FCC RF Test Report

APPLICANT	**:**	**Elk LLC**
EQUIPMENT	**:**	**Tablet PC**
MODEL NAME	**:**	**3HT7G**
FCC ID	**:**	**ZHT-1013**
STANDARD	**:**	**FCC Part 15 Subpart C §15.247**
CLASSIFICATION	**:**	**(DTS) Digital Transmission System**

The product was completely tested on Aug. 31, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

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

Reviewed by:

Jones Tsai

Jones Tsai / Manager

SPORTON INTERNATIONAL INC.

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

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR240709A	Rev. 01	Initial issue of report	Aug. 31, 2012
FR240709A	Rev. 02	Update the highest duty cycle descrption for DH5.	Sep. 10, 2012

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(1)	A8.4(2)	Number of Channels	≥ 15Chs	Pass	-
3.2	15.247(a)(1)	A8.1(b)	Hopping Channel Separation	≥ 2/3 of 20dB BW	Pass	-
3.3	15.247(a)(1)	A8.1(d)	Dwell Time of Each Channel	≤ 0.4sec in 31.6sec period	Pass	-
3.4	15.247(a)(1)	A8.1(a)	20dB Bandwidth	N/A	Pass	-
3.5	15.247(b)(1)	A8.1(b)	Peak Output Power	≤ 1 W for 1Mbps ≤ 125 mW for 2, 3Mbps	Pass	-
3.6	15.247(d)	A8.5	Conducted Band Edges	≤ 20dBc	Pass	-
3.7	15.247(d)	A8.5	Conducted Spurious Emission	≤ 20dBc	Pass	-
3.8	15.247(e)	A8.2(b)	Power Spectral Density	≤ 8dBm/3kHz	Pass	
3.8	15.247(d)	A8.5	Radiated Band Edges	15.209(a) & 15.247(d)	Pass	-
3.10	15.247(d)	A8.5	Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 6.25 dB at 145.29 MHz For Quasi-Peak
3.10	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 7.00 dB at 1.486 MHz
3.12	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Elk LLC
Suite 100, 2730 Gateway Oaks Drive Sacramento, CA 95833

1.2 Feature of Equipment Under Test

Product Feature	
Equipment	Tablet PC
Model Name	3HT7G
FCC ID	ZHT-1013
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE WLAN 11abgn / Bluetooth 3.0

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) : 7.36 dBm (0.0054 W) Bluetooth EDR (2Mbps) : 7.79 dBm (0.0060 W) Bluetooth EDR (3Mbps) : 8.14 dBm (0.0065 W)
Antenna Type	PIFA Antenna with gain 2.0 dBi
Type of Modulation	Bluetooth 3.0 : GFSK, π/4-DQPSK, 8-DPSK

1.3 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.
	TH02-HY	CO05-HY	03CH07-HY	722060/4086B-1

1.4 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, and FCC Part 15E recorded in a separate test report.

1.5 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.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
5.	iPod Earphone	Apple	N/A	FCC DoC	Unshielded, 1.0 m	N/A
6.	Notebook	DELL	Latitude E6320	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
7.	LCD Monitor	Dell	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
8.	Adapter	N/A	N/A	N/A	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	5.86 dBm	7.79 dBm	**8.14 dBm**
Ch39	2441MHz	6.71 dBm	6.67 dBm	7.01 dBm
Ch78	2480MHz	7.36 dBm	6.63 dBm	6.93 dBm

Remark:

1. All the test data for each data rate were verified, but only the worst case was reported.

2. The data rate was set in 3Mbps for all the test items due to the highest RF output power.

3. The EUT is programmed to transmit signals continuously for all testing.

2.2 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and ANSI C63.10-2009 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 KHz to 30 MHz), radiation (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

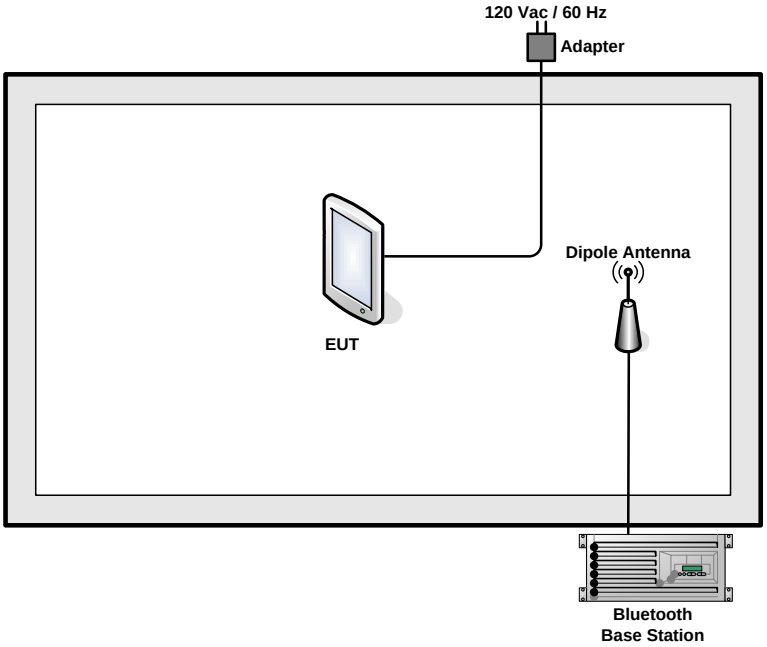
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

The following tables are showing the test modes as the worst cases (Z 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	Prescan	Prescan	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz
AC Conducted Emission	Mode 1 : GSM850 Idle + WLAN Link + Bluetooth Link + HDMI Cable + Earphone + MPEG4 + USB Cable (Charging from Adapter)		
Remark: For radiated TCs, the data rate was set in 3Mbps due to the highest RF output power; only the data of these modes was reported.			

2.3 Connection Diagram of Test System

<Bluetooth Tx Mode>



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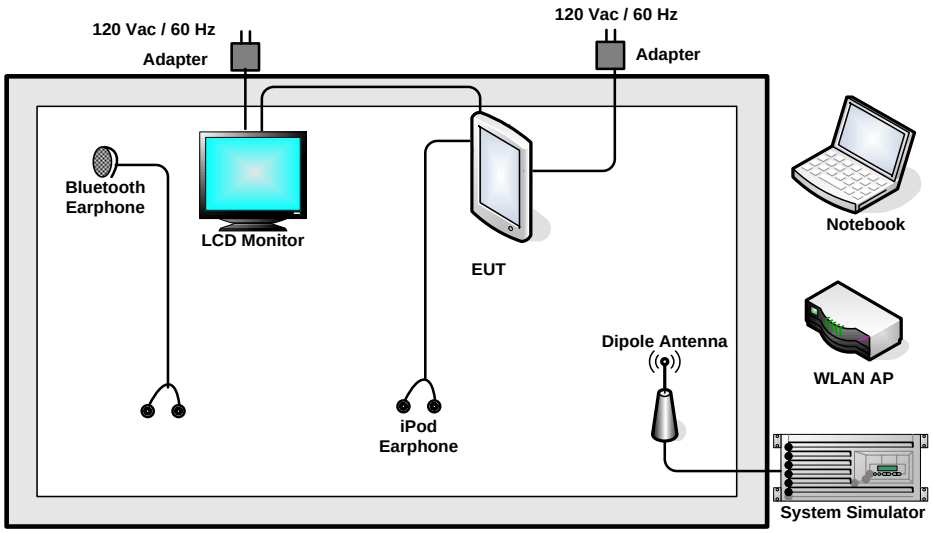


2.4 RF Utility

For Bluetooth function, “Compliance Tool” was installed in EUT which was programmed in order to make the EUT into the engineering modes to contact with Bluetooth base station for continuous transmitting and receiving signals.

3 Test Result

3.1 Number of Channel Measurement

3.1.1 Limits of Number of Hopping Frequency

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

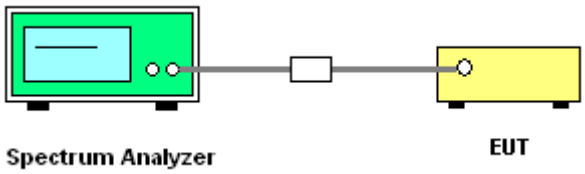
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedure

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

3.1.4 Test Setup



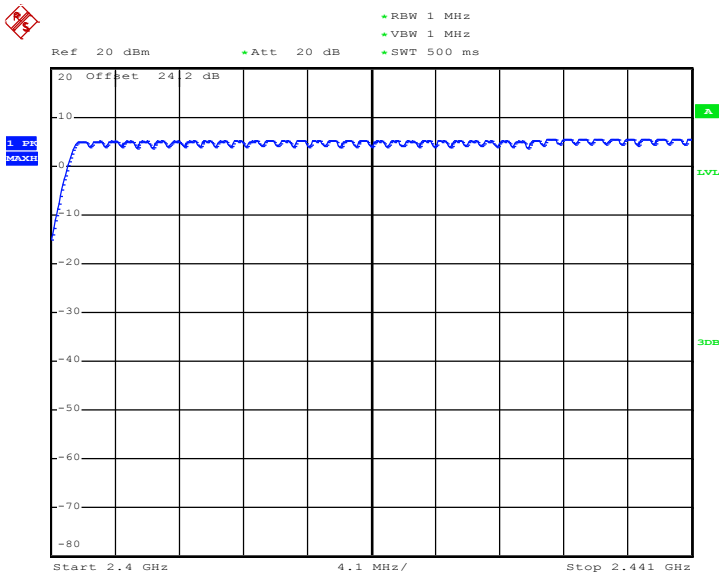
3.1.5 Test Result of Number of Hopping Frequency

Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Number of Hopping Channels (Channel)	Adaptive Frequency Hopping Limits (Channel)	Limits (Channel)	Pass/Fail
79	>20	> 15	Pass

Remark: During AFH mode, the minimum number of hopping channels is 20. The requirement of minimum of 15 channels is met.

Number of Hopping Channel Plot on Channel 00 - 78



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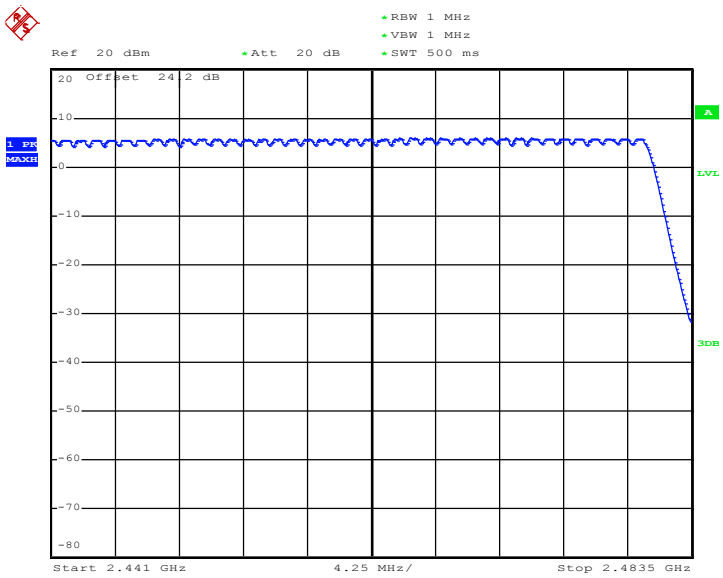

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3.2 Hopping Channel Separation Measurement

3.2.1 Limit of Hopping Channel Separation

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 KHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

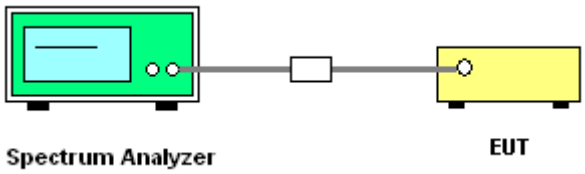
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

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

3.2.4 Test Setup

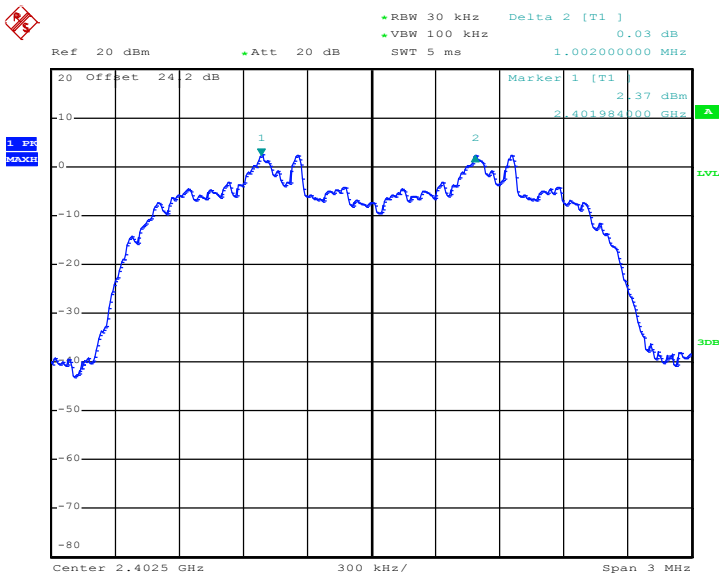


3.2.5 Test Result of Hopping Channel Separation

Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.002	0.8680	Pass
39	2441	1.002	0.8720	Pass
78	2480	1.002	0.8640	Pass

