

CORRECTED VERSION

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
19 May 2005 (19.05.2005)

PCT

(10) International Publication Number
WO 2005/045459 A3

(51) International Patent Classification⁷: **G01S 3/48**

(21) International Application Number:
PCT/US2004/029998

(22) International Filing Date:
14 September 2004 (14.09.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/665,057 22 September 2003 (22.09.2003) US

(71) Applicant (for all designated States except US):
NORTHROP GRUMMAN CORPORATION?
[US/US]; 1840 Century Park East, Los Angeles, CA
90067-2199 (US).

(72) Inventor: **MARKS, Maury**; 3701 Irongate Lane, Bowie,
MD 20715 (US).

(74) Agent: **BERNER, Kenneth, M.**; Lowe Hauptman Gilman
& Berner, LLP, 1700 Diagonal Rd., Suite 300, Alexandria,
VA 22314 (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, 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, IT, LU, 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

(88) Date of publication of the international search report:
7 July 2005

(48) Date of publication of this corrected version:
12 January 2006

(15) Information about Correction:
see PCT Gazette No. 02/2006 of 12 January 2006, Sec-
tion II

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.

(54) Title: DIRECTION FINDING METHOD AND SYSTEM USING DIGITAL DIRECTIONAL CORRELATORS

(57) Abstract: In an interferometer system, a revolving antenna array is used to sufficiently resolve all ambiguities in determination of frequency and direction of arrival of a wave-front. The frequency and direction of arrival are determined by matching predicted phase difference codes with an actual code measured at the antenna array, utilizing a cross-correlation technique. The number of parameters that can be simultaneously uniquely determined by the system depends on if the antenna array is rotated in planar or conical surfaces, and if the cross-correlation is uni- or multi-dimensional. The antenna array may include more than one baselines to enhance the system sensitivity and finding capacity.

WO 2005/045459 A3