FCC RF Test Report

APPLICANT	:	ASUSTeK COMPUTER INC.
EQUIPMENT	:	ASUS Tablet
BRAND NAME	:	ASUS
MODEL NAME	:	K00L
FCC ID	:	MSQK00L
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DSS) Spread Spectrum Transmitter

The product was received on Jul. 11, 2013 and completely tested on Aug. 16, 2013. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown to be compliant 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: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

Testing Laboratory
1190

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

TABLE OF CONTENTS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR371143A	Rev. 01	Initial issue of report	Aug. 28, 2013

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(1)	RSS-210 A8.4(2)	Number of Channels	≥ 15Chs	Pass	-
3.2	15.247(a)(1)	RSS-210 A8.1(b)	Hopping Channel Separation	≥ 2/3 of 20dB BW	Pass	-
3.3	15.247(a)(1)	RSS-210 A8.1(d)	Dwell Time of Each Channel	≤ 0.4sec in 31.6sec period	Pass	-
3.4	15.247(a)(1)	RSS-210 A8.1(a)	20dB Bandwidth	NA	Pass	-
3.4	-	RSS-Gen 4.6.1	99% Bandwidth	-	Pass	-
3.5	15.247(b)(1)	RSS-210 A8.1(b)	Peak Output Power	≤ 1 W for 1Mbps ≤ 125 mW for 2, 3Mbps	Pass	-
3.6	15.247(d)	RSS-210 A8.5	Conducted Band Edges	≤ 20dBc	Pass	-
3.7	15.247(d)	RSS-210 A8.5	Conducted Spurious Emission	≤ 20dBc	Pass	-
3.8	15.247(d)	RSS-210 A8.5	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.44 dB at 2483.500 MHz
3.9	15.207	RSS-Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 11.37 dB at 0.200 MHz
3.10	15.203 & 15.247(b)	RSS-210 A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

ASUSTeK COMPUTER INC.
4F., No. 150, LI-TE RD., PEITOU, TAIPEI, TAIWAN

1.2 Manufacturer

WISTRON INFOCOMM (KUNSHAN) CO., LTD.
No. 168, First Avenue, Jiangsu Province, comprehensive free Trade Zone, Kunshan, Suzhou China

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	ASUS Tablet
Brand Name	ASUS
Model Name	K00L
FCC ID	MSQK00L
Sample 1	EUT with SKU 1
Sample 2	EUT with SKU 2
Sample 3	EUT with SKU 3
Sample 4	EUT with SKU 4
Sample 5	EUT with SKU 5
EUT supports Radios application	WLAN 11b/g/n HT20/HT40 Bluetooth v3.0
EUT Stage	Production Unit

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

ME180A ER	Pad				
	SKU1	SKU2	SKU3	SKU4	SKU5
MB	ME180A MAIN BOARD				
CPU	CPU ASUS RK101 TFBGA453LD				
DDR	DDR3LM 1600 256M*16 FBGA96 HYNIX(1G)	DDR3LM 1600 256M*16 FBGA96 HYNIX(2G)	DDR3L-RS 256M*16-3 FBGA-96 ELPIDA(1G)	DDR3L-RS 256M*16-3 FBGA-96 ELPIDA(2G)	DDR3LM 1600 256M*16 FBGA96 HYNIX(1G)
EMMC	FLASH HYNIX //16G	FLASH HYNIX //32G	FLASH SANDISK//16G	FLASH SANDISK//32G	FLASH HYNIX //16G
WIFI/BT	C.S RTL8723BS-VQ-CG QFN-68//Realtek				
GPS	GPS+ GLONASS WLBGA C.S BCM47511//Broadcom				
LCD	LCD TFT 8.0' WXGA GL LED SLIM/Innolux				LCD TFT 8.0' WXGA GL LED//AUO
Battery	SMP/C11P1304/1S1P,3.8V		NVT/C11P1304/1S1P,3.8V		CPT/C11P1304/1S1P,3.8V
Adapter	LITE-ON/PA-1070-07		PHIHONG/PSM06A-050Q		
Camera 1.2M	LITEON/12P2SF172	LITEON/12P2SF172	FOXLINK/FM12FF-399H	FOXLINK/FM12FF-399H	LITEON/12P2SF172
Camera 5M	LITEON/13P2BA522				

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx/Rx Frequency Range	2402 MHz ~ 2480 MHz
Number of Channels	79
Carrier Frequency of Each Channel	2402+n*1 MHz; n=0~78
Maximum Output Power to Antenna	Bluetooth BR(1Mbps) : 7.62 dBm (0.0058 W) Bluetooth EDR (2Mbps) : 8.39 dBm (0.0069 W) Bluetooth EDR (3Mbps) : 8.47 dBm (0.0070 W)
99% Occupied Bandwidth	Bluetooth BR(1Mbps) : 0.860MHz Bluetooth EDR (2Mbps) : 1.164MHz Bluetooth EDR (3Mbps) : 1.156MHz
Antenna Type	PCB Antenna type with gain 2.45 dBi
Type of Modulation	Bluetooth v3.0 BR (1Mbps) : GFSK Bluetooth v3.0 EDR (2Mbps) : π /4-DQPSK Bluetooth v3.0 EDR (3Mbps) : 8-DPSK

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 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	CO01-HY	03CH07-HY	722060/4086B-1

Note: The test site complies with ANSI C63.4 2003 requirement.

1.7 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

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.

2 Test Configuration of Equipment Under Test

2.1 Descriptions of Test Mode

Preliminary tests were performed in different data rates 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	7.22 dBm	7.98 dBm	8.21 dBm
Ch39	2441MHz	7.62 dBm	8.39 dBm	**8.47 dBm**
Ch78	2480MHz	7.58 dBm	8.20 dBm	8.43 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.

a. The EUT has been associated with peripherals 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, and different data rates were conducted to determine the final configuration (Z plane as worst plane) from all possible combinations, and the worst mode of radiated spurious emissions is Bluetooth 3Mbps mode, and recorded in this report.

b. AC power line Conducted Emission was tested under maximum output power.

2.2 Test Mode

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

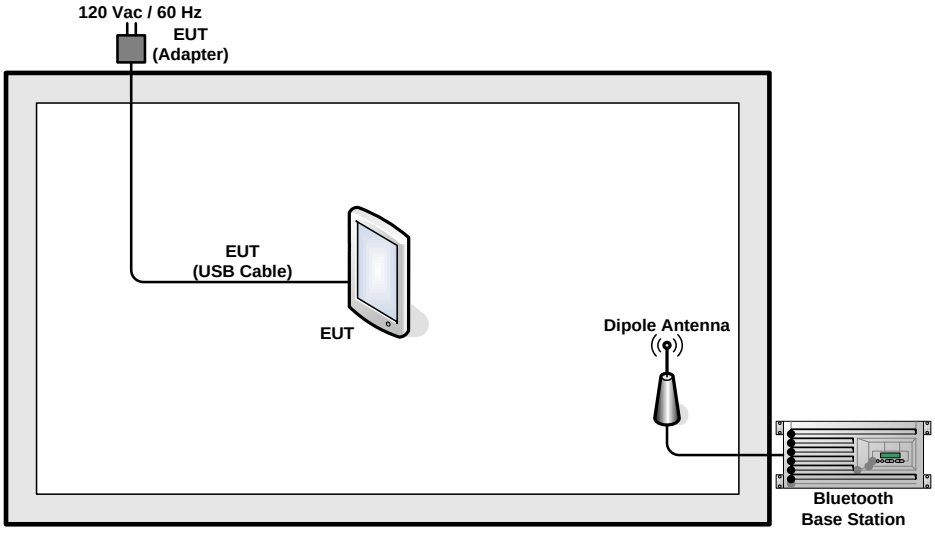
Summary table of Test Cases			
Test Item	**Data Rate / Modulation**		
	Bluetooth BR 1Mbps GFSK	**Bluetooth EDR 2Mbps π/4-DQPSK**	**Bluetooth EDR 3Mbps 8-DPSK**
Conducted Test Cases	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz	Mode 4: CH00_2402 MHz Mode 5: CH39_2441 MHz Mode 6: CH78_2480 MHz	Mode 7: CH00_2402 MHz Mode 8: CH39_2441 MHz Mode 9: CH78_2480 MHz
Radiated Test Cases	**Bluetooth EDR 3Mbps 8-DPSK**		
	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz		
AC Conducted Emission	Mode 1 :WLAN Link + Bluetooth Link + USB Cable (Charging from Adapter) + MP3 + Earphone + H Pattern for Sample 4		

Remark:

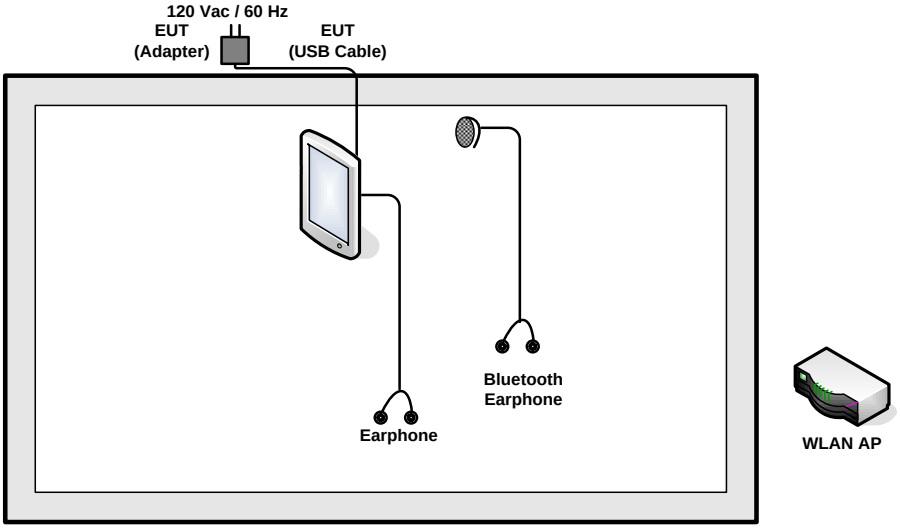
1. For radiated test cases, the worst mode data rate 3Mbps was reported only, because this data rate has the highest RF output power at preliminary tests, and the conducted spurious emissions and conducted band edge measurement for each data rate are no worse than 3Mbps, and no other significantly frequencies found in conducted spurious emission .
2. For Radiated Test Cases, The tests were performance with Adapter 1, and Battery 1.
3. All the radiated test cases were performance with Sample 4.

2.3 Connection Diagram of Test System

<Bluetooth Tx Mode>



<AC Conducted Emission Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Base Station	R&S	CBT32	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	Dns-g120	FCC DoC	N/A	Unshielded, 1.8 m
3.	Bluetooth Earphone	SONY	Z354	N/A	N/A	N/A
4.	MIC+Earphone	Apple	MB770FE/A	FCC DoC	Shielded, 1.5 m	N/A

2.5 Description of RF Function Operation Test Setup

Turn on ”RTK_BT_MP”, and ensure the EUT connected with Notebook via USB Cable. Then click "Linux (Andriod) by ADB", to allow the EUT enterning engineering mode and establishing the connection with the base station. This enables EUT's BT function to transmit and receive signals continuously.

2.6 Measurement Results Explanation Example

For all conducted test items:

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

Example:

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

Offset = RF cable loss + attenuator factor.

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

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

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 RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. 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.
7. Record the measurement data derived from spectrum analyzer.

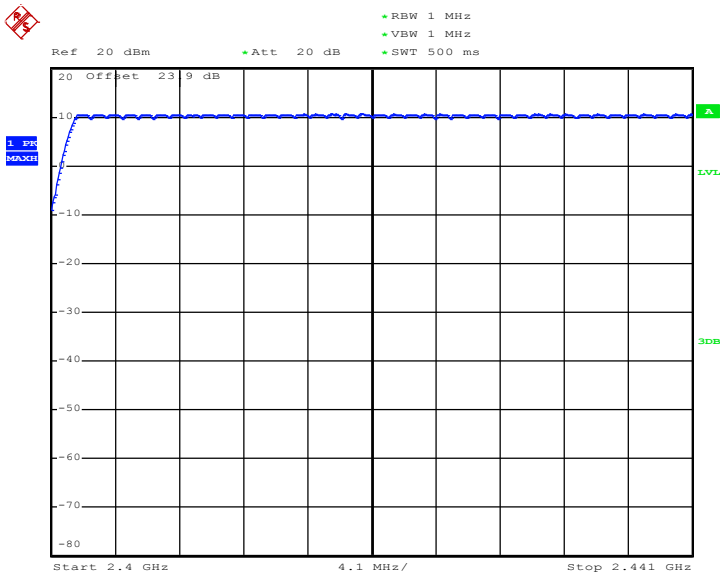
3.1.4 Test Setup

3.1.5 Test Result of Number of Hopping Frequency

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

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

Number of Hopping Channel Plot on Channel 00 - 78



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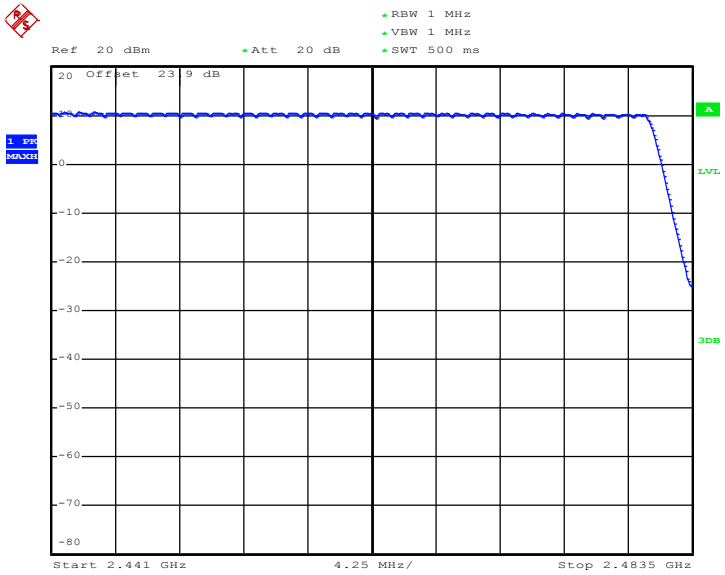

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3.2 Hopping Channel Separation Measurement

3.2.1 Limit of Hopping Channel Separation

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

3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

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

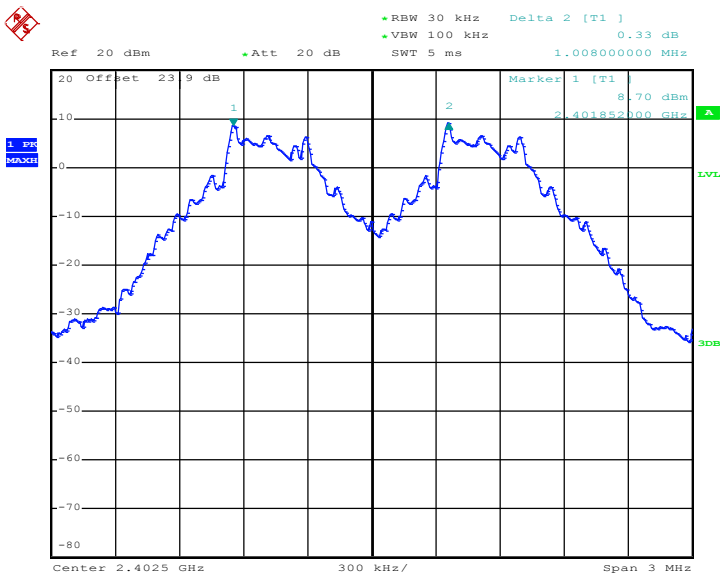
3.2.4 Test Setup

3.2.5 Test Result of Hopping Channel Separation

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

Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.008	0.5947	Pass
39	2441	1.002	0.5973	Pass
78	2480	1.002	0.5707	Pass

Channel Separation Plot on Channel 00 - 01



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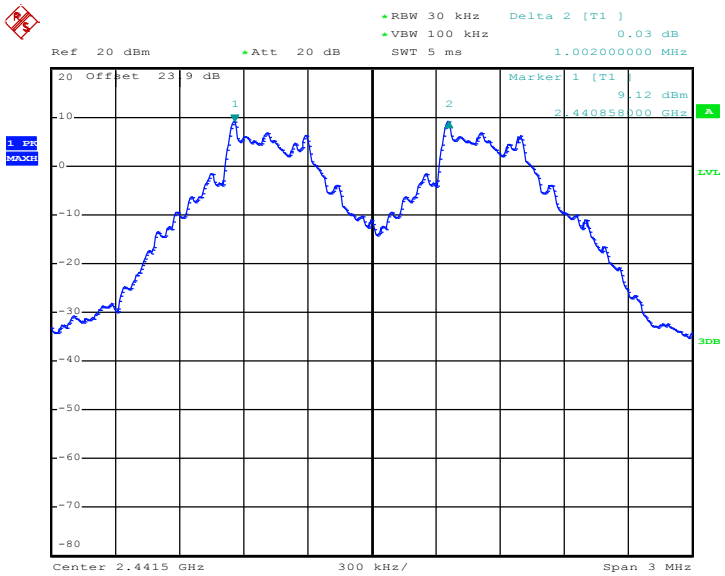
Channel Separation Plot on Channel 39 - 40



