



FCC RF Test Report

APPLICANT : ZTE CORPORATION
EQUIPMENT : WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone
BRAND NAME : ZTE
MODEL NAME : ZTE V983
FCC ID : Q78-ZTEV983
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Dec. 13, 2012 and completely tested on Jan. 24, 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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SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	A8.4	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	A8.5	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
			Conducted Spurious Emission		Pass	-
3.5	15.247(d)	A8.5	Radiated Band Edges	15.209(a) & 15.247(d)	Pass	-
			Radiated Spurious Emission		Pass	Under limit 1.85 dB at 2483.620 MHz
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 7.81 dB at 2.030 MHz
3.7	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

1.2 Manufacturer

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone
Brand Name	ZTE
Model Name	ZTE V983
FCC ID	Q78-ZTEV983
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/WLAN11bgn/ Bluetooth EDR/Bluetooth 4.0 - LE
HW Version	WMAQ
SW Version	U1900_P177A30V1.0.0B01
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 : 18.06 dBm (0.0640 W) 802.11g : 21.13 dBm (0.1297 W) 802.11n HT20 : 21.15 dBm (0.1303 W) 802.11n HT40 : 20.96 dBm (0.1247 W)
Antenna Type	IFA Antenna with gain -4.00 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 (X plane) were recorded in this report.

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

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

2.1 Carrier Frequency Channel

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

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and antenna configurations as following table and the highest power data rates were chosen for full test in the following tables. 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	17.95	17.93	17.72	17.56
CH 06	2437 MHz	17.85	17.84	17.61	17.68
CH 11	2462 MHz	18.06	18.04	17.92	17.96

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	21.13	21.08	21.11	21.05	21.07	21.09	21.11	21.02
CH 06	2437 MHz	20.93	20.89	20.91	20.87	20.89	20.84	20.97	20.93
CH 11	2462 MHz	20.98	20.87	20.81	20.82	20.79	20.81	20.82	20.88

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	21.15	20.98	21.12	21.05	21.08	21.11	21.07	21.09
CH 06	2437 MHz	20.91	20.82	20.85	20.89	20.92	20.99	20.87	20.91
CH 11	2462 MHz	20.82	20.73	20.78	20.75	20.81	20.78	20.76	20.77

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	20.96	20.78	20.79	20.67	20.88	20.82	20.75	20.81
CH 06	2437 MHz	20.78	20.77	20.71	20.62	20.58	20.64	20.53	20.71
CH 09	2452 MHz	20.68	20.59	20.54	20.53	20.58	20.61	20.66	20.54

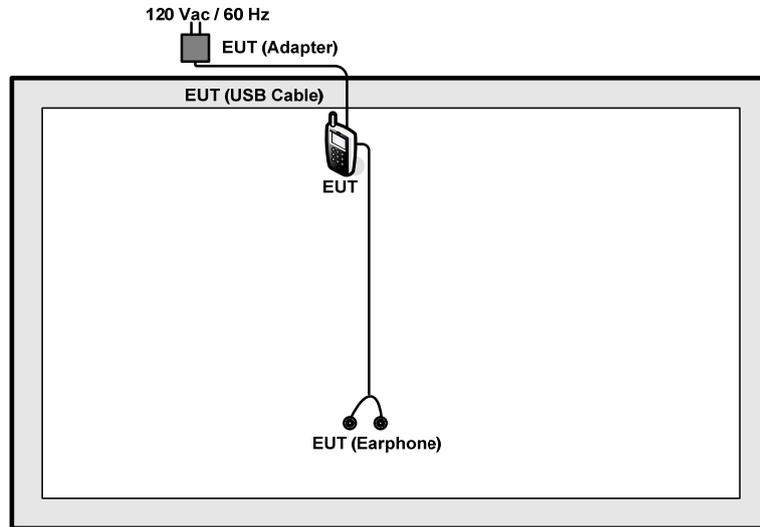
2.3 Test Mode

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

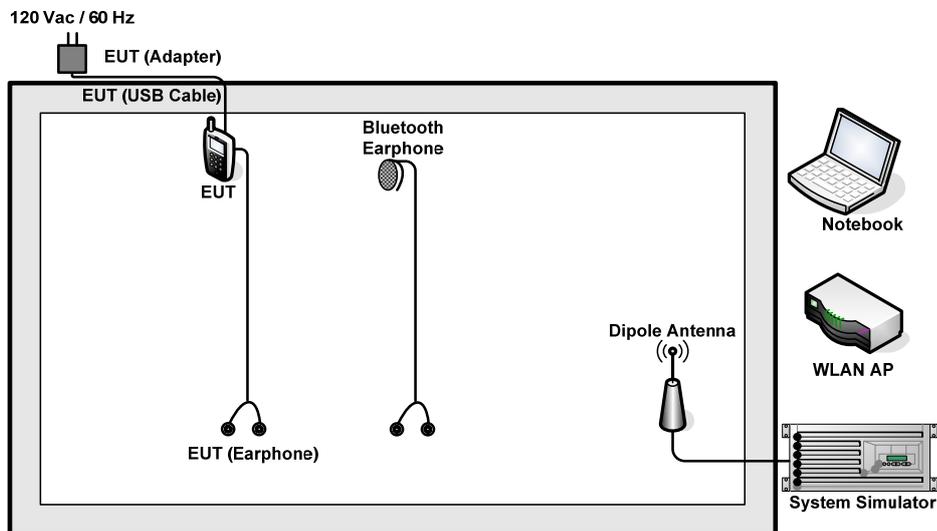
Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Conducted TCs	6dB BW Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n 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 “* # * # 3646633 # * # *” 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 :

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 5.6 + 10 = 15.6 \text{ (dB)} \end{aligned}$$

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

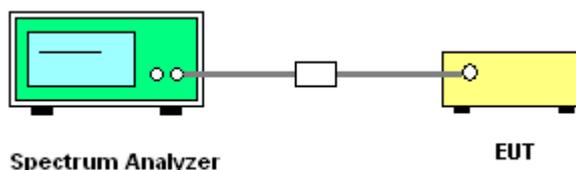
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 KHz.
5. Measure and record the results in the test report.

3.1.4 Test Setup

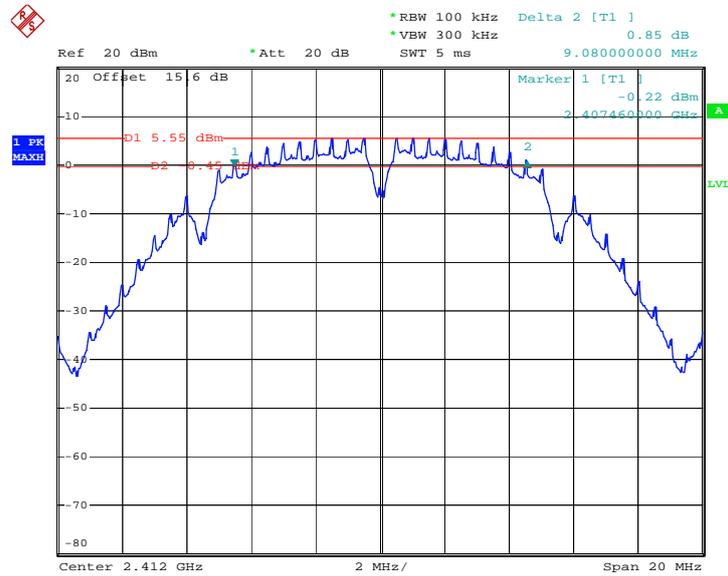


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	802.11b	Temperature :	20~21°C
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	9.08	0.5	Pass
06	2437	9.04	0.5	Pass
11	2462	9.08	0.5	Pass

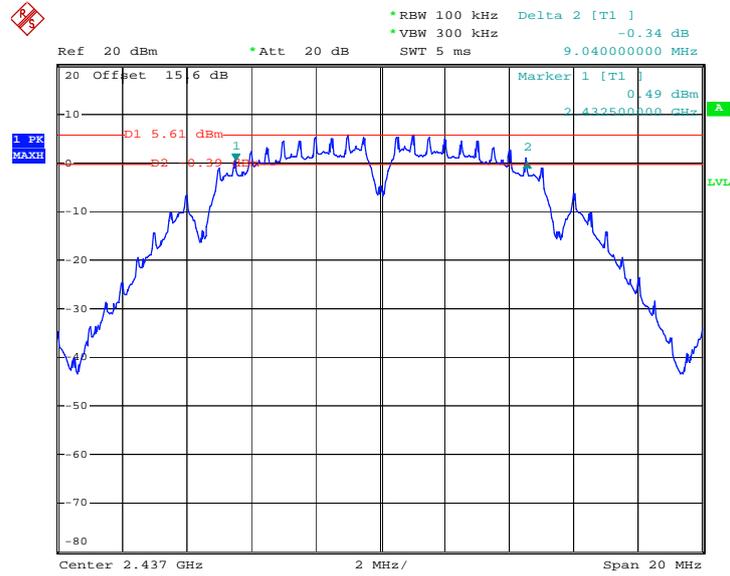
6 dB Bandwidth Plot on 802.11b Channel 01



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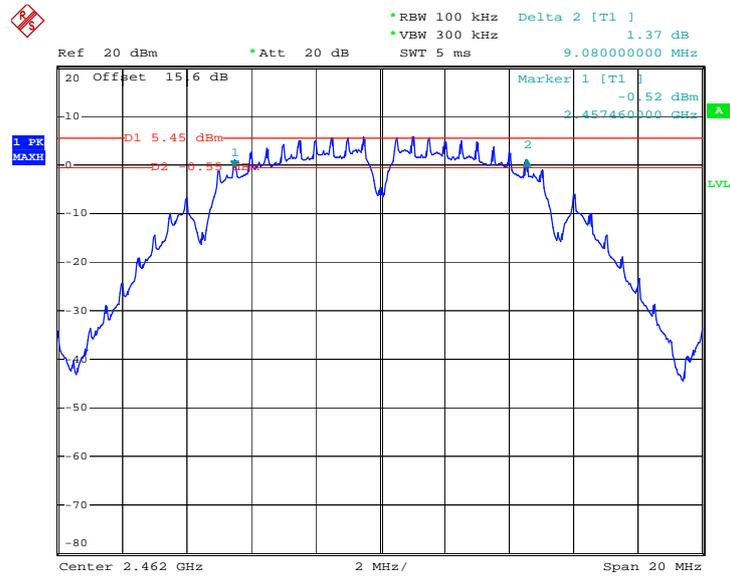


6 dB Bandwidth Plot on 802.11b Channel 06



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6 dB Bandwidth Plot on 802.11b Channel 11



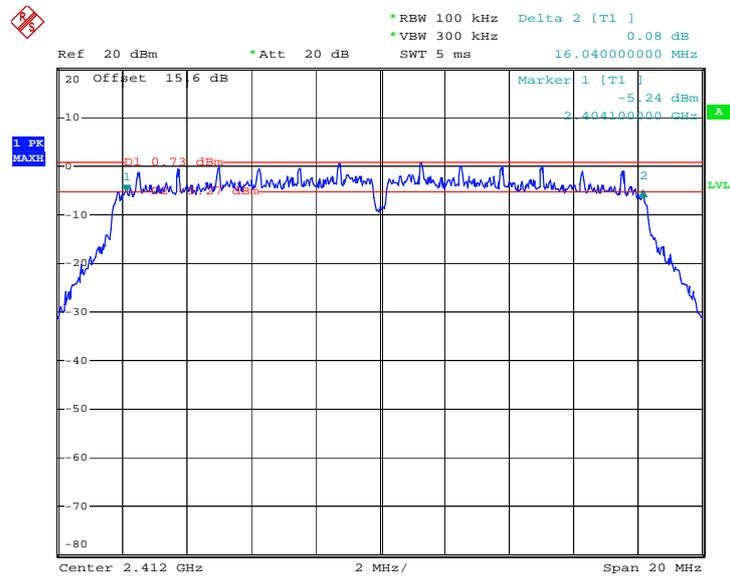
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Test Mode :	802.11g	Temperature :	20~21°C
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.04	0.5	Pass
06	2437	16.28	0.5	Pass
11	2462	16.04	0.5	Pass

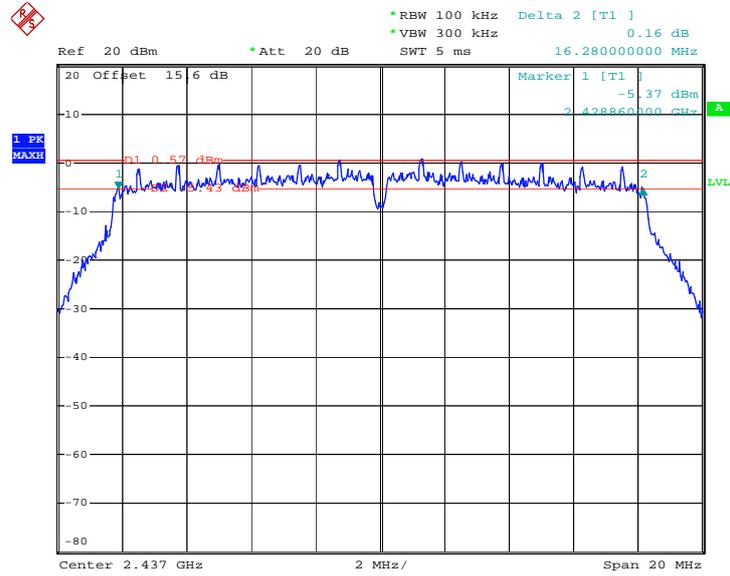
6 dB Bandwidth Plot on 802.11g Channel 01



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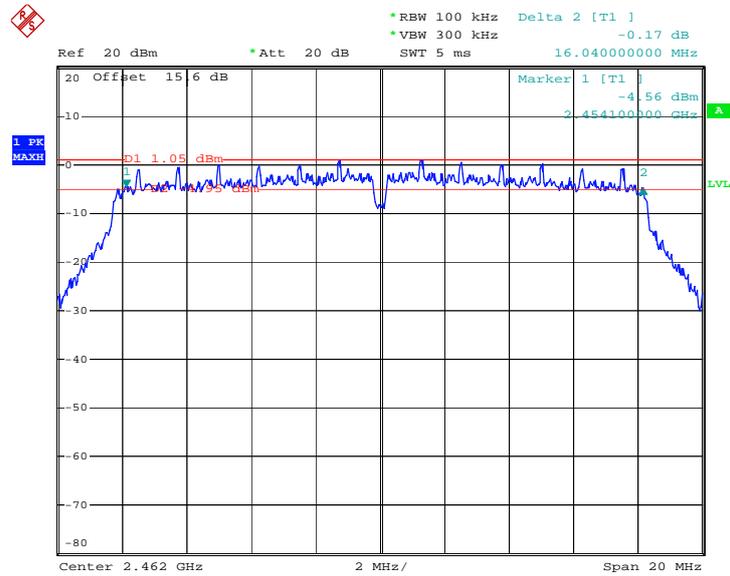


6 dB Bandwidth Plot on 802.11g Channel 06



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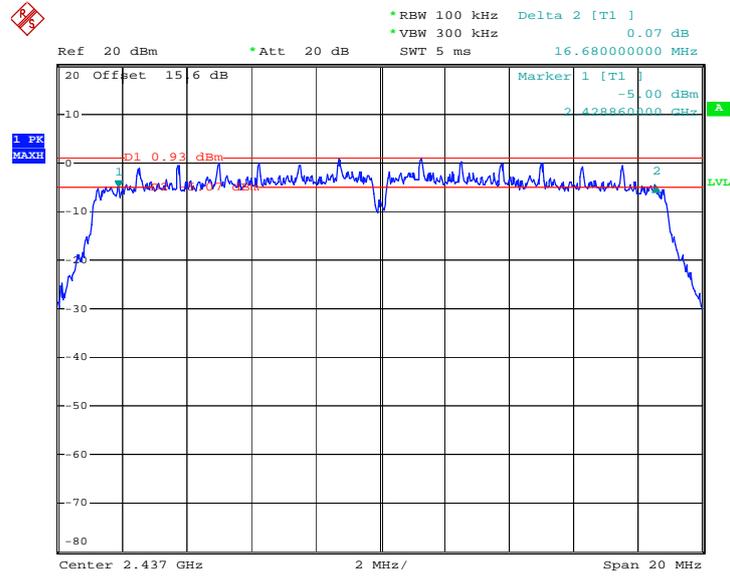
6 dB Bandwidth Plot on 802.11g Channel 11



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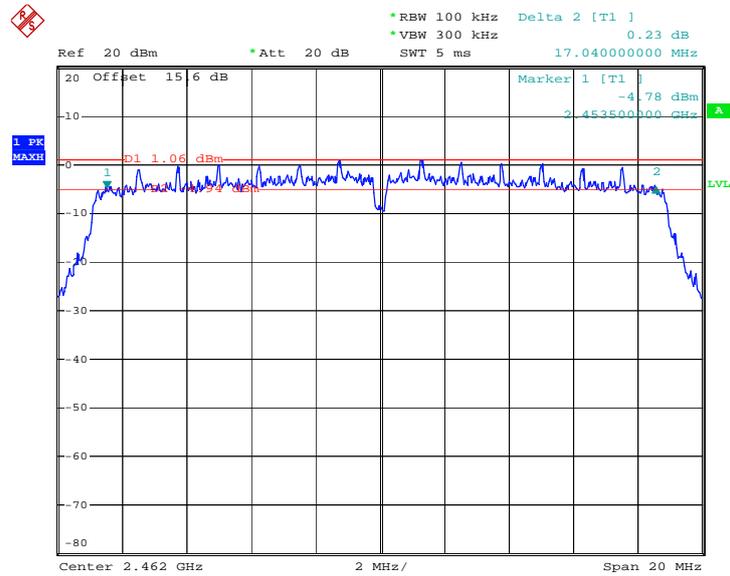


