FCC RF Test Report

APPLICANT	:	CT Asia
EQUIPMENT	:	Mobile Phone
BRAND NAME	:	BLU
MODEL NAME	:	Tank 4.5
FCC ID	:	YHLBLUTANK45
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DTS) Digital Transmission System

The product was received on Dec. 27, 2012 and completely tested on Jan. 18, 2013. 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
FR2D2703B	Rev. 01	Initial issue of report	Jan. 21, 2013

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.2	15.247(b)	A8.4	Power Output Measurement	≤ 30dBm	Pass	-
3.3	15.247(e)	A8.2(b)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	A8.5	Conducted Band Edges	≤ 20dBc	Pass	-
			Conducted Spurious Emission		Pass	-
3.5	15.247(d)	A8.5	Radiated Band Edges	15.209(a) & 15.247(d)	Pass	-
			Radiated Spurious Emission		Pass	Under limit 2.79 dB at 2389.740 MHz
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 6.62 dB at 0.380 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

Beijing Tianyu Communication Equipment Co. Ltd.
NO. 55 Jiachang 2 road, OPTO-Mechatronics Industrial Park, Tongzhou district, Beijing 101111

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Phone
Brand Name	BLU
Model Name	Tank 4.5
FCC ID	YHLBLUTANK45
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/WLAN 11bgn/Bluetooth
HW Version	DVT
SW Version	BLU-Tank4.5-V01-Generic
EUT Stage	Identical Prototype

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

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 : 17.51 dBm (0.0564 W) 802.11g : 22.58 dBm (0.1811 W) 802.11n HT20 : 22.35 dBm (0.1718 W) 802.11n HT40 : 22.57 dBm (0.1807 W)
Antenna Type	PIFA Antenna type with gain -1.20 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / 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 (Z 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	17.36	17.43	17.09	17.13
CH 06	2437 MHz	17.45	17.47	17.15	17.22
CH 11	2462 MHz	**17.51**	17.49	17.15	17.24

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	22.06	22.04	22.01	22.04	22.35	22.35	22.21	22.18
CH 06	2437 MHz	22.09	22.52	22.09	22.44	22.41	22.56	22.28	22.52
CH 11	2462 MHz	**22.58**	22.41	22.15	22.19	22.46	22.51	22.42	22.48

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	22.13	21.58	21.7	21.96	21.83	21.87	21.98	21.77
CH 06	2437 MHz	22.25	21.98	21.79	21.98	22.11	21.91	21.8	22.19
CH 11	2462 MHz	**22.35**	21.94	21.73	21.97	21.95	22.01	22.04	21.96

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	22.35	21.58	21.46	21.16	21.08	21.32	21.24	21.82
CH 06	2437 MHz	22.48	21.67	21.84	21.73	21.64	21.63	21.81	21.43
CH 09	2452 MHz	**22.57**	22.09	21.69	21.91	21.74	21.54	21.68	21.6

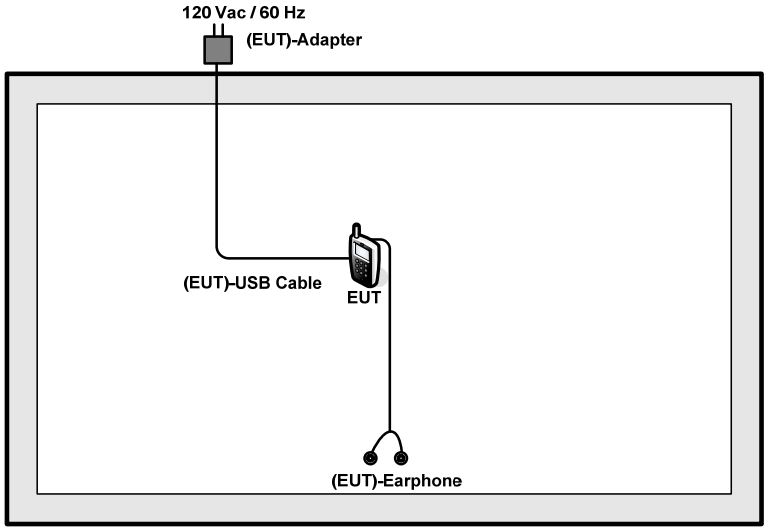
2.3 Test Mode

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

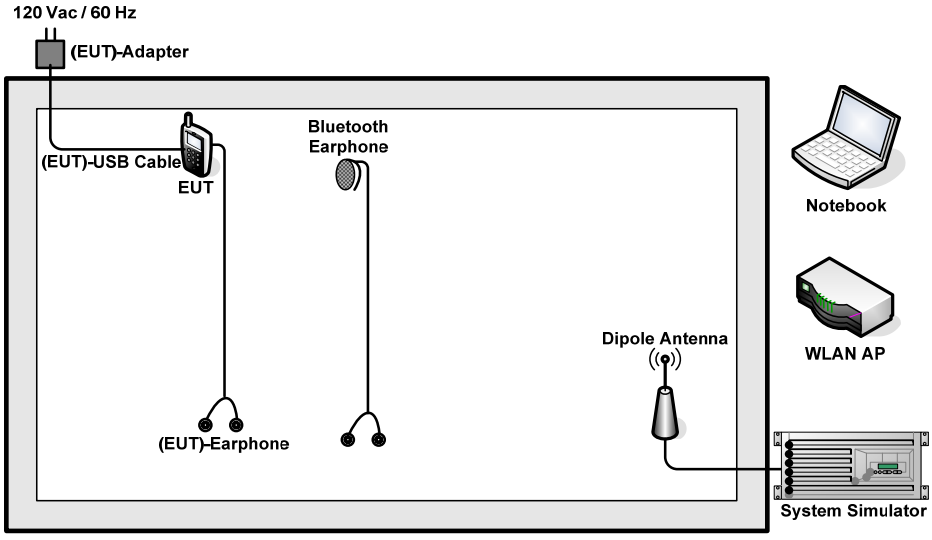
Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Conducted TCs	6dB BW Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n 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 : GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone			

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.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	GWINSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	P08S	QDS-BRCM1030	N/A	AC I/P: Unshielded, 0.9 m DC O/P: Shielded, 1.8 m
5.	Bluetooth Earphone	Nokia	BH-106	QTLBH-106	N/A	N/A

2.6 RF Utility

For WLAN function, key in "＊＃32787＃" on the EUT directly. Then, the EUT will get into the engineering modes to contact with WLAN AP 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 7.50 dB.

Example:
Offset (dB) = RF cable loss (dB) + attenuator factor (dB).
= 7.50 + 10 = 17.50 (dB)

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.

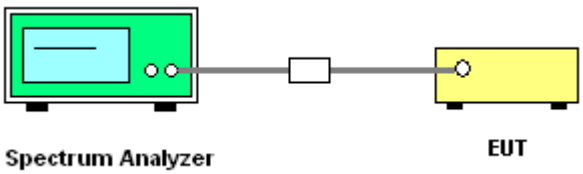
3.1.2 Measuring Instruments

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

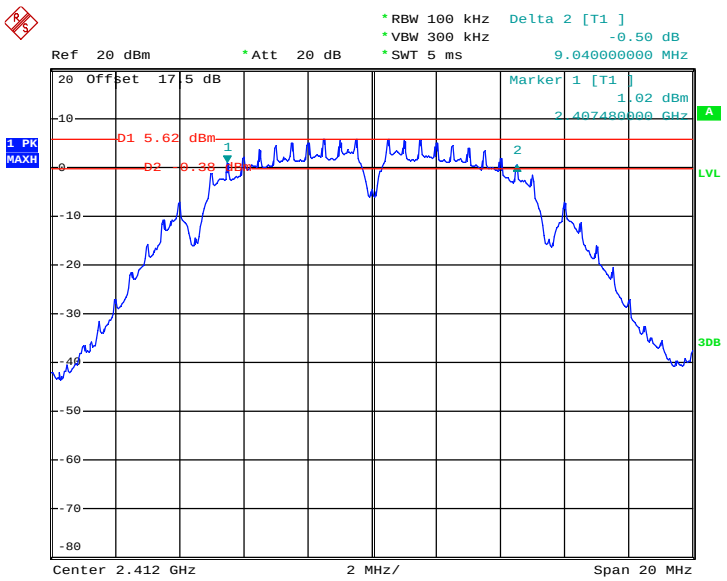


3.1.5 Test Result of 6dB Bandwidth

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

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	9.04	0.5	Pass
06	2437	9.08	0.5	Pass
11	2462	9.04	0.5	Pass

6 dB Bandwidth Plot on 802.11b Channel 01



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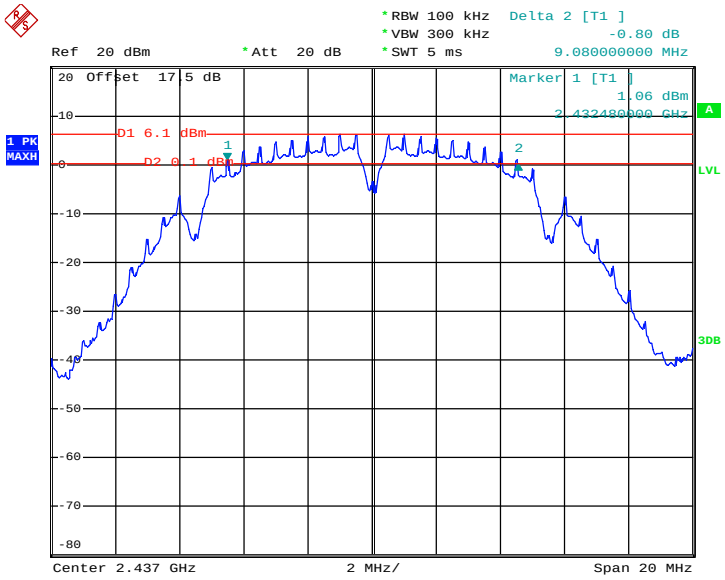
6 dB Bandwidth Plot on 802.11b Channel 06



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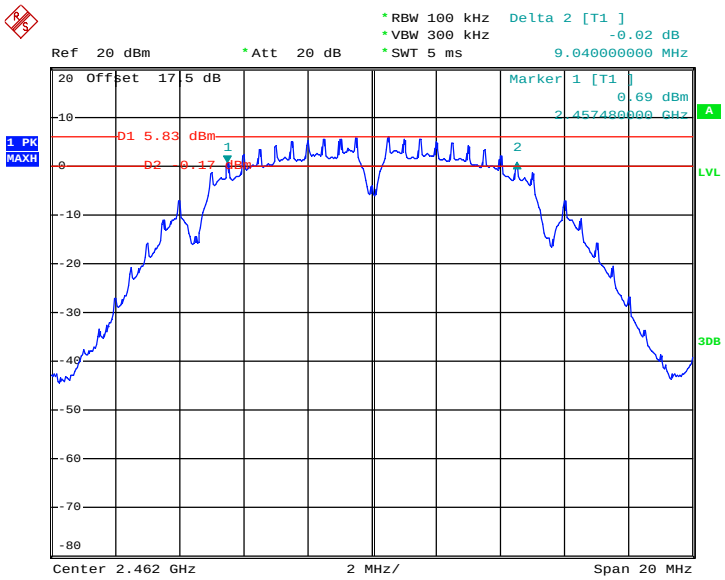
6 dB Bandwidth Plot on 802.11b Channel 11



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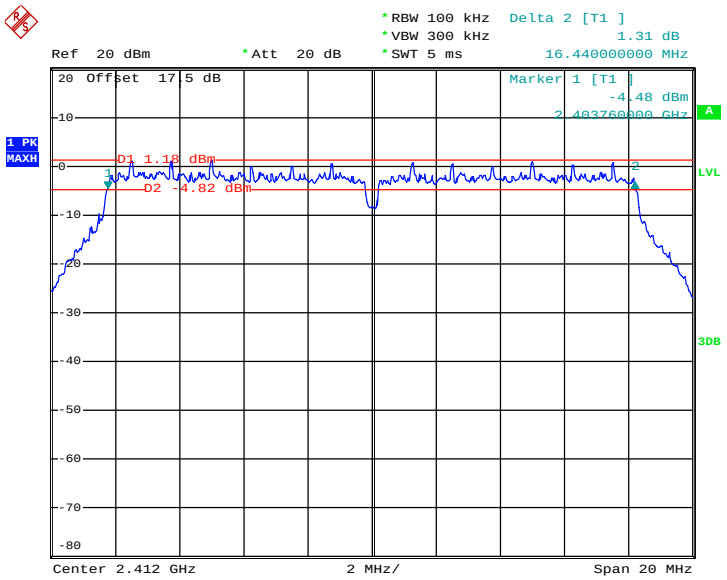
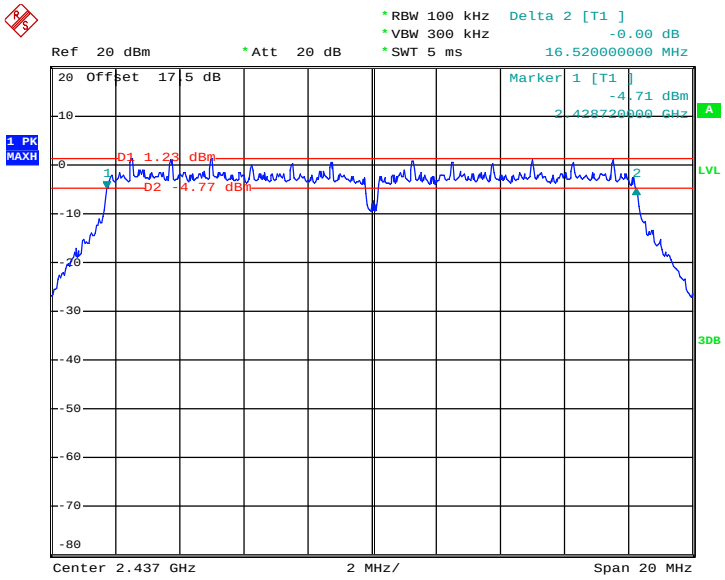
Test Mode :	802.11g	Temperature :	23~24℃
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.44	0.5	Pass
06	2437	16.52	0.5	Pass
11	2462	16.44	0.5	Pass

6 dB Bandwidth Plot on 802.11g Channel 01



6 dB Bandwidth Plot on 802.11g Channel 06



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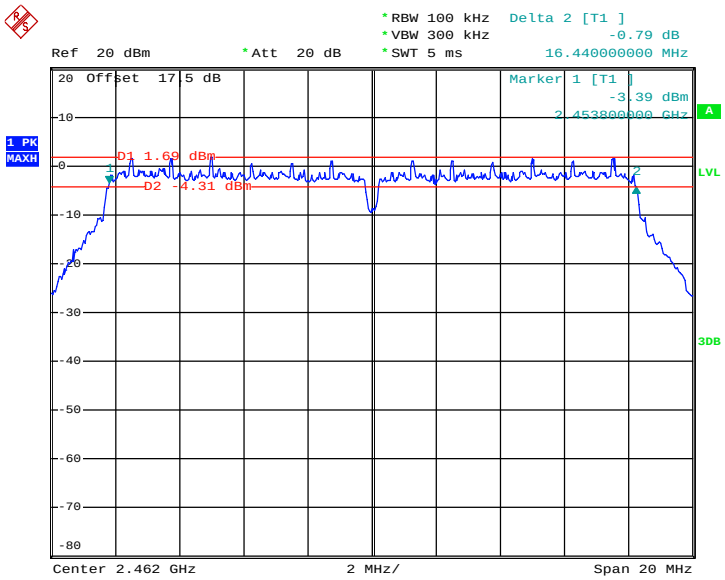
6 dB Bandwidth Plot on 802.11g Channel 11



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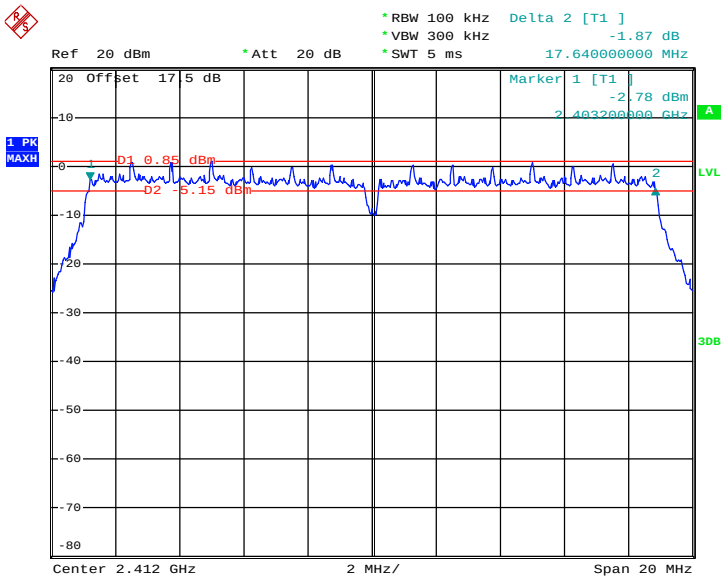
Test Mode :	802.11n HT20	Temperature :	23~24℃
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.64	0.5	Pass
06	2437	17.68	0.5	Pass
11	2462	17.72	0.5	Pass

6 dB Bandwidth Plot on 802.11n HT20 Channel 01



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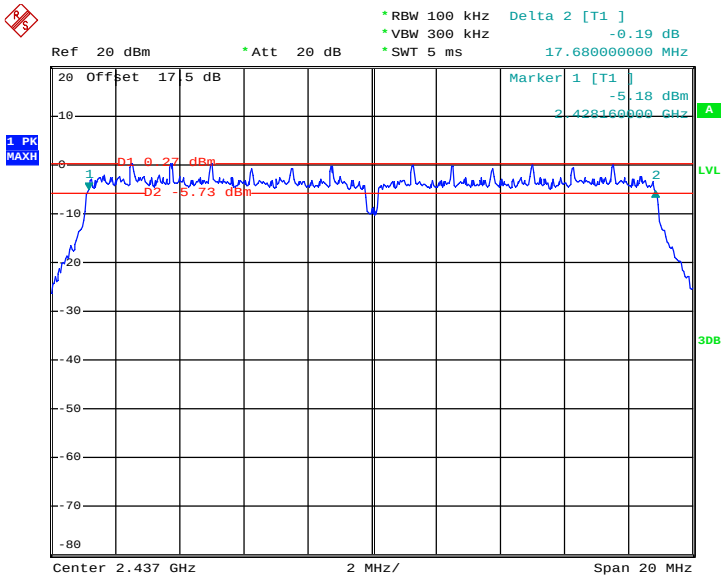
6 dB Bandwidth Plot on 802.11n HT20 Channel 06



