



FCC RF Test Report

APPLICANT : HTC Corporation
EQUIPMENT : Smartphone
MODEL NAME : PK76110
FCC ID : NM8PK76110
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Feb. 03, 2012 and completely tested on Feb. 22, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

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

Reviewed by:

Jones Tsai / 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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SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.1	-	Gen 4.6.1	99% Bandwidth	-	Pass	-
3.2	15.247(b)	A8.4	Power Output	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.4	15.247(d)	A8.5	Spurious Emission	$< 20\text{ dBc}$	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 5.70 dB at 0.414 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.03 dB at 2389.800 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

HTC Corporation

No. 23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan

1.2 Manufacturer

HTC Corporation

No. 23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Smartphone
Model Name	PK76110
Sample 1	EUT with LCM 1, Camera 1, and Battery 1
Sample 2	EUT with LCM 2, Camera 2, and Battery 2
FCC ID	NM8PK76110
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Channel Spacing	5 MHz
Maximum Output Power to Antenna	802.11b : 19.12 dBm (0.0817 W) 802.11g : 18.37 dBm (0.0687 W) 802.11g/n (BW 20MHz) : 18.31 dBm (0.0678 W)
Duty Cycle	802.11b : 99.20% 802.11g : 94.48% 802.11g/n (BW 20MHz) : 94.47%
Antenna Type	PIFA Antenna with gain 0.30 dBi
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

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

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 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.		FCC/IC Registration No.
	CO05-HY	03CH05-HY	722060/4086B-1

1.5 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v01
- ♦ ANSI C63.4-2003
- ♦ IC RSS-210 Issue 8
- ♦ IC RSS-Gen Issue 3

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	P20G	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Bluetooth Earphone	Sony Ericsson	MW600	PY70DA2029	N/A	N/A

2 Test Configuration of Equipment Under Test

2.1 Pre-Scanned RF Power

Preliminary tests were performed in different data rate as below table and the highest power data rates (11b, 11g, 11g/n (BW 20MHz) modes) were chosen for full test in the following sections to demonstrate compliance to the FCC limit line.

2.4GHz 802.11b mode				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	19.12	18.66	19.08	18.94

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)	18.37	18.34	18.30	18.17	18.05	17.92	17.63	17.55

2.4GHz 802.11g/n (BW 20MHz) mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	18.31	18.06	17.94	17.88	17.64	17.52	17.38	17.25

2.2 Maximum Peak Conducted RF Power

Band	2.4GHz 802.11b RF Power (dBm)			2.4GHz 802.11g RF Power (dBm)		
	1	6	11	1	6	11
Channel	1	6	11	1	6	11
Frequency (MHz)	2412	2437	2462	2412	2437	2462
Peak Power	18.87	18.98	19.12	17.76	17.98	18.37

Band	2.4GHz 802.11g/n (BW 20MHz) RF Power (dBm)		
	1	6	11
Channel	1	6	11
Frequency (MHz)	2412	2437	2462
Peak Power	17.67	18.05	18.31

Remark: The data rates of WLAN 802.11b/g/n were set in 1Mbps for 802.11b, 6Mbps for 802.11g, and MCS0 for 802.11g/n (BW 20MHz) for all the test cases due to the highest RF output power.



2.3 Maximum Average Conducted Output Power:

Band	2.4GHz 802.11b RF Power (dBm)			2.4GHz 802.11g RF Power (dBm)		
	1	6	11	1	6	11
Channel	1	6	11	1	6	11
Frequency (MHz)	2412	2437	2462	2412	2437	2462
Average Power	16.33	16.46	16.59	11.73	11.96	12.36

Band	2.4GHz 802.11g/n (BW 20MHz) RF Power (dBm)		
	1	6	11
Channel	1	6	11
Frequency (MHz)	2412	2437	2462
Average Power	11.64	11.96	12.22

Remark: The average power, which is used by the test method, AVG2, in DTS v01, is reporting only.

2.4 Test Mode

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

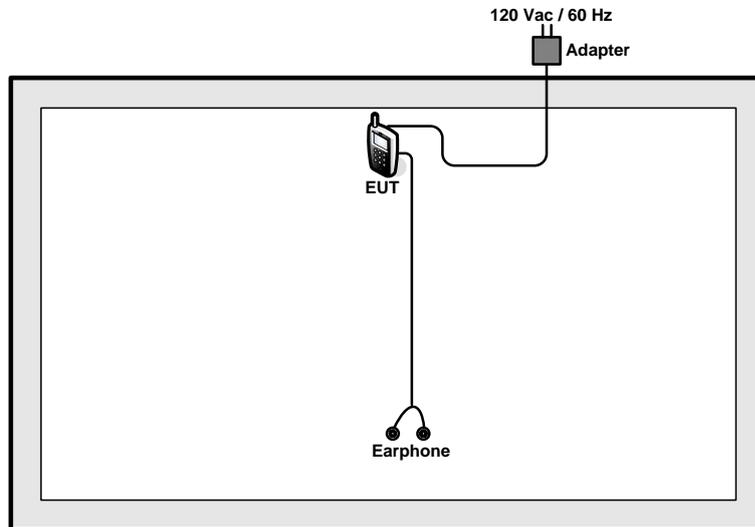
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

The following tables are showing the test modes as the worst cases (X plane for Sample A, Y plane for Sample B) and recorded in this report.

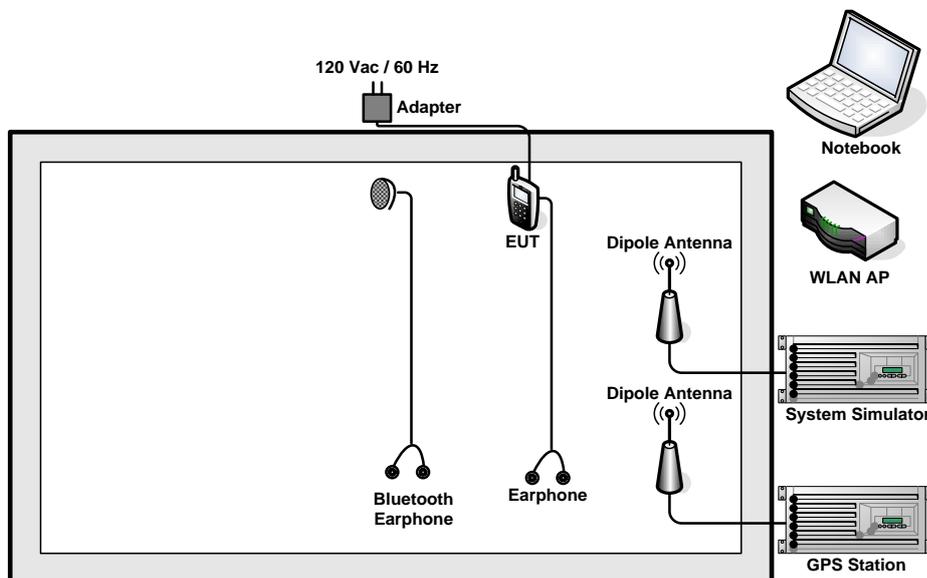
Test Cases	
Test Item	802.11b (Modulation : DSSS) 802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11g/n (BW 20M)_CH01_2412 MHz Mode 8: 802.11g/n (BW 20M)_CH06_2437 MHz Mode 9: 802.11g/n (BW 20M)_CH11_2462 MHz
Radiated TCs	Mode 1 : 802.11b CH01_2412 MHz for Sample A Mode 2 : 802.11b CH06_2437 MHz for Sample A Mode 3 : 802.11b CH11_2462 MHz for Sample A Mode 4: 802.11g_CH01_2412 MHz for Sample A Mode 5: 802.11g_CH06_2437 MHz for Sample A Mode 6: 802.11g_CH11_2462 MHz for Sample A Mode 7: 802.11g/n (BW 20M)_CH01_2412 MHz for Sample A Mode 8: 802.11g/n (BW 20M)_CH06_2437 MHz for Sample A Mode 9: 802.11g/n (BW 20M)_CH11_2462 MHz for Sample A Mode 10: 802.11g/n (BW 20M)_CH01_2412 MHz for Sample B
AC Conducted Emission	Mode 1 : WCDMA Band II Idle + Bluetooth Link + WLAN Link + GPS Rx + Earphone 2 + Battery + USB Cable 3 (Charging from Adapter 3) for Sample 1 Mode 2 : WCDMA Band II Idle + Bluetooth Link + WLAN Link + GPS Rx + Earphone 2 + Battery + USB Cable 3 (Charging from Adapter 3) for Sample 2
Remark:	
1. The worst case of conducted emission is mode 1; only the test data of it was reported. 2. All the Radiation tests were performance with USB Cable 1, Adapter 1, and Earphone 2.	

2.5 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.6 RF Utility

The programmed RF utility “Remote 432X controller (P1.63)” is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

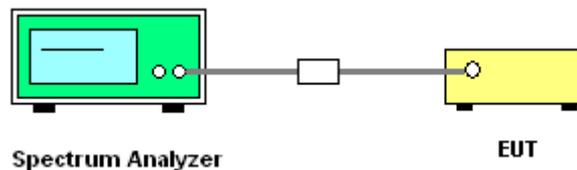
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v01.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 1-5% of the emission bandwidth (EBW). Set the Video bandwidth (VBW) $\geq 3 * RBW$. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 KHz.
4. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

3.1.4 Test Setup



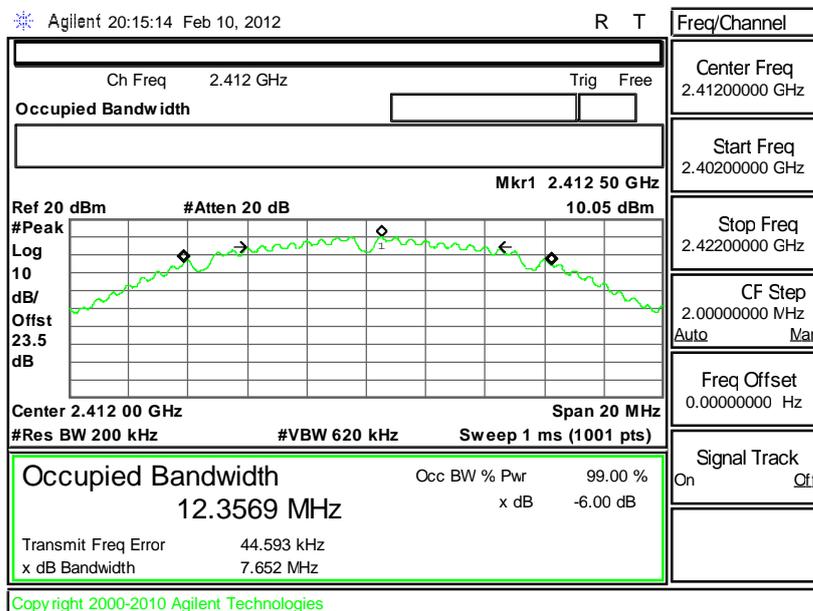


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

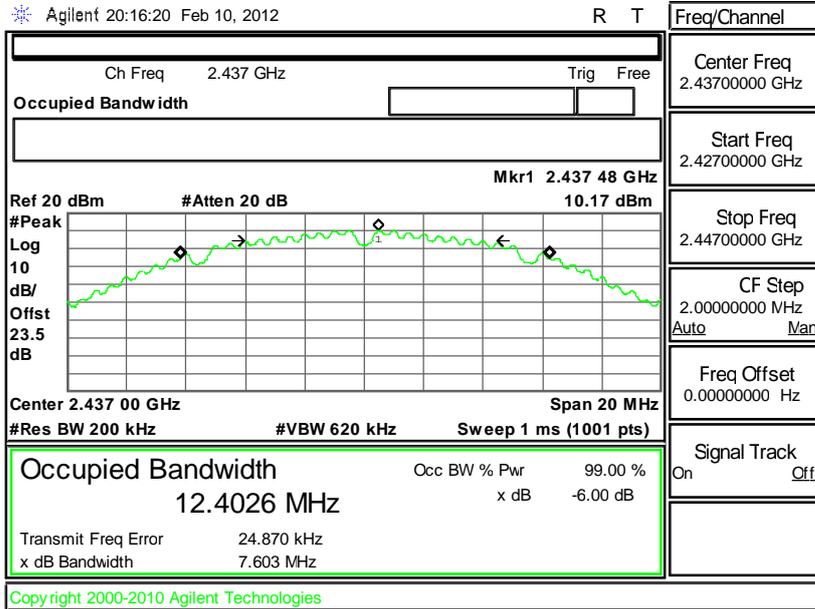
Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	7.652	0.5	Pass
06	2437	7.603	0.5	Pass
11	2462	7.622	0.5	Pass

Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01

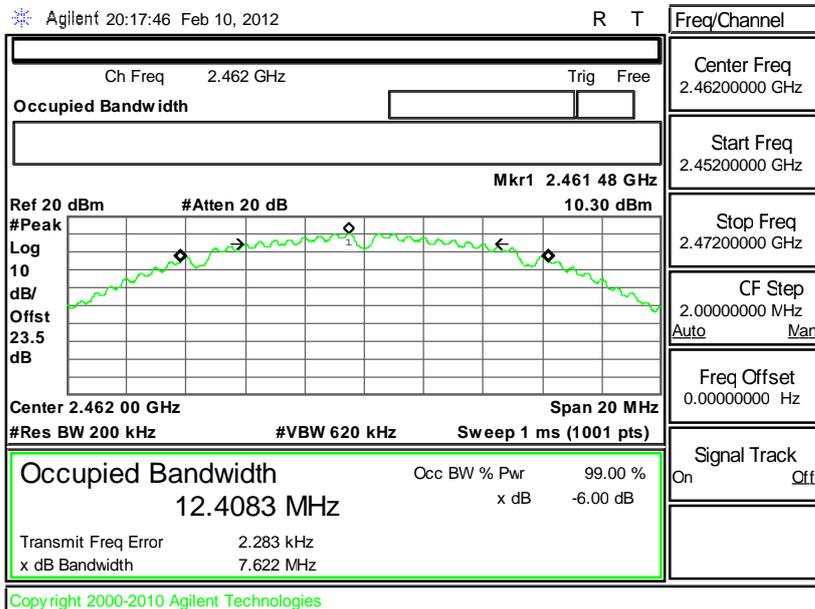




Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



Mode 3 : 6 dB Bandwidth Plot on 802.11b Channel 11

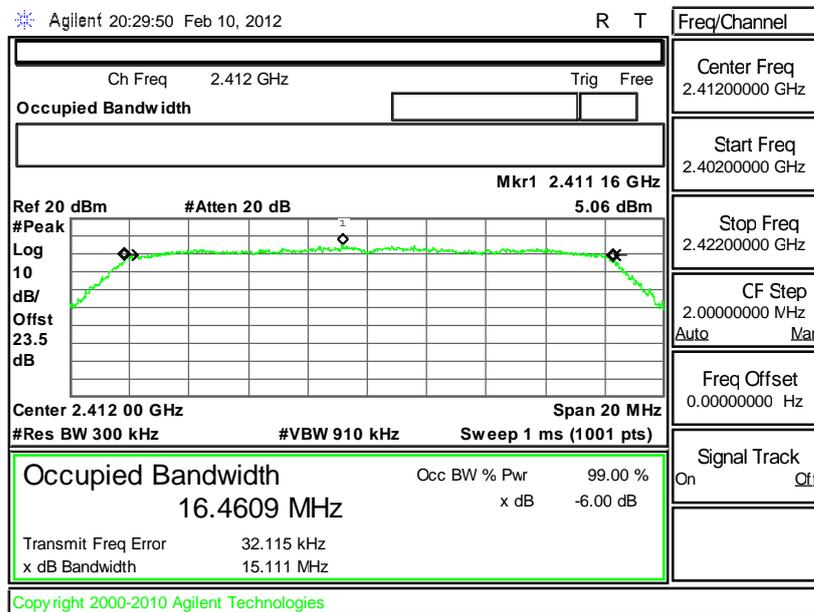




Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

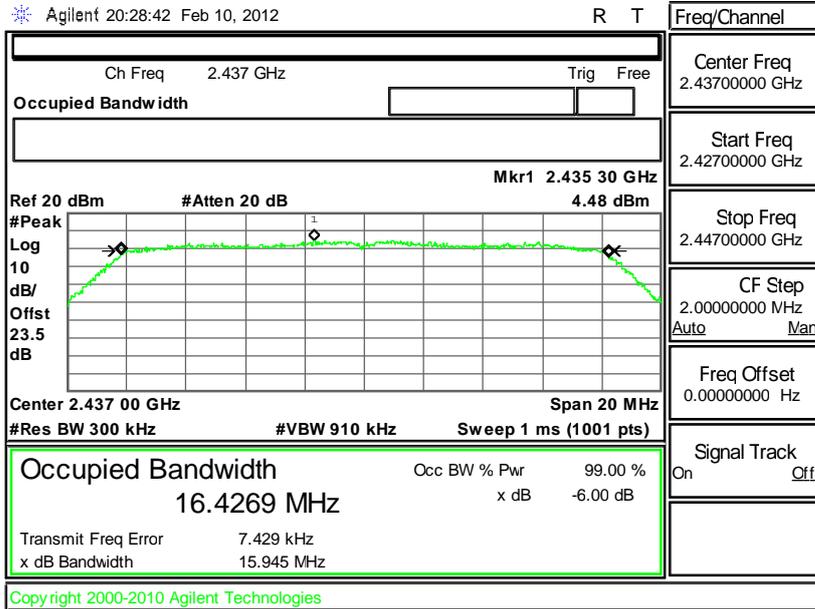
Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.111	0.5	Pass
06	2437	15.945	0.5	Pass
11	2462	15.783	0.5	Pass

Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01

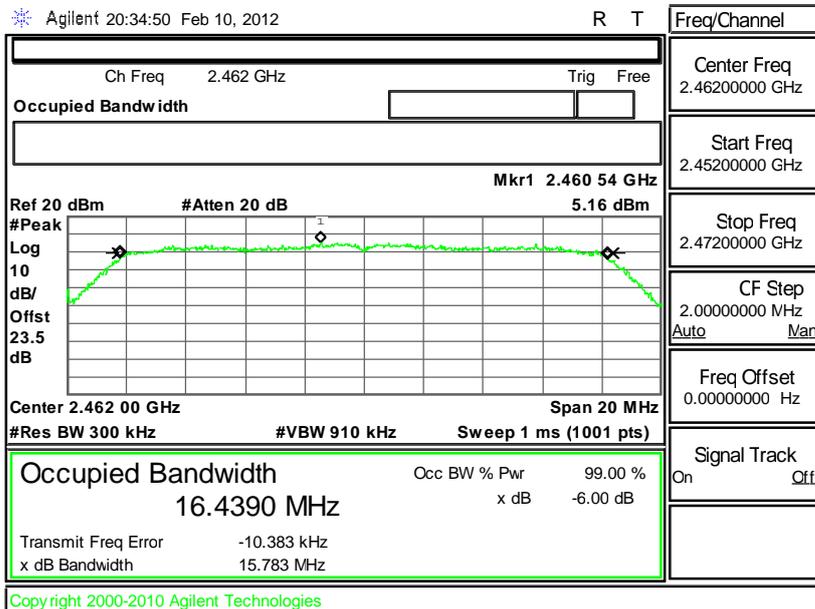




Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11



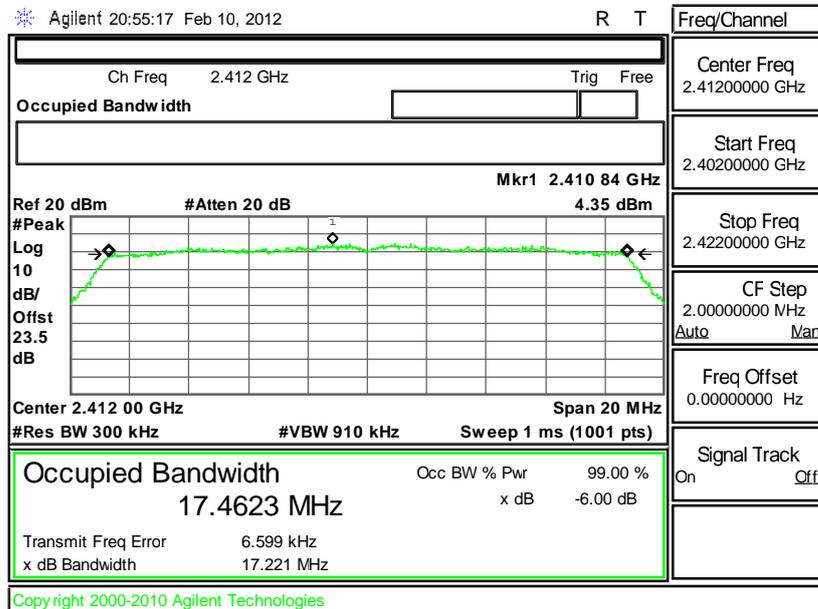


Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g/n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.221	0.5	Pass
06	2437	17.344	0.5	Pass
11	2462	17.279	0.5	Pass

