

FCC RF Test Report

APPLICANT : ZTE CORPORATION
EQUIPMENT : Mobile Hotspot
BRAND NAME : ZTE
MODEL NAME : MF96
FCC ID : Q78-MF96
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Sep. 26, 2012 and completely tested on Nov. 21, 2012. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

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

Reviewed by:



Jones Tsai / Manager



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



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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 1.33 dB at 2483.520 MHz
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 11.84 dB at 0.680 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	Mobile Hotspot
Brand Name	ZTE
Model Name	MF96
FCC ID	Q78-MF96
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/HSPA+/LTE/WLAN 11bgn
HW Version	xn2C
SW Version	PV_ZTE_MF96_V1.0.0B01
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 : 20.41 dBm (0.1099 W) 802.11g : 23.96 dBm (0.2489 W) 802.11n HT20 : 24.16 dBm (0.2606 W)
Antenna Type	Monopole Antenna with gain 1.00 dBi
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.5 Testing Site

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

1.6 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02
- ♦ ANSI C63.4-2003 and ANSI C63.10-2009
- ♦ IC RSS-210 Issue 8
- ♦ IC RSS-Gen Issue 3
- ♦ NOTICE 2012-DRS0126

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.
3. Per the section 2.2.3 of Notice of 2012-DRS0126, “ Receivers Excluded from Industry Canada Requirements”, only radiocommunication 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	20.36	20.37	20.34	20.34
CH 06	2437 MHz	19.75	19.66	19.75	19.81
CH 11	2462 MHz	20.24	20.25	20.22	20.41

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	23.96	23.93	23.91	23.92	23.89	23.91	23.77	23.89
CH 06	2437 MHz	22.83	23.65	23.26	22.81	23.21	23.14	22.98	22.91
CH 11	2462 MHz	23.91	23.95	23.81	23.71	23.85	23.91	23.81	23.91

Channel	Frequency	2.4GHz 802.11n HT20 RF Power (dBm)							
		OFDM Data Rate							
		MCS=0	MCS=1	MCS=2	MCS=3	MCS=4	MCS=5	MCS=6	MCS=7
CH 01	2412 MHz	23.85	23.83	23.85	23.47	23.31	23.21	23.31	23.31
CH 06	2437 MHz	23.01	23.11	22.76	22.65	22.58	22.37	22.34	21.96
CH 11	2462 MHz	24.16	24.01	23.91	23.42	23.41	23.42	23.41	23.09

