FCC RF Test Report

APPLICANT	:	Motorola Mobility, Inc.
EQUIPMENT	:	Mobile Phone
BRAND NAME	:	MOTOROLA
MODEL NAME	:	XT611
GPPD NUMBER	:	3195
FCC ID	:	IHDP56MM1
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DSS) Spread Spectrum Transmitter

The product was received on Sep. 30, 2011 and completely tested on Nov. 24, 2011. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

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

Reviewed by:

Jones Tsai

Jones Tsai / Manager

Testing Laboratory 1190

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR193004A	Rev. 01	Initial issue of report	Nov. 28, 2011

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(a)	20dB Bandwidth	NA	Pass	-
3.3	15.247(a)(1)	A8.1(b)	Channel Separation	≥ 2/3 of 20dB BW	Pass	-
3.4	15.247(a)(1)	A8.1(d)	Dwell Time of Each Channel	≤ 0.4sec in 31.6sec period	Pass	-
3.5	15.247(b)(1)	A8.1(b)	Peak Output Power	≤ 125 mW	Pass	-
3.6	15.247(d)	A8.5	Frequency Band Edges	≤ 20dBc	Pass	-
3.7	15.247(d)	A8.5	Spurious Emission	< 20 dBc	Pass	-
3.8	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 4.30 dB at 1.846 MHz
3.9	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 4.78 dB at 2483.500 MHz
3.10	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Motorola Mobility, Inc.
600 N. US Highway 45 Libertyville, IL 60048-1286 U.S.A.

1.2 Manufacturer

Chi Mei Communication Systems, Inc.
No. 4, Mingsheng Street, Tucheng District, New Taipei City, 23678, Taiwan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Mobile Phone
Brand Name	MOTOROLA
Model Name	XT611
FCC ID	IHDP56MM1
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	79
Carrier Frequency of Each Channel	2402+n*1 MHz; n=0~78
Channel Spacing	1 MHz
Maximum Output Power to Antenna	Bluetooth (1Mbps) : 8.85 dBm (0.0077 W) Bluetooth EDR (2Mbps) : 7.48 dBm (0.0056 W) Bluetooth EDR (3Mbps) : 8.37 dBm (0.0069 W)
Antenna Type	PIFA Antenna with gain -1.30 dBi
HW Version	V2.1
SW Version	4_410_9000
Type of Modulation	Bluetooth (1Mbps) : GFSK Bluetooth EDR (2Mbps) : π/4-DQPSK Bluetooth EDR (3Mbps) : 8-DPSK
EUT Stage	Identical Prototype

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

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH06-HY	722060/4086B-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
- IC RSS-210 Issue 8

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	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	Bluetooth Base Station	R&S	CBT32	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	P20G	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	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	8.52 dBm	7.21 dBm	8.06 dBm
Ch39	2441MHz	8.73 dBm	7.45 dBm	8.24 dBm
Ch78	2480MHz	**8.85 dBm**	7.48 dBm	8.37 dBm

Remark:

1. The data rate was set in 1Mbps for all the test items due to the highest RF output power.

2. 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 configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

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

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

The following tables are showing the test modes as the worst cases (E2 plane) and recorded in this report.

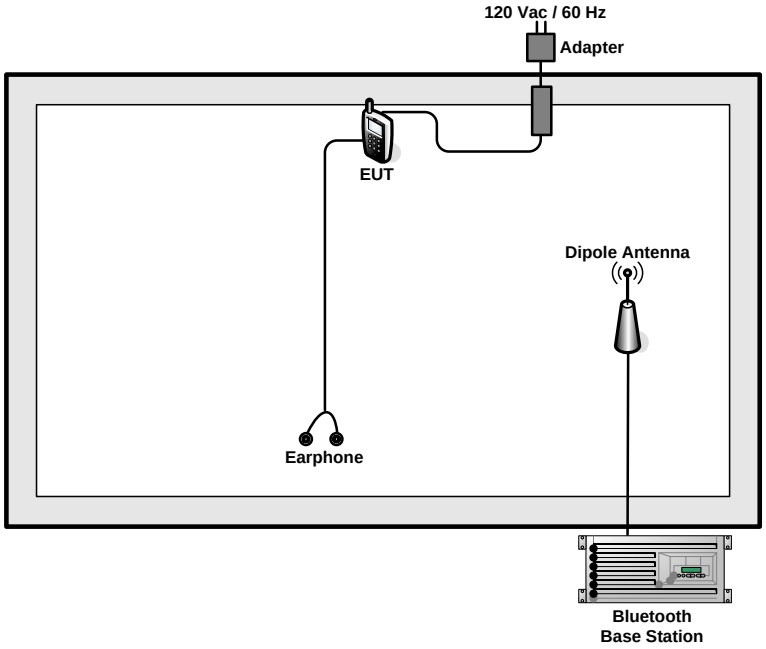
Test Cases			
Test Item	**Data Rate / Modulation**		
	Bluetooth 1Mbps GFSK	**Bluetooth EDR 2Mbps π/4-DQPSK**	**Bluetooth EDR 3Mbps 8-DPSK**
Conducted TCs	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz	Mode 4: CH00_2402 MHz Mode 5: CH39_2441 MHz Mode 6: CH78_2480 MHz	Mode 7: CH00_2402 MHz Mode 8: CH39_2441 MHz Mode 9: CH78_2480 MHz
Radiated TCs	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz	N/A	N/A
AC Conducted Emission	Mode 1 :GSM1900 Idle + Bluetooth Link + WLAN Link + Earphone + Camera + USB Cable (Charging from Adapter) + Battery		

Remark:

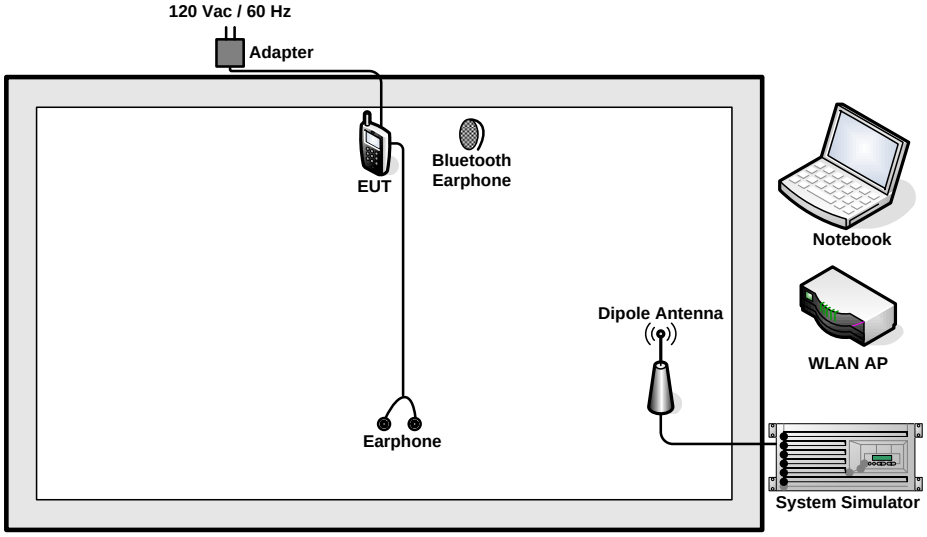
1. For radiated TCs, the data rate was set in 1Mbps due to the highest RF output power; only the data of these modes was reported.
2. For radiated TCs, the test was performance with USB cable, adapter, battery, and earphone.

2.3 Connection Diagram of Test System

<Bluetooth Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

For Bluetooth function, key in "＊＃＊＃767＃＊＃＊" on the EUT directly. Then, the EUT will contact with Bluetooth base station for transmitting and receiving signals continuously.

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.
4. The EUT must have its hopping function enabled. 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.
5. The number of hopping frequency used is defined as the device has the numbers of total channel.

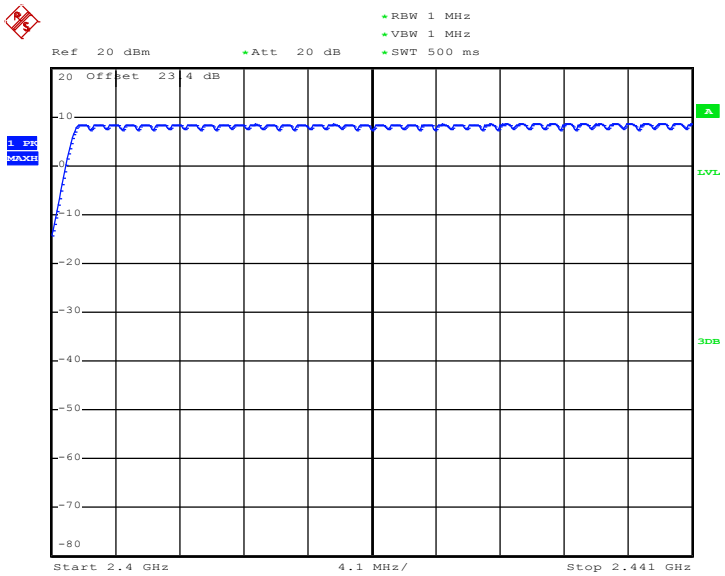
3.1.4 Test Setup

3.1.5 Test Result of Number of Hopping Frequency

Test Mode :	Mode 1~3	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

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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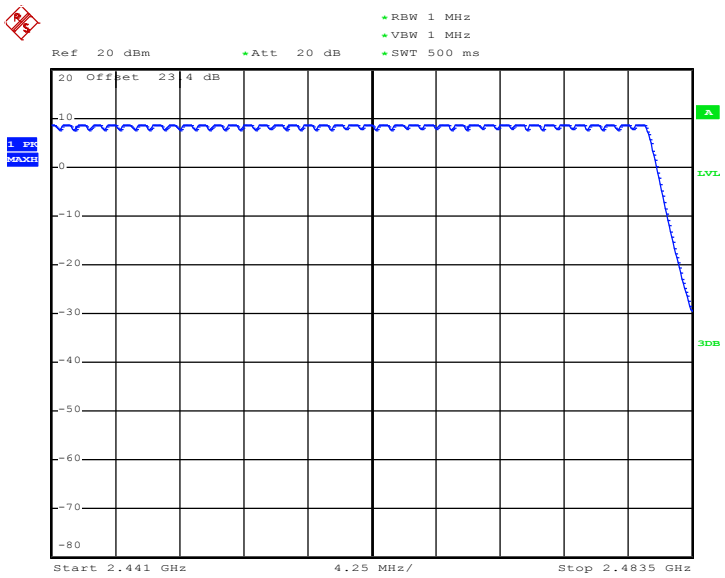

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3.2 20dB Bandwidth Measurement

3.2.1 Limit of 20dB Bandwidth

N/A

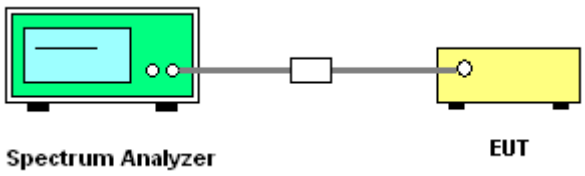
3.2.2 Measuring Instruments

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. 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 ≥ 1% of the 20 dB bandwidth; VBW ≥ 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.

