

FCC RF Test Report

APPLICANT : HTC Corporation
EQUIPMENT : Smartphone
MODEL NAME : PL80110
FCC ID : NM8PL80110
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Oct. 26, 2012 and completely tested on Dec. 13, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:



Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR2O2633B	Rev. 01	Initial issue of report	Dec. 21, 2012

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	RSS-210 A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)(1)	RSS-210 A8.1(b)	Peak Output Power	$\leq 30\text{dBm}$	Pass	-
3.5	15.247(e)	RSS-210 A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.4	15.247(d)	RSS-210 A8.5	Conducted Band Edges and Spurious Emission	$\leq 20\text{dBc}$	Pass	-
3.5	15.247(d)	RSS-210 A8.5	Radiated Band Edges and Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.46 dB at 47.010 MHz
3.6	15.207	RSS-210 Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 4.70 dB at 13.558 MHz
3.7	15.203 & 15.247(b)	RSS-210 A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

HTC Corporation

No. 23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan

1.2 Manufacturer

HTC Corporation

No. 23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Smartphone
Model Name	PL80110
FCC ID	NM8PL80110
Sample 1	EUT with LCD Panel 1, Camera Front 1, and 2nd Camera 1
Sample 2	EUT with LCD Panel 2, Camera Front 2, and 2nd Camera 2
EUT supports Radios application	CDMA/EV-DO / LTE WLAN 11abgn / Bluetooth 3.0/4.0 / NFC
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx/Rx Frequency Range	2402 MHz ~ 2480 MHz
Number of Channels	40
Carrier Frequency of Each Channel	40 Channel(37 hopping + 3 advertising channel)
Maximum Output Power to Antenna	2.21 dBm (0.0017 W)
Antenna Type	PIFA Antenna type with gain -0.20 dBi
Type of Modulation	GFSK

1.5 Testing Site

Test Site	SPORTON INTERNATIONAL INC.			
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978			
Test Site No.	Sporton Site No.			FCC/IC Registration No.
	TH02-HY	CO05-HY	03CH05-HY	722060/4086B-1

1.6 Applied Standards

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

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02
- ♦ ANSI C63.4-2003 and ANSI C63.10-2009
- ♦ IC RSS-210 Issue 8
- ♦ IC RSS-Gen Issue 3
- ♦ NOTICE 2012-DRS0126

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.
3. Per the section 2.2.3 of Notice of 2012-DRS0126, "Receivers Excluded from Industry Canada Requirements", only radiocommunication receivers operating in stand-alone mode within the band 30-960 MHz and scanner receivers are subject to Industry Canada requirements.

2 Test Configuration of Equipment Under Test

2.1 Descriptions of Test Mode

The RF output power was recorded in the following table:

Channel	Frequency	Bluetooth 4.0 – LE RF Output Power
		Data Rate / Modulation
		GFSK
		1Mbps
Ch00	2402MHz	2.21 dBm
Ch19	2440MHz	1.87 dBm
Ch39	2480MHz	1.70 dBm

- a. The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and ANSI C63.10-2009 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, X, Y, Z in three orthogonal panels to determine the final configuration (X plane as worst plane) from all possible combinations.
- b. AC power line Conducted Emission was tested under maximum output power.

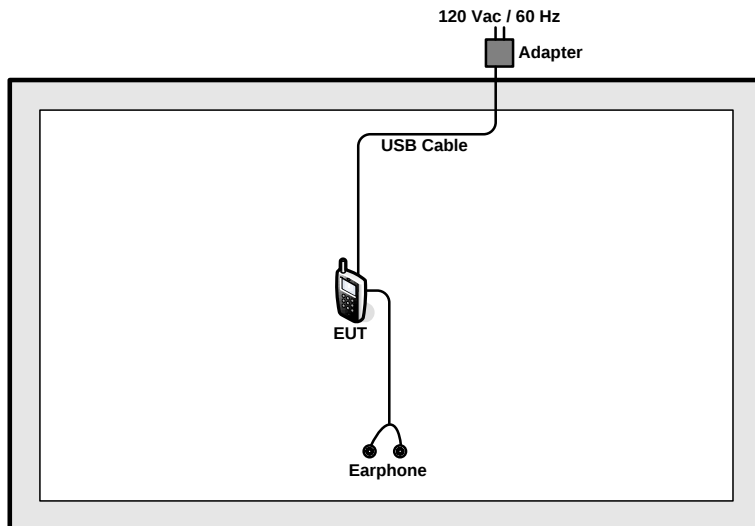
2.2 Test Mode

The following summary table is showing all test modes to demonstrate in compliance with the standard.

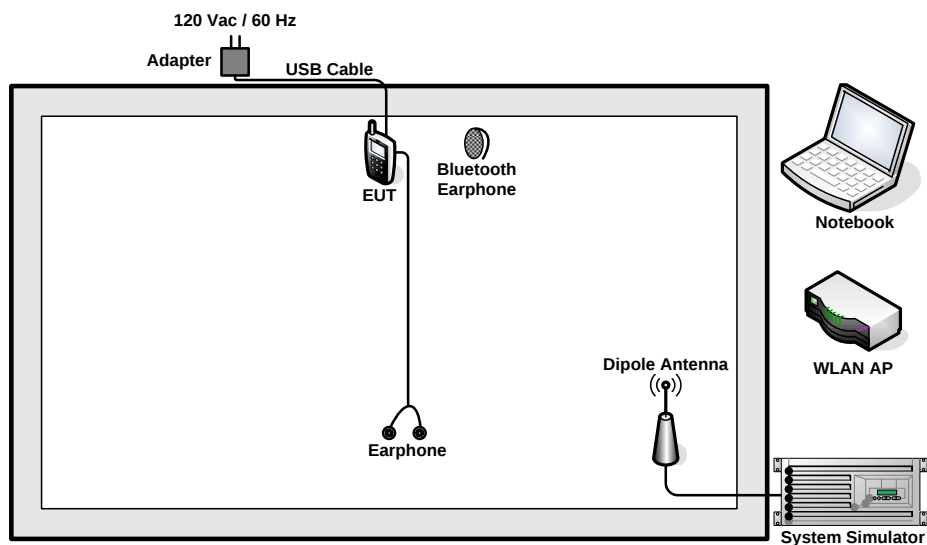
Summary table of Test Cases	
Test Item	Data Rate / Modulation
	Bluetooth 4.0 – LE / GFSK
Conducted TCs	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps
Radiated TCs	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps for Sample 1 Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps for Sample 1 Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps for Sample 1 Mode 4: Bluetooth Tx CH39_2480 MHz_1Mbps for Sample 2
AC Conducted Emission	Mode 1 :CDMA2000 BC0 Idle + Bluetooth Link + WLAN (2.4G) Link + NFC + Earphone + Battery 1 + USB Cable 1 (Charging from Adapter 1) for Sample 1 Mode 2 :CDMA2000 BC0 Idle + Bluetooth Link + WLAN (5G) Link + NFC + Earphone + Battery 1 + USB Cable 1 (Charging from Adapter 1) for Sample 1 Mode 3 :CDMA2000 BC0 Idle + Bluetooth Link + WLAN (2.4G) Link + NFC + Earphone + Battery 1 + USB Cable 1 (Charging from Adapter 1) for Sample 2
Remark: 1. The worst case of conducted emission is mode 1; only the test data of it was reported. 2. For Radiated TCs, The tests were performance with Adapter 1, Earphone, Battery 2, and USB Cable 2.	

2.3 Connection Diagram of Test System

<Bluetooth 4.0 – LE Tx Mode>



<AC Conducted Emission Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Agilent	E5515C	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Latitude E6320	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
5.	SD Card	SanDisk	N/A	N/A	N/A	N/A

2.5 Description of RF Function Operation Test Setup

For Bluetooth function, programmed RF utility, "Remote 433x controller(P2.01)" installed in the notebook make the EUT provides functions like channel selection and power level for continuous transmitting and receiving signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Example :

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\
 &= 4.2 + 10 = 14.2 \text{ (dB)}
 \end{aligned}$$

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

The minimum 6 dB bandwidth shall be at least 500 KHz.

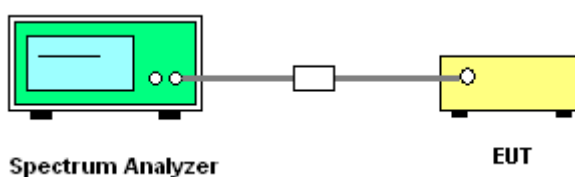
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 KHz.
5. Measure and record the results in the test report.

3.1.4 Test Setup

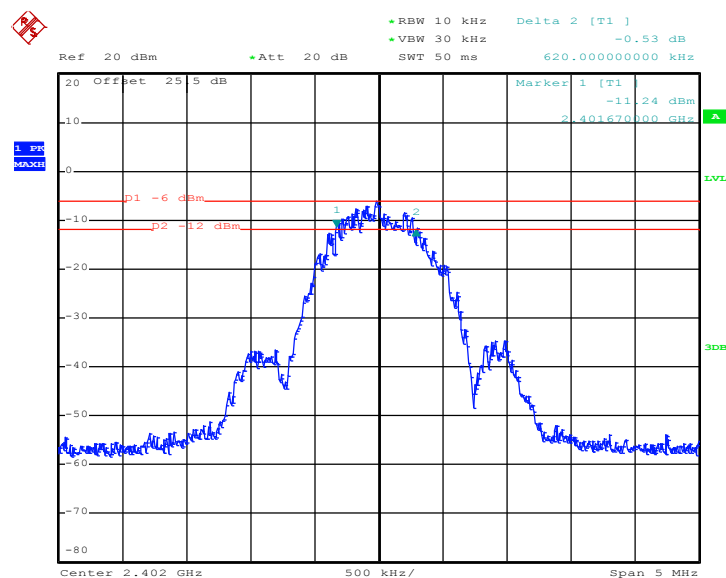


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~26℃
Test Engineer :	Bill Kuo	Relative Humidity :	58~61%

Channel	Frequency (MHz)	6dB Bandwidth (MHz)
00	2402	0.62
19	2440	0.62
39	2480	0.62

