UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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ERICSSON INC. AND TELEFONAKTIEBOLAGET
LM ERICSSON,
Petitioner,

v.

INTELLECTUAL VENTURES II LLC,
Patent Owner.

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Case IPR2014-01185
Patent 7,269,127 B2

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Before JUSTIN BUSCH, PETER P. CHEN, and J. JOHN LEE,
Administrative Patent Judges.

CHEN, *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 of claims 1–10, 17, 20–21, and 23–24 of U.S. Patent No. 7,269,127 (Ex. 1001, "the '127 patent"). Paper 2 ("Pet."). Intellectual Ventures II LLC ("Patent Owner") filed a Preliminary Response. Paper 10 ("Prelim. Resp."). We have statutory authority under 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted "unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition."

Upon consideration of the Petition, we are persuaded Petitioner has demonstrated a reasonable likelihood that it would prevail in showing the unpatentability of claims 1–10 and 17 of the '127 patent. Accordingly, we institute an *inter partes* review of these claims.

A. Related Proceedings

According to Petitioner, the '127 patent is involved in the following district court cases: *Intellectual Ventures I LLC, et al. v. AT&T Mobility LLC et al.*, 1-13-cv-01668 (D. Del.); *Intellectual Ventures I LLC, et al. v. Leap Wireless Int'l et al.*, 1-13-cv-01669 (D. Del.); *Intellectual Ventures I LLC, et al. v. Nextel Operations et al.*, 1-13-cv-01670 (D. Del.); *Intellectual Ventures I LLC, et al. v. T-Mobile USA Inc. et al.*, 1-13-cv-01671 (D. Del.); and *Intellectual Ventures I LLC, et al. v. U.S. Cellular Corp.*, 1-13-cv-01672 (D. Del.).

B. The '127 Patent

The subject matter of the challenged claims of the '127 patent relates generally to preamble structures in multi-input, multi-output (MIMO) and single-input, single-output (SISO) wireless communication systems. Ex. 1001, 3:21–24. A MIMO communication system may employ various signal modulation and demodulation techniques, including orthogonal frequency division multiplexing (OFDM). *Id.* at 4:58–62. In MIMO wireless communications systems, signals are pre-processed to avoid interference from other signals in common communications channels or paths. *Id.* at 1:54–57. Pre-processing techniques can include using frame structures, which are comprised of preamble structures and data structures. *Id.* at 1:58–63. Data or information (e.g., voice, video, audio, text) can be transmitted as data symbols organized into the data structures. *Id.* at 1:64–2:1. An efficient preamble structure for use in wireless communications systems should provide for both synchronization of data symbols and estimation of parameters such as noise variance and other parameters. *Id.* at 2:56–62.

Training symbols are typically added as prefixes to data structures, to enable synchronization between transmitters and receivers of a communications system. *Id.* at 2:10–14. These training symbols can be referred to as preambles and are part of the preamble structures. *Id.* at 2:14–15. The preamble structure can contain an enhanced training symbol, which

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is divided into sections to perform synchronization and channel parameter estimation functions. *Id.* at 11:2–8.
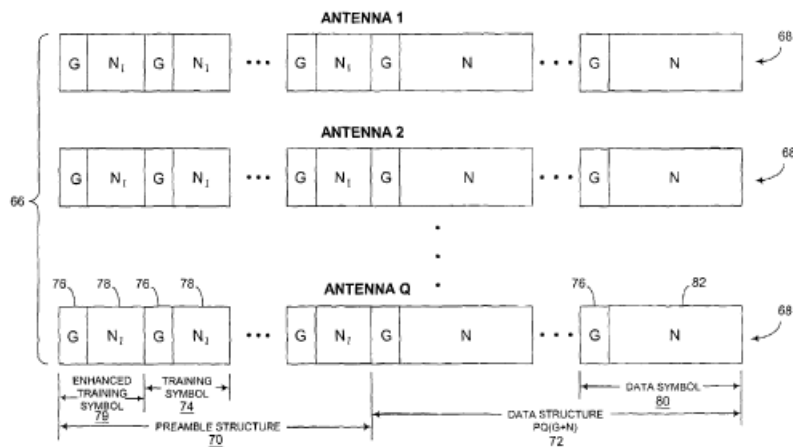
Figure 6 of the '127 patent is reproduced below.

FIG. 6

Figure 6 is a diagram of frame structures 68 in signal structure 66.   Ex. 1001, 10:50–55. Each of frame structures 68 include preamble structure 70 and data structure 72. *Id*. at 10:57–59.   Preamble structure 70 includes training symbol 74, and enhanced training symbol 79 located at the beginning of preamble structure 70. *Id*. at 10:62–11:5. Training block 78 of enhanced training symbol 79 is divided into several sections, for synchronization and for channel parameter estimation. *Id*. at 11:5–8. Data structure 72 includes one or more data symbols 80, which in turn include cyclic prefix 76 and data block 82. *Id*. at 11:27–30.

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Illustrative Claims

Claims 1–10, 17, 20–21, and 23–24 are the subject of the petition.

Claims 1 and 20 are independent and are reproduced as follows.

1. A transmitter of a communication system, the transmitter comprising:

an encoder having a pilot/training symbol inserter, the pilot/training symbol inserter configured to insert pilot symbols into data blocks and to combine training symbols with the data blocks;

at least one modulator, each modulator having an inverse discrete Fourier transform (TDFT) stage and a cyclic prefix inserter, each modulator outputting a frame structure comprising a preamble structure and a data structure, the preamble structure comprising at least one training symbol and an enhanced training symbol;

and at least one transmit antenna, each transmit antenna corresponding to a respective one or the at least one modulator, each transmit antenna transmitting the frame structure output from the corresponding modulator, wherein the enhanced training symbol is a single symbol.

20. A method of forming a frame structure that is transmitted in a communication system, the method comprising the steps of:

providing data blocks;

providing training blocks;

combining the data blocks and training blocks in a parallel

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