

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

Petitioners,

v.

KT CORPORATION (Patent Owner) and
PEGASUS WIRELESS INNOVATION LLC (Exclusive Licensee)

U.S. PATENT NO. 11,405,942

Title: METHOD AND APPARATUS FOR TRANSMITTING AND
RECEIVING DOWNLINK SIGNAL IN NEXT GENERATION WIRELESS
NETWORK

Inter Partes Review No.: IPR2025-00317

**PETITIONERS' REPLY TO PATENT OWNER'S PRELIMINARY
RESPONSE TO PETITION**

Petitioners' Exhibit List

<i>Exhibit #</i>	<i>Description</i>
1001	U.S. Patent No. 11,405,942 (the "'942 Patent")
1002	Select portions of prosecution history of the '942 Patent ("File History")
1003	Declaration of Petitioners' Expert ("Lanning Declaration")
1004	U.S. Publication No. 2017/0223687 A1 (" <i>Kuchibhotla</i> "), published August 3, 2017
1005	U.S. Publication No. 2016/0234857 A1 (" <i>Chen</i> "), published August 11, 2016
1006	3GPP TS 36.213 v8.8.0, 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures (Release 8), published September 2009
1007	3GPP TS 36.321 v8.7.0, 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification, published September 2009
1008	3GPP TS 36.331 v8.7.0, 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification (Release 8), published September 2009
1009	LTE in a Nutshell: The Physical Layer (White Paper), Telesystem Innovations Inc. (2010)
1010	U.S. Patent App. Pub. No. US 2019/0200235 A1 (" <i>Lyu</i> "), published June 27, 2019, and claiming priority to CN 201610654618.9 filed August 10, 2016
1011	U.S. Patent No. 10,397,938 B2 (" <i>Lee</i> "), issued August 27, 2019, and claiming priority to PCT/KR2015/01358 filed December 2, 2015
1012	U.S. Patent No. 8,995,925 B2 (" <i>Ekici</i> "), issued March 31, 2015
1013	U.S. Patent App. Pub. No. US 2007/0232308 A1 (" <i>Bergstrom</i> "), published October 4, 2007, published October 4, 2007
1014	U.S. Patent App. Pub. No. US 2013/0195100 A1 (" <i>Baker</i> "), published August 1, 2013

<i>Exhibit #</i>	<i>Description</i>
1015	U.S. Patent Publication No. 2018/0070341 A1 (“ <i>Islam</i> ”), published March 8, 2018, and claiming priority to September 2, 2016, September 16, 2016, and November 4, 2016
1016	3GPP TS 36.212 v8.7.0, 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Multiplexing and channel coding (Release 8), published May 2009
1017	Newton’s Telecom Dictionary, 30 th Edition. November 2016
1018	Mark R. Lanning’s CV.
1019	<i>Pegasus Wireless Innovation LLC. v. Verizon Communications Inc. et al.</i> , No. 2:23-cv-00640 (E.D. Tex) Dkt. 150
1020	<i>Pegasus Wireless Innovation LLC. v. Verizon Communications Inc. et al.</i> , No. 2:23-cv-00640 (E.D. Tex) Dkt. 68
1021	<i>Pegasus Wireless Innovation LLC. v. Verizon Communications Inc. et al.</i> , No. 2:23-cv-00640 (E.D. Tex) Dkt. 16
1022	<i>Pegasus Wireless Innovation LLC. v. Verizon Communications Inc. et al.</i> , No. 2:23-cv-00640 (E.D. Tex) Dkt. 178
1023	<i>Pegasus Wireless Innovation LLC. v. Verizon Communications Inc. et al.</i> , No. 2:23-cv-00640 (E.D. Tex) Dkt. 334

The Petition presents compelling evidence of invalidity. PO challenges the analyses of a “newly defined RNTI” and that it is conveyed to user equipment via “UE-specific RRC signaling.” Patent Owner’s Preliminary Response (“POPR”), Paper 11 (April 17, 2025) at 7-14. As detailed below, the Petition demonstrates that Kuchibhotla (EX-1004) teaches these claim elements.

