

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
2 October 2008 (02.10.2008)

PCT

(10) International Publication Number  
**WO 2008/117292 A3**

(51) International Patent Classification:

*G01S 5/02* (2006.01)      *G01S 11/14* (2006.01)  
*G01S 5/14* (2006.01)      *G06F 3/03* (2006.01)  
*G01S 5/30* (2006.01)      *G01S 1/00* (2006.01)  
*G01S 11/08* (2006.01)

(21) International Application Number:

PCT/IL2008/000432

(22) International Filing Date: 27 March 2008 (27.03.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/907,280      27 March 2007 (27.03.2007)      US

(71) Applicant (for all designated States except US): **EPOS TECHNOLOGIES LIMITED** [GB/GB]; Trident Chambers, P. O. Box 146, Road Town, Tortola, . (VG).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **ALTMAN, Nathan** [IL/IL]; 55 Bar-Ilan Street, 43700 Raanana (IL). **AGASSY, Meir** [IL/IL]; 13 Nordau Street, 52464 Ramat-gan (IL).

(74) Agents: **G.E EHRLICH (1995) LTD.** et al.; 11 Menachem Begin Street, 52521 Ramat Gan (IL).

(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, BR, BW, BY, BZ, CA, CH, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, 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, 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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL,

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR POSITIONING

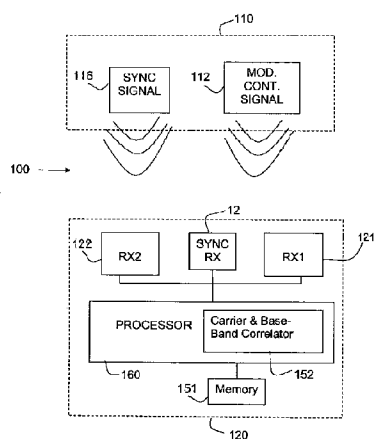


FIG. 1A

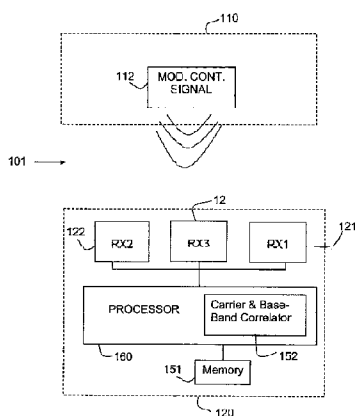


FIG. 1B

(57) Abstract: A system for small space positioning comprises a transmitting device, movable within an approximate range, configured for transmitting a modulated continuous wave, wherein the modulated continuous wave includes a carrier signal and a base-band signal, and a receiving unit configured for receiving signal (s) transmitted by the transmitting device and for determining a position of the transmitting device within the approximate range based on analysis of both the carrier signal and the base-band signal received from the transmitting device.



NO, PL, PT, RO, SE, SI, SK, 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*

**Published:**

— *with international search report*

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

31 December 2008

## INTERNATIONAL SEARCH REPORT

International application No

PCT/IL2008/000432

## A. CLASSIFICATION OF SUBJECT MATTER

INV. G01S5/02 G01S5/14 G01S5/30 G01S11/08 G01S11/14  
 G06F3/03 G01S1/00

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 G06F

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 practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 408 337 A (ZUTA MARC [GB]; ZUTA IDAN [IL]) 25 May 2005 (2005-05-25)	1,2,21, 27-29, 31-39, 57, 63-65, 67-71
Y	page 6 - page 9	3-6, 40-43
Y	page 24, lines 1-3	22-26, 58-62
X	DE 25 25 446 A1 (LICENTIA GMBH) 16 December 1976 (1976-12-16)  the whole document	1-3,30, 32,34, 36-40, 66,69,71

-/--

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*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)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*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

\*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

\*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.

\*&\* document member of the same patent family

Date of the actual completion of the international search:

12 November 2008

Date of mailing of the international search report

19/11/2008

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

Hirsch, Stefanie

## INTERNATIONAL SEARCH REPORT

International application No

PCT/IL2008/000432

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 7 026 992 B1 (HUNT KENNETH EDWARD [US] ET AL) 11 April 2006 (2006-04-11)  column 1, lines 29-44	1-3,7, 30,32, 34, 36-40, 44,66, 69,71
X	WO 00/28348 A (ELECTRONICS FOR IMAGING INC [US]) 18 May 2000 (2000-05-18) page 3, line 36 - page 4, line 19 page 7, line 27 - page 8, line 27 page 16, lines 11-24	1,2,32, 37-39
Y	US 3 526 895 A (MONTLIVALT JEAN-LOUIS HENRI F) 1 September 1970 (1970-09-01) the whole document	3-6, 40-43
Y	US 2005/150697 A1 (ALTMAN NATHAN [IL] ET AL) 14 July 2005 (2005-07-14)	22-26, 58-62
A	paragraphs [0282], [0283]	1-6,21, 27-43, 57,63-71
Y	WO 00/65530 A (BEN ARIE MORDECHAI [IL]) 2 November 2000 (2000-11-02)	22-26, 58-62
A	the whole document	1-6,21, 27-43, 57,63-71
A	WO 02/39139 A (FRAUNHOFER GES FORSCHUNG [DE]; COURONNE SYLVIE [DE]; KOEHLER STEFAN [D]) 16 May 2002 (2002-05-16) page 15, paragraph 2 - page 16, paragraph 1	34-36, 69-71
A	NONAKA H ET AL: "Ultrasonic position measurement and its applications to human interface" INSTRUMENTATION AND MEASUREMENT TECHNOLOGY CONFERENCE, 1994. IMTC/94. CONFERENCE PROCEEDINGS. 10TH ANNIVERSARY. ADVANCED TECHNOLOGIES IN I & M., 1994 IEEE HAMAMATSU, JAPAN 10-12 MAY 1994, NEW YORK, NY, USA, IEEE, 10 May 1994 (1994-05-10), pages 753-756, XP010121966 ISBN: 978-0-7803-1880-9 the whole document	1-6, 21-43, 57-71
A	US 3 848 254 A (DREBINGER K ET AL) 12 November 1974 (1974-11-12)  the whole document	1-6, 21-43, 57-71

