



Report No. SH15070035W01

FCC RF TEST REPORT

Issued to

Quanta Computer Inc.

For

Aftermarket Radio

Model Name : CP100
 Trade Name : Harman
 Brand Name : JBL
 Standard : 47 CFR Part 15,Subpart C
 ANSI C63.4-2009
 RSS 247 Issue1
 RSS GEN Issue 4
 FCC ID : HFS-XE5
 IC : 1787B-XE5
 Test date : Aug.14,2015 to Aug.14,2015
 Issue date : Aug.17,2015

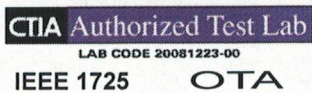
Shanghai MORLAB Communication Technology Co., Ltd.



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Approved by Guo Yeqiang

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Change History

Issue	Date	Reason for change
1.0	Aug.17,2015	First edition

1. General Information

1.1 Applicant

Quanta Computer Inc.

No.188,Wenhua 2nd Road, Guishan District ,Tao Yuan City, Taiwan

1.2 Manufacturer

Quanta Computer Inc.

No.188,Wenhua 2nd Road, Guishan District ,Tao Yuan City, Taiwan

1.3 Description of EUT

EUT Name.....: Aftermarket radio
Model Name.....: CP100
Brand Name.....: JBL
Trade Name.....: Harman
Hardware Version.....: B
Software Version.....: 1.1.9.2
Bluetooth Version.....: 2.1+EDR
Modulation Type.....: FHSS (GFSK(1Mbps), $\pi/4$ -DQPSK(EDR 2Mbps), 8-DPSK(EDR 3Mbps)
Frequency Range.....: 2.402GHz - 2.480GHz (at interval of 1MHz)
Channel Number.....: 79
Antenna Type.....: PCB Antenna
Antenna Gain.....: -5.2dBi
Extreme Voltages.....: DC12V

NOTE 1:

*The EUT contains Bluetooth Module operating at 2.4GHz ISM band; the frequencies allocated for the Bluetooth Module is $F(\text{MHz})=2402+1*n$ ($0 \leq n \leq 78$). The lowest, middle, highest channel numbers of the Bluetooth Module used and tested in this report are separately 0 (2402MHz), 39 (2441MHz) and 78 (2480MHz).*

NOTE 2:

For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacture.

2. Facilities and Accreditations

2.1 Test Facility

Shanghai Morlab Communications Technology Co., Ltd. Morlab Laboratory is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6644. A 9*6*6(m) fully anechoic chamber was used for the radiated spurious emissions test.

2.2 Environmental Conditions

Ambient temperature: 15~35°C

Relative humidity: 30~60%

Atmosphere pressure: 86-106kPa

2.3 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

Uncertainty of Conducted Emission: ± 1.76 dB

Uncertainty of Radiated Emission: ± 3.16 dB

2.4 List of Equipments Used

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Service Simulator	Anritsu	MT8852A	6K00002788	2014.9.22	1year
Spectrum Analyzer	R&S	FSU26	200880	2015.2.25	1year
Power Splitter	Weinschel	1506A	NW521	(n.a.)	(n.a.)
Power Splitter	Mini-Circuits	ZFRSC-183-S+	765001016	(n.a.)	(n.a.)
Attenuator 1	Resnet	10dB	(n.a.)	(n.a.)	(n.a.)
Attenuator 2	Resnet	3dB	(n.a.)	(n.a.)	(n.a.)
Full/Semi-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2012.9.14	3year
EMI Test Receiver	R&S	ESCI	101351	2015.8.5	1year
Antenna	Schwarzbeck	BBHA 9120C	9120C-384	2015.7.25	1year
Antenna	R&S	HL562	100385	2015.6.17	1year
Antenna	R&S	HF906	100565	2015.6.17	1year
LISN	Rohde&Schwarz	ENV216	812744	2014.9.22	1year
Personal Computer	HP	(n.a.)	(n.a.)	(n.a.)	(n.a.)
Test Antenna-Horn	Schwarzbeck	BBHA9170	BBHA91970171	2014.9.22	1year
Test Antenna-Log	Schwarzbeck	VULB 9163	9163-561	2014.9.25	1year
Test Antenna-Loop	Rohde&Schwarz	HFH2-Z2	860004/001	2014.9.22	1year

NOTE:

Equipments listed above have been calibrated and are in the period of validation.

3. Test Standards and Results

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- CFR 47 Part 15 Subpart C
- ANSI C63.4-2009
- FCC PUBLIC NOTICE DA 00-705
- INDUSTRY CANADA RSS 247 Issue 1
- INDUSTRY CANADA RSS GEN Issue 4

Remark:

All test items were verified and recorded according to the standards and without any deviation during the test.

Test items and the results are as bellow:

No	FCC Rules	IC Rules	Test Type	Limits	Result
1	15.247(a)(1)	RSS-247 5.1(4)	Number of Hopping Frequency	≥ 75 Chs	PASS
2	15.247(b)(1)	RSS-247 5.1(2)	Peak Output Power	≤ 0.125 W	PASS
3	15.247(a)(1)	RSS-247 5.1(1)	20dB Bandwidth	NA	PASS
4	15.247(a)(1)	RSS-247 5.1(2)	Carrier Frequency Separation	$\geq 2/3$ of 20dB BW	PASS
5	15.247(a)(1)	RSS-247 5.1(4)	Time of Occupancy (Dwell time)	≤ 0.4 sec in 31.6sec period	PASS
6	15.247(d)	RSS-247 5.5 RSS-GEN 8.10	Conducted Spurious Emission	< 20 dB	PASS
7	15.247(d)	RSS-247 5.5 RSS-GEN 8.10	Band Edge	≤ 20 dB	PASS
8	15.207	RSS-GEN 8.8	Conducted Emission	15.207(a)	N/A
9	15.247(d)	RSS-247 5.5 RSS-GEN 8.9	Radiated Emission	15.209(a) & 15.247(d)	PASS
10	15.203 & 15.247(b)	RSS-GEN 7.1.2	Antenna Requirement	N/A	PASS

4. Test Conditions Setting

The EUT has been associated with peripherals pursuant to ANSI C63.4-2009 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Pre-scanned tests were conducted to determine the final configuration from all possible combinations.

The following tables are showing the test modes as the worst cases and recorded in this report.

TEST MODE			
BT Data Rate / Modulation	Conducted Mode	Radiated Mode	AC Conducted Emission
Bluetooth 1Mbps GFSK	Channel 00_2402 MHz	Channel 00_2402 MHz	NA
	Channel 39_2441 MHz	Channel 39_2441 MHz	
	Channel 78_2480 MHz	Channel 78_2480 MHz	
Bluetooth EDR 2Mbps $\pi/4$ -DQPSK	Channel 00_2402 MHz	Channel 00_2402 MHz	
	Channel 39_2441 MHz	Channel 39_2441 MHz	
	Channel 78_2480 MHz	Channel 78_2480 MHz	
Bluetooth EDR 3Mbps 8-DPSK	Channel 00_2402 MHz	Channel 00_2402 MHz	
	Channel 39_2441 MHz	Channel 39_2441 MHz	
	Channel 78_2480 MHz	Channel 78_2480 MHz	

5. 47 CFR Part 15C requirements

5.1 Antenna requirement

5.1.1 Applicable standard

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by 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.

5.1.2 Result: Compliant

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

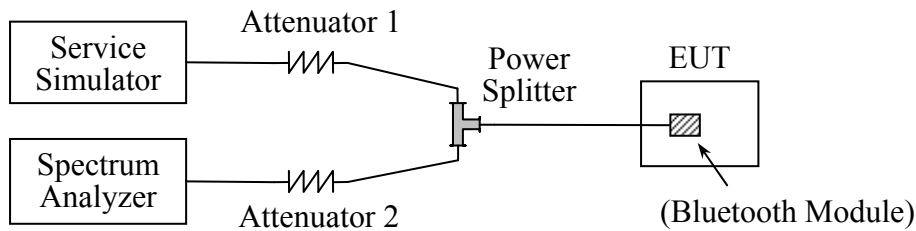
6. Test Result

6.1 Number of Hopping Frequency

6.1.1 Requirement

According to FCC section 15.247(a)(1)(iii), frequency hopping systems operating in the 2400MHz to 2483.5MHz bands shall use at least 15 hopping frequencies.

6.1.2 Test Setup



The Bluetooth Module of the EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the Bluetooth Service Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. During the measurement, the Bluetooth Module of the EUT is activated and controlled by the SS, and is set to operate under test mode transmitting 339 bytes DH5 packages at maximum power.

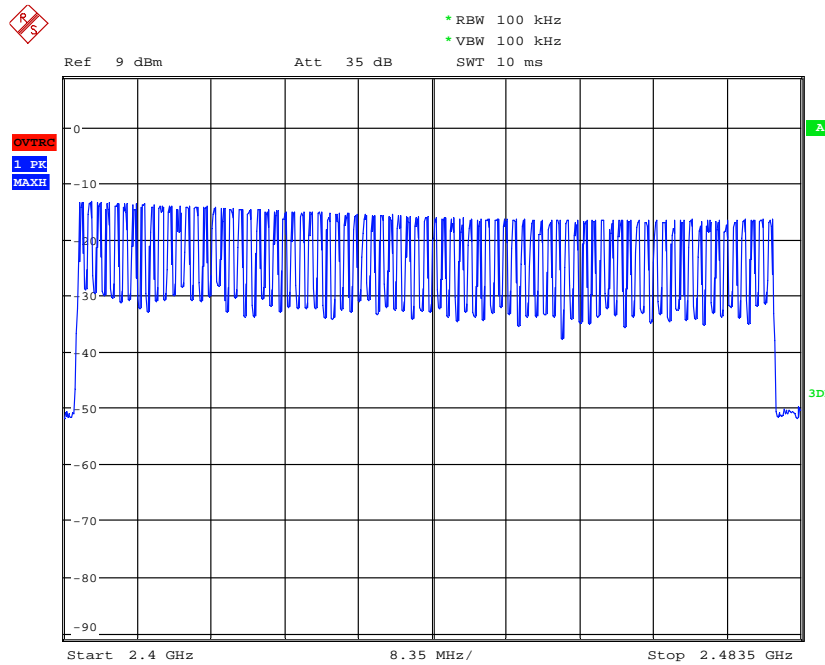
6.1.3 Test Result

The Bluetooth Module operates at hopping-on test mode; the frequencies number employed is counted to verify the Module's using the number of hopping frequency compliance to Hopping Sequence and Equal Usage of the channels

A. Test Verdict:

Frequency Block (MHz)	Measured Channel Numbers	Min. Limit	Refer to Plot	Verdict
2400 - 2483.5	79	15	Plot A	PASS

B. Test Plot:



Date: 14.AUG.2015 12:04:50

Plot A

6.2 Peak Output Power

6.2.1 Requirement

According to FCC section 15.247(b)(1), for frequency hopping systems that operates in the 2400MHz to 2483.5MHz band employing at least 75 hopping channels, the maximum peak output power of the intentional radiator shall not exceed 1Watt. For all other frequency hopping systems in the 2400MHz to 2483.5MHz band, it is 0.125Watts.

6.2.2 Test Setup

See section 6.1.2 of this report.

6.2.3 Test Result

The Bluetooth Module operates at hopping-off test mode. The lowest, middle and highest channels are selected to perform testing to verify the conducted RF output peak power of the Module.

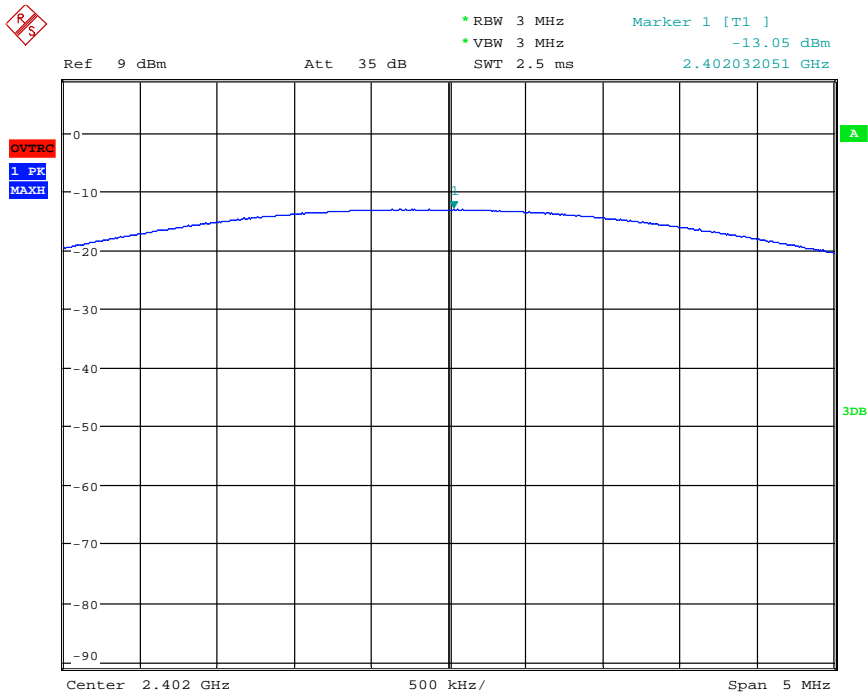
A. Test Verdict:

Channel	Frequency (MHz)	Measured Output Peak Power(dBm)		Limit	Verdict	Refer to Plot
		Data Rate/Modulation				
		GFSK		dBm		
		1Mbps				
0	2402	-13.05		30	PASS	Plot A
39	2441	-15.53			PASS	Plot B
78	2480	-15.71			PASS	Plot C

Channel	Frequency (MHz)	Measured Output Peak Power(dBm)		Limit	Verdict	Refer to Plot
		Data Rate/Modulation				
		π /4-DQPSK		dBm		
		2Mbps				
0	2402	-11.27		21	PASS	Plot D
39	2441	-14.04			PASS	Plot E
78	2480	-14.35			PASS	Plot F

