
25 Q Understood.

Page 46

1 Now, did I hear you correctly that at Zhang's
2 time, 6 megahertz was the standard size of an RF channel
3 in the U.S.?
4 A The cable systems that I was familiar with in
5 the U.S., we used 6-megahertz RF channels.
6 Q Now, going back to the '362 patent, Column 5,
7 starting on line 49.
8 A Okay.
9 Q Are the desired channels in the '362 patent RF
10 channels or content channels?
11 A So the front end portion of the mixer -- excuse
12 me -- of the mixers, right, downconverts a swath of
13 channels. And then there's a selection of the RF
14 channels, and a said selected plurality of television
15 channels are sent to a demodulator.
16 And so what he's saying is that the demodulator
17 then receives that data stream that includes the -- all
18 the digital channels that are in that data stream.
19 The -- the '362 receiver outputs that data stream to
20 demodulators.
21 Q Thank you for that explanation, but if you
22 answered my question, I missed it. My question is very
23 simple.
24 Does the phrase desired channel in the '362
25 patent refer to content channels or RF channels?

Page 47

1 A It could be either one. If you had -- if you
2 had one content in a 6-megahertz channel, and that was a
3 desired channel, that one content, then -- the
4 architecture would convert that one channel to a digital
5 data stream and output.
6 Q Okay. How can -- an RF channel and a content
7 channel are not the same thing, correct?
8 A They can be. I mean, not -- well, no. Scratch
9 that.
10 You can have one channel in an RF -- one
11 content channel in an RF channel.
12 Q Right. But --
13 A And we did that sometimes because a very high
14 quality content video, very high bit rate video, would
15 be -- would use up a lot of -- a lot of the 6-megahertz
16 channel like, you know, super high definition or
17 whatever you want to call it.
18 Q Is it also the case that in a satellite system,
19 there would be multiple content channels on a single RF
20 channel?
21 A That's generally true, yes.
22 Q Okay. Now -- so RF channel is --
23 A But it can be one. I mean, again, there's no
24 restriction that it has to be multiple. That was just
25 common.

Page 48

1 Q Right. So ordinarily, an RF channel and a
2 content channel are not the same thing, correct?
3 A It's hard to say. I mean, if you're -- depends
4 on what kind of video you're trying to send. Very high
5 quality video that could be the same. It just depends.
6 Q Okay. What does it depend on?
7 A It depends on the quality of the video you want
8 to send and the bandwidth of the RF channel and the
9 compression technique that's used for the signal, how
10 much can you pack in to a particular 6-megahertz channel
11 and achieve the desired level of video quality is what
12 I'm talking about.
13 Q Okay. Now, when you perform your analysis on
14 the '362 patent, did you use an understanding of desired
15 channels as desired RF channels or desired content
16 channels?
17 A So it's generally desired RF channels.
18 Q Okay.
19 A But it's converted to a digital data stream and
20 output to a demodulator.
21 Q In today's cable system, is it still true that
22 a single RF channel generally has multiple content
23 channels modulated on it?
24 A I'm sorry, I haven't worked on cable systems
25 since 2011, and so I do not know the answer.

Page 49

1 Q Okay. In today's satellite systems, is it
2 still true that a single RF channel generally has
3 multiple content channels modulated on it?
4 A I don't know. I haven't worked on satellite
5 systems since I left EchoStar in 2016.
6 Q What prompted you to leave Cisco -- I'm sorry,
7 EchoStar in 2016?
8 A They closed the R & D center for business
9 reasons. The strategy of the company, I think, was to
10 stop funding development work in satellite systems and
11 focus more on becoming a cell phone provider. But
12 Charlie Ergen's strategy is -- who knows? That's the
13 general thought of what was going on there.
14 Q And what prompted you leaving Telular in 2022?
15 A I didn't want a three-hour commute in the car
16 each day.
17 Q Very legitimate reason. I actually quit my
18 first job because I had to start at 7 a.m. as an
19 engineer.
20 A We should have made you come in at 7 a.m. this
21 morning then.
22 Q Yesterday, you did. No, actually, I was at
23 Parsons. I had to wear a suit. And I was 22. I had to
24 wear a suit, wake up at 5:00. By the time I got home, I
25 couldn't do anything and I was like, "I don't want this

Page 50

1 life at 22." So I relate to that.
2 Now, what have you been doing since 2022 as a
3 profession?
4 A So I've been working as an expert, consulting
5 as an expert.
6 Q Did you also do consulting work as an expert
7 before leaving Telular in 2002[SIC]?
8 A Yes.
9 Q Is it fair to say that since you left Telular
10 in June of 2002, your only profession now is as an
11 expert witness?
12 A I left in 2022, just as a clarification.
13 Q Yeah, I'm sorry, I didn't mean -- yes. Yes,
14 I'll repeat the question.
15 Is it fair to say that since you left Telular
16 in June of 2022, your only profession now is as an
17 expert witness?
18 A I've done some other consulting other than
19 being an expert witness, so I would say consulting is my
20 only profession and the majority of my income since
21 then -- since 2022 has been working as an expert as part
22 of my consulting business.
23 Q And when you say majority of your income, would
24 it be more than 80 percent?
25 A I think so. I think that's fair.

Page 51

1 Q More than 90 percent?
2 A I don't know. I'd have to look at my records
3 to see.
4 Q Okay. Now before you left Telular in June of
5 2022, so between 2019 and June of 2022, roughly what
6 percentage of your income came from litigation
7 consulting work?
8 A I really don't know. I'd have to look at my
9 records to see.
10 Q Would it be approximately more than 50 percent?
11 A It would be less than 50 percent.
12 Q Okay. May I please refer you to the '866
13 patent Figure 2?
14 A I need a break.
15 Q Yeah, let's take a break. That's fine.
16 A Okay.
17 Q And I have maybe another 20 minutes or
18 30 minutes left, so there's not much left. This may be
19 our last break before redirect. So how much of a break
20 would you like?
21 A Five minutes is great. Thank you.
22 Q Sure. Let's make it seven so we come back at
23 15 minutes past the hour.
24 Is that okay with everybody?
25 MR. QUALEY: That's fine.

Page 52

1 MR. HENDIFAR: Thank you very much.
2 (Recess.)
3 BY MR. HENDIFAR:
4 Q May I please refer you to the '866 patent
5 Figure 2?
6 A Okay.
7 Q Now, do you see the arrow at the end that says
8 serial or parallel data interface to demodulator?
9 Do you see that arrow?
10 A Yes.
11 Q Okay. And the digital data stream output in
12 Figure 2 contains only desired channels, not undesired
13 channels, correct?
14 A I think he describes a lot of having desired
15 channels. I'm not sure if he discloses -- let's see
16 here. As another option to put -- I think -- yeah, I
17 think they're mostly desired channels, I think is the
18 way the text of the spec of the patent. The claims just
19 talk about outputting desired channels.
20 Q I see. So can we look at -- let's say, claim
21 41 has that phrase in the '866 patent.
22 And please let me know when you have it.
23 A Okay. I've got it.
24 Q Same claim 41, where it says: "Wherein each
25 digital downconverter, of the plurality of digital

Page 53

1 downconverters, is operable to generate a digital
2 channel output corresponding to each desired channel,"
3 end quote.
4 So is it your understanding that the digital
5 channel output corresponding to each desired channel
6 does not contain all desired and undesired channels but
7 just desired channels?
8 MR. QUALEY: Objection to form.
9 THE WITNESS: What was the question?
10 BY MR. HENDIFAR:
11 Q Sure.
12 You recall that I was discussing Figure 2 with
13 you, and then you mentioned that the claims on the
14 required desired channels.
15 Do you recall that discussion?
16 MR. QUALEY: Objection to form.
17 THE WITNESS: I don't know if I recall that
18 discussion exactly as you characterize it.
19 BY MR. HENDIFAR:
20 Q Do you recall we discussed Figure 2 and whether
21 the output of Figure 2 contains only desired channels?
22 A I don't see the word "only" in the claims.
23 Q So may I please refer to Figure 2 of the '866
24 patent?
25 A Okay.

Page 54

1 Q Do you see the arrow titled "Serial or Parallel
2 Data Interface to Demodulator"?
3 A I do, yes.
4 Q Okay. The question is: Does the output of
5 Figure 2 contain only the desired channels and no
6 undesired channel?
7 A It contains only the desired RF channels.
8 Q Right. And when I say channel -- okay. I'll
9 clarify myself.
10 A I'm not talking about the content channels.
11 Q I appreciate that, so I'll clarify my question.
12 A As per our previous discussion of our
13 definition we agreed upon for content channels.
14 Q Very good. So -- and I didn't mean to be
15 ambiguous. I'll repeat my question with the
16 clarification.
17 In Figure 2 of the '866 patent, is it your
18 understanding that the output of the system in Figure 2
19 contains only desired RF channels and no undesired RF
20 channel?
21 A That's right.
22 Q Can we go back to claim 41 now, since in that
23 discussion previously you referenced the claims?
24 A Okay.
25 Q Okay. Do you see claim 41 where it says:

Page 55

1 "Wherein each digital downconverter, of the plurality of
2 digital downconverters, is operable to generate a
3 digital channel output corresponding to each desired
4 channel of the plurality of desired channels."
5 Do you see that?
6 A Yes.
7 Q Okay. Do you read claim 41 to require
8 downconversion of the desired channels but not the
9 undesired channels?
10 MR. QUALEY: Objection to form.
11 THE WITNESS: Can you reread that question,
12 please?
13 BY MR. HENDIFAR:
14 Q Of course.
15 I am trying to ascertain what system does claim
16 41 require -- or requires. So let me -- let me rephrase
17 my question. One moment, please.
18 Do you see where claim 41 requires an input
19 signal comprising a plurality of desired channels and a
20 plurality of undesired channels.
21 Do you see that?
22 A Are you reading claim 41B?
23 Q Well, I'm reading claim 41. I don't recall how
24 you have numbered the various elements. I'm looking at
25 the claims here. So if you look at the '866 patent,

Page 56

1 Column 15, I can give you the specific lines I'm
2 reading.
3 Do you have the '866 patent, Column 15?
4 MR. QUALEY: Counsel, I hate to interrupt, but
5 your audio has gone, like, a little mushy to my hearing.
6 BY MR. HENDIFAR:
7 Q Sorry.
8 Mr. Lett, do you have the '866 patent in front
9 of you, Column 15?
10 A Not yet.
11 Q Okay. So in Column 15 of the '866 patent, can
12 I please refer you to claim 41?
13 A I'm sorry, I'm still looking for it.
14 Q Looking for the patent?
15 A I'm confused. I see -- in the '866, I see the
16 columns go up to 18.
17 Q Right. And I'm pointing you to Column 15.
18 A I'm sorry, I thought you said 41.
19 Q Claim 41.
20 A Oh, I'm sorry. Okay.
21 Q I'm sorry?
22 A Let's get back on the same page. Thank you.
23 Okay. Now, what is your question?
24 Q In the '866 patent, Column 15, claim 41.
25 A Okay.

Page 57

1 Q Do you have that?
2 A I do, yes.
3 Q Okay. Do you see that claim 41 on line 15 says
4 "Wherein the input signal comprises a plurality of
5 desired channels and the plurality of undesired
6 channels."
7 Do you see that?
8 A Yes.
9 Q So the input signal contains both desired
10 channels and undesired channels, correct?
11 A Yes.
12 Q Okay. Do you see claim 41, starting on line
13 18, says: "A plurality of digital downconverters
14 coupled to the wideband ADC, wherein each digital
15 downconverter, of the plurality of digital
16 downconverters, is operable to generate a digital
17 channel output corresponding to each desired channel."
18 Do you see that?
19 A Yes.
20 Q Okay. Is it fair to say that a system where
21 each digital downconverter -- strike that.
22 Is it fair to say that a system where the
23 digital downconverters generate a digital channel output
24 corresponding to both desired and undesired channels
25 would be a different system that is claimed in claim 41?

Page 58

1 MR. QUALEY: Objection to form.
2 THE WITNESS: Can you break that up into parts
3 for me?
4 BY MR. HENDIFAR:
5 Q Sure.
6 Can you articulate specifically maybe what your
7 confusion, ambiguity is so maybe I can more clearly
8 address what your specific concern?
9 A It was a really long question, and I would like
10 to break it down into parts if possible.
11 Q Okay.
12 Do you see that claim 41 requires that
13 downconverters generate a digital channel output
14 corresponding to each desired channel?
15 A It says: "A plurality of digital downconverter
16 coupled to the wideband ADC, wherein each digital
17 downconverter."
18 Q Right. "Of the plurality of digital
19 downconverters is operable to generate a digital channel
20 output corresponding to each desired channel."
21 So the question was: Do you see where claim 41
22 requires that digital channel -- digital downconverters
23 generate a digital channel output corresponding to each
24 desired channel?
25 Do you see that indication?

