

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
17 July 2025 (17.07.2025)



(10) International Publication Number
WO 2025/147902 A1

- (51) International Patent Classification:
H04L 5/00 (2006.01) *H04B 7/04* (2017.01)
- (21) International Application Number:
PCT/CN2024/071588
- (22) International Filing Date:
10 January 2024 (10.01.2024)
- (25) Filing Language: English
- (26) Publication Language: English
- (71) Applicant: **LENOVO (BEIJING) LIMITED** [CN/CN]; 6 Shangdi West Road, Haidian District, Beijing 100085 (CN).
- (72) Inventors: **ZHANG, Yi**; Lenovo Hq East, Building No.1, No.10 Xibeiwang East Road, Haidian District, Beijing 100094 (CN). **ZHU, Chenxi**; Building 1, 10 East Xibeiwang Rd, Haidian District, Beijing 100094 (CN). **LIU, Bingchao**; Lenovo Hq East, Building No.1, No.10 Xibeiwang East Road, Haidian District, Beijing 100094 (CN).

(74) Agent: **LEE AND LI-LEAVEN IPR AGENCY LTD.**;
Unit 2202, Tower A, Beijing Pudi Hotel, No. 7, Jian Guo Men South Avenue, Dongcheng District, Beijing 100005 (CN).

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST,

(54) Title: METHODS AND APPARATUSES FOR ENHANCED TYPE I MULTI-PANEL CODEBOOK

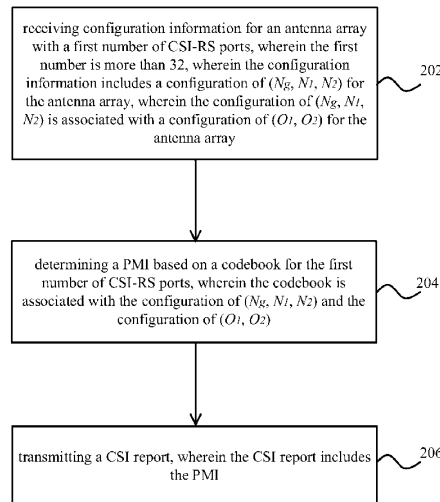


Figure 2

(57) Abstract: Various aspects of the present disclosure relate to methods and apparatuses for enhanced Type I multi-panel codebook. According to an embodiment of the present disclosure, a user equipment can include: at least one memory; and at least one processor coupled with the at least one memory and configured to cause the UE to: receive configuration information for an antenna array with a first number of channel state information reference signal (CSI-RS) ports, wherein the first number is more than 32, wherein the configuration information includes a configuration of (N_g, N_1, N_2) for the antenna array, wherein the configuration of (N_g, N_1, N_2) is associated with a configuration of (O_1, O_2) for the antenna array; determine a precoding matrix indicator (PMI) based on a codebook for the first number of CSI-RS ports, wherein the codebook is associated with the configuration of (N_g, N_1, N_2) and the configuration of (O_1, O_2) ; and transmit a channel state information (CSI) report, wherein the CSI report includes the PMI.

[Continued on next page]

SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*