Mode 7 : 6 dB Bandwidth Plot on 802.11g/n(BW 20MHz) Channel

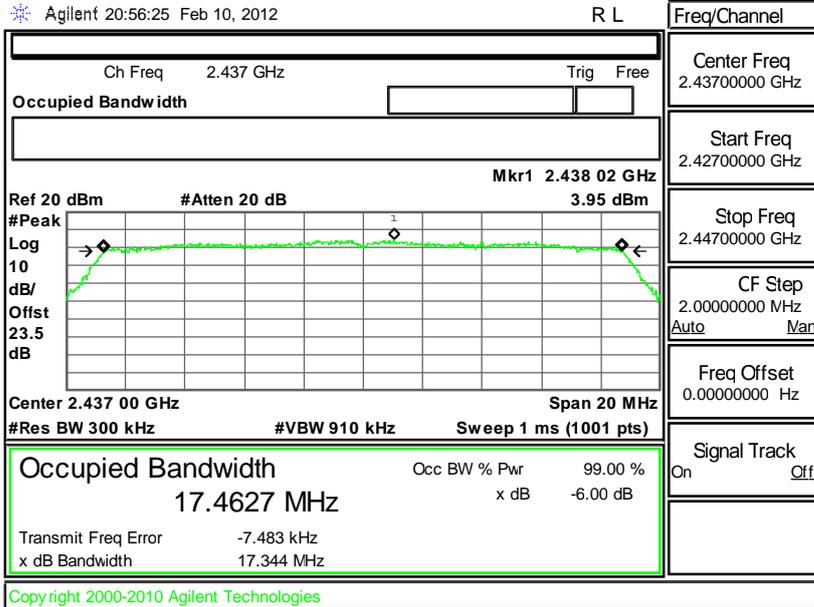
01





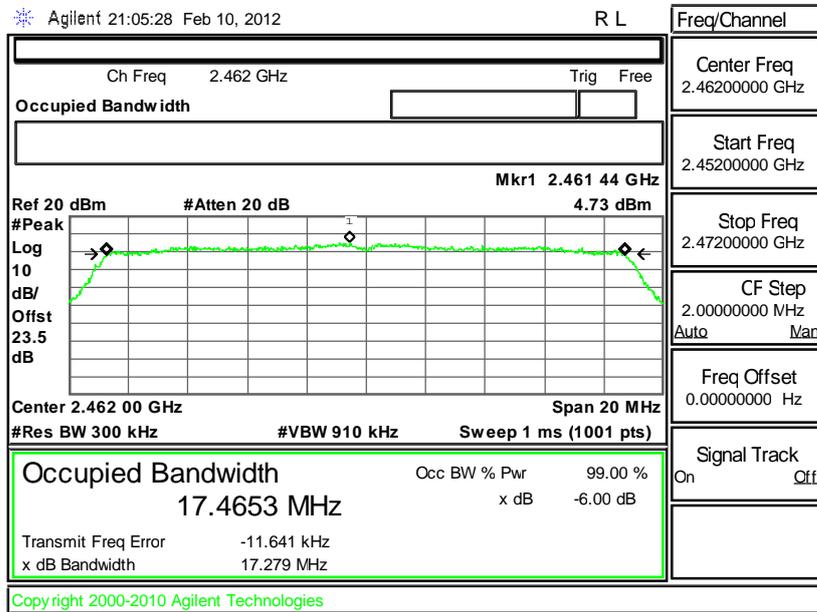
Mode 8 : 6 dB Bandwidth Plot on 802.11g/n(BW 20MHz) Channel

06



Mode 9 : 6 dB Bandwidth Plot on 802.11g/n(BW 20MHz) Channel

11



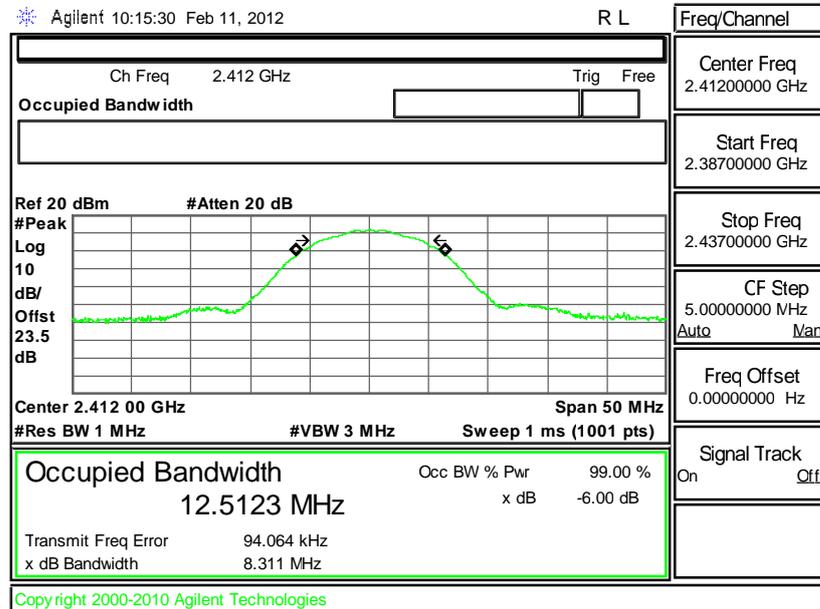


3.1.6 Test Result of 99% Occupied Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

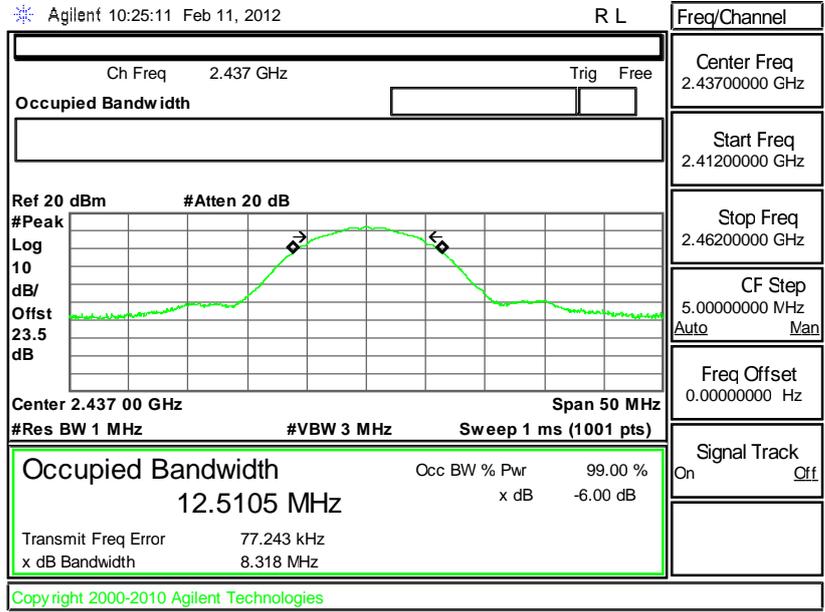
Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	12.5123	Pass
06	2437	12.5105	Pass
11	2462	12.5442	Pass

Mode 1 : 99% Occupied Bandwidth Plot on 802.11b Channel 01

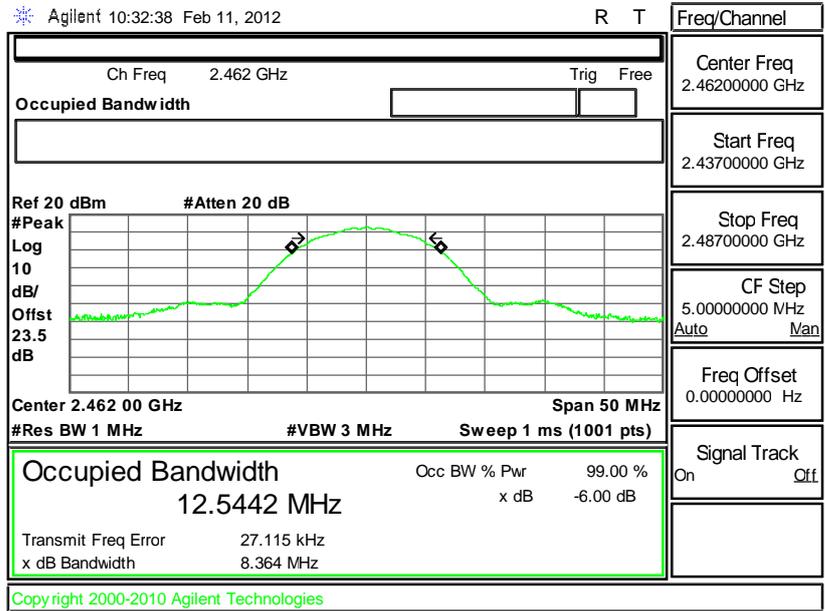




Mode 2 : 99% Occupied Bandwidth Plot on 802.11b Channel 06



Mode 3 : 99% Occupied Bandwidth Plot on 802.11b Channel 11

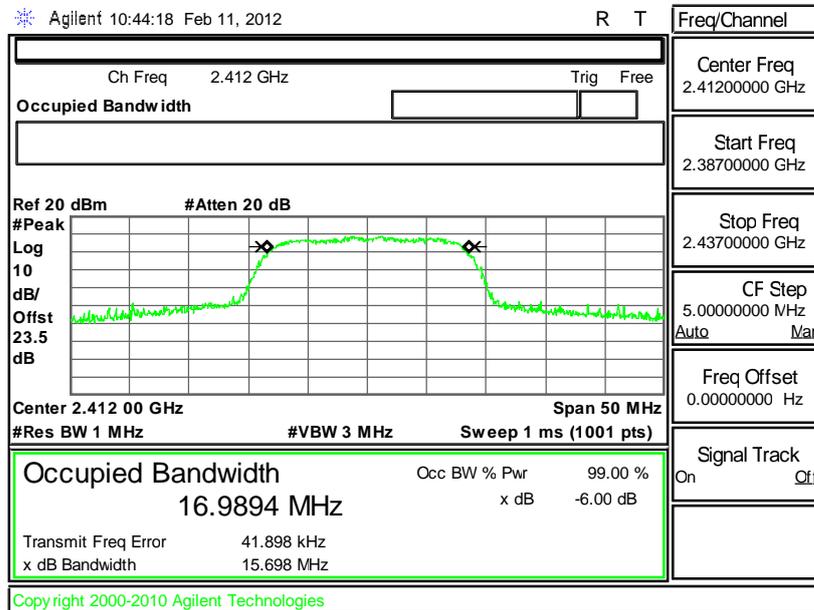




Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

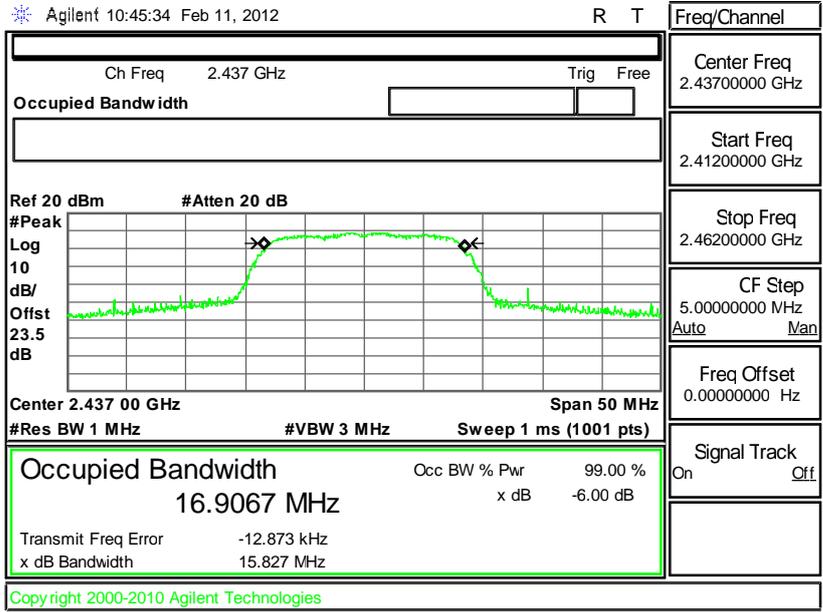
Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	16.9894	Pass
06	2437	16.9067	Pass
11	2462	16.9470	Pass

Mode 4 : 99% Occupied Bandwidth Plot on 802.11g Channel 01

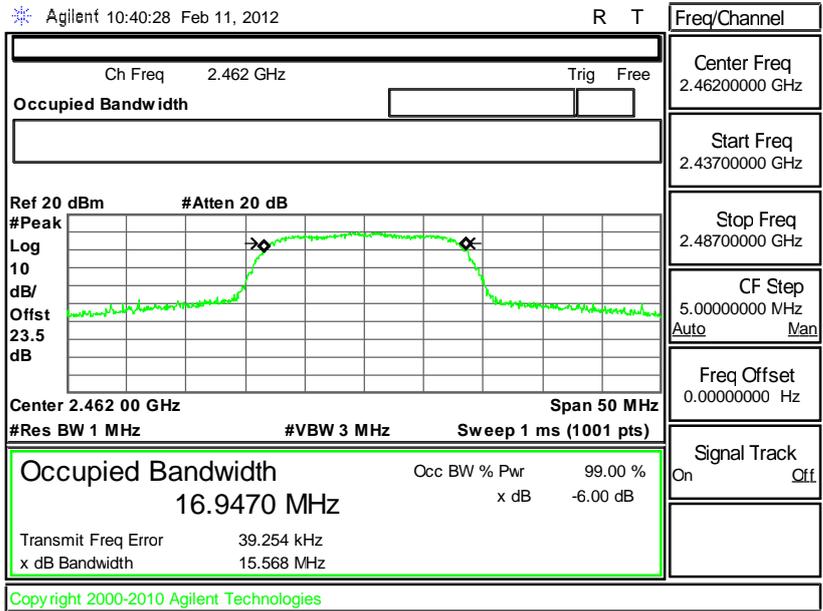




Mode 5 : 99% Occupied Bandwidth Plot on 802.11g Channel 06



Mode 6 : 99% Occupied Bandwidth Plot on 802.11g Channel 11

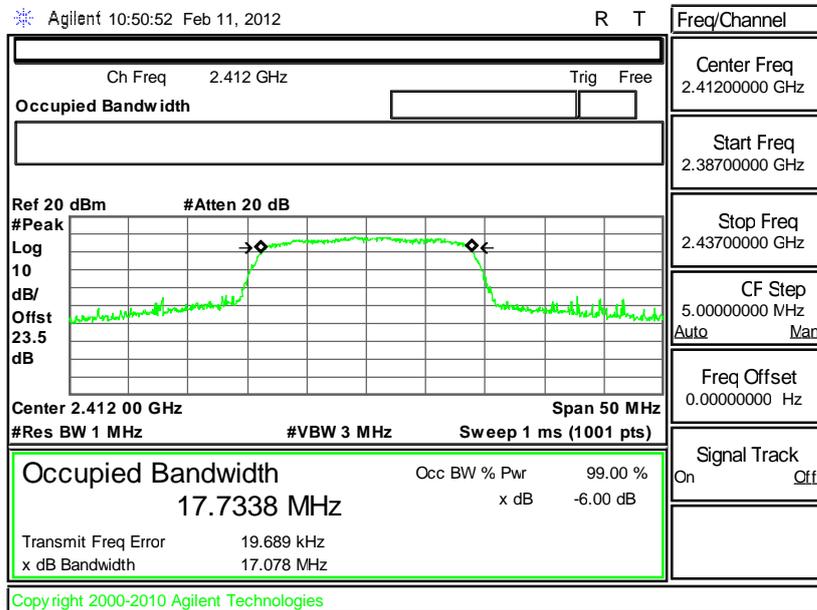




Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

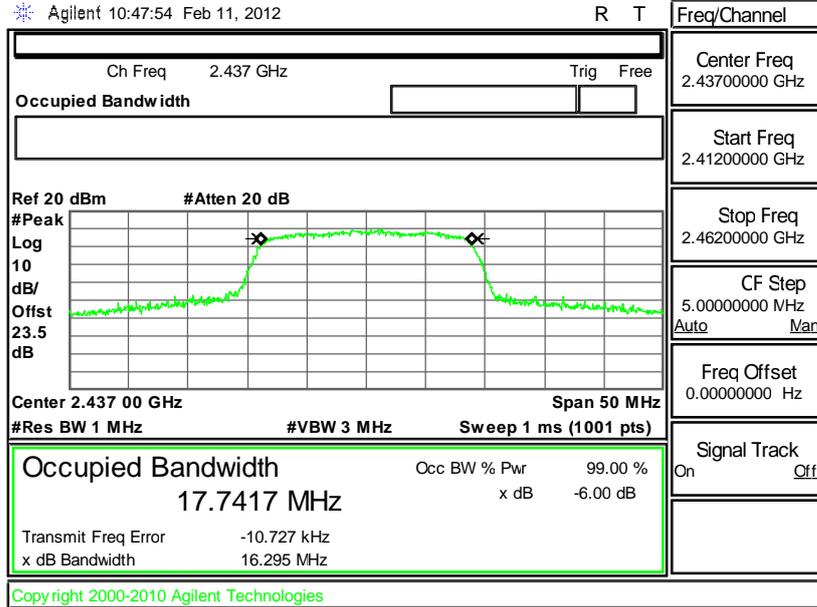
Channel	Frequency (MHz)	802.11g/n (BW 20MHz) 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	17.7338	Pass
06	2437	17.7417	Pass
11	2462	17.7912	Pass

Mode 7 : 99% Occupied Bandwidth Plot on 802.11g/n(BW 20MHz) Channel 01

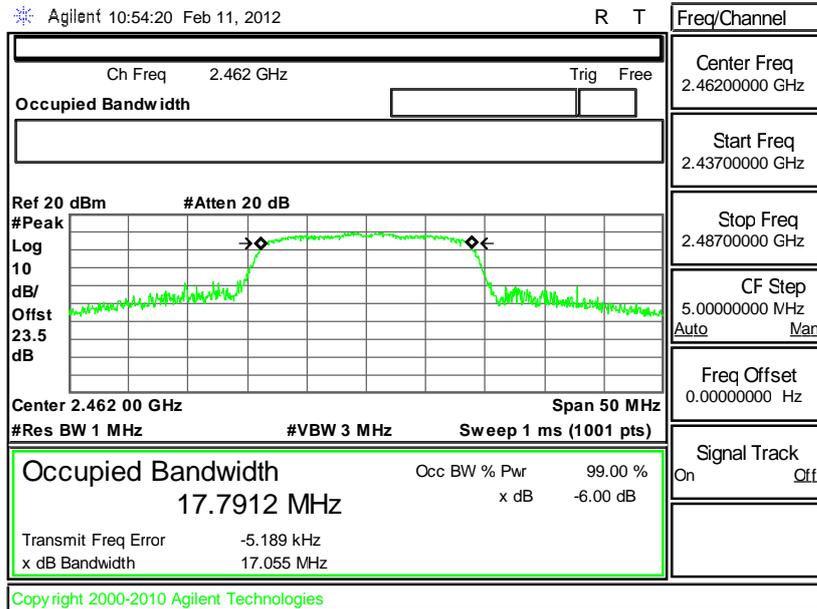




Mode 8 : 99% Occupied Bandwidth Plot on 802.11g/n(BW 20MHz) Channel 06



Mode 9 : 99% Occupied Bandwidth Plot on 802.11g/n(BW 20MHz) Channel 11



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.

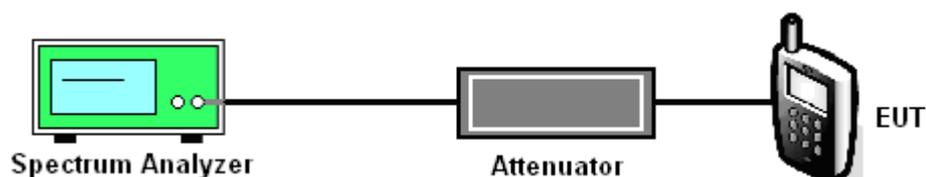
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure PK2 of FCC KDB No. 558074 DTS Meas. Guidance v01.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. The spectrum analyzer's settings are Resolution bandwidth (RBW) = 1MHz, Video bandwidth (VBW) = 3MHz, Peak Detector, auto sweep time, and the frequency span to a value that is 5-30 % greater than the EBW.
4. The spectrum analyzer's integrated band power measurement function is used to measure the peak power and the test results are demonstrated to compliance to the limit line as following plots.

