FCC RF Test Report

APPLICANT	:	**Lenovo (Shanghai) Electronics Technology Co., Ltd.**
EQUIPMENT	:	**Tablet PC IdeaTab A1000L-F**
BRAND NAME	:	**lenovo**
MODEL NAME	:	**60041**
MARKETING NAME	:	**IdeaTab A1000L-F**
FCC ID	:	**O57A1000LF**
STANDARD	:	**FCC Part 15 Subpart C §15.247**
CLASSIFICATION	:	**(DTS) Digital Transmission System**

The product was received on Jun. 18, 2013 and completely tested on Jul. 02, 2013. We, SPORTON INTERNATIONAL (SHENZHEN) 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 (SHENZHEN) INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

SPORTON INTERNATIONAL (SHENZHEN) INC.
No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR361803	Rev. 01	Initial issue of report	Jul. 12, 2013

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.1	-	99% Bandwidth	-	Pass	-
3.2	15.247(b)	Power Output Measurement	≤ 30dBm	Pass	-
3.3	15.247(e)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	Conducted Band Edges	≤ 20dBc	Pass	-
		Conducted Spurious Emission		Pass	-
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.58 dB at 2389.020 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 13.34 dB at 0.200 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Lenovo (Shanghai) Electronics Technology Co., Ltd.
No. 68 Building, 199 Fenju Road, Wai Gao Qiao FTZ, Shanghai, China

1.2 Manufacturer

Lenovo PC HK Limited
23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, Hong Kong

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Tablet PC IdeaTab A1000L-F
Brand Name	lenovo
Model Name	60041
Marketing Name	IdeaTab A1000L-F
FCC ID	O57A1000LF
EUT supports Radios application	WLAN 11bgn
HW Version	A3100_MB_PCB_V2.0
SW Version	A1000LF_A412_01_02_130608_ROW
EUT Stage	pre-production

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. There are two types of EUT sample 1 and sample 2, the differences between two samples are only different supplier for Memory/ G-sensor/ PCB/ LCM panel/ Camera/ Battery cell/ Speak-box/ Motor/ FPC of turn on key, side key and audio/ radiating film, where would not affect RF characteristics. RF test evaluation select sample 1 to perform the testing.

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx/Rx Channel Frequency Range	802.11b/g/n : 2412 MHz ~ 2462 MHz
Maximum Output Power to Antenna	802.11b : 15.60 dBm (0.03631 W) 802.11g : 19.93 dBm (0.09840 W) 802.11n HT20 : 19.96 dBm (0.09908 W) 802.11n HT40 : 19.46 dBm (0.08831 W)
99% Occupied Bandwidth	802.11b : 12.05MHz 802.11g : 17.90MHz 802.11n HT20 : 18.75MHz 802.11n HT40 : 36.70MHz
Antenna Type	PIFA Antenna type with gain 0.58 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Testing Site

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.			
Test Site Location	No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C. TEL: +86-755- 3320-2398			
Test Site No.	**Sporton Site No.**			**FCC/IC Registration No.**
	TH01-SZ	CO01-SZ	03CH01-SZ	831040/4086F-1

Note: The test site complies with ANSI C63.4 2003 requirement.

1.7 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 v03r01
- ANSI C63.10-2009

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.

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 (X 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.

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	15.60	15.58	15.33	15.28
CH 06	2437 MHz	15.21	14.94	14.98	14.88
CH 11	2462 MHz	15.24	15.08	15.01	14.89

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	19.93	19.91	19.87	19.84	19.92	19.91	19.93	19.92
CH 06	2437 MHz	19.47	19.42	19.35	19.39	19.37	19.53	19.47	19.54
CH 11	2462 MHz	18.92	18.9	18.88	18.89	18.87	18.92	18.9	18.91

Channel	Frequency	2.4GHz 802.11n HT20 RF Power (dBm)							
		OFDM Data Rate							
		6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mbps
CH 01	2412 MHz	19.96	19.84	19.89	19.88	19.95	19.92	19.91	19.86
CH 06	2437 MHz	19.53	19.47	19.41	19.45	19.48	19.52	19.43	19.51
CH 11	2462 MHz	18.95	18.86	18.84	18.89	18.88	18.92	18.94	18.98

Channel	Frequency	2.4GHz 802.11n HT40 RF Power (dBm)							
		OFDM Data Rate							
		13.5 Mbps	27 Mbps	40.5 Mbps	54 Mbps	81 Mbps	108 Mbps	121.5 Mbps	135 Mbps
CH 01	2412 MHz	19.46	19.31	19.28	19.24	19.25	19.23	19.17	19.23
CH 06	2437 MHz	19.26	19.13	19.17	19.19	19.22	19.18	19.21	19.17
CH 11	2462 MHz	19.02	19.03	18.98	18.99	18.97	19.01	19.02	19.03

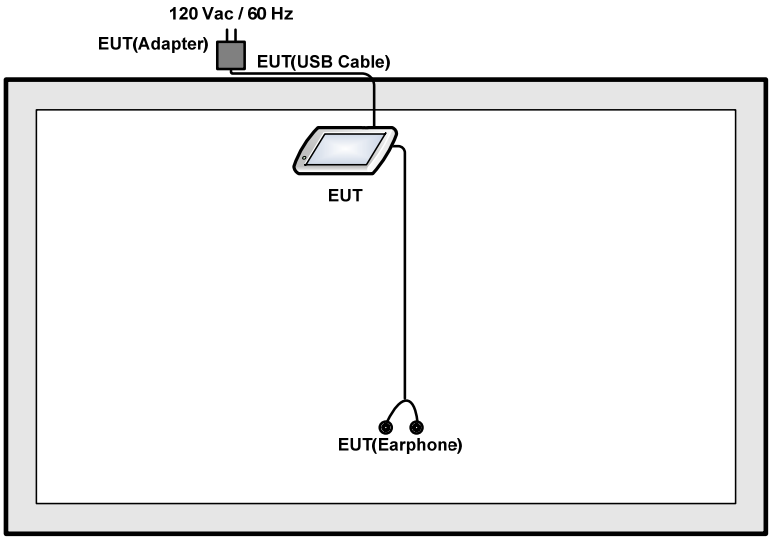
2.3 Test Mode

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

Test Cases				
	Test Items	**Mode**	**Data Rate**	**Test Channel**
Conducted TCs	**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 + USB Cable (Charging from Adapter) + Battery 1 + Earphone + Sample1 **Mode 2 : WLAN Link + USB Cable (Charging from Adapter) + Battery 2 + Earphone + Sample2**			
Remark: The worst case of conducted emission is mode 2; only the test data of it was reported.				

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



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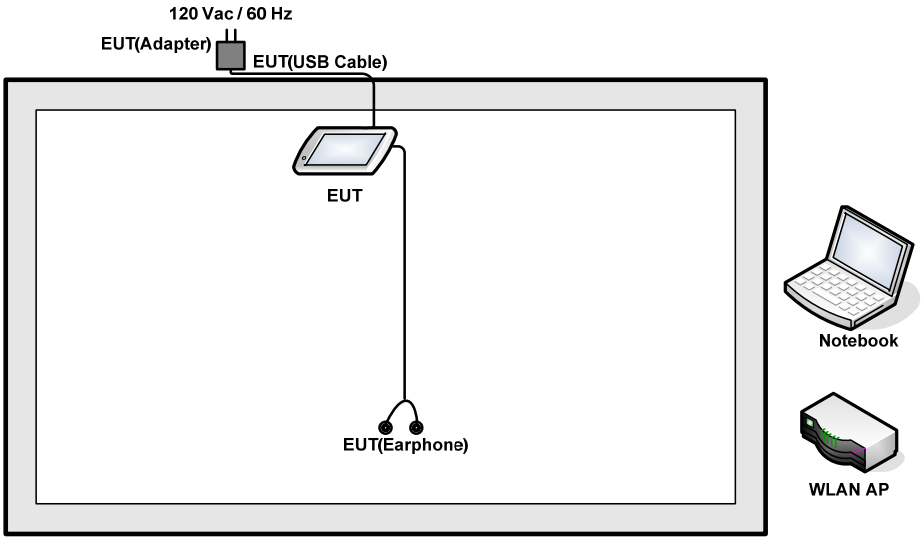


2.5 Support Unit used in test configuration and system

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.	Notebook	DELL	P08S	FCC DoC	N/A	AC I/P: Unshielded, 1.8m DC O/P: Shielded, 1.8 m

2.6 EUT Operation Test Setup

For WLAN RF test items, the engineering test program was provided and enabled to make EUT continuous transmit/receive.
For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

2.7 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor 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 attenuator factor.
Offset = RF cable loss + attenuator factor.
Following shows an offset computation example with cable loss 7.5dB and 10dB attenuator.

Example :
Offset(dB) = RF cable loss(dB) + attenuator factor(dB).
= 7.5 + 10 = 17.5 (dB)

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.

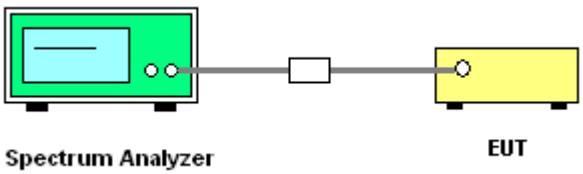
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r01.
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. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 1MHz and set the Video bandwidth (VBW) = 3MHz.
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℃
Test Engineer :	Blithe 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	9.04	0.5	Pass
11	2462	9.08	0.5	Pass

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

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.36	0.5	Pass
06	2437	16.36	0.5	Pass
11	2462	16.52	0.5	Pass

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Engineer :	Blithe 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	17.64	0.5	Pass
06	2437	17.56	0.5	Pass
11	2462	17.60	0.5	Pass

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

Channel	Frequency (MHz)	2.4GHz 802.11n HT40 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
03	2422	36.28	0.5	Pass
06	2437	36.08	0.5	Pass
09	2452	36.32	0.5	Pass

3.1.6 Test Result of 99% Occupied Bandwidth

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

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	11.95	Pass
06	2437	11.95	Pass
11	2462	12.05	Pass

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

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	17.90	Pass
06	2437	17.90	Pass
11	2462	17.90	Pass

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

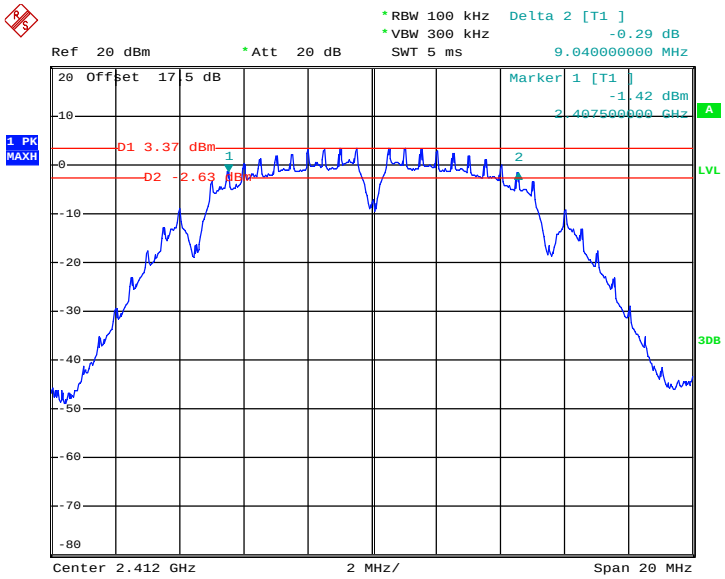
Channel	Frequency (MHz)	2.4GHz 802.11n HT20 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	18.60	Pass
06	2437	18.55	Pass
11	2462	18.75	Pass

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

Channel	Frequency (MHz)	2.4GHz 802.11n HT40 99% Occupied Bandwidth (MHz)	Pass/Fail
03	2422	36.60	Pass
06	2437	36.70	Pass
09	2452	36.70	Pass

3.1.7 Test Result of 6dB Bandwidth Plots

6 dB Bandwidth Plot on 802.11b Channel 01



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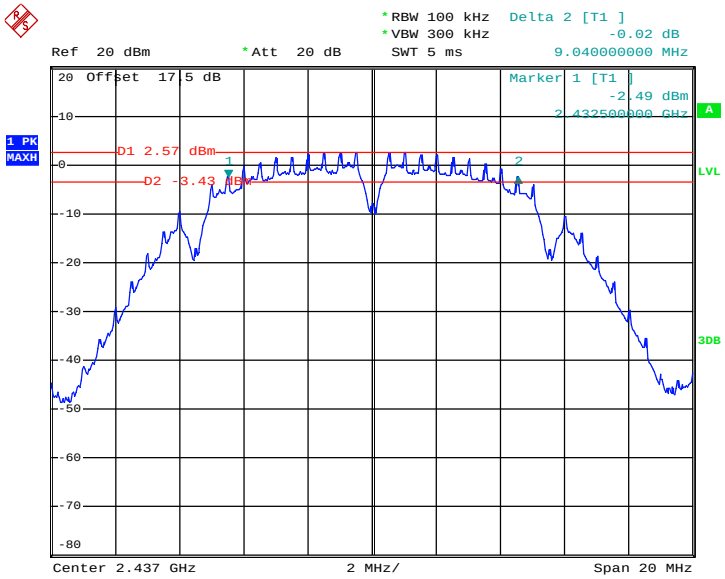
6 dB Bandwidth Plot on 802.11b Channel 06



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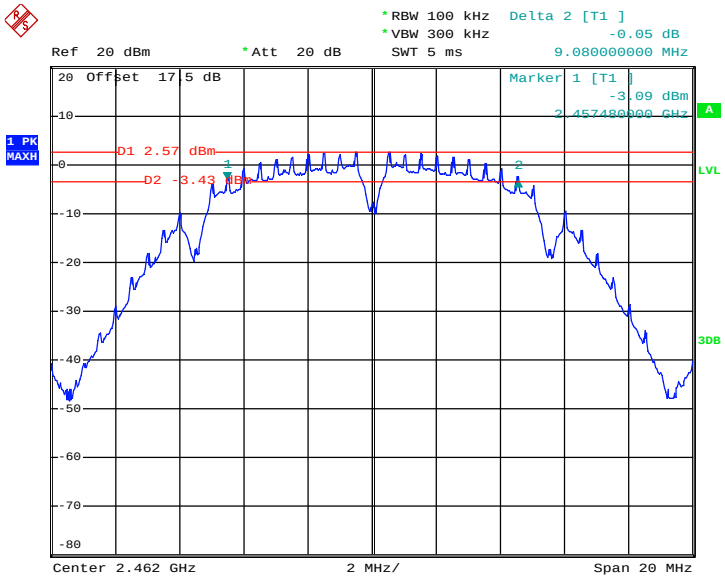
6 dB Bandwidth Plot on 802.11b Channel 11



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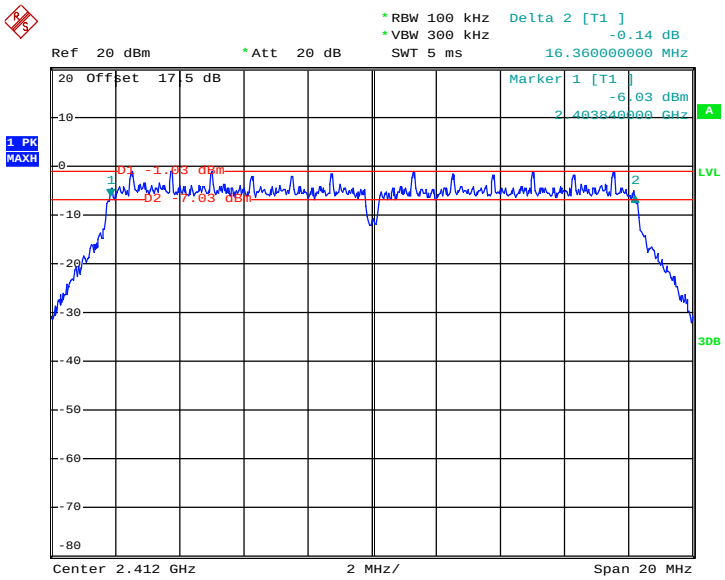
6 dB Bandwidth Plot on 802.11g Channel 01



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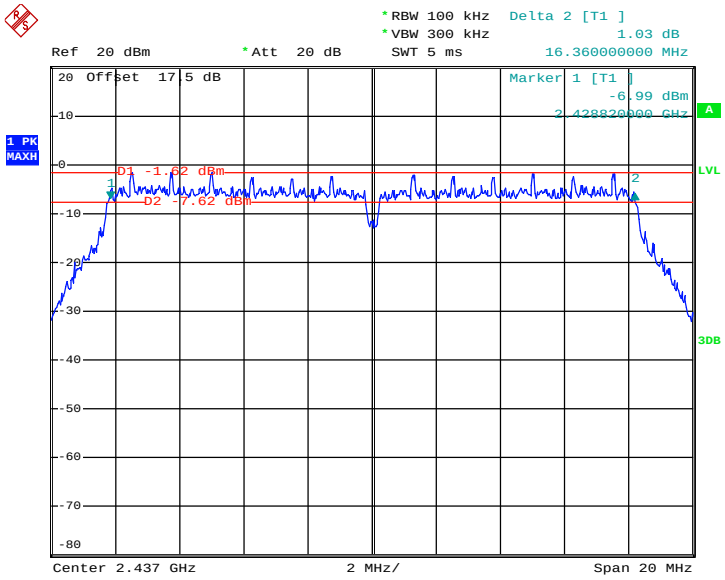
6 dB Bandwidth Plot on 802.11g Channel 06



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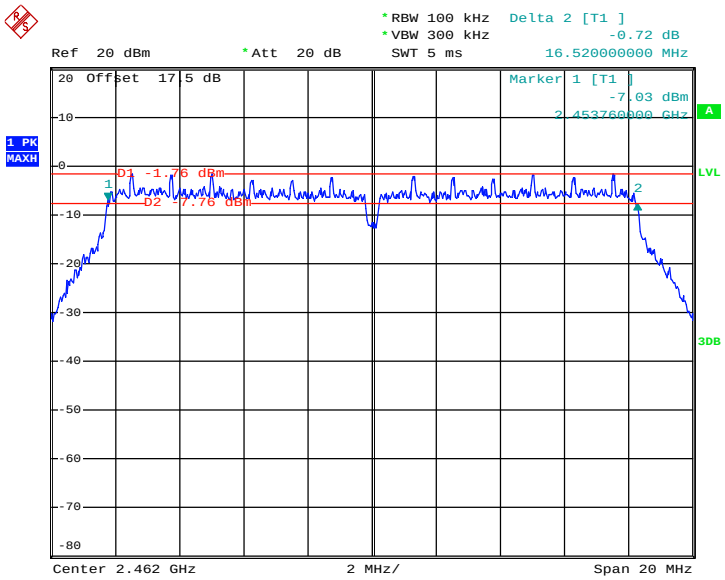
6 dB Bandwidth Plot on 802.11g Channel 11



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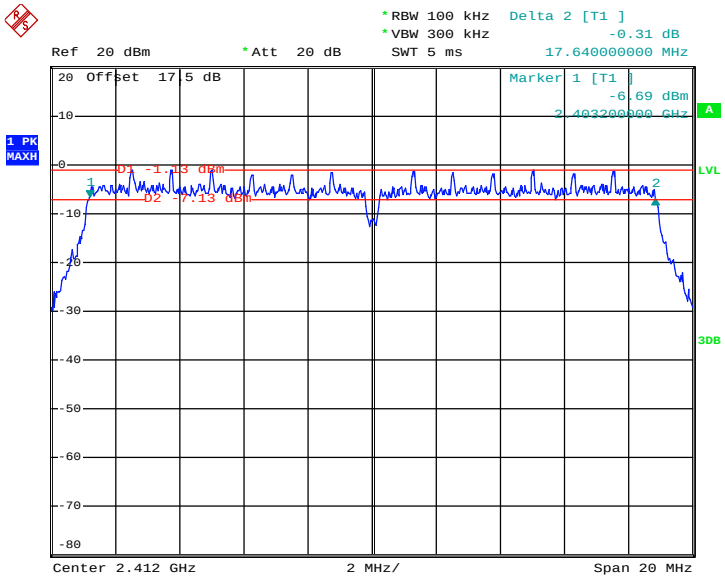
6 dB Bandwidth Plot on 2.4GHz 802.11n HT20 Channel 01