3.2.4 Test Setup

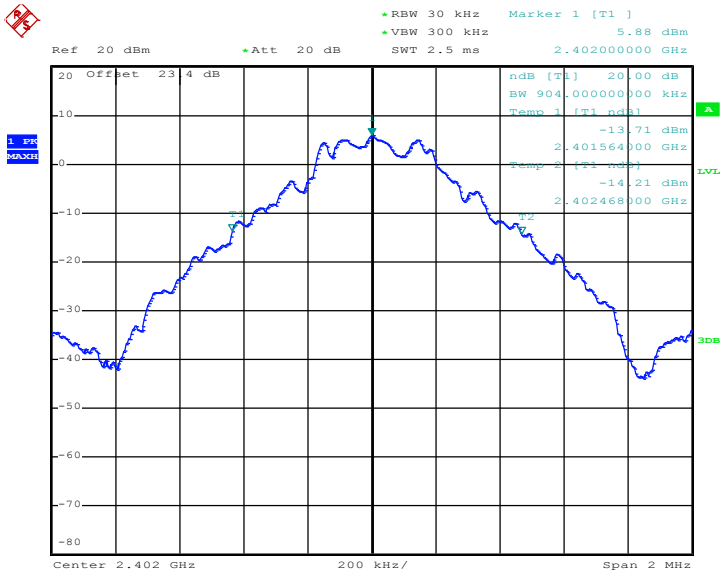


3.2.5 Test Result of 20dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	0.904
39	2441	0.904
78	2480	0.904

20 dB Bandwidth Plot on Channel 00



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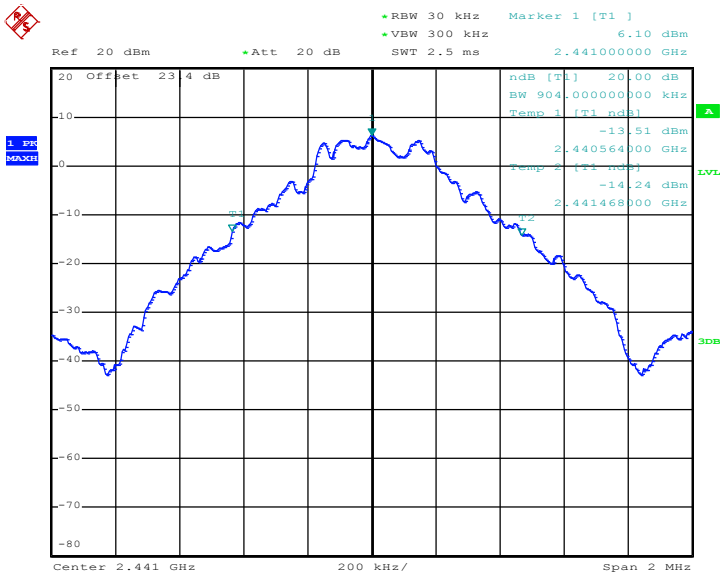
20 dB Bandwidth Plot on Channel 39



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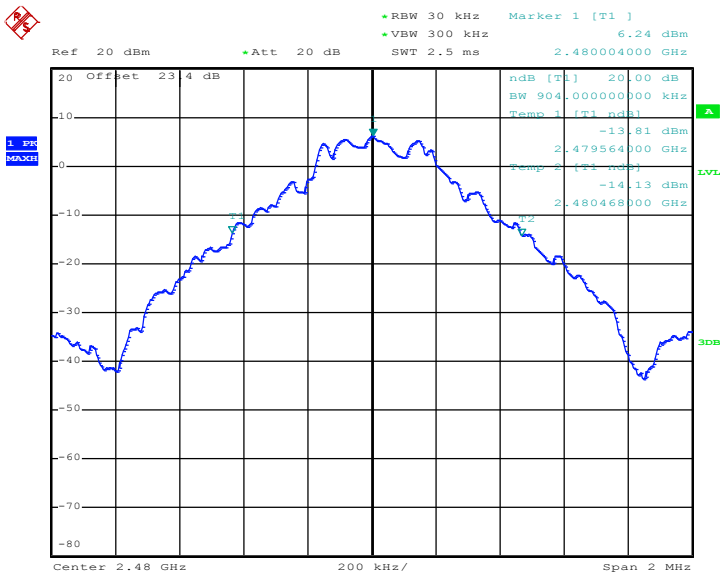
20 dB Bandwidth Plot on Channel 78



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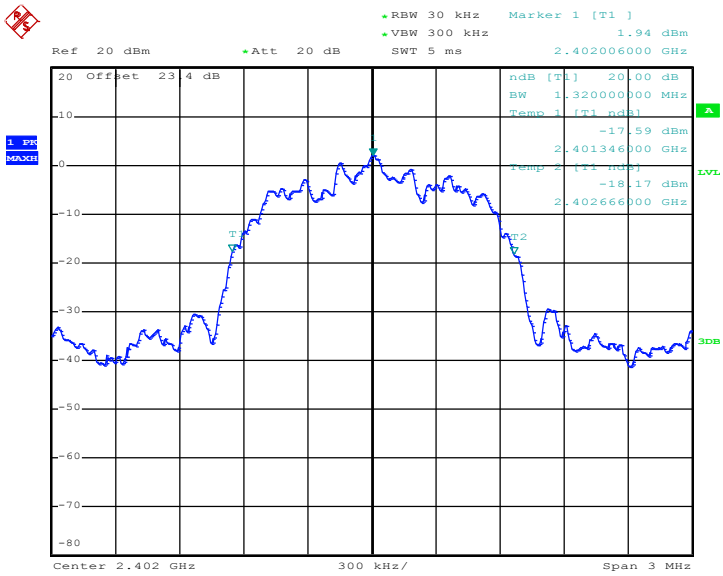
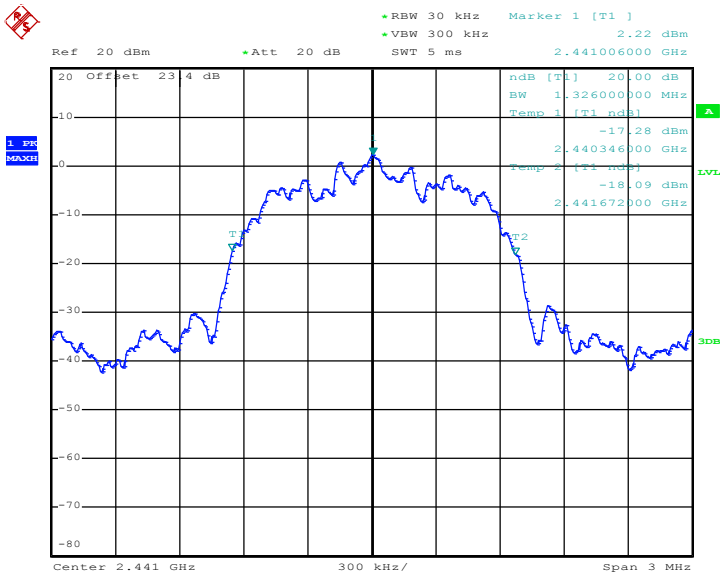
Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

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

20 dB Bandwidth Plot on Channel 00



20 dB Bandwidth Plot on Channel 39



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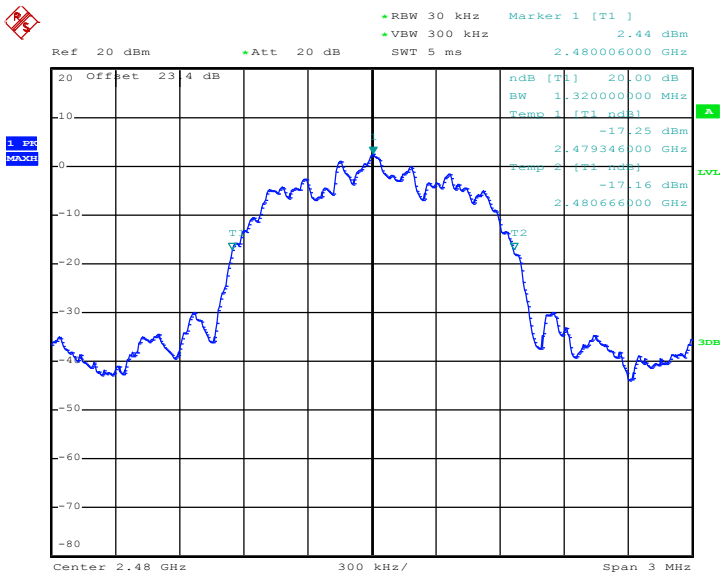
20 dB Bandwidth Plot on Channel 78



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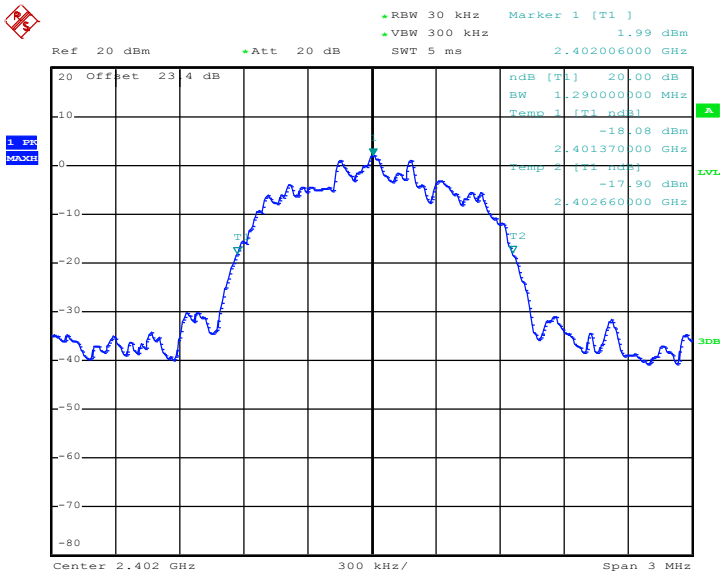
Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.290
39	2441	1.290
78	2480	1.290

20 dB Bandwidth Plot on Channel 00



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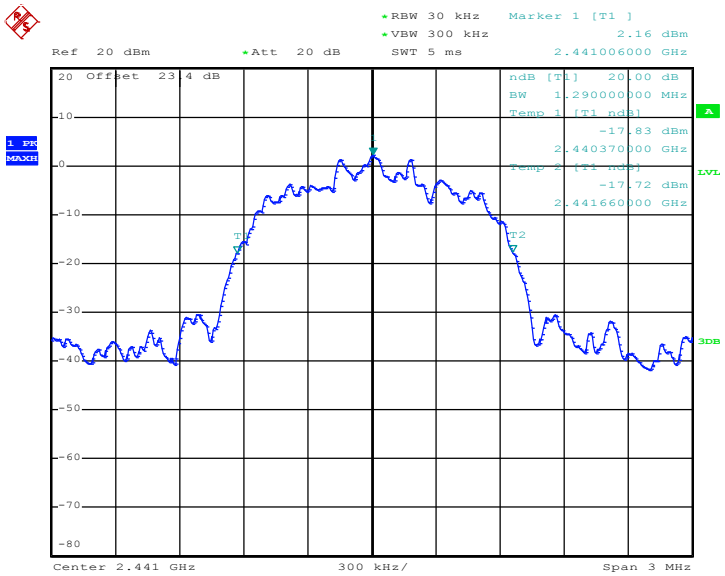
20 dB Bandwidth Plot on Channel 39



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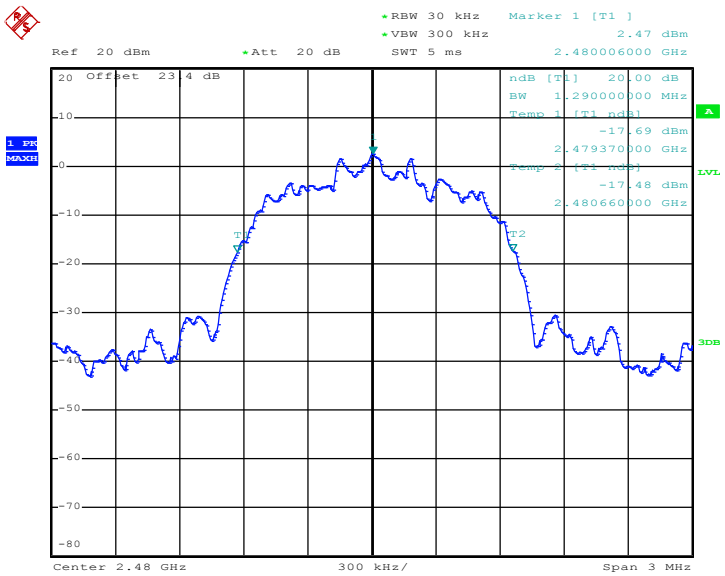
20 dB Bandwidth Plot on Channel 78



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3.3 Hopping Channel Separation Measurement

3.3.1 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.

