

FCC TEST REPORT

FCC ID : WC2DS-1116
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 : Portable Wireless Speaker
Model No. : DS-1116, ISB212B, ISB212PR, ISB212GN, DS-1108, DS-843B, ISB182B, ISPB592B

Standards : FCC CFR47 Part 15 Section 15.107:2010
FCC CFR47 Part 15 Section 15.109:2010

Date of Test : June 21 ~ June 28, 2012
Date of Issue : June 29, 2012

Tested By : Zero Zhou / Engineer 

Reviewed By : Philo zhong / Manager 

Test Result	: PASS
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Prepared By:
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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.

The results shown in this test report refer only to the sample(s) tested , This Test report cannot be reproduced, except in full, without prior written permission of the Company.

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Reference No.: WT12064160R1-D-S-F

2 Test Summary

Test Items	Test Requirement	Test Method	Result
Radiated Emission	FCC Part 15.109:2009	ANSI C63.4: 2003	PASS
Conducted Emission	FCC Part 15.107:2009	ANSI C63.4: 2003	PASS

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4 General Information

4.1 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.

4.2 General Description of E.U.T.

Product Name : Portable Wireless Speaker
Model No. : DS-1116, ISB212B, ISB212PR, ISB212GN, DS-1108, DS-843B, ISB182B, ISPB592B
Difference Description : All models are exactly the same except for different color and appearance.

4.3 Details of E.U.T.

Technical Data : Internal Li-ion Battery: 3.7V
Charging Voltage: DC 5.0V
Operation Frequency : 2402MHz ~ 2480MHz
RF Part Data : The RF modula has been tested and passed. For more details of the test results, please refer to the FCC ID: WC2DS-1116 reference No.: WT12064160-D-S-F

4.4 Description of Support Units

The EUT has been tested as an independent unit.

4.5 Standards Applicable for Testing

The customer requested FCC tests for a Portable Wireless Speaker. The rules used were FCC Part 15 Section 15.107:2009 and Section 15.109:2009.

4.6 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: IC7760A**

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 7760A, August 3, 2010.

- **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, May 26, 2011.

4.7 Test Location

All the tests were performed at:

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

5 Equipment Used during Test

Equipment Name	Manufacturer Model	Equipment No	Internal No	Specification	Cal. Date	Due Date	Uncertainty
EMC Analyzer	Agilent/ E7405A	MY451149 43	W2008001	9k-26.5GHz	Aug. 2, 2011	Aug. 1, 2012	±1dB
Trilog Broadband Antenne	SCHWARZB ECK MESS-ELEKTROM / VULB9163	336	W2008002	25-3000 MHz	Aug. 2, 2011	Aug. 1, 2012	±1dB
10m Coaxial Cable with N-male Connectors	SCHWARZB ECK MESS-ELEKTROM / AK 9515 H	-	-	-	Aug. 2, 2011	Aug. 1, 2012	-
10m 50 Ohm Coaxial Cable	SCHWARZB ECK MESS-ELEKTROM / AK 9513	-	-	-	Aug. 2, 2011	Aug. 1, 2012	-
Positioning Controller	C&C LAB/ CC-C-IF	-	-	-	Aug. 2, 2011	Aug. 1, 2012	-
Color Monitor	SUNSPO/ SP-14C	-	-	-	Aug. 2, 2011	Aug. 1, 2012	-
Test Receiver	ROHDE&SC HWARZ/ ESPI	101155	W2005001	9k-3GHz	Aug. 2, 2011	Aug. 1, 2012	±1dB
Two-Line V-Network	ROHDE&SC HWARZ/ ENV216	100115	W2005002	50Ω/50μH	Aug. 2, 2011	Aug. 1, 2012	±10%
RF Generator	TESEQ GmbH/ NSG4070	25781	W2008008	Fraq-range : 9K-1GHz RF voltage : -60 dBm-+10dBm	Aug. 2, 2011	Aug. 1, 2012	Power_freq distinguish0.1Hz RFelectricity distinguish 0.1B
PC1	Lenovo	T2900D	-	-	Aug. 2, 2011	Aug. 1, 2012	±1dB
K/B	Dell	L100	-	-	Aug. 2, 2011	Aug. 1, 2012	±0.5dB
Mouse	Acer	M-UVACR1	-	-	Aug. 2, 2011	Aug. 1, 2012	±0.5dB

