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(71) Applicant (for all designated States except US): **ARIEL-UNIVERSITY RESEARCH AND DEVELOPMENT COMPANY, LTD.** [IL/IL]; Building 3A, Kiryat Hamada Ariel University Center of Samaria, 40700 Ariel (IL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BEN-MOSHE, Boaz** [IL/IL]; 18 Shalom Aleichem Street, 46703 Herzliya (IL).

LEVI, Harel [IL/IL]; 28 Bazel Street, 62744 Tel Aviv (IL).

(74) Agent: **GUR, Erez**; POB 1372, Weizman Street, 44113 Kfar Saba (IL).

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[Continued on next page]

(54) Title: METHODS, DEVICES, AND USES FOR CALCULATING A POSITION USING A GLOBAL NAVIGATION SATELLITE SYSTEM

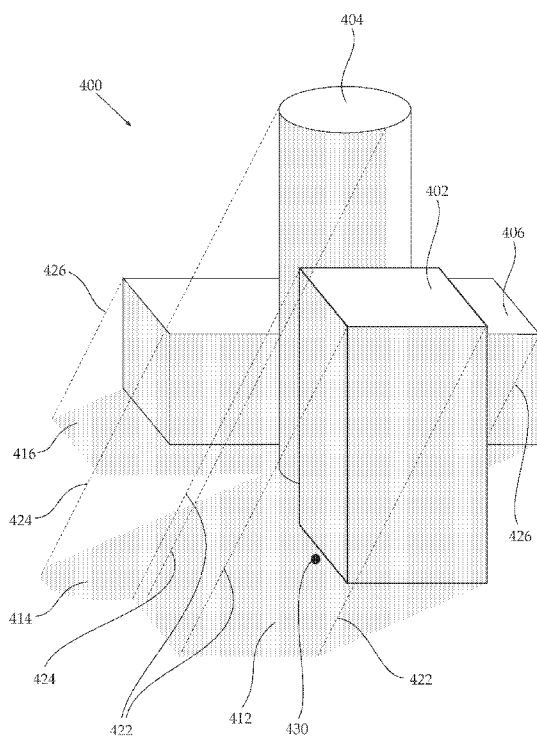


FIGURE 4

(57) Abstract: The invention, in some embodiments, relates to the field of global navigation satellite systems, and more particularly to the field of methods and devices for improving accuracy of position determination by receivers of global navigation satellite systems. Some embodiments of the invention relate to methods for generating a three-dimensional (3-D) representation of an urban area by a receiver of a global navigation satellite system using blocked lines of sight to satellites of the system. Additional embodiments of the invention relate to methods for transmitting a three-dimensional (3-D) representation of an urban area by a receiver of a global navigation satellite system for improving calculation of location by the global navigation satellite system receiver.



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
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INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2011/055899

A. CLASSIFICATION OF SUBJECT MATTER

INV. G01S19/28 G01S19/50 G01C21/00 G01S19/40
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 G01C

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)

EP0-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.
A	US 2010/079332 A1 (GARIN LIONEL JACQUES [US]) 1 April 2010 (2010-04-01) paragraphs [0147] - [0148]; figures 16-18 -----	1,25
A	US 2008/129598 A1 (GODEFROY BAPTISTE [FR] ET AL) 5 June 2008 (2008-06-05) the whole document -----	1,25
A	US 2009/179796 A1 (CHEN KUN-TSO [TW]) 16 July 2009 (2009-07-16) the whole document -----	1,25



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 application or patent but published on or after the international filing date

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"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

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"&" document member of the same patent family

Date of the actual completion of the international search

2 May 2012

Date of mailing of the international search report

11/01/2013

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

Kern, Olivier

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2011/055899

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010079332 A1	01-04-2010	CN 102165330 A EP 2342577 A1 JP 2012503775 A KR 20110063566 A TW 201022705 A US 2010079332 A1 WO 2010036661 A1	24-08-2011 13-07-2011 09-02-2012 10-06-2011 16-06-2010 01-04-2010 01-04-2010
US 2008129598 A1	05-06-2008	AT 475105 T CA 2593470 A1 CN 101099090 A EP 1836507 A1 FR 2880693 A1 JP 2008527364 A US 2008129598 A1 WO 2006075116 A1	15-08-2010 20-07-2006 02-01-2008 26-09-2007 14-07-2006 24-07-2008 05-06-2008 20-07-2006
US 2009179796 A1	16-07-2009	NONE	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2011/055899

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 all searchable 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 report covers 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.:

1-48

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: 1-48

improving the position determination

2. claims: 49-74

creating a three dimensional representation of terrestrial objects

3. claims: 75-83

providing of aiding data to a GNSS receiver.
