

FCC RF Test Report

APPLICANT : CT Asia
EQUIPMENT : WIFI Touch Book
BRAND NAME : BLU
MODEL NAME : TOUCH BOOK 7.0 LITE
FCC ID : YHLBLUTB70LITE
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Oct. 30, 2012 and completely tested on Dec. 20, 2012. We, SPORTON INTERNATIONAL (KUNSHAN) 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:



Jones Tsai / Manager



SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR2O1301	Rev. 01	Initial issue of report	Dec. 20, 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	-
3.2	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 4.14 dB at 4924.000 MHz
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 7.62 dB at 0.490 MHz
3.7	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

CT Asia

Unit 01, 15/F, Seaview Centre, 139-141 Hoi bun road, Kwun Tong, Kowloon, Hongkong

1.2 Manufacturer

Dynamax Industry Co., Ltd.

Room 808, Block A, TianJing Building, Tian'an Cyber Park, FuTian, Shenzhen, China

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	WIFI Touch Book
Brand Name	BLU
Model Name	TOUCH BOOK 7.0 LITE
FCC ID	YHLBLUTB70LITE
EUT supports Radios application	WLAN 11bgn
HW Version	CP-X3 V0.1
SW Version	sun5i_android_a13-p76v_20120521_xin_cai.img
EUT Stage	Production Unit

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

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx/Rx Frequency Range	2412 MHz ~ 2462 MHz
Number of Channels	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Maximum Output Power to Antenna	802.11b : 14.02 dBm (0.0252 W) 802.11g : 15.49 dBm (0.0354 W) 802.11n HT20 : 15.02 dBm (0.0318 W) 802.11n HT40 : 14.97 dBm (0.0314 W)
Antenna Type	PCB Antenna type with gain -0.70 dBi
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.5 Testing Site

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.			
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958			
Test Site No.	Sporton Site No.			FCC/IC Registration No.
	TH01-KS	CO01-KS	03CH01-KS	149928/4086E-1

1.6 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
- ♦ NOTICE 2012-DRS0126

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.
3. Per the section 2.2.3 of Notice of 2012-DRS0126, " Receivers Excluded from Industry Canada Requirements", only radio communication receivers operating in stand-alone mode within the band 30-960 MHz and scanner receivers are subject to Industry Canada requirements.

2 Test Configuration of Equipment Under Test

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

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.

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	12.39	12.69	12.49	12.88
CH 06	2437 MHz	13.16	13.26	13.15	13.49
CH 11	2462 MHz	13.78	13.72	13.69	14.02

Channel	Frequency	2.4GHz 802.11g RF Power (dBm)							
		OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	13.84	13.79	14.12	13.07	14.37	14.18	13.71	13.82
CH 06	2437 MHz	14.58	14.39	14.72	13.74	14.98	14.95	14.28	14.52
CH 11	2462 MHz	15.02	15.06	15.32	14.19	15.49	15.42	14.78	15.01

Channel	Frequency	2.4GHz 802.11n HT20 RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412 MHz	12.65	12.78	12.54	12.32	13.09	12.52	13.95	12.81
CH 06	2437 MHz	13.26	13.47	14.18	13.14	13.72	13.31	14.51	13.38
CH 11	2462 MHz	13.68	14.05	14.85	13.69	13.98	13.78	15.02	13.96

Channel	Frequency	2.4GHz 802.11n HT40 RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 03	2422 MHz	13.78	13.78	13.52	14.38	14.28	14.26	13.68	13.18
CH 06	2437 MHz	14.17	14.15	13.96	14.97	14.78	14.52	13.89	13.59
CH 09	2452 MHz	14.52	14.56	14.36	14.95	14.84	14.93	14.21	13.65

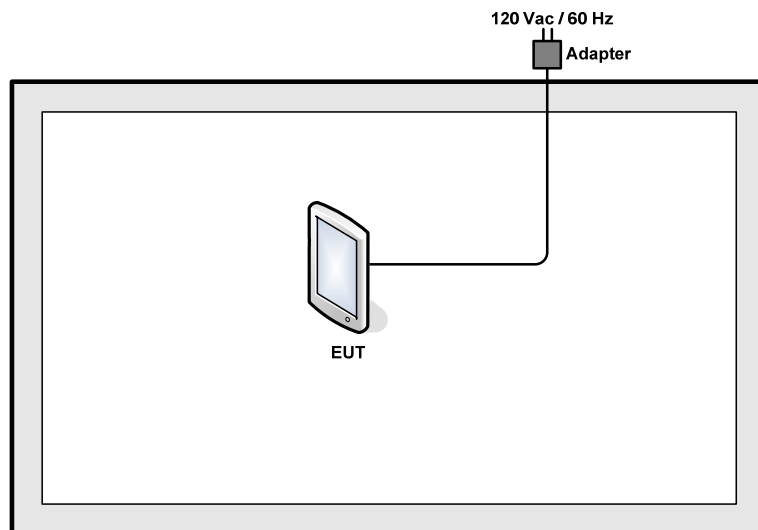
2.3 Test Mode

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

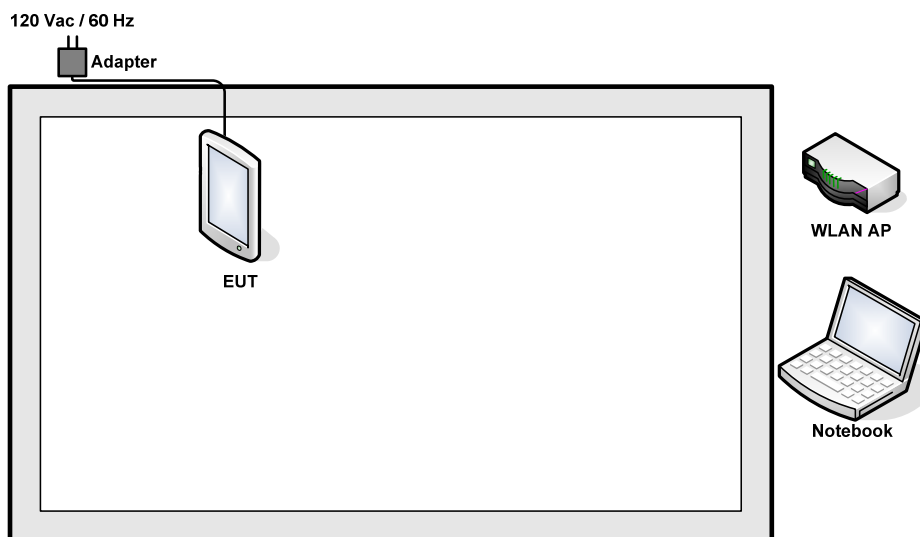
Test Cases				
Conducted TCs	Test Items	Mode	Data Rate	Test Channel
	6dB BW Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
	Conducted Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	6.5 Mbps	1/11
		802.11n HT40	13.5 Mbps	3/9
	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
		802.11n HT40	13.5 Mbps	3/6/9
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
		802.11n HT40	13.5 Mbps	3/9
	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
		802.11n HT40	13.5 Mbps	3/6/9
AC Conducted Emission	Mode 1 : WLAN Link + Adapter			

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
2.	DC Power Supply	GWINSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	VOSTRO 1450	PPD-AR5B195	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m

2.6 RF Utility

For WLAN function, programmed RF utility, “ADB” installed in the notebook make the EUT provides functions like channel selection and power level for continuous transmitting and receiving signals.

2.7 Measurement Results Explanation Example

For conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and 10dB attenuator between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and 10dB attenuator factor.

Offset = RF cable loss + attenuator factor.

Following table shows an offset computation example with cable loss 4.9 dB.

Example :

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\
 &= 4.9 + 10 = 14.9 \text{ (dB)}
 \end{aligned}$$

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

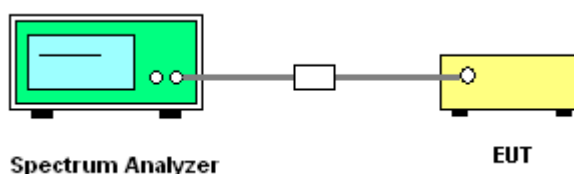
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows 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) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 KHz.
5. Measure and record the results in the test report.

3.1.4 Test Setup

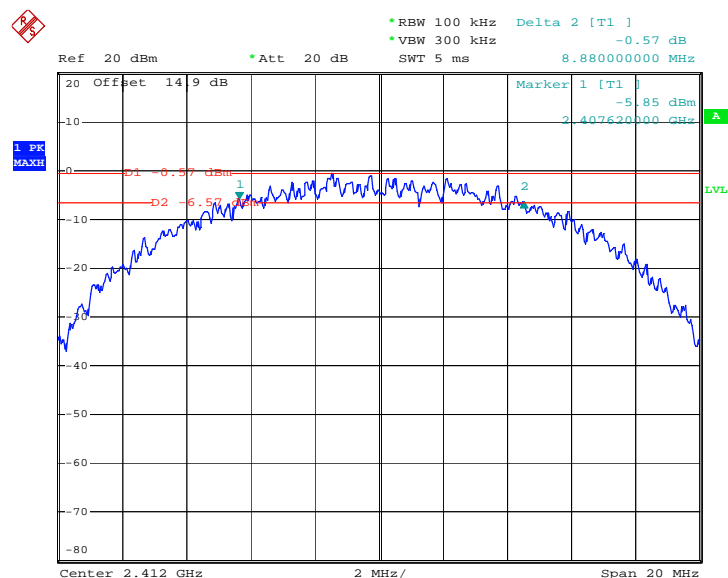


3.1.5 Test Result of 6dB Bandwidth

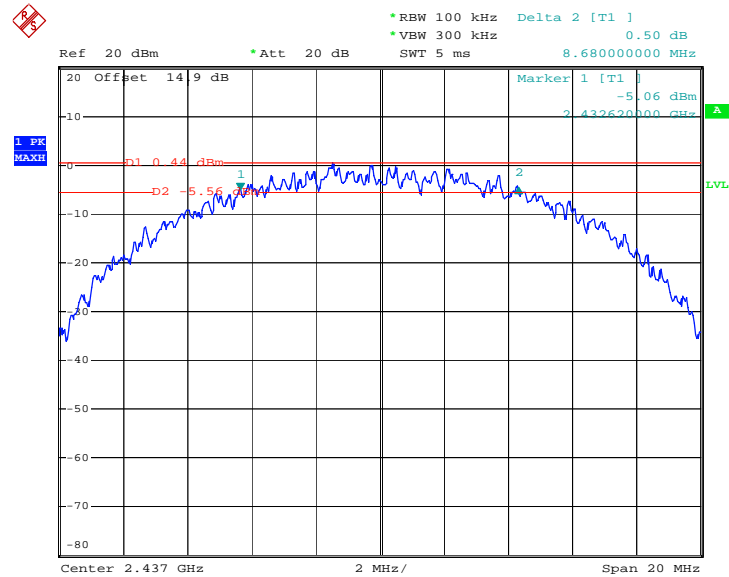
Test Mode :	802.11b	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	8.88	0.5	Pass
06	2437	8.68	0.5	Pass
11	2462	8.68	0.5	Pass

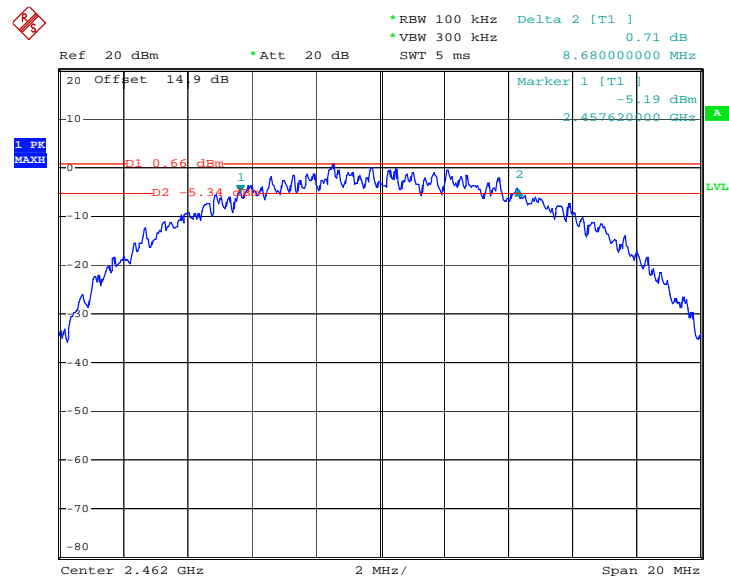
6 dB Bandwidth Plot on 802.11b Channel 01



Date: 14.DEC.2012 20:54:54

6 dB Bandwidth Plot on 802.11b Channel 06


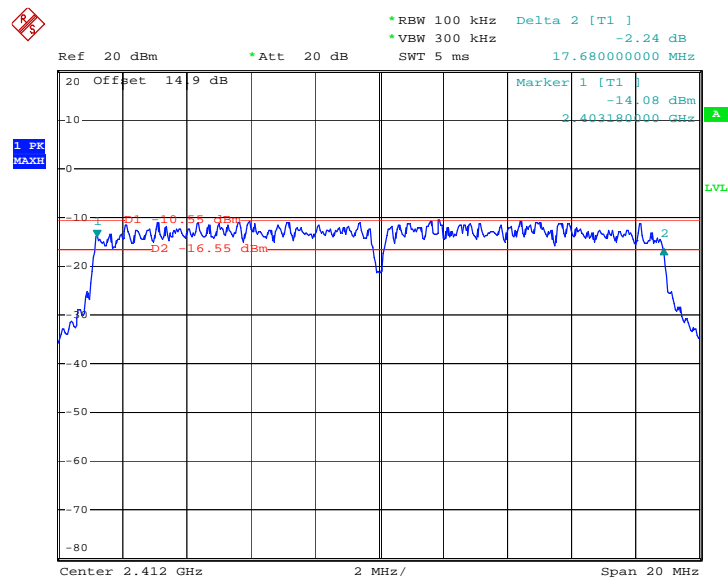
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6 dB Bandwidth Plot on 802.11b Channel 11


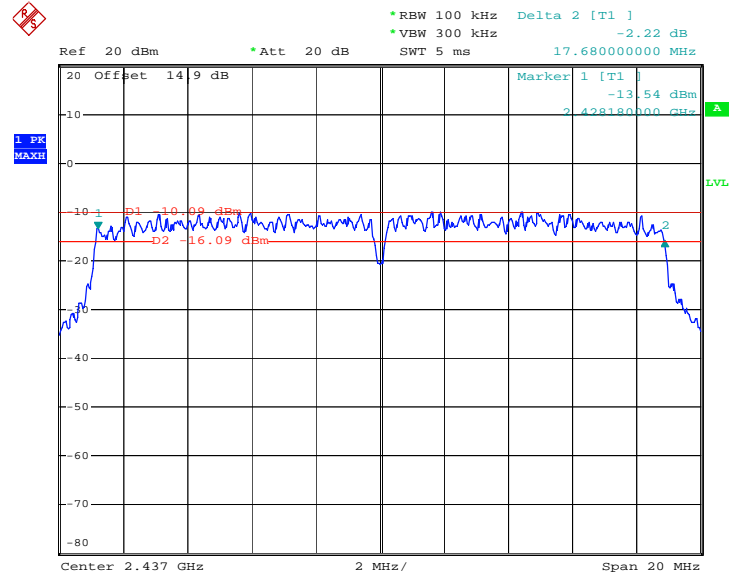
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Test Mode :	802.11g	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

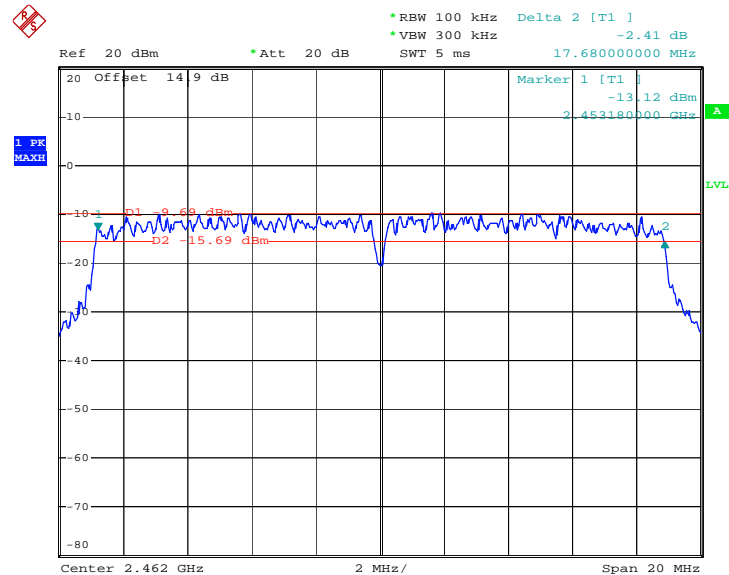
Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.68	0.5	Pass
06	2437	17.68	0.5	Pass
11	2462	17.68	0.5	Pass

6 dB Bandwidth Plot on 802.11g Channel 01


Date: 14.DEC.2012 21:50:42

6 dB Bandwidth Plot on 802.11g Channel 06


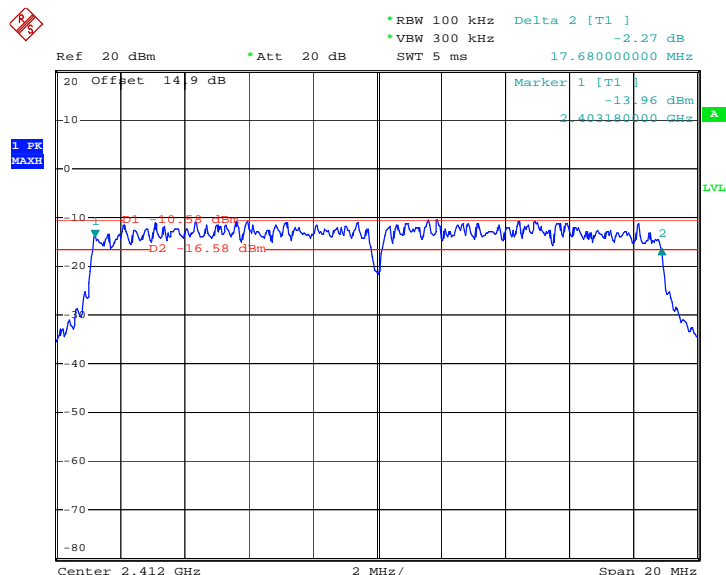
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6 dB Bandwidth Plot on 802.11g Channel 11