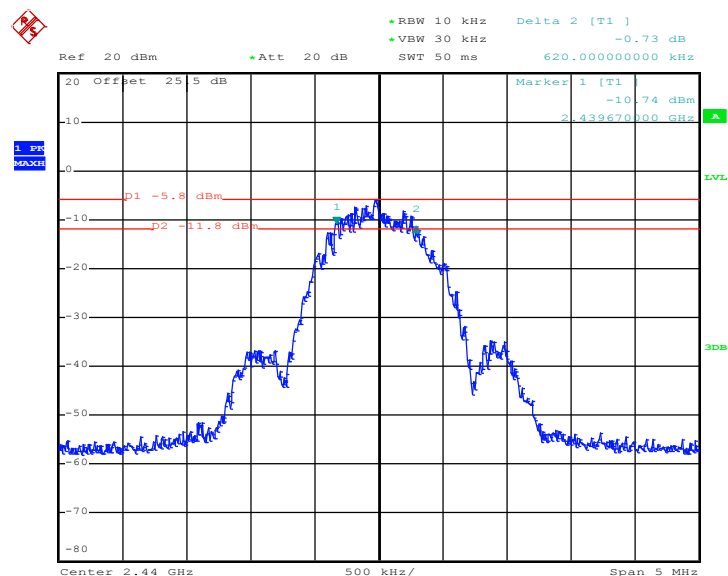
6 dB Bandwidth Plot on Channel 00



Date: 8.NOV.2012 17:24:13

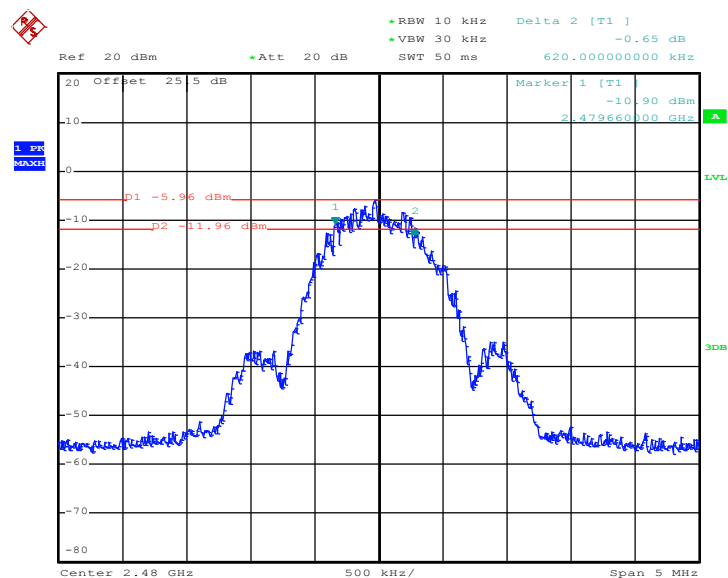


6 dB Bandwidth Plot on Channel 19



Date: 8.NOV.2012 17:26:41

6 dB Bandwidth Plot on Channel 39



Date: 8.NOV.2012 17:29:36

3.2 Peak Output Power Measurement

3.2.1 Limit of Peak Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

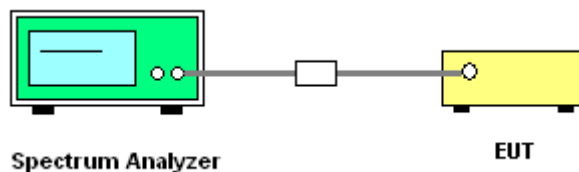
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

3.2.4 Test Setup

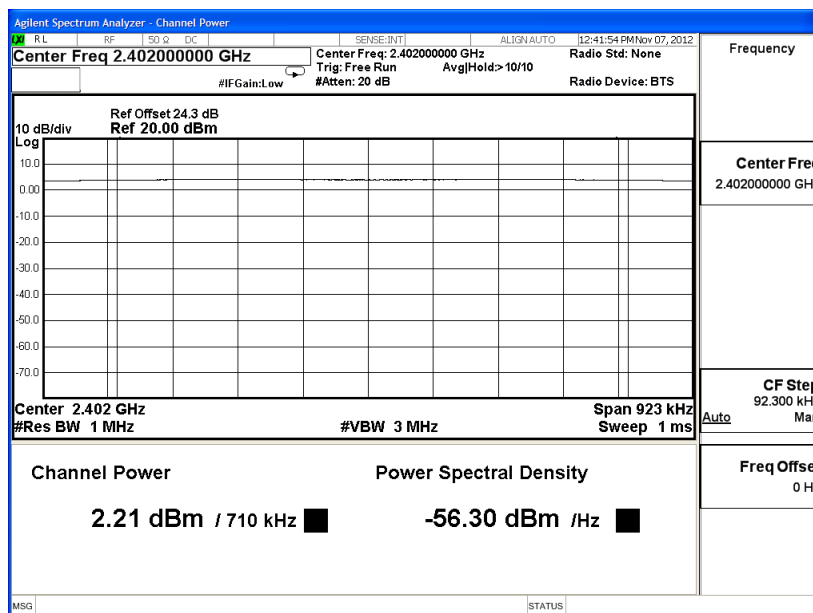


3.2.5 Test Result of Peak Output Power

Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~26℃
Test Engineer :	Bill Kuo	Relative Humidity :	58~61%

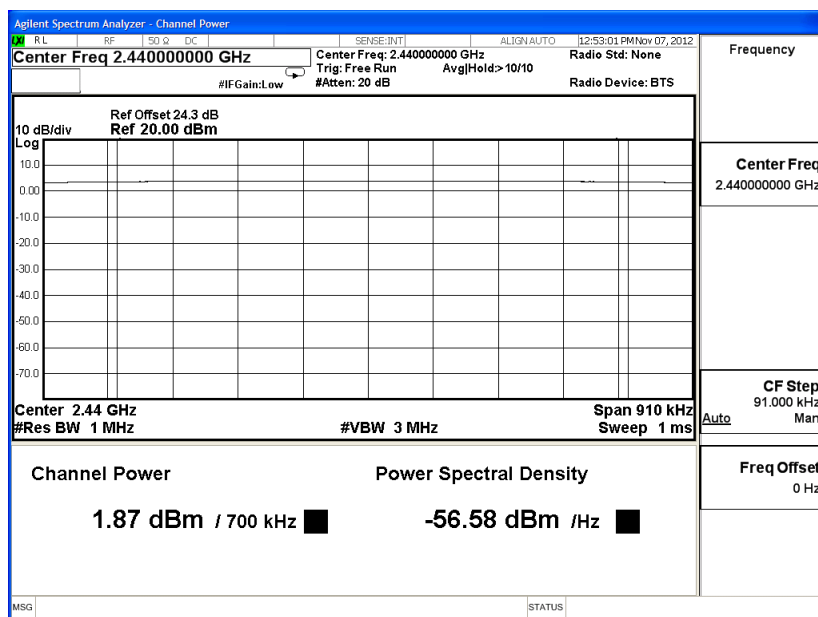
Channel	Frequency (MHz)	RF Power (dBm)		
		GFSK	Max. Limits (dBm)	Pass/Fail
		1 Mbps		
00	2402	2.21	30.00	Pass
19	2440	1.87	30.00	Pass
39	2480	1.70	30.00	Pass

Peak Output Power Plot on Channel 00

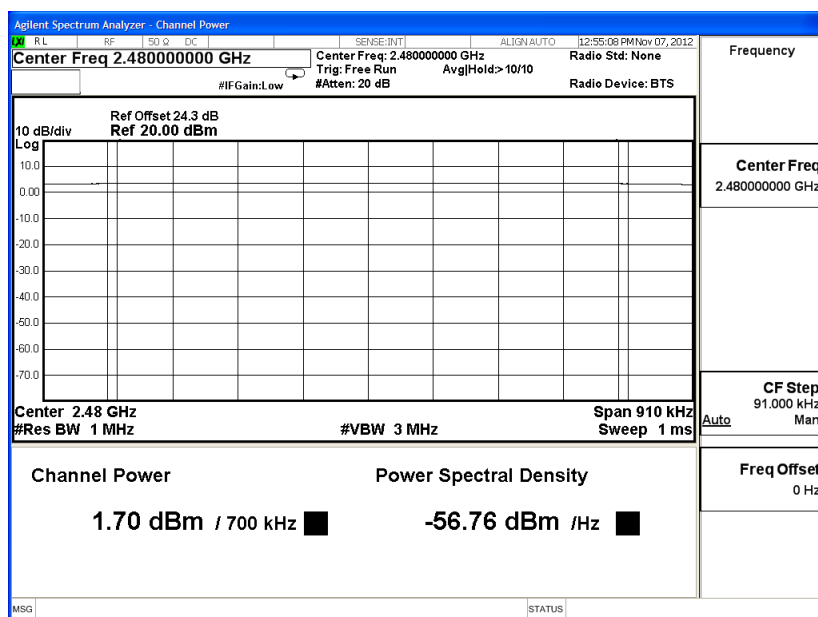




Peak Output Power Plot on Channel 19



Peak Output Power Plot on Channel 39



3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3KHz band at any time interval of continuous transmission.

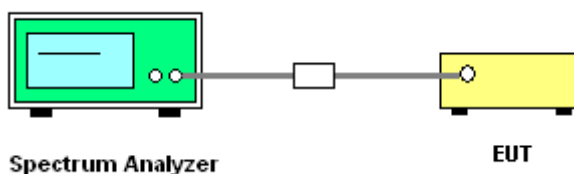
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The testing follows Measurement Procedure 9.1 Option 1 of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.
7. The Measured power density (dBm)/ 100KHz is a reference level and used as 20dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~26℃
Test Engineer :	Bill Kuo	Relative Humidity :	58~61%

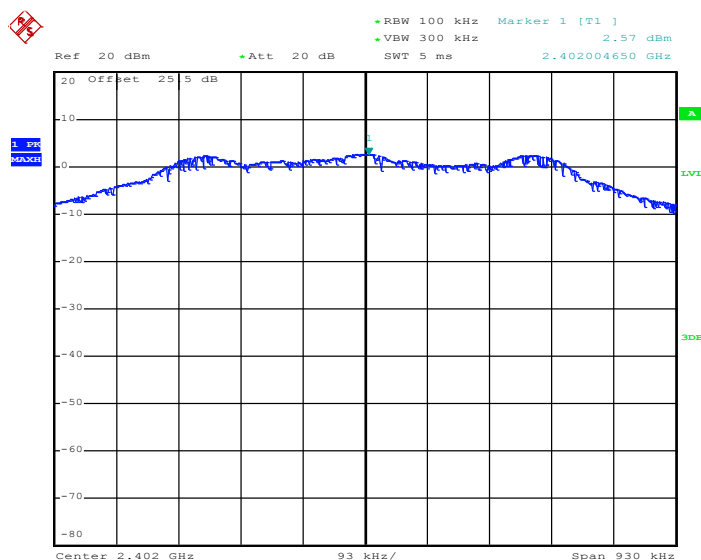
Channel	Frequency (MHz)	Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
00	2402	2.57	-10.92	8	Pass
19	2440	2.74	-10.72	8	Pass
39	2480	2.64	-10.88	8	Pass

Note:

1. Measured power density (dBm) has offset with cable loss.
2. The Measured power density (dBm)/ 100KHz is reference level and used as 20dBc down for Conducted Band Edges and Conducted Spurious Emission limit line.

