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

-----)
QUALCOMM INCORPORATED and ZYXEL)
COMMUNICATIONS CORPORATION,)IPR No.
Petitioners,)2021-00375
vs.)Patent No.
UNM RAINFOREST INNOVATIONS,)8,265,096-B2
Patent Owner.)
-----)

REMOTE DEPOSITION OF BRANIMIR VOJCIC, D.SC.
FEBRUARY 9, 2022

REPORTED BY: Tina Alfaro, RPR, CRR, RMR

Page 2

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3
4 February 9, 2022
5 1:37 p.m.
6
7
8 Deposition of BRANIMIR VOJCIC, D.SC. taken
9 remotely by video conference pursuant to notice
10 before Tina M. Alfaro, a Registered Professional
11 Reporter, Certified Realtime Reporter, and
12 Registered Merit Reporter.
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Page 3

1 APPEARANCES:
2 ON BEHALF OF THE PETITIONERS:
3 REED SMITH, LLP
4 BY: PETER CHASSMAN, ESQ.
5 MICHAEL FORBES, ESQ.
6 JONATHAN DITRIXHE, ESQ.
7 811 Main Street, Suite 1700
8 Houston, Texas 77002
9
10 ON BEHALF OF THE PATENT OWNER:
11 DIMURO GINSBERG
12 BY: HENNING SCHMIDT, ESQ.
13 1101 King Street, Suite 610
14 Alexandria, Virginia 22314
15
16 ALSO PRESENT: Rubin Montoya (Reed Smith)
17
18
19
20
21
22

Page 4

1 INDEX
2 EXAMINATION
3 WITNESS PAGE
4 By Mr. Forbes 5
5 PREVIOUSLY MARKED EXHIBITS
6 PETITIONER EXHIBIT PAGE
7 Exhibit 1009 23
'096 Provisional Application
8
9 Exhibit 2001 10
10 Declaration
11 Exhibit 2013 11
Supplemental declaration
12
13
14
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Page 5

1 (Witness previously duly sworn.)
2 WHEREUPON:
3 BRANIMIR VOJCIC, D.SC.,
4 called as a witness herein, having been previously
5 duly sworn, was examined and testified as follows:
6 EXAMINATION
7 BY MR. FORBES:
8 Q. Dr. Vojcic, we're going to have to redo a
9 little bit of what you did with my colleague,
10 Mr. Chassman, earlier. I'll try to make it as
11 minimal as possible, but before we do that, this
12 particular portion of the deposition is regarding
13 PTAB Case No. IPR 2021-00375 which relates to
14 Patent No. 8,265,096-B2 and, again, is captioned
15 "Qualcomm Incorporated, Petitioner, versus UNM
16 Rainforest Innovations, Patent Owner."
17 Dr. Vojcic, good afternoon where you are.
18 My name is Mike Forbes. I'm with Reed Smith
19 representing Qualcomm. As I said, I know you
20 answered some of these questions in a previous
21 deposition that started this morning, but I have to
22 ask them just for a complete record.

Page 6

1 As we go through this deposition it's
2 extremely important that we speak up and that we
3 try not to speak over each other. Do you
4 understand and agree to that?
5 A. Yes, of course.
6 Q. You said earlier you couldn't think of any
7 reason why you could not give your best testimony
8 today. Is that still true?
9 A. I'm not sick, yeah. So there is no
10 reason.
11 Q. I know you've been looking at your other
12 computer to look at deposition exhibits, and I have
13 no objection to that continuing. I would ask that
14 you confirm that you're not accessing e-mail or any
15 other sort of communication software during the
16 deposition.
17 A. I don't have -- on that computer I don't
18 have. On this computer I have e-mail. I could
19 close it.
20 Q. That would be good. I appreciate that.
21 A. I didn't look at it. Yeah, I just closed
22 it.

Page 7

1 Q. As I said earlier, the focus of my
2 questions are going to be on U.S. Patent 8,265,096.
3 You'll understand that when I refer to the
4 '096 Patent that's the one I'm referring to?
5 A. I do.
6 Q. Likewise when I refer to IPR 375, we can
7 all understand that I mean IPR 2021-00375, which is
8 the inter partes review proceeding that was
9 instituted regarding the validity of the
10 '096 Patent. Would you agree?
11 A. Okay.
12 Q. So the Super Bowl's coming up this weekend
13 and I don't know what's going to happen in the
14 football game, but I guarantee that at some point
15 I'm going to hear that 5G is faster than LTE. To a
16 person of skill in the art what does being faster
17 mean for one protocol versus another?
18 A. Depends, Counsel, on the context. It
19 could mean two things to a POSITA. One is that
20 latency is smaller, so in other words, faster
21 response time, and the second is that download or
22 communication speeds -- communication speed is