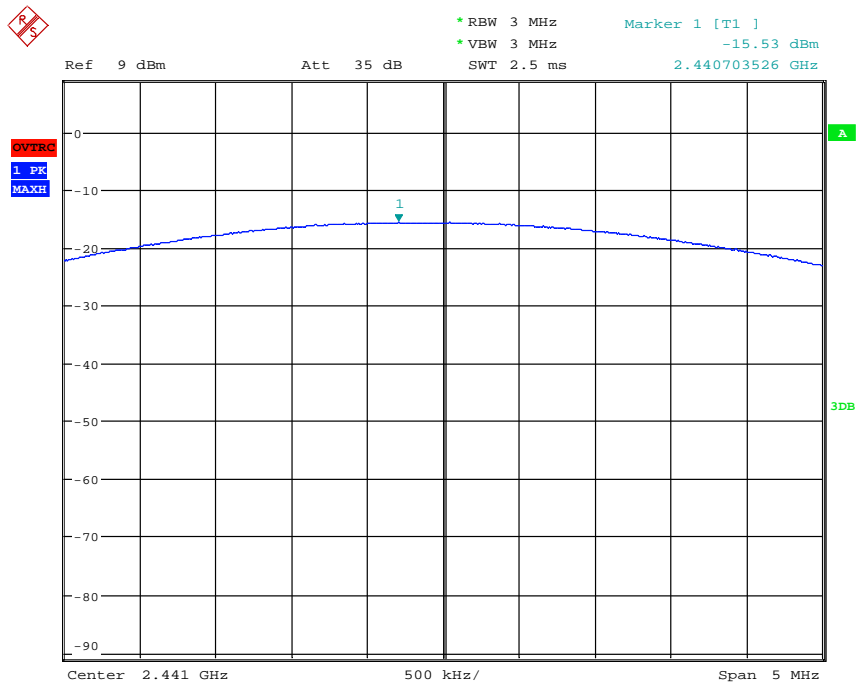
Channel	Frequency (MHz)	Measured Output Peak Power(dBm)		Limit	Verdict	Refer to Plot
		Data Rate/Modulation				
		8-DPSK		dBm		
		3Mbps				
0	2402	-10.74		21	PASS	Plot G
39	2441	-13.71			PASS	Plot H
78	2480	-13.92			PASS	Plot I

