

In the Matter of:

MediaTek Inc. et al vs

Nippon Telegraph and Telephone Corporation(IPR2020-01404)

James T. Geier

July 29, 2021

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1 UNITED STATES PATENT AND TRADEMARK OFFICE

2 BEFORE THE PATENT TRIAL AND APPEAL BOARD

3 CASE NO. IPR2020-01404

4 PATENT NO. 7,280,551

5 *****

6
7
8 MEDIATEK INC. and MEDIATEK USA INC.

9 Petitioner

10 vs.

11 NIPPON TELEGRAPH AND TELEPHONE
12 CORPORATION,

13 Patent Owner

14 *****

15
16 DEPOSITION OF: JAMES T. GEIER

17 (Take Remotely)

18 2468 Locust Hill Boulevard

19 Beavercreek, Ohio

20 July 29, 2021 9:12 a.m.

21
22 Darlene M. Coppola

23 Registered Merit Reporter

24 Certified Realtime Reporter

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EXAMINATION

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JAMES T. GEIER	
Direct By MR. SPEED	7

EXHIBITS

**None marked

(Deposition commencing at 9:13 a.m.)

THE VIDEOGRAPHER: Good morning.

We are going on the record. It is Thursday,
July 29, 2021, and the time is approximately
9:13 a.m. Eastern Standard Time.

This is the video-recorded deposition
of Mr. James T. Geier, in the matter of
MediaTek Inc. and MediaTek USA Inc., the
petitioner, versus Nippon Telegraph and
Telephone Company, the patent owner, filed in
the U.S. Patent and Trademark Office before
the Patent Trial and Appeal Board, Case No.
IPR 2020-01404, Patent No. 7280551.

This witness is appearing -- this
deposition is being taken remotely, and the
witness is appearing remotely from this
address, 2468 Locust Hill Boulevard,
Beavercreek, Ohio.

My name is Luc Bernard Val, with
O'Brien & Levine Court Reporting Solutions,
and I am the legal video specialist on
assignment today. I will be recording the
proceedings remotely. The court reporter

1 today is Diane -- Darlene Coppola -- sorry --
2 Darlene Coppola with O'Brien & Levine Court
3 Reporting Solutions, and she will be reporting
4 this proceeding remotely and is a notary
5 public in the Commonwealth of Massachusetts.
6 Neither of us is present -- physically present
7 with the witness.

8 Now will counsel please state their
9 appearances and whom they represent for the
10 record, and acknowledge that in lieu of an
11 oath administered in person, the witness will
12 verbally declare his testimony in this matter
13 under the pains and penalties of perjury and
14 also that counsel consent to this arrangement
15 and waive any objections to this manner of
16 proceeding, after which our court reporter
17 will swear in the witness and we may begin.

18 MR. SPEED: Nathan Speed from
19 Wolf Greenfield & Sacks on behalf of the
20 petitioners. We consent to the remote
21 deposition and waive any objections based on
22 the remote status of the deposition.

23 MR. ATKINSON: Brian Atkinson
24 for patent owner Nippon Telegraph and

1 Telephone Corporation, and we also consent to
2 the remote deposition and waive any objections
3 based on remote deposition.

4 THE VIDEOGRAPHER: Anyone else
5 present who needs to be announced?

6 MR. ATKINSON: No.

7 MR. SPEED: No.

8 THE VIDEOGRAPHER: Okay. You
9 may proceed with the swearing in, Darlene.

10
11 JAMES T. GEIER,
12 a witness called for examination by
13 counsel for the Petitioner and being first
14 duly sworn by the Notary Public, was examined
15 and testified as follows:

16 THE STENOGRAPHER: Thank you.
17 You may proceed.

18
19 DIRECT EXAMINATION

20 BY MR. SPEED:

21 Q. Good morning, Mr. Geier. Can you
22 please spell your full name for the record?

23 A. Yeah. My name is James Thomas Geier.
24 J-a-m-e-s, T-h-o-m-a-s, G-e-i-e-r.

1 Q. Have you been deposed before?

2 A. Yes.

3 Q. About how many times?

4 A. I don't know the exact number. I
5 think around 25 to 30 times.

6 Q. Have you been deposed in this type of
7 remote deposition setting before?

8 A. Yes, I have.

9 Q. So you understand that today you're
10 under oath?

11 A. Yes.

12 Q. If I ask you a question today and it's
13 unclear, I just ask if you could please let me
14 know that you find the question confusing or
15 unclear in some way so that I can rephrase the
16 question. Is that okay?

17 A. Yes.

18 Q. Okay. And if at any point today you
19 want to take a break, just let me know, and we
20 can do that. I just ask that we not take a
21 break while a question is pending, if that's
22 okay.

23 A. Yes.

24 Q. And given the remote nature of this --

1 today's deposition, can you confirm that
2 during the course of the deposition you won't
3 text or e-mail or look at web pages while
4 we're on the record?

5 A. Yes.

6 Q. Okay. What did you do to prepare for
7 today's deposition?

8 A. I reviewed my expert report and the
9 other documents that are listed in my report.

10 Q. Did you meet with counsel?

11 A. We talked over the phone.

12 Q. Do you recall how long you talked over
13 the phone with counsel?

14 A. I think it was a couple of hours, two
15 hours maybe, two or three hours.

16 Q. So I'm going to introduce the first
17 exhibit to the eDepoze thing so we'll... And
18 what -- I'm introducing what's been previously
19 marked as Exhibit 2026 in this proceeding.

20 Were you able to get it on your end?

21 A. Yeah, I see it. It appeared.

22 Q. Okay. Perfect. So this is Exhibit
23 2026 to this proceeding.

24 Do you recognize this as your

1 declaration in this proceeding?

2 A. Yes. At least I'm looking at the
3 first -- the cover page, it says "Declaration
4 of James T. Geier."

5 Q. And you should have -- with eDepoze,
6 you have access to the document so you can
7 flip around and go -- and move around if you
8 need to.

9 In light of that, could you flip to
10 page 92 of the document?

11 A. Okay. I think I'm there. No, I'm not
12 quite there.

13 I can use the go-to. It didn't quite
14 line up right, so...

15 Q. It's page 96 of 104 in the go-to?

16 A. Page 92 of the document looks like the
17 signature page.

18 Q. Can you confirm that that's your
19 signature?

20 A. Yes.

21 Q. And if you could go back in the
22 document to Paragraph 30, which is on page 9
23 of the document.

24 A. Okay. I'm there.

1 Q. Perfect. And if you look at
2 Paragraph 30, you provide a list of documents
3 that you reference in your declaration; is
4 that right?

5 A. Yes.

6 Q. Looking at this list today, is this an
7 accurate list of materials you considered in
8 preparing your declaration?

9 A. I reviewed these particular references
10 and anything else that's referred to in my
11 document -- or in my report here.

12 Q. Do you recall if you reviewed the
13 preliminary patent owner response that the
14 patent owner submitted in this proceeding?

15 A. I don't think I did. I don't believe
16 so, but I don't remember specifically unless
17 it's referred to in my document here.

18 Q. Okay. And do you recall if you read
19 the institution decision from the patent trial
20 appeal board in this proceeding.

21 A. I don't recall reading it -- the
22 actual institution decision.

23 Q. Okay. In Paragraph 30, you state that
24 you reviewed the file history of the '551

1 patent; is that correct?

2 A. Yes.

3 Q. why did you review the file history
4 for the '551 patent?

5 A. There's a portion of my report where I
6 talk about that. I think looking at
7 references that -- I believe the -- the
8 examiner looked at. I don't remember the
9 exact details of it, but there's a place in my
10 report where I indicate that I referred to the
11 prosecution history.

12 Q. And what do you understand to be the
13 prosecution history for a particular patent?

14 MR. ATKINSON: Objection. Form.

15 A. well, in general, it would include
16 the -- the process of when someone applied for
17 a patent until they get the patent and any of
18 the letters that were transmitted back and
19 forth about the patent and what the examiner
20 would have considered as possibly prior art.
21 Those sorts of things.

22 BY MR. SPEED:

23 Q. Do you -- are you a named inventor on
24 any patents?

1 A. Yes, I am. I'm a coinventor on one
2 patent.

3 Q. Did you review the file histories for
4 any European patents related to the '551
5 patent?

6 A. I don't remember.

7 Q. Were you compensated hourly for the
8 time you spent on your declaration?

9 A. Yes.

10 Q. And what's your hourly rate?

11 A. It's 375 per hour.

12 Q. Do you recall how many hours you spent
13 preparing your declaration?

14 A. I don't remember the specific number
15 of hours.

16 Q. Do you know? Was it more than 10
17 hours?

18 A. I believe it was more than 10, yes.

19 Q. Was it more than 100 hours?

20 A. That, I don't remember if it was more
21 than 100 or not.

22 Q. And have you previously served as an
23 expert witness in a patent matter?

24 A. Yes.

1 MR. ATKINSON: Objection.

2 Form.

3 BY MR. SPEED:

4 Q. How many times have you served as an
5 expert in a patent proceeding?

6 A. I guess I'd have to clarify what you
7 mean by that. You mean the number of times
8 I've been deposed as an expert? Or just
9 worked in general for -- on patent litigation
10 cases? Or...

11 Q. Thanks for the clarification. I guess
12 we'll start with -- well, how many times have
13 you been deposed -- sorry. Strike that.

14 How many patent litigation matters
15 have you been involved in in which you were
16 deposed during that matter?

17 A. Yeah, I don't know the exact number.
18 I think overall I've been deposed 25 or 30
19 times, but some of those were trade secret
20 cases and contract issues, that sort of thing.
21 The majority of those were patent cases, but I
22 would estimate maybe 20.

23 Q. And do you have a sense of when in
24 your career you started providing expert

1 witness services for patent litigations?

2 A. I do. I would say as an independent
3 consultant, which I've been doing since the
4 year 2000, when I started that business, I
5 started expert witness consulting maybe a few
6 years after that. I don't remember the exact
7 dates when I started, but it would be roughly
8 in that time frame.

9 Q. And you have served as an active
10 participant within multiple IEEE standard
11 organizations; is that correct?

12 MR. ATKINSON: Objection.
13 Vague. Form.

14 A. I've been involved in standards
15 development in multiple capacities, yes.

16 BY MR. SPEED:

17 Q. And which IEEE standard organizations
18 have you been involved with?

19 A. I've been involved in some degree with
20 the IEEE 802.11 working group. I've also been
21 involved --

22 THE STENOGRAPHER: I'm sorry. I
23 missed that. which working group?

24 A. The IEEE 802.11 working group. And

1 also the wi-Fi Alliance. I've been involved
2 as a voting member of the wi-Fi Alliance.

3 BY MR. SPEED:

4 Q. What's the wi-Fi Alliance?

5 A. Wi-Fi Alliance is a group that
6 provides specifications for interoperability
7 of 802.11-type wireless networks.

8 Q. And what were your responsibilities as
9 a member of the IEEE 802.11 working group?

10 A. That was early in the -- I'd say in
11 the '90s, when I was active with 802.11. And
12 at that time, I was in the U.S. Air Force and
13 was considering -- and I was working in a
14 group where we were considering use of
15 wireless LANs for use in military use --
16 military applications. So I was asked by my
17 commander to become part of the 802.11 working
18 group in a way that we could voice the
19 requirements that the military would have for
20 developing a standard such as 802.11.

21 So that was my -- my work with the
22 group, and I also provided leadership and
23 planning conferences around the 802.11 working
24 group activities.

1 Q. Were you active in the 802.11 working
2 group as of 2003?

3 A. I was no longer working with that
4 group in 2003. At that point, I was working
5 for Wi-Fi Alliance.

6 Q. And since 2003, have you worked with
7 the IEEE 802.11 working group?

8 A. Not as an active member within the
9 group, no.

10 Q. Prior to this proceeding, have you
11 ever offered opinions on whether patent claims
12 are obvious in light of the prior art?

13 MR. ATKINSON: Objection.
14 Foundation.

15 A. I've worked on patent litigation cases
16 where -- in a similar capacity where I'm
17 reviewing some analysis on invalidity of
18 patents. So I have looked at patents and
19 their claims in terms of the obviousness of --
20 of the claim in light of the prior art.

21 Q. What is your understanding of the
22 legal test for obviousness?

23 MR. ATKINSON: Objection. Form.
24 Foundation.

1 A. Well, it's -- as I state in my
2 reports, I refer to that to get to the details
3 if I was analyzing something. But in terms of
4 obviousness, it would have -- it wouldn't
5 necessarily have one particular prior art
6 reference that you could base your invalidity
7 on. So it would be -- to be obvious, it
8 would -- you wouldn't -- there would -- the
9 prior art that predates the patent would not
10 be available to teach the claims, basically,
11 in the patent.

12 BY MR. SPEED:

13 Q. Are you familiar with the term "a
14 person of ordinary skill in the art"?

15 A. Yes.

16 Q. What do you understand that term to
17 mean?

18 A. Just in general, that that person
19 would be someone who had the experience of a
20 certain defined level at the time that the --
21 of the -- basically the invention.

22 Q. And if we look at Paragraph 45 of your
23 declaration, you've accepted the level of
24 skill that the petitioners have proposed,

1 correct?

2 A. Let me get to that paragraph.

3 Q. Yes.

4 A. (Witness reviews document.)

5 Yes.

6 Q. I'm going to introduce Exhibit 1001.

7 Did you -- did Exhibit 1001 come

8 across to you?

9 A. Yeah. I'm still getting used to the
10 navigation. I think I have it now.

11 Q. Yes. Just while we're kind of in the
12 beginning of all of this, when you're looking
13 at the eDepoze screen, at least on mine, there
14 should be a back button that's in blue so that
15 you would click that to go back if you want to
16 look -- refer back to your declaration or what
17 have you. So --

18 A. Yeah, I found that button. So it's...

19 Q. Perfect.

20 So I've just introduced what's been
21 previously marked as Exhibit 1001.

22 Do you recognize this as the '551
23 patent?

24 A. Yes, I do.

1 Q. And you've reviewed this patent in
2 preparing your declaration, correct?

3 A. Yes.

4 Q. And you've -- did you rereview it in
5 preparation for today's deposition?

6 A. Yes.

7 Q. And if we turn to Column 1, lines 15
8 to 19 of the '551 patent, the patent states
9 that "The present invention relates to a
10 wireless packet communication method and a
11 wireless packet communication apparatus for
12 simultaneously transmitting a plurality of
13 wireless packets by using multiple wireless
14 channels or multiple input, multiple output
15 (hereinafter MIMO)"; is that correct?

16 A. Yes.

17 Q. Are you familiar with MIMO?

18 A. Yes, I am.

19 Q. How would you describe MIMO?

20 A. MIMO is a way of using a particular
21 channel to communicate multiple streams of
22 data simultaneously.

23 Q. Have you ever designed a wireless
24 device that uses MIMO?

1 A. I've been involved with helping
2 companies incorporate wireless into their
3 devices, which has involved MIMO, so I've been
4 involved in that way with designing products
5 that use MIMO.

6 Q. Would you agree that MIMO allows
7 different wireless packets to be transmitted
8 from a plurality of antennas at the same time
9 on the same wireless channel?

10 MR. ATKINSON: Objection. Form.

11 A. Well, MIMO would make use of a single
12 or a common wireless channel, the frequency
13 channel, and allow transmission of data
14 simultaneously by using multiple antennas.

15 BY MR. SPEED:

16 Q. And that simultaneous transmission
17 occurs over that single frequency channel,
18 correct?

19 MR. ATKINSON: Objection. Form.

20 A. Certainly a use of MIMO is to have a
21 single channel, single frequency channel to
22 use to allow simultaneous transmission.

23 BY MR. SPEED:

24 Q. And to send simultaneous transmissions

1 over a single channel, would you agree that
2 MIMO divides the channel into subchannels?

3 MR. ATKINSON: Objection. Form.

4 A. Well, not quite. I wouldn't say
5 they're subfrequency channels, if that's what
6 you mean. It would allow, again, simultaneous
7 transmission of data over a common frequency
8 channel.

9 BY MR. SPEED:

10 Q. If you look at Column 2, lines 1 to 3
11 of the '551 patent, it states that "The number
12 of MIMOs is determined in accordance with the
13 propagation coefficient and the like."

14 Do you see that?

15 A. Yes.

16 Q. What do you understand MIMOs to be?

17 MR. ATKINSON: Objection. Form.

18 A. Let me just read around that just a
19 second, just to get the context.

20 BY MR. SPEED:

21 Q. Yes.

22 A. (Witness reviews document.)

23 It looks like they're referring to a
24 number of MIMOs here as a number of streams,

1 so you would have over a common channel the
2 number of paths that you could take between
3 one point and another.

4 Q. So using MIMO, a given frequency
5 channel could have two or three MIMO paths
6 over which the packets are transmitted; is
7 that right?

8 MR. ATKINSON: Objection. Form.

9 A. Well, certainly, again, over a common
10 frequency channel, MIMO can divide that up,
11 and for two or three different streams, it can
12 be communicated from one point to the other
13 simultaneously.

14 BY MR. SPEED:

15 Q. And the different streams, the patent
16 refers to as MIMOs; is that right?

17 MR. ATKINSON: Objection. Form.

18 A. Well, as you asked before, the number
19 of MIMOs is determined. So the number of
20 MIMOs, talking about in Column 2A, appears to
21 be related to the number of streams based on
22 propagation coefficients using different
23 antennas.

24 BY MR. SPEED:

1 Q. And so if we look at Figure 14 of the
2 '551 patent.

3 A. Let me get there first.
4 Okay.

5 Q. And so Figure 14 is depicting a MIMO
6 transmissions using multiple wireless
7 channels; is that correct?

8 MR. ATKINSON: Objection. Form.

9 A. Certainly the boxes there are
10 representing different channels -- or the
11 squares, I guess, the squares in the figure.

12 BY MR. SPEED:

13 Q. If we look at the -- what I guess is
14 Figure 14(1) on the left-hand side, the three
15 wireless channel boxes have each been divided
16 into two subchannels; is that right?

17 A. I wouldn't necessarily call those
18 subchannels because they're not subfrequency
19 channels. They're not dealing with frequency.
20 Those would be, like, for example, in
21 Figure 14, in the -- under the parenthetical
22 where 1 is, you know, in the figure, where it
23 says "wireless channels," those squares are
24 channels, wireless channels whereas each

1 square for that one is -- has a dotted line
2 which represents -- I think, if I remember
3 correctly from the specification, that would
4 be a MIMO that has -- that's breaking up
5 that -- or at least it's dividing that
6 wireless frequency channel into two streams.

7 Q. Right. And those would be the two --
8 so what we see in Figure 14(1) each of those
9 wireless channels depicted there has been
10 divided into two, what the patent calls MIMOs,
11 correct?

12 A. I would believe so, yeah, based on
13 what I'm seeing in the specification.

14 Q. And if you go -- if we go to Column 1
15 of the '551 patent --

16 A. Okay.

17 Q. -- and beginning at line 23, there's
18 this paragraph that runs down to 42. And in
19 this paragraph, the '551 patent describes a
20 conventional wireless packet communication
21 apparatus; is that correct?

22 A. Let me just take a minute to read that
23 paragraph.

24 Q. Yeah.

1 A. (Witness reviews document.)
2 well, it says at the very beginning,
3 "in a conventional wireless packet
4 communication apparatus."

5 Q. And the patent says in that paragraph
6 that in the conventional wireless packet
7 communication apparatus, "A channel to be used
8 is determined in advance," correct?

9 A. That's right. It says that, that a
10 wireless channel to be used is determined in
11 advance. That's what it says in the -- at
12 that particular place.

13 Q. Do you have an understanding of how a
14 channel was determined in advance in a
15 conventional wireless packet apparatus as of
16 September of 2003?

17 MR. ATKINSON: Objection. Form.
18 Foundation.

19 A. Certainly in -- within the scope of
20 these conventional wireless packet
21 communication apparatuses, yes.

22 BY MR. SPEED:

23 Q. What's your understanding of how the
24 apparatus would determine a channel to use in

1 advance?

2 MR. ATKINSON: Objection. Form.

3 A. Well, as it shows here, 802.11 is one
4 example, and it's talking about the example
5 using CSMA, carrier-sense multiple access, and
6 with that, a particular station needing to
7 transmit would check to see if there's a
8 carrier present on that channel, that wireless
9 channel. And if there is, then it's
10 considered to be busy and, therefore, not
11 transmit.

12 And if it's idle, it would -- in other
13 words, it does not detect a carrier, then that
14 station would determine that that wireless
15 channel is available, and it would transmit
16 the data.

17 BY MR. SPEED:

18 Q. And is the station in that description
19 using carrier sense to look at multiple
20 wireless channels that are available, or is
21 there a particular one that it's been told to
22 look -- to assess whether it's idle or not?

23 MR. ATKINSON: Objection. Form.

24 A. There's going to be a particular one

1 that it looks at with 802.11 because it's at
2 that point the station is already associated
3 with the access point, or in a peer-to-peer
4 system, there's already a channel that's been
5 set, and it looks at a particular channel to
6 see if it's idle or busy before determining
7 whether it can transmit.

8 BY MR. SPEED:

9 Q. And how does the station become
10 associated with the access point?

11 A. Well, in 802.11 there's a process a
12 station goes through to determine whether or
13 not -- which access point that particular
14 station needs to connect to. So there's an
15 association process.

16 Q. Can you describe for me how that
17 association process works?

18 A. Sure. There's two ways to find an
19 802.11. One is an active association process
20 that uses active scanning. And another is a
21 passive process called passive scanning and --
22 or uses passive scanning.

23 And in active scanning, a station will
24 periodically transmit to access points on

1 different frequencies to determine -- or with
2 different channels to determine -- and access
3 points will respond, and, therefore, the
4 station will then determine which access point
5 is stronger, has a stronger signal, and then
6 possibly use that as a basis for connecting to
7 a particular access point.

8 And with passive scanning, the station
9 will just listen to different transmissions on
10 various channels to determine which access
11 points have a stronger beacon because access
12 points periodically send beacons and can just
13 add information to determine which access
14 point to associate with. But the association
15 process would occur before a packet's able --
16 I mean before a station's able to actually
17 transmit packets or transmit information.