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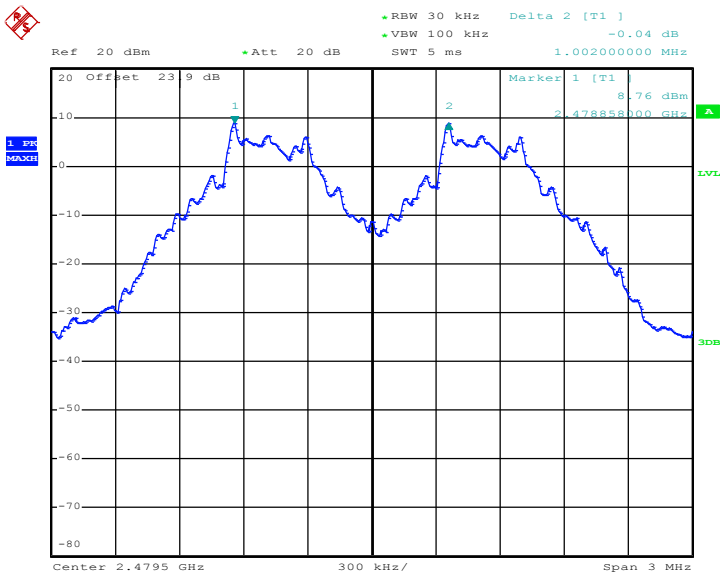
Channel Separation Plot on Channel 77 - 78

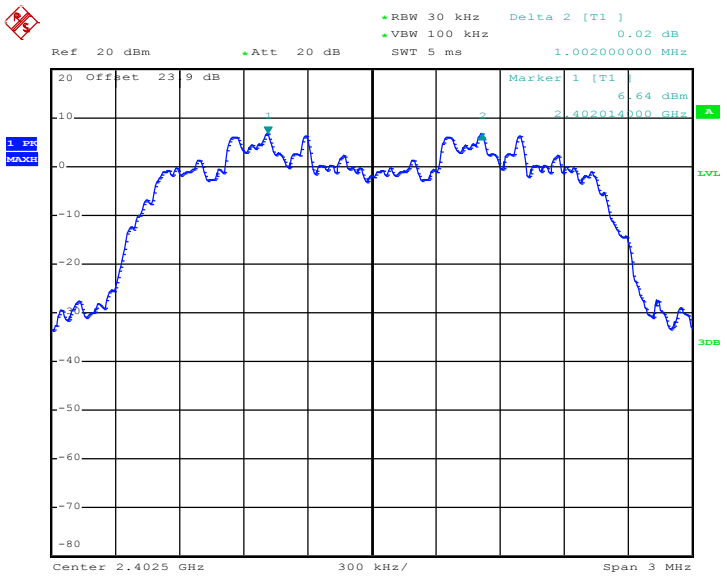


Date: 16.AUG.2013 16:47:58

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

Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.002	0.8640	Pass
39	2441	1.008	0.8640	Pass
78	2480	1.002	0.8680	Pass

Channel Separation Plot on Channel 00 - 01



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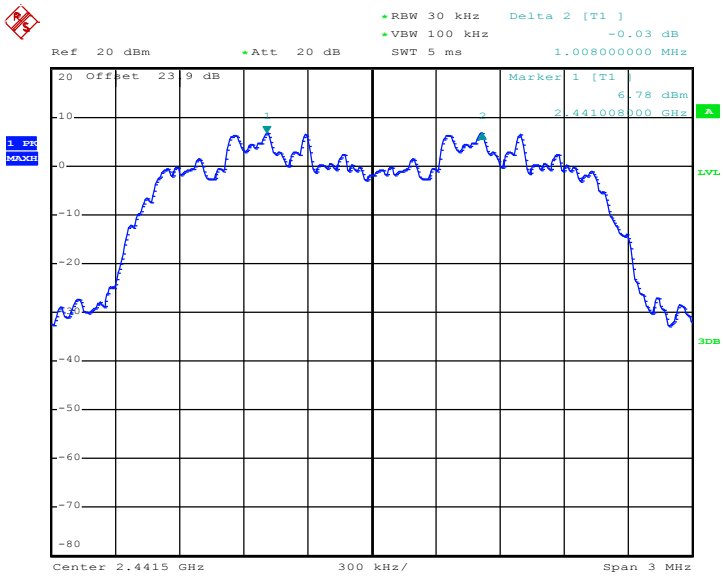
Channel Separation Plot on Channel 39 - 40



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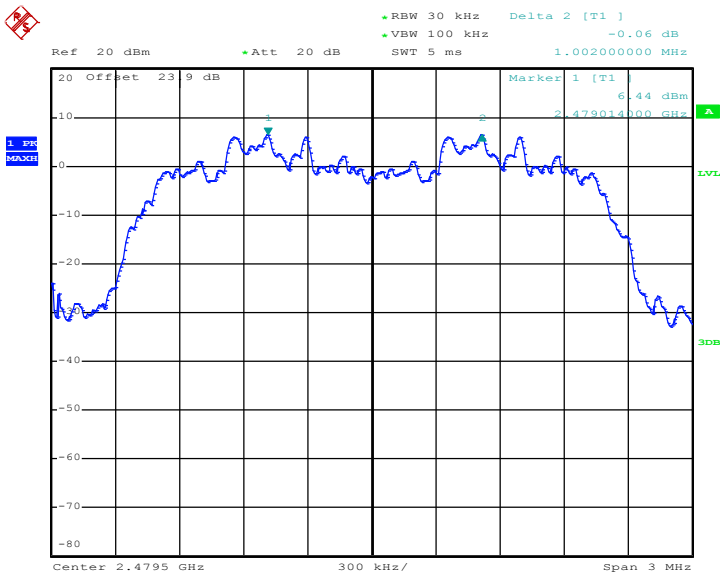
Channel Separation Plot on Channel 77 - 78

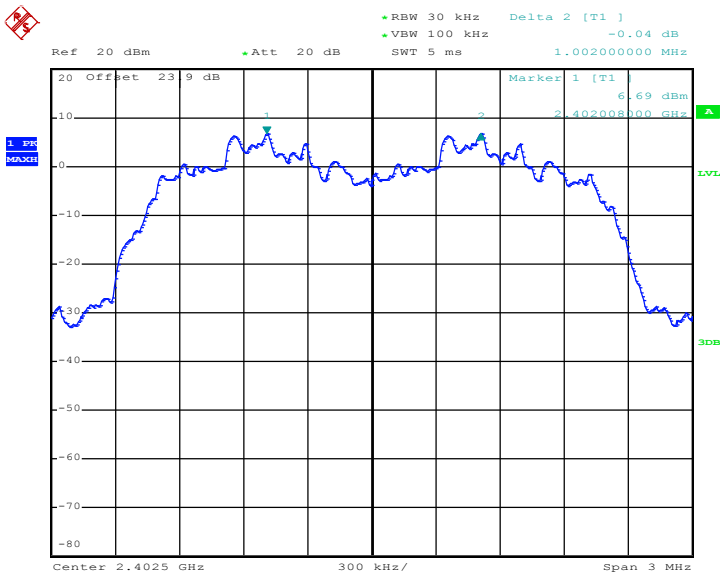


Date: 16.AUG.2013 16:58:51

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

Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.002	0.8320	Pass
39	2441	1.002	0.8320	Pass
78	2480	1.002	0.8320	Pass

Channel Separation Plot on Channel 00 - 01



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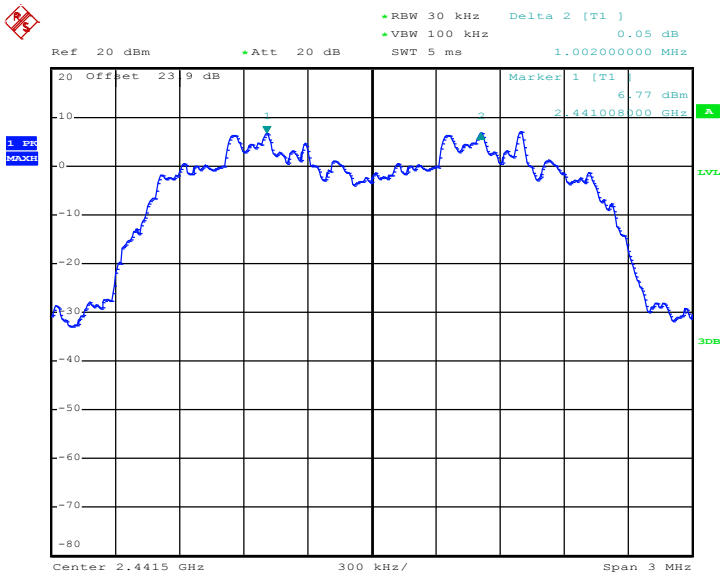
Channel Separation Plot on Channel 39 - 40



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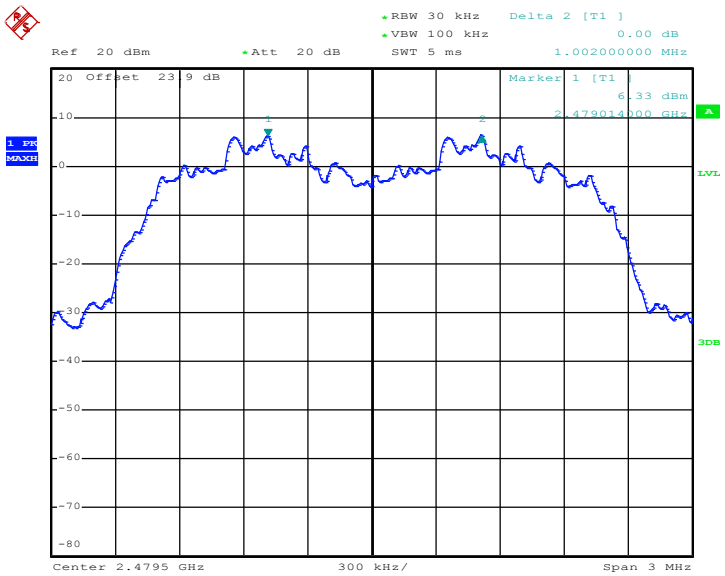
Channel Separation Plot on Channel 77 - 78



Date: 16.AUG.2013 17:37:53

3.3 Dwell Time Measurement

3.3.1 Limit of Dwell Time

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

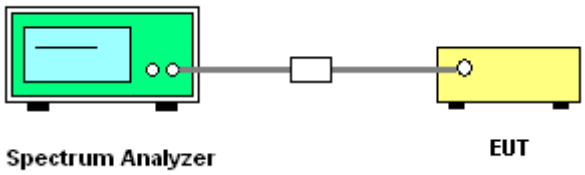
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

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

3.3.4 Test Setup



3.3.5 Test Result of Dwell Time

Test Mode :	DH5	Temperature :	24~26℃
Test Engineer :	Bill Kuo	Relative Humidity :	50~53%

Mode	Hopping Channel Number	Hops Over Occupancy Time(hops)	Package Transfer Time (msec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
Normal	79	106.67	2.92	0.31	0.4	Pass
AFH	20	53.33	2.92	0.16	0.4	Pass

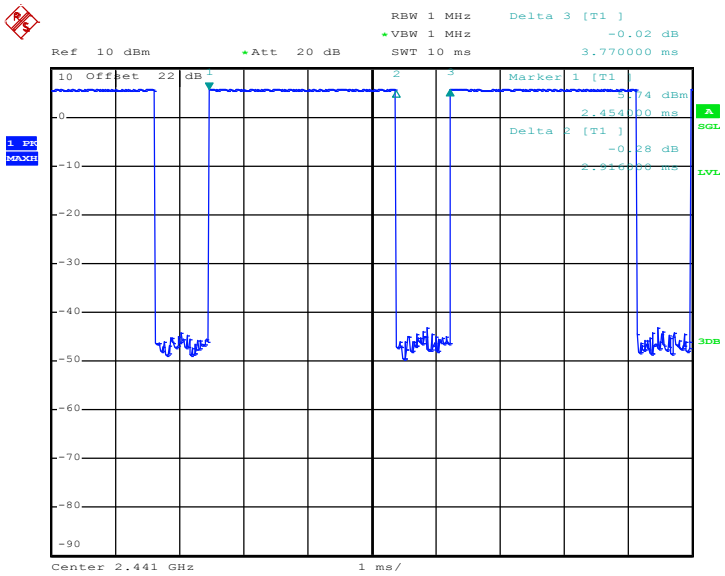
Remark:

1. In normal mode, hopping rate is 1600hops/s with 6 slots in 79 hopping channels.
With channel hopping rate (1600 / 6 / 79) in Occupancy Time Limit (0.4 x 79) (s),
Hops Over Occupancy Time comes to (1600 / 6 / 79) x (0.4 x 79) = 106.67 hops.

2. In AFH mode, hopping rate is 800hops/s with 6 slots in 20 hopping channels.
With channel hopping rate (800 / 6 / 20) in Occupancy Time Limit (0.4 x 20) (s),
Hops Over Occupancy Time comes to (800 / 6 / 20) x (0.4 x 20) = 53.33 hops.

3. Dwell Time(s) = Hops Over Occupancy Time (hops) x Package Transfer Time

Package Transfer Time Plot



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3.4 20dB and 99% Bandwidth Measurement

3.4.1 Limit of 20dB and 99% Bandwidth

Reporting only

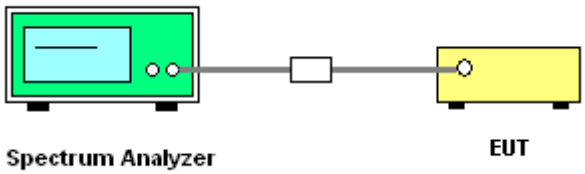
3.4.2 Measuring Instruments

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 RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Use the following spectrum analyzer settings for 20dB Bandwidth measurement.
   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. Use the following spectrum analyzer settings for 99 % Bandwidth measurement.
   For 99% Bandwidth measurement, the RBW=30kHz, and VBW = 100kHz. Sweep = auto ;
   Detector function = sample. Trace = max hold.
6. Measure and record the results in the test report.