B. Test Plot:



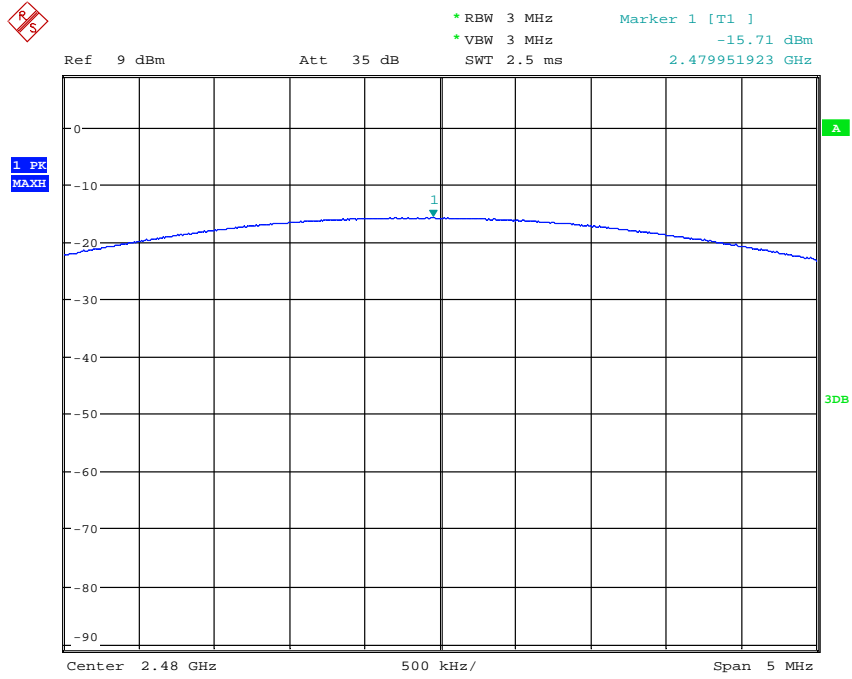
Date: 14.AUG.2015 12:07:13

Plot A



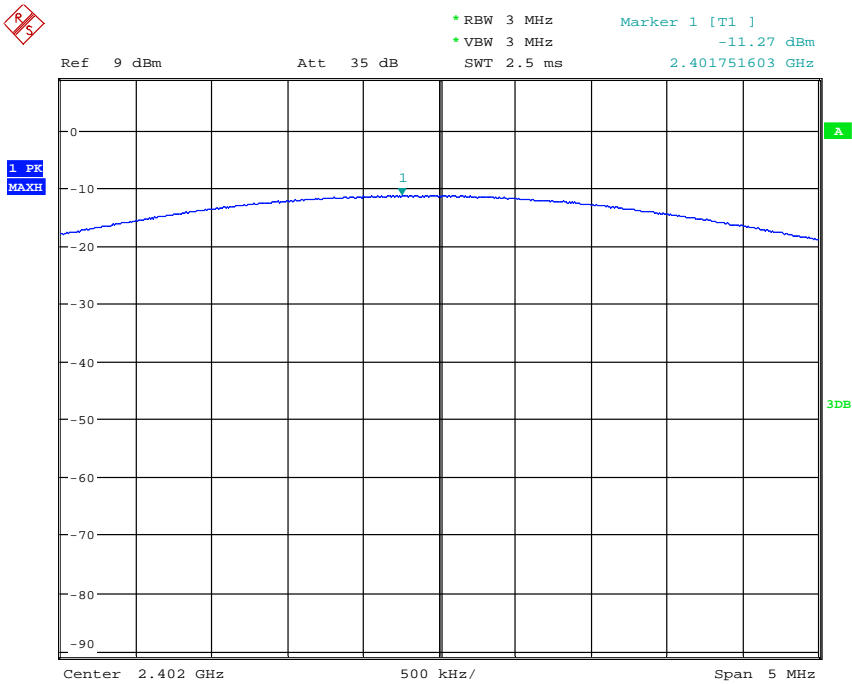
Date: 14.AUG.2015 12:08:01

Plot B



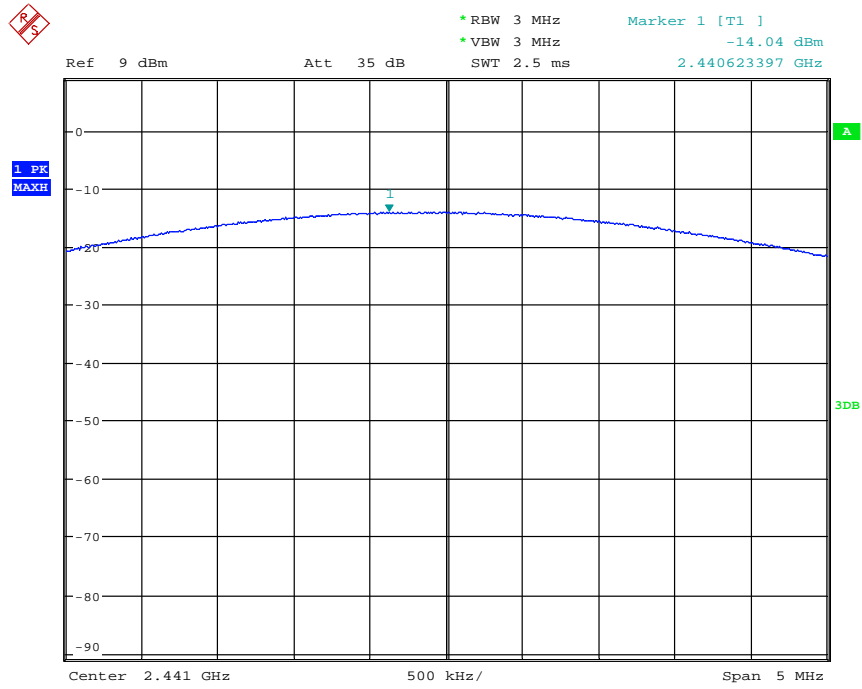
Date: 14.AUG.2015 12:09:44

Plot C



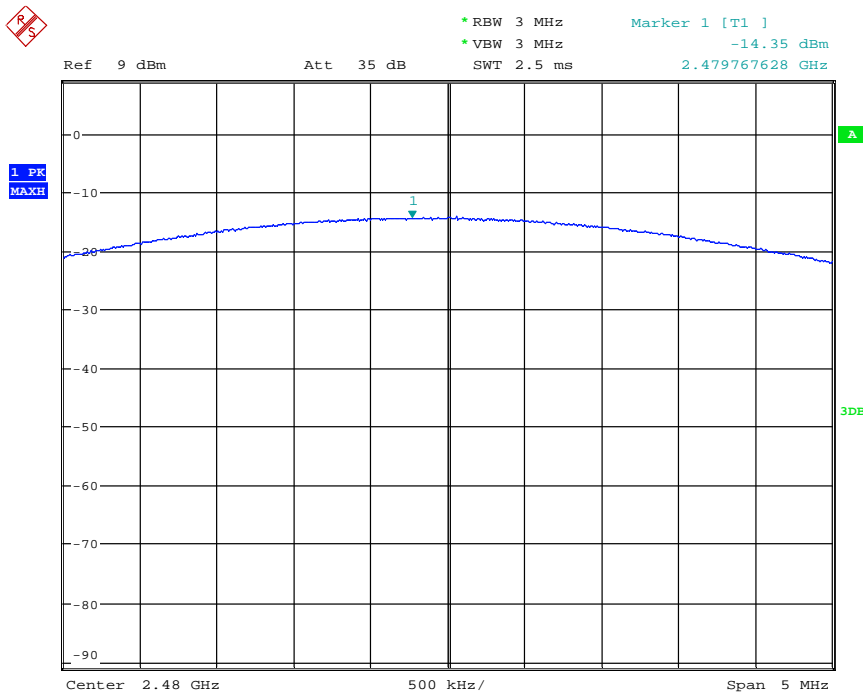
Date: 14.AUG.2015 12:12:27

Plot D



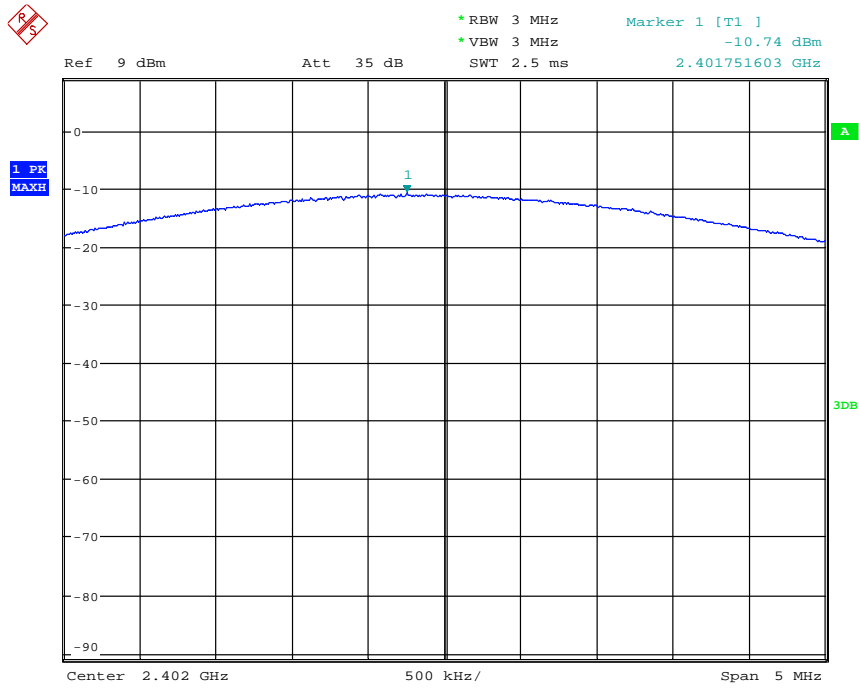
Date: 14.AUG.2015 12:10:50

Plot E



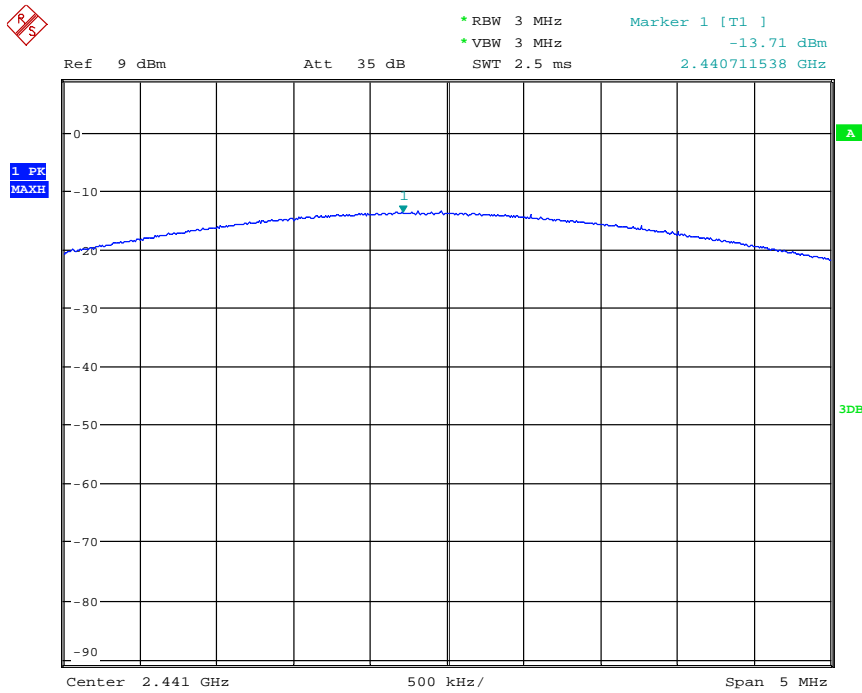
Date: 14.AUG.2015 12:10:27

Plot F



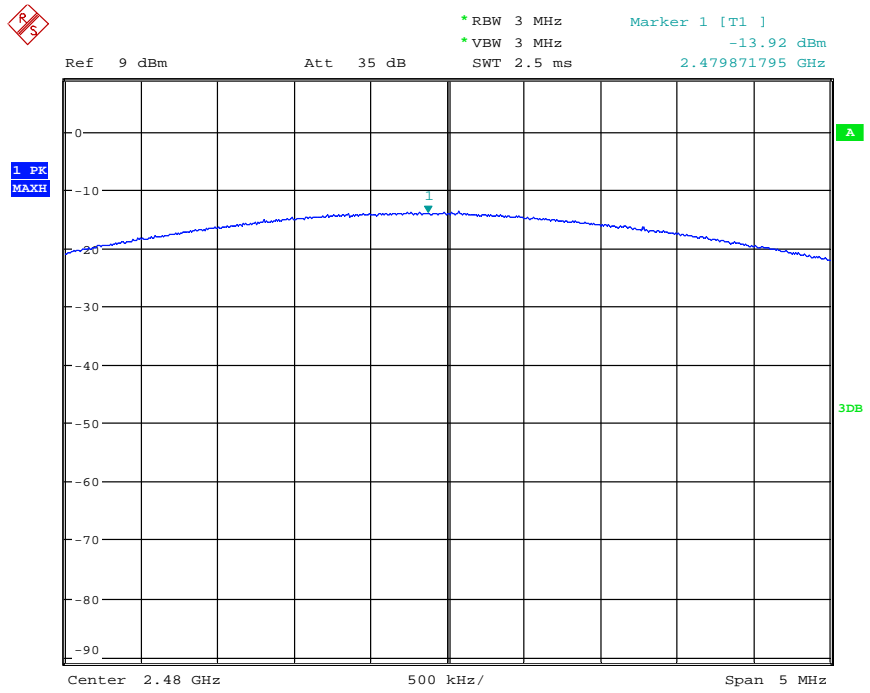
Date: 14.AUG.2015 12:12:44

Plot G



Date: 14.AUG.2015 12:13:04

Plot H



Date: 14.AUG.2015 12:13:28

Plot I

6.3 20dB Bandwidth

6.3.1 Definition

The 20dB bandwidth ($10 \cdot \log_{10} = 20\text{dB}$) taking the total RF output power.

6.3.2 Test Setup

See section 6.1.2 of this report.

6.3.3 Test Result

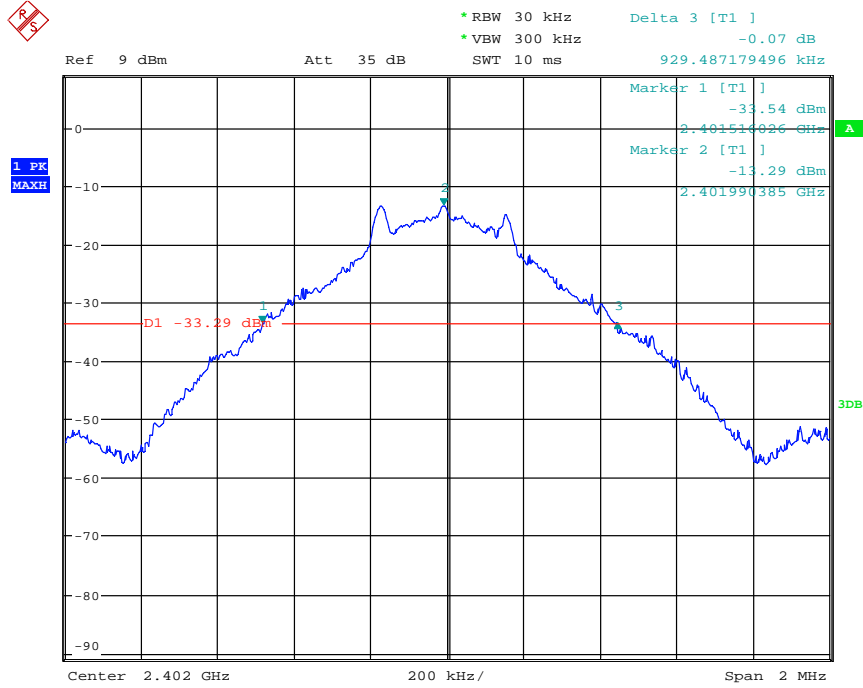
The Bluetooth Module operates at hopping-off test mode. The lowest, middle and highest channels are selected to perform testing to record the 20dB bandwidth of the Module.

A. Test Verdict

The maximum 20dB bandwidth measured is 1.150MHz according to the table below.

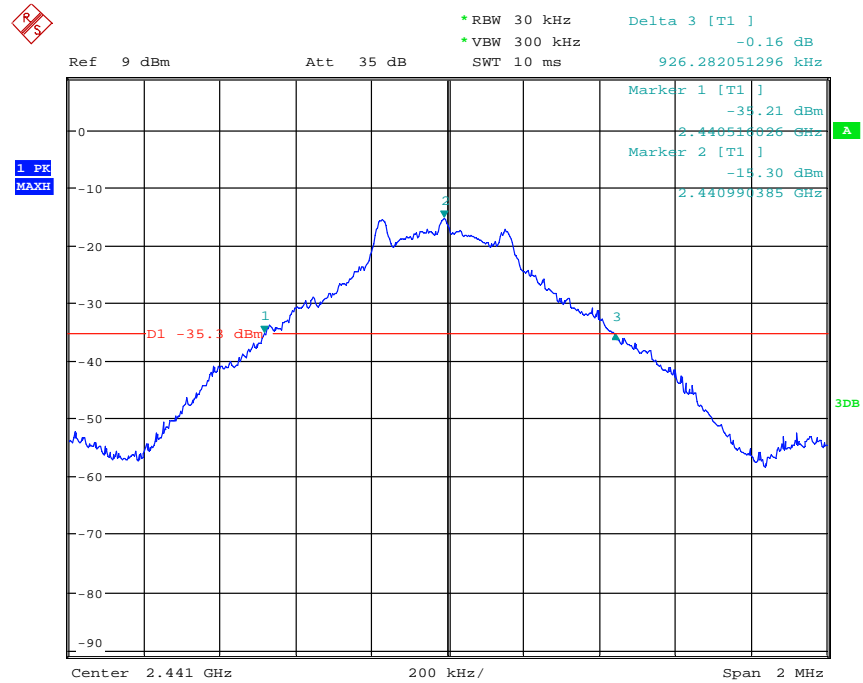
Modulation	Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Refer to Plot
GFSK	0	2402	0.929	Plot A
	39	2441	0.926	Plot B
	78	2480	0.926	Plot C
$\pi/4$ -DQPSK	0	2402	1.246	Plot D
	39	2441	1.278	Plot E
	78	2480	1.275	Plot F
8-DPSK	0	2402	1.221	Plot G
	39	2441	1.278	Plot H
	78	2480	1.275	Plot I

B. Test Plot:



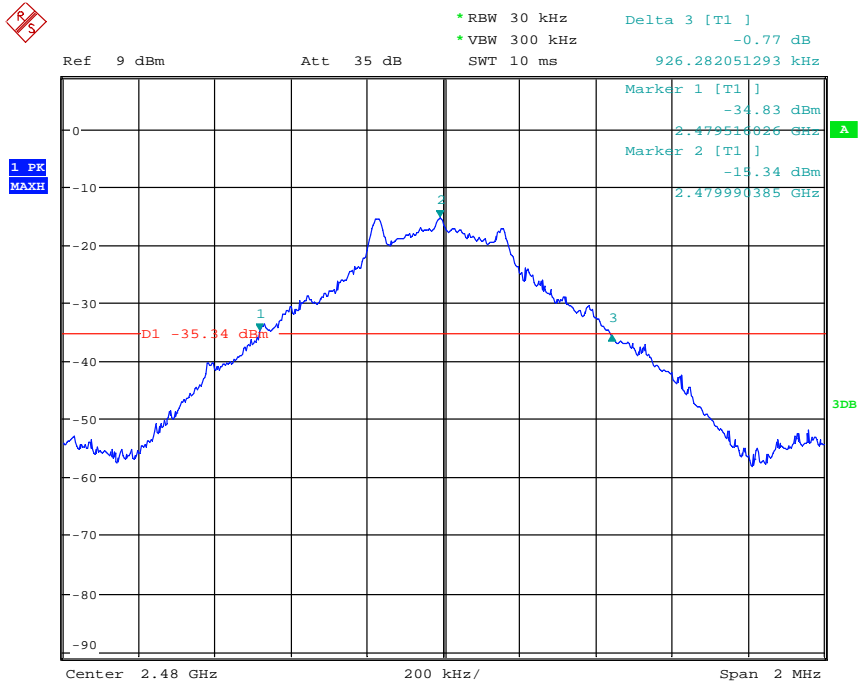
Date: 14.AUG.2015 12:17:11

(Plot A: Channel = 2402)



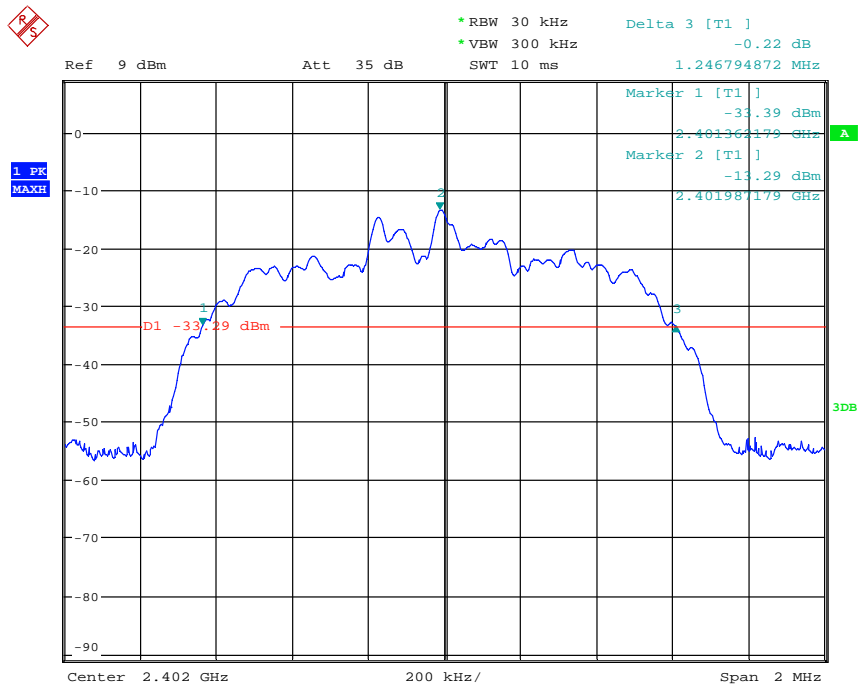
Date: 14.AUG.2015 12:18:24

(Plot B: Channel = 2441)



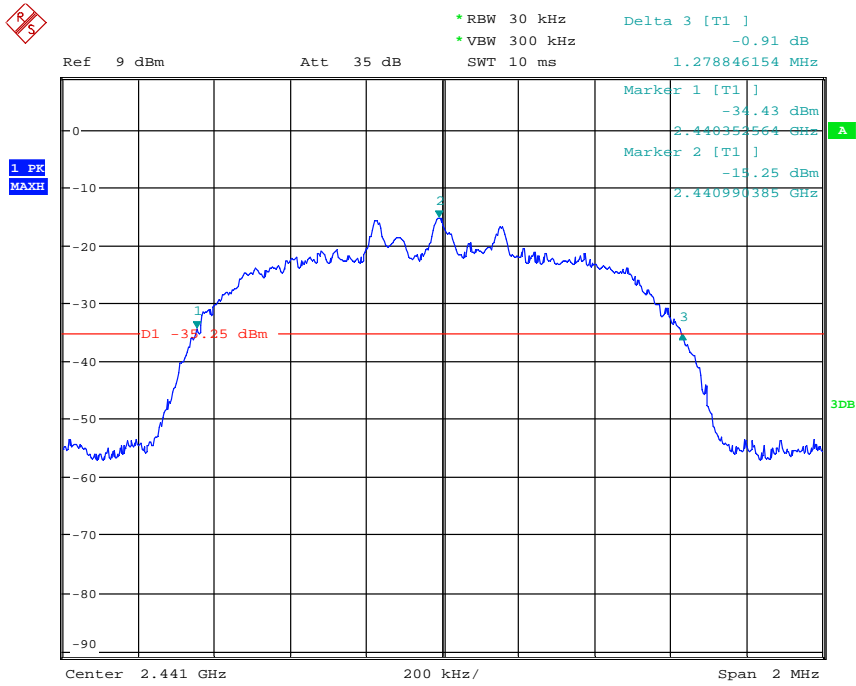
Date: 14.AUG.2015 12:19:24

(Plot C: Channel = 2480)



