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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMMSCOPE TECHNOLOGIES, LLC,

Petitioner,

v.

DALI WIRELESS, INC.,

Patent Owner.

VIDEOCONFERENCED AND VIDEO-RECORDED DEPOSITION OF

DOUGLAS A. CHRISSAN, Ph.D

LOS GATOS, CALIFORNIA

Wednesday, August 23, 2023

9:05 a.m.

Job No. 504705

Pages: 1 - 160

Reported By: April L. Crites, RMR, CRR, CSR, CCR

Ohio Notary Public

California Certified Shorthand Reporter No. 14493

1 Deposition of DOUGLAS A. CHRISSAN, Ph.D.,

2 held at the location of:

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4
5 16865 KENNEDY ROAD

6 LOS GATOS, CALIFORNIA 95032

7
8
9 * * *

10
11 Pursuant to notice, before

12 April L. Crites, RMR, CRR, CSR, CCR,

13 Notary Public in and for the state of Ohio,
14 and California Certified Shorthand Reporter.

15
16 * * *

I N D E X

EXAMINATIONS CONDUCTED

DOUGLAS A. CHRISSAN, PH.D.	PAGE
Cross-Examination by Mr. Bullard.....	7

* * *

EXHIBITS

MARKED	DESCRIPTION	PAGE
Exhibit 1	Rebuttal Expert Report of Douglas Chrissan, Ph.D., Regarding Validity of U.S. Patent No. 10,334,499	9
Exhibit 2	Patent Application Publication, Carrier Channel Distribution System	10
Exhibit 4	Declaration of Douglas A. Chrissan, Ph.D., Exhibit 2018	55
Exhibit 6	Declaration of Douglas A. Chrissan, Ph.D., Exhibit 2001	126
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1	Exhibit 10	Figure 5-2, mBSC Digital	65
2		Fiber Carrier Transport	
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4		Review of U.S. Patent	
5		No. 9,531,473, Exhibit 2007	
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8		Ex. 1008	
9	Exhibit 14	Deposition Transcript of	43
10		Douglas Chrissan, Ph.D.,	
11		dated July 12, 2023	
12	Exhibit 16	United States Patent	123
13		Application Publication,	
14		Hettstedt, et al., Method and	
15		System for Wireless Cellular	
16		Indoor Communications,	
17		CommScope Ex. 1006	
18	Exhibit 17	Declaration of Dr. Anthony	21
19		Acampora, CommScope Ex. 1003	
20	Exhibit 18	Petition For Inter Partes	134
21		Review of U.S. Pat.	
22		No. 10,334,499	

* * *

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

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19 ALSO PRESENT:

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21 Harut Akopyan, Videographer, Planet Depos

22

* * *

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1	THE VIDEOGRAPHER: Here begins media	
2	number 1 in the videotaped deposition of	09:05:06
3	Dr. Douglas Chrissan in the matter of CommScope	09:05:10
4	Technologies, LLC, v. Dali Wireless, Incorporated,	09:05:18
5	in the United States Patent and Trademark [sic]	09:05:19
6	Office before the patent trial and appeal board,	09:05:24
7	cause number IPR 2022-01345 and IPR	09:05:27
8	number 2022-01293.	09:05:39
9	Today's date is August 23, 2023. The time	09:05:40
10	on the video monitor is 9:05 a.m., Pacific Time.	09:05:44
11	The remote videographer today is Greer	09:05:48
12	McKee represents -- representing Planet Depos. All	09:05:51
13	parties of this video deposition are attending	09:05:55
14	remotely.	09:05:57
15	Will counsel please voice identify	09:05:58
16	themselves and state whom they represent?	09:06:00
17	MR. BULLARD: Good morning, everyone. My	09:06:03
18	name is William Bullard at the Carlson Caspers law	09:06:06
19	firm, representing petitioners.	09:06:11
20	MR. WIN: Good morning, this is Cliff Win	09:06:12
21	with the Folio Law Group. I represent the patent	09:06:14
22	owner Dali Wireless and the witness, Dr. Chrissan.	09:05:18

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1	THE VIDEOGRAPHER: Thank you, Counsel.	09:06:18
2	The court reporter today is April Crites,	09:06:20
3	representing Planet Depos. The witness will now	09:06:21
4	be sworn.	09:06:23
5	DOUGLAS A. CHRISSAN, Ph.D.	09:06:40
6	of lawful age, Witness herein, having been first	09:06:40
7	duly cautioned and sworn, as hereinafter	09:06:40
8	certified, was examined and said as follows:	09:06:40
9	CROSS-EXAMINATION	09:06:40
10	BY MR. BULLARD:	09:06:45
11	Q Good morning, Doctor. How are you doing	09:06:45
12	this morning?	09:06:51
13	A I'm good, thank you. And you?	09:06:52
14	Q Doing well. We haven't spoken for, what	09:06:53
15	is it, two months now, from our last deposition?	09:06:55
16	A It's been a while.	09:07:01
17	Q And you've been deposed before, correct?	09:07:03
18	A Yes, I have.	09:07:06
19	Q Do you need a refresher on any rules of	09:07:07
20	the deposition?	09:07:11
21	A No, I don't, unless anything is special or	09:07:12
22	changed for this one.	09:07:14

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1 Q Any reason you can't give your best 09:07:15
2 truthful testimony today? 09:07:18

3 A No, not that I know of. 09:07:19

4 Q And you understand that this deposition 09:07:22
5 concerns two of patent owners' patents that I'm 09:07:26
6 going to refer to as the '499 patent and the 09:07:32
7 '343 patent, correct? 09:07:36

8 A Yes. I'm looking around in the video. I 09:07:37
9 finally downloaded all the exhibit files. I'm 09:07:40
10 ready to go. 09:07:42

11 Yes, I do. 09:07:43

12 Q And you also gave a deposition in a 09:07:46
13 district court action a couple months ago 09:07:52
14 involving that same '499 patent on behalf of 09:07:57
15 patent owner, correct? 09:08:00

16 A That's correct. 09:08:02

17 Q And you also submitted an expert report 09:08:05
18 regarding the validity of the '499 patent in that 09:08:09
19 district court, correct? 09:08:14

20 A Yes, I did. 09:08:17

21 Q Okay. Could you open up Exhibit Number 1, 09:08:20
22 please? 09:08:27

1	(Petitioner's Exhibit 1, Rebuttal Expert	09:08:27
2	Report of Douglas Chrissan, Ph.D., Regarding	09:08:27
3	Validity of U.S. Patent No. 10,334,499, was marked	09:08:27
4	and presented for purposes of identification.)	09:08:36
5	THE WITNESS: Yes, I have it open.	09:08:36
6	BY MR. BULLARD:	09:08:41
7	Q Exhibit Number 1 is an expert report	09:08:42
8	regarding validity of US patent number 10,334,499	09:08:46
9	with your signature on the front page, correct?	09:08:53
10	A Yes, it is.	09:08:57
11	Q And this is an expert report that you	09:08:58
12	submitted regarding the validity of the same	09:08:59
13	'499 patent in this IPR proceeding, correct?	09:09:03
14	A Yes. The '499 patent of this report is	09:09:13
15	the same '499 patent of today's IPR proceeding.	09:09:18
16	Q Would you please turn your attention to	09:09:29
17	paragraph 54 of Exhibit 1, which is on PDF	09:09:34
18	page 20.	09:09:41
19	A Yes, I'm reading it.	09:09:55
20	Q And please feel free to take a moment to	09:10:02
21	read paragraph 54 to yourself.	09:10:05
22	A Yes, I read it.	09:11:12

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1 Q Okay. A downlink channel signal is an 09:11:16
2 example of a radio resource, correct? 09:11:20

3 A Yes, that is correct. 09:11:23

4 Q And your distinction is that the phrase 09:11:26
5 "radio resource" has a broader scope than a 09:11:31
6 downlink channel signal, correct? 09:11:35

7 MR. WIN: Objection to form. 09:11:38

8 THE WITNESS: In my opinion -- well, yes. 09:11:41
9 And that is for the reasons that I state in this 09:11:46
10 paragraph. 09:11:49

11 BY MR. BULLARD: 09:11:52

12 Q Okay. You can set that aside. 09:11:54

13 A Okay. 09:11:58

14 Q Let me turn your attention now to 09:11:59
15 Exhibit 2, please. 09:12:04

16 (Petitioner's Exhibit 2, Patent 09:12:04
17 Application Publication, Carrier Channel 09:12:04
18 Distribution System, was marked and presented for 09:12:04
19 purposes of identification.) 09:12:19

20 THE WITNESS: Okay. 09:12:19

21 BY MR. BULLARD: 09:12:20

22 Q Exhibit 2 is the Wu reference, correct? 09:12:21

1	A Yes, it is.	09:12:24
2	Q You're familiar with this reference,	09:12:26
3	correct?	09:12:29
4	A Yes, I am.	09:12:29
5	Q Would you turn your attention to Figure 2,	09:12:33
6	please?	09:12:37
7	A Yes.	09:12:44
8	Q Do you see, in Figure 2, there are analog	09:12:46
9	channels 270 that are numbered 1 through 12?	09:12:55
10	A Yes, there are analog channels 270, and I	09:13:15
11	believe that each of the 1 through 12 is meant to	09:13:22
12	indicate a separate analog channel. I would want	09:13:27
13	to search Wu to make sure.	09:13:31
14	Q So my question is: "Analog Channels 270,"	09:13:37
15	numbered 1 through 12, are examples of radio	09:13:45
16	resources, correct?	09:13:49
17	MR. WIN: Objection to form.	09:13:54
18	THE WITNESS: Yeah, before we get into any	09:13:57
19	discussion of Wu, let's refer to my second	09:14:03
20	declaration. I believe that that is what contains	09:14:11
21	my opinions on Wu in this IPR matter.	09:14:15
22	BY MR. BULLARD:	09:14:24

1 Q And if -- if you are -- or strike that. 09:14:25

2 You know, if you believe that, to answer 09:14:27

3 my question, you need to consult something in Wu or 09:14:31

4 consult some written work product, you know, feel 09:14:34

5 free to do that. But my questions will, you know, 09:14:37

6 not necessarily go paragraph by paragraph in your 09:14:39

7 declaration. Okay? 09:14:42

8 A Okay. 09:14:46

9 Q Would you like me to repeat the question? 09:14:48

10 A I understood your question. I can -- I 09:14:53

11 can answer your question without referring to my 09:15:03

12 declaration. But any further questions, I will 09:15:08

13 most likely want to refer to my declaration that 09:15:13

14 has my opinions for this IPR matter. 09:15:20

15 To answer your question, yes; my 09:15:27

16 understanding of Wu's "Analog Channels 270" are 09:15:36

17 that they are RF carriers. And as RF carriers, 09:15:42

18 they are examples of radio resources, as defined by 09:15:49

19 the patent and the PTAB's guidance for the plain 09:15:55

20 construction of radio resource. 09:16:05

21 Q Now, do you see in Figure 2 that, if you 09:16:07

22 follow the arrows, the "Analog Channels 270" 09:16:11

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1 become "Digitized Channels 273," and then, they go 09:16:21
2 over "Link 215" -- at the bottom -- "To RTUs." 09:16:25
3 And then, if you scroll down to the next figure, 09:16:32
4 Figure 3, it shows the RTU receiving the channels 09:16:35
5 in serialized form, de-serializing them into 09:16:42
6 digitized channels, and converting them to analog 09:16:47
7 channels. 09:16:50

8 Do you see that? 09:16:51

9 A I believe that you just described what we 09:16:56
10 see in Wu's Figure 2 and Figure 3, yes. I don't 09:16:59
11 think that Wu explains in detail everything that's 09:17:07
12 happening in Figure 2 and 3. But at a high level, 09:17:12
13 you just described the figure. 09:17:17

14 Q And do you see that, if you compare 09:17:19
15 Figure 2 and Figure 3, analog channels 1 through 7 09:17:25
16 are received at the matrix switch from the 09:17:29
17 multi-band transceiver, and then ultimately, they 09:17:34
18 are present in the RTU and sent to the boosters? 09:17:37

19 MR. WIN: Objection to form. 09:17:50

20 THE WITNESS: I disagree with your 09:17:56
21 statement as made. It's not like there's an RF 09:18:15
22 cable running from transceiver 260 to boosters 383 09:18:18

1	and 385. There's a significant amount of	09:18:33
2	transformation and reconstruction that takes	09:18:41
3	place; therefore, what goes into the boosters is	09:18:46
4	not going to be exactly what came out of the	09:18:53
5	transceiver 260.	09:18:59
6	BY MR. BULLARD:	09:19:11
7	Q The analog channels 270, numbered 1	09:19:12
8	through 12, ultimately are for transmission at	09:19:16
9	Wu's RTUs, correct?	09:19:21
10	MR. WIN: Objection to form.	09:19:28
11	THE WITNESS: Well, Wu's RTUs don't	09:19:43
12	transmit, for one. And, number two, as I	09:19:48
13	mentioned before, what does show up in Wu's RTU is	09:19:58
14	some signal or plurality of signals that's going	09:20:11
15	to be somehow related or some representation of	09:20:19
16	those analog channels or a transformation thereof.	09:20:25
17	BY MR. BULLARD:	09:20:41
18	Q The analog channels in the -- or strike	09:20:44
19	that.	09:20:48
20	The analog channels in Wu's RTU are	09:20:48
21	representations of the analog channels received at	09:20:55
22	Wu's matrix switch from the transceiver, correct?	09:21:02

1 MR. WIN: Objection to the form of the 09:21:08
2 question. 09:21:09

3 THE WITNESS: I believe my last answer 09:22:02
4 answers this question, as well. What does show up 09:22:07
5 as the analog channels in Wu's RTU is some signal, 09:22:11
6 or plurality of signal, that's going to be somehow 09:22:16
7 related or some representation of those analog 09:22:18
8 channels or a transformation thereof. 09:22:23

9 BY MR. BULLARD: 09:22:36

10 Q Are you contending that there is a 09:22:37
11 difference between the analog channels from the 09:22:39
12 transceiver, numbered 1 through 12, and the analog 09:22:44
13 channels also numbered 1 through 12 at Wu's RTUs? 09:22:49

14 A That answer is implementation-dependent. 09:22:59
15 I mean, I can tell you that, in any real system, 09:23:09
16 they're not going to be exactly the same. 09:23:14

17 Q The purpose of Wu -- or, strike that. 09:23:29

18 A purpose of Wu is to transport analog 09:23:32
19 channels 270 from the transceiver to Wu's RTUs, 09:23:35
20 correct? 09:23:40

21 MR. WIN: Objection to form. 09:23:53

22 THE WITNESS: I disagree with that. If 09:23:56

1	the purpose of Wu was to transport the analog	09:24:00
2	channels 270, then Wu would have a different	09:24:06
3	architecture. The purpose of Wu is to do	09:24:13
4	specifically what I mentioned before; to re-create	09:24:22
5	or reconstruct some representation of those analog	09:24:29
6	channels or a transformation thereof.	09:24:35
7	BY MR. BULLARD:	09:24:42
8	Q Let's set aside the purpose. Okay?	09:24:43
9	Wu's system transports analog	09:24:45
10	channels 270, numbered 1 through 12, to Wu's RTUs,	09:24:51
11	correct?	09:24:55
12	MR. WIN: Objection to form.	09:24:55
13	THE WITNESS: I don't agree with that	09:25:12
14	statement.	09:25:14
15	BY MR. BULLARD:	09:25:24
16	Q Okay. Let's go through Wu a little -- a	09:25:26
17	little bit slower. Okay?	09:25:29
18	A Okay.	09:25:31
19	Q You see analog channels 270 in Figure 2?	09:25:32
20	A Yes.	09:25:36
21	Q And then you see there are digitized	09:25:38
22	channels 273, correct?	09:25:40

1 A Yes. 09:25:44

2 Q And digitized channels 273 represent 09:25:48
3 analog channels 270 in digital form, correct? 09:25:53

4 A I have two answers for that: One is they 09:26:05
5 partially represent it; and two is, at that point, 09:26:10
6 the analog channels 270 stop being part of what's 09:26:15
7 further sent on. 09:26:26

8 Q Yes or no: Do digitized channels 273 09:26:33
9 represent analog channels 270 in digital form? 09:26:38

10 MR. WIN: Objection to form. 09:26:46

11 THE WITNESS: I answered that already. 09:26:47
12 They partially represent it. It depends on 09:26:49
13 exactly what happens in Wu's host unit. 09:26:56

14 BY MR. BULLARD: 09:27:13

15 Q Let's try this. What do digitized 09:27:13
16 channels 273 represent? 09:27:16

17 A Figure 2 is not clear enough -- Figure 2 09:27:26
18 is too high a level to answer that question, 09:27:33
19 specifically. We would need to look into a 09:27:38
20 detailed implementation. 09:27:42

21 Q Well, you know, you're free to look at 09:27:57
22 what you need to look at, to Wu, but you're an 09:27:59

1	expert here who's reviewed Wu, so my question	09:28:02
2	stands: What do digital channels 273 represent?	09:28:05
3	MR. WIN: Objection to form.	09:28:14
4	THE WITNESS: I just searched Wu for the	09:28:41
5	string 273 and reviewed where it shows the search.	09:29:01
6	It's came [sic] up. It appears to be Column 4.	09:29:21
7	And my answer is the same: It depends on the	09:29:23
8	implementation, and different implementations are	09:29:28
9	possible. If I were a POSITA at the time of Wu	09:29:30
10	implementing Wu, I would set on a path to work	09:29:35
11	through design tradeoffs, potentially.	09:29:44
12	BY MR. BULLARD:	09:29:51
13	Q I'd like you to focus your attention on	09:29:51
14	digitized channels 273. Okay?	09:29:54
15	A Yes, I am still looking at Figure 2.	09:29:57
16	Q Okay. Digitized channels 273 are digital	09:30:01
17	information, correct?	09:30:05
18	A That's an inference, but I can agree with	09:30:17
19	it.	09:30:22
20	Q What does an analog-to-digital converter	09:30:28
21	do?	09:30:31
22	MR. WIN: Objection to form.	09:30:34

1	THE WITNESS: An analog-to-digital	09:30:39
2	converter takes an analog signal as its input and	09:30:42
3	it produces digital values as its output, wherein	09:30:49
4	those digital values are meant to be somehow	09:30:56
5	representative of the analog input.	09:31:03
6	BY MR. BULLARD:	09:31:12
7	Q When you digitize an analog carrier	09:31:12
8	channel, like in Wu, you preserve the underlying	09:31:17
9	modulation in the analog signal, correct?	09:31:23
10	MR. WIN: Objection to form.	09:31:30
11	THE WITNESS: The first phrase of your	09:31:42
12	question is a phrase that I don't necessarily	09:31:44
13	agree with. As I say, Wu leaves open the	09:31:49
14	implementation. So I don't necessarily agree that	09:31:57
15	Wu digitizes the analog carrier channel.	09:32:07
16	BY MR. BULLARD:	09:32:17
17	Q Let's just talk general for a moment.	09:32:17
18	Okay?	09:32:20
19	A Okay.	09:32:20
20	Q If you digitize an analog carrier channel,	09:32:22
21	that process of digitizing preserves the	09:32:29
22	underlying modulation in the analog carrier	09:32:32

1	channel, correct?	09:32:37
2	MR. WIN: Objection to the form of the	09:32:38
3	question.	09:32:39
4	THE WITNESS: Your question, as asked, I	09:32:57
5	will take it as a hypothetical. But, yes, if you	09:33:00
6	take an analog carrier channel and let's say that	09:33:04
7	normally it's fed to an antenna, and you unplug	09:33:12
8	the wire from the antenna and rather you feed it	09:33:16
9	into an A-to-D, and the A-to-D was a high enough	09:33:21
10	sampling rate, then the digital values that came	09:33:30
11	out of the A-to-D would represent the signal that	09:33:35
12	went into it.	09:33:39
13	BY MR. BULLARD:	09:33:43
14	Q And an analog-to-digital converter does	09:33:43
15	not unmodulate the input analog signal, correct?	09:33:48
16	MR. WIN: Objection to form.	09:33:53
17	THE WITNESS: Well, as I mentioned, an	09:34:09
18	A-to-D converter that works correctly with a high	09:34:16
19	enough sampling rate produces a digital output	09:34:20
20	that represents its input. So whatever	09:34:25
21	characteristics the input has should still be	09:34:30
22	represented in the digital values that are	09:34:35

1	created, again, based on the input at the A-to-D.	09:34:37
2	BY MR. BULLARD:	09:34:45
3	Q So whatever phase, amplitude, and	09:34:46
4	modulation characteristics the analog input signal	09:34:50
5	has are preserved in the output from the	09:34:55
6	analog-to-digital converter?	09:35:03
7	MR. WIN: Objection to form.	09:35:05
8	THE WITNESS: In the general sense, that	09:35:59
9	is true.	09:36:03
10	BY MR. BULLARD:	09:36:06
11	Q Would you turn your attention to	09:36:07
12	Exhibit 17, please?	09:36:09
13	(Petitioner's Exhibit 17, Declaration of	09:36:09
14	Dr. Anthony Acampora, CommScope Ex. 1003, was	09:36:09
15	marked and presented for purposes of	09:36:09
16	identification.)	09:36:21
17	THE WITNESS: Yes.	09:36:21
18	BY MR. BULLARD:	09:36:24
19	Q Exhibit 17 is the declaration of	09:36:25
20	Dr. Anthony Acampora submitted to support the IPR	09:36:31
21	petition against patent owners' '499 patent,	09:36:35
22	correct?	09:36:41

