FCC RF Test Report

APPLICANT	:	Brightstar Corporation
EQUIPMENT	:	Mobile Phone
BRAND NAME	:	Avvio
MODEL NAME	:	Avvio 917S/Avvio 917
FCC ID	:	WVBA917
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DTS) Digital Transmission System

The product was received on Dec. 11, 2012 and completely tested on Dec. 31, 2012. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:

Jones Tsai / Manager

Testing Laboratory 1190

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
FR2D1103B	Rev. 01	Initial issue of report	Jan. 04, 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 5.44 dB at 34.156 MHz
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 11.92 dB at 0.840 MHz
3.7	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Brightstar Corporation
9725 NW 117th Ave., Miami, Florida, FL 33178, United States

1.2 Manufacturer

Konka Telecommunications Techenology Co., LTD.
Overseas Chinese Town, Nanshan District, Shenzhen, China

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Phone
Brand Name	Avvio
Model Name	Avvio 917S/Avvio 917
FCC ID	WVBA917
EUT supports Radios application	GSM/GPRS/WLAN 11bgn/Bluetooth2.1 EDR
HW Version	V1.2
SW Version	KAAT528_SAP_SP_EN_0_94_B16
EUT Stage	Identical Prototype

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 different types of EUT. They are single SIM card mobile (Model Name: Avvio 917) and dual SIM card mobile (Model Name: Avvio 917S). The others are the same including circuit design, PCB board, structure and all components. It is special to declare. After pre-scan two types of EUT, we found test result of the sample that dual SIM was the worst, so we choose dual SIM card mobile to perform all test.

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 : 16.91 dBm (0.0491 W) 802.11g : 16.65 dBm (0.0462 W) 802.11n HT20 : 16.67 dBm (0.0465 W) 802.11n HT40 : 16.56 dBm (0.0453 W)
Antenna Type	PIFA Antenna type with gain -0.6 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 (Y plane) were recorded in this report.

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

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

2.1 Carrier Frequency Channel

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

2.2 Pre-Scanned RF Power

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

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	15.35	15.45	14.34	15.07
CH 06	2437 MHz	16.46	16.41	15.35	16.28
CH 11	2462 MHz	**16.91**	16.86	15.79	16.48

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	16.06	16.15	16.08	16.04	16.13	16.11	16.12	16.14
CH 06	2437 MHz	**16.65**	16.62	16.62	16.58	16.56	16.61	16.63	16.58
CH 11	2462 MHz	16.19	16.17	16.15	16.08	16.25	16.17	16.22	16.17

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	16.22	16.14	16.06	16.15	16.13	16.12	16.22	16.20
CH 06	2437 MHz	**16.67**	16.62	16.61	16.63	16.57	16.60	16.63	16.60
CH 11	2462 MHz	16.20	16.08	16.16	16.12	16.18	16.13	16.09	16.07

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	16.42	16.5	16.42	16.46	16.43	16.51	16.41	16.42
CH 06	2437 MHz	**16.56**	16.55	16.49	16.53	16.52	16.53	16.53	16.5
CH 09	2452 MHz	16.52	16.31	16.35	16.43	16.39	16.42	16.39	16.37

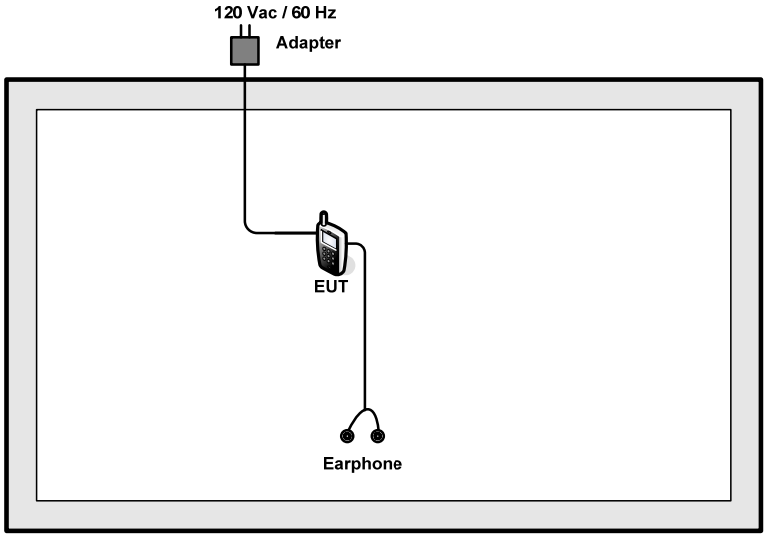
2.3 Test Mode

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

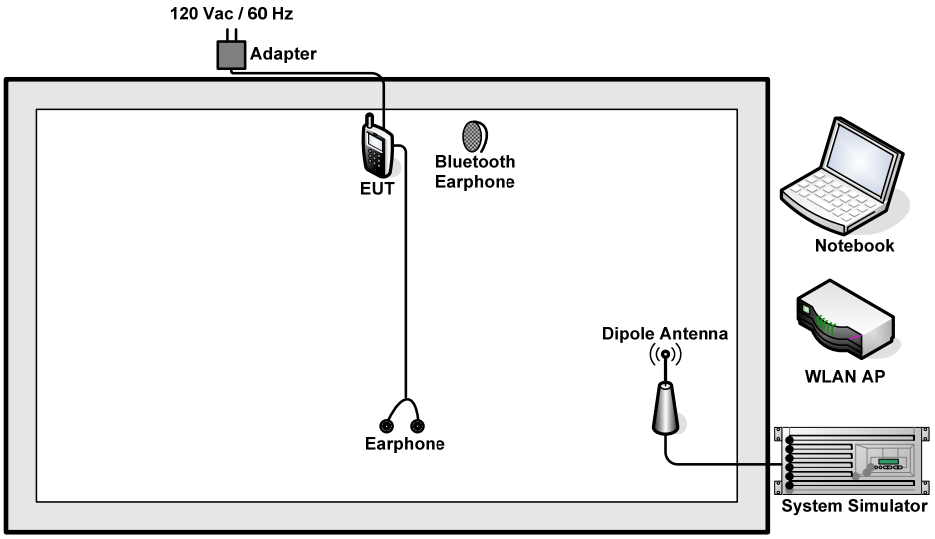
Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Conducted TCs	6dB BW Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n 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 "＊＃123258364＃" 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 5.6 dB.

Example :
Offset(dB) = RF cable loss(dB) + attenuator factor(dB).
= 5.6 + 10 = 15.6 (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.

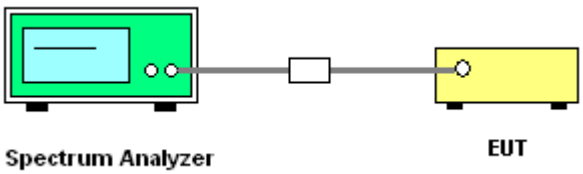
3.1.2 Measuring Instruments

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

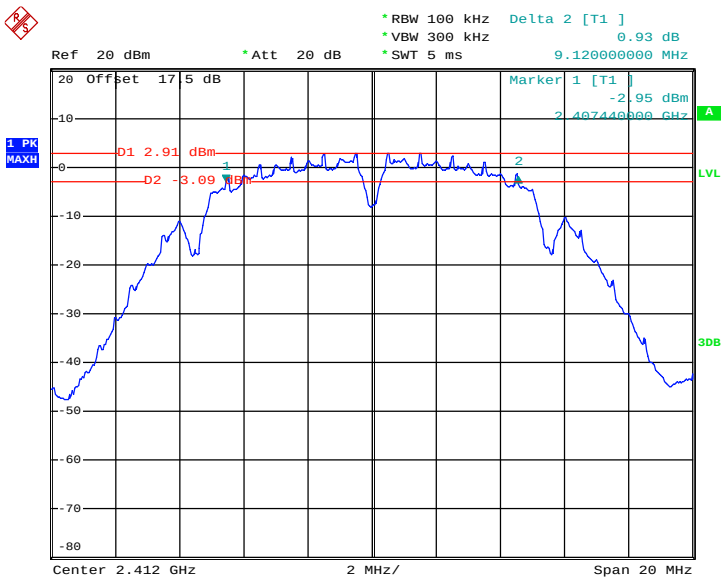


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	802.11b	Temperature :	20~21℃
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	9.12	0.5	Pass
06	2437	9.12	0.5	Pass
11	2462	9.12	0.5	Pass

6 dB Bandwidth Plot on 802.11b Channel 01



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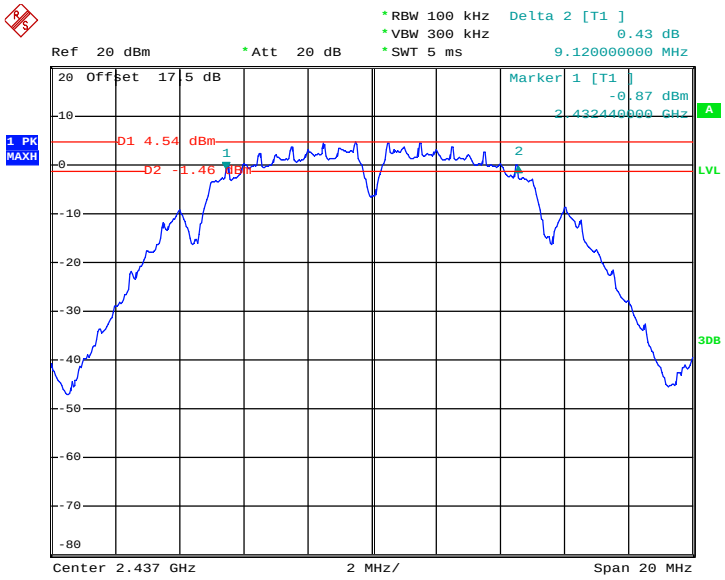
6 dB Bandwidth Plot on 802.11b Channel 06



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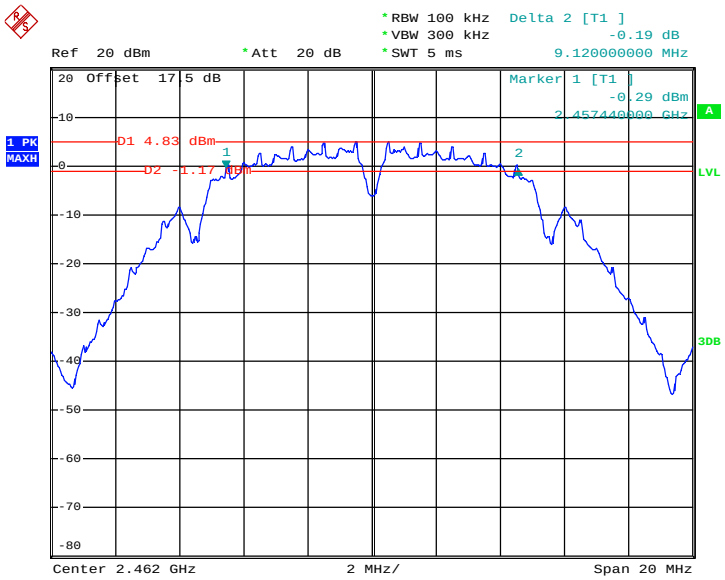
6 dB Bandwidth Plot on 802.11b Channel 11

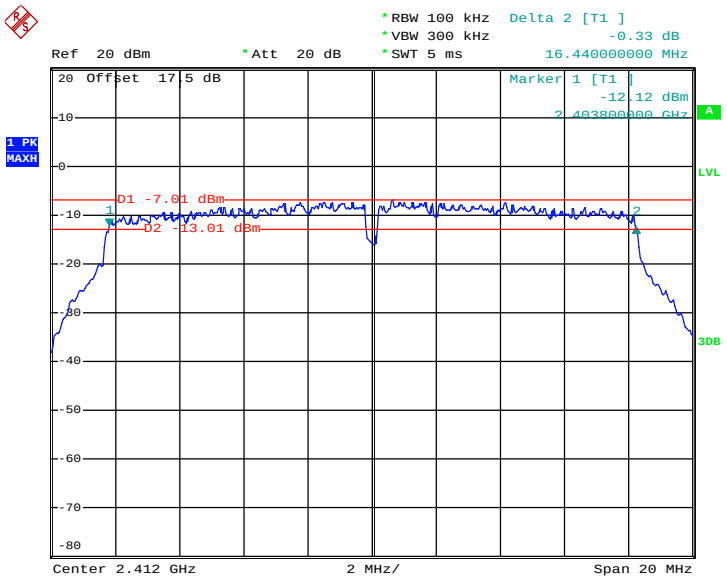


Date: 19.DEC.2012 19:38:19

Test Mode :	802.11g	Temperature :	20~21℃
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.44	0.5	Pass
06	2437	16.40	0.5	Pass
11	2462	16.48	0.5	Pass

6 dB Bandwidth Plot on 802.11g Channel 01



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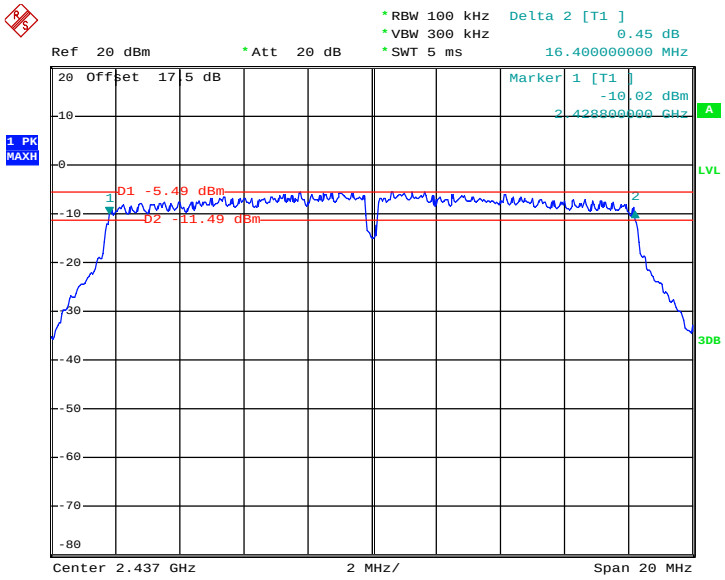
6 dB Bandwidth Plot on 802.11g Channel 06



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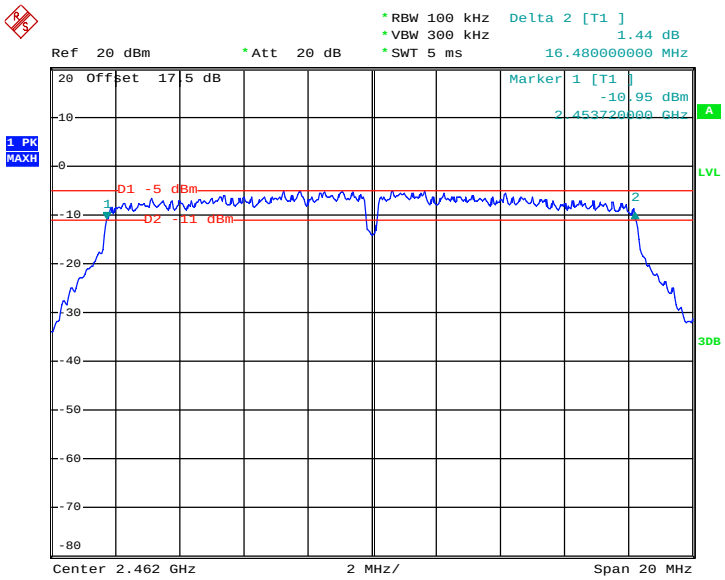
6 dB Bandwidth Plot on 802.11g Channel 11



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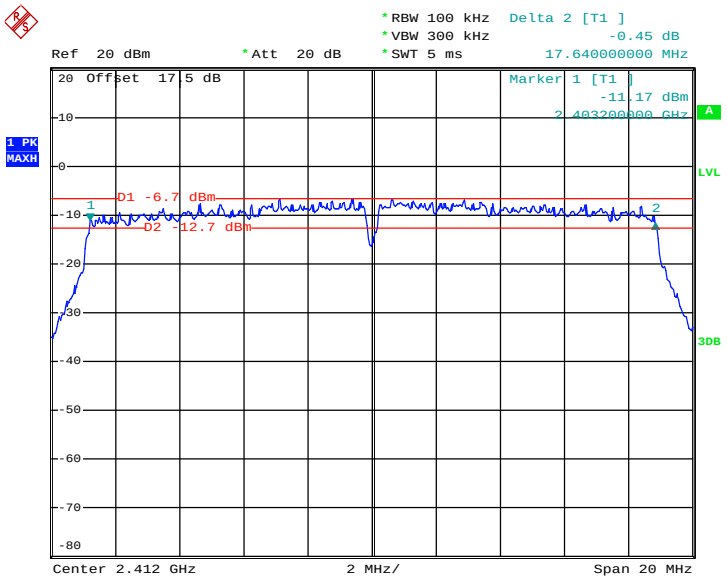
Test Mode :	802.11n HT20	Temperature :	20~21℃
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%

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	17.64	0.5	Pass
11	2462	17.68	0.5	Pass

6 dB Bandwidth Plot on 802.11n HT20 Channel 01



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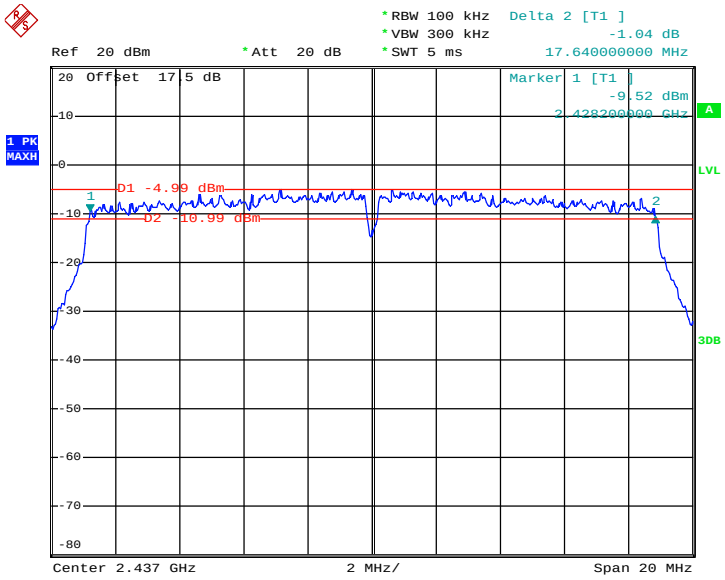
6 dB Bandwidth Plot on 802.11n HT20 Channel 06