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6 FCC Part 15 Subpart B Requirements

6.1 Conducted Emission Data

Test Requirement:	FCC Part 15 Section 15.107
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

6.2 E.U.T. Operation

Operating Environment:

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

EUT Operation:

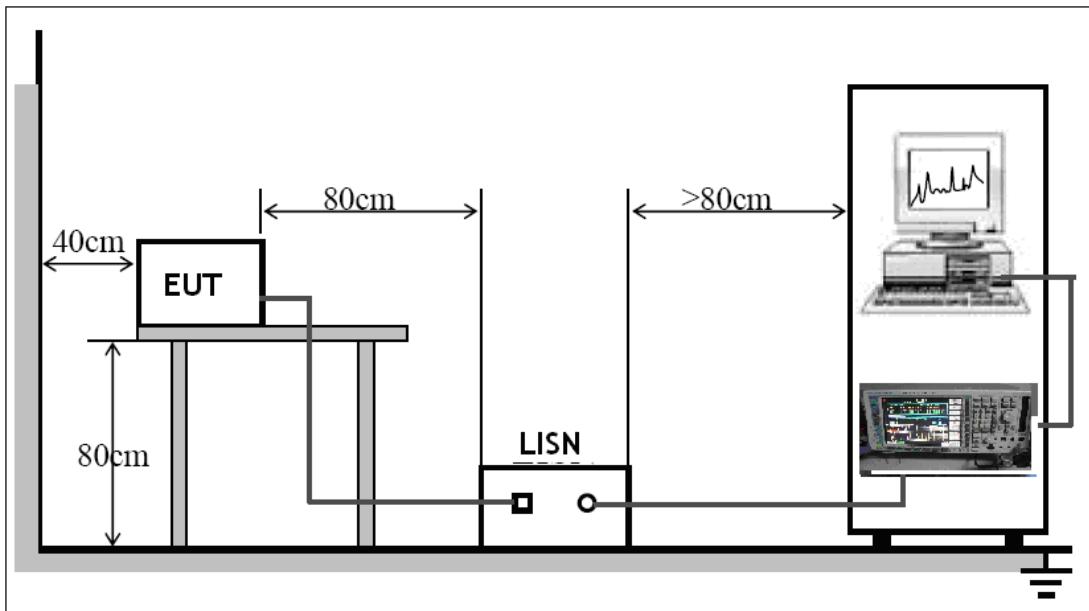
The EUT was tested in AUX IN connect PC mode and charging with PC. The worst mode was AUX IN connect PC. The worst data was showed this report only.

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.

6.3 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 Section 15.107 limits.

