

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
6 May 2004 (06.05.2004)

PCT

(10) International Publication Number
WO 2004/038854 A3

(51) International Patent Classification⁷: **H01Q 21/06**,
13/02, H01P 3/12, 11/00

(21) International Application Number:
PCT/EP2003/013342

(22) International Filing Date: 27 October 2003 (27.10.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0224912.6 25 October 2002 (25.10.2002) GB

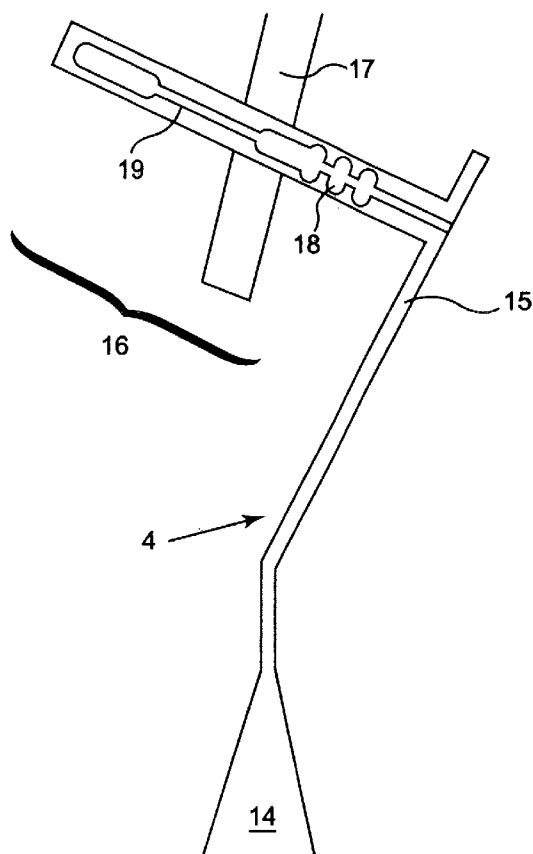
(71) Applicant (for all designated States except US): **AGENCE
SPATIALE EUROPEENNE** [FR/FR]; 8-10, rue Mario
Nikis, F-75738 Paris (FR).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **CASTIGLIONE,
Dario, Calogero** [GB/GB]; 33 Stanhope Road, Reading,
Berkshire RG2 7HW (GB). **DEIAS, Luisa** [IT/IT]; Via
Forlanini 28, I-09126 Cagliari (IT). **EDERRA-URZAIN-
QUI, Inigo** [ES/ES]; Burgiberria 37, 31417 Isaba (Navarra)
(ES). **HASKETT, David, Brian** [IE/IE]; 4 Groody Stu-
dent Park, Groody Roundabout, Castletroy, Limerick (IE).
JENKINS, Derek [GB/GB]; 56 Upthorpe Drive, Wantage,
Oxon OX12 7DG (GB). **LAISNE, Alexandre, Vincent,
Samuel, Bernard** [FR/FR]; 6 La Haguille, F-50300 Vains
(FR). **McCALDEN, Alec, John** [GB/GB]; 127 Kings
Road, Farncombe, Surrey GU7 3EU (GB). **O'NEILL,
James, Peter** [IE/GB]; 44 Welbeck Road, Sheffield S6
5AY (GB). **TENIENTE-VALLINAS, Jorge** [ES/ES];
C/Paseo Central, 23, E-31580 Lodosa (Navarra) (ES).
VAN DE WATER, Frank [NL/NL]; De Louw 9, NL-5583
GP Waalre (NL). **ZINN, Alfred, A.** [DE/DE]; Beethoven-
ring 90, 64342 Seeheim-Jugenheim (DE). **DE MAAGT,**

[Continued on next page]

(54) Title: SUB-MILLIMETRE WAVELENGTH CAMERA



(57) **Abstract:** The invention relates to an imaging device to be used with millimeter and/or sub-millimeter radiation comprising at least a pair of substrates, at least one of which is patterned on at least one surface with a patterning defining at least one radiation detector (4), each radiation detector comprising: - an antenna (14) adapted to receive millimetre and/or sub-millimeter electromagnetic radiation, - a mixer channel (16) coupled to said antenna and in communication with a via extending through a substrate for connection to a signal output, a mixer comprising filters (15, 19) being mounted in the mixer channel for extracting an intermediate frequency signal in dependence upon said radiation received by the antenna. - a waveguide structure (17) coupled to said mixer and having a signal input for connection to a local oscillator.



Peter [NL/NL]; Zeewinde 45, NL-2224 GL Katwijk (NL).
MANN, Chris [GB/GB]; Lanherne Cottage, St Mawgan,
Cornwall TR8 4ET (GB).

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).

(74) **Agents:** CABINET ORES et al.; 36, rue de St Peters-
bourg, F-75008 Paris (FR).

Declaration under Rule 4.17:

— *as to the applicant's entitlement to claim the priority of the
earlier application (Rule 4.17(iii)) for all designations*

(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, 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, 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.

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*

(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,

(88) **Date of publication of the international search report:**

17 June 2004

*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.*