

FCC RF Test Report

APPLICANT : PAX Technology Limited
EQUIPMENT : Mobile payment Terminal
BRAND NAME : PAX
MODEL NAME : D900
FCC ID : V5PD900W
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DSS) Spread Spectrum Transmitter

The product was received on Apr. 24, 2012 and completely tested on Jul. 12, 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



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
FR242415A	Rev. 01	Initial issue of report	Jul. 24, 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	$\geq 15\text{Chs}$	Pass	-
3.2	15.247(a)(1)	A8.1(b)	Hopping Channel Separation	$\geq 2/3$ of 20dB BW	Pass	-
3.3	15.247(a)(1)	A8.1(d)	Dwell Time of Each Channel	$\leq 0.4\text{sec}$ 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	$\leq 125\text{ mW}$	Pass	-
3.6	15.247(d)	A8.5	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
3.7	15.247(d)	A8.5	Conducted Spurious Emission	$\leq 20\text{dBc}$	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 1.42 dB at 816.670 MHz
3.10	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 11.77 dB at 0.180 MHz
3.11	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

PAX Technology Limited

Room 2416, 24/F., Sun Hung Kai Centre, 30 Harbour Road, Wanchai, Hong Kong

1.2 Manufacturer

PAX Computer Technology (Shenzhen) Co., Ltd.

4/F No.3 Building, Software Park, Second Central Science-Tech Road, High-Tech industrial Park, Shenzhen, Guangdong, P.R.C.

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Mobile payment Terminal
Brand Name	PAX
Model Name	D900
FCC ID	V5PD900W
EUT supports Radios application	WLAN 11bgn / Bluetooth
HW Version	D900-XXX-XX3-XXXX
SW Version	V1.XX
EUT Stage	Production Unit

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) : -1.15 dBm (0.00077 W) Bluetooth EDR (2Mbps) : -1.70 dBm (0.00068 W) Bluetooth EDR (3Mbps) : -1.30 dBm (0.00074 W)
Antenna Type	PIFA Antenna with gain 1.4 dBi
Type of Modulation	Bluetooth (1Mbps) : GFSK Bluetooth 2.1 EDR (2Mbps) : $\pi/4$ -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.	DC Power Supply	GWINSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	VOSTRO 1450	PPD-AR5B195	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
4.	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:

Band	Bluetooth RF Output Power		
Channel	00	39	78
Frequency	2402	2441	2480
Peak Power	-1.24	-1.15	-1.54

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 1Mbps 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).

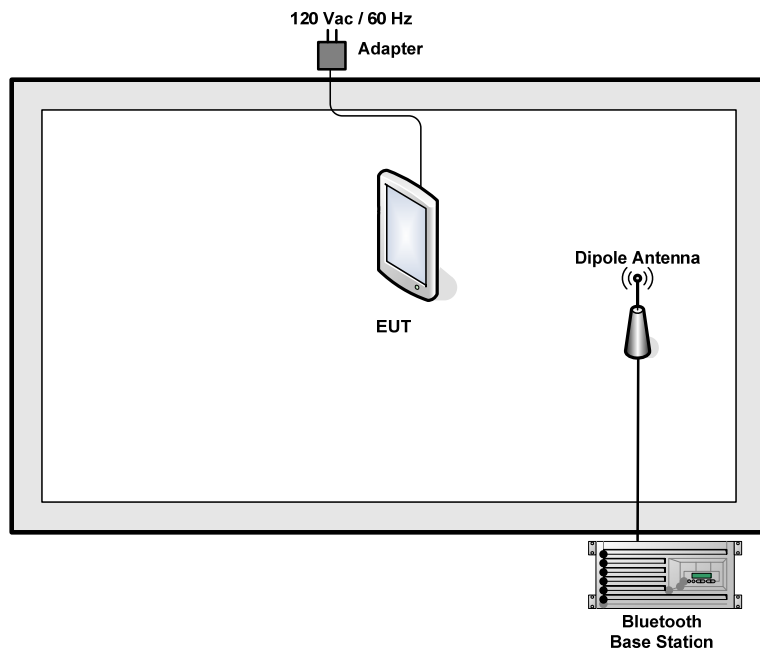
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

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

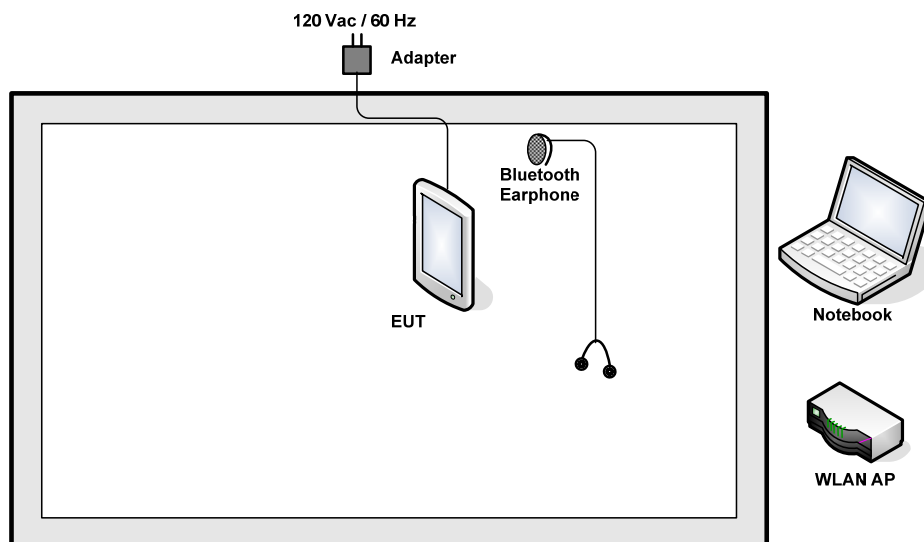
Test Cases			
Test Item	Data Rate / Modulation		
	Bluetooth 1Mbps GFSK	Bluetooth EDR 2Mbps $\pi/4$ -DQPSK	Bluetooth EDR 3Mbps 8-DPSK
Conducted TCs	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz	Mode 4: CH00_2402 MHz Mode 5: CH39_2441 MHz Mode 6: CH78_2480 MHz	Mode 7: CH00_2402 MHz Mode 8: CH39_2441 MHz Mode 9: CH78_2480 MHz
Radiated TCs	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz	N/A	N/A
AC Conducted Emission	Mode 1 :Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Camera + Credit card for Sample 1 Mode 2 :Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Barcode + Credit card for Sample 2		
Remark:			
1. For radiated TCs, the data rate was set in 1Mbps due to the highest RF output power; only the data of these modes was reported.			
2. For conducted emission, the worst case is mode 1; only the test data of this mode was reported.			

2.3 Connection Diagram of Test System

<Bluetooth Tx Mode>



<AC Conducted Emission Mode>





2.4 RF Utility

For Bluetooth function, execute "ADB" to make the EUT 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.

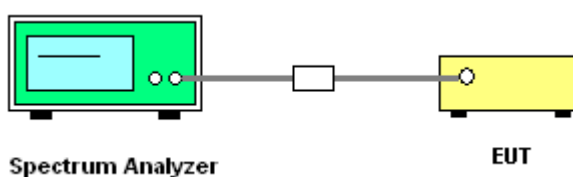
3.1.2 Measuring Instruments

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. The modulation types of EUT are irrelevant to number of hopping channels deviation.
The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:
Span = the frequency band of operation; $RBW \geq 1\%$ of the span; $VBW \geq RBW$; Sweep = auto;
Detector function = peak; Trace = max hold.
4. The number of hopping frequency used is defined as the device has the numbers of total channel.

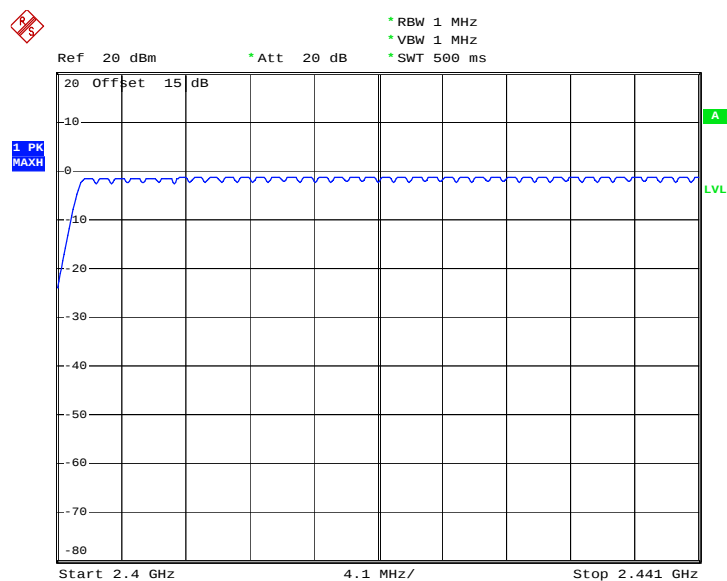
3.1.4 Test Setup



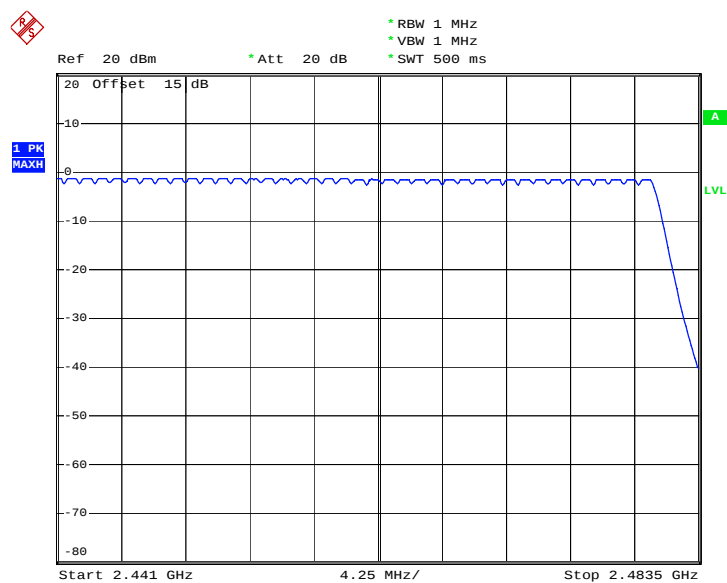
3.1.5 Test Result of Number of Hopping Frequency

Test Mode :	1Mbps	Temperature :	23~24°C
Test Engineer :	Zhi Lu	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



Date: 11.JUL.2012 19:45:05



Date: 11.JUL.2012 19:50:25

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.