3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 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 ≥ 1% of the span; VBW ≥ 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.

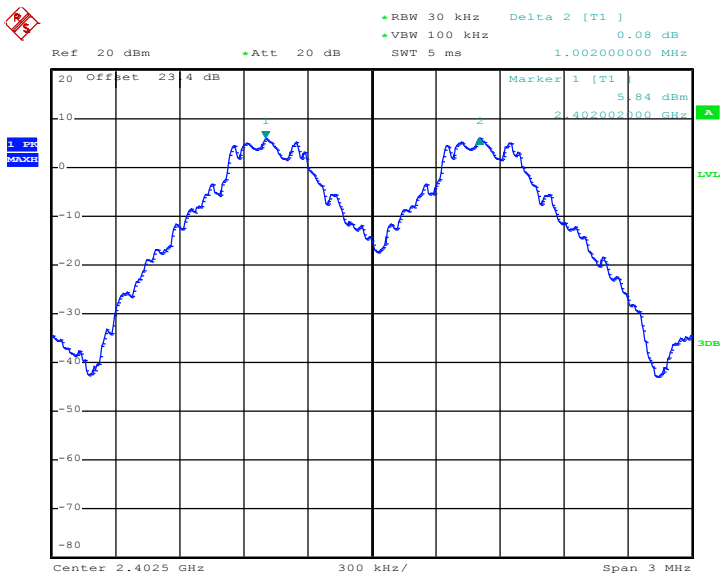
3.3.4 Test Setup

3.3.5 Test Result of Hopping Channel Separation

Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.002	0.6027	Pass
39	2441	1.002	0.6027	Pass
78	2480	1.002	0.6027	Pass

Channel Separation Plot on Channel 00 - 01



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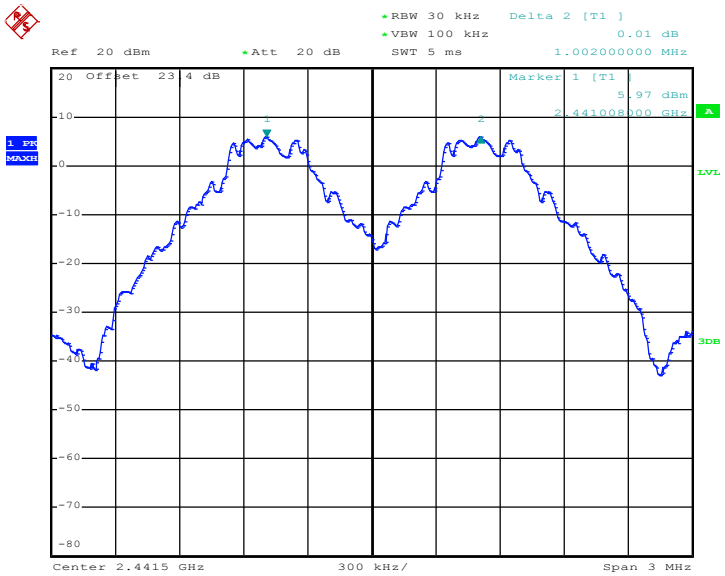
Channel Separation Plot on Channel 39 - 40



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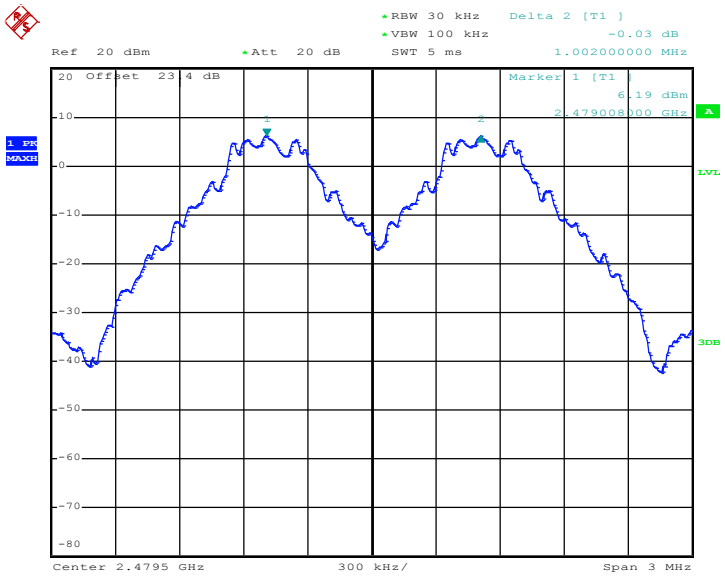
Channel Separation Plot on Channel 77 - 78



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3.4 Dwell Time Measurement

3.4.1 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.

3.4.2 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. 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 ≥ 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.

3.4.4 Test Setup

3.4.5 Test Result of Dwell Time

Test Mode :	Mode 2	**Temperature :**	24~26℃
Test Engineer :	Pinkston Tu	**Relative Humidity :**	50~53%

Package Mode	Average Hopping Channel	Package Transfer Time (usec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
DH5	3.20	2978.00	0.30	0.4	Pass

Remark:

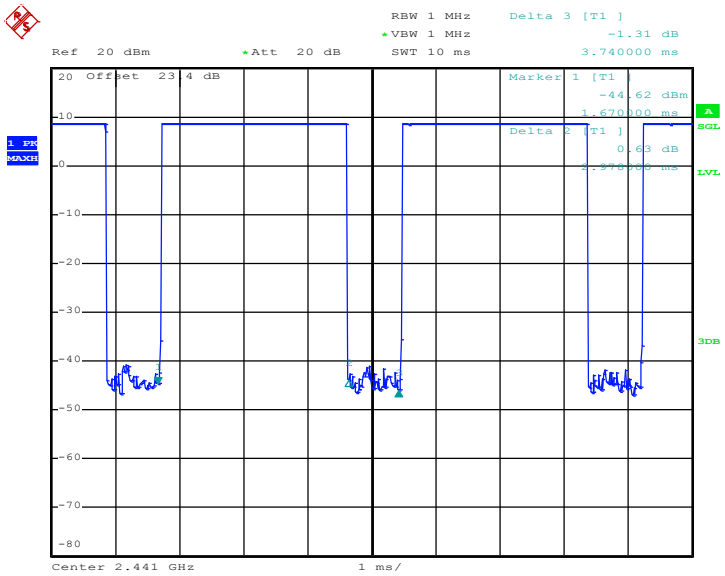
1. Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time

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



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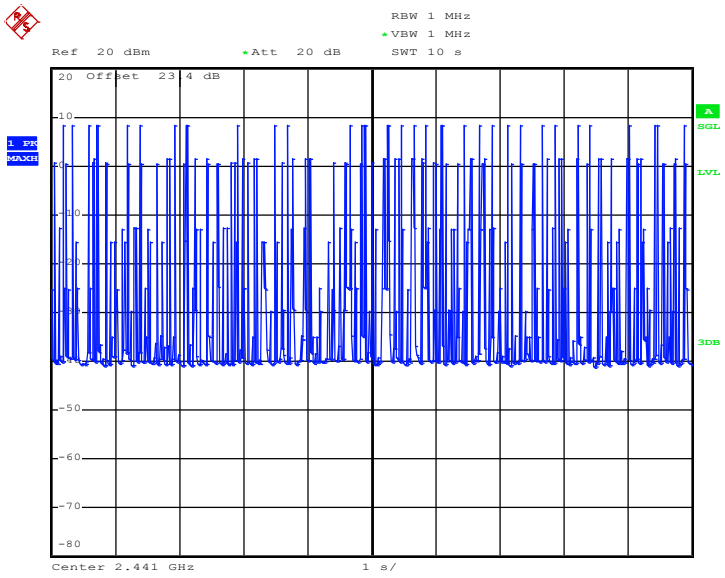
DH5 Dwell Time (Count Pulses) Plot on Channel 39



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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.

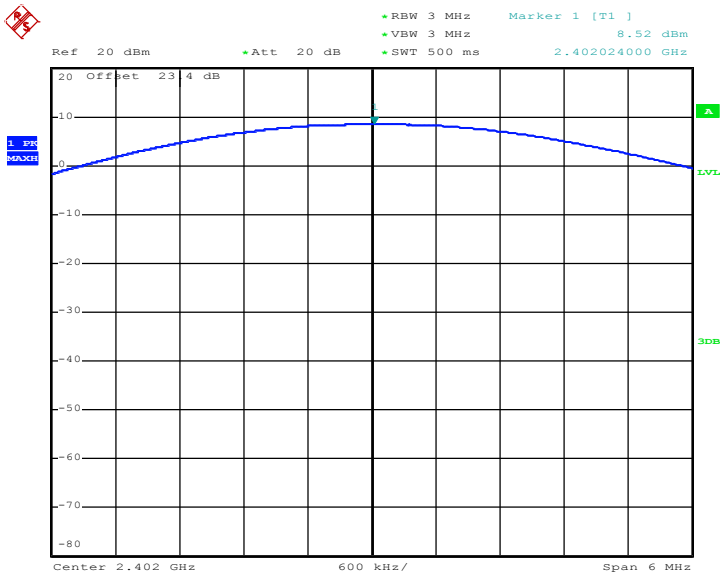
3.5.4 Test Setup

3.5.5 Test Result of Peak Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	RF Power (dBm)		
		GFSK	Max. Limits (dBm)	Pass/Fail
		1 Mbps		
00	2402	8.52	30	Pass
39	2441	8.73	30	Pass
78	2480	8.85	30	Pass