6 dB Bandwidth Plot on 802.11n HT20 Channel 06



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6 dB Bandwidth Plot on 802.11n HT20 Channel 11



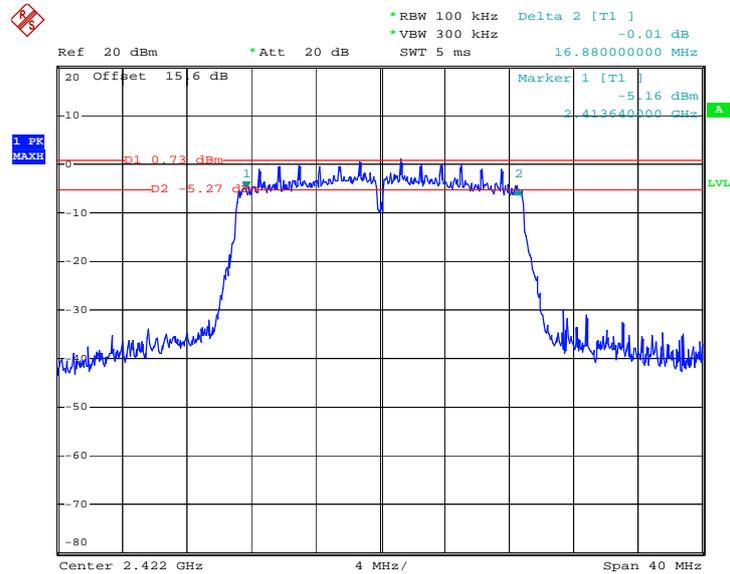
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Test Mode :	802.11n HT40	Temperature :	20~21°C
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11n HT40 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
03	2422	16.88	0.5	Pass
06	2437	17.04	0.5	Pass
09	2452	17.04	0.5	Pass

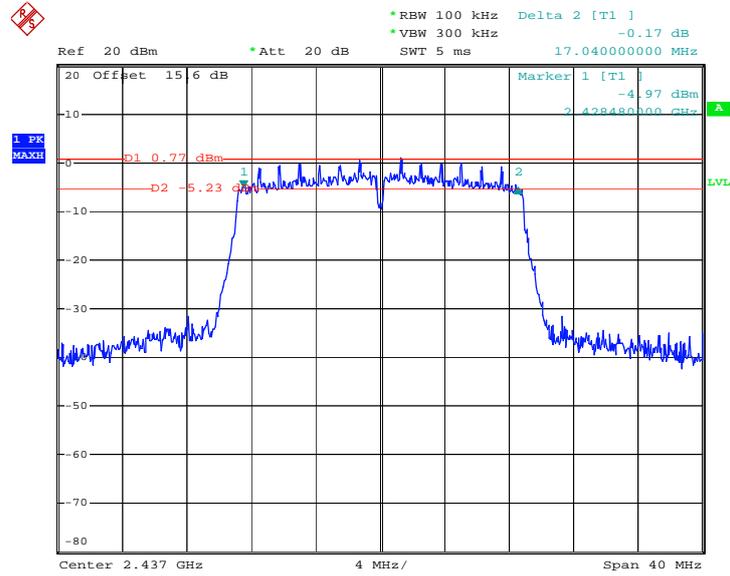
6 dB Bandwidth Plot on 802.11n HT40 Channel 03



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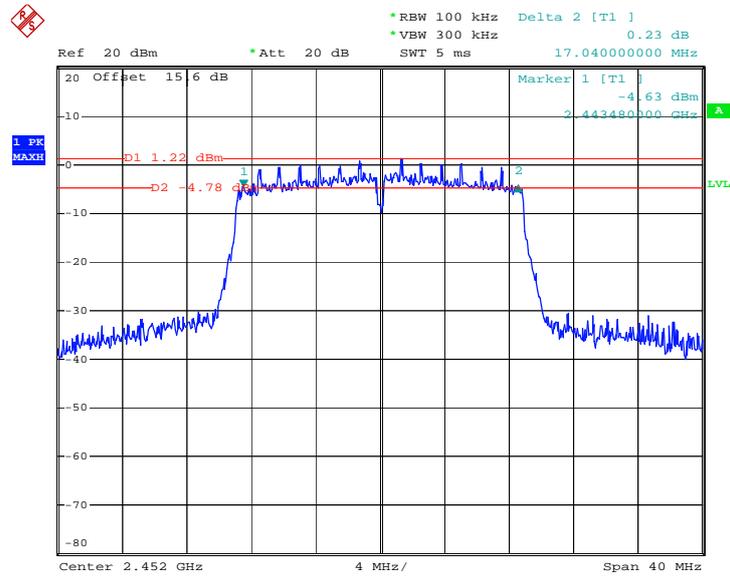


6 dB Bandwidth Plot on 802.11n HT40 Channel 06



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6 dB Bandwidth Plot on 802.11n HT40Channel 09



Date: 5.JAN.2013 17:06:11

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.

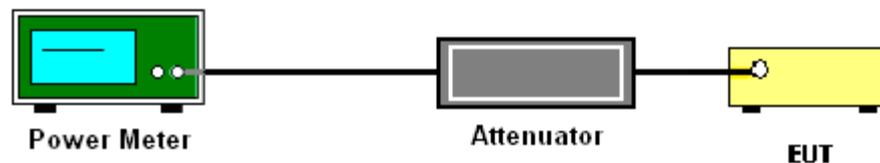
3.2.2 Measuring Instruments

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°C
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	17.95	30	Pass
06	2437	17.85	30	Pass
11	2462	18.06	30	Pass

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

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.13	30	Pass
06	2437	20.93	30	Pass
11	2462	20.98	30	Pass

Test Mode :	802.11n HT20	Temperature :	20~21°C
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	21.15	30	Pass
06	2437	20.91	30	Pass
11	2462	20.82	30	Pass

Test Mode :	2.4GHz 802.11n HT40	Temperature :	20~21°C
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	20.96	30	Pass
06	2437	20.78	30	Pass
09	2452	20.68	30	Pass



3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	802.11b	Temperature :	20~21°C
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%
Duty Cycle:	98.69%	Duty Factor:	0.06dB

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)
01	2412	14.68
06	2437	14.58
11	2462	14.88

Test Mode :	802.11g	Temperature :	20~21°C
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%
Duty Cycle:	92.67%	Duty Factor:	0.33dB

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)
01	2412	11.87
06	2437	11.94
11	2462	12.31

Test Mode :	802.11n HT20	Temperature :	20~21°C
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%
Duty Cycle:	93.52%	Duty Factor:	0.29dB

Channel	Frequency (MHz)	802.11n HT20 Average Output Power (dBm)
01	2412	11.86
06	2437	11.90
11	2462	12.23



Test Mode :	802.11n HT40	Temperature :	20~21°C
Test Engineer :	Zhi Lu	Relative Humidity :	40~41%
Duty Cycle:	44.86%	Duty Factor:	3.48dB

Channel	Frequency (MHz)	802.11n HT40 Average Output Power (dBm)
03	2422	12.24
06	2437	12.16
09	2452	12.36

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.

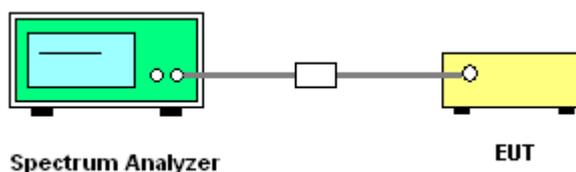
3.3.2 Measuring Instruments

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°C
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	4.93	-7.84	8	Pass
06	2437	5.30	-7.36	8	Pass
11	2462	5.22	-8.36	8	Pass

Test Mode :	802.11g	Temperature :	20~21°C
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	0.41	-13.86	8	Pass
06	2437	0.59	-13.38	8	Pass
11	2462	0.87	-13.71	8	Pass

Test Mode :	802.11n HT20	Temperature :	20~21°C
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	0.26	-12.42	8	Pass
06	2437	0.76	-14.04	8	Pass
11	2462	1.06	-13.54	8	Pass



Test Mode :	802.11n HT40	Temperature :	20~21°C
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	0.53	-13.56	8	Pass
06	2437	0.85	-14.33	8	Pass
09	2452	0.62	-11.39	8	Pass

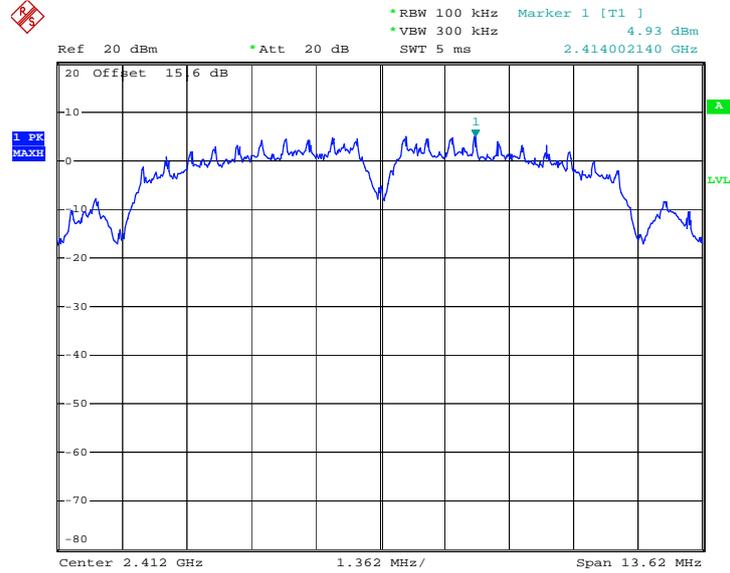
Note:

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)