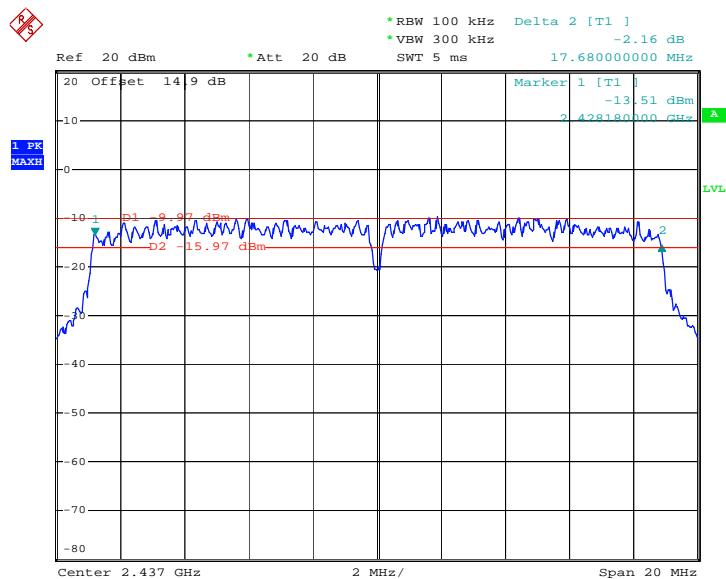
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Test Mode :	802.11n HT20	Temperature :	23~24°C
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

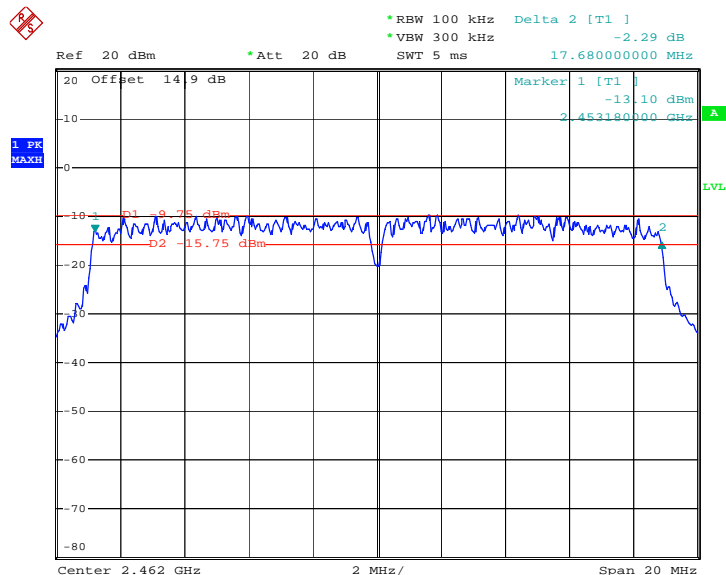
Channel	Frequency (MHz)	2.4GHz 802.11n HT20 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.68	0.5	Pass
06	2437	17.68	0.5	Pass
11	2462	17.68	0.5	Pass

6 dB Bandwidth Plot on 802.11n HT20 Channel 01


Date: 14.DEC.2012 22:23:49

6 dB Bandwidth Plot on 802.11n HT20 Channel 06


Date: 14.DEC.2012 22:27:00

6 dB Bandwidth Plot on 802.11n HT20 Channel 11


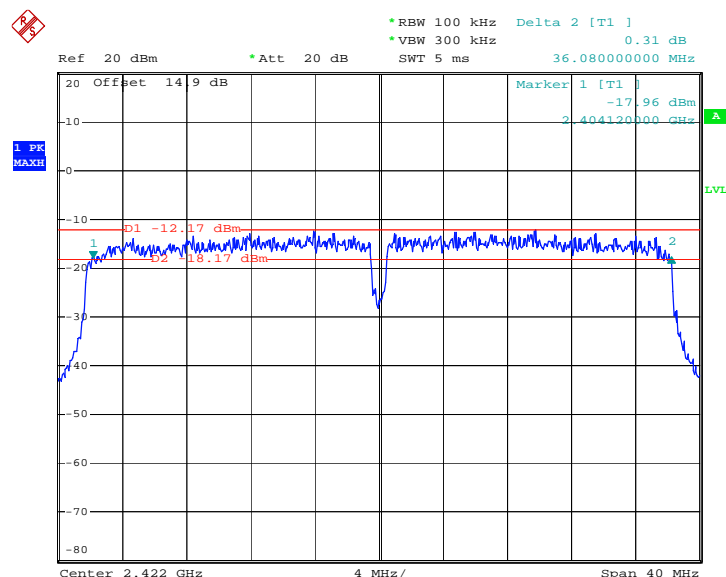
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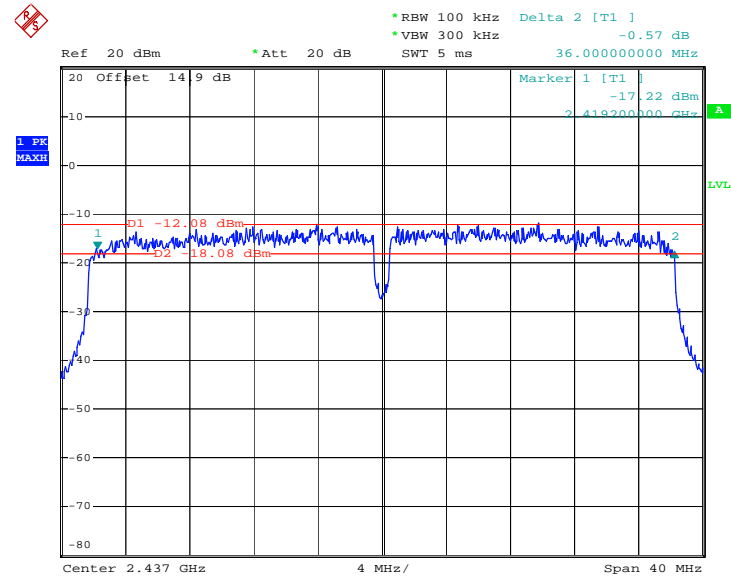
Test Mode :	802.11n HT40	Temperature :	23~24°C
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11n HT40 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
03	2422	36.08	0.5	Pass
06	2437	36.00	0.5	Pass
09	2452	36.04	0.5	Pass

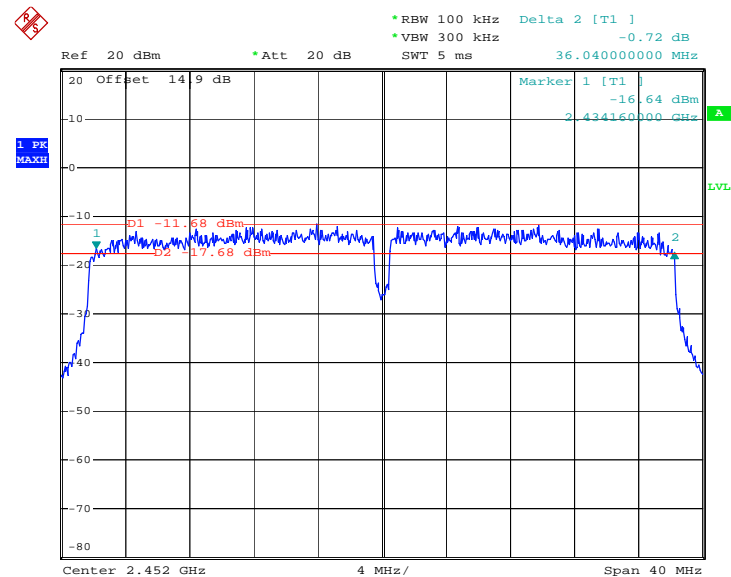
6 dB Bandwidth Plot on 802.11n HT40 Channel 03



Date: 14.DEC.2012 22:34:46

6 dB Bandwidth Plot on 802.11n HT40 Channel 06


Date: 14.DEC.2012 22:45:23

6 dB Bandwidth Plot on 802.11n HT40Channel 09


Date: 14.DEC.2012 22:47:00

3.2 Output Power Measurement

3.2.1 Limit of Output Power

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

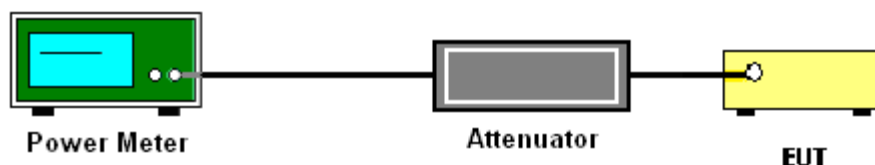
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure 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 :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	12.88	30	Pass
06	2437	13.49	30	Pass
11	2462	14.02	30	Pass

Test Mode :	802.11g	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	14.37	30	Pass
06	2437	14.98	30	Pass
11	2462	15.49	30	Pass

Test Mode :	802.11n HT20	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	13.95	30	Pass
06	2437	14.51	30	Pass
11	2462	15.02	30	Pass

Test Mode :	802.11n HT40	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

Channel	Frequency (MHz)	2.4GHz 802.11n HT40 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	14.38	30	Pass
06	2437	14.97	30	Pass
09	2452	14.95	30	Pass

3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	802.11b	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%
Duty Cycle:	100%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)
01	2412	10.46
06	2437	11.02
11	2462	11.53

Test Mode :	802.11g	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%
Duty Cycle:	100%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)
01	2412	4.51
06	2437	5.15
11	2462	5.67

Test Mode :	802.11n HT20	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%
Duty Cycle:	100%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11n HT20 Average Output Power (dBm)
01	2412	3.59
06	2437	4.26
11	2462	4.79

Test Mode :	802.11n HT40	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%
Duty Cycle:	100%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11n HT40 Average Output Power (dBm)
03	2422	4.43
06	2437	4.87
09	2452	5.16

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.

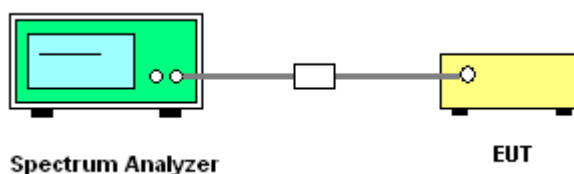
3.3.2 Measuring Instruments

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 :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	-0.69	-14.15	8	Pass
06	2437	0.08	-13.28	8	Pass
11	2462	0.47	-13.11	8	Pass

Test Mode :	802.11g	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11g Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	-11.15	-23.04	8	Pass
06	2437	-10.40	-22.34	8	Pass
11	2462	-10.07	-22.04	8	Pass

Test Mode :	802.11n HT20	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11n HT20 Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	-11.03	-22.89	8	Pass
06	2437	-10.05	-22.18	8	Pass
11	2462	-9.93	-21.97	8	Pass

Test Mode :	802.11n HT40	Temperature :	23~24℃
Test Engineer :	Lizy Li	Relative Humidity :	47~48%

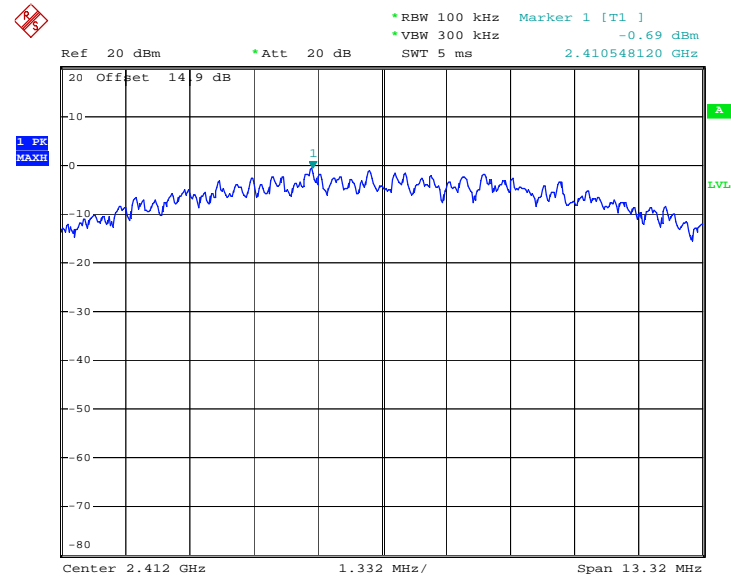
Channel	Frequency (MHz)	802.11n HT40 Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
03	2422	-12.54	-26.60	8	Pass
06	2437	-12.25	-26.20	8	Pass
09	2452	-12.09	-26.21	8	Pass

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.

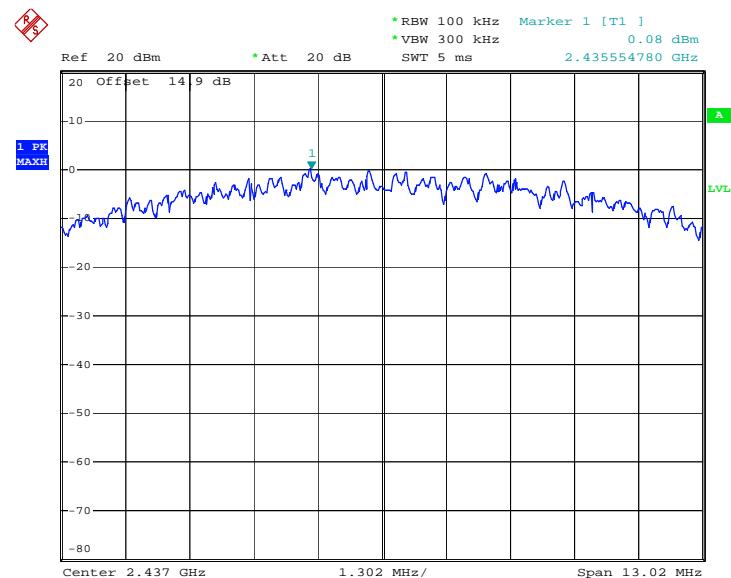
3.3.6 Test Result of Power Spectral Density Plots (100kHz)