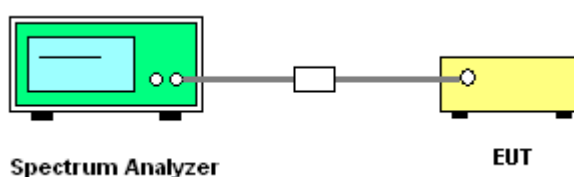
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. Please refer 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. The EUT should be transmitting at its maximum data rate as the worst cases.
4. Use the following spectrum analyzer settings:
Span = wide enough to capture the peaks of two adjacent channels; $RBW \geq 1\%$ of the span;
 $VBW \geq RBW$; Sweep = auto; Detector function = peak; Trace = max hold.
5. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

3.2.4 Test Setup

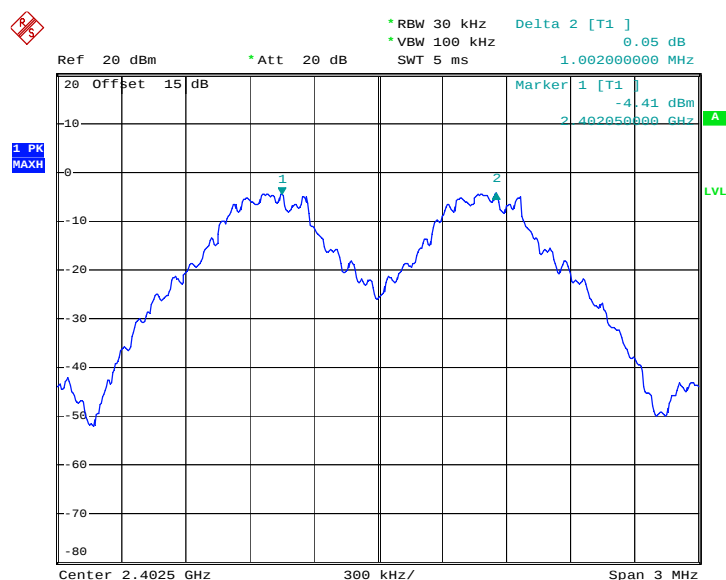


3.2.5 Test Result of Hopping Channel Separation

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

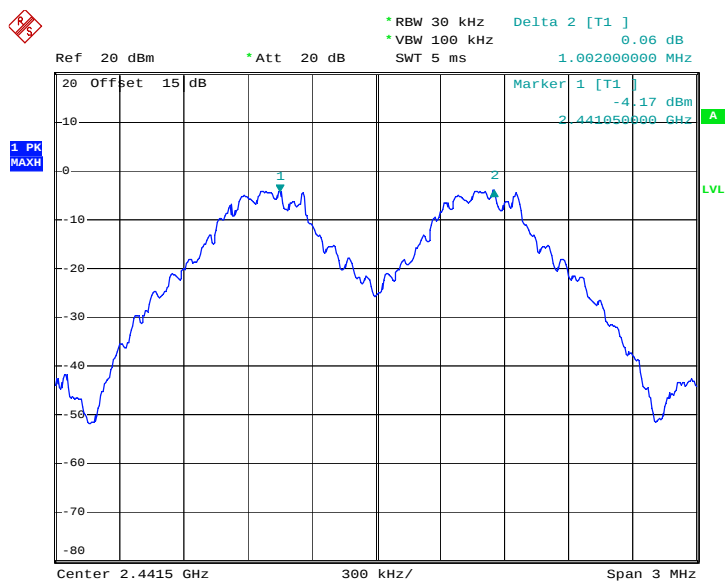
Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.002	0.6373	Pass
39	2441	1.002	0.6400	Pass
78	2480	1.002	0.6427	Pass

Channel Separation Plot on Channel 00 - 01



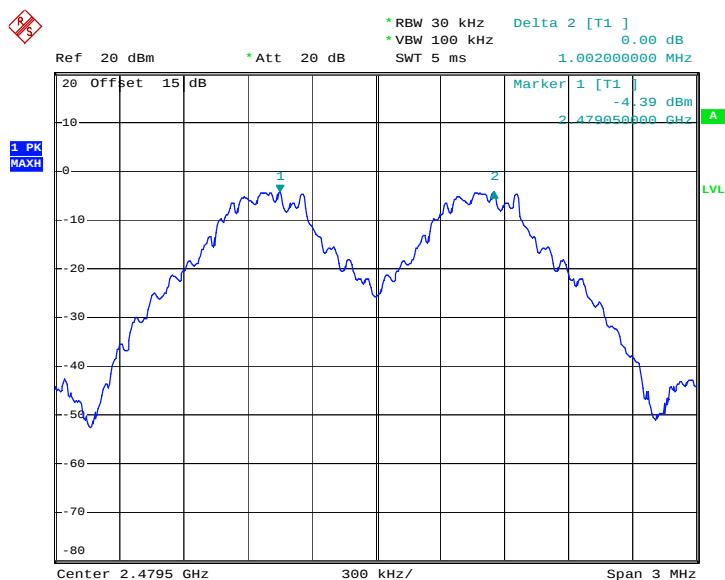
Date: 11.JUL.2012 18:45:21

Channel Separation Plot on Channel 39 - 40



Date: 11.JUL.2012 18:46:27

Channel Separation Plot on Channel 77 - 78



Date: 11.JUL.2012 18:47:40

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.

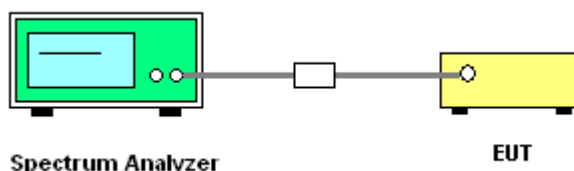
3.3.2 Measuring Instruments

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 of EUT was connected to the spectrum analyzer by a low loss cable.
3. The EUT should be transmitting at its maximum data rate as the worst cases.
4. The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:
Span = zero span, centered on a hopping channel; RBW = 1 MHz; VBW $\geq$ RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold.
5. Use the marker-delta function to calculate the dwell time.

3.3.4 Test Setup



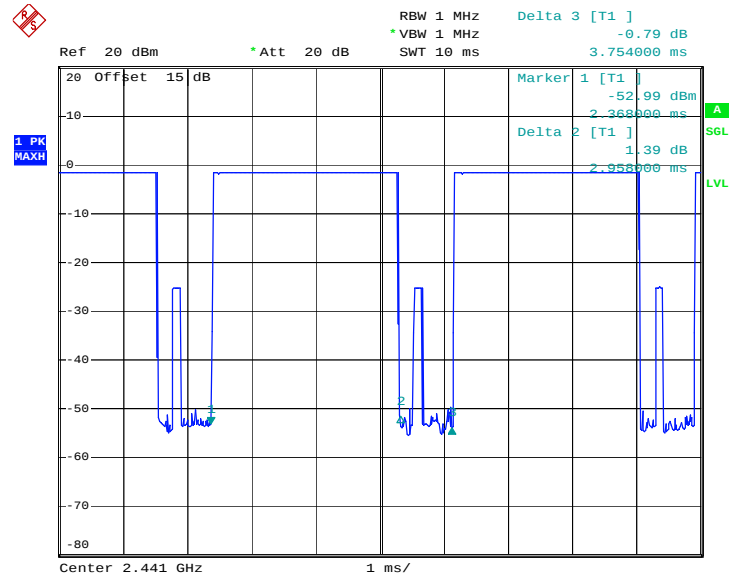
3.3.5 Test Result of Dwell Time

Test Mode :	DH5	Temperature :	23~24℃
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

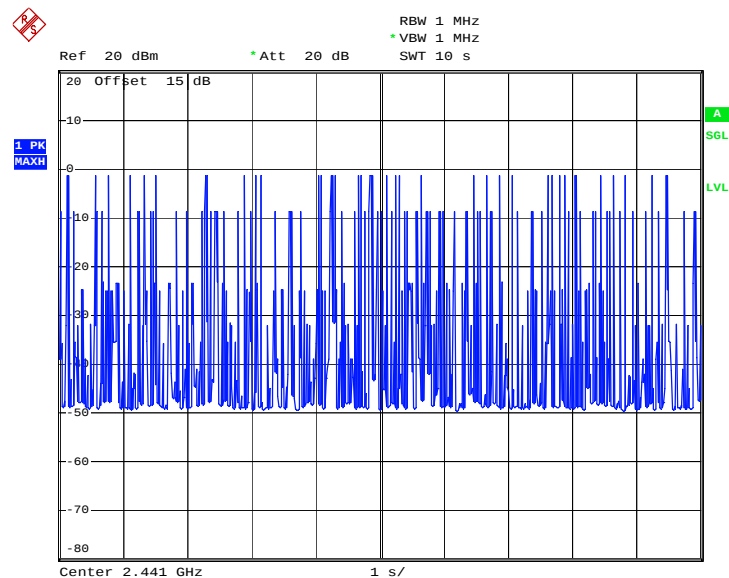
Package Mode	Average Hopping Channel	Package Transfer Time (usec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
DH5	3.50	2958.00	0.33	0.4	Pass

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)

DH5 Dwell Time (One Pulse) Plot on Channel 39


Date: 11.JUL.2012 18:41:08

DH5 Dwell Time (Count Pulses) Plot on Channel 39


Date: 11.JUL.2012 18:54:36

3.4 20dB Bandwidth Measurement

3.4.1 Limit of 20dB Bandwidth

N/A

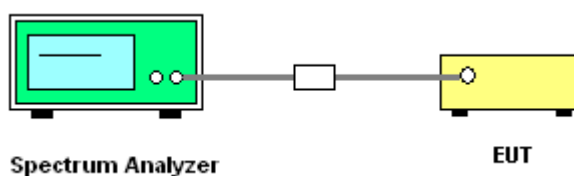
3.4.2 Measuring Instruments

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. The EUT should be transmitting at its maximum data rate as the worst cases.
4. Use the following spectrum analyzer settings:
Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel;
RBW $\geq$ 1% of the 20 dB bandwidth; VBW $\geq$ RBW; Sweep = auto; Detector function = peak;
Trace = max hold.
5. The marker-delta reading at this point is the 20 dB bandwidth of the emission.

3.4.4 Test Setup

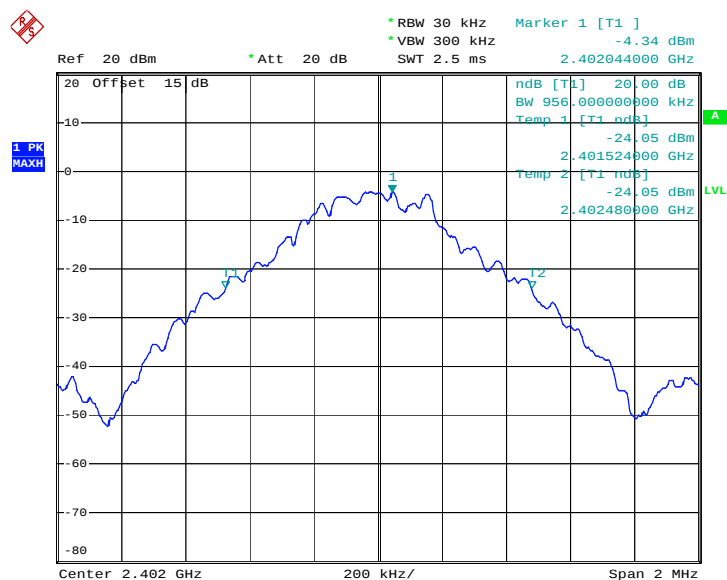


3.4.5 Test Result of 20dB Bandwidth

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

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	0.956
39	2441	0.960
78	2480	0.964

