

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ERICSSON INC. AND TELEFONAKTIEBOLAGET LM ERICSSON,
Petitioner,

v.

INTELLECTUAL VENTURES II LLC,
Patent Owner.

Cases IPR2015-01664
Patent 7,787,431 B2

Before JAMESON LEE, JUSTIN BUSCH, and J. JOHN LEE,
Administrative Patent Judges.

BUSCH, *Administrative Patent Judge.*

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

Ericsson Inc. and Telefonaktiebolaget LM Ericsson (“Petitioner”) filed a Petition requesting an *inter partes* review (Paper 2, “Pet.”) of claims 8–12 and 18–22 (the “challenged claims”) of U.S. Patent No. 7,787,431 B2 (Ex. 1001, “the ’431 patent”). Intellectual Ventures II LLC (“Patent Owner”) filed a Preliminary Response (“Prelim. Resp.”) on November 18, 2015. Paper 6.

Institution of an *inter partes* review is authorized by statute when “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a); *see* 37 C.F.R. § 42.108. Upon consideration of the Petition, we conclude the information presented shows there is a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of the challenged claims.

A. Related Matters

The parties indicate the ’431 patent is at issue in ten district court proceedings involving numerous parties. Pet. 1; Paper 5, 2–3. The ’431 patent also was the subject of another *inter partes* review: IPR2014-01195 (the “1195 IPR”). Pet 1; Paper 5, 3. The petition in the 1195 IPR challenged claims 1, 2, 8–12 and 18–22. 1195 IPR, Paper 2, 1. The Board instituted review of claims 1 and 2, but did not institute review of claims 8–12 and 18–22 in the 1195 IPR. 1195 IPR, Paper 11, 18.

B. The ’431 Patent

The ’431 patent relates to multi-carrier communication systems and methods with variable channel bandwidth. Ex. 1001, Abstract.

The challenged claims recite methods performed by base stations for generating information bearing signals, wherein the information bearing signals include a primary preamble having certain properties. *Id.* at 11:54–12:27, 13:4–47.

C. Illustrative Claim

Of the challenged claims in the '431 patent, claims 8 and 18 are independent. Claim 8 is illustrative and reproduced below:

8. A cellular base station comprising:
- circuitry configured to transmit a broadcast channel in an orthogonal frequency division multiple access (OFDMA) core-band, wherein the core-band is substantially centered at an operating center frequency and the core-band includes a first plurality of subcarrier groups, wherein each subcarrier group includes a plurality of subcarriers, wherein the core-band is utilized to communicate a primary preamble sufficient to enable radio operations, the primary preamble being a direct sequence in the time domain with a frequency content confined within the core-band or being an OFDM symbol corresponding to a particular frequency pattern within the core-band,
- wherein properties of the primary preamble comprise:
- an autocorrelation having a large correlation peak¹ with respect to sidelobes;
 - a cross-correlation with other primary preambles having a small cross-correlation coefficient with respect to power of other primary preambles; and
 - a small peak-to-average ratio; and
- wherein a large number of primary preamble sequences exhibit the properties; and
- circuitry configured to transmit control and data channels using a variable band including a second plurality of subcarrier groups, wherein the variable band includes at least the core-band.

¹ A certificate of correction was issued on August 31, 2010 to replace the word “creak” with the word “peak.” Ex. 1001, 20.

D. The Asserted Grounds and Evidence Relied Upon By Petitioner

Petitioner relies upon the following prior art references as its basis for challenging claims 8–12 and 18–22 of the '431 patent.²

| Reference | Patents/Printed Publications | Exhibit |
|-----------|---|---------|
| Dulin | U.S. Patent Pub. 2002/0055356 A1 (May 9, 2002) | 1002 |
| Yamaura | U.S. Patent No. 7,782,750 B2 (August 24, 2010) | 1003 |
| Zhuang | U.S. Patent No. 7,426,175 B2 (September 16, 2008) | 1004 |
| Hwang | I. Hwang et al., <i>A New Frame Structure for Scalable OFDMA Systems</i> , (March 11, 2004) | 1005 |

Petitioner contends that claims 8–12 and 18–22 are unpatentable under 35 U.S.C. § 103 as obvious in view of the combined teachings of Dulin, Yamaura, Hwang, and Zhuang.

1. Dulin (Ex. 1002)

Dulin describes systems and methods for scheduling and synchronizing data transmission between base stations and subscriber units (or terminal stations). Ex. 1002, Abstract. One aspect of Dulin describes generating a frame map that is sent to subscriber units to inform the subscriber units which subscriber units are authorized to send or receive a transmission in each frequency block and time slot. *Id.* ¶ 65.

2. Yamaura (Ex. 1003)

Yamaura describes a method, and apparatuses for implementing the method, of radio communication “for exchanging information between a

² Petitioner also proffers the Declaration of Zygmunt J. Haas, Ph.D. *See* Ex. 1012.

base station and a terminal station.” Ex. 1003, Abstract. The described method communicates multi-carrier signals using OFDM modulation, “including plural subcarriers within a bandwidth, communicating control signals in addition to the information between the base station and the terminal station, and wherein part of the control signals . . . is transmitted by one or more specific subcarriers in the bandwidth for the multi-carrier signals.” *Id.*

3. *Zhuang (Ex. 1004)*

Zhuang describes optimizing the auto correlation properties of each pilot signal, and the cross correlation properties between pilot signals, through the use of certain chirp sequences. Ex. 1004, 2:7–29.

4. *Hwang (Ex. 1005)*

Hwang describes a new frame structure and carrier allocation methods that an OFDM-modulated system can implement to improve system performance under scalable bandwidth. Ex. 1005, 1. Hwang describes system parameters for implementing an OFDMA system that scales its operating channel bandwidth from 2.5 MHz to 20 MHz. *Id.* at 2–3. Hwang further describes grouping subcarriers into bins as a basic allocation unit of subcarriers to a channel. *Id.* at 3–4, 8.

II. ANALYSIS

A. 35 U.S.C. § 325(d)

The Decision to Institute is a discretionary decision. *See* 35 U.S.C. § 314(a) (stating when the Director may *not* institute review, rather than when mandating when review *must* be instituted). Moreover, determinations under 35 U.S.C. § 325(d), in particular, are discretionary. 35 U.S.C. § 325(d) (“In determining whether to institute or order a proceeding under this

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