3.4.4 Test Setup

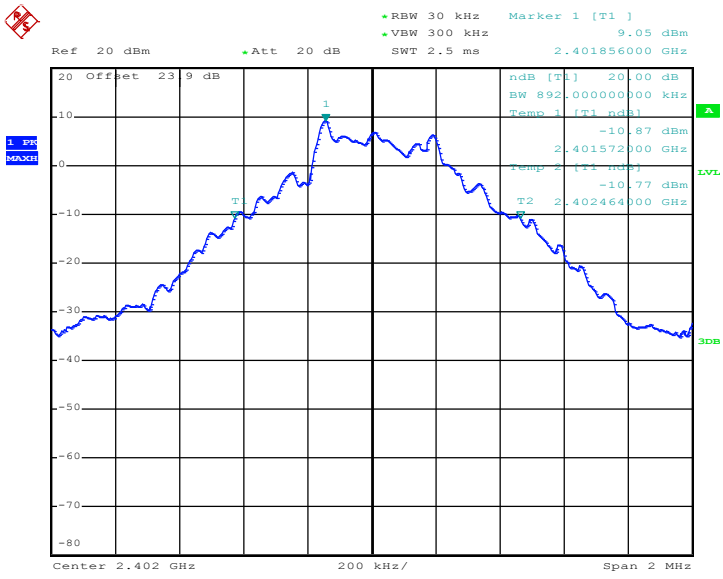


3.4.5 Test Result of 20dB Bandwidth

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

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	0.892
39	2441	0.896
78	2480	0.856

20 dB Bandwidth Plot on Channel 00



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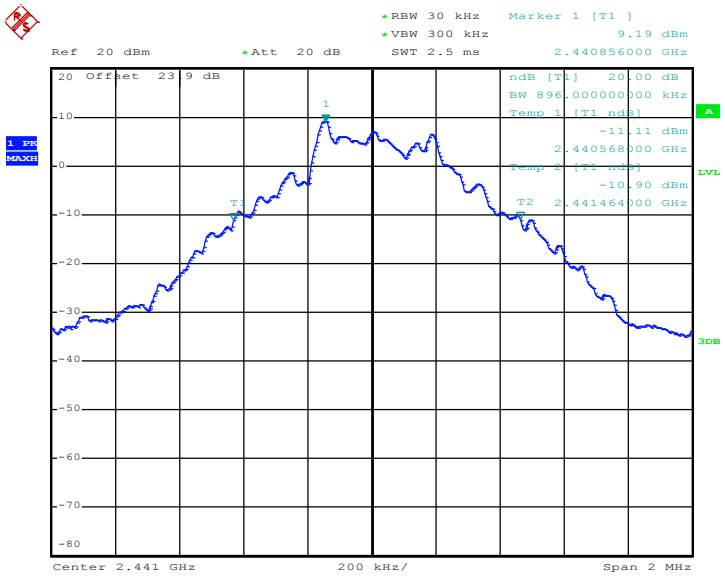
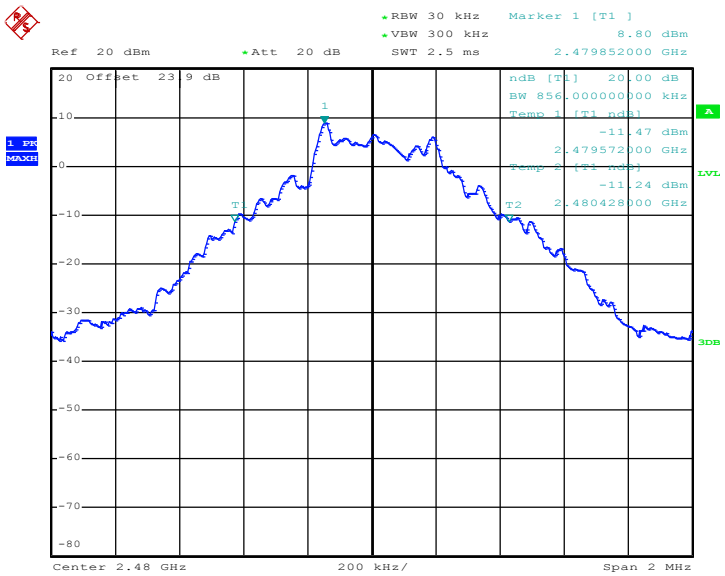
20 dB Bandwidth Plot on Channel 39



Date: 16.AUG.2013 17:39:53

20 dB Bandwidth Plot on Channel 78

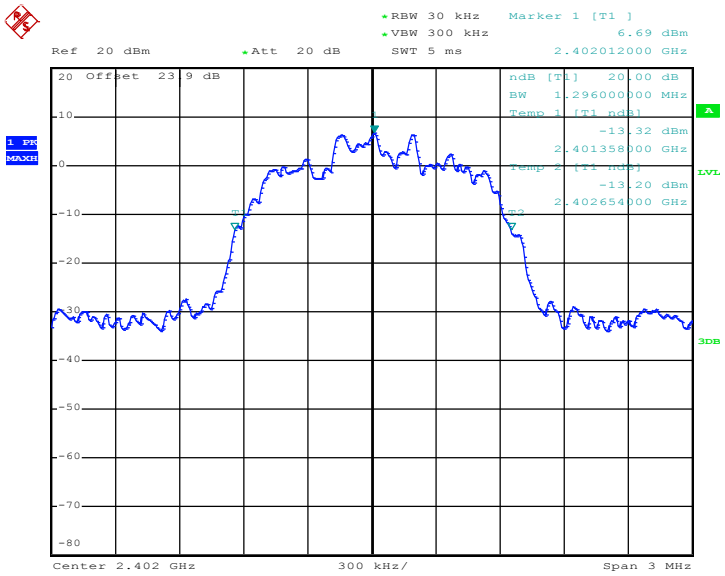


Date: 16.AUG.2013 17:40:18

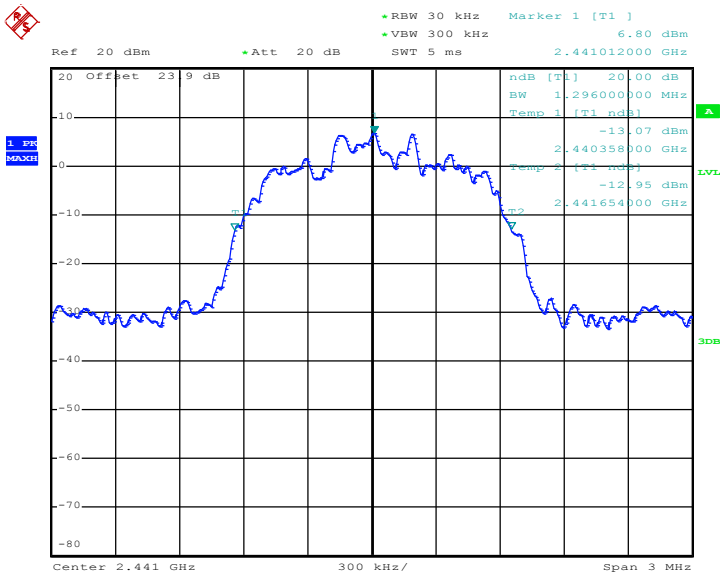
Test Mode :	2Mbps	Temperature :	24~26℃
Test Engineer :	Bill Kuo	Relative Humidity :	50~53%

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

20 dB Bandwidth Plot on Channel 00

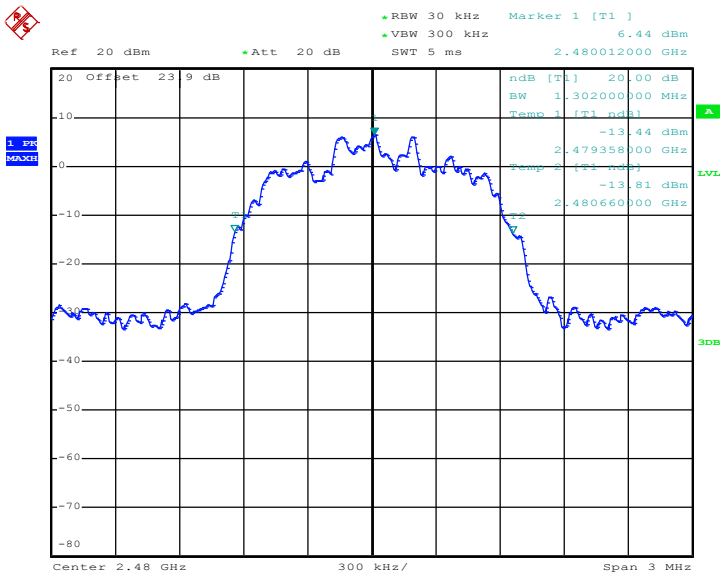


20 dB Bandwidth Plot on Channel 39



Date: 16.AUG.2013 17:42:42

20 dB Bandwidth Plot on Channel 78

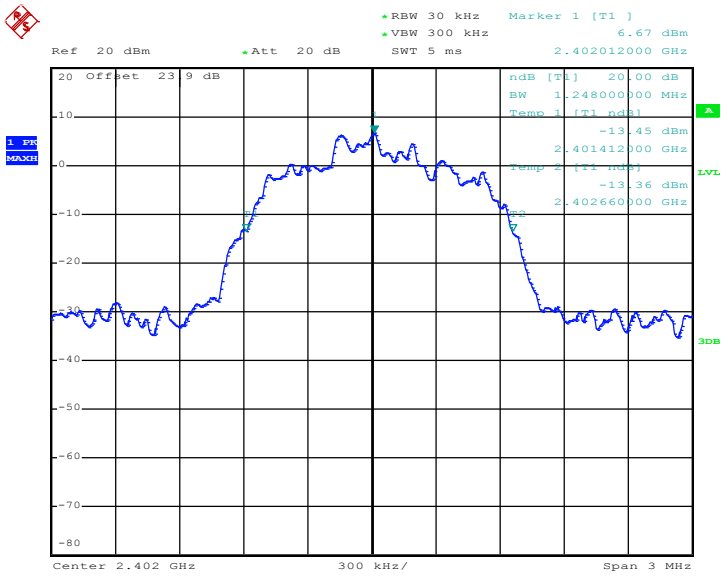


Date: 16.AUG.2013 17:44:46

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

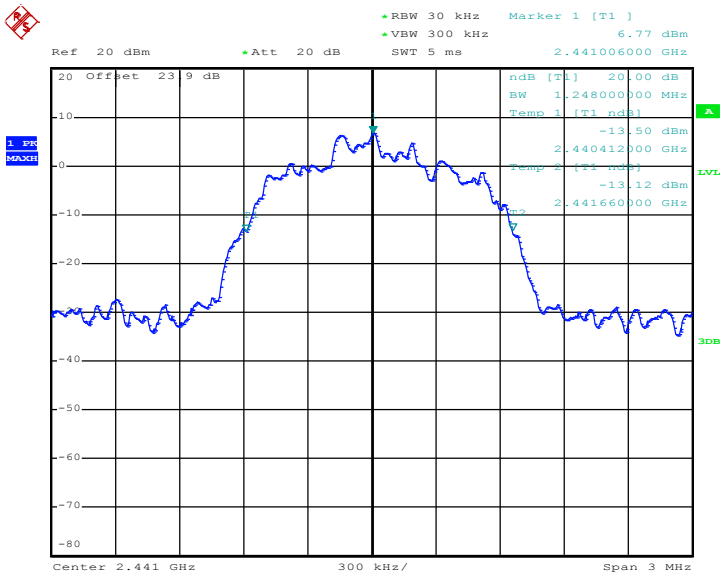
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.248
39	2441	1.248
78	2480	1.248

20 dB Bandwidth Plot on Channel 00



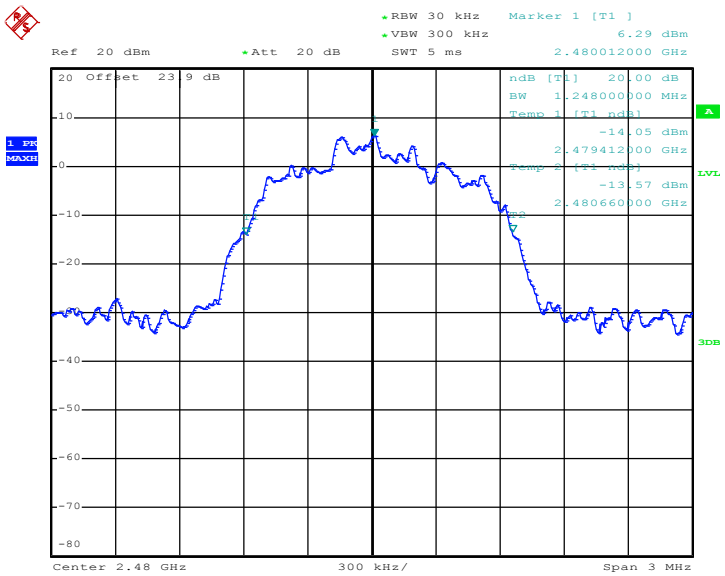
Date: 16.AUG.2013 17:45:56

20 dB Bandwidth Plot on Channel 39



Date: 16.AUG.2013 17:46:39

20 dB Bandwidth Plot on Channel 78



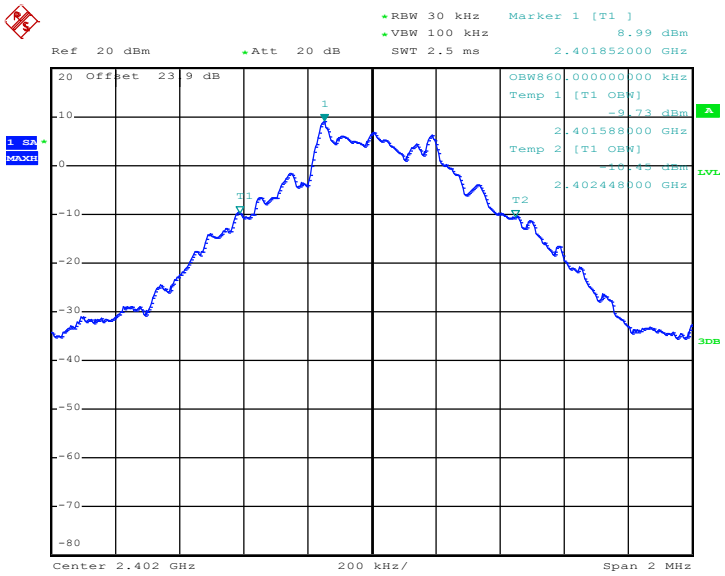
Date: 16.AUG.2013 17:47:17

3.4.6 Test Result of 99% Occupied Bandwidth

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

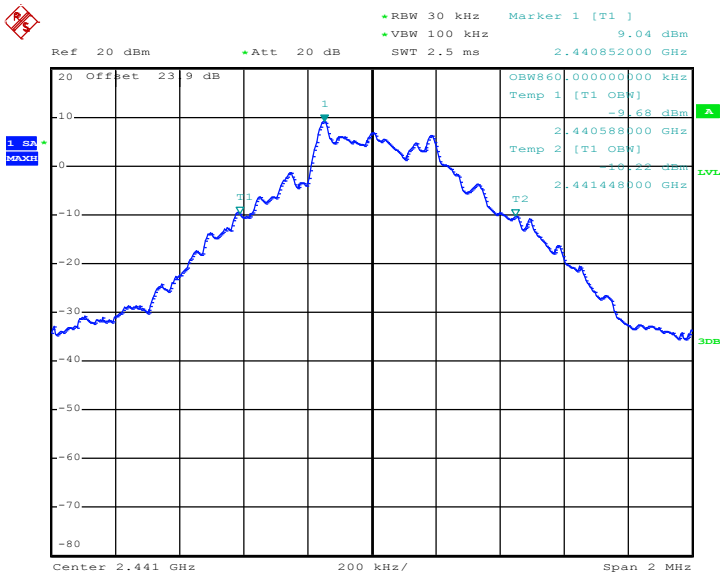
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
00	2402	0.860
39	2441	0.860
78	2480	0.860

99% Occupied Bandwidth Plot on Channel 00



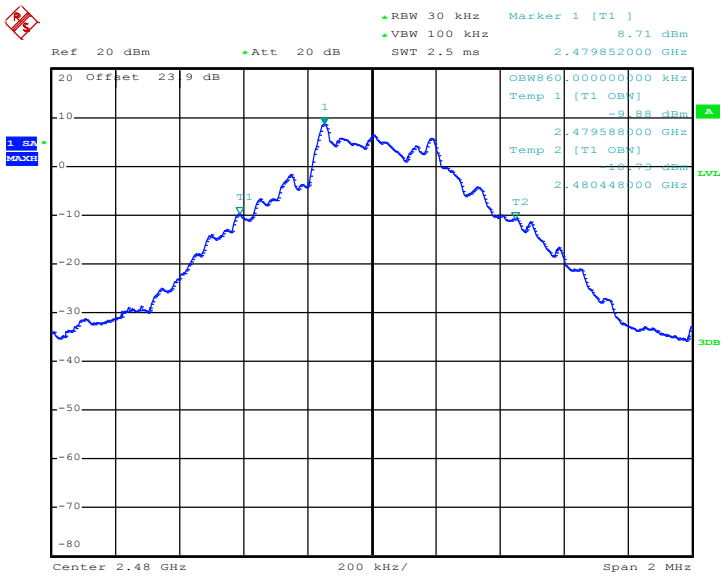
Date: 16.AUG.2013 20:37:53

99% Occupied Bandwidth Plot on Channel 39



Date: 16.AUG.2013 20:37:18

99% Occupied Bandwidth Plot on Channel 78

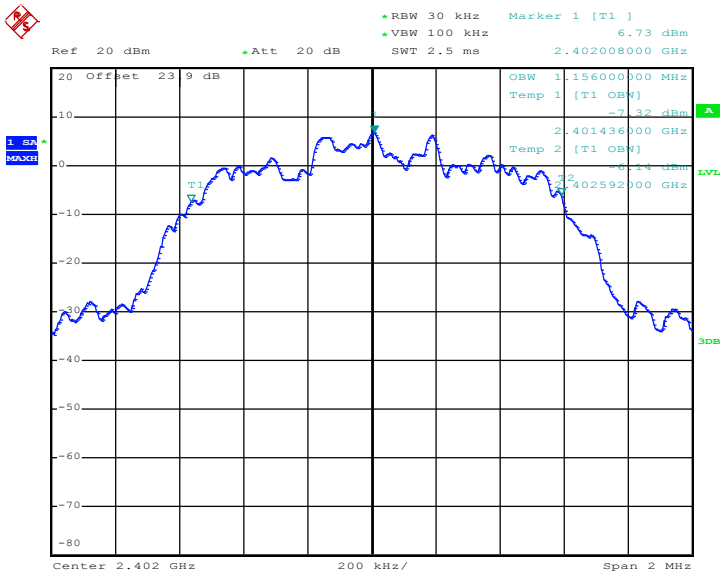


Date: 16.AUG.2013 20:36:03

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

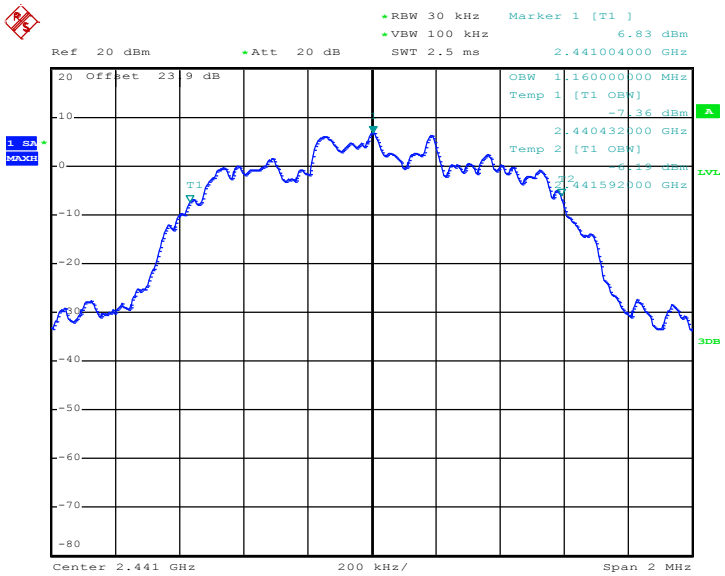
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
00	2402	1.156
39	2441	1.160
78	2480	1.164