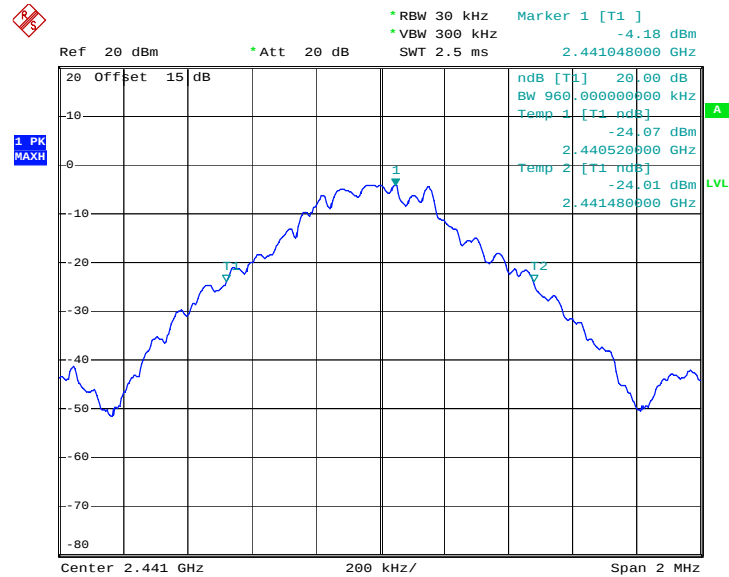
20 dB Bandwidth Plot on Channel 00



Date: 11.JUL.2012 18:56:56

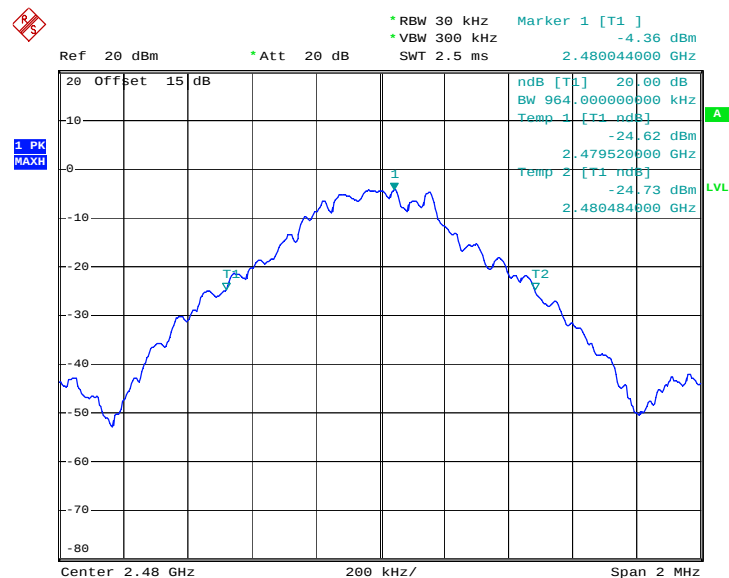


20 dB Bandwidth Plot on Channel 39



Date: 11.JUL.2012 19:22:59

20 dB Bandwidth Plot on Channel 78



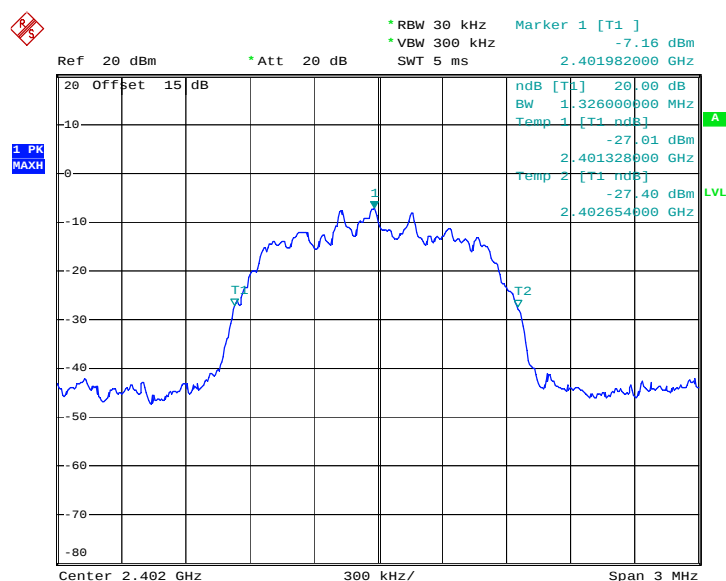
Date: 11.JUL.2012 18:58:37



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

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.326
39	2441	1.326
78	2480	1.320

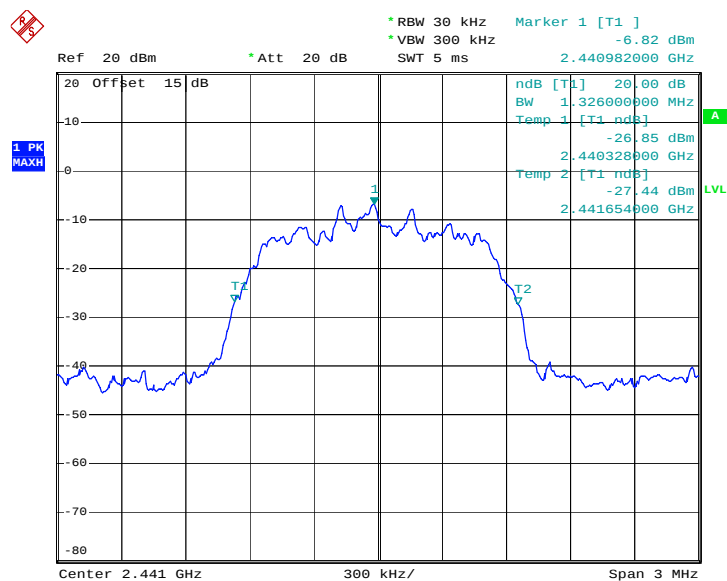
20 dB Bandwidth Plot on Channel 00



Date: 11.JUL.2012 18:59:09

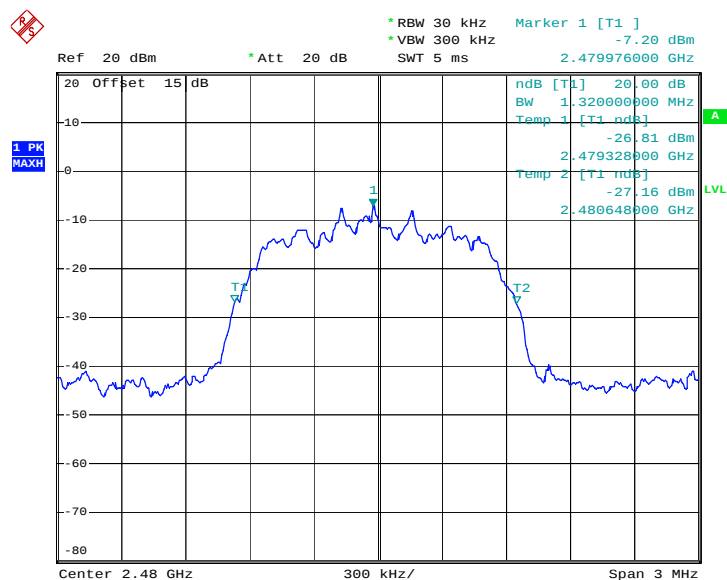


20 dB Bandwidth Plot on Channel 39



Date: 11.JUL.2012 19:00:02

20 dB Bandwidth Plot on Channel 78



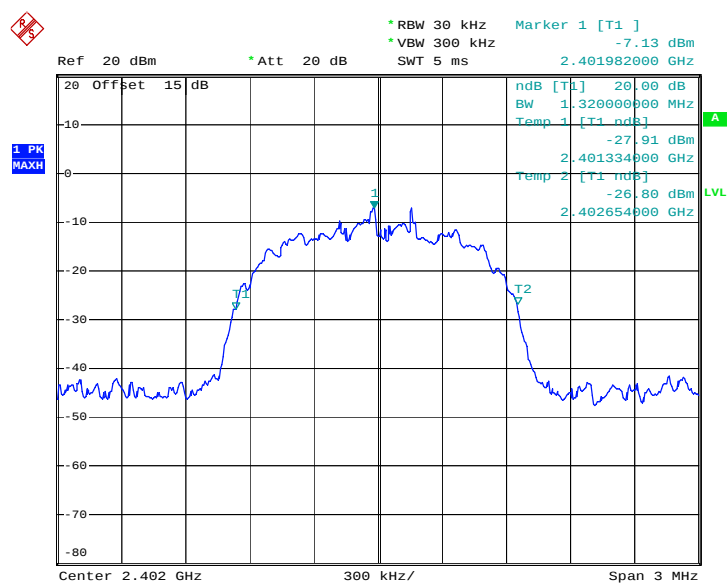
Date: 11.JUL.2012 19:01:21



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

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.320
39	2441	1.320
78	2480	1.320

20 dB Bandwidth Plot on Channel 00



Date: 11.JUL.2012 19:01:31



*RBW 30 kHz
 *VBW 300 kHz
 *Att 20 dB
 SWT 5 ms

Marker 1 [T1]
 -6.91 dBm
 2.440976000 GHz

20 Offset 15 dB

1 PK MAX

ndB [T1] 20.00 dB
 BW 1.320000000 MHz
 Temp 1 [T1 ndB] -27.23 dBm
 2.440334000 GHz
 Temp 2 [T1 ndB] -26.78 dBm
 2.441654000 GHz

Center 2.441 GHz
 300 kHz/
 Span 3 MHz

Date: 11.JUL.2012 19:01:47

1 PK
MAXH

Ref 20 dBm Att 20 dB RBW 30 kHz VBW 300 kHz SWT 5 ms

Marker 1 [T1] -7.20 dBm 2.479976000 GHz

ndB [T1] 20.00 dB
BW 1.320000000 MHz
Temp 1 [T1 ndB] -27.70 dBm
2.479334000 GHz
Temp 2 [T1 ndB] -26.88 dBm
2.480654000 GHz

Center 2.48 GHz 300 kHz/ Span 3 MHz

Date: 11.JUL.2012 19:03:00

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.

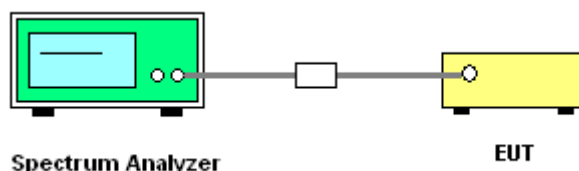
3.5.2 Measuring Instruments

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.

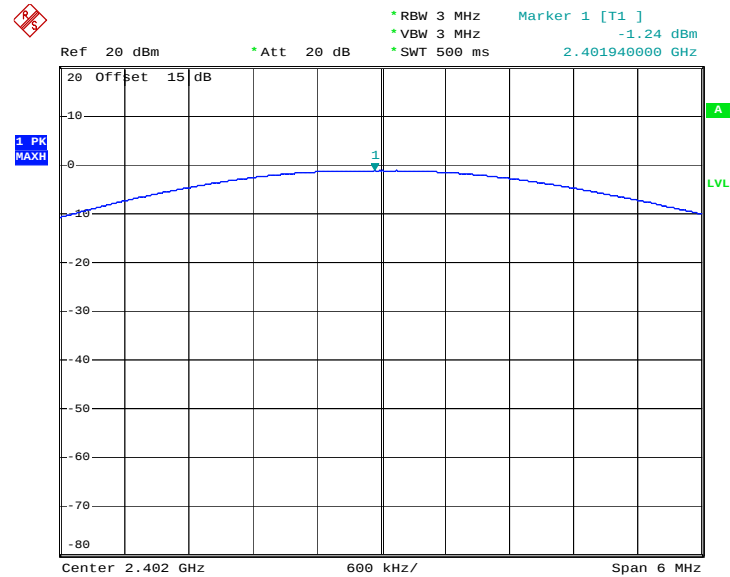
3.5.4 Test Setup



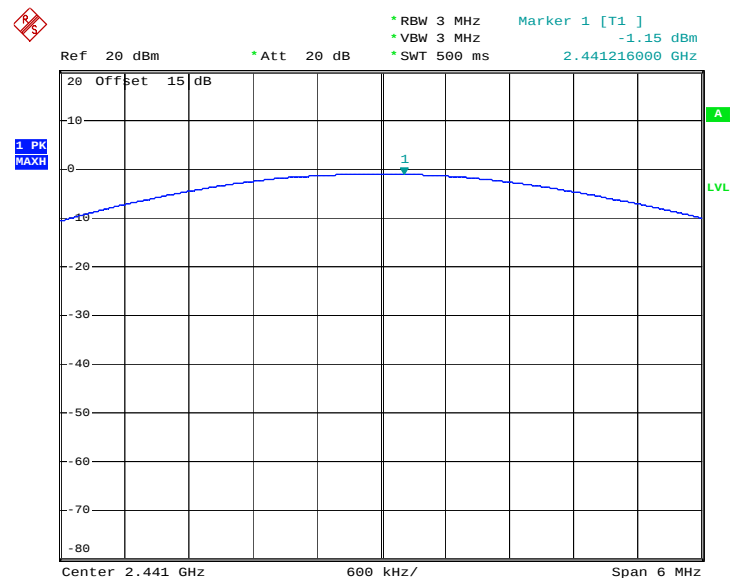
3.5.5 Test Result of Peak Output Power

Test Mode :	1Mbps	Temperature :	23~24°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	RF Power (dBm)		
		GFSK	Max. Limits (dBm)	Pass/Fail
		1 Mbps		
00	2402	-1.24	30	Pass
39	2441	-1.15	30	Pass
78	2480	-1.54	30	Pass