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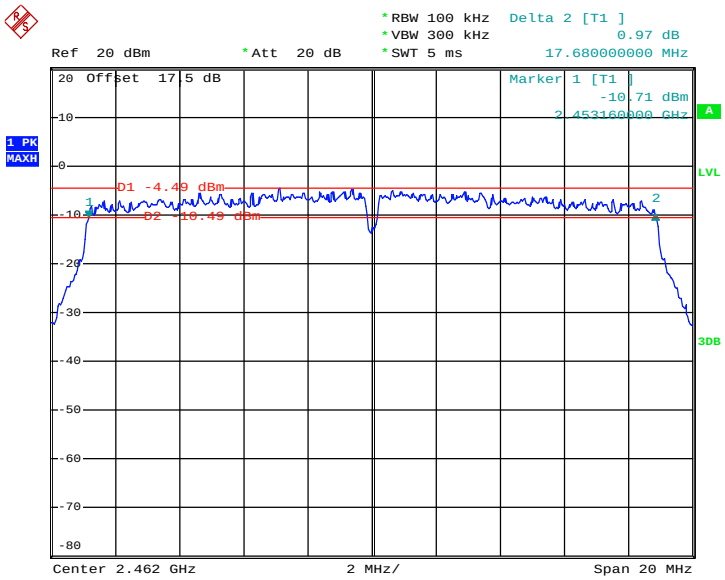
6 dB Bandwidth Plot on 802.11n HT20 Channel 11

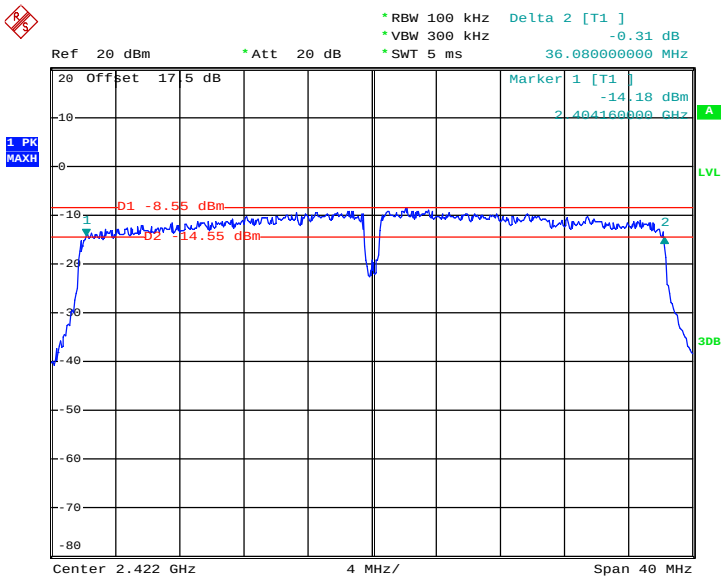


Date: 19.DEC.2012 19:45:17

Test Mode :	802.11n HT40	Temperature :	20~21℃
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11n HT40 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
03	2422	36.08	0.5	Pass
06	2437	35.92	0.5	Pass
09	2452	36.40	0.5	Pass

6 dB Bandwidth Plot on 802.11n HT40 Channel 03



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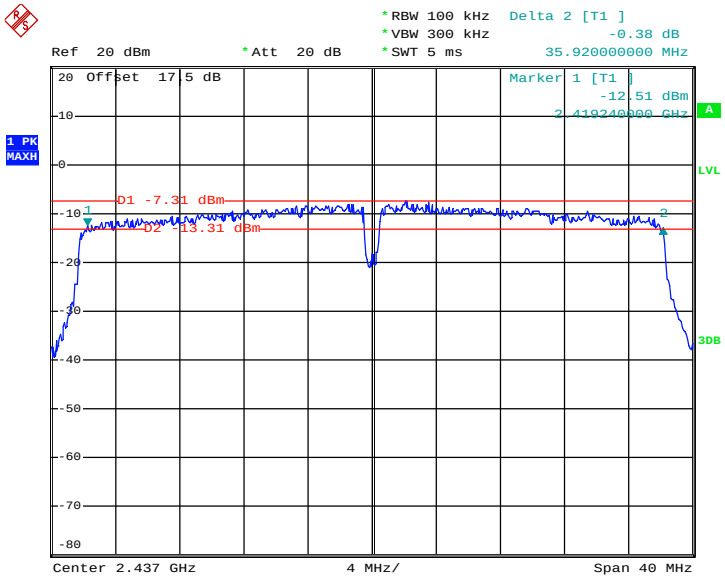
6 dB Bandwidth Plot on 802.11n HT40 Channel 06



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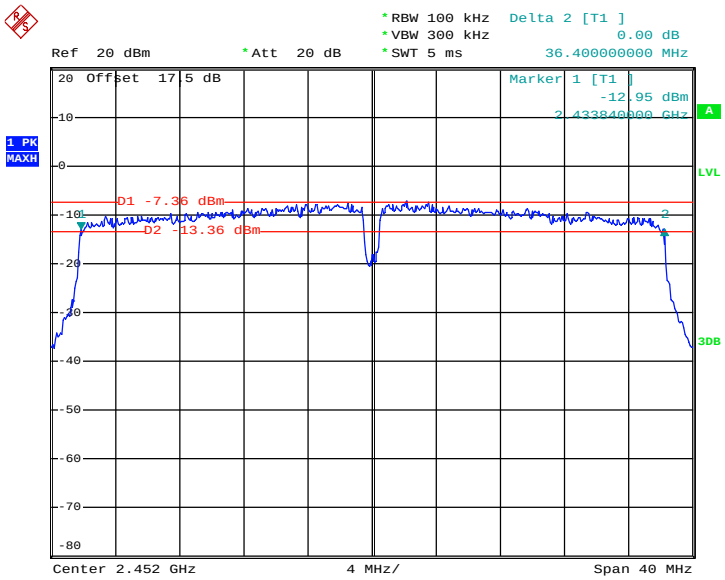
6 dB Bandwidth Plot on 802.11n HT40Channel 09



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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.

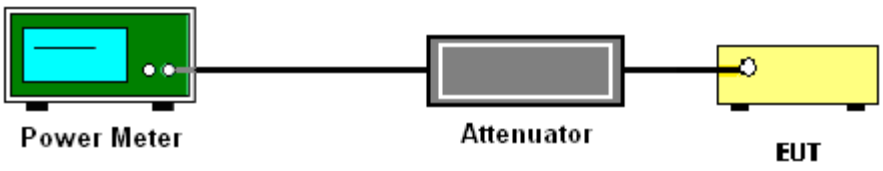
3.2.2 Measuring Instruments

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 :	20~21℃
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	15.35	30	Pass
06	2437	16.46	30	Pass
11	2462	16.91	30	Pass

Test Mode :	802.11g	Temperature :	20~21℃
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.06	30	Pass
06	2437	16.65	30	Pass
11	2462	16.19	30	Pass

Test Mode :	802.11n HT20	Temperature :	20~21℃
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.22	30	Pass
06	2437	16.67	30	Pass
11	2462	16.20	30	Pass

Test Mode :	802.11n HT40	Temperature :	20~21℃
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	2.4GHz 802.11n HT40 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	16.42	30	Pass
06	2437	16.56	30	Pass
09	2452	16.52	30	Pass

3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	802.11b	Temperature :	20~21℃
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%
Duty Cycle:	100%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)
01	2412	11.93
06	2437	13.00
11	2462	13.48

Test Mode :	802.11g	Temperature :	20~21℃
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%
Duty Cycle:	100%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)
01	2412	9.45
06	2437	10.55
11	2462	10.41

Test Mode :	802.11n HT20	Temperature :	20~21℃
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%
Duty Cycle:	100%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11n HT20 Average Output Power (dBm)
01	2412	8.20
06	2437	9.18
11	2462	8.84

Test Mode :	802.11n HT40	Temperature :	20~21℃
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%
Duty Cycle:	100%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11n HT40 Average Output Power (dBm)
03	2422	9.30
06	2437	10.07
09	2452	10.51

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.

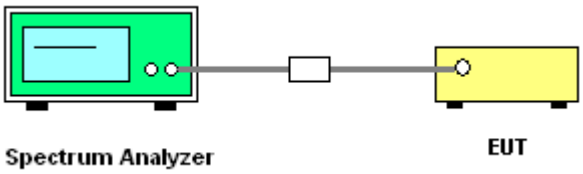
3.3.2 Measuring Instruments

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 :	20~21℃
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	3.79	-13.72	8	Pass
06	2437	5.22	-12.26	8	Pass
11	2462	5.50	-11.77	8	Pass

Test Mode :	802.11g	Temperature :	20~21℃
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11g Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	-6.57	-19.41	8	Pass
06	2437	-4.81	-17.56	8	Pass
11	2462	-4.36	-21.87	8	Pass

Test Mode :	802.11n HT20	Temperature :	20~21℃
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11n HT20 Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	-6.20	-18.79	8	Pass
06	2437	-4.33	-16.79	8	Pass
11	2462	-4.24	-17.60	8	Pass

Test Mode :	802.11n HT40	Temperature :	20~21℃
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%

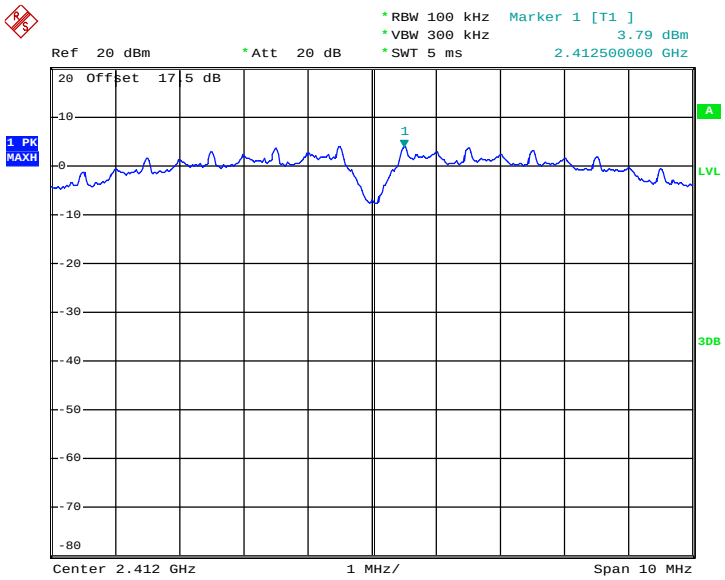
Channel	Frequency (MHz)	802.11n HT40 Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
03	2422	-8.01	-20.62	8	Pass
06	2437	-6.80	-19.61	8	Pass
09	2452	-6.52	-17.80	8	Pass

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.*

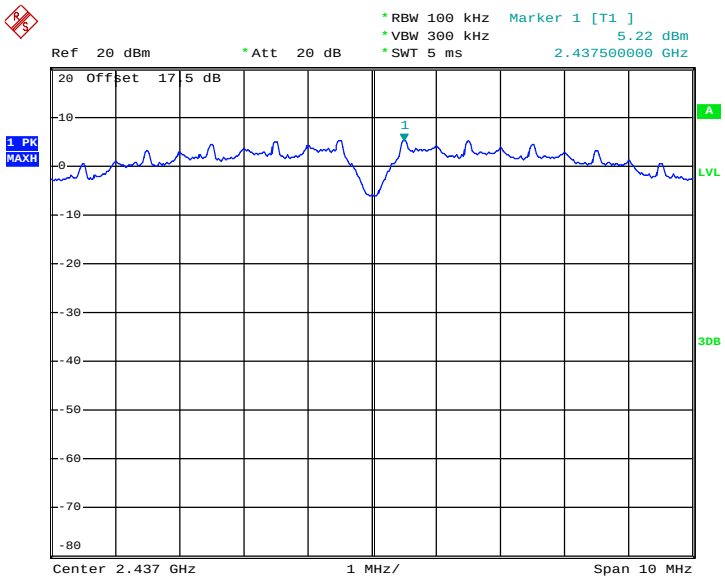
3.3.6 Test Result of Power Spectral Density Plots (100kHz)

