



(51) International Patent Classification:

G01S 7/03 (2006.01) G01S 7/02 (2006.01)
G01S 13/10 (2006.01) G01S 13/02 (2006.01)
G01S 13/34 (2006.01) G01S 7/00 (2006.01)
G01S 13/87 (2006.01)

(21) International Application Number:

PCT/US2012/071856

(22) International Filing Date:

27 December 2012 (27.12.2012)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/581,967 30 December 2011 (30.12.2011) US
13/724,572 21 December 2012 (21.12.2012) US

(71) Applicant: FLIR SYSTEMS, INC. [US/US]; 27700 SW Parkway Ave., Wilsonville, Oregon 97070 (US).

(72) Inventors: JOHNSON, Stuart; Raymarine UK, Marine House, 5 Harbourgate Southampton Road, Portsmouth Hampshire PO6 4BQ (GB). JALES, Richard; Raymarine UK, Marine House, 5 Harbourgate Southampton Road, Portsmouth Hampshire PO6 4BQ (GB). MUDGE, Stuart; Raymarine UK, Marine House, 5 Harbourgate Southampton Road, Portsmouth Hampshire PO6 4BQ (GB). YEOMANS, Larry; Raymarine UK, Marine House, 5 Harbour-

gate Southampton Road, Portsmouth Hampshire PO6 4BQ (GB). FREEMAN, Chris; Raymarine UK, Marine House, 5 Harbourgate Southampton Road, Portsmouth Hampshire PO6 4BQ (GB). LAWTON, Stewart; Raymarine UK, Marine House, 5 Harbourgate Southampton Road, Portsmouth Hampshire PO6 4BQ (GB). TOSTEVIN, Steve; Raymarine UK, Marine House, 5 Harbourgate Southampton Road, Portsmouth Hampshire PO6 4BQ (GB).

(74) Agent: FOLSOM, Brent A.; Haynes and Boone, LLP, IP Docketing Department, 2323 Victory Avenue, Suite 700, Dallas, Texas 75219-7673 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,

[Continued on next page]

(54) Title: RADAR SYSTEM AND RELATED METHODS

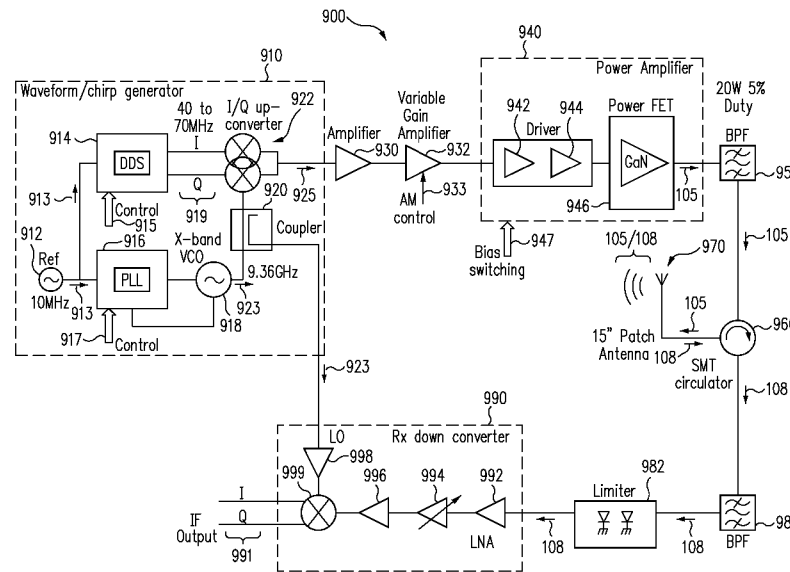


FIG. 9A

(57) Abstract: Various techniques are disclosed for providing a radar system. In one example, such a radar system includes a radar unit adapted to broadcast radar signals and receive return signals in response thereto. The radar unit includes a waveform generator adapted to provide the radar signals, a power amplifier adapted to amplify the radar signals for broadcast, an antenna adapted to broadcast the radar signals and receive the return signals, a signal directing device adapted to selectively direct the radar signals to the antenna and the return signals from the antenna, and a transmission interface adapted to transmit radar data based on the return signals from the radar unit to a base station. Other examples of radar systems and related methods are also provided.

WO 2013/147947 A3



TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

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

21 November 2013

Published:

— *with international search report (Art. 21(3))*

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/071856

A. CLASSIFICATION OF SUBJECT MATTER
 INV. G01S7/03 G01S13/10 G01S13/34 G01S13/87 G01S7/02
 G01S13/02 G01S7/00
 ADD.
 According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
 Minimum documentation searched (classification system followed by classification symbols)
 G01S
 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 7 170 440 B1 (BECKNER FREDERICK L [US]) 30 January 2007 (2007-01-30) abstract column 3, line 14 - line 26 column 4, line 34 - line 37 column 9, line 19 - line 20 column 1, line 64	1-28
X	----- US 2011/175765 A1 (CHEKROUN CLAUDE [FR] ET AL) 21 July 2011 (2011-07-21) figures 1,2a abstract paragraphs [0025], [0031] ----- -/--	1-28

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>
---	---

Date of the actual completion of the international search 20 September 2013	Date of mailing of the international search report 30/09/2013
--	--

Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Alberga, Vito
--	---

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/071856

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2 842 759 A (KENYON DAVID E) 8 July 1958 (1958-07-08) figures 1,2 column 1, line 27 - line 31 column 3, line 19 - line 25 column 11, line 59 - line 69 -----	1-28
X	US 4 158 840 A (SCHWAB CARL E) 19 June 1979 (1979-06-19) figure 1 abstract column 8, line 27 - line 30 column 11, line 45 - line 49 -----	1-28
X	US 3 146 442 A (FREDERICK HANSFORD REGINALD ET AL) 25 August 1964 (1964-08-25) figures 1,2 column 1, line 28 - line 37 -----	1-28

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/071856

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 7170440	B1	30-01-2007	CA 2619009 A1 05-07-2007
			US 7170440 B1 30-01-2007
			US 2007132630 A1 14-06-2007
			WO 2007075295 A2 05-07-2007

US 2011175765	A1	21-07-2011	CA 2705710 A1 22-05-2009
			EP 2217944 A1 18-08-2010
			FR 2923611 A1 15-05-2009
			JP 2011503597 A 27-01-2011
			US 2011175765 A1 21-07-2011
			WO 2009062946 A1 22-05-2009

US 2842759	A	08-07-1958	NONE

US 4158840	A	19-06-1979	IL 55818 A 31-12-1982
			US 4158840 A 19-06-1979

US 3146442	A	25-08-1964	DE 1223901 B 01-09-1966
			GB 932068 A 24-07-1963
			NL 273393 A 20-09-2013
			US 3146442 A 25-08-1964
