

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
ZTE (USA) INC.
Petitioners

v.

INVT SPE LLC
Patent Owner

Case No. 2018-01477
U.S. Patent No. 7,848,439

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 7,848,439**

TABLE OF CONTENTS

I. INTRODUCTION	1
II. SUMMARY OF THE '439 PATENT	1
A. DESCRIPTION OF THE ALLEGED INVENTION OF THE '439 PATENT.....	1
B. SUMMARY OF THE PROSECUTION HISTORY OF THE '439 PATENT	5
C. LEVEL OF SKILL OF A PERSON HAVING ORDINARY SKILL IN THE ART	7
III. REQUIREMENTS FOR INTER PARTES REVIEW UNDER 37 C.F.R.	
§ 42.104	7
A. GROUNDS FOR STANDING UNDER 37 C.F.R. § 42.104(A).....	7
B. IDENTIFICATION OF CHALLENGE UNDER 37 C.F.R. § 42.104(B) AND RELIEF REQUESTED	7
C. CLAIM CONSTRUCTION UNDER 37 C.F.R. § 42.104(B)(3)	8
IV. THERE IS A REASONABLE LIKELIHOOD THAT THE CHALLENGED CLAIMS OF THE '439 PATENT ARE UNPATENTABLE	9
A. <u>GROUND 1</u> : <i>LI</i> IN VIEW OF <i>WALTON</i> RENDERS CLAIMS 1, 3, 5-11 OBVIOUS.....	9
B. <u>GROUND 2</u> : <i>LI</i> IN VIEW OF <i>WALTON</i> IN FURTHER VIEW OF <i>VIJAYAN</i> RENDERS CLAIMS 2 AND 4 OBVIOUS	41
V. CONCLUSION	46
VI. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(A)(1).....	47
A. REAL PARTY-IN-INTEREST, 37 C.F.R. § 42.8(B)(1).....	47
B. RELATED MATTERS.....	47
C. LEAD AND BACK-UP COUNSEL	48

I. INTRODUCTION

Petitioners Apple Inc. and ZTE (USA) Inc. (“Petitioners”) request an *Inter Partes* Review (“IPR”) of claims 1-11 (collectively, the “Challenged Claims”) of U.S. Patent No. 7,848,439 (“the ’439 Patent”). ’439 Patent (Ex. 1001).

II. SUMMARY OF THE ’439 PATENT

A. Description of the alleged invention of the ’439 Patent

The ’439 Patent generally describes an Orthogonal Frequency Division Multiplexing (OFDM) communication system in which subcarriers are allocated and a modulation/coding scheme assigned based on measured channel quality between a base station and handset. ’439 Patent (Ex. 1001) at 1:9-26. The following excerpt explains the Applicant Admitted Prior Art (AAPA) process for adaptive modulation and coding (AMC), which forms the foundation of the ’439 Patent disclosure:

[T]he meaning of **adaptive modulation and coding** is to **adaptively adjust modulation and coding parameters** on the transmission side **based on channel characteristics** at the current time and to carry out demodulation and decoding using parameters corresponding to the transmission side on the receiving side. In a typical system, **adaptive parameters** required by adaptive demodulating/decoding section 311 **depend on feedback from the receiving side**. Before transmitting each data block, **the receiving side always first estimates transmission channel from the transmission side to the receiving side at the current time** by channel estimating section 319,

and obtains channel characteristics of the subcarriers of the OFDM. Based on these channel characteristics, the receiving side then decides modulation and coding parameters used for the OFDM subbands in the case of transmitting data from the transmission side at the current point by parameter selecting section **318**.

...

After selecting modulation and coding parameters of the OFDM subbands, subband AMC parameter selecting section **318** on **the receiving side then transmits these parameters back to the transmission side via a feedback path[.]**

Id. at 3:18-43 (emphasis added). The available frequency bandwidth of an OFDM system “is divided into a plurality of narrow subcarrier frequency bandwidths.”

Id. at 1:25-26 (emphasis added).

To simplify processing, “all of the subcarriers on the OFDM frequency domain are [further] divided into several subbands.” *Id.* at 2:18-19 (emphasis added). The ’439 explains that prior art techniques perform AMC on both subcarriers and on subbands, but notes that “AMC based on subcarriers is very difficult to be implemented, and, in addition, has the problem that feedback overhead is too large.” *Id.* at 2:2-15.

To further simplify the process and reduce feedback overhead, the ’439 Patent proposes combining subbands into subband groups based on a predefined rule, whereby a single modulation and coding scheme is selected for the entire

group:

The object of the present invention is therefore to provide communication apparatus, a communication system and a communication method capable of increasing spectrum utilization rate of a system and particularly increasing spectrum utilization rate based on high-speed fading and channel estimation error, reducing the degree of difficulty of adaptivity, and reducing the feedback overhead compared with subband adaptive methods of the related art by combining all of the subbands on a frequency domain of a subcarrier communication system based on a fixed rule to as to give several subband groups, and then selecting modulation and coding parameters for use during joint coding with respect to each subband group.

Id. at 5:32-44 (emphasis added); *see also id.* at 7:39-46, 8:2-15, 8:57-60 (“**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.**”) (emphasis added).

The '439 Patent describes three examples of how subbands are to be grouped, and leaves open the possibility that other rules may be employed to define these subband groups:

[W]ith the method of the present application, selection of adaptive parameters for the OFDM subband groups in step **903** is achieved by providing subband groups as the units of adaptive transmission rather than subbands. All of the **subbands in an OFDM frequency domain**

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.