99% Occupied Bandwidth Plot on Channel 00



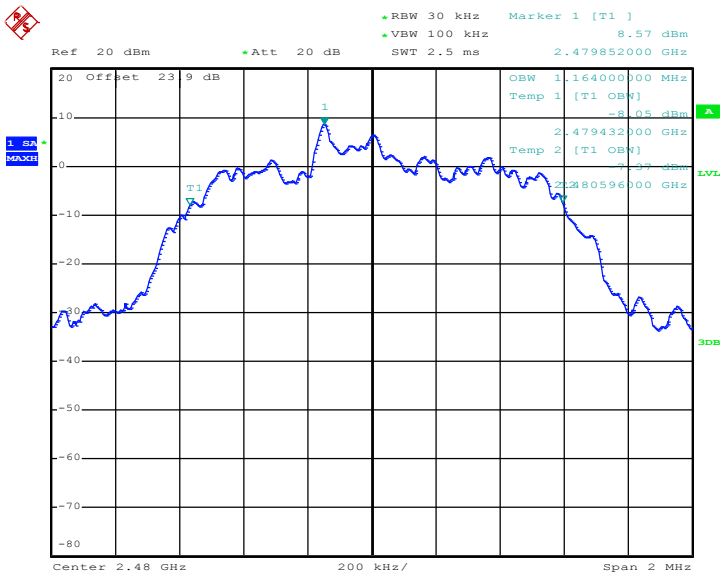
Date: 16.AUG.2013 20:33:17

99% Occupied Bandwidth Plot on Channel 39



Date: 16.AUG.2013 20:34:18

99% Occupied Bandwidth Plot on Channel 78

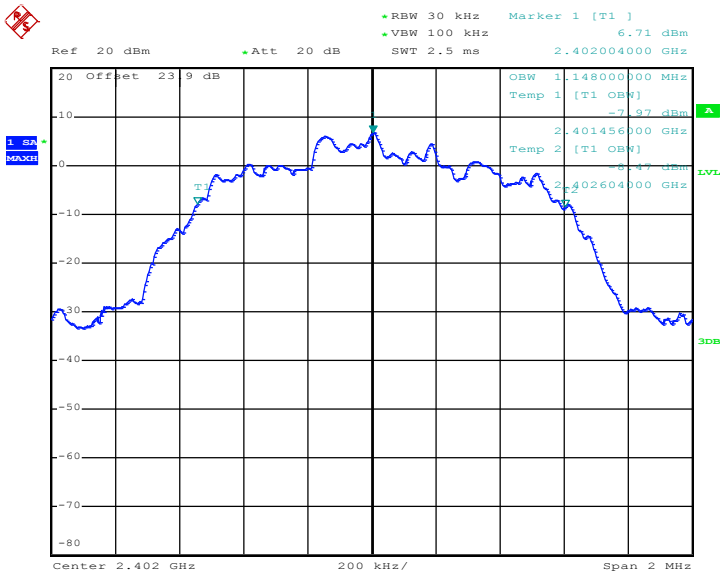


Date: 16.AUG.2013 20:39:42

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

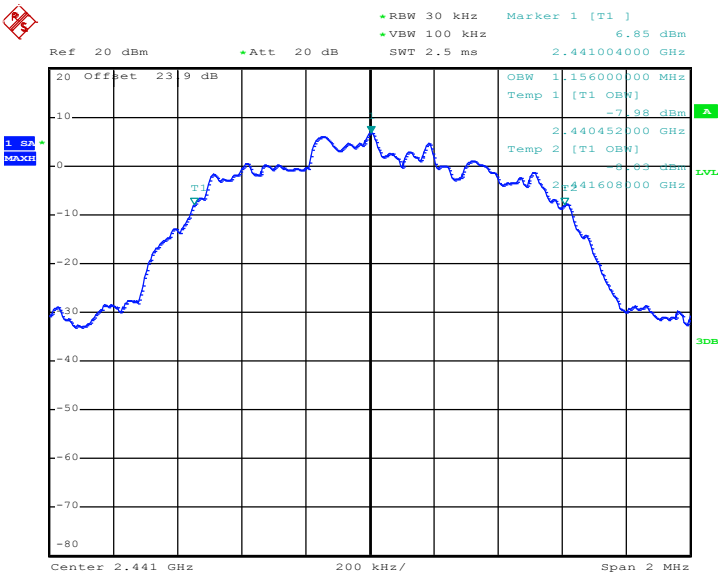
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
00	2402	1.148
39	2441	1.156
78	2480	1.156

99% Occupied Bandwidth Plot on Channel 00



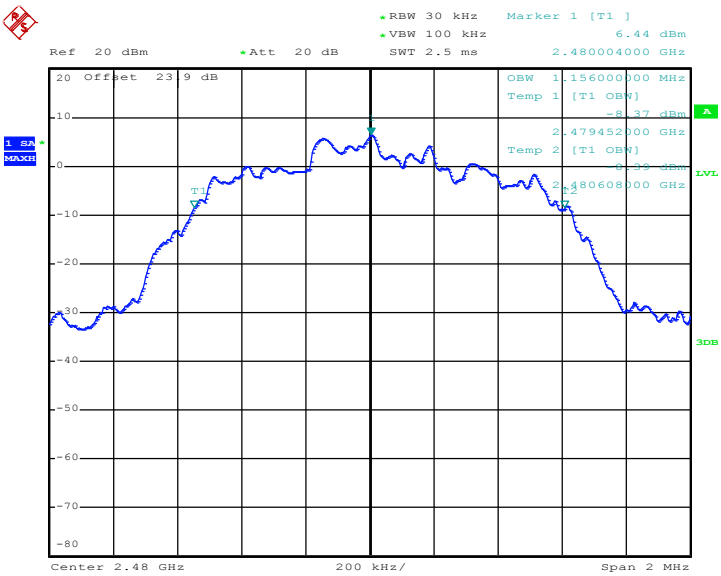
Date: 16.AUG.2013 20:25:56

99% Occupied Bandwidth Plot on Channel 39



Date: 16.AUG.2013 20:38:57

99% Occupied Bandwidth Plot on Channel 78



Date: 16.AUG.2013 20:32:10

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, 3Mbps and AFH are 0.125 watts.

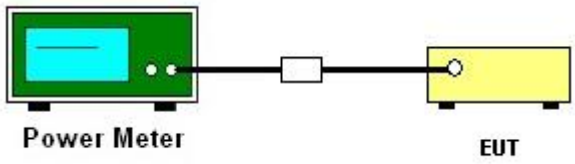
3.5.2 Measuring Instruments

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 power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power with cable loss and record the results in the test report.
5. Measure 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 :	Bill Kuo	Relative Humidity :	50~53%

Channel	Frequency (MHz)	RF Power (dBm)		
		GFSK	Max. Limits (dBm)	Pass/Fail
		1 Mbps		
00	2402	7.22	20.97	Pass
39	2441	7.62	20.97	Pass
78	2480	7.58	20.97	Pass

Note: For AFH mode using 20 hopping channels, the maximum output power limit is 20.97dBm.

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

Channel	Frequency (MHz)	RF Power (dBm)		
		π /4-DQPSK	Max. Limits (dBm)	Pass/Fail
		2 Mbps		
00	2402	7.98	20.97	Pass
39	2441	8.39	20.97	Pass
78	2480	8.20	20.97	Pass

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

Channel	Frequency (MHz)	RF Power (dBm)		
		8-DPSK	Max. Limits (dBm)	Pass/Fail
		3 Mbps		
00	2402	8.21	20.97	Pass
39	2441	8.47	20.97	Pass
78	2480	8.43	20.97	Pass

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

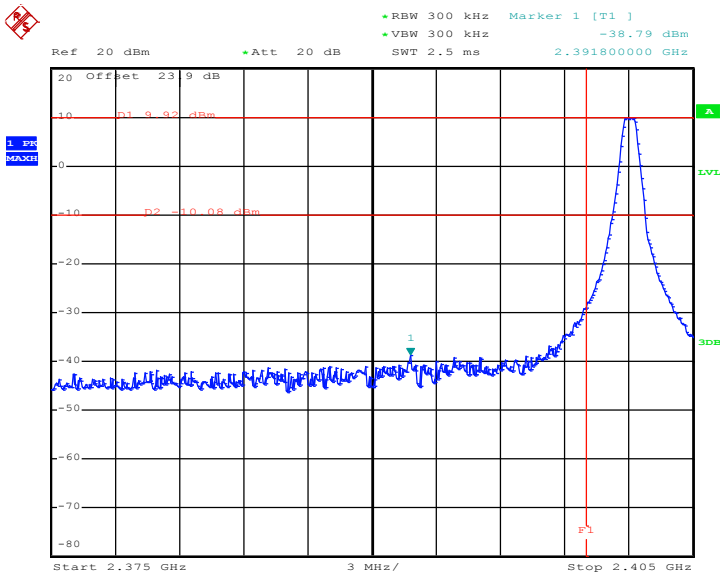
1. The testing follows the guidelines in Band-edge Compliance of RF Conducted Emissions of FCC Public Notice DA 00-705 Measurement Guidelines.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 300kHz (≥ 1% span=30MHz), VBW = 300kHz (≥ RBW). Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 300kHz RBW. The attenuation shall be 30 dB instead of 20 dB when RMS conducted output power procedure is used.
4. Enable hopping function of the EUT and then repeat step 2. and 3.
5. Measure and record the results in the test report.

3.6.4 Test Setup

3.6.6 Test Result of Conducted Band Edges

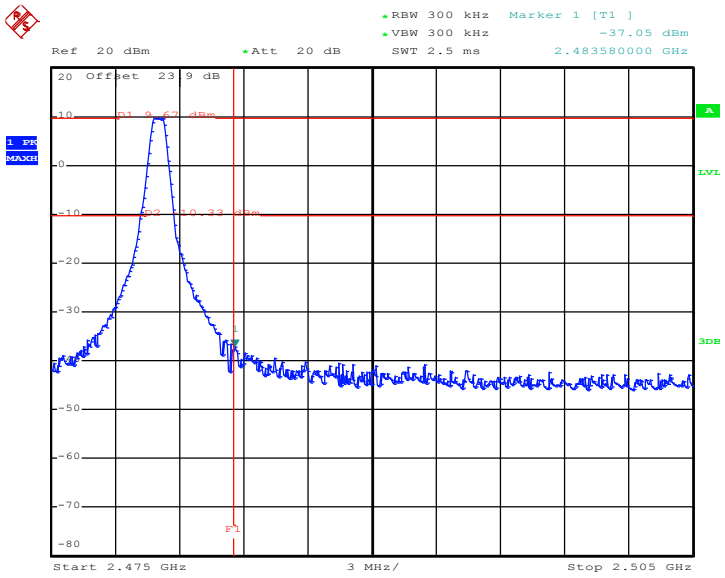
Test Mode :	1Mbps	**Temperature :**	24~26℃
Test Channel :	00 and 78	**Relative Humidity :**	50~53%
		Test Engineer :	Bill Kuo

Low Band Edge Plot on Channel 00



Date: 16.AUG.2013 18:22:34

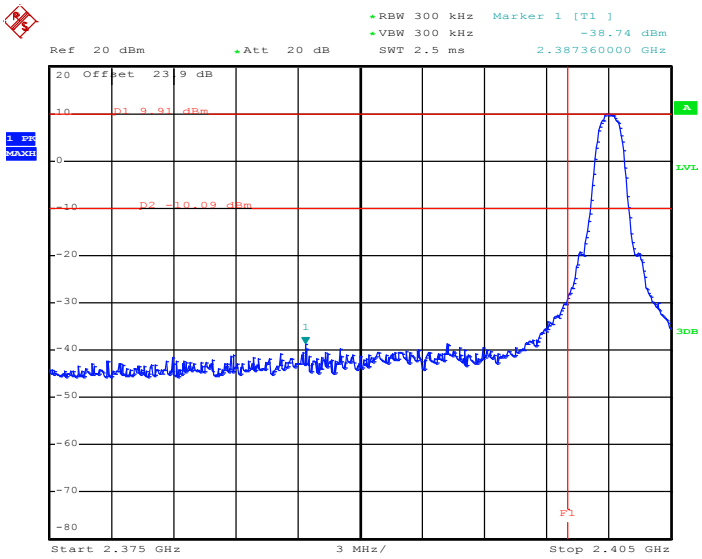
High Band Edge Plot on Channel 78



Date: 16.AUG.2013 18:18:29

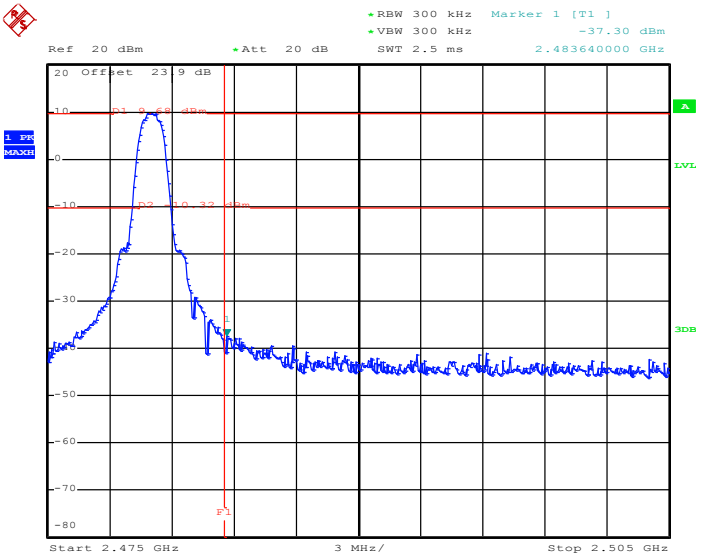
Test Mode :	2Mbps	**Temperature :**	24~26℃
Test Channel :	00 and 78	**Relative Humidity :**	50~53%
		Test Engineer :	Bill Kuo

