

FCC TEST REPORT

FCC ID : WC2DS-971R

Applicant : Wonders Technology Co., Ltd.
Address : DOSS Industrial Zone, Qiping Kengdu Industrial Area Guihua Village,
Guanlan Town Baoan District, ShenZhen, China

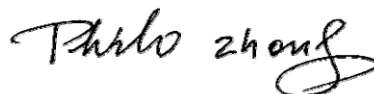
Equipment Under Test (EUT) :

Product Name : Wireless Speaker
Model No. : DS-971, EC-W130

Standards : FCC PART15 SUBPART B

Date of Test : Jun.22,2009

Test Engineer : Zero.Zhou

Reviewed By : 

Test Result :	PASS *
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Prepared By:

Waltek Services (Shenzhen) Co., Ltd.

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* The sample detailed above has been tested to the requirements of Council Directives ANSI C63.4:2003. The test results have been reviewed against the Directives above and found to meet their essential requirements.

1 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (30MHz to 5GHz)	FCC PART 15, SUBPART B: 2007	ANSI C63.4: 2003	Class B	PASS
Conducted Emission (150KHz to 30MHz)	FCC PART 15, SUBPART B: 2007	ANSI C63.4: 2003	Class B	PASS

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3 General Information

3.1 Client Information

Applicant: Wonders Technology Co., Ltd.
Address of Applicant: DOSS Industrial Zone, Qiping Kengdu Industrial Area Guihua Village, Guanlan Town Baoan District, ShenZhen, China.

Manufacturer: Wonders Technology Co., Ltd.
Address of Manufacturer: DOSS Industrial Zone, Qiping Kengdu Industrial Area Guihua Village, Guanlan Town Baoan District, ShenZhen, China.

3.2 General Description of E.U.T.

Product Name : Wireless Speaker
Model No. : DS-971, EC-W130
Model Difference: The components of PCB and circuit of EUT are identical except the color and appearance of EUT. DS-971 is the test sample.

3.3 Details of E.U.T.

Power supply: Input: 100-240VAC, 50/60Hz, 0.6A
Output: 6VDC, 1.5A

3.4 Description of Support Units

The EUT has been tested as an receiver.

3.5 Standards Applicable for Testing

The customer requested FCC tests for a Wireless Speaker. The standards used were FCC PART 15 SUBPART B.

3.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **IC – Registration No.:IC7760**

Waltek Services(Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration IC7760,July 24,2008.

- **FCC – Registration No.: 880581**

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581, July 9, 2008

3.7 Test Location

All Emissions testswere performed at:-

Waltek Services(Shenzhen) Co., Ltd. at 1/F, Fukangtai Building, West Baima Rd.,Songgang Street, Baoan District, Shenzhen, China

4 Equipment Used during Test

Equipment Name	Manufacturer Model	Equipment No	Internal No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
EMC Analyzer	Agilent/ E7405A	MY45114943	W2008001	9k-26.5GHz	Aug-08	Aug-09	Wws20081596	±1dB
Trilog Broadband Antenne 30-3000 MHz	SCHWARZBECK MESS-ELEKTROM/ VULB9163	336	W2008002	30-3000 MHz	Aug-08	Aug-09		±1dB
Broad-band Horn Antenna 1-18 GHz	SCHWARZBECK MESS-ELEKTROM/ VULB9163	667	W2008003	1-18GHz	Aug-08	Aug-09		f<10 GHz: ±1dB 10GHz<f<18 GHz: ±1.5dB
Broadband Preamplifier 0.5-18 GHz	SCHWARZBECK MESS-ELEKTROM/ BBV 9718	9718-148	W2008004	0.5-18GHz	Aug-08	Aug-09		±1.2dB
10m Coaxial Cable with N-male Connectors usable up to 18GHz,	SCHWARZBECK MESS-ELEKTROM/ AK 9515 H	-	-	-	Aug-08	Aug-09		-
10m 50 Ohm Coaxial Cable with N-plug, individual length, usable up to 3(5)GHz, Connector	SCHWARZBECK MESS-ELEKTROM/ AK 9513				Aug-08	Aug-09		
Positioning Controller	C&C LAB/ CC-C-IF				N/A	N/A		
Color Monitor	SUNSP0/ SP-14C				N/A	N/A		
Test Receiver	ROHDE&SCHWARZ/ ESPI	101155	W2005001	9k-3GHz	Aug-08	Aug-09	Wws20080942	±1dB
EMI Receiver	Beijingkehuan	KH3931		9k-1GHz	Aug-08	Aug-09		
Two-Line V-Network	ROHDE&SCHWARZ/ ENV216	100115	W2005002	50Ω/50μH	Aug-08	Aug-09	Wws20080941	±10%
V-LISN	SCHWARZBECK MESS-ELEKTRONI	NSLK 8128	8128-259	9k-30MHz	Aug-08	Aug-09		

