SGS-CSTC Standards Technical Services Ltd.

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FEDERAL COMMUNICATIONS COMMISSION
Registration number: 282399

TEST REPORT

Application No. :	SZEMO080502211RF
Applicant/ Manufacturer:	SHENZHEN XINZHENGSHENG ELECTRONICS CO., LTD
FCC ID:	VZBCM3921080514
Fundamental Carrier	**Frequency** : 2.402GHz to 2.476GHz
Equipment Under Test (EUT):	
Name:	Wii Rf nunchuck
Model:	CM3921 G5603 G5602♣
♣	Please refer to section 2 of this report which indicates which item was actually tested and which were electrically identical.
Band Name:	HAIS
Standards:	FCC PART 15: 2006
	Please refer to section 2 for further details.
Date of Receipt:	27 May 2008
Date of Test:	27 May to 10 June 2008
Date of Issue:	12 June 2008
Test Result :	**PASS ***

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Robinson Lo
Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

2 Test Summary

Test	Test Requirement	Stanadard Paragraph	Result
Conducted Emissions	FCC PART 15:2007	Section 15.107 / 15.207	PASS
Flied Strength of Fundamental	FCC PART 15:2007	Section 15.249 (a)	PASS
Flied Strength of Harmornics or other Frequency	FCC PART 15:2007	Section 15.249 (a) Section 15.209	PASS
Occupied Bandwidth	FCC PART 15:2007	Section 15.249	PASS
Band Edges Measurement	FCC PART 15:2007	Section 15.249 (d)	PASS

Remark:

The batteries used in the tests were fully charged.

Item No.: CM3921 G5603 G5602

Only the Item in the picture 6 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for all the above items.

3 Contents

4 General Information

4.1 Client Information

Applicant/ Manufacturer:	SHENZHEN XINZHENGSHENG ELECTRONICS CO., LTD
Address of Applicant/ Manufacturer :	Building 49, Baotian Industrial Zone Xixiang Town, Baoan District, Shenzhen. China

4.2 General Description of E.U.T.

Product Name:	Wii Rf nunchuck
Model:	CM3921 G5603 G5602
Power Supply:	DC 3.7 V(Rechargeable Battery) for dongle part
Power Cord:	N/A-

4.3 Description of Support Units

The EUT was tested as an independent unit: a 2.4GHz Wireless Light Gun.

The transmitter have 2 frequencies in the 2402MHz and 2476MHz can in exchange for choice.

4.4 Standards Applicable for Testing

The customer requested FCC tests for a 2.4GHz Wii Rf nunchuck.

The standard used was FCC PART 15, SUBPART C (2007) section 15.249.

4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory, No.198 Kezhu Road, Science Town Economic& Technology Development District Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

4.6 Other Information Requested by the Customer

None.

4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **NVLAP – Lab Code: 200611-0**
  SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is recognized under the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0. Effective through December 31, 2006.
- **ACA**
  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.
- **VCCI**
  The 3m Semi-anechoic chamber and Shielded Room (11.5m x 4m x 4m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-1599 and C-1706 respectively.
  Date of Registration:June 01, 2005. Valid until February 22, 2008
- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**
  Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.
- **CNAL – LAB Code: L0141**
  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAL/AC01: 2002 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of Testing Laboratories.
- **FCC – Registration No.: 282399**
  SGS-CSTC Standards Technical Services 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 282399, May 31, 2002. With the above and NVLAP's accreditation, SGS-CSTC is an authorised test laboratory for the DoC process.
- **Industry Canada (IC)**
  The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5169.

5 Test Results

5.1 Test Instruments

R&TTE RE in Chamber						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	16-06-2007	15-06-2009
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	12-12-2007	11-12-2008
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A
4	Coaxial cable	SGS	N/A	SEL0028	01-06-2008	31-05-2009
5	Coaxial cable	SGS	N/A	SEL0027	01-06-2008	31-05-2009
6	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0014	12-08-2007	11-08-2008
7	EMI Test Receiver	Rohde & Schwarz	ESCI	SEL0022	27-06-2007	26-06-2008
8	Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	15-06-2007	14-06-2008

5.2 E.U.T. Operation

Input voltage: DC 3.7 V(Rechargeable Battery) for dongle part.

