

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

Petitioners

v.

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

Case No. IPR2025-00293

Patent 10,009,161

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

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This Reply is responsive to Patent Owner’s Preliminary Response (Paper 13, “POPR”). The Board authorized the filing of this Reply in its email dated June 2, 2025.

I. ANALYSIS

The Petition presents compelling evidence of invalidity. PO asserts that the prior art does not teach or suggest the claimed “a different another code rate value ... is calculated to be 797 using ‘code rate $\times$ 1024’.” PO is wrong. As detailed below, both the Xia reference (EX1027) and the 3GPP 36.213 reference (EX1013) teach that the claimed set of four code rates would have been obvious given Xia’s express disclosure of two code rate endpoints (*i.e.*, 711 and 948) and Xia’s teachings for selecting two intervening code rates (*i.e.*, including the claimed 797) at “approximately” constant intervals between the disclosed endpoints.

A. Xia and 3GPP 36.213 Render the Claimed Set of Code Rates Obvious

PO asserts that Petitioners “ignore that the claimed 797 code rate is part of a set of claimed code rates, including claimed code rates of 711 and 948.” POPR, 3. PO is wrong. The Petition explains in detail why the code rate value of 797 would have been obvious. *See* Pet., 39-40 (“Xia’s selected endpoints for the new 256QAM CQI entries span the exact same range of code rate values as claimed in the ’161 Patent”). *See also id.*, 41 (“Xia teaches the same threshold 256QAM parameters—*i.e.*, the same number of entries (four) and the same minimum and maximum code

rate values (711, 948)"). Petitioners fully recognize the set of claimed code rates by emphasizing that "Xia teaches the same general approach" as the '161 Patent by teaching the set of claimed code rates as spanning "the *exact same* range of code rate values as claimed in the '161 Patent." Pet., 40. Thus, as explained in the Petition, both Xia and the '161 Patent recognize 711 and 948 as end points, and that strictly constant intervals between the intervening code rate values are not required between the endpoints of 711 and 948. *See* Pet., 40-41; EX1027, 84:18-31 ("approximately" constant intervals); EX1001, 14:3-8 (intervals are "almost the same"). Petitioners explain that Xia discloses *the same technique* of using approximately constant intervals as the '161 Patent. This comparison is not impermissible hindsight, but rather a demonstration of the similarity of Xia's disclosure with the '161 disclosure.

As explained in the Petition, "Xia teaches the same threshold 256QAM parameters—i.e., the same number of entries (four) and the same minimum and maximum code rate values (711, 948)". Pet., 41. The 711 and 948 endpoint code rate values are explicitly taught in Xia. Pet., 40, EX1027, 89:3, Table 6-3. As also explained in the Petition, "all that would remain is the non-critical selection of any two intervening values between 711 and 948 that 'approximate' constant intervals." Pet., 41. *See also id.*, 50 ("the two remaining (intervening) code rate values (only one of which is claimed) would necessarily fall within that range."). The evidence demonstrates that the 797 code rate is non-critical, is contemplated by the teaching

of using approximately constant spectral efficiency intervals taught by Xia, is within an acceptable tolerance of the disclosed 790 value, is a matter of obvious design choice, and is *prima facie* obvious given the closeness to the prior art code rate values to the claimed value. Pet., 41-47. PO's argument that Petitioners ignore that the claimed 797 code rate is part of a set of claimed code rates is therefore misplaced.

PO also asserts that Petitioners rely on "the incorrect premise that '[t]he '161 Patent does not explain how or why the 797 code rate was chosen for inclusion in its claimed CQI table'". POPR, 10-11 (citing Pet. 41; EX1008, ¶151). To challenge Petitioner's assertion, PO points to an excerpt in the '161 patent discussing an 'R' code rate value of 797, where "'R' values are determined so that differences of the required SNRs between adjacent CQI indexes are almost the same using required SNRs of FIG. 17 and Equation 2." POPR, 11 (citing EX1001, 14:7-11). As explained above, Xia discloses the same methodology of using approximate intervals between CQI values. Pet., 40-41; *see id.*, 39-47. The '161 Patent describes the only reasoning for selecting the code rate value as a function of a known process for selecting CQI values: setting equal intervals between CQI entries. *See* Pet., 41.