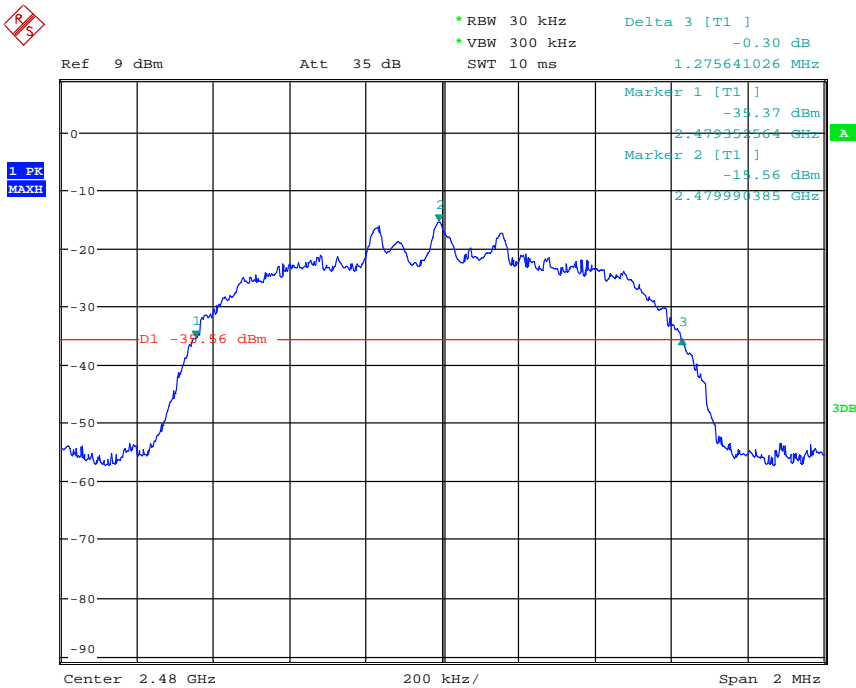
Date: 14.AUG.2015 12:21:22

(Plot D: Channel = 2402)



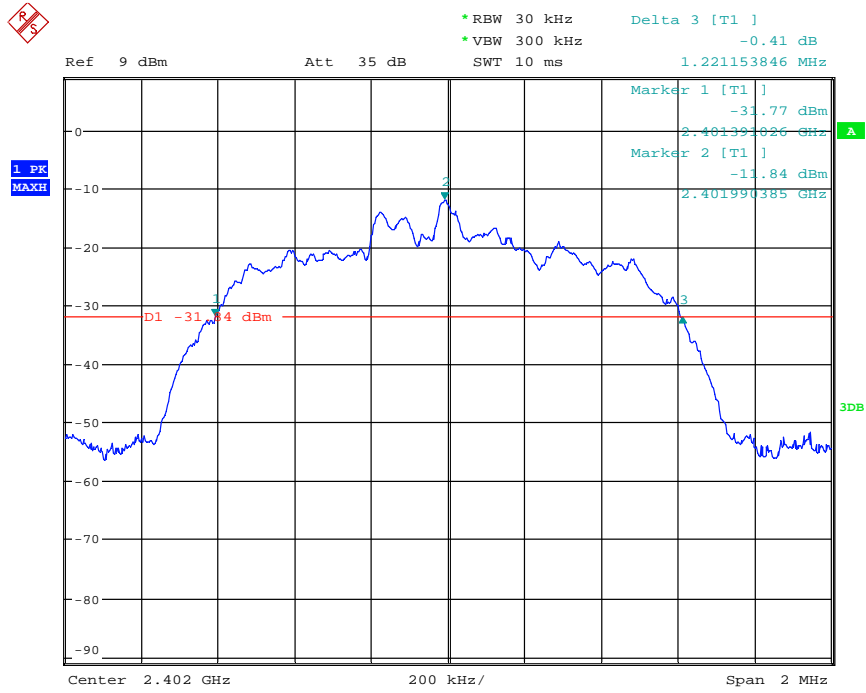
Date: 14.AUG.2015 12:20:40

(Plot E: Channel = 2441)



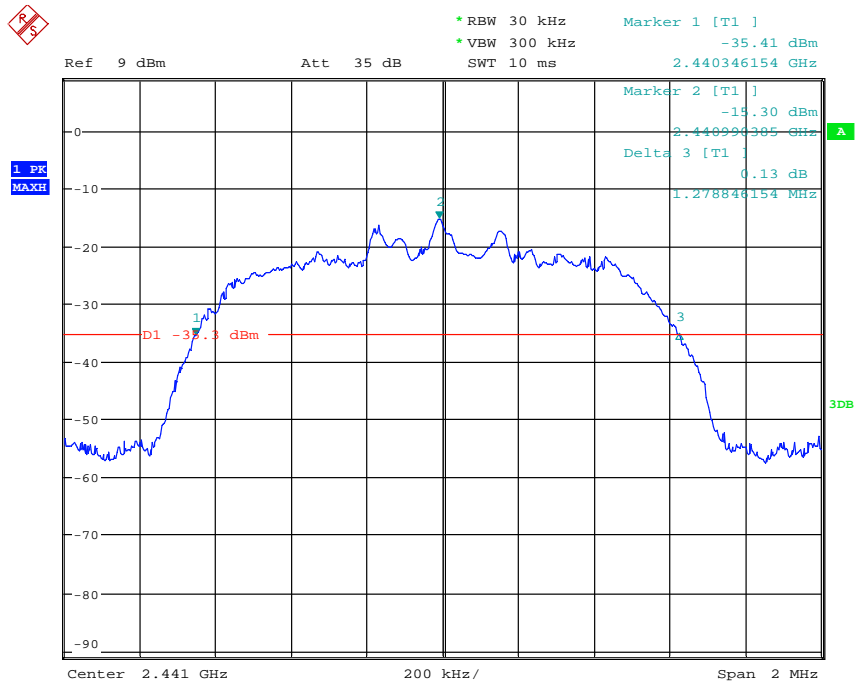
Date: 14.AUG.2015 12:20:04

(Plot F: Channel = 2480)



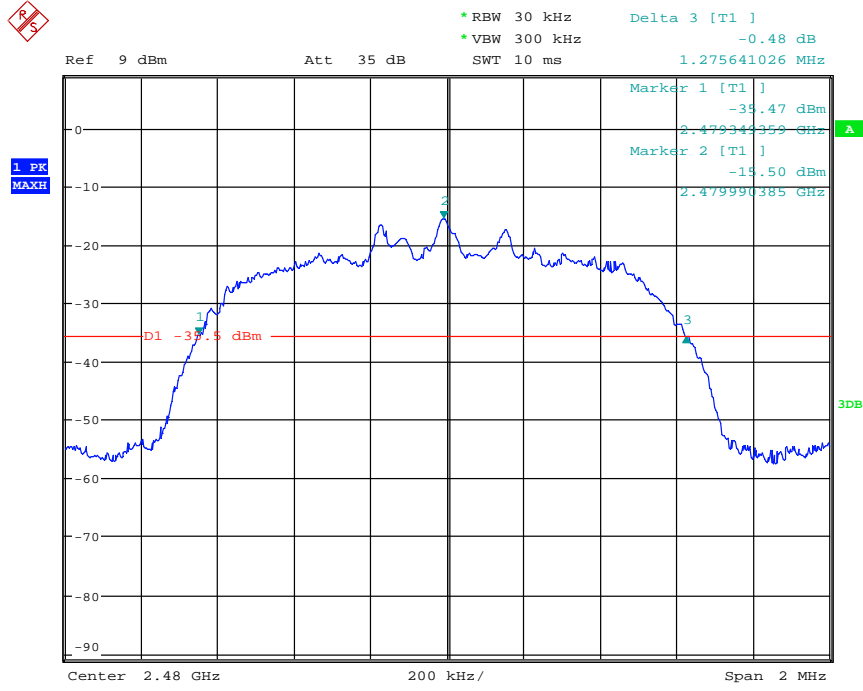
Date: 14.AUG.2015 12:22:07

(Plot G: Channel = 2402)



Date: 14.AUG.2015 12:22:38

(Plot H: Channel = 2441)



Date: 14.AUG.2015 12:23:07

(Plot I: Channel = 2480)

6.4 Carried Frequency Separation

6.4.1 Definition

According to FCC section 15.247(a)(1), frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater.

6.4.2 Test Setup

See section 6.1.2 of this report.

6.4.3 Test Result

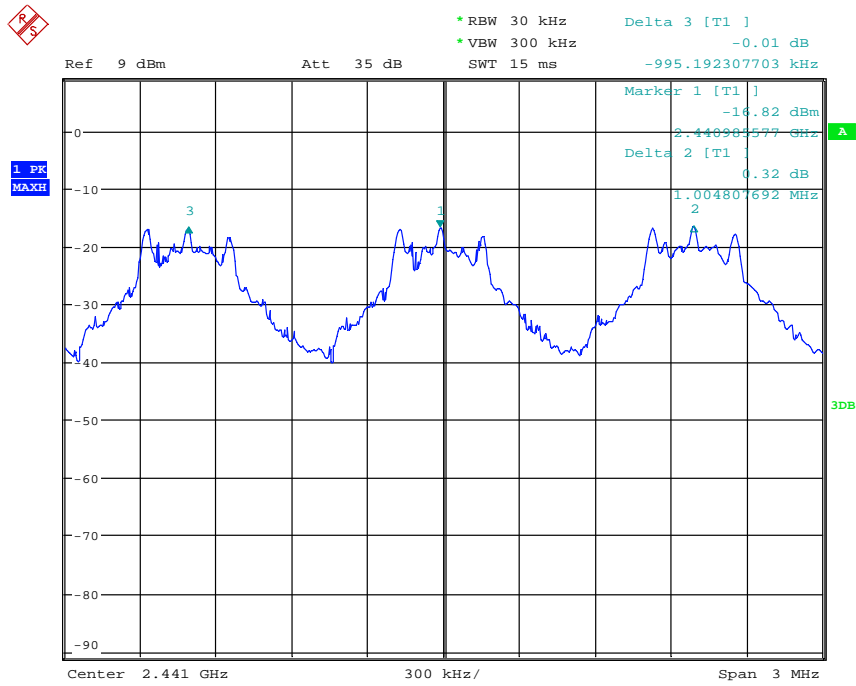
The Bluetooth Module operates at hopping-on test mode.

For any adjacent channels, the Module does have hopping channel carrier frequencies separated by a minimum of 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater. So, the verdict is PASS.

A. Test Verdict:

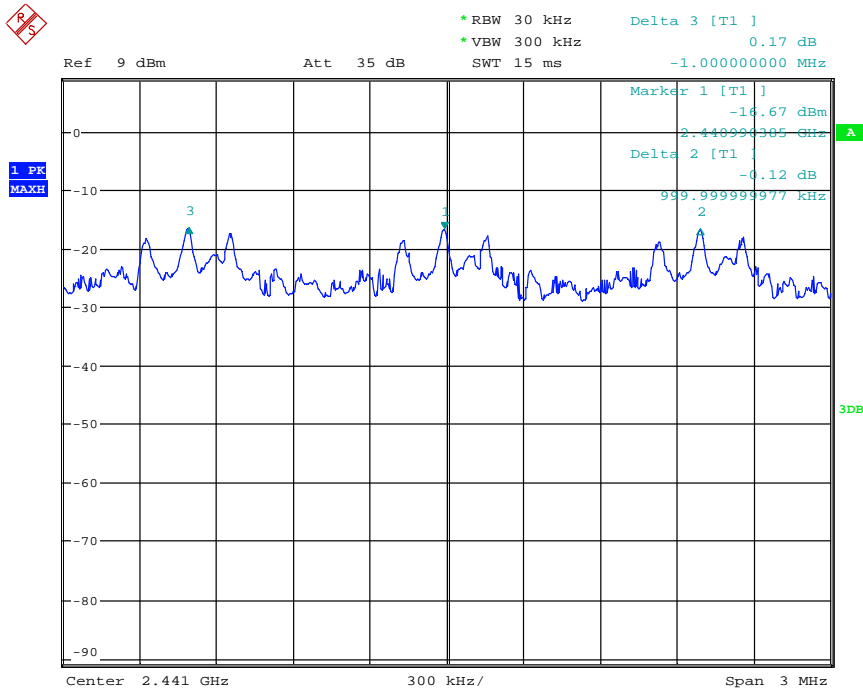
Modulation	Carried Frequency Separation (KHz)	Limit (MHz)	Refer to Plot	Result
GFSK	1004	minimum of 0.025 or 2/3 the 20dB bandwidth	Plot A	PASS
$\pi/4$ -DQPSK	1000	minimum of 0.025 or 2/3 the 20dB bandwidth	Plot B	PASS
8DPSK	1000	minimum of 0.025 or 2/3 the 20dB bandwidth	Plot C	PASS

B. Test Plot:



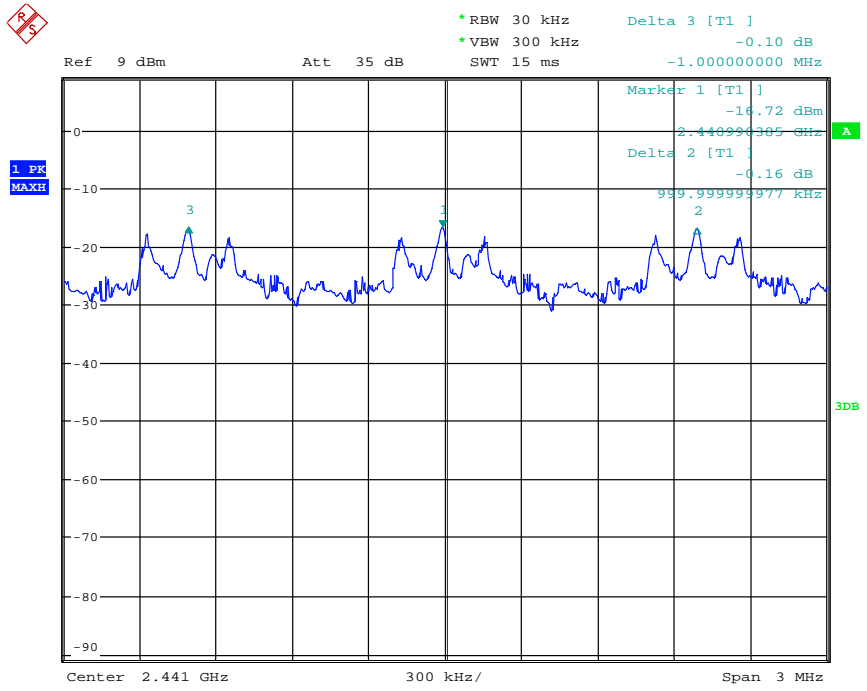
Date: 14.AUG.2015 12:26:54

(Plot A: GFSK Channel)



Date: 14.AUG.2015 12:29:21

(Plot B: $\pi/4$ -DQPSK Channel)



Date: 14.AUG.2015 12:30:40

(Plot C: 8DPSK Channel)

6.5 Time of Occupancy (Dwell time)

6.5.1 Requirement

According to FCC section 15.247(a)(1)(iii), frequency hopping systems in the 2400 - 2483.5MHz band shall use at least 15 non-overlapping 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.