Peak Output Power Plot on Channel 00


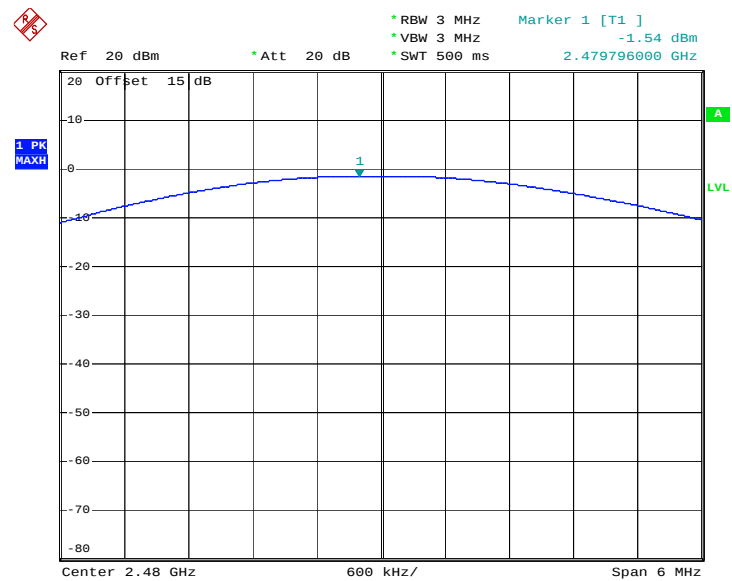
Date: 10.JUL.2012 16:42:04

Peak Output Power Plot on Channel 39


Date: 10.JUL.2012 16:43:21



Peak Output Power Plot on Channel 78



Date: 10.JUL.2012 16:44:39

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.

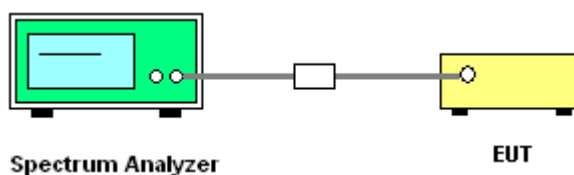
3.6.2 Measuring Instruments

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 RBW = 300KHz ($\geq 1\%$ span=30MHz), VBW = 300KHz ($\geq$ 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.
3. In case the emission is fail due to the used RBW / VBW is too wide, marker-delta method of FCC Public Notice DA 00-705 will be followed.

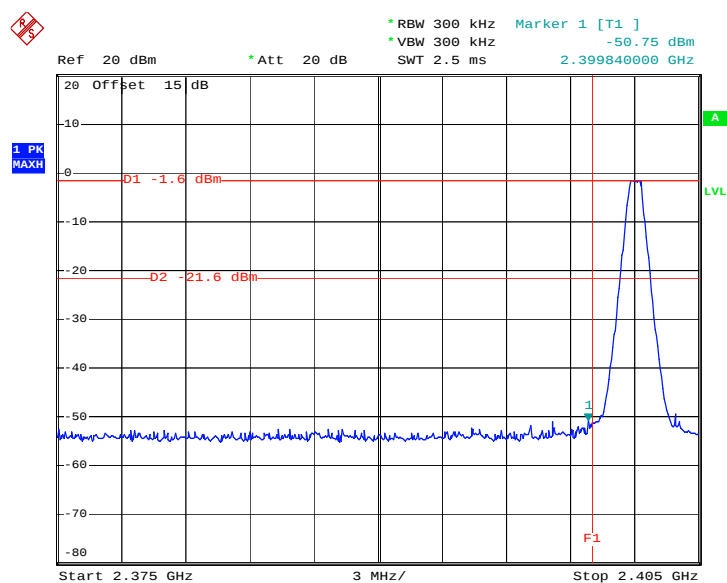
3.6.4 Test Setup



2.6.5 Test Result of Conducted Band Edges

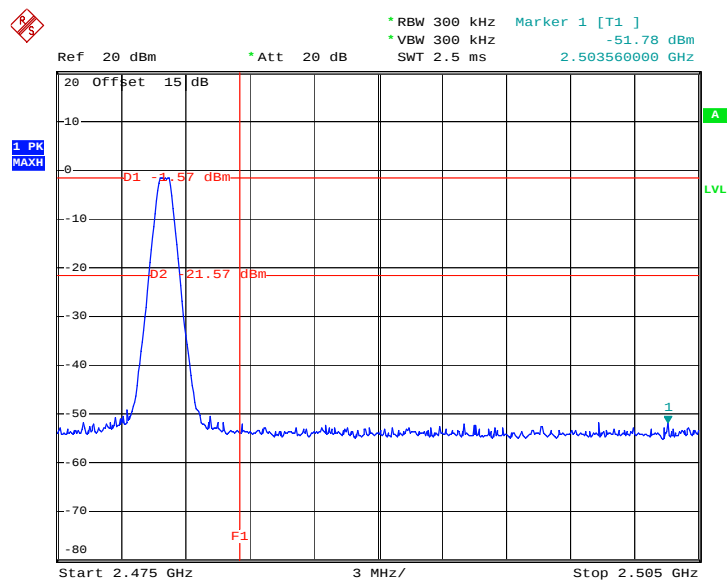
Test Mode :	1Mbps	Temperature :	23~24℃
Test Channel :	00 and 78	Relative Humidity :	47~48%
		Test Engineer :	Zhi Lu

Low Band Edge Plot on Channel 00



Date: 11.JUL.2012 19:03:54

High Band Edge Plot on Channel 78



Date: 11.JUL.2012 19:04:57

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.

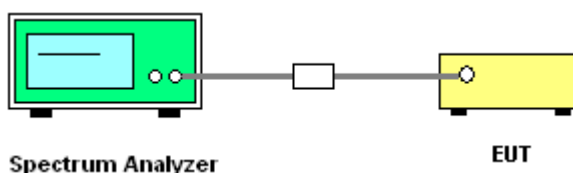
3.7.2 Measuring Instruments

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 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.

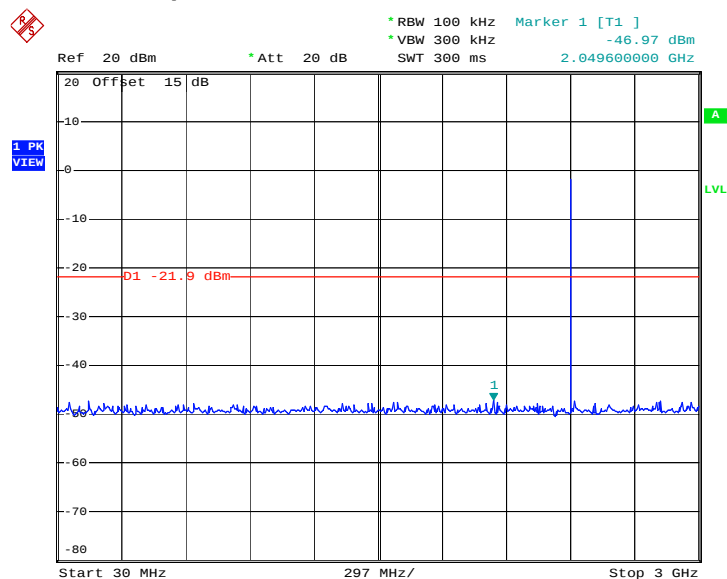
3.7.4 Test Setup



3.7.5 Test Result

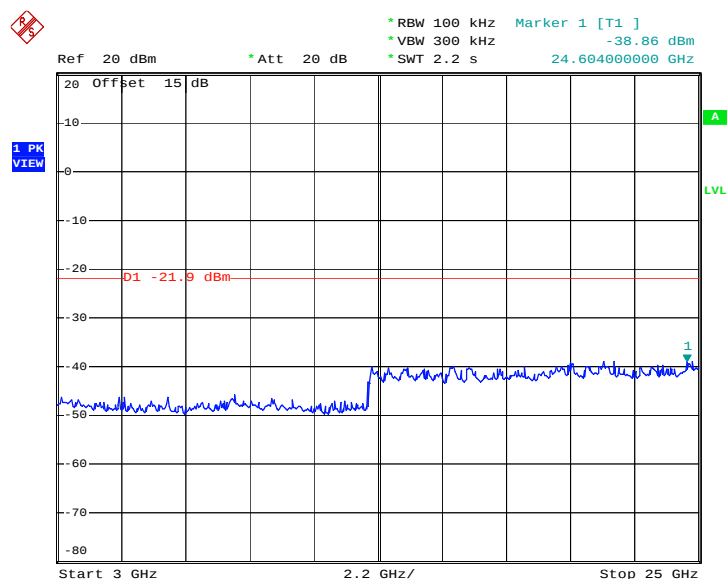
Test Mode :	1Mbps	Temperature :	23~24°C
Test Channel :	00	Relative Humidity :	47~48%
		Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 11.JUL.2012 19:58:36

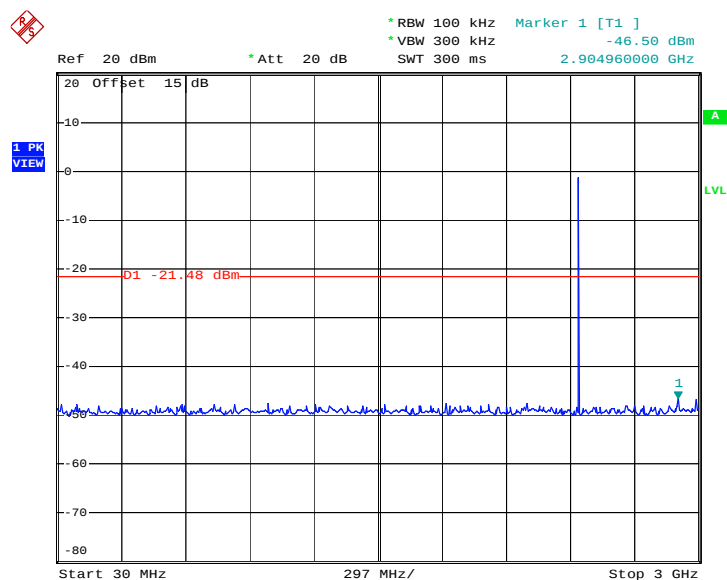
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



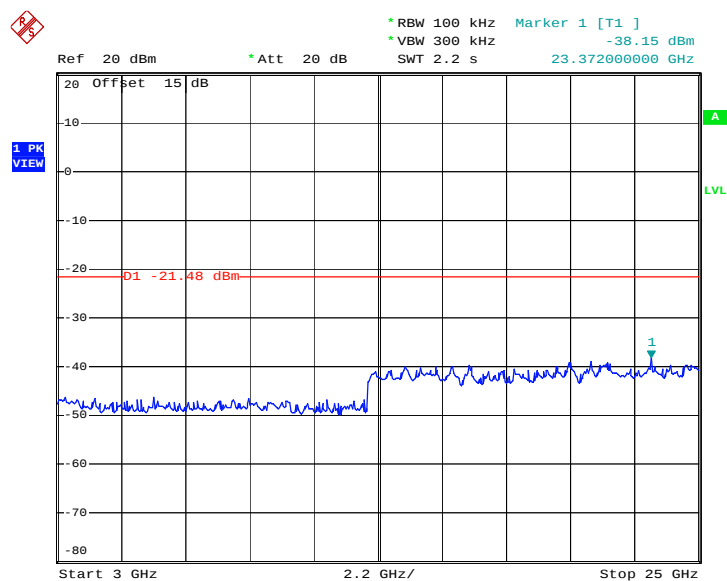
Date: 11.JUL.2012 20:09:51



Test Mode :	1Mbps	Temperature :	23~24℃
Test Channel :	39	Relative Humidity :	47~48%
		Test Engineer :	Zhi Lu