PSD 100kHz Plot on 802.11b Channel 01



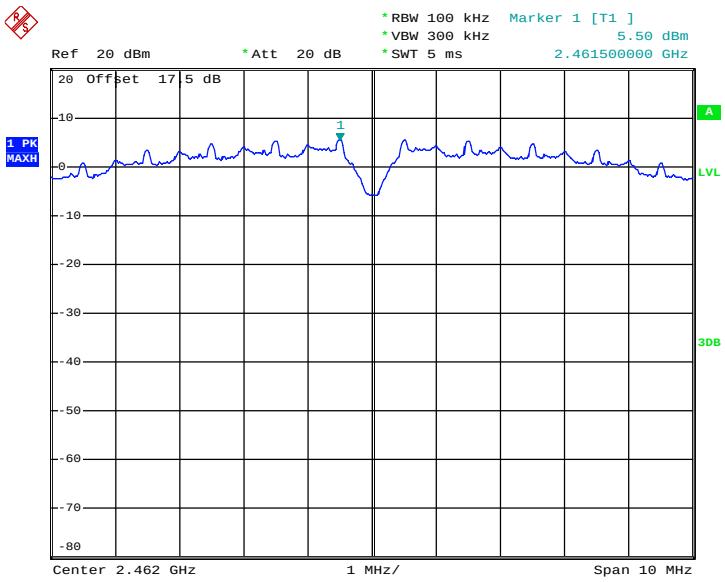
Date: 19.DEC.2012 19:54:09

PSD 100kHz Plot on 802.11b Channel 06



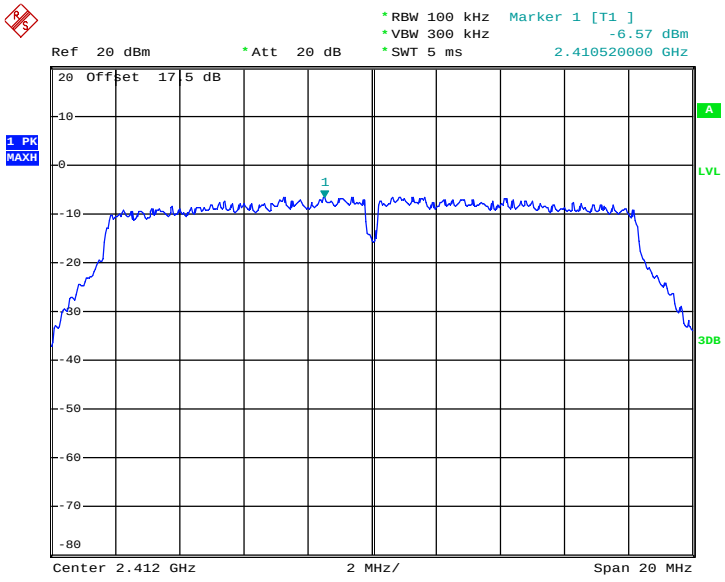
Date: 19.DEC.2012 19:54:44

PSD 100kHz Plot on 802.11b Channel 11



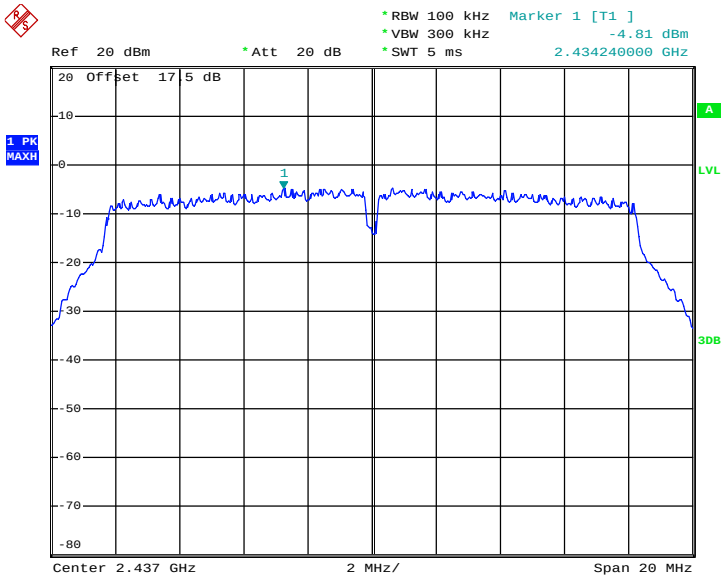
Date: 19.DEC.2012 19:55:09

PSD 100kHz Plot on 802.11g Channel 01



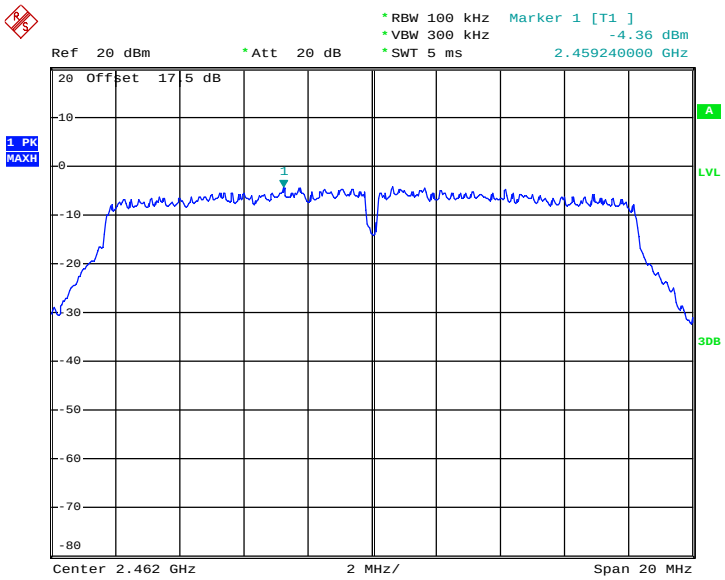
Date: 19.DEC.2012 19:57:05

PSD 100kHz Plot on 802.11g Channel 06



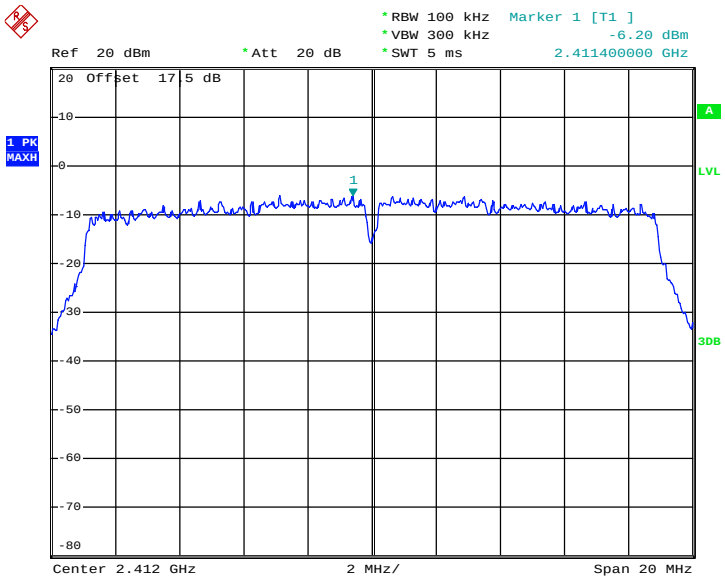
Date: 19.DEC.2012 19:56:32

PSD 100kHz Plot on 802.11g Channel 11



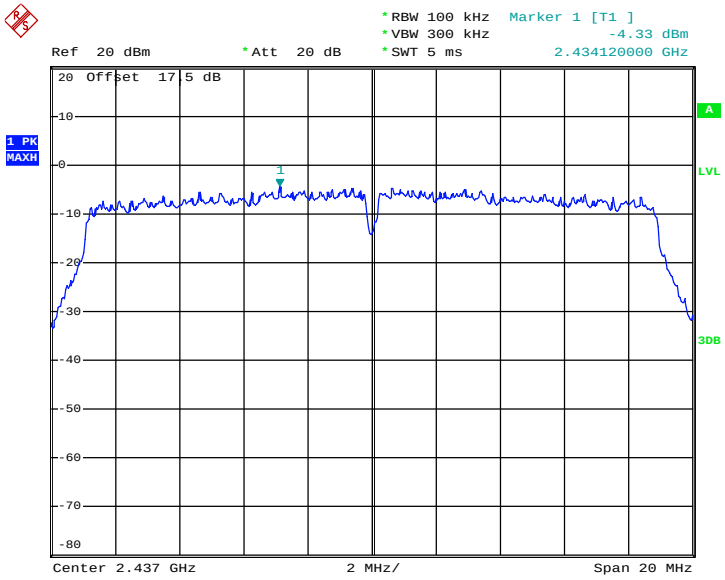
Date: 19.DEC.2012 19:56:00

PSD 100kHz Plot on 802.11n HT20 Channel 01



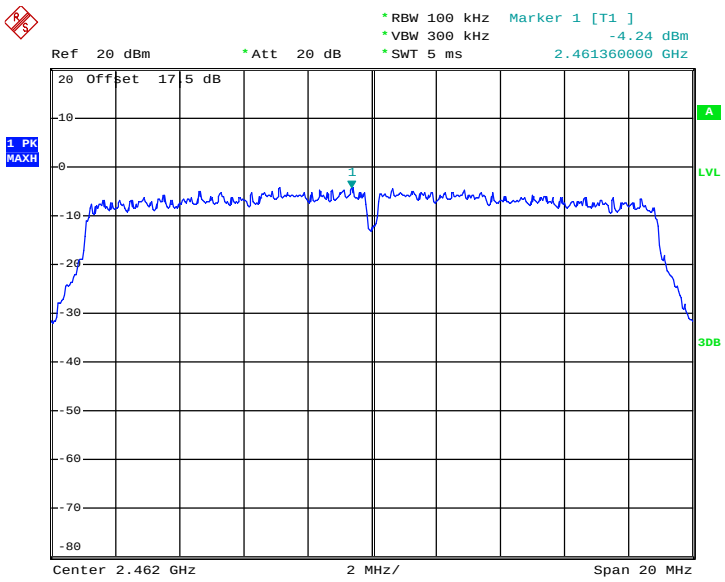
Date: 19.DEC.2012 19:58:02

PSD 100kHz Plot on 802.11n HT20 Channel 06



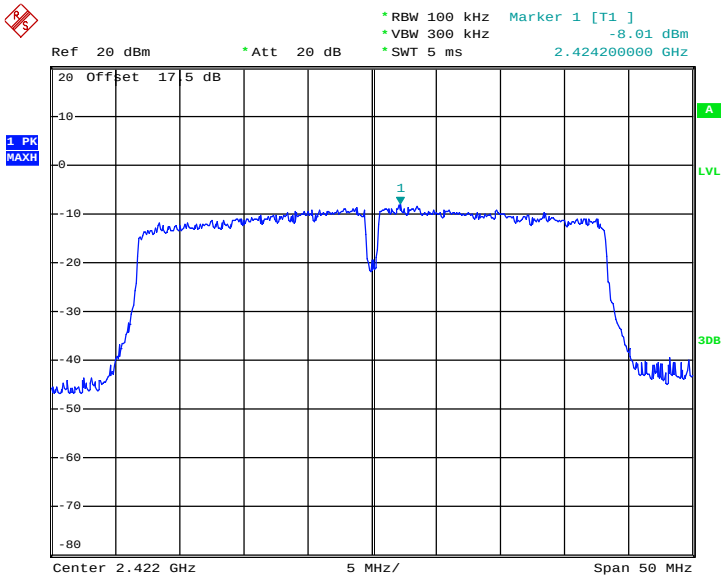
Date: 19.DEC.2012 19:58:39

PSD 100kHz Plot on 802.11n HT20 Channel 11



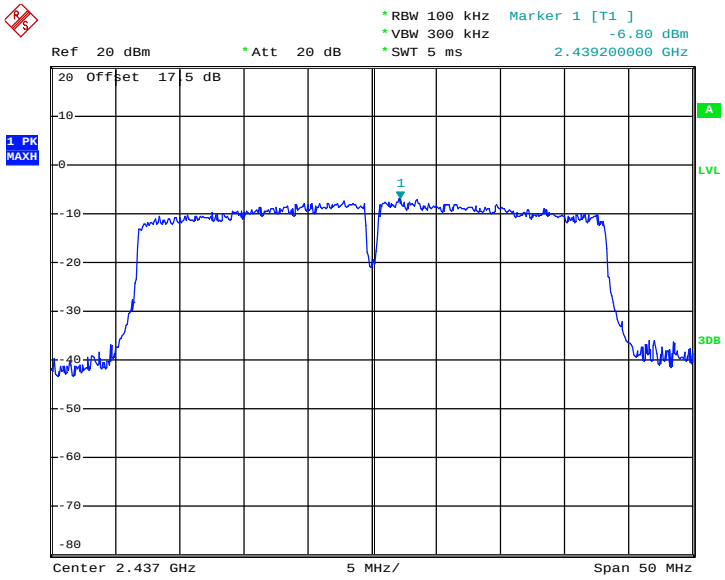
Date: 19.DEC.2012 19:59:39

PSD 100kHz Plot on 802.11n HT40 Channel 03



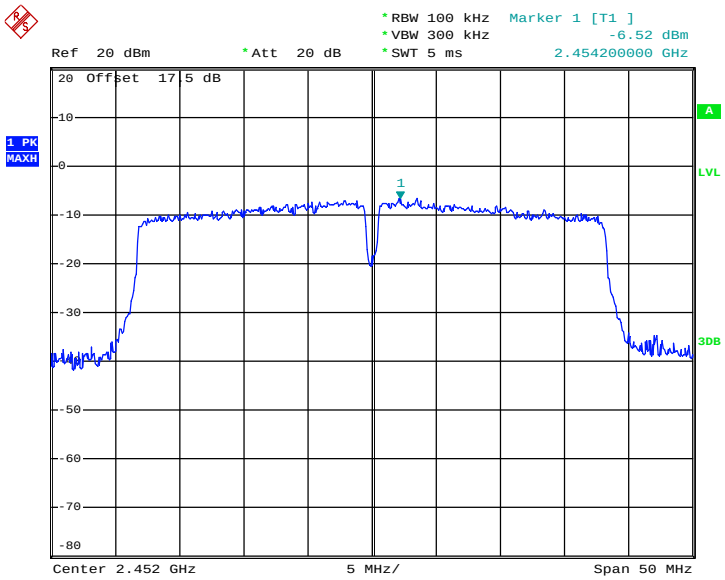
Date: 19.DEC.2012 20:00:46

PSD 100kHz Plot on 802.11n HT40 Channel 06



Date: 19.DEC.2012 20:01:22

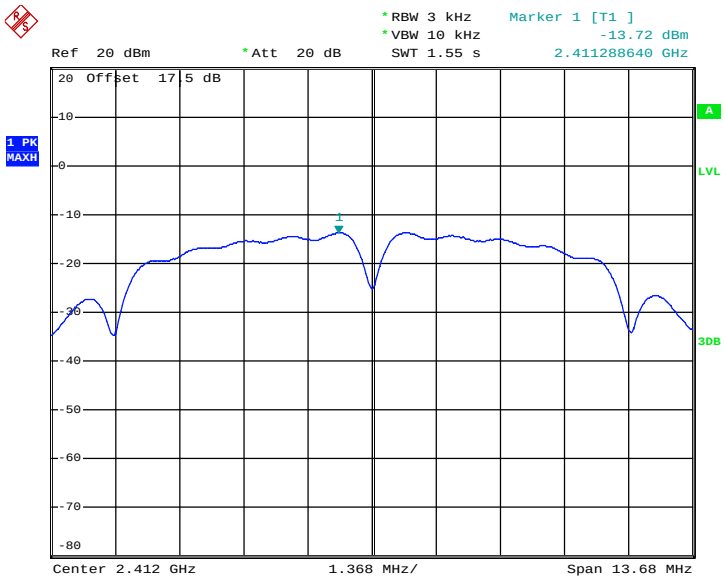
PSD 100kHz Plot on 802.11n HT40 Channel 09



Date: 19.DEC.2012 20:02:14

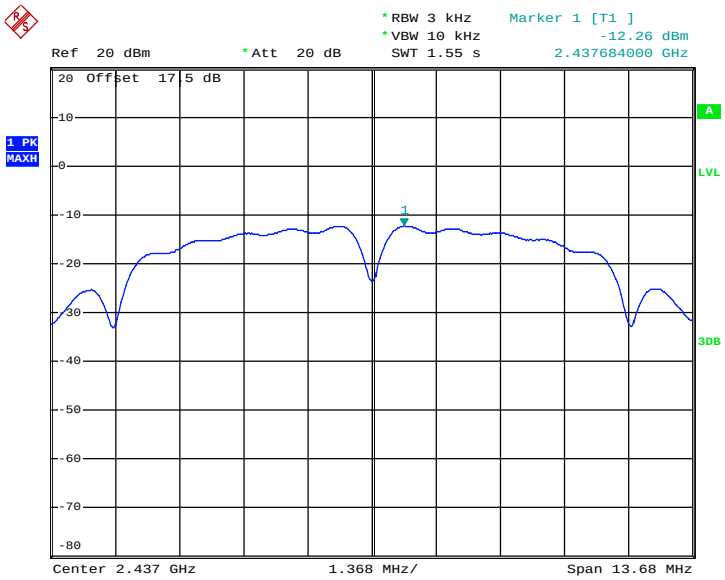
3.3.7 Test Result of Power Spectral Density Plots (3kHz)

