FCC PART 15.249

EMI MEASUREMENT AND TEST REPORT

For

ShenZhen SenZe Electronics Co.,Ltd

4F, Block B, 2nd Industrial Zone, San Wei, XiXiang, Shenzhen, China

FCC ID: AWFSZ-919

June 4, 2012

This Report Concerns: Original Report	Equipment Type: PS3 WIRELESS CONTROLLER
Test Engineer:	Eric Li
Report No.:	BST12050415Y-1E-3
Receive EUT Date/Test Date:	May 17, 2012/ May 18-29, 2012
Reviewed By:	Christina Deng
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Note: The test report is specially limited to the above company and this particular sample only. It may not be duplicated without prior written consent of Shenzhen BST Technology Co.,Ltd. This report must not be used by the client to claim product certification,approval,or endorsement by NVLAP, NIST or any agency of the US Government.

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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
Shenzhen Certification Technology Service Co., Ltd
(FCC Registered Test Site Number: 197647) on
2F, Building B, East Area of Nanchang Second Industrial Zone, Gushu 2nd Road,
Bao'an District, shenzhen 518126, 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

Description	:	PS3 WIRELESS CONTROLLER
Applicant	:	ShenZhen SenZe Electronics Co.,Ltd 4F, Block B, 2nd Industrial Zone, San Wei, XiXiang, Shenzhen, China
Model Number	:	SZ-919, SZ-918, SZ-902, SZ-903, SZ-904, SZ-906, SZ-907, SZ-908, SZ-909
Trade Name	:	SENZE
Frequency	:	2410-2470MHz
Power Supply	:	DC 3.7V Li-ion Battery or DC 5V powered by USB

2.2. Block Diagram of EUT Configuration

Figure 1 EUT Setup of TX mode

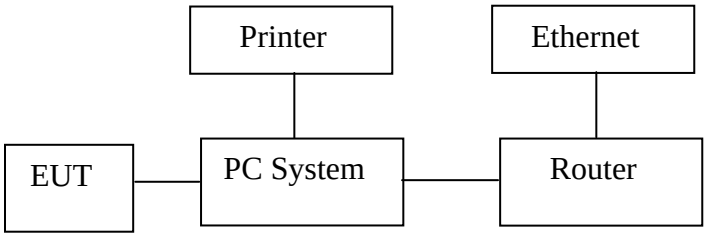


Figure 2 EUT Setup of Charging mode

2.3. Support Equipment List

Name	Model No	S/N	Manufacturer	Used "√"
PC system	AM1830	N/A	Acer	√
Printer	HP1020	N/A	HP	√
Router	TL-R402M	07115200391	TP-LINK	√

2.4. Test Conditions

Temperature: 20~25℃
Relative Humidity: 50~63 %

3. FCC ID LABEL

FCC ID: AWFSZ-919

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 View/ FCC ID Label Location

4. TEST RESULTS SUMMARY

FCC 15 Subpart C, Paragraph 15.249

FCC Rules	Description of Test	Result
Section 15.207	Conducted Emission	Compliant
Section 15.249(a)	The fundamental field strength and the harmonics	Compliant
Section 15.209 Section 15.249(d)	Radiated Emission	Compliant
Section 15.249(d)	Band Edge	Compliant
Section 15.203	Antenna Requirement	Compliant

Remark: “N/A” means “Not applicable”.

Statement: All testing was performed using the test procedures found in ANSI C63.4-2003.