Equipment Name	Manufacturer Model	Equipment No	Internal No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
	K							
Absorbing Clamp	ROHDE&SCHWARZ/ MDS-21	100205	W2005003	impedance 50Ω loss : 17 dB	Aug-08	Aug-09	Wws20080943	±1dB
10m 50 Ohm Coaxial Cable with N-plug, individual length, usable up to 3(5)GHz, Connectors	SCHWARZBECK MESS-ELEKTROM/ AK 9514				Aug-08	Aug-09		
Mp3	iPod A1285	5K85004U3R0	-	-	N/A	N/A	-	±0.5dB
FM Generator	JUNG JIN	SG-1501			Aug-08	Aug-09		±1dB

5 Emissions Test Results

5.1 Conducted Emission Data

Test Requirement:	FCC Part15.107
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class:	Class B
Limit:	66-56 dB μ V between 0.15MHz & 0.5MHz 56 dB μ V between 0.5MHz & 5MHz 60 dB μ V between 5MHz & 30MHz
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

5.1.1 E.U.T. Operation

Operating Environment:	
Temperature:	25.5 °C
Humidity:	51 % RH
Atmospheric Pressure:	1012 mbar

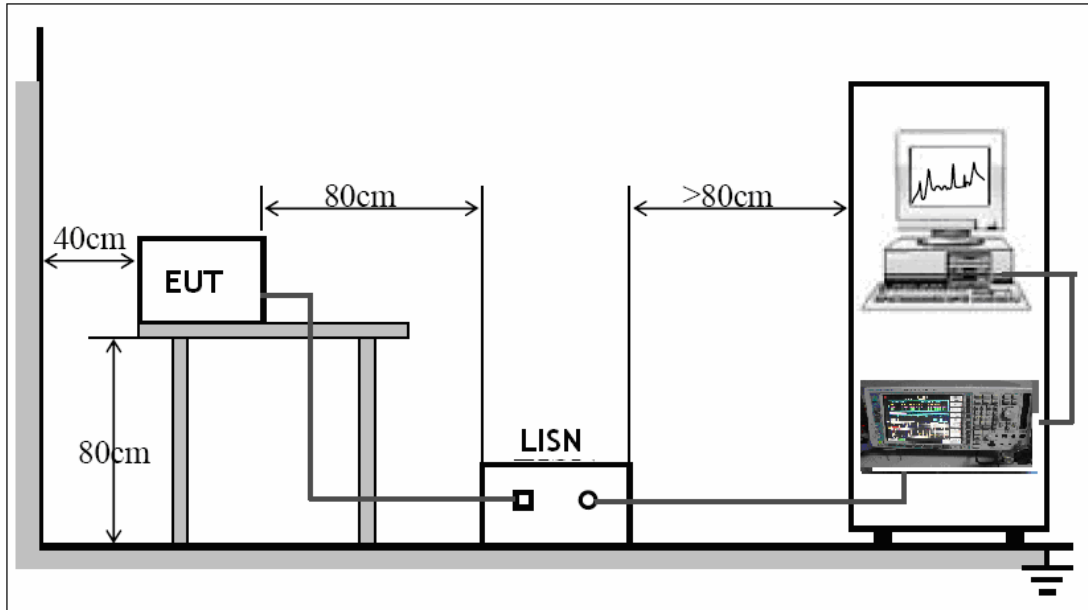
EUT Operation :

The EUT was tested according to ANSI C63.4:2003. The frequency spectrum from 150kHz to 30MHz was investigated.

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

5.1.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 B 15.107 limits.

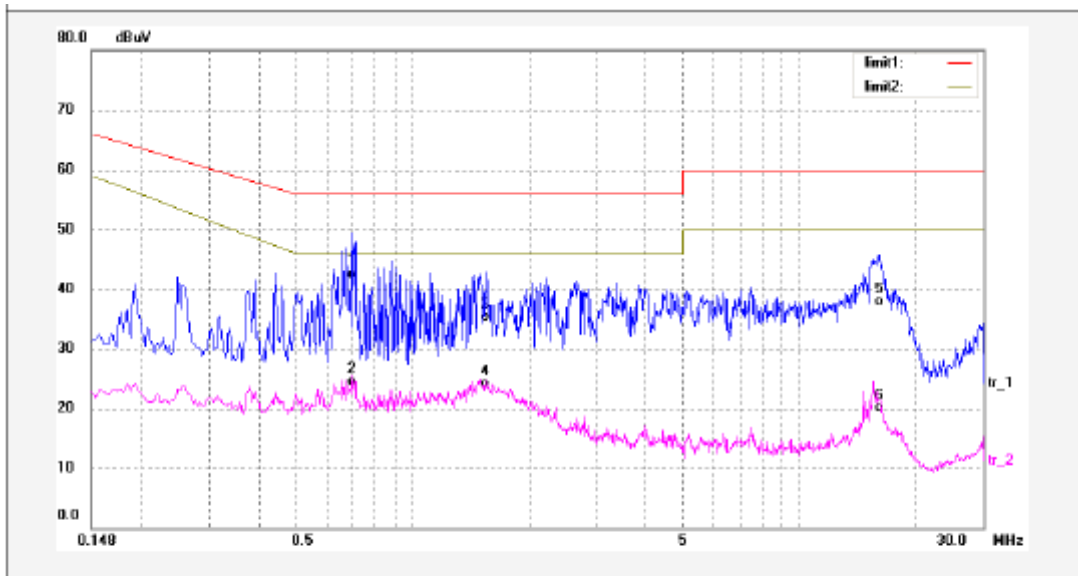


The EUT was placed on the test table in on(receiving) mode and the data were shown as follow.