PSD 3kHz Plot on 802.11b Channel 01



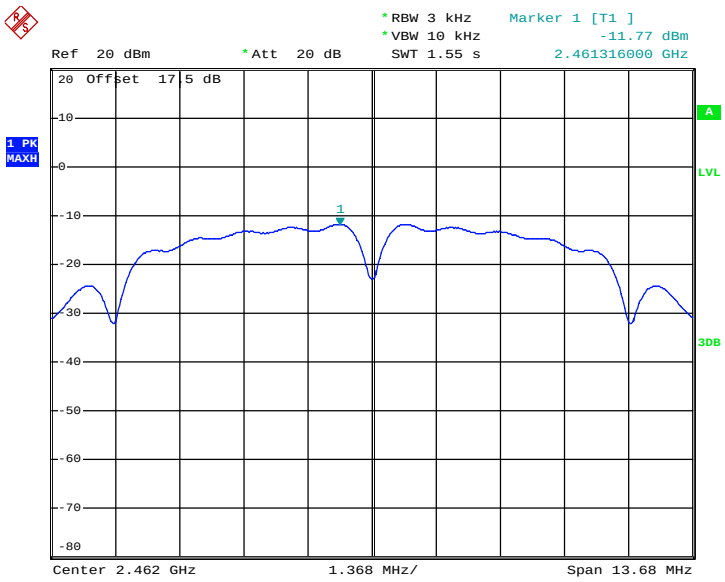
Date: 19.DEC.2012 20:25:24

PSD 3kHz Plot on 802.11b Channel 06



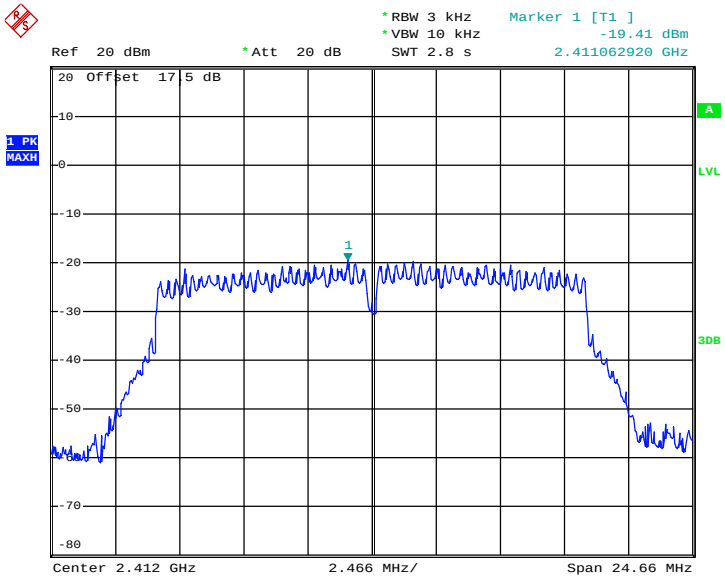
Date: 19.DEC.2012 20:25:00

PSD 3kHz Plot on 802.11b Channel 11



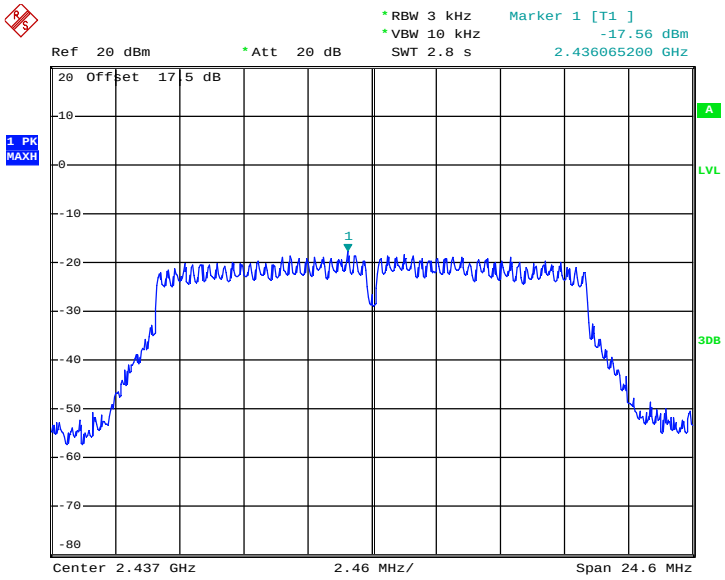
Date: 19.DEC.2012 20:24:38

PSD 3kHz Plot on 802.11g Channel 01



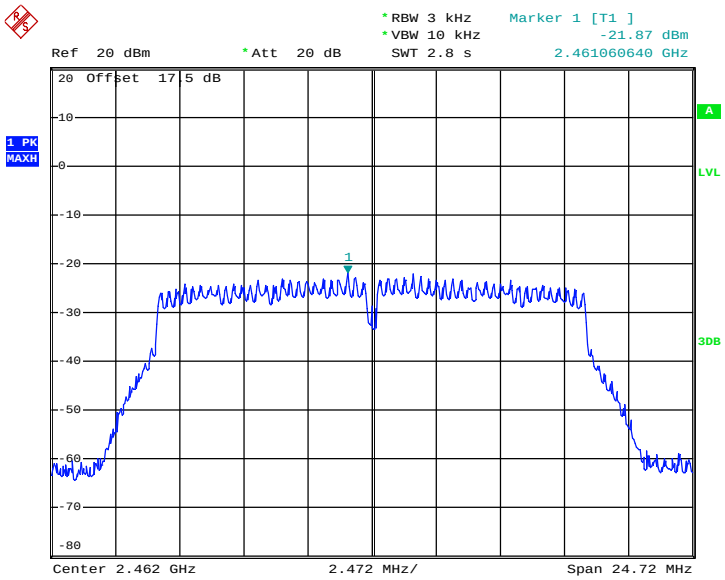
Date: 19.DEC.2012 20:26:44

PSD 3kHz Plot on 802.11g Channel 06



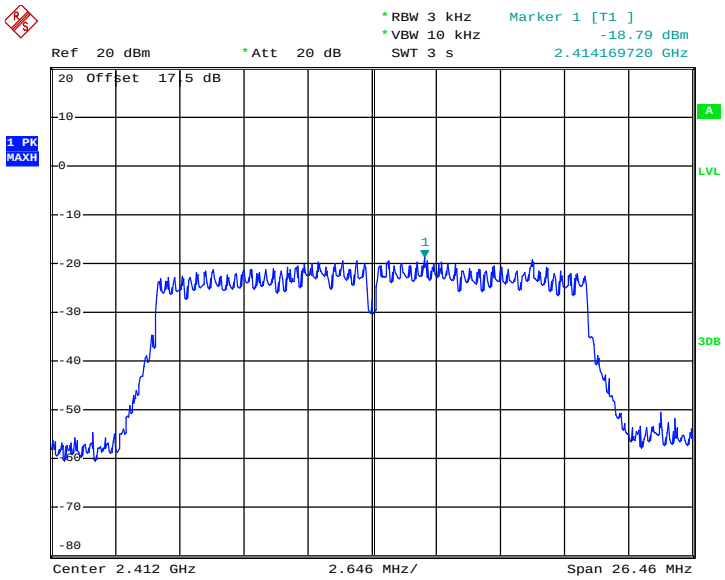
Date: 19.DEC.2012 20:27:31

PSD 3kHz Plot on 802.11g Channel 11



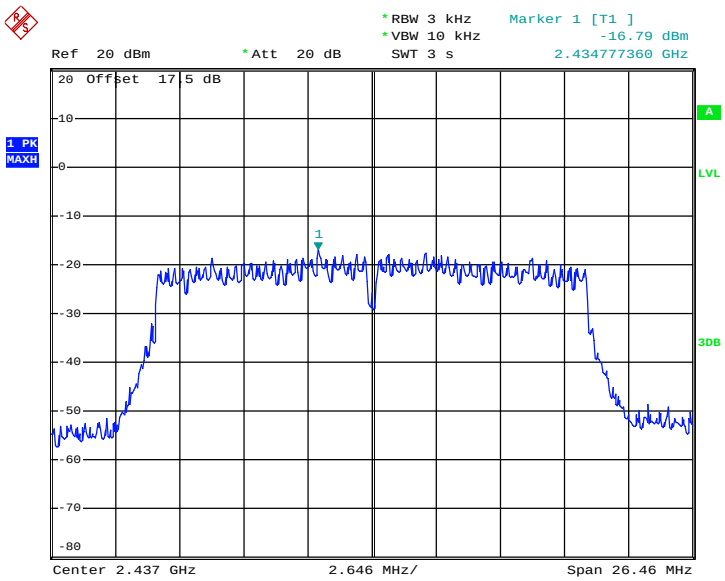
Date: 19.DEC.2012 21:20:36

PSD 3kHz Plot on 802.11n HT20 Channel 01



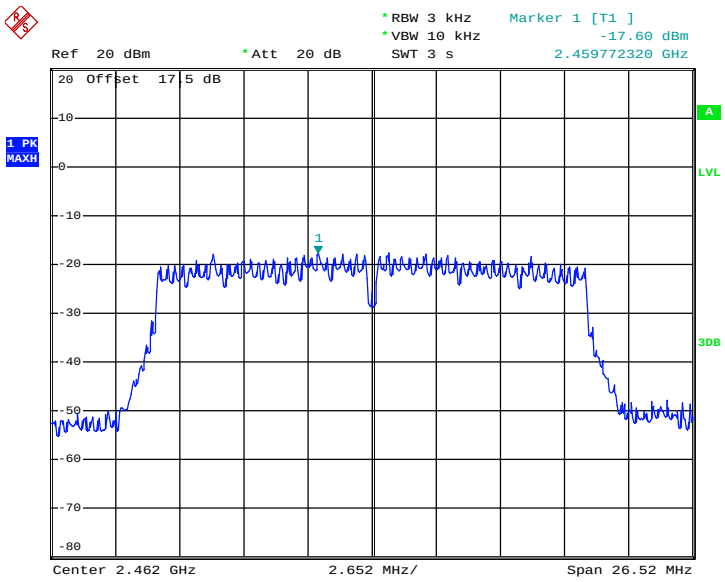
Date: 19.DEC.2012 20:31:54

PSD 3kHz Plot on 802.11n HT20 Channel 06



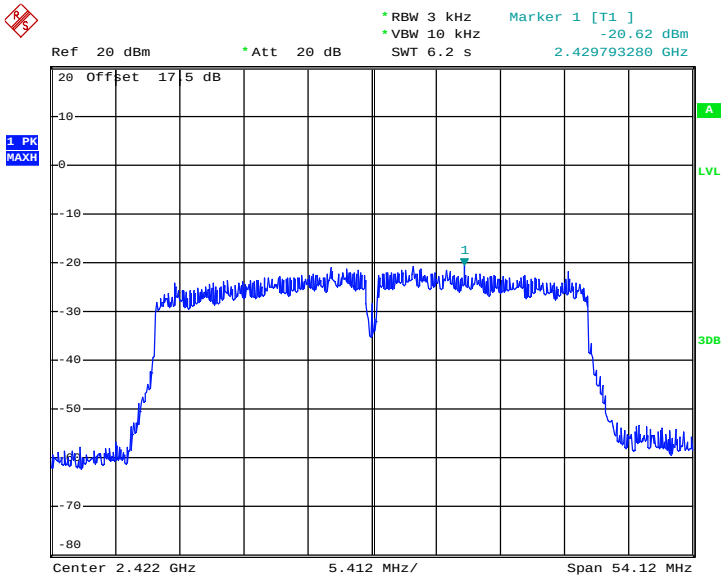
Date: 19.DEC.2012 20:30:44

PSD 3kHz Plot on 802.11n HT20 Channel 11



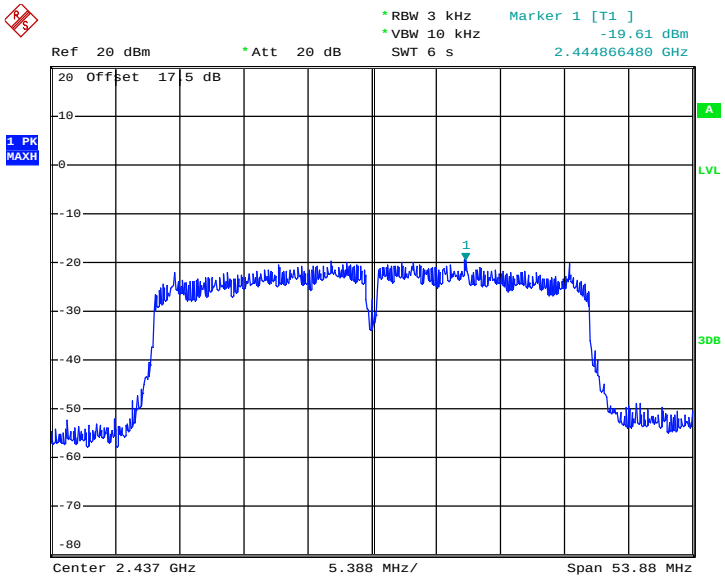
Date: 19.DEC.2012 20:29:42

PSD 3kHz Plot on 802.11n HT40 Channel 03



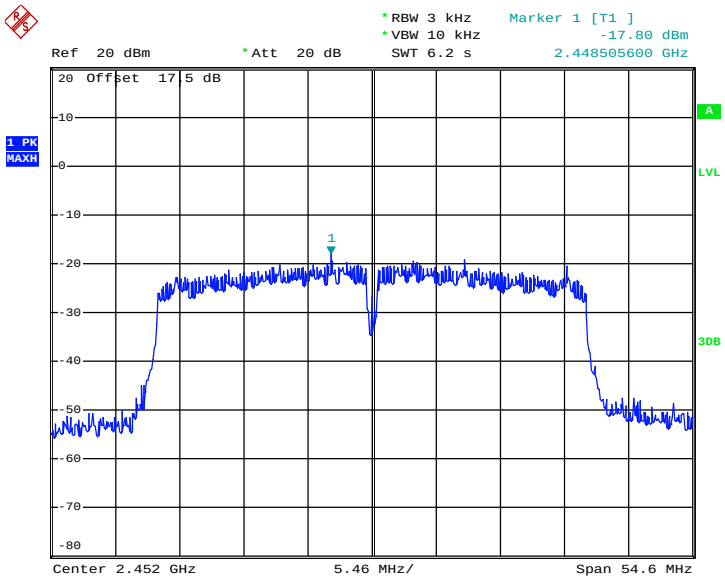
Date: 19.DEC.2012 20:32:51

PSD 3kHz Plot on 802.11n HT40 Channel 06



Date: 19.DEC.2012 20:33:56

PSD 3kHz Plot on 802.11n HT40 Channel 09



Date: 19.DEC.2012 20:35:06

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).

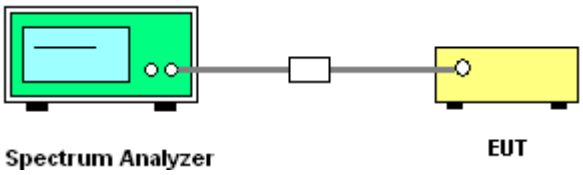
3.4.2 Measuring Instruments

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.

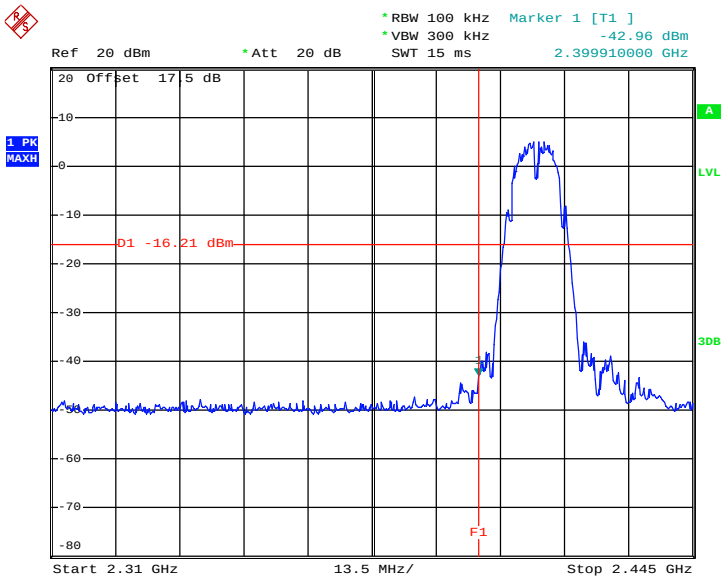
3.4.4 Test Setup



3.4.5 Test Plots of Conducted Band Edges

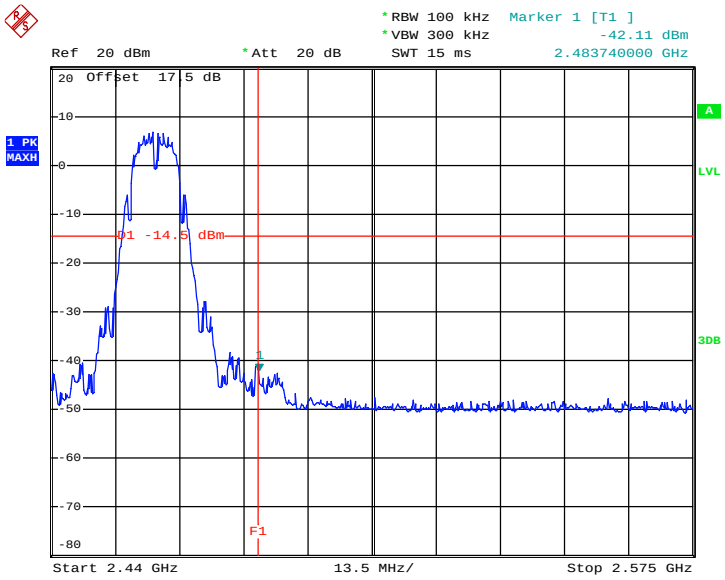
Test Mode :	802.11b	**Temperature :**	20~21℃
Test Band :	Low and High	**Relative Humidity :**	40~41%
Test Channel :	01 and 11	**Test Engineer :**	Zhi Lu

Low Band Edge Plot on 802.11b Channel 01



Date: 19.DEC.2012 20:44:58

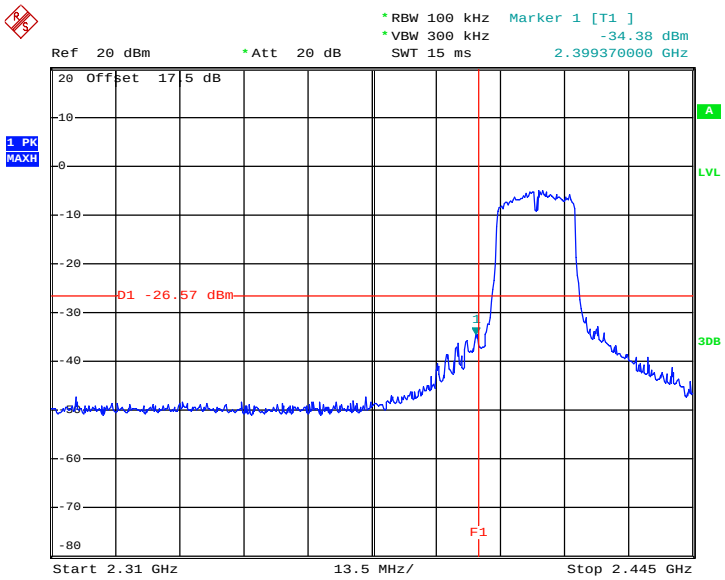
High Band Edge Plot on 802.11b Channel 11



Date: 19.DEC.2012 20:43:50

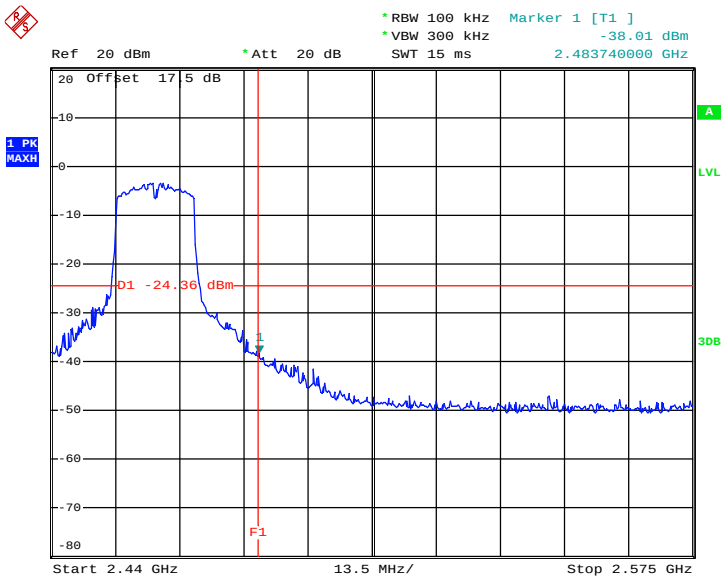
Test Mode :	802.11g	Temperature :	20~21℃
Test Band :	Low and High	Relative Humidity :	40~41%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11g Channel 01



Date: 19.DEC.2012 20:41:40

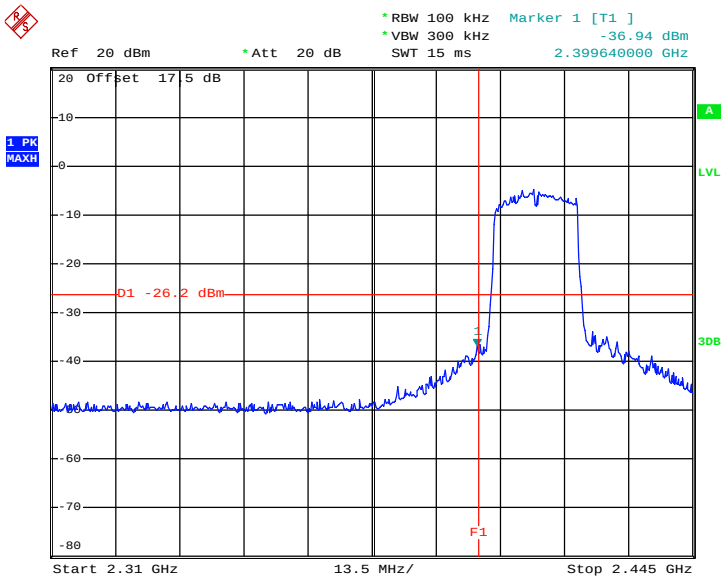
High Band Edge Plot on 802.11g Channel 11



Date: 19.DEC.2012 20:42:44

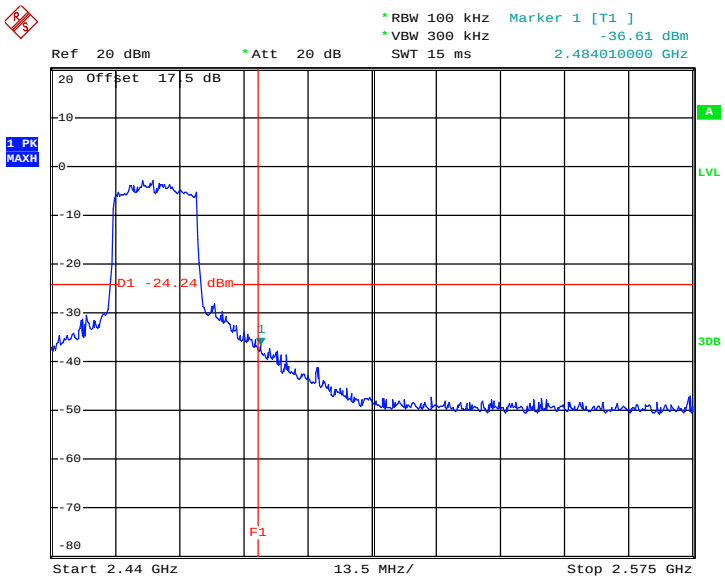
Test Mode :	802.11n HT20	Temperature :	20~21℃
Test Band :	Low and High	Relative Humidity :	40~41%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11n HT20 Channel 01