Operating Environment:

Temperature: 24.0 °C

Humidity: 52 % RH

Atmospheric Pressure: 1012 mbar

EUT Operation: Test in transmitting mode:

1. For Lowest Channel: 2.402GHz.
2. For Middle Channel: 2.440GHz.
3. For Highest Channel: 2.476GHz.

5.3 Test Procedure & Measurement Data

5.3.1 Conducted Emission

5.3.1.1 Test in transmitting mode

Test Requirement:	FCC Part15 C
Test Method:	Based on FCC Part15 C Section 15.249
Test Date:	03 June 2008
Frequency range	150 KHz – 30MHz for transmitting mode.
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth)
	Quasi-Peak if maximised peak within 6dB of Quasi-Peak limit
	Test instrumentation resolution bandwidth 9 kHz (150 KHz -30 MHz),

5.3.2 E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C Humidity: 52 % RH Atmospheric Pressure: 1012 Mbar

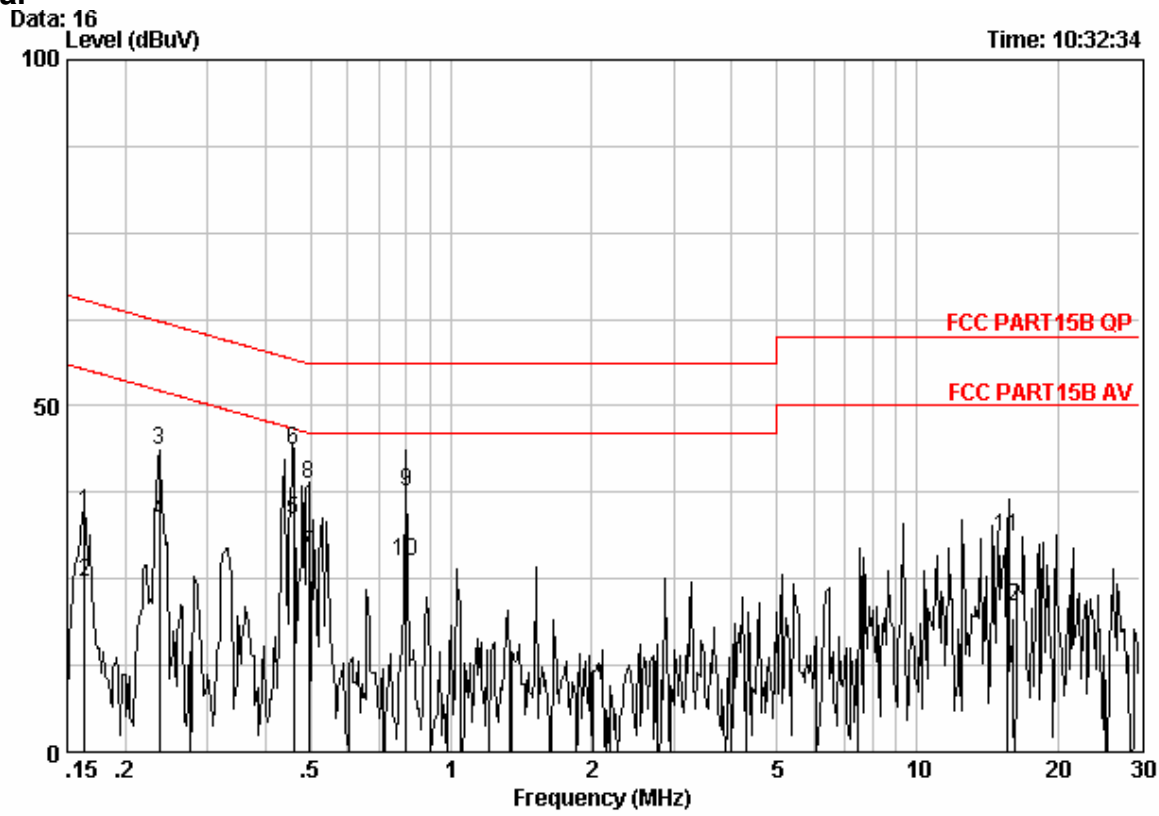
5.3.3 Measurement Data

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

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

The following Quasi-Peak and Average measurements were performed on the EUT on 03 June 2008:

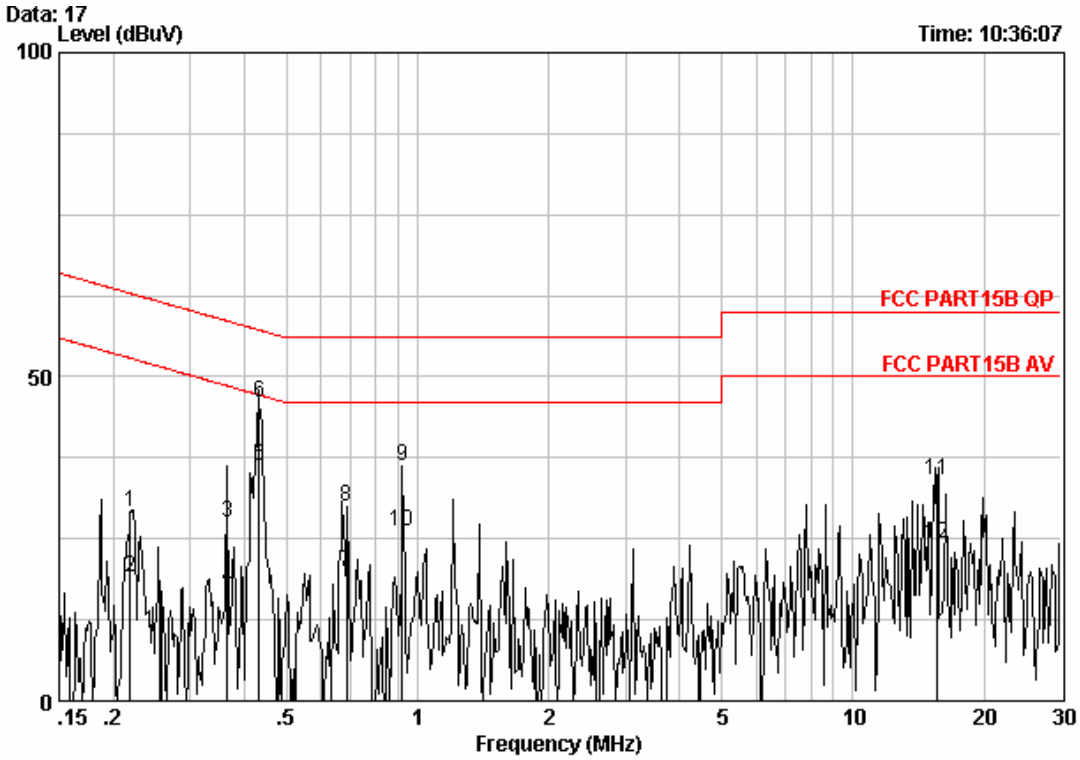
Neutral



Site : Shielding Room
Condition : FCC PART15B QP CE NEUTRAL
EUT : DISNEY PHOTO CUBE
Job No : 2375IT
Test Line : N/A
Test mode : PC

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.16327	-0.03	-0.05	34.69	34.62	65.30	-30.68	QP
2	0.16327	-0.03	-0.05	24.54	24.47	55.30	-30.83	Average
3	0.23658	-0.06	-0.04	43.59	43.49	62.22	-18.72	QP
4	0.23658	-0.06	-0.04	33.29	33.19	52.22	-19.02	Average
5	0.45878	0.00	-0.04	33.54	33.50	46.71	-13.21	Average
6 @	0.45878	0.00	-0.04	43.70	43.66	56.71	-13.05	QP
7	0.49411	0.00	-0.04	28.59	28.55	46.10	-17.55	Average
8	0.49411	0.00	-0.04	38.67	38.63	56.10	-17.46	QP
9	0.80023	0.04	-0.04	37.50	37.49	56.00	-18.51	QP
10	0.80023	0.04	-0.04	27.59	27.59	46.00	-18.41	Average
11	15.635	0.28	-0.49	31.18	30.97	60.00	-29.03	QP
12	15.635	0.28	-0.49	21.19	20.98	50.00	-29.02	Average

Line



Site : Shielding Room
Condition : FCC PART15B QP CE LINE
EUT : DISNEY PHOTO CUBE
Job No : 2375IT
Test Line : N/A
Test mode : PC

		Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
		MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1		0.21851	-0.08	-0.04	29.25	29.12	62.88	-33.75	QP
2		0.21851	-0.08	-0.04	19.17	19.05	52.88	-33.83	Average
3		0.36531	0.00	-0.04	27.66	27.62	58.61	-30.98	QP
4		0.36531	0.00	-0.04	17.59	17.55	48.61	-31.06	Average
5	@	0.43281	0.00	-0.04	36.27	36.23	47.20	-10.97	Average
6		0.43281	0.00	-0.04	46.22	46.17	57.20	-11.03	QP
7		0.68626	0.00	-0.05	19.94	19.89	46.00	-26.11	Average
8		0.68626	0.00	-0.05	29.90	29.86	56.00	-26.14	QP
9		0.92330	0.08	-0.05	36.15	36.18	56.00	-19.82	QP
10		0.92330	0.08	-0.05	26.14	26.17	46.00	-19.83	Average
11		15.635	0.28	-0.52	34.43	34.19	60.00	-25.81	QP
12		15.635	0.28	-0.52	24.39	24.15	50.00	-25.85	Average

5.3.4 Radiated Emissions

5.3.4.1 Test in transmitting mode

Test Requirement:	FCC Part15 C
Test Method:	Based on FCC Part15 C Section 15.249
Test Date:	03 June 2008
Measurement Distance:	3m (Semi-Anechoic Chamber)
Frequency range	30 MHz – 10GHz for transmitting mode.
	Test instrumentation resolution bandwidth 120 kHz (30 MHz - 1000 MHz),
	Peak:RBW=1 MHz VBW=1MHz (1000 MHz – 25GHz)
	Average:RBW=1MHz VBW=10Hz (1000MHz- 25GHz)
Operation:	Receive antenna scan height 1 - 4 m, polarization Vertical/ Horizontal

Requirements:

Fundamental Frequency (MHz)	Field Strength of Fundamental (dBuV/m @ 3m)	Field Strength of Harmonics and Spurious Emissions (dBuV/m @ 3m)
902 to 928	94.0	54.0
2400 to 2483.5	94.0	54.0
5725 to 5875	94.0	54.0
24000 to 24250	108.0	68.0

The fundamental frequency of the EUT is 2400 to 2483.5MHz

The limit for average field strength dBuv/m for the fundamental frequency = 94.0 dBμV/m.

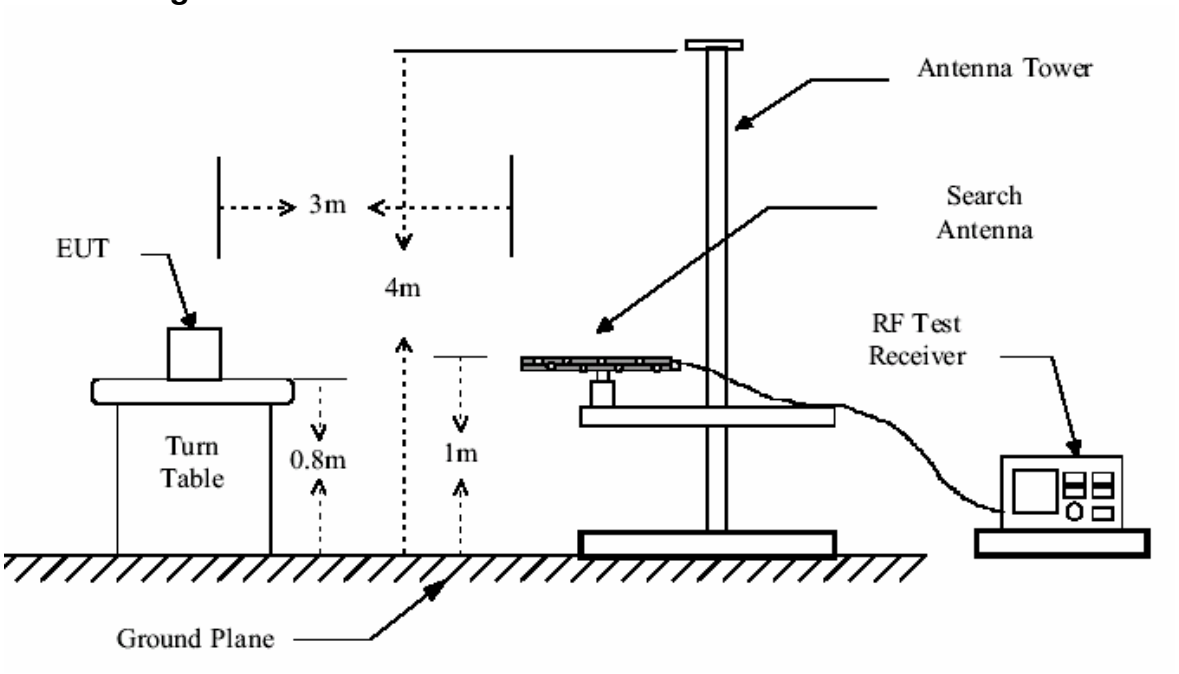
No fundamental is allowed in the restricted bands.