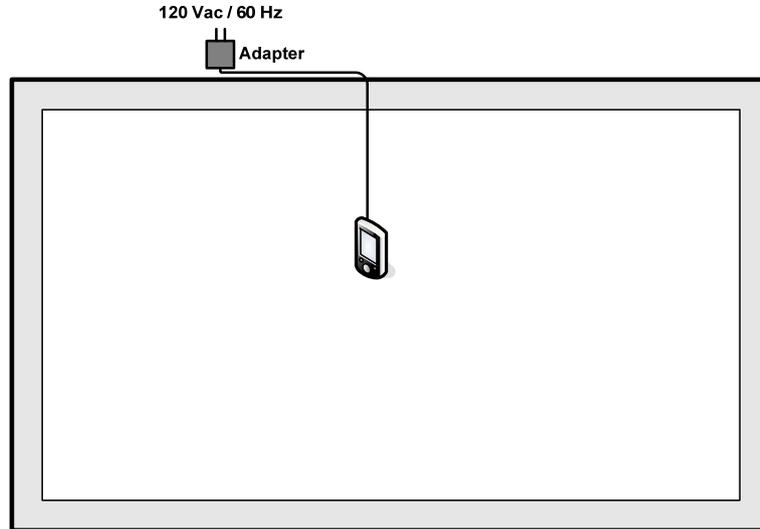
2.3 Test Mode

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

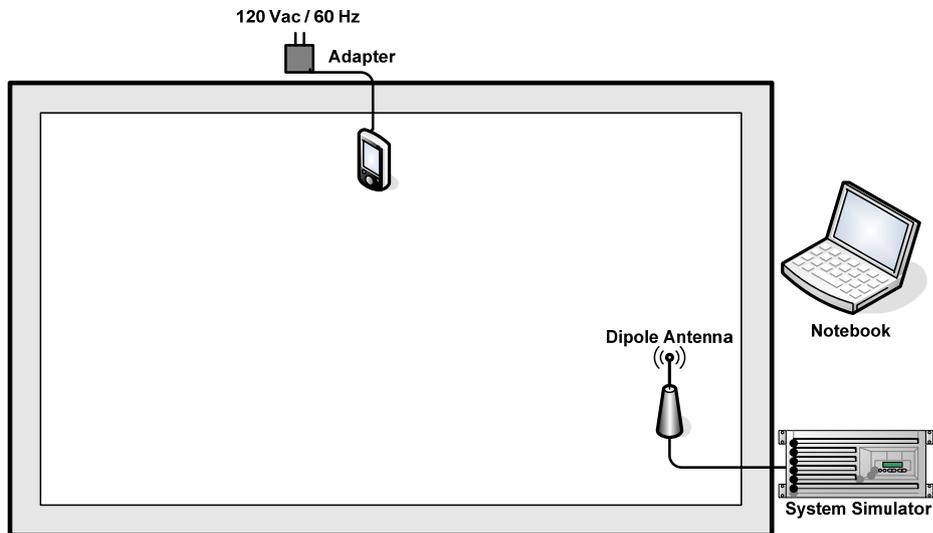
Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Conducted TCs	6dB BW Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
	Conducted Band EDGE	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	6.5 Mbps	1/11
	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
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
	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
AC Conducted Emission	Mode 1 : GSM850 (GRPS 8) Idle + WLAN Link + Adapter			

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	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.	Notebook	DELL	P08S	QDS-BRCM1030	N/A	AC I/P: Unshielded, 0.9 m DC O/P: Shielded, 1.8 m

2.6 RF Utility

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

2.7 Measurement Results Explanation Example

For conducted test items:

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

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

Offset = RF cable loss + attenuator factor.

Following table shows an offset computation example with cable loss 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.

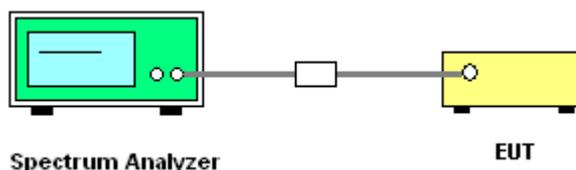
3.1.2 Measuring Instruments

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



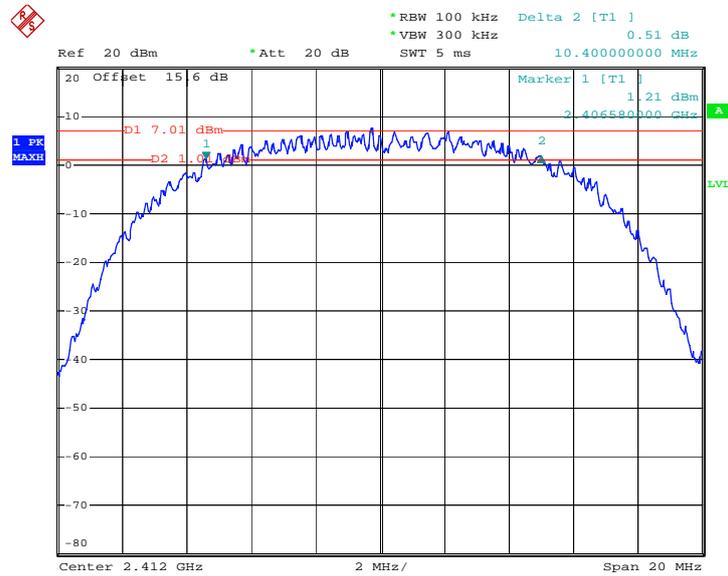


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	802.11b	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	10.40	0.5	Pass
06	2437	9.96	0.5	Pass
11	2462	9.88	0.5	Pass