3.2.4 Test Setup



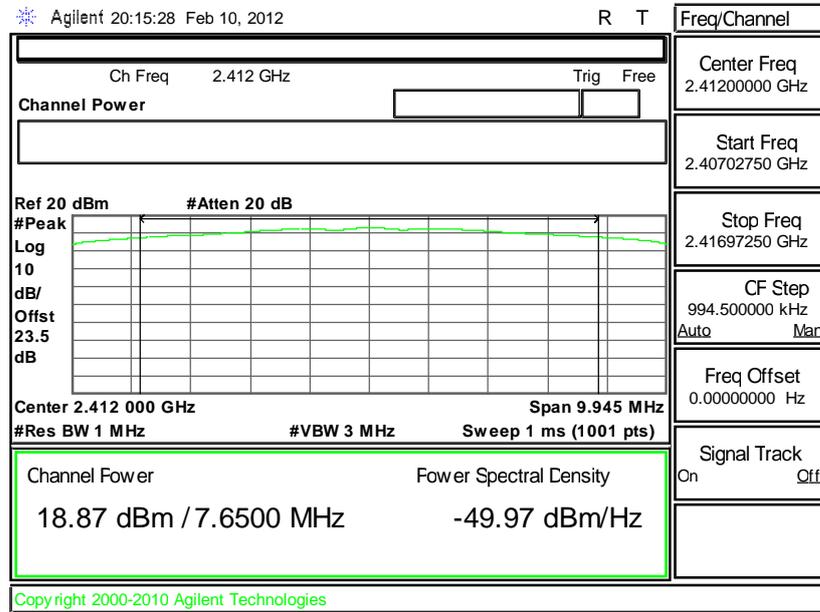


3.2.5 Test Result of Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

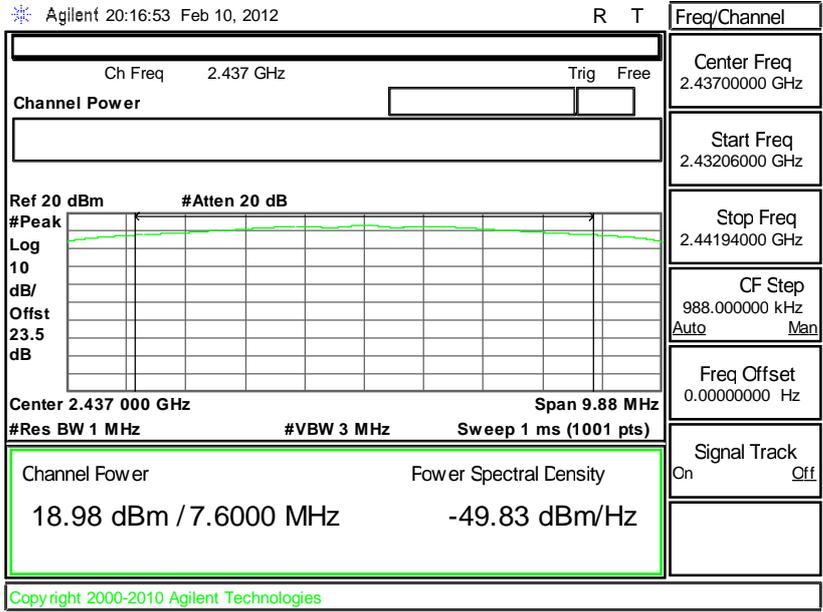
Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	18.87	30	Pass
06	2437	18.98	30	Pass
11	2462	19.12	30	Pass

Mode 1 : Output Power Plot on 802.11b Channel 01

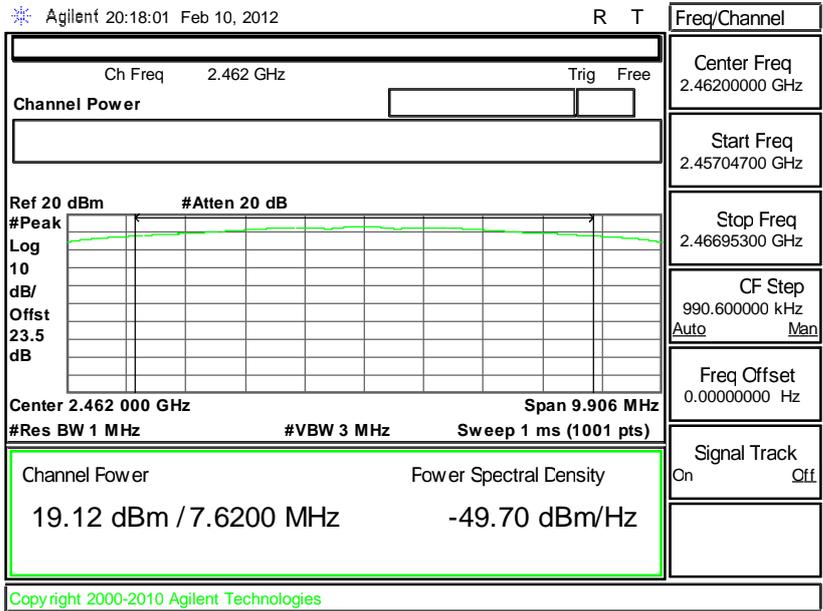




Mode 2 : Output Power Plot on 802.11b Channel 06



Mode 3 : Output Power Plot on 802.11b Channel 11

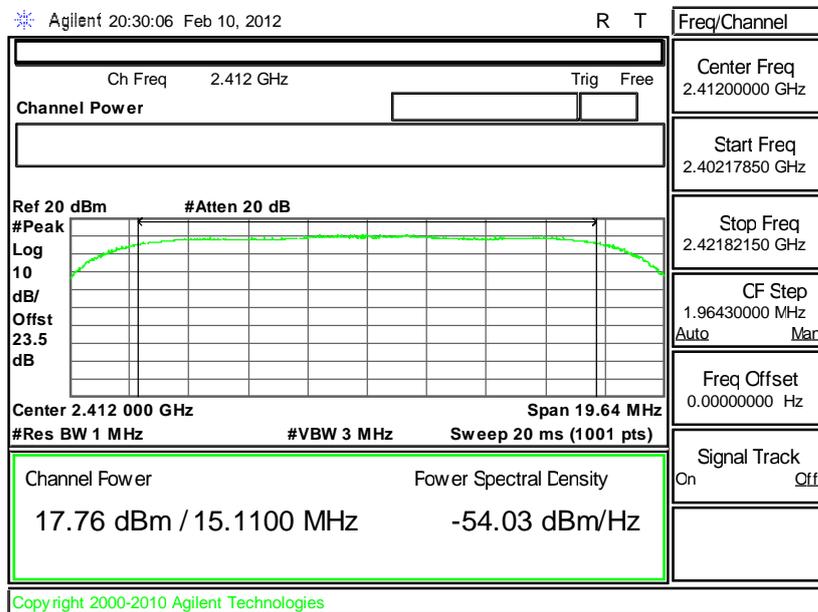




Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

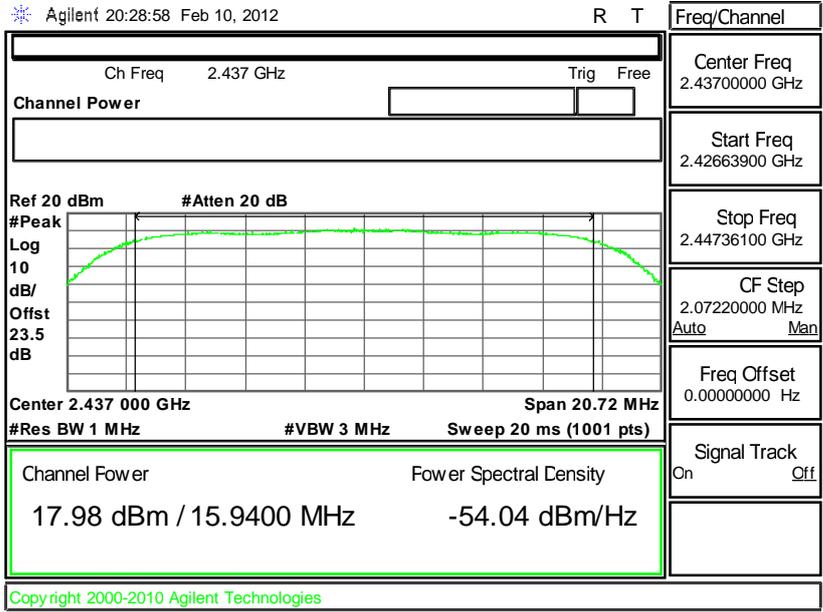
Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	17.76	30	Pass
06	2437	17.98	30	Pass
11	2462	18.37	30	Pass

Mode 4 : Output Power Plot on 802.11g Channel 01

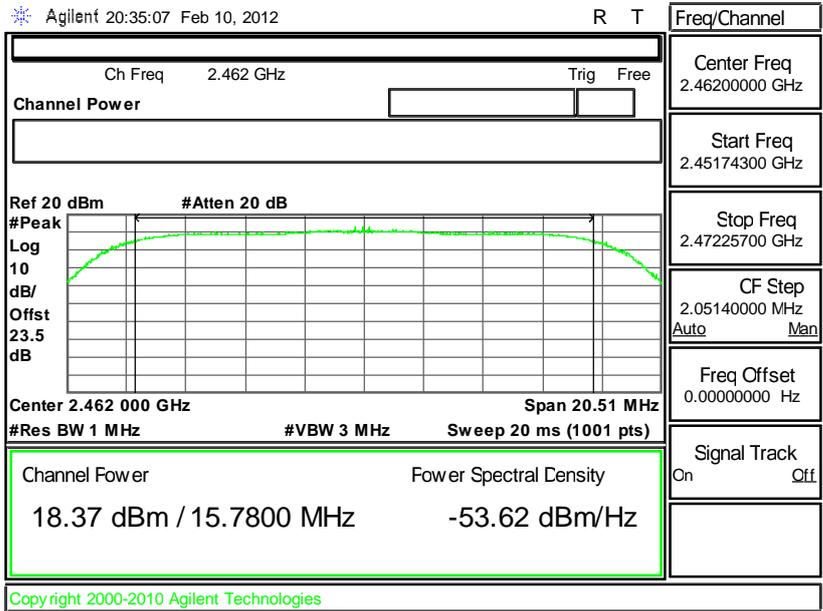




Mode 5 : Output Power Plot on 802.11g Channel 06



Mode 6 : Output Power Plot on 802.11g Channel 11

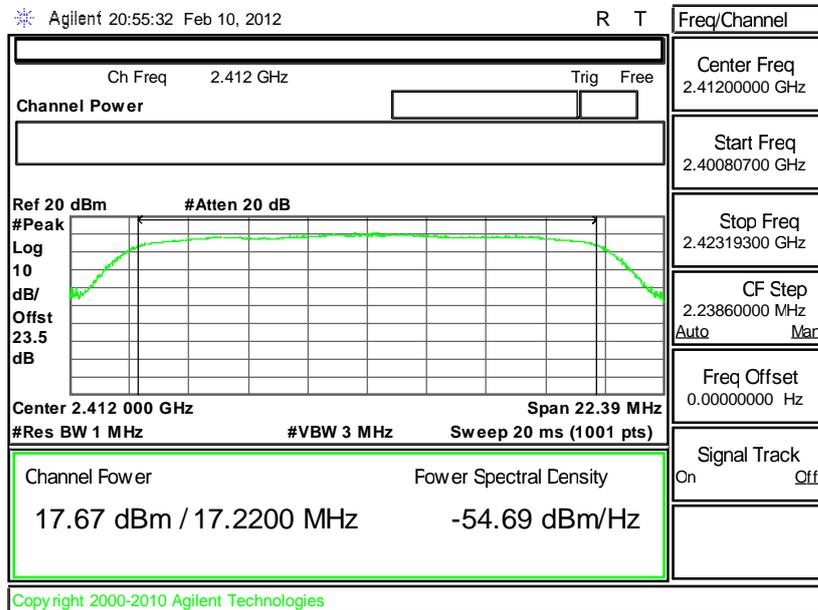




Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

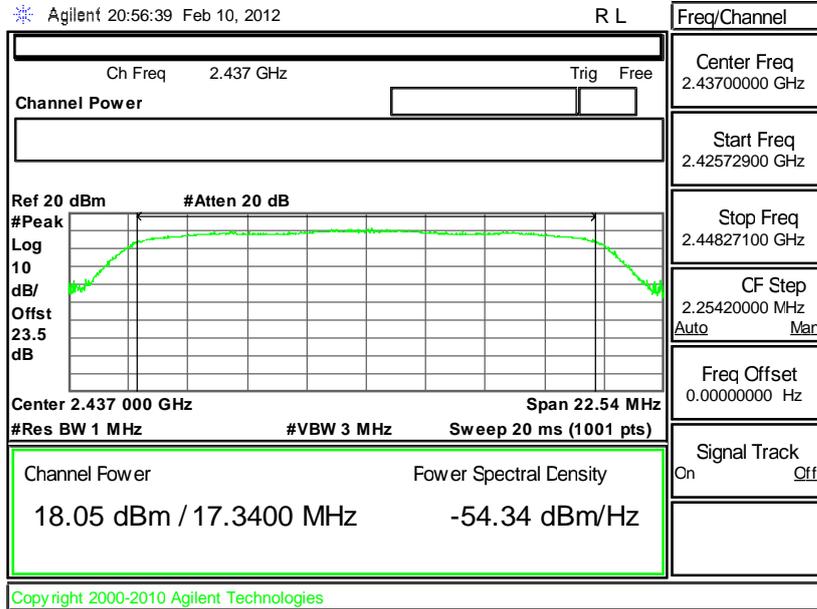
Channel	Frequency (MHz)	802.11g/n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	17.67	30	Pass
06	2437	18.05	30	Pass
11	2462	18.31	30	Pass

Mode 7: Output Power Plot on 802.11g/n (BW 20MHz) Channel 01

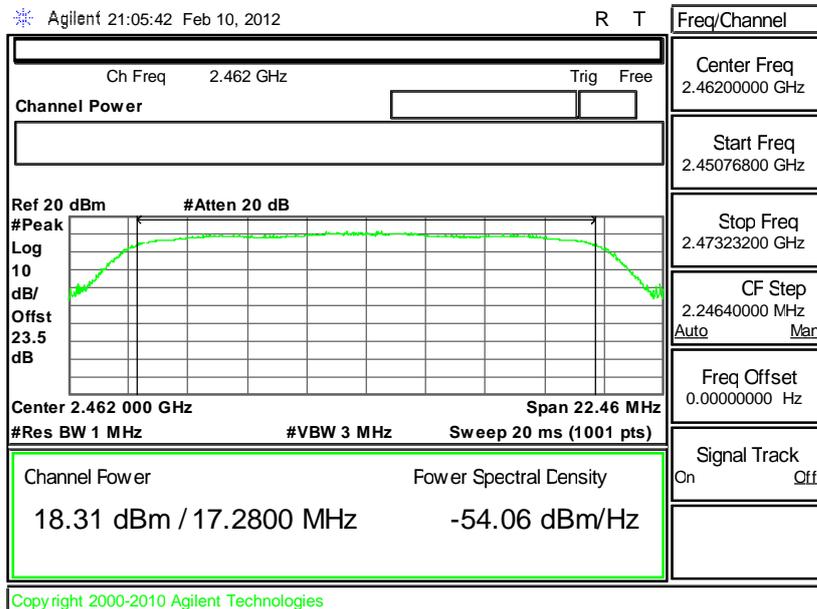




Mode 8: Output Power Plot on 802.11g/n (BW 20MHz) Channel 06



Mode 9: Output Power Plot on 802.11g/n (BW 20MHz) Channel 11



3.3 Band Edges Measurement

3.3.1 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. 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.

3.3.2 Measuring Instruments

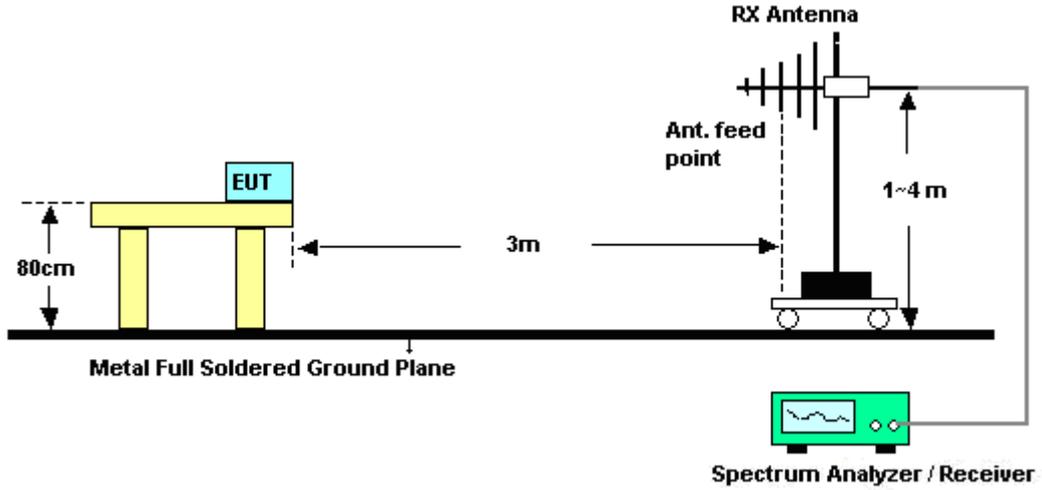
See list of measuring instruments of this test report.

3.3.3 Test Procedures

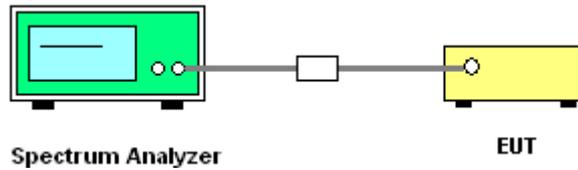
1. The testing follows the guidelines in ANSI C63.4-2003 and the Measurement Procedure of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v01.
2. Conducted emission test: Set RBW = 100 KHz, Video bandwidth (VBW) \geq RBW. Out of the authorized frequency band emissions must be at least 20 dB lower than the highest emission level within the authorized band as measured with a 100 KHz RBW. 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).
3. Radiated emission test: Apply to band edge emissions that falling on the restricted bands listed in FCC Section 15.205. The maximum permitted average field strength is listed in FCC Section 15.209. A pre-amp is necessary for this measurement. For measurement above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep=Auto. If the emission is pulsed, then modify the unit for continuous operation. Use the settings in this paragraph to correct the reading level by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation per 15.35(b) and (c).