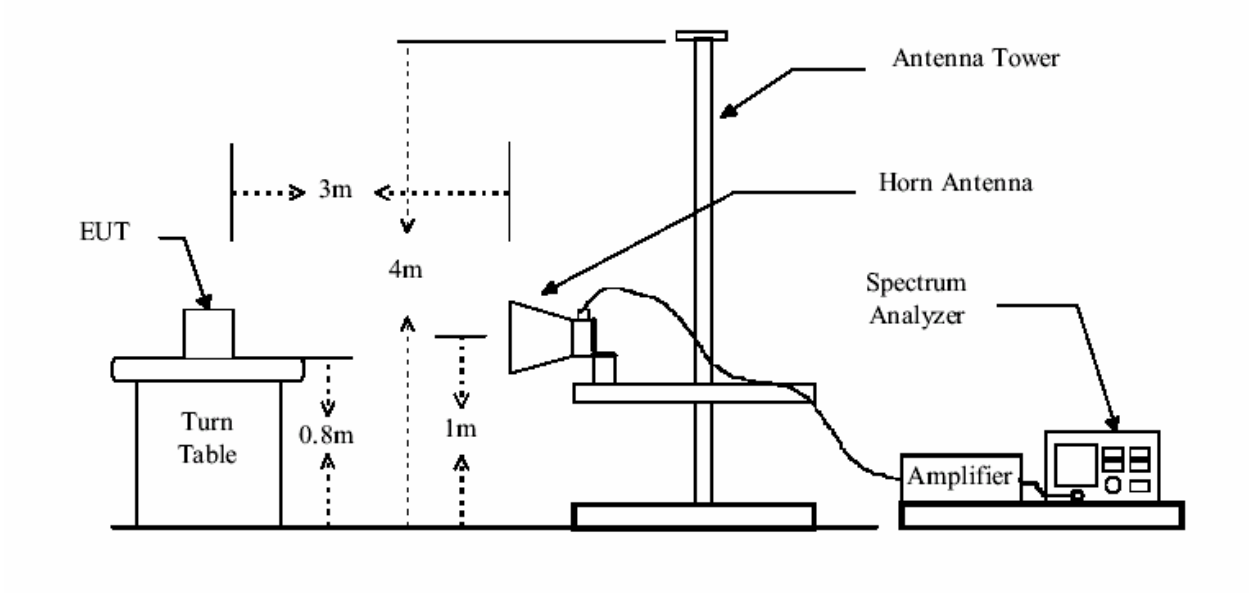
The limit for average field strength dBμV/m for the harmonics and spurious frequencies = 54.0 dBμV/m. Spurious in the restricted bands must be less than 54.0 dBuv/m or 15.209.

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 varied from 1m to 4m to find out the highest 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, Y, Z axis positioning. Only the worst case is shown in the report.

Test Configuration:





The following test results were performed on the EUT on 03 June 2008:

Peak Measurement

Channel	Test Frequency (GHz)	Measuring Level (dBuV/m)RBW=1MHz VBW=1MHz	Limits (dBuV/m)	Margin (dB)
Lowest	2.402	97.98	114	16.02
Middle	2.440	97.20	114	16.80
Highest	2.476	96.85	114	17.15
	Average Measurement			
Channel	**Test Frequency (GHz)**	**Measuring Level (dBuV/m)RBW=1MHz VBW=10Hz**	**Limits (dBuV/m)**	**Margin (dB)**
Lowest	2.402	88.58	94	5.42
Middle	2.440	88.20	94	5.80
Highest	2.476	87.78	94	6.22

1. For EUT communicating Mode. Lowest channel

30MHz- 1000MHz

Frequency (MHz)	Antenna Polarization	Emission Level Qusia-Peak (dBuV/m)	Limit (dBuV/m)	Margin (dB)
244.37	Vertical	28.3	46	17.7
325.85	Vertical	29.2	46	16.8
526.64	Horizontal	31.8	46	14.2
586.78	Horizontal	32.3	46	13.7