5.1.3 Conducted Emission Test Result

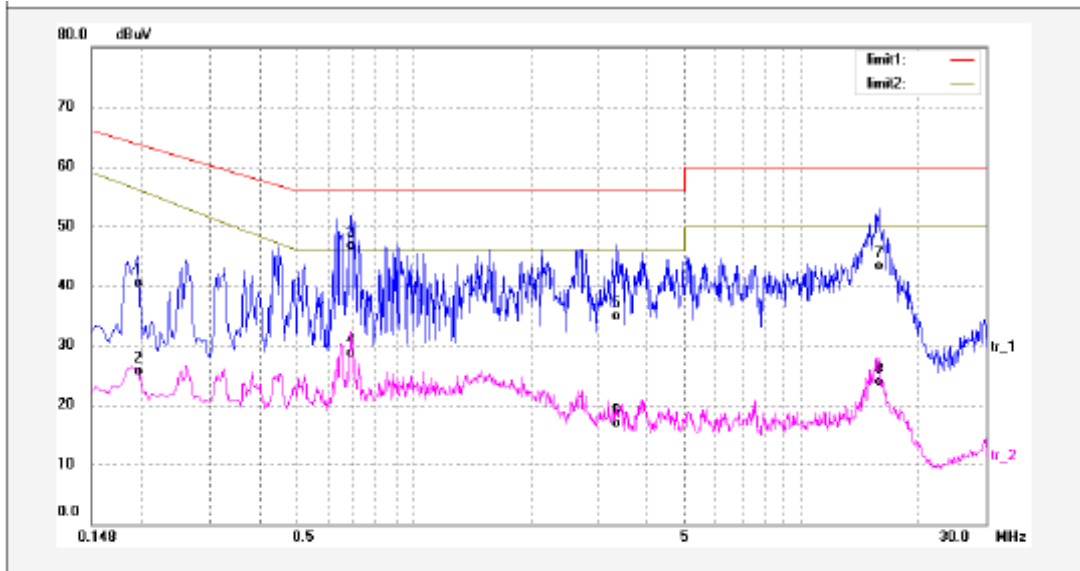
An initial pre-scan was performed on the live and neutral lines.

Phase:Live line



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.7005	41.62	0.00	41.62	56.00	-14.38	QP	
2	0.7005	23.78	0.00	23.78	48.00	-22.24	AVG	
3	1.5565	34.55	0.00	34.55	56.00	-21.45	QP	
4	1.5565	23.25	0.00	23.25	48.00	-22.75	AVG	
5	16.2044	37.19	0.00	37.19	60.00	-22.81	QP	
6	16.2044	19.38	0.00	19.38	50.00	-30.62	AVG	

Phase:Neutral line



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1965	39.63	0.00	39.63	63.75	-24.12	QP	
2	0.1965	24.84	0.00	24.84	56.08	-31.24	AVG	
3	0.6925	45.88	0.00	45.88	56.00	-10.12	QP	
4	0.6925	27.97	0.00	27.97	46.00	-18.03	AVG	
5	3.3445	34.01	0.00	34.01	56.00	-21.99	QP	
6	3.3445	18.17	0.00	18.17	46.00	-29.83	AVG	
7	15.9445	42.45	0.00	42.45	60.00	-17.55	QP	
8	15.9445	23.07	0.00	23.07	50.00	-26.93	AVG	

5.1.4 Photograph- Test Setup for Conducted Emission



5.2 Radiation Emission Data

Test Requirement:	FCC Part15.109
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	30MHz to 5GHz
Measurement Distance:	3m
Class:	Class B
Limit:	40.0 dB μ V/m between 30MHz & 88MHz 43.5 dB μ V/m between 88MHz & 216MHz 46.0 dB μ V/m between 216MHz & 960MHz 54.0 dB μ V/m zbove 960MHz
Detector:	Peak for pre-scan (120kHz resolution bandwidth) Quasi-Peak if maximised peak within 6dB of limit

5.2.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Waltek EMC Lab is ± 5.03 dB.

5.2.2 EUT Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 B limits.

The EUT was placed on the test table in on(receiving) mode and the data were shown as follow.

5.2.3 Spectrum Analyzer Setup

According to FCC Part15 B Rules, the system was tested 30 to 5000MHz.