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 10，2012	1 Year
Cable	SCHWARZBECK	N/A	NO.2	Mar 10，2012	1 Year
Cable	SCHWARZBECK	N/A	NO.3	Mar 10，2012	1 Year
LISN	Rohde＆Schwarz	ESH3-Z5	100305	Mar 10，2012	1 Year
50Ω Coaxial Switch	ANRITSU CORP	MP59B	6200283933	Mar 10，2012	1 Year
EMI Test Receiver	Rohde＆Schwarz	ESP13	100180	Oct.11,2011	1 Year
Spectrum Analyzer	Rohde＆Schwarz	FSP40	100273	Sep.10,2011	1 Year
3m Semi-Anechoic Chamber	Albatross Projects	9m×6m×6m	N/A	Feb.20,2012	1 Year
Signal Generator	FLUKE	PM5418 + Y/C	LO747012	Feb.20,2012	1 Year
Signal Generator	FLUKE	PM5418TX	LO738007	Feb.20,2012	1 Year
Loop Antenna	SCHWARZBECK	FMZB1516	113	Jan.30,2012	1 Year
Trilog-Super Broadband Antenna	SCHWARZBECK	VULB9161	9161-4079	Sep.22,2011	1 Year
Broad-Band Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-564	Sep.22,2011	1 Year
Horn Antenna	Schwarzbeck	BBHA9170	208 279	May 12, 2012	1 Year
Ultra Broadband Antenna	Rohde＆Schwarz	HL-562	100110	June.15,2011	1 Year
AMN	Rohde＆Schwarz	ESH3-Z5	100196	Oct.11,2011	1 Year
AMN	Rohde＆Schwarz	ESH3-Z5	100197	Oct.11,2011	1 Year
Pulse Limiter	Rohde＆Schwarz	ESH3-Z2	N/A	N/A	N/A
Power Meter	Rohde＆Schwarz	NRVD	100041	Feb.20,2012	1 Year
EMI Test Receiver	Rohde＆Schwarz	ESCS30	100003	Feb.20,2012	1 Year
Coaxial Cable with N-connectors	SCHWARZBECK	AK9515H	95549	Sep.22,2011	1 Year
Radio Communication Test Set	Rohde＆Schwarz	CMS 54	846621/024	Feb.20,2012	1 Year
Modulation Analyzer	Hewlett-Packard	8901B	2303A00362	Feb.20,2012	1 Year
Absorbing clamp	Rohde＆Schwarz	MDS-21	N/A	Oct.11,2011	1 Year

6. ANTENNA REQUIREMENT

6.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

6.2. Antenna Connected Construction

According to § 15.203, An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

The antenna used in this product is PCB antenna. The antenna is permanently attached. Refer to the product photo.

6.3. Result

Compliance

7. CONDUCTED POWER LINE TEST

7.1. Test Equipment

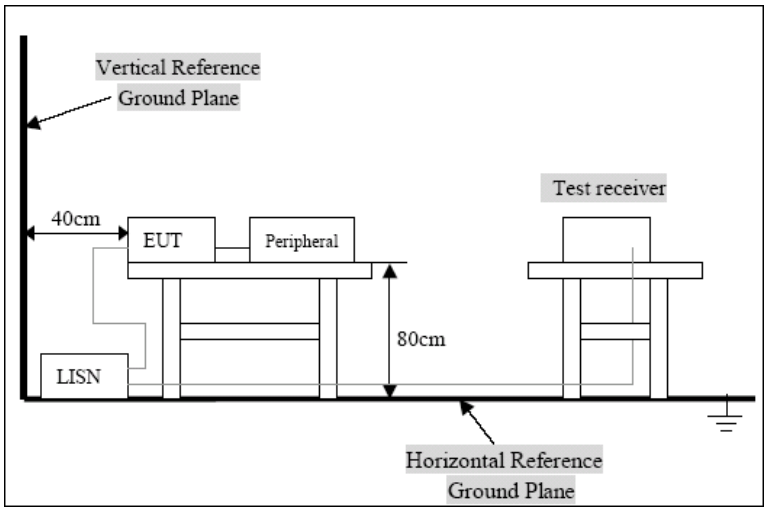
Please refer to section 5 this report.

7.2. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.).This provides a 50ohm/50uh coupling inpedance for the measuring equipment.The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uh coupling inpedance with 50ohm termination.

Both sides of A.C. Line are check for maximum conducted interference.In order to find the maximum emission,the relative positions of equipment and al of the interface cables must be changed according to ASIN C63.4:2003 on conducted measurement .Conducted emissions were invested over the frequency range from 0.15MHz to 30MH z using a receiver bandwidth of 9Khz.