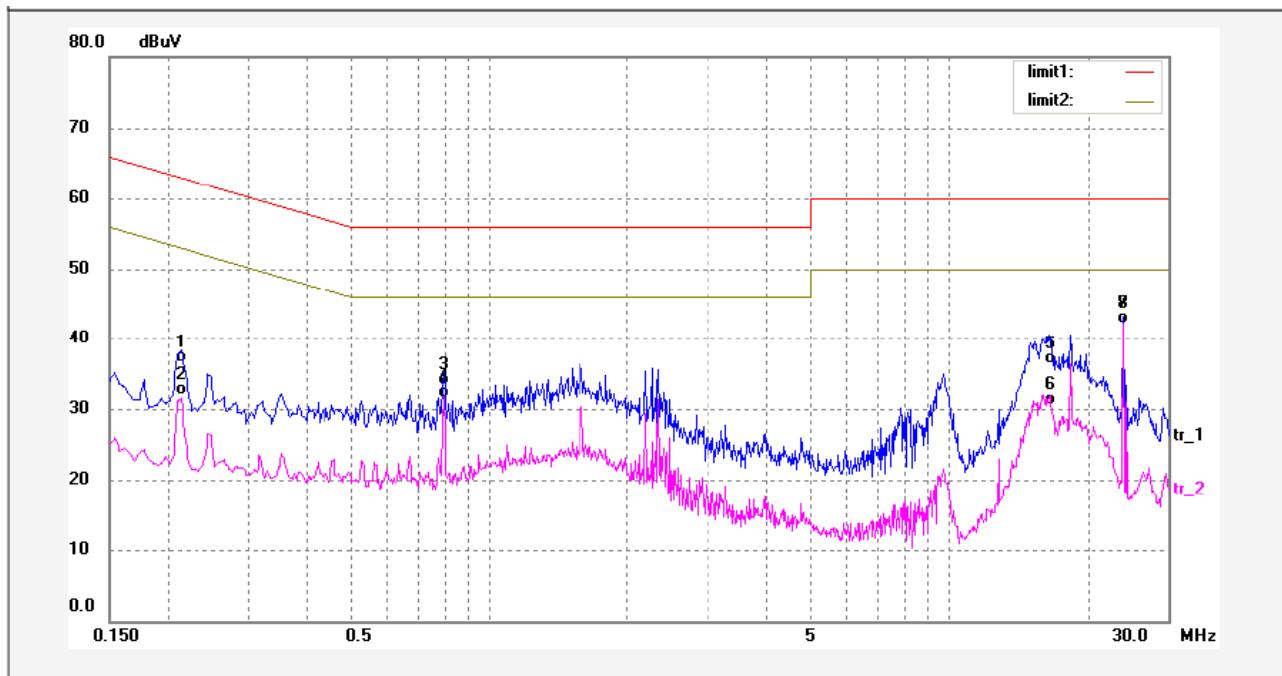


The EUT was placed on the test table in shielding room

6.4 Conducted Emission Test Result

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

Live line:



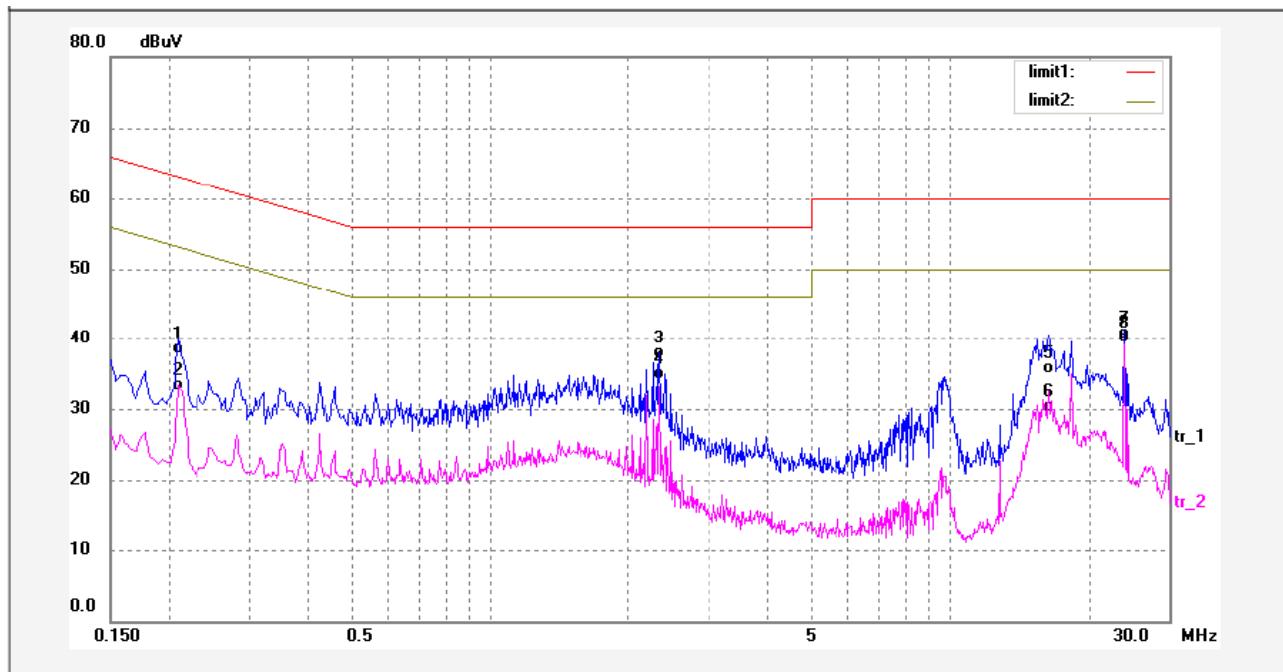
No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.2140	25.79	10.66	36.45	63.04	-26.59	QP	
2	0.2140	21.17	10.66	31.83	53.04	-21.21	AVG	
3	0.7980	21.22	12.17	33.39	56.00	-22.61	QP	
4	0.7980	19.26	12.17	31.43	46.00	-14.57	AVG	
5	16.3860	24.01	12.29	36.30	60.00	-23.70	QP	
6	16.3860	18.20	12.29	30.49	50.00	-19.51	AVG	
7	24.0740	29.61	12.48	42.09	60.00	-17.91	QP	
8	24.0740	29.56	12.48	42.04	50.00	-7.96	AVG	