B. The Grounds Are Supported by Prior Art Evidence

PO asserts Petitioners rely on references in violation of §311(b). POPR, 12. PO is wrong. The Grounds expressly name prior art patents and printed publications (EX1027, EX1013) which are sufficient to support the bases for unpatentability

without reliance on non-prior art documentary evidence. Pet., 8. The non-prior art evidence (EX1028, EX1030) cited in the Petition, while not essential, further demonstrates the obviousness of the Challenged Claims, as explained in the Petition. *See Yeda Research & Dev. Co. v. Mylan Pharm. Inc.*, 906 F.3d 1031, 1041 (Fed. Cir. 2018) (“non-prior art evidence of what was known ... ‘can be relied on for their proper supporting roles, e.g., indicating the level of ordinary skill in the art, what certain terms would mean to one with ordinary skill in the art, and how one with ordinary skill in the art would have understood a prior art disclosure.’”). Contrary to PO’s assertions, Section 311(b) does not preclude use of non-prior art evidence. *Id.* As explained in the Petition, EX1028 and EX1030 demonstrate how selection of a 797 code rate value would have been obvious given that other code rate values were equally viable and the specific selection of 797 was non-critical given the art’s teaching of “approximately” constant intervals. Pet., 42-43.

PO asserts that Petitioners do not address the prior art status of all documents relied upon, including EX1028 and EX1030. POPR, 11. However, PO misses the point. As stated, EX1028 and EX1030 are cited as supporting evidence. EX1028 and EX1030 demonstrate that a person having ordinary skill in the art would have been motivated to use equal SINR intervals between CQI entries (as taught in Xia), and that doing so could result in multiple viable code rate values, none of which were critical to the CQI table which the ’161 Patent is directed to. Pet., 45-46.

PO also mischaracterizes Petitioners' expert's statement that EX1030 is "not prior art." POPR, 2. *See* EX1008, ¶162. Petitioners' expert stated "R1-142638 (EX1030), although not prior art, demonstrates that the selected code rate value of 797 had no criticality to the use and standardization of the CQI table." EX1008, ¶162. Petitioners' expert's statements are entirely consistent with Petitioners' purpose of citing EX1030 in a supporting role. *Yeda*, 906 F.3d at 1041. Petitioners rely on the prior art to demonstrate a reasonable expectation of success in employing the 797 code rate in Xia's design, and Petitioners do not need to rely on non-prior art for this purpose. Pet., 47.

Pursuant to the Director's Memorandum dated March 26, 2025, Petitioners explained why discretionary denial is inappropriate in their Opposition to Patent Owner's Request for Discretionary Denial filed June 2, 2025.

II. CONCLUSION

Petitioners have shown a reasonable likelihood of success on the merits. Therefore, the Board should institute trial.

Date: June 16, 2025

Respectfully submitted,

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APPENDIX A - LIST OF EXHIBITS

Exhibit No.	Description
1001	U.S. Patent No. 10,009,161, issued on June 26, 2018 (“the ’161 Patent”)
1008	Declaration of Sumit Roy
1013	3GPP TS 36.213 v10.4.0 (2011-12) 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (Release 10)
1027	Certified English translation of PCT International Publication WO 2014/194681 to Xia et al.
1028	3GPP TSG RAN WG1 Meeting #77, R1-142638, WF on 256QAM CQI table design, Seoul, Korea 19 th -23 rd May 2014 (“R1-142638”)
1030	3GPP TSG RAN WG1 Meeting #76bis, R1-141366, Shenzhen, China, 31 st March-4 th April, 2014 (“R1-141366”)

CERTIFICATE OF SERVICE

The undersigned hereby certifies that on this 16th day of June, 2025, a true and correct copy of the foregoing **PETITIONERS' REPLY TO PATENT OWNER'S PRELIMINARY RESPONSE** is being served via electronic mail upon counsel for Patent Owner as follows:

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