

FCC RF Test Report

APPLICANT : ASUSTeK COMPUTER INC.
EQUIPMENT : ASUS MeMO Pad
BRAND NAME : ASUS
MODEL NAME : K001
FCC ID : MSQK001
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Sep. 18, 2012 and completely tested on Nov. 22, 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



SPORTON INTERNATIONAL INC.

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

SPORTON INTERNATIONAL INC.

TEL : 886-3-327-3456

FAX : 886-3-328-4978

FCC ID : MSQK001

Page Number : 1 of 132

Report Issued Date : Dec. 03, 2012

Report Version : Rev. 01



TABLE OF CONTENTS

REVISION HISTORY	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant	5
1.2 Manufacturer	5
1.3 Feature of Equipment Under Test	6
1.4 Testing Site	7
1.5 Applied Standards	8
1.6 Ancillary Equipment List	8
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	9
2.1 Carrier Frequency Channel	9
2.2 Pre-Scanned RF Power	10
2.3 Test Mode	11
2.4 Connection Diagram of Test System	13
2.5 RF Utility	13
3 TEST RESULT	14
3.1 6dB and 99% Bandwidth Measurement	14
3.2 Output Power Measurement	37
3.3 Power Spectral Density Measurement	42
3.4 Conducted Band Edges and Spurious Emission Measurement	63
3.5 Radiated Band Edges and Spurious Emission Measurement	93
3.6 AC Conducted Emission Measurement	126
3.7 Antenna Requirements	130
4 LIST OF MEASURING EQUIPMENT	131
5 UNCERTAINTY OF EVALUATION	132
APPENDIX A. PHOTOGRAPHS OF EUT	
APPENDIX B. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR291814B	Rev. 01	Initial issue of report	Dec. 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	$\geq 0.5\text{MHz}$	Pass	-
3.1	-	Gen 4.6.1	99% Bandwidth	-	Pass	-
3.2	15.247(b)	A8.4	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	A8.5	Conducted Band Edges	$\leq 20\text{dBc}$	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 4.19 dB at 7386.000 MHz
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 14.29 dB at 0.187 MHz
3.7	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

ASUSTeK COMPUTER INC.

4F., No. 150, LI-TE RD., PEITOU, TAIPEI 112, TAIWAN

1.2 Manufacturer

Wistron Infocomm Manufacturing (Kunshan) Co., Ltd.

First Avenue, Kunshan Integrated Free Trade Zone, Kunshan, Jiangsu, 215300, P.R China

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	ASUS MeMO Pad
Brand Name	ASUS
Model Name	K001
FCC ID	MSQK001
Sample 1	SKU#1
Sample 2	SKU#2
Sample 3	SKU#3
Sample 4	SKU#4
EUT supports Radios application	WLAN 11abgn / Bluetooth
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 Channel Frequency Range	802.11b/g/n : 2412 MHz ~ 2462 MHz 802.11a/n: 5745~5825MHz.
Maximum Output Power to Antenna	<2412 MHz ~ 2462 MHz> 802.11b : 16.70 dBm (0.0468 W) 802.11g : 24.35 dBm (0.2723 W) 802.11n HT20 : 24.15 dBm (0.2600 W) <5745 MHz ~ 5825 MHz> 802.11a : 19.67 dBm (0.0927 W) 802.11n HT20 : 19.80 dBm (0.0955 W) 802.11n HT40 : 19.91 dBm (0.0979 W)
99% Occupied Bandwidth	<2412 MHz ~ 2462 MHz> 802.11b : 14.15MHz 802.11g : 17.10MHz 802.11n HT20 : 18.05MHz <5745 MHz ~ 5825 MHz> 802.11a : 18.60MHz 802.11n HT20 : 19.35MHz 802.11n HT40 : 36.50MHz
Antenna Type	802.11b/g/n : PCB Antenna type with gain 2.22 dBi 802.11a/n : PCB Antenna type with gain 2.06 dBi
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

Second Source	SKU#1	SKU#2	SKU#3	SKU#4
Memory	HynixH5TC2G83CFR-H9R	ELPIDA/J2108EDBG-D JL-F	ELPIDA/J2108EDBG-D JL-F	ELPIDA/J2108EDBG-D JL-F
EMMC	Hynix/H26M64002DQR	Hynix/H26M52002EQR	KINGSTON/KE4CN4K6A	Hynix/H26M52002EQR
LCD Panel	HSD HSD101PWW1-G00	CMI N101ICG-L21	HSD HSD101PWW1-G10	CMI N101ICG-L21 (VER.C3)
Pad Battery	SIMPLO C11-ME301T	SIMPLO C11-ME301T	SIMPLO C11-ME301T	LG C11-ME301T
Camera (front)	LITEON 10P2SF130L	LITEON 10P2SF130K	LITEON 10P2SF130K	LITEON 10P2SF130K
ADAPTER	AD83531	PSA10A-050Q	PSA10A-050Q	AD83531

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	TH02-HY	03CH05-HY	722060/4086B-1

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C. TEL: +886-2-2631-5551 FAX: +886-2-2631-9740		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO01-NH		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 v02
- ♦ 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.	WLAN AP	D-Link	DIR-300	KA2DIR300B1	N/A	Unshielded, 1.5 m
2.	Bluetooth Speaker	i Tech	C51-A05153-XX	RKIC51-A05153-XX	N/A	N/A
3.	LCD Monitor	Dell	2408WFPb	FCC DoC	Shielded, 1.5 m	Unshielded, 1.8 m
4.	Memory Card	transcend	Micro SD 2GB	N/A	N/A	N/A
5.	Earphone	ASUS	OBO-PT-HS09D-01	FCC DoC	Unshielded, 1.2 m	N/A

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 KHz to 30 MHz) and radiated emission (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.

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

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

2.1 Carrier Frequency Channel

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

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5725-5850 MHz Band 4	149	5745	159	5795
	151	5755	161	5805
	157	5785	165	5825

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and antenna configurations as following table and the highest power data rates were chosen for full test in the following tables. Final Output Power equals to Measured Output Power adds the duty factor.

2.4GHz 802.11b mode				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	16.70	16.63	16.63	16.62

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)	24.35	24.01	23.98	23.84	23.71	23.66	23.55	23.73

2.4GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	24.15	24.11	23.95	23.77	23.54	23.83	23.51	23.57

5GHz 802.11a mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	19.67	19.47	19.27	19.29	19.1	19.24	19.16	19.15

5GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	19.80	19.21	19.1	19.04	19.25	19.52	19.3	19.14

5GHz 802.11n HT40 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	19.91	19.4	19.47	19.54	19.23	19.9	19.32	19.28

2.3 Test Mode

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

<2.4GHz>

Test Cases				
Conducted TCs	Test Items	Mode	Data Rate	Test Channel
	6dB and 99% BW Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
	Conducted Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	6.5 Mbps	1/11
	Conducted Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
Radiated TCs	Radiated Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	6.5 Mbps	1/11
	Radiated Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11

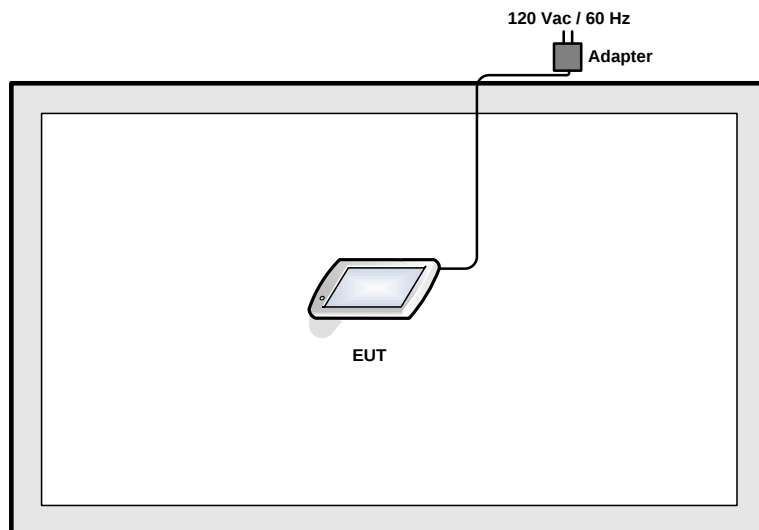
<5GHz>

Test Cases				
Conducted TCs	Test Items	Mode	Data Rate	Test Channel
	6dB and 99% BW Power Spectral Density	802.11a	6 Mbps	149/157/165
		802.11n HT20	6.5 Mbps	149/157/165
		802.11n HT40	13.5 Mbps	151/159
	Output Power	802.11a	6 Mbps	149/157/165
		802.11n HT20	6.5 Mbps	149/157/165
		802.11n HT40	13.5 Mbps	151/159
	Conducted Band Edge	802.11a	6 Mbps	149/165
		802.11n HT20	6.5 Mbps	149/165
		802.11n HT40	13.5 Mbps	151/159
	Conducted Spurious Emission	802.11a	6 Mbps	149/157/165
		802.11n HT20	6.5 Mbps	149/157/165
		802.11n HT40	13.5 Mbps	151/159
Radiated TCs	Radiated Band Edge	802.11a	6 Mbps	149/165
		802.11n HT20	6.5 Mbps	149/165
		802.11n HT40	13.5 Mbps	151/159
	Radiated Spurious Emission	802.11a	6 Mbps	149/157/165
		802.11n HT20	6.5 Mbps	149/157/165
		802.11n HT40	13.5 Mbps	151/159

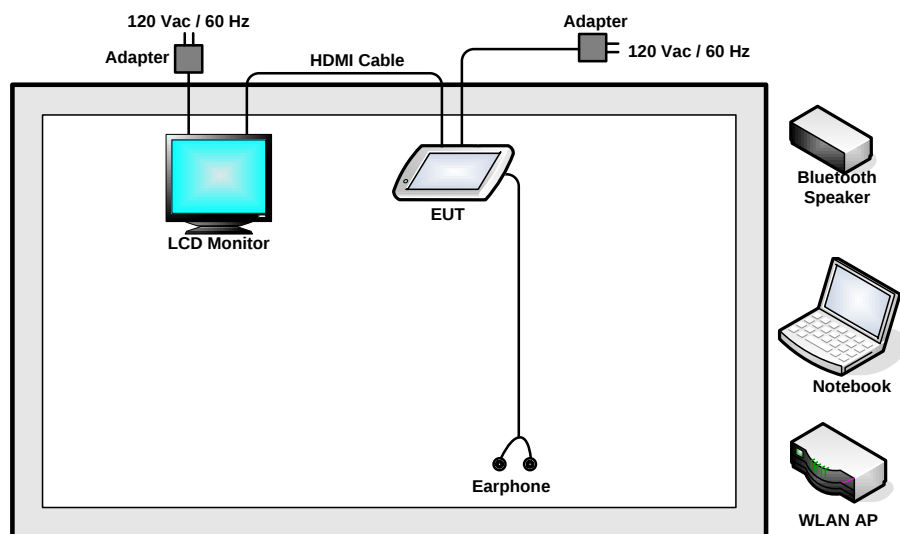
Test Cases	
AC Conducted Emission	Mode 1 : WLAN (2.4G) Link + Bluetooth Link + MP3 + H-Pattern + USB Cable (Charging from Adapter) + Earphone + SD Card + HDMI Cable
Remark: All test items were performance with Sample 1.	

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 RF Utility

The programmed RF utility "WLAN RF Test Tool" 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 and 99% Bandwidth

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

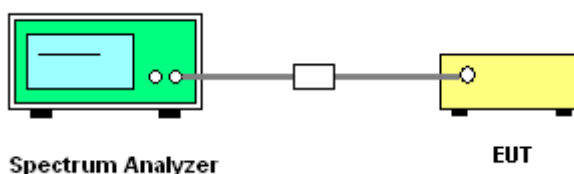
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100kHz. Set the Video bandwidth (VBW) $\geq 3 * RBW$. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 KHz.
5. Use the following spectrum analyzer settings for 99 % Bandwidth measurement.
For 99% Bandwidth measurement, the RBW=30kHz, and VBW $\geq RBW$. Sweep = auto ;
Detector function = sample. Trace = max hold.
6. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

Test Mode :	802.11b	Temperature :	24~26°C
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	9.04	0.5	Pass
06	2437	8.52	0.5	Pass
11	2462	8.56	0.5	Pass

Test Mode :	802.11g	Temperature :	24~26°C
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	15.12	0.5	Pass
06	2437	15.12	0.5	Pass
11	2462	15.12	0.5	Pass

Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.12	0.5	Pass
06	2437	15.08	0.5	Pass
11	2462	15.08	0.5	Pass

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

Channel	Frequency (MHz)	802.11a 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
149	5745	16.37	0.5	Pass
157	5785	16.42	0.5	Pass
165	5825	16.37	0.5	Pass

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	5GHz 802.11n HT20 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
149	5745	17.60	0.5	Pass
157	5785	17.56	0.5	Pass
165	5825	17.60	0.5	Pass

Test Mode :	802.11n HT40	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	5GHz 802.11n HT40 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
151	5755	35.00	0.5	Pass
159	5795	35.10	0.5	Pass

3.1.6 Test Result of 99% Occupied Bandwidth

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

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	14.15	Pass
06	2437	14.15	Pass
11	2462	14.15	Pass

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

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	17.00	Pass
06	2437	17.10	Pass
11	2462	17.05	Pass

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	17.95	Pass
06	2437	17.95	Pass
11	2462	18.05	Pass

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

Channel	Frequency (MHz)	802.11a 99% Occupied Bandwidth (MHz)	Pass/Fail
149	5745	18.50	Pass
157	5785	18.60	Pass
165	5825	18.50	Pass

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

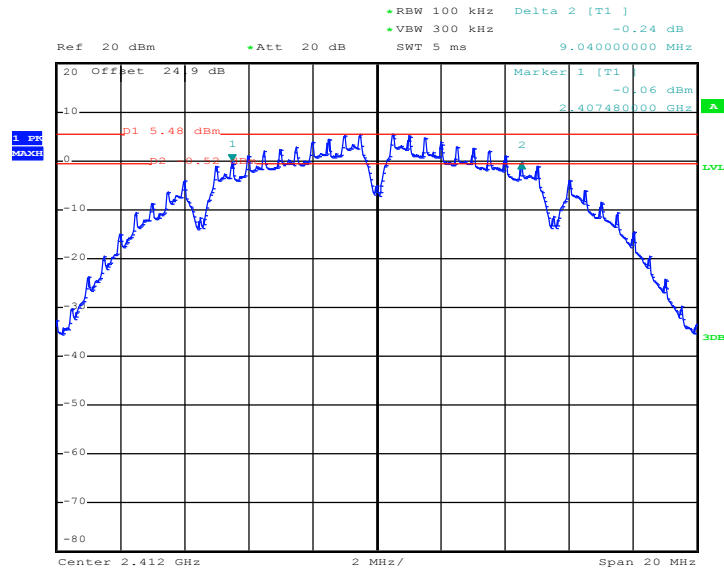
Channel	Frequency (MHz)	5GHz 802.11n HT20 99% Occupied Bandwidth (MHz)	Pass/Fail
149	5745	19.30	Pass
157	5785	19.35	Pass
165	5825	19.30	Pass

Test Mode :	802.11n HT40	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	5GHz 802.11n HT40 99% Occupied Bandwidth (MHz)	Pass/Fail
151	5755	36.50	Pass
159	5795	36.50	Pass

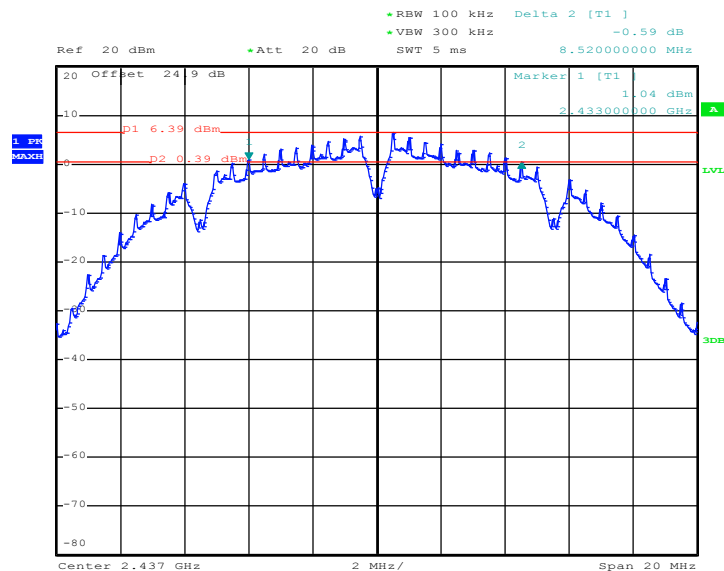
3.1.7 Test Result of 6dB Bandwidth Plots

6 dB Bandwidth Plot on 802.11b Channel 01

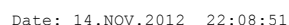


Date: 14.NOV.2012 21:55:59

6 dB Bandwidth Plot on 802.11b Channel 06



Date: 14.NOV.2012 22:04:54



6 dB Bandwidth Plot on 802.11g Channel 01





• RBW 100 kHz Delta 2 [T1]
 • VBW 300 kHz -0.08 dB
 Ref 20 dBm • Att 20 dB 15.12000000 MHz
 SWT 5 ms

20 Offset 24 9 dB
 Marker 1 [T1]
 -2.84 dBm
 2.42944000 GHz
 p1 2.82 dBm
 2
 -2.84 dBm
 -10
 -20
 -30
 -40
 -50
 -60
 -70
 -80
 Center 2.437 GHz 2 MHz/
 Span 20 MHz

Date: 14.NOV.2012 22:17:38

Date: 14.NOV.2012 22:14:25

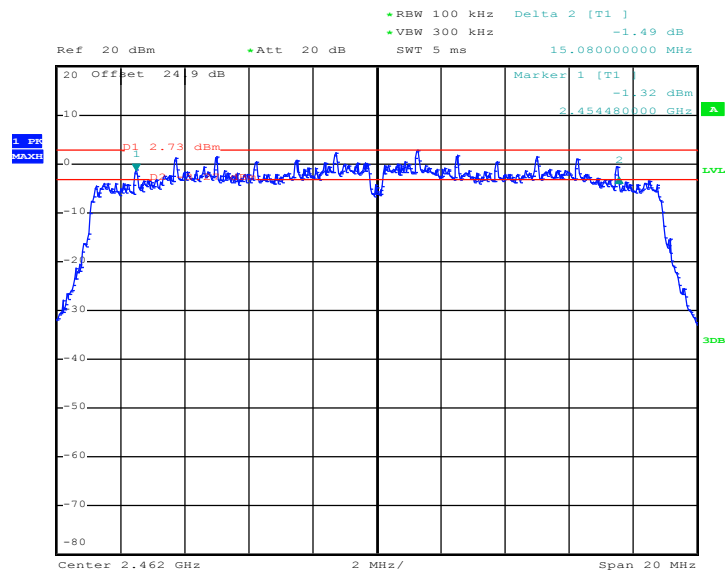


6 dB Bandwidth Plot on 2.4GHz 802.11n HT20 Channel 06





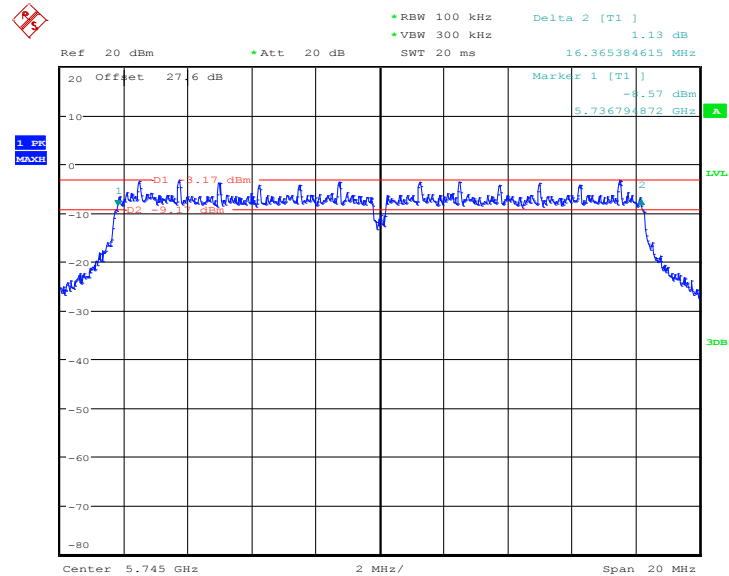
6 dB Bandwidth Plot on 2.4GHz 802.11n HT20 Channel 11



Date: 14.NOV.2012 22:39:28

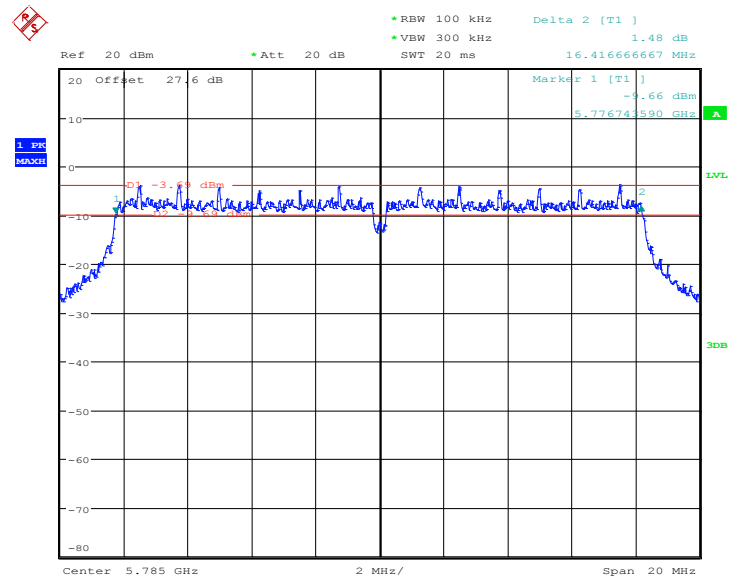


6 dB Bandwidth Plot on 802.11a Channel 149



Date: 22.NOV.2012 22:41:35

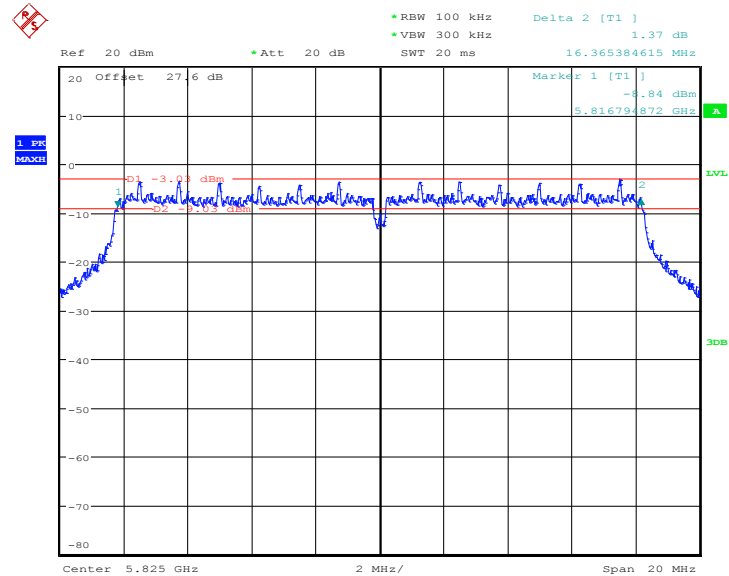
6 dB Bandwidth Plot on 802.11a Channel 157



Date: 22.NOV.2012 22:36:41

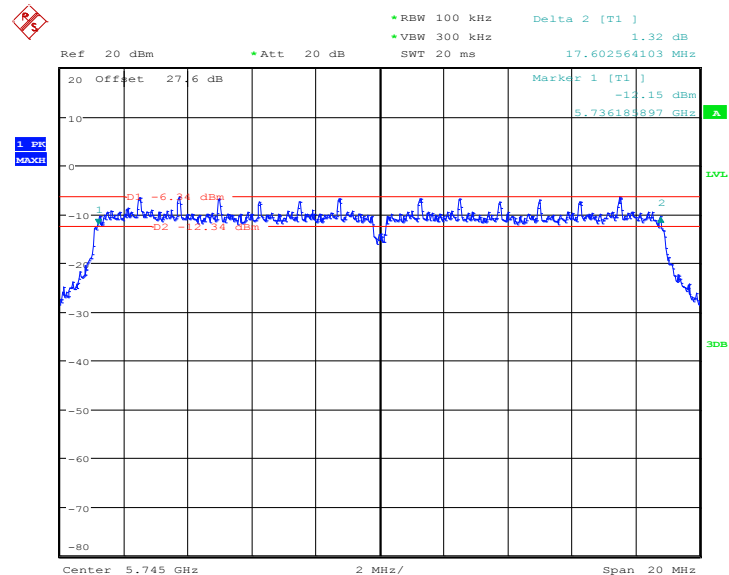


6 dB Bandwidth Plot on 802.11a Channel 165

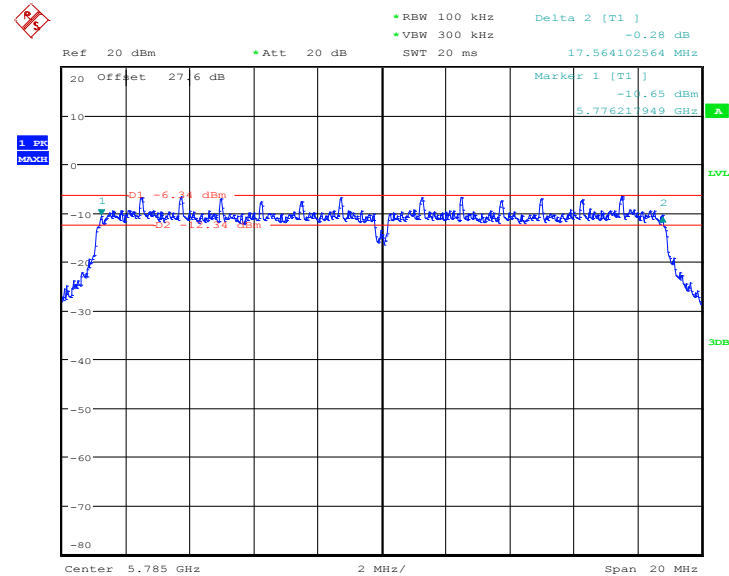


Date: 22.NOV.2012 22:39:20

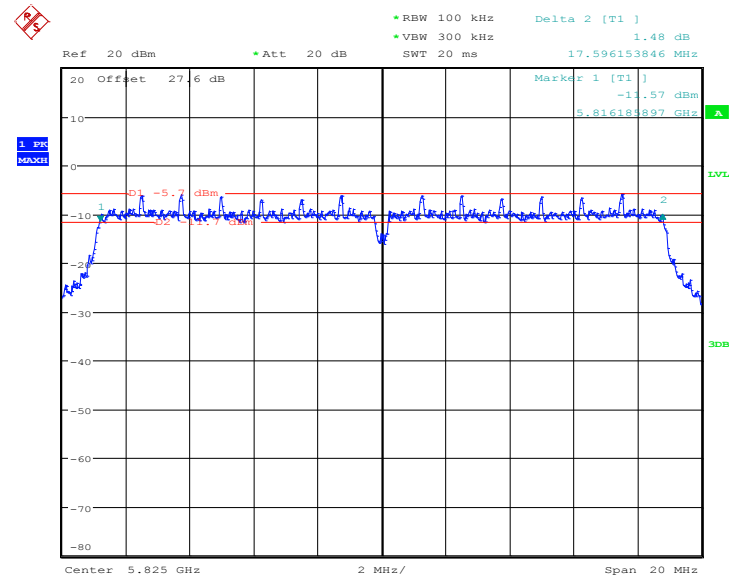
6 dB Bandwidth Plot on 5GHz 802.11n HT20 Channel 149