PSD 100kHz Plot on 802.11b Channel 01

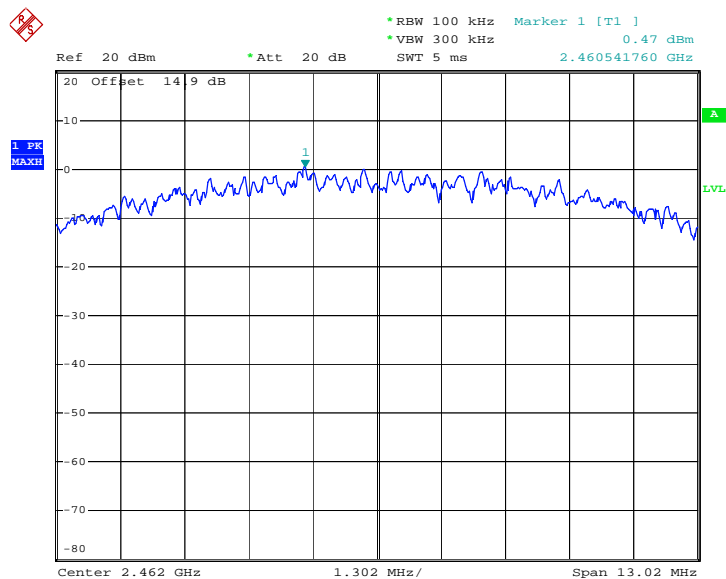


Date: 14.DEC.2012 20:55:34

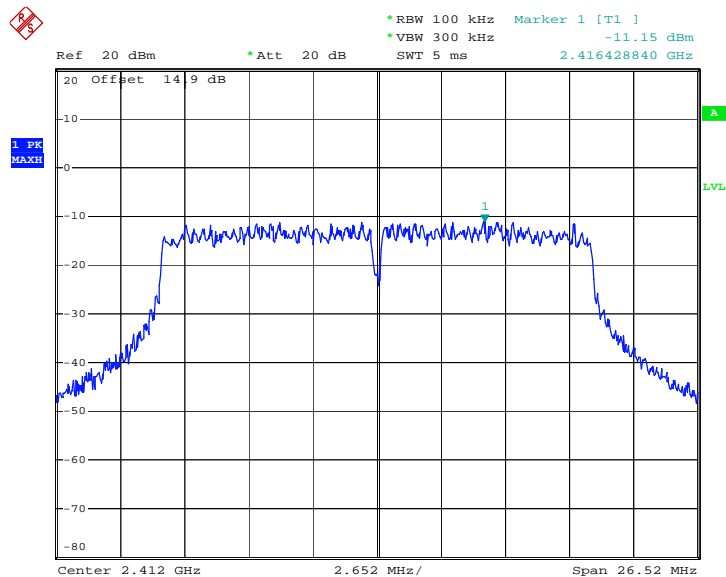
PSD 100kHz Plot on 802.11b Channel 06



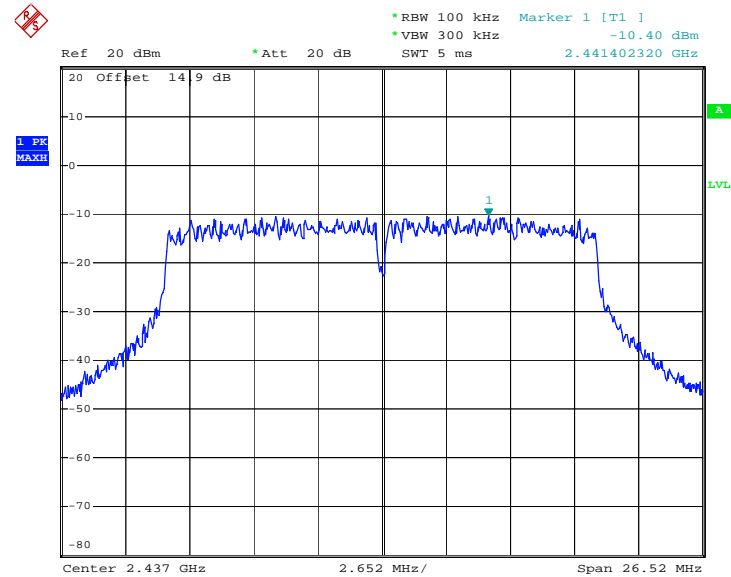
Date: 14.DEC.2012 21:05:18

PSD 100kHz Plot on 802.11b Channel 11


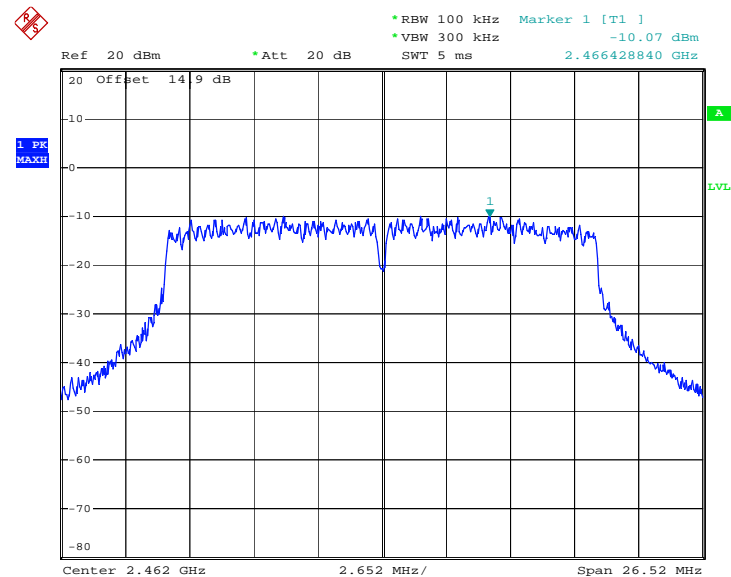
Date: 14.DEC.2012 21:08:51

PSD 100kHz Plot on 802.11g Channel 01


Date: 14.DEC.2012 21:51:12

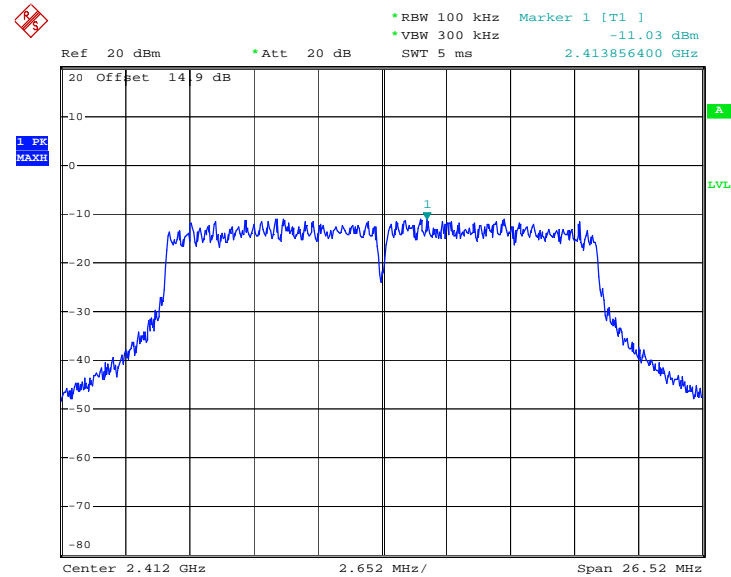
PSD 100kHz Plot on 802.11g Channel 06


Date: 14.DEC.2012 21:56:31

PSD 100kHz Plot on 802.11g Channel 11


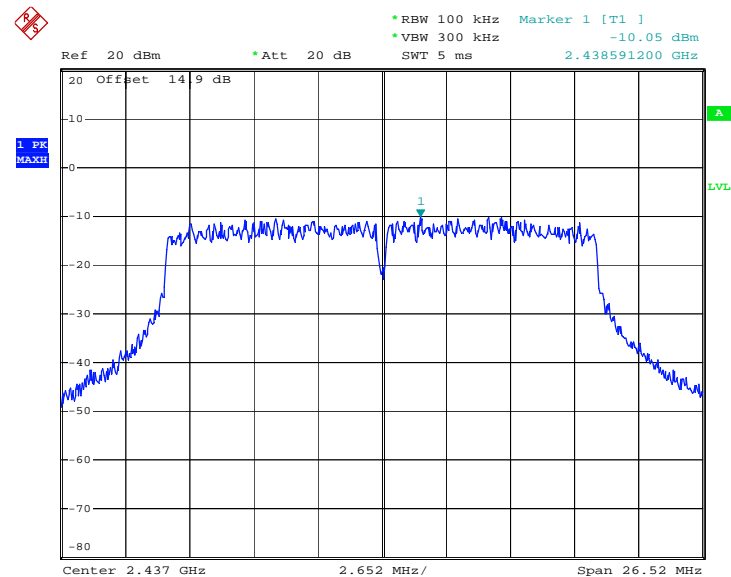
Date: 14.DEC.2012 22:02:31

PSD 100kHz Plot on 802.11n HT20 Channel 01

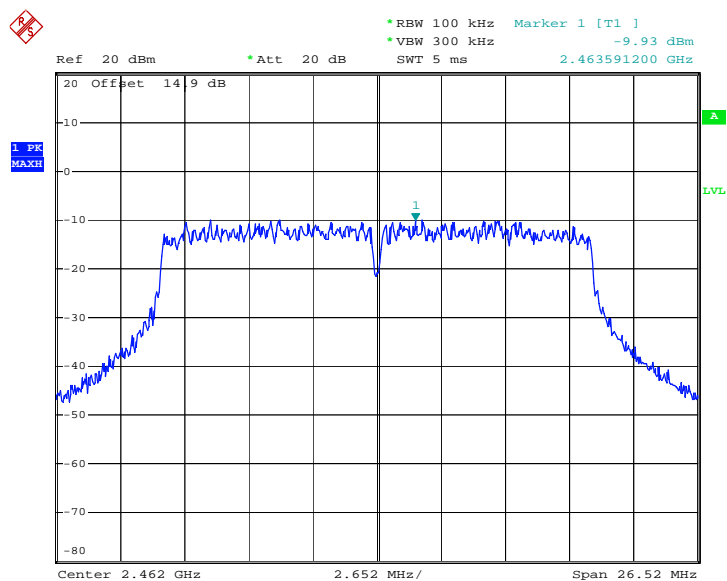


Date: 14.DEC.2012 22:24:22

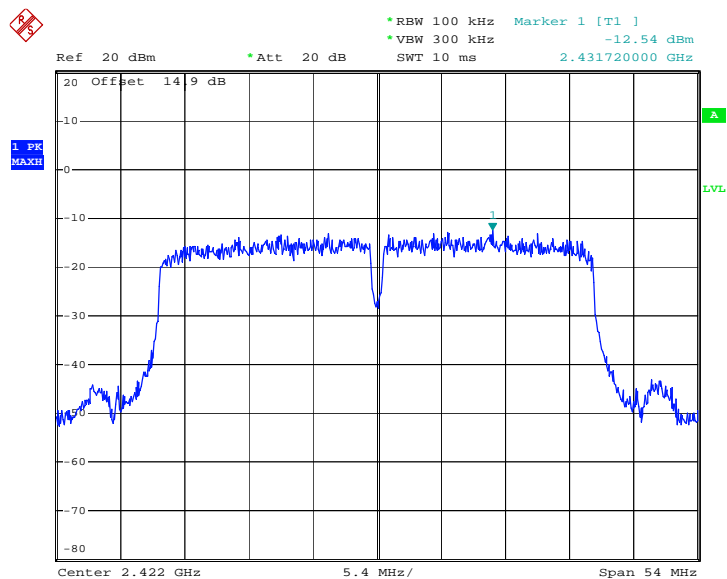
PSD 100kHz Plot on 802.11n HT20 Channel 06



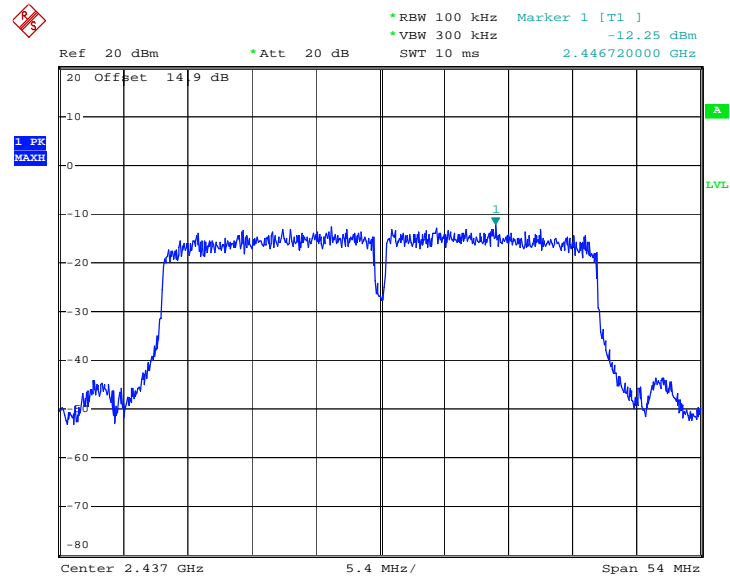
Date: 14.DEC.2012 22:27:31

PSD 100kHz Plot on 802.11n HT20 Channel 11


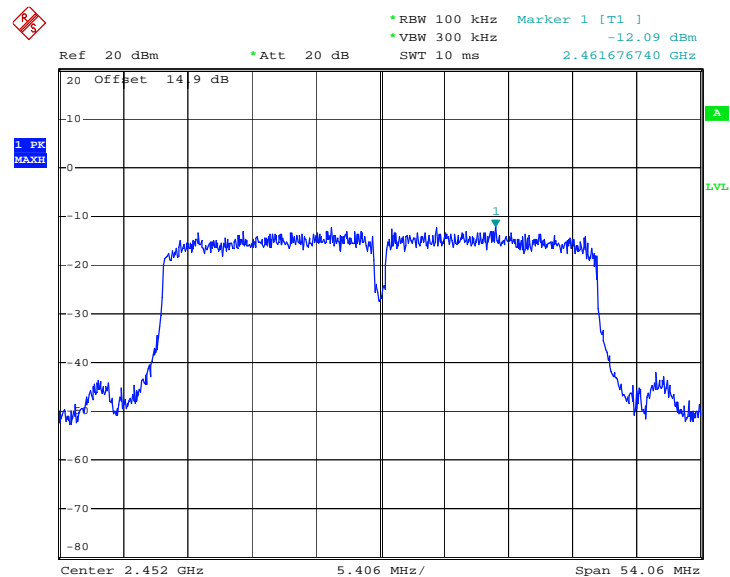
Date: 14.DEC.2012 22:30:29

PSD 100kHz Plot on 802.11n HT40 Channel 03


Date: 14.DEC.2012 22:38:34

PSD 100kHz Plot on 802.11n HT40 Channel 06


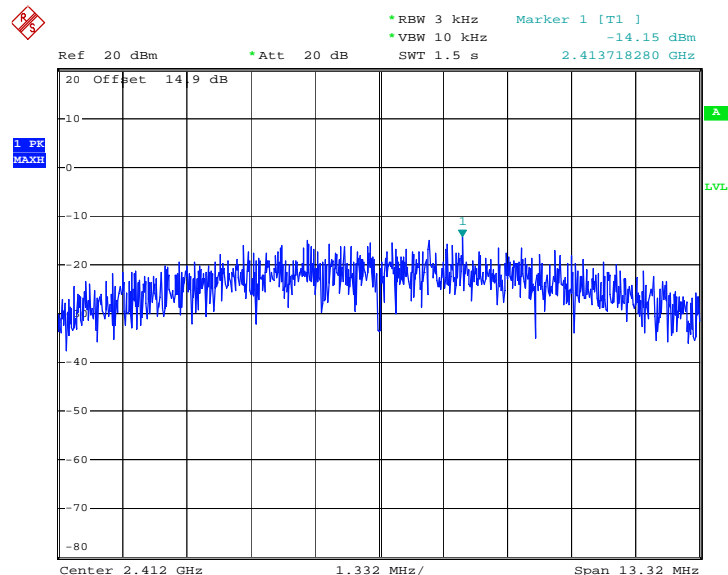
Date: 14.DEC.2012 22:42:15

PSD 100kHz Plot on 802.11n HT40 Channel 09


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

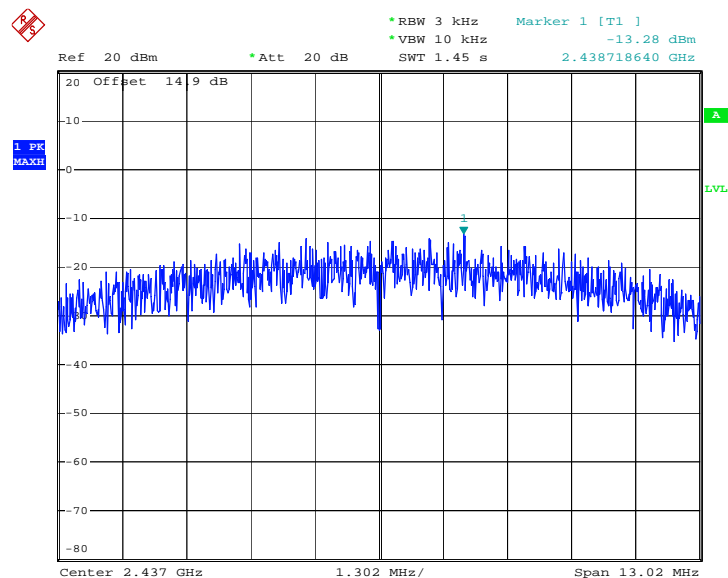
3.3.7 Test Result of Power Spectral Density Plots (3kHz)

