

FCC/IC RF Test Report

APPLICANT : Sony Mobile Communications Inc.
EQUIPMENT : Smart phone
BRAND NAME : SONY
TYPE NAME : PM-0382-BV
FCC ID : PY7PM-0382
IC : 4170B-PM0382
STANDARD : FCC Part 15 Subpart C §15.247
IC RSS-210 issue 8
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Apr. 22, 2014 and testing was completed on May 28, 2014. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

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



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR442202C	Rev. 01	Initial issue of report	Jul. 14, 2014

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	RSS-210 A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.1	-	RSS-Gen 4.6.1	99% Bandwidth	-	Pass	-
3.2	15.247(b)	RSS-210 A8.4	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	RSS-210 A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	RSS-210 A8.5	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
			Conducted Spurious Emission		Pass	-
3.5	15.247(d)	RSS-210 A8.5	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.49 dB at 2389.020 MHz
3.6	15.207	RSS-Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 9.70 dB at 0.414 MHz
3.7	15.203 & 15.247(b)	RSS-210 A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Sony Mobile Communications Inc.
Nya Vattentorget, 22188 Lund, Sweden

1.2 Manufacturer

Arima Communication Corp.
6F, No. 866, Jhongjheng Rd., Jhonghe Dist., New Taipei City 23586, Taiwan

1.3 Product 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, Bluetooth with FM Receiver, ANT+, GPS, and NFC features, and below is details of information.

Product Feature	
Equipment	Smart phone
Brand Name	SONY
Type Name	PM-0382-BV
FCC ID	PY7PM-0382
IC	4170B-PM0382
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. 8
Wi-Fi Specification	802.11b/g/n (HT20)
Bluetooth Version	v3.0 + EDR / v4.0-LE
NFC Specification	ISO14443A / ISO14443B / Felica / ISO15693
ANT+	ANT+
Power Supply	Battery / AC Adapter / Car Charger
EUT Stage	Production Unit

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

1.4 Product Specification subjective to this standard

Product Specification subjective to this standard	
Tx/Rx Channel Frequency Range	802.11b/g/n : 2412 MHz ~ 2462 MHz
Maximum (Peak) Output Power to Antenna	802.11b : 18.89 dBm (0.0774 W) 802.11g : 21.47 dBm (0.1403 W) 802.11n HT20 : 19.48 dBm (0.0887 W)
99% Occupied Bandwidth	802.11b : 13.10MHz 802.11g : 18.95MHz 802.11n HT20 : 19.15MHz
Antenna Type	802.11b/g/n : PIFA Antenna type with gain -0.77 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

EUT Information List				
IMEI	HW Version	SW Version	S/N	Performed Test Item
IMEI 1: 004021476009931 IMEI 2: 004402147609949	A	18.4.B.0.7	SQ4408D22793	RF conducted measurement
IMEI 1: 004402147601599 IMEI 2: 004402147601607			SQ4408D21675	Radiated Spurious Emission
IMEI 1: 004402147601532 IMEI 2: 004402147601540			SQ4408D21715	Conducted Emission

Accessory List	
AC Adapter	Model No. : EP800
	Type No. : CAA-0002016-US B
	S/N :
	3113W 45 408567 (for Radiated Spurious Emission) 3113W 45 408439 (for Conducted Emission)
Battery	Model No. : LIS1551ERPC
Earphone	Model No. : MH410c
	Type No. : AG-1100
	S/N :
	46844E580076508 (for Radiated Spurious Emission) 13511E560075F9C (for Conducted Emission)
USB Cable	Model No. : EC 450
	Type No. : AI-0700
	S/N :
	134912D2000799C (for Radiated Spurious Emission) 134921D00034040 (for Conducted Emission)

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 Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.			
Test Site Location	No. 52, Hwa Ya 1 st 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.			IC Registration No.
	TH02-HY	CO05-HY	03CH06-HY	4086B-1

1.7 Applicable 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 KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02
- 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

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: conducted emission (150 kHz to 30 MHz) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane) were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437	-	-

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test shown in the following tables.

2.4GHz 802.11b mode				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	18.89	18.85	18.81	18.86

2.4GHz 802.11g mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	21.47	21.46	21.43	21.44	21.46	21.43	21.45	21.42

2.4GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	19.48	19.44	19.41	19.46	19.42	19.46	19.42	19.39

2.3 Test Mode

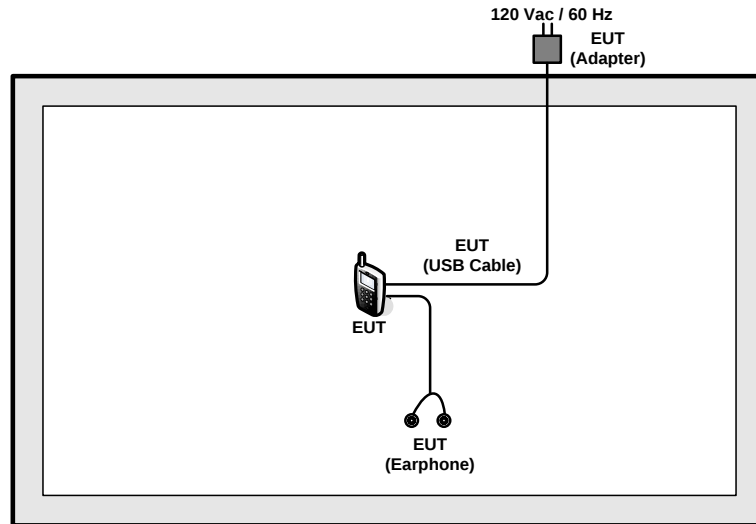
Final results of test modes, data rates and test channels are shown as following table.

<2.4GHz>

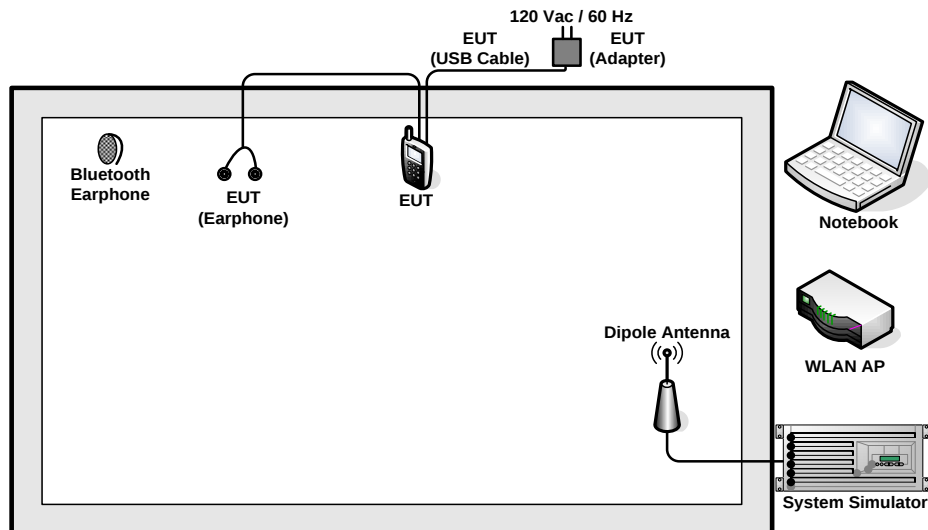
Test Cases				
Conducted TCs	Test Items	Mode	Data Rate	Test Channel
	6dB and 99% BW Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
	Conducted Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	MCS0	1/11
	Conducted Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
Radiated TCs	Radiated Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	MCS0	1/11
	Radiated Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
AC Conducted Emission	Mode 1 : GSM1900 Idle + Bluetooth Link + WLAN Link + Earphone + Battery + USB Cable (Charging from Adapter) + MP3			

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 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.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	Bluetooth Earphone	Sony	SBH20	PY7-RD0010	Unshielded, 0.75m	N/A
4.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A

2.6 EUT Operation Test Setup

For WLAN function, programmed RF utility, "Android Debug Bridge" installed in the notebook make the EUT provide functions like channel selection and power level for continuous transmitting and receiving signals.

2.7 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).

$$= 4.2 + 10 = 14.2 \text{ (dB)}$$

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

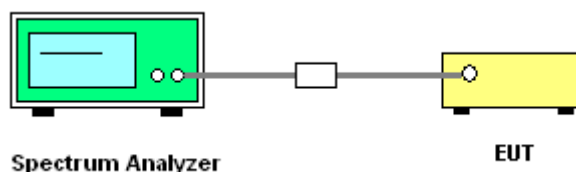
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r02.
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. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 1MHz and set the Video bandwidth (VBW) = 3MHz.
6. Measure and record the results in the test report.

3.1.4 Test Setup

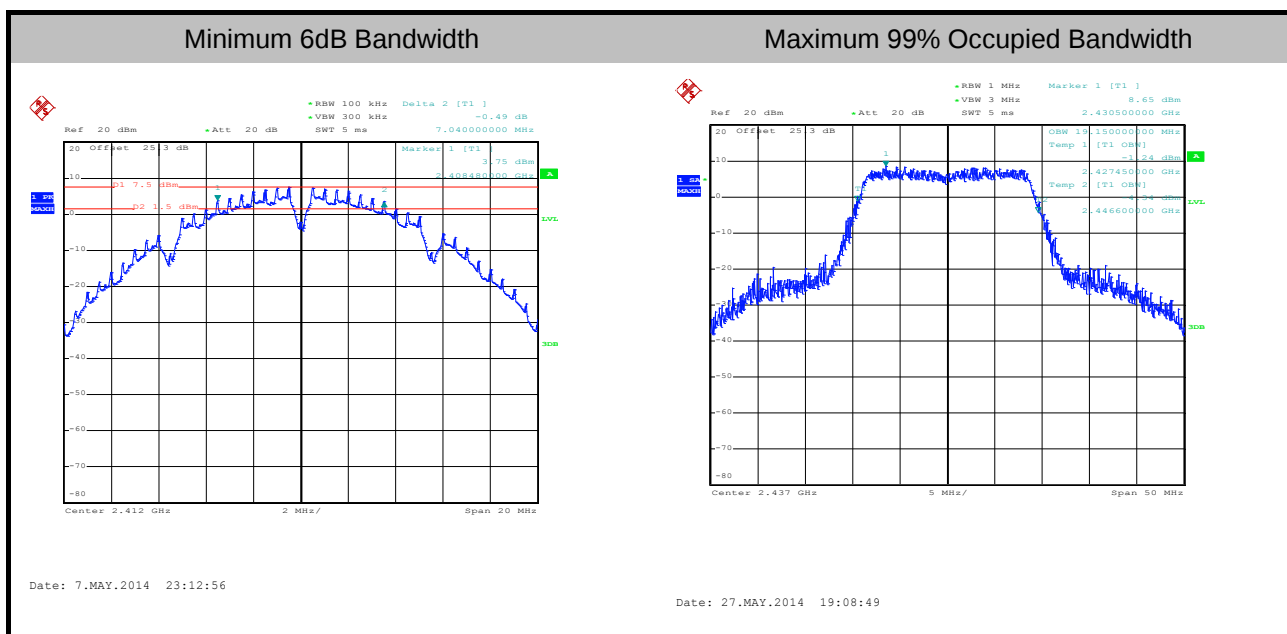




3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

Test Band :	2.4GHz	Temperature :	21~26°C
Test Engineer :	Alex Lee	Relative Humidity :	45~54%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	99% Bandwidth (MHz)	6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
11b	1Mbps	1	1	2412	13.10	7.04	0.5	Pass
11b	1Mbps	1	6	2437	12.80	7.08	0.5	Pass
11b	1Mbps	1	11	2462	12.60	7.04	0.5	Pass
11g	6Mbps	1	1	2412	18.30	16.32	0.5	Pass
11g	6Mbps	1	6	2437	18.95	16.36	0.5	Pass
11g	6Mbps	1	11	2462	18.20	16.36	0.5	Pass
HT20	MCS0	1	1	2412	18.85	17.56	0.5	Pass
HT20	MCS0	1	6	2437	19.15	17.60	0.5	Pass
HT20	MCS0	1	11	2462	19.05	17.56	0.5	Pass



Note : The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting Antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the Antenna exceeds 6dBi.

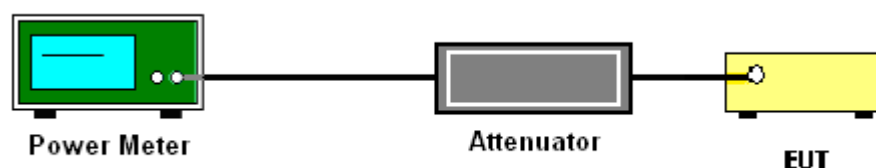
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v03r02.
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 and record the results in the test report.

3.2.4 Test Setup



**3.2.5 Test Result of Peak Output Power**

Test Mode :	2.4GHz	Temperature :	21~26℃
Test Engineer :	Alex Lee	Relative Humidity :	45~54%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	RF Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11b	1Mbps	1	1	2412	18.52	30	-0.77	Pass
11b	1Mbps	1	6	2437	18.66	30	-0.77	Pass
11b	1Mbps	1	11	2462	18.89	30	-0.77	Pass
11g	6Mbps	1	1	2412	19.29	30	-0.77	Pass
11g	6Mbps	1	6	2437	21.47	30	-0.77	Pass
11g	6Mbps	1	11	2462	19.35	30	-0.77	Pass
HT20	MCS0	1	1	2412	16.25	30	-0.77	Pass
HT20	MCS0	1	6	2437	19.48	30	-0.77	Pass
HT20	MCS0	1	11	2462	17.84	30	-0.77	Pass

Note: Measured power (dBm) has offset with cable loss.

**3.2.6 Test Result of Average output Power (Reporting Only)**

Test Mode :	2.4GHz	Temperature :	21~26°C
Test Engineer :	Alex Lee	Relative Humidity :	45~54%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	Average Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11b	1Mbps	1	1	2412	0.00	15.73	30	-0.77	Pass
11b	1Mbps	1	6	2437	0.00	15.85	30	-0.77	Pass
11b	1Mbps	1	11	2462	0.00	15.98	30	-0.77	Pass
11g	6Mbps	1	1	2412	0.00	10.16	30	-0.77	Pass
11g	6Mbps	1	6	2437	0.00	14.85	30	-0.77	Pass
11g	6Mbps	1	11	2462	0.00	10.70	30	-0.77	Pass
HT20	MCS0	1	1	2412	0.00	7.48	30	-0.77	Pass
HT20	MCS0	1	6	2437	0.00	11.26	30	-0.77	Pass
HT20	MCS0	1	11	2462	0.00	8.61	30	-0.77	Pass

Note: Measured power (dBm) has offset with cable loss and duty factor.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

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

3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02
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. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.

3.3.4 Test Setup

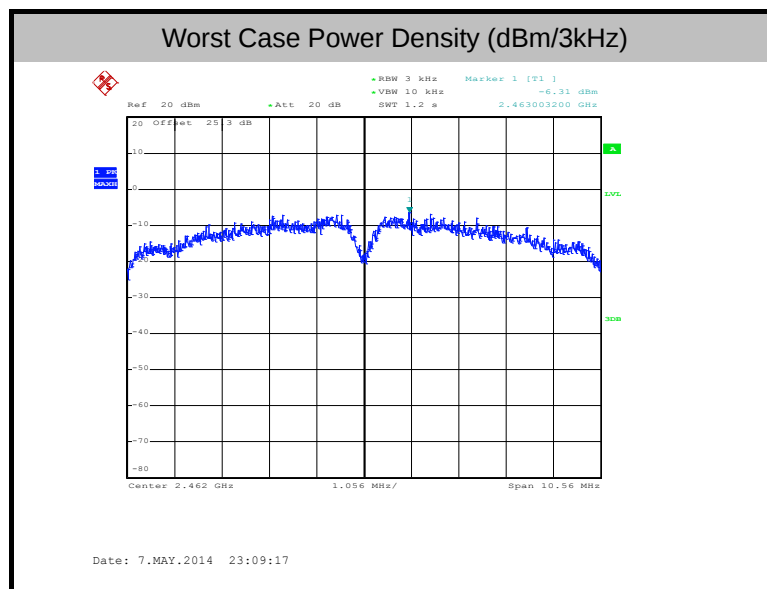


3.3.5 Test Result of Power Spectral Density

Test Mode :	2.4GHz	Temperature :	21~26℃
Test Engineer :	Alex Lee	Relative Humidity :	45~54%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	Peak Power Density (dBm/3kHz)	Max. Limits (dBm/3kHz)	DG (dBi)	Pass/Fail
11b	1Mbps	1	1	2412	-6.49	8	-0.77	Pass
11b	1Mbps	1	6	2437	-6.86	8	-0.77	Pass
11b	1Mbps	1	11	2462	-6.31	8	-0.77	Pass
11g	6Mbps	1	1	2412	-13.61	8	-0.77	Pass
11g	6Mbps	1	6	2437	-9.93	8	-0.77	Pass
11g	6Mbps	1	11	2462	-14.18	8	-0.77	Pass
HT20	MCS0	1	1	2412	-17.26	8	-0.77	Pass
HT20	MCS0	1	6	2437	-13.17	8	-0.77	Pass
HT20	MCS0	1	11	2462	-16.38	8	-0.77	Pass

Note: Measured power density (dBm) has offset with cable loss.



3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

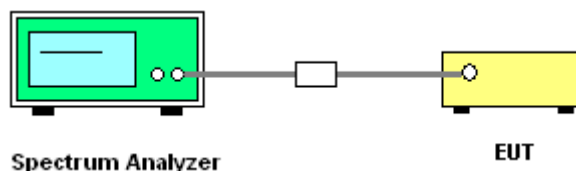
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.
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=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
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.

3.4.4 Test Setup



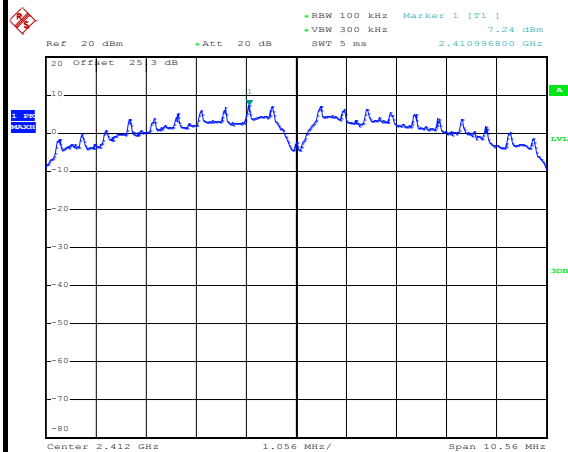


3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Test Mode :	802.11b	Temperature :	21~26°C
Test Band :	2.4GHz Low	Relative Humidity :	45~54%
Test Channel :	01	Test Engineer :	Alex Lee

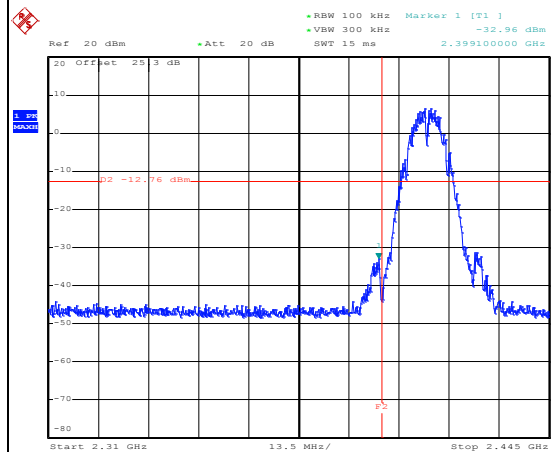
WLAN 802.11b Channel 01

100kHz PSD reference Level



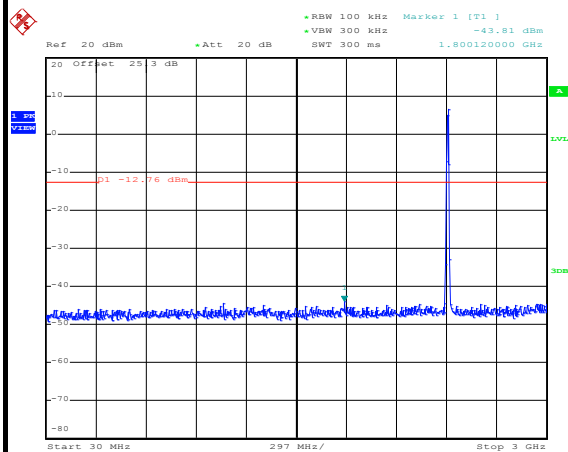
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Low Channel Plot



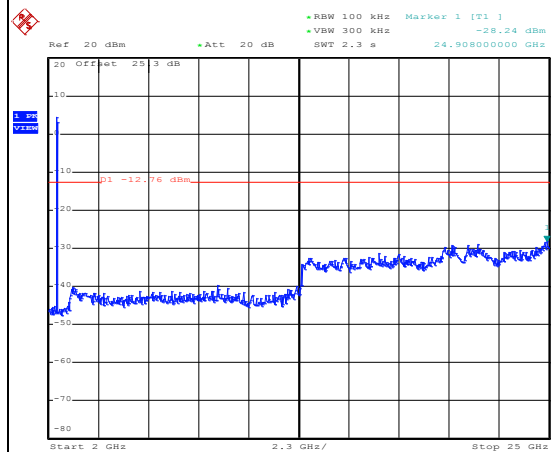
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Spurious Emission 30MHz~3GHz



