

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
5 March 2009 (05.03.2009)

PCT

(10) International Publication Number
WO 2009/029511 A1

(51) International Patent Classification:
H04L 1/16 (2006.01) *H04L 27/34* (2006.01)

(74) Agent: **LEONARD, Robert, D.**; United Plaza, Suite 1600, 30 S. 17th Street, Philadelphia, PA 19103 (US).

(21) International Application Number:
PCT/US2008/073985

(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, 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, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(22) International Filing Date: 22 August 2008 (22.08.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/957,908 24 August 2007 (24.08.2007) US

(71) Applicant (*for all designated States except US*): **INTER-DIGITAL PATENT HOLDINGS, INC.** [US/US]; 3411 Silverside Road, Concord Plaza, Suite 105, Hagley Building, Wilmington, Delaware 19810 (US).

(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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **AGHILI, Behrouz** [SE/US]; 504 Court North Drive, Melville, New York 11747 (US). **RUDOLF, Marian** [DE/CA]; 525 Lucien L'Allies, Apt. 204, Montreal, Québec (CA). **CHITRAPU, Prabhakar, R.** [US/US]; 135 Brochant Drive, Blue Bell, Pennsylvania 19422 (US). **DICK, Stephen, G.** [US/US]; 61 Bobann Drive, Nesconset, New York 11767 (US).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(54) Title: METHOD AND APPARATUS FOR RELIABLY TRANSMITTING RADIO BLOCKS WITH PIGGYBACKED ACK/NACK FIELDS

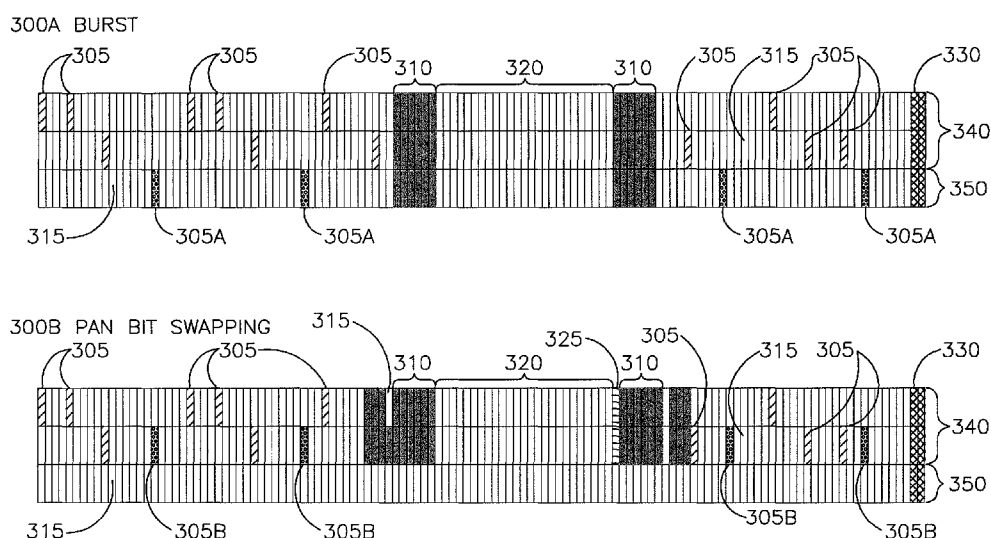


FIG. 3

(57) Abstract: Piggybacked acknowledgement/non-acknowledgement (PAN) bits in unreliable bit positions of a modulated symbol are swapped with data bits located in more reliable bit positions. In addition, a power offset value may be applied to the symbols containing the PAN bits.