SGS-CSTC Standards Technical Services Co., Ltd.

588 West Jindu Road, Songjiang District, Shanghai, China

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TEST REPORT

Application No. :	SHEMO09090109203
Applicant:	Philips Electronics Singapore Pte Ltd., Category Peripherals&Control, Philips Consumer Lifestyle
Address:	620A Lorong 1,Toa Payoh,TP1 Bldg,Level 2,Singapore 319762
Manufacturer:	Philips Consumer LifeStyle Suzhou Co.,Ltd.
Address:	59 Yu Shan Road,New District SuZhou,P.R.C
Fundamental Carrier Frequency :	2.402GHz to 2.480GHz
Equipment Under Test (EUT):	
Product Name:	Game Controller
Brand Name:	Philips
Model Name:	RCGP400504/01
FCC ID :	RCSRCGP4005A
Standards:	FCC PART 15:2008 Subpart C
Date of Receipt:	September 27,2009
Date of Test:	September 28,2009 to November 30,2009
Date of Issue:	December 2,2009

Test Result :	**PASS ***

* In the configuration tested, the EUT detailed in this report complied with the standards specified above. Please refer to section 2 of this report for further detail.

Tino Pan
E&E Section Manager
SGS-CSTC Co., Ltd.

San Yuan
Project Engineer
SGS-CSTC Co., Ltd.

2 Test Summary

Test	Test Requirement	Standard Paragraph	Result
Occupied Bandwidth	FCC PART 15 :2008	Section 15.247 (a1)	PASS
Carrier Frequencies Separated	FCC PART 15 :2008	Section 15.247(a)(1)	PASS
Hopping Channel Number	FCC PART 15 :2008	Section 15.247(a)(1)(iii)	PASS
Dwell Time	FCC PART 15 :2008	Section 15.247(a)(1)(iii)	PASS
Maximum Peak Output Power	FCC PART 15 :2008	Section 15.247(b)(1)	PASS
Conducted Spurious Emission (30MHz to 25GHz)	FCC PART 15 :2008	Section 15.209 &15.247(d)	PASS
Radiated Spurious Emission (30MHz to 25GHz)	FCC PART 15 :2008	Section 15.209 &15.247(d)	PASS
Band Edges Measurement	FCC PART 15 :2008	Section 15.247 (d) &15.205	PASS

3 Contents

4 General Information

4.1 Client Information

Applicant:	Philips Electronics Singapore Pte Ltd., Category Peripherals&Control, Philips Consumer Lifestyle
Address of Applicant:	620A Lorong 1,Toa Payoh,TP1 Bldg,Level 2,Singapore 319762
Manufacturer:	Philips Consumer LifeStyle Suzhou Co.,Ltd.
Address of Manufacturer:	59 Yu Shan Road,New District SuZhou,P.R.C

4.2 General Description of E.U.T.

Product Name:	Game Controller
Brand Name:	Philips
Model Name:	RCGP400504/01
Number of Channels	79 Channels
Channel Separation	1 MHz
Type of Modulation	FHSS (Frequency Hopping Spread Spectrum)
Support Version	Bluetooth 2.0
Dwell time	Per channel is less than 0.4s.
Power Supply:	DC 3V(AAA×2 Battery)

4.3 Description of Support Units

None.

4.4 Standards Applicable for Testing

The customer requested FCC tests for the EUT.

The standard used was FCC PART 15 Subpart C, ANSI C63.4:2003.,DA 00-705

4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
No.588 West Jindu Road, Songjiang District, Shanghai, China. 201612.

Tel: +86 21 6191 5666 Fax: +86 21 6191 5655

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:

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2012-03-17.

5 Equipments Used during Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	Spectrum Analyzer	Rohde & Schwarz	FSP-30	100324	2009-4-21	2010-4-20
2	EMI test receiver	Rohde & Schwarz	ESU40	100109	2009-6-4	2010-6-3
3	Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-679	2009-6-4	2010-6-3
4	Horn Antenna	Rohde & Schwarz	HF906	100284	2009-4-11	2010-4-10
5	Horn Antenna	Rohde & Schwarz	HF906	100285	2009-10-9	2010-10-8
6	ANTENNA	SCHWARZBECK	VULB9168	9168-313	2009-6-4	2010-6-3
7	Low nosie amplifier	TESEQ	LNA6900	70133	2009-7-7	2010-7-6
8	Atmosphere pressure meter	Shanghai ZhongXuan Electronic Co;Ltd	BY－2003P	--	2009-10-15	2010-10-14
9	CLAMP METER	FLUKE	316	86080010	2009-04-27	2010-04-26
10	Thermo-Hygrometer	ZHICHEN	ZC1-2	01050033	2008-10-21	2009-10-20
11	Digital illuminance meter	TES electrical electronic Corp.	TES-1330A	050602219	2009-10-16	2010-10-15
12	TEMPERATURE& HUMIDITY BOX	KSON	THS-D2C-100	K40723	2008-11-18	2009-11-17
13	DC power	KIKUSUI	PMC35－3	NF100260	--	--
14	Line impedance stabilization network	SCHWARZBECK	NSLK8127	8127-490	2009-5-8	2010-5-7
15	High pass Filter	FSCW	HP 12/2800-5AA2	19A45-02	2009-4-11	2010-4-10

6 Test Results

6.1 E.U.T. test conditions

Power supply:	AC adapter or battery inside.
Requirements:	15.31(e) For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.
Operating Environment:	
Temperature:	20.0 -25.0 °C
Humidity:	38-52% RH
Atmospheric Pressure:	992 -1010 mbar

.

6.2 Occupied Bandwidth

Test Requirement: FCC Part 15 C

Test Method: Based on FCC Part15 C Section 15.247,DA00-705

Test Date: October 19, 2009

Test Status: Test in fixing operating frequency at lowest, Middle, highest channel.

Test Procedure:

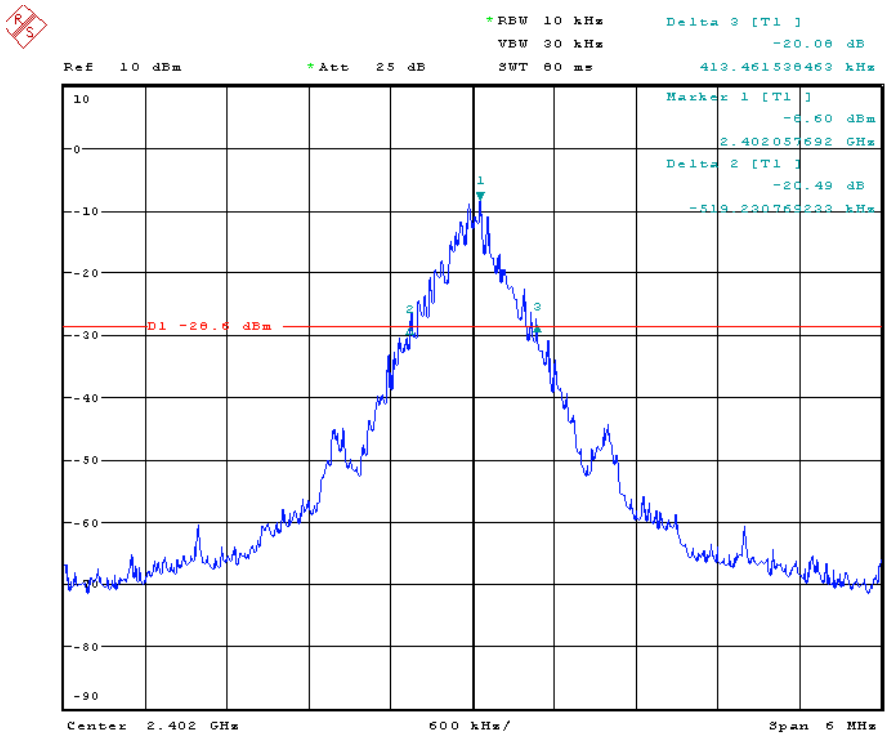
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: Span = approximately 2 to 3 times the 20dB bandwidth, centered on the hopping channel;
3. Set the spectrum analyzer: RBW >= 1% of the 20dB bandwidth (set 10kHz). VBW >= RBW. Sweep = auto; Detector Function = Peak. Trace = Max Hold.
4. Mark the peak frequency and -20dB points.

