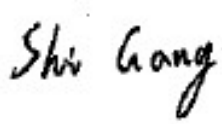
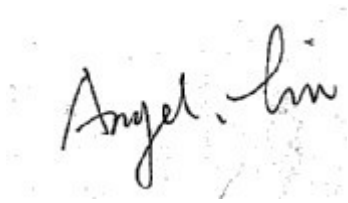
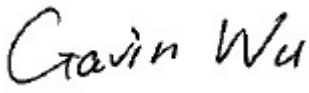
TEST REPORT

Report No.:	**EM201100293-1**	**Application No.:**	**ZJ00009531**
Client:	Harman Consumer, Inc		
Address:	8500 Balboa Blvd, Northridge, CA 91329, UNITED STATES		
Sample Description:	Remote		
Model:	RB85A00		
Test Location:	**EMC Laboratory of Guangzhou GRG Metrology and Test Technology Co., Ltd.**		
Test Specification:	**FCC 15.249:2009**		
Issue Date:	2011-08-26		
Test Result:	*Pass.*		

Tested By:	**Reviewed By:**	**Approved By:**
Shi Gang / Test Engineer	Angel Liu/ Technical Support	Gavin Wu / Manager
 Date:2011-08-26	 Date:2011-08-26	 Date:2011-08-26

Other Aspects:

None

Abbreviations: *ok / P = passed; fail / F = failed; n.a. / N = not applicable*

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. **The test standards at this station are examined and given as public standards of measurement by the Metrological Unit of the Committee of National Defence Science Industry. The authorized certificate number is DL175. This station is also authorized by CNAS. The certificate number is L0446. 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. TEST RESULT SUMMARY

FCC 15.249:2009			
Standard	**Item**	**Limit / Severity**	**Result**
FCC 15.249:2009	Antenna Requirement	FCC Part 15.203	PASS
	Intentional radiators Field Strength	FCC Part 15.249(a)	PASS
	Radiated Electromagnetic Disturbance	FCC Part 15.249 (e)	PASS
	Conduction Emissions	/	N/A(Note)
	Out of Band Emissions	FCC Part 15.249(d)	PASS

Note: The EUT is own DC 3V battery supply

2. GENERAL DESCRIPTION OF EUT

2.1 APPLICANT

Name:	Harman Consumer, Inc
Address:	8500 Balboa Blvd , Northridge , CA 91329 , UNITED STATES

2.2 MANFACTURER

Name:	Harman Consumer, Inc
Address:	8500 Balboa Blvd , Northridge , CA 91329 , UNITED STATES

2.3 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment:	Remote
Model No.:	RB85A00
Trade Name:	Harman/kardon
Power Supply:	DC 3V(Battery)
Note:	/

2.4 TEST OPERATION MODES

Emission:	mode : Transmitting

3. LABORATORY AND ACCREDITATIONS

3.1 LABORATORY

The tests and measurements refer to this report were performed by EMC Laboratory of Guangzhou GRG Metrology and Test Technology 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

3.2 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

3.3 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement		**Frequency**	**Uncertainty**
Radiated Emission	Horizontal	30MHz～1000MHz	4.2dB
	Horizontal	1GHz～18GHz	4.2dB
	Vertical	30MHz～1000MHz	4.4dB
	Vertical	1GHz～18GHz	4.4dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

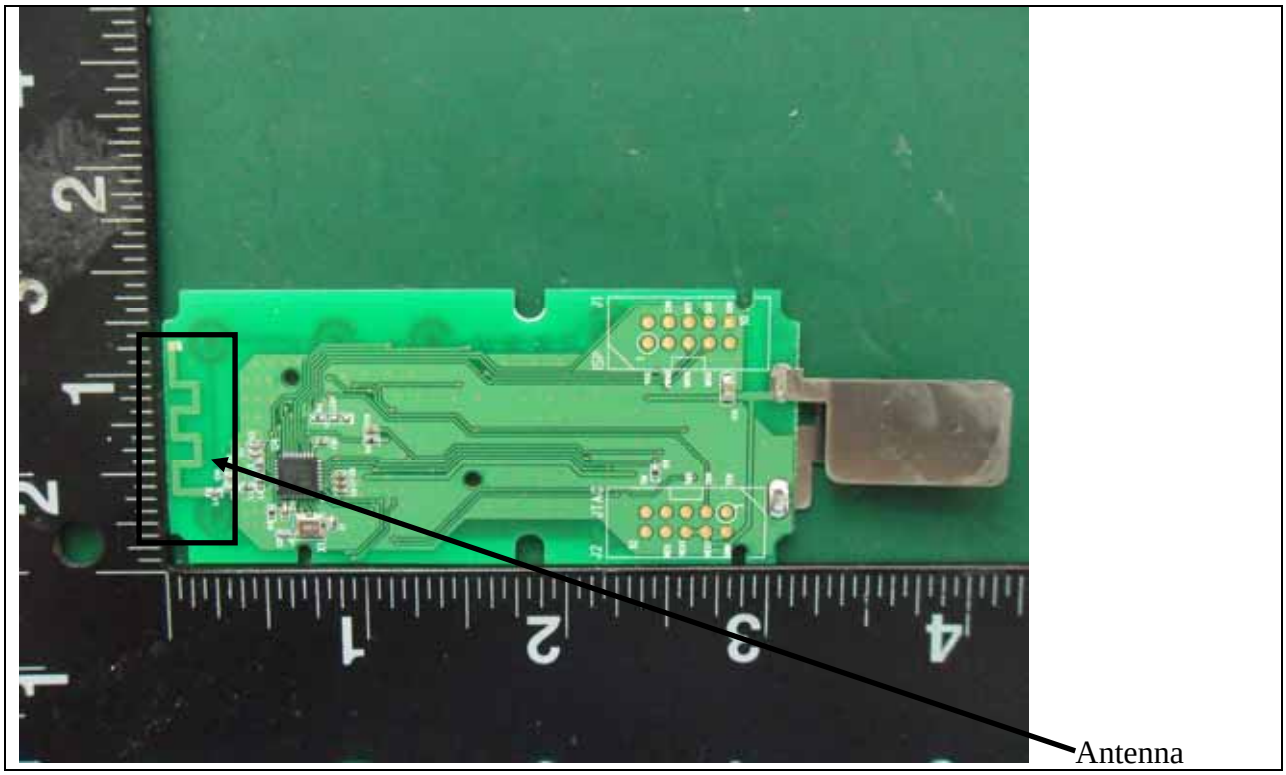
3.4 LIST OF USED TEST EQUIPMENT AT GRGT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Radiated Emission				
Bi-Log Antenna	ETS-LINDGREN	3142C	75971	2012-07-30
EMI Receiver	Rohde & Schwarz	ESCI	100529	2012-06-09
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA9120E318	2011-09-24
Intentional radiators Field Strength				
EMI Receiver	Rohde & Schwarz	ESCI	100529	2012-06-09
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA9120E318	2011-09-24
Out of Band Emissions				
Out of Band Emissions	Rohde & Schwarz	ESCI	100529	2012-06-09

