

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AT&T SERVICES INC., T-MOBILE USA, INC., CELLCO PARTNERSHIP
D/B/A VERIZON WIRELESS, ERICSSON INC., AND NOKIA OF AMERICA
CORPORATION,
Petitioners

v.

INNOVATIVE SONIC LIMITED AND CELERITY IP, LLC.
Patent Owner.

Case IPR2024-01144
U.S. Patent No. 9,237,489

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 9,237,489**

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LIST OF EXHIBITS

Ex-Number	Title
1001	U.S. Patent No. 9,237,489
1002	Christopher Hansen Declaration
1003	Craig Bishop Declaration
1004	R2-105472 (“Nokia”)
1005	R2-105685 (“Ericsson”)
1006	3GPP TS 36.331 v9.4.0 (“3GPP-36331-940”)
1007	3GPP TS 36.300 v9.5.0 (“3GPP-36300-950”)
1008	R2-105971 (“3GPP-36331-Update”)
1009	3GPP TS 36.331 v10.0.0
1010	File History of the ’489 Patent
1011	R2-104791
1012	R2-104991
1013	R2-104421
1014	“Overview of 3GPP LTE-Advanced Carrier Aggregation for 4G Wireless Communications,” IEEE Communications Magazine (Feb. 2012)
1015	Curriculum Vitae of Christopher Hansen
1016	June 21, 2022 Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings With Parallel District Court Litigation
1017	Docket Control Order
1018	Consolidation Order

Petitioners AT&T Services Inc., T-Mobile USA, Inc., Cellco Partnership d/b/a Verizon Wireless, Ericsson Inc., and Nokia of America Corporation (collectively, “Petitioners”) request *Inter Partes* Review (“IPR”) of claims 1–22 (“the Challenged Claims”) of the ’489 patent, asserted to be owned by Innovative Sonic Ltd. and Celerity IP, LLC (collectively, “Patent Owner”). Petitioners respectfully request that the Challenged Claims be found unpatentable.

I. INTRODUCTION

AT&T Services Inc., T-Mobile USA, Inc., Cellco Partnership d/b/a Verizon Wireless, Ericsson Inc., and Nokia of America Corporation (collectively, “Petitioners”) petition for inter partes review (“IPR”) seeking cancelation of claims 1–22 (the “Challenged Claims”) of U.S. Patent No. 9,237,489 (“the ’489 patent”) (Ex-1001), assigned to Innovative Sonic Limited (“Patent Owner”) according to USPTO records.

The Challenged Claims are drawn to a device and method for secondary cell (“SCell”) release during a handover procedure in a wireless network. In general, the claims includes sending information in a HandoverPreparationInformation message from a source eNodeB (“eNB”) to a target eNB that includes user equipment (“UE”) SCell configuration and the target eNB sending a handover command that includes an SCellToReleaseList to the UE to release the configured SCells.

The Challenged Claims are fully disclosed in the prior art, as discussed herein.

In particular, the 3GPP standard for wireless communication, along with the contributions to that standard, fully disclose the device and method claimed by the '489 patent.

Because all of the claimed features of the Challenged Claims were disclosed or suggested in the cited prior art, the Challenged Claims are unpatentable and should be canceled.

II. MANDATORY NOTICES

A. Real Party-in-Interest Under 37 C.F.R. § 42.8(b)(1)

The real parties in interest are AT&T Enterprises, LLC,¹ AT&T Mobility LLC, AT&T Mobility II LLC, AT&T Services Inc., Cellco Partnership d/b/a Verizon Wireless, Verizon Corporate Resources Group LLC, T-Mobile USA, Inc., Ericsson Inc., Telefonaktiebolaget LM Ericsson, and Nokia of America

¹ AT&T Corp. is a named defendant in the below identified related cases. AT&T Corp. has undergone a corporate transaction and is now merged and converted into AT&T Enterprises, LLC. Out of an abundance of caution, Petitioners are identifying AT&T Enterprises, LLC as a real party in interest in this IPR.

Corporation.²

B. Related Matters Under 37 C.F.R. § 42.8(b)(2)

The following are a list of related matters: *ASUS Technology Licensing Inc. et al. v. AT&T Inc. et al.*, Case No. 2-23-cv-00486-JRG-RSP (E.D. Tex. 2023) (Lead Case); *ASUS Technology Licensing Inc. et al. v. T-Mobile USA, Inc.*, Case No. 2-23-cv-00487-JRG-RSP (E.D. Tex. 2023); *ASUS Technology Licensing Inc. et al. v. Verizon Communications Inc.*, Case No. 2-23-cv-00488-JRG-RSP (E.D. Tex. 2023); *Innovative Sonic Limited et al. v. AT&T Inc., et al.*, Case No. 2-23-cv-00489-JRG-RSP (E.D. Tex. 2023); *Innovative Sonic Limited et al. v. T-Mobile USA, Inc.*, Case

² Out of an abundance of caution, Petitioners identify all current defendants in the below identified cases as potential real parties in interest only for the purpose of this proceeding and only to the extent that Patent Owner contends that these separate legal entities should be named real parties in interest in this IPR. Petitioners do so to avoid the potential expenditure of resources to resolve such a challenge. Petitioners also acknowledge that each petitioner has a number of affiliates. No unnamed entity is funding, controlling, or otherwise has an opportunity to control or direct this Petition or Petitioners' participation in any resulting IPR. Petitioners are also not aware of any affiliate that would be barred from filing this Petition under 35 U.S.C. § 315(e).

No. 2-23-cv-00490-JRG-RSP (E.D. Tex. 2023); *Innovative Sonic Limited et al. v. Verizon Communications, Inc. et al.*, Case No. 2-23-cv-00491-JRG-RSP (E.D. Tex. 2023).

C. Lead and Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3)

Petitioners provides the following designation of counsel.

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D. Service Information Under 37 C.F.R. § 42.8(b)(4)

A copy of this entire Petition, including all Exhibits and a Power of Attorney, is being served via email and FEDERAL EXPRESS, costs prepaid, to the address of the attorney or agent of record at the USPTO:

Blue Capital Law Firm, P.C.
650 Town Center Drive, Suite 1530
Costa Mesa, CA 92626

Petitioners are also serving Patent Owner's litigation counsel of record, as reflected below on the Certificate of Service.

Petitioners consent to electronic service at the addresses provided above for lead and back-up counsel and at the following email address: Celerity_IPRs@mckoolsmith.com. A Power of Attorney is filed concurrently herewith under 37 C.F.R. § 42.10(b).

III. FEES

The Office is authorized to charge a fee under 37 C.F.R. 42.15(a) to Deposit Account No. DA-505723 and any additional fees that are due.

IV. CERTIFICATION OF STANDING

Petitioners certify pursuant to 37 C.F.R. §42.104(a) that the '489 patent is available for IPR and that Petitioners are not barred or estopped from requesting an IPR of the Challenged Claims on the grounds identified herein.

V. OVERVIEW OF CHALLENGE AND RELIEF REQUESTED

A. Claims for Which Review Is Requested (37 C.F.R. § 42.104(b)(1))

Petitioners request the review and cancelation of claims 1-22 of the '489 Patent.

B. Prior Art

This challenge is based on the following references: R2-105685, titled “Physical layer parameters to be configured by RRC” by Ericsson (“Ericsson”) (Ex-1005) and R2-105472, titled “ASN.1 Structure for SCell Configuration” by Nokia (“Nokia”) (Ex-1004). These references are contributions to the 3GPP standard and render the challenged claims invalid in view of the standard in place at the time of the invention, which is reflected in the standard technical specification and contribution documents, including 3GPP TS 36.331 v9.4.0 (“3GPP-36331-940”, Ex-1006), 3GPP TS 36.300 v9.5.0 (“3GPP-36300-950”, Ex-1007), and R2-105971 (“3GPP-36331-Update”, Ex-1008), and are referenced as such in the specification of the '489 patent (Ex-1001, 2:21-27).

C. Relief Requested

Petitioners request institution of IPR and cancellation of the Challenged Claims based on the following Grounds, supported by the Declaration of Dr. Christopher Hansen, Ph.D. (Ex-1002).

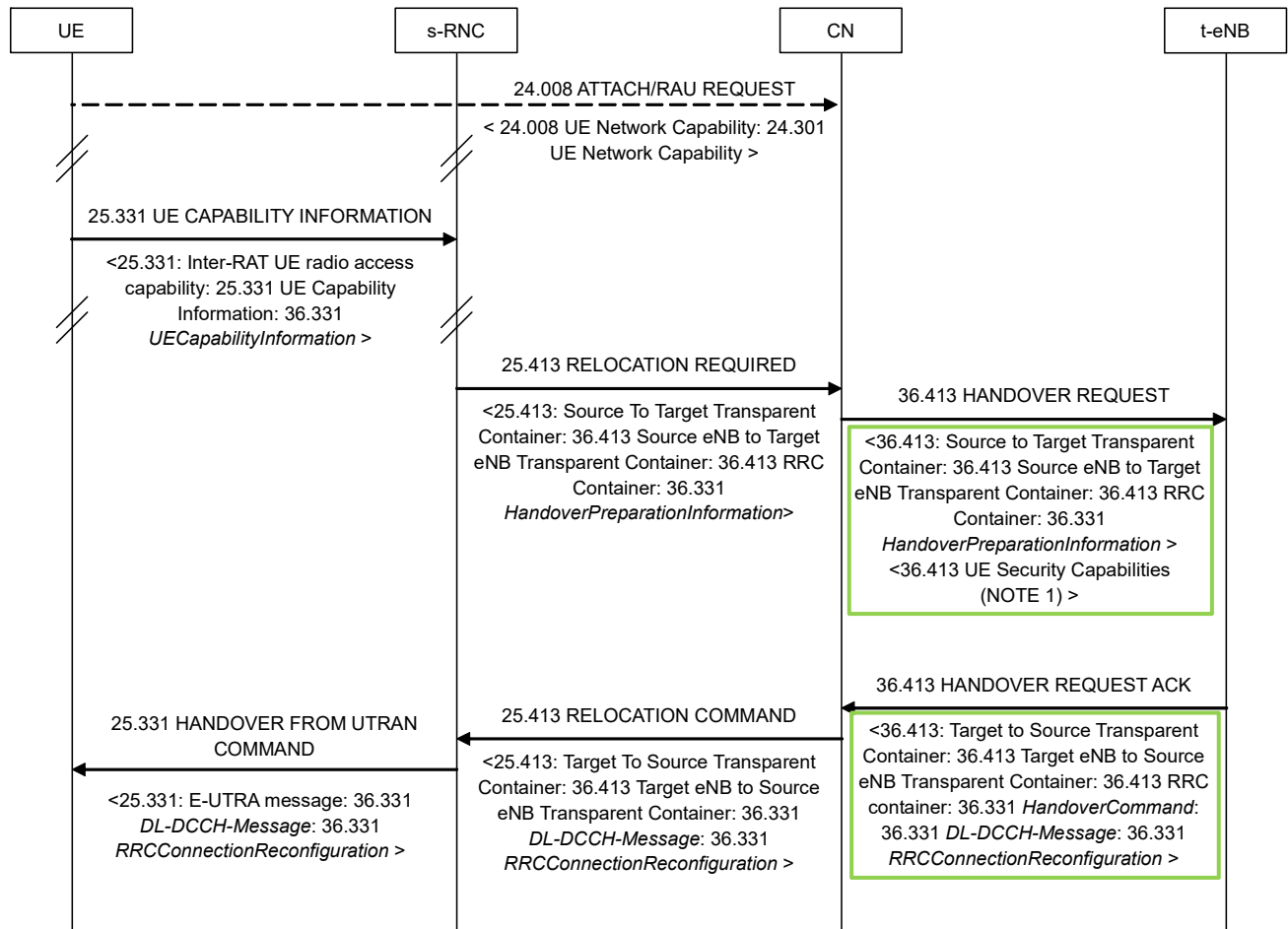
Ground	Basis	Challenged Claims	References
3	35 U.S.C. § 103 (Obviousness)	1–22	Nokia
4	35 U.S.C. § 103	1–22	Ericsson

Ground	Basis	Challenged Claims	References
	(Obviousness)		

VI. THE '489 patent

A. Technical Background

The '489 patent relates to a method for secondary cell (“SCell”) release during handover in a wireless communication system. Handover is a process wherein a user equipment (“UE”), for example a cell phone, leaves the range of one base station (“eNB”) and enters the range of another, such that the UE and its individual configurations must be seamlessly “handed over” from the “source” eNB to the “target” eNB. Ex-1002, ¶39. Figure 19.2.2.5.6-2 of 3GPP-36300-950, below, provides a general background of the handover procedure.



