FCC RF Test Report

APPLICANT	:	ZTE CORPORATION
EQUIPMENT	:	CDMA/LTE Digital Mobile Handset
BRAND NAME	:	ZTE
MODEL NAME	:	ZTE FLASH 4G LTE
FCC ID	:	Q78-ZTEN9500
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DSS) Spread Spectrum Transmitter

The product was received on Jul. 02, 2012 and completely tested on Aug. 20, 2012. We, SPORTON INTERNATIONAL (KUNSHAN) 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:

Jones Tsai / Manager

Testing Laboratory 1190

SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR270201A	Rev. 01	Initial issue of report	Sep. 11, 2012

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(1)	A8.4(2)	Number of Channels	≥ 15Chs	Pass	-
3.2	15.247(a)(1)	A8.1(b)	Hopping Channel Separation	≥ 2/3 of 20dB BW	Pass	-
3.3	15.247(a)(1)	A8.1(d)	Dwell Time of Each Channel	≤ 0.4sec in 31.6sec period	Pass	-
3.4	15.247(a)(1)	A8.1(a)	20dB Bandwidth	NA	Pass	-
3.5	15.247(b)(1)	A8.1(b)	Peak Output Power	≤ 1 w for 1Mbps ≤ 125 Mw for 2, 3Mbps	Pass	-
3.6	15.247(d)	A8.5	Conducted Band Edges	≤ 20dBc	Pass	-
3.7	15.247(d)	A8.5	Conducted Spurious Emission	≤ 20dBc	Pass	-
3.8	15.247(d)	A8.5	Radiated Band Edges	15.209(a) & 15.247(d)	Pass	-
3.9	15.247(d)	A8.5	Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 7.24 dB at 30.211 MHz
3.9.7	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 12.28 dB at 0.440 MHz
3.11	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

1.2 Manufacturer

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	CDMA/LTE Digital Mobile Handset
Brand Name	ZTE
Model Name	ZTE FLASH 4G LTE
FCC ID	Q78-ZTEN9500
EUT supports Radios application	CDMA/EV-DO/LTE/WLAN 11bgn/ Bluetooth/Bluetooth4.0 – LE/ NFC
HW Version	N9500.H01
SW Version	N9500V1.0.0B05
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.

Product Specification subjective to this standard	
Tx/Rx Frequency Range	2402 MHz ~ 2480 MHz
Number of Channels	79
Carrier Frequency of Each Channel	2402+n*1 MHz; n=0~78
Maximum Output Power to Antenna	Bluetooth (1Mbps) : 2.41 dBm (0.0017 W) Bluetooth EDR (2Mbps) : 3.25 dBm (0.0021 W) Bluetooth EDR (3Mbps) : 3.63 dBm (0.0023 W)
Antenna Type	PIFA Antenna with gain -1.00 dBi
Type of Modulation	Bluetooth (1Mbps) : GFSK Bluetooth 2.1 EDR (2Mbps) : π/4-DQPSK Bluetooth 2.1 EDR (3Mbps) : 8-DPSK

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.			
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958			
Test Site No.	Sporton Site No.			FCC/IC Registration No.
	TH01-KS	CO01-KS	03CH01-KS	149928/4086E-1

1.5 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 Public Notice DA 00-705
- ANSI C63.4-2003 and ANSI C63.10-2009
- IC RSS-210 Issue 8
- IC RSS-Gen Issue 3

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.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU200	N/A	N/A	Unshielded, 1.8 m
2.	Bluetooth Base Station	R&S	CBT	FCC DoC	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
4.	DC Power Supply	GWINSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
5.	Notebook	DELL	VOSTRO 1450	PPD-AR5B195	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
6.	Bluetooth Earphone	Nokia	BH-106	QTLBH-106	N/A	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Output Power

Preliminary tests were performed in different data rate and recorded the RF output power in the following table:

Channel	Frequency	Bluetooth RF Output Power		
		Data Rate / Modulation		
		GFSK	π /4-DQPSK	8-DPSK
		1Mbps	2Mbps	3Mbps
Ch00	2402MHz	2.41 dBm	3.25 dBm	**3.63 dBm**
Ch39	2441MHz	1.36 dBm	2.13 dBm	2.50 dBm
Ch78	2480MHz	1.74 dBm	2.52 dBm	2.87 dBm

Remark:

1. All the test data for each data rate were verified, but only the worst case was reported.
2. The data rate was set in 3Mbps for all the test items due to the highest RF output power.
3. The EUT is programmed to transmit signals continuously for all testing.

2.2 Test Mode

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).

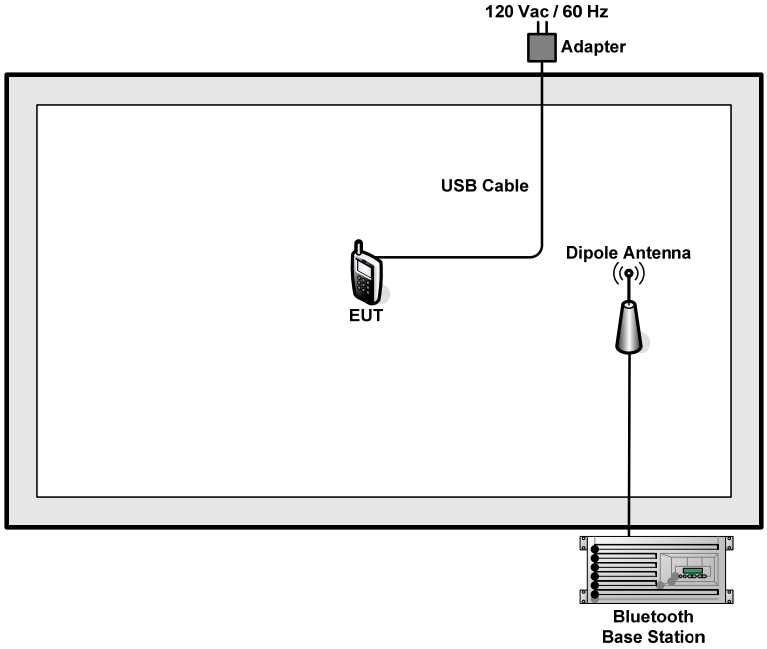
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

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

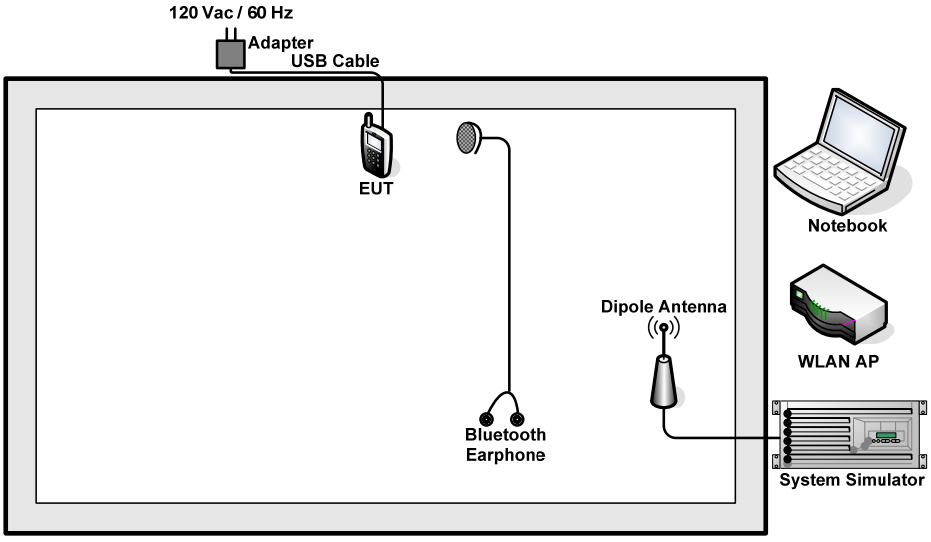
Test Cases			
Test Item	**Data Rate / Modulation**		
	Bluetooth 1Mbps GFSK	**Bluetooth EDR 2Mbps π/4-DQPSK**	**Bluetooth EDR 3Mbps 8-DPSK**
Conducted TCs	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz	Mode 4: CH00_2402 MHz Mode 5: CH39_2441 MHz Mode 6: CH78_2480 MHz	Mode 7: CH00_2402 MHz Mode 8: CH39_2441 MHz Mode 9: CH78_2480 MHz
Radiated TCs	Pretest	Pretest	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz
AC Conducted Emission	Mode 1 :CDMA2000 BC0 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + NFC Tx		
Remark: For radiated TCs, the data rate was set in 3Mbps due to the highest RF output power; only the data of these modes was reported.			

2.3 Connection Diagram of Test System

<Bluetooth Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

For Bluetooth function, key in "＊983＊28＃" on the EUT directly. Then, the EUT will get into the engineering modes to contact with Bluetooth base station for continuous transmitting and receiving signals.

3 Test Result

3.1 Number of Channel Measurement

3.1.1 Limits of Number of Hopping Frequency

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

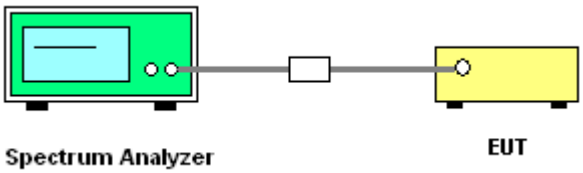
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedure

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Enable the EUT hopping function.
5. Use the following spectrum analyzer settings: Span = the frequency band of operation; RBW ≥ 1% of the span; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
6. The number of hopping frequency used is defined as the number of total channel.

3.1.4 Test Setup

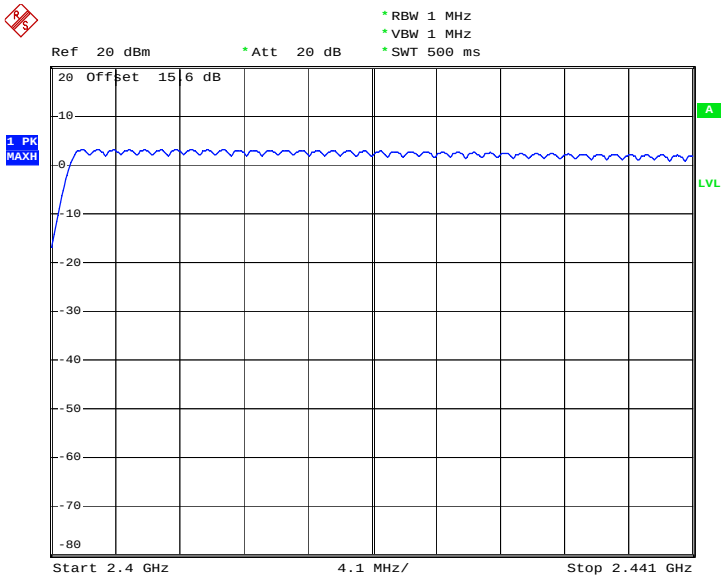


3.1.5 Test Result of Number of Hopping Frequency

Test Mode :	3Mbps	**Temperature :**	23~24℃
Test Engineer :	Lizy Li	**Relative Humidity :**	47~48%

Number of Hopping Channels (Channel)	Limits (Channel)	Pass/Fail
79	> 15	Pass

Number of Hopping Channel Plot on Channel 00 - 78



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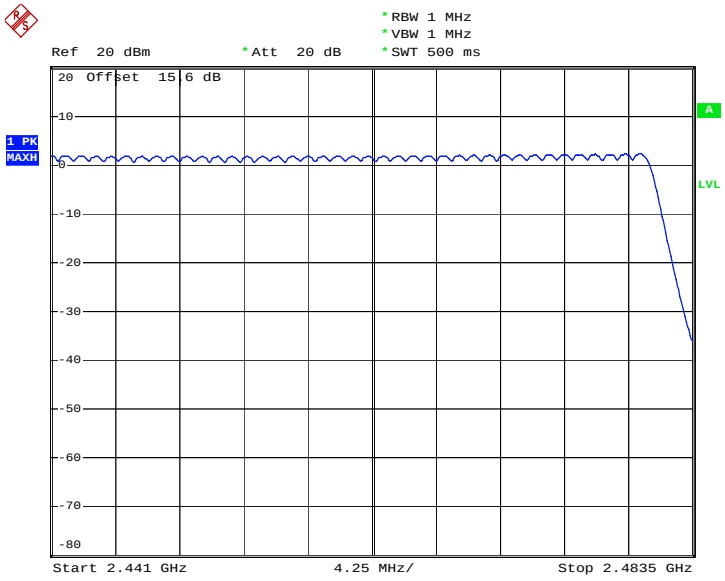

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3.2 Hopping Channel Separation Measurement

3.2.1 Limit of Hopping Channel Separation

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.