Below 1GHz

Start Frequency..... 30 MHz
 Stop Frequency..... 1000MHz
 Sweep Speed Auto
 IF Bandwidth..... 120 KHz
 Video Bandwidth..... 100KHz
 Quasi-Peak Adapter Bandwidth 120 KHz
 Quasi-Peak Adapter Mode Normal
 Resolution Bandwidth 100KHz

Above 1GHz

Start Frequency..... 1000 MHz
 Stop Frequency..... 5000MHz
 Sweep Speed Auto
 IF Bandwidth..... 120 KHz
 Video Bandwidth..... 1000KHz
 Quasi-Peak Adapter Bandwidth 120 KHz
 Quasi-Peak Adapter Mode Normal
 Resolution Bandwidth 1000KHz

5.2.4 Test Procedure

For the radiated emissions test. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB μ V of specification limits), and are distinguished with a "Qp" in the data table.

The EUT was under normal mode during the final qualification test and the configuration was used to represent the worst case results.

ANSI STANDARD C63.4-2003 12.1.1.2 OTHER TYPES OF RECEIVERS: A typical signal or an unmodulated CW signal at the operating frequency of the EUT shall be supplied to the EUT for all measurements. Such a signal may be supplied by either a signal generator and an antenna in close proximity to the EUT or directly conducted into the antenna terminals of the EUT. The signal level shall be sufficient to the local oscillator of the EUT.

5.2.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dBμV means the emission is 7dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

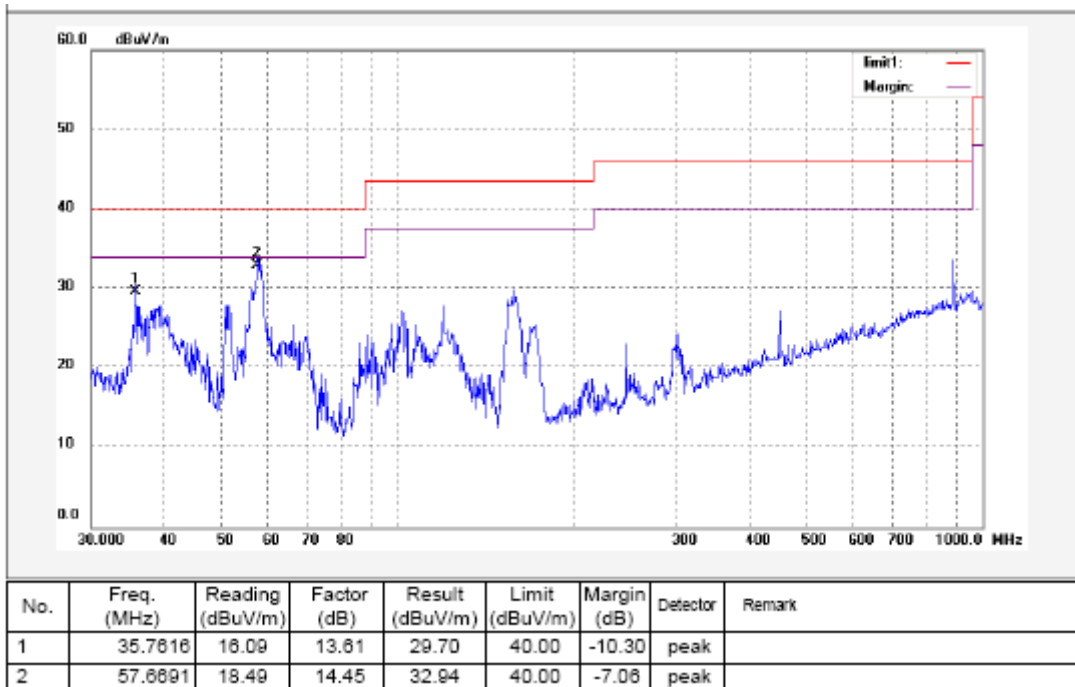
$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

5.2.6 Summary of Test Results

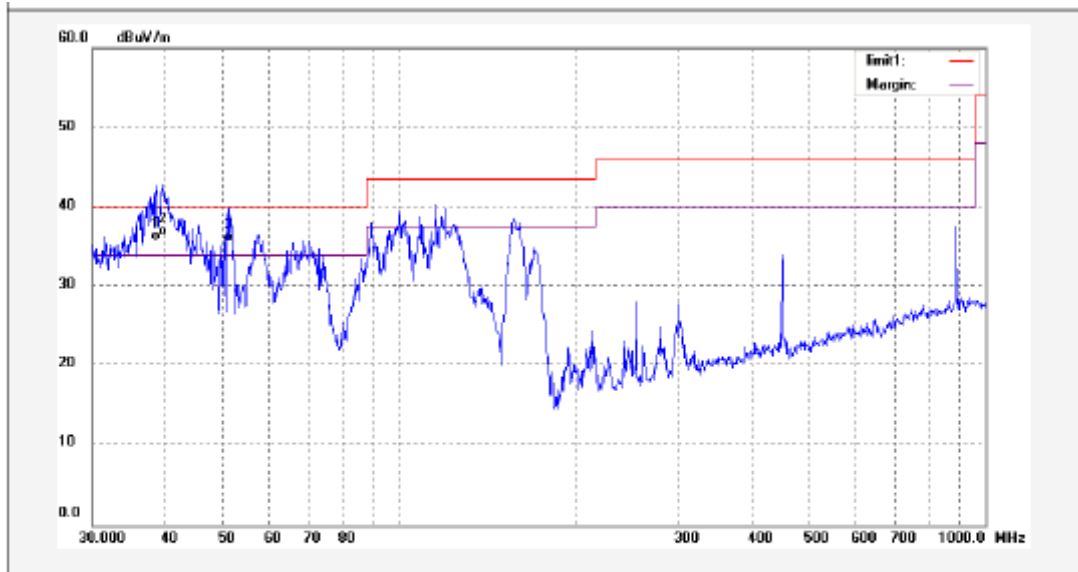
According to the data in this section, the EUT complied with the FCC Part15 B standards.