Peak Output Power Plot on Channel 00



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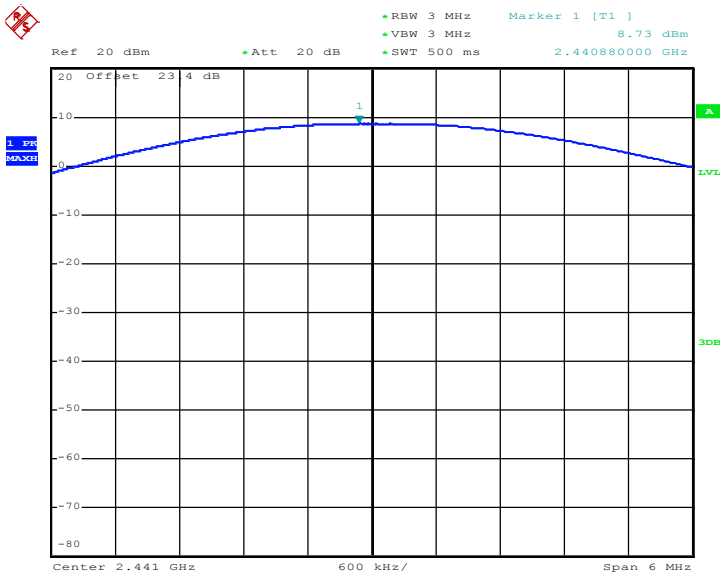
Peak Output Power Plot on Channel 39



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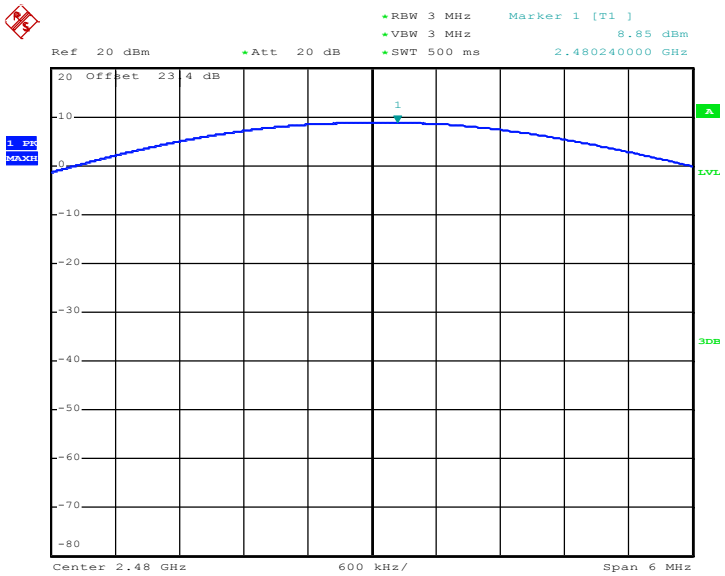
Peak Output Power Plot on Channel 78



3.6 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

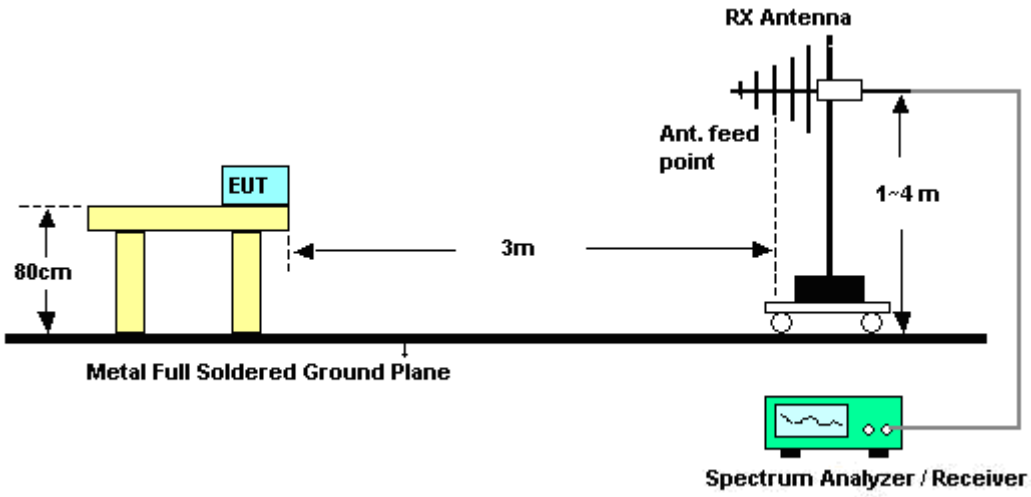
See list of measuring instruments of this test report.

3.6.3 Test Procedures

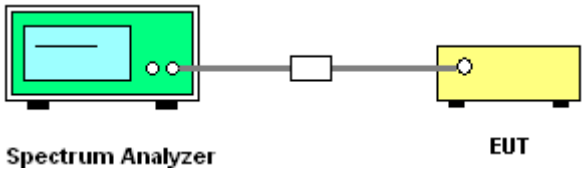
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC Public Notice DA 00-705 Measurement Guidelines.
2. RF antenna conducted test: Set RBW = 300kHz, Video bandwidth (VBW) ≥ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured 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. Radiated emission test: 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).
4. 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

<Radiated Band Edges>



<Conducted Band Edges>



3.6.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	**Temperature :**	22~23°C
Test Channel :	00	**Relative Humidity :**	49~51%
		Test Engineer :	Eric Shih

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**
2349.14	62.08	-11.92	74	59.31	31.84	5.34	34.41	109	1	Peak
2349.14	39.81	-14.19	54	37.04	31.84	5.34	34.41	109	1	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	**Level (dBuV/m)**	**Over Limit (dB)**	**Limit Line (dBuV/m)**	**Read Level (dBuV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2386.38	56.33	-17.67	74	53.42	31.9	5.4	34.39	100	359	Peak
2386.38	35.54	-18.46	54	32.63	31.9	5.4	34.39	100	359	Average

Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	78	Relative Humidity :	49~51%
		Test Engineer :	Eric Shih

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	69.22	-4.78	74	66.09	31.98	5.52	34.37	100	13	Peak
2483.5	34.37	-19.63	54	31.24	31.98	5.52	34.37	100	13	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	88.75	57.77	30.98	54.00	-23.02	Pass
Hopping Mode	88.75	54.38	34.37	54.00	-19.63	Pass

Note : Average result = Maximum field strength – Delta result

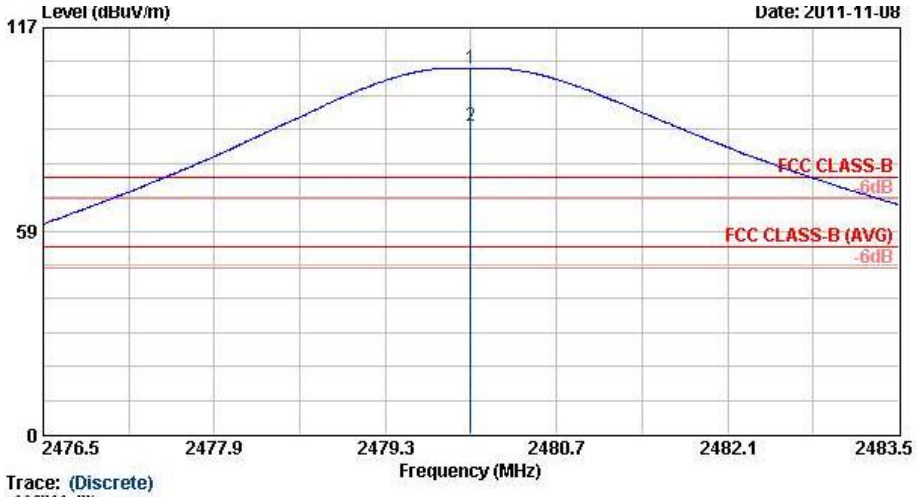
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	66.35	-7.65	74	63.22	31.98	5.52	34.37	100	359	Peak
2483.5	33.43	-20.57	54	30.3	31.98	5.52	34.37	100	359	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	86.93	56.48	30.45	54.00	-23.55	Pass
Hopping Mode	86.93	53.50	33.43	54.00	-20.57	Pass

Note : Average result = Maximum field strength – Delta result

Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	78	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal



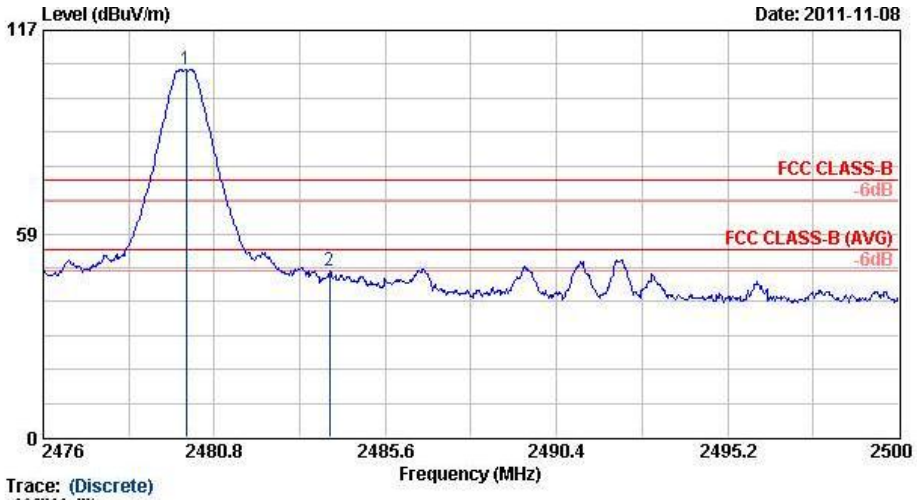
Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B HF-ANT_110602 HORIZONTAL
Project : FR 193004
Memo : Mode 3

	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 @	2480.00	105.36	31.36	74.00	102.23	31.98	5.52	34.37	100	13	Peak
2 @	2480.00	88.75	34.75	54.00	85.62	31.98	5.52	34.37	100	13	Average

* Maximum field strength of the fundamental emission

Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	78	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal



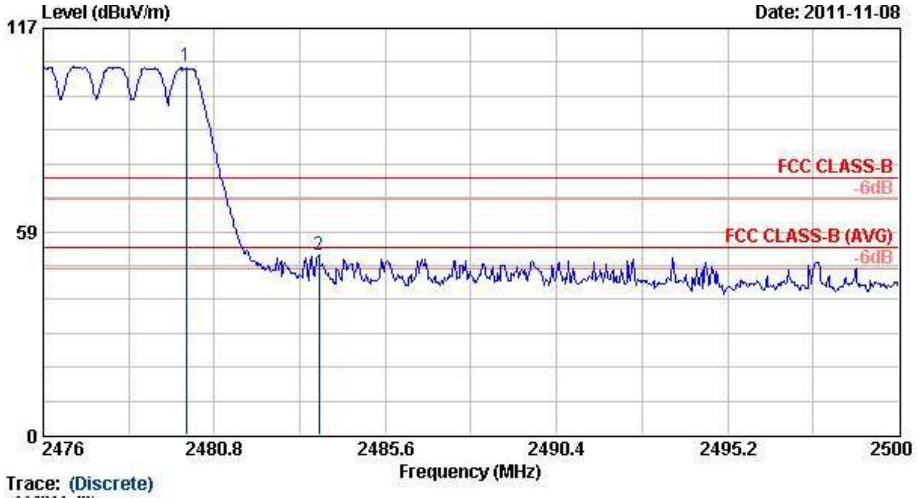
Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B HF-ANT_110802 HORIZONTAL
Project : FR 193004
Memo : Mode 3