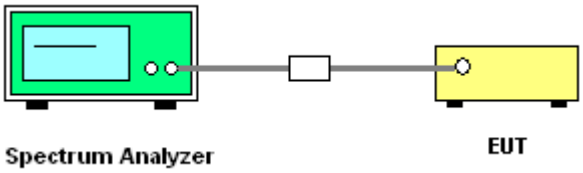
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Enable the EUT hopping function.
5. Use the following spectrum analyzer settings:
   Span = wide enough to capture the peaks of two adjacent channels; RBW ≥ 1% of the span; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.

3.2.4 Test Setup

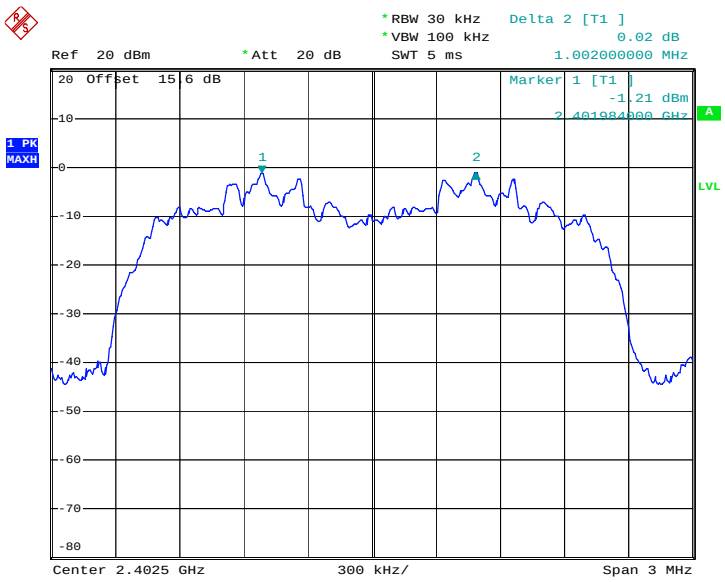


3.2.5 Test Result of Hopping Channel Separation

Test Mode :	3Mbps	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.002	0.8240	Pass
39	2441	1.002	0.8200	Pass
78	2480	1.002	0.8280	Pass

Channel Separation Plot on Channel 00 - 01



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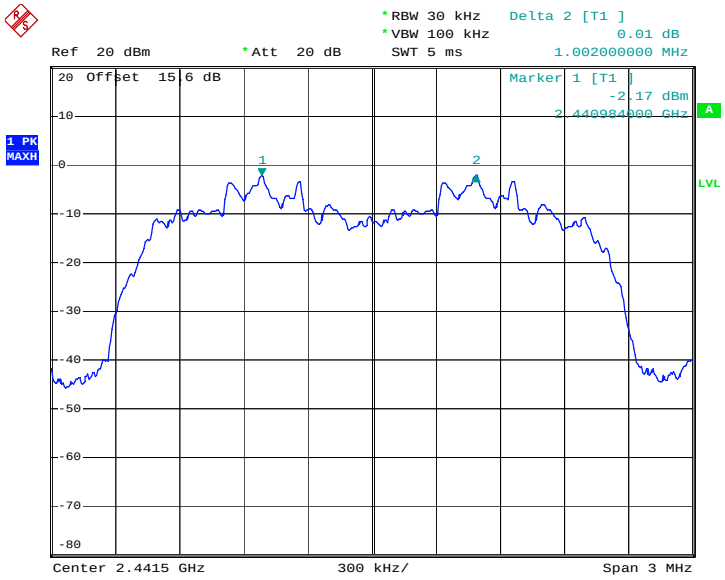
Channel Separation Plot on Channel 39 - 40



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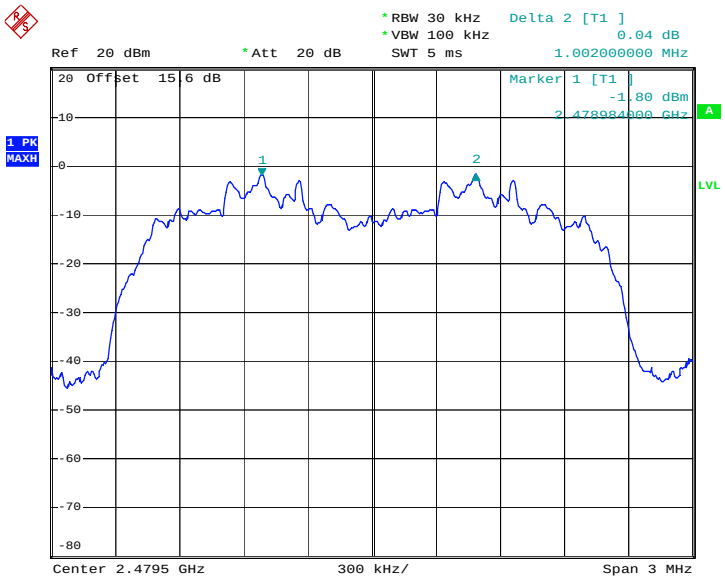
Channel Separation Plot on Channel 77 - 78



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3.3 Dwell Time Measurement

3.3.1 Limit of Dwell Time

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.

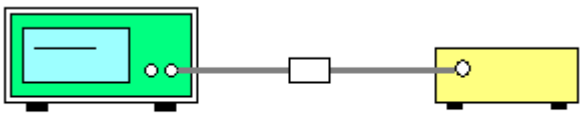
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output connector was connected to the spectrum analyzer through a low loss cable.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Enable the EUT hopping function.
5. Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel; RBW = 1 MHz; VBW ≥ RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold.

3.3.4 Test Setup



3.3.5 Test Result of Dwell Time

Test Mode :	3DH5	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

Package Mode	Average Hopping Channel	Package Transfer Time (usec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
3DH5	2.20	2960.00	0.21	0.4	Pass

Remark:

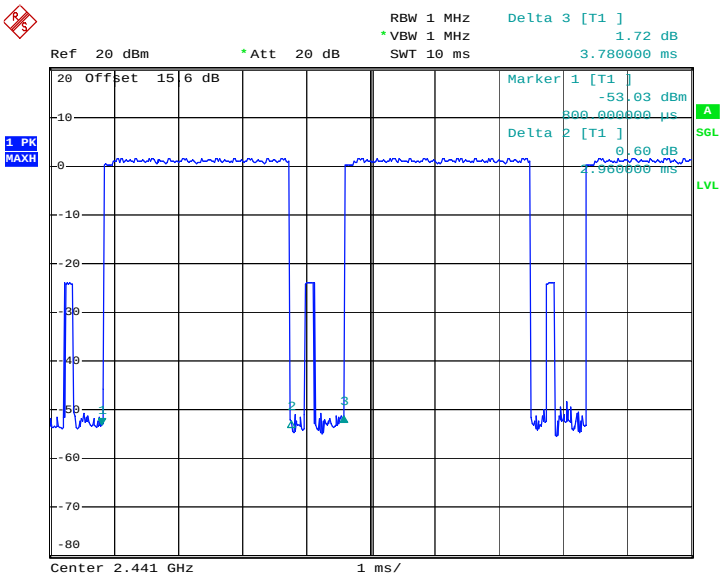
1. Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time

2. 79 channels come from the Hopping Channel number.

3. Average Hopping Channel = hops/sweep time

4. T: Package Transfer Time(us)

3DH5 Dwell Time (One Pulse) Plot on Channel 39



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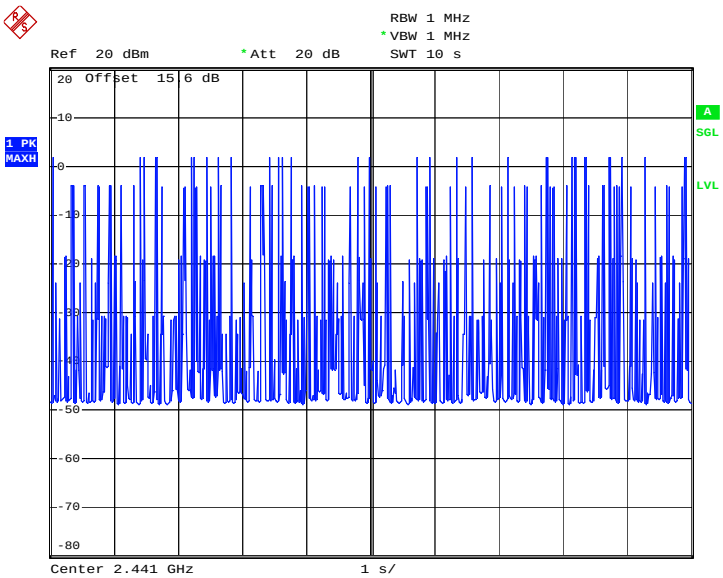
3DH5 Dwell Time (Count Pulses) Plot on Channel 39



Date: 19.JUL.2012 00:37:16

3.4 20dB Bandwidth Measurement

3.4.1 Limit of 20dB Bandwidth

Reporting only

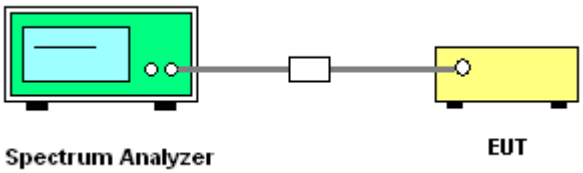
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Use the following spectrum analyzer settings:
   Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel;
   RBW ≥ 1% of the 20 dB bandwidth; VBW ≥ RBW; Sweep = auto; Detector function = peak;
   Trace = max hold.

3.4.4 Test Setup

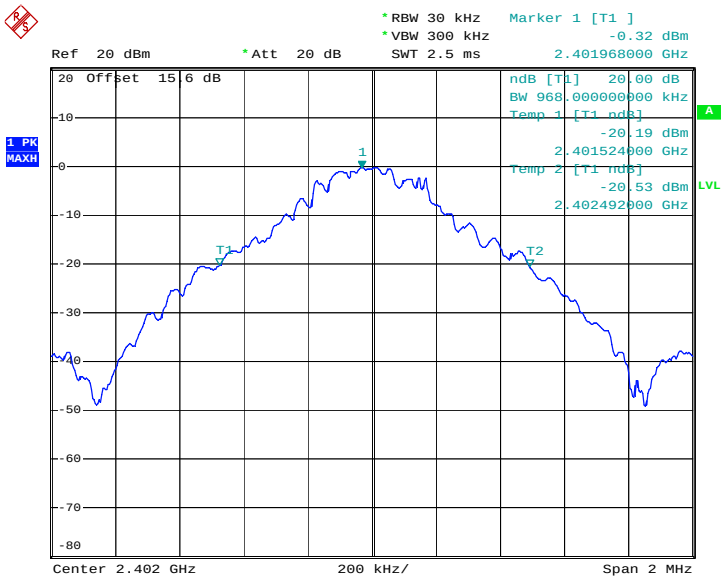


3.4.5 Test Result of 20dB Bandwidth

Test Mode :	1Mbps	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	0.968
39	2441	0.960
78	2480	0.964

