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(54) Title: ELECTRONIC COUNTER MEASURE SYSTEM

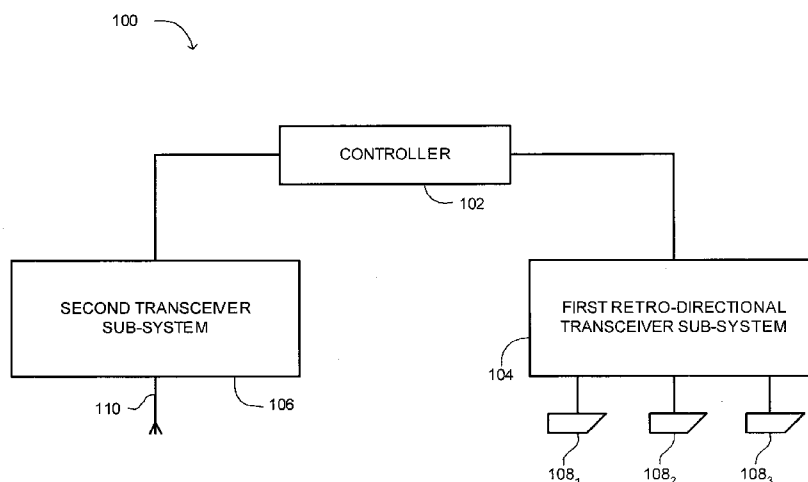


FIG. 1

(57) Abstract: A tactical electronic counter measure system comprising a first retro-directional transceiver sub system, receiving signals at a first frequency band, and first retro-directional transceiver re transmitting a signal at least substantially toward the direction from which the sources signal was received, and first retro directional transceiver sub system including a plurality of blade antennas and a controller, coupled with and first retro-directional transceiver, and controller controlling the activity of and first retro directional transceiver sub system, and controller further managing the missions of and first retro directional transceiver sub system.

INTERNATIONAL SEARCH REPORT

International application No
PCT/IL2011/000292

A. CLASSIFICATION OF SUBJECT MATTER
INV. G01S7/38
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 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	US 6 297 762 B1 (LABITT BERNARD H [US]) 2 October 2001 (2001-10-02)	1,2,4
Y	column 1, lines 1-8,16-22 column 2, lines 33-61; figure 1 column 3, lines 55-60 column 4, lines 7-12,17-40	3,5-16
Y	----- US 2006/033655 A1 (QUIEVY DIDIER [FR]) 16 February 2006 (2006-02-16) paragraphs [0028], [0030]; figure 2	3
Y	----- GB 2 286 308 A (SECR DEFENCE [GB]) 9 August 1995 (1995-08-09)	5-13
A	the whole document ----- -/-	1-4, 14-16



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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"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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Date of the actual completion of the international search

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Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 898 174 A1 (FUJITSU LTD [JP]) 24 February 1999 (1999-02-24) paragraphs [0057] - [0058]; figure 4 -----	14-16
A	US 5 623 270 A (KEMPKES MICHAEL A [US] ET AL) 22 April 1997 (1997-04-22) column 3, lines 37-63; figure 2 -----	1-16
A	EP 1 760 488 A1 (FUJITSU TEN LTD [JP]) 7 March 2007 (2007-03-07) paragraph [0030]; figure 1 -----	14-16
A	US 5 781 845 A (DYBDAL ROBERT B [US] ET AL) 14 July 1998 (1998-07-14) column 6, lines 51-54; figure 3 column 4, lines 62-66 -----	20-24
A	EP 2 131 508 A2 (BOEING CO [US]) 9 December 2009 (2009-12-09) paragraphs [0013], [0021]; figures 1,2a -----	20-24
A	WO 2009/140032 A1 (RAYTHEON CO [US]; BAKER DAVID W [US]; LO CHESTER [US]; ROBERTSON RALST) 19 November 2009 (2009-11-19) paragraph [0022]; figures 1-2 -----	20-24
A	US 2007/080847 A1 (GOUNALIS ANTHONY J [US]) 12 April 2007 (2007-04-12) cited in the application figure 1, -----	1-16
A	US 4 472 719 A (HILLS RICHARD A [US]) 18 September 1984 (1984-09-18) cited in the application the whole document -----	1-16

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL2011/000292

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.:

1-16, 20-24
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: 1-16

A tactical electronic counter measure system including multiple retro-directional transceiver sub-systems, which re-transmitt amplified phase shifted signals through transceiver dedicated antennas, whereby the phase shifts between the signals are determined by means of a relative phase determinator, which determines the relative phase shift between the receivers of a reference transceiver module and each of the remaining other transceiver modules.

2. claims: 17-19

A retro-directional tactical electronic counter measure system is packaged within an aerodynamic container attachable to an aircraft.

3. claims: 20-24

A retro-directional tactical electronic counter measure system integrating a second transceiver sub-system, said which includes a communication and RADAR digital transceiver and a second communication transceiver.

4. claims: 25-30

A tactical electronic counter measure system comprising a communication and RADAR digital transceiver and a first band communication transceiver thereby integrating RADAR jamming and communication jamming into one system.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IL2011/000292

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6297762	B1	02-10-2001	NONE
US 2006033655	A1	16-02-2006	WO 2004053517 A1 24-06-2004 EP 1570292 A1 07-09-2005 FR 2848302 A1 11-06-2004
GB 2286308	A	09-08-1995	NONE
EP 0898174	A1	24-02-1999	JP 3597678 B2 08-12-2004 JP 11064485 A 05-03-1999 US 5940029 A 17-08-1999
US 5623270	A	22-04-1997	NONE
EP 1760488	A1	07-03-2007	CN 1898578 A 17-01-2007 WO 2005124388 A1 29-12-2005 KR 20060087606 A 02-08-2006 US 2007052581 A1 08-03-2007
US 5781845	A	14-07-1998	NONE
EP 2131508	A2	09-12-2009	JP 2009296580 A 17-12-2009 US 2009303126 A1 10-12-2009
WO 2009140032	A1	19-11-2009	EP 2274638 A1 19-01-2011 US 2009323782 A1 31-12-2009
US 2007080847	A1	12-04-2007	US 2004130478 A1 08-07-2004
US 4472719	A	18-09-1984	NONE