FCC RF Test Report

APPLICANT	:	PEGATRON CORPORATION
EQUIPMENT	:	Tablet
BRAND NAME	:	TOSHIBA, Excite
MODEL NAME	:	TOSHIBA AT330, Excite 13 AT330, Excite 13 AT335
FCC ID	:	VUIPDT4330LB
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DTS) Digital Transmission System

The product was received on Mar. 15, 2012 and completely tested on Apr. 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

Testing Laboratory 1190

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

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR232266B	Rev. 01	Initial issue of report	Apr. 30, 2012

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	≥ 0.5MHz	Pass	-
3.1	-	Gen 4.6.1	99% Bandwidth	-	Pass	-
3.2	15.247(b)	A8.4	Power Output	≤ 30dBm	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	≤ 20dBc	Pass	-
3.4	15.247(d)	A8.5	Spurious Emission	< 20 dBc	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	≤ 8dBm	Pass	-
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 8.70 dB at 0.182 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.04 dB at 2483.660 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

PEGATRON CORPORATION
No. 76, Ligong St., Beitou District, Taipei City 11261

1.2 Manufacturer

PEGATRON CORPORATION
No. 76, Ligong St., Beitou District, Taipei City 11261

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Tablet
Brand Name	TOSHIBA, Excite
Model Name	TOSHIBA AT330, Excite 13 AT330, Excite 13 AT335
FCC ID	VUIPDT4330LB
Sample 1	EUT with 16G eMMC
Sample 2	EUT with 32G eMMC
Sample 3	EUT with 64G eMMC
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 : 15.42 dBm (0.035 W) 802.11g : 18.38 dBm (0.069 W) 802.11g/n (BW 20MHz) : 16.04 dBm (0.040 W)
Duty Cycle	802.11b : 97.64% 802.11g : 86.89% 802.11g/n (BW 20MHz) : 86.04%
Antenna Type	Chip Antenna with gain 4.20 dBi
Type of Antenna Connector	I-PEX connector
HW Version	1.02
SW Version	Android 4.0.3
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. The model names (TOSHIBA AT330, Excite 13 AT330, Excite 13 AT335) are identical on hardware. The only difference is the label of different branding for different customer.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH06-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.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	P20G	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	LCD Monitor	HANNspree	ST19ZOO_CN	N/A	Shielded, 1.6 m	Unshielded, 1.8 m
5.	Bluetooth Earphone	Sony Ericsson	MW600	PY70DA2029	N/A	N/A
6.	Earphone	Ergotech	ET-E200	FCC DoC	Unshielded, 1.8 m	N/A
7.	iPod Earphone	Apple	N/A	FCC DoC	Unshielded, 1.0 m	N/A
8.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	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)	15.42	15.35	15.27	14.80

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)	18.38	18.14	17.92	17.63	17.64	16.78	16.38	15.89

2.4GHz 802.11g/n (BW 20MHz) mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	16.04	15.44	15.17	15.02	14.47	13.96	13.62	13.43

2.2 Maximum Peak Conducted Output Power:

Band	2.4GHz 802.11b RF Power (dBm)			2.4GHz 802.11g RF Power (dBm)		
Channel	1	6	11	1	6	11
Frequency (MHz)	2412	2437	2462	2412	2437	2462
Peak Power	15.20	15.31	**15.42**	18.10	17.89	**18.38**

Band	2.4GHz 802.11g/n (BW 20MHz) RF Power (dBm)		
Channel	1	6	11
Frequency (MHz)	2412	2437	2462
Peak Power	15.65	15.76	**16.04**

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)		
Channel	1	6	11	1	6	11
Frequency (MHz)	2412	2437	2462	2412	2437	2462
Average Power	12.42	12.68	**12.91**	12.09	11.92	**12.35**

Band	2.4GHz 802.11g/n (BW 20MHz) RF Power (dBm)		
Channel	1	6	11
Frequency (MHz)	2412	2437	2462
Average Power	9.61	9.63	**10.05**

Remark:

1. The average power, which is used by the test method, AVG2, in DTS Meas. Guidance v01, is reporting only.
2. The EUT is programmed to transmit signals continuously.

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, laptop / tablet modes.

The following tables are showing the test modes as the worst cases (X plane) and recorded in this report.

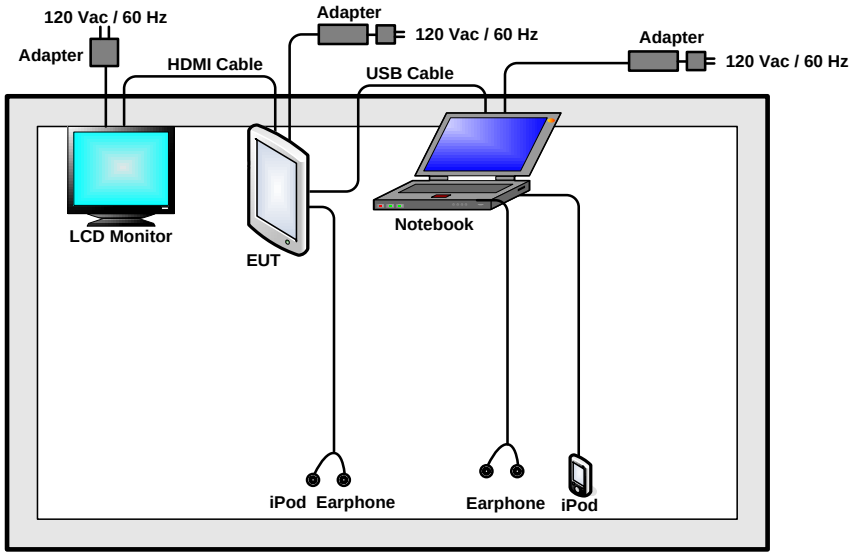
Test Cases		
Test Item	**802.11b (Modulation : DSSS)**	**802.11g/n (Modulation : OFDM)**
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11g/n (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 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
AC Conducted Emission	Mode 1 ： WLAN Link + Bluetooth Link + GPS Rx + Adapter 1 + TC for Sample 2 Mode 2 ： WLAN Link + Bluetooth Link + MPEG4 + Adapter 2 + TC for Sample 1 Mode 3 ： WLAN Link + Bluetooth Link + Camera + Adapter 3 + TC for Sample 1 Mode 4 ： WLAN Link + Bluetooth Link + H-Pattern + Adapter 4 + TC for Sample 3	

Remark:

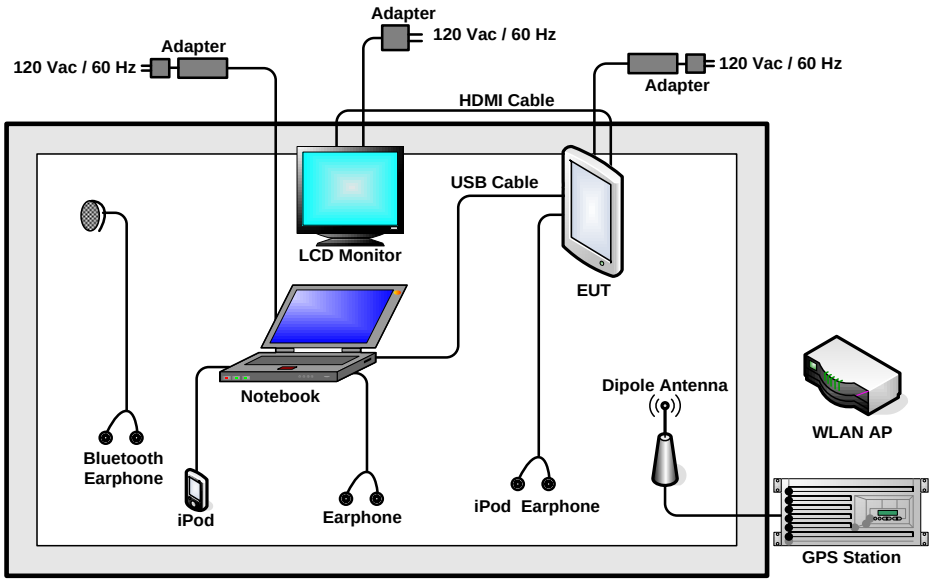
1. TC stands for Test Configuration, and consists of HDMI Cable, iPod earphone, USB Cable (Data Link with NB), and SD Card.
2. The worst case of conducted emission is mode 1; only the test data of it was reported.
3. Link with Notebook means data application transferred mode between EUT and Notebook.
4. For radiated TCs, all the tests were performance with Adapter 4 and Sample 2.

2.5 Connection Diagram of Test System

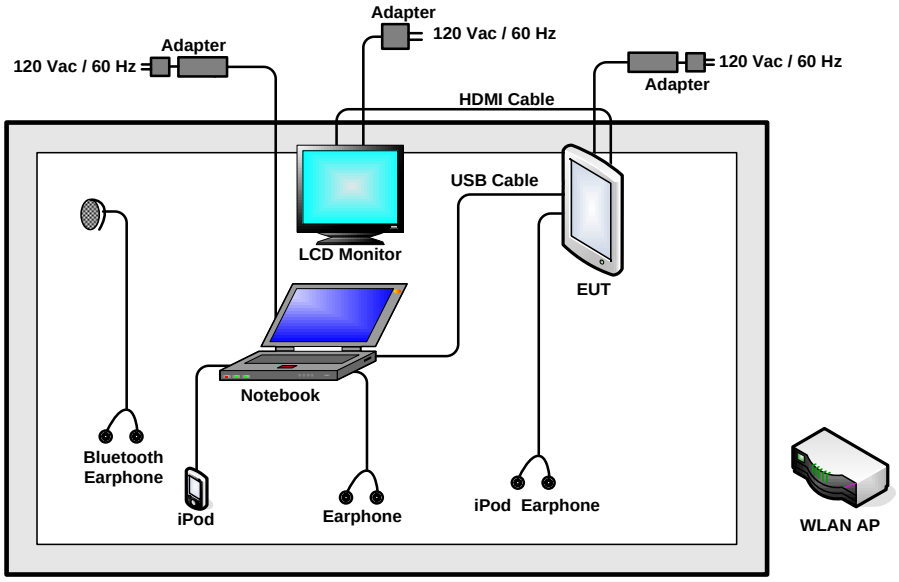
<WLAN Tx Mode>



<AC Conducted Emission in GPS Rx Mode>



<AC Conducted Emission Mode>



2.6 RF Utility

The programmed RF utility, execute “ADB” 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) ≥ 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.

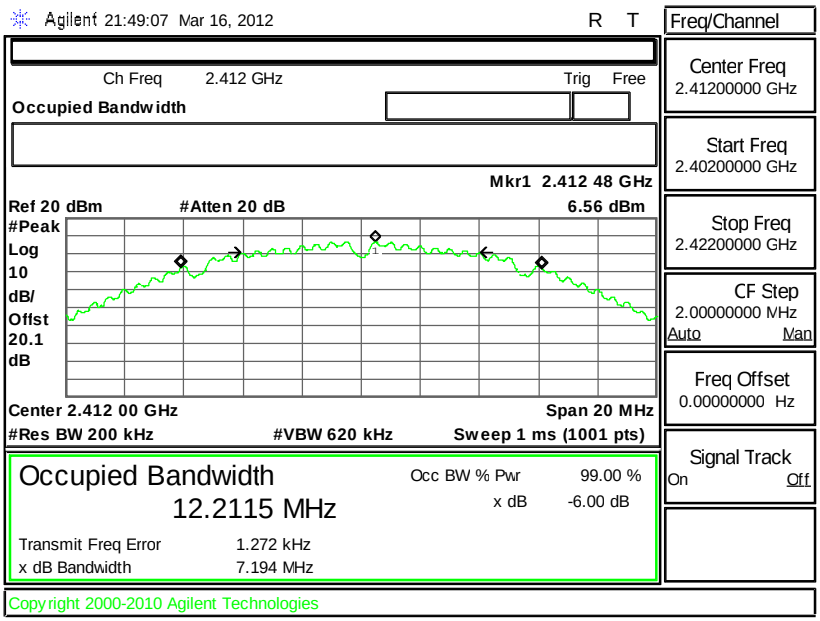
3.1.4 Test Setup

3.1.5 Test Result of 6dB Bandwidth

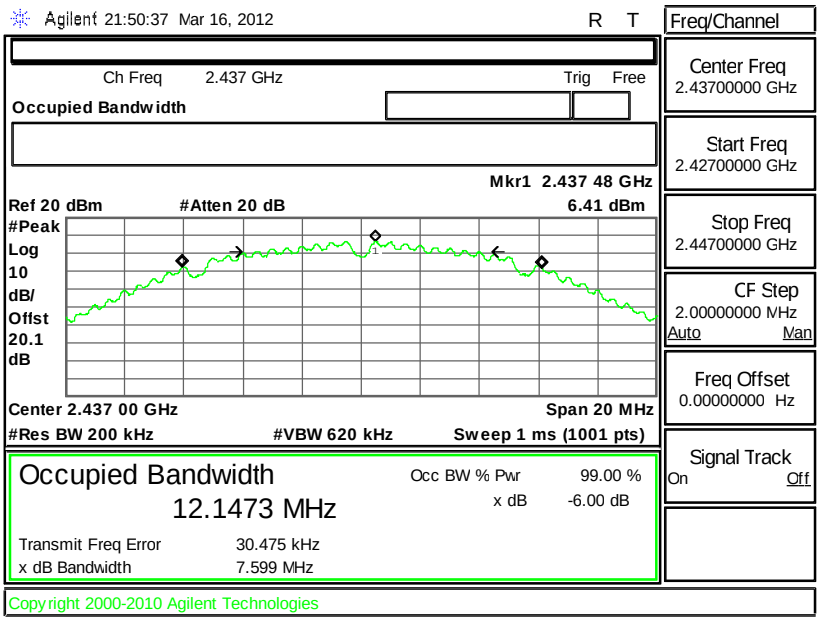
Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	7.194	0.5	Pass
06	2437	7.599	0.5	Pass
11	2462	7.156	0.5	Pass

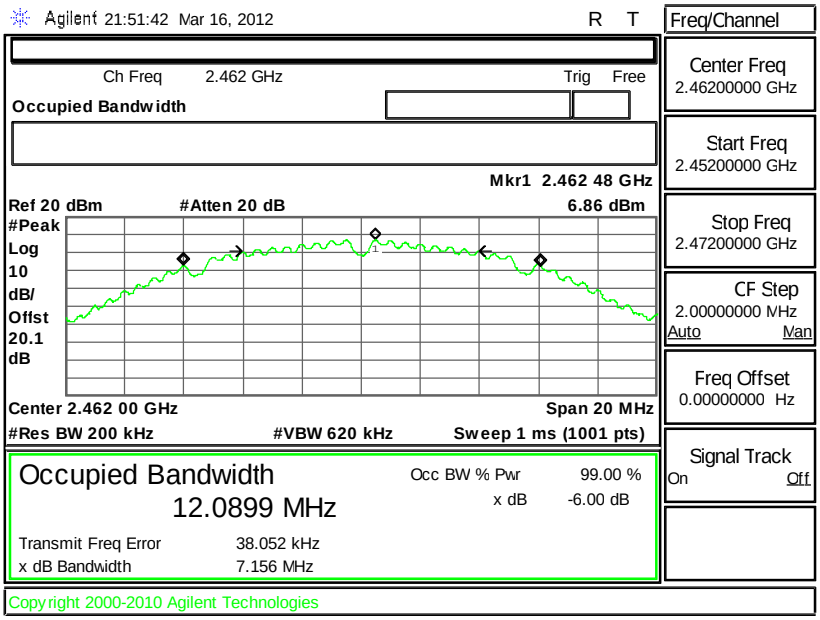
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



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



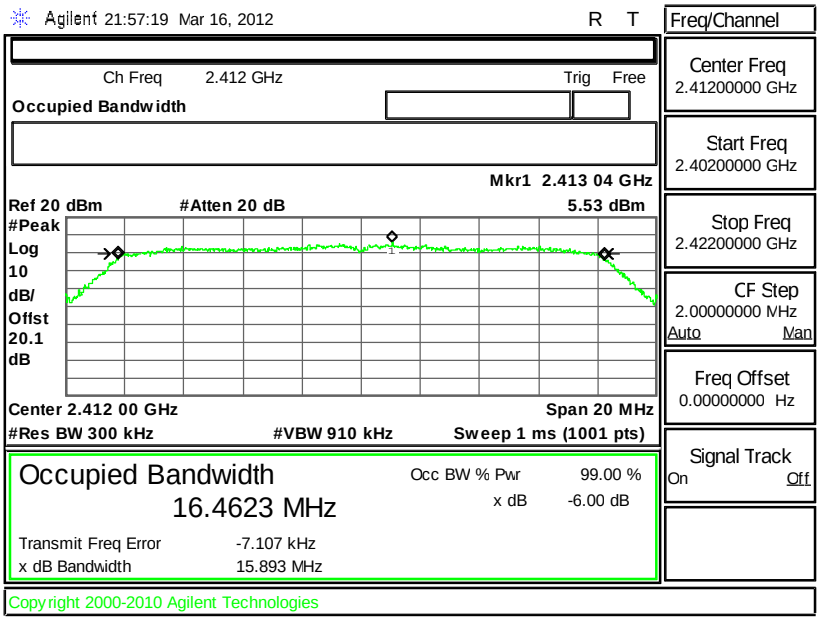
Mode 3 : 6 dB Bandwidth Plot on 802.11b Channel 11



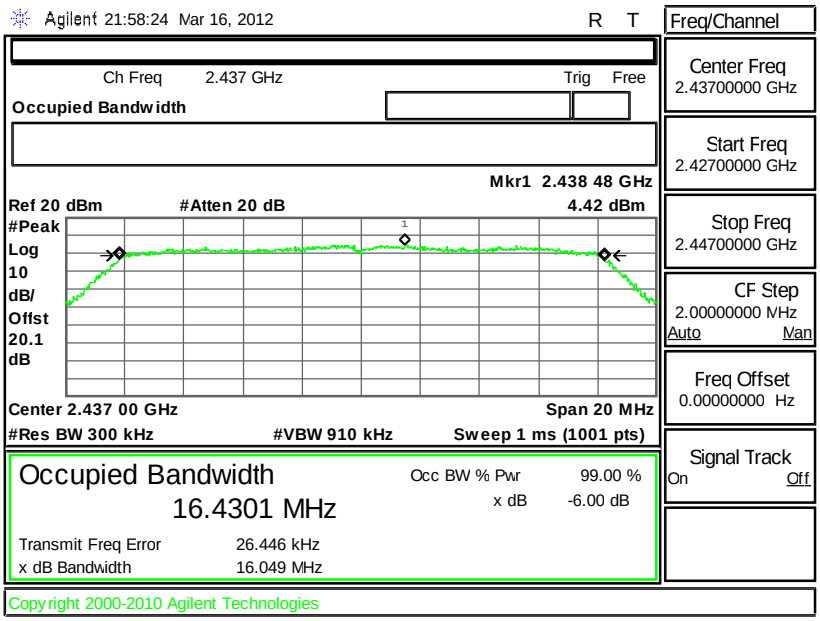
Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.893	0.5	Pass
06	2437	16.049	0.5	Pass
11	2462	15.883	0.5	Pass