	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 @	2480.00	105.73	31.73	74.00	102.60	31.98	5.52	34.37	100	13	Peak
2	2484.04	47.96	-26.04	74.00	44.82	31.98	5.52	34.37	100	13	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 57.77 dB , single carrier Mode

Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	78	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal



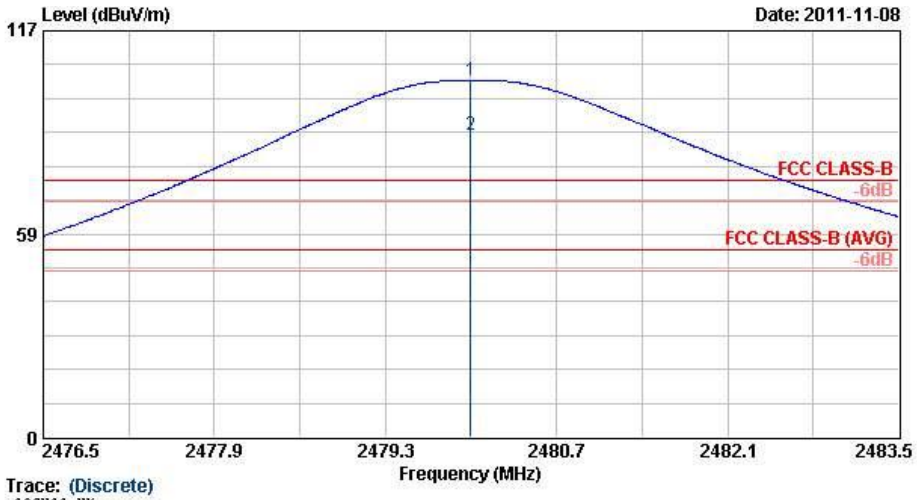
Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B HF-ANT_110602 HORTZONTAL
Project : FR 193004
Memo : Mode 3

	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 @	2480.00	105.93	31.93	74.00	102.80	31.98	5.52	34.37	100	13	Peak
2	2483.73	51.55	-22.45	74.00	48.41	31.98	5.52	34.37	100	13	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 54.38 dB , Hopping Mode

Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	78	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical



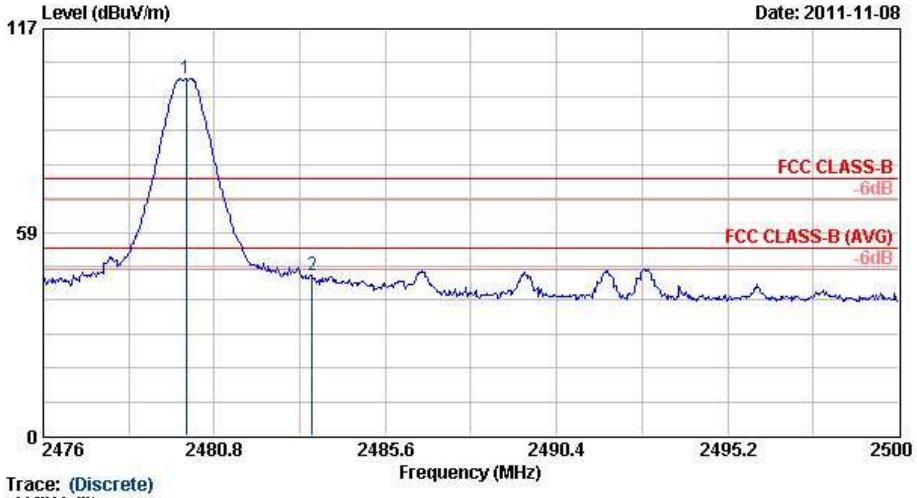
Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B HF-ANT_110802 VERTICAL
Project : FR 193004
Memo : Mode 3

	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 @	2480.00	102.67	28.67	74.00	99.53	31.98	5.52	34.37	100	359	Peak
2 @	2480.00	86.93	32.93	54.00	83.80	31.98	5.52	34.37	100	359	Average

* Maximum field strength of the fundamental emission

Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	78	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical



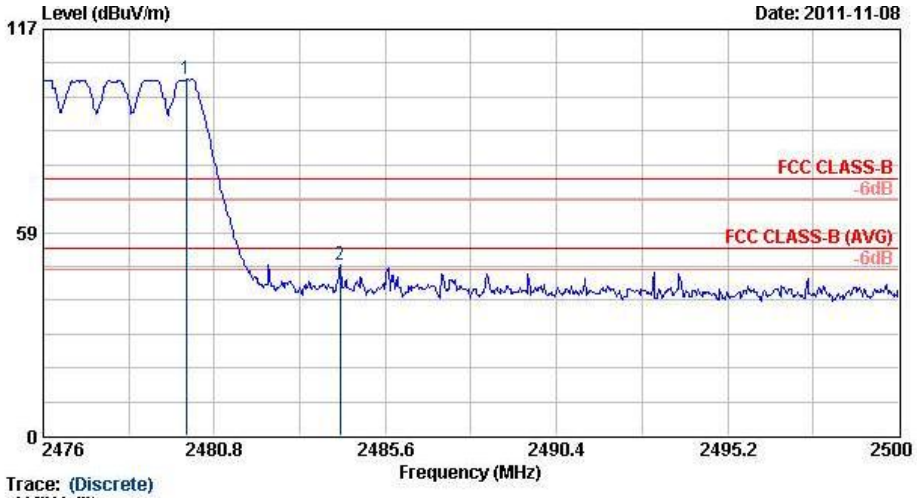
Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B HF-ANT_110802 VERTICAL
Project : FR 193004
Memo : Mode 3

	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	102.55	28.55	74.00	99.42	31.98	5.52	34.37	100	359	Peak
2	2483.54	46.07	-27.93	74.00	42.94	31.98	5.52	34.37	100	359	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 56.48 dB , single carrier Mode

Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	78	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical



Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B HF-ANT_110602 VERTICAL
Project : FR 193004
Memo : Mode 3

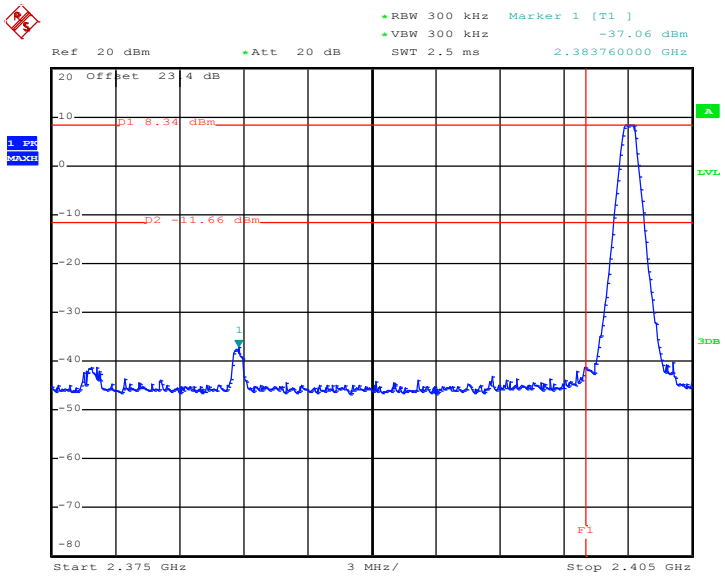
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2480.00	102.56	28.56	74.00	99.42	31.98	5.52	34.37	100	359	Peak
2	2484.33	49.06	-24.94	74.00	45.93	31.98	5.52	34.37	100	359	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 53.50 dB , Hopping Mode

3.6.6 Test Result of Conducted Band Edges

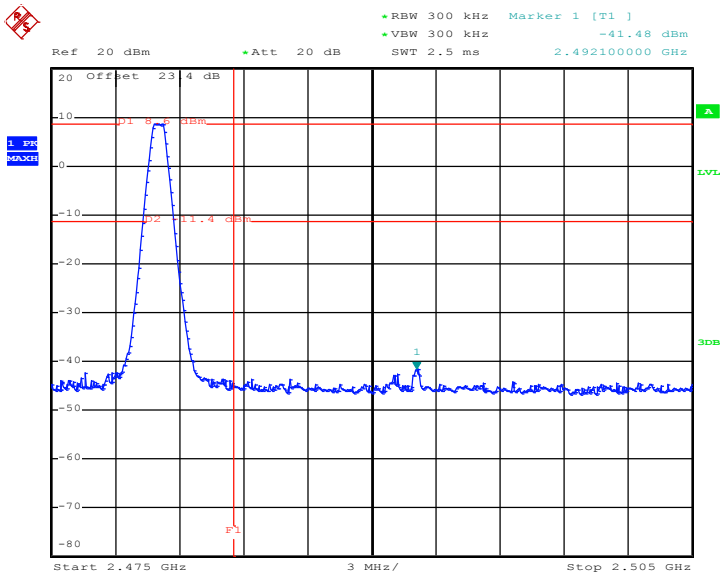
Test Mode :	Mode 1 and 3	**Temperature :**	24~26℃
Test Channel :	00 and 78	**Relative Humidity :**	50~53%
		Test Engineer :	Pinkston Tu

Low Band Edge Plot on Channel 00



Date: 12.OCT.2011 11:04:28

High Band Edge Plot on Channel 78



Date: 12.OCT.2011 11:05:31

3.7 Spurious Emission Measurement

3.7.1 Limit of Spurious Emission Measurement

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

3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

3.7.3 Test Procedure

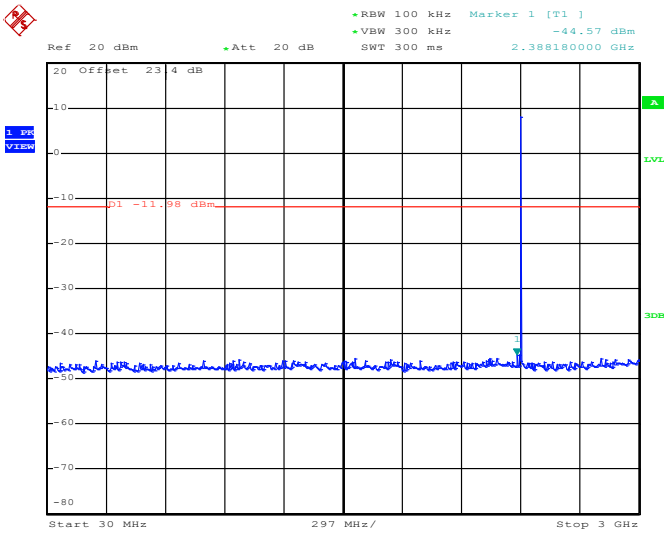
1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set RBW = 100 kHz, Video bandwidth (VBW) ≥ RBW, scan up through 10th harmonic. All harmonics / spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

3.7.4 Test Setup

3.7.5 Test Result

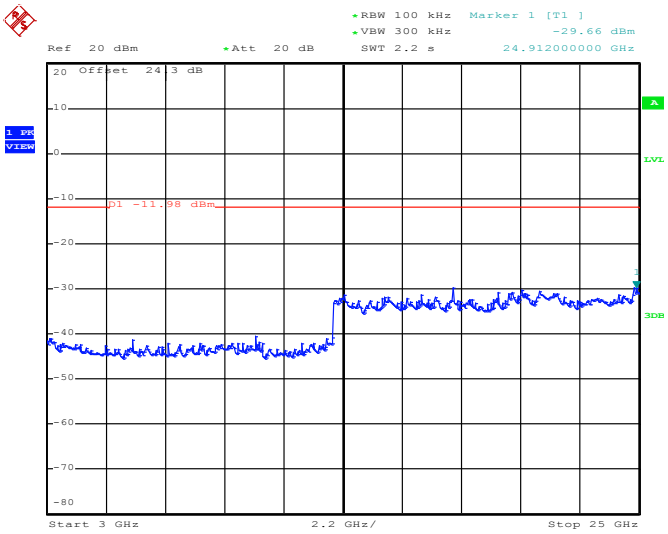
Test Mode :	Mode 1	Temperature :	24~26℃
Test Channel :	00	Relative Humidity :	50~53%
		Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 12.OCT.2011 11:34:44

