

# FCC TEST REPORT

**FCC ID** : SJ8-M410A  
**Applicant** : RDI Technology (Shenzhen) Co., Ltd.  
**Address** : Building C1 Xintang Industrial Park, East Baishixia, Fuyong, Baoan, Shenzhen, China  
**Manufacturer** : the same as above  
**Address** : the same as above  
**Equipment Under Test (EUT) :**  
Product Name : Wireless Monitor  
Model No. : UBR243  
**Rules** : FCC CFR47 Part 15 Section 15.107:2010  
FCC CFR47 Part 15 Section 15.109:2010  
**Date of Test** : January 15~24,2013  
**Date of Issue** : March 14, 2013

**Test Result** : **PASS \***

Remark:

\* The sample described above has been tested to be in compliance with the requirements of ANSI C63.4:2003. The test results have been reviewed and comply with the rules listed 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.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

**Prepared By:**

Waltek Services (Shenzhen) Co., Ltd.

1/F, Fukangtai Building, West Baima Rd., Songgang Street, Baoan District,

Shenzhen 518105, China

Tel: +86-755-83551033

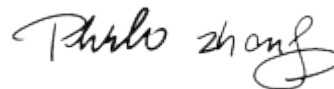
Fax: +86-755-83552400

Compiled by:



Zero Zhou / Project Engineer

Approved by:



Philo Zhong / Manager

## 2 Test Summary

<b>Test Items</b>	<b>Test Requirement</b>	<b>Result</b>
Conducted Emission	FCC Part 15.107:2010	PASS
Radiated Emission	FCC Part 15.109:2010	PASS

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## 4 General Information

### 4.1 General Description of E.U.T.

<b>Product Name</b>	: Wireless Monitor
<b>Model No.</b>	: UBR243
<b>Operation Frequency</b>	: 2402MHz ~ 2480MHz,39 channels in total
<b>Type of Modulation</b>	: GFSK
<b>Oscillator</b>	:Crystal 32.768kHz and 27MHz for CPU,16MHz for RF module
<b>Antenna installation</b>	: Integrated Antenna
<b>Antenna Gain</b>	: 2 dBi

### 4.2 Details of E.U.T.

<b>Technical Data</b>	: Battery DC 3.7V 1800mAh or DC 5V 1.5A powered by adapter (input: 100 ~ 240VAC, 50/60Hz,500mA)
<b>Adapter manufacturer</b>	: Csec
<b>M/N</b>	: CS9C050150FUF

### 4.3 Description of Support Units

The EUT has been tested as an independent unit.

### 4.4 Test Facility

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

- **IC – Registration No.: 7760A**

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, July 10, 2012.

- **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.

### 4.5 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

Conducted Emissions						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMI Test Receiver	R&S	ESCI	101178	Aug. 13,2012	Aug. 13,2013
2.	LISN	R&S	ENV216	101215	Aug. 13,2012	Aug. 13,2013
3.	Cable	HUBER+SUHNER	CBL2-NN-3M	2230300	Aug. 13,2012	Aug. 13,2013
3m Semi-anechoic Chamber for Radiation Emissions						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMC Analyzer	Agilent	E7405A	MY45114943	Aug. 13,2012	Aug. 13,2013
2.	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Aug. 13,2012	Aug. 13,2013
3.	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Aug. 13,2012	Aug. 13,2013
4.	Broad-band Horn Antenna	SCHWARZBECK	VULB9163	667	Aug. 13,2012	Aug. 13,2013
5.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	399	Aug. 13,2012	Aug. 13,2013
6.	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Feb .23,2012	Feb .23,2013
7.	Broadband Preamplifier	SCHWARZBECK	BBV 9718	9718-148	Aug. 13,2012	Aug. 13,2013
8.	10m Coaxial Cable with N- plug	SCHWARZBECK	AK 9515 H	-	Aug. 13,2012	Aug. 13,2013
9.	10m 50 Ohm Coaxial Cable with N-plug	SCHWARZBECK	AK 9513	-	Aug. 13,2012	Aug. 13,2013
10.	Positioning Controller	C&C LAB	CC-C-IF	-	Aug. 13,2012	Aug. 13,2013
11.	Color Monitor	SUNSP0	SP-14C	-	Aug. 13,2012	Aug. 13,2013
Associated Equipment						
1	Computer	lenovo	T4900V	0100640332	-	-
2	LCD	lenovo	9227-AC6	4M02921823 00473	-	-
3	Keyboard	shuangfeiyan	KB-8620D	-	-	-
4	Mouse	shuangfeiyan	OP-220	23- 033863069	-	-

## 6 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 $\mu$ V between 0.15MHz & 0.5MHz 56 dB $\mu$ V between 0.5MHz & 5MHz 60 dB $\mu$ V between 5MHz & 30MHz The tighter limit applies at the band edges.
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

### 6.1 E.U.T. Operation

#### Operating Environment:

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

#### EUT Operation:

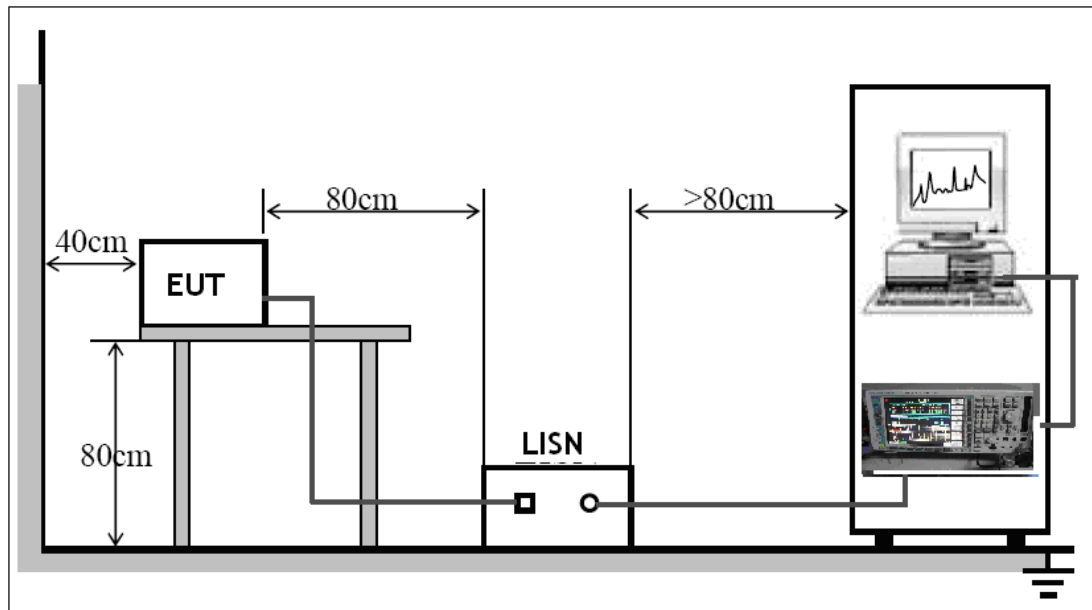
The pre-test was performance on PC connecting mode.

