FCC/IC RF Test Report

APPLICANT	:	**Sony Mobile Communications AB**
EQUIPMENT	:	**Smart phone**
BRAND NAME	:	**SONY**
MODEL NAME	:	**D2302**
TYPE NAME	:	**PM-0721-BV**
FCC ID	:	**PY7PM-0721**
STANDARD	:	**FCC Part 15 Subpart C §15.247** **IC RSS-210 issue 8**
CLASSIFICATION	:	**(DSS) Spread Spectrum Transmitter**

The product was received on Nov. 02, 2013 and testing was completed on Nov. 22, 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

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR3N0205A	Rev. 01	Initial issue of report	Jan. 20, 2014
FR3N0205A	Rev. 02	Update report for adding Loop Antenna in section 4	Jan. 31, 2014

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	≤ 125 mW	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 12.41 dB at 2483.500 MHz
3.9	15.207	RSS-Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 10.20 dB at 2.974 MHz
3.10	15.203 & 15.247(b)	RSS-210 A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Sony Mobile Communications AB
Nya Vattentornet, 22188 Lund, Sweden

1.2 Manufacturer

Compal Communications, INC.
No. 385, Yangguang Street, Neihu, Taipei 11491, Taiwan

1.3 Feature of Equipment Under Test

The Equipment Under Test (hereafter called: EUT) is smart phone supporting, GSM / WCDMA / Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n, Bluetooth with FM Receiver, GPS, and NFC features, and below is details of information.

General Information of Equipment Under Test	
Equipment	Smart phone
Brand Name	SONY
Model Name	D2302
Type Name	PM-0721-BV
FCC ID	PY7PM-0721
GSM Operating Band(s)	GSM 850/900/1800/1900MHz
GPRS / EGPRS Multi Slot Class	GPRS Class 33 , EGPRS Class 33
WCDMA Operating Band(s)	FDD Band I / II / V / VIII
WCDMA Rel. Version	Rel. 7
Wi-Fi Specification	802.11b/g/n (HT20) / 802.11an (HT20 / HT40)
Bluetooth Version	v3.0+EDR / v4.0-LE
NFC Specification	ISO14443A / ISO14443B / Felica
Power Supply	Battery / AC Adapter / Car Charger

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

1.4 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) : 7.83 dBm (0.0061 W) Bluetooth EDR (2Mbps) : 8.76 dBm (0.0075 W) Bluetooth EDR (3Mbps) : 9.20 dBm (0.0083 W)
Antenna Type	PIFA Antenna type with gain 1.31 dBi
Type of Modulation	Bluetooth BR (1Mbps) : GFSK Bluetooth EDR (2Mbps) : π/4-DQPSK Bluetooth EDR (3Mbps) : 8-DPSK
EUT #1	IMEI 1 : 004402146971357 IMEI 2 : 004402146971365 S/N : ZH8001K0XF
EUT #2	IMEI 1 : 004402147201424 IMEI 2 : 004402147201432 S/N : ZH8001YT43
EUT #3	IMEI 1 : 004402146969419 IMEI 2 : 004402146969427 S/N : ZH8001HJSF
HW Version	A
SW Version	18.0.B.0.23
EUT Stage	Production Unit

Accessory List	
AC Adapter	Model No. : EP800
	Type No. : CAA-0002016-US B
Battery	Model No. : LIS1502ERPC
	Type No. : Sony LIS1502ERPC
Earphone	Model No. : MH410c
	Type No. : AG-1100
USB Cable	Model No. : AHAB EC450
	Part No. : 1242-6715.4

Note:

1. Above EUT list and accessory list used are electrically identical per declared by manufacturer.
2. Above the accessories list are used to exercise the EUT during test, and the serial number of each type of accessories is listed in each section of this report.
3. For other wireless features of this EUT, test report will be issued separately.

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	CO05-HY	03CH08-HY	636805/4086B-2

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
- IC RSS-210 Issue 8
- IC RSS-Gen Issue 3
- NOTICE 2012-DRS0126

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.
3. Per the section 2.2.3 of Notice of 2012-DRS0126, " Receivers Excluded from Industry Canada Requirements", only radiocommunication receivers operating in stand-alone mode within the band 30-960 MHz and scanner receivers are subject to Industry Canada requirements.

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	6.26 dBm	6.99 dBm	7.59 dBm
Ch39	2441MHz	7.83 dBm	8.76 dBm	**9.20 dBm**
Ch78	2480MHz	4.91 dBm	5.68 dBm	6.23 dBm

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

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.

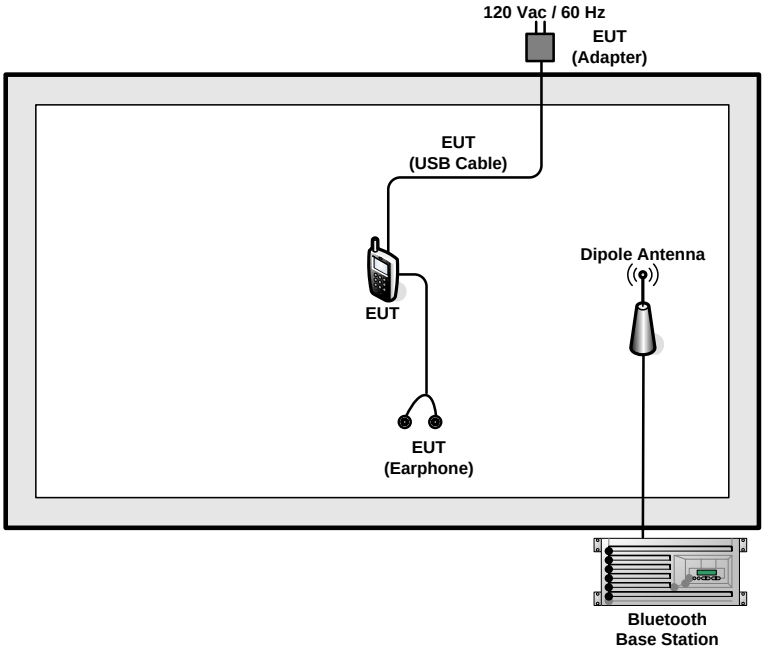
2.2 Test Mode

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

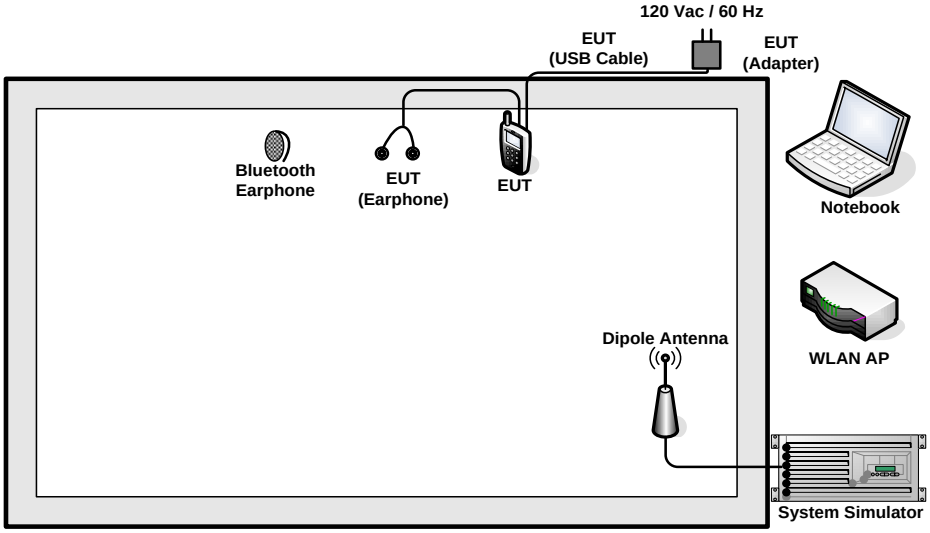
Summary table of Test Cases			
Test Item	**Data Rate / Modulation**		
	Bluetooth BR 1Mbps GFSK	**Bluetooth EDR 2Mbps π/4-DQPSK**	**Bluetooth EDR 3Mbps 8-DPSK**
Conducted Test Cases	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz	Mode 4: CH00_2402 MHz Mode 5: CH39_2441 MHz Mode 6: CH78_2480 MHz	Mode 7: CH00_2402 MHz Mode 8: CH39_2441 MHz Mode 9: CH78_2480 MHz
Radiated Test Cases	**Bluetooth BR 1Mbps GFSK**	**Bluetooth EDR 2Mbps π/4-DQPSK**	**Bluetooth EDR 3Mbps 8-DPSK**
	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
AC Conducted Emission	Mode 1 :GSM1900 Idle + Bluetooth Link + WLAN Idle + MP3 + Earphone + Battery + USB Cable (Charging from Adapter) Mode 2 :GSM1900 Idle + Bluetooth Idle + WLAN Link + MP3 + Earphone + Battery + USB Cable (Charging from Adapter)		

2.3 Connection Diagram of Test System

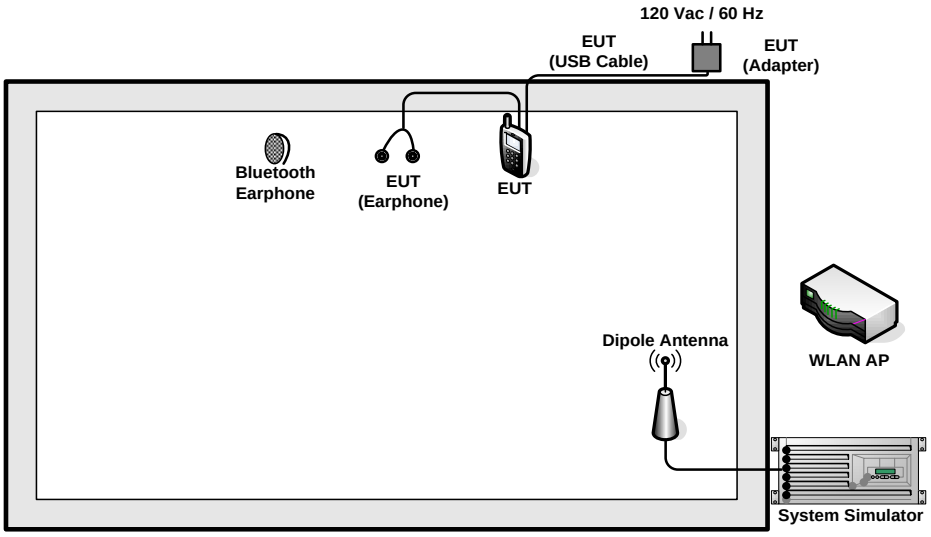
<Bluetooth Tx Mode>



<AC Conducted Emission Mode in WLAN Link>



<AC Conducted Emission Mode in WLAN Idle>



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	Bluetooth Base Station	R&S	CBT32	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	Latitude E6320	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Bluetooth Earphone	Sony Ericsson	SBH20	PY7-RD0010	N/A	N/A
6.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A

2.5 EUT Operation Test Setup

For Bluetooth test items, an engineering test program was provided and enabled to make EUT contact with Bluetooth base station for continuous transmitting and receiving signals.

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.

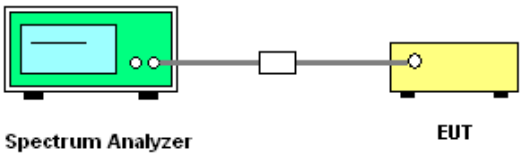
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 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

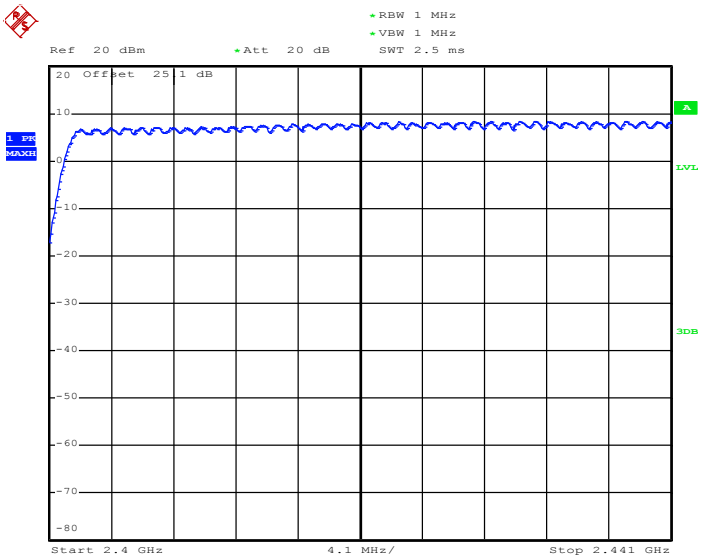


3.1.5 Test Result of Number of Hopping Frequency

Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Citta Ke	Relative Humidity :	48~51%

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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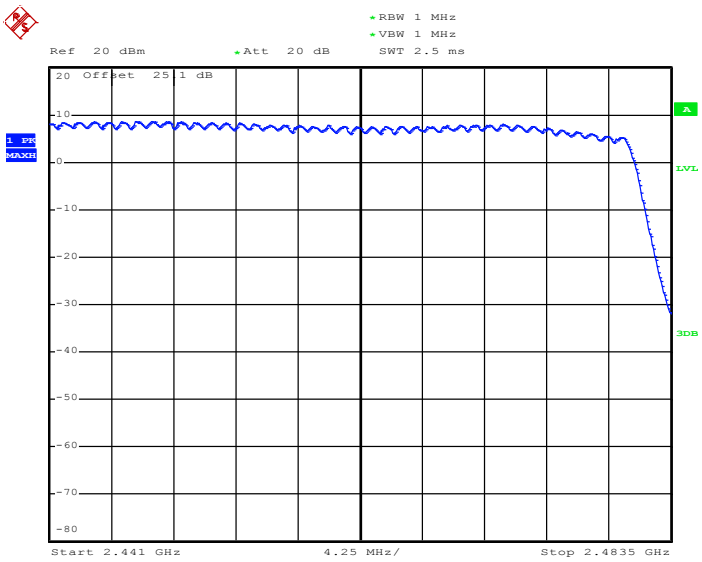

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Note: The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.

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.

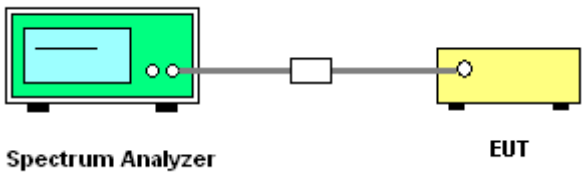
3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 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

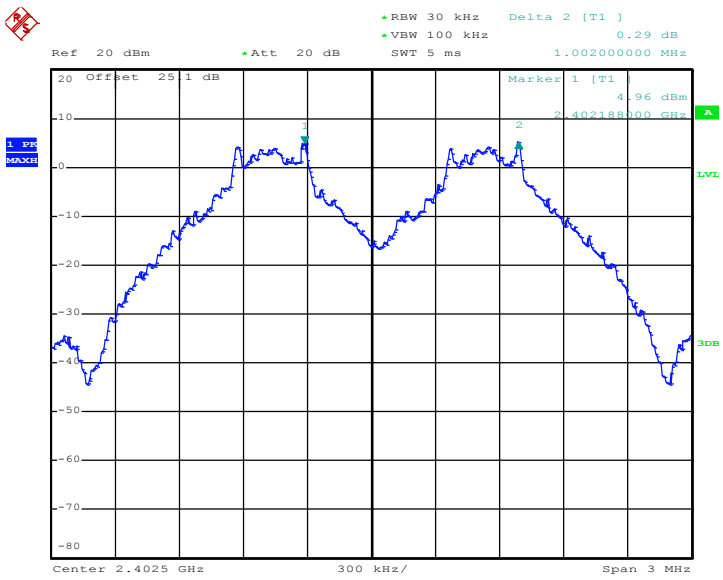


3.2.5 Test Result of Hopping Channel Separation

Test Mode :	1Mbps	Temperature :	24~26℃
Test Engineer :	Citta Ke	Relative Humidity :	48~51%

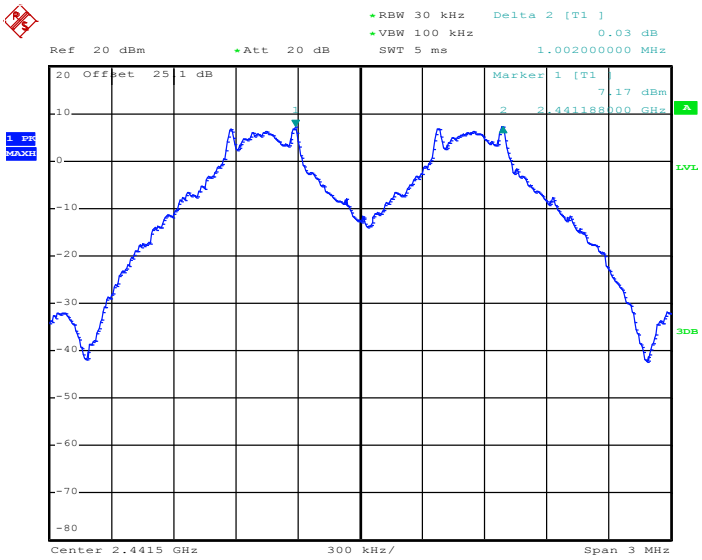
Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.002	0.6267	Pass
39	2441	1.002	0.6133	Pass
78	2480	1.002	0.6240	Pass

Channel Separation Plot on Channel 00 - 01



Note: The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.

Channel Separation Plot on Channel 39 - 40



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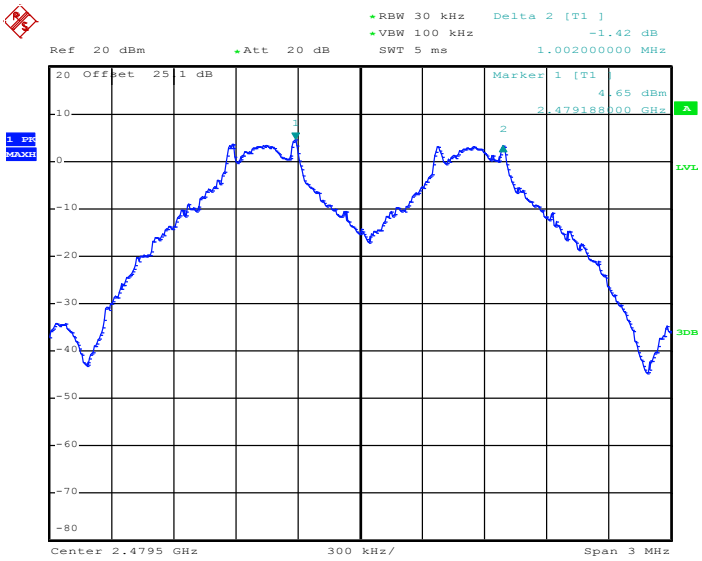
Channel Separation Plot on Channel 77 - 78



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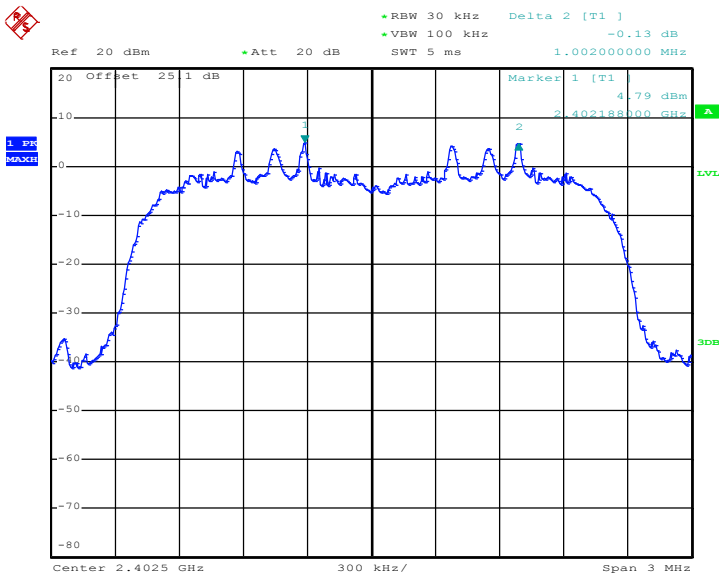
Test Mode :	2Mbps	Temperature :	24~26℃
Test Engineer :	Citta Ke	Relative Humidity :	48~51%

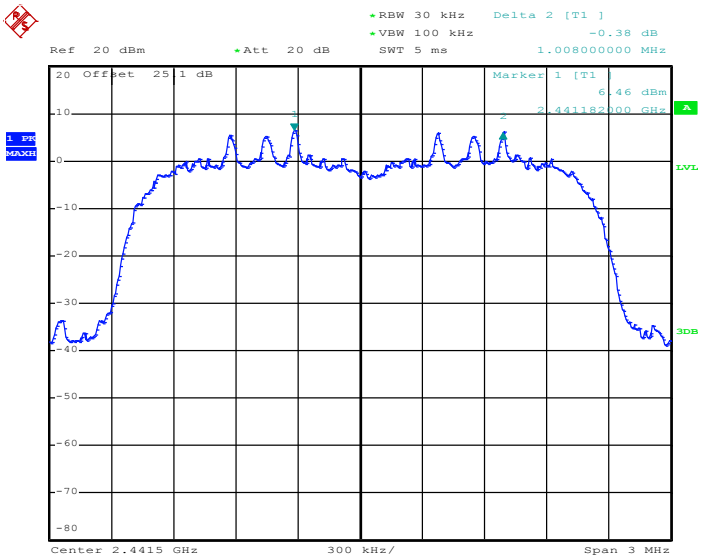
Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.002	0.8520	Pass
39	2441	1.008	0.8520	Pass
78	2480	1.008	0.8520	Pass

Channel Separation Plot on Channel 00 - 01



Note: The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.

Channel Separation Plot on Channel 39 - 40



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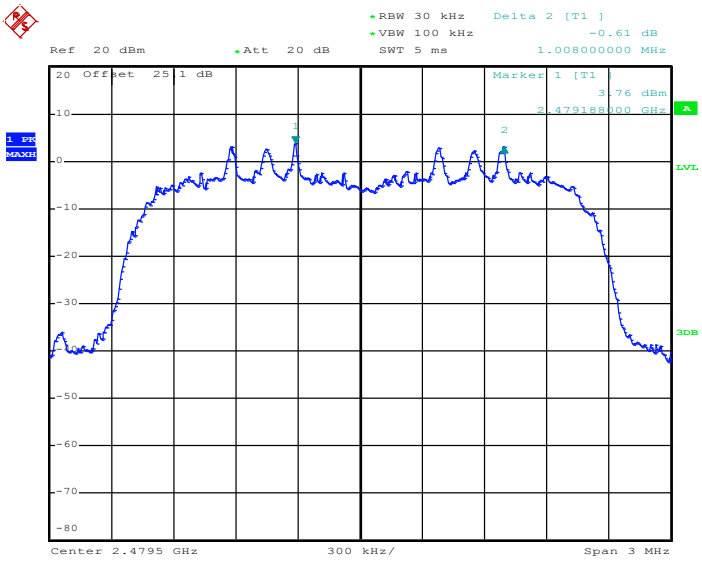
Channel Separation Plot on Channel 77 - 78



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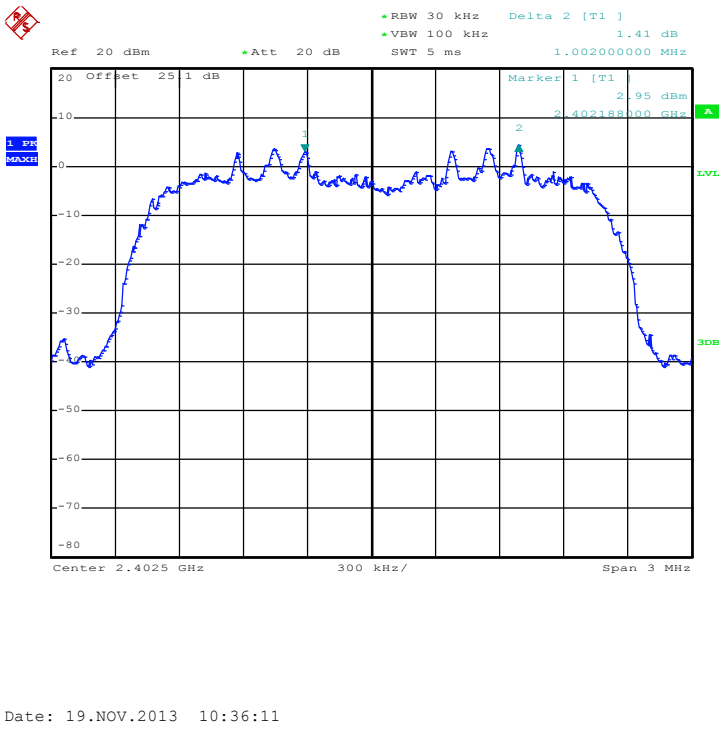
Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Citta Ke	Relative Humidity :	48~51%

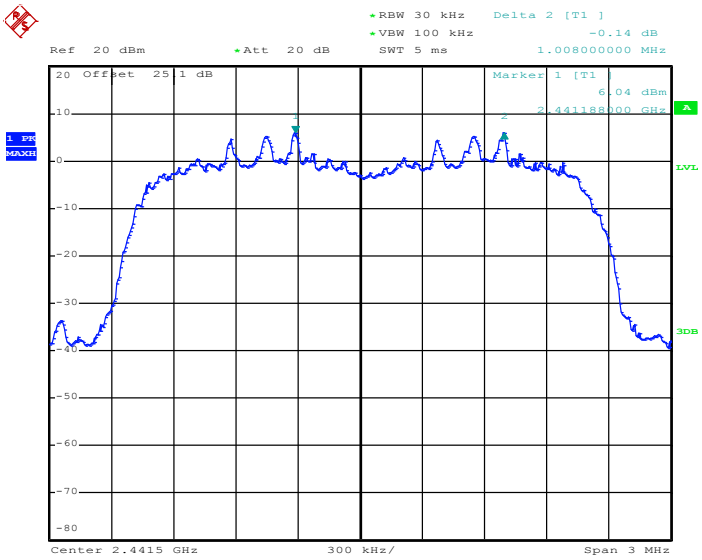
Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.002	0.8640	Pass
39	2441	1.008	0.8560	Pass
78	2480	1.002	0.8600	Pass

Channel Separation Plot on Channel 00 - 01



Note: The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.

Channel Separation Plot on Channel 39 - 40



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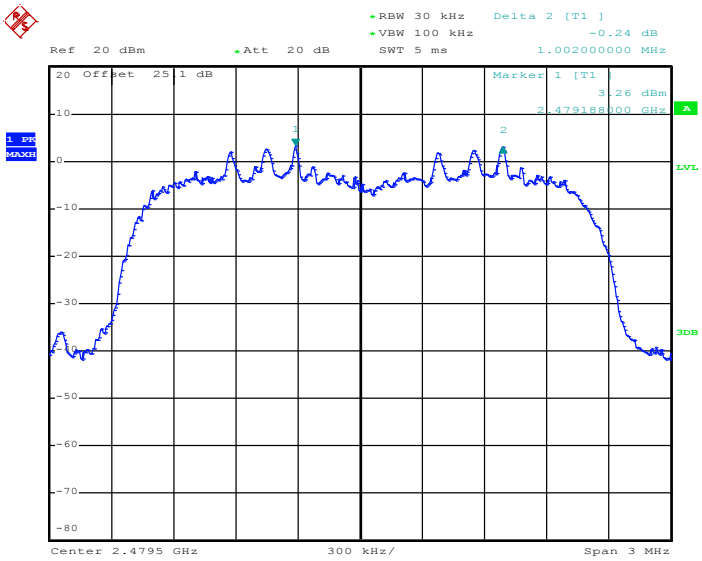
Channel Separation Plot on Channel 77 - 78



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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

The measuring equipment is listed in the section 4 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 :	Citta Ke	Relative Humidity :	48~51%

Mode	Hopping Channel Number	Hops Over Occupancy Time(hops)	Package Transfer Time (msec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
Normal	79	106.67	2.90	0.31	0.4	Pass
AFH	20	53.33	2.90	0.15	0.4	Pass

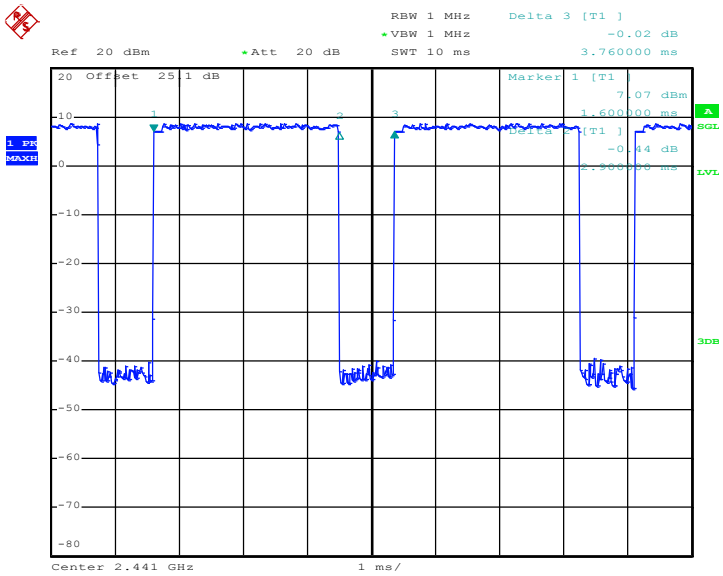
Remark:

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

The measuring equipment is listed in the section 4 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.