6.5.2 Test Setup

See section 6.1.2 of this report.

6.5.3 Test Result

The average time of occupancy on any channel within the Period can be calculated with formulas:

$$\text{DH5 : } \{\text{Total of Dwell}\} = \{\text{Pulse Time}\} * (1600 / 6) / \{\text{Number of Hopping Frequency}\} * \{\text{Period}\}$$

$$\{\text{Period}\} = 0.4\text{s} * \{\text{Number of Hopping Frequency}\}$$

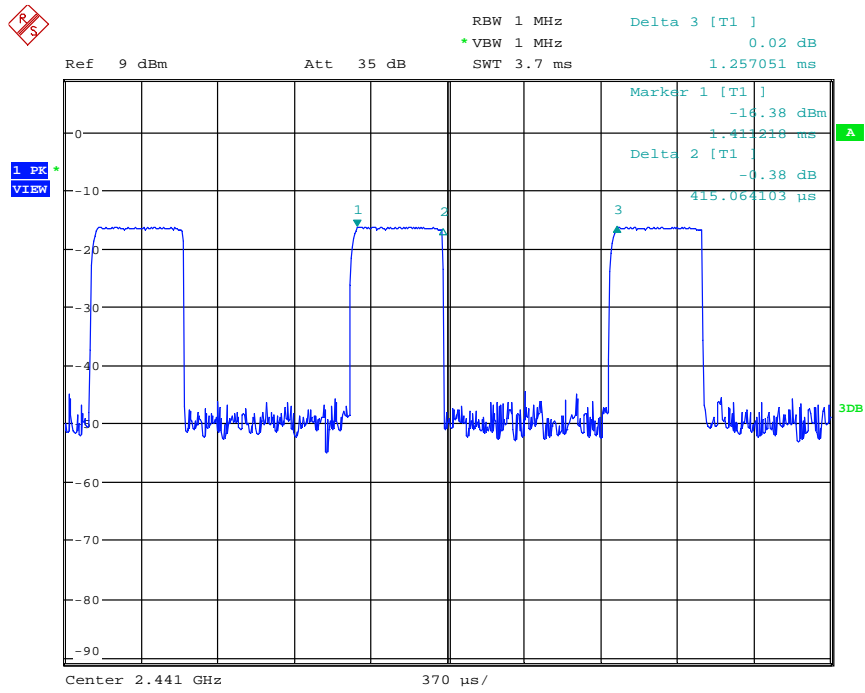
The lowest, middle and highest channels are selected to perform testing to record the dwell time of each occupation measured in this channel, which is called Pulse Time here.

A. Test Verdict:

Modulation	Channel	Pulse Time		Total of Dwell (ms)	Limit (ms)	Result
		ms	Refer to Plot			
GFSK	39	0.415	Plot A	44.33	400	PASS
$\pi/4$ -DQPSK	39	0.403	Plot B	43.04	400	PASS
8DPSK	39	0.415	Plot C	44.33	400	PASS

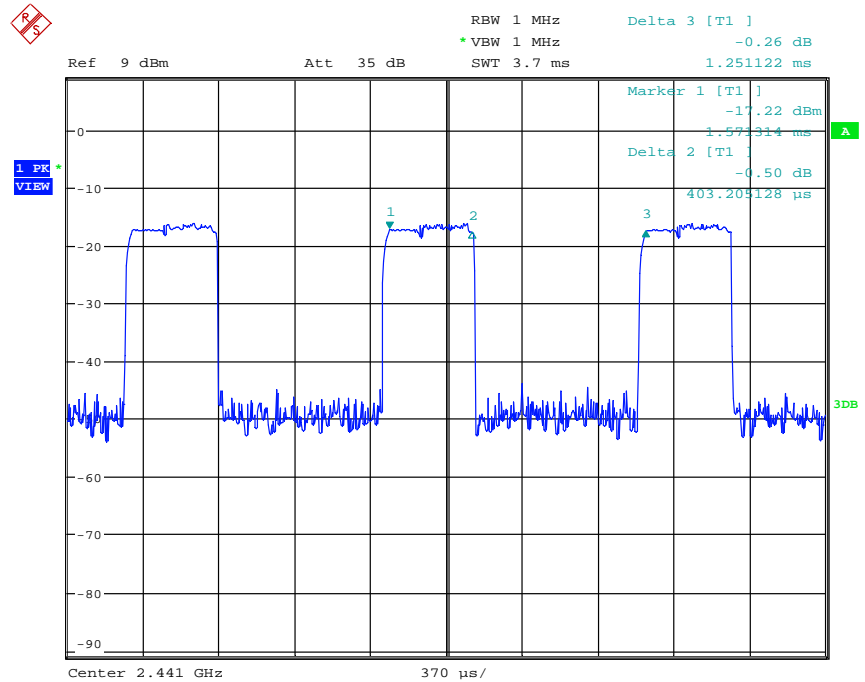
B. Test Plot:

Note: the following plots record the Pulse Time of the Module carrier.



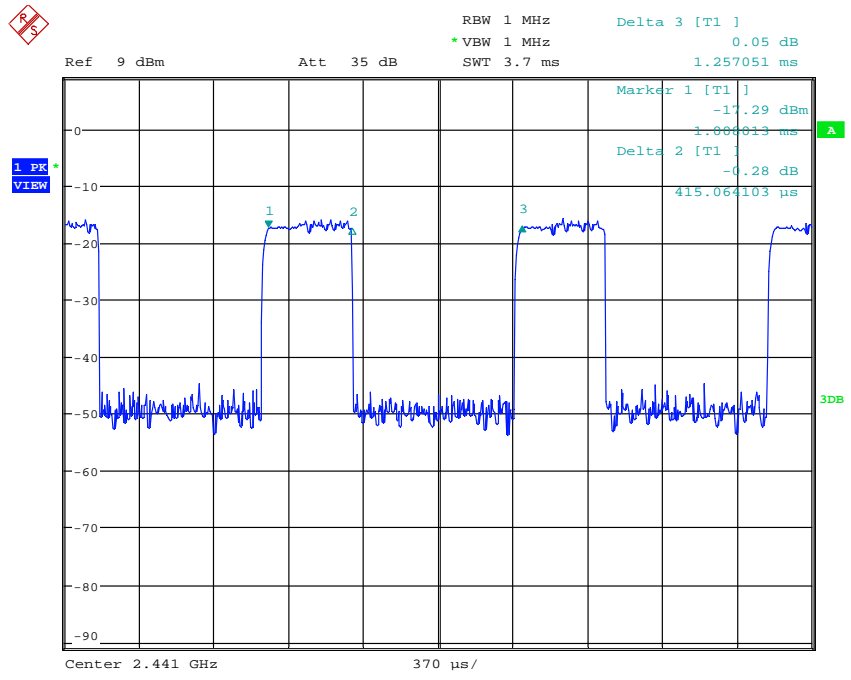
Date: 14.AUG.2015 12:35:35

(Plot A: GFSK Channel = 2441)



Date: 14.AUG.2015 12:36:15

(Plot B: $\pi/4$ -DQPSK Channel = 2441)



Date: 14.AUG.2015 12:37:17

(Plot C: 8-DPSK Channel = 24410)

6.6 Conducted Spurious Emissions

6.6.1 Requirement

According to FCC section 15.247(c), in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

6.6.2 Test Setup

See section 6.1.2 of this report.

6.6.3 Test Result

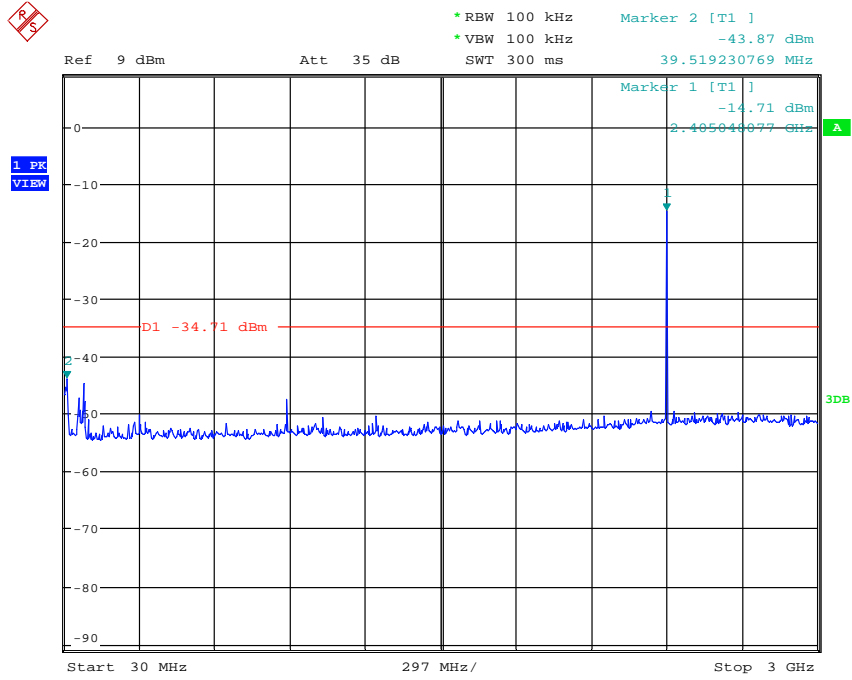
The Bluetooth Module operates at hopping-off test mode. The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions.

A. Test Verdict

Channel	Frequency (MHz)	Measured Max Out of Band Emission (dBm)	Refer to Plot	Limit (dBm)		Result
				Carrier Level	Calculated -20dBc Limit	
0	2402	-43.87	Plot A1/A2	-14.71	-34.71	PASS
39	2441	-43.05	Plot B1/B2	-15.48	-35.48	PASS
78	2480	-45.30	Plot C1/C2	-15.47	-35.47	PASS

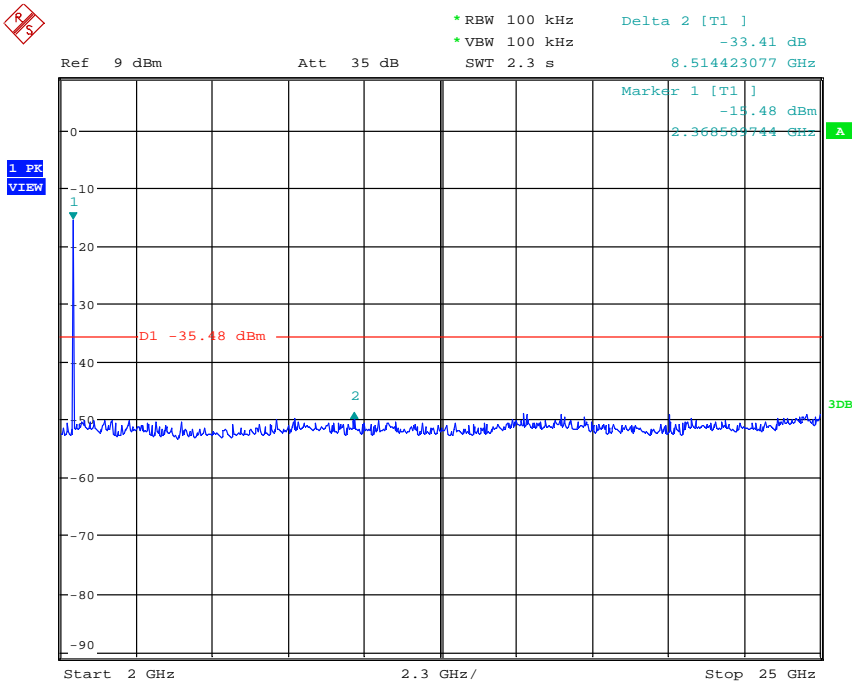
B. Test Plot

Note: the power of the Module transmitting frequency should be ignored.