Page 59

1 A Yes.
2 Q Okay. Now, if a system -- if in a system the
3 digital downconverters were operable to generate a
4 digital channel output that corresponded to both the
5 desired and undesired channel, that would be a different
6 system than one covered by claim 41, correct?
7 MR. QUALEY: Objection to form.
8 BY MR. HENDIFAR:
9 Q Mr. Lett, have you been reviewing a document
10 for the past few minutes?
11 A Yes, I'm looking at some documents.
12 Q What are you looking at specifically?
13 A I'm looking at my declaration.
14 Q Okay. So just let me know when you're ready so
15 I can repeat the question.
16 A I don't understand that it includes the word
17 "only."
18 Q But that was not my question. Let me state the
19 question again and you can answer yes or no or however
20 it is, but if you can answer the question.
21 Do you see where claim 41 requires that the
22 input signal comprises both desire and undesired
23 channels?
24 A I do.
25 Q And do you also see where in claim 41 it states

Page 60

1 that the digital downconverter is operable to generate a
2 digital channel output corresponding to each desired
3 channel?
4 A Right. And it doesn't say does not output any
5 undesired channels.
6 Q Okay. So it's your opinion that if a system
7 digitally downconverts both desired and undesired
8 channels, it is still covered by claim 41?
9 A So the Zhang system is very flexible. It
10 can --
11 Q Sir?
12 A Listen to me. Let me talk. Let me talk
13 without interrupting me.
14 Q Well --
15 A The Zhang system discloses in 41C, it can
16 output only -- it can output only the desired channel.
17 MR. HENDIFAR: I move to strike.
18 THE WITNESS: It can be a super set of that
19 feature set.
20 MR. HENDIFAR: I move to strike as
21 nonresponsive.
22 THE WITNESS: And I explained how Zhang's --
23 MR. HENDIFAR: Move to strike as nonresponsive.
24 THE WITNESS: I explained how Zhang's --
25 BY MR. HENDIFAR:

Page 61

1 Q You continue this --
2 A -- discloses and renders obvious this element.
3 Q You continue your evasive games, I will call
4 the board. Okay? This is now the tenth time since
5 yesterday you have refused to answer questions.
6 MR. QUALEY: This is not productive.
7 MR. HENDIFAR: Yes, it's not, I agree.
8 THE WITNESS: If you won't let me talk, how can
9 I answer your question?
10 BY MR. HENDIFAR:
11 Q Because you're not --
12 A You keep interrupting me.
13 Q Because you're not answering my --
14 A Maybe call the board about you interrupting me
15 constantly.
16 Q You answer my questions; I will not interrupt
17 you. Okay? It doesn't work. We've been here now for a
18 second day in a deposition that should have been
19 finished in one day, and the only reason we're here on a
20 second day is when I ask you a question, instead of
21 answering my question, you switch and read from an
22 irrelevant portion of your declaration. Okay? I'm
23 not --
24 A I didn't read from the declaration that time.
25 Q You've been reading from irrelevant portions of

Page 62

1 declaration. I ask you about the '362 patent, you
2 discuss what Zhang says. I ask you about the '866
3 patent, you discuss what Zhang says. It doesn't work
4 like that. You have expressly refused to answer
5 questions or many questions you just -- basic questions,
6 you just say I don't know.
7 MR. QUALEY: Counsel, can we -- I just said,
8 Counsel, can we get back to the actual question?
9 MR. HENDIFAR: Yes.
10 BY MR. HENDIFAR:
11 Q So if I can get an answer, but I need to lay
12 the groundwork so I actually get an answer.
13 I'm not asking you what Zhang does. I'm trying
14 to understand. I'm not -- again, I know you have
15 memorized to say Zhang is flexible in response to every
16 question, but that's not a response to every question.
17 When I ask you about what a claim limitation
18 means, I don't care what Zhang says. It doesn't matter
19 that Zhang is flexible. It is not responsive for you to
20 go to a portion of your declaration to say, "Well, Zhang
21 discloses this." That's not responsive. Okay?
22 So I asked you a question, you're more than
23 welcome to consult your declaration, but -- as long as
24 your response is responsive to what I'm asking. My
25 question didn't mention Zhang, didn't reference Zhang.

Page 63

1 It didn't matter what Zhang says. Okay?
2 So going back to Figure 2 of the '866 patent.
3 And please let me know when you have it.
4 A I have it.
5 Q Okay. Do you see digital downconverters in the
6 digital front end of that system?
7 A Which section are you calling digital
8 downconverters?
9 Q I'm asking you a question. Do you see digital
10 downconverters in the digital front end of Figure 2 of
11 the '866 patent?
12 A I'm looking for those words. I don't see them
13 in that figure. Perhaps I'm missing it.
14 Q I did not ask you if you see words named
15 digital downconverters. I'm asking you in Figure 2 of
16 the '866 patent, do you see digital downconverters in
17 the digital front end?
18 A Perhaps you can point me in the '866 patent
19 where he defines digital downconverters.
20 Q I actually don't know where that might be.
21 A Perhaps I'm mistaken, but I don't think those
22 words appear in the '866 patent.
23 Q I actually don't know if they do or do not, but
24 my question was not if the words digital downconverter
25 appear in the '866 patent.

Page 64

1 My question is: In Figure 2 of the '866
2 patent, do you see digital downconverters in the digital
3 front end?
4 A I don't see those words, and I'm looking in the
5 '866 patent for the words digital downconverters and,
6 I'm sorry, I don't see that in the '866 patent.
7 Q Do you understand my question, Mr. Lett?
8 A I'm trying to.
9 Q Okay. Do you believe my question is if you see
10 the words digital downconverter?
11 A You're referring to an element called digital
12 downconverters and I'm trying to figure out what element
13 you're talking about.
14 Q I did not ask you if you see an element called
15 digital downconverters. I asked if you see digital
16 downconverters.
17 A I'm saying if you'll please identify to me in
18 this Figure 2 which of those components you mean is
19 digital downconverters, I can answer your question.
20 Q So, Mr. Lett, what do you understand your role
21 to be in this litigation?
22 A I rendered my opinion on how the prior art
23 references disclose and render obvious the claims.
24 Q Okay. And do you consider yourself to be an
25 independent expert in this litigation?

Page 65

1 A Do you mean -- I work for myself. Is that what
2 you mean?
3 Q Okay. Do you believe your conclusions have to
4 be objective and not favoring one side or the other?
5 A Absolutely.
6 Q Okay. And do you understand that you're here
7 today to provide to the best of your ability support for
8 the opinions you've provided?
9 A Yes.
10 Q Now, do you understand that claim 41 requires
11 digital downconverters?
12 A I'm saying that I'm not sure that the spec of
13 the '866 defines the word digital downconverters.
14 Q That may be. I don't know if that's true or
15 not. I'm not disputing that. But that's not my
16 question.
17 Is it your opinion that there are no digital
18 downconverters in Figure 2 of the '866 patent?
19 A Can I please read from my declaration?
20 Q You can consult your declaration, but you need
21 to answer my question. So if your goal is just to read
22 somewhere from your declaration that doesn't actually
23 answer my question, that's not responsive.
24 A So I, in my declaration, rendered opinion about
25 digital downconverters and explained my opinions

Page 66

1 therein.
2 Q Okay. That -- is that -- do you believe that
3 answers my question?
4 A What was your question again?
5 Q My question is: Do you believe there are
6 digital downconverters in Figure 2 of the '866 patent?
7 A I believe Zhang discloses digital
8 downconverters --
9 Q We're back to that issue.
10 A -- that are representative of the elements of
11 the patent.
12 Q Mr. Lett, did my question ask what Zhang
13 discloses?
14 Mr. Lett, did my question ask what Zhang
15 discloses?
16 A No.
17 Q Okay. So why did you believe it's appropriate
18 for you to answer with what Zhang discloses?
19 Why do you believe it's appropriate to respond
20 to a question not about Zhang with what Zhang discloses?
21 Do you have a response to my question?
22 Mr. Lett, for the past few minutes, you've been
23 reviewing documents that I can't identify because it's a
24 remote deposition.
25 Would you please advise what you're doing since

Page 67

1 we have a question pending?
2 A I'm looking at my '362 declaration. Can you
3 give me a few minutes, please?
4 Q Sure.
5 A I'm sorry, the '866 declaration.
6 Okay. What's your question?
7 Q Do you see digital downconverters in Figure 2
8 of the '866 patent?
9 A Yes, I think so.
10 Q Okay. Would you point me to where in Figure 2
11 you see digital downconverters?
12 A So I think each of the sections that have a
13 mixer followed by a filter 260A is a digital
14 downconverter.
15 Q Thank you.
16 And in Figure 2, each digital downconverter
17 only provides desired channels, correct?
18 A Well, that's what the '866 patent describes,
19 yes.
20 Q Thank you.
21 Going back to claim 41 of the '866 patent on
22 Column 15, if you would please. And please let me know
23 when you're there.
24 A Okay. I'm there.
25 Q Thank you.

Page 68

1 In your opinion, if in a system that digital
2 downconverters generate a digital channel output
3 containing both desired and undesired channels, in your
4 opinion would that system be covered by claim 41?
5 A I don't understand by -- what do you mean
6 covered? Can you explain further what you mean by that?
7 Q Sure. I'll rephrase my question.
8 If in a reference that digital downconverters
9 generate a digital output that contains both desired and
10 undesired channels, in your opinion, would that
11 reference disclose claim 41's limitation saying, quote,
12 "wherein each digital downconverter, of the plurality of
13 digital downconverters, is operable to generate a
14 digital channel output corresponding to each desired
15 channel," end quote?
16 MR. QUALEY: Objection to form.
17 THE WITNESS: So if it had the word "only" in
18 that claim, I would say that it had to be a desired
19 channel output and not an undesired channel output.
20 But the same system could do both. The same
21 system could output, if it wanted to, a desired channel
22 and an undesired channel. But if you choose with that
23 system to output only desired channels, it meets the
24 claim in either way.
25 ///

Page 69

1 BY MR. HENDIFAR:
2 Q When you say either way, you're saying it meets
3 the claim whether it outputs both desired and undesired
4 channels or outputs just the desired channels?
5 A I'm saying there -- you can have a system that
6 has the capability for outputting desired and undesired
7 channels, and you can choose to just output desired
8 channels. And because the word only is not in that
9 claim, that system meets the claim element in my
10 opinion.
11 Q Okay. And thank you for that explanation. So
12 let me then refine my question in response to your
13 explanation.
14 In claim 41, if a reference could only output
15 both the desired and undesired channels, would that
16 reference, in your opinion, disclose claim 41's
17 limitation wherein each digital downconverter of the
18 plurality of digital downconverters is operable to
19 generate a digital channel output corresponding to each
20 desired channel?
21 MR. QUALEY: Objection to form.
22 THE WITNESS: Can you read back that question
23 exactly slowly?
24 BY MR. HENDIFAR:
25 Q Of course.

Page 70

1 A Thank you.
2 Q Of course.
3 If a reference can be operable to only output
4 both the desired and undesired channels, in your
5 opinion, would that reference disclose the limitation of
6 claim 41 saying, quote, "wherein each digital
7 downconverters of the plurality of digital
8 downconverters is operable to generate a digital channel
9 output corresponding to each desired channel," end
10 quote?
11 MR. QUALEY: Objection to form.
12 THE WITNESS: So this is a hypothetical system
13 that I haven't thought about and I don't know the answer
14 at this point to that question.
15 BY MR. HENDIFAR:
16 Q Now, same -- '866 patent, claim 27, if you
17 would please go to that claim. That's on Column 14.
18 Please let me know when you are there.
19 A Claim 14, you said?
20 Q Yeah -- no. Claim 27, Column 14 of the '866
21 patent.
22 A I'm going to look at my claim appendix if
23 that's okay with you.
24 Q Sure. I have no objection with you looking at
25 any of your declarations you need. My issue was with

Page 71

1 you reading something from a declaration that is not
2 responsive to my question.
3 So please feel free to consult anything you
4 need to consult in front of you.
5 A Yeah, so I'm just reading the claim elements as
6 shown in the claim listing appendix 11.
7 Q Sure. Please let me know when --
8 A If that's okay.
9 Q Please. Of course. Please let me know when
10 you're ready for me to ask my question.
11 A Okay.
12 Q Thank you.
13 In claim 27, Column 14, line 17, do you see the
14 limitation that says, quote, "wherein the DFE is
15 configured to concurrently select and provide each of
16 the plurality of desired channels."
17 Do you see that limitation?
18 A I do.
19 Q How is selecting different from providing?
20 A I think it's -- I'm not sure I know the
21 difference.
22 Q Okay. Is it possible to select a channel
23 without providing it?
24 A Yes, it is.
25 Q Okay. How would that work? Can you give an

Page 72

1 example?
2 A No. I just -- I don't know. You know, you
3 could select it, but not output it or provide it, I
4 guess. I mean...
5 Q Okay. What is the basis of your opinion that
6 it is possible to select the channel without providing
7 it?
8 A It just seems common sense that I can select
9 something without outputting it.
10 Q Now, in the claim where it says concurrently
11 select and provide, in that limitation, what
12 specifically does concurrently modify?
13 A It thinks that both of them are required,
14 right, selecting and providing.
15 Q Let me rephrase my question. Does concurrently
16 modify selecting or providing or something else?
17 A I mean, I'm not an attorney. Okay. And if
18 you're trying to trick me, you know, so be it. But it
19 just seems to me concurrently select and provide means
20 that both it has to be selected and provided.
21 Q I'm not trying to trick you. I'm trying to
22 understand how you understand the claim means. So you
23 provided an opinion that the claims are obvious,
24 correct?
25 A Yes.

Page 73

1 Q And to provide that opinion, you need to first
2 understand what the claim means, correct?
3 A Right.
4 Q Okay. So I'm trying to ascertain what your
5 understanding of the meaning of the claim is.
6 Does that make sense?
7 A Well, I think I understand what concurrently
8 select and provide mean.
9 Q Okay.
10 A Is that what your question is?
11 Q No. My question is -- you can, at least based
12 on grammar, you may read this claim to require that the
13 selecting and providing be concurrent or just the
14 selecting be concurrent --
15 A Concurrent with what?
16 Q So that's my question. What does concurrent
17 specifically modify? It's not a trick question. I'm
18 trying to understand what has to be concurrent in claim
19 27.
20 A I mean, to me, it says concurrently select and
21 provide. I don't see any other meanings other than both
22 selecting and providing is required.
23 Q Okay. So in your opinion, in claim 27, the
24 selection and the provision of the channels has to be
25 concurrent together?

Page 74

A I think I answered, but yeah, I mean, both selecting and providing is required, according to reading this sentence fragment to me.

Q Sure. And it may just be a miscommunication because I really -- I don't think I understood if you answered my question.

There is no question that both selecting and providing are required by the claim. That's not the issue. The issue is: What is it that has to be concurrent? So I'm not disputing with you that the claim requires both selecting and providing, so let me rephrase my question maybe differently and then --

A I mean, it says each of the plurality of desired channels.

Q Okay. Is that what you believe concurrently refers to?

A Selecting and providing each of the plurality of desired channels. So yeah, I mean, you have to concurrently select and provide each of the plurality of desired channels.