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Spurious Emission 2GHz~25GHz



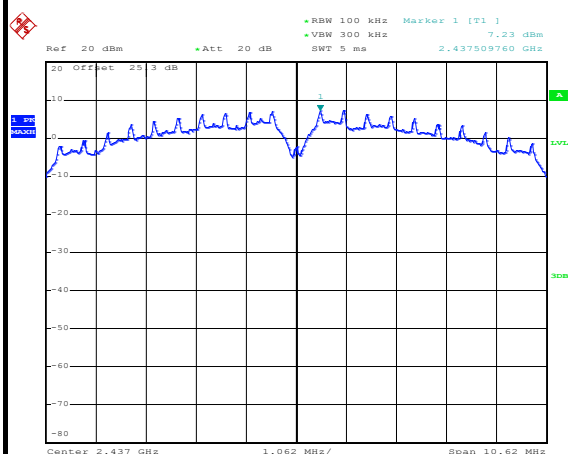
Date: 7.MAY.2014 23:14:17



Test Mode :	802.11b	Temperature :	21~26°C
Test Band :	2.4GHz Mid.	Relative Humidity :	45~54%
Test Channel :	06	Test Engineer :	Alex Lee

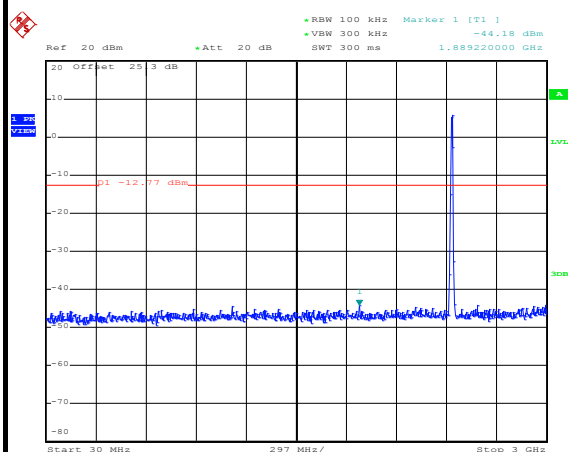
WLAN 802.11b Channel 06

100kHz PSD reference Level



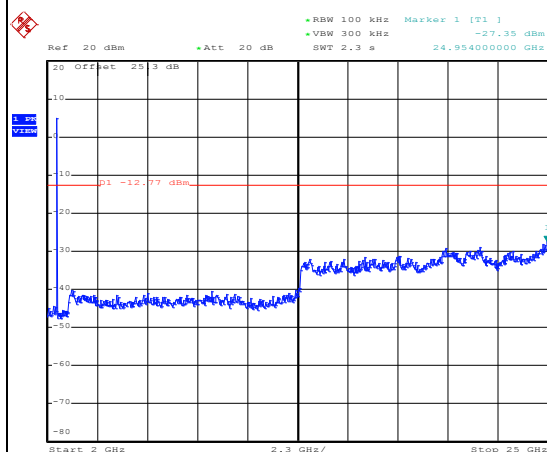
Date: 7.MAY.2014 23:03:48

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2014 23:04:07

Spurious Emission 2GHz~25GHz



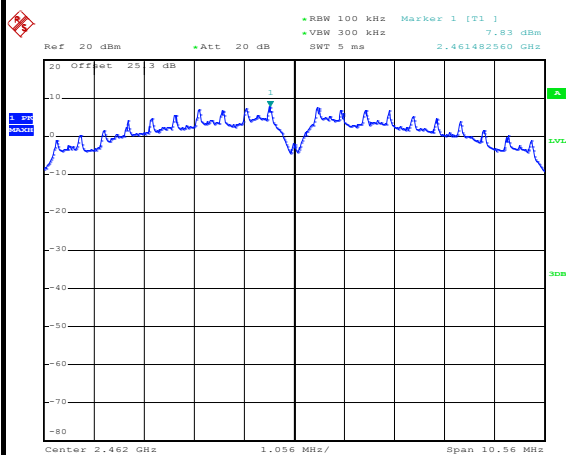
Date: 7.MAY.2014 23:04:26



Test Mode :	802.11b	Temperature :	21~26°C
Test Band :	2.4GHz High	Relative Humidity :	45~54%
Test Channel :	11	Test Engineer :	Alex Lee

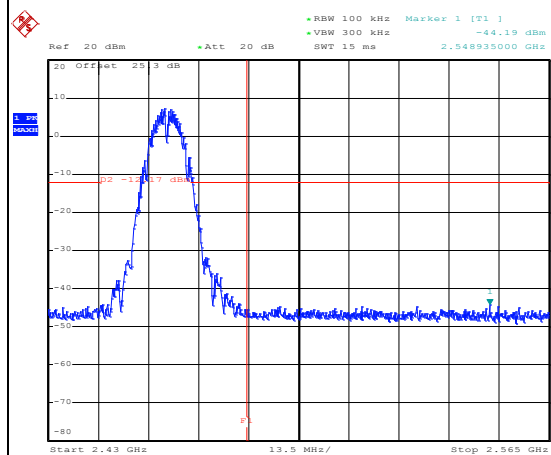
WLAN 802.11b Channel 11

100kHz PSD reference Level



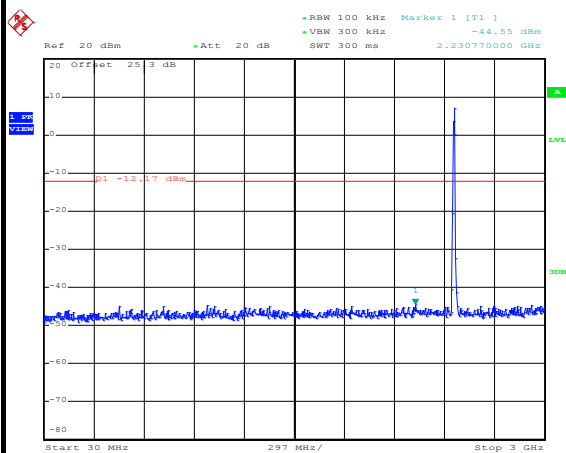
Date: 7.MAY.2014 23:09:26

High Channel Plot



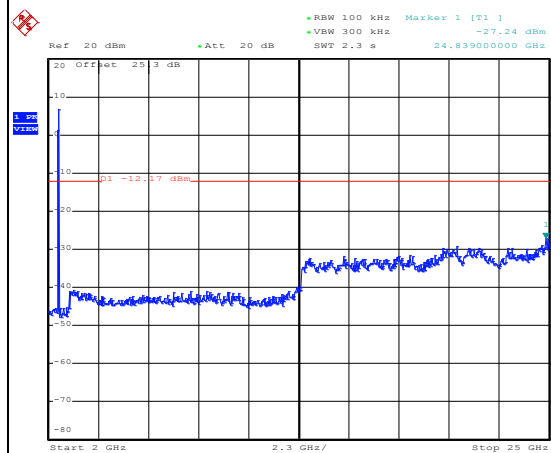
Date: 7.MAY.2014 23:09:39

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2014 23:09:59

Spurious Emission 2GHz~25GHz



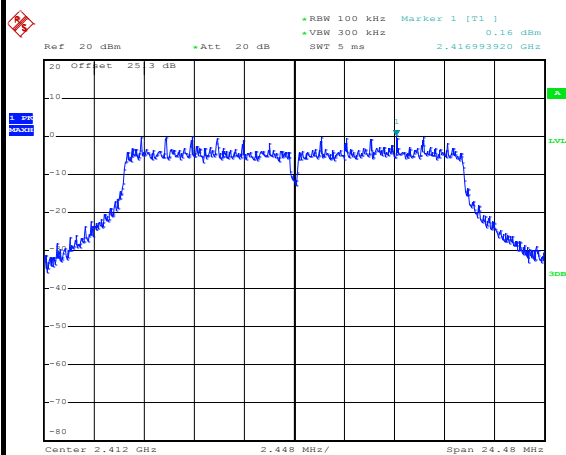
Date: 7.MAY.2014 23:10:17



Test Mode :	802.11g	Temperature :	21~26°C
Test Band :	2.4GHz Low	Relative Humidity :	45~54%
Test Channel :	01	Test Engineer :	Alex Lee

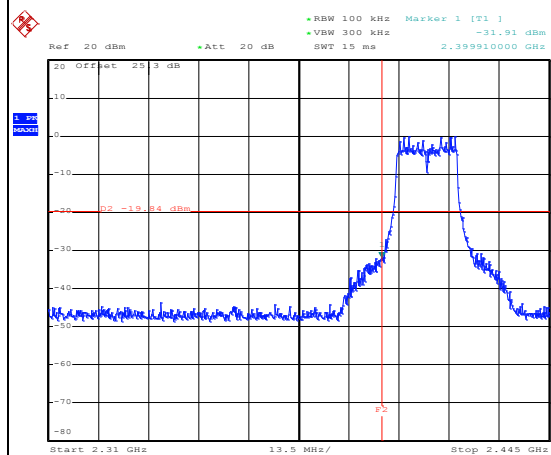
WLAN 802.11g Channel 01

100kHz PSD reference Level



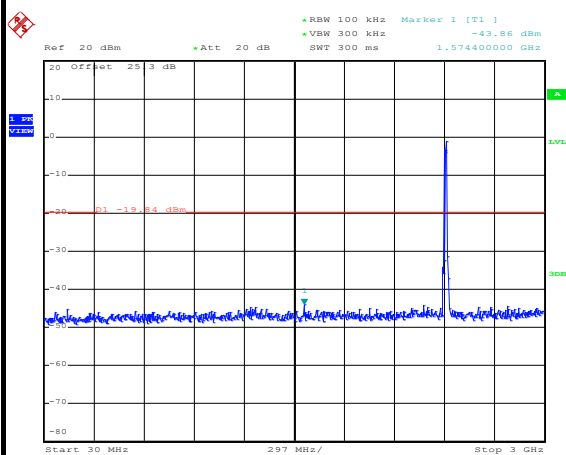
Date: 7.MAY.2014 23:19:50

Low Channel Plot



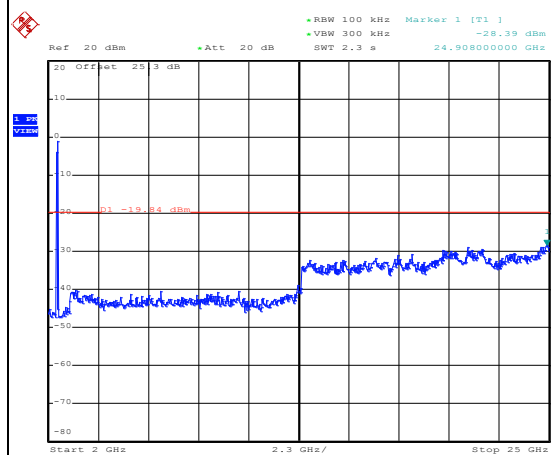
Date: 7.MAY.2014 23:20:04

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2014 23:20:23

Spurious Emission 2GHz~25GHz



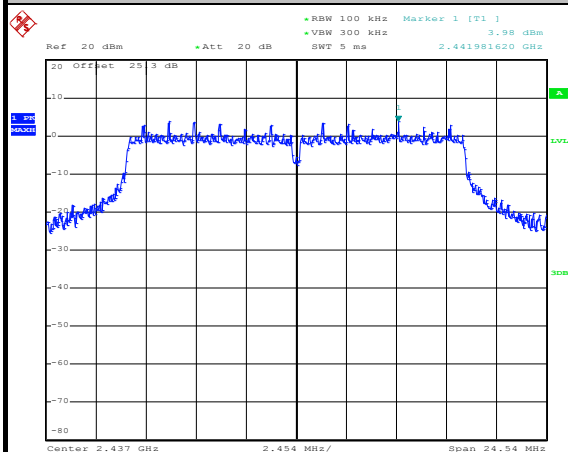
Date: 7.MAY.2014 23:20:42



Test Mode :	802.11g	Temperature :	21~26°C
Test Band :	2.4GHz Mid.	Relative Humidity :	45~54%
Test Channel :	06	Test Engineer :	Alex Lee

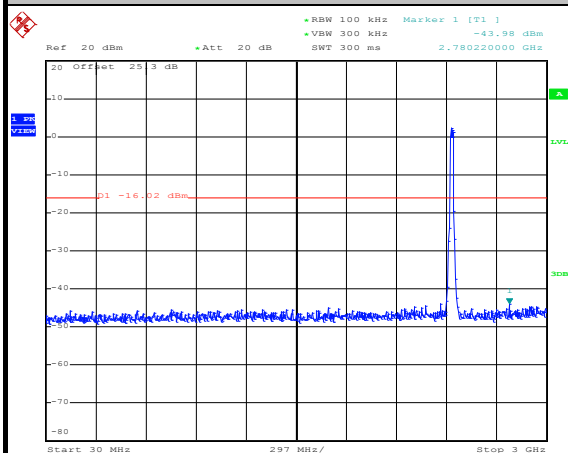
WLAN 802.11g Channel 06

100kHz PSD reference Level



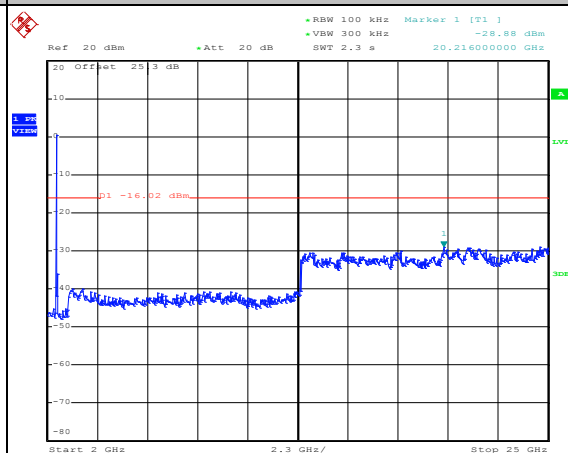
Date: 27.MAY.2014 19:03:26

Spurious Emission 30MHz~3GHz



Date: 27.MAY.2014 19:03:45

Spurious Emission 2GHz~25GHz



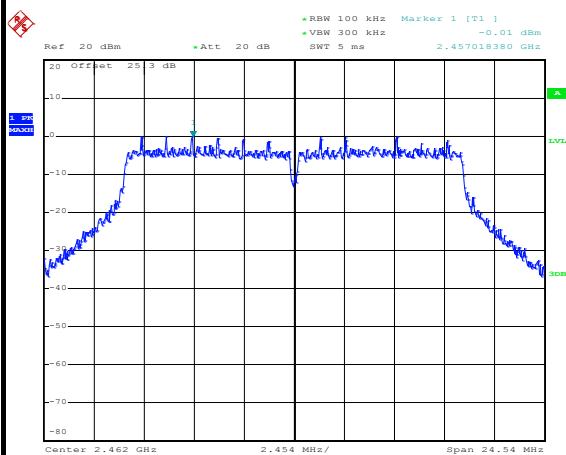
Date: 27.MAY.2014 19:04:04



Test Mode :	802.11g	Temperature :	21~26°C
Test Band :	2.4GHz High	Relative Humidity :	45~54%
Test Channel :	11	Test Engineer :	Alex Lee

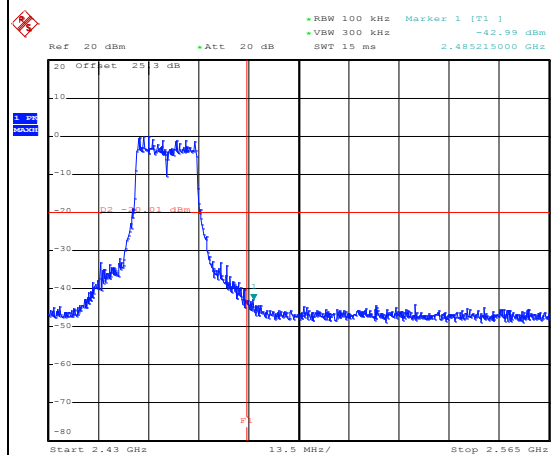
WLAN 802.11g Channel 11

100kHz PSD reference Level



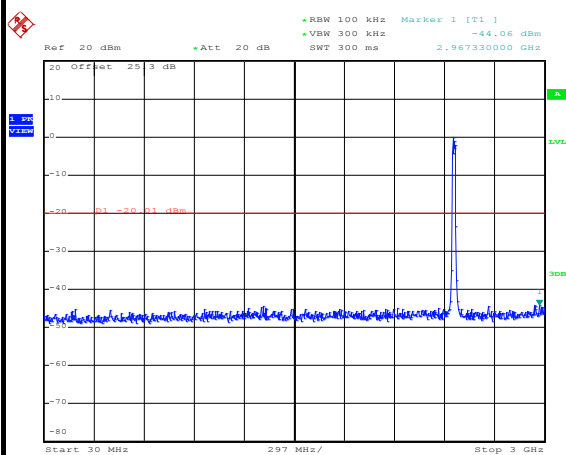
Date: 7.MAY.2014 23:30:46

High Channel Plot



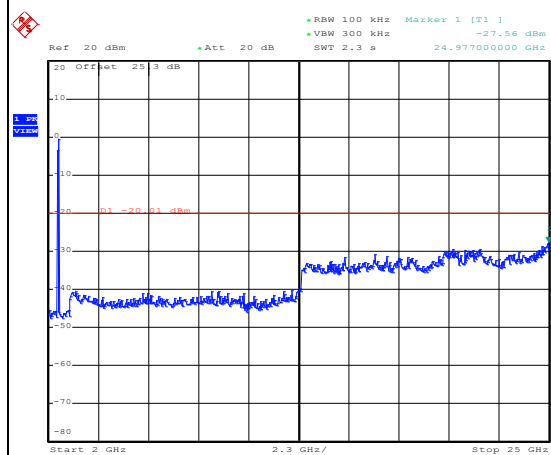
Date: 7.MAY.2014 23:31:00

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2014 23:31:19

Spurious Emission 2GHz~25GHz



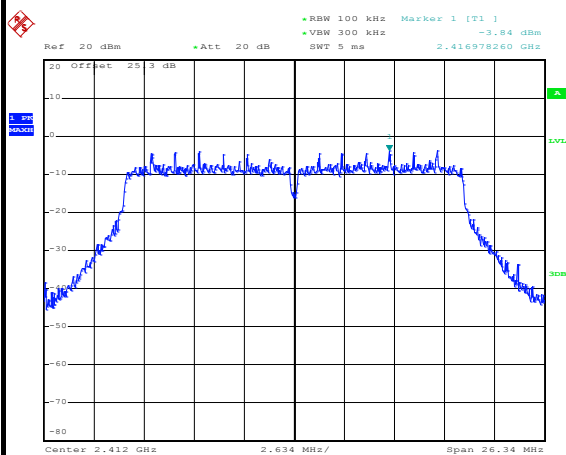
Date: 7.MAY.2014 23:31:38



Test Mode :	802.11n HT20	Temperature :	21~26°C
Test Band :	2.4GHz Low	Relative Humidity :	45~54%
Test Channel :	01	Test Engineer :	Alex Lee

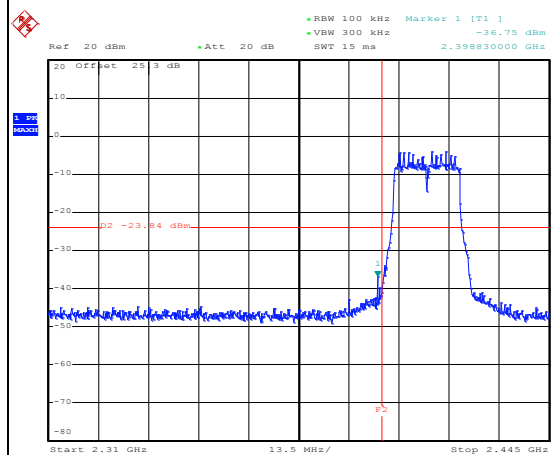
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