1	A Yes, it is.	09:37:49
2	Q And this is a document that you reviewed	09:37:51
3	prior to putting in your declaration, correct?	09:37:57
4	A Yes, I reviewed it.	09:38:03
5	Q And in your declaration, you identified	09:38:07
6	where you disagree with Dr. Acampora, correct?	09:38:12
7	A I want to review my declaration before I	09:38:20
8	answer that question. In fact, I would like to	09:38:25
9	review both declarations, or -- yes, we're still	09:38:30
10	talking about the '499.	09:38:35
11	Q And I assume you reviewed your	09:38:39
12	declarations in preparation for this deposition,	09:38:41
13	correct?	09:38:43
14	A Yes, especially the second one.	09:38:45
15	Q Well, would you turn your attention to	09:38:49
16	paragraph 104 of Dr. Acampora's declaration, which	09:38:52
17	is on PDF page 75.	09:39:01
18	A I see it.	09:39:08
19	Q And you see this is the paragraph that	09:39:10
20	begins a baseband signal, dot, dot, dot?	09:39:12
21	A Yes, I am reading paragraph 104.	09:39:20
22	Q And just let me know when you've had a	09:39:26

1 chance to refamiliarize yourself with 09:39:28

2 paragraph 104. 09:39:32

3 A I have read it. 09:43:28

4 Q You did not submit an opinion disagreeing 09:43:32

5 with Dr. Acampora's technical analysis in 09:43:36

6 paragraph 104, correct? 09:43:41

7 A I would like to review my declarations. 09:43:44

8 Q Go ahead. 09:43:50

9 A Neither of my declarations address this 09:45:02

10 paragraph, 104. But let me check my declarations 09:45:06

11 again. 09:45:23

12 No, I did not submit an opinion in my 09:46:32

13 declarations disagreeing with Dr. Acampora's 09:46:35

14 technical analysis in paragraph 104. 09:46:40

15 Q Okay. You can set that aside for now. 09:46:44

16 I'd like to go back to Exhibit Number 2, 09:46:47

17 which is the Wu reference. 09:46:51

18 A Okay. 09:46:57

19 Q And would you turn your attention to 09:46:59

20 paragraph 47 of Wu, and let me know, please, when 09:47:01

21 you're at paragraph 47. 09:47:21

22 A I see paragraph 47 of Wu. 09:47:25

1	as nonresponsive.	09:49:27
2	BY MR. BULLARD:	09:49:31
3	Q When channels 270 are distributed -- or,	09:49:31
4	strike that.	09:49:36
5	Channels 270, collectively, as groups,	09:49:37
6	individually, those are examples of different sets	09:49:44
7	of channels 270, correct?	09:49:47
8	MR. WIN: William, could you repeat the	09:51:49
9	question for me, if you don't mind?	09:51:52
10	MR. BULLARD: Yeah. I think the question	09:51:56
11	was: Channels 270, collectively, as groups,	09:51:58
12	individually, are different examples of sets of	09:52:05
13	channels 270.	09:52:10
14	MR. WIN: Okay. Thanks.	09:52:12
15	Objection to form.	09:52:14
16	THE WITNESS: I'm taking the time to look	09:54:13
17	through Wu. I'm looking for any further	09:54:14
18	description beyond this one sentence. I'm not	09:54:18
19	seeing anything, so I'm not sure exactly what Wu	09:54:25
20	is teaching in terms of implementing his	09:54:34
21	invention.	09:54:42
22	Given that sentence in isolation, it does	09:54:42

1	say group, but that's -- again, I'm not -- I'm not	09:54:52
2	sure what Wu is talking about beyond what he	09:54:57
3	describes in Figures 2 and 3, to the extent those	09:55:01
4	digitized channels are groups.	09:55:13
5	BY MR. BULLARD:	09:55:25
6	Q Were you done with your answer?	09:55:25
7	A Yes. You can clarify further if you wish.	09:55:34
8	Q Now, you recall that Figure 2 shows	09:55:52
9	analog -- or strike that.	09:55:57
10	You recall that Figure 2 shows an example	09:55:58
11	of analog channels, numbered 1 through 12, correct?	09:56:01
12	MR. WIN: Objection to form.	09:56:14
13	THE WITNESS: Yes.	09:56:34
14	BY MR. BULLARD:	09:56:44
15	Q Routing those channels collectively versus	09:56:45
16	as groups versus individually are examples of	09:56:50
17	different sets of those channels, correct?	09:56:54
18	MR. WIN: Objection to form.	09:56:58
19	THE WITNESS: How do you define "set"?	09:57:01
20	BY MR. BULLARD:	09:57:07
21	Q Just the ordinary meaning of set.	09:57:07
22	A I would agree, for example, that in	10:00:44

1	Figure 2 at base station 263A, analog channels 1,	10:00:52
2	2, 3, 4 could be considered a set. But once those	10:01:07
3	go into the switch and what happens in that switch	10:01:13
4	and what comes out, Wu doesn't explain it in	10:01:17
5	enough detail that I can give you an answer.	10:01:23
6	MR. BULLARD: Move to strike as	10:01:29
7	nonresponsive.	10:01:31
8	BY MR. BULLARD:	10:01:43
9	Q Channels 270 collectively is an example of	10:01:45
10	a set of channels 270, correct?	10:01:47
11	MR. WIN: Objection to form.	10:01:56
12	THE WITNESS: I think it depends on the	10:02:46
13	context, and here is why I say that. If I am a	10:02:49
14	person of skill looking at transceiver multiband	10:02:53
15	260, I see channels 1 through 4, out of one BTS;	10:02:57
16	and 5 through 9 out of a second BTS; and 10, 11,	10:03:07
17	12 out of a third BTS, and someone says, Is that a	10:03:14
18	set, I'd say, In what context are you defining a	10:03:16
19	set of channels?	10:03:20
20	BY MR. BULLARD:	10:03:26
21	Q Are you testifying you don't know what the	10:03:26
22	word "set" means?	10:03:28

1	MR. WIN: Objection.	10:03:30
2	THE WITNESS: Well, that's what I said, it	10:03:30
3	depends on the context. Are you taking the most	10:03:32
4	general sense outside of -- you know, outside of	10:03:35
5	electrical engineering and in the English	10:03:42
6	language, are you taking the position that set and	10:03:46
7	group are interchangeable? I don't know. It	10:03:48
8	depends.	10:03:56
9	BY MR. BULLARD:	10:03:57
10	Q Well --	10:03:57
11	A On the -- the -- it depends on the person	10:03:58
12	involved. But from an engineering standpoint, you	10:04:03
13	know, would I consider 1 through 12 a set? I	10:04:06
14	don't know, it depends on the context. I already	10:04:10
15	said that as an example, you know, I think it's	10:04:12
16	reasonable to consider 1 through 4 a set there.	10:04:16
17	Q Now, you're familiar with the fact that	10:04:26
18	the '343 patent and the '499 patent use the term	10:04:28
19	"set," correct?	10:04:39
20	A In a broader context.	10:04:39
21	Q And are you contending that the	10:04:43
22	'343 patent or the '499 patent includes a	10:04:45

1	lexicography that adopts some special meaning of	10:04:50
2	the word set?	10:04:57
3	MR. WIN: Objection to form.	10:04:57
4	THE WITNESS: You completely changed the	10:04:58
5	question. Excuse me, what the '499 says is	10:05:00
6	"Wherein the baseband unit is configured to send a	10:05:08
7	digital representation of a first set of radio	10:05:11
8	resources to the first remote unit at a first	10:05:15
9	point in time."	10:05:18
10	BY MR. BULLARD:	10:05:25
11	Q So stay on my question. Are you	10:05:26
12	contending that there is a special definition of	10:05:27
13	the term "set" in either of the patents at issue	10:05:29
14	in these IPRs where the patent owner acted as his	10:05:34
15	own lexicographer?	10:05:39
16	A No, I am not contending that.	10:05:44
17	Q Okay. So whatever meaning of "set"	10:05:47
18	applies in the '343 patent and '499 patent, use	10:05:50
19	that meaning of "set," okay? Do you understand?	10:05:55
20	A Well, a person of -- yes, I understand.	10:06:04
21	Q Okay. So --	10:06:10
22	A So a person of skill would understand that	10:06:11

1 a word like "set" may have context based on the 10:06:14
 2 surrounding usage and system. And I just gave you 10:06:20
 3 two examples. 10:06:25

4 Q Okay. So, again, use the same meaning of 10:06:35
 5 the word "set" that is used in the challenged 10:06:40
 6 patents here -- the '343 and '499 patents -- in 10:06:44
 7 responding to my questions. Okay? 10:06:49

8 A Okay. 10:06:50

9 Q So channels 270 collectively is one 10:06:51
 10 example of a set of radio resources, correct? 10:06:57

11 MR. WIN: Objection to form. 10:07:03

12 THE WITNESS: My answer is the same. 1 10:07:32
 13 through 12, collectively as a person of skill, I 10:07:40
 14 would want to know the context. But 1 through 4, 10:07:45
 15 based on what I see, yeah, I would have to say 10:07:49
 16 they're a set. 10:07:51

17 BY MR. BULLARD: 10:08:02

18 Q An example of allocating channels 270 10:08:02
 19 collectively is allocating all of the channels 10:08:06
 20 270, correct? 10:08:10

21 MR. WIN: Objection to form. 10:08:34

22 THE WITNESS: I think that in 10:08:45

1	paragraph 47, Wu meant collectively to refer to	10:08:48
2	all of them.	10:09:01
3	BY MR. BULLARD:	10:09:02
4	Q And if we go back to Figure 2, channels 1	10:09:02
5	through 4 is one example of a set of radio	10:09:20
6	resources, correct?	10:09:24
7	A My answer specifically was I think that a	10:09:28
8	person of skill would generally consider 1 through	10:09:36
9	4 to be a set. I don't know if every person of	10:09:42
10	skill would. Again, it depends on the context of	10:09:46
11	the complete system and where those bands actually	10:09:51
12	are in the spectrum and the characteristics of the	10:09:54
13	system, et cetera. We all know the cellular world	10:09:59
14	is broad and diverse. And I said that a person of	10:10:05
15	skill would want more information before -- about	10:10:17
16	a particular system implementation,	10:10:24
17	characteristics, et cetera before that person	10:10:29
18	said, Yeah, I consider 1 through 12 a group.	10:10:34
19	Q So each of 1 through 4, 5 through 9, and	10:10:41
20	10 through 12 are examples of different sets of	10:10:47
21	Wu's radio resources, correct?	10:10:52
22	MR. WIN: Objection to form.	10:10:55

1	THE WITNESS: I think, no, as stated, your	10:11:31
2	question took my answer broader. I would say 1	10:11:37
3	through 4 is a set, 5 and 6 is a set, 7, 8, and 9	10:11:40
4	are a set, and 10 is a set, 11 is a set, and 12 is	10:11:44
5	a set. Beyond that, I would need more information	10:11:48
6	about the system.	10:11:57
7	BY MR. BULLARD:	10:12:01
8	Q Would you turn your attention to	10:12:01
9	paragraph 49, please?	10:12:05
10	A Yes. Okay.	10:12:07
11	Q And if you look in about the middle of the	10:12:21
12	paragraph, do you see the sentence that reads,	10:12:25
13	quote, One should appreciate, as discussed	10:12:32
14	previously, channels 270 can be routed or	10:12:35
15	allocated according to policy 255 individually,	10:12:39
16	collectively as shown, or in arbitrary groups?	10:12:45
17	A That's the same -- essentially the same	10:12:52
18	statement as -- in paragraph 47, I believe.	10:12:56
19	Q Okay. And now, I want you to keep in mind	10:13:08
20	that phrase "or in arbitrary groups," and look	10:13:11
21	back at Figure 2.	10:13:17
22	What are some examples of arbitrary groups	10:13:24

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1	of channels 1 through 12?	10:13:28
2	A Wu doesn't explain further what his system	10:14:19
3	does, how it does, or how it's capable of doing	10:14:22
4	various things. So in the context of Wu, I don't	10:14:26
5	know beyond what is shown in Figure 2.	10:14:34
6	Q Well, you know what the word "arbitrary"	10:14:41
7	means, right?	10:14:45
8	A Generally, yes.	10:14:57
9	Q And -- and you, similarly, generally, know	10:14:59
10	what the word "group" means?	10:15:02
11	A Yes.	10:15:12
12	Q Okay. And I'm not asking you in my	10:15:13
13	question how Wu does it. Okay? Set that aside.	10:15:16
14	My question is, looking at Figure 2,	10:15:20
15	channels 1 through 12, what are examples of	10:15:24
16	arbitrary groups of channels 1 through 12?	10:15:27
17	A Well, one possible grouping is as shown in	10:15:39
18	Figure 2.	10:15:44
19	Q And that's all the channels 1 through 12,	10:15:49
20	right?	10:15:54
21	A Yes.	10:15:54
22	Q Okay. What's another example of an	10:15:56

1	arbitrary group from channels 1 through 12?	10:15:57
2	A I think that even though Wu doesn't -- Wu	10:16:03
3	doesn't explain very much, but he could, within	10:16:24
4	the context of Figure 2, Wu could choose not to	10:16:30
5	send any of 1 through 12.	10:16:36
6	Q So within the context of Figure 2, could	10:16:46
7	Wu choose not to send channel 12 and instead send	10:16:51
8	channels 1 through 11?	10:16:57
9	A Well, Wu already sends channels 1 through	10:16:58
10	11. I think Wu's matrix switch 250 could choose	10:17:02
11	not to send channel 12.	10:17:14
12	Q And instead send channels 1 through 11?	10:17:19
13	A Well, again, it's already sending channels	10:17:25
14	1 through 11, so I guess we're saying the same	10:17:27
15	thing.	10:17:33
16	MR. BULLARD: Should we take a break?	10:17:37
17	It's been more than an hour.	10:17:39
18	MR. WIN: Sure.	10:17:42
19	THE WITNESS: Yeah, that's fine.	10:17:42
20	THE VIDEOGRAPHER: We're going off the	10:17:44
21	record. The time is 10:17 a.m.	10:17:46
22	(A brief recess was taken.)	10:18:49

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1	THE VIDEOGRAPHER: We're back on the	10:30:42
2	record. The time is 10:30 a.m.	10:30:48
3	BY MR. BULLARD:	10:30:54
4	Q Are you aware that Dali, the patent owner,	10:30:55
5	owes a duty of candor to the PTAB?	10:30:58
6	A I am not an attorney if you are referring	10:31:21
7	to a legal principle, could you point me to it?	10:31:35
8	Q Well, are you aware that Dali is not	10:31:38
9	supposed to submit false information to the PTAB?	10:31:45
10	A Again, I am not an attorney. But based on	10:31:51
11	my experience in patent prosecution and	10:32:04
12	litigation, I believe that there are principles	10:32:17
13	somewhere along those lines.	10:32:22
14	Q So said in another way, are you aware that	10:32:27
15	Dali's submissions to the PTAB should be true and	10:32:30
16	accurate?	10:32:33
17	A Again, I am not an attorney. But my	10:32:39
18	understanding is that that is generally correct.	10:32:44
19	Q Would you turn your attention to	10:32:48
20	Exhibit 11, please?	10:32:51
21	(Petitioner's Exhibit 11, Petition For	10:32:51
22	Inter Partes Review of U.S. Patent No. 9,531,473,	10:32:51

1 Exhibit 2007, was marked and presented for 10:32:51
2 purposes of identification.) 10:32:51

3 THE WITNESS: Okay. 10:33:03

4 BY MR. BULLARD: 10:33:08

5 Q And do you see that Exhibit 11, on the 10:33:08
6 bottom, indicates that it is patent owner Dali 10:33:16
7 Wireless, Inc.'s exhibit submitted to the patent 10:33:21
8 trials and appeal board? 10:33:29

9 A Based on the footer alone, it does appear 10:33:41
10 to be an Exhibit 2007, I assume submitted by Dali 10:35:29
11 Wireless. 10:35:39

12 Q And would you now turn your attention to 10:35:39
13 PDF page 84, which will have paragraph 148 on the 10:35:43
14 bottom of it. And just let me know when you're 10:35:49
15 there, and I'm going to orient you to a couple 10:36:04
16 things. 10:36:06

17 A Okay. 10:36:11

18 Q Okay. Do you see -- 10:36:12

19 A Hold on. I didn't mean Okay, I'm there. 10:36:13
20 I'm reviewing my declarations. 10:36:19

21 Q And just to be clear, Doctor, this is not 10:36:33
22 your declaration. This is another declaration 10:36:36

1 that the patent owner submitted. But if you 10:36:39
2 believe you need to review your declaration, go 10:36:42
3 ahead. 10:36:44

4 A So without going back to check my records, 10:38:17
5 is it true that this Exhibit 2007 is for the 00571 10:38:23
6 IPR? 10:38:32

7 Q Whatever it says on the cover is the IPR 10:38:33
8 it's for. 10:38:47

9 A Got it. 10:38:47

10 Okay. I am at paragraph 148 of the Bims 10:39:30
11 declaration. 10:39:37

12 Q And do you see above paragraph 148 is 10:39:37
13 Figure 2 from the Wu reference? 10:39:40

14 A Yes. 10:39:43

15 Q Okay. Why don't you take a moment and 10:39:45
16 read paragraph 148 and also read paragraph 149 to 10:39:48
17 yourself. 10:39:53

18 A Okay. I've read paragraphs 148 and 149. 10:41:55

19 Q Are those paragraphs accurate? 10:42:02

20 MR. WIN: Objection to form. 10:42:07

21 THE WITNESS: Mostly. The answer is that 10:42:09

22 I -- I gave you some answers previously that 10:42:15

1 correspond somewhat to the discussion, but my 10:42:18
2 answers were more precise. For example, where the 10:42:22
3 Bims declaration at 148 says, He also explains 10:42:29
4 that whatever is signaling is delivered in the 10:42:37
5 downstream direction is sent to a host unit. The 10:42:40
6 host unit processes the signals received from the 10:42:45
7 base station and delivers them to a remote 10:42:50
8 antenna. 10:42:54

9 That sentence alone is somewhat of a 10:42:55
10 contradiction. As soon as the host unit processes 10:43:03
11 the signals, it's not delivering the original 10:43:05
12 signals. It's delivering the processed signals. 10:43:08

13 So I think there are -- I -- I made some 10:43:17
14 distinctions over what I see here from this other 10:43:20
15 expert in paragraphs 148 and 149. 10:43:25

16 Q Is there anything else that you would 10:43:31
17 identify as inaccurate in paragraphs 148 and 149? 10:43:33

18 A Let me read them word-for-word -- I mean, 10:43:38
19 I would need to read all of BIMS declaration to 10:43:48
20 answer your -- fully understand Bims and be able 10:43:54
21 to give you the best answer. But just let me 10:44:04
22 start back at paragraph 143. At least that's the 10:44:06

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1	whole section.	10:44:14
2	Okay. So your question is, is there	10:49:31
3	anything in 148 and 149 I consider inaccurate. So	10:49:35
4	in paragraph 148, there's a sentence, He also	10:49:46
5	explains that whatever signaling is delivered in	10:49:51
6	the downstream direction is sent to a host unit.	10:49:53
7	I don't know what that means without	10:49:58
8	further context, study, and review of probably a	10:50:02
9	number of other documents.	10:50:05
10	Then we went on, it says, The host unit	10:50:08
11	processes the signals received from the baseband	10:50:11
12	and delivers them to a remote antenna.	10:50:15
13	Again, once the signals are processed,	10:50:18
14	it's not those signals exactly that are delivered.	10:50:21
15	It's a -- some information related to them.	10:50:25
16	What's delivered may or may not be enough	10:50:32
17	information to fully re-create them in and of	10:50:35
18	itself.	10:50:39
19	Then it says, Finally, the remote antenna	10:50:46
20	receives the signals and processes it to create an	10:50:53
21	RF signal that will be sent by the antenna.	10:50:59
22	I don't know about that one, either,	10:51:03

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1 because Wu doesn't even mention any antenna, I 10:51:07
2 don't think. So I would want to discuss with BIMS 10:51:11
3 or read further documentation to understand that 10:51:19
4 statement in context. 10:51:23

5 And then paragraph 149 -- I think 149 10:51:27
6 restates 148 in many ways, so my comments are the 10:52:04
7 same regarding the same relevant sentences. So, 10:52:07
8 again, I would simply need to be provided with more 10:52:16
9 context to give a very detailed answer. 10:52:22

10 I also note in paragraph 149, it says, The 10:52:25
11 Wu boasts unit 230 receives signals from the BTS240 10:52:28
12 which have been processed and distributed by the 10:52:37
13 matrix switch. 10:52:41

14 A clarification of that is that Wu does 10:52:45
15 not disclose a matrix switch that can do anything 10:52:52
16 or do any arbitrary processing and distribution. 10:52:59
17 Nor do I or POSITA think that such a switch would 10:53:06
18 even exist. The BIMS declarations, I believe, has 10:53:14
19 the same theme, and that gets back to my statement 10:53:20
20 previously that the one sentence in Wu that says, 10:53:29
21 you know, you can do anything, arbitrary this, 10:53:34
22 switch, mix and match that, that's just a one-off 10:53:39

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1	sentence. Wu doesn't really disclose that	10:53:42
2	capability, nor would Wu's analog switch 250 really	10:53:45
3	be able to do that.	10:53:53
4	MR. BULLARD: I'll move to strike here as	10:53:56
5	the response has become nonresponsive to the	10:53:58
6	question asked.	10:54:02
7	BY MR. BULLARD:	10:54:03
8	Q Let's -- let's go back and go a little bit	10:54:04
9	more slowly through this. Okay?	10:54:07
10	A Okay.	10:54:09
11	Q Do you see the sentence in paragraph 148,	10:54:11
12	at the top of page 80 that says, quote, These host	10:54:14
13	units and their respective RTUs depict a classic	10:54:18
14	DAS configuration?	10:54:25
15	A I see that.	10:54:26
16	Q Do you agree that Wu's system is a DAS?	10:54:27
17	A Wu's title is carrier channel distribution	10:55:00
18	system. I believe that Wu's system could be used	10:55:06
19	as part of a DAS. Wu itself doesn't even use the	10:55:11
20	term "antenna," I think. I'm searching through	10:55:18
21	Wu.	10:55:31
22	Yeah, so I would say that Wu's carrier	10:55:31