A handover is initiated by a handover request from the source eNB to the target eNB. The request includes a HandoverPreparationInformation message that contains the Radio Resource Control information required for successful handover. Following reception of the handover request, the target eNB sends a handover request acknowledgement of a handover command to the source eNB. That handover command includes the RRCConnectionReconfiguration message, which is a command to modify an RRC connection. The RRCConnectionReconfiguration message is passively transported from the source eNB to the UE.

Upon reception of the RRCConnectionReconfiguration message, the UE shall perform the radio resource configuration procedures outlined by the RRCConnectionReconfiguration message, including SCell release. Ex-1014, 124. SCells are cells that can be used to provide additional radio resources as part of carrier aggregation. Ex-1002, ¶41.

Upon receipt of the RRCConnectionReconfiguration message, the UE undergoes the following procedure for SCell release.

- 1> if the release is triggered by reception of the *sCellToReleaseList*:
- 2> for each *sCellIndex* value included in the *sCellToReleaseList*:
- 3> if the current UE configuration includes an SCell with value *sCellIndex*:
- 4> release the SCell;

3GPP-36331-Update, § 5.3.10a.

B. Overview of the Patent

The '489 patent is titled “Method and apparatus for secondary cell release during handover in a wireless communication system” and provides a device and method for SCell release during handover. Ex-1001, Abstract. Claim 1 of the '489

patent recites the following³:

1. A method of Secondary Cell (SCell) release during handover comprising:

configuring at least one SCell by a source eNB to a User Equipment (UE); and

including information by the source eNB in a HandoverPreparationInformation message for a target eNB to control SCell release in the UE during a handover,

wherein the information indicates SCell indexes of all SCells configured to the UE before the handover, thereby allowing the target eNB to include a sCellToReleaseList with all the SCells configured to the UE in a handover command for the UE to release the SCells included in the sCellToReleaseList.

³ Petitioners reserve the right to challenge the validity of the '489 patent claims on other grounds, including under Section 112 on the basis of written description, enablement, and definiteness.

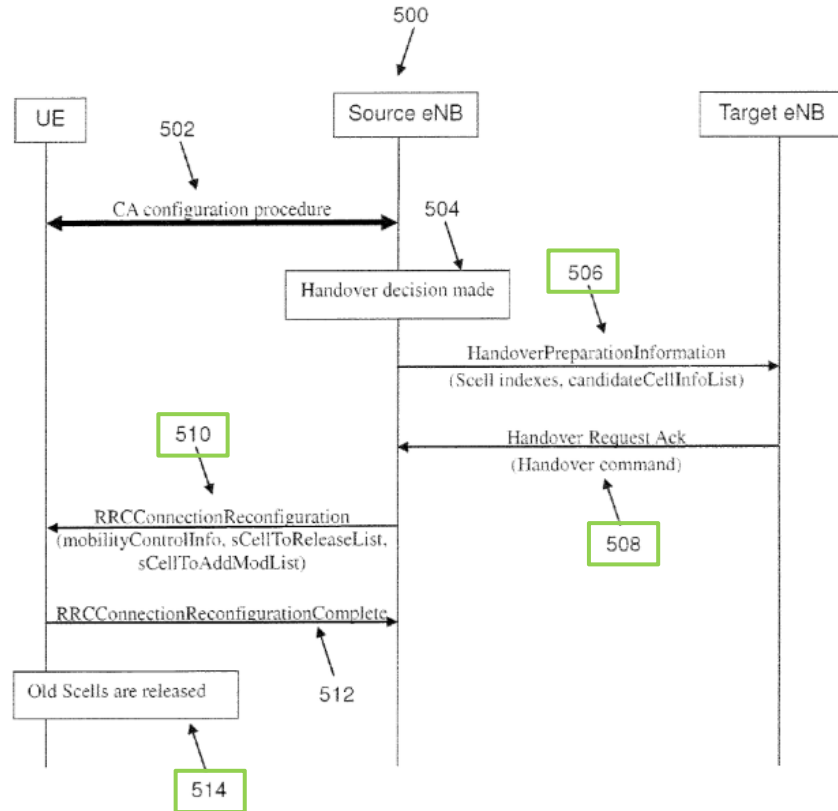


FIG. 6

Figure 6 is an exemplary embodiment of the invention. The '489 patent claims an implementation for SCell release during handover involving transmitting a HandoverPreparationInformation message from the source eNB to the target eNB (step 506), wherein the HandoverPreparationInformation message indicates the SCell indexes of all the SCells configured to the UE. Ex-1001, 7:15-23. After receiving the HandoverPreparationInformation message, the target eNB sends a handover command (step 508) including an RRCConnectionReconfiguration message with an “SCelltoReleaseList” to the UE (510). *Id.*, 7:24-27. The handover command is sent via the source eNB and results with the UE releasing the SCells in

the SCellToReleaseList (step 514). *Id.*, 7:30-36.

The concepts and properties claimed by the '489 patent, including for example, the HandoverPreparationInformation message, the SCell indexes, the SCellToReleaseList, the handover command, the RRCConnectionReconfiguration message, and the mobilitycontrolinfo, are all disclosed in the standards in place at the time of the invention, which are cited in the '489 patent specification.

The '489 patent specification describes a purported problem in the prior art that it is attempting to solve. It states that “currently there is no information included in RRCConnectionReconfiguration message for a UE to distinguish whether the handover is an intra-eNB or inter-eNB handover.” *Id.*, 6:45-48. As such, “the UE cannot decide whether or not to release the current SCells upon handover,” and therefore, “the target eNB has to include a sCellToReleaseList with all valid SCell indexes in the handover command for the UE to release all the potentially configured SCells even when there is actually no SCell configured to the UE.” *Id.*, 6:49-53.

The '489 patent goes on to state that “[c]urrently, there are 7 valid values of SCell indexes and the maximum number of SCell indexes in a SCellToReleaseList is only 4.” *Id.*, 6:54-56. Therefore, “[t]he handover command cannot include all the potential SCell Indexes which may be used in the UE” and “one additional RRCConnectionReconfiguration message is needed to release all the SCells in the UE,” which may result in increased signaling overhead. *Id.*, 6:56-59.

As a solution to this problem, the '489 patent purports to include information in the HandoverPreparationInformation message that “indicates the SCell indexes of all the SCells configured to the concerned UE, thereby allowing the target eNB to include the sCellToReleaseList with the SCells configured to the UE in the RRCConnectionReconfiguration message so that the UE can release the Scell(s) according to the sCellToReleaseList.” Ex-1001, 6:65-7:4.

C. Overview of the Prosecution History

Prior to allowance, the Examiner found the claims obvious in view of three references: R2-104791 (Ex-1011); R2-104991 (Ex-1012); and R2-104421 (Ex-1013). Ex-1010, 50-54. In response, Patent Owner did not assert that the prior art failed to disclose the claimed method for secondary cell release. *Id.*, 36-41. It instead amended the claims to include element 1[d], as provided in Section X.A.1.d, *infra*.

Patent Owner argued that the amendment to the claim “indicates all SCells that are configured to the UE by the source eNB ***before*** handover and that are to be released by the UE due to the handover, while the list in R2-104791 indicates candidate SCells to be configured to the UE ***for use after handover***.” Ex-1010, 37. In particular, Patent Owner argued that the prior art disclosed a “candidate list [that] indicates SCells to be configured for use after handover,” as opposed to the newly amended independent claims that require an indication of “SCells configured to the

UE by a source eNB before handover and to be released by the UE due to handover.”

Ex-1010, 40.

This was the only distinction provided by Patent Owner to overcome the prior art asserted by the Examiner. The Examiner then allowed the claims without further comment. *Id.*, 11. The Nokia and Ericsson references in this Petition were not before the Patent Office. As explained above, the relevant 3GPP standards in place at the time of the invention are reflected in 3GPP-36331-940, 3GPP TS. 36.300 v9.5.0, and R2-105971, which are referenced as such in the specification of the ’489 patent. Ex-1001, 2:21-27.

D. Level of Ordinary Skill in the Art

As of the earliest claimed priority date, a person of ordinary skill in the art at the time of the alleged invention of the ’489 patent (“POSITA”) would have had a B.S. in Electrical Engineering or a related field with at least three years of experience designing, developing, and/or testing telecommunication systems. Ex-1002, ¶36. A POSITA would also have familiarity with the wireless standards and well-known protocols for accessing wireless networks. *Id.* More education may supplement practical experience or *vice versa*. *Id.*

VII. CLAIM CONSTRUCTION

Petitioners submit that the Board does not need to expressly construe any terms to resolve the arguments presented herein. Petitioners submit that no terms

need to be construed because the prior art in this Petition discloses all limitations under any plausible construction. Ex-1002 ¶45.

VIII. OVERVIEW OF PRIOR ART

A. R2-105472 (“Nokia”)

R2-105472 (“Nokia”) (Ex-1004) is a proposal submitted by Nokia Siemens Networks, Nokia Corporation titled “ASN.1 Structure for SCell Configuration.” Nokia, 1. Nokia was submitted for discussion at the 3GPP TSG-RAN WG2 Meeting #71bis in Xian, China, which met between October 11, 2010 and October 15, 2010. *Id.* Therefore, Nokia is prior art under at least 35 U.S.C. 102(a). *See also*, Ex-1003 ¶¶56-57 .

Nokia was a contribution to the 3GPP technical standard, TS 36.331 version 9.4.0 (Ex-1006). In particular Nokia discusses SCell configuration parameter grouping and providing SCell configuration parameters under *radioResourceConfigDedicated*. Nokia, 1. Nokia teaches to include information elements, like, for example, an index of SCells configured to the UE as well as the *SCelltoReleaseList* in the *RadioResourceConfigDedicated* IE, which, as explained in Sections X.A.1.c-d below, is included in the *as-Config* IE of the *HandoverPreparationInformation* message before handover. *Id.*, 6-8.

B. R2-105685 (“Ericsson”)

R2-105685 (“Ericsson”) is a proposal submitted by Ericsson, ST-Ericsson titled “Physical layer parameters to be configured by RRC.” Ericsson, 1. Ericsson

was submitted for discussion at the 3GPP TSG-RAN WG2 Meeting #71bis in Xian, China, which met between October 11, 2010 and October 15, 2010. *Id.* Therefore, Ericsson is prior art under, at least, 35 U.S.C. 102(a). *See also*, Ex-1002, ¶2.

Ericsson was a contribution to the 3GPP technical standard, TS 36.331 version 9.4.0 (Ex-1006). Ericsson, 1. In relevant part, Ericsson discusses SCell radio configurations and provides SCell configuration parameters under *radioResourceConfigDedicatedSCell*. Ericsson, 2, 6, 9. Ericsson teaches to include information elements, like, for example, an index of P and SCells configured to the UE as part of the *RadioResourceConfigDedicatedSCell* IE, which, as explained in Section IX.B.1.c below, is included in the *as-Config* IE of the *HandoverPreparationInformation* message before handover. *Id.*

C. Ericsson and Nokia qualify as Prior Art to the '489 Patent Under At Least Pre-AIA 35 U.S.C. § 102(a)

As explained in detail by Craig Bishop (Ex-1003), 3GPP technical specifications (TS) and contributions, including Ericsson, are publically accessible as of the date they were uploaded to the 3GPP FTP server. Ex-1003, ¶25, 41-52, 64, 86-92.

Ericsson was uploaded to ETSI's file server on October 5, 2010. Ex-1003, ¶¶61-62, 87. As a result, Ericsson became a "printed publication" under pre-AIA 35 U.S.C. § 102(a) on October 5, 2010. *See, e.g., Samsung Elecs. Co.*, 2018 WL 6519544, *3–5 (concluding that technical reports and specifications uploaded to a

standards organization’s file server before a challenged patent’s priority date qualify as prior art under 35 U.S.C. § 102). Ericsson thus qualifies as prior art to the ’489 patent at least under pre-AIA 35 U.S.C. § 102(a).

Nokia was uploaded to ETSI’s file server on October 5, 2010. Ex-1003, ¶¶56-57, 86. As a result, Nokia became a “printed publication” under pre-AIA 35 U.S.C. § 102(a) on October 5, 2010. *See, e.g., Samsung Elecs. Co.*, 2018 WL 6519544, *3–5 (concluding that technical reports and specifications uploaded to a standards organization’s file server before a challenged patent’s priority date qualify as prior art under 35 U.S.C. § 102). Nokia thus qualifies as prior art to the ’489 patent at least under pre-AIA 35 U.S.C. § 102(a).