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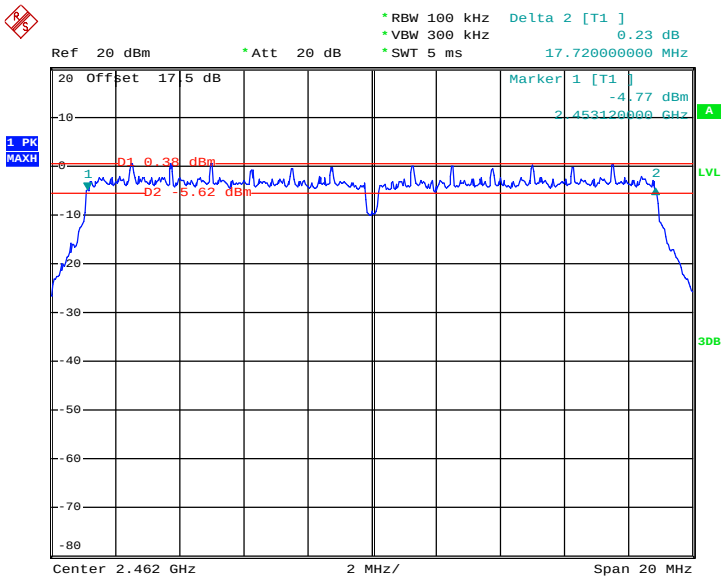
6 dB Bandwidth Plot on 802.11n HT20 Channel 11

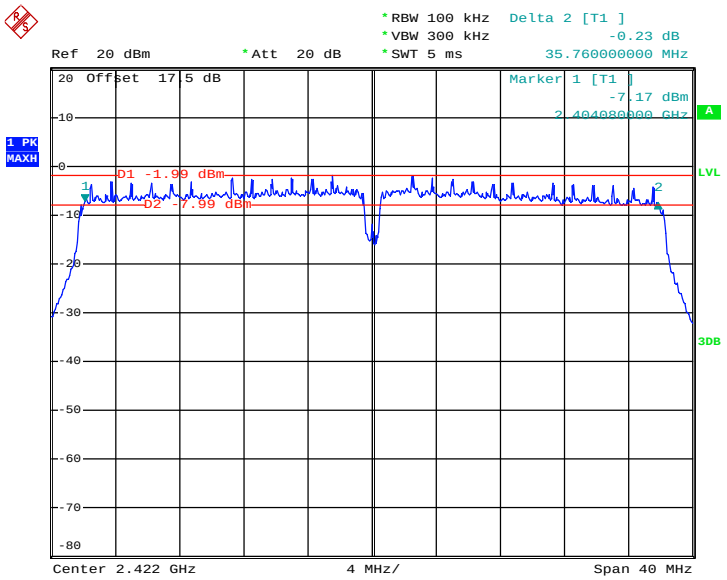


Date: 9.JAN.2013 16:45:43

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

Channel	Frequency (MHz)	802.11n HT40 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
03	2422	35.76	0.5	Pass
06	2437	35.76	0.5	Pass
09	2452	35.76	0.5	Pass

6 dB Bandwidth Plot on 802.11n HT40 Channel 03



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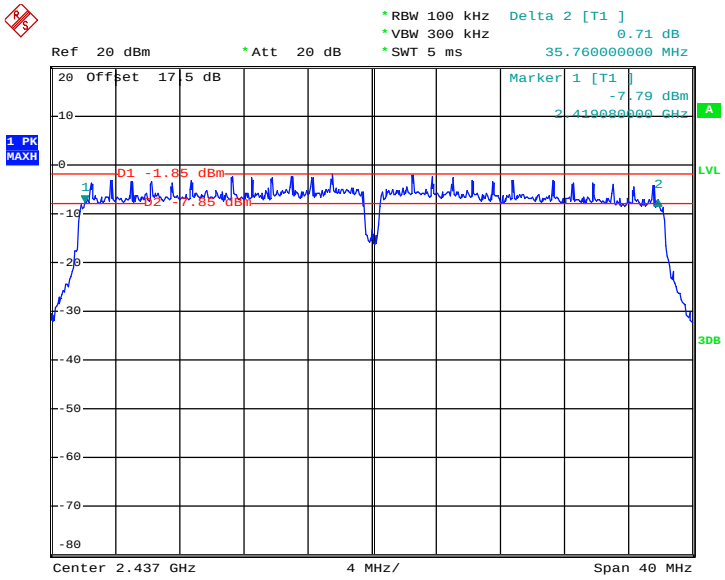
6 dB Bandwidth Plot on 802.11n HT40 Channel 06



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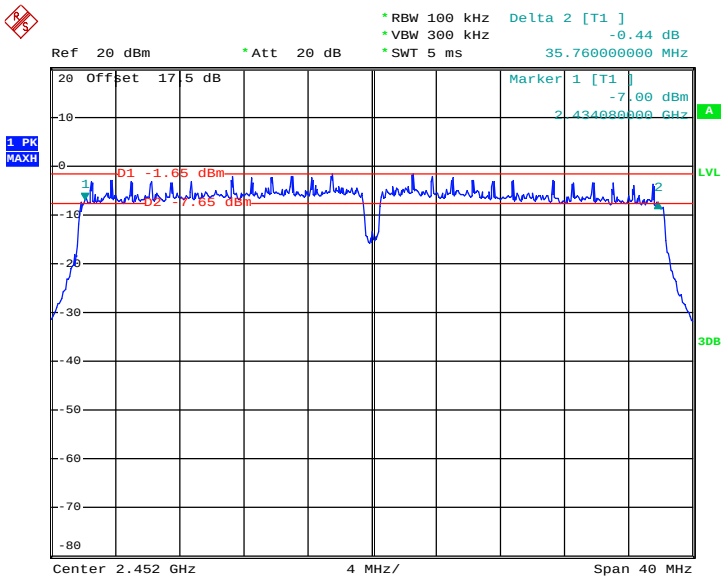
6 dB Bandwidth Plot on 802.11n HT40Channel 09



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3.2 Output Power Measurement

3.2.1 Limit of Output Power

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

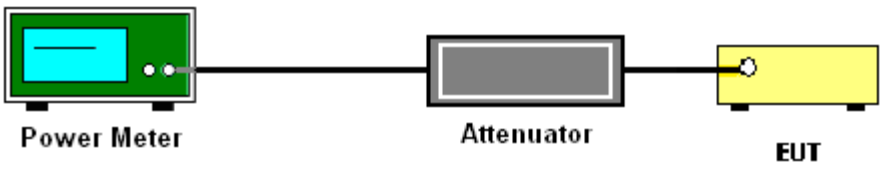
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure 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 :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	17.36	30	Pass
06	2437	17.45	30	Pass
11	2462	17.51	30	Pass

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

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.06	30	Pass
06	2437	22.09	30	Pass
11	2462	22.58	30	Pass

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

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.13	30	Pass
06	2437	22.25	30	Pass
11	2462	22.35	30	Pass

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

Channel	Frequency (MHz)	2.4GHz 802.11n HT40 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	22.35	30	Pass
06	2437	22.48	30	Pass
09	2452	22.57	30	Pass

3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	802.11b	Temperature :	23~24℃
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%
Duty Cycle:	90.25%	Duty Factor:	0.45dB

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)
01	2412	14.29
06	2437	14.30
11	2462	14.46

Test Mode :	802.11g	Temperature :	23~24℃
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%
Duty Cycle:	61.54%	Duty Factor:	2.11dB

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)
01	2412	12.80
06	2437	12.86
11	2462	12.93

Test Mode :	802.11n HT20	Temperature :	23~24℃
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%
Duty Cycle:	60.14%	Duty Factor:	2.21dB

Channel	Frequency (MHz)	802.11n HT20 Average Output Power (dBm)
01	2412	11.85
06	2437	11.86
11	2462	11.95

Test Mode :	802.11n HT40	Temperature :	23~24℃
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%
Duty Cycle:	50.00%	Duty Factor:	3.01dB

Channel	Frequency (MHz)	802.11n HT40 Average Output Power (dBm)
03	2422	11.53
06	2437	11.62
09	2452	12.28

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.

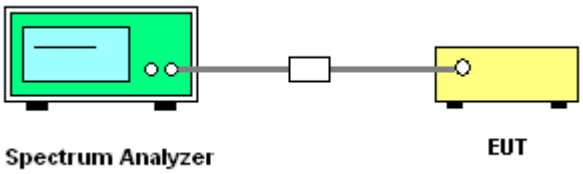
3.3.2 Measuring Instruments

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 :	Zhi Lu	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	5.33	-7.79	8	Pass
06	2437	5.93	-7.60	8	Pass
11	2462	5.79	-8.44	8	Pass

Test Mode :	802.11g	Temperature :	23~24℃
Test Engineer :	Zhi Lu	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	1.65	-11.57	8	Pass
06	2437	1.53	-10.72	8	Pass
11	2462	1.24	-11.15	8	Pass

Test Mode :	802.11n HT20	Temperature :	23~24℃
Test Engineer :	Zhi Lu	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	0.16	-13.04	8	Pass
06	2437	0.60	-12.67	8	Pass
11	2462	0.24	-12.76	8	Pass

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

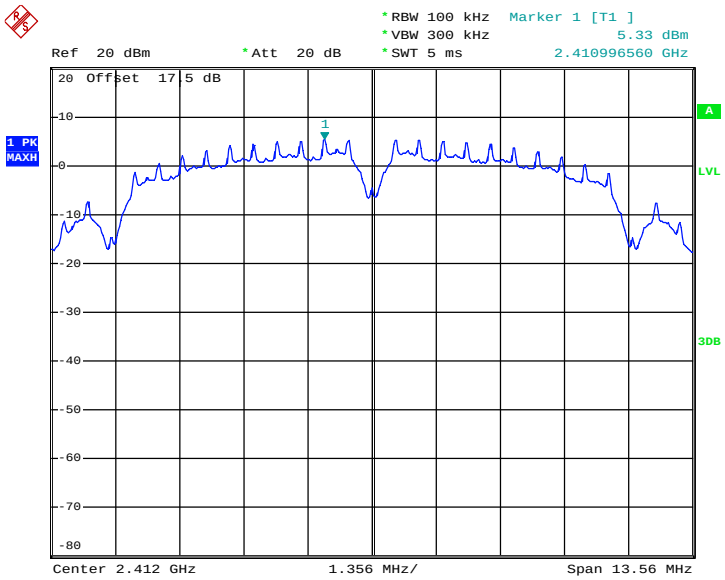
Channel	Frequency (MHz)	802.11n HT40 Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
03	2422	-1.58	-15.68	8	Pass
06	2437	-1.34	-15.90	8	Pass
09	2452	-1.57	-15.44	8	Pass

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.*

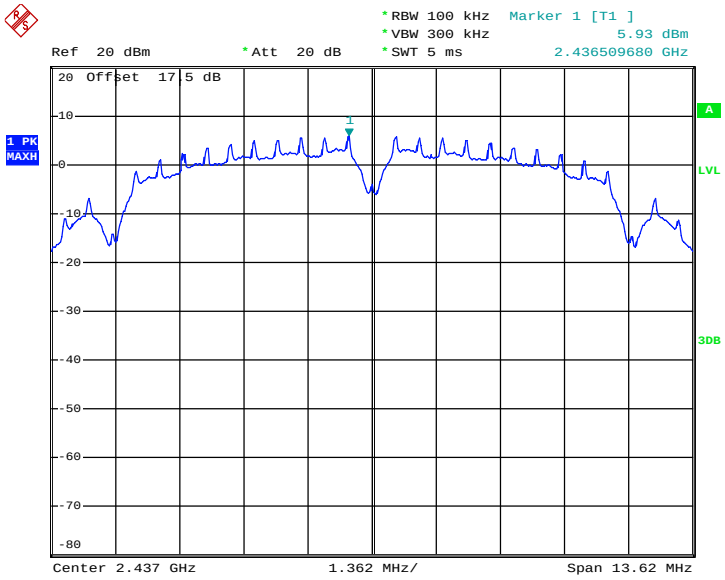
3.3.6 Test Result of Power Spectral Density Plots (100kHz)