1	channel distribution system could be used as part	10:55:34
2	of a DAS. Could be used in a DAS.	10:55:37
3	Q All right. Let me pause you there.	10:55:42
4	A But Wu doesn't -- but Wu doesn't describe	10:55:44
5	the antenna part.	10:55:46
6	Q Okay. And I want to give you a chance to	10:55:48
7	make sure you're giving truthful testimony. Okay?	10:55:49
8	So let me direct you back to Exhibit Number 1,	10:55:52
9	please.	10:55:57
10	A Okay.	10:56:11
11	Q And -- I'm sorry, I'm going to put a new	10:57:04
12	exhibit in the chat, please.	10:57:07
13	MR. BULLARD: And, Madam Court Reporter,	10:57:11
14	this is going to be not on that download link, so	10:57:15
15	when you're collecting exhibits for the	10:57:19
16	transcript, please do download this.	10:57:21
17	THE COURT REPORTER: Okay.	10:57:28
18	THE WITNESS: Well, since you pointed me	10:57:28
19	to Exhibit 1, I'm looking at paragraph 42 where I	10:57:29
20	stated, Wu discloses a carrier channel signal	10:57:33
21	distribution system. For the record, I think	10:57:43
22	that's accurate.	10:57:45

1	(Petitioner's Exhibit 14, Deposition	10:57:45
2	Transcript of Douglas Chrissan, Ph.D., dated	10:57:45
3	July 12, 2023, was marked and presented for	10:57:45
4	purposes of identification.)	10:57:49
5	BY MR. BULLARD:	10:57:49
6	Q And do you see in the chat, Doctor, that	10:57:50
7	there's an Exhibit 14 now?	10:57:52
8	A Yeah, I'll look at it.	10:58:16
9	Q And do you have that exhibit open?	10:58:58
10	A Not yet.	10:59:00
11	Q Okay. I want to make sure you're focusing	10:59:49
12	on my question now, so whatever you're doing,	10:59:52
13	please stop it, and focus on my question. Okay?	10:59:54
14	A Hold on. I'm getting your -- honestly,	10:59:57
15	I'm still getting your Exhibit 14 in position with	11:00:00
16	the other exhibits in the other file.	11:00:05
17	Q So just -- yeah, just -- you shouldn't be	11:00:09
18	doing side work. You should simply be focusing on	11:00:10
19	the question that's being asked, and the question	11:00:14
20	being asked is, Have you downloaded Exhibit 14?	11:00:16
21	A Yes.	11:00:20
22	Q Okay.	11:00:21

1	A To clarify --	11:00:22
2	Q Could you --	11:00:26
3	A -- I just spent the last minute or two	11:00:27
4	downloading it and moving it into the position,	11:00:31
5	the same file folder on my desktop as all the	11:00:34
6	other exhibits. I wasn't doing something	11:00:37
7	different.	11:00:39
8	Q Perfect.	11:00:39
9	A I had to close a bunch of windows, and now	11:00:40
10	I have to reopen a bunch of windows.	11:00:43
11	Q Perfect. Okay. So you got Exhibit 14 in	11:00:45
12	front of you now, right?	11:00:48
13	A Yes.	11:00:52
14	Q And you see this --	11:00:53
15	A It's not open -- it's not open yet. I'm	11:00:54
16	going to close a number of other exhibits. Okay.	11:01:00
17	I see this.	11:01:19
18	Q And you recognize this exhibit as a	11:01:20
19	transcript of a deposition where you gave	11:01:23
20	testimony under oath?	11:01:25
21	A Yes.	11:01:28
22	Q Okay. So can you turn your attention to	11:01:30

1	PDF page 146, please?	11:01:35
2	A Okay.	11:01:49
3	Q And I'd like to focus your attention on	11:01:50
4	line 21 through 23. Okay?	11:01:53
5	A Yes.	11:01:58
6	Q Okay. Do you see those lines read,	11:02:02
7	Question: Okay. So you agree you refer to Wu as	11:02:04
8	a DAS, correct?	11:02:08
9	Answer: Yes.	11:02:11
10	A Okay. So let's -- yes, I don't think that	11:02:17
11	contradicts my testimony a minute or two ago.	11:02:21
12	To be more literally correct, Wu	11:02:26
13	is a -- describes a system that would be used in a	11:02:30
14	DAS.	11:02:32
15	Q Okay. So Wu's disclosure would be used in	11:02:34
16	a DAS?	11:02:38
17	A Yes.	11:02:39
18	Q Okay. So Wu's RTUs would be used in a	11:02:39
19	DAS?	11:02:42
20	A Yes. Wu's -- the purpose of Wu's system	11:02:45
21	is that it would be used in a DAS.	11:02:49
22	Q Okay. Now, what does the word	11:02:51

1	"transceiver" mean to you?	11:02:54
2	A In its simplest form, a transceiver is a	11:03:09
3	device that can both transmit and receive. In	11:03:15
4	certain contexts and in certain litigation cases	11:03:22
5	I've worked, there may be some additional	11:03:27
6	limitations placed on the definition.	11:03:33
7	Q How does a transceiver provide wireless	11:03:37
8	coverage?	11:03:43
9	A A wireless transceiver in a wireless	11:03:50
10	system typically provides wireless coverage by	11:03:56
11	transmitting and receiving wireless signals.	11:04:00
12	Q And how does it wirelessly transmit and	11:04:05
13	receive signals?	11:04:12
14	A That is a very complicated question. What	11:04:27
15	aspect do you want me to discuss about wireless	11:04:36
16	systems?	11:04:41
17	Q What is the name of the component that is	11:04:46
18	used to wirelessly transmit signals, such that a	11:04:48
19	transceiver can provide wireless coverage?	11:04:54
20	A That would generally be termed an antenna.	11:04:58
21	Q Okay. Now, you're aware -- or, strike	11:05:06
22	that.	11:05:11

1	You've -- you've worked on multiple patent	11:05:11
2	cases, correct?	11:05:19
3	A Yes.	11:05:20
4	Q And you're aware that there is a general	11:05:21
5	rule that the term "an" means one or more,	11:05:24
6	correct?	11:05:37
7	MR. WIN: Objection to form.	11:05:37
8	THE WITNESS: First a clarification on the	11:05:40
9	transcripts. That is -- I believe that counsel	11:05:44
10	means, open parentheses "A-N" closed parentheses.	11:05:49
11	You mean the word "A-N," right? Not "A-N-D"?	11:06:05
12	BY MR. BULLARD:	11:06:10
13	Q Yes, the word "an." An apple.	11:06:10
14	A Yes. In --	11:06:13
15	Q And I don't want to interrupt you, but I	11:06:38
16	was not clear if you were done with your answer.	11:06:40
17	A No, I'm not done.	11:06:43
18	Q Okay. So in the claims of these --	11:06:44
19	A Hold on. No, I'm not done.	11:06:47
20	Q Oh, you're not done, I thought you said,	11:06:49
21	so you are done.	11:06:52
22	A No.	11:06:53

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1 So my understanding of the word "an" in a 11:07:13
2 patent claim is that it generally refers to one, 11:07:18
3 but the scope of the claim is still met if there 11:07:26
4 are more than one. 11:07:30

5 So if I say -- if a claim says, An apple, 11:07:35
6 then that claim term is referring to one apple. 11:07:42
7 But if there's a bowl of ten apples, that would 11:07:48
8 still be within the scope of the claim, and the 11:07:55
9 claim, "An apple" could refer to any one of them. 11:07:59
10 That's my understanding, generally. Although, you 11:08:03
11 know, in -- in further context, the claim could 11:08:08
12 mean other -- a claim could be limited in other 11:08:13
13 ways. 11:08:16

14 Q Okay. And let's -- let's talk about some 11:08:18
15 other context. Okay? 11:08:21

16 A Okay. 11:08:22

17 Q In the context of the claims of the '343 11:08:22
18 and '499 patents involved here, the phrase, quote, 11:08:28
19 An antenna, covers one or more antennas, correct? 11:08:34

20 A Let's refer to the claims themselves. I'm 11:08:43
21 opening -- I have the '499 patent open. 11:09:03

22 Q Perfect. 11:09:06

1 A Okay. So let's consider the sixth claim 11:09:32
2 element after the preamble of claim 1 of the '499. 11:09:38
3 Wherein the baseband unit is configured to send a 11:09:43
4 digital representation of a first set of radio 11:09:47
5 resources to the first remote unit at a first 11:09:50
6 point in time, the first set of radio resources 11:09:54
7 for transmission at an antenna of the first remote 11:09:59
8 unit. 11:10:03

9 So in that context, "an" means a given 11:10:08
10 antenna. So if the first remote unit has more than 11:10:16
11 one antenna -- more than one antenna, an antenna in 11:10:21
12 this claim term could refer to any one of them and 11:10:26
13 still be within the scope of the claim. 11:10:31

14 Q The claim does not require the presence of 11:10:41
15 a single antenna, correct? 11:10:44

16 MR. WIN: Objection to form. 11:10:48

17 BY MR. BULLARD: 11:10:49

18 Q Strike that. 11:10:49

19 The claim is not limited to remote units 11:10:49
20 that only have a single antenna, correct? 11:10:53

21 MR. WIN: Objection to form. 11:10:56

22 THE WITNESS: I agree. That's a 11:11:02

1 restatement of what I said. 11:11:04

2 BY MR. BULLARD: 11:11:06

3 Q Okay. And there's nothing in -- in the 11:11:06

4 '343 or '499 patents that redefines or narrows the 11:11:10

5 meaning of the phrase "an antenna" to limit it to 11:11:17

6 only cover a remote unit with a single antenna, 11:11:22

7 correct? 11:11:25

8 MR. WIN: Objection to form. 11:11:27

9 THE WITNESS: I'm searching through the 11:14:41

10 '499. 11:14:44

11 As I search for antenna throughout the 11:16:11

12 written description, it appears as though every 11:16:14

13 embodiment has one antenna per remote unit. So 11:16:17

14 that might be a claim construction issue. 11:16:25

15 But, again, based on my understanding of 11:16:34

16 the word "an," there could be more than one antenna 11:16:37

17 at a remote unit. 11:16:45

18 BY MR. BULLARD: 11:16:51

19 Q And I want to go back to where I asked 11:16:51

20 you, Question: The claim is not limited to remote 11:16:53

21 units that only have a single antenna, correct? 11:16:56

22 Answer: I agree. That's a restatement of what I 11:16:58

1	said.	11:17:02
2	Your agreement there would apply to the	11:17:03
3	claims in the '499 patent and the claims in the	11:17:07
4	'343 patent, correct?	11:17:11
5	MR. WIN: Objection to form.	11:17:12
6	THE WITNESS: Again, I clarified my	11:17:16
7	answer, but that's all on the record.	11:17:18
8	Let me look at the '343.	11:17:22
9	Yeah, my answer is the same for the '343.	11:18:14
10	Without any guidance from claim construction, I	11:18:20
11	agree that claim 1 is not limited only to systems	11:18:32
12	with one antenna remote units.	11:18:40
13	BY MR. BULLARD:	11:18:52
14	Q Can you turn your attention to Exhibit 7,	11:18:53
15	please?	11:18:55
16	(Petitioner's Exhibit 7, United States	11:18:55
17	Patent 11,006,343, Distributed Antenna System,	11:18:55
18	Exhibit 1001, was marked and presented for	11:18:55
19	purposes of identification.)	11:18:55
20	THE WITNESS: I have it up. I was just	11:19:00
21	reading it.	11:19:01
22	BY MR. BULLARD:	11:19:04

1	Q And can you turn your attention to	11:19:04
2	Figure 6, please?	11:19:08
3	A Yes.	11:19:19
4	Q And I'm going to just pick a DRU here.	11:19:21
5	I'm going to pick DRU number 1. See it in the --	11:19:25
6	sort of the top-left quadrant there?	11:19:29
7	A Yes.	11:19:33
8	Q How many antennas does that DRU have?	11:19:33
9	A Under the assumption that those are	11:19:39
10	antennas -- I think they may be, but let me read	11:19:48
11	the description of Figure 6. There would be six	11:19:53
12	of them. But let me read the description of	11:19:59
13	Figure 6.	11:20:04
14	Yeah, I think it's reasonable to assume	11:21:09
15	that those are representative of six antennas.	11:21:13
16	According to the description, each one is for a	11:21:21
17	different service. It says, six services.	11:21:23
18	Q And would you turn your attention back to	11:21:28
19	the Wu reference, which is Exhibit 2, please?	11:21:30
20	A Yes.	11:21:37
21	Q And would you turn your attention to	11:21:40
22	paragraph 50, please?	11:21:42

1	A	Paragraph 50?	11:21:51
2	Q	Correct.	11:21:53
3	A	Okay.	11:22:02
4	Q	Do you see the sentence approximately in	11:22:05
5		the middle of that paragraph that reads, quote,	11:22:09
6		Channels 370 can then be distributed to one or	11:22:12
7		more boosters for retransmission, as represented	11:22:17
8		by MCPA booster 383 or mBSC booster 385?	11:22:21
9	A	Yes, I see that.	11:22:29
10	Q	So, Wu covers where the remote has one	11:22:44
11		booster or where the remote has more than one	11:22:48
12		booster, correct?	11:22:54
13		MR. WIN: Objection to form.	11:22:56
14		THE WITNESS: Wu literally says one or	11:23:03
15		more boosters in paragraph 50.	11:23:08
16		BY MR. BULLARD:	11:23:21
17	Q	And that means Wu is covering the example	11:23:22
18		where the remote has one booster and the example	11:23:25
19		where the remote has more than one booster?	11:23:27
20	A	Wu describes that.	11:24:43
21	Q	Okay. And can you look now at the final	11:24:47
22		sentence in paragraph 50, which reads, quote, The	11:24:50

1	channels 370 can be allocated to the boosters as	11:24:54
2	desired, one band per booster, two bands per	11:24:59
3	booster, et cetera.	11:25:02
4	Do you see that?	11:25:05
5	A Wu does state that.	11:25:07
6	Q And do you see that there's an "et cetera"	11:25:10
7	at the end of the sentence?	11:25:15
8	A I see that.	11:25:21
9	Q So where Wu teaches here that the channels	11:25:24
10	370 can be allocated to the boosters as desired,	11:25:28
11	it covers not just the example of one band per	11:25:32
12	booster or two bands per booster, but et cetera	11:25:37
13	examples, such as three bands per booster?	11:25:42
14	A I agree that a person of skill would	11:25:50
15	interpret "et cetera" as encompassing three bands	11:25:56
16	per booster.	11:26:01
17	Q Okay. And let's go back to Figure 2,	11:26:04
18	please. And before we -- you know, strike that.	11:26:11
19	I'm going to ask you a new question.	11:26:26
20	You did not offer an opinion	11:26:36
21	distinguishing Wu in the case where there is only	11:26:40
22	one booster, correct?	11:26:44

1 MR. WIN: Objection to form. 11:26:49

2 THE WITNESS: I don't understand the 11:26:52

3 question. 11:26:53

4 BY MR. BULLARD: 11:27:00

5 Q Do you recall offering an opinion 11:27:01

6 distinguishing Wu in a case where there are 11:27:05

7 different boosters? 11:27:08

8 A I still don't understand the question. 11:27:15

9 Do you want to refer to one of my 11:27:29

10 declarations? 11:27:32

11 Q Okay. Can you turn to -- can you turn to 11:28:13

12 Exhibit Number 4, please? 11:28:56

13 (Petitioner's Exhibit 4, Declaration of 11:28:56

14 Douglas A. Chrissan, Ph.D., Exhibit 2018, was 11:28:56

15 marked and presented for purposes of 11:28:56

16 identification.) 11:28:56

17 THE WITNESS: Yes, I have it open. 11:29:06

18 BY MR. BULLARD: 11:29:07

19 Q Do you see that Exhibit Number 4 is the 11:29:07

20 declaration you submitted in the '499 patent IPR? 11:29:13

21 A Yes. 11:29:19

22 Q Okay. Would you turn your attention to 11:29:26

1	PDF page 31 and then paragraph 63?	11:29:30
2	A Yes, I'm reading it.	11:29:49
3	Q And feel free to refamiliarize yourself	11:29:52
4	with that paragraph, and just let me know when	11:29:55
5	you're done.	11:29:57
6	A I have read it.	11:30:20
7	Q And do you see the line, the second	11:30:21
8	sentence in paragraph 63, that says, quote,	11:30:24
9	Instead, Wu's RTU sends different carriers to	11:30:28
10	different boosters.	11:30:32
11	Do you see that?	11:30:33
12	A Yes.	11:30:34
13	Q Okay. You did not offer an opinion to	11:30:35
14	distinguish Wu in the case where there's only one	11:30:41
15	booster, correct?	11:30:46
16	A I do not discuss the single-booster case	11:31:06
17	in isolation, if that's what your question is	11:31:18
18	referring to.	11:31:21
19	Q Okay. Now, let's look back at Figure 2,	11:31:24
20	please. And this would be Figure 2 in the Wu	11:31:28
21	reference, which is Exhibit 2.	11:31:36
22	A Okay.	11:31:39

1 Q Figure 2 shows an example where there are 11:31:49
2 three bands, where one band comprises channels 1 11:31:52
3 through 4; a second band comprises channels 5 11:31:57
4 through 9; and a third band comprises channels 10 11:32:02
5 through 12, correct? 11:32:05

6 A So part one of my answer is, yes, that is 11:32:35
7 true at transceiver 260. 11:32:40

8 Part two is it appears to be the intent of 11:32:46
9 Wu that a representation of those bands is 11:32:50
10 regenerated as analog channels 370 in RTU 310. 11:33:01

11 Q Okay. And, now, if we look at Figure 3 11:33:11
12 that displays the RTU, you see there are three 11:33:17
13 bands regenerated in Figure 3, correct? 11:33:25

14 A I think that's what Wu is intending here. 11:33:30

15 Q And so we have three bands, and then, you 11:33:34
16 see there are two boosters, correct? 11:33:37

17 A Yes. 11:33:40

18 Q Now, in the case where there are three 11:33:43
19 bands per booster, all three of the bands 11:33:47
20 represented by analog channels 370 would go to one 11:33:53
21 booster, correct? 11:33:57

22 MR. WIN: Objection to form. 11:33:59

1 THE WITNESS: I believe your question is a 11:34:25

2 hypothetical. I don't understand it as asked. 11:34:27

3 BY MR. BULLARD: 11:34:58

4 Q In Wu's example where there is -- or 11:34:59

5 strike that. 11:35:02

6 In Wu's example where there are three 11:35:03

7 bands per booster, that would mean the three bands 11:35:06

8 shown in Figure 3 -- channels 1 through 4, channels 11:35:17

9 5 through 9, and channels 10 through 11 -- would be 11:35:22

10 allocated to one booster, correct? 11:35:26

11 A Wu doesn't have an example where there are 11:35:30

12 three bands per booster. 11:35:33

13 Q I'm asking you to apply Wu's teaching that 11:35:39

14 the channels can be allocated to the boosters as 11:35:43

15 desired, where it could be one band per booster, 11:35:47

16 two bands per booster, et cetera, and specifically 11:35:53

17 apply the example where there are three bands per 11:35:59

18 booster; is that clear to you? 11:36:02

19 MR. WIN: Objection to form. 11:36:04

20 THE WITNESS: Partially. Keep going. 11:36:07

21 BY MR. BULLARD: 11:36:13

22 Q Okay. So in an example of Wu where there 11:36:14

1 are three bands per booster and the three bands 11:36:16
2 are the three bands shown in Figure 3, all the 11:36:24
3 channels in those bands, 1 through 12, would be 11:36:29
4 allocated to one booster? 11:36:44

5 A Your example is a hypothetical. But I 11:36:55
6 believe it would be possible at a high level. 11:36:59

7 Q Okay. 11:37:13

8 MR. BULLARD: Okay. Let's -- should we 11:37:13
9 take a break? We started at, whatever, 11:30, and 11:37:14
10 it's now 1:37. 11:37:24

11 MR. WIN: Fine with me. 11:37:26

12 THE VIDEOGRAPHER: We're going off the 11:37:28
13 record. The time is 11:37 a.m. 11:37:29

14 (A brief recess was taken.) 11:38:24

15 THE VIDEOGRAPHER: We are back on the 11:50:25
16 record. The time is 11:50 a.m. 11:50:26

17 BY MR. BULLARD: 11:50:30

18 Q Welcome back. Would you turn your 11:50:30
19 attention to paragraph 49 of Exhibit 2, which is 11:50:32
20 the Wu reference? 11:50:36

21 A Yes. 11:50:55

22 Q And would you take a moment to just 11:50:57

1	refamiliarize yourself with that paragraph? And	11:50:59
2	then I have a few questions.	11:51:02
3	A I'm also referring to the figures.	11:51:54
4	Q Sure.	11:51:58
5	A Okay. I've read it.	11:54:30
6	Q All right. Do you see the sentence that	11:54:33
7	begins, In a preferred embodiment, the host units	11:54:37
8	230 are configured to optimally digitize desirable	11:54:44
9	channels as opposed to complete band?	11:54:50
10	A Yes.	11:54:56
11	Q And do you see, if you keep reading down,	11:54:57
12	it refers to an envelope around one or more	11:54:59
13	carrier channels, and it gives a parenthetical	11:55:06
14	example?	11:55:09
15	A Yes.	11:55:10
16	Q And do you see where, after the	11:55:12
17	parenthetical example, it says, Additionally, a	11:55:13
18	host unit 230 preferably filters out unused white	11:55:17
19	space within bands 263 to reduce bandwidth	11:55:21
20	utilization, dot dot dot?	11:55:27
21	A Yes.	11:55:32
22	Q Now, if you go to Figure 2, please -- or	11:55:42

1	I'm sorry, strike that.	11:55:46
2	Would you go to sheet 5 of 13, if you look	11:55:49
3	at the top, it's where it shows Figure 5, Figure 6,	11:56:01
4	and Figure 7.	11:56:05
5	A Yes.	11:56:21
6	Q And do you see in the upper-left quadrant,	11:56:21
7	it's showing that Figure 5 is composed of four	11:56:24
8	smaller figures, Figure 5-1 through Figures 5-4,	11:56:29
9	and you have to put them together?	11:56:34
10	A Yes.	11:56:35
11	Q Okay. So I'd like you to draw your	11:56:36
12	attention to Figure 5-2, please.	11:56:42
13	A Okay.	11:56:52
14	Q And do you see in Figure 5-2, it's	11:56:53
15	showing, on the left side, the host unit?	11:57:00
16	A I see that.	11:57:08
17	Q And do you see that the host unit is	11:57:11
18	performing the digitizing step, and it's removing	11:57:18
19	the white space between the bands?	11:57:21
20	MR. WIN: Objection to form.	11:57:32
21	THE WITNESS: Let's break your question	11:57:56
22	into its two parts.	11:57:59