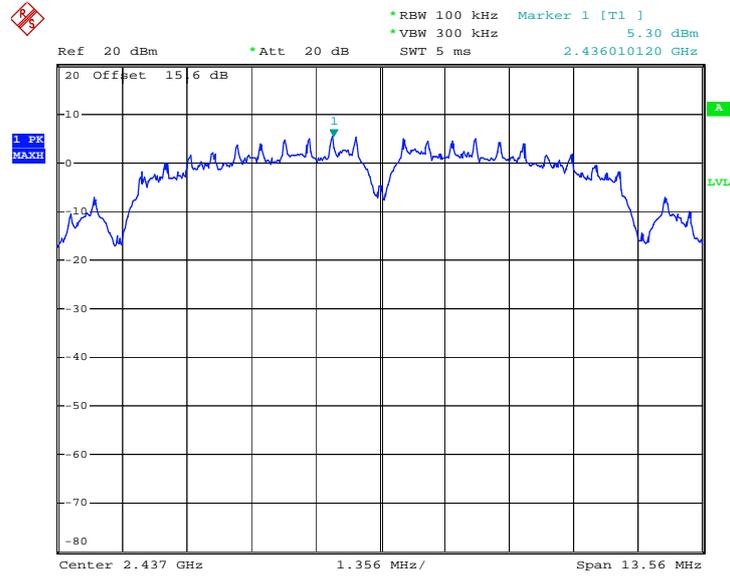
PSD 100kHz Plot on 802.11b Channel 01



Date: 5.JAN.2013 16:13:40

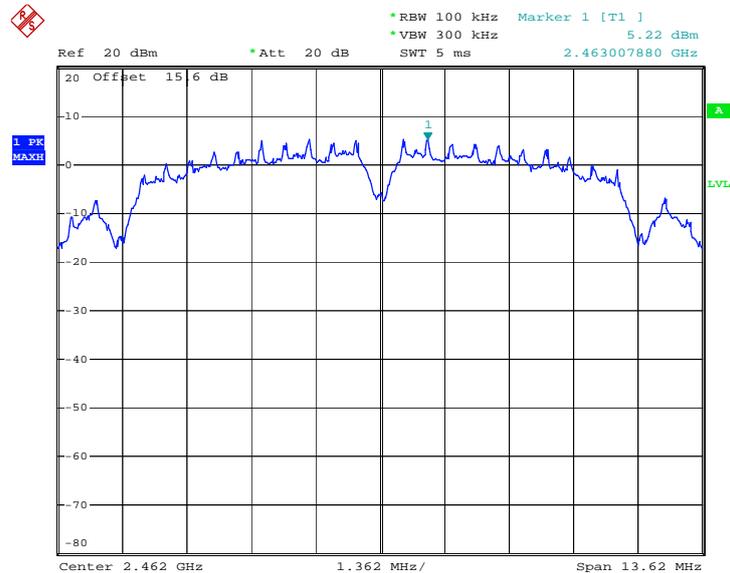


PSD 100kHz Plot on 802.11b Channel 06



Date: 5.JAN.2013 16:18:27

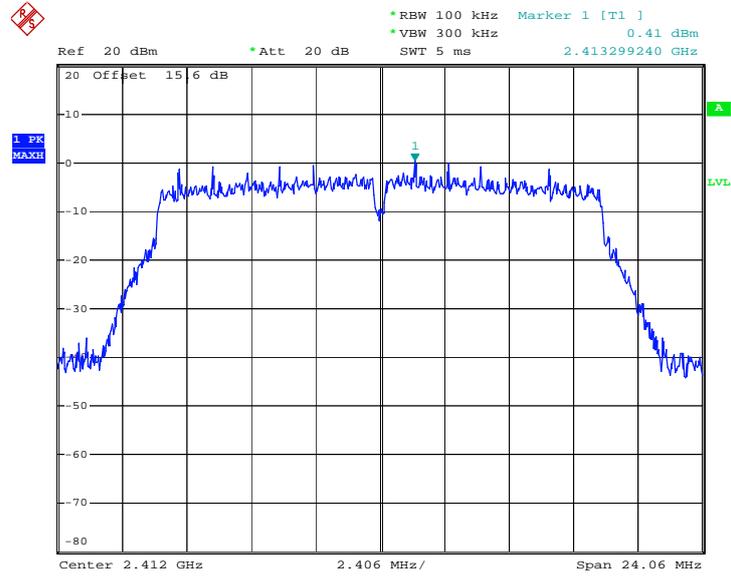
PSD 100kHz Plot on 802.11b Channel 11



Date: 5.JAN.2013 16:21:05



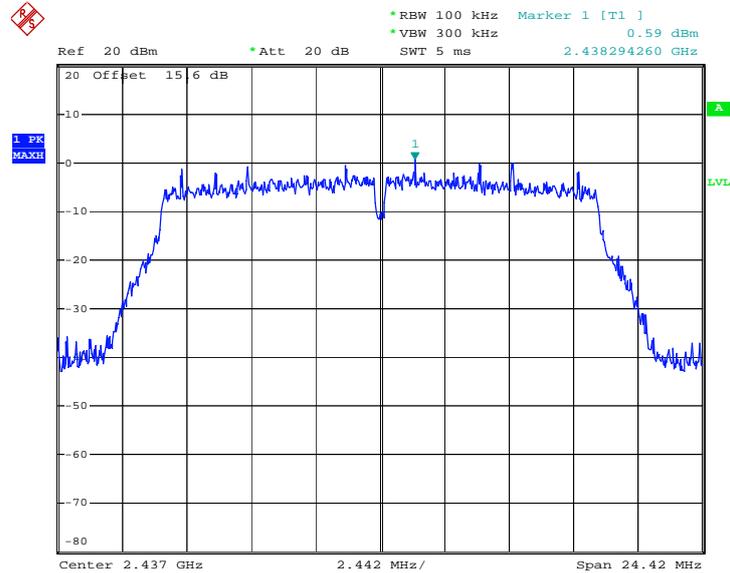
PSD 100kHz Plot on 802.11g Channel 01



Date: 5.JAN.2013 16:27:10

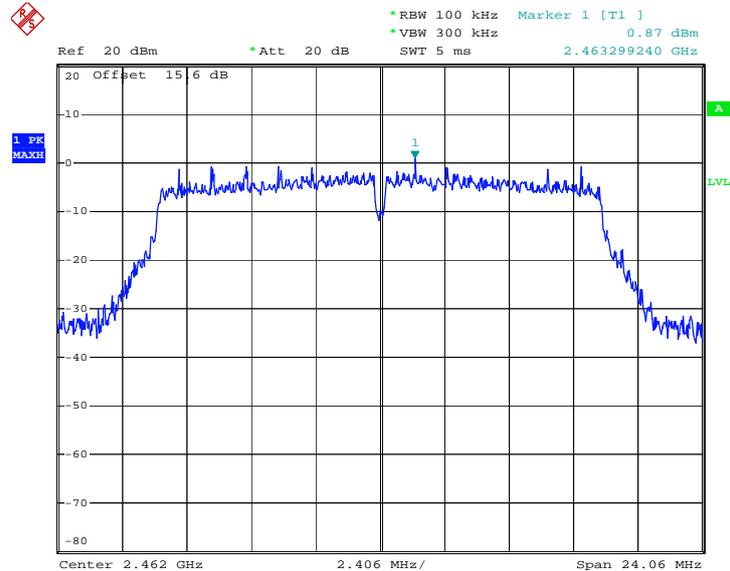


PSD 100kHz Plot on 802.11g Channel 06



Date: 5.JAN.2013 16:30:47

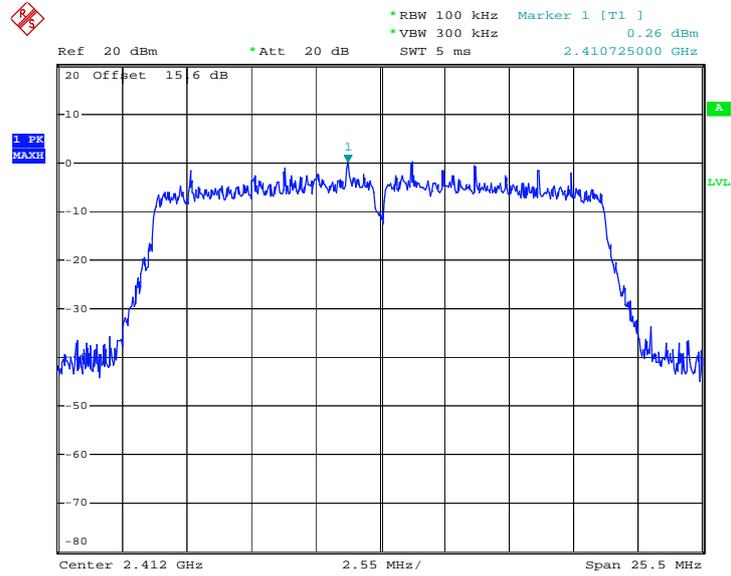
PSD 100kHz Plot on 802.11g Channel 11



Date: 5.JAN.2013 16:33:45



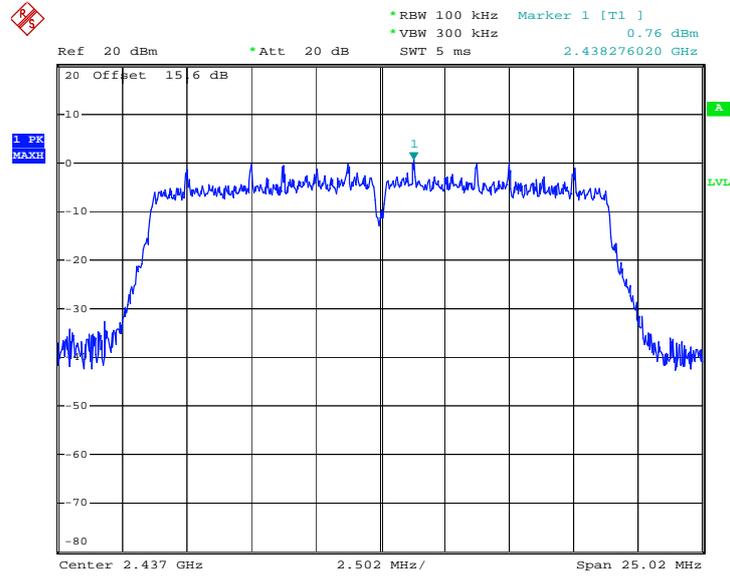
PSD 100kHz Plot on 802.11n HT20 Channel 01



Date: 5.JAN.2013 16:37:53

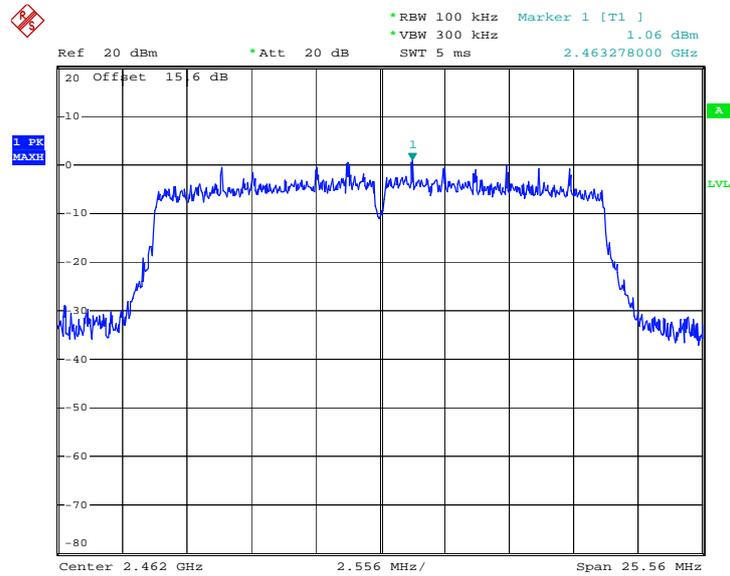


PSD 100kHz Plot on 802.11n HT20 Channel 06



Date: 5.JAN.2013 16:41:43

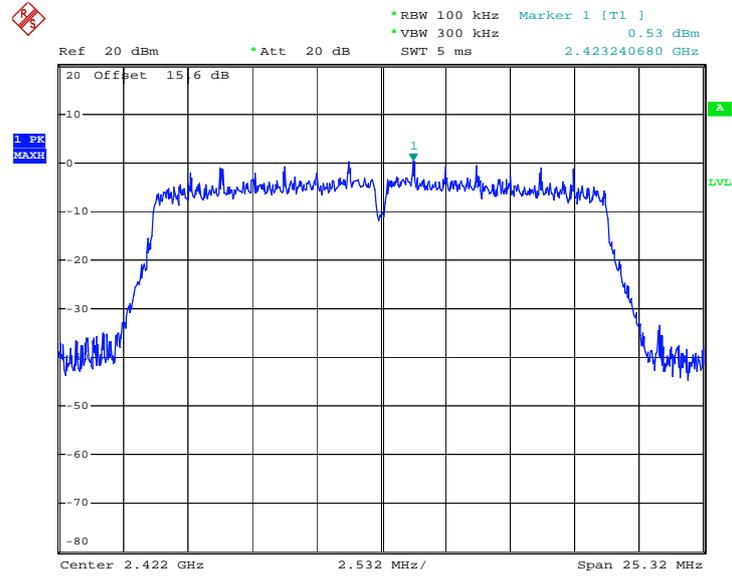
PSD 100kHz Plot on 802.11n HT20 Channel 11



Date: 5.JAN.2013 16:44:28



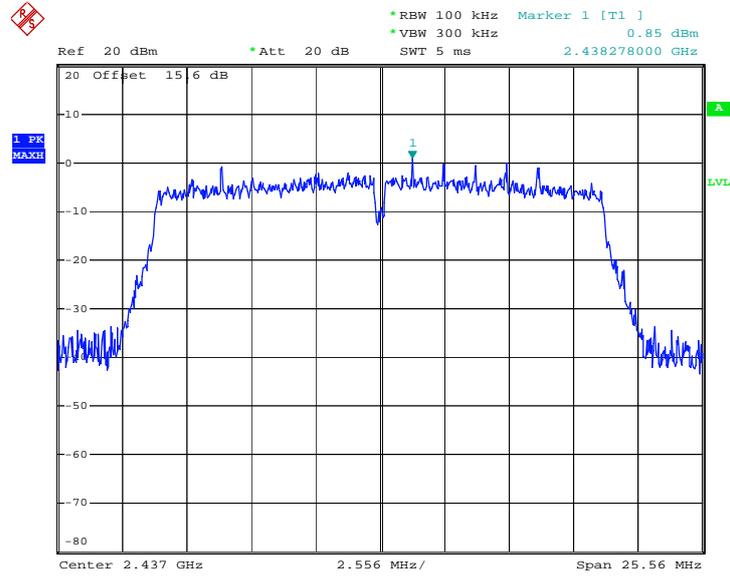
PSD 100kHz Plot on 802.11n HT40 Channel 03



