

# FCC TEST REPORT

**FCC ID** : SJ8-M420C  
**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 : Digital Monitor  
Model No. : M420C  
**Rules** : FCC CFR47 Part 15 Section 15.107:2010  
FCC CFR47 Part 15 Section 15.109:2010  
**Date of Test** : May 11~14, 2013  
**Date of Issue** : June 06 , 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.

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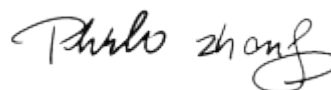
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Approved by:



Zero Zhou / Project Engineer



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## 2 Test Summary

Test Items	Test Requirement	Result
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>	: Digital Monitor
<b>Model No.</b>	: M420C
<b>Operation Frequency</b>	: 2402MHz ~ 2478MHz, 39 channels in total
<b>Type of Modulation</b>	: GFSK
<b>Oscillator</b>	: Crystal 32.768kHz and 27MHz for CPU, 16MHz for RF module

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

<b>Technical Data</b>	: (1) Battery DC 3.7V 1500mAh (2) DC 5V 1A powered by adapter (Input: 100-240~50/60Hz, 200mA)
<b>Adapter</b>	: Manufacturer: Csec, M/N: CS6D050100FUF

### 4.3 Description of Support Units

No.	Equipment	Manufacturer	Model No.	Serial No
1	Notebook	IBM	2672-39C	99-8D3W4

### 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 12, 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

### 4.6 Test Mode

Test Item	Test Mode
Conducted Emissions	PC connecting
Radiated Emissions	PC connecting

## 5 Equipment Used during Test

<b>Conducted Emissions</b>						
<b>Item</b>	<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Last Calibration Date</b>	<b>Calibration Due Date</b>
1.	EMI Test Receiver	R&S	ESCI	101155	Aug. 13,2012	Aug. 12,2013
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	Aug. 13,2012	Aug. 12,2013
3.	Cable	LARGE	RF300	EW02014-3	Aug.14,2012	Aug. 13,2013
<b>3m Semi-anechoic Chamber for Radiation(TDK) (Test Frequency: 32.768kHz ~1GHz)</b>						
<b>Item</b>	<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No</b>	<b>Last Calibration Date</b>	<b>Calibration Due Date</b>
1	Test Receiver	R&S	ESCI	101296	Aug.09,2012	Aug.08,2013
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Aug. 13,2012	Aug. 12,2013
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	Aug.11,2012	Aug.10,2013
4	Amplifier	Compliance pirection systems inc	PAP-0203	22024	Apr.07,2013	Apr.06,2014
5	Cable	HUBER+SUHNE R	CBL2	525178	Sep.15,2012	Sep.14,2013

## 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:

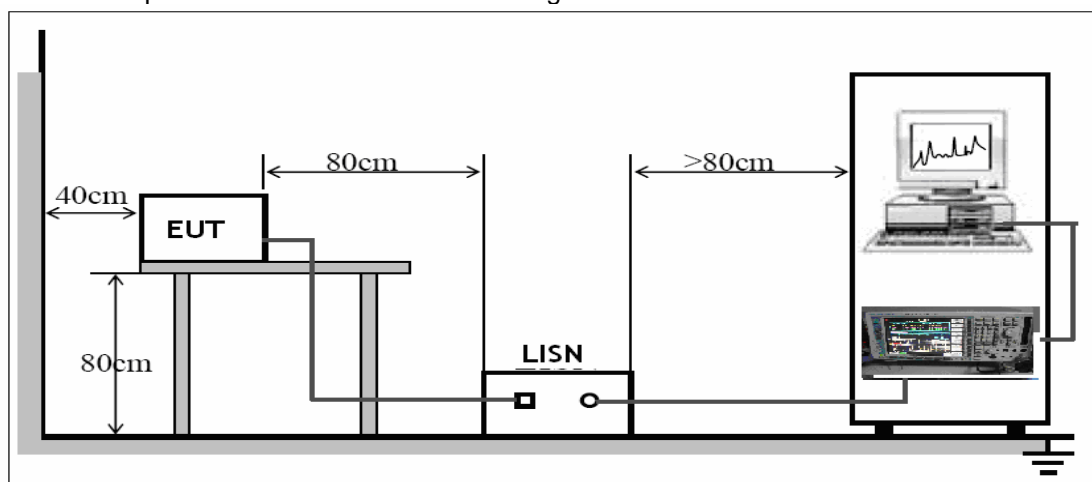
The test was performance on PC connecting mode.

