

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 5607.599PC01	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2020/012151	International filing date (<i>day/month/year</i>) 3 January 2020 (03-01-2020)	(Earliest) Priority Date (<i>day/month/year</i>) 4 January 2019 (04-01-2019)
Applicant APPLE INC.		

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 3 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. 28
 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/US2020/012151

A. CLASSIFICATION OF SUBJECT MATTER
 INV. H04W72/04
 ADD. H04W16/14 H04W72/12 H04W88/06

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)
 H04W

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 A	US 2016/128130 A1 (SADEK AHMED KAMEL [US] ET AL) 5 May 2016 (2016-05-05) paragraphs [0026], [0030], [0045] - [0048]	1-11, 13-20 12
X	WO 2017/059184 A1 (SPIDERCLOUD WIRELESS INC [US]) 6 April 2017 (2017-04-06) paragraphs [0005], [0024], [0027]	1-3,5, 9-11, 13-15, 17,18,20
X	WO 2015/116789 A1 (INTEL IP CORP [US]) 6 August 2015 (2015-08-06) paragraphs [0026], [0031], [0060], [0097] - [0099]	1-3,6, 9-11, 13-15, 17,19,20

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 26 March 2020	Date of mailing of the international search report 02/04/2020
--	--

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 Weinmiller, Jost
--	--

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2020/012151

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2016128130	A1	05-05-2016	
		AU 2015338953 A1	13-04-2017
		BR 112017008598 A2	19-12-2017
		CN 107113626 A	29-08-2017
		EP 3205137 A1	16-08-2017
		JP 6445693 B2	26-12-2018
		JP 2017533656 A	09-11-2017
		KR 20170080586 A	10-07-2017
		US 2016128130 A1	05-05-2016
		WO 2016070114 A1	06-05-2016

WO 2017059184	A1	06-04-2017	
		US 2017099666 A1	06-04-2017
		WO 2017059184 A1	06-04-2017

WO 2015116789	A1	06-08-2015	
		CN 105850180 A	10-08-2016
		EP 3100508 A1	07-12-2016
		HK 1225898 A1	15-09-2017
		US 2015223075 A1	06-08-2015
		WO 2015116789 A1	06-08-2015