20 dB Bandwidth Plot on Channel 00



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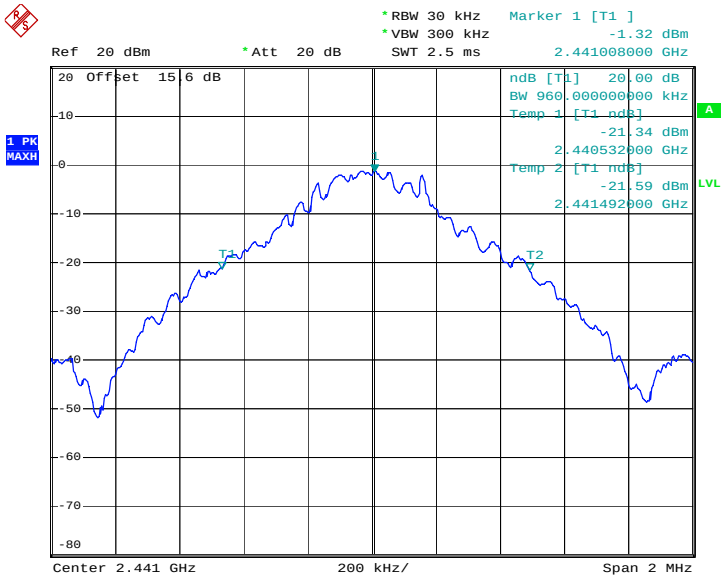
20 dB Bandwidth Plot on Channel 39



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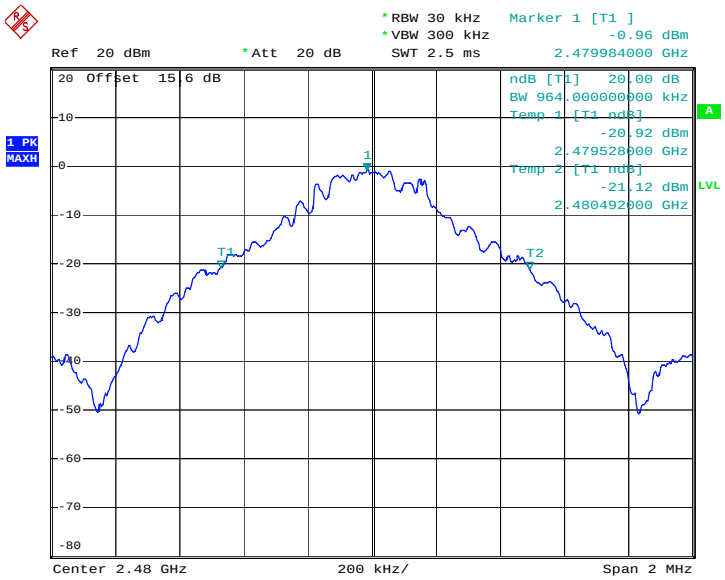
20 dB Bandwidth Plot on Channel 78

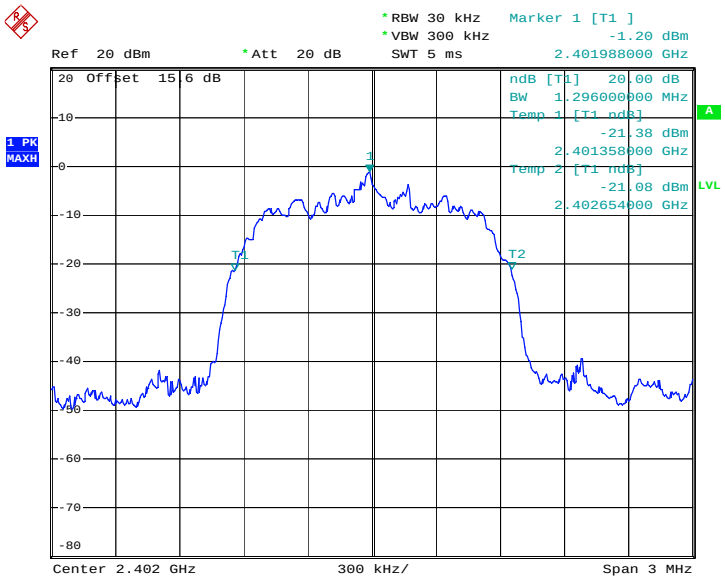


Date: 19.JUL.2012 00:37:46

Test Mode :	2Mbps	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.296
39	2441	1.296
78	2480	1.326

20 dB Bandwidth Plot on Channel 00



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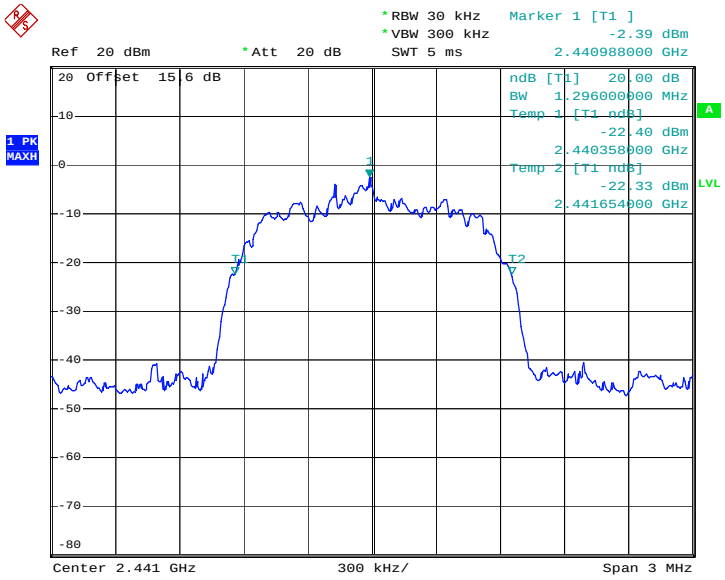
20 dB Bandwidth Plot on Channel 39



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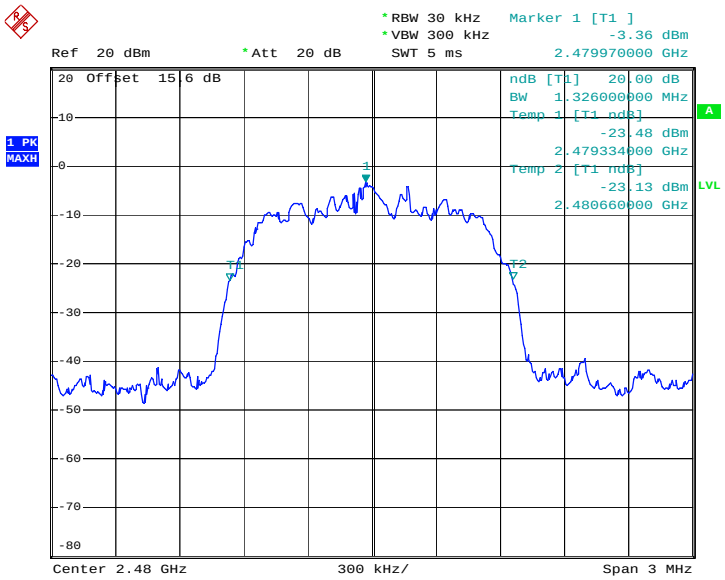
20 dB Bandwidth Plot on Channel 78

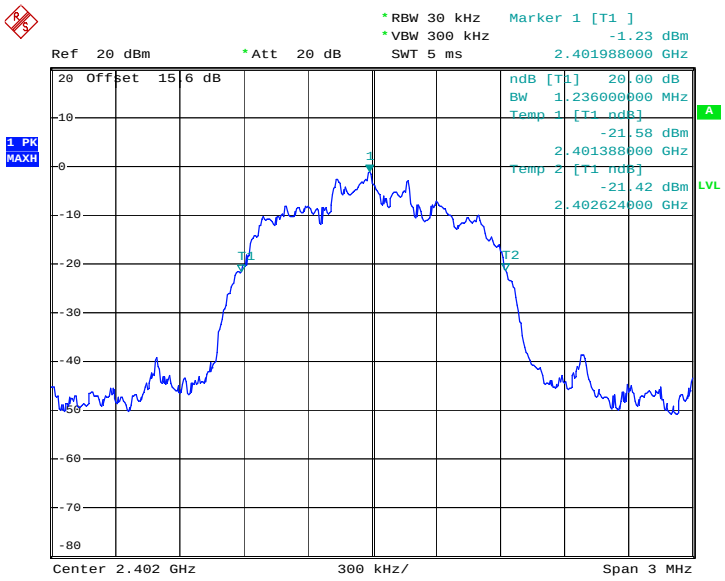


Date: 19.JUL.2012 00:38:04

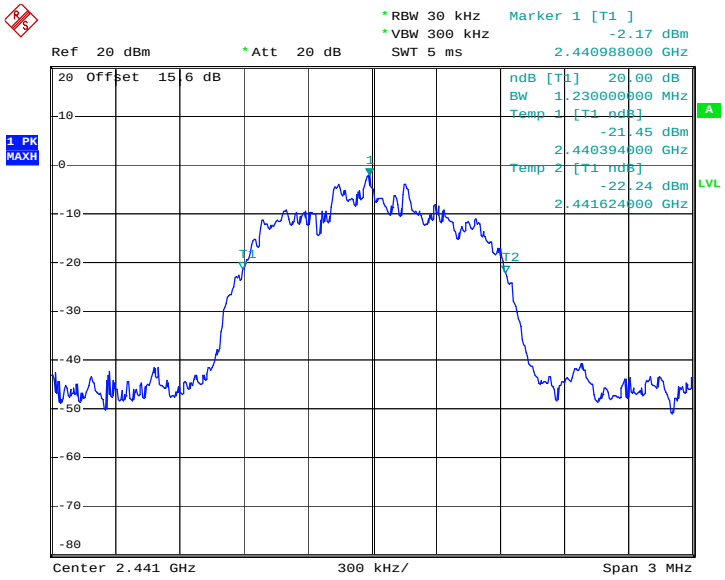
Test Mode :	3Mbps	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.236
39	2441	1.230
78	2480	1.242

20 dB Bandwidth Plot on Channel 00



20 dB Bandwidth Plot on Channel 39



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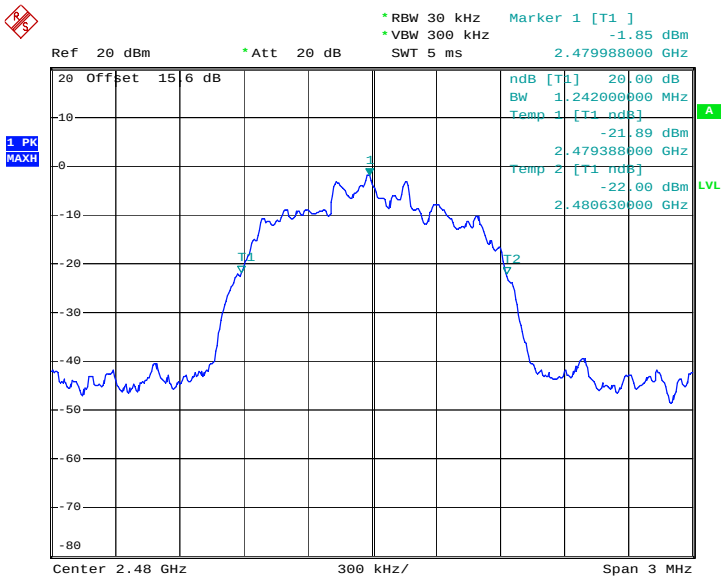
20 dB Bandwidth Plot on Channel 78



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3.5 Peak Output Power Measurement

3.5.1 Limit of Peak Output Power

Section 15.247 (b) The maximum peak conducted output power of the intentional radiator shall not exceed the following: (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. The power limit for 1Mbps is 1watt, and for 2Mbps, and 3Mbps are 0.125 watts.

3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
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.