Below 1GHz

Antenna polarization:Horizontal



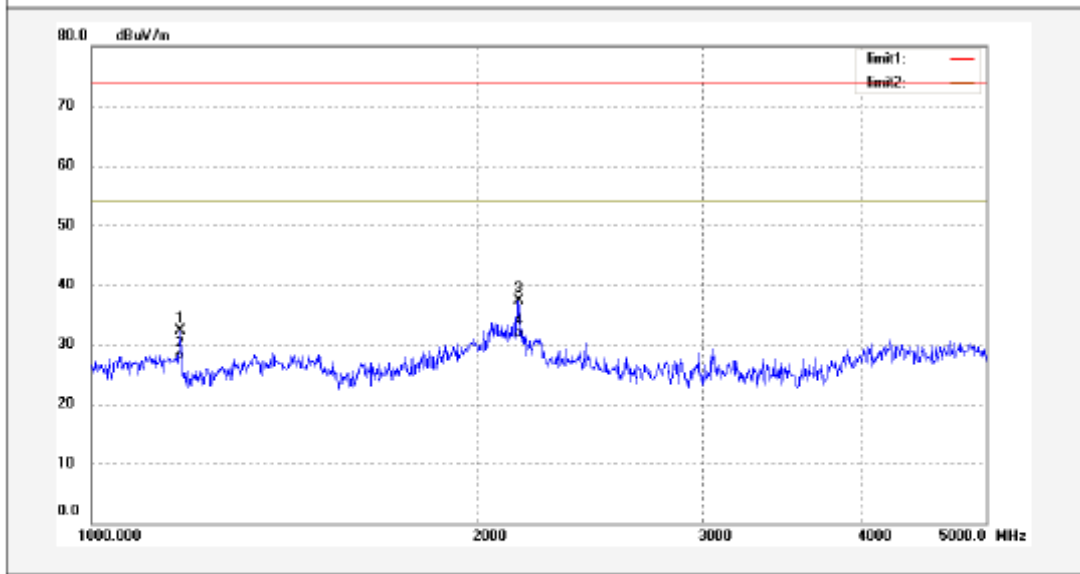
Antenna polarization:Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	38.5001	19.02	16.70	35.72	40.00	-4.28	QP	
2	39.4588	19.50	16.94	36.44	40.00	-3.56	QP	
3	51.1756	18.91	16.70	35.61	40.00	-4.39	QP	

