FCC RF Test Report

APPLICANT	:	AzureWave Technologies, Inc.
EQUIPMENT	:	HSPA+ Mobile Router
BRAND NAME	:	Azurewave
MODEL NAME	:	WW-R20
FCC ID	:	TLZ-R20
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DTS) Digital Transmission System

The product was received on Jul. 05, 2012 and completely tested on Jul. 19, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures 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
FR270532	Rev. 01	Initial issue of report	Aug. 03, 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	-
3.2	15.247(b)	A8.4	Power Output Measurement	≤ 30dBm	Pass	-
3.3	15.247(e)	A8.2(b)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	A8.5	Conducted Band Edges	≤ 20dBc	Pass	-
			Conducted Spurious Emission		Pass	-
3.5	15.247(d)	A8.5	Radiated Band Edges	15.209(a) & 15.247(d)	Pass	-
			Radiated Spurious Emission		Pass	Under limit 3.72 dB at 68.340 MHz
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 13.10 dB at 0.198 MHz
3.7	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

AzureWave Technologies, Inc.
8F., No. 94, Baozhong Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)

1.2 Manufacturer

AzureWave Technologies, Inc.
8F., No. 94, Baozhong Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	HSPA+ Mobile Router
Brand Name	Azurewave
Model Name	WW-R20
FCC ID	TLZ-R20
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/ WLAN 11bgn
HW Version	v.04
SW Version	1.0.5.3
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.

Product Specification subjective to this standard	
Tx/Rx Frequency Range	2412 MHz ~ 2462 MHz
Number of Channels	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Maximum Output Power to Antenna	802.11b : 12.35 dBm (0.0172 W) 802.11g : 19.22 dBm (0.0836 W) 802.11n HT-20 : 18.33 dBm (0.0681 W) 802.11n HT-40 : 18.74 dBm (0.0748 W)
Antenna Type	Chip Antenna with gain 1.00 dBi
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

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.
	TH02-HY	CO05-HY	03CH07-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
- FCC TCB Workshop 2012, April
- ANSI C63.4-2003 and ANSI C63.10-2009
- 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.	Notebook	DELL	Latitude E6320	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
4.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A
5.	AC Adapter	Amigo	AMS47-0501000FU	N/A	N/A	N/A

Remark: Adapter is only for testing.

2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

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

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate as below table and the highest power data rates (11b, 11g, 11n HT-20, 11n HT-40 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)	12.35	12.3	11.73	12.29

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)	19.22	18.27	18.65	18.26	18.77	18.71	18.5	18.63

2.4GHz 802.11n HT-20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	18.33	18.26	18.25	18.24	18.29	18.26	18.22	18.23
Data Rate (MHz)	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
Peak Power (dBm)	18.21	18.2	18.16	18.19	18.15	18.18	18.16	18.2

2.4GHz 802.11n HT-40 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	18.74	18.72	18.71	18.64	18.6	18.66	18.7	18.4
Data Rate (MHz)	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
Peak Power (dBm)	17.46	18.29	18.34	18.27	17.81	17.42	17.73	17.67

2.3 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and ANSI C63.10-2009 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).

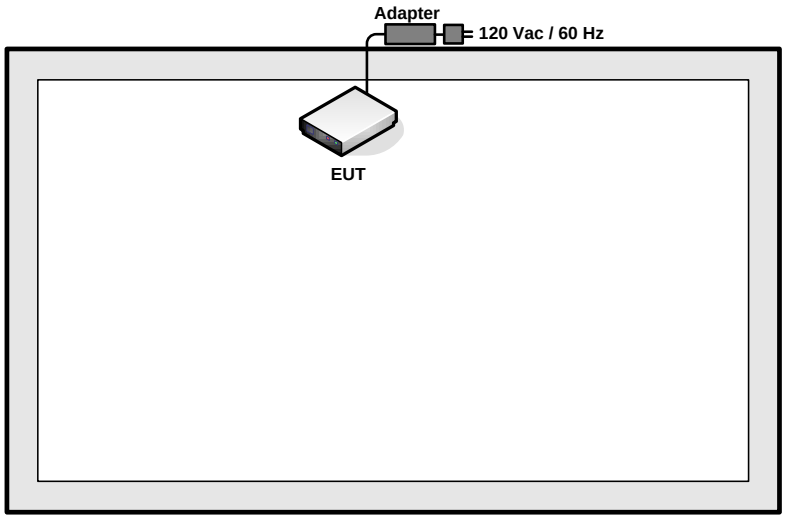
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

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

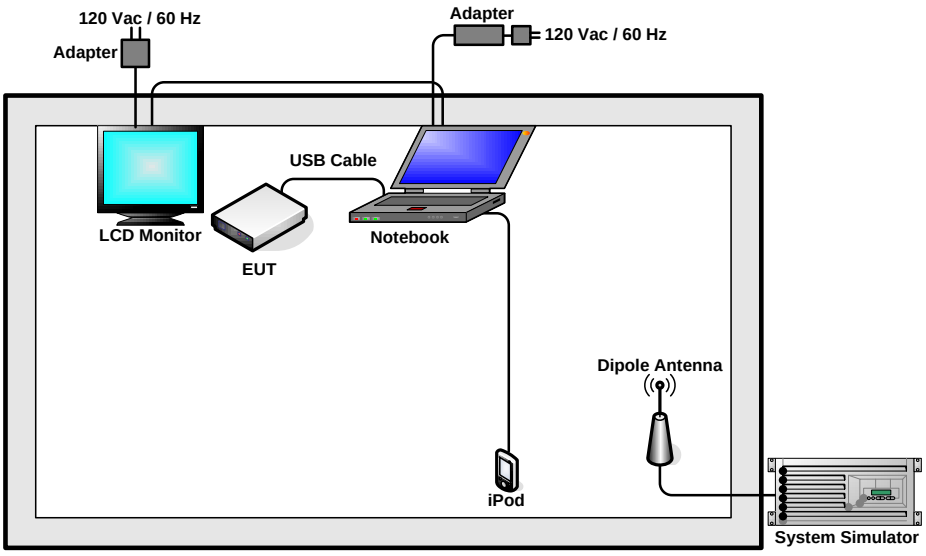
<table>
<tr><th colspan="2">Test Cases</th></tr>
<tr><th>Test Item</th><td>802.11b (Modulation : DSSS)
802.11g/n (Modulation : OFDM)</td></tr>
<tr><th>Conducted TCs</th><td>
<table>
<tr><th>Test Mode</th><th>802.11b</th><th>802.11g</th><th>802.11n HT-20</th></tr>
<tr><td>CH01</td><td>1</td><td>4</td><td>7</td></tr>
<tr><td>CH06</td><td>2</td><td>5</td><td>8</td></tr>
<tr><td>CH11</td><td>3</td><td>6</td><td>9</td></tr>
</table>
<table>
<tr><th>Test Mode</th><th>802.11n HT-40</th></tr>
<tr><td>CH03</td><td>10</td></tr>
<tr><td>CH06</td><td>11</td></tr>
<tr><td>CH09</td><td>12</td></tr>
</table>
</td></tr>
<tr><th>Radiated TCs</th><td>
<table>
<tr><th>Test Mode</th><th>802.11b</th><th>802.11g</th><th>802.11n HT-20</th></tr>
<tr><td>CH01</td><td>1</td><td>4</td><td>7</td></tr>
<tr><td>CH06</td><td>2</td><td>5</td><td>8</td></tr>
<tr><td>CH11</td><td>3</td><td>6</td><td>9</td></tr>
</table>
<table>
<tr><th>Test Mode</th><th>802.11n HT-40</th></tr>
<tr><td>CH03</td><td>10</td></tr>
<tr><td>CH09</td><td>11</td></tr>
</table>
</td></tr>
<tr><th>AC Conducted Emission</th><td>Mode 1 ： GSM850 Idle + WLAN Link + USB Cable (Charging from Notebook)</td></tr>
</table>

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 RF Utility

For WLAN function, key in “t_mfg” on the notebook for confirm IP and “t_mfg 192.168.1.1” into Tx Tool. The EUT provides functions like channel selection and power level for continuous transmitting and receiving signals.

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

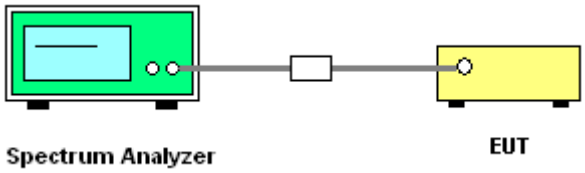
3.1.2 Measuring Instruments

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 and TCB Workshop 2012, April.
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

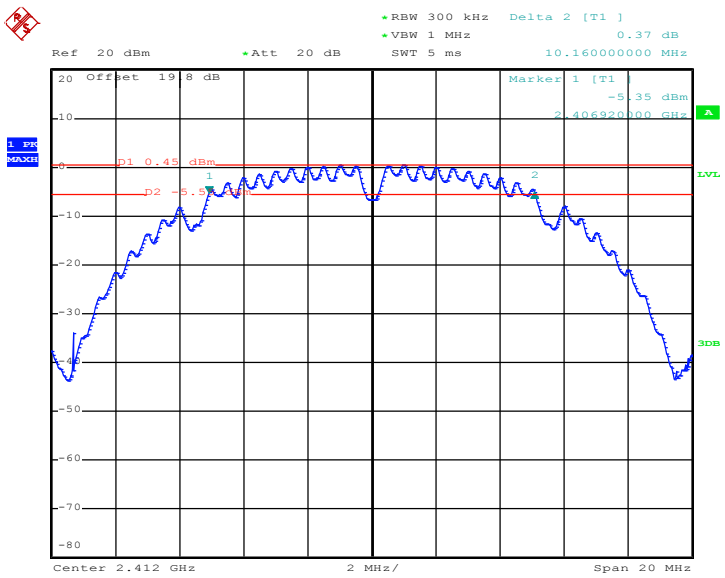


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	10.16	0.5	Pass
06	2437	10.16	0.5	Pass
11	2462	10.16	0.5	Pass

6 dB Bandwidth Plot on 802.11b Channel 01



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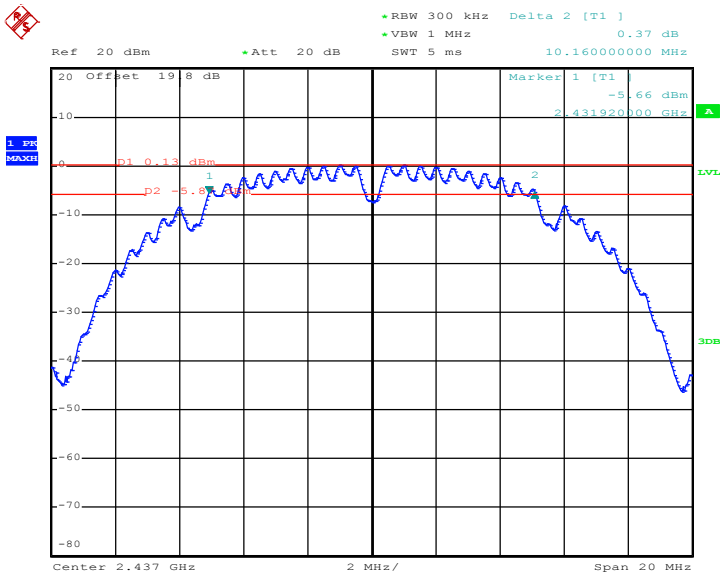
6 dB Bandwidth Plot on 802.11b Channel 06



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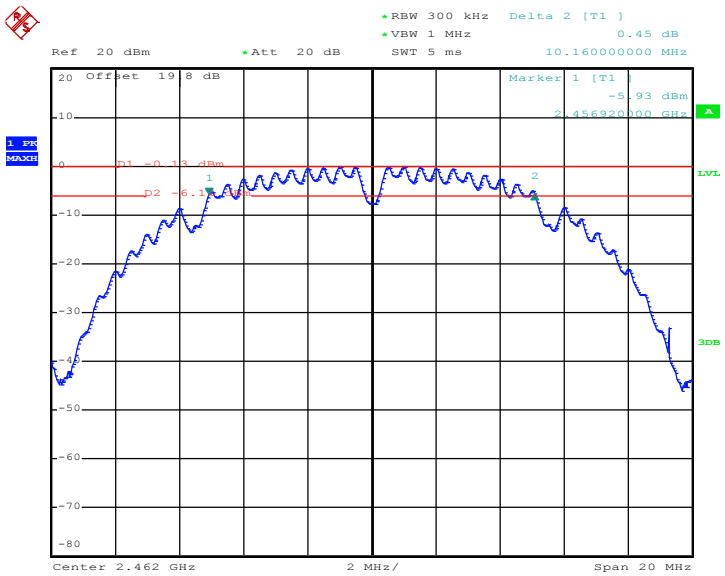
6 dB Bandwidth Plot on 802.11b Channel 11



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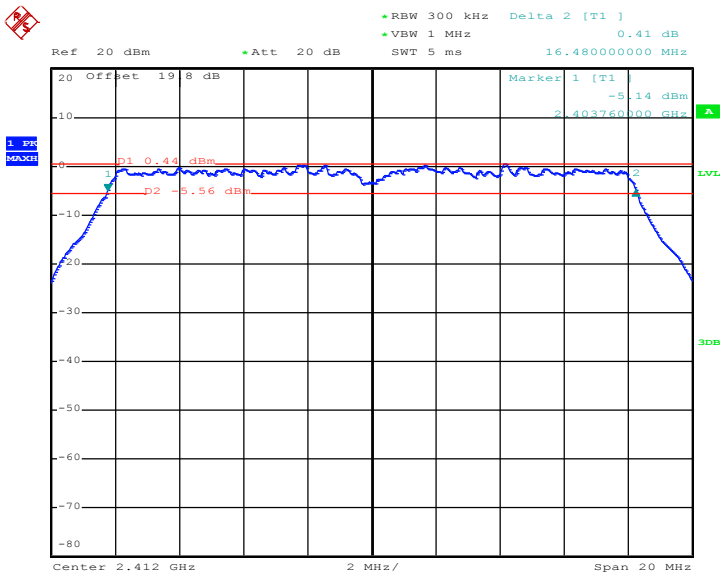
Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.48	0.5	Pass
06	2437	16.48	0.5	Pass
11	2462	16.48	0.5	Pass

6 dB Bandwidth Plot on 802.11g Channel 01



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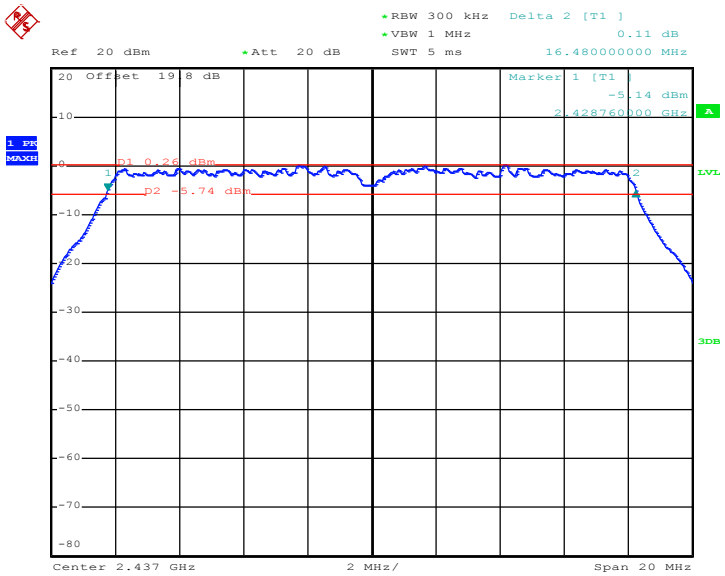
6 dB Bandwidth Plot on 802.11g Channel 06



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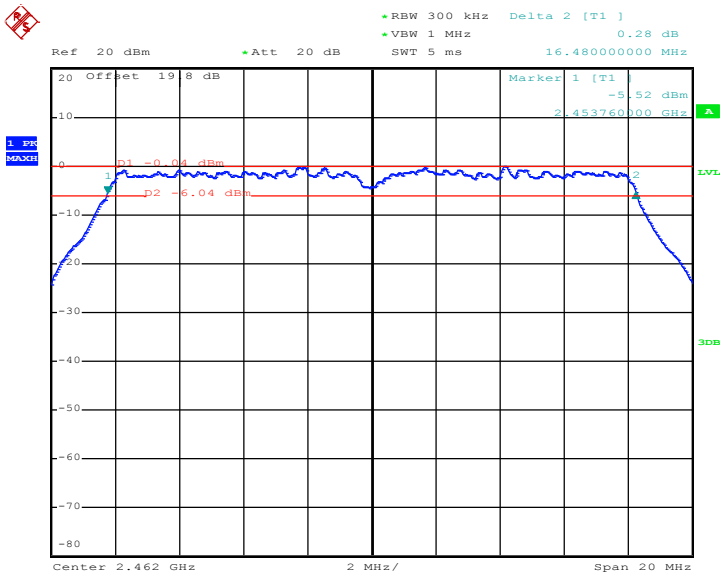
6 dB Bandwidth Plot on 802.11g Channel 11