Channel Separation Plot on Channel 00 - 01



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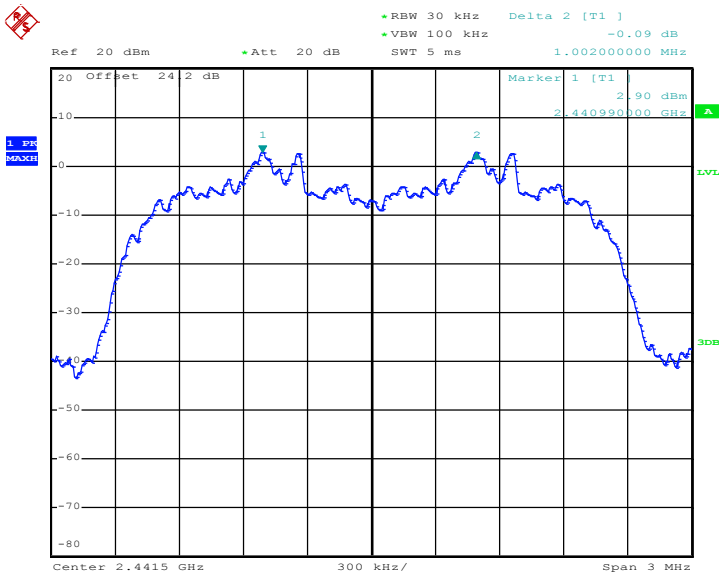
Channel Separation Plot on Channel 39 - 40



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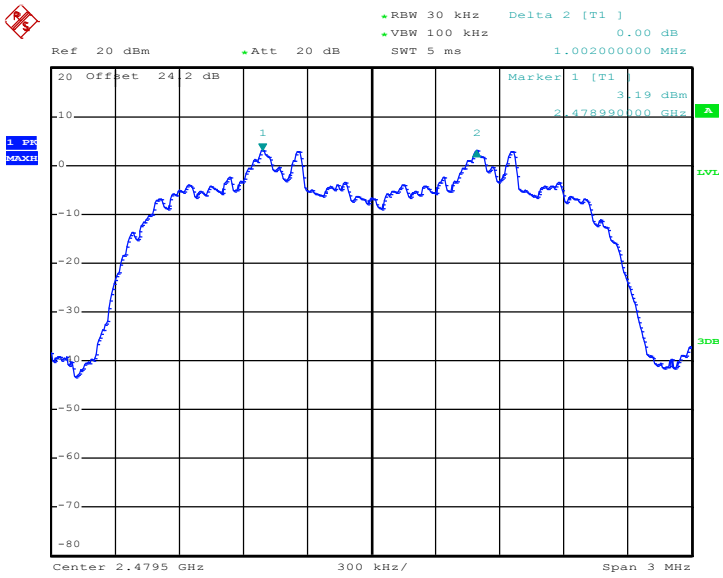
Channel Separation Plot on Channel 77 - 78



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3.3 Dwell Time Measurement

3.3.1 Limit of Dwell Time

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

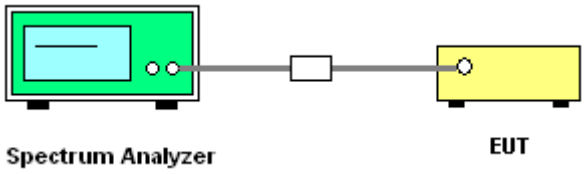
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

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

3.3.4 Test Setup



3.3.5 Test Result of Dwell Time

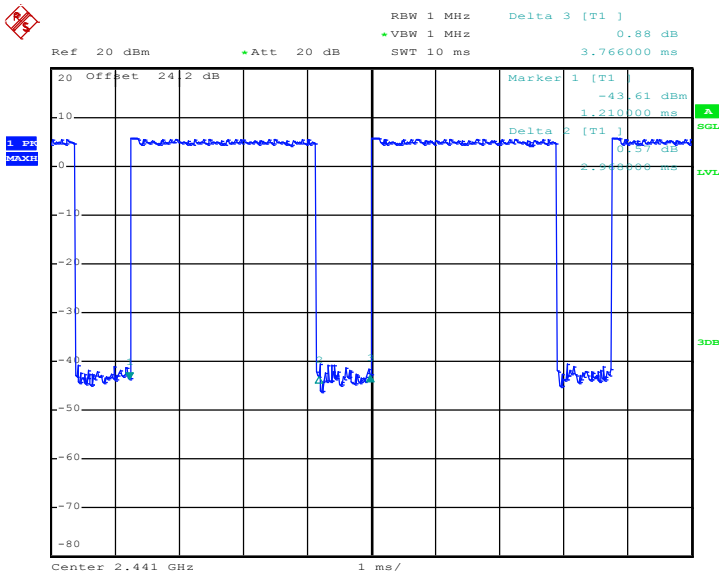
Test Mode :	3DH5	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Package Mode	Average Hopping Channel	Package Transfer Time (usec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
3DH5	3.90	2968.00	0.37	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)
5. In Bluetooth hopping operation, basic and AFH mode, the hopping rate is 1600Hz. The largest dwell time 3DH1/3DH3/3DH5 is 0.37 second of 3DH5, and the average time of occupancy on any channel would not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

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



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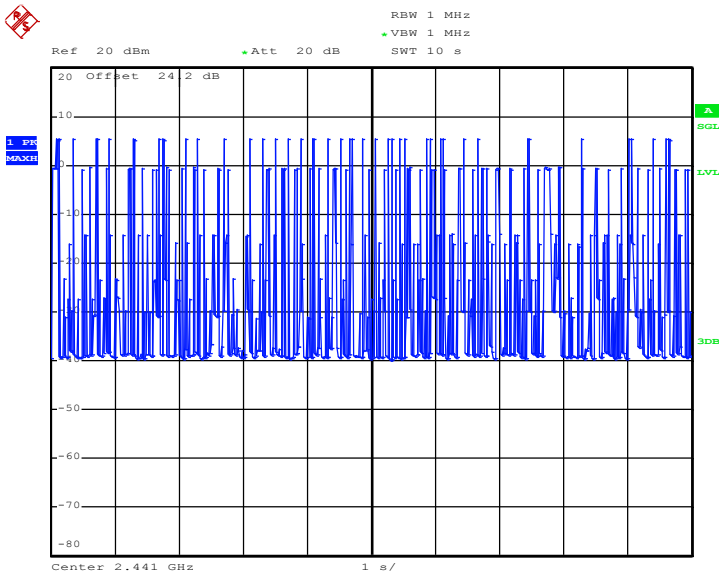
3DH5 Dwell Time (Count Pulses) Plot on Channel 39



Date: 18.APR.2012 14:57:37

3.4 20dB Bandwidth Measurement

3.4.1 Limit of 20dB Bandwidth

Reporting only

3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

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

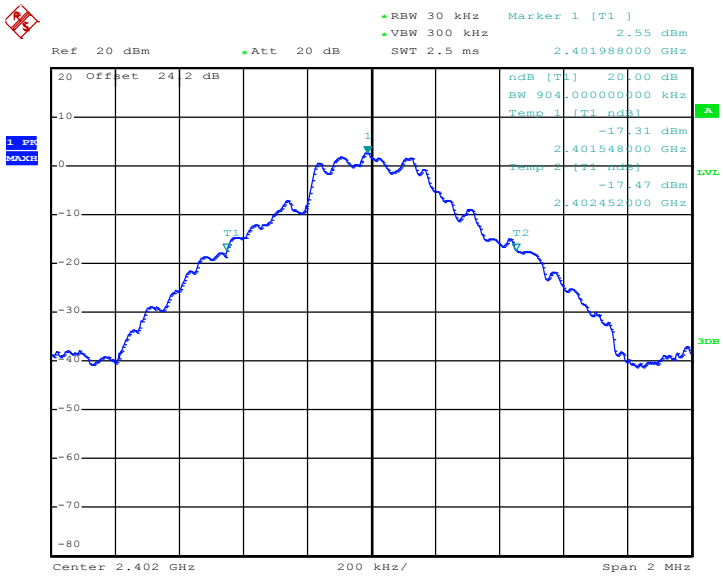
3.4.4 Test Setup

3.4.5 Test Result of 20dB Bandwidth

Test Mode :	1Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	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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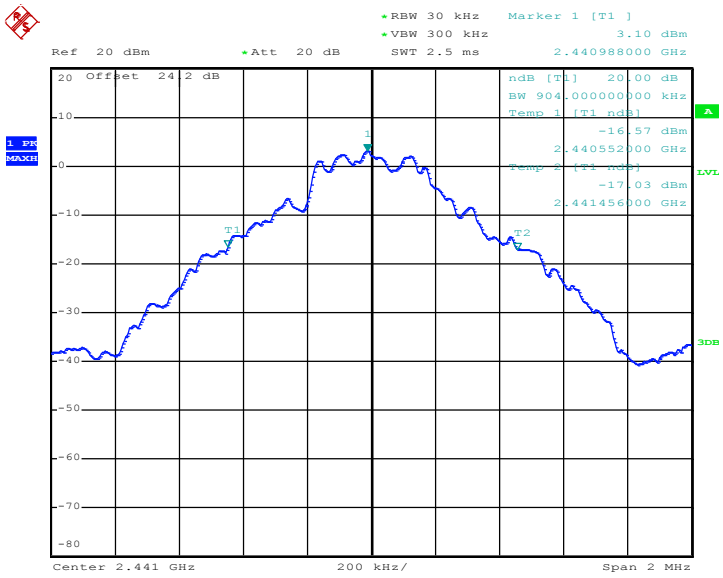
20 dB Bandwidth Plot on Channel 39



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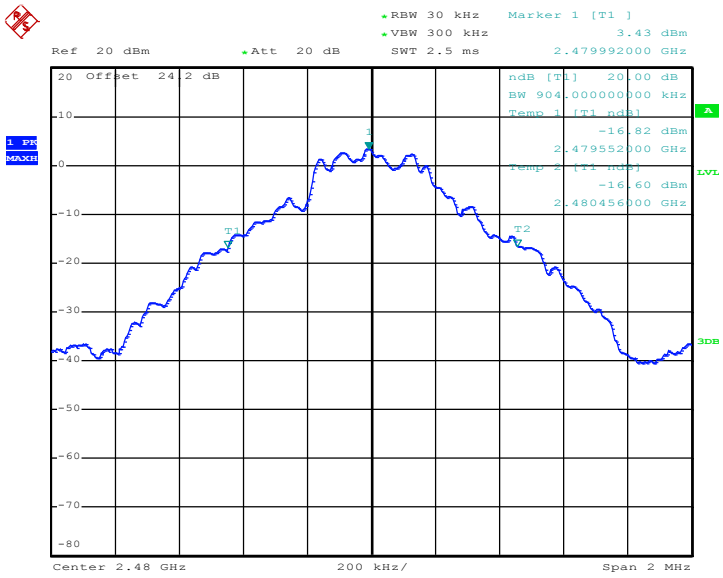
20 dB Bandwidth Plot on Channel 78

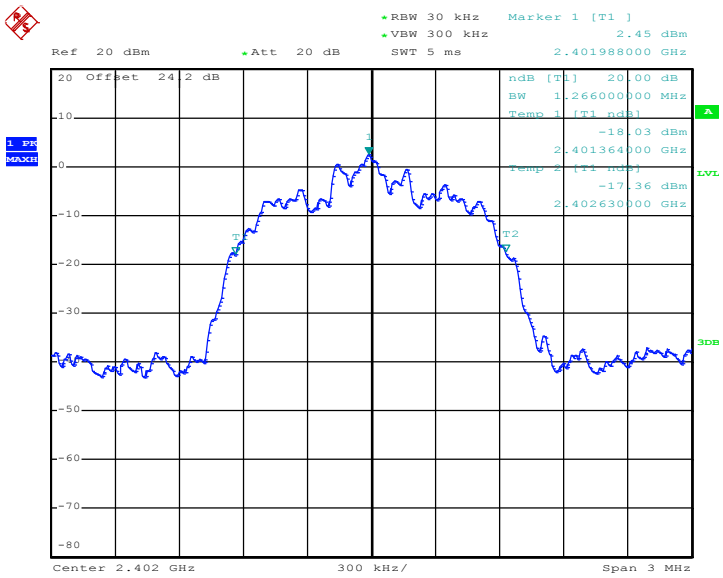


Date: 18.APR.2012 15:02:56

Test Mode :	2Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.266
39	2441	1.266
78	2480	1.266

