FCC PART 15 CLASS B

EMI MEASUREMENT AND TEST REPORT

For

Shen Zhen Bigatech Co.,Ltd

Gangzai Industry Park, Furong Industry Zone, Xinqiao Shajing Town,
Baoan District, Shenzhen, China

FCC ID: WKITENKEYR

April 3, 2013

This Report Concerns: Original Report	Equipment Type: Mini Wireless Numeric Keypad Receiver
Test Engineer:	Anna Lv
Report No.:	BST13041082Y-1ER-3
Receive EUT Date/Test Date:	March 18, 2013 / March 18, 2013- April 02, 2013
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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 Shen Zhen Bigatech Co.,Ltd approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that Shen Zhen Bigatech Co.,Ltd 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, Shen Zhen Bigatech Co.,Ltd 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 Shen Zhen Bigatech Co.,Ltd, unless the applicant has authorized Shen Zhen Bigatech Co.,Ltd in writing to do so.

Test Facility -
The test site used to collect the radiated data is located on the address of
Global United Technology Service Co., Ltd
(FCC Registered Test Site Number: 600491) on
2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District,
Shenzhen, China 518102
The Test Site is constructed and calibrated to meet the FCC requirements.

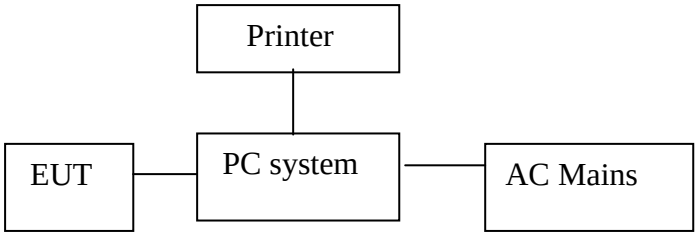
2. PRODUCT DESCRIPTION

2.1. EUT Description

Applicant	:	Shen Zhen Bigatech Co.,Ltd
Address	:	Gangzai Industry Park, Furong Industry Zone, Xinqiao Shajing Town, Baoan District, Shenzhen, China
Manufacturer	:	Shen Zhen Bigatech Co.,Ltd
Address	:	Gangzai Industry Park, Furong Industry Zone, Xinqiao Shajing Town, Baoan District, Shenzhen, China
EUT Description	:	Mini Wireless Numeric Keypad Receiver
Model Number	:	Tenkey, KB-609, KB-609G
Power Supply	:	DC 5V By PC

The series products, model name: Tenkey, KB-609, KB-609G have the same circuit diagram,PCB layout, software, RF Module, Features and functionality. The differences are the model name, so, we select Tenkey to test.

2.2. Block Diagram of EUT Configuration



2.3. Support Equipment List

Name	Model No	S/N	Manufacturer	Used (Y/N)
PC system	AM1830	N/A	Acer	Y
Printer	HP1020	N/A	HP	Y
Router	PL-R860	N/A	TP-LINK	Y

2.4. Test Conditions

Temperature: 23~27℃

Relative Humidity: 50~63 %

2.5. TEST Results SUmmary

Table 1 Test Results Summary

Test Items	Test Results
Conducted disturbance	Pass
Radiated disturbance	Pass

Remark: “N/A” means “Not applicable.”

3. TEST EQUIPMENT USED

EQUIPMENT/FACILITIES	MANUFACTURER	MODEL	SERIAL NO.	DATE OF CAL.	CAL. INTERVAL
3m Semi-Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	Mar. 30 2013	1 Year
Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Jul. 04 2012	1 Year
BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Feb. 24 2013	1 Year
Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 30 2012	1 Year
Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 30 2013	1 Year
EMI Test Software	AUDIX	E3	N/A	N/A	N/A
Cable	Resenberger	N/A	NO.1	Apr. 6, 2012	1 Year
Cable	SCHWARZBECK	N/A	NO.2	Apr. 6, 2012	1 Year
Cable	SCHWARZBECK	N/A	NO.3	Apr. 6, 2012	1 Year
Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jul. 04 2012	1 Year
Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Jul. 04 2012	1 Year
Amplifier (18-26GHz)	R&S	AFS33-18002 650-30-8P-44	GTS218	June 30 2012	1 Year
Band filter	Amindeon	82346	GTS219	Mar. 31 2013	1 Year
Active Loop Antenna	Beijing Daze	ZN30900A	GTS215	Mar. 31 2013	1 Year
Shielding Room	ZhongYu Electron	7.0(L)x3.0(W)x3.0(H)	GTS264	Sep. 08 2012	1 Year
EMI Test Receiver	R&S	ESCS30	GTS223	Jul. 04 2012	1 Year
10dB Pulse Limita	R&S	N/A	GTS224	Jul. 04 2012	1 Year
Coaxial Switch	ANRITSU CORP	MP59B	GTS225	Jul. 04 2012	1 Year
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS226	Jul. 04 2012	1 Year
Coaxial Cable	SCHWARZBECK	N/A	NO.4	Apr. 6, 2012	1 Year
EMI Test Software	AUDIX	E3	N/A	N/A	N/A