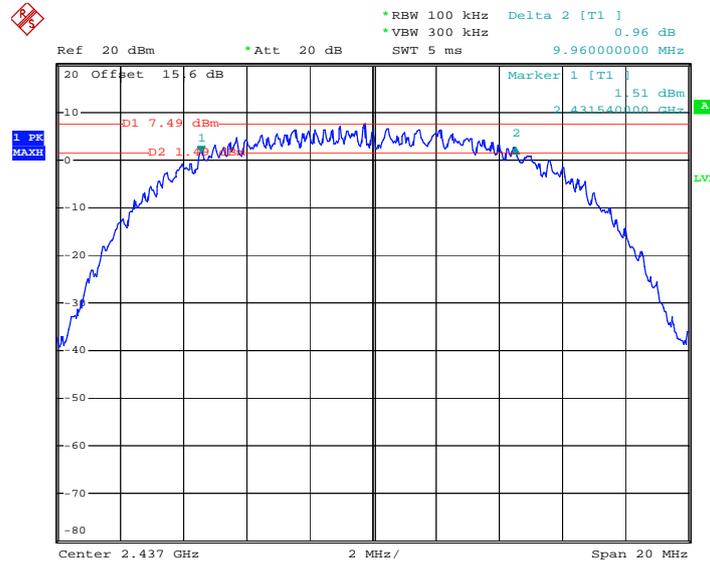
6 dB Bandwidth Plot on 802.11b Channel 01



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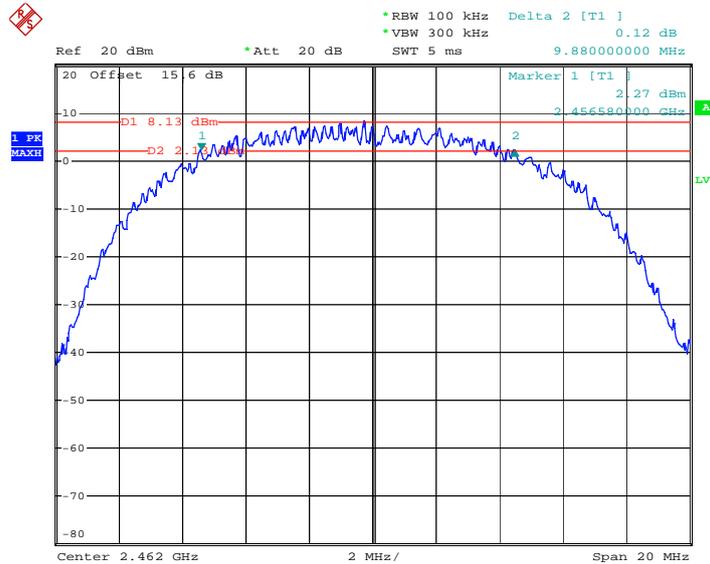


6 dB Bandwidth Plot on 802.11b Channel 06



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6 dB Bandwidth Plot on 802.11b Channel 11



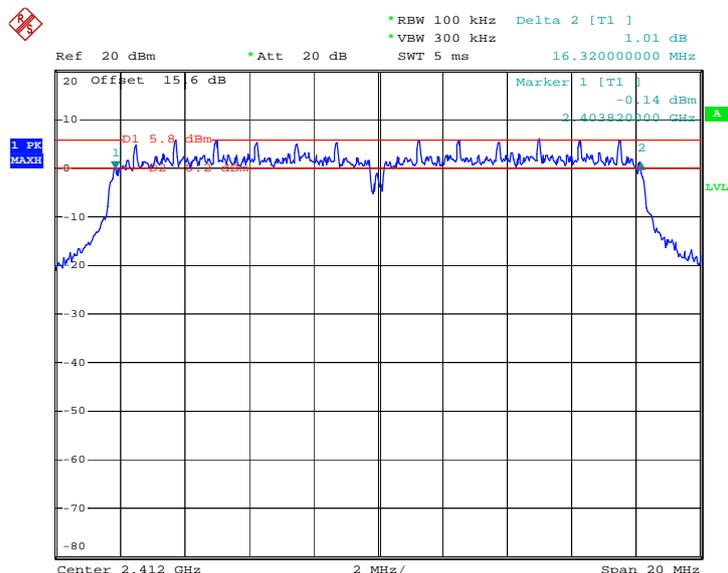
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Test Mode :	802.11g	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.32	0.5	Pass
06	2437	16.28	0.5	Pass
11	2462	15.72	0.5	Pass