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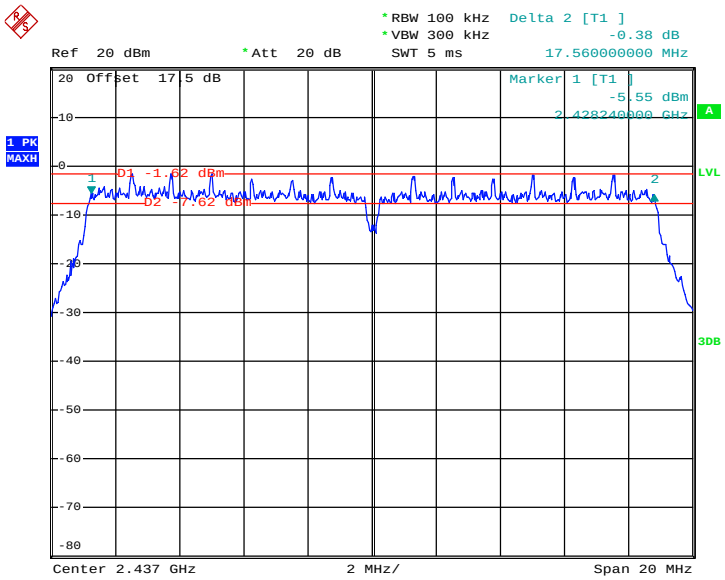
6 dB Bandwidth Plot on 2.4GHz 802.11n HT20 Channel 06



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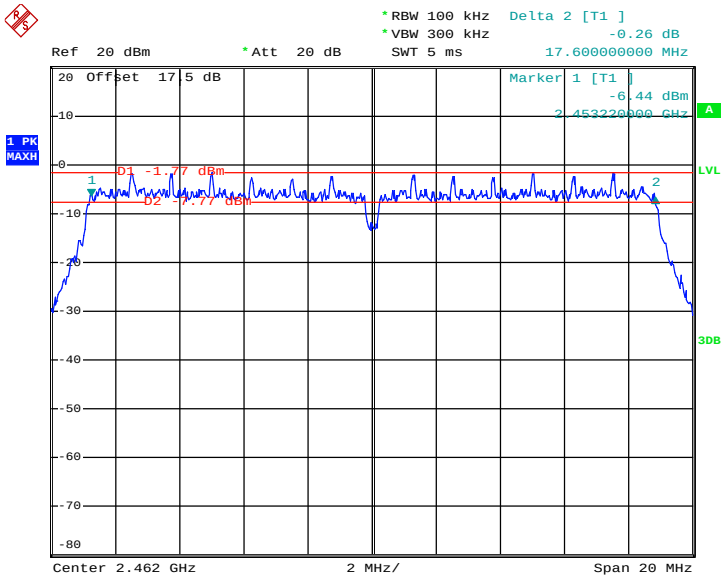
6 dB Bandwidth Plot on 2.4GHz 802.11n HT20 Channel 11



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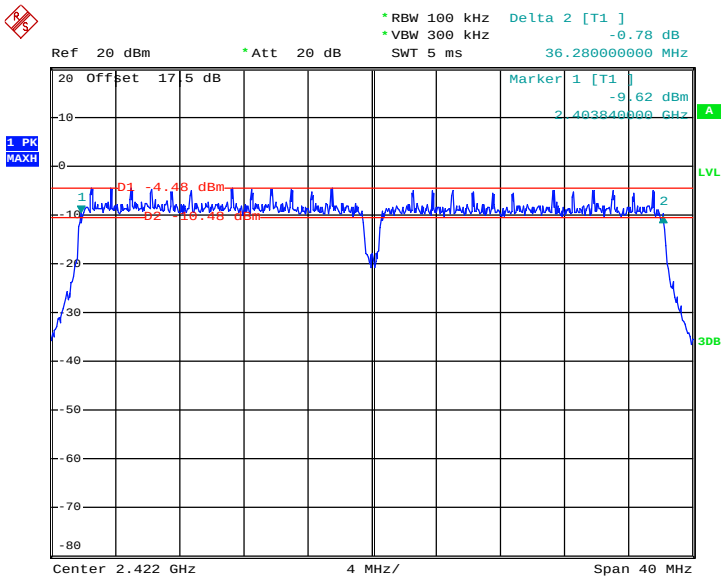
6 dB Bandwidth Plot on 2.4GHz 802.11n HT40 Channel 03



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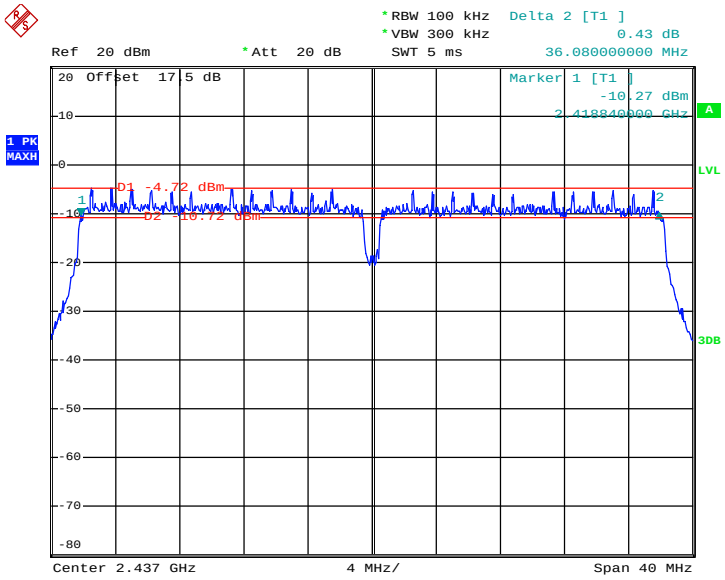
6 dB Bandwidth Plot on 2.4GHz 802.11n HT40 Channel 06



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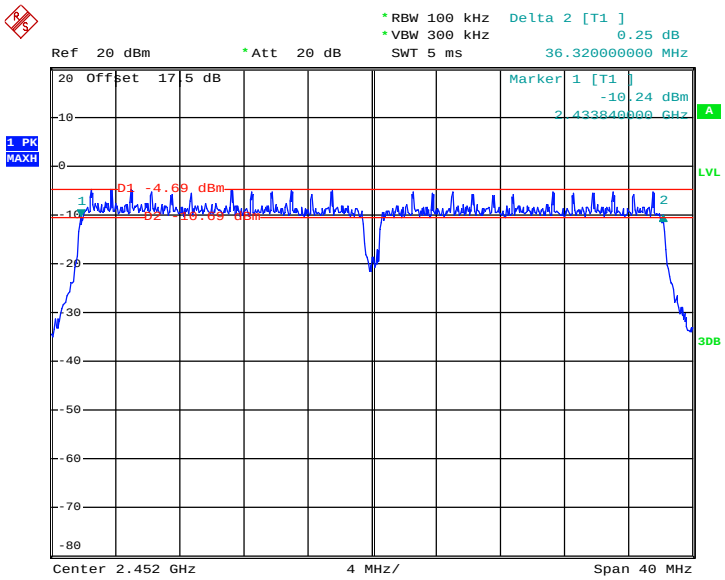
6 dB Bandwidth Plot on 2.4GHz 802.11n HT40 Channel 09



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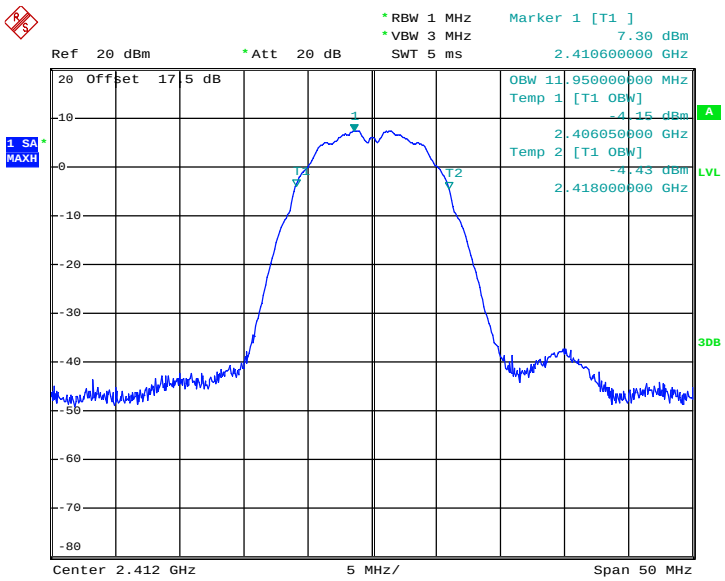
3.1.8 Test Result of 99% Bandwidth Plots

99% Occupied Bandwidth Plot on 802.11b Channel 01



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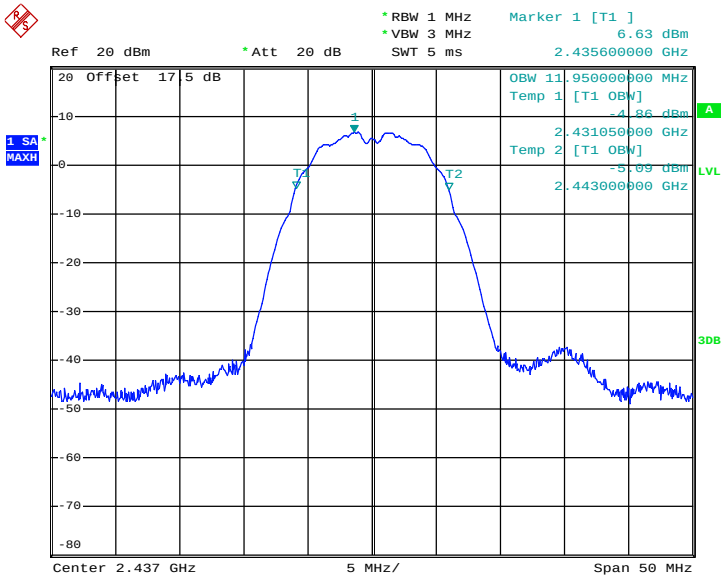
99% Occupied Bandwidth Plot on 802.11b Channel 06



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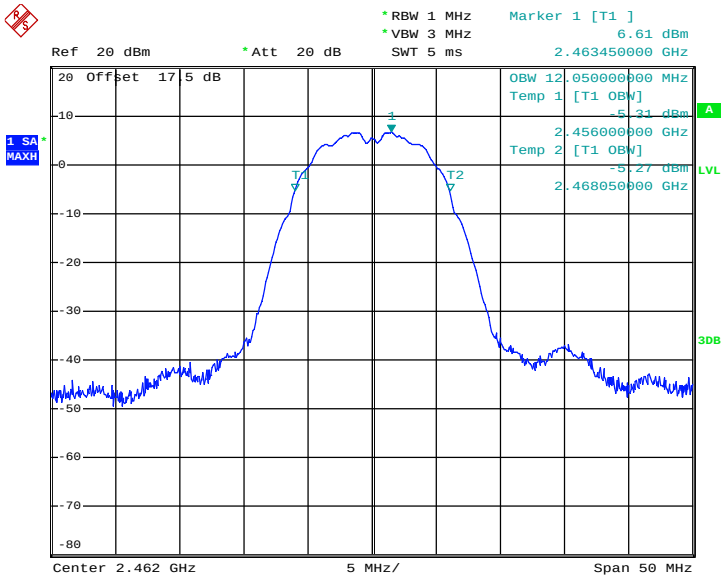
99% Occupied Bandwidth Plot on 802.11b Channel 11



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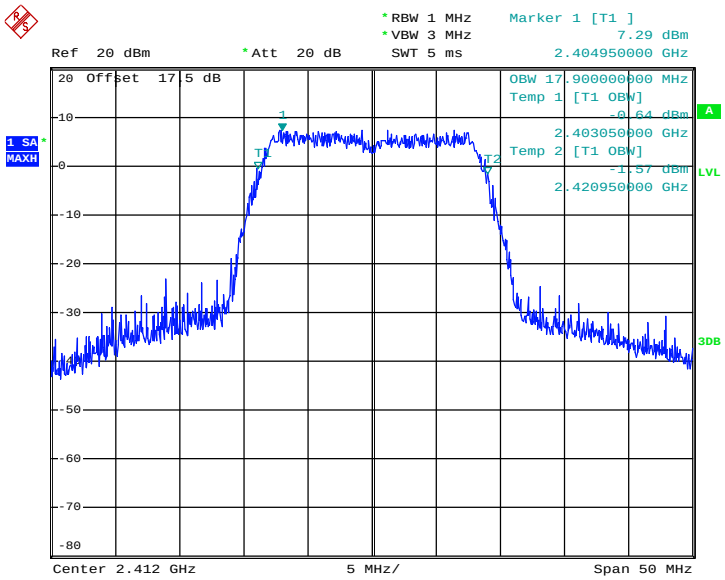
99% Occupied Bandwidth Plot on 802.11g Channel 01



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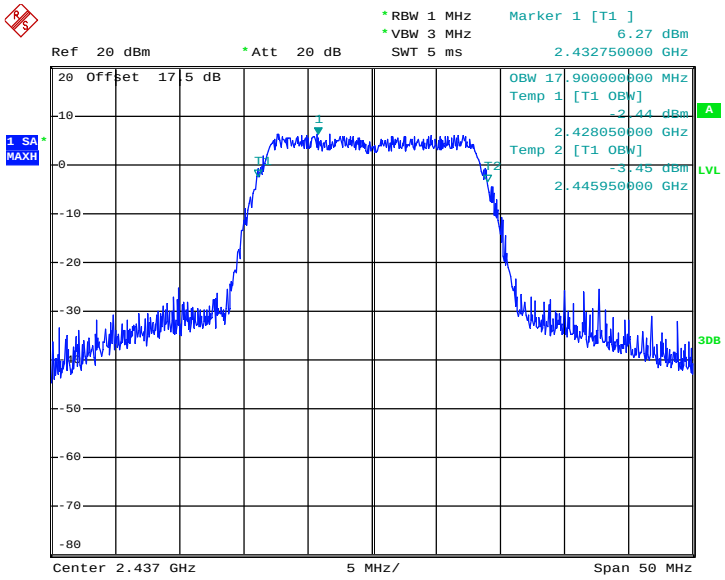
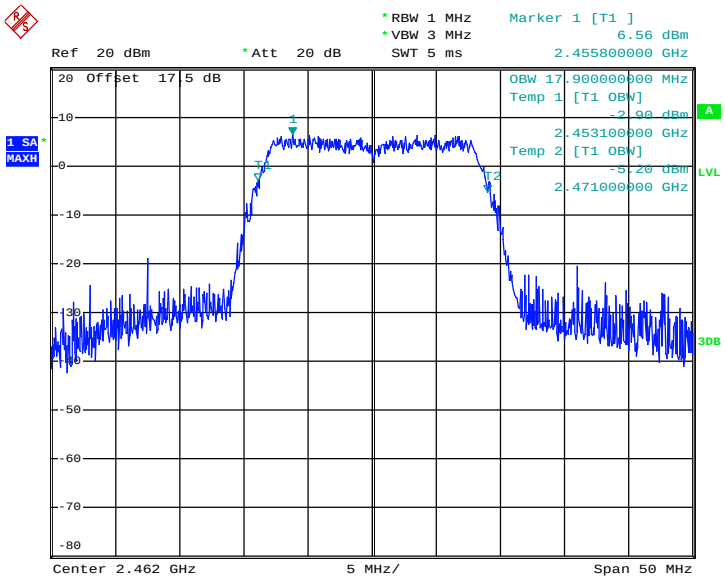
99% Occupied Bandwidth Plot on 802.11g Channel 06



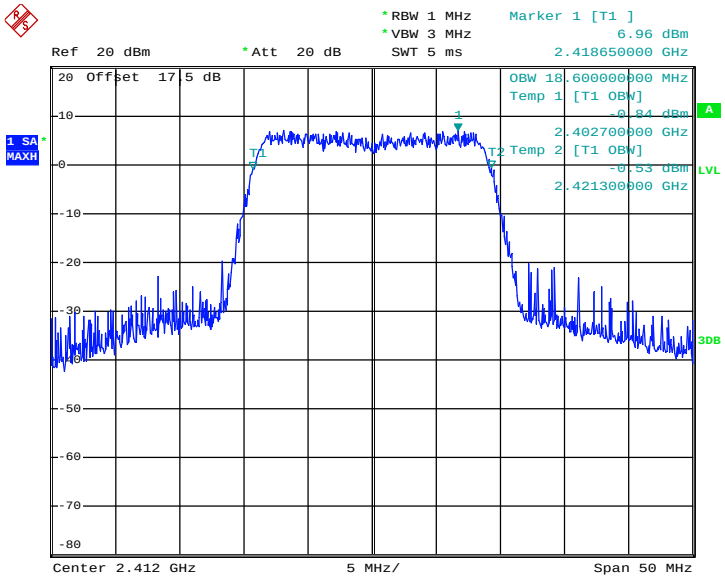
Date: 28.JUN.2013 11:19:17

99% Occupied Bandwidth Plot on 802.11g Channel 11



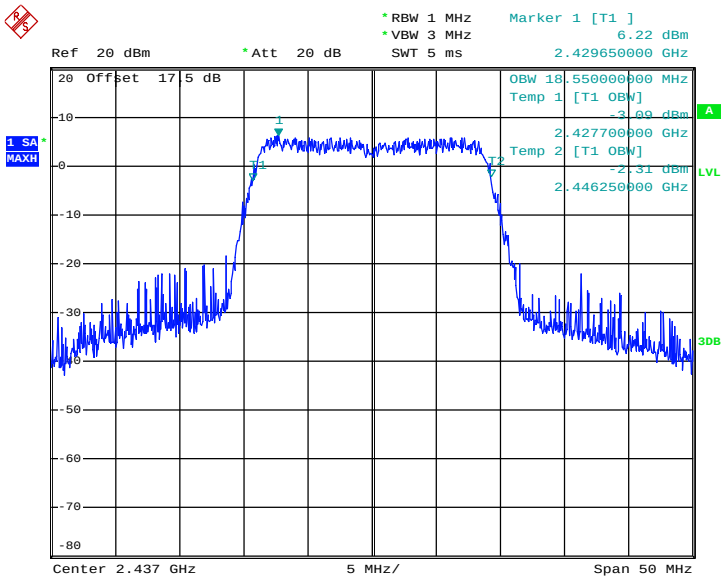
Date: 28.JUN.2013 11:27:25

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



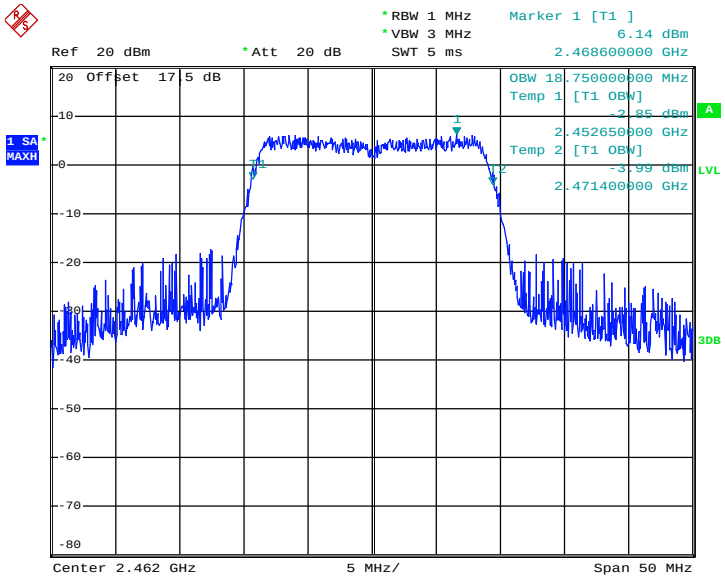
Date: 28.JUN.2013 11:43:42

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



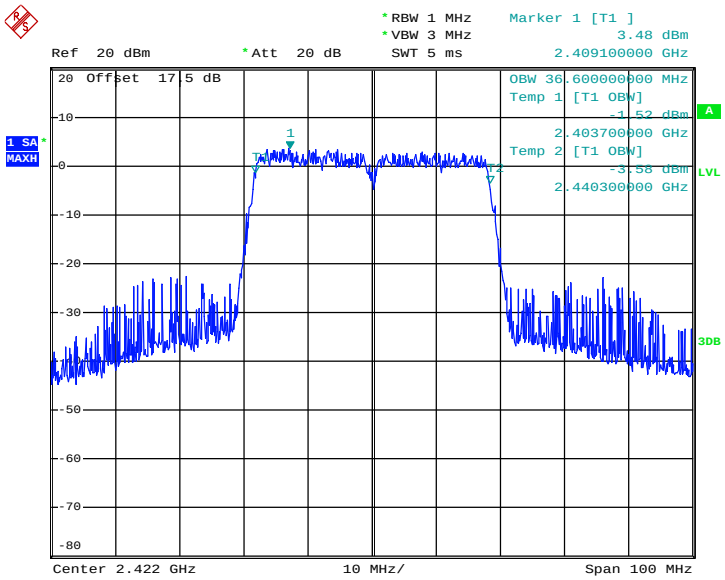
Date: 28.JUN.2013 11:49:17

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



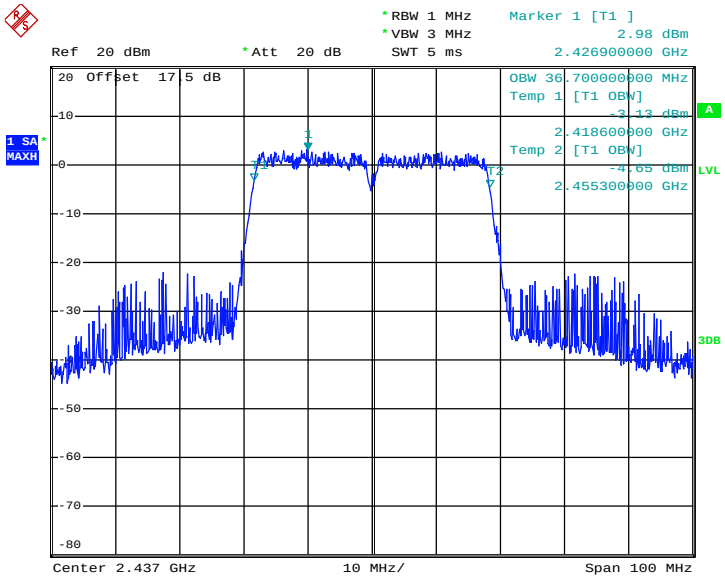
Date: 28.JUN.2013 11:54:24

99% Occupied Bandwidth Plot on 2.4GHz 802.11n HT40 Channel 03



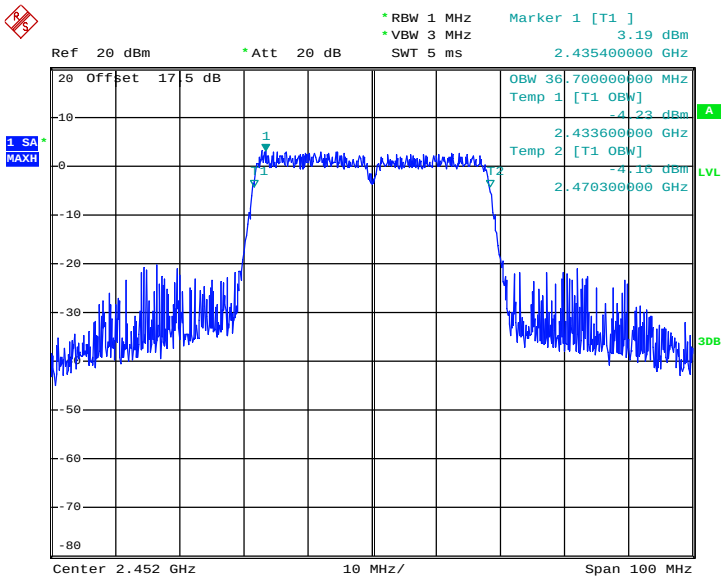
Date: 28.JUN.2013 12:01:52

99% Occupied Bandwidth Plot on 2.4GHz 802.11n HT40 Channel 06



Date: 28.JUN.2013 12:07:04

99% Occupied Bandwidth Plot on 2.4GHz 802.11n HT40 Channel 09



Date: 28.JUN.2013 12:14:24

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.