Date: 5.JAN.2013 16:59:17

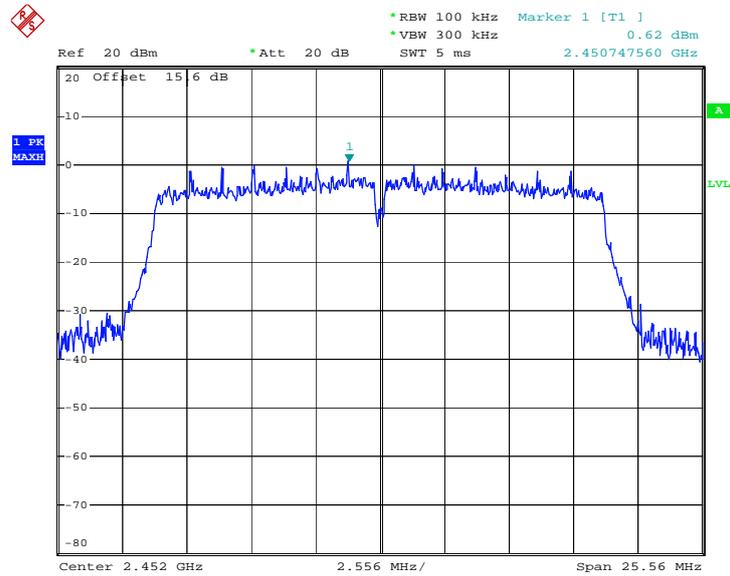


PSD 100kHz Plot on 802.11n HT40 Channel 06



Date: 5.JAN.2013 17:02:24

PSD 100kHz Plot on 802.11n HT40 Channel 09

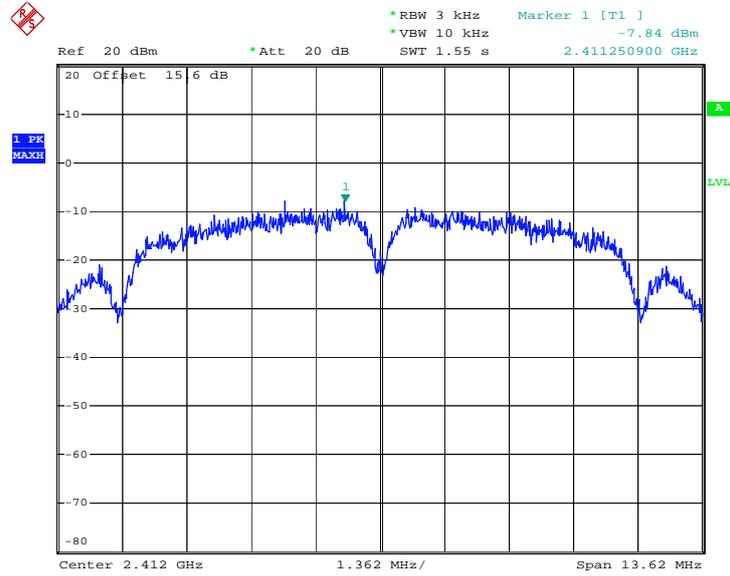


Date: 5.JAN.2013 17:06:42



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

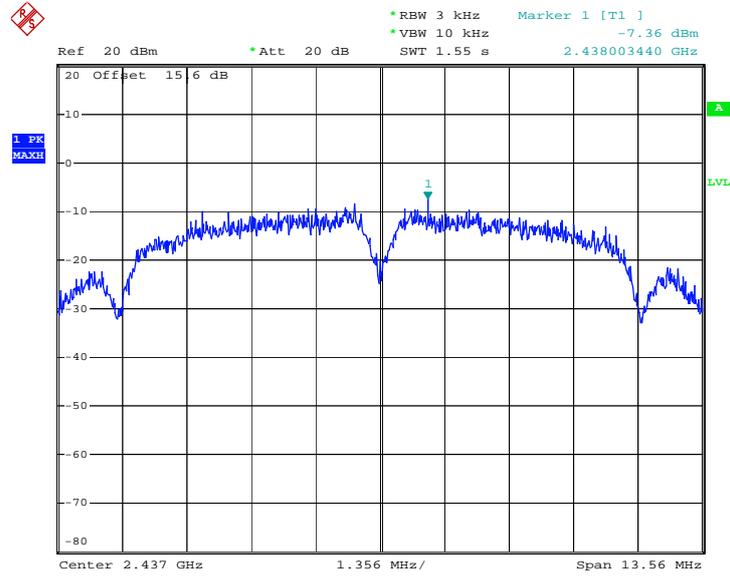
PSD 3kHz Plot on 802.11b Channel 01



Date: 5.JAN.2013 16:13:30

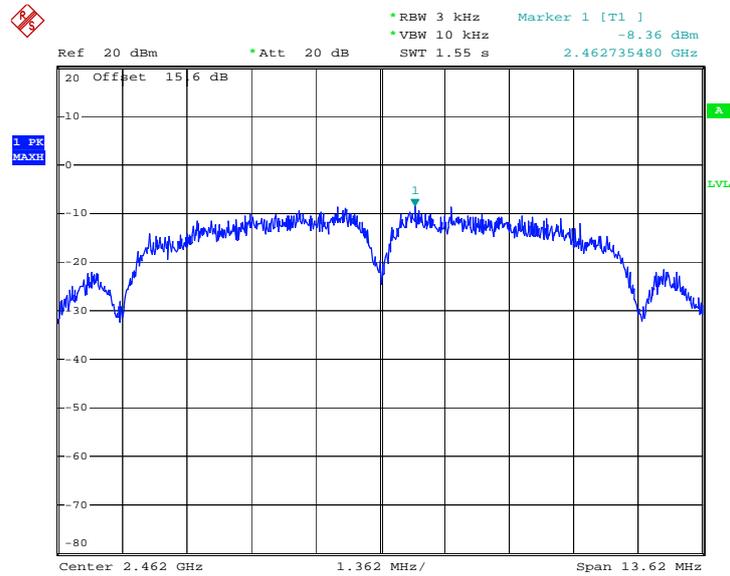


PSD 3kHz Plot on 802.11b Channel 06



Date: 5.JAN.2013 16:18:17

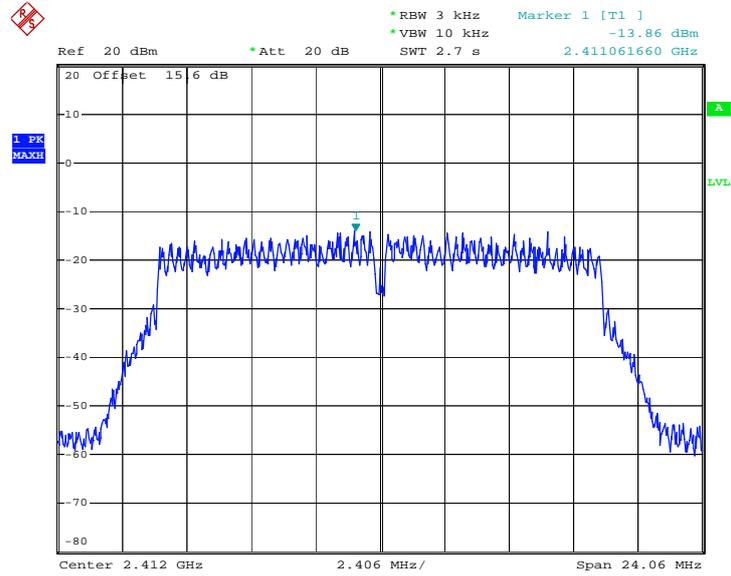
PSD 3kHz Plot on 802.11b Channel 11



Date: 5.JAN.2013 16:20:55



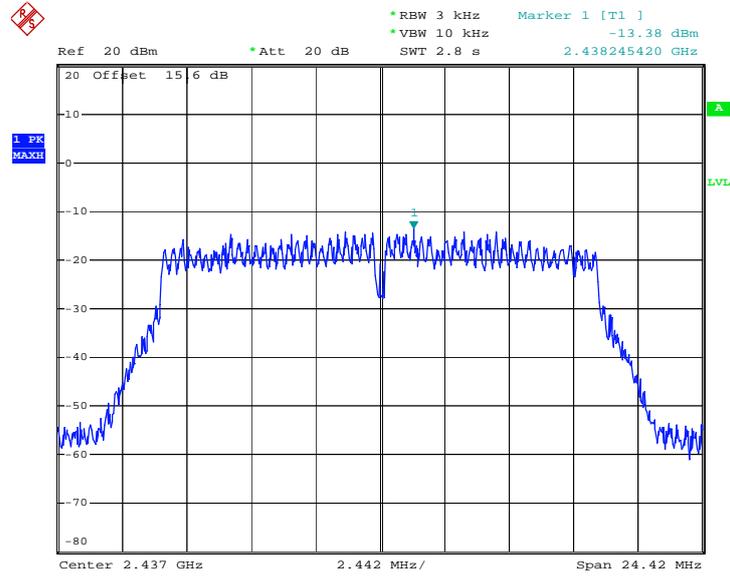
PSD 3kHz Plot on 802.11g Channel 01



Date: 5.JAN.2013 16:27:00

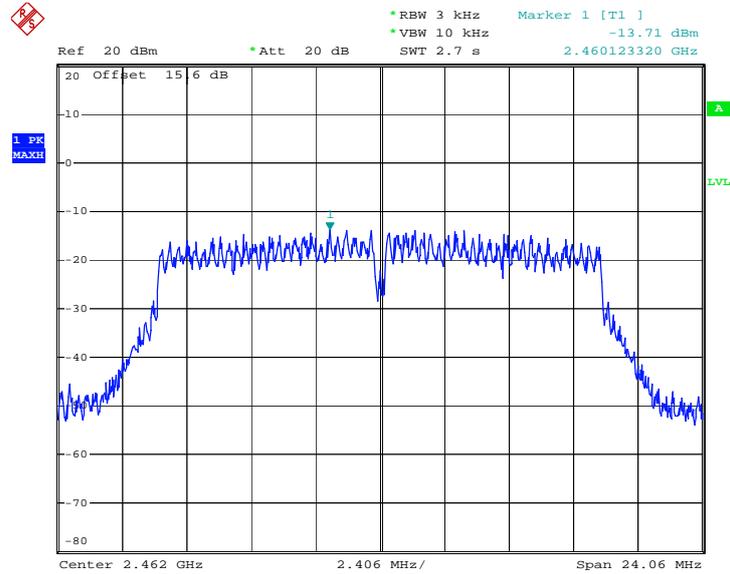


PSD 3kHz Plot on 802.11g Channel 06



Date: 5.JAN.2013 16:30:37

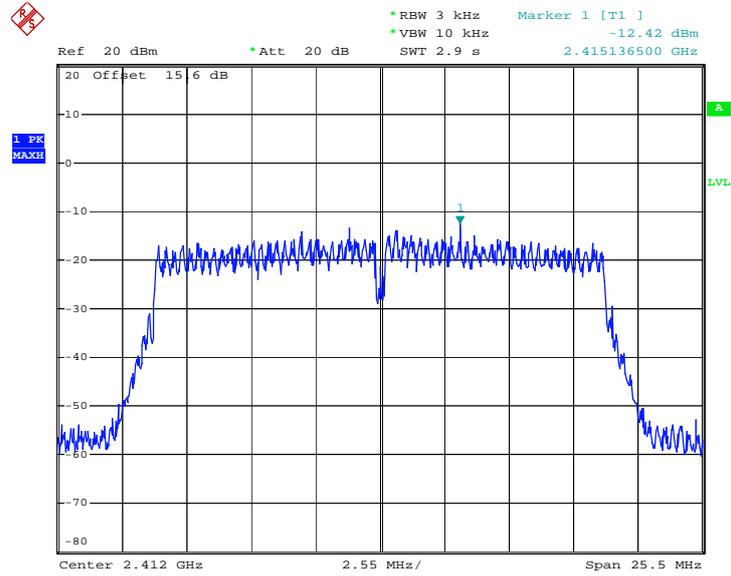
PSD 3kHz Plot on 802.11g Channel 11



Date: 5.JAN.2013 16:33:35



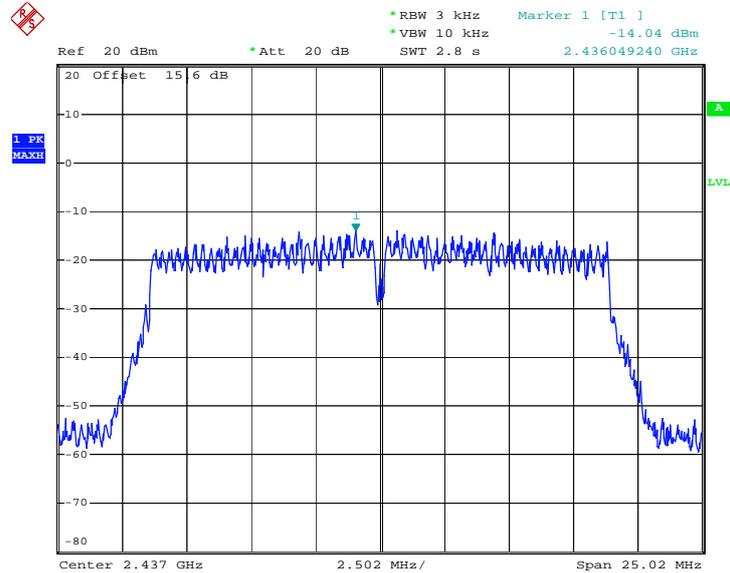
PSD 3kHz Plot on 802.11n HT20 Channel 01



Date: 5.JAN.2013 16:37:43

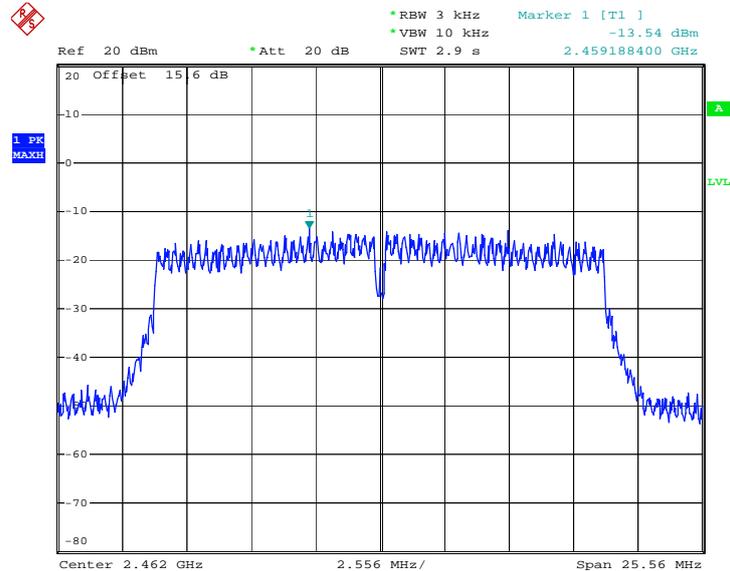


PSD 3kHz Plot on 802.11n HT20 Channel 06



Date: 5.JAN.2013 16:41:33

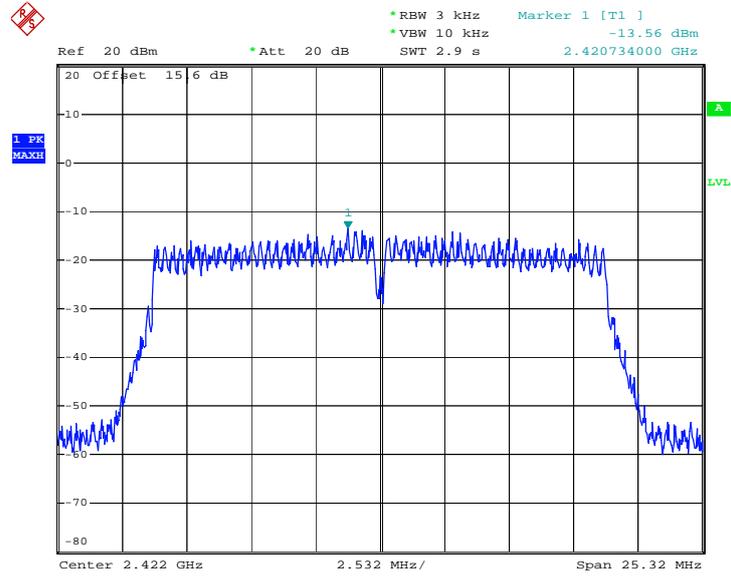
PSD 3kHz Plot on 802.11n HT20 Channel 11



Date: 5.JAN.2013 16:44:18



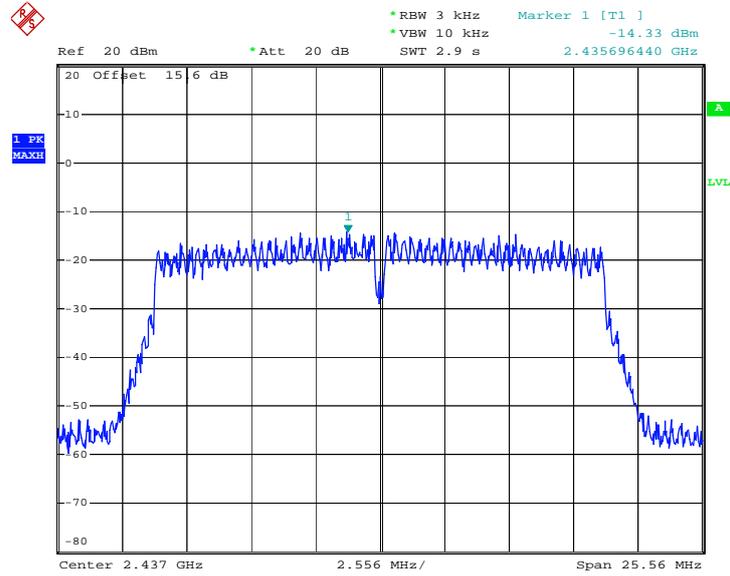
PSD 3kHz Plot on 802.11n HT40 Channel 03



Date: 5.JAN.2013 16:59:07

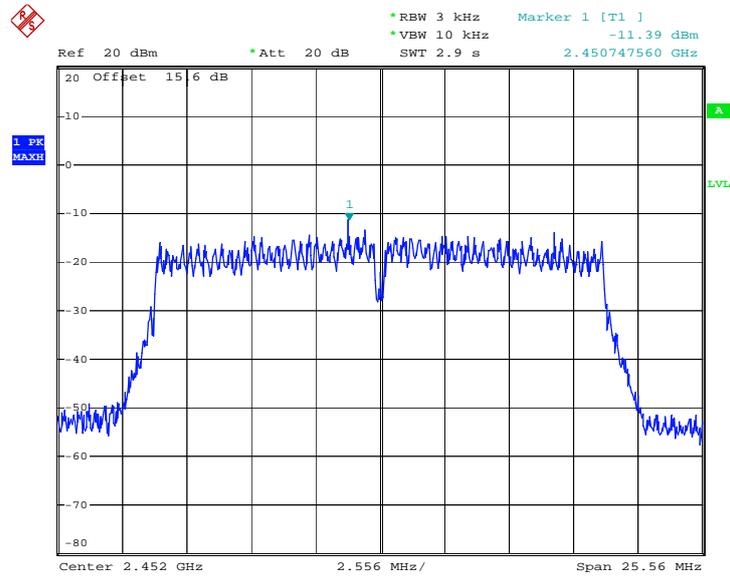


PSD 3kHz Plot on 802.11n HT40 Channel 06



Date: 5.JAN.2013 17:02:14

PSD 3kHz Plot on 802.11n HT40 Channel 09



Date: 5.JAN.2013 17:06:32

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).

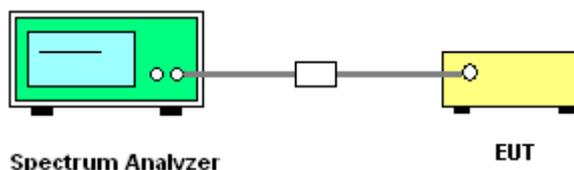
3.4.2 Measuring Instruments

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.

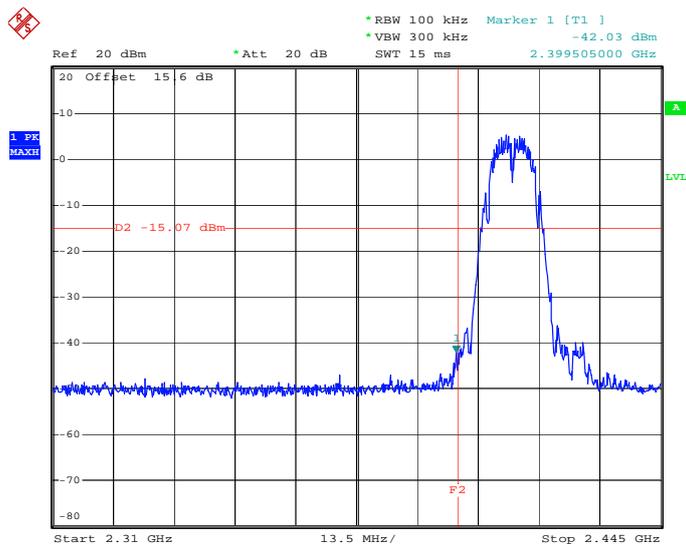
3.4.4 Test Setup



3.4.5 Test Plots of Conducted Band Edges

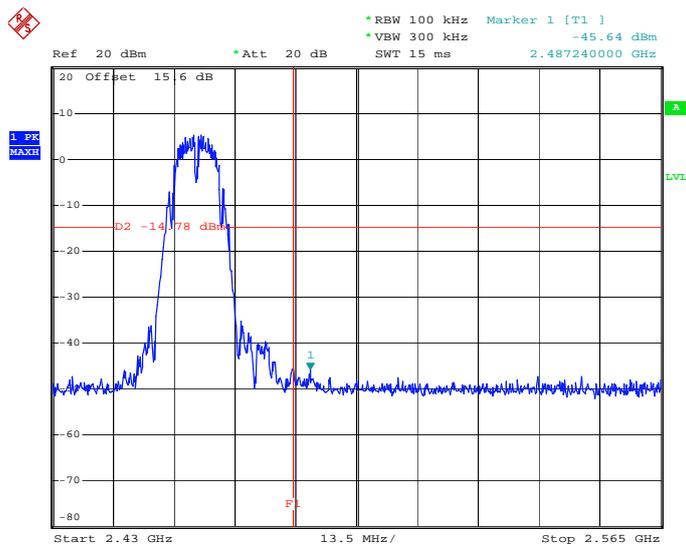
Test Mode :	802.11b	Temperature :	20~21°C
Test Band :	Low and High	Relative Humidity :	40~41%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11b Channel 01



Date: 5.JAN.2013 16:16:10

High Band Edge Plot on 802.11b Channel 11

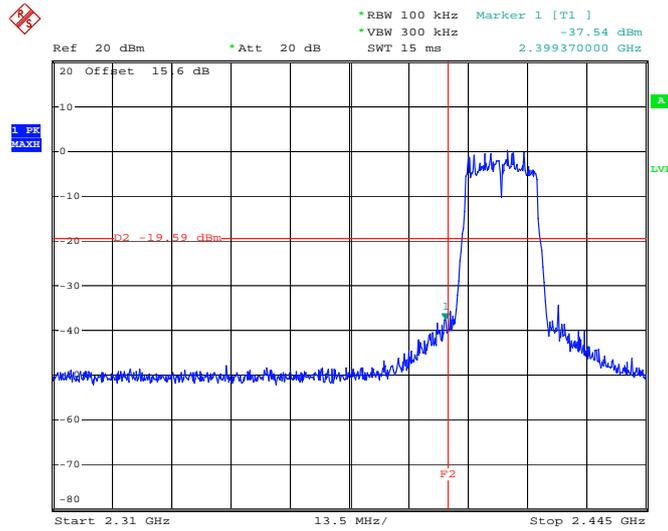


Date: 5.JAN.2013 16:23:37



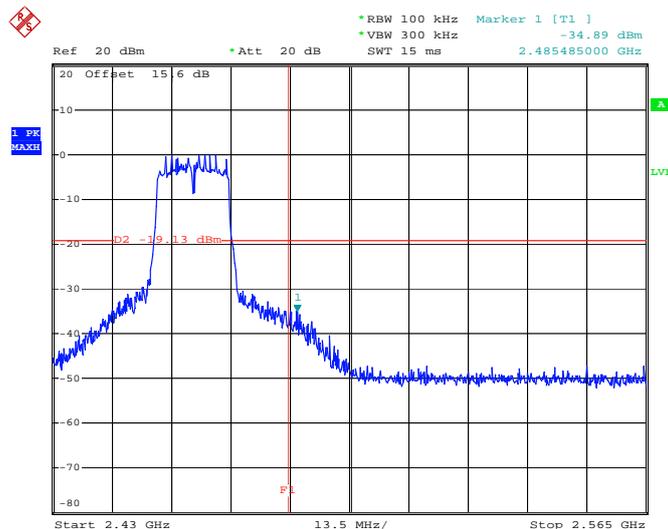
Test Mode :	802.11g	Temperature :	20~21°C
Test Band :	Low and High	Relative Humidity :	40~41%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11g Channel 01



Date: 5.JAN.2013 16:28:33

High Band Edge Plot on 802.11g Channel 11

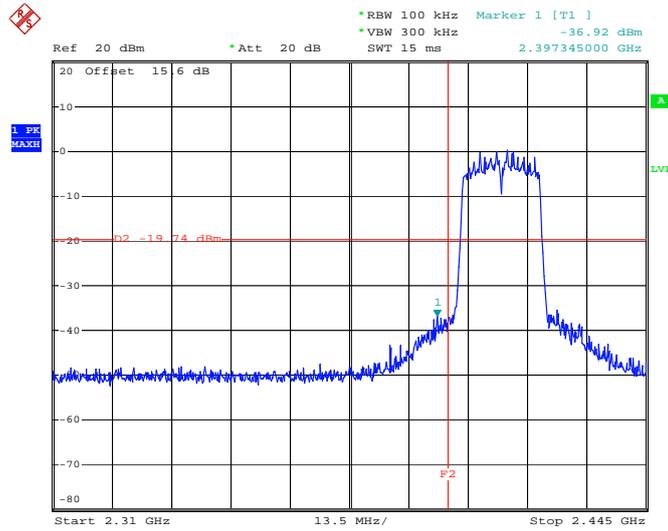


Date: 5.JAN.2013 16:35:14



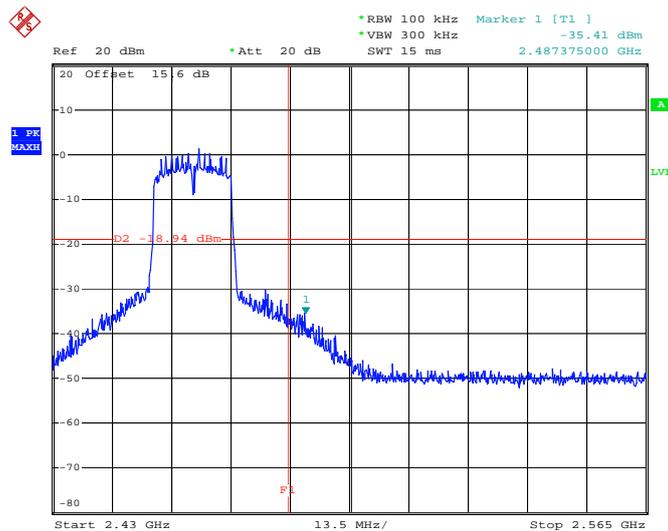
Test Mode :	802.11n HT20	Temperature :	20~21°C
Test Band :	Low and High	Relative Humidity :	40~41%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11n HT20 Channel 01