NOTE: The calibration interval of the above test instruments is 12 months.

4. ANTENNA REQUIREMENT

The EUT antenna is PCB Printed antenna. Antenna gain is -4.26dBi .which accordance 15.203.is considered sufficient to comply with the provisions of this section



5. EMISSION TEST

5.1 Intentional radiators Field Strength

5.1.1 LIMITS

Frequency (MHz)	Field Strength
2400~2483.5	50(millivolts/meter)
Field Strength of Harmonics	500(microvolts/meter)

5.1.2 TEST PROCEDURE

Procedure of Test

Radiated emission tests shall be made with the receive or transmit antenna located at a horizontal distance of 3 m plus half of the maximum width of the EUT being tested, measured from the centre of the EUT. The tests shall be performed with the equipment configured as closely as possible to its typical, practical operation. Unless stated otherwise, cables and wiring shall be as specified by the manufacturer and the equipment shall be in its housing (or cabinet) with all covers and access panels in place. Any deviation from normal EUT operating conditions shall be included in the test report.

The EUT (on a non-conductive support structure, where applicable) shall be placed on a remotely operated turntable, to allow the EUT to be rotated. The height of the EUT above the ground plane shall be according to the following requirements.

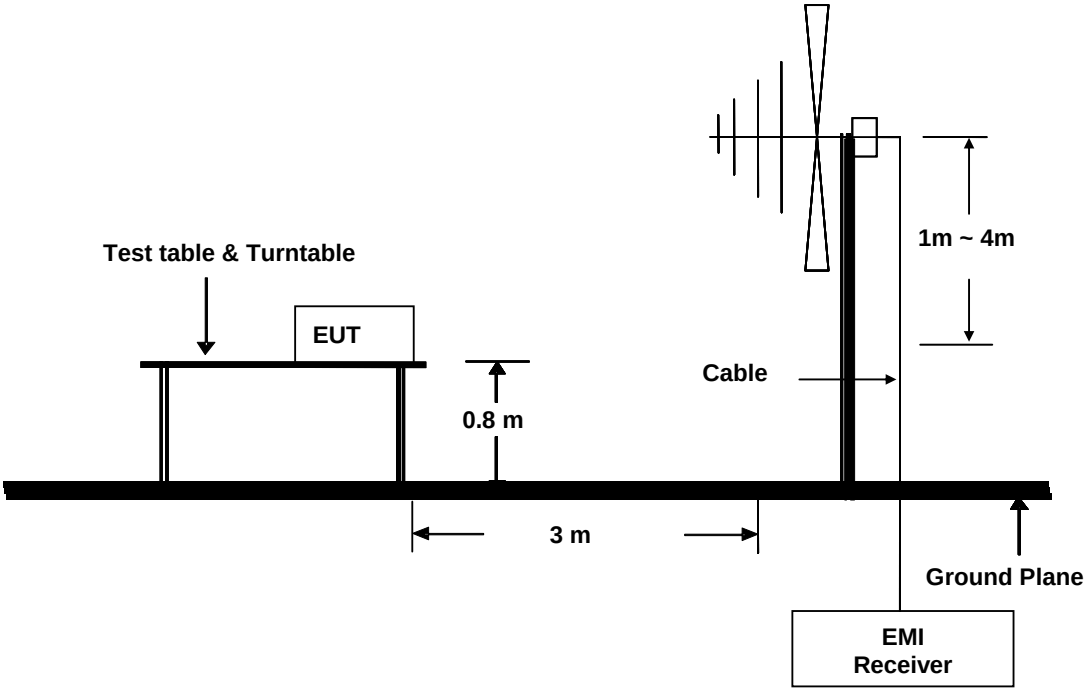
• Table-top equipment is placed on a non-conductive set-up table with height 0,8 m ± 0,01 m, ANSI C63.4 specifies the method to determine the impact of the non-conductive set-up table on test results.

• Floor-standing equipment is placed on a non-conductive support, as specified in the applicable product standard. If there are no EUT height placement requirements in the product standard, the EUT shall be placed on a non-conductive support at a height of 5 cm to 15 cm above the ground plane.

Interface cables, loads, and devices should be connected to at least one of each type of the interface ports of the EUT and, where practical, each cable shall be terminated in a device typical for its actual use. Where there are multiple interface ports of the same type, a typical number of these devices shall be connected to devices or loads. It is sufficient to connect only one of the loads, provided that it can be shown, for example by preliminary testing, that the connection of further ports would not significantly increase the level of disturbance (that is, more than 2 dB) or significantly degrade the immunity level.

The test mode(s) described in Item 2.4 were scanned during the preliminary test. After the preliminary scan, we found the test mode described in Item 2.4 producing the highest emission level. The EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the test.