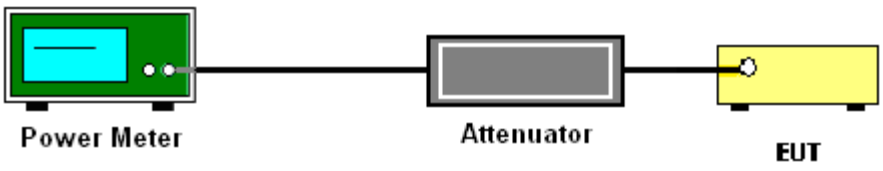
3.2.2 Measuring Instruments

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 v03r01.
2. The RF output of EUT was connected to the power meter 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℃
Test Engineer :	Blithe Li	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	15.60	30	Pass
06	2437	15.21	30	Pass
11	2462	15.24	30	Pass

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

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.93	30	Pass
06	2437	19.47	30	Pass
11	2462	18.92	30	Pass

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

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.96	30	Pass
06	2437	19.53	30	Pass
11	2462	18.95	30	Pass

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

Channel	Frequency (MHz)	2.4GHz 802.11n HT40 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	19.46	30	Pass
06	2437	19.26	30	Pass
09	2452	19.02	30	Pass

3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Blithe Li	Relative Humidity :	50~53%
Duty Cycle:	99.06%	Duty Factor:	0.04dB

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)
01	2412	12.29
06	2437	11.95
11	2462	11.99

Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Blithe Li	Relative Humidity :	50~53%
Duty Cycle:	92.70%	Duty Factor:	0.33dB

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)
01	2412	10.69
06	2437	10.33
11	2462	10.44

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Engineer :	Blithe Li	Relative Humidity :	50~53%
Duty Cycle:	92.35%	Duty Factor:	0.35dB

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 Average Output Power (dBm)
01	2412	10.73
06	2437	10.34
11	2462	10.47

Test Mode :	802.11n HT40	Temperature :	24~26℃
Test Engineer :	Blithe Li	Relative Humidity :	50~53%
Duty Cycle:	86.21%	Duty Factor:	0.64dB

Channel	Frequency (MHz)	2.4GHz 802.11n HT40 Average Output Power (dBm)
03	2422	10.11
06	2437	9.88
09	2452	10.02

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.

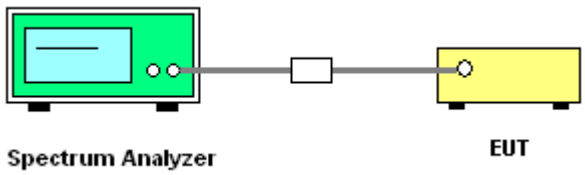
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01
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.
7. The Measured power density (dBm)/ 100KHz is a reference level and used as 20dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Blithe 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	3.26	-9.91	8	Pass
06	2437	2.39	-10.15	8	Pass
11	2462	2.41	-12.11	8	Pass

Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Blithe 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	-0.96	-14.33	8	Pass
06	2437	-1.62	-15.13	8	Pass
11	2462	-1.89	-15.21	8	Pass

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Engineer :	Blithe 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	-0.85	-14.15	8	Pass
06	2437	-1.74	-16.23	8	Pass
11	2462	-1.80	-14.96	8	Pass

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

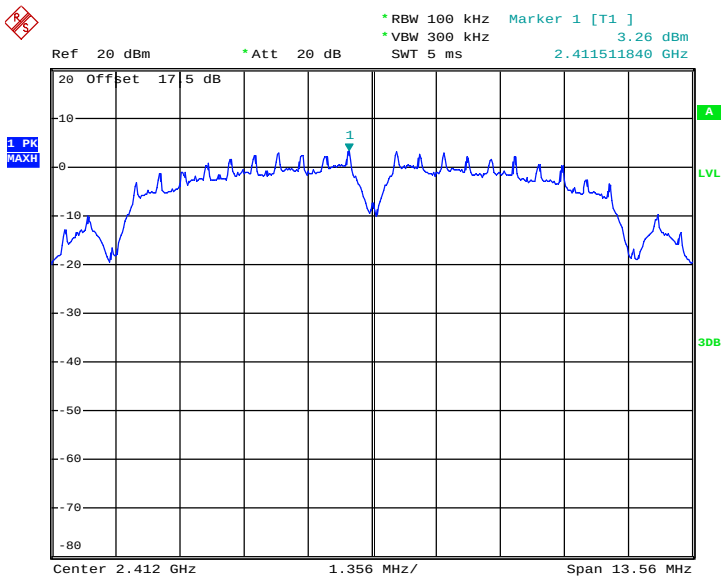
Channel	Frequency (MHz)	2.4GHz 802.11n HT40 Power Density		Max. Limits (dBm/3kHz)	Pass/Fail
		PSD/100kHz (dBm)	PSD/3kHz (dBm)		
03	2422	-4.48	-18.83	8	Pass
06	2437	-5.12	-19.60	8	Pass
09	2452	-4.71	-19.37	8	Pass

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.*

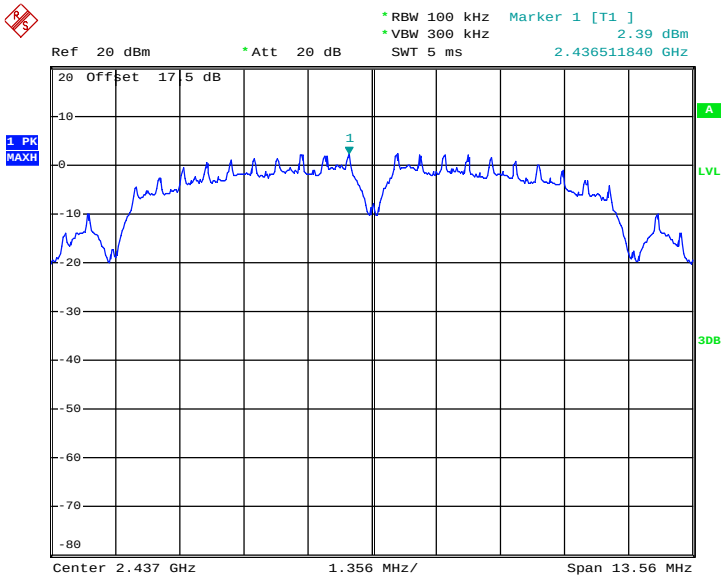
3.3.6 Test Result of Power Spectral Density Plots (100kHz)