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.

## 6.2 EUT Setup

The EUT was placed on the test table in shielding room.

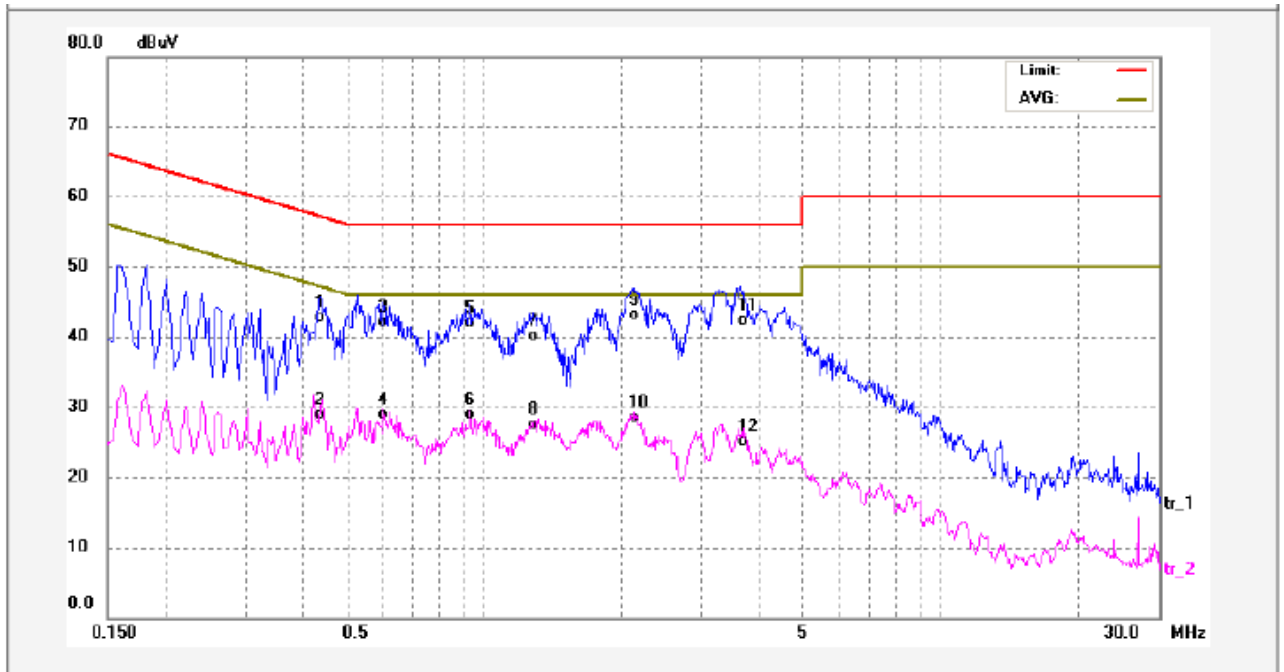


## 6.3 Conducted Emission Test Result

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

Test mode:working with PC(running skype video)

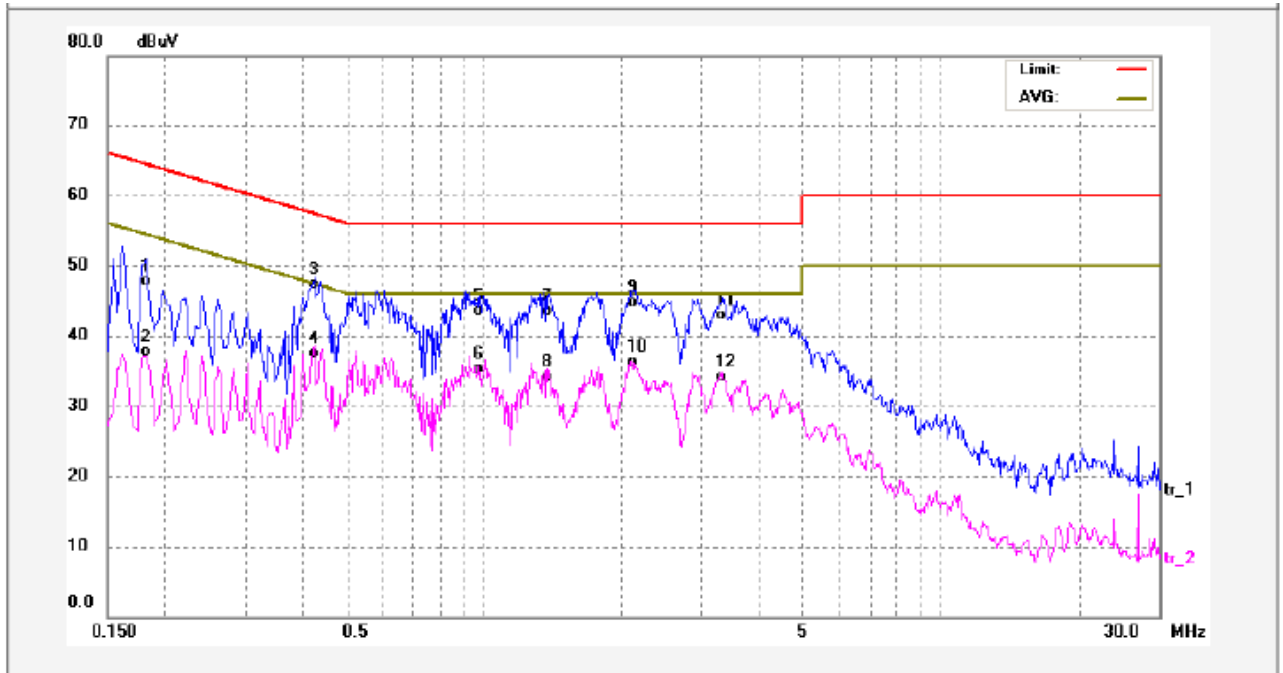
Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.4380	30.68	11.31	41.99	57.10	-15.11	QP	
2	0.4380	16.72	11.31	28.03	47.10	-19.07	AVG	
3	0.6020	29.90	11.33	41.23	56.00	-14.77	QP	
4	0.6020	16.80	11.33	28.13	46.00	-17.87	AVG	
5	0.9340	29.84	11.22	41.06	56.00	-14.94	QP	
6	0.9340	16.84	11.22	28.06	46.00	-17.94	AVG	
7	1.2820	28.10	11.19	39.29	56.00	-16.71	QP	
8	1.2820	15.57	11.19	26.76	46.00	-19.24	AVG	
9	2.1180	31.17	11.20	42.37	56.00	-13.63	QP	
10	2.1180	16.48	11.20	27.68	46.00	-18.32	AVG	
11	3.6420	30.35	11.22	41.57	56.00	-14.43	QP	
12	3.6420	13.16	11.22	24.38	46.00	-21.62	AVG	



Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1819	35.57	11.25	46.82	64.39	-17.57	QP	
2	0.1819	25.58	11.25	36.83	54.39	-17.56	AVG	
3	0.4260	35.20	11.31	46.51	57.33	-10.82	QP	
4	0.4260	25.49	11.31	36.80	47.33	-10.53	AVG	
5	0.9820	31.47	11.19	42.66	56.00	-13.34	QP	
6	0.9820	23.39	11.19	34.58	46.00	-11.42	AVG	
7	1.3820	31.45	11.19	42.64	56.00	-13.36	QP	
8	1.3820	22.16	11.19	33.35	46.00	-12.65	AVG	
9	2.1300	32.75	11.20	43.95	56.00	-12.05	QP	
10	2.1300	24.28	11.20	35.48	46.00	-10.52	AVG	
11	3.3340	30.93	11.22	42.15	56.00	-13.85	QP	
12	3.3340	22.01	11.22	33.23	46.00	-12.77	AVG	

## 7 Radiation Emission Data

Test Requirement:	FCC Part 15 Section 15.109
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Measurement Distance:	3m
Class:	Class B
Limit:	40.0 dB $\mu$ V/m between 30MHz & 88MHz for Quasi-Peak 43.5 dB $\mu$ V/m between 88MHz & 216MHz for Quasi-Peak 46.0 dB $\mu$ V/m between 216MHz & 960MHz for Quasi-Peak 54.0 dB $\mu$ V/m above 960MHz & 1GHz for Quasi-Peak 54.0 dB $\mu$ V/m above 1GHz for AV 74.0 dB $\mu$ V/m above 1GHz for Peak The tighter limit applies at the band edges.
Detector:	Peak for pre-scan (120kHz resolution bandwidth) Quasi-Peak if maximised peak within 6dB of limit

### 7.1 E.U.T. Operation

#### Operating Environment:

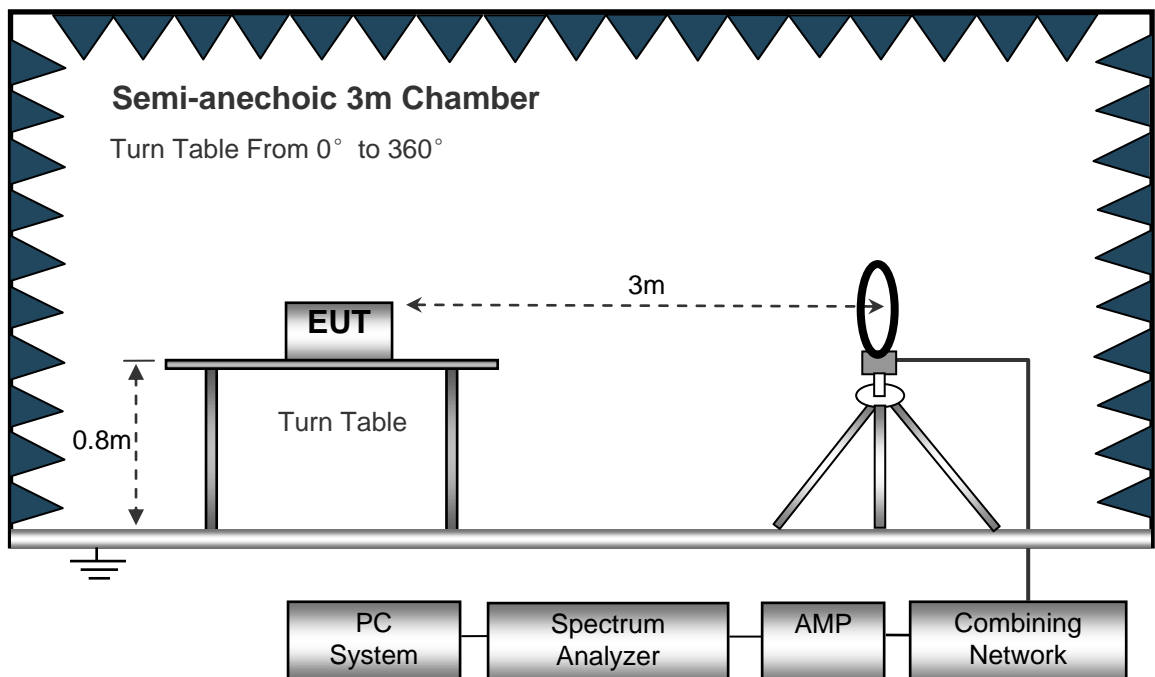
Temperature: 25.5 °C  
Humidity: 51 % RH  
Atmospheric Pressure: 1012 mbar

#### EUT Operation:

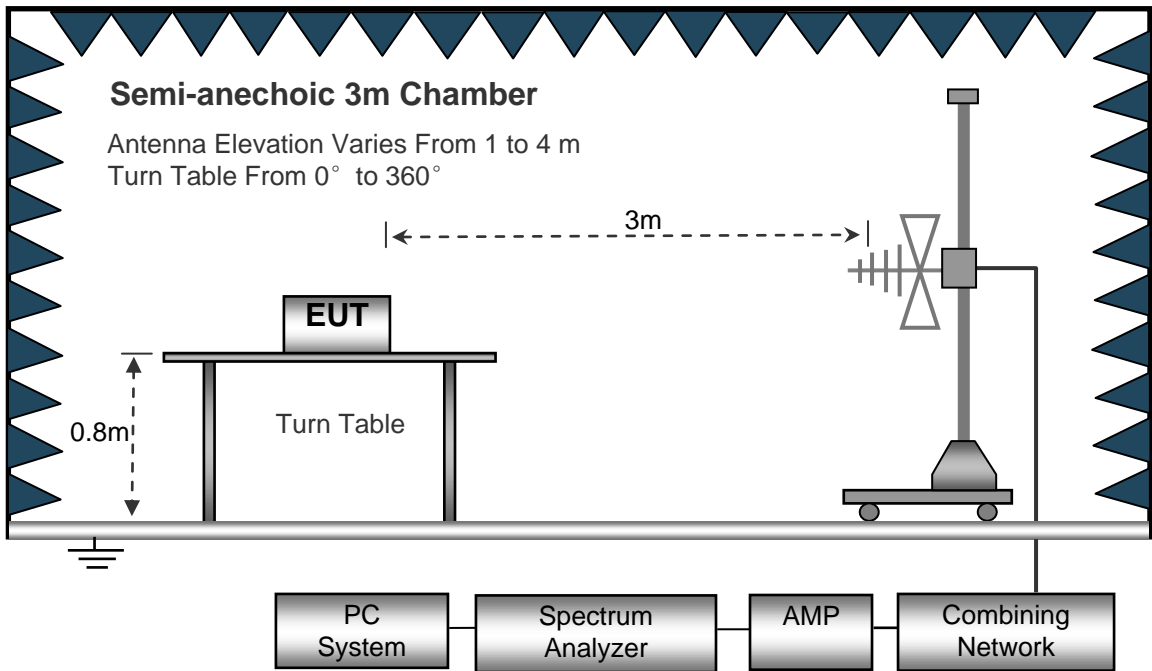
The pre-test was performance on PC connecting mode.