IX. The Standard at the Time of the Invention: 3GPP TS 36.331 v9.4.0 (“3GPP-36331-940”), 3GPP 3GPP-36300-950 (“3GPP-36300-950”), and R2-105971 (“3GPP-36331-Update”) (Collectively “3GPP-Standard”)

The Third Generation Partnership Project (3GPP) is a global collaboration between telecommunications organizations that develop specifications for mobile telecommunications technologies. Bishop Dec., ¶¶20-23. The project was established in December 1998 to develop a specification for a 3G mobile phone system based on the 2G GSM system. *Id.* 3GPP has since played a key role in the evolution of mobile communications from 3G to 4G and now towards 5G. *Id.*

3GPP-36331-940, 3GPP-36300-950, and 3GPP-36331-Update are standards documents that were created as part of the effort by 3GPP to develop specifications

for mobile telecommunications technologies. In general, and as further described below, 3GPP-36331-940 and 3GPP-36300-950 were versions of the standard just before the alleged priority date of the invention. [Ex-1003, ¶¶73,79]; Ex-1002, ¶214 . 3GPP-36331-Update is a draft of the update to 3GPP-36331-940 that was subsequently agreed upon and published in the 10th release of the 3GPP TS 36.331 (i.e. 3GPP TS 36.331 v.10.0.0). [Ex-1003, ¶81]; Ex-1002, ¶218.

A POSITA would have understood these documents to embody the state of the art in wireless telecommunications systems at the time of the invention. [Ex-1002, ¶¶77, 78. This is also made clear by the '489 Patent's reference to these same documents as "the standard offered by a consortium named 3rd Generation Partnership Project" (internal quotes omitted). '489 Patent, 2:21-27. Collectively, these are referenced as "3GPP-Standard."

A. 3GPP-36331-940 (Ex-1006)

3GPP-36331-940 (Ex-1006) is a technical specification produced by the 3rd Generation Partnership Project (3GPP), version 9.4.0 of the 9th release of the standard. In particular the technical specification specifies the Radio Resource Control protocol for the UE-E-UTRAN radio interface. It also describes the radio related information transported between source eNB and target eNB during handover, as explained by Dr. Christopher Hansen in his declaration. Ex-1002, ¶56.

B. 3GPP-36300-950 (Ex-1007)

3GPP-36300-950 (Ex-1007) is a technical specification produced by the 3rd Generation Partnership Project (3GPP), version 9.5.0 of the 9th release of the standard. In particular the technical specification specifies the Radio Resource Control protocol for the UE-E-UTRAN radio interface. It also describes the radio related information transported between source eNB and target eNB during handover, as explained by Dr. Christopher Hansen in his declaration. Ex-1002, ¶57.

C. R2-105971 (“3GPP-36331-Update”) (Ex-1008)

R2-105971 (“3GPP-36331-Update”) (Ex-1008) is a change request to portions of 3GPP-36331-940 submitted by Samsung and others titled “Introduction of Carrier Aggregation and UL/ DL MIMO.” 3GPP-36331-Update, 1. 3GPP-36331-Update was agreed upon and adopted into the standard at the 3GPP TSG-RAN WG2 Meeting #71bis in Xian, China, which met between October 11, 2010 and October 15, 2010. See R2-106929, Annex G; see also ’489 patent, 2:21-27. This was a working draft of updates to 3GPP-36311-940, and the contributions embodied in the working draft were captured in the subsequent release of the standard (TS. 36.331 v10.0.0) (the first version of release 10).

3GPP-36331-Update is related to carrier aggregation and discloses the procedures and parameters for SCell release during handover, including by providing SCell configuration information in IEs to the

HandoverPreparationInformation message and by providing SCell configuration information to the UE in a handover command and RRCConnectionReconfiguration message, as explained by Dr. Christopher Hansen in his declaration. Ex-1002, ¶82.

D. 3GPP-Standard Qualifies as Prior Art to the '489 Patent Under At Least Pre-AIA 35 U.S.C. § 102(a)

As explained in detail by Craig Bishop (Ex-1003), 3GPP technical specifications (TS) and contributions, including 3GPP TS 36.311 v9.4.0 (Ex-1006), 3GPP-36300-950 (Ex-1007), and 3GPP-36331-Update (Ex-1008) are publically accessible as of the date they were uploaded to the 3GPP FTP server. Ex-1003, ¶25, 73, 79-85. Moreover, the '489 Patent itself cites these references as prior art. Ex-1001, 2:21-27.

3GPP TS 36.311 v9.4.0 (Ex-1006) was uploaded to ETSI's file server on September 28, 2010. Ex-1003, ¶¶68-73, 89. As a result, 3GPP TS 36.311 v9.4.0 became a "printed publication" under pre-AIA 35 U.S.C. § 102(a) on September 28, 2010. *See, e.g., Samsung Elecs. Co.*, 2018 WL 6519544, *3–5 (concluding that technical reports and specifications uploaded to a standards organization's file server before a challenged patent's priority date qualify as prior art under 35 U.S.C. § 102). 3GPP TS 36.311 v9.4.0 thus qualifies as prior art to the '489 patent at least under pre-AIA 35 U.S.C. § 102(a).

3GPP-36300-950 (Ex-1007) was uploaded to ETSI's file server on September 30, 2010. Ex-1003, ¶¶74-79. As a result, 3GPP-36300-950 became a "printed

publication” under pre-AIA 35 U.S.C. § 102(a) on September 30, 2010. *See, e.g., Samsung Elecs. Co.*, 2018 WL 6519544, *3–5. 3GPP-36300-950 thus qualifies as prior art to the ’489 patent at least under pre-AIA 35 U.S.C. § 102(a).

3GPP-36331-Update (Ex-1008) was uploaded to ETSI’s file server on October 28, 2010. Ex-1003, ¶¶63-67, 88. As a result, 3GPP-36331-Update became a “printed publication” under pre-AIA 35 U.S.C. § 102(a) on October 28, 2010. *See, e.g., Samsung Elecs. Co.*, 2018 WL 6519544, *3–5. 3GPP-36331-Update thus qualifies as prior art to the ’489 patent at least under pre-AIA 35 U.S.C. § 102(a).

Further, the ’489 patent itself admits that 3GPP TS 36.311 v9.4.0, 3GPP-36300-950, and 3GPP-36331-Update are prior art. Ex-1001, 2:21-27.

E. Motivation to Combine Nokia and Ericsson with the Standard at the time of the invention

The combination of Nokia or Ericsson with the 3GPP-Standard would have been obvious to a POSITA. Ex-1002, ¶237. A POSITA would have had knowledge of the latest versions of the Standard at the time of the invention, including 3GPP-36331-940, 3GPP TS. 36.300 v9.5.0, and 3GPP-36331-Update, which are all cited in the specification of the ’489 patent. Ex-1001, 2:21-27; Ex-1002, ¶237. A POSITA would have used that knowledge, coupled with Nokia or Ericsson, to arrive at the Challenged Claims. *Id.*

During prosecution of the ’489 Patent, Patent Owner argued that the amended claims of the ’489 Patent are not rendered invalid in light of the prior art references,

including an earlier draft of the 3GPP-36331-Update reference (i.e. R2-104991), due to a revision the claim language from of the claim language from “wherein the information indicates SCell indexes of all SCells configured to the UE” to “wherein the information indicates SCell indexes of all SCells configured to the UE ***before the handover***” (emphasis added). *Compare* Ex-1010, 37, *with* Ex-1010, 52.

Nokia and Ericsson provide for this limitation. In particular, they provide for the information in a HandoverPreparationInformation message, wherein the information indicates SCell indexes of all SCells configured to the UE before the handover. Ex-1002, ¶239. The rest of the limitations are clearly disclosed in the Standard at the time of the invention, as illustrated in the Grounds below. *Id.*

As such, combining the Nokia or Ericsson contributions with the Standard at the time of the invention, for example 3GPP-36331-940, 3GPP-36300-950, and 3GPP-36331-Update renders the Challenged Claims invalid.

A POSITA would have been motivated to combine Nokia or Ericsson with the 3GPP-Standard to result in the claimed invention. First, Nokia and Ericsson are contributions to the same field of carrier aggregation addressed by the 3GPP-Standard and both are directed to solving problems in the art regarding carrier aggregation. *Id.*, ¶241. In particular, both Nokia and Ericsson specifically address SCell configuration. *Id.* This is a main focus of 3GPP-36331-Update, which represents the draft update to 3GPP 36.331 v9.4.0. *Id.*

For example, Nokia contributes a proposal regarding SCell configuration parameters related to carrier aggregation. Nokia, 1. Ericsson also provides a proposal regarding SCell radio configuration parameters. Ericsson, 1, 6-7, 9. Ericsson explicitly states that its proposal is provided “for inclusion in draft 36.331” and cites a previous draft of 3GPP-36331-Update as a reference. *Id.*, 7.

Second, Nokia and Ericsson are both contributions provided by POSITAs specifically directed to 3GPP-36331-940 and its draft update, 3GPP-36331-Update. Ericsson, 1, 9; Nokia, 1; Ex-1002, ¶243. In short, both Nokia and Ericsson are contributions designed, developed, and intended to be incorporated into the Standard at the time of the invention. *Id.*

Third, a POSITA would have knowledge of 3GPP-36331-940, 3GPP TS. 36.300 v9.5.0, and 3GPP-36331-Update, which are cited in the specification of the ’489 Patent. Ex-1001, 2:21-27. As such, a POSITA would have known that 3GPP-36331-Update provides a procedure for SCell Release upon reception of the RRCConnectionReconfiguration message from the target eNB. 3GPP-36331-Update, §§ 5.3.5.4, 5.3.10.3a.

In particular, 3GPP-36331-Update teaches that “if the current UE configuration includes an SCell with value SCellIndex: release the SCell.” 3GPP-36331-Update, §5.3.10.3a. It also teaches to “release all SCells that are part of the UE configuration.” *Id.* Therefore, a POSITA would be motivated to provide the

target eNB with information about which SCells are configured to the UE, so that the target SCell can provide to the UE the information about which SCells to release. Ex-1002, ¶245. A POSITA would have known that without this information regarding SCell configuration, performance of the procedure outlined in 3GPP-36331-Update and adopted into the subsequent version of the Standard (i.e. 3GPP 36.331 v10.0.0) would be undermined. *Id.* Therefore, a POSITA would have pursued the proposed combinations.

In addition to being motivated to pursue the proposed combination, a POSITA would have had a reasonable expectation of success in “meet[ing] the limitations of the claimed invention.” *Intelligent Bio-Systems, Inc. v. Illumina Cambridge, Ltd.*, 821 F.3d 1359, 1367 (Fed. Cir. 2016). As noted above, the Standard at the time of the invention, including 3GPP-36331-940, 3GPP-36300-950, and 3GPP-36331-Update, would have been known to a POSITA, and the Nokia and Ericsson contributions were designed by POSITAs specifically to be incorporated into the Standard, including in particular, 3GPP-36331-940 and 3GPP-36331-Update. For example, the Nokia contribution provides for SCell configuration information to be located in the RadioResourceConfigDedicated IE, which is an IE already included as part of the Standard. Nokia, 6. Ericsson similarly provides for SCell configuration information to be located in the CrossCarrierSchedulingConfig IE “as part of the SCell dedicated radio configurations

(RadioResourceConfigDedicatedScell),” which is also an IE included in the Standard. Ericsson, 6, 9. As such, a POSITA would expect a reasonable expectation of success in meeting the claimed invention by combining the proposed combinations. Ex-1002, ¶247.

X. SPECIFIC GROUNDS FOR THIS PETITION

A. Ground 1: Nokia In View of the 3GPP-Standard render Claims 1-22 Obvious

Nokia in view of the 3GPP-Standard (i.e. 3GPP-36331-940, 3GPP-36300-950, and 3GPP-36331-Update) as understood by a POSITA renders obvious the Challenged Claims for the reasons below.

1) Claim 1

a) [Preamble]: A method of Secondary Cell (SCell) release during handover comprising:

To the extent the preamble is limiting, a POSITA would have understood that the prior art, in this case 3GPP-36331-Update, discloses the preamble. For example, the summary of change discloses that the change request includes changes related to secondary cell release. *See, e.g.*, 3GPP-36331-Update, 1.

In another example, 3GPP-36331-Update discloses configuration parameters, including an “introduction of top level fields within the reconfiguration message to support addition/ modification and release of secondary cells.” *See, e.g.*, 3GPP-36331-Update, 1-2. It also discloses RRC Connection Reconfiguration procedure

whose purpose is, in part, to “add/modify/release SCells.” *See, e.g.*, 3GPP-36331-Update, § 5.3.5.1.

3GPP-36331-Update also discloses that when “the received *RRCCConnectionReconfiguration* includes the *sCellToReleaseList*,” it will “perform SCell release as specified in 5.3.10.3a.” *See, e.g.*, 3GPP-36331-Update, §§ 5.3.5.3, 5.4.5.4. 3GPP-36331-Update also outlines a method for SCell release. *See, e.g.*, 3GPP-36331-Update, § 5.3.10.3a.

b) *[1b]: configuring at least one SCell by a source eNB to a User Equipment (UE); and*

A POSITA would have understood that the prior art, in this case 3GPP-36331-Update, discloses this limitation. 3GPP-36331-Update discloses that the E-UTRAN (*i.e.* the source eNB) “may configure a UE that supports Carrier Aggregation, with one or more SCells in addition to the PCell that is initially configured during connection establishment.” *See, e.g.*, 3GPP-36331-Update, § 5.3.1.1.