20 dB Bandwidth Plot on Channel 00



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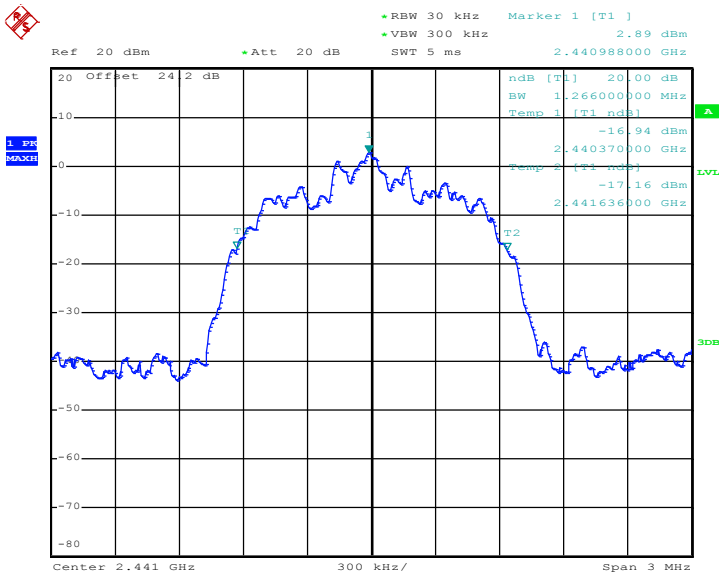
20 dB Bandwidth Plot on Channel 39



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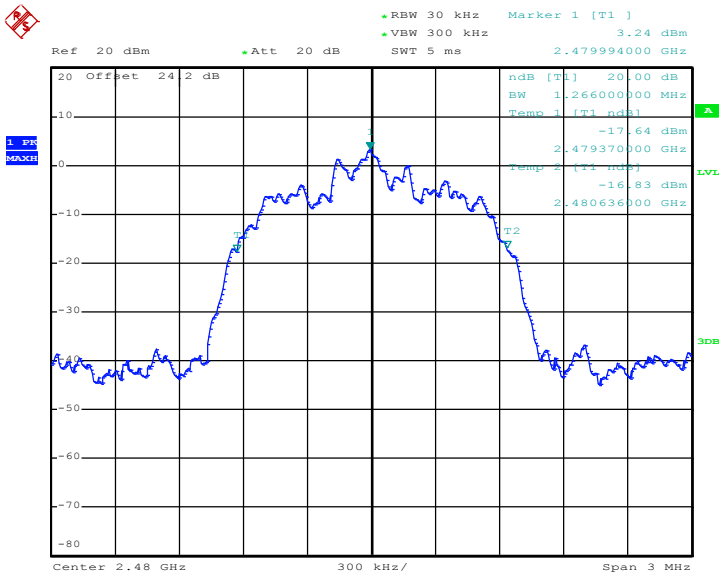
20 dB Bandwidth Plot on Channel 78

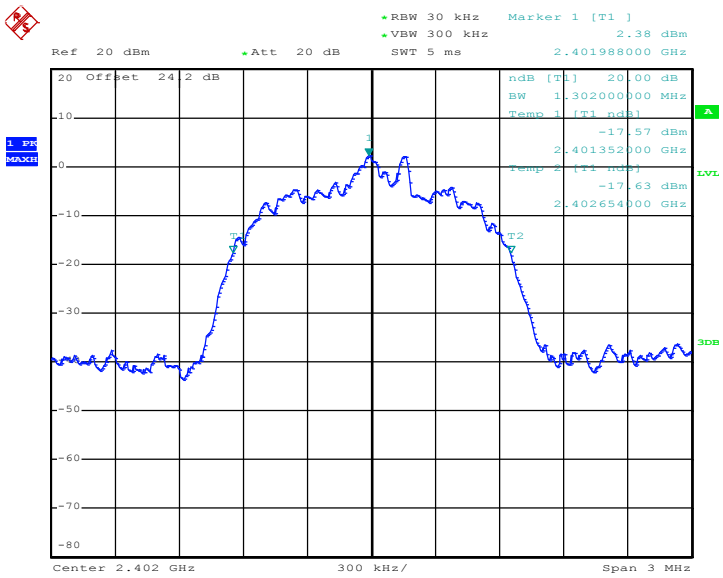


Date: 18.APR.2012 15:04:59

Test Mode :	3Mbps	**Temperature :**	24~26℃
Test Engineer :	Kenny Chen	**Relative Humidity :**	50~53%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.302
39	2441	1.308
78	2480	1.296

20 dB Bandwidth Plot on Channel 00



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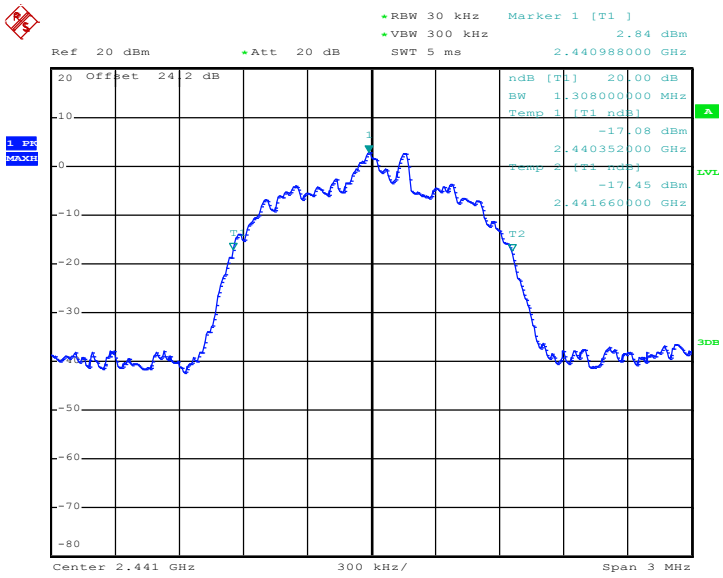
20 dB Bandwidth Plot on Channel 39



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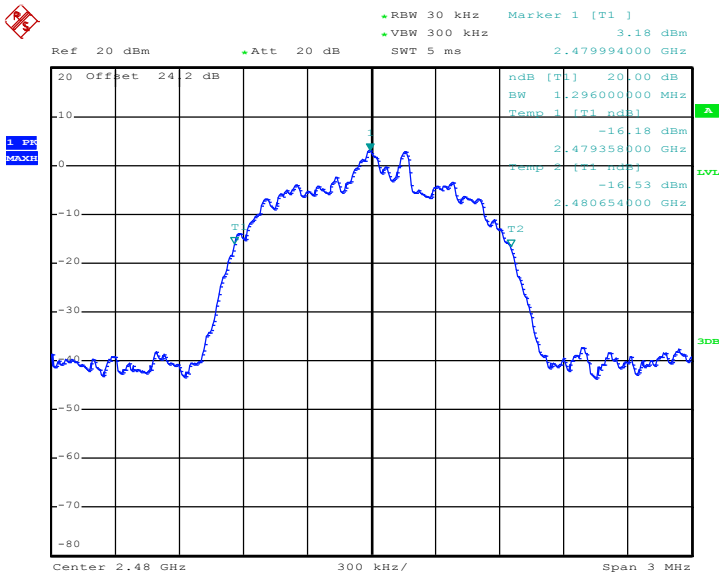
20 dB Bandwidth Plot on Channel 78



Date: 18.APR.2012 15:06:50

3.5 Output Power Measurement

3.5.1 Limit of Output Power

Section 15.247 (b) The maximum peak conducted output power of the intentional radiator shall not exceed the following: (1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band 0.125 watts. The power limit for 1Mbps is 1watt, and for 2Mbps, and 3Mbps are 0.125 watts.

3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

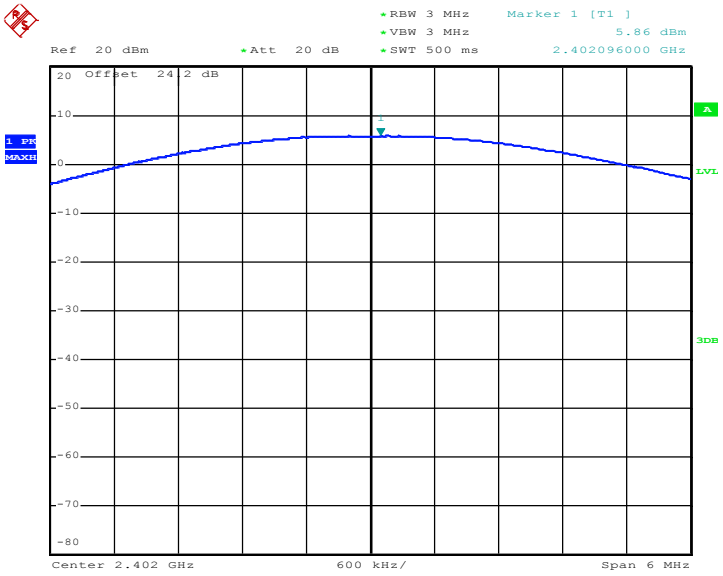
3.5.4 Test Setup

3.5.5 Test Result of Peak Output Power

Test Mode :	1Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	RF Power (dBm)		
		GFSK	Max. Limits (dBm)	Pass/Fail
		1 Mbps		
00	2402	5.86	30.00	Pass
39	2441	6.71	30.00	Pass
78	2480	7.36	30.00	Pass

Peak Output Power Plot on Channel 00



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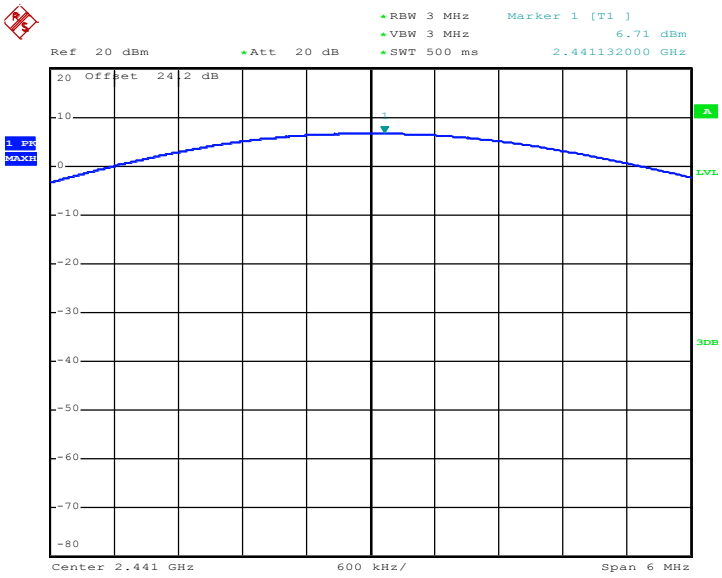
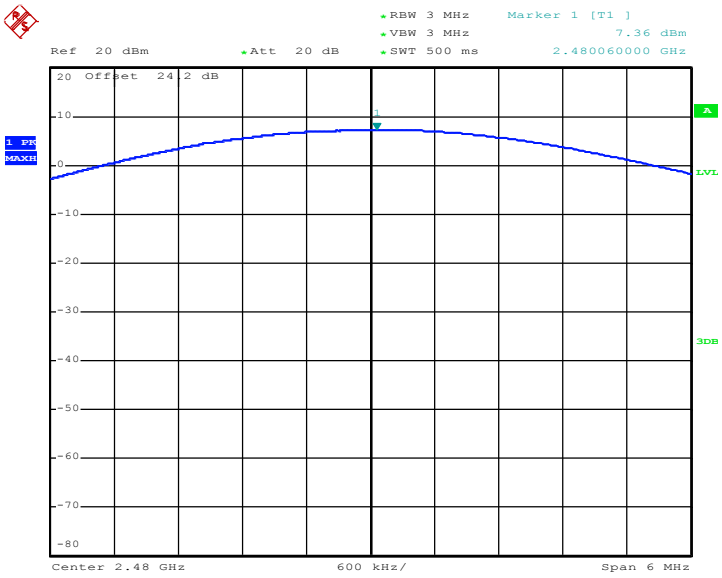
Peak Output Power Plot on Channel 39