### 7.2 EUT Setup

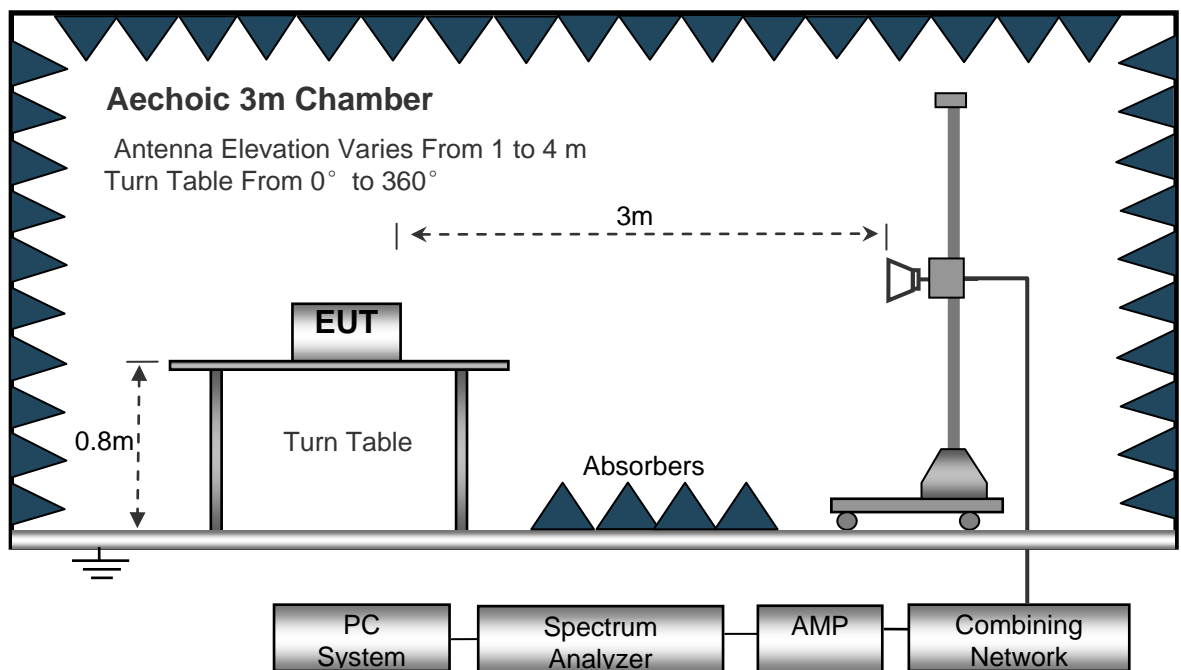
below 30MHz.



from 30 MHz to 1 GHz.



above 1 GHz.



### 7.3 Spectrum Analyzer Setup

According to FCC Part15 B Rules, the system was tested 9kHz to 6GHz.

Below 30MHz

Sweep Speed..... Auto  
IF Bandwidth ..... 10KHz  
Video Bandwidth ..... 10KHz  
Resolution Bandwidth ..... 10KHz

30MHz ~ 1GHz

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

Sweep Speed..... Auto  
IF Bandwidth ..... 120 KHz  
Video Bandwidth ..... 3MHz  
Quasi-Peak Adapter Bandwidth..... 120 KHz  
Quasi-Peak Adapter Mode ..... Normal  
Resolution Bandwidth ..... 1MHz

### 7.4 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 performed in X(normal uses) axis positioning.

## 7.5 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  $-7\text{dB}\mu\text{V}$  means the emission is  $7\text{dB}\mu\text{V}$  below the maximum limit for Class B. The equation for margin calculation is as follows:

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

### 7.6 Summary of Test Results

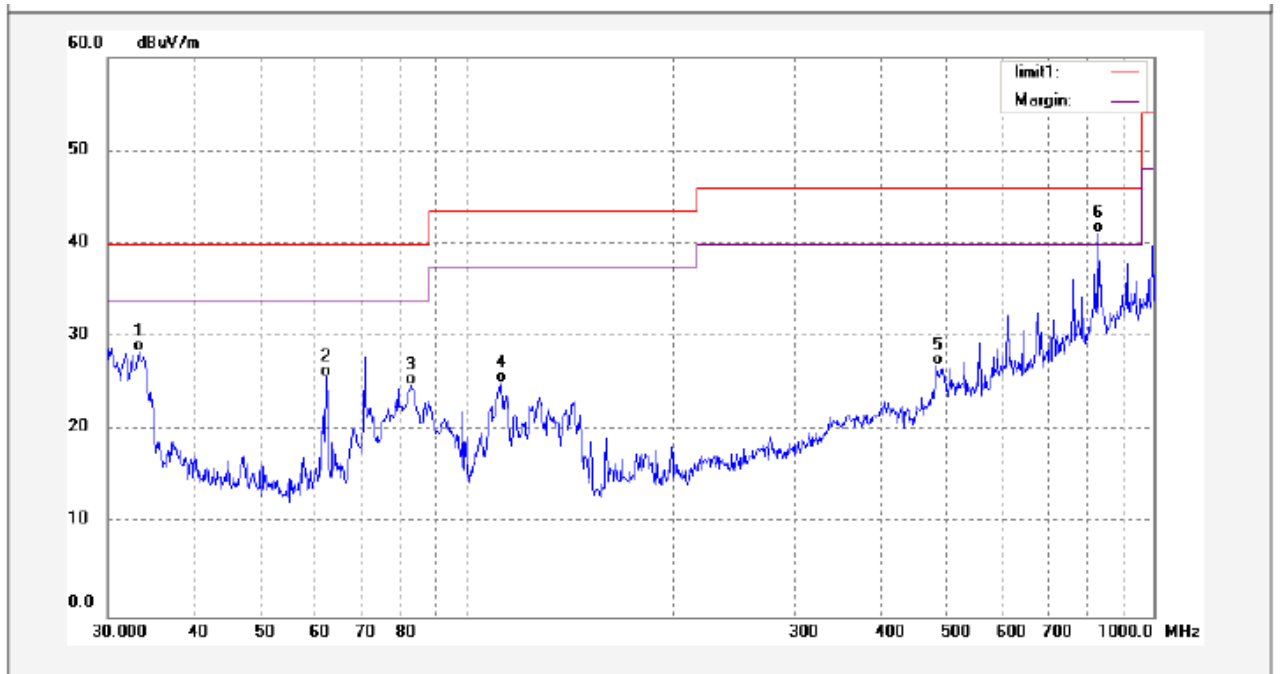
**Test Frequency :Below 30MHz**

After pretest,we found no higher emission than background level, the data does not been shown in the test report.