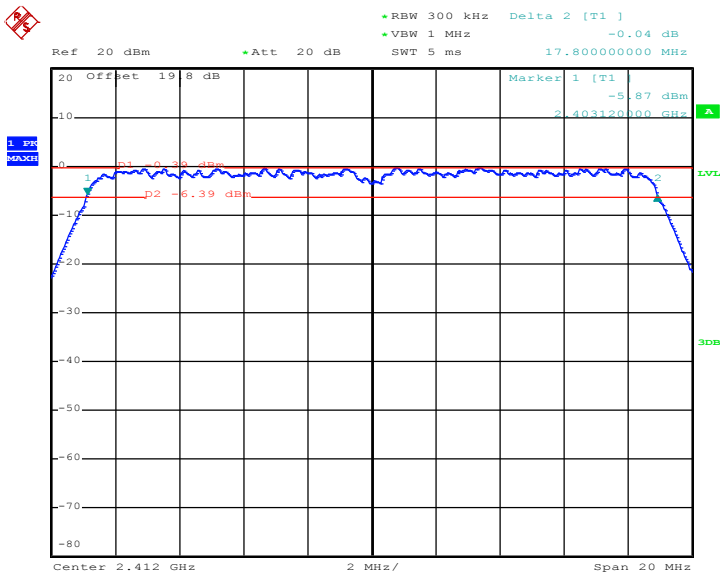


Date: 16.JUL.2012 19:38:52

Test Mode :	802.11n HT-20	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT-20 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.80	0.5	Pass
06	2437	17.78	0.5	Pass
11	2462	17.80	0.5	Pass

6 dB Bandwidth Plot on 802.11n HT-20 Channel 01



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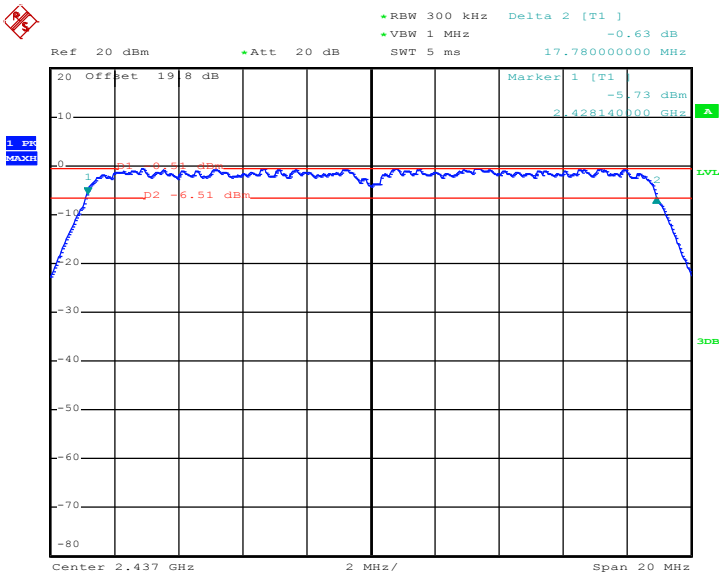
6 dB Bandwidth Plot on 802.11n HT-20 Channel 06



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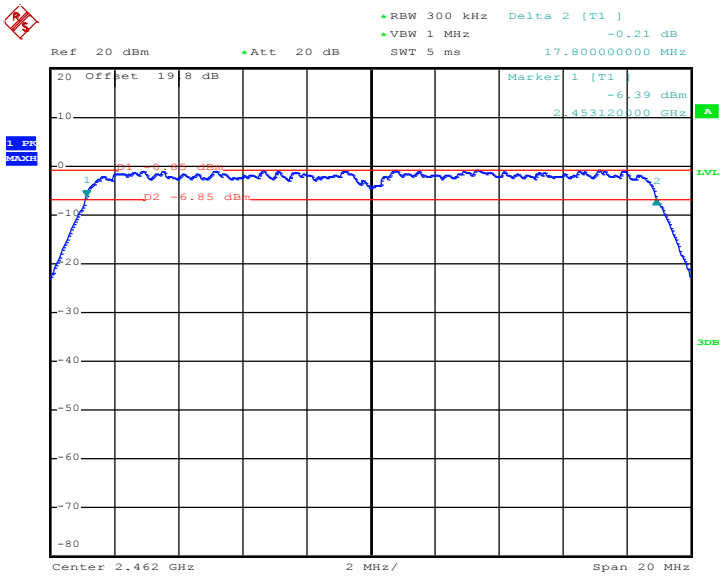
6 dB Bandwidth Plot on 802.11n HT-20 Channel 11

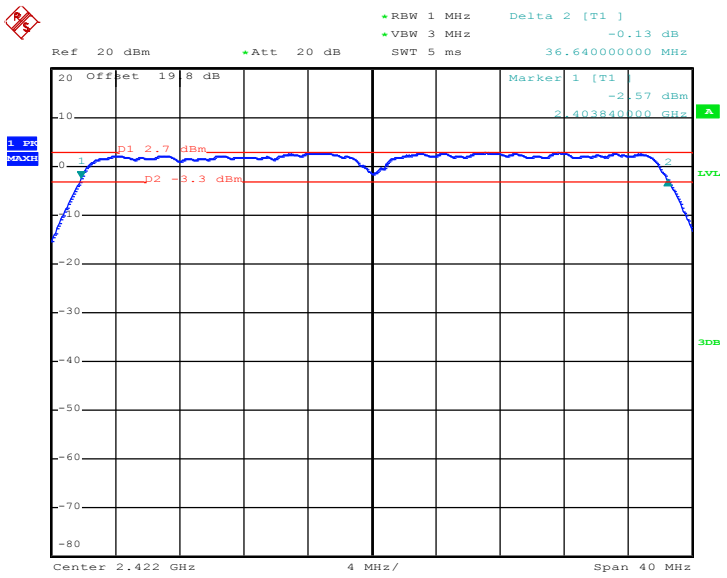


Date: 16.JUL.2012 20:00:38

Test Mode :	802.11n HT-40	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n HT-40 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
03	2422	36.64	0.5	Pass
06	2437	36.64	0.5	Pass
09	2452	36.64	0.5	Pass

6 dB Bandwidth Plot on 802.11n HT-40 Channel 03



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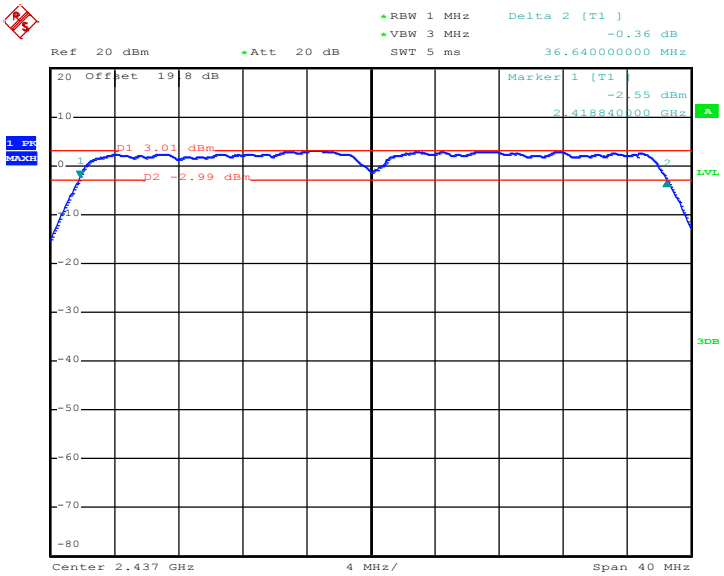
6 dB Bandwidth Plot on 802.11n HT-40 Channel 06



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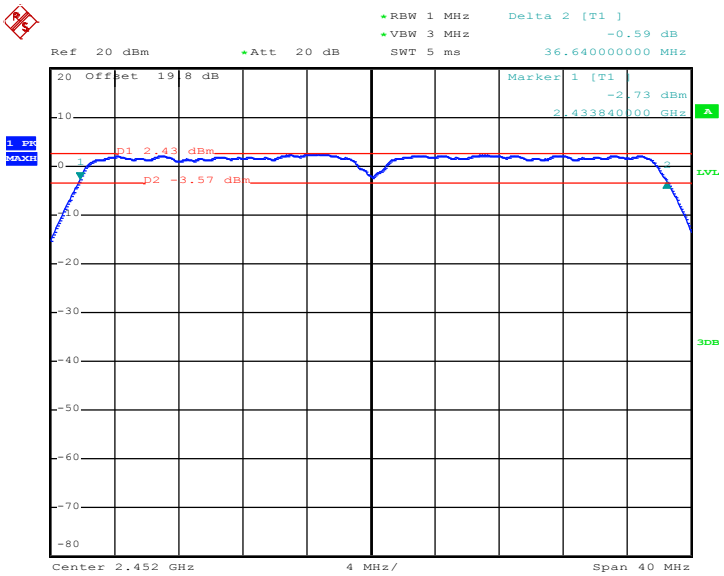
6 dB Bandwidth Plot on 802.11n HT-40Channel 09



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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.

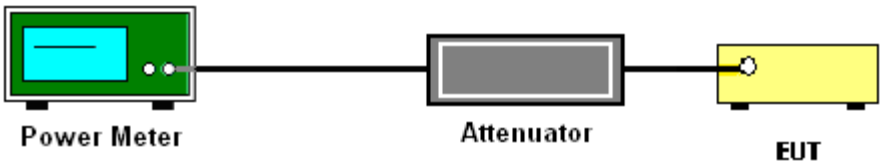
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure 7.2.1.3 Option 3(peak power meter method) of FCC KDB No. 558074 DTS Meas. Guidance DR01.
2. The RF output of EUT was connected to the power meter by a low loss cable
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	12.35	30	Pass
06	2437	11.62	30	Pass
11	2462	11.30	30	Pass

Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.22	30	Pass
06	2437	19.12	30	Pass
11	2462	18.80	30	Pass

Test Mode :	802.11n HT-20	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT-20 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	18.33	30	Pass
06	2437	18.28	30	Pass
11	2462	17.85	30	Pass

Test Mode :	2.4GHz 802.11n HT-40	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT-40 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	18.21	30	Pass
06	2437	18.74	30	Pass
09	2452	18.29	30	Pass

3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%
Duty Cycle:	100%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)
01	2412	9.83
06	2437	9.09
11	2462	8.68

Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%
Duty Cycle:	100%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)
01	2412	9.17
06	2437	8.87
11	2462	8.31

Test Mode :	802.11n HT-20	Temperature :	24~26
Test Engineer :	Reece Li	Relative Humidity :	50~53
Duty Cycle:	100%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11n HT-20 Average Output Power (dBm)
01	2412	9.23
06	2437	8.85
11	2462	8.30

Test Mode :	802.11n HT-40	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%
Duty Cycle:	100%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11n HT-40 Average Output Power (dBm)
03	2422	9.27
06	2437	9.36
09	2452	8.71

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

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

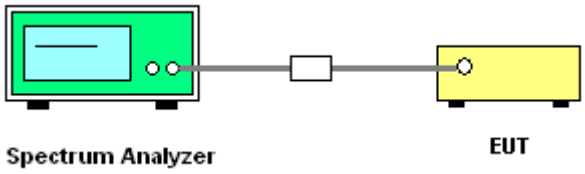
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The testing follows Measurement Procedure 5.3.1 (Peak PSD) of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance and TCB Workshop 2012, April.
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).

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

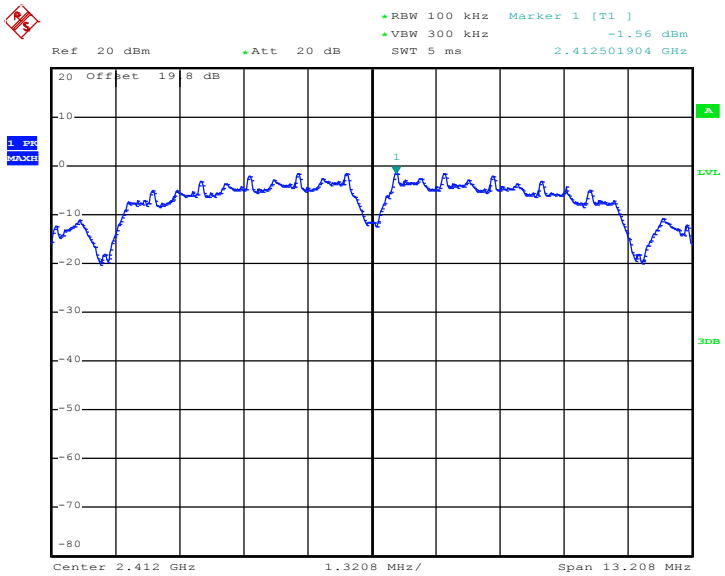
Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	-1.56	-16.76	8	Pass
06	2437	-1.83	-17.03	8	Pass
11	2462	-2.12	-17.32	8	Pass

Note:

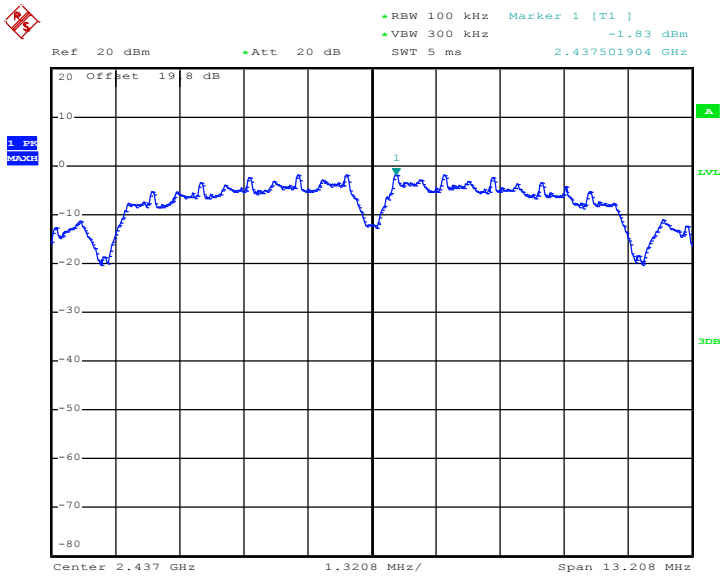
1. *Measured power density (dBm) has offset with cable loss.*
2. *BWCF (dB) = 10 log (3k/100k) = -15.2 dB*
3. *Power Density/ 3kHz (dBm)= Measured power density/ 100KHz (dBm) + BWCF (dB)*