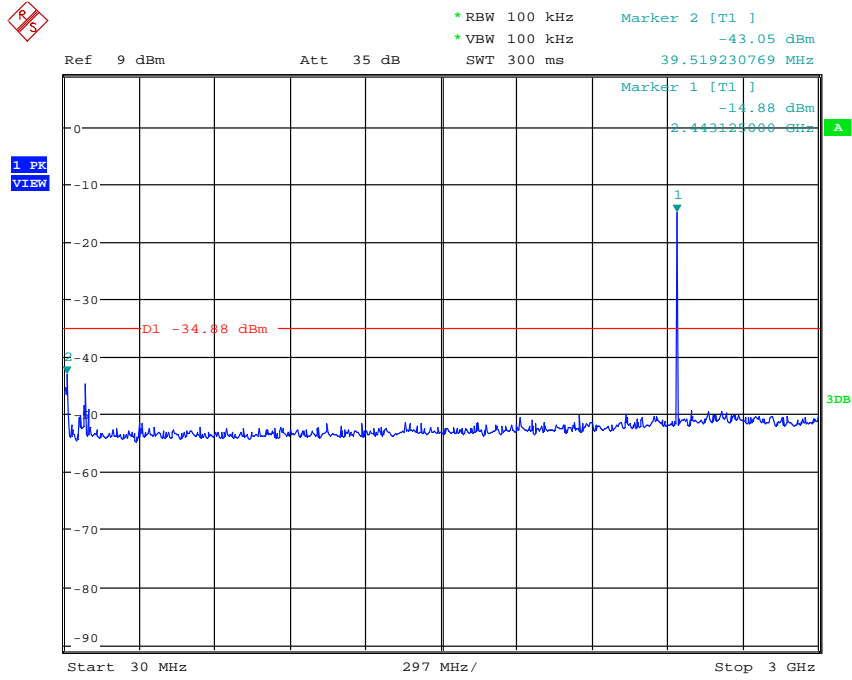
Date: 14.AUG.2015 12:47:29

Plot A1



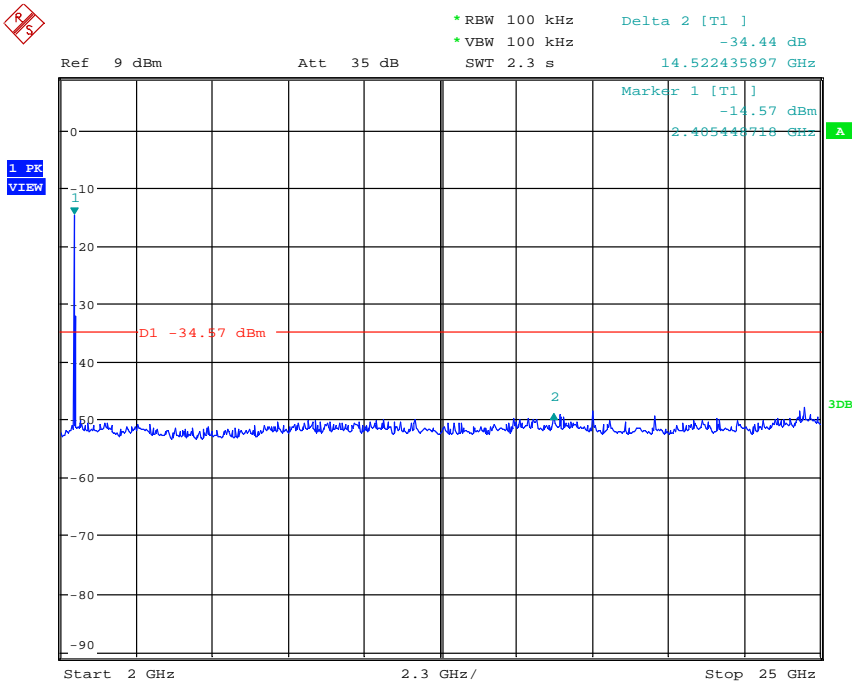
Date: 14.AUG.2015 13:08:01

Plot A2



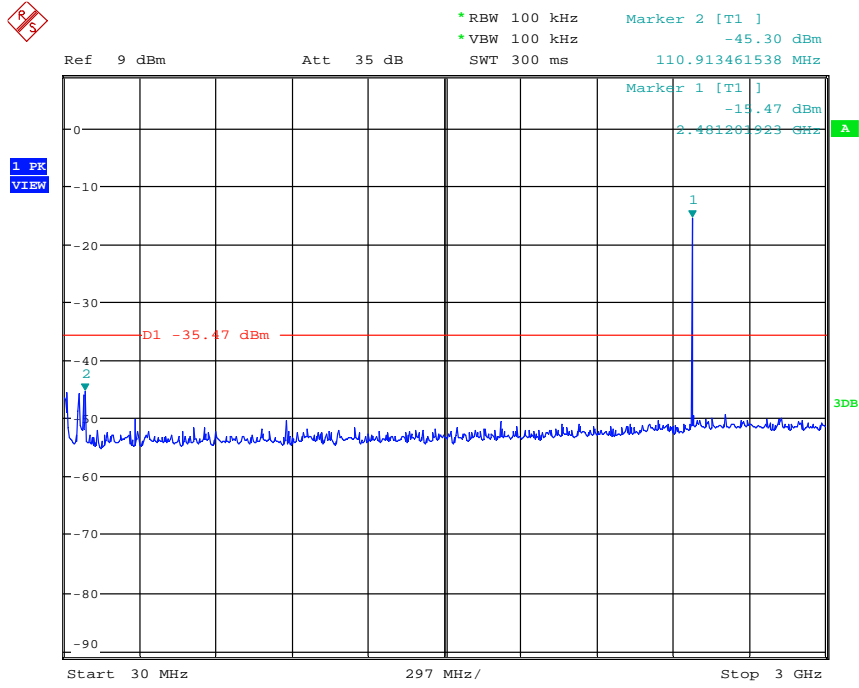
Date: 14.AUG.2015 13:00:16

Plot B1



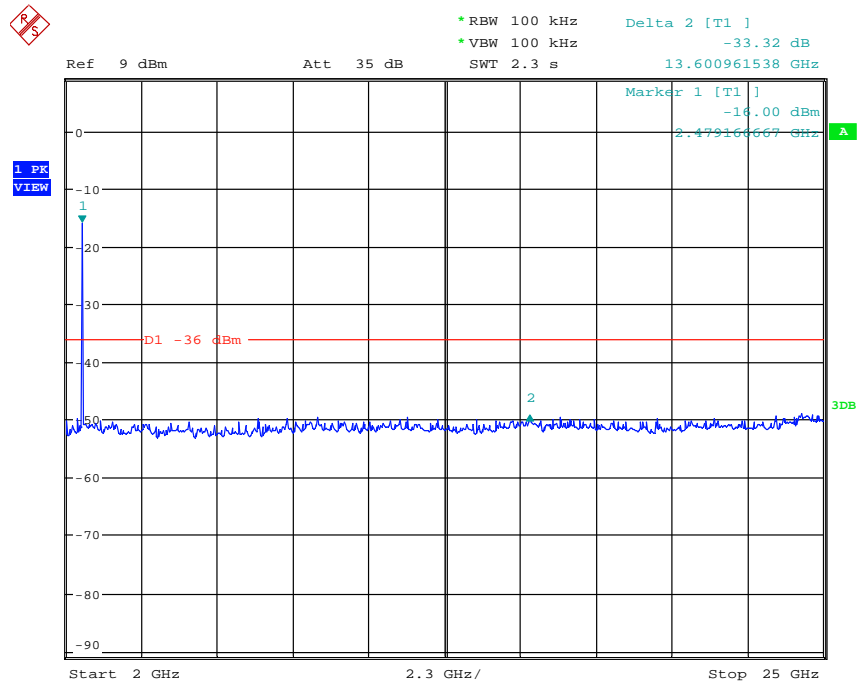
Date: 14.AUG.2015 13:06:38

Plot B2



Date: 14.AUG.2015 13:02:11

Plot C1



Date: 14.AUG.2015 13:05:13

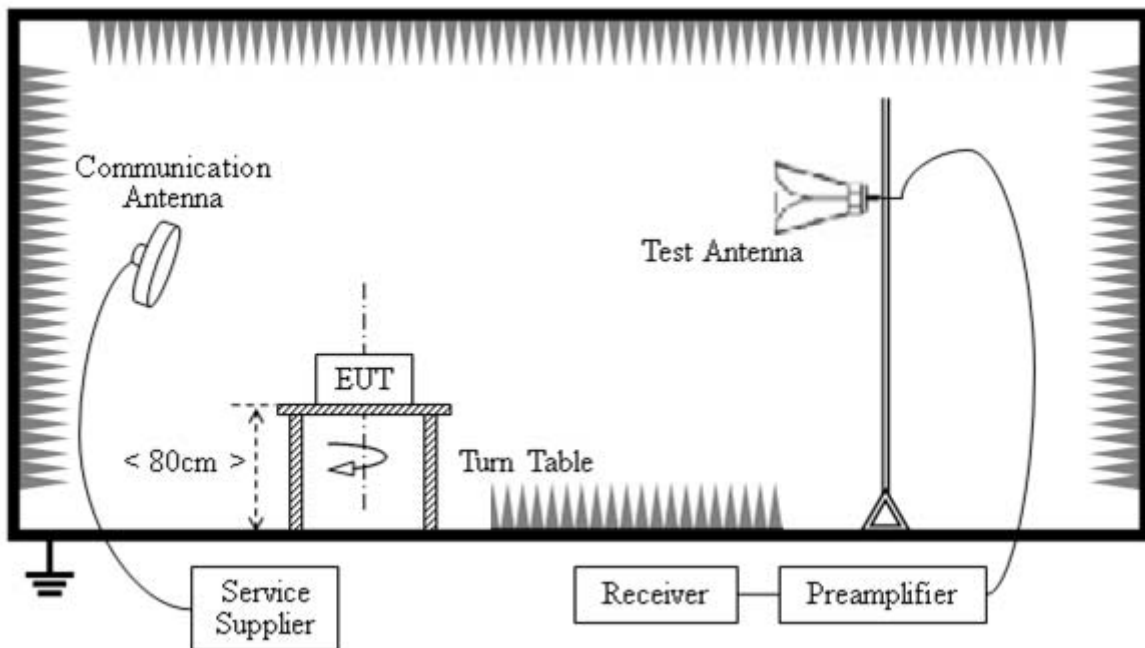
Plot C2

6.7 Band Edge

6.7.1 Requirement

According to FCC section 15.247(c), in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

6.7.2 Test Setup



The Bluetooth Module of the EUT is powered by DC 12V car battery. The Module is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading. During the measurement, the Bluetooth Module is activated and controlled by the Bluetooth Service Supplier (SS) via a Common Antenna, and is set to operate under hopping-on test mode transmitting 339 bytes DH5 packages at maximum power.

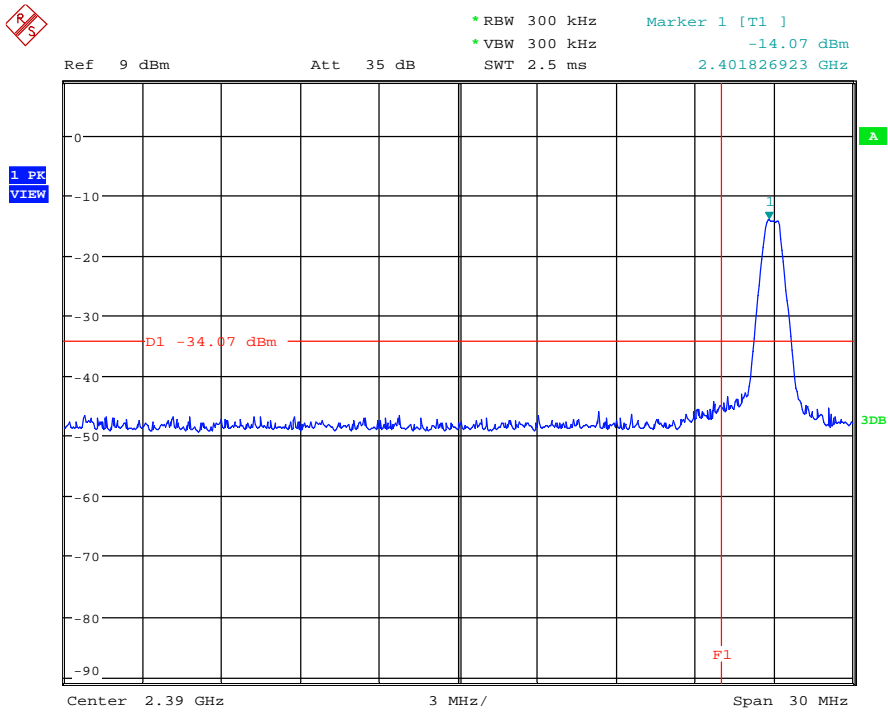
For the Test Antenna:

Horn Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

6.7.3 Test Result

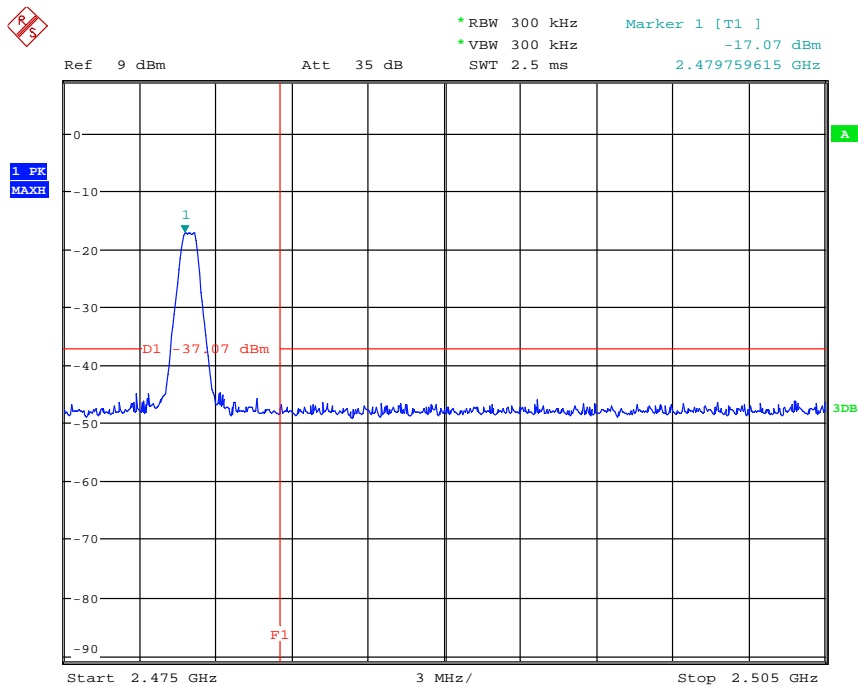
A. Conducted Band Edge:

Both hopping-on mode and hopping-off mode had been pre-tested and only the worst case (hopping-off mode) is recorded in the test report.