PSD 3kHz Plot on 802.11b Channel 01



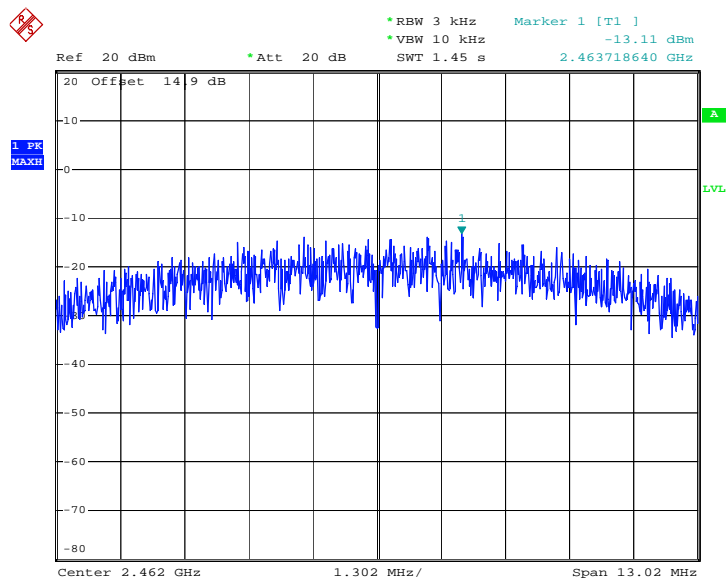
Date: 14.DEC.2012 20:55:25

PSD 3kHz Plot on 802.11b Channel 06



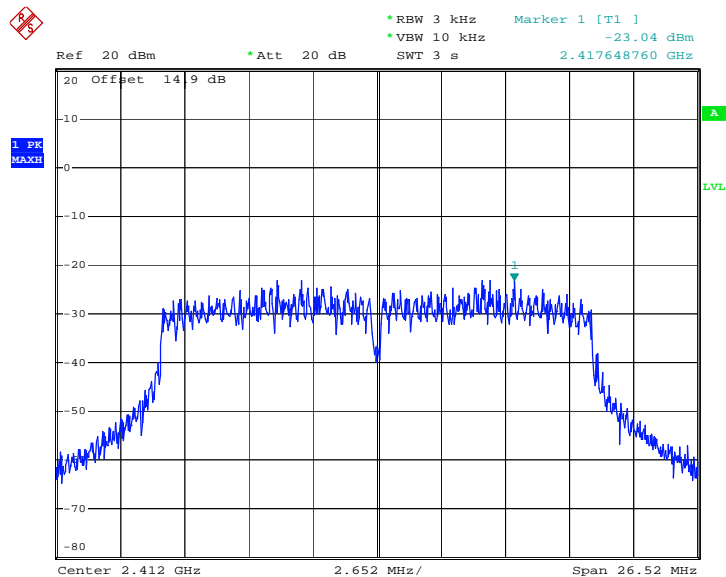
Date: 14.DEC.2012 21:05:10

PSD 3kHz Plot on 802.11b Channel 11



Date: 14.DEC.2012 21:08:29

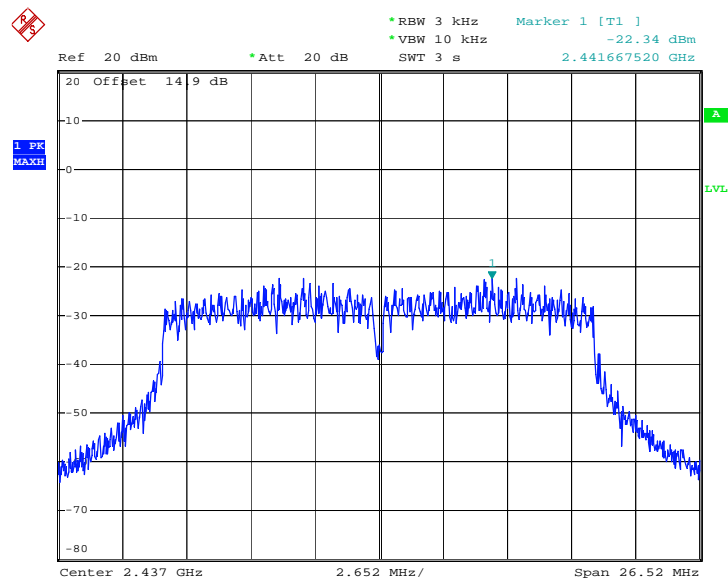
PSD 3kHz Plot on 802.11g Channel 01



Date: 14.DEC.2012 21:51:04

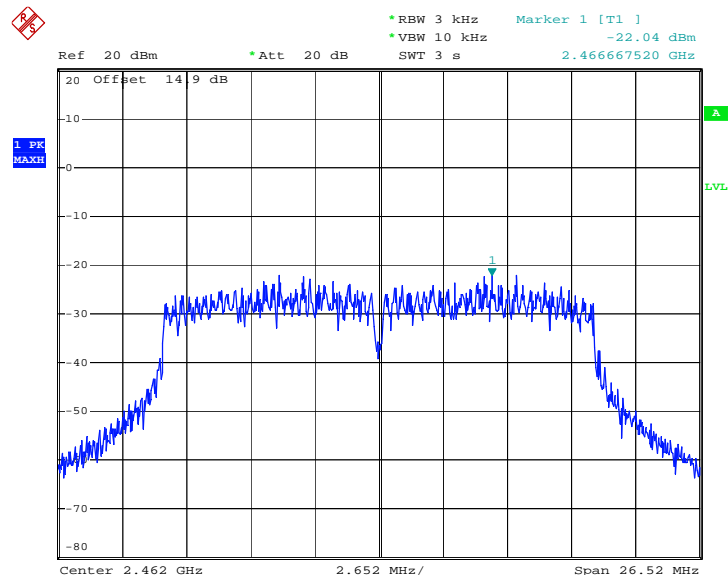


PSD 3kHz Plot on 802.11g Channel 06



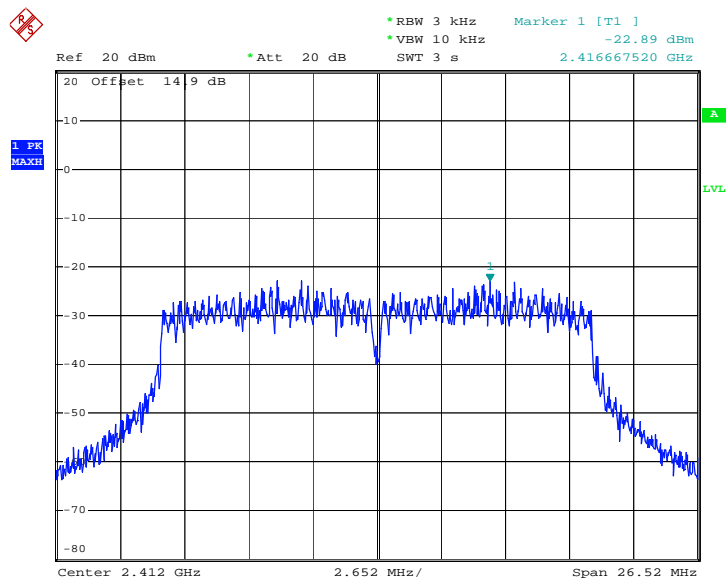
Date: 14.DEC.2012 21:55:59

PSD 3kHz Plot on 802.11g Channel 11



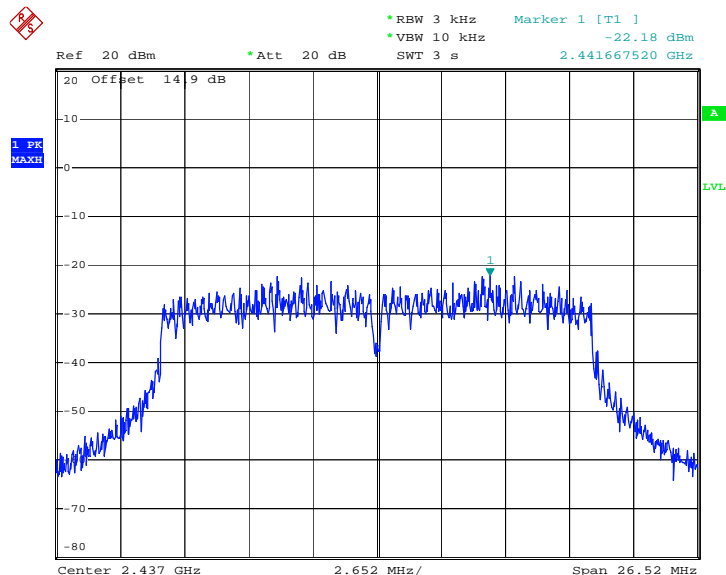
Date: 14.DEC.2012 22:01:05

PSD 3kHz Plot on 802.11n HT20 Channel 01



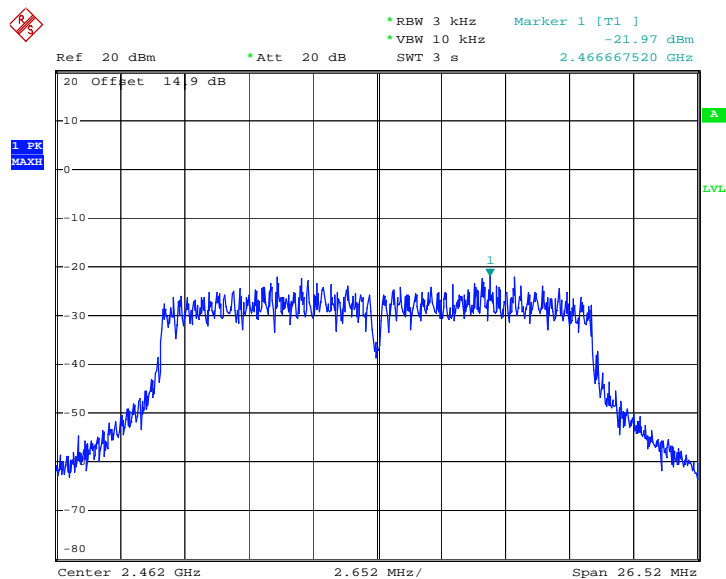
Date: 14.DEC.2012 22:24:14

PSD 3kHz Plot on 802.11n HT20 Channel 06



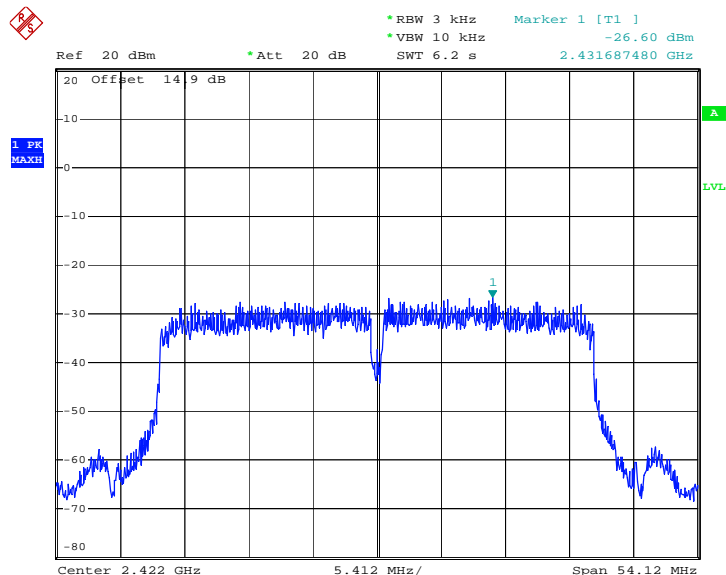
Date: 14.DEC.2012 22:27:21

PSD 3kHz Plot on 802.11n HT20 Channel 11

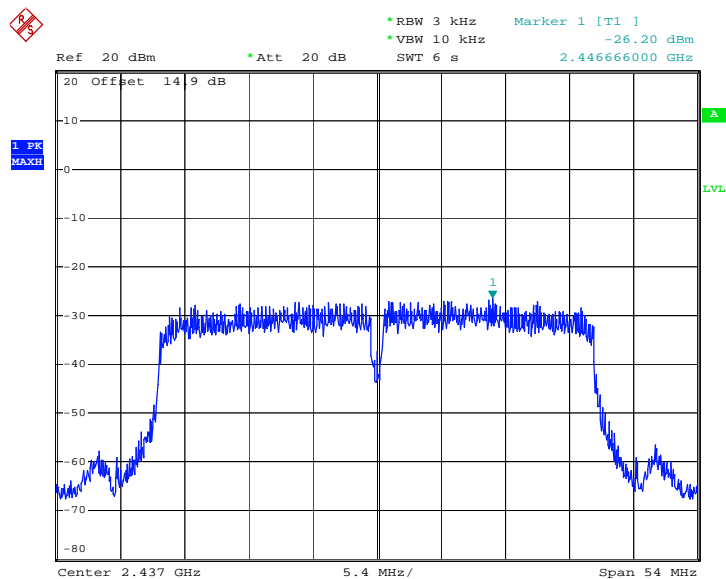


Date: 14.DEC.2012 22:30:22

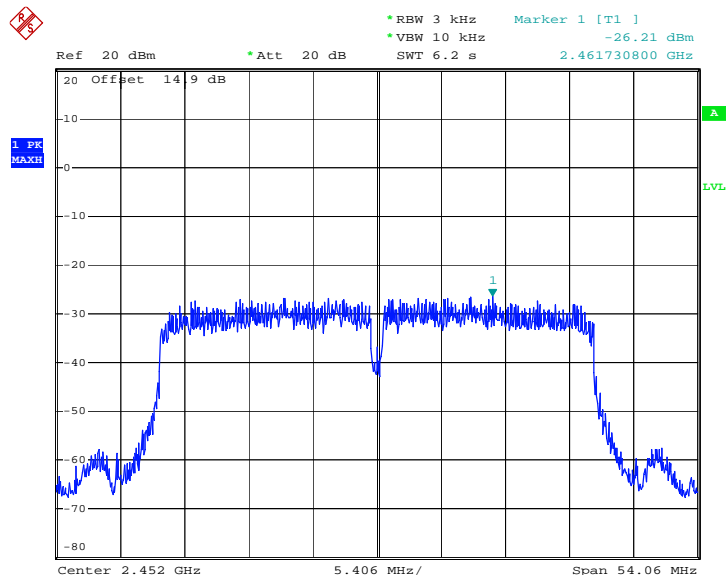
PSD 3kHz Plot on 802.11n HT40 Channel 03



Date: 14.DEC.2012 22:35:12

PSD 3kHz Plot on 802.11n HT40 Channel 06


Date: 14.DEC.2012 22:45:51

PSD 3kHz Plot on 802.11n HT40 Channel 09


Date: 14.DEC.2012 22:47:25

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).

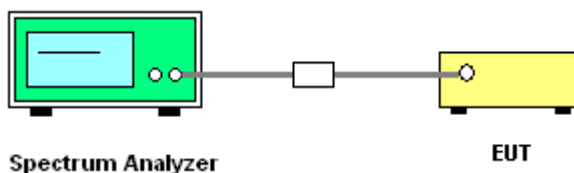
3.4.2 Measuring Instruments

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.

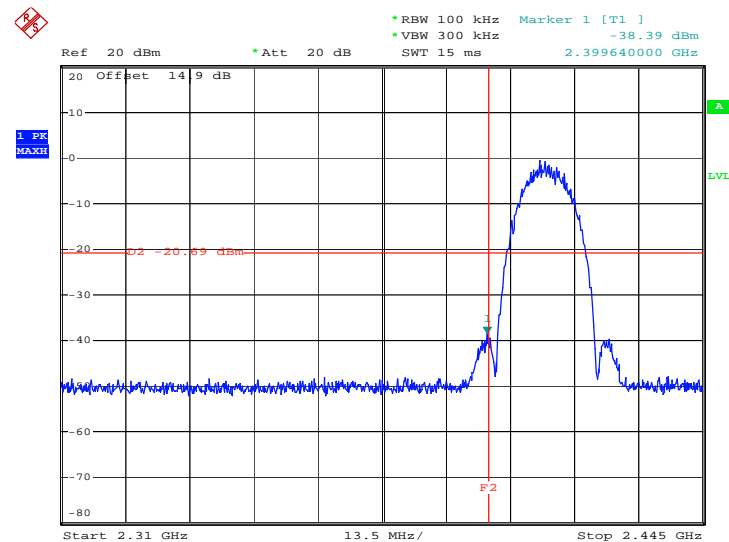
3.4.4 Test Setup



3.4.5 Test Plots of Conducted Band Edges

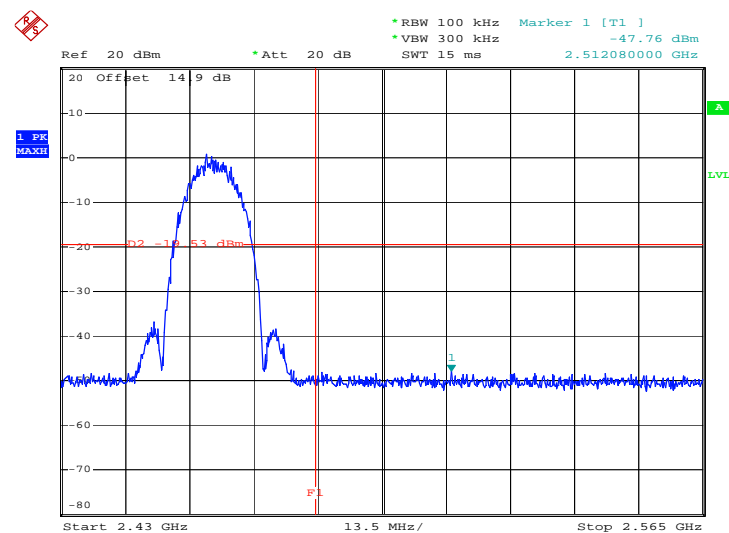
Test Mode :	802.11b	Temperature :	23~24℃
Test Band :	Low and High	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Lizy Li

Low Band Edge Plot on 802.11b Channel 01



Date: 14.DEC.2012 20:55:51

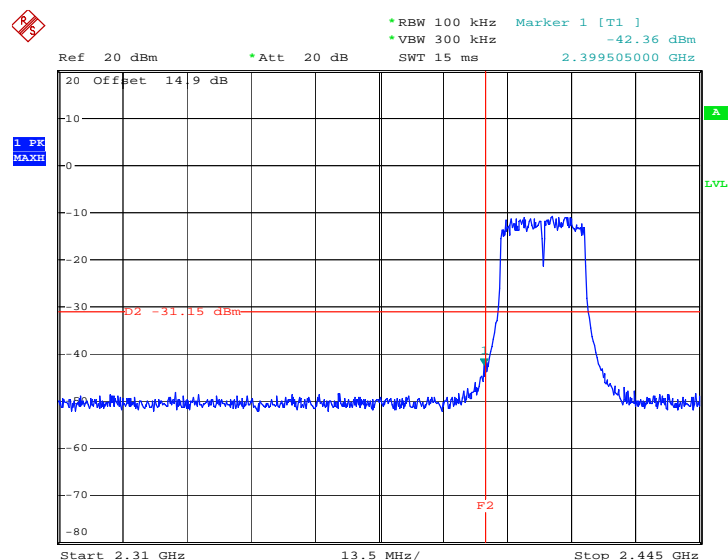
High Band Edge Plot on 802.11b Channel 11



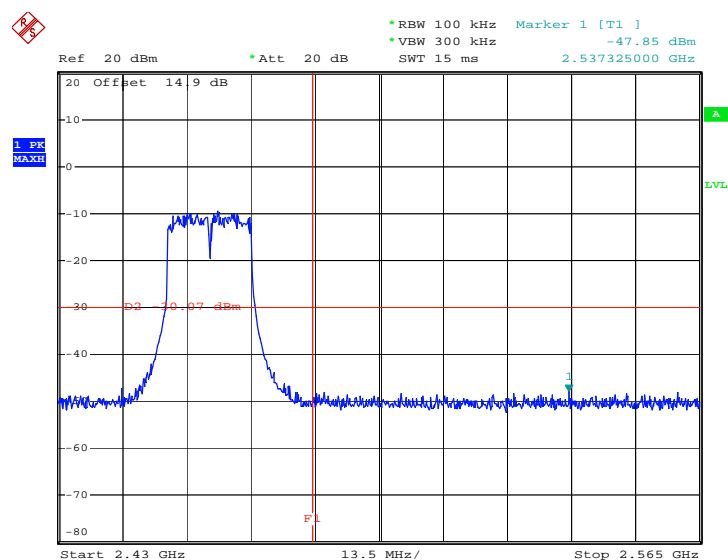
Date: 14.DEC.2012 21:09:16



Test Mode :	802.11g	Temperature :	23~24℃
Test Band :	Low and High	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Lizy Li

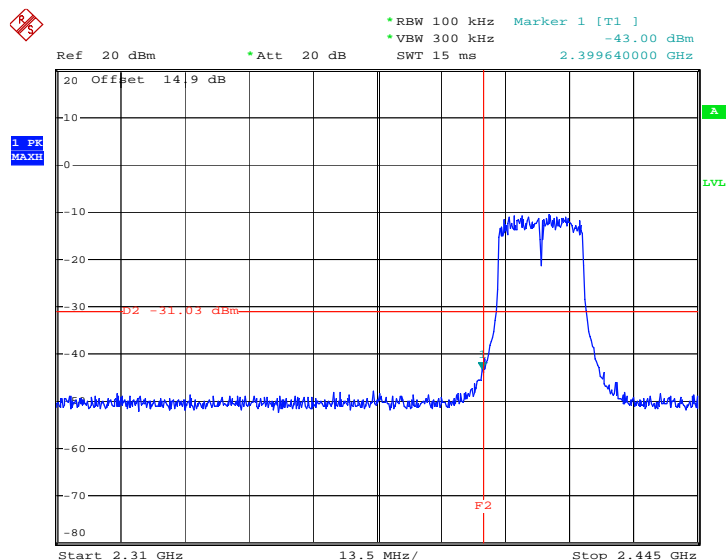
Low Band Edge Plot on 802.11g Channel 01

Date: 14.DEC.2012 21:52:11

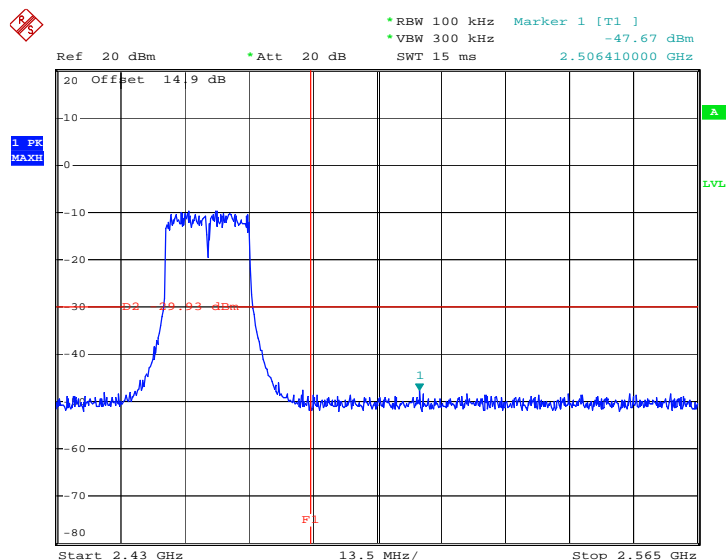
High Band Edge Plot on 802.11g Channel 11

Date: 14.DEC.2012 22:03:17

Test Mode :	802.11n HT20	Temperature :	23~24°C
Test Band :	Low and High	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Lizy Li