PSD Plot on 802.11b Channel 01



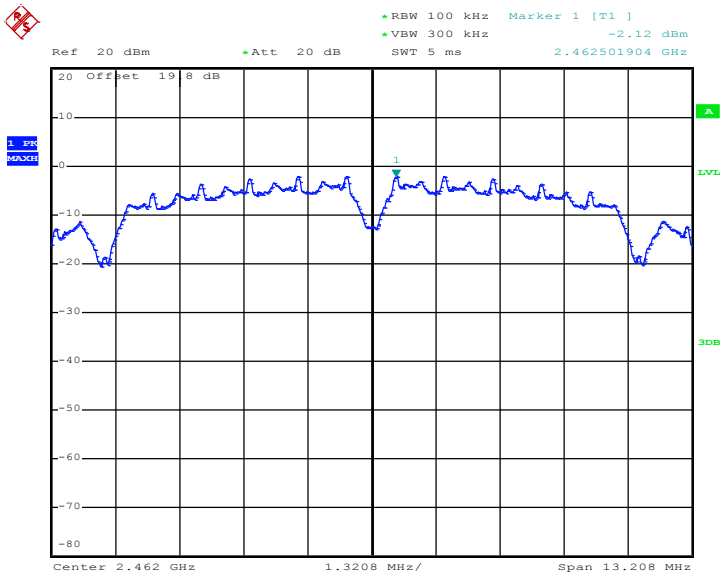
Date: 16.JUL.2012 19:26:06

PSD Plot on 802.11b Channel 06



Date: 16.JUL.2012 19:29:12

PSD Plot on 802.11b Channel 11



Date: 16.JUL.2012 19:32:24

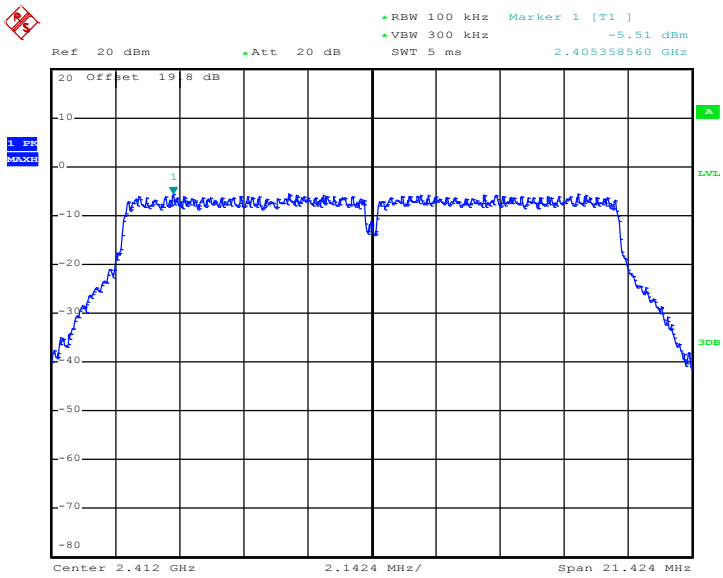
Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	-5.51	-20.71	8	Pass
06	2437	-3.78	-18.98	8	Pass
11	2462	-6.03	-21.23	8	Pass

Note:

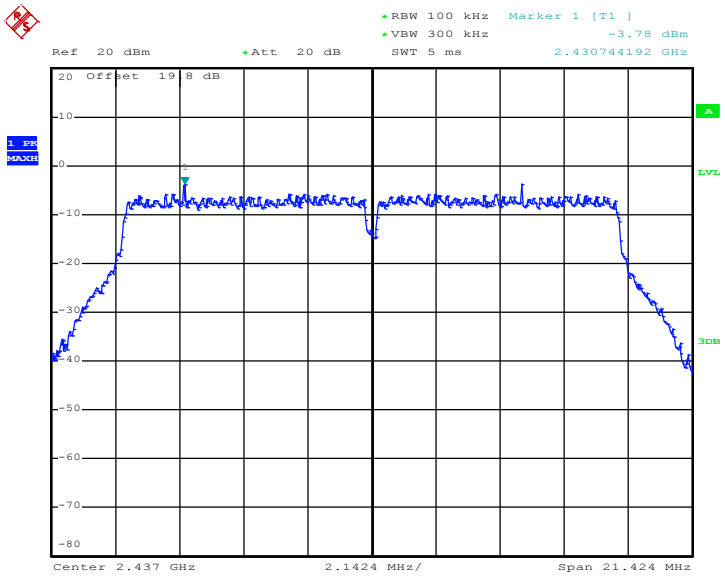
1. *Measured power density (dBm) has offset with cable loss.*
2. *BWCF (dB) = 10 log (3k/100k) = -15.2 dB*
3. *Power Density/ 3KHz (dBm)= Measured power density/ 100KHz (dBm) + BWCF (dB)*

PSD Plot on 802.11g Channel 01



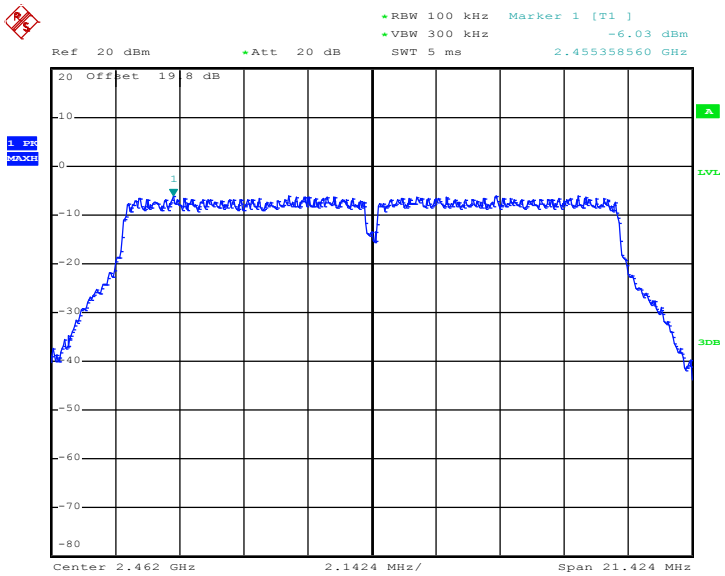
Date: 16.JUL.2012 19:49:50

PSD Plot on 802.11g Channel 06



Date: 16.JUL.2012 19:44:00

PSD Plot on 802.11g Channel 11



Date: 16.JUL.2012 19:39:13

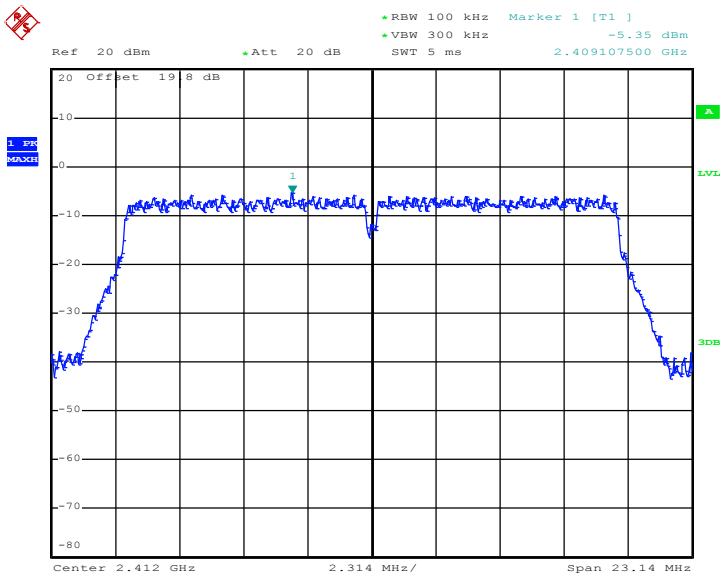
Test Mode :	802.11n HT-20	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n HT-20 Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	-5.35	-20.55	8	Pass
06	2437	-4.50	-19.70	8	Pass
11	2462	-5.10	-20.30	8	Pass

Note:

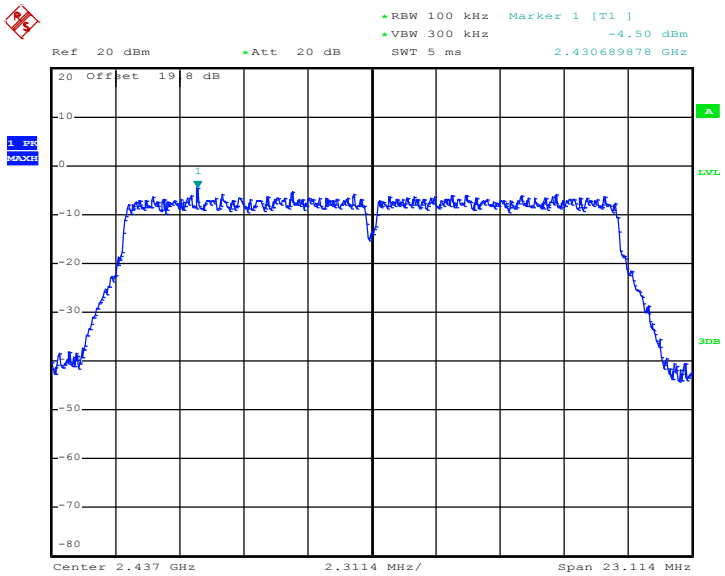
1. *Measured power density (dBm) has offset with cable loss.*
2. *BWCF (dB) = 10 log (3k/100k) = -15.2 dB*
3. *Power Density/ 3KHz (dBm)= Measured power density/ 100KHz (dBm) + BWCF (dB)*

PSD Plot on 802.11n HT-20 Channel 01



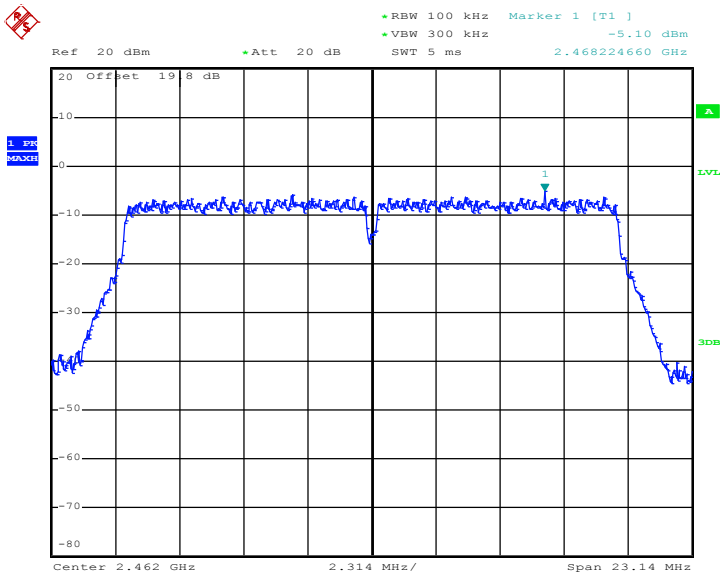
Date: 16.JUL.2012 19:54:16

PSD Plot on 802.11n HT-20 Channel 06



Date: 16.JUL.2012 19:58:03

PSD Plot on 802.11n HT-20 Channel 11



Date: 16.JUL.2012 20:00:56

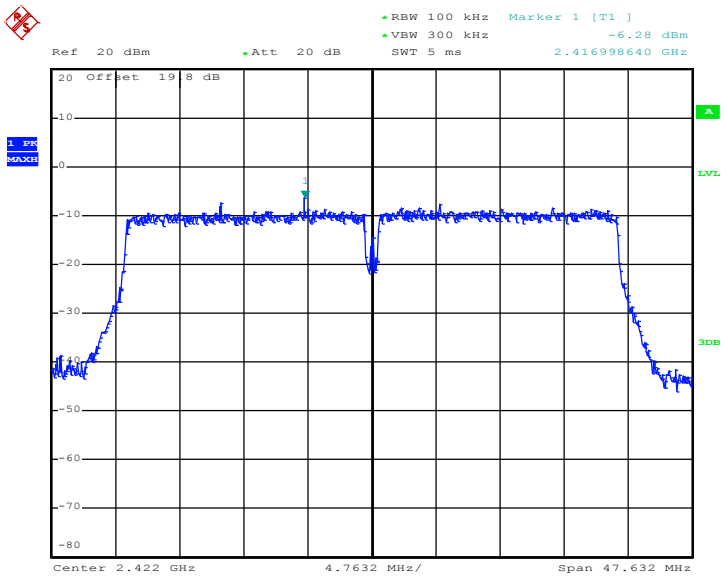
Test Mode :	802.11n HT-40	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n HT-40 Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
03	2422	-6.28	-21.48	8	Pass
06	2437	-8.06	-23.26	8	Pass
09	2452	-8.84	-24.04	8	Pass

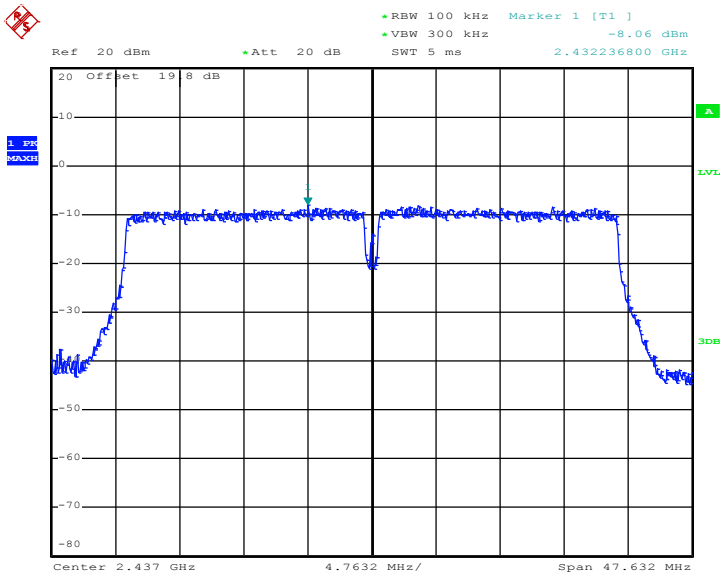
Note:

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)*

PSD Plot on 802.11n HT-40 Channel 03

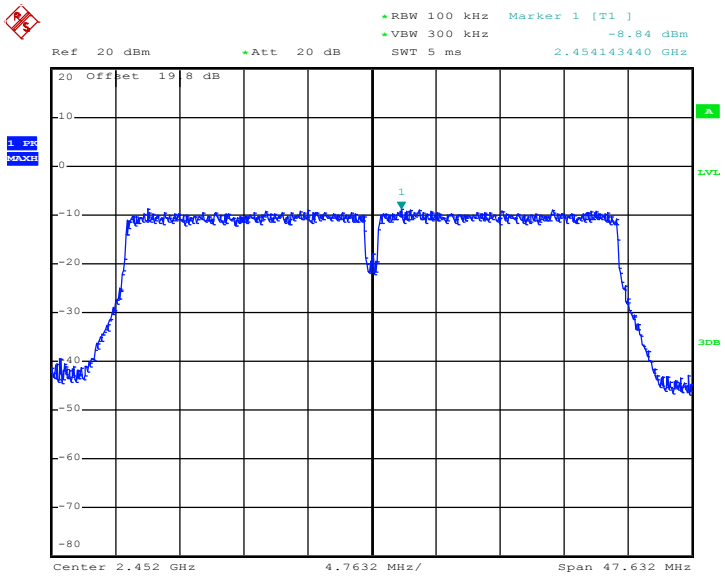


PSD Plot on 802.11n HT-40 Channel 06



Date: 16.JUL.2012 20:07:41

PSD Plot on 802.11n HT-40 Channel 09



Date: 16.JUL.2012 20:04:40

3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

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

3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

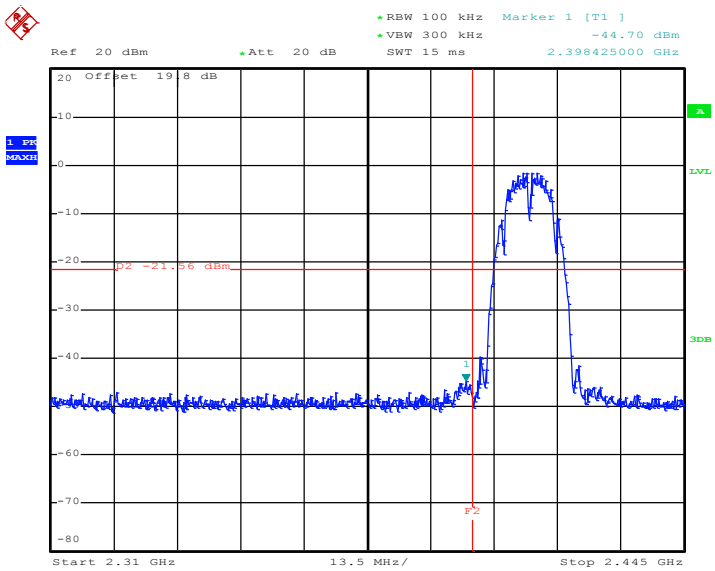
1. The testing follows the guidelines in the Measurement Procedure of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance and TCB Workshop 2012, April.
2. Set RBW = 100 KHz, VBW=300 KHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz, when maximum peak conducted output power procedure is used. The attenuation is set to 30dB, when maximum conducted output power procedure is used.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure and record the results in the test report.