Test result:

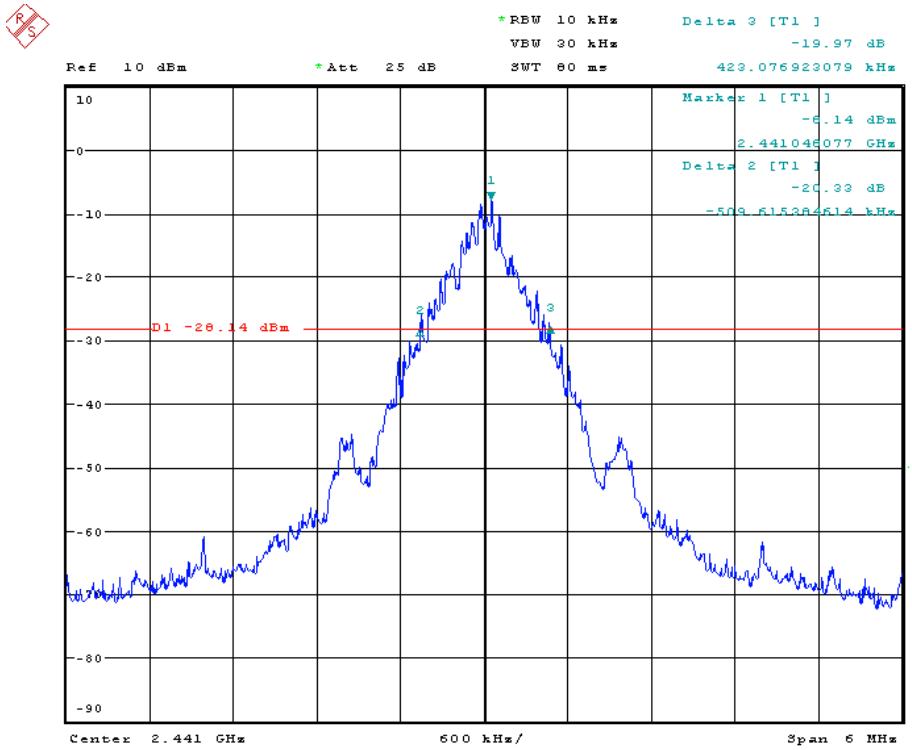
Test Channel	Bandwidth
Low	932.8kHz
Middle	932.7kHz
High	932.8kHz

Result plot as follows: Sweet time :80 ms ,RBW 10KHz ,VBW 30KHz

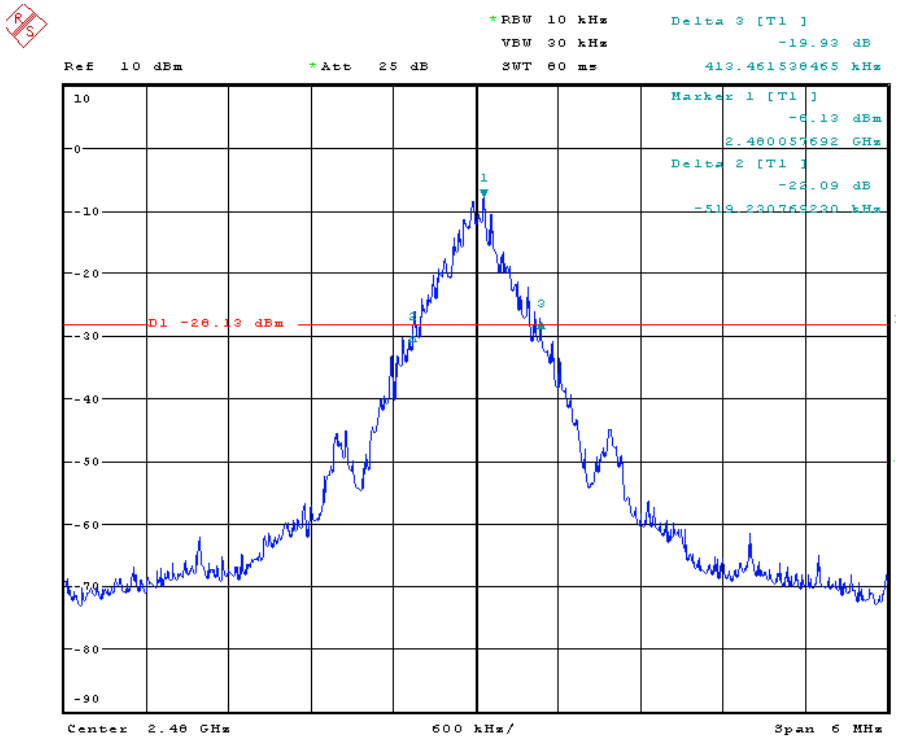
Lowest Channel：



Middle Channel：



Highest Channel：



6.3 Carrier Frequencies Separated

Test Requirement: FCC Part 15 C

Test Method: Based on FCC Part15 C Section 15.247,DA 00-705

Test Date: October 19,2009

Test requirements: Regulation 15.247(a),(1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Test Status: Test in hopping transmitting operating mode.

Test Procedure:

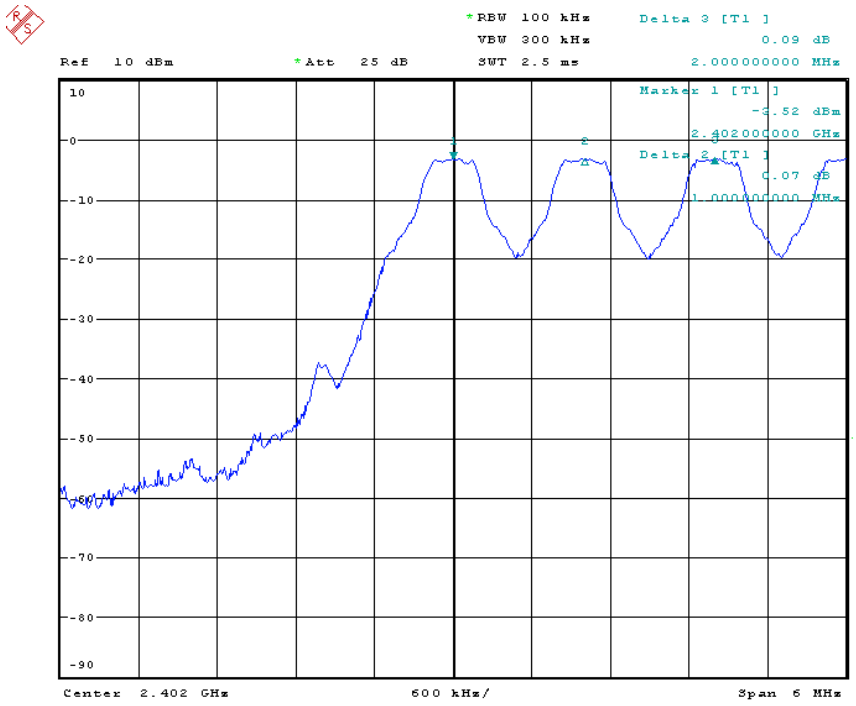
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW >= 1% of the span (set 100 kHz). VBW >= RBW , Span = 6MHz. Sweep = auto; Detector Function = Peak. Trace = Max,hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

Test result:

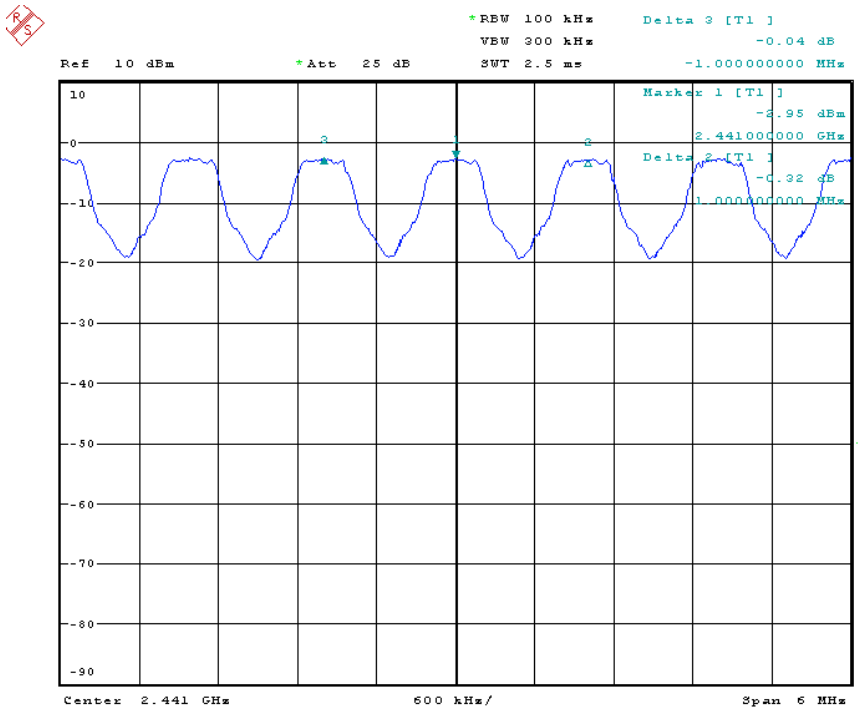
Test Channel	Carrier Frequencies Separated	PASS/FAIL
Lower Channels (channel 0 and channel 1)	1.0000MHz	PASS
Middle Channels (channel 39 and channel 40)	1.0000MHz	PASS
Upper Channels (channel 77 and channel 78)	1.0000MHz	PASS