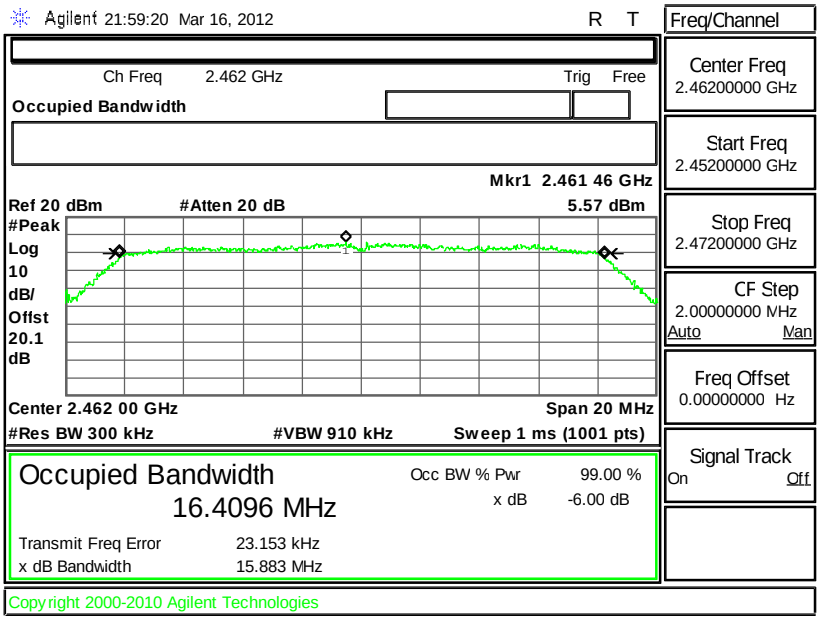
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



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



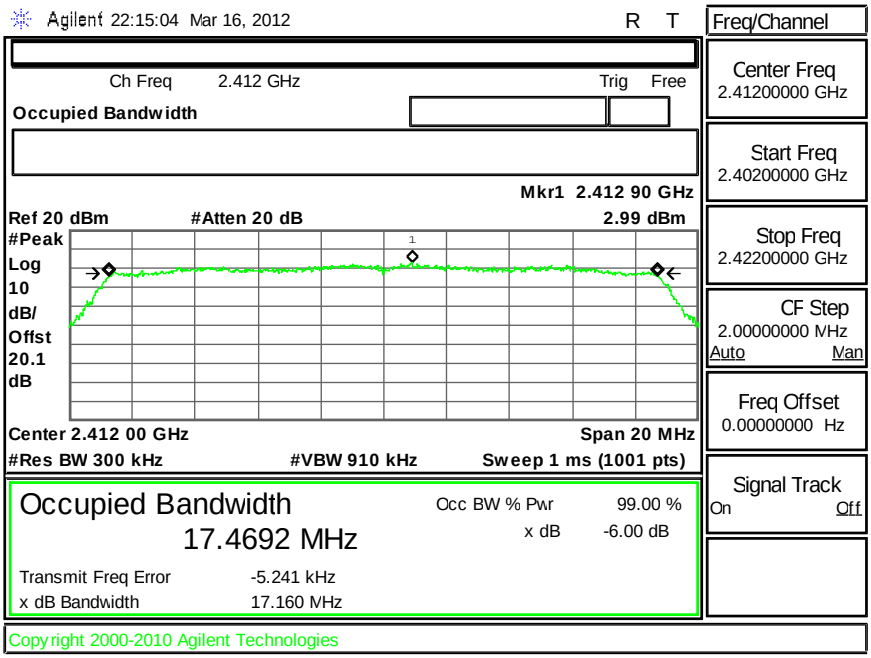
Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11



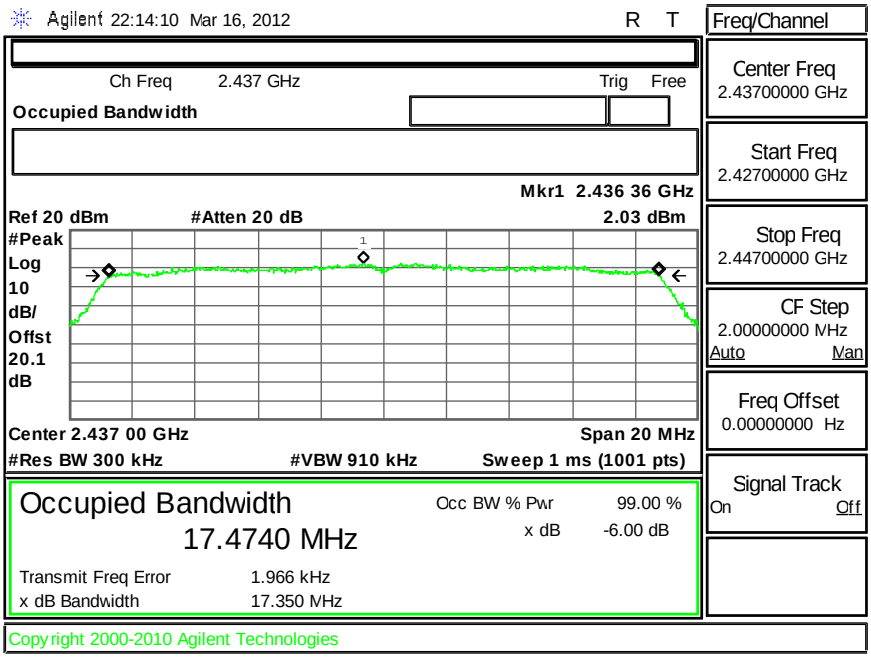
Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g/n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.160	0.5	Pass
06	2437	17.350	0.5	Pass
11	2462	17.353	0.5	Pass

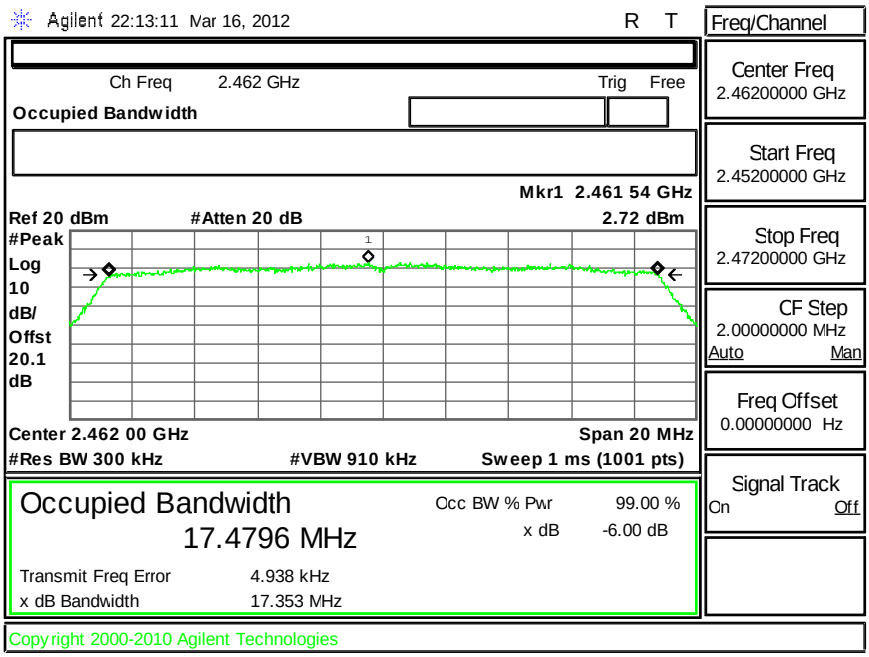
Mode 7 : 6 dB Bandwidth Plot on 802.11g/n(BW 20MHz) Channel 01



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

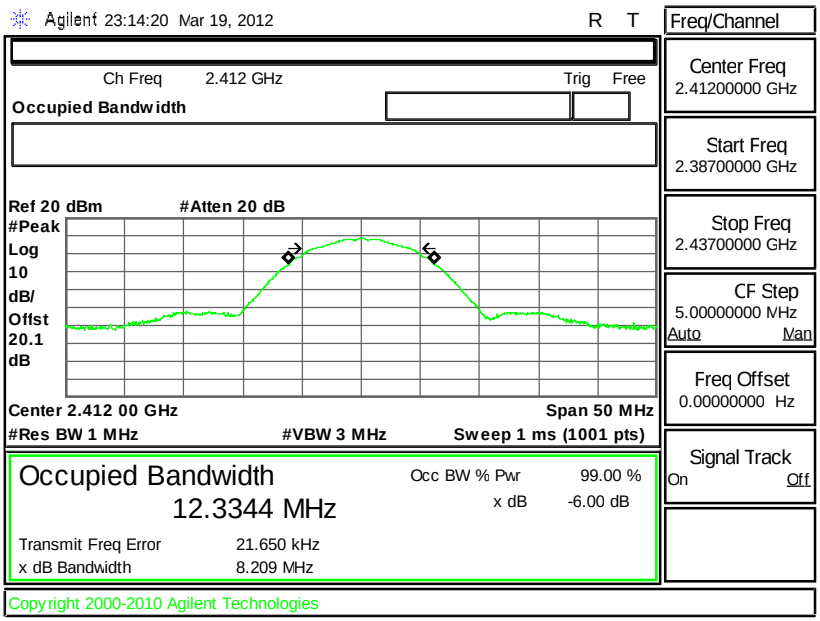


3.1.6 Test Result of 99% Occupied Bandwidth

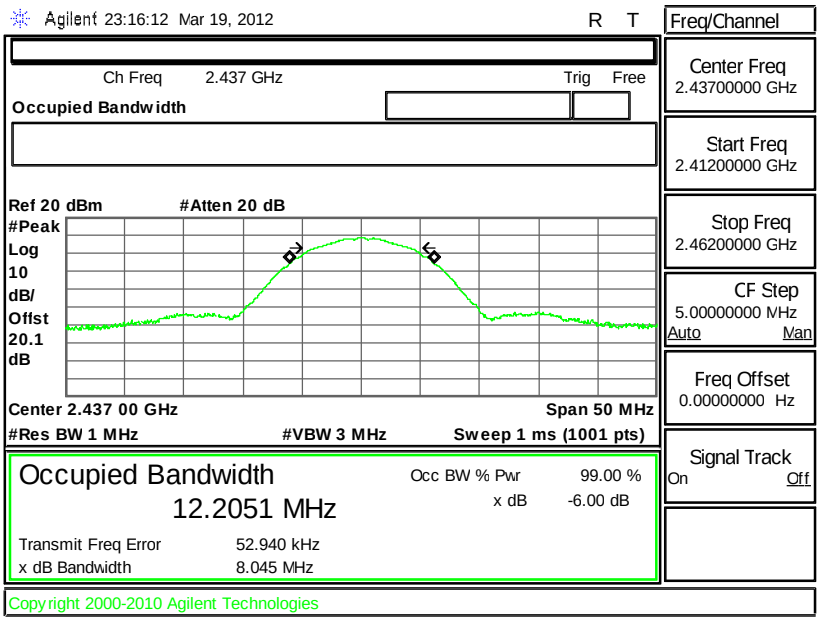
Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	12.3344	Pass
06	2437	12.2051	Pass
11	2462	12.1252	Pass

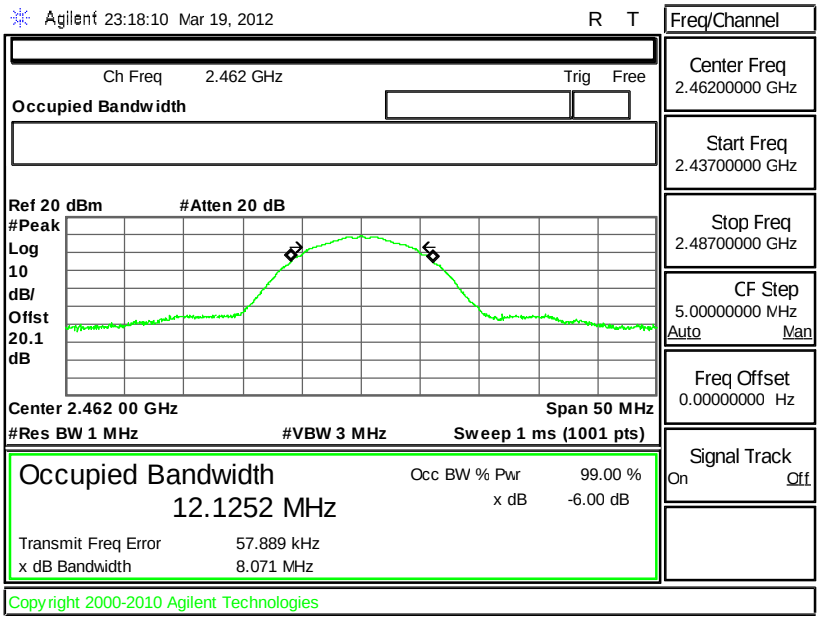
Mode 1 : 99% Occupied Bandwidth Plot on 802.11b Channel 01



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



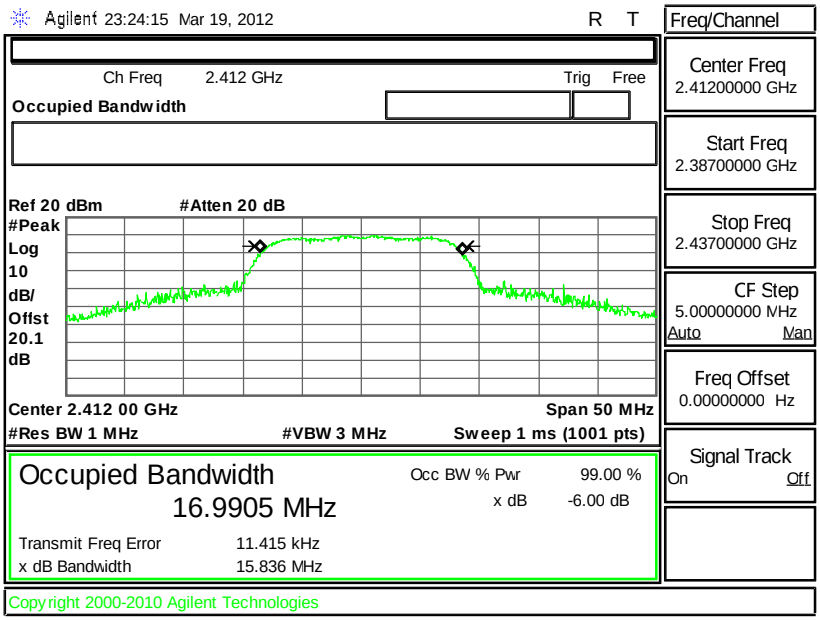
Mode 3 : 99% Occupied Bandwidth Plot on 802.11b Channel 11



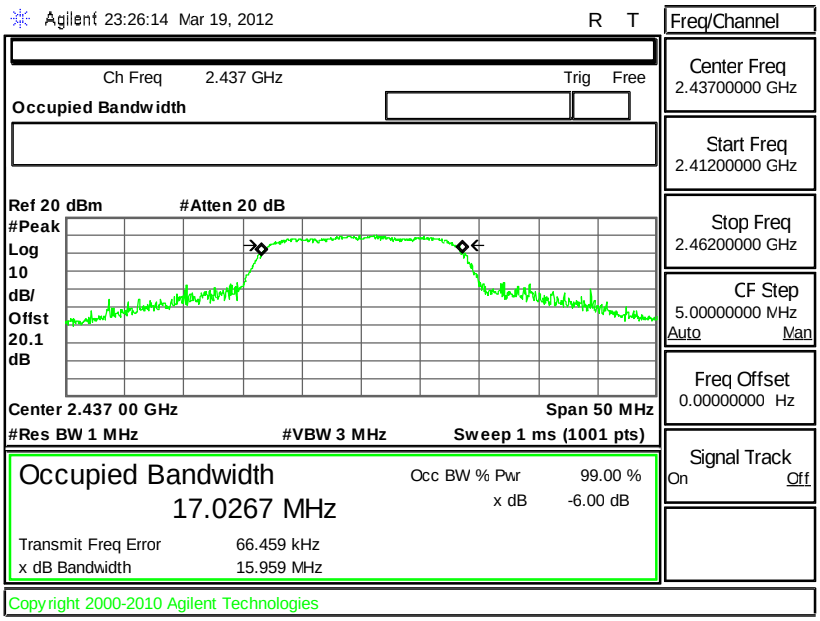
Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	16.9905	Pass
06	2437	17.0267	Pass
11	2462	16.9979	Pass

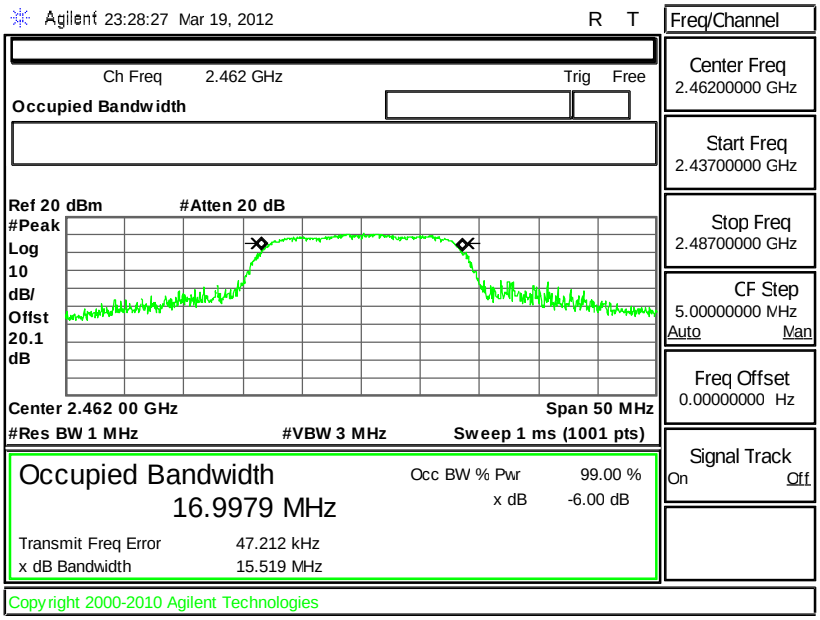
Mode 4 : 99% Occupied Bandwidth Plot on 802.11g Channel 01



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



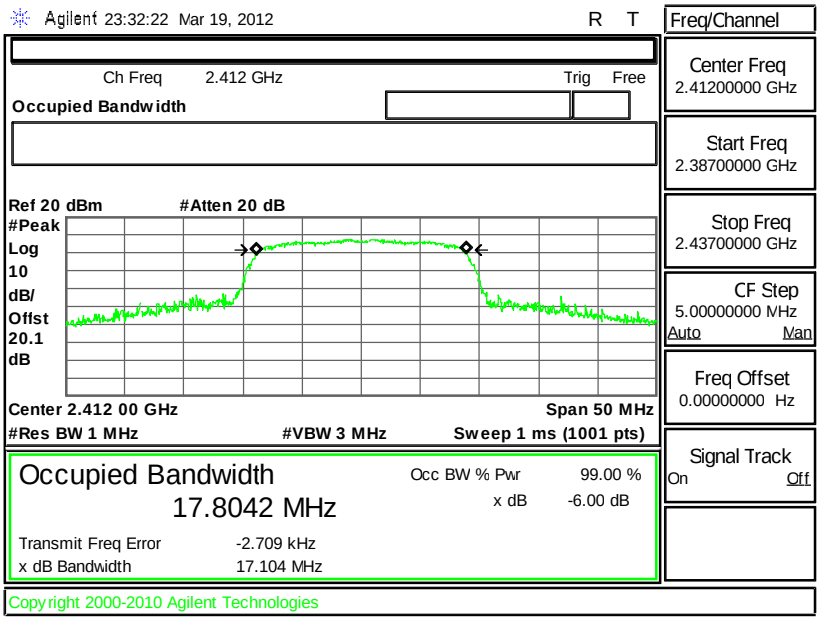
Mode 6 : 99% Occupied Bandwidth Plot on 802.11g Channel 11



