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Paper No. 49
Filed: December 4, 2018

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

HUAWEI TECHNOLOGIES CO., LTD.
Patent Owner.

Case IPR2017-01483
Patent 8,483,166 B2

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

HORVATH, *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.[1] ("Petitioner") filed a Petition (Paper 2, "Pet.") to institute *inter partes* review of claims 1–5 and 12–16 ("the challenged claims") of U.S. Patent No. 8,843,166 B2 (Ex. 1001, "the '166 patent"). Huawei Technologies Co., Ltd. ("Patent Owner") filed a Preliminary Response (Paper 10, "Prelim. Resp."). Upon consideration of the Petition and Preliminary Response, we instituted review of claims 1–5 of the '166 patent, but declined to institute review of claims 12–16. Paper 17, 35 ("Dec. Inst.").

Patent Owner filed a Response to the Petition, addressing only instituted claims 1–5. Paper 26 ("PO Resp."). Subsequent to Patent Owner's Response, the Supreme Court issued its decision in *SAS Institute, Inc. v. Iancu*, 138 S.Ct. 1348 (2018), holding that *inter partes* reviews may not be instituted on fewer than all claims challenged in a petition. We, therefore, modified our Institution Decision to include review of previously non-instituted claims 12–16. Paper 27, 3. Patent Owner filed a Supplemental Response limited to addressing these additional claims. Paper 32 ("PO Supp. Resp."). Petitioner filed a Reply to the Response and Supplemental Response. Paper 34 ("Reply"). Patent Owner filed a Sur-Reply to Petitioner's Reply. Paper 42 ("PO Sur-Reply"). We held an oral hearing on September 25, 2018, and the hearing transcript is included in the record. *See* Paper 48 ("Tr.").

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[1] Samsung identifies Samsung Electronics America, Inc. and Samsung Research America as real parties-in-interest. Pet. 3.

We have jurisdiction under 35 U.S.C. § 6(b). This is a Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons set forth below, we find Petitioner has shown by a preponderance of the evidence that claims 1–5 of the '166 patent are unpatentable, but has failed to show by a preponderance of the evidence that claims 12–16 are unpatentable.

B. Related Matters

Petitioner identifies the following as matters that could affect, or be affected by, a decision in this proceeding: *Huawei Techs. Co., Ltd. v. Samsung Elec. Co., Ltd.*, Case No. 3:16-cv-02787 (N.D. Cal.). Pet. 3. Patent Owner identifies the same matter, as well as U.S. Patent No. 9,084,159 and pending U.S. Patent App. No. 14/752,426, which are the child and grandchild, respectively, of the'166 patent. Paper 5, 1.

C. Evidence Relied Upon[2]

Reference	Date	Exhibit
Intra-domain connection of Radio Access Network (RAN) nodes to multiple Core Network (CN) nodes (Release 7), 3rd Generation Partnership Project, 3GPP TS 23.236 V7.0.0 (2006–12) ("TS 23.236").	Dec. 8, 2006	1004
3GPP System Architecture Evolution: Report on Technical Options and Conclusions (Release 7), 3rd Generation Partnership Project, 3GPP TR 23.882 V1.12.0 (2007-10) ("TR 23.882")	Oct. 25, 2007	1005

[2] Petitioner also relies upon the Declarations of Raziq Yaqub, Ph.D. (Ex. 1012), and Tim Arthur Williams, Ph.D. (Ex. 1014). Patent Owner relies on the Declaration of Dr. Mark Mahon (Ex. 2002).

Reference		Date	Exhibit
Discussion on the structure of S-TMSI, China Mobile and Huawei, 3GPP TSG SA WG2 Meeting #59, ("S2-073255").		Aug. 22, 2007	1006
Shaheen	US 2007/0248064 A1	Oct. 25, 2007	1007

D. Instituted Grounds of Unpatentability

References	Basis	Claim(s) Challenged
TS 23.236 and S2-073255	§ 103(a)	1–3, 5, 12–14, and 16
TS 23.236, S2-073255, and TR 23.882	§ 103(a)	4 and 15
TS 23.236, S2-073255, and Shaheen	§ 103(a)	12–14 and 16
TS 23.236, S2-073255, TR 23.882 and Shaheen	§ 103(a)	15

II. ANALYSIS

A. The '166 Patent

The '166 patent is directed toward a method and apparatus for allowing user equipment (UE) to access a legacy network, such as a 2G/3G network, via a temporary ID obtained from an evolved or LTE network. Ex. 1001, 1:19–23, Abstract.

According to the '166 patent, when a UE initially joins a 2G/3G network, it is attached to a Serving GPRS Support Node (SGSN), which assigns a Packet Temporary Mobile Station Identity (P-TMSI) to the UE. *Id*. at 2:18–21. The P-TMSI is a 32-bit word that includes a 10-bit Network Resource Identify (NRI) used to identify the assigning SGSN. *Id*. at 5:30–43. When the UE moves from one Radio Access Node (RAN) in the network to another, the UE sends a Radio Resource Control (RRC) message

to the new RAN. *Id*. at 5:47–49. The RRC message includes P-TMSI and Non Access Stratum (NAS) fields, and the NAS field includes a Radio Access Update (RAU) message that includes P-TMSI and Radio Access Identifier (RAI) fields. *Id*. at 5:49–52. The new RAN parses the P-TMSI from the RRC message, and if it can locate the SGSN from the NRI field of the P-TMSI, forwards the NAS field to the SGSN. *Id*. at 5:53–58. If the RAN cannot locate the SGSN, it selects a new SGSN, and sends the NAS field to the new SGSN. *Id*. at 5:58–60. The new SGSN parses the NAS field to obtain the P-TMSI, NRI, and RAI, and uses them to send a Context Request message to the old SGSN. *Id*. at 5:60–66. The new SGSN receives a UE context from the old SGSN, and assigns new RAI and P-TMSI identifiers to the UE. *Id*. at 5:67–6:4.

Similar to the procedure discussed above for 2G/3G networks, when a UE joins an LTE network, it is attached to a mobility management entity (MME) that assigns an SAE-TMSI to the UE. Ex. 1001, 7:31–36. The SAE-TMSI may be longer than the 32 bit P-TMSI. *Id*. at 3:21–26. For example, the SAE-TMSI may be 40 or 56 bits long. *Id*. at 9:21–25. When the UE moves from an LTE network to a legacy 2G/3G network, the UE cannot simply replace the P-TMSI field of the RRC message with the longer SAE-TMSI of the LTE network. Accordingly, the UE adds "MME information for uniquely identifying an MME . . . to an access message sent to the old network." *Id*. at 13:23–26. This allows the old or 2G/3G network to "determine and find the MME that is accessed by the UE in the evolved [LTE] network." *Id*. at 13:23–28.

According to the '166 patent, different LTE or SAE networks have different configurations, and the MME information needed to identify an

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