Date: 19.DEC.2012 20:41:09

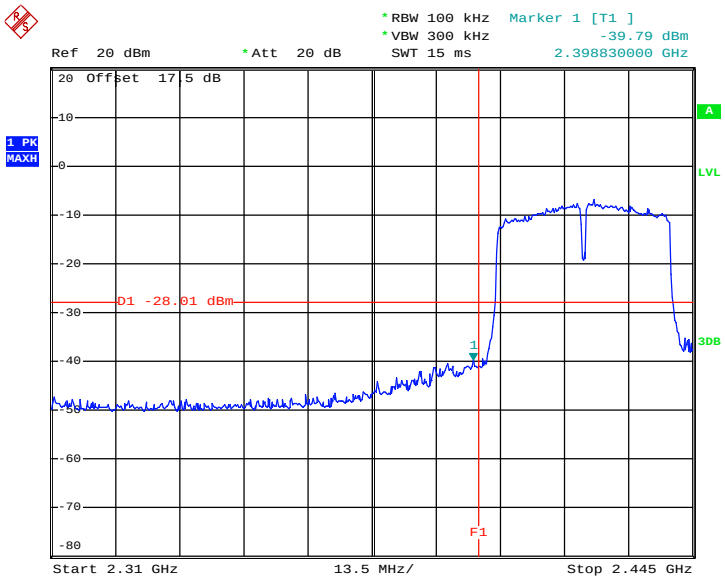
High Band Edge Plot on 802.11n HT20 Channel 11



Date: 19.DEC.2012 20:40:07

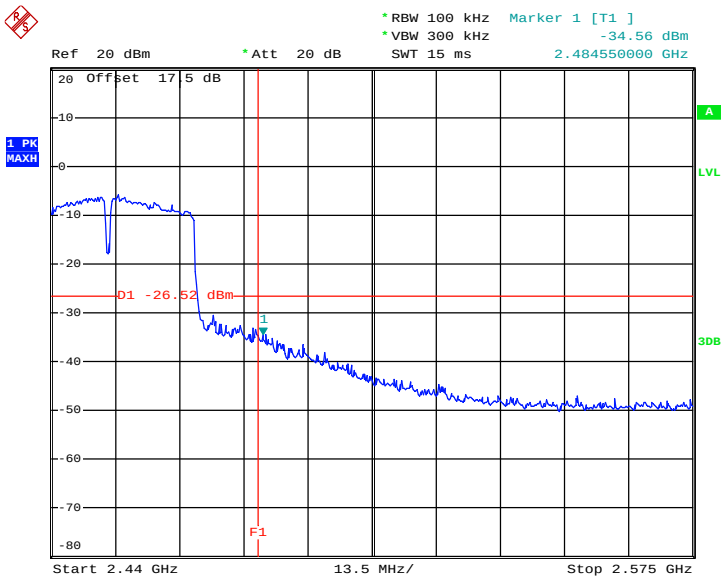
Test Mode :	802.11n HT40	Temperature :	20~21℃
Test Band :	Low and High	Relative Humidity :	40~41%
Test Channel :	03 and 09	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11n HT40 Channel 03



Date: 19.DEC.2012 20:37:35

High Band Edge Plot on 802.11n HT40 Channel 09



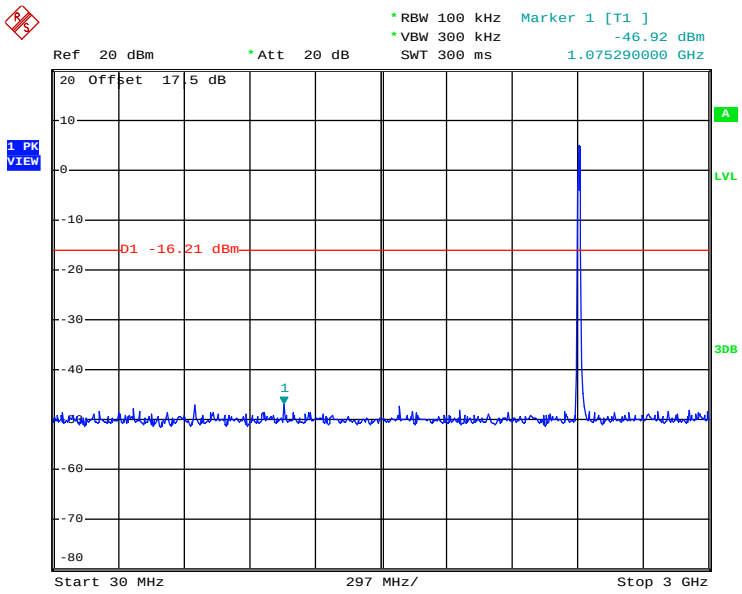
Date: 19.DEC.2012 20:39:00

3.4.6 Test Plots of Spurious Emission

Test Mode :	802.11b	Temperature :	20~21℃
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	40~41%
Test Channel :	01, 06, 11	Test Engineer :	Zhi Lu

802.11b 30 MHz~3 GHz

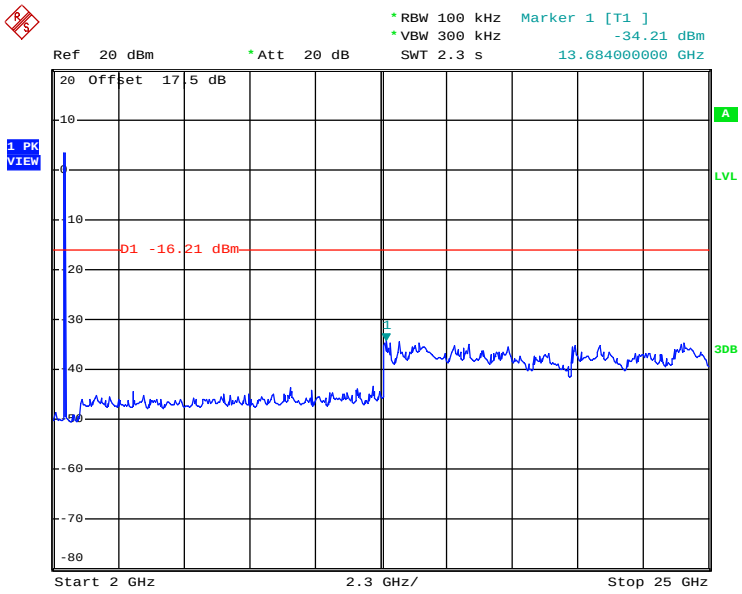
Conducted Spurious Emission Plot on Channel 01



Date: 19.DEC.2012 20:46:50

802.11b 2 GHz~25 GHz

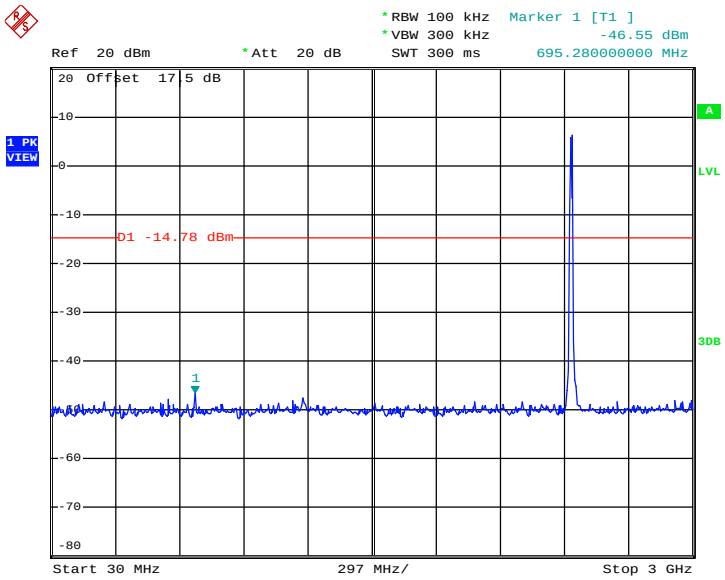
Conducted Spurious Emission Plot on Channel 01



Date: 19.DEC.2012 20:48:16

802.11b 30 MHz~3 GHz

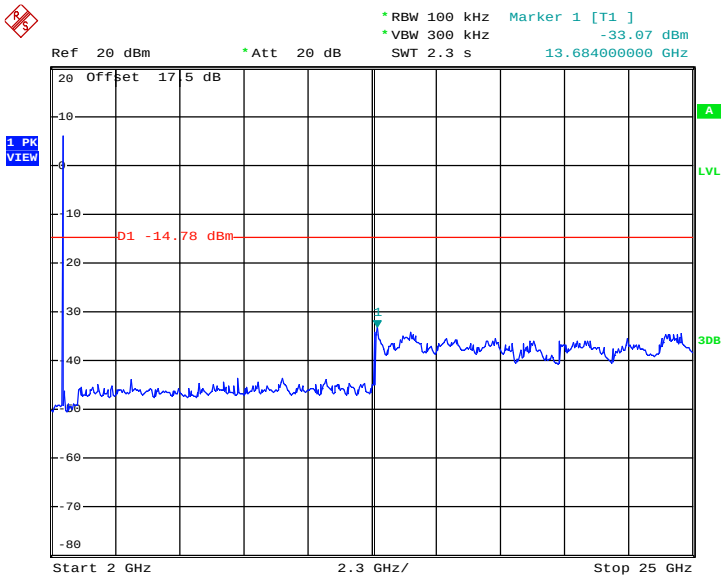
Conducted Spurious Emission Plot on Channel 06



Date: 19.DEC.2012 20:48:58

802.11b 2 GHz~25 GHz

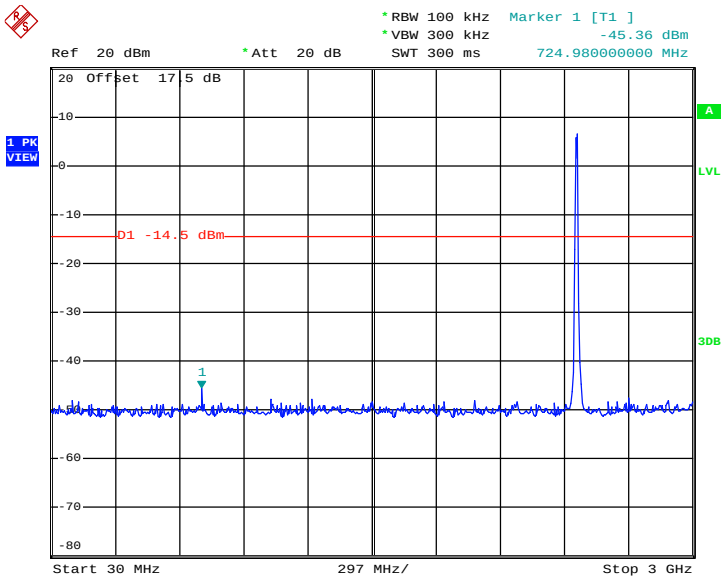
Conducted Spurious Emission Plot on Channel 06



Date: 19.DEC.2012 20:49:30

802.11b 30 MHz~3 GHz

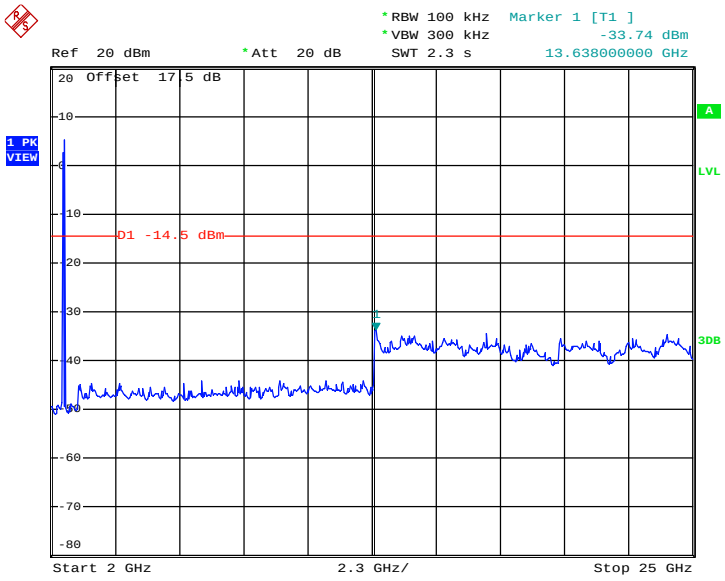
Conducted Spurious Emission Plot on Channel 11



Date: 19.DEC.2012 20:50:03

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

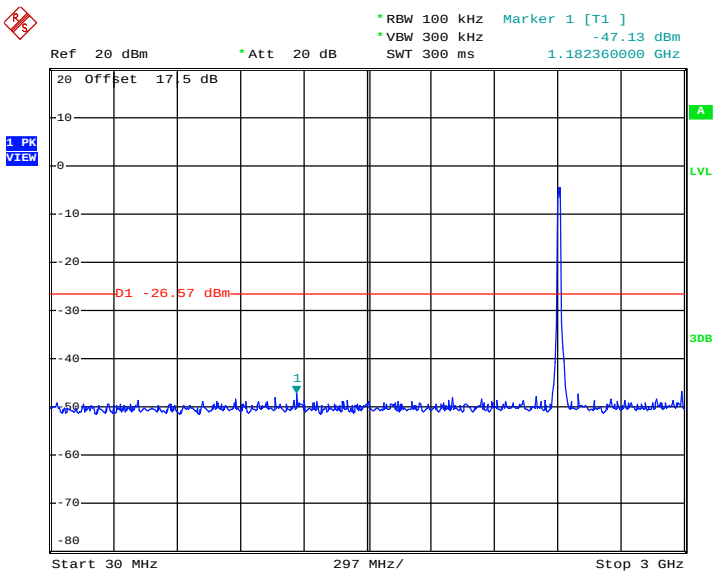


Date: 19.DEC.2012 20:50:27

Test Mode :	802.11g	Temperature :	20~21℃
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	40~41%
Test Channel :	01, 06, 11	Test Engineer :	Zhi Lu

802.11g 30 MHz~3 GHz

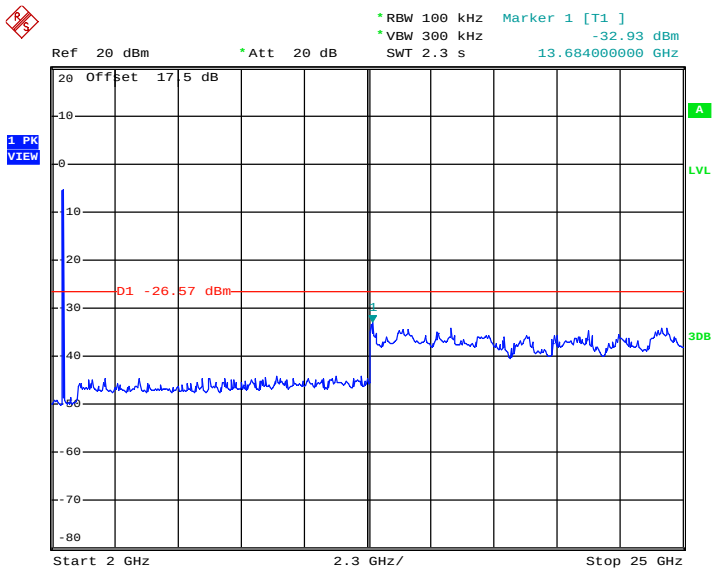
Conducted Spurious Emission Plot on Channel 01



Date: 19.DEC.2012 20:55:42

802.11g 2 GHz~25 GHz

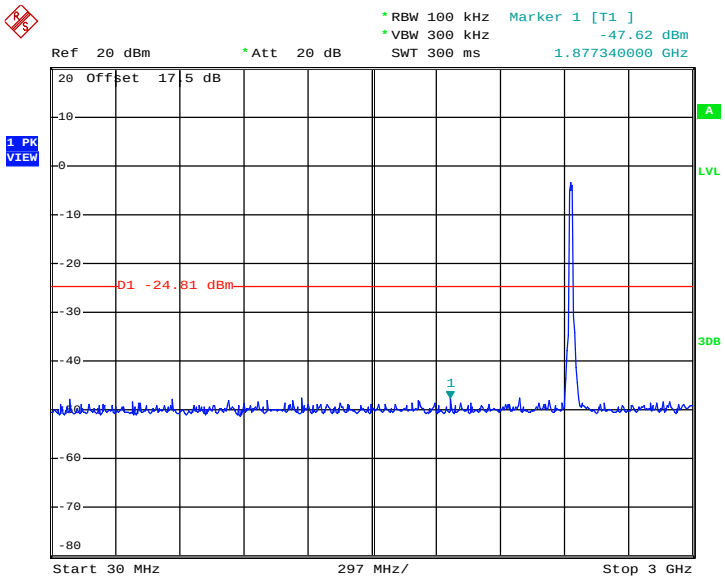
Conducted Spurious Emission Plot on Channel 01



Date: 19.DEC.2012 20:56:17

802.11g 30 MHz~3 GHz

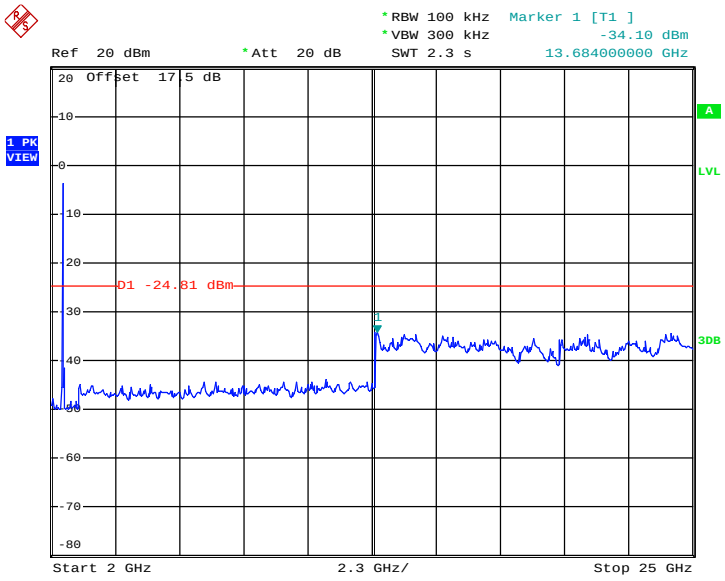
Conducted Spurious Emission Plot on Channel 06