Date: 5.JAN.2013 16:39:47

High Band Edge Plot on 802.11n HT20 Channel 11

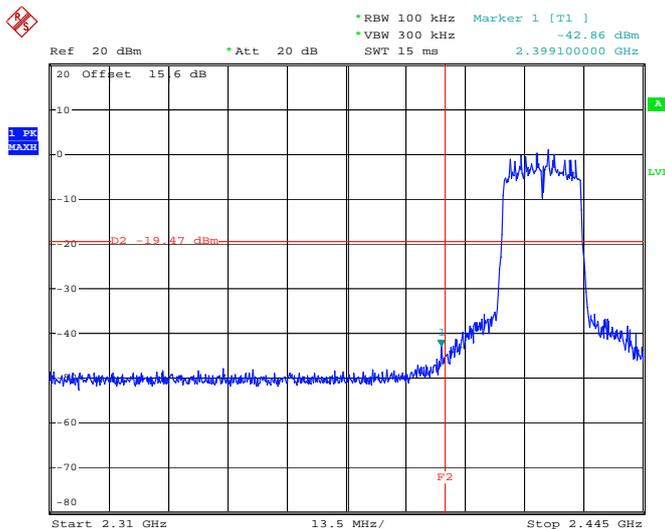


Date: 5.JAN.2013 16:44:44



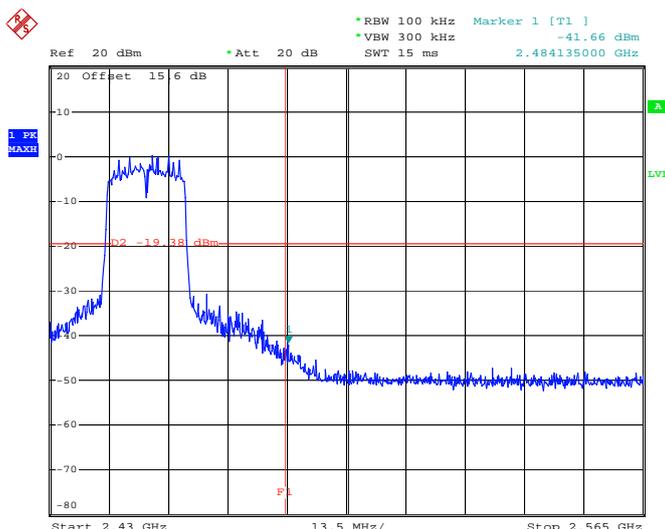
Test Mode :	802.11n HT40	Temperature :	20~21°C
Test Band :	Low and High	Relative Humidity :	40~41%
Test Channel :	03 and 09	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11n HT40 Channel 03



Date: 5.JAN.2013 16:59:33

High Band Edge Plot on 802.11n HT40 Channel 09



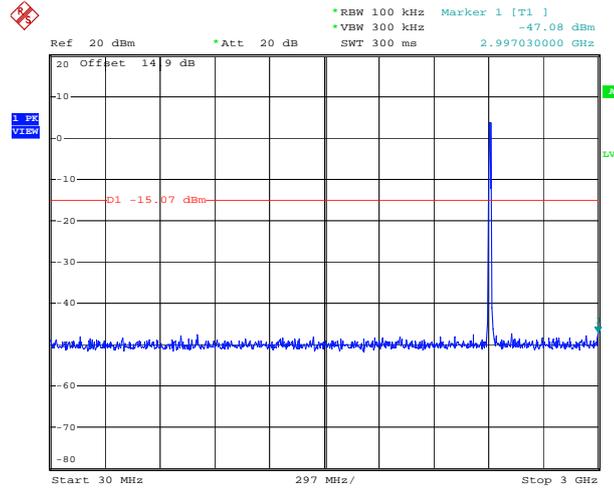
Date: 5.JAN.2013 17:06:58

3.4.6 Test Plots of Spurious Emission

Test Mode :	802.11b	Temperature :	20~21°C
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

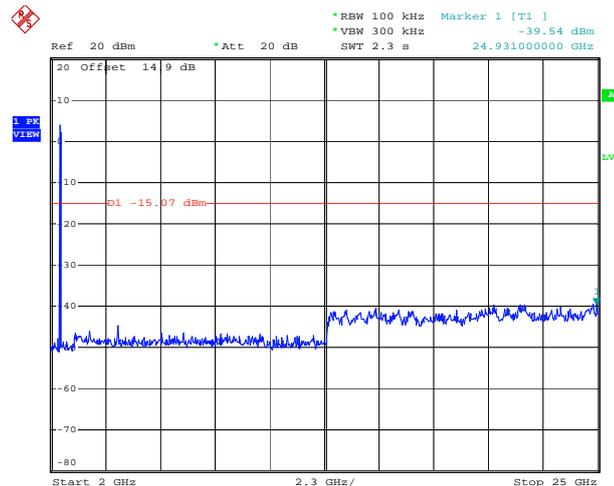
Conducted Spurious Emission Plot on Channel 01



Date: 5.JAN.2013 16:14:14

802.11b 2 GHz~25 GHz

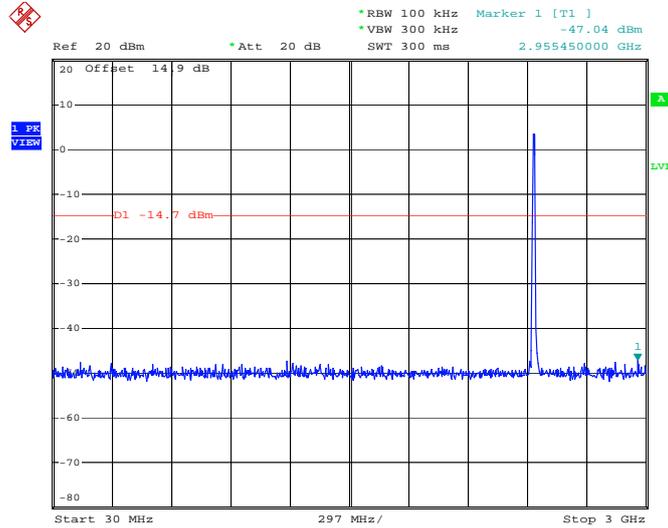
Conducted Spurious Emission Plot on Channel 01



Date: 5.JAN.2013 16:14:33

802.11b 30 MHz~3 GHz

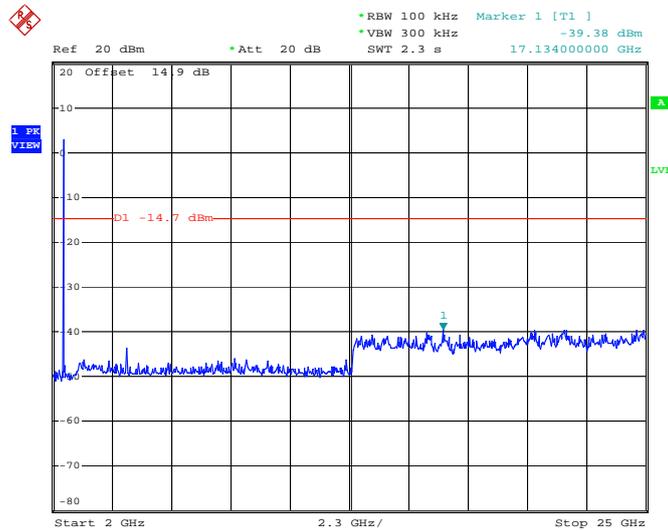
Conducted Spurious Emission Plot on Channel 06



Date: 5.JAN.2013 16:18:49

802.11b 2 GHz~25 GHz

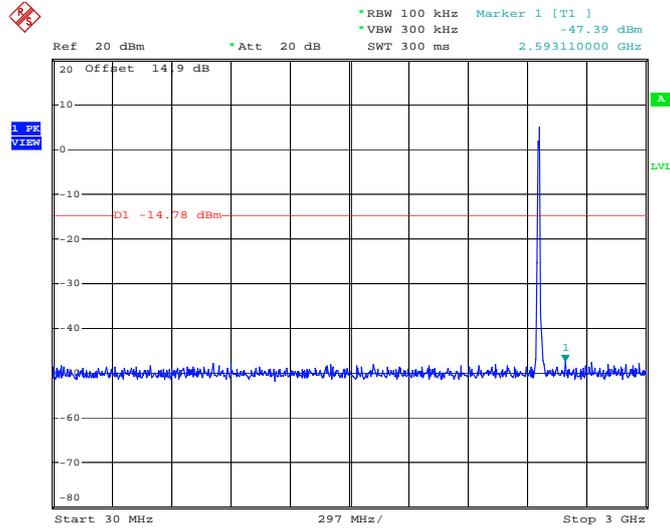
Conducted Spurious Emission Plot on Channel 06



Date: 5.JAN.2013 16:19:07

802.11b 30 MHz~3 GHz

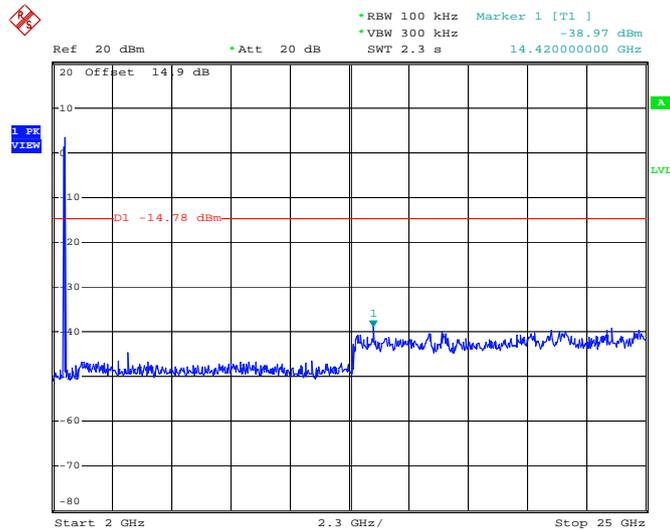
Conducted Spurious Emission Plot on Channel 11



Date: 5.JAN.2013 16:21:39

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



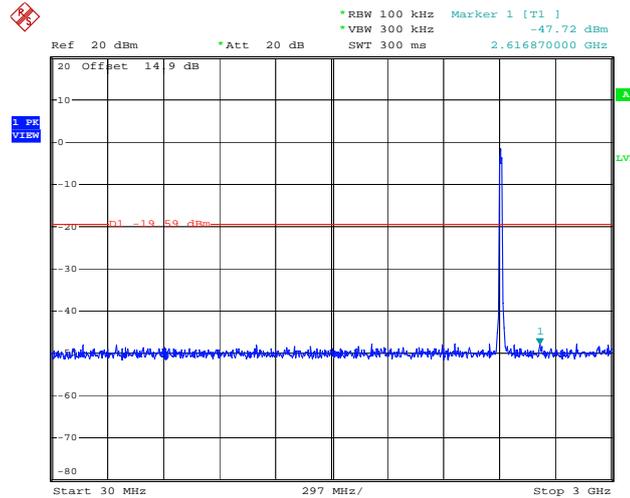
Date: 5.JAN.2013 16:21:58



Test Mode :	802.11g	Temperature :	20~21°C
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

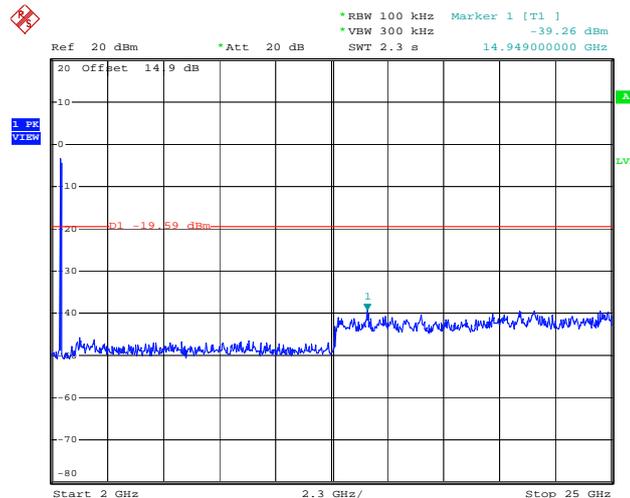
Conducted Spurious Emission Plot on Channel 01



Date: 5.JAN.2013 16:27:45

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 01

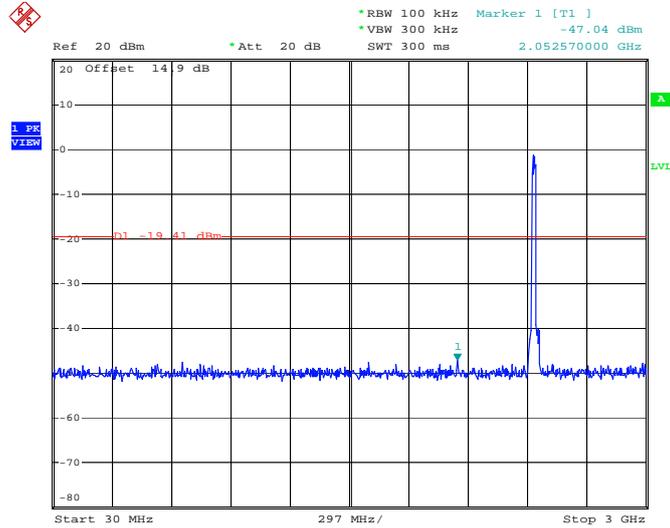


Date: 5.JAN.2013 16:28:03



802.11g 30 MHz~3 GHz

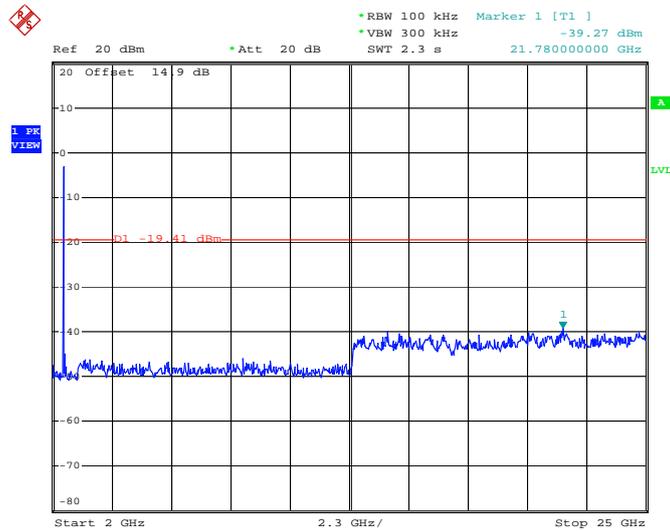
Conducted Spurious Emission Plot on Channel 06



Date: 5.JAN.2013 16:31:08

802.11g 2 GHz~25 GHz

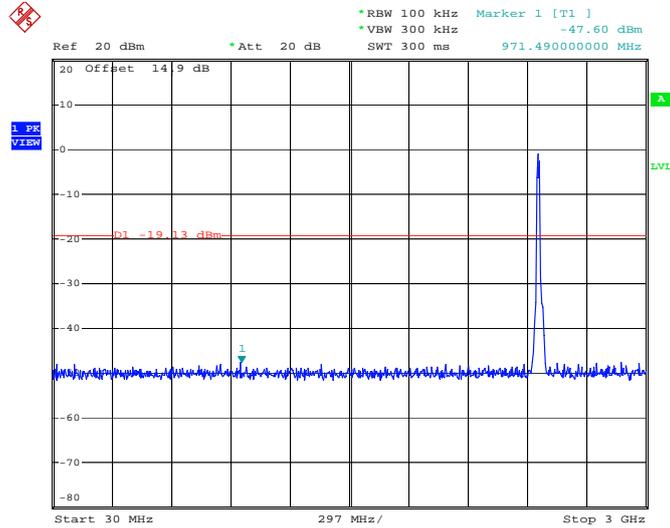
Conducted Spurious Emission Plot on Channel 06