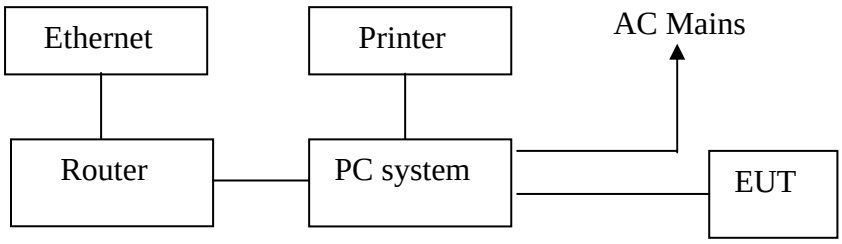
4. CONDUCTED EMISSION TEST

4.1. Measurement Uncertainty

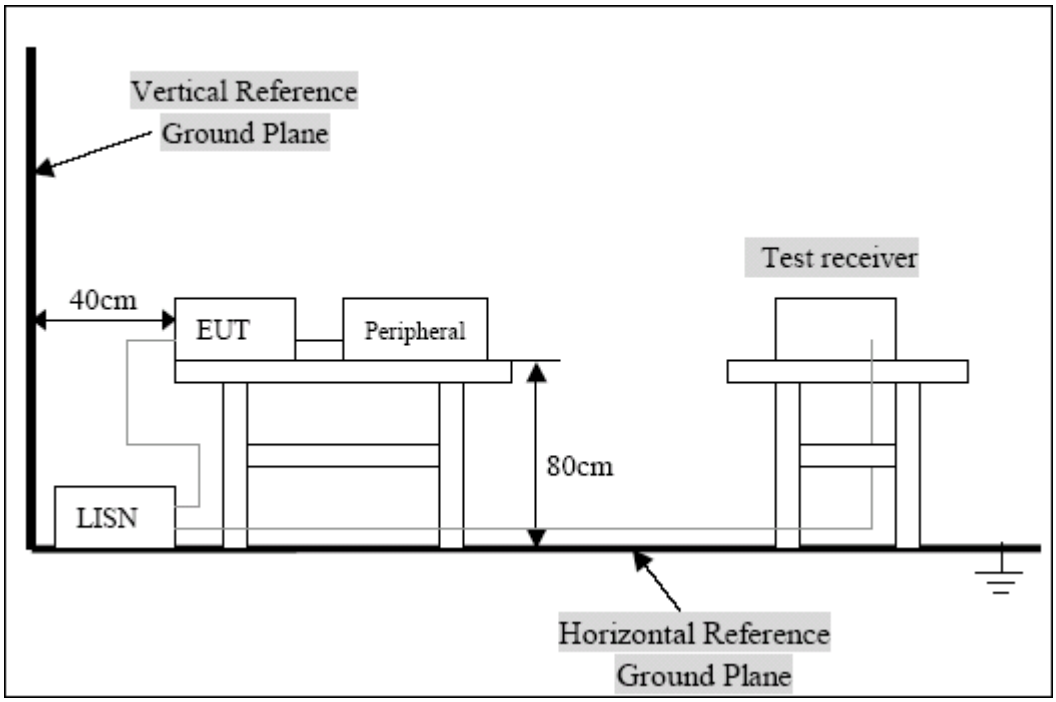
The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is + 2.88 dB.

4.2. Block Diagram of Test Setup

4.2.1.Block Diagram of connection between the EUT and the simulators



4.2.2.Test Setup Diagram



4.3. Test Standard

FCC Part 15 CLASS B

ANSI C63.4 2003

4.4. Conducted Emission Limit(Class B)

Frequency MHz	Limits dB(μV)	
	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.

4.5. 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.

4.6. Operating Condition of EUT

4.6.1.Setup the EUT and simulators as shown in Section 4.2.

4.6.2.Turn on the power of all equipments.

4.6.3.Let the EUT work in test mode (Connect to a router and the router attached to PC) and test it.

4.7. 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 is used to test the emissions form both sides of AC line. The bandwidth of EMI test receiver is set at 9kHz.