Above 1000MHz

Frequency (MHz)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	
4804.000	41.1	74.0	32.9	PK
4804.000	35.6	54.0	18.4	AV
7250.000	40.0	74.0	34.0	PK
7250.000	33.8	54.0	20.2	AV
9625.000	40.9	74.0	33.1	PK
9625.000	34.8	54.0	19.2	AV
12100.000	40.7	74.0	33.3	PK
12100.000	33.9	54.0	20.1	AV

2. For EUT communicating Mode. Middle channel

30MHz- 1000MHz

Frequency (MHz)	Antenna Polarization	Emission Level Qusia-Peak (dBuV/m)	Limit (dBuV/m)	Margin (dB)
244.37	Vertical	33.6	46	12.4
325.85	Vertical	32.9	46	13.1
526.64	Horizontal	35.4	46	10.6
586.78	Horizontal	36.1	46	9.9

Above 1000MHz

Frequency (MHz)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	
4875.000	47.6	74.0	26.4	PK
4875.000	41.8	54.0	12.2	AV
7425.000	41.0	74.0	36.1	PK
7425.000	35.3	54.0	18.7	AV
9850.000	41.1	74.0	32.9	PK
9850.000	35.7	54.0	18.3	AV
12350.000	40.2	74.0	33.8	PK
12350.000	34.7	54.0	19.3	AV

3. For EUT communicating Mode. Highest channel

30MHz- 1000MHz

Frequency (MHz)	Antenna Polarization	Emission Level Qusia-Peak (dBuV/m)	Limit (dBuV/m)	Margin (dB))
244.37	Vertical	33.7	46	12.3
325.85	Vertical	34.8	46	11.2
526.64	Horizontal	38.2	46	7.8
586.78	Horizontal	37.3	46	8.7

Above 1000MHz

Frequency (MHz)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	
4950.000	42.0	74.0	32.0	PK
4950.000	36.8	54.0	17.2	AV
7400.000	40.5	74.0	33.5	PK
7400.000	35.3	54.0	18.7	AV
9900.000	40.3	74.0	33.7	PK
9900.000	34.1	54.0	19.9	AV
12400.000	40.7	74.0	33.3	PK
12400.000	34.5	54.0	19.5	AV

N/A: refer to remark 1).

Remark:

1). For this intentional radiator operates below 10 GHz, the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the fifth harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 4^{th} harmonic.

2). According to 15.249 (e) As shown in Section 15.35(b), for frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

TEST RESULTS: The unit does meet the FCC requirements.

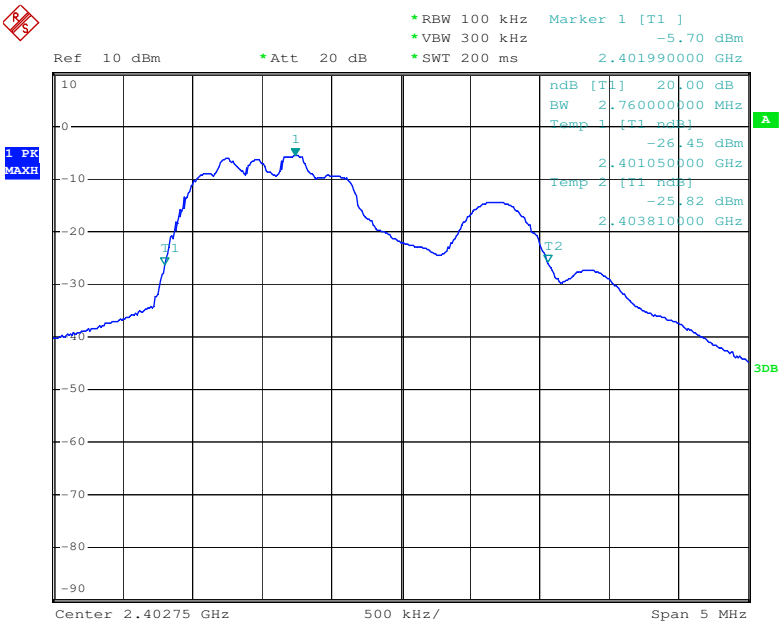
5.3.5 Occupied Bandwidth & Band Edge

Test Requirement:	FCC Part 15 C
Test Method:	Based on FCC Part15 C Section 15.249: Operation within the band 2.402 – 2.476GHz
Test Date:	05 June 2008
Requirements:	15.249 (d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.
Method of measurement:	A small sample of the transmitter output was fed into the Spectrum Analyzer and the attached plot was taken. The vertical is set to 10dB per division. The horizontal scale is set to 100KHz per division.