**Test Frequency : 30MHz ~ 1000MHz**

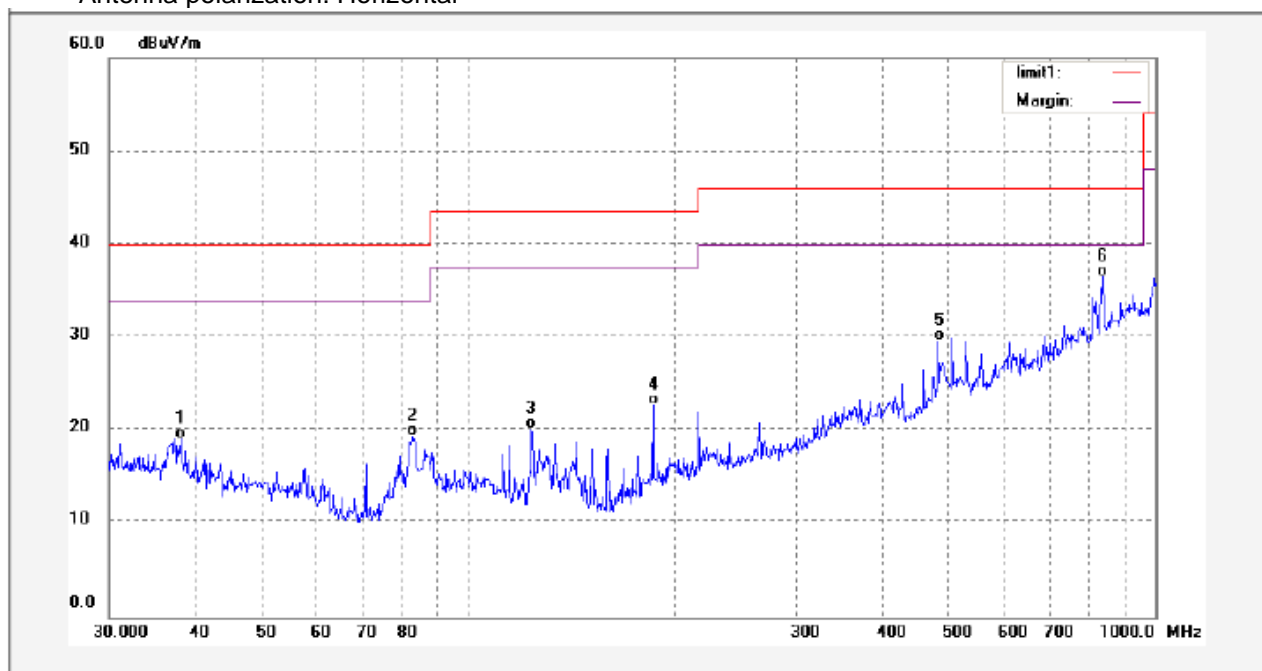
Test mode:working with PC(running skype video,adapter operation)

Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	33.3349	11.91	16.55	28.46	40.00	-11.54	QP	
2	62.3038	13.84	11.84	25.68	40.00	-14.32	QP	
3	83.1076	15.09	9.68	24.77	40.00	-15.23	QP	
4	112.4271	11.97	13.19	25.16	43.50	-18.34	QP	
5	483.2061	3.27	23.68	26.95	46.00	-19.05	QP	
6	830.0909	11.76	29.40	41.16	46.00	-4.84	QP	

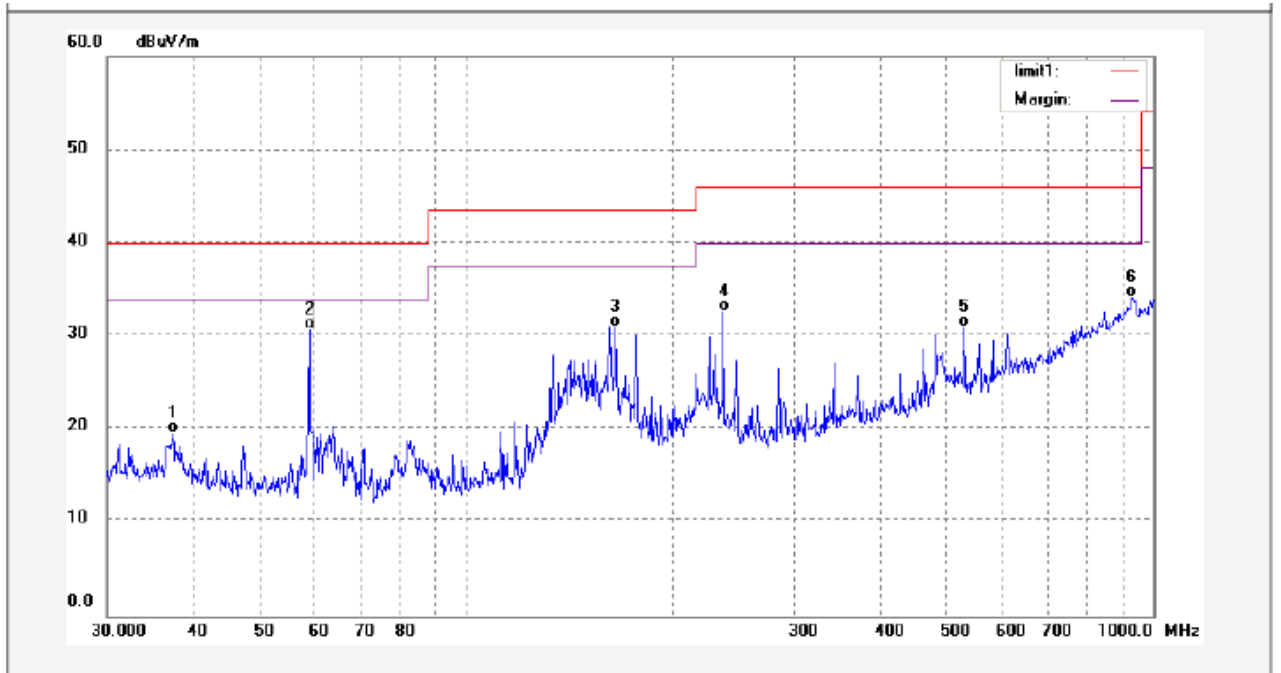
Antenna polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	38.0965	2.51	16.68	19.19	40.00	-20.81	QP	
2	83.1076	9.73	9.68	19.41	40.00	-20.59	QP	
3	123.6150	8.58	11.66	20.24	43.50	-23.26	QP	
4	185.8143	8.62	14.08	22.70	43.50	-20.80	QP	
5	483.2061	5.96	23.68	29.64	46.00	-16.36	QP	
6	838.8870	6.69	29.80	36.49	46.00	-9.51	QP	