PSD 100kHz Plot on 802.11b Channel 01



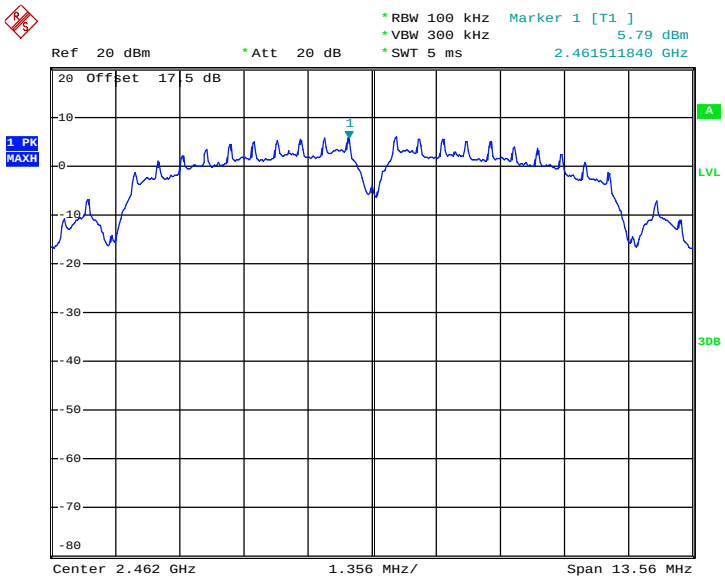
Date: 9.JAN.2013 17:15:02

PSD 100kHz Plot on 802.11b Channel 06



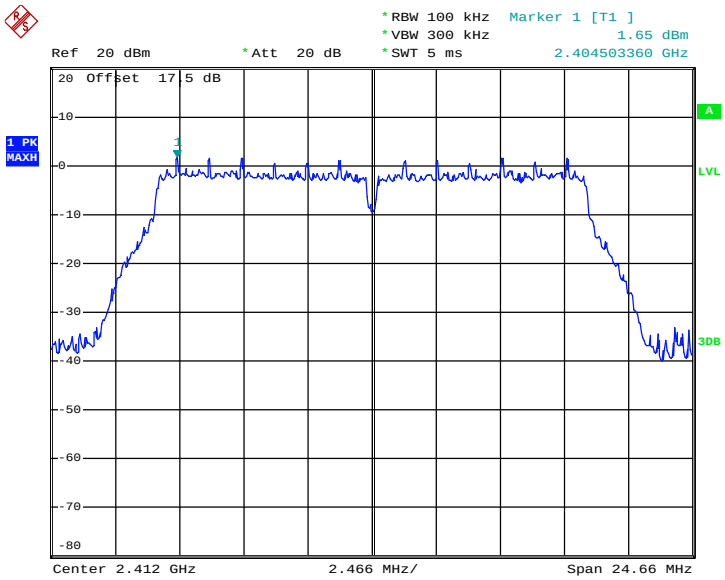
Date: 9.JAN.2013 17:15:51

PSD 100kHz Plot on 802.11b Channel 11



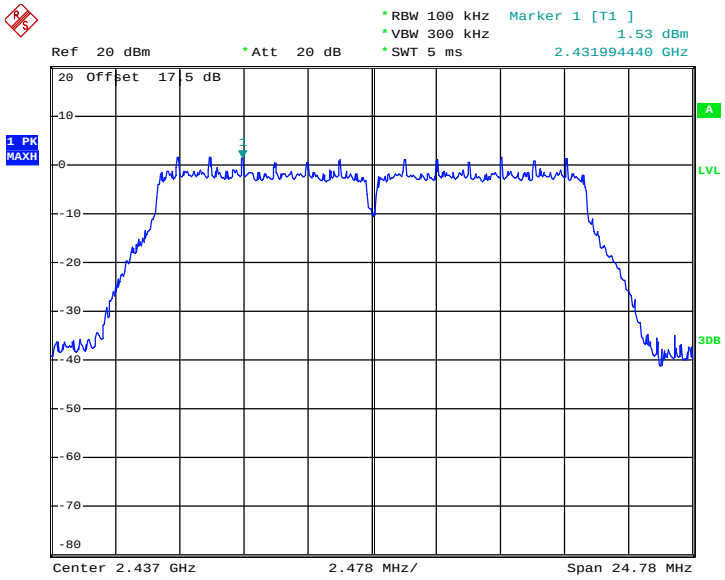
Date: 9.JAN.2013 17:16:24

PSD 100kHz Plot on 802.11g Channel 01



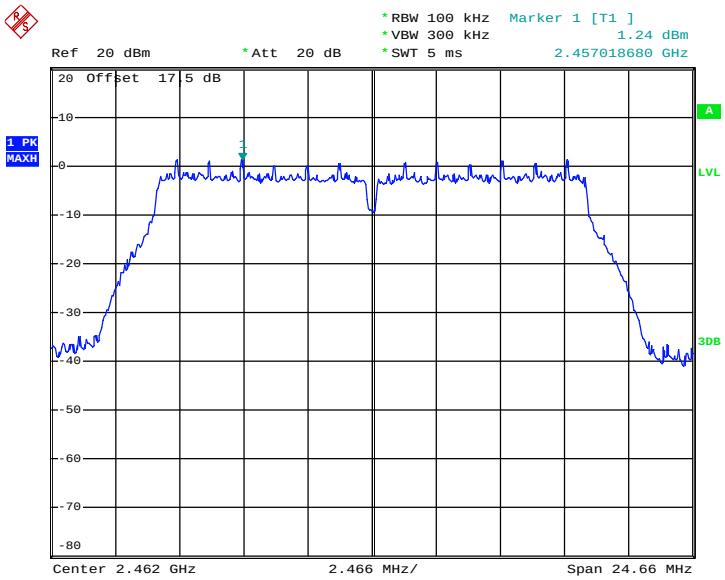
Date: 9.JAN.2013 17:18:08

PSD 100kHz Plot on 802.11g Channel 06



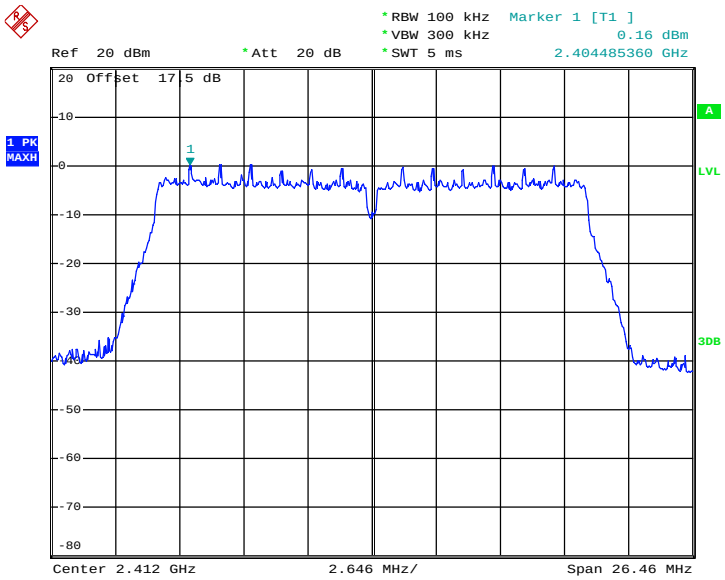
Date: 9.JAN.2013 17:18:53

PSD 100kHz Plot on 802.11g Channel 11



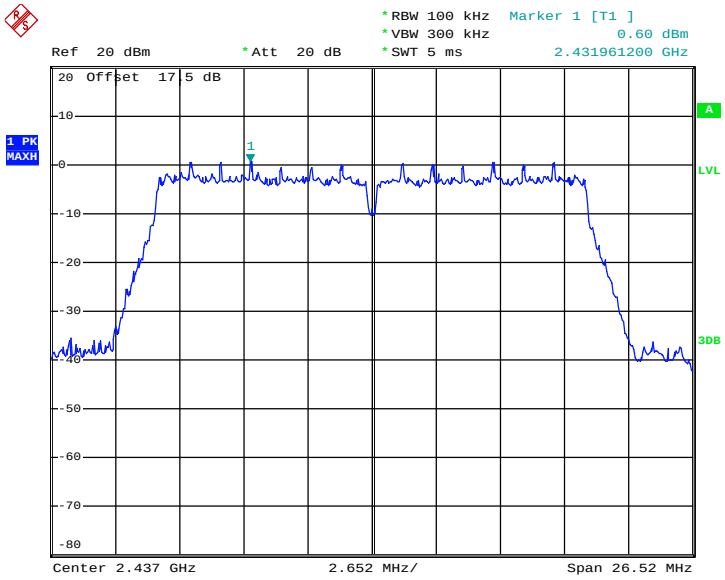
Date: 9.JAN.2013 17:17:15

PSD 100kHz Plot on 802.11n HT20 Channel 01



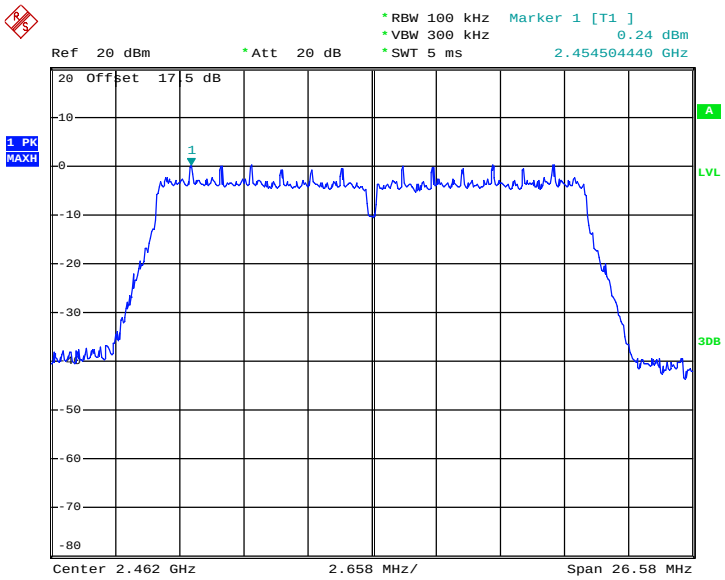
Date: 9.JAN.2013 17:21:53

PSD 100kHz Plot on 802.11n HT20 Channel 06



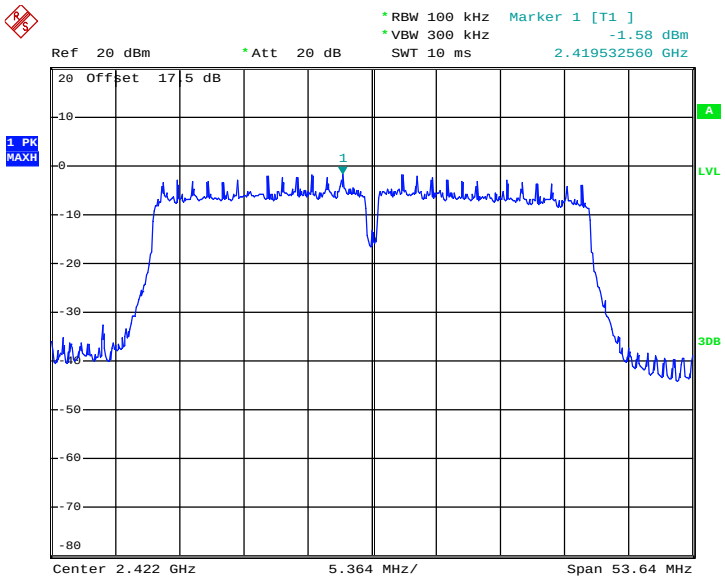
Date: 9.JAN.2013 17:20:50

PSD 100kHz Plot on 802.11n HT20 Channel 11



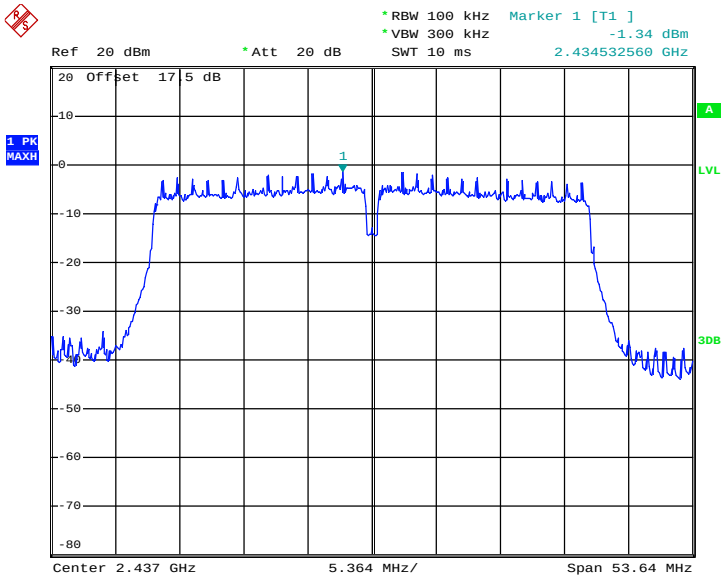
Date: 9.JAN.2013 17:22:48

PSD 100kHz Plot on 802.11n HT40 Channel 03



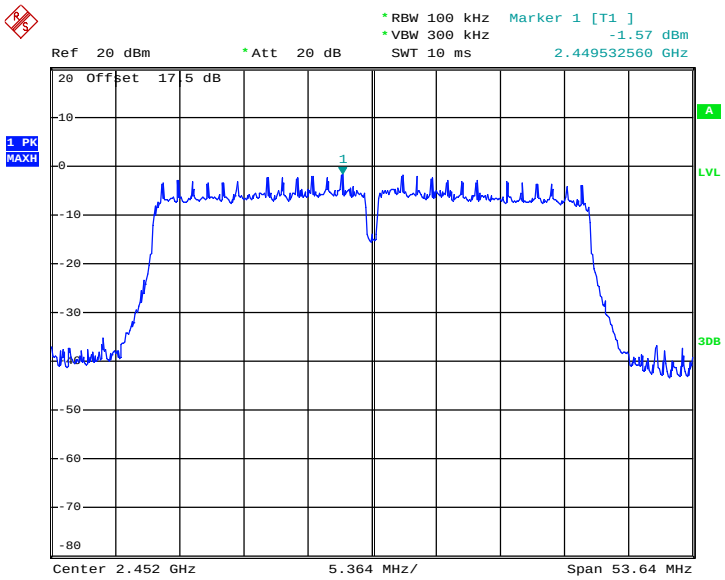
Date: 9.JAN.2013 17:23:40

PSD 100kHz Plot on 802.11n HT40 Channel 06



Date: 9.JAN.2013 17:24:54

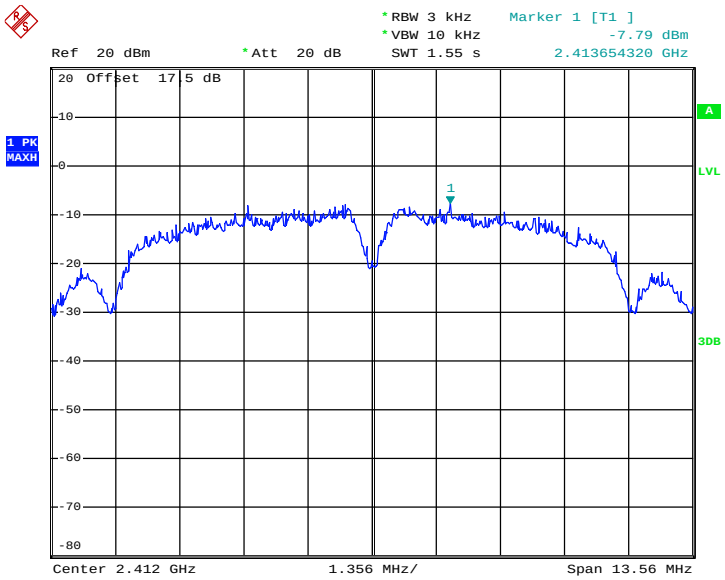
PSD 100kHz Plot on 802.11n HT40 Channel 09



Date: 9.JAN.2013 17:25:33

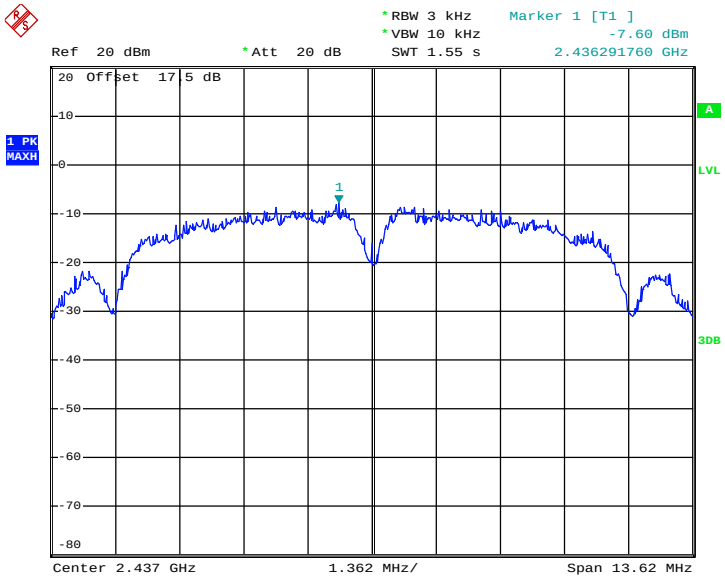
3.3.7 Test Result of Power Spectral Density Plots (3kHz)