Date: 5.JAN.2013 16:31:27

802.11g 30 MHz~3 GHz

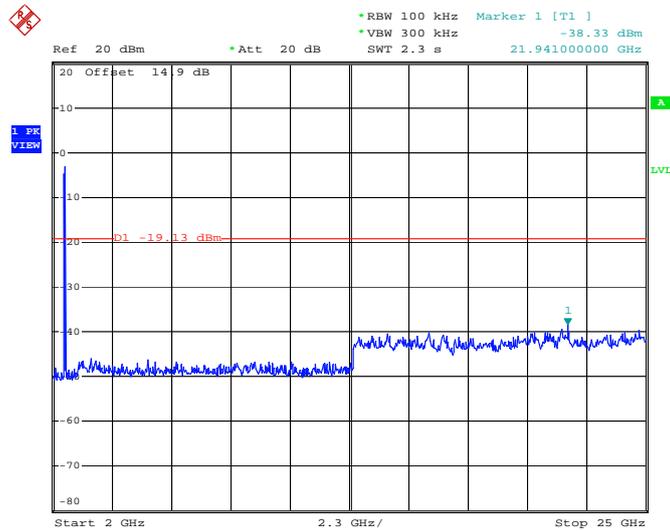
Conducted Spurious Emission Plot on Channel 11



Date: 5.JAN.2013 16:34:19

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



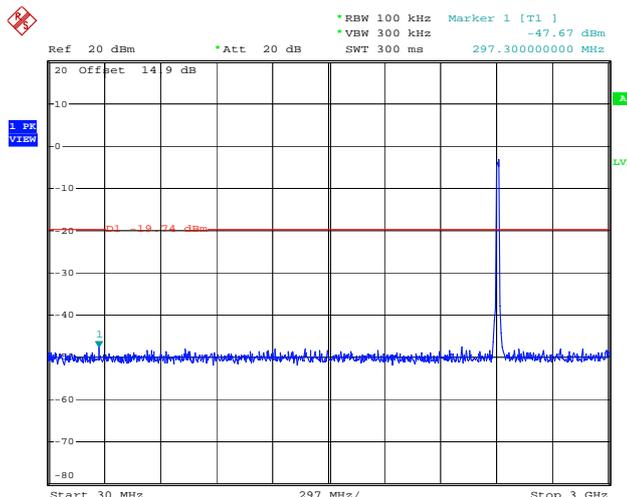
Date: 5.JAN.2013 16:34:38



Test Mode :	802.11n HT20	Temperature :	20~21°C
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

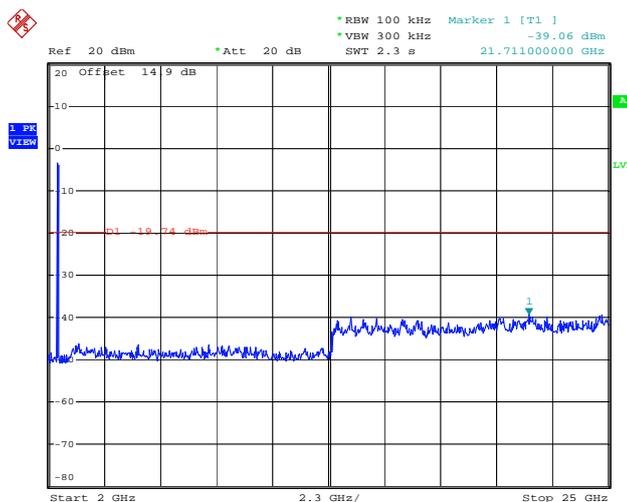
Conducted Spurious Emission Plot on Channel 01



Date: 5.JAN.2013 16:38:27

802.11n HT20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 01

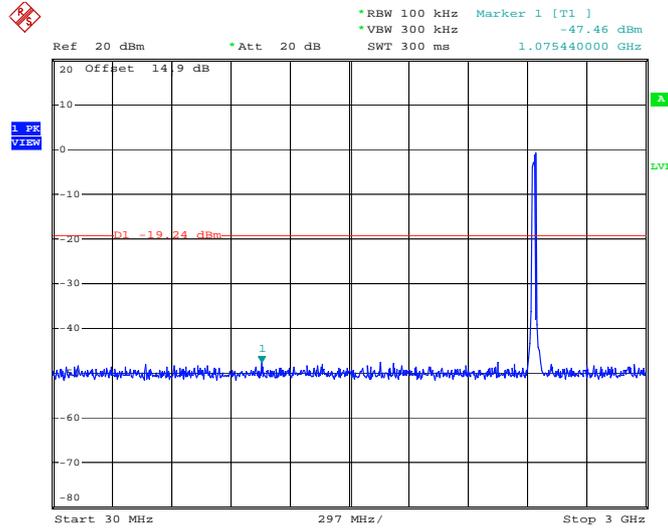


Date: 5.JAN.2013 16:38:46



802.11n HT20 30 MHz~3 GHz

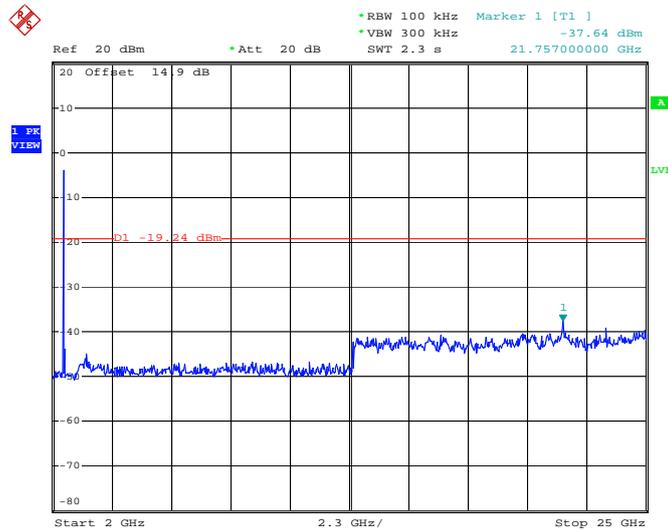
Conducted Spurious Emission Plot on Channel 06



Date: 5.JAN.2013 16:42:05

802.11n HT20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 06

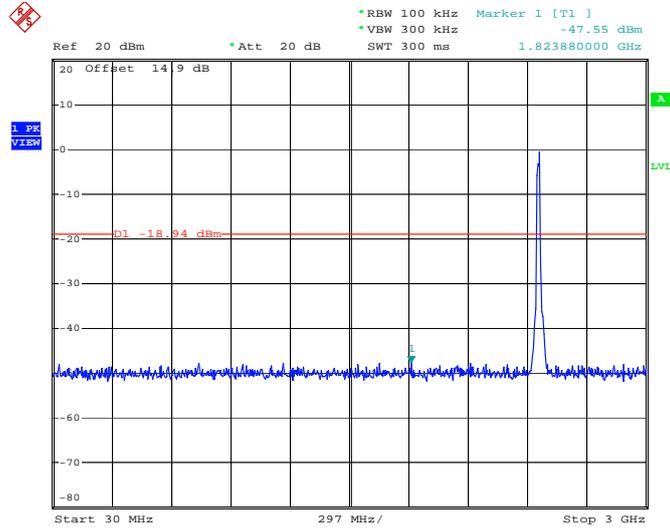


Date: 5.JAN.2013 16:42:23



802.11n HT20 30 MHz~3 GHz

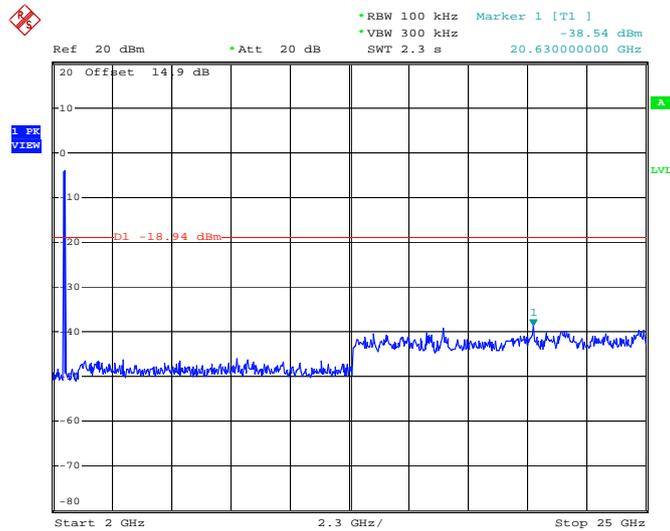
Conducted Spurious Emission Plot on Channel 11



Date: 5.JAN.2013 16:45:02

802.11n HT20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



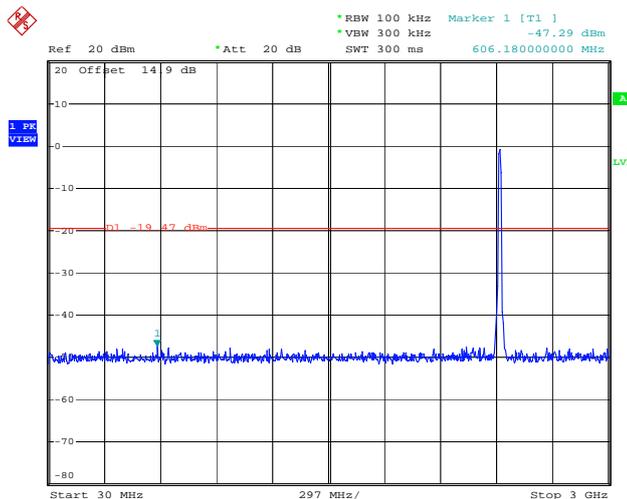
Date: 5.JAN.2013 16:45:21



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

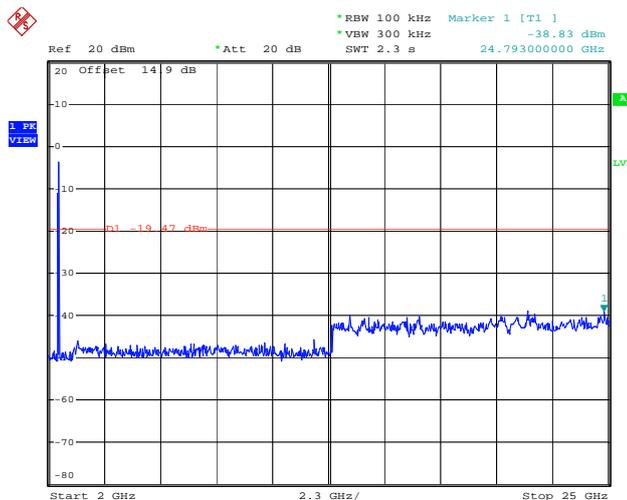
Conducted Spurious Emission Plot on Channel 03



Date: 5.JAN.2013 16:59:51

802.11n HT40 2 GHz~25 GHz

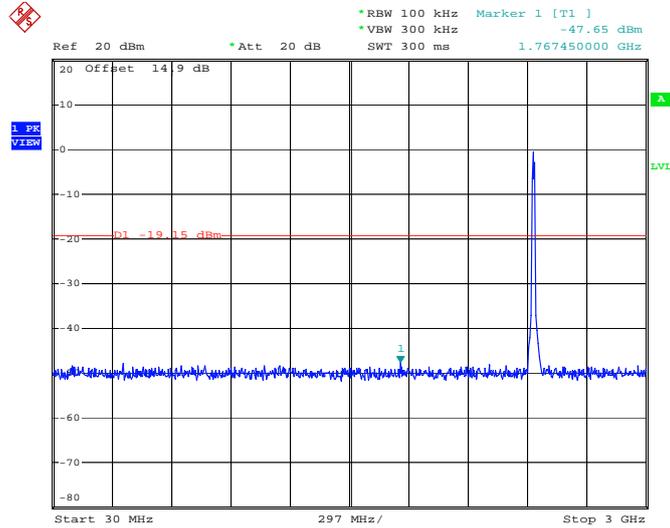
Conducted Spurious Emission Plot on Channel 03



Date: 5.JAN.2013 17:00:10

802.11n HT40 30 MHz~3 GHz

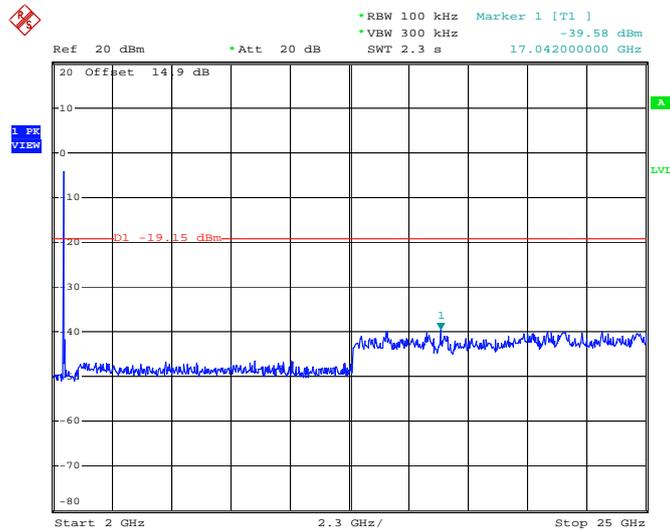
Conducted Spurious Emission Plot on Channel 06



Date: 5.JAN.2013 17:02:45

802.11n HT40 2 GHz~25 GHz

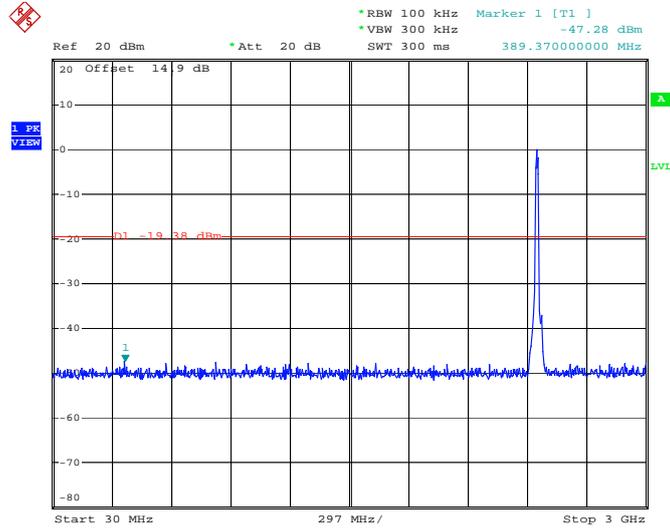
Conducted Spurious Emission Plot on Channel 06



Date: 5.JAN.2013 17:03:03

802.11n HT40 30 MHz~3 GHz

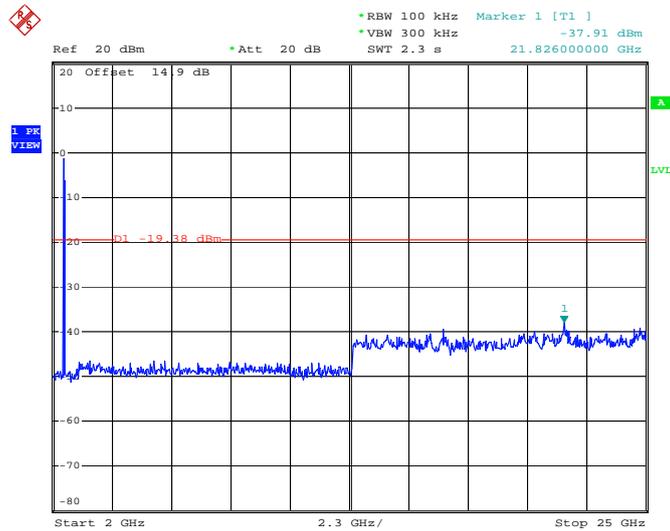
Conducted Spurious Emission Plot on Channel 09



Date: 5.JAN.2013 17:07:16

802.11n HT40 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 09



Date: 5.JAN.2013 17:07:35



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

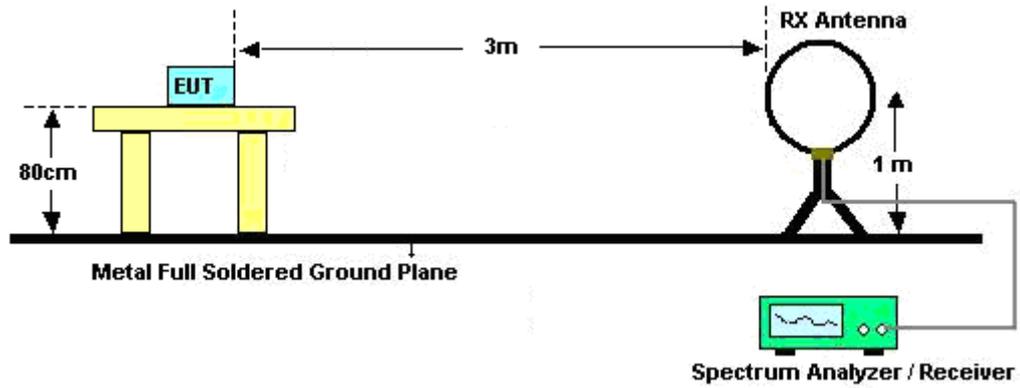
1. The testing follows the guidelines in ANSI C63. 10-2009
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better 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; $VBW \geq RBW$; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, $VBW = 3$ MHz for $f \geq 1$ GHz for peak measurement.
 For average measurement:
 - $VBW = 10$ Hz, when duty cycle is no less than 98 percent.
 - $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(ms)	1/T(KHz)	VBW Setting
802.11b	98.687	-	-	10Hz
802.11g	92.667	1.39	0.719	1KHz
802.11n HT20	93.516	1.298	0.770	1KHz
802.11n HT40	85.638	0.644	1.553	3KHz

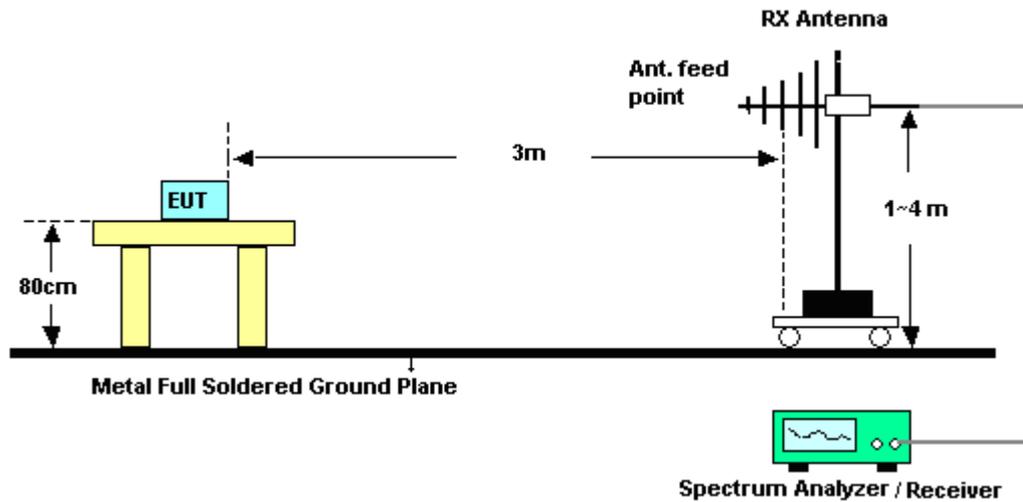
Note: For average measurement with duty cycle < 98%, use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.