1	The first part is: Is the host unit	11:58:03
2	performing a digitizing step? That's unclear from	11:58:06
3	this Figure 5-2. But in Wu generally, including	11:58:12
4	Figure 2, a POSITA understands that any digitizing	11:58:23
5	that happens happens in the host unit.	11:58:31
6	Part two of your question is: Is it	11:58:37
7	removing white space between the bands? Could you	11:58:41
8	clarify what you mean by that?	11:58:48
9	BY MR. BULLARD:	11:58:56
10	Q Well, if we go back to paragraph 49, do	11:59:02
11	you recall in paragraph 49 where Wu expressly	11:59:10
12	teaches that the host units, quote, Preferably	11:59:13
13	filters out unused white space within bands 263?	11:59:17
14	MR. WIN: Objection to form.	11:59:32
15	THE WITNESS: Yes, I see that at	11:59:46
16	paragraph 49. I think Figure 5.2 is a high-level	11:59:49
17	depiction that pictures what Wu is talking about.	12:00:02
18	BY MR. BULLARD:	12:00:16
19	Q And an example of a white space within a	12:00:17
20	band would be the space between channel 6 and	12:00:21
21	channel 7, where they're depicted in the host	12:00:24
22	unit?	12:00:32

1	A	I think that's what Wu is referring to.	12:00:40
2	A	Again, Wu gives no details on what's	12:00:49
3		happening. But this matches a high-level	12:00:58
4		description.	12:01:10
5	Q	And now, if you look back in paragraph 49,	12:01:11
6		and you look at that sentence I read earlier, that	12:01:17
7		begins, quote, In a preferred embodiment, the host	12:01:20
8		units 230 are configured to optimally digitize,	12:01:24
9		dot dot dot.	12:01:28
10		Do you see that?	12:01:29
11	A	Yes, I see that.	12:01:41
12	Q	Okay. So in Wu, Wu is teaching that its	12:01:43
13		host units get configured to optimally digitize	12:01:48
14		desirable channels, not the whole band. And that	12:01:54
15		involves, for example, filtering out the white	12:01:57
16		space within the band, correct?	12:02:00
17	A	That is what Wu describes in paragraph 49.	12:02:07
18	Q	All right. Will you now look at --	12:02:12
19	A	And -- and at least that that is possible.	12:02:14
20	Q	Would you look at paragraph 50 now?	12:02:23
21	A	Yes.	12:02:26
22	Q	Do you see the first sentence in	12:02:27

1	paragraph 50 reads, In Figure 3, RTU 310 receives	12:02:30
2	serialized channels 375 from a host unit over	12:02:37
3	link 315. RTU employs a reverse process, dot dot	12:02:42
4	dot.	12:02:47
5	A Yes, I see that.	12:02:51
6	Q Okay. And then, now, would you look over	12:02:57
7	at paragraph 56, please?	12:03:00
8	A Yes.	12:03:04
9	Q Okay. And do you see in paragraph 56, now	12:03:05
10	it's describing Figure 7, which is a schematic of	12:03:08
11	an RTU? And it explains that the RTU is having a,	12:03:14
12	quote, Similar structure of the host unit and,	12:03:20
13	quote, Mirrors a host unit's functionality.	12:03:26
14	Do you see that?	12:03:29
15	A Yes, I see that.	12:03:33
16	Q Okay. So you would agree that Wu teaches	12:03:35
17	that the RTU, quote, Employs a reverse process as	12:03:40
18	taken by the host units as taught in paragraph 50.	12:03:45
19	And then, as taught in paragraph 56, Wu teaches	12:03:49
20	that the remote unit, quote, Mirrors a host unit's	12:03:54
21	functionality.	12:03:58
22	MR. WIN: Objection --	12:04:04

1	THE WITNESS: That's what -- that's what	12:04:05
2	Wu states.	12:04:08
3	BY MR. BULLARD:	12:04:11
4	Q Okay. And now --	12:04:11
5	A I think I would want to analyze a	12:04:11
6	particular system before I verified that for a	12:04:17
7	particular system.	12:04:21
8	Q Okay. And now, can you look back at	12:04:24
9	Figure 5 and 5-1 and 5-2? And I just want you to	12:04:28
10	generally get those figures in your head. And	12:04:34
11	then I'm going to show you a combination of those	12:04:37
12	figures that we can talk about more easily.	12:04:39
13	A Okay.	12:04:52
14	Q Okay. Now, can you please turn your	12:04:53
15	attention to Exhibit 10, please?	12:04:58
16	(Petitioner's Exhibit 10, Figure 5-2, mBSC	12:04:58
17	Digital Fiber Carrier Transport System Block	12:04:58
18	Diagram-System, was marked and presented for	12:04:58
19	purposes of identification.)	12:04:58
20	THE WITNESS: I have it up.	12:05:12
21	BY MR. BULLARD:	12:05:13
22	Q Okay. And do you see that Exhibit 10 is	12:05:13

1 simply a combination of Figure 5-1 and Figure 5-2? 12:05:15

2 A Yes. 12:05:23

3 Q Okay. And I want to start on the right 12:05:25

4 side and focus on the host unit first. Okay? 12:05:28

5 A Yes. 12:05:33

6 Q So as shown in the figures here, the host 12:05:36

7 unit needs to be configured to optimally digitize 12:05:40

8 the desired channels, filter out the white space, 12:05:45

9 and then serialize the channels together, correct? 12:05:50

10 MR. WIN: Objection to form. 12:05:55

11 THE WITNESS: Yeah, I would not agree with 12:05:57

12 your question as stated. The host is configured 12:05:59

13 somehow, according to the needs of the designer. 12:06:06

14 BY MR. BULLARD: 12:06:12

15 Q And I'm not sure what the objection was. 12:06:13

16 Let me just try to rephrase it. 12:06:14

17 So Wu's host unit is configured to 12:06:17

18 digitize the desired channels, filter out the white 12:06:22

19 space, and then generate a serialized group of 12:06:26

20 digitized channels, correct? 12:06:33

21 MR. WIN: Objection to form. 12:06:36

22 THE WITNESS: I would disagree -- I 12:06:53

1	disagree with that.	12:07:00
2	BY MR. BULLARD:	12:07:03
3	Q Can you explain what part you disagree	12:07:03
4	with?	12:07:05
5	A Yes. So the first part is Wu does not	12:07:12
6	appear to digitize the desired channels. Those	12:07:23
7	channels are processed first, and the result is	12:07:30
8	digitized in some way.	12:07:36
9	And then, secondly, Wu's host unit is	12:07:39
10	configured however a designer configures it. I	12:07:47
11	think that one of Wu's embodiments is a possible	12:07:57
12	way to configure it.	12:08:02
13	Q Let's start general. Okay?	12:08:11
14	As shown in Figure 5-2, Wu's host unit is	12:08:18
15	configured to perform certain processing.	12:08:22
16	A I would agree with that.	12:08:42
17	Q Okay. So now let's move to the left side	12:08:44
18	that shows the remote units. Okay? And the left	12:08:46
19	side is Figure 5-1, correct?	12:08:50
20	A Yes.	12:08:54
21	Q Okay. Wu's remote units are now	12:08:55
22	configured to reverse the processing done by Wu's	12:09:05

1	host units, correct?	12:09:15
2	MR. WIN: Objection to form.	12:09:17
3	THE WITNESS: So my answer is in two	12:09:47
4	parts. The first part is, generally, the remote	12:09:50
5	units do, at least in part, reverse the processing	12:09:57
6	of the host unit.	12:10:03
7	And the second part is that they may be	12:10:07
8	configured to do so in different ways.	12:10:09
9	Q And so the host unit here is configured to	12:10:14
10	perform -- or, I'm sorry, strike that.	12:10:19
11	The -- strike that again.	12:10:25
12	Wu's remote unit here is configured to	12:10:26
13	perform certain processing steps such as	12:10:30
14	de-serializing the channels, converting the	12:10:33
15	channels from digital to analog, and realigning the	12:10:40
16	channels within the bands so that they now include	12:10:46
17	back in them the white space between the channels.	12:10:50
18	MR. WIN: Objection to form.	12:11:04
19	THE WITNESS: There is other processing	12:11:26
20	involved as well, but at a high level, I would	12:11:29
21	generally agree with that.	12:11:33
22	BY MR. BULLARD:	12:11:37

1	Wu, back on Exhibit 2, please?	12:15:21
2	A Okay.	12:15:28
3	Q And do you see that paragraph 23 is	12:15:31
4	explaining that Figure 6 is going to be a	12:15:34
5	schematic overview of a possible host unit?	12:15:37
6	A Yes.	12:15:42
7	Q And that figure is going to be divided	12:15:42
8	into a left half and a right half?	12:15:45
9	A Yes, I see that.	12:15:49
10	Q And do you see, then, correspondingly, in	12:15:51
11	paragraph 26, Wu explains that Figure 7 now is a	12:15:55
12	schematic overview of a possible RTU that,	12:16:00
13	likewise, has a left half and right half in Figure	12:16:05
14	7-1 and 7-2?	12:16:09
15	A Yes.	12:16:12
16	Q Okay. So I want to just start with the	12:16:13
17	schematic of the host, and then I'm going to ask	12:16:15
18	you some questions about the schematic of the	12:16:18
19	remote. Okay?	12:16:20
20	So would you turn your attention to Figure	12:16:21
21	-1?	12:16:24
22	A Okay.	12:16:35

1	Q And so this is showing a possible	12:16:37
2	schematic of one of Wu's host units, correct?	12:16:42
3	A A portion of it.	12:16:49
4	Q And --	12:16:52
5	A At least the block diagram. I don't -- I	12:16:53
6	wouldn't call it a schematic.	12:16:58
7	Q And do you see that Wu is teaching here	12:17:02
8	that the host unit includes FPGAs?	12:17:05
9	A Yes. I see that.	12:17:10
10	Q Okay. Now, can you look at Figure 7-1?	12:17:12
11	A Yes, I see it.	12:17:31
12	Q And Figure 7-1 is describing part of the	12:17:34
13	schematic remote unit, correct?	12:17:39
14	A Yes, I see that.	12:17:44
15	Q And Wu is teaching that the remote units	12:17:48
16	have FPGAs?	12:17:52
17	A Wu is teaching that a remote unit can have	12:17:56
18	an FPGA.	12:17:59
19	Q In Wu, the FPGAs in the host unit and the	12:18:17
20	FPGAs in the remote unit can be configured?	12:18:27
21	A You'll need to clarify your question. Can	12:18:45
22	be configured how?	12:18:52

1	Q Let's start with what is an FPGA?	12:18:58
2	A It's a field-programmable gate array.	12:19:01
3	Q And it's a device that can be programmed,	12:19:09
4	correct?	12:19:12
5	A An FPGA can be programmed in different	12:19:12
6	ways. What do you mean by "programmed"? In which	12:19:15
7	context are you speaking?	12:19:19
8	Q I'm just talking as a general matter, an	12:19:23
9	FPGA can be programmed?	12:19:26
10	A Given that the term "FPGA" means	12:20:01
11	field-programmable gate array, yes, the 'P'	12:20:10
12	generally means that it is programmable such that	12:20:12
13	it can have its hardware configuration changed	12:20:14
14	after it is delivered to an end customer and	12:20:23
15	placed in a device. That's in contrast to other	12:20:29
16	integrated circuit devices, such as	12:20:36
17	application-specific integrated circuits that	12:20:39
18	typically cannot have their hardware configuration	12:20:42
19	changed after they are delivered to an end	12:20:45
20	customer. But the line between those continues to	12:20:49
21	blur more and more in the industry.	12:20:56
22	Q So in Wu, the FPGAs in the host unit and	12:21:01

1	remote unit are programmable such that the	12:21:06
2	hardware configuration can be changed?	12:21:10
3	A Even that depends on the specific design.	12:21:22
4	Q Can you turn your attention to Wu	12:22:00
5	paragraph 55, and then I'm going to come back to	12:22:02
6	that question?	12:22:04
7	A Okay.	12:22:07
8	Q Do you see in paragraph 55, in the second	12:22:14
9	sentence, it says, FPGAs can be configured to	12:22:20
10	communicate with a matrix switch to obtain signals	12:22:26
11	from the respective bands supported by the system.	12:22:29
12	New sentence, An FPGA can also be used to frame,	12:22:33
13	combine, divide, synchronize, or otherwise manage	12:22:37
14	carrier channels.	12:22:41
15	A Yes.	12:22:45
16	Q Do you --	12:22:46
17	A I see that.	12:22:47
18	Q Okay. And then do you see in the next	12:22:48
19	paragraph, when we're now talking about the RTU,	12:22:49
20	Wu describes it as having a, quote, similar	12:22:53
21	structure of the host unit and, quote, Mirrors the	12:22:57
22	host unit's functionality?	12:23:02

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1 A Yes, I see that. 12:23:03

2 Q So I want to go back to my question. 12:23:08

3 In Wu, the FPGAs in the host unit and the 12:23:11

4 remote are programmable, such that various hardware 12:23:14

5 configurations can be changed? 12:23:18

6 MR. WIN: Objection to form. 12:23:28

7 THE WITNESS: I'm looking through Wu. 12:23:51

8 Wu does not state -- I don't see that Wu 12:25:04

9 teaches that the FPGA's hardware configuration is 12:25:08

10 changed. Wu teaches that the FPGAs can be 12:25:13

11 configured. But an FPGA can be flashed once in the 12:25:18

12 factory, delivered to the world, and never changed 12:25:21

13 again, the FPGAs' hardware configuration, at least. 12:25:24

14 BY MR. BULLARD: 12:25:36

15 Q So in Wu, the FPGAs in the host unit and 12:25:36

16 remote units can be configured? 12:25:40

17 MR. WIN: Objection to form. 12:25:51

18 THE WITNESS: Yes, Wu states that FPGAs 12:25:52

19 can be configured. That means they can be 12:25:55

20 configured once. 12:25:59

21 BY MR. BULLARD: 12:26:05

22 Q And the nature of an FPGA is that it can 12:26:05

1	also be reconfigured?	12:26:08
2	MR. WIN: Objection to form.	12:26:11
3	THE WITNESS: An FPGA in general can have	12:26:23
4	its hardware configuration changed after it is	12:26:28
5	delivered from the FPGA vendor, such as Xilinx to	12:26:37
6	a customer. But in many cases, if not most cases,	12:26:46
7	the FPGA's hardware is configured once for a	12:26:54
8	product and left alone. And the reason for that	12:26:57
9	is touched on in my declarations. It's a	12:27:00
10	significant -- it's a nontrivial amount of work to	12:27:05
11	reflash an FPGA. In many cases, products are not	12:27:12
12	designed to reflash an FPGA in their field.	12:27:18
13	BY MR. BULLARD:	12:27:37
14	Q So Wu's FPGAs in the host unit and remote	12:27:38
15	units could be reconfigured by loading a new-build	12:27:46
16	image onto the FPGA, correct?	12:27:52
17	MR. WIN: Objection to form.	12:27:55
18	THE WITNESS: Again, that would depend on	12:28:01
19	a particular design. I actually don't think that	12:28:05
20	Wu contemplates that, because Wu talks	12:28:12
21	about -- well, for this, I -- I would want to look	12:28:22
22	at my second declaration.	12:28:25

1 BY MR. BULLARD: 12:28:28

2 Q Well, let me ask you just a more general 12:28:28

3 question. Okay? 12:28:31

4 In general, an FPGA can be reconfigured by 12:28:31

5 loading a new build image onto it, correct? 12:28:36

6 MR. WIN: Objection to form. 12:28:42

7 THE WITNESS: So we have to piece that 12:28:50

8 out. I'm going to say that an FPGA placed in the 12:29:03

9 proper hardware configuration can have its own 12:29:15

10 hardware configuration changed by a process that 12:29:21

11 is sometimes called re-flashing it. 12:29:27

12 But let's just say that an FPGA placed in 12:29:35

13 the proper hardware configuration can have its own 12:29:39

14 hardware configuration changed. That is what is 12:29:44

15 referred to by the "P" in FPGA. 12:29:49

16 BY MR. BULLARD: 12:30:03

17 Q Okay. Let's talk about Wu Figure 2 for a 12:30:03

18 moment. 12:30:11

19 Figure 2 teaches that Wu's matrix switch 12:30:22

20 is coupled to Wu's host units 230, correct? 12:30:30

21 A Yes, that's correct. 12:30:37

22 Q And in Figure 2, Wu's matrix switch is 12:30:43

1	inside BTS240, correct?	12:30:48
2	A Yes.	12:30:56
3	Q Okay. So let's look at Figure 1 now,	12:30:58
4	please.	12:31:03
5	A Okay.	12:31:08
6	Q In Figure 1, Wu's matrix switch, that	12:31:09
7	would be inside the BTS, is co-located and	12:31:26
8	attached to the host units, correct?	12:31:31
9	MR. WIN: Objection to form.	12:31:46
10	THE WITNESS: Let me revisit Figure 1	12:32:17
11	versus Figure 2. I need to search through.	12:32:21
12	BY MR. BULLARD:	12:32:45
13	Q Sure.	12:32:45
14	A Actually, I'm clear, because if you look	12:34:51
15	at column -- if you look at page 3, at	12:35:00
16	paragraph 42, the second sentence, Observed	12:35:05
17	metrics are considered to be those having values	12:35:12
18	that are measured by BTS 240, matrix switch 250,	12:35:16
19	or other devices associated with the system.	12:35:22
20	That makes it sound like a BTS is separate	12:35:25
21	from a matrix switch. And in Figure 2, BTS has	12:35:28
22	just kind of has a squiggly line that points to	12:35:44

1	the whole thing.	12:35:46
2	But, yeah, I -- I don't know -- but go	12:35:47
3	ahead and frame your question with more detail, and	12:35:50
4	maybe we can make some progress.	12:35:53
5	Q Sure.	12:35:54
6	Well, let's start by, would you go to	12:35:55
7	paragraph 15, please?	12:35:57
8	A Right. So in this case, the BTS has a	12:36:16
9	matrix switch and host units. So that's even more	12:36:27
10	confusing.	12:36:33
11	Q So I -- I just want to go example by	12:36:34
12	example. Okay? So I just want to start with	12:36:37
13	Figure 2. Okay?	12:36:39
14	So in Figure 2, the matrix switch and the	12:36:46
15	host units are part of the same larger unit that is	12:36:52
16	the base transceiver station.	12:37:02
17	A Paragraph 15 indicates that that is the	12:37:14
18	designation used in Figure 2, which is different	12:37:19
19	than Figure 1.	12:37:25
20	Q And, again, just so we can get sort of a	12:37:36
21	clear transcript as we go example by example, I	12:37:39
22	just want to start with Figure 2. Okay?	12:37:41

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1	A Okay.	12:37:44
2	Q So looking just at Figure 2 and that	12:37:45
3	paragraph, the matrix switch and the host units	12:37:48
4	are part of the same larger unit that is the base	12:37:52
5	transceiver station?	12:37:55
6	A Again, that paragraph, 15, describing this	12:37:59
7	figure indicates that that is the designation that	12:38:02
8	applies to this figure.	12:38:06
9	Q And I'm just trying to understand, when	12:38:12
10	you say, "That is is the designation that applies	12:38:15
11	to the figure," you're saying that the designation	12:38:18
12	BTS is the larger unit that has within it the	12:38:22
13	matrix switch and the host units in Figure 2?	12:38:27
14	A Right. Paragraph 15 literally states that	12:38:31
15	the BTS includes the matrix switch 250 and the	12:38:34
16	host unit 230. But when I go back to Figure 1, it	12:38:38
17	looks like the host units are not in the BTS. It	12:38:43
18	looks like they are an appendage thereof. And	12:38:47
19	also from Figure 1, I'm not sure where the matrix	12:38:51
20	switch would be.	12:38:56
21	Q Okay. So, again, I just want to stay on	12:38:56
22	Figure 2 for a moment, okay?	12:38:59

1	Q Okay. And I want to ask you a question	13:51:21
2	about the combined functionality of the matrix	13:51:24
3	switch 250 and the host units 230 in Figure 2.	13:51:27
4	Okay?	13:51:34
5	Together, that functionality allows -- or,	13:51:36
6	strike that.	13:51:41
7	Together, that functionality is the	13:51:42
8	interface between the transceiver signal source 260	13:51:48
9	shown on the right side and the RTUs in Wu's	13:51:53
10	system, correct?	13:52:01
11	MR. WIN: Objection to form.	13:52:11
12	THE WITNESS: I would put it -- I would	13:52:12
13	put it differently. I would say together that	13:52:14
14	functionality is in between the transceiver signal	13:52:18
15	source 260 with an interface to 260 and to the	13:52:27
16	RTUs with an interface to the RTUs.	13:52:35
17	BY MR. BULLARD:	13:54:29
18	Q So let me make sure I understand that	13:54:29
19	right. So the -- again, I'm asking you about the	13:54:31
20	combined functionality of the matrix switch 250	13:54:37
21	and the host units 230 in Figure 2. Okay?	13:54:40
22	A Yes.	13:54:44