3.3.6 Test Result of Power Spectral Density Plots (100kHz)

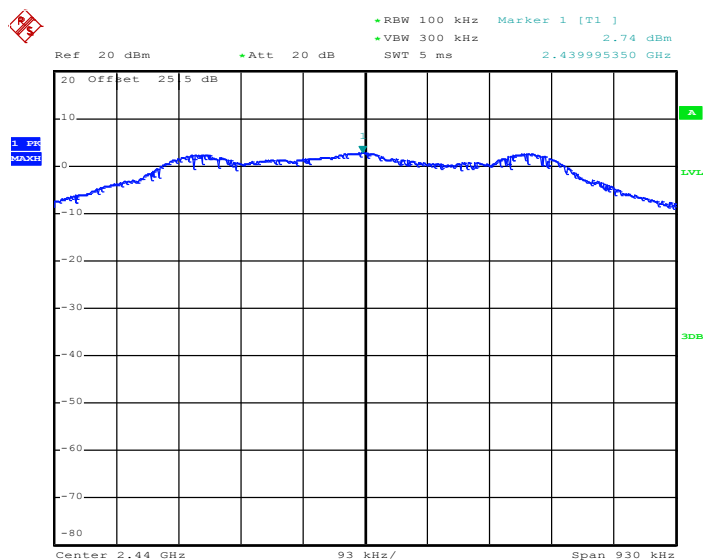
PSD 100kHz Plot on Channel 00



Date: 8.NOV.2012 17:24:40

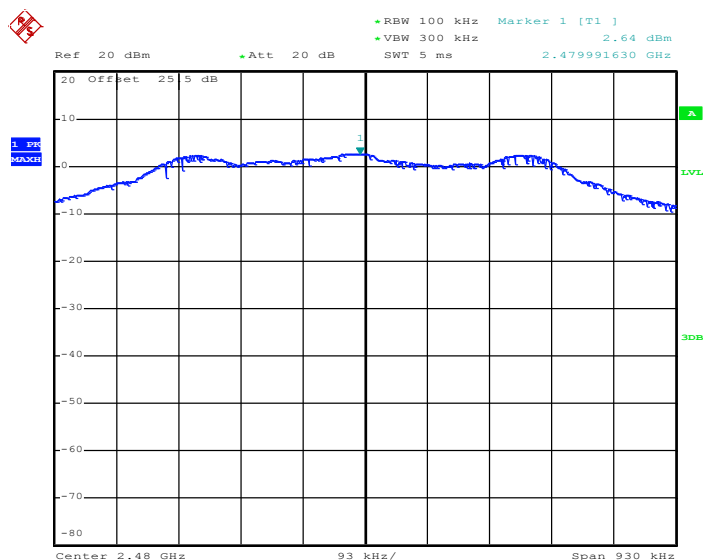


PSD 100kHz Plot on Channel 19



Date: 8.NOV.2012 17:27:08

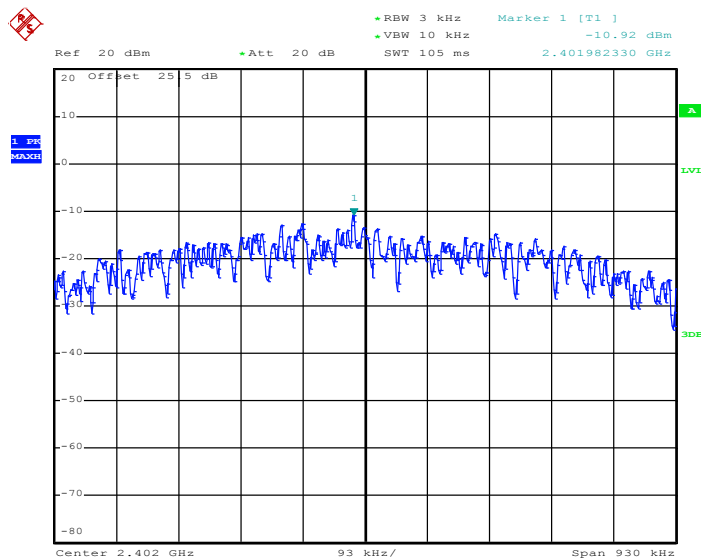
PSD 100kHz Plot on Channel 39



Date: 8.NOV.2012 17:30:03

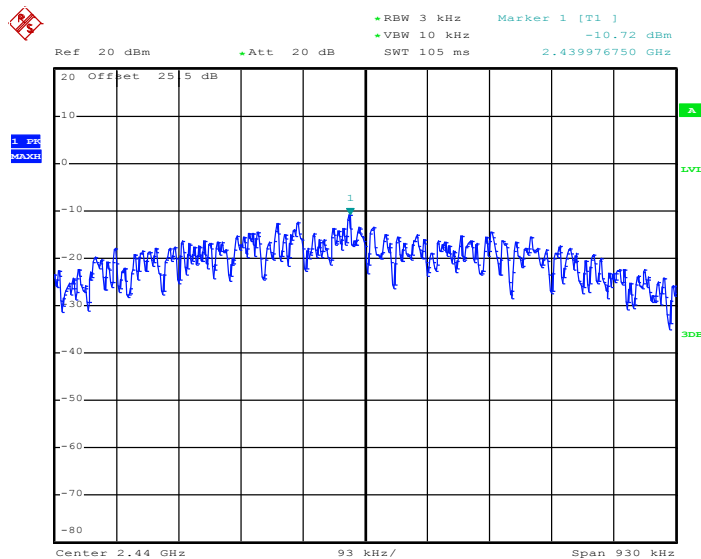
3.3.7 Test Result of Power Spectral Density Plots (3kHz)

PSD 3kHz Plot on Channel 00



Date: 8.NOV.2012 17:24:31

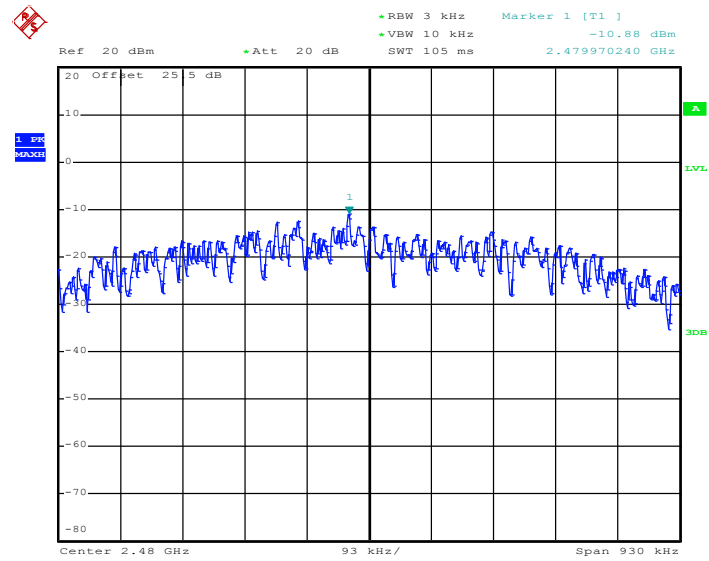
PSD 3kHz Plot on Channel 19



Date: 8.NOV.2012 17:26:59



PSD 3kHz Plot on Channel 39



Date: 8.NOV.2012 17:29:54

3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

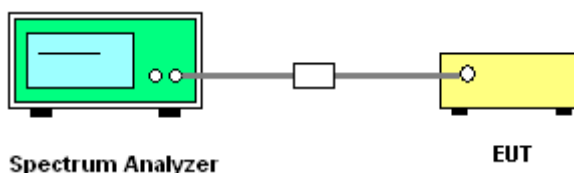
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedure

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 KHz, VBW=300 KHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

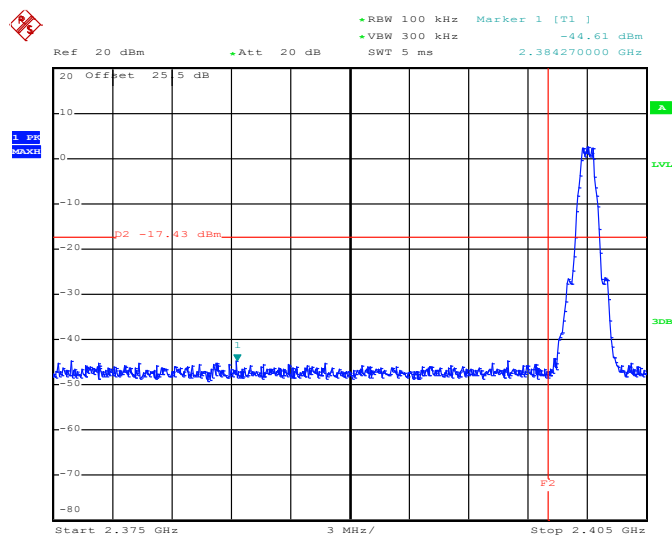
3.4.4 Test Setup



3.4.5 Test Result of Conducted Band Edges

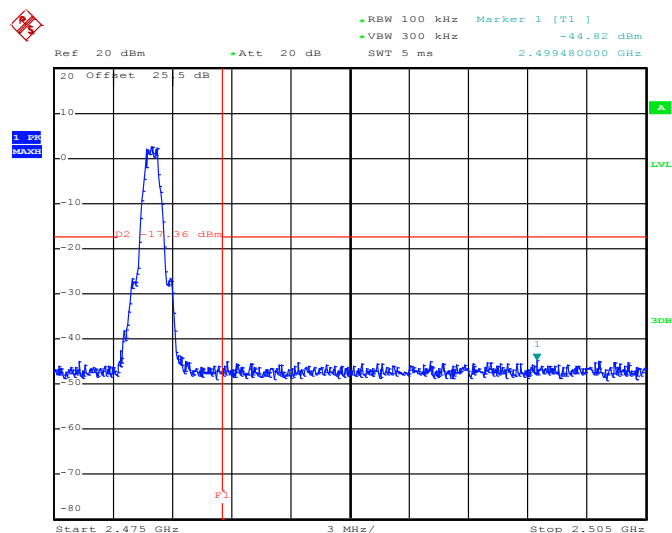
Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~26℃
Test Channel :	00 and 39	Relative Humidity :	58~61%
		Test Engineer :	Bill Kuo

Low Band Edge Plot on Channel 00



Date: 8.NOV.2012 17:24:56

High Band Edge Plot on Channel 39

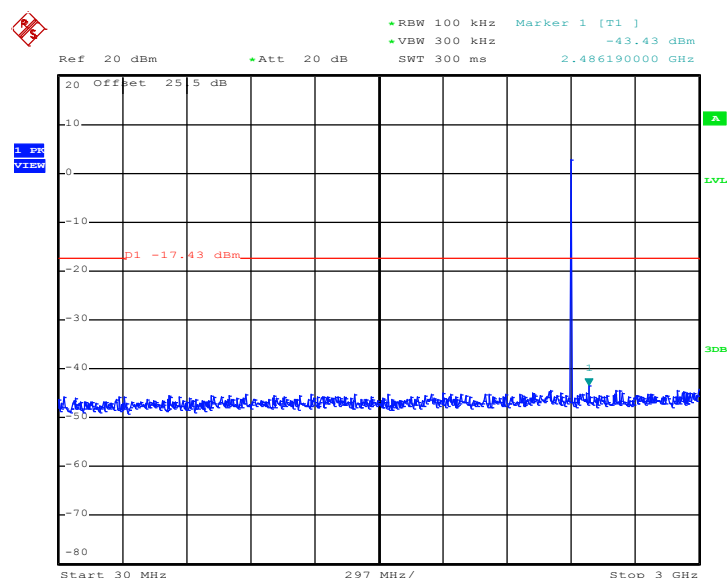


Date: 8.NOV.2012 17:30:19

3.4.6 Test Result of Conducted Spurious Emission

Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~26℃
Test Channel :	00	Relative Humidity :	58~61%
		Test Engineer :	Bill Kuo