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Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.2100	27.14	10.66	37.80	63.20	-25.40	QP	
2	0.2100	21.82	10.66	32.48	53.20	-20.72	AVG	
3	2.3380	24.93	12.26	37.19	56.00	-18.81	QP	
4	2.3380	21.86	12.26	34.12	46.00	-11.88	AVG	
5	16.4619	22.49	12.32	34.81	60.00	-25.19	QP	
6	16.4619	17.13	12.32	29.45	50.00	-20.55	AVG	
7	24.0740	27.52	12.48	40.00	60.00	-20.00	QP	
8	24.0740	26.85	12.48	39.33	50.00	-10.67	AVG	

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6.5 Radiated Emissions

Test Requirement:	FCC Part 15 Section 15.109
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
15.209 Limit:	40.0 dBuV/m between 30MHz & 88MHz 43.5 dBuV/m between 88MHz & 216MHz 46.0 dBuV/m between 216MHz & 960MHz 54.0 dBuV/m above 960MHz
Detector:	Peak for pre-scan (120kHz resolution bandwidth) Quasi-Peak if maximised peak within 6dB of limit

6.6 EUT Operation :

Operating Environment:

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

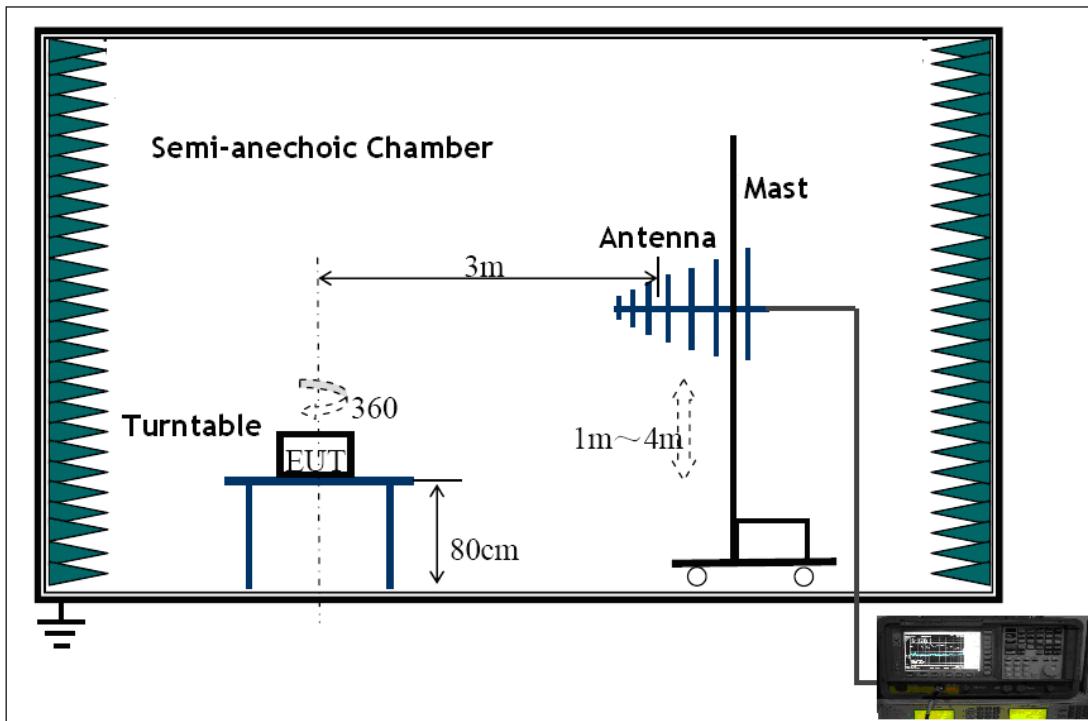
6.7 Measurement Uncertainty

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 ±5.03dB.

