

FCC PART 15 CLASS B  
EMI MEASUREMENT AND TEST REPORT  
For

Tensun tek Electronic Co., Ltd.  
Room 1106 Lankun Building, Minkang Road, Minzhi, Baoan District, Shenzhen, China

**FCC ID: ZT6TS-PHR300**

August 25, 2011

This Report Concerns: Original Report	Equipment Type: POE Wireless Router
Test Engineer:	Jack Liu
Report No.:	BST11070189Y-1ER-3-2
Receive EUT Date/Test Date:	August 11, 2011/ August 12-24, 2011
Reviewed By:	Christina 
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## **1. GENERAL INFORMATION**

### **1.1. Report information**

1.1.1.This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that BST approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that BST in any way guarantees the later performance of the product/equipment.

1.1.2.The sample/s mentioned in this report is/are supplied by Applicant, BST therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through BST, unless the applicant has authorized BST in writing to do so.

Test Facility -

The test site used to collect the radiated data is located on the address of SinTek Laboratory Co.,Ltd.

(FCC Registered Test Site Number: 963441) on

No.7, Xinshidai Industrial, Guantian Village, Shiyan Town, Baoan District, Shenzhen, Guangdong 518108, China

The Test Site is constructed and calibrated to meet the FCC requirements.

### **1.2. Measurement Uncertainty**

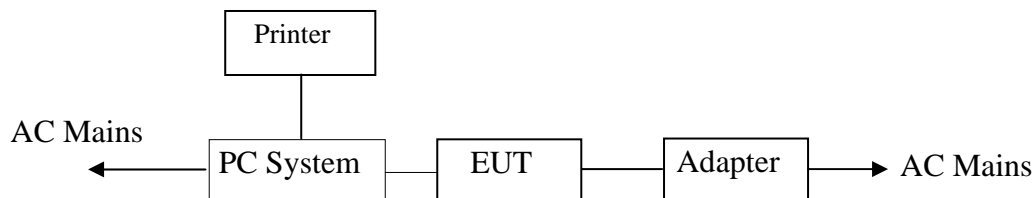
Available upon request.

## 2. PRODUCT DESCRIPTION

### 2.1. EUT Description

Applicant	:	Tensun tek Electronic Co., Ltd.
Address	:	Room 1106 Lankun Building, Minkang Road, Minzhi, Baoan District, Shenzhen, China
Manufacturer	:	Tensun tek Electronic Co., Ltd.
Address	:	Room 1106 Lankun Building, Minkang Road, Minzhi, Baoan District, Shenzhen, China
EUT Description	:	POE Wireless Router
Trade Name	:	N/A
Modulation	:	802.11b: DSSS 802.11g, n: OFDM
Model Number	:	TS-PHR300
Power Supply	:	DC 9V (Powered by Adapter)
Adapter	:	Model: HB12-O9010SPA Input: AC 100-240V, 50/60Hz, 0.4A Output: DC 9V, 1.0A
Antenna Type	:	Integral Antenna
Antenna gain	:	2dBi(2.4GHz)

### 2.2. Block Diagram of EUT Configuration



**2.3. Support Equipment List**

Name	Model No	S/N	Manufacturer	Used “ ”
PC system	ST-PC-002	569787506	DeLUX	
Printer	HP930C	N/A	HP	

**2.4. Test Conditions**

Temperature: 20~25

Relative Humidity: 50~63 %

### 3. FCC ID LABEL

**FCC ID: ZT6TS-PHR300**

**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.**

#### Label Location on EUT

#### EUT Bottom View/ FCC ID Label Location



#### 4. TEST RESULTS SUMMARY

**Table 1 Test Results Summary**

Test Items	Test Results
Conducted disturbance	Pass
Radiated disturbance	Pass

Statement: All testing was performed using the test procedures found in ANSI C63.4 20003.

##### **Modifications**

No modification was made.