Sweet time : 2.5 ms ,RBW 100KHz ,VBW 300KHz

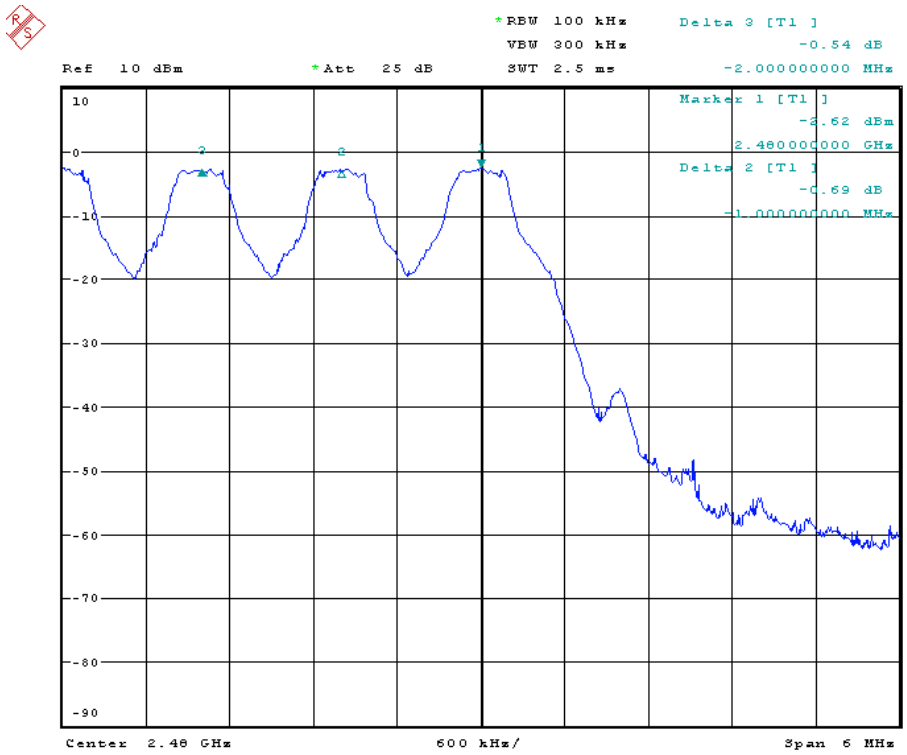
1. Lowest Channels: **Carrier Frequencies Separated**



2. Middle Channels: **Carrier Frequencies Separated**



3. Highest Channels: **Carrier Frequencies Separated**



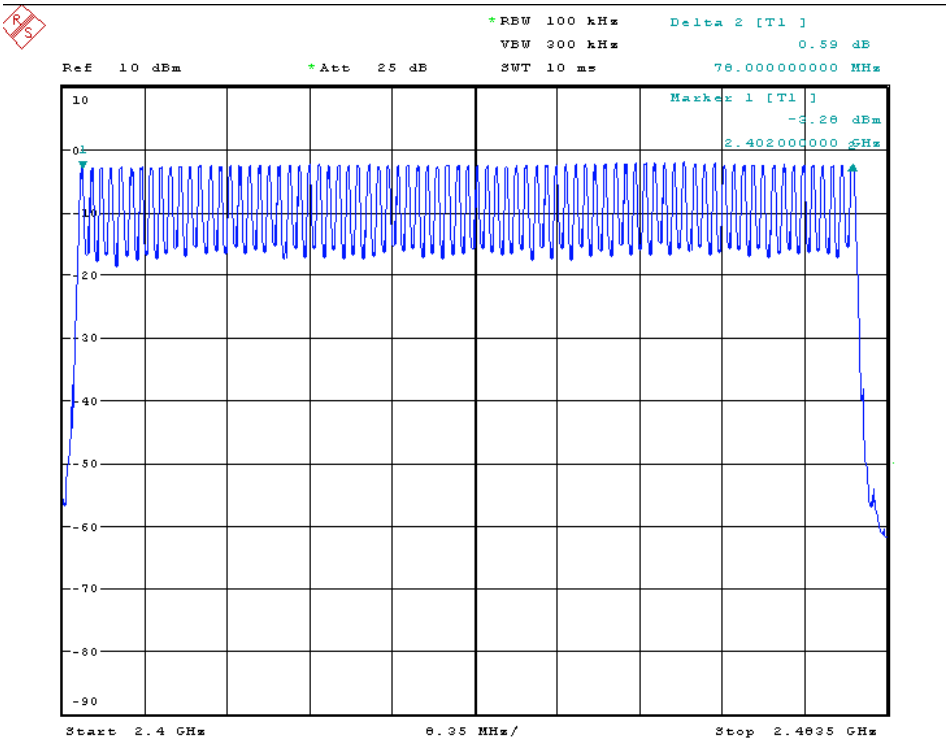
6.4 Hopping Channel Number

Test Requirement:	FCC Part15 C
Test Method:	Based on FCC Part15 C Section 15.247,DA 00-705
Test Date:	October 19,2009
Requirements:	Regulation 15.247 (a) (1)(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.
Test Status:	Test in hopping transmitting operating mode.

Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 100 kHz. VBW = 300 kHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. It may prove necessary to break the span up to sections. in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section.
4. Set the spectrum analyzer: start frequency = 2400MHz. stop frequency = 2483.5MHz. Submit the test result graph.

Test result: Total channels are 79 channels.



6.5 Dwell Time

Test Requirement:	FCC Part 15 C
Test Method:	Based on FCC Part15 C Section 15.247 & DA 00-705
Test Date:	October 20, 2009
Test requirements:	Regulation 15.247(a)(1)(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.
Test Status:	Test in hopping transmitting operating mode.

Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set spectrum analyzer span = 0. centered on a hopping channel;
3. Set RBW = 1MHz and VBW = 3MHz.Sweep = as necessary to capture the entire dwell time per hopping channel.
4. Use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g.. data rate. modulation format. etc.). repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s). An oscilloscope may be used instead of a spectrum analyzer.