Date: 24.AUG.2012 09:42:05

Peak Output Power Plot on Channel 78

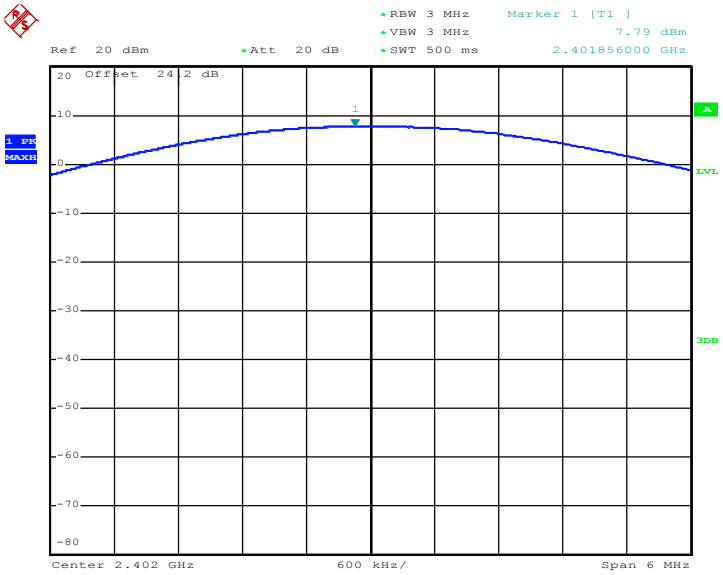


Date: 24.AUG.2012 09:42:34

Test Mode :	2Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

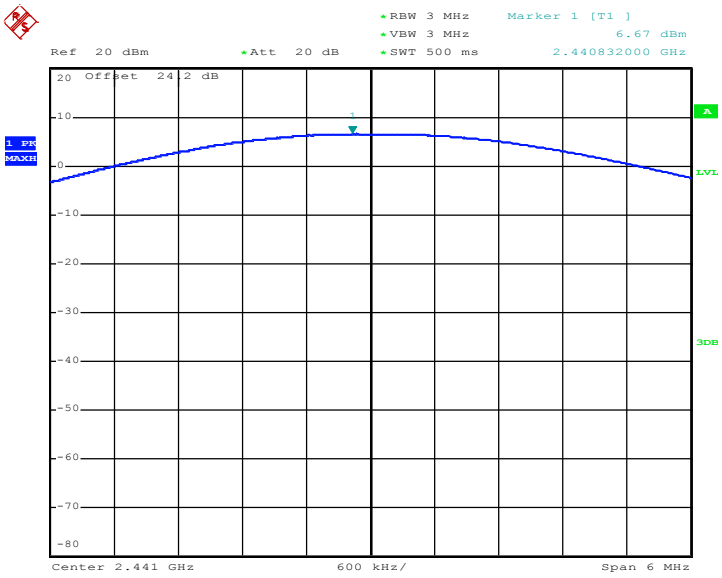
Channel	Frequency (MHz)	RF Power (dBm)		
		π/4-DQPSK 2 Mbps	Max. Limits (dBm)	Pass/Fail
00	2402	7.79	20.97	Pass
39	2441	6.67	20.97	Pass
78	2480	6.63	20.97	Pass

Peak Output Power Plot on Channel 00



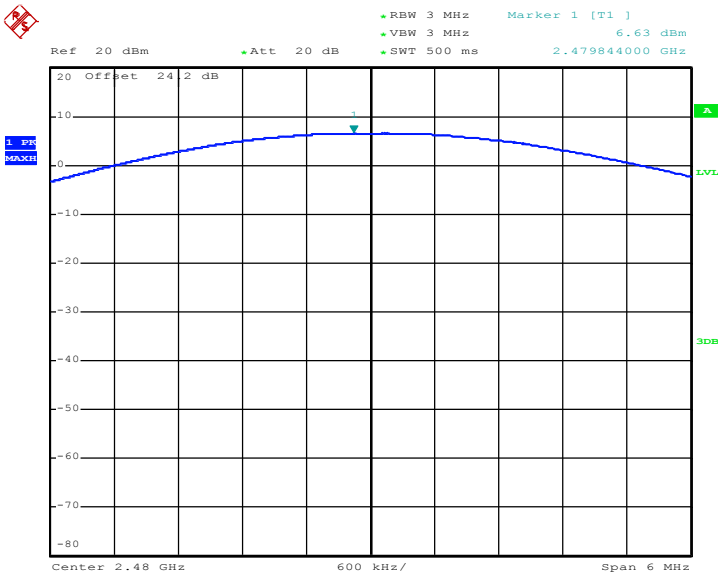
Date: 24.AUG.2012 15:43:29

Peak Output Power Plot on Channel 39



Date: 24.AUG.2012 15:49:52

Peak Output Power Plot on Channel 78

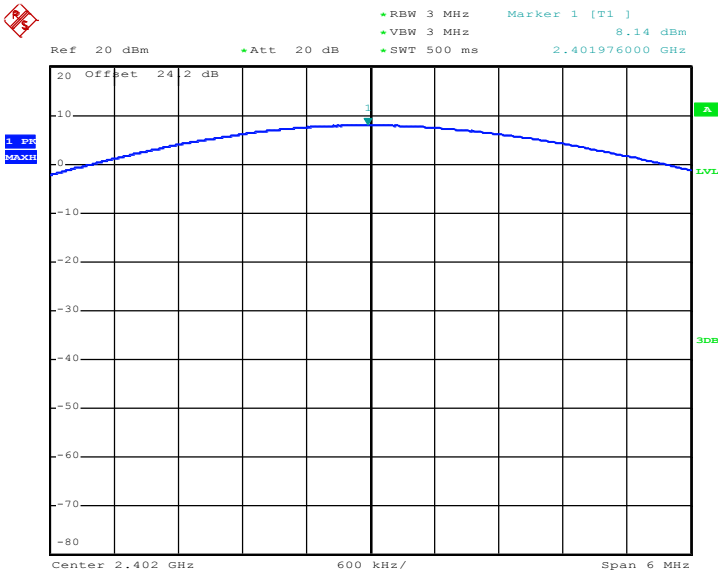


Date: 24.AUG.2012 15:46:10

Test Mode :	3Mbps	**Temperature :**	24~26℃
Test Engineer :	Kenny Chen	**Relative Humidity :**	50~53%

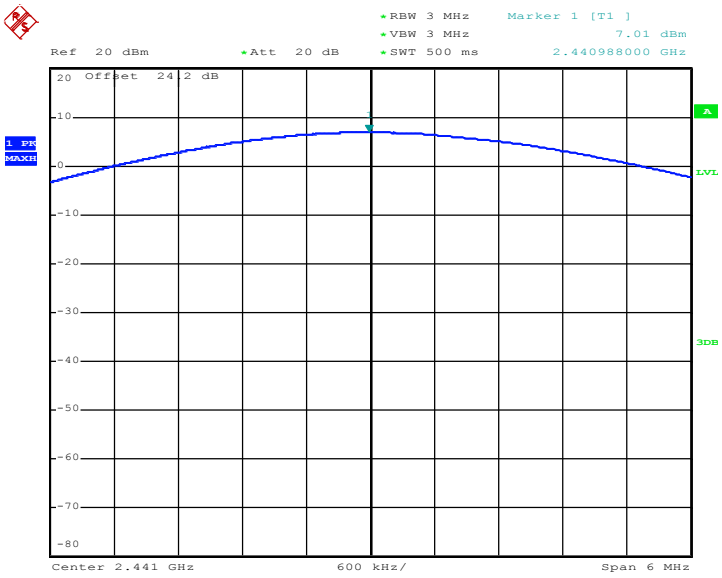
Channel	Frequency (MHz)	RF Power (dBm)		
		8-DPSK	Max. Limits (dBm)	Pass/Fail
		3 Mbps		
00	2402	8.14	20.97	Pass
39	2441	7.01	20.97	Pass
78	2480	6.93	20.97	Pass

Peak Output Power Plot on Channel 00



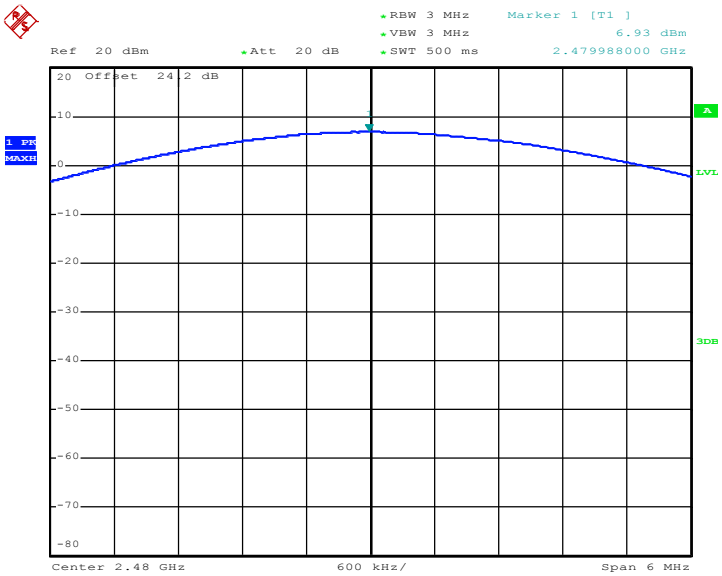
Date: 24.AUG.2012 15:44:13

Peak Output Power Plot on Channel 39



Date: 24.AUG.2012 15:45:35

Peak Output Power Plot on Channel 78



Date: 24.AUG.2012 15:46:54

3.5.6 Test Result of Average Output Power

Test Mode :	1Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	RF Power (dBm)
		GFSK
		1 Mbps
00	2402	5.60
39	2441	6.32
78	2480	6.93

Test Mode :	2Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	RF Power (dBm)
		π/4-DQPSK
		2 Mbps
00	2402	6.05
39	2441	4.84
78	2480	4.92

Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	RF Power (dBm)
		8-DPSK
		3 Mbps
00	2402	6.09
39	2441	4.88
78	2480	4.96

Note: The average power is measured by power meter with average power sensor and is reporting only.

3.6 Conducted Band Edges Measurement

3.6.1 Limit of Band Edges

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

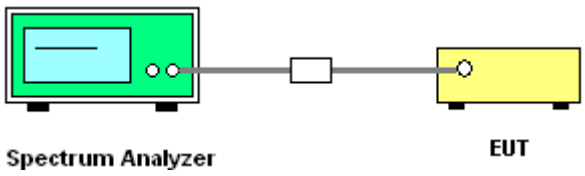
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

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

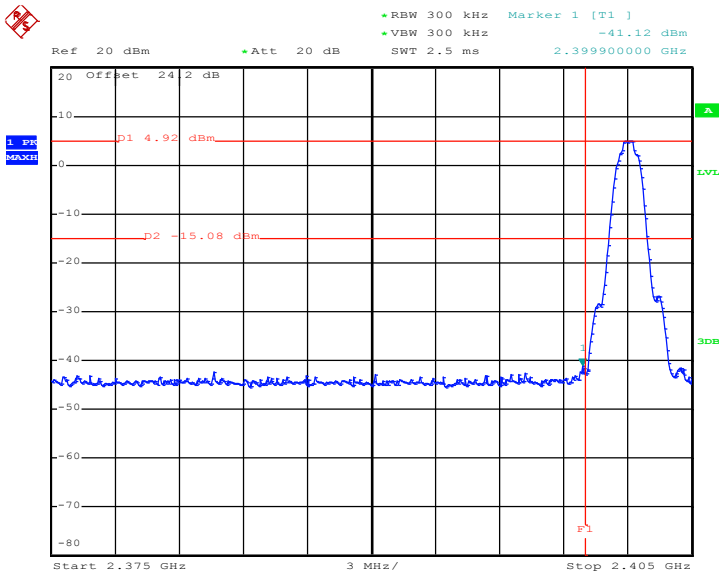
3.6.4 Test Setup



3.6.5 Test Result of Conducted Band Edges

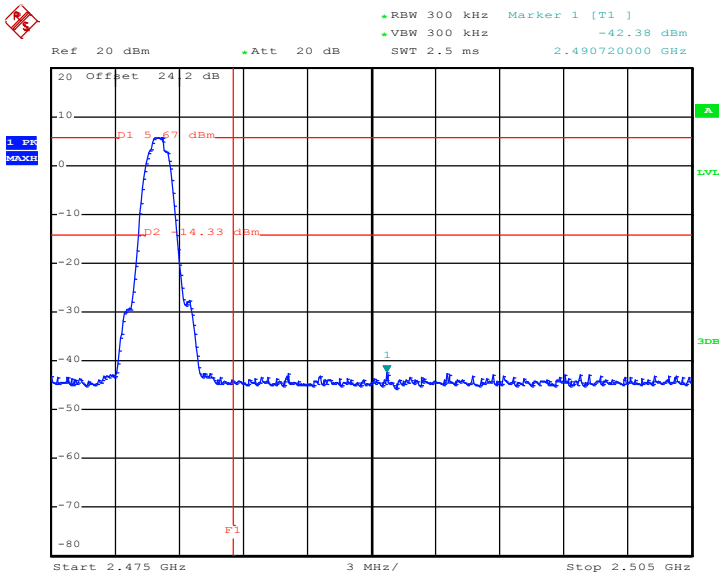
Test Mode :	3Mbps	**Temperature :**	24~26℃
Test Channel :	00 and 78	**Relative Humidity :**	50~53%
		Test Engineer :	Kenny Chen