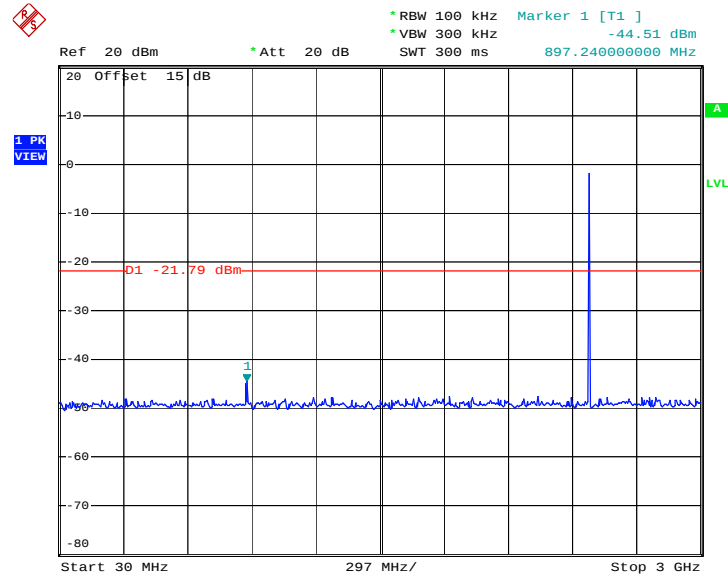
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 11.JUL.2012 19:37:43

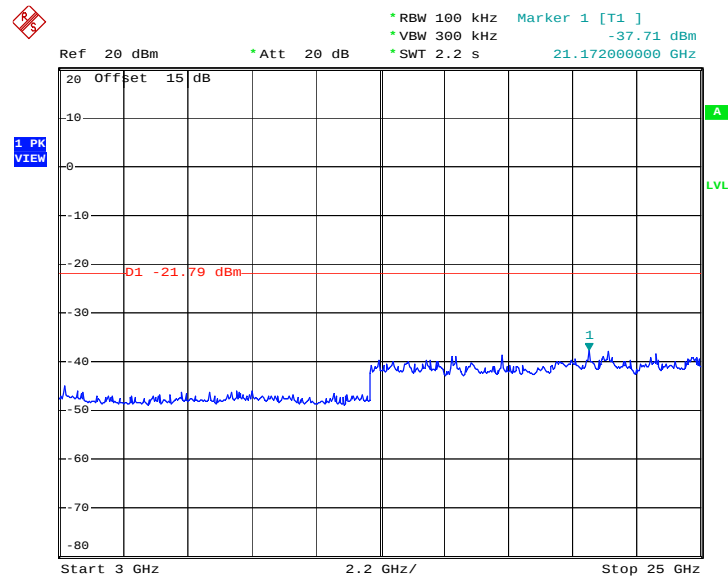
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 11.JUL.2012 20:06:40

Test Mode :	1Mbps	Temperature :	23~24℃
Test Channel :	78	Relative Humidity :	47~48%
		Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 11.JUL.2012 19:38:48

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


Date: 11.JUL.2012 20:07:36

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

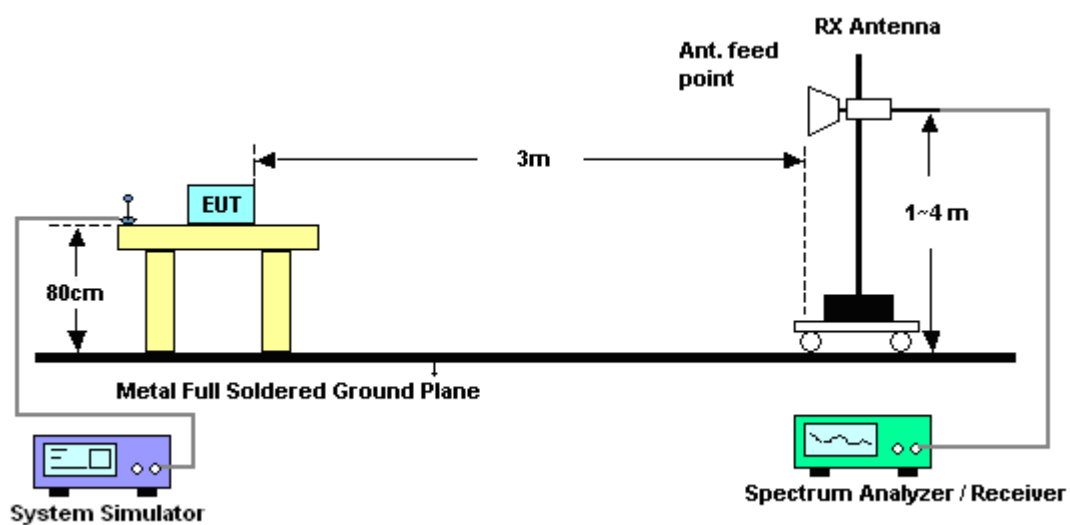
3.8.2 Measuring Instruments

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. Applies to band edge emissions that fall in the restricted bands listed in FCC Section 15.205. The maximum permitted average 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. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation. See FCC Section 15.35(b) and (c).
3. In case the emission is fail due to the used RBW / VBW is too wide, marker-delta method of FCC Public Notice DA 00-705 will be followed.

3.8.4 Test Setup



3.8.5 Test Result of Radiated Band Edges

Test Mode :	1Mbps	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
2335.46	50.45	-23.55	74	48.28	32.78	3.33	33.94	100	159	Peak
2335.46	36.44	-17.56	54	34.27	32.78	3.33	33.94	100	159	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
2363.01	49.98	-24.02	74	47.77	32.81	3.38	33.98	100	0	Peak
2363.01	36.57	-17.43	54	34.36	32.81	3.38	33.98	100	0	Average

Test Mode :	1Mbps	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
2483.5	47.2	-26.8	74	44.71	33.01	3.68	34.2	200	0	Peak
2483.5	34.15	-19.85	54	31.66	33.01	3.68	34.2	200	0	Average

Summary results of marker-delta method:

Test mode	Maximum field strength of the fundamental emission (dBμV/m)	Delta Result (dB)	Average Result (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
Single Carrier Mode	85.08	50.93	34.15	54	-19.85	Pass
Hopping Mode	85.08	52.68	32.4	54	-21.6	Pass

Note: Average result = Maximum field strength – Delta result

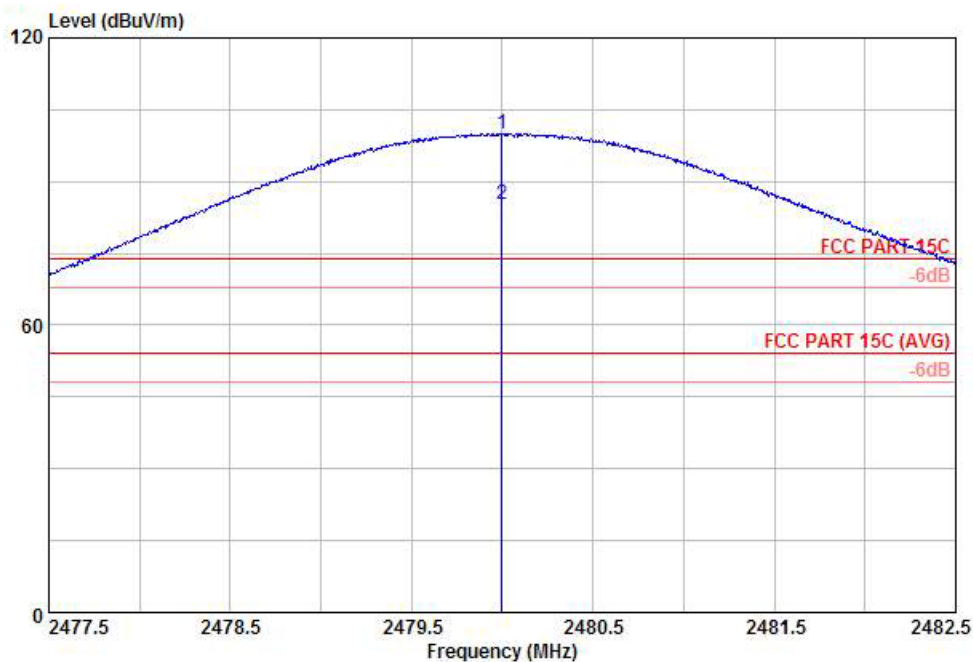
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	45.03	-28.97	74	42.54	33.01	3.68	34.2	200	15	Peak
2483.5	32.35	-21.65	54	29.86	33.01	3.68	34.2	200	15	Average

Summary results of marker-delta method:

Test mode	Maximum field strength of the fundamental emission (dBμV/m)	Delta Result (dB)	Average Result (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
Single Carrier Mode	83.07	50.72	32.35	54	-21.65	Pass
Hopping Mode	83.07	51.11	31.96	54	-22.04	Pass

Note: Average result = Maximum field strength – Delta result

Test Mode :	1Mbps	Temperature :	21~22 °C
Test Channel :	78	Relative Humidity :	46~47%
		Test Engineer :	Chenmy Cheng

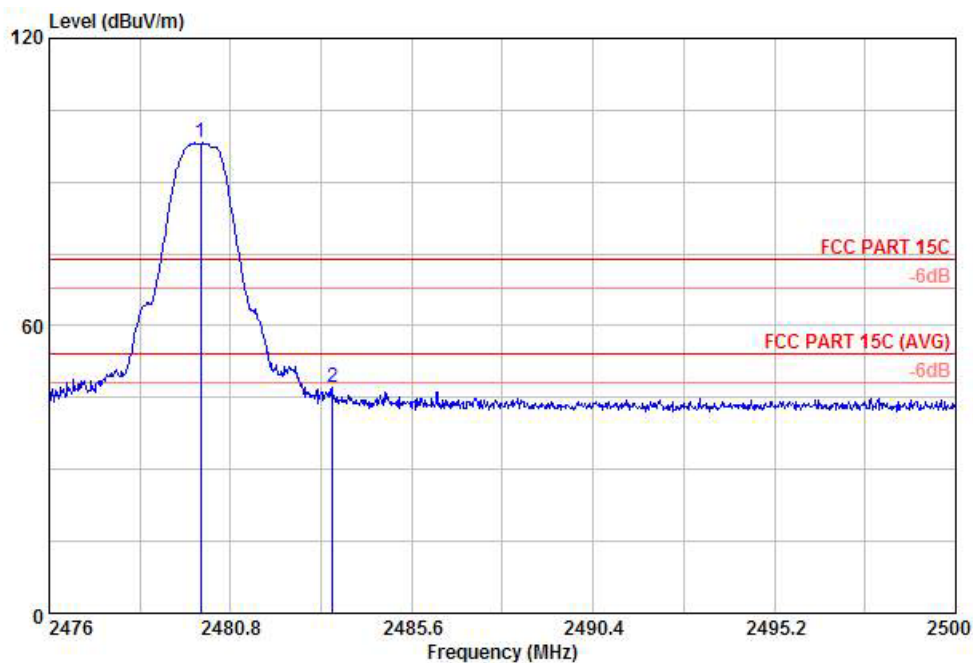


Site : 03CH01-KS
Condition: FCC PART 15C 3m HF ANT-100803 HORIZONTAL

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 X	2480.00	99.80	25.80	74.00	97.31	33.01	3.68	34.20	200	320	Peak
2 X	2480.00	85.08	31.08	54.00	82.59	33.01	3.68	34.20	200	320	Average

* Maximum field strength of the fundamental emission

Test Mode :	1Mbps	Temperature :	21~22 °C
Test Channel :	78	Relative Humidity :	46~47%
		Test Engineer :	Chenmy Cheng