Test mode:working with PC(running skype video,battery operation)

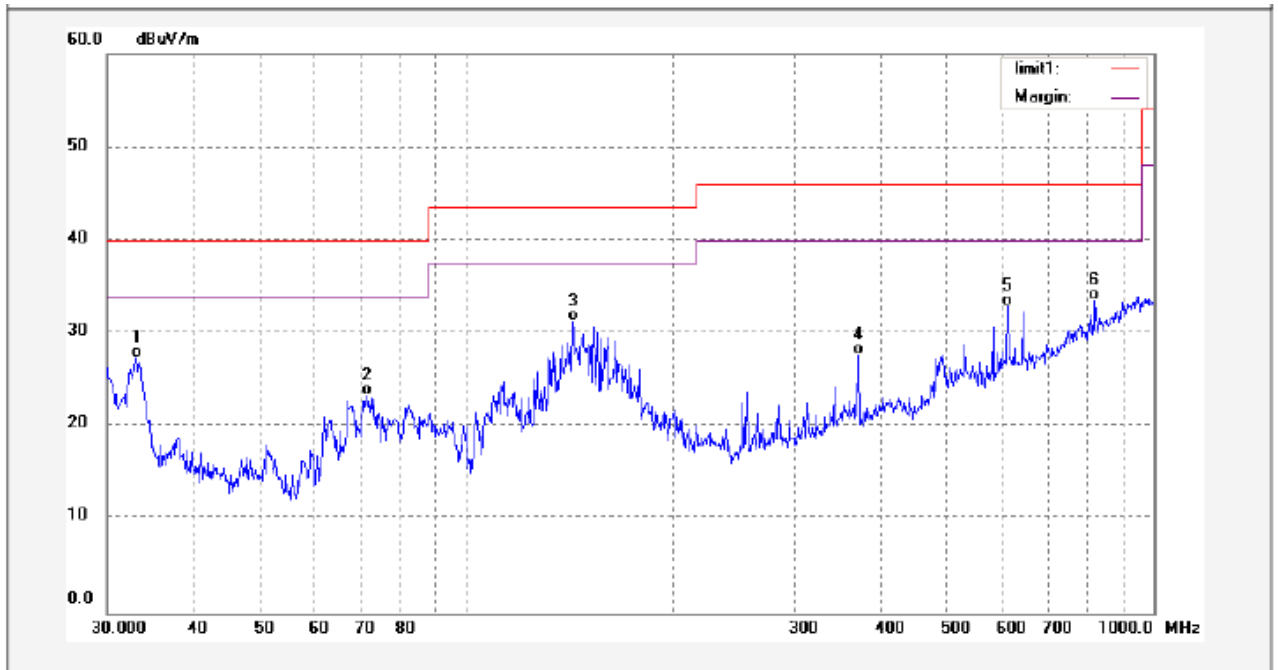
Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	37.4330	3.05	16.59	19.64	40.00	-20.36	QP	
2	59.1052	17.93	12.72	30.65	40.00	-9.35	QP	
3	164.8912	19.11	11.94	31.05	43.50	-12.45	QP	
4	236.7928	16.91	15.66	32.57	46.00	-13.43	QP	
5	531.2910	7.15	23.82	30.97	46.00	-15.03	QP	
6	932.1405	2.26	31.88	34.14	46.00	-11.86	QP	



Antenna polarization: Horizontal

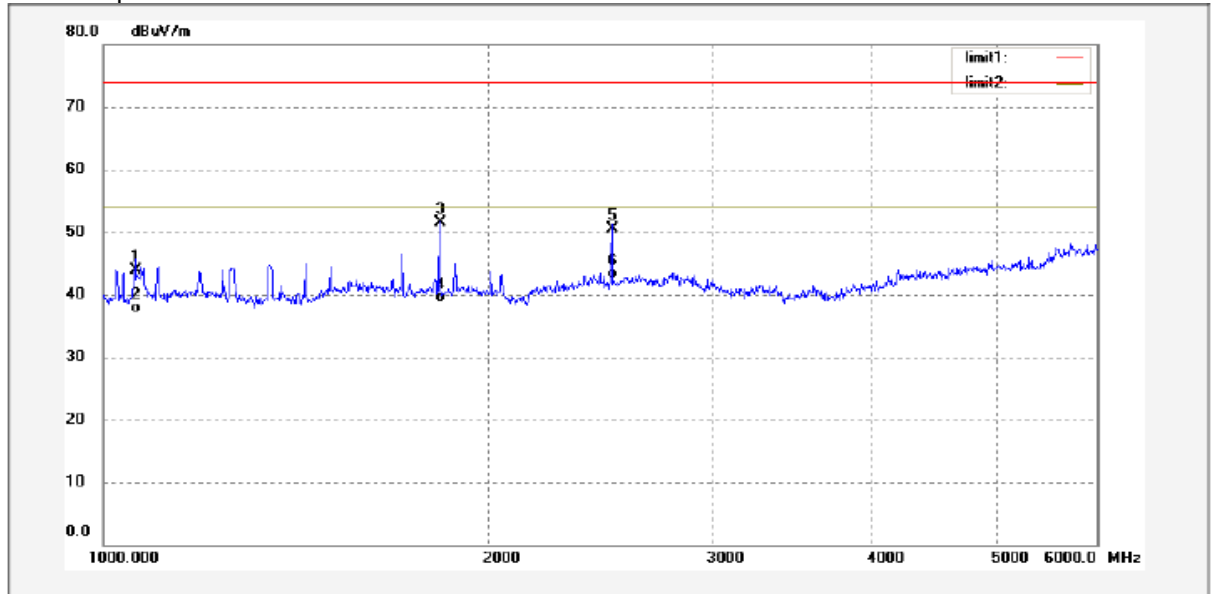


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	32.9854	10.76	16.57	27.33	40.00	-12.67	QP	
2	71.7054	13.60	9.66	23.26	40.00	-16.74	QP	
3	142.7692	19.77	11.46	31.23	43.50	-12.27	QP	
4	371.2679	7.14	20.47	27.61	46.00	-18.39	QP	
5	613.6145	6.96	26.02	32.98	46.00	-13.02	QP	
6	821.3871	3.95	29.53	33.48	46.00	-12.52	QP	