6.8 Test 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 Part 15 Section 15.109 limits.



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6.9 Spectrum Analyzer Setup

According to FCC Part15B Rules, the system was tested from 30MHz to 1GHz.

30MHz ~ 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

6.10 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the Z position. So the data shown was the Z position only.

6.11 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 -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

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

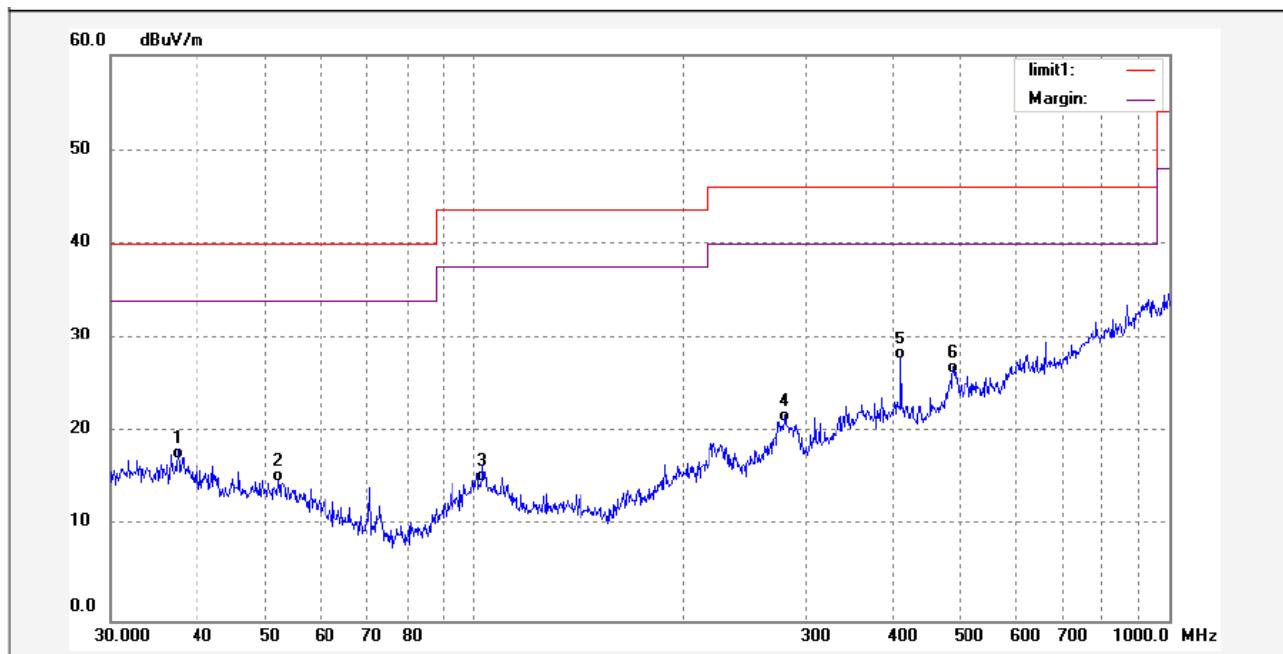
6.12 Summary of Test Results

According to the data in this section, the EUT complied with the FCC Part15 Section 15.109 standards.

AUX IN connect PC mode and charging with PC. The worst mode was AUX IN connect PC. The worst data was showed this report only.