Q If I select each of the plurality of desired channels at one step, and at a later time provide each of the plurality of desired channels, would that disclose claim 27?

MR. QUALEY: Objection to form.

Page 75

THE WITNESS: Perhaps in another place it says something about the later -- you can't do it later. But to me in this claim element, it doesn't say anything about timing.

BY MR. HENDIFAR:

Q So what does concurrently say to you? Let me -- let me step back.

What do you believe concurrently means?

A Okay. At the same time.

Q Okay. So I am trying to ascertain what has to happen at the same time in claim 27.

Do you understand my question?

A Okay. I think I'm understanding what you're getting at.

Q Thank you. And it's not intended to trick you. I'm really just trying to understand how you understand the claim. It's not that complicated. So let me ask you -- maybe then start from scratch again now that you better understand my point.

In claim 27, what does concurrently specifically modify?

MR. QUALEY: Objection to form.

THE WITNESS: I'm sorry, I'm not an attorney. I'm not familiar with, you know, the language that you're using here. I'm sorry, I don't know.

Page 76

BY MR. HENDIFAR:

Q Okay --

A Perhaps you can say it in a way I can understand better what you're saying.

Q Sure.

Did you fully understand claim 27 before opining that it's obvious?

A Yes.

Q Okay. Did you fully understand the limitation that in claim 27, that said "wherein the DFE is configured to concurrently select and provide each of the plurality of desired channels without providing any of the plurality of undesired channels."

Did you fully understand that limitation of claim 27?

A Yes.

Q Okay. And did you fully understand what the word concurrently means in that limitation?

A At the same time.

Q Okay. In claim 27, what is it that has to happen concurrently?

A Selecting and providing each of the plurality of desired channels without providing any of the plurality of the undesired channels.

Q So in your opinion, do the acts of selecting

Page 77

and providing have to happen concurrently in claim 27?

A It seems to. Again, I'm not an attorney. Maybe there's some other meaning that I don't understand, but it seems to me that they both have to occur.

Q Thank you.

So in your opinion, if a reference selects the plurality of desired channels in one step, and then at a later time provides the plurality of desired channels, that wouldn't disclose claim 27?

A Well, so the '866 patent processes the signals from left to right in Figure 2.

Do you agree with me?

Q Sure.

A So the selecting is more left than the output, which is on the right. The selecting occurs in the digital front end. The outputting occurs on the line that's labeled serial to parallel data interface. So even though that's a short amount of time to get from that block to the -- to the output, it is discreetly different in time, very small.

So the way I'm reading it is that, essentially, the flow of the signal is going through to the output, and -- and that signal goes from selecting to outputting, which is providing.

Page 78

1 Q Okay. But the claim does require concurrently,
2 right?
3 A Yeah, but the patent itself, the '866, it's not
4 absolutely concurrently at zero time, right. It's a
5 very small amount of time, admittedly, that is from
6 selecting to outputting.
7 Q So is it your opinion that selecting and
8 providing based on the plane and order and meaning are
9 concurrent even if they're done sequentially, so long as
10 the time lapse between them is small? Is that what
11 you're saying?
12 A I think so. And the -- I'm sorry, go ahead.
13 MR. QUALEY: I just said objection to form.
14 THE WITNESS: "Objection to form," he said, if
15 you didn't hear him.
16 Okay. So when you first select a channel,
17 right, it doesn't come out right then, right. It comes
18 out a little bit after that, right. So you first select
19 a channel, then it starts streaming to the output,
20 right, one after the other.
21 BY MR. HENDIFAR:
22 Q Right.
23 A After it's selected -- after it's selected,
24 right, it continues to stream, right. That's all I'm
25 saying.

Page 79

1 Q Sure. Again, I don't --
2 A And that's per the '866 patent.
3 Q Okay.
4 A And the Zhang reference.
5 Q Sure. And I don't -- I'm not in the position
6 to dispute what you're saying. I'm really just here to
7 take in your views. So did I summarize your view
8 correctly that, first, concurrently requires the acts of
9 selecting and providing to be concurrent; is that
10 correct?
11 A That's right. And the way I'm reading it is,
12 as I just described, it's -- when it first starts, it's
13 not exactly at the same time, but it's a very short
14 amount of time based on the propagation delay between
15 the circuits.
16 Q And then in your view, even though concurrently
17 requires selecting and providing to be concurrent, a
18 POSITA would understand selecting and providing to be
19 concurrent even if they're done sequentially as long as
20 the time lapse between the two steps is minimal? Is
21 that what you opined just now?
22 A Yeah, I think that's fair. It's exactly what
23 the '866 patent does as shown in Figure 2 and the Zhang
24 reference.
25 Q Now, how much time lapse between selecting and

Page 80

1 providing -- let me strike that.
2 What is the maximum time lapse between
3 selecting and providing for them to be concurrent in
4 claim 27?
5 MR. QUALEY: Objection to form.
6 THE WITNESS: I don't think I have an answer to
7 that question. I don't know.
8 BY MR. HENDIFAR:
9 Q Okay. If the acts of selecting and providing
10 in 27 are 30 seconds apart, would a POSITA understand
11 them to be concurrent?
12 A It's hard to say. I don't know.
13 Q Okay. Do you know the -- can I please refer to
14 Zhang Figure 2?
15 A Okay.
16 Q And please let me know when you have it.
17 A Okay. I have it.
18 Q Okay. In Figure 2 of Zhang, do you know what
19 is the time lapse from when the signal enters the
20 digital channel DeMux 230 to when channels D1 through Dm
21 are output?
22 A No. Just like I don't know the time lapse on
23 the '866 patent when the channel is selected by the
24 digital downconverters until its output.
25 Q Okay. Do you have any estimate?

Page 81

1 A It depends on the implementation. I don't
2 know.
3 Q It could be two minutes apart?
4 A I mean, you're talking about one of these
5 designs? Are you talking about Zhang or -- or the '866
6 patent? It could be anything. So, you know, my point
7 was that, you know, when it first starts, right, so you
8 select it, and then when it starts streaming the output,
9 there is a time lapse there, however how small or big,
10 right. After it's selected, it's streaming and it's
11 concurrently selecting and providing.
12 Q Sure. And I appreciate that explanation.
13 Now, in Zhang's Figure 2, so is it possible
14 that an implementation, the time lapse between when the
15 signal enters the channel DeMux 230 to when channels D1
16 through Dm are output, is it possible that the time
17 lapse may be five minutes?
18 A It's probably not because it's implemented --
19 this entire thing is implemented in a CMOS chip and the
20 propagation delay between modules would be very small.
21 Q I see. So in Zhang, do you believe it is
22 possible for the channel DeMux 230 to demultiplex
23 channels C1 through Cn, and then at a later time, a user
24 selects a desired channel D1 or Dm?
25 A No. The way it works -- and it's just like the

Page 82

1 '866 patent is, the user selects a desired channel and a
2 desired channels are selected C1 through Cn based on
3 that selection.
4 Q I see. So in your view, in Zhang's Figure 2,
5 the digital channel DeMux 230 does not demultiplex any
6 of channel C1 through Cn until and unless a user or the
7 system has actually selected a desired channel D1 -- or
8 requested a desired channel D1?
9 MR. QUALEY: Objection to form.
10 THE WITNESS: I didn't think about that. What
11 I was considering was the case when someone selects a
12 channel, just like the '866 panel -- patent and the '362
13 and the '206 for that matter, when they select a
14 channel, the selected channel is output.
15 BY MR. HENDIFAR:
16 Q I see. So in your view, is it possible in
17 Zhang for Zhang's Figure 2 to have channels C1 through
18 Cn demultiplexed and demultiplexer 230, and then at a
19 later time, a user requests a channel D1 through Dm?
20 A I haven't thought about that, so I don't know
21 the answer to that question.
22 Q Okay. Now, may I please refer you to your
23 declaration for the '206 patent?
24 A If you like, we can continue on for one more
25 question, but I need a little short break. We can wait

Page 83

1 until after this or do it now, whichever you prefer.
2 Q I have ten minutes left. Do you want to take a
3 break now and come back or do you --
4 A Yeah, if you don't mind. I've had a lot of
5 iced tea while we've been talking.
6 Q Not a problem. Let's come back --
7 MR. HENDIFAR: And, Counsel, I think because I
8 really only have about five to ten minutes left, we can
9 just skip the lunch break depending on what your
10 redirect and see how it goes for now?
11 THE WITNESS: Okay. Thank you.
12 MR. HENDIFAR: Come back seven minutes, at
13 25 minutes past the hour?
14 MR. QUALEY: Yeah.
15 MR. HENDIFAR: Thank you very much.
16 (Recess.)
17 BY MR. HENDIFAR:
18 Q So may I please refer you to your declaration
19 for the '206 patent, please?
20 A Okay.
21 Q Specifically starting on paragraph 212. And
22 please let me know when you're there.
23 A Okay. I'm there.
24 Q You opined that Zhang in view of Jackson
25 discloses the method of claim 14 among other claims,

Page 84

1 correct?
2 A Hang on. I'm a little confused. Let me just
3 double-check.
4 So saying they disclosed the method of claim 1,
5 13, 25, 38, 51, 64 -- I can't remember what this is.
6 I'm confused. What's confusing me is it's 2, 14, 26,
7 39, 52, 65.
8 Q I mean, it's your declaration.
9 A I remember -- okay. I'm sorry, I remember what
10 this is.
11 Q I would help you, but it's your declaration. I
12 don't know what --
13 A I just -- I'm sorry, it's been a while since I
14 read that section. So I -- okay. Now, what was your
15 question?
16 Q Sure.
17 The question is that you're opining that Zhang
18 in view of Jackson discloses or renders obvious claim 14
19 among other claims, correct?
20 A Right.
21 Q Which specific claim element do you believe
22 that Zhang is missing for which you are relying upon
23 Jackson?
24 A So -- so I'm relying on Zhang in view of
25 Jackson for the cable network connector, analog

Page 85

1 amplifier, and analog filter because they explicitly
2 disclosed those elements.
3 Q The cable network connector and what?
4 A Cable network connector, analog amplifier, and
5 analog filter.
6 Q What is a cable network connector?
7 A Well, you can see a picture of it on that
8 Page 116, the brown.
9 Q I have, but what is it?
10 A It's where you take the coax cable and you
11 screw it into the set-top box to make a connection with
12 the cable network.
13 Q Is that an equivalent of a cable network
14 connector in a satellite system?
15 A Usually both have F connectors which we
16 normally use as an input connector.
17 Q And where would this cable network connector
18 go? Like, if I'm watching cable in my house, is it --
19 would it be at the -- on the roof? Would it be right by
20 my set-top? Where would this go?
21 A Well, the connector is on the box itself.
22 That's what I'm talking about.
23 Q I see.
24 A The box that is Zhang's receiver, where it says
25 RF signal on Figure 2 of Zhang, the little dot there,

Page 86

1 you know, although it's obvious that that is a --
2 Q Understood?
3 A -- cable network connector, I mean, Jackson
4 explicitly discloses that.
5 Q I appreciate that. Now, are there other ways
6 of receiving cable RF input without a cable network
7 connector?
8 A I suppose you could receive it wirelessly.
9 Q I see. So as long as it's wired, it has to be
10 through a cable network connector?
11 A But it says connector, so connector generally,
12 a POSITA would understand to be a wired connection.
13 Q I see. So let me -- and I appreciate that. So
14 are there other ways, wired ways of receiving cable RF
15 input without a cable network connector?
16 A I mean, you could put whatever kind of
17 connector you wanted on there. I suppose if you wanted
18 to build an oddball system that wasn't compatible with
19 all the cable systems and -- like, if Comcast came to
20 your house and said, "I'm going to connect up your box."
21 "Oh, you modified the connector to be something that we
22 don't use," then he probably wouldn't connect you to the
23 cable network.
24 Q I see. So the purpose of the cable network
25 connector in part is -- it provides a uniform connection

Page 87

1 for all the different units set-top boxes?
2 A Yeah. It communicates the input signal from
3 the cable network connector.
4 Q Got it.
5 You mentioned that you also rely on Jackson for
6 an analog amplifier.
7 Do you recall that?
8 A Yes.
9 Q So in your opinion, Zhang does not expressly
10 disclose an analog amplifier as claimed?
11 A So if you look at Page 118 of that declaration,
12 I show a diagram there where Zhang is block, which
13 frequency block downconverters and bandpass filters.
14 I'm showing with Jackson more details about
15 what's inside that as disclosed by Jackson.
16 Q Right. So in that figure, you're showing the
17 combination of Jackson and Zhang, correct?
18 A Correct.
19 Q Okay. So my question is, specifically, in your
20 view, Zhang alone doesn't explicitly disclose an analog
21 amplifier as claimed, correct?
22 A Well, I don't think I -- in the section of
23 ground -- let's see. In ground A, I don't think I
24 discussed claim 14, for example. I didn't -- I didn't
25 put in my opinion, but it would be obvious to me that --

Page 88

1 and to a POSITA that there would be an amplifier in
2 there and an analog filter.
3 Q Sure.
4 A But Zhang, I think, just to make it really
5 clear, Jackson modification of Zhang specifically
6 discloses those elements.
7 Q Sure. And I appreciate that, and I understand
8 your view that it's obvious that Zhang would have an
9 analog amplifier.
10 Do you understand the distinction between a
11 reference expressly disclosing something versus making
12 it obvious?
13 A I think I do, yes.
14 Q So my question is: Is it your view that Zhang
15 does not expressly disclose an analog amplifier as
16 claimed in claim 14?
17 A I'm not sure. I'll have to look. But I wanted
18 to make it very clear in the combination it's disclosed.
19 Q Okay. If Zhang disclosed it, why would you
20 need the combination?
21 A So in paragraph 217, I explain that, in my
22 opinion, a POSITA would have been motivated to implement
23 Zhang's converter red with Jackson's analog amplifier
24 and analog filter to Zhang's frequency block
25 downconverter. And Jackson teaches that the amplifiers