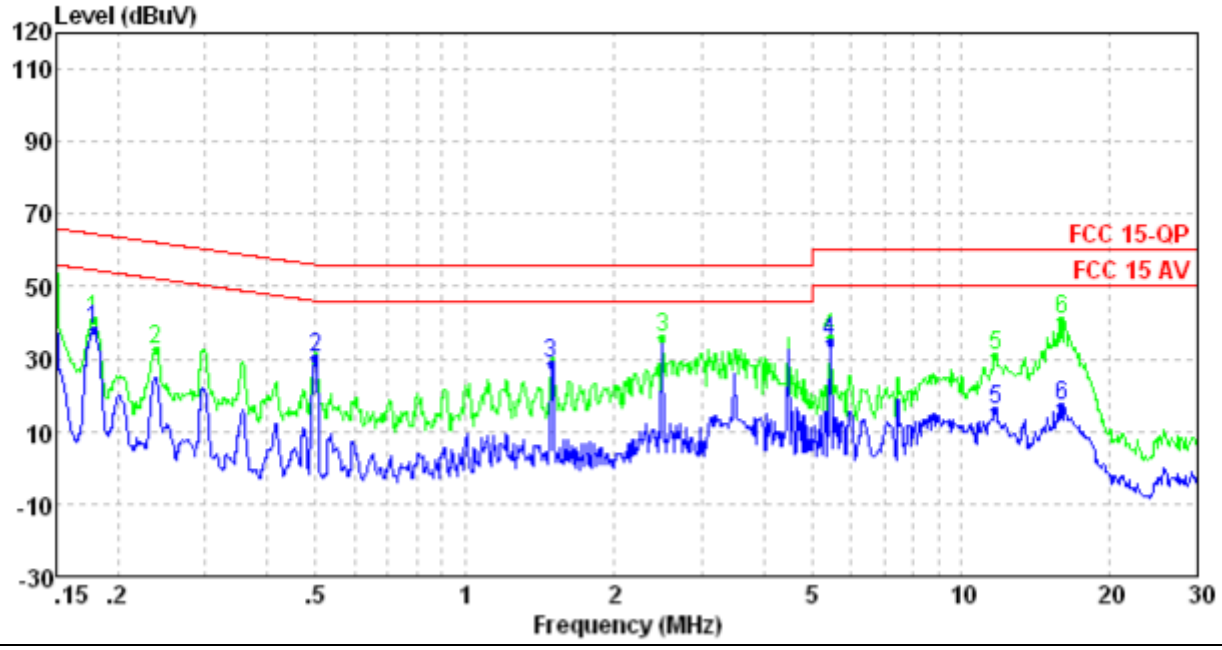
4.8. Test Result

Pass

L Line

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	
0.18	27.49	10.43	37.92	54.55	-16.63	AVG
0.50	20.13	10.43	30.56	46.01	-15.45	AVG
1.50	18.29	10.42	28.71	46.00	-17.29	AVG
5.45	24.62	10.37	34.99	50.00	-15.01	AVG
11.74	5.36	10.38	15.74	50.00	-34.26	AVG
15.97	6.60	10.29	16.89	50.00	-33.11	AVG
0.18	30.60	10.43	41.03	64.55	-23.52	QP
0.24	22.24	10.43	32.67	62.17	-29.50	QP
2.50	25.60	10.40	36.00	56.00	-20.00	QP
5.45	25.58	10.37	35.95	60.00	-24.05	QP
11.74	20.32	10.38	30.70	60.00	-29.30	QP
15.97	30.50	10.29	40.79	60.00	-19.21	QP