Date: 19.DEC.2012 20:52:27

802.11g 2 GHz~25 GHz

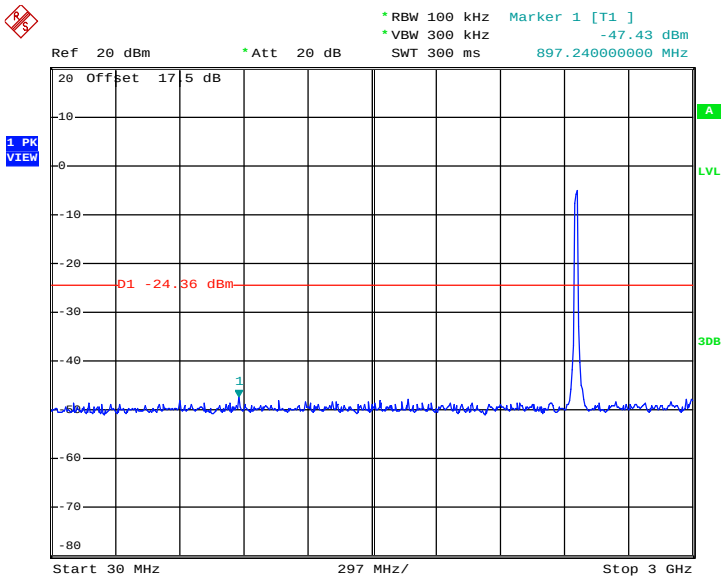
Conducted Spurious Emission Plot on Channel 06



Date: 19.DEC.2012 20:53:09

802.11g 30 MHz~3 GHz

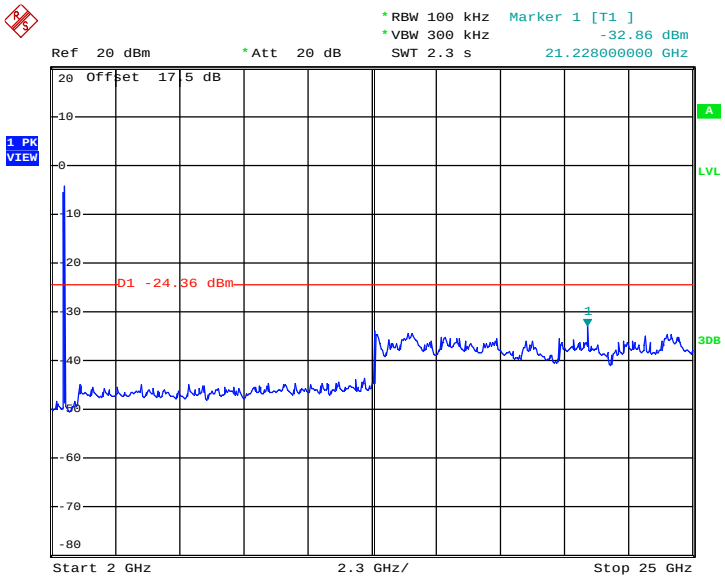
Conducted Spurious Emission Plot on Channel 11



Date: 31.DEC.2012 12:14:06

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

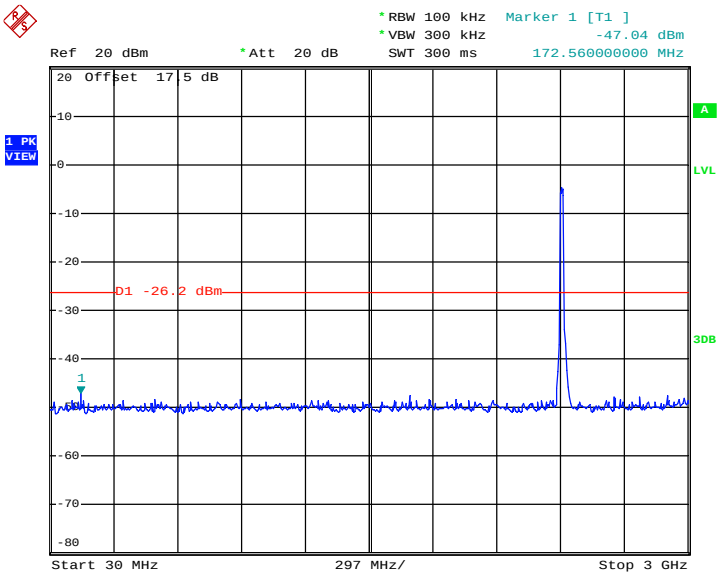


Date: 19.DEC.2012 20:51:48

Test Mode :	802.11n HT20	Temperature :	20~21℃
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	40~41%
Test Channel :	01, 06, 11	Test Engineer :	Zhi Lu

802.11n HT20 30 MHz~3 GHz

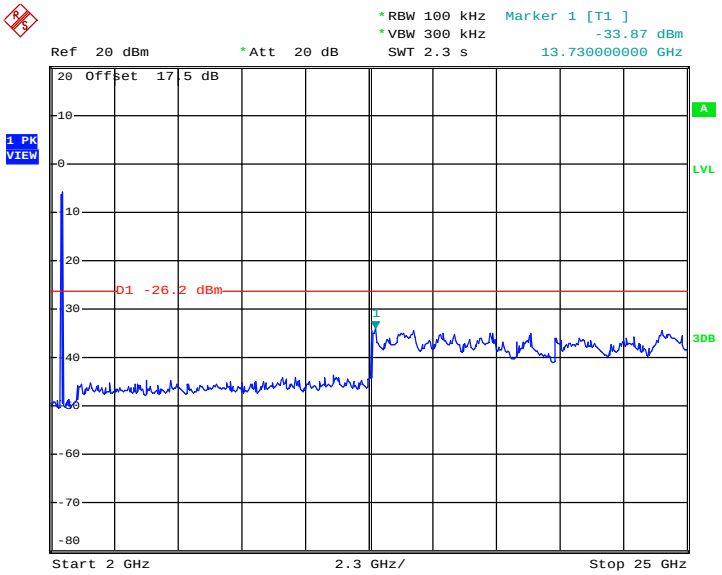
Conducted Spurious Emission Plot on Channel 01



Date: 19.DEC.2012 20:57:07

802.11n HT20 2 GHz~25 GHz

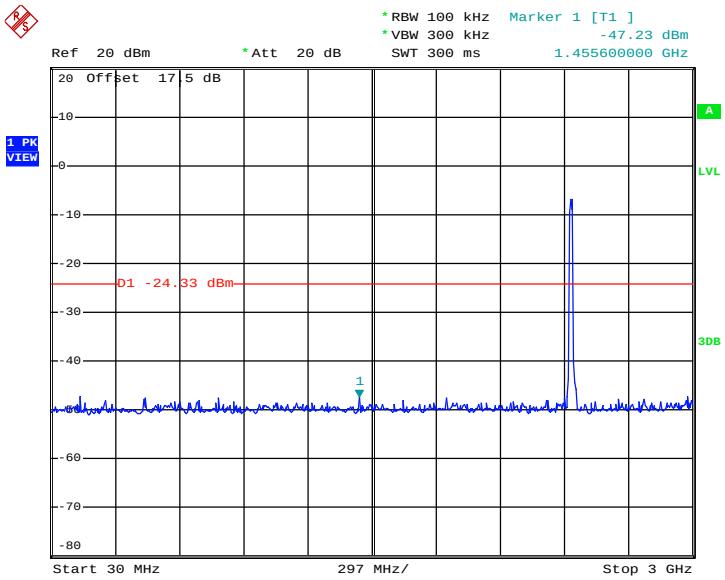
Conducted Spurious Emission Plot on Channel 01



Date: 19.DEC.2012 20:57:38

802.11n HT20 30 MHz~3 GHz

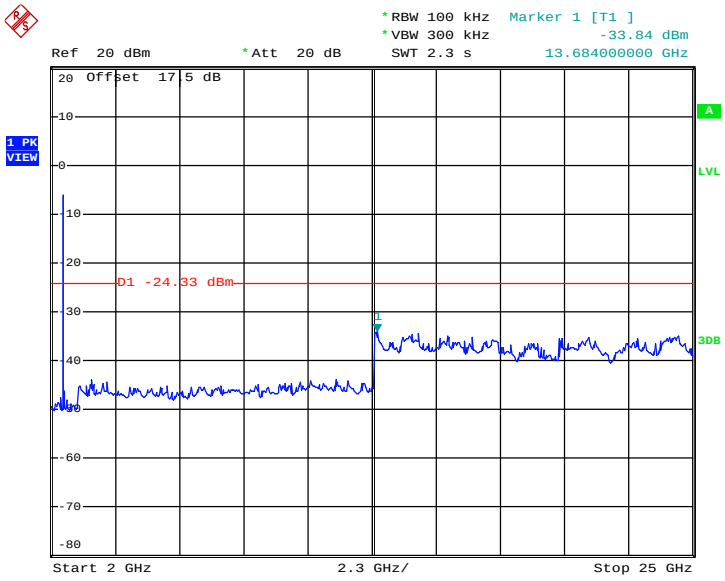
Conducted Spurious Emission Plot on Channel 06



Date: 31.DEC.2012 12:12:08

802.11n HT20 2 GHz~25 GHz

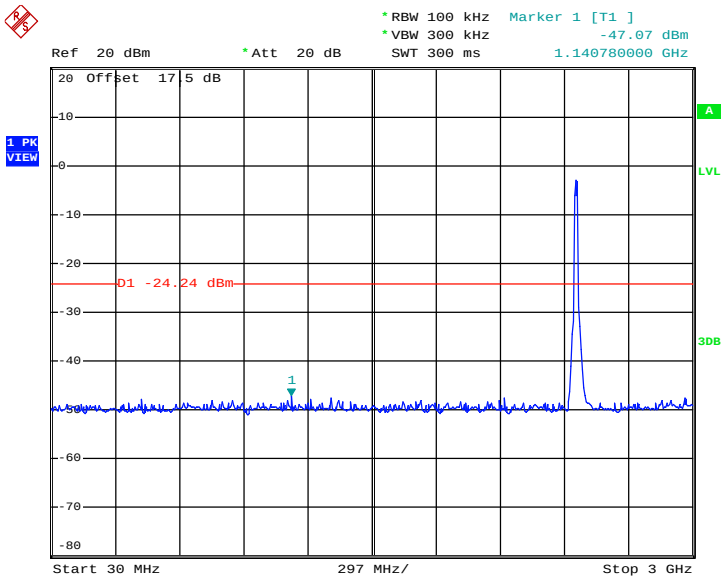
Conducted Spurious Emission Plot on Channel 06



Date: 31.DEC.2012 12:12:46

802.11n HT20 30 MHz~3 GHz

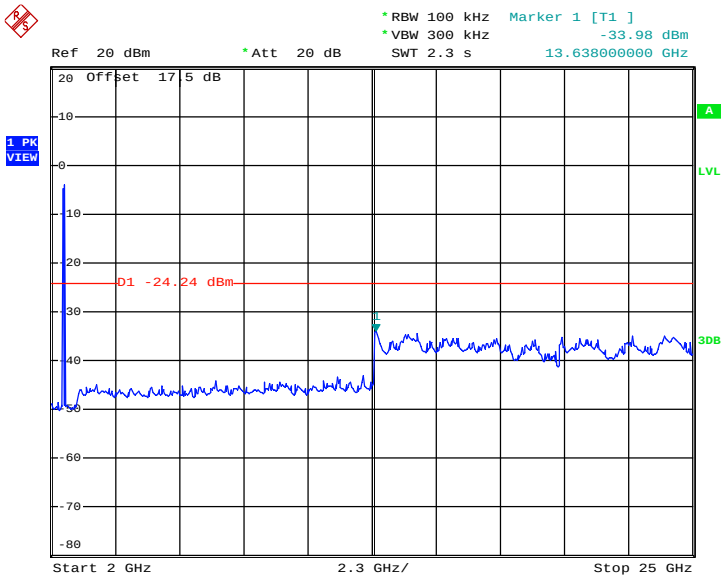
Conducted Spurious Emission Plot on Channel 11



Date: 19.DEC.2012 21:00:39

802.11n HT20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

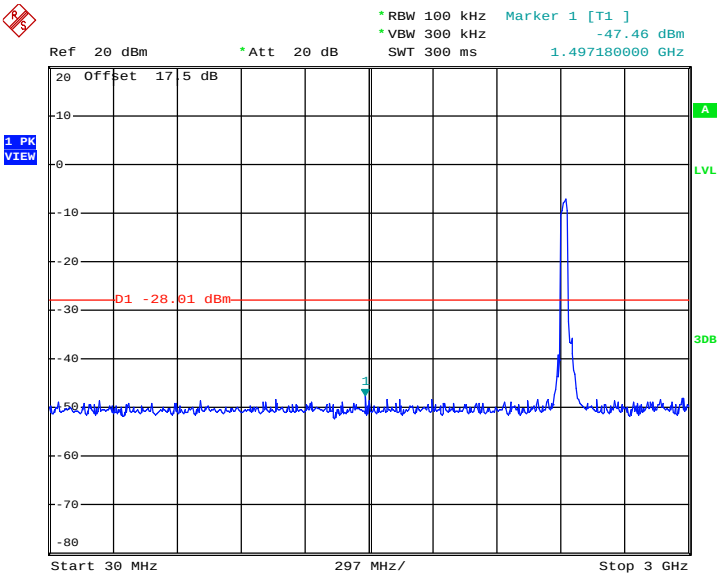


Date: 19.DEC.2012 21:01:15

Test Mode :	802.11n HT40	Temperature :	20~21
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	40~41
Test Channel :	03, 06, 09	Test Engineer :	Zhi Lu

802.11n HT40 30 MHz~3 GHz

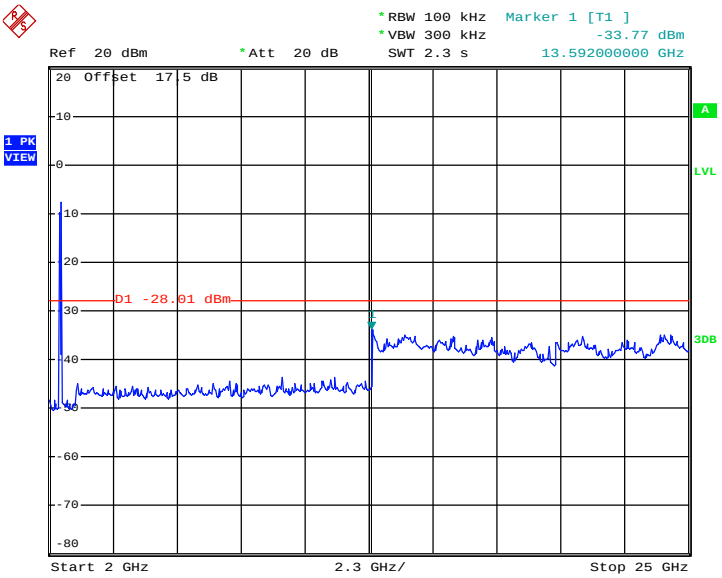
Conducted Spurious Emission Plot on Channel 03



Date: 19.DEC.2012 21:02:40

802.11n HT40 2 GHz~25 GHz

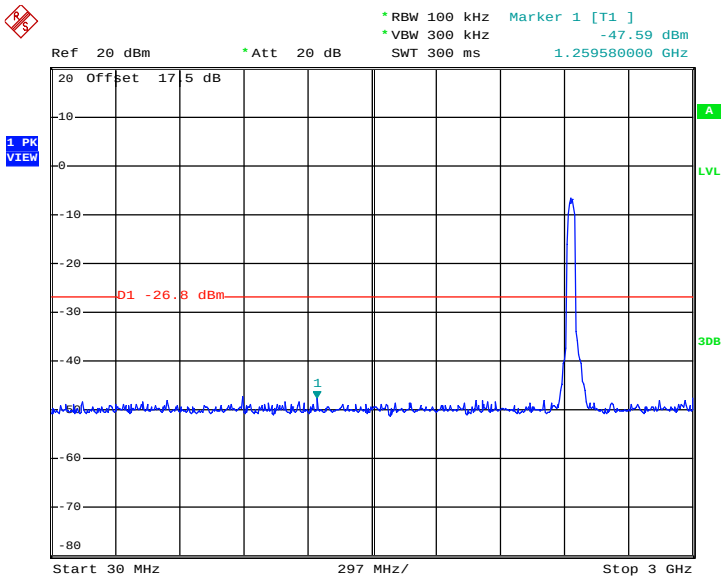
Conducted Spurious Emission Plot on Channel 03



Date: 19.DEC.2012 21:03:12

802.11n HT40 30 MHz~3 GHz

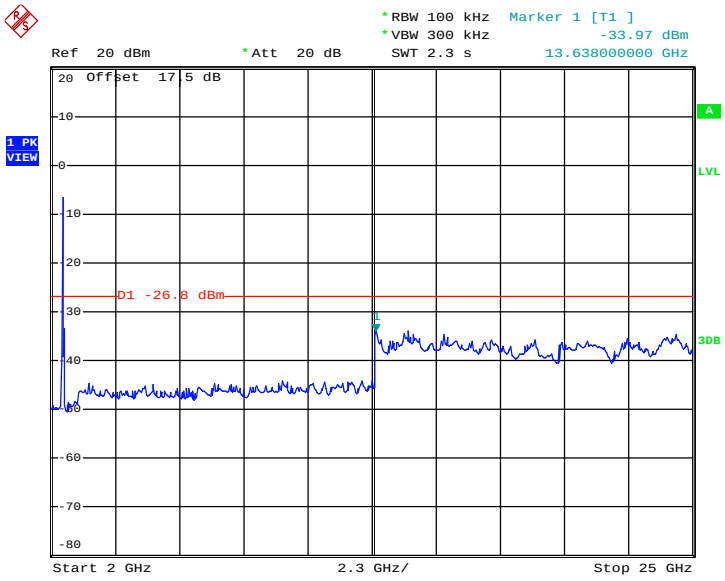
Conducted Spurious Emission Plot on Channel 06