Page 89

1 boost the power and enable automatic gain control of the
2 RF signal, which a POSITA would have understood is
3 beneficial for obtaining the highest possible
4 performance.
5 So we want to make sure that we're in the
6 system that it has the highest possible performance, and
7 that is taught by Jackson.
8 Q Now -- and I appreciate that. But paragraph
9 217 of your declaration discusses your view on why a
10 POSITA would have combined Zhang and Jackson, correct?
11 A The motivation that -- to combine them, yes.
12 Q Correct. So -- but that was not really my
13 question. I didn't ask what the motivation is.
14 A Maybe I misunderstood.
15 Q Sure.
16 My question is: Is it your opinion that Zhang
17 alone does not expressly disclose an analog amplifier as
18 claimed in claim 14?
19 A I didn't look at that and so I don't know, but
20 I can look for it in the Zhang patent if you like.
21 Q Okay. So is it your opinion that you didn't
22 look into whether Zhang discloses an analog amplifier
23 but nonetheless decided to combine it with Jackson?
24 MR. QUALEY: Objection to form.
25 THE WITNESS: So Zhang is talking about the

Page 90

1 functionality of that block 210 rather than all the
2 internal details about it. And so to make sure that all
3 the internal details are understood, I brought in
4 Jackson and -- because Jackson explicitly discloses the
5 analog amplifier and the connector and the other we
6 talked about. I forgot what the third one was.
7 BY MR. HENDIFAR:
8 Q Analog filter.
9 A Thank you.
10 Q And before you decided to combine Zhang with
11 Jackson for claim 14, did you analyze Zhang to determine
12 if Zhang alone discloses an analog amplifier?
13 A I'm not sure if Zhang discloses explicitly an
14 analog amplifier in that front end, but Zhang
15 certainly -- or excuse me -- Jackson provides the
16 details about doing that, and a POSITA would have
17 understood that and wanted the better performance as
18 described that -- as a motivation.
19 Q Okay. Now, a better performance compared to
20 what?
21 A Highest possible performance.
22 Q Right. Compared to what?
23 A I mean, if you have a performance higher than
24 that. I mean, highest possible. So in other words,
25 optimize the system so that it has the best possible

Page 91

1 performance.
2 Q I see. So are there ways to implement Zhang's
3 downconverter block 210 other than through the way you
4 have identified in Jackson?
5 A There's many ways to implement any circuit. So
6 one would certainly consider and see the benefits of
7 using the details as taught by Jackson in the
8 implementation of the block 210 of Zhang.
9 Q So in your opinion, the implementation of
10 Zhang's block 210 as you have combined with Jackson is
11 the best possible way to implement that circuit?
12 A Well, that's one of the well-known ways that
13 was documented by Jackson, and a POSITA would understand
14 that it gives you very good performance or the highest
15 possible performance and he would certainly use that
16 teaching.
17 Q Sure. So you --
18 A There might be other teachings with other
19 methods, right. But what I opined on was this is --
20 this is one example, right, of a teaching that would be
21 applicable that discloses the three elements we've been
22 talking about. And there's a reason that you might want
23 to use Jackson's teachings on a modification of Zhang
24 system.
25 Q And you've referenced multiple times the

Page 92

1 highest possible performance.
2 Do you recall that?
3 A Yes.
4 Q Okay. What -- I'm trying to understand. What
5 is the basis of your view that the portion of Zhang's --
6 I'm sorry, the portion of Jackson's circuitry you relied
7 on gives the highest possible performance for
8 implementing Zhang's block 210? I mean, that it
9 compares to other ways or what -- what is the basis of
10 that view?
11 A So I quote Jackson -- or I cite Jackson
12 paragraph 25, and the RF tuner comprises of low noise
13 amplifier 17 to boost the power of the received signal.
14 A POSITA would know that you need to boost the power of
15 the received signal to achieve the highest possible
16 performance.
17 Q So in your opinion, Jackson's paragraph 25
18 teaches the POSITA that the portion of Jackson you have
19 taken out to implement in Zhang is the best possible way
20 to implement Zhang's Box 210?
21 A Well, you need to optimize to boost the
22 received signal to achieve the optimal performance. So
23 that is why that the LNA boosts the received signal and
24 that's why I showed it that way.
25 Q Okay. Now, on Page 116 of your declaration,

Page 93

1 you produced Jackson's Figure 4B, the one that you
2 pointed me to.
3 Do you recall that?
4 A What page again?
5 Q 116, the same --
6 A Yes.
7 Q Yes. Figure 4B of Jackson, the one that you
8 pointed me to.
9 A Right.
10 Q Okay. What is the function of the cable
11 connector as shown in Figure 4B of Jackson?
12 A 4B? I don't see a -- oh, Figure 4B. Okay.
13 Hang on.
14 So as I cite in paragraph 73, receive digital
15 encoded signals through the connector as they enter the
16 home.
17 Q Okay.
18 A Along cables. And so it's an input signal from
19 the cable network connector.
20 Q What is the output 8b of Figure 4B in Jackson?
21 A I don't think I discussed that. I was talking
22 about the claim elements, the input signal from the
23 cable network connector. But I will look at that.
24 So the input connector from the cable network
25 as shown in the diagram on Page 118 goes to the LNA, and

Page 94

1 that block includes an analog filter. That's from --
2 that's from Jackson.
3 Q Is cable connector 4B in Jackson for a wideband
4 RF signal?
5 A Well, I mean, an input from a cable network is
6 generally wideband, yes. I mean, it has a lot of
7 channels on it normally.
8 Q Okay. Now, may I please refer you to paragraph
9 31 of your declaration? The one that you have is fine
10 for the '206 patent, the same.
11 A Okay.
12 Q Please let me know when you have it.
13 A I do.
14 Q Okay.
15 A We're talking about '206, right?
16 Q Sure. Paragraph 31.
17 A Oh, I'm sorry, I was on Page 31. Okay. I'm at
18 paragraph 31.
19 Q Okay. Do you see that you have provided a
20 definition for a POSITA?
21 A Yes.
22 Q Okay. And where did you get that definition?
23 A It was a collaborative effort with myself and
24 the attorneys.
25 Q Okay. What is the basis for your belief that

Page 95

1 in 2009, a person of ordinary skill would have, in
2 addition to a bachelor degree, at least three to
3 four years of experience specifically with digital
4 signal processing and radio frequency tuning for
5 satellite and cable communications?
6 A It says and/or.
7 Q And/or cable communications.
8 A I'm sorry, go ahead and finish your question.
9 I'm sorry, I interrupted.
10 Q No worries.
11 What is the basis of your opinion that a person
12 with ordinary skill in 2009, in addition to bachelor
13 degree, would have had at least three to four years of
14 experience specifically in digital signal processing and
15 radio frequency tuning systems?
16 A So the technologies that are comprising the
17 patents includes, in my opinion, digital signal
18 processing and RF frequency tuning systems for cable or
19 satellite -- and/or. And I have worked with a number of
20 people in implementing and delivering products that use
21 those skill sets. And also the people I worked with
22 that I would consider a POSITA at least had a bachelor's
23 degree, and I think a bachelor's degree in electrical
24 engineering or similar discipline would be needed.
25 And then also, just to make sure that the

Page 96

1 POSITA understands what's being discussed and -- and
2 knows, you know, kind of what's going on in the art.
3 And similarly, the kind of people I worked with and I
4 was I would say a POSITA at that time. But certainly, I
5 had a lot more experience than that, but I put myself in
6 the position of a POSITA when I rendered my opinion and
7 I worked with such people and I kind of know the level
8 of expertise that they had and that's how I rendered my
9 opinion in this declaration as well as the other two.
10 Q Now, in 2009, you were at Cisco, correct?
11 A That's right.
12 Q And what was the average education level of the
13 engineers who worked at Cisco at that time?
14 A I mean, it's hard to say. I had -- I had the
15 full gamut. I had people that were -- in my
16 organization, and I'm not talking about Cisco as a whole
17 because I don't know Cisco as a whole -- but my
18 organization, I had people that were, like, new grads
19 and I had people that were -- and when I say new grads,
20 generally a bachelor's degree in electrical engineering
21 or computer engineering or something similar. I had
22 people that had several years of experience, you know,
23 one, two, three, all the way up to -- golly, some people
24 probably had I'm guessing 30 years of experience, right.
25 And then, also had people working for me that

Page 97

1 had these skill sets, the ones I just mentioned. I also
2 had people that had other skill sets too. But I'm
3 thinking about the combination of all these skill sets
4 and degree and experience when I came up with this
5 definition.
6 Q I see. Now, how would the capabilities of a
7 POSITA be different if it had a bachelor degree in the
8 field you mentioned, but instead of three to four years
9 of experience in the fields you mention, it would only
10 have two years of experience?
11 A I mean, it's not an exact science, right. I
12 think that, based on my experience, I'm thinking maybe a
13 little more than two years would be needed, right. And
14 that's why I put three to four because you -- when you
15 come out of college, right, you learn a lot in your
16 first few years of work, right. And so I kind of
17 thought that the three to four years was kind of the
18 minimum requirement in terms of experience.
19 Q Okay. So --
20 A But I put myself in the position of that
21 window, three to four years, based on my knowledge of
22 the people that I worked with.
23 Q Right. So all of your opinions in your three
24 declarations are from the perspective of a POSITA as you
25 define in paragraph 31, correct?

Page 98

A Well, I think I use the same definition in all three. Do I need to check it or do you know?
Q No. You do.
A So the answer is yes.
Q Okay. So your opinions would not necessarily hold true if the analysis were to be performed from the perspective of somebody with a bachelor degree in electrical engineering or similar discipline, but with only two years of experience with digital signal processing and radio frequency tuning, correct?
A I think -- you know, you might have a really smart person that could get to the level of skill that I'm thinking about in two years, but I think on average you know, three to four years, you know, I think three to four is about right.
Q Okay. We have no further questions for Mr. Lett.
A Okay. Thank you.
MR. HENDIFAR: I think there may be redirect, as much as I want -- how much of a break would you like, Counsel?
MR. QUALEY: Just two minutes.
MR. HENDIFAR: Okay. Sure.
(Recess.)
MR. QUALEY: Petitioner's counsel has no

Page 99

questions.
MR. HENDIFAR: And just as a stipulation, we agreed already that the transcript -- the deposition for yesterday and today is applicable to all three IPRs, 2024-00432, 435, and 438, and it will be used for all three proceedings, correct?
MR. QUALEY: Correct. And that was the -- that was the caption that I think I delivered to the court reporter.
MR. HENDIFAR: Correct. All right thank you very much. And thank you, Mr. Lett.
THE REPORTER: Mr. Qualey, would you like a copy?
MR. QUALEY: Yes, but not by tomorrow.
THE REPORTER: Okay.
Just you, Mr. Hendifar, want it by tomorrow?
MR. HENDIFAR: Yes.
THE REPORTER: Okay.

(Whereupon, at the hour of 1:06 p.m., the deposition of DAVID B. LETT - VOLUME II was adjourned.)

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Page 100

REPORTER'S CERTIFICATION

I, Deidre Young, RPR, a Certified Shorthand Reporter in and for the State of California, do hereby certify:

That the foregoing witness was by me duly sworn; that the deposition was then taken remotely before me at the time and place herein set forth; that the testimony and proceedings were reported stenographically by me to the best of my ability to discern comments via Zoom transmission and later transcribed into typewriting under my direction; that the foregoing is a true record of the testimony and proceedings taken at that time.

IN WITNESS WHEREOF, I have subscribed my name this 12th day of DECEMBER, 2024.

Deidre Young

Deidre Young, RPR, CSR No. 11461

Page 101

DEPOSITION ERRATA SHEET

Our Assignment No. 1250019
Case Caption: COMCAST CABLE COMMUNICATIONS, LLC vs. ENTROPIC COMMUNICATIONS, LLC

DECLARATION UNDER PENALTY OF PERJURY

I declare under penalty of perjury that I have read the entire transcript of my Deposition taken in the above captioned matter or the same has been read to me, and the same is true and accurate, save and except for changes and/or corrections, if any, as indicated by me on the DEPOSITION ERRATA SHEET hereof, with the understanding that I offer these changes as if still under oath.
Signed on the _____ day of _____, 20___,

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Page 102

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25 DAVID B. LETT - VOLUME II

Page 103

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25 DAVID B. LETT - VOLUME II

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1

1 11:4,13 13:4 14:4,17,22 26:21 27:10,14,19 28:12 29:19 30:8,9,11, 16,18 31:3,6,24 32:6,8 35:19 84:4

11 4:2 71:6

116 85:8 92:25 93:5

118 87:11 93:25

125 12:17

129 10:22,25

13 84:5

14 70:17,19,20 71:13 83:25 84:6,18 87:24 88:16 89:18 90:11

15 51:23 56:1,3,9,11,17,24 57:3 67:22

17 71:13 92:13

18 56:16 57:13

1:06 99:20

2

2 12:25 13:3 14:3 15:9,12 16:6,20 17:1 25:8,23 26:9,20 27:8,13,21 29:9 30:4,5,9,12,16,20 31:4,5,6,24 32:4,19,23 34:4,21 35:19,21 38:3,6, 9 51:13 52:5,12 53:12,20,21,23 54:5,17,18 63:2,10,15 64:1,18 65:18 66:6 67:7,10,16 77:12 79:23 80:14, 18 81:13 82:4,17 84:6 85:25

20 13:3 14:3 15:9 27:13 29:10 30:4 36:9 51:17

2002 50:10

2002[SIC 50:7

2009 15:10 36:3,12,17 37:1,3,4,11 95:1,12 96:10

2011 48:25

2016 49:5,7

2019 51:5

2022 49:14 50:2,12,16,21 51:5

2024 4:2

2024-00432 99:5

206 32:25 82:13,23 83:19 94:10,15

210 90:1 91:3,8,10 92:8,20

211 38:20

212 38:23 83:21

214 41:25

217 88:21 89:9

22 13:3 14:3 15:9 49:23 50:1

221 38:21

222 38:24

224 41:25

23 29:10 30:4

230 80:20 81:15,22 82:5,18

24 15:13 16:20 17:1 44:17

25 32:14 83:13 84:5 92:12,17

26 84:6

260A 34:14 67:13

260N 34:14

27 15:13 16:21 17:1 70:16,20 71:13 73:19,23 74:24 75:11,20 76:6,10,15, 20 77:1,10 80:4,10