PSD 100kHz Plot on 802.11b Channel 01



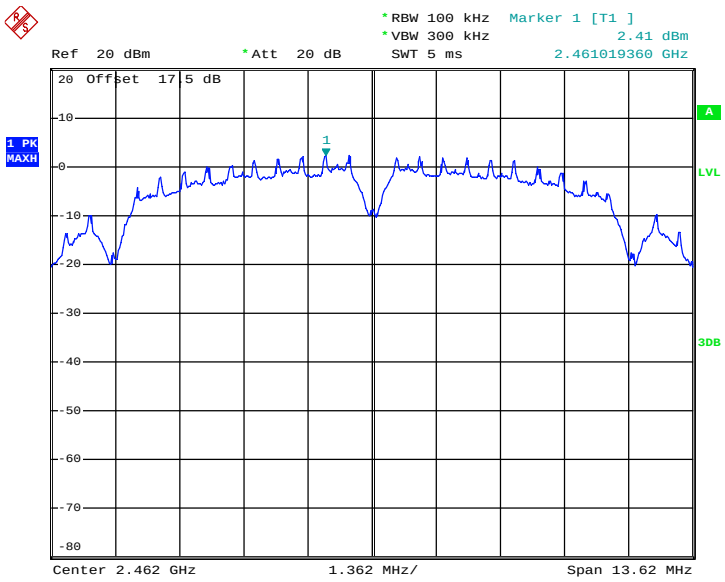
Date: 28.JUN.2013 11:00:49

PSD 100kHz Plot on 802.11b Channel 06



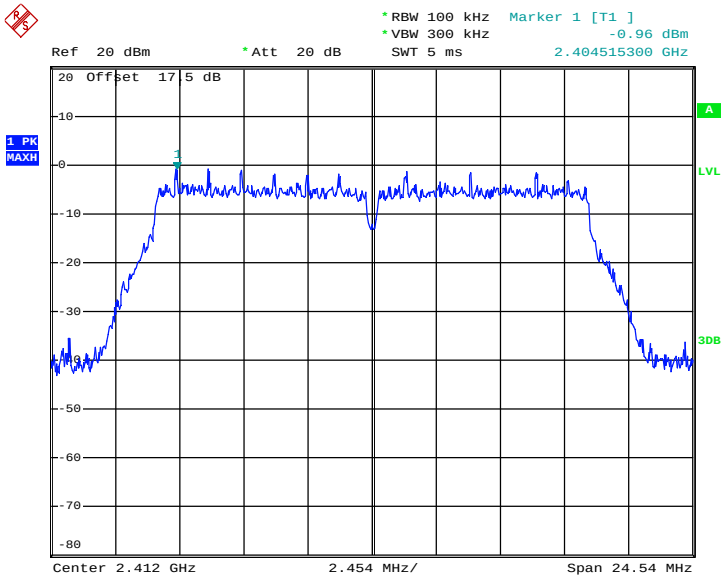
Date: 28.JUN.2013 11:06:49

PSD 100kHz Plot on 802.11b Channel 11



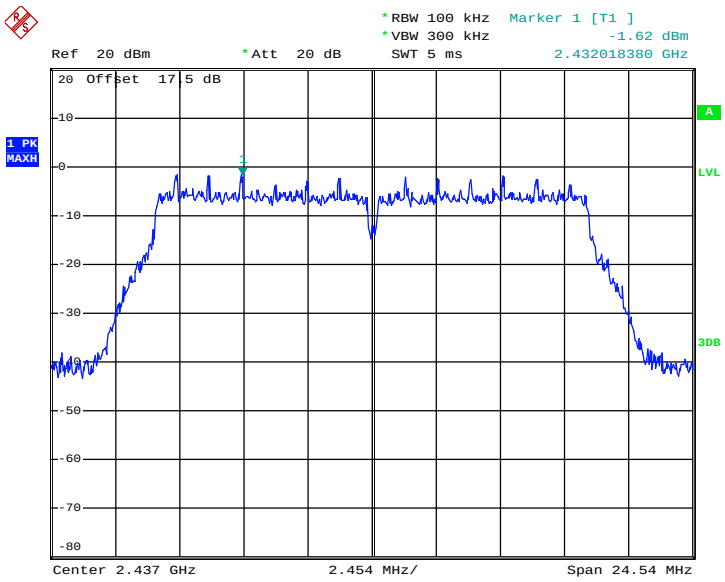
Date: 28.JUN.2013 11:11:21

PSD 100kHz Plot on 802.11g Channel 01



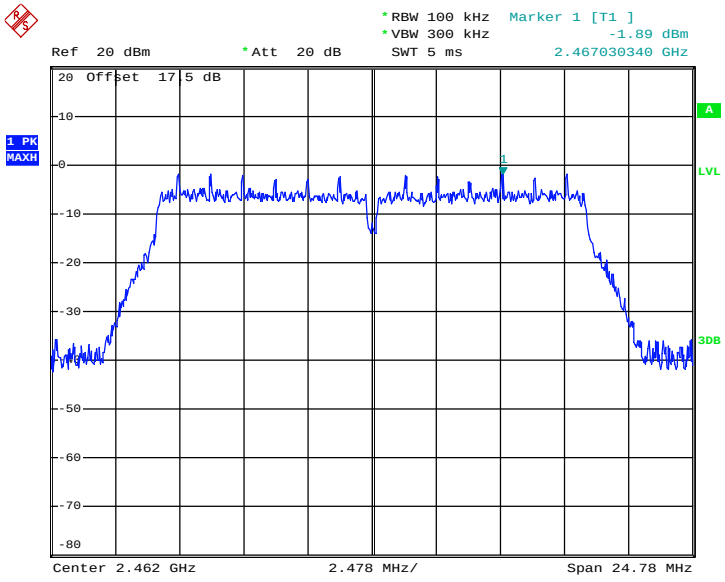
Date: 28.JUN.2013 11:16:44

PSD 100kHz Plot on 802.11g Channel 06



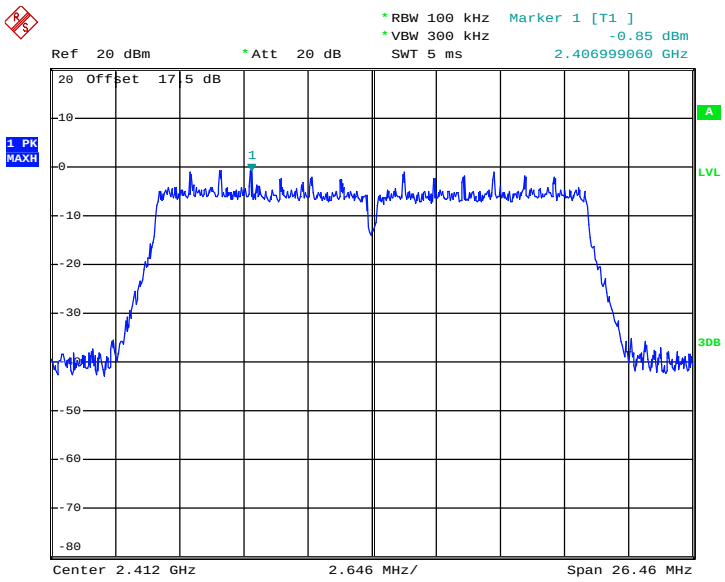
Date: 28.JUN.2013 11:21:28

PSD 100kHz Plot on 802.11g Channel 11



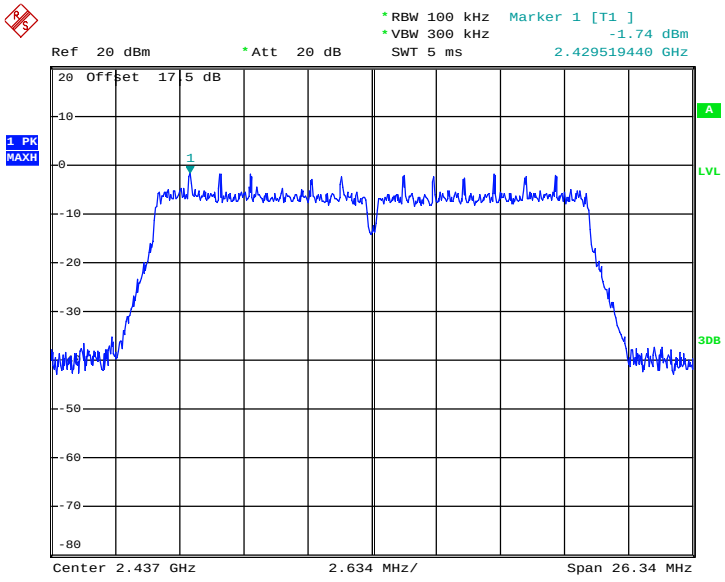
Date: 28.JUN.2013 11:25:41

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



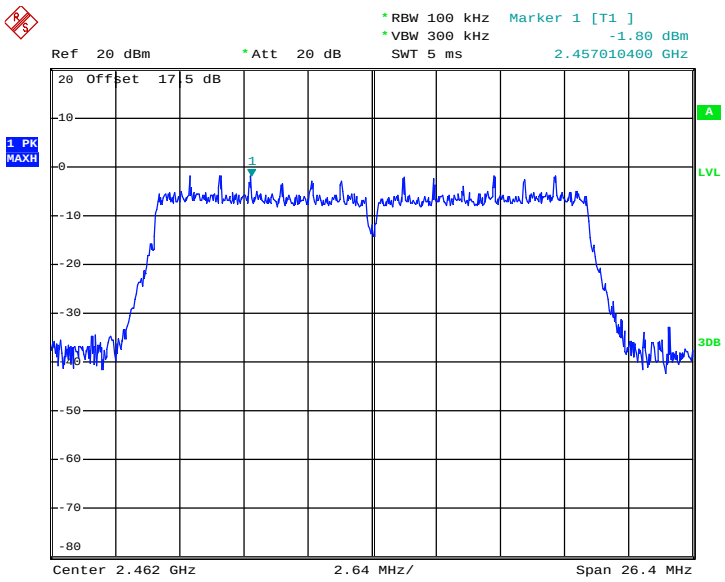
Date: 28.JUN.2013 11:33:45

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



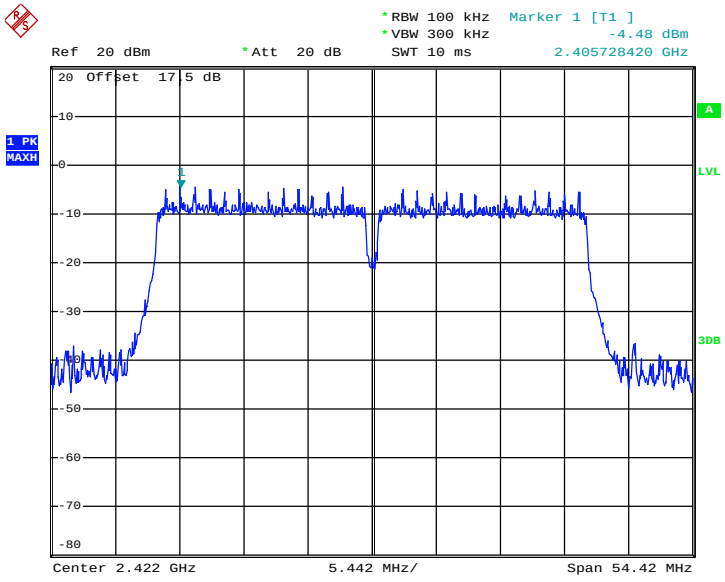
Date: 28.JUN.2013 11:46:26

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



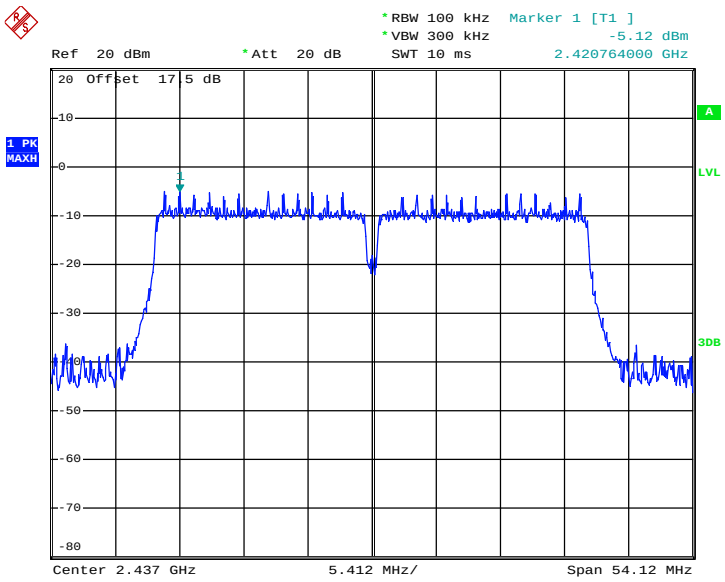
Date: 28.JUN.2013 11:52:30

PSD 100kHz Plot on 2.4GHz 802.11n HT40 Channel 03



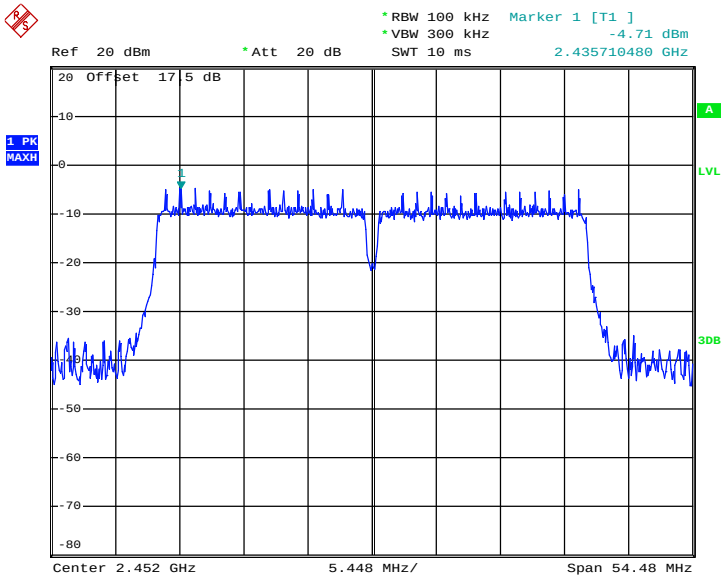
Date: 28.JUN.2013 12:00:30

PSD 100kHz Plot on 2.4GHz 802.11n HT40 Channel 06



Date: 28.JUN.2013 12:04:16

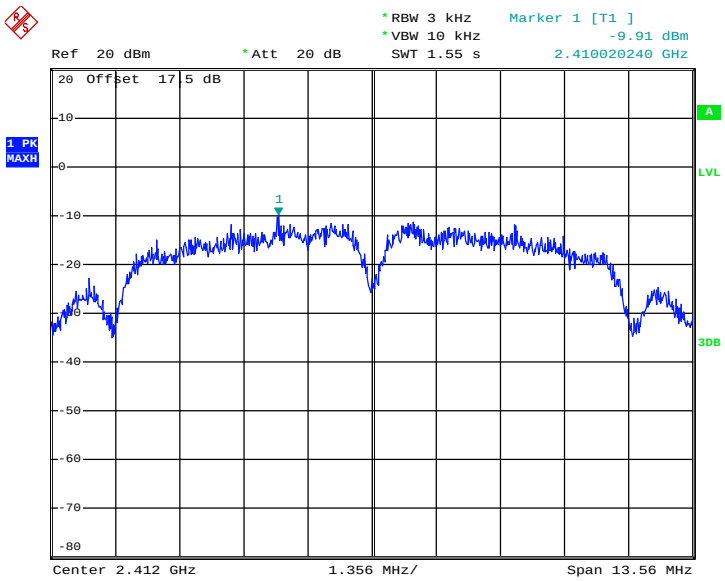
PSD 100kHz Plot on 2.4GHz 802.11n HT40 Channel 09



Date: 28.JUN.2013 12:11:53

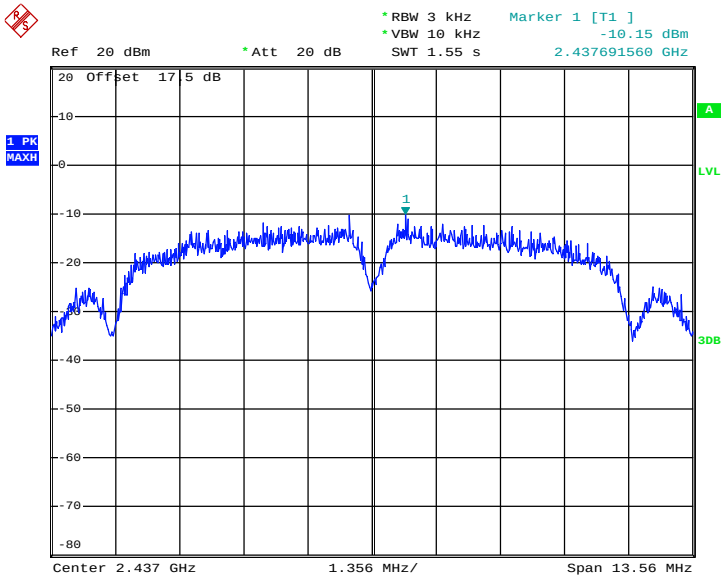
3.3.7 Test Result of Power Spectral Density Plots (3kHz)

PSD 3kHz Plot on 802.11b Channel 01



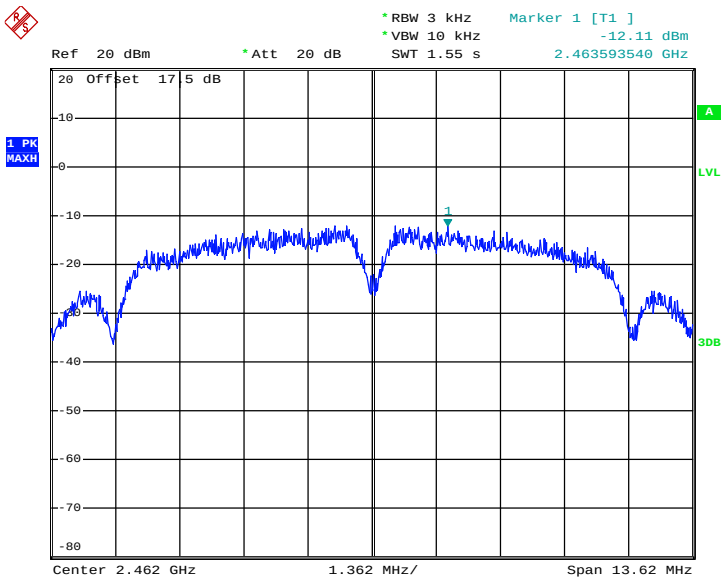
Date: 28.JUN.2013 11:00:16

PSD 3kHz Plot on 802.11b Channel 06



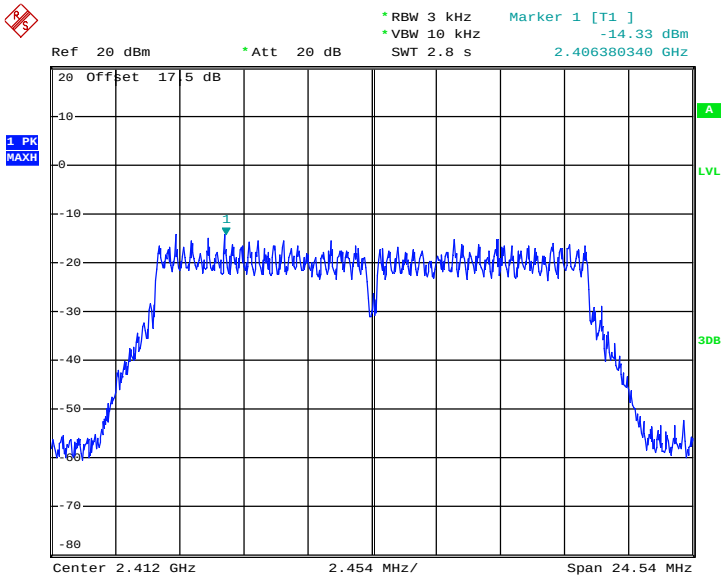
Date: 28.JUN.2013 11:06:06

PSD 3kHz Plot on 802.11b Channel 11



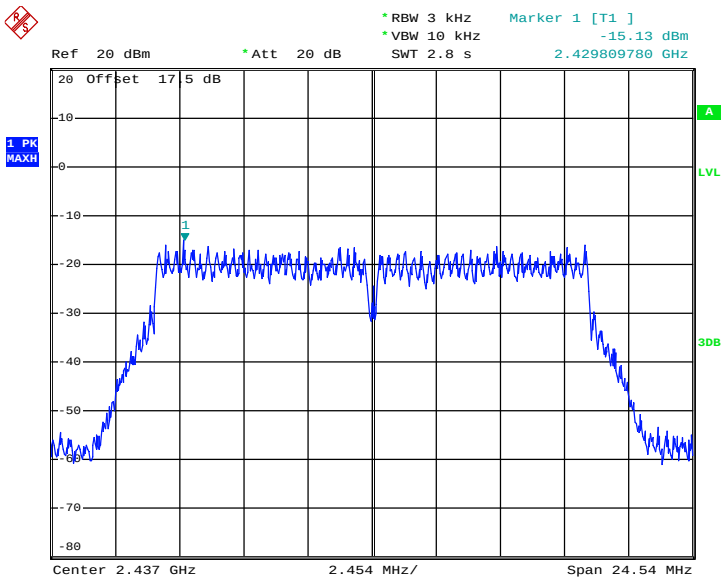
Date: 28.JUN.2013 11:11:10

PSD 3kHz Plot on 802.11g Channel 01



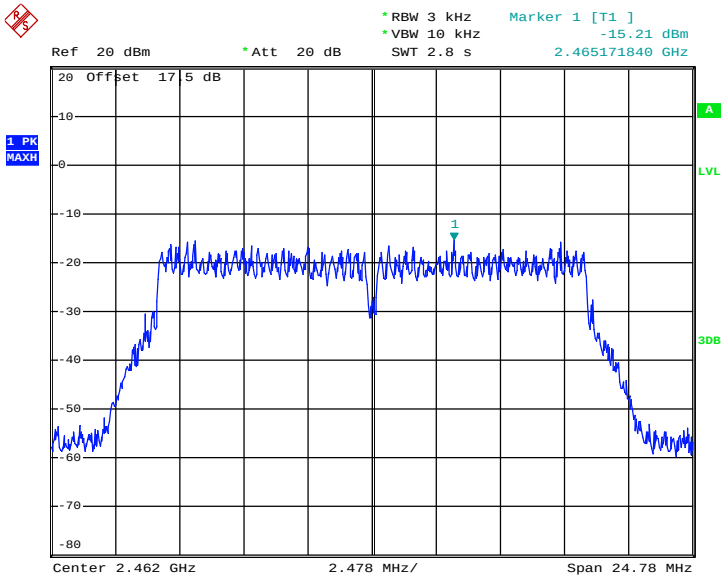
Date: 28.JUN.2013 11:16:28

PSD 3kHz Plot on 802.11g Channel 06



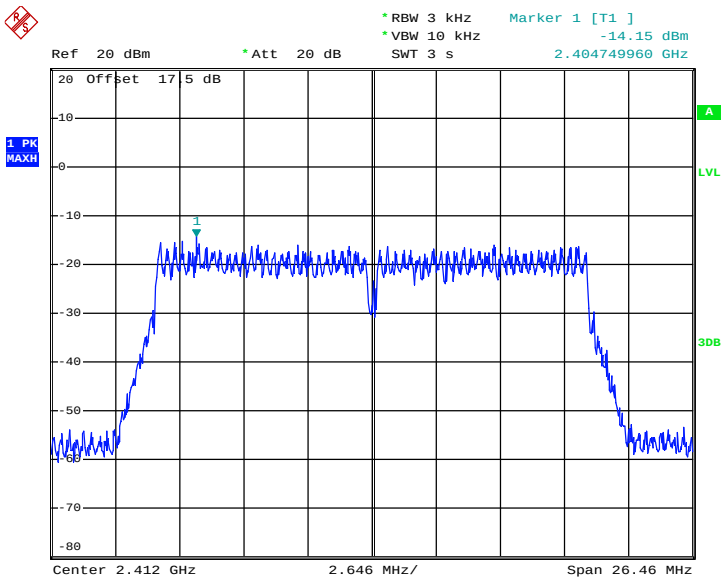
Date: 28.JUN.2013 11:20:52

PSD 3kHz Plot on 802.11g Channel 11



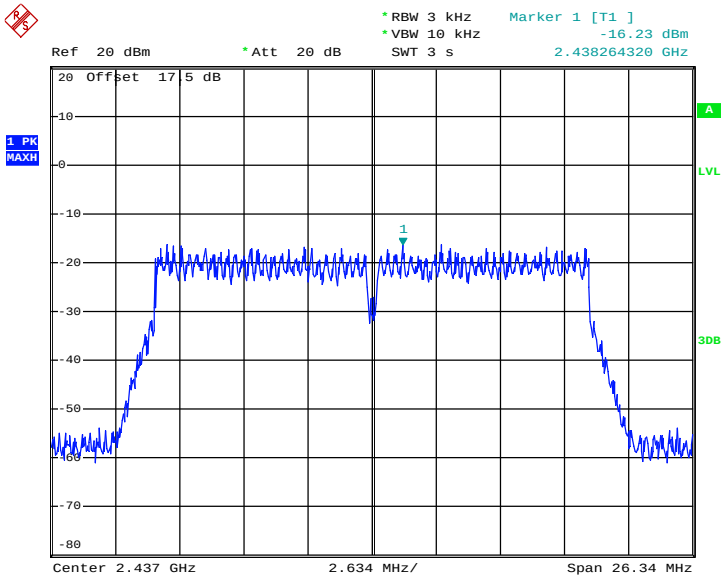
Date: 28.JUN.2013 11:25:26

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



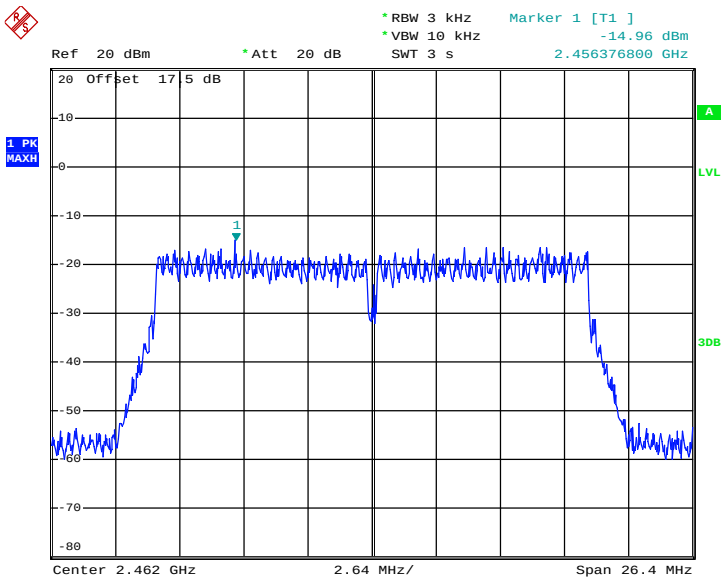
Date: 28.JUN.2013 11:32:47

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



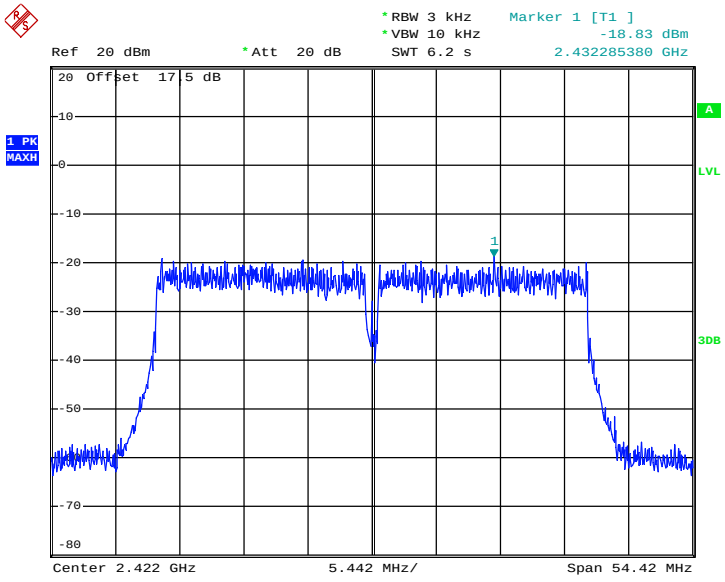
Date: 28.JUN.2013 11:46:02

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



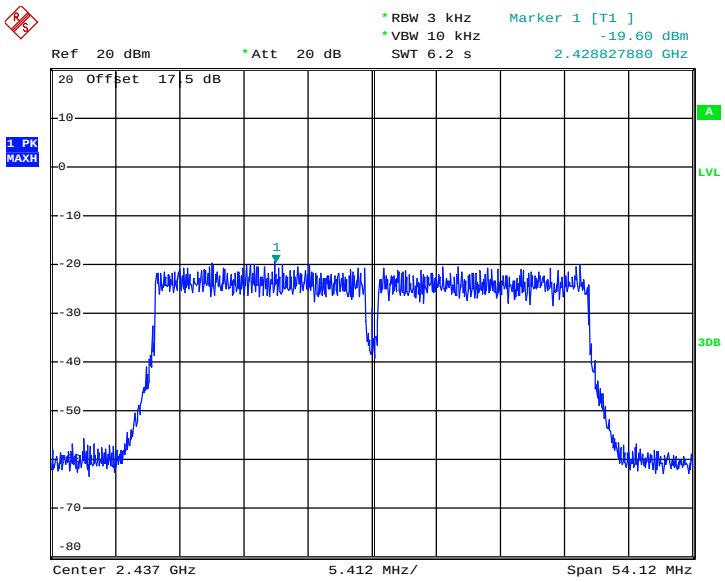
Date: 28.JUN.2013 11:52:16

PSD 3kHz Plot on 2.4GHz 802.11n HT40 Channel 03



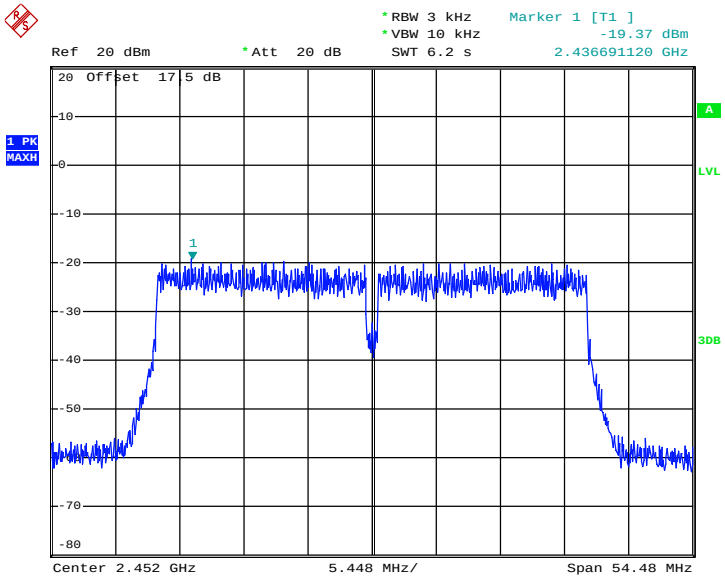
Date: 28.JUN.2013 12:00:05

PSD 3kHz Plot on 2.4GHz 802.11n HT40 Channel 06



Date: 28.JUN.2013 12:04:02

PSD 3kHz Plot on 2.4GHz 802.11n HT40 Channel 09



Date: 28.JUN.2013 12:11:37

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

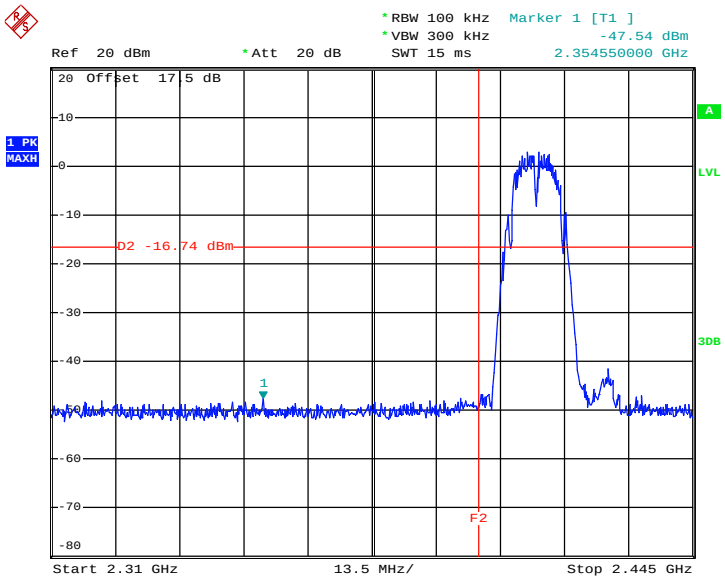
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.4.4 Test Setup