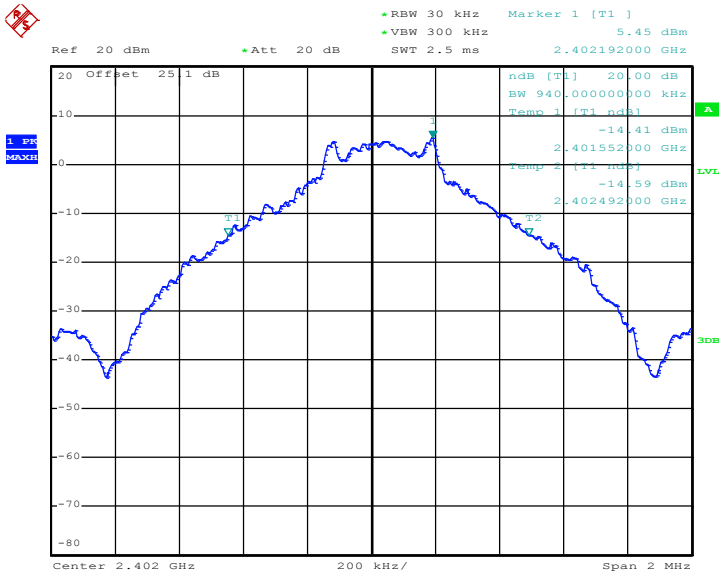
3.4.4 Test Setup

3.4.5 Test Result of 20dB Bandwidth

Test Mode :	1Mbps	Temperature :	24~26℃
Test Engineer :	Citta Ke	Relative Humidity :	48~51%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	0.940
39	2441	0.920
78	2480	0.936

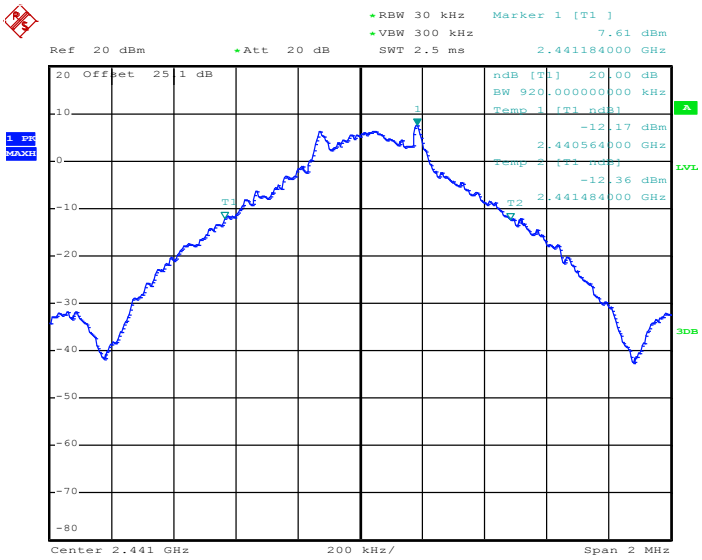
20 dB Bandwidth Plot on Channel 00



Date: 19.NOV.2013 11:08:23

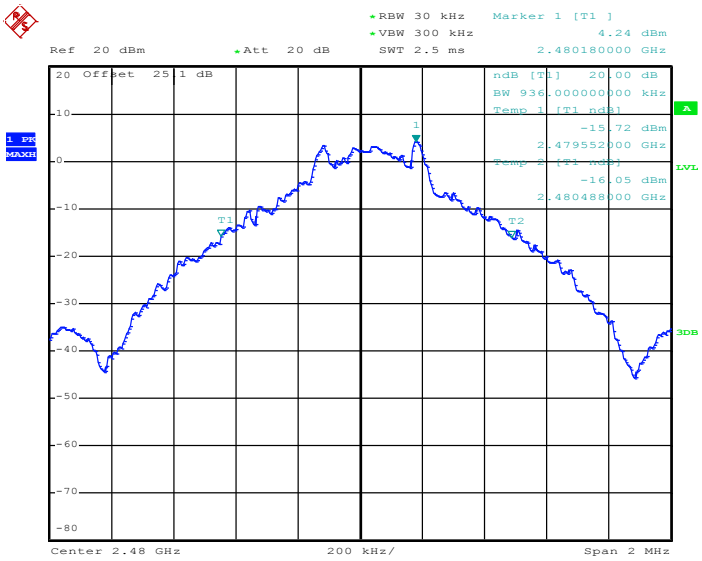
Note: The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.

20 dB Bandwidth Plot on Channel 39



Date: 19.NOV.2013 11:10:01

20 dB Bandwidth Plot on Channel 78

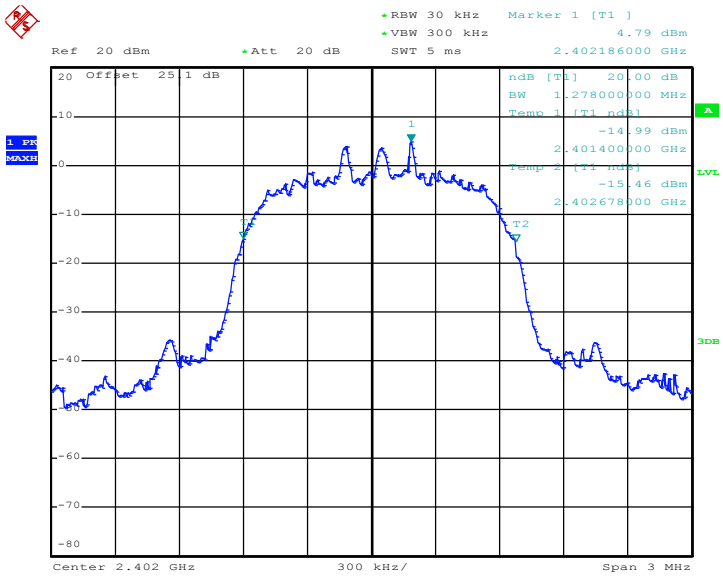


Date: 19.NOV.2013 10:12:29

Test Mode :	2Mbps	Temperature :	24~26℃
Test Engineer :	Citta Ke	Relative Humidity :	48~51%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.278
39	2441	1.278
78	2480	1.278

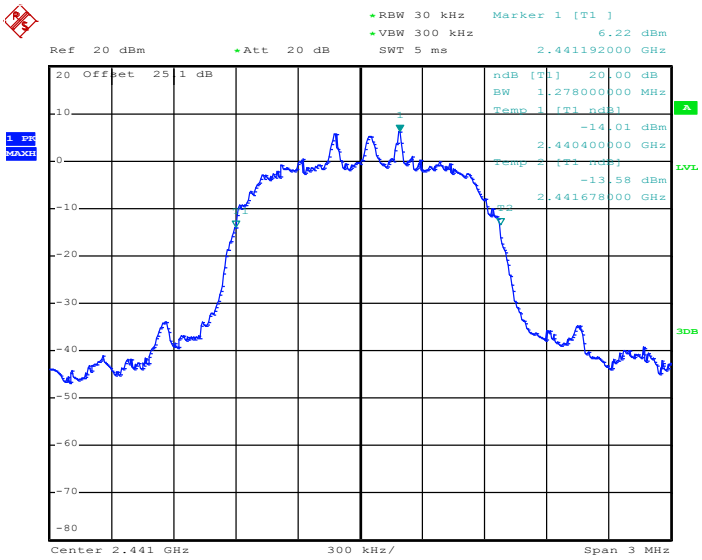
20 dB Bandwidth Plot on Channel 00



Date: 19.NOV.2013 10:20:56

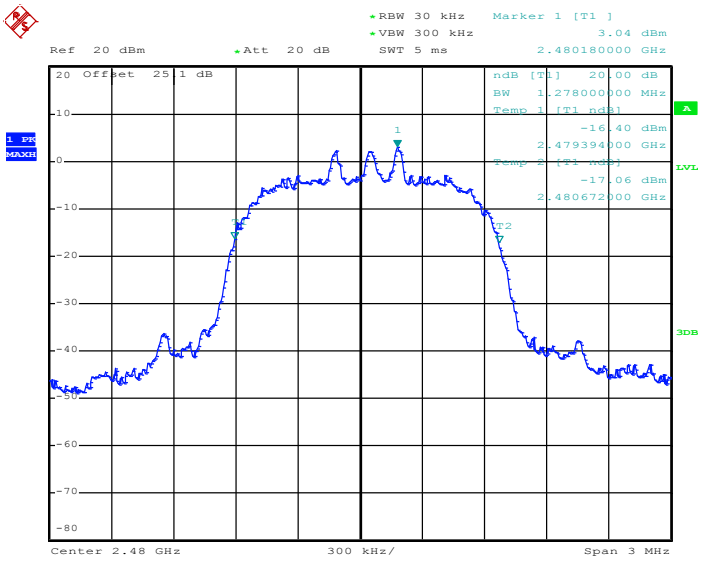
Note: The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.

20 dB Bandwidth Plot on Channel 39



Date: 19.NOV.2013 10:27:15

20 dB Bandwidth Plot on Channel 78

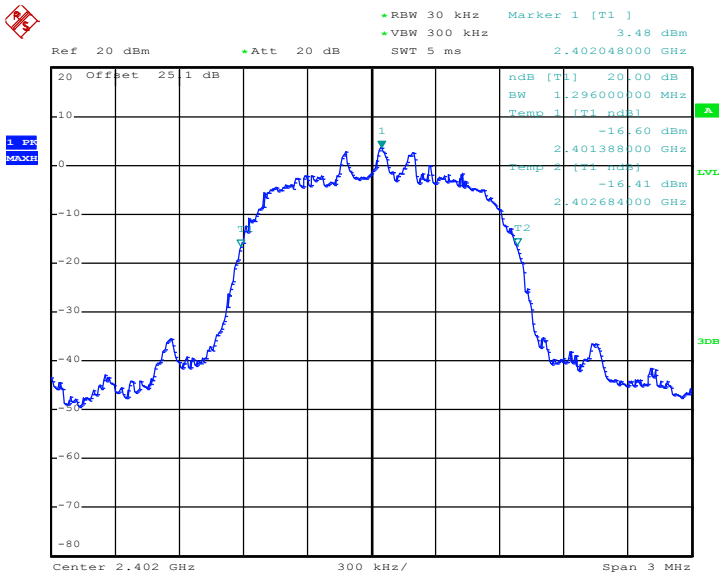


Date: 19.NOV.2013 10:32:13

Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Citta Ke	Relative Humidity :	48~51%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.296
39	2441	1.284
78	2480	1.290

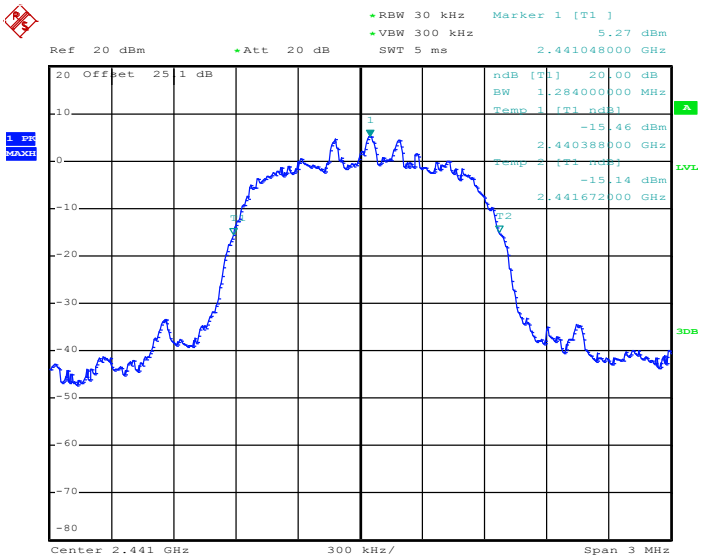
20 dB Bandwidth Plot on Channel 00



Date: 19.NOV.2013 10:37:21

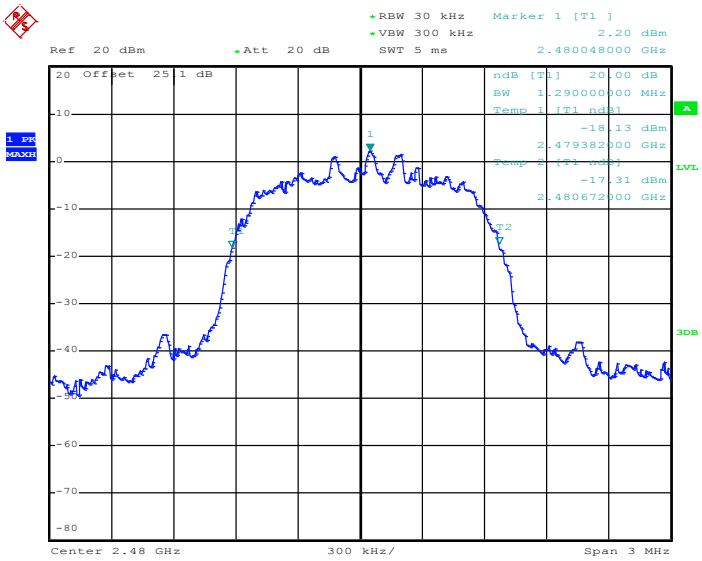
Note: The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.

20 dB Bandwidth Plot on Channel 39



Date: 19.NOV.2013 10:42:21

20 dB Bandwidth Plot on Channel 78



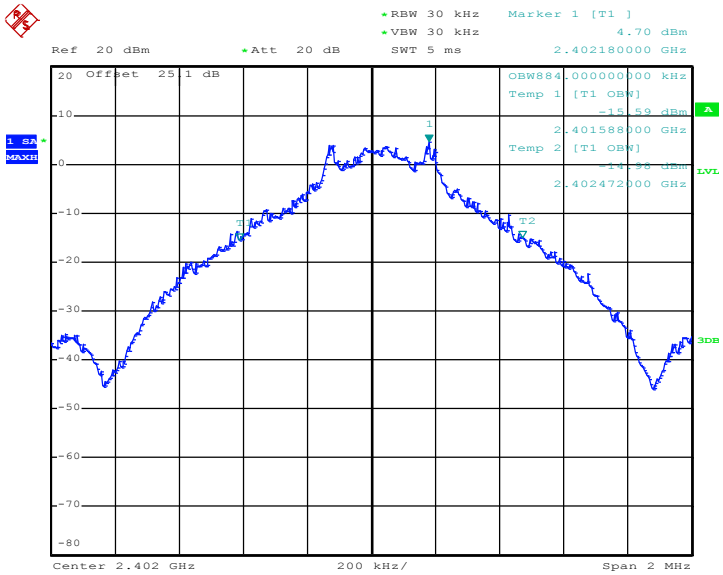
Date: 19.NOV.2013 10:46:26

3.4.6 Test Result of 99% Occupied Bandwidth

Test Mode :	1Mbps	Temperature :	24~26℃
Test Engineer :	Citta Ke	Relative Humidity :	48~51%

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
00	2402	0.884
39	2441	0.888
78	2480	0.892

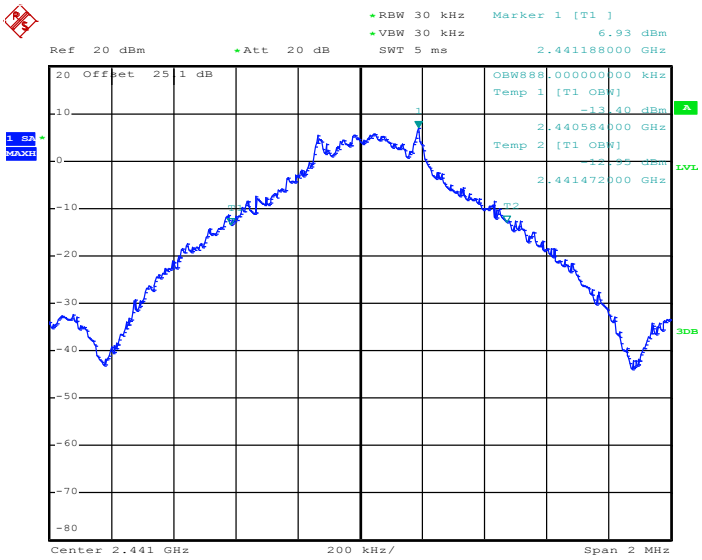
99% Occupied Bandwidth Plot on Channel 00



Date: 19.NOV.2013 09:38:30

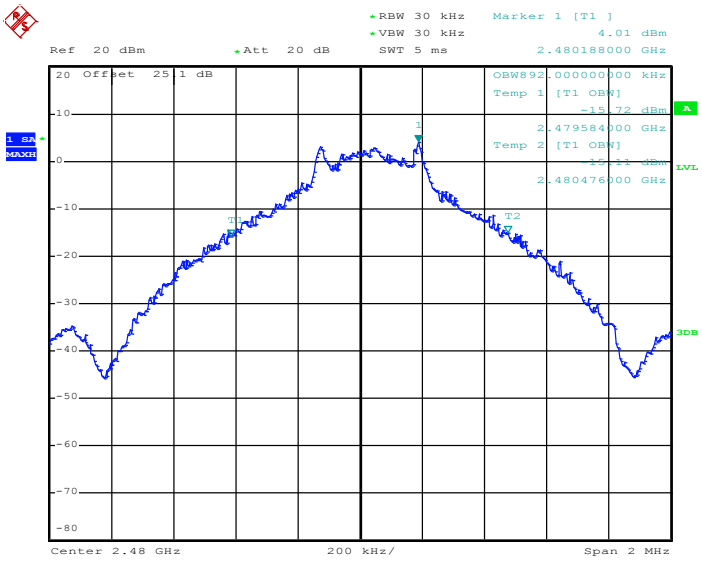
Note: The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.

99% Occupied Bandwidth Plot on Channel 39



Date: 19.NOV.2013 10:07:18

99% Occupied Bandwidth Plot on Channel 78

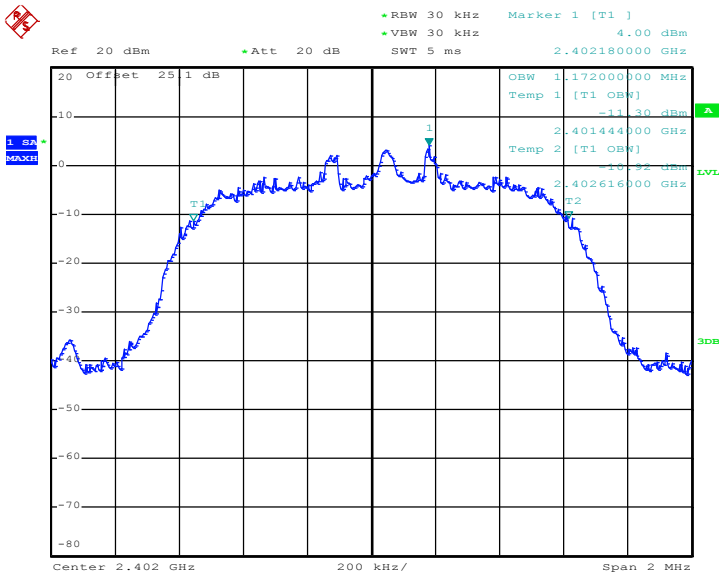


Date: 19.NOV.2013 11:06:03

Test Mode :	2Mbps	Temperature :	24~26℃
Test Engineer :	Citta Ke	Relative Humidity :	48~51%

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
00	2402	1.172
39	2441	1.176
78	2480	1.176

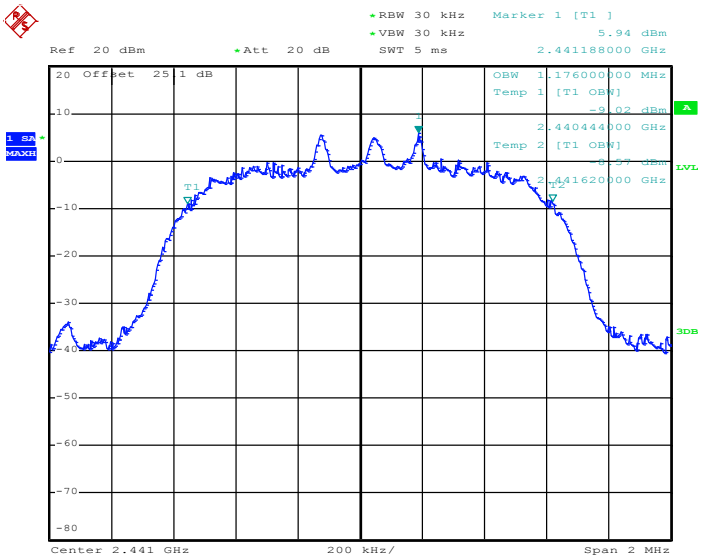
99% Occupied Bandwidth Plot on Channel 00



Date: 19.NOV.2013 11:03:41

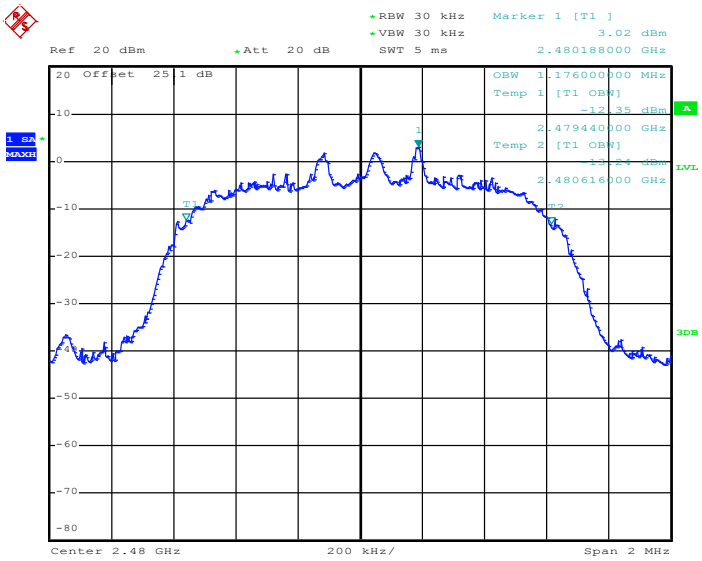
Note: The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.

99% Occupied Bandwidth Plot on Channel 39



Date: 19.NOV.2013 10:28:00

99% Occupied Bandwidth Plot on Channel 78

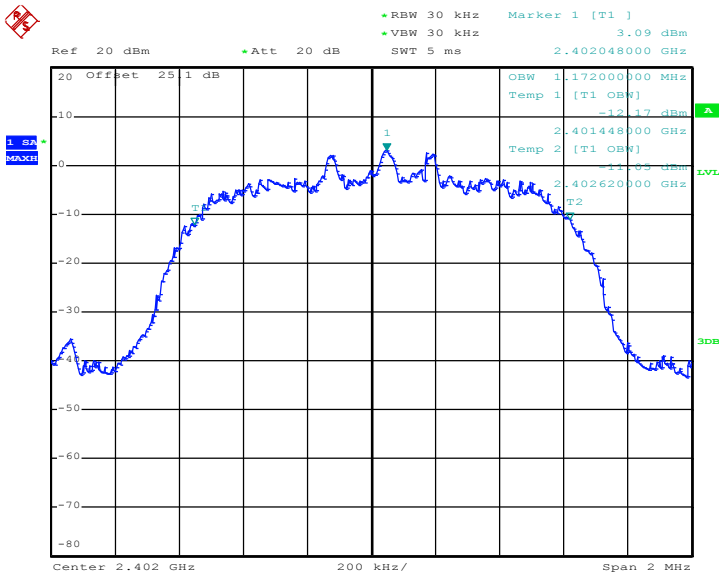


Date: 19.NOV.2013 11:00:56

Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Citta Ke	Relative Humidity :	48~51%

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
00	2402	1.172
39	2441	1.172
78	2480	1.176

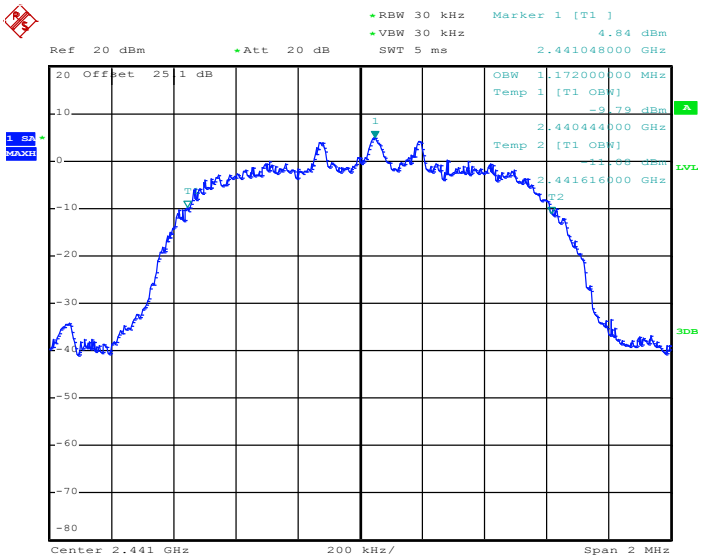
99% Occupied Bandwidth Plot on Channel 00



Date: 19.NOV.2013 10:38:21

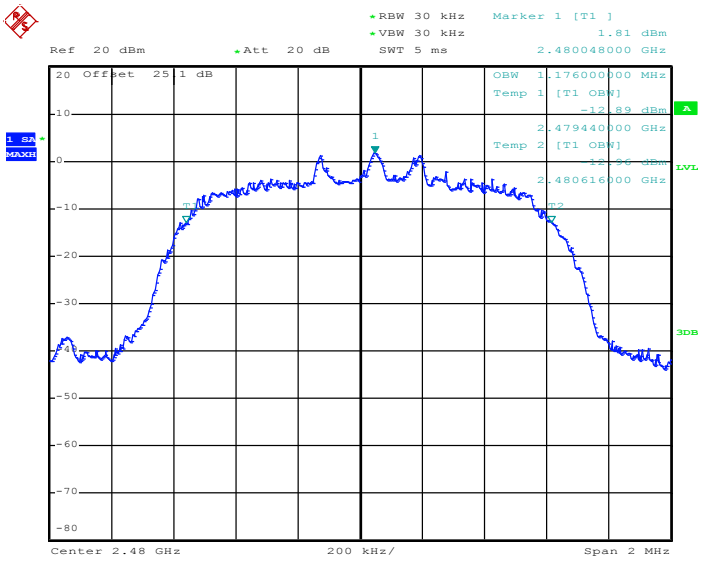
Note: The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.

99% Occupied Bandwidth Plot on Channel 39



Date: 19.NOV.2013 10:42:58

99% Occupied Bandwidth Plot on Channel 78



Date: 19.NOV.2013 10:58:57

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.

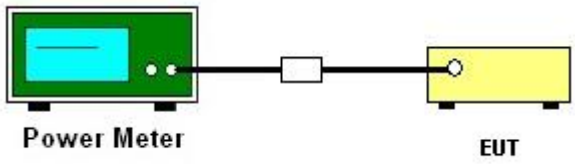
3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 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 :	Citta Ke	Relative Humidity :	48~51%

Channel	Frequency (MHz)	RF Power (dBm)		
		GFSK	Max. Limits (dBm)	Pass/Fail
		1 Mbps		
00	2402	6.26	20.97	Pass
39	2441	7.83	20.97	Pass
78	2480	4.91	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 :	Citta Ke	Relative Humidity :	48~51%

Channel	Frequency (MHz)	RF Power (dBm)		
		π/4-DQPSK	Max. Limits (dBm)	Pass/Fail
		2 Mbps		
00	2402	6.99	20.97	Pass
39	2441	8.76	20.97	Pass
78	2480	5.68	20.97	Pass

Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Citta Ke	Relative Humidity :	48~51%

Channel	Frequency (MHz)	RF Power (dBm)		
		8-DPSK	Max. Limits (dBm)	Pass/Fail
		3 Mbps		
00	2402	7.59	20.97	Pass
39	2441	9.20	20.97	Pass
78	2480	6.23	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

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

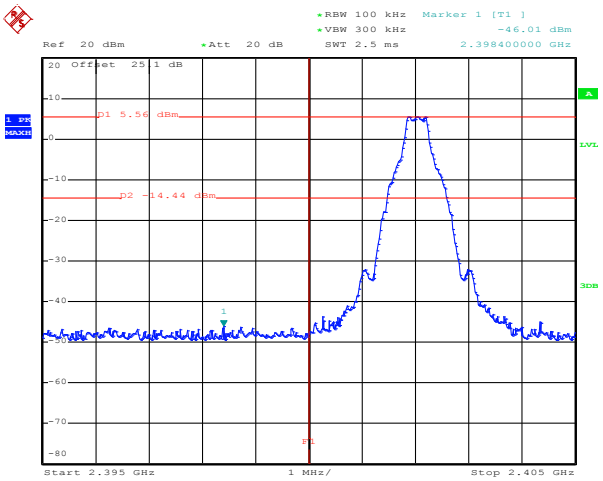
1. The testing follows the guidelines in Band-edge Compliance of RF Conducted Emissions of FCC Public Notice DA 00-705 Measurement Guidelines.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100kHz (≥ 1% span=10MHz), VBW = 300kHz (≥ RBW). Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100kHz 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

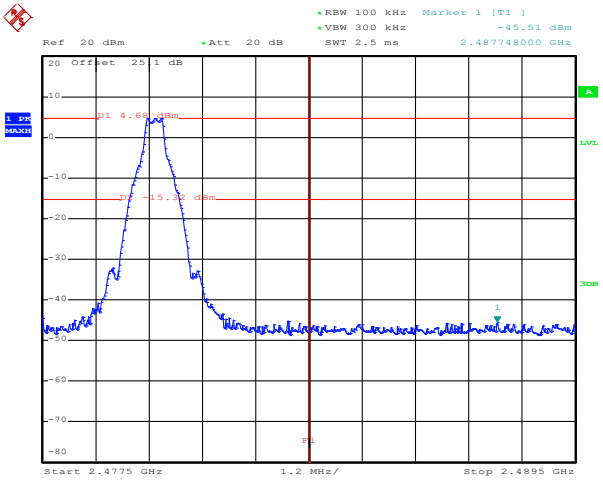
Test Mode :	1Mbps	**Temperature :**	24~26℃
Test Channel :	00 and 78	**Relative Humidity :**	48~51%
Test Engineer :	Citta Ke		

Low Band Edge Plot on Channel 00



Date: 19.NOV.2013 09:37:51

High Band Edge Plot on Channel 78

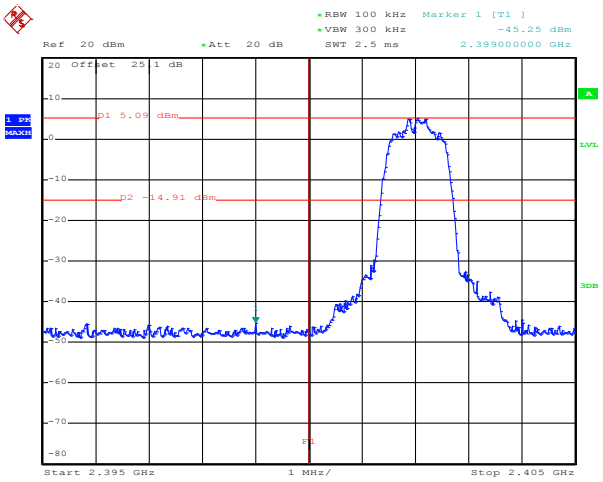


Date: 19.NOV.2013 10:13:56

Note: The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.

