

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
13 March 2008 (13.03.2008)

PCT

(10) International Publication Number
WO 2008/030806 A2

(51) International Patent Classification:
H04B 7/06 (2006.01)

(21) International Application Number:
PCT/US2007/077536

(22) International Filing Date:
4 September 2007 (04.09.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/842,872 6 September 2006 (06.09.2006) US

(71) Applicant (for all designated States except US): **QUALCOMM Incorporated** [US/US]; 5775 Morehouse Drive, San Diego, California 92121 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **KIM, Byoung-Hoon** [KR/US]; 5775 Morehouse Drive, San Diego, California 92121-1714 (US).

(74) Agent: **BACHAND, Richard A.**; 5775 Morehouse Drive, San Diego, California 92121-1714 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

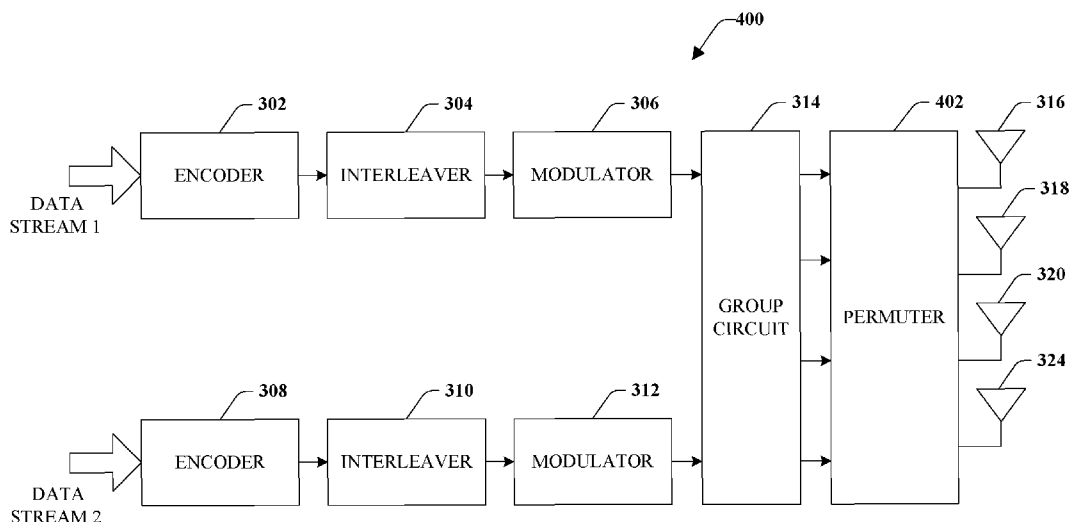
Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

- without international search report and to be republished upon receipt of that report

(54) Title: CODEWORD PERMUTATION AND REDUCED FEEDBACK FOR GROUPED ANTENNAS



(57) Abstract: Systems and methodologies are described that facilitate reducing feedback required to be transmitted on a reverse link channel in response to a forward link data transmission for multiple-input multiple-output (MIMO) wireless communication systems. In a per group rate control MIMO system, a codeword can be linked to more than one layer. Codewords are mixed among antennas in the MIMO systems based upon a symmetric permutation of antennas groups. Further, codewords are transmitted in permuted form so that receivers can reduce feedback to a base channel quality indicator (CQI) and a differential CQI. Additionally, spatial diversity is increased for each codeword improving the robustness of the system against inaccurate CQI reports.

WO 2008/030806 A2