Test Result:

Dwell time = Pulse wide x (Hopping rate / Number of channels) x Period

The test period: T= 0.4 Second/Channel x 79 Channel = 31.6 s

Channel 0: 2.402GHz

1. Time slot = 2.98 (ms) * (1600/(6*79)) * 31.6 = 0.32 s

Channel 39: 2.441GHz

2. Time slot = 2.98(ms) * (1600/(6*79)) * 31.6 = 0.32 s

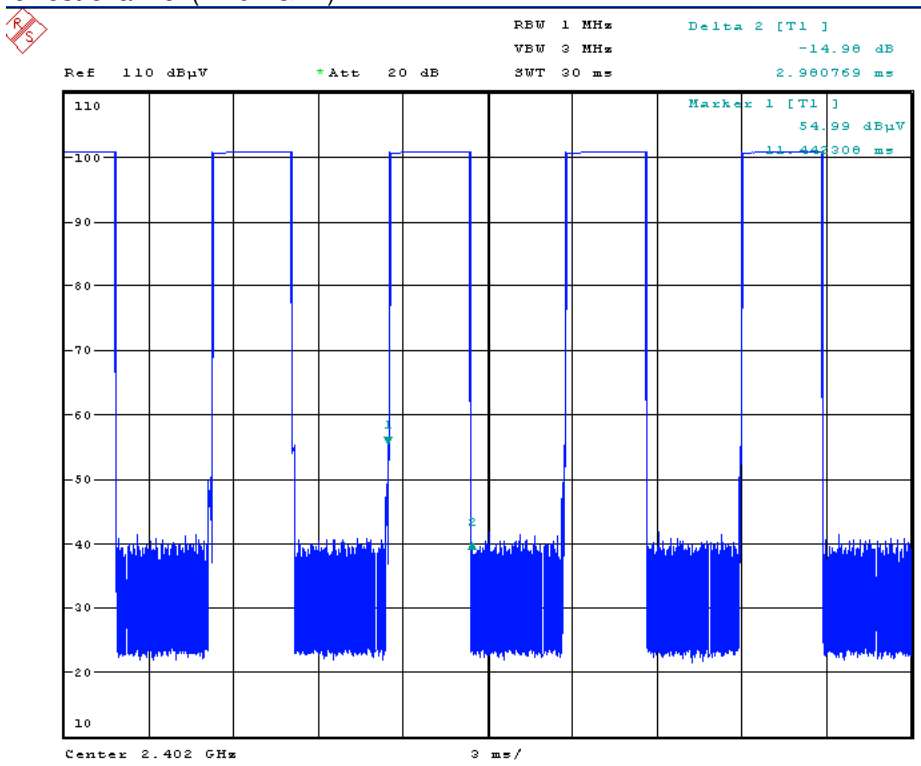
Channel 78: 2.480GHz

3. Time slot = 2.98 (ms) * (1600/(6*79)) * 31.6 = 0.32 s

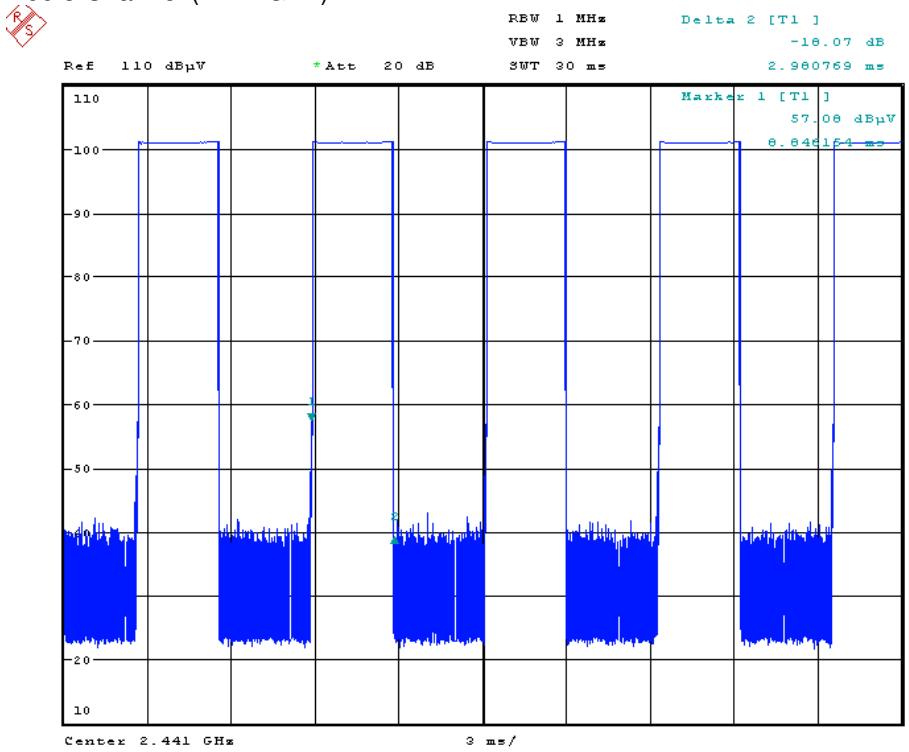
The results are not greater than 0.4 seconds.

Please refer the graph as below:

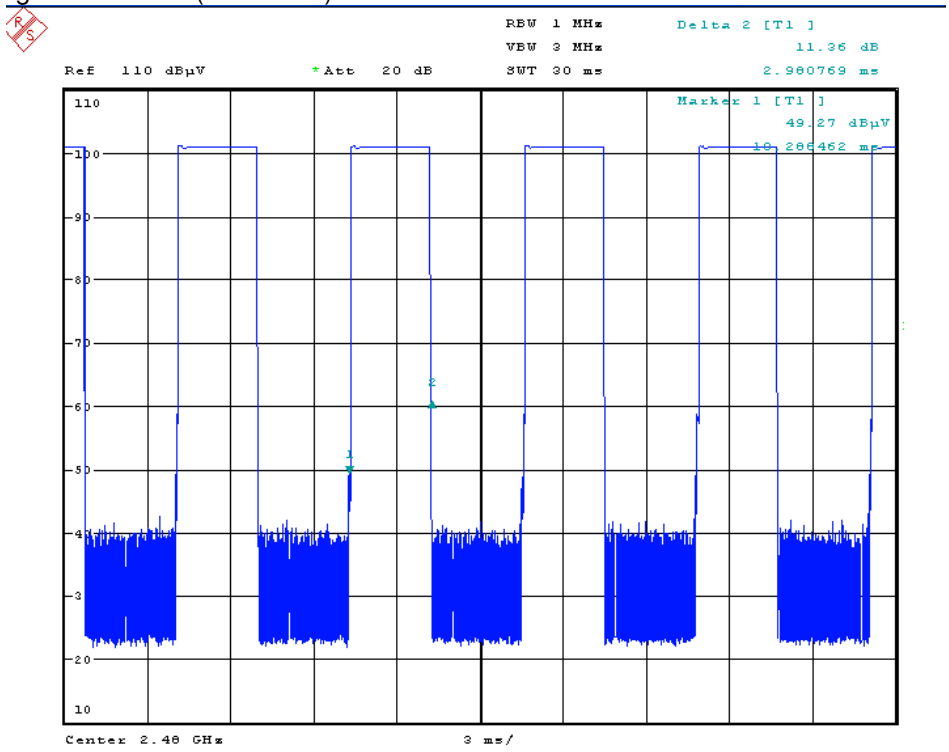
1. Lowest channel (2.402 GHz):



2. Middle Channel (2.441GHz)



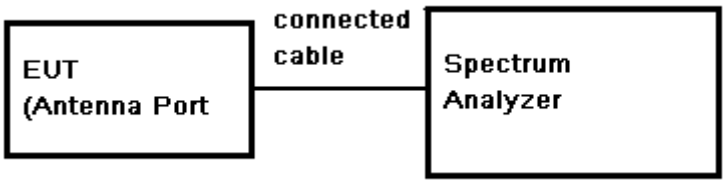
3 Highest Channel (2.480GHz)



6.6 Maximum Peak Output Power

Test Requirement:	FCC Part 15.247
Test Method:	Base on ANSI 63.4. DA 00-705
Test Date:	October 19,2009
Test Limit:	Regulation 15.247 (b)(1)For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts. Refer to the result "Hopping channel number" of this document. The 1 watt (30.0dBm) limit applies.
Test mode:	Test in fixing frequency transmitting mode.