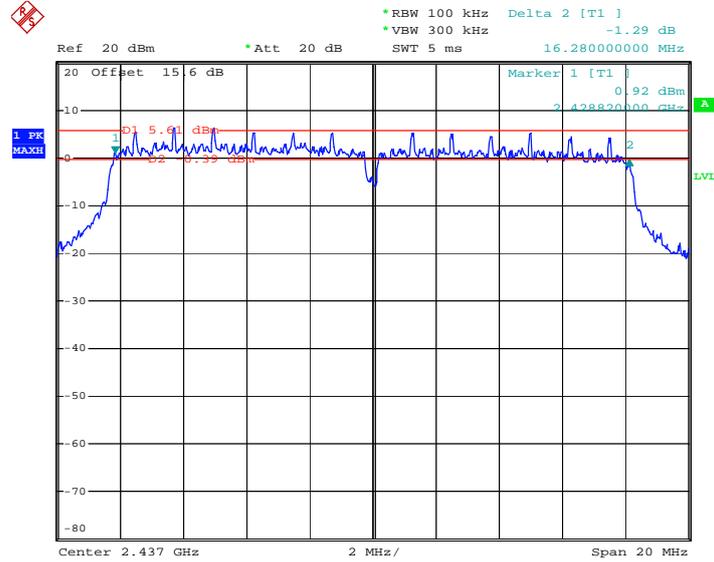
6 dB Bandwidth Plot on 802.11g Channel 01



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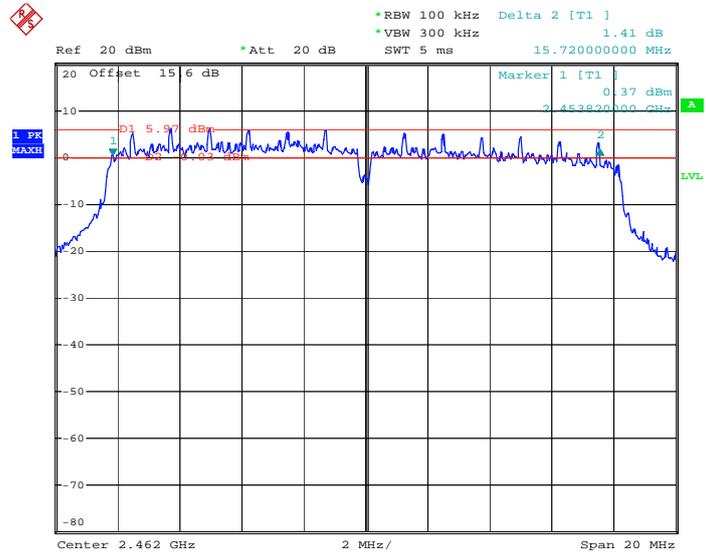


6 dB Bandwidth Plot on 802.11g Channel 06



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6 dB Bandwidth Plot on 802.11g Channel 11