3.3.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>





3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	20~23°C
Test Band :	802.11b	Relative Humidity :	50~52%
Test Channel :	01	Test Engineer :	David Yang

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
2389.23	53.93	-20.07	74	53.21	32.02	4.58	35.88	120	27	Peak
2389.23	42.59	-11.41	54	41.87	32.02	4.58	35.88	120	27	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
2386	55.68	-18.32	74	54.96	32.02	4.58	35.88	129	34	Peak
2386	44.07	-9.93	54	43.35	32.02	4.58	35.88	129	34	Average

Test Mode :	Mode 3	Temperature :	20~23°C
Test Band :	802.11b	Relative Humidity :	50~52%
Test Channel :	11	Test Engineer :	David Yang

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
2491.45	55.77	-18.23	74	54.84	32.1	4.64	35.81	100	118	Peak
2491.45	47.94	-6.06	54	47.01	32.1	4.64	35.81	100	118	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
2489.55	59.03	-14.97	74	58.1	32.1	4.64	35.81	100	29	Peak
2489.55	50.83	-3.17	54	49.9	32.1	4.64	35.81	100	29	Average



Test Mode :	Mode 4	Temperature :	20~23°C
Test Band :	802.11g	Relative Humidity :	50~52%
Test Channel :	01	Test Engineer :	David Yang

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
2389.99	68.4	-5.6	74	67.66	32.02	4.58	35.86	145	24	Peak
2389.99	43.41	-10.59	54	42.67	32.02	4.58	35.86	145	24	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.3	70.3	-3.7	74	69.58	32.02	4.58	35.88	100	29	Peak
2389.3	45.46	-8.54	54	44.74	32.02	4.58	35.88	100	29	Average

Test Mode :	Mode 6	Temperature :	20~23°C
Test Band :	802.11g	Relative Humidity :	50~52%
Test Channel :	11	Test Engineer :	David Yang

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
2489.17	62.68	-11.32	74	61.75	32.1	4.64	35.81	101	118	Peak
2489.17	45.33	-8.67	54	44.4	32.1	4.64	35.81	101	118	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	66.33	-7.67	74	65.41	32.09	4.64	35.81	100	29	Peak
2483.5	49.56	-4.44	54	48.64	32.09	4.64	35.81	100	29	Average



Test Mode :	Mode 7	Temperature :	20~23°C
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	50~52%
Test Channel :	01	Test Engineer :	David Yang

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
2389.99	70.01	-3.99	74	69.27	32.02	4.58	35.86	146	36	Peak
2389.99	43.8	-10.2	54	43.06	32.02	4.58	35.86	146	36	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.8	70.97	-3.03	74	70.23	32.02	4.58	35.86	100	24	Peak
2389.8	46.1	-7.9	54	45.36	32.02	4.58	35.86	100	24	Average

Test Mode :	Mode 9	Temperature :	20~23°C
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	50~52%
Test Channel :	11	Test Engineer :	David Yang

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
2484.04	64.28	-9.72	74	63.36	32.09	4.64	35.81	175	27	Peak
2484.04	47.73	-6.27	54	46.81	32.09	4.64	35.81	175	27	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.66	66.28	-7.72	74	65.36	32.09	4.64	35.81	107	91	Peak
2483.66	49.06	-4.94	54	48.14	32.09	4.64	35.81	107	91	Average



Test Mode :	Mode 10	Temperature :	20~23°C
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	50~52%
Test Channel :	01	Test Engineer :	David Yang

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
2389.8	70.58	-3.42	74	69.84	32.02	4.58	35.86	164	320	Peak
2389.8	48.61	-5.39	54	47.87	32.02	4.58	35.86	164	320	Average

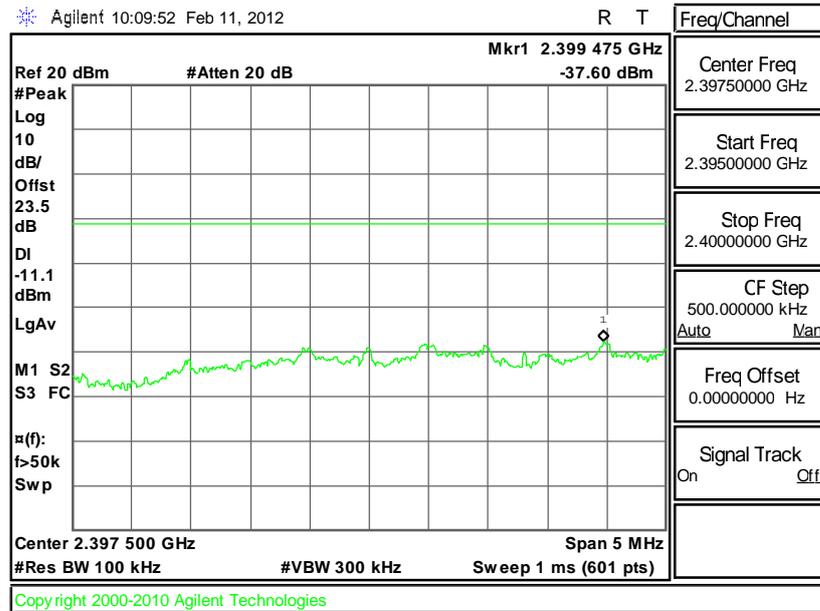
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	70.96	-3.04	74	70.22	32.02	4.58	35.86	163	42	Peak
2389.99	50.06	-3.94	54	49.32	32.02	4.58	35.86	163	42	Average



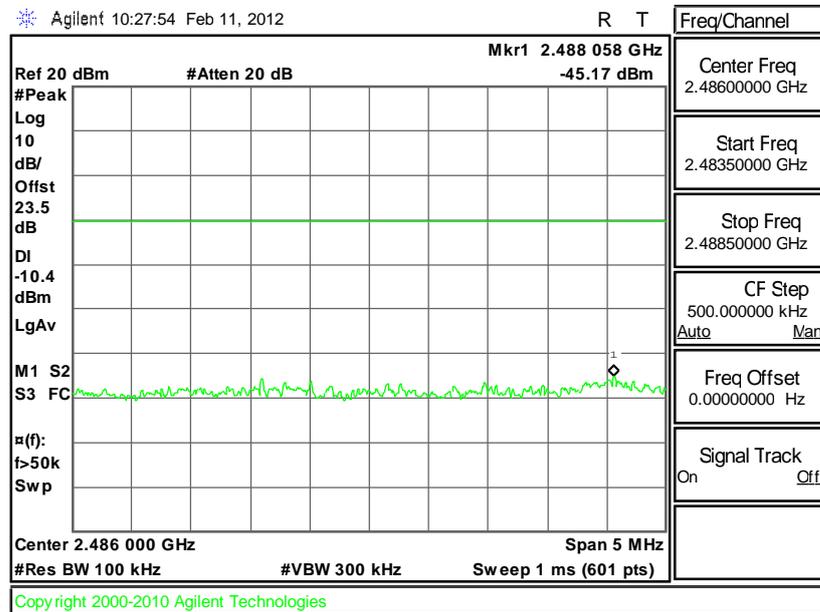
3.3.6 Test Plots of Conducted Band Edges

Test Mode :	Mode 1 and 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Hank Yu

Low Band Edge Plot on 802.11b Channel 01



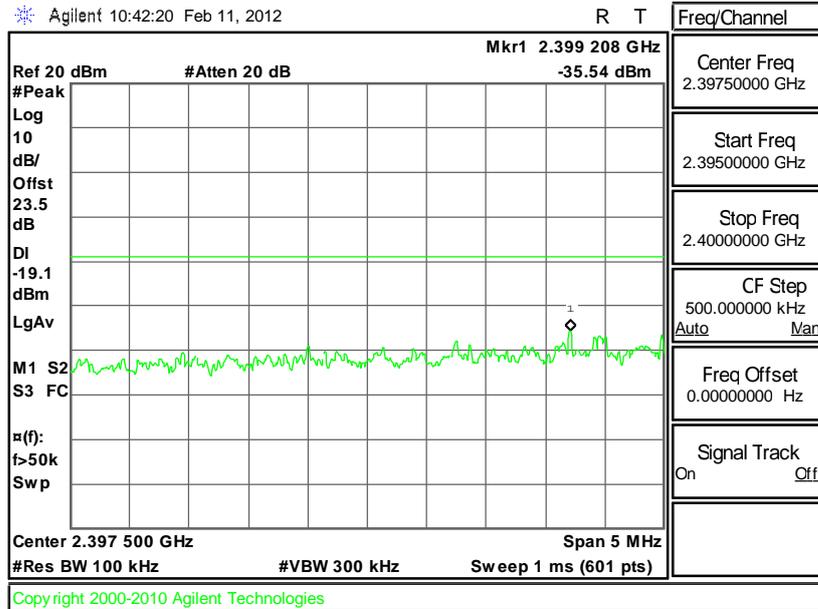
High Band Edge Plot on 802.11b Channel 11



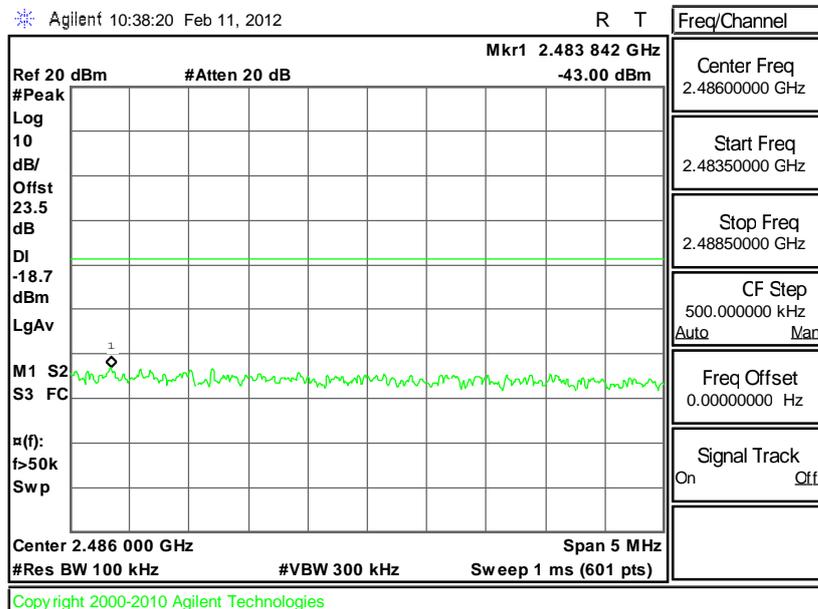


Test Mode :	Mode 4 and 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Hank Yu

Low Band Edge Plot on 802.11g Channel 01



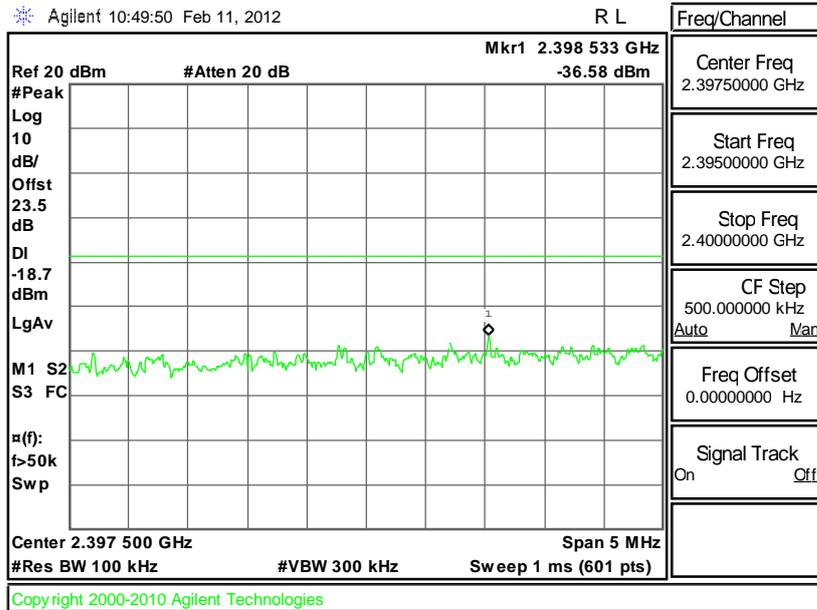
High Band Edge Plot on 802.11g Channel 11



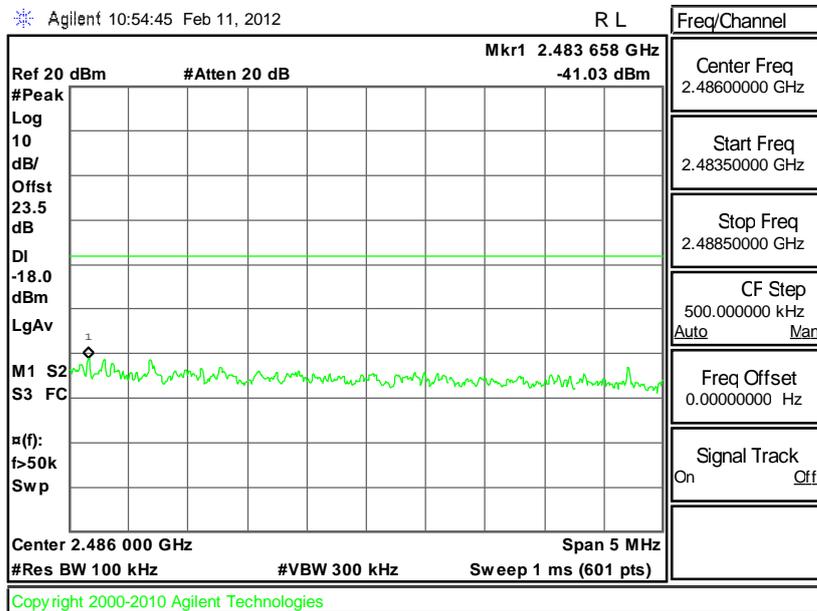


Test Mode :	Mode 7 and 9	Temperature :	24~26°C
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Hank Yu

Low Band Edge Plot on 802.11g/n (BW 20MHz) Channel 01



High Band Edge Plot on 802.11g/n (BW 20MHz) Channel 11



3.4 Spurious Emission Measurement

3.4.1 Limit of Spurious Emission Measurement

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

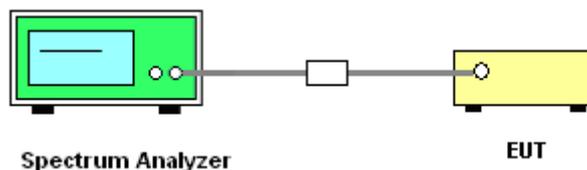
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedure

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

3.4.4 Test Setup

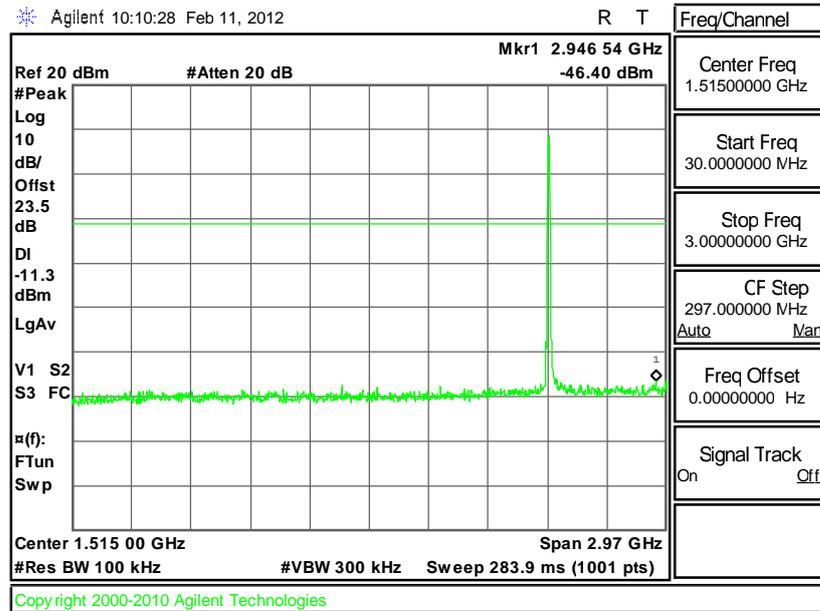




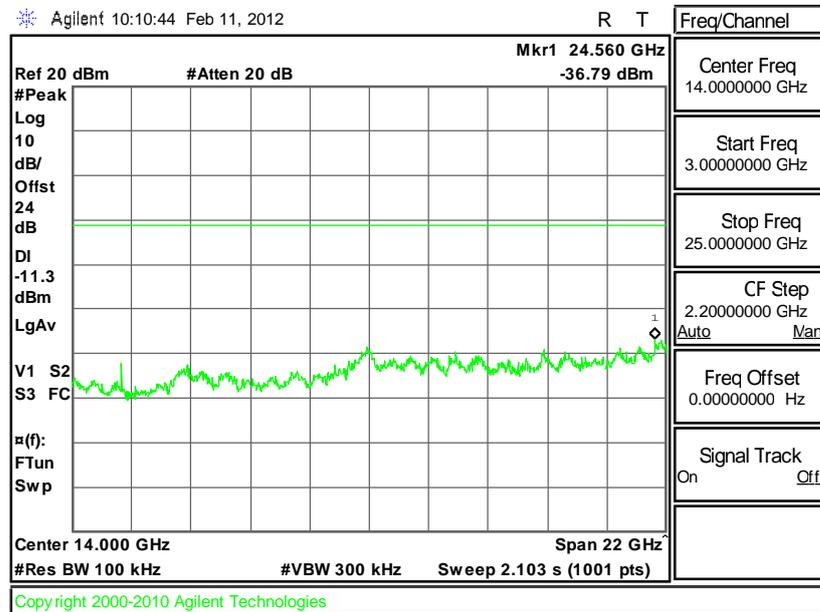
3.4.5 Test Plots of Spurious Emission

Test Mode :	Mode 1	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



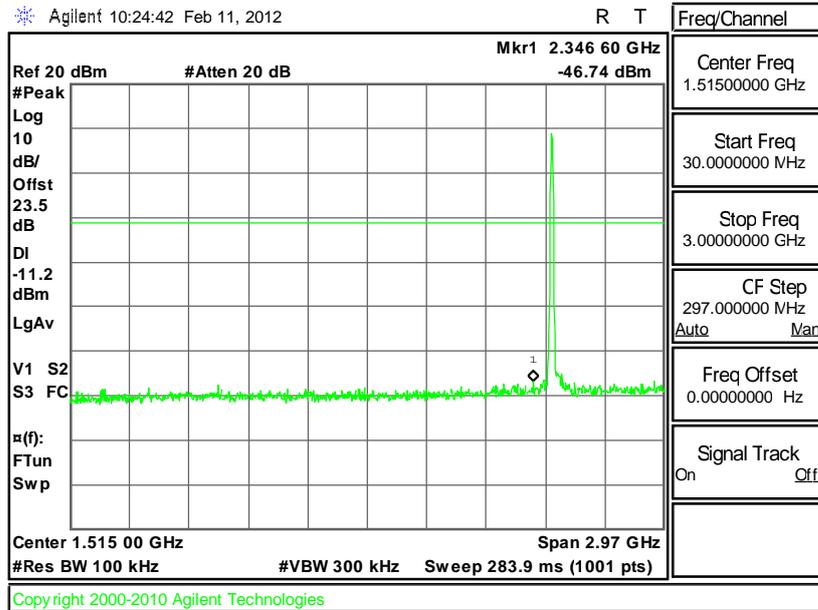
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



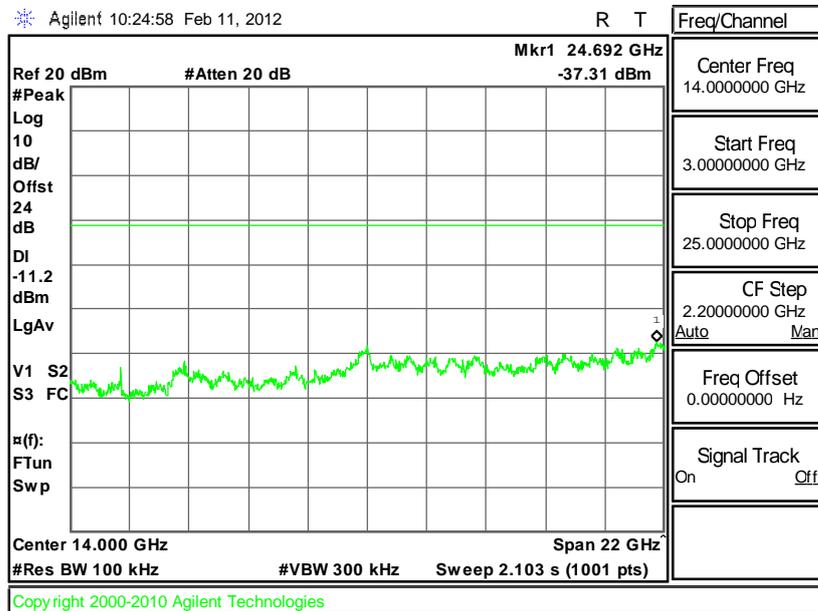


Test Mode :	Mode 2	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



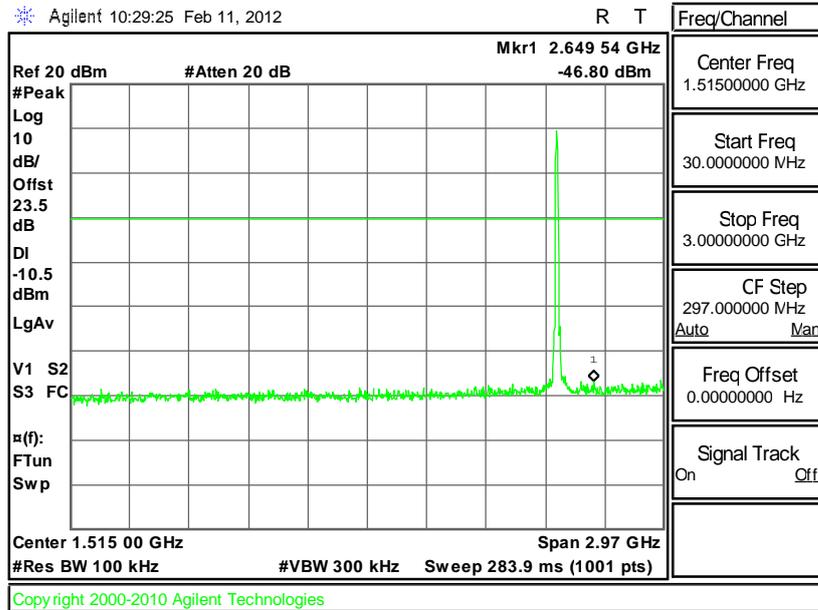
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