Low Band Edge Plot on Channel 00



Date: 18.APR.2012 15:11:32

High Band Edge Plot on Channel 78

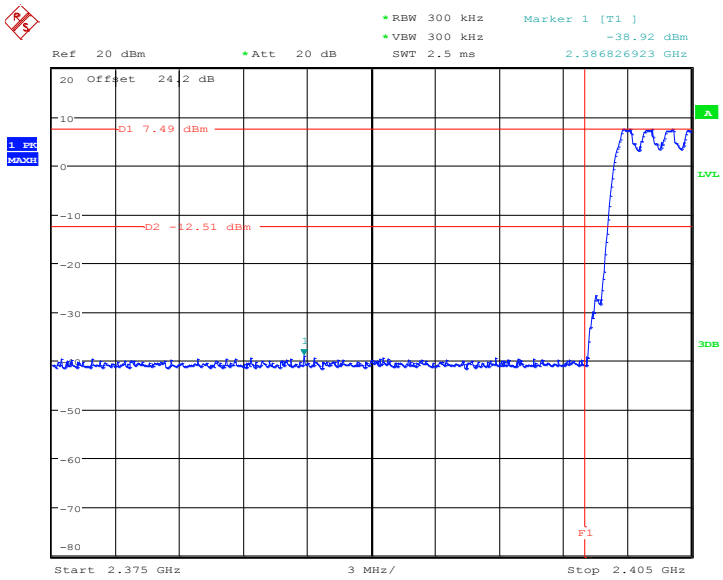


Date: 18.APR.2012 15:12:34

3.6.6 Test Result of Conducted Hopping Mode Band Edges

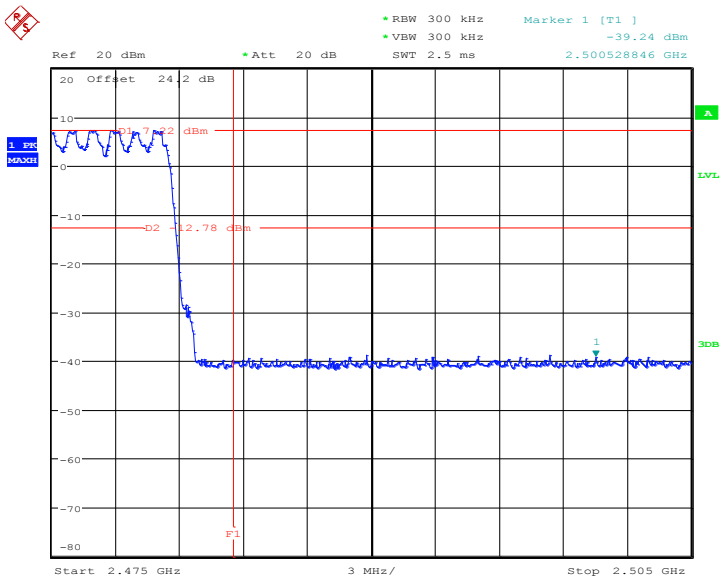
Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Hopping Mode Low Band Edge Plot



Date: 6.JUL.2012 14:01:42

Hopping Mode High Band Edge Plot



Date: 6.JUL.2012 11:55:34

3.7 Conducted 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.

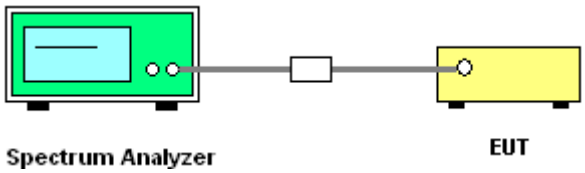
3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

3.7.3 Test Procedure

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

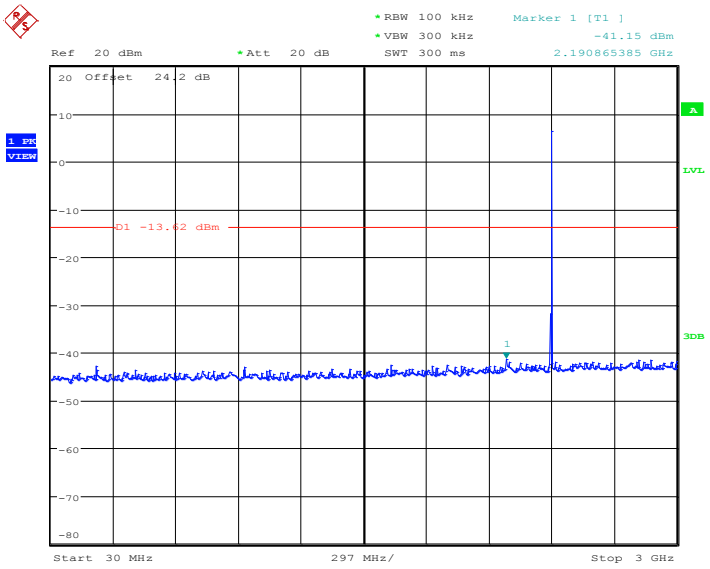
3.7.4 Test Setup



3.7.5 Test Result

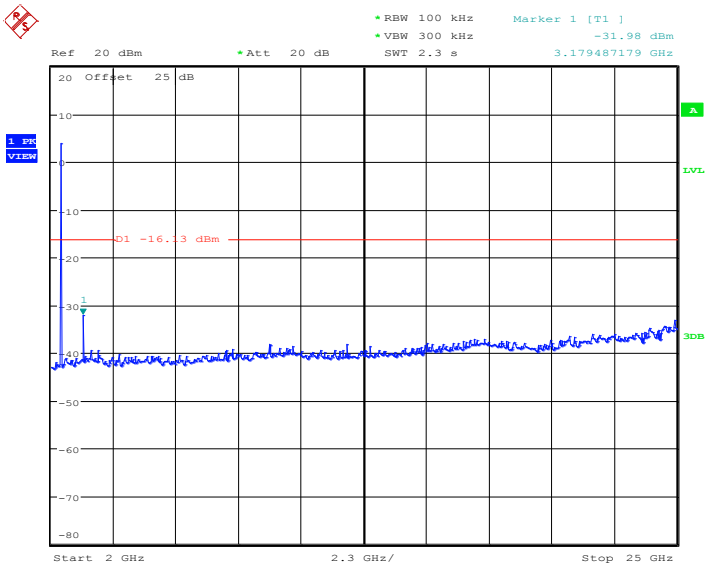
Test Mode :	3Mbps	Temperature :	24~26℃
Test Channel :	00	Relative Humidity :	50~53%
		Test Engineer :	Kenny Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 6.JUL.2012 14:12:43

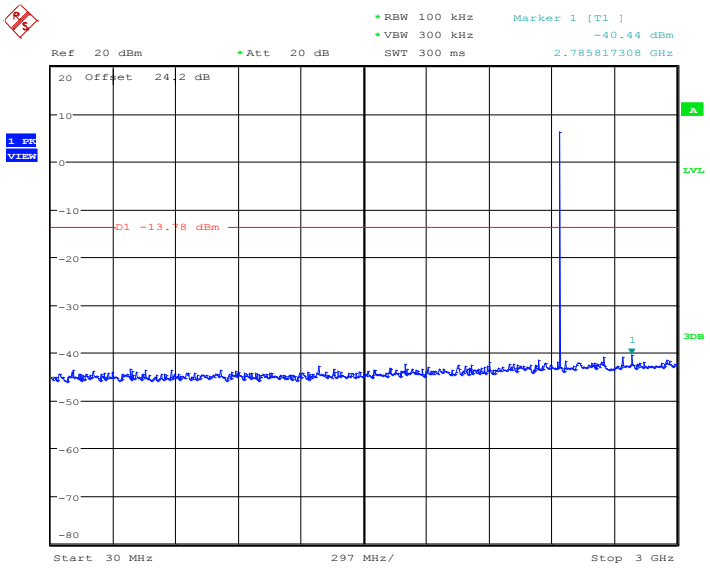
Conducted Spurious Emission Plot between 2 GHz ~ 25 GHz



Date: 6.JUL.2012 14:13:35

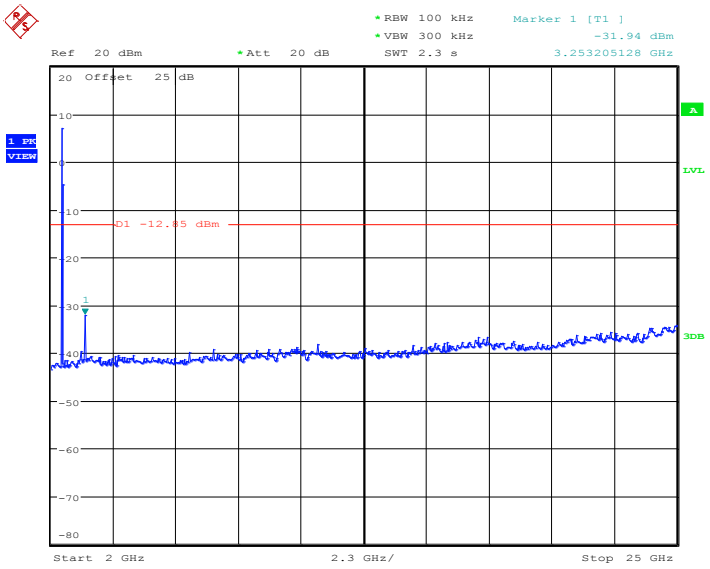
Test Mode :	3Mbps	**Temperature :**	24~26℃
Test Channel :	39	**Relative Humidity :**	50~53%
		Test Engineer :	Kenny Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 6.JUL.2012 14:14:27

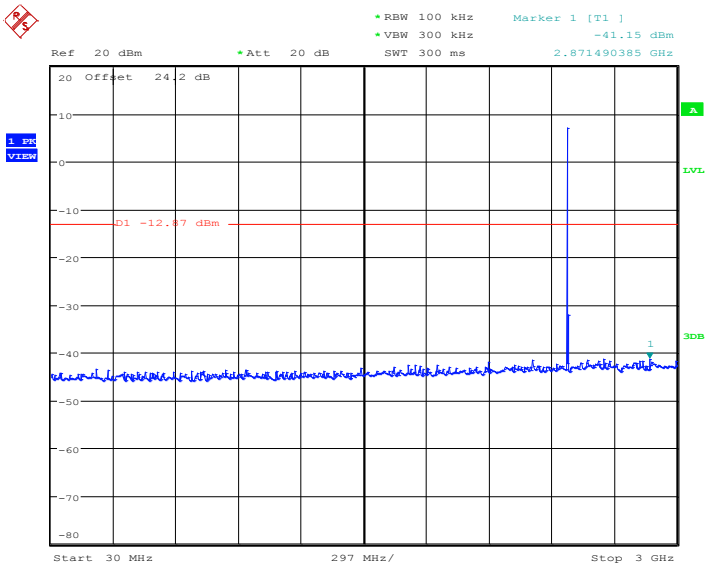
Conducted Spurious Emission Plot between 2 GHz ~ 25 GHz



Date: 6.JUL.2012 14:15:19

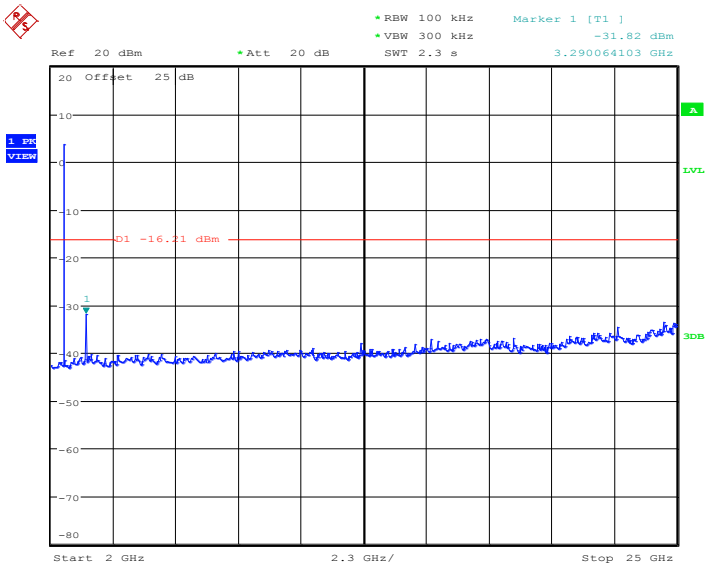
Test Mode :	3Mbps	**Temperature :**	24~26℃
Test Channel :	78	**Relative Humidity :**	50~53%
		Test Engineer :	Kenny Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 6.JUL.2012 14:16:11

Conducted Spurious Emission Plot between 2 GHz ~ 25 GHz



Date: 6.JUL.2012 14:17:06

3.8 Power Spectral Density Measurement

3.8.1 Limit of Power Spectral Density

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

3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

3.8.3 Test Procedures

1. The testing follows Measurement Procedure 5.3.1 (Peak PSD) of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance and TCB Workshop 2012, April.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 KHz. Video bandwidth (VBW) >= 10 KHz In order to make an accurate measurement, set the span to 5-30% greater than Emission Bandwidth (EBW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize.
6. Record the measurement data derived from spectrum analyzer.