3GPP-36331-Update also discloses that the E-UTRAN (*i.e.* the source eNB) “can independently add, remove or modify SCells by means of the RRC connection reconfiguration procedure using the *RRCCConnectionReconfiguration* message.” *See, e.g.*, 3GPP-36331-Update, § 5.3.1.3.

3GPP-36331-Update further discloses that the source eNB configures the UE by means of the RRC protocol. *See, e.g.*, 3GPP-36331-Update, § 5.3.1.3, § 5.3.10.3a.

3GPP-36331-Update also discloses that the source eNB controls the RRC connection reconfiguration procedure whose purpose is “to modify an RRC connection, e.g. to establish/ modify/ release RBs, to perform handover, to setup/ modify/ release measurements, to add/ modify/ release SCells.” *See, e.g., 3GPP-36331-Update, § 5.3.5.1, § 5.4.2.3, § 6.2.2, Fig. 5.3.5.1-1.*

A POSITA would understand that the E-UTRAN configuring the UE with one or more SCells discloses this limitation. Ex-1002, ¶91.

- c) [1c]: including information by the source eNB in a HandoverPreparationInformation message for a target eNB to control SCell release in the UE during a handover,*

Nokia in view of the standard at the time of the invention, in this case 3GPP-36331-940 and 3GPP-36331-Update, discloses this limitation. 3GPP-36331-940 discloses that a “HandoverPreparationInformation message” from the “source eNB” to the “target eNB.” *See, e.g., 3GPP-36331-940, 216.* The “HandoverPreparationInformation message” is the “used to transfer the E-UTRA RRC information used by the target eNB during handover preparation, including UE capability information.” *Id.*

The “HandoverPreparationInformation message” includes many different types of information elements, or “IEs,” as described in the standard and illustrated below.

```
HandoverPreparationInformation-r8-IEs ::= SEQUENCE {  
    ue-RadioAccessCapabilityInfo    UE-CapabilityRAT-ContainerList,  
    as-Config                        AS-Config                OPTIONAL,      -- Cond HO  
    rrm-Config                       RRM-Config              OPTIONAL,  
    as-Context                       AS-Context              OPTIONAL,      -- Cond HO  
    nonCriticalExtension             HandoverPreparationInformation-v920-IEs OPTIONAL  
}
```

```
HandoverPreparationInformation-v920-IEs ::= SEQUENCE {  
    ue-ConfigRelease-r9             ENUMERATED {  
                                     rel9, spare7, spare6, spare5, spare4, spare3,  
                                     spare2, spare1, ...} OPTIONAL,      -- Cond HO2  
    nonCriticalExtension             SEQUENCE {}                OPTIONAL  
}
```

Id., 216-217. The “HandoverPreparationInformation message” includes the as-Config IE. *Id.*, 216. The as-Config IE “contains information about RRC configuration information in the source cell which can be utilized by target cell to determine the need to change the RRC configuration during the handover preparation phase.” *Id.*, 218.

The as-Config IE contains radio resource configuration IEs, including the RadioResourceConfigDedicated IE, as illustrated below.

```
AS-Config ::= SEQUENCE {  
    sourceMeasConfig    MeasConfig,  
    sourceRadioResourceConfig RadioResourceConfigDedicated,  
}
```

Id., 218 (annotated).

According to 3GPP-36331-Update, the RadioResourceConfigDedicated IE “is used to setup/modify/release RBs, to modify the MAC main configuration, to modify the SPS configuration and to modify dedicated physical configuration.” 3GPP-36331-Update, § 6.3.2. Therefore, a POSITA would have understood that the prior art, in this case 3GPP-36331-Update, discloses “including information by the

source eNB in a HandoverPreparationInformation message for a target eNB to control SCell release in the UE during a handover.”

This is further shown by the fact that 3GPP-36331-Update includes the RadioResourceConfigDedicatedSCell IE as part of the RadioResourceConfigDedicated IE. RadioResourceConfigDedicatedSCell includes “UE specific configuration extensions applicable for an SCell.” *Id.* This is illustrated in the figure below.

```
RadioResourceConfigDedicatedSCell-r10 ::= SEQUENCE {  
    -- UE specific configuration extensions applicable for an SCell
```

Id. The RadioResourceConfigDedicatedSCell IE is a new contribution to the standard (3GPP-36331-940) included in 3GPP-36331-Update and adopted into the subsequent standard (TS 36.331 v10.0.0). As part of the RadioResourceConfigDedicated IE that “is used to setup/modify/release RBs, to modify the MAC main configuration, to modify the SPS configuration and to modify dedicated physical configuration” (3GPP-36331-Update, § 6.3.2), a POSITA would understand that the RadioResourceConfigDedicatedSCell IE therefore includes information “for a target eNB to control SCell release in the UE during handover” as required by this limitation. Ex-1002, ¶96.

Moreover, Nokia also discloses this limitation. Nokia teaches that SCell parameters, including an account of all the SCells configured to the UE, should be referenced in RadioResourceConfigDedicated. See Nokia, 6-8. The parameters

include SCell DL and UL parameters, such as physCellId and CarrierFreq reporting for configured SCells. *Id.*; Ex-1002, ¶97. The parameters also include the secCellIndex (corresponding to the claimed SCellIndex) and ServCellIndex. See Nokia, 6-8; Ex-1002, ¶97. These parameters include information “for a target eNB to control SCell release in the UE during handover” as required by this limitation. See Nokia, 6-8; Ex-1002, ¶97.

- d) *[1d]: wherein the information indicates SCell indexes of all SCells configured to the UE before the handover, thereby allowing the target eNB to include a sCellToReleaseList with all the SCells configured to the UE in a handover command for the UE to release the SCells included in the sCellToReleaseList.*

Nokia in view of the 3GPP-Standard discloses this limitation. As described for limitation [1c] above, the HandoverPreparationInformation message includes the as-Config IE, which includes the RadioResourceConfigDedicated IE. See Section X.A.1.c. This information is sent from the source eNB to the target eNB before handover and provides the necessary information for the target eNB to perform the handover procedure, including SCell release. *Id.*

Nokia discloses that the information in the HandoverPreparationInformation message “indicates SCell indexes of all SCells configured to the UE before the handover.” Indeed, Nokia teaches that SCell parameters, including an account of all the SCells configured to the UE, should be referenced in the

RadioResourceConfigDedicated IE. *See* Nokia, 6-8. The parameters include SCell DL and UL parameters, such as physCellId and CarrierFreq reporting for configured SCells. *Id.*, Ex-1002, ¶97. The parameters also include the secCellIndex (corresponding to the claimed SCellIndex) and ServCellIndex as part of the SecCellToAddMod IE. *See* Nokia, 6-8; Ex-1002, ¶97.

These parameters indicate the “SCell indexes of all SCells configured to the UE before the handover,” as required by the claim. Ex-1002, ¶97.

RadioResourceConfigDedicated IE also includes the claimed SCelltoReleaseList, as illustrated below. The SecCell-toReleaseList corresponds to the claimed SCelltoReleaseList. *Id.*

```
SecCell-ToReleaseList-r10 ::= SEQUENCE (SIZE (1..maxSecCell-r10)) OF CellIndex-r10
```

Nokia, 8 (annotated). The SecCell-ToReleaseList includes SCell values from 1 to the maxSecCell of the CellIndex. Nokia, 8. As described in 3GPP-36331-Update, the CellIndex ranges from 1 to maxCellmeas, which corresponds to the maximum number of entries of cells (i.e. PCells and SCells). 3GPP-36331-Update, § 6.3.4; Ex-1002, ¶101. The CIF value allocation for the scheduled SCell is from 1 to 7 (Nokia, 3), which correlates with the SCellIndex integer value as described by 3GPP-36331-Update in § 6.3.4 (3GPP-36331-Update, X). *Id.* Thus, the CellIndex is an index that includes all the configured SCells. *Id.*

The SecCell-toReleaseList includes SCell values up to the maxSecCell of the CellIndex. *Id.* The maxSecCell corresponds to the maxSCell in 3GPP-36331-Update and represents the maximum number of SCells that may be configured to a UE. 3GPP-36331-Update, § 6.4; Ex-1002, ¶102. As such, the SecCell-toReleaseList includes all of the SCells configured to the UE and provides information indicating “SCell indexes of all SCells configured to the UE before handover,” as required by the claim. *Id.*

Nokia also teaches that the RadioResourceConfigDedicated IE, as part of the as-Config IE of the HandoverPreparationInformation message, includes the ServCellIndex. Nokia, 6-8. The ServCellIndex incorporates the SCellIndex. *See* 3GPP-36331-Update, § 6.3.4 (“Value 0 applies for the PCell, while the SCellIndex that has previously been assigned applies for SCells”). Ex-1002, ¶103. The ServCellIndex, as part of the HandoverPreparationInformation message is sent from the source eNB to the target eNB during handover preparation. 3GPP-36331-940, 216. As such, it is sent ***before*** handover.

Because the ServCellIndex incorporates the SCellIndex values, it includes the SCell indexes of all SCells configured to the UE. Ex-1002, ¶103. 3GPP-36331-Update describes that “[f]or an UE configured with CA [(carrier aggregation)] the term 'serving cells' is used to denote the set of one or more cells comprising of the primary cell and ***all secondary cells***”. 3GPP-36331-Update, § 3.1 (emphasis added).

Therefore, the information in the ServCellIndex “indicates SCell indexes of all SCells configured to the UE before the handover” as required by the claim. Thus, Nokia discloses that “the information indicates SCell indexes of all SCells configured to the UE before the handover.”

When the HandoverPreparationInformation message reaches the target eNB from the source eNB, it provides the target eNB with the “necessary information to prepare the HO at the target side,” including information from the as-Config IE as explained above and in Section X.A.1.c. 3GPP-36300-950 (Ex-1007), 49. Without that information, the target eNB cannot “generate[] the RRC message to perform the handover, i.e. *RRCCONNECTIONRECONFIGURATION* message including the *MOBILITYCONTROLLINFORMATION*, to be sent by the source eNB towards the UE.” *Id.* Therefore, sending the HandoverPreparationInformation message with the information as described above, allows “the target eNB to include a sCellToReleaseList with all the SCells configured to the UE in a handover command for the UE to release the SCells included in the sCellToReleaseList.”

That *RRCCONNECTIONRECONFIGURATION* message is sent as a HandoverCommand message from the target eNB. 3GPP-36331-940 (Ex-1006), 216. The HandoverCommand message “is used to transfer the handover command generated by the target eNB, which is transparently transferred by the source RAN to the UE.” *Id.*

The *RRCCONNECTIONReconfiguration* message includes the *sCellToReleaseList* IE. 3GPP-36331-Update, § 6.2.2.

```
RRCCONNECTIONReconfiguration-v10xy-IEs ::= SEQUENCE {  
    pCellIndex-r10          INTEGER (0),  
    sCellToReleaseList-r10  SCellToReleaseList-r10  OPTIONAL,  -- Need ON
```

Id. The *sCellToReleaseList* of the *RRCCONNECTIONReconfiguration* message includes all of the SCells configured to the UE.

```
SCellToReleaseList-r10 ::= SEQUENCE (SIZE (1..maxSCell-r10)) OF SCellIndex-r10
```

Id. Thus, the target eNB includes “a *sCellToReleaseList* with all the SCells configured to the UE in a handover command” as required by the claims.

3GPP-36331-Update teaches that “if the received *RRCCONNECTIONReconfiguration* includes the *sCellToReleaseList*...perform SCell release as specified in 5.3.10.3a.” 3GPP-36331-Update, §§ 5.3.5.3, 5.3.5.4.

3GPP-36331-Update explains performance of SCell release by the UE upon reception of the *sCellToReleaseList*:

5.3.10.3a SCell release

The UE shall:

- 1> if the release is triggered by reception of the *sCellToReleaseList*;
- 2> for each *sCellIndex* value included in the *sCellToReleaseList*;
 - 3> if the current UE configuration includes an SCell with value *sCellIndex*;
 - 4> release the SCell;

3GPP-36331-Update, § 5.3.10.3a. Accordingly, 3GPP-36331-Update teaches “the UE to release the SCells included in the sCellToReleaseList,” as required by the claims.

2) Claim 2

a) [Preamble]: The method of claim 1, wherein

Nokia in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 1 for the reasons above.

*b) [2b]: the handover command corresponds to an
RRCConnectionReconfiguration message including
mobilityControlInfo.*

A POSITA would have understood that the prior art, in this case 3GPP-36331-Update and 3GPP-36331-940, discloses this limitation. Ex-1002, ¶112. For example, as described in 3GPP-36331-940, the HandoverCommand is a message “used to transfer the handover command generated by the target eNB, which is transparently transferred by the source RAN to the UE.” 3GPP-36331-940, 216.