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.

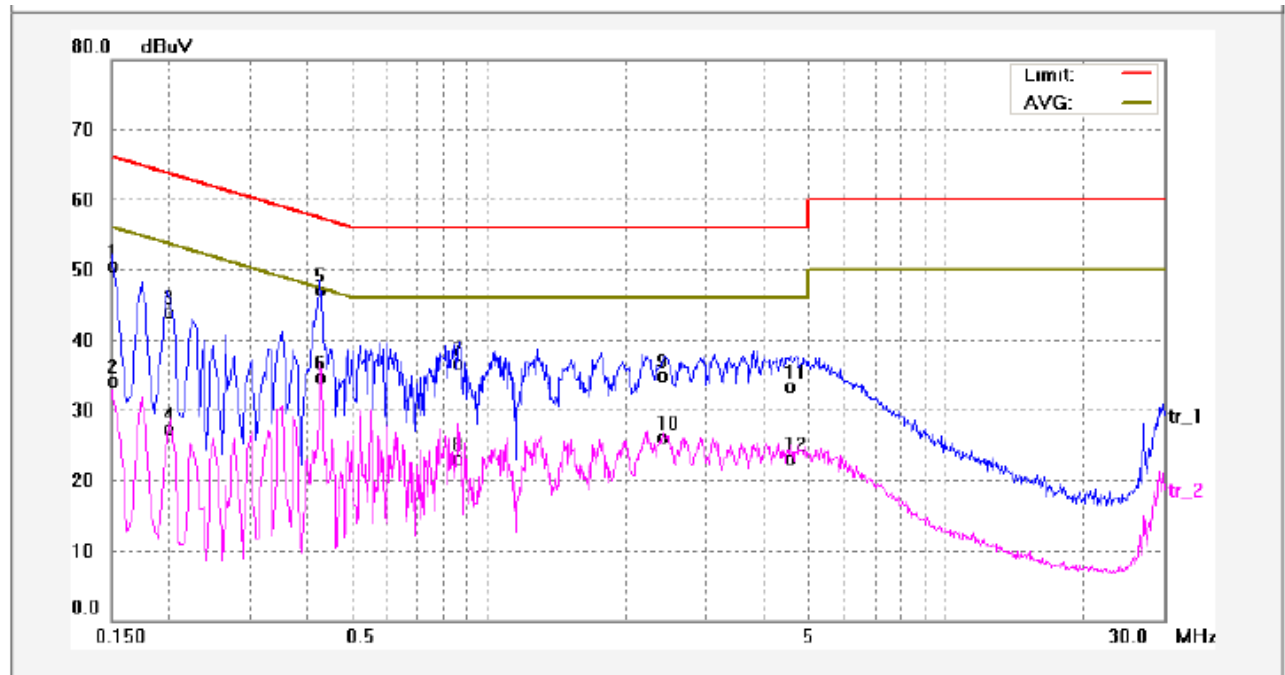


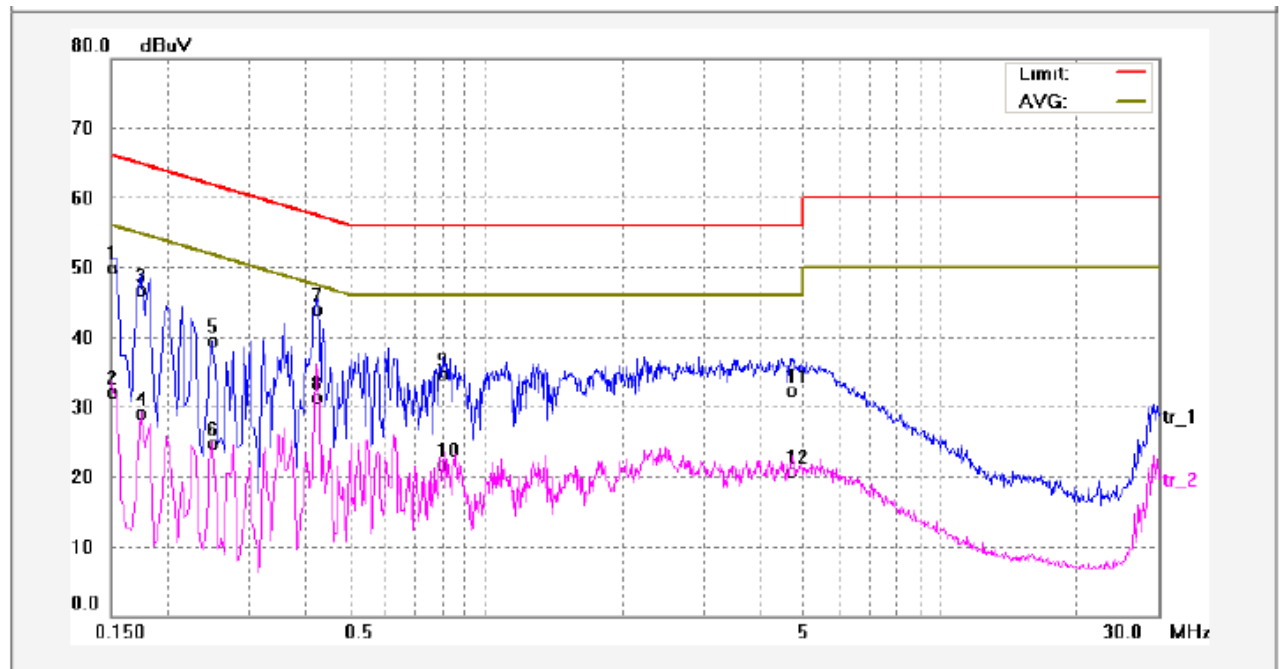
### 6.3 Conducted Emission Test Result

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

Test mode: PC connecting

Live line:



**Neutral line:**

No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1500	39.39	9.80	49.19	65.99	-16.80	QP	
2	0.1500	21.57	9.80	31.37	55.99	-24.62	AVG	
3	0.1740	36.16	9.82	45.98	64.76	-18.78	QP	
4	0.1740	18.52	9.82	28.34	54.76	-26.42	AVG	
5	0.2500	28.95	9.85	38.80	61.75	-22.95	QP	
6	0.2500	14.00	9.85	23.85	51.75	-27.90	AVG	
7	0.4300	33.10	9.91	43.01	57.25	-14.24	QP	
8	0.4300	20.51	9.91	30.42	47.25	-16.83	AVG	
9	0.8059	23.86	9.97	33.83	56.00	-22.17	QP	
10	0.8059	11.02	9.97	20.99	46.00	-25.01	AVG	
11	4.6620	21.41	10.09	31.50	56.00	-24.50	QP	
12	4.6620	9.76	10.09	19.85	46.00	-26.15	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 dBuV/m above 1GHz for AV 74.0 dBuV/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