## 5. TEST EQUIPMENT USED

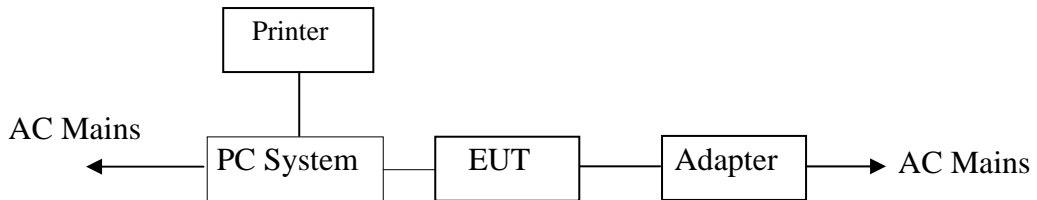
Equipment/Facilities	Manufacturer	Model #	Serial no.	Date of Cal.	Cal. Interval
Cable	Resenberger	N/A	NO.1	Mar 10 , 2011	1 Year
Cable	SCHWARZBECK	N/A	NO.2	Mar 10 , 2011	1 Year
Cable	SCHWARZBECK	N/A	NO.3	Mar 10 , 2011	1 Year
LISN	Rohde & Schwarz	ESH3-Z5	100305	Mar 10 , 2011	1 Year
50 Coaxial Switch	ANRITSU CORP	MP59B	6200283933	Mar 10 , 2011	1 Year
EMI Test Receiver	Rohde & Schwarz	ESP13	100180	Oct.11,2010	1 Year
Spectrum Analyzer	Rohde & Schwarz	FSP40	100273	Sep.10,2010	1 Year
Spectrum Analyzer	Agilent	E4446A	US44300459	Sep.10,2010	1 Year
3m Semi-Anechoic Chamber	Albatross Projects	9m×6m×6m	N/A	Feb.20,2011	1 Year
Signal Generator	FLUKE	PM5418 - Y/C	LO747012	Feb.20,2011	1 Year
Signal Generator	FLUKE	PM5418TX	LO738007	Feb.20,2011	1 Year
Loop Antenna	SCHWARZBECK	FMZB1516	113	Jan.30,2011	1 Year
Trilog-Super Broadband Antenna	SCHWARZBECK	VULB9161	9161-4079	Sep.22,2010	1 Year
Broad-Band Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-564	Sep.22,2010	1 Year
Ultra Broadband Antenna	Rohde & Schwarz	HL-562	100110	June.15,2011	1 Year
AMN	Rohde & Schwarz	ESH3-Z5	100196	Oct.11,2010	1 Year
AMN	Rohde & Schwarz	ESH3-Z5	100197	Oct.11,2010	1 Year
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	N/A	N/A	N/A
Power Meter	Rohde & Schwarz	NRVD	100041	Feb.20,2011	1 Year
EMI Test Receiver	Rohde & Schwarz	ESCS30	100003	Feb.20,2011	1 Year
Coaxial Cable with N-connectors	SCHWARZBECK	AK9515H	95549	Sep.22,2010	1 Year
Radio Communication Test Set	Rohde & Schwarz	CMS 54	846621/024	Feb.20,2011	1 Year
Modulation Analyzer	Hewlett-Packard	8901B	2303A00362	Feb.20,2011	1 Year
Absorbing clamp	Rohde & Schwarz	MDS-21	N/A	Oct.11,2010	1 Year