Page 8

1 faster. The two are sometimes related, but not
2 necessarily.
3 Q. An example of when they might not be
4 related would be a streaming video where latency is
5 less important than the download speed; is that
6 correct?
7 A. That's true because of buffering because
8 there was incurred initial latency, but that's not
9 the example I had in mind. There are latencies
10 that are introduced by protocol errors in some
11 cases that don't depend on the communication speed
12 with a physical error.
13 Q. And what would a person of ordinary skill
14 in the art understand enhanced spectrum efficiency
15 to mean for one protocol versus another?
16 A. Generally -- you said enhanced spectrum
17 efficiency?
18 Q. Enhanced spectrum efficiency, yes.
19 A. Generally a POSITA would understand that
20 this term implies that communication protocol is
21 able to facilitate transmission of more bits per
22 unit bandwidth.

Page 9

1 Q. Okay. So if I just give you a
2 hypothetical. We have protocol A that has half the
3 data transfer rate of protocol B but it uses only
4 one-quarter of the bandwidth. Would you agree that
5 that is enhanced spectrum efficiency?
6 MR. SCHMIDT: Objection, form.
7 A. I didn't quite understand your
8 hypothetical.
9 Q. Understand.
10 A. Do it a little bit slower.
11 Q. Sure. Let me try again.
12 So we have a new protocol, protocol A, and
13 it's actually half the communication speed of
14 protocol B, but it uses only one-quarter of the
15 bandwidth of protocol B. Would you agree that
16 protocol A has enhanced spectrum efficiency?
17 A. I would.
18 MR. SCHMIDT: Objection, form.
19 Q. Even though protocol A is slower than
20 protocol B according to the meaning of slower that
21 we used earlier -- or faster that we used earlier?
22 A. That's correct. So all depends on actual

<p style="text-align: right;">Page 10</p> <p>1 context, you know, what faster means. So one 2 should be careful about that. 3 Q. Okay. And in the hypothetical that I've 4 given you, just this little protocol A versus 5 protocol B, I haven't provided enough information 6 to know anything about how protocol A would handle 7 a receiver driving down the highway; is that 8 correct? 9 A. Yeah. I think you didn't mention that. 10 MR. FORBES: Okay. So at this time I'd 11 like to introduce an exhibit that's been previously 12 marked in this IPR, IPR 375, as Exhibit 2001. 13 Rubin, can you try to bring that up on the screen 14 and hopefully that will work. Okay. I'll take 15 over screen sharing. That's the wrong IPR number. 16 This is IPR 375. 17 BY MR. FORBES: 18 Q. So IPR 2021-00375 and at the footer there 19 you can see this says Exhibit 2001. Do you agree 20 with that? 21 A. Yeah. 22 Q. Okay.</p>	<p style="text-align: right;">Page 12</p> <p>1 as the one before, just signed. 2 Q. Okay. 3 A. Oh, no, no. Sorry. Sorry. This is -- 4 hold on. This is maybe different. I think I had 5 two declarations in this case. Oh, supplemental. 6 Yeah, yeah, I recognize this. Sorry. I couldn't 7 see quickly, you know. 8 Q. Absolutely. Understood. 9 So Exhibit 2013 you did sign, that's your 10 signature that appears there? 11 A. Definitely my signature. 12 Q. Okay. Turning back to IPR 375, 13 Exhibit 2001, which is your original declaration 14 which, as we talked about earlier, is unsigned. I 15 promise I'll try not to mention that too many more 16 times. I'd like you to turn to paragraph 17. I'll 17 drive that on my screen as well. Let me know when 18 you're there. Or if you're looking on the screen, 19 that's fine. 20 A. I'm there, Counsel. 21 Q. Okay. So paragraph 17 you give an opinion 22 about the person of ordinary skill in the art; is</p>
<p style="text-align: right;">Page 11</p> <p>1 And Dr. Vojcic, I will represent to you 2 that this is the version of the document that is 3 downloadable from the PTAB proceeding as 4 Exhibit 2001. Do you see at the bottom of the page 5 that it has not been signed? 6 A. I see that, yeah. 7 Q. Did you execute a declaration for the 8 '096 Patent? 9 A. I'm pretty sure I did. 10 Q. And are you aware if an executed version 11 of that declaration has ever been filed with the 12 Patent and Trademark Office? 13 A. No, I don't. Sometimes they don't send me 14 the filed versions. So maybe they did, maybe they 15 did not. I don't recall. 16 Q. Okay. While we're on exhibits I'd also 17 like to introduce the document that's been 18 previously marked as IPR 375 Exhibit 2013, which, 19 again, I will represent to you is a downloaded from 20 the Patent and Trademark Office Website. Do you 21 recognize this document? 22 A. Well, I recognize it. I mean, it's same</p>	<p style="text-align: right;">Page 13</p> <p>1 that correct? 2 A. That's correct. 3 Q. And you'll understand if I use the term 4 "POSITA" or also "POSA," P-O-S-A, that I'm 5 basically meaning the same thing that you're 6 talking about in this paragraph? 7 A. Sure. 8 Q. Okay. And you indicate that a person of 9 ordinary skill in the art would have a master's 10 degree, an M.S., Master of Science degree in 11 computer engineering or electrical engineering or 12 equivalent work experience along with at least one 13 year of experience related specifically to wireless 14 communications, including MIMO and OFDM. Did I 15 read that correctly? 16 A. That's correct, Counsel. 17 Q. Okay. What is MIMO? 18 A. MIMO stands for -- some people call it 19 MIMO for multiple input/multiple outputs. That's a 20 multi-antenna transmission systems that you could 21 employ multiple transmit antennas and multiple 22 receive antennas.</p>