(1). Occupied Bandwidth:

The occupied bandwidth as below:

For Lowest Channel:



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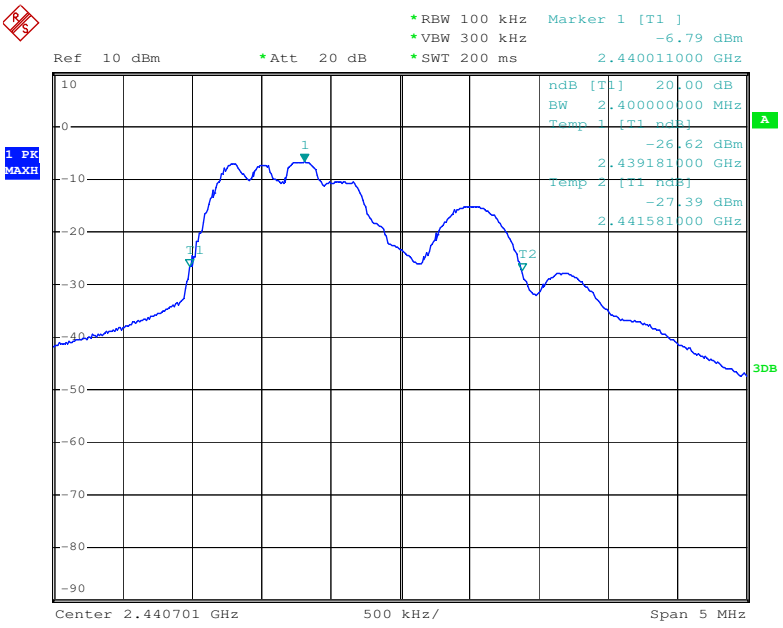
For Middle Channel:



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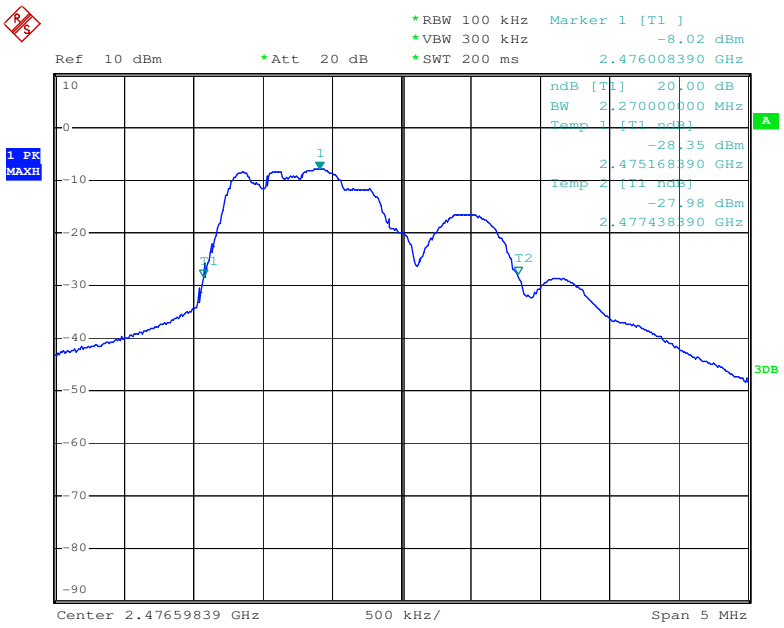
For Highest Channel:



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(2). Band Edge:

The test result for the Emissions radiated outside of the specified frequency bands , please refer the section 5.3.1 of this report.
The worst case is 59.86dBuV/m(PK) at frequency 4.9300GHz, it's below the limits in Section 15.209.

For the field strength of Lower Edges:2.402GHz is 61.5dBuV/m(PK).

For the field strength of Lower Edges:2.402GHz is 28.3dBuV/m(AV).
For the field strength of Upper Edges:2.476GHz is 46.3dBuV/m(PK).
For the field strength of Upper Edges:2.476GHz is 28.2dBuV/m(AV).

The results: The unit does meet the FCC requirements.