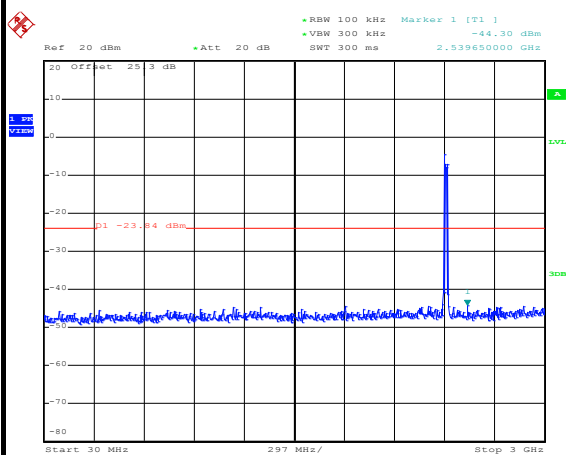
Date: 7.MAY.2014 23:35:35

Low Channel Plot



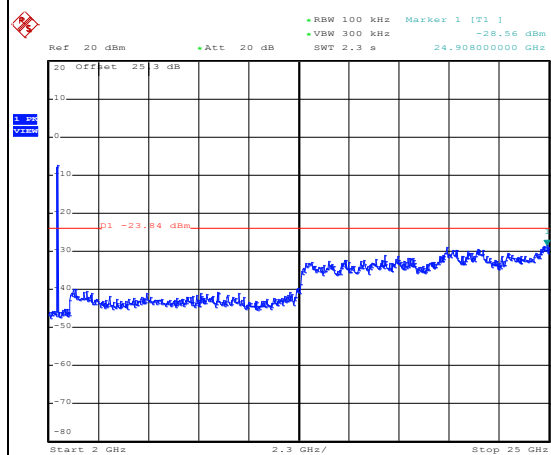
Date: 7.MAY.2014 23:35:49

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2014 23:36:08

Spurious Emission 2GHz~25GHz



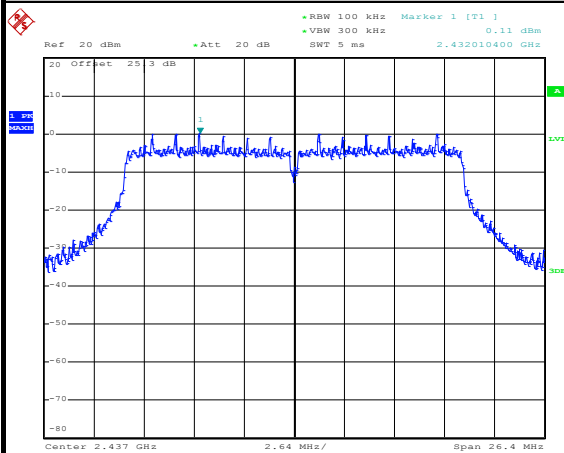
Date: 7.MAY.2014 23:36:27



Test Mode :	802.11n HT20	Temperature :	21~26°C
Test Band :	2.4GHz Mid.	Relative Humidity :	45~54%
Test Channel :	06	Test Engineer :	Alex Lee

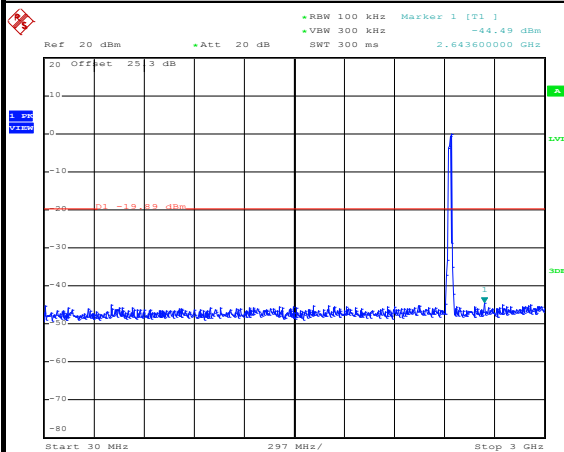
WLAN 802.11n HT20 Channel 06

100kHz PSD reference Level



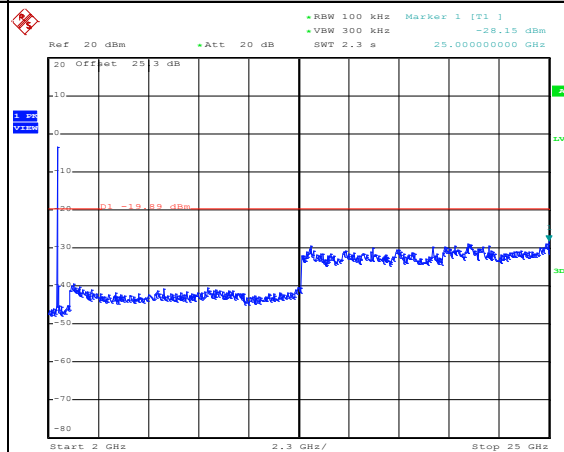
Date: 27.MAY.2014 19:08:00

Spurious Emission 30MHz~3GHz



Date: 27.MAY.2014 19:08:20

Spurious Emission 2GHz~25GHz



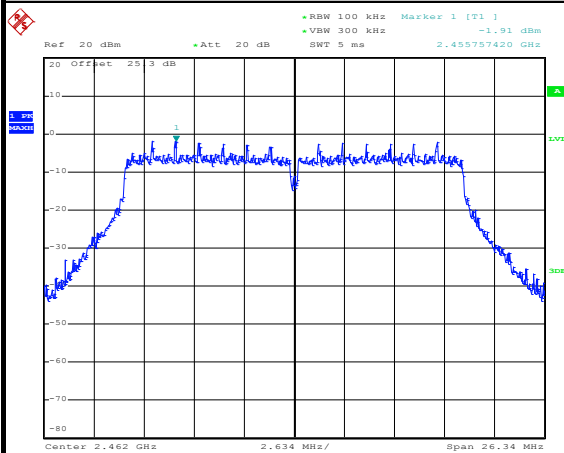
Date: 27.MAY.2014 19:08:38



Test Mode :	802.11n HT20	Temperature :	21~26°C
Test Band :	2.4GHz High	Relative Humidity :	45~54%
Test Channel :	11	Test Engineer :	Alex Lee

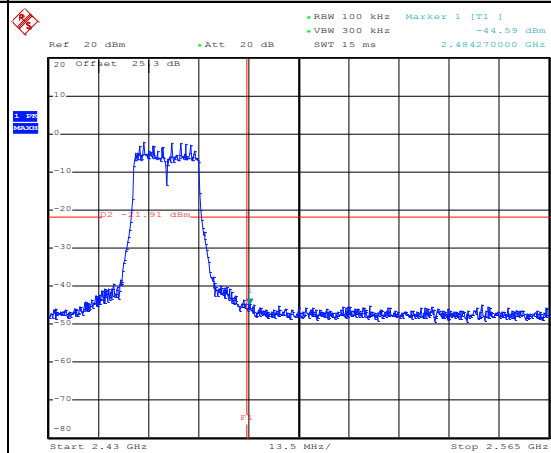
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



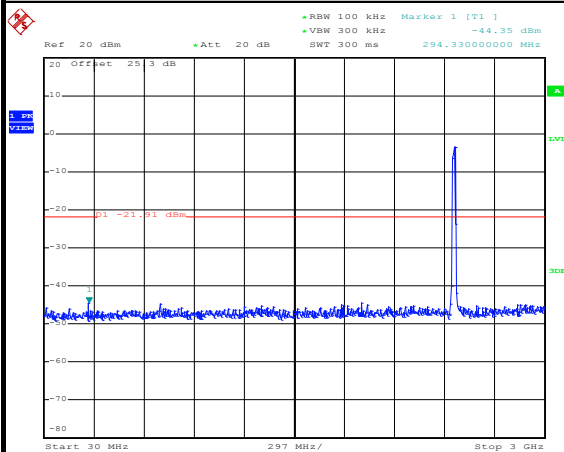
Date: 27.MAY.2014 19:14:56

High Channel Plot



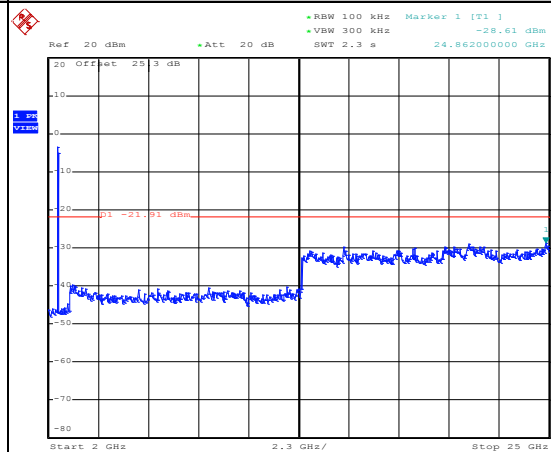
Date: 27.MAY.2014 19:15:10

Spurious Emission 30MHz~3GHz



Date: 27.MAY.2014 19:15:29

Spurious Emission 2GHz~25GHz



Date: 27.MAY.2014 19:15:48

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

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

3.5.2 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 KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.
2. 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.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamplifier Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. 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; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.

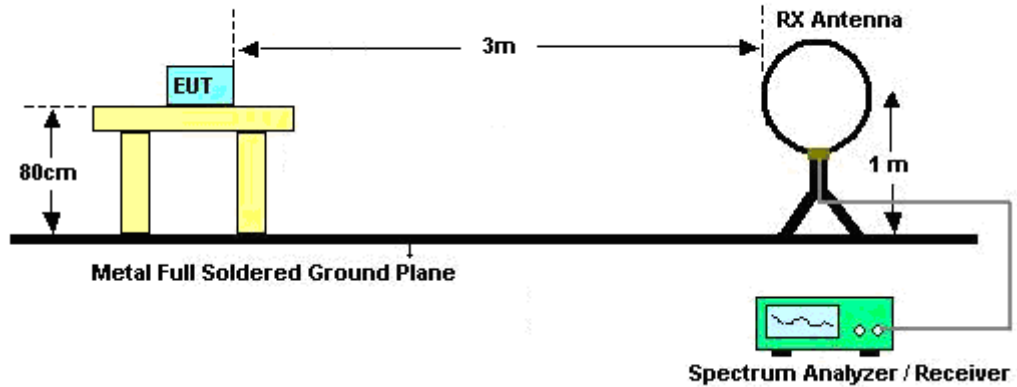
For average measurement:

 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

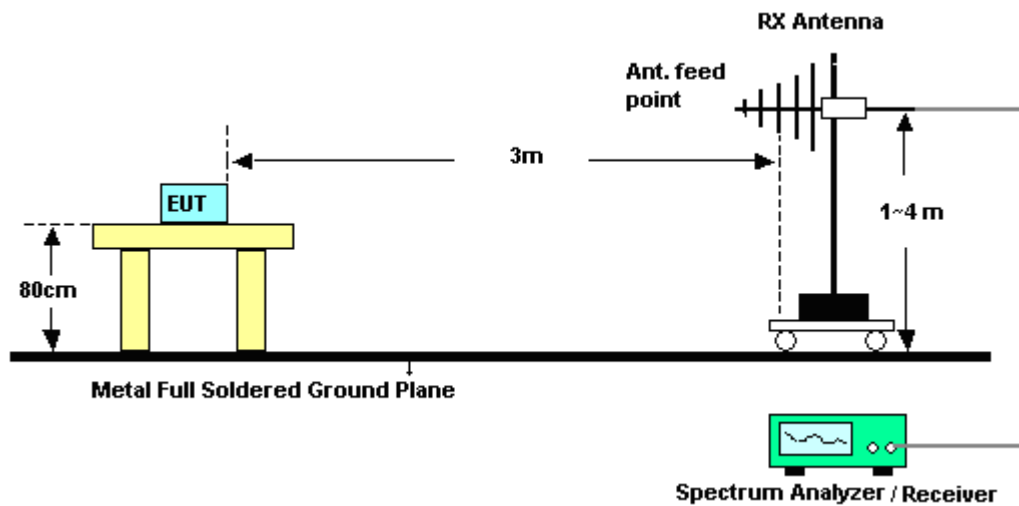
Band	Duty Cycle(%)	T(μ s)	1/T(kHz)	VBW Setting
802.11b	100	-	-	10Hz
802.11g	100	-	-	10Hz
2.4GHz 802.11n HT20	100	-	-	10Hz

3.5.4 Test Setup

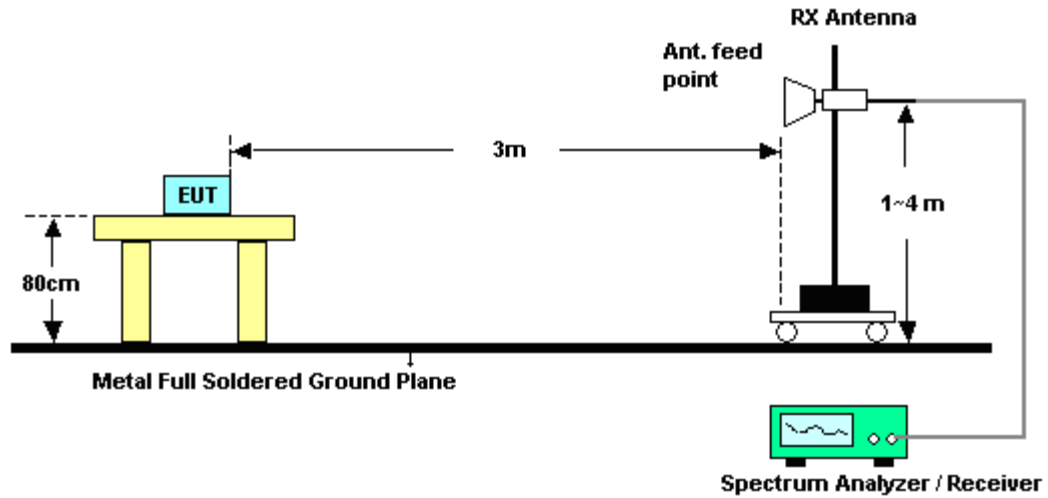
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



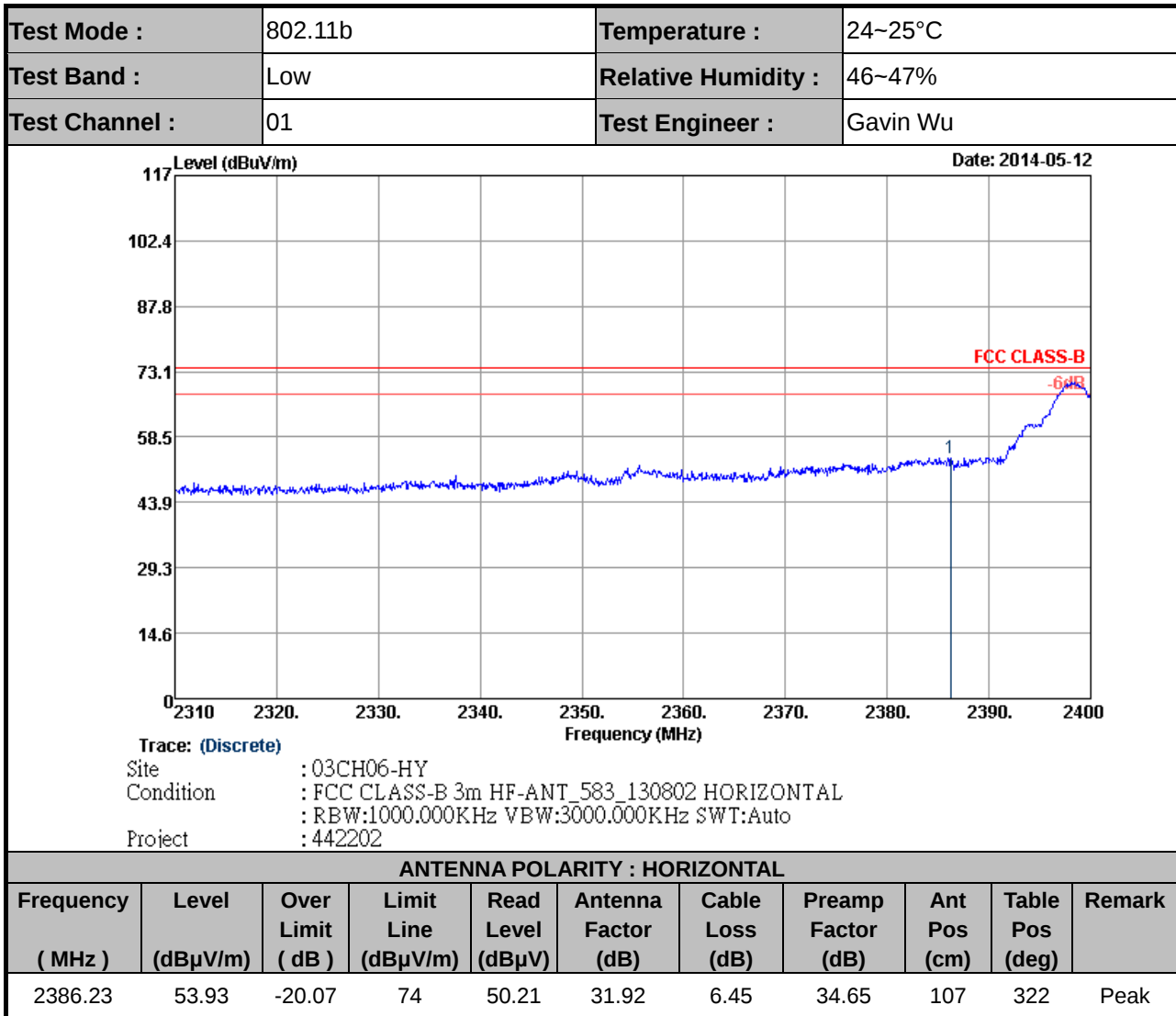
For radiated emissions above 1GHz



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

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.

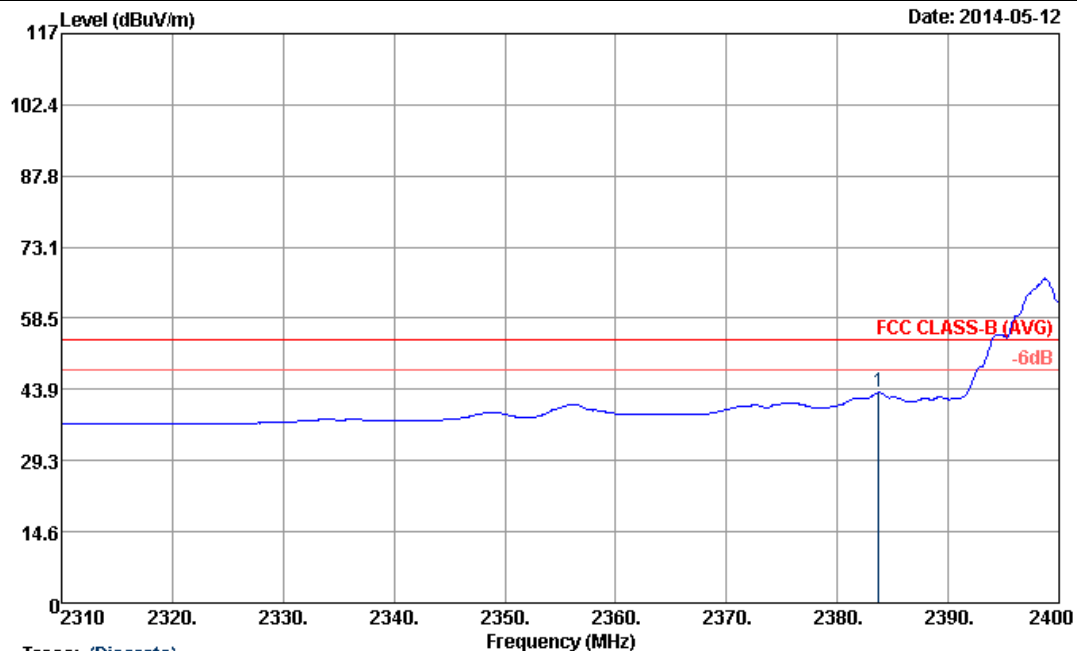
3.5.6 Test Result of Radiated Spurious at Band Edges



Note: Worst case measurement on 2386.23 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band 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 :	802.11b	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY

Condition : FCC CLASS-B (AVG) 3m HF-ANT_583_130802 HORIZONTAL

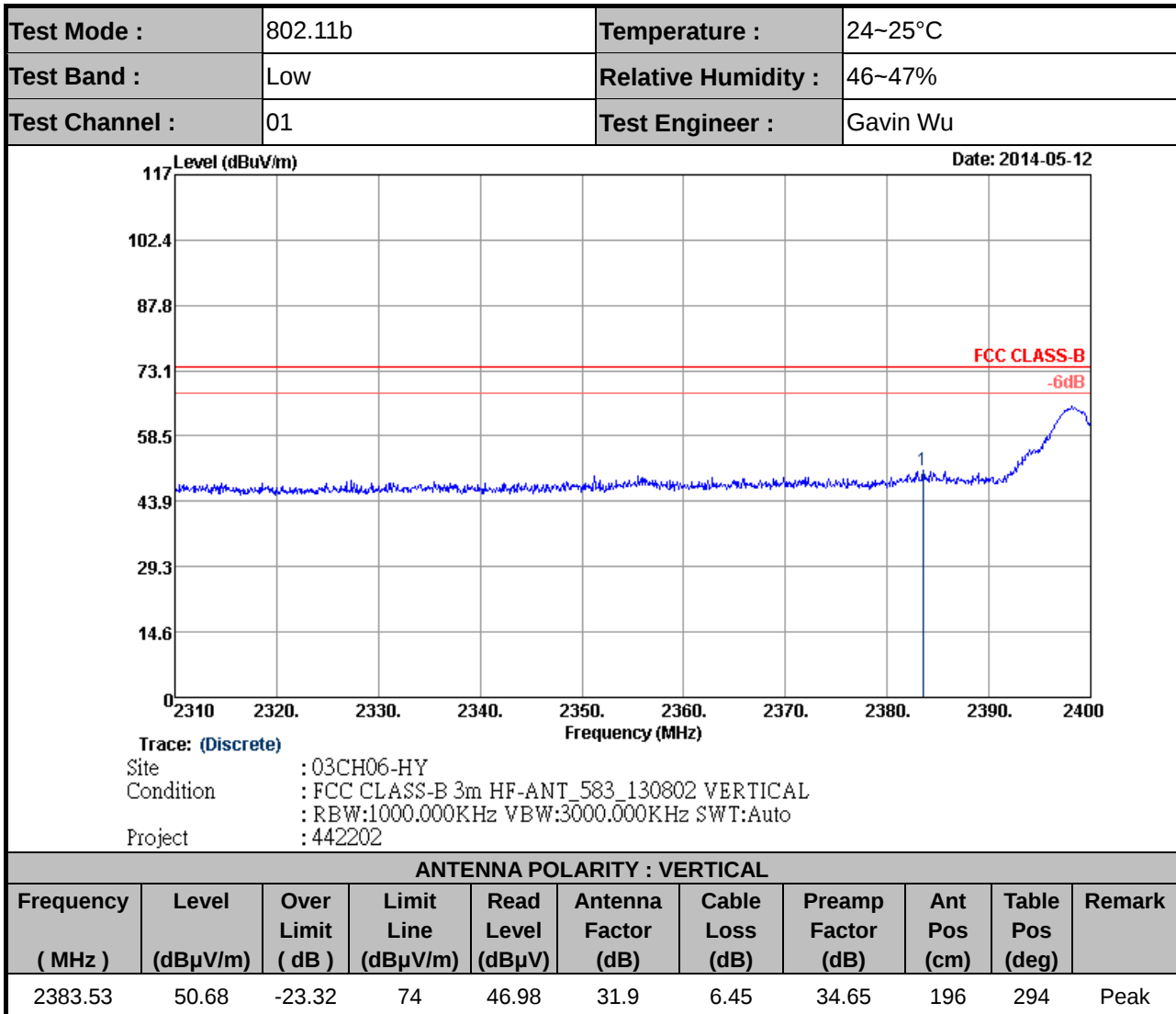
: RBW:1000.000KHz VBW:0.010KHz SWT:Auto

Project : 442202

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
2383.71	43.34	-10.66	54	39.64	31.9	6.45	34.65	107	322	Average