3.4.4 Test Setup

3.4.5 Test Plots of Conducted Band Edges

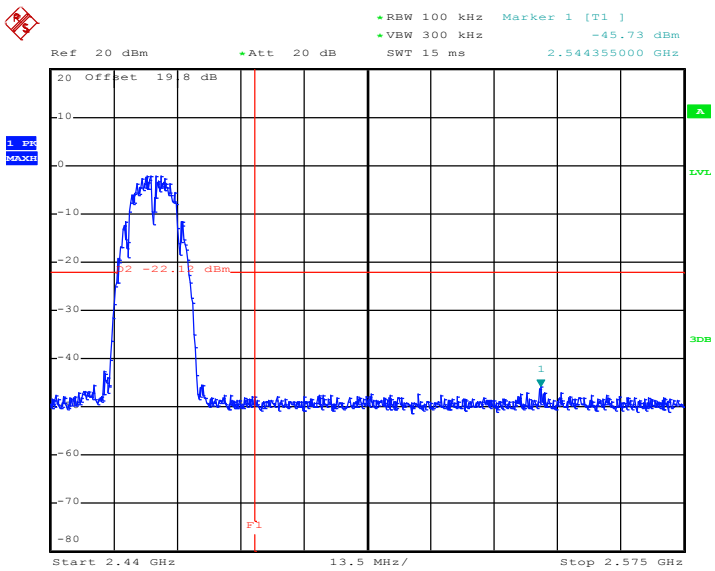
Test Mode :	802.11b	**Temperature :**	24~26℃
Test Band :	Low and High	**Relative Humidity :**	50~53%
Test Channel :	01 and 11	**Test Engineer :**	Reece Li

Low Band Edge Plot on 802.11b Channel 01



Date: 16.JUL.2012 19:26:20

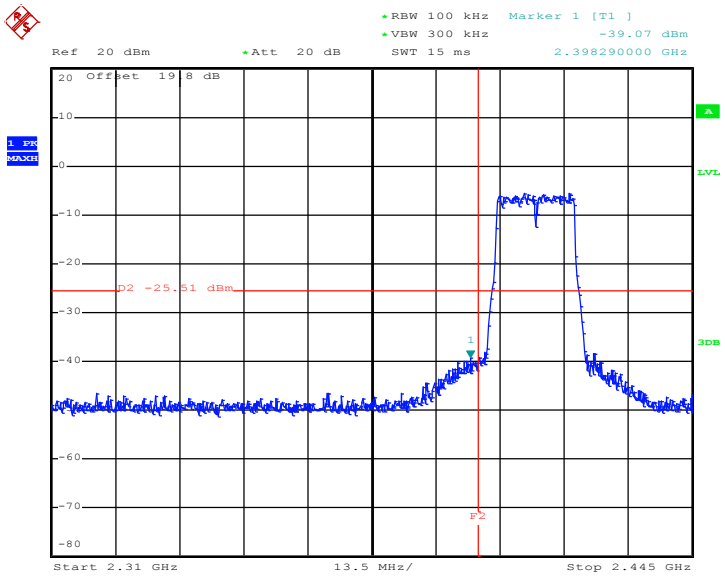
High Band Edge Plot on 802.11b Channel 11



Date: 16.JUL.2012 19:32:37

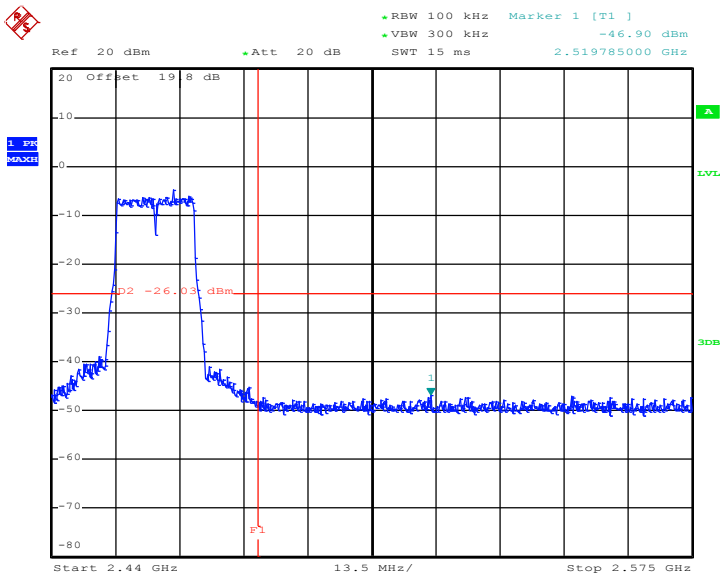
Test Mode :	802.11g	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Reece Li

Low Band Edge Plot on 802.11g Channel 01



Date: 16.JUL.2012 19:50:07

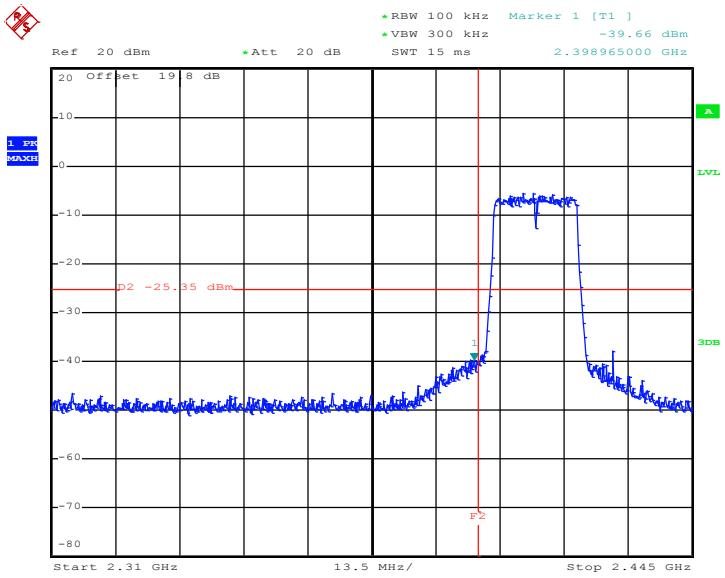
High Band Edge Plot on 802.11g Channel 11



Date: 16.JUL.2012 19:39:36

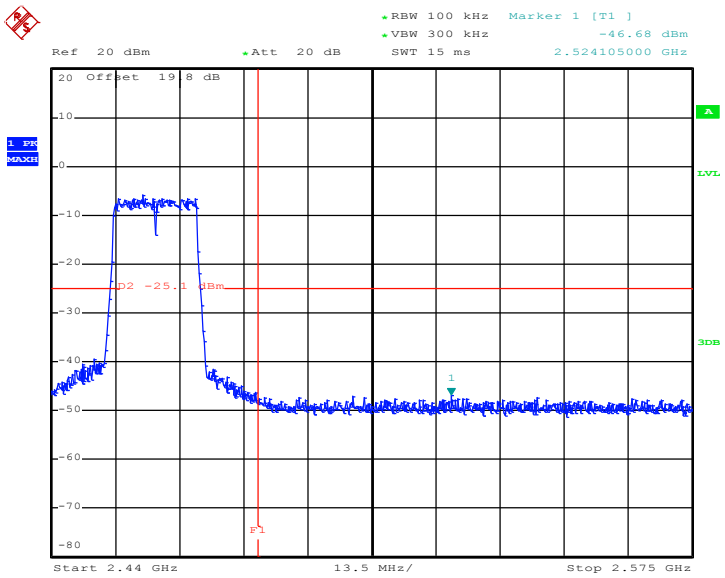
Test Mode :	802.11n HT-20	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Reece Li

Low Band Edge Plot on 802.11n HT-20 Channel 01



Date: 16.JUL.2012 19:54:35

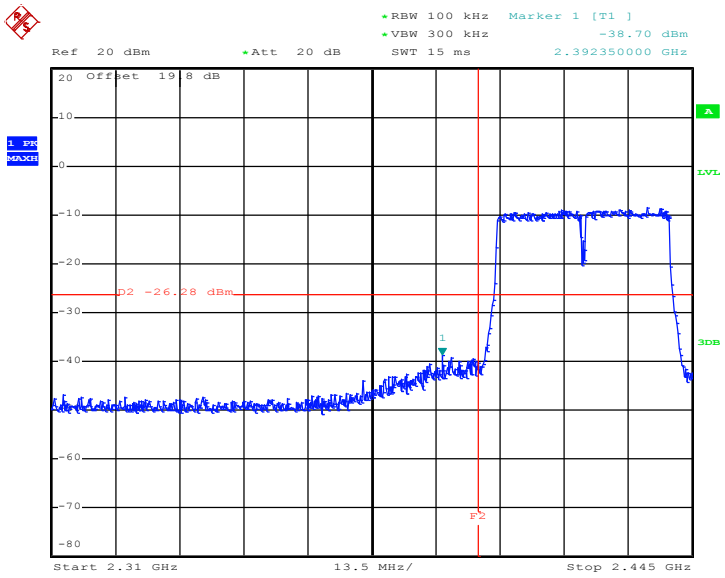
High Band Edge Plot on 802.11n HT-20 Channel 11



Date: 16.JUL.2012 20:01:11

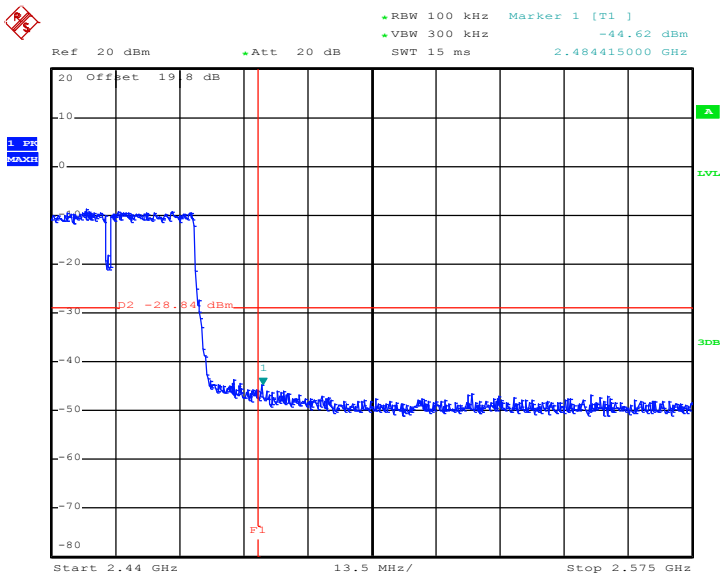
Test Mode :	802.11n HT-40	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	03 and 09	Test Engineer :	Reece Li

Low Band Edge Plot on 802.11n HT-40 Channel 03



Date: 16.JUL.2012 20:10:42

High Band Edge Plot on 802.11n HT-40 Channel 09



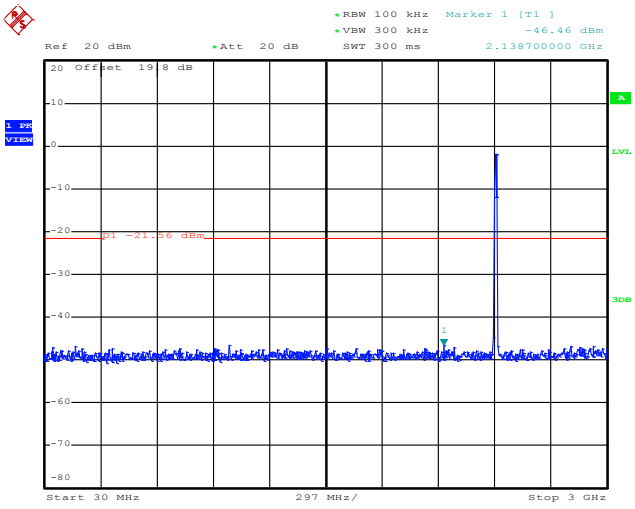
Date: 16.JUL.2012 20:05:00

3.4.6 Test Plots of Spurious Emission

Test Mode :	802.11b	Temperature :	24~26℃
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Reece Li

802.11b 30 MHz~3 GHz

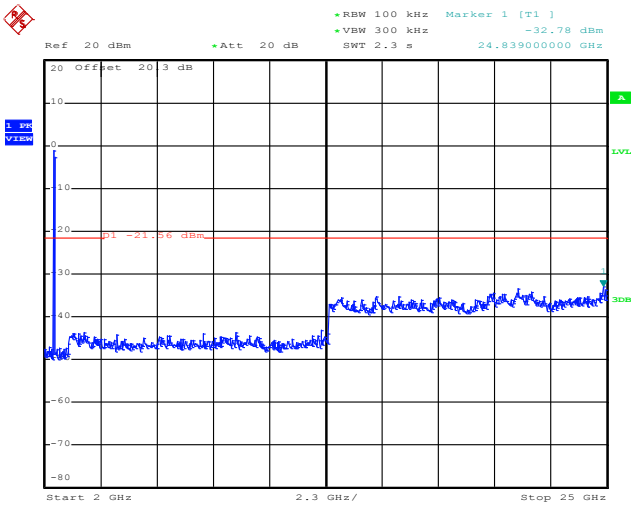
Conducted Spurious Emission Plot on Channel 01



Date: 16.JUL.2012 19:26:45

802.11b 2 GHz~25 GHz

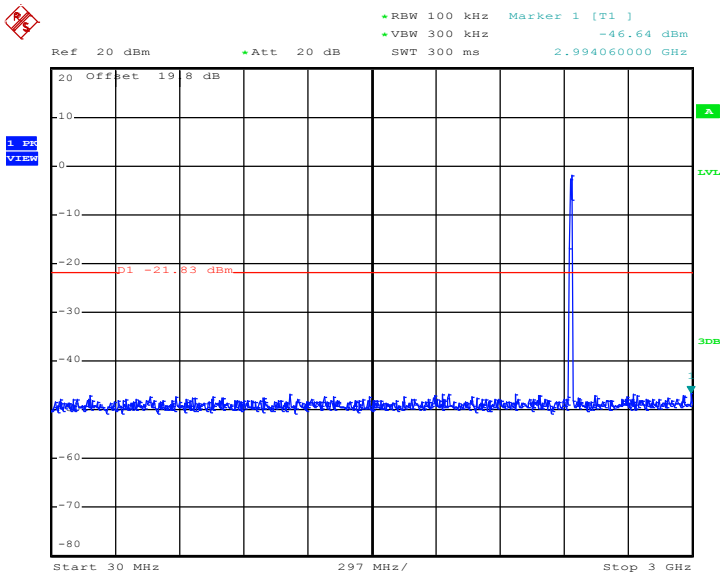
Conducted Spurious Emission Plot on Channel 01



Date: 16.JUL.2012 19:27:02

802.11b 30 MHz~3 GHz

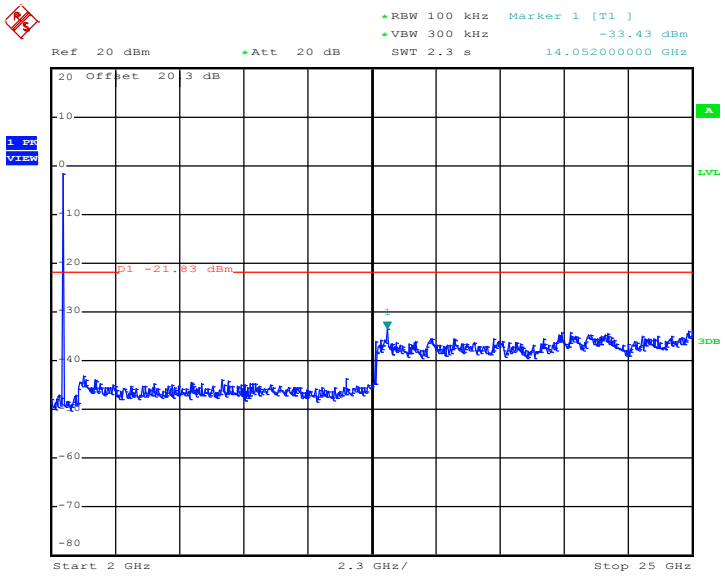
Conducted Spurious Emission Plot on Channel 06



Date: 16.JUL.2012 19:29:41

802.11b 2 GHz~25 GHz

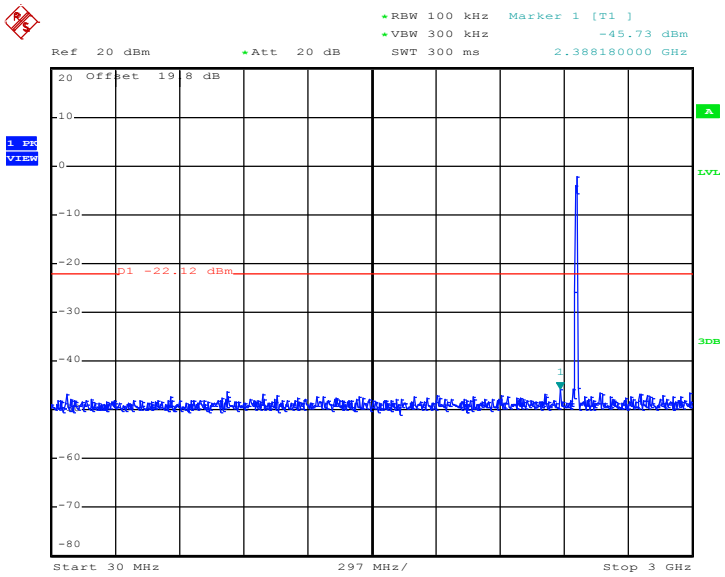
Conducted Spurious Emission Plot on Channel 06