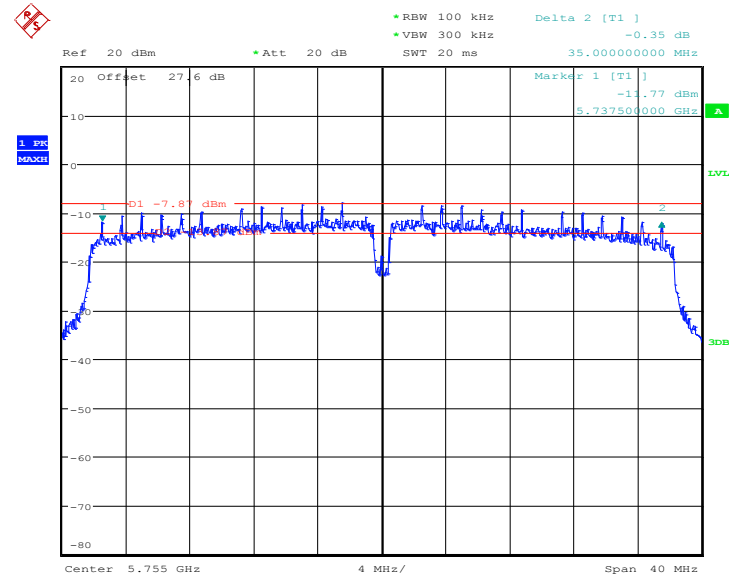
Date: 22.NOV.2012 22:15:37

6 dB Bandwidth Plot on 5GHz 802.11n HT20 Channel 157


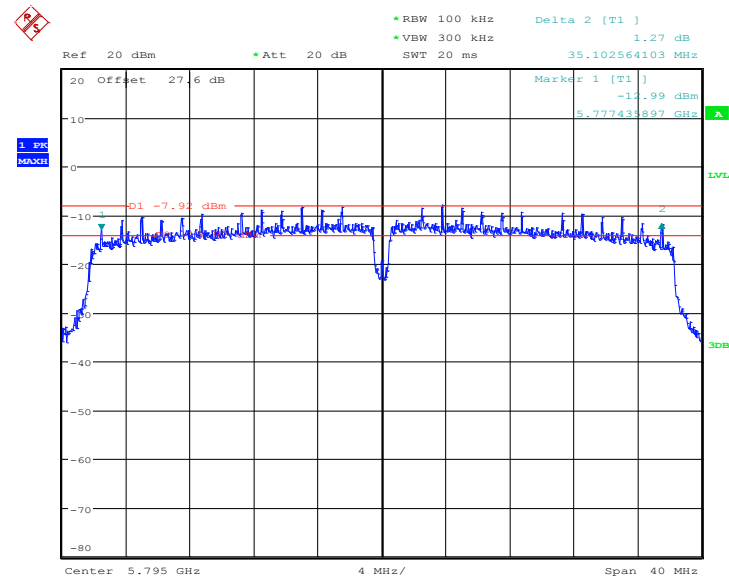
Date: 22.NOV.2012 22:19:03

6 dB Bandwidth Plot on 5GHz 802.11n HT20 Channel 165


Date: 22.NOV.2012 22:22:51

6 dB Bandwidth Plot on 5GHz 802.11n HT40 Channel 151


Date: 22.NOV.2012 22:29:43

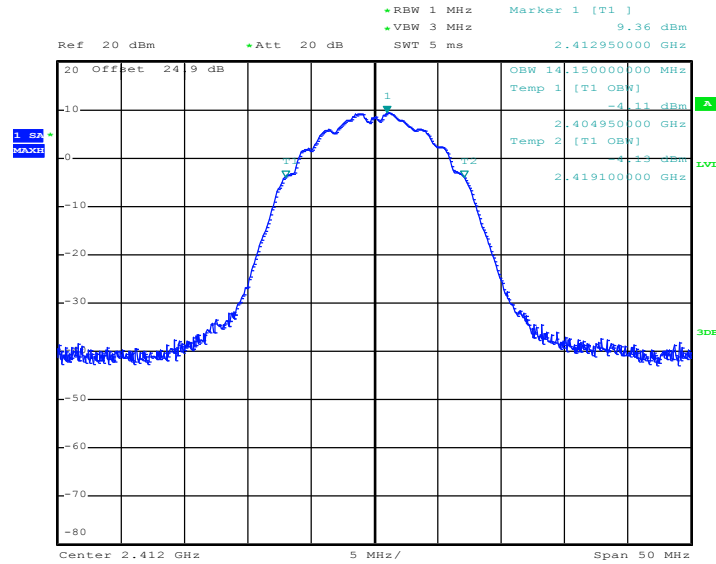
6 dB Bandwidth Plot on 5GHz 802.11n HT40 Channel 159


Date: 22.NOV.2012 22:26:04



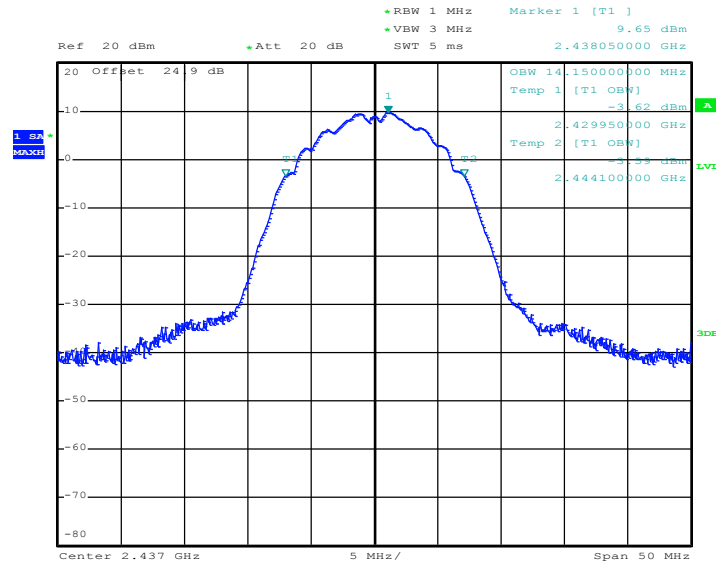
3.1.8 Test Result of 99% Bandwidth Plots

99% Occupied Bandwidth Plot on 802.11b Channel 01



Date: 14.NOV.2012 21:57:34

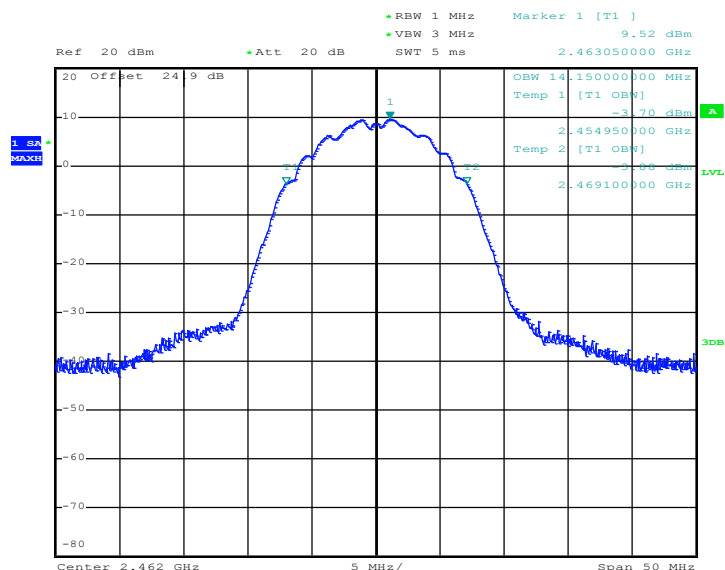
99% Occupied Bandwidth Plot on 802.11b Channel 06



Date: 14.NOV.2012 22:07:34

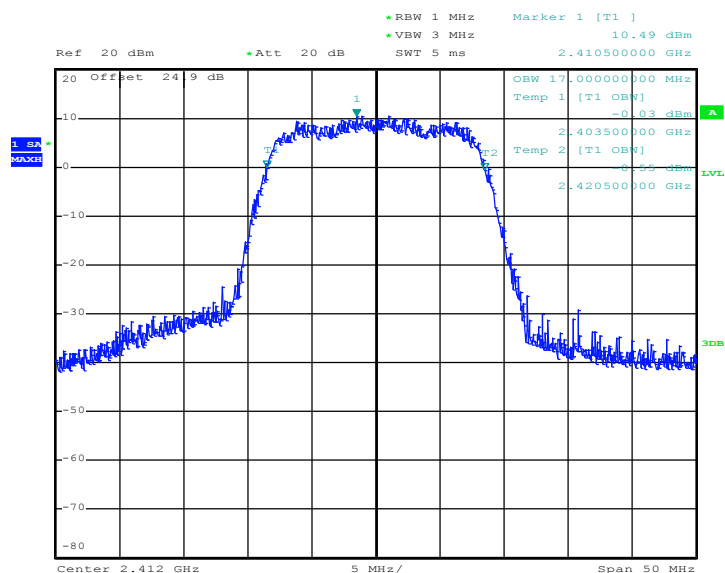


99% Occupied Bandwidth Plot on 802.11b Channel 11

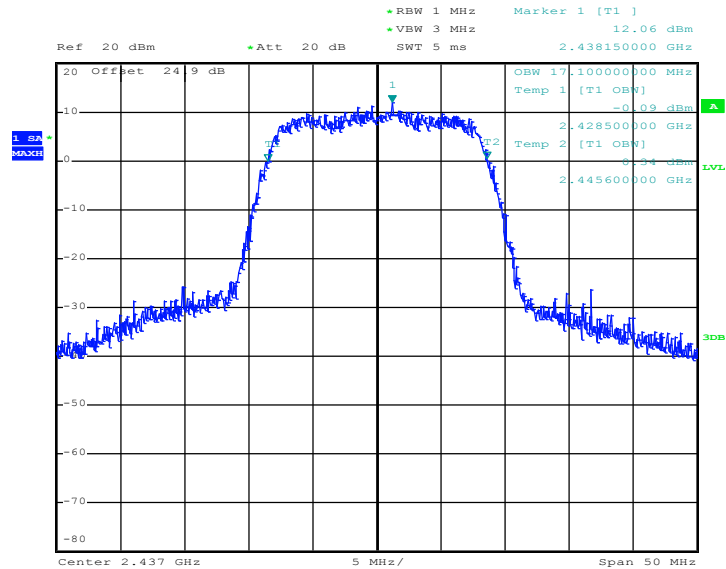


Date: 14.NOV.2012 22:10:17

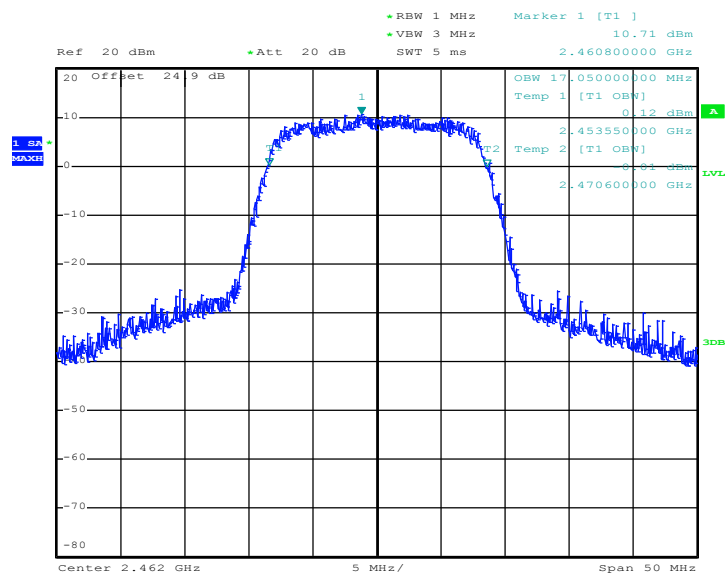
99% Occupied Bandwidth Plot on 802.11g Channel 01



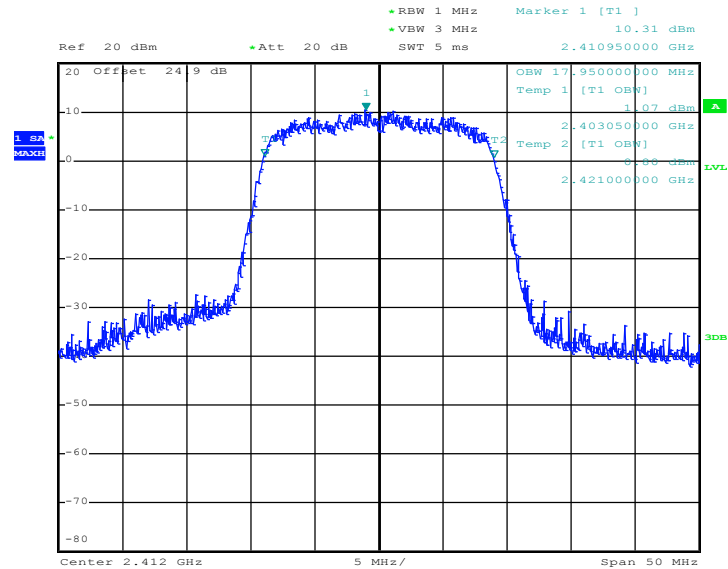
Date: 14.NOV.2012 22:30:38

99% Occupied Bandwidth Plot on 802.11g Channel 06


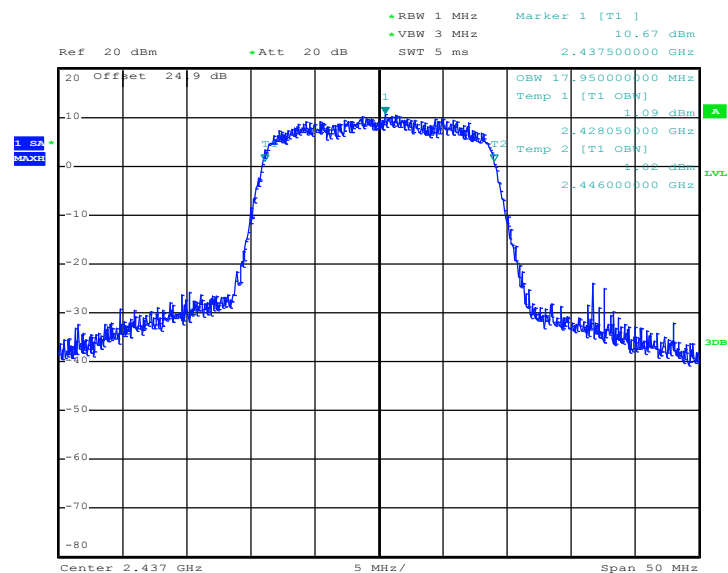
Date: 14.NOV.2012 22:27:47

99% Occupied Bandwidth Plot on 802.11g Channel 11


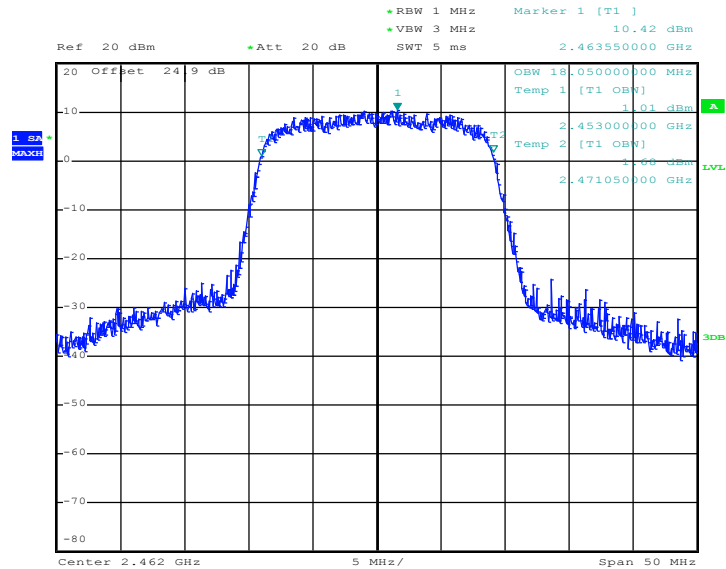
Date: 14.NOV.2012 22:16:18

99% Occupied Bandwidth Plot on 2.4GHz 802.11n HT20 Channel 01


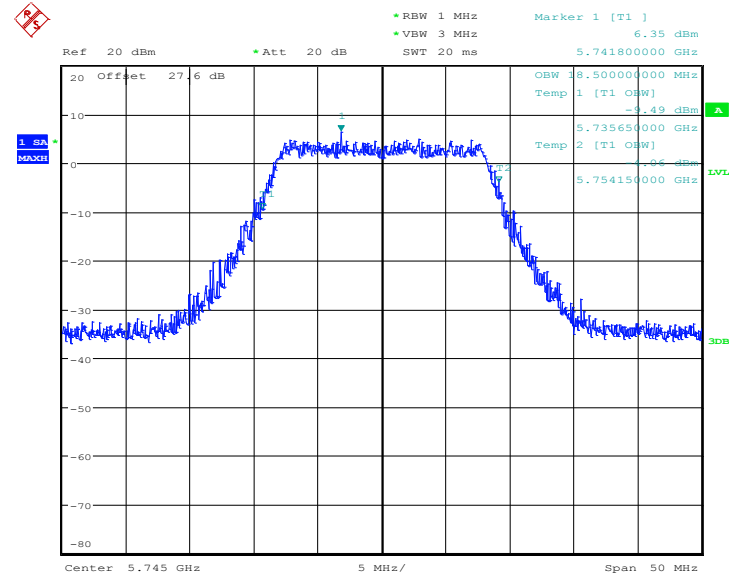
Date: 14.NOV.2012 22:34:02

99% Occupied Bandwidth Plot on 2.4GHz 802.11n HT20 Channel 06


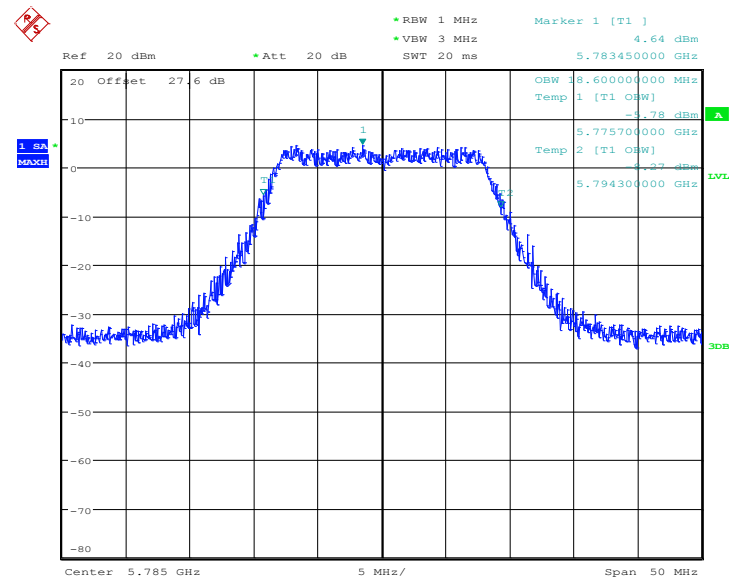
Date: 14.NOV.2012 22:38:22

99% Occupied Bandwidth Plot on 2.4GHz 802.11n HT20 Channel 11


Date: 14.NOV.2012 22:41:03

99% Occupied Bandwidth Plot on 802.11a Channel 149


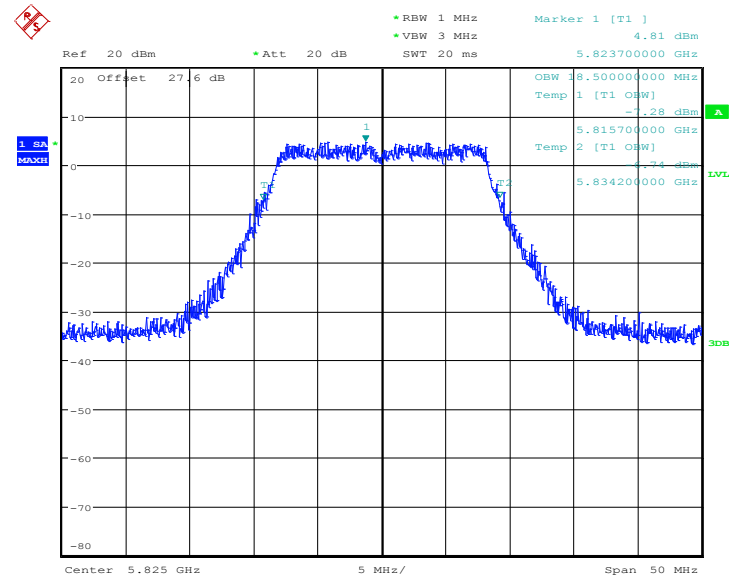
Date: 22.NOV.2012 22:42:55

99% Occupied Bandwidth Plot on 802.11a Channel 157


Date: 22.NOV.2012 22:38:17

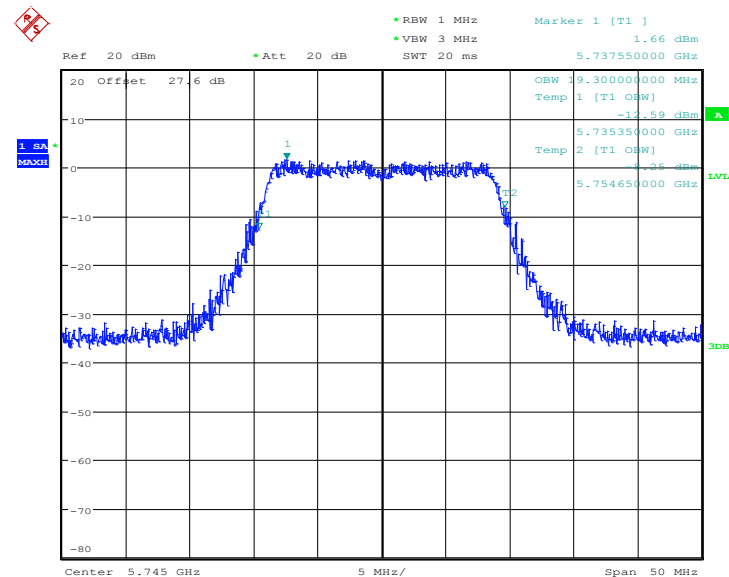


99% Occupied Bandwidth Plot on 802.11a Channel 165

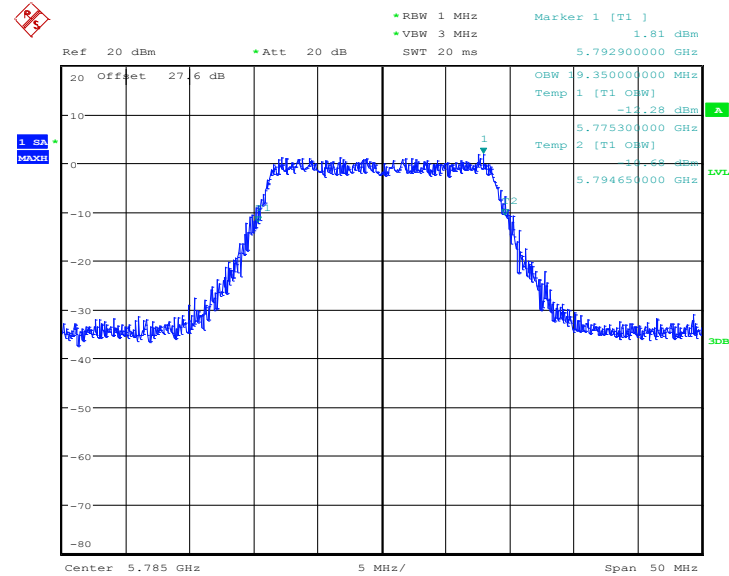


Date: 22.NOV.2012 22:40:42

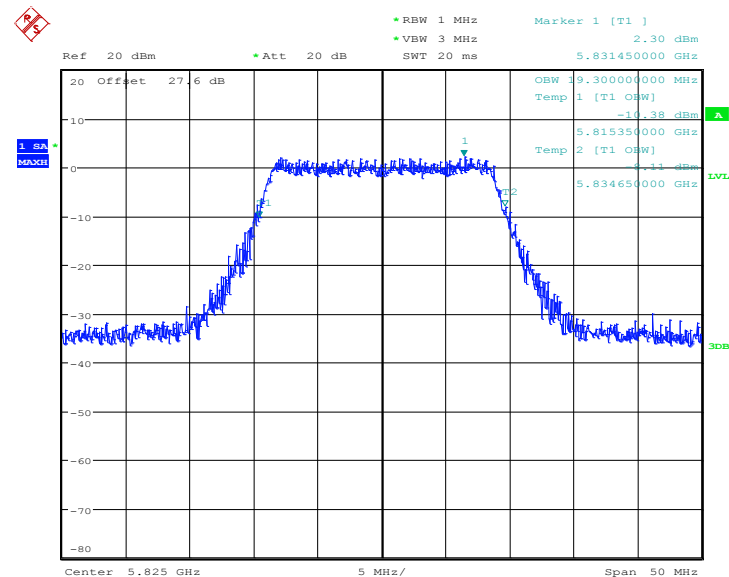
99% Occupied Bandwidth Plot on 5GHz 802.11n HT20 Channel 149



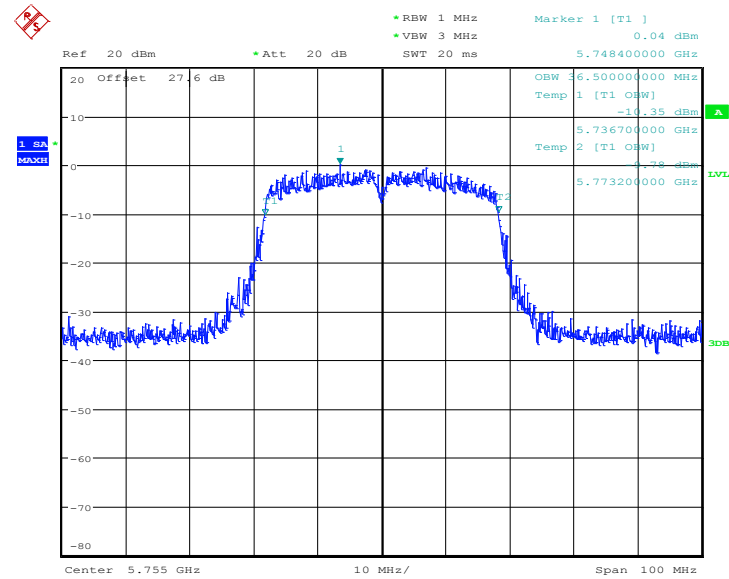
Date: 22.NOV.2012 22:17:13

99% Occupied Bandwidth Plot on 5GHz 802.11n HT20 Channel 157


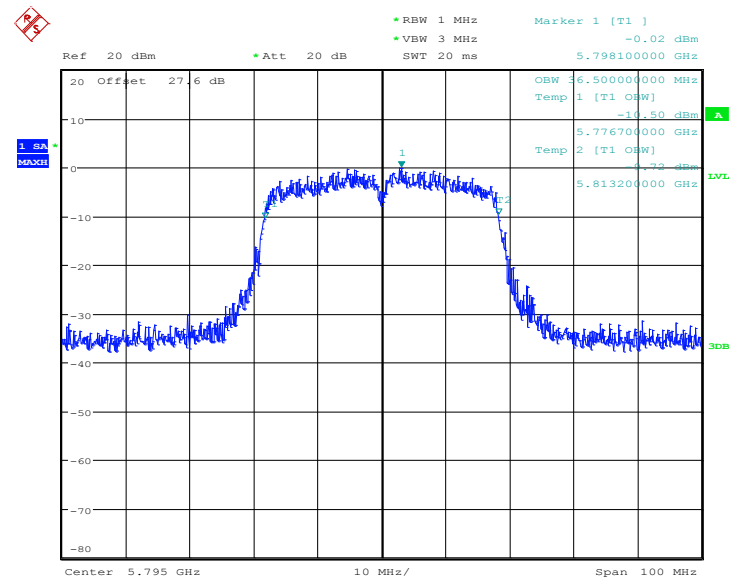
Date: 22.NOV.2012 22:20:46

99% Occupied Bandwidth Plot on 5GHz 802.11n HT20 Channel 165


Date: 22.NOV.2012 22:24:15

99% Occupied Bandwidth Plot on 5GHz 802.11n HT40 Channel 151


Date: 22.NOV.2012 22:31:34

99% Occupied Bandwidth Plot on 5GHz 802.11n HT40 Channel 159


Date: 22.NOV.2012 22:28:10

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz and 5725-5850MHz, 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.