1	Q	So that combined functionality is between	13:54:46
2		the transceiver signal source 260 and the RTUs and	13:54:50
3		it has an interface to the transceiver signal	13:54:57
4		source 260 and an interface to the RTUs?	13:55:03
5	A	Yes. That's what I described.	13:55:10
6	Q	Okay. And now, can you turn your	13:55:16
7		attention, please, to in Wu, paragraph 34, please?	13:55:18
8		And do you see the last sentence in	13:55:46
9		paragraph 34 that reads, quote, For example, each	13:55:49
10		BTS240 can, itself, be transceiver 260 that is	13:55:55
11		receptive to different bands, or could be remotely	13:55:59
12		coupled to transceiver 260?	13:56:05
13	A	Let me read all of paragraph 34. There	13:56:09
14		are some things about paragraph 34 that are	13:59:26
15		confusing. I am working through them.	13:59:29
16		I don't understand what all he is talking	14:00:19
17		about in paragraph 34, but I'll answer your	14:00:22
18		questions to the best of my ability.	14:00:25
19	Q	Okay. And do you see that paragraph 34 is	14:00:28
20		referring to, In Figure 2?	14:00:32
21	A	Do you still just want to focus on the	14:00:37
22		last sentence?	14:00:39

1	Q I'm going to, yes. I just wanted to make	14:00:39
2	sure you saw that paragraph 34 begins with In	14:00:42
3	Figure 2.	14:00:46
4	A Yes. Yeah, it refers to Figure 2.	14:00:47
5	Q Okay. So in Figure 2, in the case where	14:00:52
6	the transceiver 260 is remotely coupled, what	14:00:58
7	would that mean as applied to Figure 2? Or	14:01:03
8	let -- strike that.	14:01:13
9	Let me ask just a simpler question.	14:01:14
10	What does it mean that the transceiver 260	14:01:16
11	can be remotely coupled?	14:01:19
12	MR. WIN: Objection to form.	14:01:21
13	THE WITNESS: I'm stuck on the first part	14:01:38
14	of that sentence. Each BTS 240 can itself be	14:01:39
15	transceiver 260? How can 240 and 260 be the same	14:01:46
16	thing?	14:01:53
17	Let me look at Figure 2 again.	14:01:57
18	Yeah, I don't understand the sentence.	14:02:46
19	How can BTS 240 be transceiver 260?	14:02:49
20	Q And -- and why don't you set aside that	14:02:53
21	particular example and focus on the example where	14:02:57
22	the multiband transceiver 260 is remotely coupled.	14:03:01

1	Okay? What does it mean for multiband transceiver	14:03:05
2	260 to be remotely coupled?	14:03:15
3	MR. WIN: Objection to form.	14:03:21
4	THE WITNESS: I don't know exactly what Wu	14:04:04
5	means by that. It -- other than in Figure 2, they	14:04:08
6	appear to be two different things with an	14:04:18
7	interface between them. I already described that	14:04:22
8	for one of your other questions.	14:04:28
9	So what does it mean for 260 to be	14:04:32
10	remotely coupled? I assume that means it's a	14:04:38
11	separate module from matrix switch 250 with some	14:04:44
12	interface between them. I don't know how remote Wu	14:04:51
13	intended remote to be.	14:05:02
14	Q So in the example where multiband	14:05:05
15	transceiver 260 is remotely coupled, the matrix	14:05:08
16	switch and -- or strike that.	14:05:14
17	So in the example where the multiband	14:05:21
18	transceiver 260 is remotely coupled, the matrix	14:05:23
19	switch would be separate from the multiband	14:05:26
20	transceiver 260, but coupled to it?	14:05:29
21	A That would be my interpretation, which is,	14:05:37
22	again, what's shown in Figure 2, we can't rewrite	14:05:42

1 Figure 2, it is what it is. It just means that 14:05:53
2 they're separate modules that are connected to 14:05:56
3 each other somehow. 14:05:59

4 Q Yeah. And can you continue looking at 14:06:01
5 Figure 2, please? And the matrix switch and the 14:06:05
6 host units work together to route the -- the 14:06:10
7 channels from the transceiver to the remote units, 14:06:19
8 correct? 14:06:26

9 A I would disagree as stated. Only the 14:06:26
10 matrix switch does the routing. 14:06:30

11 Q Let -- let me rephrase with a word 14:06:34
12 different than "routing." Okay? 14:06:37

13 A Okay. 14:06:41

14 Q The matrix switch and the host units work 14:06:41
15 together to distribute the channels from the 14:06:44
16 transceivers to the remote units, correct? 14:06:51

17 MR. WIN: Objection to form. 14:07:03

18 THE WITNESS: I disagree with that as 14:07:28
19 stated, as well. 14:07:31

20 As per -- so the earliest discussion in 14:07:34
21 this deposition, the channels themselves don't get 14:07:39
22 sent to the remote unit. 14:07:44

1	BY MR. BULLARD:	14:07:49
2	Q Okay. Let me make it even simpler to	14:07:49
3	start. Okay?	14:07:53
4	Wu's matrix switch and host units work	14:07:54
5	together, correct?	14:07:58
6	MR. WIN: Objection to form.	14:08:03
7	THE WITNESS: Even that's not clear from	14:08:05
8	Wu. Let me take a look at Wu in more detail.	14:08:07
9	BY MR. BULLARD:	14:08:41
10	Q And -- and I'm fine before I ask my	14:08:41
11	question if you want to look at more things in Wu,	14:08:44
12	but let me just direct your attention now to	14:08:49
13	paragraph 54, because I think it will help you	14:08:51
14	answer the question. Okay?	14:08:54
15	A Okay.	14:08:56
16	Q Do you see in paragraph 54, in the third	14:08:56
17	line down it refers to, quote, Carrier channel	14:08:59
18	distribution system where a matrix switch	14:09:06
19	operating as a band combiner/splitter routes	14:09:09
20	channels to one or more RTUs via a BTS' host	14:09:13
21	units.	14:09:22
22	Do you see that?	14:09:22

1	A	Yes. I see that sentence.	14:09:38
2	Q	Okay. And then would you look at	14:09:41
3		paragraph 49, too, please?	14:09:42
4		And do you see the first sentence in	14:09:48
5		paragraph 49 reads, Each host unit 230 can couple	14:09:50
6		to switch 250 to send or receive channel signals.	14:09:54
7	A	Hold on. I'm still back at paragraph 54.	14:10:00
8		That's a fairly general broad-stroke	14:10:08
9		description.	14:10:14
10		Okay. I'll go to paragraph 49 now.	14:10:22
11		Okay. Where in 49?	14:10:28
12	Q	Yeah, the first line reads, quote, Each	14:10:32
13		host unit 230 can couple to switch 250 to send or	14:10:34
14		receive channel signals.	14:10:39
15	A	Yes, that aligns with what I said earlier.	14:10:47
16		There is an interface between the host unit and	14:10:51
17		the matrix switch. I think your question had	14:10:55
18		something to do with working together. I don't	14:10:59
19		see that in -- I think it's quite possible they	14:11:04
20		could work in isolation.	14:11:09
21	Q	Well, do you see, again, going back to 54,	14:11:11
22		it explains that the matrix switch is routing the	14:11:16

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1 channels to one or more RTUs via the host units? 14:11:20

2 A Fifty-four. Okay. Let me read 54 again. 14:11:29

3 Yes. I agree that the matrix switch 14:12:06

4 routes -- the matrix switch routes channels. It 14:12:11

5 takes analog channels in, it outputs analog 14:12:23

6 channels. And I agree that the purpose of the 14:12:32

7 system is to re-create a representation of those 14:12:37

8 channels at the outputs of the RTUs. So to that 14:12:41

9 extent, I agree with -- and I agree that the host 14:12:47

10 units are involved. 14:12:51

11 So to that extent, I agree with this first 14:12:54

12 sentence in paragraph 54. I think to call the 14:13:00

13 whole thing a carrier channel distribution system 14:13:05

14 requires more than just what's seen in Figure 5. 14:13:09

15 But I'll -- I'll stop there. 14:13:17

16 BY MR. BULLARD: 14:13:19

17 Q Okay. And would you turn your attention 14:13:19

18 to paragraph 38, please. And if you look at the 14:13:20

19 last sentence at the bottom of the page that 14:13:31

20 begins, quote, In a preferred embodiment, matrix 14:13:33

21 switch 250 routes analog channels 270 to an 14:13:37

22 appropriate host unit 230 according to a policy 14:13:41

1	255 for distribution to remote regions or RTUs.	14:13:45
2	Host units further distribute the channels to RTUs	14:13:51
3	over links 215.	14:14:00
4	Do you see that?	14:14:02
5	A Let me read paragraph 38.	14:14:03
6	I have read that portion of paragraph 38.	14:14:52
7	Q So Wu is describing that the matrix switch	14:14:59
8	and the host units work together to distribute the	14:15:02
9	channels to the remote regions?	14:15:08
10	A I don't see where Wu says they work	14:15:16
11	together. They do work in sequence, one after the	14:15:19
12	other. And I also disagree with Wu at the top of	14:15:23
13	page 3 where it says, Host units 230 further	14:15:32
14	distribute the channels to RTUs over links 215.	14:15:36
15	That's a -- that's a very general statement,	14:15:42
16	taking some nontechnical liberty, because as we've	14:15:47
17	said before, the host unit 230 does not send	14:15:53
18	analog channels 270 to the remote units.	14:15:56
19	Q It sends a digital version of those analog	14:16:11
20	channels, right?	14:16:14
21	A It sends a partial digital representation.	14:16:16
22	That's my general understanding.	14:16:19

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1 Q And I want to go back to your point that 14:16:26

2 they, quote, Do work in sequence. Okay? 14:16:28

3 A Okay. 14:16:33

4 Q Wu's matrix switch and host units work in 14:16:35

5 sequence so that the channels are distributed to 14:16:42

6 the remote regions; is that right? 14:16:49

7 A I agree that they work in sequence. I 14:17:01

8 don't agree that the channels are distributed. 14:17:05

9 Because for the same reason that I mentioned 14:17:11

10 before, a couple times, analog channels are not 14:17:13

11 sent -- analog channels 270 are not sent as is 14:17:23

12 from the host to the remote unit. And in Figure 14:17:27

13 2 -- sorry, in Figure 3, analog channels 370 in 14:17:37

14 the remote unit are not exactly the same as analog 14:17:42

15 channels 270. Because a transformation has been 14:17:51

16 made. 14:17:56

17 Q Okay. Let's -- 14:17:58

18 A And then -- and then a reconstruction has 14:18:00

19 been attempted. 14:18:03

20 Q Okay. Let's try to break it down a little 14:18:09

21 bit. Okay? 14:18:11

22 A Okay. 14:18:12

1 Q Wu's matrix switch and host units work in 14:18:14
2 sequence with each other, right? 14:18:18

3 A I think that's a true statement. 14:18:23

4 Q And they work together to distribute a 14:18:28
5 representation of the channels to the remote 14:18:47
6 units, correct? 14:18:53

7 A Again, I don't think it's necessarily true 14:18:56
8 that they work together, and what they send, to 14:19:00
9 the extent you can say it's distributed, is a 14:19:07
10 partial representation of the analog channels 270. 14:19:11

11 Q How about, let's try this. Okay? 14:19:36

12 The combined operation of the matrix 14:19:40
13 switch and host units results in a representation 14:19:43
14 of the channels being distributed to the remote 14:19:47
15 units? 14:19:58

16 MR. WIN: Objection to form. 14:19:59

17 THE WITNESS: It's a partial 14:20:39
18 representation and the matrix switch and the host 14:20:40
19 units don't necessarily work together or need to 14:20:50
20 have very much knowledge of each other beyond the 14:20:55
21 interface between them. But, otherwise I agree 14:20:59
22 with your statement. 14:21:03

1	BY MR. BULLARD:	14:21:22
2	Q All right. Again, I'm just -- I'm trying	14:21:22
3	to get down to what you can agree to. Okay?	14:21:25
4	A I think that's it, but keep going.	14:21:28
5	Q Okay. So the matrix switch and host units	14:21:30
6	result in a type of representation of the channels	14:21:35
7	being distributed to the remote units?	14:21:38
8	A Well, I think partial representation is a	14:21:47
9	complete answer. There's no need to change	14:21:52
10	partial to type. That adds ambiguity.	14:21:57
11	Q What do the digitized channels in Wu	14:22:16
12	represent?	14:22:21
13	A They can represent converted analog	14:22:26
14	channels.	14:22:49
15	Q And can you turn your attention back to Wu	14:22:49
16	paragraph 34?	14:22:52
17	A Yes.	14:22:58
18	Q And I guess before I move on there, when	14:22:59
19	you say "converted," you're referring to converted	14:23:00
20	from analog to digital?	14:23:04
21	A That would be one way.	14:23:18
22	Q Okay. So I --	14:23:21

1	A Another -- another way would be converted	14:23:23
2	in frequency.	14:23:26
3	Q Okay.	14:23:27
4	A It would depend on -- actually, yes, it	14:23:28
5	depends on how Wu's system is implemented.	14:23:33
6	Q And -- and in the example where Wu's	14:23:39
7	system is implemented with an analog-to-digital	14:23:48
8	converter, when you say "converted," that would be	14:23:53
9	referring to converted from analog to digital?	14:23:58
10	A Wu's system -- Wu's system shows a down	14:24:03
11	converter, as well.	14:24:09
12	Q And even with a down converter, though, an	14:24:12
13	analog-to-digital converter still converts from	14:24:17
14	analog to digital, correct?	14:24:21
15	A Yes, that's correct. And Wu's embodiment	14:24:25
16	shows an analog conversion followed by an	14:24:31
17	analog-to-digital conversion. I think that's the	14:24:38
18	common -- I think that's how Wu envisioned his	14:24:43
19	system. That's why he drew the figures the way he	14:24:48
20	did.	14:24:52
21	Q Okay. Now, can we go to paragraph 34,	14:24:54
22	please?	14:24:57

1	A	Yes. Okay.	14:25:00
2	Q	Okay. And do you see the sentence in	14:25:16
3		approximately the middle of the paragraph that	14:25:20
4		reads, quote, It is contemplated that a BTS 240	14:25:22
5		can be coupled to more than one of multiband	14:25:27
6		transceiver 260?	14:25:31
7	A	I see that sentence.	14:25:33
8	Q	What does that mean?	14:25:36
9	A	I think that literally means exactly what	14:26:37
10		it says; a BTS 240 could be connected to two	14:26:57
11		multiband transceivers 260.	14:27:08
12	Q	Okay. And I want you to keep that	14:27:17
13		teaching in mind, and I'm going to ask you about a	14:27:20
14		second teaching. Okay?	14:27:23
15	A	Okay.	14:27:26
16	Q	Okay. Can you turn your attention to	14:28:27
17		paragraph 30, please?	14:28:29
18	A	Yes.	14:28:31
19	Q	Do you see, again, towards the middle, it	14:28:32
20		says, A BTS 140 is adapted to transmit and receive	14:28:39
21		digitized signals from carrier channels within one	14:28:47
22		or more bands through a multiband wireless	14:28:52

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1	transceiver?	14:28:55
2	A I see that sentence.	14:29:12
3	Q And now would you go to paragraph 11,	14:29:15
4	please?	14:29:18
5	A Let me read all of paragraph 30 in	14:29:24
6	context.	14:29:28
7	Q Sure.	14:29:29
8	A Okay. I have worked through paragraph 30.	14:30:54
9	Q Okay.	14:30:54
10	A Let me go to paragraph 11.	14:30:59
11	Q And when you're there, I'll focus you on a	14:31:03
12	particular sentence, and then, after that you're	14:31:06
13	free to look at what you'd like in paragraph 11.	14:31:08
14	A Okay.	14:31:13
15	Q Okay. Do you see in paragraph 11, about a	14:31:14
16	third of the way down, it reads, quote, One aspect	14:31:18
17	of the inventive subject matter includes a system	14:31:22
18	comprising one or more multiband transceivers	14:31:25
19	configured to receive one or more frequency bands?	14:31:28
20	A I see the sentence. I'm reading paragraph	14:31:40
21	11 prior to that. I won't read after.	14:32:20
22	Okay. I read that sentence, and I read	14:32:34

1 the preceding sentences in paragraph 11. 14:32:41

2 Q So Wu covers where the multiband 14:32:46

3 transceiver has one or more frequency bands, 14:32:49

4 correct? 14:32:53

5 A Yes. 14:32:56

6 Q And Wu also covers where there are one or 14:32:57

7 more multiband transceivers, correct? 14:33:01

8 A Wu discusses that in his summary 14:33:08

9 paragraphs, yes. 14:33:17

10 Q So Wu would cover, for example, where 14:33:19

11 there are three multiband transceivers, each of 14:33:23

12 which has one band? 14:33:30

13 MR. WIN: Objection to form. 14:33:45

14 THE WITNESS: I can't agree with that for 14:34:13

15 the reason that I don't know why it would be 14:34:16

16 called a multiband transceiver if it only had one 14:34:18

17 band. 14:34:21

18 BY MR. BULLARD: 14:34:26

19 Q Well, didn't we just review that Wu 14:34:26

20 expressly says the multiband transceiver can 14:34:29

21 support one or more bands? 14:34:32

22 A I agree that Wu wrote that in a 14:34:47

1 broad-stroke summary paragraph, but I think if Wu 14:34:51
2 had thought about it a little more, he would have 14:34:56
3 realized that multiband transceivers have more 14:34:59
4 than one band. 14:35:02

5 Q Let me try this a little bit of a 14:35:04
6 different way. Okay? 14:35:06

7 A Okay. 14:35:14

8 Q Wu would cover, for example, where there 14:35:15
9 are three transceivers, each of which has one 14:35:18
10 band. 14:35:26

11 A So you're saying transceivers without the 14:35:27
12 multiband part? 14:35:29

13 Q Correct. 14:35:31

14 MR. WIN: Objection to form. 14:35:45

15 THE WITNESS: Wu doesn't describe that. 14:37:14
16 But I -- as I sit here right now, I think it could 14:37:22
17 be within Wu's scope. 14:37:25

18 BY MR. BULLARD: 14:37:34

19 Q So will you look at Figure 2, please? 14:37:34

20 A Yes. 14:37:38

21 Q So within Wu's scope is that instead of 14:37:38
22 having one transceiver that provides three 14:37:46

1 bands -- 263A, 263B, and 263N -- there could be 14:37:51
2 three different transceivers, each of which 14:38:02
3 provides one of those bands? 14:38:05

4 A I'm searching Wu. I don't know if Wu 14:38:33
5 contemplates a transceiver that's not -- multiband 14:41:14
6 or not. Even the claims have multiband 14:41:20
7 transceiver. So I'm not sure. I think all of 14:41:25
8 Wu's transceivers may be multiband. 14:41:27

9 I'm looking at the real-time. If I really 14:41:52
10 said, Even the transceiver has multiband, I meant 14:41:55
11 even the claims state multiband. 14:41:59

12 Q Well, Doctor, can we go back to 14:42:09
13 paragraph 11? You don't disagree that Wu 14:42:13
14 expressly teaches that it can have, quote, one or 14:42:18
15 more multiband transceivers, and that the 14:42:22
16 transceivers can be, quote, configured to receive 14:42:25
17 one or more frequency bands, correct? 14:42:28

18 A Wu literally states that. But as I said 14:42:47
19 before, I think if Wu thought about this sentence 14:42:51
20 again, he might agree that a multiband transceiver 14:42:56
21 would have more than one frequency band. 14:43:06

22 Q So applying the literal teaching in 14:43:10

1 paragraph 11 of Wu, within Wu's scope is that, 14:43:15
2 instead of having one transceiver that provides 14:43:21
3 three bands, there could be three different 14:43:23
4 transceivers, each of which provides one of those 14:43:28
5 bands, such as 263A, 263B, or 263N in Figure 2, 14:43:31
6 correct? 14:43:40

7 A That's different than what I just stated. 14:43:41
8 I think in the context of Wu, you could have three 14:43:44
9 transceivers, each of which has two or more bands. 14:43:48

10 Q So in the context of Wu, instead of having 14:43:57
11 one transceiver with three bands, as shown in 14:44:06
12 Figure 2, you could have three transceivers where 14:44:10
13 each of those transceivers has one of the three 14:44:18
14 bands -- 263A, 263B, 263N -- and also had some, 14:44:25
15 you know, additional band, correct? 14:44:33

16 MR. WIN: Objection to form. 14:44:36

17 THE WITNESS: My answer is the same as I 14:44:41
18 have stated before: Wu does not teach how to do 14:44:43
19 that. But it is within the scope of his 14:44:46
20 broad-stroke description. 14:44:51

21 BY MR. BULLARD: 14:44:59

22 Q So within the scope of his description, as 14:44:59

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1 you said, Wu covers the example where you have 14:45:02
2 three transceivers, and each of those transceivers 14:45:09
3 has one of the three bands shown in Figure 2, and 14:45:16
4 in addition, each of the transceivers has some 14:45:23
5 further bands? 14:45:26

6 MR. WIN: Objection to form. 14:45:29

7 THE WITNESS: I would not agree that he 14:45:31
8 covers it. He mentions it. He doesn't describe 14:45:36
9 it. 14:45:41

10 BY MR. BULLARD: 14:45:44

11 Q Okay. Again, I'm -- let me see if I can 14:45:44
12 find agreement here by rephrasing the question. 14:45:46
13 Okay? 14:45:48

14 A Okay. 14:45:49

15 Q Within the scope of Wu's description is 14:45:53
16 the teaching -- or, strike that. 14:45:56

17 Within the scope of Wu's description, Wu's 14:46:01
18 matrix switch could couple to three transceivers, 14:46:24
19 where each of those three transceivers has one of 14:46:33
20 the three bands shown in Figure 2, and in addition, 14:46:36
21 each of the transceivers has some further bands. 14:46:39

22 MR. WIN: Objection to form. Asked and 14:46:43

1	answered.	14:46:47
2	THE WITNESS: I think the more accurate	14:46:48
3	statement is: Within the scope of Wu's summary.	14:46:50
4	Wu's summary describes a situation whereby you	14:46:59
5	could have such a configuration.	14:47:05
6	BY MR. BULLARD:	14:47:15
7	Q So within the scope of Wu's summary is a	14:47:16
8	configuration where Wu's matrix switch couples to	14:47:23
9	three transceivers, and each of those three	14:47:26
10	transceivers has one of the three bands shown in	14:47:29
11	Figure 2, and, in addition, each of them has some	14:47:33
12	further bands?	14:47:36
13	MR. WIN: Objection to form.	14:47:49
14	THE WITNESS: I think that the third	14:47:57
15	sentence of Wu's paragraph 11, the summary, where	14:48:01
16	it says, One aspect of the inventive subject	14:48:08
17	matter includes a system comprising one or more	14:48:11
18	multiband transceivers configured to -- but also	14:48:15
19	keep in mind, that says "receive." That's another	14:48:18
20	confusing thing about Wu. Receive what? The	14:48:23
21	uplink transmissions? They must be talking about	14:48:31
22	uplink here. But then what does that mean for	14:48:34