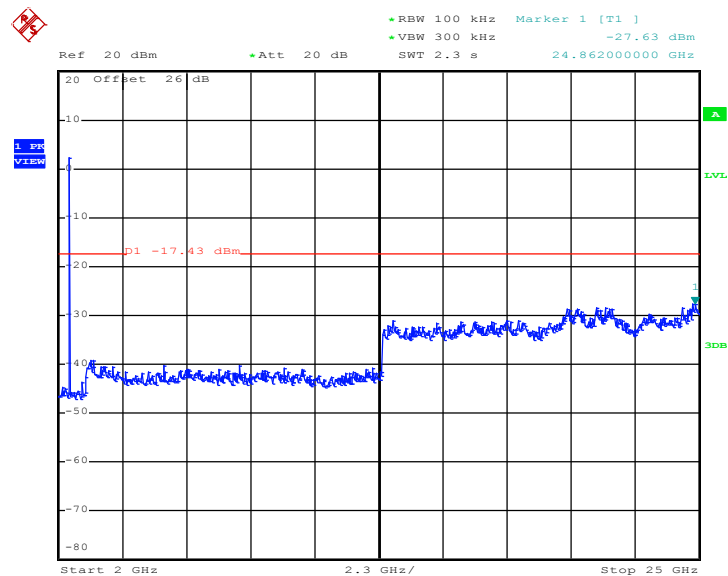
**Conducted Spurious Emission Plot on Bluetooth LE 1Mbps
GFSK Channel 00**



Date: 8.NOV.2012 17:25:13



Conducted Spurious Emission Plot on Bluetooth LE 1Mbps
GFSK Channel 00



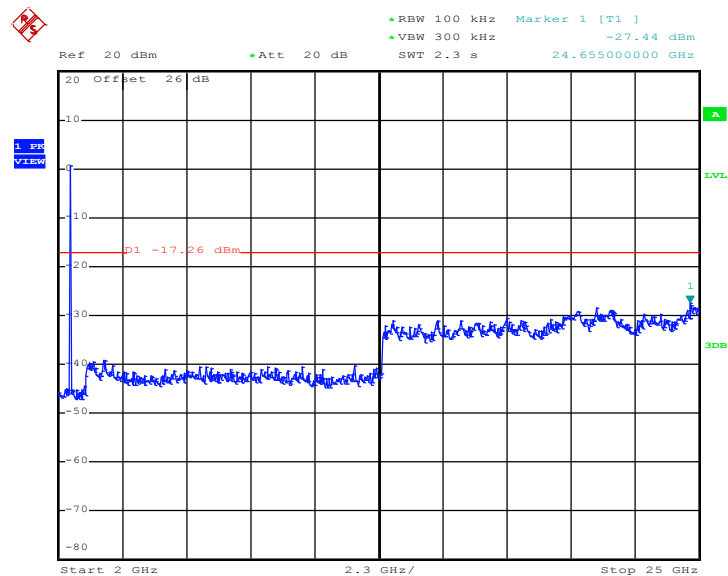
Date: 8.NOV.2012 17:25:31



Conducted Spurious Emission Plot on Bluetooth LE 1Mbps GFSK Channel 19



Conducted Spurious Emission Plot on Bluetooth LE 1Mbps GFSK Channel 19

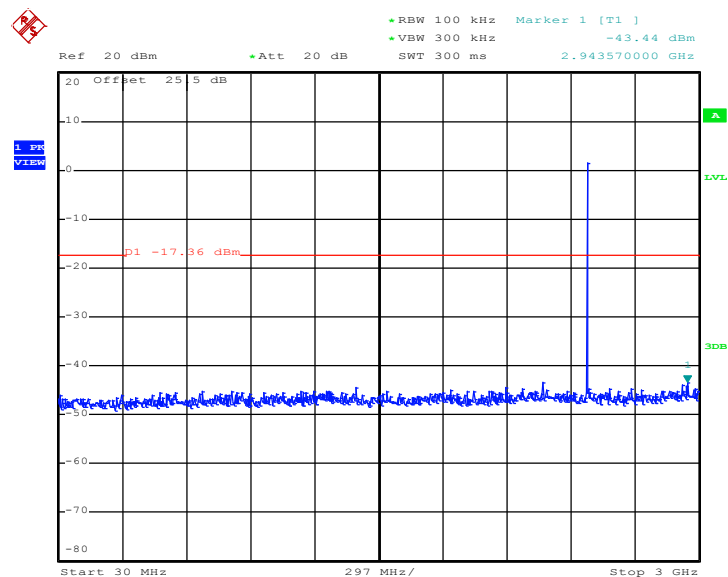


Date: 8.NOV.2012 17:27:46



Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~26°C
Test Channel :	39	Relative Humidity :	58~61%
		Test Engineer :	Bill Kuo

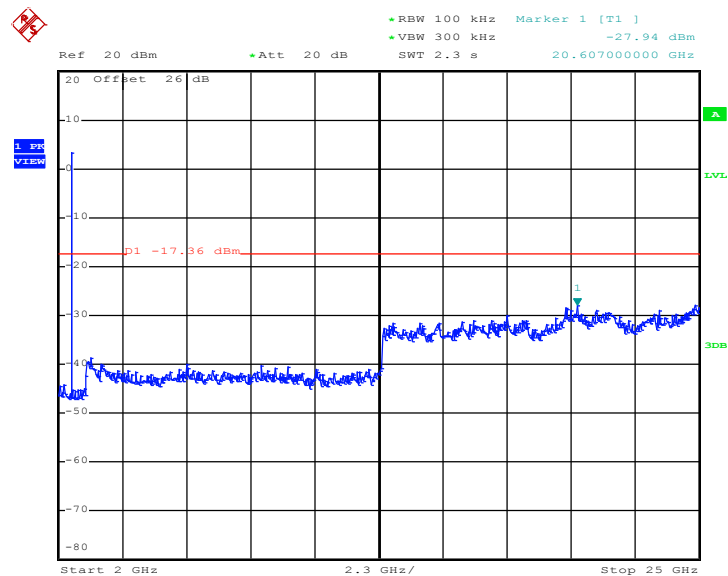
Conducted Spurious Emission Plot on Bluetooth LE 1Mbps
GFSK Channel 39



Date: 8.NOV.2012 17:30:36



Conducted Spurious Emission Plot on Bluetooth LE 1Mbps
GFSK Channel 39



Date: 8.NOV.2012 17:30:54

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 KHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The testing follows the guidelines in ANSI C63.10-2009 and ANSI C63.4-2003 test site requirement.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 KHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.

For average measurement:

 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(us)	1/T(KHz)	VBW Setting
Bluetooth 4.0 - LE	63.26	396.00	2.525	3KHz

Note: For average measurement with duty cycle < 98%, use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.



Marker-Delta method

- (1) Set RBW = 1 MHz, VBW = 3 MHz, peak detector.

Repeat the measurement with an average detector, use RBW = 1MHz

VBW = 10 Hz, when duty cycle is no less than 98 percent.

VBW $\geq 1/T$, when duty cycle is less than 98 percent

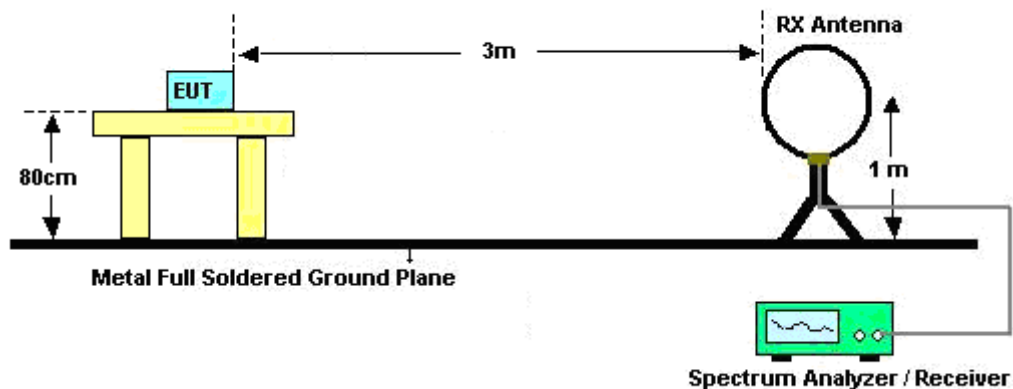
- (2) Set span = 10MHz, that encompasses both the peak of the fundamental emission and the band-edge emission under investigation. Set RBW = 100KHz, 1% of the total span. Set VBW = 100KHz $\geq$ RBW.

- (3) Subtract the delta measured in step (2) from the field strengths measured in step (1).

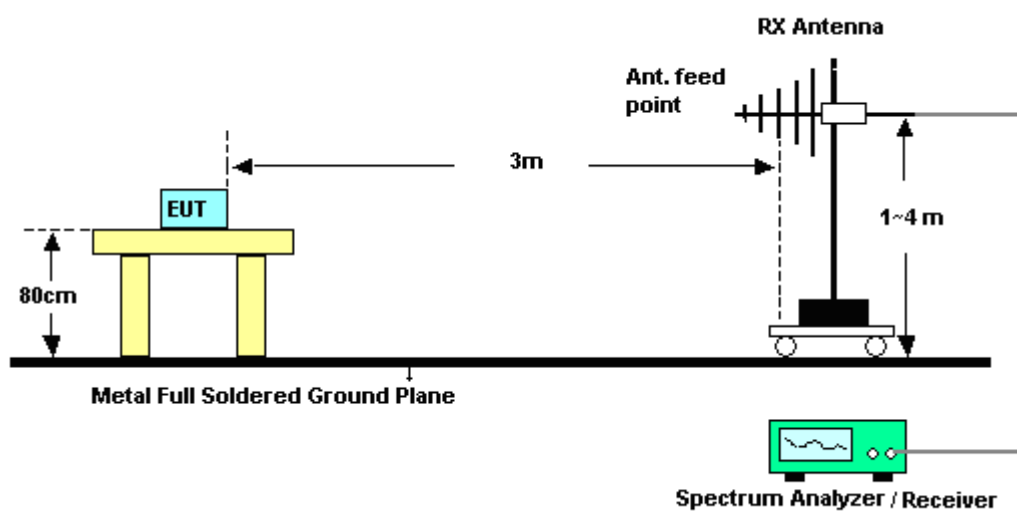
The resultant field strengths (peak/average) are then used to determine band-edge compliance as required by Section 15.205.