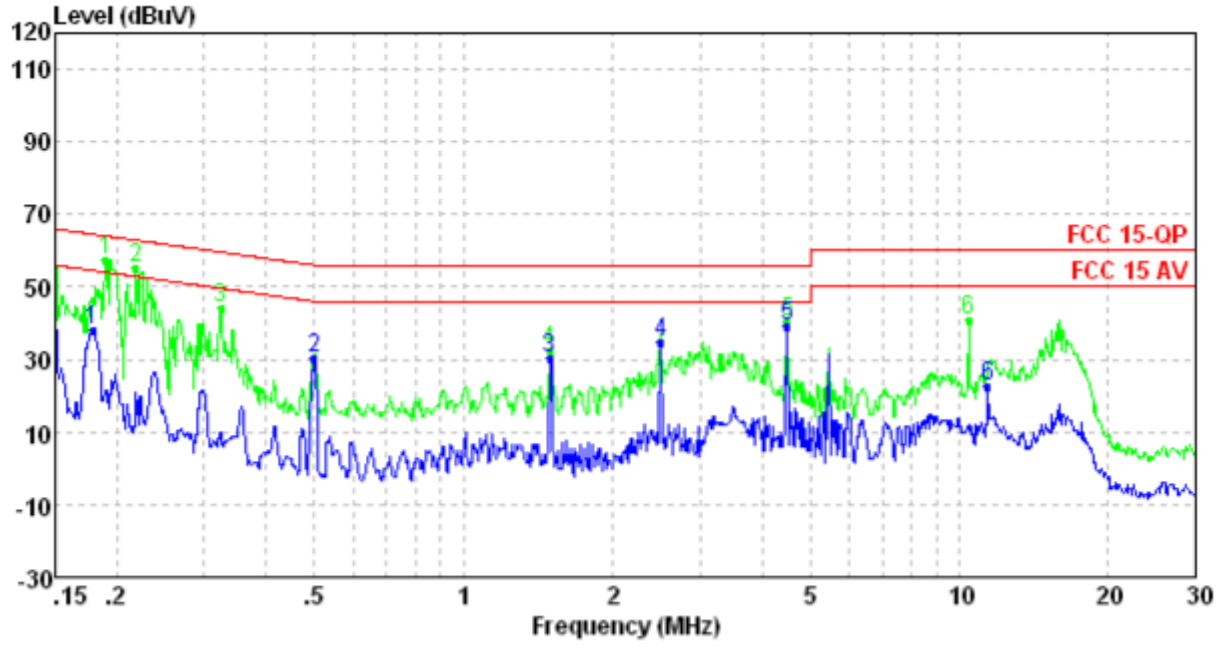
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



N Line

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	
0.18	27.46	10.43	37.89	54.55	-16.66	AVG
0.50	19.96	10.43	30.39	46.01	-15.62	AVG
1.50	19.94	10.42	30.36	46.00	-15.64	AVG
2.50	24.37	10.40	34.77	46.00	-11.23	AVG
4.50	28.82	10.37	39.19	46.00	-6.81	AVG
11.44	12.02	10.29	22.31	50.00	-27.69	AVG
0.19	47.22	10.43	57.65	64.06	-6.41	QP
0.22	44.67	10.43	55.10	62.88	-7.78	QP
0.32	33.64	10.42	44.06	59.62	-15.56	QP
1.50	22.30	10.40	32.70	56.00	-23.30	QP
4.50	29.90	10.37	40.27	56.00	-15.73	QP
10.45	30.43	10.29	40.72	60.00	-19.28	QP