1	downlink? So there's still some ambiguity.	14:48:37
2	But I guess according to Wu, at least in	14:48:46
3	the uplink, you could have that.	14:48:48
4	BY MR. BULLARD:	14:48:55
5	Q Okay. Well --	14:48:55
6	A Because -- because Wu does say "to	14:48:56
7	receive."	14:49:02
8	Q Let's go back to paragraph 34, please.	14:49:45
9	A Okay.	14:49:50
10	Q Paragraph 34 expressly teaches that	14:49:56
11	BTS 240 can be coupled to more than one multiband	14:49:59
12	transceiver 260, correct?	14:50:10
13	A Yes.	14:50:11
14	Q And you agree that each of those multiband	14:50:12
15	transceivers could have two or more bands?	14:50:15
16	A Yes.	14:50:26
17	Q Okay. So within the scope of Wu's	14:50:27
18	teaching is a configuration where the matrix	14:50:30
19	switch receives a first band comprising channels 1	14:50:44
20	through 4 from a first multiband transceiver which	14:50:50
21	is responsible for that band and some other bands,	14:50:55
22	and the matrix switch receives a second band	14:50:59

1 comprising channels 5 through 9 from a second 14:51:02
2 multiband transceiver that's responsible for that 14:51:07
3 band and possibly some other bands. And the 14:51:10
4 matrix switch receives a third band comprising 14:51:13
5 channels 10 through 12 from a third transceiver 14:51:18
6 that's responsible for that band and possibly some 14:51:21
7 other bands? 14:51:24

8 MR. WIN: Objection to form. 14:51:27

9 THE WITNESS: That is, based on Wu's 14:51:34
10 literal wording, within Wu's scope at a high 14:51:40
11 level. I don't see any description of how to do 14:51:44
12 it. 14:51:48

13 BY MR. BULLARD: 14:51:50

14 Q Okay. And now let's talk about -- if we 14:51:52
15 go back -- let's go to the claim language. If you 14:52:01
16 could go to, please, Exhibit 7, which is the 14:52:06
17 '343 patent. 14:52:22

18 A Okay. 14:52:24

19 Q And go to claim number 1, please. 14:52:25

20 A Okay. 14:52:43

21 Q Do you see, in claim number 1, the third 14:52:44
22 element is, quote, A plurality of remote units 14:52:47

1 including at least a first remote unit and a 14:52:52

2 second remote unit? 14:52:55

3 A Yes. 14:52:59

4 Q Okay. There is no limitation in any claim 14:53:00

5 in the '343 patent about what the digital access 14:53:15

6 unit is configured to send to the second remote 14:53:22

7 unit or any other remote unit other than the first 14:53:26

8 remote unit, correct? 14:53:31

9 MR. WIN: Objection. 14:53:37

10 THE WITNESS: Give me some time here. 14:53:38

11 I'm writing down some numbers. I'll tell 14:56:36

12 you what they are when I'm done. 14:56:39

13 Well, without -- there are a lot of 14:58:43

14 claims. I'm only -- I'm not even halfway through 14:58:45

15 them. But I would say that claim 1 does not have a 14:58:47

16 limitation about what the digital access unit is 14:58:55

17 configured to send, but I can't say that about some 14:58:59

18 of the dependent claims. A number of the dependent 14:59:01

19 claims could be related to what the digital access 14:59:06

20 unit is configured to send -- 14:59:15

21 Q Okay. Let's -- 14:59:19

22 A -- to -- to remote units, other than the 14:59:20

1	first remote unit.	14:59:24
2	Q Let me just make this simpler by just	14:59:26
3	focusing on independent claim 1. Okay?	14:59:29
4	A Okay.	14:59:33
5	Q In independent claim 1, there is no	14:59:34
6	limitation about what the digital access unit is	14:59:37
7	configured to send to the second remote unit or	14:59:40
8	any other remote unit other than the first remote	14:59:44
9	unit, correct?	14:59:49
10	MR. WIN: Objection to form.	14:59:50
11	THE WITNESS: Independent claim 1, in	15:00:32
12	isolation, literally does not have a limitation	15:00:34
13	about what the digital access unit is configured	15:00:45
14	to send to a second remote unit.	15:00:49
15	BY MR. BULLARD:	15:01:06
16	Q Or any other remote unit, other than the	15:01:06
17	first remote unit, correct?	15:01:08
18	A Yes.	15:01:11
19	Q Okay. Can you turn to Exhibit 8, which is	15:01:13
20	the '499 patent, and look at claim number 1,	15:01:18
21	please?	15:01:26
22	(Petitioner's Exhibit 8, United States	

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1 Patent 10,334,499, Distributed Antenna System, was
2 marked and presented for purposes of
3 identification.)

4 THE WITNESS: Okay.

5 BY MR. BULLARD:

15:01:28

6 Q Same question: In independent claim 1 of
7 the '499 patent, there's no limitation about what
8 the baseband unit is configured to send to the
9 second remote unit, or any other remote unit,
10 other than the first remote unit, correct?

15:01:28

15:01:31

15:01:34

15:01:38

15:01:42

11 A Yes. Based on the literal language of
12 independent claim 1, I believe that's correct.

15:02:38

15:02:41

13 Q So in both the '499 patent and the
14 '343 patent, there is no limitation in independent
15 claim 1 about what the baseband unit or digital
16 access unit is configured to send to any remote
17 unit other than the first remote unit?

15:02:46

15:02:51

15:03:00

15:03:07

15:03:14

18 A Based on the literal language of the
19 claim, I believe that's true.

15:03:23

15:03:26

20 Q Okay. And now I want to ask you some
21 questions about the plain language, quote, digital
22 access unit and the plain language, quote,

15:03:30

15:03:32

15:03:38

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1	baseband unit. Okay?	15:03:42
2	A Okay.	15:03:44
3	Q There is no requirement in the plain	15:03:51
4	language, quote, digital access unit or baseband	15:03:53
5	unit, that requires the unit to have the ability	15:03:58
6	to send specific downlink signals to specific	15:03:59
7	remote units or assign specific radio resources to	15:04:04
8	specific remote units, correct?	15:04:08
9	A I don't agree with that statement as made.	15:04:22
10	I would need to read the '499 patent and the	15:04:28
11	'343 patent. I believe it describes that its	15:04:34
12	baseband unit and its DAU can do those things, but	15:04:40
13	I would want to review the whole patent again.	15:04:45
14	Q And you reviewed these patents in	15:04:51
15	preparation for your deposition and in preparation	15:04:53
16	for your declarations, correct?	15:04:56
17	A That's correct. But I did not review them	15:04:57
18	with any specific questions, such as this one, in	15:05:00
19	mind.	15:05:07
20	Q Well, let's do this. If you contend that	15:05:08
21	there is a special definition of either digital	15:05:10
22	access unit or baseband unit in the '343 or	15:05:17

1 '499 patent that defined those terms to require 15:05:21
2 the capability to target communications to 15:05:26
3 specific remote units or selectively allocate 15:05:33
4 carrier channels to specific remote units or send 15:05:38
5 specific downlink signals to specific remote 15:05:41
6 units, will you tell me the line and column number 15:05:44
7 where that special definition is found? 15:05:46

8 A Sure. I will look through and take a 15:05:51
9 look. 15:06:56

10 Okay. I'm going to stop, because I'm 15:13:40
11 midway through column 7. I already have some 15:13:44
12 examples, and there's probably a lot more examples 15:13:47
13 to be found. 15:13:49

14 Now, in my opinion -- 15:13:50

15 Q And just before you start, I just want to 15:13:52
16 be clear, what I'm asking for is where you think 15:13:55
17 the patentee acts as -- acted as a lexicographer 15:13:57
18 and actually defined the term. 15:14:01

19 A Well, I have a few parts to the answer. 15:18:04
20 Number one, of course, claim construction is an 15:18:10
21 issue of law, but I believe that a person reading 15:18:13
22 the summary of the invention, column 2 at line 25, 15:18:15

1 where it says, A plurality of digital access 15:18:19
2 units, each operating to control the packet 15:18:24
3 traffic of an associated plurality of digital 15:18:26
4 remote units, that I believe a person of skill in 15:18:34
5 the art reading that paragraph would understand 15:18:38
6 that a digital access unit is at least a device 15:18:42
7 that operates to control the packet traffic of an 15:18:46
8 associated plurality of digital remote units. And 15:18:49
9 that is described further throughout the patent, 15:18:54
10 in some cases, outside of specific embodiments. 15:18:58

11 And part two is column 6 at line 3 says, 15:19:03
12 The functionality of the DAU 105 and DRUs 125A to 15:19:15
13 125K respectively are explained in detail in 15:19:21
14 another provisional application, which is hereby 15:19:26
15 incorporated by reference in its entirety. 15:19:29

16 So can we take a look at that provisional? 15:19:33
17 Can you -- is that in the packet so I can look 15:19:37
18 through that to see how it describes a DAU? 15:19:39

19 Q Well -- well, let's do this. 15:19:43

20 Did you offer an opinion anywhere in your 15:19:48
21 declarations that the patentee acted as a 15:19:51
22 lexicographer and redefined "digital access unit" 15:19:54

1	or "baseband unit" to have a special meaning?	15:20:00
2	A As I recall, I did not offer such an	15:20:07
3	opinion.	15:20:12
4	Q Okay. Let's go to Exhibit 12 for a	15:20:15
5	moment, please.	15:20:18
6	THE WITNESS: Are you -- we've been going	15:20:23
7	a while. Are you at a pause? Are you at a	15:20:24
8	transition point?	15:20:27
9	MR. BULLARD: Sure. We can take a pause	15:20:29
10	right now.	15:20:30
11	THE WITNESS: All right. It's 3:20. Do	15:20:33
12	you want to come back in 15 minutes, 3:35 --	15:20:35
13	MR. BULLARD: And --	15:20:35
14	THE WITNESS: -- Pacific?	15:20:45
15	MR. BULLARD: And, Mr. Videographer, you	15:20:45
16	can take us off the record.	15:20:47
17	THE VIDEOGRAPHER: Going off the record at	15:20:49
18	6:20 p.m.	15:20:51
19	(A brief recess was taken.)	15:20:55
20	THE VIDEOGRAPHER: We are back on record	15:34:12
21	at 3:34 p.m.	15:34:21
22	BY MR. BULLARD:	15:34:24

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1 Q "DAS" stands for distributed antenna 15:34:25

2 system, correct? 15:34:29

3 A Yes. 15:34:30

4 (Petitioner's Exhibit 12, OBSAI Reference 15:34:30

5 Point 3 Specification, CommScope Ex. 1008, was 15:34:30

6 marked and presented for purposes of 15:34:30

7 identification.) 15:34:30

8 BY MR. BULLARD: 15:34:31

9 Q Would you go to Exhibit 12, please? 15:34:31

10 A Okay. 15:34:41

11 Q Exhibit 12 is a document -- or strike 15:34:42

12 that. 15:34:46

13 Exhibit 12 is a specification document for 15:34:46

14 the OBSAI standard, correct? 15:34:51

15 A Yes. 15:34:55

16 Q Okay. And would you turn your attention 15:34:57

17 to PDF page 26, please? 15:34:58

18 And do you see that this page has a 15:35:34

19 heading, 4.2 data link layer, 4.2.1, message 15:35:38

20 overview? 15:35:44

21 A Yes, I see that. 15:35:45

22 Q And do you see that there is a Figure 11 15:35:46

1	showing the message format, and it shows that the	15:35:50
2	message format has an address field, a type field,	15:35:54
3	a T-stamp field, and then a payload field?	15:35:59
4	A I do say that -- I do see that in	15:36:06
5	Figure 11.	15:36:13
6	Q Is that a packet?	15:36:14
7	MR. WIN: Objection to form.	15:36:29
8	THE WITNESS: Let me look at my	15:37:03
9	declarations first.	15:37:06
10	I'm back reading the standard, Exhibit 12,	15:41:45
11	at the beginning of Section 4.	15:41:49
12	I think, according to this standard in the	15:44:16
13	context of this section, it's a message, not a	15:44:19
14	packet.	15:44:24
15	Q And applying the ordinary meaning of	15:44:25
16	"packet," is this message an example of a packet?	15:44:28
17	A I've seen packet construed different ways.	15:44:41
18	I think we would have to agree on a definition of	15:44:54
19	"packet" before I could answer that.	15:44:58
20	Again, the -- this specification refers to	15:45:01
21	packets, but it calls this thing at Figure 11 a	15:45:05
22	message in the data link layer. I think a packet	15:45:11

1 is something above that in the -- in a higher 15:45:17
2 layer, is what it refers to as a packet. I'd have 15:45:23
3 to read the whole standard. 15:45:26

4 Q What do you think is the ordinary meaning 15:45:32
5 of "packet"? 15:45:41

6 A It does depend on context. And within the 15:46:05
7 context of this document, this document describes 15:46:11
8 packets, so I would want to understand how it 15:46:16
9 differentiates packets from messages. 15:46:19

10 Yeah, I'd have to review the whole thing. 15:46:32

11 Q What do you understand the purpose of the 15:46:34
12 "Address" field in the OBSAI message to be? 15:46:36

13 A I'm reading starting at page 42. It 15:47:56
14 describes the address field. I think that's the 15:48:05
15 address field in Figure 11 that you showed me. 15:48:18
16 Let me see. No, Figure 11 is the data link 15:48:27
17 layer, 4.2. It's 13 bits long. Yeah, then it 15:48:54
18 gets into the transport layer. I don't know. The 15:49:37
19 document doesn't describe exactly what it's used 15:49:42
20 for. I -- I'd have to analyze the whole spec and 15:49:44
21 assess it in context. It may be 15:49:48
22 implementation-dependent. This standard is a 15:49:52

1	general tool for people to use.	15:49:59
2	Q Would you turn your attention to PDF page	15:50:01
3	24, please?	15:50:06
4	A Data link -- yeah, I'll get there. Okay.	15:50:12
5	Q Do you see, then, looking at the protocol	15:50:29
6	stack here that, one data link layer message	15:50:33
7	corresponds to one block from the transport layer	15:50:36
8	that has the address in the transport layer	15:50:41
9	payload. Do you see that?	15:50:47
10	A It does appear to depict that.	15:50:48
11	Q And so do you see, then, when you go back	15:50:51
12	to PDF page 26, and it shows the address field	15:50:54
13	there, and then you scroll to the next page, it	15:50:58
14	explains that the address is 13 bits in length in	15:51:03
15	Table 2?	15:51:08
16	A Okay.	15:51:21
17	Q And do you see that that 13 bits	15:51:22
18	corresponds to the address field on PDF page 42,	15:51:25
19	which is also 13 bits?	15:51:45
20	A Yes. Based on what you showed me, the	15:52:24
21	address field of page 42 does appear to be the	15:52:29
22	address field on PDF page 26. That's part of the	15:52:37

1 message in the data link layer. 15:53:10

2 Q Is an address used for routing a message 15:53:18
3 to its intended destination an example of 15:53:22
4 destination information? 15:53:25

5 A Paragraph 4 -- or page 42 says, The 15:55:09
6 address controls the routing of each message. In 15:55:09
7 downlink direction, i.e., from baseband to RF, all 15:55:09
8 message transfers are point-to-point, and the 15:55:09
9 address -- the address identifies the target node. 15:55:09

10 To whatever -- to whatever the target node 15:55:30
11 is, that does appear to be a destination if that 15:55:33
12 field is used. Yeah, it goes on and it further 15:55:43
13 discusses, on page 42, Node and sub-node address 15:56:09
14 fields are used in a hierarchical addressing 15:56:14
15 scheme where the node field is used to uniquely 15:56:19
16 address a specific bus node, i.e., a baseband 15:56:19
17 design block, and the sub-node address is used to 15:56:19
18 identify the specific module within the design 15:56:19
19 block -- so this is talking about design blocks. 15:56:40

20 So this is a very low-level thing. But I 15:56:47
21 guess if these messages are going to be passed 15:56:57
22 between design blocks, then it's possible to use 15:57:01

1 this address field to address a design block that 15:57:05
2 the message goes to, or a specific module within a 15:57:13
3 design block that a message goes to. 15:57:19

4 It also says, But the node address does 15:57:30
5 not necessarily stand for the address of a 15:57:33
6 physical device, such as an application-specific 15:57:37
7 integrated circuit. 15:57:42

8 Yeah, this -- yeah, this is into the very 15:57:46
9 deep details of a hardware architecture. I'll stop 15:57:55
10 there. 15:58:00

11 BY MR. BULLARD: 15:58:01

12 Q So let me just re-ask the question. 15:58:01

13 So is an address used for routing a 15:58:04
14 message to a target node an example of destination 15:58:06
15 information? 15:58:16

16 A In this context, I would say for a target 15:58:22
17 node that is a design block or a module within a 15:58:31
18 design block, yeah, that could be considered a 15:58:38
19 destination block or a design block. 15:58:43

20 Q Okay. And can you go back to page 26, 15:58:47
21 please? Do you see where it says -- or strike 15:58:54
22 that. 15:59:20

1	So, here, OBSAI is teaching to include an	15:59:21
2	address with the payload, correct?	15:59:29
3	A In this message, there is an address field	15:59:47
4	along with some payload field that's used for	15:59:53
5	internode communication. That is what this	16:00:00
6	picture depicts.	16:00:09
7	Q Okay. So for this message format, an	16:00:12
8	OBSAI is teaching to include an address with	16:00:16
9	payload, correct?	16:00:20
10	A For this particular message format in	16:00:26
11	Figure 11, I think, yes, the picture is clear.	16:00:30
12	Q Now, do you see underneath 4.2.1, where it	16:00:41
13	says, A fixed message format -- in reference to	16:00:47
14	the message format we've been discussing -- is	16:00:50
15	used for all data that is transferred over, dot	16:00:53
16	dot dot.	16:01:16
17	Do you see that?	16:01:17
18	A I see what that sentence says.	16:01:53
19	Q In the example where Wu's host units	16:02:07
20	transfer the digitized channels over an OBSAI link	16:02:20
21	to Wu's remote units, the digitized channels would	16:02:28
22	be transferred in the fixed message format	16:02:35

1 described in OBSAI we've been discussing, right? 16:02:38

2 A As I sit here right now, I can't say yes 16:02:44

3 or no to that. I would need to do a lot more 16:02:49

4 analysis of this whole transmission scheme in 16:02:51

5 light of Wu. They're talking about nodes within a 16:02:57

6 design block. So I would need to read this whole 16:03:03

7 standard and think it through more. 16:03:09

8 Wu makes no detailed discussion of how to 16:03:12

9 implement OBSAI. He just says, Use OBSAI. I can't 16:03:18

10 answer any questions on what that would look like 16:03:23

11 unless I worked through the design in detail. 16:03:25

12 Q In Wu, the digitized channels that are 16:03:32

13 transferred between Wu's host units and Wu's 16:03:38

14 remote units are examples of data as used in the 16:03:46

15 OBSAI standard, correct? 16:03:49

16 A Again, I would need to assess a design 16:03:51

17 completely before I could answer any questions on 16:03:54

18 how Wu would use or integrate OBSAI. 16:03:58

19 Q Well, Wu's digitized channels that are 16:04:06

20 sent from the host unit to the remote units are 16:04:11

21 data, correct? 16:04:17

22 A Let's open Wu. I'm going to search Wu for 16:04:19

1	OBSAI.	16:04:28
2	Yeah, Wu has no description of how to use	16:04:51
3	OBSAI. Wu at paragraph 31 says, In a preferred	16:04:54
4	embodiment, the communication links 115 between	16:04:58
5	BTS 140 and remote units 110 employ one or more	16:05:01
6	standards to exchange digitized signals. Suitable	16:05:07
7	standards include those based on, dot dot dot,	16:05:13
8	OBSAI. That's all Wu says. I can't answer any	16:05:17
9	questions about their integration without doing a	16:05:22
10	further analysis of OBSAI and Wu and thinking about	16:05:27
11	how I would design such a system.	16:05:32
12	Q Are you disputing that, in the case where	16:05:41
13	Wu uses OBSAI, the digitized channels are	16:05:43
14	exchanged using OBSAI?	16:05:51
15	MR. WIN: Objection to form.	16:06:01
16	THE WITNESS: I am not disputing your	16:06:03
17	question as asked, but I don't fully understand	16:06:05
18	how one would use OBSAI as I sit here right now,	16:06:11
19	without further analysis.	16:06:18
20	OBSAI has a number of components. I	16:06:24
21	consider it a toolbox. It's a 116-page spec, and	16:06:30
22	that's -- may be only one of the OBSAI specs. So	16:06:42

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1 I would need to study the OBSAI specification 16:06:47
2 documents in more detail to give you an answer 16:06:50
3 about how Wu may, in fact, integrate OBSAI into 16:06:52
4 its design. 16:06:59

5 BY MR. BULLARD: 16:07:05

6 Q So you don't actually know how the OBSAI 16:07:06
7 standard applies to Wu? 16:07:13

8 MR. WIN: Objection to form. 16:07:22

9 THE WITNESS: My second '499 declaration 16:07:35
10 gives my opinion. 16:07:40

11 BY MR. BULLARD: 16:07:47

12 Q And you've never given an opinion that in 16:07:47
13 the case where Wu uses OBSAI, it wouldn't use the 16:07:50
14 fixed message format that's used for all data 16:07:56
15 that's transferred in OBSAI, correct? 16:07:59