1. The Petition Demonstrates that Kuchibhotla Teaches the Claimed “Newly Defined RNTI.”

PO incorrectly suggests that the Petition addressed “newly defined RNTI” (a limitation in element [1.4] in the Petition) in only a single paragraph. POPR, 8-9. However, element [1.4] does not simply recite a “newly defined RNTI,” but requires that “the specific RNTI ... is a newly defined RNTI other than at least a cell-RNTI (C-RNTI).” EX-1001, 17:38-40. Element [1.1] (which element [1.4] refers back to) recites that the specific RNTI is “for DL preemption indication information.” EX-1001, 17:28-30. This additional language is important to the Petition’s analysis of how Kuchibhotla’s disclosed “marker-RNTI” is a “newly defined RNTI.” Yet PO does not address this language and ignores that the analysis of element [1.4] calls back to the analysis of element [1.1]. Pet., 50.

Kuchibhotla discloses that special RNTIs are assigned to the UE at call admission “*in addition* to the C-RNTI” and that one example of a special RNTI is a “special CRC mask” referred to as a “marker-RNTI.” Pet., 50 (citing to EX-1004, ¶¶84, 47) (emphasis added). Kuchibhotla’s disclosure of the special marker-RNTI

is consistent with the '942 Patent's disclosure of "a newly defined RNTI." EX-1001, 11:6-12 ("the UE may perform monitoring by performing CRC scrambling of DL control information including DL preemption indication information using a C-RNTI or a newly defined RNTI"). Claim 1 recites, and the specification describes, a "newly defined RNTI" is an RNTI other than the C-RNTI. Kuchibhotla's special marker-RNTI meets this requirement.

The Petition further demonstrates that Kuchibhotla's special marker-RNTI serves the same function (i.e., monitoring for DL preemption indication information) as the claimed "newly defined RNTI." First, Kuchibhotla's "marker" is "DL preemption indication information," because it serves the same notification purpose described in the '942 Patent. Pet., 35-36, *comparing* EX-1004, ¶¶82, 87 *with* EX-1001, 2:51-55 (indicating overlapping resource); 8:17-19 (notification of punctured resources); 10:29-33 (indicating re-allocated resources). EX-1003 ¶126.

Second, the Petition's analysis of element [1.1], which Petitioner refers to in element [1.4], demonstrates that Kuchibhotla discloses an embodiment in which the UE uses a "special CRC mask" – i.e., "marker-RNTI" – to monitor for the marker ("DL preemption indication information") in PDCCH. Pet., 40; EX-1004, ¶84; FIG. 21. EX-1003 ¶134-135.

PO does not address any of these express disclosures in Kuchibhotla and ignores the Petition's analysis discussed above, which maps "newly defined RNTI

other than at least a cell-RNTI (C-RNTI)” to Kuchibhotla’s express disclosures.

2. The Petition Demonstrates that Kuchibhotla Discloses, or Alternatively Suggests, the Marker-RNTI is Conveyed to the UE via UE-Specific RRC Signaling.

PO again ignores the disclosures of Kuchibhotla that the Petition analyzes. Pet., 36-42. That is, special RNTIs are assigned to a particular UE at call admission via dedicated mode (UE-specific) RRC configuration signaling. EX-1004, ¶57; EX-1003 ¶¶127-128. A disclosed purpose of such special RNTIs is to monitor control channels “to determine, for example, the resource allocation ... for the corresponding low latency data.” EX-1004, ¶47, ¶62; EX-1003 ¶¶131-133.

In embodiments in which a marker is transmitted in a control channel to notify the UE of resources used for low latency data, the special RNTI is marker-RNTI. EX-1004, ¶84; FIG. 21. EX-1003 ¶¶134-135. A POSITA understands from these disclosures that Kuchibhotla teaches that a UE is configured at call admission with special RNTIs (particularly those related to monitoring PDCCH for low latency control information) via UE-specific signaling. Pet., 40-41; EX-1003 ¶136.