The HandoverCommand includes the handoverCommandMessage IE, which “[c]ontains the entire DL-DCCH-Message including the *RRCConnectionReconfiguration* message used to perform handover to E-UTRAN, generated (entirely) by the target eNB.” *Id.*, 107; *see also*, 3GPP-36331-Update, § 6.2.2. Thus, the handover command “corresponds to an *RRCConnectionReconfiguration* message” as required by the claim limitation. Ex-1002, ¶113.

The RRCConnectionReconfiguration message also includes the mobilityControlInfo IE. 3GPP-36331-940, 107.

```
RRConnectionReconfiguration-r8-IEs ::= SEQUENCE {  
    measConfig      MeasConfig      OPTIONAL,  -- Need ON  
    mobilityControlInfo  MobilityControlInfo  OPTIONAL,  -- Cond HO
```

Under the definition for the RRCConnectionReconfiguration message, it describes that the mobilityControlInfo IE is “mandatorily present” during inter-node handover and intra-node handover. *Id.*, 107-108; *see also*, 3GPP-36331-Update, § 6.2.2.

3GPP-36331-Update further includes procedures for SCell release when the RRCConnectionReconfiguration message includes the mobilityControlInfo. 3GPP-36331-Update, §§ 5.3.5.4, 5.3.10.3a.

3) Claim 3

a) *[Preamble]: The method of claim 2, wherein*

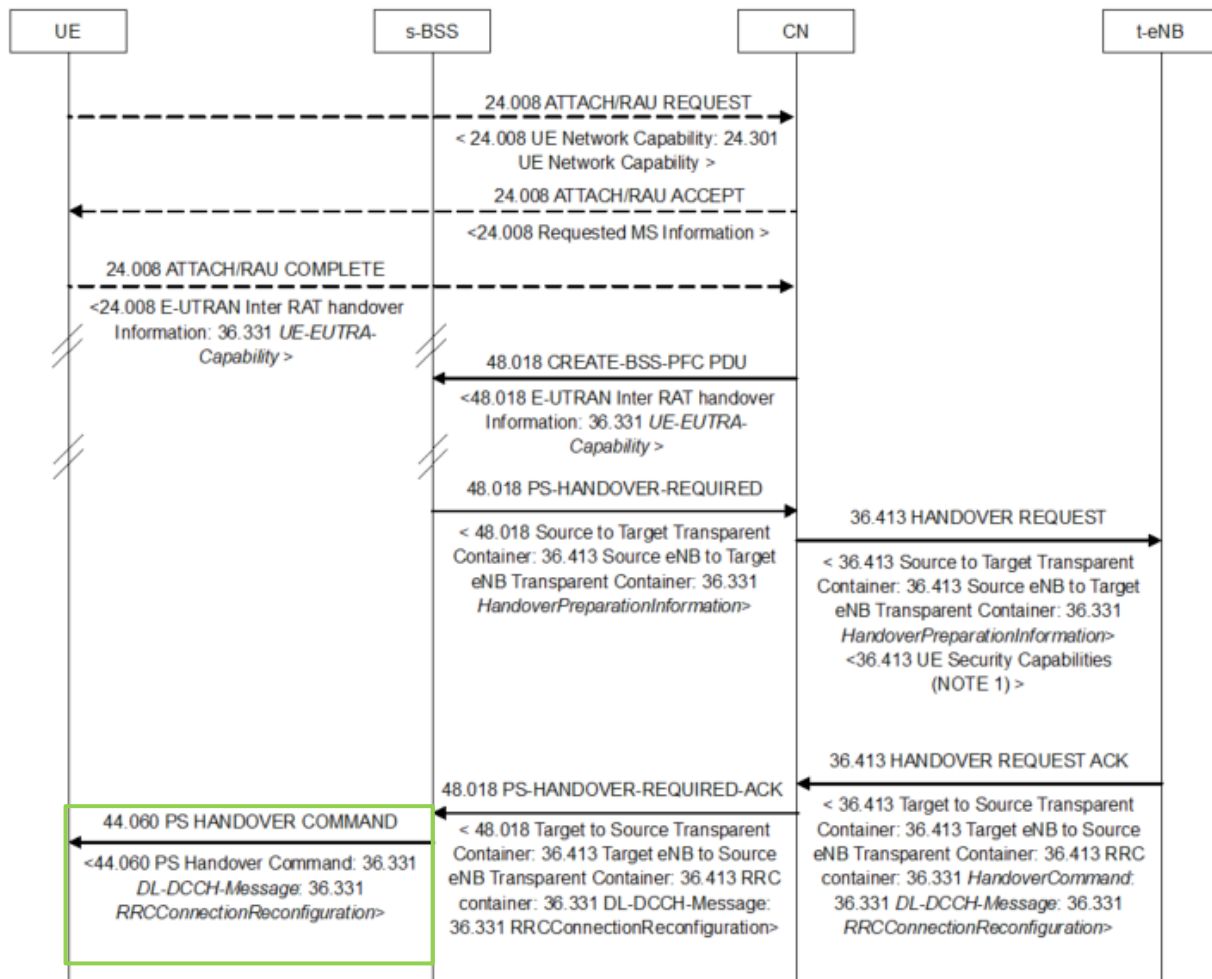
Nokia in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 2 for the reasons above.

b) *[3b]: the RRCConnectionReconfiguration message is sent from the source eNB to the UE to initiate a handover procedure.*

A POSITA would have understood that the prior art, in this case 3GPP-36300-950 and 3GPP-36331-940, discloses this limitation. *Id.*, ¶118. As discussed above, the HandoverCommand message includes the RRCConnectionReconfiguration message. *See* § X.A.2, *supra*. The HandoverCommand message is “used to transfer

the handover command generated by the target eNB, which is transparently transferred by the source RAN to the UE.” 3GPP-36331-940, 216. Inter-node handover procedure is initiated by ending the RRCConnectionReconfiguration message. *Id.*, 58.

Moreover, TS. 36.300 v9.5.0 illustrates that the RRCConnectionReconfiguration message is sent from the source eNB to the UE as a HandoverCommand to initiate the handover procedure. 3GPP-36300-950, 118.



Id., Figure 19.2.2.5.6-1 (annotated).

4) **Claim 4**

a) *[Preamble]: The method of claim 2, wherein*

Nokia in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 2 for the reasons above.

b) *[4b]: the HandoverPreparationInformation message is sent from the source eNB to the target eNB to request the handover.*

A POSITA would have understood that the prior art, in this case 3GPP-36300-950 and 3GPP-36331-940, discloses this limitation. Ex-1002, ¶121.

As depicted in figure 19.2.2.5.6-1 in section X.A.3.b, *supra*, 3GPP-36300-950 describes that the HandoverPreparationInformation message is sent from the source to the target (via a “Source to Target Transparent Container”) to request the handover. 3GPP-36300-950, Figure 19.2.2.5.6-1. 3GPP-36331-940 also describes that the HandoverPreparationInformation message is sent from the “source eNB/ source RAN to target eNB.” 3GPP-36331-940, 18.

Additionally, 3GPP-36300-950 discloses that “[t]he source eNB issues a HANDOVER REQUEST message to the target eNB passing necessary information to prepare the HO at the target side (UE X2 signalling context reference at source eNB, UE S1 EPC signalling context reference, target cell ID, K_{eNB*} , RRC context including the C-RNTI of the UE in the source eNB, **AS-configuration**, E-RAB context and physical layer ID of the source cell + MAC for possible RLF recovery)”. 3GPP-36300-950, 49 (emphasis added). The handover request corresponds to

necessary information regarding the RRC context, which includes, for example, the AS-configuration IE (“as-Config”) of the HandoverPreparationInformation message. *Id.*; *see also* § X.A.1.

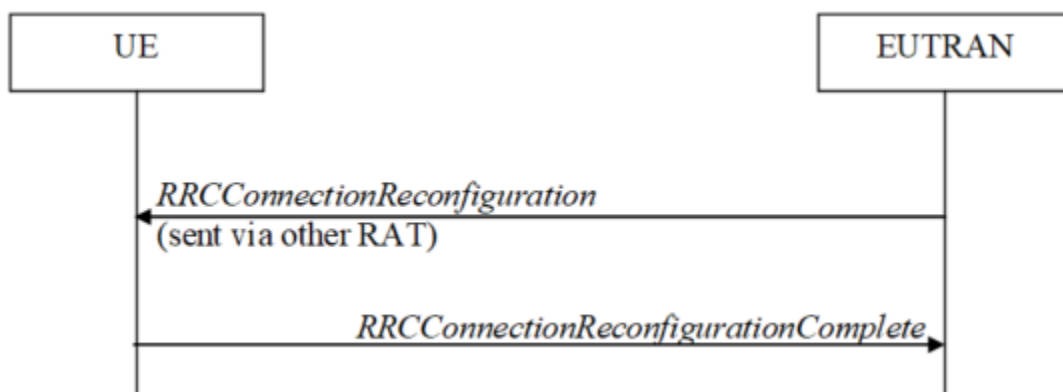
5) Claim 5

a) [Preamble]: The method of claim 2, wherein:

Nokia in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 2 for the reasons above.

b) [5b]: the handover is an inter-eNB handover.

A POSITA would have understood that the prior art, in this case 3GPP-36331-Update, discloses this limitation. Ex-1002, ¶124. For example, 3GPP-36331-Update discloses that the handover is an inter-eNB handover in § 5.4. In particular, 3GPP-36331-Update describes that inter-eNB handover is initiated “by sending the RRCConnectionReconfiguration message” to the UE, as further illustrated in the figure below. 3GPP-36331-Update §§ 5.4.2.2, 5.4.2.3.



Id., Fig. 5.4.2.1-1.

6) Claim 6

a) [Preamble]: The method of claim 3, wherein

Nokia in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 3 for the reasons above.

b) [6b]: the HandoverPreparationInformation message is sent from the source eNB to the target eNB to request the handover.

This element is the same as [4b] and is met for the same reasons. Section X.A.4; Ex-1002, ¶126.

7) Claim 7

a) [Preamble]: The method of claim 3, wherein

Nokia in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 3 for the reasons above.

b) [7b]: the handover is an inter-eNB handover.

This element is the same as [5b] and is met for the same reasons. Section X.A.5; Ex-1002, ¶128.

8) Claim 8

a) [Preamble]: The method of claim 1, wherein

Nokia in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 1 for the reasons above.

- b) [8b]: the HandoverPreparationInformation message is sent from the source eNB to the target eNB to request the handover.*

This element is the same as [4b] and is met for the same reasons. Section X.A.4; Ex-1002, ¶130.

9) Claim 9

- a) [Preamble]: The method of claim 8, wherein*

Nokia in view of the knowledge of a POSITA and the Standards existing at the time of the invention discloses Claim 8 for the reasons outlined above.

- b) [9b]: the handover is an inter-eNB handover.*

This element is the same as [5b] and is met for the same reasons. Section X.A.5; Ex-1002, ¶132.

10) Claim 10

- a) [Preamble]: The method of claim 1, wherein*

Nokia in view of the knowledge of a POSITA and the Standards existing at the time of the invention discloses Claim 1 for the reasons above.

- b) [10b]: the handover is an inter-eNB handover.*

This element is the same as [5b] and is met for the same reasons. Section X.A.5; Ex-1002, ¶134.

11) Claim 11

a) *[Preamble]: The method of claim 1, wherein*

Nokia in view of the knowledge of a POSITA and the Standards existing at the time of the invention discloses Claim 1 for the reasons above.

b) *[11b]: a RRCConnectionReconfiguration message is sent from the source eNB to the UE to initiate a handover procedure.*

This element is the same as [3b] and is met for the same reasons. Section X.A.3; Ex-1002, ¶136.

12) Claim 12

a) *[Preamble]: 12. A communication device for use in a wireless communication system, the communication device comprising:*

a control circuit;

a processor installed in the control circuit;

and a memory installed in the control circuit and coupled to the processor;

wherein the processor is configured to execute a program code stored in memory to:

To the extent the preamble is limiting, a POSITA would have understood that the prior art, in this case 3GPP-36331-Update, discloses the preamble. Ex-1002, ¶137. For example, 3GPP-36331-Update discloses a UE, which includes mobile handsets, and eNBs, which is the base station that the UE communicates with. 3GPP-36331-Update, §§ 1, 3.2, 4.2, 5.4. Both the UE and eNBs are wireless

communication devices and comprise a control circuit, a processor installed in the control circuit, and a memory installed in the control circuit and coupled to the processor. Ex-1002, ¶137.

- b) *[12b]: configuring at least one SCell by a source eNB to a User Equipment (UE); and*

This element is the same as [1b] and is met for the same reasons. Section X.A.1.b; *Id.* 138.

- c) *[12c]: including information by the source eNB in a HandoverPreparationInformation message for a target eNB to control SCell release in the UE during a handover,*

This element is the same as [1c] and is met for the same reasons. Section X.A.1.c; Ex-1002, ¶139.