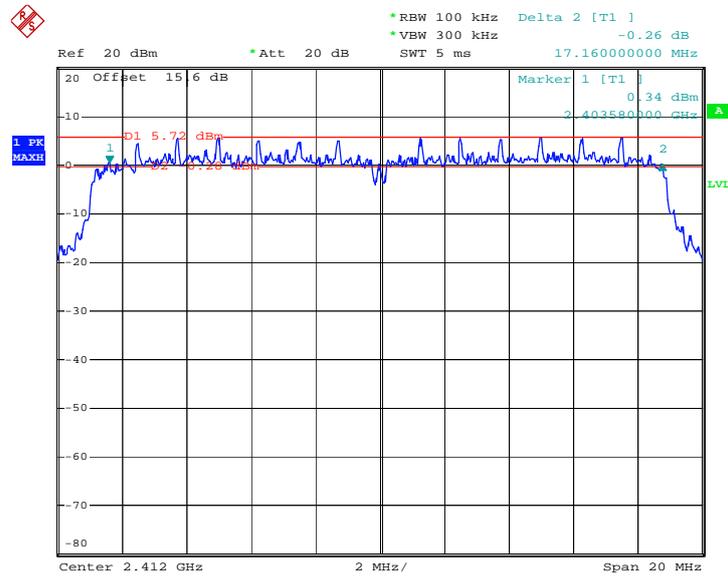
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Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.16	0.5	Pass
06	2437	17.12	0.5	Pass
11	2462	16.00	0.5	Pass

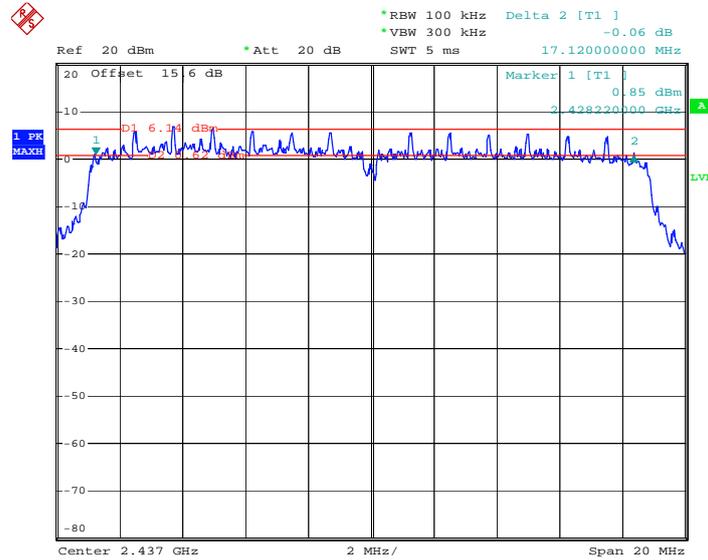
6 dB Bandwidth Plot on 802.11n HT20 Channel 01



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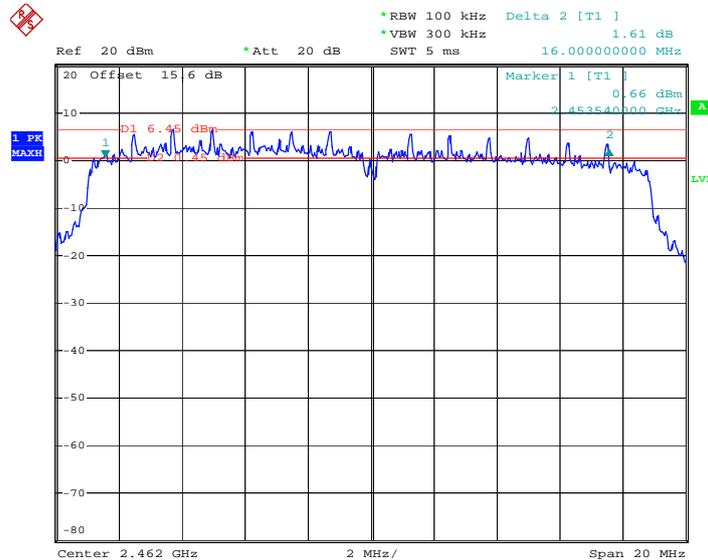


6 dB Bandwidth Plot on 802.11n HT20 Channel 06



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6 dB Bandwidth Plot on 802.11n HT20 Channel 11



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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.