Page 14

1 Q. In 2007, which is at least the claims
2 priority date for the '096 Patent, was MIMO
3 commonly used?
4 A. It was commonly talked about. There were
5 plenty of papers since mid to late '90s about MIMO,
6 and they were talking about using a MIMO in -- I,
7 by the way, also use MIMO pronunciation, not MIMO.
8 There were discussion about using them in the
9 standards in both 3G and 4G, especially 4G, LTE,
10 also in WiMAX, and maybe some other standards.
11 Q. So at the time of -- at the relevant time
12 in 2007 a person of ordinary skill in the art in
13 your opinion would have to have been actively
14 engaged with developing standardS in order to get
15 this one year of experience with MIMO?
16 MR. SCHMIDT: Objection, form.
17 A. No. I didn't mean that, that they should
18 be involved in the development of the standard.
19 What I meant is they should have some experience in
20 wireless communication systems because in the
21 regular program if it is not electrical
22 engineering -- in electrical engineering in

Page 15

1 communication subfield they would learn about MIMO
2 and OFDM. In computer engineering not necessarily.
3 So that's why they would certainly need some
4 experience in that field because then they would be
5 exposed to these new technologies that are talked
6 about as, you know, significant answers of
7 communication standards.
8 Q. So what I'm trying to understand is where
9 would a person who was of ordinary skill in the art
10 and not actively working on standards development
11 have gotten that one year of experience with MIMO
12 in 2007 when it wasn't actually being used in any
13 existing communication systems?
14 A. He would read standards, he would read
15 articles, companies that were in business of
16 wireless communication so they did consulting at
17 that time for many of them. They were discussing
18 how these new techniques such as MIMO are going to
19 improve, you know, business prospects, download
20 speeds, and upload speeds for that matter. So
21 that's how they would get exposure. They would,
22 you know, have technical presentations in the

Page 16

1 companies, you know, talking about these MIMO
2 capabilities and such. Many, many different
3 opportunities. So they didn't need to be on the
4 3GPP committee to learn about that.
5 Q. In your opinion would a POSITA at this
6 time be familiar with academic -- excuse me.
7 Strike that.
8 In your opinion would a POSITA at this
9 time necessarily be familiar with the theoretical
10 basis for the technologies they were working on?
11 A. Yes.
12 Q. And it's your opinion that they would be
13 familiar with academic papers published in the
14 area?
15 A. That's my understanding what definition of
16 a POSITA assumes that if he works in that field
17 that he would have all those articles at his
18 disposal, but regardless of that understanding,
19 yes, it was overwhelming in the literature. So he
20 would be -- he would have these academic papers
21 available. Not just papers. All Websites on
22 wireless communications were posting white papers

Page 17

1 about MIMO, and that was probably the first source
2 where an engineer in a wireless field would go and
3 then go to academic papers in the next step.
4 Q. To avoid having to introduce another
5 exhibit I'm just going to read to you what the
6 Petitioner's identification of the ordinary skill
7 in the art is. It says a "Person that would have a
8 bachelor's degree in electrical engineering,
9 computer engineering or a related field, and around
10 two years experience in the design or development
11 of wireless communication systems or the
12 equivalent."
13 A. That's not significantly different.
14 That's about half year to year, about half year
15 difference to a year of difference depending how
16 quickly a person completes Master's program. I
17 think that my definition is safer in terms of no
18 required knowledge, but their definition is not
19 far. It just requires there to be less experience.
20 I think my definition is better.
21 Q. Okay. In your view your definition
22 requires a person who is slightly more educated or

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