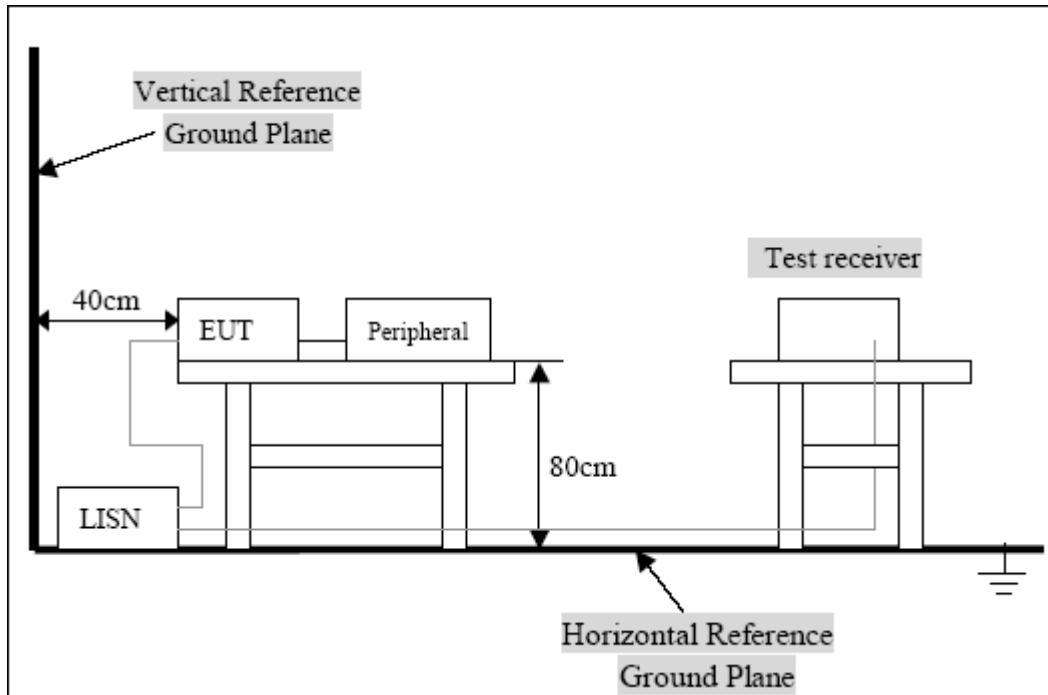
## 6. CONDUCTED EMISSION TEST

### 6.1. Block Diagram of Test Setup

#### 6.1.1. Block Diagram of connection between the EUT and the simulators



#### 6.1.2. Test Setup Diagram



### 6.2. Test Standard

FCC Part 15 CLASS B

ANSI C63.4 2003

### 6.3. Conducted Emission Limit(Class B)

Frequency MHz	Limits dB( $\mu$ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. \*Decreasing linearly with logarithm of frequency.

### 6.4. EUT Configuration on Test

The following equipments are installed on conducted emission test to meet FCC Part 15 requirement and operating in a manner, which tends to maximize its emission characteristics in a normal application.

#### 6.4.1. EUT Information

Model Number: TS-PHR300

Serial Number: N/A

### 6.5. Operating Condition of EUT

6.5.1. Setup the EUT and simulators as shown in Section 6.1.

6.5.2. Turn on the power of all equipments.

6.5.3. Let the EUT work in test mode (Connect to PC) and test it.

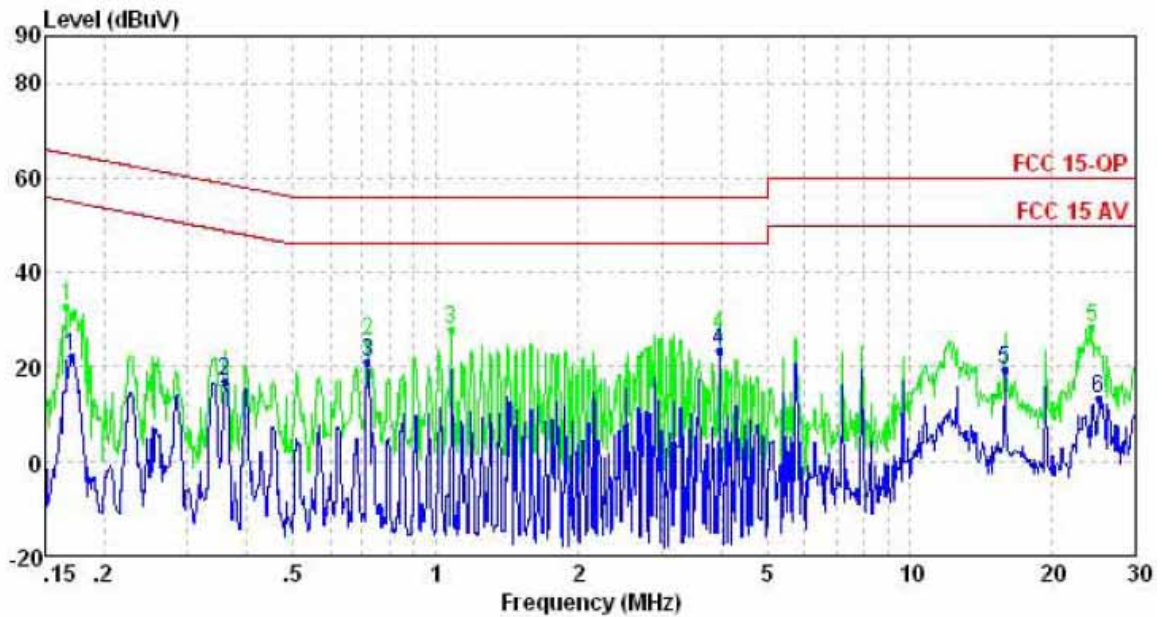
### 6.6. Test Procedure

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver (R&S Test Receiver ESCS30) is used to test the emissions form both sides of AC line. The bandwidth of EMI test receiver is set at 9kHz.