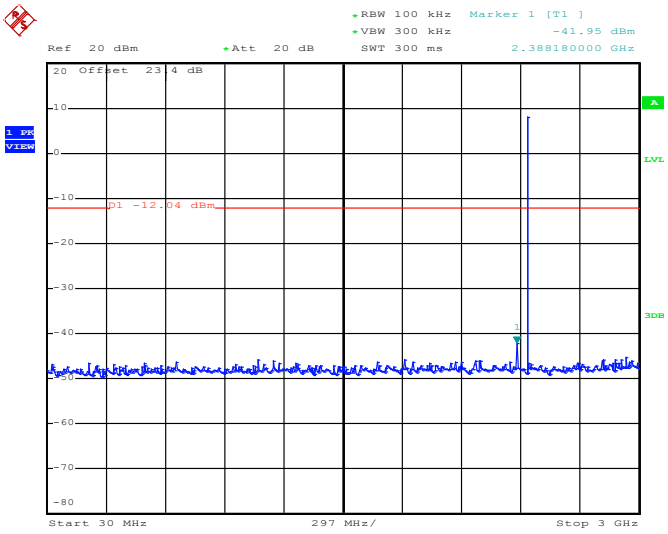
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 12.OCT.2011 11:34:55

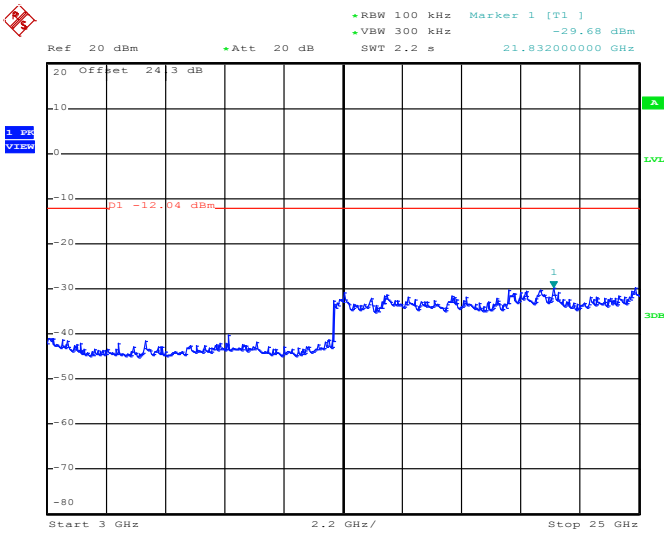
Test Mode :	Mode 2	Temperature :	24~26℃
Test Channel :	39	Relative Humidity :	50~53%
		Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 12.OCT.2011 11:35:47

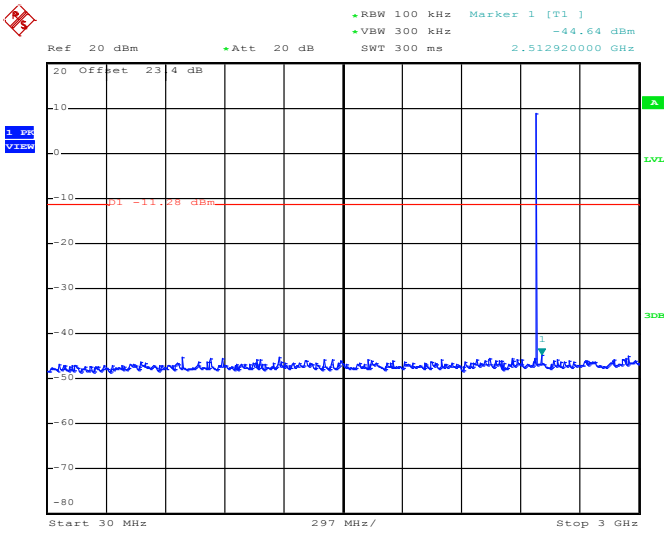
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 12.OCT.2011 11:35:59

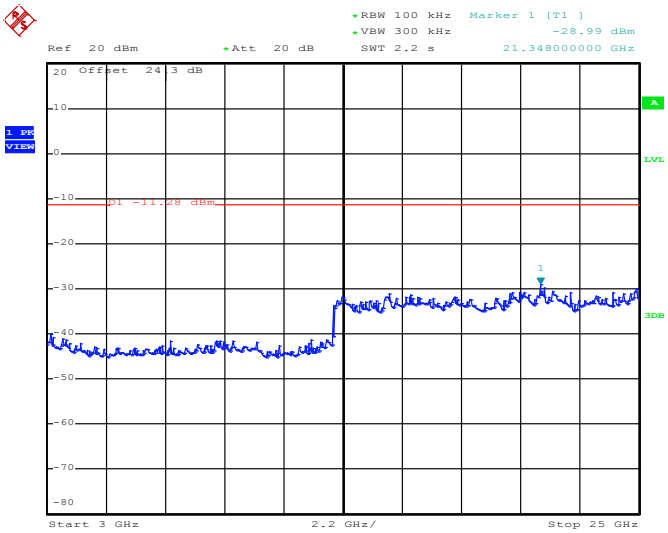
Test Mode :	Mode 3	Temperature :	24~26℃
Test Channel :	78	Relative Humidity :	50~53%
		Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 12.OCT.2011 11:36:51

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 12.OCT.2011 11:37:03

3.8 AC Conducted Emission Measurement

3.8.1 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.

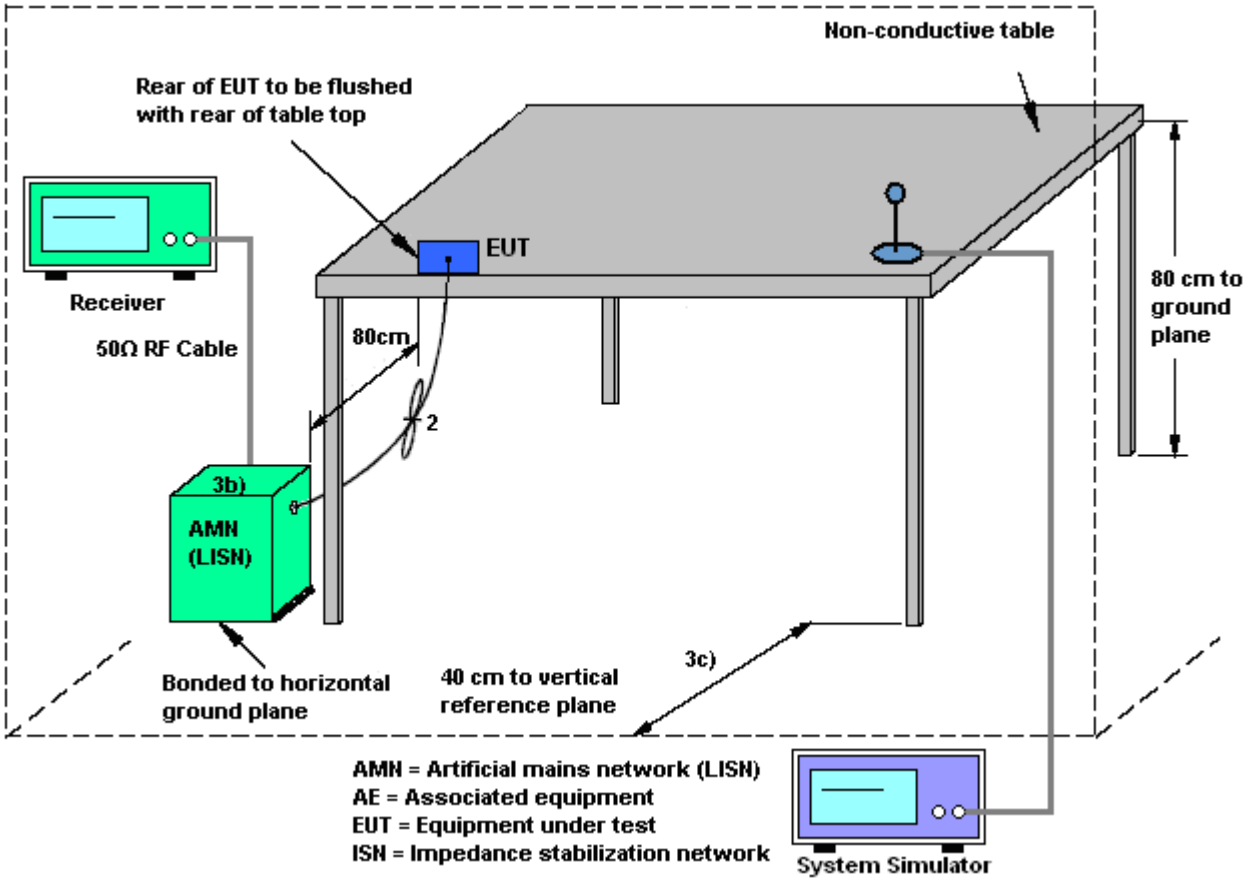
3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

3.8.3 Test Procedures

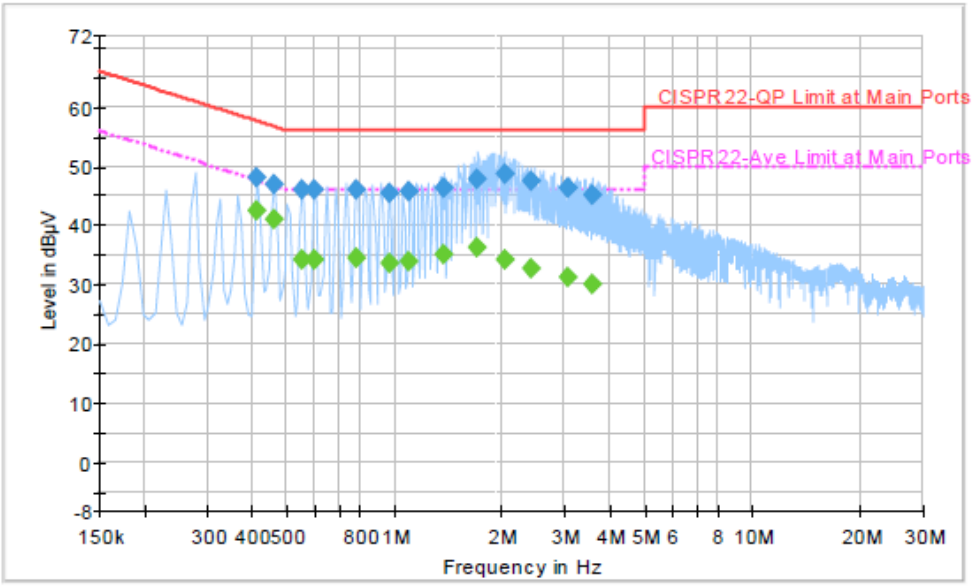
1. Please follow the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All 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.