Low Band Edge Plot on 802.11n HT20 Channel 01


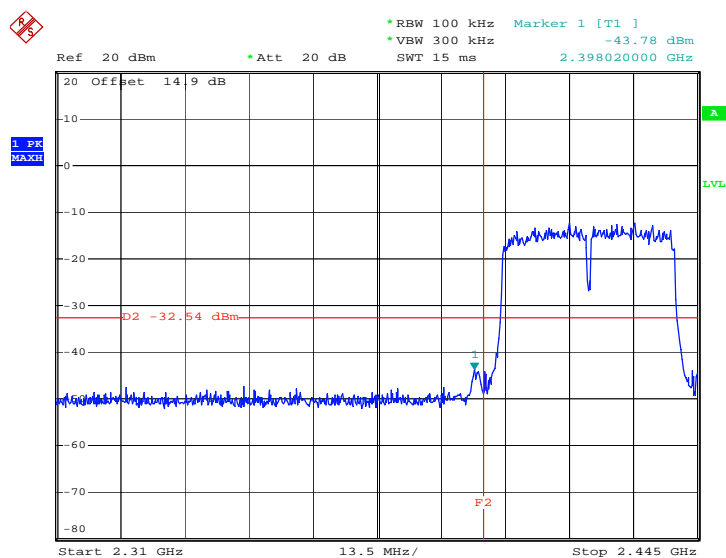
Date: 14.DEC.2012 22:24:56

High Band Edge Plot on 802.11n HT20 Channel 11


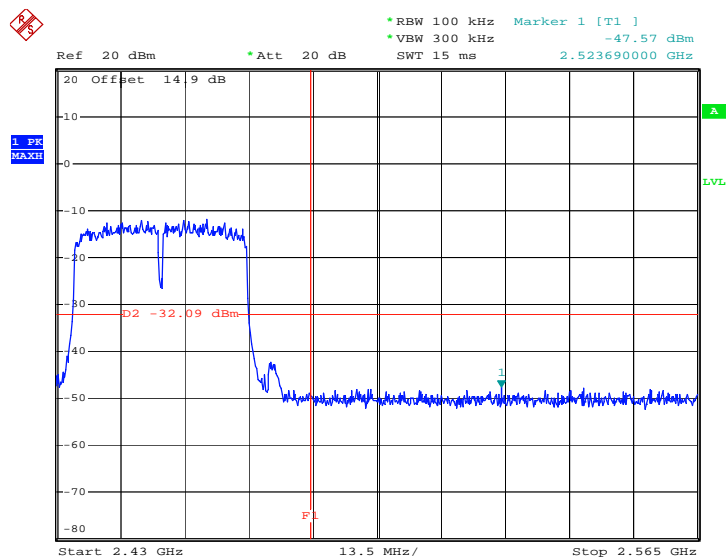
Date: 14.DEC.2012 22:30:45



Test Mode :	802.11n HT40	Temperature :	23~24°C
Test Band :	Low and High	Relative Humidity :	47~48%
Test Channel :	03 and 09	Test Engineer :	Lizy Li

Low Band Edge Plot on 802.11n HT40 Channel 03

Date: 14.DEC.2012 22:38:53

High Band Edge Plot on 802.11n HT40 Channel 09

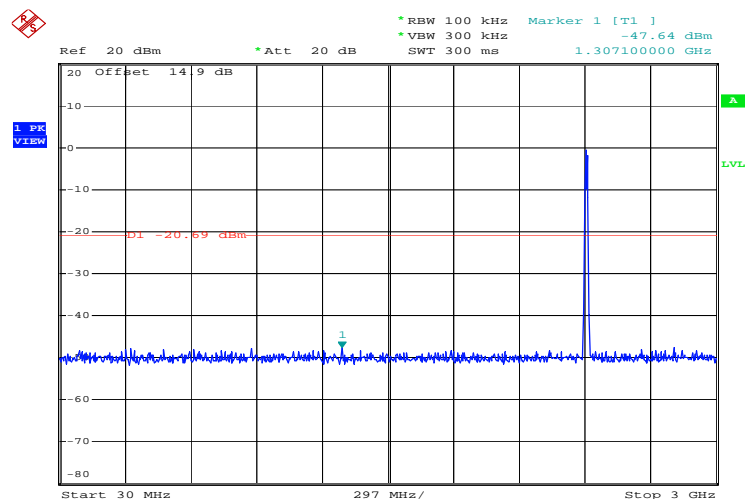
Date: 14.DEC.2012 22:47:50

3.4.6 Test Plots of Spurious Emission

Test Mode :	802.11b	Temperature :	23~24°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	47~48%
Test Channel :	01, 06, 11	Test Engineer :	Lizy Li

802.11b 30 MHz~3 GHz

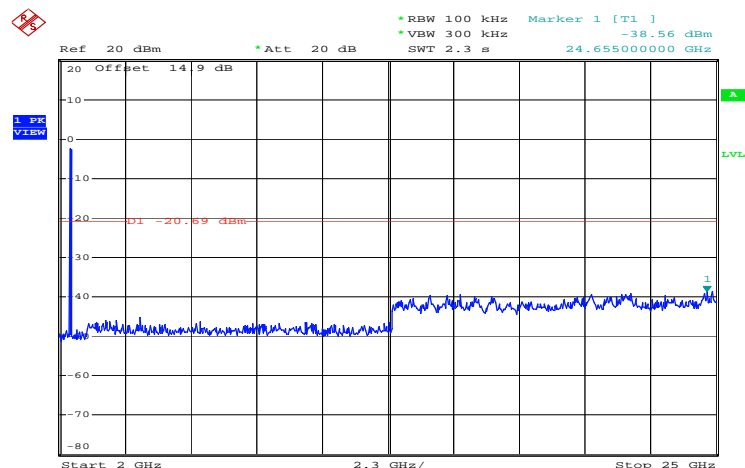
Conducted Spurious Emission Plot on Channel 01



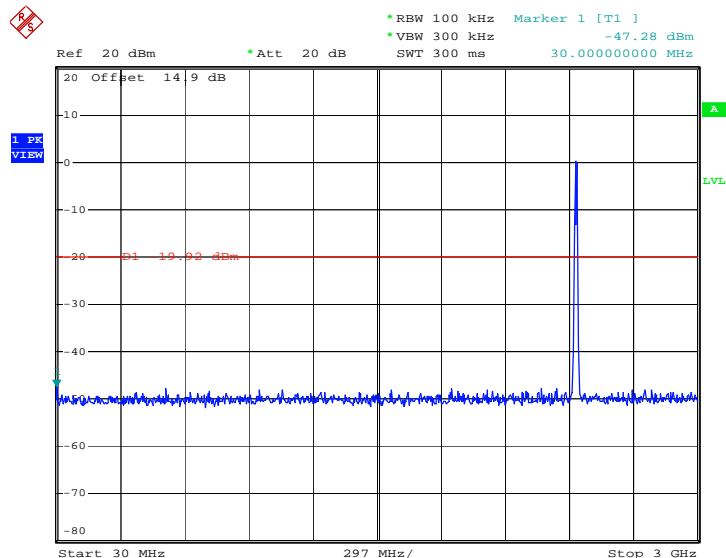
Date: 14.DEC.2012 20:56:20

802.11b 2 GHz~25 GHz

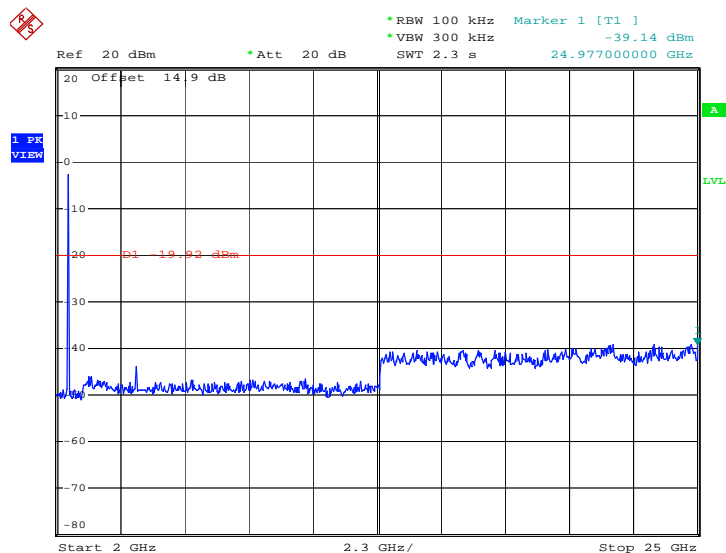
Conducted Spurious Emission Plot on Channel 01



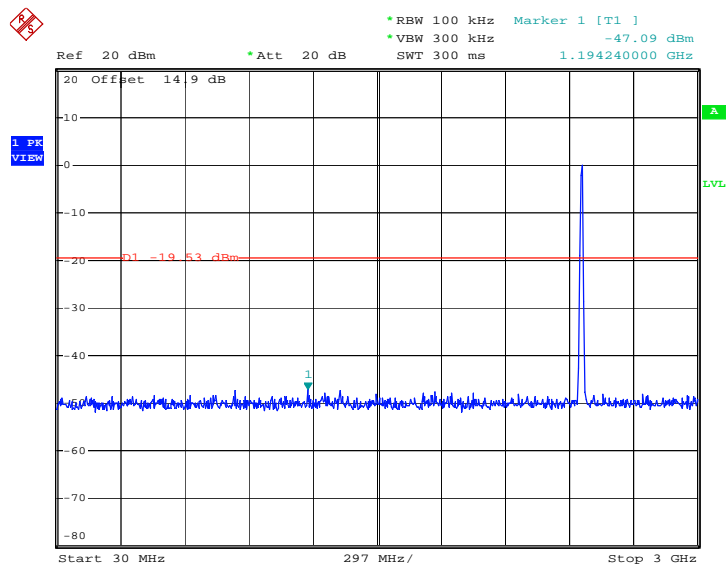
Date: 14.DEC.2012 20:56:39

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


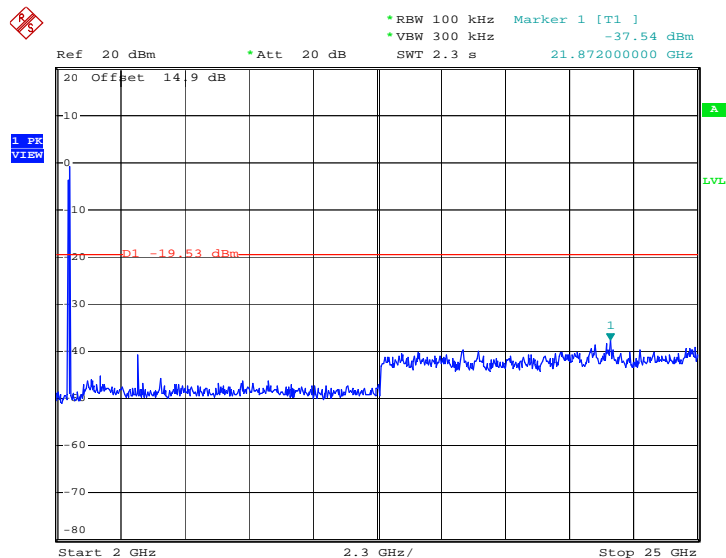
Date: 14.DEC.2012 21:06:10

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


Date: 14.DEC.2012 21:06:28

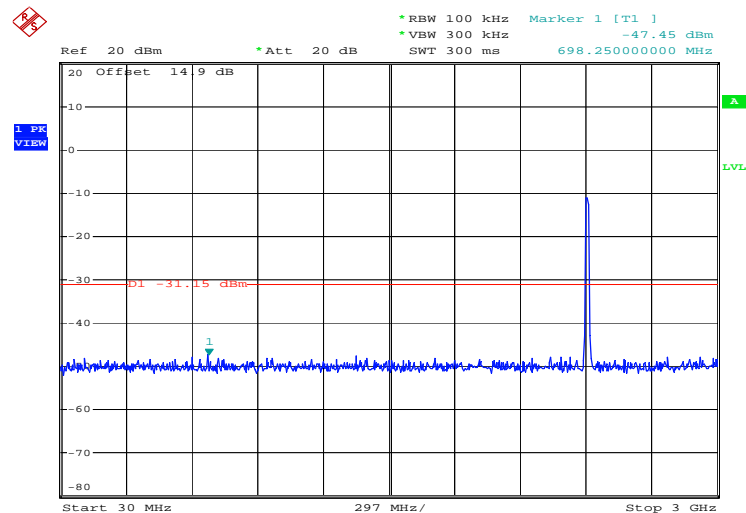
802.11b 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 14.DEC.2012 21:09:36

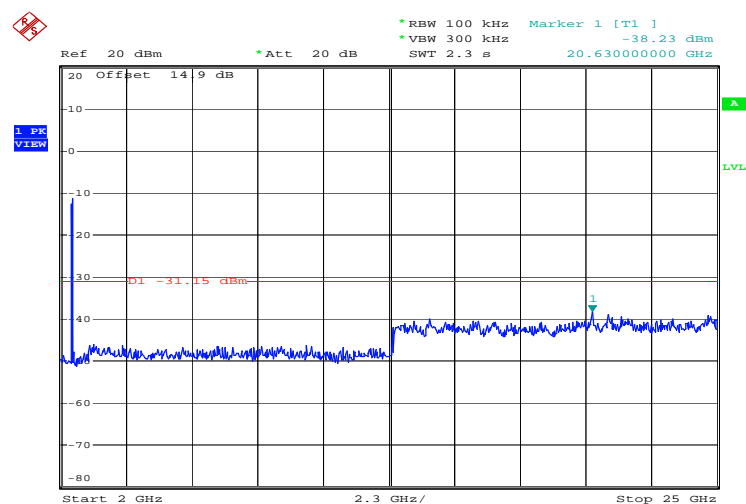
802.11b 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 14.DEC.2012 21:09:55

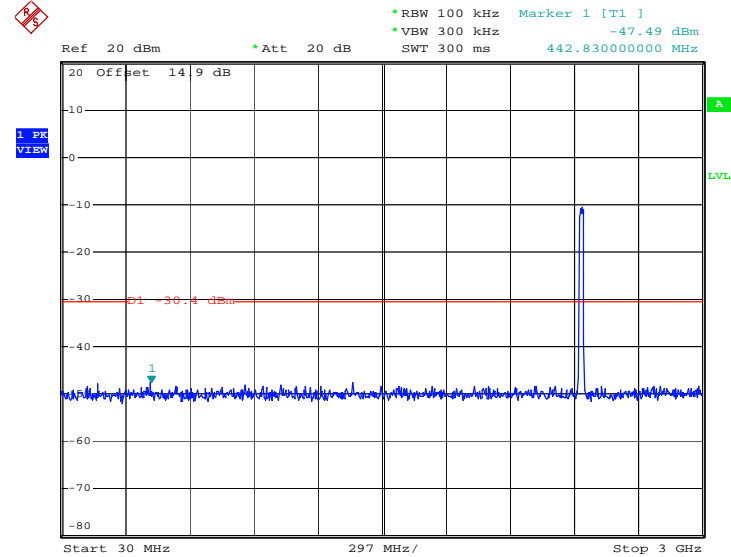
Test Mode :	802.11g	Temperature :	23~24°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	47~48%
Test Channel :	01, 06, 11	Test Engineer :	Lizy Li

802.11g 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 01


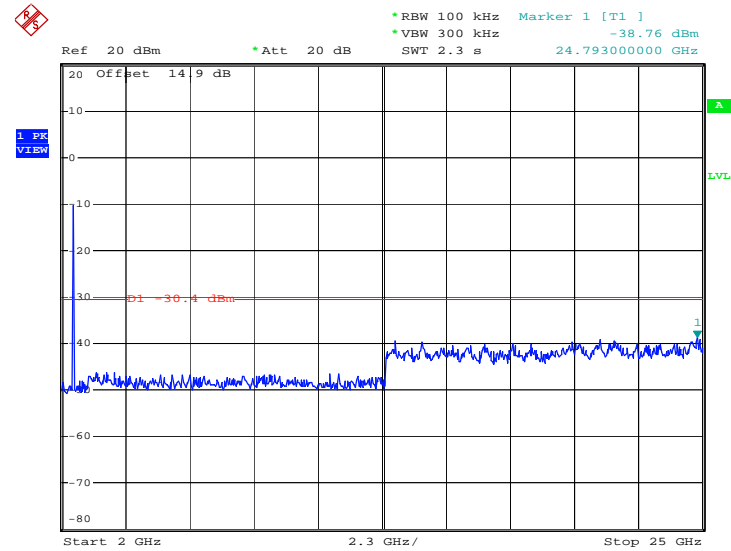
Date: 14.DEC.2012 21:52:44

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


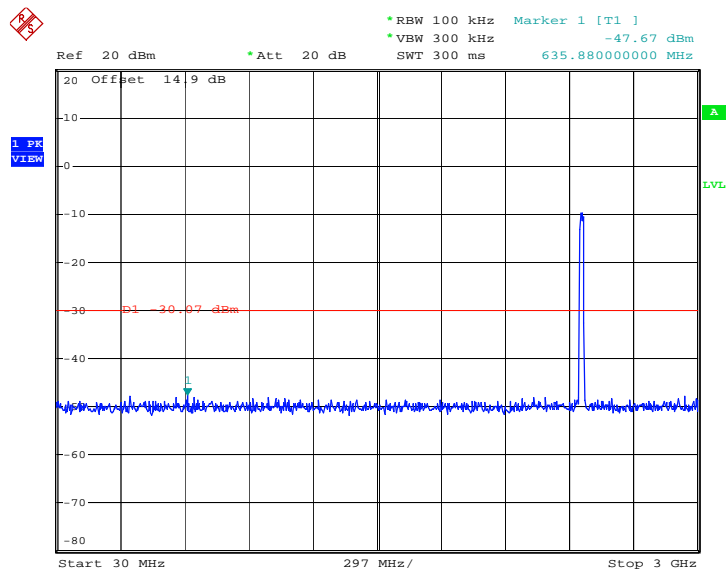
Date: 14.DEC.2012 21:53:02

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


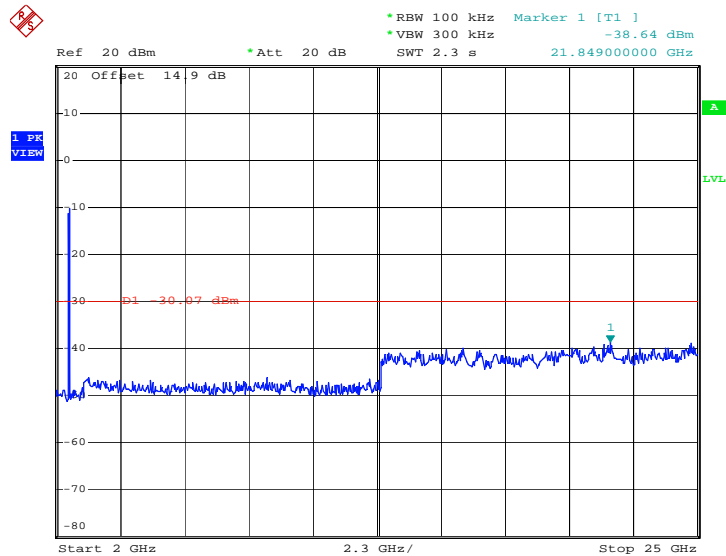
Date: 14.DEC.2012 21:57:34

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


Date: 14.DEC.2012 21:57:52

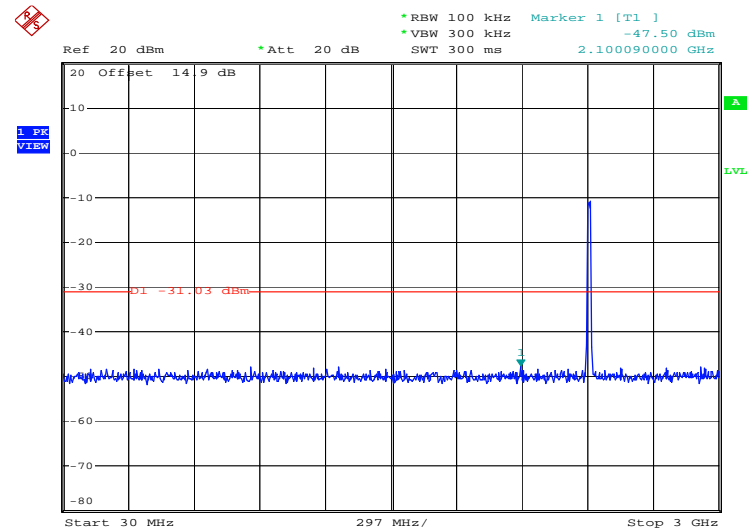
802.11g 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 14.DEC.2012 22:03:39