Test Configuration:



Test Procedure:

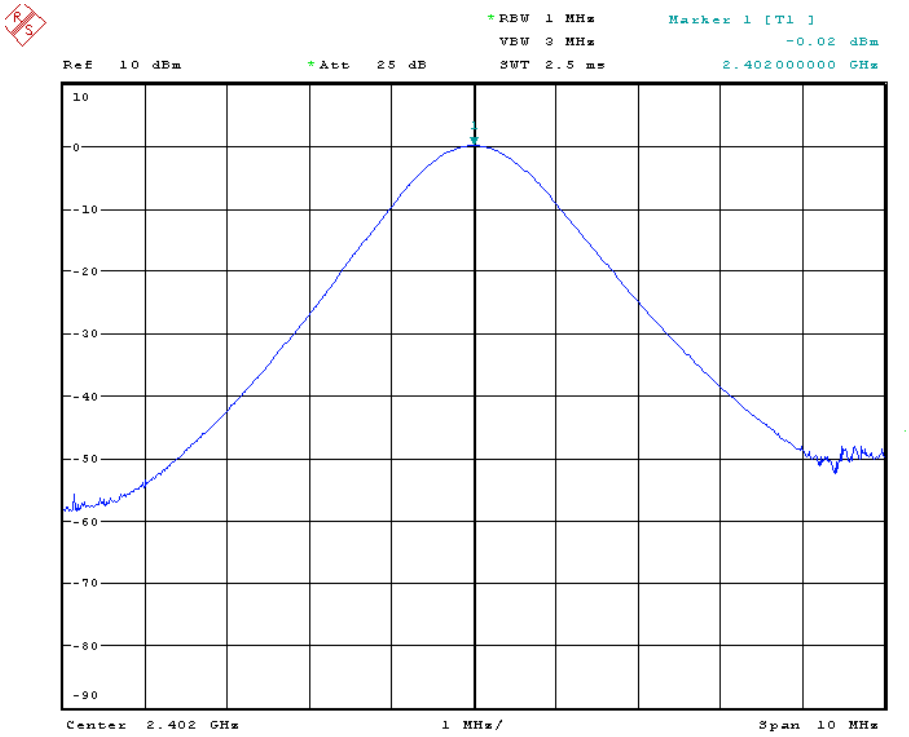
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 1 MHz. VBW = 3 MHz. Sweep = auto; Detector Function = Peak.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

Test Result:

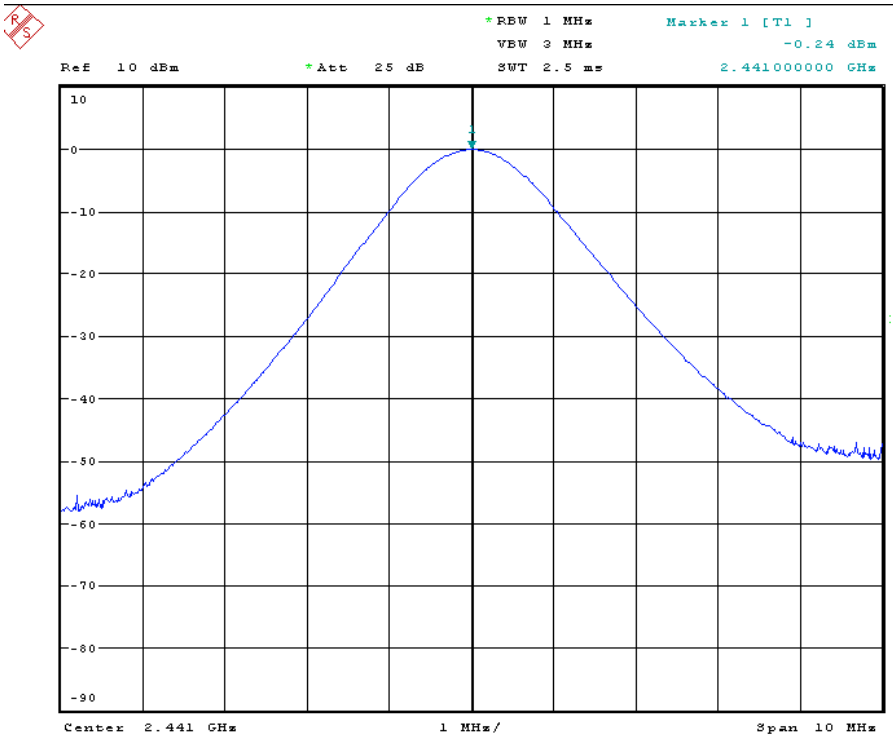
Test Channel	Fundamental Frequency (MHz)	Reading Power (dBm)	Cable Loss (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Lowest	2.402	-0.02	0.20	0.18	30.0	29.82
Middle	2.441	-0.24	0.20	-0.04	30.0	30.04
Highest	2.480	-0.39	0.20	-0.19	30.0	30.19

Test result plot as follows:

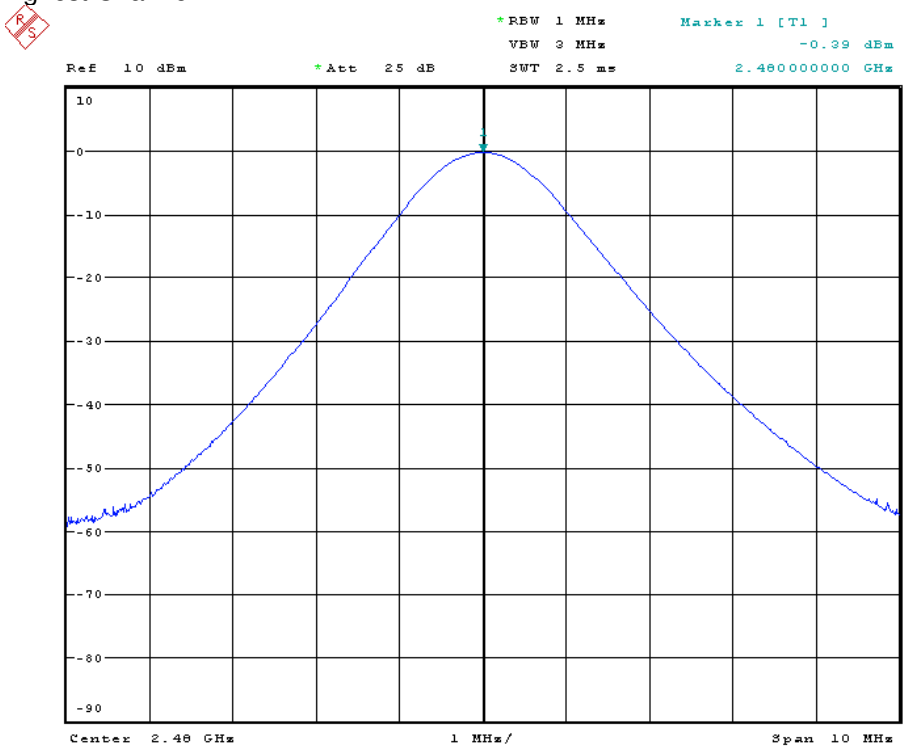
Lowest Channel:



Middle Channel:



Highest Channel:



6.7 RF Exposure Compliance Requirement

6.7.1 Standard requirement

15.247(b)(4) requirement:
(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section. if transmitting antennas of directional gain greater than 6 dBi are used. the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1). (b)(2). and (b)(3) of this section. as appropriate. by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TCB Exclusion List (7 July 2002)

Exposure category	low threshold	high threshold
general population	(60/*f*GHz) mW. $d < 2.5$ cm (120/*f*GHz) mW. $d \geq 2.5$ cm	(900/*f*GHz) mW. $d < 20$ cm
occupational	(375/*f*GHz) mW. $d < 2.5$ cm (900/*f*GHz) mW. $d \geq 2.5$ cm	(2250/*f*GHz) mW. $d < 20$ cm

6.7.2 EUT RF Exposure

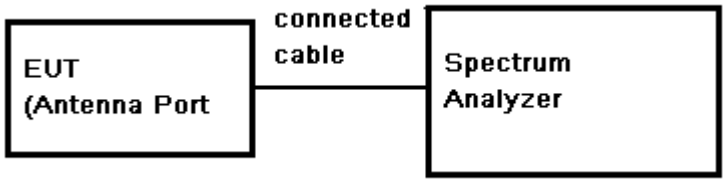
The Max Conducted Peak Output Power is **0.18dBm(1.042mW)** in channel **0**;
Antenna Gain(dBi)=0 dBi
According to the formula. calculate the EIRP test result:

EIRP= P x G = 1.042 mW x 1 = 1.042 mW ①
SAR requirement:
Low theshold= 60 / f(GHz) = 60/2.450 = 24.5 mW ② ;
① < ②.
So the SAR report is not required.

6.8 Conducted Spurious Emissions

Test Requirement:	FCC Part 15.247& DA 00-705
Test Method:	Based on FCC Part15 C Section 15.247&15.209:
Test Date:	October 19, 2009
Test requirements:	(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating. the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. based on either an RF conducted or a radiated measurement. provided the transmitter demonstrates compliance with the peak conducted power limits.
Test Status:	Test the lowest. Middle, highest channel.