3.5.4 Test Setup

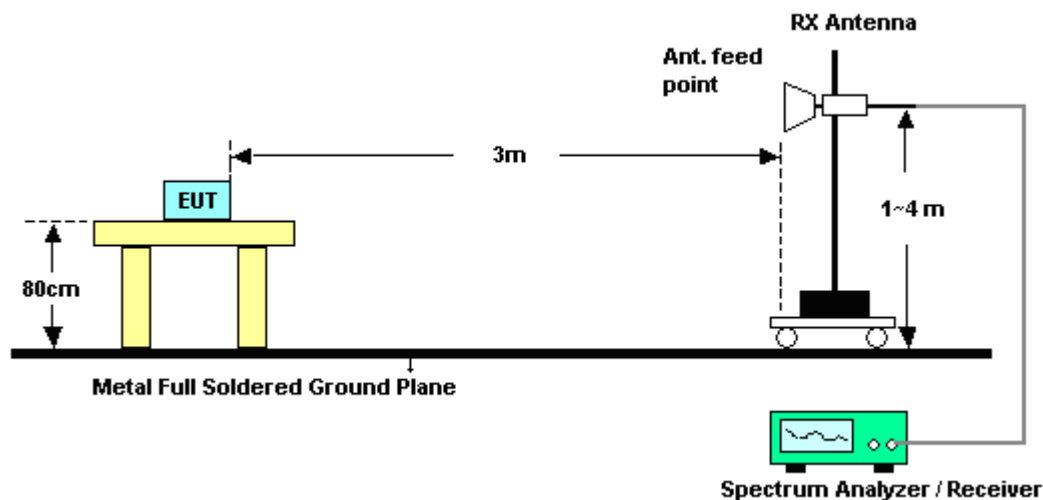
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.5.6 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	22~25°C
Test Channel :	00	Relative Humidity :	52~57%
		Test Engineer :	David Ke

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2358.15	47.1	-26.9	74	46.29	32.13	4.57	35.89	166	267	Peak
2370.84	35.63	-18.37	54	34.78	32.16	4.57	35.88	166	267	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2321.61	47.46	-26.54	74	46.74	32.09	4.53	35.9	100	317	Peak
2341.77	35.7	-18.3	54	34.93	32.11	4.55	35.89	100	317	Average

Test Mode :	Mode 3	Temperature :	22~25°C
Test Channel :	39	Relative Humidity :	52~57%
		Test Engineer :	David Ke

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.52	57.24	-16.76	74	56.13	32.28	4.64	35.81	130	266	Peak
2483.5	52.74	-1.26	54	51.63	32.28	4.64	35.81	130	266	Average
2483.52	41.35	-32.65	74	-	-	-	-	-	-	Peak
2483.5	40.46	-13.54	54	-	-	-	-	-	-	Average

Summary results of marker-delta method:

Test mode	Maximum field strength of the fundamental emission (dBμV/m)	Delta Result (dB)	Measurement Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
Peak	99.33	57.98	41.35	74	-32.65	Pass
Average	98.44	57.98	40.46	54	-13.54	Pass

Note:

1. Measurement result = Maximum field strength – Delta result
2. Delta-Marker Method is used for the 2483.5MHz average measurement as described in the test procedure of this report and the test result is under 13.54dB.

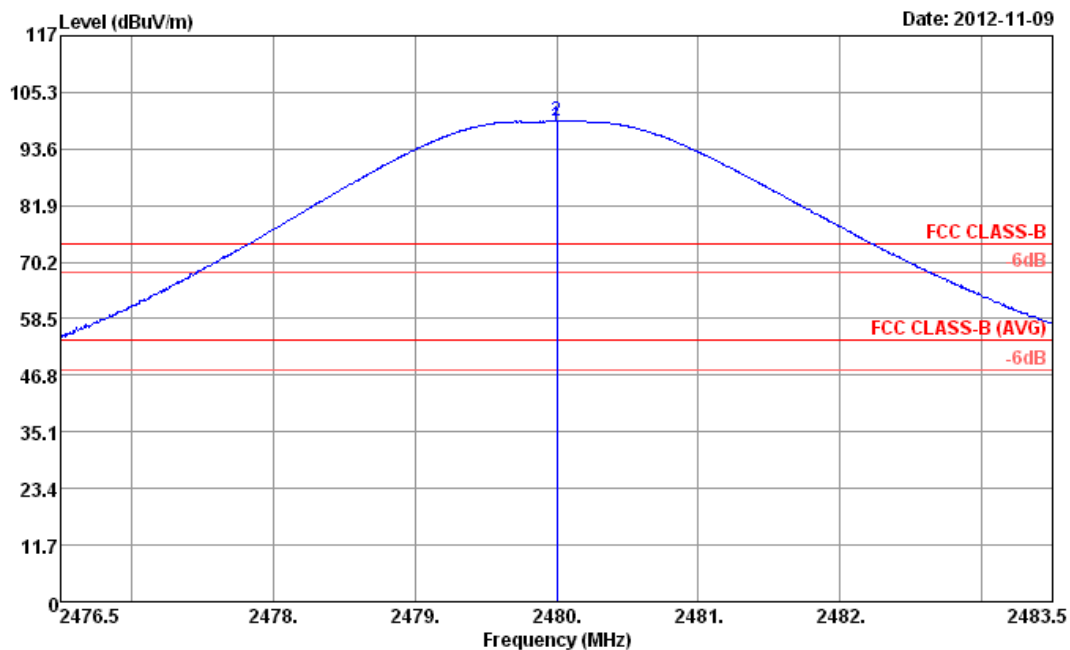
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	53.44	-20.56	74	52.33	32.28	4.64	35.81	117	335	Peak
2483.5	48.4	-5.6	54	47.29	32.28	4.64	35.81	117	335	Average
2483.5	41.16	-32.84	74	-	-	-	-	-	-	Peak
2483.5	40.17	-13.83	54	-	-	-	-	-	-	Average

Summary results of marker-delta method:

Test mode	Maximum field strength of the fundamental emission (dBμV/m)	Delta Result (dB)	Measurement Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
Peak	94.92	53.76	41.16	74	-32.84	Pass
Average	93.93	53.76	40.17	54	-13.83	Pass

Note : Measurement result = Maximum field strength – Delta result

Test Mode :	Bluetooth 4.0 - LE	Temperature :	22~25°C
Test Channel :	39	Relative Humidity :	52~57%
Test Engineer :	David Ke	Polarization :	Horizontal

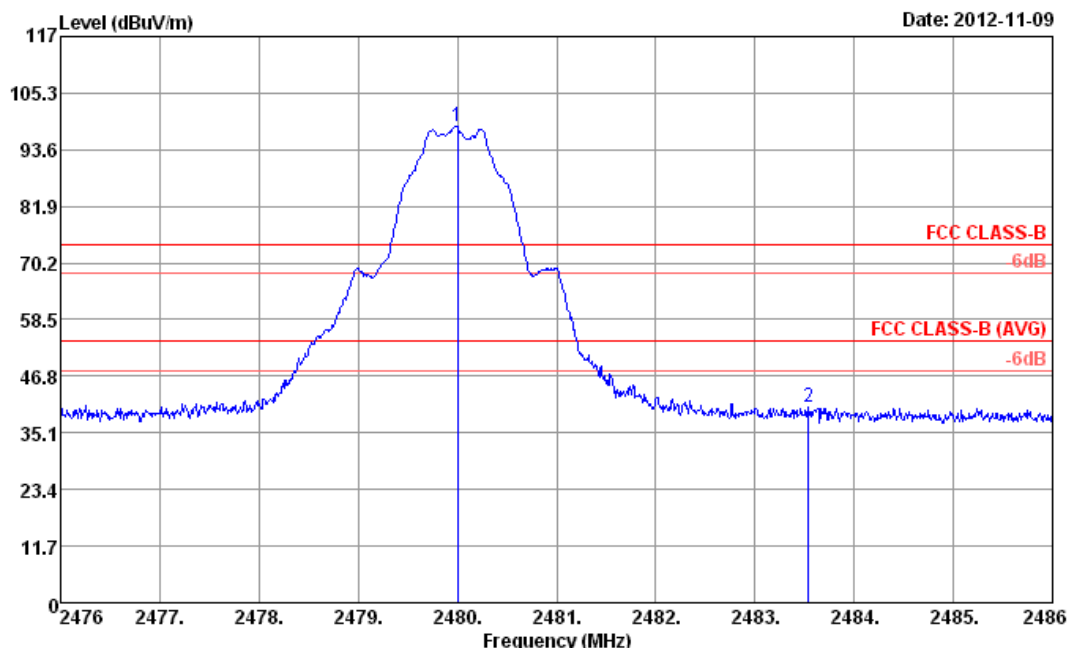


Site : 03CH05-HY
Condition : FCC CLASS-B 3m HF_ANT_584_20120809 HORIZONTAL
: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Preamp Loss	Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 *	2480.00	98.44	44.44	54.00	97.33	32.28	4.64	35.81	130	266 Average
2 *	2480.00	99.33	25.33	74.00	98.22	32.28	4.64	35.81	130	266 Peak

* Maximum field strength of the fundamental emission

Test Mode :	Bluetooth 4.0 - LE	Temperature :	22~25°C
Test Channel :	39	Relative Humidity :	52~57%
Test Engineer :	David Ke	Polarization :	Horizontal



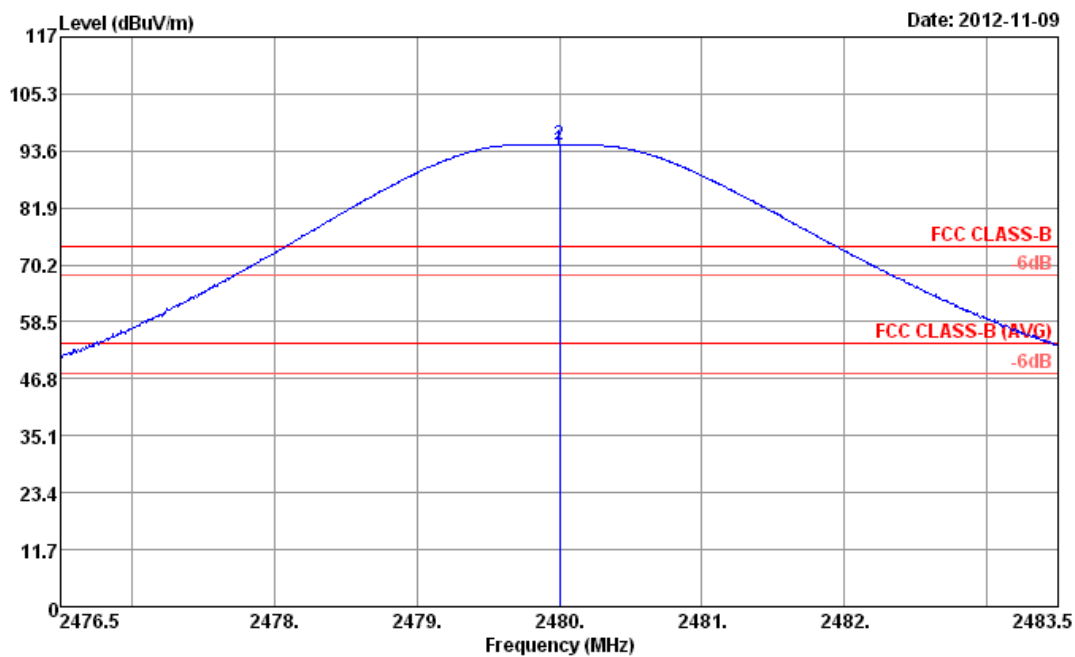
Site : 03CH05-HY
Condition : FCC CLASS-B 3m HF_ANT_584_20120809 HORIZONTAL
: RBW:100.000KHz VBW:100.000KHz SWT:Auto

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Loss Factor	Preamplifier Loss Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 *	2480.00	98.46	24.46	74.00	97.35	32.28	4.64	35.81	130	266 Peak
2	2483.54	40.48	-33.52	74.00	39.37	32.28	4.64	35.81	130	266 Peak

* Marker-Delta Method (RBW/VBW=100KHz): 57.98 dB , single carrier Mode



Test Mode :	Bluetooth 4.0 - LE	Temperature :	22~25°C
Test Channel :	39	Relative Humidity :	52~57%
Test Engineer :	David Ke	Polarization :	Vertical