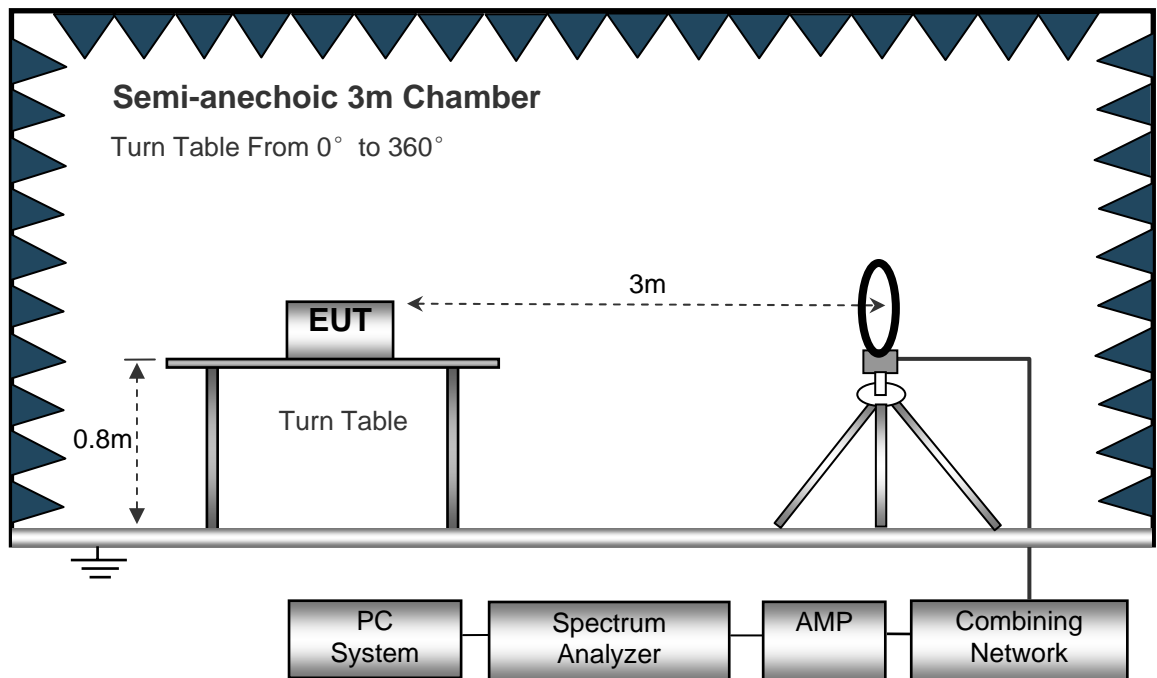
Atmospheric Pressure: 1012 mbar

#### EUT Operation:

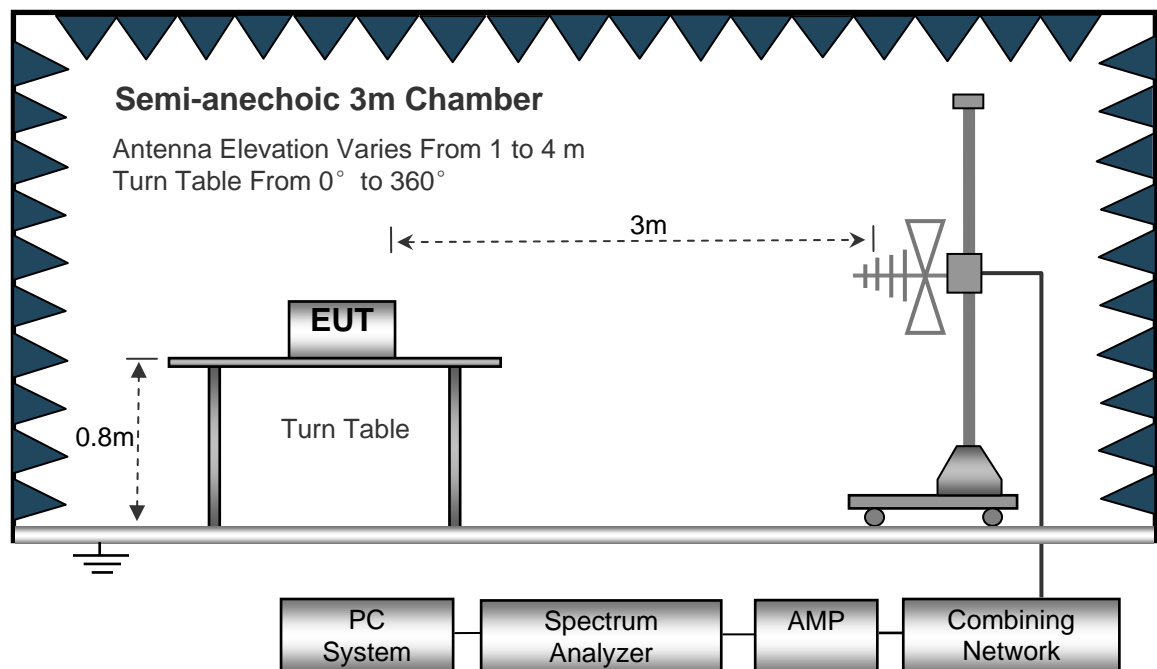
The pre-test was performance on PC connecting mode.