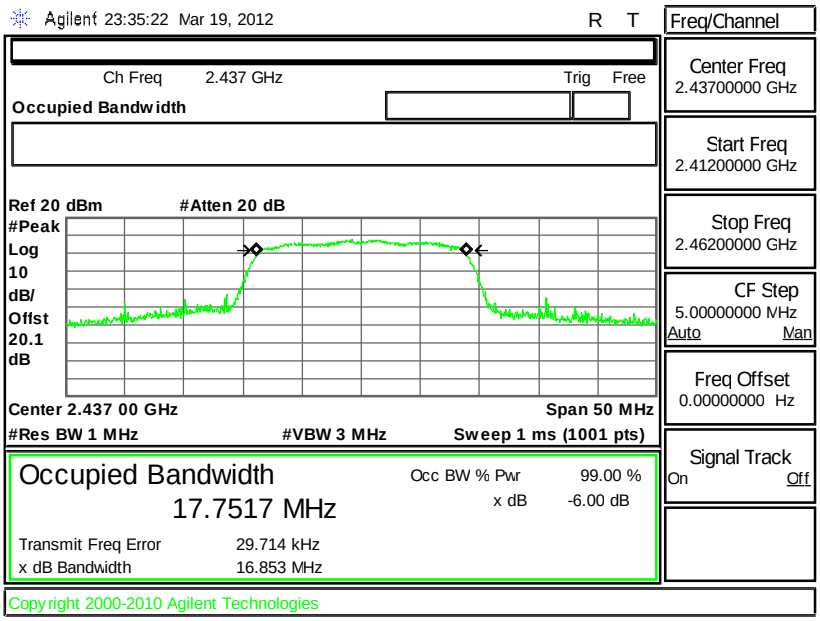
Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g/n (BW 20MHz) 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	17.8042	Pass
06	2437	17.7517	Pass
11	2462	17.7477	Pass

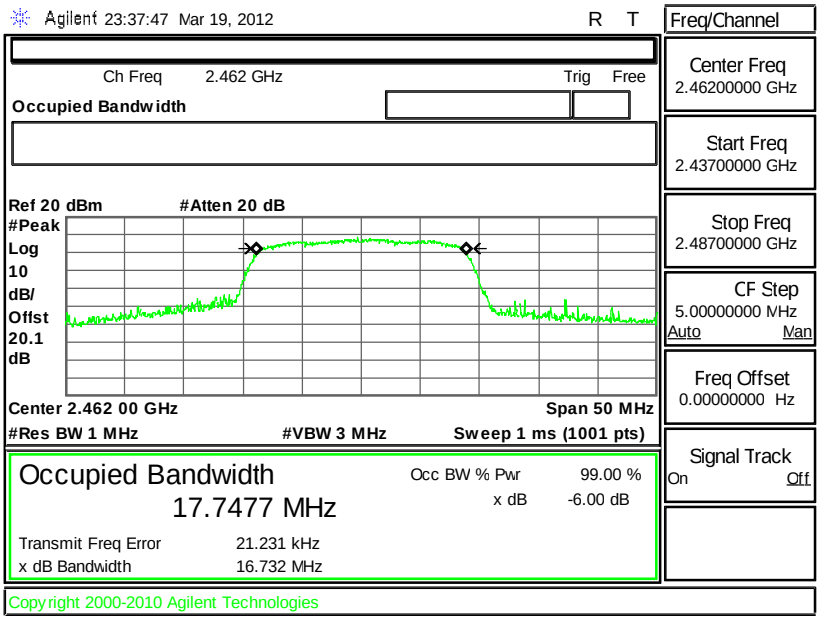
Mode 7 : 99% Occupied Bandwidth Plot on 802.11g/n(BW 20MHz) Channel 01



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.

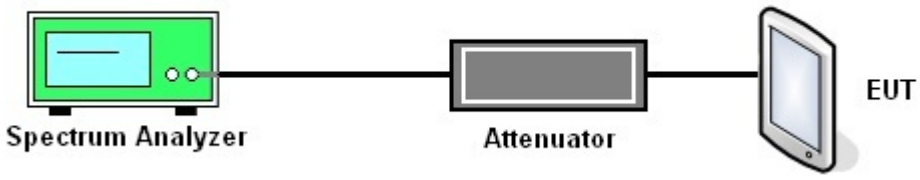
3.2.2 Measuring Instruments

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

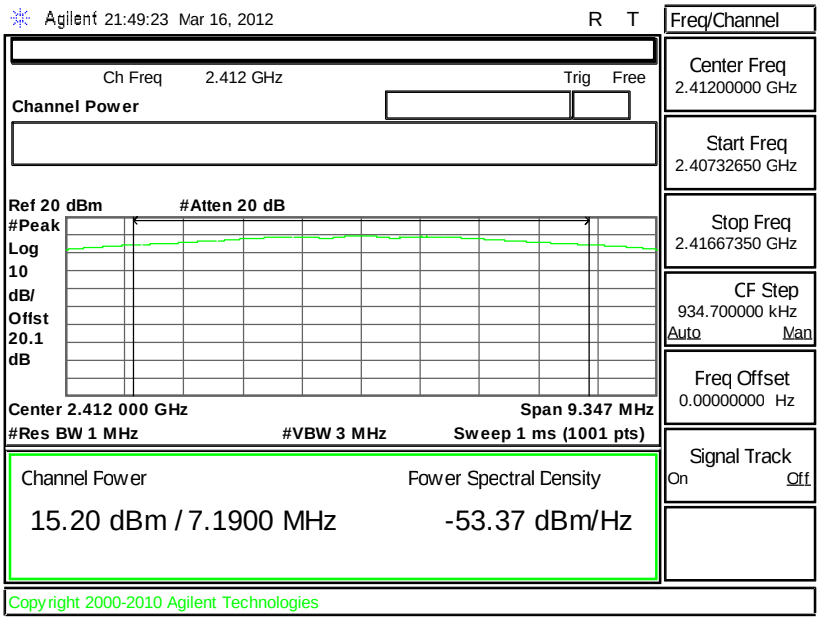


3.2.5 Test Result of Output Power

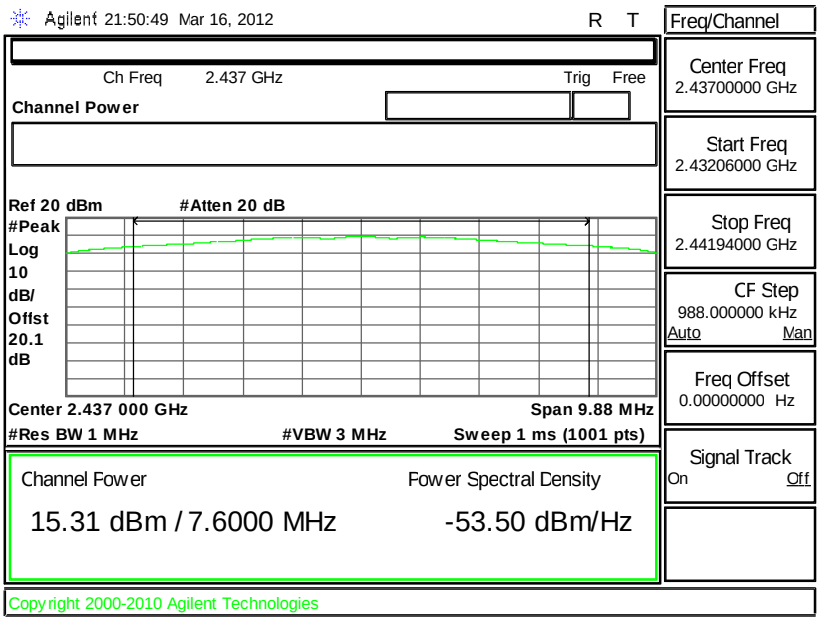
Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	15.20	30	Pass
06	2437	15.31	30	Pass
11	2462	15.42	30	Pass

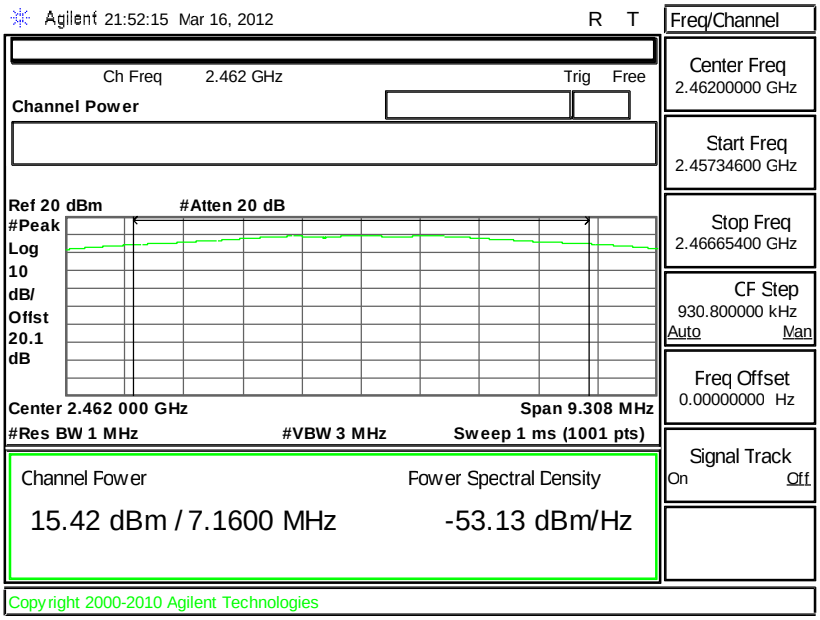
Mode 1 : Output Power Plot on 802.11b Channel 01



Mode 2 : Output Power Plot on 802.11b Channel 06



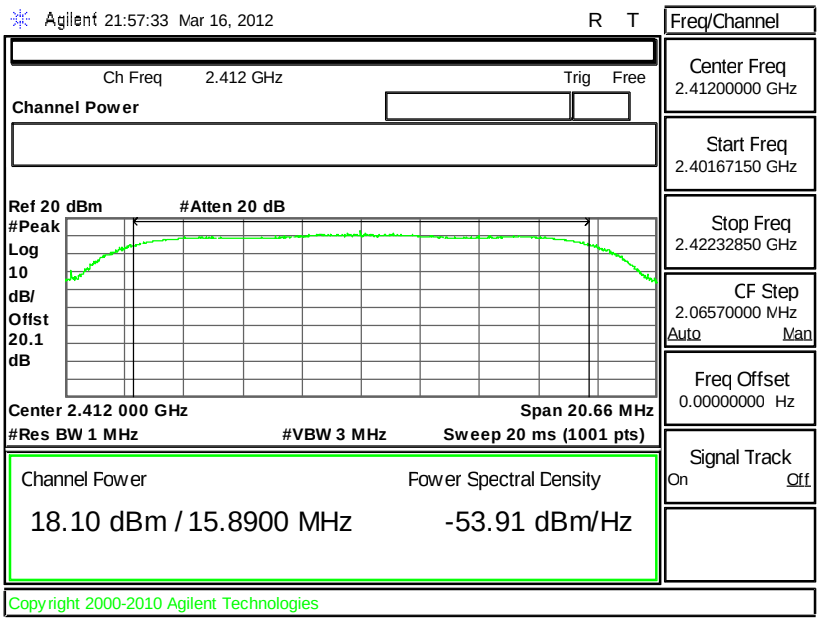
Mode 3 : Output Power Plot on 802.11b Channel 11



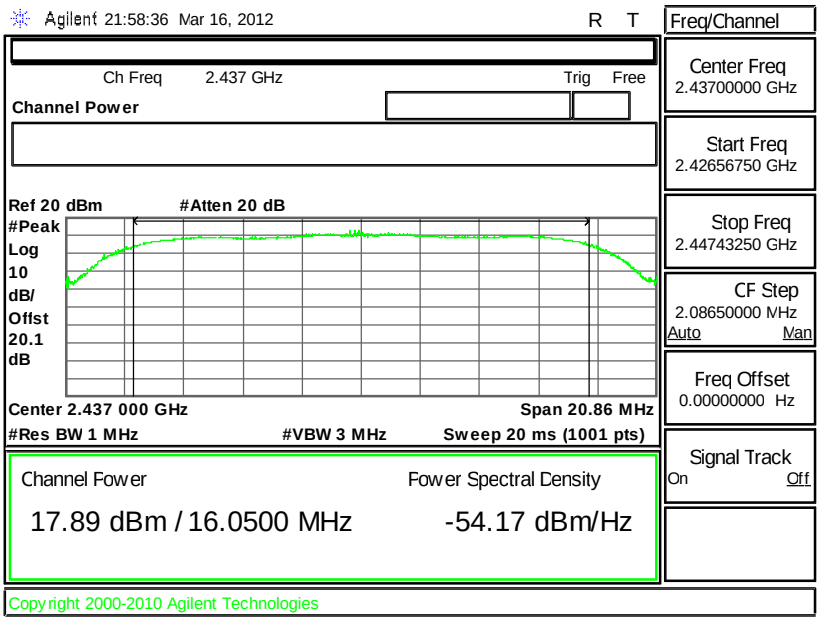
Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	18.10	30	Pass
06	2437	17.89	30	Pass
11	2462	18.38	30	Pass

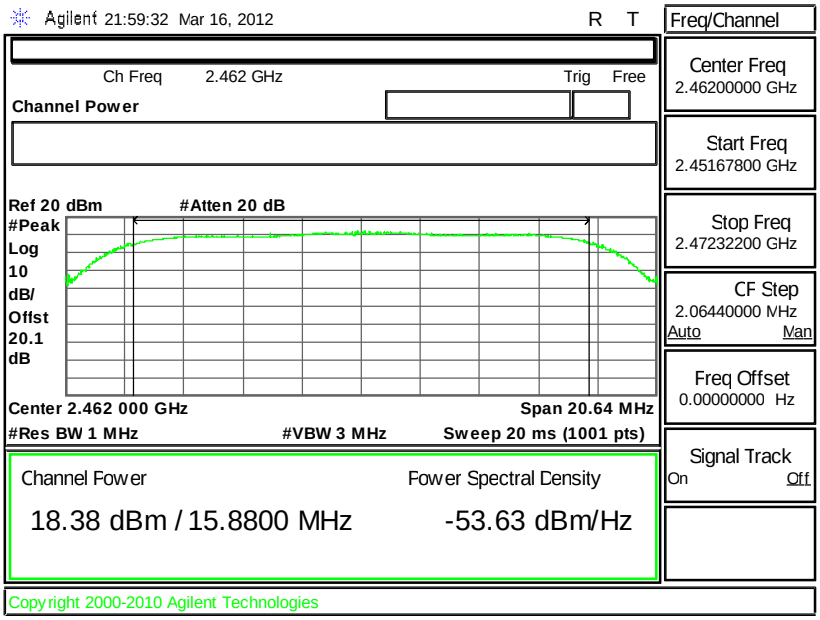
Mode 4 : Output Power Plot on 802.11g Channel 01



Mode 5 : Output Power Plot on 802.11g Channel 06



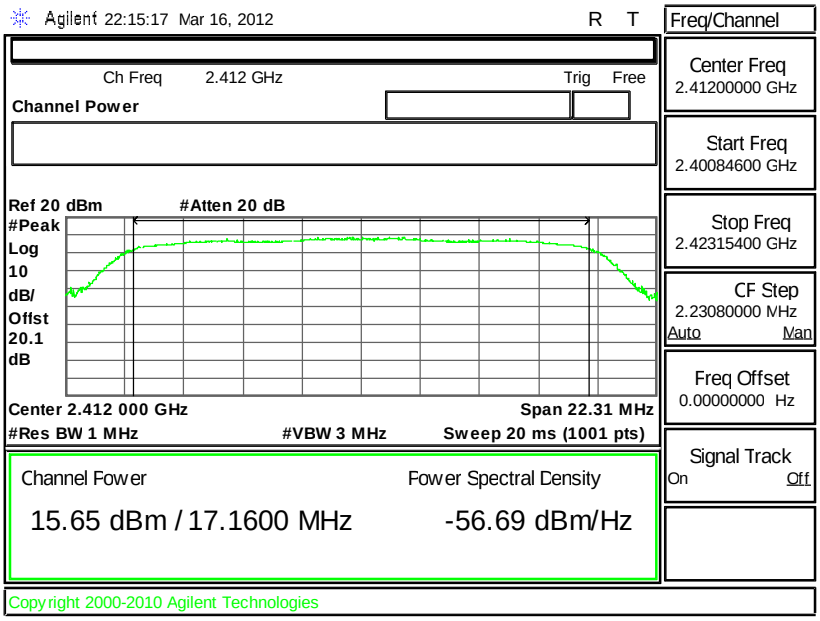
Mode 6 : Output Power Plot on 802.11g Channel 11



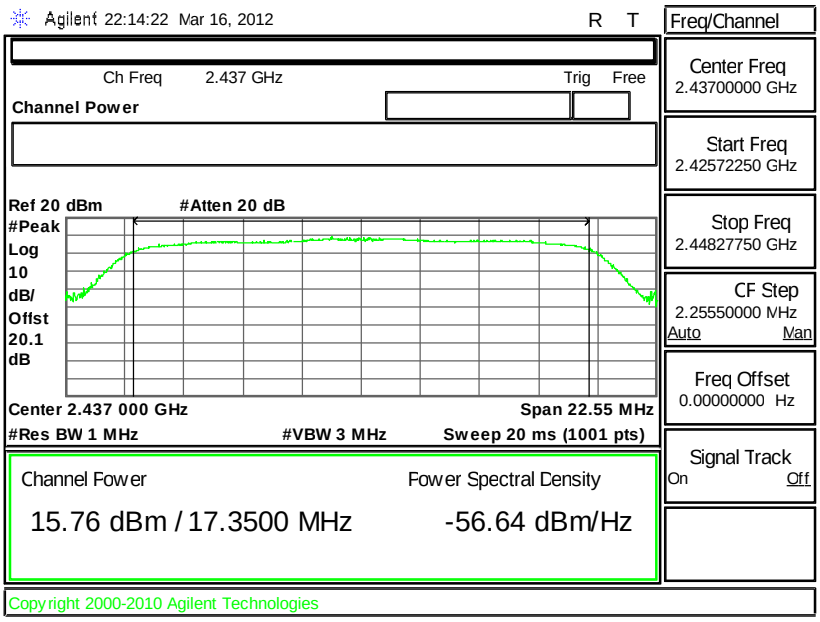
Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g/n (BW 20MHz) Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	15.65	30	Pass
06	2437	15.76	30	Pass
11	2462	16.04	30	Pass