PSD 3kHz Plot on 802.11b Channel 01



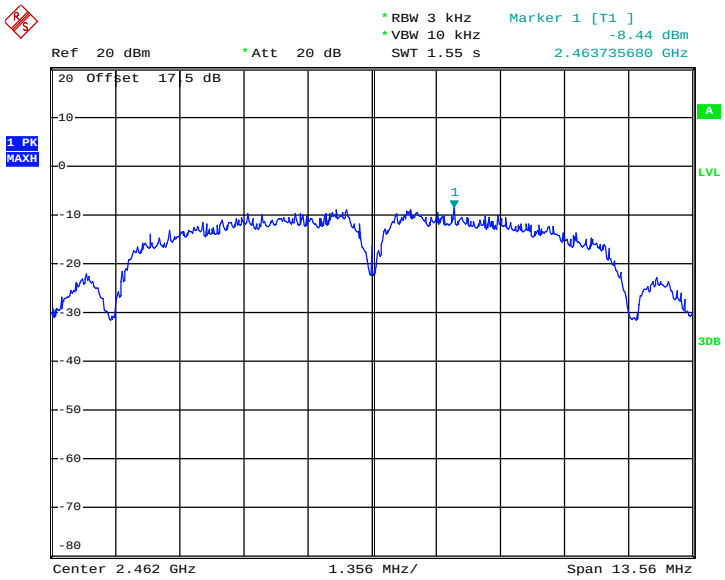
Date: 9.JAN.2013 17:32:51

PSD 3kHz Plot on 802.11b Channel 06



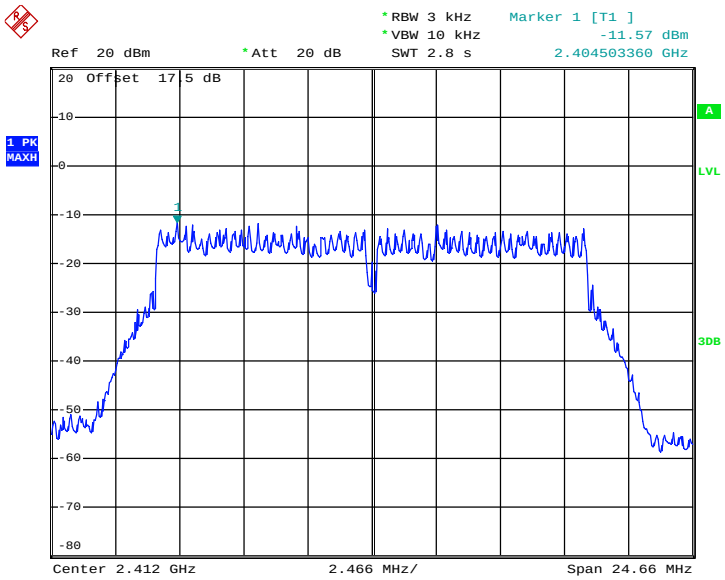
Date: 9.JAN.2013 17:31:38

PSD 3kHz Plot on 802.11b Channel 11



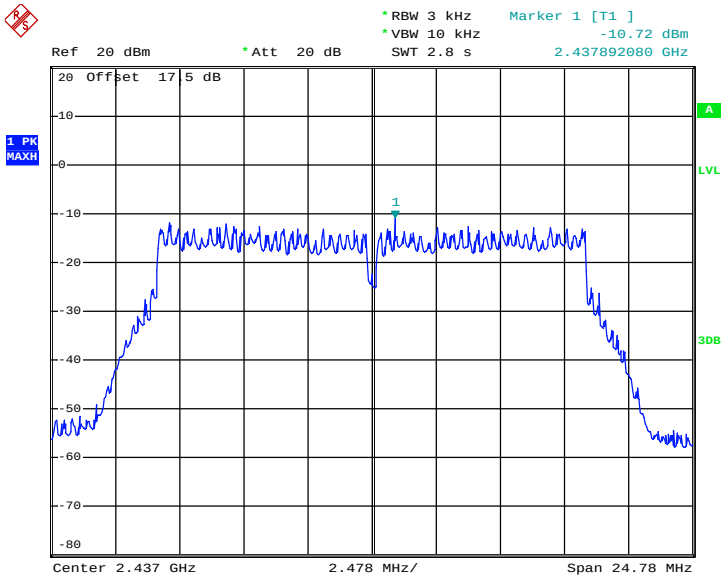
Date: 9.JAN.2013 17:30:30

PSD 3kHz Plot on 802.11g Channel 01



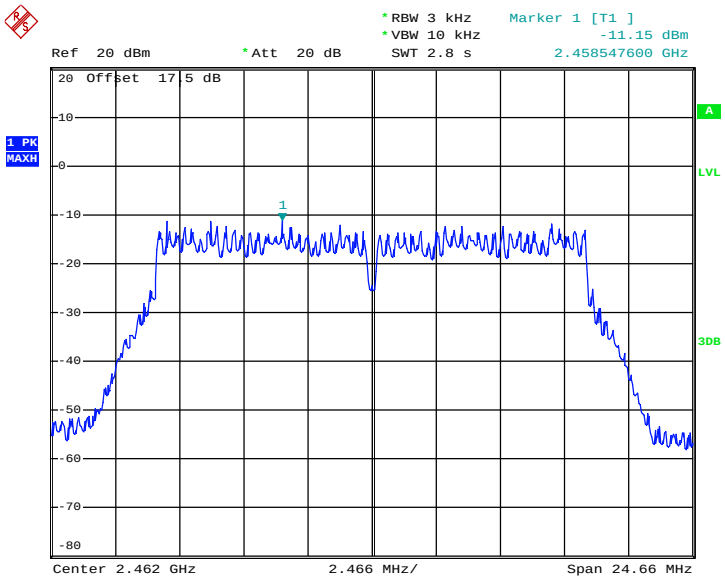
Date: 9.JAN.2013 17:33:45

PSD 3kHz Plot on 802.11g Channel 06



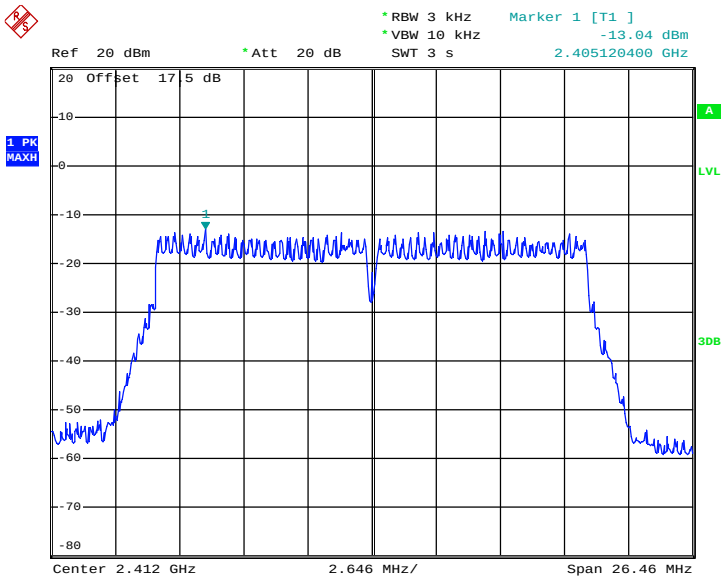
Date: 9.JAN.2013 17:35:06

PSD 3kHz Plot on 802.11g Channel 11



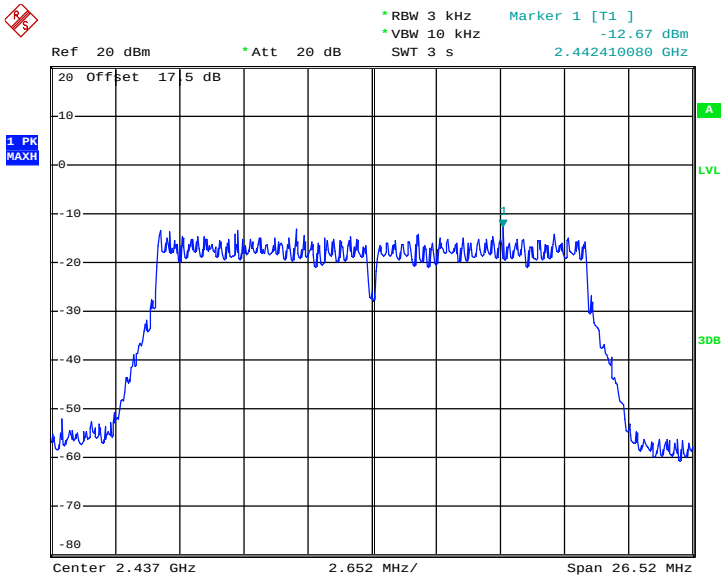
Date: 9.JAN.2013 17:36:15

PSD 3kHz Plot on 802.11n HT20 Channel 01



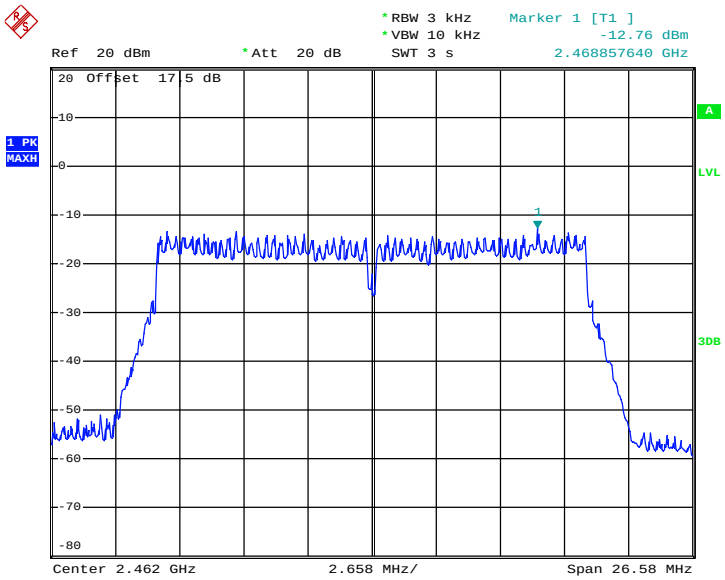
Date: 9.JAN.2013 17:39:26

PSD 3kHz Plot on 802.11n HT20 Channel 06



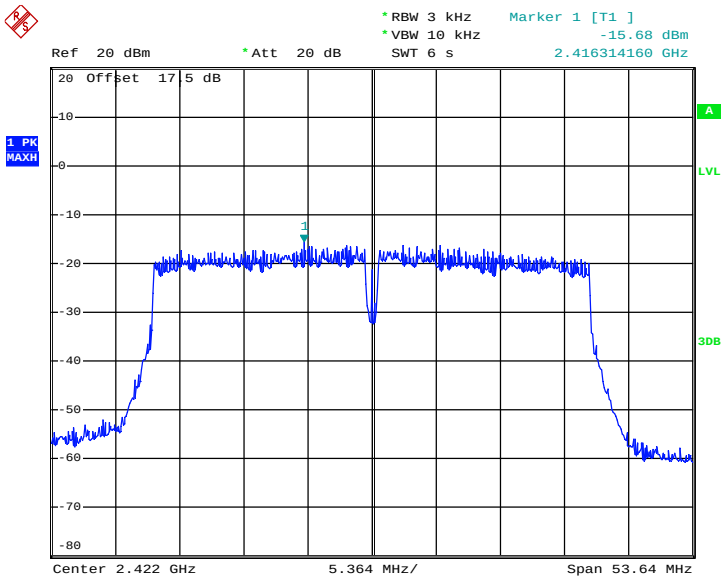
Date: 9.JAN.2013 17:38:15

PSD 3kHz Plot on 802.11n HT20 Channel 11



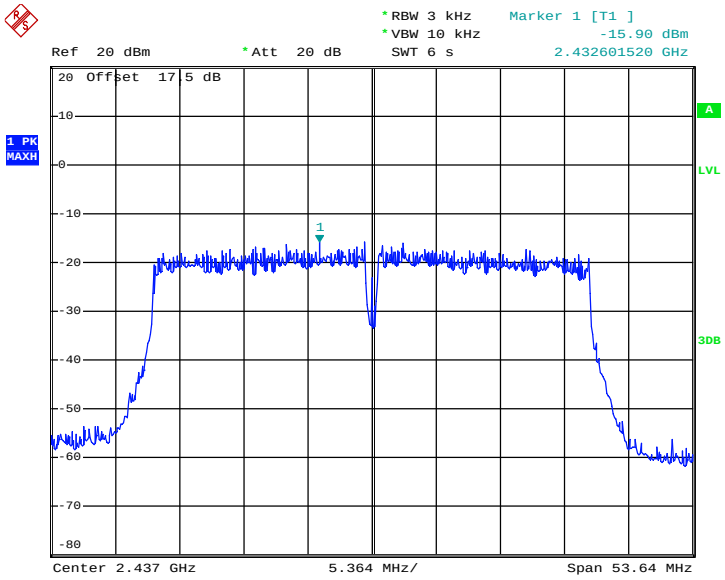
Date: 9.JAN.2013 17:37:30

PSD 3kHz Plot on 802.11n HT40 Channel 03



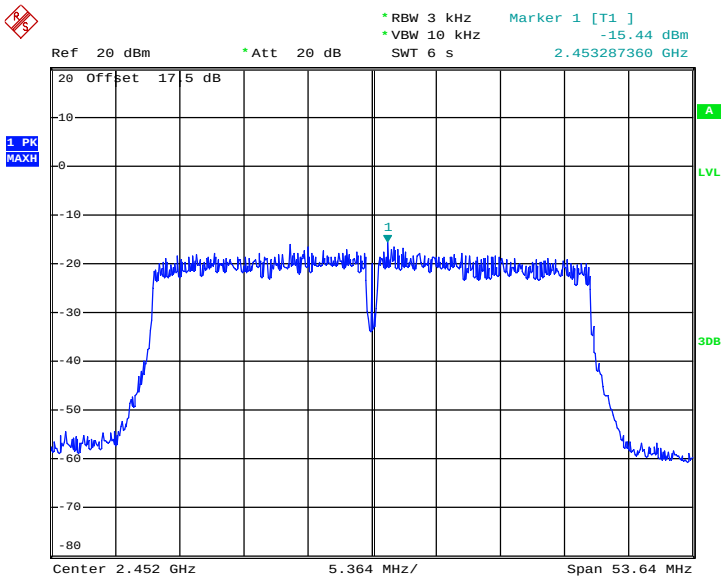
Date: 9.JAN.2013 17:29:01

PSD 3kHz Plot on 802.11n HT40 Channel 06



Date: 9.JAN.2013 17:27:16

PSD 3kHz Plot on 802.11n HT40 Channel 09



Date: 9.JAN.2013 17:26:17

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).

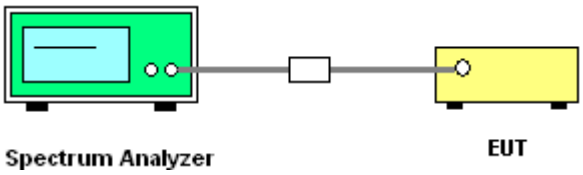
3.4.2 Measuring Instruments

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.

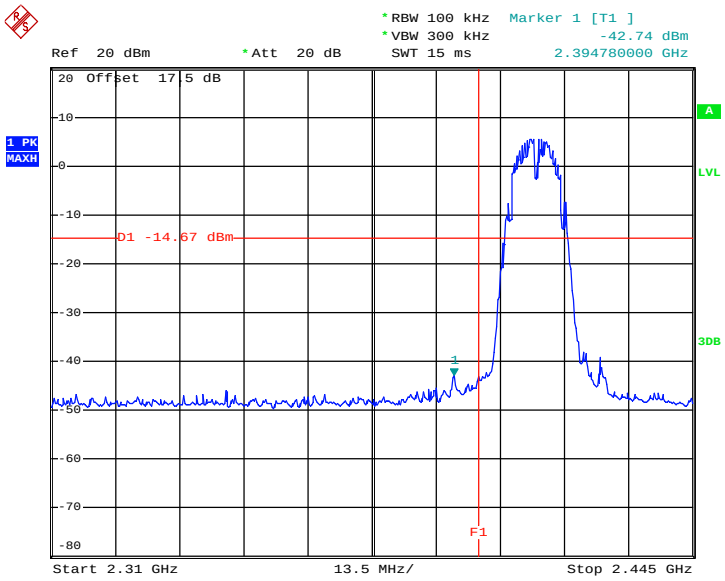
3.4.4 Test Setup



3.4.5 Test Plots of Conducted Band Edges

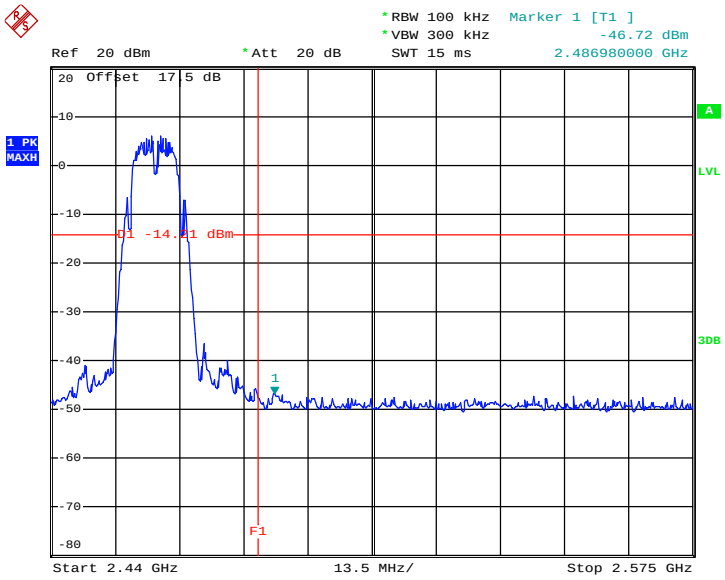
Test Mode :	802.11b	Temperature :	23~24℃
Test Band :	Low and High	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11b Channel 01



Date: 9.JAN.2013 17:54:26

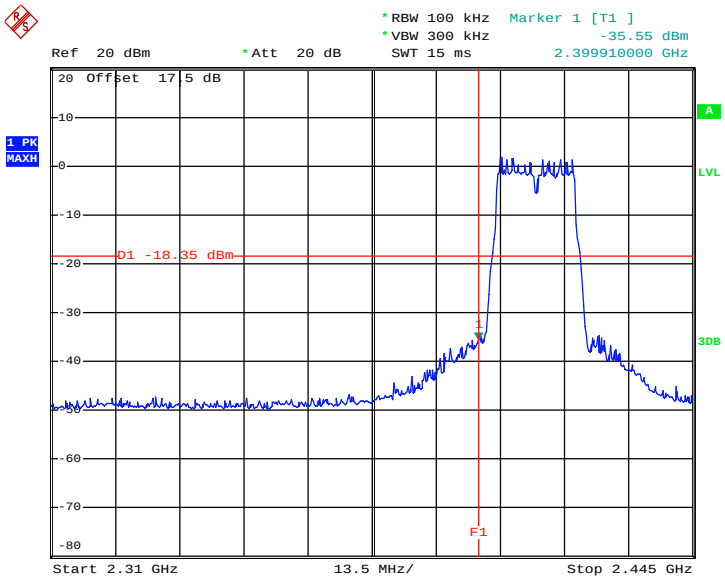
High Band Edge Plot on 802.11b Channel 11



Date: 9.JAN.2013 17:55:16

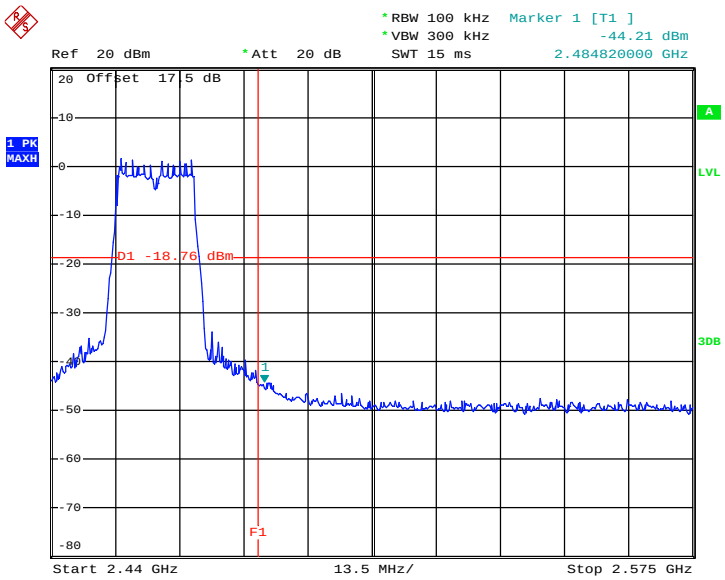
Test Mode :	802.11g	Temperature :	23~24℃
Test Band :	Low and High	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11g Channel 01



Date: 9.JAN.2013 17:57:42

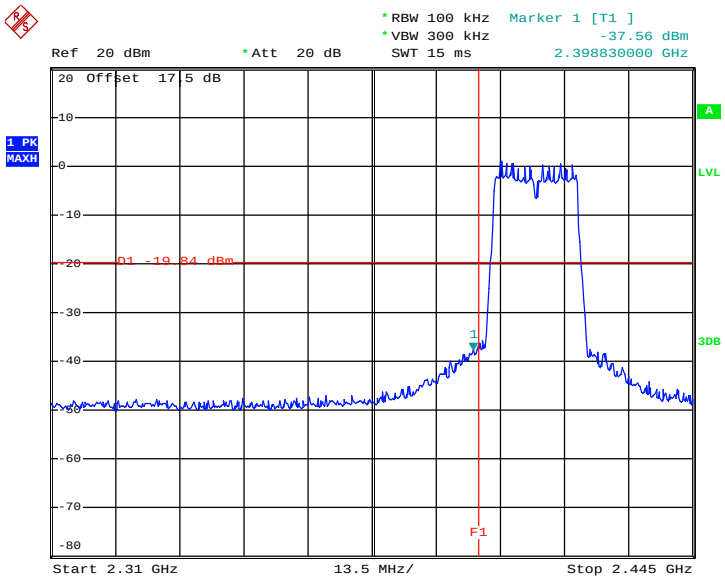
High Band Edge Plot on 802.11g Channel 11



Date: 9.JAN.2013 17:56:15

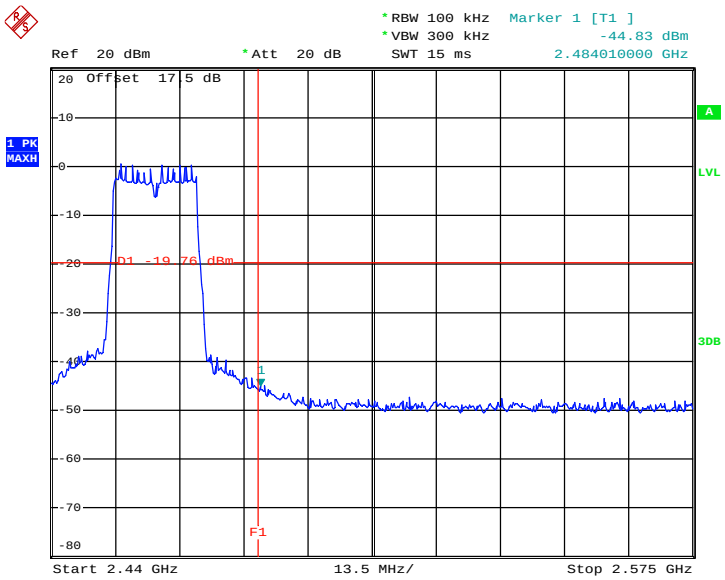
Test Mode :	802.11n HT20	Temperature :	23~24℃
Test Band :	Low and High	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11n HT20 Channel 01