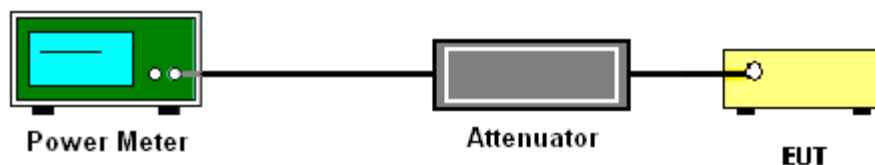
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. 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°C
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.27	30	Pass
06	2437	16.70	30	Pass
11	2462	16.63	30	Pass

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

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	23.69	30	Pass
06	2437	24.35	30	Pass
11	2462	23.45	30	Pass

Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	23.78	30	Pass
06	2437	24.15	30	Pass
11	2462	23.77	30	Pass

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

Channel	Frequency (MHz)	802.11a Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	19.52	30	Pass
157	5785	18.74	30	Pass
165	5825	19.67	30	Pass

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	5GHz 802.11n HT20 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	19.61	30	Pass
157	5785	19.12	30	Pass
165	5825	19.80	30	Pass

Test Mode :	802.11n HT40	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	5GHz 802.11n HT40 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
151	5755	19.91	30	Pass
159	5795	19.19	30	Pass

3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	802.11b	Temperature :	24~26°C
Test Engineer :	Reece Li	Relative Humidity :	50~53%
Duty Cycle:	100.00%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)
01	2412	13.71
06	2437	14.17
11	2462	14.09

Test Mode :	802.11g	Temperature :	24~26°C
Test Engineer :	Reece Li	Relative Humidity :	50~53%
Duty Cycle:	98.83%	Duty Factor:	0.05dB

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)
01	2412	13.08
06	2437	13.46
11	2462	13.38

Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Reece Li	Relative Humidity :	50~53%
Duty Cycle:	98.75%	Duty Factor:	0.05dB

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 Average Output Power (dBm)
01	2412	13.00
06	2437	13.30
11	2462	13.18

Test Mode :	802.11a	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%
Duty Cycle:	99.31%	Duty Factor:	0.03dB

Channel	Frequency (MHz)	802.11a Average Output Power (dBm)
149	5745	9.09
157	5785	8.50
165	5825	9.42

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%
Duty Cycle:	99.11%	Duty Factor:	0.04dB

Channel	Frequency (MHz)	5GHz 802.11n HT20 Average Output Power (dBm)
149	5745	9.10
157	5785	8.50
165	5825	9.25

Test Mode :	802.11n HT40	Temperature :	24~26℃
Test Engineer :	Reece Li	Relative Humidity :	50~53%
Duty Cycle:	98.57%	Duty Factor:	0.06dB

Channel	Frequency (MHz)	5GHz 802.11n HT40 Average Output Power (dBm)
151	5755	9.41
159	5795	9.09

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.

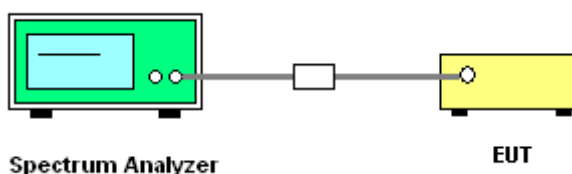
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The testing follows Measurement Procedure 9.1 Option 1 of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

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

Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	5.23	-7.37	8	Pass
06	2437	5.27	-8.34	8	Pass
11	2462	5.08	-8.62	8	Pass

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

Channel	Frequency (MHz)	802.11g Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	2.29	-11.94	8	Pass
06	2437	2.25	-11.36	8	Pass
11	2462	1.91	-11.21	8	Pass

Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	2.01	-12.18	8	Pass
06	2437	2.74	-11.78	8	Pass
11	2462	1.73	-11.04	8	Pass

Test Mode :	802.11a	Temperature :	24~26°C
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11a Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
149	5745	-3.12	-16.71	8	Pass
157	5785	-3.87	-17.34	8	Pass
165	5825	-3.65	-16.84	8	Pass

Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	5GHz 802.11n HT20 Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
149	5745	-6.46	-19.97	8	Pass
157	5785	-6.32	-20.85	8	Pass
165	5825	-5.67	-19.82	8	Pass

Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Engineer :	Reece Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	5GHz 802.11n HT40 Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
151	5755	-8.04	-21.54	8	Pass
159	5795	-7.95	-22.42	8	Pass

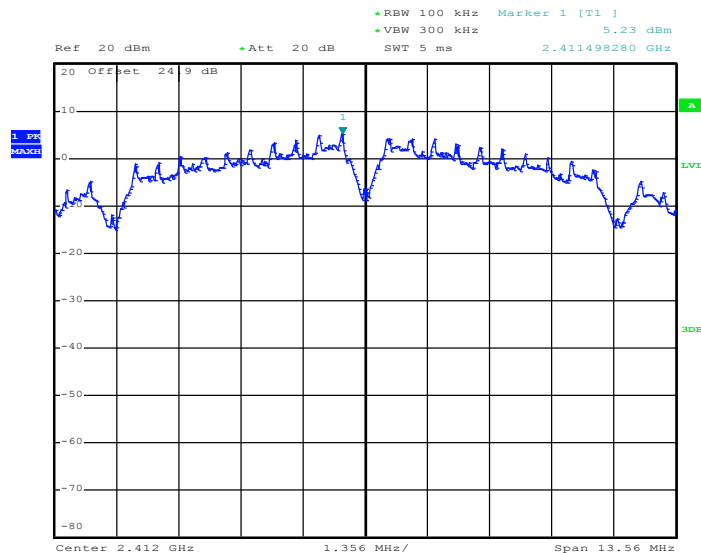
Note:

1. Measured power density (dBm) has offset with cable loss.
2. The Measured power density (dBm)/ 100KHz is reference level and used as 20dBc down for Conducted Band Edges and Conducted Spurious Emission limit line.



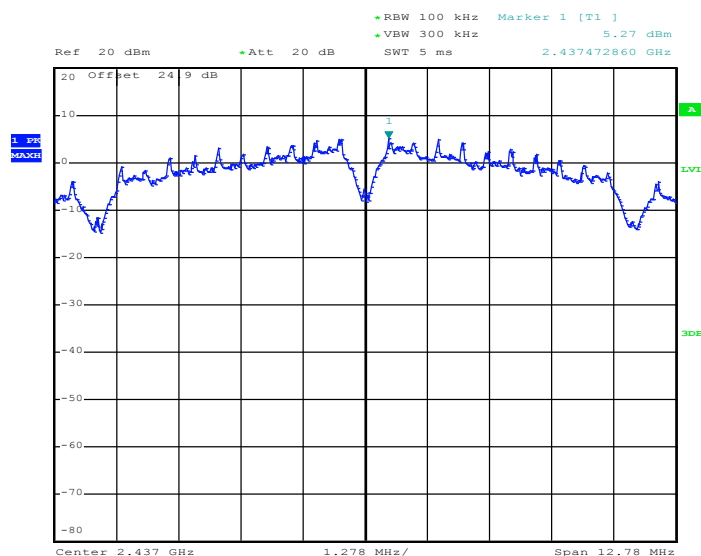
3.3.6 Test Result of Power Spectral Density Plots (100kHz)

PSD 100kHz Plot on 802.11b Channel 01



Date: 14.NOV.2012 21:56:27

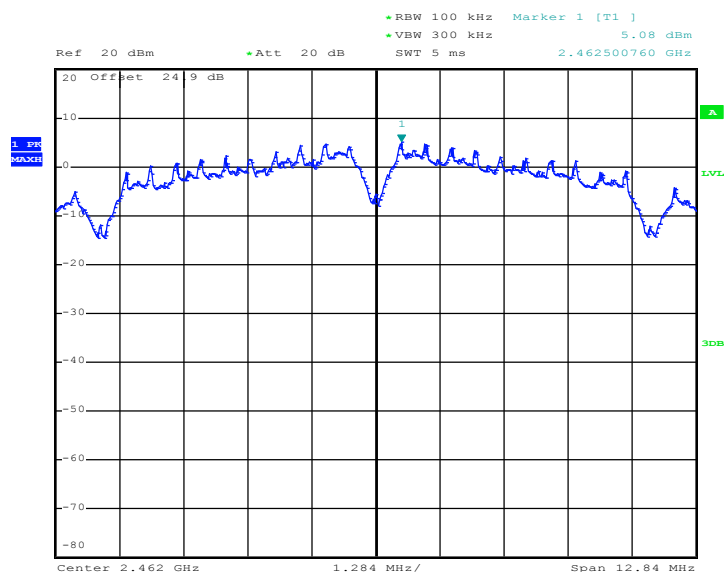
PSD 100kHz Plot on 802.11b Channel 06



Date: 14.NOV.2012 22:06:29

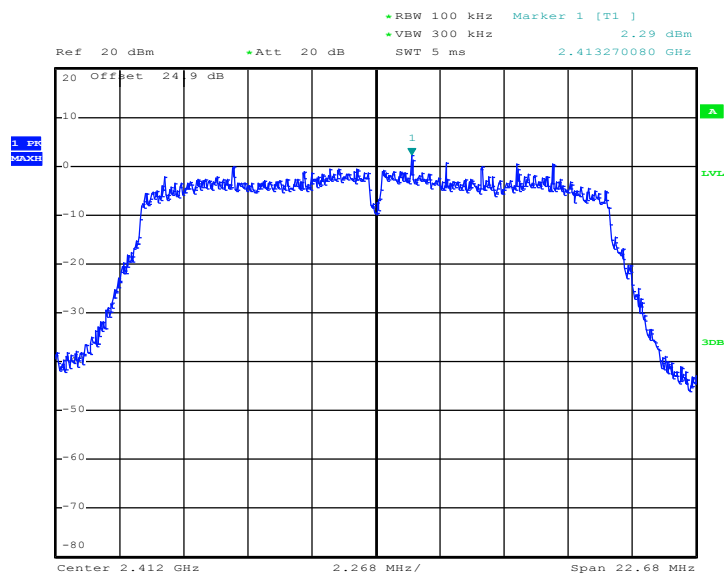


PSD 100kHz Plot on 802.11b Channel 11



Date: 14.NOV.2012 22:09:16

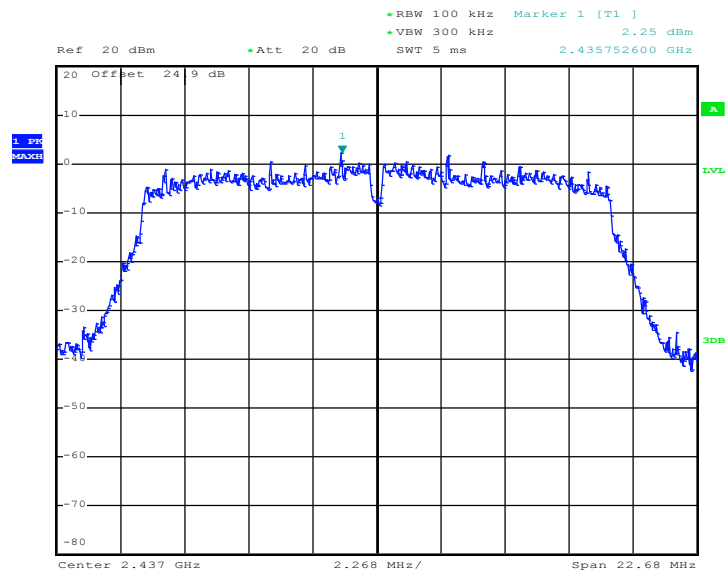
PSD 100kHz Plot on 802.11g Channel 01



Date: 14.NOV.2012 22:29:23

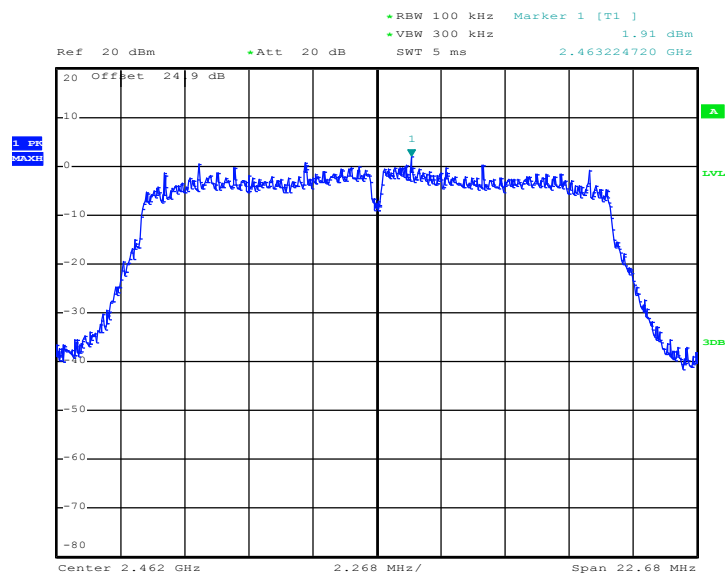


PSD 100kHz Plot 802.11g Channel 06

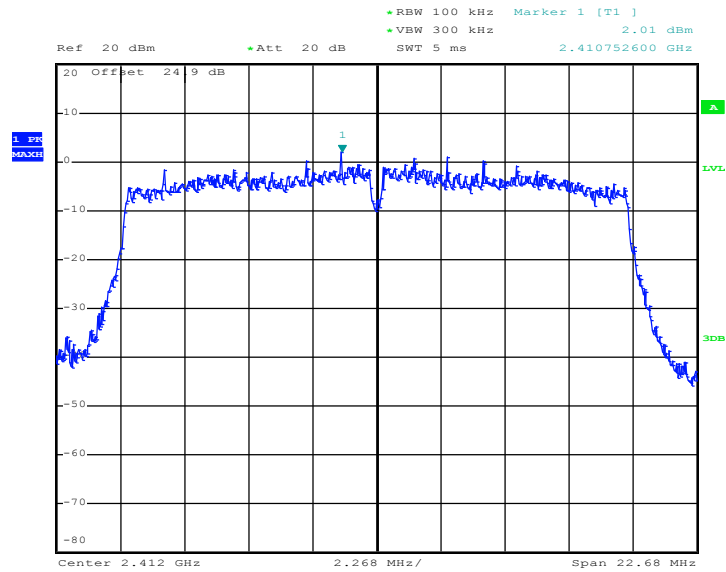


Date: 14.NOV.2012 22:23:05

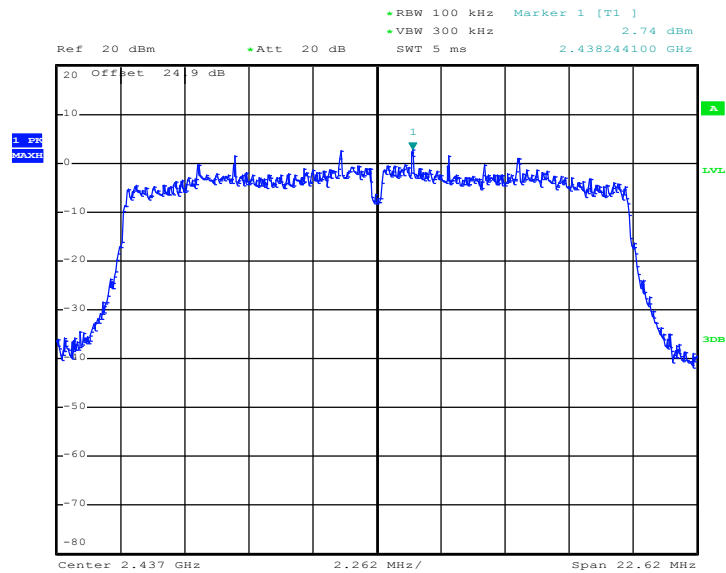
PSD 100kHz Plot 802.11g Channel 11



Date: 14.NOV.2012 22:15:01

PSD 100kHz Plot on 2.4GHz 802.11n HT20 Channel 01


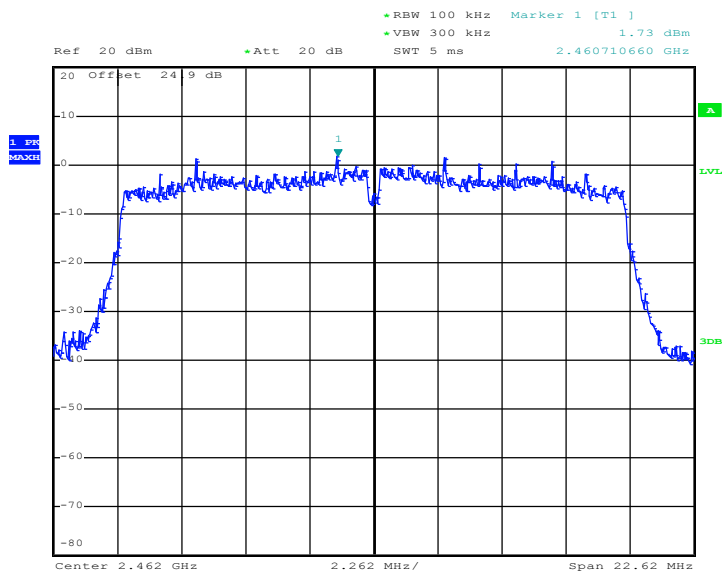
Date: 14.NOV.2012 22:32:52

PSD 100kHz Plot on 2.4GHz 802.11n HT20 Channel 06


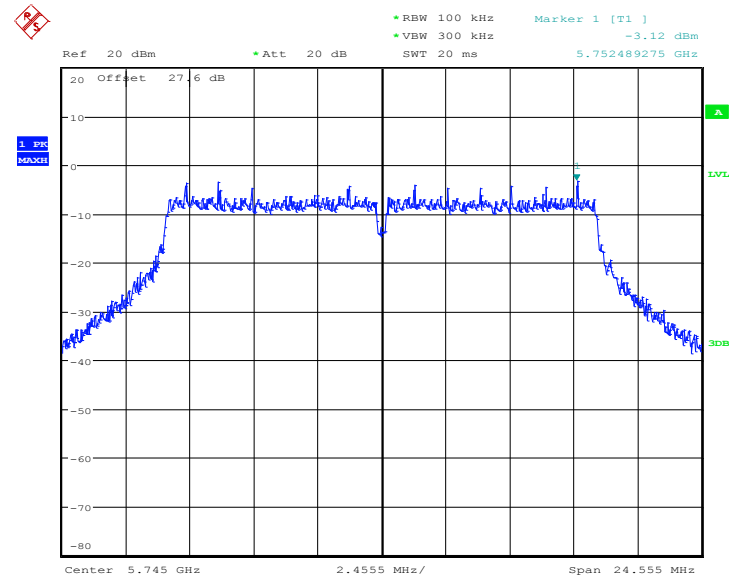
Date: 14.NOV.2012 22:36:34



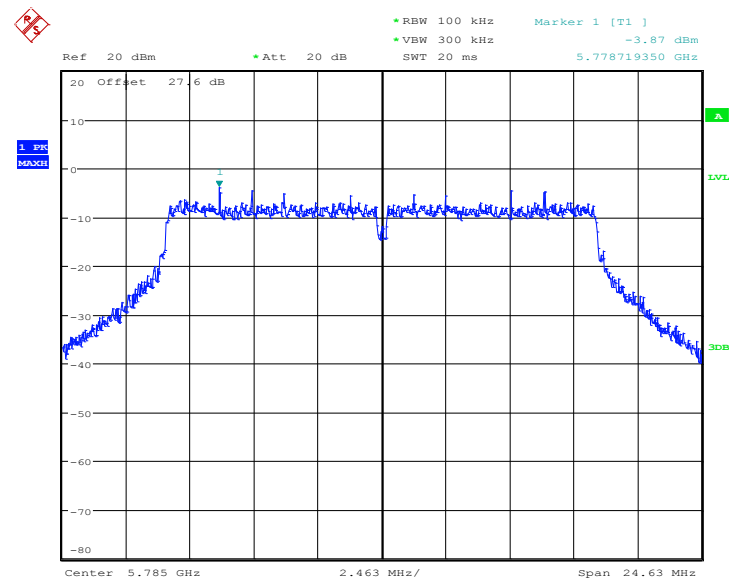
PSD 100kHz Plot on 2.4GHz 802.11n HT20 Channel 11



Date: 14.NOV.2012 22:40:00

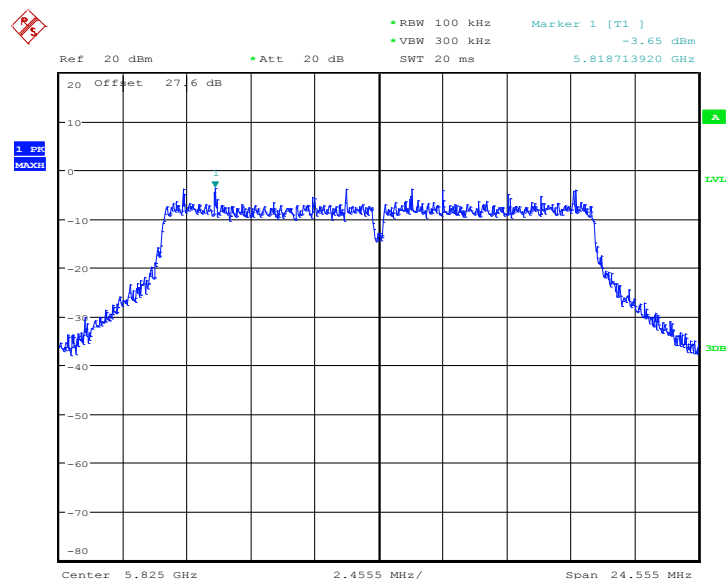
PSD 100kHz Plot on 802.11a Channel 149


Date: 22.NOV.2012 22:41:59

PSD 100kHz Plot on 802.11a Channel 157


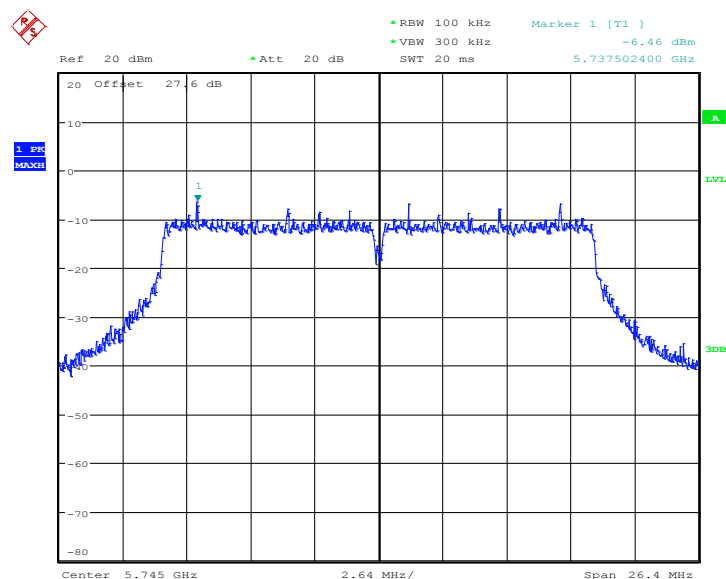
Date: 22.NOV.2012 22:37:28

PSD 100kHz Plot on 802.11a Channel 165



Date: 22.NOV.2012 22:39:45

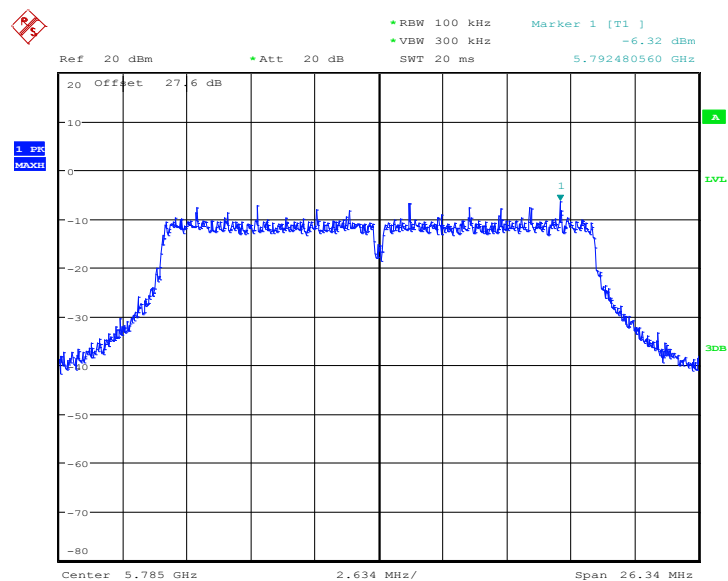
PSD 100kHz Plot on 5GHz 802.11n HT20 Channel 149



Date: 22.NOV.2012 22:16:03

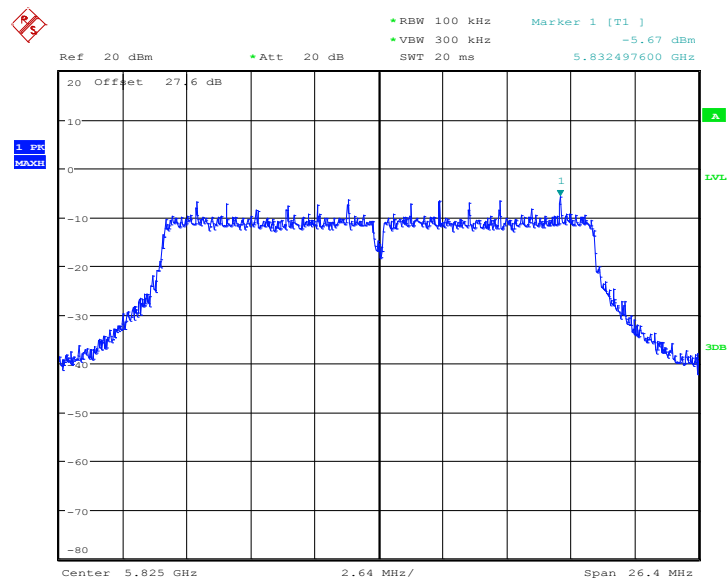


PSD 100kHz Plot on 5GHz 802.11n HT20 Channel 157



Date: 22.NOV.2012 22:19:53

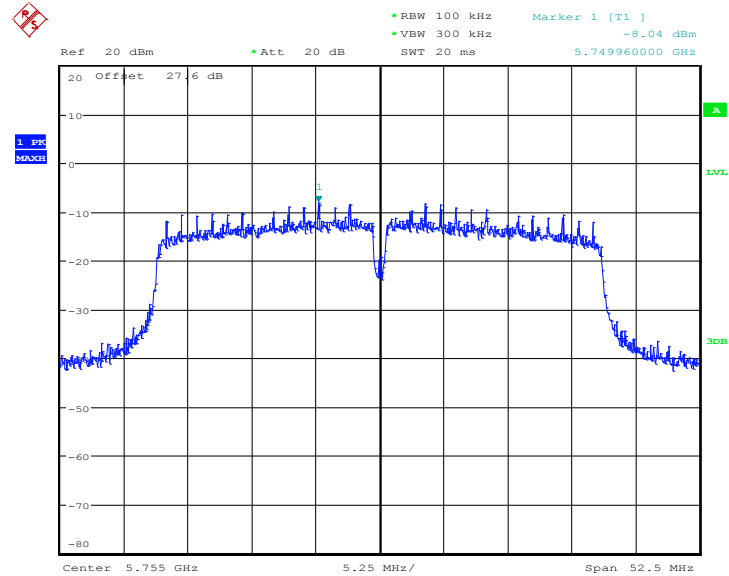
PSD 100kHz Plot on 5GHz 802.11n HT20 Channel 165



