

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
19 July 2007 (19.07.2007)

PCT

(10) International Publication Number
WO 2007/081683 A3

(51) International Patent Classification:
H04L 12/28 (2006.01)

(21) International Application Number:
PCT/US2007/000027

(22) International Filing Date: 3 January 2007 (03.01.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/756,457 4 January 2006 (04.01.2006) US
60/796,176 29 April 2006 (29.04.2006) US
60/882,777 29 December 2006 (29.12.2006) US

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

(72) Inventors; and

(75) Inventors/Applicants (for US only): **GRANDHI, Sudheer A.** [US/US]; 1605 North James Street, Mamaroneck, New York 10543 (US). **SAMMOUR, Mohammed** [CA/CA]; 2555 Modugno, Apt. #705, Montreal, Québec H4R 2L5 (CA). **LEVY, Joseph, S.** [US/US]; 26 East Webster Street, Merrick, New York 11566 (US).

(74) Agent: **BALLARINI, Robert, J.**; VOLPE AND KOENIG, P.C., United Plaza, Suite 1600, 30 S. 17th Street, Philadelphia, Pennsylvania 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, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, 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.

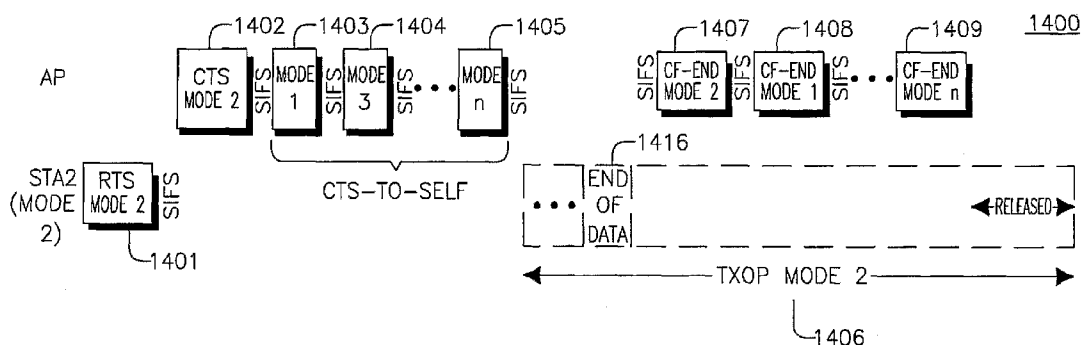
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, 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
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
7 February 2008

(54) Title: METHODS AND SYSTEMS FOR PROVIDING EFFICIENT OPERATION OF MULTIPLE MODES IN A WLAN SYSTEM



(57) Abstract: A method and system applies MAC transmission opportunity (TXOP) protection for multiple mode operation in a WLAN system. In particular, MAC mechanisms are defined to support multiple mode CTS frames, and multiple mode CF-End frames sent by the AP, each in a format appropriate for the corresponding mode which also applies to a single mode as a trivial case. MAC mechanisms permit truncation of TXOP duration for releasing the unused portion of the TXOP when no further data for transmission is available. Release of unused protected TXOP is possible for both protected AP transmissions and STA transmissions.