5.1.3 TEST SETUP



5.1.4 TEST RESULTS

Test Result:	**Pass**	**Polarization:**	**Horizontal**
Standard:	**(RE)FCC PART 15 3m**	**Power Source:**	**DC 3V**
Test item:	**Radiation Test**	**Date:**	**2011-8-25**
Temp./Hum.(%RH):	**25/57%RH**	**Time:**	**8:47:16**
EUT:	**Remote**	**Model:**	**RB85A00**
Note:			

Polarization	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Vertical	2402	38.62	31.21	69.83	114.00	44.17	peak
Vertical	2402	38.29	31.21	69.50	94.00	24.5	AVG
Horizontal	2402	29.89	31.21	61.10	114.00	52.9	peak
Horizontal	2402	29.49	31.21	60.70	94.00	33.3	AVG

5.2 Radiated Electromagnetic Disturbance

5.2.1 LIMITS

Frequency (MHz)	Quasi-peak(dBμV/m)
30 ~ 88	40
88~216	43.5
216 ~ 960	46
Above 960	54

NOTE: (1) The lower limit shall apply at the transition frequencies.

Frequency (GHz)	Quasi-peak(dBμV/m)
1 ~ 18	74
1~18	54

5.2.2 TEST PROCEDURES

Procedure of Preliminary Test

Radiated emission tests shall be made with the receive or transmit antenna located at a horizontal distance of 3 m plus half of the maximum width of the EUT being tested, measured from the centre of the EUT. The tests shall be performed with the equipment configured as closely as possible to its typical, practical operation. Unless stated otherwise, cables and wiring shall be as specified by the manufacturer and the equipment shall be in its housing (or cabinet) with all covers and access panels in place. Any deviation from normal EUT operating conditions shall be included in the test report.

The EUT (on a non-conductive support structure, where applicable) shall be placed on a remotely operated turntable, to allow the EUT to be rotated. The height of the EUT above the ground plane shall be according to the following requirements.

• Table-top equipment is placed on a non-conductive set-up table with height 0,8 m ± 0,01 m, ANSI C63.4 specifies the method to determine the impact of the non-conductive set-up table on test results.

• Floor-standing equipment is placed on a non-conductive support, as specified in the applicable product standard. If there are no EUT height placement requirements in the product standard, the EUT shall be placed on a non-conductive support at a height of 5 cm to 15 cm above the ground plane.

Interface cables, loads, and devices should be connected to at least one of each type of the interface ports of the EUT and, where practical, each cable shall be terminated in a device typical for its actual use. Where there are multiple interface ports of the same type, a typical number of these devices shall be connected to devices or loads. It is sufficient to connect only one of the loads, provided that it can be shown, for example by preliminary testing, that the connection of further ports would not significantly increase the level of disturbance (that is, more than 2 dB) or significantly degrade the immunity level.

The test mode(s) described in Item 2.4 were scanned during the preliminary test. After the preliminary scan, we found the test mode described in Item 2.4 producing the highest emission level. The EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the final test.

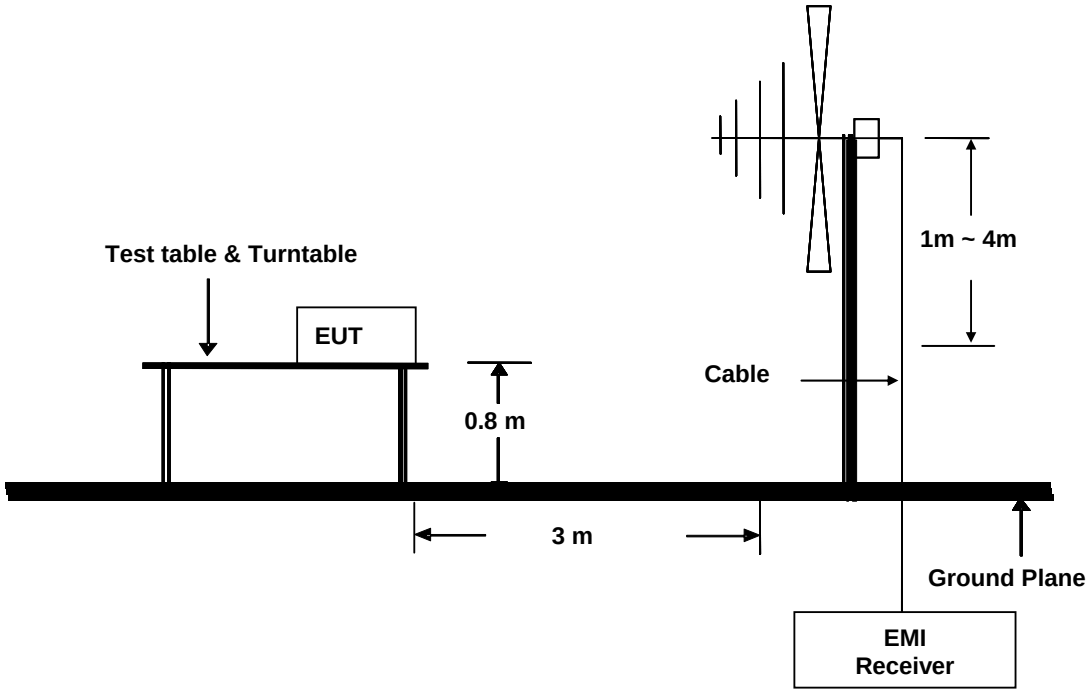
Procedure of Final Test

EUT and support equipment were set up on the turntable as per the configuration with highest emission level in the preliminary test. The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level. Record at least six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only QP reading is presented. The test data of the worst-case condition(s) was recorded.