Date: 22.NOV.2012 22:23:16

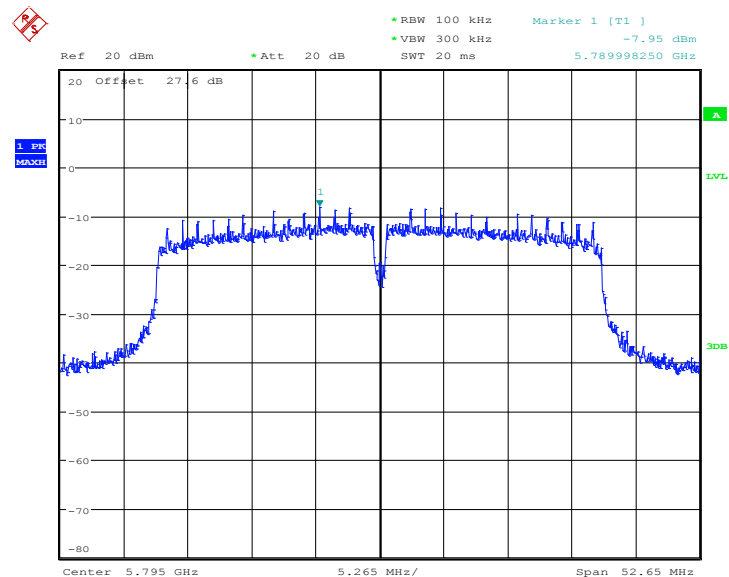


PSD 100kHz Plot on 5GHz 802.11n HT40 Channel 151



Date: 22.NOV.2012 22:30:34

PSD 100kHz Plot on 5GHz 802.11n HT40 Channel 159

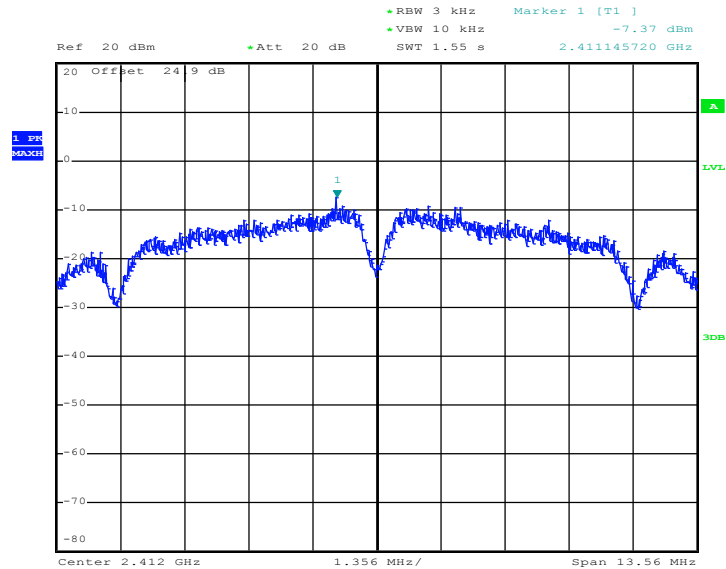


Date: 22.NOV.2012 22:27:06



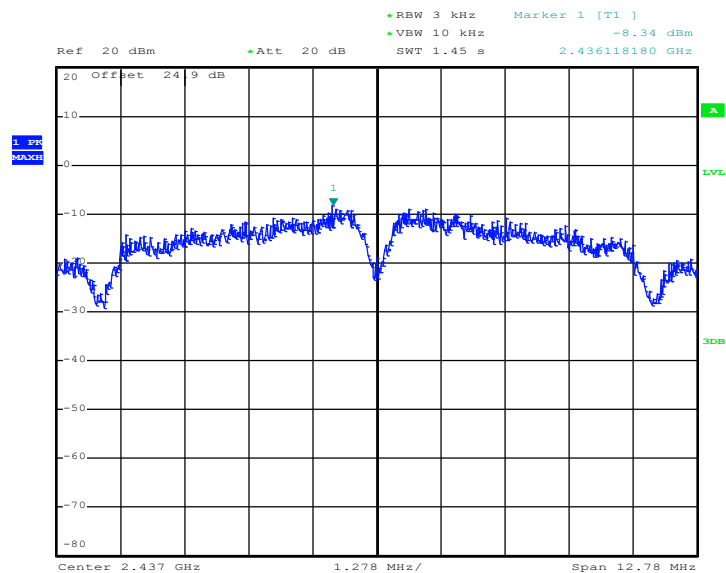
3.3.7 Test Result of Power Spectral Density Plots (3kHz)

PSD 3kHz Plot on 802.11b Channel 01

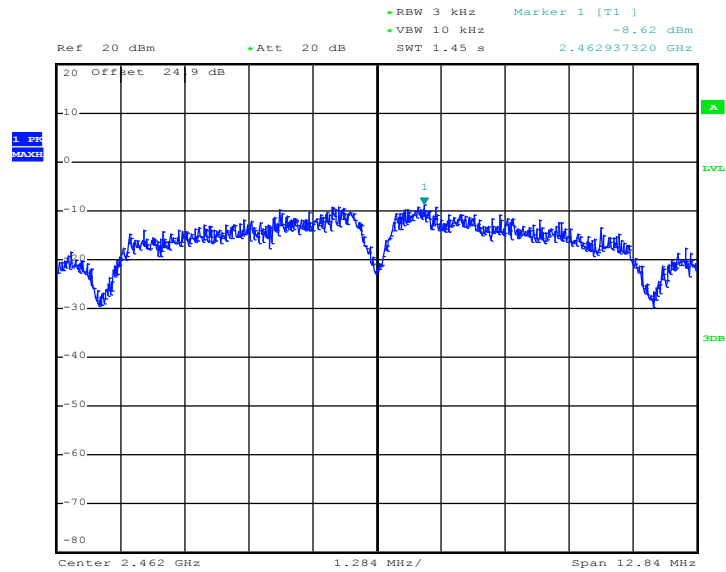


Date: 14.NOV.2012 21:56:21

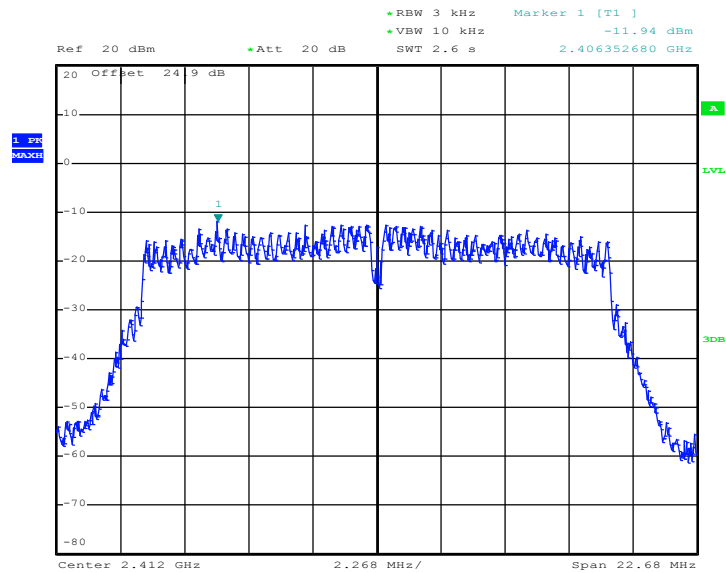
PSD 3kHz Plot on 802.11b Channel 06



Date: 14.NOV.2012 22:06:11

PSD 3kHz Plot on 802.11b Channel 11


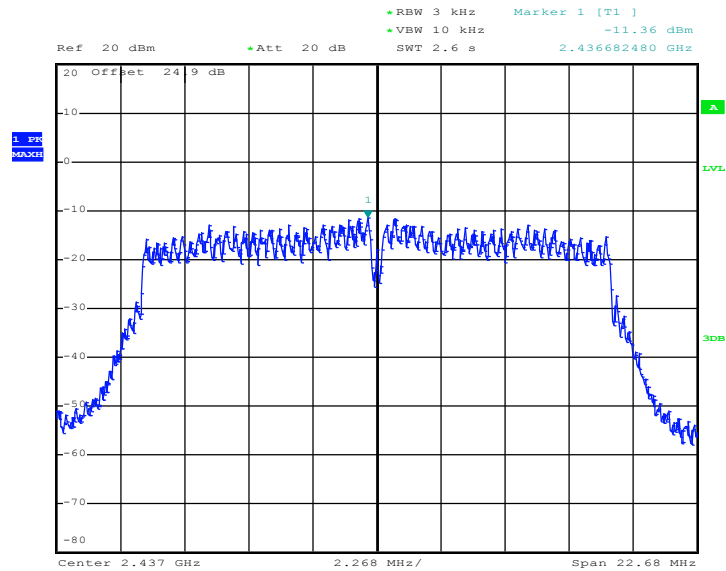
Date: 14.NOV.2012 22:09:12

PSD 3kHz Plot on 802.11g Channel 01


Date: 14.NOV.2012 22:29:18

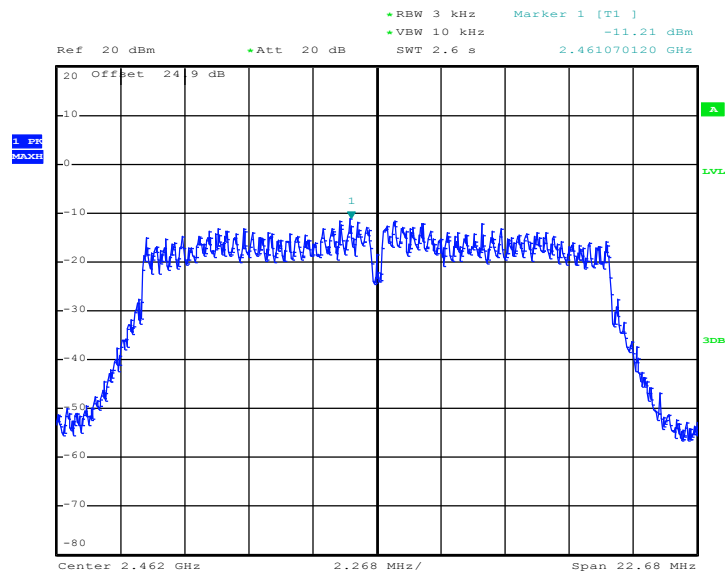


PSD 3kHz Plot on 802.11g Channel 06



Date: 14.NOV.2012 22:21:05

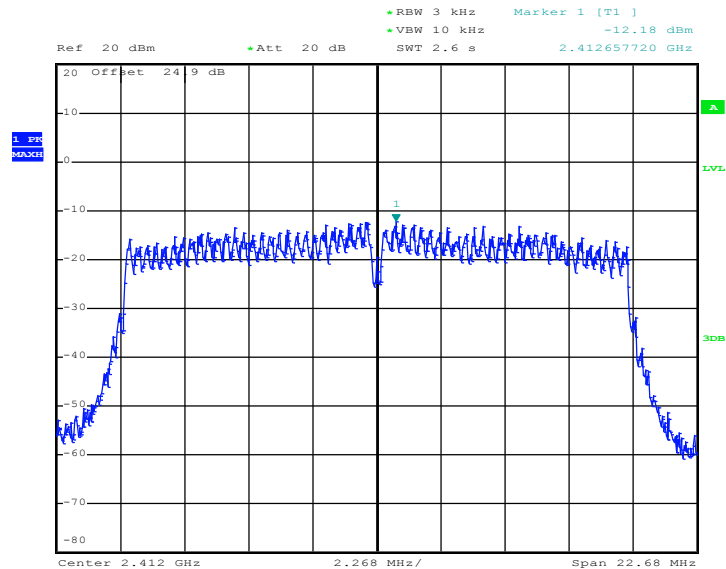
PSD 3kHz Plot on 802.11g Channel 11



Date: 14.NOV.2012 22:14:50

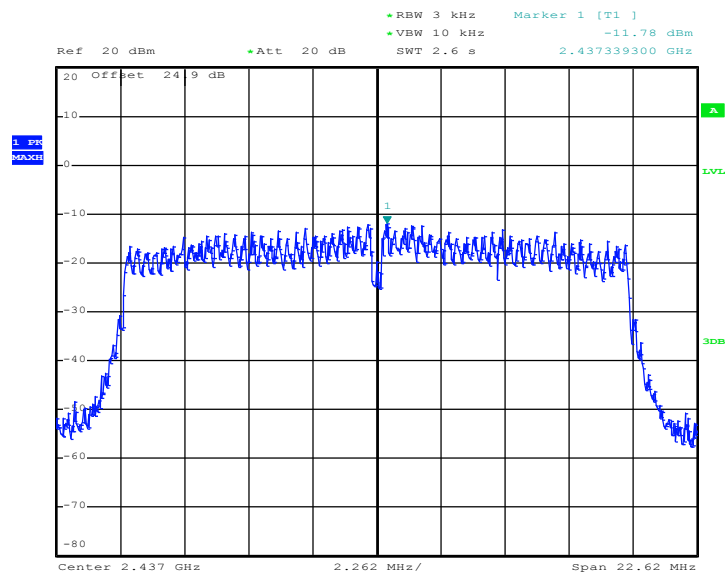


PSD 3kHz Plot on 2.4GHz 802.11n HT20 Channel 01



Date: 14.NOV.2012 22:32:47

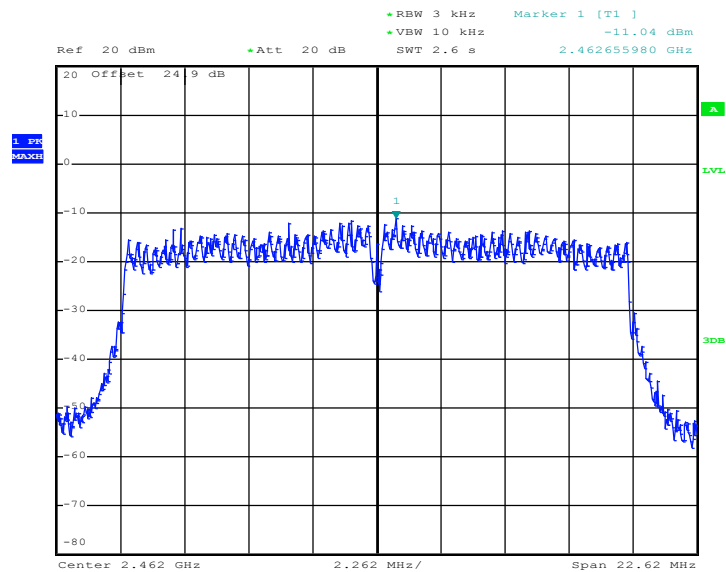
PSD 3kHz Plot on 2.4GHz 802.11n HT20 Channel 06



Date: 14.NOV.2012 22:36:28



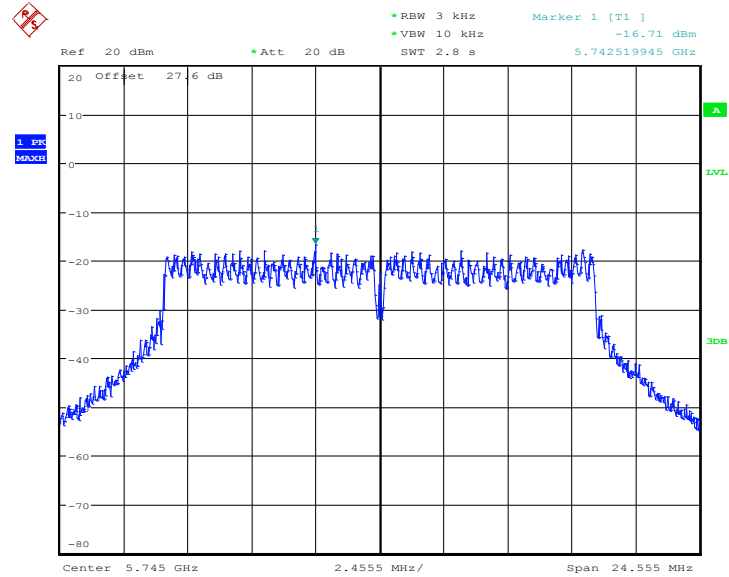
PSD 3kHz Plot on 2.4GHz 802.11n HT20 Channel 11



Date: 14.NOV.2012 22:39:55

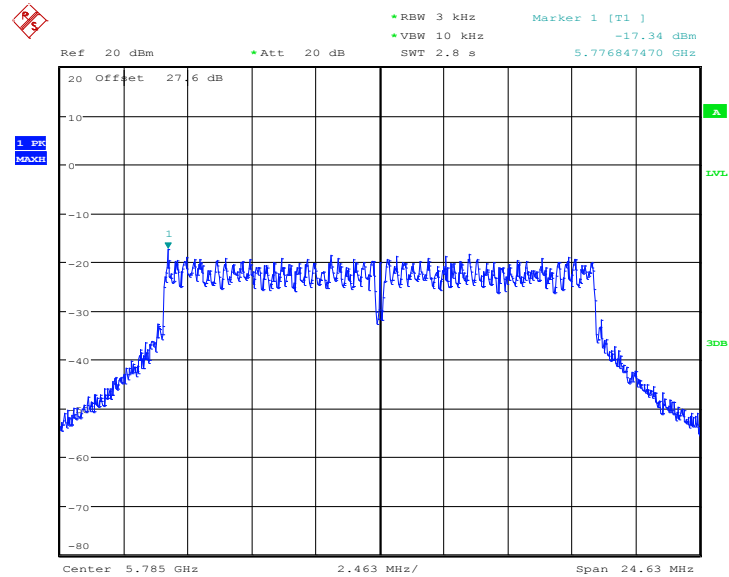


PSD 3kHz Plot on 802.11a Channel 149



Date: 22.NOV.2012 22:41:55

PSD 3kHz Plot on 802.11a Channel 157



Date: 22.NOV.2012 22:37:23

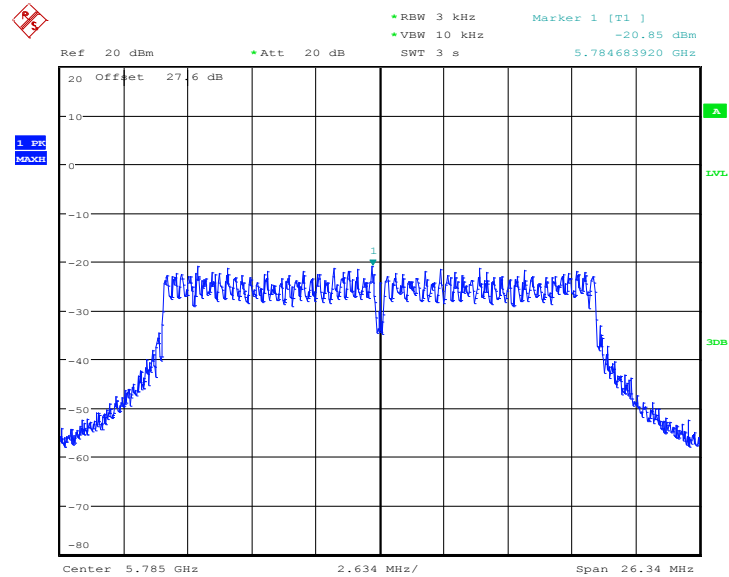


PSD 3kHz Plot on 5GHz 802.11n HT20 Channel 149



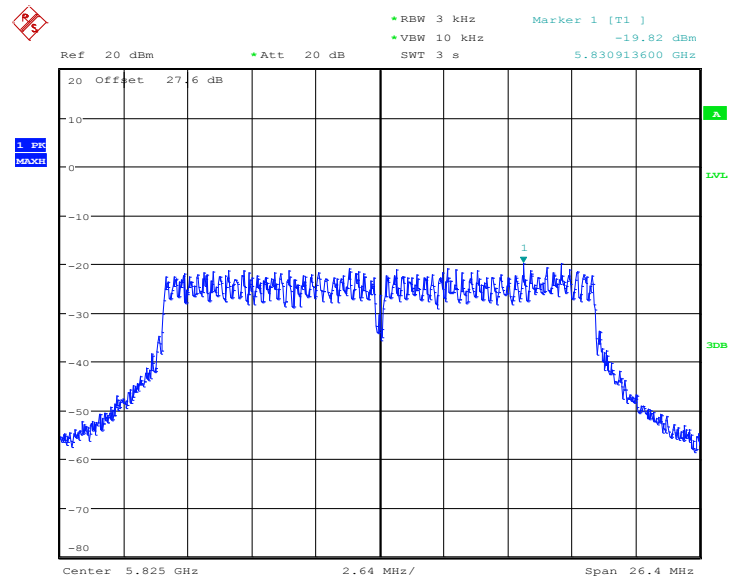


PSD 3kHz Plot on 5GHz 802.11n HT20 Channel 157



Date: 22.NOV.2012 22:19:24

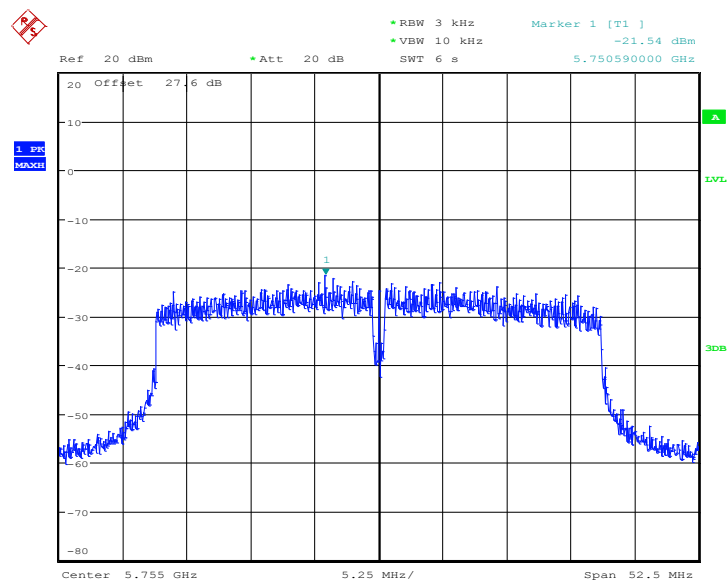
PSD 3kHz Plot on 5GHz 802.11n HT20 Channel 165



Date: 22.NOV.2012 22:23:12

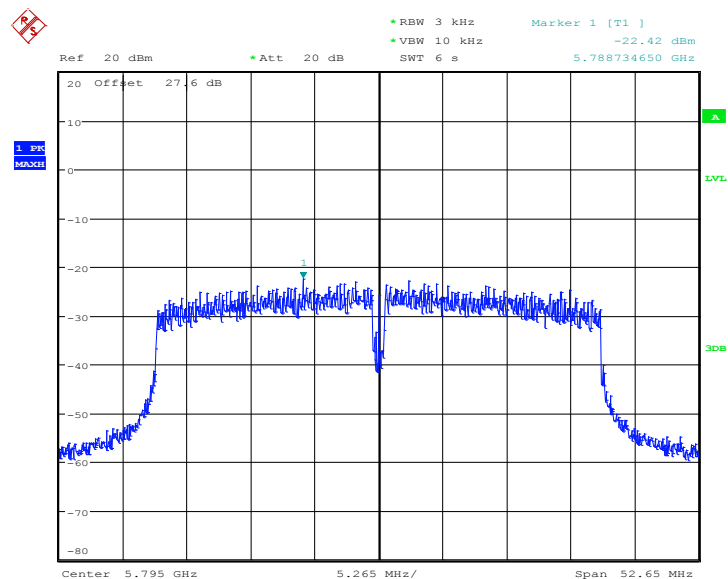


PSD 3kHz Plot on 5GHz 802.11n HT40 Channel 151



Date: 22.NOV.2012 22:30:30

PSD 3kHz Plot on 5GHz 802.11n HT40 Channel 159



Date: 22.NOV.2012 22:26:58

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).

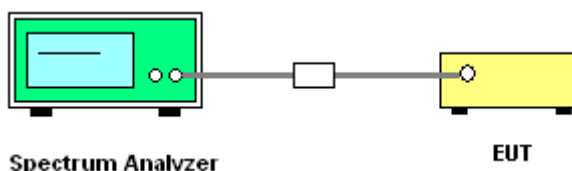
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

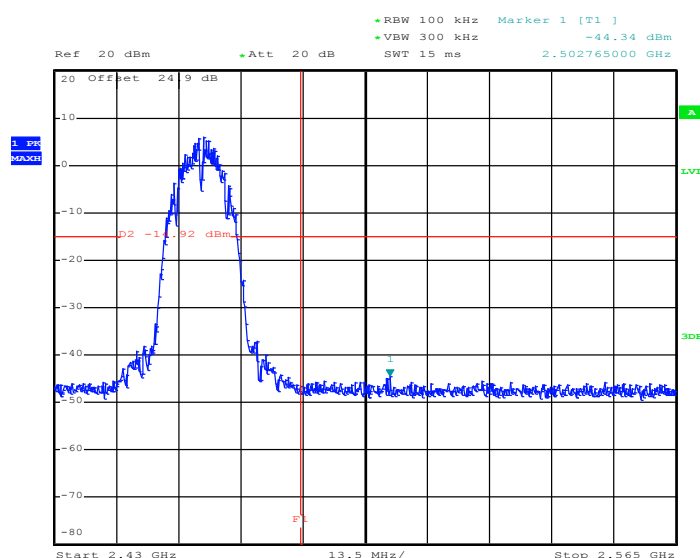
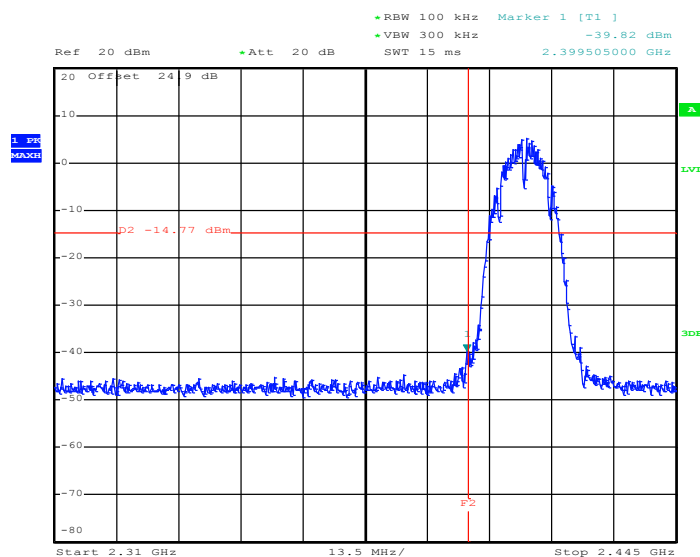
1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 KHz, VBW=300 KHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz, when maximum peak conducted output power procedure is used. The attenuation is set to 30dB, when maximum conducted output power procedure is used.
5. Measure and record the results in the test report.