7.3. Test Setup



For the actual test configuration,Please refer to the related items-Photos of testing

7.4. Conducted Power line Emission Limits

FCC Part 15 Paragraph 15.207 (dBuV)		
Frequency Range (MHZ)	Class A QP/AV	Class B QP/AV
0.15-0.5	79/66	65-56/56-46
0.5-5.0	73/60	56-46
5.0-3.0	73/60	60-50

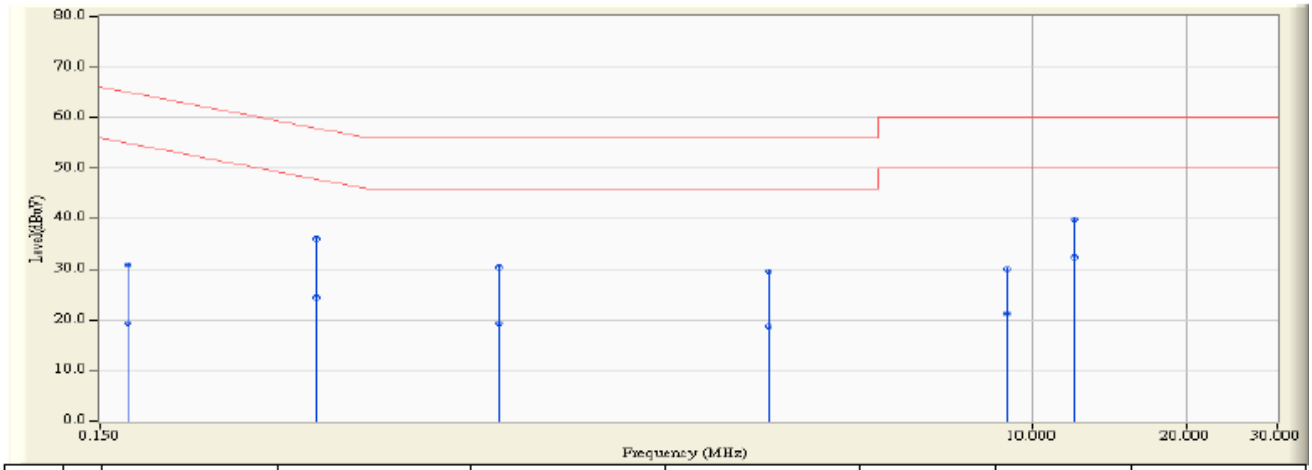
Note: In the above table, the tighter limit applies at the band edges.

7.5. Conducted Power Line Test Result

Pass.

Date of Test:	May 29, 2012	Temperature:	25°C
EUT:	PS3 WIRELESS CONTROLLER	Humidity:	56%
Model No.:	SZ-919	Power Supply:	DC 5V power by PC USB port PC power: AC120V/60Hz
Test Mode:	Charging	Test Engineer:	Eric Li