- d) *[12d]: wherein the information indicates SCell indexes of all SCells configured to the UE before the handover, thereby allowing the target eNB to include a sCellToReleaseList with all the SCells configured to the UE in a handover command for the UE to release the SCells included in the sCellToReleaseList.*

This element is the same as [1d] and is met for the same reasons. Section X.A.1.d; Ex-1002, ¶140.

13) Claim 13

- e) *[Preamble]: The device of claim 12, wherein*

Nokia in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 12 for the reasons above.

- f) [13b]: the handover command corresponds to an RRCConnectionReconfiguration message including mobilityControlInfo.*

This element is the same as [2b] and is met for the same reasons. Section X.A.2; Ex-1002, ¶142.

14) Claim 14

- g) [Preamble]: The device of claim 13, wherein*

Nokia in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 13 for the reasons above.

- h) [14b]: the RRCConnectionReconfiguration message is sent from the source eNB to the UE to initiate a handover procedure.*

This element is the same as [3b] and is met for the same reasons. Section X.A.3; Ex-1002, ¶144.

15) Claim 15

- i) [Preamble]: The device of claim 13, wherein*

Nokia in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 13 for the reasons above.

- j) [15b]: the HandoverPreparationInformation message is sent from the source eNB to the target eNB to request the handover.*

This element is the same as [4b] and is met for the same reasons. Section X.A.4; Ex-1002, ¶146.

16) Claim 16

k) [Preamble]: The device of claim 13, wherein:

Nokia in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 13 for the reasons above.

l) [16b]: the handover is an inter-eNB handover.

This element is the same as [5b] and is met for the same reasons. Section X.A.5; Ex-1002, ¶148.

17) Claim 17

m) [Preamble]: The device of claim 14, wherein

Nokia in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 14 for the reasons above.

n) [17b]: the HandoverPreparationInformation message is sent from the source eNB to the target eNB to request the handover.

This element is the same as [4b] and is met for the same reasons. Section X.A.4; Ex-1002, ¶150.

18) Claim 18

o) [Preamble]: The device of claim 14, wherein

Nokia in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 14 for the reasons above.

p) [14b]: the handover is an inter-eNB handover.

This element is the same as [5b] and is met for the same reasons. Section X.A.5; Ex-1002, ¶152.

19) Claim 19

q) [Preamble]: The device of claim 12, wherein

Nokia in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 12 for the reasons above.

r) [19b]: the HandoverPreparationInformation message is sent from the source eNB to the target eNB to request the handover.

This element is the same as [4b] and is met for the same reasons. Section X.A.4; Ex-1002, ¶154.

20) Claim 20

s) [Preamble]: The device of claim 19, wherein

Nokia in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 19 for the reasons outlined above.

t) [19b]: the handover is an inter-eNB handover.

This element is the same as [5b] and is met for the same reasons. Section X.A.5; Ex-1002, ¶156.

21) Claim 21

u) [Preamble]: The device of claim 12, wherein

Nokia in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 12 for the reasons above.

v) [21b]: the handover is an inter-eNB handover.

This element is the same as [5b] and is met for the same reasons. Section X.A.5; Ex-1002, ¶158.

22) Claim 22

w) [Preamble]: The method of claim 12, wherein

Nokia in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 12 for the reasons above.

x) [22b]: a RRCConnectionReconfiguration message is sent from the source eNB to the UE to initiate a handover procedure.

This element is the same as [3b] and is met for the same reasons. Section X.A.3; Ex-1002, ¶160.

B. Ground 2: Ericsson In View of 3GPP-Standard render Claims 1-22 Obvious

Ericsson in view of the 3GPP-Standard (i.e. 3GPP-36331-940, 3GPP-36300-950, and 3GPP-36331-Update) as understood by a POSITA renders obvious the Challenged Claims for the reasons below.

1) Claim 1

- a) [Preamble]: A method of Secondary Cell (SCell) release during handover comprising:*

To the extent the preamble is limiting, a POSITA would have understood that the prior art, in this case 3GPP-36331-Update, discloses the preamble. For example, the summary of change discloses that the change request includes changes related to secondary cell release. *See, e.g., 3GPP-36331-Update, 1.*

In another example, 3GPP-36331-Update discloses configuration parameters, including an “introduction of top level fields within the reconfiguration message to support addition/ modification and release of secondary cells.” *See, e.g., 3GPP-36331-Update, 1-2.* It also discloses RRC Connection Reconfiguration procedure whose purpose is, in part, to “add/modify/release SCells.” *See, e.g., 3GPP-36331-Update, § 5.3.5.1.*

3GPP-36331-Update also discloses that when “the received *RRCCConnectionReconfiguration* includes the *sCellToReleaseList*,” to “perform SCell release as specified in 5.3.10.3a.” *See, e.g., 3GPP-36331-Update at §§ 5.3.5.3, 5.4.5.4.* 3GPP-36331-Update also outlines a method for SCell release. *See, e.g., 3GPP-36331-Update, § 5.3.10.3a.*

- b) [1b]: configuring at least one SCell by a source eNB to a User Equipment (UE); and*

A POSITA would have understood that the prior art, in this case 3GPP-36331-Update, discloses this limitation. 3GPP-36331-Update discloses that E-UTRAN

(*i.e.* the source eNB) “may configure a UE that supports Carrier Aggregation, with one or more SCells in addition to the PCell that is initially configured during connection establishment.” *See, e.g.*, 3GPP-36331-Update, § 5.3.1.1.

3GPP-36331-Update also discloses that E-UTRAN (*i.e.* the source eNB) “can independently add, remove or modify SCells by means of the RRC connection reconfiguration procedure using the *RRCConnectionReconfiguration* message.” *See, e.g.*, 3GPP-36331-Update, § 5.3.1.3.

3GPP-36331-Update further discloses that the source eNB configures the UE by means of the RRC protocol. *See, e.g.*, 3GPP-36331-Update, § 5.3.1.3, § 5.3.10.3a.

3GPP-36331-Update also discloses that the source eNB controls the RRC connection reconfiguration procedure whose purpose is “to modify an RRC connection, *e.g.* to establish/ modify/ release RBs, to perform handover, to setup/ modify/ release measurements, to add/ modify/ release SCells.” *See, e.g.*, 3GPP-36331-Update, § 5.3.5.1, § 5.4.2.3, § 6.2.2, Fig. 5.3.5.1-1. The EUTRAN configuring the UE with one or more SCells discloses this limitation. Ex-1002, ¶168.

A POSITA would understand that the EUTRAN configuring the UE with one or more SCells discloses this limitation. *Id.*

- c) [1c]: including information by the source eNB in a HandoverPreparationInformation message for a target eNB to control SCell release in the UE during a handover,

Ericsson in view of the 3GPP-Standard discloses this limitation. 3GPP-36331-940 discloses that a “HandoverPreparationInformation message” from the “source eNB” to the “target eNB.” See, e.g., 3GPP-36331-940, 216. The “HandoverPreparationInformation message” is the “used to transfer the E-UTRA RRC information used by the target eNB during handover preparation, including UE capability information.” *Id.*

The “HandoverPreparationInformation message” includes many different types of information elements or “IEs” as described in the standard and illustrated below.

```
HandoverPreparationInformation-r8-IEs ::= SEQUENCE {  
    ue-RadioAccessCapabilityInfo    UE-CapabilityRAT-ContainerList,  
    as-Config                        AS-Config                OPTIONAL,      -- Cond HO  
    rrm-Config                       RRM-Config              OPTIONAL,  
    as-Context                       AS-Context              OPTIONAL,      -- Cond HO  
    nonCriticalExtension             HandoverPreparationInformation-v920-IEs  OPTIONAL  
}
```

```
HandoverPreparationInformation-v920-IEs ::= SEQUENCE {  
    ue-ConfigRelease-r9             ENUMERATED {  
                                     rel9, spare7, spare6, spare5, spare4, spare3,  
                                     spare2, spare1, ...}          OPTIONAL,      -- Cond HO2  
    nonCriticalExtension             SEQUENCE {}                OPTIONAL  
}
```

Id., 216-217. The “HandoverPreparationInformation message” includes the as-Config IE. *Id.*, 216. The as-Config IE “contains information about RRC configuration information in the source cell which can be utilized by target cell to

determine the need to change the RRC configuration during the handover preparation phase.” *Id.*, 218.

The as-Config IE contains radio resource configuration IEs, including the RadioResourceConfigDedicated IE, as illustrated below.

```
AS-Config ::= SEQUENCE {  
    sourceMeasConfig MeasConfig,  
    sourceRadioResourceConfig RadioResourceConfigDedicated,
```

Id., (annotated).

According to 3GPP-36331-Update, the RadioResourceConfigDedicated IE “is used to setup/modify/release RBs, to modify the MAC main configuration, to modify the SPS configuration and to modify dedicated physical configuration.” 3GPP-36331-Update, § 6.3.2. Therefore, a POSITA would have understood that the prior art, in this case 3GPP-36331-Update, discloses “including information by the source eNB in a HandoverPreparationInformation message for a target eNB to control SCell release in the UE during a handover.”

This is further shown by the fact that 3GPP-36331-Update includes the RadioResourceConfigDedicatedSCell IE as part of the RadioResourceConfigDedicated IE. RadioResourceConfigDedicatedSCell includes “UE specific configuration extensions applicable for an SCell.” *Id.* This is illustrated in the figure below.

```
RadioResourceConfigDedicatedSCell-r10 ::= SEQUENCE {  
    -- UE specific configuration extensions applicable for an SCell
```

Id. (annotated). The RadioResourceConfigDedicatedSCell IE is a new contribution to the standard (3GPP-36331-940) proposed in 3GPP-36331-Update and adopted into the subsequent standard (TS 36.331 v10.0.0). As part of the RadioResourceConfigDedicated IE that “is used to setup/modify/release RBs, to modify the MAC main configuration, to modify the SPS configuration and to modify dedicated physical configuration” (3GPP-36331-Update, § 6.3.2), a POSITA would understand that the RadioResourceConfigDedicatedSCell IE therefore includes information “for a target eNB to control SCell release in the UE during handover” as required by this limitation. Ex-1002, ¶172.

Moreover, Ericsson discloses this limitation. Ericsson teaches that the CrossCarrierSchedulingConfig IE should be referenced in RadioResourceConfigDedicatedSCell. *See* Ericsson, 2, 6, 9 (Comment by Ericsson). This IE also includes the ServCellIndex field. Ericsson, 9. Ericsson describes the ServCellIndex field as “[a] short identity used to identify a serving cell i.e. either the PCell or an SCell.” *Id.* Ericsson teaches that the ServCellIndex is made up of integers 0 through 7. *Id.* It also teaches that the PCell is assigned value 0, “while the SCellIndex that has previously been assigned applies for SCells.” *Id.*

In other words, the SCellIndex is incorporated into the ServCellIndex, wherein the SCells are assigned a value of 1 to 7, as to be expected based on the

description of the ServCellIndex and SCellIndex provided in 3GPP-36331-Update (3GPP-36331-Update, § 6.3.4).

SCellIndex information element

```
-- ASN1START
SCellIndex-r10 ::=                INTEGER (1..7)
-- ASN1STOP
```

Id.

ServCellIndex information element

```
-- ASN1START
ServCellIndex-r10 ::=            INTEGER (0..7)
-- ASN1STOP
```

Id.

As part of the as-Config IE of the HandoverPreparationInformation message, the ServCellIndex (incorporating the SCellIndex) is sent from the source eNB to the target eNB during handover preparation. 3GPP-36331-940, 216. This information allows “a target eNB to control SCell release in the UE during a handover” as required by the limitation.

- d) *[1d]: wherein the information indicates SCell indexes of all SCells configured to the UE before the handover, thereby allowing the target eNB to include a sCellToReleaseList with all the SCells configured to the UE in a handover command for the UE to release the SCells included in the sCellToReleaseList.*

Ericsson in view of the 3GPP-Standard discloses this limitation. As described for limitation [1c] above, the HandoverPreparationInformation message includes the

as-Config IE, which includes the RadioResourceConfigDedicated IE. *See* Section X.B.1.c. This information is sent from the source eNB to the target eNB before handover and provides the necessary information for the target eNB to perform the handover procedure, including SCell release. *Id.*

Ericsson discloses that the information in the HandoverPreparationInformation message “indicates SCell indexes of all SCells configured to the UE before the handover.” Indeed, Ericsson teaches that the CrossCarrierSchedulingConfig IE should be referenced in RadioResourceConfigDedicatedSCell. *See* Ericsson, 2, 6, 9 (Comment by Ericsson). CrossCarrierSchedulingConfig IE includes the ServCellIndex field. Ericsson, 9. Ericsson describes the ServCellIndex field as “[a] short identity used to identify a serving cell i.e. either the PCell or an SCell.” *Id.* Ericsson teaches that the ServCellIndex is made up of integers 0 through 7. *Id.* It also teaches that the PCell is assigned value 0, “while the SCellIndex that has previously been assigned applies for SCells.” *Id.*

In other words, the SCellIndex is incorporated into the ServCellIndex, wherein the SCells are assigned a value of 1 to 7, as to be expected based on the description of the ServCellIndex and SCellIndex provided in 3GPP-36331-Update (3GPP-36331-Update, § 6.3.4).