3.4.4 Test Setup





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

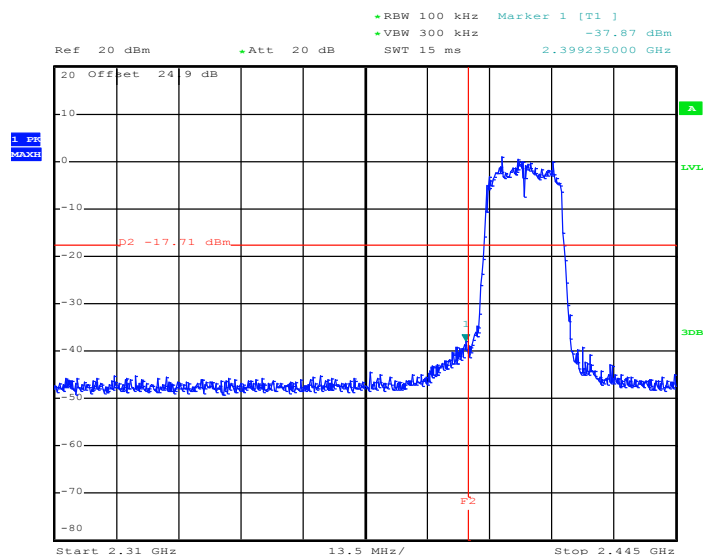


Date: 14.NOV.2012 22:09:30



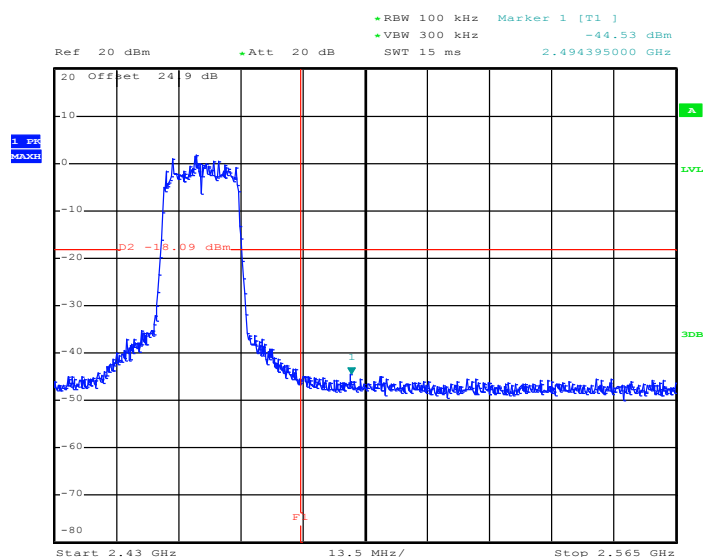
Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Reece Li

Low Band Edge Plot on 802.11g Channel 01



Date: 14.NOV.2012 22:29:38

High Band Edge Plot on 802.11g Channel 11

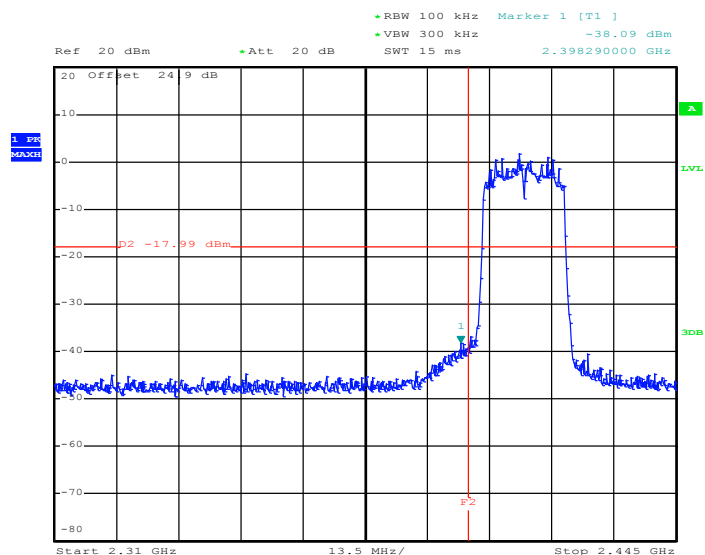


Date: 14.NOV.2012 22:15:22



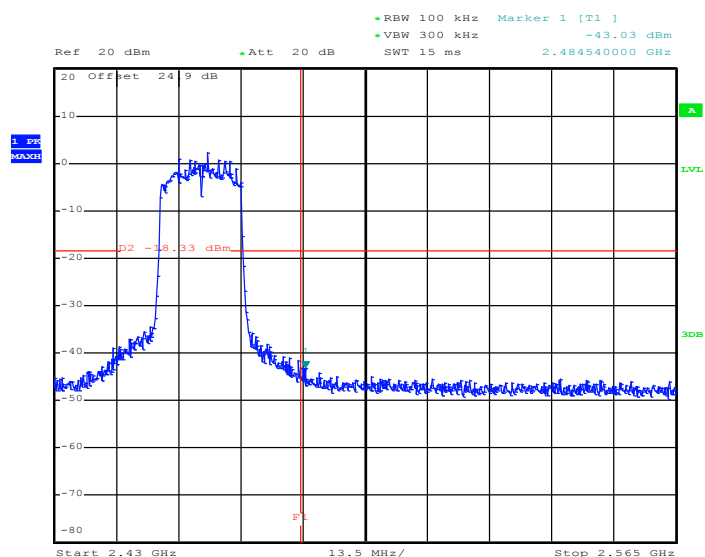
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Reece Li

Low Band Edge Plot on 2.4GHz 802.11n HT20 Channel 01



Date: 14.NOV.2012 22:33:07

High Band Edge Plot on 2.4GHz 802.11n HT20 Channel 11

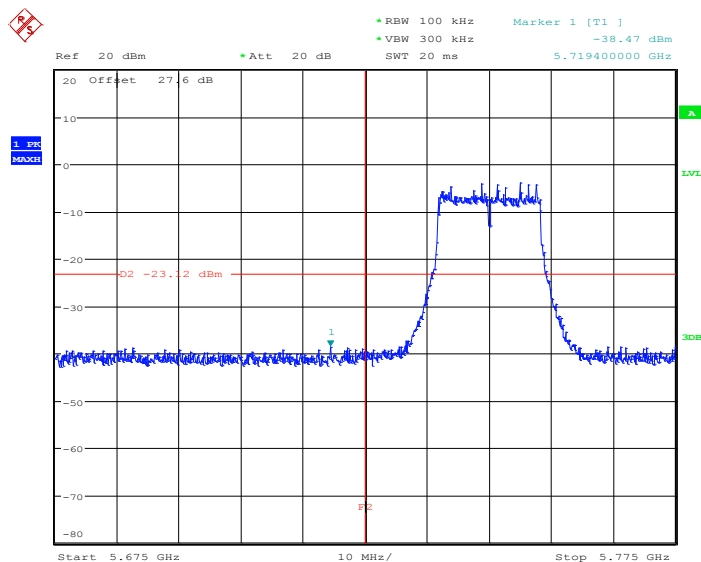


Date: 14.NOV.2012 22:40:15



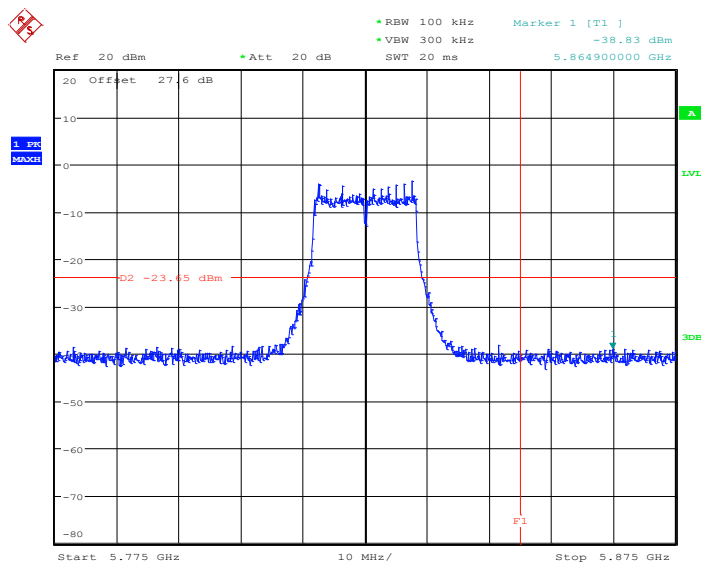
Test Mode :	802.11a	Temperature :	24~26°C
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	149 and 165	Test Engineer :	Reece Li

Low Band Edge Plot on 802.11a Channel 149



Date: 22.NOV.2012 22:42:11

High Band Edge Plot on 802.11a Channel 165



Date: 22.NOV.2012 22:39:58



Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	149 and 165	Test Engineer :	Reece Li

Ref 20 dBm Att 20 dB RBW 100 kHz VBW 300 kHz SWT 20 ms Marker 1 [T1] -38.30 dBm 5.699000000 GHz

20 Offset 27 6 dB

1.5% MAG

20 -10 0 -10 -20 -30 -40 -50 -60 -70 -80

20 10 MHz/ 5.675 GHz 5.775 GHz

20 -26.46 dBm

10 MHz

5.699 GHz

Date: 22.NOV.2012 22:16:15

Ref 20 dBm Att 20 dB RBW 100 kHz VBW 300 kHz SWT 20 ms

Marker 1 [T1] -38.04 dBm 5.858800000 GHz

20 Offset 27.6 dB

1.590 MHz

D2 -25.07 dBm

1

F1

Start 5.775 GHz 10 MHz/ Stop 5.875 GHz

Date: 22.NOV.2012 22:23:29



Test Mode :	802.11n HT40	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	151 and 159	Test Engineer :	Reece Li

Ref 20 dBm Att 20 dB RBW 100 kHz VBW 300 kHz SWT 20 ms Marker 1 [T1] -38.47 dBm 5.686800000 GHz

20 Offset 27.6 dB

1. PR
MASH

0.2 -28.04 dBm

1

F2

Start 3.675 GHz 10 MHz/ Stop 5.775 GHz

Date: 22.NOV.2012 22:30:47

Ref 20 dBm * Att 20 dB

• RBW 100 kHz
• VBW 300 kHz
SWT 20 ms

Marker 1 [T1]
-39.02 dBm
5.87120000 GHz

20 Offset 27.6 dB

1. PRG
MASH

-27.15 dBm

1

F1

Start 5.775 GHz 10 MHz/ Stop 5.875 GHz

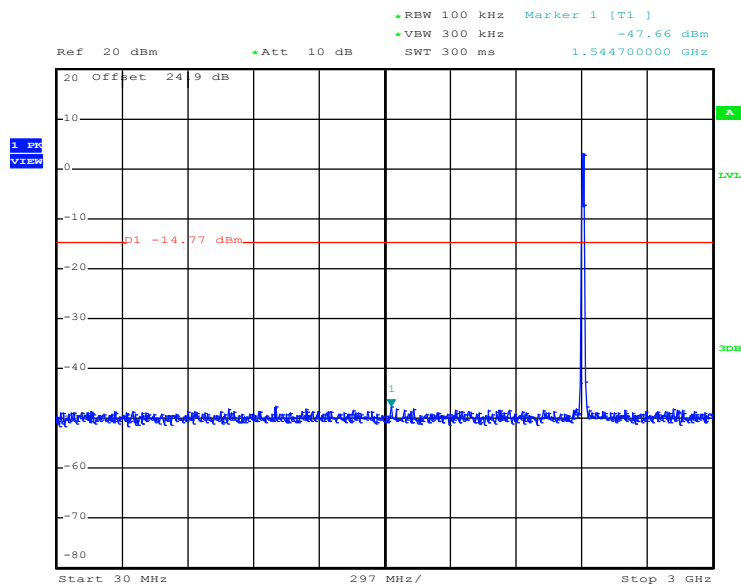
Date: 22.NOV.2012 22:27:23

3.4.7 Test Result of Conducted Spurious Emission

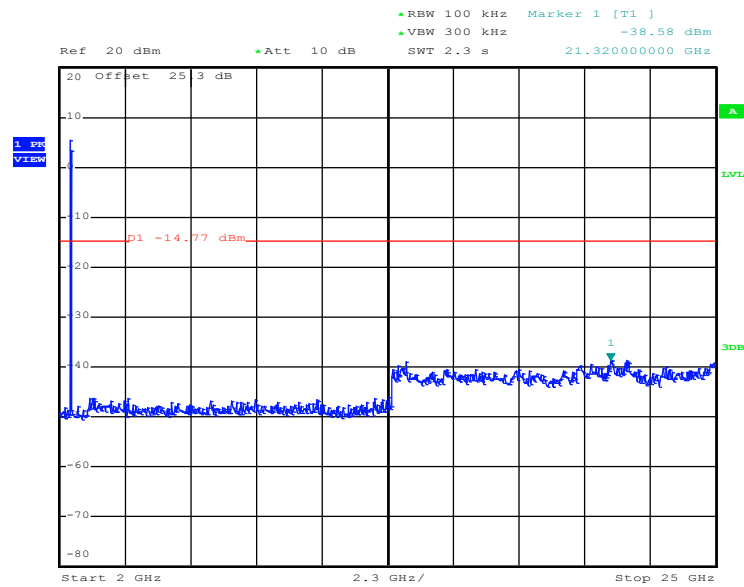
Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Reece Li

802.11b 30 MHz~3 GHz

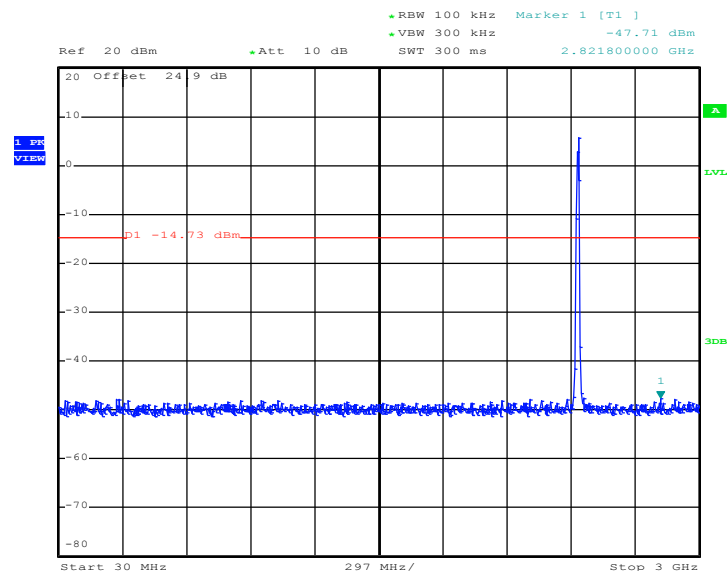
Conducted Spurious Emission Plot on Channel 01



Date: 14.NOV.2012 22:03:06

802.11b 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 01


Date: 14.NOV.2012 22:03:24

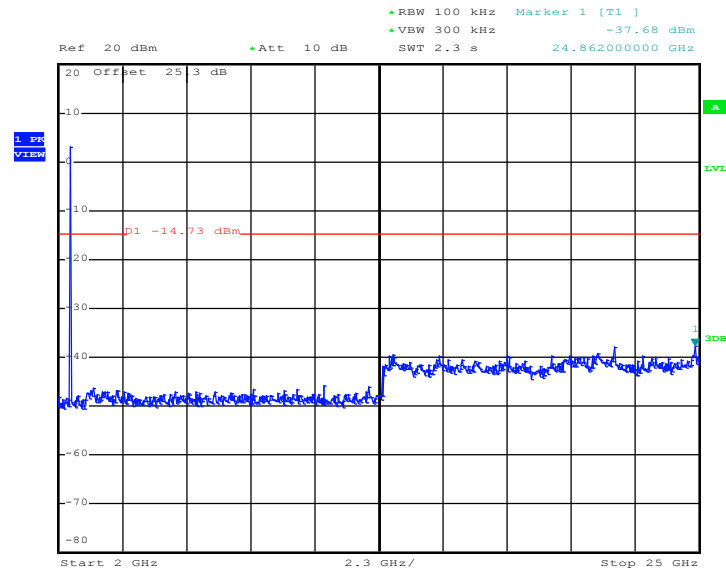
802.11b 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 06


Date: 14.NOV.2012 22:07:05



802.11b 2 GHz~25 GHz

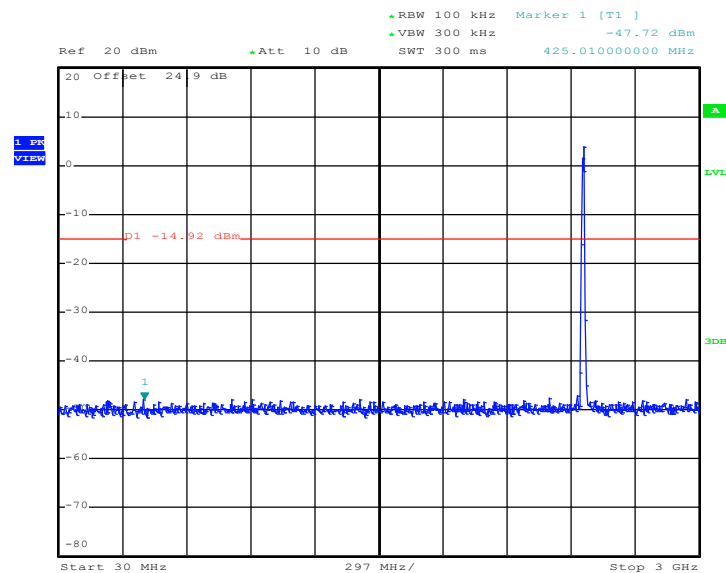
Conducted Spurious Emission Plot on Channel 06



Date: 14.NOV.2012 22:07:23

802.11b 30 MHz~3 GHz

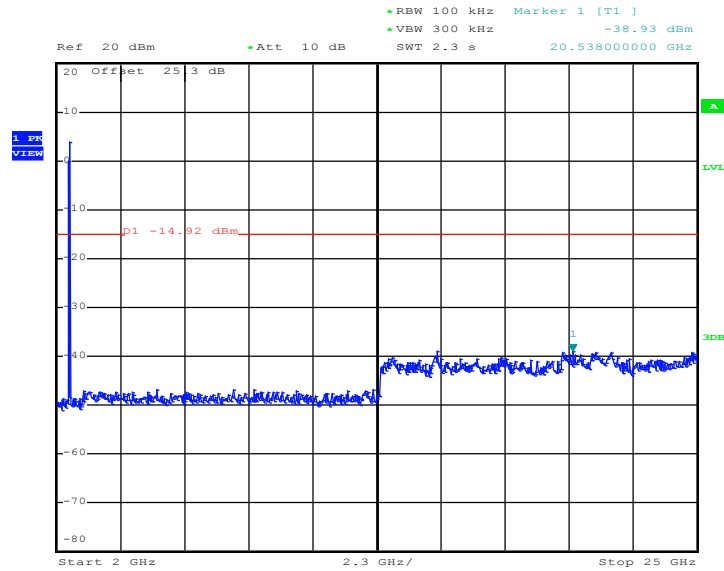
Conducted Spurious Emission Plot on Channel 11



Date: 14.NOV.2012 22:09:49

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



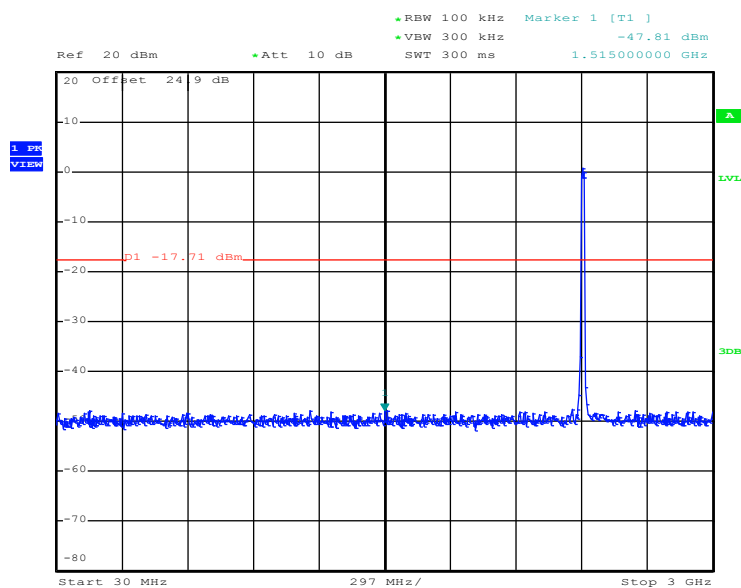
Date: 14.NOV.2012 22:10:07



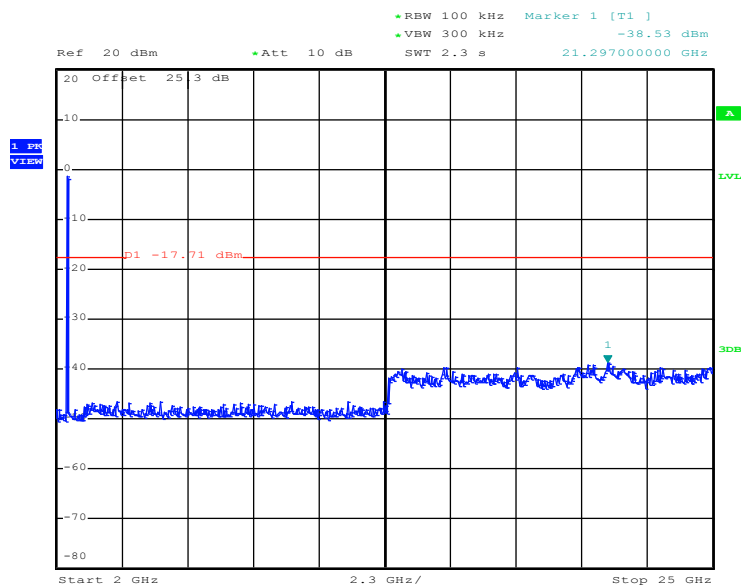
Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Reece Li

802.11g 30 MHz~3 GHz

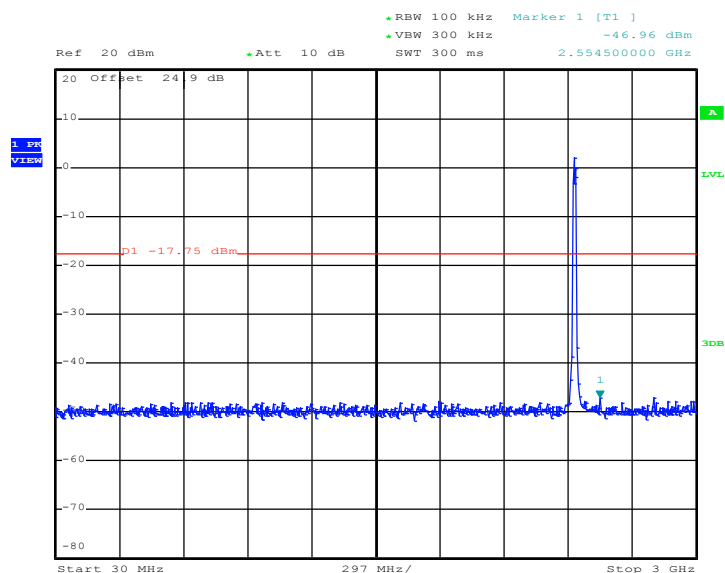
Conducted Spurious Emission Plot on Channel 01



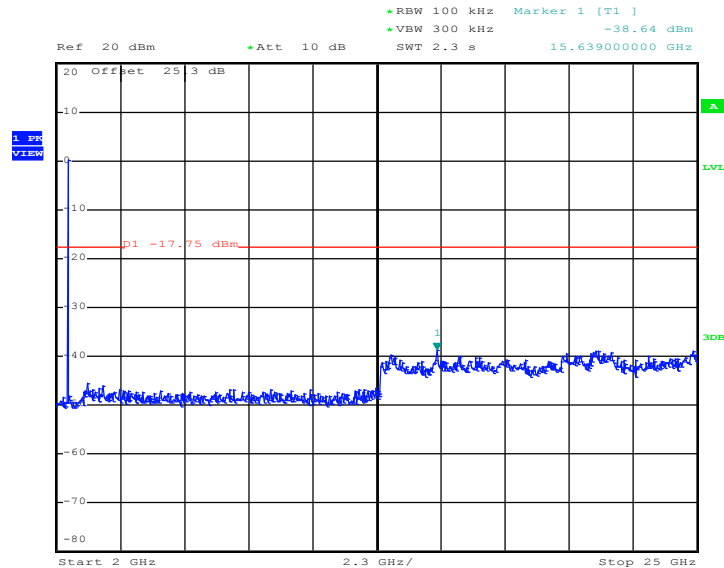
Date: 14.NOV.2012 22:30:10

802.11g 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 01


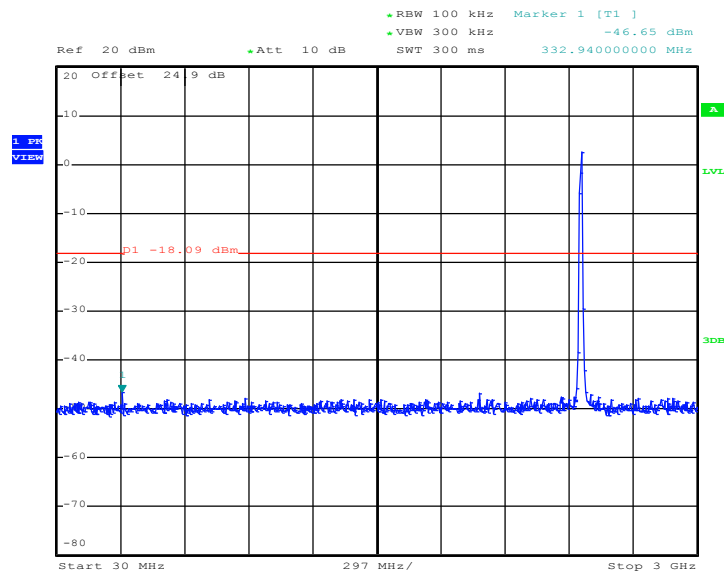
Date: 14.NOV.2012 22:30:28

802.11g 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 06


Date: 14.NOV.2012 22:27:19

802.11g 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 06


Date: 14.NOV.2012 22:27:37

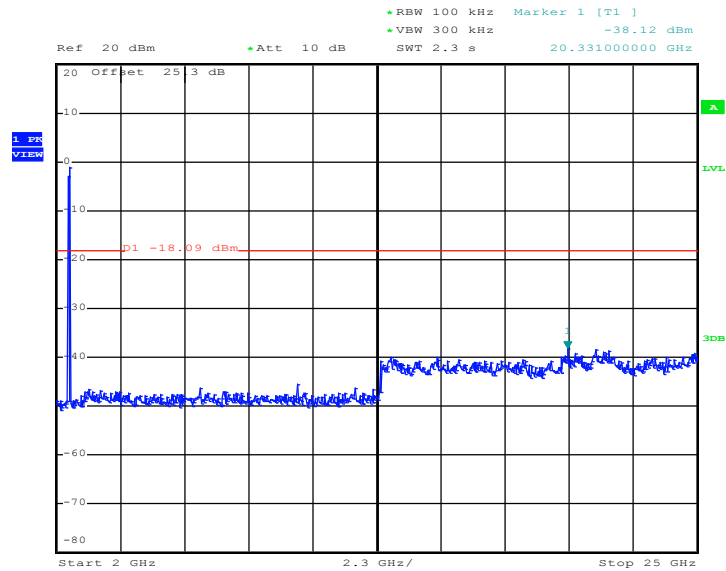
802.11g 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 14.NOV.2012 22:15:50