## 7.2 EUT Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site.  
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



### 7.3 Spectrum Analyzer Setup

According to FCC Part15 B Rules, the system was tested 9kHz to 1GHz.

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

### 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 -7dB $\mu$ V means the emission is 7dB $\mu$ 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

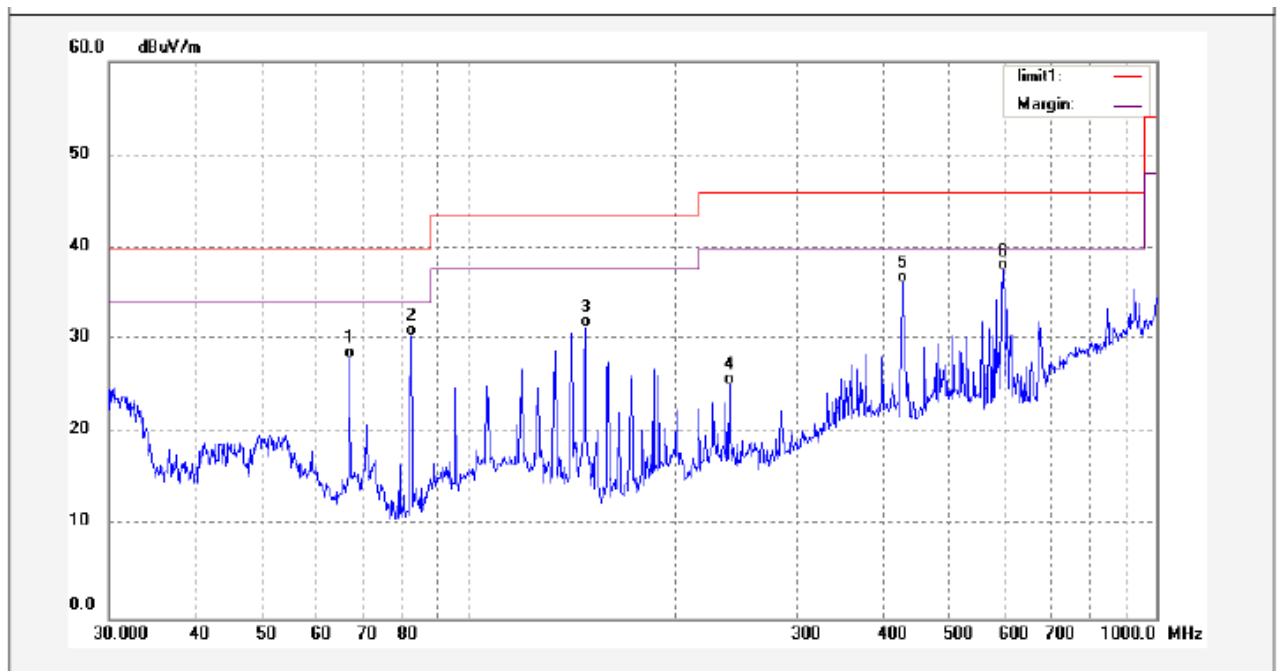
### Test Frequency :Below 30MHz

The measurements were more than 20 dB below the limit and not reported.