Date: 16.JUL.2012 19:29:58

802.11b 30 MHz~3 GHz

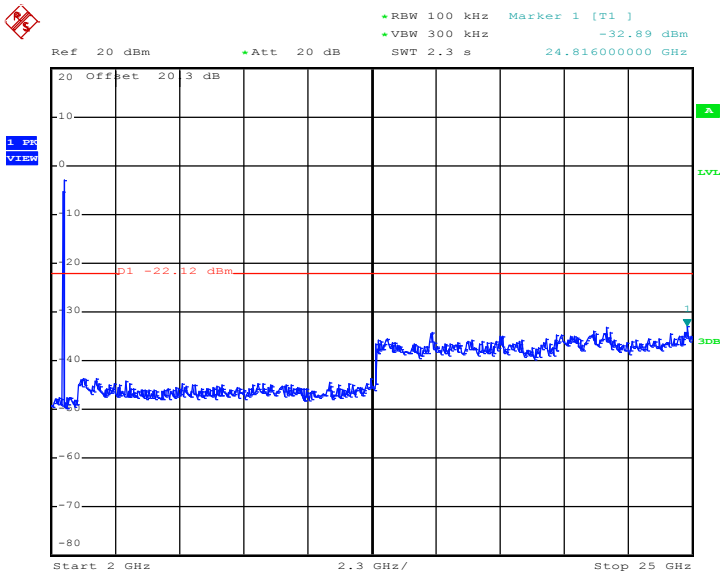
Conducted Spurious Emission Plot on Channel 11



Date: 16.JUL.2012 19:32:57

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

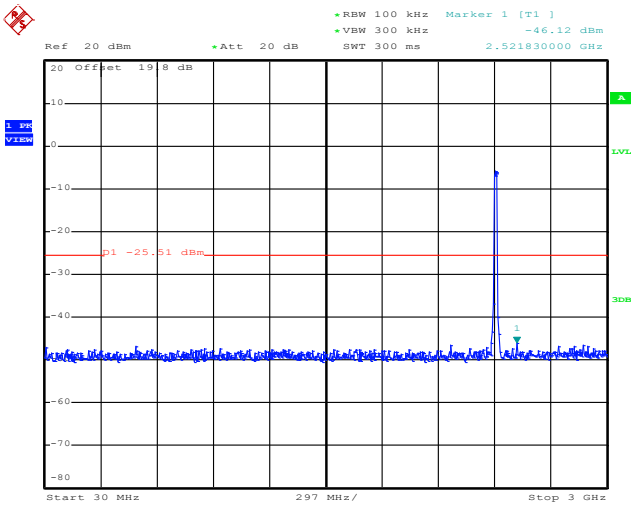


Date: 16.JUL.2012 19:33:14

Test Mode :	802.11g	Temperature :	24~26℃
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Reece Li

802.11g 30 MHz~3 GHz

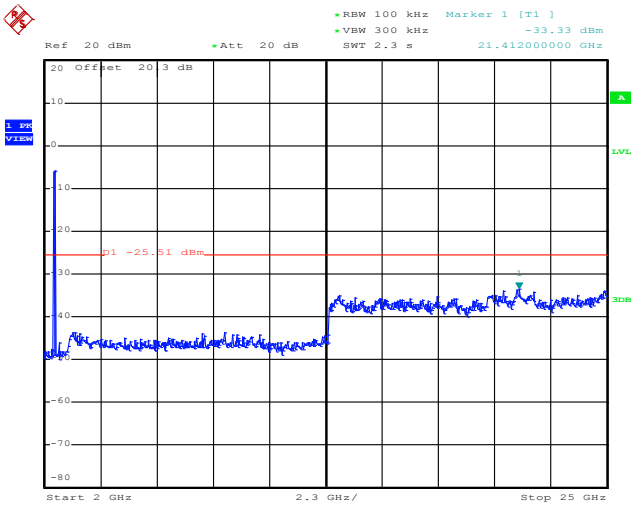
Conducted Spurious Emission Plot on Channel 01



Date: 16.JUL.2012 19:50:26

802.11g 2 GHz~25 GHz

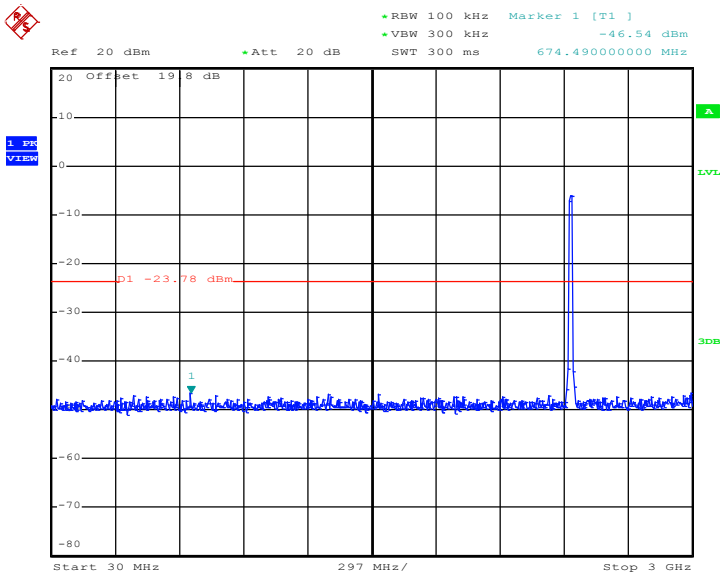
Conducted Spurious Emission Plot on Channel 01



Date: 16.JUL.2012 19:50:44

802.11g 30 MHz~3 GHz

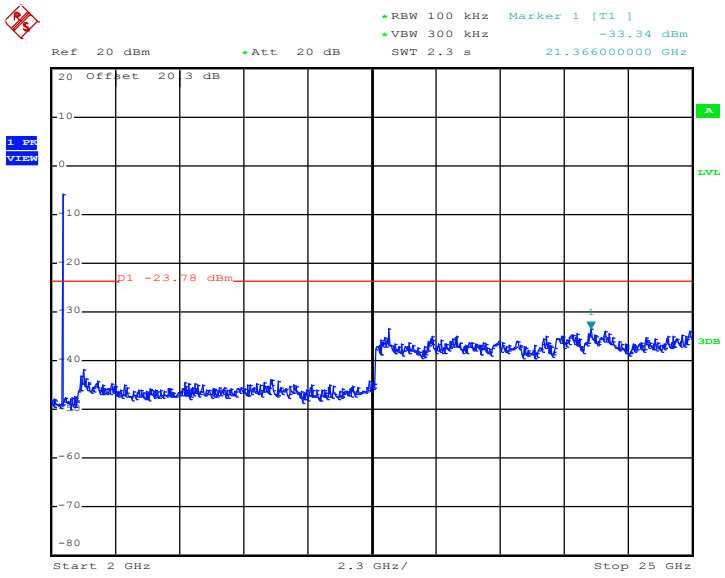
Conducted Spurious Emission Plot on Channel 06



Date: 16.JUL.2012 19:44:58

802.11g 2 GHz~25 GHz

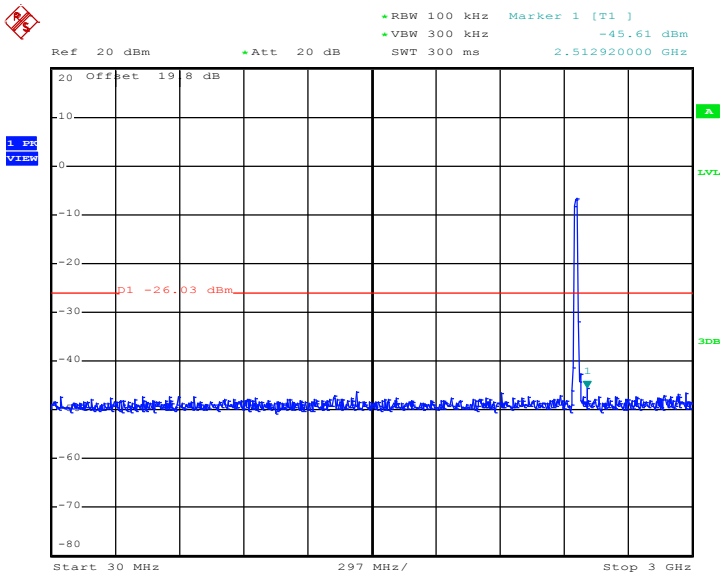
Conducted Spurious Emission Plot on Channel 06



Date: 16.JUL.2012 19:45:16

802.11g 30 MHz~3 GHz

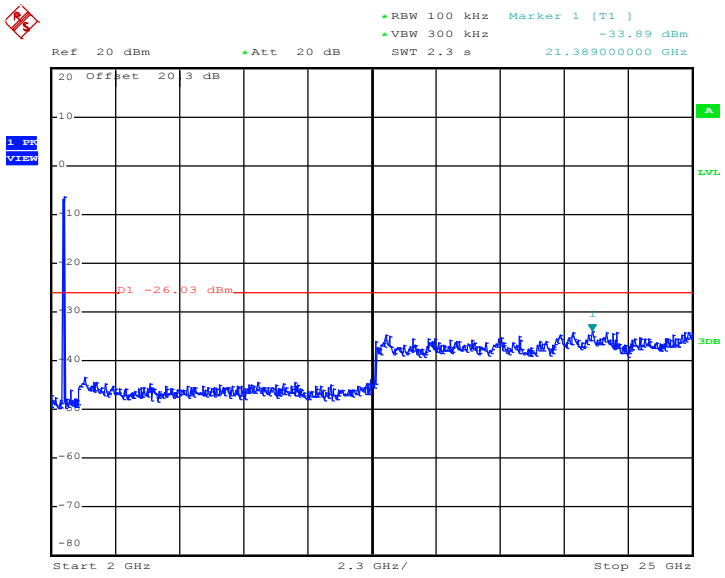
Conducted Spurious Emission Plot on Channel 11



Date: 16.JUL.2012 19:40:42

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

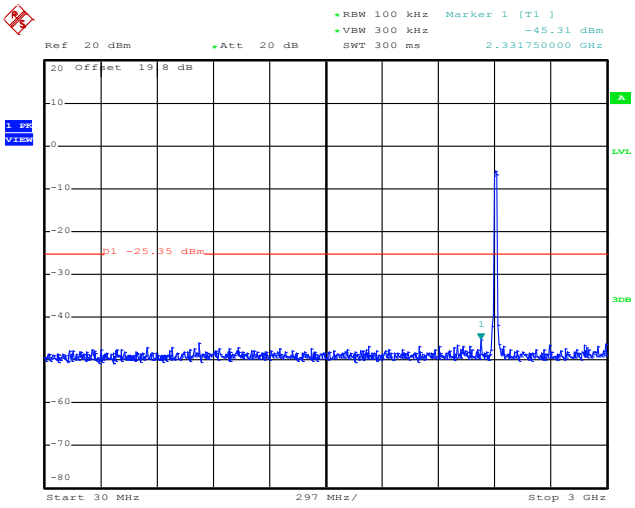


Date: 16.JUL.2012 19:41:00

Test Mode :	802.11n HT-20	Temperature :	24~26℃
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Reece Li

802.11n HT-20 30 MHz~3 GHz

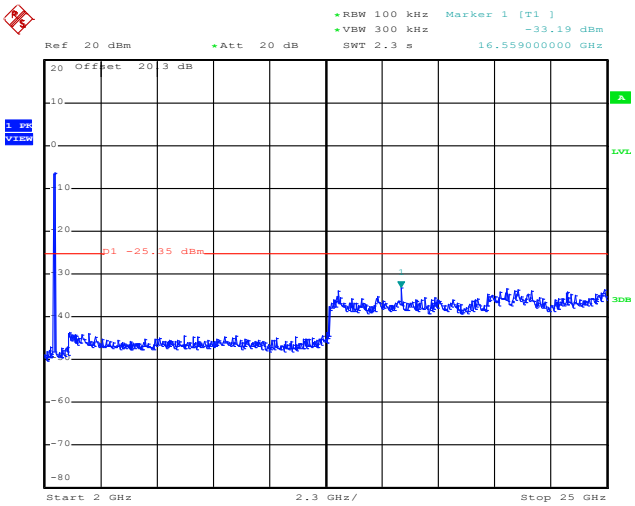
Conducted Spurious Emission Plot on Channel 01



Date: 16.JUL.2012 19:55:01

802.11n HT-20 2 GHz~25 GHz

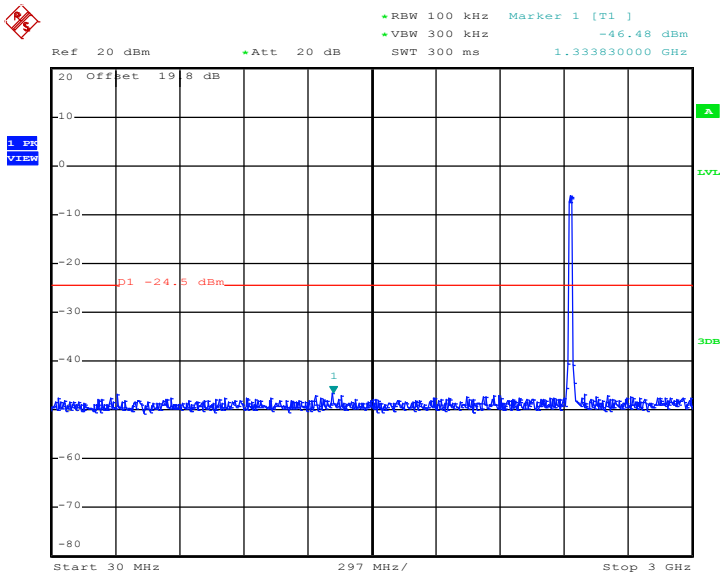
Conducted Spurious Emission Plot on Channel 01



Date: 16.JUL.2012 19:55:19

802.11n HT-20 30 MHz~3 GHz

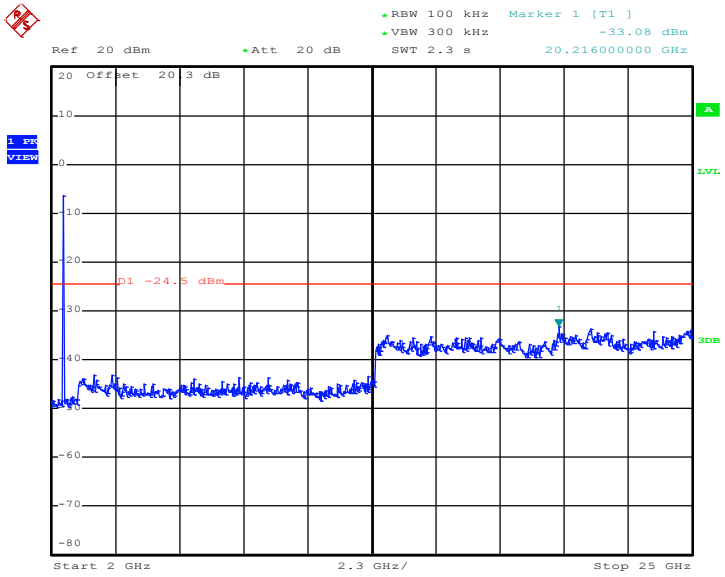
Conducted Spurious Emission Plot on Channel 06



Date: 16.JUL.2012 19:58:27

802.11n HT-20 2 GHz~25 GHz

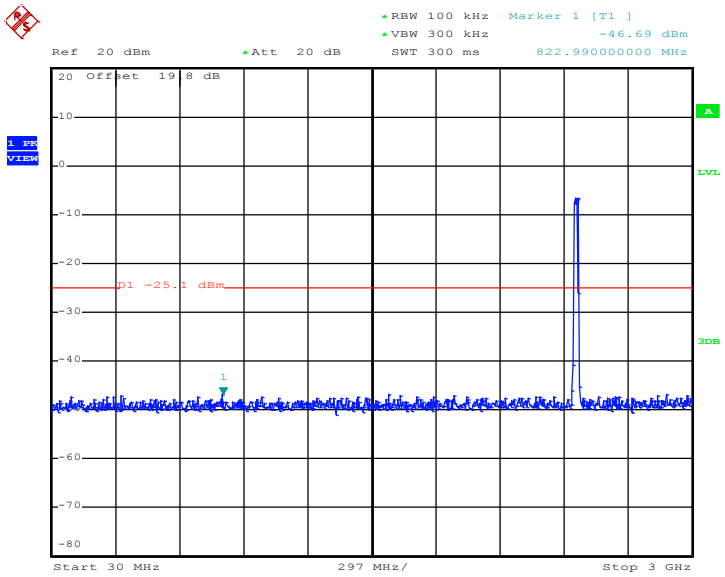
Conducted Spurious Emission Plot on Channel 06



