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Paper 37
Entered: February 28, 2020

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC., HTC CORPORATION, and HTC AMERICA, INC.,
Petitioner,

v.

INVT SPE LLC,
Patent Owner.

IPR2018-01555[1]
Patent 7,848,439 B2

Before THU A. DANG, KEVIN F. TURNER, and BARBARA A. BENOIT, *Administrative Patent Judges.*

BENOIT, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 318(a)

[1] Apple Inc., who filed a petition in IPR2019-00958, has been joined as a petitioner in IPR2018-01555. Paper 15.

I. INTRODUCTION

In this *inter partes* review instituted pursuant to 35 U.S.C. § 314, Apple Inc., HTC Corporation and HTC America, Inc. (collectively, "Petitioner") challenge the patentability of claims 1–7 of U.S. Patent No. 7,848,439 B2 (Ex. 1001, "the '439 patent" or "the challenged patent"), owned by INVT SPE LLC ("Patent Owner"). We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. This Final Written Decision is entered concurrently with a final written decision in IPR2018-01581 that challenges the patentability of claim 8 of the 'the '439 patent patent.

For reasons discussed herein, Petitioner has not shown by a preponderance of the evidence that claims 1–7 are unpatentable.

A. Procedural History

HTC Corporation and HTC America, Inc. filed a Petition requesting *inter partes* review of the challenged claims. Paper 1 ("Pet." or "Petition"). Patent Owner filed a Preliminary Response to the Petition. Paper 7. On March 7, 2019, after considering the information presented in the Petition and the Preliminary Response, we instituted an *inter partes* review of the challenged claims on the sole ground asserted by Petitioner. Paper 8 ("Dec.").

Subsequent to the Decision on Institution, Apple Inc. ("Apple") filed a petition asserting the same unpatentability ground on which we instituted review and timely filed a motion for joinder. IPR2019-00958, Paper 1 (Petition); Paper 15, 4, 5. We determined that Apple's petition met the threshold of institution and that joinder of Apple to this proceeding was appropriate. Paper 15, 13. Accordingly, we granted Apple's motion. *Id.*

Patent Owner filed a Response (Paper 16; "PO Resp."), to which Petitioner filed a Reply (Paper 25; "Pet. Reply"). In response, Patent Owner filed a Sur-reply (Paper 33; "PO Sur-reply"). A hearing was held on January 8, 2020. *See* Paper 36 ("Tr.").

B. Real Parties in Interest

The Petition identifies HTC Corporation and HTC America, Inc. as real parties in interest and the petition in IPR2019-00958 identifies Apple Inc. as a real party in interest. Pet. 1; IPR2019-00958, Paper 1, 1. Patent Owner identifies INVT SPE LLC as the real party in interest. Paper 5, 2.

C. Related Matters

As required by 37 C.F.R. § 42.8(b)(2), each party identified various judicial or administrative matters that would affect or be affected by a decision in this proceeding. Pet. 1–2; Paper 5 (Patent Owner's Mandatory Notice), 2–3; IPR2019-00958, Paper 1, 1.

The parties identify the following district court cases: *INVT SPE LLC v. HTC Corporation, HTC America, Inc.*, No. 2:17-cv-03740 (D. N.J.); *INVT SPE LLC v. ZTE*, No. 2:17-cv-06522 (D.N.J.); *INVT SPE LLC v. Apple, Inc.*, No. 2:17-cv-03738 (D.N.J.); *Inventergy, Inc. v. HTC Corporation*, No. 2:17-cv-00200 (D. Del.); *Inventergy, Inc. v. Apple, Inc.*, No. 2:17-cv-00196 (D. Del.). Pet. 1; Paper 5, 2; IPR2019-00958, Paper 1, 1. Petitioner also identifies U.S. International Trade Commission Investigation No. 337-TA-1138, styled *Certain KTE- and 3G-Compliant Cellular Communications Devices.* IPR2019-00958, Paper 1, 1. Patent Owner identifies nine *inter partes* review proceedings that various petitioners requested. Paper 5, 2–3.

D. The Challenged Patent

The '439 patent, titled "Communication Apparatus, Communication System, and Communication Method," describes techniques for adaptive modulation and coding that result in improved spectrum usage in mobile communications between a handset and a base station. Ex. 1001, code (54), (57) (Abstract), 1:10–26.

1. The Written Description

The patent describes techniques for a wireless communication orthogonal frequency division multiplexing (OFDM) system that transmits high-speed data using a large number of subcarrier frequency bandwidths. *Id.* at 1:10–14. The patent explains the concept of adaptive modulation and coding (AMC) is "to change modulation and coding parameters in transmission based on channel characteristics at [the] current time." *Id.* at 1:65–67. "With OFDM, adaptivity . . . refers to adaptivity at two domains of time domain and frequency domain." *Id.* at 1:67–2:2.

The patent identifies two types of AMC used in conventional OFDM. *Id.* at 2:3. The first type of AMC is adaptivity based on individual OFDM subcarriers, which is difficult to implement due to the number of subcarriers. *Id.* at 2:3–12. The second type of AMC in OFDM is adaptivity based on groups of subcarriers, and the patent refers to groups of subcarrier as subbands. *Id.* at 2:12–21. The patent indicates that in prior art subband AMC: "a subband indicates a subcarrier group comprised of subcarriers in neighboring positions on the frequency domain." *Id.* at 2:19–21. The conventional method of adaptivity based on subbands (groups of subcarriers) reduced the difficulty of implementing adaptivity and reduced feedback overhead. *Id.* at 4:56–60. But, these conventional methods were not able

"to effectively utilize diversity performance between subbands," which the patent indicates "is an important method for improving wireless transmission quality." *Id.* at 4:56–60.

The patent describes creating subband groups based on a predefined rule and selecting a modulation and coding scheme for the entire subband group, instead of doing so for a subband (group of subcarriers). *Id.* at 5:39–45, 8:57–60 ("On the receiving side, differences with subband adaptivity of the related art shown in FIG. 4B is that the unit of adaptive demodulation and coding is a subband group rather than a subband."). The patent provides three examples of how subbands are to be grouped (combining neighboring subbands, combining subbands spaced at intervals, and combining all of the subbands) and indicates additional methods are possible. *Id.* at 10:29–33.

2. The Challenged Claims

Petitioner challenges claims 1–7 in the '439 patent, of which claim 1 is independent. Claim 1, reproduced below with brackets noting Petitioner's identifiers, is illustrative of the claimed subject matter:

> 1. A communication apparatus comprising:
>
> [1a[2]] a channel estimating section that carries out a channel estimation per subband;
>
> [1b] a parameter deciding section that decides modulation parameters and coding parameters per subband group comprised of a plurality of the subbands, based on a result of the channel estimation per subband;
>
> [1c] a parameter information transmission section that transmits, to a communicating party, parameter information indicating the modulation parameters and the coding parameters decided at the parameter deciding section;

[2] Petitioner's limitation references are used for clarity and brevity.

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