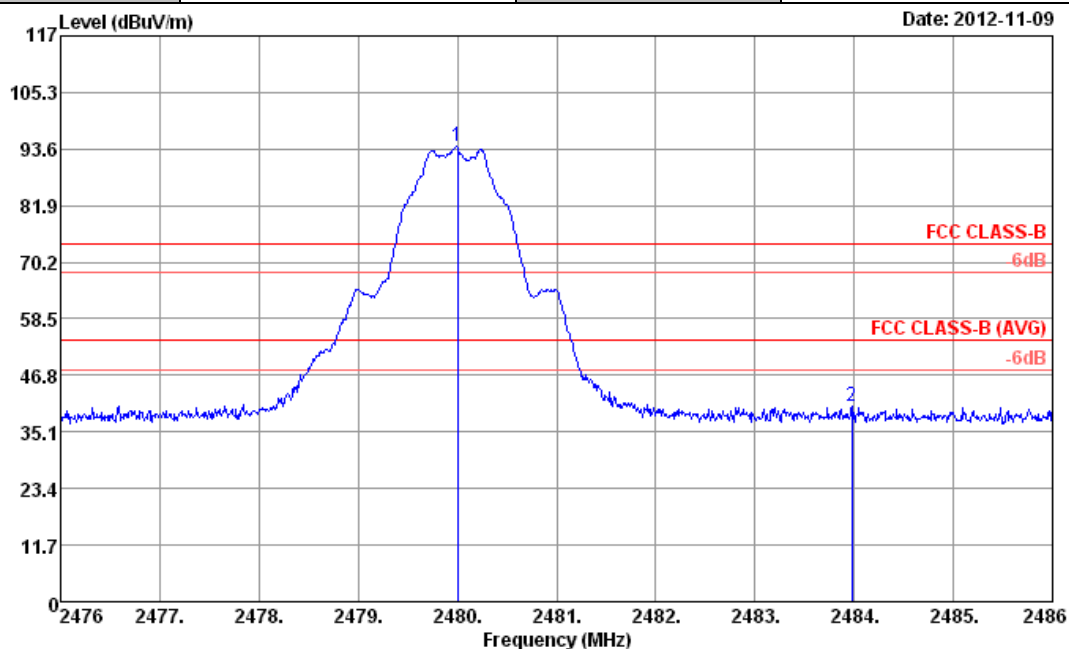


Site : 03CH05-HY
Condition : FCC CLASS-B 3m HF_ANT_584_20120809 VERTICAL
: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	Preamp Loss	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 *	2480.00	93.93	39.93	54.00	92.82	32.28	4.64	35.81	117	335 Average
2 *	2480.00	94.92	20.92	74.00	93.81	32.28	4.64	35.81	117	335 Peak

* Maximum field strength of the fundamental emission

Test Mode :	Bluetooth 4.0 - LE	Temperature :	22~25°C
Test Channel :	39	Relative Humidity :	52~57%
Test Engineer :	David Ke	Polarization :	Vertical



Site : 03CH05-HY
 Condition : FCC CLASS-B 3m HF_ANT_584_20120809 VERTICAL
 : RBW:100.000KHz VBW:100.000KHz SWT:Auto

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	cm	deg	
1 *	2480.00	94.02	20.02	74.00	92.91	32.28	4.64	35.81	117	335 Peak
2	2483.98	40.26	-33.74	74.00	39.15	32.28	4.64	35.81	117	335 Peak

* Marker-Delta Method (RBW/VBW=100KHz): 53.76 dB , single carrier Mode

Test Mode :	Mode 4	Temperature :	22~25°C
Test Channel :	39	Relative Humidity :	52~57%
		Test Engineer :	David Ke

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	56.57	-17.43	74	55.46	32.28	4.64	35.81	158	264	Peak
2483.5	51.21	-2.79	54	50.1	32.28	4.64	35.81	158	264	Average
2483.52	41.82	-32.18	74	-	-	-	-	-	-	Peak
2483.5	41.19	-12.81	54	-	-	-	-	-	-	Average

Summary results of marker-delta method:

Test mode	Maximum field strength of the fundamental emission (dBμV/m)	Delta Result (dB)	Measurement Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
Peak	98.39	56.57	41.82	74	-32.18	Pass
Average	97.76	56.57	41.19	54	-12.81	Pass

Note:

1. Measurement result = Maximum field strength – Delta result
2. Delta-Marker Method is used for the 2483.5MHz average measurement as described in the test procedure of this report and the test result is under 12.81dB.

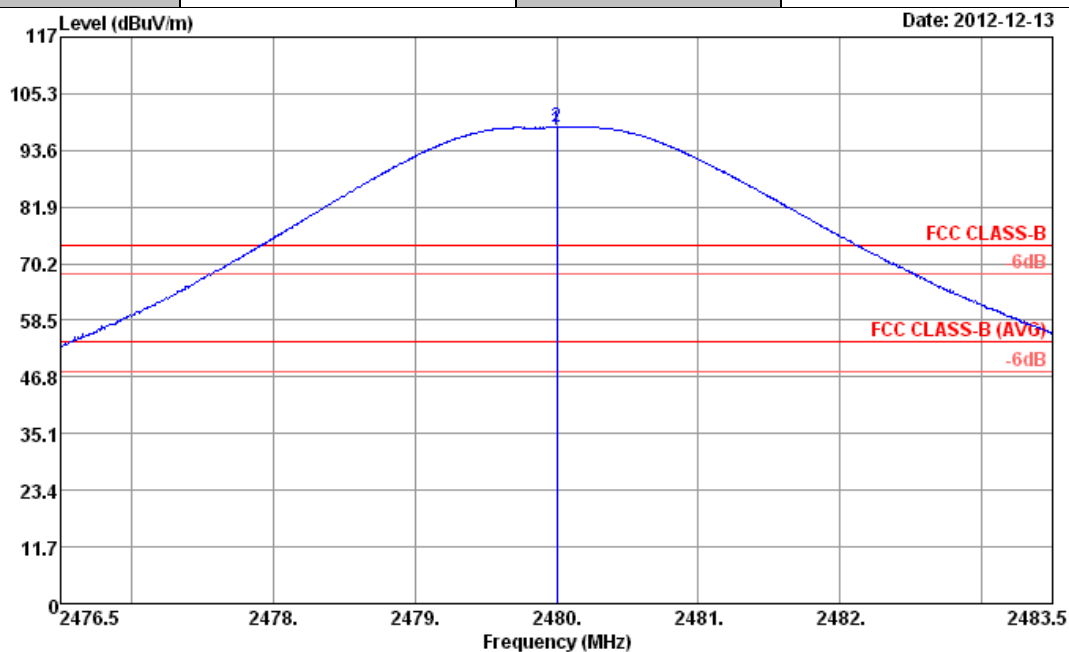
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	53.52	-20.48	74	52.41	32.28	4.64	35.81	110	310	Peak
2483.5	47.92	-6.08	54	46.81	32.28	4.64	35.81	110	310	Average
2483.5	41.42	-32.58	74	-	-	-	-	-	-	Peak
2483.5	40.83	-13.17	54	-	-	-	-	-	-	Average

Summary results of marker-delta method:

Test mode	Maximum field strength of the fundamental emission (dBμV/m)	Delta Result (dB)	Measurement Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
Peak	95.35	53.93	41.42	74	-32.58	Pass
Average	94.76	53.93	40.83	54	-13.17	Pass

Note: Measurement result = Maximum field strength – Delta result

Test Mode :	Bluetooth 4.0 - LE	Temperature :	22~25°C
Test Channel :	39	Relative Humidity :	52~57%
Test Engineer :	David Ke	Polarization :	Horizontal

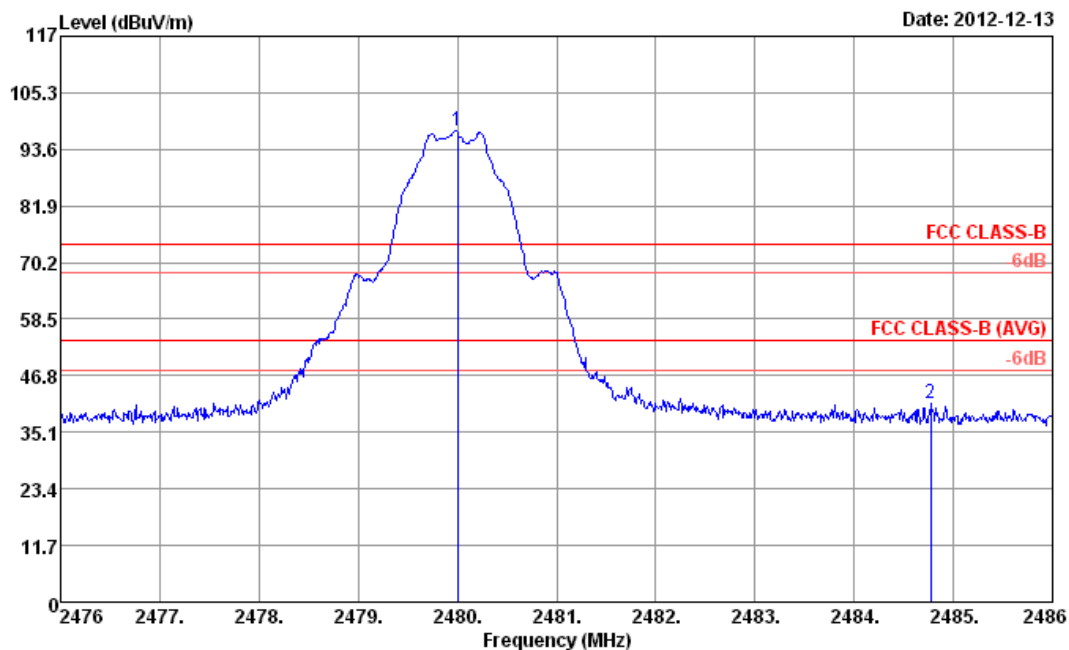


Site : 03CH05-HY
 Condition : FCC CLASS-B 3m HF_ANT_584_20120809 HORIZONTAL
 : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Preamp Loss	Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 *	2480.00	97.76	43.76	54.00	96.65	32.28	4.64	35.81	158	264 Average
2 *	2480.00	98.39	24.39	74.00	97.28	32.28	4.64	35.81	158	264 Peak

* Maximum field strength of the fundamental emission

Test Mode :	Bluetooth 4.0 - LE	Temperature :	22~25°C
Test Channel :	39	Relative Humidity :	52~57%
Test Engineer :	David Ke	Polarization :	Horizontal