Date: 16.JUL.2012 19:58:44

802.11n HT-20 30 MHz~3 GHz

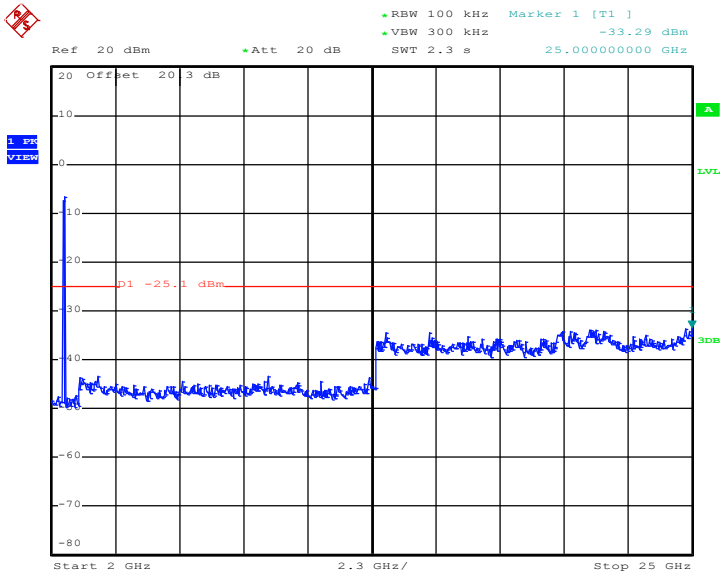
Conducted Spurious Emission Plot on Channel 11



Date: 16.JUL.2012 20:01:32

802.11n HT-20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

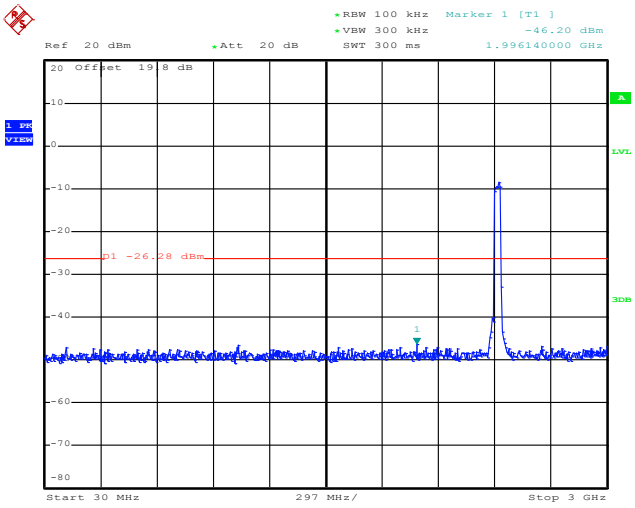


Date: 16.JUL.2012 20:01:49

Test Mode :	802.11n HT-40	Temperature :	24~26
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53
Test Channel :	03, 06, 09	Test Engineer :	Reece Li

802.11n HT-40 30 MHz~3 GHz

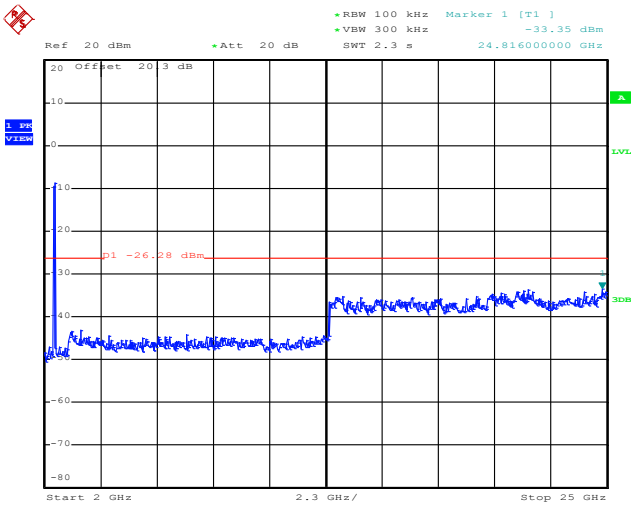
Conducted Spurious Emission Plot on Channel 03



Date: 16.JUL.2012 20:11:20

802.11n HT-40 2 GHz~25 GHz

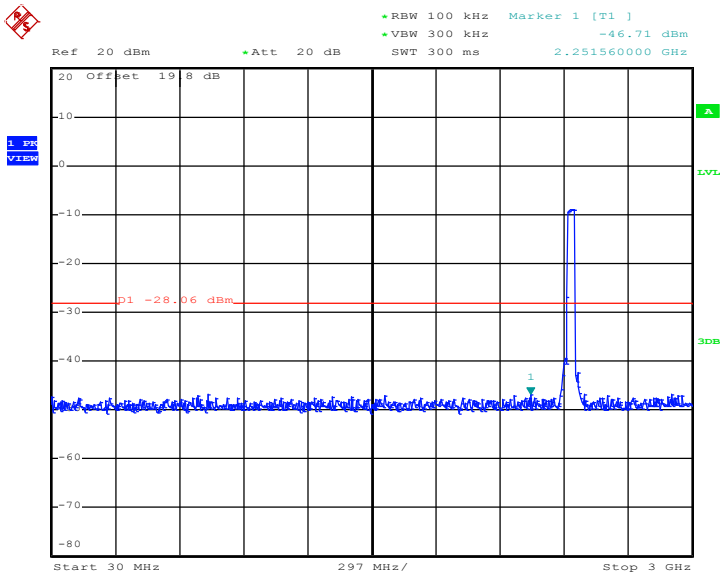
Conducted Spurious Emission Plot on Channel 03



Date: 16.JUL.2012 20:11:37

802.11n HT-40 30 MHz~3 GHz

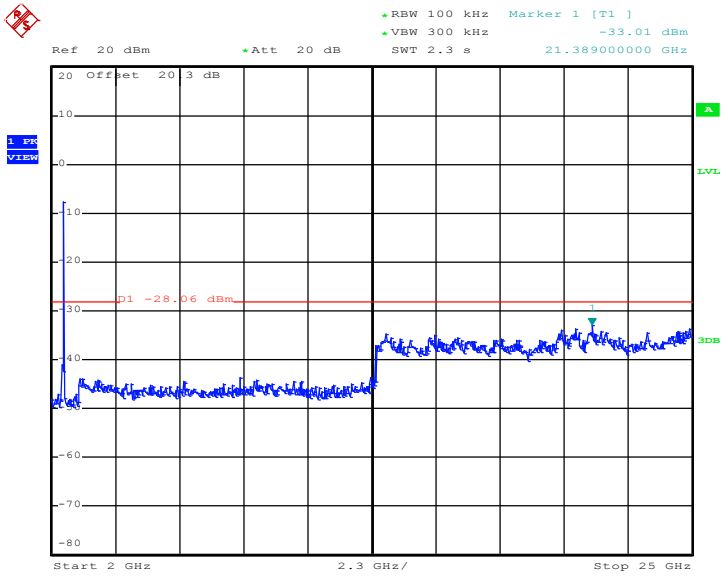
Conducted Spurious Emission Plot on Channel 06



Date: 16.JUL.2012 20:08:02

802.11n HT-40 2 GHz~25 GHz

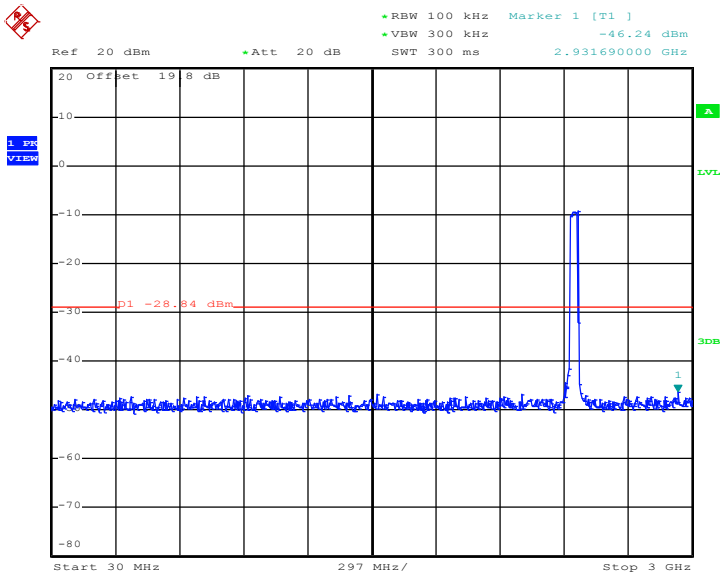
Conducted Spurious Emission Plot on Channel 06



Date: 16.JUL.2012 20:08:19

802.11n HT-40 30 MHz~3 GHz

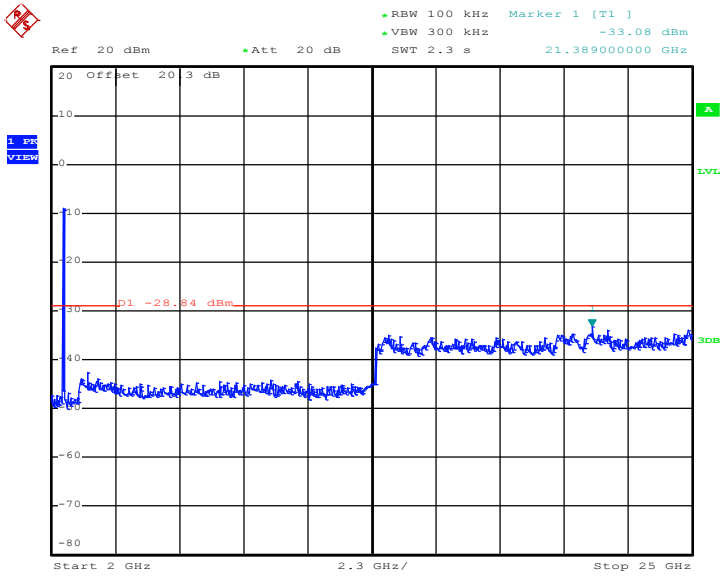
Conducted Spurious Emission Plot on Channel 09



Date: 16.JUL.2012 20:05:27

802.11n HT-40 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 09



Date: 16.JUL.2012 20:05:45

3.5 Radiated Emission Measurement

3.5.1 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

3.5.2 Measuring Instruments

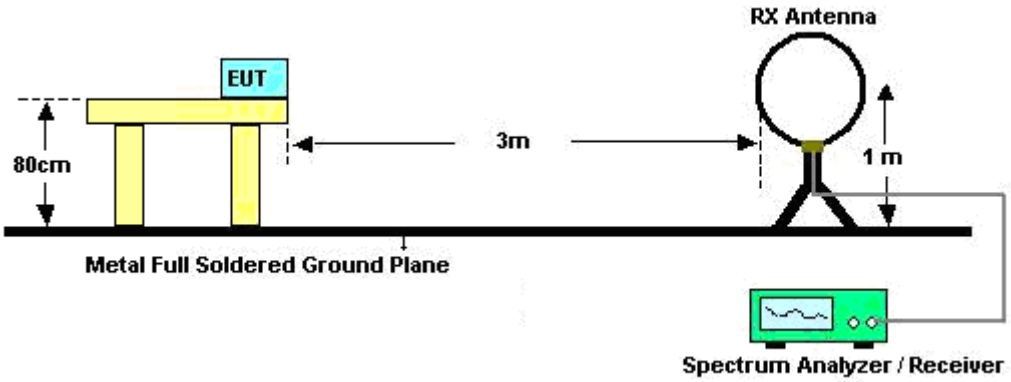
See list of measuring instruments of this test report.

3.5.3 Test Procedures

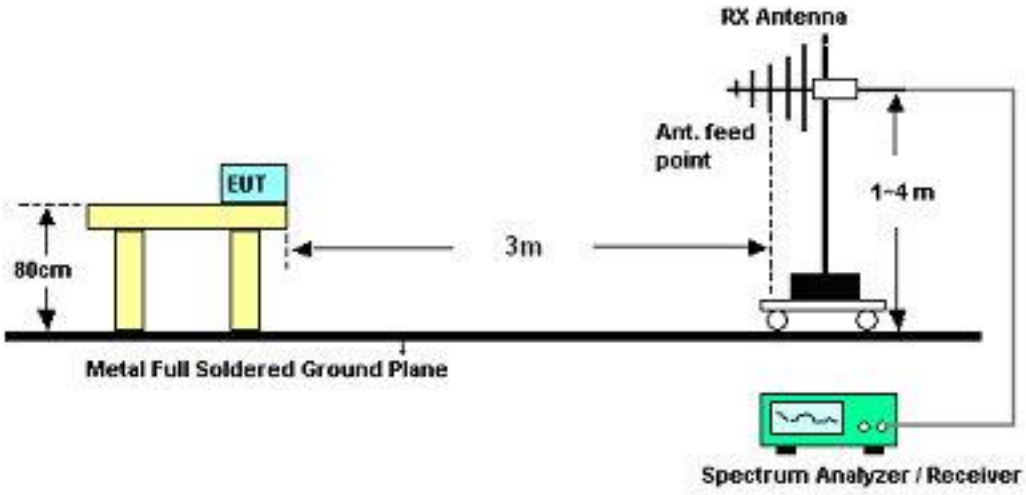
1. The testing follows TCB Workshop 2012, April and fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test site requirement. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
2. The EUT was placed on a turntable with 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving Antenna, which was mounted on the top of a variable height Antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest radiation.
5. Use the following spectrum analyzer settings:
6. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 KHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for Peak measurement, and then set VBW=10Hz, while maintaining all of the other instrument settings for Average measurement.
7. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
8. If the emission level of the EUT measured by the peak detector is more than 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported

3.5.4 Test Setup

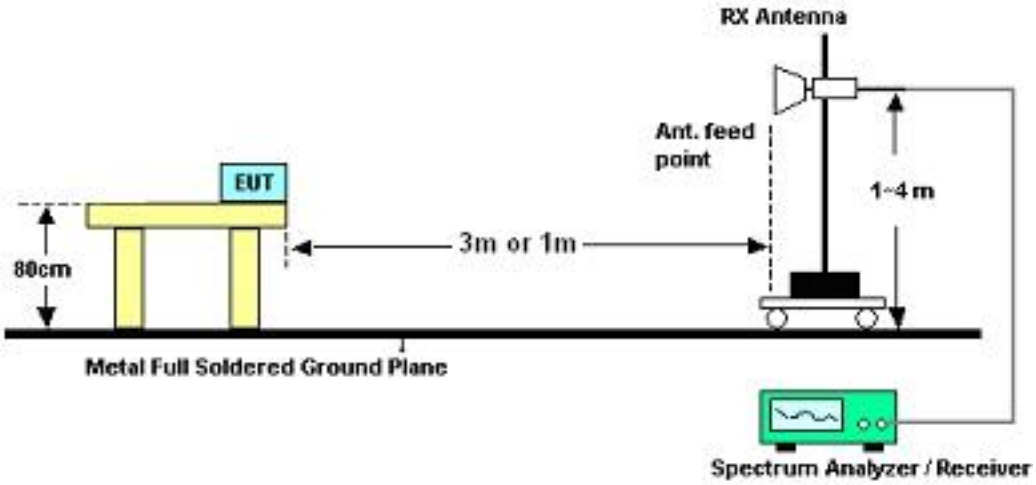
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 Test Results of Radiated 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.

