

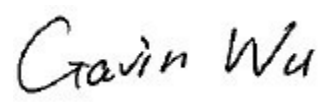




TEST REPORT

Report No.:	EM201200385-3	Application No.:	ZJ00018316
Applicant:	Harman International Industries, Incorporated		
Applicant Address:	8500 Balboa Blvd, Northridge, CA 91329, UNITED STATES		
Sample Description:	JBL PowerUp Wireless Charging Speaker for Nokia		
Model:	MD-100W		
Test Location:	Guangzhou GRG Metrology and Test Co., Ltd		
Test Specification:	FCC Part 1 §1.1310		
Test Date:	2012-07-25 to 2012-12-12		
Issue Date:	2012-12-13		
Test Result:	<i>Pass.</i>		
Prepared By:	Reviewed By:	Approved By:	
Eddy Zong / Test Engineer	Jane Cao / Manager	Gavin Wu / Manager	
			
Date:2012-12-13	Date:2012-12-13	Date:2012-12-13	
Other Aspects:			
Abbreviations: <i>ok / P = passed; fail / F = failed; n.a. / N = not applicable</i>			
The test result in this test report refers exclusively to the presented test sample. This report shall not be reproduced except in full, without the written approval of GRGT.			

DIRECTIONS OF TEST

1. This station carries out test task according to the national regulation of verifications which can be traced to National Primary Standards and BIPM.
2. The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.
3. If there is any objection concerning the test, the client should inform the laboratory within 15 days from the date of receiving the test report.

Table of Contents

1. GENERAL INFORMATION.....	4
1.1 APPLICANT.....	4
1.2 MANUFACTURER	4
1.3 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST	4
2. LABORATORY AND ACCREDITATIONS	6
2.1 LABORATORY	6
2.2 ACCREDITATIONS.....	6
2.3 TEST EQUIPMENT LIST.....	6
3. RF EXPOSURE EVALUATION	7
3.1 TEST SETUP.....	7
3.2 ENVIRONMENTAL EVALUATION AND EXPOSURE LIMIT ACCORDING TO FCC CFR 47 PART 1, 1.1307(B), 1.1310.....	8
3.3 TEST RESULT	9
3.3.1 <i>Operating mode</i>	9
3.3.2 <i>Test Mode</i>	9
3.3.3 <i>E-Field Strength at 10 cm from the edges surrounding the EUT</i>	9
3.3.4 <i>H-Field Strength at 10 cm from the edges surrounding the EUT</i>	10
APPENDIX A: TEST SETUP PHOTOS	11
APPENDIX B: PHOTOS OF THE EUT	12

1. GENERAL INFORMATION

1.1 Applicant

Name: Harman International Industries, Incorporated
Address: 8500 Balboa Blvd, Northridge, CA 91329, UNITED STATES

1.2 Manufacturer

Name: Harman International Industries, Incorporated
Address: 8500 Balboa Blvd, Northridge, CA 91329, UNITED STATES

1.3 Basic Description of Equipment Under Test

Equipment:	JBL PowerUp Wireless Charging Speaker for Nokia
Model No.:	MD-100W
Trade Name:	JBL, NOKIA
Device Category:	Mobile Device
Equipment serial No. :	Prototype
Adapter Power:	Input: AC 100-240V~ 50/60Hz 2A; Output:DC18V-2.5A
Charging power range	DC 5V ,0-1000mA, load step is 20-80%
Frequency Range:	112kHz~205kHz
Communication mode ^{note 1} :	Analog ping mode, Digital communication mode
Antenna type:	Internal Loop Antenna

Note 1: Description of communication mode

Analog ping mode

The charger (TX) is on a low power state and sends an analog ping on 300ms intervals to detect the presence of the mobile phone (RX).

In order to find the mobile phone (RX), the charger (TX) applies a short pulse to its primary coil regularly. When the charger (TX) is detected the mobile phone (RX) sends digital ping and expects the power receiver to reply with a signal-strength packet. If the signal strength packet is valid, the power transmitter keeps power on the coil and proceeds to the next phase.