270 34:11,16 35:1,8

270A 34:5,14,16,22

270N 34:5,16,22

28 8:21

3

3 35:19

30 36:9 51:18 80:10 96:24

31 94:9,16,17,18 97:25

362 10:22 12:24 13:2,14,16 14:3,8, 10,17 15:12 16:20 17:8,21,25 18:1, 7,14 19:10 21:12 23:6,8 25:8,22 26:10,20,21 27:9,10,12,21 28:8,17 29:8 30:5 32:18,23 34:4,13 35:6,18 38:3,9 39:23 41:21 42:11,16,21 46:6,9,19,24 48:14 62:1 67:2 82:12

38 84:5

39 84:7

4

4 38:16,19 41:22

40 36:9

400 31:16

41 52:21,24 54:22,25 55:7,16,18,23 56:12,18,19,24 57:3,12,25 58:12,21 59:6,21,25 60:8 65:10 67:21 68:4 69:14 70:6

41's 68:11 69:16

41B 55:22

41C 60:15

435 99:5

438 99:5

48 38:17

49 42:12 46:7

4B 93:1,7,11,12,20 94:3

5

5 5:18,24 8:21 9:1,16 10:3,19 35:7 42:12,13 46:6

50 18:20 51:10,11

51 84:5

52 84:7

530 9:18 10:4,20 12:4,8,15

54 35:7

55 16:2 18:14

56 32:19,23

58 32:19,23 35:7

5:00 49:24

6

6 16:2 18:14,20 19:10 21:13 22:24 23:6 24:1 44:2 45:15 46:2

6-megahertz 45:13,24 46:5 47:2,15 48:10

60 23:7 24:1
61 19:11 21:13 23:7 42:21
62 18:14
64 84:5
65 84:7
66 35:19,21
67 41:22

7

7 49:18,20
73 93:14

8

8.2 39:23
80 50:24
800 14:4,17,23 30:6 31:17,23
800-megahertz 29:19,24 31:25
84 8:25 9:6
866 8:25 9:7 51:12 52:4,21 53:23 54:17 55:25 56:3,8,11,15,24 62:2 63:2,11,16,18,22,25 64:1,5,6 65:13, 18 66:6 67:5,8,18,21 70:16,20 77:11 78:3 79:2,23 80:23 81:5 82:1,12
87 12:18
8b 93:20

9

90 11:9 41:14 51:1

A

a.m. 49:18,20
ability 65:7
absolutely 65:5 78:4
accessible 5:15
accused 16:16
achieve 15:21 48:11 92:15,22
achieves 17:8 18:7
active 36:12
acts 76:25 79:8 80:9
actual 25:21 62:8
ADC 33:5 57:14 58:16
ADC1 31:7
ADC2 31:7
ADCS 31:24
addition 95:2,12
address 19:4 58:8
addressed 22:25
addresses 17:5
adjourned 99:22
administered 4:6
admittedly 78:5
Adobe 10:11
advantages 16:7
advise 66:25
advised 20:22
afternoon 4:11
agree 15:8 35:3 45:8 61:7 77:13
agreed 54:13 99:3
ahead 78:12 95:8
algorithm 6:14,17
ambiguity 58:7
ambiguous 54:15
America 45:13
amount 33:10 77:19 78:5 79:14
amplifier 85:1,4 87:6,10,21 88:1,9, 15,23 89:17,22 90:5,12,14 92:13
amplifiers 88:25
amplitude 39:10
analog 23:1 27:16 28:8,12,25 29:19 30:7,10,17 84:25 85:1,4,5 87:6,10, 20 88:2,9,15,23,24 89:17,22 90:5,8, 12,14 94:1
analog-to-digital 16:22 17:2 21:18 22:7,18,21 27:22 28:3,10,14,19 29:5,16,25 30:3 31:5,8,13
analysis 48:13 98:6
analyze 90:11
and/or 95:6,7,19
annotation 11:8
annotations 9:1
answering 37:24 61:13,21
answers 66:3
apologize 9:13 10:11
appears 35:7
appendix 70:22 71:6
applicable 91:21 99:4
apply 4:19
approach 16:6 43:3
approximately 51:10
arch 14:7
architecture 6:18,19 11:17 12:19 16:7 25:15 30:8 42:5 47:4
arrow 34:3,6 52:7,9 54:1
art 64:22 96:2
articulate 26:19 27:8 28:2 29:13 58:6
articulated 13:11
ascertain 9:25 55:15 73:4 75:10
attorney 72:17 75:23 77:2
attorneys 94:24
audio 40:9,12 56:5
audio/technical 41:8
automatic 89:1
average 96:12 98:13
aware 42:20

B

bachelor 95:2,12 97:7 98:7
bachelor's 95:22,23 96:20
back 14:12 17:22 23:6 32:14 39:21 41:4,9,20 46:6 51:22 54:22 56:22 62:8 63:2 66:9 67:21 69:22 75:7 83:3,6,12

background 14:11,13

band 31:9 42:6,10 45:11

bandpass 87:13

bandwidth 13:4 14:4,17,22,24 29:23 30:6,10,17 31:12,20,24,25 45:13 48:8

baseband 16:3

based 31:11 34:9 36:14,16 37:3 73:11 78:8 79:14 82:2 97:12,21

basic 62:5

basis 20:22 72:5 92:5,9 94:25 95:11

belief 94:25

beneficial 23:17 24:8 28:18 89:3

benefit 21:17 22:7 26:19 28:2

benefits 22:23 23:7 24:2 27:8 91:6

big 81:9

bit 5:6 29:14 32:12 43:3 47:14 78:18

block 11:7,20,25 77:20 87:12,13 88:24 90:1 91:3,8,10 92:8 94:1

blocks 11:23

board 37:20 61:4,14

boost 89:1 92:13,14,21

boosts 92:23

boss 9:3

box 34:3,5 85:11,21,24 86:20 92:20

boxes 34:5 87:1

BPSK 39:24

break 30:23 32:12 43:9 51:14,15,19 58:2,10 82:25 83:3,9 98:20

broad 21:20 37:16

brought 90:3

brown 85:8

build 35:17 86:18

bunch 7:21

bus 10:5,21 11:4,13

buses 9:17

business 49:8 50:22

C

C-SPAN 42:15 43:22 44:12,14

C1 5:25 6:4,16,20,24 81:23 82:2,6,17

cable 45:21 46:4 48:21,24 84:25 85:3,4,6,10,12,13,17,18 86:3,6,10, 14,15,19,23,24 87:3 93:10,19,23,24 94:3,5 95:5,7,18

cables 93:18

call 44:23 47:17 61:3,14

called 44:24 45:3 64:11,14

calling 35:1 63:7

capabilities 6:19 8:21 97:6

capability 69:6

caption 99:8

car 49:15

care 62:18

carriers 45:10

carries 45:14

case 9:21 38:20 47:18 82:11

caught 12:10

cell 49:11

center 49:8

change 8:6

channel 7:23,24 8:1,3,6,7,8,13,20 15:17,23 16:9 17:11 18:10 19:18 23:10,18 24:4,9,14,18,25 25:3,9,14, 23 26:4,5,8 28:13,16,19 42:14,15, 16,18,20 43:5,7,11,12,17,19,23,25 44:7,9,12,21 45:2,7,12,14,20,24 46:2,24 47:2,3,4,6,7,10,11,16,20,22 48:1,2,8,10,22 49:2 53:2,5 54:6,8,20 55:3,4 57:17,23 58:13,14,19,20,22, 23,24 59:4,5 60:2,3,16 68:2,14,15, 19,21,22 69:19,20 70:8,9 71:22 72:6 78:16,19 80:20,23 81:15,22,24 82:1, 5,6,7,8,12,14,19

channels 6:15,16,20,22,24 7:3,7,9, 12,19,21 8:16,17 9:2,16 10:5,20,21 11:13 16:3 26:2,5 33:9,14 36:1,18 37:5 42:17,22 43:25 44:2 45:10,15, 18,23 46:5,9,10,13,14,15,18,25 47:19 48:15,16,17,23 49:3 52:12,13, 15,17,19 53:6,7,14,21 54:5,7,10,13, 19 55:4,8,9,19,20 57:5,6,10,24 59:23 60:5,8 67:17 68:3,10,23 69:4, 7,8,15 70:4 71:16 73:24 74:14,18, 20,22,23 76:12,13,23,24 77:8,9 80:20 81:15,23 82:2,17 94:7

characterization 15:9

characterize 7:20 53:18

Charlie 49:12

check 98:2

China's 5:24,25

chip 81:19

choose 68:22 69:7

choppy 40:13

Ciciora 42:23

circuit 6:8,10,11,12 11:18,22 37:20 91:5,11

circuitry 13:5 14:5,19 27:15 28:9,25 92:6

circuits 34:1 79:15

Cisco 49:6 96:10,13,16,17

cite 92:11 93:14

cited 8:21

citing 42:23

claim 9:20,23 52:20,24 54:22,25 55:7,15,18,22,23 56:12,19,24 57:3, 12,25 58:12,21 59:6,21,25 60:8 62:17 65:10 67:21 68:4,11,18,24 69:3,9,14,16 70:6,16,17,19,20,22 71:5,6,13 72:10,22 73:2,5,12,18,23 74:8,11,24 75:3,11,17,20 76:6,10, 15,20 77:1,10 78:1 80:4 83:25 84:4, 18,21 87:24 88:16 89:18 90:11 93:22

claimed 57:25 87:10,21 88:16 89:18

claims 14:10,11 52:18 53:13,22 54:23 55:25 64:23 72:23 83:25 84:19

clarification 50:12 54:16

clarify 54:9,11

clear 21:11 88:5,18

clock 29:24 33:15

close 10:10

closed 49:8

CMOS 6:7 11:22 81:19

Cn 5:25 6:4,16,20,24 81:23 82:2,6, 18

CNN 43:22 45:19

coax 85:10

collaborative 94:23

collectively 31:19,24

college 97:15

column 12:25 13:3 14:3 15:9,12,13 16:2,20 17:1 18:14,19 19:10 21:13 22:24 23:6 24:1 27:13 29:9 30:4 32:19,21,23 35:7,19,21 38:16,19 41:22 42:12,13 46:6 56:1,3,9,11,17, 24 67:22 70:17,20 71:13

columns 56:16

combination 87:17 88:18,20 97:3

combine 89:11,23 90:10

combined 89:10 91:10

Comcast 20:3 86:19

comfortable 19:13

commercial 37:18

commercially 36:3,4,17 37:4,10 38:1

common 47:25 72:8

commonly 16:5 33:1

communicates 87:2

communications 95:5,7

commute 49:15

company 49:9

compared 90:19,22

compares 92:9

compatible 86:18

completely 10:10

complex 32:4 38:4,9,12 41:15

complicated 75:17

component 15:3 38:5,11,21,22 39:4,8,12 40:6,18 41:12,13,14

components 22:11 40:1 41:25 64:18

compression 48:9

comprises 6:12 57:4 59:22 92:12

comprising 55:19 95:16

computer 10:7 96:21

concern 58:8

concluded 4:24 5:2

conclusions 65:3

concurrent 73:13,14,15,16,18,25 74:10 78:9 79:9,17,19 80:3,11

concurrently 71:15 72:10,12,15,19 73:7,20 74:15,19 75:6,8,20 76:11, 18,21 77:1 78:1,4 79:8,16 81:11

conducted 4:15

configured 71:15 76:11

confused 34:13 37:7 56:15 84:2,6

confusing 84:6

confusion 28:13 58:7

connect 86:20,22

connection 4:18 85:11 86:12,25

connector 84:25 85:3,4,6,14,16,17, 21 86:3,7,10,11,15,17,21,25 87:3 90:5 93:11,15,19,23,24 94:3

connectors 85:15

considered 5:5 39:25

constantly 61:15

consult 62:23 65:20 71:3,4

consulting 50:4,6,18,19,22 51:7

consumer 42:23 43:12

content 42:15 43:5,17,19,23,25 44:7,9,12,20 45:2,7,14,23 46:10,25 47:2,3,6,11,14,19 48:2,15,22 49:3 54:10,13

context 14:14 21:24 22:2,5,20 26:16 37:25 39:16

continuation 4:14

continue 61:1,3 82:24

continues 78:24

control 89:1

conversion 15:16,23 16:9,21,22,23 17:3,11 18:10,21 19:1,10,17,20 20:25 21:12,18 22:7,21 23:9,18 24:4,9,14,18,24 25:2,13 26:21 27:1, 4,9,16,22 28:3,10,14,15,19 29:1,5, 16 30:3,10,19

convert 30:6,17 31:19 47:4

converted 48:19

converter 22:19 23:2 29:21,25 88:23

converters 31:6,8,13

converts 27:24

convey 39:4,6 40:7,19 41:12

conveys 39:7

copy 99:13

correct 5:25 9:8 21:14 27:23 31:10, 21,25 35:10 36:12 37:1 38:5,11 47:7 48:2 52:13 57:10 59:6 67:17 72:24 73:2 79:10 84:1,19 87:17,18,21 89:10,12 96:10 97:25 98:10 99:6,7, 10

correctly 8:15 46:1 79:8

correlation 41:18

corresponded 59:4

cosign 40:22

counsel 20:3,22 56:4 62:7,8 83:7 98:21,25

coupled 57:14 58:16

court 4:6 16:12,18 32:12 99:8

covered 59:6 60:8 68:4,6

cross-examination 4:23

D

D1 5:25 6:3,15,22 7:1 11:4 80:20 81:15,24 82:7,8,19

D2 11:4

data 7:8 9:17 10:5,21 11:4,13 12:20 15:16,23 16:4,5,8,21,22,23 17:3,6, 11,16 18:7,10,16,21 19:1,9,16,17,19 20:25 21:12,18 22:7,22 23:9,17 24:3,8,14,18,22,24 25:2,12,13 27:18