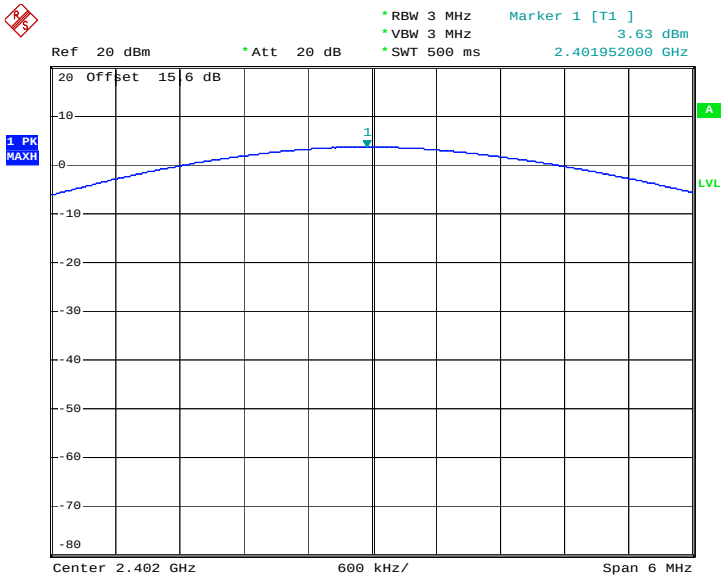
3.5.4 Test Setup

3.5.5 Test Result of Peak Output Power

Test Mode :	3Mbps	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

Channel	Frequency (MHz)	RF Power (dBm)		
		8-DPSK	Max. Limits (dBm)	Pass/Fail
		3 Mbps		
00	2402	3.63	20.97	Pass
39	2441	2.50	20.97	Pass
78	2480	2.87	20.97	Pass

Peak Output Power Plot on Channel 00



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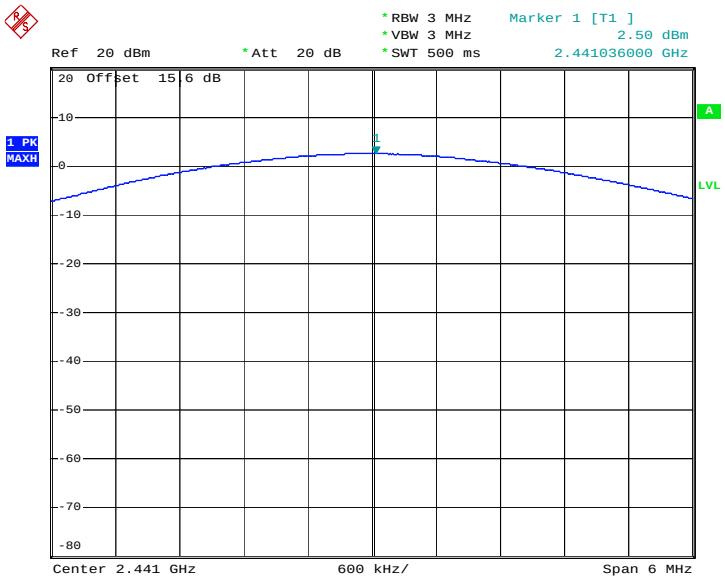
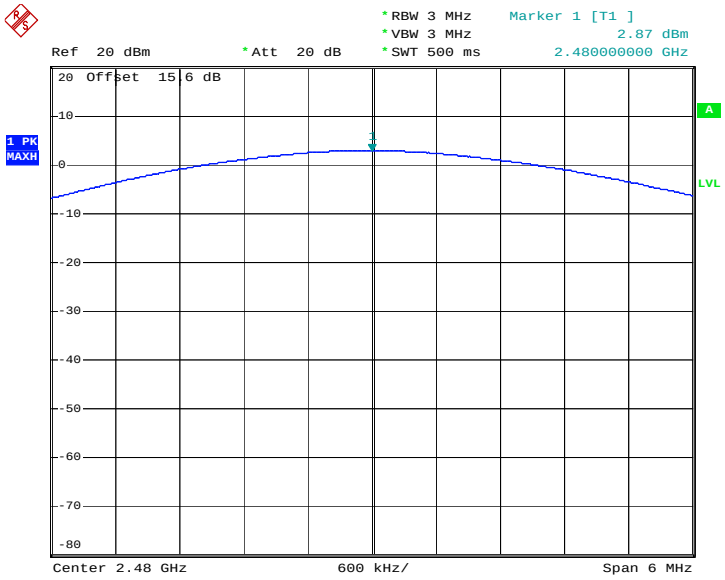
Peak Output Power Plot on Channel 39



Date: 19.JUL.2012 00:15:25

Peak Output Power Plot on Channel 78



Date: 19.JUL.2012 00:16:43

3.6 Conducted Band Edges Measurement

3.6.1 Limit of Band Edges

In any 100 KHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

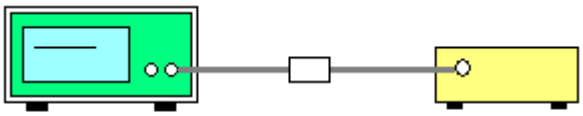
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

1. The testing follows the guidelines in Band-edge Compliance of RF Conducted Emissions of FCC Public Notice DA 00-705 Measurement Guidelines.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 300KHz (≥ 1% span=30MHz), VBW = 300KHz (≥ RBW). Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 300k Hz RBW. Note: If the device complies with the use of power option 2 the attenuation under this paragraph shall be 30 dB instead of 20 dB.
4. Enable hopping function of the EUT and then repeat step 2. and 3.
5. Record the results in the test report.

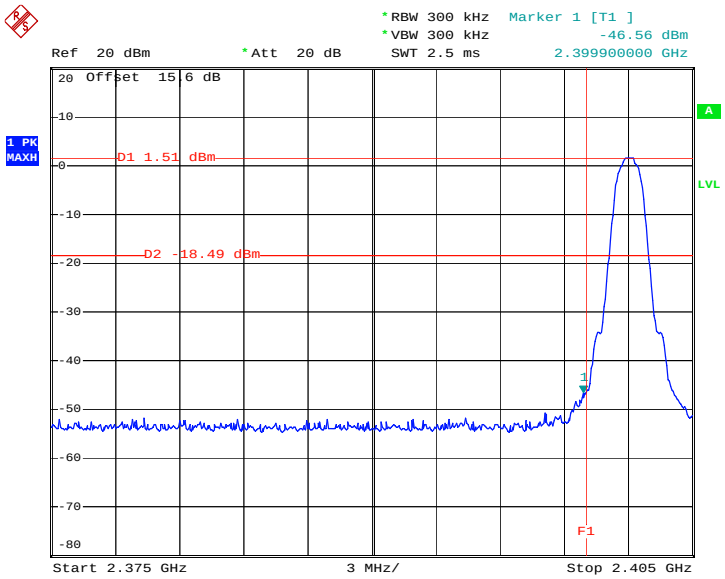
3.6.4 Test Setup



3.6.6 Test Result of Conducted Band Edges

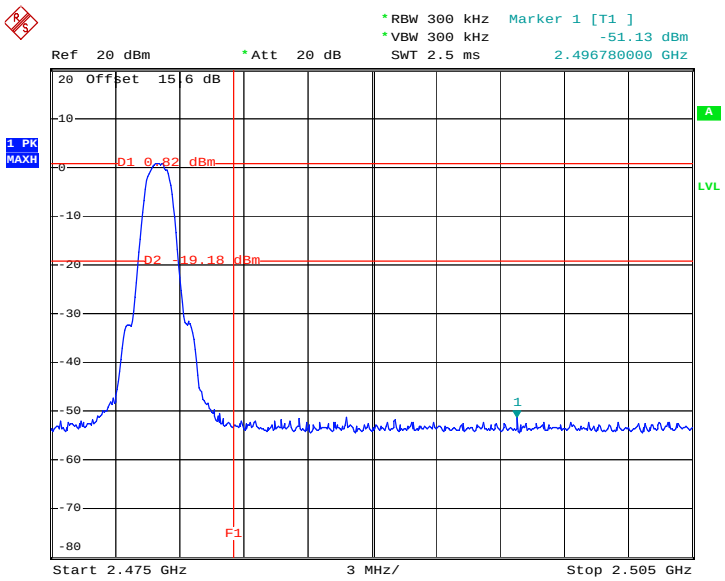
Test Mode :	3Mbps	Temperature :	23~24℃
Test Channel :	00 and 78	Relative Humidity :	47~48%
		Test Engineer :	Lizy Li

Low Band Edge Plot on Channel 00



Date: 19.JUL.2012 00:43:05

High Band Edge Plot on Channel 78

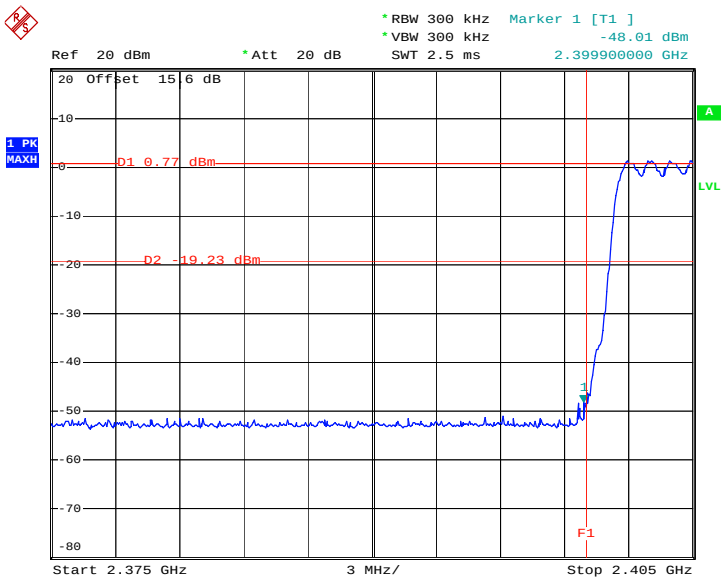


Date: 19.JUL.2012 00:44:08

3.6.7 Test Result of Conducted Hopping Mode Band Edges

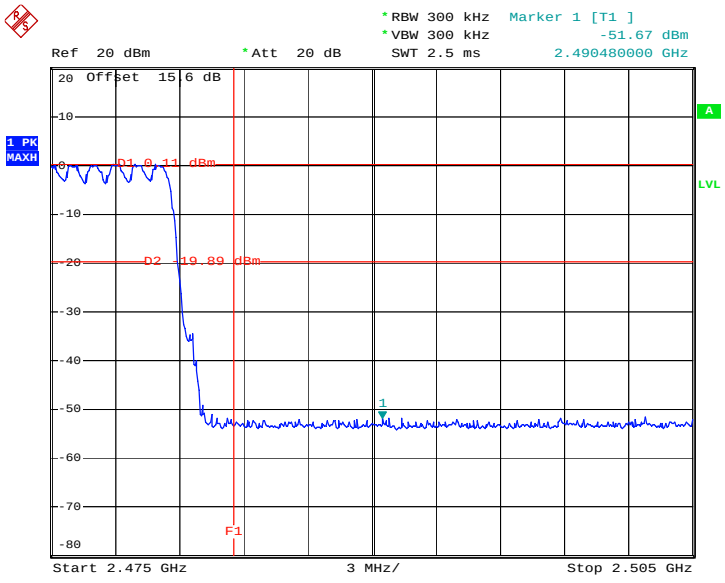
Test Mode :	3Mbps	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

Hopping Mode Low Band Edge Plot



Date: 1.AUG.2012 15:02:08

Hopping Mode High Band Edge Plot



Date: 1.AUG.2012 15:05:27

3.7 Conducted Spurious Emission Measurement

3.7.1 Limit of Spurious Emission Measurement

In any 100 KHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

3.7.3 Test Procedure

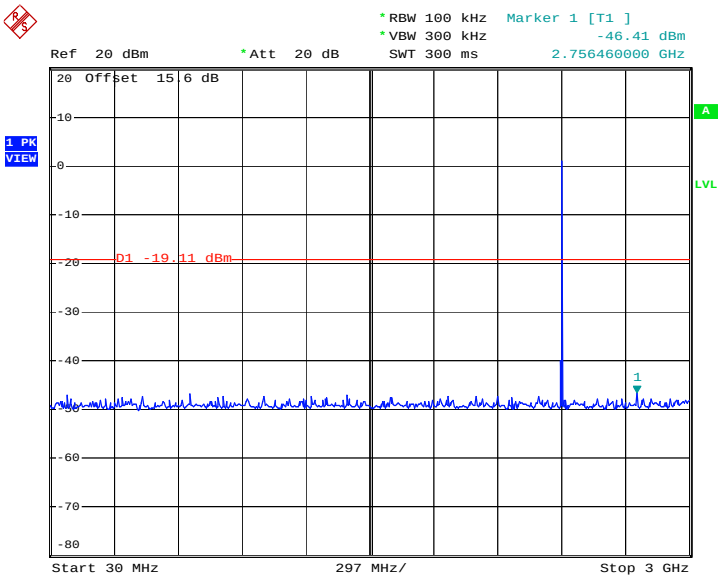
1. The testing follows the guidelines in Spurious RF Conducted Emissions of FCC Public Notice DA 00-705 Measurement Guidelines
2. The transmitter output was connected to the spectrum analyzer via a low lose cable.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 KHz, VBW = 300KHz, scan up through 10th harmonic. All harmonics / spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 KHz RBW.
5. Record the results in the test report.