2.4.5 Test Result of Conducted Spurious at Band Edges

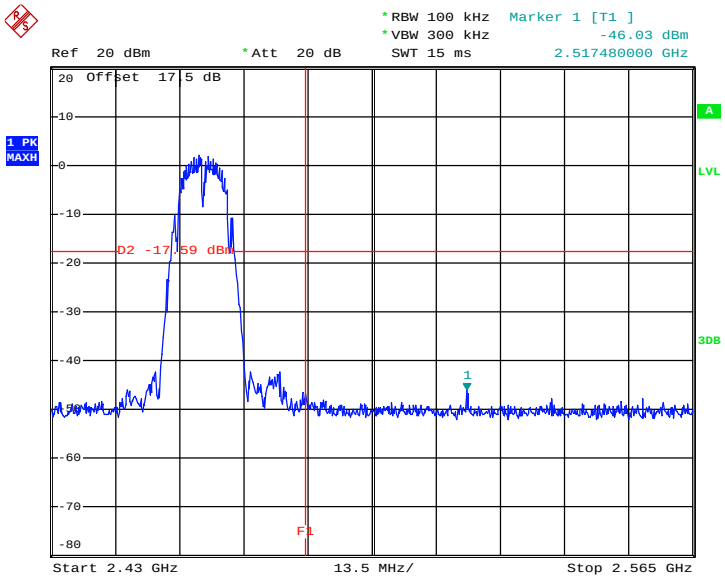
Test Mode :	802.11b	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Blithe Li

Low Band Edge Plot on 802.11b Channel 01



Date: 28.JUN.2013 11:01:23

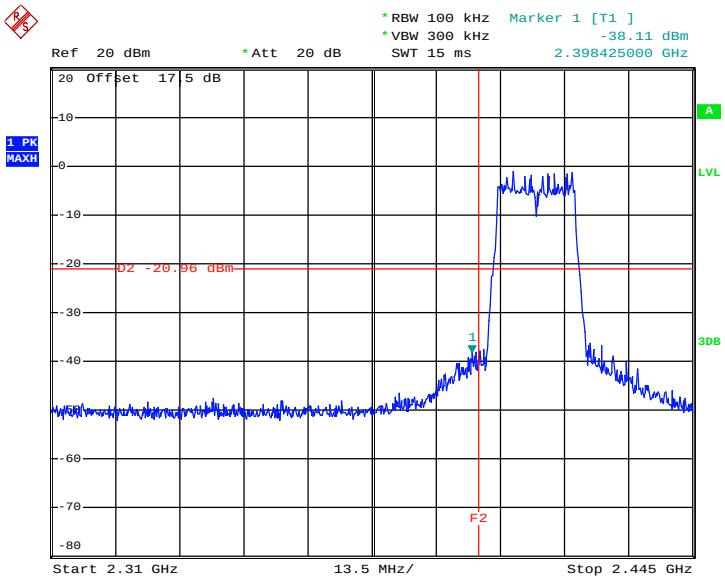
High Band Edge Plot on 802.11b Channel 11



Date: 29.JUN.2013 16:26:16

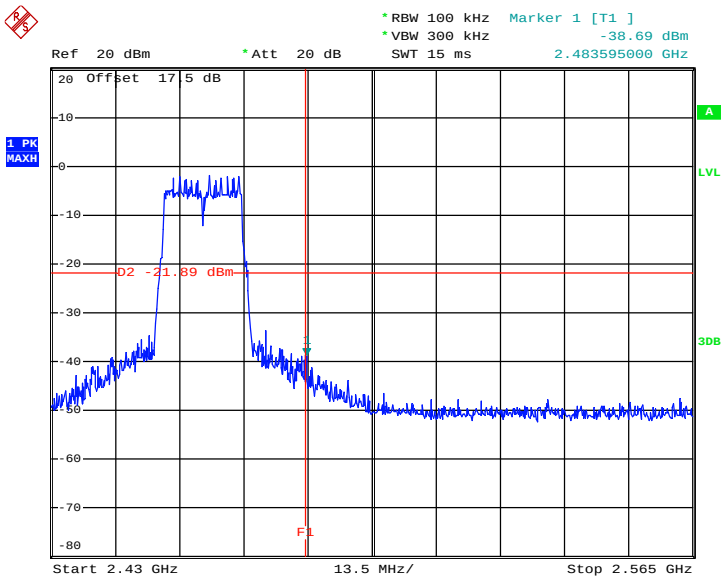
Test Mode :	802.11g	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Blithe Li

Low Band Edge Plot on 802.11g Channel 01



Date: 28.JUN.2013 11:17:12

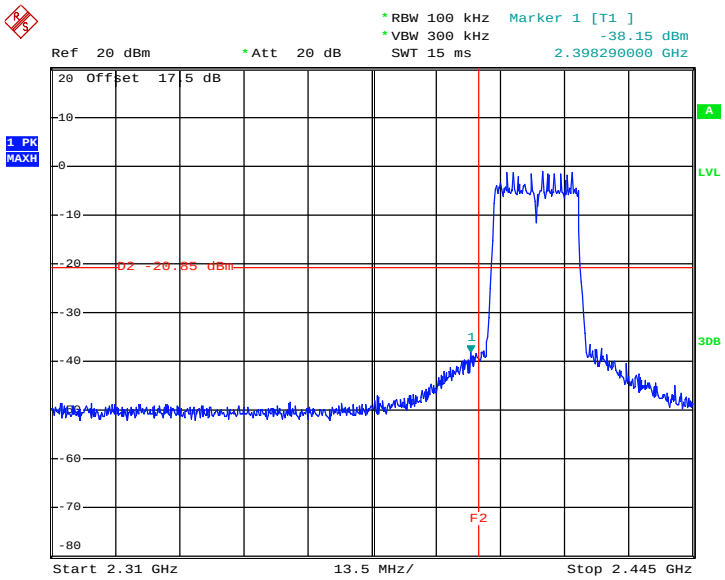
High Band Edge Plot on 802.11g Channel 11



Date: 28.JUN.2013 11:26:25

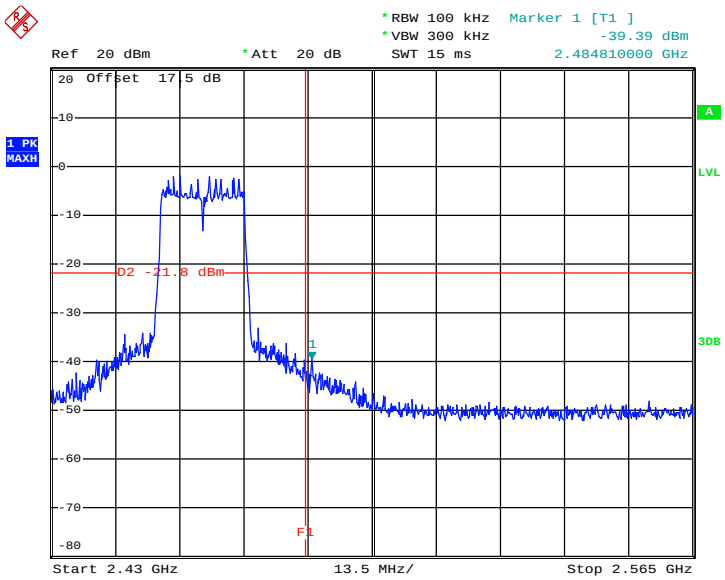
Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Blithe Li

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



Date: 28.JUN.2013 11:34:05

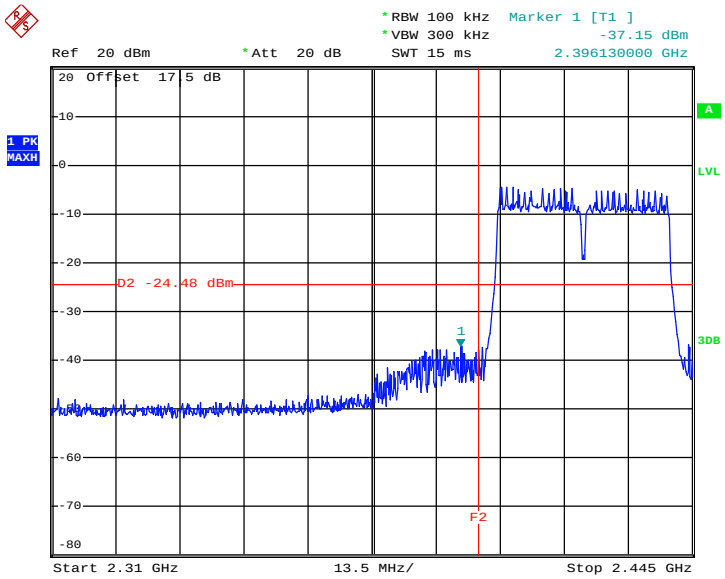
High Band Edge Plot on 2.4GHz 802.11n HT20 Channel 11



Date: 28.JUN.2013 11:53:09

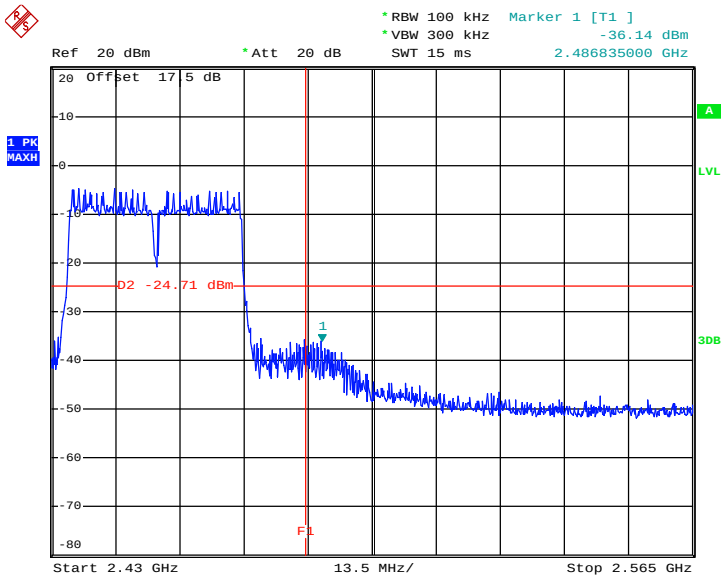
Test Mode :	802.11n HT40	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	03 and 09	Test Engineer :	Blithe Li

Low Band Edge Plot on 2.4GHz 802.11n HT40 Channel 03



Date: 28.JUN.2013 12:00:53

High Band Edge Plot on 2.4GHz 802.11n HT40 Channel 09



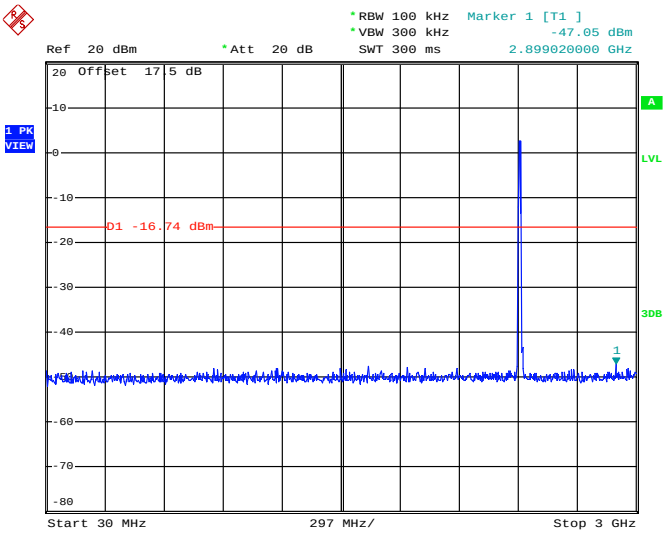
Date: 28.JUN.2013 12:12:23

3.4.5 Test Result of Conducted Spurious Emission

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

802.11b 30 MHz~3 GHz

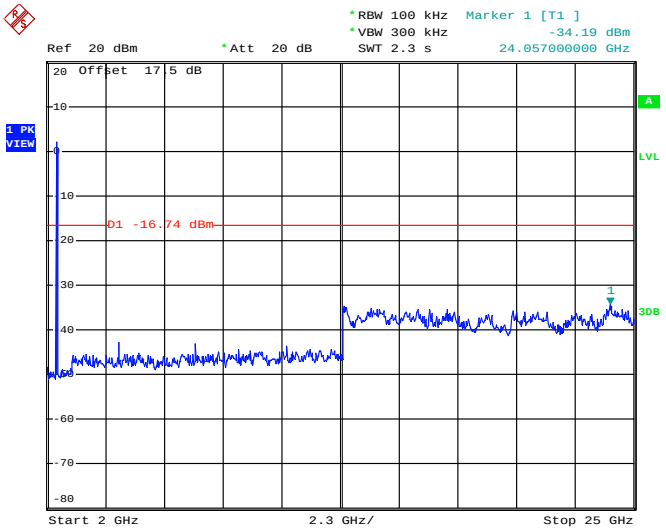
Conducted Spurious Emission Plot on Channel 01



Date: 28.JUN.2013 11:02:26

802.11b 2 GHz~25 GHz

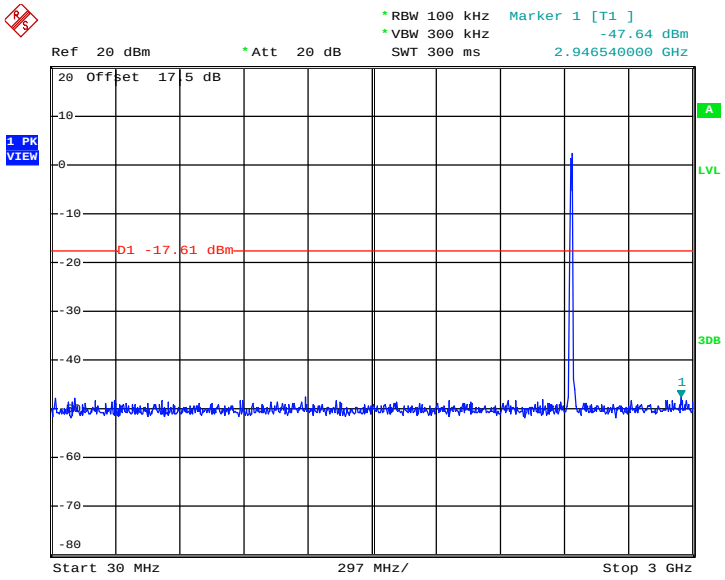
Conducted Spurious Emission Plot on Channel 01



Date: 28.JUN.2013 11:02:44

802.11b 30 MHz~3 GHz

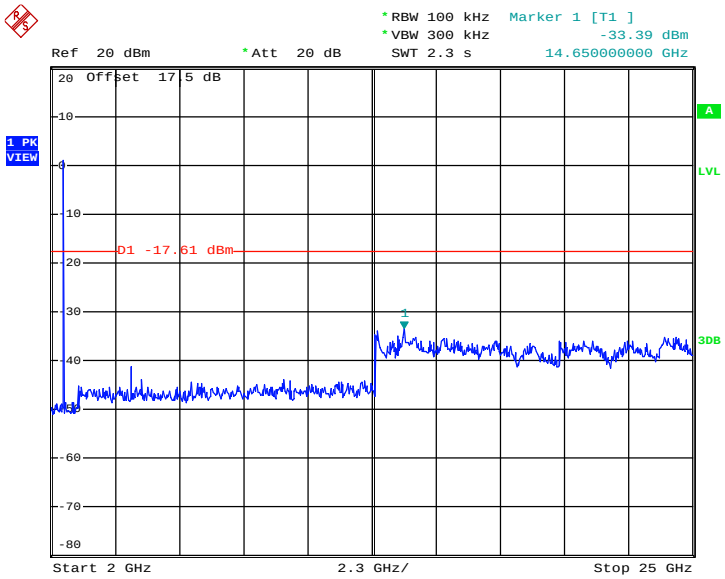
Conducted Spurious Emission Plot on Channel 06



Date: 28.JUN.2013 11:07:45

802.11b 2 GHz~25 GHz

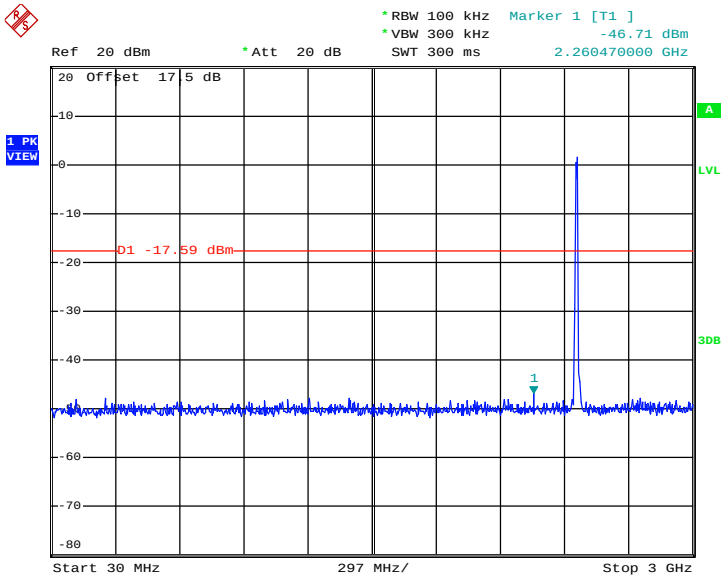
Conducted Spurious Emission Plot on Channel 06



Date: 28.JUN.2013 11:08:04

802.11b 30 MHz~3 GHz

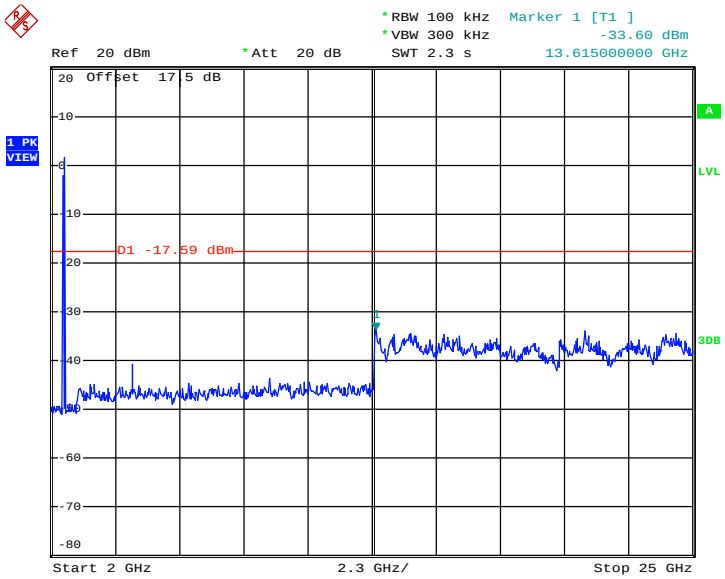
Conducted Spurious Emission Plot on Channel 11



Date: 28.JUN.2013 11:13:53

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

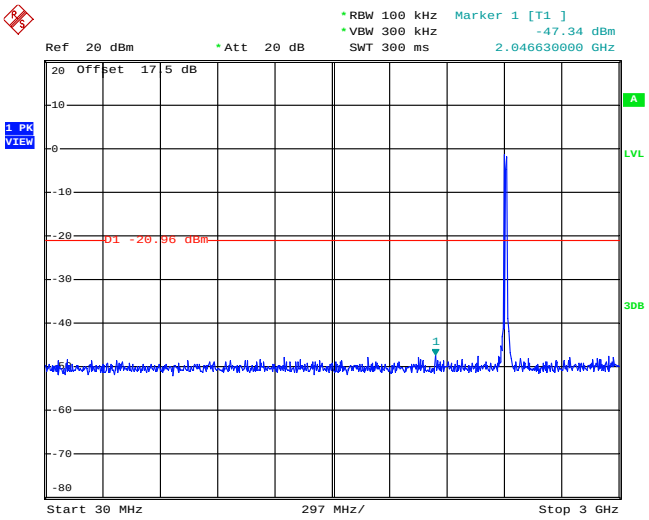


Date: 28.JUN.2013 11:14:11

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

802.11g 30 MHz~3 GHz

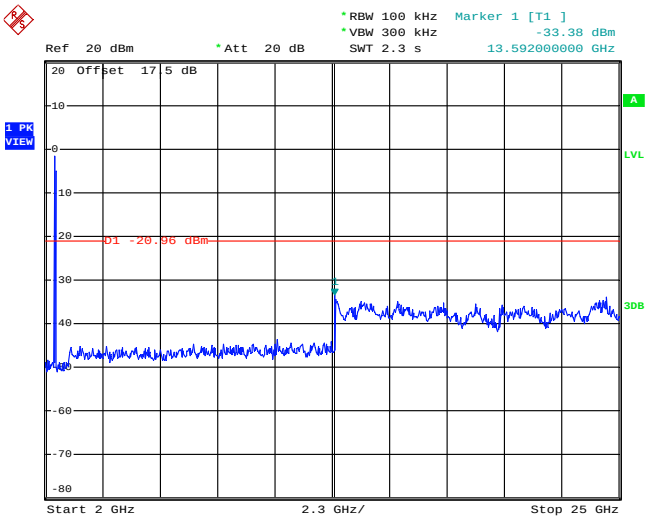
Conducted Spurious Emission Plot on Channel 01