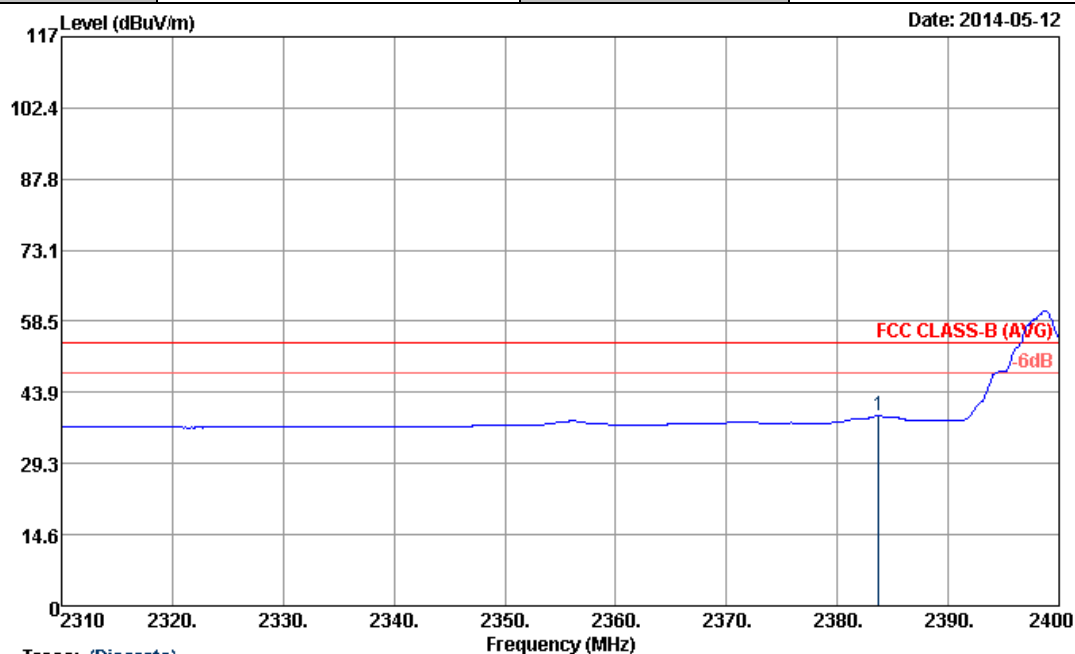
Note: Worst case measurement on 2383.71 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band edge measurement in the restricted band 2310-2390MHz. And, 2390-2400 MHz is non-restricted band which limit line is 20dB below the fundamental frequency emission level which is tested by conducted spurious emission. Both the test results are compliance with the FCC limit line.



Note: Worst case measurement on 2383.53 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band 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 :	802.11b	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY

Condition : FCC CLASS-B (AVG) 3m HF-ANT_583_130802 VERTICAL

: RBW:1000.000KHz VBW:0.010KHz SWT:Auto

Project : 442202

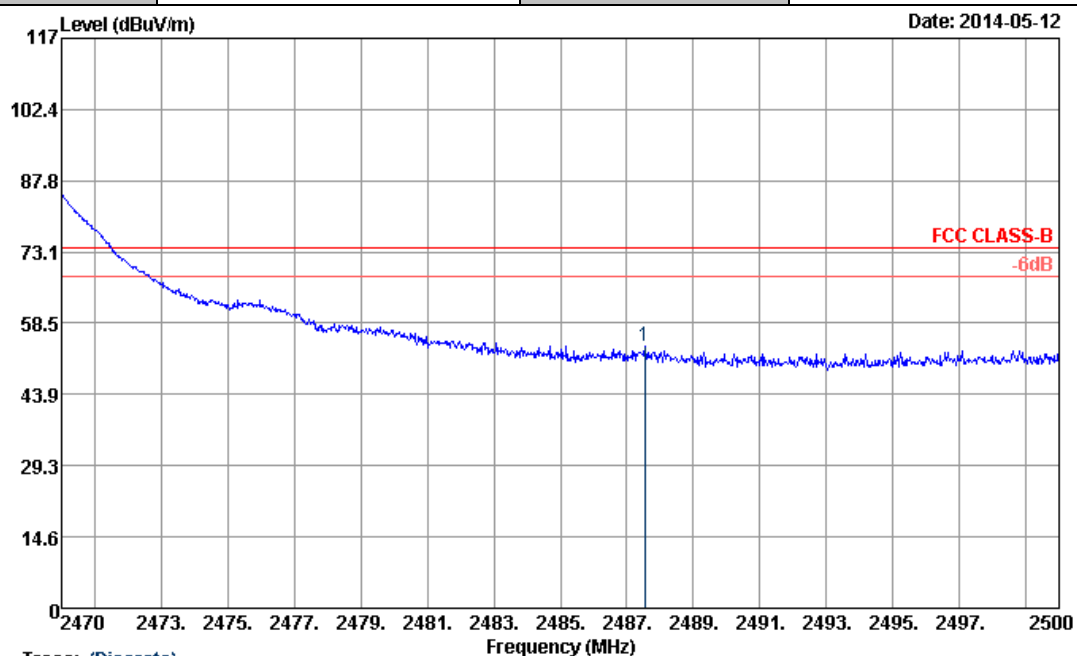
ANTENNA POLARITY : VERTICAL

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
2383.71	39.1	-14.9	54	35.4	31.9	6.45	34.65	196	294	Average

Note: Worst case measurement on 2383.71 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band 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 :	802.11b	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m HF-ANT_583_130802 HORIZONTAL
: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Project : 442202

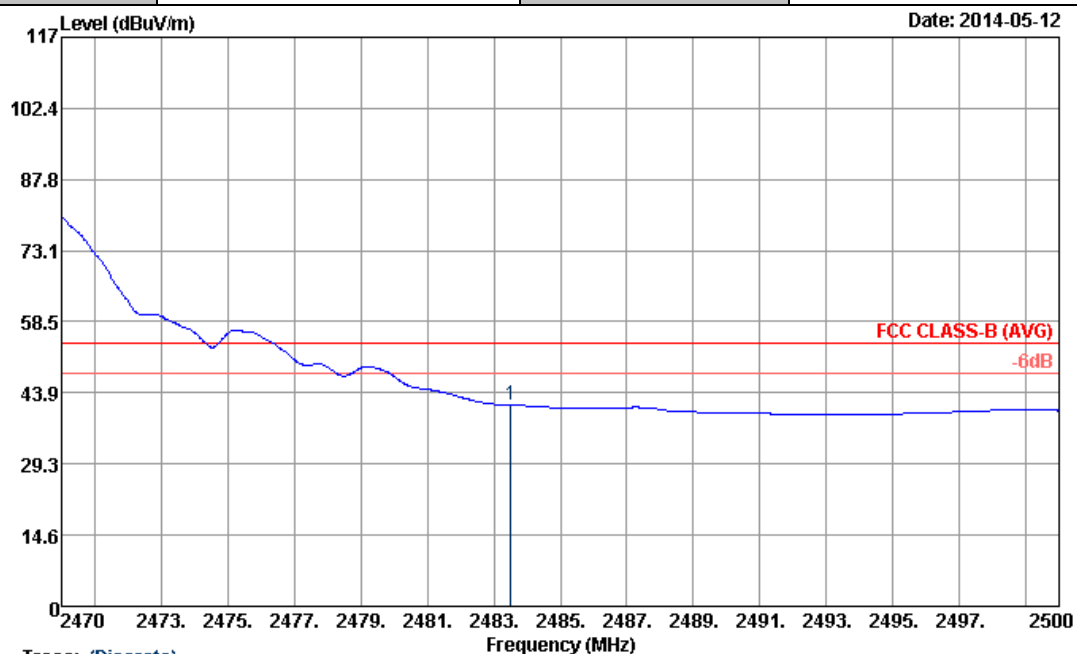
ANTENNA POLARITY : HORIZONTAL

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2487.55	53.91	-20.09	74	49.95	32	6.59	34.63	104	320	Peak

Note: Worst case measurement on 2487.55 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band edge measurement in the restricted band 2483.5-2500MHz. And, 2470-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.



Test Mode :	802.11b	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY

Condition : FCC CLASS-B (AVG) 3m HF-ANT_583_130802 HORIZONTAL

: RBW:1000.000KHz VBW:0.010KHz SWT:Auto

Project : 442202

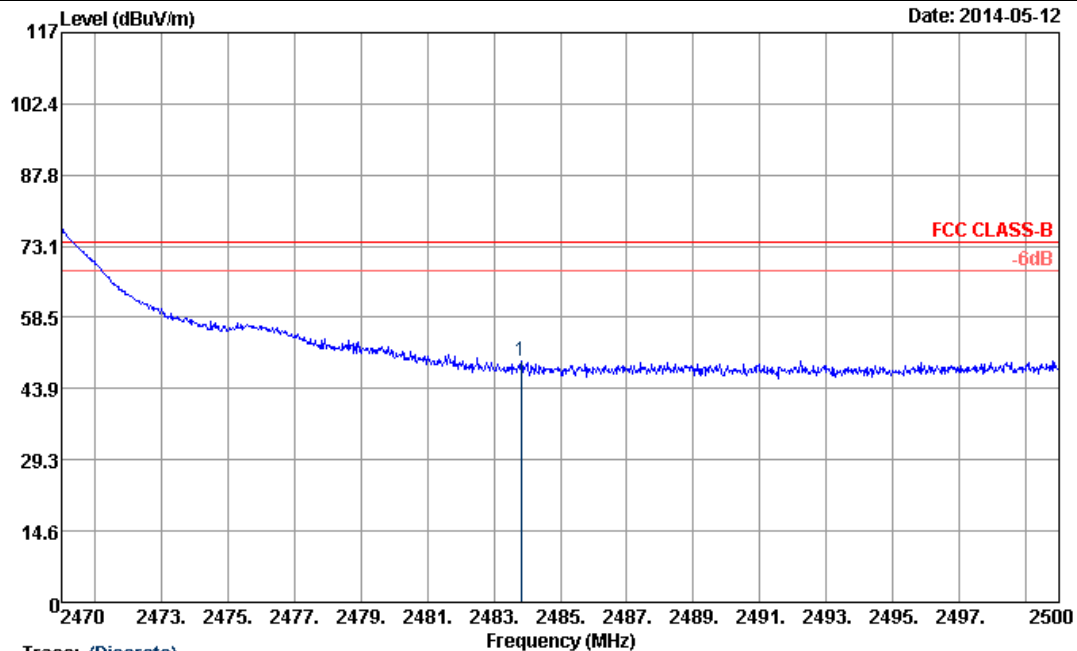
ANTENNA POLARITY : HORIZONTAL

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
2483.50	41.33	-12.67	54	37.38	31.99	6.59	34.63	104	320	Average

Note: Worst case measurement on 2483.50 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band edge measurement in the restricted band 2483.5-2500MHz. And, 2470-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.



Test Mode :	802.11b	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m HF-ANT_583_130802 VERTICAL
: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Project : 442202

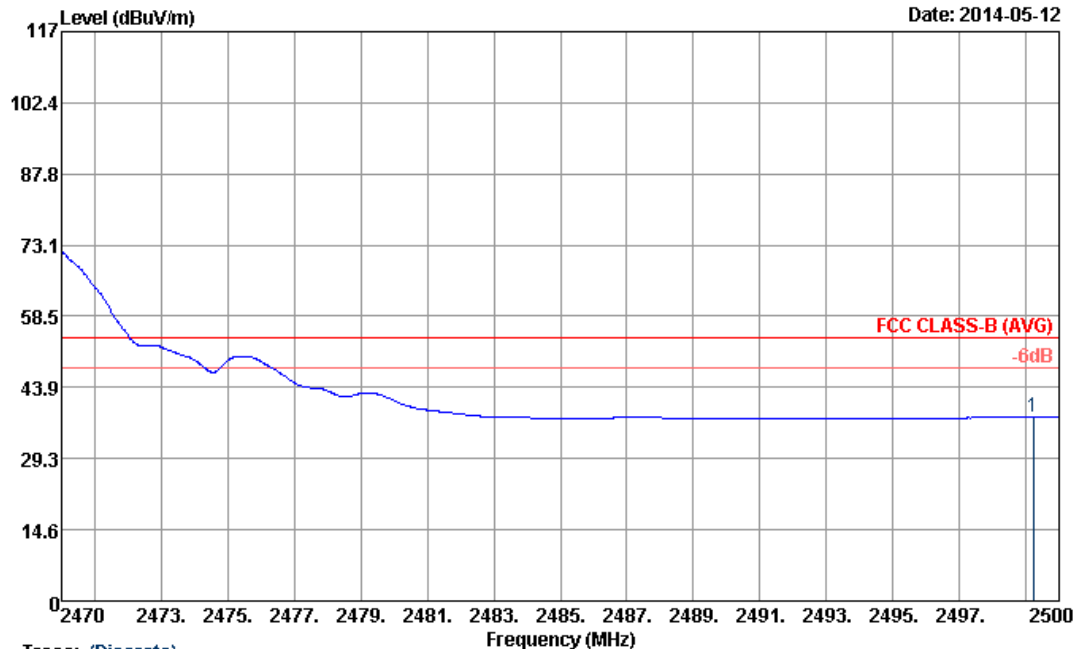
ANTENNA POLARITY : VERTICAL

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.83	49.58	-24.42	74	45.63	31.99	6.59	34.63	200	258	Peak

Note: Worst case measurement on 2483.83 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band edge measurement in the restricted band 2483.5-2500MHz. And, 2470-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.



Test Mode :	802.11b	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY

Condition : FCC CLASS-B (AVG) 3m HF-ANT_583_130802 VERTICAL

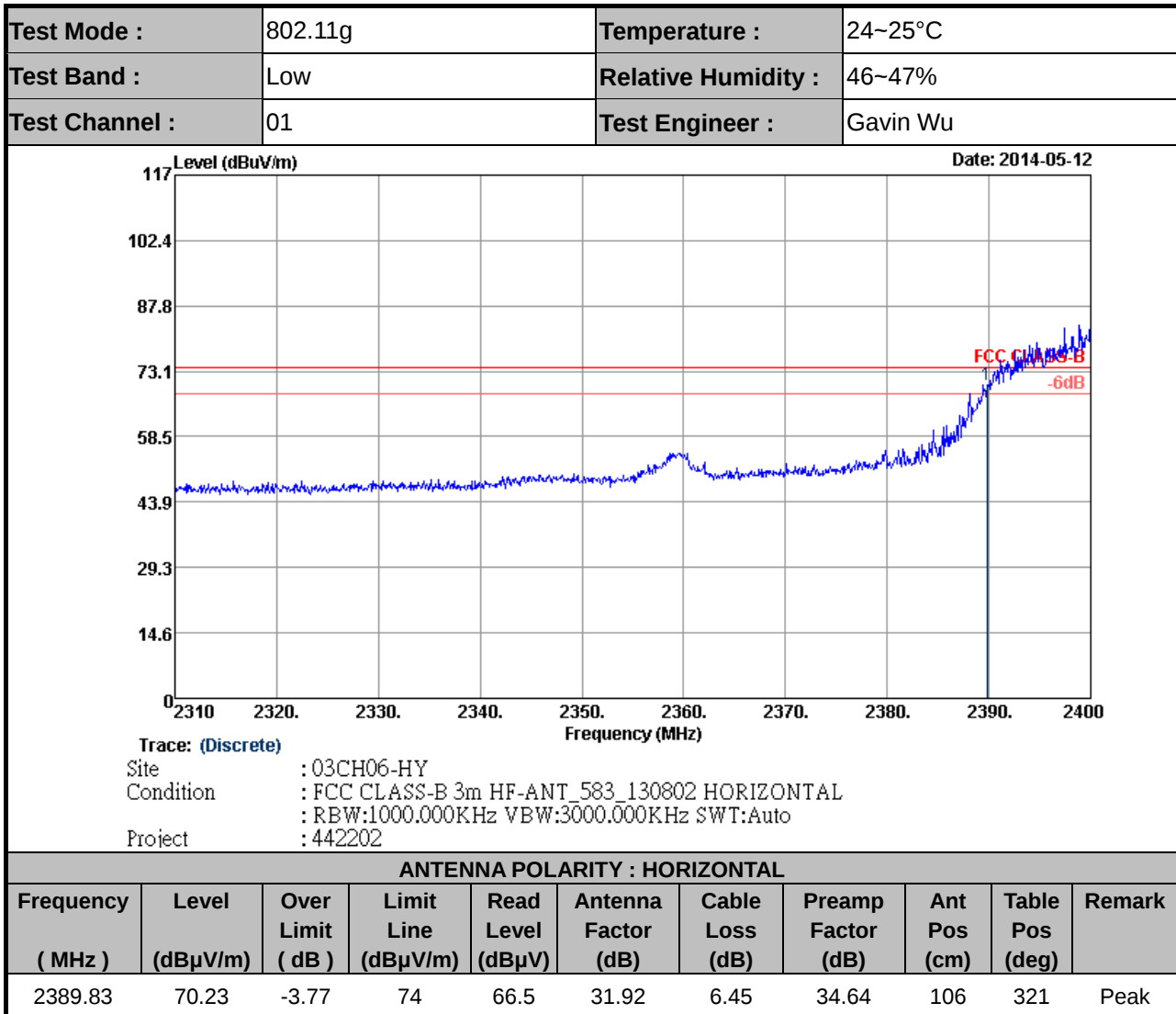
: RBW:1000.000KHz VBW:0.010KHz SWT:Auto

Project : 442202

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
2499.22	37.81	-16.19	54	33.85	32	6.59	34.63	200	258	Average

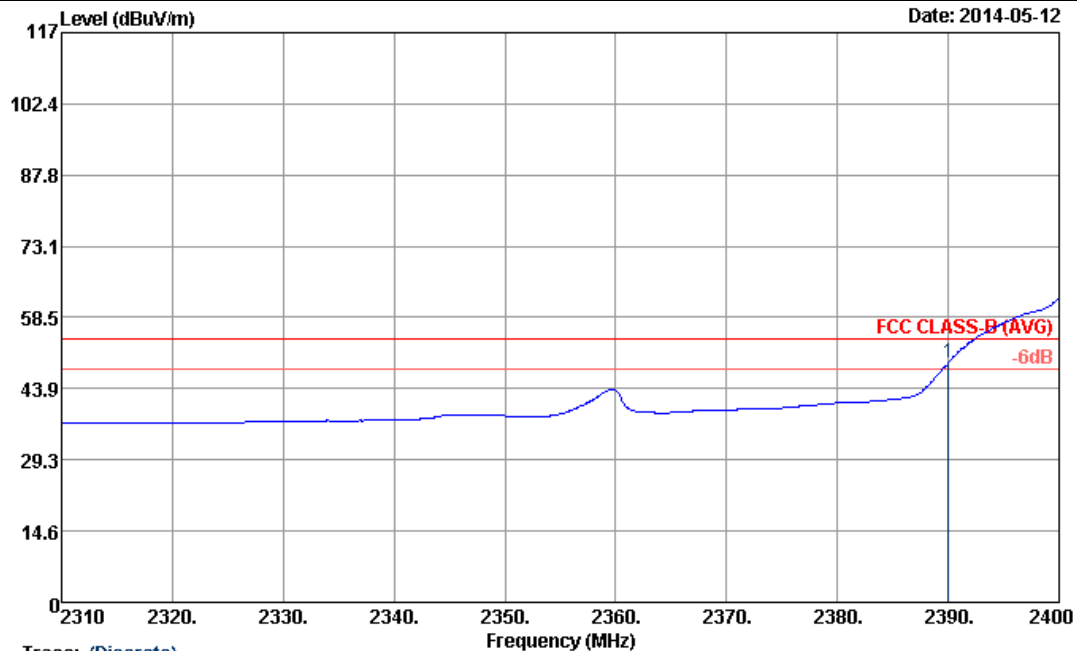
Note: Worst case measurement on 2499.22 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band edge measurement in the restricted band 2483.5-2500MHz. And, 2470-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.