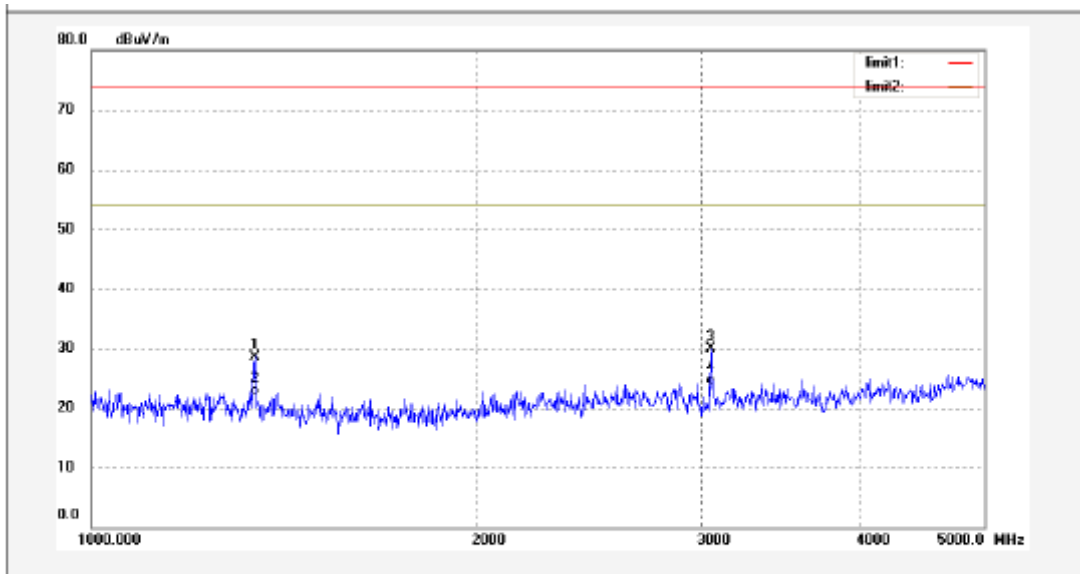
Above 1GHz

Antenna polarization:Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1172.917	40.20	-7.86	32.34	74.00	-41.66	peak	
2	1172.917	35.15	-7.86	27.29	54.00	-26.71	AVG	
3	2152.994	43.60	-6.24	37.36	74.00	-36.64	peak	
4	2152.994	37.33	-6.24	31.09	54.00	-22.91	AVG	

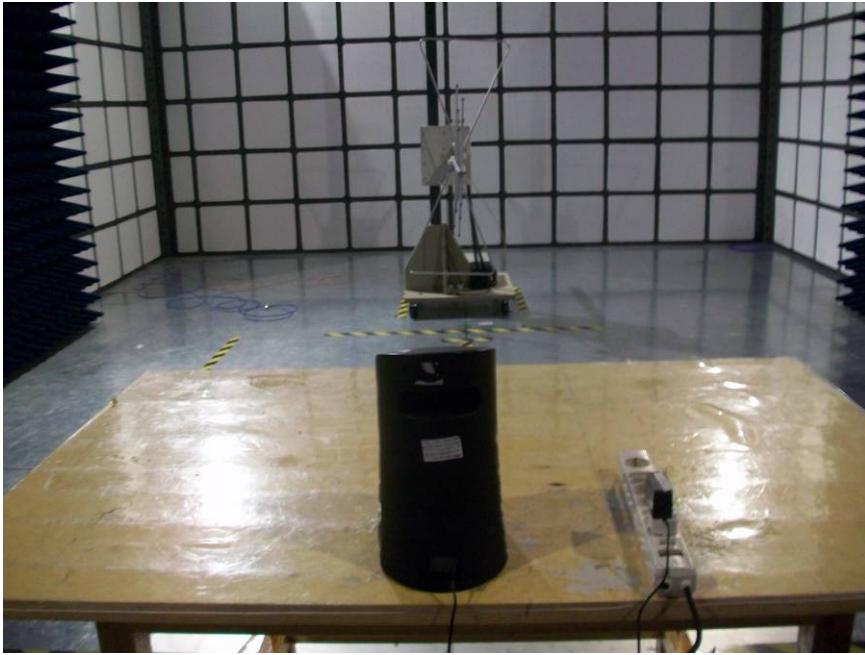
Antenna polarization:Horizontal



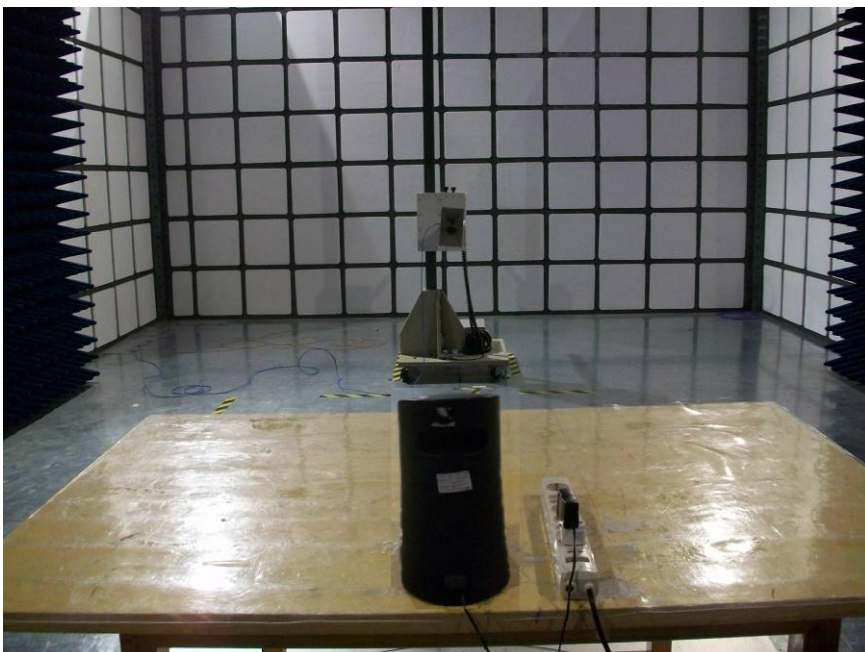
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1342.887	36.49	-7.89	28.60	74.00	-45.40	peak	
2	1342.887	29.96	-7.89	22.07	54.00	-31.93	AVG	
3	3054.014	36.54	-6.73	29.81	74.00	-44.19	peak	
4	3054.014	30.68	-6.73	23.95	54.00	-30.05	AVG	

5.2.7 Photograph – Radiation Emission Test Setup

Below 1GHz:



Above 1GHz:



6 Photographs - Constructional Details

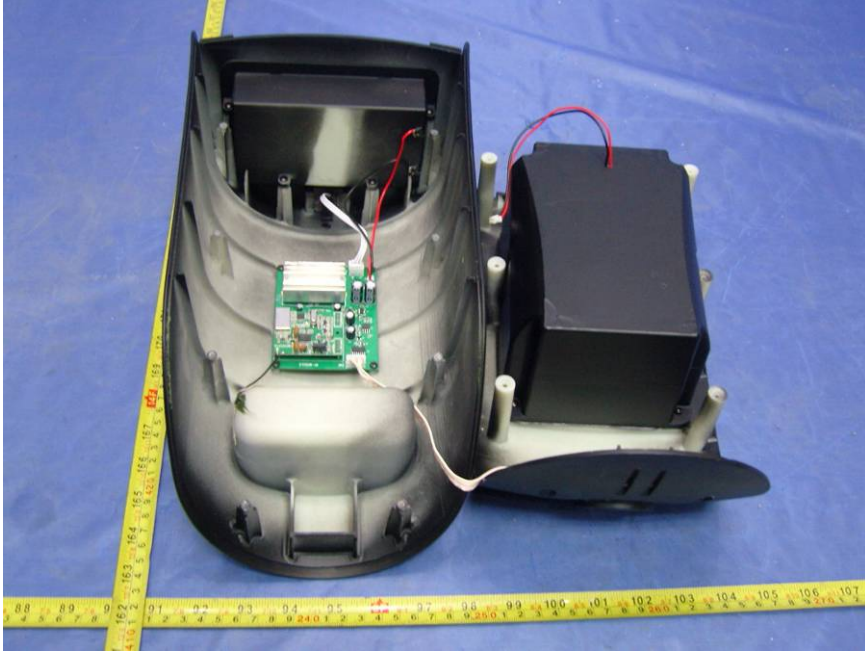
6.1 EUT –Component View



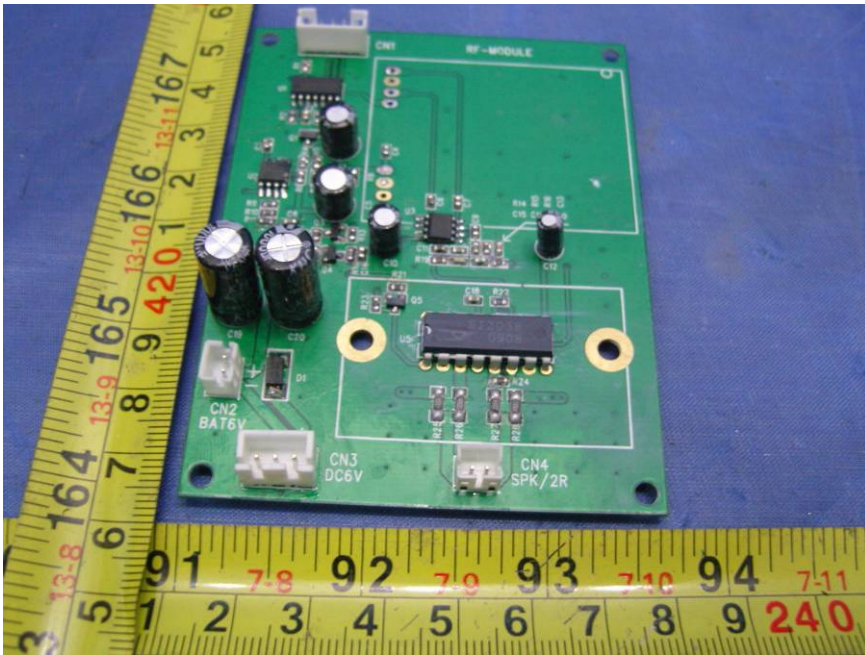
6.2 EUT - Back View



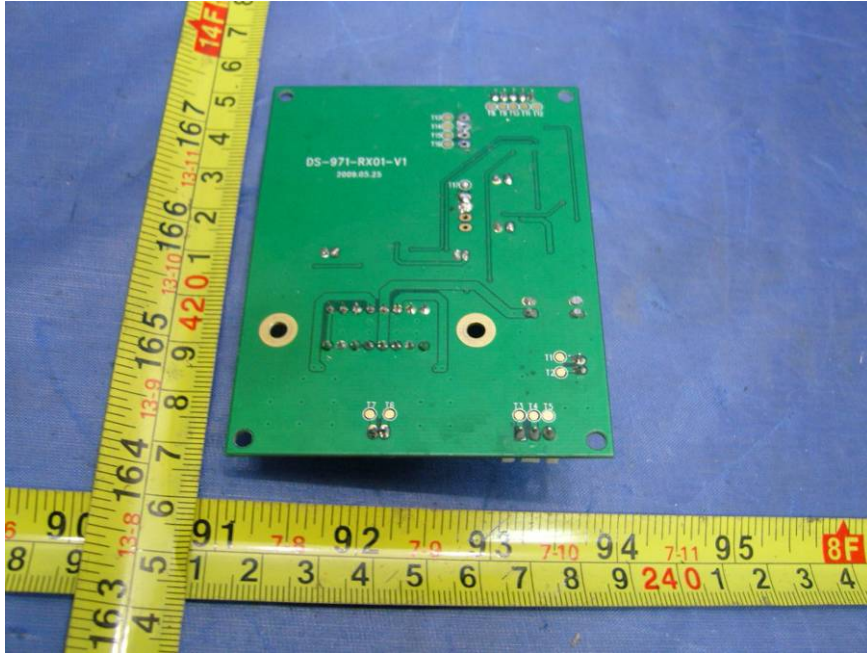
6.3 EUT – Open View



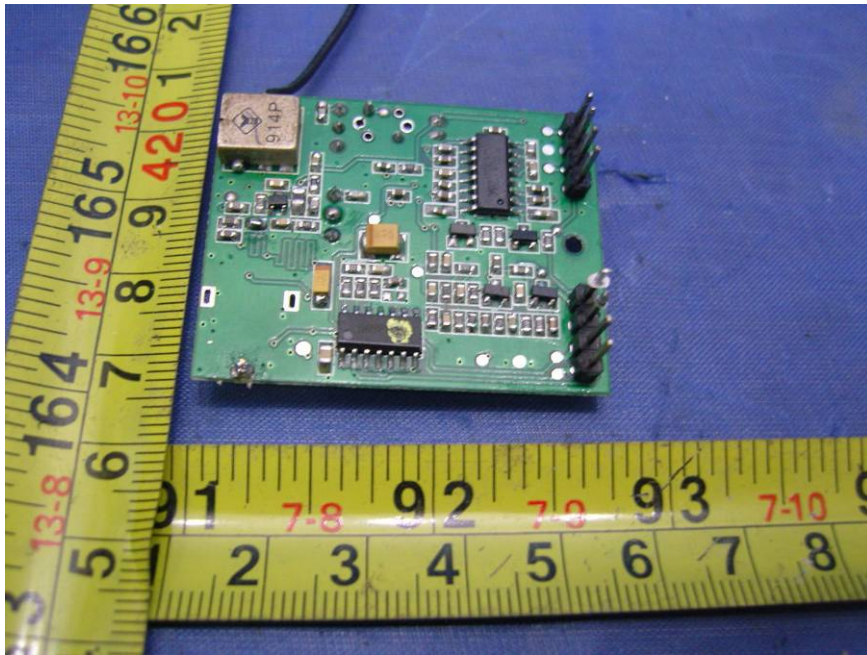
6.4 EUT – PCB1-Front View



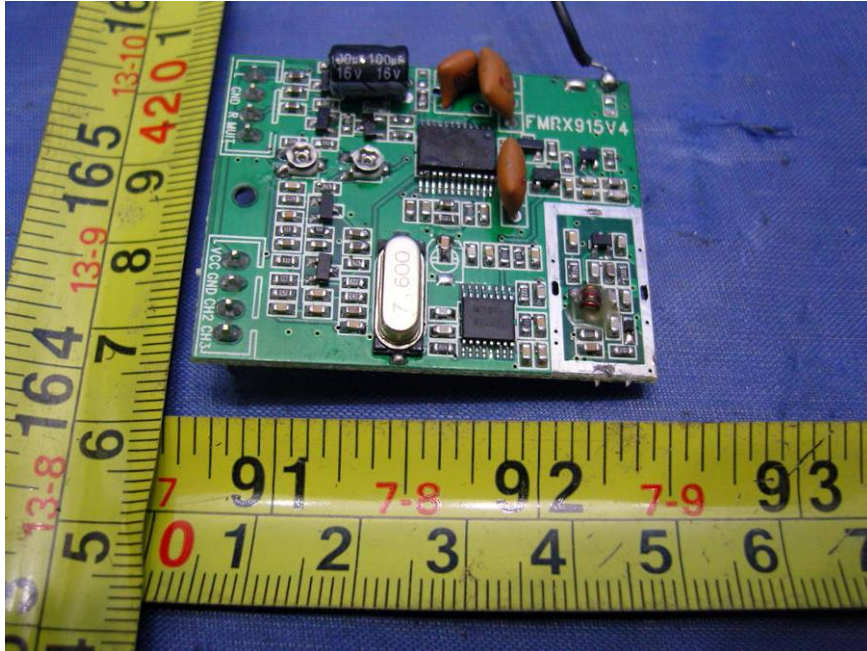
6.5 EUT – PCB1-Back View



6.6 EUT – PCB2-Front View



6.7 EUT – PCB2-Back View



6.8 Adapter–Appearance View



7 FCC Label

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:(1)this device may not cause harmful interference,and (2) this device must accept any interference received, including interference that may cause undesired operation

The Label must not be a stick-on paper. The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Proposed Label Location on EUT
EUT Bottom View/proposed FCC Mark Location