Date: 28.JUN.2013 11:17:43

802.11g 2 GHz~25 GHz

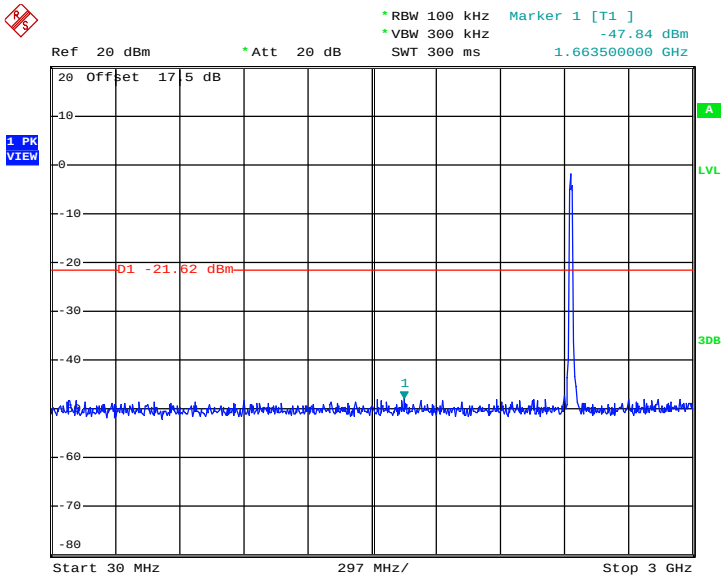
Conducted Spurious Emission Plot on Channel 01



Date: 28.JUN.2013 11:18:02

802.11g 30 MHz~3 GHz

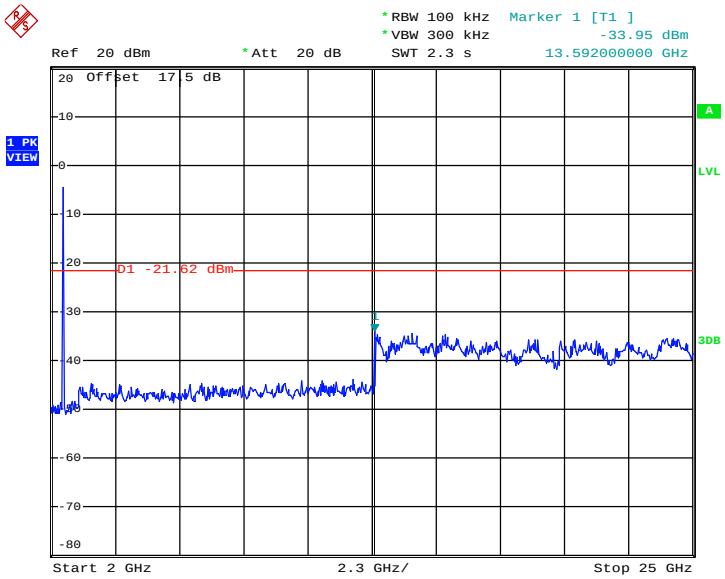
Conducted Spurious Emission Plot on Channel 06



Date: 28.JUN.2013 11:22:53

802.11g 2 GHz~25 GHz

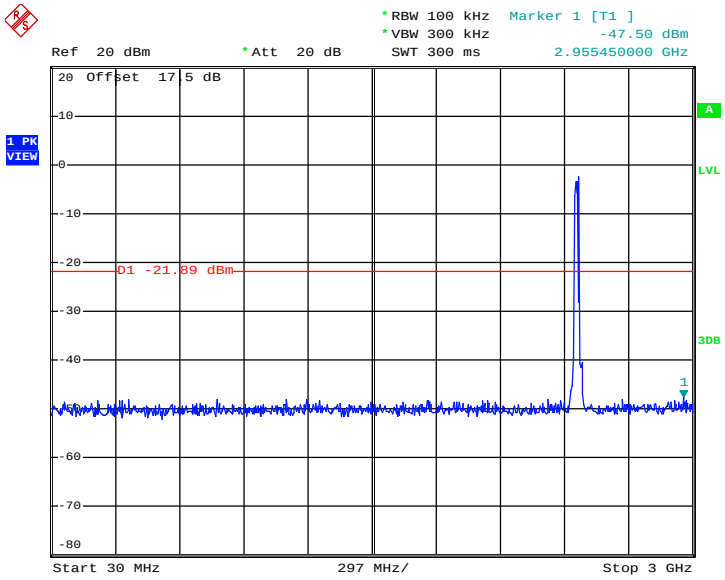
Conducted Spurious Emission Plot on Channel 06



Date: 28.JUN.2013 11:23:11

802.11g 30 MHz~3 GHz

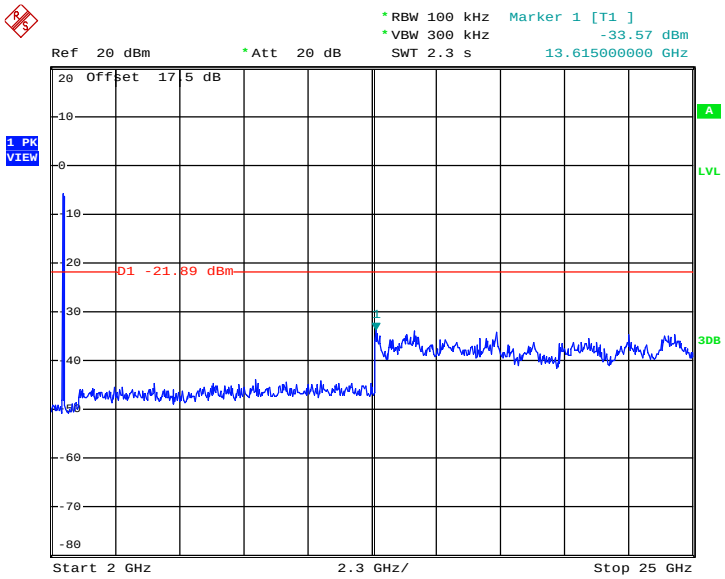
Conducted Spurious Emission Plot on Channel 11



Date: 28.JUN.2013 11:26:48

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

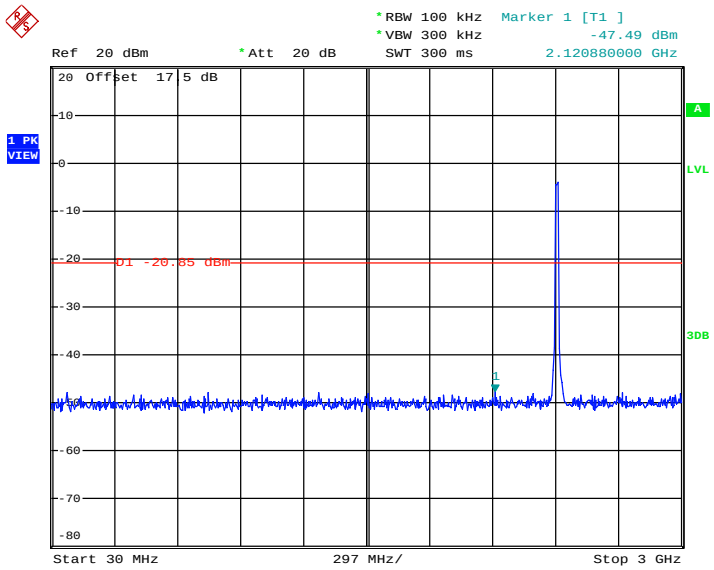


Date: 28.JUN.2013 11:27:06

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 :	Blithe Li

2.4GHz 802.11n HT20 30 MHz~3 GHz

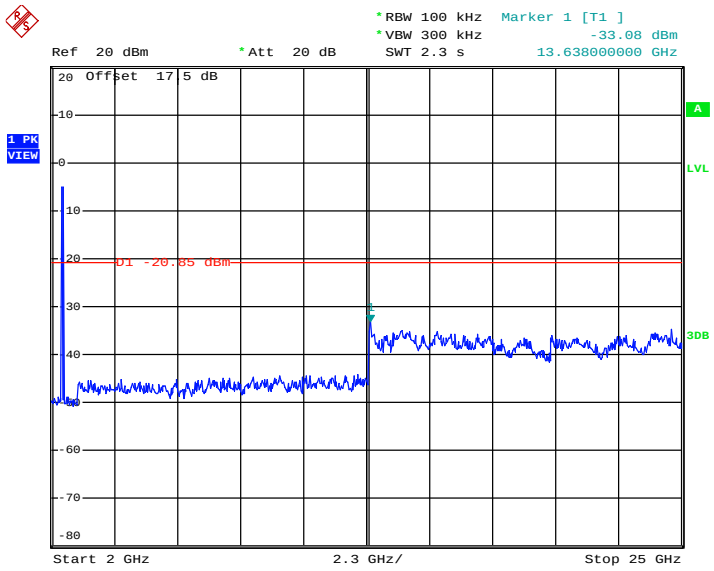
Conducted Spurious Emission Plot on Channel 01



Date: 28.JUN.2013 11:42:19

2.4GHz 802.11n HT20 2 GHz~25 GHz

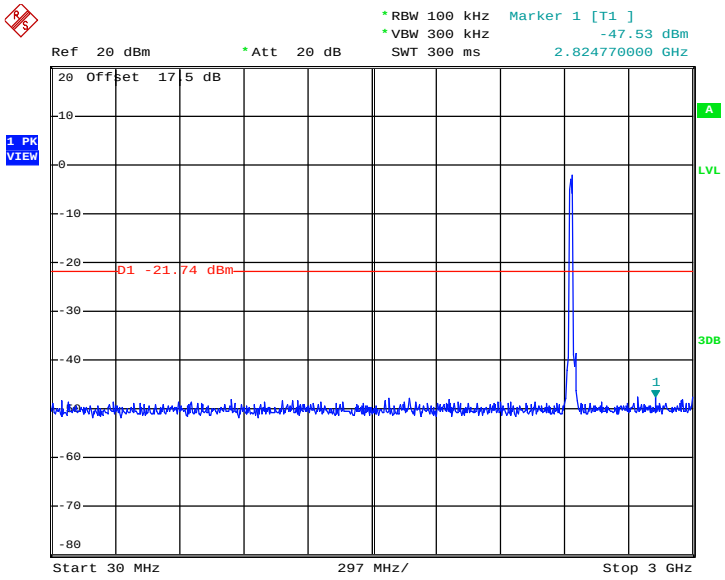
Conducted Spurious Emission Plot on Channel 01



Date: 28.JUN.2013 11:42:37

2.4GHz 802.11n HT20 30 MHz~3 GHz

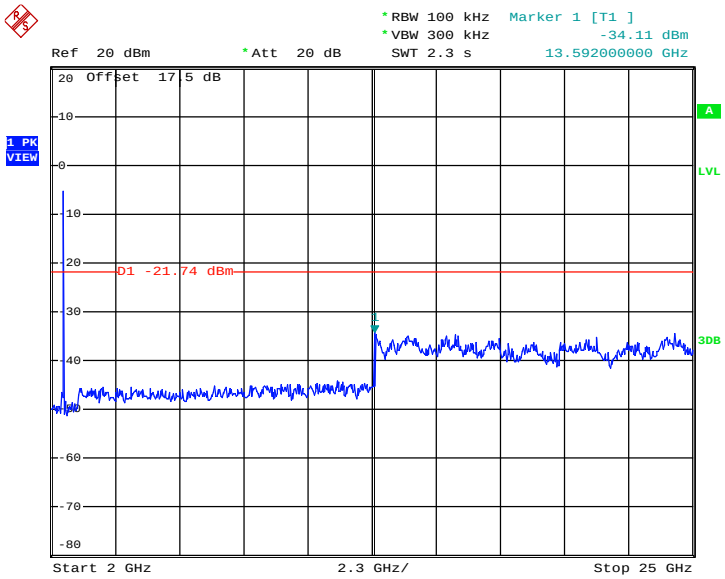
Conducted Spurious Emission Plot on Channel 06



Date: 28.JUN.2013 11:48:40

2.4GHz 802.11n HT20 2 GHz~25 GHz

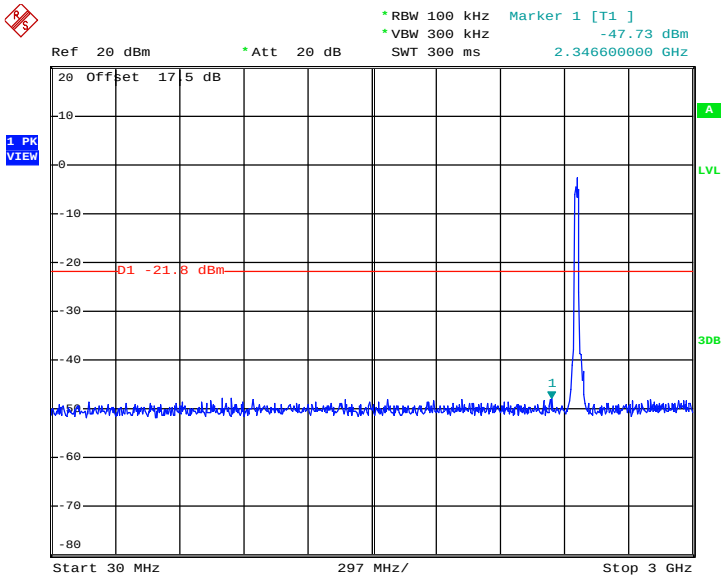
Conducted Spurious Emission Plot on Channel 06



Date: 28.JUN.2013 11:48:58

2.4GHz 802.11n HT20 30 MHz~3 GHz

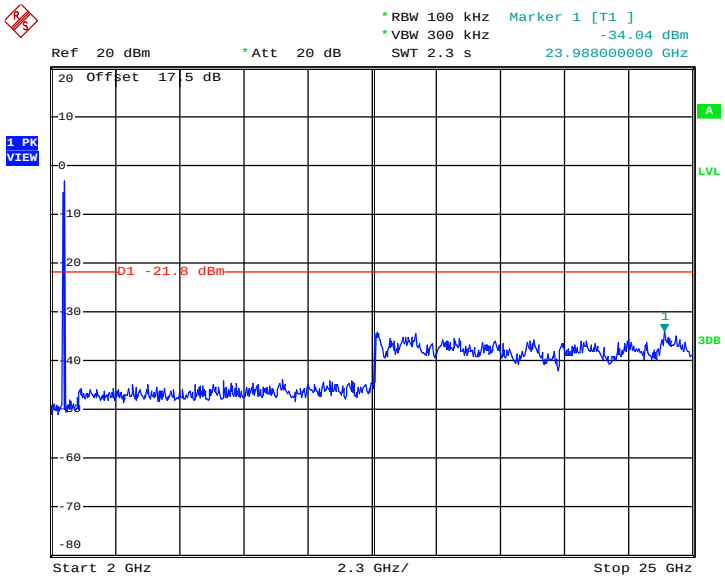
Conducted Spurious Emission Plot on Channel 11



Date: 28.JUN.2013 11:53:33

2.4GHz 802.11n HT20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

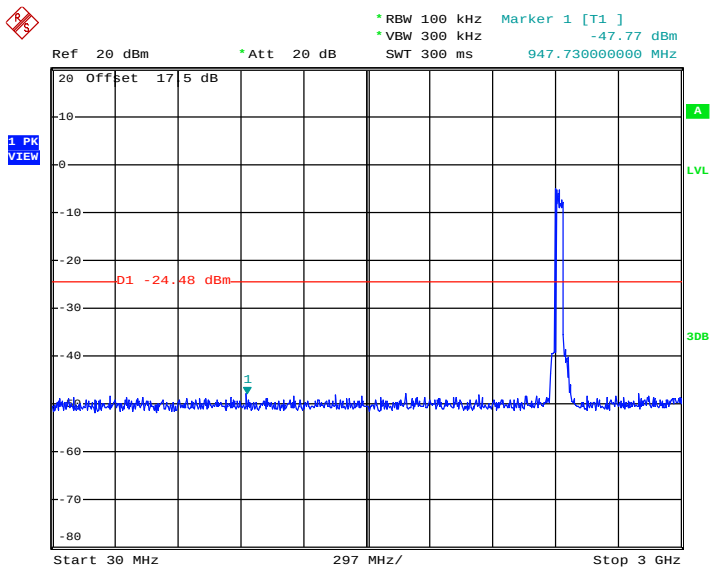


Date: 28.JUN.2013 11:53:51

Test Mode :	802.11n HT40	Temperature :	24~26℃
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53%
Test Channel :	03, 06, 09	Test Engineer :	Blithe Li

2.4GHz 802.11n HT40 30 MHz~3 GHz

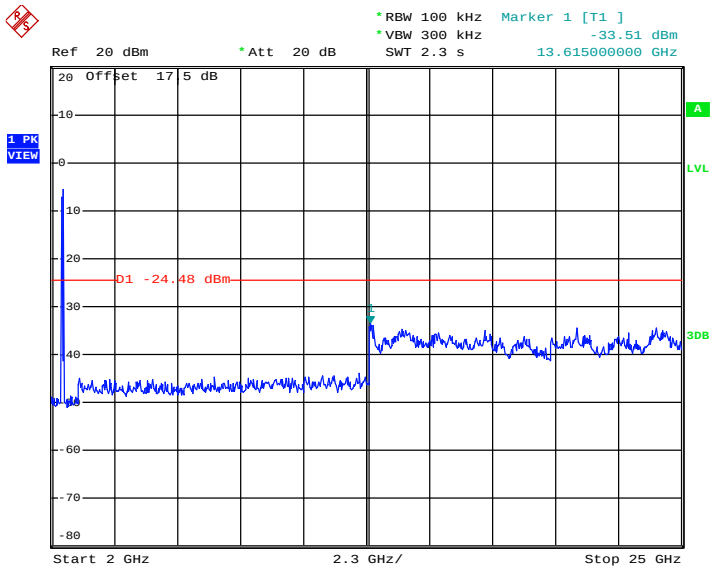
Conducted Spurious Emission Plot on Channel 03



Date: 28.JUN.2013 12:01:20

2.4GHz 802.11n HT40 2 GHz~25 GHz

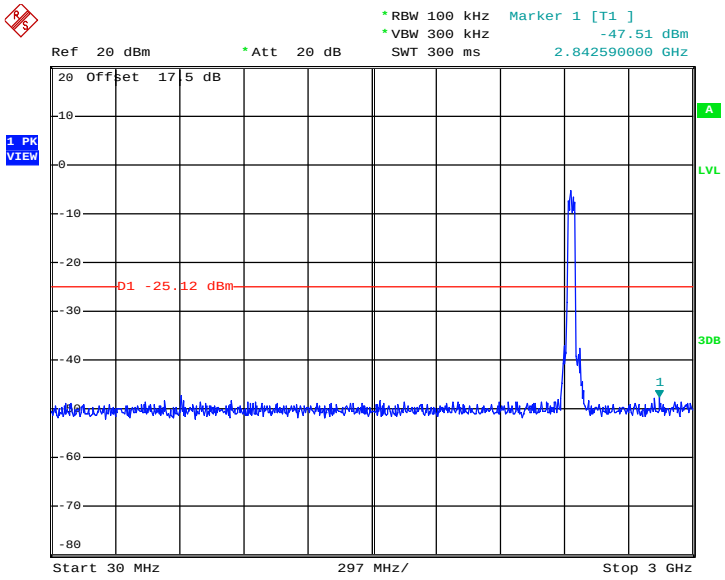
Conducted Spurious Emission Plot on Channel 03