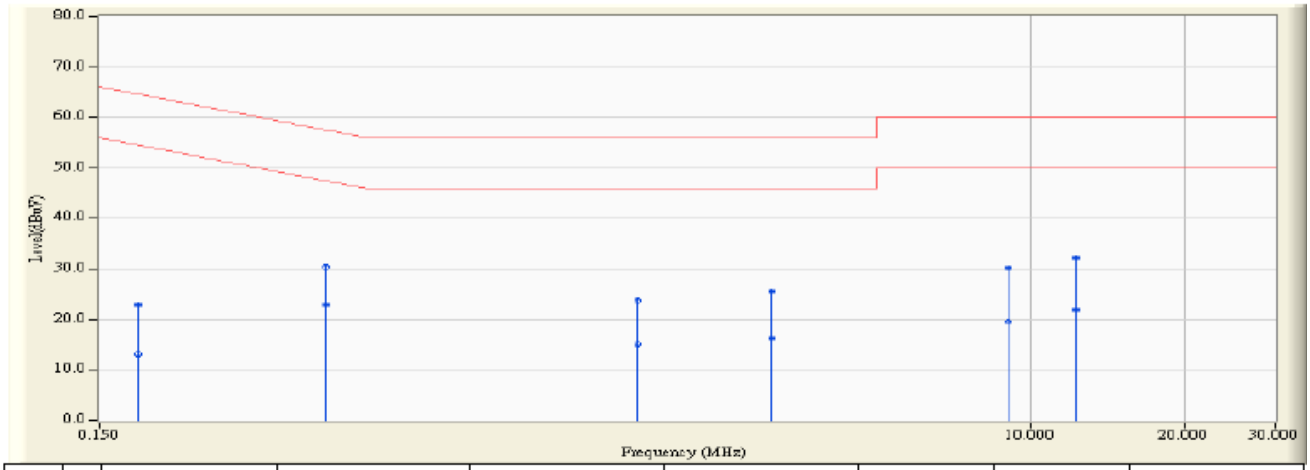
L Line



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.170	9.778	21.080	30.858	-34.126	64.983	QUASIPEAK
2		0.170	9.778	9.610	19.388	-35.596	54.983	AVERAGE
3		0.396	9.830	26.160	35.990	-21.945	57.935	QUASIPEAK
4		0.396	9.830	14.520	24.350	-23.585	47.935	AVERAGE
5		0.900	9.662	20.880	30.542	-25.458	56.000	QUASIPEAK
6		0.900	9.662	9.550	19.212	-26.788	46.000	AVERAGE
7		3.048	9.820	19.700	29.520	-26.480	56.000	QUASIPEAK
8		3.048	9.820	8.850	18.670	-27.330	46.000	AVERAGE
9		8.884	9.949	20.110	30.058	-29.942	60.000	QUASIPEAK
10		8.884	9.949	11.240	21.188	-28.812	50.000	AVERAGE
11		12.037	10.069	29.880	39.949	-20.051	60.000	QUASIPEAK
12	*	12.037	10.069	22.210	32.279	-17.721	50.000	AVERAGE

Note:
1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

N Line



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.177	9.767	13.230	22.997	-41.612	64.609	QUASIPEAK
2		0.177	9.767	3.410	13.177	-41.432	54.609	AVERAGE
3		0.416	9.838	20.610	30.448	-27.087	57.535	QUASIPEAK
4	*	0.416	9.838	13.090	22.928	-24.607	47.535	AVERAGE
5		1.693	9.745	13.980	23.725	-32.275	56.000	QUASIPEAK
6		1.693	9.745	5.210	14.955	-31.045	46.000	AVERAGE
7		3.107	9.821	15.610	25.431	-30.569	56.000	QUASIPEAK
8		3.107	9.821	6.560	16.381	-29.619	46.000	AVERAGE
9		9.017	9.977	20.370	30.347	-29.653	60.000	QUASIPEAK
10		9.017	9.977	9.640	19.617	-30.383	50.000	AVERAGE
11		12.255	10.127	22.130	32.257	-27.743	60.000	QUASIPEAK
12		12.255	10.127	11.650	21.777	-28.223	50.000	AVERAGE

Note:
1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

8. RADIATED EMISSION TEST

8.1. Test Equipment

Please refer to section 5 this report.

8.2. 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, and 1MHz in above 1000MHz.

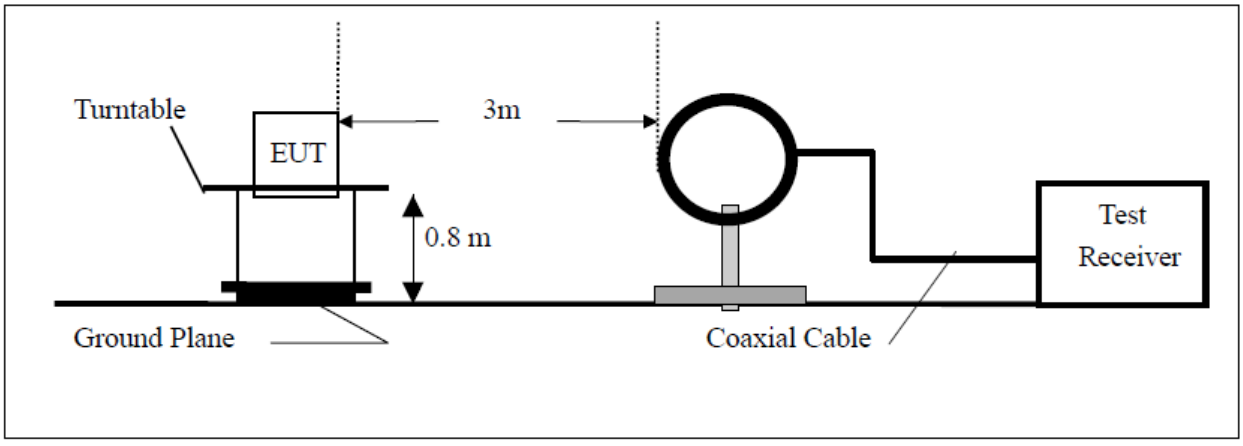
The frequency range from 9kHz to 25GHz is checked.