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



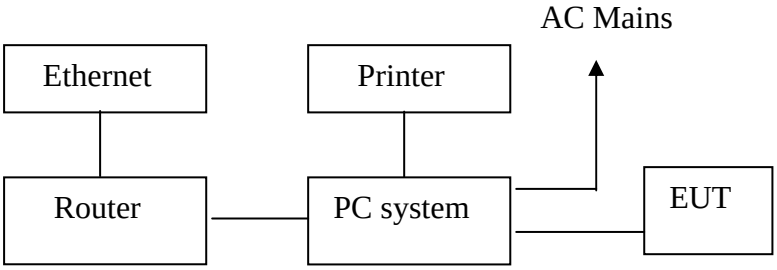
5. RADIATED EMISSION MEASUREMENT

5.1. Measurement Uncertainty

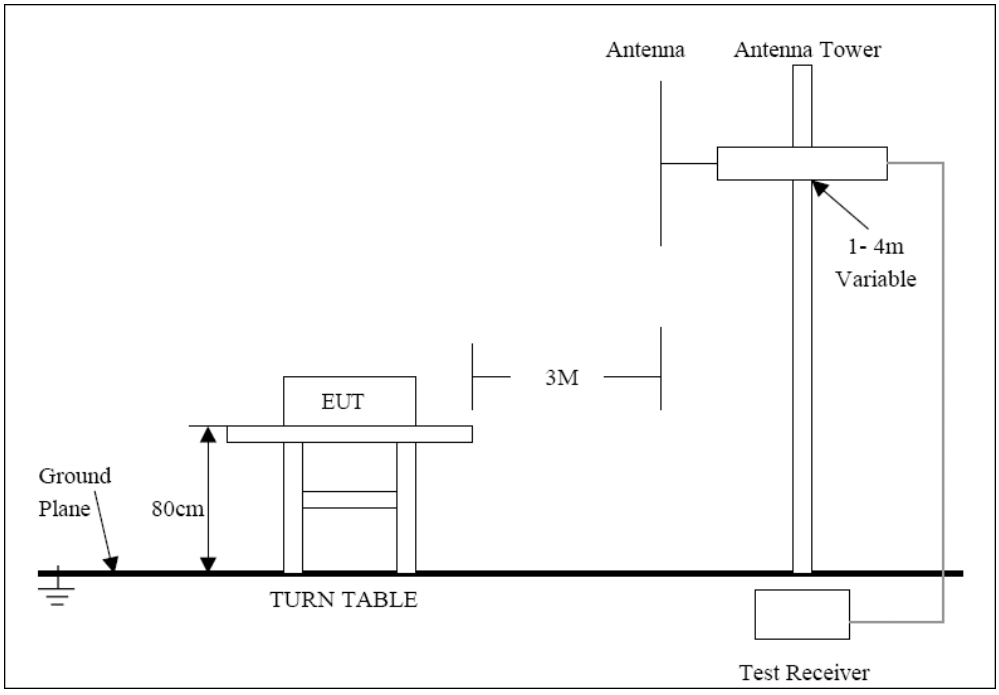
The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is + 5.10 dB.

5.2. Block Diagram of EUT Configuration

5.2.1.Block Diagram of connection between the EUT and the simulators



5.2.2.Semi-anechoic Chamber Test Setup Diagram



5.3. Test Standard

FCC Part 15 CLASS B
ANSI C63.4 2003

5.4. Radiated Emission Limit(Class B)

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dBμV/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.

5.5. 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.

5.6. Operating Condition of EUT

5.6.1.Setup the EUT as shown on Section 5.2.1

5.6.2.Turn on the power of all equipments.

5.6.3.Let the EUT work in test mode (Connect to a router and the router attached to PC) and test it.

5.7. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Calibrated Loop antenna is used as receiving antenna for frequencies below 30MHz, Calibrated Bilog antenna is used as receiving antenna for frequencies between 30 MHz and 1 GHz, Calibrated Horn antenna is used as receiving antenna for frequencies above 1000MHz. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement.

The bandwidth of test receiver is set at 9kHz in below 30MHz. and set at 120kHz in 30-1000MHz.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Peak detector and Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

The frequency range from 9kHz to 1000MHz is checked. All the test results are listed in Section 6.8. The measurements greater than 20dB below the limit are not report.