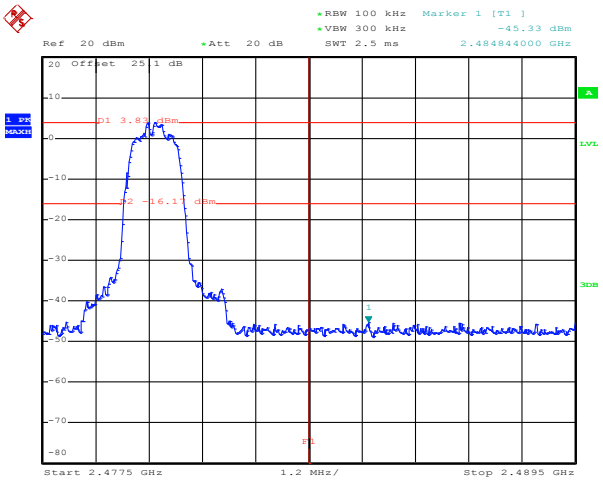
Test Mode :	2Mbps	**Temperature :**	24~26℃
Test Channel :	00 and 78	**Relative Humidity :**	48~51%
Test Engineer :	Citta Ke		

Low Band Edge Plot on Channel 00



Date: 19.NOV.2013 10:21:32

High Band Edge Plot on Channel 78

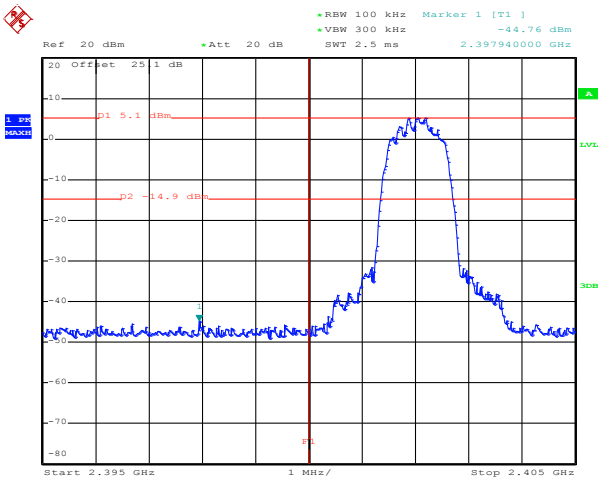


Date: 19.NOV.2013 10:32:46

Note: The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.

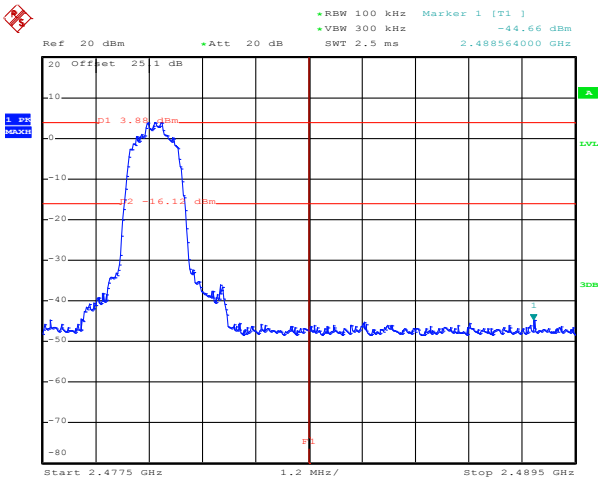
Test Mode :	3Mbps	**Temperature :**	24~26℃
Test Channel :	00 and 78	**Relative Humidity :**	48~51%
Test Engineer :	Citta Ke		

Low Band Edge Plot on Channel 00



Date: 19.NOV.2013 10:37:46

High Band Edge Plot on Channel 78



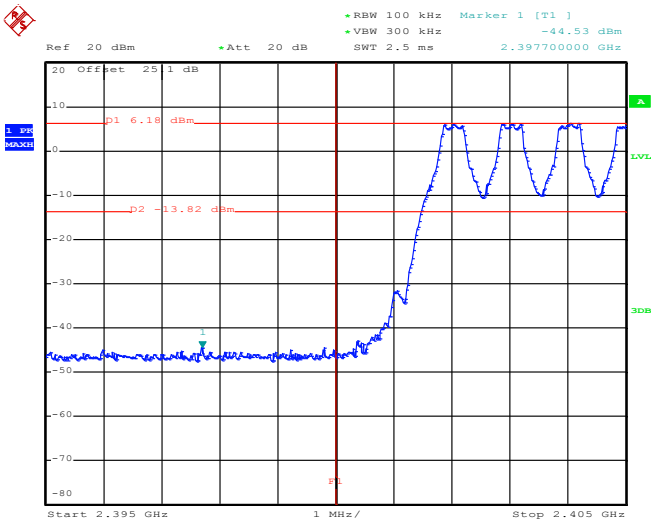
Date: 19.NOV.2013 10:46:50

Note: The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.

3.6.7 Test Result of Conducted Hopping Mode Band Edges

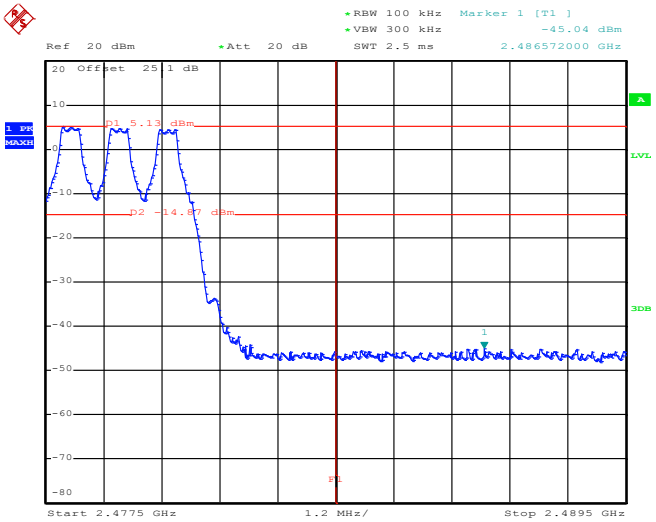
Test Mode :	1Mbps	Temperature :	24~26℃
Test Engineer :	Citta Ke	Relative Humidity :	48~51%

1Mbps Hopping Mode Low Band Edge Plot



Date: 19.NOV.2013 11:30:57

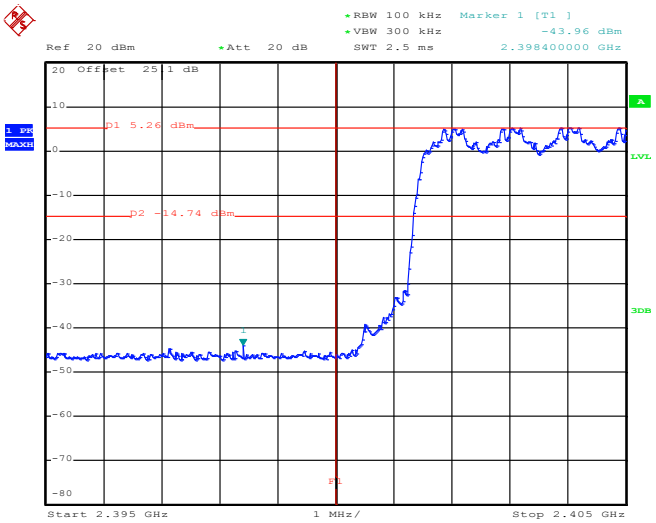
1Mbps Hopping Mode High Band Edge Plot



Date: 19.NOV.2013 11:32:00

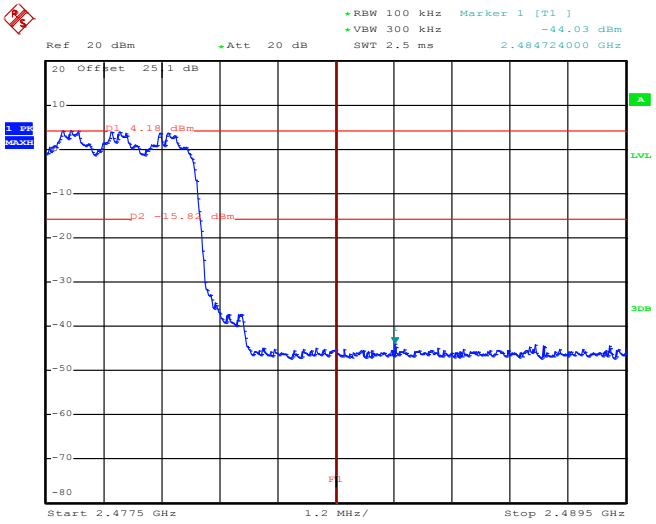
Test Mode :	2Mbps	Temperature :	24~26℃
Test Engineer :	Citta Ke	Relative Humidity :	48~51%

2Mbps Hopping Mode Low Band Edge Plot



Date: 19.NOV.2013 11:37:39

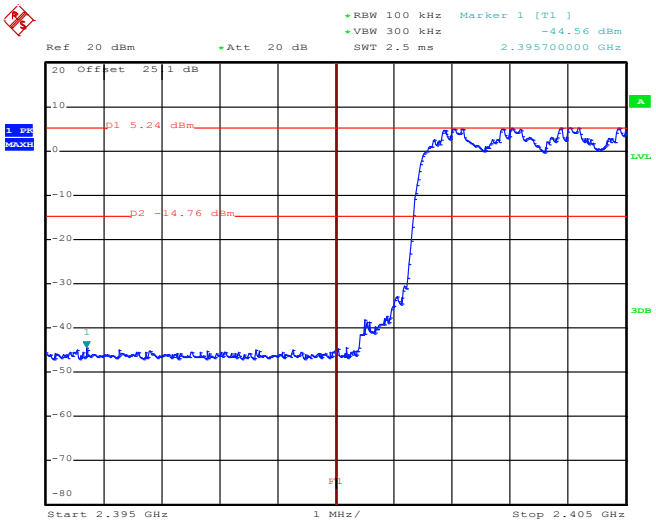
2Mbps Hopping Mode High Band Edge Plot



Date: 19.NOV.2013 11:34:42

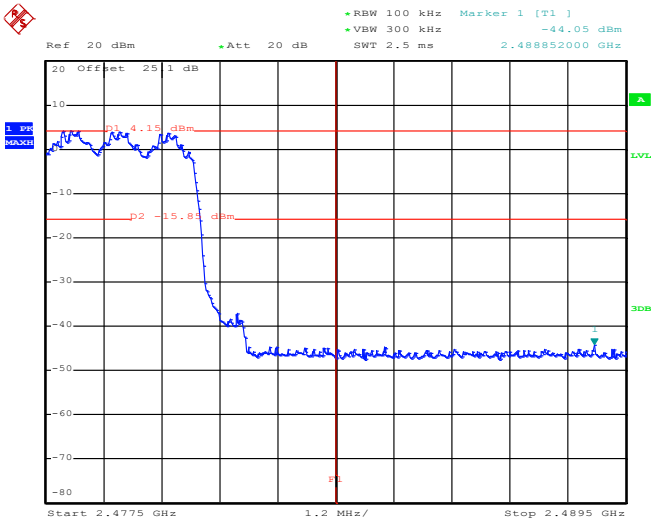
Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Citta Ke	Relative Humidity :	48~51%

3Mbps Hopping Mode Low Band Edge Plot



Date: 19.NOV.2013 11:42:09

3Mbps Hopping Mode High Band Edge Plot



Date: 19.NOV.2013 11:44:02

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

The measuring equipment is listed in the section 4 of this test report.

3.7.3 Test Procedure

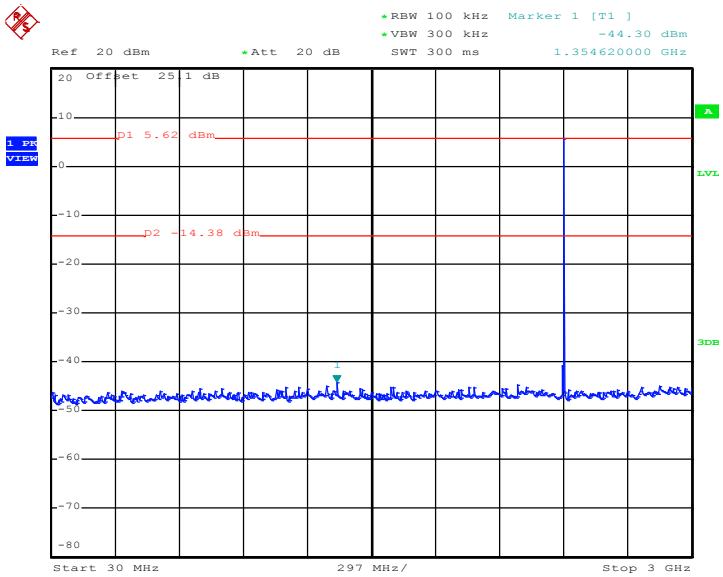
1. The testing follows the guidelines in Spurious RF Conducted Emissions of FCC Public Notice DA 00-705 Measurement Guidelines
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum 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 :	48~51%
Test Engineer :	Citta Ke		

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

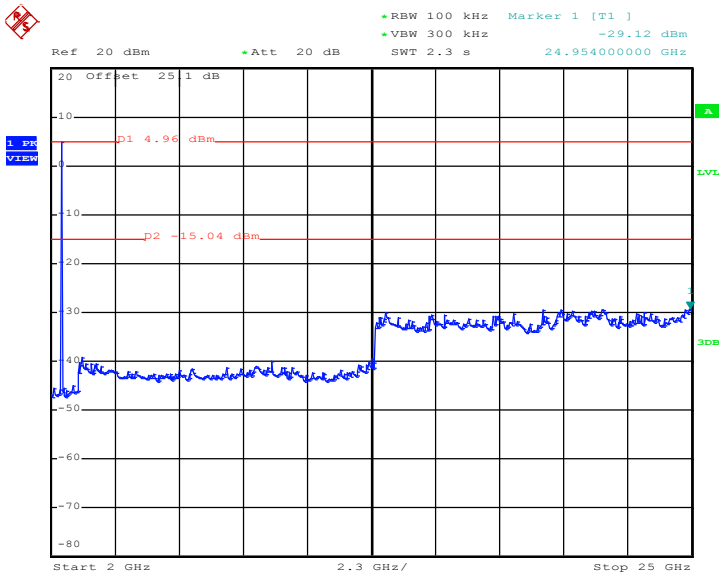


Date: 19.NOV.2013 10:00:59

Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

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

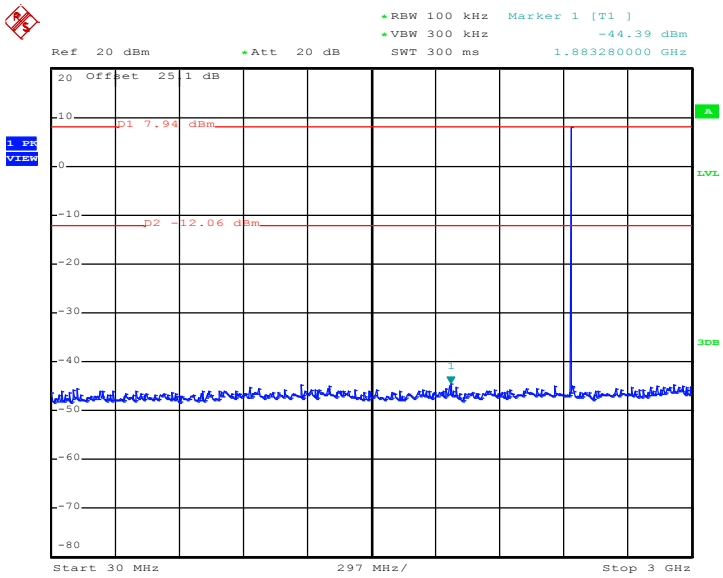


Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

Test Mode :	1Mbps	Temperature :	24~26℃
Test Channel :	39	Relative Humidity :	48~51%
Test Engineer :	Citta Ke		

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

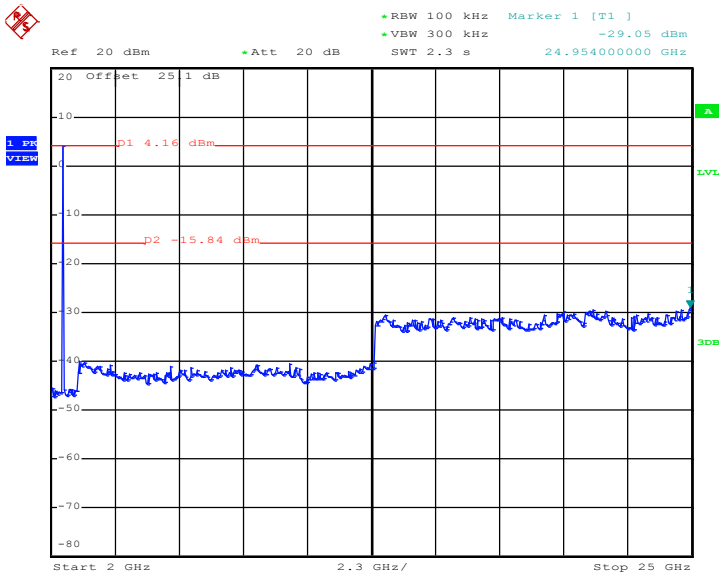


Date: 19.NOV.2013 10:07:47

Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

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



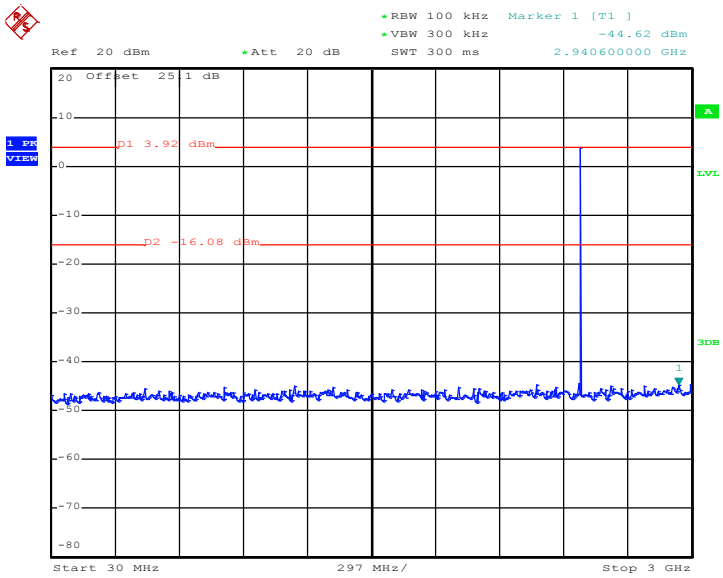
Date: 19.NOV.2013 10:08:09

Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

Test Mode :	1Mbps	Temperature :	24~26℃
Test Channel :	78	Relative Humidity :	48~51%
Test Engineer :	Citta Ke		

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

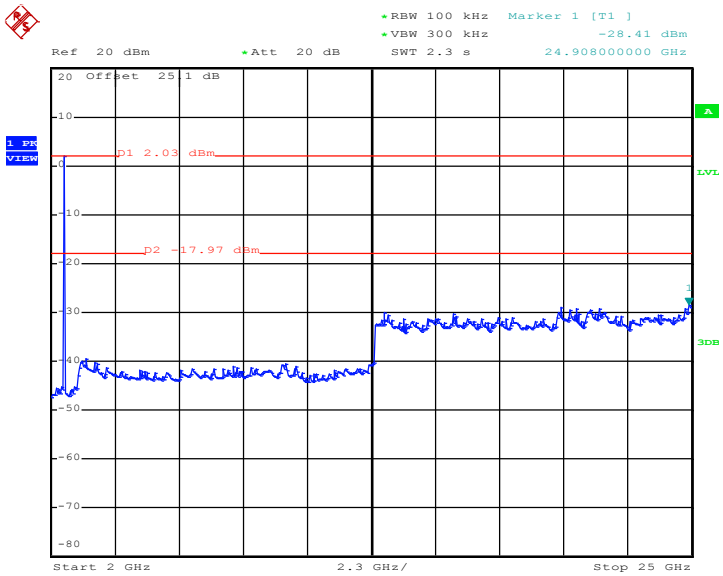


Date: 19.NOV.2013 10:15:17

Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

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



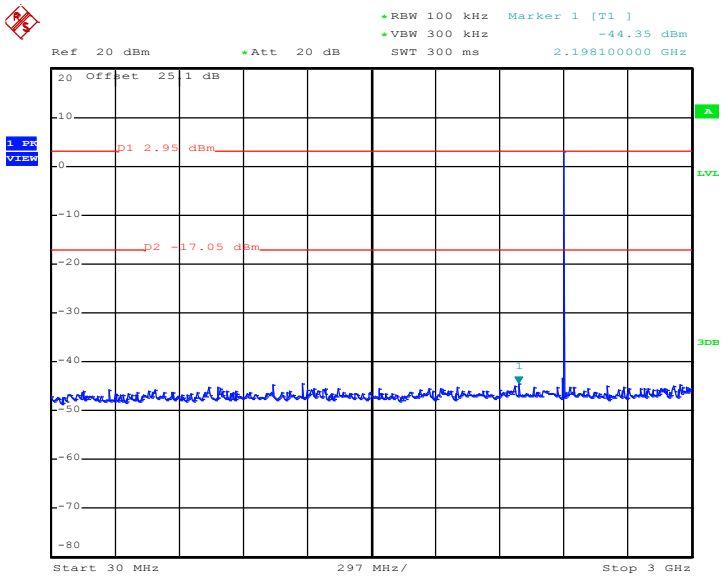
Date: 19.NOV.2013 10:15:39

Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

Test Mode :	2Mbps	Temperature :	24~26℃
Test Channel :	00	Relative Humidity :	48~51%
Test Engineer :	Citta Ke		

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

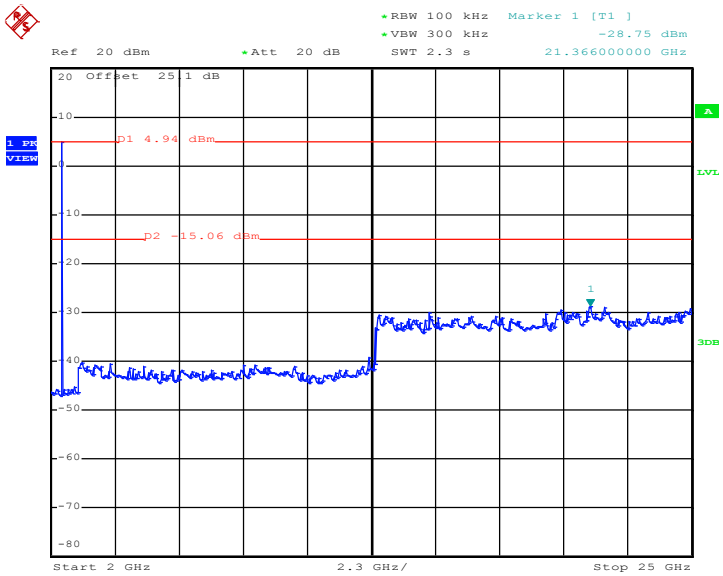


Date: 19.NOV.2013 10:22:35

Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

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



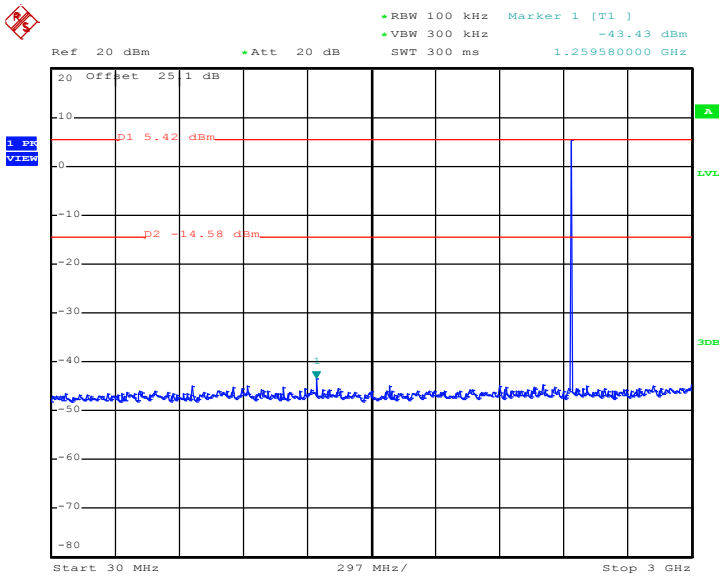
Date: 19.NOV.2013 10:22:56

Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

Test Mode :	2Mbps	Temperature :	24~26℃
Test Channel :	39	Relative Humidity :	48~51%
Test Engineer :	Citta Ke		

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

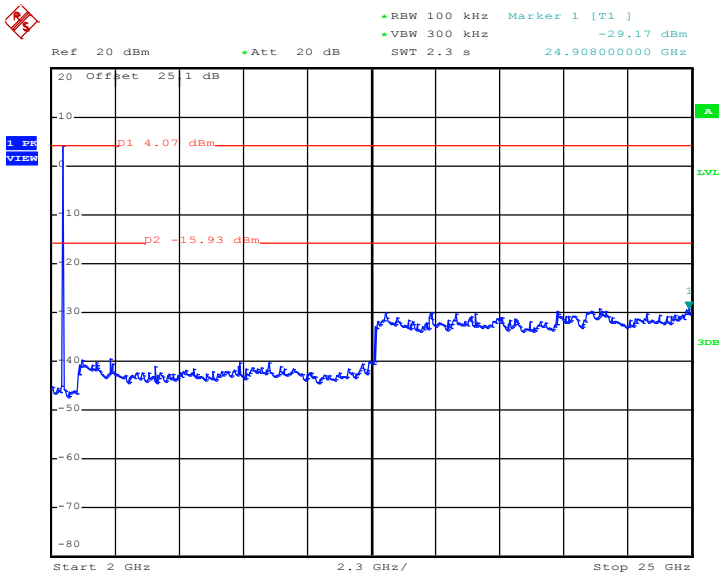


Date: 19.NOV.2013 10:28:35

Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

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



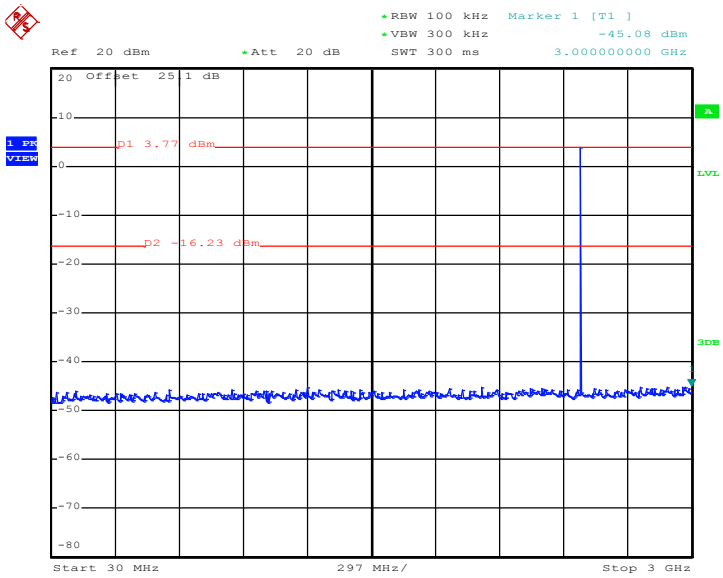
Date: 19.NOV.2013 10:28:57

Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

Test Mode :	2Mbps	Temperature :	24~26℃
Test Channel :	78	Relative Humidity :	48~51%
Test Engineer :	Citta Ke		

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

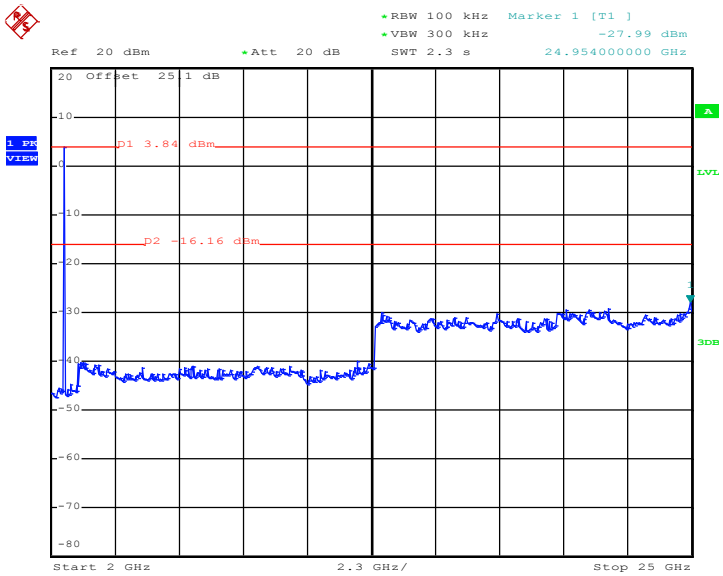


Date: 19.NOV.2013 10:33:47

Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

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



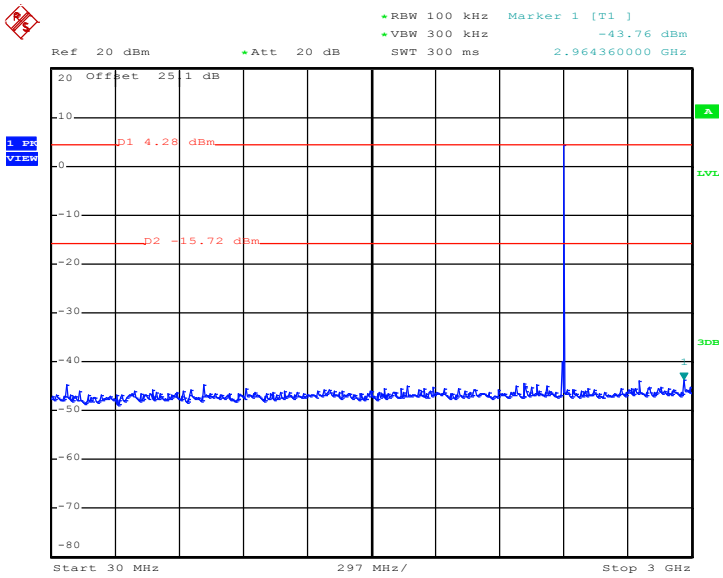
Date: 19.NOV.2013 10:34:08

Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

Test Mode :	3Mbps	Temperature :	24~26℃
Test Channel :	00	Relative Humidity :	48~51%
Test Engineer :	Citta Ke		