18 Q. So by the time a station is
19 attempting to transmit packets or transmit
20 information, it's already been associated with
21 an access point on a particular one of the
22 available frequency channels; is that right?

23 MR. ATKINSON: Objection. Form.

24 A. That's close. I don't know if I would

1 say exactly in those words but the -- as I
2 said, the station that's becoming associated
3 with a particular access point does not send
4 any information packets until it's associated.
5 And when the association takes place, the
6 station that has become associated with that
7 access point is then going to use one
8 particular frequency channel for sending the
9 information packets.

10 BY MR. SPEED:

11 Q. In the conventional 802.11 system
12 that's described in the paragraph from
13 column 1 from lines 23 to 42 of the '551
14 patent, do you know how many frequency
15 channels were available for a station to
16 access -- to transmit data once it's been
17 associated with a corresponding access
18 point?

19 MR. ATKINSON: Objection. Form.

20 A. Well, as I say, once the station's
21 become associated, there's only one frequency
22 channel that it will use.

23 BY MR. SPEED:

24 Q. But prior to the association, when

1 it's doing the active or passive polling, how
2 many frequency channels are there for the
3 station to either transmit its own access
4 request or receive beacons from access
5 points?

6 MR. ATKINSON: Objection. Form.

7 A. That depends on the frequency
8 spectrum. In 802.11 the 2.4 gigahertz
9 frequency spectrum has -- there's 14 possible
10 channels that are defined in the United
11 States. There's only a certain number of
12 those that can be really used because of the
13 bandwidth of those signals, and it's typically
14 channels 1, 6, and 11 would be considered to
15 be separate enough to provide sufficient
16 communications.

17 So there's -- there's several channels
18 that these access points can be sent to and
19 then stations can associate with and then just
20 use one of those channels at any particular
21 time.

22 BY MR. SPEED:

23 Q. And with the access point, when is the
24 access point set to a particular one of those

1 14 available channels?

2 MR. ATKINSON: Objection. Form.

3 A. If you're going to set up an access
4 point, the person setting the access point --
5 I'm sorry -- setting up the access point would
6 configure that channel in the access point,
7 set it to a particular channel, and then
8 that's the channel, the only channel that that
9 access point operates on based on the -- this
10 particular standard, you know, this version of
11 the standard.

12 BY MR. SPEED:

13 Q. So would that, the setting up of the
14 access points channel, would that be done by
15 an administrator who's using -- who's setting
16 up a wireless network for their home office or
17 work environment?

18 MR. ATKINSON: Objection. Form.

19 A. It really depends on how the network
20 is configured or how it's managed. There may
21 be a manual setting where that's put into the
22 access point, someone just logs into the
23 access point and sets the channel number.

24 BY MR. SPEED:

1 Q. what are the other ways that it would
2 be set beyond a manual setting of the channel
3 by an administrator?

4 MR. ATKINSON: Objection. Form.
5 Foundation.

6 A. The access point channel that it's
7 going to use could often -- when you receive
8 an access point, it's set -- or at least the
9 channel's already configured to be at a
10 particular channel by default. Some access
11 points are shipped that way. Some you have to
12 activate the radio before you can set the
13 access point.

14 So it really depends on the maker of
15 the access point and how it was -- how it's
16 intended to be managed.

17 BY MR. SPEED:

18 Q. In this same paragraph at lines 29 to
19 32, it states that "This management allows a
20 plurality of stations to share one wireless
21 channel in a staggered manner."

22 Do you see that?

23 A. Yes.

24 Q. what does it mean that the stations

1 can share one wireless channel in a staggered
2 manner?

3 MR. ATKINSON: Objection. Form.

4 A. As I've talked about, the stations are
5 going to use one channel to communicate, and
6 it's staggered, meaning that one station will
7 transmit at any particular time. And then
8 stations can -- will end up taking turns, not
9 necessarily in any particular order, but
10 because of the carrier-sense protocol, one
11 station would transmit at a time. And then if
12 another station needs to transmit, they
13 would -- they wait for their medium to become
14 idle, then they can transmit. So it will be
15 one at a time, and over a period of time, it
16 will be staggered.

17 BY MR. SPEED:

18 Q. So when a station is transmitting on
19 the shared wireless channel with the access
20 point, is there a time limit for how long it
21 can -- it can use the wireless channel, or can
22 it stay on there for as long as it wants?

23 MR. ATKINSON: Objection. Form.
24 Foundation.

1 A. It kind of depends on what you're
2 meaning by stay on for as long as it wants.

3 As I've said, you know, each station
4 will take turns accessing the medium. So
5 there's -- the station would use the medium
6 and transmit its packet, and then at that
7 point, it becomes idle again. If other
8 stations need to transmit, they will determine
9 it's idle and then start transmitting.

10 In the 802.11, packets are a specific
11 length. There's a max length, so I imagine
12 that would -- depending on the data rate,
13 would govern the amount of time that it's
14 going to be transmitting after it has access.
15 But it's going to be based on data rate and
16 length of the packet and those sorts of
17 things -- those types of things to determine
18 how long it would actually be transmitting.

19 BY MR. SPEED:

20 Q. would a station, after it's been
21 associated with an access point, announce that
22 it's preserving the channel for a particular
23 period of time so that the other stations in
24 the system know that the channel is going to

1 be occupied for a particular period of time?

2 MR. ATKINSON: Objection. Form.
3 Foundation.

4 A. Kind of depends what you mean by
5 "announce". There's not necessarily an
6 announcement packet that's sent out to tell
7 other stations of a particular length of time.
8 Maybe if I -- maybe clarify your question,
9 what you mean by that, it might help. I can
10 try to answer it.

11 BY MR. SPEED:

12 Q. I'm just wondering if in 802.11, when
13 the station is first communicating with the
14 access point, if it says to the access point,
15 kind of colloquial terms, I need to send data.
16 Take me ten seconds to send the data, so I
17 want the line for ten seconds.

18 Is there something -- you know, I'm
19 putting it in colloquial terms, but is there a
20 more technical implementation that 802.11 does
21 to accomplish this sort of reserving of the
22 line for a particular length of time?

23 MR. ATKINSON: Objection. Form.

24 A. I don't know of an announcement from

1 the station to the access point during
2 association that would indicate that.
3 There's -- no, I -- during the association
4 process, I don't know of a reservation type of
5 communication that takes place during that --
6 during that time period.

7 BY MR. SPEED:

8 Q. Is there any type of reservation
9 process that occurs prior to the association
10 with the access point?

11 MR. ATKINSON: Objection
12 foundation.

13 A. Was your question whether or not there
14 was a reservation scheme before association?
15 Was that what you asked?

16 BY MR. SPEED:

17 Q. Yes.

18 A. Yeah, I don't know of a -- again, I
19 don't know of any packets that are sent to
20 indicate to the access point, as part of the
21 association, that that station's going to need
22 the wireless channel for a particular amount
23 of time. You know, as far as sending
24 information packets, you know, and doing that

1 ahead of time, I don't know of that process.

2 BY MR. SPEED:

3 Q. Are you familiar with the term
4 "network allocation vector"?

5 A. Yes, I am.

6 Q. What's a network allocation vector?

7 A. It's a -- it's a vector that's used to
8 be included in packets that are sent to
9 indicate these are for sending information and
10 other types of packets that would let other
11 stations know that there's a packet being
12 transmitted and to hold off and wait until
13 that packet is -- is done being transmitted.

14 It's a virtual sensing mechanism
15 versus a physical sensing mechanism that CSMA
16 provides.

17 Q. Are you familiar with the term "clear
18 to send" in the 802.11 standard?

19 A. Yes, I am.

20 Q. What's -- what's the clear to send
21 signal in the 802.11 standard?

22 A. Clear to send is generally used in
23 conjunction with a request to send, so RTS/CTS
24 type of process. And the clear to send would

1 be in response to a request to send. It would
2 be -- a clear to send would be sent from a
3 station as a response to the request to send
4 that it received from another station.

5 Q. would those -- would the clear to send
6 and ready to send signal exchanges between an
7 access point and a station indicate the
8 duration of the transmission that the station
9 wants to send to the access point?

10 MR. ATKINSON: Objection. Form.
11 Misstates testimony.

12 A. Again, the -- the clear to send would
13 include the duration value that the sending
14 station has included. That would be amount of
15 time that it's indicating to another station,
16 the access point or other stations listening,
17 that the amount of time to hold off to be
18 sufficient enough time for that transmission
19 of the information or packet that's being sent
20 by the station, and any acknowledgments and
21 other activity needed to complete that
22 communication.

23 BY MR. SPEED:

24 Q. In this paragraph that we see in

1 Column 1, from lines 23 to 42 of the '551
2 patent, the conventional system that's
3 described is not described as using MIMO on
4 the shared wireless channel; is that right?

5 A. I don't see any indication of MIMO in
6 that particular paragraph.

7 Q. Would -- was the use of MIMO
8 standardized in the 802.11 1999 edition
9 standard?

10 A. I don't believe it was, no. It wasn't
11 part of that particular version.

12 Q. And did -- I'm sorry. Was MIMO
13 ultimately incorporated into the 802.11
14 standard?

15 A. Yes, it was.

16 Q. Do you recall what the first 802.11
17 standard was to incorporate MIMO?

18 A. I believe it was 802.11n.

19 Q. And do you recall when 802.11n was
20 released?

21 A. I don't remember specifically, but
22 around the 2016 time frame as I had a book I
23 wrote about that particular protocol that was
24 published right about that same time as that

1 standard, and that's the publication date of
2 that book.

3 Q. What's the name of the book?

4 A. It's "Designing and Deploying"
5 wireless networks, or it -- actually, "802.11n
6 Wireless Networks."

7 Q. And so if the conventional system
8 described in Column 1, lines 23 to 42 was not
9 using MIMO, it would have been using single
10 input single output or SISO transmission
11 technique, correct?

12 MR. ATKINSON: Objection. Form.

13 A. It was certainly using the idea of
14 sending a packet of information over a single
15 channel -- single frequency channel. That is,
16 you transmit one over one frequency channel,
17 it's received on one frequency channel.

18 Q. Have you heard the term "SISO,"
19 S-I-S-O, before?

20 A. Yes.

21 Q. And what is SISO? What is your
22 understanding of SISO in the wireless
23 communication context?

24 A. It would be single input single

1 output.

2 Q. And that's distinguishable from MIMO,
3 which is multiple input multiple output; is
4 that correct?

5 A. That's right.

6 Q. If we look at the next paragraph in
7 Column 1, it begins at line 43, and it goes to
8 47. This paragraph describes the use of
9 multiple wireless channels to transmit data
10 packets; is that right?

11 MR. ATKINSON: Objection. Form.

12 A. Well, it's certainly talking about the
13 idea of multiple wireless channels and that
14 those are found idle or by carrier since then
15 the plurality of wireless packets are
16 transmitted simultaneously. It's the idea of
17 using multiple wireless channels, which are
18 frequency channels.

19 BY MR. SPEED:

20 Q. And the patent at Column 1, lines 43
21 to 46 describes the use of multiple wireless
22 channels found idle by carrier since it's to
23 be a known wireless packet communication
24 method, right?

1 MR. ATKINSON: Objection. Form.

2 A. I'm not sure what you mean by "known
3 wireless packet method."

4 BY MR. SPEED:

5 Q. I'm looking at column 1, line 42 to
6 43, the very first phrase in that sentence.

7 A. Oh, I see. Right. It says, "wireless
8 packet communications method is known." So
9 it's talking about this as being a known
10 method.

11 Q. Would you agree that the use of
12 multiple wireless channels increases
13 throughput relative to a single-channel
14 system?

15 MR. ATKINSON: Objection. Form.
16 Foundation.

17 A. It depends.

18 BY MR. SPEED:

19 Q. It depends on what?

20 A. Well, just the general idea of sending
21 simultaneous information, it seems as though
22 that that would increase throughput because
23 you're seeing more information in a given
24 amount of time. But there's -- you have to

1 consider the impairments that could occur that
2 might degrade that communications to the point
3 where it's not necessarily as efficient or --
4 or maybe you don't have any throughput gain by
5 using that method.

6 Q. So absent the impairments that could
7 occur to degrade the communication, the use of
8 multiple channels would increase throughput in
9 a system as compared to the use of a single
10 channel in that same system, right?

11 MR. ATKINSON: Objection. Form.

12 A. Again, as I said, in general,
13 certainly using multiple wireless frequency
14 channels that are completely separate, there's
15 no issues of interference between the channels
16 or within the channels or in any way is any
17 type of degradation, you would have an
18 increase in throughput because you're sending
19 more information in a given amount of time, in
20 general.

21 BY MR. SPEED:

22 Q. And what are the types of impairments
23 that could occur in a multiple wireless
24 channel system that would degrade system

1 throughput?

2 A. Well, certainly one is the basis of
3 this particular invention in the '551 patent
4 is power leakage.

5 Q. And what's power leakage?

6 A. Power leakage -- and it's explained in
7 the specification -- it's where you're going
8 to have -- a transmitter would be transmitting
9 information. And when it's receiving
10 information, the received information incurs a
11 form of degradation, so there's a leakage of
12 power in that form from what it's transmitting
13 to what it's receiving.

14 Q. Are there any other impairments that
15 would degrade throughput in a multiple
16 wireless frequency channel system beyond power
17 leakage?

18 MR. ATKINSON: Objection. Form.
19 Foundation.

20 A. I imagine there is. That's the one
21 that's closest to my thinking right now
22 because that's the basis of this particular
23 patent. There's -- I'm sure there's other
24 ways that it could have degradation. It all

1 depends. Some of these frequency channels may
2 be impacted by interference more since they're
3 different frequency channels. Maybe the
4 frequency channels that are added to this
5 single one to -- in order to improve the
6 throughput is -- maybe it suffers more
7 interference at that particular frequency, for
8 whatever reason.

9 There's other ways of impairing a
10 signal than just what the patent here shows.
11 This patent has one particular issue that it's
12 resolving through the invented -- the
13 invention in the claims.

14 BY MR. SPEED:

15 Q. And earlier this morning you had
16 explained how while there are 14 channels
17 available in the 2.4 gigahertz frequency band,
18 in the United States, Channels 1, 6, and 11
19 are the channels that are conventionally
20 utilized.

21 Do you recall that?

22 A. Yeah, maybe I wouldn't say it in
23 exactly those words. There's 11 channels, and
24 1, 6 and 11 -- in the United States, and 1, 6

1 and 11 are the ones that can be used with --
2 without interference between those channels.
3 If you had multiple wireless LANs in one area,
4 you know, for example, three access points in
5 one area, you could best set them to 1, 6 and
6 11.

7 If you had four access points, then
8 you would start running into possibly issues,
9 you know, where those -- those different
10 wireless LANs are going to have interference
11 with each other.

12 Q. And what -- what causes the
13 interference when you introduce a fourth
14 access point to that system you're discussing?

15 MR. ATKINSON: Objection. Form.

16 A. Well, the idea is that you have --
17 it's going to -- whether or not that happens
18 is going to depend on the scenario, how -- how
19 those access points are installed within the
20 facility and where they're located and the
21 propagation of each one and that sort of
22 thing.

23 But if -- let's say you had four
24 access points, and they were really close to

1 each other, and you set two to Channel 1. The
2 stations that associate with the access point
3 -- let's say Access Point A, which is set to
4 1, Access Point B, which is set to Channel 1,
5 then if a station that's associated with
6 Access Point 1 is communicating over its
7 channel -- that Channel 1, if it
8 communications at the same time that a station
9 is communicating with channel -- with Access
10 Point B, then there could be some -- what they
11 call interaccess point interference where
12 signals on one wireless network are just
13 causing errors and signals on another wireless
14 network.

15 BY MR. SPEED:

16 Q. And are -- the channels 1, 6 and 11
17 that are utilized in the United States, are
18 those considered nonoverlapping channels?

19 A. That's generally the term that's used
20 to describe those, yes.

21 Q. And so what -- is there a general term
22 used to describe channels that are closer
23 together on the frequency spectrum such as,
24 like, Channel 4 and Channel 5?

1 MR. ATKINSON: Objection. Form.

2 A. I don't recall a specific term for
3 that within the 802.11 channels. They're
4 just -- they possibly could be overlapping
5 channels, you know, the frequencies. The
6 frequency spectrum of those channels will
7 start to begin to overlap.

8 BY MR. SPEED:

9 Q. And as of 2003, persons of skill in
10 the art understood that it was better for a
11 system design to use nonoverlapping channels,
12 like Channels 1, 6, and 11, right?

13 MR. ATKINSON: Objection. Form.

14 A. It would depend on the scenario
15 whether or not it was better or not.

16 BY MR. SPEED:

17 Q. Can you describe a scenario where it
18 would -- where the use of overlapping channels
19 would be better than the use of nonoverlapping
20 channels?

21 A. In some situations, there could be --
22 again, this is just thinking of possible
23 ways -- if you wanted to -- for some
24 particular reason, you needed to set all of

1 your channels to one particular channel, let's
2 say Channel 1, the microwave ovens, when they
3 operate, they tend to sort of pollute the
4 middle and upper part of the frequency
5 spectrum.

6 So when you turn on a microwave oven
7 -- I've done a lot of testing with them --
8 that around Channel 6 and above, there's a lot
9 of interference from the type of microwaves I
10 was testing. So if you -- so it may motivate
11 you to set them all to Channel 1 in that
12 situation and just operate with the -- let's
13 say three access points in the same area with
14 all on -- set on Channel 1 to avoid
15 interference from the microwave oven.

16 And that could be better than
17 operating with those access points separated
18 by Channels 1, 6, and 11 because the ones on 6
19 and 11 would be overrun by the interference
20 from the microwave oven. That's just one
21 reason and -- you know, why that could be
22 better to go with just one channel.

23 Q. would the power leakage problem that's
24 described in the '551 patent occur if the

1 station is using nonoverlapping channels?

2 MR. ATKINSON: Objection. Form.
3 Foundation.

4 A. Power leakage described in the patent
5 is between channels used by a particular user
6 at the same time. So in the 802.11 sense that
7 we've been talking about with the -- these
8 particular -- these -- this version of these
9 standards, it wouldn't -- power leakage
10 wouldn't come into play as defined in the
11 patent. It doesn't have a chance to because
12 they're not using multiple channels between
13 the -- a particular user and an access point.

14 BY MR. SPEED:

15 Q. Outside the context of 802.11, if you
16 were looking at the conventional multiple
17 wireless channel system described in Column 1
18 of the '551 patent at lines 43 to 47, if that
19 system used non- -- sorry -- if it used --
20 yeah, nonoverlapping channels, would power
21 leakage between Channels 1 and 6 be a problem?

22 A. Well, just to define this in the way I
23 think you meant was if you had a true multi-
24 -- multichannel system where, let's say, User

1 A is communicating with User B, and it's just
2 between those users, and they had -- User A
3 had multiple frequency channels to use
4 simultaneously, those frequency channels were
5 nonoverlapping, meaning -- let's say there's
6 three channels, and they don't overlap at all,
7 I mean, as -- as far as the spectrum mass
8 would indicate, generally, I would think that
9 there wouldn't necessarily be as much power
10 leakage, but I think there still could be
11 depending on the transmit power of the user --
12 of the -- let's say User A is transmitting.
13 It depends on how well made the product is. I
14 think -- I think there still could be leakage
15 if you considered it nonoverlapping.

16 To some degree, I mean, signals are
17 propagated even beyond what their spectrum
18 mass would be for -- like, for example, in
19 802.11, that's just -- a certain density of
20 that signal is considered to be within that
21 area, and at high enough power, things can
22 interfere regardless, or two systems can
23 interfere. So I think it depends.

24 Q. would you agree that the likelihood of

1 power leakage in that scenario increases if,
2 rather than using nonoverlapping channels 1,
3 6, and 11, the station used overlapping
4 channels 1, 2 and 3?

5 MR. ATKINSON: Objection. Form.

6 A. It depends on the situation, you know.
7 With all things equal, you know, there's no
8 other limitations or issues that would cause
9 any difference or any -- anything to impact
10 this, and I would have to think about that
11 more to determine if there are any and what
12 they are. But I would think that if the
13 frequencies -- the closer the frequencies are
14 together, the more interference that might
15 leak -- or the more power that might leak from
16 one to the other.

17 All that depends on how well that --
18 or how the transmitter -- the receiver section
19 is designed as far as how much the power
20 leakage would impact it. But it is a problem,
21 you know, that the patent brings up as far as
22 an issue, and I've seen the issue before, and
23 that's what the invention is all about,
24 solving it.

1 BY MR. SPEED:

2 Q. If we look at Column 2, lines 26 to 30
3 of the '551 patent --

4 A. Let me get there.

5 Q. Yes.

6 A. Okay. Column 2. What were the line
7 numbers again.

8 Q. 26 to 30, that first sentence in that
9 paragraph.

10 A. Oh, okay.

11 Q. And that sentence says that "In the
12 case where center frequencies of multiple
13 wireless channels used at the same time are
14 close to each other, an effect of leakage
15 power from one wireless channel to a frequency
16 region used by another wireless channel
17 becomes large."

18 Do you see that?

19 A. Yes.

20 Q. Do you understand the reference to
21 "close to each other" to mean that the
22 channels are overlapping in some manner?

23 MR. ATKINSON: Objection. Form.

24 A. I don't think, as I've stated earlier,

1 they're -- I don't think that that necessarily
2 means that they're, quote/unquote, overlapping
3 or nonoverlapping.

4 I think it's going to depend, you
5 know, on the situation. That "close" just
6 means that they're close, you know, that the
7 situation is going to occur when you're using
8 frequency channels that are right next to each
9 other, which tends to be the case because of
10 the way the spectrum as allocated.

11 BY MR. SPEED:

12 Q. When you say "frequency channels right
13 next to each other," do you mean, like,
14 Frequency Channel 1 and 2 or Frequency Channel
15 1 and 6?

16 A. I would say both situations.

17 Q. Is it your opinion that the problem of
18 power leakage that's described in the '551
19 patent only occurs in multichannel systems?

20 MR. ATKINSON: Objection. Form.

21 A. I believe the examples and what the
22 specification refers to in the '551 patent is
23 dealing with multichannel systems where,
24 again, between User A and User B, there's

1 multiple channels that are used simultaneously
2 to communicate between those two users.

