

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
19 February 2004 (19.02.2004)

PCT

(10) International Publication Number
WO 2004/015450 A1

(51) International Patent Classification⁷: **G01V 3/08**

(21) International Application Number:
PCT/AU2003/000995

(22) International Filing Date: 6 August 2003 (06.08.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2002950621 7 August 2002 (07.08.2002) AU

(71) Applicant (for all designated States except US): **J I PE-STON PTY LTD** [AU/AU]; 200 Beatty Road, ARCHER-FIELD, Queensland 4108 (AU).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **TIRKEL, Anatol, Zygmunt** [AU/AU]; 8 Cecil Street, EAST BRIGHTON, Victoria 3187 (AU). **GADEK, Jerzy, Fryderyk** [AU/AU]; 8 Cecil Street, EAST BRIGHTON, Victoria 3197 (AU).

(74) Agent: **FISHER ADAMS KELLY**; LEVEL 13, AMP PLACE, 10 EAGLE STREET, BRISBANE, Queensland 4000 (AU).

(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, 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.

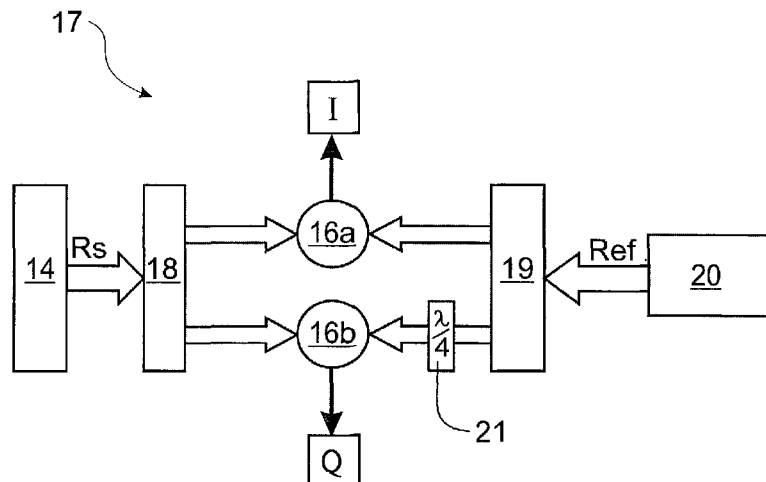
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

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.

(54) Title: NEAR-FIELD ANTENNA ARRAY WITH SIGNAL PROCESSING



(57) **Abstract:** Method and apparatus for extracting coherent information from in-phase (I) and quadrature (Q) signals. In a form, signals from an antenna array are mixed to form a plurality of I and Q signals that combined to form respective complex vectors. Each vector is adjusted in phase and magnitude to compensate for variations in field signal patterns, summed with other vectors, spatially and temporally filtered, and processed using spectral analysis algorithms to extract coherent spatial information. The coherent spatial information may be used to detect the presence, number and activity of insects within a structure in the near field of the antenna.

WO 2004/015450 A1