Procedure of Final Test

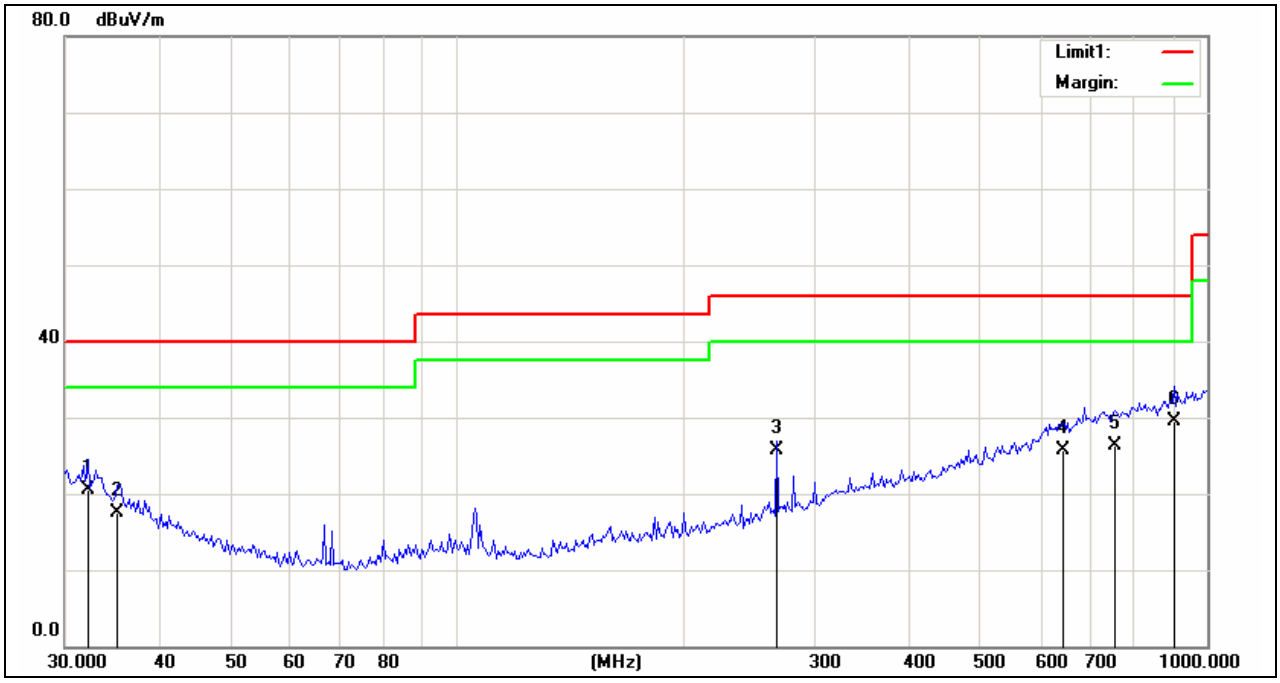
EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test. A scan was taken on both power lines, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. The test data of the worst-case condition(s) was recorded.

5.2.3 TEST SETUP



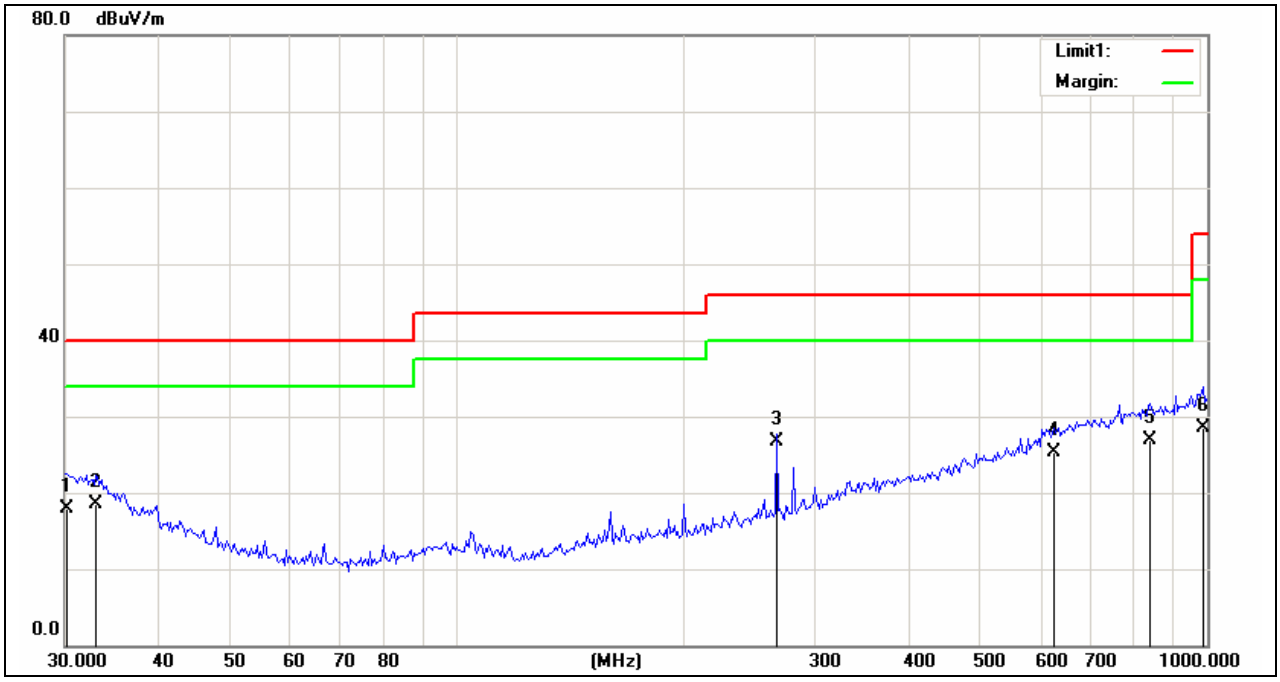
5.2.4 TEST RESULTS

Test Result:	**Pass**	**Probe:**	**Vertical**
Standard:	**(RE)FCC PART 15 3m**	**Power Source:**	**DC 3V**
Test item:	**Radiation Test**	**Date:**	**2011-8-24**
Temp./Hum.(%RH):	**25/57%RH**	**Time:**	**8:35:36**
EUT:	**Remote**	**Model:**	**RB85A00**
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	32.2736	2.46	18.04	20.50	40.00	-19.50	QP
2	35.3098	1.41	16.19	17.60	40.00	-22.40	QP
3	266.9808	11.62	14.08	25.70	46.00	-20.30	QP
4	641.5044	2.90	22.80	25.70	46.00	-20.30	QP
5	755.0478	2.01	24.29	26.30	46.00	-19.70	QP
6	903.7968	3.34	26.16	29.50	46.00	-16.50	QP