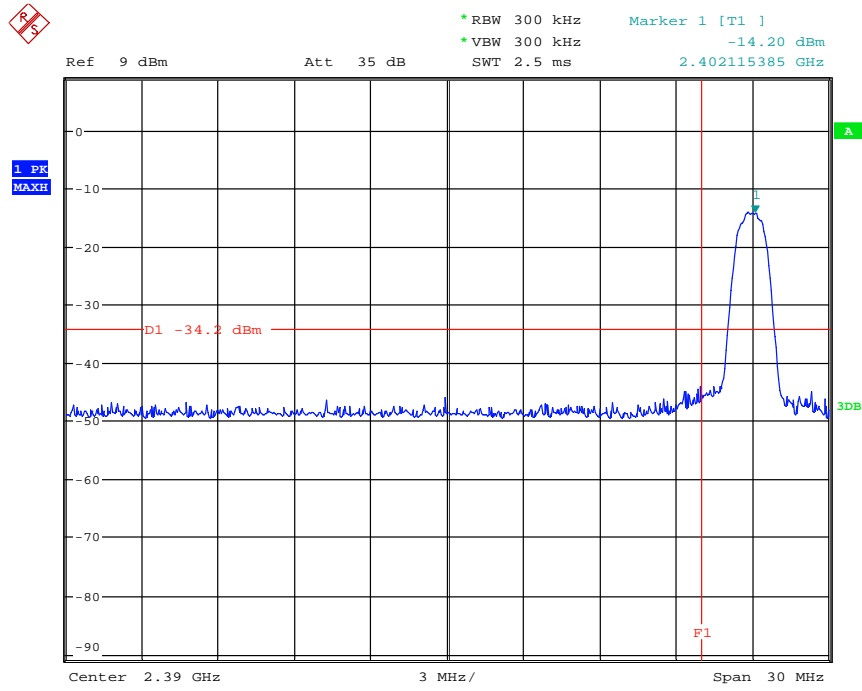
Date: 14.AUG.2015 13:15:29

(Plot A: GFSK Channel = 0)



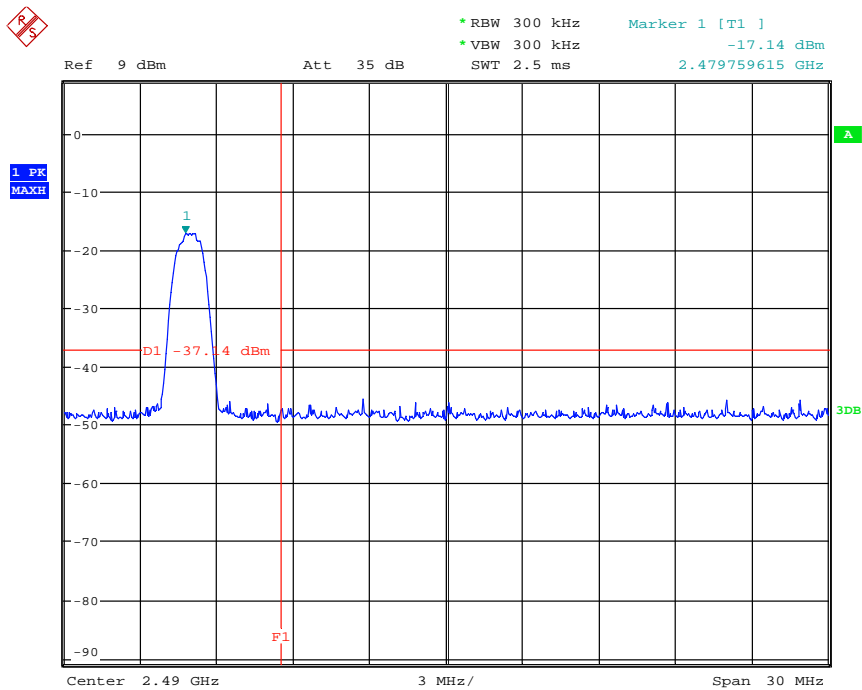
Date: 14.AUG.2015 13:17:43

(Plot B: GFSK Channel = 78)



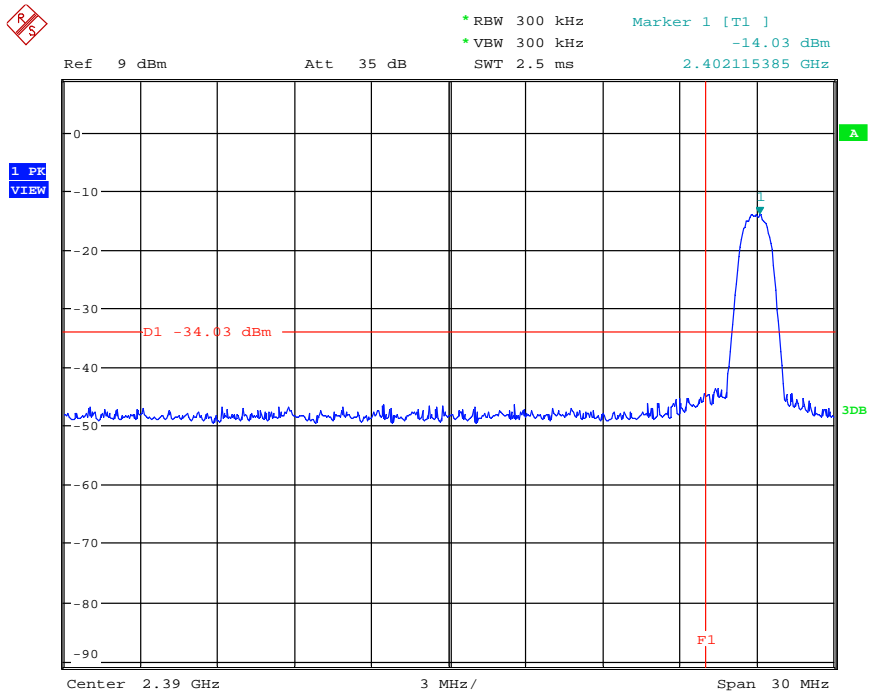
Date: 14.AUG.2015 13:14:11

(Plot C: $\pi/4$ -DQPSK Channel = 0)



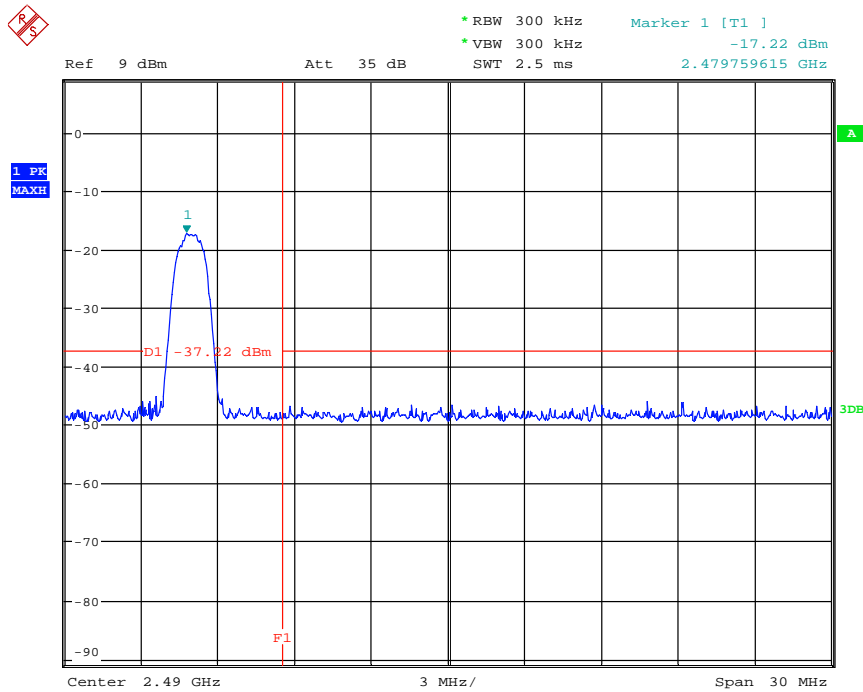
Date: 14.AUG.2015 13:18:29

(Plot D: $\pi/4$ -DQPSK Channel = 78)



Date: 14.AUG.2015 13:13:05

(Plot E: 8DPSK Channel = 0)



Date: 14.AUG.2015 13:19:11

(Plot F: 8DPSK Channel = 78)

6.8 Conducted Emission

6.8.1 Requirement

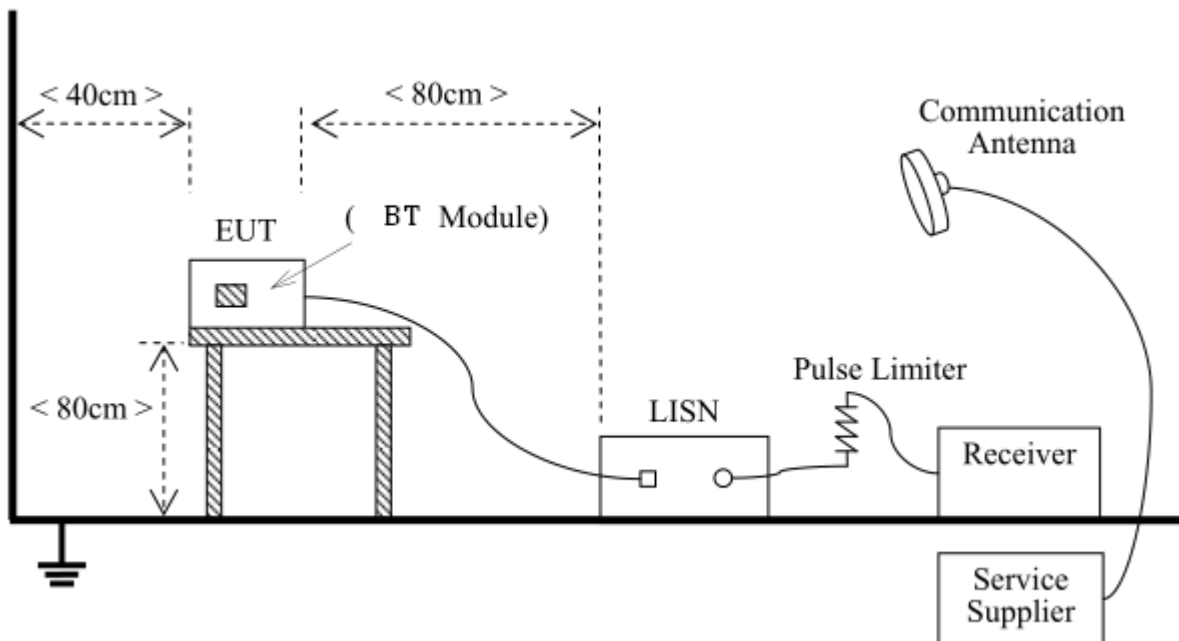
According to FCC section 15.207 and RSS-GEN 7.2.4, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network(LISN).

Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

- (a) The lower limit shall apply at the band edges.
- (b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

6.8.2 Test Description



The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.4:2009

6.8.3 Test result

N/A, this device is powered by DC 12V car battery.

6.9 Radiated Emission

6.9.1 Requirement

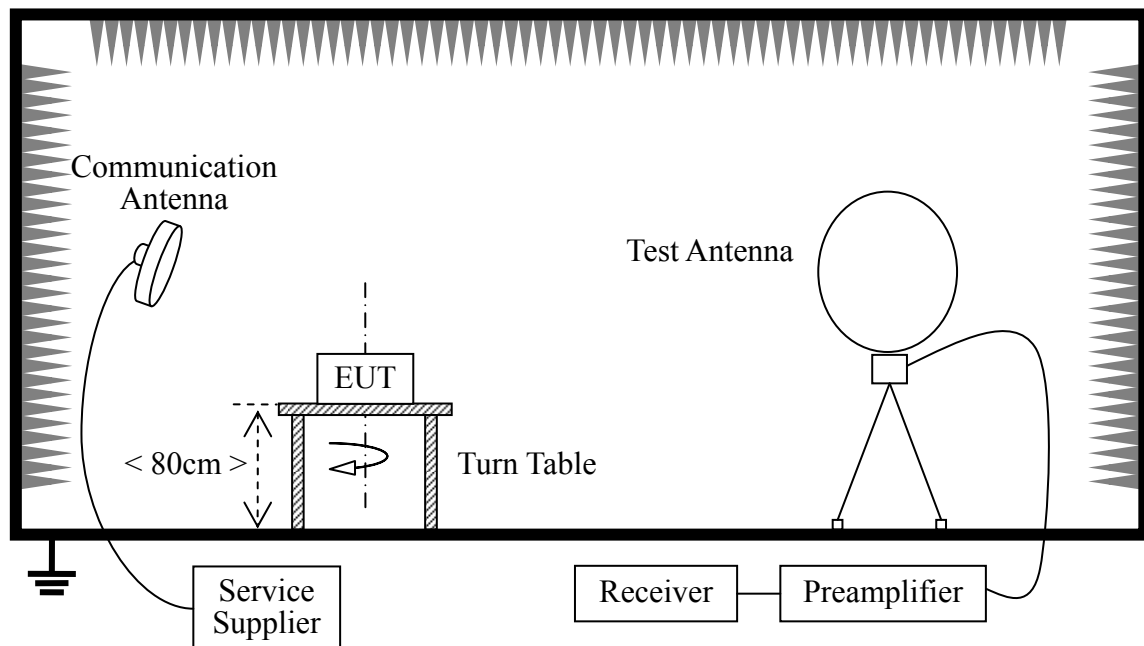
According to FCC section 15.247(c), radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