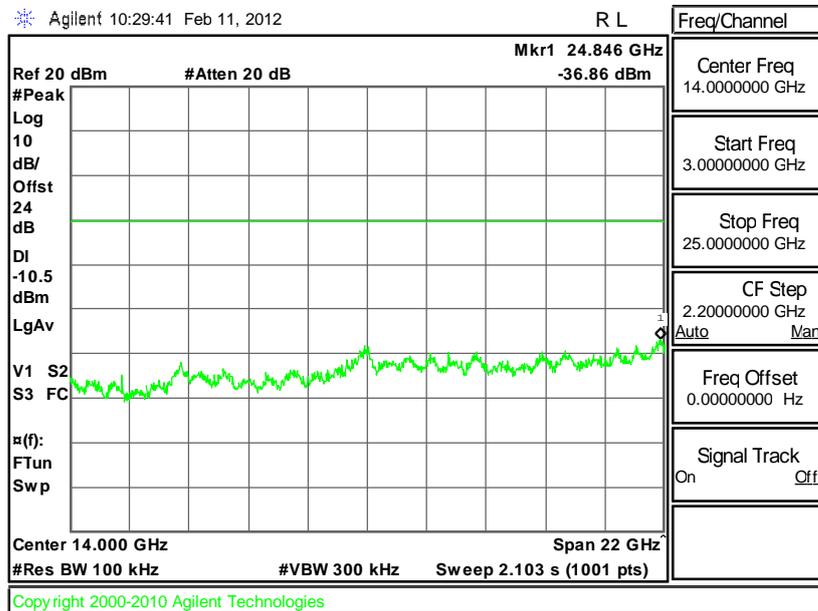


Test Mode :	Mode 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



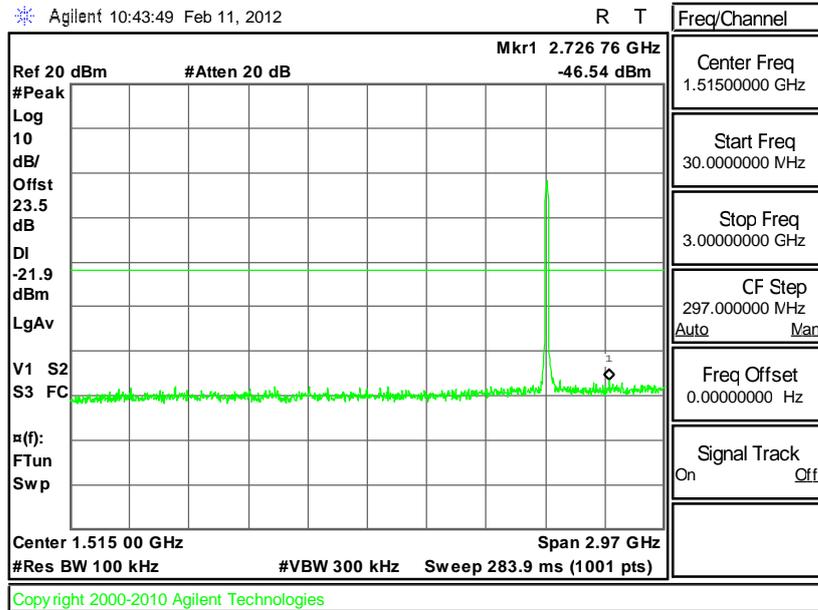
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



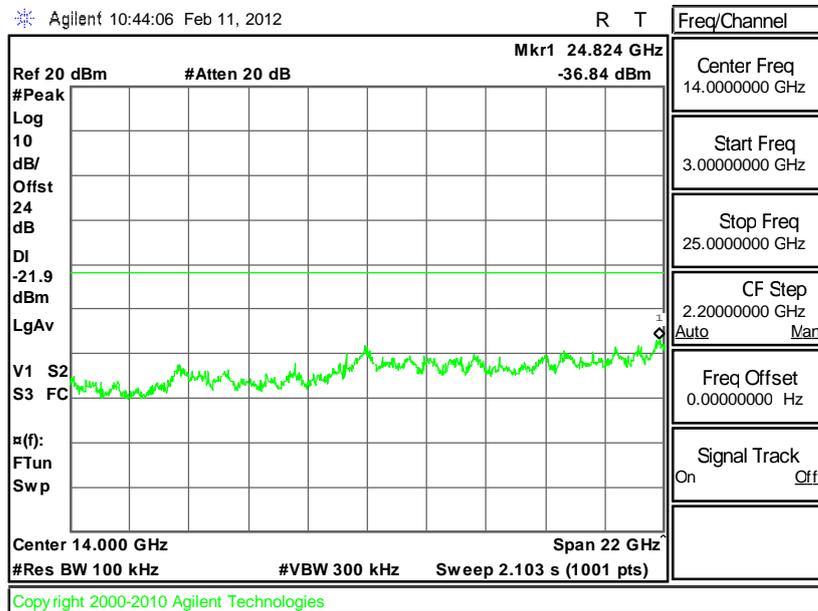


Test Mode :	Mode 4	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



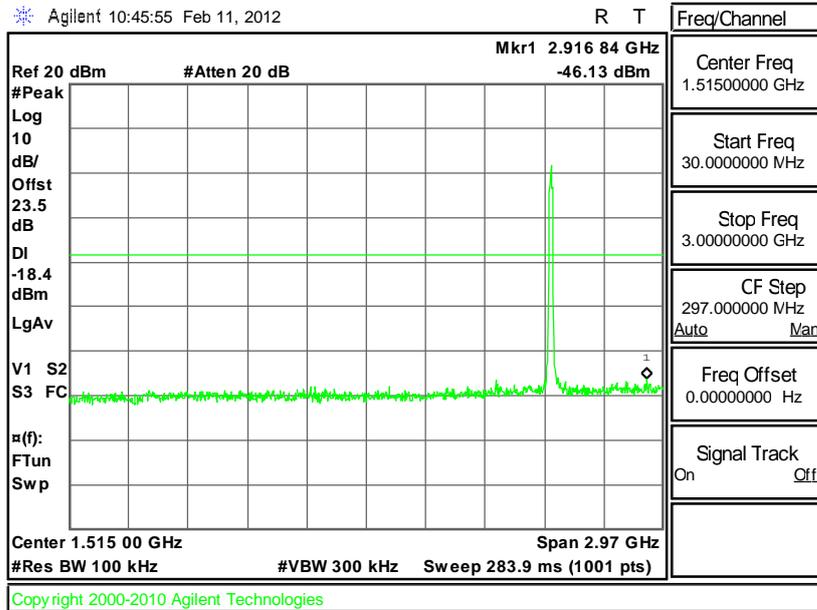
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



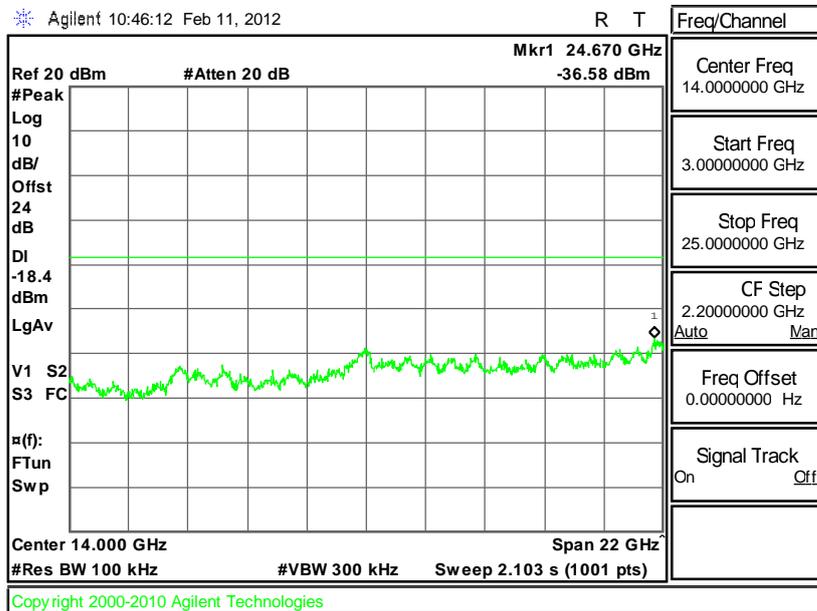


Test Mode :	Mode 5	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



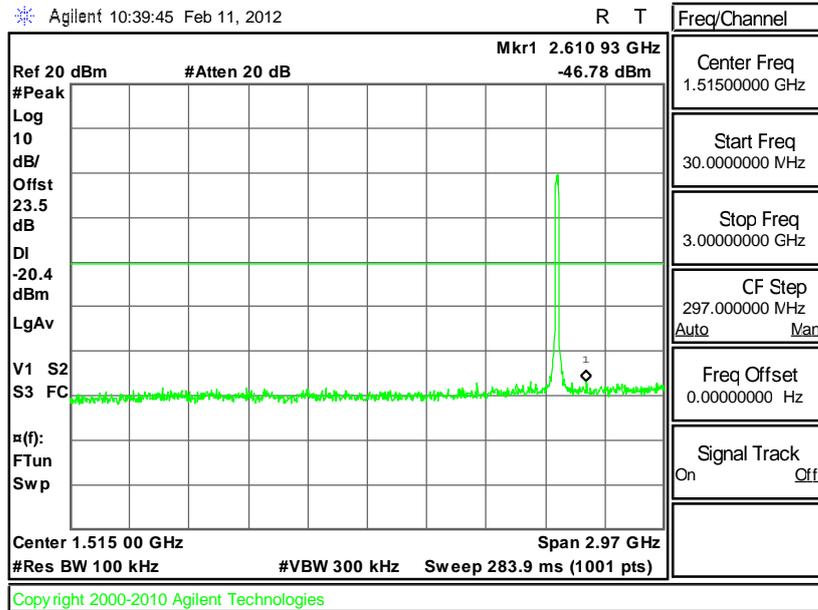
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



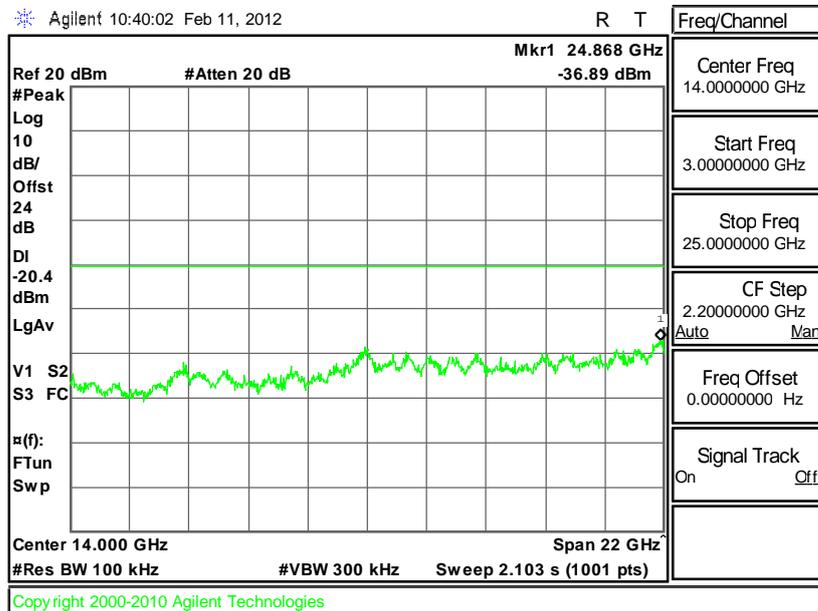


Test Mode :	Mode 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



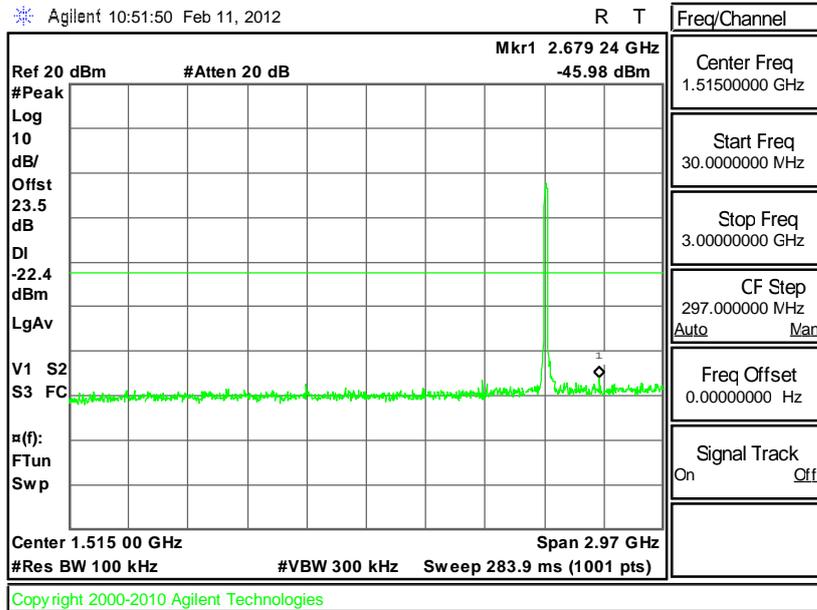
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



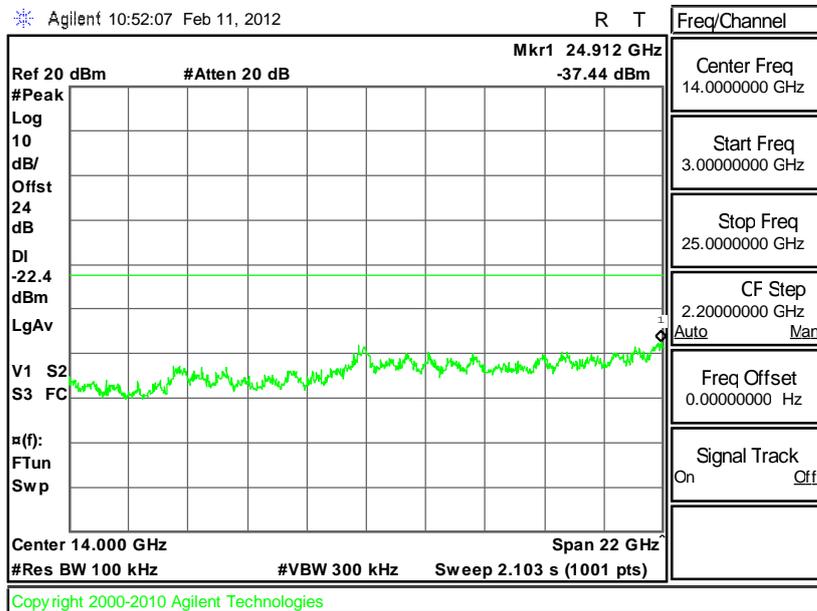


Test Mode :	Mode 7	Temperature :	24~26°C
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



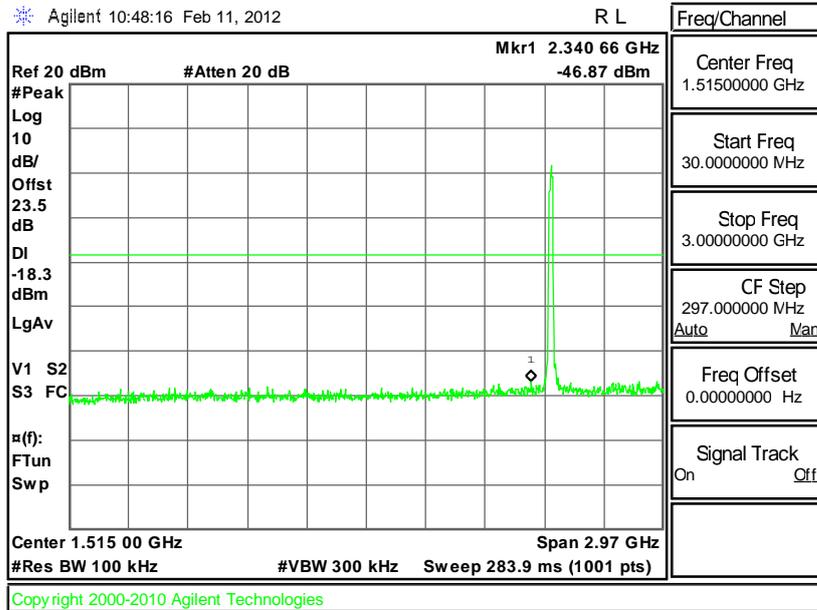
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



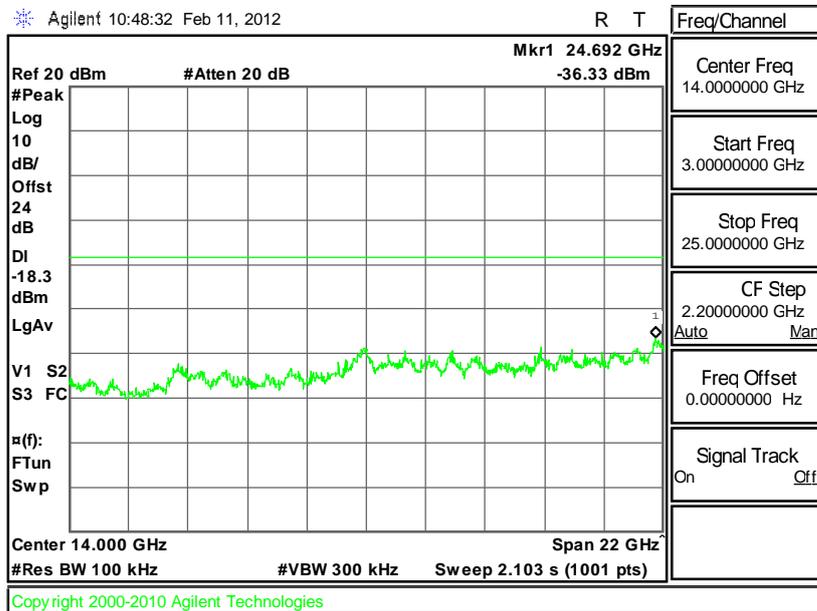


Test Mode :	Mode 8	Temperature :	24~26°C
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



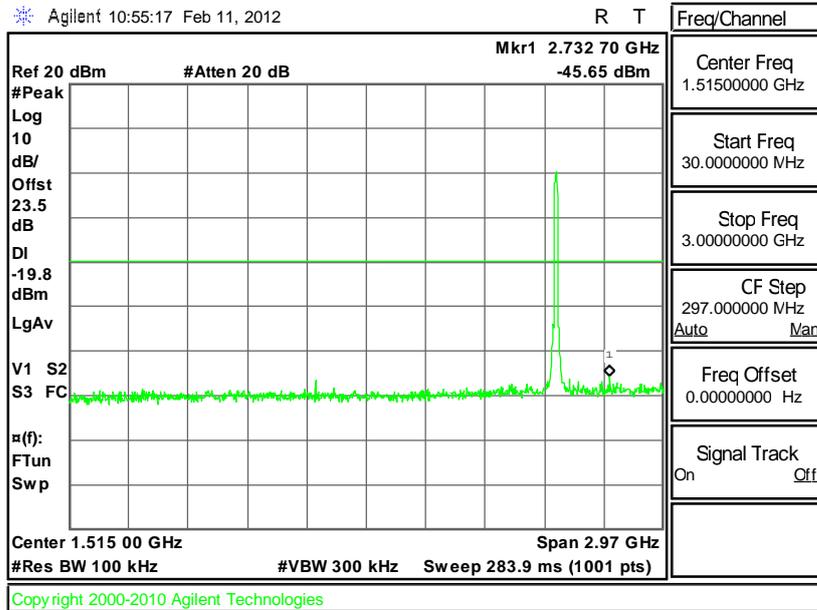
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



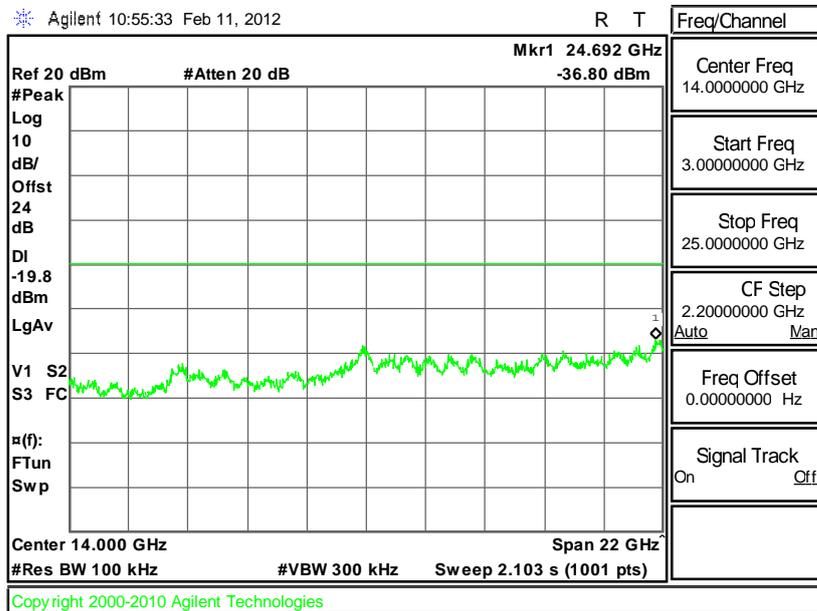


Test Mode :	Mode 9	Temperature :	24~26°C
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



3.5 Power Spectral Density Measurement

3.5.1 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.