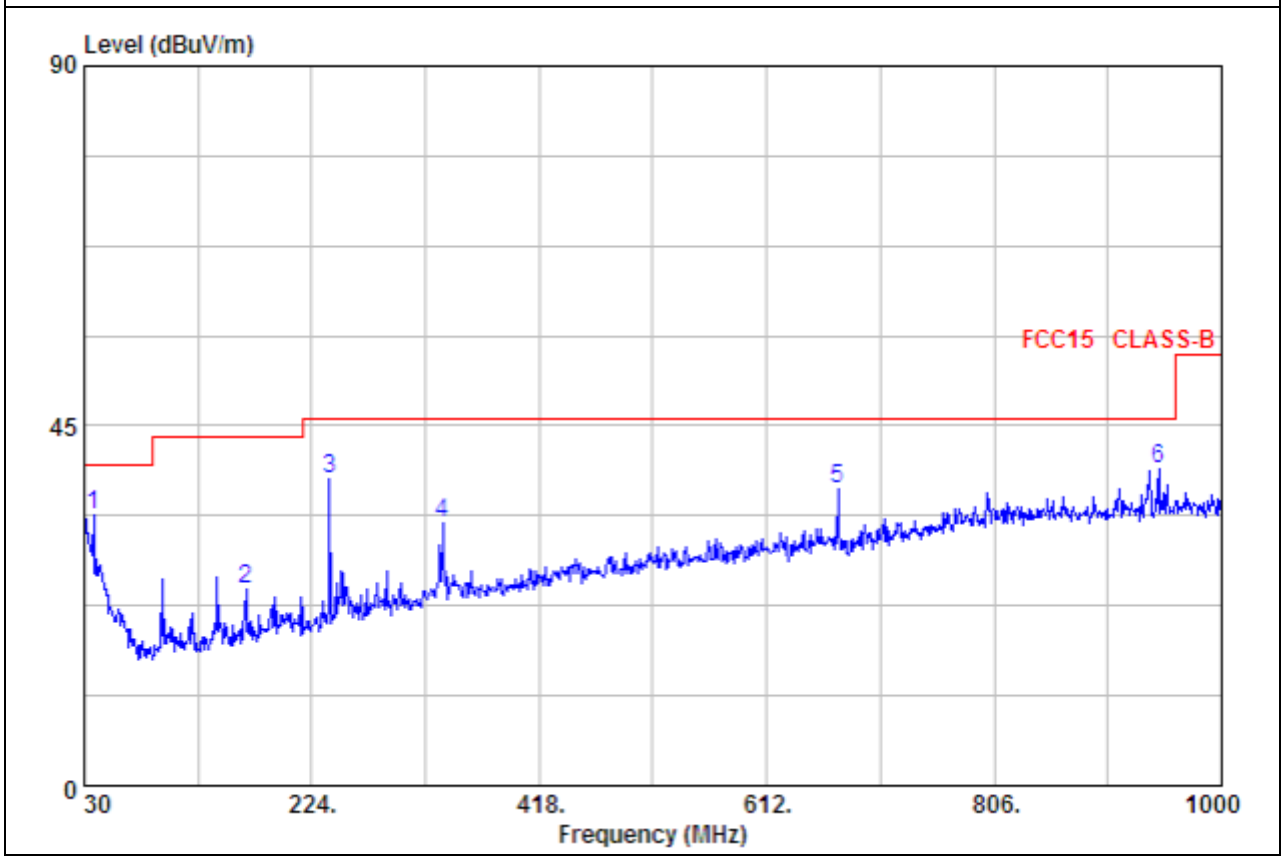
5.8. Test Result

PASS

Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
37.76	31.78	2.13	33.91	40.00	-6.09	QP
167.74	22.28	2.28	24.56	43.50	-18.94	QP
239.52	35.97	2.35	38.32	46.00	-7.68	QP
335.55	30.51	2.35	32.86	46.00	-13.14	QP
673.11	33.8	3.20	37.00	46.00	-9.00	QP
946.65	36.48	3.20	39.68	46.00	-6.32	QP

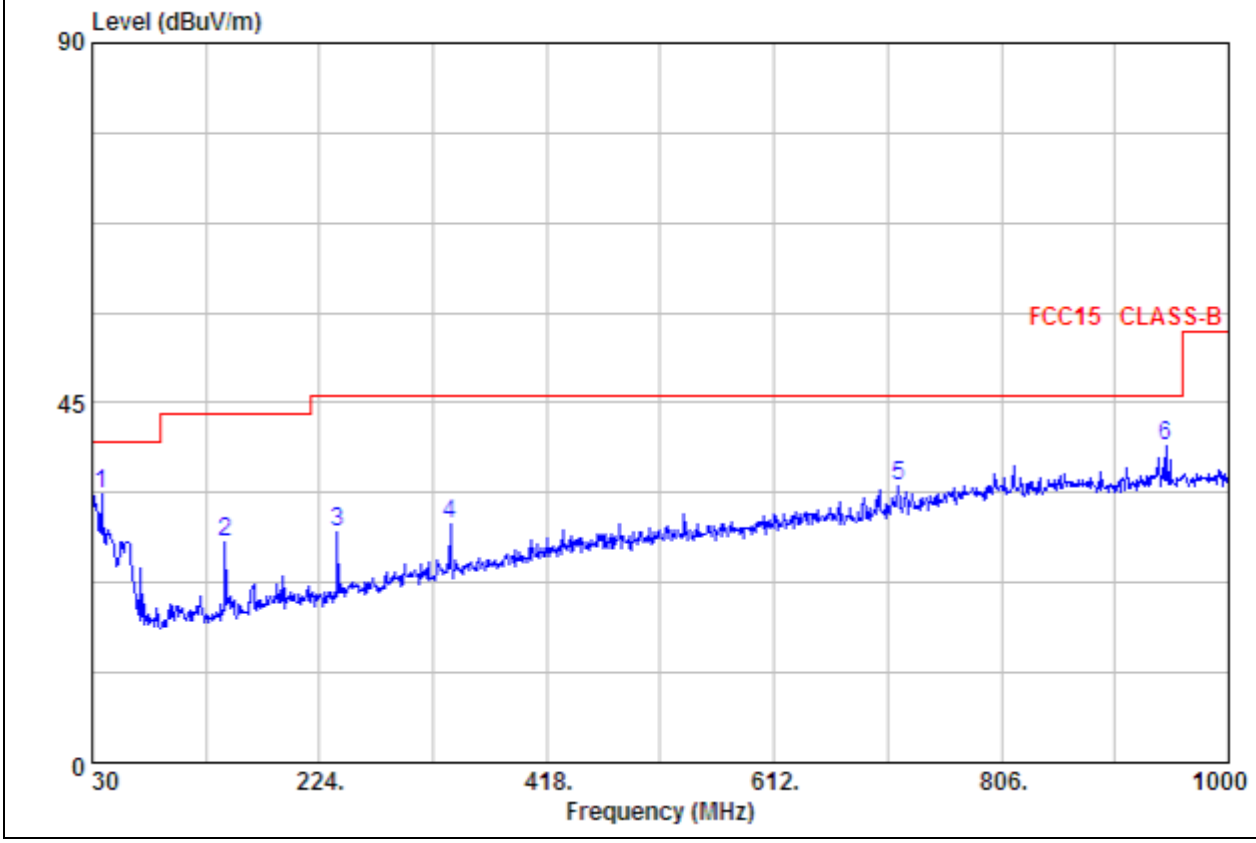
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Vertical