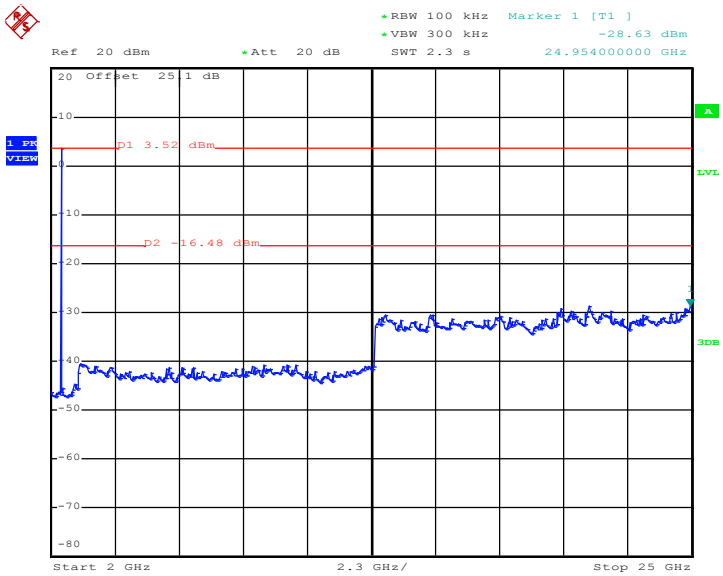
3Mbps CSE Plot on Ch 00 between 30 MHz ~ 3 GHz



Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

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



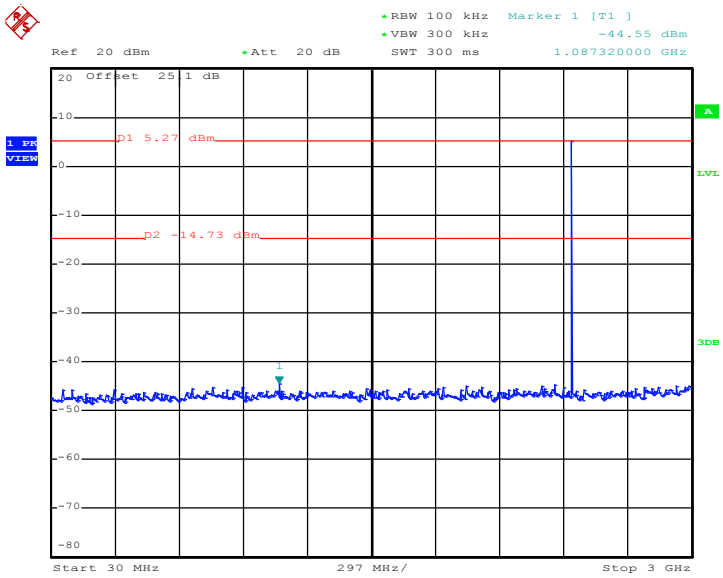
Date: 19.NOV.2013 10:39:15

Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

Test Mode :	3Mbps	Temperature :	24~26℃
Test Channel :	39	Relative Humidity :	48~51%
Test Engineer :	Citta Ke		

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

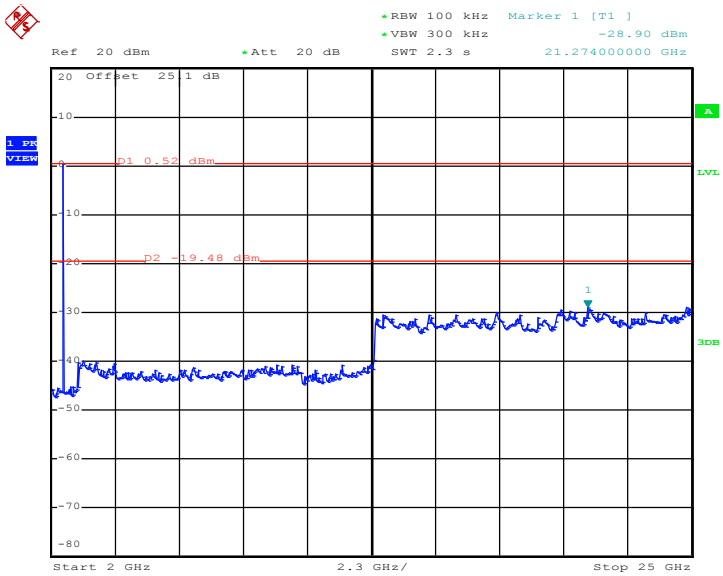


Date: 19.NOV.2013 10:43:31

Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

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



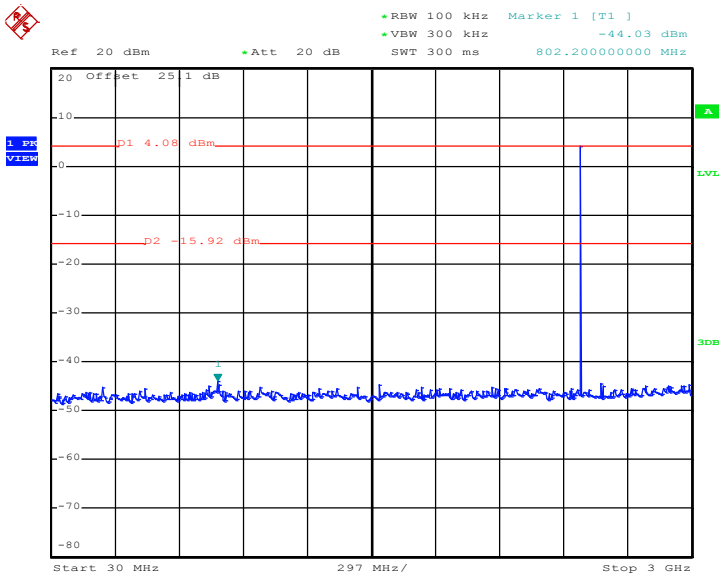
Date: 19.NOV.2013 10:43:53

Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

Test Mode :	3Mbps	Temperature :	24~26℃
Test Channel :	78	Relative Humidity :	48~51%
Test Engineer :	Citta Ke		

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

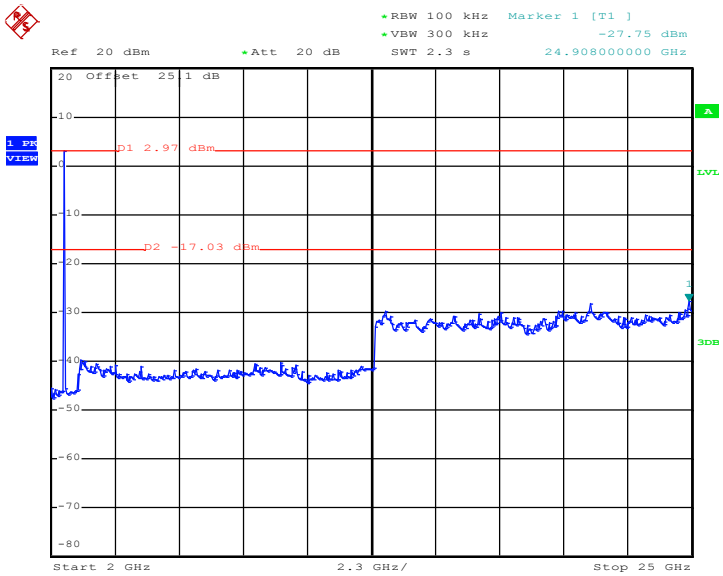


Date: 19.NOV.2013 10:48:04

Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

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



Date: 19.NOV.2013 10:48:25

Note:

1. The total loss is 25.1 dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer offset.
2. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

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

The measuring equipment is listed in the section 4 of this test report.

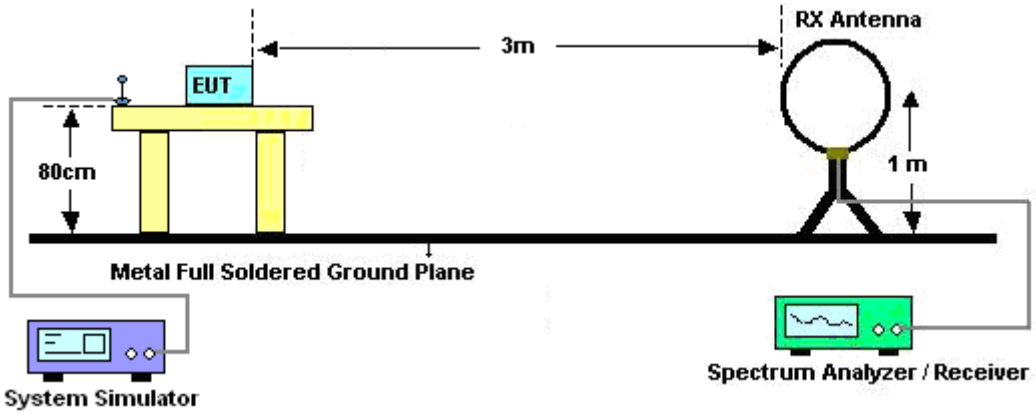
3.8.3 Test Procedures

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

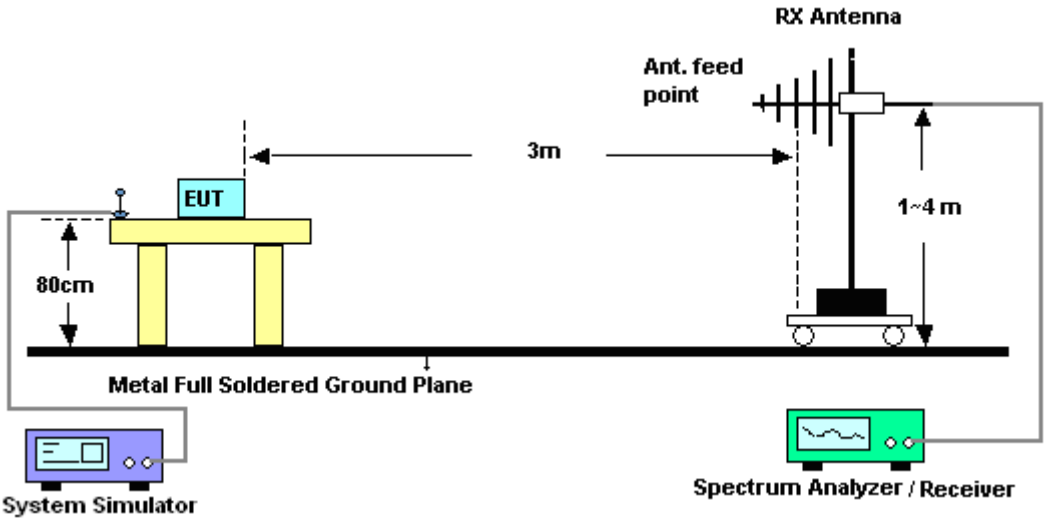
Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (24.73dB for DH5 / 24.82dB for 2DH5 / 24.79dB for 3DH5) derived from 20log (dwell time/100ms). This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.

3.8.4 Test Setup

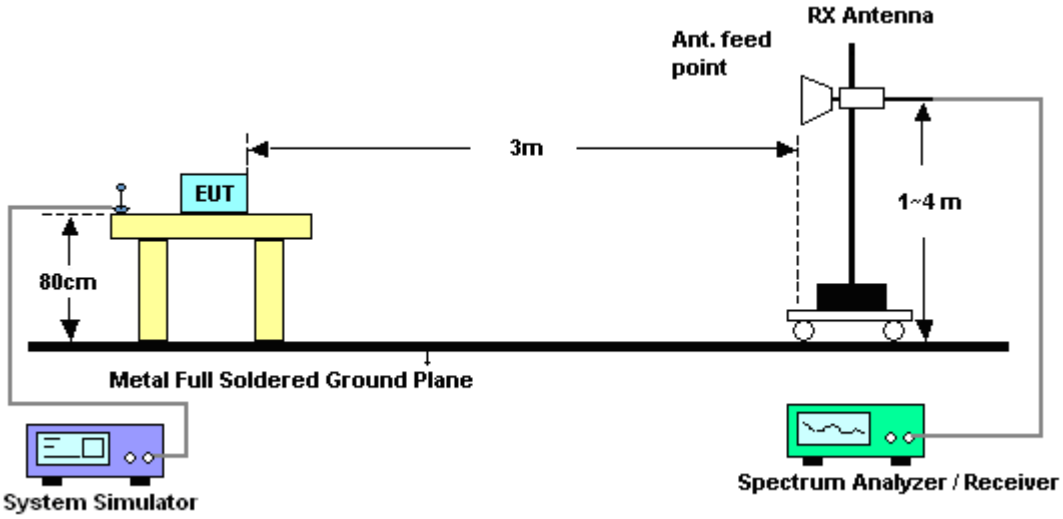
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz

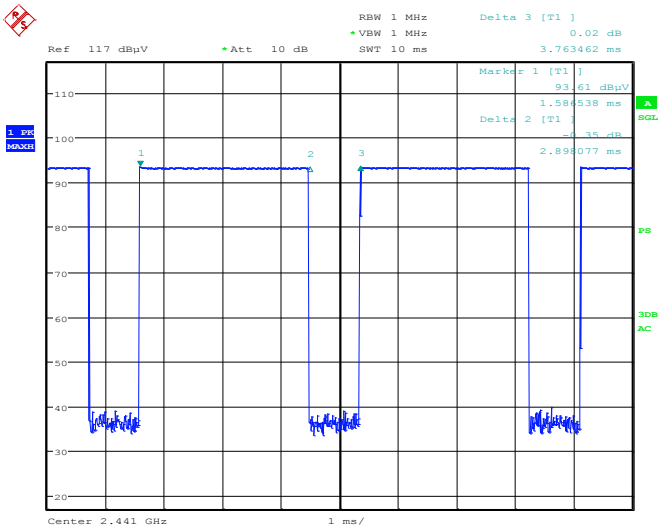


3.8.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

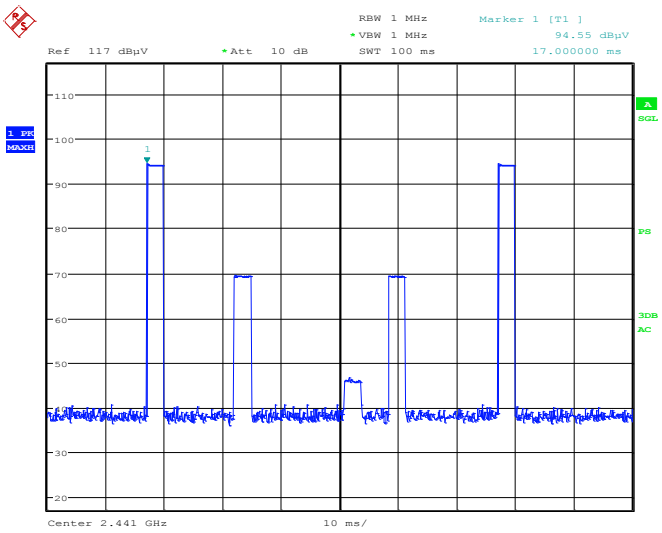
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.8.6 Duty cycle correction factor for average measurement

DH5 on time (One Pulse) Plot on Channel 39



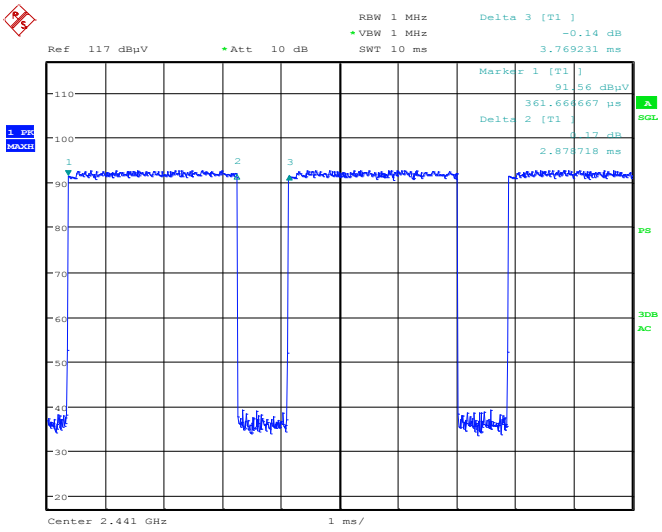
DH5 on time (Count Pulses) Plot on Channel 39



Note:

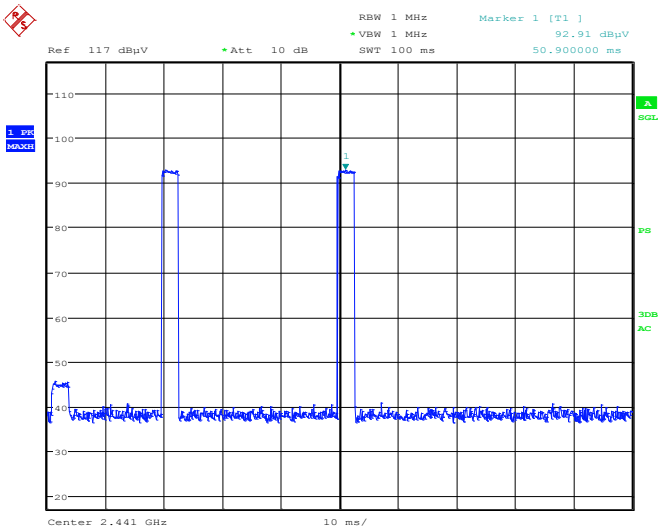
1. Worst case Duty cycle = on time/100 milliseconds = 2 * 2.90 / 100 = 5.80 %
2. Worst case Duty cycle correction factor = 20*log(Duty cycle) = -24.73 dB
3. DH5 has the highest duty cycle worst case and is reported.

2DH5 on time (One Pulse) Plot on Channel 39



Date: 22.NOV.2013 04:07:40

2DH5 on time (Count Pulses) Plot on Channel 39

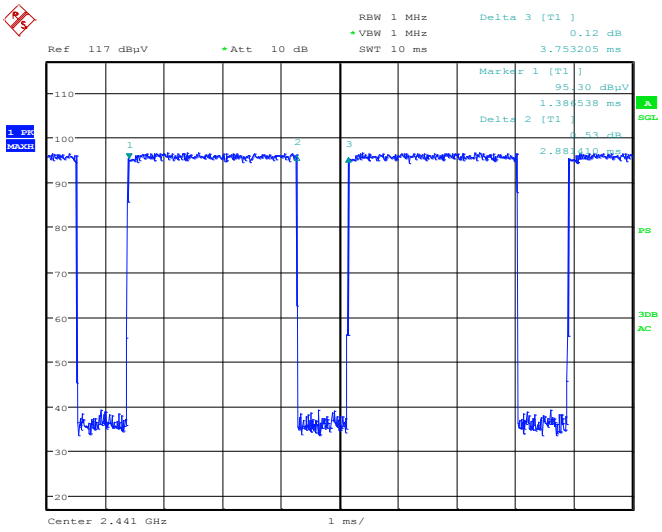


Date: 22.NOV.2013 04:12:26

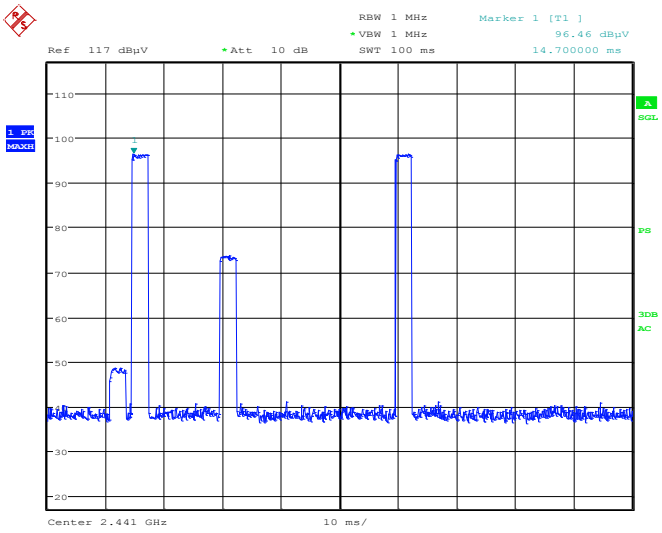
Note:

1. Worst case Duty cycle = on time/100 milliseconds = 2 * 2.87 / 100 = 5.74 %
2. Worst case Duty cycle correction factor = 20*log(Duty cycle) = -24.82 dB
3. 2DH5 has the highest duty cycle worst case and is reported.

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



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



Note:

1. Worst case Duty cycle = on time/100 milliseconds = 2 * 2.88 / 100 = 5.76 %
2. Worst case Duty cycle correction factor = 20*log(Duty cycle) = -24.79 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

2.88 ms x 20 channels = 57.6 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:

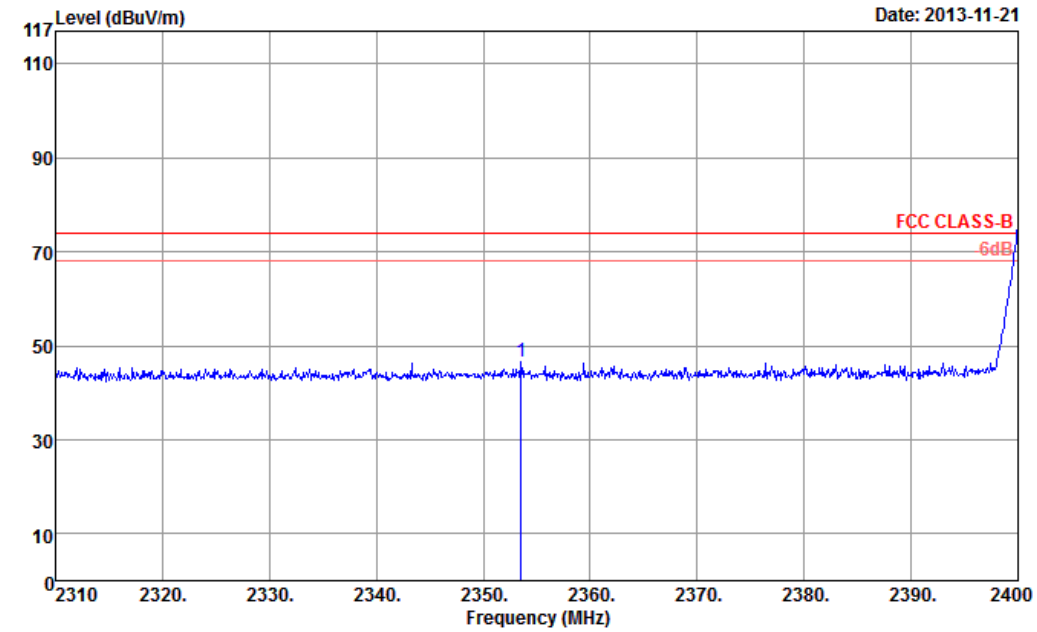
2.88 ms x 2 = 5.76 ms

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

20 x log(5.76 ms/100ms) = -24.79 dB

3.8.7 Test Result of Radiated Spurious at Band Edges

Test Mode :	1Mbps	Temperature :	22~24°C
Test Channel :	00	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		



Site : 03CH08-HY
Condition : FCC CLASS-B 3m HORN_130108 HORIZONTAL
: RBW:1000.000KHz VBW:1000.000KHz SWT:Auto

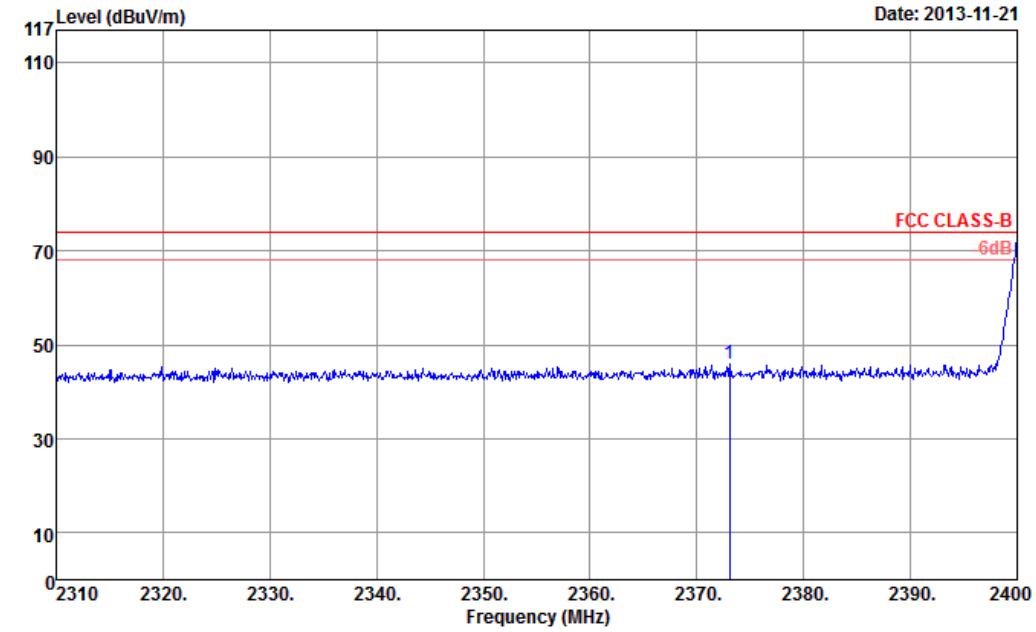
ANTENNA POLARITY : HORIZONTAL

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
2353.56	46.61	-27.39	74	41.78	32.13	6.19	33.49	157	320	Peak
2353.56	21.88	-32.12	54	-	-	-	-	-	-	Average

Note:

1. The average levels were calculated from the peak level corrected with duty cycle correction factor (24.73dB) derived from 20log (dwell time/100ms).
   For example: Average level = 46.61dBuV/m – 24.73 (dB) = 21.88dBuV/m.
2. Worst case measurement on 2353.56 MHz is compliance with 74/54 dBuV/m (peak/average) limit and Edge Measurement in the restricted band 2310-2390MHz. And, 2390-2400 MHz is non-restricted band which limit line is 20dB below the fundamental frequency emission level which is tested by conducted spurious emission. Both the test results are compliance with the FCC limit line.

Test Mode :	1Mbps	Temperature :	22~24°C
Test Channel :	00	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		



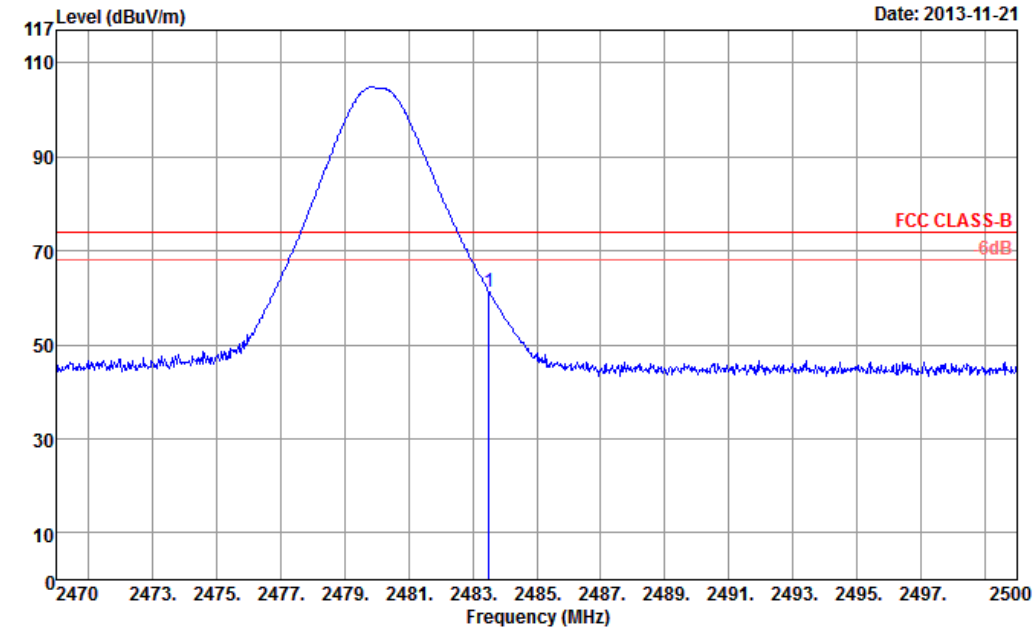
Site : 03CH08-HY
Condition : FCC CLASS-B 3m HORN_130108 VERTICAL
: RBW:1000.000KHz VBW:1000.000KHz SWT:Auto

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
2373.09	46.02	-27.98	74	41.34	31.95	6.21	33.48	100	342	Peak
2373.09	21.29	-32.71	54	-	-	-	-	-	-	Average

Note: Worst case measurement on 2373.09 MHz is compliance with 74/54 dBuV/m (peak/average) limit and Edge Measurement in the restricted band 2310-2390MHz. And, 2390-2400 MHz is non-restricted band which limit line is 20dB below the fundamental frequency emission level which is tested by conducted spurious emission. Both the test results are compliance with the FCC limit line.