3 BY MR. SPEED:

4 Q. So your understanding of multichannel
5 system is that there must be multiple channels
6 between two stations for it to be a
7 multichannel system; is that right?

8 MR. ATKINSON: Objection. Form.

9 A. I would say as -- as far as the
10 looking at the '551 patent, within that
11 context, certainly a multichannel system would
12 be where there's a User A and a User B, User A
13 transmitting to User B would have the ability
14 to use or have a system that supports multiple
15 wireless frequency channels and to use those
16 simultaneously.

17 BY MR. SPEED:

18 Q. What about a system in which the
19 access point is a multichannel access point
20 and it uses three channels to send
21 transmissions to three different mobile
22 clients? Is that a multichannel system, in
23 your view?

24 MR. ATKINSON: Objection. Form.

1 A. Within the scope of the '551 patent, I
2 would say no. It's -- it's the case where I
3 mentioned between one particular station -- or
4 as a user -- between one user and another
5 user. That user could be a station. It could
6 be an access point. But communications
7 between Point A and Point B, there would be
8 use of multiple channels. But the case where
9 you have different users that are
10 communicating with -- from an access point,
11 even though those are on different channels,
12 that each one of those users still is only
13 operating on one channel.

14 BY MR. SPEED:

15 Q. So to have a multichannel system in
16 the context of the '551 patent, you need to
17 have a multichannel access point and a
18 multichannel client that's being served by
19 that access point?

20 A. I don't know if I would use that
21 terminology to name those, you know, in that
22 way. But, again, between one particular point
23 and another point, there would be multiple
24 wireless frequency channels that are used

1 simultaneously to communicate information or
2 to communicate data.

3 Q. And was there something about the
4 multichannel access point or multichannel
5 client terminology that wasn't technically
6 accurate?

7 A. I wouldn't --

8 MR. ATKINSON: Objection. Form.

9 A. I wouldn't say it's -- not necessarily
10 not accurate. It's just putting a name like
11 that on something, I just want to be careful
12 that I'm explaining what I mean by it or what
13 -- if you call something a name, I want to be
14 sure that I'm clarifying what -- how I would
15 see that being used, you know, if those were
16 named that way.

17 BY MR. SPEED:

18 Q. Does the problem of power leakage that
19 the '551 patent describes occur with a single
20 MIMO implemented channel?

21 MR. ATKINSON: Objection. Form.
22 Foundation.

23 A. I would say it depends on how we look
24 at this within the context of '551 or outside

1 of '551 just in general.

2 I would say, in general, if you have a
3 single wireless channel, then you have MIMO
4 streams, multiple MIMO streams, over that
5 single wireless channel. The way the '551
6 patent is explaining power leakage, you
7 wouldn't necessarily have power leakage from
8 one stream to the other. That's a different
9 type of interference that occurs there.

10 BY MR. SPEED:

11 Q. What -- is there a name for that
12 different type of interference that occurs?

13 A. I think it's -- it goes by different
14 names, but it's interference within the
15 channel, you know, not necessarily -- it's not
16 between channels, wireless channels. You
17 know, it's not -- not between wireless
18 frequency channels. It's within a single
19 wireless frequency channel.

20 Q. So if you have a system in which an
21 access point is communicating with a station
22 using a single MIMO implemented channel, would
23 that be a multichannel system in the context
24 of the '551 patent?

1 MR. ATKINSON: Objection. Form.
2 Foundation.

3 A. I would say it depends. The '551
4 patent is an invention for combating power
5 leakage in systems that are multichannel,
6 meaning there's multiple wireless frequency
7 channels between two points in the system
8 between, let's say, User A and User B, and
9 those paths can be used simultaneously.

10 There are situations where possibly
11 when the -- one user is going to communicate
12 that all of those -- and may be using MIMO
13 also -- where all of those paths are -- or I'm
14 sorry -- all of those wireless frequency
15 channels are busy, except possibly the
16 mandatory channel. Maybe it's going to
17 communicate that way using MIMO.

18 So it's just -- there may be
19 situations where there's a single wireless
20 channel used, but it would be part of a
21 multichannel system -- or system, again,
22 having multiple wireless paths -- or wireless
23 frequency channels between, let's say, User A
24 and User B.

1 BY MR. SPEED:

2 Q. For an access point communicating with
3 a station using single MIMO-implemented
4 channel, to be a multichannel system in the
5 context of the '551 patent, that access point
6 would have to have the ability to also send
7 data over a separates wireless -- another
8 wireless channel to the same device?

9 MR. ATKINSON: Objection. Form.
10 Foundation.

11 A. I don't know if I would say it in
12 exactly those words. But the user -- or the
13 station and the access point would need to be
14 able to communicate simultaneously, you know,
15 say, from user -- from station and in place of
16 the access point over multiple wireless
17 frequency channels simultaneously. It would
18 need to have that capability.

19 BY MR. SPEED:

20 Q. Can power leakage occur in a
21 conventional signal channel system?

22 MR. ATKINSON: Objection. Form.

23 A. You know, at least within the context
24 of the '551 patent, again, it's describing

1 power leakage as being an issue between
2 multiple wireless frequency channels. so if
3 you only had an access point that -- and a
4 station that they're only going to communicate
5 on one channel at a time and that's the only
6 channel after association it's going to
7 communicate with or communicate on, then
8 they're -- I don't think -- in that situation,
9 there wouldn't necessarily be any power
10 leakage because there's no other wireless
11 channel that could be causing it that's part
12 of that multichannel configuration.

13 BY MR. SPEED:

14 Q. What about a scenario where you have
15 Access Point A servicing Client A on Channel 1
16 and in that same system you have an Access
17 Point B nearby servicing Client B on an
18 overlapping channel, say Channel 2? would
19 there be a potential for power leakage to
20 present a problem to that system with two
21 access points and two mobile station clients?

22 A. Within the context of the '551 patent
23 and how power leakage is being defined, I
24 would say no.

1 MR. SPEED: We've been going for
2 a little over an hour, do you want to take a
3 ten-minute break?

4 THE WITNESS: Yeah, that would
5 be great.

6 MR. SPEED: Why don't we go off
7 the record?

8 THE VIDEOGRAPHER: We're off the
9 record at 10:28 a.m.

10
11 (Recess taken from 10:28 a.m.
12 to 10:44 a.m.)
13

14 THE VIDEOGRAPHER: We are back
15 on the record. 10:44 a.m.

16 BY MR. SPEED:

17 Q. So going back to the hypothetical we
18 had right before the break where you have
19 Access Point A servicing Client A on Channel 1
20 and close by you have an Access Point B
21 servicing Client B on an overlapping or
22 adjacent Channel 2, would there be a potential
23 for interference that could impair either set
24 of transmissions from occurring in their

1 intended manner?

2 MR. ATKINSON: Objection. Form.

3 A. May I rephrase that in a way so I can
4 indicate I understand what you're asking? But
5 I understand there's a single access point,
6 and it's transmitting on one frequency channel
7 to, let say, User A, and that same access
8 point is communicating with another client or
9 a station which is, let's say, B, and it's on
10 a different wireless frequency channel.

11 It really depends on the -- how the
12 system is configured and installed, you know,
13 whether or not there would be interference
14 between, let's say, the wireless channel for
15 User B and the wireless channel for User A.
16 It depends.

17 BY MR. SPEED:

18 Q. And is one -- one of the factors that
19 would influence whether there's interference
20 how close the two frequency channels that are
21 being used are to one another?

22 MR. ATKINSON: Objection. Form.
23 Foundation.

24 A. Probably the closer in frequency those

1 are would be a factor in whether or not
2 there's interference -- or it could be a
3 factor. It depends on other -- other ways
4 that the systems configured too whether or not
5 that's even a factor. But there could be
6 interference between those two channels just
7 in general. Yeah, there would be
8 interference.

9 BY MR. SPEED:

10 Q. And would that potential for
11 interference exist if rather than having a
12 single access point servicing two clients, you
13 had two separate access points each servicing
14 one client on adjacent frequency channels?

15 MR. ATKINSON: Objection. Form.

16 A. Well, again, I don't know if I -- I'll
17 restate it in a way so that it's clear how I
18 think I understand what your question is and
19 how you're terming things.

20 But first of all, to clarify that
21 first situation just so it's easier to
22 understand the second, it really depends how
23 that access point is operating. If the access
24 point is able to communicate on both channels

1 at the same time or it's just communicating
2 with one user on one channel, then it switches
3 and communicates with the other user on the
4 other channel, it may not be communicating
5 simultaneously with both of them. So it
6 depends on how that access point is
7 configured.

8 For your second scenario, it sounds
9 like now you're including a second access
10 point. So Access Point 1 and 2. And Access
11 Point 1's communicating with User A on one
12 particular frequency channel, and Access
13 Point 2 is communicating with User B on a
14 different wireless frequency channel, and
15 that -- you're saying that those are adjacent
16 channels, I think, is what you said.

17 It depends on how -- again, how the
18 system is configured and how it's designed to
19 operate, how close those channels are, where
20 the users are in relationship to the access
21 points, and where the access points are in
22 relationship to each other whether or not
23 there would be any degradation in throughput.

24 BY MR. SPEED:

1 Q. And in this proceeding, you've offered
2 an opinion on the proper construction of the
3 term "mandatory channel"; is that correct?

4 A. That's right.

5 Q. And we'll be going to your declaration
6 at this point, if you want to pull that up.

7 A. Okay.

8 Q. And in particular, the construction
9 you propose is set forth at page 63, which is
10 on -- or sorry, Paragraph 63, which spans from
11 page 25 to 26. Is that right? Can you get
12 there?

13 A. I'm just trying to navigate using this
14 since the page numbers don't line up, but I'll
15 be there in a minute.

16 I think you're asking whether or not
17 my explanation of -- my opinions for claim
18 construction, whether they start on page 25,
19 and that's where I'm at right now, and it
20 appears that's the page number that it does
21 start on.

22 Q. And if you turn to page 26, you
23 propose a construction for mandatory channel
24 that modifies the construction the board

1 adopted, and -- is that correct?

2 A. Yeah. As I've stated on -- in
3 Paragraph 63 that I -- and I'm just restating
4 that what the board provided for construction
5 with one proposed modification.

6 Q. And your construction is "The
7 mandatory channel is one channel and a
8 wireless multichannel communication system
9 whose idle state determines whether there can
10 be a transmission over the other channels"; is
11 that right?

12 A. That's correct.

13 Q. What's your understanding of wireless
14 multichannel communication system in your
15 proposed construction?

16 A. Well, as we've been talking about
17 already, you know, and I'll just restate
18 here, is that a multichannel -- a wireless
19 multichannel communication system would be
20 where there's multiple wireless channels
21 between, let's say, between User A and User B
22 that can be used simultaneously. So User A
23 can transmit information or data to User B
24 simultaneously over multiple channels.

1 Q. And a system in which there is a
2 multichannel access point but it only
3 communicates with multiple clients on a single
4 channel would not be a wireless multichannel
5 communication system, as you've construed it
6 in this proceeding, right?

7 MR. ATKINSON: Objection. Form.
8 Foundation.

9 A. I think that kind of -- it depends in
10 how the system is configured.

11 BY MR. SPEED:

12 Q. So how -- how could you configure the
13 system with a multichannel access point that
14 serves clients only with single-channel
15 transmissions such that it would be a --
16 wireless multichannel communication system
17 under your construction?

18 MR. ATKINSON: Objection. Form.

19 A. Well, as I said earlier, if that
20 access point was able to, let's say, transmit
21 to one particular station over multiple
22 wireless frequency channels, it may only have
23 one of those channels available and could
24 transmit over that, and but it still has the

1 other ones that were part of the system. You
2 know, it's designed to operate in multiple
3 channels, and sometimes it might. It might
4 use two channels to communicate, two wireless
5 frequency channels. Another time it might use
6 three.

7 But it -- in that situation, if it --
8 there may be some configurations or situations
9 where only one of those was available for that
10 particular -- or one of those was idle at that
11 time and the other ones were busy, detected
12 busy, that could be possible. It's a possible
13 scenario.

14 But, in general, as I've said, you
15 would need to have the capability at some
16 point to be able to communicate over multiple
17 channels simultaneously between that access
18 point and a user.

19 BY MR. SPEED:

20 Q. And the conventional 802.11 that we
21 were talking about earlier, described in that
22 first paragraph of column 1 of the '551
23 patent, that system was not capable of sending
24 data packets simultaneously over multiple

1 wireless channels; is that right?

2 MR. ATKINSON: Objection. Form.
3 Foundation.

4 A. Well, at least the versions of the
5 standard -- of the 802.11 standard mentioned
6 in the '551 patent that we looked at in Column
7 1. Those were single-channel systems.

8 BY MR. SPEED:

9 Q. So those versions of the standard
10 802.11 mentioned in the '551 patent that we
11 looked at earlier in Column 1, those would not
12 be multichannel communication systems as you
13 are defining in your construction; is that
14 right?

15 A. That's right.

16 MR. ATKINSON: Objection. Form.

17 A. The earlier versions of that standard,
18 which are noted, again, in the patent in
19 Column 1, at that time frame, the time frame
20 of the patent, those would not be a
21 multichannel communication system as I'm using
22 in the construction.

23 BY MR. SPEED:

24 Q. And that's because while the stations

1 could select from multiple channels, they
2 could only transmit over a single channel; is
3 that right?

4 MR. ATKINSON: Objection. Form.

5 A. Well, the stations don't necessarily
6 select a channel. They're -- they're being
7 assigned a channel. As they connect to a
8 particular access point, they have then -- now
9 then been assigned a channel. That's how the
10 channel is determine is based on which access
11 point that that user chooses to connect to,
12 and then that's the channel that's going to be
13 used. It's that person who put that channel
14 in the access point was what determines the
15 channel.

16 BY MR. SPEED:

17 Q. So the access point has a -- strike
18 that.

19 with an access point, an administrator
20 could choose from one of the 11 possible
21 802.11d channels to set as the channel for
22 that access point; is that right?

23 MR. ATKINSON: Objection. Form.
24 Foundation.

1 A. That -- that's one way that that
2 channel and the access point can be
3 configured, as a way to descend.

4 BY MR. SPEED:

5 Q. So even though that access point is
6 selecting one channel out of multiple
7 available channels to use, it's not a wireless
8 multichannel communication system because once
9 the channel is set with the access point, it
10 can only communicate over that single channel;
11 is that right?

12 A. Well, again, not necessarily -- I
13 don't know if I would say those words. But
14 just to modify a little bit, it's -- that
15 access point is configured with a channel, and
16 that channel is what the access point is going
17 to use when it communicates with a station.
18 That's the only channel it's going to use.

19 Q. And because it's the only channel
20 that the access point can use, it's not a
21 multichannel communication system under your
22 construction; is that right?

23 MR. ATKINSON: Objection. Form
24 foundation.

1 A. You know, at least I would, you know,
2 answer that in a way if that access point --
3 if that were the only channel it could operate
4 on and there was no other channels it can
5 operate on simultaneously, like you talked
6 about before, but within the scope of 802.11,
7 then that's the only channel, and it wouldn't
8 necessarily be a multichannel communication
9 system, as I've stated in the construction.

10 BY MR. SPEED:

11 Q. In the latter half of your
12 construction, in Paragraph 63, you state,
13 "whose idle state determines whether there can
14 be a transmission over the other channels."

15 Do you see that?

16 A. Yes.

17 Q. Does -- is the A transmission that
18 you're referencing in your construction the
19 transmissions between the access point and the
20 station it's serving or all transmissions that
21 the access point performs in the system?

22 MR. ATKINSON: Objection. Form.

23 A. I think it -- what do you mean -- I
24 guess I have to ask you what do you mean by

1 "the system"?

2 BY MR. SPEED:

3 Q. You've got an access point that has
4 the ability to use three channels, and it's
5 communicating with Client A using a mandatory
6 channel and the other three channels. But it
7 also has a Client B that it communicates with
8 but which does not have the mandatory channel
9 assigned to it.

10 Does the idle state of the mandatory
11 channel assigned to Client A dictate whether
12 there's transmissions possible to Client B for
13 which no mandatory channel is assigned under
14 your construction?

15 MR. ATKINSON: Objection. Form.
16 Foundation. Scope.

17 A. Well, from what I understand, in the
18 '551 patent specification is that you apply
19 the mandatory channel -- you use that
20 mandatory channel to determine its idle state,
21 and that determines whether or not you can
22 transmit over the other channels. That's done
23 when you're communicating to a station that
24 has a mandatory channel set.

1 If a station does not have a
2 mandatory state -- a mandatory channel set,
3 then it can transmit without that procedure of
4 checking the mandatory channel because there
5 is no mandatory channel set.

6 BY MR. SPEED:

7 Q. So the idle state of the mandatory
8 channel determines whether transmissions are
9 sent to the station for which the mandatory
10 channel has been assigned; is that right?

11 MR. ATKINSON: Objection. Form.

12 A. There needs to be a mandatory channel
13 set for there to be the mandatory channel
14 identified from one of those channels. So it
15 would need to be set. It's something that's
16 established.

17 BY MR. SPEED:

18 Q. Right. And whether -- whether or not
19 the station for which a mandatory channel is
20 set will ever receive a data transmission is
21 dependent upon the idle state of the mandatory
22 channel, right?

23 MR. ATKINSON: Objection. Form.

24 A. Again, in order for this access point,

1 for example, to send data to the station
2 that's using, let's say, three channels and it
3 fits within the scope of what the '551 patent
4 explains as a multichannel system -- and this
5 is not 802.11 -- the degree we're talking
6 about with these versions in the '551 patent,
7 if there's a mandatory channel set, then it
8 would check that mandatory channel, and if
9 it's busy, it won't transmit over those other
10 channels if some of those were found to be
11 idle.

12 BY MR. SPEED:

13 Q. If the access point determines that
14 there is no mandatory channel set for that
15 particular station, it will just send data
16 packets based on the idle state of the
17 channels, right?

18 MR. ATKINSON: Objection. Form.
19 Foundation.

20 A. well, the access point would -- would
21 send information on those wireless channels by
22 checking to see if they're idle and send data
23 if they're -- if they're idle, if there's no
24 mandatory channel set.

1 BY MR. SPEED:

2 Q. So if you have an access point that
3 has -- is servicing two clients, Client A and
4 Client B, and it's servicing both clients with
5 multiple channels -- so it's a multichannel
6 communication system, as you described
7 today -- Client A is one for which a mandatory
8 channel has been set and Client B is one for
9 which a mandatory channel has not been set --
10 are you with me? -- the transmissions to
11 Client A will always be determined by the idle
12 state of the mandatory channel, but
13 transmissions to Client B will be determined
14 just based on the carrier sense and the idle
15 state of the channels themselves. Is that
16 right?

17 MR. ATKINSON: Objection. Form.

18 A. Yeah, I -- there's some assumptions
19 that would probably need to be made there
20 but -- for example, the access point is
21 operating independently and can implement both
22 those -- that particular functionality.

23 But, you know, based on the '551,
24 within the scope of the construction that I've

1 stated there, there would need to be a
2 mandatory channel set if you're going to use
3 that to limit transmissions on idle channels.

4 So in the situation going to a user
5 where there's no mandatory channel set, then a
6 station or an access point in this matter or
7 this particular example can transmit if
8 those -- those channels are idle.

9 BY MR. SPEED:

10 Q. Okay. So if we looked at Claim 1 of
11 the '551 patent -- so my apologies, we'll have
12 to go back to that.

13 A. Okay. I'm there.

14 Q. So the preamble Claim 1 recites, "A
15 wireless packet communication method for
16 transmitting a plurality of wireless packets
17 simultaneously by using one of three separate
18 transmission techniques"; is that right?

19 A. Yes.

20 MR. ATKINSON: Objection. Form.

21 BY MR. SPEED:

22 Q. And the first technique is using
23 multiple wireless channels determined to be
24 idle by carrier sense, right?

1 A. Well, certainly one of the situations
2 is where it would accommodate multiple
3 wireless channels, right, determined to be
4 idle by carrier sense.

5 Q. And then the second technique that's
6 listed in the preamble is single wireless
7 channel determined to be idle in MIMO; is that
8 right?

9 A. It says a single wireless channel
10 determined to be idle in MIMO. That's
11 correct.

12 Q. Then the third technique that could be
13 used is the multiple wireless channels in the
14 MIMO.

15 Do you see that?

16 A. It says that, yes.

17 Q. So that the preamble is reciting three
18 separate ways of transmitting a plurality of
19 wireless packets simultaneously, correct?

20 A. I would say that these are three
21 different scenarios that are offered within a
22 multichannel system, i.e., where wireless
23 packets can be sent simultaneously, that these
24 are three different scenarios, you know, that

1 can be accommodated here.

2 Q. Right. For a device to practice the
3 preamble recited in Claim 1, it need only
4 transmit a plurality of wireless packets
5 simultaneously by using one of the three
6 transmission techniques, right?

7 MR. ATKINSON: Objection. Form.

8 A. Well, I wouldn't say it in those
9 words. It's not quite -- so let me -- let me
10 just add some to that so it's -- you can
11 understand my answer.

12 The -- a multichannel system would --
13 could use one of these particular techniques
14 to transmit its information, but it's still a
15 multi -- multichannel communication system.
16 So it would be comprised of multiple channels,
17 but these are different ways it can transmit,
18 you know, within that system.

19 BY MR. SPEED:

20 Q. So to better frame my question, then,
21 it would be a device that has the ability to
22 send data over multiple channels, would
23 practice the preamble if it transmits a
24 plurality of wireless packets simultaneously

1 using one of the three techniques recited in
2 the preamble; is that right?

3 A. I might have missed the very first
4 part. I'm sorry. If you could repeat that
5 because I don't recall what you said exactly,
6 the first part of that.

7 Q. Yeah. So a device that has the
8 ability to send data over multiple distinct
9 wireless channels would practice the preamble
10 if it transmits a plurality of wireless
11 packets simultaneously using any of the three
12 recited transmission techniques, right?

13 MR. ATKINSON: Objection. Form.

14 A. I could answer that with a little bit
15 clarification to -- I mean, my own
16 clarification to your question.

17 I would say that a wireless system,
18 that it's -- first of all, it's a multichannel
19 wireless system, as the '551 patent has
20 defined, and it's -- those multiple wireless
21 channels are between two different users --
22 let's say User A and User B -- and they can be
23 used simultaneously for transmit of
24 information between User A and User B, so if a

1 system of that type that has that particular
2 architecture, it may implement one of these
3 particular techniques when it actually
4 transmits.