### 6.7. Test Result

**Pass**

L Line



Condition:

: RBW:9.000KHz VBW:30.000KHz

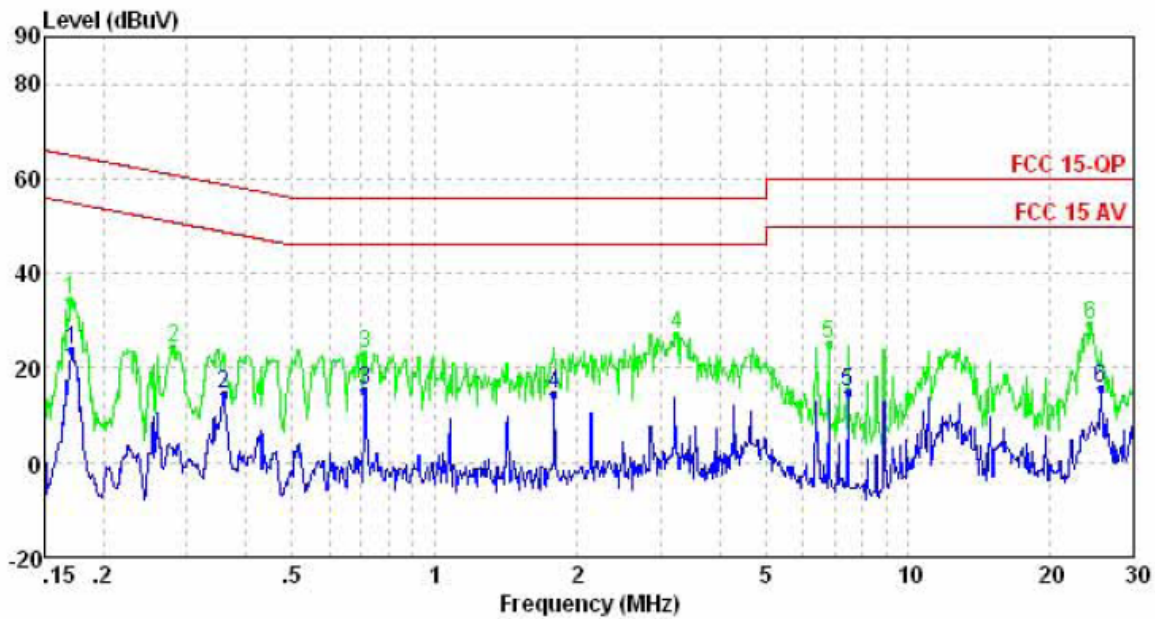
	Freq	Level	Limit	Over	Remark	Pol/Phase
	MHz	dBuV	Line	Limit		
			dBuV	dB		
1	0.17	22.37	54.94	-32.57	Average	LINE
2	0.36	16.83	48.74	-31.91	Average	LINE
3 Max	0.72	21.05	46.00	-24.95	Average	LINE
4	3.96	23.26	46.00	-22.74	Average	LINE
5	15.89	19.55	50.00	-30.45	Average	LINE
6	25.05	13.17	50.00	-36.83	Average	LINE

Condition:

: RBW:9.000KHz VBW:30.000KHz

	Freq	Level	Limit	Over	Remark	Pol/Phase
	MHz	dBuV	Line	Limit		
			dBuV	dB		
1	0.17	32.82	65.12	-32.30	Peak	LINE
2	0.72	25.33	56.00	-30.67	Peak	LINE
3 Max	1.08	27.97	56.00	-28.03	Peak	LINE
4	3.96	26.74	56.00	-29.26	Peak	LINE
5	24.27	28.30	60.00	-31.70	Peak	LINE

N Line



Condition:

: RBW:9.000KHz VBW:30.000KHz

	Freq	Level	Limit	Over	Remark	Pol/Phase
	MHz	dBuV	Line	Limit		
			dBuV	dB		
1	0.17	24.03	54.90	-30.87	Average	NEUTRAL
2	0.36	14.50	48.74	-34.24	Average	NEUTRAL
3	0.71	15.28	46.00	-30.72	Average	NEUTRAL
4 Max	1.79	14.53	46.00	-31.47	Average	NEUTRAL
5	7.49	15.05	50.00	-34.95	Average	NEUTRAL
6	25.59	15.74	50.00	-34.26	Average	NEUTRAL