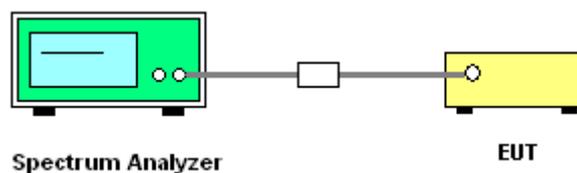
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The testing follows Measurement Procedure PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v01.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Record the measurement data derived from spectrum analyzer.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 KHz. Video bandwidth (VBW) \geq 300 KHz In order to make an accurate measurement, set the span to 5-30% greater than Emission Bandwidth (EBW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
6. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3\text{ kHz}/100\text{ kHz} = -15.2\text{ dB})$.

3.5.4 Test Setup





3.5.5 Test Result of Power Spectral Density

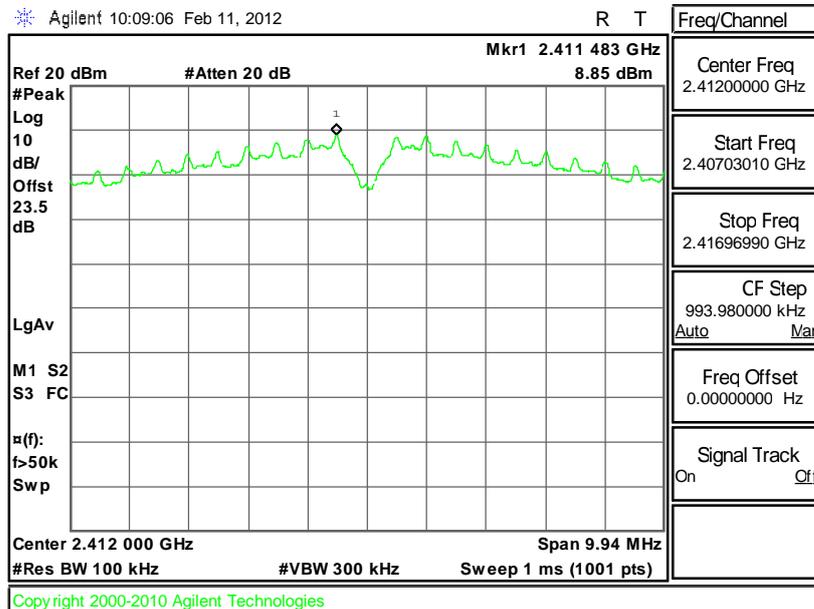
Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	8.85	-6.35	8	Pass
06	2437	9.27	-5.93	8	Pass
11	2462	9.57	-5.63	8	Pass

Note:

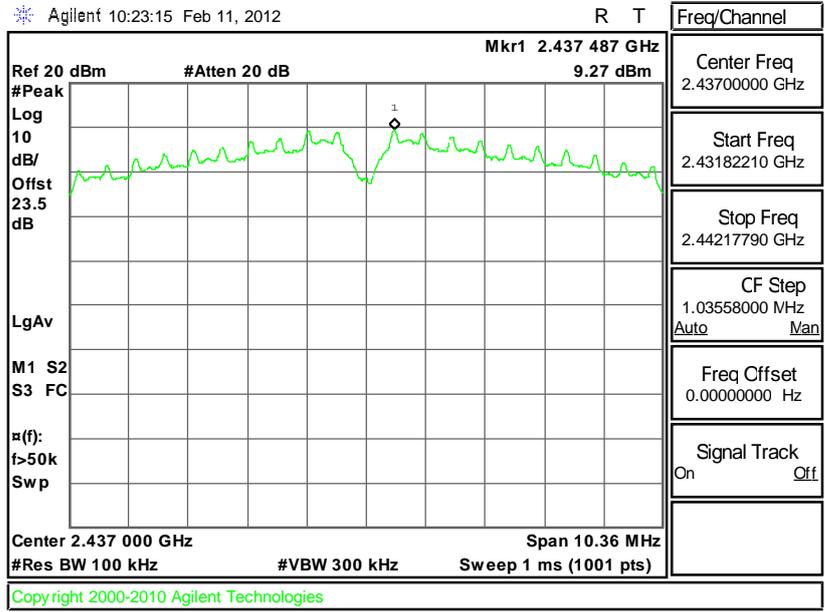
1. Measured power density (dBm) has offset with cable loss.
2. BWCF (dB) = $10 \log (3K/100K) = -15.2 \text{ dB}$
3. Power Density/ 3KHz (dBm) = Measured power density/ 100KHz (dBm) + BWCF (dB)

Mode 1 : PSD Plot on 802.11b Channel 01

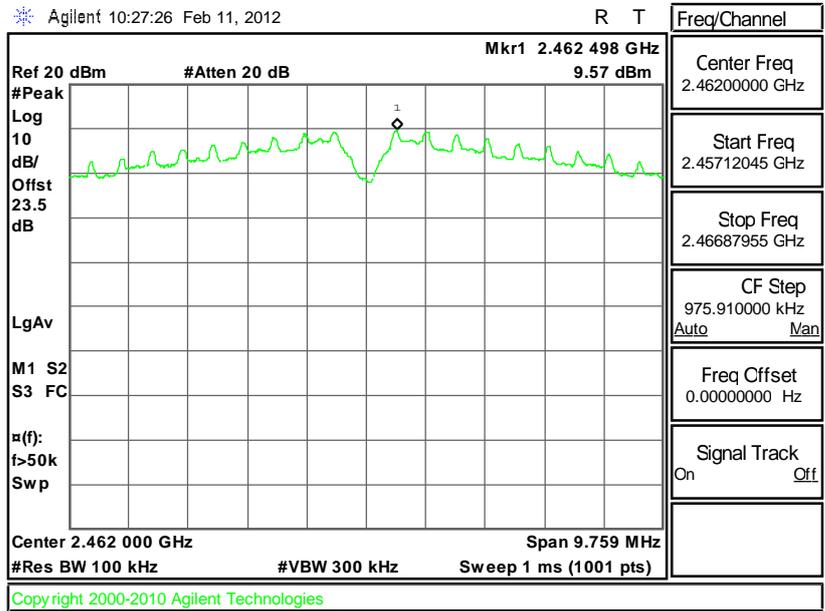




Mode 2 : PSD Plot on 802.11b Channel 06



Mode 3 : PSD Plot on 802.11b Channel 11





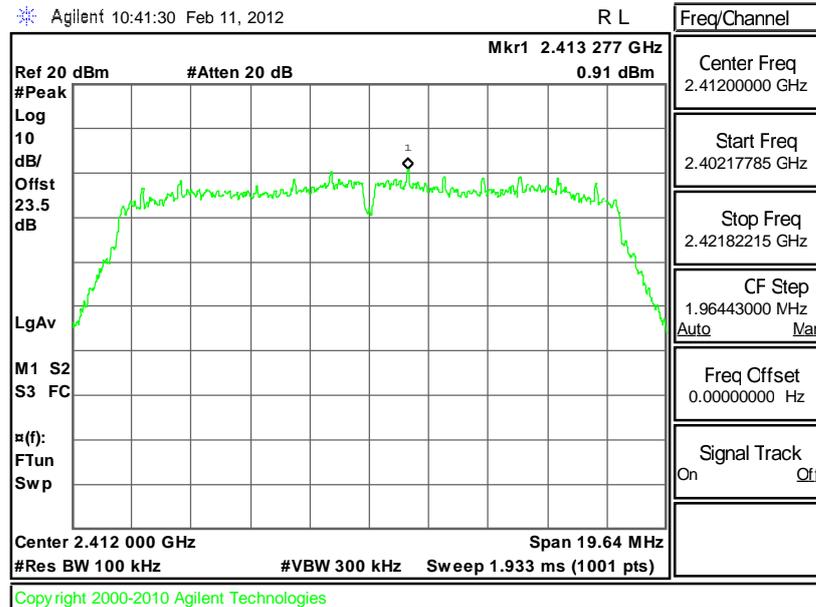
Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	0.91	-14.29	8	Pass
06	2437	1.55	-13.65	8	Pass
11	2462	1.30	-13.90	8	Pass

Note:

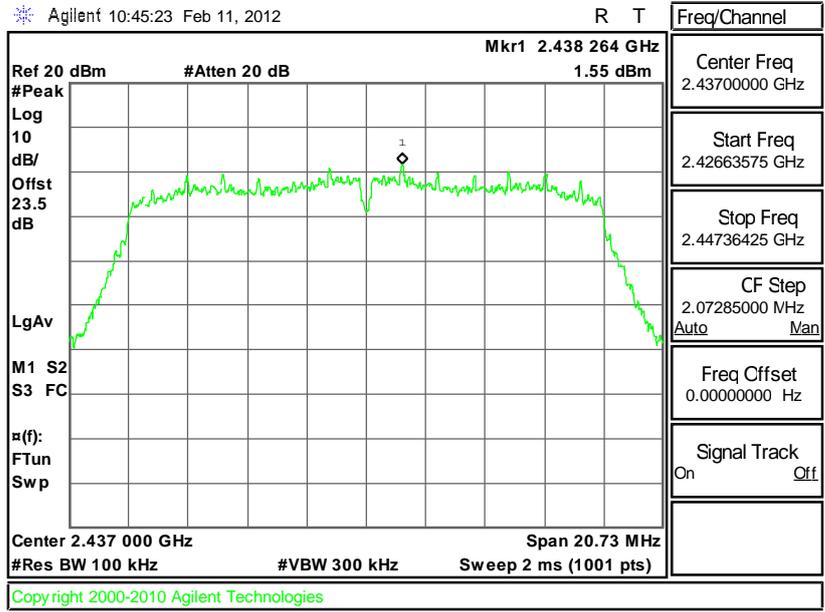
1. Measured power density (dBm) has offset with cable loss.
2. BWCF (dB) = $10 \log (3K/100K) = -15.2 \text{ dB}$
3. Power Density/ 3KHz (dBm) = Measured power density/ 100KHz (dBm) + BWCF (dB)

Mode 4 : PSD Plot on 802.11g Channel 01

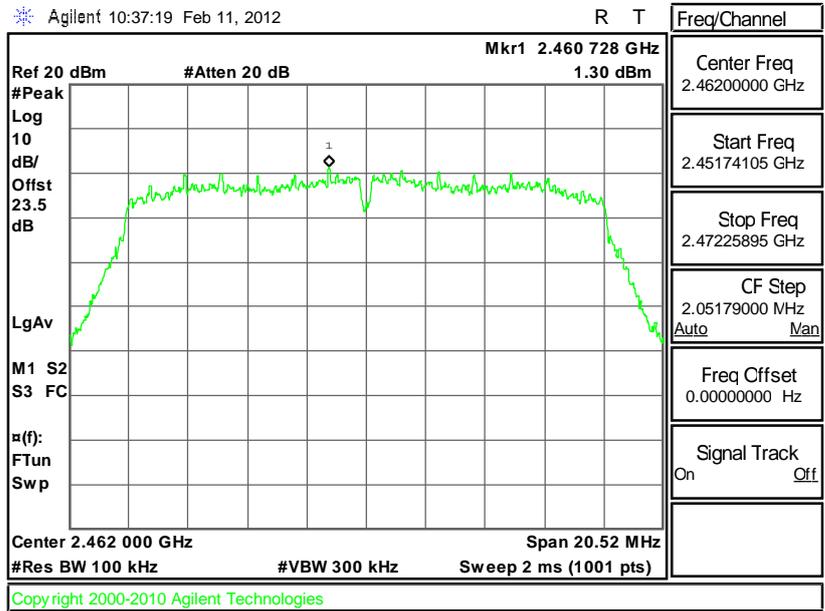




Mode 5 : PSD Plot on 802.11g Channel 06



Mode 6 : PSD Plot on 802.11g Channel 11





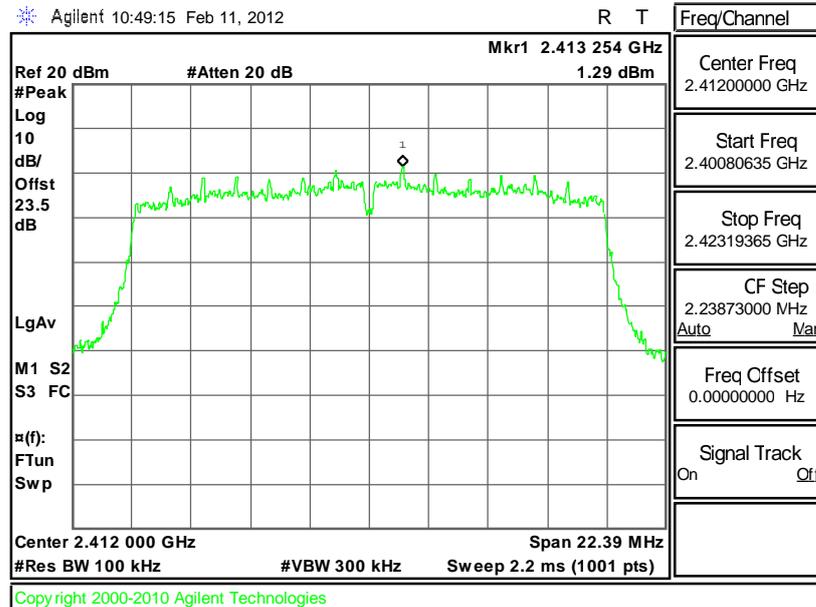
Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g/n (BW 20MHz) Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	1.29	-13.91	8	Pass
06	2437	1.68	-13.52	8	Pass
11	2462	1.99	-13.21	8	Pass

Note:

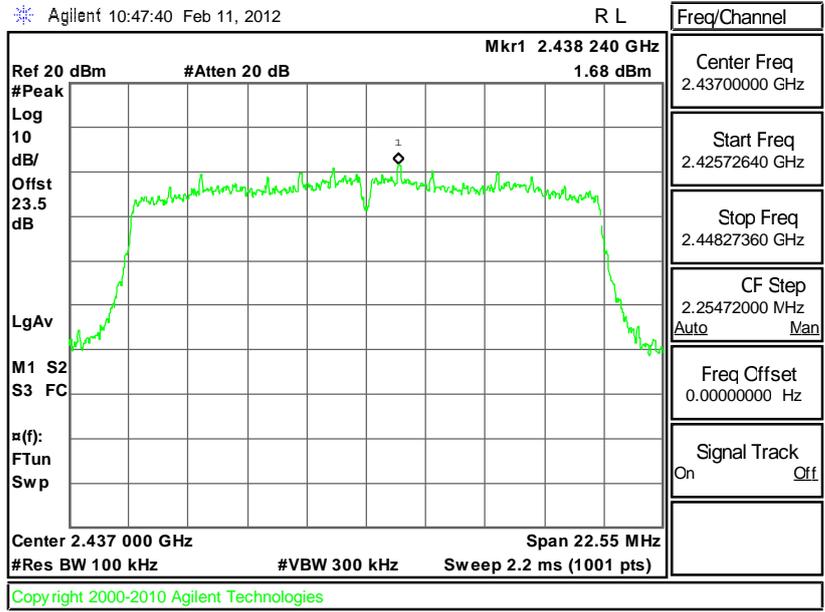
1. Measured power density (dBm) has offset with cable loss.
2. BWCF (dB) = $10 \log (3K/100K) = -15.2 \text{ dB}$
3. Power Density/ 3KHz (dBm) = Measured power density/ 100KHz (dBm) + BWCF (dB)

Mode 7 : PSD Plot on 802.11g/n (BW 20MHz) Channel 01

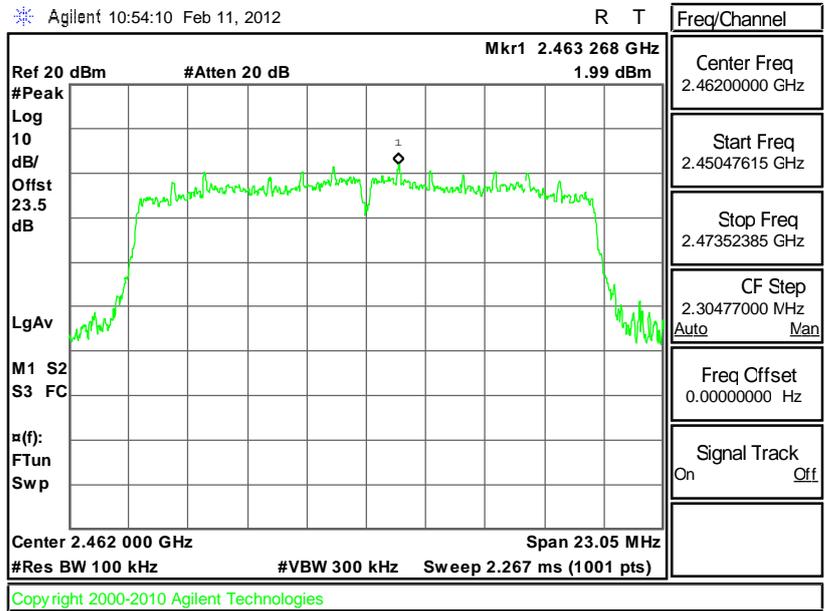




Mode 8 : PSD Plot on 802.11g/n (BW 20MHz) Channel 06



Mode 9 : PSD Plot on 802.11g/n (BW 20MHz) Channel 11



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 (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