5 But it's still a system that's --
6 doesn't -- in other words, the way you asked
7 the question, it's not just the fact that
8 there's multiple channels available. It's
9 that those multiple channels can be used.
10 They're configured in a way and it operates in
11 a way that more than one of those could be
12 used for simultaneous transmission between one
13 point to another point in the system -- for
14 example, between a station and an access
15 point -- and you can simultaneously transmit
16 on more than one of those wireless frequency
17 channels. It may actually transmit using one
18 of these methods. That's how I see that this
19 is -- what this means.

20 BY MR. SPEED:

21 Q. So if we look at the second
22 transmission technique, "a single wireless
23 channel determined to be idle in MIMO."

24 Do you see that?

1 A. Yes.

2 Q. So your understanding of the preamble
3 is that a device for -- for a device to
4 perform the method recited in the preamble of
5 transmitting a plurality of wireless packets
6 simultaneously by using a single wireless
7 channel determined to be idle in MIMO, the
8 device needs to have been configured so that
9 it could have sent data over a second wireless
10 channel to the same device that it's
11 transmitting the MIMO back in?

12 MR. ATKINSON: Objection. Form.

13 A. Yeah, I don't think I would have an
14 answer to the way that that's been asked. But
15 maybe I can make my own clarifications and
16 answer it, it would be helpful.

17 BY MR. SPEED:

18 Q. Sure.

19 A. You know, certainly -- again, I've
20 already said this, but, you know, I won't
21 repeat it again, but the idea is that a
22 multichannel system, there's multiple wireless
23 frequency channels that can be used
24 simultaneously between one point and the

1 other. The one you picked out here as single
2 wireless channel would be, then, one of those
3 wireless channels that's used, one of those
4 multiple channels that are part of that
5 architecture of that multichannel system.

6 Q. So a system in which you have a single
7 MIMO-implemented channel is not within the
8 scope of the preamble if it's -- if that
9 single MIMO-implemented channel is the only
10 channel that can be used between the two
11 stations, right?

12 MR. ATKINSON: Objection. Form.

13 A. I don't think that -- again, I
14 would -- I'd want to have my own
15 clarifications on that question because -- or
16 make my own clarifications. You said that
17 were "used."

18 Certainly, it could be one used, but
19 there's other ones that were part of the
20 architecture that could have been used that
21 might be busy, you know, during that
22 particular time period and, therefore, can't
23 be used. So there may be some of those
24 channels that the multichannel communication

1 systems that are busy, again, within scope of
2 what the '551 patent specifies as multichannel
3 -- or teaches as multichannel, and, therefore,
4 you would be, at that particular time, using
5 one of the channels, but it's still part of a
6 multichannel system that those other channels
7 could have been used.

8 BY MR. SPEED:

9 Q. Thanks for the clarification.

10 So a system of which you have a single
11 MIMO-implemented channel is not within the
12 scope of the preamble if that single
13 MIMO-implemented channel is the only channel
14 provided between the two stations; is that
15 correct?

16 MR. ATKINSON: Objection. Form.

17 A. Then we have a similar problem that
18 we're provided. What would that mean? If
19 that's -- if that's a single channel between,
20 let's say, an access point and a user station,
21 if that's the only channel that's going to be
22 available for use for that particular
23 architecture, how the architecture supports,
24 then there's no other -- there's not a time

1 when you would be able to communicate over,
2 let's say, two channels simultaneously between
3 those two, then that would not be considered
4 part of this -- wouldn't be meeting this
5 particular claim.

6 So in other words, it is -- just to
7 give you an example -- it may be helpful to
8 clarify -- is the version of 802.11 that we're
9 talking about in the -- we've been talking
10 about in the '551 patent does not meet that --
11 that limitation because it -- it's not a
12 multichannel communication system as taught by
13 the '551 patent. That's one reason. But, you
14 know, we're talking about just the preamble
15 here. That's why that's not.

16 Q. And you would agree that Claim 1's
17 preamble treats single-channel MIMO as an
18 alternative to using multiple wireless
19 channels, correct?

20 MR. ATKINSON: Objection. Form.

21 A. I wouldn't necessarily say it's an
22 alternative. I don't know if I would use
23 those words. But it's -- it's a -- sort of a
24 scenario, you know, that's -- this needs to

1 accommodate, you know, that that particular --
2 the system needs to accommodate that
3 particular scenario.

4 BY MR. SPEED:

5 Q. If you could turn to Paragraph 55 of
6 your declaration. It's on page 19.

7 A. Okay. One second. Okay. I'm almost
8 there.

9 Q. No problem.

10 A. Okay. I'm at -- I'm on page 18 -- oh,
11 page 19.

12 Q. It starts at 18.

13 A. Yeah.

14 Q. And I just wanted to call your
15 attention to the last sentence so that I can
16 make sure your testimony's clear.

17 A. And that's in Paragraph 55?

18 Q. Yes, sir.

19 A. Okay. Okay. I'm there.

20 Q. I just -- my question's going to be
21 whether or not you agree that "The '551 patent
22 treats single-channel MIMO in using multiple
23 wireless channels as alternatives to each
24 other for transmitting packets

1 simultaneously."

2 A. Give me a second while I read that.

3 Q. Yes.

4 A. (Witness reviews document.)

5 well, I think that, as I said, I think
6 these are a form of a scenario. In other
7 words, I guess what I meant by that was that
8 I'm using the word "alternative" here meaning
9 to perform simultaneous transmission. It's
10 using MIMO to get the simultaneous
11 transmission or multiple wireless channels,
12 you know, to get simultaneous transmission.

13 And it's not that it's an alternative
14 in a way that only one needs to be
15 implemented. In other words, you never
16 accomplished a particular thing, only have to
17 do this one thing. You know, that's not what
18 that means.

19 It's -- that's why I said probably a
20 way of sort of clarifying what I meant by
21 alternative here. It's like a scenario. You
22 know, it's one of the scenarios that may occur
23 and that you need to accommodate when
24 implementing the system.

1 Q. So one of the scenarios in the
2 preamble is sending packets simultaneously
3 over a single channel using MIMO, right?

4 A. Right. That would be a scenario that
5 would need to be -- or it's a scenario that
6 would be provided.

7 Q. Right.

8 A. Or it could provide, right.

9 Q. And an alternative scenario would be
10 sending packets simultaneously over multiple
11 channels, right?

12 A. Right. That would be another way to
13 accommodate the sending of simultaneous
14 information.

15 Q. And the preamble of Claim 1
16 encompasses both of those scenarios, right?

17 A. Right. It does in the context of a
18 multichannel system.

19 Q. If you look at column -- sorry to make
20 you keep jumping around, but column 9 of the
21 '551 patent.

22 A. I don't know if there's a faster way
23 to navigate through these, but I'm just typing
24 in a page number. So I can hit the little

1 arrow key, but then --

2 Q. It should be page 19.

3 A. Yeah. It would be helpful if you
4 happen to know the page number. It would be
5 really good.

6 Q. Sometimes I do; sometimes I don't.

7 A. So column 9?

8 Q. Yes.

9 A. Okay.

10 Q. And starting around line 7 of
11 column 9, the patent describes an exemplary
12 structure of a wireless packet communication
13 apparatus; is that right?

14 A. Yes.

15 Q. And in that apparatus, the patent says
16 it's depicted in Figure 12?

17 A. Yes.

18 Q. And in this particular paragraph, the
19 patent describes the apparatus as one "capable
20 of transmitting and receiving three wireless
21 packets simultaneously by using three wireless
22 channels, No. 1, No. 2, and No. 3"; is that
23 right?

24 A. That's what it says there.

1 Q. So the exemplary apparatus described
2 in this paragraph is performing the first
3 technique recited in Claim 1's preamble,
4 namely transmitting packets using multiple
5 wireless channels determined to be idle by
6 carrier sense, right?

7 MR. ATKINSON: Objection. Form.

8 A. Let me spend a minute just reading the
9 context around that --

10 BY MR. SPEED:

11 Q. Yes.

12 A. -- if you don't mind.

13 Q. Yes, no problem.

14 A. (Witness reviews document.)

15 well, at least what they're describing
16 there, there's three wireless packets
17 simultaneous -- or packets -- well, let me
18 back up again.

19 Transmitting and receiving three
20 wireless packets simultaneously by using the
21 three wireless channels, 1, 2, and 3, that is
22 a multichannel system. And I believe in
23 the -- I don't have the patent open right now
24 to see that claim, but that was one of the

1 situations or scenarios that I -- we pointed
2 to in the -- in Claim 1 -- in the preamble.

3 Q. Great. And if you look at lines 19
4 to 22 of that -- in Column 9, the patent
5 explains that "MIMO will not be taken into
6 consideration in the following description."

7 Do you see that?

8 A. Hold on a second.

9 Okay. Yeah, that's what it says
10 there.

11 Q. So would you agree that the patent's
12 describing an example of an apparatus that
13 uses the multichannel transmission technique
14 and is not describing one that uses the MIMO
15 techniques that are also recited in the
16 preamble?

17 MR. ATKINSON: Objection. Form.

18 A. I wouldn't necessarily say it in that
19 way. The -- this is just showing that the
20 example given here isn't using MIMO.

21 BY MR. SPEED:

22 Q. Okay. That -- that works.

23 A. I mean, right before there, it says
24 MIMO is used, you know, for each wireless

1 channel. But when they go through this
2 example in Figure 12, it appears that they're
3 not discussing that with MIMO for the purpose
4 of explaining something. They just didn't
5 include it --

6 Q. Okay.

7 A. -- for that purpose.

8 Q. And in the -- in that last sentence,
9 from 19 to 23, I'll say, on Column 9, it says,
10 "The MIMO will not be taken into consideration
11 in the following description as well as a case
12 where multiple wireless channels are
13 independently used."

14 Do you see that?

15 A. Right.

16 Q. Do you understand what the case is
17 where multiple wireless channels are
18 independently used?

19 MR. ATKINSON: Objection. Form.

20 A. Let me -- again, let me spend a minute
21 with this to read it.

22 BY MR. SPEED:

23 Q. Okay.

24 A. (Witness reviews document.)

1 A. I think from a -- going about based on
2 my memory without having to read the whole
3 specification again but I think that that
4 refers to not using, let's say, for example, a
5 mandatory channel, you know, one where it's
6 independent from that. You know, they can be
7 used independently where a mandatory channel
8 might not be set.

9 Q. Okay.

10 A. Again, I'm not absolutely certain, but
11 I think just based on my memory.

12 Q. And going back to your declaration, at
13 Paragraph 66.

14 A. And do you happen to know the page
15 number of that?

16 Q. It's 27. So I think it's probably 29.

17 A. Unfortunately, these aren't staying
18 open to the same page so I've got to go back.
19 I haven't figured out a way to make that stay
20 on the same page we were on before. It goes
21 back to page 1.

22 Okay. So which paragraph was that?

23 Q. It's Paragraph 66. It's actually
24 page 31 out of 104.

1 A. Okay. I'm on page 31.

2 Q. So you see Paragraph 66 there?

3 A. Actually, I'm looking at my
4 declaration on page 31. I'm seeing Paragraph
5 73.

6 Q. Sorry. It's page 27 of your actual
7 declaration. I was giving you the page number
8 of the little blue tab. It's Paragraph 66 on
9 page 27 of your declaration.

10 A. So I'm there now.

11 Q. Okay. In this paragraph, you explain
12 that the '551 patent specification uses the
13 phrase "A wireless channel to be used is
14 determined in advance" when describing
15 conventional 802.11 systems, right?

16 A. And I'm trying to be sure I know
17 where -- you're in Paragraph 66. Whereabouts
18 are you reading it, just so I can get there a
19 little quicker?

20 Q. It's bolded somewhat in the middle.
21 But why don't you read the whole paragraph and
22 then just --

23 A. I see where you're reading from.

24 Q. Okay. So in Paragraph 66, you're

1 explaining that the specification uses the
2 phrase "A wireless channel to be used is
3 determined in advance" when describing
4 conventional 802.11 systems, right?

5 A. Right.

6 Q. And you contrast that with Claim 1,
7 which requires setting a mandatory channel,
8 right?

9 A. Right.

10 Q. Right. So what do you understand
11 setting in Claim 1 to require?

12 MR. ATKINSON: Objection. Form.

13 A. Are you talking about setting a
14 mandatory channel? What does that require?

15 BY MR. SPEED:

16 Q. Yes. How -- I guess how is setting a
17 mandatory channel different from determining a
18 channel in advance?

19 A. Well, determining a channel in
20 advance, I'm talking about there is the idea
21 of determining whether or not you can use a
22 channel, and that's something that you would
23 do in advance of communications.

24 You would need to determine whether or

1 not the channels were idle and could idly
2 transmit. whereas, setting the mandatory
3 channel would be something that's done -- it's
4 a different thing. You're setting the
5 mandatory channel based on a particular user
6 that you're communicating with.

7 Q. And how does the '551 patent describe
8 setting a channel for a particular user?

9 A. well, the setting of a mandatory
10 channel would -- you would be identifying a
11 particular channel as the mandatory channel.
12 And that's -- that's how you would set that.
13 You know, there would be a way of identifying
14 the channel for a particular user as a
15 mandatory channel for that particular user
16 that you're going to communicate with.

17 Q. would one way of identifying the
18 channel for a particular user as a mandatory
19 channel be for an administrator to go in to
20 the access point and say, You're using Channel
21 6 for all of your transmissions to clients in
22 this network?

23 MR. ATKINSON: Objection. Form.
24 Foundation.

1 A. No. Because the 802.11 systems don't
2 implement multichannel systems that a
3 mandatory channel would be part of.

4 Q. Do you recall if there's any
5 description of how the mandatory channel is
6 set in either the transmitting or receiving
7 station in the '551 patent?

8 MR. ATKINSON: Objection. Form.

9 A. It depends what you mean by "how."
10 what do you mean? Do you mean actually
11 physically how is it done or under what rules?
12 Or what -- what do you mean by "how"?

13 BY MR. SPEED:

14 Q. I guess any explanation of how it's
15 done beyond just the general concept of you
16 need to set a channel. Is there any
17 description in the patent of precisely or an
18 example of how that could be accomplished?

19 MR. ATKINSON: Objection. Form.

20 A. I don't recall exactly. There could
21 be -- this is going on my memory without
22 reading through the whole patent to -- to
23 verify this, but there may have been something
24 about that if there was potential for power

1 leakage, that that would be a reason to set a
2 mandatory channel. That's some, I guess,
3 explanation of how it's set or why -- I guess
4 why it's set.

5 But the actual physical setting of it,
6 I don't remember the specification describing
7 the process of doing that except for
8 identifying why you need to use it or why
9 you'd want to use it.

10 BY MR. SPEED:

11 Q. Do you think a person of skill in the
12 art would know how to set a mandatory channel
13 for a particular device in view of the
14 description in the '551 patent?

15 MR. ATKINSON: Objection. Form.
16 Scope.

17 A. I think certainly an engineer who's
18 designing this type of system would -- would
19 know situations where this power leakage could
20 occur whether they're building their own
21 products and have done testing or they've --
22 looking at this more from a theoretical
23 standpoint, could -- could determine whether
24 or not a mandatory channel, if there would be

1 a benefit of setting a mandatory channel.

2 BY MR. SPEED:

3 Q. And if they identified that there
4 would be a benefit to setting a mandatory
5 channel, can you give an example of how they
6 would go about actually setting the mandatory
7 channel for a particular device?

8 A. Well, with any type of system, there's
9 multiple ways of setting particular
10 characteristics of the system, you know,
11 parameters that -- let's say for this case,
12 it's the mandatory channel whether or not
13 there's a mandatory channel set and what
14 channel it is.

15 Some ways are -- could be where
16 it's -- it's designed in to the system, that
17 if there's a product that someone's developing
18 and there's -- it's a multichannel system, so
19 they're going to have multiple channels, they
20 look into this issue and, based on the
21 frequencies that they're using, determine --
22 and maybe based on testing that they do in a
23 lab and out in the field, determine that
24 mandatory channels are going to have to be set

1 in certain circumstances for certain products.
2 And then that could be done in the factory,
3 you know, when the device is built, at that
4 part of it. That's sort of a static way.

5 Another way could be to make it a
6 configuration parameter that's available on
7 each device to -- maybe that device gathers
8 statistics or maybe, as an engineer, you do
9 testing and out in the field determine that
10 there needs to be mandatory channels set for
11 particular users to improve throughput. They
12 could be set and used.

13 And then maybe do more testing to see
14 what the outcome is, and you could activate it
15 or not. There could be dynamic means of -- of
16 providing a mandatory channel or at least
17 identifying whether a mandatory channel needs
18 to be set and communicating back to some other
19 device to tell them to set it, if it's having
20 trouble -- if that device receiving is
21 noticing a lot of retransmissions because of
22 the power leakage.

23 There's a variety of ways that a
24 person of ordinary skill in the art would

1 know, you know, how to first determine whether
2 or not a mandatory channel needs to be set and
3 then ways of setting that, you know, within
4 the systems.

5 BY MR. SPEED:

6 Q. Thanks.

7 I'm going to introduce the Shpak
8 reference, which was previously identified as
9 Exhibit 1005.

10 A. Okay. I have it.

11 Q. And do you recognize Exhibit 1005 as
12 the Shpak application publication that you
13 discuss in your declaration?

14 A. Yes.

15 Q. And you would agree that Shpak teaches
16 a method by which multiple access points can
17 arbitrate amongst themselves to determine
18 which access point should transmit to a mobile
19 station, right?

20 MR. ATKINSON: Objection to
21 form. Foundation.

22 A. well, at least you know there's a
23 station out there that communicates with an
24 access point, and then the access points

1 negotiate or arbitrate who's going to
2 communicate with it, and then that access
3 point -- some access point wins, and then that
4 other access point will then communicate with
5 that client. So that's, I believe, what this
6 Shpak is about.

7 BY MR. SPEED:

8 Q. And the winning access point transmits
9 wireless packets to a mobile station over what
10 Shpak calls a common frequency channel; is
11 that right?

12 MR. ATKINSON: Objection. Form.
13 Foundation.

14 A. Well, I know that the stations -- this
15 is by my memory, but I believe the stations
16 communicate over a common frequency channel
17 with the access point and then the winning
18 access point, I don't remember what it was
19 called, you know, the actual channel, what
20 that was called, but there's -- there's a
21 single channel that it communicates over.

22 BY MR. SPEED:

23 Q. And the access points in Shpak are
24 described as 802.11 compliant, right?

1 A. I believe so, because in Paragraph 16,
2 it's referring to 802.11, that these are
3 802.11-type access points.

4 Q. If we look at Paragraph 6 of Shpak,
5 Shpak confirms that with respect to 802.11b
6 and 802.11g, there were four frequency
7 channels defined in the 2.4 gigahertz band,
8 right?

9 A. You're referring to Paragraph 6?

10 Q. Yes.

11 A. Let me read that.

12 (Witness reviews document.)

13 Okay. You said something about that
14 there's four channels? Maybe I misunderstood
15 what you said.

16 Q. Well, if I -- I might have misspoke.
17 Shpak, in Paragraph 6, states that 802.11b and
18 802.11g standards define 14 frequency
19 channels, correct?

20 A. That's what it says there, and that's
21 accurate.

22 Q. And then it goes on to say, "But
23 because of bandwidth and regulatory
24 limitations, WLANS operating according to

1 these standards in the United States actually
2 only have three different frequency channels
3 from which to choose."

4 Do you see that?

5 A. I see that it says that. That's not
6 necessarily completely accurate. But it's --
7 it's the three nonoverlapping channels. They
8 still -- they can -- in the United States, you
9 can choose among eleven channels, not three,
10 but there's three different frequency channels
11 that are not overlapping that you can choose
12 from. I think that's what -- that's certainly
13 what they meant. They just didn't say it that
14 way.

15 Q. Right. So Shpak is consistent with
16 what we were discussing earlier, that there's
17 multiple frequency channels, but there's three
18 nonoverlapping ones used in the United States,
19 typically, 1, 6, and 11; is that right?

20 MR. ATKINSON: Objection. Form.

21 A. Just to clarify my answer, that those
22 three channels are not used at the same time
23 between one point and another, so, in other
24 words, between a station and an access point.

1 There's three available that could be used,
2 and only one is set and then used, or at least
3 configured, at an access point, and that's the
4 only one used.

5 There's never a second channel that's
6 used between, let's say, a station and a
7 access point of those two -- two channels, at
8 least within 802.11.

9 BY MR. SPEED:

10 Q. If you turn to -- sorry to do this --
11 back to your declaration, Paragraph 80.

12 A. Do you have approximately the page
13 number?

14 Q. Yes, I have to do the same thing you
15 do. Sorry.

16 A. Okay.

17 Q. Looks like it is page 36 of your
18 actual declaration, and it's 40 of 104 in the
19 eDepoze interface.

20 A. Which paragraph was that again,
21 please?

22 Q. Paragraph 80.

23 A. 80. Okay.

24 Okay. I'm there.

1 Q. And I just wanted to confirm that, in
2 your opinion, Shpak teaches using carrier
3 sense to its common frequency channel to
4 assess whether it's idle or busy, right?

5 MR. ATKINSON: Objection. Form.

6 A. I think what you're meaning -- and
7 I'll restate this just so I know I'm answering
8 the question I think it is -- is that whether
9 or not Shpak is using carrier sense to access
10 the channels communicating with between, like,
11 say, an access point and a station, is
12 that --

13 BY MR. SPEED:

14 Q. Yes.

15 A. Okay. It's talking about the idea of
16 using 802.11, so that's carrier sense was
17 what -- is what would be used --

18 Q. Right.

19 A. -- for that single channel.

20 Q. And in Paragraph 81 of your
21 declaration, so the next one, you say, "At the
22 time of Shpak, 802.11 standards did not
23 address multichannel communication systems."

24 Do you see that?

1 A. Yes.

2 Q. And then in the third sentence in
3 Paragraph 81, you say, as of the -- "At the
4 time of Shpak and at the priority date of the
5 '551 patent, there were no standardized
6 multichannel systems."