3.7.4 Test Setup

3.7.5 Test Result

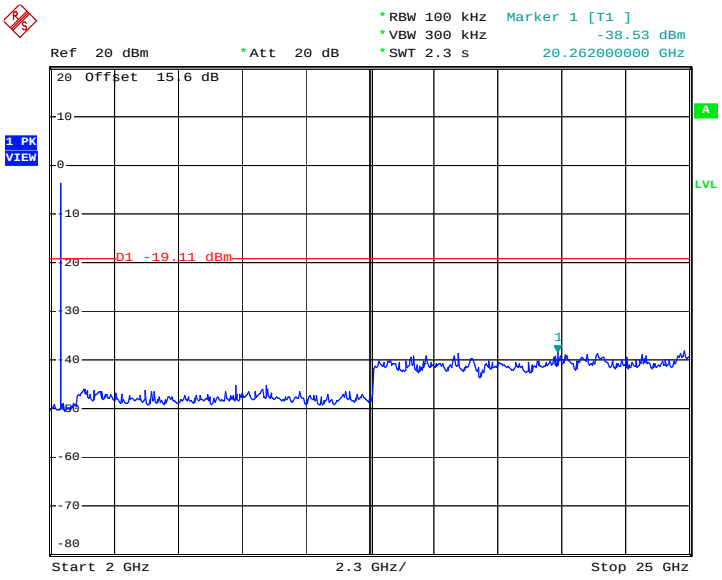
Test Mode :	3Mbps	Temperature :	23~24℃
Test Channel :	00	Relative Humidity :	47~48%
		Test Engineer :	Lizy Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 19.JUL.2012 00:50:30

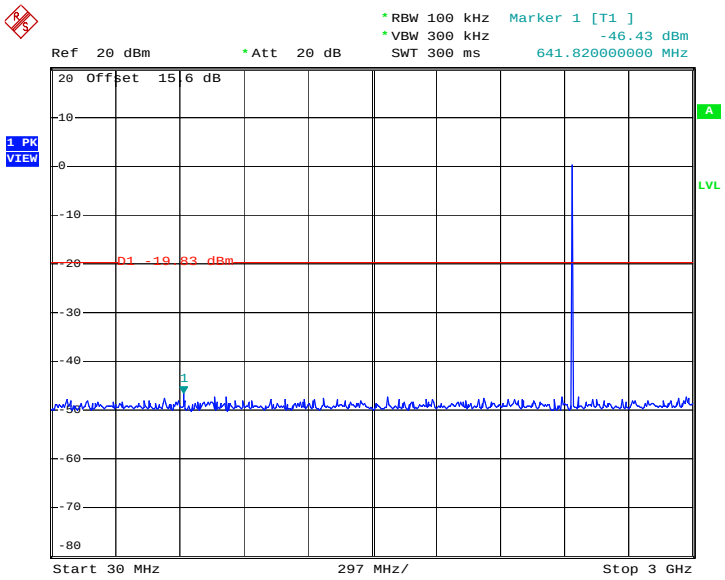
Conducted Spurious Emission Plot between 2 GHz ~ 25 GHz



Date: 24.JUL.2012 22:57:03

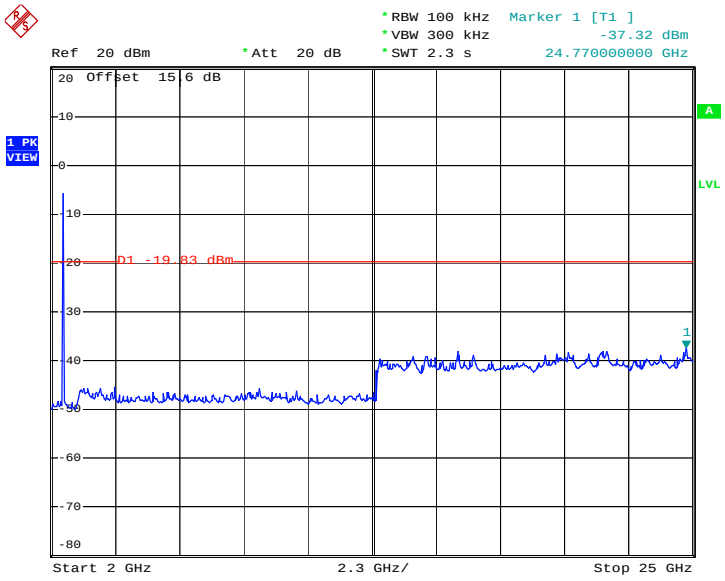
Test Mode :	3Mbps	Temperature :	23~24℃
Test Channel :	39	Relative Humidity :	47~48%
		Test Engineer :	Lizy Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 19.JUL.2012 00:51:34

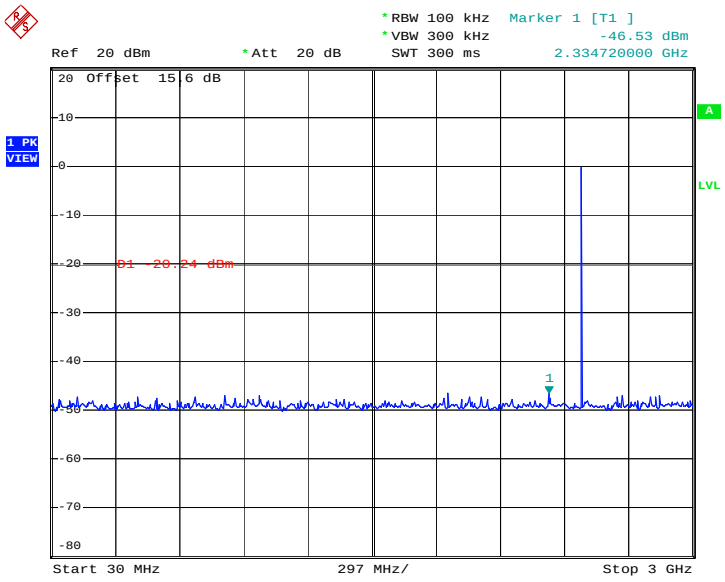
Conducted Spurious Emission Plot between 2 GHz ~ 25 GHz



Date: 24.JUL.2012 22:58:04

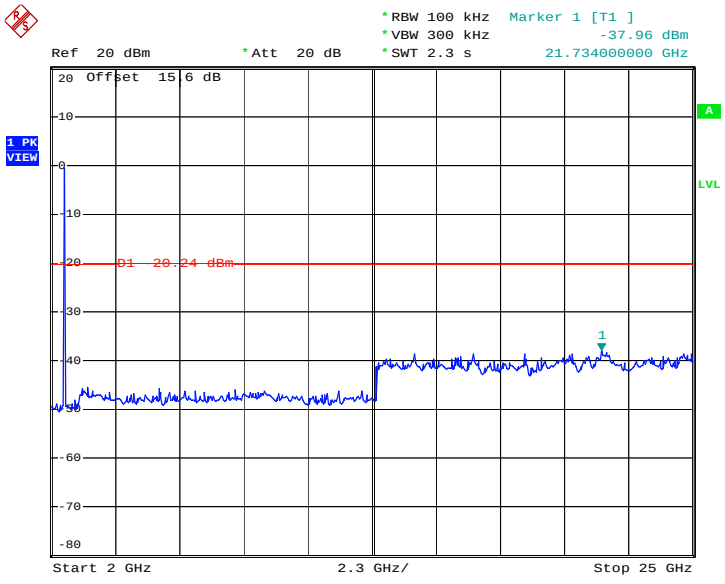
Test Mode :	3Mbps	Temperature :	23~24℃
Test Channel :	78	Relative Humidity :	47~48%
		Test Engineer :	Lizy Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 19.JUL.2012 00:52:38

Conducted Spurious Emission Plot between 2 GHz ~ 25 GHz



Date: 24.JUL.2012 23:00:07

3.8 Radiated Band Edges Measurement

3.8.1 Limit of Radiated Band Edges

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. 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

3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

3.8.3 Test Procedures

1. The testing follows the guidelines in Spurious Radiated Emissions of FCC Public Notice DA 00-705 Measurement Guidelines and fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test site requirement.
2. The EUT was placed on a turntable with 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, 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 to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Applies to band edge emissions that fall in the restricted bands listed in FCC Section 15.205, the maximum permitted field strength is listed in FCC Section 15.209. A pre-amp is necessary for this measurement. For measurements above 1 GHz, set RBW = 1MHz, VBW = 1MHz, Sweep: Auto for Peak; set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto for Average.
7. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Note: The average measurement for Bluetooth may calculate from the peak level corrected with duty cycle correction factor, derived from the appropriate duty cycle calculation per 15.35(b) and (c). The result by calculation method is no worse than direct measurement by using VBW=10Hz.

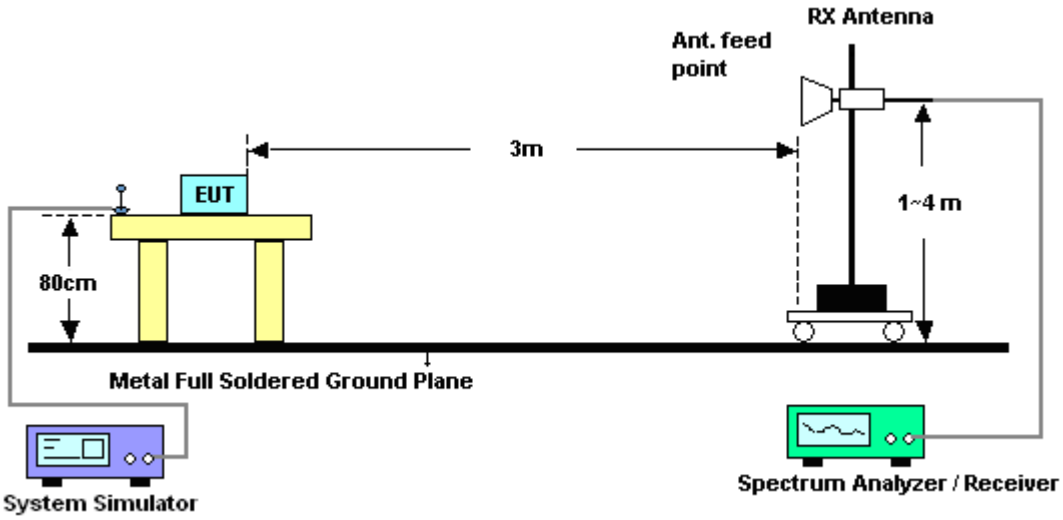
Marker-Delta method in DA 00-705：

(1) Use a 1 MHz RBW, a 1 MHz VBW, and a peak detector (as required by Section 15.35). Repeat the measurement with an average detector (i.e., 1 MHz RBW with 10 Hz VBW).

(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 = 300KHz >= 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.