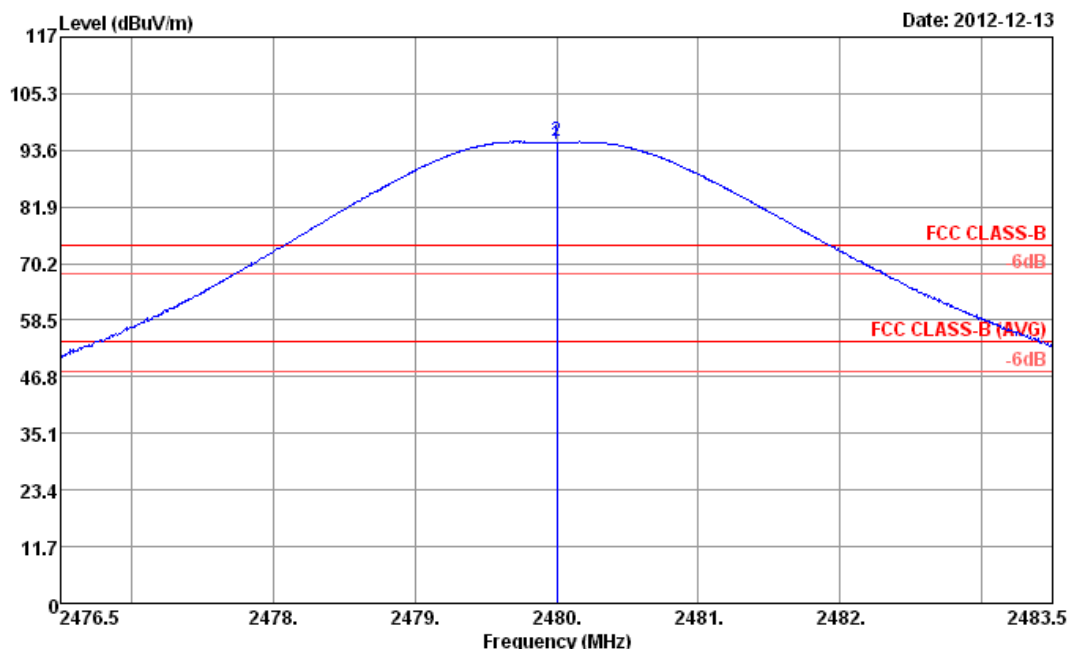
Site : 03CH05-HY
Condition : FCC CLASS-B 3m HF_ANT_584_20120809 HORIZONTAL
: RBW:100.000KHz VBW:100.000KHz SWT:Auto

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Loss Factor	Preamplifier Loss Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 *	2480.00	97.53	23.53	74.00	96.42	32.28	4.64	35.81	158	264 Peak
2	2484.77	40.96	-33.04	74.00	39.85	32.28	4.64	35.81	158	264 Peak

* Marker-Delta Method (RBW/VBW=100KHz): 56.57 dB , single carrier Mode



Test Mode :	Bluetooth 4.0 - LE	Temperature :	22~25°C
Test Channel :	39	Relative Humidity :	52~57%
Test Engineer :	David Ke	Polarization :	Vertical

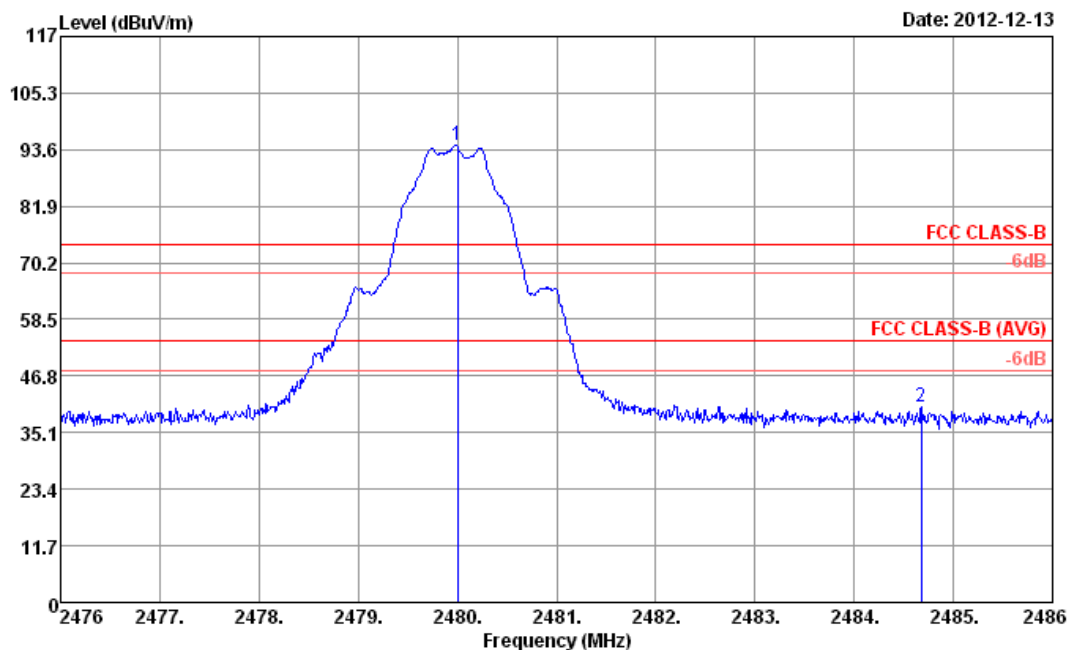


Site : 03CH05-HY
Condition : FCC CLASS-B 3m HF_ANT_584_20120809 VERTICAL
: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Preamp Loss	Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 *	2480.00	94.76	40.76	54.00	93.65	32.28	4.64	35.81	110	310 Average
2 *	2480.00	95.35	21.35	74.00	94.24	32.28	4.64	35.81	110	310 Peak

* Maximum field strength of the fundamental emission

Test Mode :	Bluetooth 4.0 - LE	Temperature :	22~25°C
Test Channel :	39	Relative Humidity :	52~57%
Test Engineer :	David Ke	Polarization :	Vertical



Site : 03CH05-HY
Condition : FCC CLASS-B 3m HF_ANT_584_20120809 VERTICAL
: RBW:100.000KHz VBW:100.000KHz SWT:Auto

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level Factor	Loss Factor	Loss Factor	cm	deg	
1 *	2480.00	94.45	20.45	74.00	93.34	32.28	4.64	35.81	110	310 Peak
2	2484.68	40.52	-33.48	74.00	39.41	32.28	4.64	35.81	110	310 Peak

* Marker-Delta Method (RBW/VBW=100KHz): 53.93 dB , single carrier Mode

3.5.7 Test Result of Radiated Emission (30 MHz ~ 10th Harmonic)

Test Mode :	Mode 1	Temperature :	22~25°C
Test Channel :	00	Relative Humidity :	52~57%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 2402 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2402	96.7	-	-	95.8	32.18	4.58	35.86	166	267	Average
2402	97.59	-	-	96.69	32.18	4.58	35.86	166	267	Peak

Test Mode :	Mode 1	Temperature :	22~25°C
Test Channel :	00	Relative Humidity :	52~57%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 2402 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2402	91.08	-	-	90.18	32.18	4.58	35.86	100	317	Average
2402	92.03	-	-	91.13	32.18	4.58	35.86	100	317	Peak

Test Mode :	Mode 2	Temperature :	22~25°C
Test Channel :	19	Relative Humidity :	52~57%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 2440 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2440	97.64	-	-	96.63	32.24	4.61	35.84	200	274	Average
2440	98.6	-	-	97.59	32.24	4.61	35.84	200	274	Peak

Test Mode :	Mode 2	Temperature :	22~25°C
Test Channel :	19	Relative Humidity :	52~57%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 2440 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2440	93.11	-	-	92.1	32.24	4.61	35.84	100	316	Average
2440	94.02	-	-	93.01	32.24	4.61	35.84	100	316	Peak

Test Mode :	Mode 3	Temperature :	22~25°C
Test Channel :	39	Relative Humidity :	52~57%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per 15.31		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
47.01	23.92	-16.08	40	44.81	9.8	0.79	31.48	-	-	Peak
152.04	28	-15.5	43.5	46.77	11.18	1.29	31.24	131	204	Peak
222.24	24.62	-21.38	46	44.57	9.44	1.55	30.94	-	-	Peak
323.1	19.59	-26.41	46	35.23	13.46	1.84	30.94	-	-	Peak
553.4	20.31	-25.69	46	29.14	19.84	2.34	31.01	-	-	Peak
789.3	24.67	-21.33	46	29.83	21.92	2.81	29.89	-	-	Peak
2480	98.45	-	-	97.34	32.28	4.64	35.81	130	266	Average
2480	99.3	-	-	98.19	32.28	4.64	35.81	130	266	Peak

Test Mode :	Mode 3	Temperature :	22~25°C
Test Channel :	39	Relative Humidity :	52~57%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
33.78	31.48	-8.52	40	45.84	16.54	0.73	31.63	-	-	Peak
47.01	36.54	-3.46	40	57.43	9.8	0.79	31.48	100	300	Peak
104.25	26.29	-17.21	43.5	46.25	10.4	1.12	31.48	-	-	Peak
417.6	18.58	-27.42	46	31.17	16.42	2.06	31.07	-	-	Peak
640.9	23.78	-22.22	46	30.99	20.39	2.56	30.16	-	-	Peak
872.6	25.63	-20.37	46	29.4	23.1	2.96	29.83	-	-	Peak
2480	93.93	-	-	92.82	32.28	4.64	35.81	117	335	Average
2480	94.81	-	-	93.7	32.28	4.64	35.81	117	335	Peak



Test Mode :	Mode 4	Temperature :	22~25°C
Test Channel :	39	Relative Humidity :	52~57%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.97	21.69	-18.31	40	35.52	17.08	0.72	31.63	-	-	Peak
114.24	27.31	-16.19	43.5	46.64	10.95	1.17	31.45	121	257	Peak
233.58	24.95	-21.05	46	43.81	10.48	1.59	30.93	-	-	Peak
335.7	18.85	-27.15	46	34.25	13.82	1.87	31.09	-	-	Peak
481.3	19.16	-26.84	46	30.03	17.62	2.2	30.69	-	-	Peak
766.9	23.47	-22.53	46	28.65	22.1	2.78	30.06	-	-	Peak
2480	97.76	-	-	96.65	32.28	4.64	35.81	158	264	Average
2480	98.48	-	-	97.37	32.28	4.64	35.81	158	264	Peak

Test Mode :	Mode 4	Temperature :	22~25°C
Test Channel :	39	Relative Humidity :	52~57%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per 15.31		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
34.86	36.47	-3.53	40	51.36	16	0.74	31.63	100	199	Peak
48.63	32.28	-7.72	40	53.56	9.37	0.8	31.45	-	-	Peak
80.22	28.72	-11.28	40	51.62	7.5	0.98	31.38	-	-	Peak
408.5	16.26	-29.74	46	29.35	16.03	2.03	31.15	-	-	Peak
643	23.06	-22.94	46	30.27	20.37	2.57	30.15	-	-	Peak
820.8	24.18	-21.82	46	28.62	22.45	2.87	29.76	-	-	Peak
2480	94.49	-	-	93.38	32.28	4.64	35.81	110	310	Average
2480	95.3	-	-	94.19	32.28	4.64	35.81	110	310	Peak

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

For equipment 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 or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