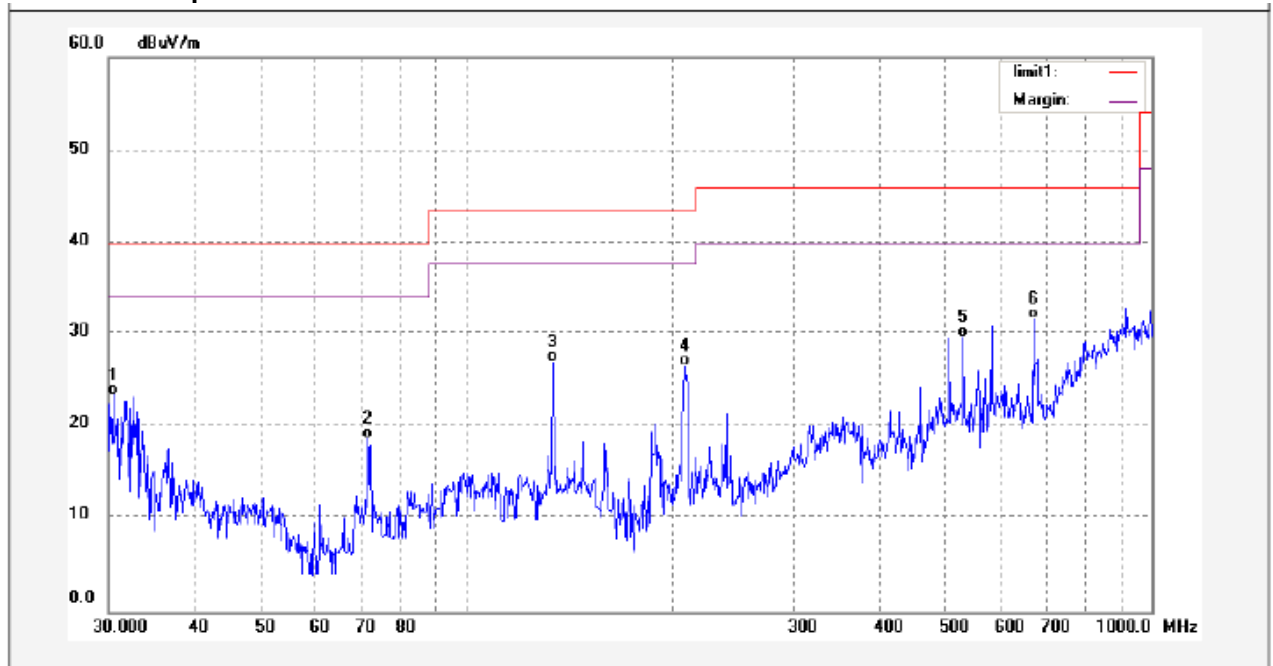
Test Frequency : 30MHz ~ 1000MHz

Test mode: PC connecting

Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	67.0747	17.42	10.62	28.04	40.00	-11.96	QP	
2	82.5257	20.69	9.63	30.32	40.00	-9.68	QP	
3	147.8745	20.23	11.10	31.33	43.50	-12.17	QP	
4	239.3018	10.16	14.93	25.09	46.00	-20.91	QP	
5	427.2919	16.03	19.98	36.01	46.00	-9.99	QP	
6	598.7066	12.40	25.08	37.48	46.00	-8.52	QP	

**Antenna polarization: Horizontal**

No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	30.4246	7.11	16.29	23.40	40.00	-16.60	QP	
2	71.7052	8.92	9.71	18.63	40.00	-21.37	QP	
3	133.5491	14.91	11.99	26.90	43.50	-16.60	QP	
4	208.6579	12.24	14.19	26.43	43.50	-17.07	QP	
5	531.2910	6.33	23.31	29.64	46.00	-16.36	QP	
6	672.3101	5.85	25.70	31.55	46.00	-14.45	QP	