Low Band Edge Plot on Channel 00



Date: 16.AUG.2013 18:24:03

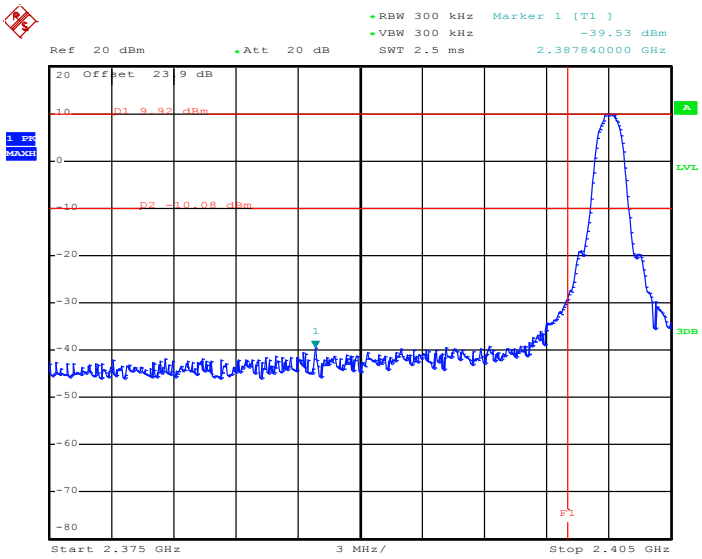
High Band Edge Plot on Channel 78



Date: 16.AUG.2013 18:25:18

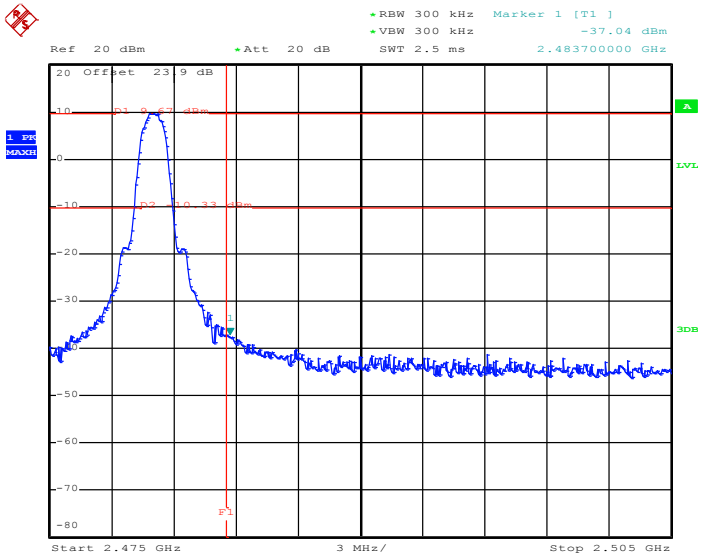
Test Mode :	3Mbps	**Temperature :**	24~26℃
Test Channel :	00 and 78	**Relative Humidity :**	50~53%
		Test Engineer :	Bill Kuo

Low Band Edge Plot on Channel 00



Date: 16.AUG.2013 18:27:37

High Band Edge Plot on Channel 78

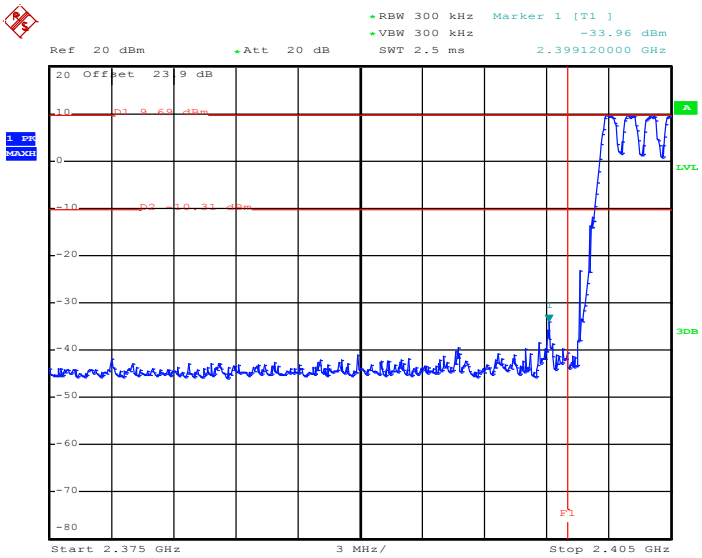


Date: 16.AUG.2013 18:25:41

3.6.7 Test Result of Conducted Hopping Mode Band Edges

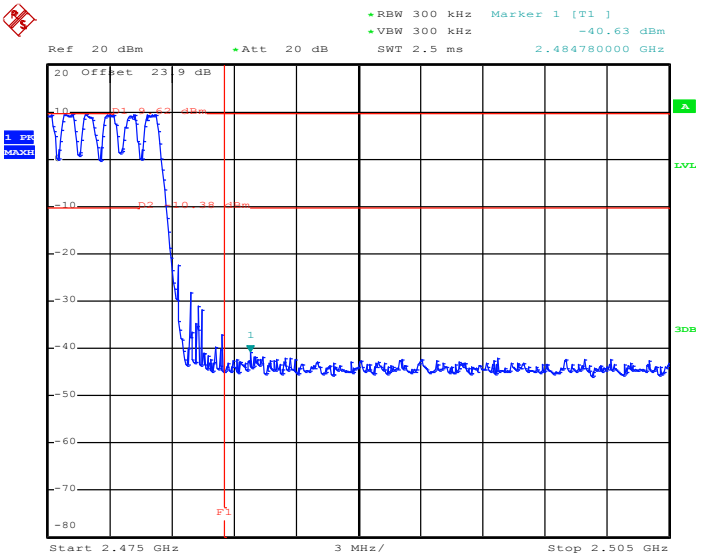
Test Mode :	1Mbps	Temperature :	24~26℃
Test Engineer :	Bill Kuo	Relative Humidity :	50~53%

1Mbps Hopping Mode Low Band Edge Plot



Date: 16.AUG.2013 20:04:05

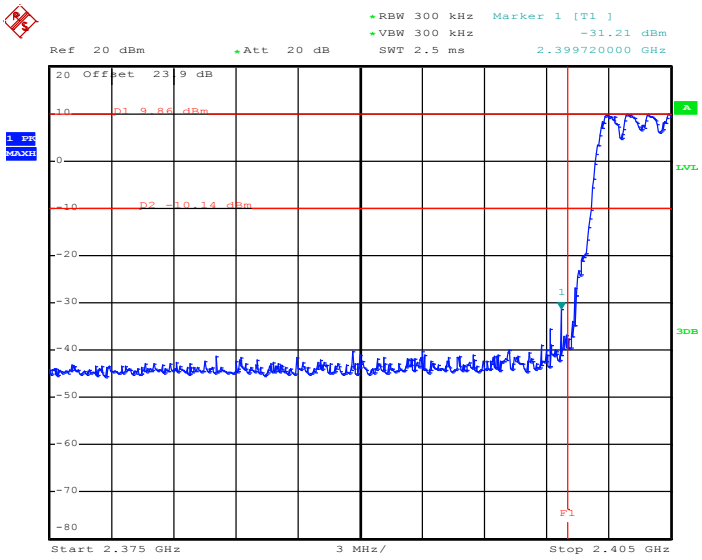
1Mbps Hopping Mode High Band Edge Plot



Date: 16.AUG.2013 20:05:38

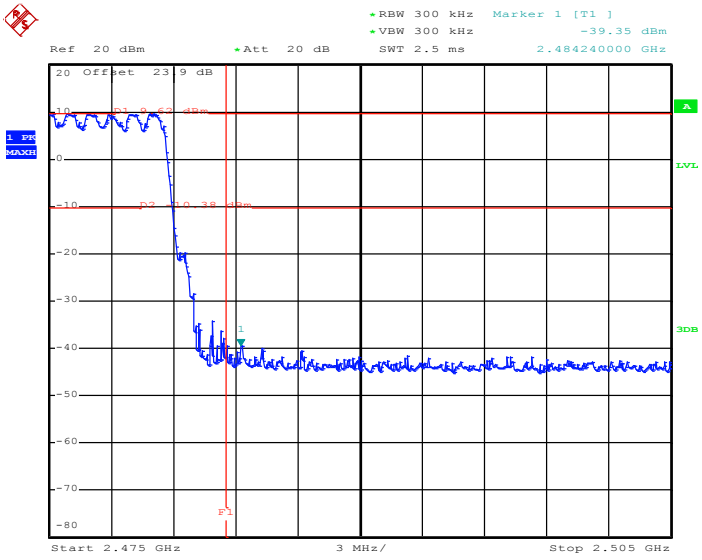
Test Mode :	2Mbps	Temperature :	24~26℃
Test Engineer :	Bill Kuo	Relative Humidity :	50~53%

2Mbps Hopping Mode Low Band Edge Plot



Date: 16.AUG.2013 20:10:55

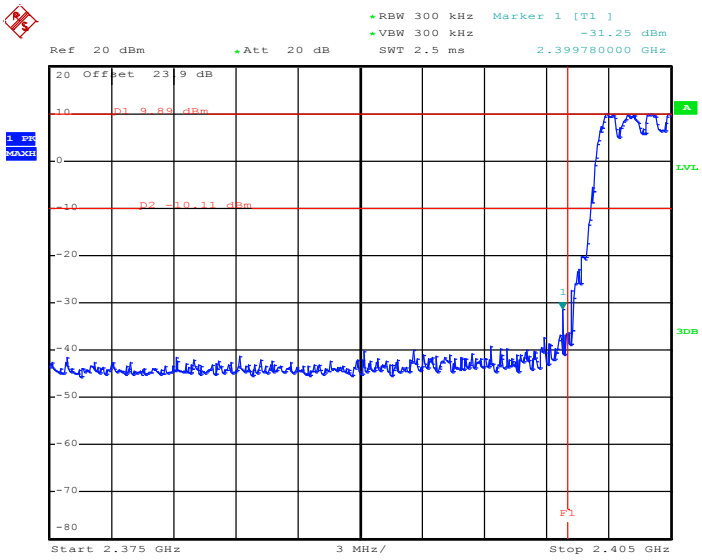
2Mbps Hopping Mode High Band Edge Plot



Date: 16.AUG.2013 20:09:56

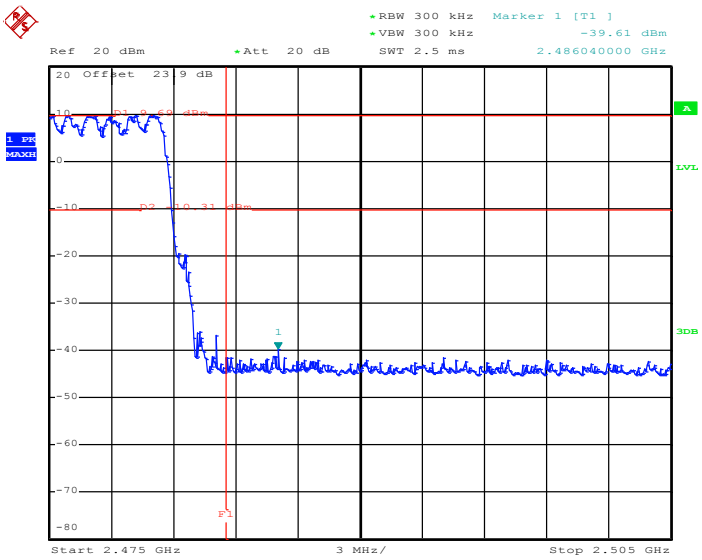
Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Bill Kuo	Relative Humidity :	50~53%

3Mbps Hopping Mode Low Band Edge Plot



Date: 16.AUG.2013 20:12:47

3Mbps Hopping Mode High Band Edge Plot



Date: 16.AUG.2013 20:56:24

3.7 Conducted Spurious Emission Measurement

3.7.1 Limit of Spurious Emission Measurement

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

3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

3.7.3 Test Procedure

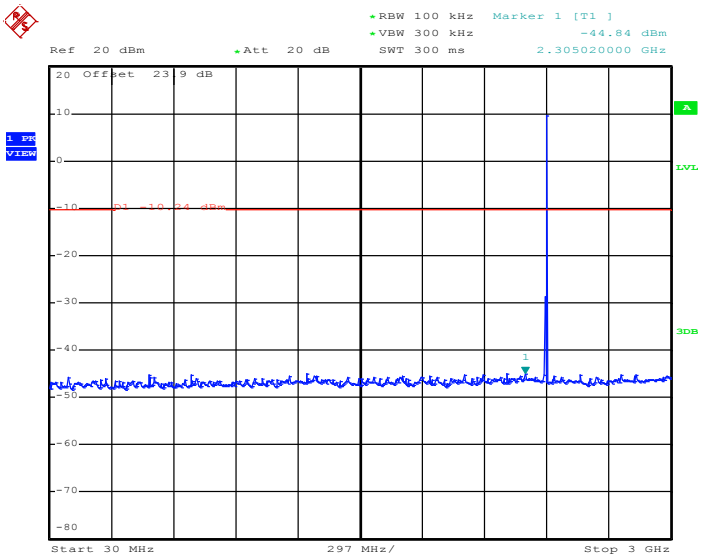
1. The testing follows the guidelines in Spurious RF Conducted Emissions of FCC Public Notice DA 00-705 Measurement Guidelines
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW = 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. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.7.4 Test Setup

3.7.5 Test Result of Conducted Spurious Emission

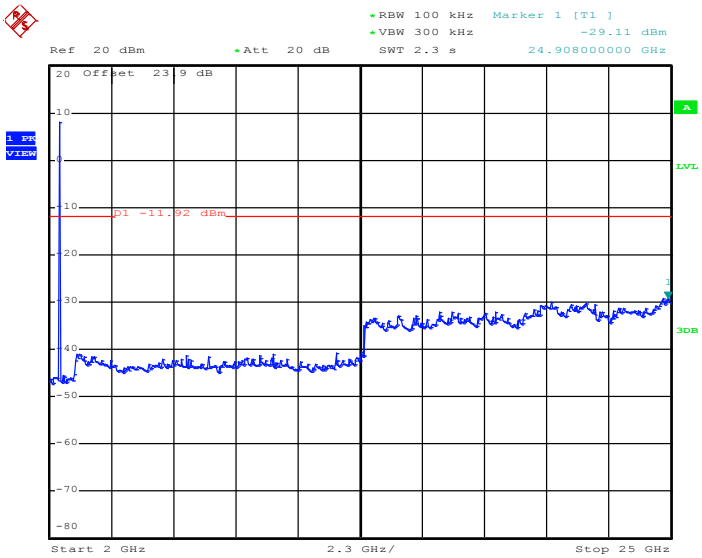
Test Mode :	1Mbps	Temperature :	24~26℃
Test Channel :	00	Relative Humidity :	50~53%
		Test Engineer :	Bill Kuo

1Mbps CSE Plot on Ch 00 between 30MHz ~ 3 GHz



Date: 16.AUG.2013 18:01:04

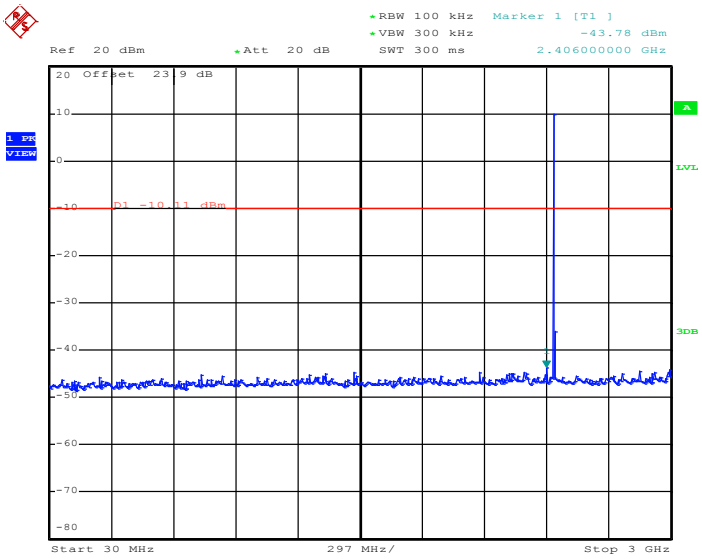
1Mbps CSE Plot on Ch 00 between 2 GHz ~ 25 GHz



Date: 16.AUG.2013 18:01:55

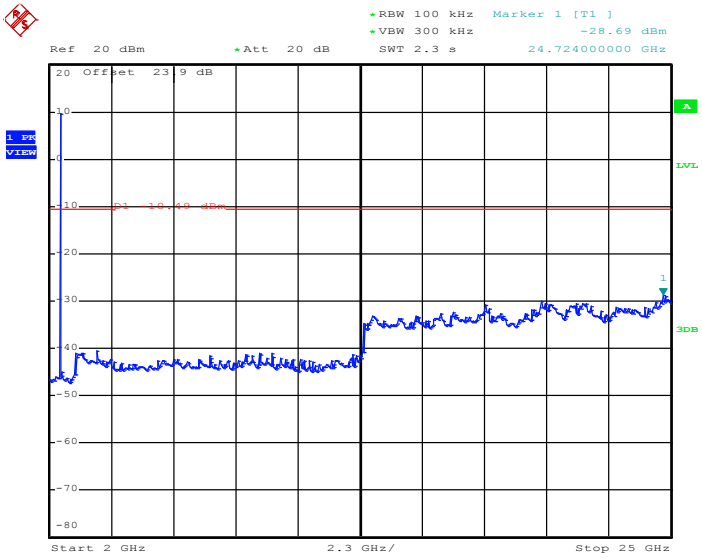
Test Mode :	1Mbps	**Temperature :**	24~26℃
Test Channel :	39	**Relative Humidity :**	50~53%
		Test Engineer :	Bill Kuo