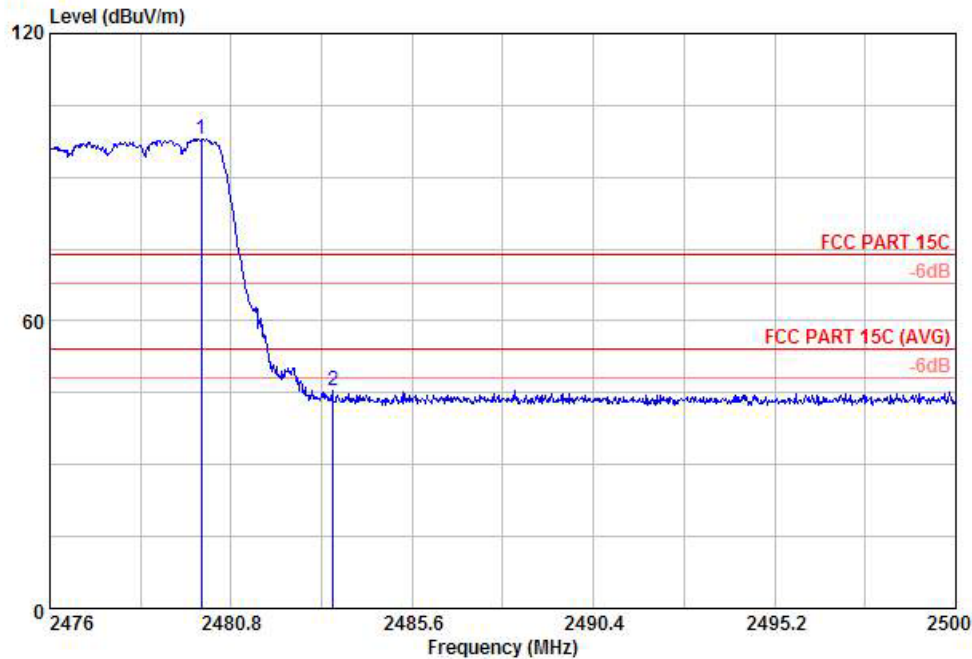


Site : 03CH01-KS
Condition: FCC PART 15C 3m HF ANT-100803 HORIZONTAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB	dB	cm	deg	
1 X	2480.00	98.13	24.13	74.00	95.64	33.01	3.68	34.20	200	196 Peak
2	2483.50	47.20	-26.80	74.00	44.71	33.01	3.68	34.20	200	0 Peak

* Marker-Delta Method (RBW/VBW=100KHz): 50.93 dB , single carrier Mode

Test Mode :	1Mbps	Temperature :	21~22 °C
Test Channel :	78	Relative Humidity :	46~47%
		Test Engineer :	Chenmy Cheng

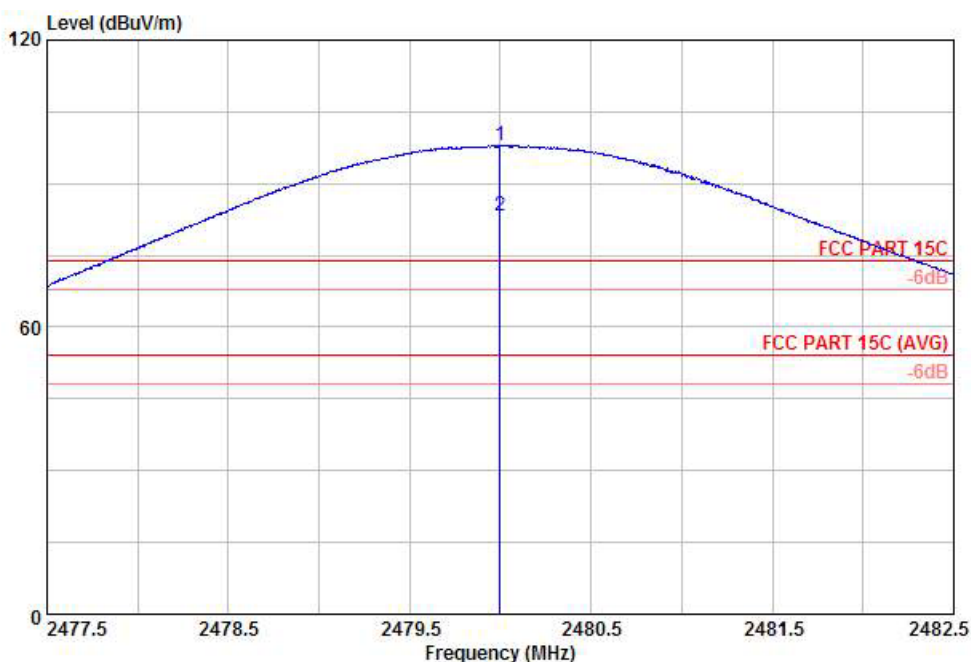


Site : 03CH01-KS
Condition: FCC PART 15C 3m HF ANT-100803 HORIZONTAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB	dB	cm	deg	
1 X	2480.00	98.03	24.03	74.00	95.54	3.68	34.20	200	21	Peak
2	2483.50	45.35	-28.65	74.00	42.86	3.68	34.20	200	16	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 52.68 dB , Hopping Mode

Test Mode :	1Mbps	Temperature :	21~22 °C
Test Channel :	78	Relative Humidity :	46~47%
		Test Engineer :	Chenmy Cheng

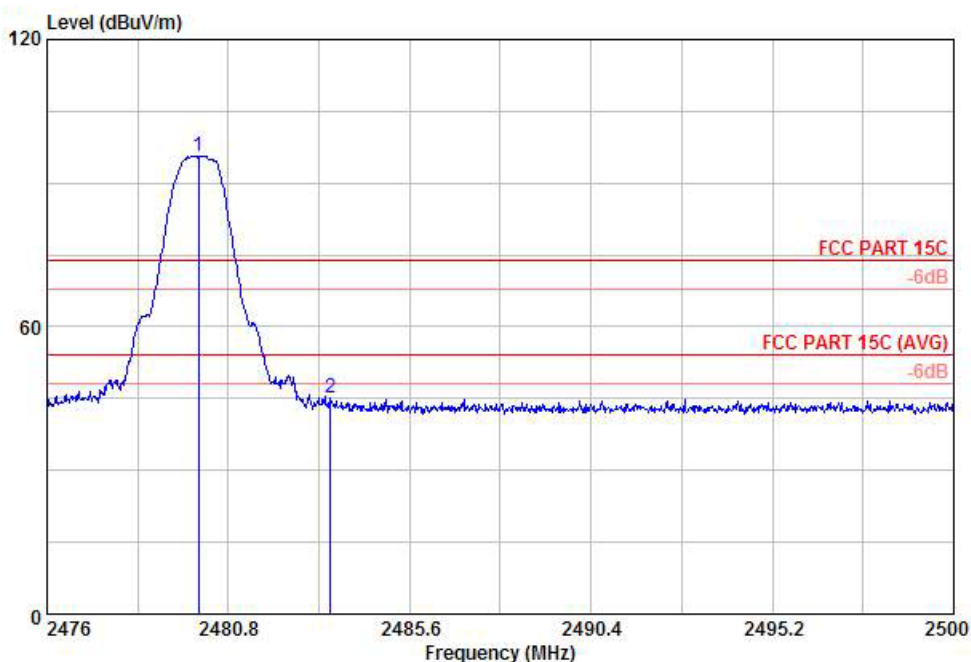


Site : 03CH01-KS
Condition: FCC PART 15C 3m HF ANT-100803 VERTICAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 X	2480.00	97.98	23.98	74.00	95.49	33.01	3.68	34.20	200	190
2 X	2480.00	83.07	29.07	54.00	80.58	33.01	3.68	34.20	200	190

* Maximum field strength of the fundamental emission

Test Mode :	1Mbps	Temperature :	21~22 °C
Test Channel :	78	Relative Humidity :	46~47%
		Test Engineer :	Chenmy Cheng

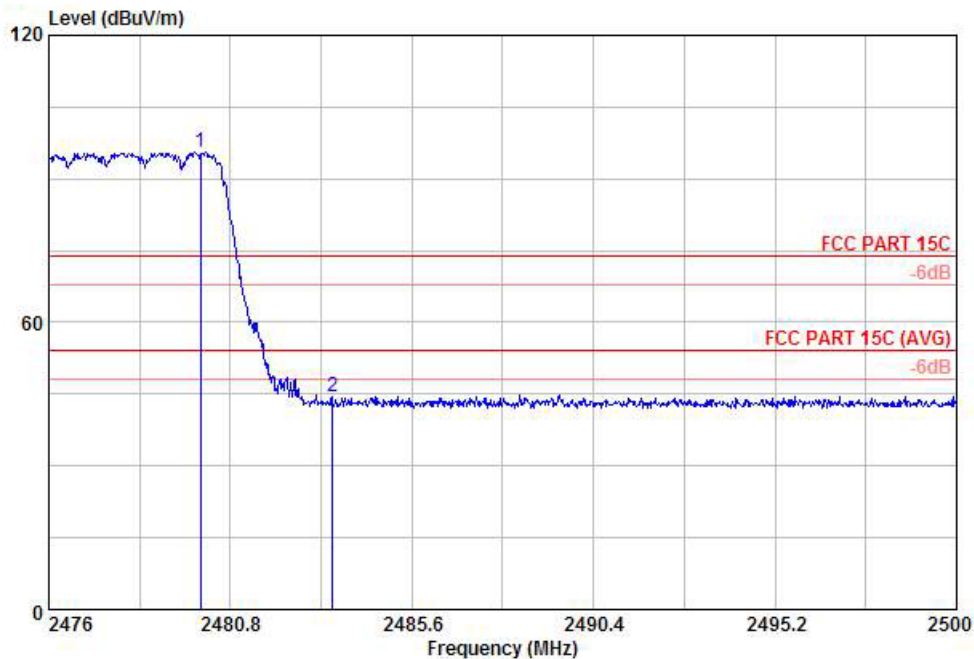


Site : 03CH01-KS
Condition: FCC PART 15C 3m HF ANT-100803 VERTICAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB	dB	cm	deg	
1 X	2480.00	95.75	21.75	74.00	93.26	33.01	3.68	34.20	200	188 Peak
2	2483.50	45.03	-28.97	74.00	42.54	33.01	3.68	34.20	200	15 Peak

* Marker-Delta Method (RBW/VBW=100KHz): 50.72 dB , single carrier Mode

Test Mode :	1Mbps	Temperature :	21~22 °C
Test Channel :	78	Relative Humidity :	46~47%
		Test Engineer :	Chenmy Cheng



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

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBUV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBUV/m	dBuV	dB	dB	cm	deg	
1 X	2480.00	95.57	21.57	74.00	93.08	3.68	34.20	200	0	Peak
2	2483.50	44.46	-29.54	74.00	41.97	3.68	34.20	200	165	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 51.11 dB , Hopping 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

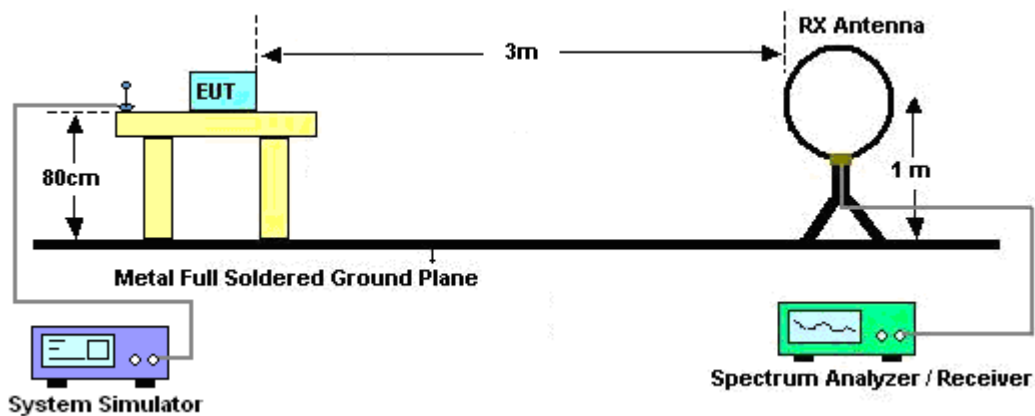
See list of measuring instruments of this test report.