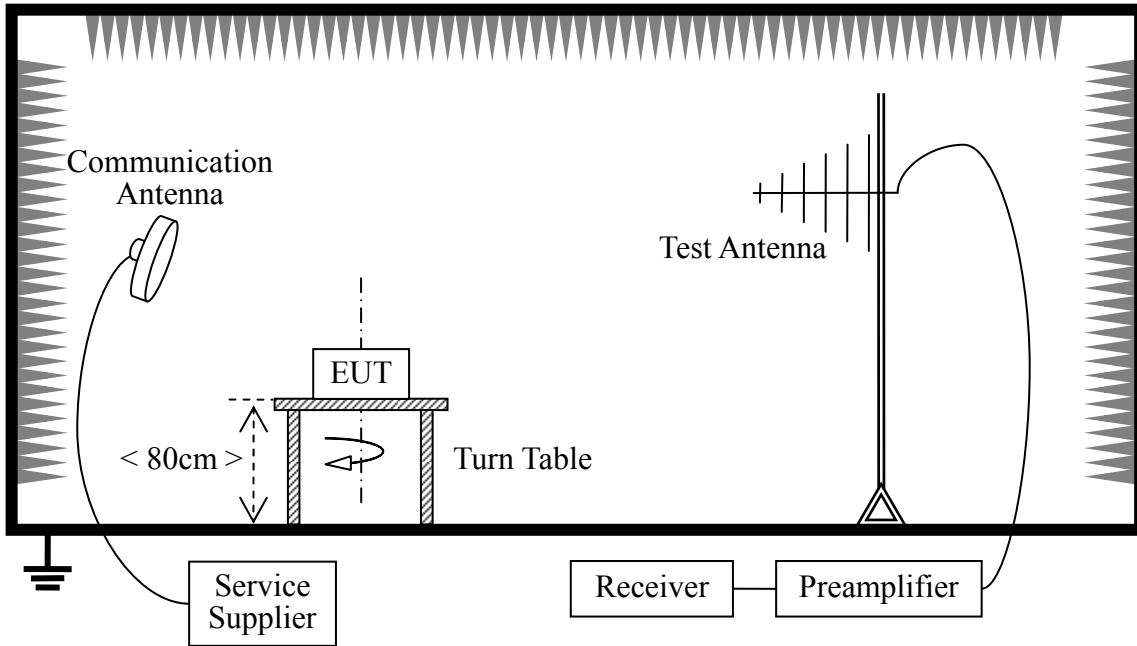
Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)	Limit($\text{dB}\mu\text{V/m}$)	Detector
0.009-0.490	2400/F(kHz)	300	/	/
0.490-1.705	24000/F(kHz)	30	/	/
1.705-30	30	30	/	/
30 - 88	100	3	40	QP
88 - 216	150	3	43.5	QP
216 - 960	200	3	46	QP
960 - 1000	500	3	54	QP
Above 1000	500	3	54	AV

In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table)

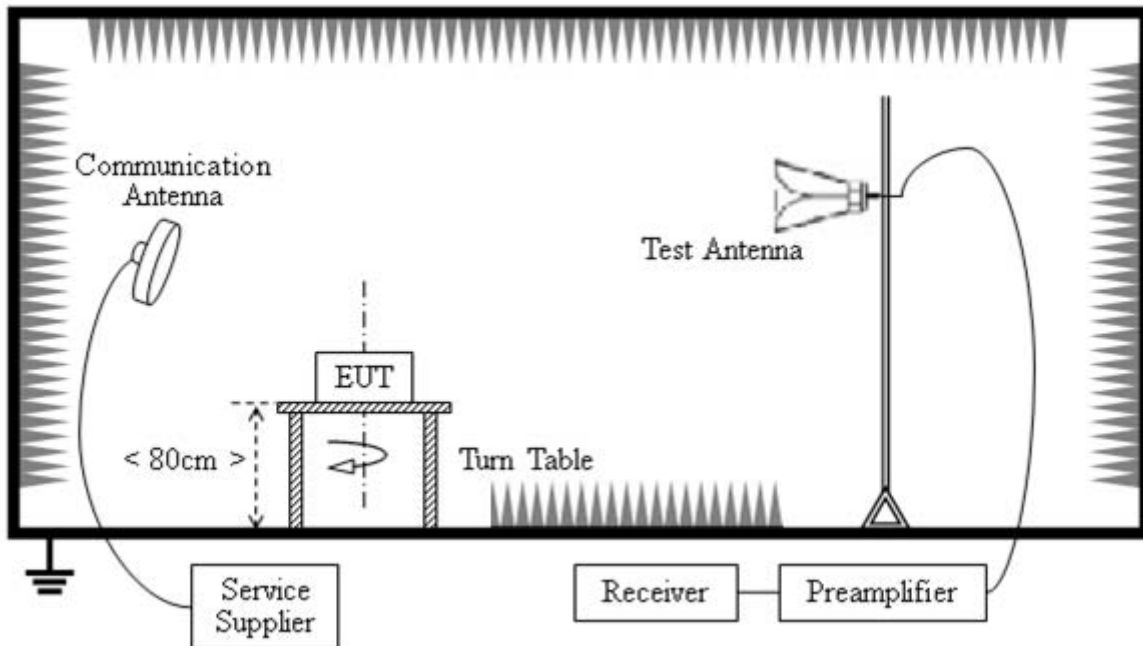
6.9.2 Test Setup



Radiated Emissions below 30mhz



Radiated Emissions 30-1000MHz



Radiated Emissions above 1000MHz

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.4 (2009). The EUT was set-up on insulator 80cm above the Ground Plane. The set-up and test methods were according to ANSI C63.4.

The Bluetooth Module of the EUT is powered by DC 12V car battery. The Module is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading. During the measurement, the Bluetooth Module is activated and controlled by

the Bluetooth Service Supplier (SS) via a Common Antenna, and is set to operate under hopping-on test mode transmitting 339 bytes DH5 packages at maximum power.

For the Test Antenna: In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength, the azimuth range of turntable was 0° to 360°, the receive antenna has two polarizations horizontal and vertical. When doing measurements above 1GHz, the EUT was placed within the 3dB beam width range of the horn antenna, and the EUT was tested in 3 orthogonal positions as recommended in ANSI C63.4 for Radiated Emissions and the worst-case data was presented.

6.9.3 Test Result

A. Test Result for 9 kHz ~ 30 MHz:

Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
--	--	10	--	See Note

Note:

- The amplitude of spurious emissions that are attenuated by more than 10dB below the permissible value has no need to be reported.*
- Distance extrapolation factor = 40 log (specific distance / test distance) (dB);*
- Limit line = specific limits (dBuV) + distance extrapolation factor.*

B. Test Result for 30 MHz ~ 10th Harmonic

Channel 0 (2402MHz)

Frequency (MHz)	Level (dBuV)	Limit Line (dBuV)	Margin (dB)	Antenna Polarization	Result
119.86	22.17	46	-23.83	Horizontal	PASS
258.91	26.47	46	-19.53	Horizontal	PASS
510.69	28.43	46	-17.57	Horizontal	PASS
2402.12	47.02	54	-6.98	Horizontal	PASS
2898.19	13.17	54	-40.83	Horizontal	PASS
5026.67	15.93	54	-38.07	Horizontal	PASS
119.86	26.59	46	-19.41	Vertical	PASS
256.52	29.73	46	-16.27	Vertical	PASS
319.94	31.20	46	-14.80	Vertical	PASS
2402.12	47.47	54	-6.53	Vertical	PASS
2897.06	13.90	54	-40.10	Vertical	PASS
5088.64	18.06	54	-35.94	Vertical	PASS

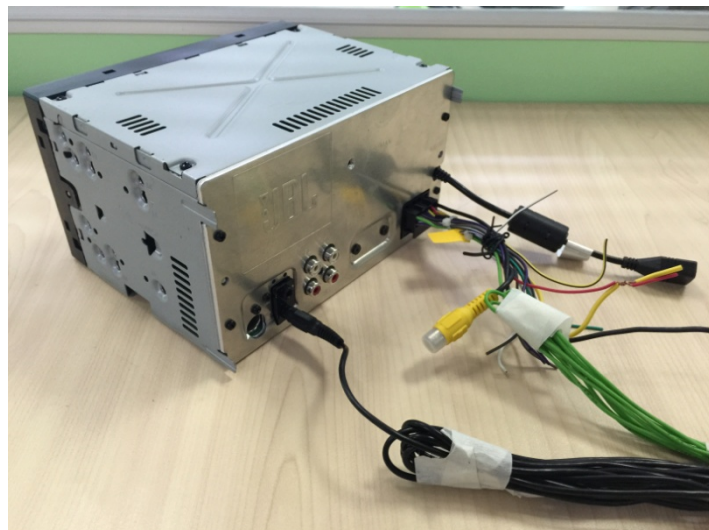
Channel 39 (2441MHz)

Frequency (MHz)	Level (dBuV)	Limit Line (dBuV)	Margin (dB)	Antenna Polarization	Result
119.86	22.11	46	-23.89	Horizontal	PASS
283.98	26.26	46	-19.74	Horizontal	PASS
406.09	27.58	46	-18.42	Horizontal	PASS
2440.75	47.12	54	-6.88	Horizontal	PASS
2887.51	12.87	54	-41.13	Horizontal	PASS
4738.50	16.06	54	-37.94	Horizontal	PASS
119.86	26.24	46	-19.76	Vertical	PASS
256.52	29.89	46	-16.11	Vertical	PASS
319.94	30.75	46	-15.25	Vertical	PASS
2440.86	47.78	54	-6.22	Vertical	PASS
2860.11	12.86	54	-41.14	Vertical	PASS
5003.29	18.13	54	-35.87	Vertical	PASS

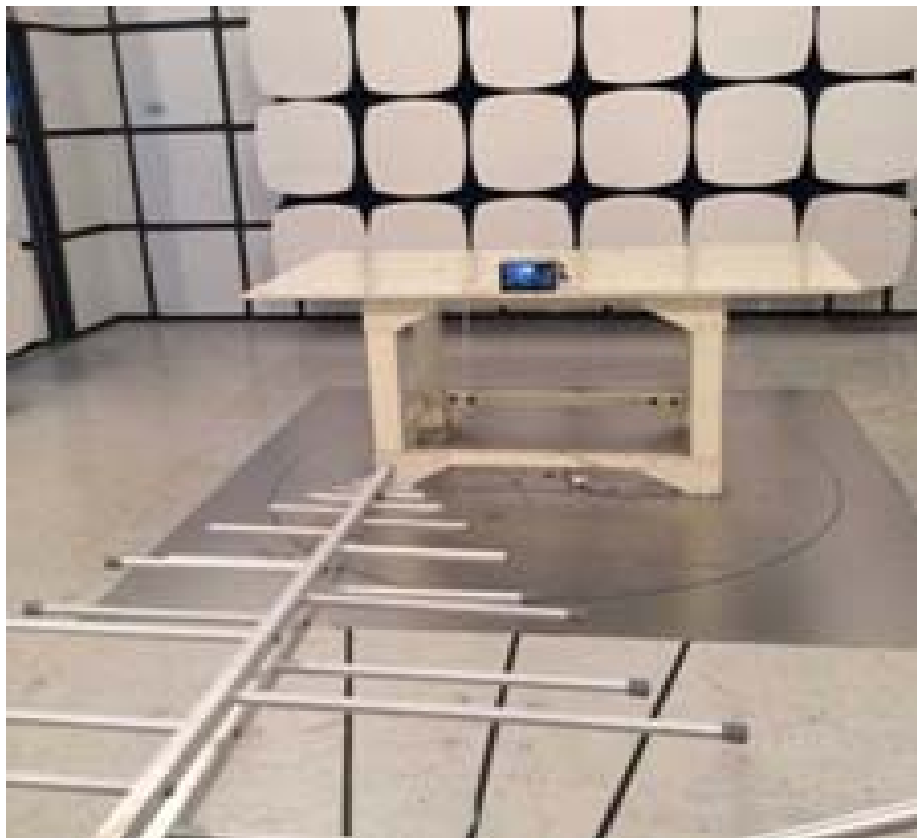
Channel 78 (2480MHz)

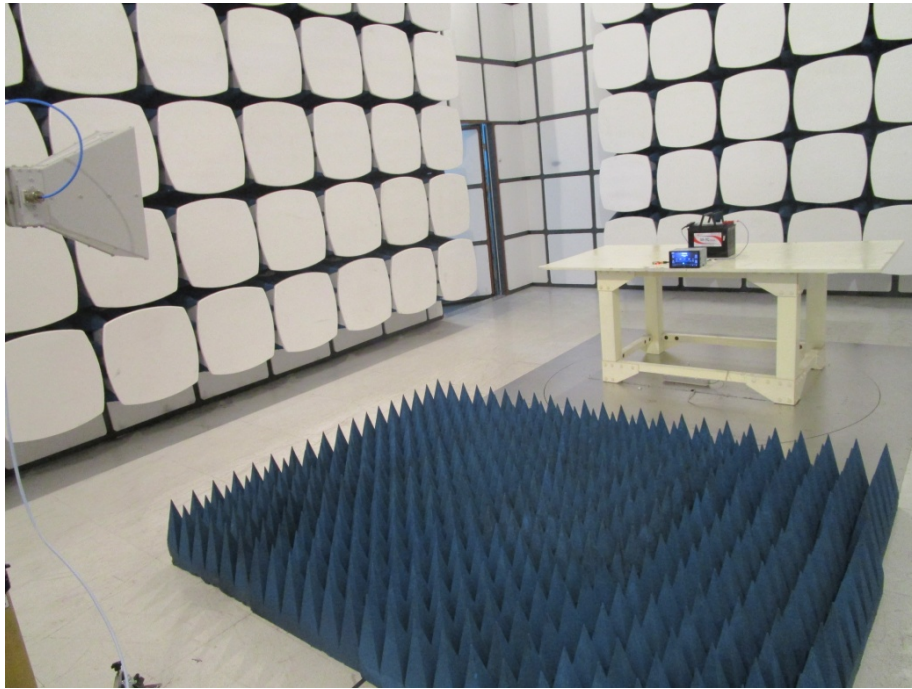
Frequency (MHz)	Level (dBuV)	Limit Line (dBuV)	Margin (dB)	Antenna Polarization	Result
119.86	23.79	46	-22.21	Horizontal	PASS
270.44	25.63	46	-20.37	Horizontal	PASS
416.63	29.45	46	-16.55	Horizontal	PASS
2480.68	47.49	54	-6.51	Horizontal	PASS
3098.71	16.26	54	-37.74	Horizontal	PASS
5769.02	19.21	54	-34.79	Horizontal	PASS
119.86	27.69	46	-18.31	Vertical	PASS
256.52	27.88	46	-18.12	Vertical	PASS
674.17	31.36	46	-14.64	Vertical	PASS
2480.55	48.91	54	-5.09	Vertical	PASS
4744.36	18.56	54	-35.44	Vertical	PASS
5583.31	20.01	54	-33.99	Vertical	PASS

Annex A Photos of the EUT



Annex B Photos of Test Setup





**** END OF REPORT ****