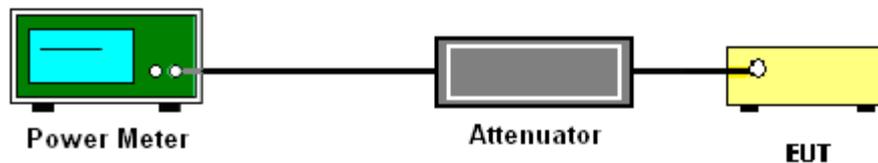
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

6. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
7. The RF output of EUT was connected to the power meter by a low loss cable
8. Set to the maximum power setting and enable the EUT transmit continuously.
9. 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 :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	20.34	30	Pass
06	2437	19.81	30	Pass
11	2462	20.41	30	Pass

Test Mode :	802.11g	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	23.96	30	Pass
06	2437	22.83	30	Pass
11	2462	23.91	30	Pass

Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	23.85	30	Pass
06	2437	23.01	30	Pass
11	2462	24.16	30	Pass



3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	802.11b	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)
01	2412	17.78
06	2437	17.42
11	2462	17.84

Test Mode :	802.11g	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)
01	2412	18.48
06	2437	17.69
11	2462	17.64

Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11n HT20 Average Output Power (dBm)
01	2412	17.57
06	2437	17.49
11	2462	17.22

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.

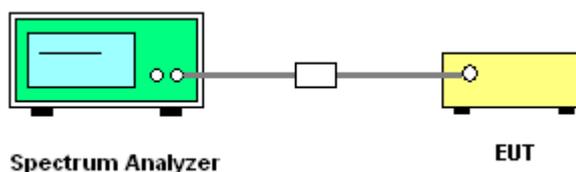
3.3.2 Measuring Instruments

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 :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	7.36	-6.34	8	Pass
06	2437	7.58	-6.71	8	Pass
11	2462	8.00	-3.39	8	Pass

Test Mode :	802.11g	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11g Power Density		Max. Limits (dBm)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	5.44	-6.78	8	Pass
06	2437	6.08	-10.25	8	Pass
11	2462	6.07	-9.77	8	Pass

Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11n HT20 Power Density		Max. Limits (dBm)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	5.70	-3.24	8	Pass
06	2437	6.43	-5.46	8	Pass
11	2462	6.48	-5.17	8	Pass

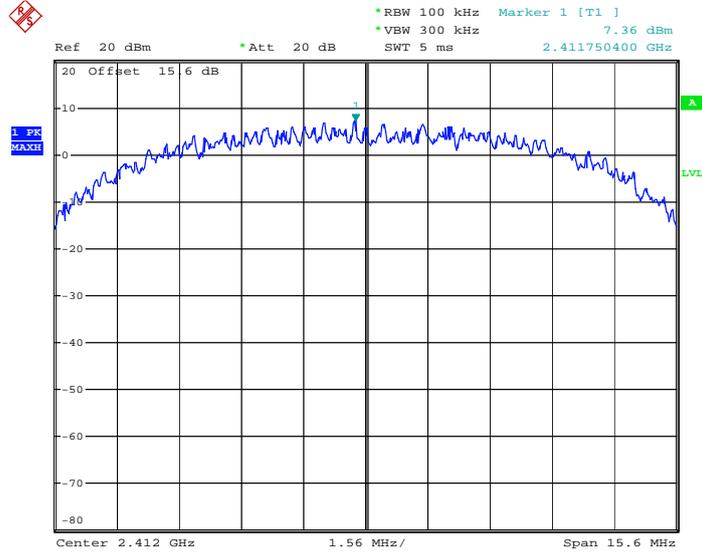
Note:

1. Measured power density (dBm) has offset with cable loss.
2. The Measured power density (dBm)/ 100KHz is also a reference level and used as 20dBc down for Conducted Band Edges and Conducted Spurious Emission limit line.



