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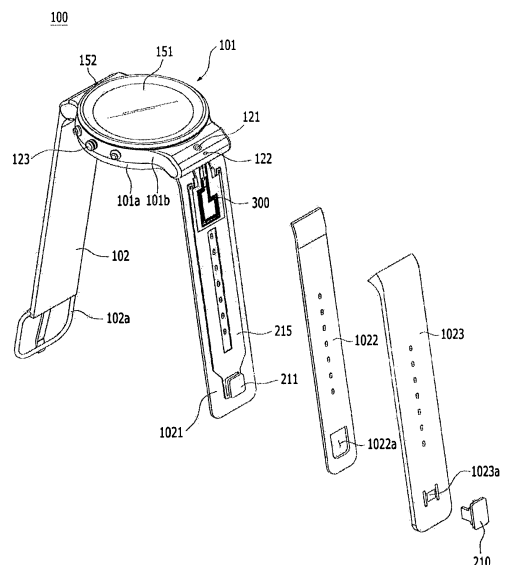
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(54) **WEARABLE TERMINAL**

(57) There is disclosed a wearable terminal including a main body, a main board provided in the main body, a first touch pad provided in a rear surface of the main body, a flexible board configured to connect the main body and the first touch pad to each other, a band coupled to the main body, wound around a user's wrist to secure the main body to the user's body part, a second touch pad provided in the other surface of one surface contacting with the user's body part when the user wears the band, a flexible board having one end connected to the second touch pad and the other end connected to the main board, and a controller configured to extract an electrocardiogram by measuring a difference of electric potentials of body muscles sensed from the first touch pad and the second touch pad.

FIG. 7



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EUROPEAN SEARCH REPORT

Application Number
EP 15 00 1597

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2010/076331 A1 (CHAN HSIAO-LUNG [TW] ET AL) 25 March 2010 (2010-03-25)	1-4,8-15	INV. A61B5/00 A61B5/0245 A61B5/0452 A61B5/117 H01Q1/27 H01Q21/28 G06F3/038 G06F3/0354 ADD. G06F21/32 G06K9/00 H01Q1/38 G04R60/04
Y	* abstract; figures 1-7 * * paragraphs [0008], [0016] - [0023] *	5-7	
X	US 2006/136744 A1 (LANGE DANIEL H [IL]) 22 June 2006 (2006-06-22)	1	
Y	* abstract; figures 1-3,19,20 * * paragraphs [0016] - [0044], [0077], [0083] - [0094] *	5-7	
X	US 5 191 891 A (RIGHTER WILLIAM H [US]) 9 March 1993 (1993-03-09)	1,4	
Y	* abstract; figures 1-3 * * column 2, line 50 - column 4, line 15 * * column 5, lines 40-45 *		
A	JP 3 639966 B2 (CASIO COMPUTER CO LTD) 20 April 2005 (2005-04-20)	1,8-15	TECHNICAL FIELDS SEARCHED (IPC)
Y	* abstract; figures 5-18,21,22 * * paragraphs [0005] - [0015], [0041] - [0043], [0046] - [0055] *		A61B G06F G06K H04L H01Q G04R H04B
A	US 2014/203989 A1 (JEONG SEUNG HWAN [KR] ET AL) 24 July 2014 (2014-07-24)	8-15	
Y	* abstract; figures 3-5 * * paragraphs [0047] - [0080] *		
A	US 2014/152516 A1 (KIM DONG ZO [KR] ET AL) 5 June 2014 (2014-06-05)	8-15	
Y	* paragraphs [0007] - [0025], [0037] - [0088]; figures 1-5 *		
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		4 April 2016	Carta, Riccardo
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone		T : theory or principle underlying the invention	
Y : particularly relevant if combined with another document of the same category		E : earlier patent document, but published on, or after the filing date	
A : technological background		D : document cited in the application	
O : non-written disclosure		L : document cited for other reasons	
P : intermediate document		& : member of the same patent family, corresponding document	

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

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Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

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No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

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LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

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see sheet B

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All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

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As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

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Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

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None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

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The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

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**LACK OF UNITY OF INVENTION
SHEET B**

Application Number
EP 15 00 1597

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

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1. claims: 2-7(completely); 1(partially)

ECG wearable terminal and user authentication

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2. claims: 8-15(completely); 1(partially)

Antenna module, constructional details and power feeding

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ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 15 00 1597

5 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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

04-04-2016

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010076331 A1	25-03-2010	NONE	
US 2006136744 A1	22-06-2006	NONE	
US 5191891 A	09-03-1993	AU 2283892 A CA 2077858 A1 EP 0540154 A1 JP H05293091 A US 5191891 A US 5365935 A	11-03-1993 11-03-1993 05-05-1993 09-11-1993 09-03-1993 22-11-1994
JP 3639966 B2	20-04-2005	JP 3639966 B2 JP H0936630 A	20-04-2005 07-02-1997
US 2014203989 A1	24-07-2014	KR 20140094309 A US 2014203989 A1	30-07-2014 24-07-2014
US 2014152516 A1	05-06-2014	US 2014152516 A1 WO 2014088323 A1	05-06-2014 12-06-2014

专利名称(译)	可穿戴终端		
公开(公告)号	EP2989965A3	公开(公告)日	2016-05-11
申请号	EP2015001597	申请日	2015-05-27
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IPC分类号	A61B5/00 A61B5/0245 A61B5/0452 A61B5/117 H01Q1/27 H01Q21/28 G06F3/038 G06F3/0354 G06F21/32 G06K9/00 H01Q1/38 G04R60/04		
CPC分类号	A61B5/0245 A61B5/04525 A61B5/117 A61B5/681 A61B5/742 G04G9/0064 G04G21/08 G04R60/04 G06F21/32 G06K9/00885 H01Q1/273 H01Q1/38 H01Q7/00 H01Q21/28 G06F3/03547 G06F3/038		
代理机构(译)	拜尔, ANDREAS		
优先权	1020140115248 2014-09-01 KR 1020140124782 2014-09-19 KR		
其他公开文献	EP2989965B1 EP2989965A2		
外部链接	Espacenet		

摘要(译)

公开了一种可穿戴式终端，包括主体，设置在主体中的主板，设置在主体的后表面中的第一触摸板，被配置为将主体和第一触摸板连接到每个的柔性板。另外，连接到主体的带子缠绕在使用者的手腕上以将主体固定到使用者的身体部位，当使用者佩戴带子时，第二触摸垫设置在与使用者的身体部位接触的一个表面的另一个表面上，一个柔性板，其一端连接到第二触摸板，另一端连接到主板，控制器，用于通过测量从第一触摸板和第二触摸板感测到的身体肌肉的电位差来提取心电图触摸板。

FIG. 7