Digital communication mode

After finding the mobile phone (RX), the charger (TX) initiates power signal and then receives data PACKETS from the mobile phone (RX). If the mobile phone (RX) is removed on the position of the

charger (TX) then this communication is stopped at once and the transmitting power signal of the charger (TX) is immediately stopped.

Note 2: Operational description

Communication is made with load modulation over the power transfer signal, no separate communication channel. Power transfer frequency changes but stays between 112 and 205 kHz, depending on power demands and mainly has 50% duty cycle (only in cases where transferred power is so low that freq control range is not enough, the duty cycle is reduced) .

In the power-transfer phase, the power receiver sends control error packets to the power transmitter to increase or decrease the power supply. These packets are sent approximately every 250 ms during normal operation or every 32 ms during large signal changes.

To end the power transfer, the power receiver sends an “End Power” message or sends no communications for 1.25 seconds. Either of these events places the power transmitter in a low-power state.

2. LABORATORY AND ACCREDITATIONS

2.1 Laboratory

The tests and measurements refer to this report were performed by Guangzhou GRG Metrology and Test CO., LTD.

Add. : 163 Pingyun Rd, West of Huangpu Ave, Guangzhou, 510656, P. R. China

Telephone: +86-20-38699959, 38699960, 38699961

Fax : +86-20-38695185

2.2 Accreditations

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	FCC Listed Lab (No. 688188)
China	CNAS (No.L0446)
China	DILAC (No.DL175)
Canada	Registration No.:8355A-1

2.3 Test Equipment List

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Broadband Field Meter	Narda	NBM-550	E-0082	2013-01-15
Isotropic Electric Field Probe	Narda	EF0391	D-0082	2013-01-09
Exposure Level Tester	Narda	ELT-400	M-0084/M-0096	2013-03-11
Qi Receiver Simulator	AVID	102-01	SN 00000372	/
Electronic load	ITECH	IT8513C	00202330667210 3002	2013-09-27

3.2 Environmental Evaluation and Exposure Limit According To FCC CFR 47 Part 1, 1.1307(B), 1.1310

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in §1.1307(b).

Table 1 Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

RF exposure compliance will need to be determined with respect to 1.1307 (c) and (d) of the FCC rules. The emissions should be within the limits at 300 kHz in Table 1 of 1.1310 (use the 300 kHz limits for 150 kHz: 614 V/m, 1.63 A/m).

3.3 Test Result

3.3.1 Operating mode

Operation Mode 1 (OM1)	Charging and communication mode (Charging and communication)
Operation Mode 2 (OM2)	Analog ping mode (transmitting a very short pulse to find a client device)

3.3.2 Test Mode

This device has been tested to simulate the various load conditions of the client device.

For simulating the various load condition, electronic loads are used to control charging currents.

It means that the impedance electronic loads can be adjusted by operator.

So that it can control the charging current of the circuit.

The charging current was controlled from 1000mA (Max) to 20mA (Min) by 250mA step using load.

Charging current	Test mode(TM)
20mA(Min.)	TM1
250mA	TM2
500mA	TM3
750mA	TM4
1000mA (Max.)	TM5

3.3.3 E-Field Strength at 10 cm from the edges surrounding the EUT

Test setup	Probe height (cm)	Operating mode	Test mode	Probe Position A (V/m)	Probe Position B (V/m)	Probe Position C (V/m)	Probe Position D (V/m)	Limits (V/m)
1	0	OM1	TM1	2.11	2.24	2.15	2.14	614.00
	0	OM1	TM2	3.61	3.65	3.61	3.69	614.00
	0	OM1	TM3	4.48	4.61	4.25	4.55	614.00
	0	OM1	TM4	4.46	4.75	4,23	4.62	614.00
	0	OM1	TM5	4.55	4.83	4.36	4.79	614.00
	0	OM2	N/A	0.44	0.45	0.44	0.43	614.00
2	+2	OM1	TM5	4.59	4.84	4.47	4.81	614.00
	- 2	OM1	TM5	4.41	4.65	4.29	4.68	614.00

Note: The test step 2 was repeated at the worst case configuration of step 1 with varying the antenna height to maximize the emission.