Note: Worst case measurement on 2389.83 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band 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 :	802.11g	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B (AVG) 3m HF-ANT_583_130802 HORIZONTAL
: RBW:1000.000KHz VBW:0.010KHz SWT:Auto
Project : 442202

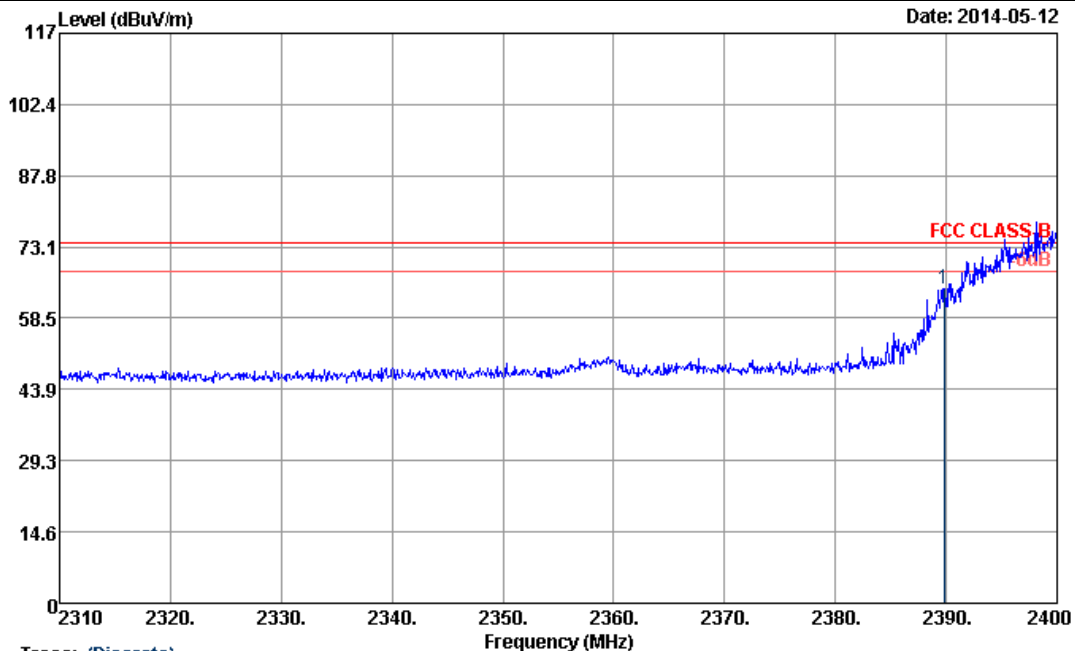
ANTENNA POLARITY : HORIZONTAL

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
2390.00	49.18	-4.82	54	45.45	31.92	6.45	34.64	106	321	Average

Note: Worst case measurement on 2390.00 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band 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 :	802.11g	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m HF-ANT_583_130802 VERTICAL
: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Project : 442202

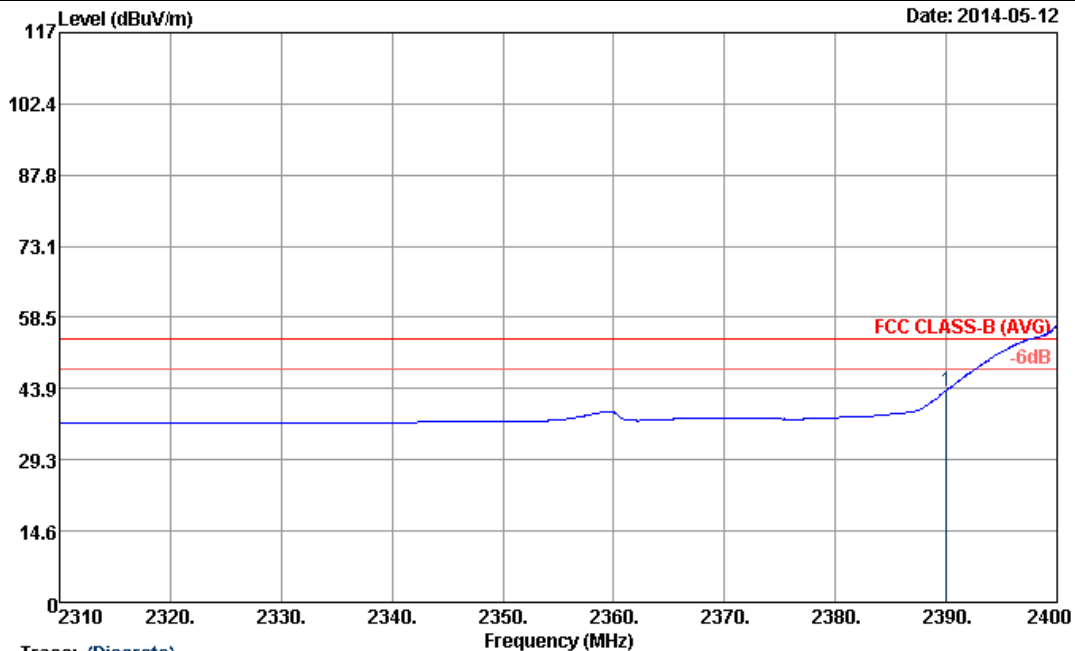
ANTENNA POLARITY : VERTICAL

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.83	64.61	-9.39	74	60.88	31.92	6.45	34.64	200	276	Peak

Note: Worst case measurement on 2389.83 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band 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 :	802.11g	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY

Condition : FCC CLASS-B (AVG) 3m HF-ANT_583_130802 VERTICAL

: RBW:1000.000KHz VBW:0.010KHz SWT:Auto

Project : 442202

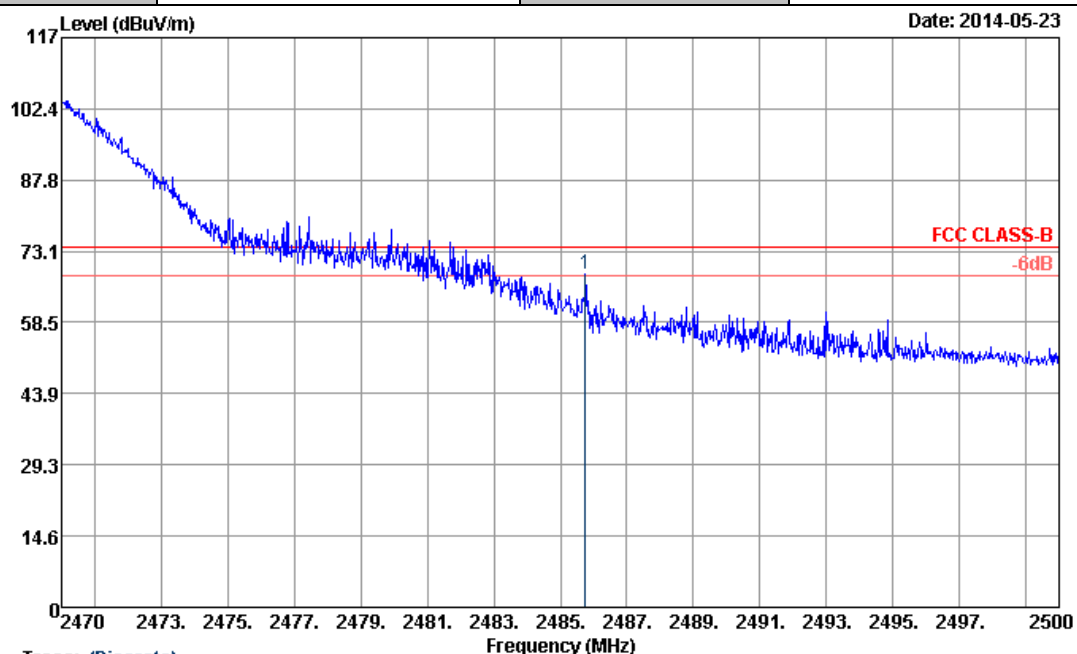
ANTENNA POLARITY : VERTICAL

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
2390.00	43.47	-10.53	54	39.74	31.92	6.45	34.64	200	276	Average

Note: Worst case measurement on 2390.00 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band 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 :	802.11g	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m HF-ANT_583_130802 HORIZONTAL
: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Project : 442202

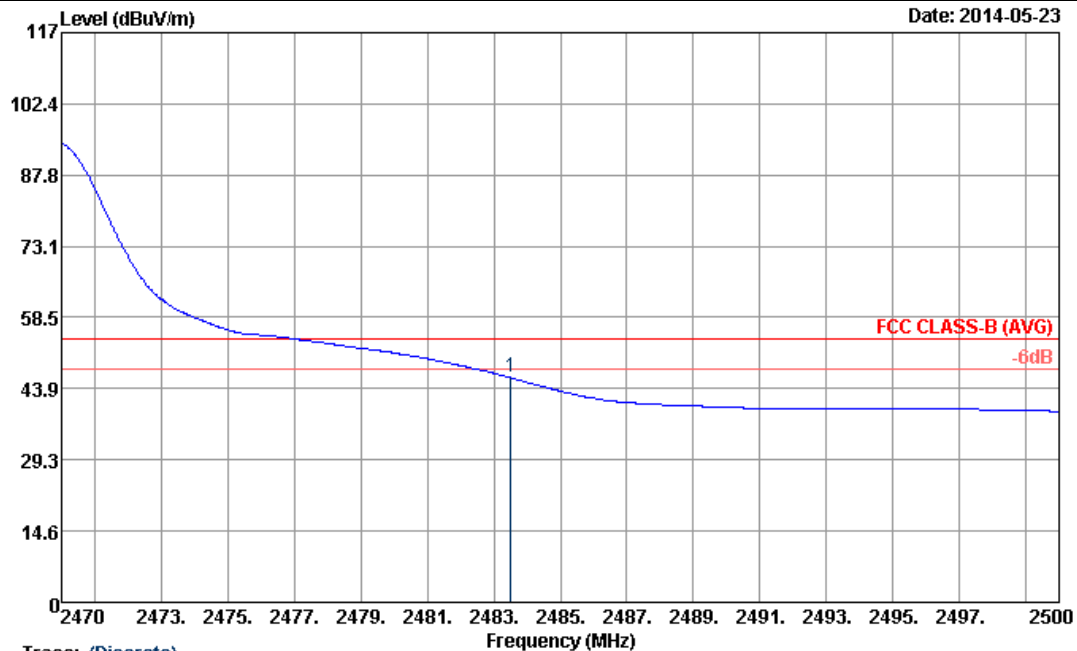
ANTENNA POLARITY : HORIZONTAL

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
2485.75	68.33	-5.67	74	64.38	31.99	6.59	34.63	100	300	Peak

Note: Worst case measurement on 2485.75 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band edge measurement in the restricted band 2483.5-2500MHz. And, 2470-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.



Test Mode :	802.11g	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B (AVG) 3m HF-ANT_583_130802 HORIZONTAL
: RBW:1000.000KHz VBW:0.010KHz SWT:Auto
Project : 442202

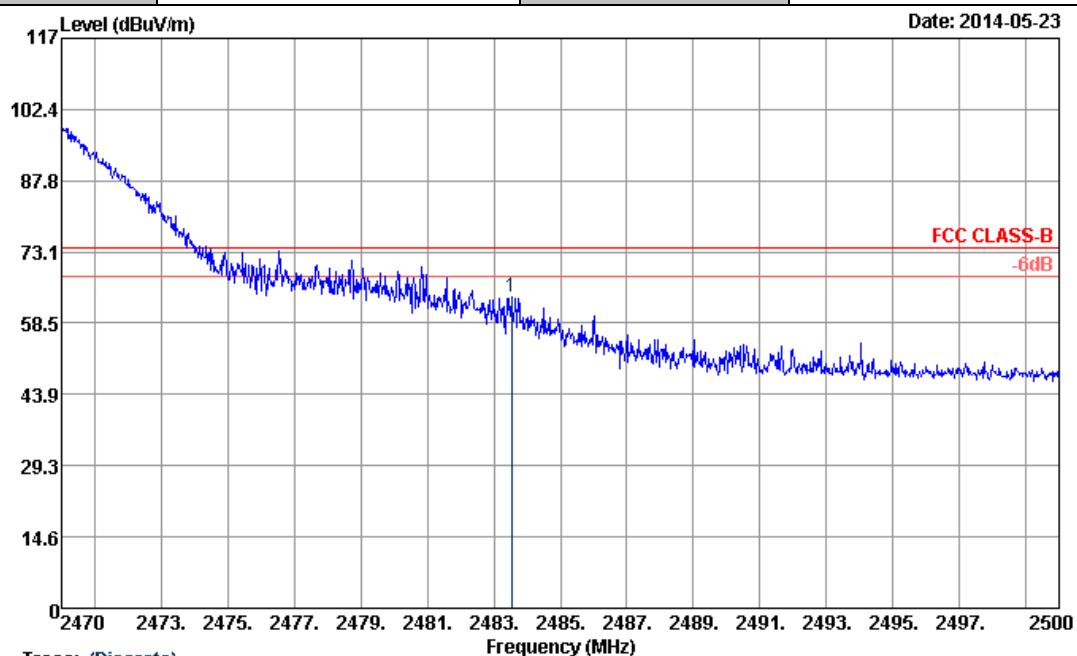
ANTENNA POLARITY : HORIZONTAL

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
2483.50	46.12	-7.88	54	42.17	31.99	6.59	34.63	100	300	Average

Note: Worst case measurement on 2483.50 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band edge measurement in the restricted band 2483.5-2500MHz. And, 2470-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.



Test Mode :	802.11g	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m HF-ANT_583_130802 VERTICAL
: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Project : 442202

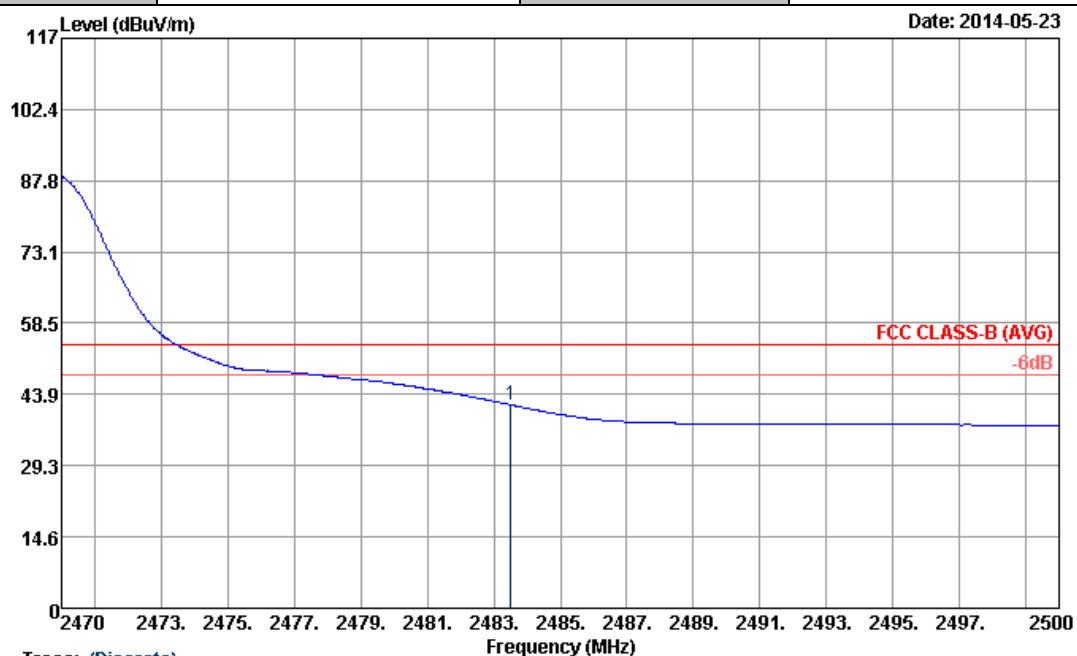
ANTENNA POLARITY : VERTICAL

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.53	63.79	-10.21	74	59.84	31.99	6.59	34.63	100	286	Peak

Note: Worst case measurement on 2483.53 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band edge measurement in the restricted band 2483.5-2500MHz. And, 2470-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.



Test Mode :	802.11g	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY

Condition : FCC CLASS-B (AVG) 3m HF-ANT_583_130802 VERTICAL

: RBW:1000.000KHz VBW:0.010KHz SWT:Auto

Project : 442202

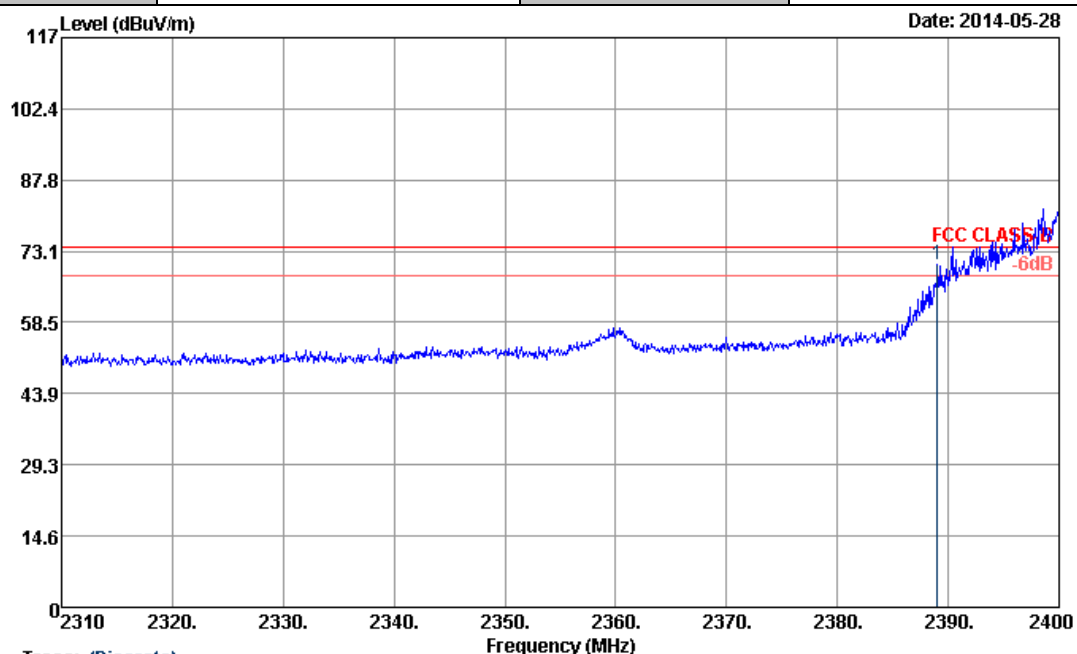
ANTENNA POLARITY : VERTICAL

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	41.76	-12.24	54	37.81	31.99	6.59	34.63	100	286	Average

Note: Worst case measurement on 2483.50 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band edge measurement in the restricted band 2483.5-2500MHz. And, 2470-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m HF-ANT_583_130802 HORIZONTAL
: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Project : 442202

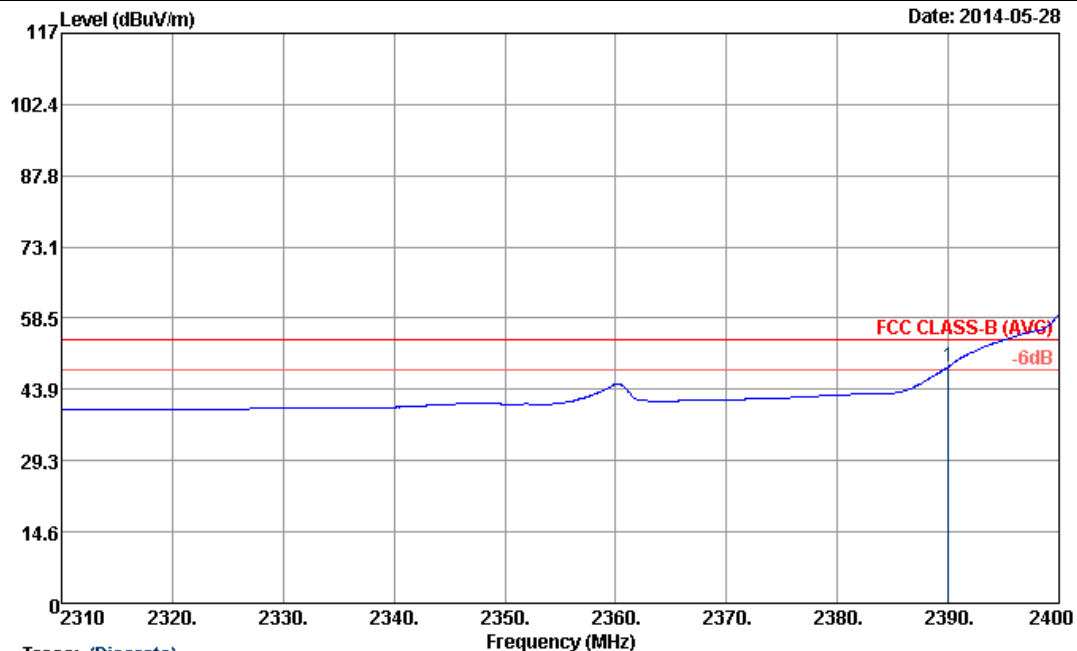
ANTENNA POLARITY : HORIZONTAL

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.02	70.51	-3.49	74	66.79	31.92	6.45	34.65	105	321	Peak

