

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 85423765PCT01	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/EP2017/069547	International filing date (<i>day/month/year</i>) 2 August 2017 (02-08-2017)	(Earliest) Priority Date (<i>day/month/year</i>)
Applicant HUAWEI TECHNOLOGIES CO , LTD		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of:

- the international application in the language in which it was filed
 a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. **Certain claims were found unsearchable** (See Box No. II)

3. **Unity of invention is lacking** (see Box No III)

4. With regard to the **title**,

- the text is approved as submitted by the applicant
 the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- the text is approved as submitted by the applicant
 the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 3a

- as suggested by the applicant
 as selected by this Authority, because the applicant failed to suggest a figure
 as selected by this Authority, because this figure better characterizes the invention

b. none of the figures is to be published with the abstract

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/069547

A. CLASSIFICATION OF SUBJECT MATTER
 INV. G02C7/08 G02C7/14 G02C11/00
 ADD. G02B27/01

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)
 G02C G02B

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 2007/046887 A1 (HOWELL THOMAS A [US] ET AL) 1 March 2007 (2007-03-01)	1-4,7-16
Y	figures 3K, 4,5, 11B, 12B, 12C paragraphs [0086], [0087], [0169]	5,6
X	US 6 474 808 B1 (BETTINGER DAVID S [US]) 5 November 2002 (2002-11-05)	1-16
Y	figures 1,2,4,6 column 4, lines 25-35	5,6
X	US 2012/127420 A1 (BLUM RONALD D [US] ET AL) 24 May 2012 (2012-05-24)	1-4,7-16
A	paragraphs [0069], [0253], [0276] figure 3	5,6
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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

"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	Date of mailing of the international search report
12 April 2018	20/04/2018

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 de Lajarte, Gilles
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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/069547

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 2012/249797 A1 (HADDICK JOHN D [US] ET AL) 4 October 2012 (2012-10-04)	1-4,7-16
Y	figure 21 paragraph [0137]	5,6
X	----- US 4 806 011 A (BETTINGER DAVID S [US]) 21 February 1989 (1989-02-21) figures 1,2,6 claim 6	1-16
A	----- US 1 879 516 A (JOHN ROWAN) 27 September 1932 (1932-09-27) figures 1, 2	1
A	----- US 2015/279254 A1 (ZHENG XIAOPAN [CN] ET AL) 1 October 2015 (2015-10-01) figures 20C, 21B, 22B	1
X	----- WO 2016/044612 A1 (GEN NINE INC) 24 March 2016 (2016-03-24) figure 1 paragraphs [0028], [0050]	1
A	----- US 6 057 966 A (CARROLL DAVID W [US] ET AL) 2 May 2000 (2000-05-02) figures 3, 29	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/EP2017/069547

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007046887	A1	01-03-2007	NONE
US 6474808	B1	05-11-2002	NONE
US 2012127420	A1	24-05-2012	NONE
US 2012249797	A1	04-10-2012	NONE
US 4806011	A	21-02-1989	NONE
US 1879516	A	27-09-1932	NONE
US 2015279254	A1	01-10-2015	CN 104950437 A 30-09-2015 DE 102014019628 A1 01-10-2015 US 2015279254 A1 01-10-2015
WO 2016044612	A1	24-03-2016	CN 107077173 A 18-08-2017 EP 3195081 A1 26-07-2017 US 2017248991 A1 31-08-2017 WO 2016044612 A1 24-03-2016
US 6057966	A	02-05-2000	NONE