Test Frequency : 30MHz ~ 1000MHz

Antenna polarization: Vertical



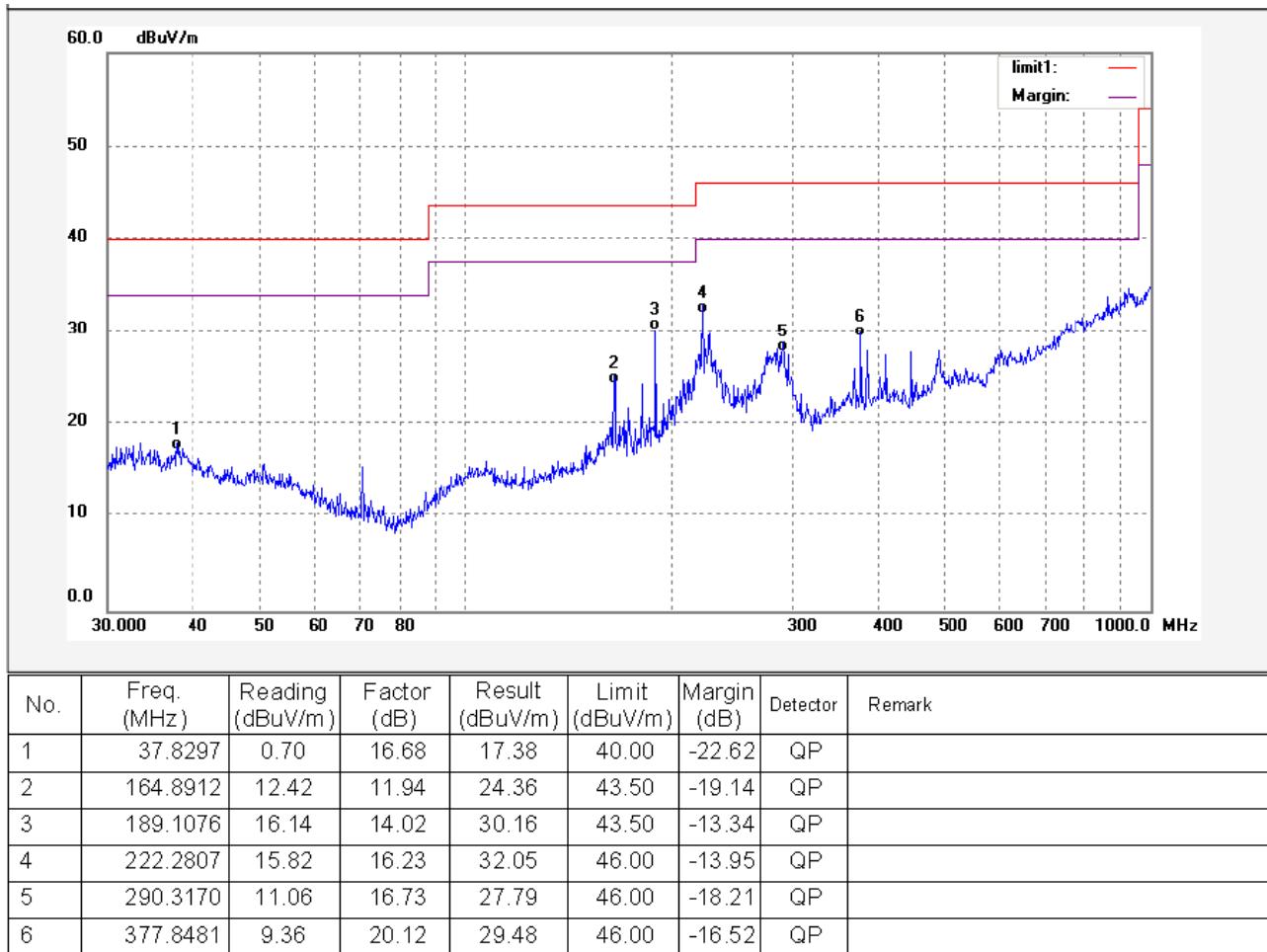
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	37.4330	0.58	16.59	17.17	40.00	-22.83	QP	
2	52.2659	0.32	14.43	14.75	40.00	-25.25	QP	
3	102.9729	0.60	14.15	14.75	43.50	-28.75	QP	
4	280.2936	4.20	16.85	21.05	46.00	-24.95	QP	
5	411.0925	6.30	21.39	27.69	46.00	-18.31	QP	
6	488.3263	0.90	25.25	26.15	46.00	-19.85	QP	

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Antenna polarization: Horizontal



==END==