UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

HUAWEI TECHNOLOGIES CO., LTD,
Patent Owner.

_____

Case IPR2017-01472
Patent 8,369,278 B2

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Before TREVOR M. JEFFERSON, MICHELLE N. WORMMEESTER, and
JOHN F. HORVATH, *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

Samsung Electronics Co., Ltd. ("Petitioner")[1] filed a Petition (Paper 1, "Pet.") requesting *inter partes* review of claims 1, 2, and 6–9 of U.S. Patent No. 8,369,278 B2 (Ex. 1001, "the '278 patent"). Huawei Technologies Co., Ltd. ("Patent Owner") filed a Preliminary Response (Paper 10, "Prelim. Resp."). We instituted an inter partes review of all the challenged claims. Paper 13 ("Inst. Dec."); *see* 35 U.S.C. 314(a).

Following institution, Patent Owner filed a Patent Owner Response (Paper 22, "PO Resp.") and Petitioner filed a Reply (Paper 27, "Pet. Reply"). With our authorization, Patent Owner filed a Sur-Reply (Paper 32, "PO Sur-Reply"). Patent Owner also filed a Motion to Exclude (Paper 32), which we address below. On September 25, 2018, we conducted an oral hearing, for which a copy of the transcript (Paper 38, "Tr.") is included in the record.

For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1, 2, and 6–9 of the '278 patent are unpatentable. This final written decision is issued pursuant to 35 U.S.C. § 318(a).

B. Related Proceeding

The parties identify one related district court case: *Huawei Technologies Co. v. Samsung Electronics Co.*, Case No. 3:16-cv-02787 (N.D. Cal.). Pet. 4; Paper 5, 1.

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[1] Petitioner identifies Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Samsung Research America as real parties in interest.

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C. The '278 Patent (Ex. 1001)

The '278 patent is entitled "Method and Apparatus for Sending Control Signaling" and is directed to

> [a] method for sending control signaling [that] may include: indicating, by the transmitter, a payload size or Redundancy Version (RV) through different states of one field in the control signaling; and sending the control signaling indicative of the payload size or RV on the field

Ex. 1001, 3:36–40. The background of the '278 patent discloses that mobiles and base stations use a retransmission scheme called Hybrid Automatic Repeat reQuest (HARQ). Ex. 1001, 1:36-45. HARQ is a scheme wherein a receiver sends either an acknowledgement (ACK) or negative acknowledgement (NACK) back to the transmitter after each message. *Id.* at 1:60–67. The base station notifies the terminal of allocated physical resources and HARQ-related information through downlink control signaling and transmits the downlink data to the terminal. *Id.* at 1:46–49. Such control signaling may include payload size, HARQ process number, Redundancy Version (RV), and New Data Indicator (NDI). *Id.* at 1:49–51.

As disclosed in the '278 patent, payload size (the size of the transmitted data) and RV are the control information sent as part of the control signaling from a base station to a mobile device. Ex. 1001 at 1:49-52. "The value of RV is generally the default value in the initial transmission. If the packet is retransmitted, the NDI value is the same as that in the previous transmission, and the RV value changes." *Id.* at 2:17–21. Thus, "the RV is marked RV1 when the packet is retransmitted for the first time, marked RV2 when the packet is retransmitted for the second time, . . . and so on." *Id.* at 2:21–26. In the initial transmission and retransmission

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of the same packet, the payload size is the same," thus the payload size need only be indicated in the initial transmission. *Id*. at 2:26–28.

> The '278 patent further discloses that:

> [a] method for sending control signaling is provided in embodiments disclosed herein, including: indicating payload size or RV based on different states of one field in the control signaling; and sending, in response to the indication, the control signaling indicative of the payload size or RV in the field, thus vacating the field occupied by the information not required to be indicated, and saving physical resources.

Id. at 4:23–29. Thus, in this method "[d]ifferent states of one field in the control signaling may indicate a payload size or RV." *Id*. at 4:49–50.

> The '278 patent provides an example of a 6-bit field that is used to represent either RV or payload size:

> in a 6-bit field, 4 states whose foremost upper bits are all 0s can indicate 4 different RVs. That is, the 4 states 000000, 000001, 000010 and 000011 indicate RV1-RV4. Accordingly, the remaining 60 states (any bit in the 4 foremost upper bits of the remaining 60 states is non-zero) indicate 60 different payload sizes.

Id. at 5:9-14. In this embodiment, the '278 patent explains that "[t]he 2 bits occupied by the RV in the prior art are saved." The '278 patent further explains that "when the control signaling is received, it is practicable to judge whether the field in the control signaling indicates the payload size or the RV by only detecting the state code." *Id*. at 5:14–17.

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D. Illustrative Claims

Petitioner challenges claims 1, 2, and 6–9 of the '278 patent, with independent claims 1 and 7. Claims 1 and 2 are reproduced below:

> 1. A method of signaling, comprising:
>
> [1A] receiving, by a terminal, control signaling comprising a field, wherein the field includes N bits that are either 1 or 0, and a state of the field is indicated by all the N bits of the field; wherein N is a positive integer greater than 1; [1B] wherein the field is dynamically indicative of one of a payload size or a Redundancy Version (RV) through the state of the field, [1C] wherein the payload size is indicated through a first state of the field when the first state is within a first predetermined range and the RV is indicated through a second state of the field when the second state is within a second predetermined range distinct from the first predetermined range; and
>
> [1D] sending, by the terminal, a packet according to the received control signaling to a base station (BS).
>
> 2. The method of claim 1, further comprising:
>
> determining, by the terminal, that the RV is a default value if the received control signaling is indicative of the payload size on the field.

Ex. 1001, 11:60–12:15 [bracketed lettering added], Cert. of Corr., 1.

E. Instituted Grounds of Unpatentability

We instituted review based on the Petition's challenges to claims 1, 2, and 6–9 of the '278 patent as follows (*see* Inst. Dec. 28–29; Pet. 6–7):

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