Date: 9.JAN.2013 17:58:37

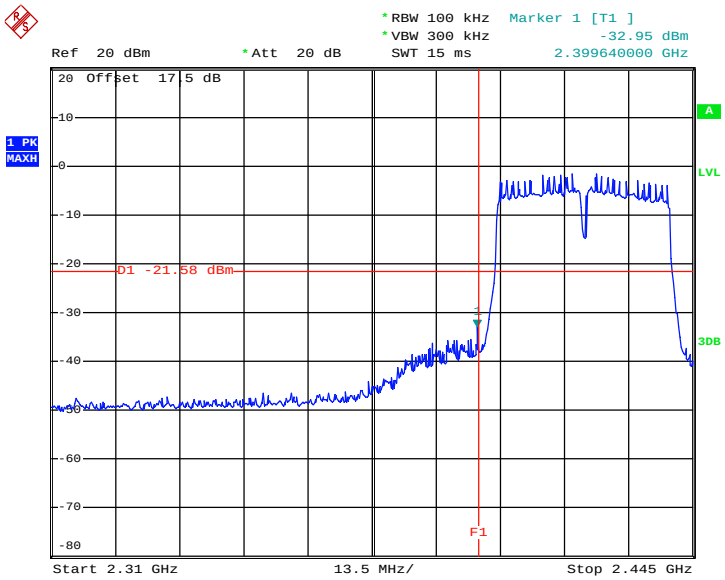
High Band Edge Plot on 802.11n HT20 Channel 11



Date: 9.JAN.2013 17:59:27

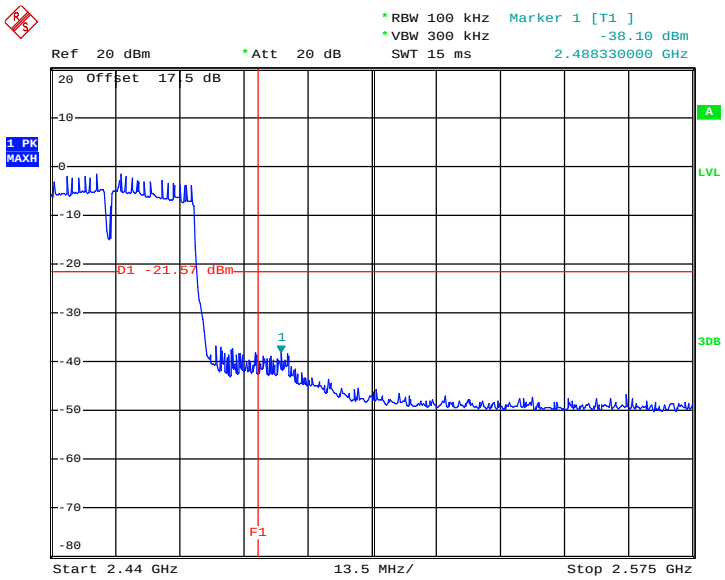
Test Mode :	802.11n HT40	Temperature :	23~24℃
Test Band :	Low and High	Relative Humidity :	47~48%
Test Channel :	03 and 09	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11n HT40 Channel 03



Date: 9.JAN.2013 18:01:57

High Band Edge Plot on 802.11n HT40 Channel 09



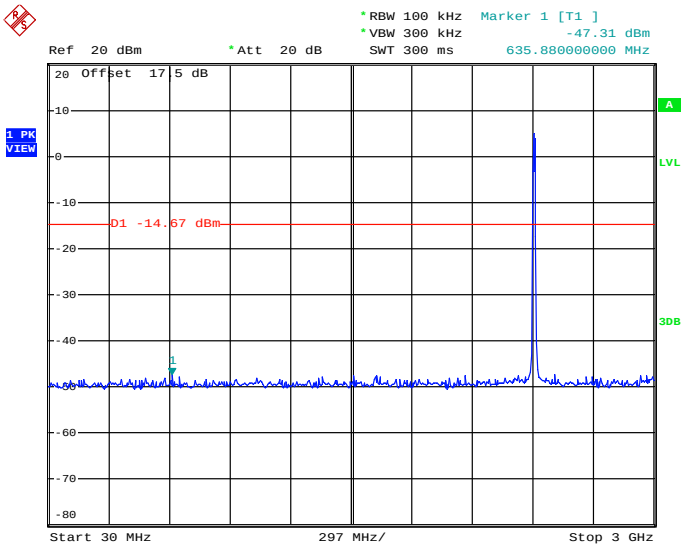
Date: 9.JAN.2013 18:00:41

3.4.6 Test Plots of Spurious Emission

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

802.11b 30 MHz~3 GHz

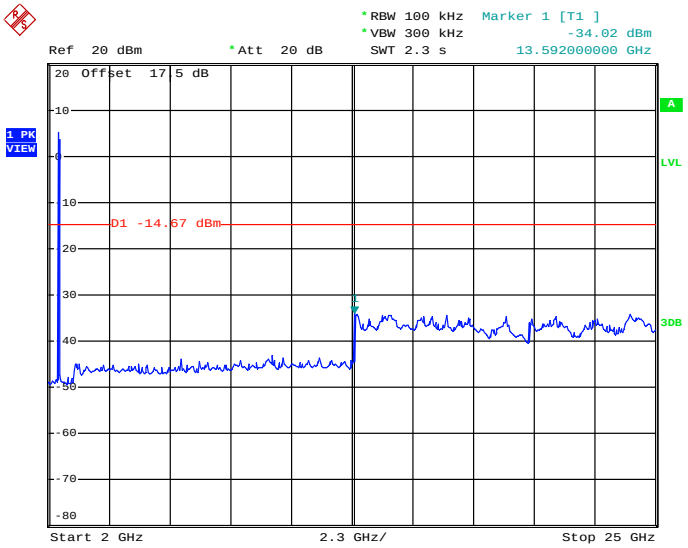
Conducted Spurious Emission Plot on Channel 01



Date: 9.JAN.2013 18:32:29

802.11b 2 GHz~25 GHz

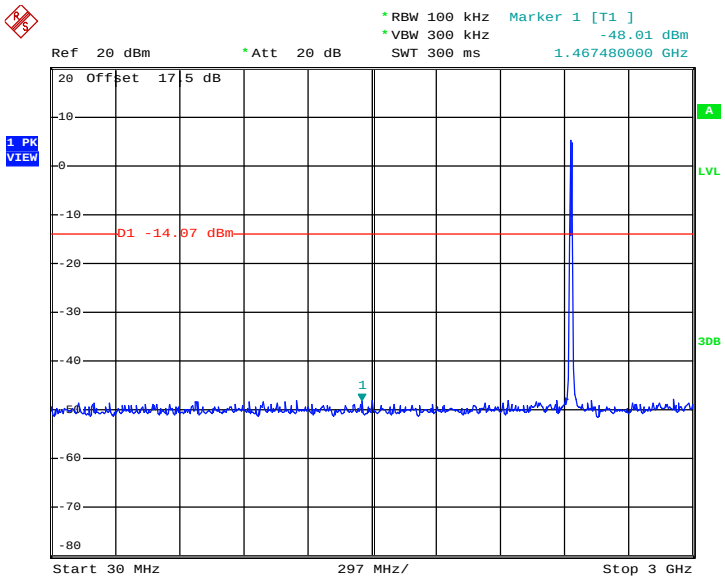
Conducted Spurious Emission Plot on Channel 01



Date: 9.JAN.2013 18:34:00

802.11b 30 MHz~3 GHz

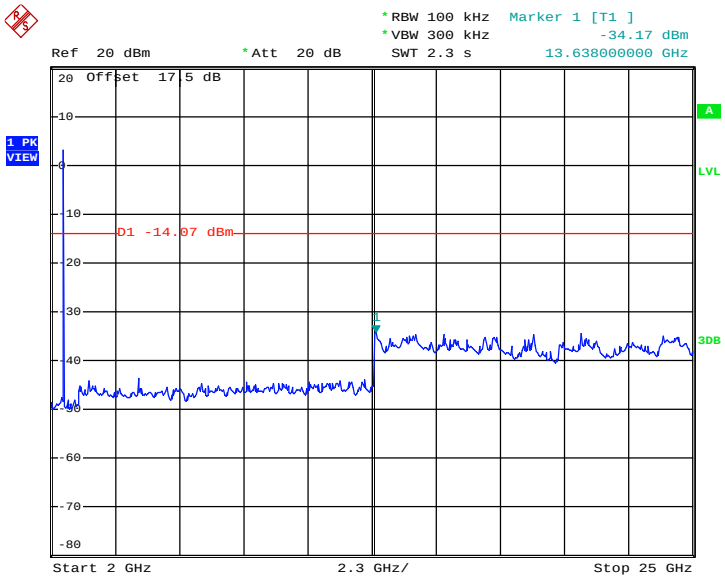
Conducted Spurious Emission Plot on Channel 06



Date: 9.JAN.2013 18:35:19

802.11b 2 GHz~25 GHz

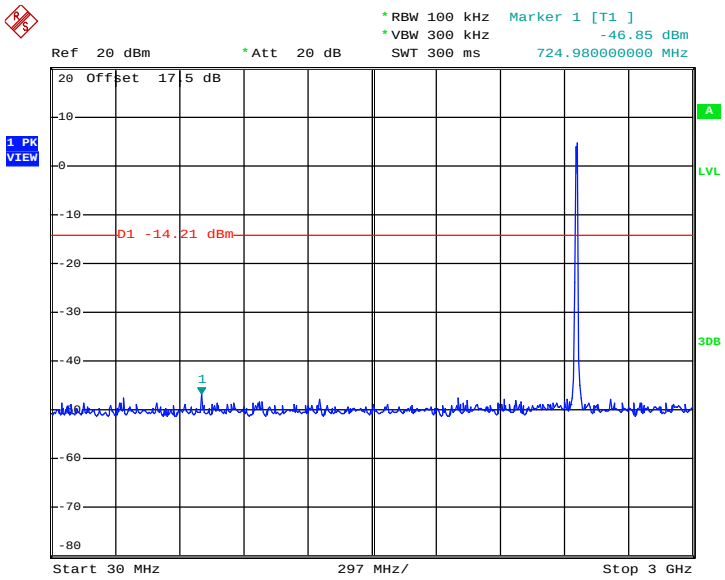
Conducted Spurious Emission Plot on Channel 06



Date: 9.JAN.2013 18:34:47

802.11b 30 MHz~3 GHz

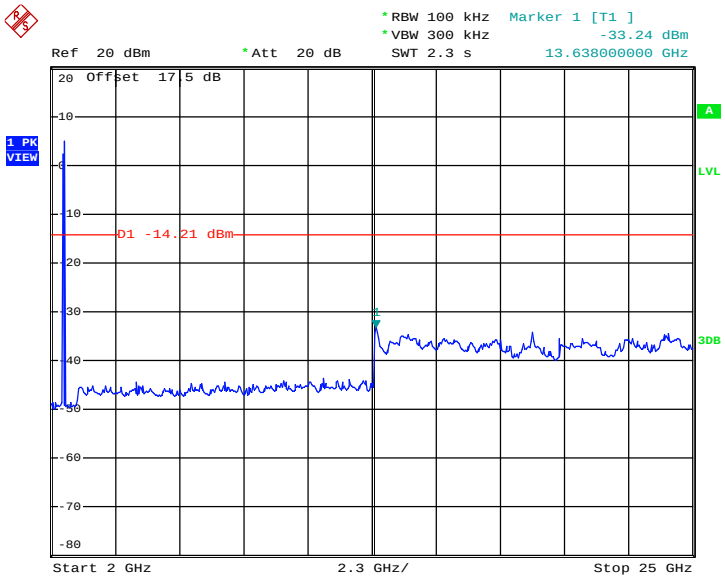
Conducted Spurious Emission Plot on Channel 11



Date: 9.JAN.2013 18:35:58

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

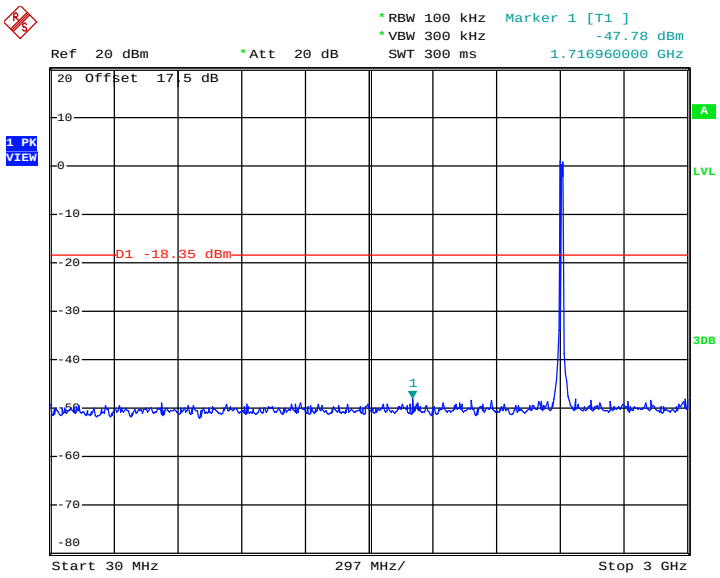


Date: 9.JAN.2013 18:36:54

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

802.11g 30 MHz~3 GHz

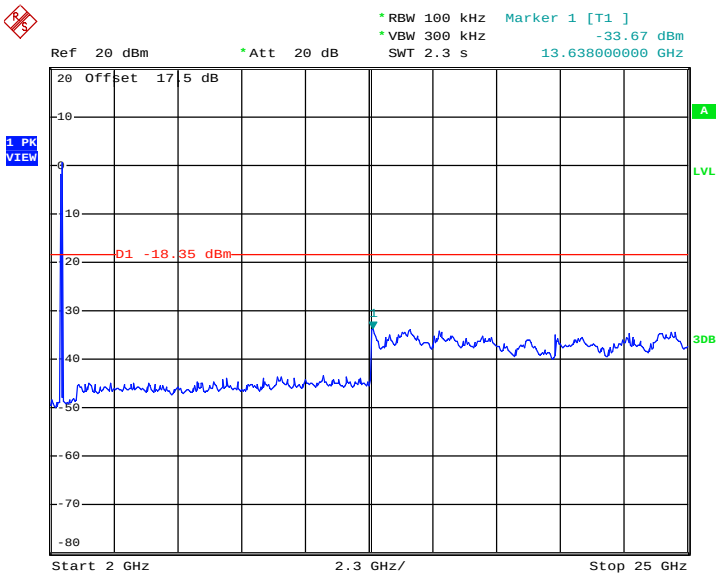
Conducted Spurious Emission Plot on Channel 01



Date: 9.JAN.2013 18:45:49

802.11g 2 GHz~25 GHz

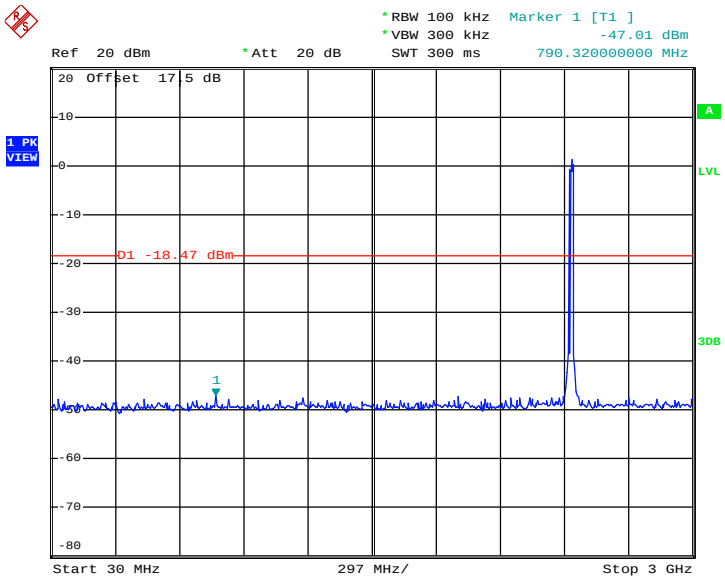
Conducted Spurious Emission Plot on Channel 01



Date: 9.JAN.2013 18:45:21

802.11g 30 MHz~3 GHz

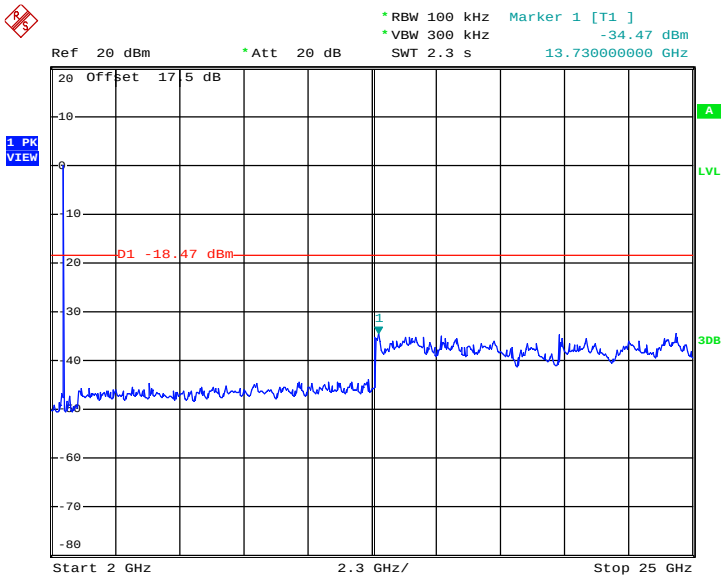
Conducted Spurious Emission Plot on Channel 06