3.8.4 Test Setup

3.8.5 Test Result of Power Spectral Density

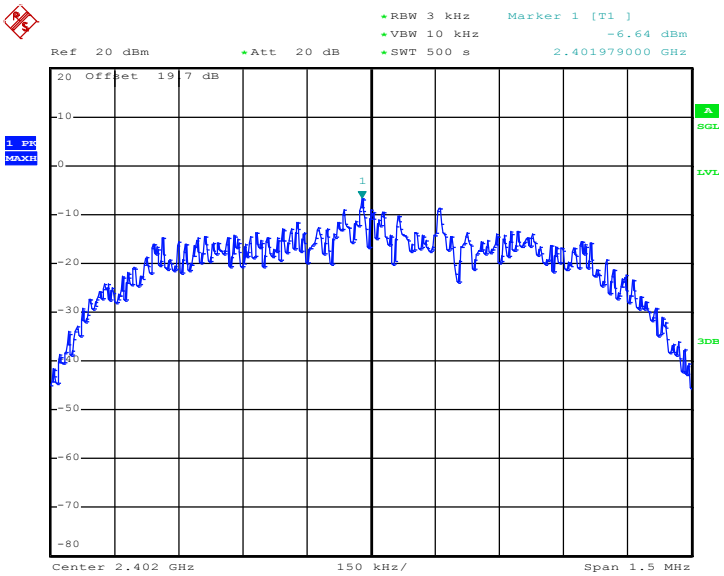
Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	BT Power Density	Max. Limits (dBm)	Pass /Fail
		PSD/3KHz (dBm)		
00	2402	-6.64	8	Pass
39	2441	-5.13	8	Pass
78	2480	-6.75	8	Pass

3.8.6 Test Result of Power Spectral Density Plots

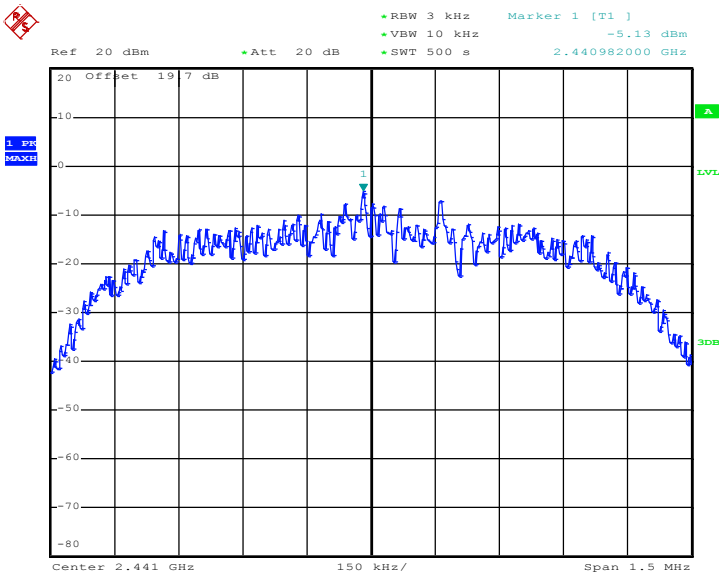
Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

PSD Plot on Channel 00



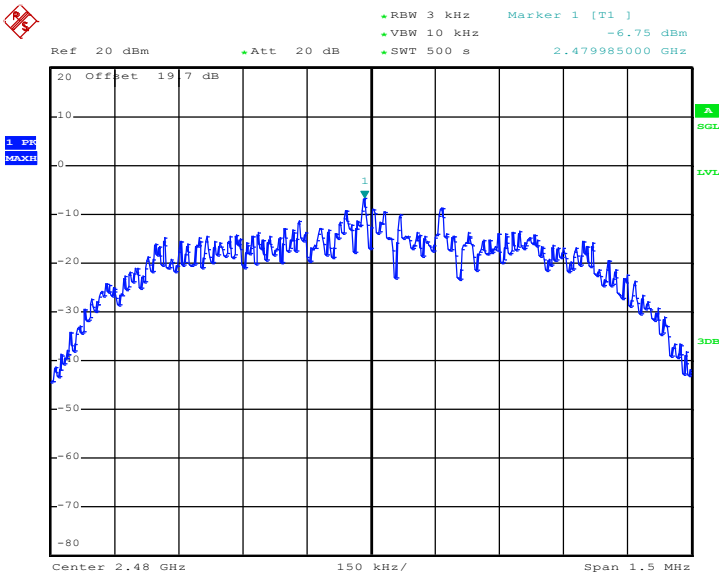
Date: 28.JUL.2012 04:53:29

PSD Plot on Channel 39



Date: 24.JUL.2012 10:06:48

PSD Plot on Channel 78



Date: 28.JUL.2012 05:18:56

3.9 Radiated Band Edges Measurement

3.9.1 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

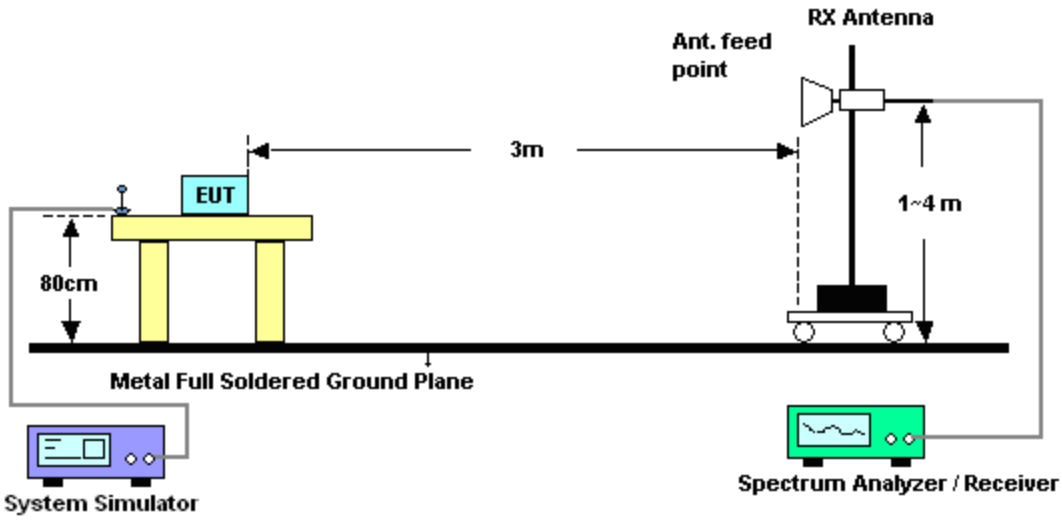
3.9.2 Measuring Instruments

See list of measuring instruments of this test report.

3.9.3 Test Procedures

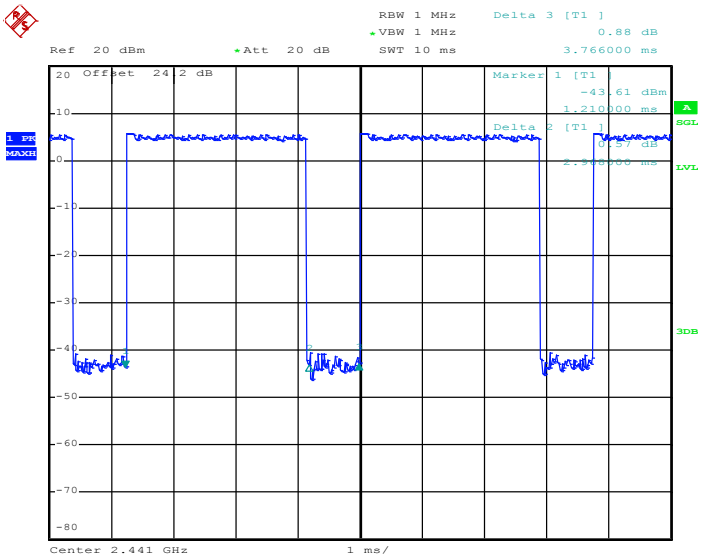
1. The testing follows the guidelines in Spurious Radiated Emissions of FCC Public Notice DA 00-705 Measurement Guidelines and fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test site requirement.
2. The EUT was placed on a turntable with 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Applies to band edge emissions that fall in the restricted bands listed in FCC Section 15.205, the maximum permitted field strength is listed in FCC Section 15.209. A pre-amp is necessary for this measurement. For measurements above 1 GHz, set RBW = 1MHz, VBW = 1MHz, Sweep: Auto for Peak. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
7. For average measurement: use duty cycle correction factor method.
   Duty cycle = On time/100 milliseconds
   On time = $N_1*L_1+N_2*L_2+...+N_{n-1}*LN_{n-1}+N_n*L_n$
   Where N_1 is number of type 1 pulses, L_1 is length of type 1 pulses, etc.
   Average Level = Peak Level + 20*log(Duty cycle)
   For example: Peak level = 45.61 dBuV/m, and duty cycle correction factor= -24.5dB. Average level= 64 + (-24.5) = 21.11 dBuV/m.

3.9.4 Test Setup



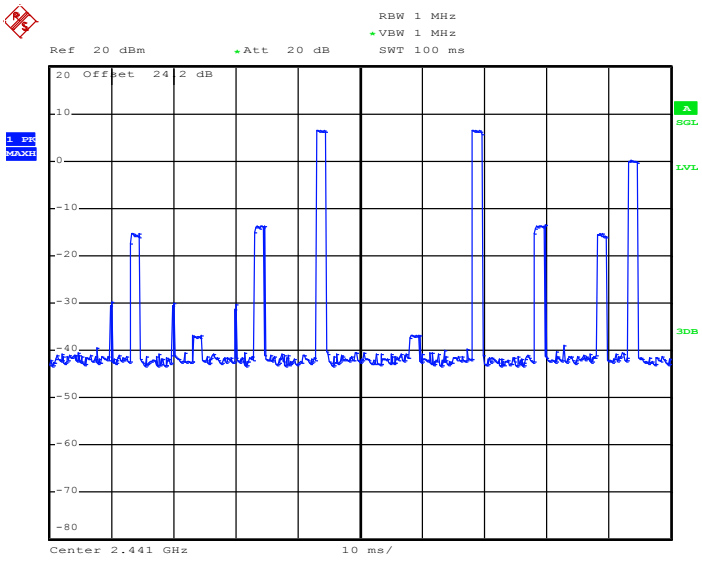
3.9.5 Duty cycle correction factor for average measurement

3DH5 on time/100ms (One Pulse) Plot on Channel 39



Date: 11.APR.2012 16:31:47

3DH5 on time/100ms (Count Pulses) Plot on Channel 39



Date: 16.AUG.2012 18:16:30

Note:

1. Duty cycle = on time/100 milliseconds = 2 * 2.968 / 100 = 5.95 %
2. Duty cycle correction factor = 20*log(Duty cycle) = -24.50 dB
3. 3DH5 has the highest duty cycle and is reported.

3.9.6 Test Result of Radiated Band Edges

Test Mode :	3Mbps	Temperature :	23~24°C
Test Channel :	00	Relative Humidity :	41~42%
		Test Engineer :	Gavin Wu

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
2357.12	45.61	-28.39	74	41.56	32.01	5.99	33.95	109	333	Peak
2357.12	21.11	-32.89	54	-	-	-	-	-	-	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
2360.35	45.51	-28.49	74	41.46	32.01	5.99	33.95	100	55	Peak
2360.35	21.01	-32.99	54	-	-	-	-	-	-	Average

Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (24.5dB) derived from 20log (dwell time/100ms).

For example: Average level = 45.61dBuV/m – 24.5 (dB) = 21.11dBuV/m.

Test Mode :	3Mbps	Temperature :	23~24°C
Test Channel :	78	Relative Humidity :	41~42%
		Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	68.58	-5.42	74	64.02	32.38	6.18	34	192	294	Peak
2483.5	44.08	-9.92	54	-	-	-	-	-	-	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
2483.5	65.33	-8.67	74	60.77	32.38	6.18	34	162	122	Peak
2483.5	40.83	-13.17	54	-	-	-	-	-	-	Average

3.10 Radiated Spurious Emission Measurement

3.10.1 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. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

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

3.10.2 Measuring Instruments

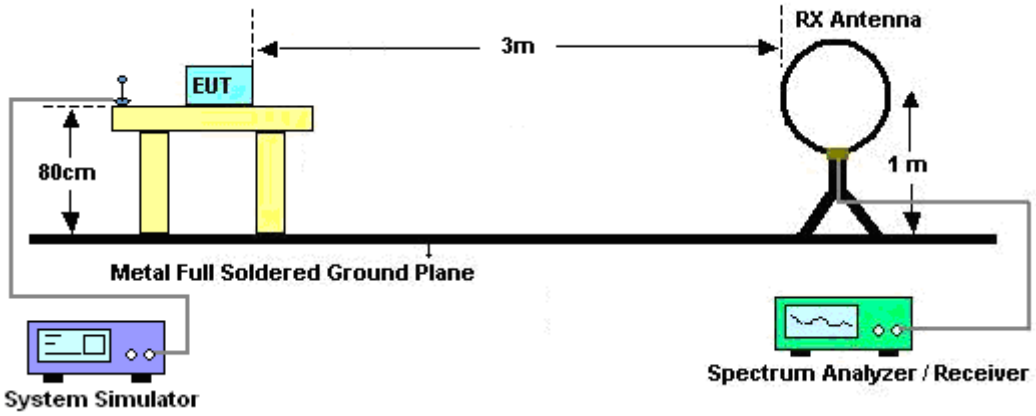
See list of measuring instruments of this test report.