3.9.3 Test Procedures

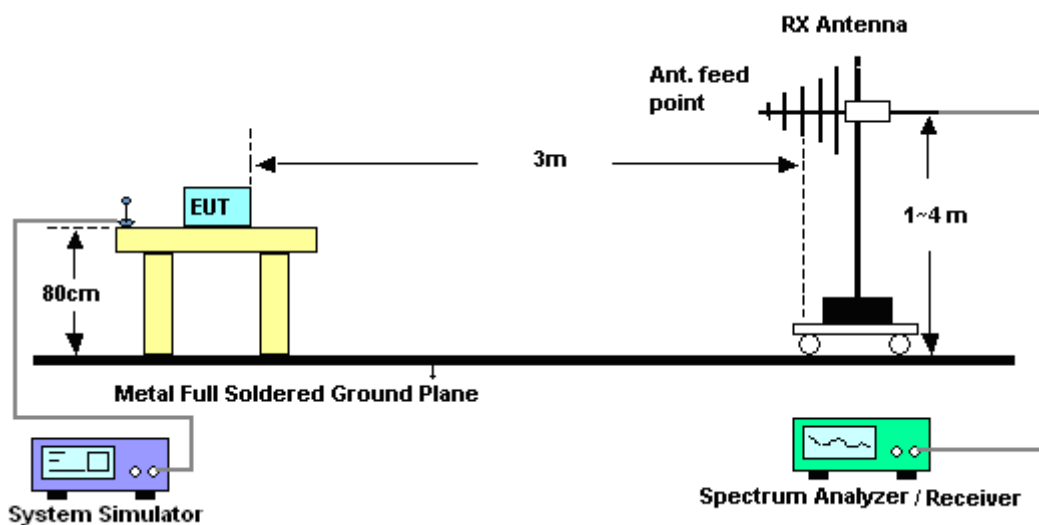
1. The testing follows the guidelines in Spurious Radiated Emissions of FCC Public Notice DA 00-705 Measurement Guidelines and fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test site requirement.
2. Applies to band edge emissions that fall in the restricted bands listed in FCC Section 15.205. The maximum permitted average 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. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation. See FCC Section 15.35(b) and (c).
3. Follow the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009 with respect to maximizing the emission by rotating the EUT, measuring the emission for three EUT orthogonal planes, and adjusting the measurement antenna height and polarization. A pre-amp and a high pass filter are used for this test in order to get the good signal level.
4. Measured average value if the peak value is greater than 54 dBuV/m

3.9.4 Test Setup

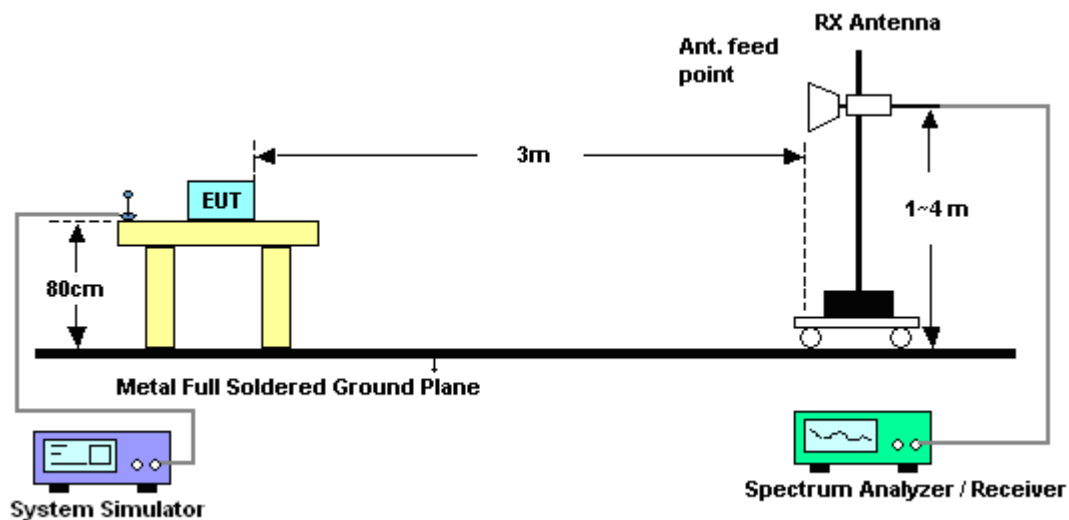
For radiated emissions below 30MHz



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 :	1Mbps for sample 1	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
320.03	40.12	-5.88	46	55.76	13.55	0.76	29.95	-	-	Peak
720.64	41.93	-4.07	46	50.91	19.53	1.15	29.66	-	-	Peak
816.67	44.58	-1.42	46	52.9	20.03	1.26	29.61	100	0	QP
832.19	41.68	-4.32	46	49.75	20.3	1.27	29.64	-	-	Peak
914.64	37.66	-8.34	46	45.33	20.52	1.31	29.5	-	-	Peak
998.06	40.13	-13.87	54	47.14	21.09	1.42	29.52	-	-	Peak
2335.46	50.45	-23.55	74	48.28	32.78	3.33	33.94	100	159	Peak
2335.46	36.44	-17.56	54	34.27	32.78	3.33	33.94	100	159	Average
2402	100.14	-	-	97.86	32.86	3.47	34.05	100	281	Peak
2402	84.59	-	-	82.31	32.86	3.47	34.05	100	281	Average
2487.46	49.79	-24.21	74	47.3	33.01	3.68	34.2	100	0	Peak
2487.46	36.77	-17.23	54	34.28	33.01	3.68	34.2	100	0	Average
4804	58.06	-15.94	74	50.19	35.17	4.97	32.27	100	360	Peak
4804	48.13	-5.87	54	40.26	35.17	4.97	32.27	100	360	Average

Test Mode :	1Mbps for sample 1	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
163.86	34.72	-8.78	43.5	54.67	9.44	0.54	29.93	-	-	Peak
320.03	36.77	-9.23	46	52.41	13.55	0.76	29.95	-	-	Peak
624.61	36.41	-9.59	46	46.22	18.74	1.08	29.63	-	-	Peak
720.64	43.43	-2.57	46	52.41	19.53	1.15	29.66	100	251	QP
816.67	41.49	-4.51	46	49.81	20.03	1.26	29.61	-	-	Peak
998.06	42.32	-11.68	54	49.33	21.09	1.42	29.52	-	-	Peak
2363.01	49.98	-24.02	74	47.77	32.81	3.38	33.98	100	0	Peak
2363.01	36.57	-17.43	54	34.36	32.81	3.38	33.98	100	0	Average
2402	95.04	-	-	92.76	32.86	3.47	34.05	100	350	Peak
2402	79.89	-	-	77.61	32.86	3.47	34.05	100	350	Average
2486.51	49.47	-24.53	74	46.98	33.01	3.68	34.2	100	119	Peak
2486.51	37.02	-16.98	54	34.53	33.01	3.68	34.2	100	119	Average
4803	59.22	-14.78	74	51.35	35.17	4.97	32.27	100	26	Peak
4803	50.29	-3.71	54	42.42	35.17	4.97	32.27	100	26	Average

Test Mode :	1Mbps for sample 1	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
320.03	41.02	-4.98	46	56.66	13.55	0.76	29.95	-	-	Peak
480.08	35.85	-10.15	46	47.79	16.87	0.94	29.75	-	-	Peak
720.64	41.64	-4.36	46	50.62	19.53	1.15	29.66	-	-	Peak
816.67	43.14	-2.86	46	51.46	20.03	1.26	29.61	100	211	QP
832.19	41.95	-4.05	46	50.02	20.3	1.27	29.64	-	-	Peak
998.06	38	-16	54	45.01	21.09	1.42	29.52	-	-	Peak
2356.36	50.08	-23.92	74	47.87	32.81	3.38	33.98	200	102	Peak
2356.36	37.03	-16.97	54	34.82	32.81	3.38	33.98	200	102	Average
2441	101.07	-	-	98.67	32.95	3.6	34.15	190	256	Peak
2441	85.75	-	-	83.35	32.95	3.6	34.15	190	256	Average
2483.85	49.79	-24.21	74	47.3	33.01	3.68	34.2	200	0	Peak
2483.85	36.85	-17.15	54	34.36	33.01	3.68	34.2	200	0	Average
4881	49.86	-4.14	54	41.97	35.18	4.98	32.27	100	64	Average
4881	58.87	-15.13	74	50.98	35.18	4.98	32.27	100	64	Peak

Test Mode :	1Mbps for sample 1	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
163.86	36.91	-6.59	43.5	56.86	9.44	0.54	29.93	-	-	Peak
320.03	33.77	-12.23	46	49.41	13.55	0.76	29.95	-	-	Peak
624.61	35.18	-10.82	46	44.99	18.74	1.08	29.63	-	-	Peak
720.64	44.55	-1.45	46	53.53	19.53	1.15	29.66	100	16	QP
816.67	40.91	-5.09	46	49.23	20.03	1.26	29.61	-	-	Peak
998.06	41.62	-12.38	54	48.63	21.09	1.42	29.52	-	-	Peak
2387.14	49.89	-24.11	74	47.61	32.86	3.47	34.05	200	19	Peak
2387.14	36.89	-17.11	54	34.61	32.86	3.47	34.05	200	19	Average
2441	96.04	-	-	93.64	32.95	3.6	34.15	200	116	Peak
2441	81.03	-	-	78.63	32.95	3.6	34.15	200	116	Average
2490.12	49.68	-24.32	74	47.14	33.05	3.72	34.23	200	0	Peak
2490.12	37.64	-16.36	54	35.1	33.05	3.72	34.23	200	0	Average
4884	51.85	-2.15	54	43.96	35.18	4.98	32.27	100	27	Average
4884	60.72	-13.28	74	52.83	35.18	4.98	32.27	100	27	Peak

Test Mode :	1Mbps for sample 1	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
320.03	42.55	-3.45	46	58.19	13.55	0.76	29.95	-	-	Peak
480.08	36.63	-9.37	46	48.57	16.87	0.94	29.75	-	-	Peak
720.64	40.15	-5.85	46	49.13	19.53	1.15	29.66	-	-	Peak
816.67	42.58	-3.42	46	50.9	20.03	1.26	29.61	100	0	Peak
832.19	41.67	-4.33	46	49.74	20.3	1.27	29.64	-	-	Peak
998.06	38.29	-15.71	54	45.3	21.09	1.42	29.52	-	-	Peak
2358	36.56	-17.44	54	34.35	32.81	3.38	33.98	200	196	Average
2358	49.52	-24.48	74	47.31	32.81	3.38	33.98	200	196	Peak
2480	85.08	-	-	82.59	33.01	3.68	34.2	200	320	Average
2480	99.8	-	-	97.31	33.01	3.68	34.2	200	320	Peak
2483.5	47.2	-26.8	74	44.71	33.01	3.68	34.2	200	0	Peak
2483.5	34.15	-19.85	54	31.66	33.01	3.68	34.2	200	0	Average
4962	52.26	-21.74	74	44.32	35.2	5	32.26	100	95	Peak
4962	46.51	-7.49	54	38.57	35.2	5	32.26	100	95	Average

Test Mode :	1Mbps for sample 1	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
163.86	36.48	-7.02	43.5	56.43	9.44	0.54	29.93	-	-	Peak
320.03	34.8	-11.2	46	50.44	13.55	0.76	29.95	-	-	Peak
624.61	34.78	-11.22	46	44.59	18.74	1.08	29.63	-	-	Peak
720.64	43.64	-2.36	46	52.62	19.53	1.15	29.66	100	320	QP
816.67	39.58	-6.42	46	47.9	20.03	1.26	29.61	-	-	Peak
998.06	40.58	-13.42	54	47.59	21.09	1.42	29.52	-	-	Peak
2380	37.45	-16.55	54	35.21	32.83	3.42	34.01	200	0	Average
2380	49.06	-24.94	74	46.82	32.83	3.42	34.01	200	0	Peak
2480	83.07	-	-	80.58	33.01	3.68	34.2	200	190	Average
2480	97.98	-	-	95.49	33.01	3.68	34.2	200	190	Peak
2483.5	45.03	-28.97	74	42.54	33.01	3.68	34.2	200	15	Peak
2483.5	32.35	-21.65	54	29.86	33.01	3.68	34.2	200	15	Average
4962	55.94	-18.06	74	48	35.2	5	32.26	100	94	Peak
4962	49.91	-4.09	54	41.97	35.2	5	32.26	100	94	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.