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.

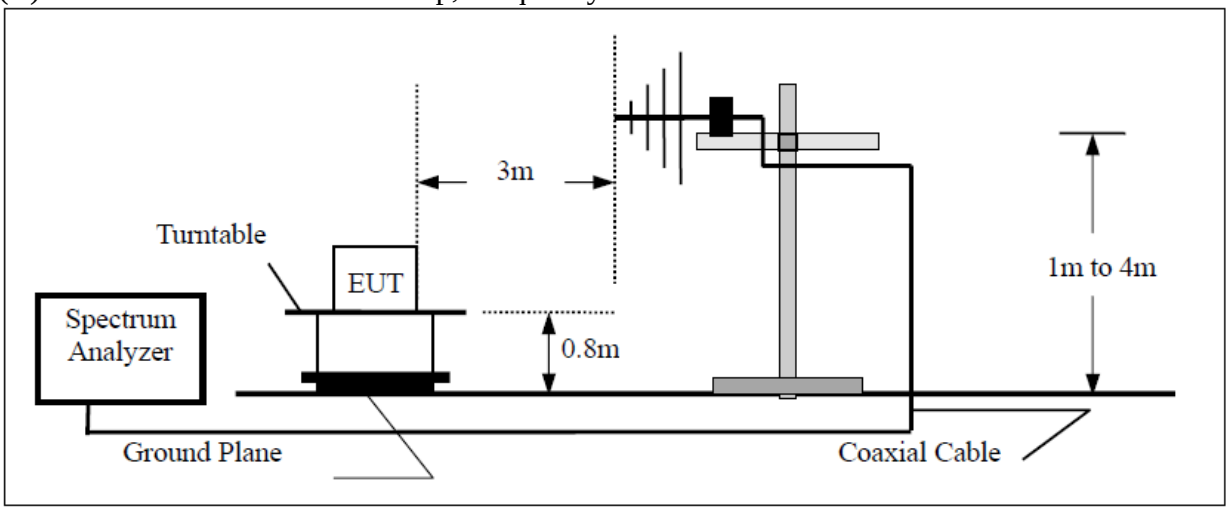
Through three orthogonal axes to determine which attitude and equipment arrangement produces the highest emission relative to the limit.

8.3. Radiated Test Setup

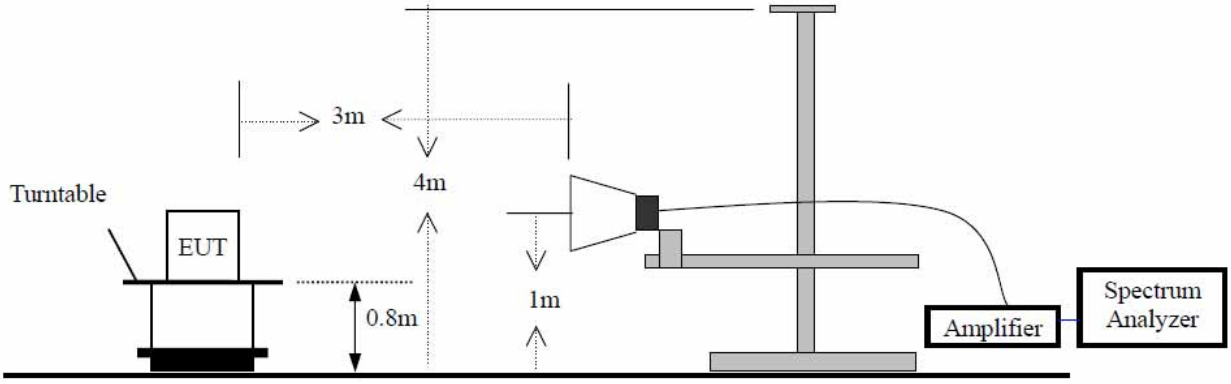
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



8.4. Radiated Emission Limit

All emission from a digital device,including any network of conductors and apparatus connected thereto,shall not exceed the level of field strength specified below :