3.10.3 Test Procedures

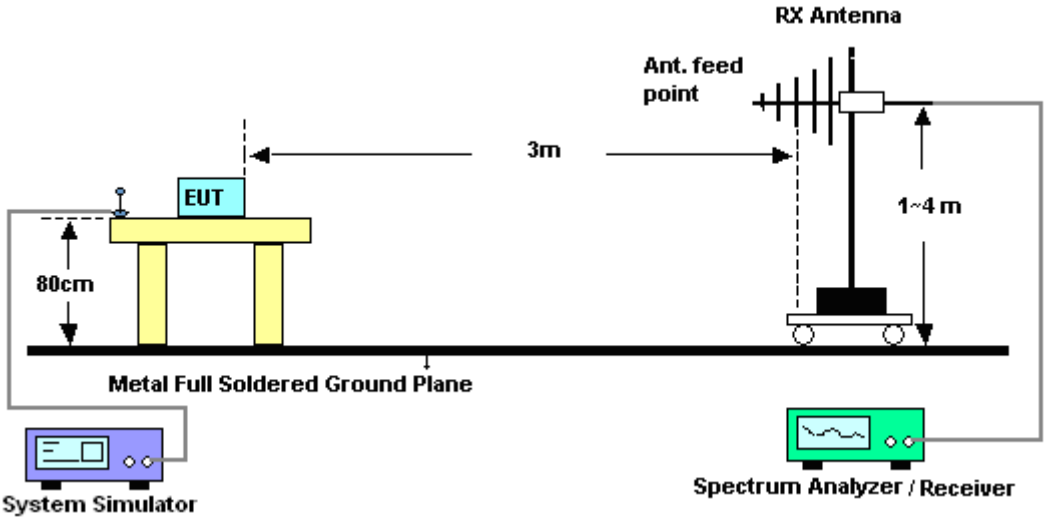
1. The testing follows the guidelines in Spurious Radiated Emissions of FCC Public Notice DA 00-705 Measurement Guidelines and fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test site requirement.
2. The EUT was placed on a turntable with 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 KHz for f < 1 GHz, RBW=1MHz for f>1GHz ; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak; Set RBW = 1MHz
7. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
8. For measurement below 1GHz, if the emission level of the EUT measured by the peak detector is more than 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement by using the quasi-peak detector will be reported.
9. For average measurement: use duty cycle correction factor method.
   Duty cycle = On time/100 milliseconds
   On time = $N_1*L_1+N_2*L_2+...+N_{n-1}*LN_{n-1}+N_n*L_n$
   Where N_1 is number of type 1 pulses, L_1 is length of type 1 pulses, etc.
   Average Level = Peak Level + 20*log(Duty cycle)
   For example: Peak level = 45.61 dBuV/m, and duty cycle correction factor= -24.5dB. Average level= 64 + (-24.5) = 21.11 dBuV/m.

3.10.4 Test Setup

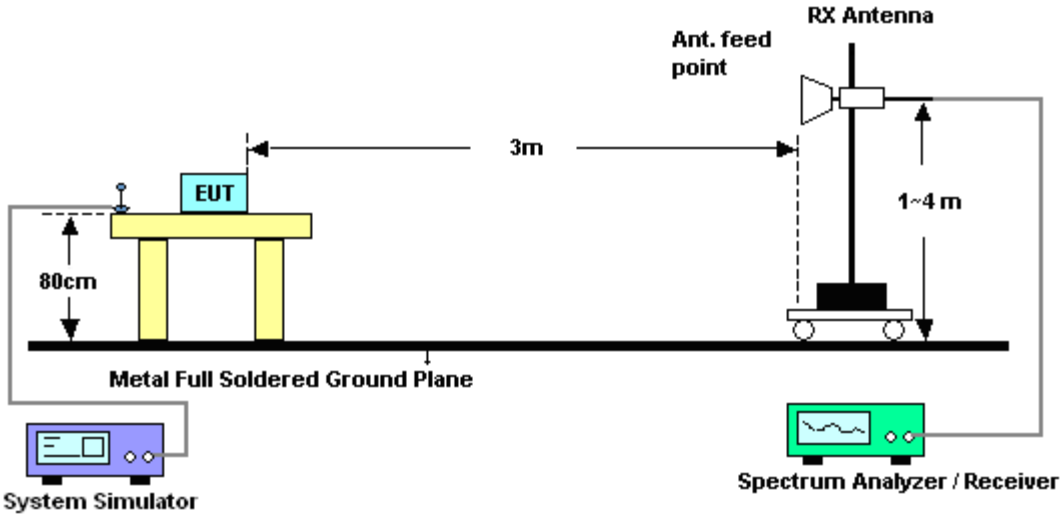
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz

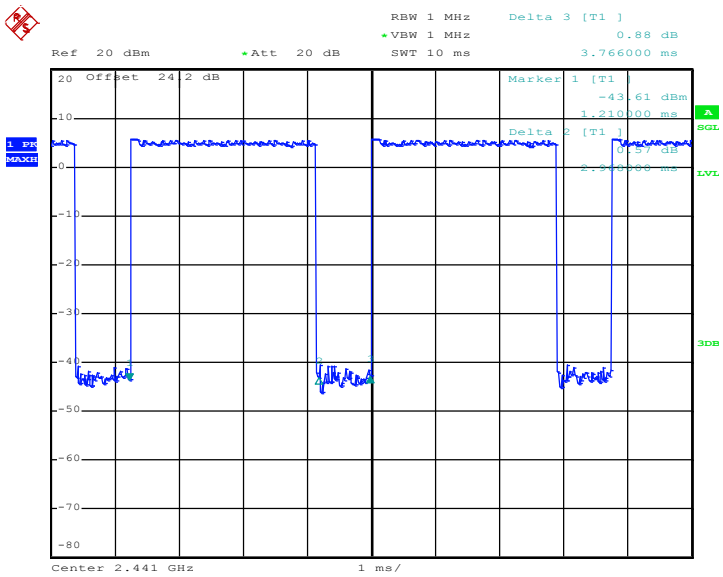


3.10.5 Test Results of Radiated Emissions (9 KHz ~ 30 MHz)

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.

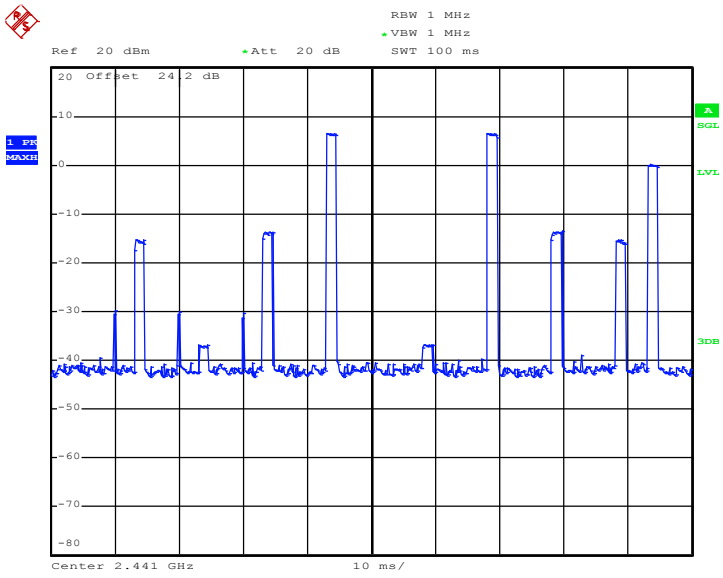
3.10.6 Duty cycle correction factor for average measurement

3DH5 on time/100ms (One Pulse) Plot on Channel 39



Date: 11.APR.2012 16:31:47

3DH5 on time/100ms (Count Pulses) Plot on Channel 39



Date: 16.AUG.2012 18:16:30

Note: Duty cycle = on time/100 milliseconds = 2 * 2.968 / 100 = 5.95 %

Duty cycle correction factor = 20*log(Duty cycle) = -24.50 dB

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

Test Mode :	3Mbps	**Temperature :**	23~24°C
Test Channel :	00	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 2402 MHz is fundamental signal which can be ignored. 2. 3201 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. For example, 102.96 dBuV/m - 20dB = 82.96 dBuV/m.		

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
2357.12	21.11	-32.89	54	-	-	-	-	-	-	Average
2357.12	45.61	-28.39	74	41.56	32.01	5.99	33.95	109	333	Peak
2402	78.46	-	-	-	-	-	-	-	-	Average
2402	102.96	-	-	98.83	32.06	6.03	33.96	109	333	Peak
2500	20.83	-33.17	54	-	-	-	-	-	-	Average
2500	45.33	-28.67	74	40.95	32.2	6.18	34	109	333	Peak
3201	45.94	-37.02	82.96	66.34	32.74	7.19	60.33	100	0	Peak
4804	44.63	-29.37	74	61.48	34.1	9.11	60.06	100	0	Peak

Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (24.5dB) derived from 20log (dwell time/100ms).

For example: Average level = 45.61dBuV/m – 24.5 (dB) = 21.11dBuV/m.

Test Mode :	3Mbps	**Temperature :**	23~24°C
Test Channel :	00	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**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
2360.35	21.01	-32.99	54	-	-	-	-	-	-	Average
2360.35	45.51	-28.49	74	41.46	32.01	5.99	33.95	100	55	Peak
2402	74.26	-	-	-	-	-	-	-	-	Average
2402	98.76	-	-	94.63	32.06	6.03	33.96	100	55	Peak
2486	20.27	-33.73	54	-	-	-	-	-	-	Average
2486	44.77	-29.23	74	40.41	32.18	6.18	34	100	55	Peak
4804	42.77	-31.23	74	59.62	34.1	9.11	60.06	100	0	Peak

Test Mode :	3Mbps	**Temperature :**	23~24°C
Test Channel :	39	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 2441 MHz is fundamental signal which can be ignored. 2. 2638 MHz and 3255 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2370	20.87	-33.13	54	-	-	-	-	-	-	Average
2370	45.37	-28.63	74	41.3	32.03	5.99	33.95	108	318	Peak
2441	79.00	-	-	-	-	-	-	-	-	Average
2441	103.50	-	-	99.24	32.13	6.11	33.98	108	318	Peak
2494	20.15	-33.85	54	-	-	-	-	-	-	Average
2494	44.65	-29.35	74	40.27	32.2	6.18	34	108	318	Peak
2638	56.31	-27.19	83.5	51.62	32.33	6.33	33.97	100	0	Peak
3255	42.84	-40.66	83.5	63.21	32.75	7.29	60.41	100	0	Peak
4882	46.67	-27.33	74	63.21	34.1	9.14	59.78	100	0	Peak

Test Mode :	3Mbps	**Temperature :**	23~24°C
Test Channel :	39	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**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
2384	20.15	-33.85	54	-	-	-	-	-	-	Average
2384	44.65	-29.35	74	40.55	32.03	6.03	33.96	102	64	Peak
2441	72.27	-	-	-	-	-	-	-	-	Average
2441	96.77	-	-	92.51	32.13	6.11	33.98	102	64	Peak
2490	20.32	-33.68	54	-	-	-	-	-	-	Average
2490	44.82	-29.18	74	40.44	32.2	6.18	34	102	64	Peak

Test Mode :	3Mbps	**Temperature :**	23~24°C
Test Channel :	78	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. 3306 MHz is not within a restricted band.		

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
151.23	39.77	-3.73	43.5	58.68	11.13	1.21	31.25	-	-	Peak
192.54	36.21	-7.29	43.5	57	9.03	1.29	31.11	100	350	QP
241.68	42.68	-3.32	46	60.1	11.99	1.53	30.94	-	-	Peak
304.2	41.25	-4.75	46	56.97	13.43	1.78	30.93	-	-	Peak
367.2	35.13	-10.87	46	48.96	15.13	2.08	31.04	-	-	Peak
435.8	35.67	-10.33	46	47.65	16.75	2.26	30.99	-	-	Peak
2480	107.49	-	-	102.93	32.38	6.18	34	192	294	Peak
2480	82.99	-	-	-	-	-	-	-	-	Average
3306	43.91	-43.58	87.49	60.7	32.74	7.39	56.92	100	0	Peak
4962	48.03	-25.97	74	62.45	33.91	9.16	57.49	100	0	Peak
4962	23.53	-30.47	54	-	-	-	-	-	-	Average

Test Mode :	3Mbps	**Temperature :**	23~24°C
Test Channel :	78	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**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
145.29	37.25	-6.25	43.5	56.01	11.29	1.21	31.26	100	60	QP
192.27	40.44	-3.06	43.5	61.24	9.02	1.29	31.11	-	-	Peak
299.19	38.59	-7.41	46	54.48	13.3	1.77	30.96	-	-	Peak
300	36.63	-9.37	46	52.5	13.3	1.77	30.94	-	-	Peak
361.6	32.86	-13.14	46	46.88	14.98	2.06	31.06	-	-	Peak
456.8	27.7	-18.3	46	39.2	17.19	2.31	31	-	-	Peak
2480	104.9	-	-	100.34	32.38	6.18	34	162	122	Peak
2480	80.4	-	-	-	-	-	-	-	-	Average
4959	44.58	-29.42	74	59	33.91	9.16	57.49	100	0	Peak
4959	20.08	-33.92	54	-	-	-	-	-	-	Average

3.11 AC Conducted Emission Measurement

3.11.1 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.