**Test Frequency : Above 1GHz**

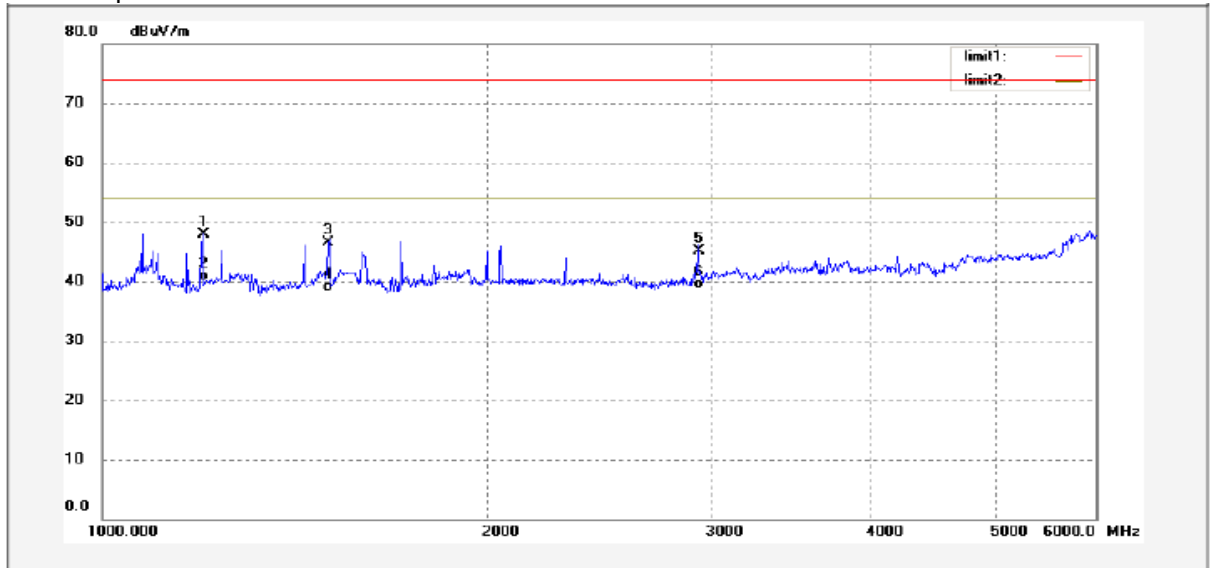
Test mode:working with PC(running skype video,battery operation)

Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1060.120	47.38	-3.45	43.93	74.00	-30.07	peak	
2	1060.120	40.50	-3.45	37.05	54.00	-16.95	AVG	
3	1836.673	52.90	-1.35	51.55	74.00	-22.45	peak	
4	1836.673	40.02	-1.35	38.67	54.00	-15.33	AVG	
5	2503.006	48.68	1.85	50.53	74.00	-23.47	peak	
6	2503.006	40.68	1.85	42.53	54.00	-11.47	AVG	

Antenna polarization: Horizontal

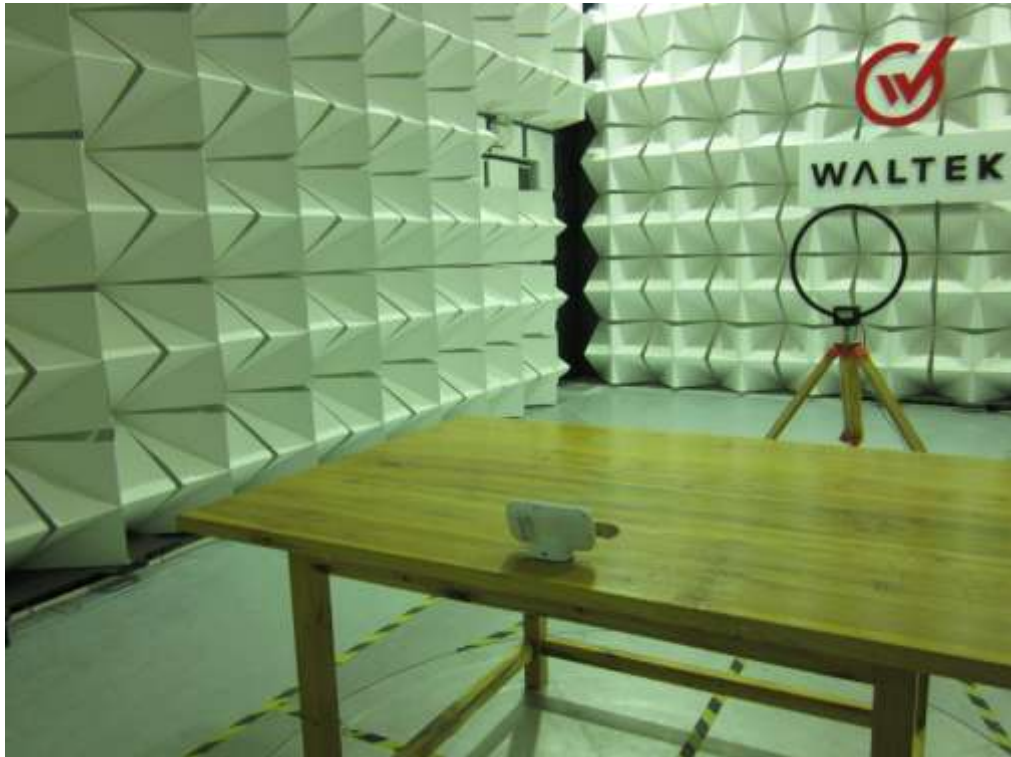


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1200.400	50.60	-2.62	47.98	74.00	-26.02	peak	
2	1200.400	42.74	-2.62	40.12	54.00	-13.88	AVG	
3	1501.002	48.69	-2.18	46.51	74.00	-27.49	peak	
4	1501.002	40.52	-2.18	38.34	54.00	-15.66	AVG	
5	2933.868	41.99	3.04	45.03	74.00	-28.97	peak	
6	2933.868	35.70	3.04	38.74	54.00	-15.26	AVG	