Note: Worst case measurement on 2389.02 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band 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 :	802.11n HT20	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY

Condition : FCC CLASS-B (AVG) 3m HF-ANT_583_130802 HORIZONTAL

: RBW:1000.000KHz VBW:0.010KHz SWT:Auto

Project : 442202

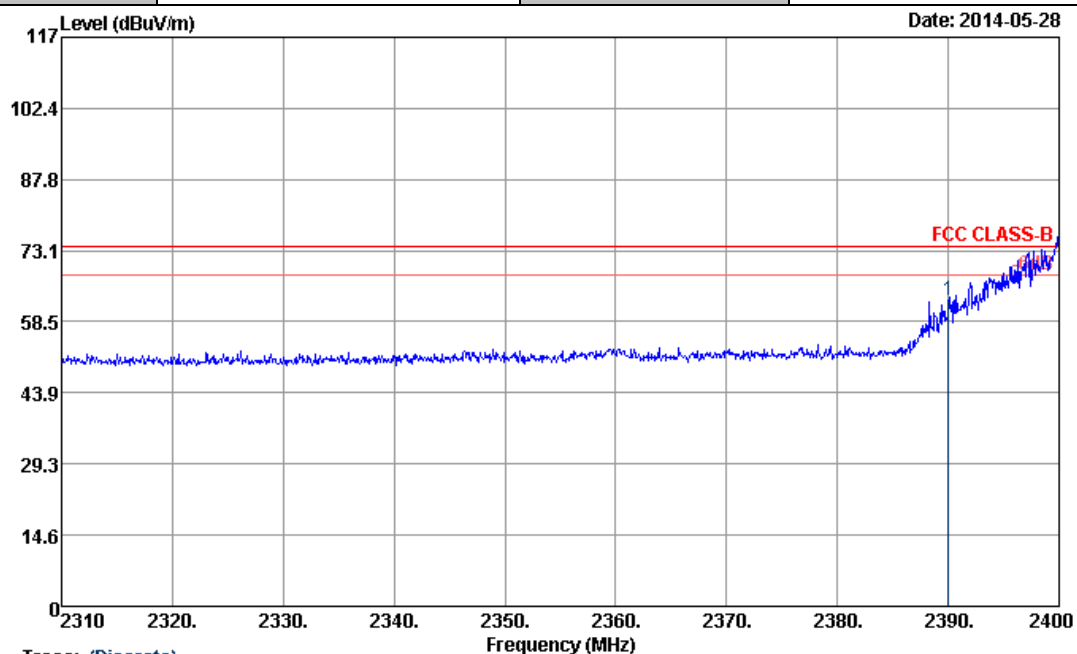
ANTENNA POLARITY : HORIZONTAL

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
2390.00	48.61	-5.39	54	44.88	31.92	6.45	34.64	105	321	Average

Note: Worst case measurement on 2390.00 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band 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 :	802.11n HT20	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY

Condition : FCC CLASS-B 3m HF-ANT_583_130802 VERTICAL

: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

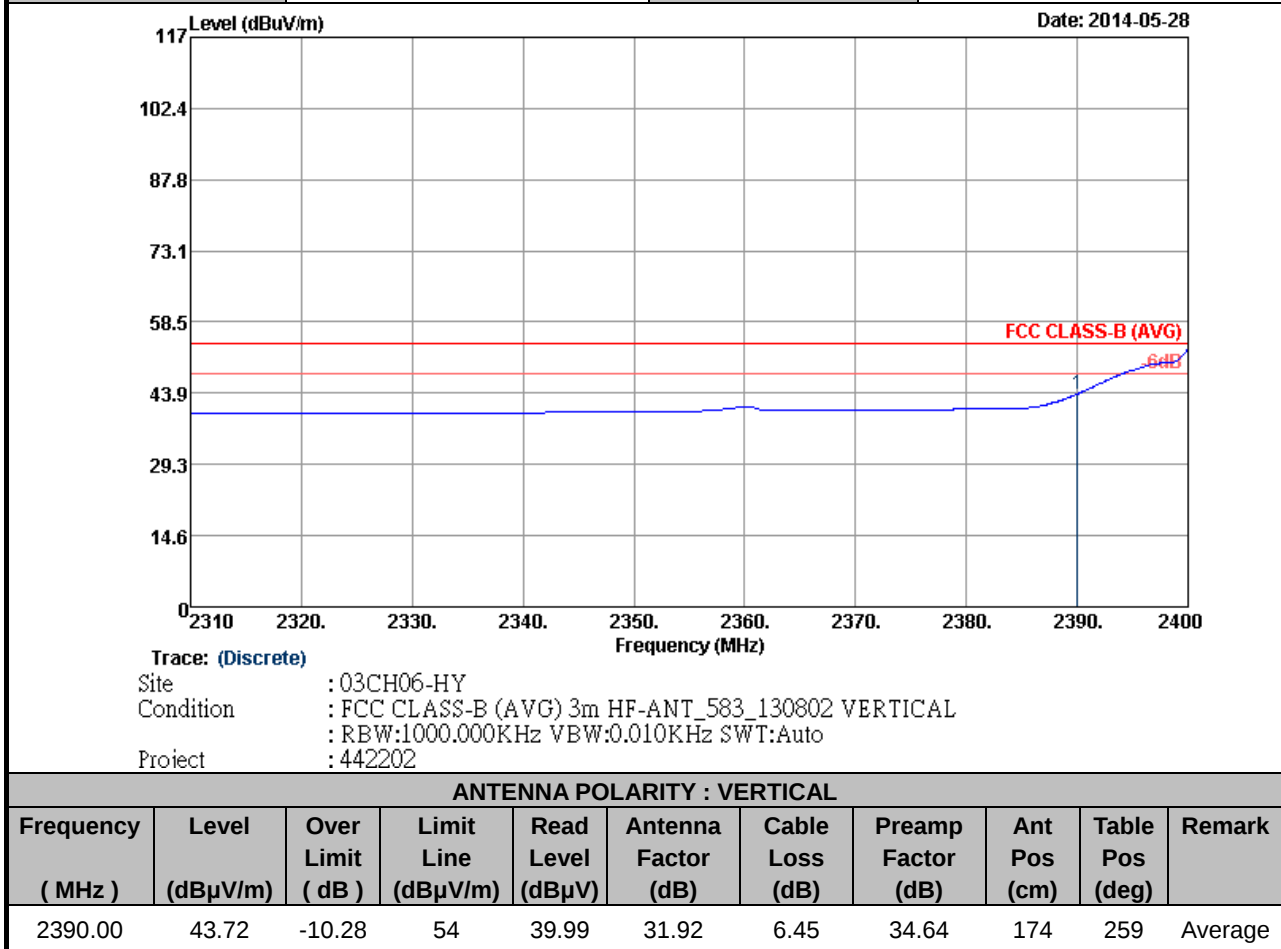
Project : 442202

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
2390.00	62.81	-11.19	74	59.08	31.92	6.45	34.64	174	259	Peak

Note: Worst case measurement on 2390.00 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band 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.

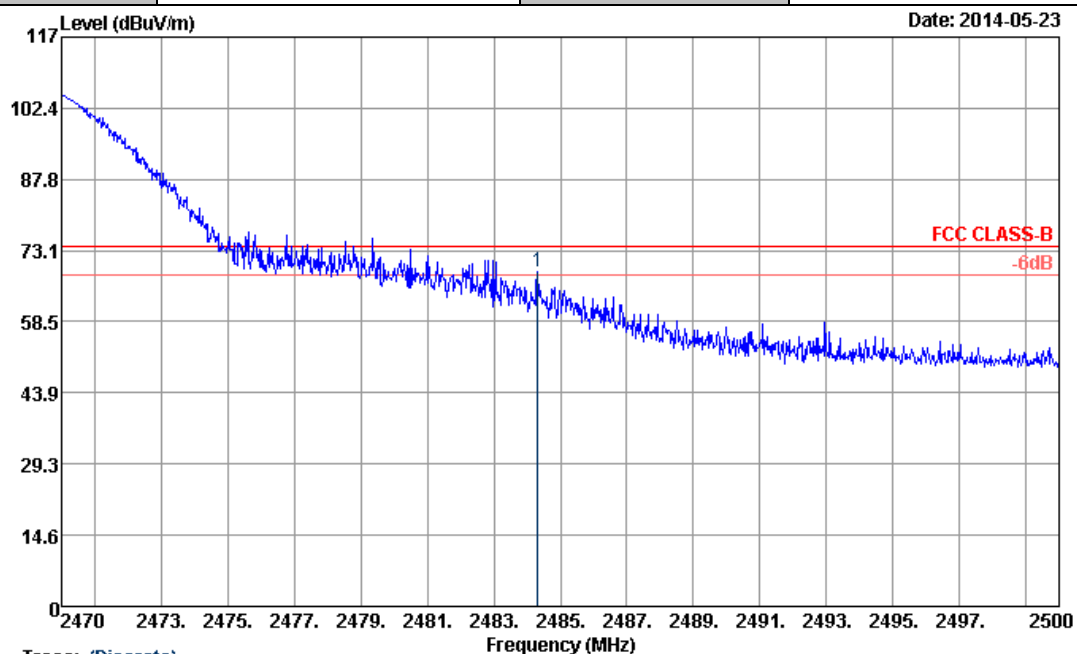
Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Gavin Wu



Note: Worst case measurement on 2390.00 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band 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 :	802.11n HT20	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY
 Condition : FCC CLASS-B 3m HF-ANT_583_130802 HORIZONTAL
 : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
 Project : 442202

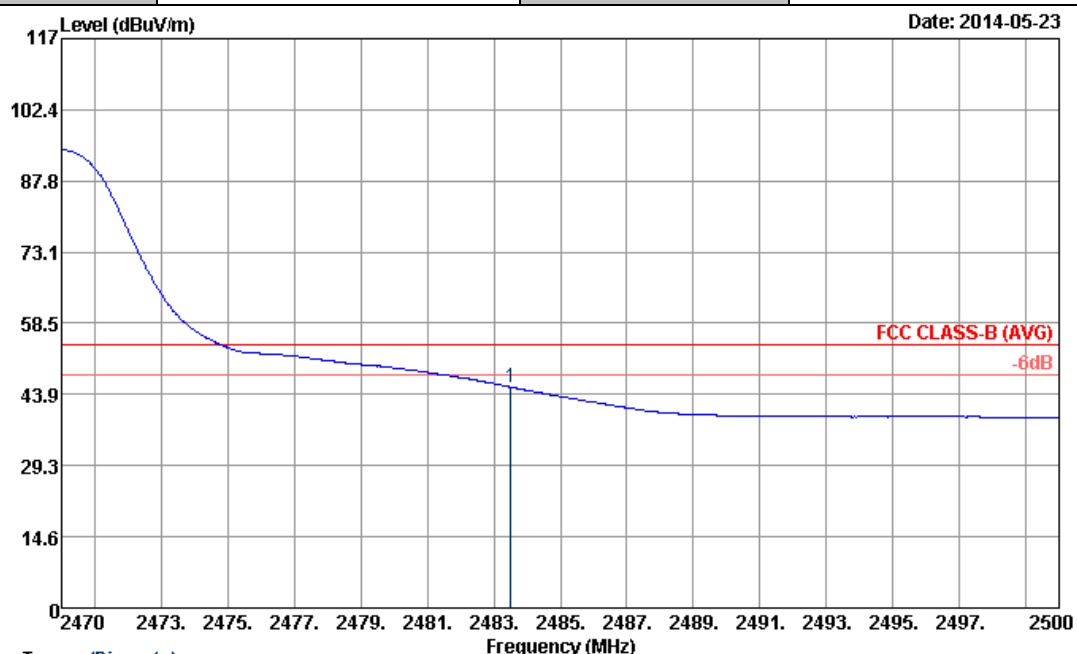
ANTENNA POLARITY : HORIZONTAL

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.31	68.62	-5.38	74	64.67	31.99	6.59	34.63	100	300	Peak

Note: Worst case measurement on 2484.31 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band edge measurement in the restricted band 2483.5-2500MHz. And, 2470-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY

Condition : FCC CLASS-B (AVG) 3m HF-ANT_583_130802 HORIZONTAL

: RBW:1000.000KHz VBW:0.010KHz SWT:Auto

Project : 442202

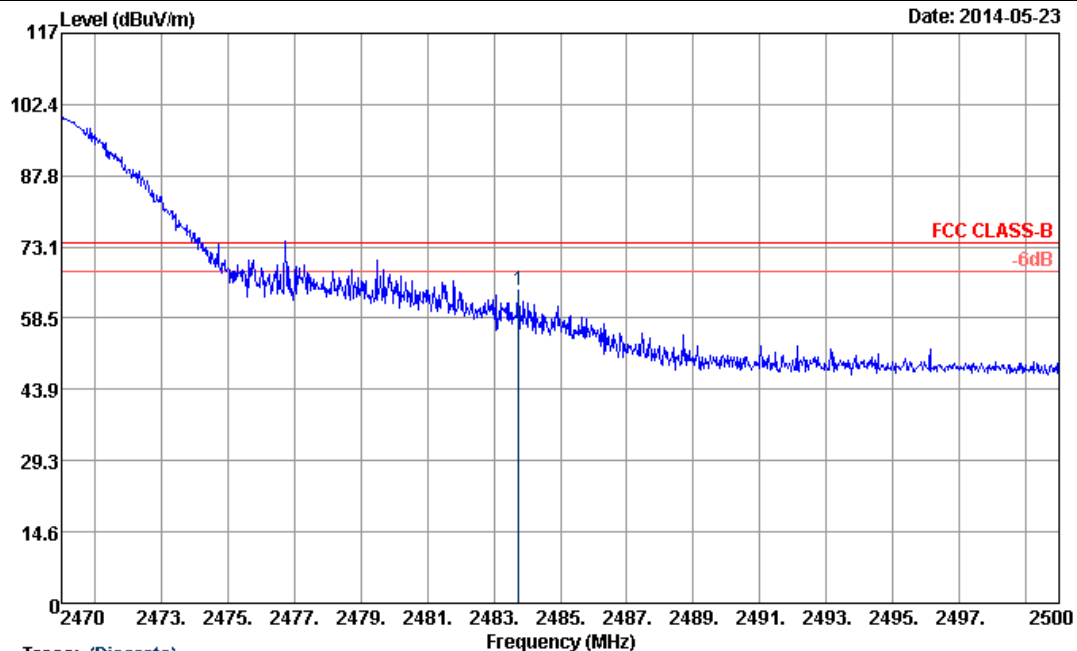
ANTENNA POLARITY : HORIZONTAL

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
2483.50	45.44	-8.56	54	41.49	31.99	6.59	34.63	100	300	Average

Note: Worst case measurement on 2483.50 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band edge measurement in the restricted band 2483.5-2500MHz. And, 2470-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY
 Condition : FCC CLASS-B 3m HF-ANT_583_130802 VERTICAL
 : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
 Project : 442202

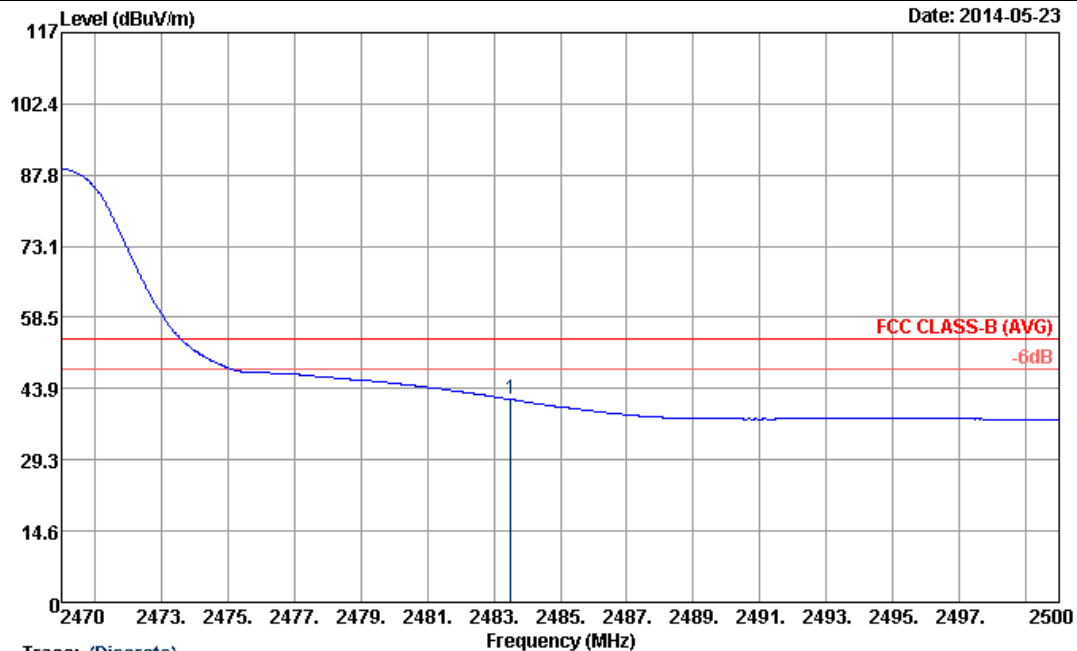
ANTENNA POLARITY : VERTICAL

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.74	64.13	-9.87	74	60.18	31.99	6.59	34.63	100	285	Peak

Note: Worst case measurement on 2483.74 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band edge measurement in the restricted band 2483.5-2500MHz. And, 2470-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Gavin Wu



Trace: (Discrete)

Site : 03CH06-HY

Condition : FCC CLASS-B (AVG) 3m HF-ANT_583_130802 VERTICAL

: RBW:1000.000KHz VBW:0.010KHz SWT:Auto

Project : 442202

ANTENNA POLARITY : VERTICAL

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	41.66	-12.34	54	37.71	31.99	6.59	34.63	100	285	Average

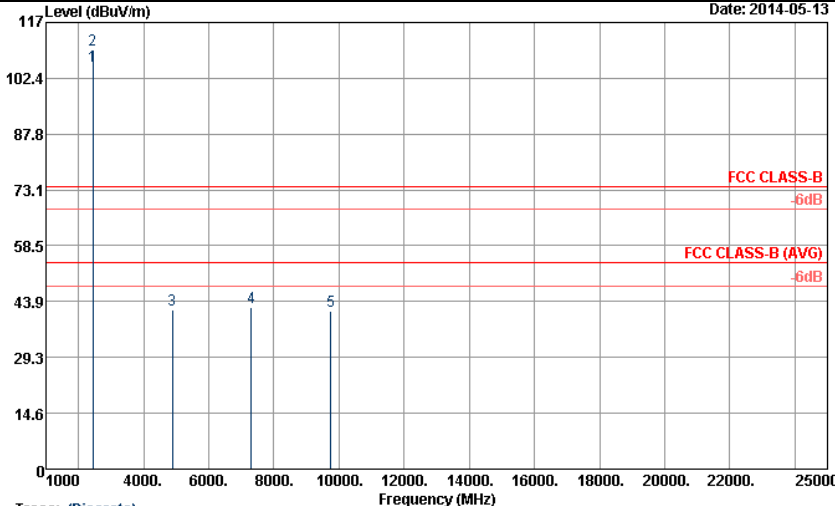
Note: Worst case measurement on 2483.50 MHz is compliance with 74/54 dBuV/m (peak/average) limit and band edge measurement in the restricted band 2483.5-2500MHz. And, 2470-2483.5MHz is within the operating band and not within the restricted band. The test result is compliance with the FCC limit line.

