

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
10 November 2005 (10.11.2005)

PCT

(10) International Publication Number
WO 2005/106523 A1

(51) International Patent Classification⁷:
H04Q 7/20

G01S 5/14,

(74) Agents: WADSWORTH, Philip R. et al.; 5775 Morehouse Drive, San Diego, CA 92121 (US).

(21) International Application Number:

PCT/US2004/010307

(22) International Filing Date: 2 April 2004 (02.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US): QUALCOMM INCORPORATED [US/US]; 5775 Morehouse Drive, San Diego, CA 92121 (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, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

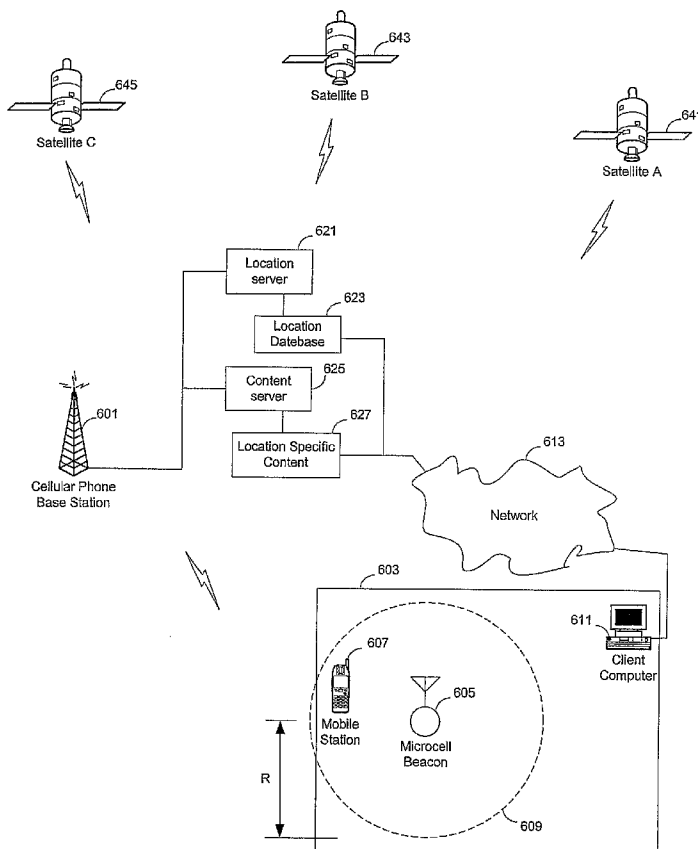
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL,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

[Continued on next page]

(72) Inventor; and

(75) Inventor/Applicant (for US only): WRAPPE, Thomas Keith [US/US]; 490 Santa Rosa Drive, Los Gatos, CA 95032 (US).

(54) Title: METHODS AND APPARATUSES FOR BEACON ASSISTED POSITION DETERMINATION SYSTEMS



(57) Abstract: Methods and apparatuses for microcell beacon assisted position determination. In one embodiment, microcell beacons that are based on low cost, mass market electronics for wireless local area data communication (e.g., Bluetooth or WiFi) are used to broadcast to mobile stations location information and/or identification information, which can be used to look up for the location information, to improve the precision of position solutions in a wide area position determination system (e.g., a GPS system, an AFLT system, or a hybrid system). In one embodiment, the location information and/or the identification information are site specific; and, the distribution and the transmission strength of the microcell beacons are adjusted to prevent misidentification. In one embodiment, the microcell beacons have the transmission capability but not the receiving capability for wireless local area data communication; and, the mobile station has the receiving capability but not the transmission capability for wireless local area data communication.

WO 2005/106523 A1



TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG).

Published:

— *with international search report*

Declaration under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a
patent (Rule 4.17(ii)) for all designations*

*For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*