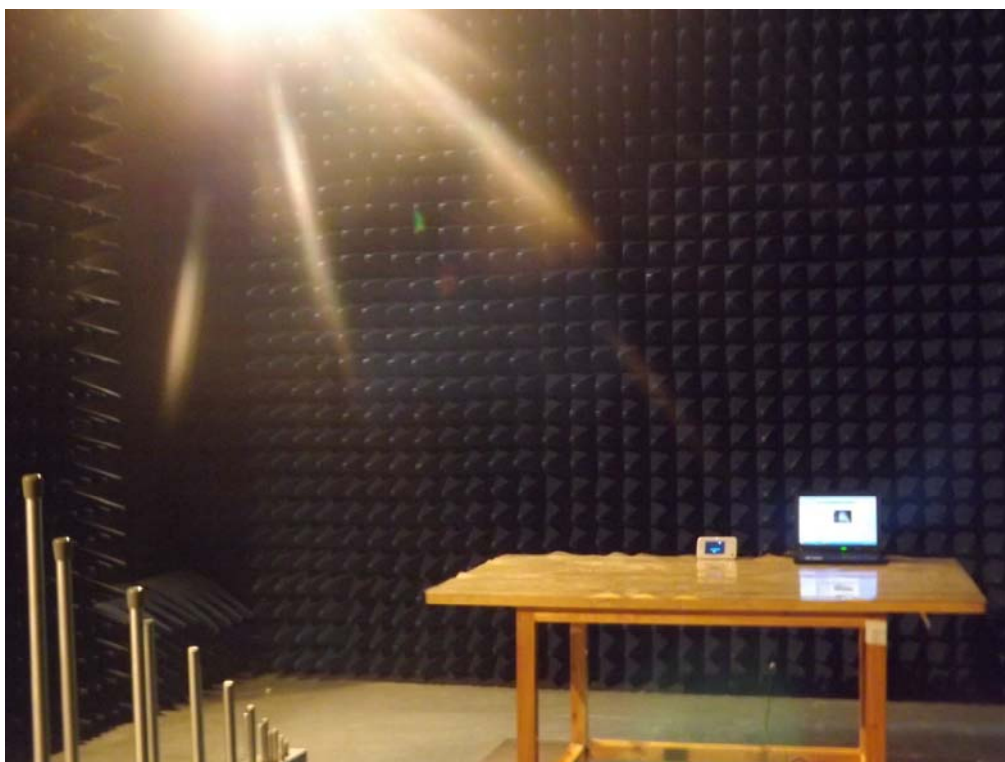
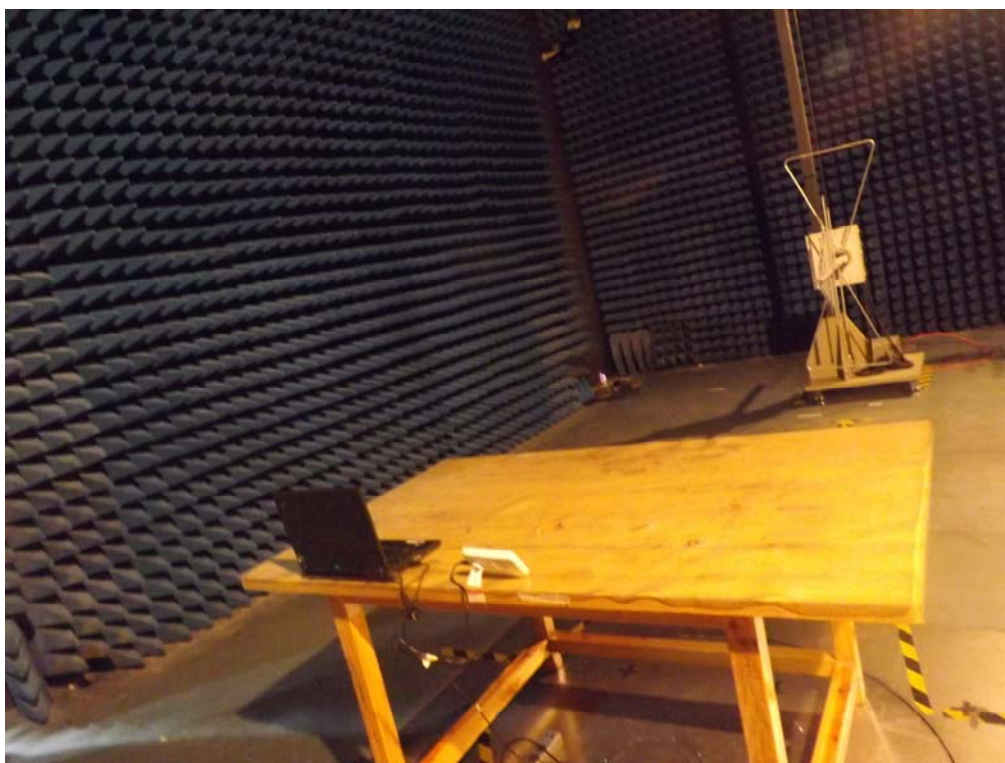
## 8 Photographs – Test Setup

### 8.1 Photograph – Radiation Emission Test Setup

Below 30MHz



30MHz to 1GHz





## 8.2 Photograph – Conducted Emission Test Setup





## **9 Photographs –Constructional Details**

**Refer to test report No.: WTF13S0503485E**

==END==