Test Mode :	1Mbps	Temperature :	22~24°C
Test Channel :	78	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		



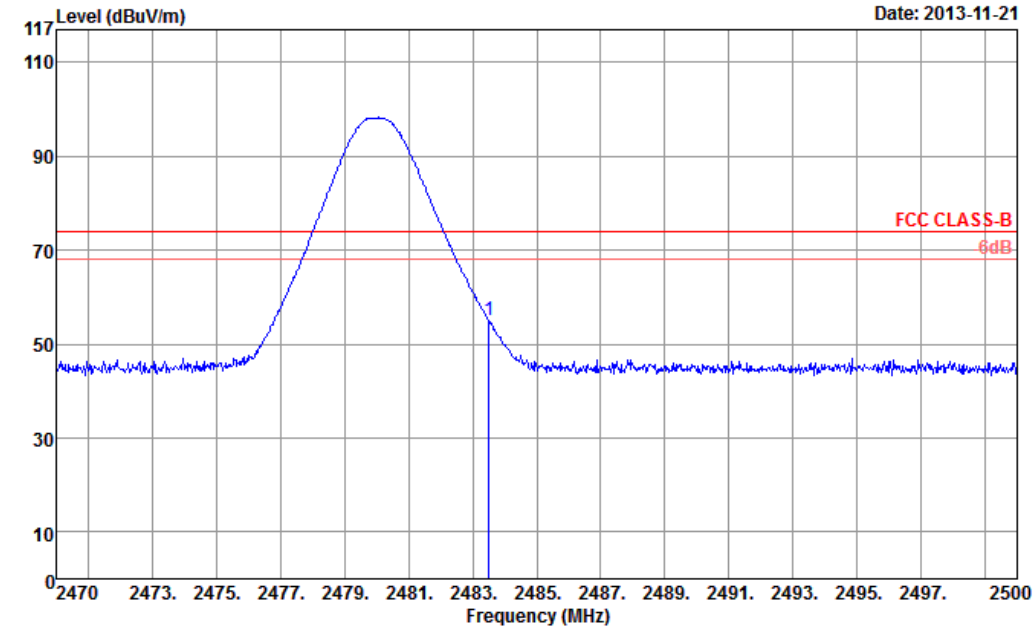
Site : 03CH08-HY
Condition : FCC CLASS-B 3m HORN_130108 HORIZONTAL
: RBW:1000.000KHz VBW:1000.000KHz SWT:Auto

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	61.18	-12.82	74	55.56	32.63	6.45	33.46	100	329	Peak
2483.5	36.45	-17.55	54	-	-	-	-	-	-	Average

Note: Worst case measurement on 2483.5 MHz is compliance with 74/54 dBuV/m (peak/average) limit and Edge Measurement in the restricted band 2483.5-2500MHz. And, 2480-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.

Test Mode :	1Mbps	Temperature :	22~24°C
Test Channel :	78	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		



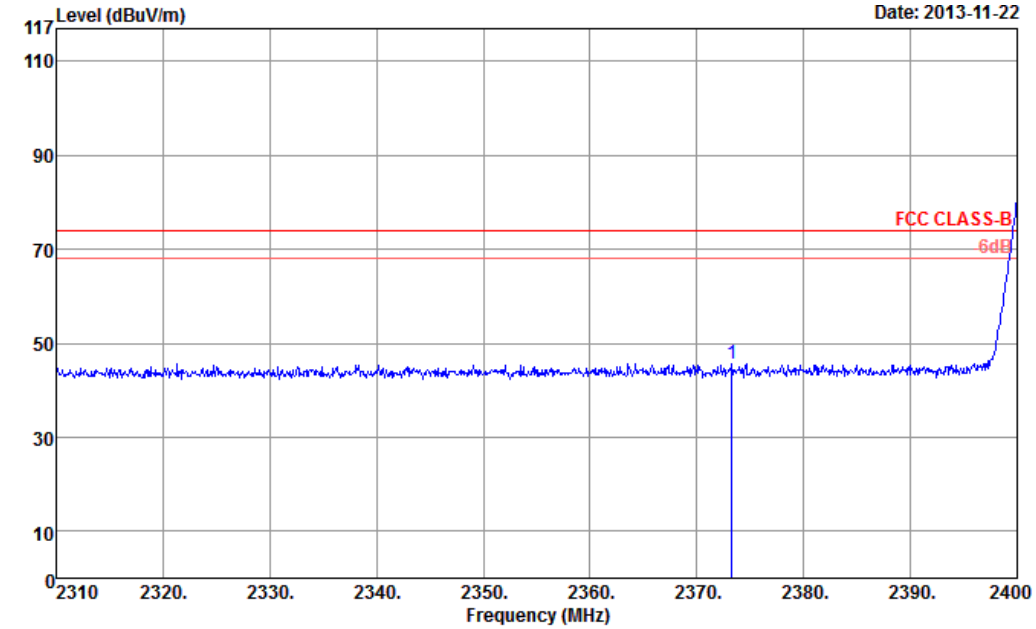
Site : 03CH08-HY
Condition : FCC CLASS-B 3m HORN_130108 VERTICAL
: RBW:1000.000KHz VBW:1000.000KHz SWT:Auto

ANTENNA POLARITY : VERTICAL

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limity Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	55.13	-18.87	74	49.55	32.59	6.45	33.46	100	54	Peak
2483.5	30.4	-23.6	54	-	-	-	-	-	-	Average

Note: Worst case measurement on 2483.5 MHz is compliance with 74/54 dBuV/m (peak/average) limit and Edge Measurement in the restricted band 2483.5-2500MHz. And, 2480-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.

Test Mode :	2Mbps	Temperature :	22~24°C
Test Channel :	00	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		



Site : 03CH08-HY
Condition : FCC CLASS-B 3m HORN_130108 HORIZONTAL
: RBW:1000.000KHz VBW:1000.000KHz SWT:Auto

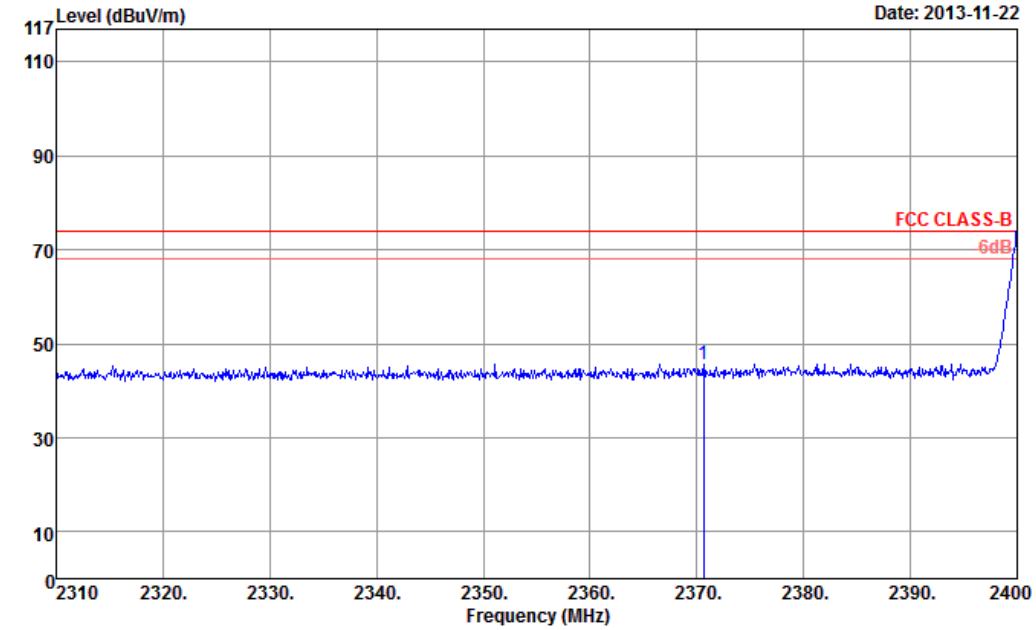
ANTENNA POLARITY : HORIZONTAL

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
2373.27	45.63	-28.37	74	40.7	32.2	6.21	33.48	103	320	Peak
2373.27	20.81	-33.19	54	-	-	-	-	-	-	Average

Note:

1. The average levels were calculated from the peak level corrected with duty cycle correction factor (24.82dB) derived from 20log (dwell time/100ms).
   For example: Average level = 45.63dBuV/m – 24.82 (dB) = 20.81dBuV/m.
2. Worst case measurement on 2373.27 MHz is compliance with 74/54 dBuV/m (peak/average) limit and Edge Measurement in the restricted band 2310-2390MHz. And, 2390-2400 MHz is non-restricted band which limit line is 20dB below the fundamental frequency emission level which is tested by conducted spurious emission. Both the test results are compliance with the FCC limit line.

Test Mode :	2Mbps	Temperature :	22~24°C
Test Channel :	00	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		



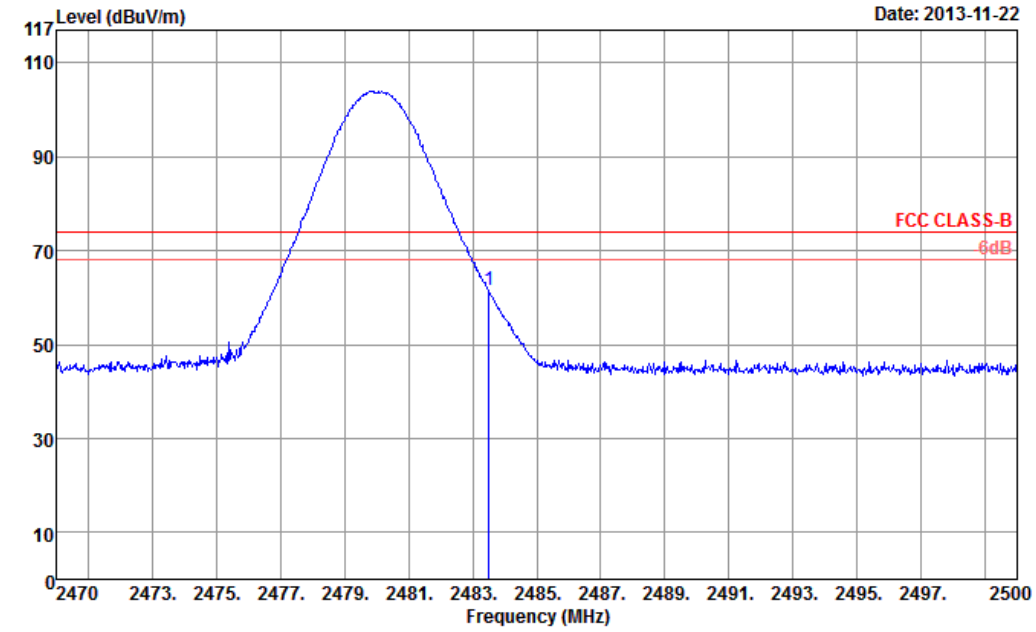
Site : 03CH08-HY
Condition : FCC CLASS-B 3m HORN_130108 VERTICAL
: RBW:1000.000KHz VBW:1000.000KHz SWT:Auto

ANTENNA POLARITY : VERTICAL

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2370.66	45.61	-28.39	74	40.93	31.95	6.21	33.48	127	75	Peak
2370.66	20.79	-33.21	54	-	-	-	-	-	-	Average

Note: Worst case measurement on 2370.66 MHz is compliance with 74/54 dBuV/m (peak/average) limit and Edge Measurement in the restricted band 2310-2390MHz. And, 2390-2400 MHz is non-restricted band which limit line is 20dB below the fundamental frequency emission level which is tested by conducted spurious emission. Both the test results are compliance with the FCC limit line.

Test Mode :	2Mbps	Temperature :	22~24°C
Test Channel :	78	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		



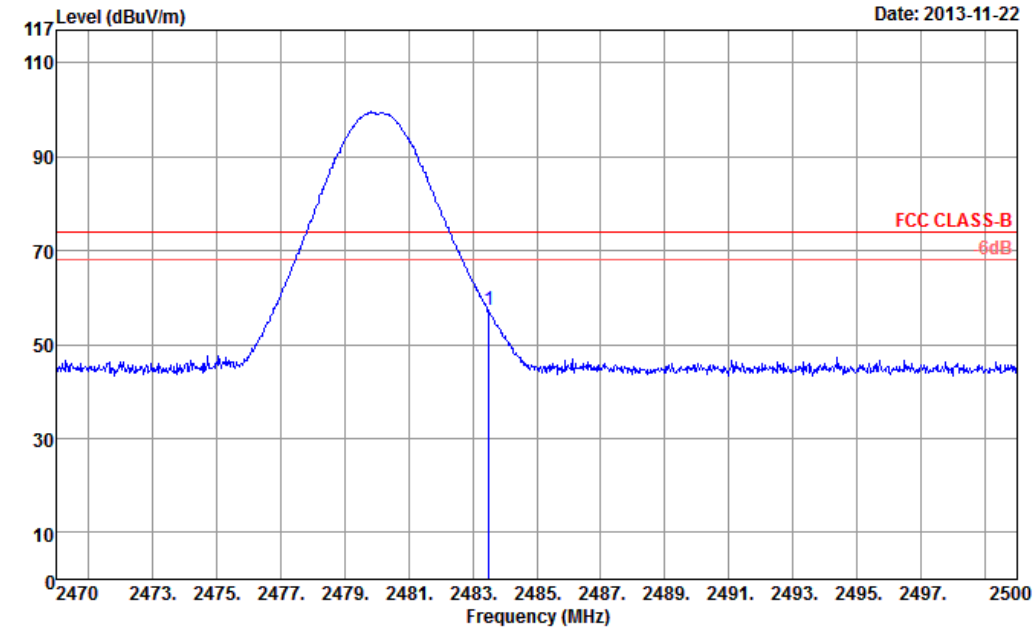
Site : 03CH08-HY
Condition : FCC CLASS-B 3m HORN_130108 HORIZONTAL
: RBW:1000.000KHz VBW:1000.000KHz SWT:Auto

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	61.59	-12.41	74	55.97	32.63	6.45	33.46	101	326	Peak
2483.5	36.77	-17.23	54	-	-	-	-	-	-	Average

Note: Worst case measurement on 2483.5 MHz is compliance with 74/54 dBuV/m (peak/average) limit and Edge Measurement in the restricted band 2483.5-2500MHz. And, 2480-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.

Test Mode :	2Mbps	Temperature :	22~24°C
Test Channel :	78	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		



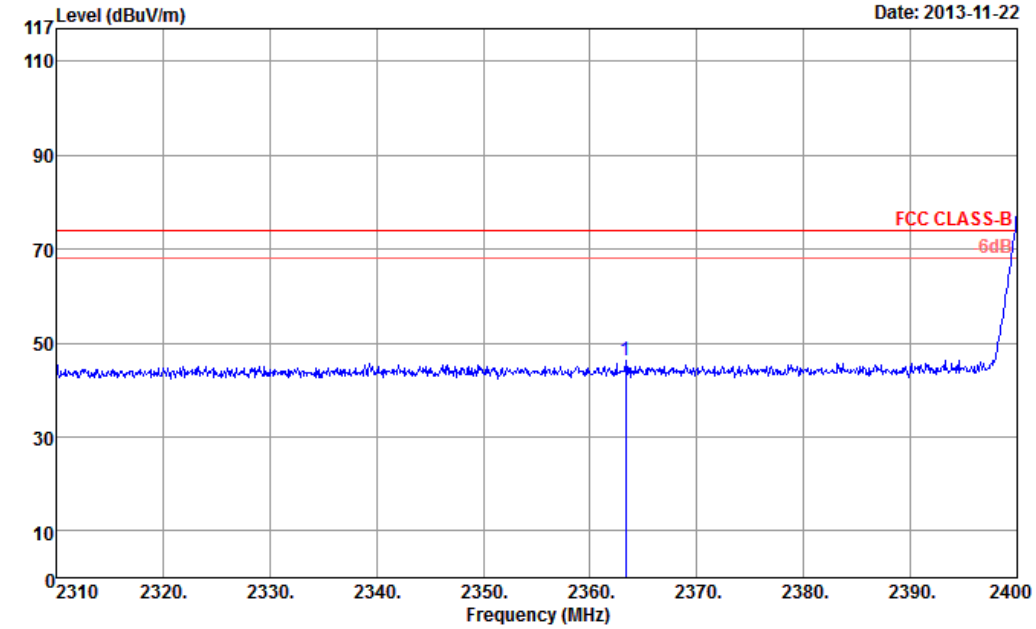
Site : 03CH08-HY
Condition : FCC CLASS-B 3m HORN_130108 VERTICAL
: RBW:1000.000KHz VBW:1000.000KHz SWT:Auto

ANTENNA POLARITY : VERTICAL

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limity Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	57.33	-16.67	74	51.75	32.59	6.45	33.46	100	56	Peak
2483.5	32.51	-21.49	54	-	-	-	-	-	-	Average

Note: Worst case measurement on 2483.5 MHz is compliance with 74/54 dBuV/m (peak/average) limit and Edge Measurement in the restricted band 2483.5-2500MHz. And, 2480-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.

Test Mode :	3Mbps	Temperature :	22~24°C
Test Channel :	00	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		



Site : 03CH08-HY
Condition : FCC CLASS-B 3m HORN_130108 HORIZONTAL
: RBW:1000.000KHz VBW:1000.000KHz SWT:Auto

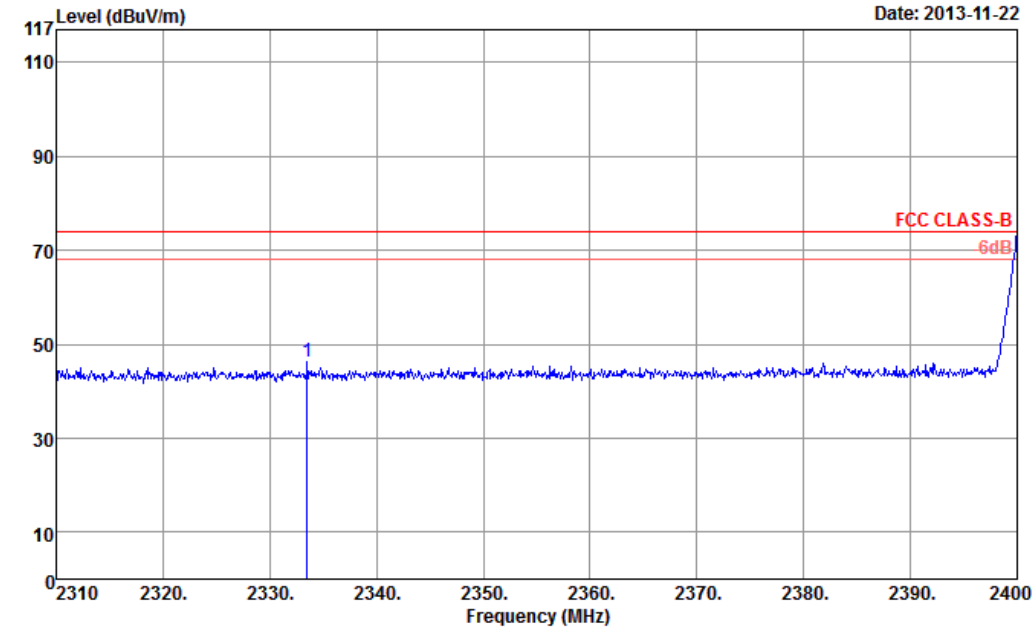
ANTENNA POLARITY : HORIZONTAL

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
2363.37	46.29	-27.71	74	41.44	32.13	6.21	33.49	188	304	Peak
2363.37	21.5	-32.5	54	-	-	-	-	-	-	Average

Note:

1. The average levels were calculated from the peak level corrected with duty cycle correction factor (24.79dB) derived from 20log (dwell time/100ms).
   For example: Average level = 46.29dBuV/m – 24.79 (dB) = 21.50dBuV/m.
2. Worst case measurement on 2363.37 MHz is compliance with 74/54 dBuV/m (peak/average) limit and Edge Measurement in the restricted band 2310-2390MHz. And, 2390-2400 MHz is non-restricted band which limit line is 20dB below the fundamental frequency emission level which is tested by conducted spurious emission. Both the test results are compliance with the FCC limit line.

Test Mode :	3Mbps	Temperature :	22~24°C
Test Channel :	00	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		



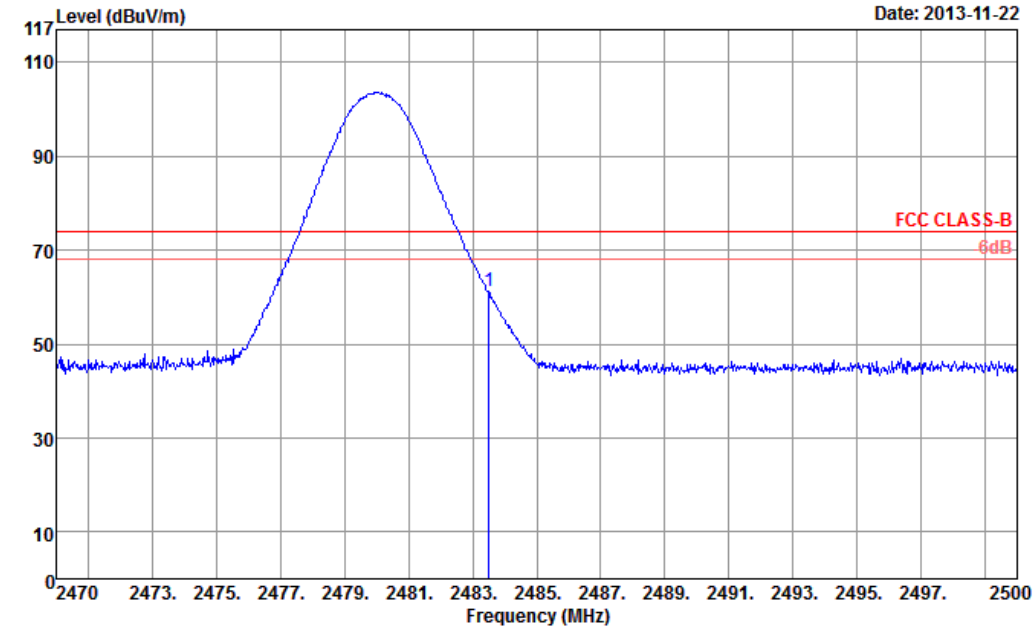
Site : 03CH08-HY
Condition : FCC CLASS-B 3m HORN_130108 VERTICAL
: RBW:1000.000KHz VBW:1000.000KHz SWT:Auto

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
2333.49	46.12	-27.88	74	41.79	31.63	6.19	33.49	100	321	Peak
2333.49	21.33	-32.67	54	-	-	-	-	-	-	Average

Note: Worst case measurement on 2333.49 MHz is compliance with 74/54 dBuV/m (peak/average) limit and Edge Measurement in the restricted band 2310-2390MHz. And, 2390-2400 MHz is non-restricted band which limit line is 20dB below the fundamental frequency emission level which is tested by conducted spurious emission. Both the test results are compliance with the FCC limit line.

Test Mode :	3Mbps	Temperature :	22~24°C
Test Channel :	78	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		



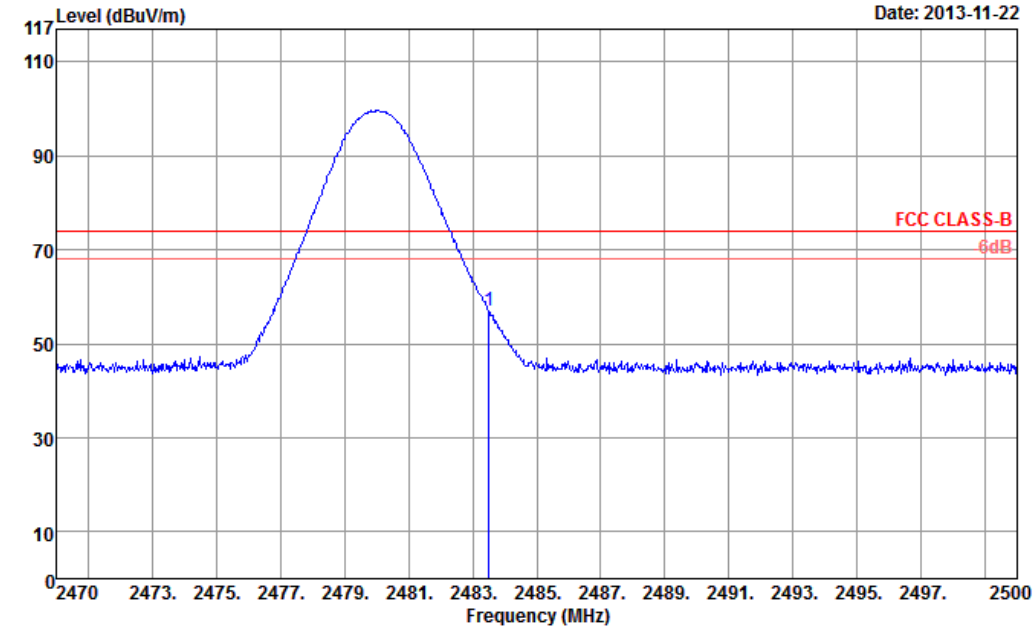
Site : 03CH08-HY
Condition : FCC CLASS-B 3m HORN_130108 HORIZONTAL
: RBW:1000.000KHz VBW:1000.000KHz SWT:Auto

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	61.34	-12.66	74	55.72	32.63	6.45	33.46	152	302	Peak
2483.5	36.55	-17.45	54	-	-	-	-	-	-	Average

Note: Worst case measurement on 2483.5 MHz is compliance with 74/54 dBuV/m (peak/average) limit and Edge Measurement in the restricted band 2483.5-2500MHz. And, 2480-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.

Test Mode :	3Mbps	Temperature :	22~24°C
Test Channel :	78	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		



Site : 03CH08-HY
Condition : FCC CLASS-B 3m HORN_130108 VERTICAL
: RBW:1000.000KHz VBW:1000.000KHz SWT:Auto

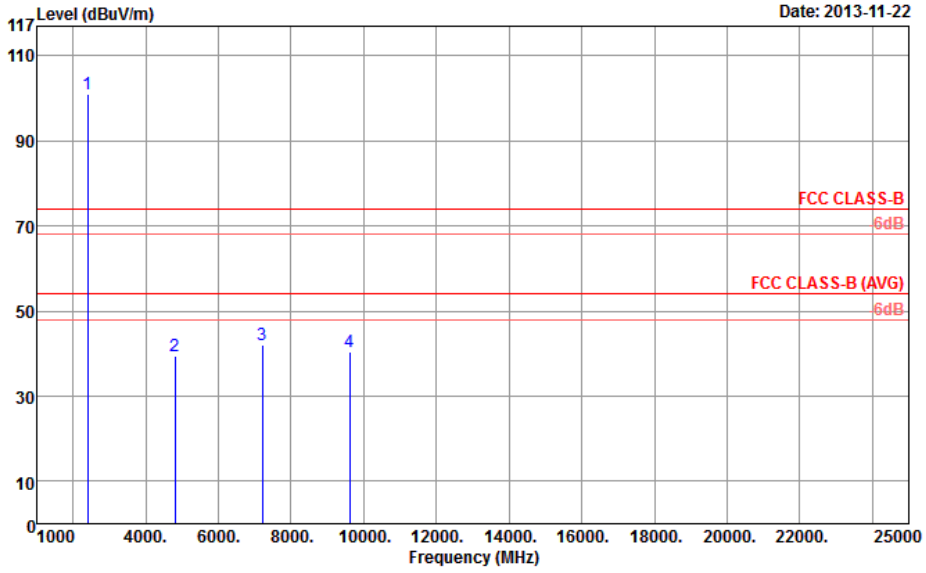
ANTENNA POLARITY : VERTICAL

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limity Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	56.95	-17.05	74	51.37	32.59	6.45	33.46	107	17	Peak
2483.5	32.16	-21.84	54	-	-	-	-	-	-	Average

Note: Worst case measurement on 2483.5 MHz is compliance with 74/54 dBuV/m (peak/average) limit and Edge Measurement in the restricted band 2483.5-2500MHz. And, 2480-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.

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

Test Mode :	1Mbps	Temperature :	22~24°C
Test Channel :	00	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2402 MHz is fundamental signal which can be ignored. 2. 7206 MHz and 9609 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level. For example, 100.94dBμV/m - 20dB = 80.94dBμV/m. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF HORIZONTAL
: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

ANTENNA POLARITY : HORIZONTAL

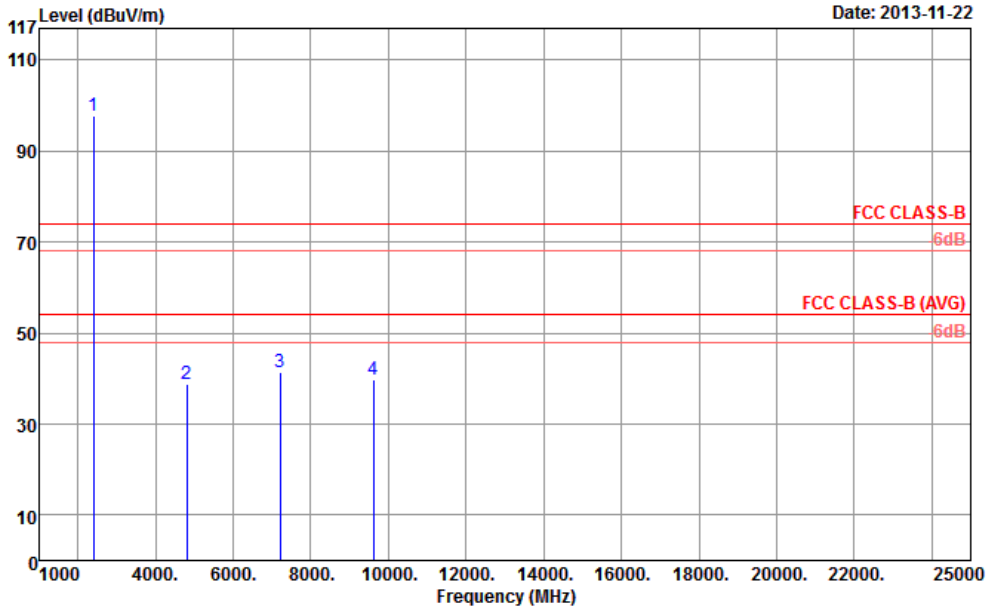
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2402	100.94	-	-	95.93	32.27	6.22	33.48	157	320	Peak
2402	76.21	-	-	-	-	-	-	-	-	Average
4803	39.51	-34.49	74	56.02	34.46	8	58.97	100	0	Peak
4803	14.78	-39.22	54	-	-	-	-	-	-	Average
7206	42.14	-38.8	80.94	54.3	35.62	10.49	58.27	100	0	Peak
9609	40.51	-40.43	80.94	49.52	36.88	11.55	57.44	100	0	Peak

Other harmonics are lower than background noise

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

For example: Average level = 100.94dBuV/m – 24.73 (dB) = 76.21dBuV/m.