Date: 9.JAN.2013 18:40:44

802.11g 2 GHz~25 GHz

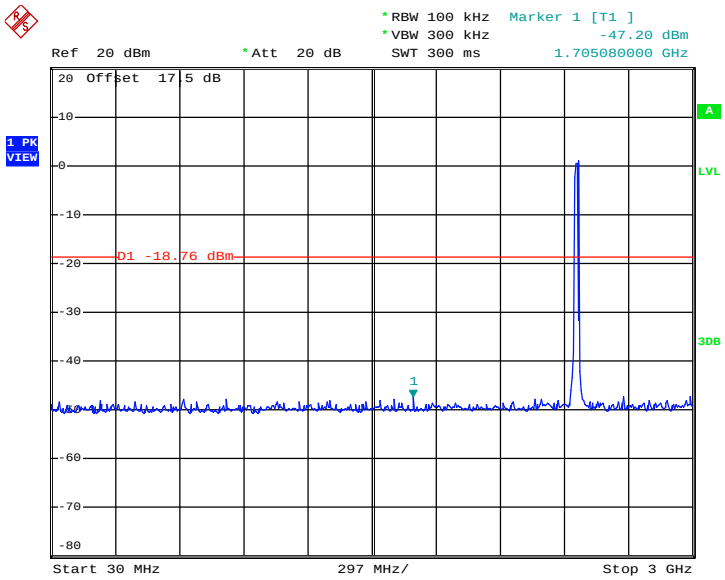
Conducted Spurious Emission Plot on Channel 06



Date: 9.JAN.2013 18:42:50

802.11g 30 MHz~3 GHz

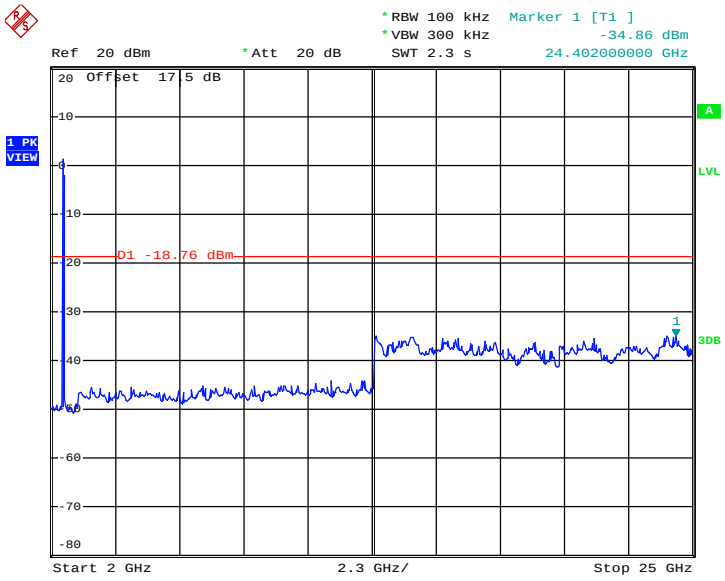
Conducted Spurious Emission Plot on Channel 11



Date: 9.JAN.2013 18:39:16

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

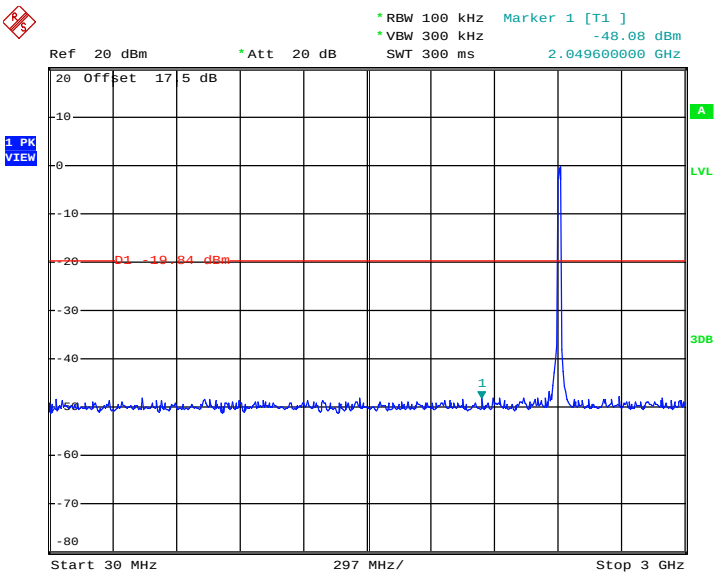


Date: 9.JAN.2013 18:38:22

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

802.11n HT20 30 MHz~3 GHz

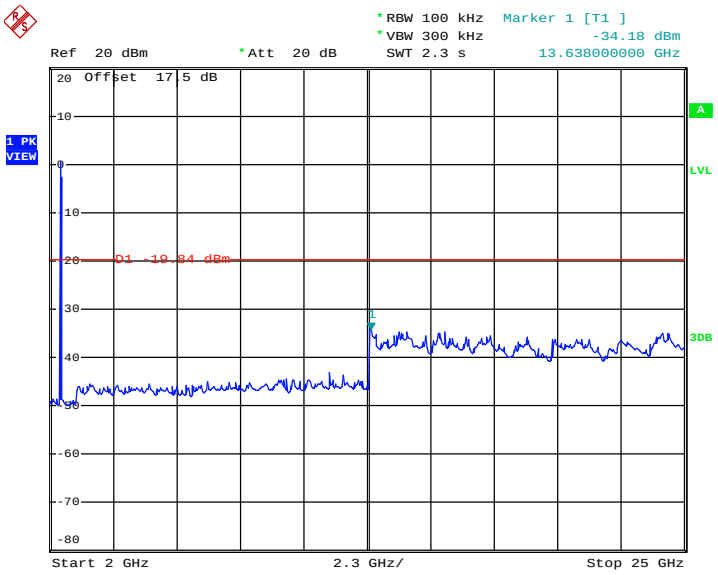
Conducted Spurious Emission Plot on Channel 01



Date: 9.JAN.2013 18:47:17

802.11n HT20 2 GHz~25 GHz

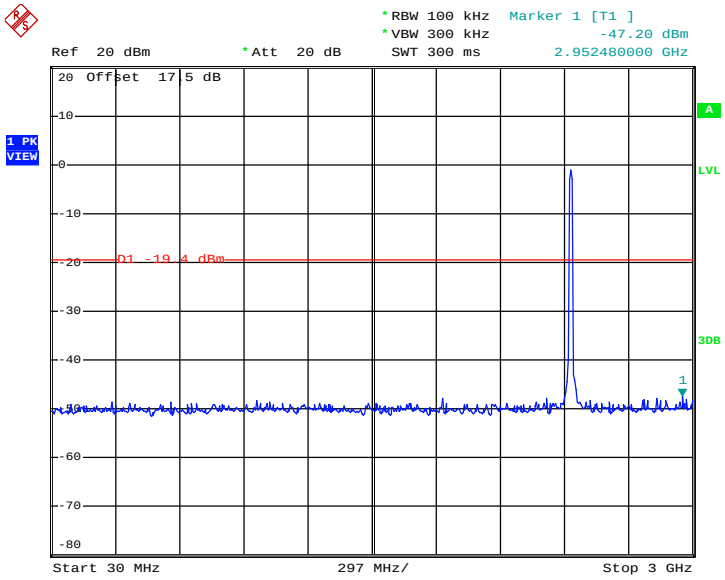
Conducted Spurious Emission Plot on Channel 01



Date: 9.JAN.2013 18:47:47

802.11n HT20 30 MHz~3 GHz

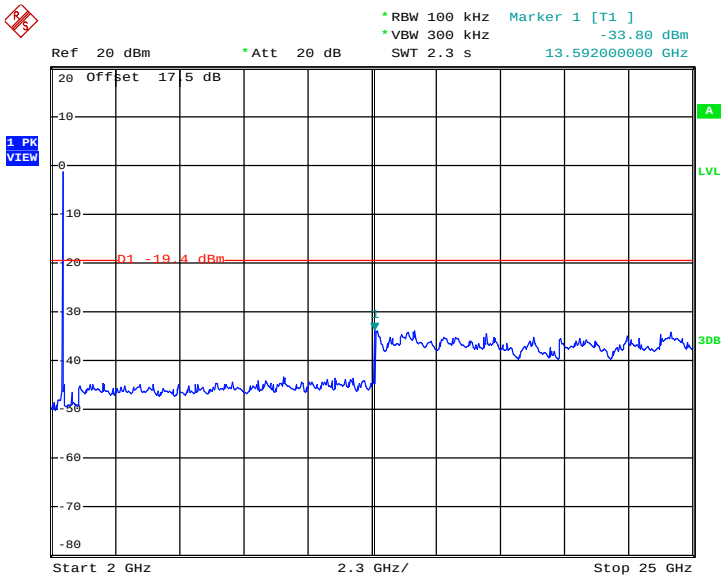
Conducted Spurious Emission Plot on Channel 06



Date: 9.JAN.2013 18:50:54

802.11n HT20 2 GHz~25 GHz

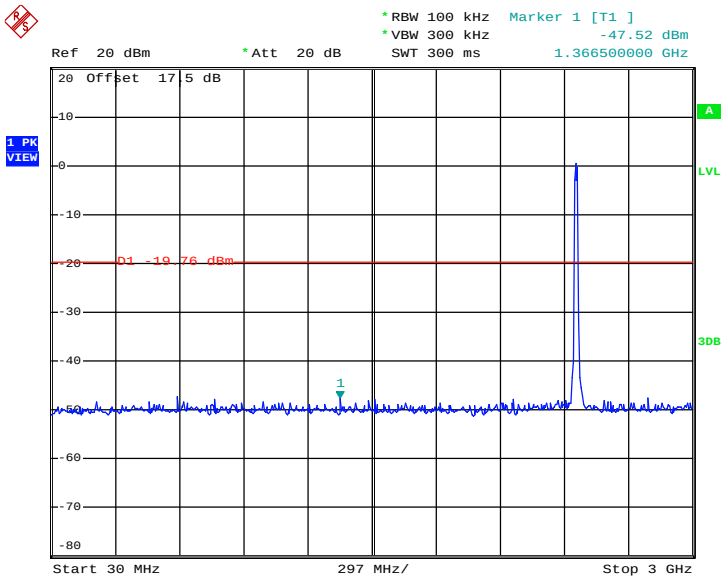
Conducted Spurious Emission Plot on Channel 06



Date: 9.JAN.2013 18:50:20

802.11n HT20 30 MHz~3 GHz

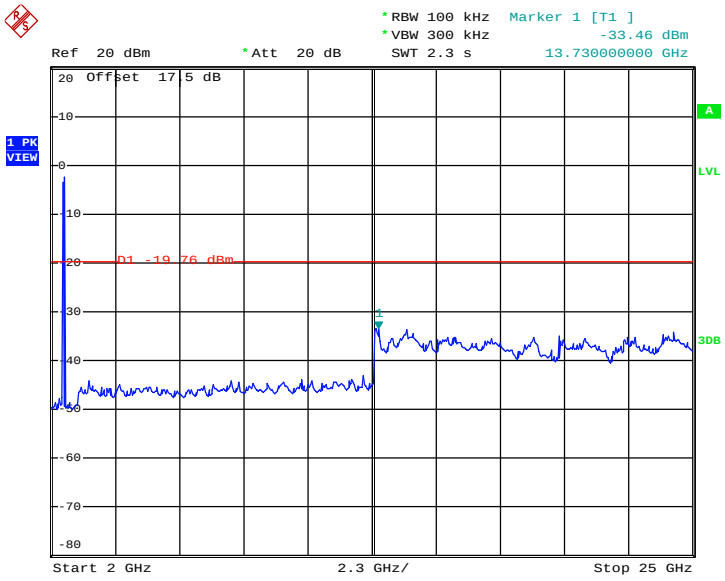
Conducted Spurious Emission Plot on Channel 11



Date: 9.JAN.2013 18:52:00

802.11n HT20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

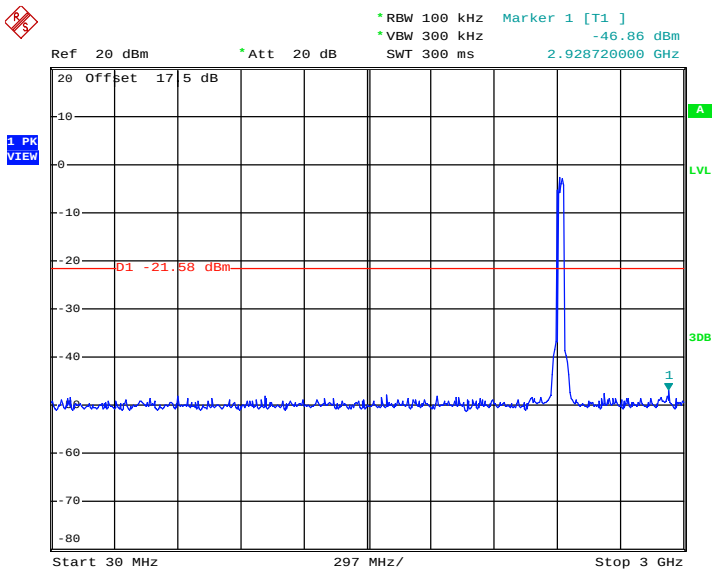


Date: 9.JAN.2013 18:53:23

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 :	Zhi Lu

802.11n HT40 30 MHz~3 GHz

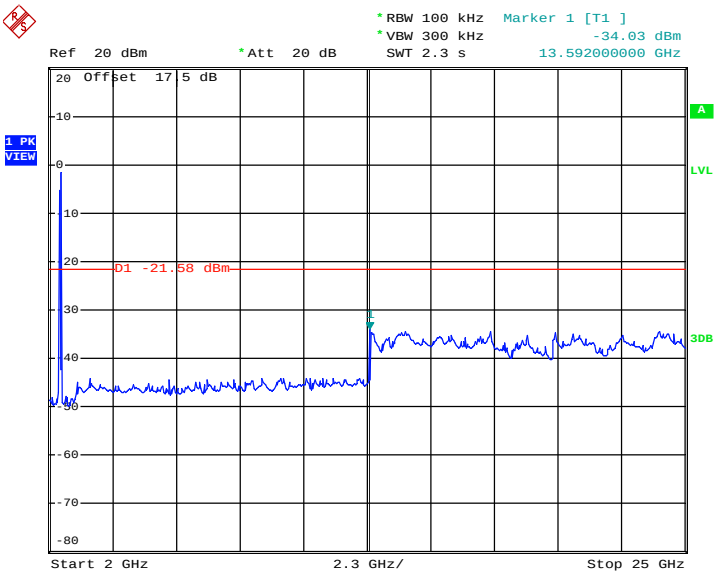
Conducted Spurious Emission Plot on Channel 03



Date: 9.JAN.2013 18:56:22

802.11n HT40 2 GHz~25 GHz

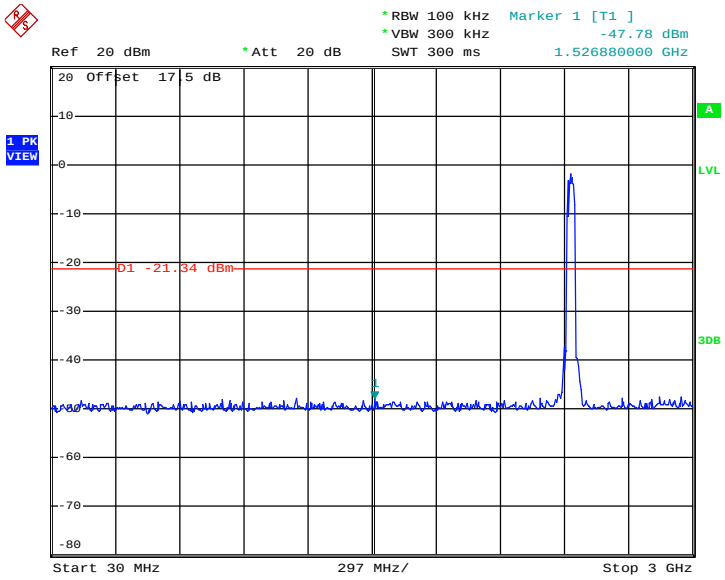
Conducted Spurious Emission Plot on Channel 03



Date: 9.JAN.2013 18:54:56

802.11n HT40 30 MHz~3 GHz

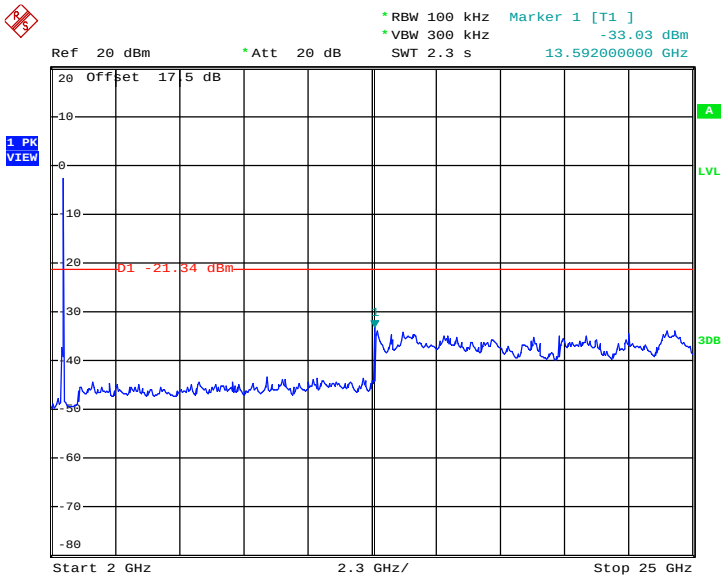
Conducted Spurious Emission Plot on Channel 06