A．Fundamental and Harmonics Radiated Emissions 15.249(a) Limit

Fundamental Frequency (MHZ)	Field as trength of Fundamental(3m)			Field as trength of Harmonics(3m)		
	mV/m	dBuV/m		uV/m	dBuV/m	
902~928	50	94(AV)	114(Peak)	500	54(AV)	74(Peak)
2400~2483.5	50	94(AV)	114(Peak)	500	54(AV)	74(Peak)

Note: (1) RF Voltage (dBuV)=20 log Voltage(uV)
(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
(3) The emission limit in this paragraph os based on measurement instrumentation employing an average detector.Measurement using instrumentation with a peak detector function,corresponding to 20dB above the maximum permitted average limit.

B. Spurious Radiated Emissions.

Frequency (MHz)	Limit			
	Field Strength of Quasi-peak Value (microvolts/m)	Field Strength of Quasi-peak Value (dBμV/m)	Measurement distance (m)	The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.
0.009 - 0.490	2400/F(kHz)	/	300	
0.490 - 1.705	24000/F(kHz)	/	30	
1.705-30	30	29.5	30	
30 - 88	100	40	3	
88 - 216	150	43.5	3	
216 - 960	200	46	3	
Above 960	500	54	3	

Note: (1) RF Voltage (dBuV)=20 log Voltage(uV)
(2) In the Above Table,the tighter limit applies at the band edges.
(3) Distaqnce refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

8.5. Radiated Emission Test Result

Pass

A. Fundamental Radiated Emissions Data

CH Low

Freq. (MHz)	Emission(dBuV/m) AV/PK	HORIZ/ VERT	Limits(dBuV/m) AV/PK	Margin (dB)
2410	72.94/83.06	VERT	94/114	21.06/30.94
2410	73.28/83.70	HORIZ	94/114	20.72/30.30

CH Middle

Freq. (MHz)	Emission(dBuV/m) AV/PK	HORIZ/ VERT	Limits(dBuV/m) AV/PK	Margin (dB)
2440	70.39/81.65	VERT	94/114	23.61/32.35
2440	71.42/82.57	HORIZ	94/114	22.58/31.43

CH High

Freq. (MHz)	Emission(dBuV/m) AV/PK	HORIZ/ VERT	Limits(dBuV/m) AV/PK	Margin (dB)
2470	70.01/80.40	VERT	94/114	23.99/33.60
2470	73.67/84.35	HORIZ	94/114	20.33/29.65

B.Harmonics Radiated Emissions Data

CH Low

Freq. (MHz)	Emission(dBuV/m) AV/PK	HORIZ/ VERT	Limits(dBuV/m) AV/PK	Margin (dB)
4820.0	44.23/55.08	VERT	54.0/74.0	9.77/18.92
4820.0	45.17/56.74	HORIZ	54.0/74.0	8.83/17.26

Emissions attenuated more than 20 dB below the permissible value are not reported.

CH Middle

Freq. (MHz)	Emission(dBuV/m) AV/PK	HORIZ/ VERT	Limits(dBuV/m) AV/PK	Margin (dB)
4880.0	43.72/54.63	VERT	54.0/74.0	10.28/19.37
4880.0	44.33/55.36	HORIZ	54.0/74.0	9.67/18.64

Emissions attenuated more than 20 dB below the permissible value are not reported.

CH High

Freq. (MHz)	Emission(dBuV/m) AV/PK	HORIZ/ VERT	Limits(dBuV/m) AV/PK	Margin (dB)
4940.0	44.87/55.29	VERT	54.0/74.0	9.13/18.71
4940.0	45.95/57.11	HORIZ	54.0/74.0	8.05/16.89

Emissions attenuated more than 20 dB below the permissible value are not reported.

C. General Radiated Emissions Data

Freq. (MHz)	Emission(dBuV/m) AV/PK	HORIZ/ VERT	Limits(dBuV/m) AV/PK	Margin (dB)
-	-	HORIZ	-	-
-	-	VERT	-	-

Emissions attenuated more than 20 dB below the permissible value are not reported.

9. BAND EDGE

9.1. Test Equipment

Please refer to Section 5 this report.

9.2. Test Procedure

The EUT and its simulators are 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 was positioned such that the distance from antenna to the EUT was 3 meters. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated measurement. The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz respectively.