Date: 28.JUN.2013 12:01:38

2.4GHz 802.11n HT40 30 MHz~3 GHz

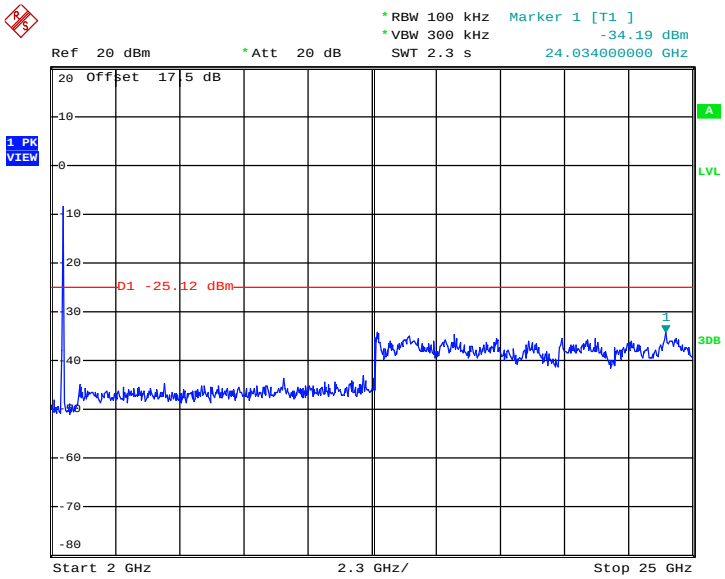
Conducted Spurious Emission Plot on Channel 06



Date: 28.JUN.2013 12:09:09

2.4GHz 802.11n HT40 2 GHz~25 GHz

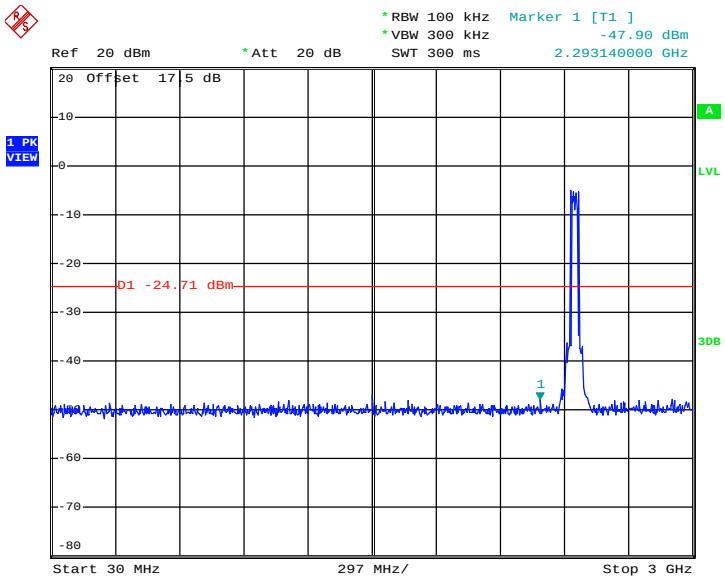
Conducted Spurious Emission Plot on Channel 06



Date: 28.JUN.2013 12:07:57

2.4GHz 802.11n HT40 30 MHz~3 GHz

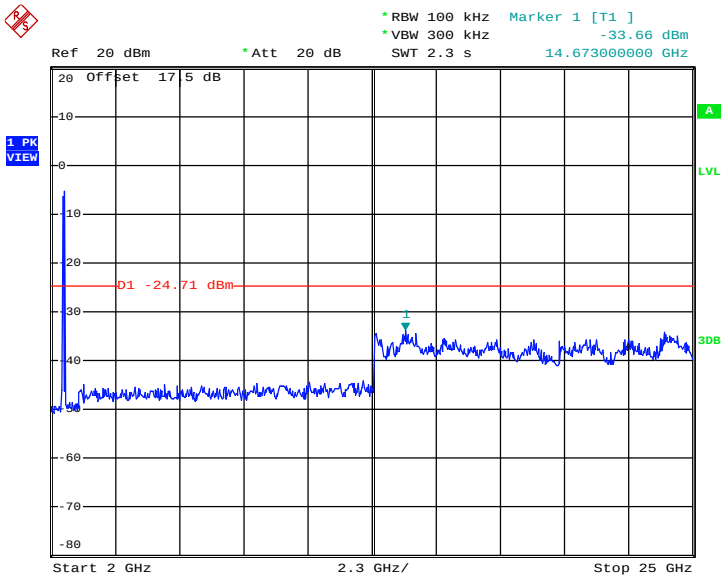
Conducted Spurious Emission Plot on Channel 09



Date: 28.JUN.2013 12:14:07

2.4GHz 802.11n HT40 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 09



Date: 28.JUN.2013 12:13:10

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.

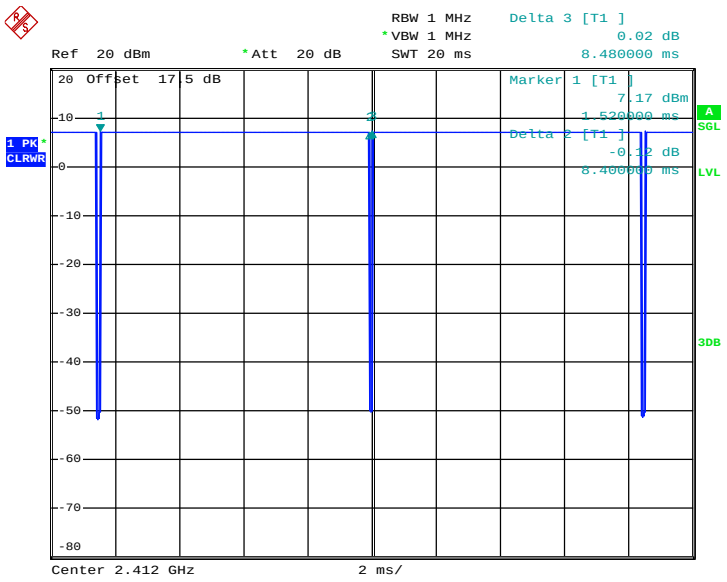
3.5.3 Test Procedures

1. The testing follows the guidelines in ANSI C63.10-2009.
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 ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 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(ms)	1/T(kHz)	VBW Setting
802.11b	0.991	8.400	-	10Hz
802.11g	0.927	1.396	0.716	1kHz
2.4GHz 802.11n HT20	0.924	1.304	0.767	1kHz
2.4GHz 802.11n HT40	0.862	0.650	1.538	3kHz

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

802.11b Duty Cycle

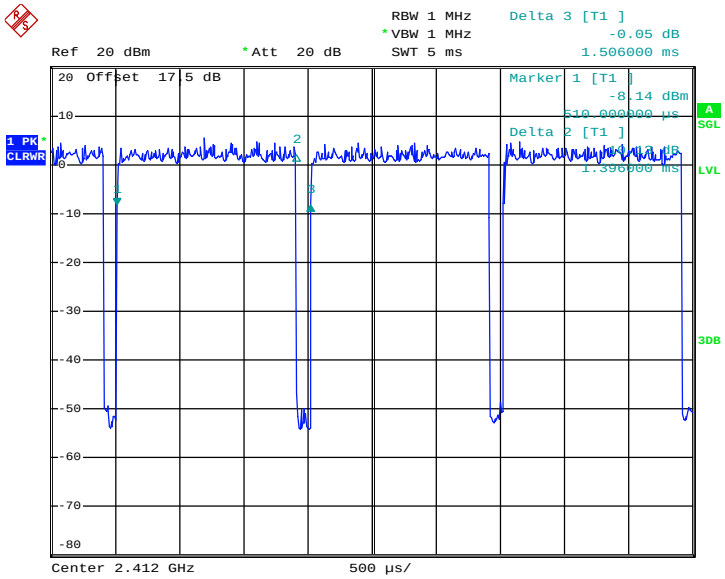


Date: 26.JUN.2013 11:44:33

Note:

The total loss is 17.5dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

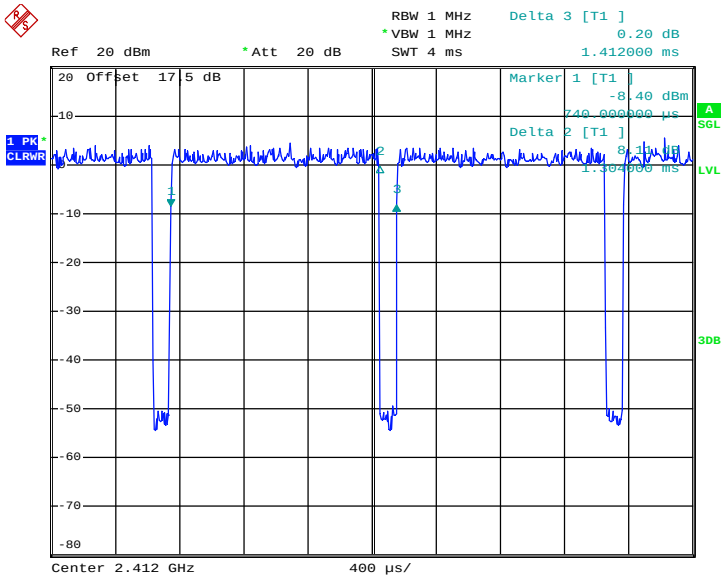
802.11g Duty Cycle



Note:

The total loss is 17.5dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

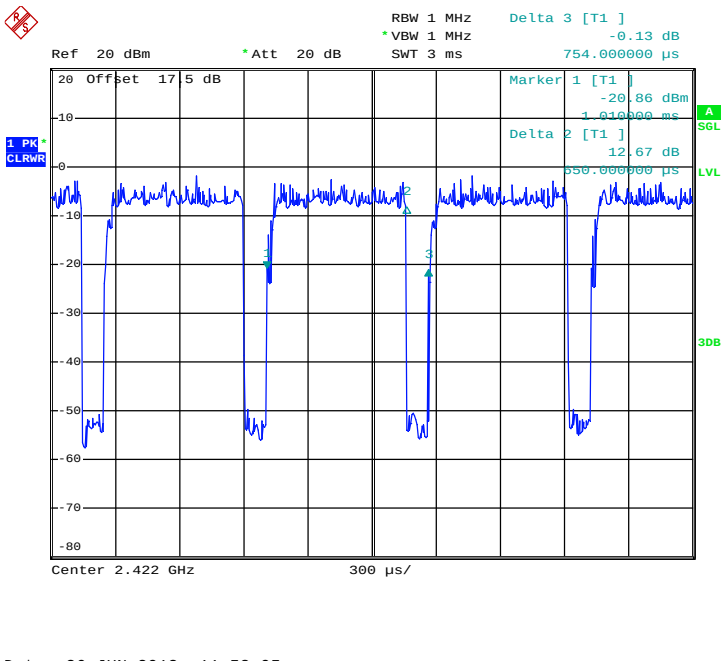
2.4GHz 802.11n HT20 Duty Cycle



Note:

The total loss is 17.5dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

2.4GHz 802.11n HT40 Duty Cycle

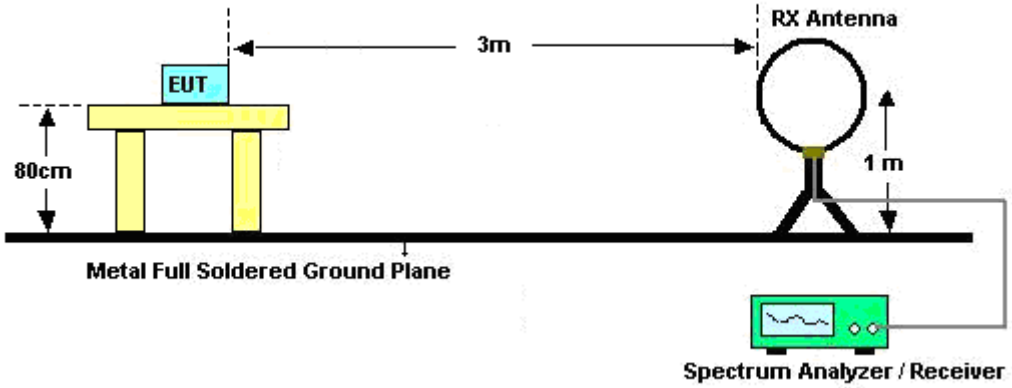


Note:

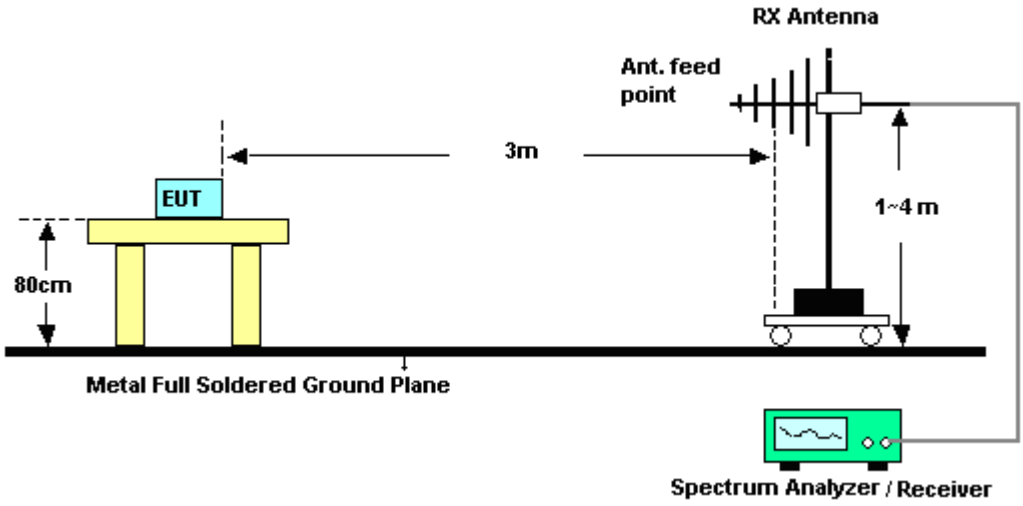
The total loss is 17.5dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

3.5.4 Test Setup

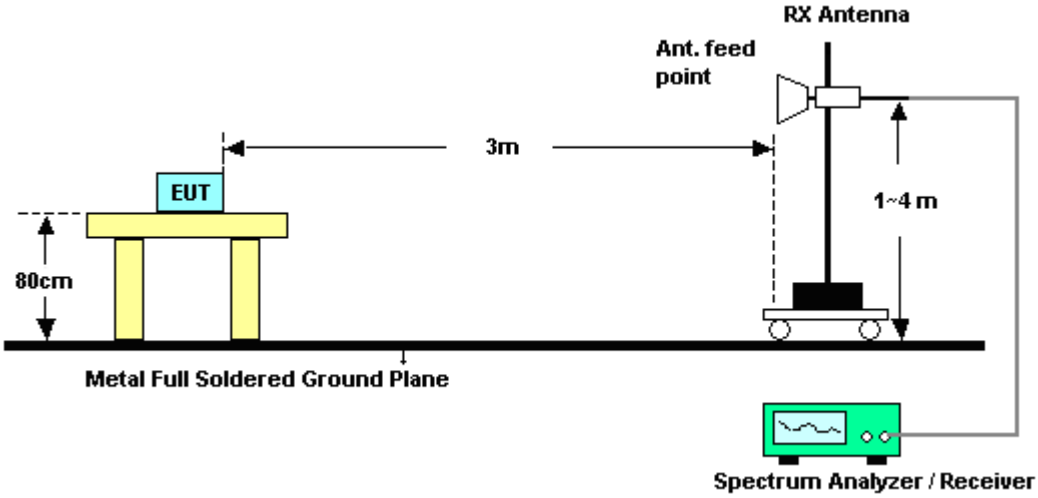
For radiated emissions below 30MHz



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 :	49~53%
Test Channel :	01	Test Engineer :	Zhongshuang Zhang

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
2389.83	49.65	-24.35	74	42.87	32.14	4.42	29.78	169	51	Peak
2390	38.54	-15.46	54	31.76	32.14	4.42	29.78	169	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
2389.74	48.6	-25.4	74	41.83	32.14	4.42	29.79	141	183	Peak
2390	37.57	-16.43	54	30.79	32.14	4.42	29.78	141	183	Average

Test Mode :	802.11b	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	49~53%
Test Channel :	11	Test Engineer :	Zhongshuang Zhang

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
2484.73	53.1	-20.9	74	46.12	32.27	4.47	29.76	138	14	Peak
2483.5	43.07	-10.93	54	36.09	32.27	4.47	29.76	138	14	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
2483.92	50.91	-23.09	74	43.93	32.27	4.47	29.76	207	184	Peak
2483.5	39.48	-14.52	54	32.5	32.27	4.47	29.76	207	184	Average

Test Mode :	802.11g	Temperature :	23~25°C
Test Band :	Low	Relative Humidity :	49~53%
Test Channel :	01	Test Engineer :	Zhongshuang Zhang

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
2389.38	68.4	-5.6	74	61.63	32.14	4.42	29.79	172	54	Peak
2390	46.59	-7.41	54	39.81	32.14	4.42	29.78	172	54	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.38	63.82	-10.18	74	57.05	32.14	4.42	29.79	140	184	Peak
2390	42.06	-11.94	54	35.28	32.14	4.42	29.78	140	184	Average

Test Mode :	802.11g	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	49~53%
Test Channel :	11	Test Engineer :	Zhongshuang Zhang

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
2484.52	68.65	-5.35	74	61.67	32.27	4.47	29.76	139	54	Peak
2483.59	46.84	-7.16	54	39.86	32.27	4.47	29.76	139	54	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.01	62.51	-11.49	74	55.53	32.27	4.47	29.76	170	308	Peak
2483.77	41.45	-12.55	54	34.47	32.27	4.47	29.76	170	308	Average

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Band :	Low	Relative Humidity :	49~53%
Test Channel :	01	Test Engineer :	Zhongshuang Zhang

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
2389.02	70.42	-3.58	74	63.65	32.14	4.42	29.79	103	120	Peak
2390	47.05	-6.95	54	40.27	32.14	4.42	29.78	103	120	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
2388.93	65.14	-8.86	74	58.37	32.14	4.42	29.79	199	346	Peak
2389.92	41.73	-12.27	54	34.95	32.14	4.42	29.78	199	346	Average

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	49~53%
Test Channel :	11	Test Engineer :	Zhongshuang Zhang

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
2485.66	67.7	-6.3	74	60.72	32.27	4.47	29.76	129	56	Peak
2483.68	46.78	-7.22	54	39.8	32.27	4.47	29.76	129	56	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
2486.17	62.73	-11.27	74	55.75	32.27	4.47	29.76	100	360	Peak
2483.56	42.46	-11.54	54	35.48	32.27	4.47	29.76	100	360	Average

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Band :	Low	Relative Humidity :	49~53%
Test Channel :	03	Test Engineer :	Zhongshuang Zhang

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
2387.67	66.52	-7.48	74	59.75	32.14	4.42	29.79	112	0	Peak
2390	42.89	-11.11	54	36.11	32.14	4.42	29.78	112	0	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
2388.12	58.2	-15.8	74	51.43	32.14	4.42	29.79	104	181	Peak
2390	37.86	-16.14	54	31.08	32.14	4.42	29.78	104	181	Average

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	49~53%
Test Channel :	09	Test Engineer :	Zhongshuang Zhang

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
2485.63	64.78	-9.22	74	57.8	32.27	4.47	29.76	108	42	Peak
2483.53	43.97	-10.03	54	36.99	32.27	4.47	29.76	108	42	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
2483.98	66.78	-7.22	74	59.8	32.27	4.47	29.76	100	204	Peak
2483.68	39.92	-14.08	54	32.94	32.27	4.47	29.76	100	204	Average