Date: 9.JAN.2013 18:57:40

802.11n HT40 2 GHz~25 GHz

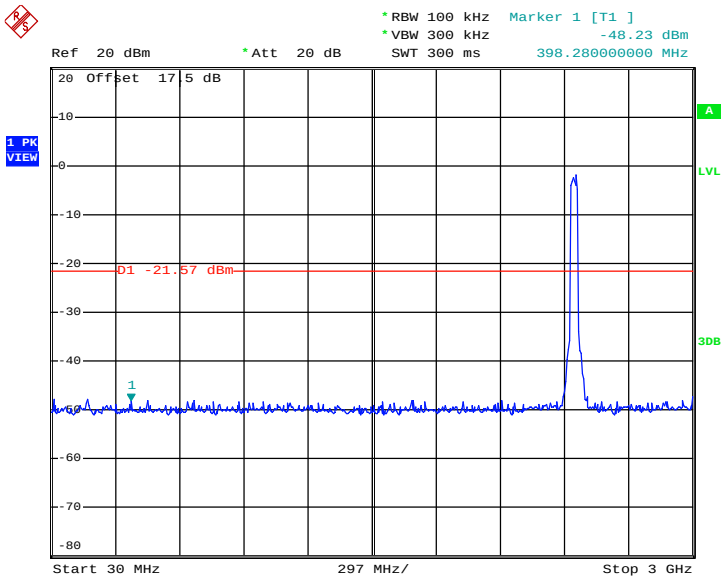
Conducted Spurious Emission Plot on Channel 06



Date: 9.JAN.2013 18:58:46

802.11n HT40 30 MHz~3 GHz

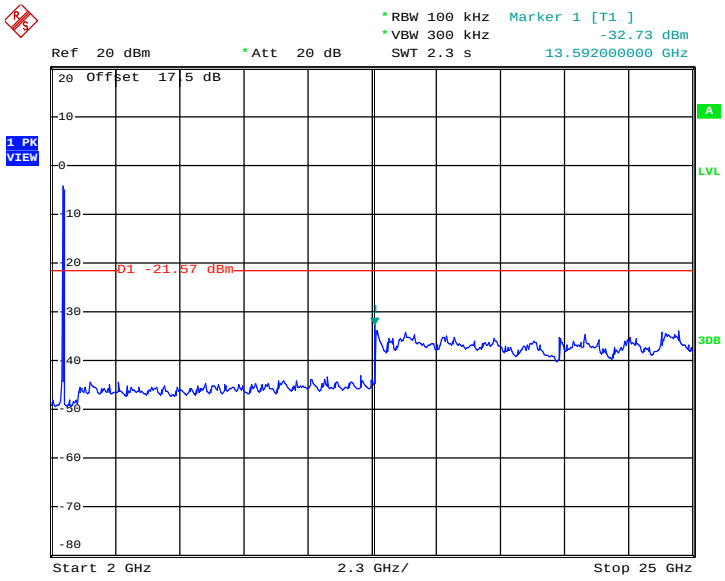
Conducted Spurious Emission Plot on Channel 09



Date: 9.JAN.2013 19:01:10

802.11n HT40 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 09



Date: 9.JAN.2013 19:00:24

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

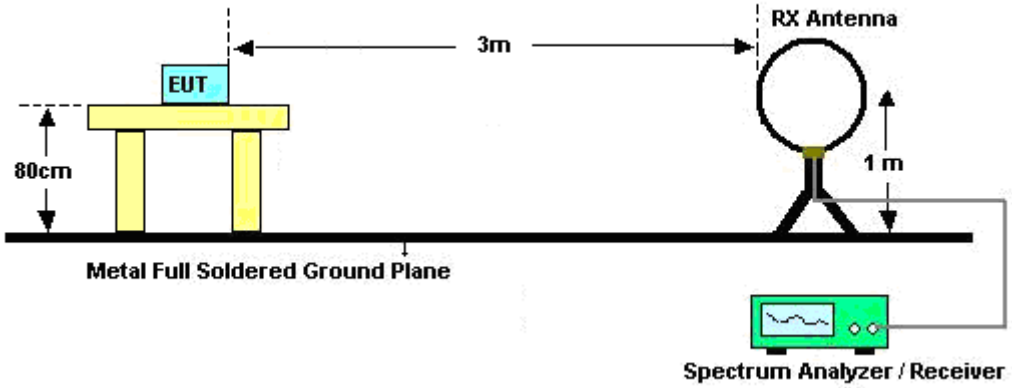
1. The testing follows the guidelines in ANSI C63. 10-2009
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better 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 - 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	99.057	-	-	10HZ
802.11g	92.144	1.384	0.723	1KHZ
802.11n HT20	91.655	1.296	0.772	1KHZ
802.11n HT40	86.221	0.657	1.522	3KHZ

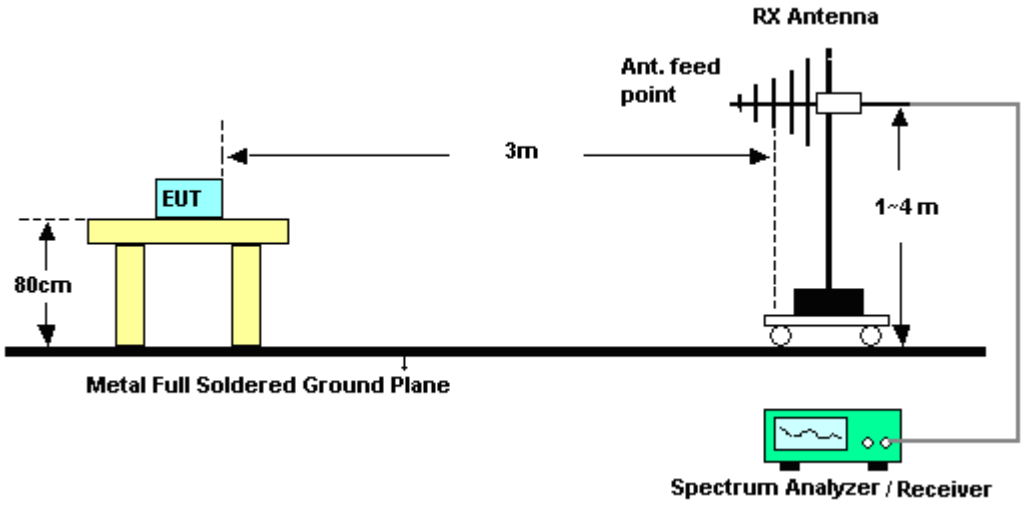
Note: For average measurement with duty cycle < 98%, use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.

3.5.4 Test Setup

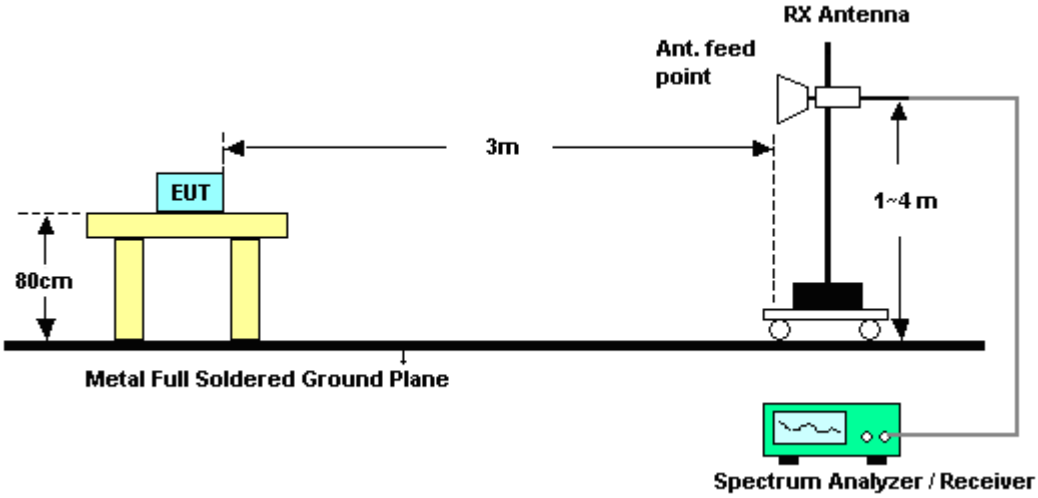
For radiated emissions below 30MHz



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 :	22~23℃
Test Band :	Low	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Steven Hao

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
2389.29	51.32	-22.68	74	50.21	32.86	2.11	33.86	119	0	Peak
2389.83	40.03	-13.97	54	38.95	32.86	2.11	33.89	118	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
2386.23	47.63	-26.37	74	46.52	32.86	2.11	33.86	156	196	Peak
2387.4	34.82	-19.18	54	33.71	32.86	2.11	33.86	159	190	Average

Test Mode :	802.11b	Temperature :	22~23℃
Test Band :	High	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Steven Hao

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
2483.71	48.95	-25.05	74	47.77	33.01	2.16	33.99	110	0	Peak
2483.5	37.86	-16.14	54	36.68	33.01	2.16	33.99	110	358	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
2483.56	45.5	-28.5	74	44.32	33.01	2.16	33.99	129	273	Peak
2483.5	33.54	-20.46	54	32.36	33.01	2.16	33.99	109	278	Average

Test Mode :	802.11g	Temperature :	22~23℃
Test Band :	Low	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Steven Hao

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
2389.65	63.87	-10.13	74	62.76	32.86	2.11	33.86	113	0	Peak
2390	48.07	-5.93	54	46.99	32.86	2.11	33.89	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
2387.94	57.61	-16.39	74	56.5	32.86	2.11	33.86	200	287	Peak
2390	42.29	-11.71	54	41.21	32.86	2.11	33.89	200	290	Average

Test Mode :	802.11g	Temperature :	22~23℃
Test Band :	High	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Steven Hao

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	69.8	-4.2	74	68.62	33.01	2.16	33.99	109	0	Peak
2483.5	44.38	-9.62	54	43.2	33.01	2.16	33.99	109	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
2483.89	63.87	-10.13	74	62.69	33.01	2.16	33.99	156	176	Peak
2483.5	38.92	-15.08	54	37.74	33.01	2.16	33.99	156	278	Average

Test Mode :	802.11n HT20	Temperature :	22~23℃
Test Band :	Low	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Steven Hao

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
2389.92	64.24	-9.76	74	63.16	32.86	2.11	33.89	112	0	Peak
2390	48.33	-5.67	54	47.25	32.86	2.11	33.89	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
2389.65	56.98	-17.02	74	55.87	32.86	2.11	33.86	116	0	Peak
2390	41.64	-12.36	54	40.56	32.86	2.11	33.89	154	0	Average

Test Mode :	802.11n HT20	Temperature :	22~23℃
Test Band :	High	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Steven Hao

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
2484.04	68.45	-5.55	74	67.27	33.01	2.16	33.99	106	0	Peak
2483.5	45.62	-8.38	54	44.44	33.01	2.16	33.99	106	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
2483.8	65.83	-8.17	74	64.65	33.01	2.16	33.99	100	278	Peak
2483.5	40.65	-13.35	54	39.47	33.01	2.16	33.99	100	259	Average

Test Mode :	802.11n HT40	Temperature :	22~23℃
Test Band :	Low	Relative Humidity :	41~42%
Test Channel :	03	Test Engineer :	Steven Hao

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
2389.09	69.67	-4.33	74	68.59	32.86	2.11	33.89	181	353	Peak
2389.74	51.21	-2.79	54	50.1	32.86	2.11	33.86	181	353	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	67.86	-6.14	74	66.78	32.86	2.11	33.89	127	197	Peak
2388.85	48	-6	54	46.89	32.86	2.11	33.86	127	197	Average

Test Mode :	802.11n HT40	Temperature :	22~23℃
Test Band :	High	Relative Humidity :	41~42%
Test Channel :	09	Test Engineer :	Steven Hao

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2486.29	64.12	-9.88	74	62.94	33.01	2.16	33.99	197	212	Peak
2483.5	39.23	-14.77	54	38.05	33.01	2.16	33.99	197	212	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
2485.99	63.94	-10.06	74	62.76	33.01	2.16	33.99	100	251	Peak
2485.63	38.34	-15.66	54	37.16	33.01	2.16	33.99	100	251	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 :**	22~23℃
Test Channel :	01	**Relative Humidity :**	41~42%
Test Engineer :	Steven Hao	**Polarization :**	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 2397.03 MHz and 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
2397.03	67.14	-15.39	82.53	66.06	32.86	2.11	33.89	119	0	Peak
2412	102.53	-	-	101.41	32.89	2.12	33.89	119	0	Peak
2412	97.06	-	-	95.94	32.89	2.12	33.89	119	0	Average
4824	45.02	-28.98	74	40.9	35.17	3.09	34.14	200	320	Peak
7236	45.41	-37.12	82.53	40.27	36.18	3.24	34.28	100	0	Peak

Test Mode :	802.11b	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 2396.94 MHz and 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
2396.94	55.18	-21.69	76.87	54.1	32.86	2.11	33.89	158	196	Peak
2412	96.87	-	-	95.75	32.89	2.12	33.89	158	196	Peak
2412	91.69	-	-	90.57	32.89	2.12	33.89	158	196	Average
4826	46.05	-27.95	74	41.93	35.17	3.09	34.14	156	200	Peak
7236	43.72	-33.15	76.87	38.58	36.18	3.24	34.28	100	140	Peak

Test Mode :	802.11b	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	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	102.37	-	-	101.21	32.95	2.14	33.93	108	150	Peak
2437	97.01	-	-	95.85	32.95	2.14	33.93	108	150	Average
4876	47.96	-26.04	74	43.7	35.18	3.12	34.04	200	169	Peak
7312	43.49	-30.51	74	38.33	36.2	3.21	34.25	100	360	Peak

Test Mode :	802.11b	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	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	96.39	-	-	95.23	32.95	2.14	33.93	100	176	Peak
2437	91.01	-	-	89.85	32.95	2.14	33.93	100	176	Average
4876	48.77	-25.23	74	44.51	35.18	3.12	34.04	200	150	Peak
7312	43.38	-30.62	74	38.22	36.2	3.21	34.25	100	20	Peak

Test Mode :	802.11b	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	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	101.63	-	-	100.46	32.98	2.15	33.96	109	0	Peak
2462	96.06	-	-	94.89	32.98	2.15	33.96	109	0	Average
4924	50.75	-23.25	74	46.35	35.19	3.15	33.94	100	30	Peak
7386	44.69	-29.31	74	39.49	36.24	3.19	34.23	200	100	Peak

Test Mode :	802.11b	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	97.16	-	-	95.99	32.98	2.15	33.96	128	272	Peak
2462	91.89	-	-	90.72	32.98	2.15	33.96	128	272	Average
4926	48.06	-25.94	74	43.66	35.19	3.15	33.94	200	0	Peak
7386	43.81	-30.19	74	38.61	36.24	3.19	34.23	100	170	Peak

Test Mode :	802.11g	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 2397.3 MHz and 7236 MHz are not within restricted bands, and their limit lines are 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
2397.3	71.75	-11.04	82.79	70.67	32.86	2.11	33.89	112	0	Peak
2412	102.79	-	-	101.67	32.89	2.12	33.89	112	0	Peak
2412	91.79	-	-	90.67	32.89	2.12	33.89	112	0	Average
4824	43.47	-30.53	74	39.35	35.17	3.09	34.14	156	174	Peak
7236	43.74	-39.05	82.79	38.6	36.18	3.24	34.28	200	0	Peak

Test Mode :	802.11g	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	Polarization :	Vertical
Remark :	4. 2412 MHz is fundamental signal which can be ignored. 5. 2397.21 MHz and 7236 MHz are not within restricted bands, and their limit lines are 20dB below the highest emission level. 6. 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
2397.21	63.02	-13.78	76.8	61.94	32.86	2.11	33.89	200	291	Peak
2412	96.8	-	-	95.68	32.89	2.12	33.89	200	291	Peak
2412	86.13	-	-	85.01	32.89	2.12	33.89	200	291	Average
4824	44.06	-29.94	74	39.94	35.17	3.09	34.14	100	250	Peak
7236	43.22	-33.58	76.8	38.08	36.18	3.24	34.28	100	0	Peak

Test Mode :	802.11g	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	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	102.76	-	-	101.6	32.95	2.14	33.93	115	0	Peak
2437	91.2	-	-	90.04	32.95	2.14	33.93	115	0	Average
4876	46.72	-27.28	74	42.46	35.18	3.12	34.04	189	200	Peak
7312	45.15	-28.85	74	39.99	36.2	3.21	34.25	200	345	Peak

Test Mode :	802.11g	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	98.31	-	-	97.15	32.95	2.14	33.93	100	268	Peak
2437	87.68	-	-	86.52	32.95	2.14	33.93	100	268	Average
4874	47.7	-26.3	74	43.44	35.18	3.12	34.04	100	0	Peak
7312	43.68	-30.32	74	38.52	36.2	3.21	34.25	120	0	Peak

Test Mode :	802.11g	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	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
32.634	18.71	-21.29	40	35.91	16.04	0.35	33.59	-	-	Peak
53.882	18.91	-21.09	40	45.54	6.49	0.46	33.58	-	-	Peak
115.726	28.08	-15.42	43.5	49.27	11.8	0.62	33.61	-	-	Peak
207.85	31.23	-12.27	43.5	54.61	9.34	0.83	33.55	100	236	Peak
285.978	26.55	-19.45	46	46.19	12.78	0.97	33.39	-	-	Peak
958.794	29.11	-16.89	46	39	20.78	1.77	32.44	-	-	Peak
2462	102.08	-	-	100.91	32.98	2.15	33.96	108	0	Peak
2462	90.93	-	-	89.76	32.98	2.15	33.96	108	0	Average
4924	47.81	-26.19	74	43.41	35.19	3.15	33.94	100	360	Peak
7386	43.99	-30.01	74	38.79	36.24	3.19	34.23	100	286	Peak

Test Mode :	802.11g	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	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
36.127	23.32	-16.68	40	41.92	14.65	0.37	33.62	-	-	Peak
52.025	26.62	-13.38	40	52.74	7.01	0.45	33.58	-	-	Peak
63.536	19.38	-20.62	40	47.25	5.22	0.5	33.59	-	-	Peak
107.134	31.42	-12.08	43.5	52.87	11.56	0.6	33.61	100	0	Peak
214.514	22.56	-20.94	43.5	45.54	9.71	0.84	33.53	-	-	Peak
945.44	31.13	-14.87	46	41.11	20.71	1.75	32.44	-	-	Peak
2462	96.73	-	-	95.56	32.98	2.15	33.96	157	279	Peak
2462	84.48	-	-	83.31	32.98	2.15	33.96	157	279	Average
4924	45.05	-28.95	74	40.65	35.19	3.15	33.94	200	10	Peak
7386	45.11	-28.89	74	39.91	36.24	3.19	34.23	126	210	Peak