9.3. Band Edge FCC 15.249(d) Limit

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating,the radio frequency power that is produced by the intentional radiator shall be at least 50dB below that in the 100kHz bandwidth within the band that contains the desired power,based on either an RF conducted or a radited measurement,Attenuation below the general limits specified in Section 15.209(a) is not required. In addition,radiated emissions which fall in the restricted bands as defined in Section 15.205(a),must also comply with the radiated emission limits specitfied in Section 15.209(a) (see Section 15.205(c)).

9.4. Band Edge Test Result

Pass

TX 2410MHz (PK)

Frequency (MHz)	Result(dBμV/m) PEAK	Limit(dBμV/m) PEAK	Margin(dB) PEAK	Polarization
2389.200	41.51	74	32.49	Vertical
2390.000	37.60	74	36.40	Vertical
2400.000	37.84	74	36.16	Vertical
2388.500	39.05	74	34.95	Horizontal
2390.000	38.16	74	35.84	Horizontal
2400.000	38.11	74	35.89	Horizontal

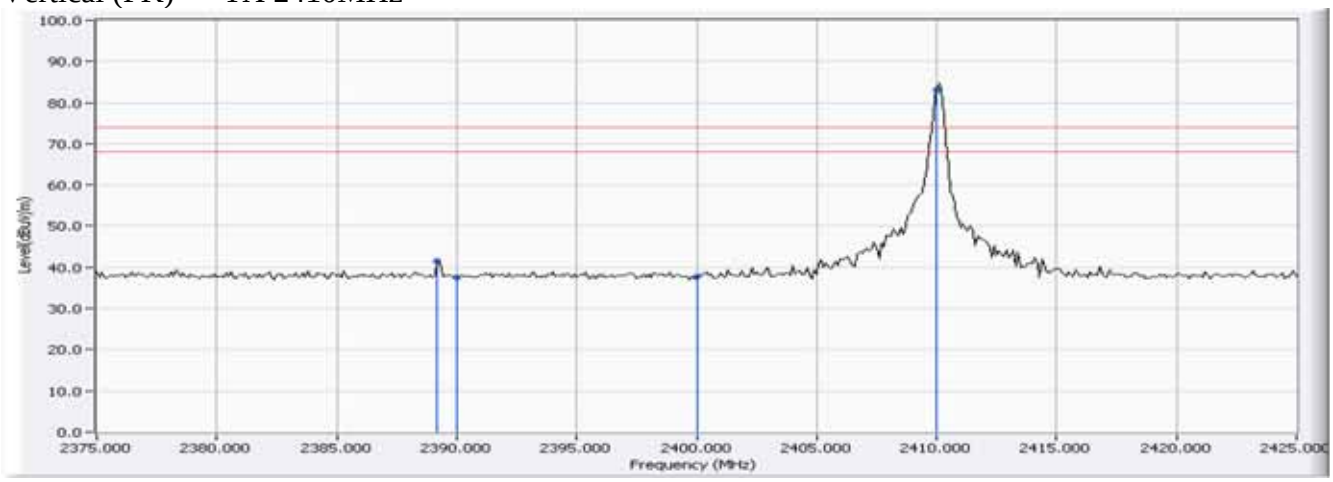
Note:
1. The average measurement was not performed when the peak measured data under the limit of average detection.

TX 2470MHz (PK)