3.5.6 Test Result of Radiated Band Edges

Test Mode :	802.11b	Temperature :	21~23℃
Test Band :	Low	Relative Humidity :	49~51%
Test Channel :	01	Test Engineer :	Eric Shih

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
2389.04	47.47	-26.53	74	43.34	32.06	6.03	33.96	100	98	Peak
2389.04	34.33	-19.67	54	30.2	32.06	6.03	33.96	100	98	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
2388.09	47.04	-26.96	74	42.91	32.06	6.03	33.96	100	232	Peak
2388.09	33.45	-20.55	54	29.32	32.06	6.03	33.96	100	232	Average

Test Mode :	802.11b	Temperature :	21~23℃
Test Band :	High	Relative Humidity :	49~51%
Test Channel :	11	Test Engineer :	Eric Shih

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	47.44	-26.56	74	43.06	32.2	6.18	34	100	114	Peak
2489.17	33.65	-20.35	54	29.27	32.2	6.18	34	100	114	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
2490.69	53.28	-20.72	74	48.9	32.2	6.18	34	196	248	Peak
2490.69	32.8	-21.2	54	28.42	32.2	6.18	34	196	248	Average

Test Mode :	802.11g	Temperature :	21~23℃
Test Band :	Low	Relative Humidity :	49~51%
Test Channel :	01	Test Engineer :	Eric Shih

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	63.15	-10.85	74	59.02	32.06	6.03	33.96	100	108	Peak
2389.99	40.17	-13.83	54	36.04	32.06	6.03	33.96	100	108	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
2388.66	50.72	-23.28	74	46.59	32.06	6.03	33.96	151	256	Peak
2388.66	34.29	-19.71	54	30.16	32.06	6.03	33.96	151	256	Average

Test Mode :	802.11g	Temperature :	21~23℃
Test Band :	High	Relative Humidity :	49~51%
Test Channel :	11	Test Engineer :	Eric Shih

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	54.18	-19.82	74	49.82	32.18	6.18	34	100	101	Peak
2483.5	36.37	-17.63	54	32.01	32.18	6.18	34	100	101	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
2484.99	48.4	-25.6	74	44.04	32.18	6.18	34	160	250	Peak
2484.99	33.81	-20.19	54	29.45	32.18	6.18	34	160	250	Average

Test Mode :	802.11n HT-20	Temperature :	21~23℃
Test Band :	Low	Relative Humidity :	49~51%
Test Channel :	01	Test Engineer :	Eric Shih

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
2389.04	63.39	-10.61	74	59.26	32.06	6.03	33.96	100	108	Peak
2389.04	39.86	-14.14	54	35.73	32.06	6.03	33.96	100	108	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
2389.61	57.68	-16.32	74	53.55	32.06	6.03	33.96	200	249	Peak
2389.61	36.21	-17.79	54	32.08	32.06	6.03	33.96	200	249	Average

Test Mode :	802.11n HT-20	Temperature :	21~23℃
Test Band :	High	Relative Humidity :	49~51%
Test Channel :	11	Test Engineer :	Eric Shih

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
2488.98	59.68	-14.32	74	55.3	32.2	6.18	34	100	102	Peak
2488.98	38.39	-15.61	54	34.01	32.2	6.18	34	100	102	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
2484.04	55.52	-18.48	74	51.16	32.18	6.18	34	195	246	Peak
2484.04	34.25	-19.75	54	29.89	32.18	6.18	34	195	246	Average

Test Mode :	802.11n HT-40	Temperature :	21~23℃
Test Band :	Low	Relative Humidity :	49~51%
Test Channel :	03	Test Engineer :	Eric Shih

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
2381.25	66.28	-7.72	74	62.18	32.03	6.03	33.96	100	104	Peak
2381.25	42.96	-11.04	54	38.86	32.03	6.03	33.96	100	104	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	60.16	-13.84	74	56.03	32.06	6.03	33.96	200	238	Peak
2389.99	38.19	-15.81	54	34.06	32.06	6.03	33.96	200	238	Average

Test Mode :	802.11n HT-40	Temperature :	21~23℃
Test Band :	High	Relative Humidity :	49~51%
Test Channel :	09	Test Engineer :	Eric Shih

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
2488.41	57.13	-16.87	74	52.75	32.2	6.18	34	100	105	Peak
2488.41	39.98	-14.02	54	35.6	32.2	6.18	34	100	105	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
2484.42	56.29	-17.71	74	51.93	32.18	6.18	34	199	243	Peak
2484.42	37.75	-16.25	54	33.39	32.18	6.18	34	199	243	Average

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

Test Mode :	802.11b	Temperature :	21~23℃
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. For example, 102.66 dBuV/m - 20dB = 82.66dBuV/m.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.04	34.33	-19.67	54	30.2	32.06	6.03	33.96	100	98	Average
2389.04	47.47	-26.53	74	43.34	32.06	6.03	33.96	100	98	Peak
2412	98.89	-	-	94.71	32.08	6.07	33.97	100	98	Average
2412	102.66	-	-	98.48	32.08	6.07	33.97	100	98	Peak
2486	32.71	-21.29	54	28.35	32.18	6.18	34	100	98	Average
2486	44.44	-29.56	74	40.08	32.18	6.18	34	100	98	Peak
4824	47.4	-26.6	74	63.29	34.1	9.12	59.11	100	0	Peak
7236	45.71	-36.95	82.66	58.09	35.7	10.03	58.11	100	0	Peak

Test Mode :	802.11b	Temperature :	21~23℃
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.09	33.45	-20.55	54	29.32	32.06	6.03	33.96	100	232	Average
2388.09	47.04	-26.96	74	42.91	32.06	6.03	33.96	100	232	Peak
2412	90.73	-	-	86.55	32.08	6.07	33.97	100	232	Average
2412	94.99	-	-	90.81	32.08	6.07	33.97	100	232	Peak
2490	32.64	-21.36	54	28.26	32.2	6.18	34	100	232	Average
2490	44.93	-29.07	74	40.55	32.2	6.18	34	100	232	Peak
4824	48.07	-25.93	74	63.96	34.1	9.12	59.11	100	0	Peak
7236	46.37	-28.62	74.99	58.75	35.7	10.03	58.11	100	0	Peak

Test Mode :	802.11b	Temperature :	21~23℃
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	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
2338	33.81	-20.19	54	29.82	31.98	5.95	33.94	100	104	Average
2338	45.5	-28.5	74	41.51	31.98	5.95	33.94	100	104	Peak
2437	98.22	-	-	93.96	32.13	6.11	33.98	100	104	Average
2437	101.28	-	-	97.05	32.1	6.11	33.98	100	104	Peak
2488	32.89	-21.11	54	28.51	32.2	6.18	34	100	104	Average
2488	44.34	-29.66	74	39.96	32.2	6.18	34	100	104	Peak
4874	44.74	-29.26	74	60.55	34.1	9.13	59.04	100	0	Peak

Test Mode :	802.11b	Temperature :	21~23℃
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	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
2318	32.24	-21.76	54	28.29	31.96	5.92	33.93	156	253	Average
2318	45.88	-28.12	74	41.93	31.96	5.92	33.93	156	253	Peak
2437	90.53	-	-	86.27	32.13	6.11	33.98	156	253	Average
2437	94.36	-	-	90.1	32.13	6.11	33.98	156	253	Peak
2496	32.68	-21.32	54	28.3	32.2	6.18	34	156	253	Average
2496	44.92	-29.08	74	40.54	32.2	6.18	34	156	253	Peak
4874	45.99	-28.01	74	61.8	34.1	9.13	59.04	100	0	Peak

Test Mode :	802.11b	Temperature :	21~23℃
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	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
2354	33.64	-20.36	54	29.62	32.01	5.95	33.94	100	114	Average
2354	46.01	-27.99	74	41.99	32.01	5.95	33.94	100	114	Peak
2462	96.59	-	-	92.29	32.15	6.14	33.99	100	114	Average
2462	100.34	-	-	96.04	32.15	6.14	33.99	100	114	Peak
2489.17	33.65	-20.35	54	29.27	32.2	6.18	34	100	114	Average
2489.17	47.44	-26.56	74	43.06	32.2	6.18	34	100	114	Peak
4924	44.7	-29.3	74	60.41	34.1	9.15	58.96	100	0	Peak

Test Mode :	802.11b	Temperature :	21~23℃
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	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
2350	33.27	-20.73	54	29.28	31.98	5.95	33.94	196	248	Average
2350	45.97	-28.03	74	41.98	31.98	5.95	33.94	196	248	Peak
2462	92.49	-	-	88.19	32.15	6.14	33.99	196	248	Average
2462	96.31	-	-	92.01	32.15	6.14	33.99	196	248	Peak
2490.69	32.8	-21.2	54	28.42	32.2	6.18	34	196	248	Average
2490.69	53.28	-20.72	74	48.9	32.2	6.18	34	196	248	Peak
4924	47.78	-26.22	74	63.49	34.1	9.15	58.96	100	0	Peak

Test Mode :	802.11g	Temperature :	21~23℃
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	40.17	-13.83	54	36.04	32.06	6.03	33.96	100	108	Average
2389.99	63.15	-10.85	74	59.02	32.06	6.03	33.96	100	108	Peak
2412	94.37	-	-	90.19	32.08	6.07	33.97	100	108	Average
2412	103.81	-	-	99.63	32.08	6.07	33.97	100	108	Peak
2490	33.08	-20.92	54	28.7	32.2	6.18	34	100	108	Average
2490	45.16	-28.84	74	40.78	32.2	6.18	34	100	108	Peak
4824	44.27	-29.73	74	60.16	34.1	9.12	59.11	100	0	Peak
7236	48.93	-34.88	83.81	61.31	35.7	10.03	58.11	100	0	Peak

Test Mode :	802.11g	Temperature :	21~23℃
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.66	34.29	-19.71	54	30.16	32.06	6.03	33.96	151	256	Average
2388.66	50.72	-23.28	74	46.59	32.06	6.03	33.96	151	256	Peak
2412	87.44	-	-	83.18	32.13	6.11	33.98	151	256	Average
2412	96.65	-	-	92.47	32.08	6.07	33.97	151	256	Peak
2488	32.91	-21.09	54	28.53	32.2	6.18	34	151	256	Average
2488	44.79	-29.21	74	40.41	32.2	6.18	34	151	256	Peak
4824	47.37	-26.63	74	63.26	34.1	9.12	59.11	100	0	Peak
7236	50.26	-26.39	76.65	62.64	35.7	10.03	58.11	100	0	Peak

Test Mode :	802.11g	Temperature :	21~23℃
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	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
2358	34.86	-19.14	54	30.81	32.01	5.99	33.95	100	103	Average
2358	46.96	-27.04	74	42.91	32.01	5.99	33.95	100	103	Peak
2437	94.15	-	-	89.89	32.13	6.11	33.98	100	103	Average
2437	103.35	-	-	99.12	32.1	6.11	33.98	100	103	Peak
2486	33.27	-20.73	54	28.91	32.18	6.18	34	100	103	Average
2486	45.22	-28.78	74	40.86	32.18	6.18	34	100	103	Peak
7311	47.83	-26.17	74	60.2	35.7	10.06	58.13	100	0	Peak

Test Mode :	802.11g	Temperature :	21~23℃
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	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
2372	33.13	-20.87	54	29.06	32.03	5.99	33.95	156	256	Average
2372	45.08	-28.92	74	41.01	32.03	5.99	33.95	156	256	Peak
2437	86.98	-	-	82.72	32.13	6.11	33.98	156	256	Average
2437	96.54	-	-	92.31	32.1	6.11	33.98	156	256	Peak
2498	32.75	-21.25	54	28.37	32.2	6.18	34	156	256	Average
2498	44.38	-29.62	74	40	32.2	6.18	34	156	256	Peak
7311	47.55	-26.45	74	59.92	35.7	10.06	58.13	100	0	Peak

Test Mode :	802.11g	Temperature :	21~23℃
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	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
2378	34.77	-19.23	54	30.7	32.03	5.99	33.95	100	101	Average
2378	47.42	-26.58	74	43.35	32.03	5.99	33.95	100	101	Peak
2462	91.18	-	-	86.88	32.15	6.14	33.99	100	101	Average
2462	100.4	-	-	96.1	32.15	6.14	33.99	100	101	Peak
2483.5	36.37	-17.63	54	32.01	32.18	6.18	34	100	101	Average
2483.5	54.18	-19.82	74	49.82	32.18	6.18	34	100	101	Peak
7386	47.2	-26.8	74	59.56	35.7	10.1	58.16	100	0	Peak

Test Mode :	802.11g	Temperature :	21~23℃
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	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
2350	33.1	-20.9	54	29.11	31.98	5.95	33.94	160	250	Average
2350	46.24	-27.76	74	42.25	31.98	5.95	33.94	160	250	Peak
2462	86.25	-	-	81.95	32.15	6.14	33.99	160	250	Average
2462	95.64	-	-	91.34	32.15	6.14	33.99	160	250	Peak
2484.99	33.81	-20.19	54	29.45	32.18	6.18	34	160	250	Average
2484.99	48.4	-25.6	74	44.04	32.18	6.18	34	160	250	Peak
7386	48.49	-25.51	74	60.86	35.7	10.1	58.17	100	0	Peak

Test Mode :	802.11n-HT20	Temperature :	21~23℃
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.04	39.86	-14.14	54	35.73	32.06	6.03	33.96	100	108	Average
2389.04	63.39	-10.61	74	59.26	32.06	6.03	33.96	100	108	Peak
2412	93.96	-	-	89.78	32.08	6.07	33.97	100	108	Average
2412	103.69	-	-	99.51	32.08	6.07	33.97	100	108	Peak
2500	33.21	-20.79	54	28.83	32.2	6.18	34	100	108	Average
2500	44.79	-29.21	74	40.41	32.2	6.18	34	100	108	Peak
4824	46.23	-27.77	74	62.12	34.1	9.12	59.11	100	0	Peak
7236	49.72	-33.97	83.69	62.1	35.7	10.03	58.11	100	0	Peak

Test Mode :	802.11n-HT20	Temperature :	21~23℃
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.61	36.21	-17.79	54	32.08	32.06	6.03	33.96	200	249	Average
2389.61	57.68	-16.32	74	53.55	32.06	6.03	33.96	200	249	Peak
2412	88.54	-	-	84.36	32.08	6.07	33.97	200	249	Average
2412	98.16	-	-	93.98	32.08	6.07	33.97	200	249	Peak
2484	32.91	-21.09	54	28.55	32.18	6.18	34	200	249	Average
2484	45.02	-28.98	74	40.66	32.18	6.18	34	200	249	Peak
4824	47.27	-26.73	74	63.16	34.1	9.12	59.11	100	0	Peak
7236	49.99	-28.17	78.16	62.37	35.7	10.03	58.11	100	0	Peak

Test Mode :	802.11n-HT20	Temperature :	21~23℃
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	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
2386	35.46	-18.54	54	31.33	32.06	6.03	33.96	100	104	Average
2386	46.54	-27.46	74	42.41	32.06	6.03	33.96	100	104	Peak
2437	93.76	-	-	89.5	32.13	6.11	33.98	100	104	Average
2437	103.33	-	-	99.1	32.1	6.11	33.98	100	104	Peak
2486	33.26	-20.74	54	28.9	32.18	6.18	34	100	104	Average
2486	45.56	-28.44	74	41.2	32.18	6.18	34	100	104	Peak
7311	47.12	-26.88	74	59.49	35.7	10.06	58.13	100	0	Peak

Test Mode :	802.11n-HT20	Temperature :	21~23℃
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	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
2348	33.57	-20.43	54	29.58	31.98	5.95	33.94	198	250	Average
2348	46.36	-27.64	74	42.37	31.98	5.95	33.94	198	250	Peak
2437	86.82	-	-	82.56	32.13	6.11	33.98	198	250	Average
2437	96.53	-	-	92.3	32.1	6.11	33.98	198	250	Peak
2496	32.85	-21.15	54	28.47	32.2	6.18	34	198	250	Average
2496	45.34	-28.66	74	40.96	32.2	6.18	34	198	250	Peak
7311	47.69	-26.31	74	60.06	35.7	10.06	58.13	100	0	Peak

Test Mode :	802.11n-HT20	Temperature :	21~23℃
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	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
2348	34.97	-19.03	54	30.98	31.98	5.95	33.94	100	102	Average
2348	46.84	-27.16	74	42.85	31.98	5.95	33.94	100	102	Peak
2462	91.74	-	-	87.44	32.15	6.14	33.99	100	102	Average
2462	101.57	-	-	97.27	32.15	6.14	33.99	100	102	Peak
2488.98	38.39	-15.61	54	34.01	32.2	6.18	34	100	102	Average
2488.98	59.68	-14.32	74	55.3	32.2	6.18	34	100	102	Peak
7386	45.29	-28.71	74	57.66	35.7	10.1	58.17	100	0	Peak