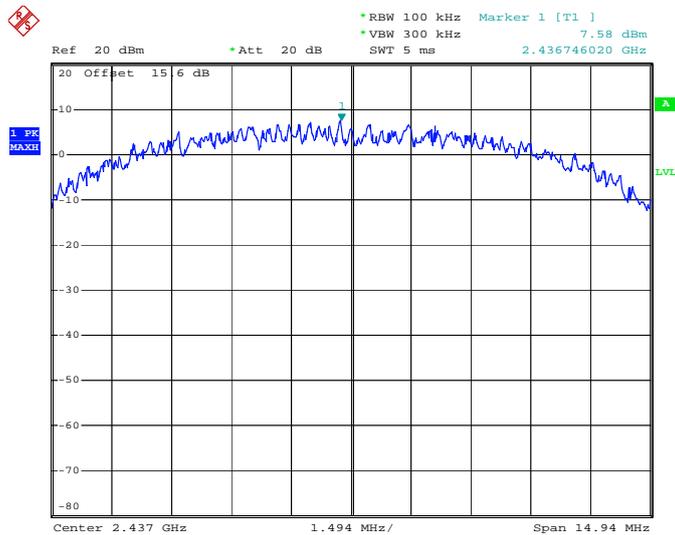
3.3.6 Test Result of Power Spectral Density Plots (100KHz)

PSD 100KHz Plot on 802.11b Channel 01



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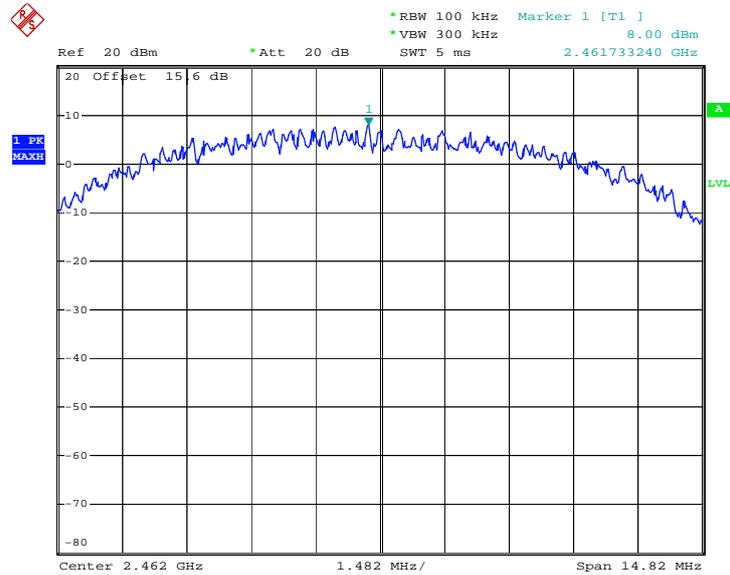
PSD 100KHz Plot on 802.11b Channel 06



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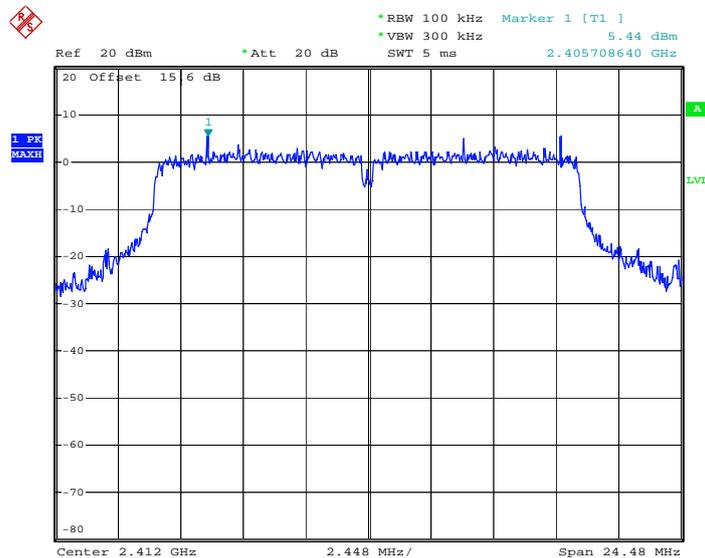