28:7,20 33:10,13,20,21,23 34:23 44:13 45:16 46:17,18,19 47:5 48:19 52:8,11 54:2 77:18

David 4:1,5 16:12 99:21

day 49:16 61:18,19,20

DECEMBER 4:2

decided 89:23 90:10

decimated 35:13

decimator 32:20,24 33:1 34:1,8,11 35:1

decimators 34:22 35:9

declaration 8:25 9:7 10:23 11:9 12:18 13:7,11 16:11 17:23 18:4 19:3 20:1,10,17 32:25 39:20,24 40:3 42:19,22 43:1,14 59:13 61:22,24 62:1,20,23 65:19,20,22,24 67:2,5 71:1 82:23 83:18 84:8,11 87:11 89:9 92:25 94:9 96:9

declarations 5:7 70:25 97:24

define 97:25

defines 42:17 63:19 65:13

definition 47:16 54:13 94:20,22 97:5 98:1

degree 95:2,13,23 96:20 97:4,7 98:7

degrees 41:14

delay 10:11 79:14 81:20

delivered 99:8

delivering 95:20

demodulator 7:8,10,23 8:16 12:21 15:17,24 16:4,10 17:7,12,13 18:11, 16 19:18 21:19 22:2,8,19,22 23:1,2, 10,19 24:5,10,15,23 25:1,3,10,12, 14,16,24 26:9 27:17,19,23,25 28:4, 5,11,20,21,24 29:2,6,7,17 30:11,12, 20,21 34:15,16,23,25 37:20,25 46:15,16 48:20 52:8 54:2

demodulators 6:21,25 8:2,4,13 35:9 36:3,5,17 37:4,8,11,13,15,16 38:25 46:20

demultiplex 11:13,25 12:2 81:22 82:5

demultiplexed 9:18 12:3,7,14 82:18

demultiplexer 82:18

demultiplexes 8:15 10:4,20

demultiplexing 7:11,18

Demux 9:18 10:1,4,20 12:4,8,15,19 80:20 81:15,22 82:5

depend 48:6

depending 4:12 22:12 42:4 83:9

depends 48:3,5,7 81:1

deposition 4:1,15,19,23 5:3,4,10 61:18 66:24 99:3,21

describes 17:15 52:14 67:18

describing 6:7 14:8 18:15 45:8

design 11:22 22:10,13,25 25:16 26:1 27:14

designed 42:20

designs 22:11 81:5

desirable 15:14

desire 42:14 59:22

desired 7:6,7 8:6,7,13,17 16:3 36:1, 18 37:5 42:6,17,22 43:6,12 46:9,24 47:3 48:11,14,15,17 52:12,14,17,19 53:2,5,6,7,14,21 54:5,7,19 55:3,4,8, 19 57:5,9,17,24 58:14,20,24 59:5 60:2,7,16 67:17 68:3,9,14,18,21,23 69:3,4,6,7,15,20 70:4,9 71:16 74:14, 18,20,21,23 76:12,23 77:8,9 81:24 82:1,2,7,8

detail 23:4

details 27:2 87:14 90:2,3,16 91:7

determination 7:5

determine 6:14 16:25 90:11

development 49:10

DFE 71:14 76:10

diagram 11:6 35:13 87:12 93:25

difference 30:18 44:4,6 71:21

differently 29:14 43:3 74:12

digital 7:8 8:19 13:5 14:5,18 17:16 22:22 24:22 25:12 27:15,16,18,24 28:7,9,24 29:1 30:7,10,18 31:20 33:2,4 34:22 44:1 45:22 46:18 47:4 48:19 52:11,25 53:1,4 55:1,2,3 57:13,14,15,16,21,23 58:13,15,16, 18,19,22,23 59:3,4 60:1,2 63:5,6,7, 9,10,15,16,17,19,24 64:2,5,10,11, 15,19 65:11,13,17,25 66:6,7 67:7, 11,13,16 68:1,2,8,9,12,13,14 69:17, 18,19 70:6,7,8 77:17 80:20,24 82:5 93:14 95:3,14,17 98:9

digitally 60:7

digitization 32:5

digitize 29:20,22 31:9,24

direct 26:20 27:1,4,9

directly 34:15 36:2

disagree 35:14,16

discipline 95:24 98:8

disclose 6:5,17 11:16 26:12 64:23 68:11 69:16 70:5 74:24 77:10 87:10, 20 88:15 89:17

disclosed 23:8 84:4 85:2 87:15 88:18,19

discloses 7:2,6 8:19 16:10 52:15 60:15 61:2 62:21 66:7,13,15,18,20 83:25 84:18 86:4 88:6 89:22 90:4, 12,13 91:21

disclosing 14:10 88:11

disclosure 6:13

discreetly 77:20

discuss 23:4 62:2,3

discussed 4:18 8:24 11:17 13:9 27:5 53:20 87:24 93:21 96:1

discusses 89:9

discussing 22:3,6 53:12

discussion 53:15,18 54:12,23

dispute 18:13 29:9 79:6

disputing 65:15 74:10

distinction 43:4,17 45:6 88:10

divides 38:4,10

division 9:18 10:1,4,20 11:3,5,7,24 12:4,8,15,19,20

Dm 5:25 6:4,15,22 7:1 11:4 80:20 81:16,24 82:19

document 16:17 59:9

documented 91:13

documents 5:12,15 10:8,9,12 22:25 59:11 66:23
dot 85:25
double 14:25 29:24
double-check 34:10,11 84:3
doubt 15:11
down-convert 32:4
downconversion 55:8
downconverter 52:25 55:1 57:15, 21 58:15,17 60:1 63:24 64:10 67:14, 16 68:12 69:17 88:25 91:3
downconverters 53:1 55:2 57:13, 16,23 58:13,19,22 59:3 63:5,8,10, 15,16,19 64:2,5,12,15,16,19 65:11, 13,18,25 66:6,8 67:7,11 68:2,8,13 69:18 70:7,8 80:24 87:13
downconverts 38:20,21 46:12 60:7
Ds 32:2
duly 4:6
dynamic 15:15,22 17:10 18:9

E

easier 35:22
Echostar 49:5,7
education 96:12
effort 94:23
electrical 34:1 95:23 96:20 98:8
electronic 35:22
element 9:20,23 61:2 64:11,12,14 69:9 75:3 84:21
elements 55:24 66:10 71:5 85:2 88:6 91:21 93:22
eliminates 16:8 19:17 23:9 24:3,12, 24 25:2,13
embodiment 25:8,23 26:9,19 27:8
embodiments 15:20
enable 89:1
encoded 93:15
end 15:17 23:11 24:5 34:22 46:11 52:7 53:3 63:6,10,17 64:3 68:15 70:9 77:17 90:14
engineer 49:19
engineering 95:24 96:20,21 98:8
engineers 96:13
enter 93:15
enters 80:19 81:15
entire 14:12 81:19
entitled 13:25
equivalent 85:13
Ergen's 49:12
error 35:8
ESPN 8:10,11,12
essentially 27:14 28:7 42:4 77:22
estimate 80:25
evasive 61:3
evening 5:10
exact 97:11
EXAMINATION 4:9
examined 4:7
examples 22:17 45:12
excuse 16:1 17:4 31:15 38:25 46:11 90:15
expensive 13:4 14:5,18 15:3,5,6, 16,23 16:8,21 17:3,10 18:9,21 19:17 23:9 24:3,13,17,24,25 25:13 27:15 28:9,24 29:5,15 30:2 32:1 37:17
experience 36:14,16 37:3 95:3,14 96:5,22,24 97:4,9,10,12,18 98:9
expert 7:4 13:12 16:25 21:8 26:18 27:7 28:1 36:25 50:4,5,6,11,17,19, 21 64:25
expertise 96:8
explain 15:20 19:19 21:5 26:19 32:25 39:17 68:6 88:21
explained 26:25 29:20 60:22,24 65:25
explains 29:13 39:21 42:4,19
explanation 8:14 9:12 46:21 69:11, 13 81:12
explicitly 85:1 86:4 87:20 90:4,13
expressly 62:4 87:9 88:11,15 89:17
extensive 32:5
extra 15:1 33:23

F

fading 40:10
fair 35:6 50:9,15,25 57:20,22 79:22
falls 45:11
familiar 46:4 75:24
fancy 37:19
Farmer 42:24
fashion 11:24
fast 8:20 16:14,16
faster 8:18
favoring 65:4
feature 60:19
feel 19:13 71:3
fewer 33:14
field 36:12,16,25 37:1 97:8
fields 97:9
figure 5:18,24 9:1,16 10:3,19 11:3 13:4 14:4,17,22 16:6 25:8,23 26:9, 20,21 27:8,10,14,19,21 28:12 29:19 30:5,8,9,11,12,18,20 31:5 32:4,6,8 34:4,21 38:3,6,9 51:13 52:5,12 53:12,20,21,23 54:5,17,18 63:2,10, 13,15 64:1,12,18 65:18 66:6 67:7, 10,16 77:12 79:23 80:14,18 81:13 82:4,17 85:25 87:16 93:1,7,11,12,20
Figures 30:16 31:3
filter 34:14 67:13 85:1,5 88:2,24 90:8 94:1
filtered 35:13
filtering 15:16,23 16:9 17:11 18:10 19:18 23:10,18 24:4,9,14,18,25 25:3,9,14
filters 87:13
fine 19:7 21:6,9 25:20 40:5 51:15,25 94:9

finish 95:8
finished 61:19
five-minute 32:11
flatly 19:24
flexibility 6:18
flexible 11:17 12:19 60:9 62:15,19
flow 77:23
focus 49:11
follow-up 18:2
forgot 90:6
form 10:6 12:9 14:6,20 15:25 17:14 18:12 19:2,12 21:15 22:9 23:20 24:11,22 25:25 26:11 27:11 28:22 30:22 36:20 43:18 53:8,16 55:10 58:1 59:7 68:16 69:21 70:11 74:25 75:22 78:13,14 80:5 82:9 89:24
forward 18:20
found 34:25
Fox 43:22
fragment 74:3
frame 45:22
free 71:3
frequencies 31:16
frequency 14:25 29:23 30:17 31:9, 20,21 32:2 33:6 35:25 36:7,11,15,18 37:5 41:24 42:1,2 45:11 87:13 88:24 95:4,15,18 98:10
front 5:13 34:22 46:11 56:8 63:6,10, 17 64:3 71:4 77:17 90:14
froze 40:8,20
full 13:19 96:15
fully 13:13,16,22 76:6,9,14,17
function 9:25 93:10
functionality 6:8 90:1
funding 49:10

G

gain 89:1
games 61:3
gamut 96:15
general 49:13
generally 47:21 48:17,22 49:2 86:11 94:6 96:20
generate 53:1 55:2 57:16,23 58:13, 19,23 59:3 60:1 68:2,9,13 69:19 70:8
generated 42:6
generates 38:23
give 9:13 10:9 21:20 56:1 67:3 71:25
goal 65:21
golly 96:23
good 4:11 32:11 54:14 91:14
grads 96:18,19
grammar 73:12
great 42:3 51:21
ground 87:23
groundwork 62:12
guess 72:4
guessing 96:24

H

habit 17:21,22
half 31:12,15 32:2 33:18
Hang 84:2 93:13
happen 75:11 76:21 77:1
Happily 10:17
happy 13:8
hard 48:3 80:12 96:14
hate 56:4
HBO 45:20
hear 40:9,22,23,24 41:1 46:1 78:15
hearing 56:5
Hendifar 4:10 10:14 12:12,22 14:15 15:4 16:17,19 17:18 18:17 19:6,21 21:16 22:16 23:22 24:16 26:7,14 27:20 29:3 31:1 32:14,17 36:23 40:11,14,17 41:2,5,9,10 43:21 52:1, 3 53:10,19 55:13 56:6 58:4 59:8 60:17,20,23,25 61:7,10 62:9,10 69:1,24 70:15 75:5 76:1 78:21 80:8 82:15 83:7,12,15,17 90:7 98:19,23 99:2,10,16,17
high 27:16 28:10,11,25 29:1 30:2 33:9,12,15,23 36:8,11 47:13,14,16 48:4
higher 90:23
highest 14:25 29:22 33:6 89:3,6 90:21,24 91:14 92:1,7,15
hold 98:6
home 49:24 93:16
hour 32:15 51:23 83:13 99:20
house 85:18 86:20
hung 10:7
hypothetical 70:12

I

IC 11:21
iced 83:5
idea 35:16
identified 5:13,16 34:15 91:4
identify 64:17 66:23
II 4:1,5 99:21
image 42:1,2,6,10
imaginary 41:17
implement 88:22 91:2,5,11 92:19, 20
implementation 6:7 11:18 81:1,14 91:8,9
implementations 15:2
implemented 42:8 81:18,19
implementing 92:8 95:20
in- 41:14
in-phase 38:4,10,21,23 39:3,7,11 40:21
include 5:6
includes 6:8 45:9,17 46:17 59:16 94:1 95:17

including 22:23
income 50:20,23 51:6
increase 15:15,22 17:10 18:9
independent 64:25
indication 58:25
information 39:3,6 40:6,18 45:10
input 31:9,10,23 36:5,6 37:6,11,12 38:22 39:4,5,9,10 40:19 41:12 55:18 57:4,9 59:22 85:16 86:6,15 87:2 93:18,22,24 94:5
inputs 37:8,12,14,19,23
inside 87:15
integrated 6:8,10,11,12 11:18
intended 75:15
interface 9:3 16:5 17:12,17 18:7 26:3 34:23,24 36:2 52:8 54:2 77:18
interfaces 19:16
interfacing 37:15
intermediate 36:11
internal 90:2,3
interrupt 56:4 61:16
interrupted 95:9
interrupting 60:13 61:12,14
invention 24:2
IPRS 99:4
irrelevant 17:23 61:22,25
issue 41:6 66:9 70:25 74:9
issues 41:8
items 35:8