Test Result:	**Pass**	**Probe:**	**Horizontal**
Standard:	**(RE)FCC PART 15 3m**	**Power Source:**	**DC 3V**
Test item:	**Radiation Test**	**Date:**	**2011-8-24**
Temp./Hum.(%RH):	**25/57%RH**	**Time:**	**8:31:21**
EUT:	**Remote**	**Model:**	**RB85A00**
Note:			



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	30.1691	-1.43	19.33	17.90	40.00	-22.10	QP
2	33.0073	1.00	17.60	18.60	40.00	-21.40	QP
3	266.9808	12.72	14.08	26.80	46.00	-19.20	QP
4	623.7307	2.50	22.80	25.30	46.00	-20.70	QP
5	840.1255	1.69	25.21	26.90	46.00	-19.10	QP
6	988.8240	1.70	26.90	28.60	54.00	-25.40	QP

Emission above 1GHz:

Frequency	Antenna polarization	Detector	Result	Limit	Result
(MHz)		PK/AV	(dBuV/m)	(dBuV/m)	
4804	Vertical	PK	48.32	74	Pass
4804	Vertical	AV	47.50	54	Pass
7206	Vertical	PK	45.31	74	Pass
7206	Vertical	AV	44.27	54	Pass
4804	Horizontal	PK	46.07	74	Pass
4804	Horizontal	AV	45.62	54	Pass
7206	Horizontal	PK	44.31	74	Pass
7206	Horizontal	AV	43.20	54	Pass

5.3 Out of Band Emissions

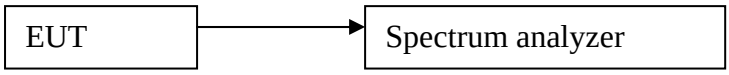
5.3.1 LIMITS

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

5.3.2 TEST PROCEDURES

Remove the antenna from the EUT and then connect a low attenuation cable from the antenna port to the spectrum.
Set the spectrum analyzer: RBW >= 1% of the span (set 10 kHz). VBW >= RBW , Span = enough to captch the trace. Sweep = auto; Detector Function = Peak. Trace = Max,hold.