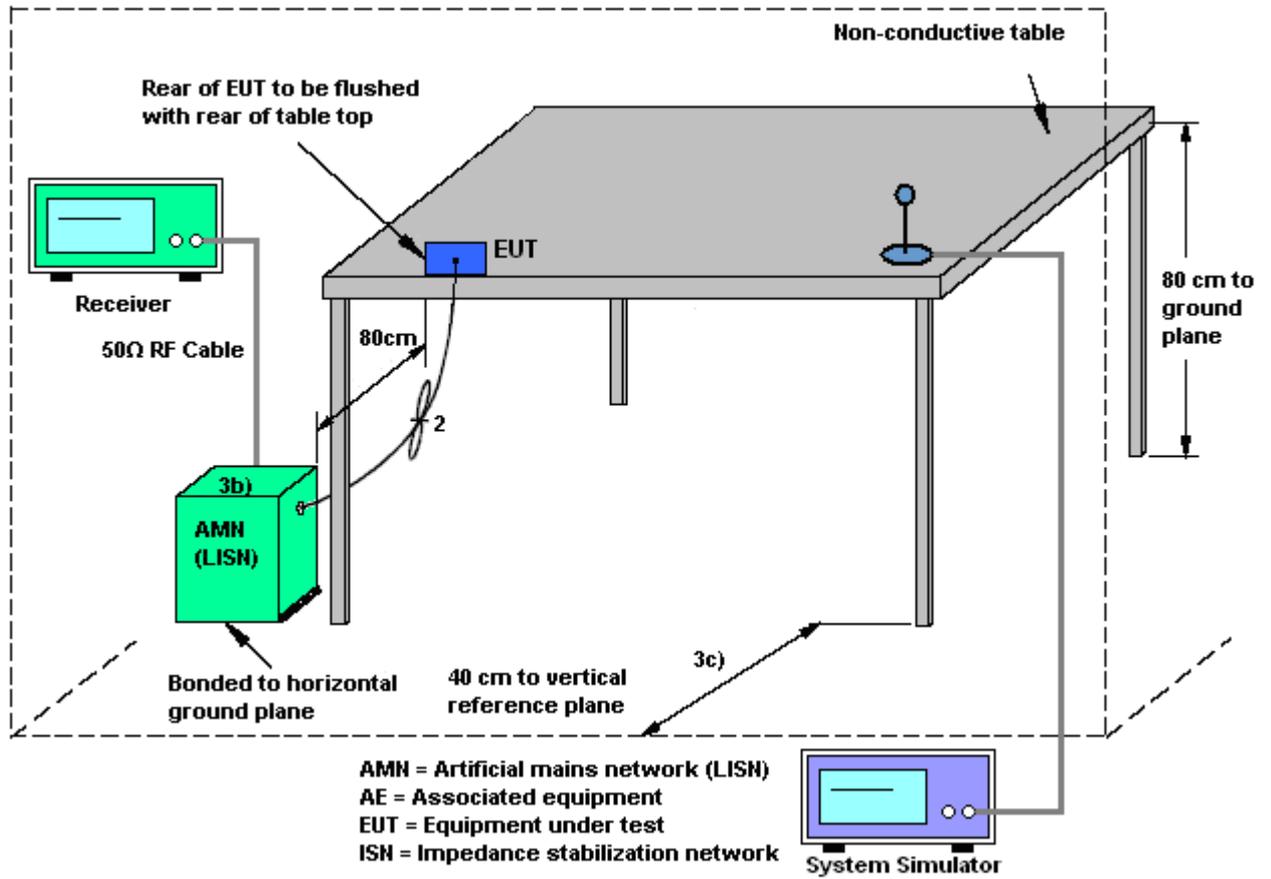
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

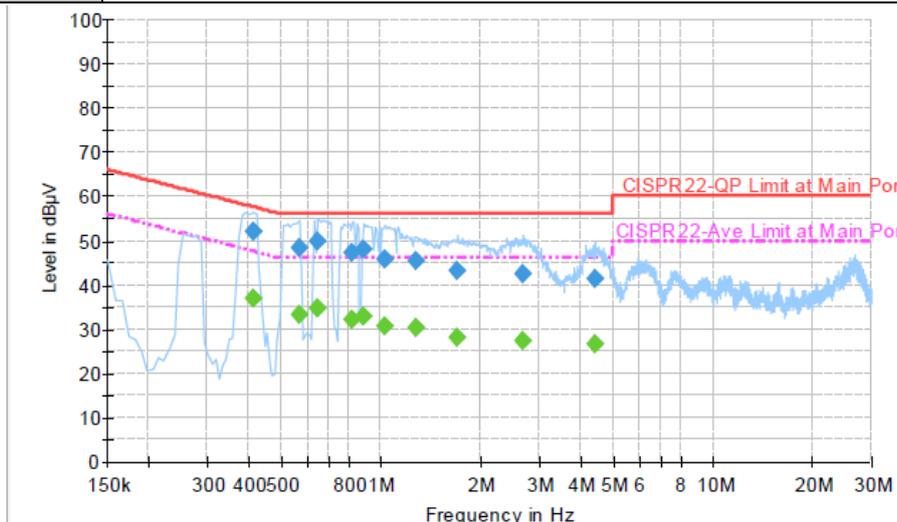
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 KHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band II Idle + Bluetooth Link + WLAN Link + GPS Rx + Earphone 2 + Battery + USB Cable 3 (Charging from Adapter 3) for Sample 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result : QuasiPeak

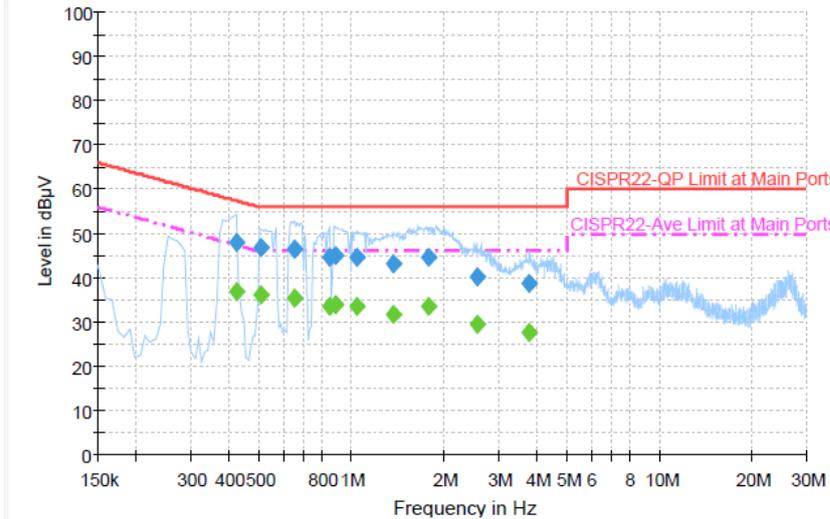
Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.414000	51.9	Off	L1	19.4	5.7	57.6
0.566000	48.3	Off	L1	19.3	7.7	56.0
0.646000	49.8	Off	L1	19.3	6.2	56.0
0.822000	47.1	Off	L1	19.5	8.9	56.0
0.886000	47.9	Off	L1	19.4	8.1	56.0
1.030000	45.9	Off	L1	19.4	10.1	56.0
1.278000	45.3	Off	L1	19.4	10.7	56.0
1.702000	43.2	Off	L1	19.4	12.8	56.0
2.694000	42.3	Off	L1	19.5	13.7	56.0
4.406000	41.5	Off	L1	19.5	14.5	56.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.414000	37.0	Off	L1	19.4	10.6	47.6
0.566000	33.3	Off	L1	19.3	12.7	46.0
0.646000	34.7	Off	L1	19.3	11.3	46.0
0.822000	32.1	Off	L1	19.5	13.9	46.0
0.886000	32.8	Off	L1	19.4	13.2	46.0
1.030000	30.8	Off	L1	19.4	15.2	46.0
1.278000	30.2	Off	L1	19.4	15.8	46.0
1.702000	28.1	Off	L1	19.4	17.9	46.0
2.694000	27.4	Off	L1	19.5	18.6	46.0
4.406000	26.4	Off	L1	19.5	19.6	46.0



Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band II Idle + Bluetooth Link + WLAN Link + GPS Rx + Earphone 2 + Battery + USB Cable 3 (Charging from Adapter 3) for Sample 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.422000	48.0	Off	N	19.4	9.4	57.4
0.510000	46.9	Off	N	19.3	9.1	56.0
0.654000	46.4	Off	N	19.4	9.6	56.0
0.846000	44.6	Off	N	19.5	11.4	56.0
0.886000	45.0	Off	N	19.4	11.0	56.0
1.046000	44.5	Off	N	19.4	11.5	56.0
1.374000	43.0	Off	N	19.5	13.0	56.0
1.782000	44.8	Off	N	19.5	11.2	56.0
2.550000	40.3	Off	N	19.5	15.7	56.0
3.766000	38.6	Off	N	19.5	17.4	56.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.422000	36.9	Off	N	19.4	10.5	47.4
0.510000	36.0	Off	N	19.3	10.0	46.0
0.654000	35.4	Off	N	19.4	10.6	46.0
0.846000	33.5	Off	N	19.5	12.5	46.0
0.886000	34.1	Off	N	19.4	11.9	46.0
1.046000	33.5	Off	N	19.4	12.5	46.0
1.374000	31.9	Off	N	19.5	14.1	46.0
1.782000	33.7	Off	N	19.5	12.3	46.0
2.550000	29.4	Off	N	19.5	16.6	46.0
3.766000	27.5	Off	N	19.5	18.5	46.0

3.7 Radiated Emission Measurement

3.7.1 Limit of Radiated Emission

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

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

3.7.2 Measuring Instruments

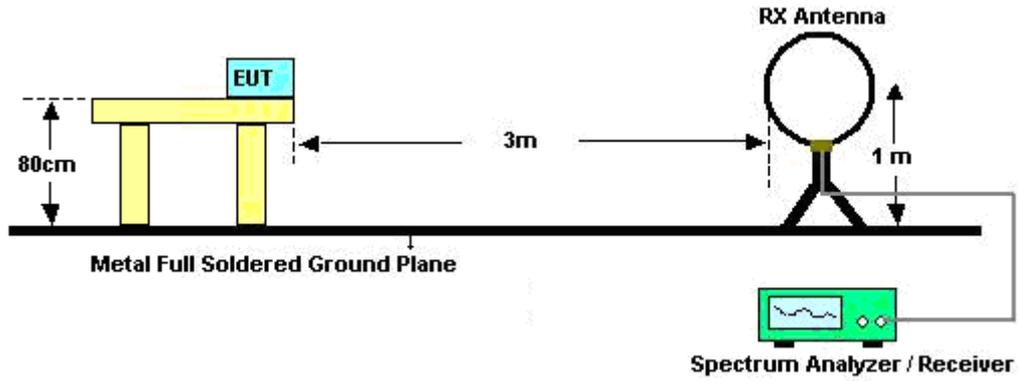
See list of measuring instruments of this test report.

3.7.3 Test Procedures

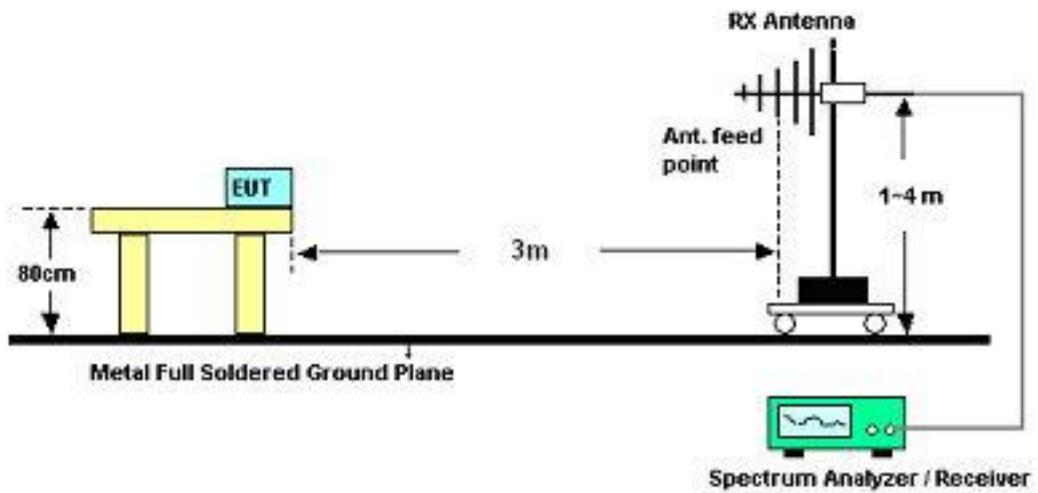
1. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW = 1 MHz for $f \geq 1$ GHz, 100 KHz for $f < 1$ GHz; VBW \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Measurement above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB per decade from 3m to 1m.
 Distance extrapolation factor = $20 \log(\text{specific distance [3m]} / \text{test distance [1m]})$ (dB)
2. Maximize the emission by rotating the EUT for three orthogonal planes, and adjusting the measurement antenna height and polarization. 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 in ANSI C63.4-2003.

3.7.4 Test Setup

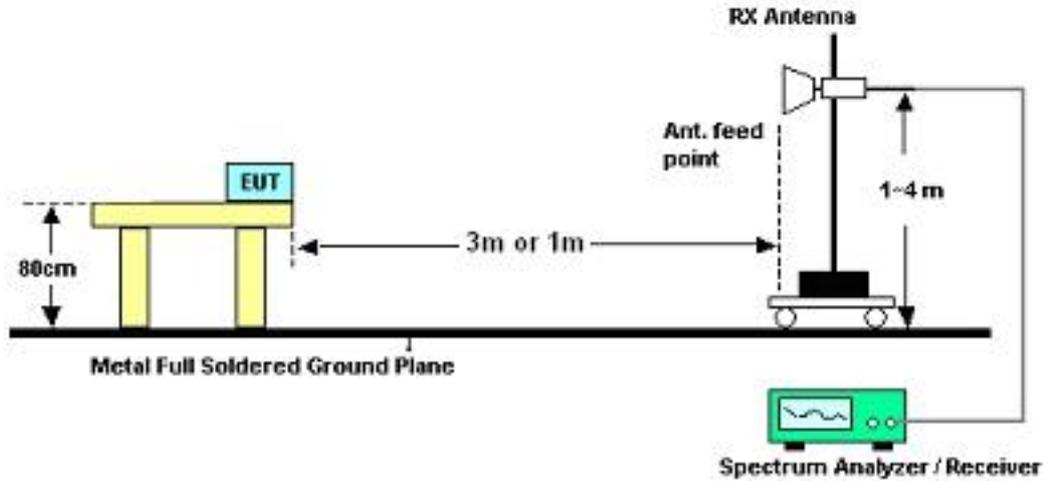
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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



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

Test Mode :	Mode 1	Temperature :	20~23°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.35	19.91	-20.09	40	31.63	19.12	0.71	31.55	121	100	Peak
100.47	22.28	-21.22	43.5	42.69	10.06	1.1	31.57	-	-	Peak
153.66	16.69	-26.81	43.5	35.88	11.02	1.29	31.5	-	-	Peak
337.1	18.78	-27.22	46	34.19	14.02	1.87	31.3	-	-	Peak
557.6	21.89	-24.11	46	30.29	20.2	2.34	30.94	-	-	Peak
764.8	23.7	-22.3	46	29.22	22.25	2.77	30.54	-	-	Peak
2389.23	42.59	-11.41	54	41.87	32.02	4.58	35.88	120	27	Average
2389.23	53.93	-20.07	74	53.21	32.02	4.58	35.88	120	27	Peak
2412	103.47	-	-	102.71	32.03	4.59	35.86	120	27	Average
2412	107.99	-	-	107.23	32.03	4.59	35.86	120	27	Peak
2486	35.73	-18.27	54	34.81	32.09	4.64	35.81	120	27	Average
2486	46.54	-27.46	74	45.62	32.09	4.64	35.81	120	27	Peak
4824	46.23	-27.77	74	64.35	33.83	6.51	58.46	100	0	Peak



Test Mode :	Mode 1	Temperature :	20~23°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
42.15	32.01	-7.99	40	51.23	11.56	0.76	31.54	106	334	Peak
49.17	31.26	-8.74	40	53.71	8.32	0.8	31.57	-	-	Peak
103.71	25.28	-18.22	43.5	45.19	10.54	1.11	31.56	-	-	Peak
421.1	17.7	-28.3	46	30.19	16.61	2.07	31.17	-	-	Peak
602.4	20.68	-25.32	46	29.16	19.96	2.43	30.87	-	-	Peak
813.1	24.35	-21.65	46	29.71	22.32	2.85	30.53	-	-	Peak
2386	44.07	-9.93	54	43.35	32.02	4.58	35.88	129	34	Average
2386	55.68	-18.32	74	54.96	32.02	4.58	35.88	129	34	Peak
2412	106.7	-	-	105.94	32.03	4.59	35.86	129	34	Average
2412	110.68	-	-	109.92	32.03	4.59	35.86	129	34	Peak
2486	37.87	-16.13	54	36.95	32.09	4.64	35.81	129	34	Average
2486	49.34	-24.66	74	48.42	32.09	4.64	35.81	129	34	Peak
4824	50.19	-3.81	54	68.31	33.83	6.51	58.46	100	32	Average
4824	52.51	-21.49	74	70.63	33.83	6.51	58.46	100	32	Peak



Test Mode :	Mode 2	Temperature :	20~23°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
42.15	22.84	-17.16	40	42.06	11.56	0.76	31.54	165	193	Peak
100.74	21.24	-22.26	43.5	41.65	10.06	1.1	31.57	-	-	Peak
135.84	17.69	-25.81	43.5	36.57	11.38	1.25	31.51	-	-	Peak
333.6	19.48	-26.52	46	35.01	13.91	1.86	31.3	-	-	Peak
545.7	20.17	-25.83	46	29.45	19.36	2.32	30.96	-	-	Peak
762	23.66	-22.34	46	29.15	22.28	2.77	30.54	-	-	Peak
2348	36.33	-17.67	54	35.69	31.98	4.55	35.89	102	118	Average
2348	46.8	-27.2	74	46.16	31.98	4.55	35.89	102	118	Peak
2437	103.1	-	-	102.27	32.06	4.61	35.84	102	118	Average
2437	107.02	-	-	106.21	32.04	4.61	35.84	102	118	Peak
2488	37.58	-16.42	54	36.65	32.1	4.64	35.81	102	118	Average
2488	48.54	-25.46	74	47.61	32.1	4.64	35.81	102	118	Peak
4874	45.35	-28.65	74	63.36	33.82	6.53	58.36	100	0	Peak



Test Mode :	Mode 2	Temperature :	20~23°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
42.42	32.67	-7.33	40	51.89	11.56	0.76	31.54	103	221	Peak
73.74	25.23	-14.77	40	49.2	6.62	0.95	31.54	-	-	Peak
103.71	24.54	-18.96	43.5	44.45	10.54	1.11	31.56	-	-	Peak
415.5	16.69	-29.31	46	29.36	16.45	2.05	31.17	-	-	Peak
610.1	21.05	-24.95	46	29.25	20.2	2.45	30.85	-	-	Peak
762	24.34	-21.66	46	29.83	22.28	2.77	30.54	-	-	Peak
2390	41.69	-12.31	54	40.95	32.02	4.58	35.86	100	17	Average
2390	52	-22	74	51.26	32.02	4.58	35.86	100	17	Peak
2437	106.69	-	-	105.86	32.06	4.61	35.84	100	17	Average
2437	110.51	-	-	109.68	32.06	4.61	35.84	100	17	Peak
2486	40.1	-13.9	54	39.18	32.09	4.64	35.81	100	17	Average
2486	51.53	-22.47	74	50.61	32.09	4.64	35.81	100	17	Peak
4874	49.63	-4.37	54	67.64	33.82	6.53	58.36	100	38	Average
4874	51.96	-22.04	74	69.97	33.82	6.53	58.36	100	38	Peak



Test Mode :	Mode 3	Temperature :	20~23°C
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
40.53	21.17	-18.83	40	39.22	12.72	0.75	31.52	114	152	Peak
101.82	20.91	-22.59	43.5	41.16	10.22	1.1	31.57	-	-	Peak
155.01	15.35	-28.15	43.5	34.64	10.9	1.31	31.5	-	-	Peak
334.3	19.24	-26.76	46	34.74	13.94	1.86	31.3	-	-	Peak
563.2	21.4	-24.6	46	29.83	20.15	2.35	30.93	-	-	Peak
769	24.03	-21.97	46	29.58	22.21	2.78	30.54	-	-	Peak
2386	35.73	-18.27	54	35.01	32.02	4.58	35.88	100	118	Average
2386	48.44	-25.56	74	47.72	32.02	4.58	35.88	100	118	Peak
2462	102.41	-	-	101.55	32.07	4.62	35.83	100	118	Average
2462	106.49	-	-	105.63	32.07	4.62	35.83	100	118	Peak
2491.45	47.94	-6.06	54	47.01	32.1	4.64	35.81	100	118	Average
2491.45	55.77	-18.23	74	54.84	32.1	4.64	35.81	100	118	Peak
4924	47.54	-26.46	74	65.43	33.81	6.56	58.26	100	0	Peak



Test Mode :	Mode 3	Temperature :	20~23°C
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
40.8	32.66	-7.34	40	50.71	12.72	0.75	31.52	100	345	Peak
102.09	25.74	-17.76	43.5	45.99	10.22	1.1	31.57	-	-	Peak
153.93	19.85	-23.65	43.5	39.09	10.96	1.3	31.5	-	-	Peak
414.1	17.01	-28.99	46	29.71	16.42	2.05	31.17	-	-	Peak
552.7	20.74	-25.26	46	29.4	19.95	2.34	30.95	-	-	Peak
762.7	24.24	-21.76	46	29.73	22.28	2.77	30.54	-	-	Peak
2386	40	-14	54	39.28	32.02	4.58	35.88	100	29	Average
2386	50.61	-23.39	74	49.89	32.02	4.58	35.88	100	29	Peak
2462	106.56	-	-	105.7	32.07	4.62	35.83	100	29	Average
2462	110.6	-	-	109.74	32.07	4.62	35.83	100	29	Peak
2489.55	50.83	-3.17	54	49.9	32.1	4.64	35.81	100	29	Average
2489.55	59.03	-14.97	74	58.1	32.1	4.64	35.81	100	29	Peak
4924	50.96	-3.04	54	68.85	33.81	6.56	58.26	114	26	Average
4924	52.84	-21.16	74	70.74	33.81	6.55	58.26	114	26	Peak