802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



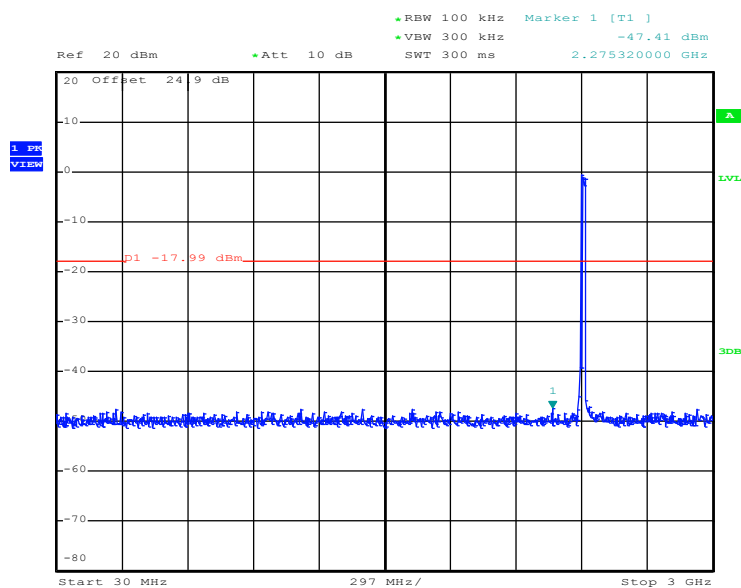
Date: 14.NOV.2012 22:16:07



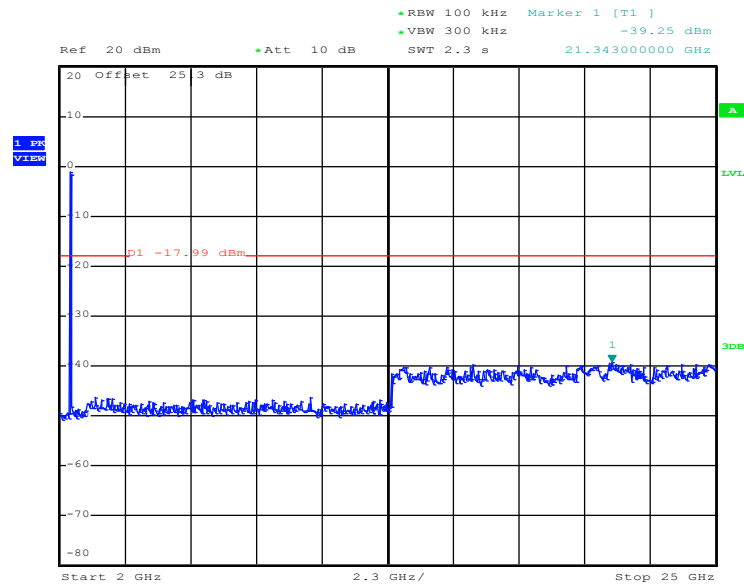
Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Reece Li

2.4GHz 802.11n HT20 30 MHz~3 GHz

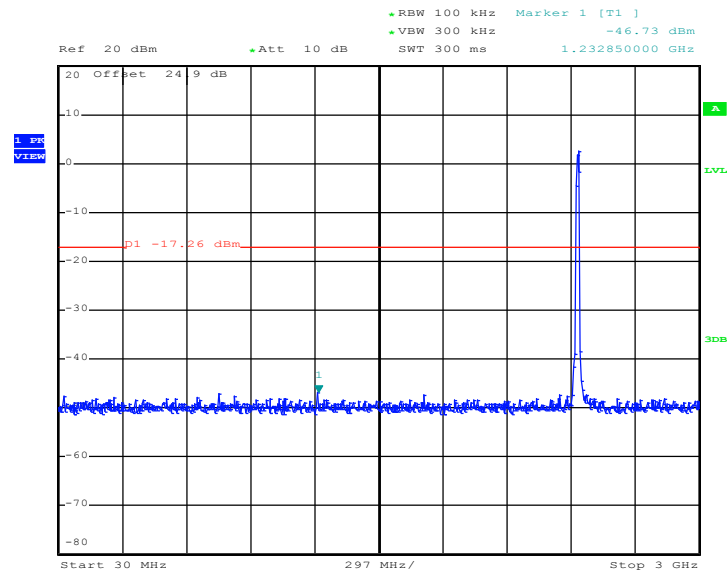
Conducted Spurious Emission Plot on Channel 01



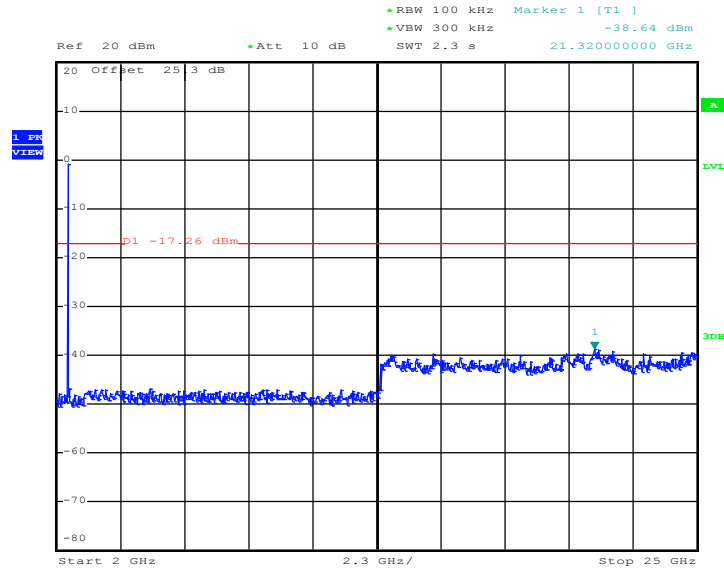
Date: 14.NOV.2012 22:33:33

2.4GHz 802.11n HT20 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 01


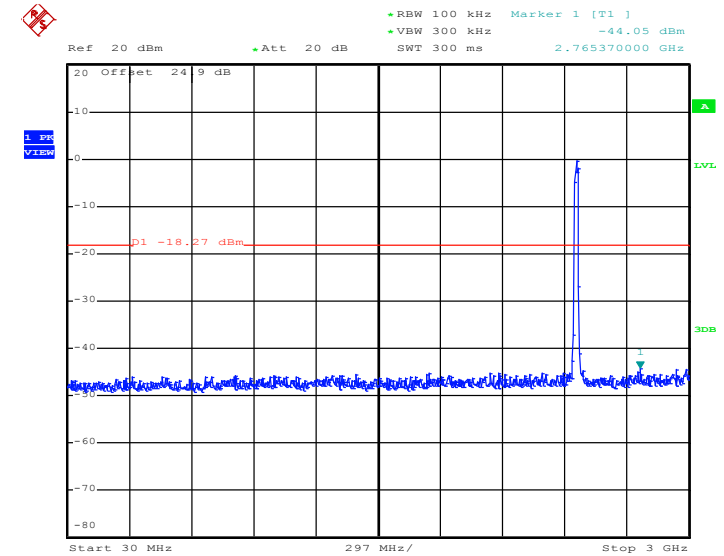
Date: 14.NOV.2012 22:33:51

2.4GHz 802.11n HT20 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 06


Date: 14.NOV.2012 22:37:35

2.4GHz 802.11n HT20 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 06


Date: 14.NOV.2012 22:37:52

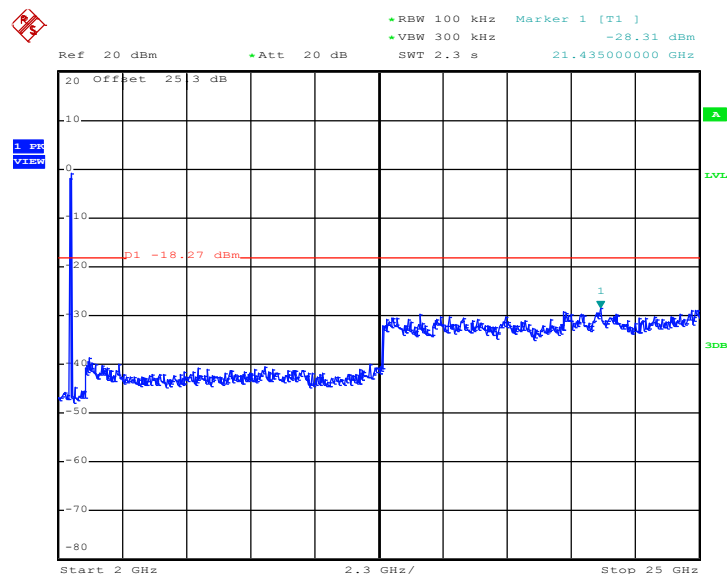
2.4GHz 802.11n HT20 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 26.NOV.2012 19:08:45



2.4GHz 802.11n HT20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



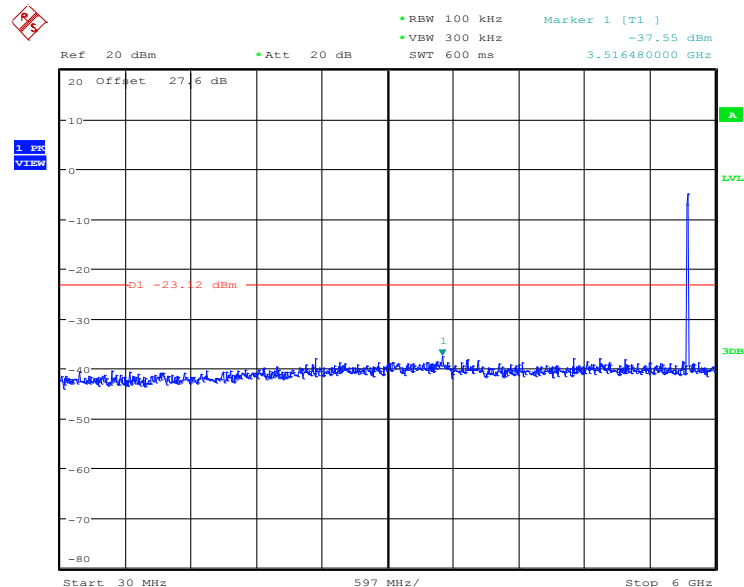
Date: 26.NOV.2012 19:09:03



Test Mode :	802.11a	Temperature :	24~26℃
Test Band :	30MHz-6GHz and 5G-40GHz	Relative Humidity :	50~53%
Test Channel :	149, 157, 165	Test Engineer :	Reece Li

802.11a 30 MHz~6 GHz

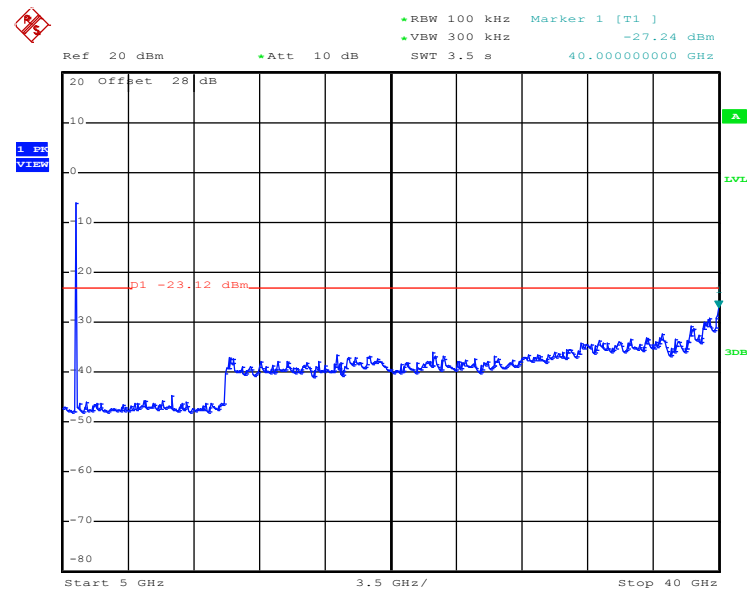
Conducted Spurious Emission Plot on Channel 149



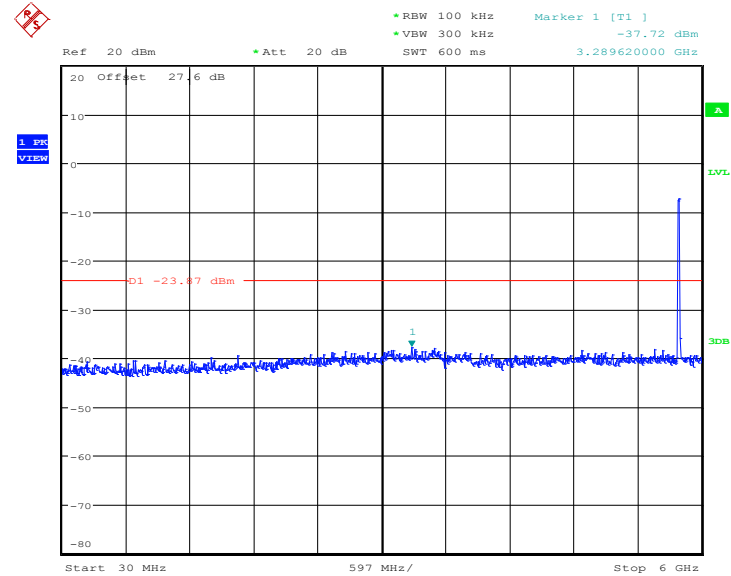
Date: 22.NOV.2012 22:42:29

802.11a 5 GHz~40 GHz

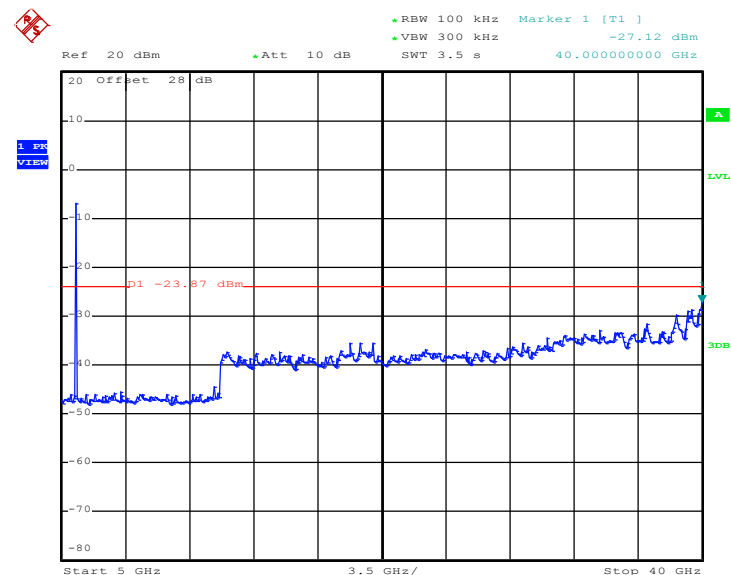
Conducted Spurious Emission Plot on Channel 149



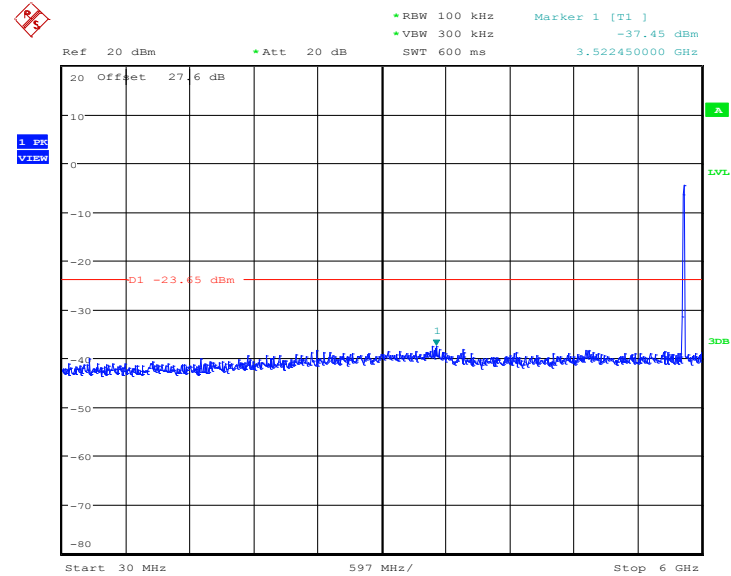
Date: 25.NOV.2012 12:50:15

802.11a 30 MHz~6 GHz
Conducted Spurious Emission Plot on Channel 157


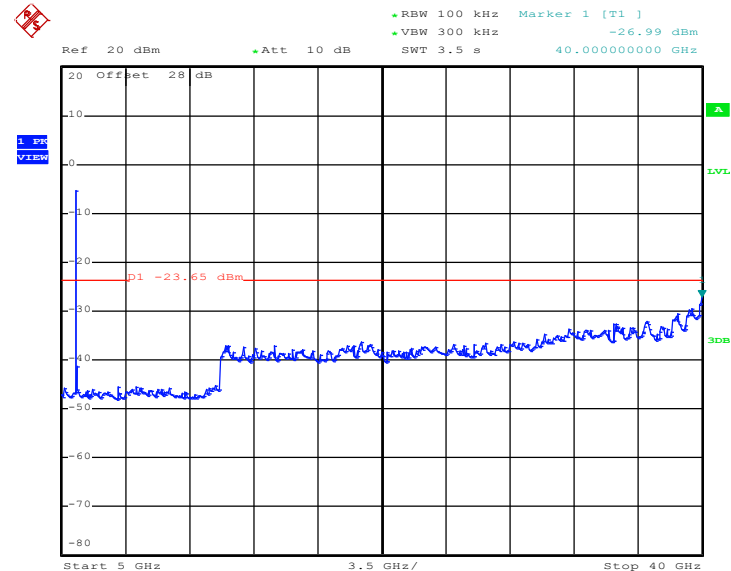
Date: 22.NOV.2012 22:37:49

802.11a 5 GHz~40 GHz
Conducted Spurious Emission Plot on Channel 157


Date: 25.NOV.2012 13:06:14

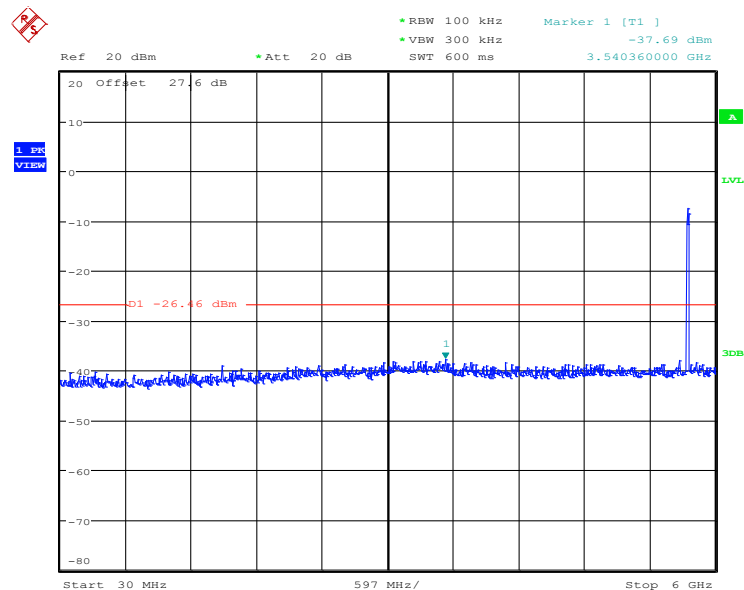
802.11a 30 MHz~6 GHz
Conducted Spurious Emission Plot on Channel 165


Date: 22.NOV.2012 22:40:16

802.11a 5 GHz~40 GHz
Conducted Spurious Emission Plot on Channel 165


Date: 25.NOV.2012 13:07:17

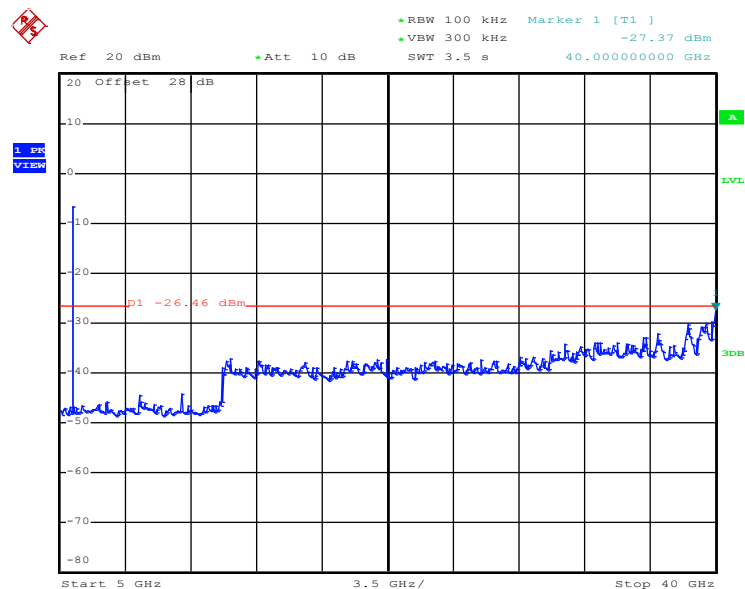
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	30MHz-5GHz and 5G-40GHz	Relative Humidity :	50~53%
Test Channel :	149, 157, 165	Test Engineer :	Reece Li

5GHz 802.11n HT20 30 MHz~6 GHz
Conducted Spurious Emission Plot on Channel 149


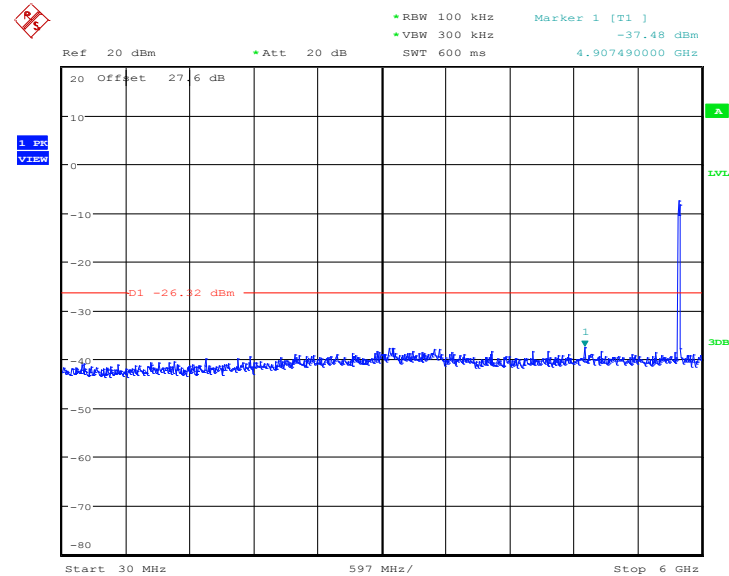
Date: 22.NOV.2012 22:16:34

5GHz 802.11n HT20 5 GHz~40 GHz

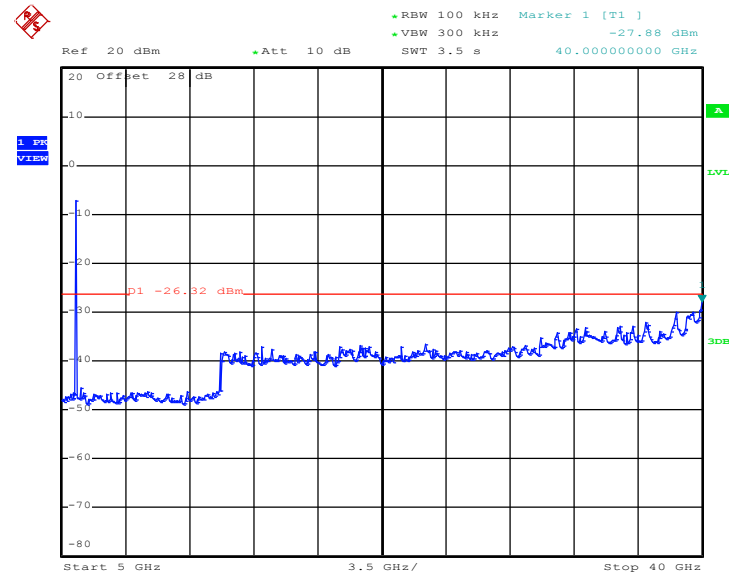
Conducted Spurious Emission Plot on Channel 149



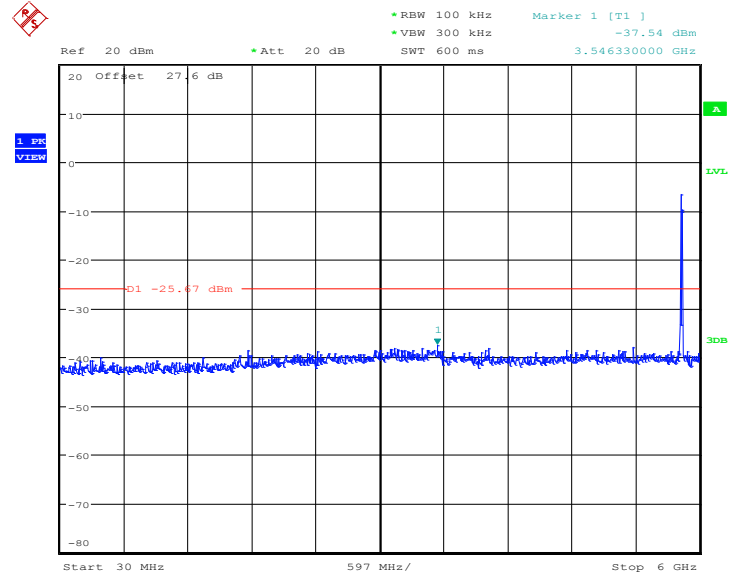
Date: 25.NOV.2012 13:17:20

5GHz 802.11n HT20 30 MHz~6 GHz
Conducted Spurious Emission Plot on Channel 157


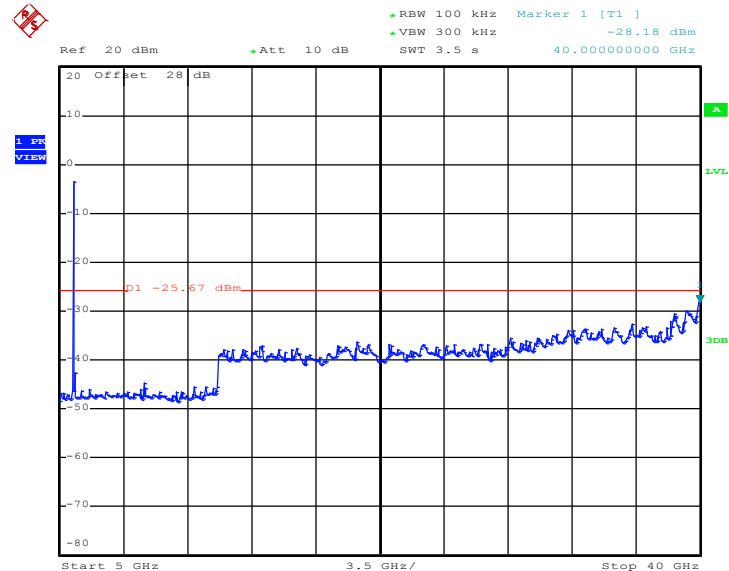
Date: 22.NOV.2012 22:20:19

5GHz 802.11n HT20 5 GHz~40 GHz
Conducted Spurious Emission Plot on Channel 157


Date: 25.NOV.2012 12:53:50

5GHz 802.11n HT20 30 MHz~6 GHz
Conducted Spurious Emission Plot on Channel 165


Date: 22.NOV.2012 22:23:48

5GHz 802.11n HT20 5 GHz~40 GHz
Conducted Spurious Emission Plot on Channel 165


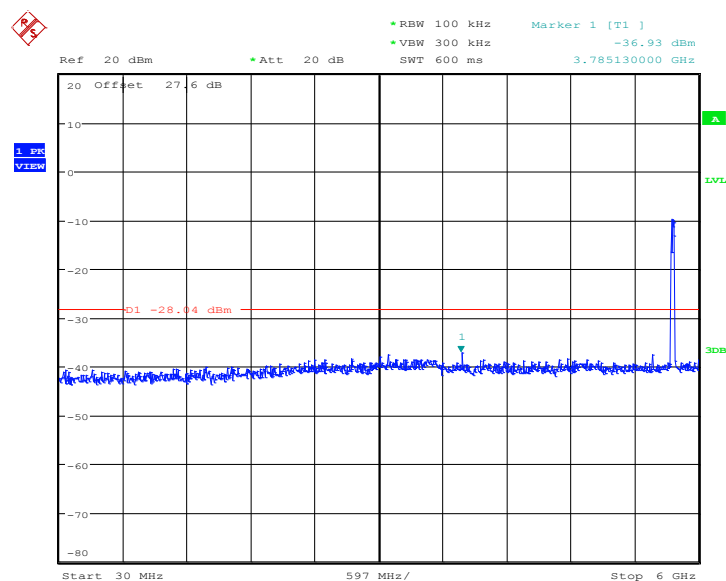
Date: 25.NOV.2012 12:54:53



Test Mode :	802.11n HT40	Temperature :	24~26℃
Test Band :	30MHz-6GHz and 5G-40GHz	Relative Humidity :	50~53%
Test Channel :	151 and 159	Test Engineer :	Reece Li

