

08/01/03
2003000155

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
17 January 2002 (17.01.2002)

PCT

(10) International Publication Number
WO 02/05384 A1

- (51) International Patent Classification⁷: **H01Q 13/10** (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, 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, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (21) International Application Number: PCT/IL01/00626
- (22) International Filing Date: 9 July 2001 (09.07.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/217,021 11 July 2000 (11.07.2000) US
09/649,023 28 August 2000 (28.08.2000) US
- (71) Applicant (for all designated States except US): **IN4TEL LTD.** [IL/IL]; P.O. Box 12882, 60 Medinat Hayehudim Street, 46 733 Herzlia Pituah (IL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **MAOZ, Joseph** [IL/IL]; 23 Emek Bracha Street, 67 456 Tel Aviv (IL).
KADICHEVITZ, Michael [IL/IL]; 9 Klonimus Street, 62 644 Tel Aviv (IL).
- (74) Agent: **G. E. EHRLICH (1995) LTD.**; 28 Bezalel Street, 52 521 Ramat Gan (IL).
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, 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
- 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.*

WO 02/05384 A1

(54) Title: INTERNAL ANTENNAS FOR MOBILE COMMUNICATION DEVICES

(57) Abstract: A multi-band microwave antenna which is resonant and radiant at a high frequency band and at one or more lower frequency bands includes an electrically-conductive ground plane (103) on one face of a dielectric substrate (101); an electrically conductive strip line on the opposite face of the dielectric substrate; a curved slot (104) formed in the ground plane having a feed side (105) electromagnetically coupled to the feed end of the strip line, and a load side electromagnetically coupled to the load end of the strip line, such that the slot is resonant and radiant at the high frequency band; and a further electrical conductor (110) electrically connected to the ground plane to serve as a continuation thereof at the load side of the slot and electromagnetically coupled to the slot at the lower frequency bands such as to cause the slot to be resonant and radiant also at the lower frequency band or bands.



162162



ACTION