Test Mode :	1Mbps	Temperature :	22~24°C
Test Channel :	00	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2402 MHz is fundamental signal which can be ignored. 2. 7206 MHz and 9609 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



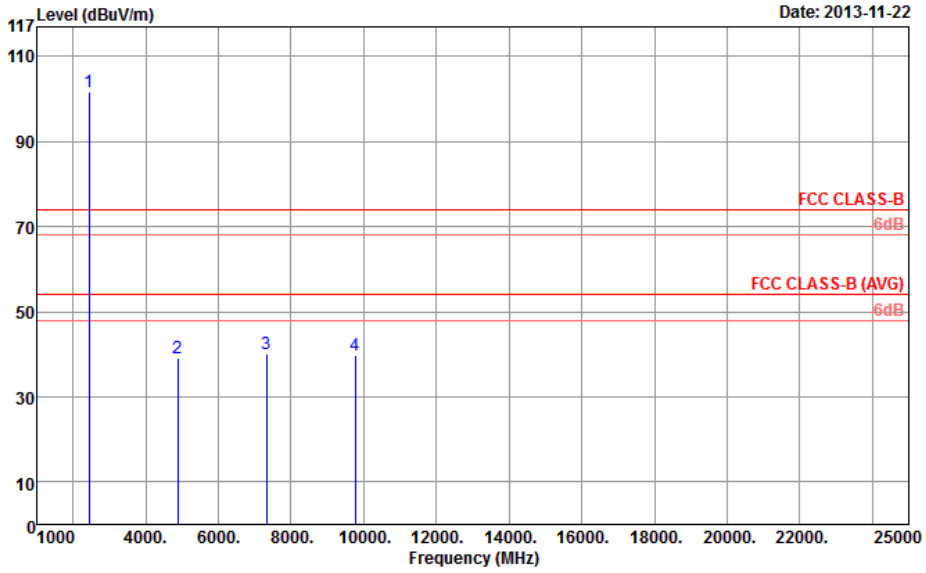
Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF VERTICAL
: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

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
2402	97.9	-	-	93.1	32.06	6.22	33.48	100	342	Peak
2402	73.17	-	-	-	-	-	-	-	-	Average
4803	38.87	-35.13	74	55.38	34.46	8	58.97	100	0	Peak
4803	14.14	-39.86	54	-	-	-	-	-	-	Average
7206	41.45	-36.45	77.9	53.63	35.6	10.49	58.27	100	0	Peak
9609	39.83	-38.07	77.9	49.22	36.5	11.55	57.44	100	0	Peak

Other harmonics are lower than background noise

Test Mode :	1Mbps	Temperature :	22~24°C
Test Channel :	39	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2442 MHz is fundamental signal which can be ignored. 2. 9765 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



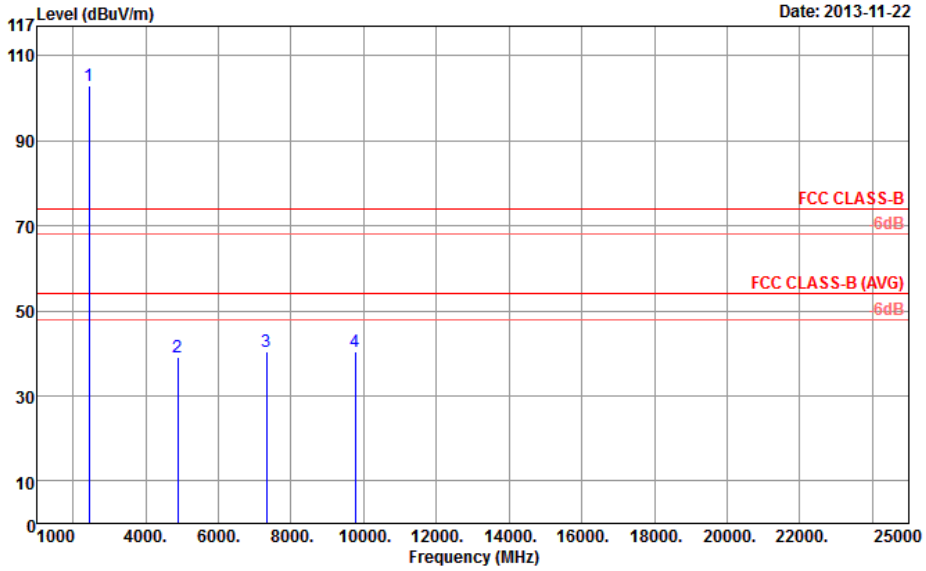
Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF HORIZONTAL
: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

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
2442	101.81	-	-	96.45	32.49	6.34	33.47	101	348	Peak
2442	77.08	-	-	-	-	-	-	-	-	Average
4881	38.99	-35.01	74	55.31	34.4	8.15	58.87	100	0	Peak
4881	14.26	-39.74	54	-	-	-	-	-	-	Average
7323	40.16	-33.84	74	52.55	35.63	10.47	58.49	100	0	Peak
7323	15.43	-38.57	54	-	-	-	-	-	-	Average
9765	39.92	-34.08	81.81	48.84	37.02	11.57	57.51	100	0	Peak

Other harmonics are lower than background noise

Test Mode :	1Mbps	Temperature :	22~24°C
Test Channel :	39	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2442 MHz is fundamental signal which can be ignored. 2. 9765 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



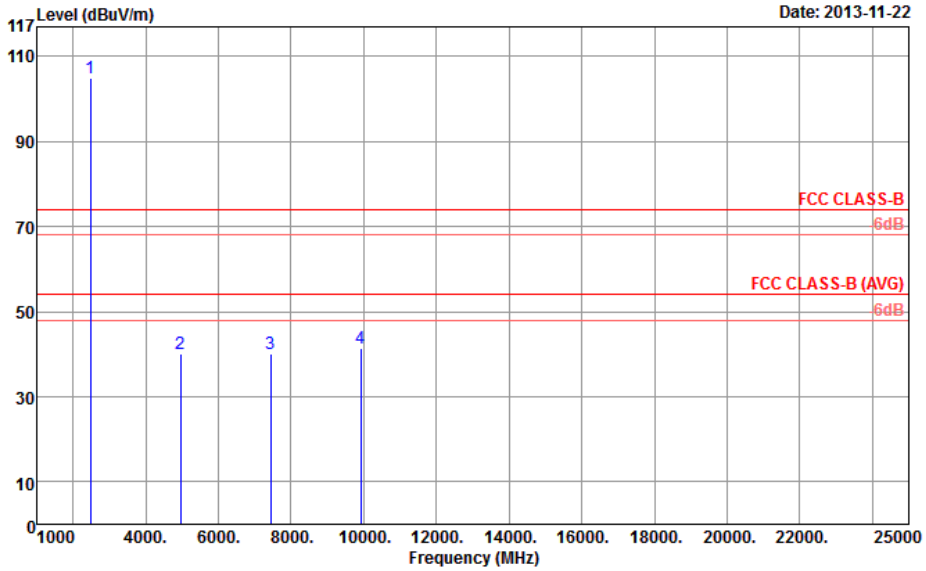
Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF VERTICAL
: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

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
2442	102.86	-	-	97.61	32.38	6.34	33.47	132	279	Peak
2442	78.13	-	-	-	-	-	-	-	-	Average
4881	39.07	-34.93	74	55.39	34.4	8.15	58.87	100	0	Peak
4881	14.34	-39.66	54	-	-	-	-	-	-	Average
7323	40.44	-33.56	74	52.92	35.54	10.47	58.49	100	0	Peak
7323	15.71	-38.29	54	-	-	-	-	-	-	Average
9765	40.27	-33.73	82.86	49.68	36.53	11.57	57.51	100	0	Peak

Other harmonics are lower than background noise

Test Mode :	1Mbps	Temperature :	22~24°C
Test Channel :	78	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. 9921 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



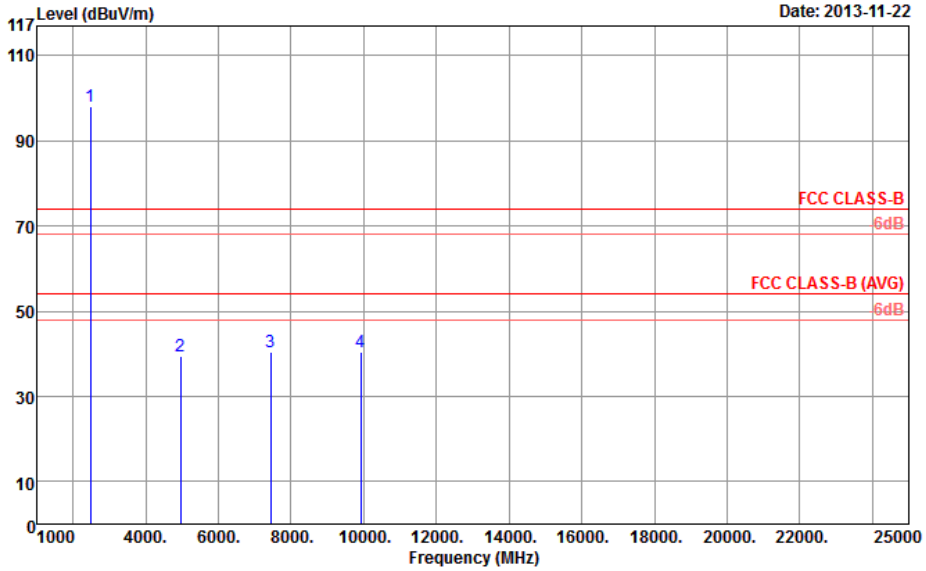
Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF HORIZONTAL
: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

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
2480	104.83	-	-	99.21	32.63	6.45	33.46	100	329	Peak
2480	80.1	-	-	-	-	-	-	-	-	Average
4959	39.97	-34.03	74	56.13	34.33	8.26	58.75	100	0	Peak
4959	15.24	-38.76	54	-	-	-	-	-	-	Average
7440	40.06	-33.94	74	52.62	35.68	10.47	58.71	100	0	Peak
7440	15.33	-38.67	54	-	-	-	-	-	-	Average
9921	41.42	-43.41	84.83	50.09	37.21	11.69	57.57	100	0	Peak

Other harmonics are lower than background noise

Test Mode :	1Mbps	Temperature :	22~24°C
Test Channel :	78	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. 9921 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



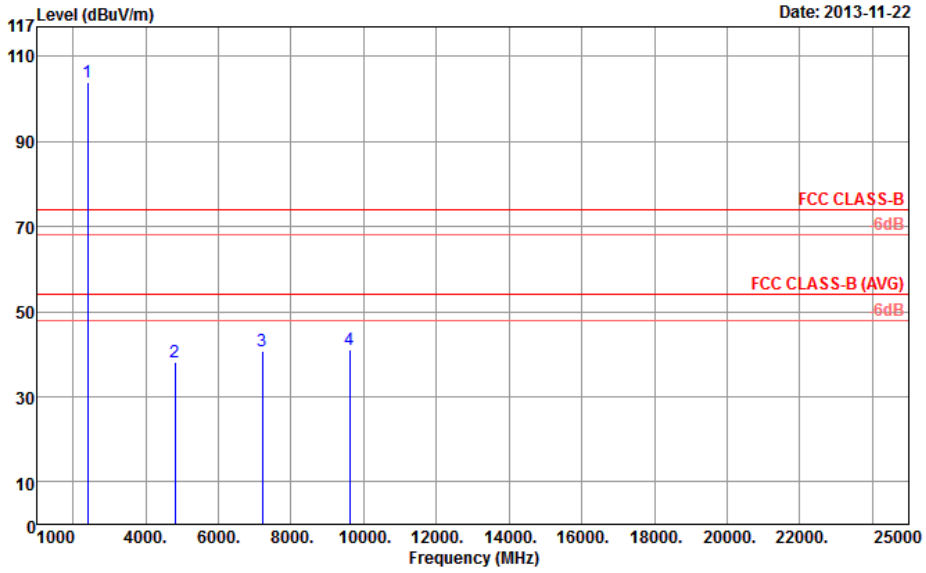
Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF VERTICAL
: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

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
2480	98.17	-	-	92.59	32.59	6.45	33.46	100	54	Peak
2480	73.44	-	-	-	-	-	-	-	-	Average
4959	39.51	-34.49	74	55.67	34.33	8.26	58.75	100	0	Peak
4959	14.78	-39.22	54	-	-	-	-	-	-	Average
7440	40.32	-33.68	74	53.12	35.44	10.47	58.71	100	0	Peak
7440	15.59	-38.41	54	-	-	-	-	-	-	Average
9921	40.38	-37.79	78.17	49.47	36.79	11.69	57.57	100	0	Peak

Other harmonics are lower than background noise

Test Mode :	2Mbps	Temperature :	22~24°C
Test Channel :	00	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2402 MHz is fundamental signal which can be ignored. 2. 7206 MHz and 9609 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF HORIZONTAL
: RBW:1000.000KHz VBW:1000.000KHz SWT:Auto

ANTENNA POLARITY : HORIZONTAL

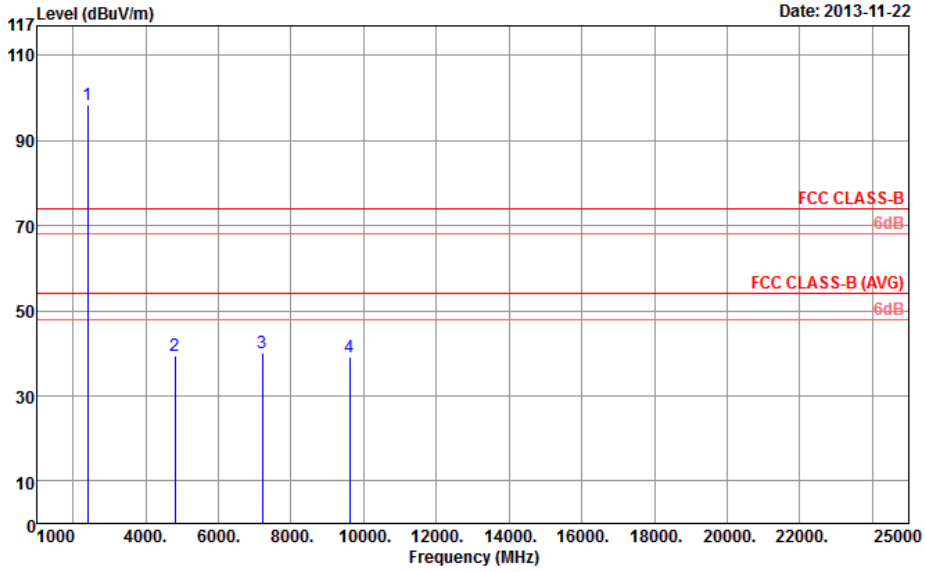
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2402	104.05	-	-	99.04	32.27	6.22	33.48	103	320	Peak
2402	79.23	-	-	-	-	-	-	-	-	Average
4803	38.03	-35.97	74	54.54	34.46	8	58.97	100	0	Peak
4803	13.21	-40.79	54	-	-	-	-	-	-	Average
7206	40.63	-43.42	84.05	52.79	35.62	10.49	58.27	100	0	Peak
9609	40.92	-43.13	84.05	49.93	36.88	11.55	57.44	100	0	Peak

Other harmonics are lower than background noise

Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (24.82dB) derived from 20log (dwell time/100ms).

For example: Average level = 104.05dBuV/m – 24.82 (dB) = 79.23dBuV/m.

Test Mode :	2Mbps	Temperature :	22~24°C
Test Channel :	00	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2402 MHz is fundamental signal which can be ignored. 2. 7206 MHz and 9609 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



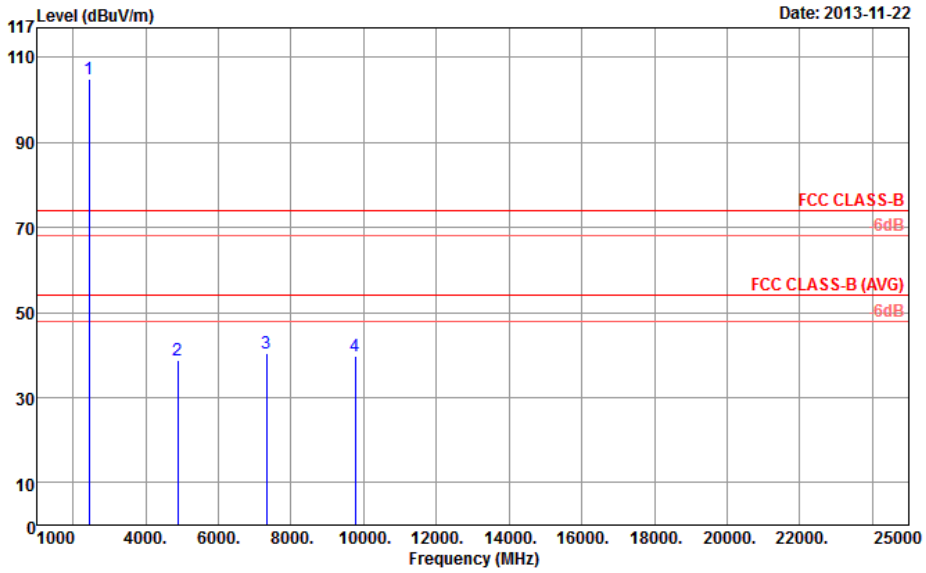
Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF VERTICAL
: RBW:1000.000KHz VBW:1000.000KHz SWT:Auto

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
2402	98.36	-	-	93.56	32.06	6.22	33.48	127	75	Peak
2402	73.54	-	-	-	-	-	-	-	-	Average
4803	39.39	-34.61	74	55.9	34.46	8	58.97	100	0	Peak
4803	14.57	-39.43	54	-	-	-	-	-	-	Average
7206	39.99	-38.37	78.36	52.17	35.6	10.49	58.27	100	0	Peak
9609	39.03	-39.33	78.36	48.42	36.5	11.55	57.44	100	0	Peak

Other harmonics are lower than background noise

Test Mode :	2Mbps	Temperature :	22~24°C
Test Channel :	39	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2441 MHz is fundamental signal which can be ignored. 2. 9765 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



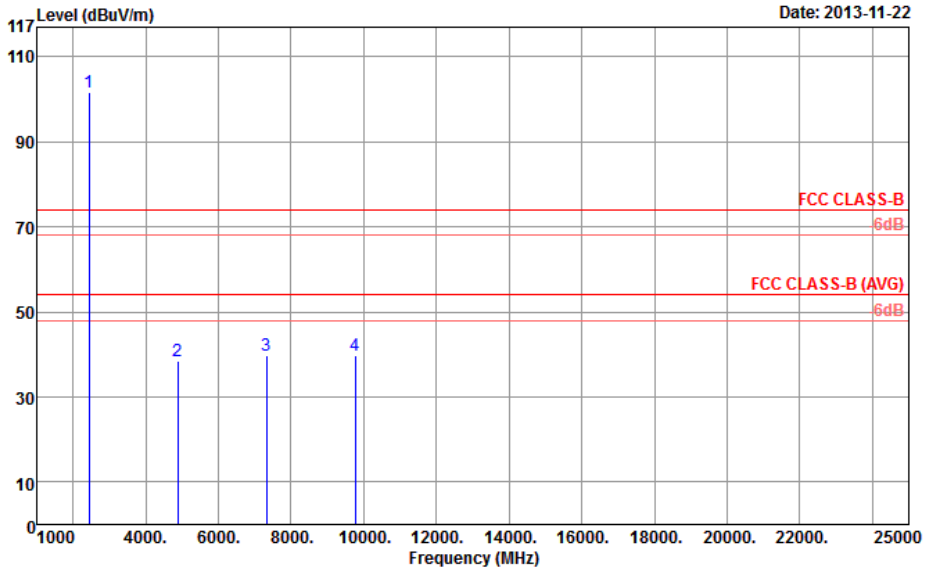
Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF HORIZONTAL

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
2441	105.07	-	-	99.71	32.49	6.34	33.47	105	334	Peak
2441	80.25	-	-	-	-	-	-	-	-	Average
4881	38.75	-35.25	74	55.07	34.4	8.15	58.87	100	0	Peak
4881	13.93	-40.07	54	-	-	-	-	-	-	Average
7323	40.54	-33.46	74	52.93	35.63	10.47	58.49	100	0	Peak
7323	15.72	-38.28	54	-	-	-	-	-	-	Average
9765	39.77	-45.3	85.07	48.69	37.02	11.57	57.51	100	0	Peak

Other harmonics are lower than background noise

Test Mode :	2Mbps	Temperature :	22~24°C
Test Channel :	39	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2441 MHz is fundamental signal which can be ignored. 2. 9765 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



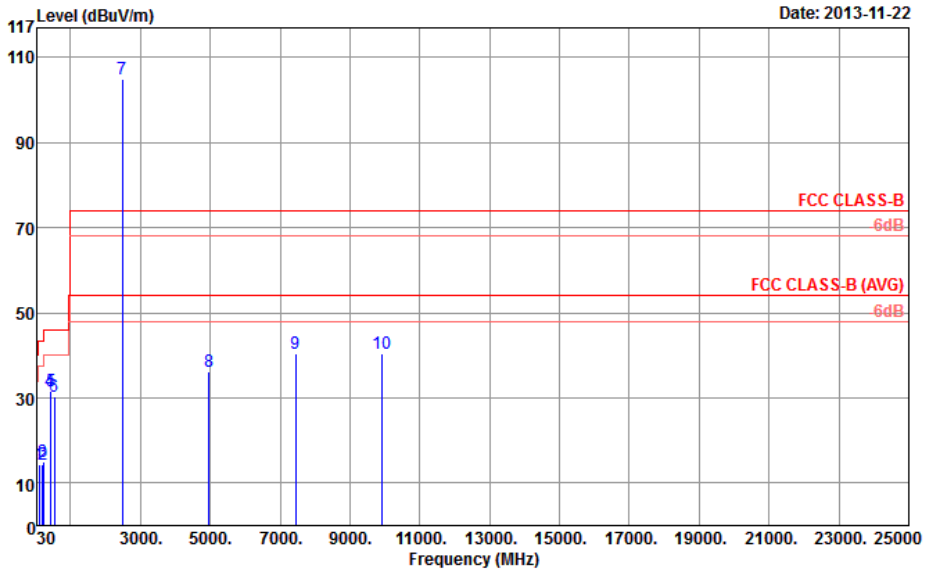
Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF VERTICAL

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
2441	101.73	-	-	96.48	32.38	6.34	33.47	100	18	Peak
2441	76.91	-	-	-	-	-	-	-	-	Average
4881	38.38	-35.62	74	54.7	34.4	8.15	58.87	100	0	Peak
4881	13.56	-40.44	54	-	-	-	-	-	-	Average
7323	39.86	-34.14	74	52.34	35.54	10.47	58.49	100	0	Peak
7323	15.04	-38.96	54	-	-	-	-	-	-	Average
9765	39.77	-41.96	81.73	49.18	36.53	11.57	57.51	100	0	Peak

Other harmonics are lower than background noise

Test Mode :	2Mbps	Temperature :	22~24°C
Test Channel :	78	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2481 MHz is fundamental signal which can be ignored. 2. 9921 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



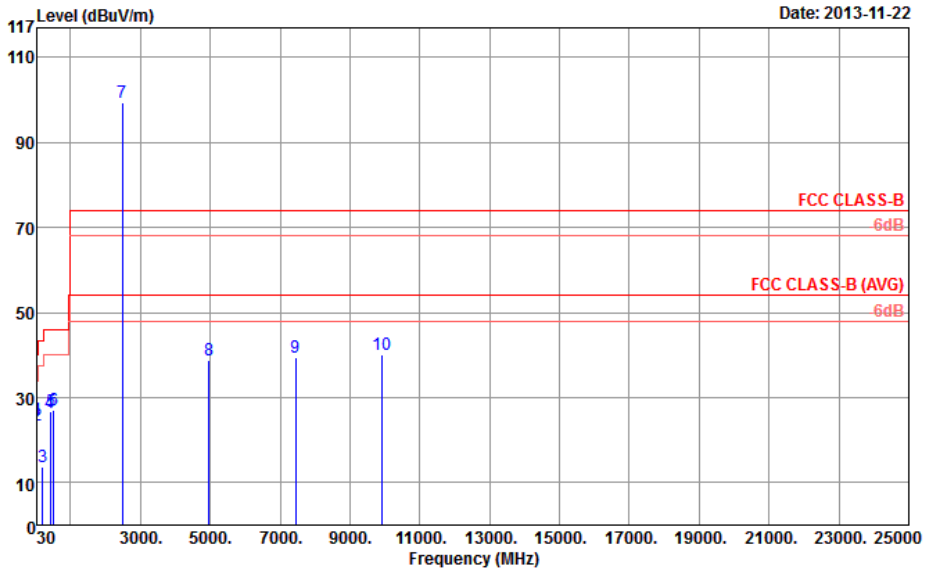
Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF HORIZONTAL

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
103.98	14.29	-29.21	43.5	34.1	10.91	1.19	31.91	-	-	Peak
208.2	14.46	-29.04	43.5	35.75	8.74	1.68	31.71	-	-	Peak
224.13	14.89	-31.11	46	35.86	9	1.75	31.72	-	-	Peak
422.5	31.73	-14.27	46	44.27	16.45	2.39	31.38	168	102	Peak
428.8	31.51	-14.49	46	44.12	16.34	2.4	31.35	-	-	Peak
528.2	30.37	-15.63	46	41.46	17.48	2.66	31.23	-	-	Peak
2481	104.89	-	-	99.27	32.63	6.45	33.46	101	326	Peak
2481	80.07	-	-	-	-	-	-	-	-	Average

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
4959	36.11	-37.89	74	52.27	34.33	8.26	58.75	100	0	Peak
4959	11.29	-42.71	54	-	-	-	-	-	-	Average
7440	40.33	-33.67	74	52.89	35.68	10.47	58.71	100	0	Peak
7440	15.51	-38.49	54	-	-	-	-	-	-	Average
9921	40.55	-44.34	84.89	49.22	37.21	11.69	57.57	100	0	Peak
Other harmonics are lower than background noise										

Test Mode :	2Mbps	Temperature :	22~24°C
Test Channel :	78	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2481 MHz is fundamental signal which can be ignored. 2. 9921 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



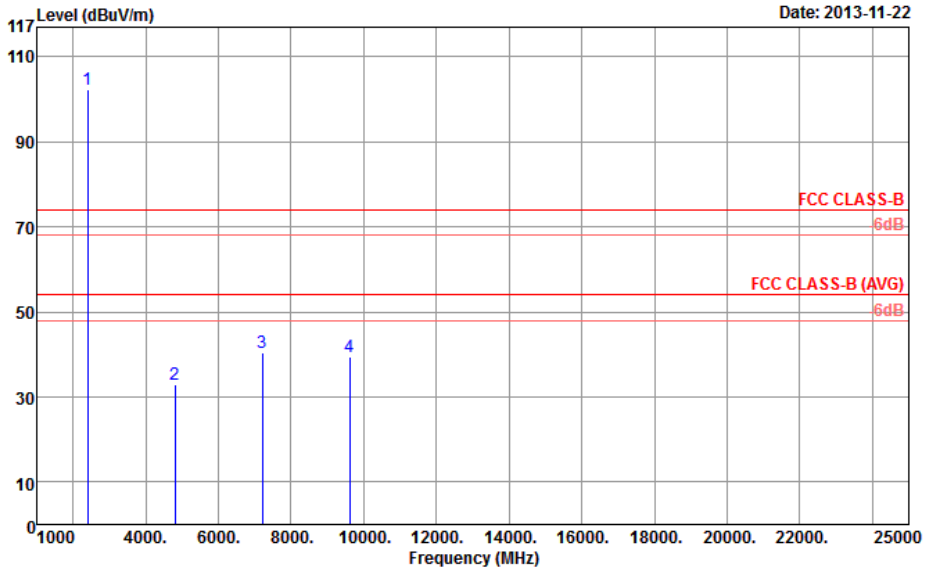
Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF VERTICAL

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
30	24.61	-15.39	40	34.37	21.66	0.64	32.06	125	221	Peak
41.34	23.38	-16.62	40	43.52	11.1	0.76	32	-	-	Peak
208.2	13.64	-29.86	43.5	34.33	9.34	1.68	31.71	-	-	Peak
422.5	26.43	-19.57	46	38.93	16.49	2.39	31.38	-	-	Peak
431.6	26.86	-19.14	46	39.61	16.19	2.4	31.34	-	-	Peak
518.4	27.02	-18.98	46	38.2	17.39	2.64	31.21	-	-	Peak
2481	99.46	-	-	93.88	32.59	6.45	33.46	100	56	Peak
2481	74.64	-	-	-	-	-	-	-	-	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
4959	38.88	-35.12	74	55.04	34.33	8.26	58.75	100	0	Peak
4959	14.06	-39.94	54	-	-	-	-	-	-	Average
7440	39.43	-34.57	74	52.23	35.44	10.47	58.71	100	0	Peak
7440	14.61	-39.39	54	-	-	-	-	-	-	Average
9921	40.06	-39.4	79.46	49.15	36.79	11.69	57.57	100	0	Peak
Other harmonics are lower than background noise										

Test Mode :	3Mbps	Temperature :	22~24°C
Test Channel :	00	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2403 MHz is fundamental signal which can be ignored. 2. 7206 MHz and 9609 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF HORIZONTAL

ANTENNA POLARITY : HORIZONTAL

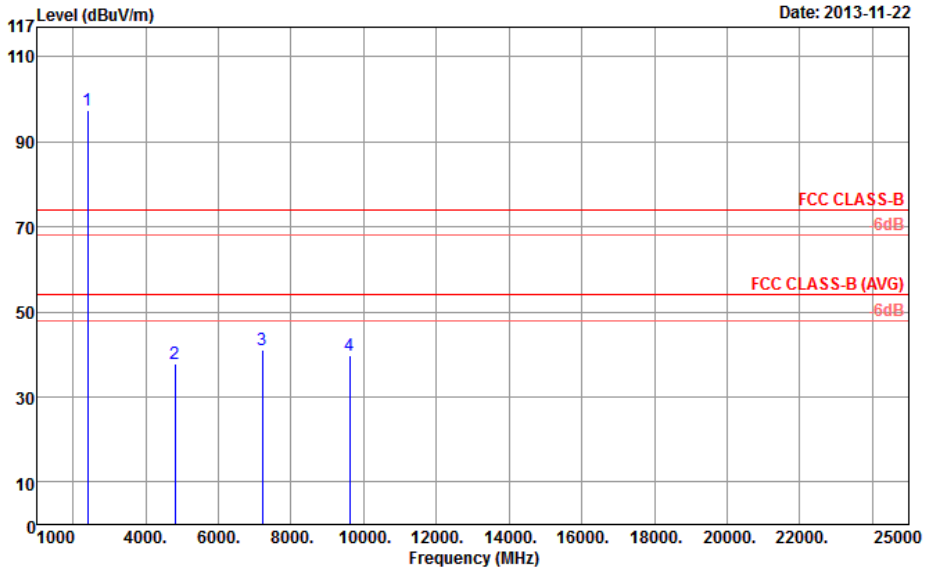
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2403	102.27	-	-	97.19	32.34	6.22	33.48	188	304	Peak
2403	77.48	-	-	-	-	-	-	-	-	Average
4803	32.82	-41.18	74	49.33	34.46	8	58.97	100	0	Peak
4803	8.03	-45.97	54	-	-	-	-	-	-	Average
7206	40.48	-41.79	82.27	52.64	35.62	10.49	58.27	100	0	Peak
9609	39.42	-42.85	82.27	48.43	36.88	11.55	57.44	100	0	Peak

Other harmonics are lower than background noise

Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (24.79dB) derived from 20log (dwell time/100ms).