1Mbps CSE Plot on Ch 39 between 30MHz ~ 3 GHz



Date: 16.AUG.2013 18:02:47

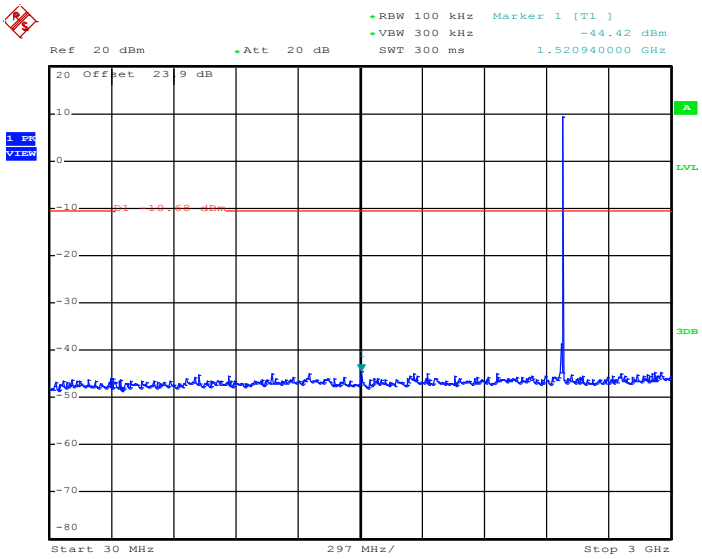
1Mbps CSE Plot on Ch 39 between 2 GHz ~ 25 GHz



Date: 16.AUG.2013 18:03:40

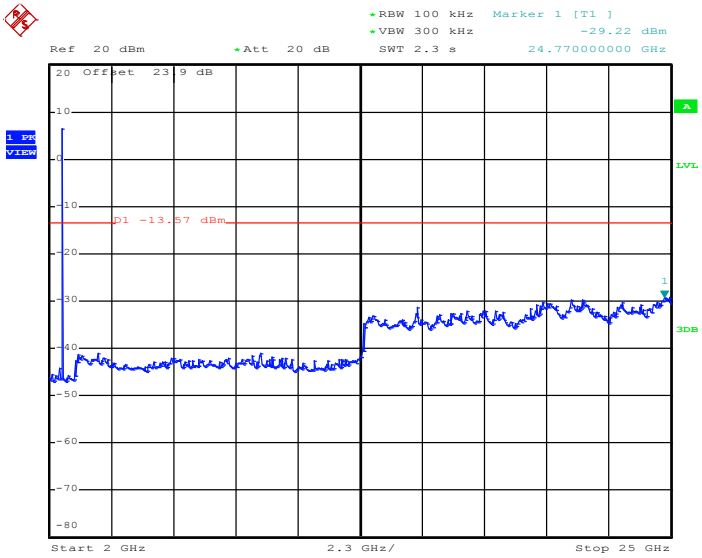
Test Mode :	1Mbps	**Temperature :**	24~26℃
Test Channel :	78	**Relative Humidity :**	50~53%
		Test Engineer :	Bill Kuo

1Mbps CSE Plot on Ch 78 between 30MHz ~ 3 GHz



Date: 16.AUG.2013 18:04:32

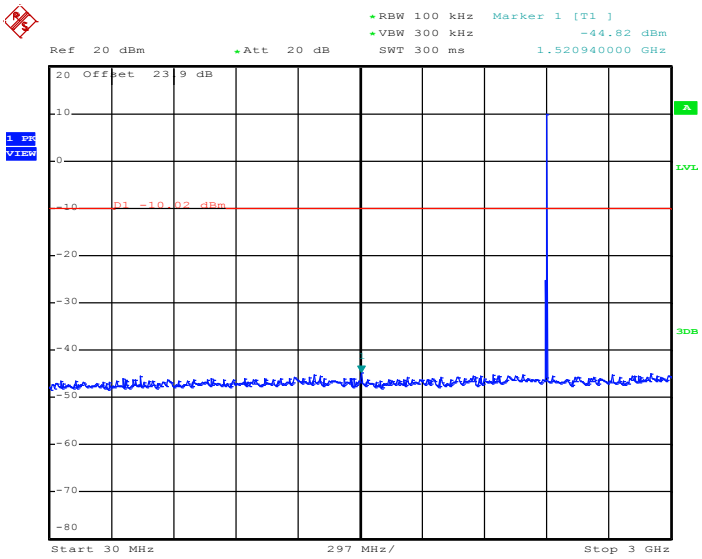
1Mbps CSE Plot on Ch 78 between 2 GHz ~ 25 GHz



Date: 16.AUG.2013 18:05:24

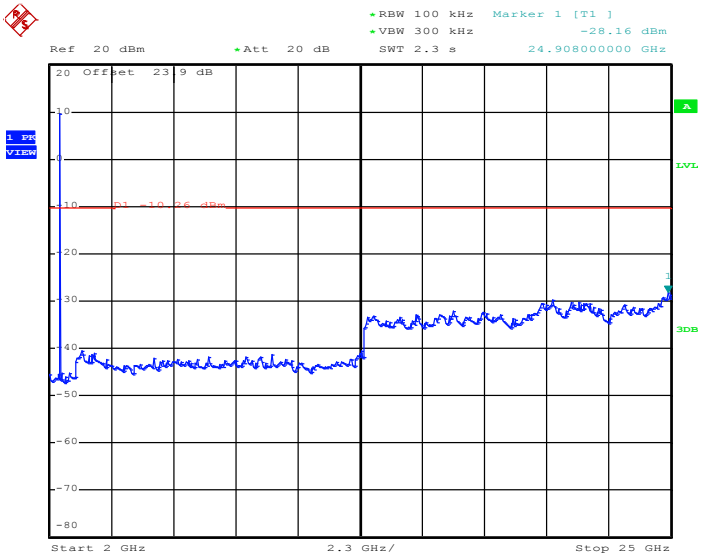
Test Mode :	2Mbps	**Temperature :**	24~26℃
Test Channel :	00	**Relative Humidity :**	50~53%
		Test Engineer :	Bill Kuo

2Mbps CSE Plot on Ch 00 between 30MHz ~ 3 GHz



Date: 16.AUG.2013 18:06:43

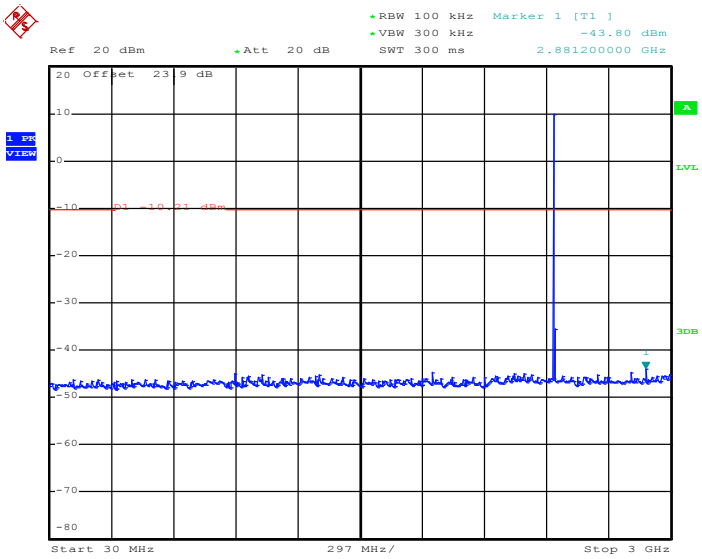
2Mbps CSE Plot on Ch 00 between 2 GHz ~ 25 GHz



Date: 16.AUG.2013 18:07:36

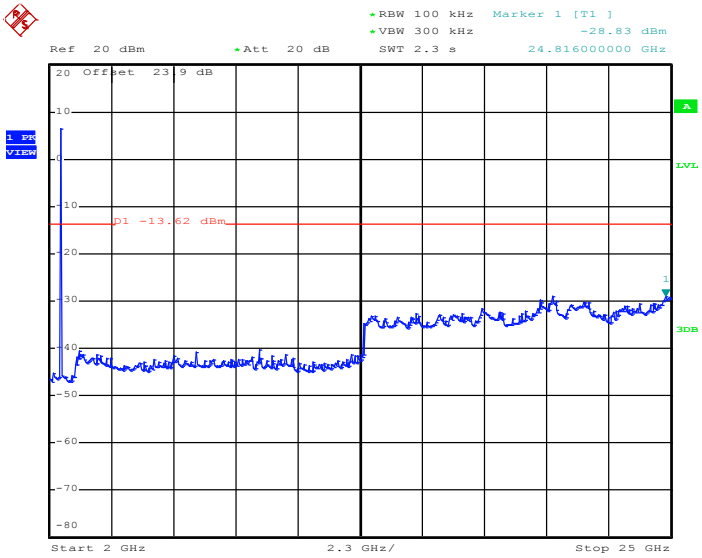
Test Mode :	2Mbps	**Temperature :**	24~26℃
Test Channel :	39	**Relative Humidity :**	50~53%
		Test Engineer :	Bill Kuo

2Mbps CSE Plot on Ch 39 between 30MHz ~ 3 GHz



Date: 16.AUG.2013 18:08:28

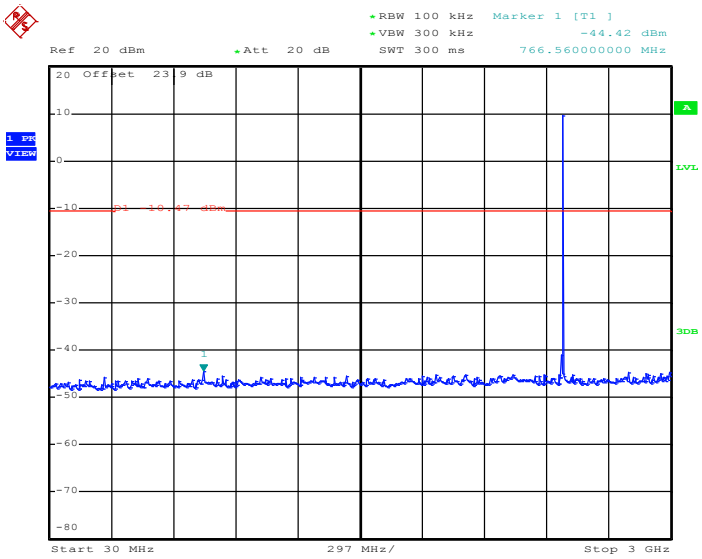
2Mbps CSE Plot on Ch 39 between 2 GHz ~ 25 GHz



Date: 16.AUG.2013 18:09:20

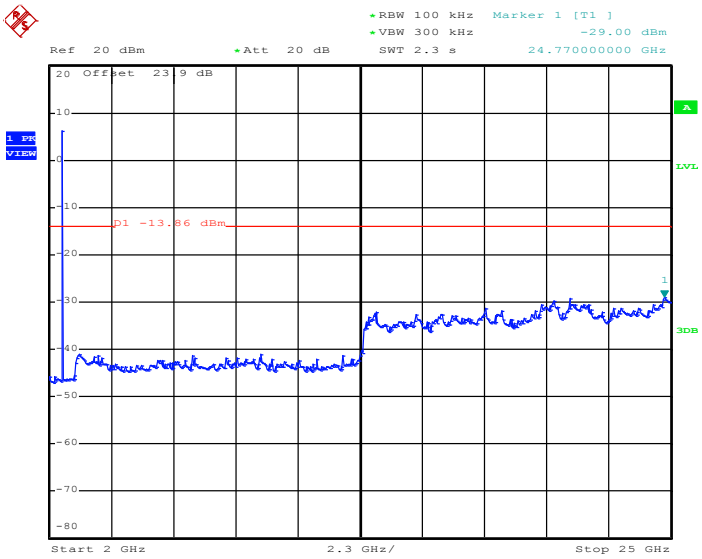
Test Mode :	2Mbps	Temperature :	24~26℃
Test Channel :	78	Relative Humidity :	50~53%
		Test Engineer :	Bill Kuo

2Mbps CSE Plot on Ch 78 between 30MHz ~ 3 GHz



Date: 16.AUG.2013 18:10:12

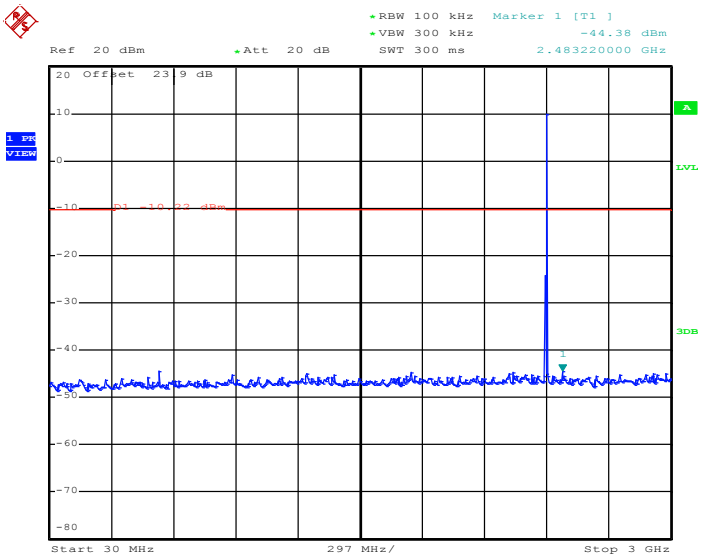
2Mbps CSE Plot on Ch 78 between 2 GHz ~ 25 GHz



Date: 16.AUG.2013 18:11:04

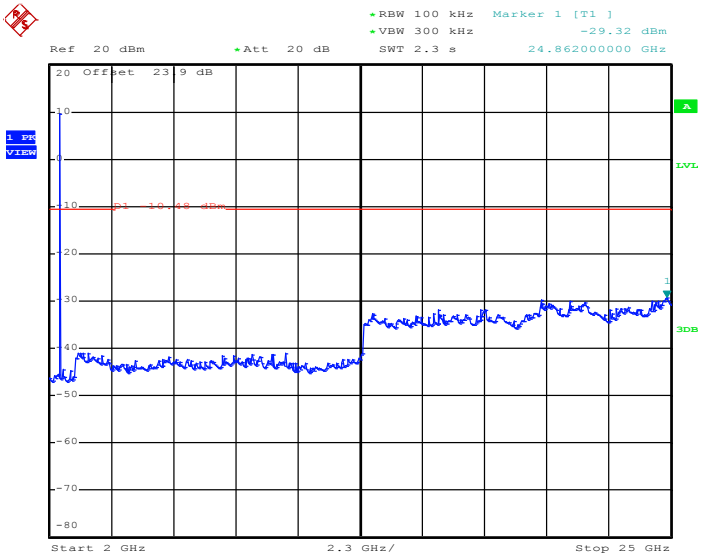
Test Mode :	3Mbps	**Temperature :**	24~26℃
Test Channel :	00	**Relative Humidity :**	50~53%
		Test Engineer :	Bill Kuo

3Mbps CSE Plot on Ch 00 between 30MHz ~ 3 GHz



Date: 16.AUG.2013 17:53:39

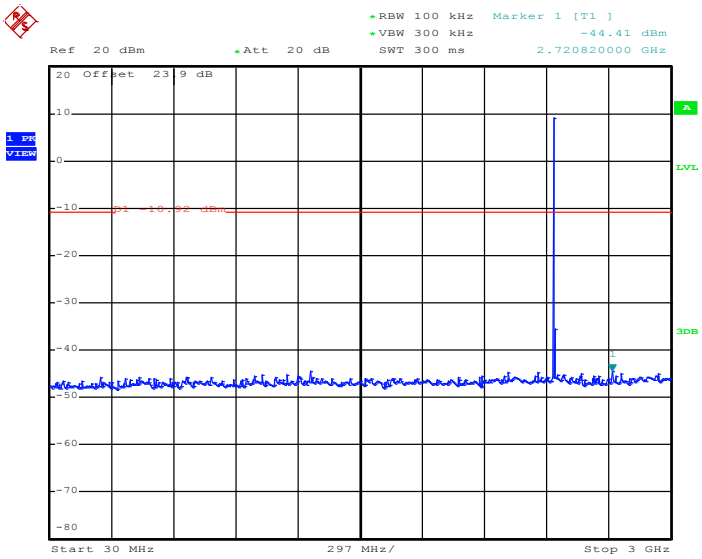
3Mbps CSE Plot on Ch 00 between 2 GHz ~ 25 GHz