SCellIndex information element

```
-- ASN1START
SCellIndex-r10 ::=                INTEGER (1..7)
-- ASN1STOP
```

Id.

ServCellIndex information element

```
-- ASN1START
ServCellIndex-r10 ::=            INTEGER (0..7)
-- ASN1STOP
```

Id. As part of the as-Config IE of the HandoverPreparationInformation message, the ServCellIndex (incorporating the SCellIndex) is sent from the source eNB to the target eNB during handover preparation. 3GPP-36331-940, 216.

Moreover, because the ServCellIndex incorporated the SCellIndex values, it includes the SCell indexes of all SCells configured to the UE. Ex-1002, ¶80-81 . 3GPP-36331-Update describes that “[f]or an UE configured with CA [(carrier aggregation)] the term 'serving cells' is used to denote the set of one or more cells comprising of the primary cell and ***all secondary cells***”. 3GPP-36331-Update, § 3.1 (emphasis added).

Therefore, the information in the ServCellIndex “indicates SCell indexes of all SCells configured to the UE before the handover” as required by the claim.

When the HandoverPreparationInformation message reaches the target eNB from the source eNB, it provides the target eNB with the “necessary information to prepare the HO at the target side,” including information from the as-Config IE as

explained in Section X.A.1.c above. 3GPP-36300-950, 49. Without that information, the target eNB cannot “generate[] the RRC message to perform the handover, i.e. *RRCCConnectionReconfiguration* message including the *mobilityControlInformation*, to be sent by the source eNB towards the UE.” *Id.* Therefore, sending the *HandoverPreparationInformation* message with the information as described above, allows “the target eNB to include a *sCellToReleaseList* with all the SCells configured to the UE in a handover command for the UE to release the SCells included in the *sCellToReleaseList*.”

That *RRCCConnectionReconfiguration* message is sent as a *HandoverCommand* message from the target eNB. 3GPP-36331-940, 216. The *HandoverCommand* message “is used to transfer the handover command generated by the target eNB, which is transparently transferred by the source RAN to the UE.” *Id.*

The *RRCCConnectionReconfiguration* message includes the *sCellToReleaseList* IE. 3GPP-36331-Update, § 6.2.2.

```
RRCCConnectionReconfiguration-v10xy-IEs ::= SEQUENCE {  
    pCellIndex-r10                INTEGER (0),  
    sCellToReleaseList-r10        SCellToReleaseList-r10    OPTIONAL, -- Need ON
```

Id. The *sCellToReleaseList* of the *RRCCConnectionReconfiguration* message includes all of the SCells configured to the UE.

```
SCellToReleaseList-r10 ::= SEQUENCE (SIZE (1..maxSCell-r10)) OF SCellIndex-r10
```

Id. Thus, the target eNB includes “a *sCellToReleaseList* with all the SCells configured to the UE in a handover command” as required by the claims.

3GPP-36331-Update teaches that “if the received *RRCCConnectionReconfiguration* includes the *sCellToReleaseList*...perform SCell release as specified in 5.3.10.3a.” 3GPP-36331-Update, §§ 5.3.5.3, 5.3.5.4.

3GPP-36331-Update explains performance of SCell release by the UE upon reception of the *sCellToReleaseList*:

5.3.10.3a SCell release

The UE shall:

- 1> if the release is triggered by reception of the *sCellToReleaseList*;
- 2> for each *sCellIndex* value included in the *sCellToReleaseList*;
- 3> if the current UE configuration includes an SCell with value *sCellIndex*;
- 4> release the SCell;

3GPP-36331-Update, § 5.3.10.3a. Accordingly, 3GPP-36331-Update teaches “the UE to release the SCells included in the *sCellToReleaseList*,” as required by the claims.

2) Claim 2

a) *[Preamble]: The method of claim 1, wherein*

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 1 for the reasons above.

- b) [2b]: the handover command corresponds to an *RRCCConnectionReconfiguration* message including *mobilityControlInfo*.

A POSITA would have understood that the prior art, in this case 3GPP-36331-Update and 3GPP-36331-940, discloses this limitation . Ex-1002, ¶188. For example, as described in 3GPP-36331-940, the HandoverCommand is a message “used to transfer the handover command generated by the target eNB, which is transparently transferred by the source RAN to the UE.” 3GPP-36331-940, 216.

The HandoverCommand includes the handoverCommandMessage IE, which “[c]ontains the entire DL-DCCH-Message including the *RRCCConnectionReconfiguration* message used to perform handover to E-UTRAN, generated (entirely) by the target eNB.” *Id.*, 107; *see also*, 3GPP-36331-Update, § 6.2.2. Thus, the handover command “corresponds to an *RRCCConnectionReconfiguration* message” as required by the claim limitation. Ex-1002, ¶189.

The *RRCCConnectionReconfiguration* message also includes the *mobilityControlInfo* IE. 3GPP-36331-940, 107.

```
RRCCConnectionReconfiguration-r8-IEs ::= SEQUENCE {  
    measConfig          MeasConfig          OPTIONAL, -- Need ON  
    mobilityControlInfo MobilityControlInfo  OPTIONAL, -- Cond HO
```

Under the definition for the *RRCCConnectionReconfiguration* message, it describes that the *mobilityControlInfo* IE is “mandatorily present” during inter-node

handover and intra-node handover. *Id.*, 107-108; *see also*, 3GPP-36331-Update, § 6.2.2.

3GPP-36331-Update further includes procedures for SCell release when the RRCConnectionReconfiguration message includes the mobilityControlInfo. 3GPP-36331-Update, §§ 5.3.5.4, 5.3.10.3a.

3) Claim 3

a) [Preamble]: The method of claim 2, wherein

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 2 for the reasons above.

b) [3b]: the RRCConnectionReconfiguration message is sent from the source eNB to the UE to initiate a handover procedure.

A POSITA would have understood that the prior art, in this case 3GPP-36300-950 and 3GPP-36331-940, discloses this limitation. Ex-1002, ¶194. As discussed above, the HandoverCommand message includes the RRCConnectionReconfiguration message. See § X.A.2, *supra*. The HandoverCommand message is “used to transfer the handover command generated by the target eNB, which is transparently transferred by the source RAN to the UE.” 3GPP-36331-940, 216. Inter-node handover procedure is initiated by ending the RRCConnectionReconfiguration message. *Id.*, 58.

Moreover, TS. 36.300 v9.5.0 illustrates that the RRCConnectionReconfiguration message is sent from the source eNB to the UE as a HandoverCommand to initiate

the handover procedure, as depicted in figure 19.2.2.5.6-1 in section X.A.3.b, *supra*. 3GPP-36300-950, 118, Figure 19.2.2.5.6-1.

4) Claim 4

a) [Preamble]: The method of claim 2, wherein

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 2 for the reasons above.

b) [4b]: the HandoverPreparationInformation message is sent from the source eNB to the target eNB to request the handover.

A POSITA would have understood that the prior art, in this case 3GPP-36300-950 and 3GPP-36331-940, discloses this limitation. Ex-1002, ¶197.

As depicted in figure 19.2.2.5.6-1 in section X.A.3.b, *supra*, 3GPP-36300-950 describes that the HandoverPreparationInformation message is sent from the source to the target (via a “Source to Target Transparent Container”) to request the handover. 3GPP-36300-950, Figure 19.2.2.5.6-1.

Additionally, 3GPP-36300-950 disclose that “[t]he source eNB issues a HANDOVER REQUEST message to the target eNB passing necessary information to prepare the HO at the target side (UE X2 signalling context reference at source eNB, UE S1 EPC signalling context reference, target cell ID, K_{eNB*} , RRC context including the C-RNTI of the UE in the source eNB, ***AS-configuration***, E-RAB context and physical layer ID of the source cell + MAC for possible RLF recovery)”. 3GPP-36300-950, 49 (emphasis added). The handover request corresponds to

necessary information regarding the RRC context, which includes, for example, the AS-configuration IE (“as-Config”) of the HandoverPreparationInformation message. *Id.*; see also § X.A.1.

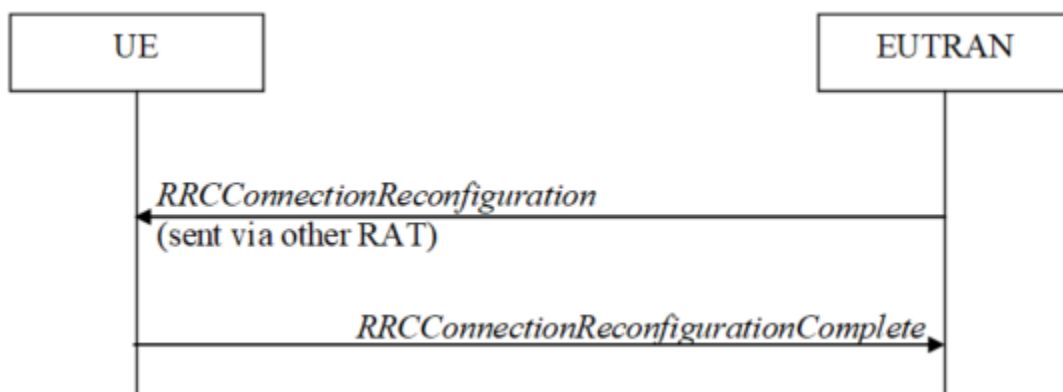
5) Claim 5

a) [Preamble]: The method of claim 2, wherein:

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 2 for the reasons above.

b) [5b]: the handover is an inter-eNB handover.

A POSITA would have understood that the prior art, in this case 3GPP-36331-Update, discloses this limitation. Ex-1002, ¶200. For example, 3GPP-36331-Update discloses that the handover is an inter-eNB handover in § 5.4. In particular, 3GPP-36331-Update describes that inter-eNB handover is initiated “by sending the RRCConnectionReconfiguration message” to the UE, as further illustrated in the figure below. 3GPP-36331-Update §§ 5.4.2.2, 5.4.2.3.



Id., Fig. 5.4.2.1-1.

6) Claim 6

a) [Preamble]: The method of claim 3, wherein

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 3 for the reasons above.

b) [6b]: the HandoverPreparationInformation message is sent from the source eNB to the target eNB to request the handover.

This element is the same as [4b] and is met for the same reasons. Section X.A.4; Ex-1002, ¶202.

7) Claim 7

a) [Preamble]: The method of claim 3, wherein

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 3 for the reasons above.

b) [7b]: the handover is an inter-eNB handover.

This element is the same as [5b] and is met for the same reasons. Section X.A.5; Ex-1002, ¶204.

8) Claim 8

a) [Preamble]: The method of claim 1, wherein

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 1 for the reasons above.

- b) [8a]: the HandoverPreparationInformation message is sent from the source eNB to the target eNB to request the handover.*

This element is the same as [4b] and is met for the same reasons. Section X.A.4; Ex-1002, ¶206.

9) Claim 9

- a) [Preamble]: The method of claim 8, wherein*

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 8 for the reasons outlined above.

- b) [9b]: the handover is an inter-eNB handover.*

This element is the same as [5b] and is met for the same reasons. Section X.A.5; Ex-1002, ¶208.

10) Claim 10

- a) [Preamble]: The method of claim 1, wherein*

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 1 for the reasons above.

- b) [10b]: the handover is an inter-eNB handover.*

This element is the same as [5b] and is met for the same reasons. Section X.A.5; Ex-1002, ¶210.

11) Claim 11

a) [Preamble]: The method of claim 1, wherein

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 1 for the reasons above.

b) [11b]: a RRCConnectionReconfiguration message is sent from the source eNB to the UE to initiate a handover procedure.

This element is the same as [3b] and is met for the same reasons. Section X.A.3; Ex-1002, ¶213.

12) Claim 12

a) [Preamble]: 12. A communication device for use in a wireless communication system, the communication device comprising:

a control circuit;

a processor installed in the control circuit;

and a memory installed in the control circuit and coupled to the processor;

wherein the processor is configured to execute a program code stored in memory to:

To the extent the preamble is limiting, a POSITA would have understood that the prior art, in this case 3GPP-36331-Update, discloses the preamble. Ex-1002, ¶114. 3GPP-36331-Update discloses a UE, which includes mobile handsets, and eNBs, which is the base station that the UE communicates with. 3GPP-36331-Update, §§ 1, 3.2, 4.2, 5.4. Both the UE and eNBs are wireless communication

devices and comprise a control circuit, a processor installed in the control circuit, and a memory installed in the control circuit and coupled to the processor. Ex-1002, ¶213.