Test Configuration:



Test Procedure:

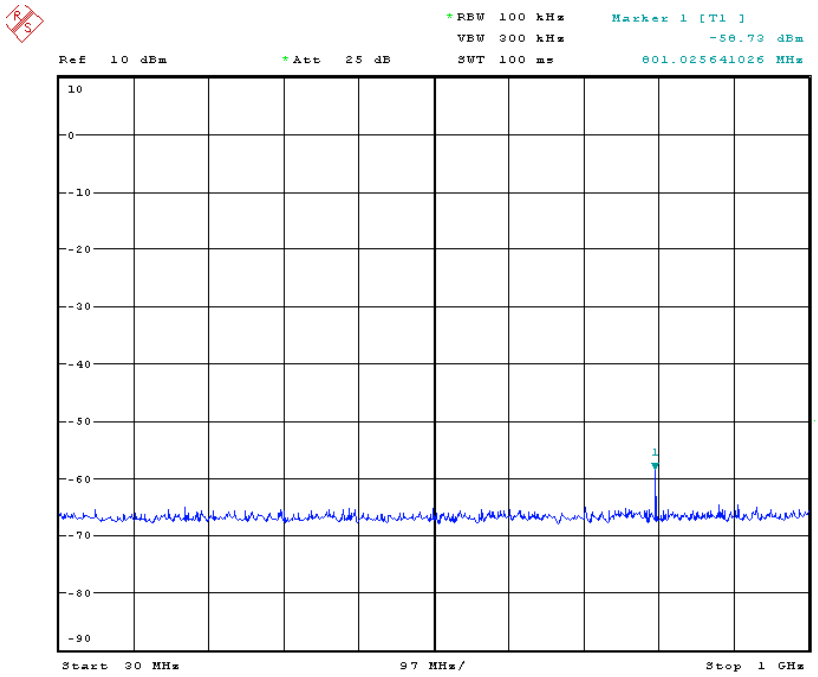
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

2. Set the spectrum analyzer: RBW = 100KHz. VBW >= RBW. Sweep = auto; Detector Function = Peak (Max. hold).

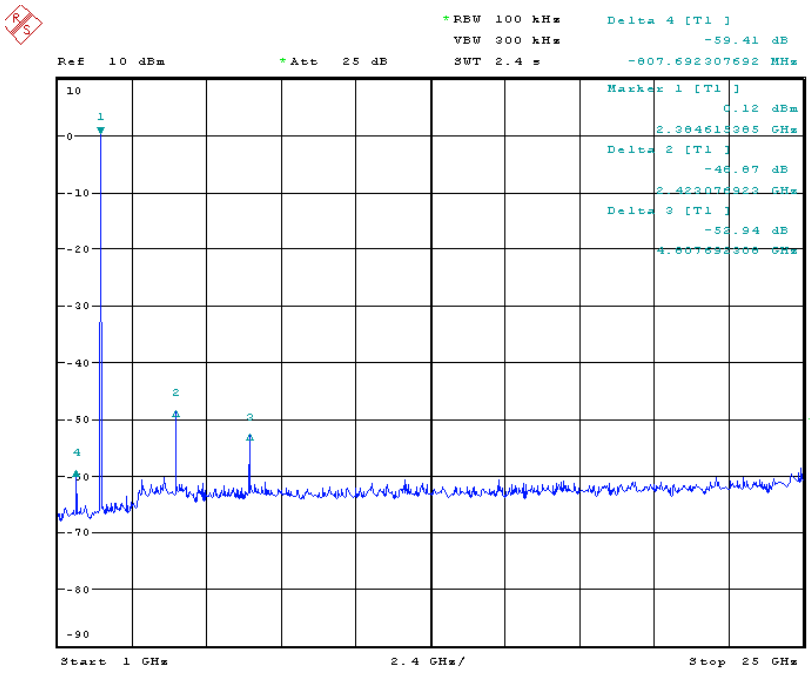
RBW 100KHz,VBW 300KHz

Lowest Channel:

Below 1GHz:

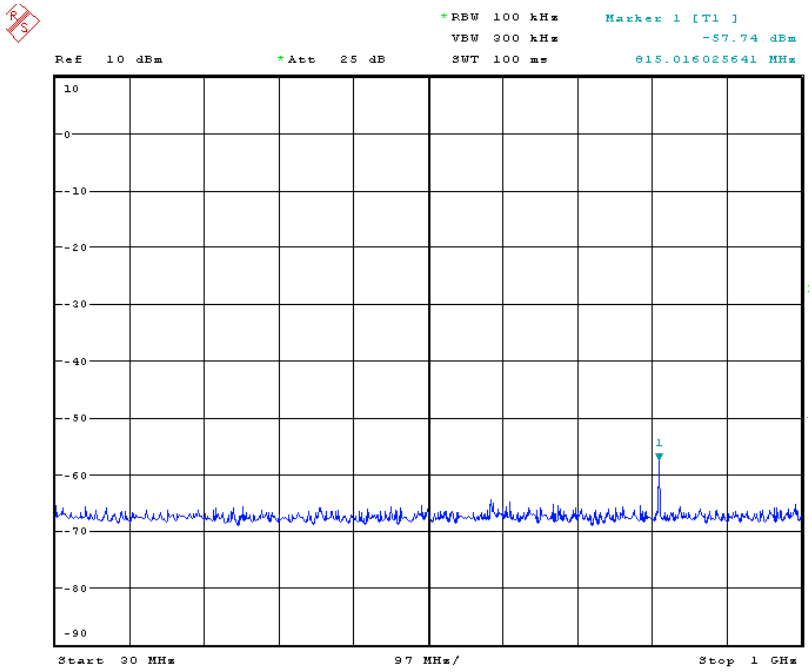


Above 1GHz:

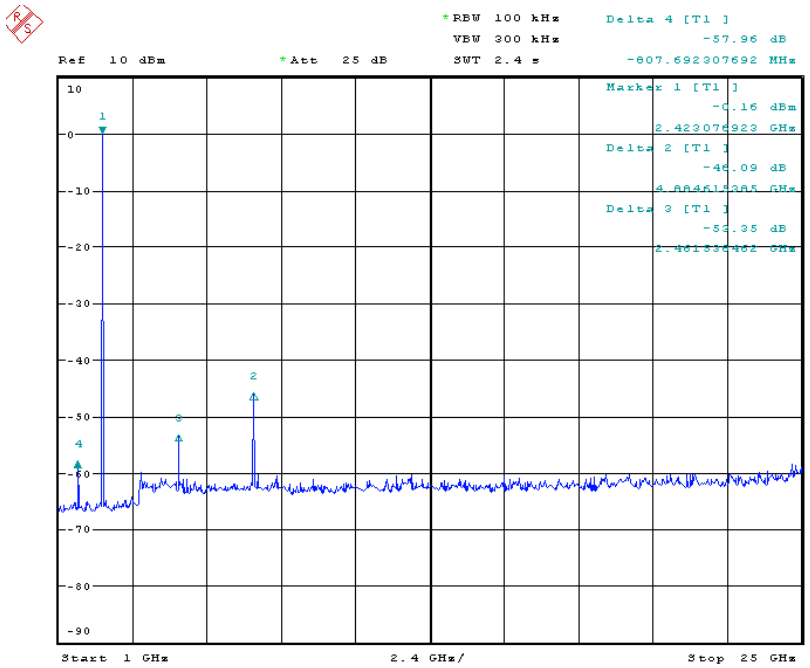


Middle Channel:

Below 1GHz

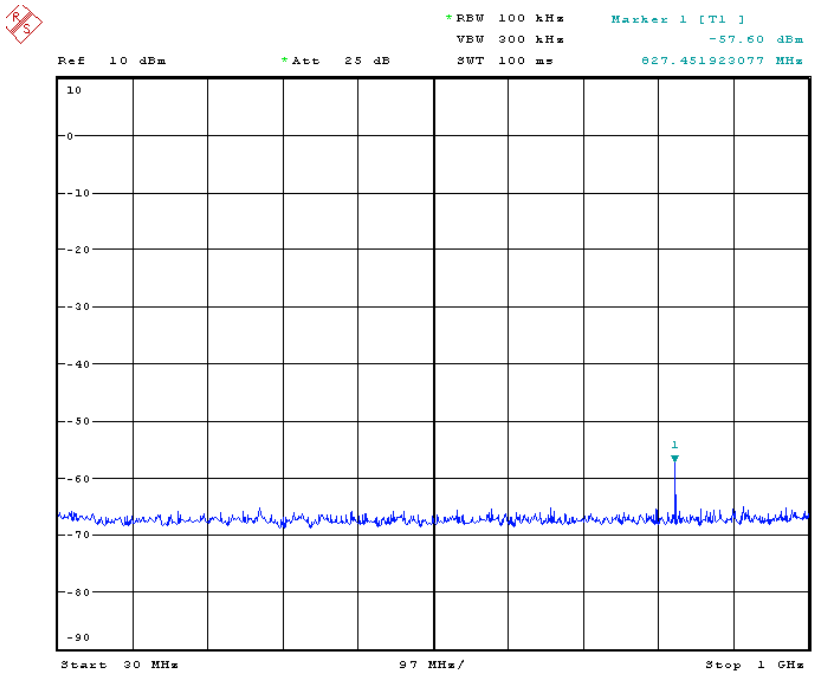


Above 1GHz

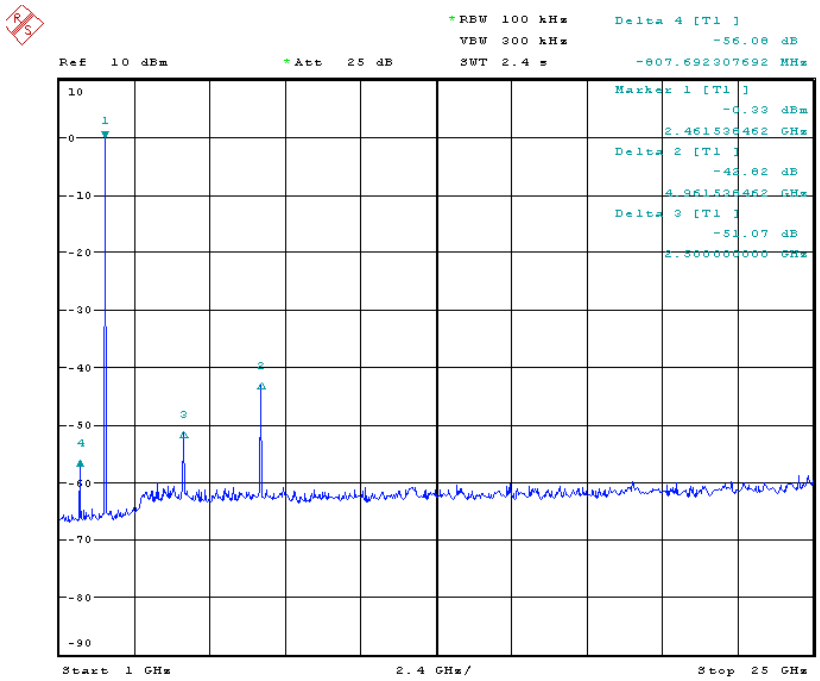


Highest Channel:

Below 1GHz



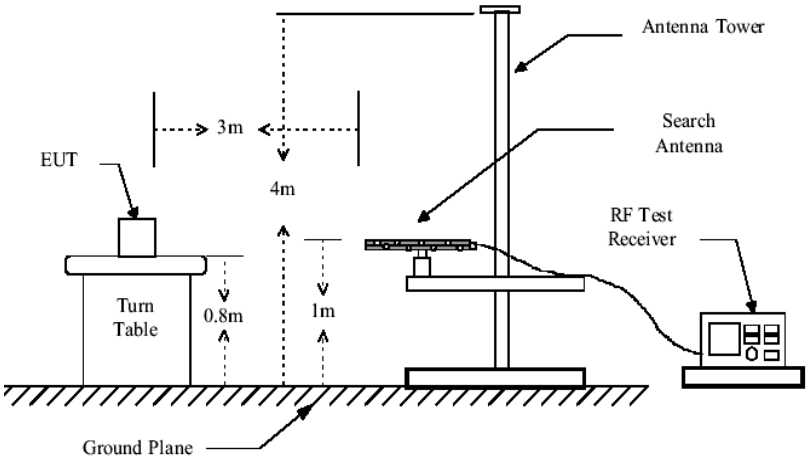
Above 1GHz



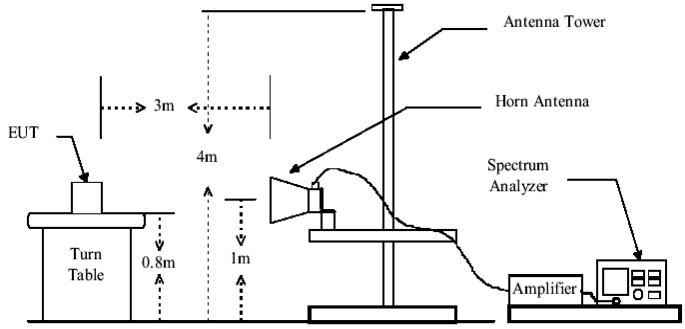
6.9 Radiated Spurious Emissions

Test Requirement:	FCC 15.247(d) & 15.209
Test Method:	ANSI C63.4 section 8 & 13
Test Date:	October 19, 2009 to November 30,2009
Test Status:	Test lowest channel, Middle, highest channel.
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber) Test instrumentation resolution bandwidth 120 kHz and Quasi-Peak detector applies (30 MHz - 1000 MHz). 1MHz resolution bandwidth and Peak detector apply (1000 MHz – 25GHz) Above 1GHz (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO. Receive antenna scan height 1 m - 4 m. polarization Vertical / Horizontal In order to find out the max.emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions.
15.209 Limit:	40.0 dBμV/m between 30MHz & 88MHz 43.5 dBμV/m between 88MHz & 216MHz 46.0 dBμV/m between 216MHz & 960MHz 54.0 dBμV/m above 960MHz
15.247(d) limit:	(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating. the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that Contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

Test Configuration:



30MHz to 1GHz radiated emissions test configuration



Above 1GHz radiated emissions test configuration

Test Procedure: The procedure used was ANSI Standard C63.4:2003. The receiver was scanned from 30MHz to 25GHz.When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. The worst case emissions were reported.

Low nosie amplifier was used below 1GHz,High pass Filter was used above 3GHz.

Between 1G and 3GHz, we did not use any amplifier or filter.

Test was performed on GFSK mode

6.9.1 Harmonic and other spurious emissions

6.9.1.1 Test in low Channel in transmitting status

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
315	15.1	0.35	24.6	31.8	22.65	46.00	Vertical
945	23.3	0.52	23..8	30.3	30.32	46.00	Horizontal

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Peak Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Filter (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4804	27.6	0.82	0.5	43.5	65.5	50.92	74	Vertical
7206	35.5	1.7	0.8	43.1	43.8	38.7	74	V
9608	37.7	2.02	0.9	43	45	42.62	74	V
4804	27.6	0.82	0.5	43.5	42.8	28.22	74	Horizontal
7206	35.5	1.7	0.8	43.1	43.1	38	74	H
9608	37.7	2.02	0.9	43	45.6	43.22	74	H

Average Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Filter (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4804	27.6	0.82	0.5	43.5	54.8	40.22	54	Vertical
7206	35.5	1.7	0.8	43.1	32.2	27.1	54	V
9608	37.7	2.02	0.9	43	34.1	31.72	54	V
4804	27.6	0.82	0.5	43.5	32.4	17.82	54	Horizontal
7206	35.5	1.7	0.8	43.1	33.3	28.2	54	H
9608	37.7	2.02	0.9	43	34.7	32.32	54	H

The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor +Filter–Preamplifier Factor.

6.9.1.2 Test in middle Channel in transmitting status

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
40.0	15.0	0.1	24.6	35.0	25.5	40.0	Vertical
42.0	15.1	0.1	24.6	35.8	26.4	40.0	Horizontal

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Peak Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Filter (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4882	27.6	0.84	0.5	43.4	68.5	54.04	74	Vertical
7323	35.5	1.74	0.6	43.1	33.1	27.84	74	V
9764	37.7	2.05	0.9	43	34.7	32.35	74	V
4882	27.6	0.84	0.5	43.4	32.5	18.04	74	Horizontal
7323	35.5	1.74	0.6	43.1	34.2	28.94	74	H
9764	37.7	2.05	0.9	43	35.6	33.25	74	H

Average Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Filter (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4882	27.6	0.84	0.5	43.4	57.6	43.14	54	Vertical
7323	35.5	1.74	0.6	43.1	23.7	18.44	54	V
9764	37.7	2.05	0.9	43	23.2	20.85	54	V
4882	27.6	0.84	0.5	43.4	24.6	10.14	54	Horizontal
7323	35.5	1.74	0.6	43.1	23.5	18.24	54	H
9764	37.7	2.05	0.9	43	25.1	22.75	54	H

The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor +Filter–Preamplifier Factor.