Date: 19.DEC.2012 21:03:58

802.11n HT40 2 GHz~25 GHz

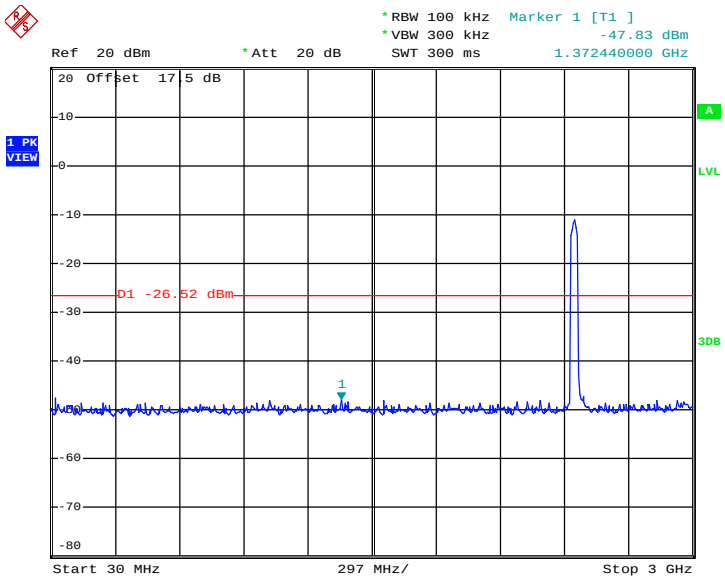
Conducted Spurious Emission Plot on Channel 06



Date: 19.DEC.2012 21:04:33

802.11n HT40 30 MHz~3 GHz

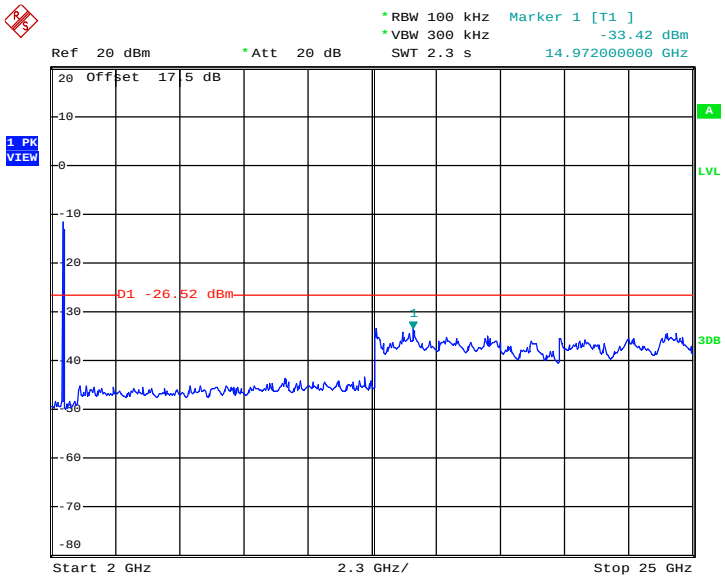
Conducted Spurious Emission Plot on Channel 09



Date: 19.DEC.2012 21:09:34

802.11n HT40 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 09



Date: 19.DEC.2012 21:10:20

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

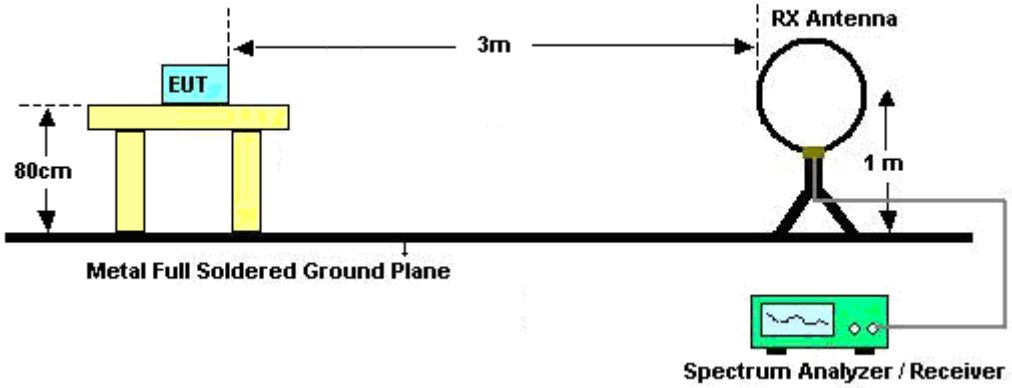
1. The testing follows the guidelines in ANSI C63. 10-2009
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better 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(us)	1/T(KHz)	VBW Setting
802.11b	100.00	-	-	10Hz
802.11g	100.00	-	-	10Hz
2.4G 802.11n HT20	100.00	-	-	10Hz
2.4G 802.11n HT40	100.00	-	-	10Hz

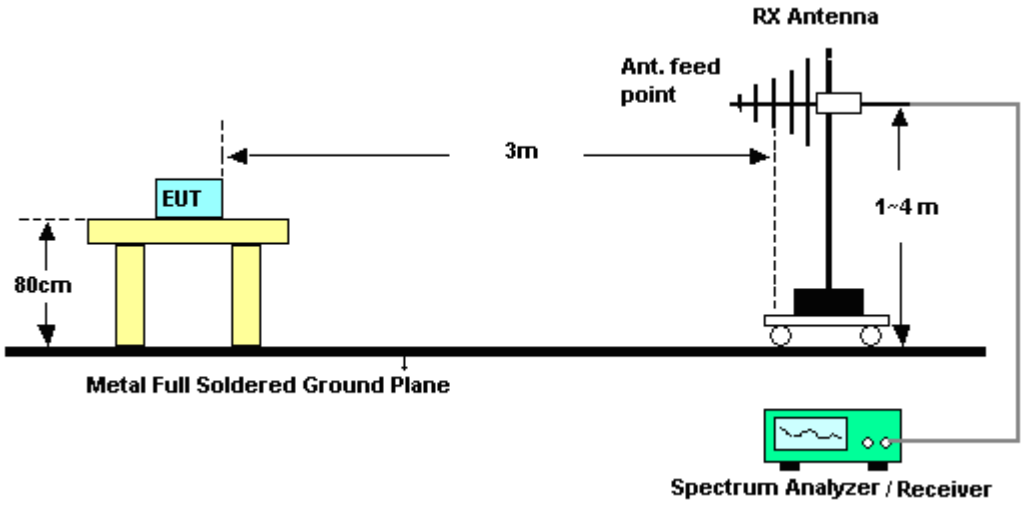
Note: For average measurement with duty cycle < 98%, use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.

3.5.4 Test Setup

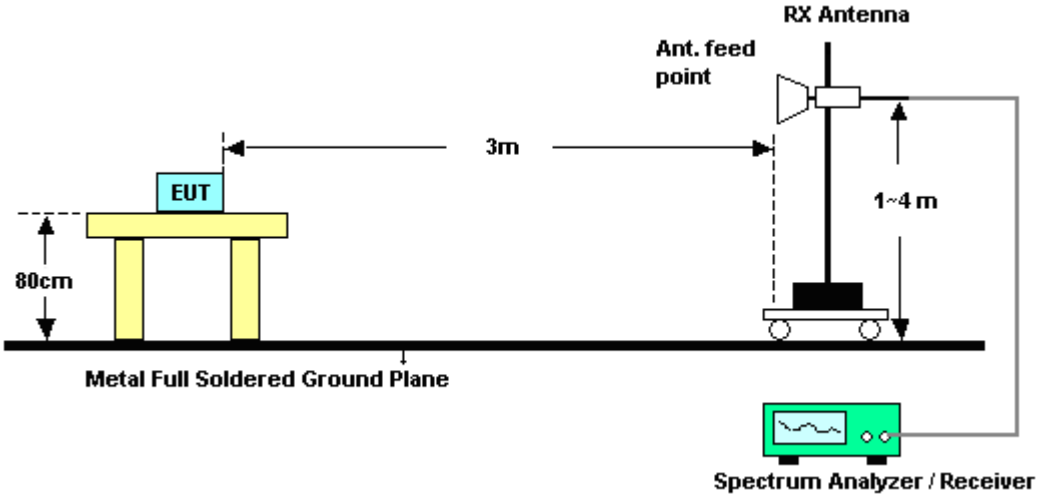
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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

3.5.6 Test Result of Radiated Band Edges

Test Mode :	802.11b	Temperature :	21~22℃
Test Band :	Low	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Allen Cheng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2371.2	50.29	-23.71	74	46.88	32.83	2.09	31.51	100	102	Peak
2390	38.04	-15.96	54	34.58	32.86	2.11	31.51	100	102	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2380.02	50.04	-23.96	74	46.63	32.83	2.09	31.51	100	21	Peak
2390	36.69	-17.31	54	33.23	32.86	2.11	31.51	100	21	Average

Test Mode :	802.11b	Temperature :	21~22℃
Test Band :	High	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Allen Cheng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.89	51.61	-22.39	74	47.95	33.01	2.16	31.51	100	16	Peak
2483.53	39.7	-14.3	54	36.04	33.01	2.16	31.51	100	16	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	50.35	-23.65	74	46.69	33.01	2.16	31.51	152	46	Peak
2484.94	36.81	-17.19	54	33.15	33.01	2.16	31.51	152	46	Average

Test Mode :	802.11g	Temperature :	21~22℃
Test Band :	Low	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Allen Cheng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.57	51.18	-22.82	74	47.72	32.86	2.11	31.51	190	0	Peak
2390	38.29	-15.71	54	34.83	32.86	2.11	31.51	190	360	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
2388.57	50.32	-23.68	74	46.86	32.86	2.11	31.51	106	350	Peak
2390	37.52	-16.48	54	34.06	32.86	2.11	31.51	106	352	Average

Test Mode :	802.11g	Temperature :	21~22℃
Test Band :	High	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Allen Cheng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.61	57.89	-16.11	74	54.23	33.01	2.16	31.51	131	351	Peak
2483.5	42.7	-11.3	54	39.04	33.01	2.16	31.51	136	348	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
2484.64	54.53	-19.47	74	50.87	33.01	2.16	31.51	106	209	Peak
2483.5	39.74	-14.26	54	36.08	33.01	2.16	31.51	106	208	Average

Test Mode :	802.11n HT20	Temperature :	21~22℃
Test Band :	Low	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Allen Cheng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2385.69	51.48	-22.52	74	48.02	32.86	2.11	31.51	100	162	Peak
2389.47	37.38	-16.62	54	33.92	32.86	2.11	31.51	100	162	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	49.8	-24.2	74	46.34	32.86	2.11	31.51	100	21	Peak
2390	37.17	-16.83	54	33.71	32.86	2.11	31.51	100	21	Average

Test Mode :	802.11n HT20	Temperature :	21~22℃
Test Band :	High	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Allen Cheng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.91	58.05	-15.95	74	54.39	33.01	2.16	31.51	130	261	Peak
2483.5	42.67	-11.33	54	39.01	33.01	2.16	31.51	130	261	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2488.9	54.46	-19.54	74	50.75	33.05	2.17	31.51	100	96	Peak
2483.5	39.43	-14.57	54	35.77	33.01	2.16	31.51	100	96	Average

Test Mode :	802.11n HT40	Temperature :	21~22℃
Test Band :	Low	Relative Humidity :	40~41%
Test Channel :	03	Test Engineer :	Allen Cheng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2379.57	50.99	-23.01	74	47.58	32.83	2.09	31.51	130	30	Peak
2389.29	40.44	-13.56	54	36.98	32.86	2.11	31.51	130	30	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
2387.31	51.51	-22.49	74	48.05	32.86	2.11	31.51	100	39	Peak
2388.75	38.76	-15.24	54	35.3	32.86	2.11	31.51	100	39	Average

Test Mode :	802.11n HT40	Temperature :	21~22℃
Test Band :	High	Relative Humidity :	40~41%
Test Channel :	09	Test Engineer :	Allen Cheng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.07	59.15	-14.85	74	55.49	33.01	2.16	31.51	120	36	Peak
2484.94	44.43	-9.57	54	40.77	33.01	2.16	31.51	120	36	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
2485.21	56.04	-17.96	74	52.38	33.01	2.16	31.51	100	181	Peak
2483.5	41.62	-12.38	54	37.96	33.01	2.16	31.51	100	181	Average

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

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

Test Mode :	802.11b	**Temperature :**	21~22℃
Test Channel :	01	**Relative Humidity :**	40~41%
Test Engineer :	Allen Cheng	**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
2396.85	53.9	-28.92	82.82	50.44	32.86	2.11	31.51	100	102	Peak
2412	102.82	-	-	99.32	32.89	2.12	31.51	104	53	Peak
2412	98.11	-	-	94.61	32.89	2.12	31.51	104	53	Average
4824	48.77	-25.23	74	42.04	35.17	3.09	31.53	100	0	Peak
7236	51.52	-22.48	82.82	43.05	36.18	3.24	30.95	100	29	Peak

Test Mode :	802.11b	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	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
2398.92	51.53	-25.69	77.22	48.07	32.86	2.11	31.51	100	21	Peak
2412	97.22	-	-	93.72	32.89	2.12	31.51	100	115	Peak
2412	92.15	-	-	88.65	32.89	2.12	31.51	100	115	Average
4824	50.67	-23.33	74	43.94	35.17	3.09	31.53	100	16	Peak
7236	50.29	-23.71	77.22	41.82	36.18	3.24	30.95	100	201	Peak

Test Mode :	802.11b	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	104.03	-	-	100.45	32.95	2.14	31.51	100	16	Peak
2437	99.75	-	-	96.17	32.95	2.14	31.51	100	16	Average
4874	49.78	-24.22	74	43	35.18	3.12	31.52	100	206	Peak
7311	50.01	-23.99	74	41.54	36.2	3.21	30.94	100	62	Peak

Test Mode :	802.11b	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	98.98	-	-	95.4	32.95	2.14	31.51	100	46	Peak
2437	94.17	-	-	90.59	32.95	2.14	31.51	100	46	Average
4874	49.48	-24.52	74	42.7	35.18	3.12	31.52	100	122	Peak
7311	50.41	-23.59	74	41.94	36.2	3.21	30.94	100	109	Peak

Test Mode :	802.11b	Temperature :	21~22℃
Test Channel :	11	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
34.276	20.19	-19.81	40	37.87	15.56	0.36	33.6	-	-	Peak
71.581	19.72	-20.28	40	47.32	5.46	0.53	33.59	-	-	Peak
292.058	27.33	-18.67	46	46.84	12.89	0.98	33.38	-	-	Peak
383.932	37.85	-8.15	46	54.44	15.59	1.14	33.32	100	265	Peak
766.057	26.55	-19.45	46	37.79	19.89	1.61	32.74	-	-	Peak
948.761	29.71	-16.29	46	39.67	20.73	1.75	32.44	-	-	Peak
2462	105.28	-	-	101.66	32.98	2.15	31.51	100	15	Peak
2462	100.78	-	-	97.16	32.98	2.15	31.51	100	15	Average
4924	49.95	-24.05	74	43.12	35.19	3.15	31.51	100	16	Peak
7386	50.72	-23.28	74	42.22	36.24	3.19	30.93	100	189	Peak

Test Mode :	802.11b	Temperature :	21~22℃
Test Channel :	11	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
34.156	34.56	-5.44	40	52.24	15.56	0.36	33.6	100	216	Peak
46.016	25.35	-14.65	40	49.66	8.88	0.42	33.61	-	-	Peak
100.934	24.87	-18.63	43.5	47.28	10.62	0.58	33.61	-	-	Peak
390.723	33.61	-12.39	46	50	15.79	1.14	33.32	-	-	Peak
584.79	31.83	-14.17	46	44.85	18.57	1.38	32.97	-	-	Peak
948.761	31.75	-14.25	46	41.71	20.73	1.75	32.44	-	-	Peak
2462	101.23	-	-	97.61	32.98	2.15	31.51	100	351	Peak
2462	95.97	-	-	92.35	32.98	2.15	31.51	100	351	Average
4924	49.85	-24.15	74	43.02	35.19	3.15	31.51	100	0	Peak
7386	50.78	-23.22	74	42.28	36.24	3.19	30.93	100	0	Peak

Test Mode :	802.11g	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	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
2398	55.6	-24.16	79.76	52.14	32.86	2.11	31.51	190	0	Peak
2412	99.76	-	-	96.26	32.89	2.12	31.51	190	0	Peak
2412	88.89	-	-	85.39	32.89	2.12	31.51	190	0	Average
4824	48.98	-25.02	74	42.25	35.17	3.09	31.53	100	20	Peak
7236	50.23	-23.77	79.76	41.76	36.18	3.24	30.95	200	156	Peak

Test Mode :	802.11g	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	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
2396.4	54.22	-23.11	77.33	50.76	32.86	2.11	31.51	105	352	Peak
2412	97.33	-	-	93.83	32.89	2.12	31.51	105	352	Peak
2412	86.78	-	-	83.28	32.89	2.12	31.51	105	352	Average
4824	48.63	-25.37	74	41.9	35.17	3.09	31.53	200	10	Peak
7236	51.07	-22.93	77.33	42.6	36.18	3.24	30.95	200	300	Peak

Test Mode :	802.11g	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	103.05	-	-	99.47	32.95	2.14	31.51	154	0	Peak
2437	91.12	-	-	87.54	32.95	2.14	31.51	154	0	Average
4874	50.06	-23.94	74	43.28	35.18	3.12	31.52	200	0	Peak
7312	49.79	-24.21	74	41.32	36.2	3.21	30.94	200	189	Peak

Test Mode :	802.11g	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	99.18	-	-	95.6	32.95	2.14	31.51	103	0	Peak
2437	88.4	-	-	84.82	32.95	2.14	31.51	103	0	Average
4874	49.91	-24.09	74	43.13	35.18	3.12	31.52	100	0	Peak
7312	50.29	-23.71	74	41.82	36.2	3.21	30.94	200	175	Peak

