UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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HYTERA COMMUNICATIONS CO. LTD.,
Petitioner,

v.

MOTOROLA SOLUTIONS, INC.,
Patent Owner.

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Case IPR2017-02183
Patent 8,279,991 B2

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Before TREVOR M. JEFFERSON, DANIEL N. FISHMAN, and
PATRICK M. BOUCHER, *Administrative Patent Judges.*

JEFFERSON, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I.   INTRODUCTION

A. Background

We instituted an *inter partes* review of claims 7 and 8 of U.S. Patent No. 8,279,991 B2 (Ex. 1001, "the '991 patent") in response to a petition (Paper 1, "Pet.") filed by Hytera Communications Corp. Ltd. ("Petitioner")[1]. Paper 7 ("Dec."). Motorola Solutions, Inc. ("Patent Owner") filed a Preliminary Response (Paper 6, "Prelim. Resp.") prior to institution. Following institution, Patent Owner filed a Response (Paper 22, "PO Resp.") to which Petitioner filed a Reply (Paper 33, "Reply") and Patent Owner filed an authorized Sur-Reply (Paper 42, "PO Sur-Reply"). Petitioner filed a Motion to Exclude evidence filed by Patent Owner, which Patent Owner opposed, and to which Petitioner replied. Papers 40, 43, 45. An oral hearing was held with the parties, and a copy of the transcript was entered into the record. Paper 46 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the claims on which we instituted trial. Based on the record before us, Petitioner has not shown, by a preponderance of the evidence, that claims 7 and 8 of the '991 patent are unpatentable.

B. Related Proceeding

Both parties identify *In the Matter of Certain Two-Way Radio Equipment and Systems, Related Software and Components Thereof*, 337-TA-1053 (ITC), and *Motorola Solutions, Inc. v. Hytera Communications*

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[1] Petitioner identifies Hytera America, Inc., and Hytera Communications America (West), Inc. as additional real parties in interest. Pet. 48.

Corp. Ltd., No. 1:17-cv-01972 (N.D. Ill.), as related proceedings. Pet. 48;
Paper 5, 1.

C. The '991 Patent (Ex. 1001)

The '991 patent, entitled "Method of Efficiently Synchronizing to a
Desired Timeslot in a Time Division Multiple Access Communication
System," describes methods for transmitting communications in a Time
Division Multiple Access Communication ("TDMA") system to enable
efficient use of resources in the TDMA system. Ex. 1001, 3:17–21, 3:58–
62. TDMA air interface protocol is described in a European
Telecommunications Standard Institute—Digital Mobile Radio (ETSI-
DMR) standard (ETSI TS 102 361-1). *Id*. at 1:36–38. A subscriber unit in a
TDMA communication system must ensure it is synchronized with a desired
timeslot before it can receive or transmit data on a TDMA frequency
channel. *Id*. at 1:38–41. The '991 patent describes that "the ETSI-DMR
standard provides a TDMA Channel (TC) bit which informs the receiving
device whether the next timeslot to be received is timeslot 1 or timeslot 2."
Id. at 1:41–43.

> The '991 patent
>
> discloses a method for efficiently synchronizing to a desired
> timeslot in a TDMA communication system. In repeater-based
> transmissions, the present disclosure reduces the time required
> for the receiving device to synchronize to the desired times lot,
> thus eliminating the extra time needed to reliably decode the TC
> bits in the CACH message, as described [in existing TDMC
> protocol].