- b) *[12b]: configuring at least one SCell by a source eNB to a User Equipment (UE); and*

This element is the same as [1b] and is met for the same reasons. Section X.B.1.b; Ex-1002, ¶213.

- c) *[12c]: including information by the source eNB in a HandoverPreparationInformation message for a target eNB to control SCell release in the UE during a handover, wherein the information indicates SCell indexes of all SCells configured to the UE before the handover,*

This element is the same as [1c] and is met for the same reasons. Section X.B.1.c; Ex-1002, ¶215.

- d) *[12d]: thereby allowing the target eNB to include a sCellToReleaseList with all the SCells configured to the UE in a handover command for the UE to release the SCells included in the sCellToReleaseList.*

This element is the same as [1d] and is met for the same reasons. Section X.B.1.d; Ex-1002, ¶216.

13) Claim 13

- a) *[Preamble]: The device of claim 12, wherein*

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 12 for the reasons above.

- b) *[13b]: the handover command corresponds to an RRCConnectionReconfiguration message including mobilityControlInfo.*

This element is the same as [2b] and is met for the same reasons. Section X.A.2; Ex-1002, ¶219.

14) Claim 14

- a) *[Preamble]: The device of claim 13, wherein*

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 13 for the reasons above.

- b) *[14b]: the RRCConnectionReconfiguration message is sent from the source eNB to the UE to initiate a handover procedure.*

This element is the same as [3b] and is met for the same reasons. Section X.A.3; Ex-1002, ¶220.

15) Claim 15

- a) *[Preamble]: The device of claim 13, wherein*

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 13 for the reasons above.

- b) *[15b]: the HandoverPreparationInformation message is sent from the source eNB to the target eNB to request the handover.*

This element is the same as [4b] and is met for the same reasons. Section X.A.4; Ex-1002, ¶222.

16) Claim 16

a) [Preamble]: The device of claim 13, wherein:

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 13 for the reasons above.

b) [16b]: the handover is an inter-eNB handover.

This element is the same as [5b] and is met for the same reasons. Section X.A.5; Ex-1002, ¶224.

17) Claim 17

a) [Preamble]: The device of claim 14, wherein

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 14 for the reasons above.

b) [17b]: the HandoverPreparationInformation message is sent from the source eNB to the target eNB to request the handover.

This element is the same as [4b] and is met for the same reasons. Section X.A.4; Ex-1002, ¶226.

18) Claim 18

a) [Preamble]: The device of claim 14, wherein

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 14 for the reasons above.

b) [14b]: the handover is an inter-eNB handover.

This element is the same as [5b] and is met for the same reasons. Section X.A.5; Ex-1002, ¶228.

19) Claim 19

a) [Preamble]: The device of claim 12, wherein

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 12 for the reasons above.

b) [19b]: the HandoverPreparationInformation message is sent from the source eNB to the target eNB to request the handover.

This element is the same as [4b] and is met for the same reasons. Section X.A.4; Ex-1002, ¶230.

20) Claim 20

a) [Preamble]: The device of claim 19, wherein

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 19 for the reasons outlined above.

b) [19b]: the handover is an inter-eNB handover.

This element is the same as [5b] and is met for the same reasons. Section X.A.5; Ex-1002, ¶232.

21) Claim 21

a) [Preamble]: The device of claim 12, wherein

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 12 for the reasons above.

b) [21b]: the handover is an inter-eNB handover.

This element is the same as [5b] and is met for the same reasons. Section X.A.5; Ex-1002, ¶234.

22) Claim 22

a) [Preamble]: The method of claim 12, wherein

Ericsson in view of the in view of the knowledge of a POSITA and the 3GPP-Standard discloses Claim 12 for the reasons above.

b) [22b]: a RRCConnectionReconfiguration message is sent from the source eNB to the UE to initiate a handover procedure.

This element is the same as [3b] and is met for the same reasons. Section X.A.3; Ex-1002, ¶236.

XI. SECONDARY CONSIDERATIONS

Petitioners are unaware of any evidence of secondary considerations that would support a finding of non-obviousness. *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1311–12 (Fed. Cir. 2006). The asserted prior art cited herein demonstrates there is no evidence of failure by others and that the features recited in the Challenged Claims were readily available in the prior art. Ex-1002, ¶¶73-82

Even if secondary considerations did exist, they could not overcome the strong prima facie case of obviousness shown in this Petition. *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010). Should Patent Owner attempt to meet its burden to show secondary considerations, Petitioners reserve the right to respond.

XII. INSTITUTION IS PROPER UNDER SECTIONS 314 AND 325

Petitioners have shown that there is a reasonable likelihood of prevailing with respect to at least one Challenged Claim. Petitioners have not filed a civil action challenging the validity of the '489 patent that could bar review under Section 325. This is also the first and only petition challenging any of the '489 patent's claims, which weighs in favor of institution under *General Plastic Industrial Co., Ltd. v. Canon Kabushiki Kaisha*, IPR2016-01357, Paper 19 (P.T.A.B. Sept. 6, 2017). And the prior art relied upon here—Centonza and Han—were not before the Patent Office during prosecution, which further weighs in favor of institution. *Advanced Bioinc, LLC v. Med-El Elektromedizinische Geräte GmbH*, IPR2019-01469 (Paper No. 6) (P.T.A.B. Feb. 13, 2020) (precedential) (looking to “whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office”).

The factors set forth in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11, 6 (P.T.A.B. Mar. 20, 2020) (“*Fintiv*”) (precedential) also favor institution.

The **first factor** (stay) is neutral, because Petitioners have not yet moved for a stay. *See Hulu LLC v. SITO Mobile R&D IP, LLC et al.*, IPR2021-00298, Paper 11, 10-11 (P.T.A.B. May 19, 2021).

The **second factor** (proximity) is neutral. As the Director’s Interim Guidance explains, “[t]he PTAB will weigh this factor against exercising discretion to deny institution under *Fintiv* if the median time-to trial is around the same time or after the projected statutory deadline for the PTAB’s final written decision.” Ex-1016, 9. The Interim Guidance further explains that “[w]here the parties rely on time-to-trial statistics, the PTAB will also consider additional supporting factors such as the number of cases before the judge in the parallel litigation” *Id.*

Jury selection is scheduled to begin on July 21, 2025. Ex-1017, 1. With this Petition filed in May 2024, a final written decision may be expected by November 2025, not long after the trial date (and likely before any appealable post-trial decision). The Board has granted institution in cases where the final written decision issued a few months after the scheduled trial date when other factors favor institution. *See Hulu*, IPR2021-00298, Paper 11, 11-18; *see also NetNut Ltd. v. Bright Data Ltd.*, IPR2021-01492, Paper 12, 9-16 (P.T.A.B. Mar. 21, 2022) (instituting review with trial date six months before final written decision). Those same factors are present here. In the litigation, moreover, there are multiple defendants, and there will be separate trials. The cases are only consolidated for

pretrial. Ex-1018. It is reasonable to expect that all trials will not be complete or through post-trial orders before the final written decision. In these circumstances, the Board treats this factor as neutral. *See CrowdStrike, Inc. v. Open Text Inc.*, IPR2023-00556, Paper 9, 8 (P.T.A.B. Sept. 12, 2023).

The **third factor** (investment) weighs against denial. The district court litigation is in its early stages. Fact discovery is in its infancy, and the parties have not engaged in expert discovery. Ex-1017, 3–5. The parties have not identified terms for claim construction. *Id.* Nor have there been any substantive orders in the case. The district court’s investment is, therefore, minimal. *See PEAG LLC v. Varta Microbattery GmbH*, IPR2020-01214, Paper 8, 17 (P.T.A.B. Jan. 6, 2021).

Petitioners diligently filed this Petition after they received Patent Owner’s infringement contentions that confirmed Petitioners’ technology is at the center of the district court litigation. The Board has recognized that “it is often reasonable for a petitioner to wait to file its petition until it learns which claims are being asserted against it in the parallel proceeding.” *Fintiv*, IPR2020-00019, Paper 11, 11. The Board has further found a petitioner acted diligently when filing its petition approximately four months after receiving the infringement contentions, which is just under the approximate timeframe here (Ex-1017, 6). *See Corning Optical Communications LLC v. Dali Wireless, Inc.*, IPR2021-00762, Paper 8, 9-10 (P.T.A.B. Oct. 31, 2021); *see also Hulu*, IPR2021-00298, Paper 11, 13-14; *Ericsson*

Inc. v. Koninklijke KPN N.V., IPR2022-00079, Paper 9, 10-11 (P.T.A.B. May 25, 2022) (finding petitioner “very diligent” in filing two months after receiving infringement contentions); *Ericsson Inc. v. Koninklijke KPN N.V.*, IPR2022-00069, Paper 9, 11-12 (P.T.A.B. May 25, 2022) (same).

Petitioners’ diligence in filing and the district court’s minimal investment tips this factor in favor of institution. *PEAG*, IPR2020-01214, Paper 8, 17-18.

The **fourth factor** (overlap) also weighs against denial. Petitioners hereby stipulate that, if trial is instituted, Petitioners will not pursue this IPR’s Grounds in the district court litigation. This stipulation eliminates any risk of overlapping effort and results. The Board has confirmed that such a stipulation “mitigates any concerns of duplicative efforts between the district court and the Board, as well as concerns of potentially conflicting decisions.” *See VMWare, Inc. v. Intellectual Ventures I LLC*, IPR2020-00470, Paper 13, 20 (P.T.A.B. Aug. 18, 2020) (“Thus, we find that this factor weighs in favor of not exercising discretion to deny institution under 35 U.S.C. § 314(a).”). “Instituting trial here serves overall system efficiency and integrity goals by not duplicating efforts and by resolving materially different patentability issues.” *Apple, Inc. v. SEVEN Networks, LLC*, IPR2020-00156, Paper 10, 19 (P.T.A.B. June 15, 2020); *see also Sand Revolution II, LLC v. Continental Intermodal Group-Trucking LLC*, IPR2019-01393, Paper 24, 12 (P.T.A.B. June 16, 2020). This factor, therefore, weighs against discretionary denial.

The **fifth factor** (parties) favors institution. Petitioners are either parties to the district court litigations or have sought to intervene. And if Petitioners Ericsson and Nokia’s motions to intervene are granted, a “holistic view” of the factors likewise favors institution. *See Verizon Business Network Services, Inc. v. Huawei Techs. Co.*, IPR2020-01141, Paper 12, 17 (P.T.A.B Jan. 14, 2021); *Samsung Elecs. Co Ltd., v Dynamics Inc.*, IPR2020-00505, Paper 11, 15 (P.T.A.B. Aug. 12, 2020).

Even if the Board determines that the aforementioned factors favor denial, the Board should not discretionarily deny institution, because this Petition presents compelling merits (the **sixth factor**). *See CommScope Techs. LLC v. Dali Wireless, Inc.*, IPR2022-01242, Paper 23, 4-5 (P.T.A.B. Feb. 27, 2023) (precedential). Patent Owner acceded during prosecution that the prior art taught the message flow of the Challenged Claims—it only argued that the prior art had the wrong network components (a mix of network controllers and base stations), not eNBs. Ex-1002, 407–416. Both Centonza and Han—which were not before Patent Office—teach or suggest the claimed message functionality using eNBs. This Petition thus presents compelling merits that plainly lead to the conclusion that at least one claim is unpatentable, and the Board should grant institution. *See CommScope Techs. LLC v. Dali Wireless, Inc.*, IPR2022-01242, Paper 24, 75 (P.T.A.B .Mar. 17, 2023).

Due to Petitioners’ diligence, it would be premature at the time of this Petition to argue regarding the timing of respective milestones in the proceeding versus the

litigation. Thus, if Patent Owner raises § 314(a) arguments in a Preliminary Response, Petitioners respectfully request the opportunity to reply before institution, to address, e.g., the expected schedules of the co-pending cases.

XIII. CONCLUSION

Petitioners request institution of IPR and cancellation of the Challenged Claims.

Date: July 25, 2024

Respectfully submitted,

/ Scott W. Hejny /

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CERTIFICATION OF WORD COUNT

The undersigned hereby certifies that the portions of the above-captioned **PETITION FOR INTER PARTES REVIEW** specified in 37 C.F.R. § 42.24 have 13,718 words, in compliance with the 14,000 word limit set forth in 37 C.F.R. § 42.24(b)(1). This word count was prepared using Microsoft Word 2010.

Respectfully submitted,

Date: July 25, 2024

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CERTIFICATION OF SERVICE

The undersigned hereby certifies that the above-captioned **PETITION FOR INTER PARTES REVIEW** is being served on counsel for patent owner via electronic mail and FEDERAL EXPRESS, costs prepaid, to the address of the attorney or agent of record at the USPTO: on July 25, 2024, in its entirety on the following counsel of record for Patent Owner:

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