For example: Average level = 102.27dBuV/m – 24.79 (dB) = 77.48dBuV/m.

Test Mode :	3Mbps	Temperature :	22~24°C
Test Channel :	00	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2403 MHz is fundamental signal which can be ignored. 2. 7206 MHz and 9609 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



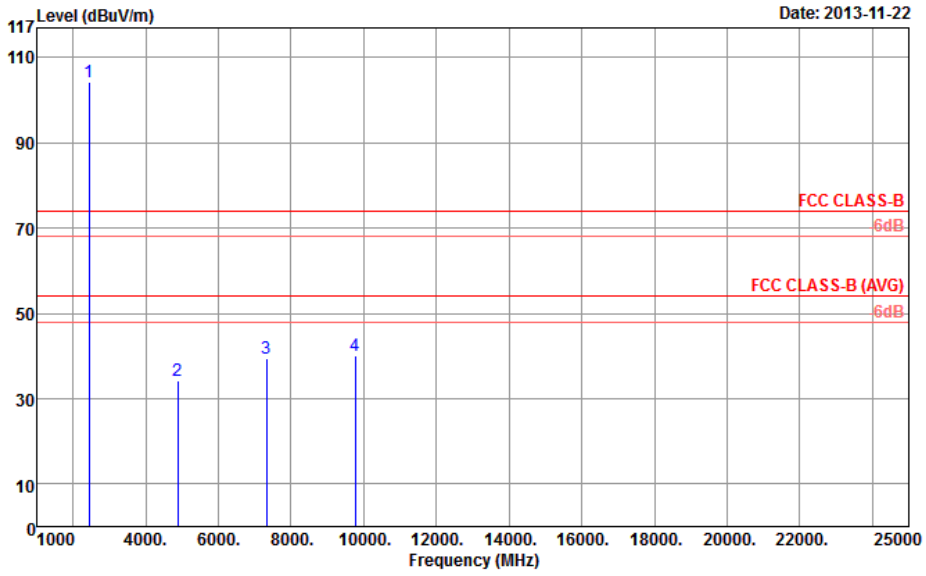
Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF VERTICAL

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
2403	97.33	-	-	92.43	32.16	6.22	33.48	100	321	Peak
2403	72.54	-	-	-	-	-	-	-	-	Average
4803	37.91	-36.09	74	54.42	34.46	8	58.97	100	0	Peak
4803	13.12	-40.88	54	-	-	-	-	-	-	Average
7206	41.09	-36.24	77.33	53.27	35.6	10.49	58.27	100	0	Peak
9609	39.7	-37.63	77.33	49.09	36.5	11.55	57.44	100	0	Peak

Other harmonics are lower than background noise

Test Mode :	3Mbps	Temperature :	22~24°C
Test Channel :	39	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2441 MHz is fundamental signal which can be ignored. 2. 9765 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



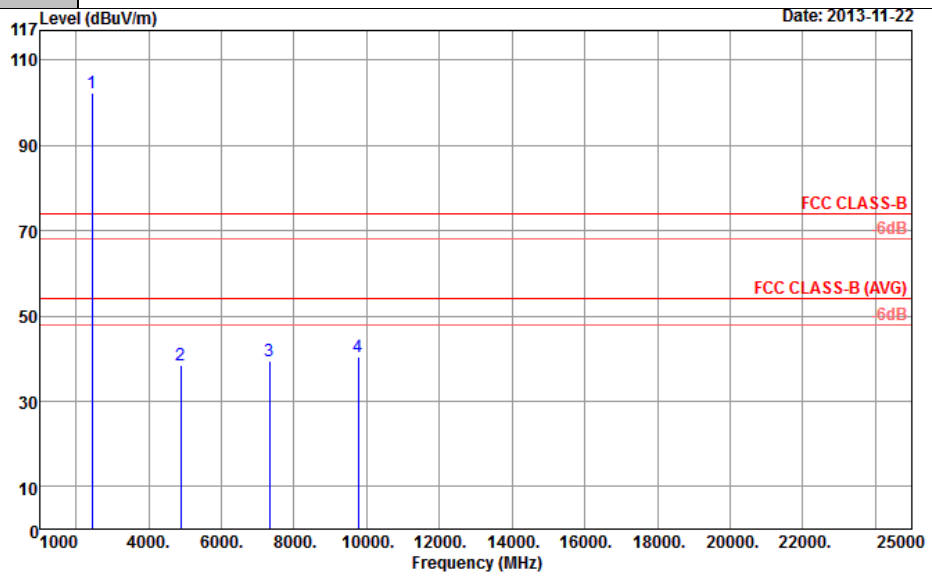
Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF HORIZONTAL

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
2441	104.44	-	-	99.08	32.49	6.34	33.47	100	298	Peak
2441	79.65	-	-	-	-	-	-	-	-	Average
4881	34.2	-39.8	74	50.52	34.4	8.15	58.87	100	0	Peak
4881	9.41	-44.59	54	-	-	-	-	-	-	Average
7323	39.53	-34.47	74	51.92	35.63	10.47	58.49	100	0	Peak
7323	14.74	-39.26	54	-	-	-	-	-	-	Average
9765	40.13	-44.31	84.44	49.05	37.02	11.57	57.51	100	0	Peak

Other harmonics are lower than background noise

Test Mode :	3Mbps	Temperature :	22~24°C
Test Channel :	39	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2441 MHz is fundamental signal which can be ignored. 2. 9765 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



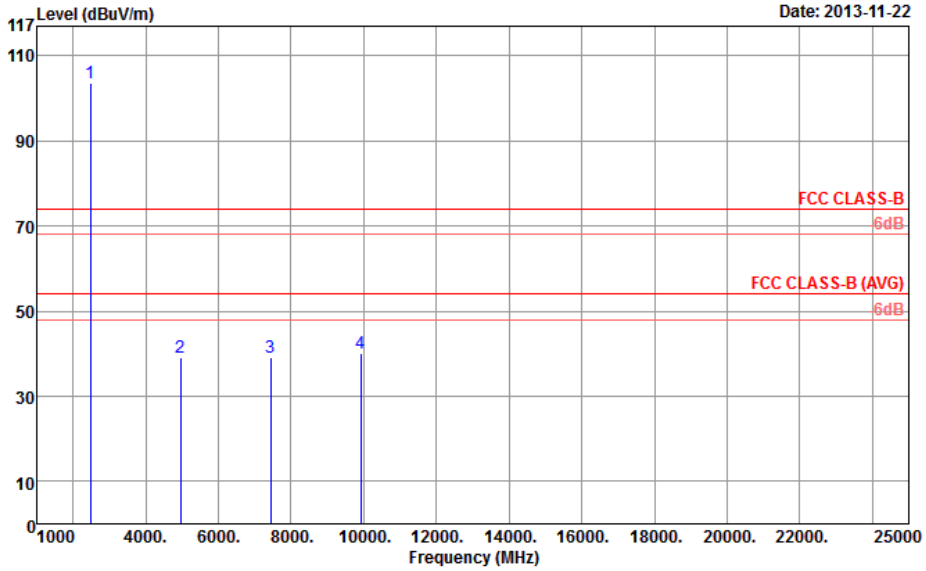
Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF VERTICAL

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
2441	102.46	-	-	97.21	32.38	6.34	33.47	103	28	Peak
2441	77.67	-	-	-	-	-	-	-	-	Average
4881	38.52	-35.48	74	54.84	34.4	8.15	58.87	100	0	Peak
4881	13.73	-40.27	54	-	-	-	-	-	-	Average
7323	39.53	-34.47	74	52.01	35.54	10.47	58.49	100	0	Peak
7323	14.74	-39.26	54	-	-	-	-	-	-	Average
9765	40.35	-42.11	82.46	49.76	36.53	11.57	57.51	100	0	Peak

Other harmonics are lower than background noise

Test Mode :	3Mbps	Temperature :	22~24°C
Test Channel :	78	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2481 MHz is fundamental signal which can be ignored. 2. 9921 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



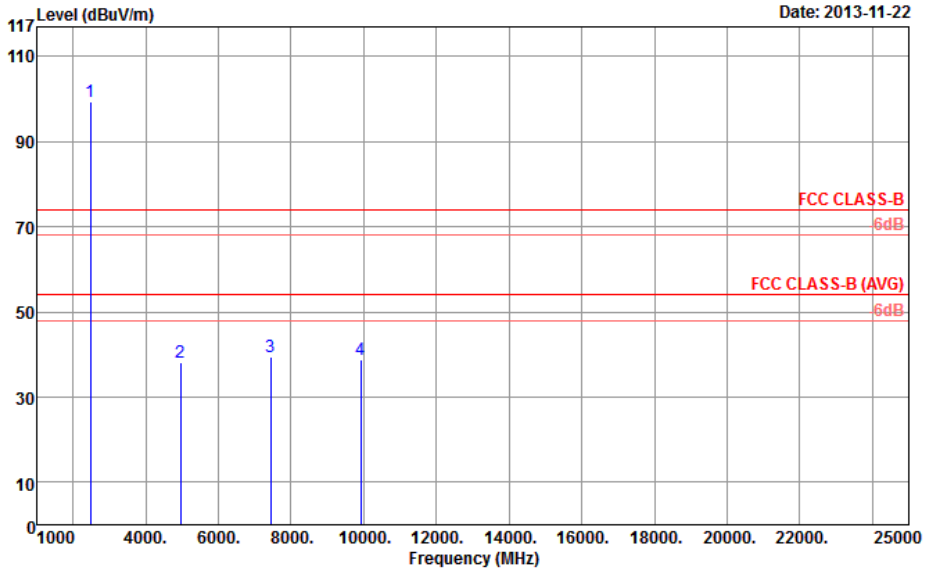
Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF HORIZONTAL
: RBW:1000.000KHz VBW:1000.000KHz SWT:Auto

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
2481	103.53	-	-	97.91	32.63	6.45	33.46	152	302	Peak
2481	78.74	-	-	-	-	-	-	-	-	Average
4959	39.01	-34.99	74	55.17	34.33	8.26	58.75	100	0	Peak
4959	14.22	-39.78	54	-	-	-	-	-	-	Average
7440	38.96	-35.04	74	51.52	35.68	10.47	58.71	100	0	Peak
7440	14.17	-39.83	54	-	-	-	-	-	-	Average
9921	40.07	-43.46	83.53	48.74	37.21	11.69	57.57	100	0	Peak

Other harmonics are lower than background noise

Test Mode :	3Mbps	Temperature :	22~24°C
Test Channel :	78	Relative Humidity :	50~52%
Test Engineer :	Jet Lui		
Remark :	1. 2481 MHz is fundamental signal which can be ignored. 2. 9921 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. The harmonic (5th, 6th, 7th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



Site : 03CH08-HY
Condition : FCC CLASS-B 3m SHF-EHF VERTICAL
: RBW:1000.000KHz VBW:1000.000KHz SWT:Auto

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
2481	99.4	-	-	93.82	32.59	6.45	33.46	107	17	Peak
2481	74.61	-	-	-	-	-	-	-	-	Average
4959	38.12	-35.88	74	54.28	34.33	8.26	58.75	100	0	Peak
4959	13.33	-40.67	54	-	-	-	-	-	-	Average
7440	39.45	-34.55	74	52.25	35.44	10.47	58.71	100	0	Peak
7440	14.66	-39.34	54	-	-	-	-	-	-	Average
9921	38.87	-40.53	79.4	47.96	36.79	11.69	57.57	100	0	Peak

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.

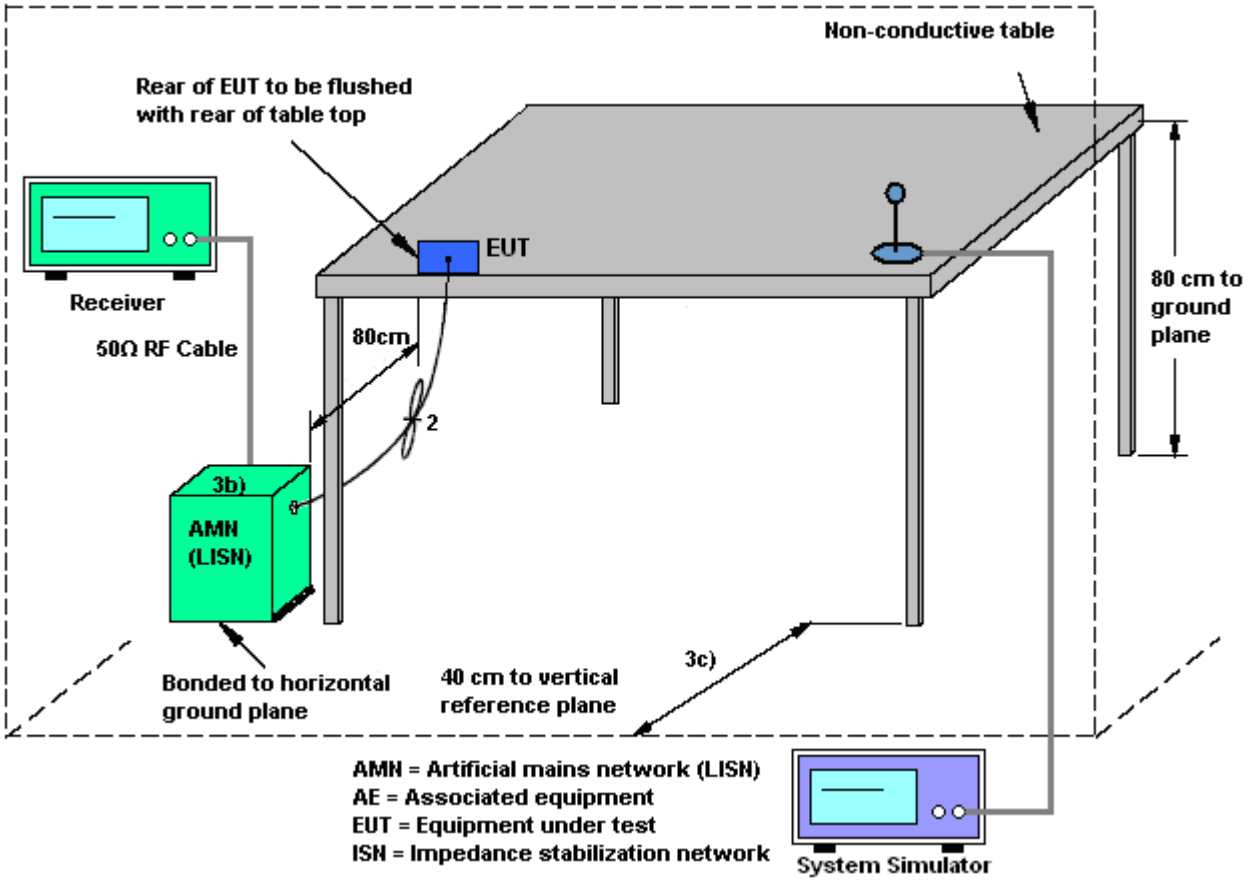
3.9.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.9.3 Test Procedures

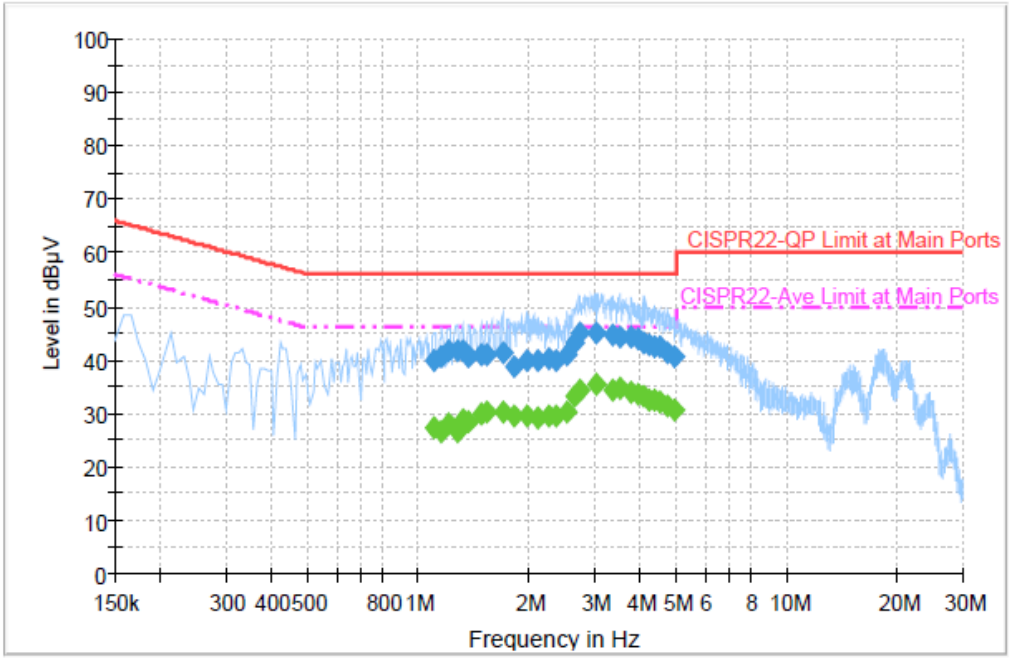
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
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



3.9.5 Test Result of AC Conducted Emission

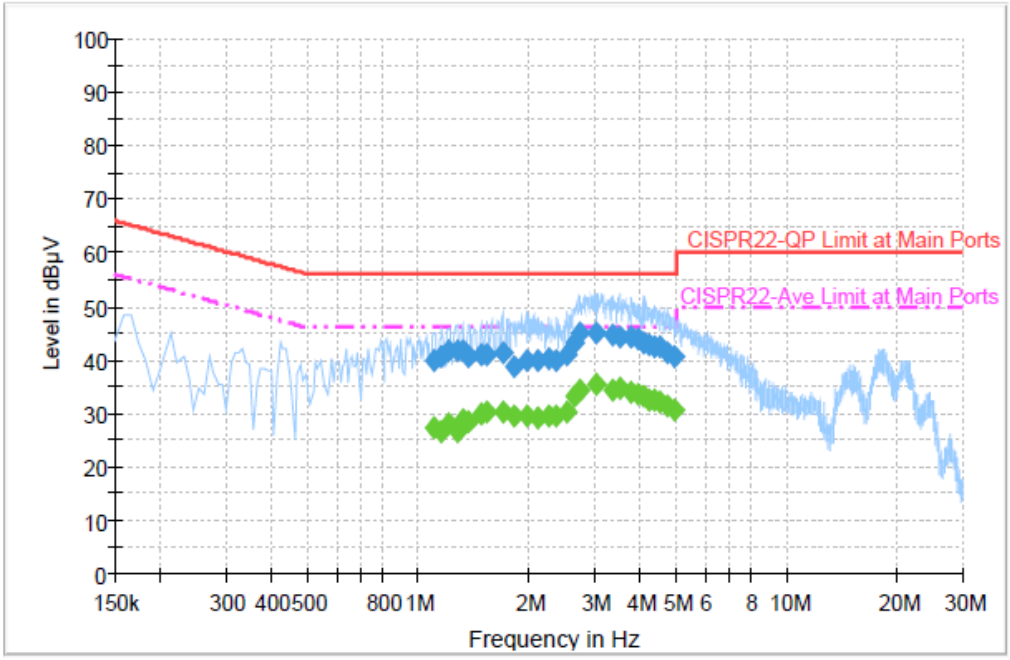
Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Idle + MP3 + Earphone + Battery + USB Cable (Charging from Adapter)		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.102000	39.8	Off	L1	19.4	16.2	56.0
1.158000	40.8	Off	L1	19.4	15.2	56.0
1.206000	41.6	Off	L1	19.4	14.4	56.0
1.278000	41.8	Off	L1	19.4	14.2	56.0
1.318000	41.7	Off	L1	19.4	14.3	56.0
1.374000	40.4	Off	L1	19.4	15.6	56.0
1.478000	40.9	Off	L1	19.4	15.1	56.0
1.534000	40.8	Off	L1	19.4	15.2	56.0
1.694000	41.4	Off	L1	19.4	14.6	56.0
1.822000	38.7	Off	L1	19.4	17.3	56.0
1.966000	40.0	Off	L1	19.4	16.0	56.0
2.118000	39.9	Off	L1	19.4	16.1	56.0
2.262000	40.1	Off	L1	19.5	15.9	56.0
2.366000	39.8	Off	L1	19.5	16.2	56.0

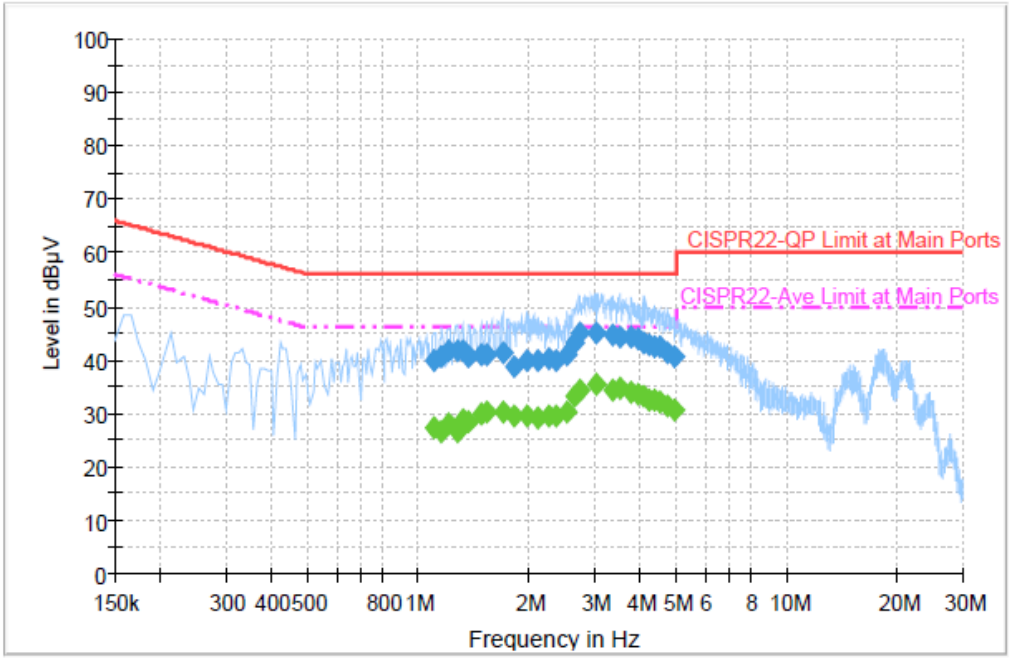
Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Idle + MP3 + Earphone + Battery + USB Cable (Charging from Adapter)		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.526000	41.1	Off	L1	19.4	14.9	56.0
2.638000	43.2	Off	L1	19.4	12.8	56.0
2.742000	45.1	Off	L1	19.4	10.9	56.0
3.054000	45.0	Off	L1	19.5	11.0	56.0
3.382000	44.6	Off	L1	19.5	11.4	56.0
3.526000	44.4	Off	L1	19.5	11.6	56.0
3.790000	44.1	Off	L1	19.5	11.9	56.0
3.942000	43.7	Off	L1	19.5	12.3	56.0
4.102000	43.2	Off	L1	19.5	12.8	56.0
4.214000	42.6	Off	L1	19.5	13.4	56.0
4.382000	42.5	Off	L1	19.5	13.5	56.0
4.510000	42.3	Off	L1	19.5	13.7	56.0
4.758000	41.3	Off	L1	19.5	14.7	56.0
4.974000	40.7	Off	L1	19.5	15.3	56.0

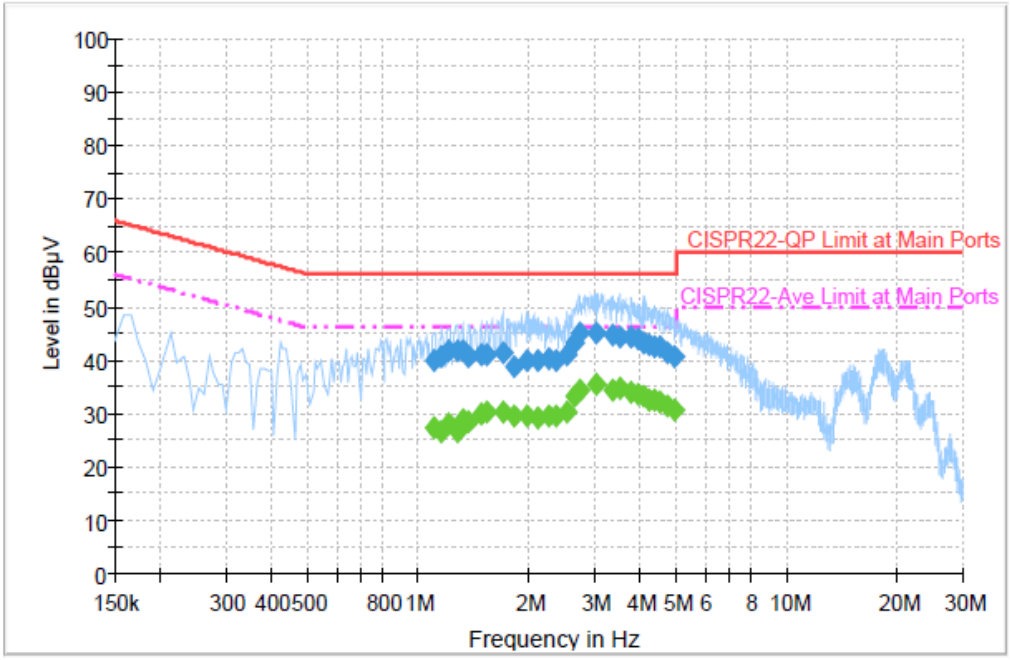
Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Idle + MP3 + Earphone + Battery + USB Cable (Charging from Adapter)		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.102000	27.3	Off	L1	19.4	18.7	46.0
1.158000	26.5	Off	L1	19.4	19.5	46.0
1.206000	28.1	Off	L1	19.4	17.9	46.0
1.278000	26.7	Off	L1	19.4	19.3	46.0
1.318000	28.6	Off	L1	19.4	17.4	46.0
1.374000	28.5	Off	L1	19.4	17.5	46.0
1.478000	29.8	Off	L1	19.4	16.2	46.0
1.534000	30.2	Off	L1	19.4	15.8	46.0
1.694000	30.4	Off	L1	19.4	15.6	46.0
1.822000	29.6	Off	L1	19.4	16.4	46.0
1.966000	29.5	Off	L1	19.4	16.5	46.0
2.118000	29.2	Off	L1	19.4	16.8	46.0
2.262000	29.4	Off	L1	19.5	16.6	46.0
2.366000	29.5	Off	L1	19.5	16.5	46.0

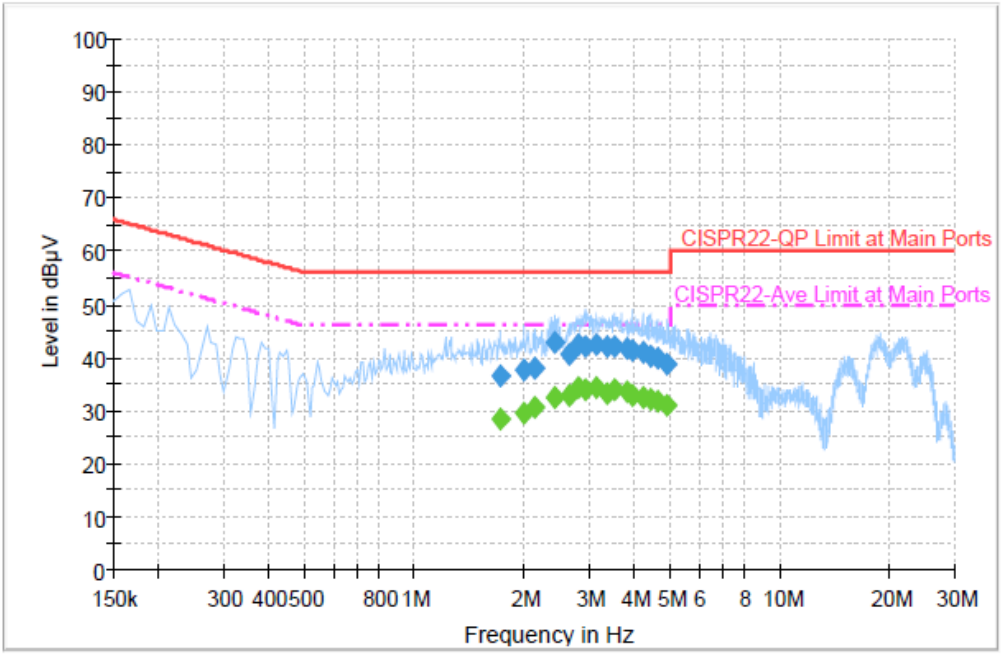
Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Idle + MP3 + Earphone + Battery + USB Cable (Charging from Adapter)		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.526000	30.3	Off	L1	19.4	15.7	46.0
2.638000	33.1	Off	L1	19.4	12.9	46.0
2.742000	34.3	Off	L1	19.4	11.7	46.0
3.054000	35.3	Off	L1	19.5	10.7	46.0
3.382000	34.4	Off	L1	19.5	11.6	46.0
3.526000	34.7	Off	L1	19.5	11.3	46.0
3.790000	33.9	Off	L1	19.5	12.1	46.0
3.942000	33.8	Off	L1	19.5	12.2	46.0
4.102000	33.2	Off	L1	19.5	12.8	46.0
4.214000	32.5	Off	L1	19.5	13.5	46.0
4.382000	32.3	Off	L1	19.5	13.7	46.0
4.510000	32.1	Off	L1	19.5	13.9	46.0
4.758000	31.2	Off	L1	19.5	14.8	46.0
4.974000	30.6	Off	L1	19.5	15.4	46.0