Test Mode :	802.11g	Temperature :	21~22℃
Test Channel :	11	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	103.17	-	-	99.55	32.98	2.15	31.51	131	350	Peak
2462	92.14	-	-	88.52	32.98	2.15	31.51	131	350	Average
4924	49.54	-24.46	74	42.71	35.19	3.15	31.51	100	0	Peak
7386	51.44	-22.56	74	42.94	36.24	3.19	30.93	200	100	Peak

Test Mode :	802.11g	Temperature :	21~22℃
Test Channel :	11	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	98.9	-	-	95.28	32.98	2.15	31.51	106	208	Peak
2462	87.99	-	-	84.37	32.98	2.15	31.51	106	208	Average
4924	49.26	-24.74	74	42.43	35.19	3.15	31.51	136	258	Peak
7386	51.18	-22.82	74	42.68	36.24	3.19	30.93	150	240	Peak

Test Mode :	802.11n HT20	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	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
2398.11	56.82	-22.25	79.07	53.36	32.86	2.11	31.51	100	162	Peak
2412	99.07	-	-	95.57	32.89	2.12	31.51	163	0	Peak
2412	88.76	-	-	85.26	32.89	2.12	31.51	163	0	Average
4824	48.81	-25.19	74	42.08	35.17	3.09	31.53	100	122	Peak
7236	50.74	-23.26	79.07	42.27	36.18	3.24	30.95	100	81	Peak

Test Mode :	802.11n HT20	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	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
2398.2	55.58	-20.73	76.31	52.12	32.86	2.11	31.51	100	21	Peak
2412	96.31	-	-	92.81	32.89	2.12	31.51	106	336	Peak
2412	85.41	-	-	81.91	32.89	2.12	31.51	106	336	Average
4824	50.06	-23.94	74	43.33	35.17	3.09	31.53	100	163	Peak
7236	50.43	-23.57	76.31	41.96	36.18	3.24	30.95	100	90	Peak

Test Mode :	802.11n HT20	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	98.51	-	-	94.93	32.95	2.14	31.51	160	0	Peak
2437	87.23	-	-	83.65	32.95	2.14	31.51	160	0	Average
4874	49.51	-24.49	74	42.73	35.18	3.12	31.52	100	51	Peak
7311	50.65	-23.35	74	42.18	36.2	3.21	30.94	100	102	Peak

Test Mode :	802.11n HT20	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	96.21	-	-	92.63	32.95	2.14	31.51	100	0	Peak
2437	84.96	-	-	81.38	32.95	2.14	31.51	100	0	Average
4874	49.4	-24.6	74	42.62	35.18	3.12	31.52	100	163	Peak
7311	51.78	-22.22	74	43.31	36.2	3.21	30.94	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~22℃
Test Channel :	11	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	100.96	-	-	97.34	32.98	2.15	31.51	130	28	Peak
2462	89.97	-	-	86.35	32.98	2.15	31.51	130	28	Average
4924	49.08	-24.92	74	42.25	35.19	3.15	31.51	100	12	Peak
7386	50.47	-23.53	74	41.97	36.24	3.19	30.93	100	281	Peak

Test Mode :	802.11n HT20	Temperature :	21~22℃
Test Channel :	11	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	95.51	-	-	91.89	32.98	2.15	31.51	100	276	Peak
2462	84.01	-	-	80.39	32.98	2.15	31.51	100	276	Average
4924	50.55	-23.45	74	43.72	35.19	3.15	31.51	100	65	Peak
7386	50.27	-23.73	74	41.77	36.24	3.19	30.93	100	212	Peak

Test Mode :	802.11n HT40	Temperature :	21~22℃
Test Channel :	03	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	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
2398.47	56.1	-20.26	76.36	52.64	32.86	2.11	31.51	130	30	Peak
2422	96.36	-	-	92.82	32.92	2.13	31.51	100	30	Peak
2422	86.73	-	-	83.19	32.92	2.13	31.51	100	30	Average
4844	49.73	-24.27	74	42.98	35.18	3.1	31.53	100	0	Peak
7266	51.08	-22.92	74	42.62	36.19	3.22	30.95	100	19	Peak

Test Mode :	802.11n HT40	Temperature :	21~22℃
Test Channel :	03	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	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
2398.92	53.3	-20.97	74.27	49.84	32.86	2.11	31.51	100	39	Peak
2422	94.27	-	-	90.73	32.92	2.13	31.51	108	320	Peak
2422	84.16	-	-	80.62	32.92	2.13	31.51	108	320	Average
4844	49.42	-24.58	74	42.67	35.18	3.1	31.53	100	56	Peak
7266	50.84	-23.16	74	42.38	36.19	3.22	30.95	100	68	Peak

Test Mode :	802.11n HT40	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	97.48	-	-	93.9	32.95	2.14	31.51	128	26	Peak
2437	86.53	-	-	82.95	32.95	2.14	31.51	128	26	Average
4874	49.46	-24.54	74	42.68	35.18	3.12	31.52	100	66	Peak
7311	50.63	-23.37	74	42.16	36.2	3.21	30.94	100	81	Peak

Test Mode :	802.11n HT40	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	94.82	-	-	91.24	32.95	2.14	31.51	100	158	Peak
2437	84.44	-	-	80.86	32.95	2.14	31.51	100	158	Average
4874	48.86	-25.14	74	42.08	35.18	3.12	31.52	100	116	Peak
7311	50.29	-23.71	74	41.82	36.2	3.21	30.94	100	62	Peak

Test Mode :	802.11n HT40	Temperature :	21~22℃
Test Channel :	09	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	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	97.64	-	-	94.06	32.95	2.14	31.51	129	26	Peak
2452	87.47	-	-	83.89	32.95	2.14	31.51	129	26	Average
4904	49.73	-24.27	74	42.92	35.19	3.14	31.52	100	36	Peak
7356	51.08	-22.92	74	42.59	36.22	3.2	30.93	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	21~22℃
Test Channel :	09	Relative Humidity :	40~41%
Test Engineer :	Allen Cheng	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	94.32	-	-	90.74	32.95	2.14	31.51	106	120	Peak
2452	83.7	-	-	80.12	32.95	2.14	31.51	106	120	Average
4904	49.42	-24.58	74	42.61	35.19	3.14	31.52	100	12	Peak
7356	50.84	-23.16	74	42.35	36.22	3.2	30.93	100	20	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.

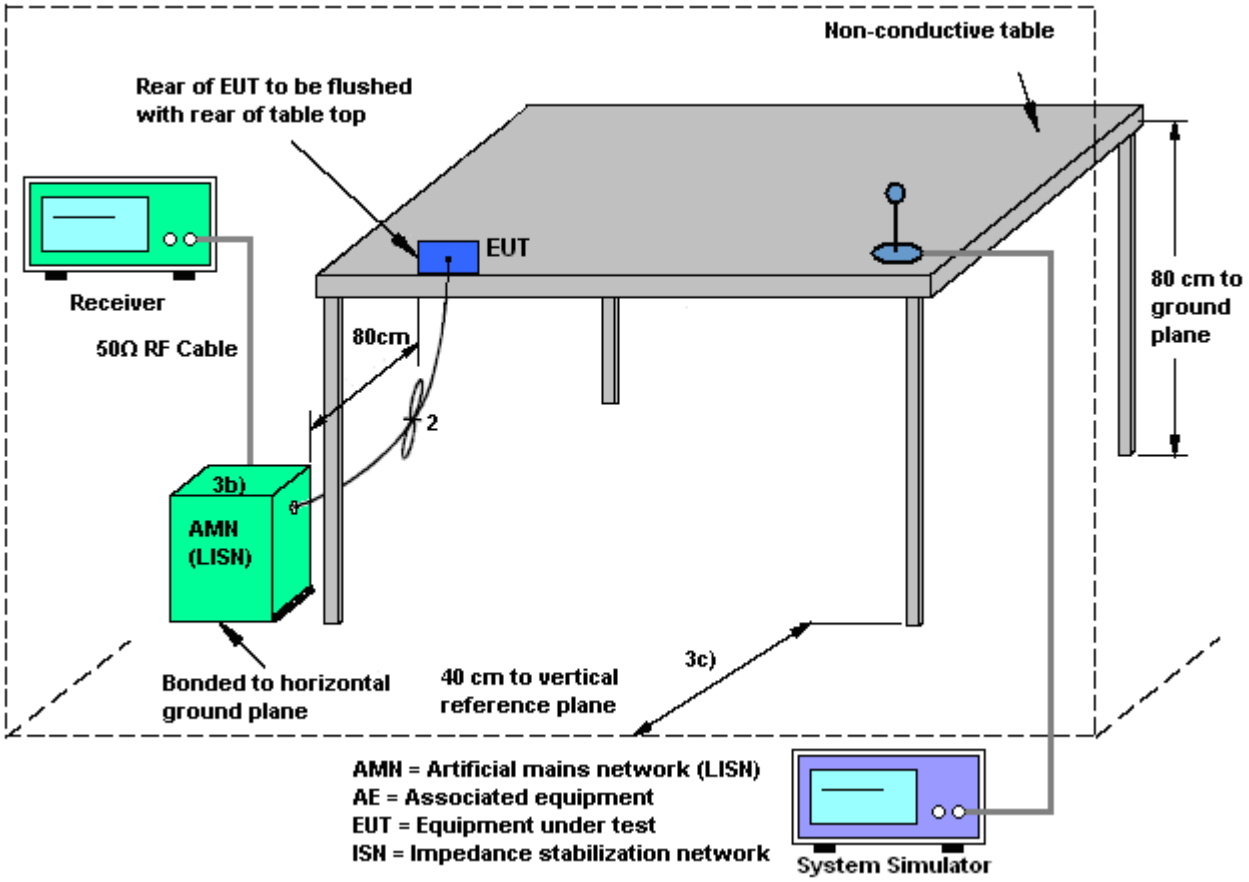
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

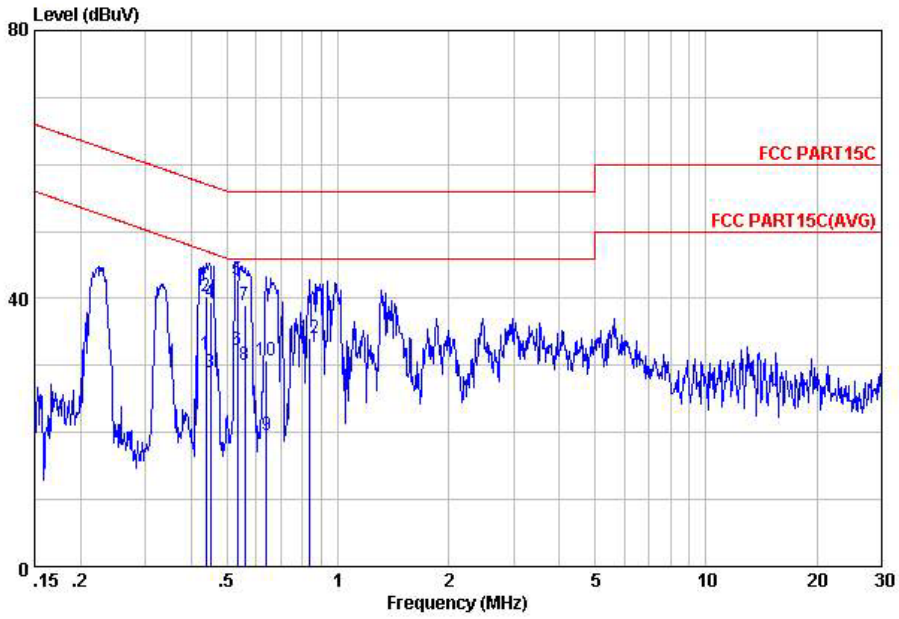
1. The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance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

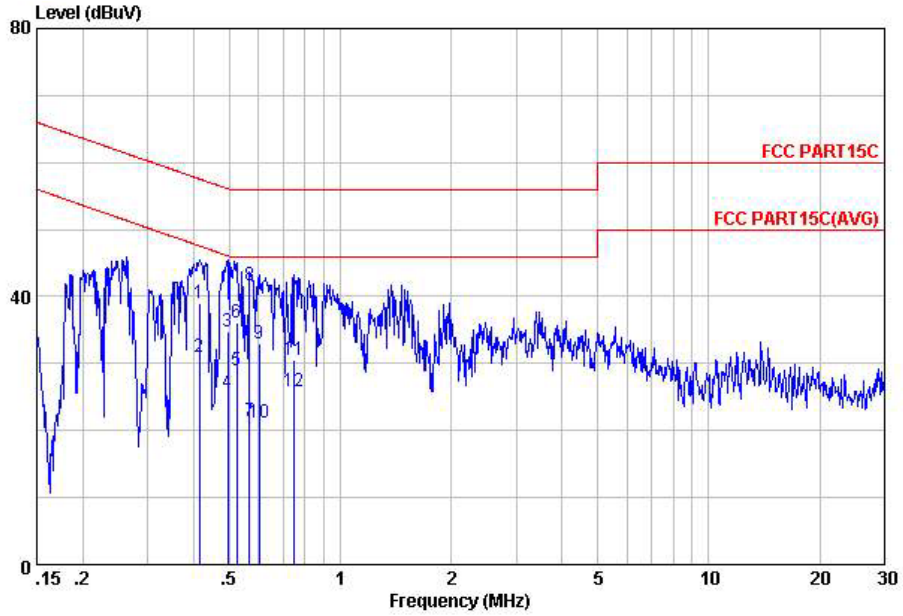


Site : C001-KS
Condition: FCC PART15C LISN-111230 LINE

mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.44	31.57	-15.54	47.11	21.40	-0.08	10.25	Average
2	0.44	40.27	-16.84	57.11	30.10	-0.08	10.25	QP
3	0.45	28.97	-17.88	46.85	18.80	-0.08	10.25	Average
4	0.45	39.37	-17.48	56.85	29.20	-0.08	10.25	QP
5	0.53	42.67	-13.33	56.00	32.49	-0.08	10.26	QP
6	0.53	32.28	-13.72	46.00	22.10	-0.08	10.26	Average
7	0.56	38.98	-17.02	56.00	28.80	-0.08	10.26	QP
8	0.56	30.08	-15.92	46.00	19.90	-0.08	10.26	Average
9	0.64	19.69	-26.31	46.00	9.51	-0.09	10.27	Average
10	0.64	30.79	-25.21	56.00	20.61	-0.09	10.27	QP
11	0.84	32.79	-23.21	56.00	22.60	-0.09	10.28	QP
12	0.84	34.08	-11.92	46.00	23.89	-0.09	10.28	Average

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 : CO01-KS
Condition: FCC PART15C LISN-111230 NEUTRAL

mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.41	38.97	-18.58	57.55	28.80	-0.08	10.25	QP
2	0.41	31.07	-16.48	47.55	20.90	-0.08	10.25	Average
3	0.49	34.67	-21.43	56.10	24.50	-0.08	10.25	QP
4	0.49	25.72	-20.38	46.10	15.55	-0.08	10.25	Average
5	0.52	29.08	-16.92	46.00	18.90	-0.08	10.26	Average
6	0.52	36.08	-19.92	56.00	25.90	-0.08	10.26	QP
7	0.57	21.48	-24.52	46.00	11.30	-0.08	10.26	Average
8	0.57	41.68	-14.32	56.00	31.50	-0.08	10.26	QP
9	0.60	32.98	-23.02	56.00	22.80	-0.08	10.26	QP
10	0.60	21.08	-24.92	46.00	10.90	-0.08	10.26	Average
11	0.75	30.49	-25.51	56.00	20.30	-0.08	10.27	QP
12	0.75	25.79	-20.21	46.00	15.60	-0.08	10.27	Average

3.7 Antenna Requirements

3.7.1 Standard Applicable

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

3.7.2 Antenna Connected Construction

Non-standard connector used.

3.7.3 Antenna Gain

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 07, 2012	Dec. 19, 2012~ Dec. 31, 2012	Dec. 06, 2013	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 22, 2012	Dec. 19, 2012~ Dec. 31, 2012	Aug. 21, 2013	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 22, 2012	Dec. 19, 2012~ Dec. 31, 2012	Aug. 21, 2013	Conducted (TH01-KS)
DC Power Supply	GWINSTEK	GPS-3030D	E1884515	N/A	Aug. 22, 2012	Dec. 19, 2012~ Dec. 31, 2012	Aug. 21, 2013	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Dec. 07, 2012	Dec. 19, 2012~ Dec. 31, 2012	Dec. 06, 2013	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 08, 2012	Dec. 21, 2012	Nov. 07, 2013	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	100400	9kHz~30GHz	Jun. 01, 2012	Dec. 21, 2012	May 31, 2013	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 07, 2012	Dec. 21, 2012	Dec. 06, 2013	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/ 001	9 kHz~30 MHz	Jul. 03, 2012	Dec. 21, 2012	Jul. 02, 2014	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 07, 2012	Dec. 21, 2012	Jan. 06, 2013	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161069	1MHz~1GHz	Jun. 01, 2012	Dec. 21, 2012	May 31, 2013	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 07, 2012	Dec. 21, 2012	Dec. 06, 2013	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz~18GHz	Nov. 07, 2012	Dec. 21, 2012	Nov. 06, 2013	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	9170249	15GHz~40GHz	Nov. 23, 2012	Dec. 21, 2012	Nov. 22, 2013	Radiation (03CH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 01, 2012	Dec. 31, 2012	May 31, 2013	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 07, 2012	Dec. 31, 2012	Dec. 06, 2013	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Dec. 07, 2012	Dec. 31, 2012	Dec. 06, 2013	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 15, 2012	Dec. 31, 2012	Nov. 14, 2013	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/066	2G Full-Band	Dec. 07, 2012	Dec. 31, 2012	Dec. 06, 2013	Conduction (CO01-KS)

5 Uncertainty of Evaluation

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

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

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

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

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

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

Appendix A. Photographs of EUT

Please refer to Sporton report number EP2D1103 as below.