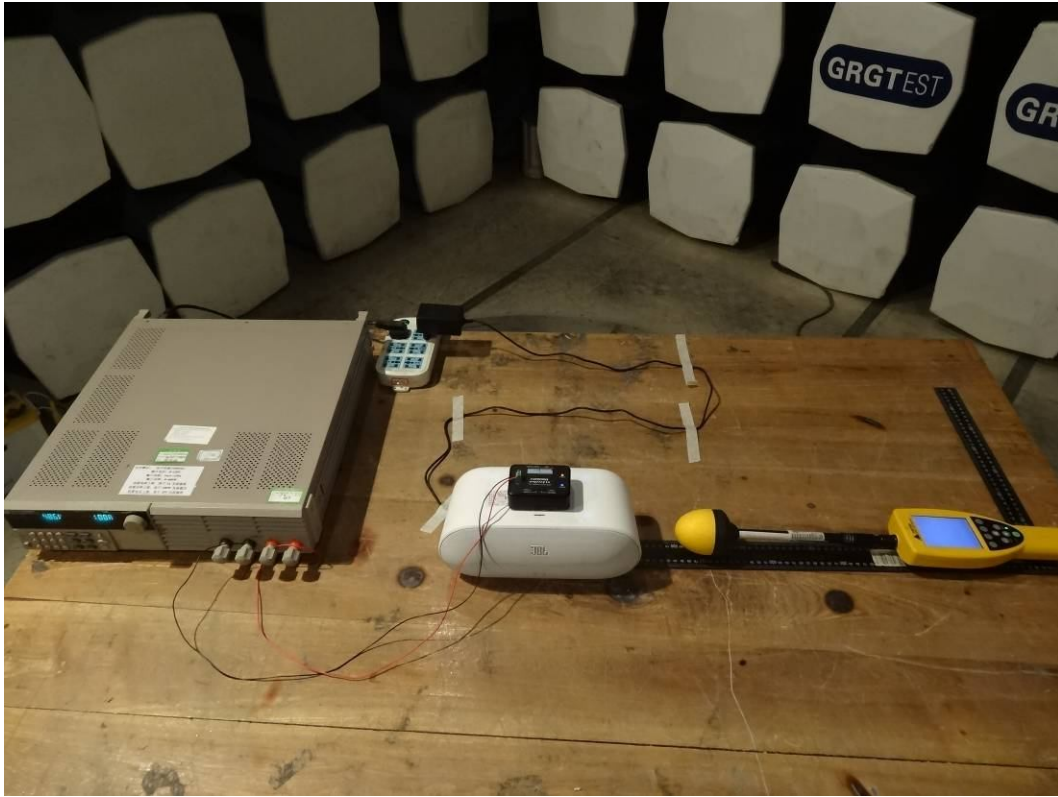
3.3.4 H-Field Strength at 10 cm from the edges surrounding the EUT

Test setup	Probe height (cm)	Operating mode	Test mode	Probe Position A (V/m)	Probe Position B (V/m)	Probe Position C (V/m)	Probe Position D (V/m)	Limits (V/m)
1	0	OM1	TM1	0.124	0.125	0.125	0.124	1.630
	0	OM1	TM2	0.267	0.269	0.271	0.268	1.630
	0	OM1	TM3	0.277	0.276	0.273	0.271	1.630
	0	OM1	TM3	0.279	0.282	0.281	0.277	1.630
	0	OM1	TM5	0.283	0.283	0.291	0.287	1.630
	0	OM2	N/A	0.087	0.0875	0.085	0.085	1.630
2	+2	OM1	TM5	0.287	0.285	0.291	0.291	614.00
	-2	OM1	TM5	0.283	0.282	0.288	0.285	614.00

Note: The test step 2 was repeated at the worst case configuration of step 1 with varying the antenna height to maximize the emission.

Appendix A: Test Setup Photos

Test Setup Photos of E-Field



Test Setup Photos of H-Field



Appendix B: Photos of the EUT







-----This is the last page of the report. -----