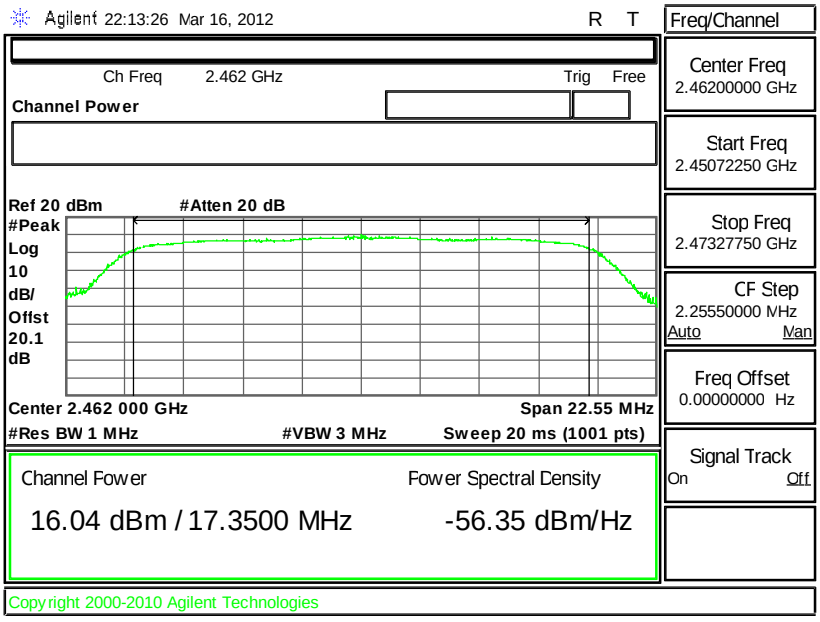
Mode 7: Output Power Plot on 802.11g/n (BW 20MHz) channel 01



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

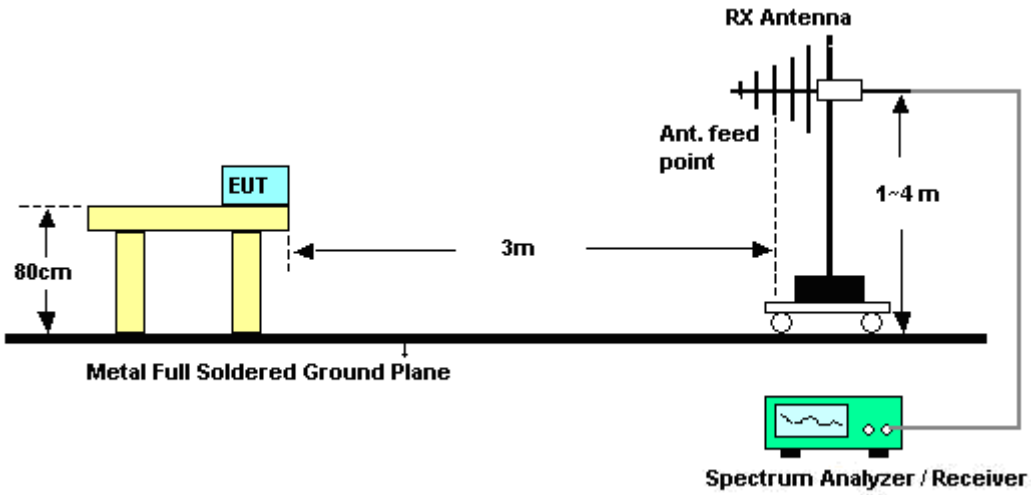
See list of measuring instruments of this test report.

3.3.3 Test Procedures

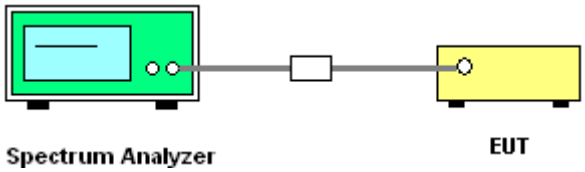
1. The testing follows the guidelines in ANSI C63.4-2003 and the Measurement Procedure of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v01.
2. Conducted emission test: Set RBW = 100 KHz, Video bandwidth (VBW) ≥ RBW. Out of the authorized frequency band emissions must be at least 20 dB lower 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 :	21~25℃
Test Band :	802.11b	Relative Humidity :	51~55%
Test Channel :	01	Test Engineer :	Wii Chang

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
2388.85	55.11	-18.89	74	52.37	31.9	5.4	34.56	100	54	Peak
2388.85	43.19	-10.81	54	40.45	31.9	5.4	34.56	100	54	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2386.57	49.14	-24.86	74	46.4	31.9	5.4	34.56	100	285	Peak
2386.57	37.41	-16.59	54	34.67	31.9	5.4	34.56	100	285	Average

Test Mode :	Mode 3	Temperature :	21~25℃
Test Band :	802.11b	Relative Humidity :	51~55%
Test Channel :	11	Test Engineer :	Wii Chang

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
2484.61	57.65	-16.35	74	54.7	31.98	5.52	34.55	100	60	Peak
2484.61	49.82	-4.18	54	46.87	31.98	5.52	34.55	100	60	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
2489.93	57.55	-16.45	74	54.58	32	5.52	34.55	100	285	Peak
2489.93	49.48	-4.52	54	46.51	32	5.52	34.55	100	285	Average

Test Mode :	Mode 4	Temperature :	21~25℃
Test Band :	802.11g	Relative Humidity :	51~55%
Test Channel :	01	Test Engineer :	Wii Chang

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
2389.42	65.16	-8.84	74	62.42	31.9	5.4	34.56	100	55	Peak
2389.42	46.85	-7.15	54	44.11	31.9	5.4	34.56	100	55	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	57.34	-16.66	74	54.6	31.9	5.4	34.56	100	295	Peak
2389.99	39.87	-14.13	54	37.13	31.9	5.4	34.56	100	295	Average

Test Mode :	Mode 6	Temperature :	21~25℃
Test Band :	802.11g	Relative Humidity :	51~55%
Test Channel :	11	Test Engineer :	Wii Chang

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
2483.66	70.96	-3.04	74	68.01	31.98	5.52	34.55	100	60	Peak
2483.66	49.46	-4.54	54	46.51	31.98	5.52	34.55	100	60	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
2484.61	66.01	-7.99	74	63.06	31.98	5.52	34.55	100	293	Peak
2484.61	45.16	-8.84	54	42.21	31.98	5.52	34.55	100	293	Average

Test Mode :	Mode 7	Temperature :	21~25℃
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	51~55%
Test Channel :	01	Test Engineer :	Wii Chang

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	61.58	-12.42	74	58.84	31.9	5.4	34.56	100	55	Peak
2389.99	45.5	-8.5	54	42.76	31.9	5.4	34.56	100	55	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
2389.42	55.84	-18.16	74	53.1	31.9	5.4	34.56	100	287	Peak
2389.42	38.37	-15.63	54	35.63	31.9	5.4	34.56	100	287	Average

Test Mode :	Mode 9	Temperature :	21~25℃
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	51~55%
Test Channel :	11	Test Engineer :	Wii Chang

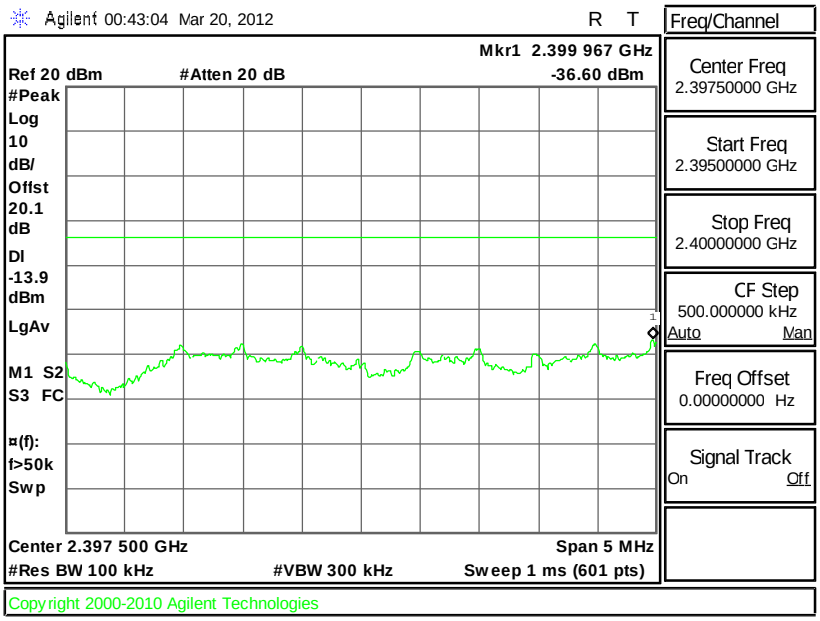
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2486.7	70.94	-3.06	74	67.99	31.98	5.52	34.55	100	61	Peak
2486.7	47.95	-6.05	54	45	31.98	5.52	34.55	100	61	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
2483.85	69.42	-4.58	74	66.47	31.98	5.52	34.55	100	284	Peak
2483.85	46.71	-7.29	54	43.76	31.98	5.52	34.55	100	284	Average

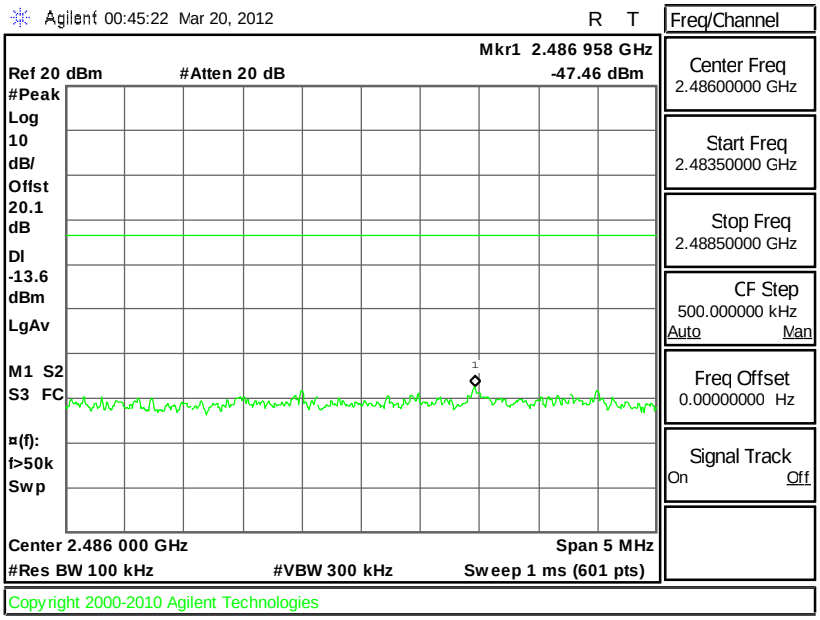
3.3.6 Test Plots of Conducted Band Edges

Test Mode :	Mode 1 and 3	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Book Lin

Low Band Edge Plot on 802.11b Channel 01

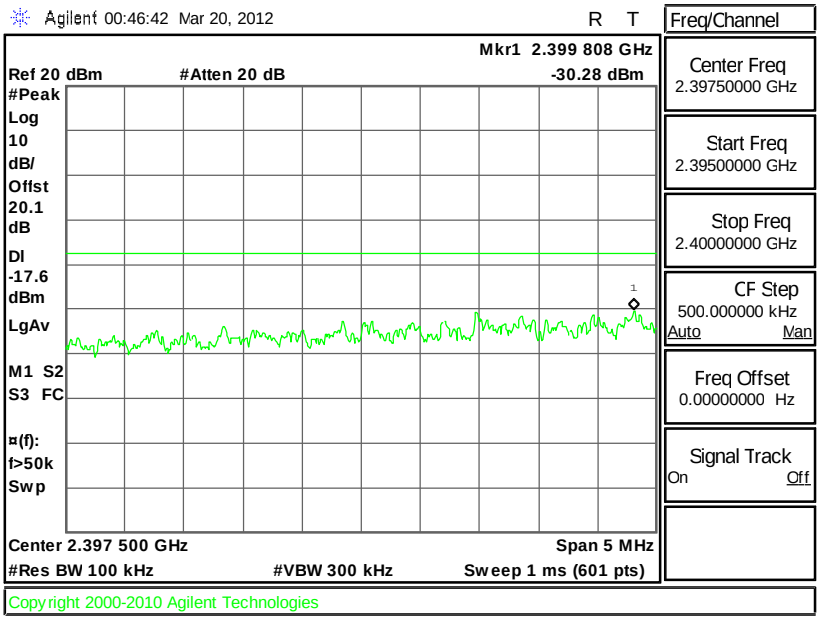


High Band Edge Plot on 802.11b Channel 11

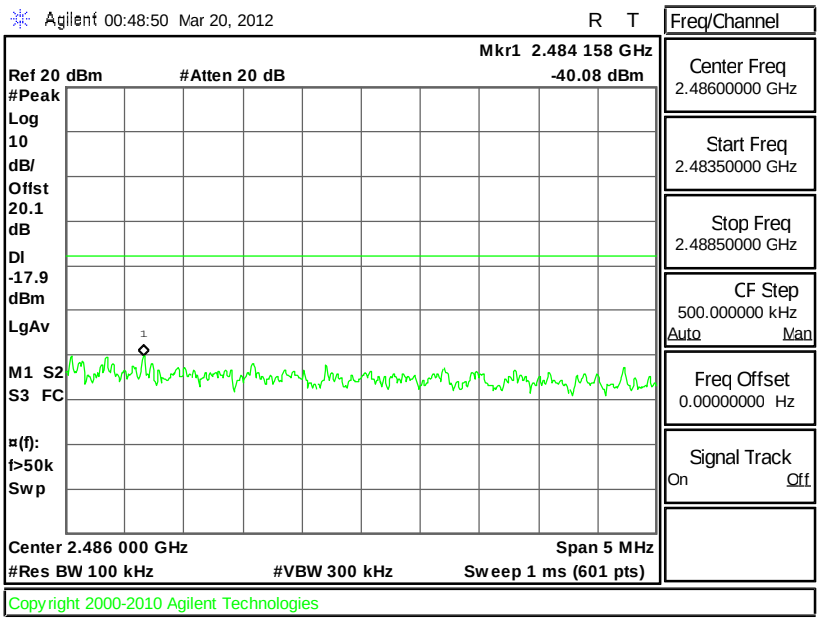


Test Mode :	Mode 4 and 6	Temperature :	24~26℃
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Book Lin

Low Band Edge Plot on 802.11g Channel 01

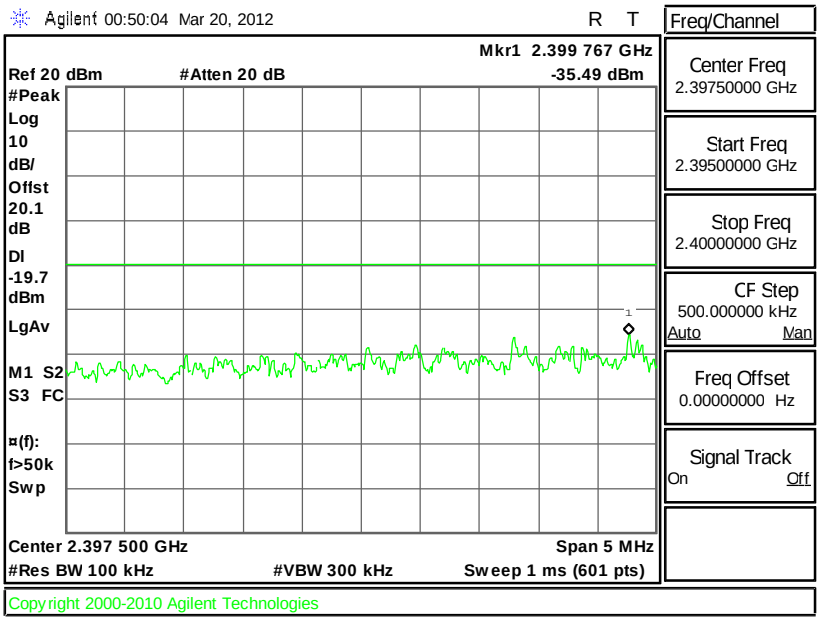


High Band Edge Plot on 802.11g Channel 11

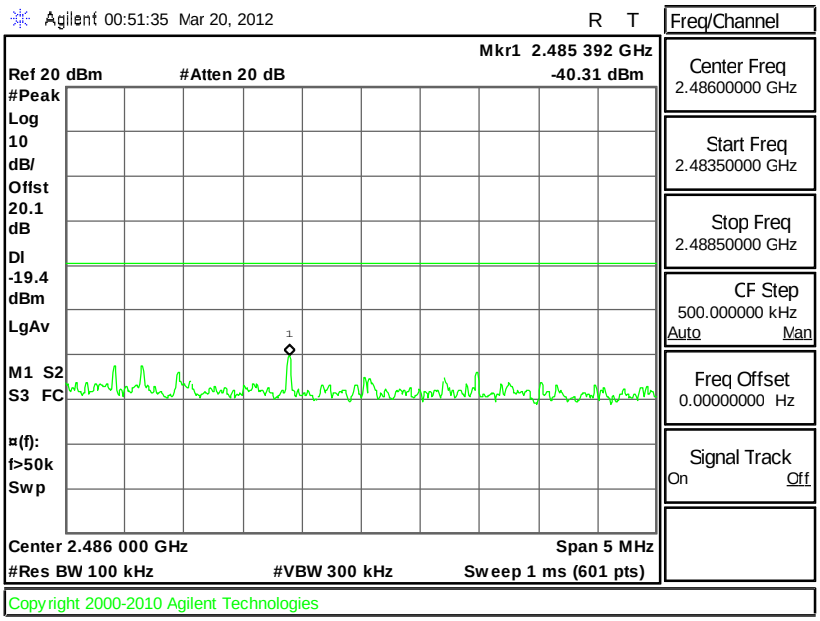


Test Mode :	Mode 7 and 9	Temperature :	24~26℃
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Book Lin

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.

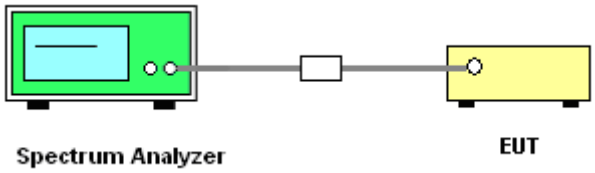
3.4.2 Measuring Instruments

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) ≥ 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.

