



## SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application number:  
EP 18 76 36 45

**Classification of the application (IPC):**  
H04J 3/06, H04W 84/18, H04W 52/02, H04W 56/00, H04W 84/12

**Technical fields searched (IPC):**  
H04W

DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
X	US 2016192273 A1 (OREN ELAD [IL]) 30 June 2016 (2016-06-30)	1, 4, 7-15
Y	* paragraph [0037] *	2, 3, 5, 6
	* paragraphs [0060] - [0066] *	
	* figures 2, 4 *	
X	WO 2017030473 A1 (ERICSSON TELEFON AB L M [SE])	1, 11, 14
A	23 February 2017 (2017-02-23)	2-10, 12, 13, 15
	* page 2, lines 1-9 *	
	* page 4, lines 10-17 *	
	* page 9, line 37 - page 10, line 16 *	
	* page 12, lines 10-11 *	
	* page 12, line 30 - page 13, line 2 *	
	* page 14, lines 28-29 *	
	* page 15, lines 1-3 *	
	* figures 1, 2A, 3, 6, 7, 8 *	
Y	US 2016227543 A1 (FLAMMER III GEORGE H [US])	2, 3
A	04 August 2016 (2016-08-04)	1, 4-15
	* paragraphs [0046], [0047] *	
	* paragraphs [0058], [0059] *	
	* paragraphs [0066], [0067] *	
	* figures 1, 5, 7B, 9, 10D *	
Y	US 2013044658 A1 (ZHU HAIFENG [US] ET AL)	5, 6
A	21 February 2013 (2013-02-21)	1-4, 7-15
	* paragraphs [0036] - [0043] *	
	* paragraphs [0025] - [0026] *	
	* figures 3, 4, 6 *	

The supplementary search report has been based on the last set of claims valid and available at the start of the search.

Place of search The Hague	Date of completion of the search 01 December 2020	Examiner Wijting, Carl
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### CATEGORY OF CITED DOCUMENTS

X: particularly relevant if taken alone	P: intermediate document
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Application number:  
EP 18 76 36 45

### DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
A	US 8233456 B1 (KOPIKARE RAHUL [US] ET AL) 31 July 2012 (2012-07-31) * column 9, lines 20-62 * * column 10, lines 26-42 * * column 11, line 11 - column 12, line 2 * * figures 3, 4, 5 *	1-15

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Place of search The Hague	Date of completion of the search 01 December 2020	Examiner Wijting, Carl
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A: technological background	E: earlier patent document, but published on, or after the filing date
O: non-written disclosure	D: document cited in the application
& : member of the same patent family, corresponding document	L: document cited for other reasons

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**ANNEX TO SUPPLEMENTARY EUROPEAN  
SEARCH REPORT**

 Application number:  
EP 18 76 36 45

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on 01-12-2020  
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Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 2016192273	A1	30-06-2016	NONE		
WO2017030473	A1	23-02-2017	NONE		
US 2016227543	A1	04-08-2016	CN	107431910 A	01-12-2017
			EP	3251307 A1	06-12-2017
			US	2016226747 A1	04-08-2016
			US	2016227543 A1	04-08-2016
US 2013044658	A1	21-02-2013	CA	2845326 A1	21-02-2013
			CN	103918324 A	09-07-2014
			EP	2745582 A1	25-06-2014
			ES	2727789 T3	18-10-2019
			MX	338566 B	21-04-2016
			US	2013044658 A1	21-02-2013
			WO	2013025295 A1	21-02-2013
US 8233456	B1	31-07-2012	US	8233456 B1	31-07-2012
			US	8891492 B1	18-11-2014
			US	9374785 B1	21-06-2016