3.5.4 Test Setup

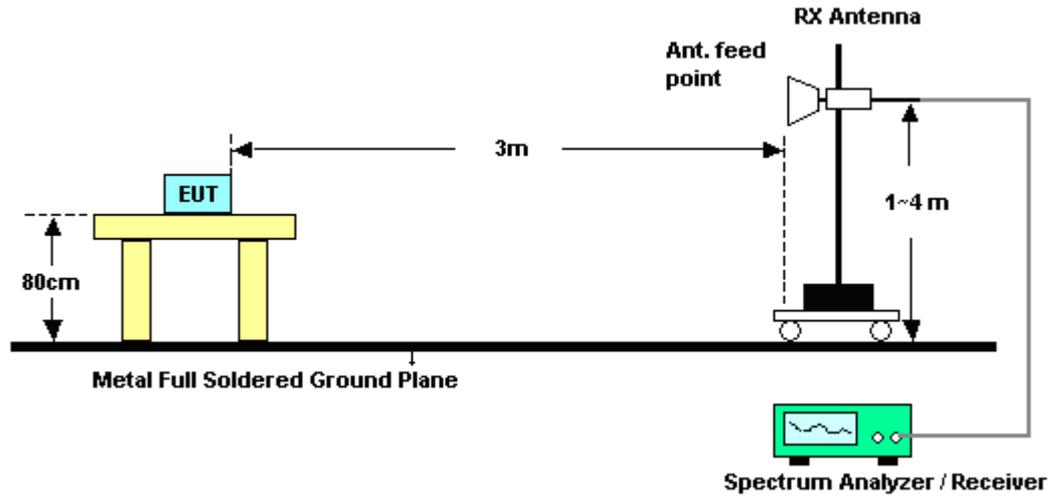
For radiated emissions below 30MHz



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 :	21~22°C
Test Band :	Low	Relative Humidity :	42~43%
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
2389.83	48.05	-25.95	74	46.97	32.86	2.11	33.89	154	322	Peak
2390	35.45	-18.55	54	34.37	32.86	2.11	33.89	154	322	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
2387.4	46.46	-27.54	74	45.35	32.86	2.11	33.86	169	324	Peak
2390	35.84	-18.16	54	34.76	32.86	2.11	33.89	169	324	Average

Test Mode :	802.11b	Temperature :	21~22°C
Test Band :	High	Relative Humidity :	42~43%
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
2483.68	52.17	-21.83	74	50.99	33.01	2.16	33.99	108	259	Peak
2483.5	43.65	-10.35	54	42.47	33.01	2.16	33.99	108	259	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	47.4	-26.6	74	46.22	33.01	2.16	33.99	200	326	Peak
2483.5	37.12	-16.88	54	35.94	33.01	2.16	33.99	200	326	Average



Test Mode :	802.11g	Temperature :	21~22°C
Test Band :	Low	Relative Humidity :	42~43%
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
2389.83	60.18	-13.82	74	59.1	32.86	2.11	33.89	103	141	Peak
2390	37.9	-16.1	54	36.82	32.86	2.11	33.89	103	141	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
2389.11	59.31	-14.69	74	58.2	32.86	2.11	33.86	100	2	Peak
2390	38.8	-15.2	54	37.72	32.86	2.11	33.89	100	2	Average

Test Mode :	802.11g	Temperature :	21~22°C
Test Band :	High	Relative Humidity :	42~43%
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
2483.62	72.15	-1.85	74	70.97	33.01	2.16	33.99	100	293	Peak
2483.5	44.77	-9.23	54	43.59	33.01	2.16	33.99	100	293	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.01	70.13	-3.87	74	68.95	33.01	2.16	33.99	200	303	Peak
2483.5	41.97	-12.03	54	40.79	33.01	2.16	33.99	200	303	Average



Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Band :	Low	Relative Humidity :	42~43%
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
2390	68.07	-5.93	74	66.99	32.86	2.11	33.89	200	308	Peak
2390	45.43	-8.57	54	44.35	32.86	2.11	33.89	200	308	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
2390	61.35	-12.65	74	60.27	32.86	2.11	33.89	100	262	Peak
2390	37.4	-16.6	54	36.32	32.86	2.11	33.89	100	262	Average

Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Band :	High	Relative Humidity :	42~43%
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
2483.5	70.88	-3.12	74	69.7	33.01	2.16	33.99	200	302	Peak
2483.5	45.83	-8.17	54	44.65	33.01	2.16	33.99	200	302	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
2484.55	64.87	-9.13	74	63.69	33.01	2.16	33.99	100	262	Peak
2483.65	39.67	-14.33	54	38.49	33.01	2.16	33.99	100	262	Average



Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Band :	Low	Relative Humidity :	42~43%
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
2389.83	66.23	-7.77	74	62.77	32.86	2.11	31.51	147	119	Peak
2389.92	42.36	-11.64	54	38.9	32.86	2.11	31.51	147	119	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
2388.48	60.85	-13.15	74	59.74	32.86	2.11	33.86	100	128	Peak
2397.12	37.92	-16.08	54	34.46	32.86	2.11	31.51	100	128	Average

Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Band :	High	Relative Humidity :	42~43%
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
2483.56	71.22	-2.78	74	67.56	33.01	2.16	31.51	102	342	Peak
2485.69	44.4	-9.6	54	40.74	33.01	2.16	31.51	102	242	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
2484.1	69.27	-4.73	74	65.61	33.01	2.16	31.51	128	36	Peak
2485.9	40.18	-13.82	54	36.52	33.01	2.16	31.51	128	36	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°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Steven Hao	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 2398.47 MHz and 7236 MHz are not within restricted bands, and their limit lines are 20dB below the highest emission level. For example, 104.91 dBuV/m - 20dB = 84.91 dBuV/m. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2398.47	57.61	-27.3	84.91	56.53	32.86	2.11	33.89	154	322	Peak
2412	104.91	-	-	103.79	32.89	2.12	33.89	108	279	Peak
2412	99.07	-	-	97.95	32.89	2.12	33.89	108	279	Average
4824	46.54	-27.46	74	42.42	35.17	3.09	34.14	100	234	Peak
7236	45.89	-39.02	84.91	40.75	36.18	3.24	34.28	100	0	Peak



Test Mode :	802.11b	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Steven Hao	Polarization :	Vertical
Remark :	<ol style="list-style-type: none"> 2412 MHz is fundamental signal which can be ignored. 2398.47 MHz and 7236 MHz are not within restricted bands, and their limit lines are 20dB below the highest emission level. For example, 98.7 dBuV/m - 20dB = 78.7 dBuV/m. 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	57.4	-21.3	78.7	56.32	32.86	2.11	33.89	169	324	Peak
2412	98.7	-	-	97.58	32.89	2.12	33.89	199	312	Peak
2412	92.89	-	-	91.77	32.89	2.12	33.89	199	312	Average
4824	51.34	-22.66	74	47.22	35.17	3.09	34.14	100	84	Peak
4824	46.61	-7.39	54	42.49	35.17	3.09	34.14	100	84	Average
7236	46	-32.7	78.7	40.86	36.18	3.24	34.28	120	157	Peak



Test Mode :	802.11b	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	42~43%
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	105.51	-	-	104.35	32.95	2.14	33.93	111	254	Peak
2437	99.94	-	-	98.78	32.95	2.14	33.93	111	254	Average
4874	45.09	-28.91	74	40.83	35.18	3.12	34.04	100	0	Peak
7311	43.64	-30.36	74	38.49	36.2	3.21	34.26	102	245	Peak



Test Mode :	802.11b	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	42~43%
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	97.53	-	-	96.37	32.95	2.14	33.93	141	286	Peak
2437	91.92	-	-	90.76	32.95	2.14	33.93	141	286	Average
4874	47.07	-26.93	74	42.81	35.18	3.12	34.04	100	231	Peak
7311	43.87	-30.13	74	38.72	36.2	3.21	34.26	120	174	Peak



Test Mode :	802.11b	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	42~43%
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	103.99	-	-	102.82	32.98	2.15	33.96	133	280	Peak
2462	98.43	-	-	97.26	32.98	2.15	33.96	133	280	Average
4924	45.17	-28.83	74	40.77	35.19	3.15	33.94	100	231	Peak
7386	45.25	-28.75	74	40.05	36.24	3.19	34.23	100	230	Peak



Test Mode :	802.11b	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	42~43%
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	98.07	-	-	96.9	32.98	2.15	33.96	198	324	Peak
2462	92.6	-	-	91.43	32.98	2.15	33.96	198	324	Average
4924	45.44	-28.56	74	41.04	35.19	3.15	33.94	120	157	Peak
7386	43.77	-30.23	74	38.57	36.24	3.19	34.23	100	0	Peak



Test Mode :	802.11g	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Steven Hao	Polarization :	Horizontal
Remark :	<ol style="list-style-type: none"> 2412 MHz is fundamental signal which can be ignored. 2398.83 MHz and 7236 MHz are not within restricted bands, and their limit lines are 20dB below the highest emission level. For example, 104.15 dBuV/m - 20dB = 84.15 dBuV/m. 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
2398.83	68.03	-16.12	84.15	66.95	32.86	2.11	33.89	103	141	Peak
2412	104.15	-	-	103.03	32.89	2.12	33.89	143	252	Peak
2412	93.47	-	-	92.35	32.89	2.12	33.89	143	252	Average
4824	42.29	-31.71	74	38.17	35.17	3.09	34.14	124	84	Peak
7236	44.31	-39.84	84.15	39.17	36.18	3.24	34.28	124	161	Peak



Test Mode :	802.11g	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Steven Hao	Polarization :	Vertical
Remark :	<ol style="list-style-type: none"> 2412 MHz is fundamental signal which can be ignored. 2396.85 MHz and 7236 MHz are not within restricted bands, and their limit lines are 20dB below the highest emission level. For example, 96.24 dBuV/m - 20dB = 76.24 dBuV/m. 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	71.7	-4.54	76.24	70.62	32.86	2.11	33.89	100	2	Peak
2412	96.24	-	-	95.12	32.89	2.12	33.89	167	309	Peak
2412	84.77	-	-	83.65	32.89	2.12	33.89	167	309	Average
4824	43.96	-30.04	74	39.84	35.17	3.09	34.14	100	234	Peak
7236	43.89	-32.35	76.24	38.75	36.18	3.24	34.28	103	60	Peak



Test Mode :	802.11g	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	42~43%
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	104.24	-	-	103.08	32.95	2.14	33.93	110	261	Peak
2437	93.28	-	-	92.12	32.95	2.14	33.93	110	261	Average
4874	42.87	-31.13	74	38.61	35.18	3.12	34.04	100	45	Peak
7312	43.63	-30.37	74	38.47	36.2	3.21	34.25	200	157	Peak



Test Mode :	802.11g	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	42~43%
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	94.55	-	-	93.39	32.95	2.14	33.93	100	54	Peak
2437	83.47	-	-	82.31	32.95	2.14	33.93	100	54	Average
4874	42.24	-31.76	74	37.98	35.18	3.12	34.04	100	247	Peak
7311	43.14	-30.86	74	37.99	36.2	3.21	34.26	103	58	Peak



Test Mode :	802.11g	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	42~43%
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
35.624	17.71	-22.29	40	36.31	14.65	0.37	33.62	-	-	Peak
116.132	22.93	-20.57	43.5	44.12	11.8	0.62	33.61	-	-	Peak
228.49	25.19	-20.81	46	46.97	10.83	0.88	33.49	-	-	Peak
260.144	21.86	-24.14	46	42.21	12.15	0.93	33.43	-	-	Peak
872.183	21.01	-24.99	46	31.44	20.49	1.69	32.61	-	-	Peak
938.833	27.64	-18.36	46	37.65	20.68	1.75	32.44	112	47	Peak
2462	102.85	-	-	101.68	32.98	2.15	33.96	111	262	Peak
2462	92.22	-	-	91.05	32.98	2.15	33.96	111	262	Average
4924	41.99	-32.01	74	37.59	35.19	3.15	33.94	100	264	Peak
7386	44.95	-29.05	74	39.75	36.24	3.19	34.23	100	237	Peak



Test Mode :	802.11g	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	42~43%
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
38.888	23.66	-16.34	40	43.93	12.98	0.39	33.64	120	100	Peak
50.764	19.67	-20.33	40	45.41	7.4	0.44	33.58	-	-	Peak
99.528	20.81	-22.69	43.5	43.35	10.5	0.58	33.62	-	-	Peak
231.718	17.6	-28.4	46	39.15	11.04	0.89	33.48	-	-	Peak
872.183	24.88	-21.12	46	35.31	20.49	1.69	32.61	-	-	Peak
938.833	28.53	-17.47	46	38.54	20.68	1.75	32.44	-	-	Peak
2462	95.86	-	-	94.69	32.98	2.15	33.96	136	306	Peak
2462	84.86	-	-	83.69	32.98	2.15	33.96	136	309	Average
4924	44.12	-29.88	74	39.72	35.19	3.15	33.94	124	78	Peak
7386	43.64	-30.36	74	38.44	36.24	3.19	34.23	106	354	Peak



Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Steven Hao	Polarization :	Horizontal
Remark :	<ol style="list-style-type: none"> 1. 2412 MHz is fundamental signal which can be ignored. 2. 2399 MHz and 7236 MHz are not within restricted bands, and their limit lines are 20dB below the highest emission level. For example, 100.7 dBuV/m - 20dB = 80.7 dBuV/m. 3. Average measurement was not performed if peak level went lower than the average limit. 		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2399	76.06	-4.64	80.7	74.98	32.86	2.11	33.89	100	36	Peak
2412	100.7	-	-	99.58	32.89	2.12	33.89	100	36	Peak
2412	90.84	-	-	89.72	32.89	2.12	33.89	100	36	Average
4824	43.71	-30.29	74	39.59	35.17	3.09	34.14	100	199	Peak
7236	44.22	-36.48	80.7	39.08	36.18	3.24	34.28	100	66	Peak



Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Steven Hao	Polarization :	Vertical
Remark :	<ol style="list-style-type: none"> 1. 2412 MHz is fundamental signal which can be ignored. 2. 2399 MHz and 7236 MHz are not within restricted bands, and their limit lines are 20dB below the highest emission level. For example, 94.86 dBuV/m - 20dB = 74.86 dBuV/m. 3. Average measurement was not performed if peak level went lower than the average limit. 		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2399	70.3	-4.56	74.86	69.22	32.86	2.11	33.89	200	60	Peak
2412	94.86	-	-	93.74	32.89	2.12	33.89	200	60	Peak
2412	83.67	-	-	82.55	32.89	2.12	33.89	200	60	Average
4824	43.91	-30.09	74	39.79	35.17	3.09	34.14	100	205	Peak
7236	44.94	-29.92	74.86	39.8	36.18	3.24	34.28	100	0	Peak



Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	42~43%
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	99.81	-	-	98.65	32.95	2.14	33.93	200	301	Peak
2437	89.78	-	-	88.62	32.95	2.14	33.93	200	301	Average
4874	42.33	-31.67	74	38.07	35.18	3.12	34.04	100	20	Peak
7311	43.19	-30.81	74	38.04	36.2	3.21	34.26	100	98	Peak



Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	42~43%
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	94.61	-	-	93.45	32.95	2.14	33.93	100	262	Peak
2437	84.37	-	-	83.21	32.95	2.14	33.93	100	262	Average
4874	43.78	-30.22	74	39.52	35.18	3.12	34.04	100	21	Peak
7311	44.04	-29.96	74	38.89	36.2	3.21	34.26	10	50	Peak



Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	42~43%
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	100.68	-	-	99.51	32.98	2.15	33.96	200	300	Peak
2462	90.13	-	-	88.96	32.98	2.15	33.96	200	300	Average
4924	42.91	-31.09	74	38.51	35.19	3.15	33.94	100	96	Peak
7386	44.47	-29.53	74	39.27	36.24	3.19	34.23	100	85	Peak



Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	42~43%
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	94.85	-	-	93.68	32.98	2.15	33.96	100	262	Peak
2462	83.98	-	-	82.81	32.98	2.15	33.96	100	262	Average
4924	43.14	-30.86	74	38.74	35.19	3.15	33.94	100	162	Peak
7386	44	-30	74	38.8	36.24	3.19	34.23	100	0	Peak



Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Channel :	03	Relative Humidity :	42~43%
Test Engineer :	Steven Hao	Polarization :	Horizontal
Remark :	1. 2422 MHz is fundamental signal which can be ignored. 2. 2392 MHz is not within restricted band, and its limit line is 20dB below the highest emission level. For example, 93.84 dBuV/m - 20dB = 73.84 dBuV/m. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2392	64.61	-9.23	73.84	63.53	32.86	2.11	33.89	110	278	Peak
2422	93.84	-	-	92.72	32.92	2.13	33.93	110	278	Peak
2422	83.2	-	-	82.08	32.92	2.13	33.93	110	278	Average
4844	44.91	-29.09	74	38.16	35.18	3.1	31.53	100	0	Peak
7266	49.93	-24.07	74	41.47	36.19	3.22	30.95	100	0	Peak



Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Channel :	03	Relative Humidity :	42~43%
Test Engineer :	Steven Hao	Polarization :	Vertical
Remark :	<ol style="list-style-type: none"> 2422 MHz is fundamental signal which can be ignored. 2392 MHz is not within restricted band, and its limit line is 20dB below the highest emission level. For example, 86.37 dBuV/m - 20dB = 66.37 dBuV/m. 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
2392	57.96	-8.41	66.37	56.88	32.86	2.11	33.89	100	64	Peak
2422	86.37	-	-	85.25	32.92	2.13	33.93	100	64	Peak
2422	75.99	-	-	74.87	32.92	2.13	33.93	100	64	Average
4844	46.16	-27.84	74	39.41	35.18	3.1	31.53	100	0	Peak
7266	48.88	-25.12	74	40.42	36.19	3.22	30.95	100	360	Peak



Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	42~43%
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	93.74	-	-	90.16	32.95	2.14	31.51	100	265	Peak
2437	83.62	-	-	80.04	32.95	2.14	31.51	100	265	Average
4874	47.94	-26.06	74	41.16	35.18	3.12	31.52	100	360	Peak
7312	48.34	-25.66	74	39.87	36.2	3.21	30.94	120	0	Peak



Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	42~43%
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	89.7	-	-	86.12	32.95	2.14	31.51	110	0	Peak
2437	79.44	-	-	75.86	32.95	2.14	31.51	110	0	Average
4874	46.64	-27.36	74	39.86	35.18	3.12	31.52	100	0	Peak
7312	48.34	-25.66	74	39.87	36.2	3.21	30.94	100	0	Peak



Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Channel :	09	Relative Humidity :	42~43%
Test Engineer :	Steven Hao	Polarization :	Horizontal
Remark :	1. 2452 MHz is fundamental signal which can be ignored. 2. 2396 MHz is not within restricted band, and its limit line is 20dB below the highest emission level. For example, 93.86 dBuV/m - 20dB = 73.86 dBuV/m. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2396	46.72	-27.14	73.86	43.26	32.86	2.11	31.51	100	241	Peak
2452	93.86	-	-	90.28	32.95	2.14	31.51	110	315	Peak
2452	83.39	-	-	79.81	32.95	2.14	31.51	110	315	Average
4904	47.24	-26.76	74	40.43	35.19	3.14	31.52	100	0	Peak
7356	49.56	-24.44	74	41.07	36.22	3.2	30.93	100	360	Peak



Test Mode :	802.11n HT40	Temperature :	21~22°C
Test Channel :	09	Relative Humidity :	42~43%
Test Engineer :	Steven Hao	Polarization :	Vertical
Remark :	1. 2452 MHz is fundamental signal which can be ignored. 2. 2398 MHz is not within restricted band, and its limit line is 20dB below the highest emission level. For example, 90.64 dBuV/m - 20dB = 70.64 dBuV/m. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2398	45.52	-25.12	70.64	42.06	32.86	2.11	31.51	120	157	Peak
2452	90.64	-	-	87.06	32.95	2.14	31.51	104	36	Peak
2452	80.29	-	-	76.71	32.95	2.14	31.51	104	36	Average
4904	47.41	-26.59	74	40.6	35.19	3.14	31.52	100	0	Peak
7356	48.4	-25.6	74	39.91	36.22	3.2	30.93	100	0	Peak

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 KHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

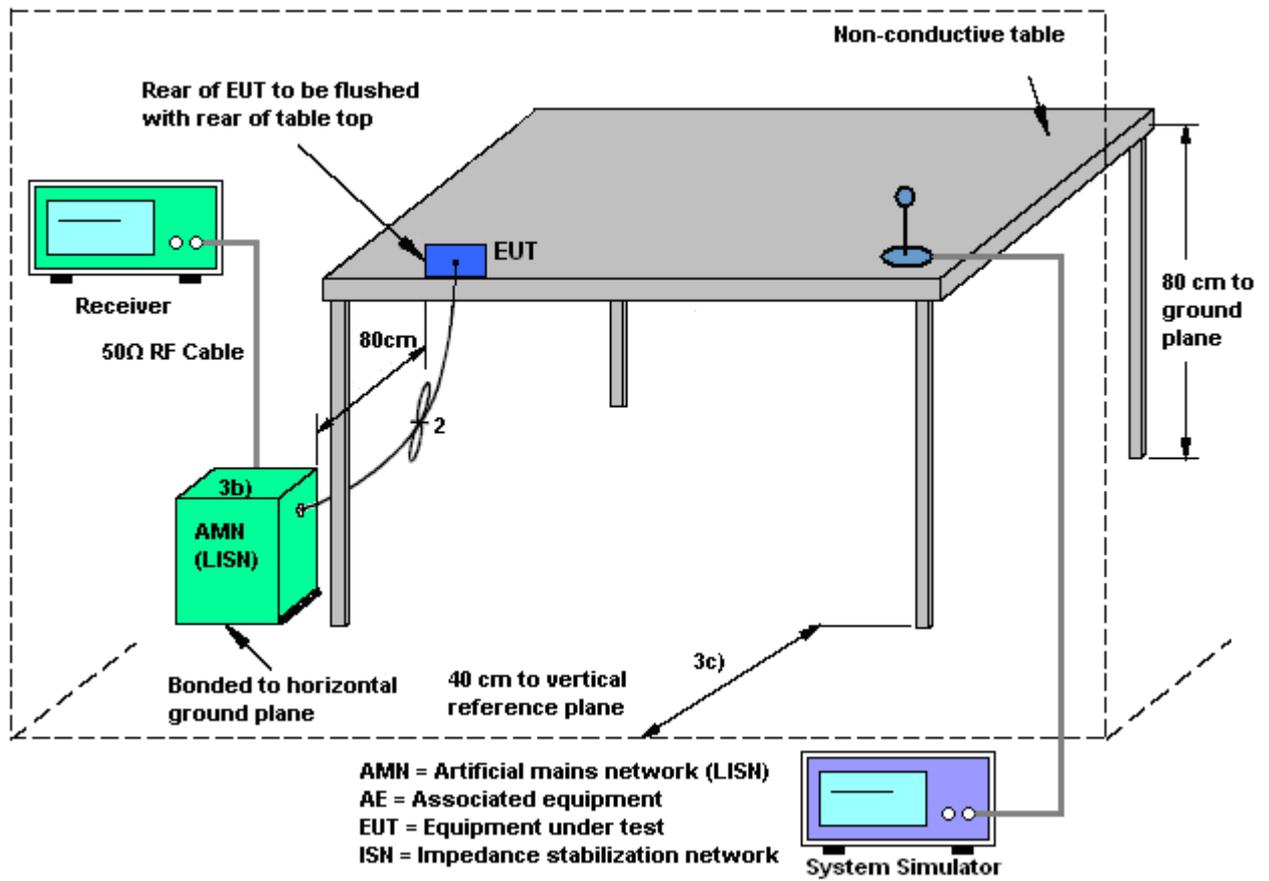
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

1. The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 KHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

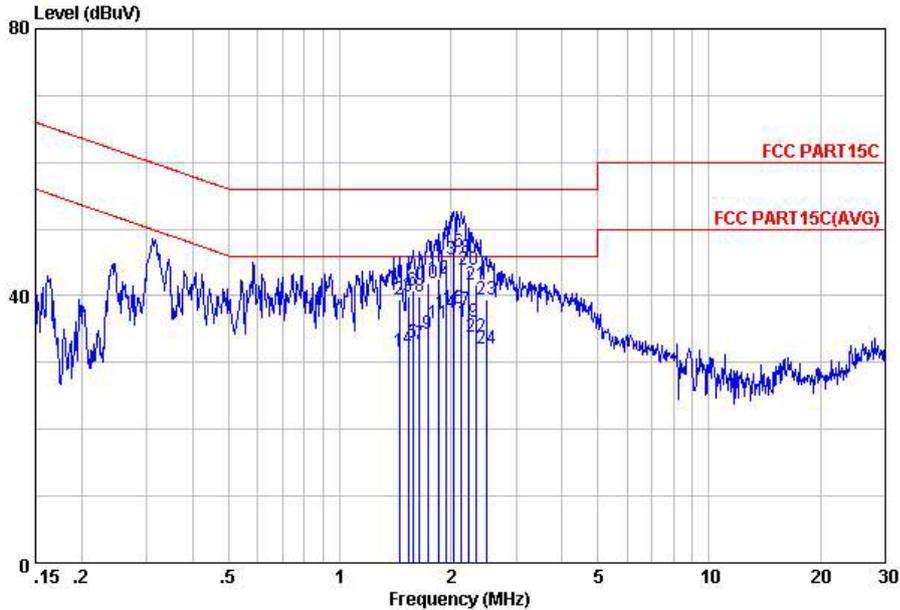
3.6.4 Test Setup





3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	19~20°C
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.		

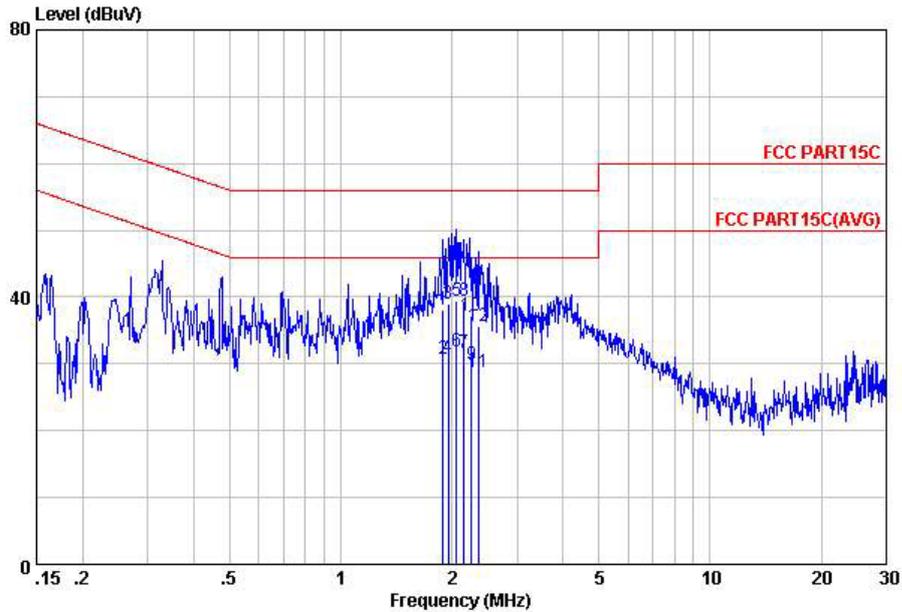


Site : C001-KS
 Condition: FCC PART15C LISN-111230 LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	1.45	31.69	-14.31	46.00	21.51	-0.11	10.29	Average
2	1.45	39.39	-16.61	56.00	29.21	-0.11	10.29	QP
3	1.54	39.79	-16.21	56.00	29.61	-0.11	10.29	QP
4	1.54	32.09	-13.91	46.00	21.91	-0.11	10.29	Average
5	1.58	32.99	-13.01	46.00	22.81	-0.11	10.29	Average
6	1.58	40.69	-15.31	56.00	30.51	-0.11	10.29	QP
7	1.64	32.69	-13.31	46.00	22.50	-0.11	10.30	Average
8	1.64	39.99	-16.01	56.00	29.80	-0.11	10.30	QP
9	1.73	34.29	-11.71	46.00	24.10	-0.11	10.30	Average
10	1.73	41.89	-14.11	56.00	31.70	-0.11	10.30	QP
11	1.85	35.79	-10.21	46.00	25.60	-0.11	10.30	Average
12	1.85	42.49	-13.51	56.00	32.30	-0.11	10.30	QP
13	1.95	45.49	-10.51	56.00	35.30	-0.11	10.30	QP
14	1.95	37.49	-8.51	46.00	27.30	-0.11	10.30	Average
15	2.03	38.19	-7.81	46.00	28.00	-0.11	10.30	Average
16	2.03	46.59	-9.41	56.00	36.40	-0.11	10.30	QP
17	2.13	37.79	-8.21	46.00	27.60	-0.11	10.30	Average
18	2.13	45.59	-10.41	56.00	35.40	-0.11	10.30	QP
19	2.24	35.99	-10.01	46.00	25.80	-0.11	10.30	Average
20	2.24	43.89	-12.11	56.00	33.70	-0.11	10.30	QP
21	2.35	41.69	-14.31	56.00	31.50	-0.11	10.30	QP
22	2.35	33.79	-12.21	46.00	23.60	-0.11	10.30	Average
23	2.49	39.39	-16.61	56.00	29.19	-0.11	10.31	QP
24	2.49	31.99	-14.01	46.00	21.79	-0.11	10.31	Average



Test Mode :	Mode 1	Temperature :	19~20°C
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	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	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	1.89	38.19	-17.81	56.00	28.00	-0.11	10.30	QP
2	1.89	30.69	-15.31	46.00	20.50	-0.11	10.30	Average
3	1.96	38.89	-17.11	56.00	28.70	-0.11	10.30	QP
4	1.96	30.89	-15.11	46.00	20.70	-0.11	10.30	Average
5	2.05	39.39	-16.61	56.00	29.20	-0.11	10.30	QP
6	2.05	31.89	-14.11	46.00	21.70	-0.11	10.30	Average
7	2.16	31.69	-14.31	46.00	21.50	-0.11	10.30	Average
8	2.16	39.39	-16.61	56.00	29.20	-0.11	10.30	QP
9	2.26	29.89	-16.11	46.00	19.70	-0.11	10.30	Average
10	2.26	37.29	-18.71	56.00	27.10	-0.11	10.30	QP
11	2.36	28.79	-17.21	46.00	18.60	-0.11	10.30	Average
12	2.36	35.69	-20.31	56.00	25.50	-0.11	10.30	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. 05, 2013~ Jan. 06, 2013	Dec. 28, 2013	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 22, 2012	Jan. 05, 2013~ Jan. 06, 2013	Aug. 21, 2013	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 22, 2012	Jan. 05, 2013~ Jan. 06, 2013	Aug. 21, 2013	Conducted (TH01-KS)
DC Power Supply	GWINSTEK	GPS-3030D	E1884515	N/A	Aug. 22, 2012	Jan. 05, 2013~ Jan. 06, 2013	Aug. 21, 2013	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Dec. 29, 2012	Jan. 05, 2013~ Jan. 06, 2013	Dec. 28, 2013	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 08, 2012	Jan. 24, 2013	Nov. 07, 2013	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	100400	9kHz~30GHz	Jun. 01, 2012	Jan. 24, 2013	May 31, 2013	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 07, 2012	Jan. 24, 2013	Dec. 06, 2013	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/ 001	9 kHz~30 MHz	Jul. 03, 2012	Jan. 24, 2013	Jul. 02, 2014	Radiation (03CH01-KS)
Double Ridge Horn Antenna	ETS-Lindgren	1908/7/13	00075957	1GHz~18GHz	Dec. 07, 2012	Jan. 24, 2013	Dec. 06, 2013	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161069	1MHz~1GHz	Jun. 01, 2012	Jan. 24, 2013	May 31, 2013	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 29, 2012	Jan. 24, 2013	Dec. 28, 2013	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz~18GHz	Nov. 07, 2012	Jan. 24, 2013	Nov. 06, 2013	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	9170249	15GHz~40GHz	Nov. 23, 2012	Jan. 24, 2013	Nov. 22, 2013	Radiation (03CH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 01, 2012	Jan. 21, 2013	May 31, 2013	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 29, 2012	Jan. 21, 2013	Dec. 28, 2013	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Dec. 29, 2012	Jan. 21, 2013	Dec. 28, 2013	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 15, 2012	Jan. 21, 2013	Nov. 14, 2013	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/066	2G Full-Band	Dec. 29, 2012	Jan. 21, 2013	Dec. 28, 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
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

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

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

Please refer to Sporton report number EP2D1301 as below.