

INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2018/009995

A. CLASSIFICATION OF SUBJECT MATTER

G06K 9/00(2006.01)i, G06F 3/041(2006.01)i

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)

G06K 9/00; G06F 3/041; G06F 3/044; G06K 9/60

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
 Korean Utility models and applications for Utility models: IPC as above
 Japanese Utility models and applications for Utility models: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 eKOMPASS (KIPO internal) & Keywords: display, touch, fingerprint, recognition, sensor, pixel, drive signal, position, state

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KR 10-2015-0073539 A (SAMSUNG ELECTRONICS CO., LTD.) 01 July 2015 See paragraphs [0016]-[0017], [0036]-[0039]; claim 1; and figures 1, 5b.	1-15
Y	KR 10-2013-0057637 A (SAMSUNG ELECTRO-MECHANICS CO., LTD.) 03 June 2013 See paragraphs [0046]-[0048]; claim 8; and figures 2, 5.	1-15
A	KR 10-2016-0071887 A (LG ELECTRONICS INC.) 22 June 2016 See figures 2, 4.	1-15
A	US 9727156 B2 (SAMSUNG ELECTRONICS CO., LTD.) 08 August 2017 See figures 1-4, 5A-5C.	1-15
A	WO 2016-036304 A1 (FINGERPRINT CARDS AB.) 10 March 2016 See figures 1a, 3a-3b.	1-15

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	"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
"E" earlier application or patent but published on or after the international filing date	"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
"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)	"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
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	


Date of the actual completion of the international search

07 DECEMBER 2018 (07.12.2018)

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/KR2018/009995

Patent document cited in search report	Publication date	Patent family member	Publication date
KR 10-2015-0073539 A	01/07/2015	CN 106030471 A	12/10/2016
		EP 3087461 A1	02/11/2016
		EP 3087461 A4	23/08/2017
		US 2015-0177884 A1	25/06/2015
		WO 2015-099410 A1	02/07/2015
KR 10-2013-0057637 A	03/06/2013	US 2013-0135247 A1	30/05/2013
KR 10-2016-0071887 A	22/06/2016	CN 105704297 A	22/06/2016
		EP 3032385 A1	15/06/2016
		US 2016-0171281 A1	16/06/2016
		US 9547789 B2	17/01/2017
US 9727156 B2	08/08/2017	KR 10-2015-0099259 A	31/08/2015
		US 2015-0242696 A1	27/08/2015
		US 2017-0269752 A1	21/09/2017
WO 2016-036304 A1	10/03/2016	CN 105637533 A	01/06/2016
		CN 105637533 B	08/08/2017
		EP 3195195 A1	26/07/2017
		EP 3195195 A4	18/04/2018
		JP 2017-527907 A	21/09/2017
		KR 10-1821729 B1	24/01/2018
		KR 10-2017-0042291 A	18/04/2017
		US 2016-0063298 A1	03/03/2016
		US 9734379 B2	15/08/2017