The Petition alternatively argues that it would be obvious to include the marker-RNTI in UE-specific RRC configuration messaging in light of Kuchibhotla’s express teachings. Pet., 41-42. Kuchibhotla discloses that a special LL-RNTI is assigned to the UE for the purpose of monitoring PDCCH to determine resource allocations for low latency data. Pet., 39-40; EX-1004, ¶47;

EX-1003 ¶131-133. Kuchibhotla also discloses an embodiment in which a special marker-RNTI is used to monitor PDCCH for information (i.e., a marker) identifying low latency resource allocations. Pet., 40-41; EX-1004, ¶84; EX-1003 ¶137. In that embodiment, a marker is transmitted in PDCCH in a subframe $n+1$ to inform the UE that resources in a previous subframe n have been used for low latency data. Pet., 40, 51-53; EX-1004, ¶84, ¶131, FIG. 21; EX-1003 ¶¶168-172. When PDCCH is used, the UE applies the special marker-RNTI to differentiate the marker from other control channel information. Pet. 40; EX-1004, ¶84; EX-1003 ¶¶134-137. By using PDCCH to transmit the marker and the marker-RNTI to decode the marker, the UE can more quickly determine the resources in the previous subframe that have been used for low latency data. Pet., 41-42; EX-1004, ¶84; EX-1003 ¶138. Given this disclosed benefit of a special marker-RNTI, a POSITA would have been motivated to include the marker-RNTI in the UE-specific RRC messaging that is used to configure the UE with special RNTIs for monitoring PDCCH for low latency control information. *Id.*

Rather than addressing Kuchibhotla's express disclosures or the Petition's analysis, PO focuses on embodiments in which the marker is not sent in PDCCH. POPR, 12-14. PO argues that, because Kuchibhotla discloses embodiments in which the marker can be broadcast to multiple UEs, then a POSITA would understand that the marker-RNTI is common to many UEs and, as such, it would

be sent via a broadcast. POPR, 14. First, the fact that the marker is common does not inform whether the marker-RNTI is sent via UE-specific or broadcast signaling. In the '942 Patent, the preemption marker is multicast, but the special RNTI is sent via UE-specific signaling. EX-1001, 17:28-31; 17:36-37.

Second, the disclosure that PO cites is not the embodiment in which the marker-RNTI identified in the Petition is used. Kuchibhotla discloses numerous alternate embodiments for marker transmission. It can be sent in the data region; in the same subframe as the preempted resources; in a different subframe; in PDCCH; in PHICH; in predefined or preconfigured symbols or resource groups; in every symbol configured for low latency transmission in a subframe; etc. EX-1004, FIG. 20, FIG. 21, FIG. 22, ¶46, ¶76, ¶83, ¶84, ¶85, ¶86, ¶92, ¶93.

However, Kuchibhotla discloses use of the marker-RNTI in the embodiment in which the marker is transmitted in PDCCH in a subframe subsequent to the subframe in which resources were reallocated to low latency data. EX-1004, FIG. 21, ¶84. The marker is sent in PDCCH to reduce decoding latency; and the marker-RNTI is used to differentiate the marker from other control information in PDCCH. EX-1004, ¶84. In other scenarios, Kuchibhotla does not disclose use of the special marker-RNTI. In short, the allegedly “overlooked” disclosures have no bearing on the Petition’s analysis because they do not address the marker-RNTI, which is the element that is at issue.

Respectfully submitted,

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CERTIFICATION OF SERVICE ON PATENT OWNER

Pursuant to 37 C.F.R. §§42.6(e), 42.8(b)(4) and 42.105, the undersigned certifies that on May 30, 2025, a complete and entire copy of this **Petitioners' Reply to Patent Owner's Preliminary Response to the Petition** was served in its entirety via filing through the Patent Trial and Appeal Case Tracking System (P-TACTS), as well as by delivering copies via electronic mail to the following:

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