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Paper 14
Entered: July 19, 2021

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

QUALCOMM INCORPORATED,
Petitioner,

v.

UNM RAINFOREST INNOVATIONS,
Patent Owner.

IPR2021-00375
Patent 8,265,096 B2

Before KRISTEN L. DROESCH, BARBARA A. PARVIS, and CHARLES J. BOUDREAU, *Administrative Patent Judges*.

DROESCH, *Administrative Patent Judge.*

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

Dismissing Motion for Joinder
35 U.S.C. § 315(c); 37 C.F.R. 42.122(b)

I. INTRODUCTION

A. Background

Qualcomm Incorporated ("Petitioner") filed a Petition requesting an *inter partes* review of claims 1–4 and 6–8 ("challenged claims") of U.S. Patent No. 8,265,096 B2 (Ex. 1001, "'096 Patent"). Paper 1 ("Pet."). Petitioner filed a Declaration of Sumit Roy, Ph.D. (Ex. 1002) with its Petition. Petitioner concurrently filed a Motion for Joinder seeking to join as a Petitioner in *Intel Corp. v. UNM Rainforest Innovations*, IPR2020-01576. (Paper 3, "Motion for Joinder"). UNM Rainforest Innovations ("Patent Owner") filed a Preliminary Response. Paper 8 ("Prelim. Resp."). Patent Owner filed a Declaration of Branimir Vojcic, D.Sc. (Ex. 2001) with its Preliminary Response. Pursuant to our authorization, Petitioner filed a Reply to the Preliminary Response (Paper 10, "Reply to Prelim. Resp.") to address discretionary denial under 35 U.S.C. § 314(a), to which Patent Owner filed a Sur-reply (Paper 12, "Sur-reply to Prelim. Resp.").

We have authority to determine whether to institute review under 35 U.S.C. § 314 and 37 C.F.R. § 42.4.

For the reasons provided below, we determine, based on the record before us, there is a reasonable likelihood Petitioner would prevail in showing at least one of the challenged claims is unpatentable.

B. Real Parties in-Interest

Petitioner states that Qualcomm Incorporated is the real party in-interest and further identifies its customers Dell Technologies Inc., Dell Inc., and EMC Corporation (collectively, "Dell") as additional real parties in-interest. *See* Pet. 2.

Patent Owner states that the University of New Mexico Board of Regents is an additional real party in-interest. *See* Paper 6, 2.

C. Related Matters

The parties indicate the following matters may affect or be affected by a decision in this proceeding: *UNM Rainforest Innovations v. Industrial Technology Research Institute*, No. D-202-CV-2021-02803 (N.M. 2d. Judicial District Court May 4, 2021); *UNM Rainforest Innovations v. ASUSTek Computer, Inc.*, No. 6:20-cv-00142-ADA (W.D. Tex.); *UNM Rainforest Innovations v. Dell Technologies, Inc.*, No. 6:20-cv-00468-ADA (W.D. Tex.); *UNM Rainforest Innovations v. D-Link Corp.*, No. 6:20-cv-00143-ADA (W.D. Tex.); *UNM Rainforest Innovations v. TP-Link Technologies Co.*, No. 6:19-cv-00428-ADA (W.D. Tex.); *UNM Rainforest Innovations v. ZyXEL Communications Corp.*, No. 6:20-cv-00522-ADA (W.D. Tex.); *ZyXEL Communications Corp. v. UNM Rainforest Innovations*, IPR2021-00734. *See* Pet. 2–3; Paper 6, 2; Paper 11, 1.

Claims 1–4 and 6–8 were also the subject of a petition filed in *Intel Corp. v. UNM Rainforest Innovations*, IPR2020-01576, which was terminated upon granting a joint motion to terminate. *See* IPR2020-01576, Papers 2, 9.

D. The '096 Patent (Ex. 1001)

The '096 Patent relates to methods for constructing frame structures for orthogonal frequency-division multiple access (OFDMA) systems. *See* Ex. 1001, 1:16–19.

Figure 6A of the '096 Patent is reproduced below:

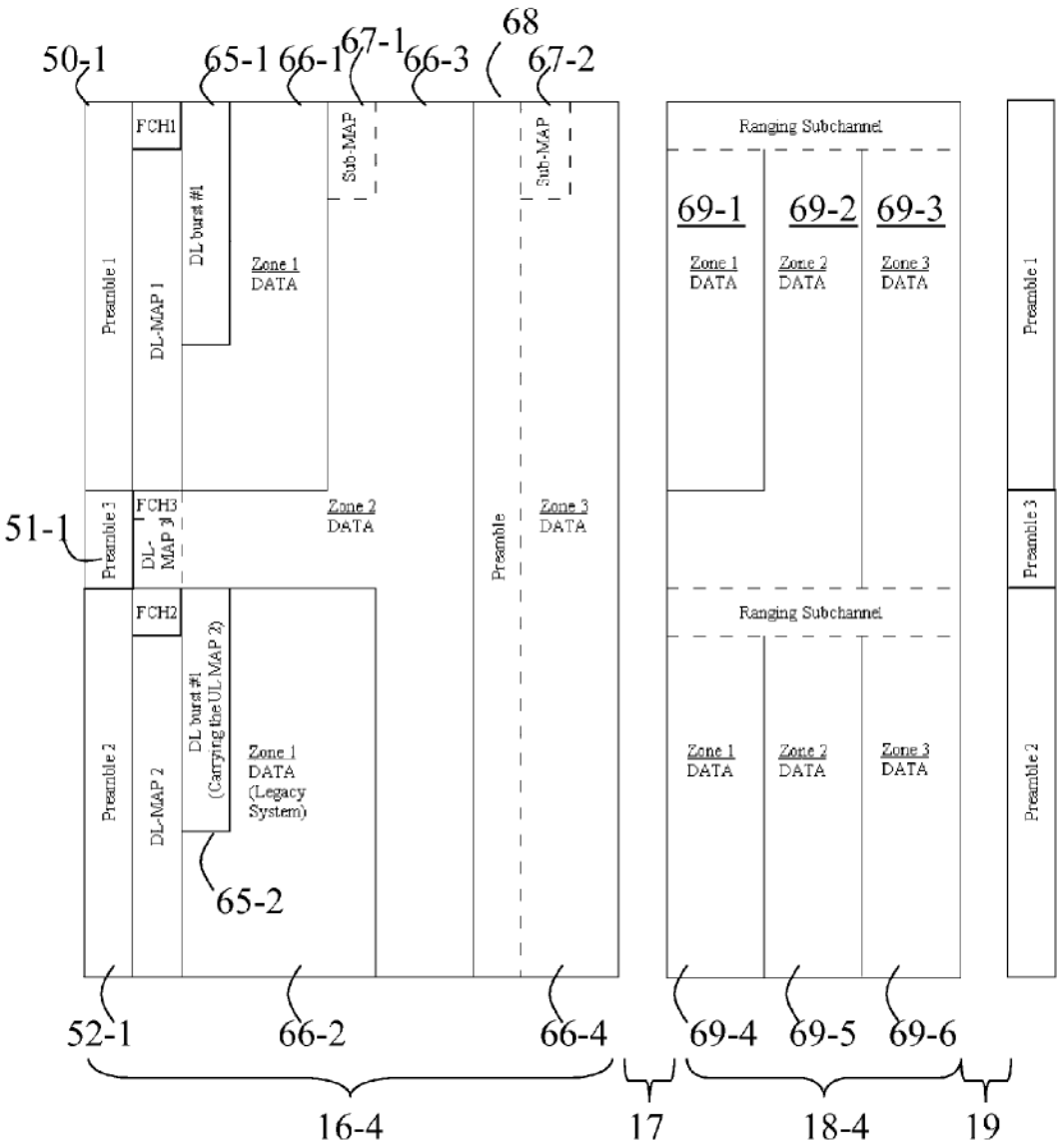

Figure 6A illustrates an OFDMA frame structure supporting high mobility and having a scalable bandwidth. *See* Ex. 1001, 4:1–3, 6:66–7:2. The frame structure includes downlink (DL) sub-frame 16-4 and uplink (UL) sub-frame 18-4. *See id.* at 7:5–7. The frame structure includes added regions related to zones 3 for high-mobility environments. *See id.* at 7:2–5. In DL sub-frame 16-4, a first added region includes preamble 68, a sub-MAP 67–2 and DATA 66-4. *See id.* at 7:5–7. In UL sub-frame 18-4, a

second added region includes DATA 69-3 and 69-6 (zones 3). *See id.* at 7:7–8. DATA 66-4, 69-3, and 69-6 may be allocated for the extended OFDMA system under high mobility. *See id.* at 7:8–10. DL sub-frame 16-4 is divided according to mapping information in DL-MAP 1, DL-MAP 2, and DL-MAP 3, and UL sub-frame 18-4 is divided according to the map information in UL-MAPs in DL burst #1 65-1 and/or 65-2. *See id.* at 7:10–14. A portion of the guard band that overlaps data zones 69-1 and 69-2 in UL sub-frame 18-4 may be used to transmit data in the extended system. *See id.* at 7:14–17. "As compared to the zones in the data region of the DL sub-frame 16-4 or the UL sub-frame 18-4 of the old/legacy system or the new/extended system, the placements of the pilot symbols may be denser, [and] the OFDMA symbol periods may be shorter . . . in zones 3 of UL sub-frame 18-4 or DL sub-frame 16-4 for the extended system under high mobility." *Id.* at 7:21–27.

E. Illustrative Claims

Claims 1 and 8 are independent and claims 2–4, 6, and 7 depend ultimately from claim 1. Claims 1 and 8 are illustrative and reproduced below:

> 1. A method of constructing a frame structure for data transmission, the method comprising:
>
> generating a first section comprising data configured in a first format compatible with a first communication system using symbols;
>
> generating a second section following the first section, the second section comprising data configured in a second format compatible with a second communication system using symbols, wherein the first communication system's symbols and the second communication system's

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