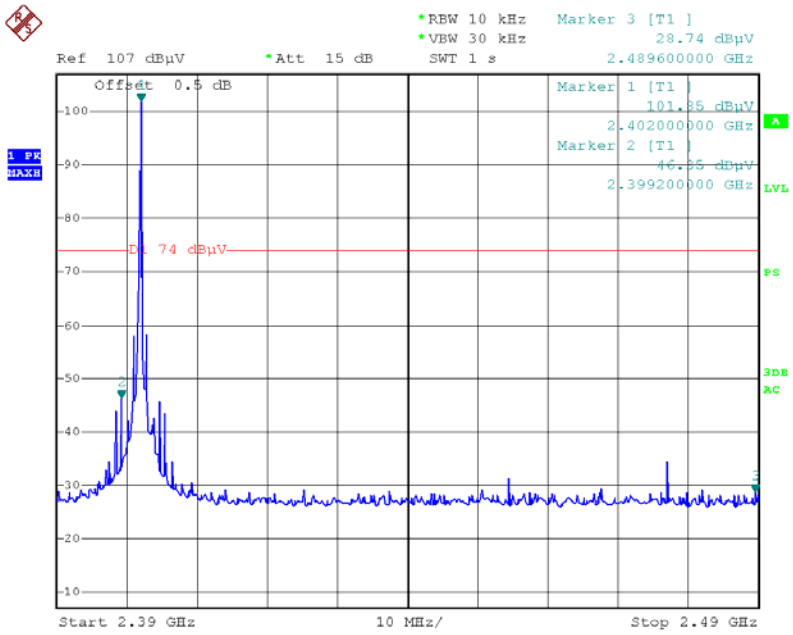
5.3.3 TEST SETUP

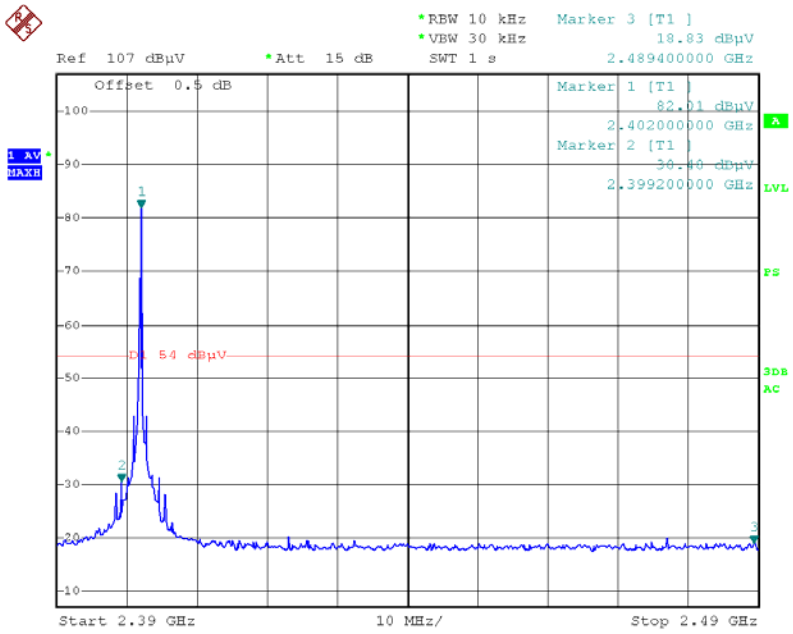


5.3.4 TEST RESULTS

The mark 2393.846MHz is 44.99

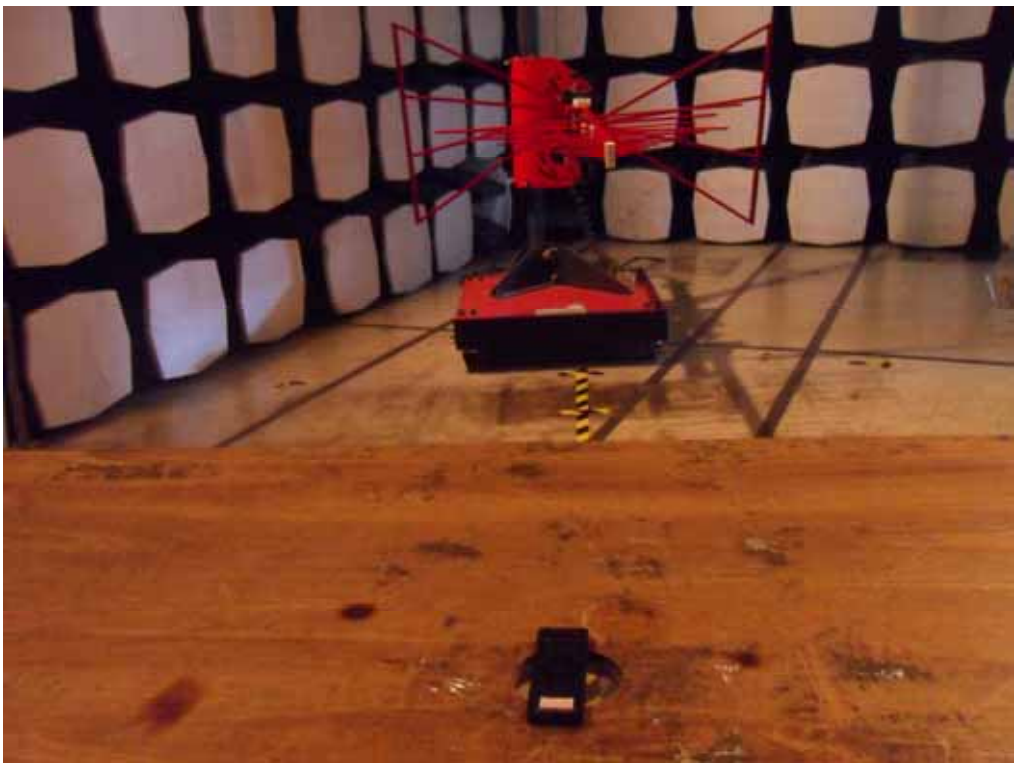
Frequency (MHz)	Reading dBuV	Limit	Result
2399.2MHz	45.01	PK below 74 or below fundamental 50dB	Pass
2488.4 MHz	28.0	PK below 74 or below fundamental 50dB	Pass
2399.2MHz	30.4	AV below 54 or below fundamental 50dB	Pass
2489.4 MHz	18.83	AV below 54 or below fundamental 50dB	Pass

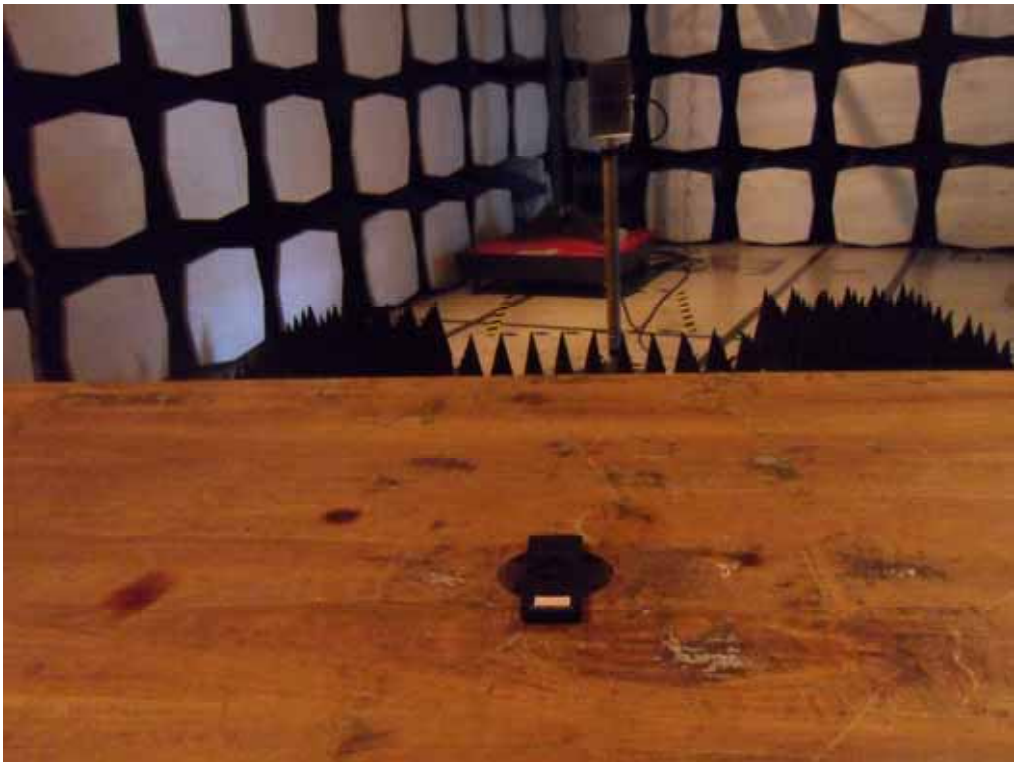

RBW 10 kHz
VBW 30 kHz
SWT 1 s
Marker 3 [T1]
28.74 dBµV
2.489600000 GHz
Ref 107 dBµV
Att 15 dB
Offset 0.5 dB
Marker 1 [T1]
101.35 dBµV
2.402000000 GHz
Marker 2 [T1]
46.55 dBµV
2.399200000 GHz
D1 74 dBµV
1 PK MAXH
A
LVL
PS
3DB AC
Start 2.39 GHz
10 MHz/
Stop 2.49 GHz