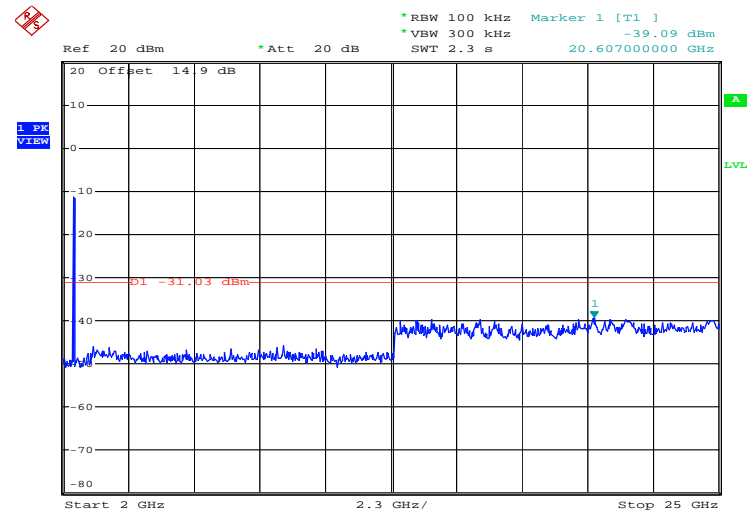
802.11g 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 14.DEC.2012 22:03:57

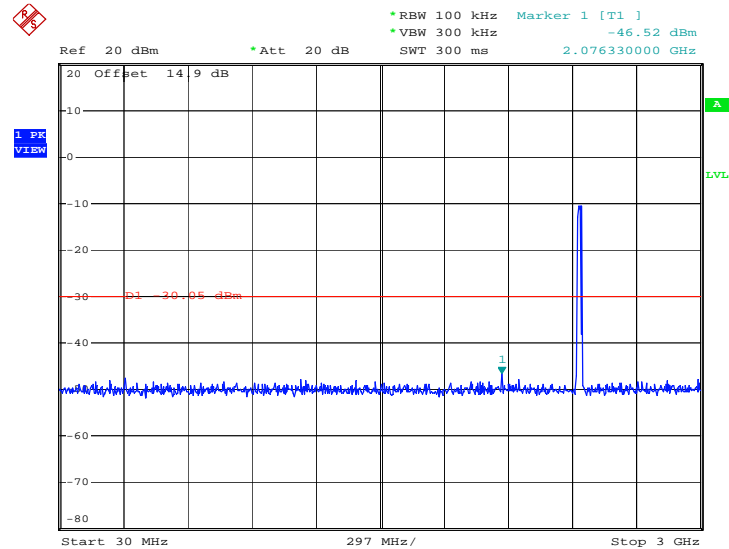
Test Mode :	802.11n HT20	Temperature :	23~24°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	47~48%
Test Channel :	01, 06, 11	Test Engineer :	Lizy Li

802.11n HT20 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 01


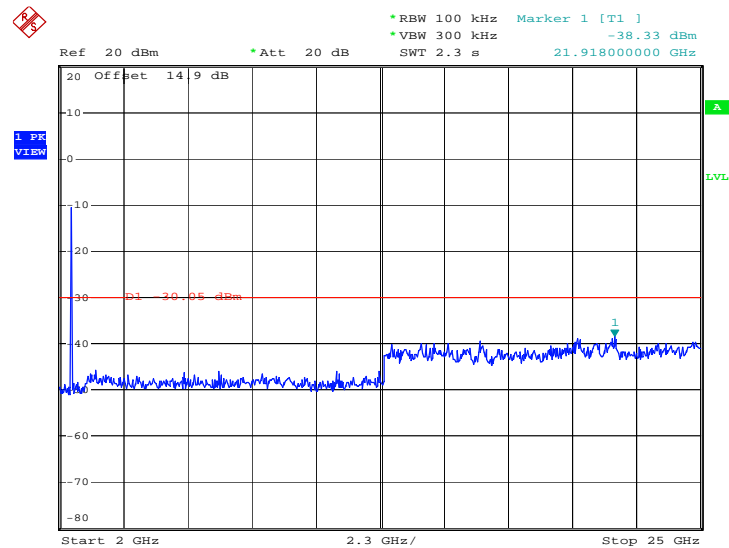
Date: 14.DEC.2012 22:25:19

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


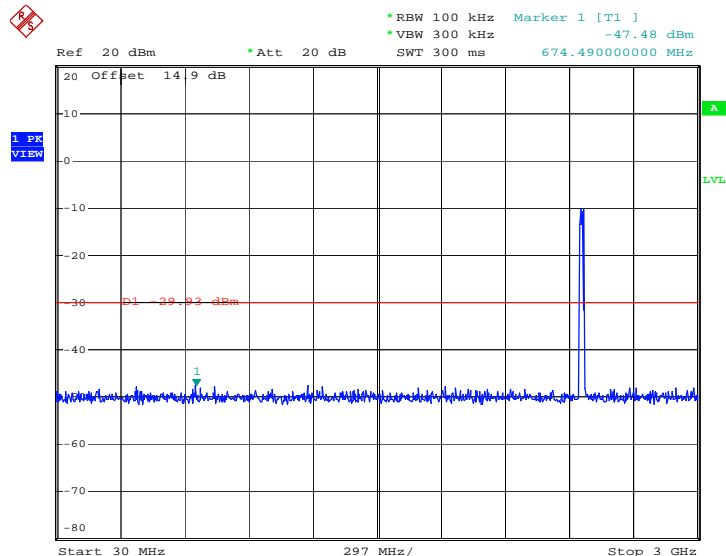
Date: 14.DEC.2012 22:25:37

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


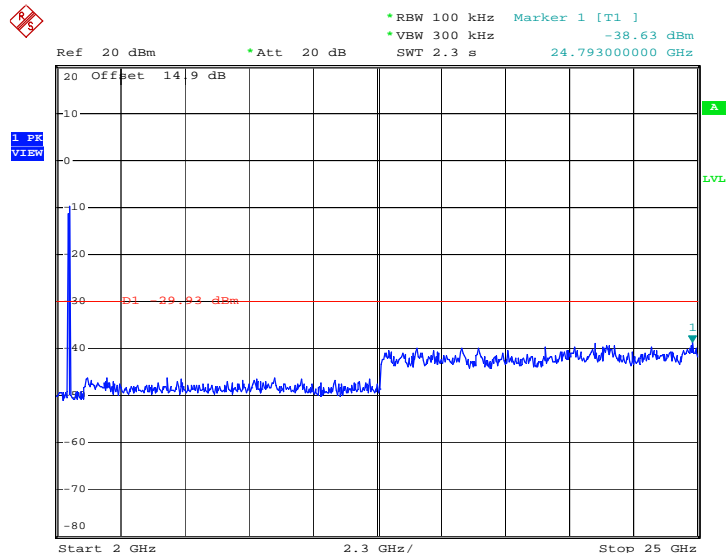
Date: 14.DEC.2012 22:27:53

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


Date: 14.DEC.2012 22:28:11

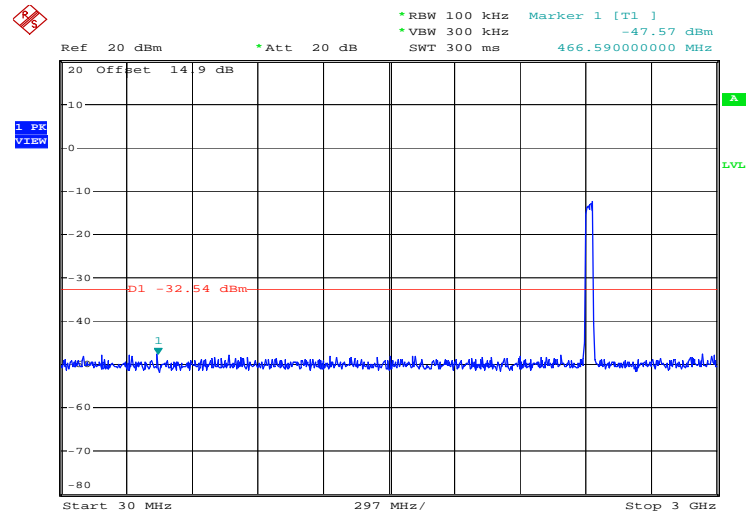
802.11n HT20 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 14.DEC.2012 22:31:06

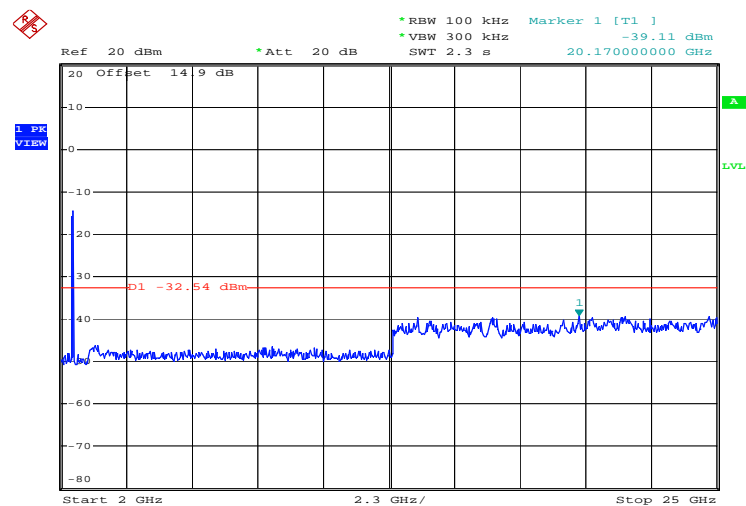
802.11n HT20 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 11


Date: 14.DEC.2012 22:31:24

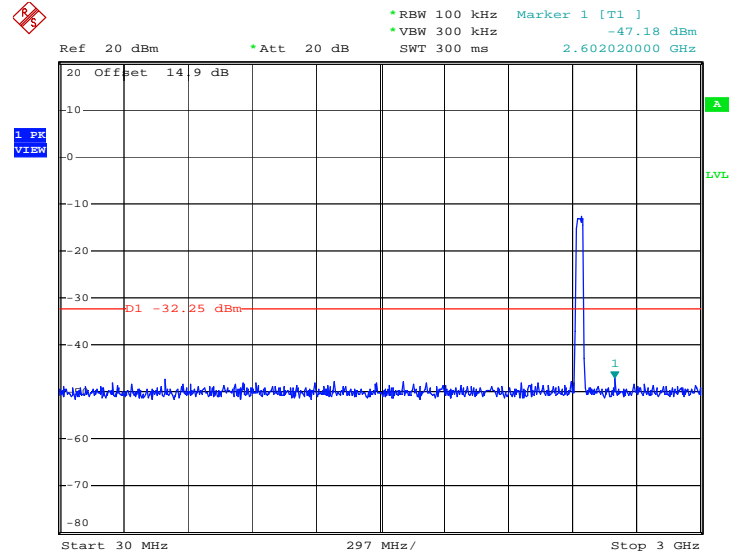
Test Mode :	802.11n HT40	Temperature :	23~24
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	47~48
Test Channel :	03, 06, 09	Test Engineer :	Lizy Li

802.11n HT40 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 03


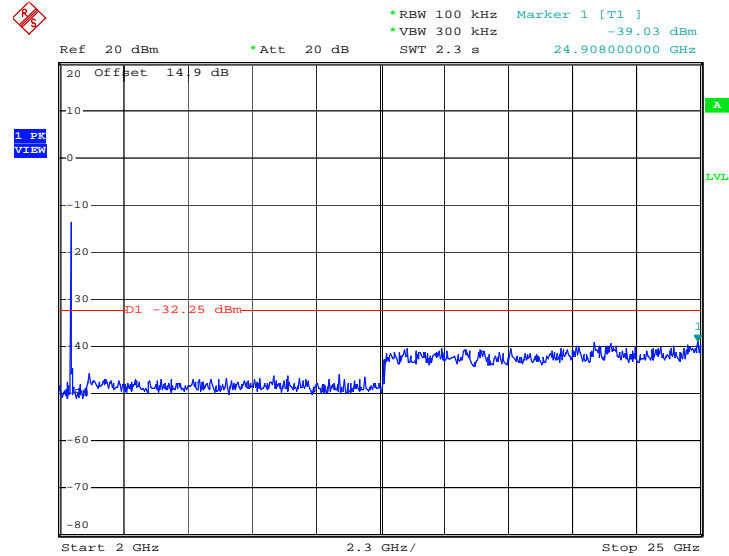
Date: 14.DEC.2012 22:39:21

802.11n HT40 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 03


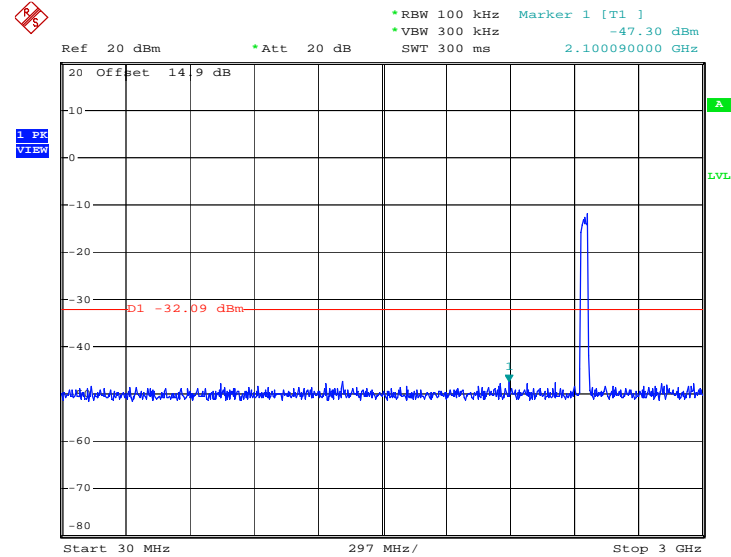
Date: 14.DEC.2012 22:39:40

802.11n HT40 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 06


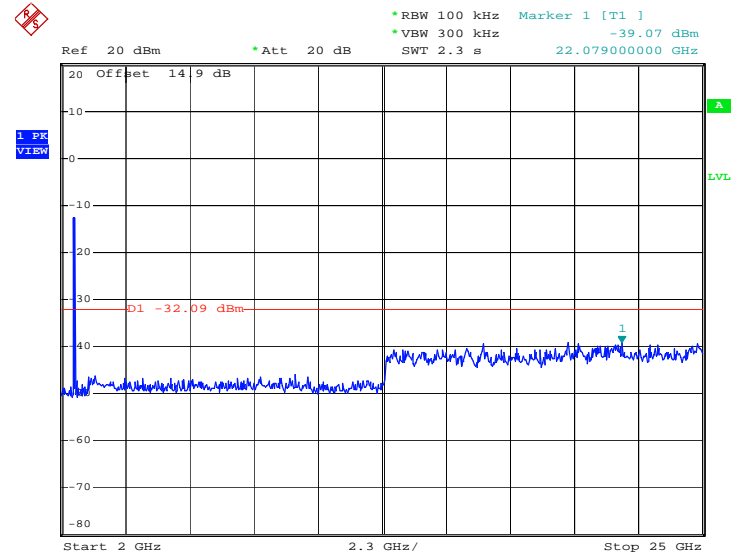
Date: 14.DEC.2012 22:42:47

802.11n HT40 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 06


Date: 14.DEC.2012 22:43:05

802.11n HT40 30 MHz~3 GHz
Conducted Spurious Emission Plot on Channel 09


Date: 14.DEC.2012 22:48:10

802.11n HT40 2 GHz~25 GHz
Conducted Spurious Emission Plot on Channel 09


Date: 14.DEC.2012 22:48:29

3.5 Radiated Emission Measurement

3.5.1 Limit of Radiated Emission

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

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

3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The testing follows the guidelines in 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 - Preamplifier Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 KHz for $f < 1$ GHz; VBW \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.

