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(71) Applicant: Research In Motion Limited Waterloo, ON N2L 3W8 (CA)

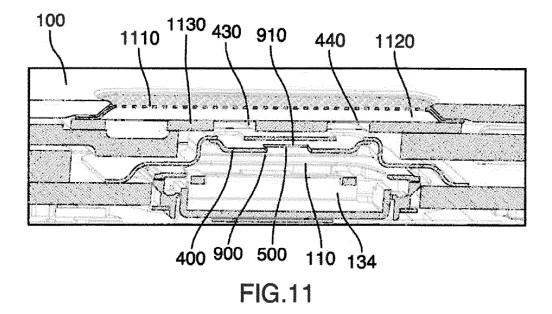
(72) Inventors:

- Burghardt, Gunther 44799 Bochum (DE)
- Thrien, Markus 44799 Bochum (DE)
- (74) Representative: Moore, Barry et al Hanna Moore & Curley 13 Lower Lad Lane Dublin 2 (IE)

(54) A front resonator for a speaker of a wireless device

(57) A front resonator for a speaker of a wireless device is provided, comprising: an enclosure mounted over the speaker and forming with an upper surface of the speaker a front volume for the front resonator; and a plate having an upper surface mounted to an inner surface of

the enclosure, the upper surface of the plate having a trough with an opening formed therein, wherein the trough and the inner surface of the enclosure form a tube having at least one end to emit sound generated by the speaker through the front volume and tube from the wireless device.





EUROPEAN SEARCH REPORT

Application Number EP 13 15 4777

	DOCUMENTS CONSID	ERED TO BE RELEVANT		
Category	Citation of document with in of relevant passa	idication, where appropriate, ages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Х	ET AL) 31 August 20 * column 4, line 7 figures 2-4 *	NESON THEODORE R [US] 04 (2004-08-31) - column 4, line 51; - column 6, line 50 *	1-15	INV. H04R1/28
X,D A	US 2007/147646 A1 (28 June 2007 (2007- * paragraph [0005]; * paragraph [0026]	06-28)	1-11,13, 15 12	
Х	[US]) 7 October 200	PATTERSON GREGORY S 4 (2004-10-07) - paragraph [0035];	1-7,11,	
Y	AL) 29 May 2003 (20	PEDERSEN PER [DK] ET 03-05-29) - paragraph [0030];	1	TECHNICAL FIFT DO
Υ	15 January 2002 (20	B1 (CHEN WATERSON [TW] ET AL) 1 SEAL 002 (2002-01-15) H04R		TECHNICAL FIELDS SEARCHED (IPC) H04R H04M
Α	US 2008/268793 A1 (AL) 30 October 2008 * paragraph [0025];	NELSON GLENN R [US] ET (2008-10-30) figures 6-10 *	1,7,12, 14	
Х	US 6 658 110 B1 (AN [DK]) 2 December 20 * figure 1 *	DERSEN MORTEN KJELDSEN 03 (2003-12-02)	1-15	
Х	EP 1 865 690 A1 (NE 12 December 2007 (2 * figure 4a *		1-15	
	The present search report has be	<u> </u>	<u> </u>	
	Place of search The Hague	Date of completion of the search 24 June 2013	Wil	Examiner
X : part Y : part docu A : tech O : non	ATEGORY OF CITED DOCUMENTS icularly relevant if taken alone icularly relevant if combined with another interest of the same category nological background written disclosure mediate document	T : theory or principl E : earlier patent doc after the filing dat D : document cited in L : document cited fo	e underlying the is sument, but publi e n the application or other reasons	nvention shed on, or

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

EP 13 15 4777

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.

24-06-2013

Patent document cited in search report		Publication date	Patent family member(s)			Publication date	
US	6785395	B1	31-08-2004	NON	E		
US	2007147646	A1	28-06-2007	AT CN EP JP KR US WO	482576 1943269 1692911 2007512756 20060129198 2007147646 2005053353	A A2 A A1	15-10-2 04-04-2 23-08-2 17-05-2 15-12-2 28-06-2 09-06-2
US	2004198239	A1	07-10-2004	AU CN EP JP JP US WO	2003293810 1723679 1570629 4664682 2006509432 2004198239 2004054211	A A1 B2 A A1	30-06-2 18-01-2 07-09-2 06-04-2 16-03-2 07-10-2 24-06-2
US	2003100273	A1	29-05-2003	NON	 E		
US	6339649	B1	15-01-2002	JP JP US	3327865 2000308169 6339649	Α	24-09-2 02-11-2 15-01-2
US	2008268793	A1	30-10-2008	NON	 E		
US	6658110	B1	02-12-2003	AT AU CA CN DE DK DK EP JP US WO	69905069 69905069 173789	A A1 A1 D1 T2 B1 T3 A1 A	15-02-2 26-04-2 13-04-2 14-11-2 27-02-2 06-11-2 22-10-2 14-04-2 29-08-2 27-08-2 02-12-2
EP	1865690	A1	12-12-2007	CN EP JP US US	101151875 1865690 2006279260 2009137268 2013114844 2006104156	A1 A A1 A1	26-03-2 12-12-2 12-10-2 28-05-2 09-05-2 05-10-2