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

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	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, 105.27dBμV/m - 20dB = 85.27dBμV/m. 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	105.27	-	-	98.44	32.17	4.44	29.78	169	51	Peak
2412	100.33	-	-	93.5	32.17	4.44	29.78	169	51	Average
4824	42.93	-31.07	74	32.64	33.68	5.95	29.34	150	200	Peak
7236	41.16	-44.11	85.27	26.33	35.29	7.58	28.04	100	250	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 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	102.9	-	-	96.07	32.17	4.44	29.78	141	183	Peak
2412	97.63	-	-	90.8	32.17	4.44	29.78	141	183	Average
4824	44.2	-29.8	74	33.91	33.68	5.95	29.34	150	240	Peak
7236	39.23	-43.67	82.9	24.4	35.29	7.58	28.04	120	320	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	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	107.71	-	-	100.81	32.22	4.45	29.77	140	18	Peak
2437	102.35	-	-	95.45	32.22	4.45	29.77	140	18	Average
4874	42.37	-31.63	74	31.89	33.8	6.02	29.34	120	210	Peak
7311	40.03	-33.97	74	24.9	35.31	7.8	27.98	100	0	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	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	101.87	-	-	94.97	32.22	4.45	29.77	100	223	Peak
2437	96.22	-	-	89.32	32.22	4.45	29.77	100	223	Average
4874	40.81	-33.19	74	30.33	33.8	6.02	29.34	120	210	Peak
7311	39.73	-34.27	74	24.6	35.31	7.8	27.98	100	360	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	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	106.4	-	-	99.45	32.24	4.47	29.76	138	14	Peak
2462	101.29	-	-	94.34	32.24	4.47	29.76	138	14	Average
4924	42.4	-31.6	74	31.73	33.92	6.1	29.35	120	210	Peak
7386	40.21	-33.79	74	24.64	35.35	8.12	27.9	150	210	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	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	102.77	-	-	95.82	32.24	4.47	29.76	200	184	Peak
2462	97.2	-	-	90.25	32.24	4.47	29.76	200	184	Average
4924	41.28	-32.72	74	30.61	33.92	6.1	29.35	120	120	Peak
7386	40.59	-33.41	74	25.02	35.35	8.12	27.9	150	230	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	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. 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	106.3	-	-	99.47	32.17	4.44	29.78	172	54	Peak
2412	95.84	-	-	89.01	32.17	4.44	29.78	172	54	Average
4824	42.93	-31.07	74	32.64	33.68	5.95	29.34	150	200	Peak
7236	41.16	-45.14	86.3	26.33	35.29	7.58	28.04	100	250	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 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	102.12	-	-	95.29	32.17	4.44	29.78	140	184	Peak
2412	90.82	-	-	83.99	32.17	4.44	29.78	140	184	Average
4824	44.2	-29.8	74	33.91	33.68	5.95	29.34	150	240	Peak
7236	39.23	-42.89	82.12	24.4	35.29	7.58	28.04	120	320	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	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	107.37	-	-	100.47	32.22	4.45	29.77	140	0	Peak
2437	95.98	-	-	89.08	32.22	4.45	29.77	140	0	Average
4874	42.37	-31.63	74	31.89	33.8	6.02	29.34	120	210	Peak
7311	40.03	-33.97	74	24.9	35.31	7.8	27.98	100	0	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	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	101.7	-	-	94.8	32.22	4.45	29.77	170	175	Peak
2437	90.52	-	-	83.62	32.22	4.45	29.77	170	175	Average
4874	40.81	-33.19	74	30.33	33.8	6.02	29.34	120	210	Peak
7311	39.73	-34.27	74	24.6	35.31	7.8	27.98	100	360	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	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	106.08	-	-	99.13	32.24	4.47	29.76	139	54	Peak
2462	94.72	-	-	87.77	32.24	4.47	29.76	139	54	Average
4924	42.4	-31.6	74	31.73	33.92	6.1	29.35	120	210	Peak
7386	40.21	-33.79	74	24.64	35.35	8.12	27.9	150	210	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	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	102.28	-	-	95.33	32.24	4.47	29.76	170	308	Peak
2462	90.52	-	-	83.57	32.24	4.47	29.76	170	308	Average
4924	41.28	-32.72	74	30.61	33.92	6.1	29.35	120	120	Peak
7386	40.59	-33.41	74	25.02	35.35	8.12	27.9	150	230	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	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. 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
62.67	27.26	-12.74	40	51.42	5.53	0.85	30.54	-	-	Peak
105.6	33.59	-9.91	43.5	51.26	11.8	1.18	30.65	100	120	Peak
186.33	26.79	-16.71	43.5	46.84	9	1.33	30.38	-	-	Peak
352.5	27.86	-18.14	46	41.09	14.77	1.83	29.83	-	-	Peak
531.7	24.22	-21.78	46	33.22	18.1	2.19	29.29	-	-	Peak
696.9	36.23	-9.77	46	43.49	19.38	2.43	29.07	-	-	Peak
2412	104.82	-	-	97.99	32.17	4.44	29.78	103	120	Peak
2412	102.33	-	-	95.5	32.17	4.44	29.78	103	120	Average
4824	40.1	-33.9	74	29.81	33.68	5.95	29.34	200	321	Peak
7236	39.76	-45.06	84.82	24.93	35.29	7.58	28.04	100	0	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 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
84	24.22	-15.78	40	45.66	8.1	1.08	30.62	-	-	Peak
95.88	31.31	-12.19	43.5	50.41	10.4	1.16	30.66	-	-	Peak
172.56	31.61	-11.89	43.5	51.12	9.63	1.28	30.42	120	210	Peak
353.9	28.66	-17.34	46	41.87	14.77	1.84	29.82	-	-	Peak
533.1	25.37	-20.63	46	34.37	18.1	2.19	29.29	-	-	Peak
898.5	29.93	-16.07	46	34.81	21.22	2.71	28.81	-	-	Peak
2412	100.07	-	-	93.24	32.17	4.44	29.78	199	346	Peak
2412	98.03	-	-	91.2	32.17	4.44	29.78	199	346	Average
4824	43.98	-30.02	74	33.69	33.68	5.95	29.34	100	0	Peak
7236	40.66	-39.41	80.07	25.83	35.29	7.58	28.04	100	360	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	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	108.14	-	-	101.24	32.22	4.45	29.77	160	188	Peak
2437	96.43	-	-	89.53	32.22	4.45	29.77	160	188	Average
4874	44.65	-29.35	74	34.17	33.8	6.02	29.34	100	358	Peak
7311	42.62	-31.38	74	27.49	35.31	7.8	27.98	100	325	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	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	101.78	-	-	94.88	32.22	4.45	29.77	113	176	Peak
2437	90.96	-	-	84.06	32.22	4.45	29.77	113	176	Average
4874	44.79	-29.21	74	34.31	33.8	6.02	29.34	100	0	Peak
7311	41.62	-32.38	74	26.49	35.31	7.8	27.98	100	360	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	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	104.65	-	-	97.7	32.24	4.47	29.76	129	56	Peak
2462	94.1	-	-	87.15	32.24	4.47	29.76	129	56	Average
4924	40.09	-33.91	74	29.42	33.92	6.1	29.35	200	145	Peak
7386	41.05	-32.95	74	25.48	35.35	8.12	27.9	200	321	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	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	100.78	-	-	93.83	32.24	4.47	29.76	100	360	Peak
2462	89.97	-	-	83.02	32.24	4.47	29.76	100	360	Average
4924	40.3	-33.7	74	29.63	33.92	6.1	29.35	145	210	Peak
7386	40.42	-33.58	74	24.85	35.35	8.12	27.9	100	360	Peak

Test Mode :	2.4GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	03	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	Polarization :	Horizontal
Remark :	1. 2422 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
2422	109.38	-	-	102.52	32.19	4.44	29.77	112	0	Peak
2422	98.46	-	-	91.6	32.19	4.44	29.77	112	0	Average
4844	41.96	-32.04	74	31.6	33.72	5.98	29.34	120	210	Peak
7266	40.32	-33.68	74	25.34	35.3	7.69	28.01	150	210	Peak

Test Mode :	2.4GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	03	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	Polarization :	Vertical
Remark :	1. 2422 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
2422	102.02	-	-	95.16	32.19	4.44	29.77	104	180	Peak
2422	91.62	-	-	84.76	32.19	4.44	29.77	104	180	Average
4844	42.09	-31.91	74	31.73	33.72	5.98	29.34	120	230	Peak
7266	40.47	-33.53	74	25.49	35.3	7.69	28.01	150	230	Peak

Test Mode :	2.4GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	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	107.28	-	-	100.38	32.22	4.45	29.77	112	54	Peak
2437	96.88	-	-	89.98	32.22	4.45	29.77	112	54	Average
4874	42.37	-31.63	74	31.89	33.8	6.02	29.34	120	210	Peak
7311	40.03	-33.97	74	24.9	35.31	7.8	27.98	100	0	Peak

Test Mode :	2.4GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	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	102.57	-	-	95.67	32.22	4.45	29.77	172	181	Peak
2437	91.37	-	-	84.47	32.22	4.45	29.77	172	181	Average
4874	40.81	-33.19	74	30.33	33.8	6.02	29.34	120	210	Peak
7311	39.73	-34.27	74	24.6	35.31	7.8	27.98	100	360	Peak

Test Mode :	2.4GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	09	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	Polarization :	Horizontal
Remark :	1. 2452 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
2452	107.13	-	-	100.22	32.22	4.45	29.76	108	42	Peak
2452	95.77	-	-	88.86	32.22	4.45	29.76	108	42	Average
4904	42.18	-31.82	74	31.58	33.88	6.06	29.34	120	210	Peak
7356	40.39	-33.61	74	24.97	35.33	8.01	27.92	120	120	Peak

Test Mode :	2.4GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	09	Relative Humidity :	49~53%
Test Engineer :	Zhongshuang Zhang	Polarization :	Vertical
Remark :	1. 2452 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
2452	102.64	-	-	95.73	32.22	4.45	29.76	100	203	Peak
2452	90.68	-	-	83.77	32.22	4.45	29.76	100	203	Average
4904	40.95	-33.05	74	30.35	33.88	6.06	29.34	135	230	Peak
7356	39.77	-34.23	74	24.35	35.33	8.01	27.92	150	230	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 (dBμV)	
	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.

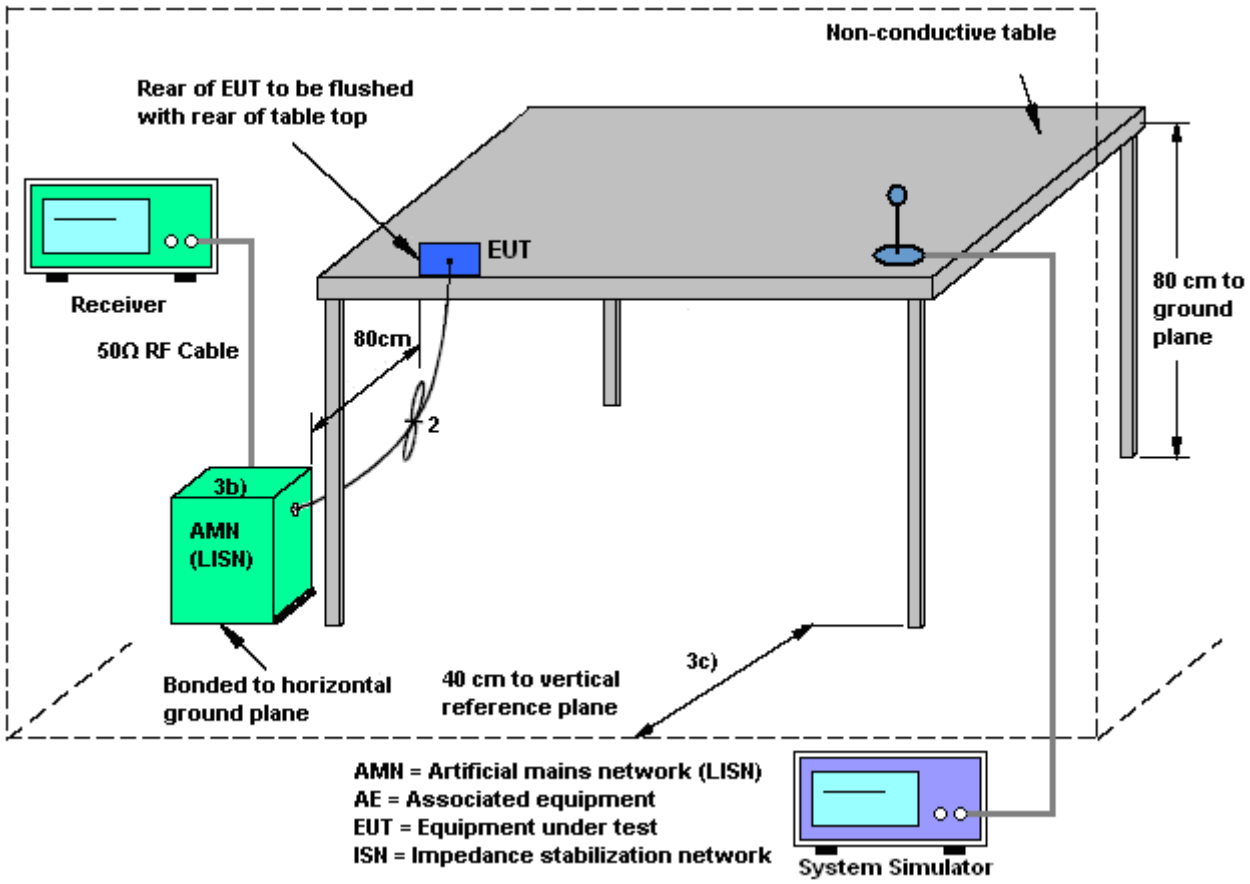
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

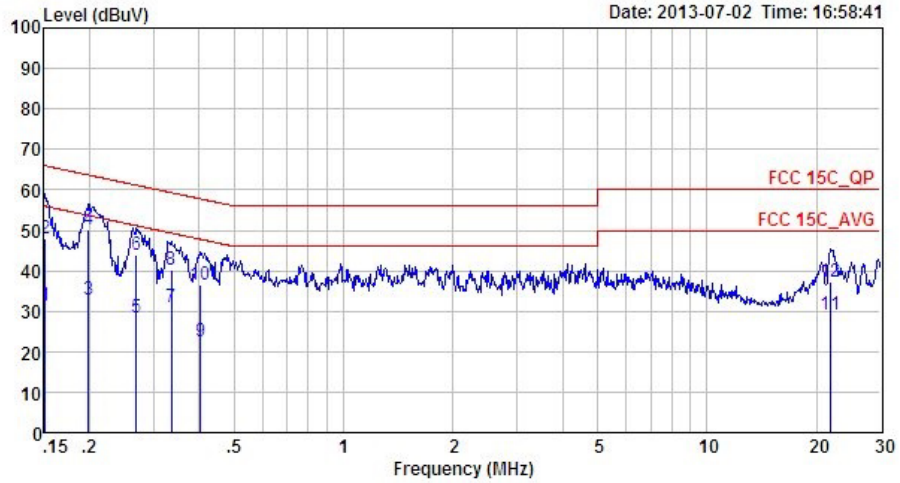
1. The testing follows the guidelines in ANSI C63.10-2009.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network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

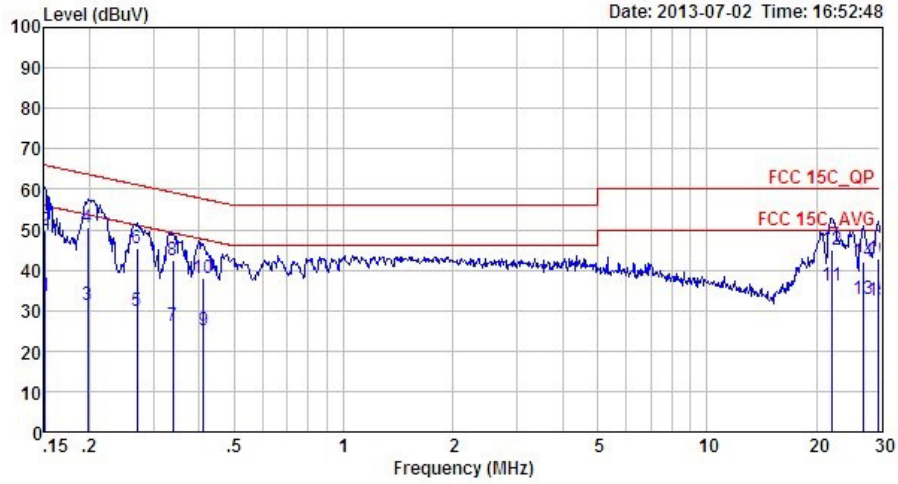
Test Mode :	Mode 2	Temperature :	24~25℃
Test Engineer :	Leo Liao	Relative Humidity :	48~49%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link + USB Cable (Charging from Adapter) + Battery 2 + Earphone + Sample2		



Site : CO01-SZ
Condition: FCC 15C_QP LISN_L_2000601 LINE
Project : (FR) 361803
Mode : Mode 2

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.15	31.38	-24.58	55.96	21.30	0.03	10.05	Average
2		0.15	48.08	-17.88	65.96	38.00	0.03	10.05	QP
3		0.20	32.88	-20.79	53.67	22.79	0.03	10.06	Average
4	*	0.20	50.08	-13.59	63.67	39.99	0.03	10.06	QP
5		0.27	28.48	-22.68	51.16	18.40	0.02	10.06	Average
6		0.27	43.98	-17.18	61.16	33.90	0.02	10.06	QP
7		0.34	30.89	-18.42	49.31	20.80	0.02	10.07	Average
8		0.34	40.39	-18.92	59.31	30.30	0.02	10.07	QP
9		0.40	22.60	-25.17	47.77	12.50	0.02	10.08	Average
10		0.40	36.60	-21.17	57.77	26.50	0.02	10.08	QP
11		21.83	29.09	-20.91	50.00	18.20	0.41	10.48	Average
12		21.83	37.09	-22.91	60.00	26.20	0.41	10.48	QP

Test Mode :	Mode 2	Temperature :	24~25℃
Test Engineer :	Leo Liao	Relative Humidity :	48~49%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link + USB Cable (Charging from Adapter) + Battery 2 + Earphone + Sample2		



Site : CO01-SZ
Condition: FCC 15C_QP LISN_N_2000601 NEUTRAL
Project : (FR) 361803
Mode : Mode 2

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.15	33.67	-22.29	55.96	23.60	0.02	10.05	Average
2		0.15	49.77	-16.19	65.96	39.70	0.02	10.05	QP
3		0.20	31.47	-22.24	53.71	21.39	0.02	10.06	Average
4	*	0.20	50.37	-13.34	63.71	40.29	0.02	10.06	QP
5		0.27	29.88	-21.24	51.12	19.80	0.02	10.06	Average
6		0.27	45.38	-15.74	61.12	35.30	0.02	10.06	QP
7		0.34	26.08	-23.14	49.22	15.99	0.02	10.07	Average
8		0.34	42.48	-16.74	59.22	32.39	0.02	10.07	QP
9		0.41	25.09	-22.50	47.59	14.99	0.02	10.08	Average
10		0.41	38.09	-19.50	57.59	27.99	0.02	10.08	QP
11		22.06	36.09	-13.91	50.00	25.00	0.62	10.47	Average
12		22.06	44.89	-15.11	60.00	33.80	0.62	10.47	QP
13		26.84	32.71	-17.29	50.00	21.40	0.89	10.42	Average
14		26.84	42.11	-17.89	60.00	30.80	0.89	10.42	QP
15		29.53	32.58	-17.42	50.00	21.11	1.00	10.47	Average
16		29.53	42.68	-17.32	60.00	31.21	1.00	10.47	QP

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	FSP30	101400	9kHz~30GHz	Mar. 28, 2013	Jun. 28, 2013~ Jun. 29, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	N/A	Mar. 28, 2013	Jun. 28, 2013~ Jun. 29, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
Power Sensor	Anritsu	MA2411B	1207253	N/A	Mar. 28, 2013	Jun. 28, 2013~ Jun. 29, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
ESCI TEST Receiver	R&S	ESCI	100724	9kHz -3GHz	Mar. 28, 2013	Jun. 26, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
Spectrum Analyzer	R&S	FSP30	101362	9kHz~30GHz	Oct. 11, 2012	Jun. 26, 2013	Oct. 10, 2013	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 12, 2012	Jun. 26, 2013	Oct. 11, 2013	Radiation (03CH01-SZ)
Bilog Antenna	SCHAFFNER	CBL6112B	2614	30MHz ~2GHz	Nov. 03, 2012	Jun. 26, 2013	Nov. 02, 2013	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9kHz-3000MHz GAIN 30db	Mar. 28, 2013	Jun. 26, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	Mar. 28, 2013	Jun. 26, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
SHF-EHF-Horn	Schwarzbeck	BBHA9170	BBHA9170249	14GHz~40GHz	Nov. 23, 2012	Jun. 26, 2013	Nov. 22, 2013	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz-30MHz	Oct. 22, 2012	Jun. 26, 2013	Oct. 21, 2013	Radiation (03CH01-SZ)
Turn Table	EM Electronice	EM 1000	N/A	0 ~ 360 degree	N/A	Jun. 26, 2013	N/A	Radiation (03CH01-SZ)
Antenna Mast	EM Electronice	EM 1000	N/A	1 m - 4 m	N/A	Jun. 26, 2013	N/A	Radiation (03CH01-SZ)
AC LISN	ETS-LINDGREN	3816/2SH	00103912	0.1MHz~108MHz	Feb. 28, 2013	Jul. 02, 2013	Feb. 27, 2014	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	ETS-LINDGREN	3816/2SH	00103892	0.1MHz~108MHz	Feb. 28, 2013	Jul. 02, 2013	Feb. 27, 2014	Conduction (CO01-SZ)
ESCIO TEST Receiver	R&S	1142.8007.03	100724	9kHz-3GHz	Mar. 08, 2013	Jul. 02, 2013	Mar. 07, 2014	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891 N/A	N/A	Oct. 12, 2012	Jul. 02, 2013	Oct. 11, 2013	Conduction (CO01-SZ)

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 EP361803 as below.