Test Mode :	802.11n HT20	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 2398.65 MHz and 7236 MHz are not within restricted bands, and their limit lines are 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
2398.65	69.39	-12.97	82.36	68.31	32.86	2.11	33.89	112	0	Peak
2412	102.36	-	-	101.24	32.89	2.12	33.89	112	0	Peak
2412	90.53	-	-	89.41	32.89	2.12	33.89	112	0	Average
4824	44.07	-29.93	74	39.95	35.17	3.09	34.14	200	128	Peak
7236	43.85	-38.51	82.36	38.71	36.18	3.24	34.28	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 2398.02 MHz and 7236 MHz are not within restricted bands, and their limit lines are 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
2398.02	62.16	-13.29	75.45	61.08	32.86	2.11	33.89	100	0	Peak
2412	95.45	-	-	94.33	32.89	2.12	33.89	100	0	Peak
2412	83.52	-	-	82.4	32.89	2.12	33.89	100	0	Average
4824	43.49	-30.51	74	39.37	35.17	3.09	34.14	200	359	Peak
7236	44.52	-30.93	75.45	39.38	36.18	3.24	34.28	200	182	Peak

Test Mode :	802.11n HT20	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	100.14	-	-	98.98	32.95	2.14	33.93	112	360	Peak
2437	89.03	-	-	87.87	32.95	2.14	33.93	112	360	Average
4878	46.58	-27.42	74	42.32	35.18	3.12	34.04	200	38	Peak
7312	44.13	-29.87	74	38.97	36.2	3.21	34.25	200	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	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	95.3	-	-	94.14	32.95	2.14	33.93	100	104	Peak
2437	83.19	-	-	82.03	32.95	2.14	33.93	100	104	Average
4874	44.58	-29.42	74	40.32	35.18	3.12	34.04	160	200	Peak
7312	43.43	-30.57	74	38.27	36.2	3.21	34.25	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	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	101.65	-	-	100.48	32.98	2.15	33.96	107	0	Peak
2462	90.8	-	-	89.63	32.98	2.15	33.96	107	0	Average
4924	46.44	-27.56	74	42.04	35.19	3.15	33.94	200	175	Peak
7386	44.05	-29.95	74	38.85	36.24	3.19	34.23	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	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	96.93	-	-	95.76	32.98	2.15	33.96	100	270	Peak
2462	85.97	-	-	84.8	32.98	2.15	33.96	100	270	Average
4924	44.12	-29.88	74	39.72	35.19	3.15	33.94	110	200	Peak
7386	43.76	-30.24	74	38.56	36.24	3.19	34.23	200	109	Peak

Test Mode :	802.11n HT40	Temperature :	22~23℃
Test Channel :	03	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	Polarization :	Horizontal
Remark :	1. 2422 MHz is fundamental signal which can be ignored. 2. 2399 MHz are not within restricted bands, and their limit lines are 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
2399	68.24	-11.09	79.33	67.16	32.86	2.11	33.89	181	353	Peak
2422	99.33	-	-	98.21	32.92	2.13	33.93	172	315	Peak
2422	88.51	-	-	87.39	32.92	2.13	33.93	172	315	Average
4844	44.38	-29.62	74	40.19	35.18	3.1	34.09	100	245	Peak
7266	44.42	-29.58	74	39.28	36.19	3.22	34.27	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	22~23℃
Test Channel :	03	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	Polarization :	Vertical
Remark :	1. 2422 MHz is fundamental signal which can be ignored. 2. 2394.17 MHz are not within restricted bands, and their limit lines are 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
2394.17	67.02	-9.09	76.11	65.94	32.86	2.11	33.89	127	197	Peak
2422	96.11	-	-	94.99	32.92	2.13	33.93	125	206	Peak
2422	85.18	-	-	84.06	32.92	2.13	33.93	125	206	Average
4844	44.12	-29.88	74	39.93	35.18	3.1	34.09	123	58	Peak
7266	44.31	-29.69	74	39.17	36.19	3.22	34.27	104	174	Peak

Test Mode :	802.11n HT40	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	98.01	-	-	96.85	32.95	2.14	33.93	113	316	Peak
2437	87.36	-	-	86.2	32.95	2.14	33.93	113	316	Average
4874	44.56	-29.44	74	40.3	35.18	3.12	34.04	124	73	Peak
7311	43.74	-30.26	74	38.59	36.2	3.21	34.26	120	168	Peak

Test Mode :	802.11n HT40	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	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	94.5	-	-	93.34	32.95	2.14	33.93	105	355	Peak
2437	83.44	-	-	82.28	32.95	2.14	33.93	105	355	Average
4874	43.85	-30.15	74	39.59	35.18	3.12	34.04	102	54	Peak
7311	44.33	-29.67	74	39.18	36.2	3.21	34.26	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	22~23℃
Test Channel :	09	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	Polarization :	Horizontal
Remark :	1. 2452 MHz is fundamental signal which can be ignored. 2. 2398 MHz are not within restricted bands, and their limit lines are 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
2398	56.9	-21.79	78.69	55.82	32.86	2.11	33.89	111	314	Peak
2452	98.69	-	-	97.56	32.95	2.14	33.96	111	314	Peak
2452	88.58	-	-	87.45	32.95	2.14	33.96	111	314	Average
4904	46.29	-27.71	74	41.95	35.19	3.14	33.99	100	0	Peak
7356	43.75	-30.25	74	38.57	36.22	3.2	34.24	123	40	Peak

Test Mode :	802.11n HT40	Temperature :	22~23℃
Test Channel :	09	Relative Humidity :	41~42%
Test Engineer :	Steven Hao	Polarization :	Vertical
Remark :	1. 2452 MHz is fundamental signal which can be ignored. 2. 2396 MHz are not within restricted bands, and their limit lines are 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
2396	56.72	-15.8	72.52	55.64	32.86	2.11	33.89	102	282	Peak
2452	92.52	-	-	91.39	32.95	2.14	33.96	102	282	Peak
2452	82.09	-	-	80.96	32.95	2.14	33.96	102	282	Average
4904	44.31	-29.69	74	39.97	35.19	3.14	33.99	102	347	Peak
7356	43.8	-30.2	74	38.62	36.22	3.2	34.24	124	157	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.

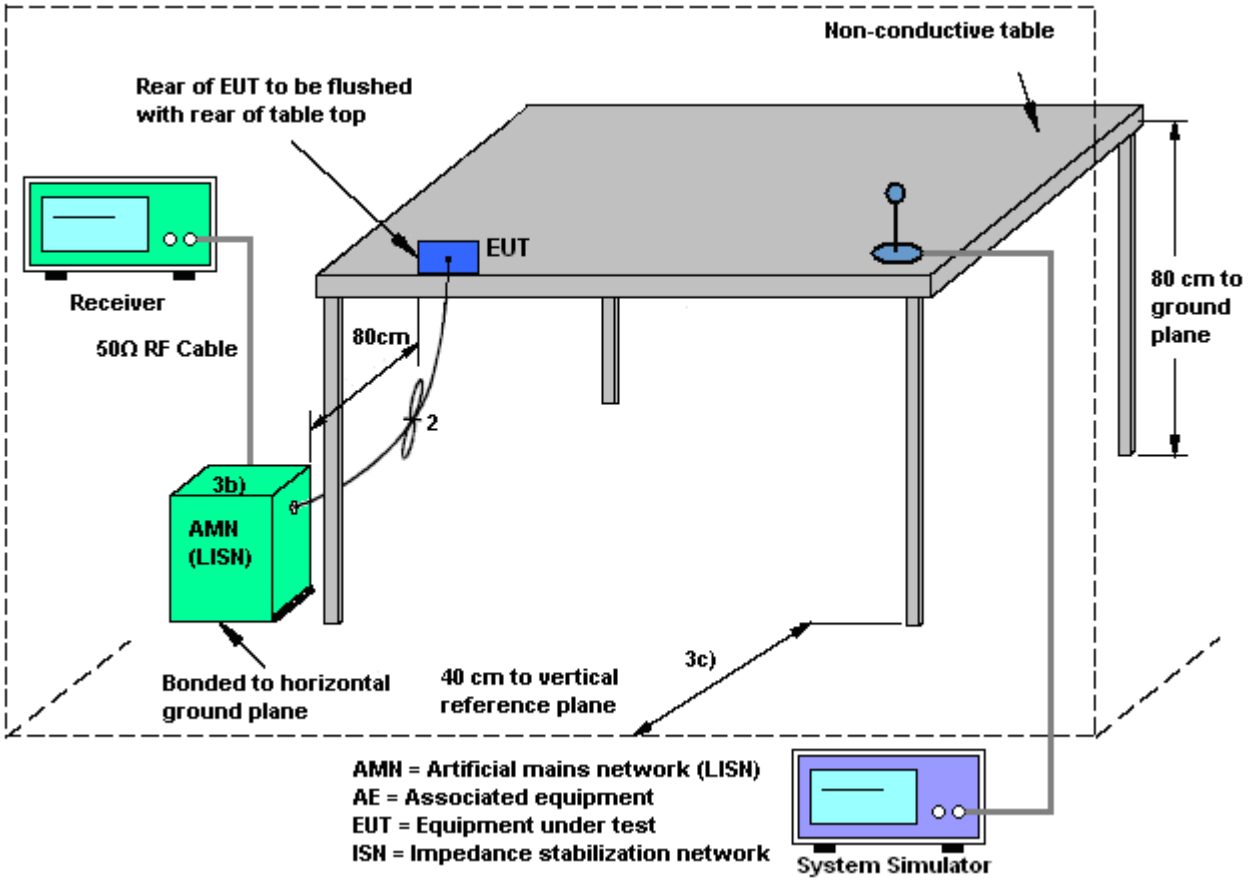
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

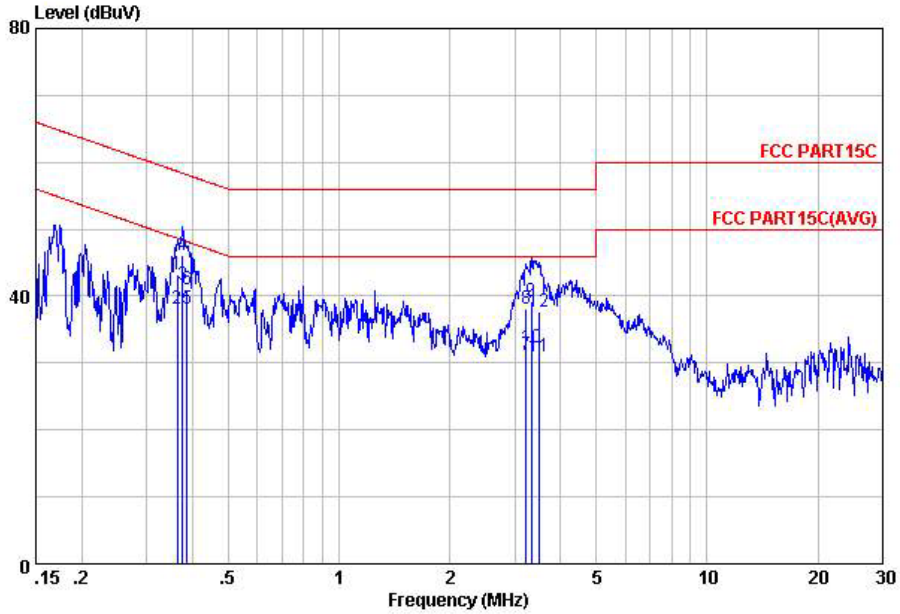
1. The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance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

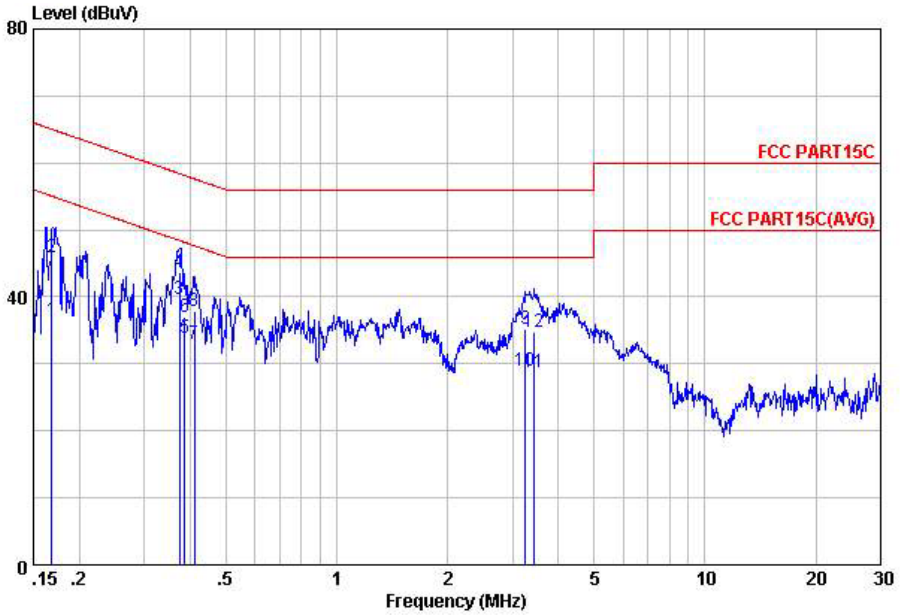
Test Mode :	Mode 1	**Temperature :**	19~20℃
Test Engineer :	Tom Wang	**Relative Humidity :**	39~40%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-KS
Condition: FCC PART15C LISN-111230 LINE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.36	43.17	-15.48	58.65	33.00	-0.08	10.25	QP
2	0.36	38.07	-10.58	48.65	27.90	-0.08	10.25	Average
3	0.38	41.77	-6.62	48.39	31.60	-0.08	10.25	Average
4	0.38	46.07	-12.32	58.39	35.90	-0.08	10.25	QP
5	0.39	38.17	-9.95	48.12	28.00	-0.08	10.25	Average
6	0.39	40.97	-17.15	58.12	30.80	-0.08	10.25	QP
7	3.22	31.20	-14.80	46.00	21.00	-0.12	10.32	Average
8	3.22	38.00	-18.00	56.00	27.80	-0.12	10.32	QP
9	3.33	39.20	-16.80	56.00	29.00	-0.12	10.32	QP
10	3.33	32.40	-13.60	46.00	22.20	-0.12	10.32	Average
11	3.51	31.00	-15.00	46.00	20.79	-0.12	10.33	Average
12	3.51	37.60	-18.40	56.00	27.39	-0.12	10.33	QP

Test Mode :	Mode 1	Temperature :	19~20℃
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
Condition: FCC PART15C LISN-111230 NEUTRAL

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.17	36.63	-18.40	55.03	26.50	-0.08	10.21	Average
2	0.17	45.93	-19.10	65.03	35.80	-0.08	10.21	QP
3	0.37	39.67	-8.76	48.43	29.50	-0.08	10.25	Average
4	0.37	43.77	-14.66	58.43	33.60	-0.08	10.25	QP
5	0.39	33.97	-14.15	48.12	23.80	-0.08	10.25	Average
6	0.39	37.07	-21.05	58.12	26.90	-0.08	10.25	QP
7	0.41	32.97	-14.67	47.64	22.80	-0.08	10.25	Average
8	0.41	37.77	-19.87	57.64	27.60	-0.08	10.25	QP
9	3.26	35.10	-20.90	56.00	24.90	-0.12	10.32	QP
10	3.26	28.90	-17.10	46.00	18.70	-0.12	10.32	Average
11	3.44	28.70	-17.30	46.00	18.49	-0.12	10.33	Average
12	3.44	34.70	-21.30	56.00	24.49	-0.12	10.33	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	FSP40	100319	9kHz~40GHz	Dec. 29, 2012	Jan. 09, 2013	Dec. 28, 2013	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 22, 2012	Jan. 09, 2013	Aug. 21, 2013	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 22, 2012	Jan. 09, 2013	Aug. 21, 2013	Conducted (TH01-KS)
DC Power Supply	GWINSTEK	GPS-3030D	E1884515	N/A	Aug. 22, 2012	Jan. 09, 2013	Aug. 21, 2013	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Dec. 29, 2012	Jan. 09, 2013	Dec. 28, 2013	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 08, 2012	Jan. 18, 2013	Nov. 07, 2013	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	100400	9kHz~30GHz	Jun. 01, 2012	Jan. 18, 2013	May 31, 2013	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 07, 2012	Jan. 18, 2013	Dec. 06, 2013	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/ 001	9 kHz~30 MHz	Jul. 03, 2012	Jan. 18, 2013	Jul. 02, 2014	Radiation (03CH01-KS)
Double Ridge Horn Antenna	ETS-Lindgren	1908/7/13	00075957	1GHz~18GHz	Dec. 07, 2012	Jan. 18, 2013	Dec. 06, 2013	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161069	1MHz~1GHz	Jun. 01, 2012	Jan. 18, 2013	May 31, 2013	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 29, 2012	Jan. 18, 2013	Dec. 28, 2013	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz~18GHz	Nov. 07, 2012	Jan. 18, 2013	Nov. 06, 2013	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	9170249	15GHz~40GHz	Nov. 23, 2012	Jan. 18, 2013	Nov. 22, 2013	Radiation (03CH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 01, 2012	Jan. 07, 2013	May 31, 2013	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 29, 2012	Jan. 07, 2013	Dec. 28, 2013	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Dec. 29, 2012	Jan. 07, 2013	Dec. 28, 2013	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 15, 2012	Jan. 07, 2013	Nov. 14, 2013	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/066	2G Full-Band	Dec. 29, 2012	Jan. 07, 2013	Dec. 28, 2013	Conduction (CO01-KS)

5 Uncertainty of Evaluation

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

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

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

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

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

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

Appendix A. Photographs of EUT

Please refer to Sporton report number EP2D2703 as below.