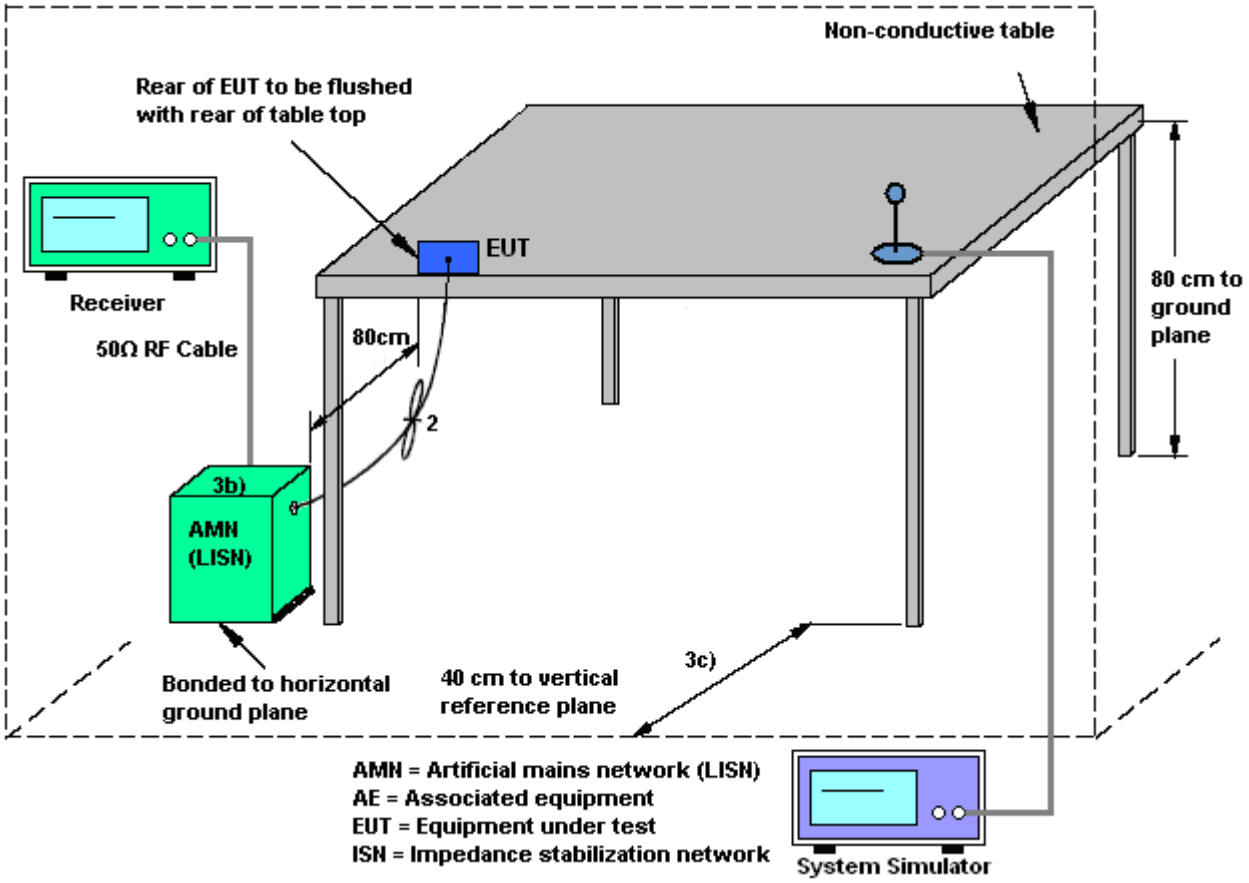
3.11.2 Measuring Instruments

See list of measuring instruments of this test report.

3.11.3 Test Procedures

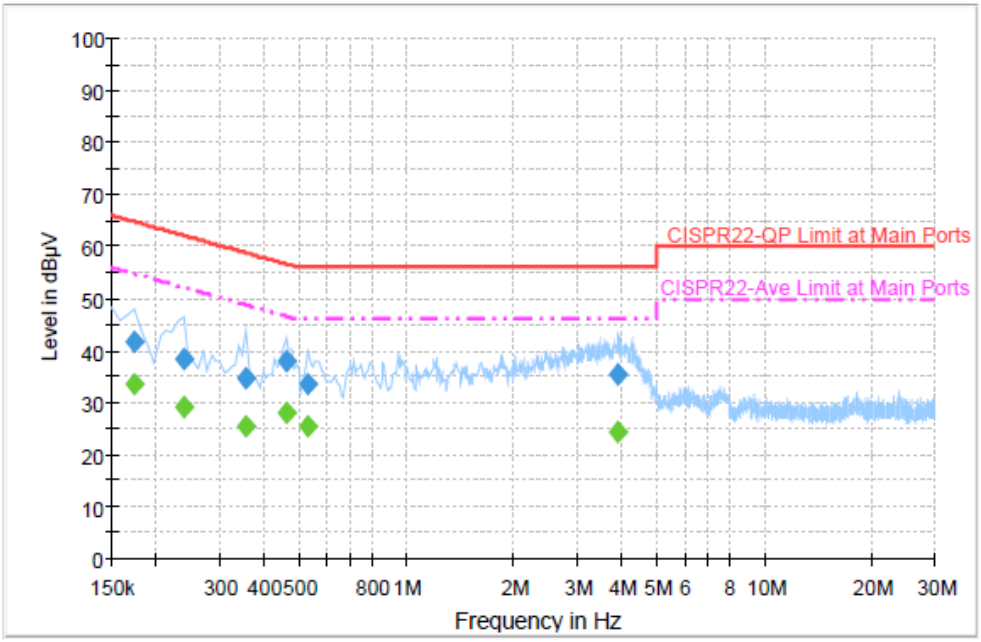
1. Please follow the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009 test site requirement.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance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

3.11.4 Test Setup



3.11.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	**Temperature :**	21~22℃
Test Engineer :	Kai-Chun Chu	**Relative Humidity :**	52~53%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	GSM850 Idle + WLAN Link + Bluetooth Link + HDMI Cable + Earphone + MPEG4 + USB Cable (Charging from Adapter)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



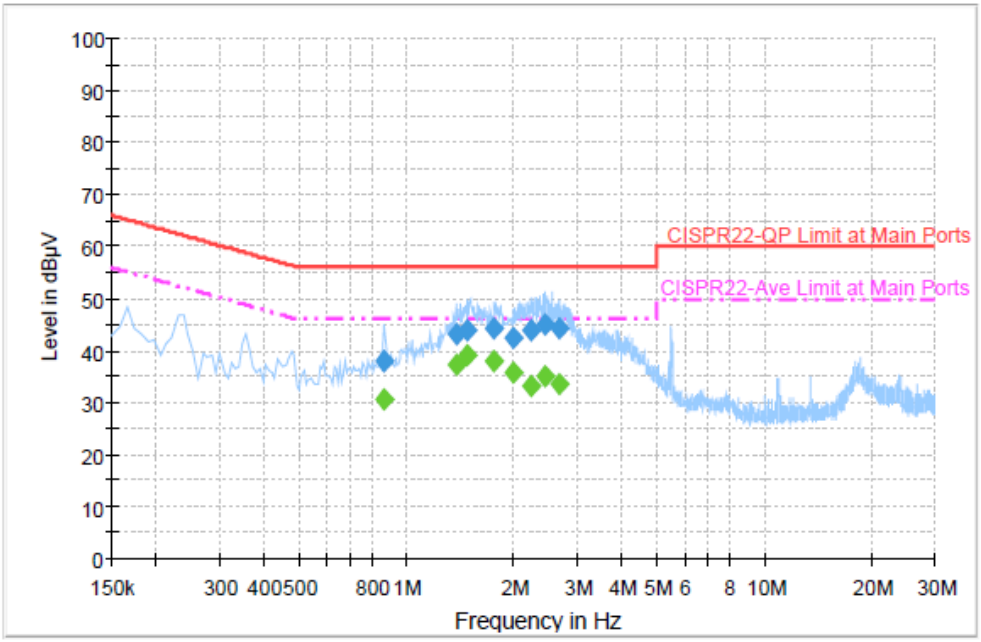
Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	41.6	Off	L1	19.4	23.2	64.8
0.238000	38.5	Off	L1	19.5	23.7	62.2
0.358000	34.8	Off	L1	19.4	24.0	58.8
0.462000	38.0	Off	L1	19.3	18.7	56.7
0.534000	33.7	Off	L1	19.4	22.3	56.0
3.918000	35.4	Off	L1	19.6	20.6	56.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	33.6	Off	L1	19.4	21.2	54.8
0.238000	29.3	Off	L1	19.5	22.9	52.2
0.358000	25.4	Off	L1	19.4	23.4	48.8
0.462000	28.1	Off	L1	19.3	18.6	46.7
0.534000	25.6	Off	L1	19.4	20.4	46.0
3.918000	24.3	Off	L1	19.6	21.7	46.0

Test Mode :	Mode 1	**Temperature :**	21~22℃
Test Engineer :	Kai-Chun Chu	**Relative Humidity :**	52~53%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	GSM850 Idle + WLAN Link + Bluetooth Link + HDMI Cable + Earphone + MPEG4 + USB Cable (Charging from Adapter)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.870000	37.9	Off	N	19.5	18.1	56.0
1.382000	43.3	Off	N	19.5	12.7	56.0
1.486000	44.1	Off	N	19.5	11.9	56.0
1.758000	44.4	Off	N	19.5	11.6	56.0
1.990000	42.5	Off	N	19.5	13.5	56.0
2.222000	44.0	Off	N	19.6	12.0	56.0
2.438000	45.2	Off	N	19.7	10.8	56.0
2.670000	44.2	Off	N	19.6	11.8	56.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.870000	30.8	Off	N	19.5	15.2	46.0
1.382000	37.1	Off	N	19.5	8.9	46.0
1.486000	39.0	Off	N	19.5	7.0	46.0
1.758000	38.1	Off	N	19.5	7.9	46.0
1.990000	35.9	Off	N	19.5	10.1	46.0
2.222000	33.2	Off	N	19.6	12.8	46.0
2.438000	34.9	Off	N	19.7	11.1	46.0
2.670000	33.6	Off	N	19.6	12.4	46.0

3.12 Antenna Requirements

3.12.1 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.

3.12.2 Antenna Connected Construction

Non-standard connector used.

3.12.3 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	Apr. 11, 2012 ~ Jun. 06, 2012	Jun. 12, 2012	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 06, 2012	Jun. 06, 2012 ~ Aug. 24, 2012	Jun. 05, 2013	Conducted (TH02-HY)
Bluetooth Base Station	R&S	CBT32	100519	N/A	Jun. 01, 2011	Apr. 11, 2012 ~ May 30, 2012	May 31, 2012	Conducted (TH02-HY)
Bluetooth Base Station	R&S	CBT32	100519	N/A	Jun. 05, 2012	Jun. 05, 2012 ~ Aug. 24, 2012	Jun. 06, 2013	Conducted (TH02-HY)
EMI Test Receiver	R&S	ESCS 30	100356	9KHz ~ 2.75GHz	Oct. 27, 2011	Jul. 25, 2012	Oct. 26, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz ~ 30MHz	Dec. 09, 2011	Jul. 25, 2012	Dec. 08, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz ~ 30MHz	Dec. 06, 2011	Jul. 25, 2012	Dec. 05, 2012	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	Jul. 25, 2012	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	117995	N/A	Jul. 28, 2011	Jul. 25, 2012	Jul. 27, 2013	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 22, 2011	Apr. 13, 2012 ~ Aug. 31, 2012	Oct. 21, 2012	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP30	101067	9KHz ~ 30GHz	Dec. 06, 2011	Apr. 13, 2012 ~ Aug. 31, 2012	Dec. 05, 2012	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 10, 2011	Apr. 13, 2012 ~ Aug. 01, 2012	Aug. 09, 2012	Radiation (03CH07-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz ~ 18GHz	Aug. 01, 2012	Aug. 01, 2012 ~ Aug. 31, 2012	Jul. 31, 2013	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz ~ 26.5GHz	Dec. 05, 2011	Apr. 13, 2012 ~ Aug. 31, 2012	Dec. 04, 2012	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Feb. 27, 2012	Apr. 13, 2012 ~ Aug. 31, 2012	Feb. 26, 2013	Radiation (03CH07-HY)
EMI TEST RECEIVER	R&S	ESCI 7	100724	9kHz ~ 7GHz	Aug. 22, 2011	Apr. 13, 2012 ~ May 04, 2012	Aug. 21, 2012	Radiation (03CH07-HY)
EMI TEST RECEIVER	R&S	ESVS10	834468/003	20MHz ~ 1000MHz	May 04, 2012	May 04, 2012 ~ Aug. 31, 2012	May. 03, 2013	Radiation (03CH07-HY)
Pre Amplifier	MITEQ	AMF-7D-00101800-30-10P	159088	1GHz ~ 18GHz	Mar. 10, 2012	Apr. 13, 2012 ~ Aug. 31, 2012	Mar. 09, 2013	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz ~ 40GHz	Oct. 21, 2011	Apr. 13, 2012 ~ Aug. 31, 2012	Oct. 20, 2012	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Apr. 13, 2012 ~ May 14, 2012	Jul. 28, 2012	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	100315	9 kHz~30 MHz	May 14, 2012	May 14, 2012 ~ Aug. 31, 2012	May 13, 2013	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.26**

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

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

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

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