3.8.4 Test Setup



3.8.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	**Temperature :**	20~22℃
Test Engineer :	Aslen Chiu	**Relative Humidity :**	40~42%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Link + Earphone + Camera + USB Cable (Charging from Adapter) + Battery		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



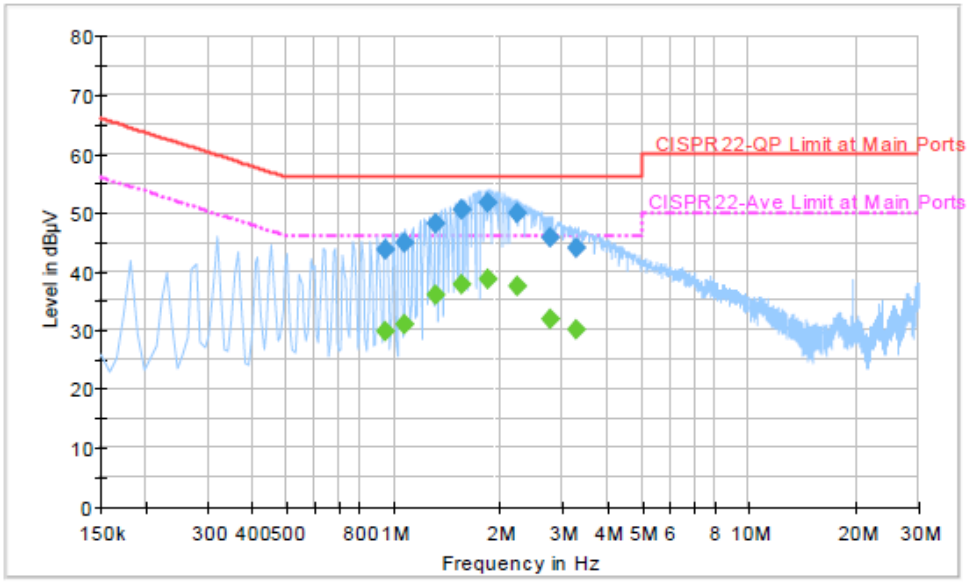
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.414000	48.1	Off	L1	19.5	9.5	57.6
0.462000	46.9	Off	L1	19.5	9.8	56.7
0.550000	46.1	Off	L1	19.4	9.9	56.0
0.598000	45.9	Off	L1	19.4	10.1	56.0
0.782000	46.0	Off	L1	19.4	10.0	56.0
0.966000	45.5	Off	L1	19.4	10.5	56.0
1.102000	45.7	Off	L1	19.4	10.3	56.0
1.374000	46.4	Off	L1	19.4	9.6	56.0
1.710000	47.7	Off	L1	19.4	8.3	56.0
2.038000	48.7	Off	L1	19.4	7.3	56.0
2.406000	47.6	Off	L1	19.5	8.4	56.0
3.054000	46.2	Off	L1	19.4	9.8	56.0
3.566000	45.1	Off	L1	19.5	10.9	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.414000	42.6	Off	L1	19.5	5.0	47.6
0.462000	41.1	Off	L1	19.5	5.6	46.7
0.550000	34.2	Off	L1	19.4	11.8	46.0
0.598000	34.2	Off	L1	19.4	11.8	46.0
0.782000	34.4	Off	L1	19.4	11.6	46.0
0.966000	33.7	Off	L1	19.4	12.3	46.0
1.102000	34.0	Off	L1	19.4	12.0	46.0
1.374000	35.2	Off	L1	19.4	10.8	46.0
1.710000	36.3	Off	L1	19.4	9.7	46.0
2.038000	34.1	Off	L1	19.4	11.9	46.0
2.406000	32.6	Off	L1	19.5	13.4	46.0
1.374000	31.2	Off	L1	19.4	14.8	46.0
3.566000	30.1	Off	L1	19.5	15.9	46.0

Test Mode :	Mode 1	**Temperature :**	20~22℃
Test Engineer :	Aslen Chiu	**Relative Humidity :**	40~42%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Link + Earphone + Camera + USB Cable (Charging from Adapter) + Battery		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.950000	43.8	Off	N	19.5	12.2	56.0
1.078000	45.0	Off	N	19.5	11.0	56.0
1.310000	48.1	Off	N	19.5	7.9	56.0
1.550000	50.4	Off	N	19.5	5.6	56.0
1.846000	51.7	Off	N	19.5	4.3	56.0
2.230000	50.0	Off	N	19.5	6.0	56.0
2.774000	45.8	Off	N	19.5	10.2	56.0
3.278000	44.1	Off	N	19.5	11.9	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.950000	29.8	Off	N	19.5	16.2	46.0
1.078000	30.9	Off	N	19.5	15.1	46.0
1.310000	36.1	Off	N	19.5	9.9	46.0
1.550000	37.9	Off	N	19.5	8.1	46.0
1.846000	38.8	Off	N	19.5	7.2	46.0
2.230000	37.6	Off	N	19.5	8.4	46.0
2.774000	31.8	Off	N	19.5	14.2	46.0
3.278000	30.1	Off	N	19.5	15.9	46.0

3.9 Radiated 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

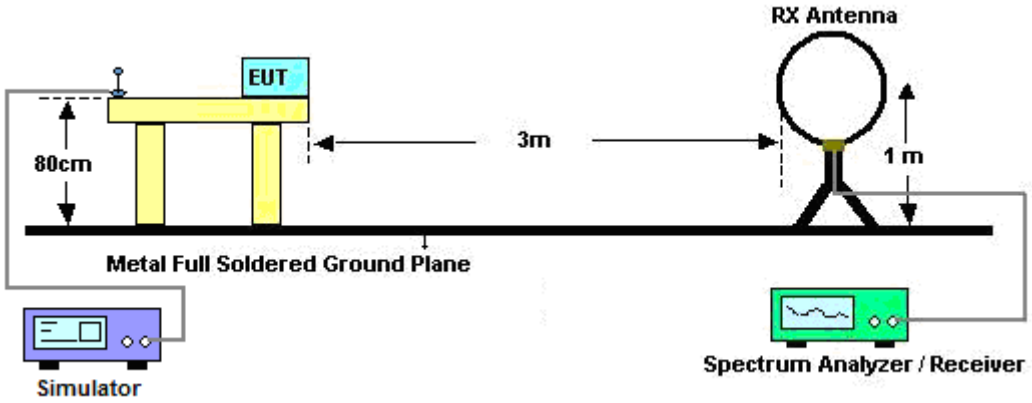
See list of measuring instruments of this test report.

3.9.3 Test Procedures

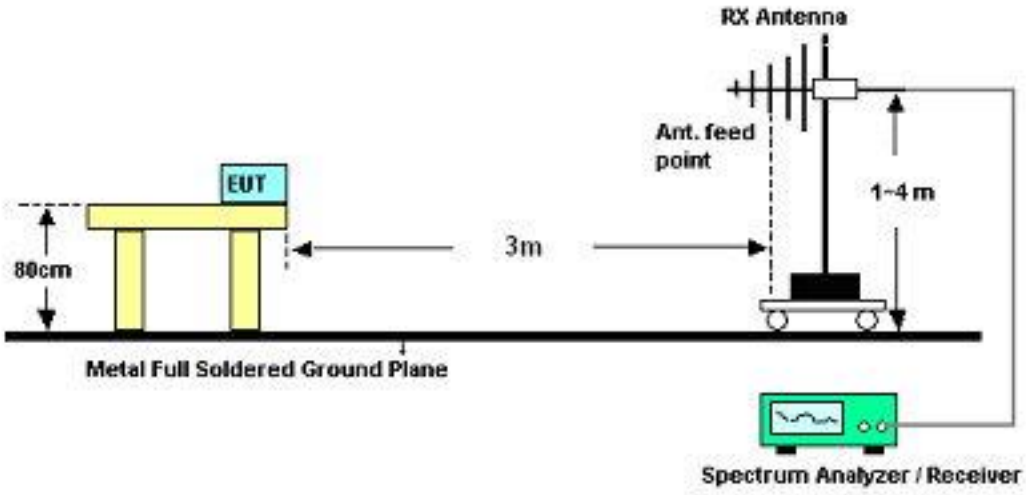
1. The testing follows the guidelines in FCC Public Notice DA 00-705 Measurement Guidelines.
2. Use the following spectrum analyzer settings:
   (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
   (2) Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.
   Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1m]) (dB)
3. Follow the guidelines in ANSI C63.4-2003 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 for the peak value is greater than 54 dBuv/m

3.9.4 Test Setup

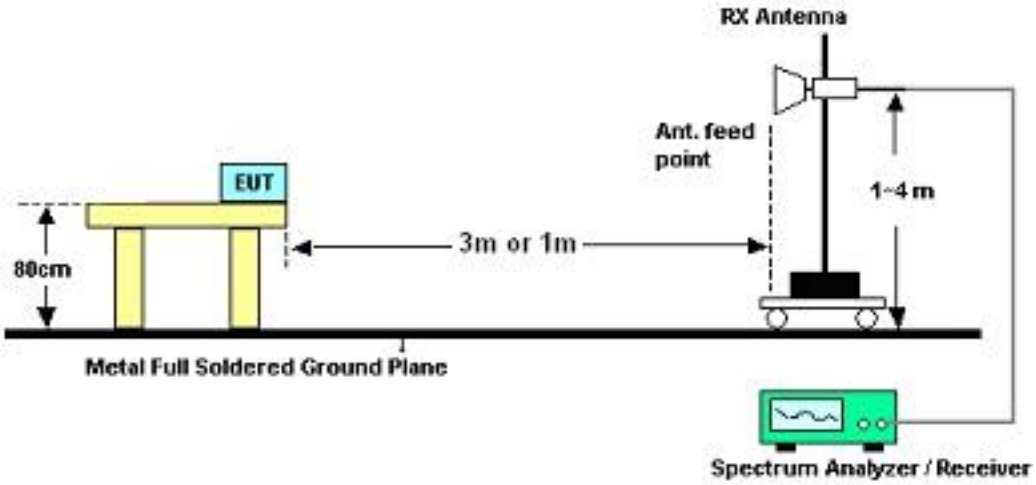
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

Test Engineer :	Eric Shih	Temperature :	22~23°C
		Relative Humidity :	49~51%

Frequency	Measurement Distance	Field Strength	Antenna Factor	Distance Factor	Limit Distance	Field Strength at Limit Distance (30m)	Limit (30m)
(MHz)	(m)	(dBuV/m)	(dB/m)	(dB/decade)	(m)	(dBuV/m)	(dBuV/m)
26	3	9.17	19.70	40	30	-30.83	29.54

Note:

1. In accordance with 15.33 (a): For each frequency at which a measurement is made at only one distance, the square of an inverse linear distance extrapolation factor (40 dB/decade) is applied.
   Distance extrapolation factor = 40 log (specific distance / test distance) (dB);
   Limit line = specific limits (dBuV) + distance extrapolation factor.
2. The field strength measured is direct conversion of all parameters (antenna factor and distance extrapolation factor) and loaded into the spectrum.
3. For example 1:
   Field Strength at 3m=10 (dBuV/m)
   Field Strength at 30m=10- 40*log(30m/3m)=-30 (dBuV/m)
   For example 2:
   Field Strength at 10m=10 (dBuV/m)
   Field Strength at 30m=10- 40*log(30m/10m)=-9.08 (dBuV/m)

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

Test Mode :	Mode 1	Temperature :	22~23°C
Test Channel :	00	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	2402 MHz is fundamental signal which can be ignored.		

