

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ERICSSON INC.
NOKIA OF AMERICA CORPORATION
Petitioners,

v.

ACTIVE WIRELESS TECHNOLOGIES LLC
Patent Owner.

U.S. PATENT NO. 10,531,443
Title: PHYSICAL UPLINK CONTROL CHANNEL (PUCCH) FORMAT
ADAPTION FOR 5TH GENERATION (5G) NEW RADIO (NR)

Inter Partes Review No.: IPR2024-00951

**PETITIONERS' REPLY TO
PATENT OWNER'S PRELIMINARY RESPONSE¹**

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Patent Trial and Appeal Board
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

¹ The Board authorized this three-page Reply to address Patent Owner's POPR via email dated November 5, 2024.

Petitioners' Exhibit List

<i>Exhibit #</i>	<i>Description</i>
1001	U.S. Patent No. 10,531,443 (the "'443 Patent")
1002	Select portions of prosecution history of the '443 Patent ("File History")
1003	Declaration of Petitioners' Expert Dr. Mark P. Mahon
1004	U.S. Pat. No. 11,206,108 ("Wang")
1005	U.S. Pat. No. 11,012,221 ("Yang")
1006	Chinese Pat. App. 201710288177.X ("Wang Foreign Priority Application")
1007	English translation of the Wang Foreign Priority Application
1008	U.S. Provisional Pat. App. 62/501,048 ("'048 Application")
1009	English translation of the '048 Application
1010	U.S. Pat. No. 10,735,170 ("'170 Patent")
1011	U.S. Pat. No. 8,223,712 ("'712 Patent")
1012	U.S. Pat. No. 9,344,259 ("'259 Patent")
1013	Expert Report of Regis (Bud) Bates Regarding Infringement Of U.S. Pat. Nos. 10,531,443; 11,019,557; 10,785,764; and 10,601,566 (excerpted), <i>Active Wireless Techs, LLC v. T-Mobile</i> , Case No. 2:23-cv-00261-JRG (E.D. Tex)

On October 25, 2024, PO served its expert report on infringement that takes a claim interpretation contrary to the POPR positions regarding the scheduled “downlink shared channel (PDSCH).” EX-1001, 2:43-44. The disputed term is: “corresponding to the **PDSCH which is scheduled in a** [common] [UE-specific] **search space** [(CSS)] [(USS)].” Pet. elements [3.3], [3.4]; POPR, §§VI.A.1-2, VI.B.1-2. Per PO’s competing interpretations, this term can be interpreted two ways: (1) the PDSCH itself is transmitted in a search space (CSS/USS) (*i.e.*, is “scheduled” or “allocated” to transmit in a search space); or (2) PDCCH transmits in a search space and carries control information to schedule / allocate PDSCH.

The Petition used interpretation #2. The POPR argued that the prior art failed because it shows that the PDCCH that is used to schedule the PDSCH is transmitted in a search space; as opposed to transmitting the PDSCH in a search space, which would be consistent with interpretation #1. PO’s POPR arguments are directly contrary to its position in the Related Litigation, where its position has changed over time. Most recently, PO’s expert in the Related Litigation offered opinions consistent with interpretation #2:

a PDCCH monitored in a search space set (CSS / USS) carrying control information such as scheduling decisions for the PDSCH meets the claim limitation of “PDSCH which is scheduled in a common search space” or “PDSCH which is scheduled in a UE-specific search space.”

EX-1013, ¶¶224-225. In other words, PO’s expert now reads schedule in a search space to refer to the PDCCH used for the scheduling, rather than the

transmission of the PDSCH that is scheduled. Based on PO's litigation position, the Board should reject the PO's contrary arguments in the POPR. POPR, §§VI.A.1-2, VI.B.1-2.

The **Petition** explained that “Downlink Control Information (DCI) is transmitted through the PDCCH and includes information about the DL-SCH resource allocation.” Pet., §IV.F.3. The Petition explained that the PDCCH is monitored in common and UE-specific search spaces. *E.g.*, Pet, §IV.F.4 (“control region is sub-divided into common and UE-specific search spaces which the UE should monitor (attempt to decode each of the PDCCHs)”).

The Petition-cited prior art identifies that DCI/PDCCH is in search spaces. *See, e.g.*, Pet., §VII.A.2.a.[3.3], (quoting EX-1004, 12:50-57 (“the single bit HARQ-ACK feedback method is adopted by the DCI in the common search space (CSS) fixedly”)); §VII.A.2.a.[3.4], (quoting EX-1004, EX-1004, 12:55-57 (“the multi-bit HARQ-ACK feedback method is adopted by the DCI in a user-specific search space (USS) fixedly”)); §VII.B.2.a.[3.3], (quoting EX-1005, 38:1-6 (“**for DL/UL data .. transmission scheduled through CSS** based DCI ... transmission”); §VII.B.2.a.[3.4], (quoting EX-1005, 37:63-38:1 (“**for DL/UL data transmission scheduled through DCI ... transmission based not on CSS but on USS**...”). Thus, the Petition consistently applies interpretation #2.

The **POPR** admitted that the prior art shows DCI / PDCCH in search spaces,

but argued the prior art was deficient for not showing PDSCH in the search spaces.

The Petition cites to a disclosure in the '048 Application that “the UE operates such that HARQ-ACK feedback corresponding to the PDSCH is reported to eNB using NACK” and “A/N feedback operation on a TB basis may be applied/set for DL/UL data ... transmissions scheduled via **CSS-based DCI transmissions**.” Pet. at 58 ... the Petition also assumes with no evidence that the disclosed **downlink data (DL data)** somehow corresponds to the PDSCH scheduled in a CSS.

POPR at 17. Thus, (1) PO admitted that DCI was in CSS [common search space] and scheduled the DL/UL data transmission (PDSCH) for which HARQ-ACK feedback occurred; but (2) PO argued that *PDSCH* was not “scheduled in a CSS.” PO repeated this argument in each substantive section. *E.g.*, POPR at 11 (arguing that Wang’s “DCI in a common search space” failed to disclose “PDSCH is scheduled in a common search space (CSS), as the claim requires”); 13-14 (arguing that Wang’s “DCI in a user-specific search space” failed to disclose “the PDSCH is scheduled in a user-specific search space, as the claim requires”); 18-19 (arguing that Yang’s “DCI ... based not on CSS but on USS” did not disclose “the PDSCH is scheduled in a user-specific search space (USS), as the claim requires”).

PO’s POPR conflicts with PO’s expert that “a PDCCH monitored in a search space set (CSS / USS) carrying control information such as scheduling decisions for the PDSCH meets the claim limitation.” EX-1013, ¶¶224-25. The Petition matches PO’s expert and the Board should therefore reject PO’s POPR arguments.

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 the 8th of November, 2024, a complete and entire copy of this Petition for *Inter Partes* Review of U.S. Patent No. 10,531,443 and all supporting exhibits were served via email and/or electronic download by agreement of Patent Owner, to the following address:

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