For average measurement:

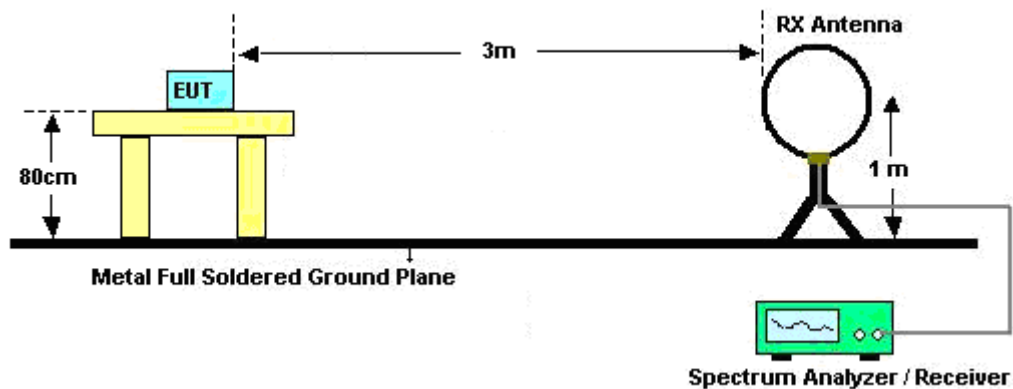
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(us)	1/T(KHz)	VBW Setting
802.11b	100.00	-	-	10Hz
802.11g	100.00	-	-	10Hz
2.4G 802.11n HT20	100.00	-	-	10Hz
2.4G 802.11n HT40	100.00	-	-	10Hz

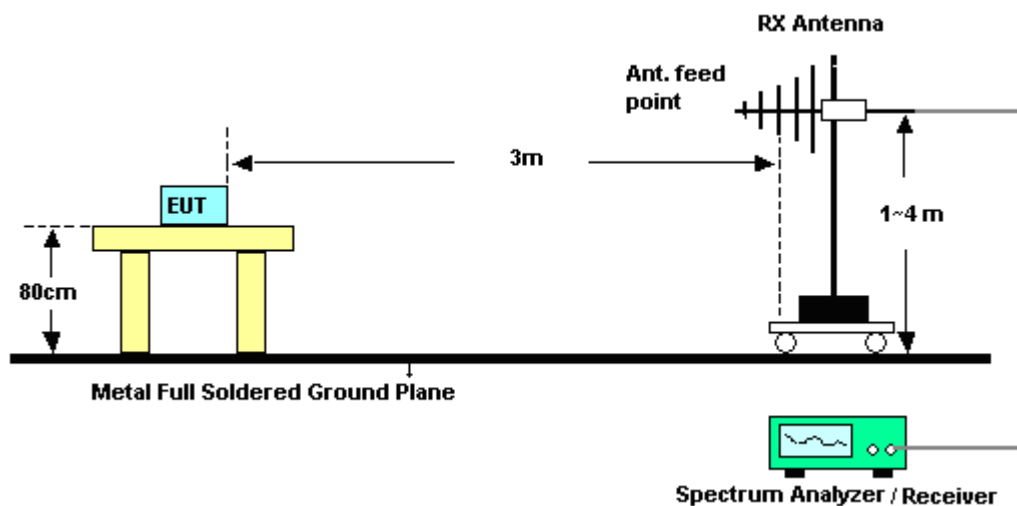
Note: For average measurement with duty cycle < 98%, use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.

3.5.4 Test Setup

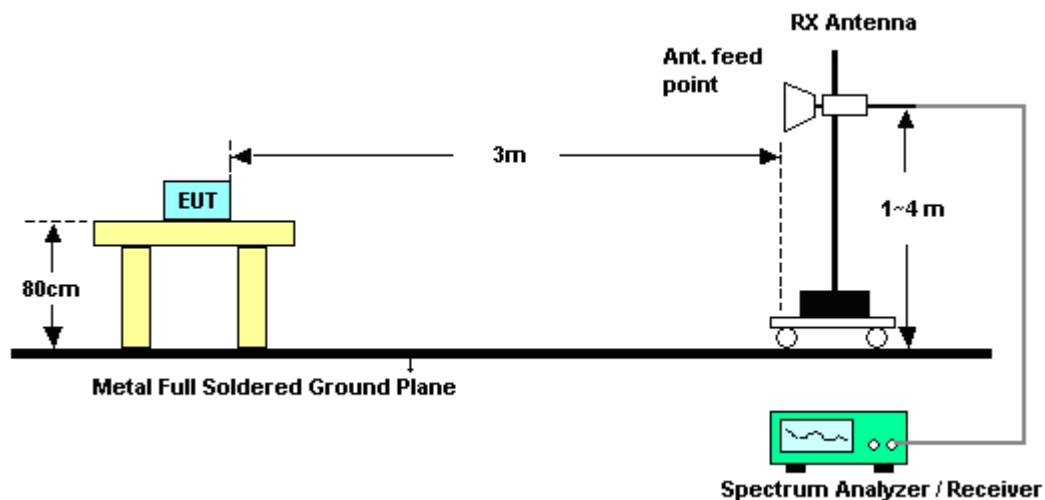
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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

3.5.6 Test Result of Radiated Band Edges

Test Mode :	802.11b	Temperature :	21~22℃
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	Allen Cheng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.66	53.64	-20.36	74	50.18	32.86	2.11	31.51	175	152	Peak
2390	40.69	-13.31	54	37.23	32.86	2.11	31.51	175	152	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.66	53.53	-20.47	74	50.07	32.86	2.11	31.51	135	90	Peak
2373.09	40.88	-13.12	54	37.47	32.83	2.09	31.51	135	90	Average

Test Mode :	802.11b	Temperature :	21~22℃
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	Allen Cheng

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
2483.86	55.52	-18.48	74	51.86	33.01	2.16	31.51	107	140	Peak
2483.53	41.87	-12.13	54	38.21	33.01	2.16	31.51	107	140	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
2483.8	53.79	-20.21	74	50.13	33.01	2.16	31.51	100	107	Peak
2483.56	40.63	-13.37	54	36.97	33.01	2.16	31.51	100	107	Average



Test Mode :	802.11g	Temperature :	21~22℃
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	Allen Cheng

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
2373.36	52.46	-21.54	74	49.05	32.83	2.09	31.51	179	333	Peak
2390	39.07	-14.93	54	35.61	32.86	2.11	31.51	179	333	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
2366.43	52.65	-21.35	74	49.27	32.81	2.08	31.51	100	296	Peak
2390	39.63	-14.37	54	36.17	32.86	2.11	31.51	100	296	Average

Test Mode :	802.11g	Temperature :	21~22℃
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	Allen Cheng

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
2483.65	53.02	-20.98	74	49.36	33.01	2.16	31.51	112	51	Peak
2483.5	37.32	-16.68	54	33.66	33.01	2.16	31.51	112	51	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.43	52.2	-21.8	74	48.54	33.01	2.16	31.51	125	108	Peak
2483.5	36.99	-17.01	54	33.33	33.01	2.16	31.51	125	108	Average

Test Mode :	802.11n HT20	Temperature :	21~22℃
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	Allen Cheng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	53.01	-20.99	74	49.55	32.86	2.11	31.51	174	153	Peak
2390	38.95	-15.05	54	35.49	32.86	2.11	31.51	174	153	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
2389.92	52.36	-21.64	74	48.9	32.86	2.11	31.51	157	76	Peak
2390	38.61	-15.39	54	35.15	32.86	2.11	31.51	157	76	Average

Test Mode :	802.11n HT20	Temperature :	21~22℃
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	Allen Cheng

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
2483.95	54.61	-19.39	74	50.95	33.01	2.16	31.51	141	142	Peak
2483.5	39.25	-14.75	54	35.59	33.01	2.16	31.51	141	142	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
2483.95	53.28	-20.72	74	49.62	33.01	2.16	31.51	100	100	Peak
2483.5	38.64	-15.36	54	34.98	33.01	2.16	31.51	100	100	Average

Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	03	Test Engineer :	Allen Cheng

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
2386.5	52.47	-21.53	74	49.01	32.86	2.11	31.51	110	148	Peak
2390	39.6	-14.4	54	36.14	32.86	2.11	31.51	110	148	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	53.08	-20.92	74	49.67	32.83	2.09	31.51	100	107	Peak
2390	39.26	-14.74	54	35.8	32.86	2.11	31.51	100	107	Average

Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	09	Test Engineer :	Allen Cheng

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
2484.34	55.63	-18.37	74	51.97	33.01	2.16	31.51	110	219	Peak
2483.5	38.25	-15.75	54	34.59	33.01	2.16	31.51	110	219	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
2483.68	55.53	-18.47	74	51.87	33.01	2.16	31.51	125	81	Peak
2483.5	37.66	-16.34	54	34	33.01	2.16	31.51	125	81	Average

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

NOTE: Below 1GHz for radiated emission measurement, pre-scanned all test modes and only choose the worst case mode was recorded in the report.

Test Mode :	802.11b	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	Polarization :	Horizontal
Remark :	1. 2399 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 2. 2412 MHz is fundamental signal which can be ignored. 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
2399	64.56	-23.68	88.24	61.1	32.86	2.11	31.51	175	152	Peak
2412	108.24	-	-	104.74	32.89	2.12	31.51	142	145	Peak
2412	100.78	-	-	97.28	32.89	2.12	31.51	142	145	Average
4824	61.6	-12.4	74	54.87	35.17	3.09	31.53	138	48	Peak
4824	46.78	-7.22	54	40.05	35.17	3.09	31.53	138	48	Average
7236	50.83	-23.17	74	42.36	36.18	3.24	30.95	103	265	Peak

Test Mode :	802.11b	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	Polarization :	Vertical
Remark :	1. 2399 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 2. 2412 MHz is fundamental signal which can be ignored. 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
2399	65	-21.86	86.86	61.54	32.86	2.11	31.51	135	90	Peak
2412	106.86	-	-	103.36	32.89	2.12	31.51	100	86	Peak
2412	97.78	-	-	94.28	32.89	2.12	31.51	100	86	Average
4824	58.69	-15.31	74	51.96	35.17	3.09	31.53	100	96	Peak
4824	43.5	-10.5	54	36.77	35.17	3.09	31.53	100	96	Average
7236	50.74	-23.26	74	42.27	36.18	3.24	30.95	120	360	Peak

Test Mode :	802.11b	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	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	110.13	-	-	106.55	32.95	2.14	31.51	139	144	Peak
2437	100.83	-	-	97.25	32.95	2.14	31.51	139	144	Average
4874	61.98	-12.02	74	55.2	35.18	3.12	31.52	167	40	Peak
4874	48.49	-5.51	54	41.71	35.18	3.12	31.52	167	40	Average
7311	49.91	-24.09	74	41.44	36.2	3.21	30.94	100	265	Peak

Test Mode :	802.11b	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	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	107.25	-	-	103.67	32.95	2.14	31.51	101	81	Peak
2437	97.93	-	-	94.35	32.95	2.14	31.51	101	81	Average
4874	54.58	-19.42	74	47.8	35.18	3.12	31.52	100	268	Peak
4874	42.53	-11.47	54	35.75	35.18	3.12	31.52	100	268	Average
7311	50.78	-23.22	74	42.31	36.2	3.21	30.94	102	360	Peak

Test Mode :	802.11b	Temperature :	21~22℃
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	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
66.034	23.76	-16.24	40	51.63	5.22	0.5	33.59	-	-	Peak
131.758	29.77	-13.73	43.5	51.13	11.55	0.68	33.59	-	-	Peak
198.588	26.07	-17.43	43.5	49.86	8.95	0.82	33.56	-	-	Peak
428.019	32.57	-13.43	46	48.46	16.18	1.18	33.25	-	-	Peak
494.199	35.79	-10.21	46	50.49	17.12	1.32	33.14	100	191	Peak
948.761	32.47	-13.53	46	42.43	20.73	1.75	32.44	-	-	Peak
2462	110.27	-	-	106.65	32.98	2.15	31.51	137	143	Peak
2462	101.01	-	-	97.39	32.98	2.15	31.51	137	143	Average
4924	64.21	-9.79	74	57.38	35.19	3.15	31.51	137	26	Peak
4924	49.86	-4.14	54	43.03	35.19	3.15	31.51	137	26	Average
7386	50.28	-23.72	74	41.78	36.24	3.19	30.93	102	216	Peak

Test Mode :	802.11b	Temperature :	21~22℃
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	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
66.034	24.39	-15.61	40	52.26	5.22	0.5	33.59	-	-	Peak
129.015	29.2	-14.3	43.5	50.41	11.71	0.67	33.59	-	-	Peak
428.019	31.25	-14.75	46	47.14	16.18	1.18	33.25	-	-	Peak
494.199	38.36	-7.64	46	53.06	17.12	1.32	33.14	-	-	Peak
560.693	39.41	-6.59	46	52.55	18.52	1.34	33	200	16	Peak
948.761	31.86	-14.14	46	41.82	20.73	1.75	32.44	-	-	Peak
2462	107.34	-	-	103.72	32.98	2.15	31.51	100	59	Peak
2462	98.04	-	-	94.42	32.98	2.15	31.51	100	59	Average
4924	57.31	-16.69	74	50.48	35.19	3.15	31.51	109	269	Peak
4924	42.52	-11.48	54	35.69	35.19	3.15	31.51	109	269	Average
7386	50.46	-23.54	74	41.96	36.24	3.19	30.93	130	253	Peak

Test Mode :	802.11g	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	Polarization :	Horizontal
Remark :	1. 2399 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 2. 2412 MHz is fundamental signal which can be ignored. 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
2399	70.08	-13.16	83.24	66.62	32.86	2.11	31.51	179	333	Peak
2412	103.24	-	-	99.74	32.89	2.12	31.51	112	226	Peak
2412	92.73	-	-	89.23	32.89	2.12	31.51	112	226	Average
4824	55.5	-18.5	74	48.77	35.17	3.09	31.53	139	33	Peak
4824	41.53	-12.47	54	34.8	35.17	3.09	31.53	139	33	Average
7236	50.64	-23.36	74	42.17	36.18	3.24	30.95	123	20	Peak

Test Mode :	802.11g	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	Polarization :	Vertical
Remark :	1. 2399 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 2. 2412 MHz is fundamental signal which can be ignored. 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
2399	69.76	-11.57	81.33	66.3	32.86	2.11	31.51	100	296	Peak
2412	101.33	-	-	97.83	32.89	2.12	31.51	199	290	Peak
2412	90.4	-	-	86.9	32.89	2.12	31.51	199	290	Average
4824	54.62	-19.38	74	47.89	35.17	3.09	31.53	100	83	Peak
4824	39.78	-14.22	54	33.05	35.17	3.09	31.53	100	83	Average
7236	51.69	-22.31	74	43.22	36.18	3.24	30.95	101	265	Peak

Test Mode :	802.11g	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	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	104.32	-	-	100.74	32.95	2.14	31.51	108	48	Peak
2437	91.68	-	-	88.1	32.95	2.14	31.51	108	48	Average
4874	53.37	-20.63	74	46.59	35.18	3.12	31.52	101	360	Peak
4874	41.9	-12.1	54	35.12	35.18	3.12	31.52	101	360	Average
7311	51.28	-22.72	74	42.81	36.2	3.21	30.94	125	26	Peak

Test Mode :	802.11g	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	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	101.73	-	-	98.15	32.95	2.14	31.51	131	258	Peak
2437	88.96	-	-	85.38	32.95	2.14	31.51	131	258	Average
4874	49.73	-24.27	74	42.95	35.18	3.12	31.52	102	157	Peak
7311	49.54	-24.46	74	41.07	36.2	3.21	30.94	125	49	Peak

Test Mode :	802.11g	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	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	103.96	-	-	100.34	32.98	2.15	31.51	142	133	Peak
2462	92.41	-	-	88.79	32.98	2.15	31.51	142	133	Average
4924	55.65	-18.35	74	48.82	35.19	3.15	31.51	100	356	Peak
4924	42.03	-11.97	54	35.2	35.19	3.15	31.51	100	356	Average
7386	50.96	-23.04	74	42.46	36.24	3.19	30.93	100	254	Peak

Test Mode :	802.11g	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	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	102.15	-	-	98.53	32.98	2.15	31.51	100	288	Peak
2462	90.21	-	-	86.59	32.98	2.15	31.51	100	288	Average
4924	49.12	-24.88	74	42.29	35.19	3.15	31.51	100	254	Peak
7386	50.41	-23.59	74	41.91	36.24	3.19	30.93	101	168	Peak

Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	Polarization :	Horizontal
Remark :	1. 2399 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 2. 2412 MHz is fundamental signal which can be ignored. 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
2399	70.49	-10.8	81.29	67.03	32.86	2.11	31.51	174	153	Peak
2412	101.29	-	-	97.79	32.89	2.12	31.51	142	154	Peak
2412	90.02	-	-	86.52	32.89	2.12	31.51	142	154	Average
4824	51.33	-22.67	74	44.6	35.17	3.09	31.53	102	59	Peak
7236	50.9	-23.1	74	42.43	36.18	3.24	30.95	102	154	Peak

Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	Polarization :	Vertical
Remark :	1. 2399 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 2. 2412 MHz is fundamental signal which can be ignored. 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
2399	71.33	-8.45	79.78	67.87	32.86	2.11	31.51	157	76	Peak
2412	99.78	-	-	96.28	32.89	2.12	31.51	198	258	Peak
2412	87.6	-	-	84.1	32.89	2.12	31.51	198	258	Average
4824	49.35	-24.65	74	42.62	35.17	3.09	31.53	100	254	Peak
7236	50.98	-23.02	74	42.51	36.18	3.24	30.95	100	223	Peak

Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	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	103.55	-	-	99.97	32.95	2.14	31.51	138	140	Peak
2437	91.53	-	-	87.95	32.95	2.14	31.51	138	140	Average
4874	52.81	-21.19	74	46.03	35.18	3.12	31.52	120	254	Peak
4874	42.46	-11.54	54	35.68	35.18	3.12	31.52	120	254	Average
7311	50.3	-23.7	74	41.83	36.2	3.21	30.94	102	365	Peak

Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	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	99.89	-	-	96.31	32.95	2.14	31.51	103	71	Peak
2437	87.94	-	-	84.36	32.95	2.14	31.51	103	71	Average
4874	49.15	-24.85	74	42.37	35.18	3.12	31.52	102	365	Peak
7311	50.87	-23.13	74	42.4	36.2	3.21	30.94	100	250	Peak

Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	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	103.77	-	-	100.15	32.98	2.15	31.51	136	140	Peak
2462	91.51	-	-	87.89	32.98	2.15	31.51	136	140	Average
4924	54.58	-19.42	74	47.75	35.19	3.15	31.51	100	355	Peak
4924	40.48	-13.52	54	33.65	35.19	3.15	31.51	100	355	Average
7386	51.12	-22.88	74	42.62	36.24	3.19	30.93	100	254	Peak

Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	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	100.08	-	-	96.46	32.98	2.15	31.51	104	261	Peak
2462	87.38	-	-	83.76	32.98	2.15	31.51	104	261	Average
4924	49.44	-24.56	74	42.61	35.19	3.15	31.51	102	451	Peak
7386	52.41	-21.59	74	43.91	36.24	3.19	30.93	105	152	Peak

Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Channel :	03	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	Polarization :	Horizontal
Remark :	1. 2398.38 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 2. 2422 MHz is fundamental signal which can be ignored. 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
2398.38	64.74	-12.62	77.36	61.28	32.86	2.11	31.51	110	148	Peak
2422	97.36	-	-	93.82	32.92	2.13	31.51	141	225	Peak
2422	86.33	-	-	82.79	32.92	2.13	31.51	141	225	Average
4844	49.4	-24.6	74	42.65	35.18	3.1	31.53	157	48	Peak
7266	51.28	-22.72	74	42.82	36.19	3.22	30.95	162	321	Peak

Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Channel :	03	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	Polarization :	Vertical
Remark :	1. 2398.56 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 2. 2422 MHz is fundamental signal which can be ignored. 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
2398.56	62.93	-13.35	76.28	59.47	32.86	2.11	31.51	100	107	Peak
2422	96.28	-	-	92.74	32.92	2.13	31.51	100	260	Peak
2422	85.03	-	-	81.49	32.92	2.13	31.51	100	260	Average
4844	49.24	-24.76	74	42.49	35.18	3.1	31.53	100	214	Peak
7266	51.44	-22.56	74	42.98	36.19	3.22	30.95	103	210	Peak

Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	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	97.85	-	-	94.27	32.95	2.14	31.51	136	215	Peak
2437	86.97	-	-	83.39	32.95	2.14	31.51	136	215	Average
4874	50.25	-23.75	74	43.47	35.18	3.12	31.52	102	164	Peak
7311	51.52	-22.48	74	43.05	36.2	3.21	30.94	103	256	Peak

Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	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	96.69	-	-	93.11	32.95	2.14	31.51	102	280	Peak
2437	84.63	-	-	81.05	32.95	2.14	31.51	102	280	Average
4874	49.1	-24.9	74	42.32	35.18	3.12	31.52	102	54	Peak
7311	50.6	-23.4	74	42.13	36.2	3.21	30.94	100	26	Peak

Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Channel :	09	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	Polarization :	Horizontal
Remark :	1. 2399 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 2. 2452 MHz is fundamental signal which can be ignored. 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
2399	50.45	-28.84	79.29	46.99	32.86	2.11	31.51	-	-	Peak
2452	99.29	-	-	95.71	32.95	2.14	31.51	136	137	Peak
2452	88.33	-	-	84.75	32.95	2.14	31.51	136	137	Average
4904	50.36	-23.64	74	43.55	35.19	3.14	31.52	100	21	Peak
7356	50.97	-23.03	74	42.48	36.22	3.2	30.93	100	21	Peak

Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Channel :	09	Relative Humidity :	42~43%
Test Engineer :	Allen Cheng	Polarization :	Vertical
Remark :	1. 2399 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 2. 2452 MHz is fundamental signal which can be ignored. 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
2399	49.44	-27.16	76.6	45.98	32.86	2.11	31.51	-	-	Peak
2452	96.6	-	-	93.02	32.95	2.14	31.51	100	95	Peak
2452	86.21	-	-	82.63	32.95	2.14	31.51	100	95	Average
4904	49.07	-24.93	74	42.26	35.19	3.14	31.52	100	21	Peak
7356	51.52	-22.48	74	43.03	36.22	3.2	30.93	100	169	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.

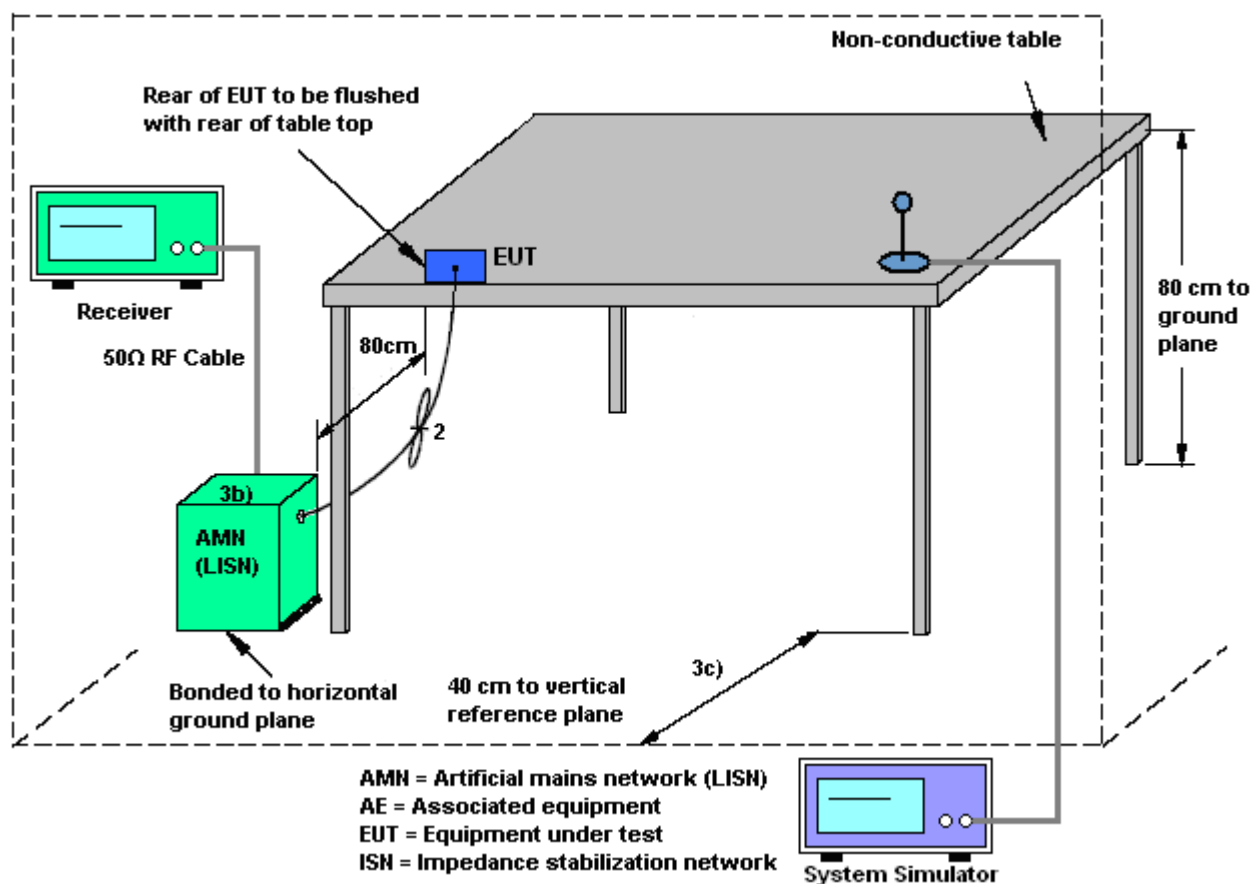
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

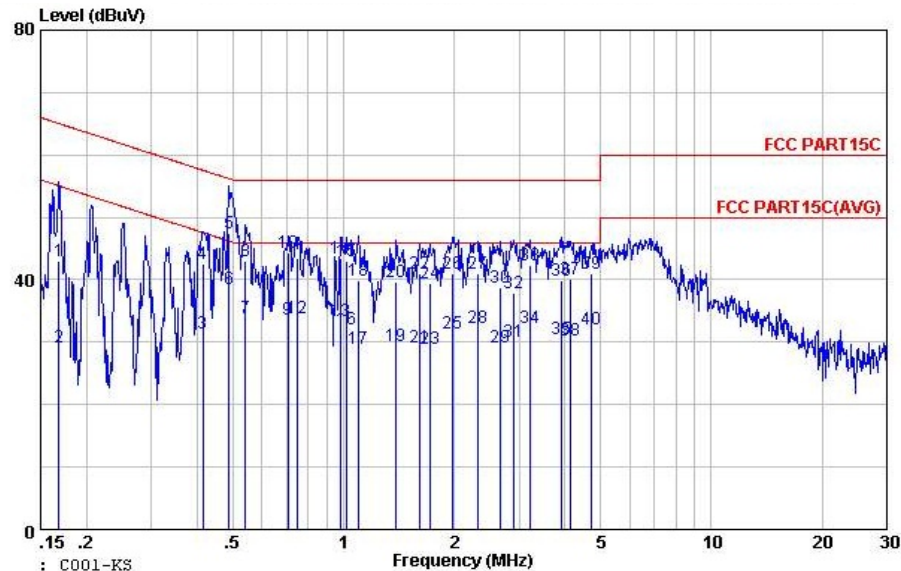
1. The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance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

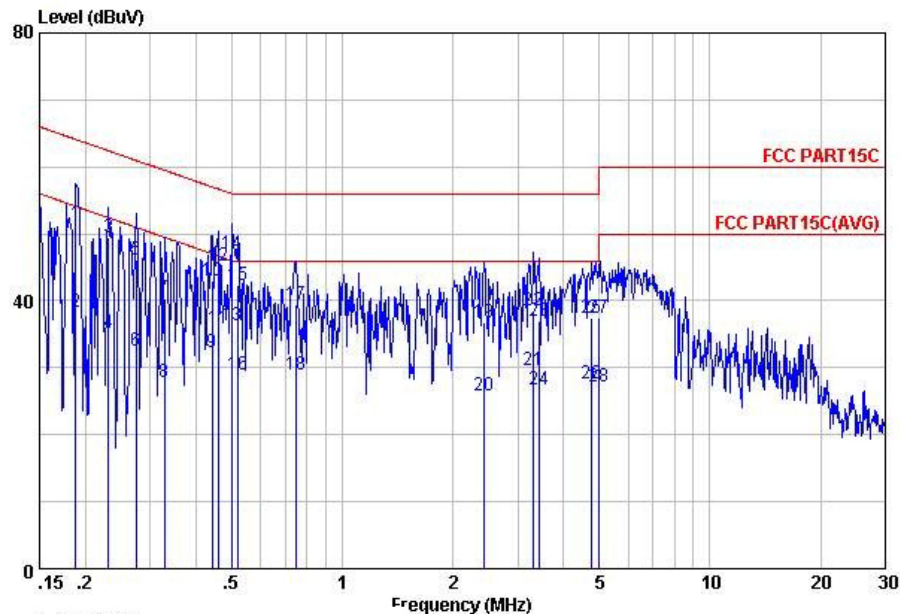
Test Mode :	Mode 1	Temperature :	19~20°C
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
Condition: FCC PART15C LISN-111230 LINE
Project : (FR) 201301

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.17	42.94	-22.09	65.03	32.80	-0.07	10.21	QP
2	0.17	29.24	-25.79	55.03	19.10	-0.07	10.21	Average
3	0.41	31.47	-16.08	47.55	21.30	-0.08	10.25	Average
4	0.41	42.57	-14.98	57.55	32.40	-0.08	10.25	QP
5	0.49	47.47	-8.72	56.19	37.30	-0.08	10.25	QP
6	0.49	38.57	-7.62	46.19	28.40	-0.08	10.25	Average
7	0.54	33.97	-12.03	46.00	23.79	-0.08	10.26	Average
8	0.54	43.07	-12.93	56.00	32.89	-0.08	10.26	QP
9	0.70	33.68	-12.32	46.00	23.50	-0.09	10.27	Average
10	0.70	44.28	-11.72	56.00	34.10	-0.09	10.27	QP
11	0.75	43.48	-12.52	56.00	33.30	-0.09	10.27	QP
12	0.75	33.78	-12.22	46.00	23.60	-0.09	10.27	Average
13	0.98	33.48	-12.52	46.00	23.30	-0.10	10.28	Average
14	0.98	43.48	-12.52	56.00	33.30	-0.10	10.28	QP
15	1.02	42.98	-13.02	56.00	32.80	-0.10	10.28	QP
16	1.02	31.98	-14.02	46.00	21.80	-0.10	10.28	Average
17	1.09	29.08	-16.92	46.00	18.90	-0.10	10.28	Average
18	1.09	39.98	-16.02	56.00	29.80	-0.10	10.28	QP
19	1.39	29.38	-16.62	46.00	19.19	-0.10	10.29	Average
20	1.39	39.68	-16.32	56.00	29.49	-0.10	10.29	QP
21	1.61	29.29	-16.71	46.00	19.10	-0.11	10.30	Average
22	1.61	41.09	-14.91	56.00	30.90	-0.11	10.30	QP
23	1.72	28.99	-17.01	46.00	18.80	-0.11	10.30	Average
24	1.72	39.39	-16.61	56.00	29.20	-0.11	10.30	QP
25	1.97	31.39	-14.61	46.00	21.20	-0.11	10.30	Average
26	1.97	41.09	-14.91	56.00	30.90	-0.11	10.30	QP
27	2.31	40.89	-15.11	56.00	30.70	-0.11	10.30	QP
28	2.31	32.29	-13.71	46.00	22.10	-0.11	10.30	Average
29	2.66	29.30	-16.70	46.00	19.10	-0.11	10.31	Average
30	2.66	38.70	-17.30	56.00	28.50	-0.11	10.31	QP
31	2.90	30.10	-15.90	46.00	19.90	-0.12	10.32	Average
32	2.90	37.80	-18.20	56.00	27.60	-0.12	10.32	QP
33	3.21	42.30	-13.70	56.00	32.10	-0.12	10.32	QP
34	3.21	32.20	-13.80	46.00	22.00	-0.12	10.32	Average
35	3.90	30.50	-15.50	46.00	20.30	-0.13	10.33	Average
36	3.90	39.80	-16.20	56.00	29.60	-0.13	10.33	QP
37	4.14	40.10	-15.90	56.00	29.90	-0.13	10.33	QP
38	4.14	30.20	-15.80	46.00	20.00	-0.13	10.33	Average
39	4.70	40.90	-15.10	56.00	30.70	-0.13	10.33	QP
40	4.70	32.00	-14.00	46.00	21.80	-0.13	10.33	Average

Test Mode :	Mode 1	Temperature :	19~20°C
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
Condition: FCC PART15C LISN-111230 NEUTRAL
Project : (FR) 201301

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.19	51.54	-12.57	64.11	41.39	-0.07	10.22	QP
2	0.19	38.24	-15.87	54.11	28.09	-0.07	10.22	Average
3	0.23	49.55	-12.84	62.39	39.40	-0.07	10.22	QP
4	0.23	35.25	-17.14	52.39	25.10	-0.07	10.22	Average
5	0.27	46.06	-14.92	60.98	35.90	-0.07	10.23	QP
6	0.27	32.56	-18.42	50.98	22.40	-0.07	10.23	Average
7	0.33	40.27	-19.22	59.49	30.11	-0.08	10.24	QP
8	0.33	27.87	-21.62	49.49	17.71	-0.08	10.24	Average
9	0.44	32.27	-14.75	47.02	22.10	-0.08	10.25	Average
10	0.44	43.07	-13.95	57.02	32.90	-0.08	10.25	QP
11	0.46	35.97	-10.70	46.67	25.80	-0.08	10.25	Average
12	0.46	45.17	-11.50	56.67	35.00	-0.08	10.25	QP
13	0.50	36.37	-9.64	46.01	26.20	-0.08	10.25	Average
14	0.50	46.97	-9.04	56.01	36.80	-0.08	10.25	QP
15	0.52	42.28	-13.72	56.00	32.10	-0.08	10.26	QP
16	0.52	28.88	-17.12	46.00	18.70	-0.08	10.26	Average
17	0.75	39.39	-16.61	56.00	29.20	-0.08	10.27	QP
18	0.75	28.89	-17.11	46.00	18.70	-0.08	10.27	Average
19	2.43	36.79	-19.21	56.00	26.59	-0.11	10.31	QP
20	2.43	25.79	-20.21	46.00	15.59	-0.11	10.31	Average
21	3.31	29.70	-16.30	46.00	19.50	-0.12	10.32	Average
22	3.31	38.50	-17.50	56.00	28.30	-0.12	10.32	QP
23	3.42	37.10	-18.90	56.00	26.89	-0.12	10.33	QP
24	3.42	26.70	-19.30	46.00	16.49	-0.12	10.33	Average
25	4.77	37.50	-18.50	56.00	27.30	-0.13	10.33	QP
26	4.77	27.60	-18.40	46.00	17.40	-0.13	10.33	Average
27	4.98	37.50	-18.50	56.00	27.30	-0.13	10.33	QP
28	4.98	27.10	-18.90	46.00	16.90	-0.13	10.33	Average

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	100319	9kHz~40GHz	Dec. 30, 2011	Dec. 14, 2012~ Dec. 19, 2012	Dec. 29, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 22, 2012	Dec. 14, 2012~ Dec. 19, 2012	Aug. 21, 2013	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 22, 2012	Dec. 14, 2012~ Dec. 19, 2012	Aug. 21, 2013	Conducted (TH01-KS)
DC Power Supply	GWINSTEK	GPS-3030D	E1884515	N/A	Aug. 22, 2012	Dec. 14, 2012~ Dec. 19, 2012	Aug. 21, 2013	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Dec. 30, 2011	Dec. 14, 2012~ Dec. 19, 2012	Dec. 29, 2012	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 08, 2012	Dec. 19, 2012	Nov. 07, 2013	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	100400	9kHz~30GHz	Jun. 01, 2012	Dec. 19, 2012	May 31, 2013	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 07, 2012	Dec. 19, 2012	Dec. 08, 2013	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/ 001	9 kHz~30 MHz	Jul. 03, 2012	Dec. 19, 2012	Jul. 02, 2014	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 07, 2012	Dec. 19, 2012	Jan. 06, 2013	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161069	1MHz~1GHz	Jun. 01, 2012	Dec. 19, 2012	May 31, 2013	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 30, 2011	Dec. 19, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz~18GHz	Nov. 07, 2012	Dec. 19, 2012	Nov. 06, 2013	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	9170249	15GHz~40GHz	Nov. 23, 2012	Dec. 19, 2012	Nov. 22, 2013	Radiation (03CH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 01, 2012	Dec. 20, 2012	May 31, 2013	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 30, 2011	Dec. 20, 2012	Dec. 29, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Dec. 30, 2011	Dec. 20, 2012	Dec. 29, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 15, 2012	Dec. 20, 2012	Nov. 14, 2013	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/066	2G Full-Band	Dec. 30, 2011	Dec. 20, 2012	Dec. 29, 2012	Conduction (CO01-KS)

5 Uncertainty of Evaluation

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

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.72
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Appendix A. Photographs of EUT

Please refer to Sporton report number EP2O1301 as below.