16 A I did not give an opinion in that regard 16:08:08
17 as stated. 16:08:14

18 Q And you've never given an opinion that in 16:08:15
19 a case where Wu uses OBSAI, it wouldn't use the 16:08:20
20 address field of the fixed message format that's 16:08:26
21 used for all data that is transferred in OBSAI, 16:08:30
22 correct? 16:08:34

1 MR. WIN: Objection to form. 16:08:40

2 THE WITNESS: In my second declaration, at 16:08:42
3 paragraph 74, I state, Wu does not disclose any 16:08:47
4 specific implementation of the cited features of 16:08:52
5 the OBSAI standard, nor does Wu disclose how the 16:08:55
6 OBSAI's point-to-point interface can be used to 16:08:59
7 selectively send digital representations of radio 16:09:03
8 resources within destination information for 16:09:09
9 specific RTUs to which the data is sent as 16:09:12
10 required by the challenge claims. 16:09:16

11 I mention OBSAI elsewhere in my 16:09:18
12 declaration, but I think that is -- that is one key 16:09:20
13 summary point, if not the key summary point; so, 16:09:26
14 therefore, the answer to your question -- 16:09:30

15 Q Would you like me to re-ask my question? 16:10:22

16 A No, I'm still going -- I think my 16:10:24
17 paragraph 74 is relevant, as well. We would need 16:10:47
18 to go back and look through the various petitions 16:10:55
19 and documentation, because I say that the 16:11:00
20 particular page of the OBSAI standard, petitioner 16:11:04
21 cites to, states that the bus interface is a 16:11:08
22 high-capacity point-to-point...for uplink and 16:11:12

1 downlink telecom user, data transfer related 16:11:17

2 control. 16:11:22

3 So yeah, I don't believe that petitioner 16:11:27

4 or petition discussed what we're discussing now. 16:11:37

5 Do you want to take me to some place that a 16:11:44

6 petitioner document does? 16:11:48

7 Q Let's stay on your testimony for a moment. 16:11:53

8 In the paragraphs you identified, there's 16:11:57

9 no mention of the fixed message format in OBSAI or 16:11:59

10 the address field within the fixed message format, 16:12:05

11 correct? 16:12:12

12 A That's correct, in the paragraphs of my 16:13:44

13 declaration that I have identified, I simply say 16:13:47

14 Wu does not disclose any specific implementation 16:13:50

15 of the cited features of the OBSAI standard, nor 16:13:53

16 does Wu disclose how the OBSAIs point-to-point 16:13:57

17 interface can be used... 16:14:00

18 Q Okay. So you've never given an opinion 16:14:06

19 that in the case where Wu does use OBSAI, it 16:14:09

20 wouldn't use the address field of the fixed 16:14:13

21 message format that's used for all data that's 16:14:16

22 transferred in OBSAI, correct? 16:14:20

1	MR. WIN: Objection to form.	16:14:44
2	THE WITNESS: My declarations do not touch	16:16:13
3	on that particular address field as I read them,	16:16:18
4	specifically.	16:16:31
5	BY MR. BULLARD:	16:16:32
6	Q Okay. Would you turn your attention to	16:16:32
7	Exhibit 16, please?	16:16:34
8	(Petitioner's Exhibit 16, United States	
9	Patent Application Publication, Hettstedt, et al.,	
10	Method and System for Wireless Cellular Indoor	
11	Communications, CommScope Ex. 1006, was marked and	
12	presented for purposes of identification.)	
13	THE WITNESS: Yes.	16:16:44
14	BY MR. BULLARD:	16:16:45
15	Q Okay. And you recognize this as the	16:16:45
16	Hettstedt reference, correct?	16:16:49
17	A Yes.	16:16:50
18	Q And you reviewed this reference in	16:16:51
19	preparation for your declarations as well as your	16:16:53
20	deposition, correct?	16:16:55
21	A Yes.	16:16:58
22	Q Okay. And would you turn your attention	16:17:01

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1	to Figure 5, please?	16:17:04
2	A Okay.	16:17:18
3	Q And do you see in Figure 5 that it shows	16:17:24
4	the CMU receiving carriers from the base station?	16:17:32
5	A Yes.	16:17:38
6	Q Okay. And then if you go to paragraph 53,	16:17:39
7	please?	16:17:53
8	A Yes.	16:18:06
9	Q And do you see in paragraph 53 where it	16:18:06
10	says, The base station Bs provides the M carriers	16:18:09
11	CA1 to CAM to the cell management unit, CMU?	16:18:13
12	A Yes.	16:18:19
13	Q And then do you see that the next	16:18:20
14	paragraph, paragraph 54, now talks about another	16:18:22
15	figure, Figure 6?	16:18:25
16	A Yes.	16:18:33
17	Q And do you see about halfway down, it now	16:18:33
18	describes another example where it says, Each base	16:18:35
19	station can provide four carriers?	16:18:38
20	A Yes, I see that.	16:18:49
21	Q Okay. In Hettstedt, those carriers are	16:18:56
22	the radio resources, correct?	16:19:16

1 MR. WIN: Objection to form. 16:19:19

2 THE WITNESS: Unlike Wu, the connection 16:21:40

3 between the BS1 and the next step, the module that 16:21:45

4 does the switching, is not analog in Hettstedt. 16:21:56

5 So the connections between BS1 and the CMU 16:22:06

6 are not radio resources. They are already some 16:22:10

7 conversion of radio resources. 16:22:16

8 BY MR. BULLARD: 16:22:40

9 Q You agree that the CMU receives carriers, 16:22:40

10 correct? 16:22:46

11 A The CMU receives a representation of 16:22:50

12 carriers, it would appear that interface is not 16:22:57

13 fully defined. 16:23:07

14 Q And those carriers are the resource that 16:23:15

15 Hettstedt CMU distributes to the radio heads, 16:23:19

16 correct? 16:23:27

17 A You mean that -- the representations of 16:23:33

18 carriers are what Hettstedt's CMU distributes to 16:23:37

19 the radio heads? I would agree with that. 16:23:42

20 Q And let's go to your -- your first 16:23:47

21 declaration in the '499 patent. 16:23:51

22 A Okay. 16:23:59

1	Q Which is Exhibit 6, please.	16:23:59
2	(Petitioner's Exhibit 6, Declaration of	16:23:59
3	Douglas A. Chrissan, Ph.D., Exhibit 2001, was	16:23:59
4	marked and presented for purposes of	16:23:59
5	identification.)	16:23:59
6	THE WITNESS: Okay.	16:24:04
7	BY MR. BULLARD:	16:24:05
8	Q And please turn your attention to	16:24:05
9	paragraph 56.	16:24:06
10	A Okay.	16:24:28
11	Q And do you see that here you said, quote,	16:24:29
12	Hettstedt and Wu involve sending user payload data	16:24:33
13	packaged or modulated with RF carrier channels to	16:24:37
14	the remote radio units.	16:24:42
15	Do you see that?	16:24:45
16	A Yes, I see what I wrote here in	16:25:00
17	paragraph 56.	16:25:04
18	Q Okay.	16:25:05
19	A Both Hettstedt and Wu involve sending user	16:25:05
20	payload data packaged or modulated with RF carrier	16:25:10
21	signals. It is transform -- those RF carrier	16:25:15
22	channels are transformed yet again before they're	16:25:21

1 sent to the remote radio units. That's a 16:25:25
2 clarification that we have discussed throughout 16:25:29
3 this deposition. 16:25:32

4 Q So in Hettstedt -- strike that. 16:25:36

5 Hettstedt involves sending user payload 16:25:38
6 data packaged or modulated with RF carrier 16:25:42
7 channels to the remote radio units, correct? 16:25:49
8 That's what you said here. 16:25:50

9 A Yeah. That statement is literally 16:25:51
10 correct. How it's done requires some 16:25:55
11 clarification. The user -- I mean, I would even 16:25:57
12 argue -- let's see. Yeah, the user data is 16:26:05
13 packaged in some way, shape, or form. And then it 16:26:14
14 is modulated with RF carrier channels in some way, 16:26:20
15 shape, or form. It's converted back to the format 16:26:31
16 that goes across to the remote radio heads in some 16:26:37
17 form. I'm done. 16:26:41

18 Q Okay. So in Hettstedt, the CMU is sending 16:26:57
19 to the remote radio heads payload data packaged or 16:27:07
20 modulated with RF carrier channels, correct? 16:27:11

21 MR. WIN: Objection -- 16:27:32

22 THE WITNESS: I'll answer that in two 16:27:35

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1	ways. I mean, the payload data is packaged	16:27:36
2	somehow. In Wu, it is modulated or converted into	16:27:42
3	RF carrier channels, which are then the analog	16:27:54
4	channels 270 of Wu, which then go through further	16:28:00
5	processing, and it's the further processing that	16:28:04
6	gets sent to the remote radio head. We've	16:28:08
7	discussed Wu in detail.	16:28:12
8	In Hettstedt, I think the user data may be	16:28:14
9	packaged, but it may not be modulated all the way	16:28:26
10	to an RF carrier channel. It depends on the	16:28:29
11	details of Hettstedt's system. It might be. It	16:28:34
12	might not be. And the reason I say that is	16:28:40
13	because -- let me read Hettstedt in more detail.	16:28:46
14	BY MR. BULLARD:	16:28:49
15	Q Well, I just want to stay on -- well,	16:28:49
16	first, move to strike that part of your answer.	16:28:51
17	But I want to stay on what you actually	16:28:54
18	said in your declaration. Okay?	16:28:56
19	And you signed this declaration, and you	16:28:59
20	said, I declare under penalty of perjury that the	16:29:02
21	foregoing is true and correct.	16:29:05
22	You said that, right?	16:29:07

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1	A	Yeah, we're at Exhibit 6, right?	16:29:23
2	Q	That's right.	16:29:27
3	A	Okay. Yes, my understanding is that	16:29:29
4		between my first declaration and my second	16:29:34
5		declaration, the PTAB came out with further	16:29:37
6		guidance on what a radio resource is, and since	16:29:43
7		claim construction is an issue of law, once the	16:29:51
8		PTAB came out with claim construction guidance on	16:29:56
9		what a radio resource is, my discussion is	16:30:02
10		different between my first and my second	16:30:08
11		declaration. And the difference is that the PTAB	16:30:12
12		made it clear that an RF carrier channel is a	16:30:21
13		radio resource independent of any payload data	16:30:26
14		that it may or may not include. And I think	16:30:29
15		that's incorporated into my second declaration.	16:30:33
16	Q	And in your second declaration, you	16:30:41
17		dispute the claim language, a digital	16:30:44
18		representation, but you don't dispute that	16:30:46
19		Hettstedt discloses radio resources, correct?	16:30:49
20	A	I don't dispute that Wu discloses radio	16:31:01
21		resources, but I don't see in Hettstedt where	16:31:11
22		Hettstedt requires an RF carrier. Let me check.	16:31:13

1 Q So -- so, again, Doctor, I'm focusing on 16:31:19
2 your declaration. Okay? 16:31:22

3 So you do not provide an opinion in your 16:31:25
4 second declaration, disputing that Wu discloses 16:31:27
5 radio resources, correct? 16:31:33

6 A I believe that is correct. 16:31:41

7 Q And you don't -- 16:31:50

8 A And just -- 16:31:51

9 Q Or, sorry, strike that. 16:31:52

10 A No, let me -- Hettstedt does 16:31:53
11 disclose -- in Hettstedt's paragraph 6 -- the 16:31:59
12 radio -- Hettstedt's paragraph 6, sentence two, 16:32:01
13 says, The radiofrequency RF signals from the base 16:32:08
14 station. 16:32:13

15 So Hettstedt talks about RF signals from a 16:32:14
16 base station. Those, at least, qualify as radio 16:32:20
17 resources, as well. 16:32:28

18 Q Okay. So you don't provide an opinion in 16:32:29
19 your second declaration, disputing that Hettstedt 16:32:32
20 does disclose radio resources, correct? 16:32:35

21 MR. WIN: Objection to form. 16:32:39

22 THE WITNESS: Yeah, I will have -- I'm 16:35:12

1	looking at my second declaration on page 42, at	16:35:14
2	the end of paragraph 86, where it says, Hettstedt	16:35:18
3	does not disclose radio resources. That should	16:35:23
4	read, Hettstedt does not teach sending digital	16:35:31
5	representations of a first second set of radio	16:35:38
6	resources. Based on paragraph 6 of Hettstedt,	16:35:49
7	Hettstedt does mention, at least, radio frequency	16:35:54
8	signals from the base station, and those would be	16:36:01
9	radio resources just like the RF signals from the	16:36:04
10	base stations in Wu are radio resources.	16:36:12
11	BY MR. BULLARD:	16:36:21
12	Q All right. So just to confirm, you are	16:36:21
13	not providing an opinion disputing that Hettstedt	16:36:23
14	does disclose radio resources, correct?	16:36:26
15	A Hettstedt mentions RF signals in	16:36:35
16	paragraph 6, and those are a form of radio	16:36:41
17	resources. To that extent, Hettstedt discloses	16:36:44
18	radio resources. I'm not making any opinions on	16:36:51
19	anything else.	16:36:55
20	Q Okay. So, again, just to be clear, in	16:36:58
21	your second declaration, you're disputing whether	16:37:00
22	Hettstedt discloses, quote, Digital	16:37:04

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1	representations, end quote, of radio resources,	16:37:07
2	but not whether or not Hettstedt discloses radio	16:37:10
3	resources by themselves?	16:37:14
4	MR. WIN: Objection to form. Asked and	16:37:17
5	answered.	16:37:21
6	THE WITNESS: That is what I'm disputing	16:37:26
7	in my second declaration, whether Hettstedt	16:37:28
8	discloses digital representations of radio	16:37:31
9	resources.	16:37:36
10	BY MR. BULLARD:	16:37:37
11	Q Okay. And let's --	16:37:37
12	A But I also -- I mean, I would also dispute	16:37:40
13	that Hettstedt sends -- Hettstedt does not send	16:37:44
14	radio resources to the radio heads. I don't want	16:37:49
15	to be mischaracterized here. Hettstedt talks	16:38:00
16	about radio resources all the way back at the base	16:38:04
17	station. Hettstedt does not teach sending radio	16:38:07
18	resources to a radio head.	16:38:11
19	MR. BULLARD: Okay. Move to strike.	16:38:14
20	BY MR. BULLARD:	16:38:18
21	Q Let's go look at the '499 patent, which is	16:38:18
22	Exhibit 8, please.	16:38:24

1	A	Yeah, we've -- we've been going more than	16:38:30
2		an hour, so you want to finish out this line and	16:38:32
3		take another break?	16:38:36
4	Q	Sure.	16:38:38
5		Okay. So do you see in Exhibit 8, which	16:38:39
6		is the '499 patent, in claim 1, the element that	16:38:44
7		reads, quote, Where in the baseband unit is	16:38:52
8		configured to receive a plurality of radio	16:38:57
9		resources from the first signal source and the	16:39:00
10		second signal source.	16:39:02
11	A	You're at '499 claim 1?	16:39:25
12	Q	Correct.	16:39:32
13	A	Where the baseband unit is configured to	16:39:33
14		receive a plurality of radio resources from the	16:39:36
15		first signal source and the second signal source.	16:39:41
16		Okay.	16:39:44
17	Q	And in your second declaration, you do not	16:39:51
18		dispute the petitioner showing that Hettstedt	16:39:55
19		teaches that element, correct?	16:40:00
20	A	I'll incorporate my section 17 of my	16:43:38
21		second declaration into my answer. That said, I	16:43:46
22		do not address that claim element, specifically.	16:43:54

1	Q So nowhere in your second declaration do	16:44:03
2	you dispute the petitioner is showing that	16:44:05
3	Hettstedt teaches that element, correct?	16:44:07
4	A I do not see in my declaration that I	16:44:35
5	dispute that element.	16:44:38
6	Q Okay. And I'm going to put a related	16:44:41
7	exhibit, 18, in the chat, please.	16:44:43
8	(Petitioner's Exhibit 18, Petition For	16:44:51
9	Inter Partes Review of U.S. Pat. No. 10,334,499,	16:44:51
10	was marked and presented for purposes of	16:44:51
11	identification.)	16:44:51
12	BY MR. BULLARD:	16:44:51
13	Q Which should be the '499 petition, if you	16:44:59
14	could open that up, please.	16:45:02
15	A I'm getting there. Okay. I have it open.	16:45:37
16	BY MR. BULLARD:	16:46:01
17	Q Yeah, could you go to page 65, please?	16:46:01
18	A Okay.	16:46:13
19	Q And you see that on page 65 is the	16:46:13
20	petitioner showing in the petition of why Wu	16:46:16
21	teaches the element we've been talking about,	16:46:19
22	wherein the baseband unit is configured to receive	16:46:22

1	a plurality of radio resources...	16:46:26
2	a Okay.	16:46:32
3	Q And do you see the first line says,	16:46:33
4	Hettstedt CMU receives a plurality of, quote,	16:46:35
5	carriers from each of the base stations which	16:46:39
6	satisfies this limitation?	16:46:41
7	A I see it said that. I don't agree with	16:46:46
8	it.	16:46:49
9	Q I -- I didn't ask you if you didn't agree	16:46:49
10	with it. Okay?	16:46:51
11	MR. BULLARD: So I'll move to strike.	16:46:53
12	BY MR. BULLARD:	16:46:53
13	Q I'm just asking you, do you see that line,	16:46:54
14	Hettstedt CMU receives a plurality of carriers	16:46:56
15	from each of the base stations which satisfies	16:46:59
16	this limitation?	16:47:01
17	A Yes, I see that.	16:47:03
18	Q And if you keep reading down, do you see	16:47:04
19	the line that says, Hettstedt's carriers are,	16:47:09
20	quote, radio resources. They're the resources	16:47:13
21	used by Hettstedt's radio heads.	16:47:16
22	Do you see that line?	16:47:21

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1	A	I see that line.	16:47:40
2	Q	Okay. And if you keep reading down, now	16:47:42
3		onto the next page, at the end of the second line	16:47:44
4		do you see where it says, quote, Each carrier	16:47:47
5		corresponds to a, quote, frequency allocation?	16:47:50
6		Do you see that?	16:47:55
7	A	I see that line.	16:48:01
8	Q	Okay. Now, in your second declaration,	16:48:02
9		you did not provide an opinion disputing this	16:48:06
10		showing I just pointed to you where petitioner	16:48:13
11		showed that Hettstedt CMU receives a plurality of	16:48:17
12		carriers from each of the base stations which	16:48:24
13		satisfies this limitations...and the other quotes	16:48:26
14		I recited?	16:48:31
15	MR. WIN:	Objection to form.	16:48:33
16	BY MR. BULLARD:		16:48:37
17	Q	Well, strike that. Let me ask just a	16:48:37
18		shorter question.	16:48:39
19		In your second declaration, you did not	16:48:40
20		provide an opinion disputing this showing I just	16:48:42
21		walked you through, or the element of wherein the	16:48:45
22		baseband unit is configured to receive a plurality	16:48:49

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1 of radio resources dot dot dot? 16:48:52

2 A I do not see in my declaration that I 16:51:36

3 disputed that, specifically. 16:51:39

4 Q And you didn't provide any opinion in your 16:51:41

5 second declaration disputing that Hettstedt's CMU 16:51:45

6 sends those carriers in digital form in digital 16:51:53

7 packets over a digital connection to Hettstedt's 16:51:57

8 remote radio heads, correct? 16:52:02

9 A I do describe my opinion of what happens 16:52:14

10 in Hettstedt, including at section 15. And I 16:54:03

11 believe that it does conflict with your question. 16:54:09

12 So to that extent, I stand by what I wrote, at 16:54:13

13 least in section 15 of my declaration. 16:54:18

14 Q And if there's a particular paragraph 16:54:23

15 where you think you disputed that Hettstedt's CMU 16:54:25

16 sends those carriers in digital form in digital 16:54:30

17 packets over a digital connection to Hettstedt's 16:54:34

18 remote radio heads, please identify what that 16:54:38

19 paragraph is. 16:54:41

20 And I understand that you dispute whether 16:54:54

21 or not Hettstedt discloses the claimed digital 16:54:56

22 representation. I'm trying to understand, with my 16:54:59

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1 question, whether or not you dispute that technical 16:55:01
 2 description of Hettstedt, that Hettstedt's CMU 16:55:04
 3 sends those carriers in digital form in digital 16:55:08
 4 packets over digital connections to remote radio 16:55:12
 5 heads. 16:55:15

6 MR. WIN: Objection to form. 16:55:17

7 THE WITNESS: Let's take that in pieces. 16:57:33

8 So the first piece is that whatever Hettstedt is 16:57:47
 9 calling carrier CA1 to CAM in Figure 5, which I 16:57:54
 10 dispute as a radio resource at that 16:58:05
 11 point -- whatever -- 16:58:10

12 MR. BULLARD: Okay. Move to strike that 16:58:10
 13 part as nonresponsive. 16:58:12

14 THE WITNESS: Whatever -- whatever 16:58:14
 15 Hettstedt is calling a carrier into its CMU in 16:58:15
 16 Figure 5 does get sent in digital form. The 16:58:19
 17 digital packets that it uses carry destination 16:58:32
 18 information for a particular carrier, not a 16:58:39
 19 particular device. 16:58:44

20 With those qualifications, I otherwise 16:58:47
 21 agree with your statement. 16:58:50

22 BY MR. BULLARD: 16:58:54

1	Q Okay. So whatever Hettstedt is calling a	16:58:54
2	carrier that comes into its CMU, the CMU does	16:58:56
3	send, in digital form in digital packets over a	16:59:07
4	digital connection to the remote radio heads?	16:59:10
5	A That is what appear -- that -- that is	16:59:16
6	what Hettstedt appears to do with digital packets	16:59:19
7	addressed to particular carriers.	16:59:26
8	Q Okay.	16:59:30
9	MR. BULLARD: Let's take a break. Thank	16:59:32
10	you for humoring me going longer there.	16:59:33
11	THE VIDEOGRAPHER: Going off the record at	16:59:36
12	4:59 p.m.	16:59:37
13	(A brief recess was taken.)	17:07:29
14	THE VIDEOGRAPHER: Going back on record at	17:14:27
15	5:14 p.m.	17:14:42
16	BY MR. BULLARD:	17:14:45
17	Q Would you turn your attention, please, to	17:14:45
18	Exhibit 4, which is your second declaration in the	17:14:47
19	'499 IPR, and turn your attention in particular to	17:14:51
20	paragraph 42 on PDF page 18?	17:14:56
21	A Yes, I'm there.	17:15:08
22	Q All right. Do you see the sentence that	17:15:09