Test Mode :	Mode 4	Temperature :	20~23°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.35	26.35	-13.65	40	38.07	19.12	0.71	31.55	143	241	Peak
101.28	19.55	-23.95	43.5	39.96	10.06	1.1	31.57	-	-	Peak
152.31	14.39	-29.11	43.5	33.52	11.08	1.29	31.5	-	-	Peak
334.3	18.71	-27.29	46	34.21	13.94	1.86	31.3	-	-	Peak
535.9	19.31	-26.69	46	29.41	18.59	2.3	30.99	-	-	Peak
753.6	23.54	-22.46	46	28.96	22.36	2.76	30.54	-	-	Peak
2389.99	43.41	-10.59	54	42.67	32.02	4.58	35.86	145	24	Average
2389.99	68.4	-5.6	74	67.66	32.02	4.58	35.86	145	24	Peak
2412	93.06	-	-	92.3	32.03	4.59	35.86	145	24	Average
2412	105.79	-	-	105.03	32.03	4.59	35.86	145	24	Peak
2492	36.04	-17.96	54	35.1	32.1	4.64	35.8	145	24	Average
2492	48.01	-25.99	74	47.07	32.1	4.64	35.8	145	24	Peak



Test Mode :	Mode 4	Temperature :	20~23°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
41.61	30.97	-9.03	40	49.6	12.14	0.76	31.53	103	85	Peak
103.44	24.69	-18.81	43.5	44.6	10.54	1.11	31.56	-	-	Peak
155.82	19.84	-23.66	43.5	39.2	10.82	1.32	31.5	-	-	Peak
423.9	16.21	-29.79	46	28.67	16.64	2.07	31.17	-	-	Peak
602.4	20.62	-25.38	46	29.1	19.96	2.43	30.87	-	-	Peak
735.4	23.28	-22.72	46	29	22.15	2.72	30.59	-	-	Peak
2389.3	45.46	-8.54	54	44.74	32.02	4.58	35.88	100	29	Average
2389.3	70.3	-3.7	74	69.58	32.02	4.58	35.88	100	29	Peak
2412	94.99	-	-	94.23	32.03	4.59	35.86	100	29	Average
2412	108.82	-	-	108.06	32.03	4.59	35.86	100	29	Peak
2484	37.34	-16.66	54	36.42	32.09	4.64	35.81	100	29	Average
2484	49.5	-24.5	74	48.58	32.09	4.64	35.81	100	29	Peak
4824	45.76	-28.24	74	63.88	33.83	6.51	58.46	100	0	Peak



Test Mode :	Mode 5	Temperature :	20~23°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
34.86	25.57	-14.43	40	39.95	16.4	0.74	31.52	126	199	Peak
115.05	23.1	-20.4	43.5	41.64	11.8	1.18	31.52	-	-	Peak
204.15	15.83	-27.67	43.5	36.66	9.15	1.48	31.46	-	-	Peak
421.1	17.62	-28.38	46	30.11	16.61	2.07	31.17	-	-	Peak
633.2	21.82	-24.18	46	29.49	20.6	2.53	30.8	-	-	Peak
909	25.5	-20.5	46	29.38	23.57	3.02	30.47	-	-	Peak
2390	36.32	-17.68	54	35.58	32.02	4.58	35.86	102	119	Average
2390	48.19	-25.81	74	47.45	32.02	4.58	35.86	102	119	Peak
2437	92.45	-	-	91.62	32.06	4.61	35.84	102	119	Average
2437	105.9	-	-	105.07	32.06	4.61	35.84	102	119	Peak
2484	36.4	-17.6	54	35.48	32.09	4.64	35.81	102	119	Average
2484	48.6	-25.4	74	47.68	32.09	4.64	35.81	102	119	Peak



Test Mode :	Mode 5	Temperature :	20~23°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
41.61	31.85	-8.15	40	50.48	12.14	0.76	31.53	100	152	Peak
73.74	23.69	-16.31	40	47.66	6.62	0.95	31.54	-	-	Peak
116.67	25.81	-17.69	43.5	44.35	11.8	1.18	31.52	-	-	Peak
428.8	16.86	-29.14	46	29.24	16.69	2.09	31.16	-	-	Peak
567.4	20.96	-25.04	46	29.51	20.01	2.36	30.92	-	-	Peak
736.8	23.29	-22.71	46	28.95	22.21	2.72	30.59	-	-	Peak
2390	36.03	-17.97	54	35.29	32.02	4.58	35.86	100	16	Average
2390	52.04	-21.96	74	51.3	32.02	4.58	35.86	100	16	Peak
2437	95.34	-	-	94.51	32.06	4.61	35.84	100	16	Average
2437	108.16	-	-	107.33	32.06	4.61	35.84	100	16	Peak
2484	38.18	-15.82	54	37.26	32.09	4.64	35.81	100	16	Average
2484	49.87	-24.13	74	48.95	32.09	4.64	35.81	100	16	Peak
4874	46.81	-27.19	74	64.82	33.82	6.53	58.36	100	0	Peak



Test Mode :	Mode 6	Temperature :	20~23°C
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
34.86	22.54	-17.46	40	36.92	16.4	0.74	31.52	155	120	Peak
116.67	23.07	-20.43	43.5	41.61	11.8	1.18	31.52	-	-	Peak
189.57	14.97	-28.53	43.5	36.31	8.7	1.44	31.48	-	-	Peak
439.3	17.93	-28.07	46	30.1	16.88	2.11	31.16	-	-	Peak
568.8	20.78	-25.22	46	29.37	19.97	2.36	30.92	-	-	Peak
755.7	24.36	-21.64	46	29.79	22.35	2.76	30.54	-	-	Peak
2380	35.8	-18.2	54	35.1	32	4.58	35.88	101	118	Average
2380	47.48	-26.52	74	46.78	32	4.58	35.88	101	118	Peak
2462	92.03	-	-	91.17	32.07	4.62	35.83	101	118	Average
2462	105.06	-	-	104.2	32.07	4.62	35.83	101	118	Peak
2489.17	45.33	-8.67	54	44.4	32.1	4.64	35.81	101	118	Average
2489.17	62.68	-11.32	74	61.75	32.1	4.64	35.81	101	118	Peak



Test Mode :	Mode 6	Temperature :	20~23°C
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
41.61	32.17	-7.83	40	50.8	12.14	0.76	31.53	109	36	Peak
49.17	31.54	-8.46	40	53.99	8.32	0.8	31.57	-	-	Peak
116.67	25.5	-18	43.5	44.04	11.8	1.18	31.52	-	-	Peak
423.2	17.2	-28.8	46	29.67	16.63	2.07	31.17	-	-	Peak
582.1	20.74	-25.26	46	29.45	19.8	2.39	30.9	-	-	Peak
738.9	23.19	-22.81	46	28.77	22.27	2.73	30.58	-	-	Peak
2388	37.62	-16.38	54	36.9	32.02	4.58	35.88	100	29	Average
2388	49.42	-24.58	74	48.7	32.02	4.58	35.88	100	29	Peak
2462	94.59	-	-	93.73	32.07	4.62	35.83	100	29	Average
2462	107.22	-	-	106.36	32.07	4.62	35.83	100	29	Peak
2483.5	49.56	-4.44	54	48.64	32.09	4.64	35.81	100	29	Average
2483.5	66.33	-7.67	74	65.41	32.09	4.64	35.81	100	29	Peak
4924	47.41	-26.59	74	65.3	33.81	6.56	58.26	100	0	Peak



Test Mode :	Mode 7	Temperature :	20~23°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.35	24.48	-15.52	40	36.2	19.12	0.71	31.55	121	103	Peak
115.86	24.84	-18.66	43.5	43.38	11.8	1.18	31.52	-	-	Peak
197.4	14.41	-29.09	43.5	35.43	8.98	1.46	31.46	-	-	Peak
415.5	16.97	-29.03	46	29.64	16.45	2.05	31.17	-	-	Peak
556.2	20.8	-25.2	46	29.3	20.1	2.34	30.94	-	-	Peak
742.4	23.84	-22.16	46	29.36	22.32	2.73	30.57	-	-	Peak
2389.99	43.8	-10.2	54	43.06	32.02	4.58	35.86	146	36	Average
2389.99	70.01	-3.99	74	69.27	32.02	4.58	35.86	146	36	Peak
2412	93.52	-	-	92.76	32.03	4.59	35.86	146	36	Average
2412	106.49	-	-	105.73	32.03	4.59	35.86	146	36	Peak
2488	36.04	-17.96	54	35.11	32.1	4.64	35.81	146	36	Average
2488	46.81	-27.19	74	45.88	32.1	4.64	35.81	146	36	Peak



Test Mode :	Mode 7	Temperature :	20~23°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
41.61	32.22	-7.78	40	50.85	12.14	0.76	31.53	-	-	Peak
49.17	32.64	-7.36	40	55.09	8.32	0.8	31.57	103	229	Peak
116.67	25.01	-18.49	43.5	43.55	11.8	1.18	31.52	-	-	Peak
429.5	17.48	-28.52	46	29.85	16.7	2.09	31.16	-	-	Peak
642.3	22.03	-23.97	46	29.72	20.54	2.56	30.79	-	-	Peak
821.5	25.48	-20.52	46	30.44	22.69	2.87	30.52	-	-	Peak
2389.8	46.1	-7.9	54	45.36	32.02	4.58	35.86	100	24	Average
2389.8	70.97	-3.03	74	70.23	32.02	4.58	35.86	100	24	Peak
2412	94.07	-	-	93.31	32.03	4.59	35.86	100	24	Average
2412	107.89	-	-	107.13	32.03	4.59	35.86	100	24	Peak
2496	36.71	-17.29	54	35.77	32.1	4.64	35.8	100	24	Average
2496	48.4	-25.6	74	47.46	32.1	4.64	35.8	100	24	Peak
4824	44.72	-29.28	74	62.84	33.83	6.51	58.46	100	0	Peak



Test Mode :	Mode 8	Temperature :	20~23°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
34.86	21.47	-18.53	40	35.85	16.4	0.74	31.52	141	157	Peak
117.21	23.2	-20.3	43.5	41.73	11.8	1.19	31.52	-	-	Peak
194.97	15.29	-28.21	43.5	36.51	8.8	1.45	31.47	-	-	Peak
423.9	17.94	-28.06	46	30.4	16.64	2.07	31.17	-	-	Peak
610.8	21.22	-24.78	46	29.38	20.23	2.46	30.85	-	-	Peak
766.9	24.48	-21.52	46	30.01	22.23	2.78	30.54	-	-	Peak
2388	37.94	-16.06	54	37.22	32.02	4.58	35.88	145	29	Average
2388	52.5	-21.5	74	51.78	32.02	4.58	35.88	145	29	Peak
2437	93.42	-	-	92.59	32.06	4.61	35.84	145	29	Average
2437	106.25	-	-	105.42	32.06	4.61	35.84	145	29	Peak
2492	37.1	-16.9	54	36.16	32.1	4.64	35.8	145	29	Average
2492	48.62	-25.38	74	47.68	32.1	4.64	35.8	145	29	Peak



Test Mode :	Mode 8	Temperature :	20~23°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
41.34	31.65	-8.35	40	50.28	12.14	0.76	31.53	100	177	Peak
49.17	30.53	-9.47	40	52.98	8.32	0.8	31.57	-	-	Peak
116.67	24.57	-18.93	43.5	43.11	11.8	1.18	31.52	-	-	Peak
471.5	17.83	-28.17	46	29.16	17.61	2.18	31.12	-	-	Peak
645.8	21.31	-24.69	46	29.09	20.42	2.58	30.78	-	-	Peak
819.4	24.03	-21.97	46	29.08	22.6	2.87	30.52	-	-	Peak
2390	38.4	-15.6	54	37.66	32.02	4.58	35.86	100	31	Average
2390	52.89	-21.11	74	52.15	32.02	4.58	35.86	100	31	Peak
2437	94.35	-	-	93.52	32.06	4.61	35.84	100	31	Average
2437	107.55	-	-	106.72	32.06	4.61	35.84	100	31	Peak
2486	38.71	-15.29	54	37.79	32.09	4.64	35.81	100	31	Average
2486	53.83	-20.17	74	52.91	32.09	4.64	35.81	100	31	Peak
4874	45.04	-28.96	74	63.04	33.82	6.54	58.36	100	0	Peak



Test Mode :	Mode 9	Temperature :	20~23°C
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
34.86	23.52	-16.48	40	37.9	16.4	0.74	31.52	126	320	Peak
116.4	24.17	-19.33	43.5	42.71	11.8	1.18	31.52	-	-	Peak
216.57	14.79	-31.21	46	35.48	9.26	1.53	31.48	-	-	Peak
384.7	16.62	-29.38	46	30.51	15.35	1.98	31.22	-	-	Peak
533.1	19.04	-26.96	46	29.22	18.51	2.3	30.99	-	-	Peak
730.5	23.99	-22.01	46	29.89	22	2.71	30.61	-	-	Peak
2388	36.01	-17.99	54	35.29	32.02	4.58	35.88	175	27	Average
2388	47.66	-26.34	74	46.94	32.02	4.58	35.88	175	27	Peak
2462	91.88	-	-	91.02	32.07	4.62	35.83	175	27	Average
2462	105.86	-	-	105	32.07	4.62	35.83	175	27	Peak
2484.04	47.73	-6.27	54	46.81	32.09	4.64	35.81	175	27	Average
2484.04	64.28	-9.72	74	63.36	32.09	4.64	35.81	175	27	Peak



Test Mode :	Mode 9	Temperature :	20~23°C
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
42.15	32.94	-7.06	40	52.16	11.56	0.76	31.54	100	226	Peak
49.44	32.12	-7.88	40	54.57	8.32	0.8	31.57	-	-	Peak
113.43	24.13	-19.37	43.5	42.88	11.6	1.17	31.52	-	-	Peak
451.2	17.91	-28.09	46	29.7	17.22	2.14	31.15	-	-	Peak
638.1	22.11	-23.89	46	29.75	20.6	2.55	30.79	-	-	Peak
747.3	23.8	-22.2	46	29.24	22.37	2.74	30.55	-	-	Peak
2386	36.91	-17.09	54	36.19	32.02	4.58	35.88	107	91	Average
2386	48.72	-25.28	74	48	32.02	4.58	35.88	107	91	Peak
2462	94.57	-	-	93.71	32.07	4.62	35.83	107	91	Average
2462	107.76	-	-	106.9	32.07	4.62	35.83	107	91	Peak
2483.66	49.06	-4.94	54	48.14	32.09	4.64	35.81	107	91	Average
2483.66	66.28	-7.72	74	65.36	32.09	4.64	35.81	107	91	Peak
4924	45.42	-28.58	74	63.31	33.81	6.56	58.26	100	0	Peak



Test Mode :	Mode 10	Temperature :	20~23°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
36.75	31.59	-8.41	40	47.21	15.16	0.74	31.52	140	248	Peak
114.24	34.04	-9.46	43.5	52.69	11.7	1.17	31.52	-	-	Peak
191.73	19.46	-24.04	43.5	40.75	8.74	1.44	31.47	-	-	Peak
399.4	17.11	-28.89	46	30.28	16	2.01	31.18	-	-	Peak
587	22.27	-23.73	46	30.96	19.8	2.4	30.89	-	-	Peak
811.7	24.45	-21.55	46	29.85	22.28	2.85	30.53	-	-	Peak
2389.8	48.61	-5.39	54	47.87	32.02	4.58	35.86	164	320	Average
2389.8	70.58	-3.42	74	69.84	32.02	4.58	35.86	164	320	Peak
2412	94.43	-	-	93.67	32.03	4.59	35.86	164	320	Average
2412	108.38	-	-	107.62	32.03	4.59	35.86	164	320	Peak
2486	37.61	-16.39	54	36.69	32.09	4.64	35.81	164	320	Average
2486	49.44	-24.56	74	48.52	32.09	4.64	35.81	164	320	Peak
4824	46.91	-27.09	74	65.03	33.83	6.51	58.46	100	0	Peak



Test Mode :	Mode 10	Temperature :	20~23°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
36.75	33.76	-6.24	40	49.38	15.16	0.74	31.52	103	95	Peak
41.61	31.88	-8.12	40	50.51	12.14	0.76	31.53	-	-	Peak
113.43	27.61	-15.89	43.5	46.36	11.6	1.17	31.52	-	-	Peak
391.7	16.93	-29.07	46	30.54	15.6	1.99	31.2	-	-	Peak
549.9	20.41	-25.59	46	29.23	19.8	2.33	30.95	-	-	Peak
761.3	24.28	-21.72	46	29.76	22.29	2.77	30.54	-	-	Peak
2389.99	50.06	-3.94	54	49.32	32.02	4.58	35.86	163	42	Average
2389.99	70.96	-3.04	74	70.22	32.02	4.58	35.86	163	42	Peak
2412	93.69	-	-	92.93	32.03	4.59	35.86	163	42	Average
2412	106.81	-	-	106.05	32.03	4.59	35.86	163	42	Peak
2484	38.38	-15.62	54	37.46	32.09	4.64	35.81	163	42	Average
2484	50.23	-23.77	74	49.31	32.09	4.64	35.81	163	42	Peak



3.8 Antenna Requirements

3.8.1 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.

3.8.2 Antenna Connected Construction

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

3.8.3 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	Agilent	E4446A	MY50180136	3Hz~44GHz	Apr. 03, 2011	Feb. 10, 2012 ~ Feb. 11, 2012	Apr. 02, 2012	Conducted (TH02-HY)
EMI Test Receiver	R&S	ESCI 7	100724	9kHz~7GHz	Aug. 22, 2011	Feb. 21, 2012	Aug. 21, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz~30MHz	Dec. 09, 2011	Feb. 21, 2012	Dec. 08, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz~30MHz	Dec. 06, 2011	Feb. 21, 2012	Dec. 05, 2012	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	Feb. 21, 2012	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	116457	N/A	Jun. 24, 2011	Feb. 21, 2012	Jun. 23, 2012	Conduction (CO05-HY)
GPS Station	T&E	GS-50	N/A	N/A	N/A	Feb. 21, 2012	N/A	Conduction (CO05-HY)
Spectrum Analyzer	R&S	FSP30	101352	9KHz~30GHz	Nov. 03, 2011	Feb. 20, 2012 ~ Feb. 22, 2012	Nov. 02, 2012	Radiation (03CH05-HY)
COM-POWER	Double Ridge Horn	AH-118	701030	1GHz~18GHz	N/A	Feb. 20, 2012 ~ Feb. 22, 2012	N/A	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2725	30MHz~1GHz	Oct. 22, 2011	Feb. 20, 2012 ~ Feb. 22, 2012	Oct. 21, 2012	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 - 360 degree	N/A	Feb. 20, 2012 ~ Feb. 22, 2012	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m~4 m	N/A	Feb. 20, 2012 ~ Feb. 22, 2012	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz~18GHz	Aug. 04, 2011	Feb. 20, 2012 ~ Feb. 22, 2012	Aug. 03, 2012	Radiation (03CH05-HY)
COM-POWER	COM-POWER	PA-103	161075	1KHz~1GHz	Mar. 29, 2011	Feb. 20, 2012 ~ Feb. 22, 2012	Mar. 28, 2012	Radiation (03CH05-HY)
Pre Amplifier	EMCI	EMC051845	SN980048	1GHz~18GHz	Jul. 19, 2011	Feb. 20, 2012 ~ Feb. 22, 2012	Jul. 18, 2012	Radiation (03CH05-HY)
Pre Amplifier	EMCI	EMC051845	SN980048	1GHz~18GHz	Jul. 18, 2011	Feb. 20, 2012 ~ Feb. 22, 2012	Jul. 17, 2012	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz~26.5GHz	Apr. 14, 2011	Feb. 20, 2012 ~ Feb. 22, 2012	Apr. 13, 2012	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Feb. 20, 2012 ~ Feb. 22, 2012	Jul. 28, 2012	Radiation (03CH05-HY)

5 Uncertainty of Evaluation

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

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

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

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



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

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\text{Log}(1-\Gamma_1*\Gamma_2)$	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty $U_c(y)$	2.36				
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.72				