UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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APPLE INC.,
Petitioner,

v.

TELEFONAKTIEBOLAGET LM ERICSSON,
Patent Owner.

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IPR2022-00337
Patent 10,454,655 B2

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Before SALLY C. MEDLEY, STEVEN M. AMUNDSON, and
STEPHEN E. BELISLE, *Administrative Patent Judges*.

AMUNDSON, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Apple Inc. ("Petitioner") filed a Petition requesting an *inter partes* review of claims 1–40 in U.S. Patent No. 10,454,655 B2 (Exhibit 1001, "the '655 patent") under 35 U.S.C. §§ 311–319. Paper 2 ("Pet."). Telefonaktiebolaget LM Ericsson ("Patent Owner") filed a Preliminary Response. Paper 6 ("Prelim. Resp.").

Under 37 C.F.R. § 42.4(a), we have authority to determine whether to institute an *inter partes* review. We may institute an *inter partes* review only if "the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a) (2018). The "reasonable likelihood" standard is "a higher standard than mere notice pleading" but "lower than the 'preponderance' standard to prevail in a final written decision." *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29 at 13 (PTAB Dec. 20, 2019) (precedential).

Based on the current record and for the reasons explained below, Petitioner has shown that there is a reasonable likelihood that it would prevail with respect to at least one of the challenged claims. Thus, we institute an *inter partes* review of claims 1–40 in the '655 patent on all challenges included in the Petition.

II. BACKGROUND

A. Real Parties in Interest

Petitioner identifies itself as the real party in interest. Pet. 84. Patent Owner identifies the following real parties in interest: Telefonaktiebolaget

LM Ericsson and Ericsson Inc. Paper 3, 2. The parties do not raise any issue about real parties in interest.

B. Related Matters

Petitioner and Patent Owner identify the following Board proceeding as a related matter involving a challenge to the '655 patent: *Samsung Electronics Co. v. Telefonaktiebolaget LM Ericsson*, IPR2021-00447 (PTAB Jan. 29, 2021). Pet. 85; Paper 3, 2. Petitioner states that this proceeding "was dismissed prior to institution, and before the filing of a preliminary response." Pet. 83, 85.

Petitioner and Patent Owner identify the following civil action as a related matter: *Ericsson Inc. v. Samsung Electronics Co.*, 2:20-cv-00380-JRG (E.D. Tex. Dec. 11, 2020). Pet. 84–85; Paper 3, 2. Petitioner states that this civil action was settled. Pet. 85.

C. The '655 Patent (Exhibit 1001)

The '655 patent, titled "Wireless Terminals, Nodes of Wireless Communication Networks, and Methods of Operating the Same," issued on October 22, 2019, from an application filed on November 28, 2018. Ex. 1001, codes (22), (45), (54). The patent identifies that application as the latest in a series of continuation applications that started with an application filed on November 10, 2015. *Id.* at 1:8–13, code (63). The patent claims priority to two provisional applications, i.e., a provisional application filed on January 13, 2015, and a provisional application filed on April 20, 2015. *Id.* at 1:8–16, code (60). The patent states that "[e]mbodiments disclosed herein may be generally directed to wireless communications and more particularly, directed to medium access control (MAC) control elements (CEs) for wireless communications and related wireless terminals and

wireless communication network nodes." *Id.* at 1:22–26; *see id.* at code (57).

The '655 patent explains that "Long Term Evolution (LTE) specifications have been standardized to support Component Carrier (CC) bandwidths up to 20 MHz." Ex. 1001, 1:30–32. According to the patent, however, "LTE operation with bandwidths wider than 20 MHz may be possible" by "means of Carrier Aggregation (CA)." *Id.* at 1:33–35; *see id.* at 4:62–63, 7:32–35, Fig. 1 (illustrating an aggregated bandwidth of 100 MHz based on five 20-MHz component carriers). Because the MAC specification "has not been designed to support more than five" component carriers or "in some cases more than seven" component carriers, the invention endeavors to extend support to additional component carriers. *Id.* at 7:38–58; *see id.* at 2:10–18.

The '655 patent also explains that the "number of aggregated Component Carriers CCs as well as the bandwidth of each individual CC may be different for uplink and downlink." Ex. 1001, 1:48–50. "A number of CCs configured in the network may be different from a number of CCs seen by a terminal." *Id.* at 1:55–57. "A terminal may, for example, support and/or be configured with more downlink CCs than uplink CCs, even though the network offers the same number of uplink and downlink CCs." *Id.* at 1:57–60.

The '655 patent identifies a problem if "a terminal is activated on multiple CCs" and "it has to monitor all DownLink DL CCs for PDCCH (Physical DownLink Control CHannel) and PDSCH (Physical DownLink Shared CHannel)" because that monitoring operation "may require a wider receiver bandwidth, a higher sampling rate, etc., resulting in increased power

consumption." Ex. 1001, 2:3–9. To address that problem, the patent
discloses using medium access control (MAC) control elements (CEs) to
exchange activation/deactivation information between a base station or
eNodeB (eNB) and a wireless terminal or user equipment (UE). *See id.* at
2:22–59, 7:52–63, code (57). The activation/deactivation information allows
for individual control of the CCs. *See id.* at 11:41–12:24.

For example, the '655 patent discloses defining two different versions
of an "activation/deactivation MAC CE" where:

   (1)   a first version includes a first bit map with bits
              corresponding to the respective component carriers in a
              first group of component carriers, e.g., 7 or 8 component
              carriers; and

   (2)   a second version includes a second bit map with bits
              corresponding to the respective component carriers in
              a second group of component carriers, e.g., 31 or 32
              component carriers.

Ex. 1001, 2:37–59, 7:54–58, 11:23–40, Figs. 6–7. In each bit map, a 0 may
indicate deactivation of the respective component carrier, while a 1 may
indicate activation of the respective component carrier. *Id.* at 11:59–65,
12:18–24, 12:33–45.

According to the '655 patent, a "comprehensive list" of conventional
MAC CEs "is provided in section 6.1.3 of 3GPP [3d Generation Partnership
Project] TS [Technical Specification] 36.321 v12.3.0 (2014-09), 'LTE;
Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access
Control (MAC) protocol specification.'" Ex. 1001, 2:25–29. For each
MAC CE, an LCID (Logical Channel Identity) "is used as an identifier for
the MAC CE so that the receiver interprets the MAC CE correctly." *Id.* at
2:29–32.

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