Condition:

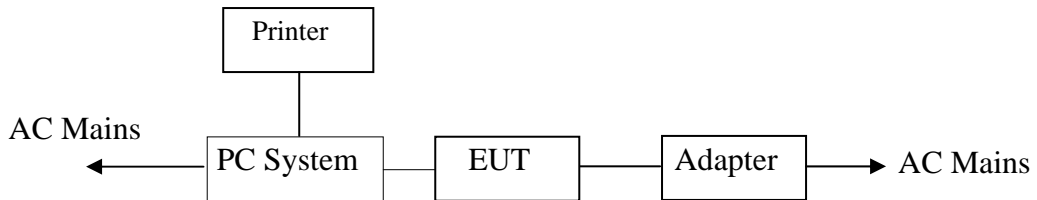
: RBW:9.000KHz VBW:30.000KHz

	Freq	Level	Limit	Over	Remark	Pol/Phase
	MHz	dBuV	Line	Limit		
			dBuV	dB		
1	0.17	34.45	64.99	-30.54	Peak	NEUTRAL
2	0.28	24.05	60.81	-36.76	Peak	NEUTRAL
3	0.71	23.18	56.00	-32.82	Peak	NEUTRAL
4 Max	3.24	27.19	56.00	-28.81	Peak	NEUTRAL
5	6.81	25.24	60.00	-34.76	Peak	NEUTRAL
6	24.27	29.17	60.00	-30.83	Peak	NEUTRAL

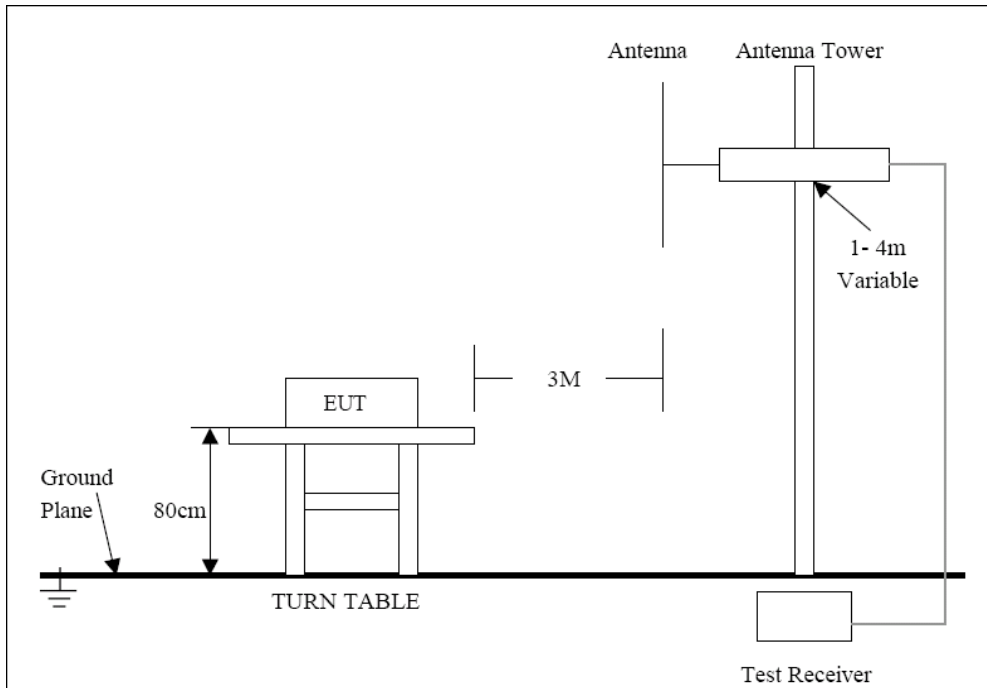
## 7. RADIATED EMISSION MEASUREMENT

### 7.1. Block Diagram of EUT Configuration

#### 7.1.1. Block Diagram of connection between the EUT and the simulators



#### 7.1.2. Semi-anechoic Chamber Test Setup Diagram



### 7.2. Test Standard

FCC Part 15 CLASS B  
ANSI C63.4 2003

### 7.3. Radiated Emission Limit(Class B)

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dB $\mu$ V/m)
30 ~ 88	3	40.0
88 ~ 216	3	43.5
216 ~ 960	3	46.0
Above 1000	3	54.0

Note:(1) The smaller limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT or system.