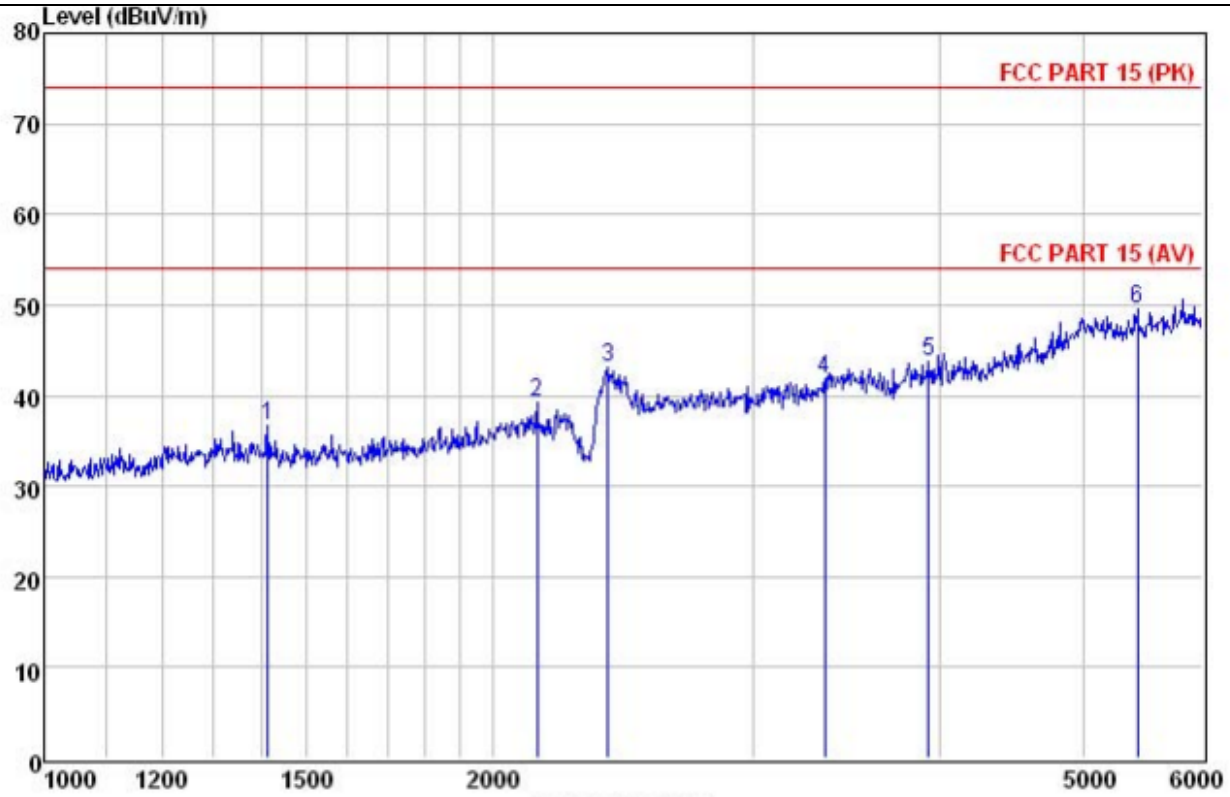
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
37.76	31.54	2.13	33.67	40.00	-6.33	QP
143.49	25.39	2.28	27.67	43.50	-15.83	QP
239.52	26.43	2.35	28.78	46.00	-17.22	QP
335.55	27.46	2.35	29.81	46.00	-16.19	QP
717.73	31.47	3.20	34.67	46.00	-11.33	QP
946.65	36.49	3.20	39.69	46.00	-6.31	QP