Id. at 3:15–22. Figure 7, below, illustrates a timing diagram of two direct-
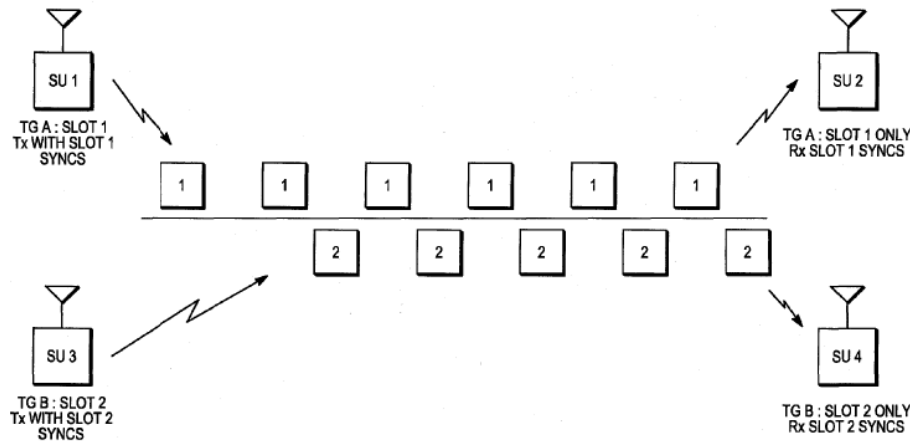mode transmissions in accordance with the '991 patent.

FIG. 7

Figure 7 depicts a system with two timeslots per frequency channel for
individual communications. The '991 patent states that in Figure 7

> two transmissions are currently being transmitted by two
> transmitting subscriber units on a single frequency (e.g., 12.5
> kHz channel bandwidth with 2:1 TDMA slotting structure for
> 6.25e spectral efficiency) in separate timeslots. Transmitting
> subscriber unit 1 is transmitting bursts in its transmission that
> have an embedded synchronization pattern associated with
> Timeslot 1, where appropriate; transmitting subscriber unit 3 is
> transmitting bursts in its transmission that have an embedded
> synchronization pattern associated with Timeslot 2, where
> appropriate. Once the synchronization patterns are detected by
> the receiving subscriber units 2 and 4, respectively, the receiving
> subscriber units 2 and 4 immediately know they have
> synchronized to their desired timeslots.

Id. at 11:29–42.

The '991 patent discloses methods for a transmitting device to
transmit bursts containing voice, data, or control information in different
timeslots using different synchronization patterns associated with the
timeslots, as well as methods for a receiving device to synchronize to a

desired timeslot. *Id*. at Figs. 2–6. The '991 patent explains that the transmitting device knows a set of synchronization patterns associated with each timeslot on a frequency. *Id*. at 5:25–26, 9:33–40. Each set of synchronization patterns "can be a set of one or greater," such that the set may comprise "one synchronization pattern associated with the timeslot" or may have a plurality of synchronization patterns that differentiate between the source and/or payload-type for bursts transmitted on that timeslot. *Id*. at 5:45–65, 9:47–60, 9:64–10:9. The '991 Specification describes a "two slot TDMA communication system" in which the transmitting device knows a different set of synchronization patterns associated with each of the two timeslots on a frequency, each set comprising at least two synchronization patterns. *Id*. at 5:56–65 (synchronization patterns associated with timeslot 1, including "BS_Sourced_Data_TS1=DFF57D75DF5D$_{16}$", "BS_Sourced_Voice_TS1=755FD7DF75F7$_{16}$"), 6:27–34 (synchronization patterns associated with timeslot 2, including "BS_Sourced_Data_TS2 = DD7FF5D757DD$_{16}$", "BS_Sourced_Voice_TS2=77D55F7DFD77$_{16}$").

The '991 patent describes that "[i]n a repeater-based transmission, a transmitting device selects a synchronization pattern associated with the desired timeslot . . . ." *Id*. at 3:21–23. "If the receiving device detects the synchronization pattern, the receiving device immediately synchronizes with the timeslot with confidence that it is synchronizing to the desired timeslot, or can immediately adjust its timing in order to decode the desired timeslot, without needing extra time to reliably decode the TC bits in the CACH." *Id*. at 3:31–37. In order to transmit bursts, a device prepares to transmit in a timeslot (such as Timeslot 1, Timeslot 2, a rest timeslot, or a non-rest

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