RBW 10 kHz
VBW 30 kHz
SWT 1 s
Marker 3 [T1]
18.83 dBµV
2.489400000 GHz
Ref 107 dBµV
Att 15 dB
Offset 0.5 dB
Marker 1 [T1]
82.01 dBµV
2.402000000 GHz
Marker 2 [T1]
30.40 dBµV
2.399200000 GHz
D1 54 dBµV
1 AV MAXH
A
LVL
PS
3DB AC
Start 2.39 GHz
10 MHz/
Stop 2.49 GHz

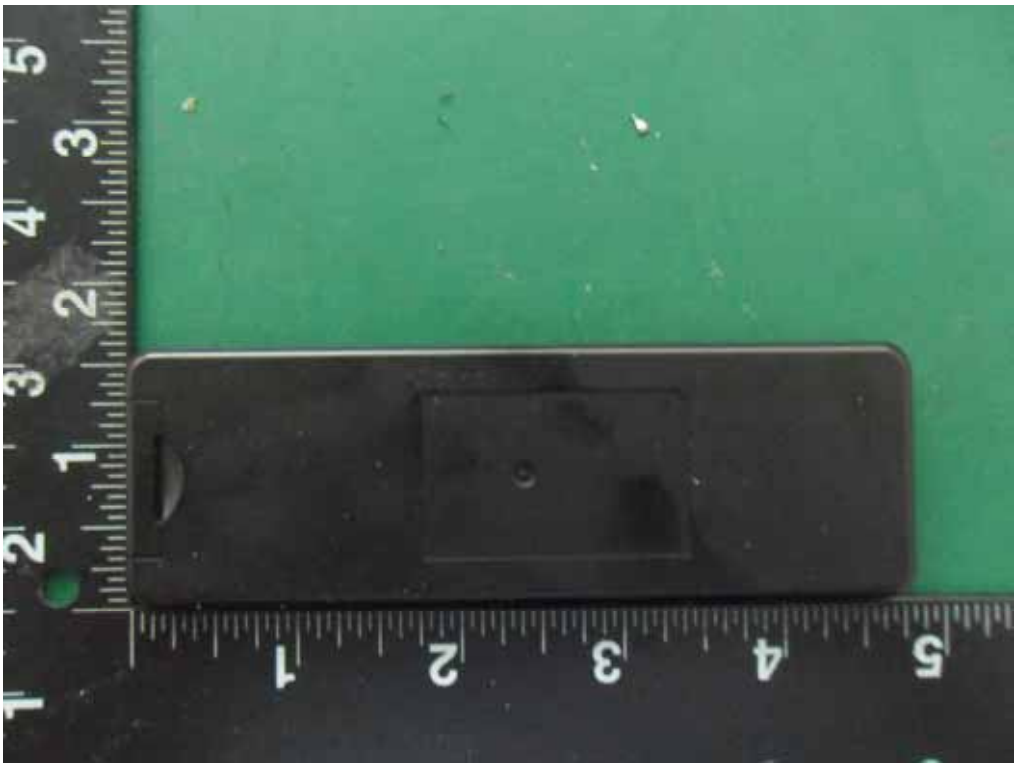