Test Mode :	802.11n-HT20	Temperature :	21~23℃
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	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
2380	33.94	-20.06	54	29.84	32.03	6.03	33.96	195	246	Average
2380	46.53	-27.47	74	42.43	32.03	6.03	33.96	195	246	Peak
2462	88.14	-	-	83.84	32.15	6.14	33.99	195	246	Average
2462	98.05	-	-	93.75	32.15	6.14	33.99	195	246	Peak
2484.04	34.25	-19.75	54	29.89	32.18	6.18	34	195	246	Average
2484.04	55.52	-18.48	74	51.16	32.18	6.18	34	195	246	Peak
7386	48.3	-25.7	74	60.67	35.7	10.1	58.17	100	0	Peak

Test Mode :	802.11n-HT40	Temperature :	21~23℃
Test Channel :	03	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	2422 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
49.44	26.73	-13.27	40	49.17	8.5	0.69	31.63	-	-	Peak
196.59	24.8	-18.7	43.5	45.73	9.07	1.31	31.31	-	-	Peak
267.6	36.77	-9.23	46	53.58	12.85	1.63	31.29	100	0	Peak
336.4	29.21	-16.79	46	44.39	14.3	1.87	31.35	-	-	Peak
670.3	23.41	-22.59	46	30.58	20.36	2.88	30.41	-	-	Peak
955.9	25.55	-20.45	46	28.93	23.94	3.47	30.79	-	-	Peak
2381.25	42.96	-11.04	54	38.86	32.03	6.03	33.96	100	104	Average
2381.25	66.28	-7.72	74	62.18	32.03	6.03	33.96	100	104	Peak
2422	91.44	-	-	87.24	32.1	6.07	33.97	100	104	Average
2422	100.59	-	-	96.39	32.1	6.07	33.97	100	104	Peak
2486	33.93	-20.07	54	29.57	32.18	6.18	34	100	104	Average
2486	47.8	-26.2	74	43.44	32.18	6.18	34	100	104	Peak
4874	41.17	-32.83	74	57.72	34.1	9.13	59.78	100	0	Peak

Test Mode :	802.11n-HT40	Temperature :	21~23℃
Test Channel :	03	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	2422 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
68.34	36.28	-3.72	40	60.95	6.28	0.83	31.78	100	0	Peak
75.9	36.08	-3.92	40	59.9	7.06	0.86	31.74	-	-	Peak
199.56	27.34	-16.16	43.5	48.23	9.1	1.32	31.31	-	-	Peak
318.2	23.59	-22.41	46	39.12	13.8	1.81	31.14	-	-	Peak
836.2	25.25	-20.75	46	29.99	22.46	3.23	30.43	-	-	Peak
930	25.61	-20.39	46	29.49	23.55	3.41	30.84	-	-	Peak
2389.99	38.19	-15.81	54	34.06	32.06	6.03	33.96	200	238	Average
2389.99	60.16	-13.84	74	56.03	32.06	6.03	33.96	200	238	Peak
2422	85.59	-	-	81.39	32.1	6.07	33.97	200	238	Average
2422	94.71	-	-	90.53	32.08	6.07	33.97	200	238	Peak
2492	33.16	-20.84	54	28.78	32.2	6.18	34	200	238	Average
2492	45.58	-28.42	74	41.2	32.2	6.18	34	200	238	Peak
4874	40.05	-33.95	74	56.6	34.1	9.13	59.78	100	0	Peak

Test Mode :	802.11n-HT40	Temperature :	21~23℃
Test Channel :	09	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	2452 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	35.5	-18.5	54	31.37	32.06	6.03	33.96	100	105	Average
2390	51.84	-22.16	74	47.71	32.06	6.03	33.96	100	105	Peak
2452	88.45	-	-	84.19	32.13	6.11	33.98	100	105	Average
2452	99.63	-	-	95.4	32.1	6.11	33.98	100	105	Peak
2488.41	39.98	-14.02	54	35.6	32.2	6.18	34	100	105	Average
2488.41	57.13	-16.87	74	52.75	32.2	6.18	34	100	105	Peak
4904	41.72	-32.28	74	-1.52	34.1	9.14	0	100	0	Peak

Test Mode :	802.11n-HT40	Temperature :	21~23℃
Test Channel :	09	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	2452 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	34.13	-19.87	54	30	32.06	6.03	33.96	199	243	Average
2390	48.95	-25.05	74	44.82	32.06	6.03	33.96	199	243	Peak
2452	83.23	-	-	78.97	32.13	6.11	33.98	199	243	Average
2452	92.34	-	-	88.08	32.13	6.11	33.98	199	243	Peak
2484.42	37.75	-16.25	54	33.39	32.18	6.18	34	199	243	Average
2484.42	56.29	-17.71	74	51.93	32.18	6.18	34	199	243	Peak
4904	41.66	-32.34	74	-1.58	34.1	9.14	0	100	0	Peak

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.

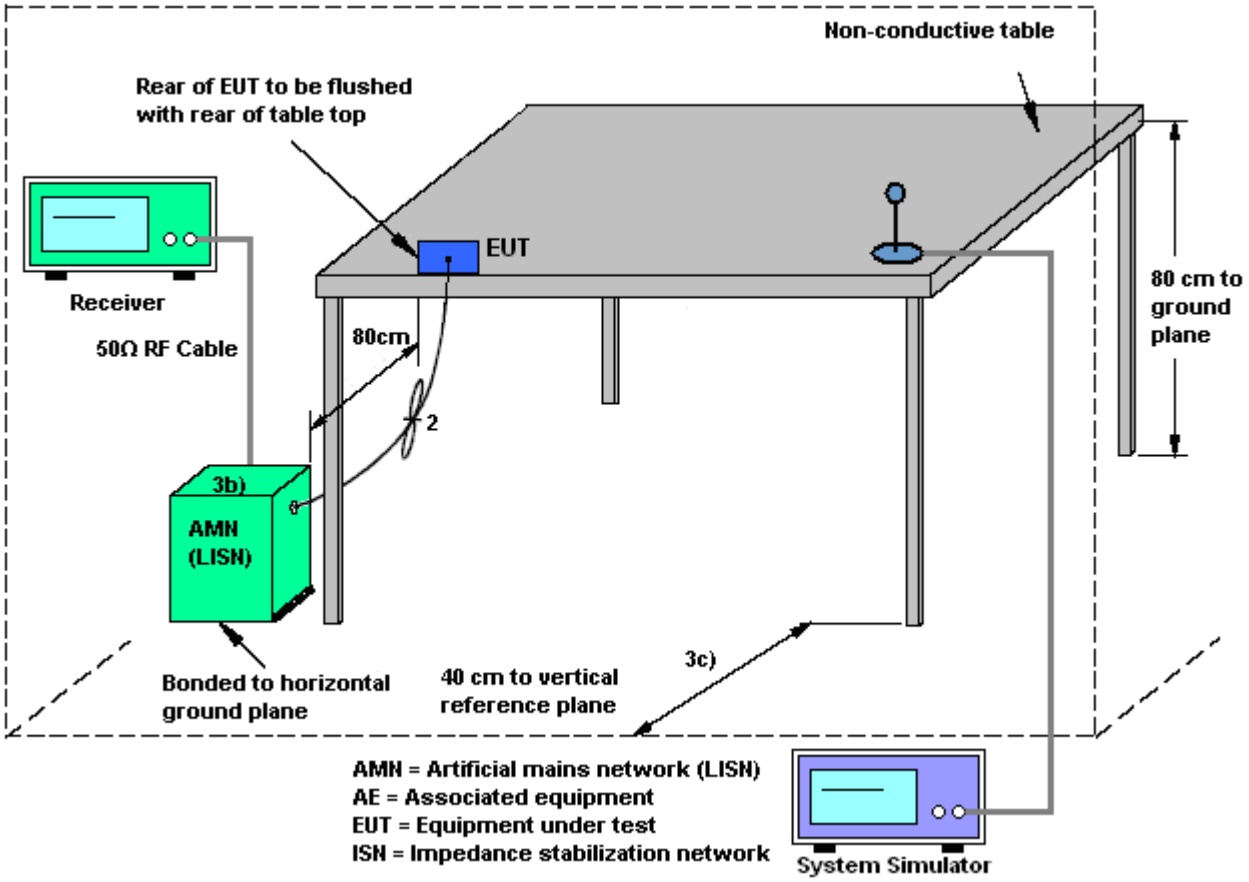
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

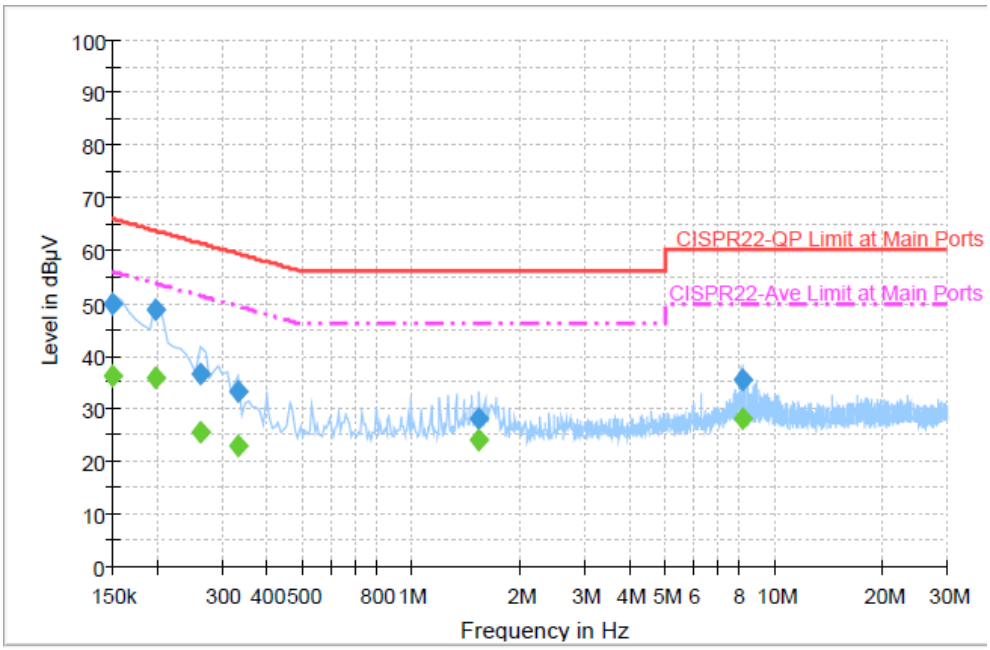
1. The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance 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 :**	20~21℃
Test Engineer :	Kai-Chun Chu	**Relative Humidity :**	50~51%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	GSM850 Idle + WLAN Link + USB Cable (Charging from Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



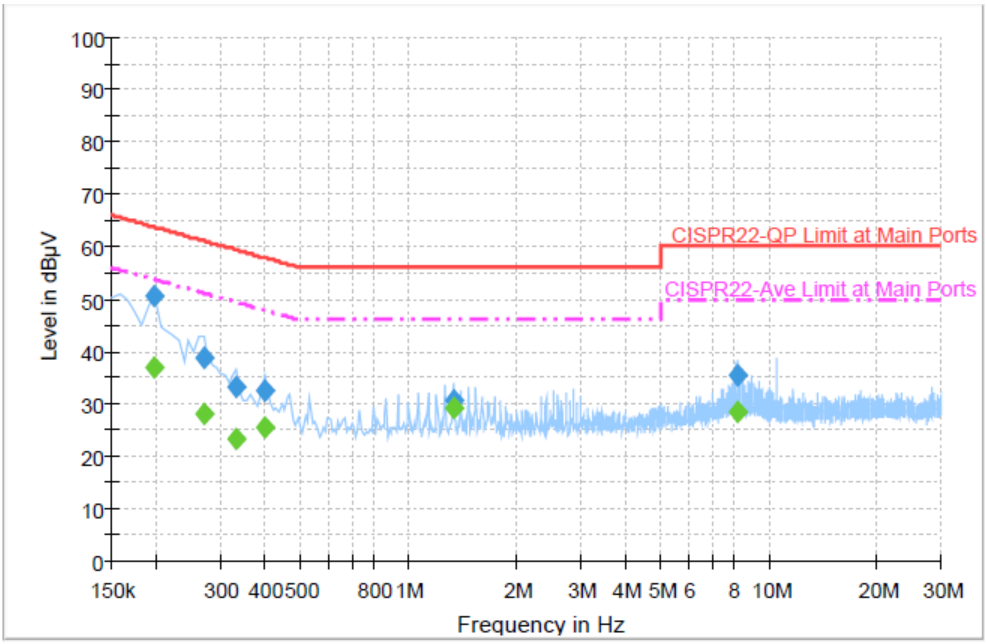
Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	49.9	Off	L1	19.4	16.1	66.0
0.198000	48.8	Off	L1	19.3	14.9	63.7
0.262000	36.4	Off	L1	19.4	25.0	61.4
0.334000	33.1	Off	L1	19.4	26.3	59.4
1.534000	28.1	Off	L1	19.4	27.9	56.0
8.150000	35.5	Off	L1	19.7	24.5	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	36.3	Off	L1	19.4	19.7	56.0
0.198000	35.9	Off	L1	19.3	17.8	53.7
0.262000	25.3	Off	L1	19.4	26.1	51.4
0.334000	22.9	Off	L1	19.4	26.5	49.4
1.534000	23.9	Off	L1	19.4	22.1	46.0
8.150000	28.1	Off	L1	19.7	21.9	50.0

Test Mode :	Mode 1	Temperature :	20~21℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	50~51%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + WLAN Link + USB Cable (Charging from Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.198000	50.6	Off	N	19.3	13.1	63.7
0.270000	38.8	Off	N	19.4	22.3	61.1
0.334000	33.3	Off	N	19.4	26.1	59.4
0.398000	32.4	Off	N	19.5	25.5	57.9
1.334000	30.6	Off	N	19.5	25.4	56.0
8.150000	35.4	Off	N	19.8	24.6	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.198000	37.0	Off	N	19.3	16.7	53.7
0.270000	27.9	Off	N	19.4	23.2	51.1
0.334000	23.1	Off	N	19.4	26.3	49.4
0.398000	25.4	Off	N	19.5	22.5	47.9
1.334000	29.2	Off	N	19.5	16.8	46.0
8.150000	28.3	Off	N	19.8	21.7	50.0

3.7 Antenna Requirements

3.7.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.7.2 Antenna Connected Construction

Non-standard connector used.

3.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 06, 2012	Jul. 14, 2012~ Jul. 16, 2012	Jun. 05, 2013	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 18, 2011	Jul. 14, 2012~ Jul. 16, 2012	Sep. 17, 2012	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 18, 2011	Jul. 14, 2012~ Jul. 16, 2012	Sep. 17, 2012	Conducted (TH02-HY)
EMI Test Receiver	R&S	ESCS 30	100356	9KHz ~ 2.75GHz	Oct. 27, 2011	Jul. 18, 2012	Oct. 26, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz ~ 30MHz	Dec. 09, 2011	Jul. 18, 2012	Dec. 08, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz ~ 30MHz	Dec. 06, 2011	Jul. 18, 2012	Dec. 05, 2012	Conduction (CO05-HY)
AC Power Source	APC	APC-1000 W	N/A	N/A	N/A	Jul. 18, 2012	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	112403	N/A	Feb. 22, 2011	Jul. 18, 2012	Feb. 21, 2013	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 22, 2011	Jul. 19, 2012	Oct. 21, 2012	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP30	101067	9KHz ~ 30GHz	Dec. 06, 2011	Jul. 19, 2012	Dec. 05, 2012	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 10, 2011	Jul. 19, 2012	Aug. 09, 2012	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz ~ 26.5GHz	Dec. 05, 2011	Jul. 19, 2012	Dec. 04, 2012	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Feb. 27, 2012	Jul. 19, 2012	Feb. 26, 2013	Radiation (03CH07-HY)
EMI TEST RECEIVER	R&S	ESCI 7	100724	9kHz ~ 7GHz	Aug. 22, 2011	Jul. 19, 2012	Aug. 21, 2012	Radiation (03CH07-HY)
Pre Amplifier	MITEQ	AMF-7D-00 101800-30-10P	159088	1GHz ~ 18GHz	Mar. 10, 2012	Jul. 19, 2012	Mar. 09, 2013	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz ~ 40GHz	Oct. 21, 2011	Jul. 19, 2012	Oct. 20, 2012	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 19, 2012	Jul. 28, 2012	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.26**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.54**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**

Appendix A. Photographs of EUT

Please refer to Sporton report number EP270532 as below.