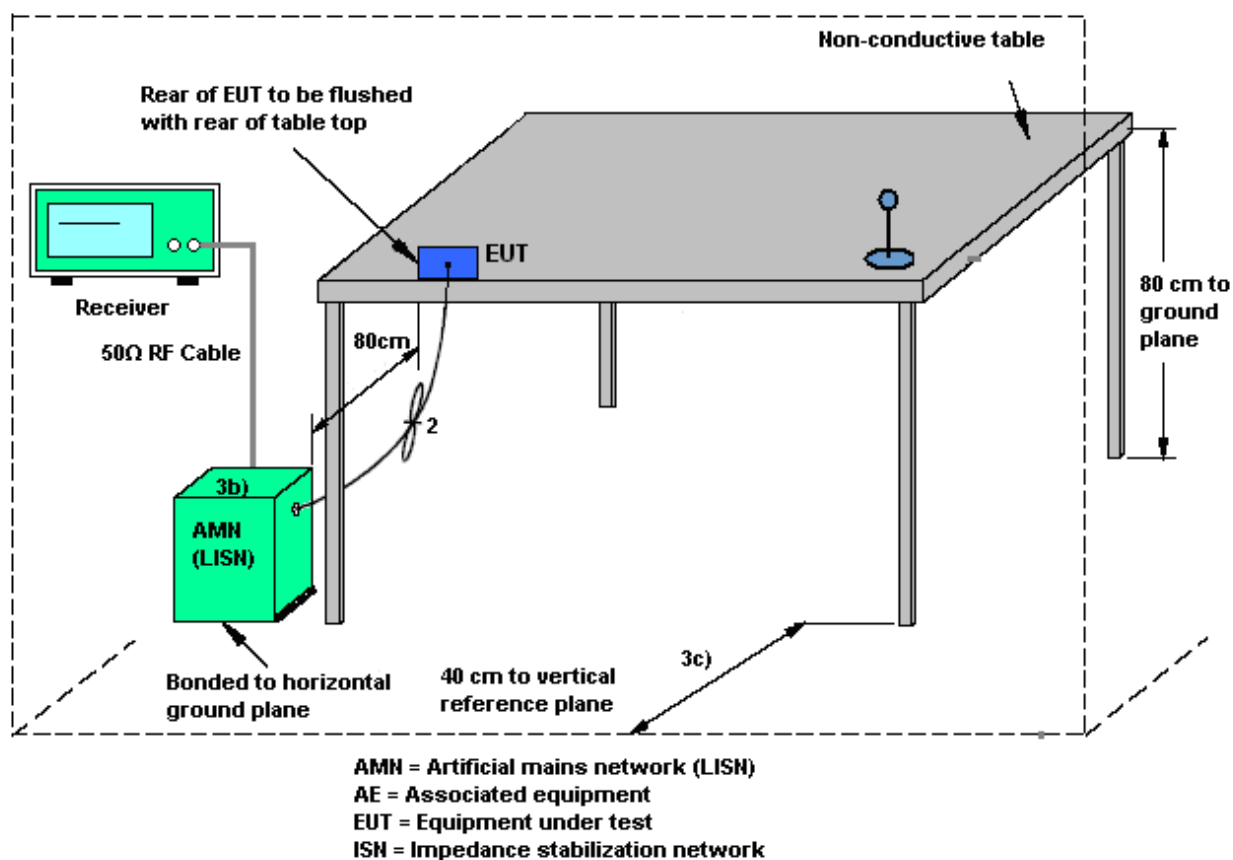
3.10.2 Measuring Instruments

See list of measuring instruments of this test report.

3.10.3 Test Procedures

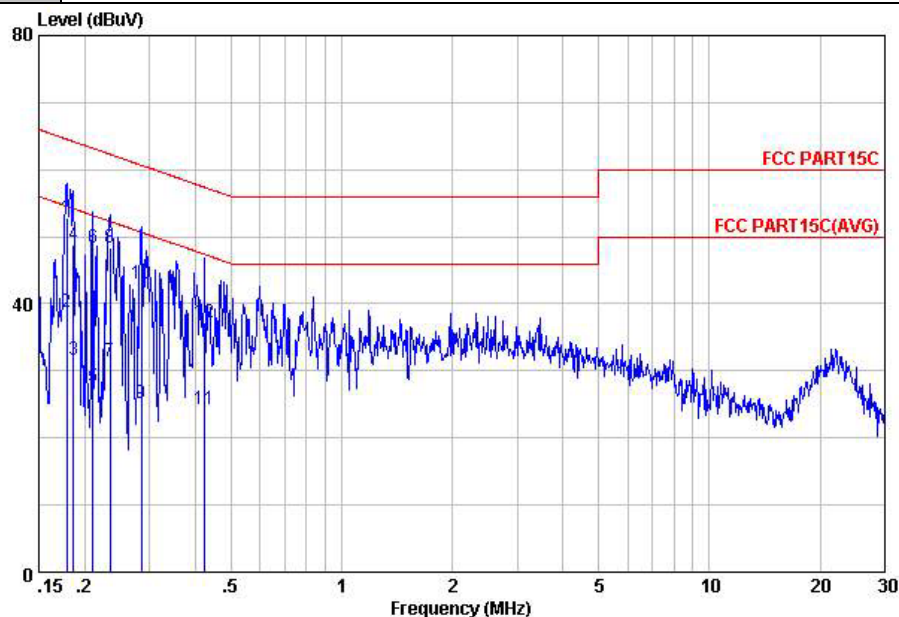
1. Please follow the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009 test site requirement.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance 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 :	Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Camera + Credit card for Sample 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

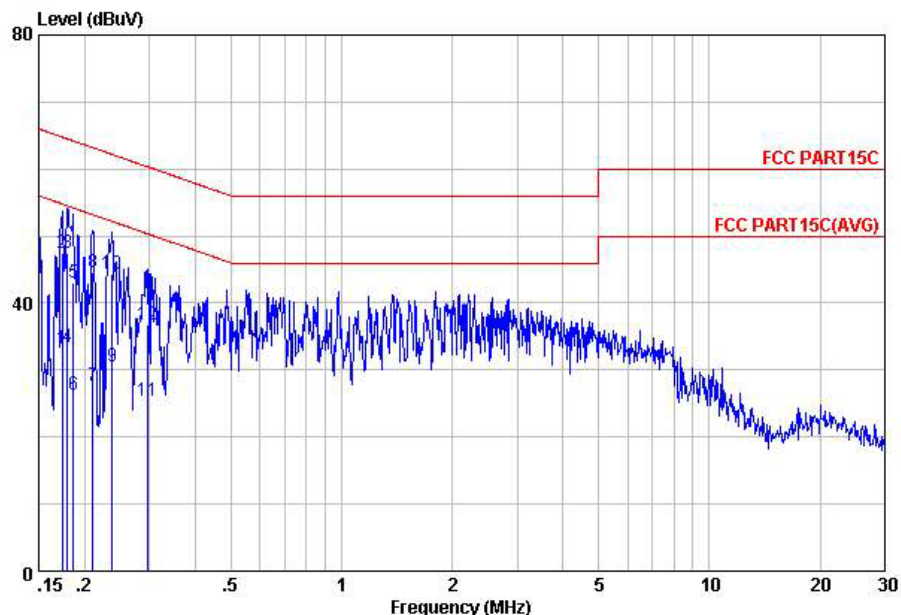


Site : C001-KS
Condition: FCC PART15C LISN-111230 LINE

mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.18	52.78	-11.77	64.55	42.40	-0.07	10.45	QP
2	0.18	38.88	-15.67	54.55	28.50	-0.07	10.45	Average
3	0.19	31.71	-22.49	54.20	21.30	-0.07	10.48	Average
4	0.19	48.71	-15.49	64.20	38.30	-0.07	10.48	QP
5	0.21	27.63	-25.55	53.18	17.19	-0.07	10.51	Average
6	0.21	48.43	-14.75	63.18	37.99	-0.07	10.51	QP
7	0.23	31.35	-20.95	52.30	20.90	-0.07	10.52	Average
8	0.23	48.45	-13.85	62.30	38.00	-0.07	10.52	QP
9	0.28	25.19	-25.49	50.68	14.70	-0.07	10.56	Average
10	0.28	43.09	-17.59	60.68	32.60	-0.07	10.56	QP
11	0.42	24.34	-23.03	47.37	13.80	-0.08	10.62	Average
12	0.42	37.24	-20.13	57.37	26.70	-0.08	10.62	QP

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



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

mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.17	33.26	-21.51	54.77	22.90	-0.08	10.44	Average
2	0.17	47.56	-17.21	64.77	37.20	-0.08	10.44	QP
3	0.18	47.38	-17.12	64.50	37.00	-0.08	10.46	QP
4	0.18	33.48	-21.02	54.50	23.10	-0.08	10.46	Average
5	0.19	43.00	-21.20	64.20	32.59	-0.07	10.48	QP
6	0.19	26.40	-27.80	54.20	15.99	-0.07	10.48	Average
7	0.21	27.53	-25.65	53.18	17.09	-0.07	10.51	Average
8	0.21	44.63	-18.55	63.18	34.19	-0.07	10.51	QP
9	0.24	30.45	-21.72	52.17	20.00	-0.07	10.52	Average
10	0.24	44.45	-17.72	62.17	34.00	-0.07	10.52	QP
11	0.30	25.50	-24.82	50.32	14.99	-0.07	10.58	Average
12	0.30	36.70	-23.62	60.32	26.19	-0.07	10.58	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. 10, 2012~ Jul. 11, 2012	Dec. 29, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 23, 2011	Jul. 10, 2012~ Jul. 11, 2012	Aug. 22, 2012	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 23, 2011	Jul. 10, 2012~ Jul. 11, 2012	Aug. 22, 2012	Conducted (TH01-KS)
DC Power Supply	GWINSTEK	GPS-3030D	E1884515	N/A	Aug. 23, 2011	Jul. 10, 2012~ Jul. 11, 2012	Aug. 22, 2012	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Dec. 30, 2011	Jul. 10, 2012~ Jul. 11, 2012	Dec. 29, 2012	Conducted (TH01-KS)
Bluetooth Base Station	R&S	CBT	100783	N/A	Aug. 18, 2011	Jul. 10, 2012~ Jul. 11, 2012	Aug. 17, 2012	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 09, 2011	Jul. 12, 2012	Nov. 08, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Jul. 12, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Jul. 12, 2012	Dec. 07, 2012	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/00	9 kHz~30 MHz	Jul. 28, 2011	Jul. 12, 2012	Jul. 27, 2012	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 06, 2012	Jul. 12, 2012	Jan. 05, 2013	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 30, 2011	Jul. 12, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 30, 2011	Jul. 12, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz~18GHz	Nov. 07, 2011	Jul. 12, 2012	Nov. 06, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Oct. 11, 2011	Jul. 12, 2012	Oct.10, 2012	Radiation (03CH01-KS)
Bluetooth Base Station	R&S	CBT	100783	N/A	Aug. 18, 2011	Jul. 12, 2012	Aug. 17, 2012	Radiation (03CH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 01, 2012	Jul. 06, 2012	May 31, 2013	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 30, 2011	Jul. 06, 2012	Dec. 29, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Dec. 30, 2011	Jul. 06, 2012	Dec. 29, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 16, 2011	Jul. 06, 2012	Nov. 15, 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
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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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Appendix A. Photographs of EUT

Please refer to Sporton report number EP242415 as below.