7 Do you see that?

8 A. Yes.

9 Q. And you bolded and italicized
10 "standardized."

11 Do you see that?

12 A. Yes.

13 Q. And so what did you mean by there were
14 no standardized multichannel communication
15 systems at the time of Shpak or the priority
16 date of the '551 patent?

17 A. Well, what I mean there is there were
18 no multichannel communication systems that
19 were part of standards. So, in other words,
20 like 802.11.

21 Q. Okay. But as we saw in Column 1 of
22 the '551 patent, there it was known to use
23 multiple channels to transmit packets
24 simultaneously, right?

1 MR. ATKINSON: Objection. Form.

2 A. I don't remember exactly what the --
3 how the '551 patent phrased that, so I think
4 -- if you're referring to that, I wouldn't
5 mind looking at that just to confirm it. If
6 there's a statement you're -- you need to --
7 BY MR. SPEED:

8 Q. Yeah, you should have the '551 patent
9 in your --

10 A. If you don't mind, I wouldn't mind
11 seeing what you're pointing to there.

12 Q. It's column 1, line 43 to 48, I
13 believe.

14 A. Column 1. Column 1. Which lines are
15 you referring to?

16 Q. 43-ish to 48. It's the paragraph that
17 begins "on the other hand."

18 A. Okay. Yes, I see that, and I agree
19 that that's what that says.

20 Q. So it was multichannel systems, as
21 you've defined multichannel systems, were
22 known as of the priority date of the '551
23 patent. They just weren't standardized; is
24 that right?

1 A. well, it's -- the '551 patent is
2 explained in Column 1 "wireless packet
3 communication method is known in which when
4 multiple wireless channels are found idle by
5 carrier sense, a plurality of wireless packets
6 are transmitted simultaneously using the
7 wireless channel."

8 So what that's saying is that
9 there's -- it was known that there were
10 systems that have multiple wireless channels
11 and that use carrier sense to determine if
12 packets should be sent. But that's as far
13 as -- that's the -- that's the -- basically
14 the what was known.

15 Q. Right. Is that a multichannel system
16 in your understanding of multichannel
17 system?

18 MR. ATKINSON: Objection. Form.

19 A. It would be a multichannel system by
20 the fact that it supports multiple wireless
21 frequency channels.

22 BY MR. SPEED:

23 Q. Are multichannel systems standardized
24 as of today in 802.11?

1 A. I haven't analyzed that as part of my
2 opinions here.

3 MR. SPEED: Okay. I'd like to
4 introduce the Ho records.

5 THE WITNESS: It's been about an
6 hour so far. If we're going to change gears,
7 do you mind if we take another quick break?

8 MR. SPEED: Yeah, actually, I
9 probably have five minutes of questions, and
10 then I thought maybe we could break for lunch,
11 if that works.

12 THE WITNESS: That's fine, if
13 you want to do that.

14 MR. SPEED: Yeah, I appreciate
15 you raising it.

16 THE WITNESS: Yes.

17 BY MR. SPEED:

18 Q. So I'm introducing what's been
19 previously marked as Exhibit 1006.

20 A. I'm sorry. I've got a slight problem.
21 I -- somehow my browser is gone that had
22 the -- the documents in it. I don't know what
23 happened here. I still see my window in Zoom,
24 but I'm not seeing the browser.

1 MR. SPEED: why don't we go off
2 the record.

3
4 (Off-the-record discussion.)

5
6 MR. SPEED: Let's get off the
7 record.

8 THE VIDEOGRAPHER: We are off
9 the record at 11:49 a.m.

10
11 (Recess taken from 11:49 a.m.
12 to 11:50 a.m.)

13
14 THE VIDEOGRAPHER: We're back on
15 the record at 11:50 a.m.

16 BY MR. SPEED:

17 Q. I just introduced what is previously
18 been identified as Exhibit 1006.

19 Do you recognize Exhibit 1006 as the
20 Ho patent application that you discussed in
21 your declaration?

22 A. Yes.

23 Q. And you would agree that Ho discloses
24 the use of MIMO over a single wireless

1 channel, right?

2 A. Just give me a minute just to review
3 Ho, just to skim it really quick. I'm going
4 to look at something.

5 Yes, I believe Ho is just -- it's
6 MIMO, describing MIMO over a single channel.

7 Q. All right. And if you look at
8 Paragraph 9 of Ho.

9 A. Okay. Paragraph 9. Okay.

10 Q. And just -- my question was just going
11 to be, there's a reference to Communication
12 Links 48 and 50 within Paragraph 9. Just let
13 me know when you've read the paragraph, and
14 I'll ask you a question.

15 A. Okay.

16 (Witness reviews document.)

17 Okay. I'm sorry. I had to reposition
18 things here. So I'm back to Paragraph 9. So
19 you want me to read the whole paragraph?

20 Q. Yes, you might as well.

21 A. (Witness reviews document.)

22 Okay. I've read Paragraph 9.

23 Q. Paragraph 9 references Communication
24 Links 48 and 50 between Stations 10 and 12.

1 Do you see that?

2 A. Yes.

3 Q. And so those communication links are,
4 I believe, what we were talking about earlier
5 as the MIMO paths that are used to subdivide
6 the single wireless channel over which the
7 packets are being transmitted; is that
8 right?

9 MR. ATKINSON: Objection. Form.

10 A. Yeah, they're the MIMO streams that
11 are being communicated over the same wireless
12 frequency channel.

13 BY MR. SPEED:

14 Q. And you see that there's a reference
15 to 2-by-2 MIMO and 3-by-3 MIMO.

16 Do you see that?

17 A. Yes.

18 Q. What do you understand 2-by-2 MIMO
19 configuration to be?

20 A. That generally represents the number
21 of antennas.

22 Q. So if you have two antennas, you can
23 send -- you can create two MIMO data streams
24 over a single channel, right?

1 A. Yeah.

2 MR. ATKINSON: Objection. Form.

3 A. That's -- that's possible to --

4 BY MR. SPEED:

5 Q. And if you have three antennas, you
6 could do three MIMO data streams over that
7 single channel?

8 MR. ATKINSON: Objection. Form.
9 Foundation.

10 A. Yeah. At least with MIMO, if you have
11 a 3-by-3 system, you could configure that for
12 operating with three streams of data, again,
13 over a common frequency channel.

14 BY MR. SPEED:

15 Q. All right. This is probably a good
16 spot to break for lunch.

17 A. Okay.

18 THE VIDEOGRAPHER: Let's go off
19 the record. We are off the record at
20 11:54 a.m.

21

22 (Recess taken from 11:54 a.m.
23 to 12:43 p.m.)

24

1 THE VIDEOGRAPHER: We're back on
2 the record at 12:43 p.m.

3 BY MR. SPEED:

4 Q. Mr. Geier, at Paragraph 139 in your
5 declaration through to Paragraph 150, that's
6 where you discuss Ground 1 from the petition;
7 is that right?

8 A. Okay. So Paragraph 139, let me go to
9 that.

10 Q. Yes. It's page 73 of your actual
11 declaration and page 77 of 104 in the eDepoze
12 exhibit.

13 A. I'm just opening my -- my declaration.
14 Okay. I'm there.

15 Q. And just confirming that between
16 Paragraphs 139 and 150, you address Ground 1
17 from the petition, correct?

18 A. Yes. That looks to -- that's correct.

19 Q. Okay. And in Ground 1 from the
20 petition, you understand the petitioners
21 propose that a person of skill in the art
22 would have modified the Shpak system in view
23 of Ho such that the common frequency channel
24 used by the Shpak access points would have

1 implemented Ho's MIMO technique, correct?

2 MR. ATKINSON: Objection. Form.

3 A. I understand that they were using
4 those two references together for Ground 1.

5 BY MR. SPEED:

6 Q. And in your discussion of Ground 1,
7 you do not dispute that persons of skill in
8 the art as of September 2003 had reasons to
9 implement Shpak's wireless system such that
10 its access points used MIMO transmissions over
11 the common frequency channel, right?

12 MR. ATKINSON: Objection. Form.
13 Scope.

14 A. Certainly I would think a person of
15 ordinary skill in the art would look at Shpak
16 and understand it implements MIMO over a
17 common frequency channel, and that's something
18 that could be implemented.

19 BY MR. SPEED:

20 Q. And you don't dispute that if a person
21 of skill in the art was motivated to add MIMO
22 functionality to Shpak, they would have a
23 reasonable expectation of success in doing so
24 in 2003, right?

1 MR. ATKINSON: Objection. Form.
2 Scope.

3 A. I don't remember all the details that
4 Shpak gave about MIMO over -- over the common
5 frequency channel. I'd probably have to
6 review that to really answer that fully. But
7 they certainly bring up the notion of using
8 MIMO over a single channel, which was done
9 during that time.

10 BY MR. SPEED:

11 Q. And it was -- at that time, it didn't
12 require undue experimentations for persons of
13 skill in the art to implement MIMO-based
14 single-channel systems, right?

15 MR. ATKINSON: Objection. Form.
16 Foundation.

17 A. It certainly was understood, in theory
18 at least. I know for certain that MIMO could
19 be used over a single channel. I don't recall
20 the numbers of the systems that were
21 implemented with that, with MIMO over a single
22 channel at the time. But I know in papers I
23 read, it was known it was something that could
24 be done.

1 BY MR. SPEED:

2 Q. So you don't dispute that a person of
3 skill in the art started with Shpak and
4 motivated to take its single transmission
5 access point and make those multiple input,
6 multiple output access points would have been
7 able to do so in 2003, right?

8 MR. ATKINSON: Objection. Form.
9 Scope.

10 A. You said something about -- maybe I
11 didn't understand the question -- something
12 about using multiple access points with a
13 common channel. Is that what you meant?

14 BY MR. SPEED:

15 Q. No, sorry.

16 A. Okay.

17 Q. So with Shpak, unmodified has access
18 points that communicate on the common
19 frequency channel, right?

20 A. Right.

21 Q. Right. And I'm just asking in 2003
22 would a person of skill in the art have had a
23 reasonable expectation of success that they
24 could modify those access points so that they

1 could use MIMO technology?

2 MR. ATKINSON: Objection. Form.
3 Scope. Lacks foundation.

4 A. Yeah, I'm really not so certain of
5 that. I -- I know that MIMO was certainly a
6 technology that I knew in theory from reading
7 papers.

8 As far as actually implementing them,
9 implementing MIMO in access points to provide
10 multiple streams of data, I don't recall the
11 systems that supported that to know, you know,
12 how reasonable that would be. I just don't
13 recall.

14 BY MR. SPEED:

15 Q. And if you look at, for example,
16 Paragraph 143 in your declaration, it's your
17 opinion the Shpak-Ho combination proposed in
18 the petition does not disclose the mandatory
19 channel element of Claim 1 because Shpak-Ho's
20 common frequency channel is not one of
21 multiple channels provided for transmission
22 but rather the only channel available,
23 right?

24 MR. ATKINSON: Objection. Form.

1 A. Let me just look at that section of my
2 declaration real quick.

3 (Witness reviews document.)

4 well, that's certainly what I've
5 stated there, you know, that the -- it's in
6 Paragraph 143, but starting on page 74 is
7 where I explain that because Shpak's --
8 Shpak-Ho's common frequency channel is not one
9 of multiple channels provided for transmission
10 but rather the only channel available, so
11 meaning that it's the only channel that can be
12 used for that communications -- or
13 communications between those two devices.

14 BY MR. SPEED:

15 Q. Right. So your opinion that the
16 Shpak-Ho combination doesn't render obvious
17 Claim 1, for example, is based on your
18 understanding that the claims require a
19 multichannel system; is that correct?

20 MR. ATKINSON: Objection. Form.

21 A. well, that's certainly part of it, as
22 I've said in my statement that I just read
23 from my report.

24 BY MR. SPEED:

1 Q. Is there any other part of your
2 opinion of why Shpak-Ho doesn't render obvious
3 Claim 1 that's independent from your
4 understanding that the claims require a
5 multichannel communication system?

6 MR. ATKINSON: Objection. Form.

7 A. Let me just glance at my report real
8 quick.

9 BY MR. SPEED:

10 Q. Yeah.

11 A. (Witness reviews document.)

12 well, at least -- I'm reading through
13 the rest of 143 -- that's what I was talking
14 about there was the idea that it's a common
15 channel and not one of multiple channels, you
16 know, that can be used.

17 Q. I guess what I'm trying to understand
18 is if the board were to disagree with you and
19 construe mandatory channel, as the petitioners
20 have proposed, such that the mandatory channel
21 could be the only channel provided between two
22 stations, would you agree that Shpak-Ho at
23 that point would teach all elements of
24 Claim 1?

1 MR. ATKINSON: Objection. Form.
2 Scope. Lacks foundation.

3 A. I guess I kind of see it as a
4 hypothetical with that. I mean, it would
5 depend on certain things.

6 But what I understand from what you
7 just told me, if that were the construction,
8 as I've talked about, you could have the
9 mandatory channel be the only one that's
10 actually being transmitted on and being used
11 at that moment. But it's still part of -- if
12 it's a part of a multicomunication system, it
13 would need to have other channels that are
14 associated with it, that they can used, but
15 they just happen to be busy at that time, and
16 they're not idle.

17 BY MR. SPEED:

18 Q. Right. I'm just asking hypothetical
19 scenario where the board agreed with
20 Petitioners that the mandatory channel can be
21 the only channel provided between one station
22 and another, would you agree that Shpak-Ho, in
23 that hypothetical interpretation of the
24 claims, would render the claims obvious?

1 MR. ATKINSON: Objection. Form.
2 Scope. Lacks foundation.

3 A. Again, you're offering a hypothetical
4 of the claim construction I haven't analyzed.
5 That's something that, you know, I would take
6 time with.

7 I know that, based on how I understand
8 the claim construction to be for this is, you
9 know, for a mandatory channel, this does not
10 satisfy that. If there's some other claim
11 construction that's rendered, that it would
12 depend. I would have to see and analyze what
13 is meant by that and how that fits into the
14 '551 patent.

15 BY MR. SPEED:

16 Q. So you didn't analyze whether Shpak-Ho
17 meets, for example, Claim 1 under Petitioners'
18 proposed construction; is that right?

19 MR. ATKINSON: Objection. Form.
20 Scope. Lacks foundation.

21 A. What I analyzed is what's in my
22 declaration. So that -- that's what I'm
23 providing opinions on. I don't remember if
24 that's in my declaration. I don't think it

1 is, but I actually don't remember. I don't
2 think I did offer that opinion.

3 But, you know, it would depend. You
4 know, I would have to -- I could look at that
5 further, you know, if that's something I
6 didn't cover in my report.

7 BY MR. SPEED:

8 Q. And I just -- strike that.

9 So when you assessed Shpak-Ho, you
10 assessed it from the perspective -- strike
11 that.

12 when you analyzed Shpak-Ho, you were
13 analyzing whether it met Claim 1 under your
14 construction of mandatory channel, correct?

15 MR. ATKINSON: Objection. Form.
16 Misstates testimony.

17 A. Well, then, certainly I've offered my
18 suggestions on what that construction should
19 be. You know, we talked about that earlier.
20 It's -- it doesn't meet that construction.
21 You know, the idea that it's -- it's just a --
22 if that's the only channel that's ever
23 available that can be sent -- data can be sent
24 on and there can never be a chance of having

1 multiple communication channels that are based
2 on frequency, just being that common channel
3 and that's the only channel available, it
4 doesn't meet that.

5 BY MR. SPEED:

6 Q. I'd like to introduce the Bugeja
7 reference.

8 A. Okay. I have it.

9 Q. I've just introduced what's been
10 marked as exhibit -- previously as
11 Exhibit 1007.

12 Do you recognize Exhibit 1007 as the
13 Bugeja patent application publication that you
14 discuss in your declaration?

15 A. Yes, it appears to be that.

16 Q. And looking at the abstract, you would
17 agree Bugeja discloses a system that uses
18 multichannel wireless access points, right?

19 A. That's certainly what it says.

20 Q. And if we look at, for example, at
21 Figure 4 --

22 A. Okay. I'm there.

23 Q. -- Figure 4 depicts three access
24 points, 402.

1 Do you see that?

2 A. You said 402?

3 Q. Element 402 is an access point,
4 correct?

5 A. Yes, it appears to be.

6 Q. And so we've got -- so we've got three
7 access points with -- and each access point is
8 a multichannel access point that can transmit
9 on channels 1, 6, or 11, right?

10 A. If I remember from the specification
11 describing that, that it does have those three
12 channels that it could transmit on, that's
13 correct.

14 Q. And in what we see in Figure 4, each
15 access point picks one channel to be its
16 primary channel that it uses at full power,
17 right?

18 MR. ATKINSON: Objection. Form.

19 A. Well, at least one channel is going to
20 be used by an access point for that outer
21 region, which would be its -- I would say
22 normal power of operation.

23 BY MR. SPEED:

24 Q. Okay. And then -- sorry. Go ahead.

1 A. I can't remember if the specification
2 called that full power or just normal power.
3 It's -- it's a particular power setting for
4 the access point.

5 Q. And then the access points each use
6 the other two channels at half power and
7 consider the -- and the Bugeja calls those
8 secondary channels, right?

9 MR. ATKINSON: Objection. Form.

10 A. I do remember where they're called
11 secondary channels. I can't remember if it's
12 operating at half power. It's some reduced
13 power from what the primary channel would be.

14 BY MR. SPEED:

15 Q. If you look at Paragraph 30 of
16 Bugeja --

17 A. Let's see. Almost there.
18 Okay.

19 Q. -- and in Paragraph 30, it explains
20 that the access points transmit on full power
21 on a primary channel and on less power on a
22 secondary channel, right?

23 A. Yes, that's right.

24 Q. So, for example, if we're looking back

1 on Figure 4 again and if we look at the access
2 point on the top left of the -- of the figure,
3 that access point's transmitting at full power
4 on Channel 11, its primary channel, and it's
5 transmitting at half power on Channels 1 and
6 6; is that correct?

7 A. I think the specification said "less
8 power." I'm not certain it's half power or
9 not, but I would say less power.

10 Q. So it's Channel 11 is this access
11 point's primary channel. Channels 1 and 6 are
12 that access point's secondary channels, right?

13 A. At least in the diagram, they're
14 depicting that scenario, yes.

15 Q. And so when a client such as what we
16 see here, 408, enters the outer region, it's
17 assigned to primary channel for that
18 particular access point, right?

19 A. It's going to use the primary access
20 point since it's in the outer region.

21 Q. So all outer region clients are
22 assigned to the primary channel of whatever
23 access point is serving them in the outer
24 region, right?

1 A. I can't remember if the specification
2 actually used the word "assigned," but they're
3 going to be using the primary channel in that
4 outer region.

5 Q. Okay. If we go to Paragraph 35 of
6 Bugeja.

7 A. Okay.

8 Q. And just in this paragraph, just to
9 confirm, Bugeja is saying -- Bugeja uses the
10 word "assigned"; is that right?

11 A. Give me a minute. I'll read that
12 paragraph.

13 Q. Yeah.

14 A. (Witness reviews document.)

15 Okay. It does use the word
16 "assigned."

17 Q. So a client in an outer region is
18 assigned to the primary channel, and clients
19 in the inner region are assigned to secondary
20 channels, correct?

21 MR. ATKINSON: Objection. Form.

22 A. At least I remember, I believe, from
23 the specification that certainly the ones on
24 the inner channel may be assigned to secondary

1 channels, and it may be one or two. I believe
2 also could also be assigned to it as a primary
3 channel. So it's not definite it's going to
4 be assigned to a secondary channel, from what
5 I understand.

6 BY MR. SPEED:

7 Q. And if we're looking at Paragraph 35
8 of Bugeja, it picks up on that point where it
9 says that "An inner region client is likely
10 assigned to Channel 1 or 6 in the inner region
11 to give more bandwidth on Channel 11 to the
12 outer region, 404." Do you see that?

13 A. Yes.

14 Q. So the inner region clients can be
15 assigned any of the three, but Bugeja suggests
16 that it's more likely that they're assigned
17 one of the secondary channels to provide more
18 bandwidth on the primary channel to the outer
19 region clients, right?

20 A. If they're assigned secondary
21 channels, right. But, again, I don't believe
22 it has to. It could still be a primary
23 channel.

24 Q. Right. So it's -- it's -- whether

1 it's -- an inner client receives or is
2 assigned to the primary channel is
3 implementation specific, right?

4 MR. ATKINSON: Objection. Form.

5 A. I think it kind of depends on what you
6 mean by that. I'm not really sure, you know,
7 based on the way you asked it.

8 BY MR. SPEED:

9 Q. So Bugeja in Paragraph 35 is saying
10 that an inner region client could be assigned
11 to any of Channels 1, 6, or 11 in this
12 environment, right?

13 A. I believe those are valid channels,
14 that they're explained in their example, yes.

15 Q. And then -- but then Bugeja says to
16 give the benefit of more bandwidth on
17 Channel 11 for outer region clients, it's
18 likely that the inner region clients are going
19 to be on either Channel 1 or 6, which is the
20 secondary channel for this access point,
21 right?

22 MR. ATKINSON: Objection. Form.

23 A. I think if -- you know, in an actual
24 implementation, it would -- that would depend.

1 I think that it's going to be -- most likely
2 it would choose -- if you're going to use this
3 to try to improve throughput, if you have a
4 frequency reuse issue, and you might not, but
5 if you do, then those would be the channels
6 you would likely choose. It doesn't mean you
7 have to, but you might. You could choose
8 those channels that differ from the primary
9 channel.

10 BY MR. SPEED:

11 Q. And you said "if you have a frequency
12 reuse issue, and you might not." What is a
13 frequency reuse issue?

14 A. I'm saying that fairly generally. But
15 the idea of Bugeja -- "Bugeja," I believe, is
16 how you pronounce that -- is that there's only
17 three of nonoverlapping channels. So to try
18 to make it more efficient in some situations
19 where you might have an issue of frequency
20 reuse -- in other words, there's an overlap
21 somewhere in frequencies that are being
22 assigned -- there's only three that you can do
23 with nonoverlapping channels, then this
24 particular approach can help.

1 But there's some situations where it
2 might not, you know, it might not be necessary
3 to do. That's why I said that it -- they may
4 be assigned to secondary channel, but maybe
5 not. You know, it depends.