APPENDIX A: PHOTOGRAPH OF THE TEST ARRANGEMENT

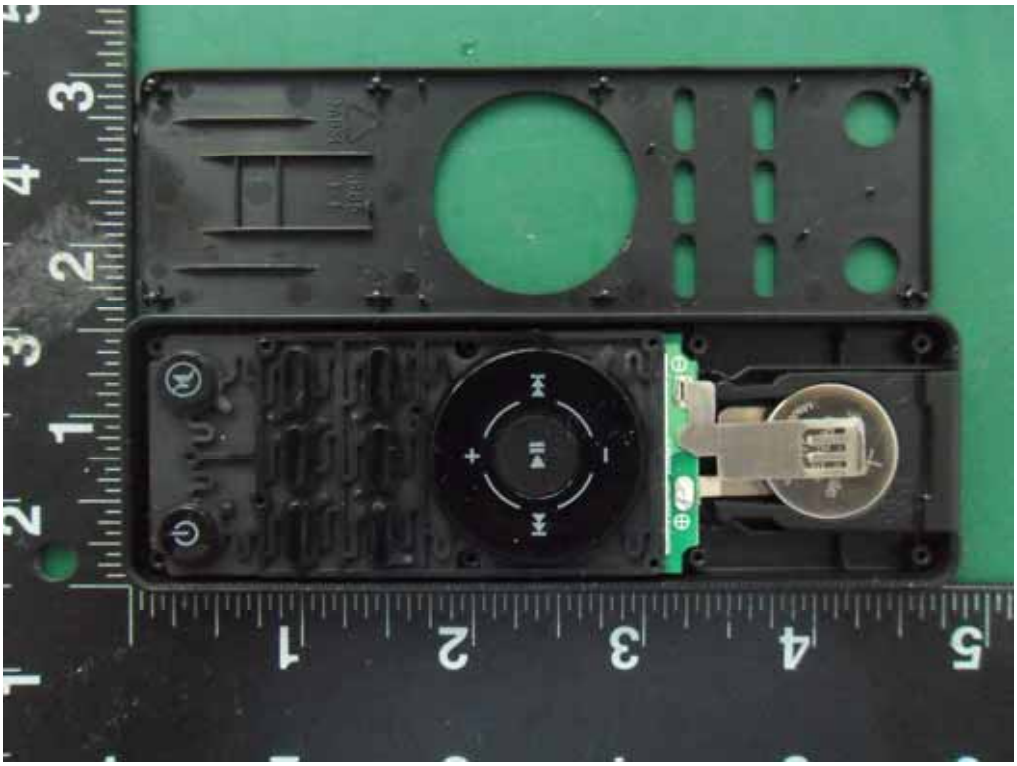
Radiated Emission

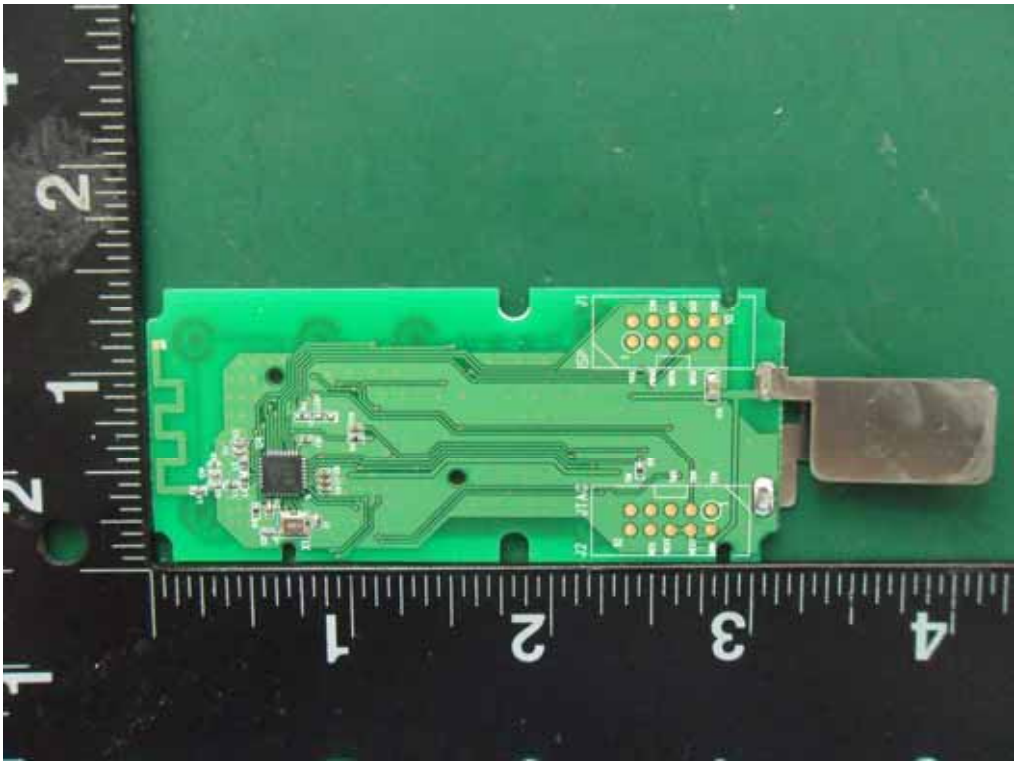


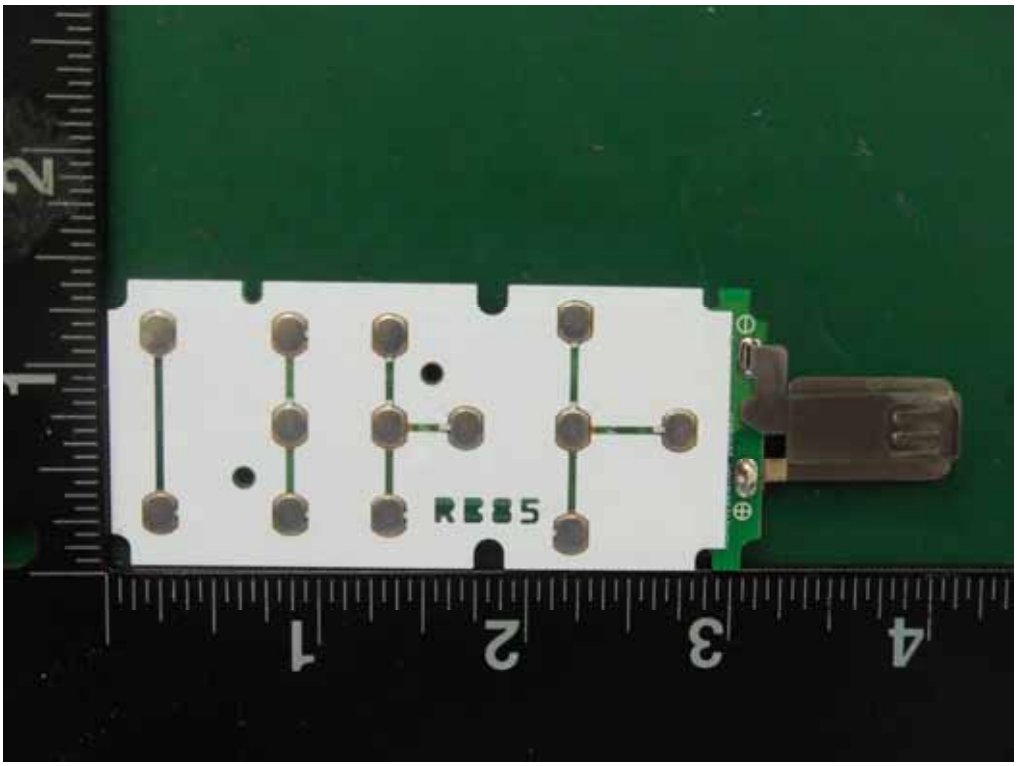


APPENDIX B: PHOTOGRAPH OF THE EUT









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