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

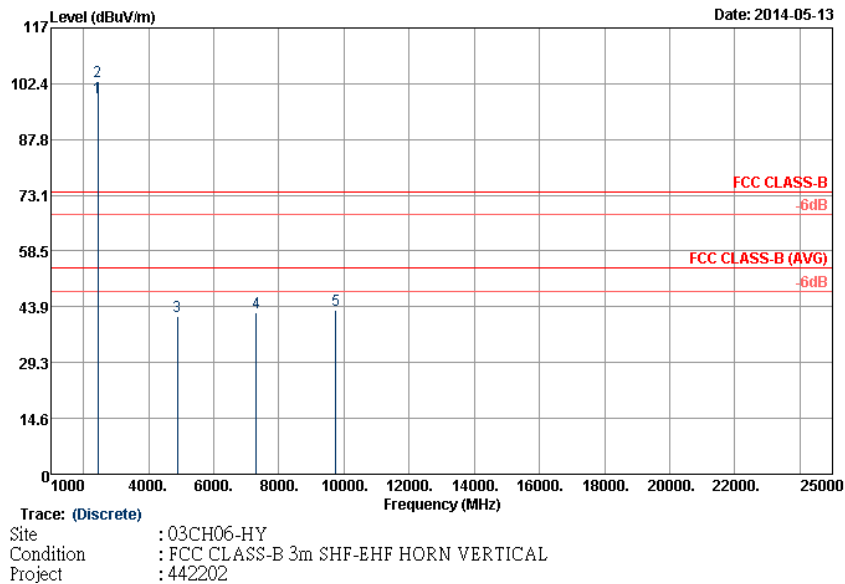
Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Gavin Wu		
Remark :	1. 2414 MHz is fundamental signal which can be ignored. 2. 7236 MHz and 9648 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level. For example, 110.92 dBμV/m - 20dB = 90.92 dBμV/m. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5th, 6th, 7th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		
Level (dBuV/m) 117 102.4 87.8 73.1 58.5 43.9 29.3 14.6 0 2 3 4 5 </			



Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Gavin Wu		
Remark :	1. 2414 MHz is fundamental signal which can be ignored. 2. 7236 MHz and 9648 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5th, 6th, 7th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise		
Level (dBuV/m)			

Test Mode :	802.11b	Temperature :	24~25°C							
Test Channel :	06	Relative Humidity :	46~47%							
Test Engineer :	Gavin Wu									
Remark :	1. 2439 MHz is fundamental signal which can be ignored. 2. 9747 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5th, 6th, 7th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise									
Level (dBuV/m) Date: 2014-05-13  Trace: (Discrete) Site : 03CH06-HY Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL Project : 442202										
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
2439	105.48	-	-	101.64	31.96	6.52	34.64	107	322	Average
2439	109.79	-	-	105.95	31.96	6.52	34.64	107	322	Peak
4875	41.64	-32.36	74	57.78	34.37	10.18	60.69	100	0	Peak
7311	42.27	-31.73	74	56.24	35.61	10.94	60.52	100	0	Peak
9747	41.48	-48.31	89.79	55.56	36.51	10.56	61.15	100	0	Peak
Other harmonics are lower than background noise										

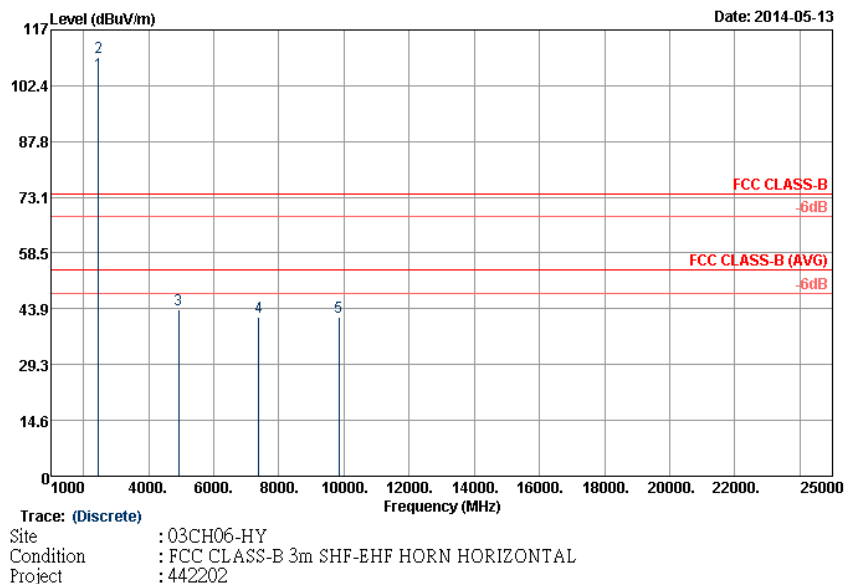
Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Gavin Wu		
Remark :	1. 2439 MHz is fundamental signal which can be ignored. 2. 9747 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise		


ANTENNA POLARITY : VERTICAL

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2439	98.62	-	-	94.78	31.96	6.52	34.64	200	258	Average
2439	102.93	-	-	99.09	31.96	6.52	34.64	200	258	Peak
4875	41.51	-32.49	74	57.65	34.37	10.18	60.69	100	0	Peak
7311	42.41	-31.59	74	56.38	35.61	10.94	60.52	100	0	Peak
9747	42.88	-40.05	82.93	56.96	36.51	10.56	61.15	100	0	Peak

Other harmonics are lower than background noise

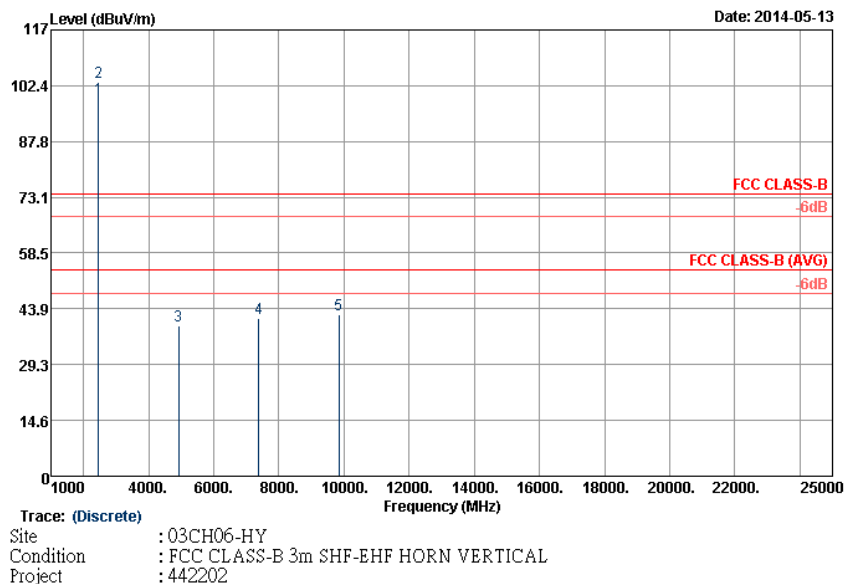
Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Gavin Wu		
Remark :	1. 2464 MHz is fundamental signal which can be ignored. 2. 9849 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise		


ANTENNA POLARITY : HORIZONTAL

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2464	105.44	-	-	101.55	31.97	6.56	34.64	104	320	Average
2464	109.74	-	-	105.85	31.97	6.56	34.64	104	320	Peak
4926	43.68	-30.32	74	59.7	34.34	10.21	60.57	100	0	Peak
7386	41.58	-32.42	74	55.66	35.56	10.92	60.56	100	0	Peak
9849	41.71	-48.03	89.74	55.68	36.63	10.57	61.17	100	0	Peak

Other harmonics are lower than background noise

Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Gavin Wu		
Remark :	1. 2464 MHz is fundamental signal which can be ignored. 2. 9849 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise		

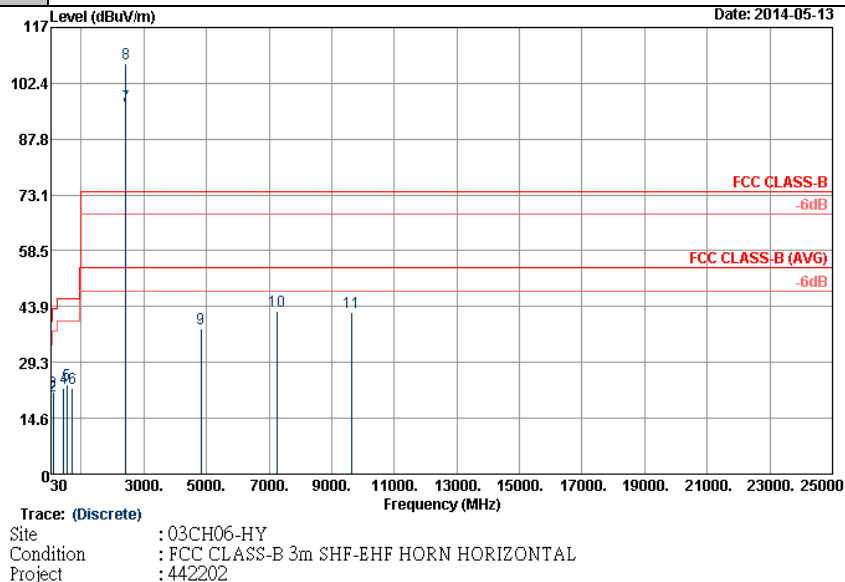

ANTENNA POLARITY : VERTICAL

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2464	98.96	-	-	95.07	31.97	6.56	34.64	200	258	Average
2464	103.28	-	-	99.39	31.97	6.56	34.64	200	258	Peak
4923	39.33	-34.67	74	55.36	34.34	10.2	60.57	100	0	Peak
7386	41.54	-32.46	74	55.62	35.56	10.92	60.56	100	0	Peak
9849	42.45	-40.83	83.28	56.42	36.63	10.57	61.17	100	0	Peak

Other harmonics are lower than background noise



Test Mode :	802.11g	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Gavin Wu		
Remark :	1. 2414 MHz is fundamental signal which can be ignored. 2. 7236 MHz and 9648 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise		



ANTENNA POLARITY : HORIZONTAL

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	23.48	-16.52	40	36.14	18.5	0.64	31.8	102	178	Peak
99.66	20.63	-22.87	43.5	40.48	10.8	1.1	31.75	-	-	Peak
106.95	21.6	-21.9	43.5	40.38	11.84	1.13	31.75	-	-	Peak
440	22.58	-23.42	46	35.35	16.8	2.29	31.86	-	-	Peak
532.4	23.56	-22.44	46	34.49	18.52	2.52	31.97	-	-	Peak



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
721.4	22.38	-23.62	46	31.59	19.84	2.96	32.01	-	-	Peak
2414	96.6	-	-	92.82	31.93	6.49	34.64	106	321	Average
2414	107.47	-	-	103.69	31.93	6.49	34.64	106	321	Peak
4824	38.21	-35.79	74	54.45	34.4	10.17	60.81	100	0	Peak
7236	42.81	-44.66	87.47	56.69	35.66	10.96	60.5	100	0	Peak
9648	42.5	-44.97	87.47	56.68	36.39	10.56	61.13	100	0	Peak
Other harmonics are lower than background noise										

Test Mode :	802.11g	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Gavin Wu		
Remark :	1. 2414 MHz is fundamental signal which can be ignored. 2. 7236 MHz and 9648 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5th, 6th, 7th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise		
Level (dBUV/m)			



ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dB μ V/m)	Over Limit (dB)	Limit Line (dB μ V/m)	Read Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
585.6	26.17	-19.83	46	36.17	19.34	2.7	32.04	-	-	Peak
2414	90.63	-	-	86.85	31.93	6.49	34.64	200	276	Average
2414	101.19	-	-	97.41	31.93	6.49	34.64	200	276	Peak
4824	39.53	-34.47	74	55.77	34.4	10.17	60.81	100	0	Peak
7236	41.88	-39.31	81.19	55.76	35.66	10.96	60.5	100	0	Peak
9648	43.14	-38.05	81.19	57.32	36.39	10.56	61.13	100	0	Peak
Other harmonics are lower than background noise										

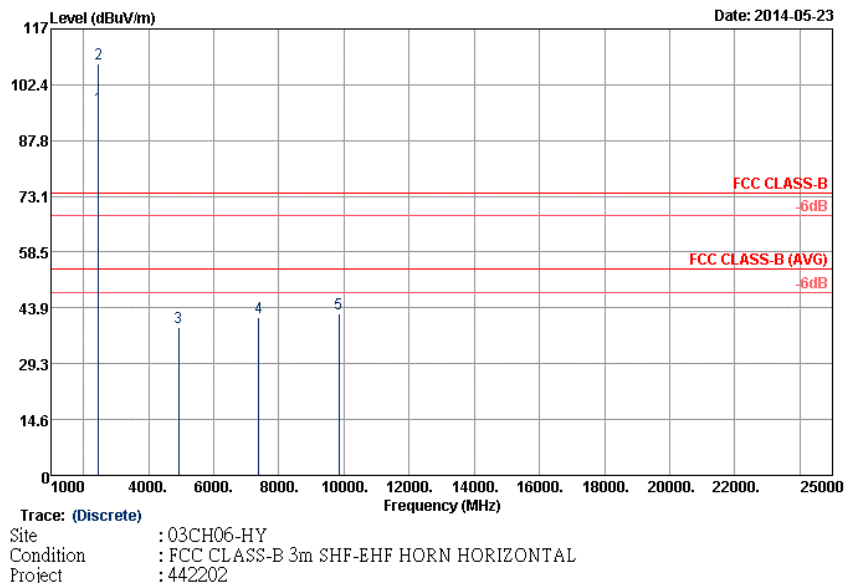


Test Mode :	802.11g	Temperature :	24~25°C							
Test Channel :	06	Relative Humidity :	46~47%							
Test Engineer :	Gavin Wu									
Remark :	1. 2439 MHz is fundamental signal which can be ignored. 2. 9747 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5th, 6th, 7th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise									
Level (dBUV/m) Date: 2014-05-25 Trace: (Discrete) Site : 03CH06-HY Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL Project : 442202 Frequency (MHz)										
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
2439	98.9	-	-	95.06	31.96	6.52	34.64	106	321	Average
2439	109.95	-	-	106.11	31.96	6.52	34.64	106	321	Peak
4875	39.39	-34.61	74	55.53	34.37	10.18	60.69	100	0	Peak
7311	43.05	-30.95	74	57.02	35.61	10.94	60.52	100	0	Peak
9747	41.89	-48.06	89.95	55.97	36.51	10.56	61.15	100	0	Peak
Other harmonics are lower than background noise										



Test Mode :	802.11g	Temperature :	24~25°C							
Test Channel :	06	Relative Humidity :	46~47%							
Test Engineer :	Gavin Wu									
Remark :	1. 2439 MHz is fundamental signal which can be ignored. 2. 9747 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5th, 6th, 7th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise									
Level (dBuV/m) Date: 2014-05-25 Trace: (Discrete) Site : 03CH06-HY Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL Project : 442202 Frequency (MHz)										
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
2439	93.7	-	-	89.86	31.96	6.52	34.64	199	277	Average
2439	104.67	-	-	100.83	31.96	6.52	34.64	199	277	Peak
4875	39.55	-34.45	74	55.69	34.37	10.18	60.69	100	0	Peak
7311	43.01	-30.99	74	56.98	35.61	10.94	60.52	100	0	Peak
9747	42.49	-42.18	84.67	56.57	36.51	10.56	61.15	100	0	Peak
Other harmonics are lower than background noise										

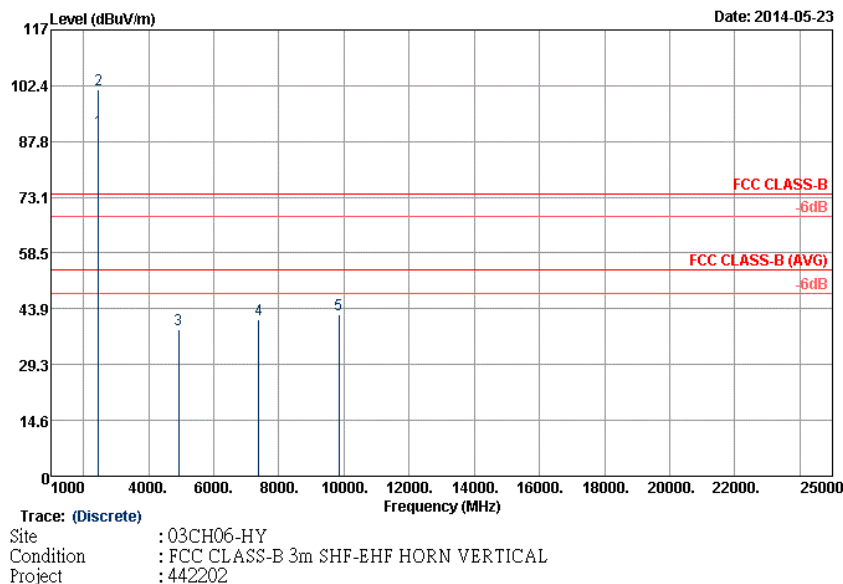
Test Mode :	802.11g	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Gavin Wu		
Remark :	1. 2464 MHz is fundamental signal which can be ignored. 2. 9849 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise		


ANTENNA POLARITY : HORIZONTAL

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2464	96.56	-	-	92.67	31.97	6.56	34.64	107	320	Average
2464	107.96	-	-	104.07	31.97	6.56	34.64	107	320	Peak
4923	38.9	-35.1	74	54.93	34.34	10.2	60.57	100	0	Peak
7386	41.54	-32.46	74	55.62	35.56	10.92	60.56	100	0	Peak
9849	42.28	-45.68	87.96	56.25	36.63	10.57	61.17	100	0	Peak

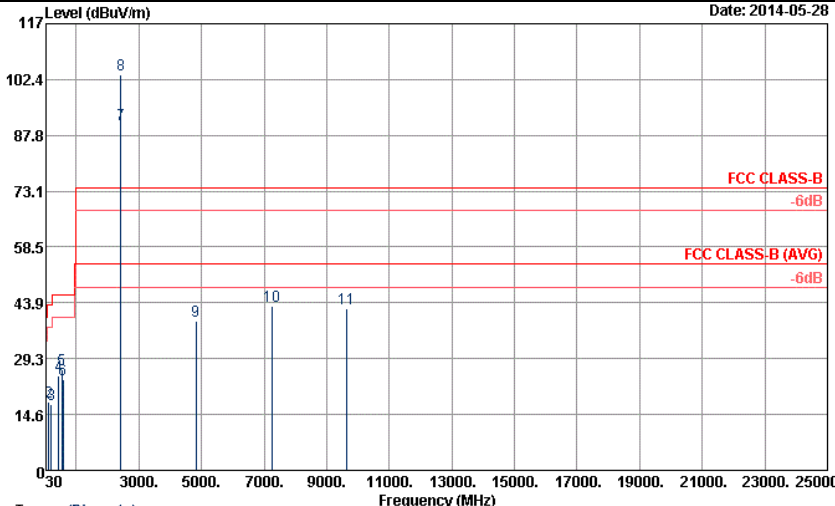
Other harmonics are lower than background noise

Test Mode :	802.11g	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Gavin Wu		
Remark :	1. 2464 MHz is fundamental signal which can be ignored. 2. 9849 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise		


ANTENNA POLARITY : VERTICAL

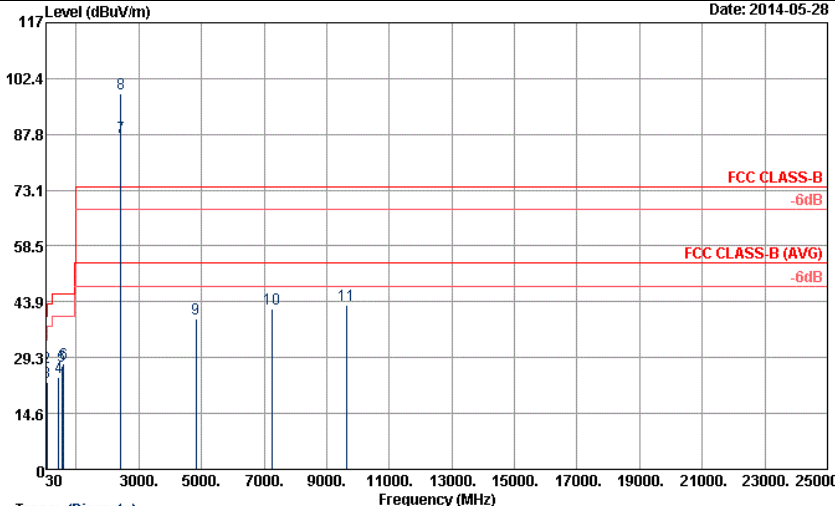
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2464	90.6	-	-	86.71	31.97	6.56	34.64	199	277	Average
2464	101.55	-	-	97.66	31.97	6.56	34.64	199	277	Peak
4923	38.4	-35.6	74	54.43	34.34	10.2	60.57	100	0	Peak
7386	41	-33	74	55.08	35.56	10.92	60.56	100	0	Peak
9849	42.25	-39.3	81.55	56.22	36.63	10.57	61.17	100	0	Peak

Other harmonics are lower than background noise

Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C							
Test Channel :	01	Relative Humidity :	46~47%							
Test Engineer :	Gavin Wu									
Remark :	1. 2414 MHz is fundamental signal which can be ignored. 2. 7236 MHz and 9648 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5th, 6th, 7th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise									
Level (dBUV/m) Date: 2014-05-28  Trace: (Discrete) Site : 03CH06-HY Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL Project : 442202										
ANTENNA POLARITY : HORIZONTAL										
Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
(MHz)	(dBUV/m)	(dB)	(dBUV/m)	(dBUV)	(dB)	(dB)	(dB)	(cm)	(deg)	
30	21.82	-18.18	40	34.48	18.5	0.64	31.8	103	268	Peak
121.8	17.85	-25.65	43.5	36.25	12.12	1.23	31.75	-	-	Peak
196.86	17.34	-26.16	43.5	38.43	9.14	1.52	31.75	-	-	Peak
429.5	24.85	-21.15	46	37.64	16.8	2.26	31.85	-	-	Peak
536.6	26.24	-19.76	46	36.88	18.81	2.53	31.98	-	-	Peak