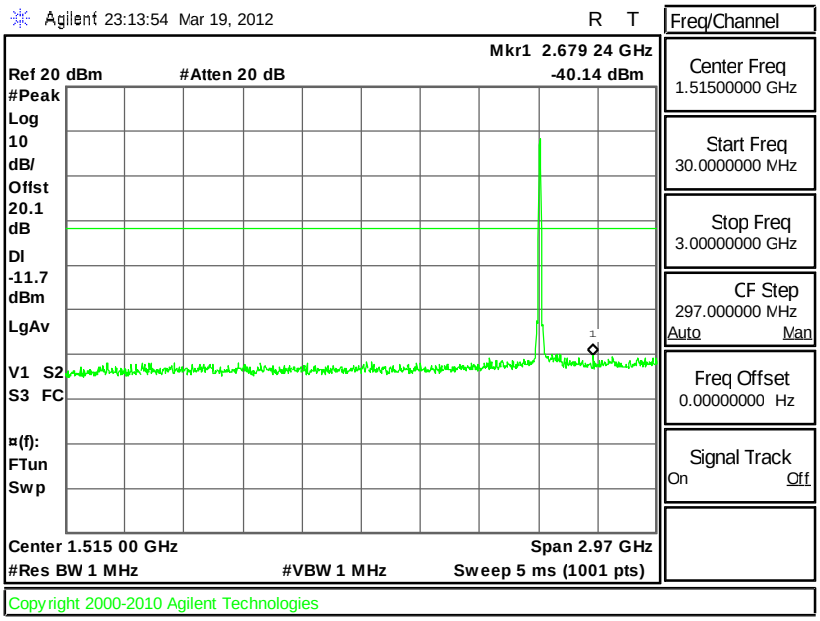
3.4.4 Test Setup



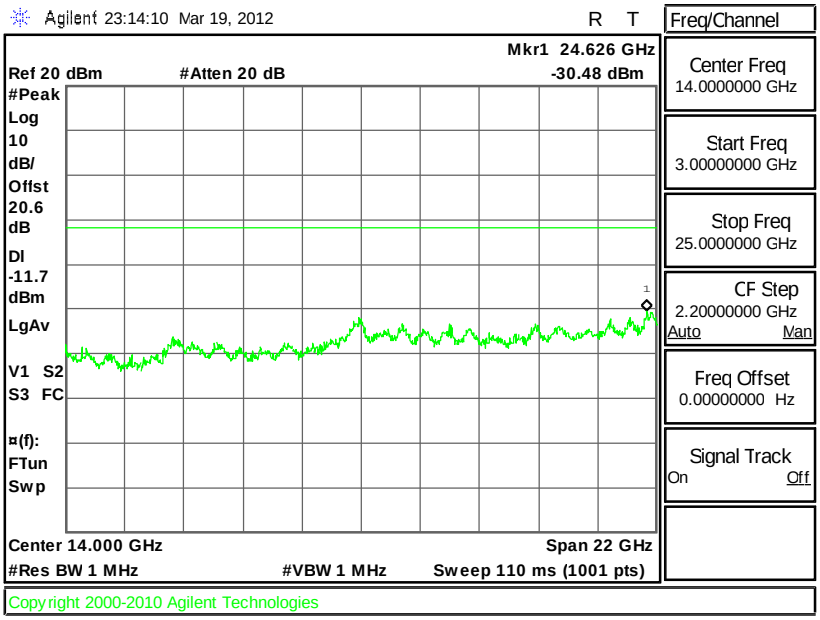
3.4.5 Test Plots of Spurious Emission

Test Mode :	Mode 1	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Book Lin

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

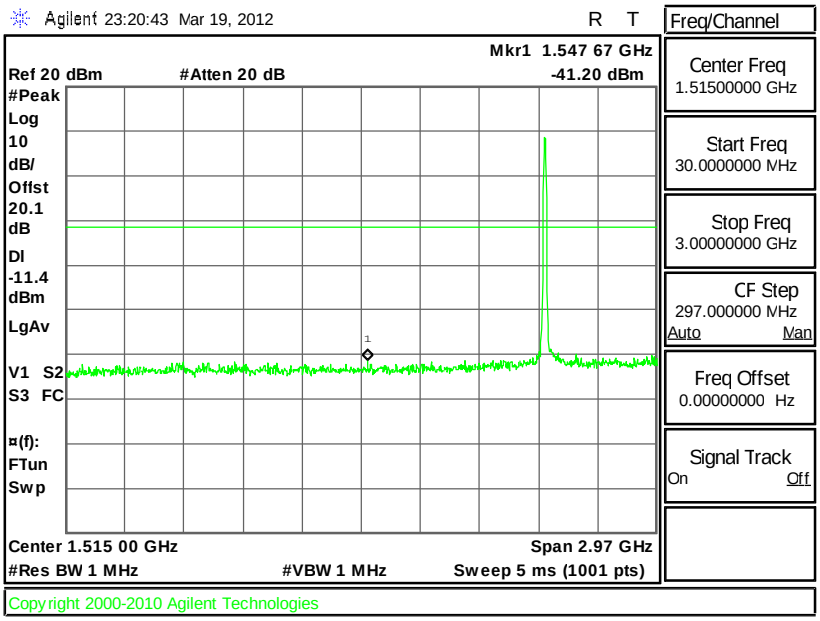


Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

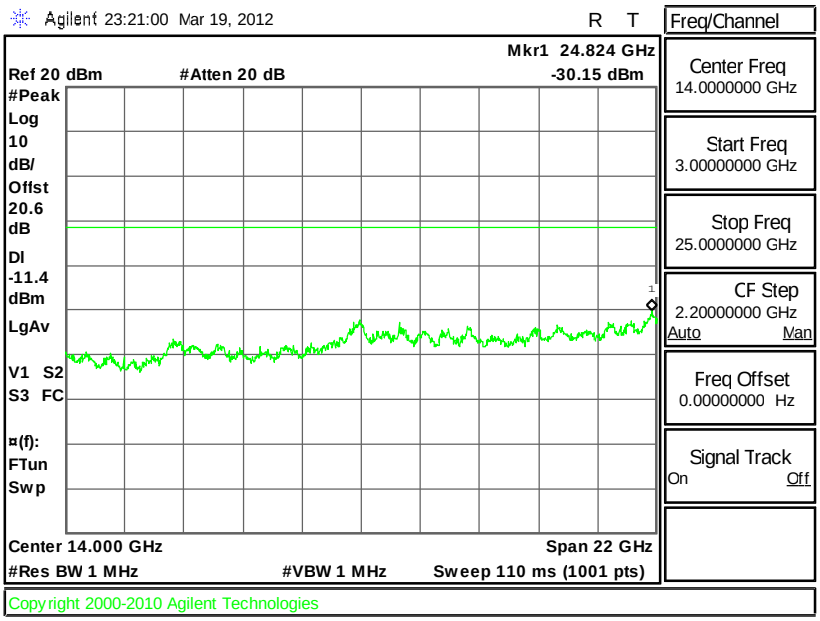


Test Mode :	Mode 2	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Book Lin

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

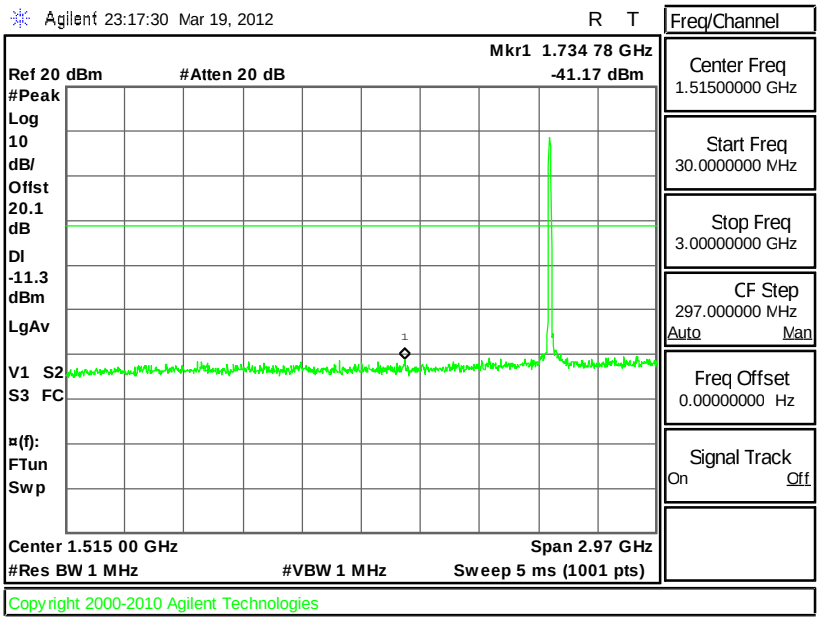


Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

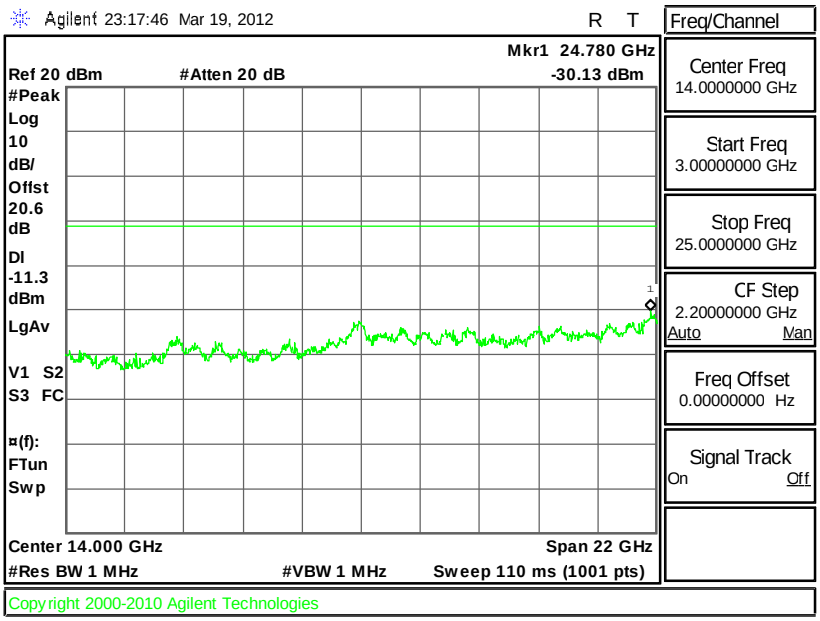


Test Mode :	Mode 3	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Book Lin

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

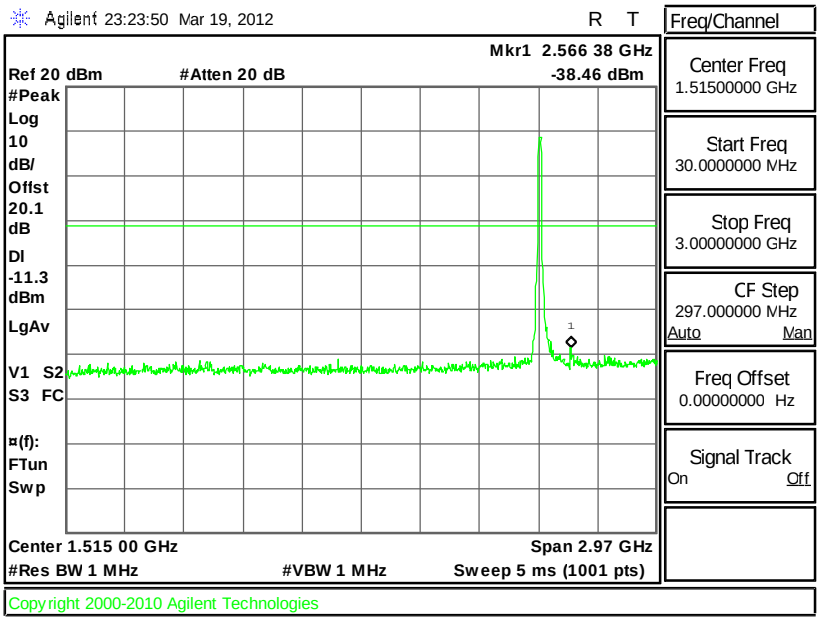


Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

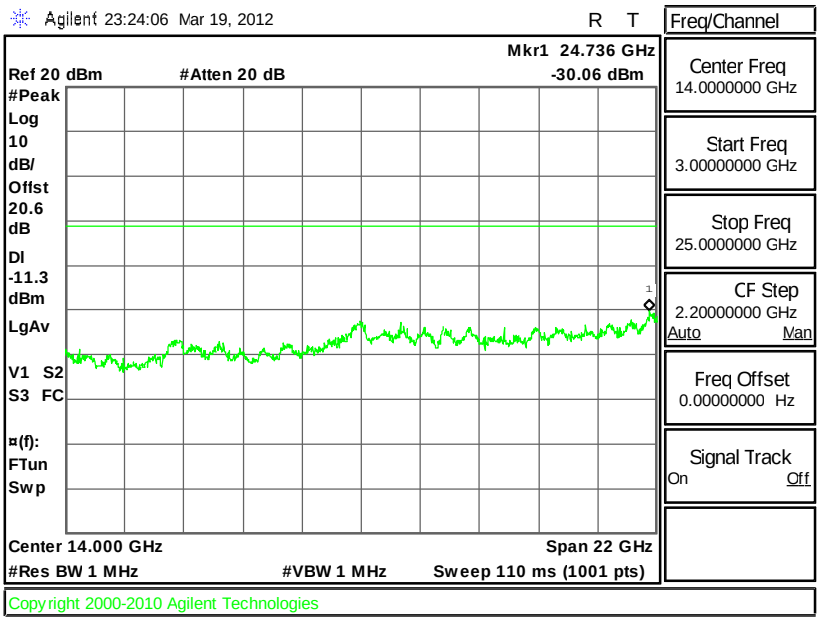


Test Mode :	Mode 4	Temperature :	24~26℃
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Book Lin

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

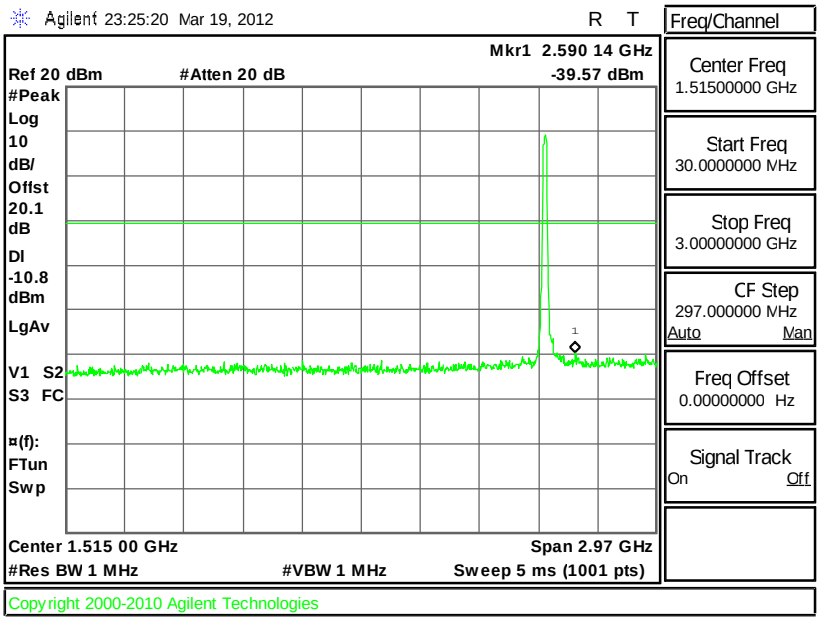


Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

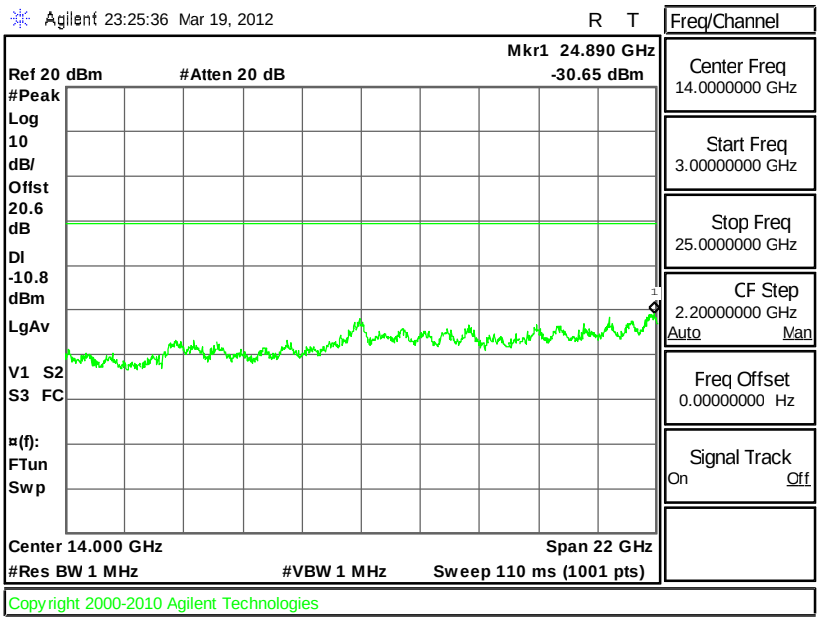


Test Mode :	Mode 5	Temperature :	24~26
Test Band :	802.11g	Relative Humidity :	50~53
Test Channel :	06	Test Engineer :	Book Lin

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

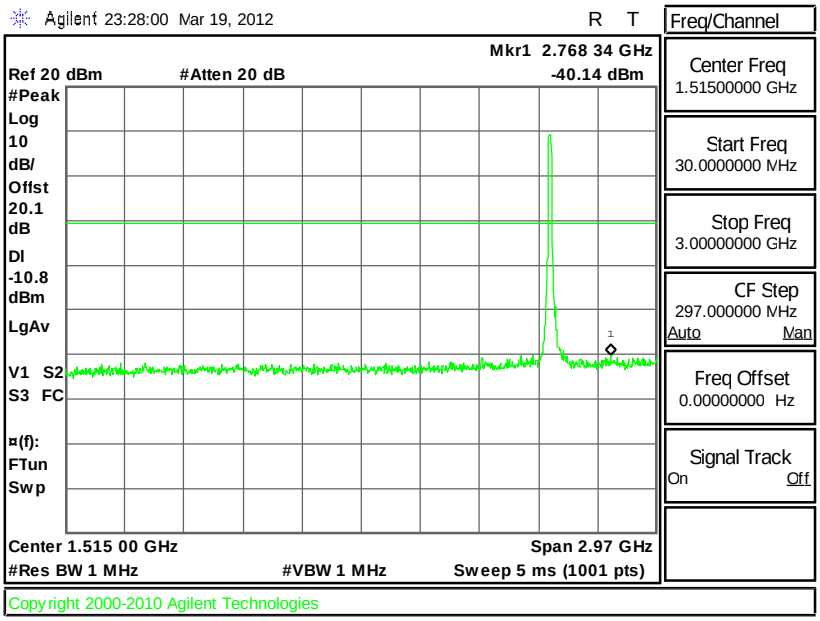


Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

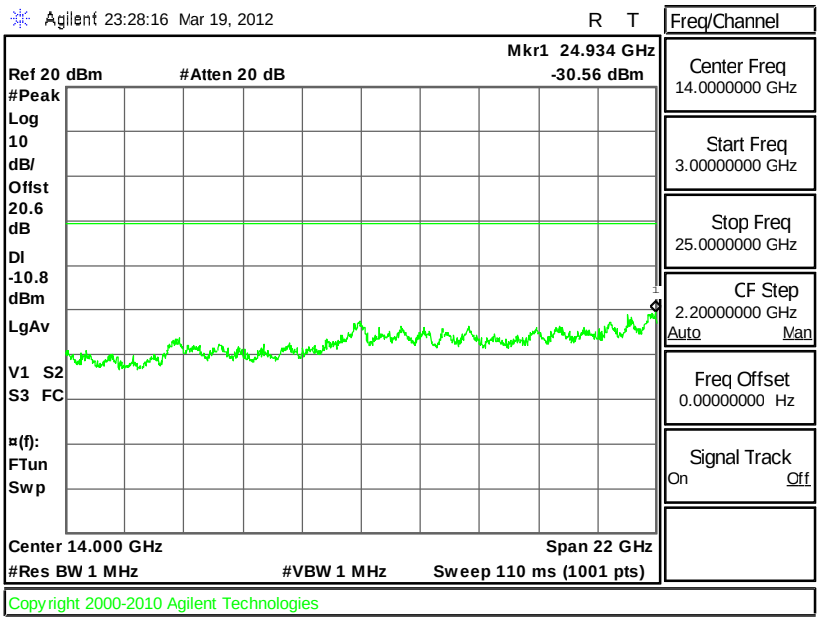


Test Mode :	Mode 6	Temperature :	24~26℃
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Book Lin