6 Q. And how would assigning an inner
7 region client to Channel 1 or 6 in the inner
8 region give more bandwidth to -- on Channel 11
9 to an outer region client?

10 MR. ATKINSON: Objection. Form.

11 A. Well, maybe being more specific. Are
12 you talking about the diagram that we're
13 seeing there, I think, in Figure 4, was it?

14 So one of those access points, if you
15 set to, let's say the outer region is on
16 Channel 6 maybe, and so you're asking, what
17 would be the -- how would it help to set the
18 inner region ones to 1 and 11? Would that be
19 a fair example or --

20 BY MR. SPEED:

21 Q. Right. How would what Bugeja -- at
22 least as I'm understanding Bugeja, it's
23 suggesting that there's a benefit to
24 restricting inner region clients to the

1 secondary channels to allow for more bandwidth
2 for the outer region clients on the primary
3 channel. And I was just hoping you could
4 explain --

5 A. Okay.

6 Q. -- if that's true.

7 A. I think it's true, but it depends on
8 the situation. In some situations, you might
9 not see any of -- any benefit or any change in
10 doing that. In some situations, you might see
11 a benefit, you know, see some efficiency
12 gains, higher throughputs, that sort of thing
13 by adopting different channels for the
14 secondary -- the secondary channels in the
15 inner region. It depends on how the network
16 is laid out in a facility, how it's -- what
17 the utilization is.

18 For example, if the facility only has
19 one access point, you know, it doesn't make
20 any difference. There are -- well, I'm not
21 going to say it wouldn't make any difference,
22 but it wouldn't be as much of a problem
23 because you don't have those other channels
24 out there being used. You might not have as

1 much conflict, then, you know, with other
2 channels.

3 If you've got 50 access points in a
4 very small space, then maybe that would
5 warrant this type of system or at least
6 provide a reasoning to consider using it
7 because you might have a lot of overlap, and
8 it might make more sense to assign channels in
9 this way.

10 But then, in general, if you assign on
11 the -- in the -- for the secondary channels
12 for that inner region, if you sign those to
13 channels that are different and nonoverlapping
14 with the outer region, then they can
15 communicate in the same area for -- without --
16 without a conflict, you know, between the
17 channels. So your throughput would increase
18 because it's, as I explained earlier in my
19 report and we talked about earlier with CSMA,
20 it's one station can transmit one time on a
21 given frequency. So if they're on different
22 frequencies you can utilize those independent
23 from each other, at least without -- without
24 having as much interference.

1 But there's a lot of reasons why -- a
2 lot of situations where it may not make sense
3 to do even, like, with utilization. If
4 utilization is really low among all of your
5 clients, they may not ever really need to
6 transmit at the same time, and it might not be
7 as benefit -- as much of a benefit to
8 implement a more complex system like that
9 because they're -- there's not going to be as
10 much conflict. They could put them all on
11 Channel 1.

12 I've had situations where I've
13 deployed networks in a facility with one
14 channel, and that's all, and there may be
15 eight access points but all on the same
16 channel for various reasons to do that. But
17 it wouldn't have done any good to set those to
18 different channels because the utilization was
19 so low on the system.

20 Q. Okay. So by restricting an inner
21 region client to the secondary channels, does
22 that reduce competition, if you will, for the
23 primary channel that the outer region clients
24 are attempting to access?

1 A. I didn't quite fully understand your
2 question, but maybe I'll rephrase it in a way
3 so I can answer it. I think I know how you
4 meant -- how you meant the question.

5 I think you're asking whether or not
6 the selection of channels for the inner region
7 is done in a way to avoid interference with
8 the communications on the primary channel for
9 the outer region, I think, is what you're
10 asking; is that correct?

11 Q. Right, right. Is that one way the
12 throughput would be increased to the outer
13 region clients?

14 A. I think, as I was talking about
15 earlier, it's kind of that same idea is that
16 if the outer region, let's say, is operating
17 on Channel 6, that's the primary channel, so
18 the outer region -- that's the primary channel
19 of that particular system and whether they're
20 operating in an inner area or the outer area,
21 that's the channel they would use.

22 There are situations where it may make
23 sense to assign a secondary channel or the
24 secondary channel or a set of secondary

1 channels to the inner region stations so that
2 they can communicate in a way so that it
3 won't -- those frequencies won't overlap with
4 the frequencies of the outer region and,
5 therefore, have less interference.

6 BY MR. SPEED:

7 Q. And if a client in Bugeja is a
8 multichannel client, then it can be assigned
9 multiple channels; is that right?

10 MR. ATKINSON: Objection. Form.

11 A. I think in the situation where you're
12 going to be implementing multiple channels,
13 you know, from in the inner region, which we
14 read, you know, certainly something that's
15 considered in this reference, then that client
16 would need to be able to communicate on those
17 multiple channels. So it would need to have
18 the capability of communicating on two
19 separate distinct frequencies.

20 BY MR. SPEED:

21 Q. And Bugeja describes that at
22 Paragraph 37, right, where he talks about
23 multichannel clients can take advantage of up
24 to three times speed downloads and uploads to

1 the access point; is that right?

2 MR. ATKINSON: Objection. Form.

3 A. Let me look at that -- that paragraph
4 really quick.

5 well, I think what Paragraph 37 is
6 saying is that the idea of using multiple
7 channels, frequency channels, you can send
8 information simultaneously and, therefore,
9 increase the throughput from the -- from
10 particular users or stations that are
11 operating within that inner region on -- and
12 only within the scope of the inner region
13 because their power is going to be less so
14 they have less range.

15 BY MR. SPEED:

16 Q. So an inner region client, rather than
17 just having Channel 1 assigned to it, could
18 have Channels 1 and 6 assigned to it, right?

19 MR. ATKINSON: Objection.
20 Form.

21 A. well, certainly the -- this reference
22 teaches that these particular devices in the
23 inner region can have multiple channels that
24 they're using at the same time simultaneously.

1 So they would be -- again, I think we saw one
2 place where it said that these were assigned.
3 I believe that that's the terminology that was
4 used. If that's the same location, well,
5 that's defined as well, but it's where they're
6 assigned those channels and they're going to
7 be operating on, perhaps. It doesn't have to
8 be, but perhaps they could use multiple
9 channels.

10 BY MR. SPEED:

11 Q. And if they're using multiple
12 channels, they would transmit on those
13 channels based on the idle state of the
14 channel using carrier sense, right?

15 A. I don't recall in here -- in this
16 reference if that was limited to carrier
17 sense. I believe it is in 802.11, but I'm
18 pretty certain it is. That would certainly be
19 a way to do that.

20 Q. All right. And in -- so in your
21 declaration at -- you address Ground 3 in
22 Paragraphs 151 to 171.

23 A. Okay. I'm sorry. I have to look at
24 that real quick.

1 Q. Yes. It's page 79 of the declaration,
2 which should be 83 of the eDepoze document.

3 A. Okay. On page 79. Okay. I'm sorry.
4 If you could repeat what you're asking.

5 Q. So the petition had a Ground 3, which
6 was a combination of Bugeja plus -- plus Ho.

7 Do you recall that?

8 A. Yes.

9 Q. And the -- at a high level, if the
10 combination was a person of skill in the art
11 would implement Bugeja's access points such
12 that they -- on each channel, they were able
13 to use MIMO transmissions.

14 Do you recall that?

15 A. Yes.

16 Q. Okay. And so in Paragraphs 151 to
17 171, that's where you provide your opinion of
18 why you don't think that proposed combination
19 would render the claims obvious, right?

20 A. Let me just glance through those to
21 make sure it's...

22 Yes, it's those paragraphs.

23 Q. And in those paragraphs, you don't
24 dispute that POSAs in 2003 had reasons to

1 implement Bugeja's system using access points
2 that were MIMO capable, right?

3 A. Was the question -- I'm sorry. Repeat
4 that question. Maybe -- I think I missed
5 something.

6 MR. ATKINSON: Objection. Form.

7 BY MR. SPEED:

8 Q. In these -- when assessing Ground 3,
9 you have your opinions of why you don't think
10 Ground 3 renders claims -- the relevant claims
11 obvious, right?

12 A. Right.

13 Q. I just want to establish that of
14 the -- one of the reasons -- strike that.

15 You do not, though, believe that a
16 POSA would not have had a reason to pursue the
17 proposed modification, right?

18 A. I think in order to -- maybe I'm still
19 not understanding your question because of the
20 double negative there, but --

21 Q. I'll try to rephrase. I'm just trying
22 to simplify the issues that we need to
23 discuss.

24 So one question I have is you -- you

1 don't disagree that it would have been obvious
2 to combine Bugeja and Ho in the way we
3 proposed? You just disagree that that
4 combination would actually meet the elements
5 of the claim, correct?

6 A. Certainly, the latter case is, yes,
7 there were -- I don't agree that it satisfies
8 the claims, and that -- that's clearly
9 explained in my report.

10 Based, you know -- opinions on reasons
11 to combine and not to combine, I can't recall
12 if I had anything like that. I'd have to look
13 at my report and see if there was anything I
14 said regarding that.

15 Q. So that -- so if you -- if you did, it
16 would presumably be in the section --
17 Paragraph 151 to 171, where you address
18 Ground 3, right?

19 A. I would think that that's where I
20 would put it, yes.

21 Q. If you -- take as long as you need,
22 but could you look through it just to see if
23 you challenge the motivation to combine?

24 A. Okay. Thanks. Let me take a quick

1 look.

2 (Witness reviews document.)

3 Okay. I think the question you had
4 was asking whether or not a person of ordinary
5 skill in the art would basically not have an
6 issue with combining these two in the way that
7 would satisfy the claims of the patent. Is
8 that -- maybe I'm not sure exactly what your
9 question was.

10 Q. Sorry. I'm just trying to -- okay.
11 So with the obvious analysis, you would agree
12 that you have two references, and you need to
13 identify a reason to combine those two
14 references in a particular way, correct?

15 A. Right.

16 Q. Right. And a person of skill in the
17 art needs to have a reasonable expectation of
18 success in making that combination, right?

19 A. Right.

20 MR. ATKINSON: Objection. Form.

21 BY MR. SPEED:

22 Q. And then independent of that, you then
23 look at that proposed combination and say does
24 it meet each element of the claim and,

1 therefore, render it obvious, correct?

2 A. That's pretty much what you do, right.

3 Q. Okay. So there's three distinct
4 aspects of an obvious analysis, typically,
5 right?

6 MR. ATKINSON: Objection. Form.

7 A. Legally, I can't remember all the
8 steps, but, you know, it's in my report. But
9 those are the types of things that I would be
10 doing or have done.

11 BY MR. SPEED:

12 Q. Right. And so we can agree that you
13 dispute that the proposed combination, when
14 it's put together, meets each element of the
15 challenged claims, right?

16 A. Yes.

17 Q. And so the -- my question is on the
18 first one of whether or not POSA, in the first
19 instance, would think to add MIMO
20 functionality to Bugeja in light of the
21 teachings of Ho, do you disagree with that
22 proposed motivation to combine?

23 MR. ATKINSON: Objection. Form.
24 Lacks foundation. Scope.

1 A. Yeah, I'm not certain I covered that
2 in my opinion, so that's why I'm struggling a
3 little bit. I don't remember that. I don't
4 think I necessarily offer an opinion on it,
5 but I -- I don't remember. Unless there's
6 someplace else in my declaration where I'm
7 saying something that would apply to all these
8 situations, I don't remember that either.

9 But I looked through this section, and
10 I don't see something specific, you know,
11 answering that. So I don't think I covered
12 that in my opinions.

13 BY MR. SPEED:

14 Q. Okay. And in those same sections, did
15 you cover the -- I guess the second issue,
16 which is reasonable expectation of success?
17 Do you recall if you covered that in --

18 MR. ATKINSON: Objection. Form.

19 BY MR. SPEED:

20 Q. -- Paragraphs 151 to 171 of your
21 declaration?

22 MR. ATKINSON: Objection. Form.

23 A. I -- I can look again, but I don't
24 remember covering that in those sections.

1 BY MR. SPEED:

2 Q. So if we look at Paragraph 151 of your
3 declaration.

4 A. Okay.

5 Q. So in your opinion, the Bugeja-Ho
6 combination does not disclose the elements of
7 Claim 1, in part, because the combination,
8 quote, relies on Bugeja's teaching of a single
9 channel that is assigned to a given client; is
10 that right?

11 A. Right.

12 Q. So this is -- your opinion is -- goes
13 back to the earlier opinion that we talked
14 about, that the claims are limited to
15 multichannel communication systems, right?

16 A. That's fair to say. Again, it's --
17 these are systems where you have multiple
18 channels that can be used simultaneously
19 between one particular user and another user,
20 for example, a station and an access point or
21 a station to a different station.

22 Q. Right. And because of the Bugeja-Ho
23 combination, the -- the primary channel is the
24 only channel that an outer region client can

1 use? You don't consider that transmission to
2 be a multichannel communication transmission,
3 correct?

4 A. Yeah.

5 MR. ATKINSON: Objection. Form.

6 A. That's fair to say that there's -- in
7 that particular -- that is only one channel
8 that's used. That's the channel that's -- it
9 doesn't have another channel it can use after
10 selecting those.

11 BY MR. SPEED:

12 Q. You would agree, though, that
13 Bugeja-Ho access point has the capability to
14 transmit packets simultaneously over multiple
15 idle wireless channels, right?

16 MR. ATKINSON: Objection. Form.

17 A. As I said, again, to clarify that or
18 put some scope around it is -- in the inner
19 region, it's possible that those stations may
20 be set up to communicate over more than one
21 channel simultaneously.

22 BY MR. SPEED:

23 Q. And in Bugeja-Ho, do you recall how a
24 device is determined to be an inner region

1 client or an outer region client?

2 A. In Bugeja, which I don't think this --
3 I don't believe it's mentioning Ho, but in
4 Bugeja, it's a -- the idea of what the
5 distance that the station is from the access
6 point. And I believe it was -- would deal
7 with signal power, you know, and what the --
8 as an indicator as far as distance.

9 Q. So based -- based on the signal power
10 from a particular client device, the Bugeja
11 access point would assign that device to
12 either the primary channel or one or both of
13 the secondary channels, right?

14 MR. ATKINSON: Objection. Form.

15 A. Yeah, at least the idea is that, based
16 on signal power, if that's -- being used as an
17 indication of distance, that the inner -- one
18 that's closer at some level or some cutoff
19 value would be, or could be, assigned a
20 secondary channel or two secondary channels
21 based on its signal power.

22 BY MR. SPEED:

23 Q. And in Paragraph 152, you state that
24 "Bugeja teaches against the idea of using a

1 mandatory channel because it teaches all
2 channels -- all available channels should be
3 used indiscriminately."

4 Do you see that?

5 A. Right.

6 Q. What did you mean by "All available
7 channels should be used indiscriminately"?

8 MR. ATKINSON: Objection. Form.

9 A. Let me just read the rest of that
10 paragraph.

11 (Witness reviews document.)

12 well, I believe that it's -- it's
13 just you need to perform a carrier-sensing
14 operation, and it's idle, you can just
15 transmit. That's -- that's, I believe, what I
16 meant by being indiscriminate, that it's not
17 basing that on the idle state of another
18 channel, i.e., a mandatory channel.

19 BY MR. SPEED:

20 Q. And is this the reason why Bugeja-Ho
21 purportedly doesn't meet the claim elements
22 distinct from the multichannel issue that
23 you've already identified?

24 MR. ATKINSON: Objection. Form.

1 A. Well, it's certainly one of the ones
2 that I recall in my report since we're looking
3 at it right here. In other words, it does not
4 have a mandatory channel. It has as taught in
5 the '551 patent.

6 BY MR. SPEED:

7 Q. If you turn back to Paragraph 63,
8 which is page 26 of your declaration.

9 A. Okay.

10 Q. And so your construction is one
11 channel in a wireless multichannel
12 communication system whose idle state
13 determines whether there can be a transmission
14 over the other channels, right?

15 A. Yeah. I'm sorry. I didn't quite go
16 to the right paragraph then. So you said
17 paragraph -- which paragraph?

18 Q. It's 63, but it's the part that goes
19 on to the next page. Sorry.

20 A. Okay I'm sorry, I...

21 Now I'm on the right page now. I'm
22 sorry. Go ahead.

23 Q. And so your construction, you could
24 read it as having two parts, right? There's

1 the mandatory channel using one channel and a
2 wireless multichannel communication system,
3 right?

4 A. well, I think I read the construction
5 as one thing. I wouldn't say there's
6 different -- I mean, there's different phrases
7 in there, but I don't think they can really be
8 detached. You know, it's all one thought, you
9 know, as far as the construction is. It's
10 one -- it's a mandatory channel, so it's
11 treated as one -- one thing as a whole.

12 Q. And with respect to Bugeja, the
13 Bugeja-Ho combination, it's your opinion that
14 the primary channel in Bugeja-Ho is not a
15 mandatory channel because it's not one channel
16 on a wireless multichannel communication
17 system, right?

18 MR. ATKINSON: Objection. Form.

19 A. well, certainly a primary channel is
20 -- is not one channel in a wireless
21 multichannel communication system because
22 there's between -- in that particular part of
23 it, in the primary channel region, that's the
24 only channel that can be assigned. So --

1 BY MR. SPEED:

2 Q. Right.

3 A. -- there's --

4 Q. Right. And so -- and also what we
5 were just talking about, you also think that
6 the Bugeja-Ho lacks a mandatory channel
7 because none of the channels is one whose idle
8 state determines whether there can be a
9 transmission over the channels, right?

10 MR. ATKINSON: Objection. Form.

11 A. Well, certainly, there's no mandatory
12 channel because, at least partly, if I
13 remember from my declaration here, is that
14 where there's an idle state that determines
15 whether there can be a transmission over the
16 other channels. They're just used
17 indiscriminately.

18 BY MR. SPEED:

19 Q. So for Bugeja-Ho combination, you have
20 two reasons why you don't think Bugeja-Ho
21 meets the mandatory channel as you've
22 construed it?

23 MR. ATKINSON: Objection. Form.
24 Misstates testimony.

1 A. I'm not sure how we define a reason to
2 put a box around it that way, but those are at
3 least two reasons. I don't recall in the rest
4 of my declaration of that section if there's
5 any other -- what I would call reasons. But
6 those are certainly two things that are --
7 that are missing.

8 BY MR. SPEED:

9 Q. And then moving back to Paragraph 155,
10 which is page 81.

11 A. Okay. I'm almost there.
12 Okay.

13 Q. And about a third of the way down
14 here, a sentence that says, "I agree with the
15 Board's conclusion that the mandatory channel
16 is always used to 'control system
17 transmission.'"

18 Do you see that?

19 A. I'm still trying to -- oh, yeah, I see
20 where it is now. Okay. Yes.

21 Q. And you continue. It says, "It's my
22 opinion that Bugeja, however, teaches that
23 transmission does take place on a secondary
24 channel regardless of whether the primary

1 channel is idle"; is that right?

2 A. Right.

3 Q. So what do you understand the board to
4 have meant when it said that the mandatory
5 channel is used to "control system
6 transmission"?

7 A. Well, just that. It's used to control
8 whether or not transmission can take place
9 over multiple channels. I mean, we're talking
10 about a multichannel. It's one -- the
11 mandatory channel is one channel of a
12 multichannel communication system. So a
13 multichannel communication system -- and the
14 rest of that would refer to a multichannel
15 communication system. So if it's controlling
16 access, it would control access to those
17 multiple channels.

18 Q. Does that mean that transmissions that
19 occur in the system -- that all transmissions
20 that occur in the system are controlled by the
21 idle state of the mandatory channel or just
22 transmissions between the transmitting station
23 and the receiving station for which a
24 mandatory channel has been set?

1 A. Let me again rephrase that the way I'm
2 thinking you're asking. I think this is what
3 you're trying to say is that if a mandatory
4 channel is set for a particular station, then
5 you're asking whether or not that control is
6 happening for those transmissions to that
7 station and whether or not that control is
8 also taking place in a situation where there's
9 no mandatory channel set.

10 Is that kind of what you're --

11 Q. Yes, yes. Thank you.

12 A. Certainly the way the -- the claims
13 read is that -- with the '551 patent is that
14 if a mandatory channel is set, then there is a
15 form of control of whether or not the
16 transmission is going to take place that goes
17 beyond what the carrier-sense multiple access
18 protocol would provide.

19 And that step that it goes on with is
20 to check the mandatory channel and only
21 transmit if that's idle, and that counts --
22 it's also pertains to the -- any idle channels
23 other than the mandatory channel.

24 So that control would -- would be

1 exercised there if -- if there's no mandatory
2 channel sent, then -- then the transmissions
3 can happen without having that -- that -- you
4 don't have to implement that procedure because
5 there's no mandatory channel set. So you
6 would just check the idle state and just
7 transmit on all of those if that's what the
8 system decides to do.

9 Q. So if you had a single access point
10 that's serving two clients, Client A has a
11 mandatory channel assigned to it, and Client B
12 has no mandatory channel assigned to it.

13 Do you have that hypothetical in mind?

14 A. Uh-huh, right.

15 Q. Does the idle status of the mandatory
16 channel for -- for Client A dictate whether
17 there's transmissions sent to Client B for
18 which there is no mandatory channel?

19 A. From what I understand, and it is a
20 hypothetical so I haven't analyzed it fully,
21 and I know we talked about it earlier, but my
22 first thought is that the access point would
23 control those transmissions based on a
24 mandatory channel to, let's say, Client A, you

1 know, that has a mandatory channel set. And
2 if that mandatory channel is busy but it needs
3 to communicate with another client that does
4 not have a mandatory channel set, is that that
5 wouldn't necessarily control or -- or preclude
6 that transmission from happening because that
7 other client does not have a -- does not have
8 a mandatory channel set.

9 Again, it's a hypothetical, so this is
10 just me sitting here today thinking about it.
11 More thought maybe -- it depends on the
12 configuration of things. It may change what I
13 would think about that. But just first
14 thought is that's kind of how I see the claims
15 working.