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



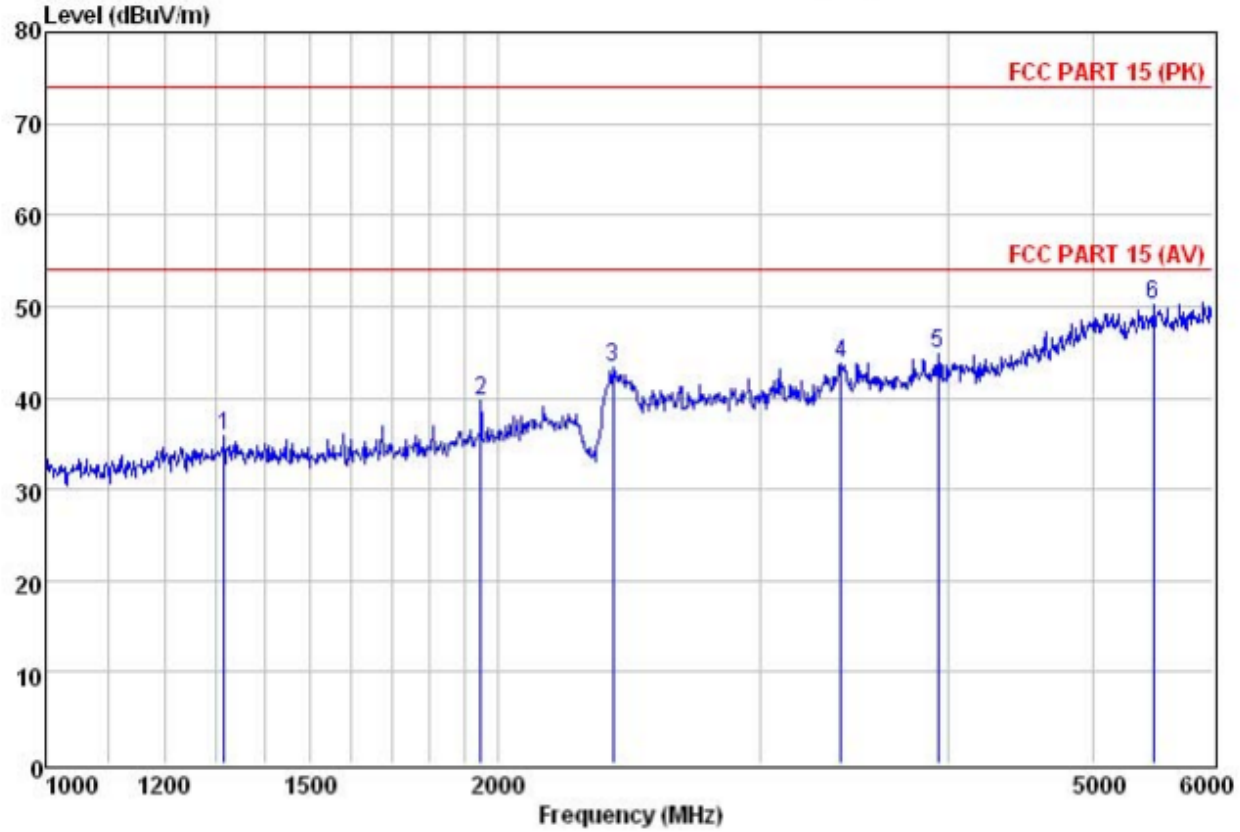
Plot of Radiation Emissions Test Data (Above 1GHz)

Horiyontal



	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1413.134	48.57	25.40	3.72	40.94	36.75	74.00	-37.25	
2	2145.322	47.06	27.52	5.12	40.39	39.31	74.00	-34.69	
3	2393.094	41.21	27.58	5.67	31.35	43.11	74.00	-30.89	
4	3345.599	46.48	28.29	6.31	39.31	41.77	74.00	-32.23	
5	3931.041	47.24	29.78	7.59	40.94	43.67	74.00	-30.33	
6	5427.187	48.63	31.91	9.15	40.21	49.48	74.00	-24.52	

Vertical



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1315.398	47.49	25.58	3.63	40.92	35.78	74.00	-38.22	
2	1950.969	49.85	25.93	4.79	40.88	39.69	74.00	-34.31	
3	2388.809	41.52	27.58	5.67	31.35	43.42	74.00	-30.58	
4	3393.901	47.71	28.46	6.44	38.84	43.77	74.00	-30.23	
5	3938.091	48.48	29.78	7.60	40.99	44.87	74.00	-29.13	
6	5476.026	49.36	32.01	9.16	40.24	50.29	74.00	-23.71	