### 7.4. EUT Configuration on Test

The following equipment are installed on Radiated Emission Measurement to meet the Commission requirements and operating regulations in a manner which tends to maximize Its emission characteristics in normal application.

### 7.5. Operating Condition of EUT

7.5.1.Setup the EUT as shown on Section 7.1

7.5.2.Turn on the power of all equipments.

7.5.3.Let the EUT work in test mode (Connect to PC) and measure it.

### 7.6. Test Procedure

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna (calibrated by dipole antenna) are used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on measurement.

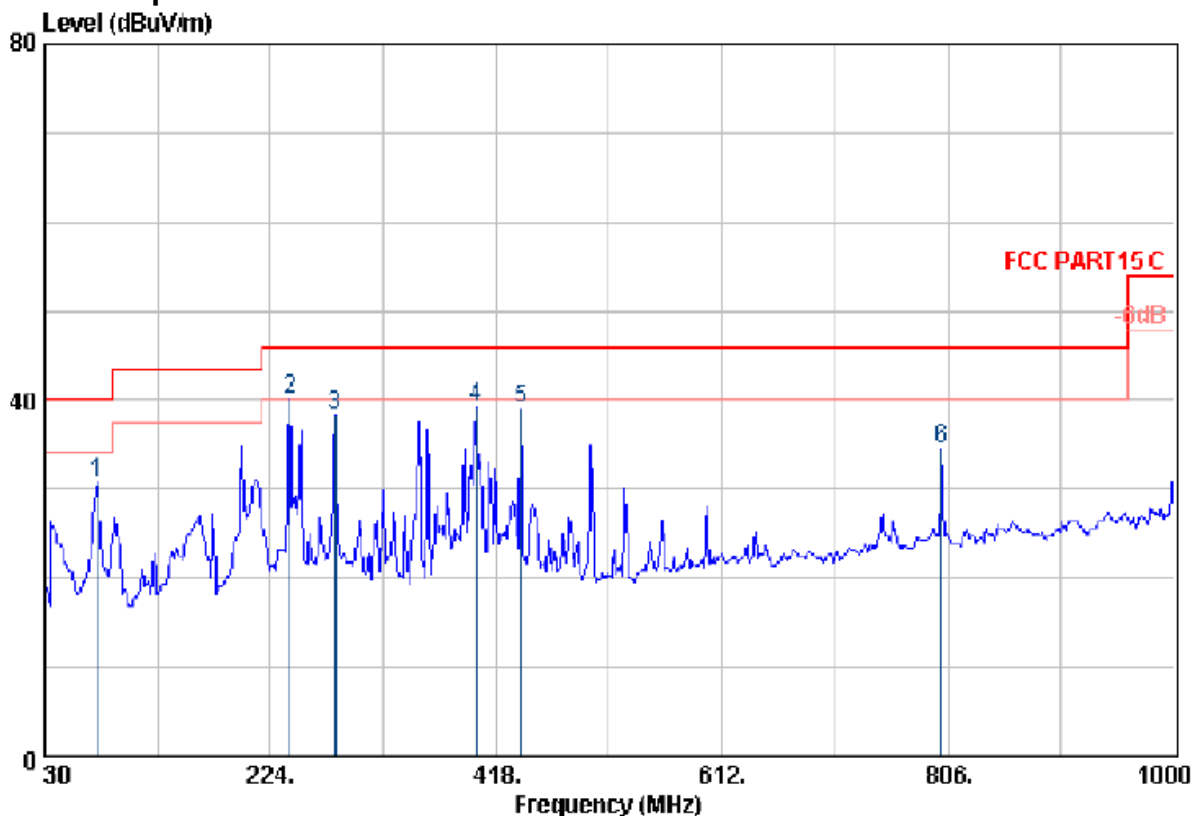
The bandwidth of test receiver is set at 120kHz in 30-1000MHz.

The EUT is tested in Semi-anechoic Chamber. The frequency range from 30MHz to 1000MHz is checked.All the test results are listed in Section 7.7.