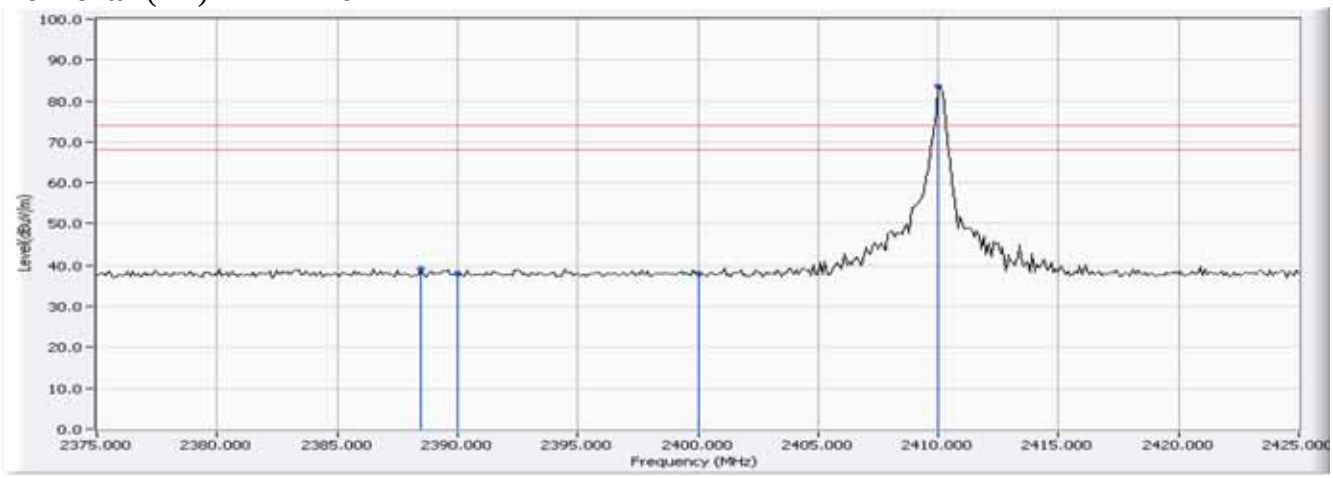
Frequency (MHz)	Result(dBμV/m) PEAK	Limit(dBμV/m) PEAK	Margin(dB) PEAK	Polarization
2478.500	37.99	74	36.01	Vertical
2483.500	39.63	74	34.37	Vertical
2495.000	38.47	74	35.53	Vertical
2478.500	38.21	74	35.79	Horizontal
2485.000	40.00	74	34.00	Horizontal
2495.000	38.33	74	35.67	Horizontal

Note:
1. The average measurement was not performed when the peak measured data under the limit of average detection.

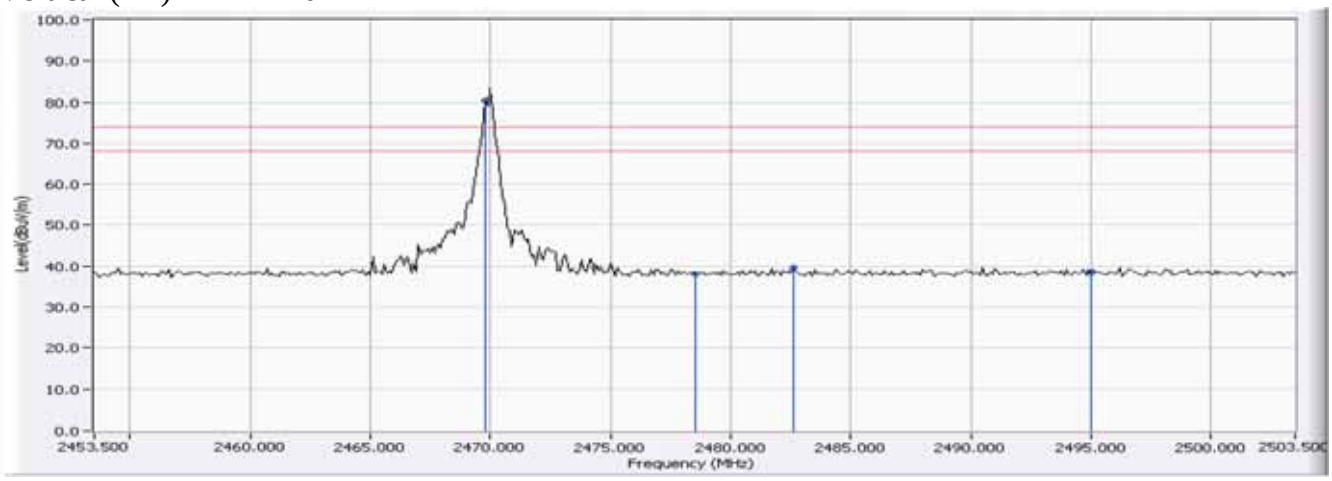
Vertical (PK) TX 2410MHz



Horizontal (PK) TX 2410MHz



Vertical (PK) TX 2470MHz



Horizontal (PK) TX 2470MHz