5GHz 802.11n HT40 30 MHz~6 GHz

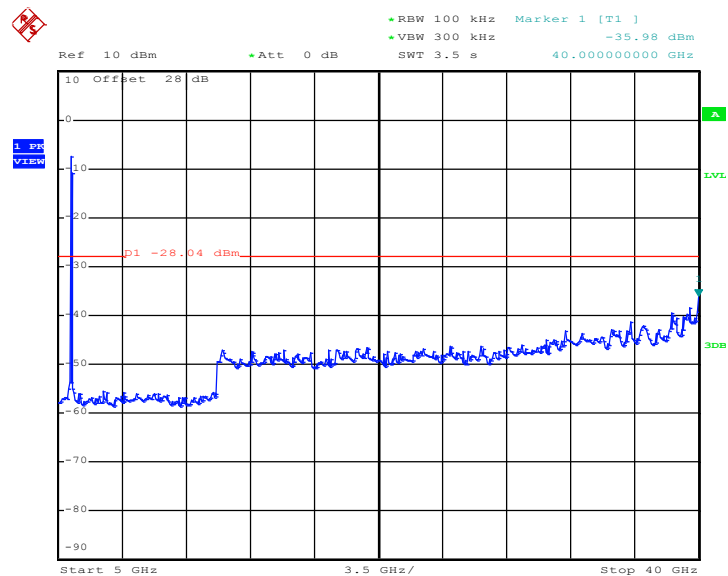
Conducted Spurious Emission Plot on Channel 151



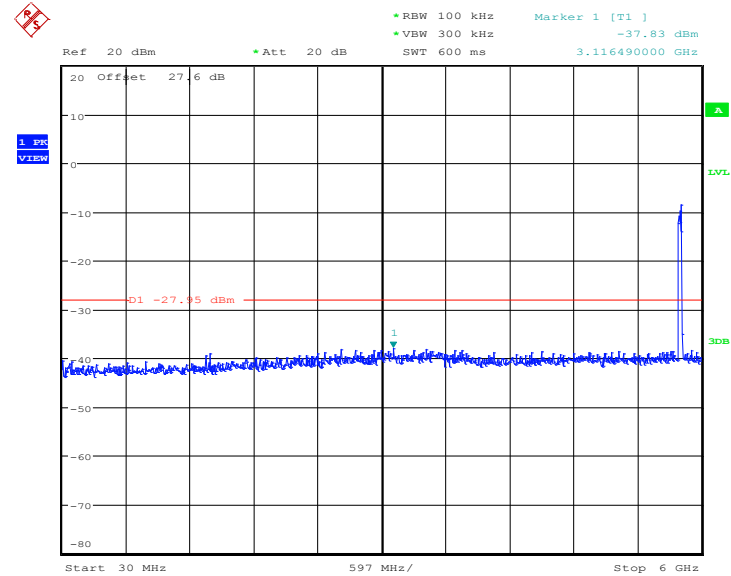
Date: 22.NOV.2012 22:31:05

5GHz 802.11n HT40 5 GHz~40 GHz

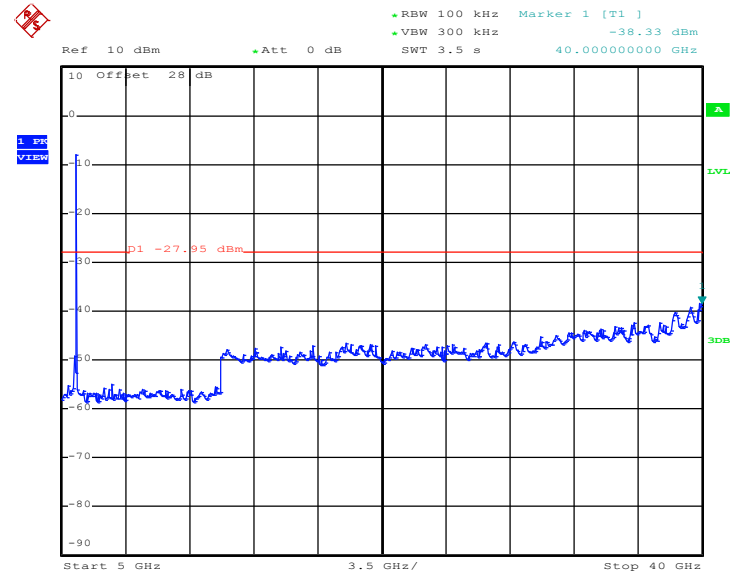
Conducted Spurious Emission Plot on Channel 151



Date: 25.NOV.2012 13:04:13

5GHz 802.11n HT40 30 MHz~6 GHz
Conducted Spurious Emission Plot on Channel 159


Date: 22.NOV.2012 22:27:41

5GHz 802.11n HT40 5GHz~40 GHz
Conducted Spurious Emission Plot on Channel 159


Date: 25.NOV.2012 13:03:14

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

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

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

3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

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

For average measurement:

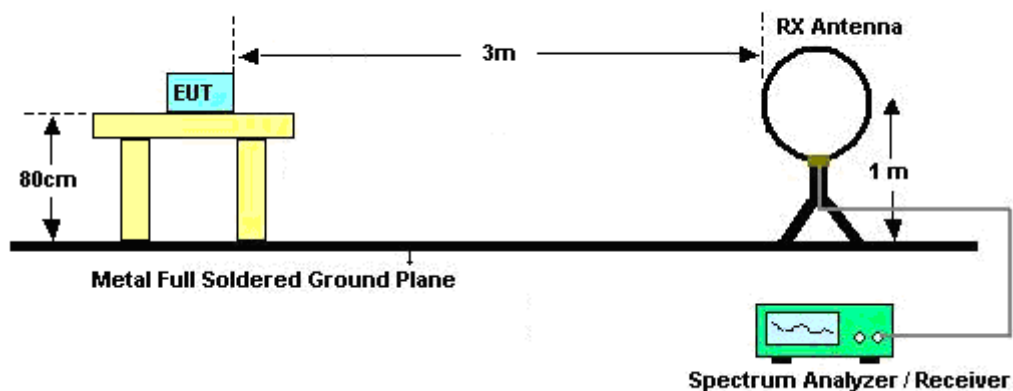
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(us)	1/T(KHz)	VBW Setting
802.11b	100	-	-	10Hz
802.11g	98.83	-	-	10Hz
2.4GHz 802.11n HT20	98.75	-	-	10Hz
802.11a	99.31	-	-	10Hz
5GHz 802.11n HT20	99.11	-	-	10Hz
5GHz 802.11n HT40	98.57	-	-	10Hz

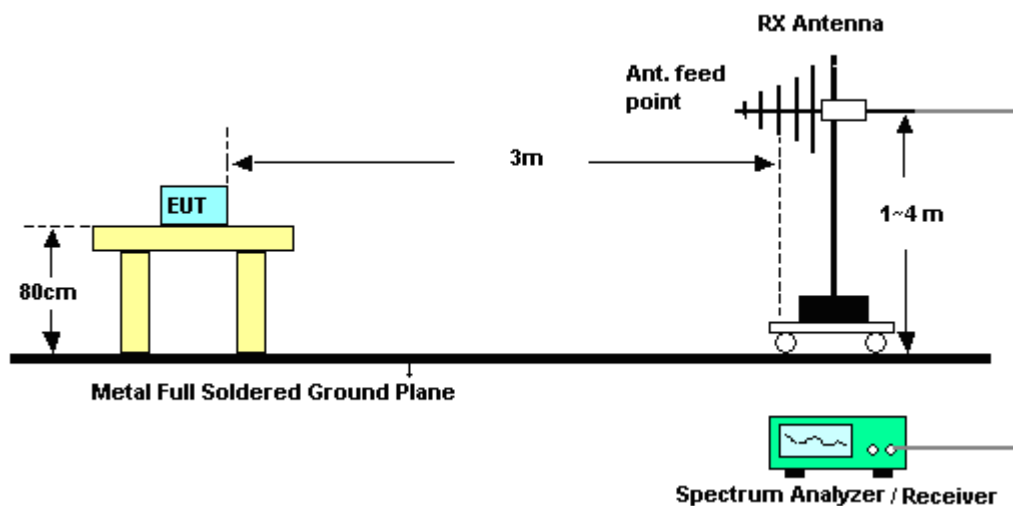
Note: For average measurement with duty cycle $< 98\%$, use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.

3.5.4 Test Setup

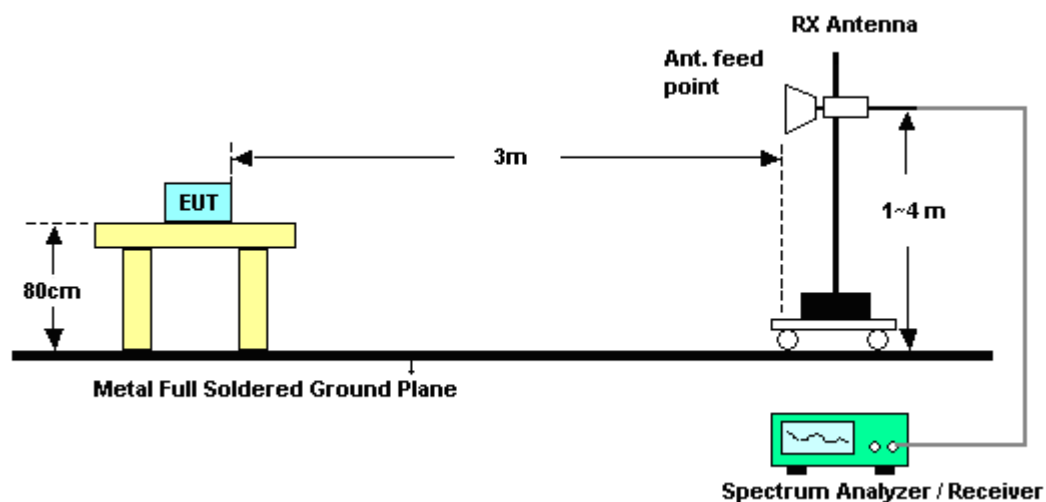
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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

3.5.6 Test Result of Radiated Band Edges

Test Mode :	802.11b	Temperature :	23~25°C
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
2384.97	57.34	-16.66	74	56.48	32.16	4.58	35.88	119	131	Peak
2385.33	46.96	-7.04	54	46.1	32.16	4.58	35.88	119	131	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
2385.24	57.74	-16.26	74	56.88	32.16	4.58	35.88	105	358	Peak
2385.33	47.42	-6.58	54	46.56	32.16	4.58	35.88	105	358	Average

Test Mode :	802.11b	Temperature :	23~25°C
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
2489.18	59.18	-14.82	74	58.05	32.3	4.64	35.81	116	130	Peak
2490.96	47.08	-6.92	54	45.95	32.3	4.64	35.81	116	130	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
2488.86	57.89	-16.11	74	56.76	32.3	4.64	35.81	126	360	Peak
2491.22	44.95	-9.05	54	43.82	32.3	4.64	35.81	126	360	Average



Test Mode :	802.11g	Temperature :	23~25°C
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
2387.49	69.34	-4.66	74	68.46	32.18	4.58	35.88	120	131	Peak
2390	48.36	-5.64	54	47.46	32.18	4.58	35.86	120	131	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
2387.13	68.3	-5.7	74	67.42	32.18	4.58	35.88	104	357	Peak
2390.01	47.73	-6.27	54	46.83	32.18	4.58	35.86	104	357	Average

Test Mode :	802.11g	Temperature :	23~25°C
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
2484.08	69.67	-4.33	74	68.56	32.28	4.64	35.81	116	129	Peak
2483.5	49.31	-4.69	54	48.2	32.28	4.64	35.81	116	129	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
2483.82	67.25	-6.75	74	66.14	32.28	4.64	35.81	125	359	Peak
2483.5	46.94	-7.06	54	45.83	32.28	4.64	35.81	125	359	Average

Test Mode :	802.11n HT20	Temperature :	23~25°C
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
2389.2	68.43	-5.57	74	67.55	32.18	4.58	35.88	121	131	Peak
2390	46.31	-7.69	54	45.41	32.18	4.58	35.86	121	131	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
2389.38	66.49	-7.51	74	65.61	32.18	4.58	35.88	104	358	Peak
2390	46.58	-7.42	54	45.68	32.18	4.58	35.86	104	358	Average

Test Mode :	802.11n HT20	Temperature :	23~25°C
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
2483.84	69.71	-4.29	74	68.6	32.28	4.64	35.81	117	130	Peak
2483.5	49.74	-4.26	54	48.63	32.28	4.64	35.81	117	130	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
2483.52	67.2	-6.8	74	66.09	32.28	4.64	35.81	126	359	Peak
2483.5	47.5	-6.5	54	46.39	32.28	4.64	35.81	126	359	Average

Test Mode :	802.11a	Temperature :	23~25°C
Test Band :	Low	Relative Humidity :	49~51%
Test Channel :	149	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
5725	64.47	-23.35	87.82	57.08	35.07	7.17	34.85	110	113	Peak
5745	96.83	-	-	89.4	35.09	7.19	34.85	110	113	Average
5745	107.82	-	-	100.39	35.09	7.19	34.85	110	113	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	57.2	-24.36	81.56	49.81	35.07	7.17	34.85	122	300	Peak
5745	90.5	-	-	83.07	35.09	7.19	34.85	122	300	Average
5745	101.56	-	-	94.13	35.09	7.19	34.85	122	300	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	49~51%
Test Channel :	165	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
5850	57.48	-29.34	86.82	49.85	35.21	7.29	34.87	120	110	Peak
5825	96.08	-	-	88.49	35.19	7.27	34.87	120	110	Average
5825	106.82	-	-	99.23	35.19	7.27	34.87	120	110	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5850	53.12	-28.5	81.62	45.49	35.21	7.29	34.87	109	282	Peak
5825	89.7	-	-	82.11	35.19	7.27	34.87	109	282	Average
5825	101.62	-	-	94.03	35.19	7.27	34.87	109	282	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Band :	Low	Relative Humidity :	49~51%
Test Channel :	149	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
5725	66.6	-20.74	87.34	59.21	35.07	7.17	34.85	100	111	Peak
5745	96.18	-	-	88.75	35.09	7.19	34.85	100	111	Average
5745	107.34	-	-	99.91	35.09	7.19	34.85	100	111	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	58.55	-22.72	81.27	51.16	35.07	7.17	34.85	122	300	Peak
5745	90.21	-	-	82.78	35.09	7.19	34.85	122	300	Average
5745	101.27	-	-	93.84	35.09	7.19	34.85	122	300	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	49~51%
Test Channel :	165	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
5850	61	-25.35	86.35	53.37	35.21	7.29	34.87	110	109	Peak
5825	95.77	-	-	88.18	35.19	7.27	34.87	110	109	Average
5825	106.35	-	-	98.78	35.17	7.27	34.87	110	109	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5850	54.96	-26.07	81.03	47.33	35.21	7.29	34.87	110	301	Peak
5825	90.2	-	-	82.61	35.19	7.27	34.87	110	301	Average
5825	101.03	-	-	93.44	35.19	7.27	34.87	110	301	Peak



Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Band :	Low	Relative Humidity :	49~51%
Test Channel :	151	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
5725	67.91	-18.72	86.63	60.52	35.07	7.17	34.85	110	114	Peak
5755	94	-	-	86.55	35.11	7.19	34.85	110	114	Average
5755	106.63	-	-	99.18	35.11	7.19	34.85	110	114	Peak
5850	55.3	-31.33	86.63	47.67	35.21	7.29	34.87	110	114	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	61.26	-18.03	79.29	53.87	35.07	7.17	34.85	121	288	Peak
5755	87.66	-	-	80.21	35.11	7.19	34.85	121	288	Average
5755	99.29	-	-	91.84	35.11	7.19	34.85	121	288	Peak
5850	51.99	-27.3	79.29	44.36	35.21	7.29	34.87	121	288	Peak



Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	49~51%
Test Channel :	159	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
5725	54.35	-31.9	86.25	46.96	35.07	7.17	34.85	111	115	Peak
5795	94.71	-	-	87.18	35.15	7.24	34.86	111	115	Average
5795	106.25	-	-	98.72	35.15	7.24	34.86	111	115	Peak
5850	53.77	-32.48	86.25	46.14	35.21	7.29	34.87	111	115	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	50.04	-29.2	79.24	42.65	35.07	7.17	34.85	121	307	Peak
5795	87.74	-	-	80.21	35.15	7.24	34.86	121	307	Average
5795	99.24	-	-	91.71	35.15	7.24	34.86	121	307	Peak
5850	51.47	-27.77	79.24	43.84	35.21	7.29	34.87	121	307	Peak

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

Test Mode :	802.11b	Temperature :	23~25°C
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, 110.46dBuV/m - 20dB = 90.46dBuV/m. 3. 7236 MHz and 9648 MHz are not within a restricted band.		

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
2412	106.2	-	-	105.27	32.2	4.59	35.86	119	131	Average
2412	110.46	-	-	109.53	32.2	4.59	35.86	119	131	Peak
7236	51.82	-38.64	90.46	65.35	36.05	8.29	57.87	100	0	Peak
9648	48.96	-41.5	90.46	58.33	37.09	9.48	55.94	100	0	Peak

Test Mode :	802.11b	Temperature :	23~25°C
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 and 9648 MHz are not within a restricted band.		

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
2412	105.04	-	-	104.11	32.2	4.59	35.86	105	358	Average
2412	109.31	-	-	108.38	32.2	4.59	35.86	105	358	Peak
7236	49.56	-39.75	89.31	63.09	36.05	8.29	57.87	100	0	Peak
9648	47.86	-41.45	89.31	57.23	37.09	9.48	55.94	100	0	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. 9747 MHz is not within a restricted band. 3. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	105.96	-	-	104.95	32.24	4.61	35.84	119	129	Average
2437	110.2	-	-	109.19	32.24	4.61	35.84	119	129	Peak
4875	43.18	-30.82	74	61.25	34.28	6.53	58.88	100	0	Peak
7311	47.45	-6.55	54	60.98	36.04	8.42	57.99	100	296	Average
7311	53.29	-20.71	74	66.82	36.04	8.42	57.99	100	296	Peak
9747	47.13	-43.07	90.2	56.32	37.21	9.49	55.89	100	0	Peak
12186	48.8	-25.2	74	55.22	39.05	10.6	56.07	100	0	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. 9747 MHz is not within a restricted band. 3. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	104.81	-	-	103.8	32.24	4.61	35.84	102	357	Average
2437	109.14	-	-	108.13	32.24	4.61	35.84	102	357	Peak
4875	43.41	-30.59	74	61.48	34.28	6.53	58.88	100	0	Peak
7311	48.72	-25.28	74	62.25	36.04	8.42	57.99	100	0	Peak
9747	47.98	-41.16	89.14	57.17	37.21	9.49	55.89	100	0	Peak
12183	48.76	-25.24	74	55.18	39.05	10.6	56.07	100	0	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. 9846 MHz is not within a restricted band. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.35	21.75	-18.25	40	34.52	18.16	0.71	31.64	-	-	Peak
165	22.75	-20.75	43.5	42.44	10.1	1.36	31.15	-	-	Peak
286.23	27.38	-18.62	46	43.8	12.98	1.75	31.15	-	-	Peak
510	28.91	-17.09	46	39.23	18.1	2.25	30.67	-	-	Peak
714.4	29.23	-16.77	46	35.6	21.15	2.68	30.2	110	53	Peak
816.6	27.25	-18.75	46	31.85	22.31	2.86	29.77	-	-	Peak
2462	106.51	-	-	105.46	32.26	4.62	35.83	116	130	Average
2462	110.93	-	-	109.88	32.26	4.62	35.83	116	130	Peak
3693	43.58	-30.42	74	64.14	32.97	5.8	59.33	100	0	Peak
4926	44.72	-29.28	74	62.61	34.29	6.56	58.74	100	0	Peak
7386	49.81	-4.19	54	63.37	36.02	8.55	58.13	100	295	Average
7386	54.57	-19.43	74	68.13	36.02	8.55	58.13	100	295	Peak
9846	48.2	-42.73	90.93	57.22	37.31	9.51	55.84	100	0	Peak
12309	49.3	-24.7	74	55.73	39.15	10.61	56.19	100	0	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. 9846 MHz is not within a restricted band. 3. Average measurement was not performed if peak level went lower than the average limit.		

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
32.97	32.04	-7.96	40	45.87	17.08	0.72	31.63	100	103	Peak
86.7	21.96	-18.04	40	44.23	8.06	1.05	31.38	-	-	Peak
222.24	23.53	-22.47	46	43.48	9.44	1.55	30.94	-	-	Peak
510	32.5	-13.5	46	42.82	18.1	2.25	30.67	-	-	Peak
714.4	28.81	-17.19	46	35.18	21.15	2.68	30.2	-	-	Peak
816.6	27.24	-18.76	46	31.84	22.31	2.86	29.77	-	-	Peak
2462	104.57	-	-	103.52	32.26	4.62	35.83	126	360	Average
2462	108.9	-	-	107.85	32.26	4.62	35.83	126	360	Peak
3693	43.28	-30.72	74	63.84	32.97	5.8	59.33	100	0	Peak
4926	45.12	-28.88	74	63.01	34.29	6.56	58.74	100	0	Peak
7386	50.66	-23.34	74	64.22	36.02	8.55	58.13	100	0	Peak
9846	48.81	-40.09	88.9	57.83	37.31	9.51	55.84	100	0	Peak
12309	48.76	-25.24	74	55.19	39.15	10.61	56.19	100	0	Peak

Test Mode :	802.11g	Temperature :	23~25°C
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. 3. Average measurement was not performed if peak level went lower than the average limit.		

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
2412	100.15	-	-	99.22	32.2	4.59	35.86	120	131	Average
2412	111.74	-	-	110.81	32.2	4.59	35.86	120	131	Peak
4824	44.48	-29.52	74	62.72	34.27	6.51	59.02	100	0	Peak
7236	52.85	-38.89	91.74	66.38	36.05	8.29	57.87	100	0	Peak

Test Mode :	802.11g	Temperature :	23~25°C
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. 3. Average measurement was not performed if peak level went lower than the average limit.		

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
2412	98.88	-	-	97.95	32.2	4.59	35.86	104	357	Average
2412	110.29	-	-	109.36	32.2	4.59	35.86	104	357	Peak
4824	42.84	-31.16	74	61.08	34.27	6.51	59.02	100	0	Peak
7236	48.92	-41.37	90.29	62.45	36.05	8.29	57.87	100	0	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	100.64	-	-	99.63	32.24	4.61	35.84	119	129	Average
2437	112.31	-	-	111.3	32.24	4.61	35.84	119	129	Peak
3654	43.48	-30.52	74	64.04	32.92	5.78	59.26	100	0	Peak
4875	43.89	-30.11	74	61.96	34.28	6.53	58.88	100	0	Peak
7314	38.77	-15.23	54	52.3	36.04	8.42	57.99	100	293	Average
7314	55.33	-18.67	74	68.86	36.04	8.42	57.99	100	293	Peak
12186	48.66	-25.34	74	55.08	39.05	10.6	56.07	100	0	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	98.57	-	-	97.56	32.24	4.61	35.84	103	358	Average
2437	110.75	-	-	109.74	32.24	4.61	35.84	103	358	Peak
3654	42.33	-31.67	74	62.89	32.92	5.78	59.26	100	0	Peak
4875	44.55	-29.45	74	62.62	34.28	6.53	58.88	100	0	Peak
7314	49.09	-24.91	74	62.62	36.04	8.42	57.99	100	0	Peak
12183	47.32	-26.68	74	53.74	39.05	10.6	56.07	100	0	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2462	100.23	-	-	99.18	32.26	4.62	35.83	116	129	Average
2462	112.02	-	-	110.97	32.26	4.62	35.83	116	129	Peak
3693	43.62	-30.38	74	64.18	32.97	5.8	59.33	100	0	Peak
4926	46.32	-27.68	74	64.21	34.29	6.56	58.74	100	0	Peak
7386	38.95	-15.05	54	52.51	36.02	8.55	58.13	100	298	Average
7386	53.61	-20.39	74	67.17	36.02	8.55	58.13	100	298	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2462	97.86	-	-	96.81	32.26	4.62	35.83	125	359	Average
2462	109.01	-	-	107.96	32.26	4.62	35.83	125	359	Peak
3693	43.09	-30.91	74	63.65	32.97	5.8	59.33	100	0	Peak
4926	43.87	-30.13	74	61.76	34.29	6.56	58.74	100	0	Peak
7389	49.43	-24.57	74	62.99	36.02	8.55	58.13	100	0	Peak

Test Mode :	2.4GHz 802.11n-HT20	Temperature :	23~25°C
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. 3. Average measurement was not performed if peak level went lower than the average limit.		

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
2412	98.68	-	-	97.75	32.2	4.59	35.86	121	131	Average
2412	109.8	-	-	108.87	32.2	4.59	35.86	121	131	Peak
4824	44.51	-29.49	74	62.75	34.27	6.51	59.02	100	0	Peak
7236	49.48	-40.32	89.8	63.01	36.05	8.29	57.87	100	0	Peak

Test Mode :	2.4GHz 802.11n-HT20	Temperature :	23~25°C
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. 7239MHz is not within a restricted band. 3. Average measurement was not performed if peak level went lower than the average limit.		