1	begins, quote, To effectuate load balancing at the	17:15:11
2	headend of the DAS, i.e., the CMU dot dot dot?	17:15:16
3	A Yes.	17:15:24
4	Q You agree here that Hettstedt does	17:15:25
5	disclose a DAS?	17:15:30
6	MR. WIN: Objection to form.	17:15:32
7	THE WITNESS: I do at least imply that	17:16:21
8	Hettstedt's system is a DAS or a part of a DAS.	17:16:24
9	BY MR. BULLARD:	17:16:36
10	Q And you've had the opportunity to review	17:16:36
11	Hettstedt multiple times, correct?	17:16:38
12	A Yes, I have.	17:16:41
13	Q Okay. And Hettstedt's system is a form of	17:16:43
14	a DAS, correct?	17:16:46
15	A I agree that Hettstedt's system is at	17:17:11
16	least a form of a DAS.	17:17:15
17	Q Okay. Would you turn your attention now	17:17:17
18	to paragraph 85, please. Which is on PDF page 42.	17:17:19
19	A Okay.	17:17:42
20	Q And if you go to the next page, do you see	17:17:43
21	there's the bottom of paragraph 85 continued onto	17:17:46
22	that page?	17:17:50

1 A Yes, I see that. 17:17:59

2 Q Okay. And do you see where it says, 17:18:01

3 quote, In other words, the Hettstedt radio heads 17:18:04

4 do not receive "digital representations" of radio 17:18:07

5 resources; they simply relay the received data 17:18:12

6 from the C -- CMU over the antennas? 17:18:15

7 A That statement is somewhat of a 17:18:27

8 generalization, but, yes, it is in my report -- my 17:18:29

9 declaration. 17:18:34

10 Q And you're acknowledging here that the 17:18:35

11 radio heads have antennas? 17:18:38

12 A This does not -- let me read this 17:20:10

13 paragraph. This does not state conclusively that 17:20:14

14 the antennas are in the radio heads. There are 17:20:35

15 antennas somewhere that transmit and receive RF 17:20:42

16 signals. 17:20:50

17 Q So you acknowledge, though, that the 17:21:21

18 carriers that are sent to Hettstedt's radio heads 17:21:26

19 are for transmission over antennas? 17:21:30

20 MR. WIN: Objection to form. 17:21:35

21 THE WITNESS: After they are processed and 17:21:43

22 transformed in some way. 17:21:47

1	BY MR. BULLARD:	17:21:52
2	Q So you acknowledge that the carriers that	17:21:52
3	are sent to Hettstedt's radio heads are for	17:21:55
4	transmission over antennas after they're processed	17:21:58
5	and transformed appropriately?	17:22:02
6	A What Hettstedt calls a carrier are for	17:22:06
7	transmission over antennas after they are	17:22:22
8	processed and transformed appropriately. I	17:22:23
9	believe that's clear in Hettstedt.	17:22:27
10	Q And carriers -- well, strike that.	17:22:32
11	The antenna would be the structure that	17:22:38
12	provides the RF air interface to the users,	17:22:59
13	correct?	17:23:06
14	A There could be any number of antennas in	17:23:10
15	any kind of configuration. As we discussed	17:23:14
16	earlier, the device that converts electrical to RF	17:23:23
17	signals is called an antenna, or an antenna array.	17:23:29
18	Q Okay. Would you turn your attention to	17:23:47
19	Hettstedt, which is Exhibit 16, paragraph 50,	17:23:51
20	please?	17:23:56
21	A Yes.	17:24:14
22	Q And do you see the opening line in	17:24:15

1 paragraph 50 says, The remote radio heads RH1 to 17:24:17
2 RH5 are RF air interfaces to users. And then it 17:24:23
3 continues farther down, The remote radio heads are 17:24:28
4 equipped to transmit four carriers over the full 17:24:32
5 RF bandwidth. 17:24:36

6 Do you see that? 17:24:38

7 A Yes. 17:24:39

8 Q So the use of RF here and the RF air 17:24:40
9 interface and the RF bandwidth tells a POSITA that 17:24:44
10 the radio heads do, in fact, have antennas to 17:24:49
11 transmit the carriers, correct? 17:24:55

12 A I would agree given the statement the 17:25:00
13 remote radio heads RH1 to RH5 are RF air 17:25:06
14 interfaces, that at least in some way, shape, or 17:25:12
15 form, RH1 through RH5 encompass some number of 17:25:17
16 antennas in some configuration. 17:25:31

17 Q Have you ever gone to the FCC's website? 17:25:35

18 A I have gone to the FCC's website. 17:25:42

19 Q And for what purposes have you gone to the 17:25:47
20 FCC's website? 17:25:50

21 A I don't recall specifically why. I just 17:25:55
22 know that I have. I would have to think about 17:26:00

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1 that some more. 17:26:03

2 Q Have you ever gone to the FCC's equipment 17:26:12
3 authorization search function? 17:26:18

4 A I don't recall that I have. 17:26:33

5 Q What is your understanding of the type of 17:26:43
6 information a company needs to submit to the FCC 17:26:46
7 in order to gain approval to transmit and license 17:26:52
8 bands? 17:26:58

9 A I think that that is dependent on the 17:27:05
10 specific equipment type and the specific bands, 17:27:29
11 but I believe it would include at least test 17:27:36
12 reports. 17:27:43

13 Q If a person of ordinary skill wants to 17:27:46
14 obtain information about a commercial product from 17:27:49
15 the FCC, what's your understanding of how he would 17:28:02
16 do it? 17:28:06

17 A I have not looked into that, specifically, 17:28:12
18 at least in recent memory. 17:28:22

19 Q Now, in your declaration, you dispute 17:28:27
20 whether or not the prior art teaches digital 17:28:30
21 representations of radio resources, correct? 17:28:33

22 A Yes, I do. 17:28:38

1 Q Are you contending that the patentee acted 17:28:42
2 as his own lexicographer and articulated a special 17:28:45
3 definition for the term "digital representation" 17:28:49
4 or "digital representation of a first and second 17:28:55
5 set of radio resources"? 17:28:58

6 A Allow me to refer to my declaration. 17:29:12

7 So my interpretation of a digital 17:30:08
8 representation of a set of radio resources is 17:30:11
9 described in paragraphs 44 and 45, among other 17:30:16
10 things. 17:30:22

11 So, first, a digital representation of any 17:30:25
12 signal has a plain and ordinary meaning, and it is 17:30:33
13 as I stated. It's digital information defining or 17:30:38
14 describing a signal such that that signal can be 17:30:58
15 reconstructed from the digital information. 17:31:04

16 That's plain and ordinary meaning. If you 17:31:09
17 have a signal, a digital representation of that 17:31:11
18 signal is going to be information in digital form 17:31:13
19 required to represent or reconstruct that signal. 17:31:18

20 And I also state in my declaration that 17:31:22
21 the Board agreed with that in the 01430 IPR. So 17:31:25
22 based on that, I do not state that the patentee 17:31:34

1 redefined the term. I state that it's plain and 17:31:40
2 ordinary meaning, and it was supported by the PTAB. 17:31:46

3 Q So your opinion is that the plain and 17:31:53
4 ordinary meaning governs the term "digital 17:31:55
5 representation" and the longer phrase, "digital 17:31:59
6 representation of a first and second set of radio 17:32:02
7 resources"? Not any special definition, 17:32:05
8 lexicography, or disavowal, correct? 17:32:10

9 A I give the same answer. My opinion is 17:33:18
10 that the term "digital representation" is both 17:33:21
11 plain and ordinary meaning and informed in light 17:33:26
12 of the PTAB. I do not see that it is -- I do not 17:33:29
13 see that I mentioned any lexicography about the 17:33:39
14 patentee or on the part of the patentee. 17:33:46

15 MR. BULLARD: Somebody's audio is going -- 17:34:03
16 let's just -- oh, it's gone. 17:34:05

17 BY MR. BULLARD: 17:34:06

18 Q So you are relying on the plain and 17:34:06
19 ordinary meaning, correct? 17:34:09

20 A I believe that -- yes, I believe that is 17:34:10
21 the plain and ordinary meaning. I am also relying 17:34:12
22 on that PTAB decision. 17:34:16

1	Q Okay. Would you turn your attention to	17:34:18
2	the '343 patent, please? And would you turn your	17:34:30
3	attention --	17:34:52
4	A I have it up.	17:34:56
5	Q And would you go to column 4, line 65,	17:34:57
6	please? You see here, it's describing that RF	17:35:09
7	input signals are received at the DAU?	17:35:26
8	A Yes.	17:35:54
9	Q Now, if you continue onto the next page,	17:35:55
10	column 5, do you see the line that says, The RF	17:35:58
11	input signals are separately down-converted,	17:36:03
12	digitized, and converted to baseband (using a	17:36:08
13	Digital Down-Converter) by the DAU.	17:36:12
14	A Yeah, let me review the passage in	17:36:19
15	context.	17:36:22
16	Yeah, the whole passage starting at	17:37:02
17	column 4, line 29, is relevant. But I will focus	17:37:05
18	on specifically what you point me to.	17:37:09
19	Q Great.	17:37:14
20	So, again, are you looking --	17:37:15
21	A The RF -- yeah, I'm looking at the top of	17:37:18
22	column 5. The RF input signals are separately	17:37:21

1 down-converted, digitized, and converted to 17:37:26
2 baseband (using a Digital Down-Converter) by the 17:37:30
3 DAU. 17:37:35

4 I see that. 17:37:36

5 Q Is that an example of the DAU creating a 17:37:37
6 digital representation of a radio resource? 17:37:40

7 MR. WIN: Objection to form. 17:37:45

8 THE WITNESS: Partially, yes. It has to 17:37:58
9 maintain all of the control information and signal 17:38:03
10 processing information that it used in that 17:38:09
11 process, because those are part of the digital 17:38:16
12 representation required for the remote unit to 17:38:22
13 reconstruct the signal. 17:38:27

14 BY MR. BULLARD: 17:38:35

15 Q Is the output of that process described in 17:38:36
16 column 5, lines 1 through 2, A digital 17:38:38
17 representation of a radio resource? 17:38:42

18 A Just the output of the digital 17:38:51
19 down-converter alone is a part of the digital 17:39:08
20 representation of radio resources. The digital 17:39:23
21 representation also includes, as I stated, the 17:39:28
22 signal processing information used in the process. 17:39:33

1 In the '343 patent, that is all communicated to 17:39:44
2 the radio units, as discussed in the written 17:39:48
3 description. 17:39:52

4 Q Nothing in the '343 patent or the 17:39:57
5 '499 patent excludes from the scope of the claim 17:40:01
6 systems that employ down-conversion, correct? 17:40:06

7 MR. WIN: Objection to form. 17:40:11

8 THE WITNESS: I would generally agree with 17:41:03
9 that statement. 17:41:06

10 BY MR. BULLARD: 17:41:08

11 Q Can you look at the Wu reference, 17:41:09
12 paragraph 11, please? It's Exhibit 2. 17:41:12

13 A Yes, I see it. 17:41:28

14 Q And do you see, the last sentence in 17:41:31
15 paragraph 11 reads, quote, The routing policy can 17:41:33
16 be reconfigured as desired or can operate 17:41:37
17 according to a priori-defined rules, dot dot dot. 17:41:41

18 a Yes, I see that in Wu. 17:41:50

19 Q And you don't dispute that Wu teaches the 17:42:05
20 routing policy can be reconfigured as desired, 17:42:12
21 correct? 17:42:14

22 A Within Wu's switch, Wu states that. I 17:42:15

1	don't dispute it.	17:42:22
2	Q And Wu doesn't ever impose a requirement	17:42:23
3	for how quickly its system achieves the	17:42:28
4	reconfiguration, correct?	17:42:34
5	A I would dispute that. Let me look through	17:42:38
6	Wu.	17:42:43
7	Q Are you able to answer the question?	17:51:23
8	A I'm getting there.	17:51:36
9	All right. I'm getting to the end of my	17:54:06
10	search.	17:54:10
11	Based on Wu taken as a whole, I believe	17:55:53
12	that Wu encompasses a fast reconfiguration within	17:56:00
13	its matrix switch. However, I don't see a literal	17:56:10
14	requirement in Wu for its reconfiguration time.	17:56:15
15	Q So you do not see any expressed	17:56:26
16	requirement in Wu about how quickly or how slowly	17:56:29
17	the reconfiguration is implemented?	17:56:32
18	A I do not see an expressed requirement in	17:57:36
19	Wu.	17:57:44
20	Q A conventional base station modulates data	17:57:45
21	onto carriers by manipulating the phase,	17:57:51
22	amplitude, and frequency characteristics of the	17:57:55

1	carrier in response to the data as defined by the	17:57:59
2	chosen air interface protocol for the system --	17:58:03
3	e.g., GSM, CDMA, LTE, et cetera -- correct?	17:58:07
4	MR. WIN: Objection to form.	17:58:15
5	THE WITNESS: To go back on your last	17:58:24
6	question, just one more thing.	17:58:27
7	Okay. Let me move on to your next	17:58:50
8	question. I'm reading it.	17:58:53
9	I would say that's generally correct if	18:00:37
10	you change "and" to "and/or."	18:00:41
11	BY MR. BULLARD:	18:00:48
12	Q So a conventional base station modulates	18:00:48
13	data onto carriers by manipulating the phase,	18:00:51
14	amplitude, and/or frequency characteristics of the	18:00:55
15	carrier in response to the data as defined by the	18:00:58
16	chosen air interface protocol for the system --	18:01:02
17	e.g. GSM, CDMA, LTE, et cetera -- correct?	18:01:04
18	A That's a generally --	18:01:13
19	MR. BULLARD: Did you freeze?	18:01:56
20	THE COURT REPORTER: He got disconnected.	18:01:59
21	MR. BULLARD: Can we go off the record?	18:02:16
22	THE VIDEOGRAPHER: Going off the record at	18:02:19

1	6:01 p.m.	18:02:26
2	(Off-the-record discussion.)	18:02:57
3	THE VIDEOGRAPHER: Going back on record at	18:02:57
4	6:02 p.m.	18:03:00
5	BY MR. BULLARD:	18:03:09
6	Q So, Doctor, please go ahead and --	18:03:10
7	A Yeah, that's a --	18:03:10
8	Q -- provide your answer.	18:03:14
9	A That's a generally correct statement.	18:03:14
10	Q In Hettstedt, the CMU does not de-modulate	18:03:18
11	the carriers it receives from the base station,	18:03:44
12	correct?	18:03:45
13	THE COURT REPORTER: Could you repeat your	18:03:36
14	question for me?	18:03:36
15	MR. WIN: Objection to form.	18:03:36
16	THE COURT REPORTER: Could you please	18:03:36
17	repeat your question for me?	18:03:36
18	MR. BULLARD: Yeah.	18:03:37
19	BY MR. BULLARD:	18:03:37
20	Q In Hettstedt, the CMU does not de-modulate	18:03:37
21	the carriers it receives from the base station,	18:03:42
22	correct?	18:03:45

1	A	Whatever Hettstedt is calling a carrier	18:04:33
2		that it gets from the base station to the CMU, it	18:04:36
3		could de-modulate it, but in the context of	18:04:40
4		Hettstedt, I don't think that's a requirement.	18:04:46
5	Q	And in the context of Hettstedt, the CMU	18:04:51
6		places the same carriers it receives from the base	18:04:56
7		station in digital form into the digital packets	18:05:00
8		that it then sends over the digital connection to	18:05:04
9		the remote units, correct?	18:05:06
10	A	That is one way that it could operate.	18:05:20
11	Q	And you didn't testify that there was a	18:05:29
12		different way it operates, correct?	18:05:31
13	A	That's correct. My description of	18:06:22
14		Hettstedt is at paragraphs 41, 42 of my second	18:06:26
15		declaration. And that's the overview. And then	18:06:35
16		my rebuttal of the various points of Hettstedt	18:06:38
17		start in section 15 and thereafter.	18:06:41
18	Q	When a signal is down-converted to	18:06:46
19		baseband, the resulting baseband signal preserves	18:06:51
20		the amplitude and phase modulation characteristics	18:06:57
21		of the original signal before down-conversion,	18:07:02
22		correct?	18:07:07

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1 MR. WIN: Objection to form. 18:07:07

2 THE WITNESS: Well, that depends on how 18:07:14

3 the down-conversion is done. It can generally 18:07:16

4 preserve those things. 18:07:22

5 BY MR. BULLARD: 18:07:36

6 Q If the down-conversion is functioning 18:07:36

7 properly, it will generally preserve the amplitude 18:07:39

8 and phase modulation characteristics of the 18:07:44

9 original signal before down-conversion, correct? 18:07:47

10 MR. WIN: Objection to form. 18:07:52

11 THE WITNESS: I would generally agree with 18:07:54

12 that. 18:07:56

13 BY MR. BULLARD: 18:08:03

14 Q The software settings in the example 18:08:03

15 embodiment in the '343 patent and '499 patent at 18:08:09

16 the remote units are not themselves literally 18:08:13

17 radio resources, correct? 18:08:19

18 MR. WIN: Objection to form. 18:08:21

19 THE WITNESS: According to guidance on the 18:09:08

20 claim construction of radio resources, I would 18:09:25

21 agree with that statement. 18:09:28

22 BY MR. BULLARD: 18:09:35

1 Q Is there any requirement in the claims of 18:09:36
2 the '343 patent about how quickly any 18:09:43
3 reconfiguration or change must occur? 18:10:04

4 A Yeah, the claims use the words "dynamic" 18:16:30
5 and "automatic" within the context of 18:16:35
6 reconfiguring. And if you read through the 18:16:38
7 specification regarding what dynamic and automatic 18:16:45
8 means, I believe that that does place a 18:16:48
9 requirement on the claims of the '343 patent that 18:16:53
10 use those words. If any of the claims do not use 18:17:00
11 the word dynamic or automatic, especially the word 18:17:05
12 auto -- especially the word dynamic, then there's 18:17:08
13 no requirement. 18:17:12

14 But any of the claims that talk about a 18:17:12
15 dynamic reconfiguration in the context of this 18:17:15
16 patent in its written description means that has to 18:17:18
17 happen very quickly. 18:17:21

18 Q Dynamic is in contrast to manual, correct? 18:17:31

19 A No. Automatic is in contrast to manual, I 18:17:35
20 think. Let me search the patent again. 18:17:41

21 Q Well, I -- I just have one final question. 18:17:44

22 Is there some citation you can provide me 18:17:47

1	in the patent where it teaches that the	18:17:51
2	reconfiguration, the change, or the adjustment must	18:17:56
3	occur quickly?	18:18:00
4	That's my last question.	18:18:04
5	MR. WIN: Objection to form.	18:18:05
6	THE WITNESS: I do see a place where	18:20:52
7	dynamic is contrasted with manual. I saw other	18:20:54
8	places where automatic is contrasted with manual.	18:20:58
9	Let's see. A person of skill looking	18:21:07
10	at -- or, I should say, reading the places in the	18:22:13
11	'343 patent where it talks about dynamic	18:22:15
12	configuration understands that that reconfiguration	18:22:18
13	is meant to happen on a very short time basis.	18:22:21
14	For example, column 3 at line 10, Further,	18:22:26
15	the present invention provides a high degree of	18:22:33
16	dynamic flexibility, supports dynamic	18:22:36
17	rearrangements, and provides a low life cycle cost,	18:22:37
18	dot dot dot.	18:22:41
19	I have two more. 7 at 20, Digital Up	18:22:49
20	Converters located within the DRU can be	18:23:03
21	dynamically reconfigured as a result of commands	18:23:05
22	from the NOC to transport from the DAU input to any	18:23:08

1	specific DRU output.	18:23:11
2	So I believe that a dynamic	18:23:15
3	reconfiguration of a digital up converter is going	18:23:22
4	to happen very quickly, and that's also something	18:23:26
5	that's not taught in the prior art.	18:23:28
6	And then, at 10, 20 -- around 10, 20,	18:23:35
7	again, it talks about digital up converters being	18:23:41
8	dynamically software-configured. That, again, is	18:23:45
9	going to happen very quickly, as opposed to any	18:23:48
10	slower, more manual method.	18:23:54
11	So, yeah, I believe that a person of skill	18:23:57
12	reading the '343 would understand that its claim	18:24:00
13	scope is for the reconfiguration to happen quickly	18:24:05
14	for those claims that use the word dynamic.	18:24:10
15	Q Okay. I think we can leave it there.	18:24:14
16	MR. BULLARD: Cliff, do you have anything?	18:24:20
17	MR. WIN: No, I have no redirect.	18:24:23
18	THE VIDEOGRAPHER: All right. This marks	18:24:25
19	the end of the deposition of Dr. Douglas Chrissan.	18:24:26
20	We're going off the record a 6:24 p.m.	18:27:44
21	(The deposition was concluded at	18:27:44
22	6:24 p.m.)	

* * *

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1 I, DOUGLAS A. CHRISSAN, do hereby certify
2 that the foregoing is a true and accurate
3 transcription of my testimony.
4
5

6 _____
7 Dated _____
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22

I further certify that the deposition of DOUGLAS A. CHRISSAN, PH.D. was taken virtually on Wednesday, August 23, 2023, commencing at 9:05 a.m. to 6:24 p.m.

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

7 IN WITNESS WHEREOF, I have hereunto set my
8 hand this 24th day of August, 2023.

9
10   APRIL L. CRITES
11 Notary Public
State of Ohio
My Comm. Expires
October 3, 2027

12 APRIL L. CRITES, RPR, RMR, CRR

13 NOTARY PUBLIC, STATE OF OHIO

14 My commission expires 10/3/2027
15
16
17
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21
22

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