Date: 16.AUG.2013 17:54:31

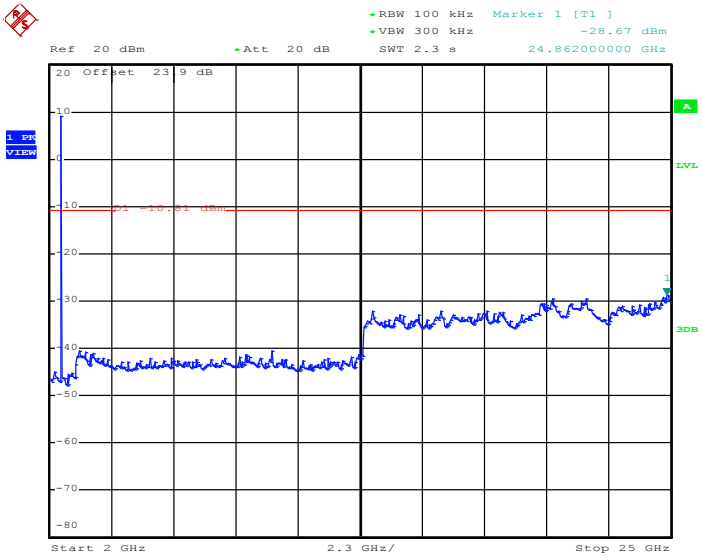
Test Mode :	3Mbps	**Temperature :**	24~26℃
Test Channel :	39	**Relative Humidity :**	50~53%
		Test Engineer :	Bill Kuo

3Mbps CSE Plot on Ch 39 between 30MHz ~ 3 GHz



Date: 16.AUG.2013 17:55:23

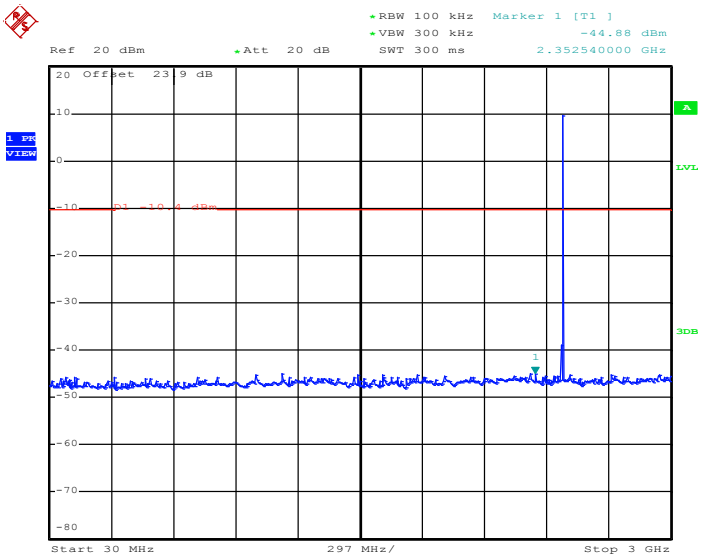
3Mbps CSE Plot on Ch 39 between 2 GHz ~ 25 GHz



Date: 16.AUG.2013 17:56:15

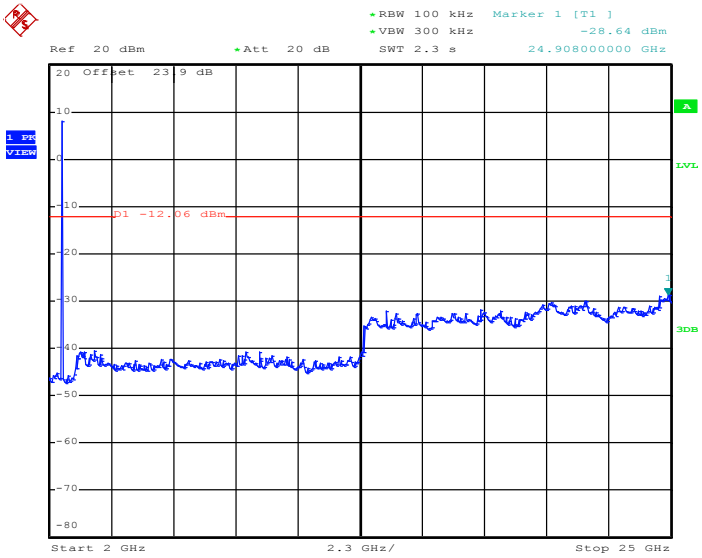
Test Mode :	3Mbps	**Temperature :**	24~26℃
Test Channel :	78	**Relative Humidity :**	50~53%
		Test Engineer :	Bill Kuo

3Mbps CSE Plot on Ch 78 between 30MHz ~ 3 GHz



Date: 16.AUG.2013 17:57:07

3Mbps CSE Plot on Ch 78 between 2 GHz ~ 25 GHz



Date: 16.AUG.2013 17:58:00

3.8 Radiated Band Edges and Spurious Emission Measurement

3.8.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

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

3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

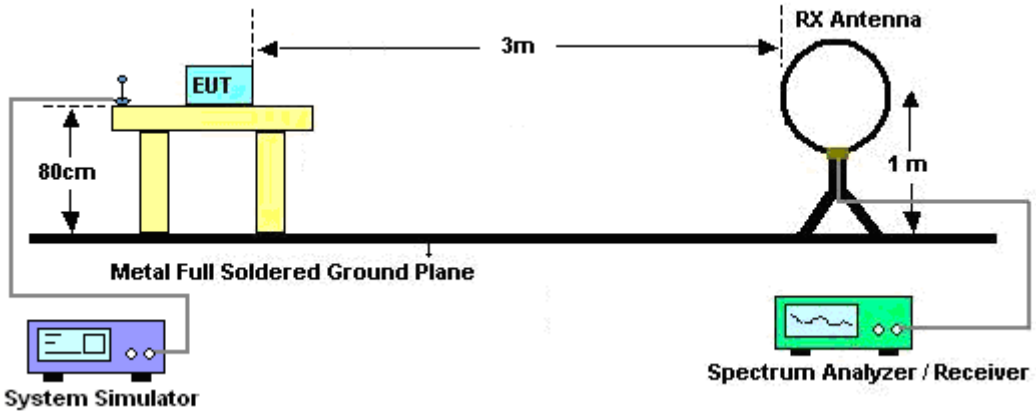
3.8.3 Test Procedures

1. The testing follows the guidelines in Spurious Radiated Emissions of FCC Public Notice DA 00-705 Measurement Guidelines.
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
   (3) For average measurement: use duty cycle correction factor method per 15.35(c).
   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 Emission Level = Peak Emission Level + 20*log(Duty cycle)
7. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

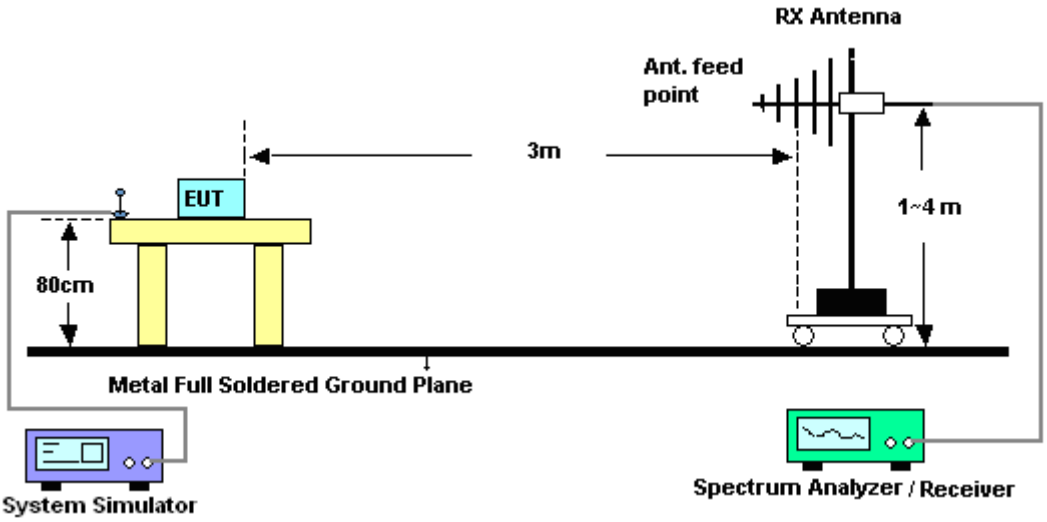
Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (24.73dB) derived from 20log (dwell time/100ms).

3.8.4 Test Setup

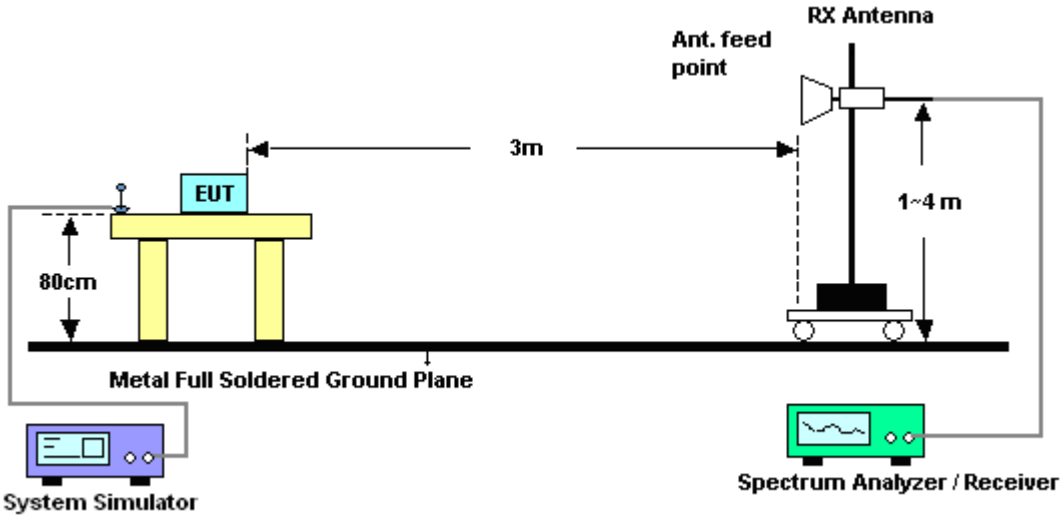
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz

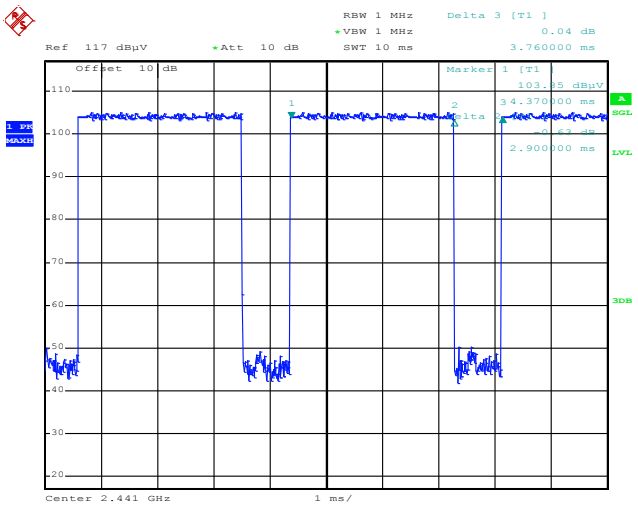


3.8.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

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.

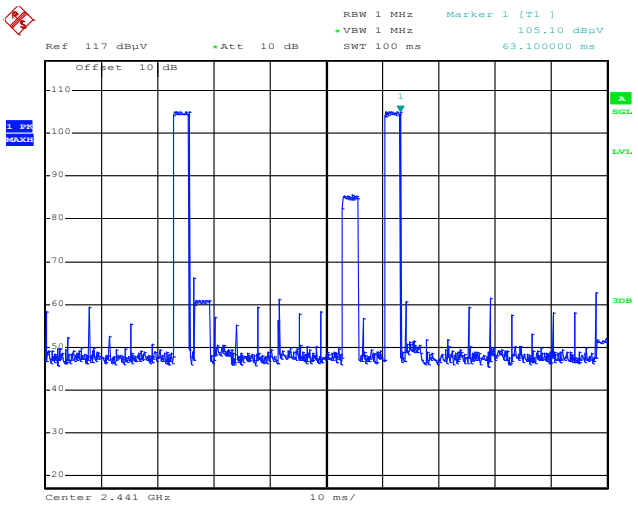
3.8.6 Duty cycle correction factor for average measurement

3DH5 on time (One Pulse) Plot on Channel 39



Date: 15.AUG.2013 14:27:16

3DH5 on time (Count Pulses) Plot on Channel 39



Date: 15.AUG.2013 14:25:33

Note:

1. Worst case Duty cycle = on time/100 milliseconds = 2 * 2.90 / 100 = 5.80 %
2. Worst case Duty cycle correction factor = 20*log(Duty cycle) = -24.73 dB
3. 3DH5 has the highest duty cycle worst case and is reported.

Duty Cycle Correction Factor Consideration for AFH mode:

Bluetooth normal hopping rate is 1600Hz and reduced to 800Hz in AFH mode; due to the reduced number of hopping frequencies, with the same packet configuration the dwell time in each channel frequency within 100msec period is longer in AFH mode than normal mode.

In AFH mode, the minimum hopping frequencies are 20, to get the longest dwell time DH5 packet is observed; the period to have DH5 packet completing one hopping sequence is

2.90 ms x 20 channels = 58.00 ms

There cannot be 2 complete hopping sequences within 100ms period, considering the random hopping behavior, maximum 2 hops can be possibly observed within the period. [100ms / 57.6ms] = 2 hops

Thus, the maximum possible ON time:

2.90 ms x 2 = 5.80 ms

Worst case Duty Cycle Correction factor, which is derived from the maximum possible ON time,

20 x log(5.80 ms/100ms) = -24.73 dB

3.8.7 Test Result of Radiated Spurious at Band Edges

Test Mode :	3Mbps	**Temperature :**	21~23°C
Test Channel :	00	**Relative Humidity :**	51~53%
		Test Engineer :	Kyle Jhuang

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**
2389.56	66.48	-7.52	74	61.66	32.18	6.91	34.27	130	234	Peak
2389.56	41.75	-12.25	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**
2389.56	65.31	-8.69	74	60.49	32.18	6.91	34.27	161	276	Peak
2389.56	40.58	-13.42	54	-	-	-	-	-	-	Average

Test Mode :	3Mbps	**Temperature :**	21~23°C
Test Channel :	78	**Relative Humidity :**	51~53%
		Test Engineer :	Kyle Jhuang

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	70.56	-3.44	74	65.65	32.28	7.06	34.43	100	237	Peak
2483.5	45.83	-8.17	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**
2483.53	69.64	-4.36	74	64.73	32.28	7.06	34.43	150	282	Peak
2483.53	44.91	-9.09	54	-	-	-	-	-	-	Average

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

Note: Pre-scanned all test modes and only choose the worst case mode recorded in the test report for radiated spurious emission below 1GHz.

Test Mode :	3Mbps	**Temperature :**	21~23°C
Test Channel :	00	**Relative Humidity :**	51~53%
Test Engineer :	Kyle Jhuang	**Polarization :**	Horizontal
Remark :	1. 2402 MHz is fundamental signal which can be ignored. 2. 7206 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. For example, 108.36 dBμV/m - 20dB = 88.36 dBμV/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
2402	108.36	-	-	103.57	32.18	6.91	34.3	130	234	Peak
2402	83.63	-	-	-	-	-	-	-	-	Average
4803	40.96	-33.04	74	56.91	34.26	8.75	58.96	100	0	Peak
4803	16.23	-37.77	54	-	-	-	-	-	-	Average
7206	42.63	-45.73	88.36	53.39	36.06	10.81	57.63	100	0	Peak

Note: Other harmonics are lower than background noise.

Test Mode :	3Mbps	**Temperature :**	21~23°C
Test Channel :	00	**Relative Humidity :**	51~53%
Test Engineer :	Kyle Jhuang	**Polarization :**	Vertical
Remark :	1. 2402 MHz is fundamental signal which can be ignored. 2. 7206 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
2402	107.63	-	-	102.84	32.18	6.91	34.3	161	276	Peak
2402	82.9	-	-	-	-	-	-	-	-	Average
4803	41.34	-32.66	74	57.29	34.26	8.75	58.96	100	0	Peak
4803	16.61	-37.39	54	-	-	-	-	-	-	Average
7206	42.42	-45.21	87.63	53.18	36.06	10.81	57.63	100	0	Peak

Note: Other harmonics are lower than background noise.