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

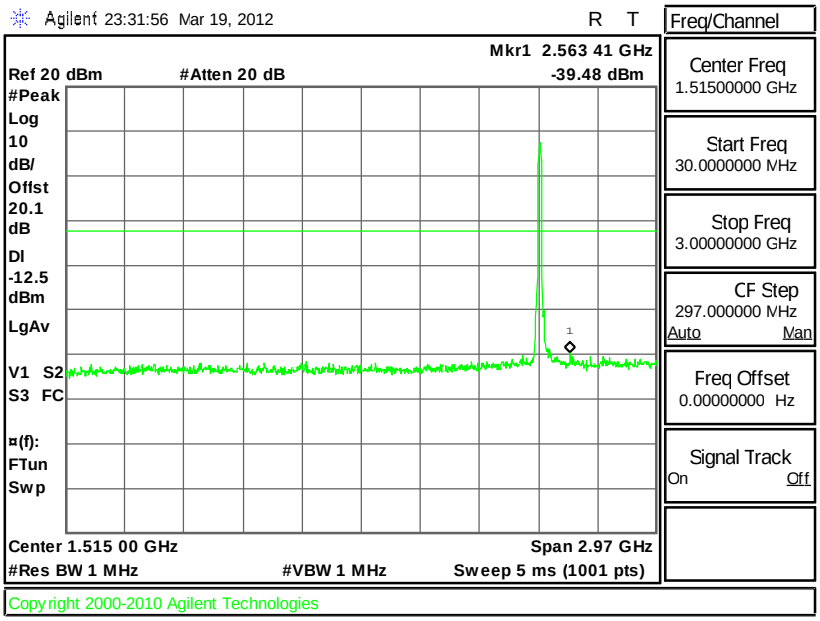


Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

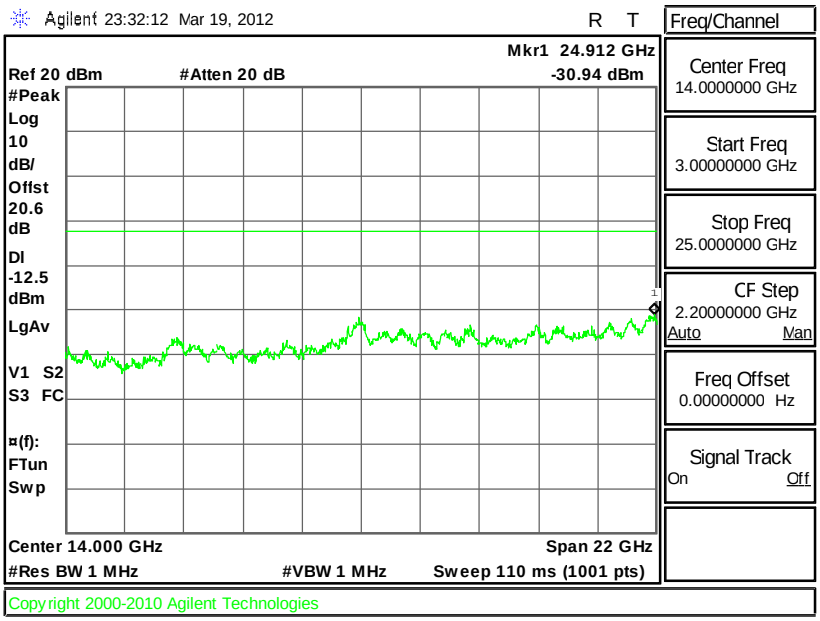


Test Mode :	Mode 7	Temperature :	24~26℃
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Book Lin

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

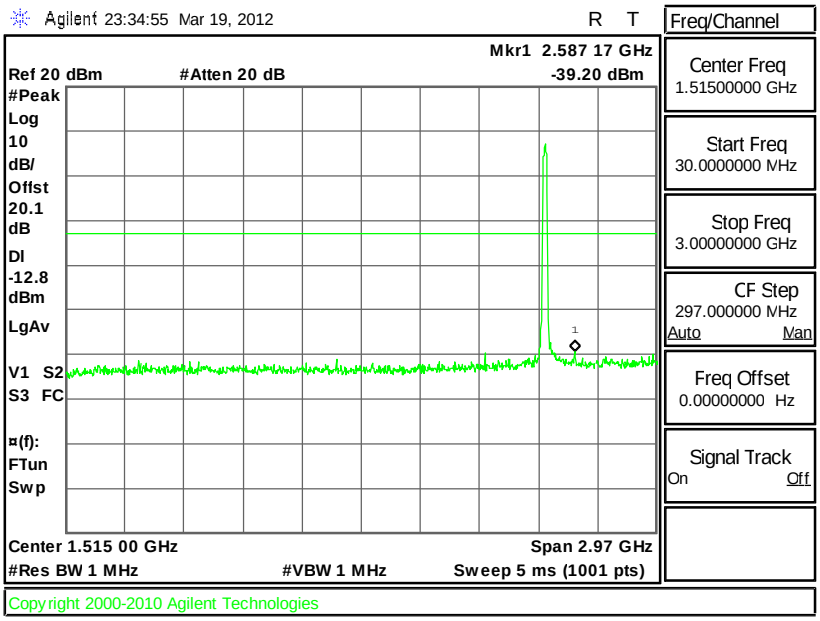


Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

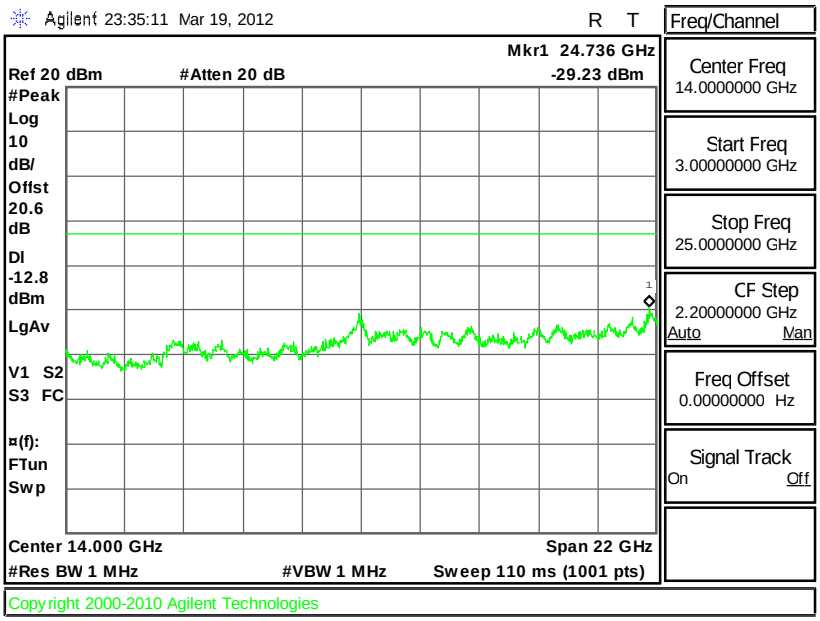


Test Mode :	Mode 8	Temperature :	24~26℃
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Book Lin

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

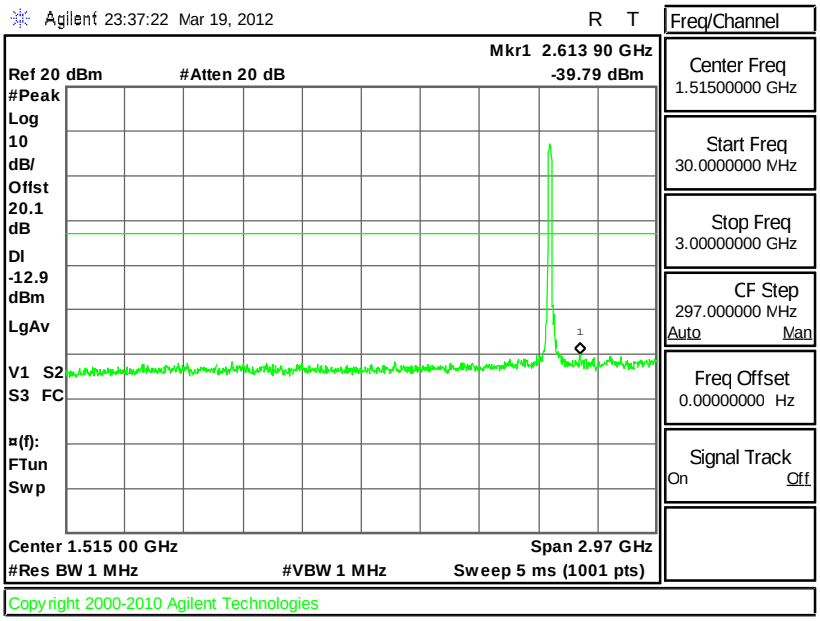


Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

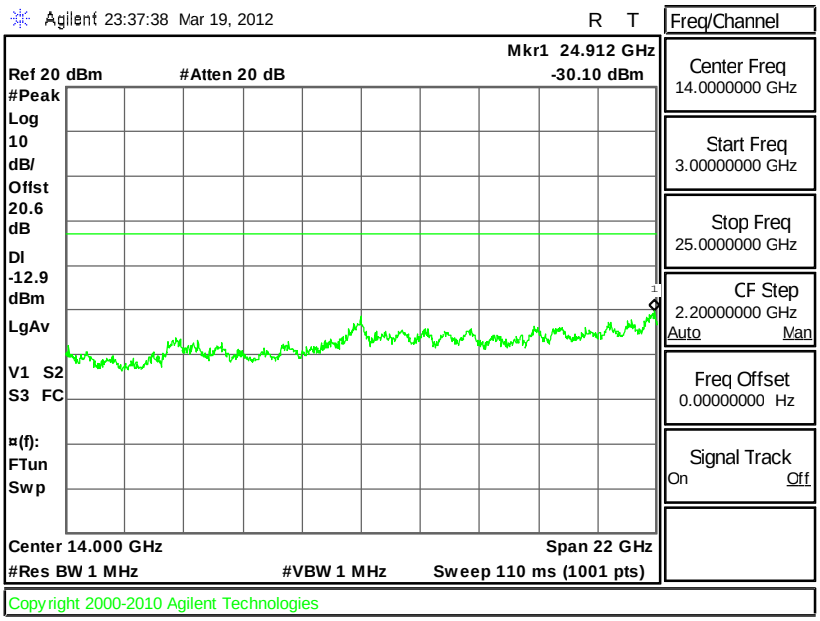


Test Mode :	Mode 9	Temperature :	24~26℃
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Book Lin

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.

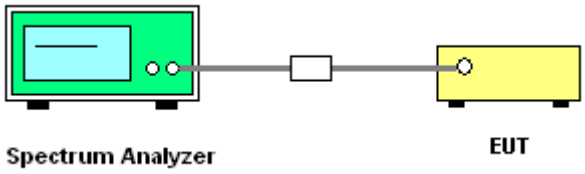
3.5.2 Measuring Instruments

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) >= 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 = 10log (3 kHz/100 kHz = -15.2 dB).

3.5.4 Test Setup



3.5.5 Test Result of Power Spectral Density

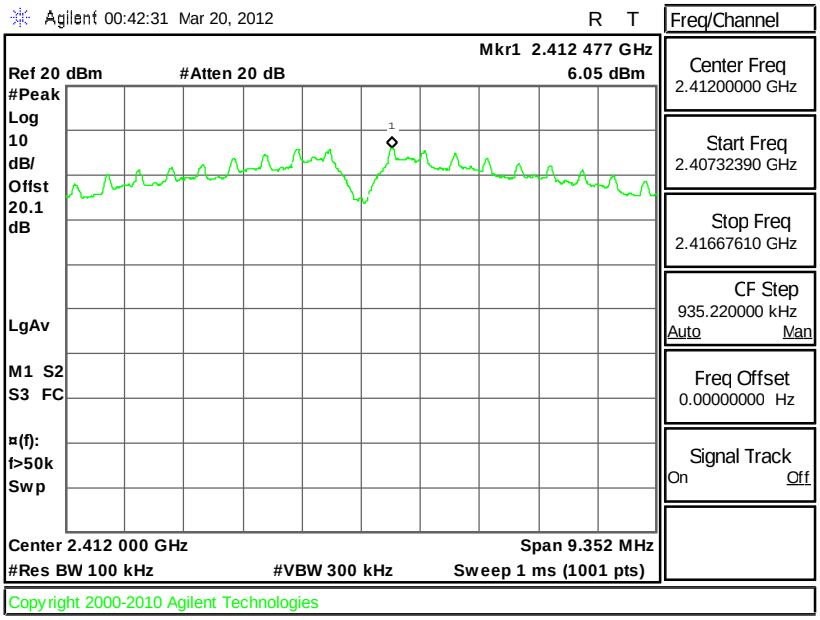
Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	6.05	-9.15	8	Pass
06	2437	6.10	-9.10	8	Pass
11	2462	6.42	-8.78	8	Pass

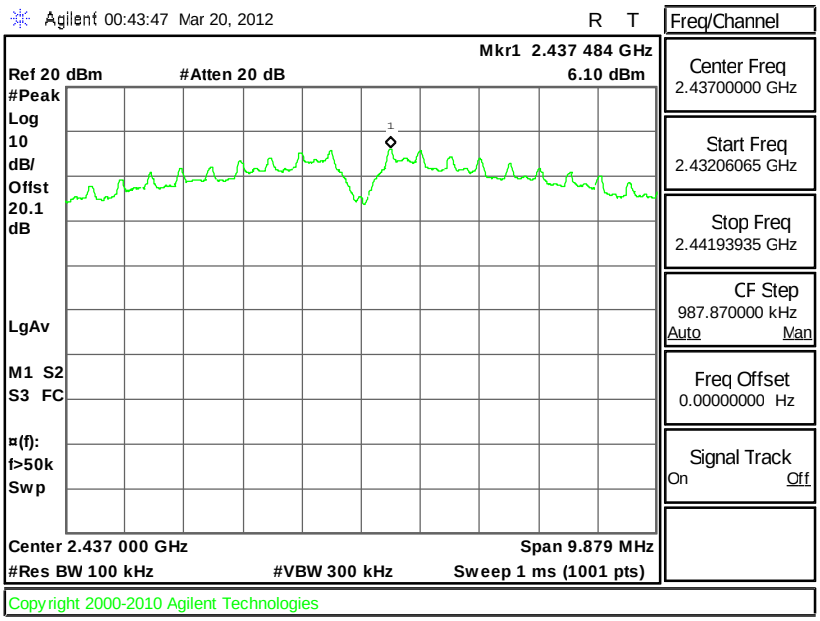
Note:

1. *Measured power density (dBm) has offset with cable loss.*
2. *BWCF (dB) = 10 log (3k/100k) = -15.2 dB*
3. *Power Density/ 3kHz (dBm)= Measured power density/ 100KHz (dBm) + BWCF (dB)*

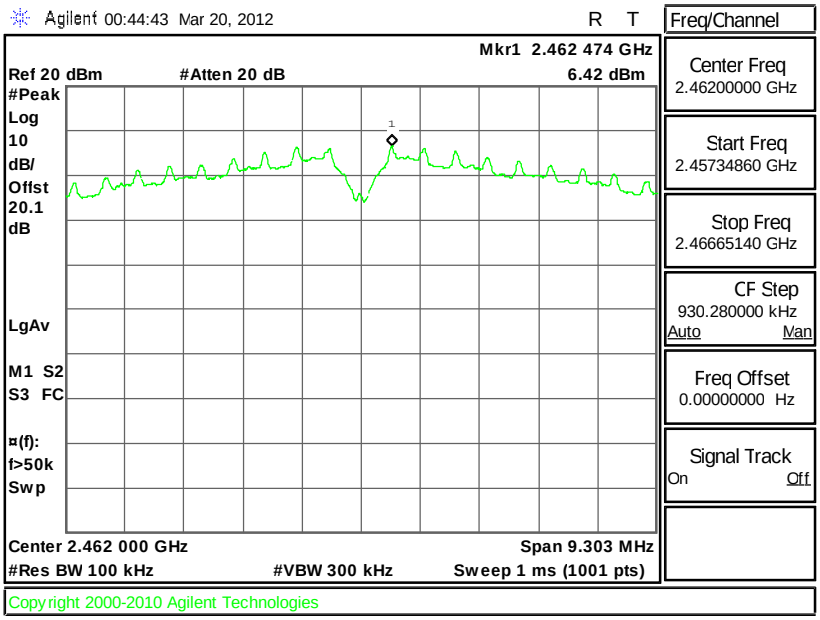
Mode 1 : PSD Plot on 802.11b Channel 01



Mode 2 : PSD Plot on 802.11b Channel 06



Mode 3 : PSD Plot on 802.11b Channel 11



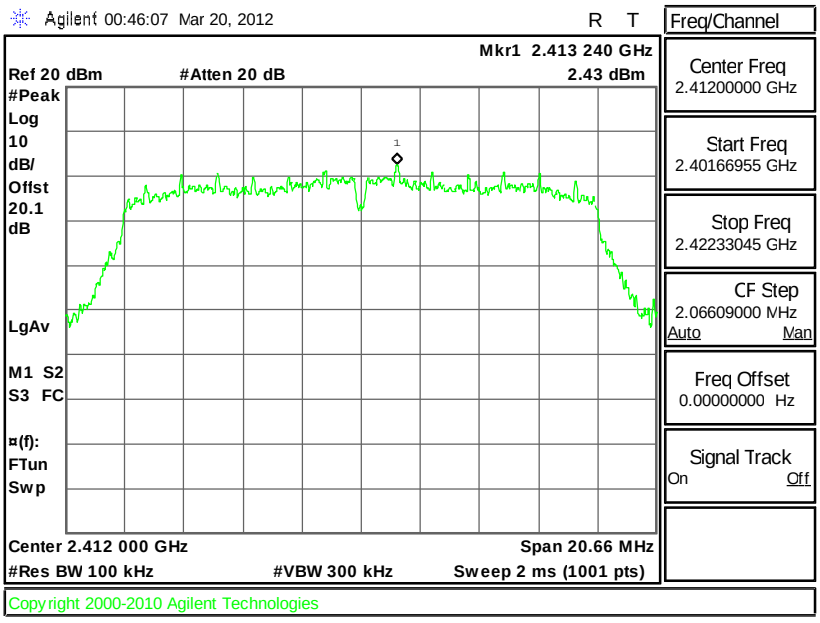
Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	2.43	-12.77	8	Pass
06	2437	2.52	-12.68	8	Pass
11	2462	2.14	-13.06	8	Pass