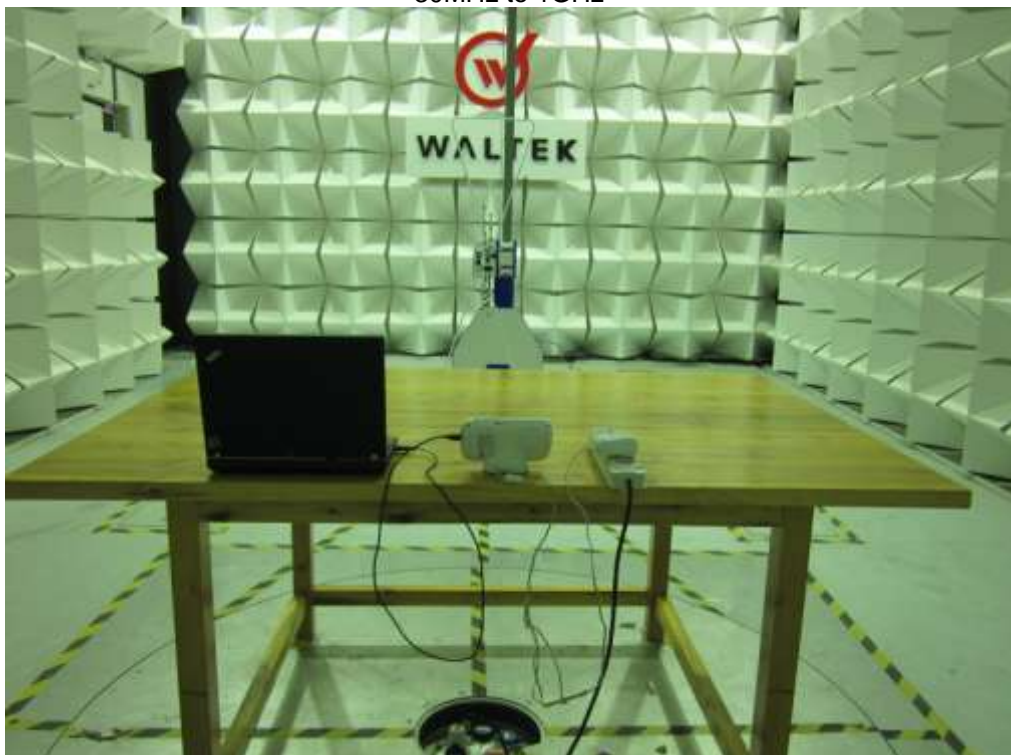
## 8 Photographs – Test Setup

### 8.1 Photograph – Radiation Emission Test Setup

Below 30MHz

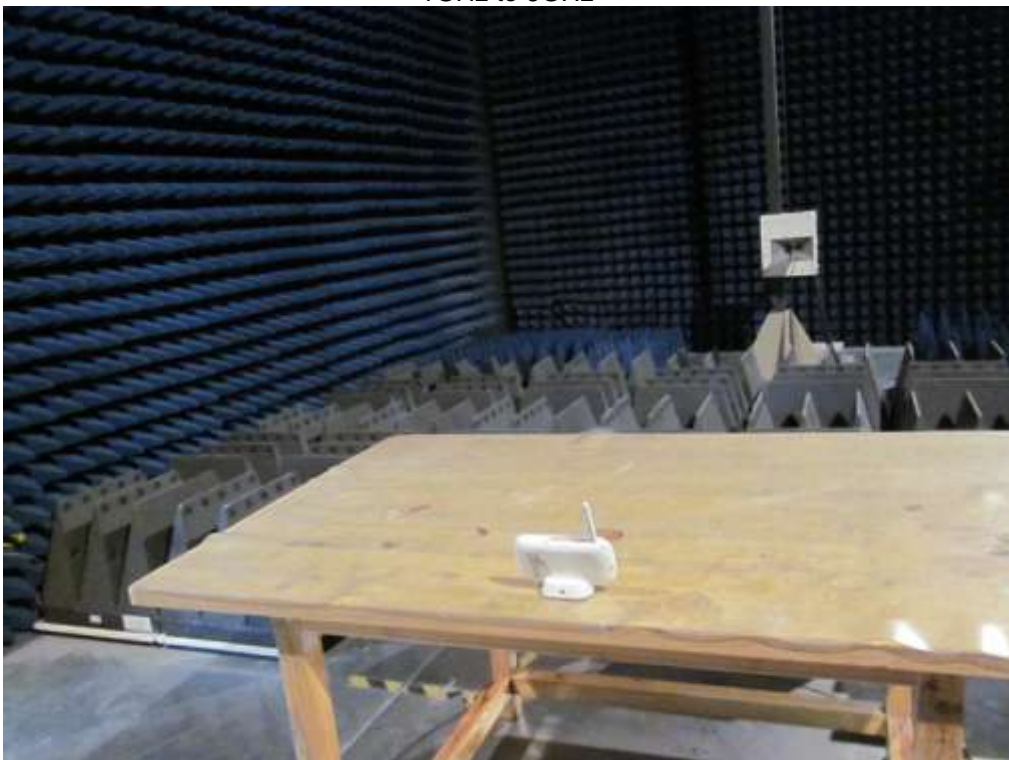


30MHz to 1GHz

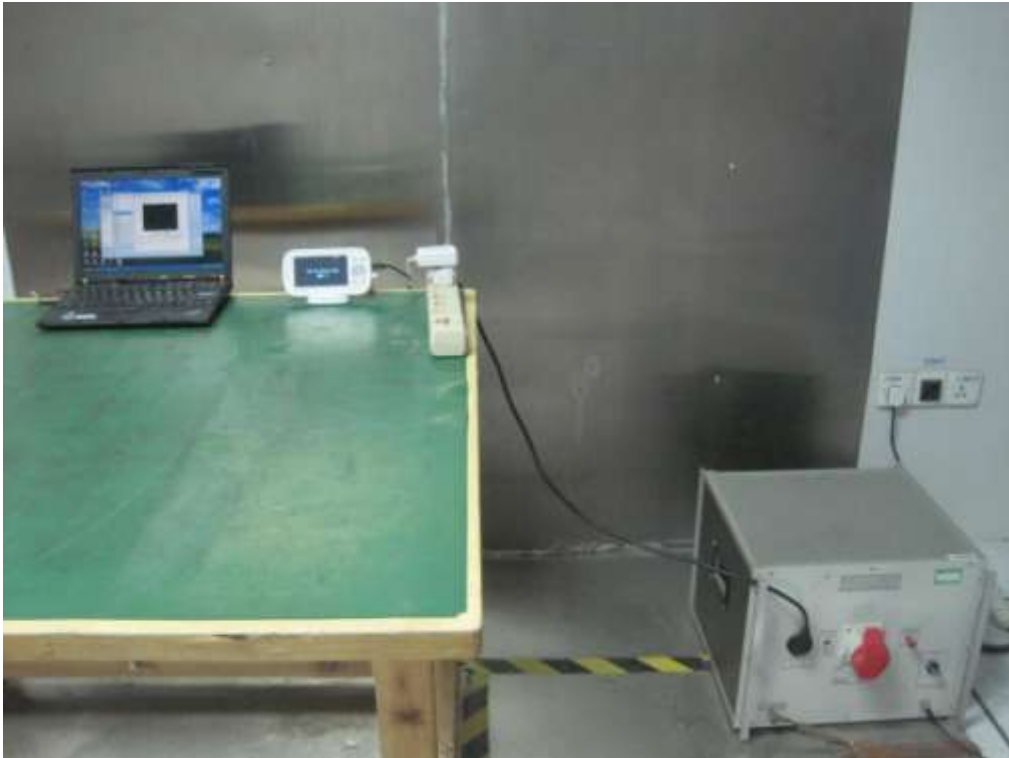




1GHz to 6GHz



## 8.2 Photograph – Conducted Emission Test Setup



## **9 Photographs –Constructional Details**

**Refer to UBR243\_FCC\_internal photos document.**

==END==