Test Mode :	3Mbps	Temperature :	21~23°C
Test Channel :	39	Relative Humidity :	51~53%
Test Engineer :	Kyle Jhuang	Polarization :	Horizontal
Remark :	2442 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
2442	109.37	-	-	104.53	32.24	6.99	34.39	100	234	Peak
2442	84.64	-	-	-	-	-	-	-	-	Average
4881	41.2	-32.8	74	56.9	34.28	8.85	58.83	100	0	Peak
4881	16.47	-37.53	54	-	-	-	-	-	-	Average
7323	43.51	-30.49	74	54.31	36.03	10.91	57.74	100	0	Peak
7323	18.78	-35.22	54	-	-	-	-	-	-	Average

Note: Other harmonics are lower than background noise.

Test Mode :	3Mbps	Temperature :	21~23°C
Test Channel :	39	Relative Humidity :	51~53%
Test Engineer :	Kyle Jhuang	Polarization :	Vertical
Remark :	2442 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
2442	108.31	-	-	103.47	32.24	6.99	34.39	127	260	Peak
2442	83.58	-	-	-	-	-	-	-	-	Average
4881	40.48	-33.52	74	56.18	34.28	8.85	58.83	100	0	Peak
4881	15.75	-38.25	54	-	-	-	-	-	-	Average
7323	42.25	-31.75	74	53.05	36.03	10.91	57.74	100	0	Peak
7323	17.52	-36.48	54	-	-	-	-	-	-	Average

Note: Other harmonics are lower than background noise.

Test Mode :	3Mbps	Temperature :	21~23°C
Test Channel :	78	Relative Humidity :	51~53%
Test Engineer :	Kyle Jhuang	Polarization :	Horizontal
Remark :	2480 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
42.96	23.89	-16.11	40	42.75	11.7	0.64	31.2	100	58	Peak
137.19	23.13	-20.37	43.5	41.6	11.44	1.19	31.1	-	-	Peak
240.06	27.28	-18.72	46	44.82	11.93	1.53	31	-	-	Peak
479.9	20.26	-25.74	46	31	17.68	2.38	30.8	-	-	Peak
514.9	21.97	-24.03	46	31.8	18.35	2.48	30.66	-	-	Peak
720	26.94	-19.06	46	33.46	20.89	2.99	30.4	-	-	Peak
2480	109.41	-	-	104.5	32.28	7.06	34.43	100	237	Peak
2480	84.68	-	-	-	-	-	-	-	-	Average
4959	41.22	-32.78	74	56.67	34.29	8.92	58.66	100	0	Peak
4959	16.49	-37.51	54	-	-	-	-	-	-	Average
7440	42.28	-31.72	74	53.08	36.01	11.04	57.85	100	0	Peak
7440	17.55	-36.45	54	-	-	-	-	-	-	Average

Note: Other harmonics are lower than background noise.

Test Mode :	3Mbps	Temperature :	21~23°C
Test Channel :	78	Relative Humidity :	51~53%
Test Engineer :	Kyle Jhuang	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
32.7	28.21	-11.79	40	41.19	17.84	0.56	31.38	100	158	Peak
68.34	26.12	-13.88	40	50.27	6.28	0.83	31.26	-	-	Peak
167.97	20.6	-22.9	43.5	40.74	9.75	1.23	31.12	-	-	Peak
479.9	20.2	-25.8	46	30.94	17.68	2.38	30.8	-	-	Peak
527.5	22.63	-23.37	46	32.28	18.56	2.5	30.71	-	-	Peak
720	24.03	-21.97	46	30.55	20.89	2.99	30.4	-	-	Peak
2480	106.86	-	-	101.95	32.28	7.06	34.43	150	282	Peak
2480	82.13	-	-	-	-	-	-	-	-	Average
4959	40.84	-33.16	74	56.29	34.29	8.92	58.66	100	0	Peak
4959	16.11	-37.89	54	-	-	-	-	-	-	Average
7440	42.83	-31.17	74	53.63	36.01	11.04	57.85	100	0	Peak
7440	18.1	-35.9	54	-	-	-	-	-	-	Average

Note: Other harmonics are lower than background noise.

3.9 AC Conducted Emission Measurement

3.9.1 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 (dBμV)	
	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.

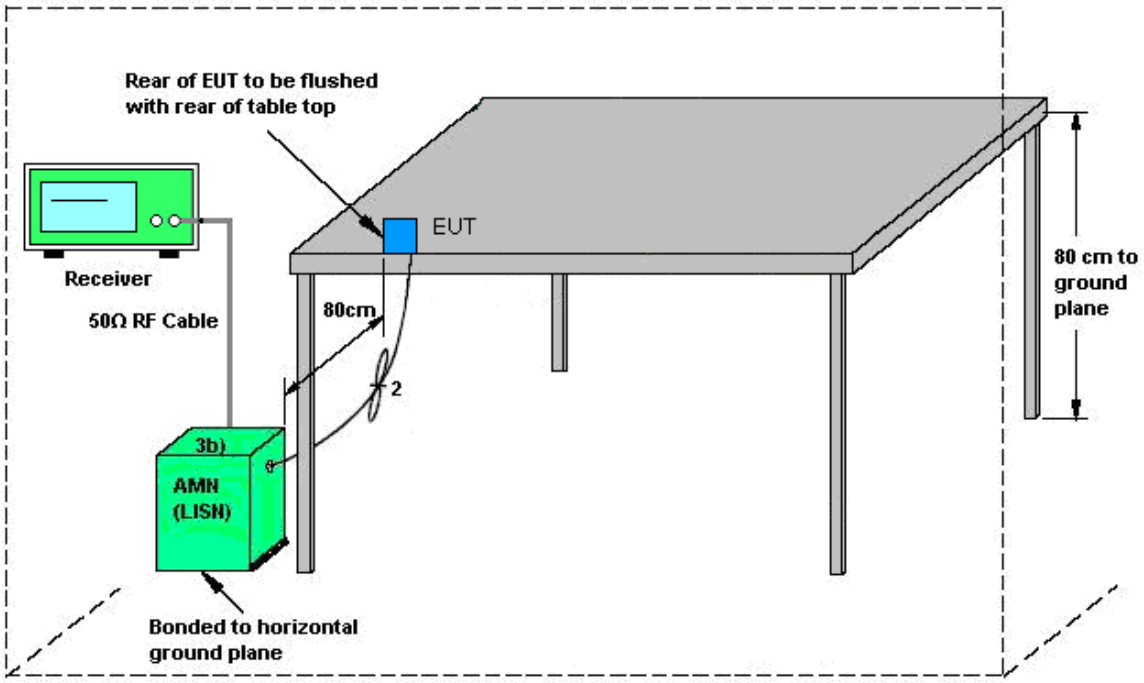
3.9.2 Measuring Instruments

See list of measuring instruments of this test report.

3.9.3 Test Procedures

1. 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.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

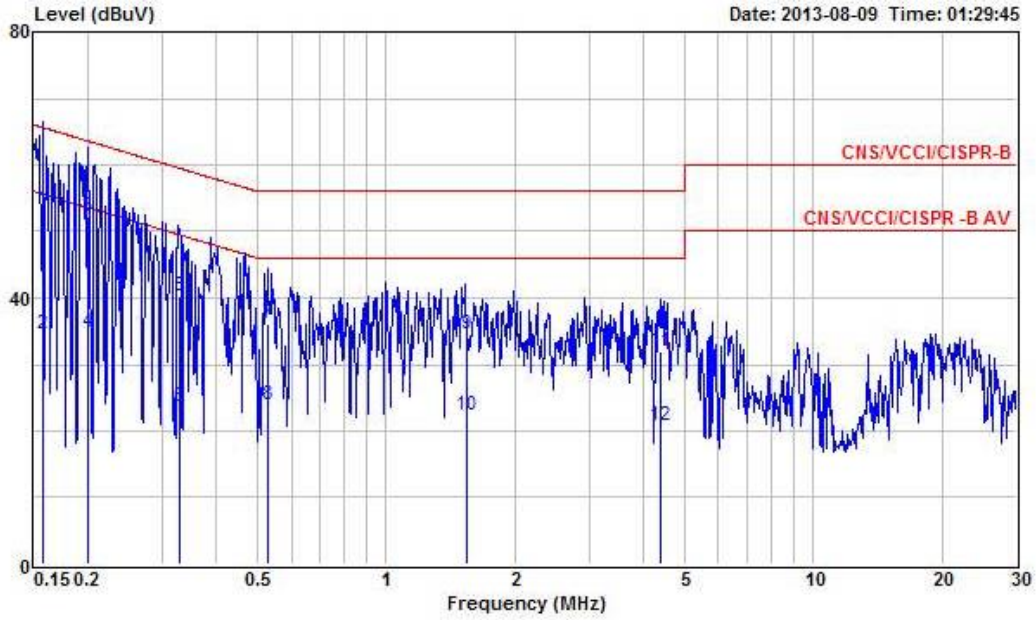
3.9.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.9.5 Test Result of AC Conducted Emission

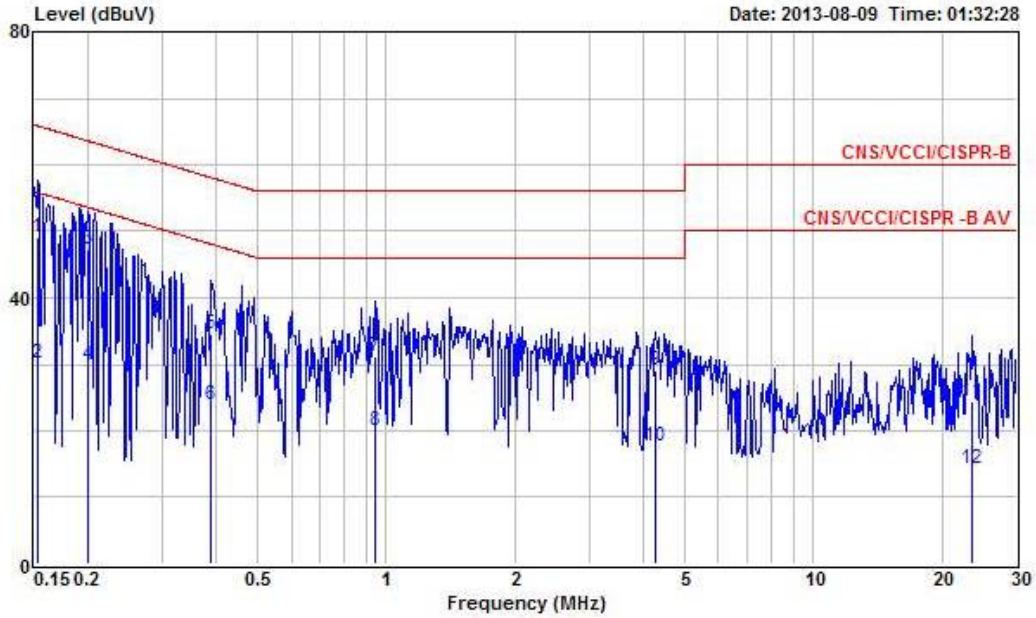
Test Mode :	Mode 1	**Temperature :**	24~25℃
Test Engineer :	David Du	**Relative Humidity :**	56~57%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	WLAN Link + Bluetooth Link + USB Cable (Charging from Adapter) + MP3 + Earphone + H Pattern for Sample 4		



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B LISN 2001/004-121228 LINE
EUT : ASUS Tablet
Power : 120V/60Hz
Model : ME180A

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.157	53.35	-12.27	65.62	53.12	0.13	0.10	QP
2	0.157	34.45	-21.17	55.62	34.22	0.13	0.10	Average
3	0.200	52.24	-11.37	63.61	52.00	0.14	0.10	QP
4	0.200	34.80	-18.81	53.61	34.56	0.14	0.10	Average
5	0.327	40.38	-19.15	59.53	40.13	0.15	0.10	QP
6	0.327	23.75	-25.78	49.53	23.50	0.15	0.10	Average
7	0.527	36.15	-19.85	56.00	35.89	0.16	0.10	QP
8	0.527	23.93	-22.07	46.00	23.67	0.16	0.10	Average
9	1.540	34.47	-21.53	56.00	34.19	0.18	0.10	QP
10	1.540	22.29	-23.71	46.00	22.01	0.18	0.10	Average
11	4.410	31.99	-24.01	56.00	31.74	0.24	0.01	QP
12	4.410	20.72	-25.28	46.00	20.47	0.24	0.01	Average

Test Mode :	Mode 1	**Temperature :**	24~25℃
Test Engineer :	David Du	**Relative Humidity :**	56~57%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	WLAN Link + Bluetooth Link + USB Cable (Charging from Adapter) + MP3 + Earphone + H Pattern for Sample 4		



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B LISN 2001/004-121228 NEUTRAL
EUT : ASUS Tablet
Power : 120V/60Hz
Model : ME180A

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.153	49.14	-16.70	65.84	48.93	0.11	0.10	QP
2	0.153	30.12	-25.72	55.84	29.91	0.11	0.10	Average
3	0.201	47.23	-16.34	63.57	47.03	0.10	0.10	QP
4	0.201	29.97	-23.60	53.57	29.77	0.10	0.10	Average
5	0.387	34.45	-23.68	58.13	34.23	0.12	0.10	QP
6	0.387	23.91	-24.22	48.13	23.69	0.12	0.10	Average
7	0.938	31.15	-24.85	56.00	30.91	0.14	0.10	QP
8	0.938	20.02	-25.98	46.00	19.78	0.14	0.10	Average
9	4.270	28.97	-27.03	56.00	28.74	0.22	0.01	QP
10	4.270	17.71	-28.29	46.00	17.48	0.22	0.01	Average
11	23.640	24.35	-35.65	60.00	23.61	0.54	0.20	QP
12	23.640	14.36	-35.64	50.00	13.62	0.54	0.20	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

Enbedded in Antenna.

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	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 07, 2013	Aug. 15, 2013~ Aug. 16, 2013	Jun. 06, 2014	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	300MHz~40GHz	Feb. 05, 2013	Aug. 15, 2013~ Aug. 16, 2013	Feb. 04, 2014	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	300MHz~40GHz	Feb. 05, 2013	Aug. 15, 2013~ Aug. 16, 2013	Feb. 04, 2014	Conducted (TH02-HY)
EMC Receiver	R&S	ESCS 30	100132	9kHz ~ 2.75GHz	Nov. 14, 2012	Aug. 09, 2013	Nov. 13, 2013	Conduction (CO01-HY)
LISN	MessTec	NNB-2/16Z	2001/004	9kHz – 30MHz	Dec. 28, 2012	Aug. 09, 2013	Dec. 27, 2013	Conduction (CO01-HY)
LISN (Support Unit)	MessTec	NNB-2/16Z	2001/009	9kHz ~ 30MHz	Jan. 08, 2013	Aug. 09, 2013	Jan. 07, 2014	Conduction (CO01-HY)
EMI Filter	LINDGREN	LRE-2060	1004	< 450Hz	N/A	Aug. 09, 2013	N/A	Conduction (CO01-HY)
EMI Filter	LINDGREN	N6006	201052	0~60Hz	N/A	Aug. 09, 2013	N/A	Conduction (CO01-HY)
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832010001	9kHz ~ 30MHz	Mar. 01, 2013	Aug. 09, 2013	Feb. 28, 2014	Conduction (CO01-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9KHz~7GHz	Sep. 03, 2012	Aug. 15, 2013	Sep. 02, 2013	Radiation (03CH07-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101067	9KHz~30GHz	Nov. 30, 2012	Aug. 15, 2013	Nov. 29, 2013	Radiation (03CH07-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz~1GHz	Oct. 06, 2012	Aug. 15, 2013	Oct. 05, 2013	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	75962	1GHz~18GHz	Aug. 22, 2012	Aug. 15, 2013	Aug. 21, 2013	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	18GHz~40GHz	Sep. 28, 2012	Aug. 15, 2013	Sep. 27, 2013	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	30MHz~1GHz	Feb. 26, 2013	Aug. 15, 2013	Feb. 25, 2014	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~26.5GHz	Dec. 01, 2012	Aug. 15, 2013	Nov. 30, 2013	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	159088	DC~18G High Gain	Feb. 27, 2013	Aug. 15, 2013	Feb. 26, 2014	Radiation (03CH07-HY)
Turn Table	ChainTek	ChainTek 3000	N/A	0 ~ 360 degree	N/A	Aug. 15, 2013	N/A	Radiation (03CH07-HY)
Antenna Mast	ChainTek	ChainTek 3000	N/A	N/A	N/A	Aug. 15, 2013	N/A	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**