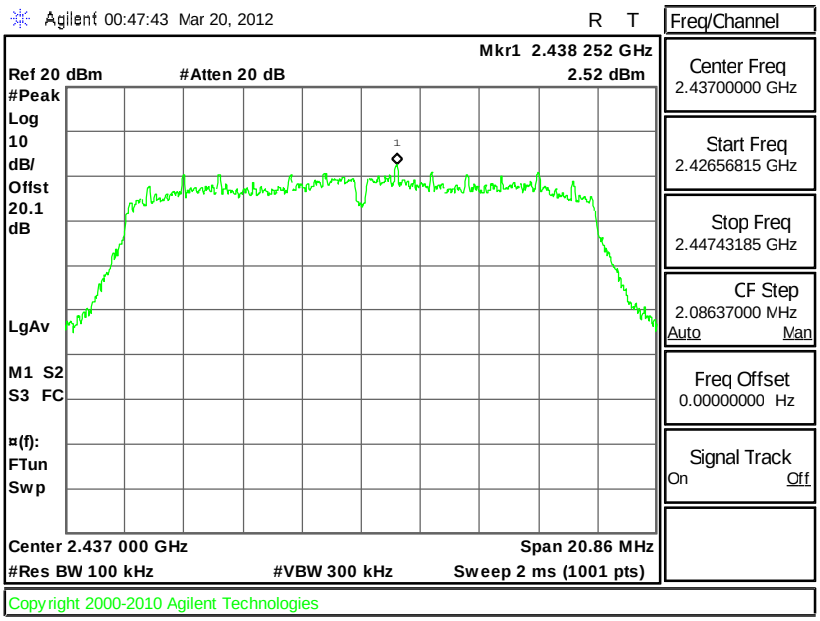
Note:

1. *Measured power density (dBm) has offset with cable loss.*
2. *BWCF (dB) = 10 log (3k/100k) = -15.2 dB*
3. *Power Density/ 3KHz (dBm)= Measured power density/ 100KHz (dBm) + BWCF (dB)*

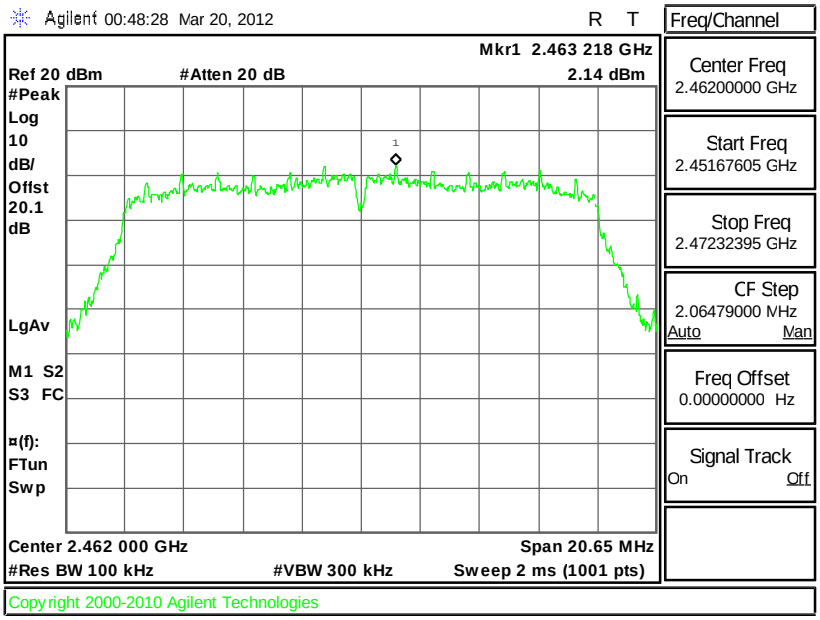
Mode 4 : PSD Plot on 802.11g Channel 01



Mode 5 : PSD Plot on 802.11g Channel 06



Mode 6 : PSD Plot on 802.11g Channel 11



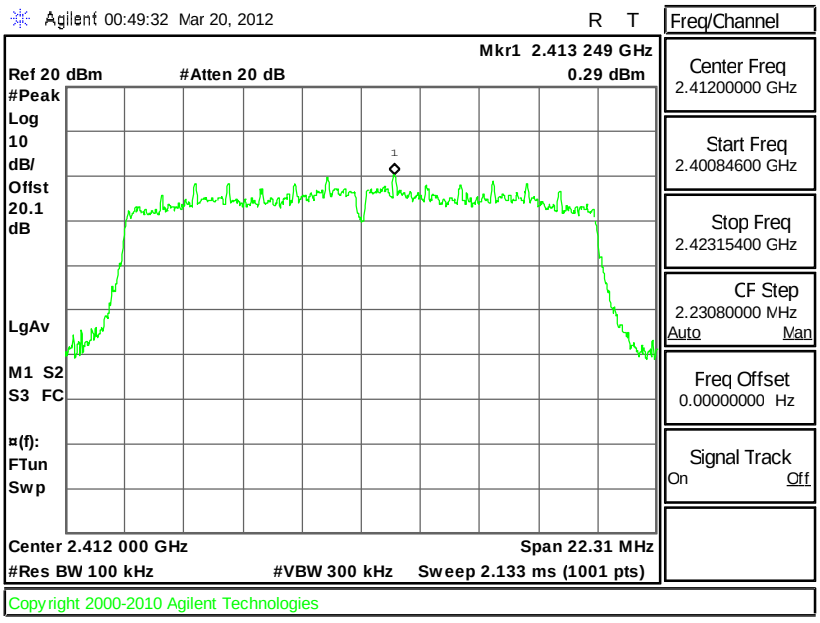
Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g/n (BW 20MHz) Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	0.29	-14.91	8	Pass
06	2437	0.15	-15.05	8	Pass
11	2462	0.58	-14.62	8	Pass

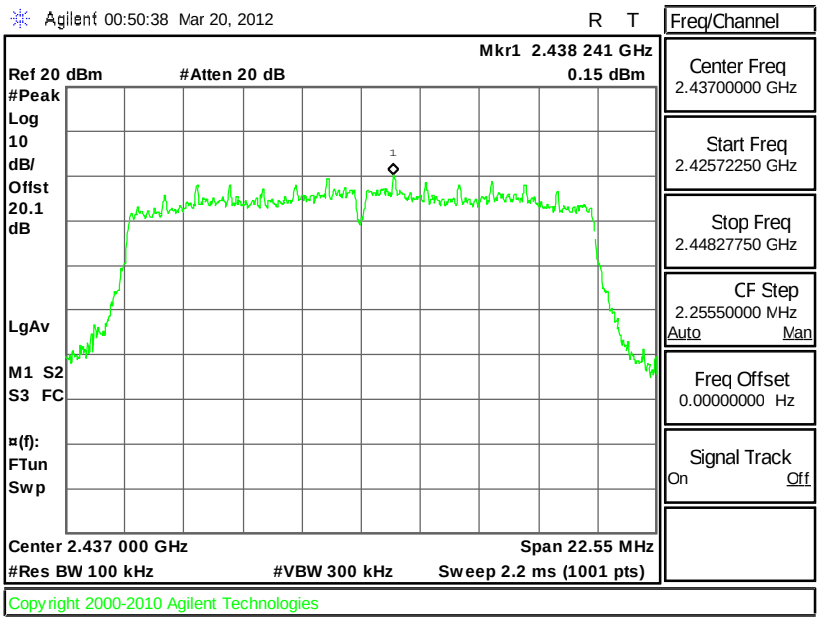
Note:

1. *Measured power density (dBm) has offset with cable loss.*
2. *BWCF (dB) = 10 log (3k/100k) = -15.2 dB*
3. *Power Density/ 3KHz (dBm)= Measured power density/ 100KHz (dBm) + BWCF (dB)*

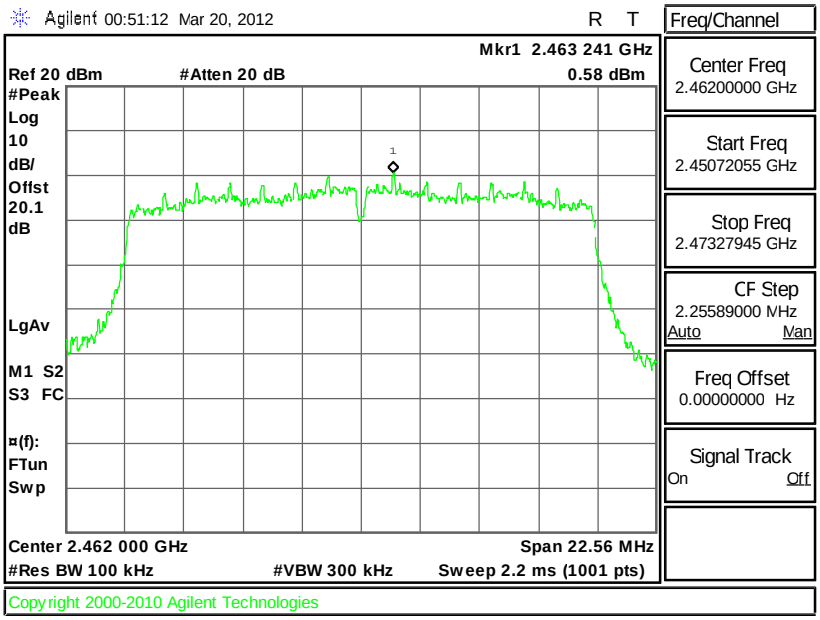
Mode 7 : PSD Plot on 802.11g/n (BW 20MHz) Channel 01



Mode 8 : PSD Plot on802.11g/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.

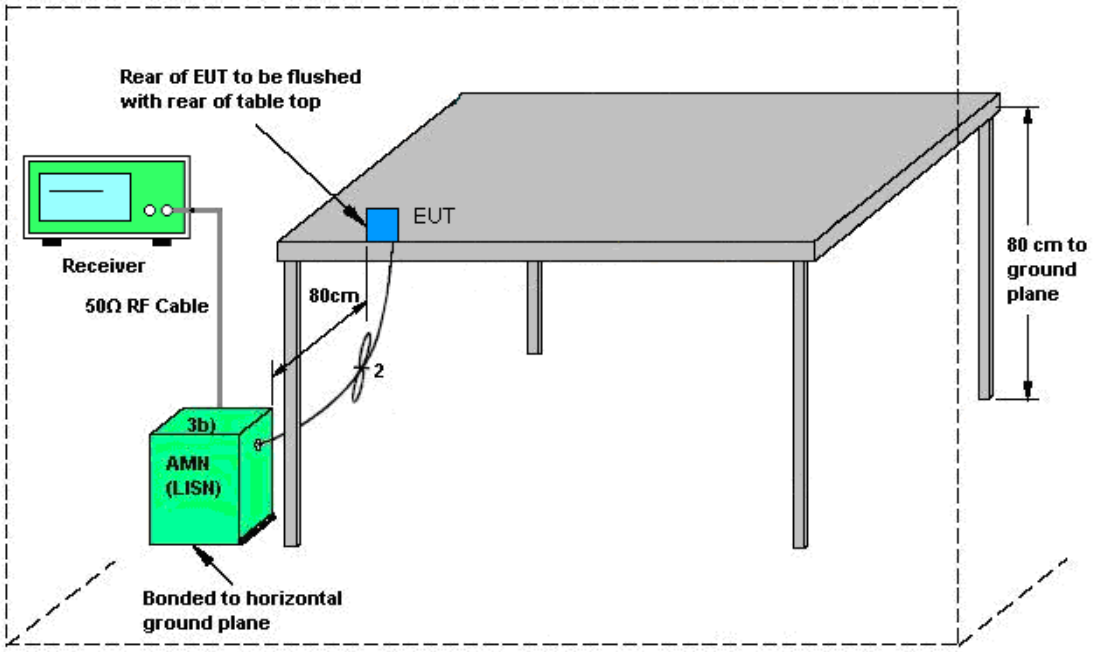
3.6.2 Measuring Instruments

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.

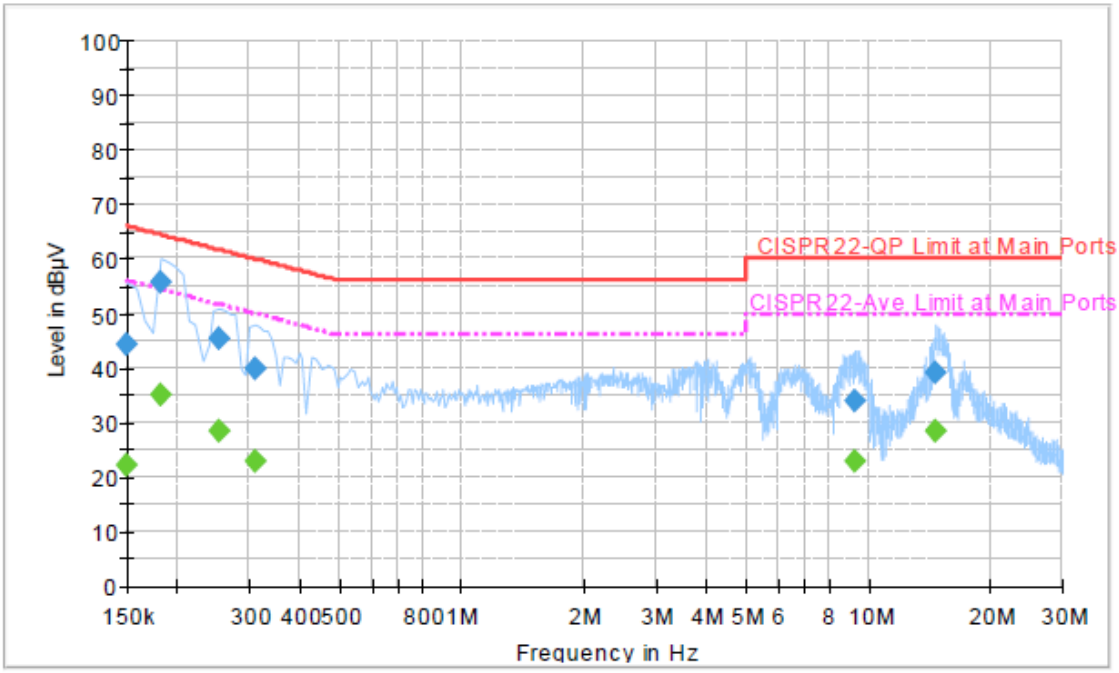
3.6.4 Test Setup



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

3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	21~23℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link + Bluetooth Link + GPS Rx + Adapter 1 + TC for Sample 2		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



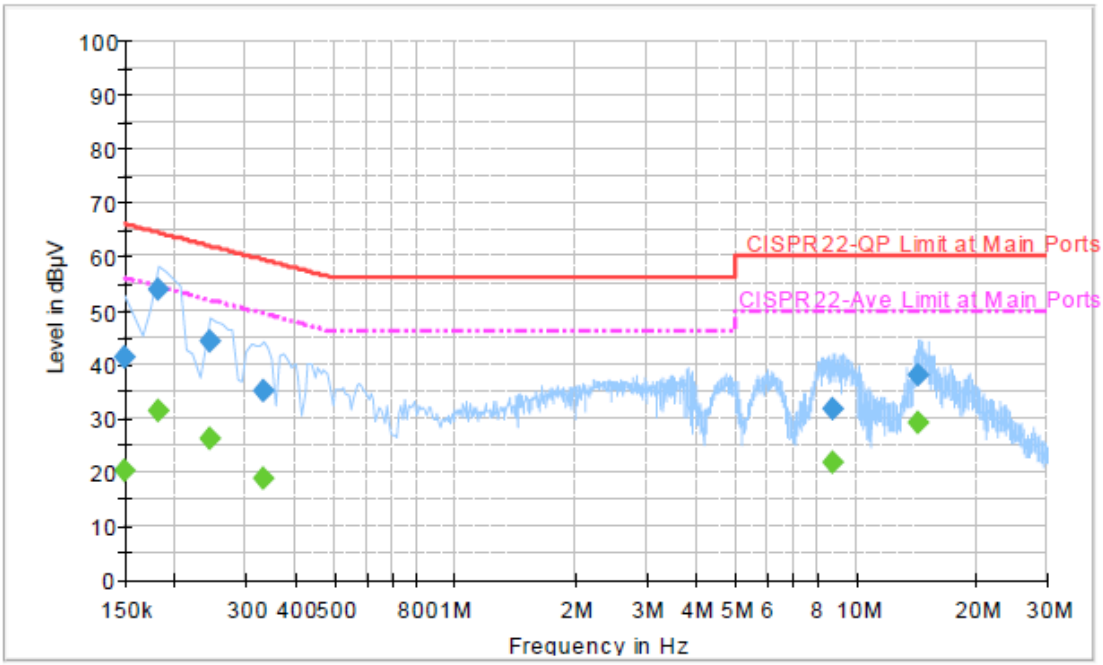
Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	44.1	Off	L1	19.4	21.9	66.0
0.182000	55.7	Off	L1	19.4	8.7	64.4
0.254000	45.2	Off	L1	19.3	16.4	61.6
0.310000	39.8	Off	L1	19.3	20.2	60.0
9.270000	34.0	Off	L1	19.5	26.0	60.0
14.614000	39.1	Off	L1	19.8	20.9	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	22.2	Off	L1	19.4	33.8	56.0
0.182000	35.1	Off	L1	19.4	19.3	54.4
0.254000	28.4	Off	L1	19.3	23.2	51.6
0.310000	22.9	Off	L1	19.3	27.1	50.0
9.270000	22.9	Off	L1	19.5	27.1	50.0
14.614000	28.4	Off	L1	19.8	21.6	50.0

Test Mode :	Mode 1	Temperature :	21~23℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link + Bluetooth Link + GPS Rx + Adapter 1 + TC for Sample 2		
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)
0.150000	41.3	Off	N	19.4	24.7	66.0
0.182000	53.7	Off	N	19.4	10.7	64.4
0.246000	44.3	Off	N	19.4	17.6	61.9
0.334000	35.2	Off	N	19.3	24.2	59.4
8.790000	31.8	Off	N	19.7	28.2	60.0
14.310000	37.9	Off	N	19.8	22.1	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	20.1	Off	N	19.4	35.9	56.0
0.182000	31.4	Off	N	19.4	23.0	54.4
0.246000	26.2	Off	N	19.4	25.7	51.9
0.334000	18.7	Off	N	19.3	30.7	49.4
8.790000	21.7	Off	N	19.7	28.3	50.0
14.310000	29.3	Off	N	19.8	20.7	50.0

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

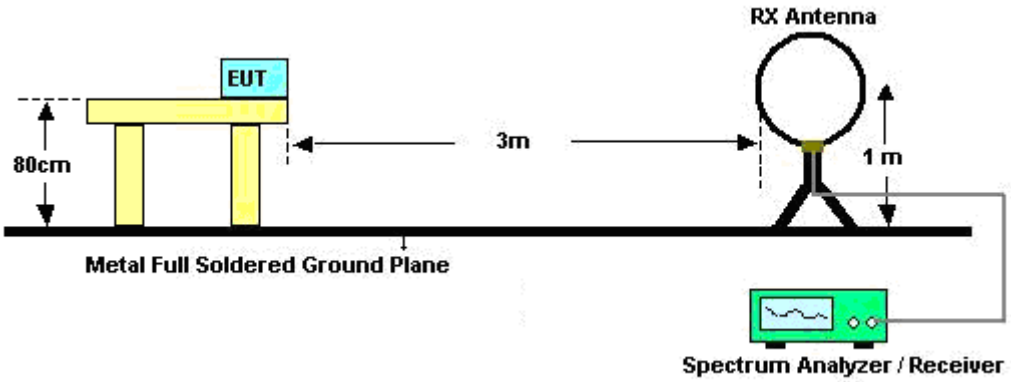
See list of measuring instruments of this test report.