3.8.4 Test Setup



3.8.5 Test Result of Radiated Band Edges

Test Mode :	3Mbps	Temperature :	21~22°C
Test Channel :	00	Relative Humidity :	46~47%
		Test Engineer :	Chenmy Cheng

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
2332.99	50.63	-23.37	74	48.5	32.76	3.27	33.9	100	109	Peak
2332.99	36.64	-17.36	54	34.51	32.76	3.27	33.9	100	109	Average

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
2370.61	50.61	-23.39	74	48.37	32.83	3.42	34.01	100	51	Peak
2370.61	37.1	-16.9	54	34.86	32.83	3.42	34.01	100	51	Average

Test Mode :	Mode 3	Temperature :	21~22°C
Test Channel :	78	Relative Humidity :	46~47%
		Test Engineer :	Chenmy Cheng

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
2483.97	44.41	-29.59	74	36.11	33.01	4.29	29	175	22	Peak
2483.97	31.76	-22.24	54	23.46	33.01	4.29	29	175	22	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	92.43	48.02	44.41	74	-29.59	Pass
Average	79.78	48.02	31.76	54	-22.24	Pass

Note: Average result = Maximum field strength – Delta result

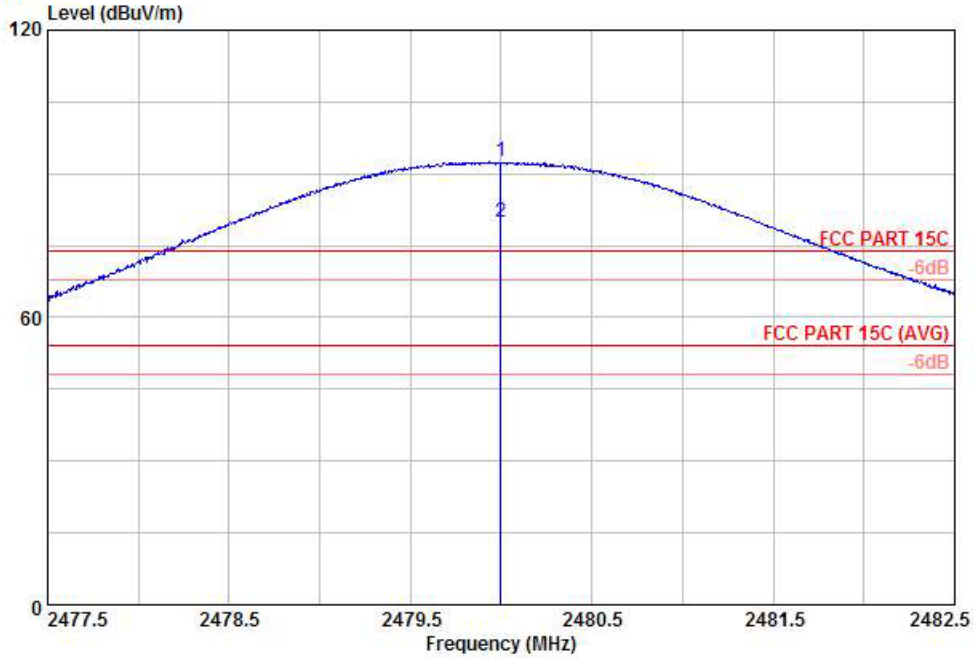
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.97	44.28	-29.72	74	35.98	33.01	4.29	29	154	271	Peak
2483.97	32.09	-21.91	54	23.79	33.01	4.29	29	154	271	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	90.03	45.75	44.28	74	-29.72	Pass
Average	77.84	45.75	32.09	54	-21.91	Pass

Note: Average result = Maximum field strength – Delta result

Test Mode :	Mode 3	Temperature :	21~22°C
Test Channel :	78	Relative Humidity :	46~47%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal

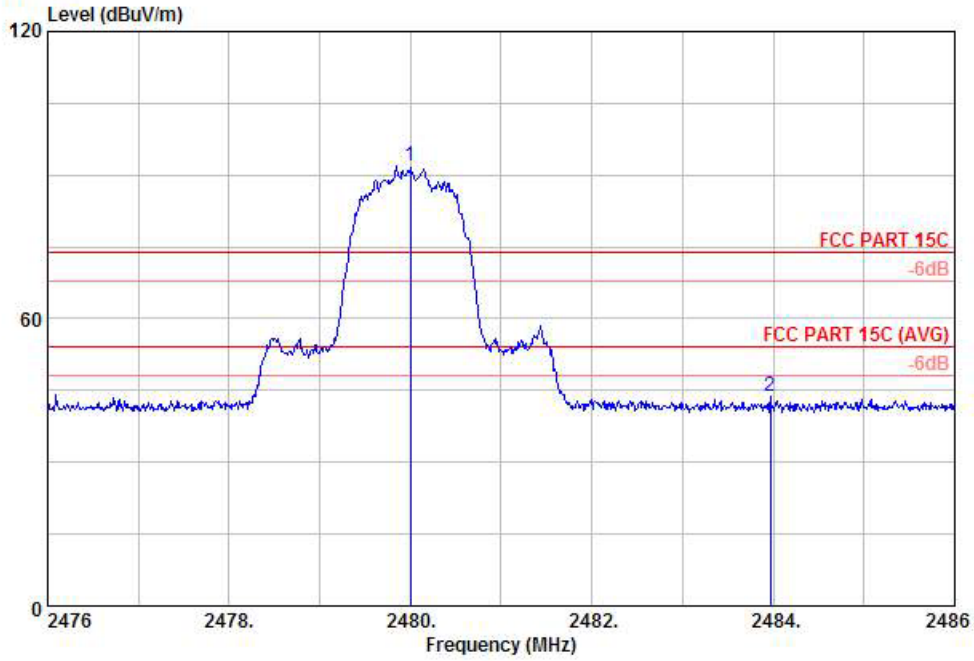


Site : 03CH01-KS
Condition: FCC PART 15C 3m HF ANT-100803 HORIZONTAL

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 X	2480.00	92.43	18.43	74.00	84.13	33.01	4.29	29.00	100	41	Peak
2 X	2480.00	79.78	25.78	54.00	71.48	33.01	4.29	29.00	100	41	Average

* Maximum field strength of the fundamental emission

Test Mode :	Mode 3	Temperature :	21~22°C
Test Channel :	78	Relative Humidity :	46~47%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal

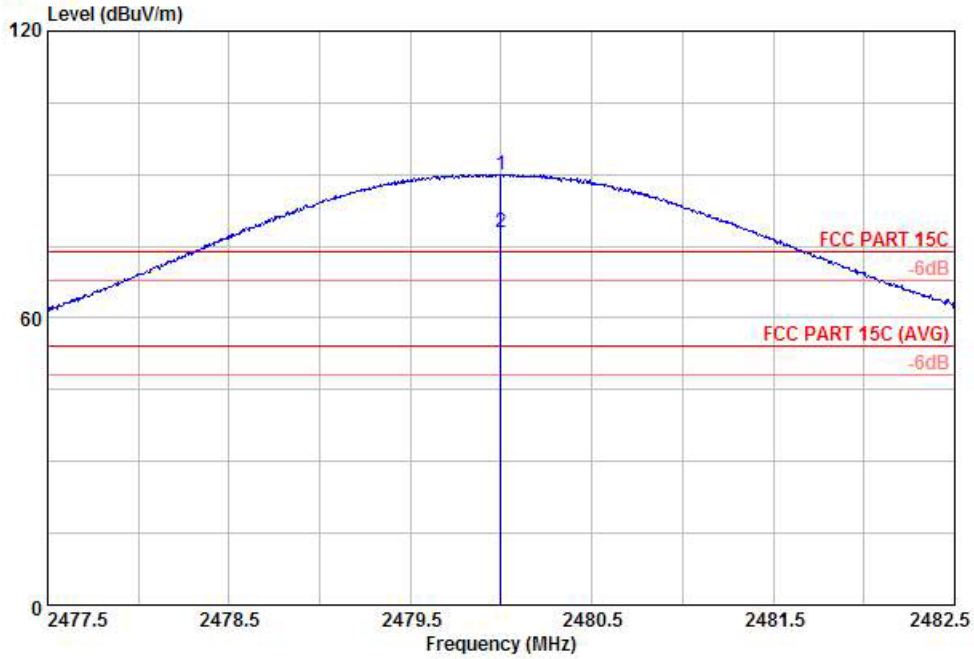


Site : 03CH01-KS
Condition: FCC PART 15C 3m HF ANT-100803 HORIZONTAL

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 X	2480.00	91.82	17.82	74.00	83.52	33.01	4.29	29.00	102	45	Peak
2	2483.97	43.80	-30.20	74.00	35.50	33.01	4.29	29.00	175	223	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 48.02 dB , single carrier Mode

Test Mode :	Mode 3	Temperature :	21~22°C
Test Channel :	78	Relative Humidity :	46~47%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical

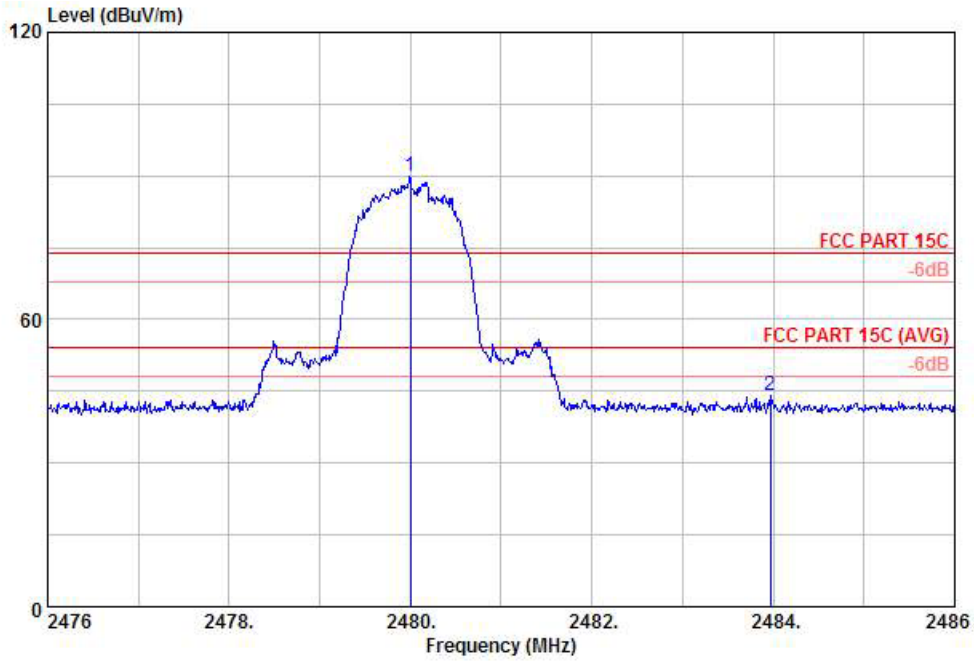


Site : 03CH01-KS
Condition: FCC PART 15C 3m HF ANT-100803 VERTICAL

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 X	2480.00	90.03	16.03	74.00	81.73	33.01	4.29	29.00	100	83	Peak
2 X	2480.00	77.84	23.84	54.00	69.54	33.01	4.29	29.00	100	83	Average

* Maximum field strength of the fundamental emission

Test Mode :	Mode 3	Temperature :	21~22°C
Test Channel :	78	Relative Humidity :	46~47%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical



Site : 03CH01-KS
Condition: FCC PART 15C 3m HF ANT-100803 VERTICAL

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 X	2480.00	89.87	15.87	74.00	81.57	33.01	4.29	29.00	115	20	Peak
2	2483.97	44.12	-29.88	74.00	35.82	33.01	4.29	29.00	154	271	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 45.75 dB , single carrier Mode

3.9 Radiated Spurious Emission Measurement

3.9.1 Limit of Radiated 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. 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

3.9.2 Measuring Instruments

See list of measuring instruments of this test report.

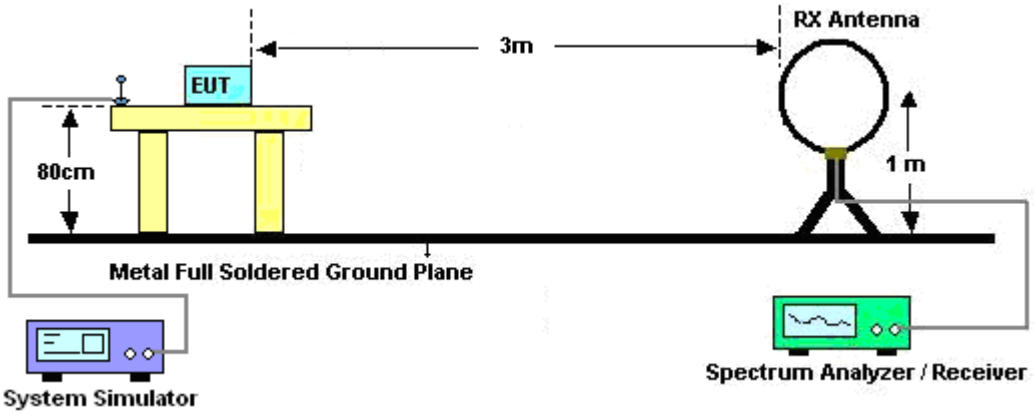
3.9.3 Test Procedures

1. The testing follows the guidelines in Spurious Radiated Emissions of FCC Public Notice DA 00-705 Measurement Guidelines and fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test site requirement.
2. The EUT was placed on a turntable with 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, 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 to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. 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, RBW=1MHz for f>1GHz ; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak; Set RBW = 1MHz, VBW = 10 Hz, Sweep = auto for average.
7. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
8. For measurement below 1GHz, if the emission level of the EUT measured by the peak detector is more than 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement by using the quasi-peak detector will be reported.