J

Jackson 83:24 84:18,23,25 86:3 87:5,14,15,17 88:5,25 89:7,10,23 90:4,11,15 91:4,7,10,13 92:11,18 93:7,11,20 94:2,3
Jackson's 88:23 91:23 92:6,17 93:1
Jim 42:23
job 49:18
June 50:10,16 51:4,5

K

Kelly 42:24,25
kind 36:10 37:24,25 42:5 48:4 86:16 96:2,3,7 97:16,17
knowledge 97:21

L

labeled 77:18
language 75:24
lapse 78:10 79:20,25 80:2,19,22 81:9,14,17
large 33:10
lay 62:11
layout 11:21
learn 97:15
leave 49:6
leaving 49:14 50:7
left 11:2,6 49:5 50:9,12,15 51:4,18 77:12,15 83:2,8
left-hand 11:10
legitimate 49:17
Lett 4:1,5,11 17:19 32:18 40:20 41:11 56:8 59:9 64:7,20 66:12,14,22 98:17 99:11,21
level 48:11 96:7,12 98:12
life 50:1
limitation 62:17 68:11 69:17 70:5 71:14,17 72:11 76:9,14,18
limited 11:19 12:1 13:9
lines 11:19 13:3 14:3 15:9,13 16:20 18:14,20 23:7,15 30:4 32:19,23 35:7 56:1
Listen 60:12
listing 71:6
litigation 51:6 64:21,25
LNA 92:23 93:25
located 4:12 6:3
log 41:3
logic 5:23 6:3,5,9 11:20
long 21:9 58:9 62:23 78:9 79:19 86:9
looked 5:5 9:22 22:24
lot 33:13,21,23 35:15 47:15 52:14 83:4 94:6 96:5 97:15
low 36:11 92:12
low-if 42:8
lower 33:16 35:12
lunch 83:9

M

Madam 32:12 41:2
made 49:20
majority 50:20,23
make 7:4 14:13 22:11 51:22 73:6 85:11 88:4,18 89:5 90:2 95:25
making 6:3 88:11
materials 5:5,7
matter 13:12 62:18 63:1 82:13
maximum 80:2
meaning 73:5 77:3 78:8
meanings 73:21
means 17:1,21 19:20 21:1,8,12 25:6 30:1 36:7 62:18 72:19,22 73:2 75:8 76:18
meant 35:9
meet 5:9
meets 68:23 69:2,9
megahertz 14:4,17,23 30:6 31:16, 18,23 36:9 44:2 45:15 46:2
memorized 62:15
mention 62:25 97:9
mentioned 23:16 27:1 53:13 87:5 97:1,8
method 83:25 84:4

methods 16:6 91:19
mind 31:4 83:4
Mine 40:11
minimal 79:20
minimum 97:18
minus 41:17
minutes 32:14 51:17,18,21,23 59:10 66:22 67:3 81:3,17 83:2,8,12, 13 98:22
Mirabbassi 27:3 42:3
miscommunication 74:4
missed 46:22
missing 63:13 84:22
mistaken 30:13,21 63:21
misunderstood 89:14
mixer 32:4 38:4,9,20,21 46:11 67:13
mixers 38:12 39:1 46:12
mixing 42:7
modification 88:5 91:23
modified 86:21
modify 72:12,16 73:17 75:21
modifying 24:17
modulated 39:11,24 48:23 49:3
modulation 39:16,19,25
module 12:2
modules 81:20
moment 9:13 44:16 55:17
momentarily 10:8
money 15:5,7
morning 4:11 5:6,16 49:21
motivated 88:22
motivation 89:11,13 90:18
move 21:9 60:17,20,23
moving 15:12
mpeg 44:13
multiple 26:2,5 37:12,19,22 45:9, 18,23 47:19,24 48:22 49:3 91:25
multiplex 11:6,7,12,24,25 12:20 45:17
multiplexed 9:17 11:3 45:16
multiplied 40:22
mushy 56:5

N

named 63:14
necessarily 12:3,7,14 35:16 98:5
needed 95:24 97:13
network 41:5 84:25 85:3,4,6,12,13, 17 86:3,6,10,15,23,24 87:3 93:19, 23,24 94:5
noise 92:12
nonetheless 89:23
nonresponsive 18:4 25:18 60:21, 23
North 45:13
number 9:5 11:15,19 32:21 33:8 41:16,17 43:25 95:19
numbered 55:24
Nyquist 14:23 33:7

O

oath 4:6
objection 10:6 12:9,16 14:6,20 15:25 17:14 18:12 19:2,12 21:15 22:9 23:20 24:11 25:25 26:11 27:11 28:22 30:22 36:20 43:18 53:8,16 55:10 58:1 59:7 68:16 69:21 70:11, 24 74:25 75:22 78:13,14 80:5 82:9 89:24
objective 15:21 17:9 18:8 65:4
obtaining 89:3
obvious 14:11 61:2 64:23 72:23 76:7 84:18 86:1 87:25 88:8,12
occur 77:5
occurs 77:16,17
oddball 86:18
office 41:6
operable 53:1 55:2 57:16 58:19 59:3 60:1 68:13 69:18 70:3,8
opined 13:6 79:21 83:24 91:19
opining 76:7 84:17
opinion 17:8,13 18:6,25 19:3,4,5, 14,25 20:10 29:4 60:6 64:22 65:17, 24 68:1,4,10 69:10,16 70:5 72:5,23 73:1,23 76:25 77:7 78:7 87:9,25 88:22 89:16,21 91:9 92:17 95:11,17 96:6,9
opinions 13:14,17,20,23 65:8,25 97:23 98:5
opposed 21:19 22:8,19 28:4,20 29:6,17
optimal 92:22
optimize 11:22 90:25 92:21
option 52:16
order 78:8
ordinarily 48:1
ordinary 95:1,12
organization 96:16,18
originally 33:11
oscillator 40:22
output 7:8,23 8:1 11:4 12:21 14:22 17:16 22:21 23:1 27:19 28:12 33:13, 21 34:21 38:24,25 47:5 48:20 52:11 53:2,5,21 54:4,18 55:3 57:17,23 58:13,20,23 59:4 60:2,4,16 68:2,9, 14,19,21,23 69:7,14,19 70:3,9 72:3 77:15,20,23 78:19 80:21,24 81:8,16 82:14 93:20
outputs 26:2 46:19 69:3,4
outputting 12:20 24:22 25:12 52:19 69:6 72:9 77:17,25 78:6

P

p.m. 99:20
pack 48:10
Pandey 11:18,21
panel 82:12
paragraph 8:21 10:22,24 12:17 16:1 17:3 42:21 44:17 83:21 88:21

89:8 92:12,17 93:14 94:8,16,18 97:25

parallel 9:11 16:4,5 17:6,12,17 18:7, 16 19:16 24:22 26:2 34:23,24 52:8 54:1 77:18

Parsons 49:23

part 35:12 41:6 44:1 45:18,19 50:21 86:25

parts 58:2,10

past 32:15 51:23 59:10 66:22 83:13

patent 9:1,7 12:24 13:2,14,16 14:1, 3,9,10,18 15:12 16:20 17:1,8,21,25 18:1,7,14 19:10,15 21:12 23:6,8,14, 25 24:3 25:9,22 26:10,20,21 27:9, 10,12,21 28:9,17 29:9,11,13 30:5 32:19,23 34:5,13 35:2,6,18 38:3,10, 17 41:21 42:11,24,25 46:6,9,25 48:14 51:13 52:4,18,21 53:24 54:17 55:25 56:3,8,11,14,24 62:1,3 63:2, 11,16,18,22,25 64:2,5,6 65:18 66:6, 11 67:8,18,21 70:16,21 77:11 78:3 79:2,23 80:23 81:6 82:1,12,23 83:19 89:20 94:10

patent's 15:20

patents 21:24 37:1 95:17

pending 67:1

people 95:20,21 96:3,7,15,18,19,22, 23,25 97:2,22

percent 50:24 51:1,10,11

percentage 51:6

perform 28:18 29:16 48:13

performance 42:9 89:4,6 90:17,19, 21,23 91:1,14,15 92:1,7,16,22

performed 98:6

performing 21:17 22:7 28:2

performs 27:21

permitted 4:22 20:14

person 95:1,11 98:12

perspective 97:24 98:7

Petitioner's 98:25

phase 39:5 41:14

phone 49:11

phrase 44:20 46:24 52:21

picture 85:7

place 22:15 75:1

places 22:12

placing 22:18

plane 78:8

plurality 46:14 52:25 55:1,4,19,20 57:4,5,13,15 58:15,18 68:12 69:18 70:7 71:16 74:13,17,19,21,23 76:12, 13,22,24 77:8,9

point 10:13 13:7 15:3 23:3 25:17 63:18 67:10 70:14 75:19 81:6

pointed 11:9 27:3 93:2,8

pointing 56:17

portion 17:23 18:19 23:24 39:7 46:11 61:22 62:20 92:5,6,18

portions 32:5 61:25

POSITA 5:23 6:2,9 26:3 42:20 79:18 80:10 86:12 88:1,22 89:2,10 90:16 91:13 92:14,18 94:20 95:22 96:1,4,6 97:7,24

position 79:5 96:6 97:20

power 89:1 92:13,14

practical 15:1

prefer 83:1

preparation 5:3,9

previous 24:1,21 54:12

previously 29:21 54:23

prior 14:7 64:22

privilege 20:22

problem 17:5,19 18:15 19:15 83:6

procedures 4:18

proceedings 99:6

processes 77:11

processing 13:5 14:5,18 28:9,11, 25 95:4,14,18 98:10

processor 27:17 29:1

produced 93:1

productive 61:6

products 95:20

profession 50:3,10,16,20

program 28:15 44:14

programs 8:9

prompted 49:6,14

propagation 79:14 81:20

provide 9:15 10:2,18 20:4 21:9 22:17 65:7 71:15 72:3,11,19 73:1,8, 21 74:19,22 76:11

provided 65:8 72:20,23 94:19

provider 49:11

providing 13:14,17,20,23 17:6,12 71:19,23 72:6,14,16 73:13,22 74:2, 8,11,17 76:12,22,23 77:1,25 78:8 79:9,17,18 80:1,3,9 81:11

provision 73:24

purchase 38:1

purpose 86:24

put 22:11,14 45:23 52:16 86:16 87:25 96:5 97:14,20

Q

QAM 39:16,19,25

QPSK 39:25

quadrature 38:5,11,22,24 39:11 40:6,18 41:12

Qualey 10:6 12:9,16 14:6,20 15:25 16:12 17:14 18:12 19:2,12 21:15 22:9 23:20 24:11 25:25 26:11 27:11 28:22 30:22 36:20 40:9,12 43:18 51:25 53:8,16 55:10 56:4 58:1 59:7 61:6 62:7 68:16 69:21 70:11 74:25 75:22 78:13 80:5 82:9 83:14 89:24 98:22,25 99:7,12,14

quality 47:14 48:5,7,11

question 6:23 9:14 10:1,16,17 13:3, 8 14:2 17:20 18:2,4,5 19:4,22,24 20:4,11,12,17,21 21:4,6,20,21 23:21 24:1 25:18,19,22 27:5,6 28:17 30:23 32:19,24 35:4,5,25 36:22 37:7,24 38:7 40:4,15,16 41:11,20 43:2,10, 15,16 44:3,10,25 46:22 50:14 53:9 54:4,11,15 55:11,17 56:23 58:9,21 59:15,18,19,20 61:9,20,21 62:8,16,

22,25 63:9,24 64:1,7,9,19 65:16,21, 23 66:3,4,5,12,14,20,21 67:1,6 68:7 69:12,22 70:14 71:2,10 72:15 73:10, 11,16,17 74:6,7,12 75:12 80:7 82:21,25 84:15,17 87:19 88:14 89:13,16 95:8

questions 13:10 20:9,15 26:24 35:15 61:5,16 62:5 98:16 99:1

quick 8:6

quit 49:17

quote 15:14,17 23:8,11,13 24:5 42:19 53:3 68:11,15 70:6,10 71:14 92:11

quotes 44:22

quoting 24:2

R

rack-mount 37:25

racks 37:18

radio 95:4,15 98:10

range 15:15,22 17:10 18:9

rate 16:2 33:1,4,6,9,12,15,16,23 47:14

read 16:14 17:4 18:1,3 19:14 22:23 24:25 25:1,4 27:13 29:11 39:21 40:2,3 42:17 43:11 55:7 61:21,24 65:19,21 69:22 73:12 84:14

reading 16:13 17:23 23:15 24:17,19 29:8 32:7 43:1,13 55:22,23 56:2 61:25 71:1,5 74:3 77:22 79:11

reads 34:17

ready 59:14 71:10

real 36:8

reason 15:11 18:13 29:9 49:17 61:19 91:22

reasoning 18:20

reasons 11:15 49:9

recall 8:24 9:4,21 19:23 20:3,6 27:1, 2 53:12,15,17,20 55:23 87:7 92:2 93:3

receive 86:8 93:14

received 92:13,15,22,23

receiver 6:13 15:14,21 17:9,16 18:8 26:6 33:4 36:2 42:7,9 46:19 85:24

receivers 36:25

receives 46:17

receiving 86:6,14

Recess 32:16 52:2 83:16 98:24

record 7:22 8:3 41:7,9

records 51:2,9

red 88:23

redirect 51:19 83:10 98:19

reduce 33:1,3,18

reduced 16:2

refer 5:18 12:24 19:1 32:18 34:4 35:18 38:16 41:21 42:11,14 44:17 46:25 51:12 52:4 53:23 56:12 80:13 82:22 83:18 94:8

reference 5:19 13:19,23 15:5 42:3, 24 62:25 68:8,11 69:14,16 70:3,5 77:7 79:4,24 88:11