3.7.3 Test Procedures

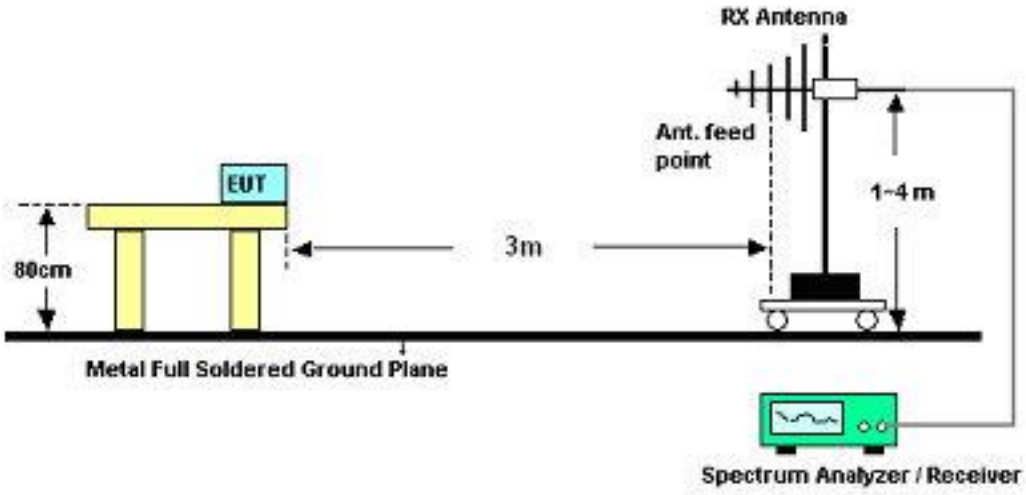
1. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW = 1 MHz for f ≥ 1 GHz, 100 KHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Measurement above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB per decade from 3m to 1m.
   Distance extrapolation factor = 20 log (specific distance [3m] / 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

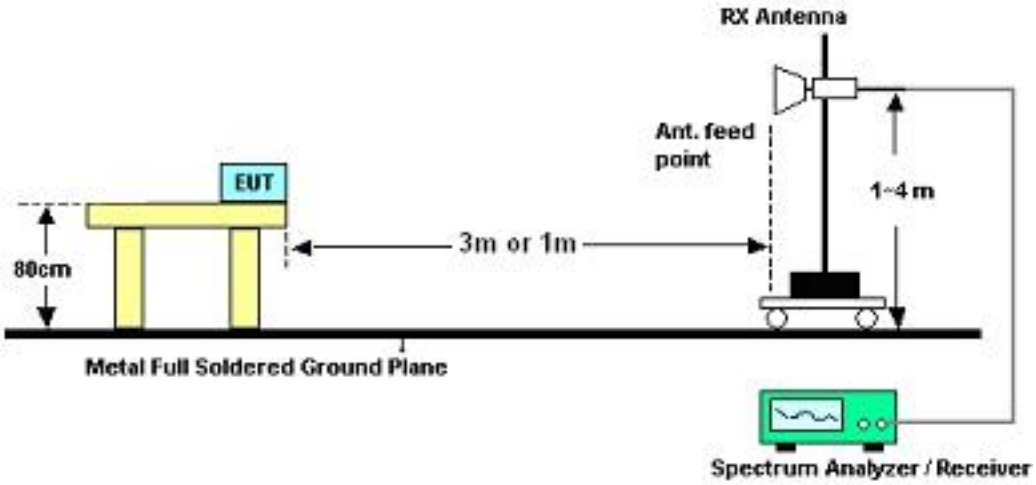
For radiated emissions below 30MHz



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 :	21~25℃
Test Channel :	01	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
2388.85	43.19	-10.81	54	40.45	31.9	5.4	34.56	100	54	Average
2388.85	55.11	-18.89	74	52.37	31.9	5.4	34.56	100	54	Peak
2412	109.69	-	-	106.91	31.91	5.43	34.56	100	54	Peak
2412	104.79	-	-	102.01	31.91	5.43	34.56	100	54	Average
2486	40.02	-13.98	54	37.07	31.98	5.52	34.55	100	54	Average
2486	50.96	-23.04	74	48.01	31.98	5.52	34.55	100	54	Peak

Test Mode :	Mode 1	Temperature :	21~25℃
Test Channel :	01	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
2386.57	37.41	-16.59	54	34.67	31.9	5.4	34.56	100	285	Average
2386.57	49.14	-24.86	74	46.4	31.9	5.4	34.56	100	285	Peak
2412	107.86	-	-	105.08	31.91	5.43	34.56	100	285	Peak
2412	102.28	-	-	99.5	31.91	5.43	34.56	100	285	Average
2484	40.02	-13.98	54	37.07	31.98	5.52	34.55	100	285	Average
2484	51.57	-22.43	74	48.62	31.98	5.52	34.55	100	285	Peak

Test Mode :	Mode 2	Temperature :	21~25℃
Test Channel :	06	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
2390	47.73	-26.27	74	44.99	31.9	5.4	34.56	100	54	Peak
2390	37.85	-16.15	54	35.11	31.9	5.4	34.56	100	54	Average
2437	109.32	-	-	106.47	31.95	5.46	34.56	100	54	Peak
2437	104.53	-	-	101.68	31.95	5.46	34.56	100	54	Average
2486	50.33	-23.67	74	47.38	31.98	5.52	34.55	100	54	Peak
2486	40.47	-13.53	54	37.52	31.98	5.52	34.55	100	54	Average

Test Mode :	Mode 2	Temperature :	21~25℃
Test Channel :	06	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
2390	45.7	-28.3	74	42.96	31.9	5.4	34.56	100	288	Peak
2390	34.67	-19.33	54	31.93	31.9	5.4	34.56	100	288	Average
2437	107.37	-	-	104.52	31.95	5.46	34.56	100	288	Peak
2437	102.36	-	-	99.51	31.95	5.46	34.56	100	288	Average
2484	51.82	-22.18	74	48.87	31.98	5.52	34.55	100	288	Peak
2484	40.65	-13.35	54	37.7	31.98	5.52	34.55	100	288	Average

Test Mode :	Mode 3	Temperature :	21~25℃
Test Channel :	11	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
2390	36.63	-17.37	54	33.89	31.9	5.4	34.56	100	60	Average
2390	47.55	-26.45	74	44.81	31.9	5.4	34.56	100	60	Peak
2462	104.57	-	-	101.67	31.97	5.49	34.56	100	60	Average
2462	109.07	-	-	106.17	31.97	5.49	34.56	100	60	Peak
2484.61	49.82	-4.18	54	46.87	31.98	5.52	34.55	100	60	Average
2484.61	57.65	-16.35	74	54.7	31.98	5.52	34.55	100	60	Peak

Test Mode :	Mode 3	Temperature :	21~25℃
Test Channel :	11	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
2388	34.18	-19.82	54	31.44	31.9	5.4	34.56	100	285	Average
2388	45.52	-28.48	74	42.78	31.9	5.4	34.56	100	285	Peak
2462	103.77	-	-	100.87	31.97	5.49	34.56	100	285	Average
2462	108.54	-	-	105.64	31.97	5.49	34.56	100	285	Peak
2489.93	49.48	-4.52	54	46.51	32	5.52	34.55	100	285	Average
2489.93	57.55	-16.45	74	54.58	32	5.52	34.55	100	285	Peak

Test Mode :	Mode 4	Temperature :	21~25℃
Test Channel :	01	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
2389.42	46.85	-7.15	54	44.11	31.9	5.4	34.56	100	55	Average
2389.42	65.16	-8.84	74	62.42	31.9	5.4	34.56	100	55	Peak
2412	111.38	-	-	108.6	31.91	5.43	34.56	100	55	Peak
2412	93.3	-	-	90.52	31.91	5.43	34.56	100	55	Average
2484	39.79	-14.21	54	36.84	31.98	5.52	34.55	100	55	Average
2484	54.02	-19.98	74	51.07	31.98	5.52	34.55	100	55	Peak

Test Mode :	Mode 4	Temperature :	21~25℃
Test Channel :	01	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
2389.99	39.87	-14.13	54	37.13	31.9	5.4	34.56	100	295	Average
2389.99	57.34	-16.66	74	54.6	31.9	5.4	34.56	100	295	Peak
2412	107.28	-	-	104.5	31.91	5.43	34.56	100	295	Peak
2412	90.39	-	-	87.61	31.91	5.43	34.56	100	295	Average
2492	38.41	-15.59	54	35.44	32	5.52	34.55	100	295	Average
2492	52.13	-21.87	74	49.16	32	5.52	34.55	100	295	Peak

Test Mode :	Mode 5	Temperature :	21~25℃
Test Channel :	06	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
2390	54.39	-19.61	74	51.65	31.9	5.4	34.56	100	53	Peak
2390	38.79	-15.21	54	36.05	31.9	5.4	34.56	100	53	Average
2437	111.21	-	-	108.36	31.95	5.46	34.56	100	53	Peak
2437	93.47	-	-	90.62	31.95	5.46	34.56	100	53	Average
2484	57.67	-16.33	74	54.72	31.98	5.52	34.55	100	53	Peak
2484	41.76	-12.24	54	38.81	31.98	5.52	34.55	100	53	Average

Test Mode :	Mode 5	Temperature :	21~25℃
Test Channel :	06	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
2390	47.86	-26.14	74	45.12	31.9	5.4	34.56	100	298	Peak
2390	35.43	-18.57	54	32.69	31.9	5.4	34.56	100	298	Average
2437	107.4	-	-	104.55	31.95	5.46	34.56	100	298	Peak
2437	89.98	-	-	87.13	31.95	5.46	34.56	100	298	Average
2486	55.19	-18.81	74	52.24	31.98	5.52	34.55	100	298	Peak
2486	39.94	-14.06	54	36.99	31.98	5.52	34.55	100	298	Average

Test Mode :	Mode 6	Temperature :	21~25℃
Test Channel :	11	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
81.3	26.45	-13.55	40	50.13	7.06	0.96	31.7	100	74	Peak
141.24	26.25	-17.25	43.5	45.56	10.97	1.42	31.7	-	-	Peak
145.29	26.55	-16.95	43.5	46.1	10.7	1.45	31.7	-	-	Peak
407.1	31.05	-14.95	46	44.26	16.19	2.4	31.8	-	-	Peak
454.7	29.96	-16.04	46	42.32	16.95	2.54	31.85	-	-	Peak
480.6	32.09	-13.91	46	43.62	17.42	2.82	31.77	-	-	Peak
2388	36.89	-17.11	54	34.15	31.9	5.4	34.56	100	60	Average
2388	48.67	-25.33	74	45.93	31.9	5.4	34.56	100	60	Peak
2462	93.71	-	-	90.81	31.97	5.49	34.56	100	60	Average
2462	111.24	-	-	108.34	31.97	5.49	34.56	100	60	Peak
2483.66	49.46	-4.54	54	46.51	31.98	5.52	34.55	100	60	Average
2483.66	70.96	-3.04	74	68.01	31.98	5.52	34.55	100	60	Peak

Test Mode :	Mode 6	Temperature :	21~25℃
Test Channel :	11	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
126.93	30.81	-12.69	43.5	49.34	11.8	1.37	31.7	-	-	Peak
130.98	30.94	-12.56	43.5	49.51	11.74	1.39	31.7	100	66	Peak
142.59	28.3	-15.2	43.5	47.67	10.9	1.43	31.7	-	-	Peak
431.6	31.98	-14.02	46	44.81	16.52	2.49	31.84	-	-	Peak
481.3	32.25	-13.75	46	43.78	17.42	2.82	31.77	-	-	Peak
528.9	30.31	-15.69	46	41.22	17.97	2.96	31.84	-	-	Peak
2382	33.81	-20.19	54	31.09	31.88	5.4	34.56	100	293	Average
2382	45.39	-28.61	74	42.67	31.88	5.4	34.56	100	293	Peak
2462	90.07	-	-	87.17	31.97	5.49	34.56	100	293	Average
2462	107.6	-	-	104.7	31.97	5.49	34.56	100	293	Peak
2484.61	45.16	-8.84	54	42.21	31.98	5.52	34.55	100	293	Average
2484.61	66.01	-7.99	74	63.06	31.98	5.52	34.55	100	293	Peak

Test Mode :	Mode 7	Temperature :	21~25℃
Test Channel :	01	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
2389.99	45.5	-8.5	54	42.76	31.9	5.4	34.56	100	55	Average
2389.99	61.58	-12.42	74	58.84	31.9	5.4	34.56	100	55	Peak
2412	108.31	-	-	105.53	31.91	5.43	34.56	100	55	Peak
2412	90.62	-	-	87.84	31.91	5.43	34.56	100	55	Average
2483.5	38.35	-15.65	54	35.4	31.98	5.52	34.55	100	55	Average
2483.5	50.16	-23.84	74	47.21	31.98	5.52	34.55	100	55	Peak

Test Mode :	Mode 7	Temperature :	21~25℃
Test Channel :	01	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
2389.42	38.37	-15.63	54	35.63	31.9	5.4	34.56	100	287	Average
2389.42	55.84	-18.16	74	53.1	31.9	5.4	34.56	100	287	Peak
2412	105.77	-	-	102.99	31.91	5.43	34.56	100	287	Peak
2412	87.86	-	-	85.08	31.91	5.43	34.56	100	287	Average
2484	37.89	-16.11	54	34.94	31.98	5.52	34.55	100	287	Average
2484	51.05	-22.95	74	48.1	31.98	5.52	34.55	100	287	Peak

Test Mode :	Mode 8	Temperature :	21~25℃
Test Channel :	06	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
2390	50.57	-23.43	74	47.83	31.9	5.4	34.56	100	61	Peak
2390	36.94	-17.06	54	34.2	31.9	5.4	34.56	100	61	Average
2437	108.42	-	-	105.57	31.95	5.46	34.56	100	61	Peak
2437	90.01	-	-	87.16	31.95	5.46	34.56	100	61	Average
2486	54.38	-19.62	74	51.43	31.98	5.52	34.55	100	61	Peak
2486	39.64	-14.36	54	36.69	31.98	5.52	34.55	100	61	Average

Test Mode :	Mode 8	Temperature :	21~25℃
Test Channel :	06	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
2390	45.92	-28.08	74	43.18	31.9	5.4	34.56	100	291	Peak
2390	34.54	-19.46	54	31.8	31.9	5.4	34.56	100	291	Average
2437	105.57	-	-	102.72	31.95	5.46	34.56	100	291	Peak
2437	87.94	-	-	85.09	31.95	5.46	34.56	100	291	Average
2484	52.78	-21.22	74	49.83	31.98	5.52	34.55	100	291	Peak
2484	38.06	-15.94	54	35.11	31.98	5.52	34.55	100	291	Average

Test Mode :	Mode 9	Temperature :	21~25℃
Test Channel :	11	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
2390	48.01	-25.99	74	45.27	31.9	5.4	34.56	100	61	Peak
2390	35.07	-18.93	54	32.33	31.9	5.4	34.56	100	61	Average
2462	108.57	-	-	105.67	31.97	5.49	34.56	100	61	Peak
2462	90.34	-	-	87.44	31.97	5.49	34.56	100	61	Average
2486.7	47.95	-6.05	54	45	31.98	5.52	34.55	100	61	Average
2486.7	70.94	-3.06	74	67.99	31.98	5.52	34.55	100	61	Peak

Test Mode :	Mode 9	Temperature :	21~25℃
Test Channel :	11	Relative Humidity :	51~55%
Test Engineer :	Wii Chang	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
2332	33.65	-20.35	54	31.05	31.83	5.34	34.57	100	284	Average
2332	45.19	-28.81	74	42.59	31.83	5.34	34.57	100	284	Peak
2462	87.07	-	-	84.17	31.97	5.49	34.56	100	284	Average
2462	105.24	-	-	102.34	31.97	5.49	34.56	100	284	Peak
2483.85	46.71	-7.29	54	43.76	31.98	5.52	34.55	100	284	Average
2483.85	69.42	-4.58	74	66.47	31.98	5.52	34.55	100	284	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 Chip 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	Mar. 16, 2012 ~ Mar. 20, 2012	Apr. 02, 2012	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCS 30	100356	9KHz ~ 2.75GHz	Oct. 27, 2011	Mar. 19, 2012 ~ Apr. 20, 2012	Oct. 26, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz ~ 30MHz	Dec. 09, 2011	Mar. 19, 2012 ~ Apr. 20, 2012	Dec. 08, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz ~ 30MHz	Dec. 06, 2011	Mar. 19, 2012 ~ Apr. 20, 2012	Dec. 05, 2012	Conduction (CO05-HY)
AC Power Source	APC	APC-1000 W	N/A	N/A	N/A	Mar. 19, 2012 ~ Apr. 20, 2012	N/A	Conduction (CO05-HY)
GPS Station	T&E	GS-50	N/A	N/A	N/A	Mar. 19, 2012 ~ Apr. 20, 2012	N/A	Conduction (CO05-HY)
Spectrum Analyzer	Agilent	E4408B	MY44211030	9KHz ~ 26.5GHz	Nov. 23, 2011	Apr. 21, 2012 ~ Apr. 22, 2012	Nov. 22, 2012	Radiation (03CH06-HY)
Spectrum Analyzer	R&S	FSP30	101352	9KHz-30GHz	Nov. 01,2011	Apr. 21, 2012 ~ Apr. 22, 2012	Oct. 31, 2012	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/003	20MHz ~ 1000MHz	May 10, 2011	Apr. 21, 2012 ~ Apr. 22, 2012	May 09, 2012	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz ~ 2GHz	Oct. 22, 2011	Apr. 21, 2012 ~ Apr. 22, 2012	Oct. 21, 2012	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz ~ 18GHz	Aug. 01, 2011	Apr. 21, 2012 ~ Apr. 22, 2012	Jul. 31, 2012	Radiation (03CH06-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz ~ 40GHz	Oct. 21, 2011	Apr. 21, 2012 ~ Apr. 22, 2012	Oct. 20, 2012	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz ~ 26.5GHz	Apr. 13, 2012	Apr. 21, 2012 ~ Apr. 22, 2012	Apr. 12, 2013	Radiation (03CH06-HY)
Amplifier	Agilent	310N	186713	9KHz ~ 1GHz	Apr. 11, 2012	Apr. 21, 2012 ~ Apr. 22, 2012	Apr. 10, 2013	Radiation (03CH06-HY)
Pre Amplifier	EMCI	EMC051845	SN980048	1GHz ~ 18GHz	Jul. 18, 2011	Apr. 21, 2012 ~ Apr. 22, 2012	Jul. 17, 2012	Radiation (03CH06-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Apr. 21, 2012 ~ Apr. 22, 2012	Jul. 28, 2012	Radiation (03CH06-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 Uc(y)	**1.13**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(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 Uc(y)	**1.27**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(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 Γ1 = 0.197 Antenna VSWR Γ2 = 0.194 Uncertainty = 20Log(1-Γ1*Γ2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	**2.36**				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**				

Appendix A. Photographs of EUT

Please refer to Sporton report number EP232266 as below.