16 THE WITNESS: It's been about an
17 hour now. Do you mind taking a break since it
18 was a little quiet spot there?

19 MR. SPEED: Sorry. I was
20 thinking, but, yeah, about a ten-minute break
21 is fine with me.

22 THE WITNESS: Good.

23 THE VIDEOGRAPHER: We're off the
24 record at 1:41 p.m.

(Recess take from 1:41 p.m.
to 1:54 p.m.)

THE VIDEOGRAPHER: Back on the
record, 1:54 p.m.

By MR. SPEED:

Q. Mr. Geier, if we could -- if you could
pull up the '551 patent.

A. Okay.

Q. If you flip all the way to the back to
column 11 and column 12. It's where the
claims start.

A. Okay.

Q. You see where it says, at the bottom
of column 11, "Industrial Availability"?

A. Yes.

Q. And then there's two paragraphs there.
You see that?

A. Yes.

Q. If you could just -- I'm going to ask
you a question or two about those. If you
want to just review them, that would be
helpful.

1 A. (Witness reviews document.)

2 Okay. I've read those.

3 Q. Okay. I just wanted to confirm that
4 the second paragraph where it states,
5 "Moreover, in the case where there's a station
6 for which no mandatory channel is set,
7 transmission is enabled between stations,
8 including the station even when the mandatory
9 channel is busy."

10 Do you see that?

11 A. Yes.

12 Q. Okay. So that's consistent with the
13 hypothetical we were describing earlier where
14 the mandatory channel doesn't dictate
15 transmission to stations for which no
16 mandatory channel has been assigned,
17 correct?

18 MR. ATKINSON: Objection. Form.

19 A. That's what that means is that there's
20 no mandatory channel set, then transmission is
21 enabled, you know, that there is no mandatory
22 channel set. So it doesn't matter the state
23 of the other channels or any of the channels.

24 BY MR. SPEED:

1 Q. And it concludes by saying, "Thus
2 reduction of the throughput can be
3 suppressed."

4 Do you see that?

5 A. Yes.

6 Q. Do you have a sense of how that, I
7 guess, case would suppress a reduction of
8 throughput?

9 MR. ATKINSON: Objection. Form.
10 Scope.

11 A. You know, I haven't really thought of
12 that before, so I'm kind of thinking about
13 this, I think, for the first time just now.
14 But I can't remember thinking about this
15 before, so just give me a minute to look at
16 it.

17 (Witness reviews document.)

18 The only thing I can think of there --
19 again, now, this is the first time I'm
20 thinking about it, so I might -- would
21 probably with more time could come up with
22 something probably better, but I think that,
23 you know, this idea of certainly trying to
24 reduce power leakage, you're doing that by not

1 allowing transmissions at certain times, which
2 is fine. There's always -- there's a cost to
3 anything you do with -- with setting in
4 functionality to improve things.

5 Even though you're improving things,
6 there's generally some sort of cost. And if
7 you don't need that, the power leakage is not
8 a problem, then it's probably better, or could
9 be better, just not to use the mandatory
10 channel for that particular user, you know.
11 If there is an issue with power leakage, then
12 the benefits would likely outweigh the cost of
13 doing it.

14 Here, I think what they're meaning is
15 that if -- if there's no mandatory channel
16 set, then reduction of throughput can be
17 suppressed. So there won't be any reduction
18 of throughput regarding the use of this
19 mandatory channel, that that's cost, you know,
20 you wouldn't have, I think. I'm not really
21 certain. I haven't thought about this, I
22 don't think, before.

23 BY MR. SPEED:

24 Q. Right. So the -- if I am

1 understanding you, the idea is what -- the
2 mandatory channel has its benefits, allegedly,
3 mainly avoiding power leakage, but it comes at
4 the cost of reduction of throughput because
5 stations need to wait for that mandatory
6 channel to be available, right?

7 MR. ATKINSON: Objection. Form.

8 A. Well, I wouldn't say it -- it's always
9 going to be there. I wouldn't say the
10 statement in that way. It's just it could.
11 You know, you always weigh the cost versus the
12 benefits and to determine if you're going to
13 implement it.

14 BY MR. SPEED:

15 Q. Right.

16 A. And this -- I think that's what that
17 means. I'm not absolutely certain. You know,
18 with more time I might come up with something
19 different than that or better.

20 Q. So the idea is if you have to -- if
21 you set mandatory channels for certain
22 stations, the throughput for those stations
23 could be reduced depending on the system
24 transmissions. And so you could suppress the

1 amount of throughput reduction that you have
2 by having some stations not be limited by the
3 mandatory channel; is that right?

4 MR. ATKINSON: Objection. Form.

5 A. You know, I don't know if I would say
6 it that way. But I think what I mean is that,
7 you know, you always weigh the cost versus the
8 benefits. And if it turns out where a station
9 you want to transmit to is not the type -- or
10 having a situation where power leakage is a
11 problem, then that -- that's a good candidate
12 for not setting a mandatory channel for it is
13 that if -- it might cost you a little bit with
14 -- with no gain whereas if it had a power
15 leakage problem, now you pay a little bit and
16 you gain a big gain or gain some benefit so
17 you'll have a net positive, you know, for
18 efficiency. That's what I meant.

19 It's -- the -- it's situation by
20 situation. Or it depends on the situation, I
21 guess, is a better way of saying it.

22 BY MR. SPEED:

23 Q. So I'm going to introduce the Lundby
24 exhibit. Let me get you that.

1 A. Okay. I have it.

2 Q. I've introduced what's been previously
3 marked as Exhibit 1008. Do you recognize this
4 as the Lundby reference that you discuss in
5 your declaration?

6 A. It appears to be, yes.

7 Q. If we look at Column 1, lines 7 to 10,
8 this is where Lundby describes the field of
9 its invention, right?

10 A. Yes.

11 Q. Okay. And that field is
12 communications in general; is that right?

13 A. That's part of it.

14 Q. And in the description of the related
15 art from Lundby, Lundby discusses
16 communications in a CDMA-based system,
17 right?

18 A. Yeah, it's discussing the use of CDMA;
19 that's right.

20 Q. Okay. And if we look at Figure 2 of
21 Lundby, Lundby describes a -- is depicting a
22 method for transmitting information in a
23 wireless communications system, right?

24 A. You said Figure 1?

1 Q. Sorry. Figure 2.

2 A. I'm sorry? Figure 2? Okay.

3 Q. Yeah. And Figure 2 depicts a method
4 for transmitting information in a wireless
5 communication system; is that right?

6 A. I believe that's what they're
7 referring to as 240, you know, as Item 240.

8 Q. And at an high level, Figure 2
9 describes a method where if it's desirable to
10 transmit on two channels, then the
11 communication system transmits data on a
12 primary channel and a secondary channel, and
13 that's shown in Block 250 of Figure 2,
14 right?

15 A. Yeah. where the actual transmission
16 takes place is in 250.

17 Q. And that -- the block at 250 is a
18 transmission on a primary and a secondary
19 channel, right?

20 MR. ATKINSON: Objection to
21 form.

22 A. Yes.

23 BY MR. SPEED:

24 Q. And then if it's not desirable to use

1 two channels, you go to Block 252, and you
2 transmit data on the primary channel, right?

3 MR. ATKINSON: Objection. Form.

4 A. Yes, that's correct.

5 BY MR. SPEED:

6 Q. So you would agree that Lundby only
7 illustrates two outcomes for its Figure 2
8 method, either transmitting on the primary
9 channel or both the primary and secondary
10 channels, right?

11 MR. ATKINSON: Objection. Form.

12 A. Well, at least in Figure 2 at -- I
13 call it a decision block, 246, or at least
14 making the -- in trying to answer that
15 question, desirable to transmit on two
16 channels, it's yes or no. You do either
17 transmit on the primary channel or you
18 transmit on primary and secondary channels.
19 So those are the two possible outcomes of that
20 Block 246.

21 BY MR. SPEED:

22 Q. Let's go back to your declaration. If
23 you could turn to Paragraph 102 of your
24 declaration.

1 A. Okay. I'm there.

2 Q. Okay. And in Paragraph 102, you're
3 describing the Shpak 1B ground that Petitioner
4 proposed, and you note that the petitioner
5 argues a POSA would have combined Shpak with
6 1B by adding another available 802.11b channel
7 as a secondary channel to augment the primary
8 channel's bandwidth such that wireless packets
9 are transmitted on both channels
10 simultaneously.

11 Do you see that?

12 A. Yes.

13 Q. And in the combination, the primary
14 channel that we referred to is also Shpak's
15 common frequency channel, right?

16 A. I believe it was called that, but it's
17 the one that's generally used, yes.

18 Q. So in unmodified Shpak, the access
19 points could send data over -- could send data
20 serially over the common frequency channel,
21 right?

22 MR. ATKINSON: Objection. Form.

23 A. Not really certain how you're using
24 the word serial -- "serially." Do you mean

1 one at a time, or do you mean in serial data
2 transmission, or -- I guess I'm not sure what
3 you meant by "serially."

4 BY MR. SPEED:

5 Q. No. Apologies. It's probably an
6 inartful question.

7 So in the modified Shpak system that
8 we've proposed, the access point would
9 simultaneously send packets over both the
10 common frequency channel and a second --
11 secondary 802.11b channel, right?

12 A. I think that's what the petitioner was
13 suggesting, that you use 802.11 channels
14 instead of what Shpak was indicating in the
15 reference.

16 Q. Right. I guess what Shpak was doing
17 in the reference was just a single-channel
18 transmission technique, right?

19 MR. ATKINSON: Objection. Form.

20 A. From what I understand, that was just
21 a single channel that would be used at all.

22 BY MR. SPEED:

23 Q. And so in the combination where the
24 access point can use both the common frequency

1 channel and a secondary channel, the bandwidth
2 available to the access point has been
3 increased compared to the unmodified Shpak
4 access point, right?

5 MR. ATKINSON: Objection. Form.

6 A. Again, it depends on how that would be
7 implemented. You know, it would be -- if
8 you're using two channels and there's no
9 conflict in using those two channels and with
10 everything else not being a factor, nothing
11 else being a factor in how that would operate,
12 in general, having two channels versus one
13 channel can increase throughput.

14 BY MR. SPEED:

15 Q. And by increasing throughput, that
16 would also increase the speed with which a
17 client can download or upload data to the
18 access point, right?

19 MR. ATKINSON: Objection. Form.

20 A. Again, it would -- that would depend
21 on many factors, you know, whether or not the
22 speed would actually be increased. It might
23 not.

24 BY MR. SPEED:

1 Q. How -- in what scenario would it not
2 be -- would speed not be increased by adding a
3 second channel to Shpak's system?

4 MR. ATKINSON: Objection. Form.

5 A. You know, there's a couple that come
6 to mind. One would be from those two distinct
7 frequencies that are being used, frequency
8 bands being used or frequency channels, I
9 guess, probably a better way to say it. One
10 of those could be conflicting with another
11 channel from another access point nearby that
12 may be operating on the same channel, and
13 there's someone streaming video there, and
14 it's going to damage that -- that channel,
15 that second channel that you're choosing to
16 use to communicate with the other one, and,
17 therefore, you wouldn't have any gain. You
18 know, there would be just continuous errors
19 and retransmissions.

20 It could be where both channels are
21 fine but you're downloading from a server that
22 could only output a certain -- at a certain
23 performance level, and whether you can
24 download at 100 megabits per second or 50

1 megabits per second, it doesn't matter if the
2 server is only able to output at one megabit
3 per second. The server would be limiting the
4 performance.

5 So in other words, you may not see any
6 gain in performance by adding another channel.
7 You know, you would have to consider the
8 systems and its application to know whether or
9 not there would be any gain.

10 BY MR. SPEED:

11 Q. And conversely if you add another
12 channel to the Shpak-Ho access point, you
13 could increase the speed with which clients
14 are able to upload and download data, right?

15 MR. ATKINSON: Objection. Form.

16 A. It all depends on the -- on the
17 situation, you know, because another reason
18 could be you could have power leakage, you
19 know, among those channels. And that's, of
20 course, why you do need to use a mandatory
21 channel, which isn't taught there, but you --
22 that would be a reason why you might not have
23 a speed gain, if there's a problem with a
24 power leakage.

1 BY MR. SPEED:

2 Q. So assuming there's no power leakage
3 problem, assuming that some of these other
4 problems are resolved, all things equal, being
5 able to use two channels allows you to
6 transmit more data more quickly than using a
7 single channel; is that right?

8 A. I -- I -- certainly as I've said just
9 a little bit ago is that, in general, that
10 would be the benefit of using two channels is
11 that you can push more data through in a
12 shorter amount of time and therefore improve
13 throughput. But it depends on the
14 application, the environment, the
15 configuration of the system, you know, whether
16 or not you would actually be able to achieve
17 that.

18 Q. And Paragraph 119 of your declaration.

19 A. Okay.

20 Q. And in Paragraph 119, you agree that
21 increased transmission speed provides a
22 motivation to use two channels instead of one;
23 is that right?

24 A. Let me read through that paragraph.

1 Q. Okay.

2 A. (Witness reviews document.)

3 I think, as I state there, it is my
4 opinion that, at most, this motivation
5 provides a reason to use two channels instead
6 of one. And that's going with what I talked
7 about. In general, you know, that's -- that's
8 a benefit. And, again, it depends on the
9 situation.

10 Q. And if you look at Paragraph 120, you
11 note that the petitioner alleged that another
12 reason to add a second channel would be to
13 reduce interference on a common frequency
14 channel.

15 Do you see that?

16 A. Let me to read through that.

17 Q. Yeah.

18 A. (Witness reviews document.)

19 I think what I point out there, at
20 least in my opinion so far, is that that's
21 what the petitioner has alleged. I don't
22 think I agree with that there. I mean, in
23 other words, I don't think I had an opinion on
24 that in my declaration.

1 Q. Okay. I -- maybe I misinterpreted it.
2 I was looking at the last sentence where you
3 say, "As with increased speed, this
4 motivation, the reduction in interference,
5 that most speaks to the advantages of using
6 two channels instead of one but does not, in
7 my opinion, suggest one might wish to use
8 none."

9 Do you see that?

10 A. Yes.

11 Q. Would you agree that an advantage of
12 using two channels is a reduction of
13 interference on the common frequency channel
14 in Shpak?

15 MR. ATKINSON: Objection. Form.

16 A. Yeah, maybe I'm not understanding
17 your question because you're saying
18 "interference". What do you mean by -- I
19 mean, I know what interference is in general,
20 but what are you -- maybe you could rephrase
21 that in that way because that's what's
22 throwing me off is interference. I don't
23 think I have an opinion on interference in
24 that common channel.

1 BY MR. SPEED:

2 Q. So the first sentence says,
3 "Petitioner has also alleged that a POSA would
4 wish to combine Shpak with Lundby because
5 adding an additional channel to Shpak's common
6 frequency channel would reduce interference on
7 the common frequency channel."

8 Do you see that?

9 A. (Witness reviews document.)

10 I think that -- well, again, that's
11 not, I don't believe, my comments. I think
12 that's from Williams's declaration, from what
13 I understood.

14 Q. Okay.

15 A. So it's not -- it's not my opinion
16 that I understand. It's -- from what I
17 remember when I wrote this, it's something
18 that came from Dr. Williams.

19 Q. And what's your understanding of
20 interference in a -- for a frequency channel?

21 A. There's different types of
22 interference. You can have interference from
23 a wireless LAN operating nearby that could
24 provide egress, decrease in throughput.

1 You could have interference within a
2 channel, for example, with a CDMA system where
3 there's issues with the streams and using --
4 not using orthogonal codes to keep the stream
5 separate.

6 There can be interference in the
7 channel and is sort of a form of interference
8 within the channel. There's various forms of
9 interference.

10 Q. would -- would the -- would the
11 interference within the channel, would that
12 apply also in a MIMO-implemented wireless
13 channel such that there would be interference
14 between the MIMO data streams?

15 MR. ATKINSON: Objection. Form.

16 A. well as I mention, MIMO can have
17 interference that's occurring between symbols,
18 you know, that are being sent on different
19 streams if they're -- the codes used to
20 represent those symbols are not orthogonal,
21 you can have interference. But it's
22 interference within the channel, sometimes
23 referred to as, like, a channel noise.
24 That's -- that's that form.

1 But I guess the way you asked your
2 question is whether or not I would disagree
3 that there's a benefit of less interference in
4 a common frequency channel because of the use
5 of multiple channels.

6 You would have an increase in
7 throughput possibly, as I've talked about.
8 That's a possible benefit. But I guess I
9 don't understand the question you're asking if
10 you're referring to that in terms of
11 interference.

12 BY MR. SPEED:

13 Q. If we go to Paragraph 121, do you see
14 in that paragraph you explain that the
15 "Petitioner has suggested that a POSA would
16 wish to use another channel to reduce the
17 amount of transmit power on Shpak's common
18 frequency channel so as to stay within
19 regulatory limits."

20 Do you see that?

21 A. Yes.

22 Q. And your view is that, at most, that
23 motivation, the reduction of transmit power
24 provides a reason to use two channels instead

1 of one, right?

2 MR. ATKINSON: Objection. Form.

3 A. well, that -- that's a different
4 thing, I can see here, at least the way it's
5 worded from what was taken from what the
6 petitioner was thinking. In that case, as
7 I've said in here in Paragraph 121, that that
8 would provide a reason to use two channels
9 instead of one.

10 So the idea of using a separate
11 channel would allow you to reduce the amount
12 of transmit power on the common frequency
13 channel is that now you're able to send data
14 over different channels. In fact, you
15 probably would reduce it because you're only
16 going to have so much power you're going to be
17 able to use over MIMO using these particular
18 channels, at least the ones in Lundby.

19 we're talking about Shpak now. But
20 here in Shpak, it's -- you could reduce the
21 power in one of those channels and then stay
22 within the regulatory limits or just conserve
23 power of that device. So there could be
24 benefits of doing that. I guess I wouldn't

1 disagree with that.

2 BY MR. SPEED:

3 Q. Okay. All right. And if you turn to
4 page 54 of your declaration.

5 A. Okay.

6 Q. Page 54 is where you start a section
7 called "Shpak-Lundby does not prevent
8 transmission when the common frequency channel
9 is busy."

10 Do you see that?

11 A. I'm on page 54, you said?

12 Q. Yes.

13 A. Okay.

14 Q. And it's, like -- it's Section 1,
15 right above Paragraph 108.

16 A. Okay. I see that now, yes.

17 Q. And so in this section -- it's from
18 Paragraph 108 to 114 -- you explain that in
19 your opinion, "A POSA implementing Shpak in
20 view of Lundby would have designed the system
21 such that the access points transmit packets
22 over the secondary channel whenever it's idle
23 even if the primary channel is busy"; is that
24 right?

1 MR. ATKINSON: Objection. Form.

2 A. Let me just read through that.

3 BY MR. SPEED:

4 Q. Yes. Yeah, take your time.

5 A. (Witness reviews document.)

6 Yeah, I believe that's what I'm saying
7 right there that's in Paragraph 108.

8 Q. And that's because, as we see in,
9 like, Paragraph 110, in your view, the default
10 transmission in the art as of 2003 would be to
11 transmit when a channel's idle, right?

12 MR. ATKINSON: Objection. Form.

13 A. And you're referring to Paragraph 110,
14 right?

15 BY MR. SPEED:

16 Q. Yes.

17 A. Yeah. I guess what I'm saying in 110
18 is that that's how the transmissions would be
19 taking place is based on what's taught in
20 Shpak, which is based on the 802.11 protocol.

21 Q. So in the implementation that you're
22 describing the Shpak-Lundby access point would
23 have been -- would have treated the primary
24 channel and the secondary channel as

1 independent channels that could be used
2 together or separately based on idle state,
3 right?

4 MR. ATKINSON: Objection. Form.

5 A. No. There wouldn't be a particular
6 channel that would be used to disallow
7 transmission on an idle channel, you know. So
8 it would be -- in other words, there's no
9 mandatory channel, you know, that's been
10 provided for that -- that situation.

11 BY MR. SPEED:

12 Q. And in Paragraph 110 at the top of
13 page 56, you've compared your implementation
14 of Shpak-Lundby to the multichannel
15 conventional -- multichannel communication
16 system described in the '551 specification,
17 right?

18 MR. ATKINSON: Objection. Form.

19 A. Yeah. As I said, I'm pointing to the
20 '551 patent specification that talks about the
21 prior art or the prior multichannel systems
22 using carrier sensing to sense the multiple
23 channels instead of just one, and if the
24 channel is idle, it transmits.

1 BY MR. SPEED:

2 Q. So in your implementation of
3 Shpak-Lundby, there -- the secondary channel
4 wouldn't be held in reserve and only used when
5 necessary to augment the bandwidth of the
6 primary channel, right?

7 MR. ATKINSON: Objection. Form.

8 A. I didn't quite understand that
9 question.

10 BY MR. SPEED:

11 Q. So in the implementation of
12 Shpak-Lundby that you're describing in, for
13 example, Paragraph 110 of your declaration,
14 the primary -- or the secondary channel is not
15 being held in reserve to augment the primary
16 channel on an ad hoc basis but is instead
17 being used whenever it's idle and a station
18 would like to use it, right?

19 MR. ATKINSON: Objection. Form.

20 A. I guess I don't understand what you
21 mean by my "implementation." This is -- the
22 petitioner's the one that's, you know,
23 described this particular combination. I
24 didn't. You know, it wasn't my combination.

1 So I guess I'm a little confused on what you
2 want me to -- how you want me to answer this.

3 BY MR. SPEED:

4 Q. Okay. So if you turn to Paragraph 102
5 of your declaration.

6 A. Okay.

7 Q. You -- you quote from Dr. Williams's
8 declaration where he explains that "The
9 Shpak-Lundby access point would have applied
10 Lundby's decision tree to select which
11 channels to use, either the primary channel or
12 the primary and secondary channels, when
13 desirable."

14 Do you see that?

15 A. Right.

16 Q. So in Dr. Williams's proposed
17 combination, you're either using the primary
18 channel or you're going to augment it with the
19 secondary channel when desirable, right?

20 A. Right.

21 Q. Right. So that would be different
22 than the conventional multichannel wireless
23 system that's described in the background of
24 the '551 patent, right?

1 MR. ATKINSON: Objection. Form.

2 A. well, I think it's still identifying
3 two channels that can be used
4 indiscriminately. They're just sensed and
5 then used if they're available.