referenced 54:23 91:25

references 14:1,11 18:20 20:9,15 64:23

referencing 16:22

referring 9:20 19:10 28:12 64:11

refers 16:21 34:11 35:8 74:16

refine 69:12

refuse 19:24 20:21

refused 61:5 62:4

rejection 42:10

relate 50:1

relied 18:19 20:15 23:25 92:6

rely 87:5

relying 23:5 84:22,24

remember 9:21 84:5,9

remote 66:24

render 14:11 19:5 64:23

rendered 64:22 65:24 96:6,8

rendering 19:14

renders 61:2 84:18

reopen 10:9

repeat 10:17 12:5 20:12 27:6 40:14, 16 50:14 54:15 59:15

rephrase 6:23 55:16 68:7 72:15 74:12

reporter 4:7 16:18 32:13 99:9,12, 15,18

reporter's 16:13

representative 66:10

represents 44:14

requested 20:4 82:8

requests 82:19

require 13:4 14:5 27:15 28:8,24 30:9 31:12 32:1,2 55:7,16 73:12 78:1

required 36:18 37:5,11 53:14 72:13 73:22 74:2,8

requirement 30:16 97:18

requirements 22:13

requires 14:18 33:9 55:16,18 58:12, 22 59:21 65:10 74:11 79:8,17

requiring 15:16,22 17:10 18:9

reread 10:16 14:12 55:11

respond 66:19

response 18:3 19:23 20:4 23:25 25:21 43:9 62:15,16,24 66:21 69:12

responsive 19:22 43:9,14 62:19,21, 24 65:23 71:2

restate 23:21

restriction 47:24

result 42:7

review 5:12 13:13,19

reviewed 27:3

reviewing 59:9 66:23

RF 31:9,21,23 33:4,8 38:22 39:4,9, 10 40:7,19 41:12 42:14 43:4,17,24 44:7 45:6,9,11,14,24 46:2,5,9,13,25 47:6,10,11,19,22 48:1,8,15,17,22 49:2 54:7,19 85:25 86:6,14 89:2 92:12 94:4 95:18

role 64:20
roof 85:19
root 41:17
roughly 51:5
row 29:10
rules 4:17

S

sake 16:13
sample 14:24 33:5,12,16,18,19,20
sampled 33:8
sampling 16:2 31:15 32:2 33:1,3,9, 23
satellite 47:18 49:1,4,10 85:14 95:5, 19
science 97:11
scratch 47:8 75:18
screw 85:11
search 8:20
seconds 80:10
section 14:8,13 25:11 27:13 39:20, 23 63:7 84:14 87:22
sections 67:12
select 8:12 26:4 71:15,22 72:3,6,8, 11,19 73:8,20 74:19,21 76:11 78:16, 18 81:8 82:13
selected 6:15,25 42:22 43:11 46:14 72:20 78:23 80:23 81:10 82:2,7,14
selecting 26:4,17 71:19 72:14,16 73:13,14,22 74:2,7,11,17 76:22,25 77:15,16,24 78:6,7 79:9,17,18,25 80:3,9 81:11
selection 6:3 15:17,24 16:9 17:11 18:10 19:18 23:10,18 24:4,9,14,18 25:1,3,10,14,24 26:8,16 28:13,16,19 46:13 73:24 82:3
selector 5:24 8:19 10:3 11:12,14
selects 5:24 77:7 81:24 82:1,11
send 11:23 12:1 48:4,8
sense 72:8 73:6
sentence 15:13,18 18:25 20:16 21:8 23:5 24:6,19,21,23 25:4 30:3 34:17 74:3
sentences 13:10 17:4 22:23
sequentially 78:9 79:19
serial 9:11 12:20 16:3,4 17:6,12,17 18:6,16 19:16 24:22 26:2 34:23,24 52:8 54:1 77:18
session 5:2
set 12:1 60:18,19
set-top 85:11,20 87:1
sets 38:12 95:21 97:1,2,3
share 16:17
shifting 36:1,15,18 37:5
short 77:19 79:13 82:25
show 12:17 87:12
showed 16:11 92:24
showing 87:14,16
shown 11:4,5,8 16:6 71:6 79:23 93:11,25
shows 6:18
side 11:2,5,10 16:10 19:18 23:11,19 24:5,10,15 25:1,4,10,15,24 26:9 65:4
sign 33:25 34:8
signal 23:1 27:18,23 28:3,4 29:19, 23 31:10,21,23 33:2,4,5,6,8 38:4,10, 22,24 39:4,5,7,8,9,10 40:7,19 41:12, 13 48:9 55:19 57:4,9 59:22 77:23,24 80:19 81:15 85:25 87:2 89:2 92:13, 15,22,23 93:18,22 94:4 95:4,14,17 98:9
signals 11:23 12:3,7,14 31:12 33:15 34:14 39:24 41:25 77:11 93:15
similar 95:24 96:21 98:8
similarly 96:3
simple 46:23
single 45:23 47:19 48:22 49:2
Sir 60:11
sit 21:7
sitting 9:15 10:2,18 14:16 19:8,9 21:11 27:7
situation 9:22 29:14,18
size 46:2
skill 95:1,12,21 97:1,2,3 98:12
skip 33:19 83:9
slowly 69:23
small 77:21 78:5,10 81:9,20
smart 98:12
solving 18:15 19:15
source 41:24 42:19
speak 4:22
spec 52:18 65:12
specific 20:10,16 21:21 27:5 56:1 58:8 84:21
specifically 20:21 58:6 59:12 72:12 73:17 75:21 83:21 87:19 88:5 95:3, 14
spectrum 36:1,19 37:6 45:9
speculate 17:22
speed 8:18 15:1 27:16 28:10,11,25 29:1,24 30:2
spent 14:9
square 41:17
standard 46:2
start 10:11 49:18 75:18
starting 16:2 39:23 41:22 42:12 46:7 57:12 83:21
starts 78:19 79:12 81:7,8
state 59:18
stated 19:24,25 20:10 23:13
statement 21:9 29:8
states 24:1 59:25
step 74:22 75:7 77:8
steps 79:20
stipulation 99:2
stop 49:10
strategy 49:9,12
stream 7:8 16:4 17:6,16 18:16 22:22

27:18 28:7 44:1,14 45:16,17,18,20 46:17,18,19 47:5 48:19 52:11 78:24

streaming 78:19 81:8,10

strike 36:15 39:9 41:18 57:21 60:17, 20,23 80:1

subject 13:12

subscriber 7:22,25 8:20

substance 4:22

suggest 28:18

suit 49:23,24

summarize 79:7

super 47:16 60:18

support 18:25 23:25 65:7

suppose 7:9 36:4 86:8,17

swath 46:12

switch 8:17 61:21

symbols 40:1

system 7:21 15:21 17:9 18:8 22:12 23:8 36:2 45:21 47:18 48:21 54:18 55:15 57:20,22,25 59:2,6 60:6,9,15 63:6 68:1,4,20,21,23 69:5,9 70:12 82:7 85:14 86:18 89:6 90:25 91:24

systems 15:15 46:4 48:24 49:1,5,10 86:19 95:15,18

T

talk 26:23 52:19 60:12 61:8

talked 5:8 26:22 33:7 90:6

talking 11:20 16:16 21:25 22:20 24:21,23 25:11 27:13 28:6 29:18 30:4 31:17 37:15 38:13,14 39:24 42:5,8 44:25 45:12 48:12 54:10 64:13 81:4,5 83:5 85:22 89:25 91:22 93:21 94:15 96:16

talks 25:15

taught 89:7 91:7

tea 83:5

teaches 11:22 88:25 92:18

teaching 91:16,20

teachings 91:18,23

technique 48:9

technologies 95:16

technology 22:2,5

television 8:9 46:14

telling 17:5

Telular 49:14 50:7,9,15 51:4

ten 44:1 83:2,8

tenth 61:4

term 37:16 45:4

terms 42:9 97:18

testified 4:7

testimony 19:8 32:3

text 52:18

theorem 14:23 33:7

thereof 22:23

thing 33:22 47:7 48:2 81:19

thinking 39:15 97:3,12 98:13

thinks 72:13

thought 26:22 43:6 49:13 56:18 70:13 82:20 97:17

three-hour 49:15

time 4:13 8:2,16 9:18 10:1,4,19 11:3, 5,7,24 12:3,8,11,15,19,20 14:9 15:3 20:5 22:14 32:11 45:22 46:2 49:24 61:4,24 74:22 75:9,11 76:19 77:9, 19,21 78:4,5,10 79:13,14,20,25 80:2,19,22 81:9,14,16,23 82:19 96:4,13

times 91:25

timing 75:4

titled 54:1

today 4:13,19 5:10 22:3,6 65:7 99:4

today's 5:4,10 48:21 49:1

tomorrow 99:14,16

top 42:7

totally 14:13

traces 12:1

tradeoffs 22:10,18

training 17:21

transcript 99:3

transmission 6:25

transmitted 6:21 9:2

transport 45:16,17

trick 72:18,21 73:17 75:15

true 20:18 31:3 34:2 36:14,17 37:3 47:21 48:21 49:2 65:14 98:6

tuner 16:7 21:18,23 22:8,19 26:21 27:2,4,9 92:12

tuning 95:4,15,18 98:10

Tuttle 42:25

typical 33:25 45:21

typo 35:2

typographical 35:8

U

U.S. 46:3,5

understand 4:14,17,21,25 5:23 6:2, 9 8:15 13:16,22 14:13 19:1 20:8,14, 20 21:23 22:1 23:24 26:3 29:12 32:9 35:4 36:21 43:4,16 44:6,24 59:16 62:14 64:7,20 65:6,10 68:5 72:22 73:2,7,18 75:12,16,19 76:4,6,9,14, 17 77:4 79:18 80:10 86:12 88:7,10 91:13 92:4

understanding 6:6 14:1 34:9 48:14 53:4 54:18 73:5 75:13

understands 96:1

understood 8:23 45:25 74:5 86:2 89:2 90:3,17

undesired 7:7,9,11,19 8:7,11 52:12 53:6 54:6,19 55:9,20 57:5,10,24 59:5,22 60:5,7 68:3,10,19,22 69:3,6, 15 70:4 76:13,24

uniform 86:25

units 87:1

universally 34:2

unwanted 41:24

user 8:17 26:16 81:23 82:1,6,19

V

version 35:22

versus 9:11 88:11

video 45:22 47:14 48:4,5,7,11

view 26:4,5 35:4 79:7,16 82:4,16 83:24 84:18,24 87:20 88:8,14 89:9 92:5,10

viewing 42:23 43:12

views 79:7

VOLUME 4:1,5 99:21

W

w-a-s-t-e 7:17

wait 7:15 82:25

wake 49:24

wanted 35:3 68:21 86:17 88:17 90:17

wanting 8:3

waste 7:12,14,16,17,19,20

wasted 8:5

watch 7:22,25 8:3,11,12 26:17 28:15

watching 8:9,10 85:18

ways 86:5,14 91:2,5,12 92:9

wear 49:23,24

WEDNESDAY 4:2

well-known 91:12

whichever 83:1

wideband 15:14,21 17:9,15 18:8 36:2 57:14 58:16 94:3,6

window 97:21

wired 86:9,12,14

wirelessly 86:8

wires 12:1

word 12:11 20:19 53:22 59:16 65:13 68:17 69:8 76:18

words 45:15 63:12,14,22,24 64:4,5, 10 90:24

work 9:16 49:10 50:6 51:7 61:17 62:3 65:1 71:25 97:16

worked 48:24 49:4 95:19,21 96:3,7, 13 97:22

working 50:4,21 96:25

works 7:21 10:3,19 81:25

worries 10:15 95:10

Y

years 95:3,13 96:22,24 97:8,10,13, 16,17,21 98:9,13,14

yesterday 4:15,18 5:8,10,13,16 8:24 17:20 19:23 22:3,6 26:22,23,25 49:22 61:5 99:4

yesterday's 5:2

Z

Zhang 5:19 6:5,7,17 7:2,6 8:15,19, 22 10:19 11:16 13:19,22 16:10 17:15,24 18:3 26:1 42:8 44:18 45:2 60:9,15 62:2,3,13,15,18,19,20,25 63:1 66:7,12,14,18,20 79:4,23 80:14,18 81:5,21 82:17 83:24 84:17, 22,24 85:25 87:9,12,17,20 88:4,5,8, 14,19 89:10,16,20,22,25 90:10,11, 12,13,14 91:8,23 92:19

Zhang's 6:13 9:1 46:1 60:22,24 81:13 82:4,17 85:24 88:23,24 91:2, 10 92:5,8,20

ERRATA SHEET

Deposition of David Lett

Date: 12/11/2024 (Day 2)

Case: Comcast Cable Communications, LLC -v- Entropic Communications, LLC, Case Nos. IPR2024-00432, -00435, -00438 (PTAB)

Magna Legal Job. No.: 1238320

PAGE/LINE(S)	CHANGE	REASON
7/8	output to the demodulator as a digital data stream.· So he	missing word
8/21	capabilities.· That's in paragraph ~~5 in~~ 28 cited in	transcription error
14/7	THE WITNESS:· So this is in the prior art~~ch~~	typographical error
16/7	several advantages over conventional tuner architectures.	clarification
34/16	270A to 270N.· Oh, the demodulator is not 270A to 270N~~--~~	transcription error
40/22	multiplied by oscillator cosigne, but -- can you hear me	spelling
42/7	result of mixing.· And the type of~~p~~ receiver that we've been	transcription error
42/14	Does a desired channel refer to an RF channel or	typographical error
42/20	what a POSITA would be aware of as a desiredg~~ned~~ channel.	typographical error
72/13	I~~t~~ think~~s~~ that both of them are required,	typographical error
77/20	that block to the -- to the output, it is distinctly~~creetly~~	transcription error
87/12	I show a diagram there where Zhang is the block~~, which~~ with	transcription error

[SIGNATURE ON FOLLOWING PAGE]

1/13/25

Date

David B. Lett

David B. Lett

SUBSCRIBED AND SWORN TO BEFORE ME THIS 13th DAY OF January, 2025.

DIANA ROSALES QUINTANILLA
MY COMMISSION EXPIRES
NOTARY
PUBLIC
DECEMBER 20, 2027
GWINNETT COUNTY, GEORGIA

Notary Public

12/20/2027

Commission Expiration Date