

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
23 February 2006 (23.02.2006)

PCT

(10) International Publication Number
WO 2006/020434 A3

(51) International Patent Classification:
H04Q 7/00 (2006.01)

(21) International Application Number:

PCT/US2005/027061

(22) International Filing Date: 29 July 2005 (29.07.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/601,200 12 August 2004 (12.08.2004) US
11/082,286 17 March 2005 (17.03.2005) US

(71) Applicant (for all designated States except US): **INTER-DIGITAL TECHNOLOGY CORPORATION** [US/US]; 300 Delaware Avenue, Suite 527, Wilmington, DE 19801 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **OZLUTURK, Fatih** [US/US]; 70 Willowdale Avenue, Port Washington, NY 11050 (US). **PIETRASKI, Philip, J.** [US/US]; 7 Talbot Place, Huntington Station, NY 11746 (US). **BULTAN, Aykut** [TR/US]; 16-70 Bell Blvd., Apt. 515, Bayside, NY 11360 (US).

(74) Agent: **BALLARINI, Robert, J.**; Volpe and Koenig, P.C., United Plaza, Suite 1600, 30 South 17th Street, Philadelphia, PA 19103 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

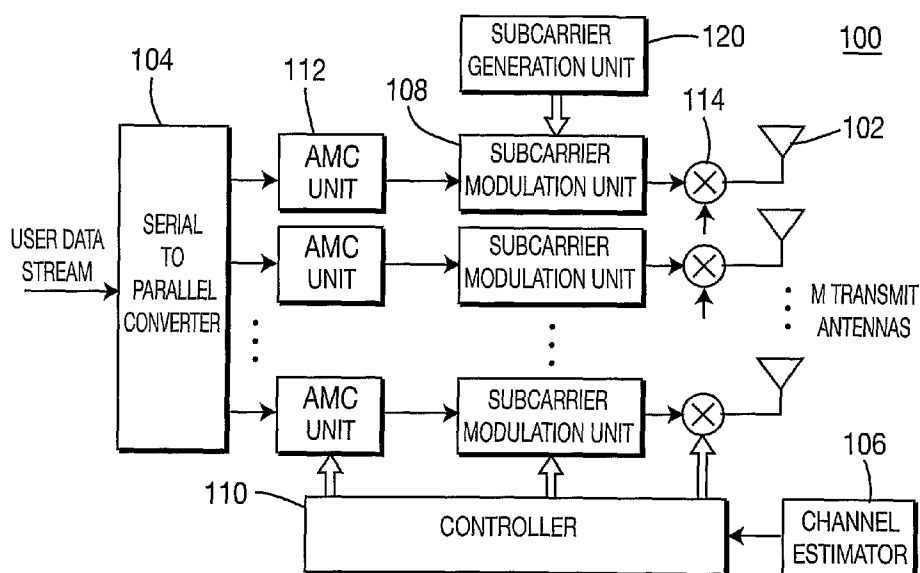
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, 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).

Published:

— with international search report

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR SUBCARRIER AND ANTENNA SELECTION IN MIMO-OFDM SYSTEM



(57) Abstract: A method and apparatus for radio resources control in a multiple input multiple output (MIMO) orthogonal frequency division multiplexing (OFDM) communication system are disclosed. Channel metric is calculated for each of a plurality of transmit antennas. Sub-carriers are allocated to each transmit antenna in accordance with the channel metric of each transmit antenna. Signals are transmitted using the allocated sub-carriers at each antenna. Adaptive modulation and coding and transmit power control of each sub-carrier may be further implemented in accordance with the channel metric. Power control may be implemented per antenna basis or per sub-carrier basis. In performing power control, a subset of transmit antennas may be selected and waterpouing may be applied only to the selected antennas. Waterpouing may be based on SNR instead of channel response.

WO 2006/020434 A3



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(88) Date of publication of the international search report:

6 July 2006