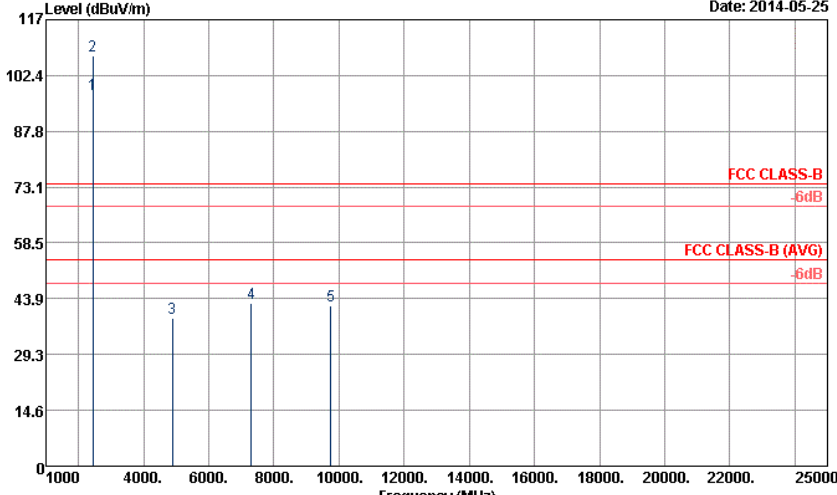


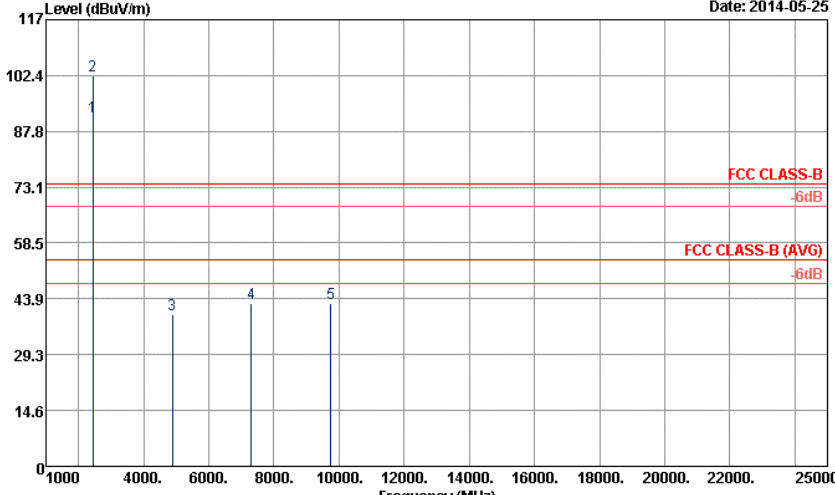
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
581.4	23.9	-22.1	46	33.87	19.39	2.68	32.04	-	-	Peak
2414	90.53	-	-	86.75	31.93	6.49	34.64	105	321	Average
2414	103.69	-	-	99.91	31.93	6.49	34.64	105	321	Peak
4824	39.21	-34.79	74	55.45	34.4	10.17	60.81	100	0	Peak
7236	42.98	-40.71	83.69	56.86	35.66	10.96	60.5	100	0	Peak
9648	42.29	-41.4	83.69	56.47	36.39	10.56	61.13	100	0	Peak
Other harmonics are lower than background noise										

Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C							
Test Channel :	01	Relative Humidity :	46~47%							
Test Engineer :	Gavin Wu									
Remark :	1. 2414 MHz is fundamental signal which can be ignored. 2. 7236 MHz and 9648 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise									
Level (dBuV/m)  Trace: (Discrete) Site : 03CH06-HY Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL Project : 442202 Date: 2014-05-28										
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	31.27	-8.73	40	43.93	18.5	0.64	31.8	104	225	Peak
32.7	26.84	-13.16	40	41.26	16.7	0.67	31.79	-	-	Peak
51.06	22.89	-17.11	40	45.88	7.98	0.81	31.78	-	-	Peak
433	23.99	-22.01	46	36.78	16.8	2.27	31.86	-	-	Peak
538	27.02	-18.98	46	37.52	18.95	2.53	31.98	-	-	Peak



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
588.4	27.71	-18.29	46	37.72	19.31	2.72	32.04	-	-	Peak
2414	86.86	-	-	83.08	31.93	6.49	34.64	174	259	Average
2414	98.5	-	-	94.72	31.93	6.49	34.64	174	259	Peak
4824	39.5	-34.5	74	55.74	34.4	10.17	60.81	100	0	Peak
7236	41.96	-36.54	78.5	55.84	35.66	10.96	60.5	100	0	Peak
9648	42.9	-35.6	78.5	57.08	36.39	10.56	61.13	100	0	Peak
Other harmonics are lower than background noise										

Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C							
Test Channel :	06	Relative Humidity :	46~47%							
Test Engineer :	Gavin Wu									
Remark :	1. 2439 MHz is fundamental signal which can be ignored. 2. 9747 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5th, 6th, 7th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise									
Level (dBuV/m) Date: 2014-05-25  Trace: (Discrete) Site : 03CH06-HY Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL Project : 442202										
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
2439	97.46	-	-	93.62	31.96	6.52	34.64	108	321	Average
2439	107.79	-	-	103.95	31.96	6.52	34.64	108	321	Peak
4875	38.88	-35.12	74	55.02	34.37	10.18	60.69	100	0	Peak
7311	42.58	-31.42	74	56.55	35.61	10.94	60.52	100	0	Peak
9747	42.06	-45.73	87.79	56.14	36.51	10.56	61.15	100	0	Peak
Other harmonics are lower than background noise										

Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C							
Test Channel :	06	Relative Humidity :	46~47%							
Test Engineer :	Gavin Wu									
Remark :	1. 2439 MHz is fundamental signal which can be ignored. 2. 9747 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5th, 6th, 7th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise									
Level (dBuV/m) Date: 2014-05-25  Trace: (Discrete) Site : 03CH06-HY Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL Project : 442202 Frequency (MHz)										
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
2439	91.49	-	-	87.65	31.96	6.52	34.64	174	259	Average
2439	102.2	-	-	98.36	31.96	6.52	34.64	174	259	Peak
4875	39.7	-34.3	74	55.84	34.37	10.18	60.69	100	0	Peak
7311	42.81	-31.19	74	56.78	35.61	10.94	60.52	100	0	Peak
9747	42.83	-39.37	82.2	56.91	36.51	10.56	61.15	100	0	Peak
Other harmonics are lower than background noise										



Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Gavin Wu		
Remark :	1. 2464 MHz is fundamental signal which can be ignored. 2. 9849 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5th, 6th, 7th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise		
Level (dBUV/m) 117 102.4 87.8 73.1 58.5 43.9 29.3 14.6 0 2 3 4 5			



Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C							
Test Channel :	11	Relative Humidity :	46~47%							
Test Engineer :	Gavin Wu									
Remark :	1. 2464 MHz is fundamental signal which can be ignored. 2. 9849 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit. 4. The harmonic (5th, 6th, 7th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise									
Level (dBUV/m) Date: 2014-05-23 Trace: (Discrete) Site : 03CH06-HY Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL Project : 442202 Frequency (MHz)										
ANTENNA POLARITY : VERTICAL										
Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2464	88.65	-	-	84.76	31.97	6.56	34.64	199	258	Average
2464	99.72	-	-	95.83	31.97	6.56	34.64	199	258	Peak
4923	39.22	-34.78	74	55.25	34.34	10.2	60.57	100	0	Peak
7386	43.04	-30.96	74	57.12	35.56	10.92	60.56	100	0	Peak
9849	41.84	-37.88	79.72	55.81	36.63	10.57	61.17	100	0	Peak
Other harmonics are lower than background noise										

3.6 AC Conducted Emission Measurement

3.6.1 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 (dB μ V)	
	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.

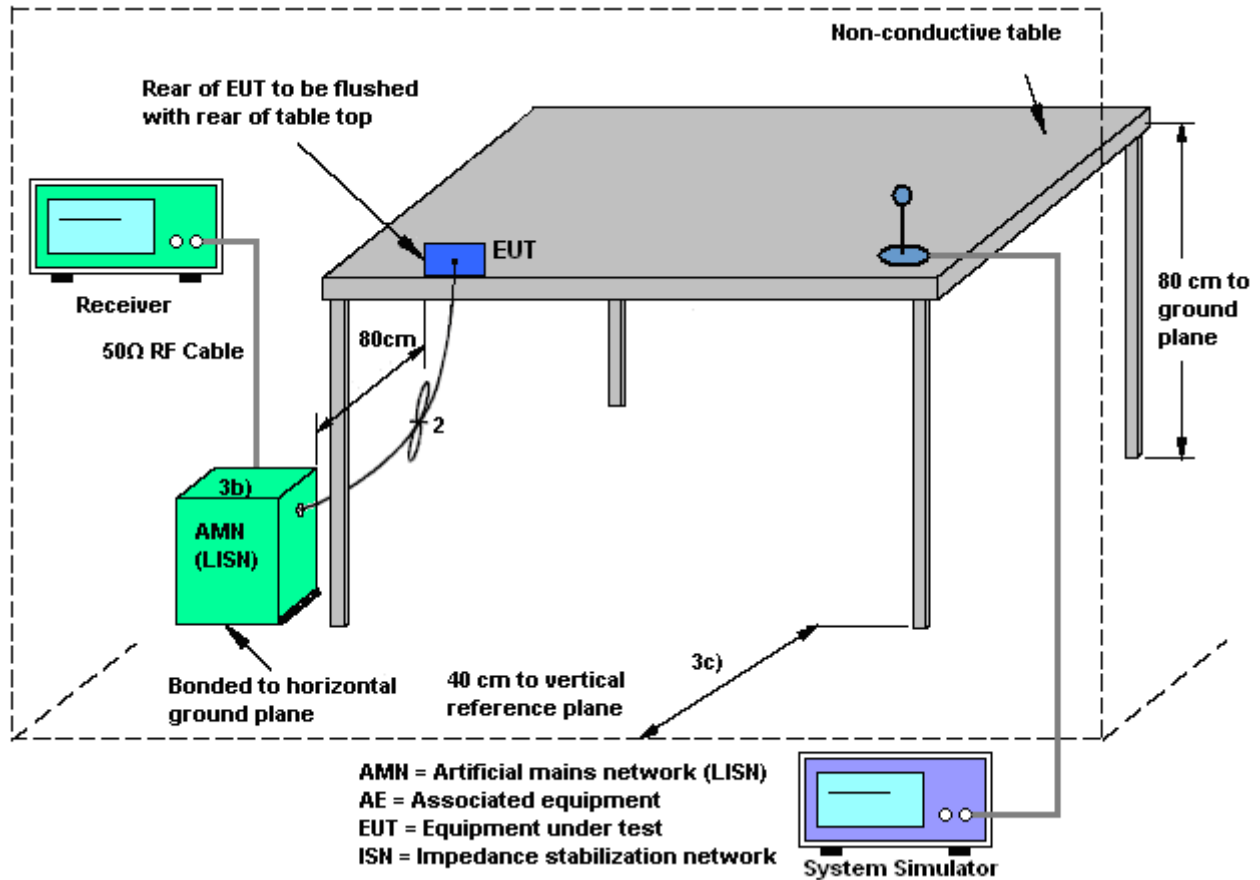
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

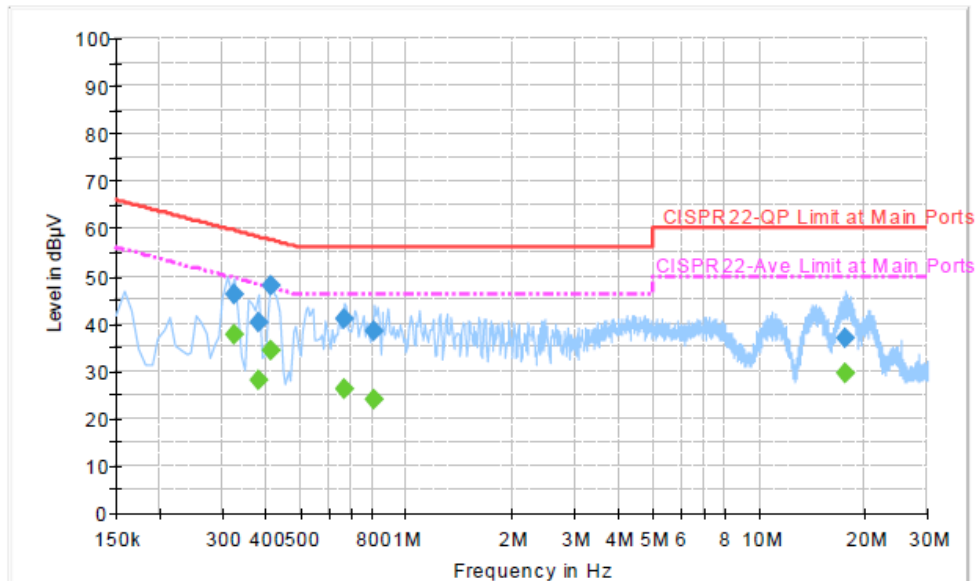
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other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

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Link + Earphone + Battery + USB Cable (Charging from Adapter) + MP3		



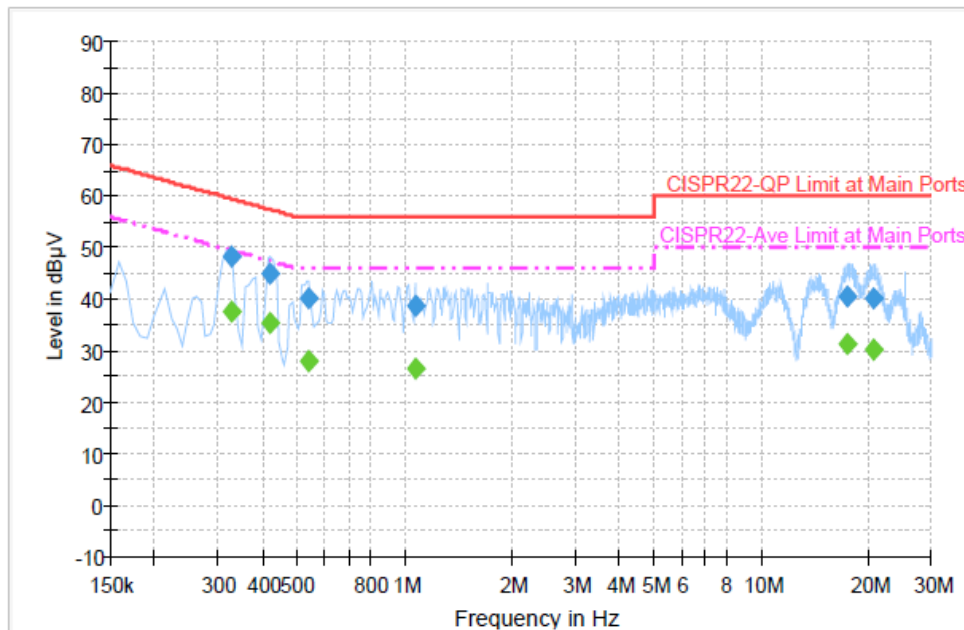
Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.326000	46.3	Off	L1	19.4	13.3	59.6
0.382000	40.1	Off	L1	19.3	18.1	58.2
0.414000	47.9	Off	L1	19.4	9.7	57.6
0.670000	40.9	Off	L1	19.5	15.1	56.0
0.814000	38.3	Off	L1	19.5	17.7	56.0
17.526000	37.0	Off	L1	19.9	23.0	60.0

Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.326000	37.7	Off	L1	19.4	11.9	49.6
0.382000	28.2	Off	L1	19.3	20.0	48.2
0.414000	34.4	Off	L1	19.4	13.2	47.6
0.670000	26.1	Off	L1	19.5	19.9	46.0
0.814000	24.1	Off	L1	19.5	21.9	46.0
17.526000	29.4	Off	L1	19.9	20.6	50.0

Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Link + Earphone + Battery + USB Cable (Charging from Adapter) + MP3		


Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.326000	48.2	Off	N	19.4	11.4	59.6
0.422000	44.9	Off	N	19.4	12.5	57.4
0.542000	40.3	Off	N	19.3	15.7	56.0
1.070000	38.6	Off	N	19.5	17.4	56.0
17.406000	40.6	Off	N	19.9	19.4	60.0
20.726000	40.1	Off	N	19.9	19.9	60.0

Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.326000	37.6	Off	N	19.4	12.0	49.6
0.422000	35.3	Off	N	19.4	12.1	47.4
0.542000	28.0	Off	N	19.3	18.0	46.0
1.070000	26.5	Off	N	19.5	19.5	46.0
17.406000	31.3	Off	N	19.9	18.7	50.0
20.726000	30.3	Off	N	19.9	19.7	50.0

3.7 Antenna Requirements

3.7.1 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. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. 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.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 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	May 05, 2014~ May 27, 2014	Jun. 06, 2014	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Aug. 17, 2013	May 05, 2014~ May 27, 2014	Aug. 16, 2014	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Aug. 17, 2013	May 05, 2014~ May 27, 2014	Aug. 16, 2014	Conducted (TH02-HY)
Hygrometer	Testo	608-H1	34897199	N/A	May 07, 2013	May 05, 2014	May 06, 2014	Conducted (TH02-HY)
Hygrometer	Testo	608-H1	34897199	N/A	May 06, 2014	May 06, 2014~ May 27, 2014	May 05, 2015	Conducted (TH02-HY)
RF cable	HONOVA	MF86	N/A	N/A	Nov. 25, 2013	May 05, 2014~ May 27, 2014	Nov. 24, 2014	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP30	101067	9kHz ~ 30GHz	Nov. 20, 2013	May 12, 2014~ May 28, 2014	Nov. 19, 2014	Radiation (03CH06-HY)
Spectrum Analyzer	Agilent	E4408B	MY442110 30	9kHz ~ 26.5GHz	Dec. 02, 2013	May 12, 2014~ May 28, 2014	Dec. 01, 2014	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/00 03	20MHz ~ 1GHz	May 06, 2014	May 12, 2014~ May 28, 2014	May 05, 2015	Radiation (03CH06-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	860004/00 01	9kHz ~ 30MHz	Jul. 03, 2012	May 12, 2014~ May 28, 2014	Jul. 02, 2014	Radiation (03CH06-HY)
Bilog Antenna	Schaffner	CBL6112B	2885	30MHz ~ 2GHz	Oct. 10, 2013	May 12, 2014~ May 28, 2014	Oct. 09, 2014	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz ~ 18GHz	Aug. 02, 2013	May 12, 2014~ May 28, 2014	Aug. 01, 2014	Radiation (03CH06-HY)
Amplifier	SONOMA	310N	187231	9kHz ~ 1GHz	May 12, 2014	May 12, 2014~ May 28, 2014	May 11, 2015	Radiation (03CH06-HY)
Pre Amplifier	EMCI	EMC051845	SN980048	1GHz ~ 18GHz	Jul. 18, 2013	May 12, 2014~ May 28, 2014	Jul. 17, 2014	Radiation (03CH06-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170 251	15GHz ~ 40GHz	Oct. 03, 2013	May 12, 2014~ May 28, 2014	Oct. 02, 2014	Radiation (03CH06-HY)
Preamplifier	Agilent	8449B	3008A019 17	1GHz~ 26.5GHz	Apr. 10, 2014	May 12, 2014~ May 28, 2014	Apr. 09, 2015	Radiation (03CH06-HY)
Turn Table	INN-CO	DS2000	420/650/00	0 ~ 360 degree	N/A	May 12, 2014~ May 28, 2014	N/A	Radiation (03CH06-HY)
Antenna Mast	MF	MF-7802	MF780208 212	1 m ~ 4 m	N/A	May 12, 2014~ May 28, 2014	N/A	Radiation (03CH06-HY)
LF RF Cable	warison	WCBA-WC04 NM.NM2	N/A	30MHz~1GHz	Nov. 28, 2013	May 12, 2014~ May 28, 2014	Nov. 27, 2014	Radiation (03CH06-HY)
HF RF Cable	Huber + Suhner	sucoflex 104	286027/4	1GHz~26.5GHz	Nov. 28, 2013	May 12, 2014~ May 28, 2014	Nov. 27, 2014	Radiation (03CH06-HY)
High Pass Filter	Microwave Circuits	H3G018G1	SN477219	3G HPF	Nov. 28, 2013	May 12, 2014~ May 28, 2014	Nov. 27, 2014	Radiation (03CH06-HY)
High Pass Filter	Microwave Circuits	H07G18G3	282388	7G HPF	Nov. 28, 2013	May 12, 2014~ May 28, 2014	Nov. 27, 2014	Radiation (03CH06-HY)
Low Pass Filter	Wainwright	WLKS1500-8 SS	SN51	1.5G LPF	Nov. 28, 2013	May 12, 2014~ May 28, 2014	Nov. 27, 2014	Radiation (03CH06-HY)



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	WISEWIND	410	BU5004	N/A	May 06, 2014	May 12, 2014~ May 28, 2014	May 05, 2015	Radiation (03CH06-HY)
Test Software	Audix	E3 V6.0	N/A	N/A	N/A	May 12, 2014~ May 28, 2014	N/A	Radiation (03CH06-HY)
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100356	9kHz ~ 2.75GHz	Nov. 15, 2013	May 10, 2014	Nov. 14, 2014	Conduction (CO05-HY)
LISN (for auxiliary equipment)	Rohde & Schwarz	ENV216	100081	9kHz ~ 30MHz	Dec. 12, 2013	May 10, 2014	Dec. 11, 2014	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz ~ 30MHz	Dec. 04, 2013	May 10, 2014	Dec. 03, 2014	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	May 10, 2014	N/A	Conduction (CO05-HY)
Test Software	N/A	EMC32	8.40.0	N/A	N/A	May 10, 2014	N/A	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Apr. 23, 2014,	May 10, 2014	Apr. 22, 2015	Conduction (CO05-HY)
LF Cable	Shuner	RG-402	N/A	N/A	Oct. 17, 2013	May 10, 2014	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 (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.26
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.50
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