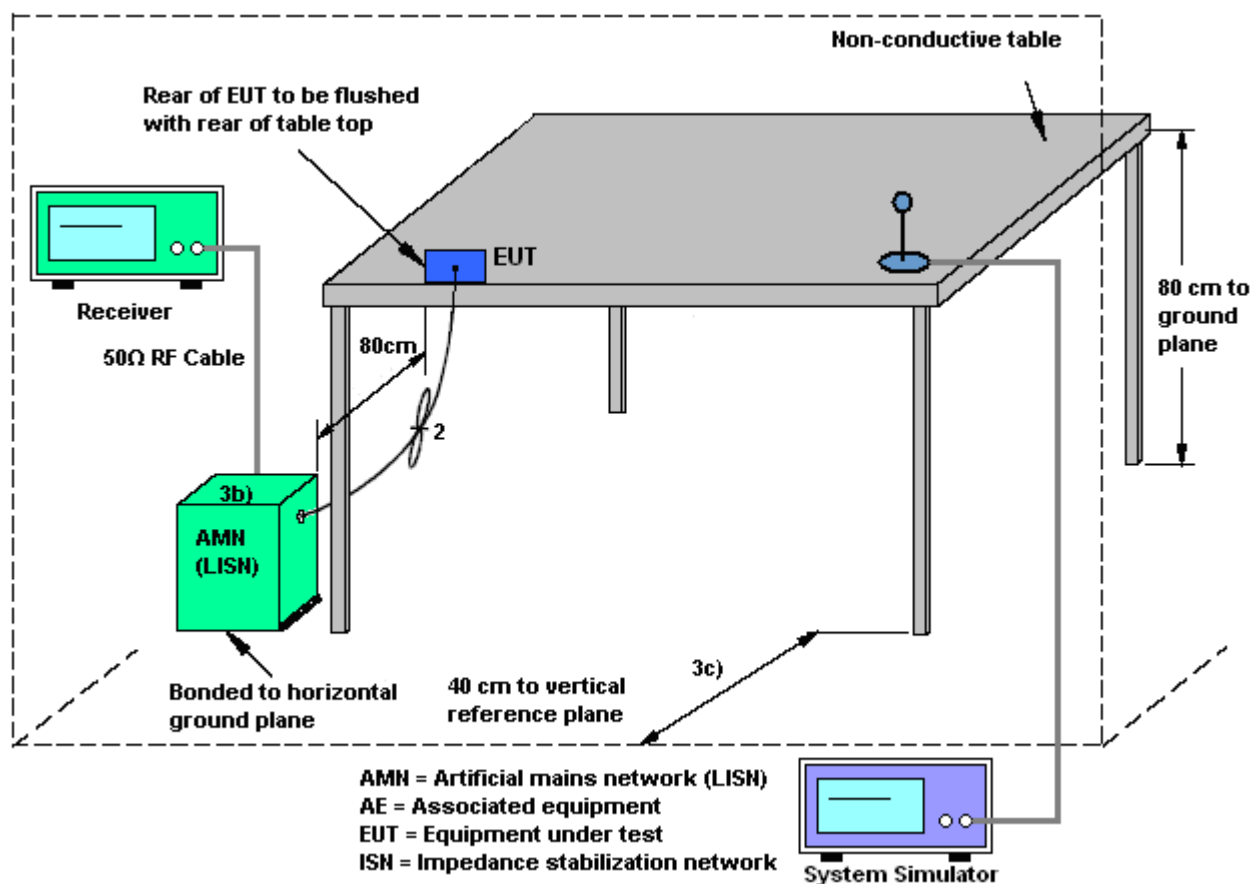
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

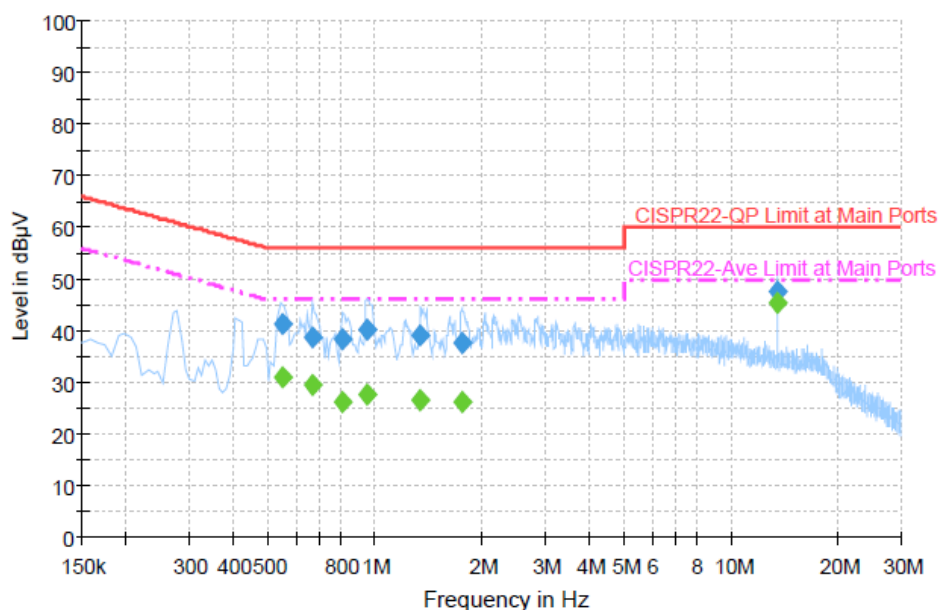
1. The testing follows the guidelines in ANSI C63.10-2009 and ANSI C63.4-2003 test site requirement.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 kHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	CDMA2000 BC0 Idle + Bluetooth Link + WLAN (2.4G) Link + NFC + Earphone + Battery 1 + USB Cable 1 (Charging from Adapter 1) for Sample 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



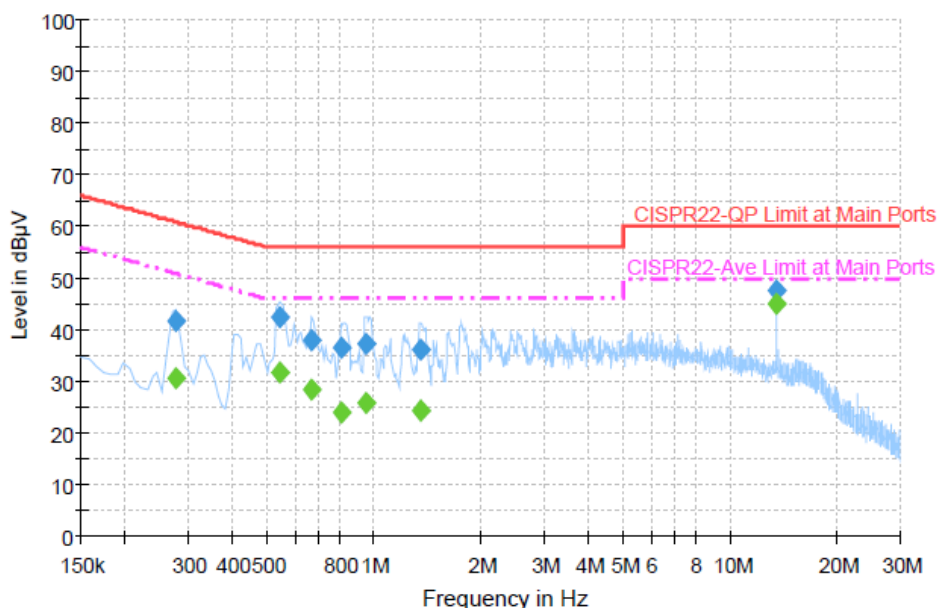
Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.550000	41.2	Off	L1	19.4	14.8	56.0
0.670000	38.8	Off	L1	19.4	17.2	56.0
0.814000	38.3	Off	L1	19.4	17.7	56.0
0.950000	40.2	Off	L1	19.4	15.8	56.0
1.342000	39.2	Off	L1	19.4	16.8	56.0
1.750000	37.5	Off	L1	19.4	18.5	56.0
13.558000	47.7	Off	L1	19.6	12.3	60.0

Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.550000	31.0	Off	L1	19.4	15.0	46.0
0.670000	29.5	Off	L1	19.4	16.5	46.0
0.814000	26.2	Off	L1	19.4	19.8	46.0
0.950000	27.5	Off	L1	19.4	18.5	46.0
1.342000	26.6	Off	L1	19.4	19.4	46.0
1.750000	26.2	Off	L1	19.4	19.8	46.0
13.558000	45.3	Off	L1	19.6	4.7	50.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	CDMA2000 BC0 Idle + Bluetooth Link + WLAN (2.4G) Link + NFC + Earphone + Battery 1 + USB Cable 1 (Charging from Adapter 1) for Sample 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.278000	41.9	Off	N	19.4	19.0	60.9
0.542000	42.4	Off	N	19.4	13.6	56.0
0.670000	38.0	Off	N	19.4	18.0	56.0
0.806000	36.4	Off	N	19.4	19.6	56.0
0.950000	37.4	Off	N	19.4	18.6	56.0
1.350000	36.0	Off	N	19.5	20.0	56.0
13.558000	47.4	Off	N	19.7	12.6	60.0

Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.278000	30.8	Off	N	19.4	20.1	50.9
0.542000	31.6	Off	N	19.4	14.4	46.0
0.670000	28.4	Off	N	19.4	17.6	46.0
0.806000	24.1	Off	N	19.4	21.9	46.0
0.950000	25.9	Off	N	19.4	20.1	46.0
1.350000	24.4	Off	N	19.5	21.6	46.0
13.558000	45.1	Off	N	19.7	4.9	50.0

3.7 Antenna Requirements

3.7.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. 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 FCC rule.

3.7.2 Antenna Connected Construction

Non-standard connector used.

3.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 06, 2012	Nov. 07, 2012 ~ Nov. 08, 2012	Jun. 05, 2013	Conducted (TH02-HY)
Spectrum Analyzer	R&S	ESU26	100390	20Hz ~ 26.5GHz	Dec. 22, 2011	Nov. 06, 2012 ~ Dec. 13, 2012	Dec. 21, 2012	Radiation (03CH05-HY)
Bilog Antenna	Schaffner	CBL6111C	2725	30MHz~2GHz	Oct. 06, 2012	Nov. 06, 2012 ~ Dec. 13, 2012	Oct. 05, 2013	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 ~ 360 degree	N/A	Nov. 06, 2012 ~ Dec. 13, 2012	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m ~ 4 m	N/A	Nov. 06, 2012 ~ Dec. 13, 2012	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz~18GHz	Aug. 10, 2012	Nov. 06, 2012 ~ Dec. 13, 2012	Aug. 09, 2013	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A02665	1GHz~26.5GHz	Aug. 28, 2012	Nov. 06, 2012 ~ Dec. 13, 2012	Aug. 27, 2013	Radiation (03CH05-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz ~ 40GHz	Sep. 28, 2012	Nov. 06, 2012 ~ Dec. 13, 2012	Sep. 27, 2013	Radiation (03CH05-HY)
Pre Amplifier	COM-POWER	PA-103	161075	10-1000MHz.32dB.GAIN	Feb. 27, 2012	Nov. 06, 2012 ~ Dec. 13, 2012	Feb. 26, 2013	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9KHz ~ 30MHz	Jul. 03, 2012	Nov. 06, 2012 ~ Dec. 13, 2012	Jul. 02, 2013	Radiation (03CH05-HY)
EMI Test Receiver	R&S	ESCI 7	100724	9kHz~7GHz	Sep. 03, 2012	Nov. 07, 2012 ~ Nov. 29, 2012	Sep. 02, 2013	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz ~ 30MHz	Dec. 09, 2011	Nov. 07, 2012 ~ Nov. 29, 2012	Dec. 08, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz ~ 30MHz	Dec. 06, 2011	Nov. 07, 2012 ~ Nov. 29, 2012	Dec. 05, 2012	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	Nov. 07, 2012 ~ Nov. 29, 2012	N/A	Conduction (CO05-HY)
System Simulator	Agilent	E5515C (8960)	MY48360820	N/A	Jan. 05, 2012	Nov. 07, 2012 ~ Nov. 29, 2012	Jan. 04, 2014	Conduction (CO05-HY)

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.26
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.54
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.72
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