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
37.29	21.67	-18.33	40	38.9	13.69	0.78	31.7	-	-	Peak
101.01	19.76	-23.74	43.5	39.45	10.76	1.23	31.68	-	-	Peak
128.82	21.46	-22.04	43.5	39.97	11.81	1.38	31.7	-	-	Peak
763.4	27.68	-18.32	46	36.14	20.26	3.35	32.07	-	-	Peak
864.9	28.95	-17.05	46	35.83	21.33	3.61	31.82	100	95	Peak
951.7	24.18	-21.82	46	29.63	21.87	3.79	31.11	-	-	Peak
2349.14	39.81	-14.19	54	37.04	31.84	5.34	34.41	109	1	Average
2349.14	62.08	-11.92	74	59.31	31.84	5.34	34.41	109	1	Peak
2402	108.29	-	-	105.37	31.91	5.4	34.39	109	1	Peak
2402	91.46	-	-	88.43	31.95	5.46	34.38	109	1	Average
2494	45.75	-28.25	74	42.6	32	5.52	34.37	109	1	Peak
2494	32.71	-21.29	54	29.56	32	5.52	34.37	109	1	Average

Test Mode :	Mode 1	Temperature :	22~23°C
Test Channel :	00	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	2402 MHz is fundamental signal which can be ignored.		

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
42.42	29.98	-10.02	40	49.62	11.25	0.81	31.7	100	98	Peak
100.74	20.43	-23.07	43.5	40.12	10.76	1.23	31.68	-	-	Peak
126.93	21.3	-22.2	43.5	39.74	11.89	1.37	31.7	-	-	Peak
763.4	27.24	-18.76	46	35.7	20.26	3.35	32.07	-	-	Peak
864.2	27.42	-18.58	46	34.32	21.32	3.6	31.82	-	-	Peak
932.1	24.29	-21.71	46	30.03	21.78	3.78	31.3	-	-	Peak
2386.38	35.54	-18.46	54	32.63	31.9	5.4	34.39	100	359	Average
2386.38	56.33	-17.67	74	53.42	31.9	5.4	34.39	100	359	Peak
2402	86.79	-	-	83.88	31.9	5.4	34.39	100	359	Average
2402	102.27	-	-	99.35	31.91	5.4	34.39	100	359	Peak
2492	44.97	-29.03	74	41.82	32	5.52	34.37	100	359	Peak
2492	32.63	-21.37	54	29.48	32	5.52	34.37	100	359	Average

Test Mode :	Mode 2	Temperature :	22~23°C
Test Channel :	39	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	2441 MHz is fundamental signal which can be ignored.		

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
42.69	29.35	-10.65	40	48.99	11.25	0.81	31.7	100	34	Peak
97.5	17.79	-25.71	43.5	37.89	10.37	1.2	31.67	-	-	Peak
120.45	21.17	-22.33	43.5	39.32	12.23	1.33	31.71	-	-	Peak
763.4	28.55	-17.45	46	37.01	20.26	3.35	32.07	-	-	Peak
864.2	29.11	-16.89	46	36.01	21.32	3.6	31.82	-	-	Peak
932.1	24.61	-21.39	46	30.35	21.78	3.78	31.3	-	-	Peak
2388	57.02	-16.98	74	54.11	31.9	5.4	34.39	105	334	Peak
2388	37.28	-16.72	54	34.37	31.9	5.4	34.39	105	334	Average
2441	108.42	-	-	105.39	31.95	5.46	34.38	105	334	Peak
2441	91.89	-	-	88.86	31.95	5.46	34.38	105	334	Average
2492	49.67	-24.33	74	46.52	32	5.52	34.37	105	334	Peak
2492	33.62	-20.38	54	30.47	32	5.52	34.37	105	334	Average

Test Mode :	Mode 2	Temperature :	22~23°C
Test Channel :	39	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	2441 MHz is fundamental signal which can be ignored.		

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
42.69	30.31	-9.69	40	49.95	11.25	0.81	31.7	100	82	Peak
92.37	20.71	-22.79	43.5	41.87	9.4	1.15	31.71	-	-	Peak
129.09	21.31	-22.19	43.5	39.82	11.81	1.38	31.7	-	-	Peak
763.4	27.65	-18.35	46	36.11	20.26	3.35	32.07	-	-	Peak
864.9	27.39	-18.61	46	34.27	21.33	3.61	31.82	-	-	Peak
898.5	25.01	-20.99	46	31.26	21.61	3.75	31.61	-	-	Peak
2388	55.3	-18.7	74	52.39	31.9	5.4	34.39	100	356	Peak
2388	36.38	-17.62	54	33.47	31.9	5.4	34.39	100	356	Average
2441	103.66	-	-	100.63	31.95	5.46	34.38	100	356	Peak
2441	88.32	-	-	85.29	31.95	5.46	34.38	100	356	Average
2492	47.92	-26.08	74	44.77	32	5.52	34.37	100	356	Peak
2492	33.1	-20.9	54	29.95	32	5.52	34.37	100	356	Average

Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	78	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	2480 MHz is fundamental signal which can be ignored.		

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
40.53	28.76	-11.24	40	47.33	12.32	0.81	31.7	100	75	Peak
57.81	19.73	-20.27	40	43.68	6.79	0.94	31.68	-	-	Peak
128.82	22.4	-21.1	43.5	40.91	11.81	1.38	31.7	-	-	Peak
763.4	28.17	-17.83	46	36.63	20.26	3.35	32.07	-	-	Peak
864.2	28.92	-17.08	46	35.82	21.32	3.6	31.82	-	-	Peak
932.1	25.02	-20.98	46	30.76	21.78	3.78	31.3	-	-	Peak
2382	52.81	-21.19	74	49.92	31.88	5.4	34.39	100	13	Peak
2382	33.04	-20.96	54	30.15	31.88	5.4	34.39	100	13	Average
2480	105.19	-	-	102.06	31.98	5.52	34.37	100	13	Peak
2480	88.75	-	-	85.62	31.98	5.52	34.37	100	13	Average
2483.5	69.22	-4.78	74	66.09	31.98	5.52	34.37	100	13	Peak
2483.5	34.37	-19.63	54	31.24	31.98	5.52	34.37	100	13	Average

Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	78	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	2480 MHz is fundamental signal which can be ignored.		

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
37.29	29.53	-10.47	40	46.76	13.69	0.78	31.7	-	-	Peak
42.42	31.19	-8.81	40	50.83	11.25	0.81	31.7	100	18	Peak
128.82	21.77	-21.73	43.5	40.28	11.81	1.38	31.7	-	-	Peak
763.4	26.94	-19.06	46	35.4	20.26	3.35	32.07	-	-	Peak
864.2	27.82	-18.18	46	34.72	21.32	3.6	31.82	-	-	Peak
898.5	24.86	-21.14	46	31.11	21.61	3.75	31.61	-	-	Peak
2382	55.22	-18.78	74	52.33	31.88	5.4	34.39	100	359	Peak
2382	33.43	-20.57	54	30.54	31.88	5.4	34.39	100	359	Average
2480	102.39	-	-	99.26	31.98	5.52	34.37	100	359	Peak
2480	86.93	-	-	83.8	31.98	5.52	34.37	100	359	Average
2483.5	66.35	-7.65	74	63.22	31.98	5.52	34.37	100	359	Peak
2483.5	33.43	-20.57	54	30.3	31.98	5.52	34.37	100	359	Average

3.10 Antenna Requirements

3.10.1 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.

3.10.2 Antenna Connected Construction

The antennas type used in this product is PIFA Antenna without connector and it is considered to meet antenna requirement.

3.10.3 Antenna Gain

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 13, 2011	Oct. 12, 2011	Jun. 12, 2012	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 18, 2011	Oct. 12, 2011	Sep. 17, 2012	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 18, 2011	Oct. 12, 2011	Sep. 17, 2012	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Feb. 18, 2011	Oct. 12, 2011	Feb. 17, 2012	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 18, 2011	Oct. 12, 2011	Feb. 17, 2012	Conducted (TH02-HY)
Bluetooth Base Station	R&S	CBT32	100522	N/A	Jan. 13, 2011	Oct. 12, 2011	Jan. 12, 2012	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCI 7	100724	9kHz~7GHz	Aug. 22, 2011	Nov. 24, 2011	Aug. 21, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz – 30MHz	Dec. 03, 2010	Nov. 24, 2011	Dec. 02, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz – 30MHz	Dec. 01, 2010	Nov. 24, 2011	Nov. 30, 2011	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	Nov. 24, 2011	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	112403	N/A	Feb. 22, 2011	Nov. 24, 2011	Feb. 21, 2012	Conduction (CO05-HY)
Spectrum Analyzer	R&S	FSP40	100057	9KHz-40GHz	Oct. 27, 2011	Nov. 07, 2011 ~ Nov. 09, 2011	Oct. 26, 2012	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/003	20MHz-1000MHz	May 10, 2011	Nov. 07, 2011 ~ Nov. 09, 2011	May 09, 2012	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Oct. 22, 2011	Nov. 07, 2011 ~ Nov. 09, 2011	Oct. 21, 2012	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz~18GHz	Aug. 01, 2011	Nov. 07, 2011 ~ Nov. 09, 2011	Jul. 31, 2012	Radiation (03CH06-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 21, 2011	Nov. 07, 2011 ~ Nov. 09, 2011	Oct. 20, 2012	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz- 26.5GHz	Apr. 14, 2011	Nov. 07, 2011 ~ Nov. 09, 2011	Apr. 13, 2012	Radiation (03CH06-HY)
Amplifier	Agilent	310N	186713	9KHz~1GHz	Apr. 14, 2011	Nov. 07, 2011 ~ Nov. 09, 2011	Apr. 13, 2012	Radiation (03CH06-HY)
Amplifier	Agilent	310N	186713	9KHz~1GHz	Apr. 14, 2011	Nov. 07, 2011 ~ Nov. 09, 2011	Apr. 13, 2012	Radiation (03CH06-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9KHz~30MHz	Jul. 29, 2010	Nov. 07, 2011 ~ Nov. 09, 2011	Jul. 28, 2012	Radiation (03CH06-HY)
Bluetooth Base Station	R&S	CBT32	100522	N/A	Jan. 13, 2011	Nov. 07, 2011 ~ Nov. 09, 2011	Jan. 12, 2012	Radiation (03CH06-HY)

5 Uncertainty of Evaluation

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

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.10	Normal (k=2)	0.05
Cable Loss	0.10	Normal (k=2)	0.05
AMN Insertion Loss	2.50	Rectangular	0.63
Receiver Specification	1.50	Rectangular	0.43
Site Imperfection	1.39	Rectangular	0.80
Mismatch	+0.34 / -0.35	U-Shape	0.24
Combined Standard Uncertainty Uc(y)	**1.13**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.26**		

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

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty Uc(y)	**1.27**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.54**		

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

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ1 = 0.197 Antenna VSWR Γ2 = 0.194 Uncertainty = 20Log(1-Γ1*Γ2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	**2.36**				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**				