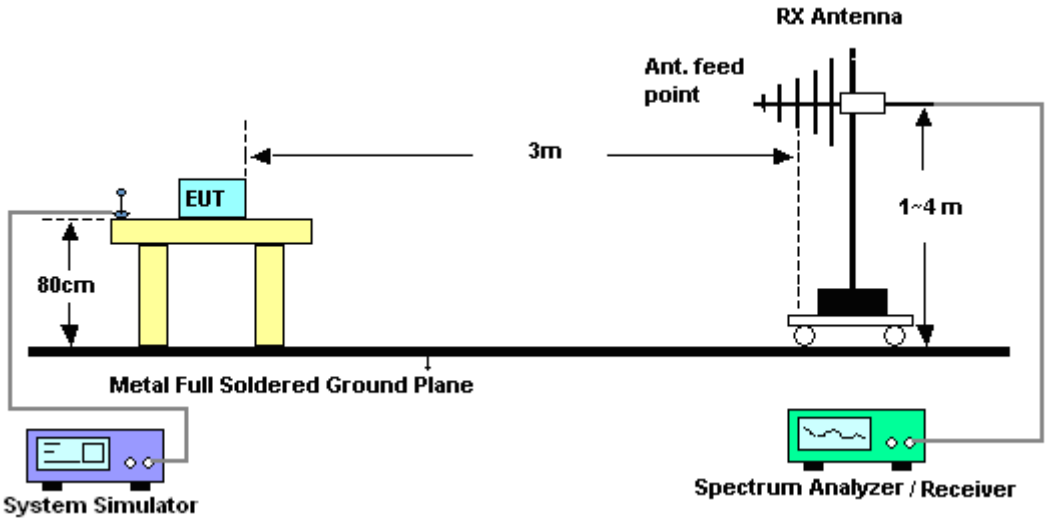
Note: The average measurement for Bluetooth may calculate from the peak level corrected with duty cycle correction factor, derived from the appropriate duty cycle calculation per 15.35(b) and (c). The result by calculation method is no worse than direct measurement by using VBW=10Hz.

3.9.4 Test Setup

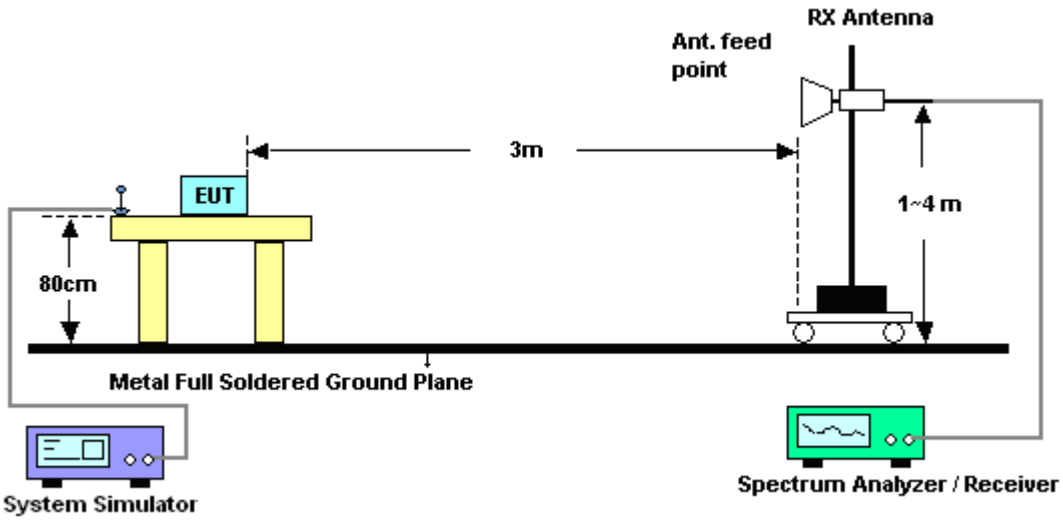
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.9.5 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.

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

Test Mode :	3Mbps	Temperature :	21~22°C
Test Channel :	00	Relative Humidity :	46~47%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	2402 MHz is fundamental signal which can be ignored.		

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
96.436	25.55	-17.95	43.5	45.21	9.91	0.4	29.97	100	21	Peak
119.018	19.27	-24.23	43.5	36.99	11.8	0.45	29.97	-	-	Peak
351.708	25.4	-20.6	46	39.98	14.54	0.82	29.94	-	-	Peak
374.623	24.71	-21.29	46	38.56	15.21	0.83	29.89	-	-	Peak
460.727	22.13	-23.87	46	34.55	16.45	0.91	29.78	-	-	Peak
833.317	26.29	-19.71	46	34.34	20.32	1.27	29.64	-	-	Peak
2332.99	50.63	-23.37	74	48.5	32.76	3.27	33.9	100	109	Peak
2332.99	36.64	-17.36	54	34.51	32.76	3.27	33.9	100	109	Average
2402	85	-	-	82.72	32.86	3.47	34.05	200	126	Peak
2402	72.94	-	-	70.66	32.86	3.47	34.05	200	126	Average
2492.59	50.38	-23.62	74	47.84	33.05	3.72	34.23	100	0	Peak
2492.59	37.75	-16.25	54	35.21	33.05	3.72	34.23	100	0	Average

Test Mode :	3Mbps	Temperature :	21~22°C
Test Channel :	00	Relative Humidity :	46~47%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	2402 MHz is fundamental signal which can be ignored.		

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
34.156	28.41	-11.59	40	42.71	15.56	0.23	30.09	100	152	Peak
38.212	27.1	-12.9	40	43.22	13.7	0.24	30.06	-	-	Peak
93.44	27.54	-15.96	43.5	47.61	9.51	0.4	29.98	-	-	Peak
460.727	24.55	-21.45	46	36.97	16.45	0.91	29.78	-	-	Peak
537.589	24.39	-21.61	46	34.85	18.24	0.99	29.69	-	-	Peak
833.317	29.63	-16.37	46	37.68	20.32	1.27	29.64	-	-	Peak
2370.61	50.61	-23.39	74	48.37	32.83	3.42	34.01	100	51	Peak
2370.61	37.1	-16.9	54	34.86	32.83	3.42	34.01	100	51	Average
2402	84.33	-	-	82.05	32.86	3.47	34.05	100	0	Peak
2402	73.59	-	-	71.31	32.86	3.47	34.05	100	0	Average
2492.97	50.86	-23.14	74	48.32	33.05	3.72	34.23	100	256	Peak
2492.97	37.15	-16.85	54	34.61	33.05	3.72	34.23	100	256	Average

Test Mode :	3Mbps	Temperature :	21~22°C
Test Channel :	39	Relative Humidity :	46~47%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	2441 MHz is fundamental signal which can be ignored.		

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
95.762	27.07	-16.43	43.5	46.73	9.91	0.4	29.97	-	-	Peak
118.601	20.94	-22.56	43.5	38.66	11.8	0.45	29.97	-	-	Peak
332.519	24.02	-21.98	46	39.12	14.05	0.79	29.94	-	-	Peak
365.539	25.09	-20.91	46	39.29	14.88	0.83	29.91	-	-	Peak
499.425	23.34	-22.66	46	34.92	17.19	0.96	29.73	-	-	Peak
833.317	31.63	-14.37	46	39.68	20.32	1.27	29.64	100	251	Peak
2371.18	50.23	-23.77	74	47.99	32.83	3.42	34.01	100	59	Peak
2371.18	37.17	-16.83	54	34.93	32.83	3.42	34.01	100	59	Average
2441	85.76	-	-	83.36	32.95	3.6	34.15	100	186	Peak
2441	74.93	-	-	72.53	32.95	3.6	34.15	100	186	Average
2488.98	50.19	-23.81	74	47.65	33.05	3.72	34.23	100	0	Peak
2488.98	37.3	-16.7	54	34.76	33.05	3.72	34.23	100	0	Average

Test Mode :	3Mbps	Temperature :	21~22°C
Test Channel :	39	Relative Humidity :	46~47%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	2441 MHz is fundamental signal which can be ignored.		

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
30.211	32.76	-7.24	40	44.58	18	0.26	30.08	100	96	Peak
38.212	27.07	-12.93	40	43.19	13.7	0.24	30.06	-	-	Peak
91.495	28.12	-15.38	43.5	48.6	9.12	0.39	29.99	-	-	Peak
175.652	13.31	-30.19	43.5	33.85	8.8	0.55	29.89	-	-	Peak
537.589	23.69	-22.31	46	34.15	18.24	0.99	29.69	-	-	Peak
833.317	27.74	-18.26	46	35.79	20.32	1.27	29.64	-	-	Peak
2379.35	50.35	-23.65	74	48.11	32.83	3.42	34.01	100	26	Peak
2379.35	37.43	-16.57	54	35.19	32.83	3.42	34.01	100	26	Average
2441	85.97	-	-	83.57	32.95	3.6	34.15	100	360	Peak
2441	74.59	-	-	72.19	32.95	3.6	34.15	100	360	Average
2483.66	49.96	-24.04	74	47.47	33.01	3.68	34.2	100	291	Peak
2483.66	37.17	-16.83	54	34.68	33.01	3.68	34.2	100	291	Average

Test Mode :	3Mbps	Temperature :	21~22°C
Test Channel :	78	Relative Humidity :	46~47%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	2480 MHz is fundamental signal which can be ignored.		

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
96.099	27.14	-16.36	43.5	46.8	9.91	0.4	29.97	100	109	Peak
117.36	21.12	-22.38	43.5	38.84	11.8	0.45	29.97	-	-	Peak
281.995	19.47	-26.53	46	36.01	12.7	0.71	29.95	-	-	Peak
332.519	23.97	-22.03	46	39.07	14.05	0.79	29.94	-	-	Peak
393.472	26.51	-19.49	46	39.64	15.87	0.84	29.84	-	-	Peak
833.317	28.44	-17.56	46	36.49	20.32	1.27	29.64	-	-	Peak
2360	53.37	-20.63	74	45.47	32.81	4.21	29.12	112	310	Peak
2360	40.05	-13.95	54	32.15	32.81	4.21	29.12	112	310	Average
2480	92.43	-	-	84.13	33.01	4.29	29	100	41	Peak
2480	79.78	-	-	71.48	33.01	4.29	29	100	41	Average
2483.97	44.41	-29.59	74	36.11	33.01	4.29	29	175	22	Peak
2483.97	31.76	-22.24	54	23.46	33.01	4.29	29	175	22	Average

Test Mode :	3Mbps	Temperature :	21~22°C
Test Channel :	78	Relative Humidity :	46~47%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	2480 MHz is fundamental signal which can be ignored.		

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
33.445	29.93	-10.07	40	44.23	15.56	0.23	30.09	-	-	Peak
42.154	26.15	-13.85	40	45.5	10.48	0.26	30.09	-	-	Peak
91.816	27.62	-15.88	43.5	47.86	9.35	0.39	29.98	-	-	Peak
460.727	22.64	-23.36	46	35.06	16.45	0.91	29.78	-	-	Peak
833.317	37.04	-8.96	46	45.09	20.32	1.27	29.64	100	62	Peak
942.131	22.25	-23.75	46	29.75	20.7	1.33	29.53	-	-	Peak
2376	53.35	-20.65	74	45.4	32.83	4.22	29.1	113	352	Peak
2376	40.03	-13.97	54	32.08	32.83	4.22	29.1	113	352	Average
2480	90.03	-	-	81.73	33.01	4.29	29	100	83	Peak
2480	77.84	-	-	69.54	33.01	4.29	29	100	83	Average
2483.97	44.28	-29.72	74	35.98	33.01	4.29	29	154	271	Peak
2483.97	32.09	-21.91	54	23.79	33.01	4.29	29	154	271	Average

3.10 AC Conducted Emission Measurement

3.10.1 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.