6 You know, if you have a reason to use
7 one, you use one. If you have a reason to use
8 two, you use two. Lundby is clear on how
9 that -- or gives examples on how that decision
10 is made, you know, the idea of conserving
11 power. There may be situations where you want
12 to deliver things in -- the data in parallel,
13 but it takes up a code, you know, another code
14 to do that. So there's some things you have
15 to consider. And it might use less power, so
16 that there's a benefit there. But it's -- I
17 guess I don't know how else to answer that.

18 BY MR. SPEED:

19 Q. Right. So you would agree that
20 there's certain circumstances where it would
21 be beneficial to augment the bandwidth of a
22 wireless channel, to allow for greater
23 throughput, for example?

24 MR. ATKINSON: Objection. Form.

1 A. well, like we talked about in general
2 that there may be a benefit in doing that, you
3 know, by having multiple channels and
4 communicate simultaneously, but you run the
5 risk of issues, you know, that if you have to
6 analyze the issues to see if there's too many
7 issues with doing that, then it may not be
8 worth it. You know, you might do just as well
9 or even better, you know, by having one
10 channel in terms of throughput.

11 BY MR. SPEED:

12 Q. And if the secondary channel is
13 available for use when it's idle, is there a
14 scenario in which a -- the access points using
15 the primary channel and it has decided it
16 would like to augment the primary channel but
17 it can't do so because the secondary channel
18 is being used by some other mobile device?

19 MR. ATKINSON: Objection. Form.
20 Scope.

21 A. I think it depends on how the system's
22 implemented, you know, whether or not there's
23 a pool of channels that can be used between
24 those two stations and whichever ones are

1 ideally used or you have a certain set that
2 you use between two users. I think it's going
3 to depend, you know, on the situation.

4 BY MR. SPEED:

5 Q. Great. So you could have a scenario
6 where the system's design where you have a
7 primary channel and then you have a secondary
8 channel that you -- you keep in reserve for
9 only circumstances where you need it such as
10 you're downloading a data-intensive video and
11 you want to increase the throughput of the
12 connection to the station?

13 MR. ATKINSON: Objection. Form.
14 Scope.

15 A. I don't believe Lundby or Shpak teach
16 that. I mean, where you -- it's -- it's
17 either -- you can transmit on one or both.
18 Well, I guess you have the idea is it
19 desirable? But they're basing that
20 desirability on specific things whether it's
21 code -- the idea of trying to not use too many
22 codes. You know, that would be a decision
23 that you could use one channel instead of two
24 if you are limited by codes.

1 Or if you have power issues, you might
2 want to use two channels, see if you can get
3 by with less power. Decisions can be made
4 like that to determine whether you use one or
5 two channels.

6 BY MR. SPEED:

7 Q. Right. And Figure 2 of Lundby is
8 teaching that those types of decisions can be
9 made on an ad hoc basis, right?

10 MR. ATKINSON: Objection. Form.
11 Scope.

12 A. I don't remember it necessarily being
13 ad hoc. I don't remember in Lundby -- or in
14 Shpak or Lundby how that would be -- or how
15 that could be provided. You know, I imagine
16 there's all kinds of ways to do that, but I
17 don't remember.

18 BY MR. SPEED:

19 Q. Right. So one way of the all kinds of
20 ways to do that would be to determine on an ad
21 hoc basis whether it would be desirable to use
22 a second channel to augment the primary
23 channel, right?

24 MR. ATKINSON: Objection. Form.

1 Scope.

2 A. Well, again I think that that -- that
3 block that's right before or where it splits
4 off into yes or no and decides whether to use
5 one channel or two is based on parameters that
6 they give some examples in the -- in the
7 reference, you know, as far as what those
8 could be, but they're based on code
9 availability and power usage.

10 BY MR. SPEED:

11 Q. If you were designing a system that --
12 for which you wanted to guarantee a station
13 the ability to augment its primary channel
14 with a secondary channel, would you keep that
15 secondary channel in reserve and only use it
16 when you want to augment the primary channel?

17 A. I think it depends on how the system's
18 designed. You might have that channel as just
19 a channel that's available. And if you're not
20 using it, some other station might use it or
21 some other -- some other part -- some other
22 application running in that station might use
23 it. I think it really depends on how the
24 system's implemented or --

1 Q. So -- sorry. So building on that, if
2 you wanted to guarantee the availability of
3 bandwidth augmentation, if you will, wouldn't
4 you want to ensure that that secondary channel
5 is always available for the bandwidth
6 augmentation such that you wouldn't make it
7 available for others to use in the interim?

8 MR. ATKINSON: Objection. Form.
9 Scope.

10 A. I wouldn't say that's necessarily true
11 in all -- in all cases. I -- I haven't
12 analyzed that to the point where I could give
13 you something very clear, but I -- but I -- I
14 don't think that's going to be the situation
15 at all times.

16 BY MR. SPEED:

17 Q. would you agree that at least one way
18 to implement a system that has a guaranteed
19 ability to augment a primary channel with a
20 secondary channel would be to keep that
21 secondary channel in reserve until it is
22 needed by the primary channel for bandwidth
23 augmentation?

24 MR. ATKINSON: Objection. Form.

1 Scope.

2 A. Again, I can't say that that's how you
3 would do it. I don't think that that's the
4 only way nor -- I can't tell you whether or
5 not that would be the preferred way either. I
6 -- I don't think that that would be the only
7 way to do that. I mean, I don't think you
8 would have to do that.

9 BY MR. SPEED:

10 Q. But would you agree that it's one way
11 to get guaranteed bandwidth augmentation?

12 MR. ATKINSON: Objection. Form.
13 Scope.

14 A. Again, I think it depends on how you
15 implement the system. I can't really say
16 whether or not that's a definite way you could
17 do that.

18 BY MR. SPEED:

19 Q. So if you have an access point with a
20 primary channel that's communicating with a
21 station and your system is designed such that
22 that access point has a secondary channel that
23 it can use when it's -- when the access point
24 determines that it -- there's a need for

1 bandwidth augmentation and that secondary
2 channel is never used except when it's being
3 used to augment the primary channel, would
4 that system not result in guaranteed bandwidth
5 augmentation for the station that the access
6 point is serving?

7 MR. ATKINSON: Objection. Form.
8 Scope.

9 A. You know, I think those are the things
10 that you would need to think about and -- and
11 consider. You're bringing up a hypothetical
12 that I haven't thought about before. I
13 imagine there would be other things that would
14 need to be defined, you know, and how it
15 operated, what the system architecture looked
16 like.

17 For that -- that particular
18 hypothetical, I -- I don't think I have -- I
19 don't think I could positively say that that
20 would work or that that would be all you would
21 need without further considering or having
22 more details, you know, about -- about that
23 system.

24 BY MR. SPEED:

1 Q. what other details would you need?

2 A. At this point, I don't even know what
3 to tell you yet. I -- I would have to lay
4 this out and draw it and have a -- try to
5 learn more about what's -- how it's working,
6 you know, think about what the issues might be
7 and those issues being resolved, you know, and
8 what to -- to overcome them. I honestly don't
9 know at this point.

10 Q. In this -- the conventional
11 multichannel system that's described in the
12 '551 patent, the first column and that you
13 talk about in Paragraph 110 of your
14 declaration.

15 A. Right.

16 Q. So let's assume that you have an
17 access point that has the ability to transmit
18 over three channels, 1, 2, and 3.

19 Did you get that?

20 A. Yes.

21 Q. Okay. And there's a multichannel
22 client that the access point says, I'm going
23 to service you on Channels 1 and 2, and I
24 would love to service you on 3, but 3's busy.

1 Someone else is using it. And so the
2 communication between the access point and the
3 client is on Channels 1 and 2.

4 Do you get that?

5 A. Yes.

6 Q. If Channel 3 becomes available, is the
7 access point able to automatically allocate
8 that third channel to the client, or does the
9 third channel become a contested channel for
10 any of the other stations in the system to
11 attempt to access?

12 MR. ATKINSON: Objection. Form.
13 Scope.

14 A. First of all, what are you -- are you
15 doing a 802.11 access point?

16 BY MR. SPEED:

17 Q. Sure. Do a 802.11 access point.

18 A. 802.11 doesn't provide that type of
19 functionality at that -- that state, you know,
20 at least in that -- with the versions of the
21 standard that are referred to in the '551
22 patent.

23 Q. So what -- the functionality that
24 you're talking about, is that the -- are we

1 going all the way back to multichannel
2 wireless communication functionality?

3 A. well --

4 MR. ATKINSON: Objection. Form.
5 Scope.

6 A. Yeah, you gave me a scenario where the
7 access point is three channels, and there's a
8 multichannel client, and there's going to be
9 communications over Channels 1 and 2 between
10 the access point and the client
11 simultaneously, from what I understood.
12 That's not included in the 802.11 standard.

13 BY MR. SPEED:

14 Q. So --

15
16 (Parties speaking simultaneously.)

17
18 A. Not --

19 BY MR. SPEED:

20 Q. Sorry. No, that's a helpful
21 clarification. Okay.

22 So let's take 802.11 out of the
23 equation, and just -- we're using what the
24 patent -- the '551 patent is talking about is

1 a conventional multichannel wireless system,
2 and you still have the same access point
3 that's communicating on Channels 1 and 2 to
4 the client. It has a third channel that it
5 can't use because it's -- when it begins its
6 transmission to the client, that third channel
7 is busy.

8 If that third channel becomes
9 available, would the third channel become a --
10 would -- is there -- would the third channel
11 automatically be assigned to the client, or
12 does it become a contested channel that other
13 devices could use?

14 MR. ATKINSON: Objection. Form.
15 Scope.

16 A. Well, I -- I think what -- it's hard
17 to answer that question because you're
18 defining a hypothetical around something
19 you're referring to in the '551 patent.
20 You're kind of -- you're adding some
21 description to something that I've never seen
22 before. You know, you're giving a
23 hypothetical. So it's hard to answer that
24 question.

1 But the '551 patent, all I'm saying is
2 as a -- if that reference is that channels and
3 multichannel systems are handled
4 indiscriminately, meaning that they're all
5 going to be sensed and they're all subject to
6 be used, depending on the how the system is
7 designed, you're adding in some design
8 configuration to the architecture here.
9 You're defining the architecture in a certain
10 way. It's -- it's not going to be based on a
11 -- the prior art systems are not going to be
12 having a mandatory channel that's going to
13 restrict operation over other channels when
14 that channel is busy. That's all that's meant
15 by that.

16 You're coming with a hypothetical
17 that's building on something that was
18 mentioned in the '551 patent. So I don't
19 know. You know, based on a hypothetical, it
20 depends on how the system is designed to
21 operate beyond -- beyond that. I can't tell
22 you how that would operate because I -- it's a
23 hypothetical system subject to however someone
24 engineered it to work.

1 BY MR. SPEED:

2 Q. And in Paragraph 126 of your
3 declaration --

4 A. Okay. I'm there.

5 Q. -- you state, "Petitioner fails to
6 allege any motivation to modify how the
7 decision to transmit is made so as to prevent
8 transmission on an idle channel based on the
9 state of another channel."

10 Do you see that?

11 A. Yes.

12 Q. And then you continue on, and you note
13 that "Shpak provides no teaching relevant to
14 the decision to transmit in multichannel
15 systems whatsoever nor does it address the
16 possibility of leakage from one channel to
17 another."

18 Do you see that?

19 A. Yes.

20 Q. So Shpak doesn't address leakage from
21 one channel to another, right?

22 MR. ATKINSON: Objection. Form.

23 A. Well, at least in the way the '551
24 patent is defining power leakage and what the

1 basis of the invention is -- is for, Shpak
2 doesn't -- doesn't teach that.

3 BY MR. SPEED:

4 Q. And in Lundby -- Lundby, likewise,
5 does not address interference between distinct
6 frequency channels, right?

7 MR. ATKINSON: Objection. Form.

8 A. I don't see in Lundby where there's
9 multiple channels that would set the scenario
10 or set the stage for a power leakage.

11 BY MR. SPEED:

12 Q. And so in your view, is the desire to
13 reduce power leakage the only motivation a
14 POSA would have had to prevent transmission on
15 an idle channel based on the state of another
16 channel?

17 MR. ATKINSON: Objection. Form.
18 Scope.

19 A. Are you saying in general or within
20 the scope of the '551 patent?

21 BY MR. SPEED:

22 Q. In general.

23 A. In general, there may be other
24 reasons. I don't know what -- I mean, I can't

1 think offhand what they would be. There could
2 be -- I guess there could be other reasons.

3 Q. Okay.

4 A. And in terms of the '551 patent, that
5 is the reason, you know, that -- that they're
6 basing the -- the invention on to solve that
7 problem.

8 MR. ATKINSON: why don't we take
9 a ten-minute break, and I'll just check my
10 notes and see what I have left to do. We're
11 getting there. We're pretty close.

12 THE VIDEOGRAPHER: Off the
13 record at 2:49 p.m.

14
15 (Recess taken from 2:49 p.m.
16 to 3:01 p.m.)

17
18 THE VIDEOGRAPHER: Back on the
19 record, 3:02 p.m.

20 BY MR. SPEED:

21 Q. Mr. Geier, if you could turn to
22 Paragraph 71 on page 30 of your declaration.

23 A. Okay. You said Paragraph 31?

24 Q. Sorry. Paragraph 71, page 30.

1 A. Oh, 71.

2 Q. Yes.

3 A. Okay.

4 Q. It's in the section where you're
5 discussing the prosecution history.

6 A. Okay. Sorry. Just trying to maneuver
7 the navigation of this thing. It's...

8 Okay. I'm there now.

9 Q. Excellent. And so in this Paragraph
10 71 that spans page 29 to 30, you discuss the
11 prosecution history of the '551 patent, right?

12 A. Yes, yes.

13 Q. And in the -- on page 30, you discuss
14 a Sonetaka reference.

15 Do you see that?

16 A. Yes.

17 Q. Did you review the Sonetaka reference
18 when you put together your declaration?

19 A. I believe I did. Not recently, but I
20 believe I did earlier.

21 Q. Okay. I'll just introduce it so that
22 we have it in the record. I'm introducing
23 what's been previously marked as Exhibit 1010.

24 Do you recognize Exhibit 1010 as the

1 Sonetaka reference?

2 A. I believe that's it.

3 Q. And if you go to Column 1, line 64,
4 there's a paragraph that spans over to
5 Column 2. Could you read that paragraph?

6 A. So the last paragraph, starting on
7 Column 1?

8 Q. Yes, sir, and it goes to Column 2.

9 A. (Witness reviews document.)
10 Okay.

11 Q. So in that paragraph, Sonetaka's --
12 teaches reserving a service channel for a --
13 for traffic having a predetermined service
14 rank, correct?

15 A. Yes.

16 Q. And an example that it provides is
17 that traffic having a high service rank,
18 right?

19 A. Yes.

20 Q. And in that paragraph, it describes
21 that that service channel is reserved and made
22 available only to traffic having the
23 predetermined service rank, right?

24 MR. ATKINSON: Objection. Form.

1 A. That's what it says on the -- on that
2 particular paragraph.

3 BY MR. SPEED:

4 Q. Okay. So traffic that is below the
5 predetermined service rank can't use the
6 reserve service channel even if it's
7 available, right?

8 MR. ATKINSON: Objection. Form.
9 Scope.

10 A. Before I answer that, let me read a
11 little bit around that paragraph, if you don't
12 mind, just really quick.

13 Q. Yes, no problem.

14

15 (Stenographer clarification.)

16

17 A. (Witness reviews document.)

18 Okay. I'm sorry. If you could repeat
19 that last question.

20 BY MR. SPEED:

21 Q. So traffic that is below the
22 predetermined service rank can't use the
23 reserved channel even if it's available,
24 right?

1 MR. ATKINSON: Objection. Form.
2 Scope. Foundation.

3 A. Yeah, that's what it says at the
4 beginning of Column 2. At least for this,
5 they're using this -- I guess here as an
6 example but having the predetermined service
7 rank and not assigned to other traffics.

8 BY MR. SPEED:

9 Q. So Sonetaka is teaching a system where
10 a channel is only allowed to be used for some
11 content but not other content, right?

12 MR. ATKINSON: Objection. Form.
13 Scope. Foundation.

14 A. I think that kind of depends on how
15 it's implemented because they're talking about
16 a service rank. If they're all the same
17 service rank and they're all high, then all --
18 all traffic would go over that -- that -- a
19 particular -- it would be considered that type
20 of traffic.

21 So I think it kind -- it would depend
22 on how it's implemented or what type of
23 application is being used and what -- what the
24 service rank is of the data being sent.

1 BY MR. SPEED:

2 Q. So if you -- if the data being sent
3 includes low service rank and high service
4 rank, the -- the reserved service channel is
5 reserved for the high service ranked data,
6 right?

7 MR. ATKINSON: Objection. Form.
8 Scope. Foundation.

9 A. At least in this -- this particular
10 paragraph, that seems to be what it's
11 describing.

12 BY MR. SPEED:

13 Q. So that the notion of a wireless
14 communication system that reserves certain
15 channels for certain use cases was known in
16 the art as of 2003, right?

17 MR. ATKINSON: Objection. Form.
18 Scope. Foundation.

19 A. Well, at least the idea is, as
20 explained right here, that there could be
21 some -- one second. Let me reread that
22 portion.

23 (Witness reviews document.)

24 This example here indicates that

1 the -- that this particular service channel
2 can be reserved for traffic having a
3 particular level of service, or service rank,
4 they call it.

5 BY MR. SPEED:

6 Q. So Sonetaka is disclosing a system in
7 which channels are reserved and only used in
8 certain -- for certain data, right?

9 MR. ATKINSON: Objection. Form.
10 Scope. Foundation.

11 A. Well, at least in this reference in
12 that paragraph you're pointing me to or the
13 section, it's saying that service channels
14 reserved in advance for only -- only for
15 traffic having a predetermined service rank,
16 for instance, having a high service rank.
17 That wouldn't necessarily have to be the only
18 way that you classify it. They're giving that
19 for instance as an example. So you could use
20 high service rank as a -- as an example of how
21 you could -- how you could do that and are
22 only assigned to traffic having the
23 predetermined service rank and not assigned to
24 other traffics.

1 So it's saying there that you could
2 have something classified as a high service
3 rank and use that service channel for that
4 particular purpose, you know, for sending that
5 data.

6 Anyway, it's using this high service
7 rank as an example, and I could see a
8 situation where you might have all traffics at
9 that service rate.

10 MR. SPEED: I have no further
11 questions.

12 MR. ATKINSON: Can we go off the
13 record for about -- oh, let's shoot for 15
14 minutes, maybe.

15 MR. SPEED: Okay.

16 THE VIDEOGRAPHER: Sure. We can
17 do that. Let's go off the record. Off the
18 record at 3:12 p.m.

19
20 (Recess taken from 3:12 p.m.
21 to 3:31 p.m.)
22

23 THE VIDEOGRAPHER: Back on the
24 record, 3:31 p.m.

1 MR. ATKINSON: NTT has no
2 questions. We'd like to thank Mr. Geier for
3 his time.

4 THE WITNESS: Thank you.

5 MR. ATKINSON: Thank you.

6 MR. SPEED: Thank you very much,
7 Mr. Geier. It was hopefully a not-too-bad
8 experience for everybody.

9 THE WITNESS: Not bad at all.
10 Thank you.

11 THE VIDEOGRAPHER: The time is
12 now 3:31 p.m., and this concludes today's
13 deposition of Mr. James T. Geier. We are
14 going off the record and completing the
15 deposition.

16 THE STENOGRAPHER: Mr. Atkinson,
17 did you want to receive a rough draft?

18 MR. ATKINSON: Yes. Yeah, we'd
19 like a rough and then, you know, the final, no
20 rush.

21 THE STENOGRAPHER: And, Nathan,
22 I've got your order.

23 MR. SPEED: Yes, thanks.

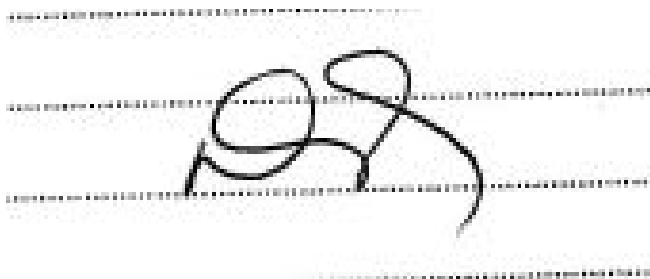
24 (Deposition concluded at 3:33 p.m.)

CERTIFICATION

I, DARLENE M. COPPOLA, a Notary Public, do hereby certify that JAMES T. GEIER, appeared remotely on the 29th day of July, 2021, and was by me duly sworn to testify to the truth and nothing but the truth as to his knowledge touching and concerning the matters in controversy in this cause; that he was thereupon examined upon his oath and said examination reduced to writing by me; and that the statement is a true record of the testimony given by the witness, to the best of my knowledge and ability.

I further certify that I am not a relative or employee of counsel/attorney for any of the parties, nor a relative or employee of such parties, nor am I financially interested in the outcome of the action.

WITNESS MY HAND THIS 3rd day of August, 2021.



DARLENE M. COPPOLA

NOTARY PUBLIC

REGISTERED MERIT REPORTER

My commission expires:

November 11, 2022

1 UNITED STATES PATENT AND TRADEMARK OFFICE

2 BEFORE THE PATENT TRIAL AND APPEAL BOARD

3 CASE NO. IPR2020-01404

4 PATENT NO. 7,280,551

5 *****

6
7
8 MEDIATEK INC. and MEDIATEK USA INC.

9 Petitioner

10 vs.

11 NIPPON TELEGRAPH AND TELEPHONE
12 CORPORATION,

13 Patent Owner

14 *****

15 I, JAMES T. GEIER, say that I have read the
16 foregoing deposition and hereby declare under penalty
17 of perjury the foregoing is true and correct:
18 (as prepared) (as corrected on errata.)

19 Executed this _____ day of _____,
20 2021, at _____, _____.

21
22
23 _____
24 JAMES T. GEIER

CORRECTION PAGE

DEPONENT: JAMES T. GEIER

DATE TAKEN: JULY 29, 2021

CASE: MEDIATEK, INC. VS. NIPPOL TELEGRAPH

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