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
2412	97.42	-	-	96.49	32.2	4.59	35.86	104	358	Average
2412	108.15	-	-	107.22	32.2	4.59	35.86	104	358	Peak
4824	42.67	-31.33	74	60.91	34.27	6.51	59.02	100	0	Peak
7239	46.47	-41.68	88.15	60	36.05	8.29	57.87	100	0	Peak

Test Mode :	2.4GHz 802.11n-HT20	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	98.1	-	-	97.09	32.24	4.61	35.84	119	130	Average
2437	109.46	-	-	108.47	32.22	4.61	35.84	119	130	Peak
3654	43.64	-30.36	74	64.2	32.92	5.78	59.26	100	0	Peak
4875	43.39	-30.61	74	61.46	34.28	6.53	58.88	100	0	Peak
7317	36.21	-17.79	54	49.77	36.03	8.42	58.01	100	294	Average
7317	51.11	-22.89	74	64.67	36.03	8.42	58.01	100	294	Peak

Test Mode :	2.4GHz 802.11n-HT20	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	97.32	-	-	96.31	32.24	4.61	35.84	102	358	Average
2437	108.36	-	-	107.37	32.22	4.61	35.84	102	358	Peak
3654	42.06	-31.94	74	62.62	32.92	5.78	59.26	100	0	Peak
4875	44.32	-29.68	74	62.39	34.28	6.53	58.88	100	0	Peak
7308	46.62	-27.38	74	60.15	36.04	8.42	57.99	100	0	Peak

Test Mode :	2.4GHz 802.11n-HT20	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.54	20.79	-19.21	40	33.56	18.16	0.71	31.64	-	-	Peak
165.27	23.3	-20.2	43.5	42.99	10.1	1.36	31.15	-	-	Peak
298.11	26.94	-19.06	46	42.88	13.26	1.78	30.98	-	-	Peak
300	27.62	-18.38	46	43.48	13.3	1.78	30.94	-	-	Peak
510	29.76	-16.24	46	40.08	18.1	2.25	30.67	-	-	Peak
714.4	29.77	-16.23	46	36.14	21.15	2.68	30.2	100	334	Peak
2462	99.03	-	-	97.98	32.26	4.62	35.83	117	130	Average
2462	110.74	-	-	109.69	32.26	4.62	35.83	117	130	Peak
3693	44.97	-29.03	74	65.53	32.97	5.8	59.33	100	0	Peak
4926	44.21	-29.79	74	62.1	34.29	6.56	58.74	100	0	Peak
7392	38.86	-15.14	54	52.42	36.02	8.55	58.13	100	294	Average
7392	54.2	-19.8	74	67.76	36.02	8.55	58.13	100	294	Peak

Test Mode :	2.4GHz 802.11n-HT20	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
32.97	32.7	-7.3	40	46.53	17.08	0.72	31.63	100	104	Peak
86.97	21.02	-18.98	40	43.13	8.22	1.05	31.38	-	-	Peak
226.29	28.09	-17.91	46	47.74	9.72	1.56	30.93	-	-	Peak
510	32.13	-13.87	46	42.45	18.1	2.25	30.67	-	-	Peak
714.4	28.55	-17.45	46	34.92	21.15	2.68	30.2	-	-	Peak
816.6	28.23	-17.77	46	32.83	22.31	2.86	29.77	-	-	Peak
2462	97.14	-	-	96.09	32.26	4.62	35.83	126	359	Average
2462	109.03	-	-	107.98	32.26	4.62	35.83	126	359	Peak
3693	42.78	-31.22	74	63.34	32.97	5.8	59.33	100	0	Peak
4926	45.04	-28.96	74	62.93	34.29	6.56	58.74	100	0	Peak
7395	37.42	-16.58	54	50.98	36.02	8.55	58.13	126	331	Average
7395	52.37	-21.63	74	65.93	36.02	8.55	58.13	126	331	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	149	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 5745 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5745	96.83	-	-	89.4	35.09	7.19	34.85	110	113	Average
5745	107.82	-	-	100.39	35.09	7.19	34.85	110	113	Peak
7662	48.54	-25.46	74	61.93	36.03	8.8	58.22	100	0	Peak
11496	39.08	-14.92	54	45.51	38.5	10.27	55.2	100	14	Average
11496	51.74	-22.26	74	58.17	38.5	10.27	55.2	100	14	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	149	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 5475 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5745	90.5	-	-	83.07	35.09	7.19	34.85	122	300	Average
5745	101.56	-	-	94.13	35.09	7.19	34.85	122	300	Peak
7662	47.68	-26.32	74	61.07	36.03	8.8	58.22	100	0	Peak
11496	50.83	-23.17	74	57.3	38.48	10.26	55.21	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	157	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 5785 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5785	96.31	-	-	88.82	35.13	7.22	34.86	120	110	Average
5785	107.18	-	-	99.69	35.13	7.22	34.86	120	110	Peak
7714	46.08	-27.92	74	59.43	36.04	8.81	58.2	100	0	Peak
11574	42.25	-11.75	54	48.67	38.56	10.32	55.3	100	15	Average
11574	55.9	-18.1	74	62.32	38.56	10.32	55.3	100	15	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	157	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 5785 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5785	89.85	-	-	82.36	35.13	7.22	34.86	100	272	Average
5785	100.64	-	-	93.15	35.13	7.22	34.86	100	272	Peak
7714	46.16	-27.84	74	59.51	36.04	8.81	58.2	100	0	Peak
11574	40.95	-13.05	54	47.37	38.56	10.32	55.3	101	344	Average
11574	53.63	-20.37	74	60.05	38.56	10.32	55.3	101	344	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	165	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 5825 MHz is fundamental signal which can be ignored. 2. 7766MHz is not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.35	21.34	-18.66	40	34.11	18.16	0.71	31.64	-	-	Peak
110.46	23.73	-19.77	43.5	43.36	10.75	1.15	31.53	-	-	Peak
292.44	28.35	-17.65	46	44.52	13.16	1.76	31.09	-	-	Peak
510	29.75	-16.25	46	40.07	18.1	2.25	30.67	100	33	Peak
612.2	27.04	-18.96	46	34.93	19.98	2.46	30.33	-	-	Peak
714.4	28.95	-17.05	46	35.32	21.15	2.68	30.2	-	-	Peak
5825	96.08	-	-	88.49	35.19	7.27	34.87	120	110	Average
5825	106.82	-	-	99.23	35.19	7.27	34.87	120	110	Peak
7766	45.19	-41.63	86.82	58.5	36.05	8.82	58.18	100	0	Peak
11664	42.74	-11.26	54	49.16	38.62	10.37	55.41	100	6	Average
11664	56.34	-17.66	74	62.76	38.62	10.37	55.41	100	6	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	165	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 5825 MHz is fundamental signal which can be ignored. 2. 7766MHz is not within a restricted band.		

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
32.97	32.56	-7.44	40	46.39	17.08	0.72	31.63	103	134	Peak
86.7	21.55	-18.45	40	43.82	8.06	1.05	31.38	-	-	Peak
222.78	30.64	-15.36	46	50.52	9.51	1.55	30.94	-	-	Peak
510	33.26	-12.74	46	43.58	18.1	2.25	30.67	-	-	Peak
713.7	27.37	-18.63	46	33.79	21.1	2.68	30.2	-	-	Peak
815.9	27.63	-18.37	46	32.26	22.28	2.86	29.77	-	-	Peak
5825	89.7	-	-	82.11	35.19	7.27	34.87	109	282	Average
5825	101.62	-	-	94.03	35.19	7.27	34.87	109	282	Peak
7766	45.55	-36.07	81.62	58.86	36.05	8.82	58.18	100	0	Peak
11658	44.14	-9.86	54	50.56	38.62	10.37	55.41	141	22	Average
11658	56.11	-17.89	74	62.53	38.62	10.37	55.41	141	22	Peak

Test Mode :	5GHz 802.11n-HT20	Temperature :	23~25°C
Test Channel :	149	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 5745 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5745	96.18	-	-	88.75	35.09	7.19	34.85	100	111	Average
5745	107.34	-	-	99.91	35.09	7.19	34.85	100	111	Peak
7662	47.38	-26.62	74	60.77	36.03	8.8	58.22	100	0	Peak
11490	39.61	-14.39	54	46.08	38.48	10.26	55.21	100	20	Average
11490	51.74	-22.26	74	58.21	38.48	10.26	55.21	100	20	Peak

Test Mode :	5GHz 802.11n-HT20	Temperature :	23~25°C
Test Channel :	149	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 5745 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5745	90.21	-	-	82.78	35.09	7.19	34.85	122	300	Average
5745	101.27	-	-	93.84	35.09	7.19	34.85	122	300	Peak
7662	46.93	-27.07	74	60.32	36.03	8.8	58.22	100	0	Peak
11496	40.77	-13.23	54	47.24	38.48	10.26	55.21	104	12	Average
11496	51.77	-22.23	74	58.24	38.48	10.26	55.21	104	12	Peak

Test Mode :	5GHz 802.11n-HT20	Temperature :	23~25°C
Test Channel :	157	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 5785 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5785	95.86	-	-	88.37	35.13	7.22	34.86	121	111	Average
5785	106.99	-	-	99.5	35.13	7.22	34.86	121	111	Peak
7714	45.14	-28.86	74	58.49	36.04	8.81	58.2	100	0	Peak
11574	41.25	-12.75	54	47.67	38.56	10.32	55.3	100	14	Average
11574	55.71	-18.29	74	62.13	38.56	10.32	55.3	100	14	Peak

Test Mode :	5GHz 802.11n-HT20	Temperature :	23~25°C
Test Channel :	157	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 5785 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5785	89.81	-	-	82.32	35.13	7.22	34.86	132	307	Average
5785	100.61	-	-	93.12	35.13	7.22	34.86	132	307	Peak
7714	45.27	-28.73	74	58.62	36.04	8.81	58.2	100	0	Peak
11574	42.34	-11.66	54	48.76	38.56	10.32	55.3	107	5	Average
11574	55.53	-18.47	74	61.95	38.56	10.32	55.3	107	5	Peak

Test Mode :	5GHz 802.11n-HT20	Temperature :	23~25°C
Test Channel :	165	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 5825 MHz is fundamental signal which can be ignored. 2. 7766MHz is not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.81	21.11	-18.89	40	33.88	18.16	0.71	31.64	-	-	Peak
165.54	22.95	-20.55	43.5	42.76	9.98	1.36	31.15	-	-	Peak
289.47	27.43	-18.57	46	43.74	13.07	1.75	31.13	-	-	Peak
510	29.82	-16.18	46	40.14	18.1	2.25	30.67	-	-	Peak
714.4	29.89	-16.11	46	36.26	21.15	2.68	30.2	100	245	Peak
816.6	26.69	-19.31	46	31.29	22.31	2.86	29.77	-	-	Peak
5825	95.77	-	-	88.18	35.19	7.27	34.87	110	109	Average
5825	106.35	-	-	98.78	35.17	7.27	34.87	110	109	Peak
7766	46.33	-40.02	86.35	59.64	36.05	8.82	58.18	100	0	Peak
11646	42.61	-11.39	54	49.02	38.61	10.37	55.39	100	14	Average
11646	58.53	-15.47	74	64.94	38.61	10.37	55.39	100	14	Peak

Test Mode :	5GHz 802.11n-HT20	Temperature :	23~25°C
Test Channel :	165	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 5825 MHz is fundamental signal which can be ignored. 2. 7766MHz is not within a restricted band.		

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
32.97	32.04	-7.96	40	45.87	17.08	0.72	31.63	110	48	Peak
86.7	21.74	-18.26	40	44.01	8.06	1.05	31.38	-	-	Peak
292.44	22.58	-23.42	46	38.75	13.16	1.76	31.09	-	-	Peak
510	32.1	-13.9	46	42.42	18.1	2.25	30.67	-	-	Peak
713.7	28.35	-17.65	46	34.77	21.1	2.68	30.2	-	-	Peak
815.9	28.67	-17.33	46	33.3	22.28	2.86	29.77	-	-	Peak
5825	90.2	-	-	82.61	35.19	7.27	34.87	110	301	Average
5825	101.03	-	-	93.44	35.19	7.27	34.87	110	301	Peak
7766	45.37	-35.66	81.03	58.68	36.05	8.82	58.18	100	0	Peak
11658	43.41	-10.59	54	49.83	38.62	10.37	55.41	152	13	Average
11658	56.57	-17.43	74	62.99	38.62	10.37	55.41	152	13	Peak

Test Mode :	5GHz 802.11n-HT40	Temperature :	23~25°C
Test Channel :	151	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 5755 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5755	94	-	-	86.55	35.11	7.19	34.85	110	114	Average
5755	106.63	-	-	99.18	35.11	7.19	34.85	110	114	Peak
7674	48.12	-25.88	74	61.5	36.04	8.8	58.22	100	0	Peak
11514	50.67	-23.33	74	57.1	38.5	10.27	55.2	100	0	Peak

Test Mode :	5GHz 802.11n-HT40	Temperature :	23~25°C
Test Channel :	151	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 5755 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5755	87.66	-	-	80.21	35.11	7.19	34.85	121	288	Average
5755	99.29	-	-	91.84	35.11	7.19	34.85	121	288	Peak
7674	47.66	-26.34	74	61.04	36.04	8.8	58.22	100	0	Peak
11514	50.08	-23.92	74	56.51	38.5	10.27	55.2	100	0	Peak

Test Mode :	5GHz 802.11n-HT40	Temperature :	23~25°C
Test Channel :	159	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 5795 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5795	94.71	-	-	87.18	35.15	7.24	34.86	111	115	Average
5795	106.25	-	-	98.72	35.15	7.24	34.86	111	115	Peak
7726	47.49	-26.51	74	60.82	36.05	8.81	58.19	100	0	Peak
11592	39.67	-14.33	54	46.1	38.57	10.32	55.32	100	0	Average
11592	51.66	-22.34	74	58.09	38.57	10.32	55.32	100	0	Peak

Test Mode :	5GHz 802.11n-HT40	Temperature :	23~25°C
Test Channel :	159	Relative Humidity :	49~51%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 5795 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5795	87.74	-	-	80.21	35.15	7.24	34.86	121	307	Average
5795	99.24	-	-	91.71	35.15	7.24	34.86	121	307	Peak
7726	47.75	-26.25	74	61.08	36.05	8.81	58.19	100	0	Peak
11598	40.06	-13.94	54	46.47	38.57	10.34	55.32	102	0	Average
11598	51.9	-22.1	74	58.31	38.57	10.34	55.32	102	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.

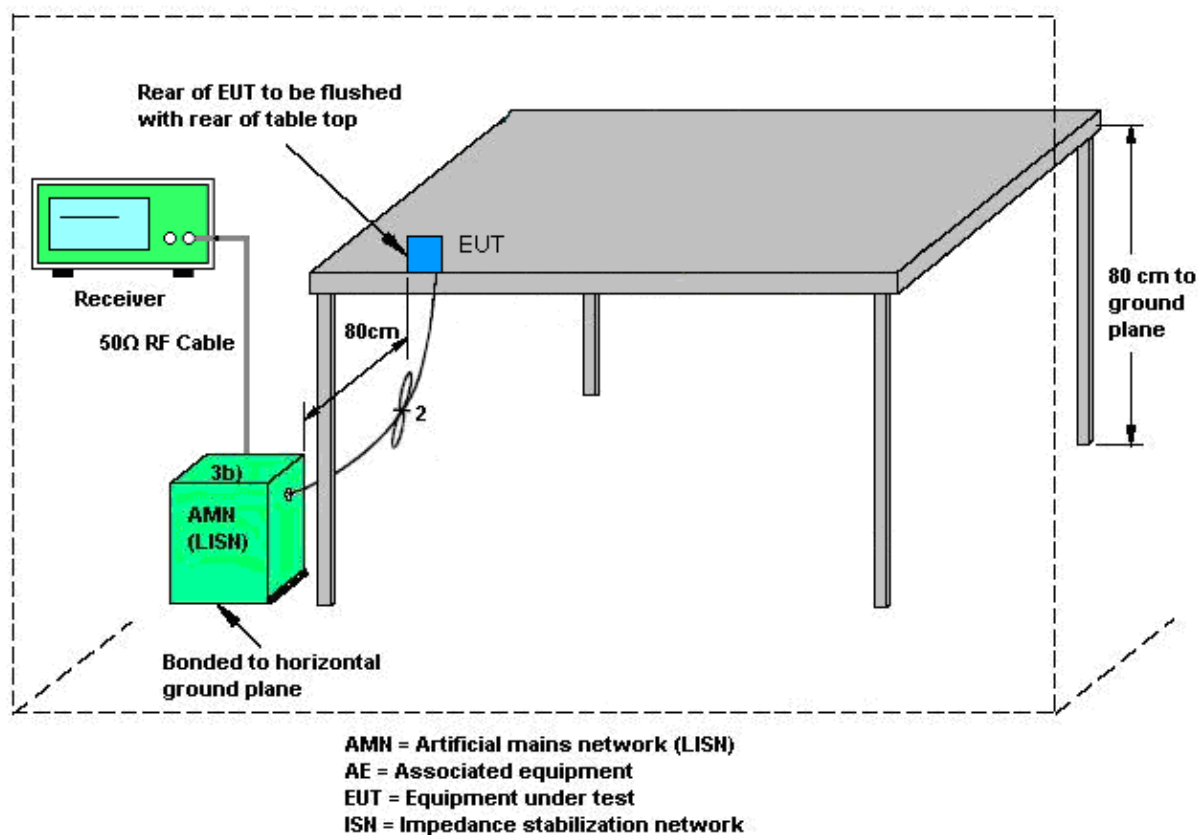
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

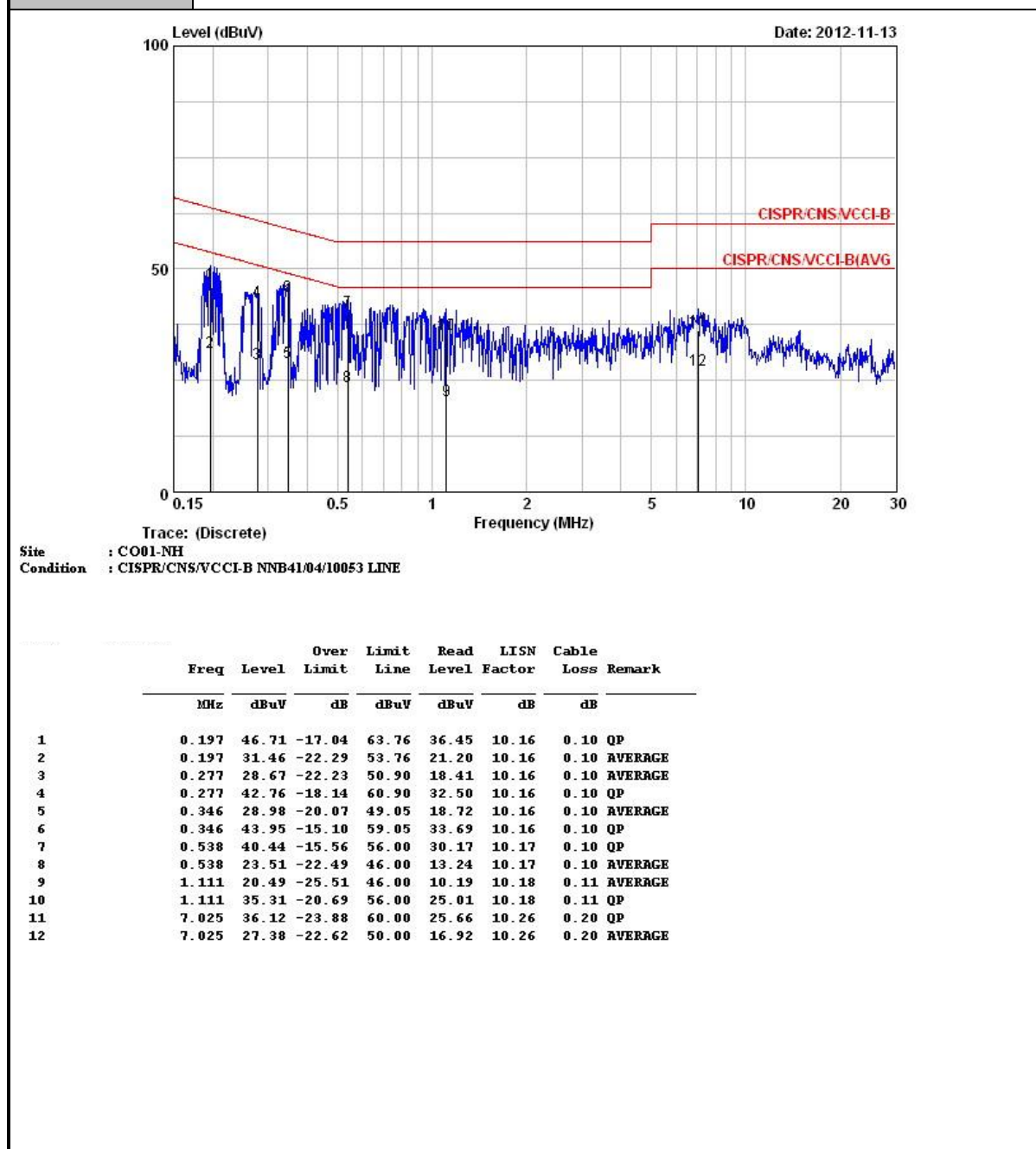
1. The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance 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

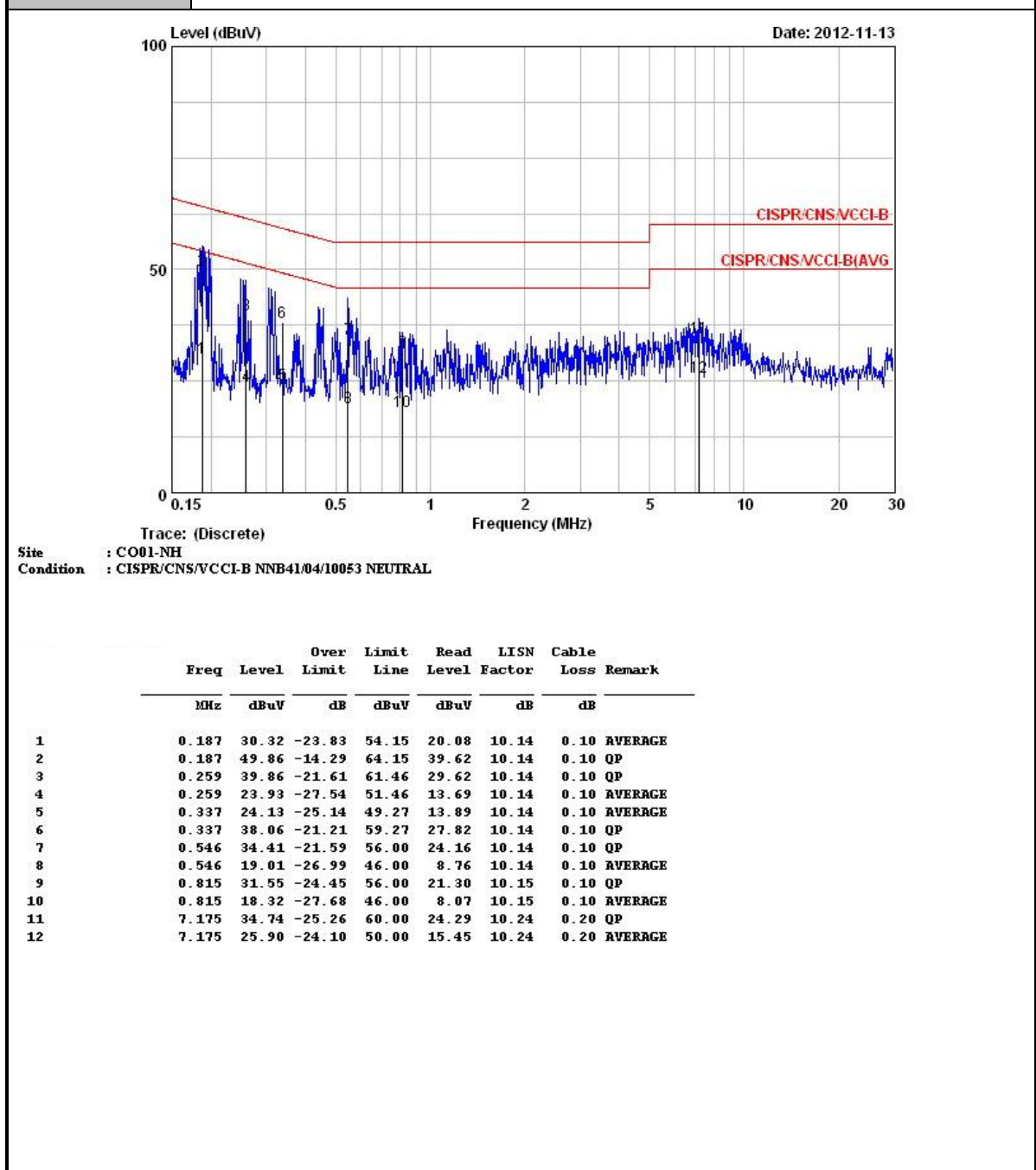


3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	23~24℃
Test Engineer :	Eddie Lee	Relative Humidity :	54~55%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN (2.4G) Link + Bluetooth Link + MP3 + H-Pattern + USB Cable (Charging from Adapter) + Earphone + SD Card + HDMI Cable		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Test Mode :	Mode 1	Temperature :	23~24°C
Test Engineer :	Eddie Lee	Relative Humidity :	54~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN (2.4G) Link + Bluetooth Link + MP3 + H-Pattern + USB Cable (Charging from Adapter) + Earphone + SD Card + HDMI Cable		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



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	Nov. 12, 2012 ~ Nov. 22, 2012	Jun. 05, 2013	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Sep. 08, 2012	Nov. 12, 2012 ~ Nov. 22, 2012	Sep. 07, 2013	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Sep. 08, 2012	Nov. 12, 2012 ~ Nov. 22, 2012	Sep. 07, 2013	Conducted (TH02-HY)
Receiver	R&S	ESCS 30	100357	9 kHz - 2.75 GHz	Nov. 18, 2011	Nov. 13, 2012	Nov. 17, 2012	Conduction (CO01-NH)
LISN	SCHAFFNER	NNB41	04/10053	9kHz - 30MHz	Nov. 17, 2011	Nov. 13, 2012	Nov. 16, 2012	Conduction (CO01-NH)
Power Filter	CORCOM	MR12030	N/A	30A*2	N/A	Nov. 13, 2012	N/A	Conduction (CO01-NH)
RF Cable-CON	Suhner Switzerland	RG223/U	CB004	9kHz - 30MHz	Dec. 13, 2011	Nov. 13, 2012	Dec. 12, 2012	Conduction (CO01-NH)
Spectrum Analyzer	R&S	ESU26	100390	20Hz ~ 26.5GHz	Dec. 22, 2011	Nov. 13, 2012 ~ Nov. 14, 2012	Dec. 21, 2012	Radiation (03CH05-HY)
Bilog Antenna	Schaffner	CBL6111C	2725	30MHz~2GHz	Oct. 06, 2012	Nov. 13, 2012 ~ Nov. 14, 2012	Oct. 05, 2013	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 ~ 360 degree	N/A	Nov. 13, 2012 ~ Nov. 14, 2012	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m ~ 4 m	N/A	Nov. 13, 2012 ~ Nov. 14, 2012	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz~18GHz	Aug. 10, 2012	Nov. 13, 2012 ~ Nov. 14, 2012	Aug. 09, 2013	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A02665	1GHz~26.5GHz	Aug. 28, 2012	Nov. 13, 2012 ~ Nov. 14, 2012	Aug. 27, 2013	Radiation (03CH05-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz ~ 40GHz	Sep. 28, 2012	Nov. 13, 2012 ~ Nov. 14, 2012	Sep. 27, 2013	Radiation (03CH05-HY)
Pre Amplifier	COM-POWER	PA-103	161075	10-1000MHz.32dB.GAIN	Feb. 27, 2012	Nov. 13, 2012 ~ Nov. 14, 2012	Feb. 26, 2013	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9KHz ~ 30MHz	Jul. 03, 2012	Nov. 13, 2012 ~ Nov. 14, 2012	Jul. 02, 2014	Radiation (03CH05-HY)

5 Uncertainty of Evaluation

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

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

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

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

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

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 EP291814 as below.