6.9.1.3 Test in high Channel in transmitting status

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization	
182.4	12.6	0.3	24.5	30.1	18.5	46	Vertical	
249.0	13.1	0.3	24.5	33.6	22.5	46	Horizontal	

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Peak Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Filter (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4960	27.7	0.88	0.5	43.4	65.6	51.28	74	Vertical
7440	35.7	1.81	0.6	43.2	42.8	37.71	74	V
9920	37.9	2.15	0.9	43.1	45.2	43.05	74	V
4960	27.7	0.88	0.5	43.4	41.8	27.48	74	Horizontal
7440	35.7	1.81	0.6	43.2	42.6	37.51	74	H
9920	37.9	2.15	0.9	43.1	46.2	44.05	74	H

Average Measurement:

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Filter (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
4960	27.7	0.88	0.5	43.4	53.2	38.88	54	Vertical
7440	35.7	1.81	0.6	43.2	32.6	27.51	54	V
9920	37.9	2.15	0.9	43.1	34.7	32.55	54	V
4960	27.7	0.88	0.5	43.4	31.9	17.58	54	Horizontal
7440	35.7	1.81	0.6	43.2	32.7	27.61	54	H
9920	37.9	2.15	0.9	43.1	35	32.85	54	H

The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor +Filter–Preamplifier Factor.

Remark: No any other emissions level which are attenuated less than 20dB below the limit.
According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.
Hence there no other emissions have been reported.

Remark:

1). N/A: For this intentional radiator operates below 25 GHz. the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the third harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 3rd harmonic.

2). As shown in Section, 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 result: The unit does meet the FCC requirements.

6.9.2 Radiated Emissions which fall in the restricted bands

Test Requirement:	Section 15.247(d) 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 specified in Section 15.209(a) (see Section 15.205(c)).
Test Method:	Base on ANSI 63.4
Test Date:	October 19, 2009 to November 30,2009
Measurement Distance:	3m (Semi-Anechoic Chamber)
Limit:	40.0 dBμV/m between 30MHz & 88MHz; 43.5 dBμV/m between 88MHz & 216MHz; 46.0 dBμV/m between 216MHz & 960MHz; 54.0 dBμV/m above 960MHz.
Detector:	For PK value: RBW = 1 MHz for f ≥ 1 GHz VBW ≥ RBW; Sweep = auto Detector function = peak Trace = max hold For AV value: RBW = 1 MHz for f ≥ 1 GHz VBW =10Hz; Sweep = auto Detector function = peak Trace = max hold

Test Result:

1. Low Channel

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2390	27.88	4.65	16.17	10.07	48.7	42.6
2483.5	28.74	4.8	16.91	11.96	50.45	45.5

2. Middle Channel

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2390	27.88	4.65	15.27	10.07	47.8	42.6
2483.5	28.74	4.8	15.36	9.96	48.9	43.5

3. High Channel

Frequency (MHz)	Antenna factors (dB/m)	Cable loss(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2390	27.88	4.65	14.97	9.37	47.5	42.4
2483.5	28.74	4.8	15.66	10.56	49.2	44.1

Remark: No any other emission which fall in restricted bands can be detected and be reported.

Test Level =Receiver Reading + Antenna Factor + Cable Factor

All frequencies within the “Restricted bands” have been evaluated to compliance.

Section 15.205 Restricted bands of operation.

(a) Except as shown in paragraph (d) of this section. only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	
13.36 - 13.41	322 - 335.4		

Test result: The unit does meet the FCC requirements.

6.10 Band Edges Requirement

Test Requirement:	FCC Part 15 C
Test Method:	Based on ANSI 63.4
	Operation within the band 2400 – 2483.5 MHz
Test Date:	October 19,2009 to November 30,2009
Requirements:	Section 15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. 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 specified in Section 15.209(a) (see Section 15.205(c)).
Method of Measurement:	Set RBW of spectrum analyzer to 100 kHz and VBW of spectrum analyzer to 300 kHz with suitable frequency span including 100 kHz bandwidth from band edge. The band edges was measured and recorded.

The band edges was measured and recorded Result:

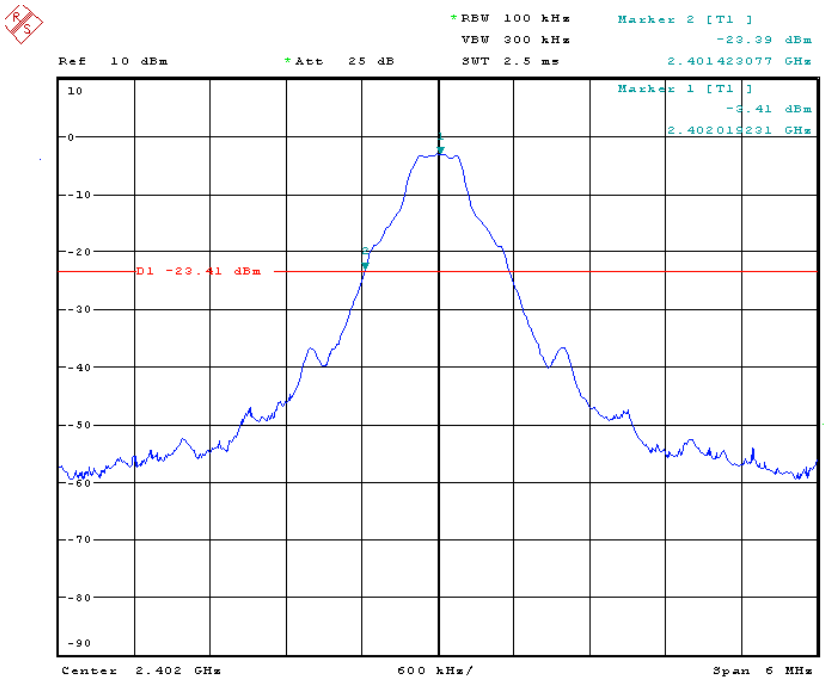
The Lower Edges attenuated more than 20dB.

The Upper Edges attenuated more than 20dB.

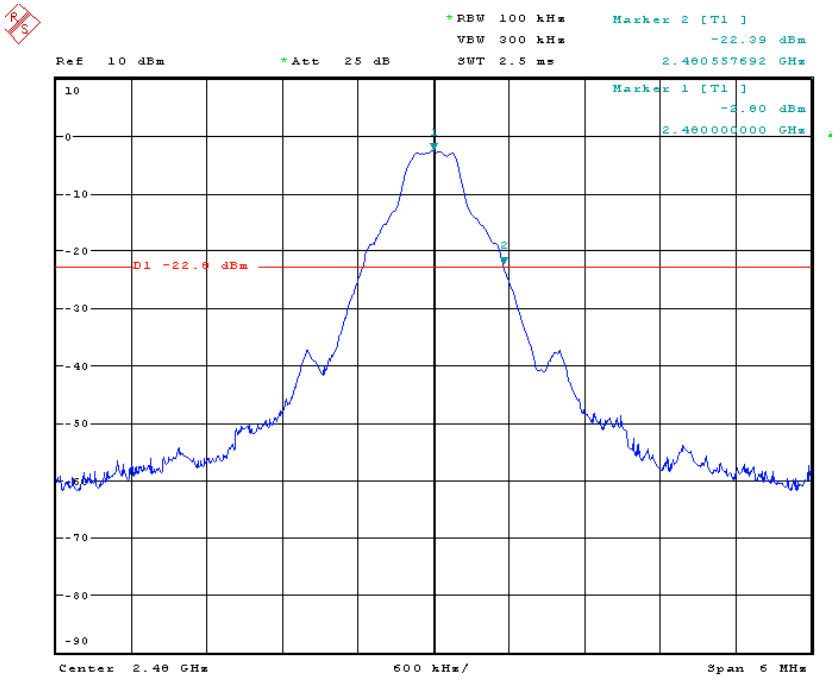
The graph as below. represents the emissions take for this device.

RBW 100KHz, VBW 300KHz

Lowest Channel:



Highest Channel:



Test result: The unit does meet the FCC requirements.