-/--

## INTERNATIONAL SEARCH REPORT

International application No

PCT/IL2008/000432

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 006 594 A (SIEMENS AG [DE]) 9 January 1980 (1980-01-09)  the whole document	1-6, 21-43, 57-71
A	US 5 365 516 A (JANDRELL LOUIS H M [US]) 15 November 1994 (1994-11-15) column 38, line 33 - column 44, line 9	8-20, 45-56
A	DE 198 42 712 C1 (SIEMENS AG [DE]) 4 May 2000 (2000-05-04) the whole document	8-20, 45-56
A	DE 197 12 751 A1 (DEUTSCH ZENTR LUFT & RAUMFAHRT [DE]) 8 October 1998 (1998-10-08) figures 4-20	8-20, 45-56
A	WO 2004/048998 A (KONINKL PHILIPS ELECTRONICS NV [NL]; ROSENFELD JOSI [GB]) 10 June 2004 (2004-06-10) figure 2	8-20, 45-56
A	EP 1 345 465 A (NOKIA CORP [FI]) 17 September 2003 (2003-09-17) paragraph [0008]	8-20, 45-56
A	WO 01/59992 A (TIME DOMAIN CORP [US]) 16 August 2001 (2001-08-16) page 13, line 28 - page 17, line 14	8-20, 45-56

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IL2008/000432

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search reportcovers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-6, 21-43, 57-71

System for small space positioning of a transmitting device with a correlation receiver.

2. claims: 7-20, 44-56

Resolving ambiguity in multi-path environments.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IL2008/000432

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2408337	A	25-05-2005	US 2005110774 A1 US 2005110775 A1	26-05-2005 26-05-2005
DE 2525446	A1	16-12-1976	NONE	
US 7026992	B1	11-04-2006	EP 1707980 A1	04-10-2006
WO 0028348	A	18-05-2000	AT 328289 T AU 741604 B2 AU 6297199 A BR 9906838 A CA 2316799 A1 DE 69931602 T2 EP 1046055 A1 JP 2002529746 T US 6414673 B1	15-06-2006 06-12-2001 29-05-2000 17-10-2000 18-05-2000 02-11-2006 25-10-2000 10-09-2002 02-07-2002
US 3526895	A	01-09-1970	DE 1773287 B1 FR 1528755 A GB 1221108 A JP 48041397 B NL 6805928 A	09-09-1971 14-06-1968 03-02-1971 06-12-1973 28-10-1968
US 2005150697	A1	14-07-2005	NONE	
WO 0065530	A	02-11-2000	AU 3986400 A	10-11-2000
WO 0239139	A	16-05-2002	AT 266872 T AU 1599402 A CA 2424978 A1 DE 10055289 A1 EP 1314048 A1 JP 2004513372 T US 2004012524 A1	15-05-2004 21-05-2002 03-04-2003 29-05-2002 28-05-2003 30-04-2004 22-01-2004
US 3848254	A	12-11-1974	AT 330845 B CH 539856 A DE 2137846 A1 FR 2148089 A1 GB 1362343 A IT 963373 B NL 7210127 A	26-07-1976 31-07-1973 08-02-1973 11-03-1973 07-08-1974 10-01-1974 30-01-1973
EP 0006594	A	09-01-1980	DE 2829558 A1	24-01-1980
US 5365516	A	15-11-1994	AU 659869 B2 AU 2466792 A AU 3032295 A BR 9206372 A CA 2115251 A1 EP 0677198 A1 JP 7502153 T WO 9304453 A1 US 5526357 A	01-06-1995 16-03-1993 30-05-1996 30-05-1995 17-02-1993 18-10-1995 02-03-1995 04-03-1993 11-06-1996
DE 19842712	C1	04-05-2000	JP 3380499 B2 JP 2000101480 A US 6532255 B1	24-02-2003 07-04-2000 11-03-2003

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IL2008/000432

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
DE 19712751	A1	08-10-1998	FR	2761479 A1	02-10-1998
			US	6236673 B1	22-05-2001
WO 2004048998	A	10-06-2004	AT	327518 T	15-06-2006
			AU	2003278506 A1	18-06-2004
			CN	1717594 A	04-01-2006
			DE	60305525 T2	05-04-2007
			EP	1567886 A1	31-08-2005
			JP	2006507750 T	02-03-2006
EP 1345465	A	17-09-2003	FI	20020470 A	14-09-2003
			US	2003198258 A1	23-10-2003
WO 0159992	A	16-08-2001	AU	3328201 A	20-08-2001
			EP	1258106 A2	20-11-2002
			US	2006135149 A1	22-06-2006
			US	7027425 B1	11-04-2006
			US	2005018640 A1	27-01-2005