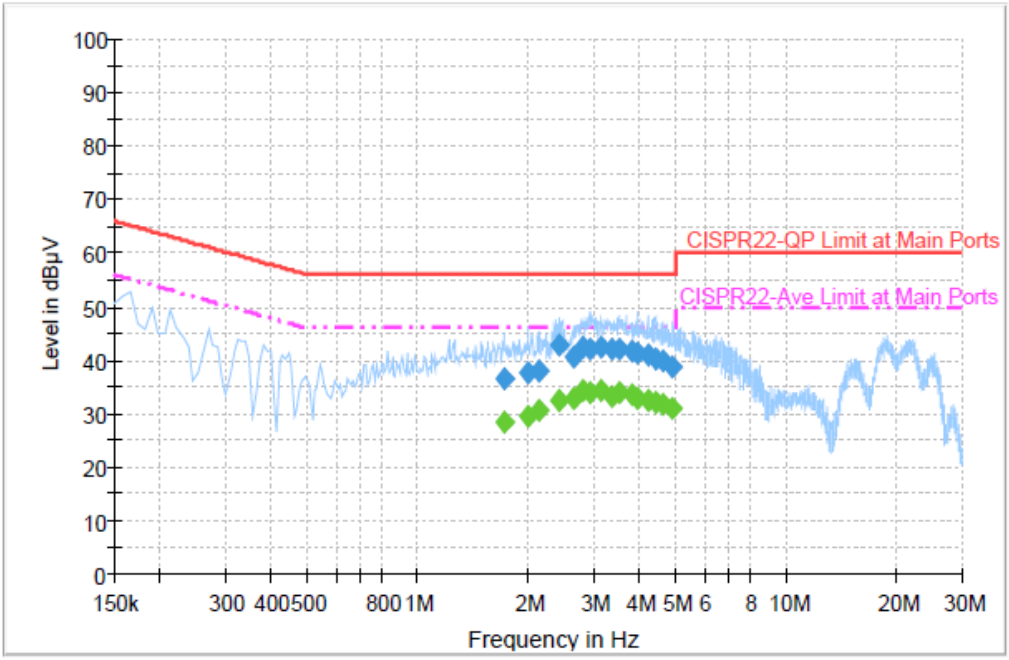
Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Idle + MP3 + Earphone + Battery + USB Cable (Charging from Adapter)		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.718000	36.5	Off	N	19.5	19.5	56.0
1.990000	37.5	Off	N	19.5	18.5	56.0
2.142000	38.0	Off	N	19.5	18.0	56.0
2.414000	42.8	Off	N	19.5	13.2	56.0
2.638000	40.4	Off	N	19.5	15.6	56.0
2.790000	42.4	Off	N	19.5	13.6	56.0
2.926000	41.9	Off	N	19.5	14.1	56.0
3.134000	42.3	Off	N	19.5	13.7	56.0
3.366000	42.0	Off	N	19.5	14.0	56.0
3.534000	42.0	Off	N	19.5	14.0	56.0
3.798000	41.6	Off	N	19.5	14.4	56.0
3.934000	41.2	Off	N	19.5	14.8	56.0
4.222000	40.9	Off	N	19.5	15.1	56.0
4.406000	40.1	Off	N	19.5	15.9	56.0
4.614000	39.8	Off	N	19.5	16.2	56.0
4.886000	38.9	Off	N	19.6	17.1	56.0

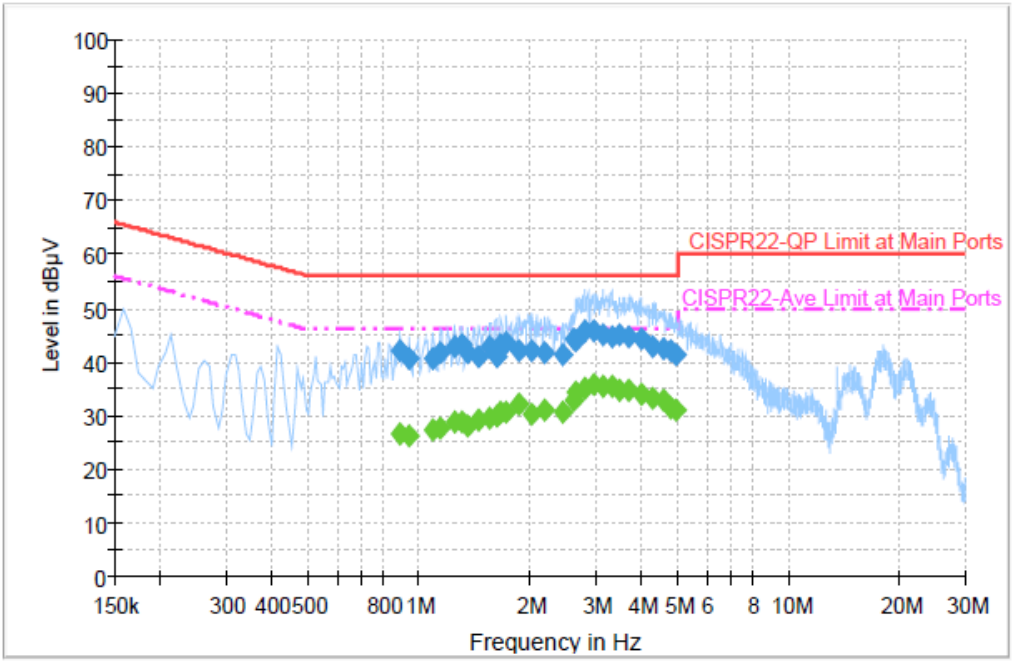
Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Idle + MP3 + Earphone + Battery + USB Cable (Charging from Adapter)		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.718000	28.5	Off	N	19.5	17.5	46.0
1.990000	29.4	Off	N	19.5	16.6	46.0
2.142000	30.7	Off	N	19.5	15.3	46.0
2.414000	32.5	Off	N	19.5	13.5	46.0
2.638000	32.9	Off	N	19.5	13.1	46.0
2.790000	34.5	Off	N	19.5	11.5	46.0
2.926000	34.1	Off	N	19.5	11.9	46.0
3.134000	34.2	Off	N	19.5	11.8	46.0
3.366000	33.4	Off	N	19.5	12.6	46.0
3.534000	33.8	Off	N	19.5	12.2	46.0
3.798000	33.4	Off	N	19.5	12.6	46.0
3.934000	32.9	Off	N	19.5	13.1	46.0
4.222000	32.6	Off	N	19.5	13.4	46.0
4.406000	32.1	Off	N	19.5	13.9	46.0
4.614000	31.6	Off	N	19.5	14.4	46.0
4.886000	30.8	Off	N	19.6	15.2	46.0

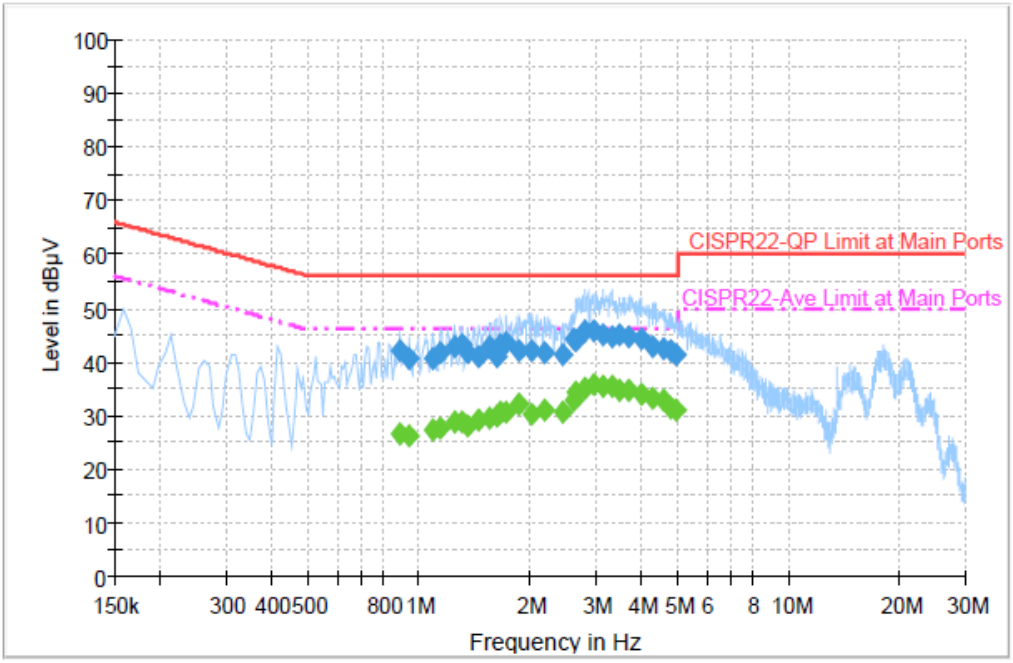
Test Mode :	Mode 2	Temperature :	20~22℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + Bluetooth Idle + WLAN Link + MP3 + Earphone + Battery + USB Cable (Charging from Adapter)		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.886000	41.9	Off	L1	19.4	14.1	56.0
0.942000	40.6	Off	L1	19.4	15.4	56.0
1.086000	40.6	Off	L1	19.4	15.4	56.0
1.142000	41.8	Off	L1	19.4	14.2	56.0
1.246000	42.9	Off	L1	19.4	13.1	56.0
1.302000	43.2	Off	L1	19.4	12.8	56.0
1.358000	41.6	Off	L1	19.4	14.4	56.0
1.454000	41.1	Off	L1	19.4	14.9	56.0
1.558000	42.9	Off	L1	19.4	13.1	56.0
1.622000	41.0	Off	L1	19.4	15.0	56.0
1.662000	43.1	Off	L1	19.4	12.9	56.0
1.718000	43.5	Off	L1	19.4	12.5	56.0
1.870000	41.9	Off	L1	19.4	14.1	56.0
2.022000	41.9	Off	L1	19.4	14.1	56.0

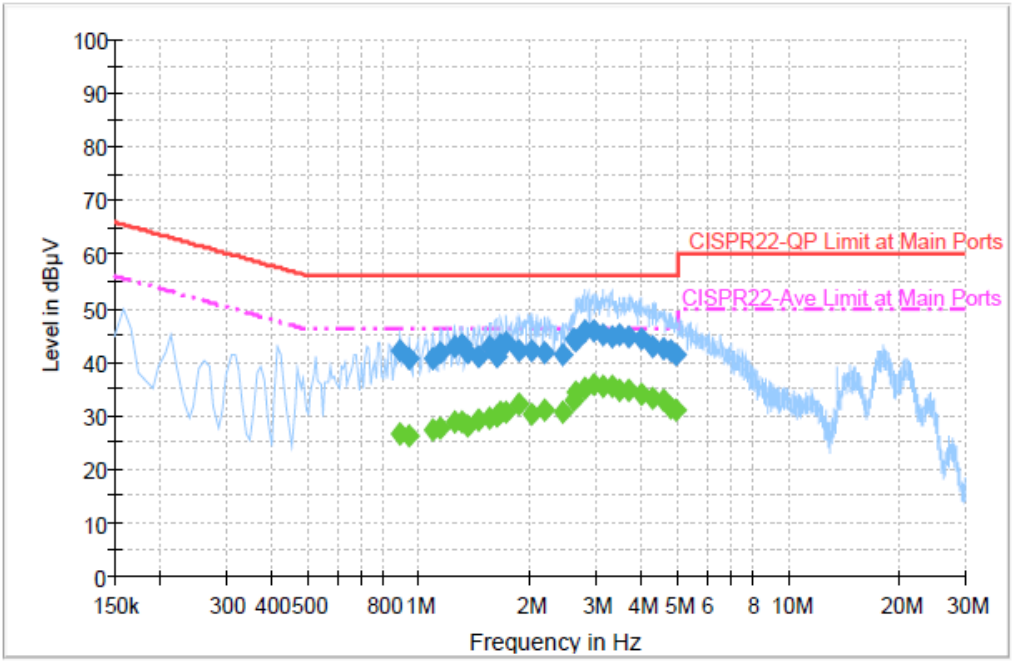
Test Mode :	Mode 2	Temperature :	20~22℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + Bluetooth Idle + WLAN Link + MP3 + Earphone + Battery + USB Cable (Charging from Adapter)		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.190000	41.5	Off	L1	19.5	14.5	56.0
2.446000	41.2	Off	L1	19.5	14.8	56.0
2.606000	44.2	Off	L1	19.4	11.8	56.0
2.662000	44.1	Off	L1	19.4	11.9	56.0
2.806000	45.7	Off	L1	19.4	10.3	56.0
2.974000	45.8	Off	L1	19.4	10.2	56.0
3.150000	44.8	Off	L1	19.5	11.2	56.0
3.310000	44.6	Off	L1	19.5	11.4	56.0
3.486000	45.1	Off	L1	19.5	10.9	56.0
3.678000	44.6	Off	L1	19.5	11.4	56.0
3.998000	44.2	Off	L1	19.5	11.8	56.0
4.286000	42.7	Off	L1	19.5	13.3	56.0
4.598000	42.4	Off	L1	19.5	13.6	56.0
4.790000	41.9	Off	L1	19.5	14.1	56.0
4.950000	41.3	Off	L1	19.5	14.7	56.0

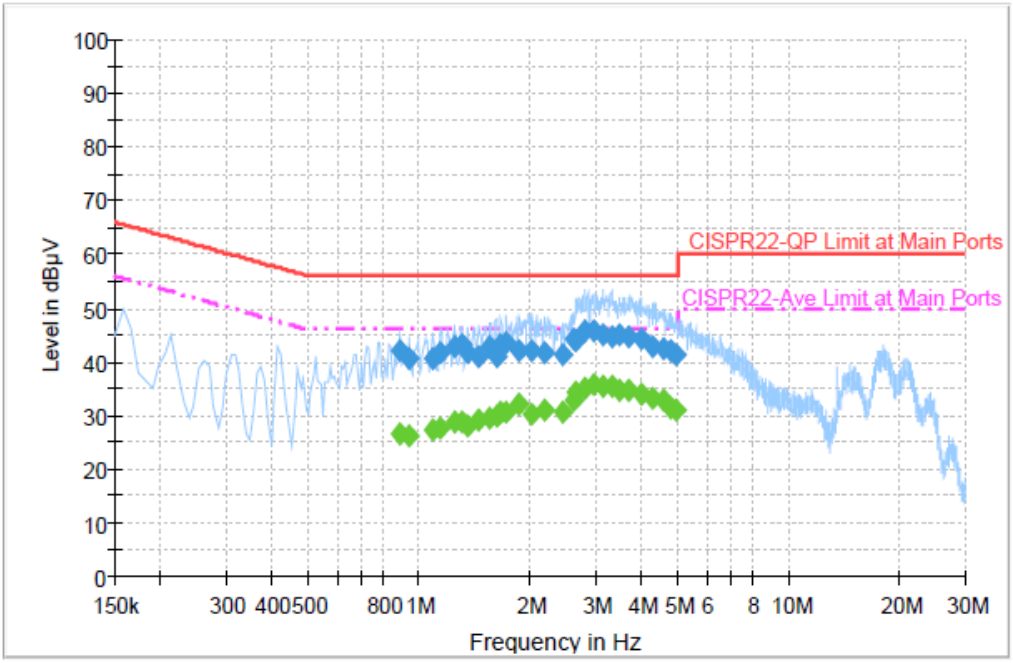
Test Mode :	Mode 2	Temperature :	20~22℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + Bluetooth Idle + WLAN Link + MP3 + Earphone + Battery + USB Cable (Charging from Adapter)		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.886000	26.5	Off	L1	19.4	19.5	46.0
0.942000	26.2	Off	L1	19.4	19.8	46.0
1.086000	27.3	Off	L1	19.4	18.7	46.0
1.142000	27.7	Off	L1	19.4	18.3	46.0
1.246000	28.9	Off	L1	19.4	17.1	46.0
1.302000	29.0	Off	L1	19.4	17.0	46.0
1.358000	28.2	Off	L1	19.4	17.8	46.0
1.454000	29.1	Off	L1	19.4	16.9	46.0
1.558000	29.6	Off	L1	19.4	16.4	46.0
1.622000	29.8	Off	L1	19.4	16.2	46.0
1.662000	30.7	Off	L1	19.4	15.3	46.0
1.718000	30.5	Off	L1	19.4	15.5	46.0
1.870000	32.1	Off	L1	19.4	13.9	46.0
2.022000	30.3	Off	L1	19.4	15.7	46.0

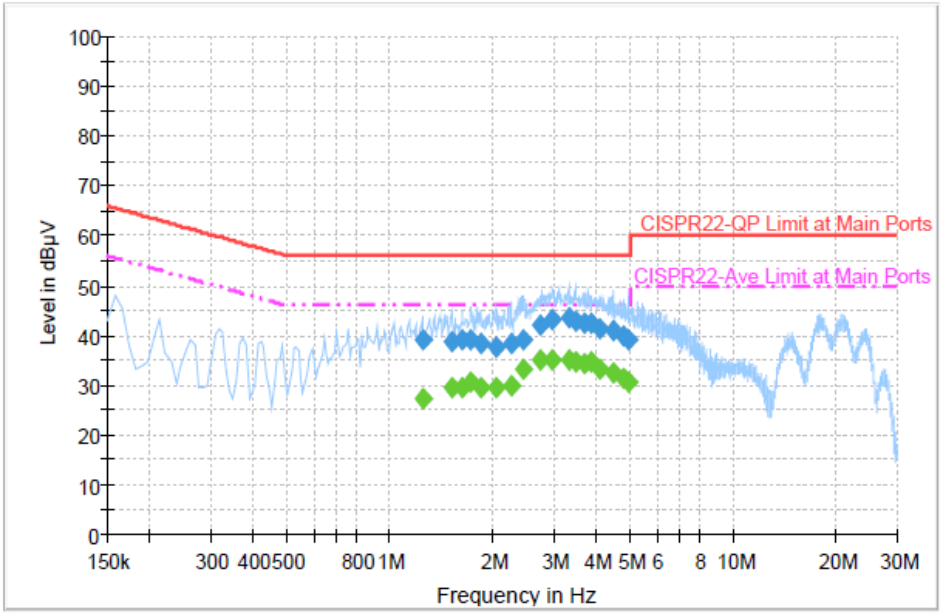
Test Mode :	Mode 2	Temperature :	20~22℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + Bluetooth Idle + WLAN Link + MP3 + Earphone + Battery + USB Cable (Charging from Adapter)		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.190000	30.9	Off	L1	19.5	15.1	46.0
2.446000	30.7	Off	L1	19.5	15.3	46.0
2.606000	32.9	Off	L1	19.4	13.1	46.0
2.662000	34.2	Off	L1	19.4	11.8	46.0
2.806000	35.2	Off	L1	19.4	10.8	46.0
2.974000	35.8	Off	L1	19.4	10.2	46.0
3.150000	35.5	Off	L1	19.5	10.5	46.0
3.310000	35.4	Off	L1	19.5	10.6	46.0
3.486000	34.7	Off	L1	19.5	11.3	46.0
3.678000	34.6	Off	L1	19.5	11.4	46.0
3.998000	34.1	Off	L1	19.5	11.9	46.0
4.286000	33.3	Off	L1	19.5	12.7	46.0
4.598000	32.7	Off	L1	19.5	13.3	46.0
4.790000	31.3	Off	L1	19.5	14.7	46.0
4.950000	31.1	Off	L1	19.5	14.9	46.0

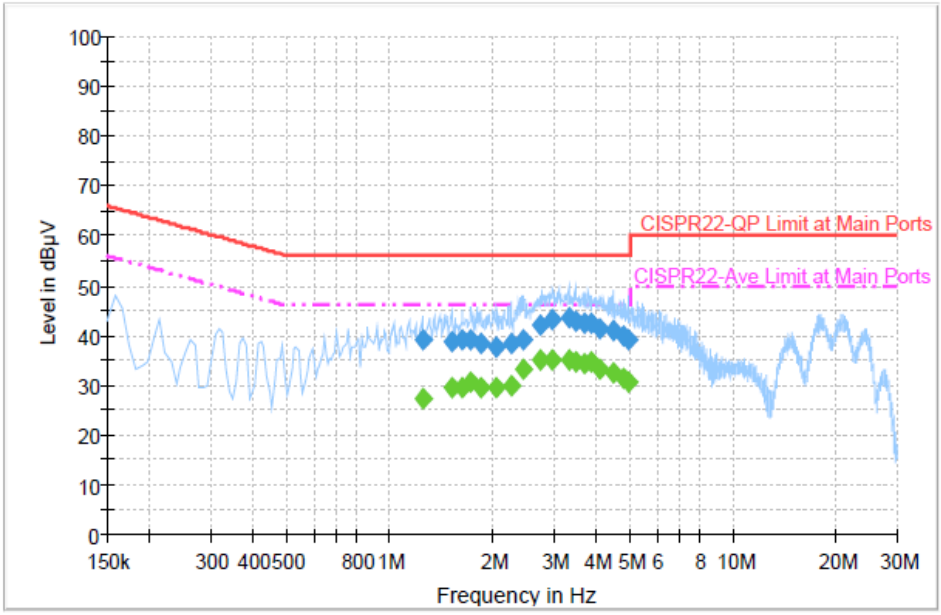
Test Mode :	Mode 2	Temperature :	20~22℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM1900 Idle + Bluetooth Idle + WLAN Link + MP3 + Earphone + Battery + USB Cable (Charging from Adapter)		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.246000	39.2	Off	N	19.5	16.8	56.0
1.510000	38.6	Off	N	19.5	17.4	56.0
1.622000	39.0	Off	N	19.5	17.0	56.0
1.726000	39.1	Off	N	19.5	16.9	56.0
1.838000	38.5	Off	N	19.5	17.5	56.0
2.046000	37.7	Off	N	19.5	18.3	56.0
2.246000	38.4	Off	N	19.5	17.6	56.0
2.438000	39.1	Off	N	19.5	16.9	56.0
2.734000	42.0	Off	N	19.5	14.0	56.0
2.982000	43.1	Off	N	19.5	12.9	56.0
3.310000	43.5	Off	N	19.5	12.5	56.0
3.470000	43.0	Off	N	19.5	13.0	56.0
3.670000	42.5	Off	N	19.5	13.5	56.0
3.846000	42.3	Off	N	19.5	13.7	56.0
4.078000	41.5	Off	N	19.5	14.5	56.0
4.486000	40.9	Off	N	19.5	15.1	56.0
4.774000	39.8	Off	N	19.5	16.2	56.0
4.966000	39.2	Off	N	19.6	16.8	56.0

Test Mode :	Mode 2	Temperature :	20~22℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM1900 Idle + Bluetooth Idle + WLAN Link + MP3 + Earphone + Battery + USB Cable (Charging from Adapter)		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.246000	27.3	Off	N	19.5	18.7	46.0
1.510000	29.6	Off	N	19.5	16.4	46.0
1.622000	29.5	Off	N	19.5	16.5	46.0
1.726000	30.6	Off	N	19.5	15.4	46.0
1.838000	29.6	Off	N	19.5	16.4	46.0
2.046000	29.7	Off	N	19.5	16.3	46.0
2.246000	30.0	Off	N	19.5	16.0	46.0
2.438000	33.2	Off	N	19.5	12.8	46.0
2.734000	34.9	Off	N	19.5	11.1	46.0
2.982000	34.9	Off	N	19.5	11.1	46.0
3.310000	35.0	Off	N	19.5	11.0	46.0
3.470000	34.8	Off	N	19.5	11.2	46.0
3.670000	34.2	Off	N	19.5	11.8	46.0
3.846000	34.6	Off	N	19.5	11.4	46.0
4.078000	33.1	Off	N	19.5	12.9	46.0
4.486000	32.5	Off	N	19.5	13.5	46.0
4.774000	31.4	Off	N	19.5	14.6	46.0
4.966000	30.7	Off	N	19.6	15.3	46.0

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 Anti-Replacement Construction

An embedded-in antenna design is used.

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	Nov. 18, 2013 ~ Nov. 19, 2013	Jun. 06, 2014	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	300MHz~40GHz	Feb. 05, 2013	Nov. 18, 2013 ~ Nov. 19, 2013	Feb. 04, 2014	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	300MHz~40GHz	Feb. 05, 2013	Nov. 18, 2013 ~ Nov. 19, 2013	Feb. 04, 2014	Conducted (TH02-HY)
Hygrometer	Testo	608-H1	34897199	N/A	May 07, 2013	Nov. 18, 2013 ~ Nov. 19, 2013	May 06, 2014	Conducted (TH02-HY)
RF cable	HONOVA	MF86	N/A	N/A	Nov. 26, 2012	Nov. 18, 2013 ~ Nov. 19, 2013	Nov. 25, 2013	Conducted (TH02-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100472	20Hz – 26.5GHz	Jan. 23, 2013	Nov. 21, 2013 ~ Nov. 22, 2013	Jan. 22, 2014	Radiation (03CH08-HY)
Bilog Antenna	Teseq GmbH	CBL6112D	35379	30MHz~2GHz	Oct. 10, 2013	Nov. 21, 2013 ~ Nov. 22, 2013	Oct. 09, 2014	Radiation (03CH08-HY)
Horn Antenna	ESCO	3117	000143261	1GHz~18GHz	Jan. 08, 2013	Nov. 21, 2013 ~ Nov. 22, 2013	Jan. 07, 2014	Radiation (03CH08-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz~40GHz	Oct. 03, 2013	Nov. 21, 2013 ~ Nov. 22, 2013	Oct. 02, 2014	Radiation (03CH08-HY)
Amplifier	SONOMA	310N	187231	9kHz~1GHz	May 15, 2013	Nov. 21, 2013 ~ Nov. 22, 2013	May 14, 2014	Radiation (03CH08-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	1590074	1GHz~18GHz	Jul. 09, 2013	Nov. 21, 2013 ~ Nov. 22, 2013	Jul. 08, 2014	Radiation (03CH08-HY)
Pre Amplifier	Agilent	8449B	3008A02665	1GHz~26.5GHz	Sep. 04, 2013	Nov. 21, 2013 ~ Nov. 22, 2013	Sep. 03, 2014	Radiation (03CH08-HY)
Turn Table	Chaintek	Chaintek 3000	N/A	0~360 Degree	N/A	Nov. 21, 2013 ~ Nov. 22, 2013	N/A	Radiation (03CH08-HY)
Antenna Mast	MF	MFA520BS	N/A	1m~4m	N/A	Nov. 21, 2013 ~ Nov. 22, 2013	N/A	Radiation (03CH08-HY)
Low Pass Filter	Wainwright	WLKS1200-8SS	SN2	1.2G LPF	Dec. 27, 2012	Nov. 21, 2013 ~ Nov. 22, 2013	Dec. 26, 2013	Radiation (03CH08-HY)
Low Pass Filter	Wainwright	WLKS4500-8SS	SN19	4.5G LPF	Dec. 27, 2012	Nov. 21, 2013 ~ Nov. 22, 2013	Dec. 26, 2013	Radiation (03CH08-HY)
High Pass Filter	Microwave	H07G18G3	SN282388	7G HPF	Dec. 27, 2012	Nov. 21, 2013 ~ Nov. 22, 2013	Dec. 26, 2013	Radiation (03CH08-HY)
High Pass Filter	Microwave	H3G018G3	SN279268	3G HPF	Dec. 27, 2012	Nov. 21, 2013 ~ Nov. 22, 2013	Dec. 26, 2013	Radiation (03CH08-HY)
Turn Table	Chaintek	Chaintek 3000	N/A	0~360 Degree	N/A	Nov. 21, 2013 ~ Nov. 22, 2013	N/A	Radiation (03CH08-HY)
Antenna Mast	MF	MFA520BS	NA	1m~4m	N/A	Nov. 21, 2013 ~ Nov. 22, 2013	N/A	Radiation (03CH08-HY)
Hygrometer	Testo	608-H1	41410070	N/A	Jul. 18, 2013	Nov. 21, 2013 ~ Nov. 22, 2013	Jul. 17, 2014	Radiation (03CH08-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	860004/0001	9 kHz~30 MHz	Jul. 03, 2012	Nov. 21, 2013 ~ Nov. 22, 2013	Jul. 02, 2014	Radiation (03CH08-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9 kHz~7 GHz	Sep. 06, 2013	Nov. 13, 2013	Sep. 05, 2014	Conduction (CO05-HY)
Two-LISN	Rohde & Schwarz	ENV216	100081	9kHz ~ 30MHz	Dec. 12, 2012	Nov. 13, 2013	Dec. 11, 2013	Conduction (CO05-HY)
Two-LISN	Rohde & Schwarz	ENV216	100080	9kHz ~ 30MHz	Dec. 06, 2012	Nov. 13, 2013	Dec. 05, 2013	Conduction (CO05-HY)
AC Power Source	APC	APC-1000 W	N/A	N/A	N/A	Nov. 13, 2013	N/A	Conduction (CO05-HY)
Test Software	N/A	EMC32	8.40.0	N/A	N/A	Nov. 13 2013	N/A	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Apr. 25, 2013,	Nov. 13, 2013	Apr. 24, 2014	Conduction (CO05-HY)
LF Cable	Shuner	RG-402	N/A	N/A	Oct. 17, 2013	Nov. 13, 2013	Oct. 16, 2014	Conduction (CO05-HY)

Note: Test equipment calibration is traceable to the procedure of ISO17025.

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))	**4.30**