### 7.7. Test Result

**PASS**

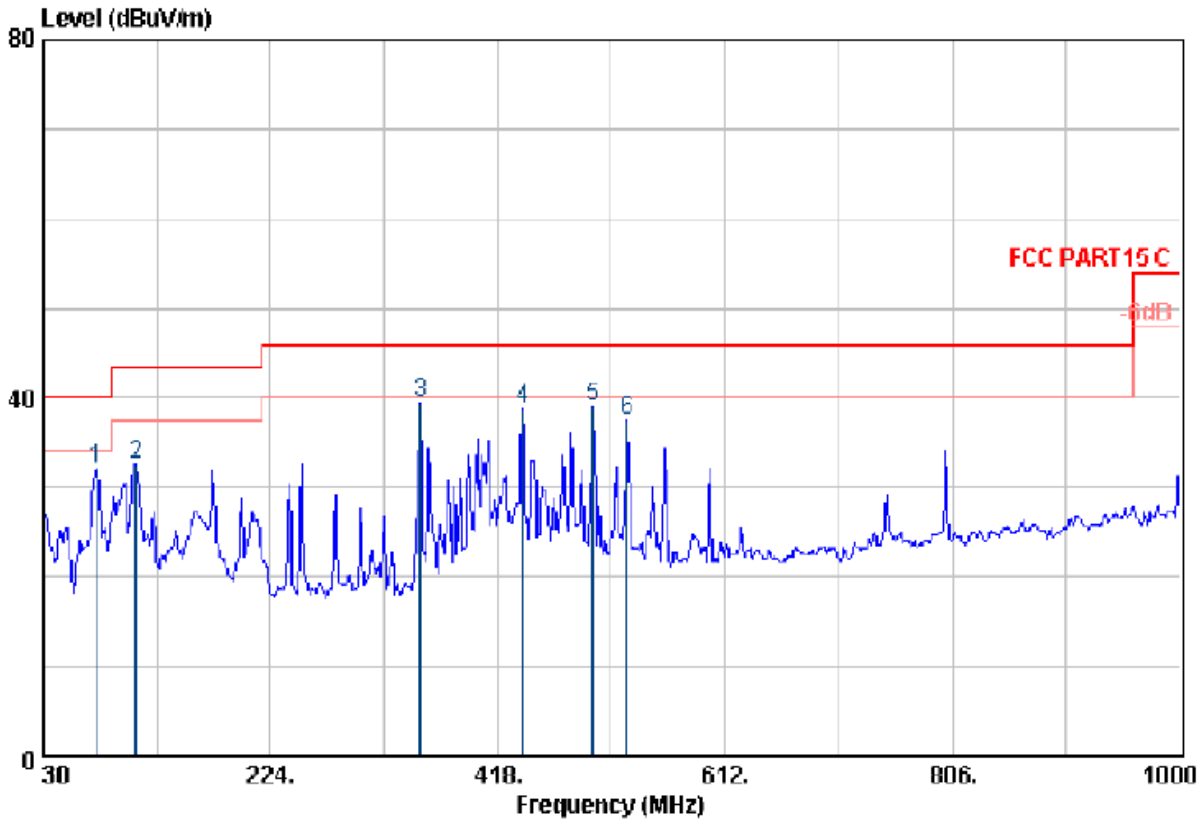
**Horizontal polarization**



	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	75.59	7.32	0.94	22.48	30.74	40.00	9.26	QP
2	240.49	11.88	1.46	26.68	40.02	46.00	5.98	QP
3	279.29	13.30	1.57	23.37	38.24	46.00	7.76	QP
4	400.54	16.53	1.83	20.76	39.12	46.00	6.88	QP
5	439.34	17.08	2.04	19.88	39.00	46.00	7.00	QP
6	800.18	21.80	2.61	10.24	34.65	46.00	11.35	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

**Vertical polarization**



	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	75.59	7.32	0.94	23.80	32.06	40.00	7.94	QP
2	109.54	11.30	1.04	20.28	32.62	43.50	10.88	QP
3	352.04	15.28	1.79	22.37	39.44	46.00	6.56	QP
4	439.34	17.08	2.04	19.56	38.68	46.00	7.32	QP
5	499.48	18.10	2.02	18.84	38.96	46.00	7.04	QP
6	528.58	18.40	2.09	17.01	37.50	46.00	8.50	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.