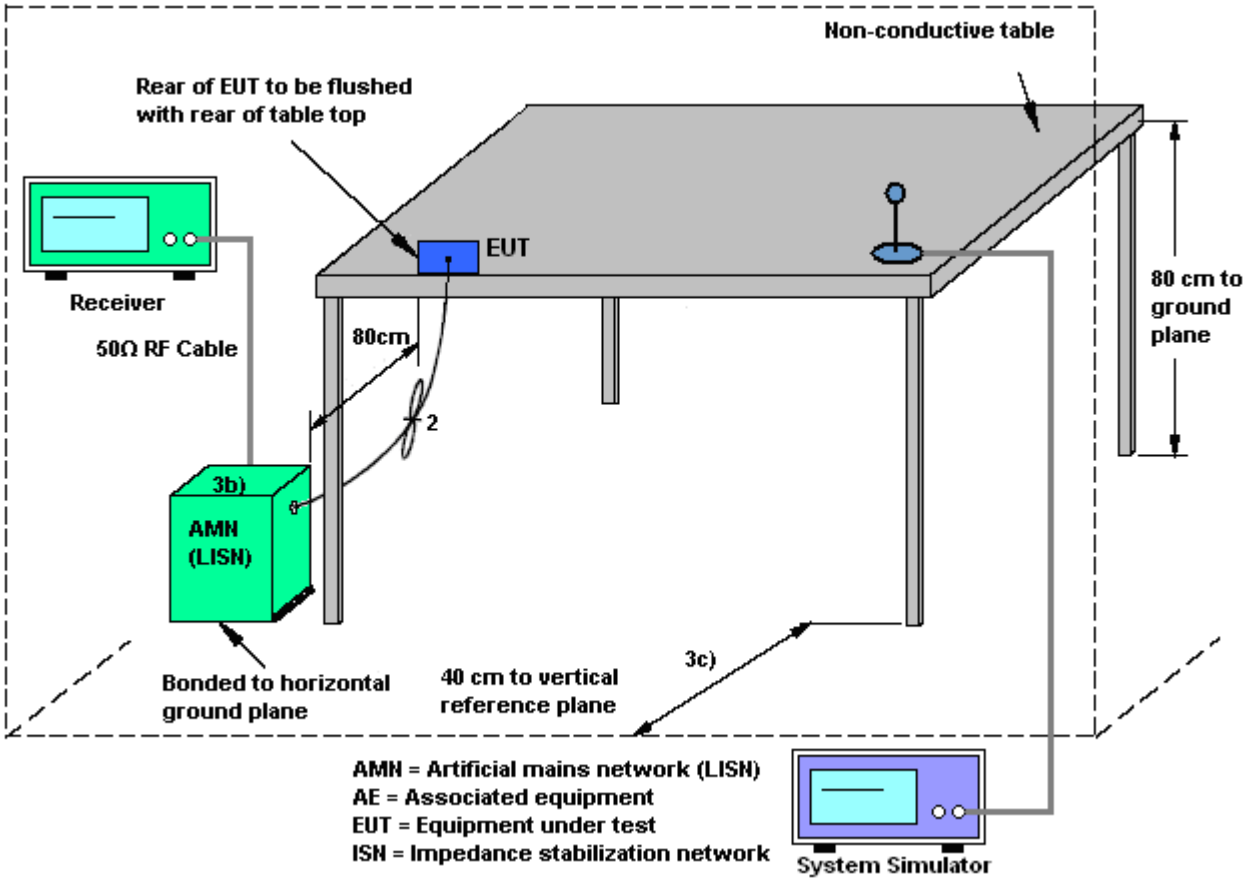
3.10.2 Measuring Instruments

See list of measuring instruments of this test report.

3.10.3 Test Procedures

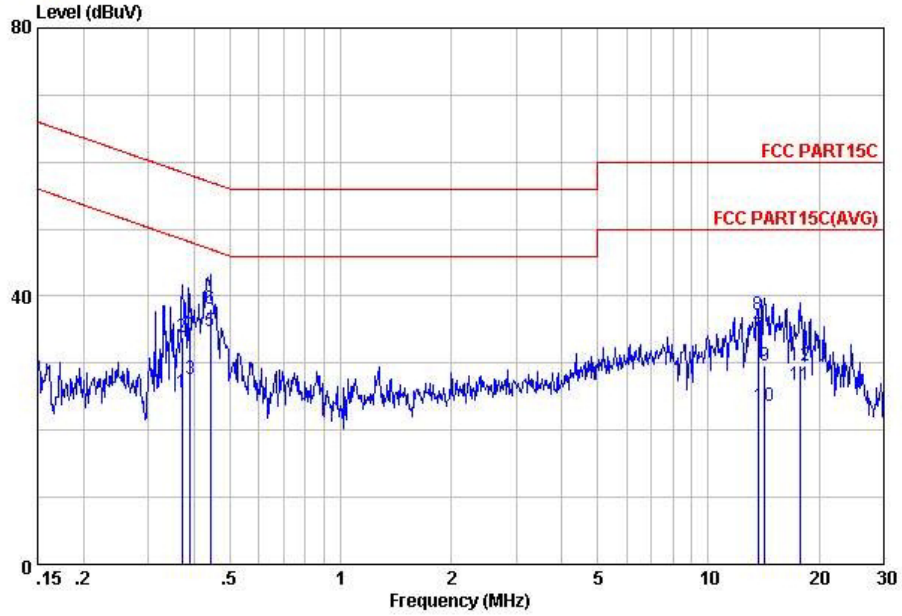
1. The test follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009 test site requirement.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line 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.

3.10.4 Test Setup



3.10.5 Test Result of AC Conducted Emission

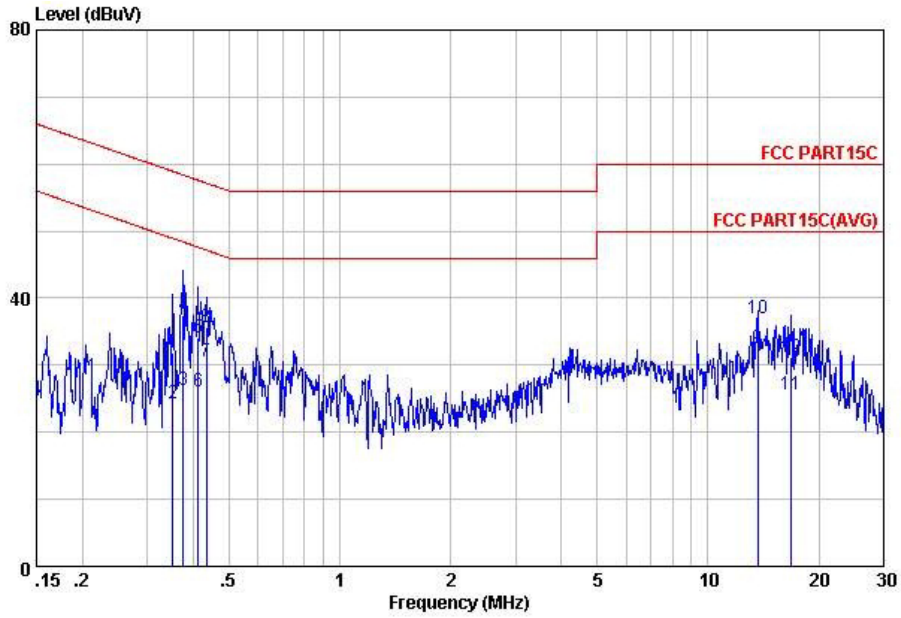
Test Mode :	Mode 1	**Temperature :**	19~20℃
Test Engineer :	Tom Wang	**Relative Humidity :**	39~40%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	CDMA2000 BC0 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + NFC Tx		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-KS
Condition: FCC PART15C LISN-111230 LINE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.37	25.73	-22.74	48.47	15.20	-0.08	10.61	Average
2	0.37	33.83	-24.64	58.47	23.30	-0.08	10.61	QP
3	0.39	27.54	-20.54	48.08	17.00	-0.08	10.62	Average
4	0.39	35.34	-22.74	58.08	24.80	-0.08	10.62	QP
5	0.44	34.74	-12.28	47.02	24.20	-0.08	10.62	Average
6	0.44	38.04	-18.98	57.02	27.50	-0.08	10.62	QP
7	13.62	34.03	-15.97	50.00	23.11	-0.06	10.98	Average
8	13.62	37.13	-22.87	60.00	26.21	-0.06	10.98	QP
9	14.21	29.74	-30.26	60.00	18.80	-0.05	10.99	QP
10	14.21	23.64	-26.36	50.00	12.70	-0.05	10.99	Average
11	17.75	26.70	-23.30	50.00	15.61	0.04	11.05	Average
12	17.75	29.60	-30.40	60.00	18.51	0.04	11.05	QP

Test Mode :	Mode 1	Temperature :	19~20℃
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	CDMA2000 BC0 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + NFC Tx		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
Condition: FCC PART15C LISN-111230 NEUTRAL

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.35	31.93	-26.98	58.91	21.40	-0.08	10.61	QP
2	0.35	24.33	-24.58	48.91	13.80	-0.08	10.61	Average
3	0.38	26.34	-22.05	48.39	15.81	-0.08	10.61	Average
4	0.38	37.34	-21.05	58.39	26.81	-0.08	10.61	QP
5	0.41	34.14	-23.45	57.59	23.60	-0.08	10.62	QP
6	0.41	26.14	-21.45	47.59	15.60	-0.08	10.62	Average
7	0.44	30.44	-16.71	47.15	19.90	-0.08	10.62	Average
8	0.44	35.74	-21.41	57.15	25.20	-0.08	10.62	QP
9	13.62	32.61	-17.39	50.00	21.70	-0.07	10.98	Average
10	13.62	37.01	-22.99	60.00	26.10	-0.07	10.98	QP
11	16.75	25.62	-24.38	50.00	14.61	-0.01	11.02	Average
12	16.75	31.22	-28.78	60.00	20.21	-0.01	11.02	QP

3.11 Antenna Requirements

3.11.1 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.

3.11.2 Antenna Connected Construction

Non-standard connector used.

3.11.3 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	100319	9kHz~40GHz	Dec. 30, 2011	Jul. 19, 2012~ Aug. 01, 2012	Dec. 29, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 23, 2011	Jul. 19, 2012~ Aug. 01, 2012	Aug. 22, 2012	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 23, 2011	Jul. 19, 2012~ Aug. 01, 2012	Aug. 22, 2012	Conducted (TH01-KS)
DC Power Supply	GWINSTEK	GPS-3030D	E1884515	N/A	Aug. 23, 2011	Jul. 19, 2012~ Aug. 01, 2012	Aug. 22, 2012	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Dec. 30, 2011	Jul. 19, 2012~ Aug. 01, 2012	Dec. 29, 2012	Conducted (TH01-KS)
Bluetooth Base Station	R&S	CBT	100783	N/A	Aug. 18, 2011	Jul. 19, 2012~ Aug. 01, 2012	Aug. 17, 2012	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 09, 2011	Aug. 20, 2012	Nov. 08, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Aug. 20, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Aug. 20, 2012	Dec. 07, 2012	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/00	9 kHz~30 MHz	Jul. 28, 2012	Aug. 20, 2012	Jul. 27, 2013	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 06, 2012	Aug. 20, 2012	Jan. 05, 2013	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 30, 2011	Aug. 20, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 30, 2011	Aug. 20, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz~18GHz	Nov. 07, 2011	Aug. 20, 2012	Nov. 06, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Oct. 11, 2011	Aug. 20, 2012	Oct.10, 2012	Radiation (03CH01-KS)
Bluetooth Base Station	R&S	CBT	100783	N/A	Aug. 17, 2012	Aug. 20, 2012	Aug. 16, 2013	Radiation (03CH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 01, 2012	Aug. 20, 2012	May 31, 2013	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 30, 2011	Aug. 20, 2012	Dec. 29, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Dec. 30, 2011	Aug. 20, 2012	Dec. 29, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 16, 2011	Aug. 20, 2012	Nov. 15, 2012	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/066	2G Full-Band	Dec. 30, 2011	Aug. 20, 2012	Dec. 29, 2012	Conduction (CO01-KS)

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

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.54

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

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

Appendix A. Photographs of EUT

Please refer to Sporton report number EP270201 as below.