PSD 100KHz Plot on 802.11b Channel 11



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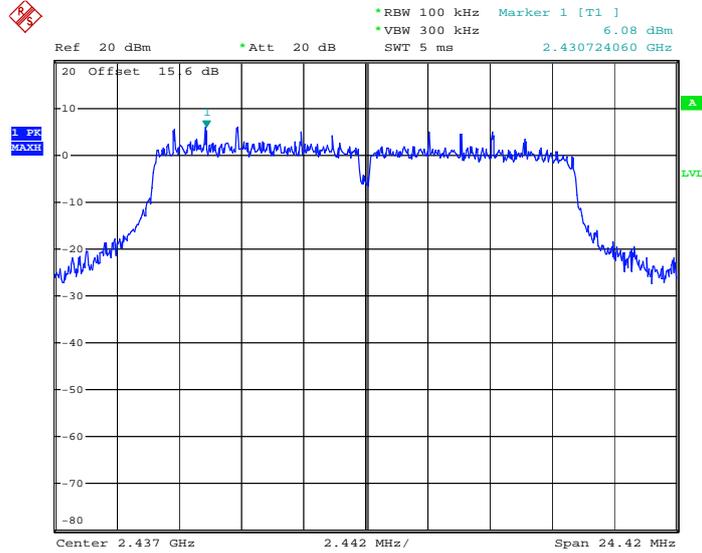
PSD 100KHz Plot on 802.11g Channel 01



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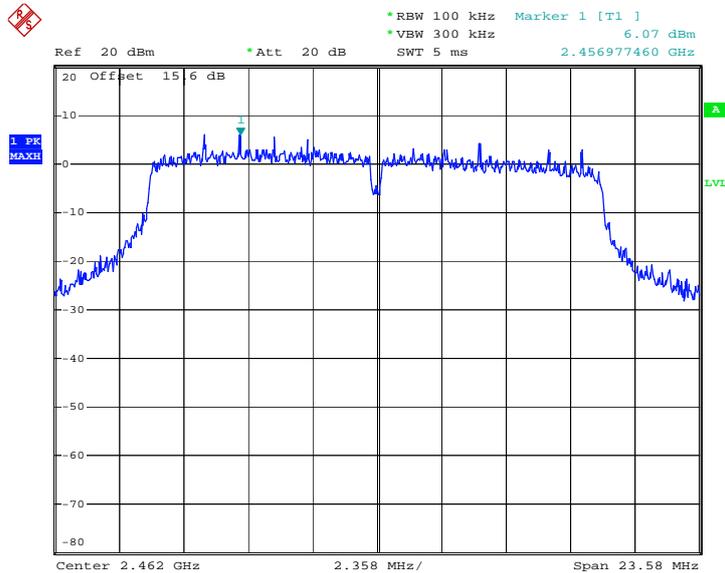


PSD 100KHz Plot on 802.11g Channel 06



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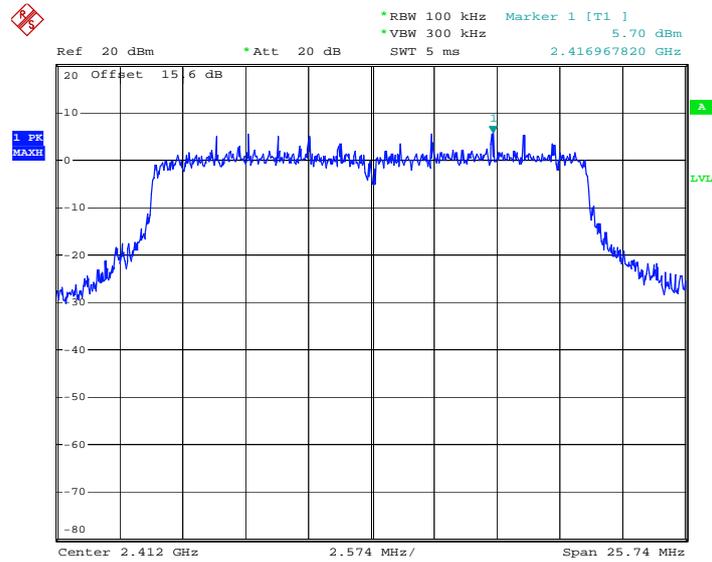
PSD 100KHz Plot on 802.11g Channel 11



Date: 21.NOV.2012 13:41:08

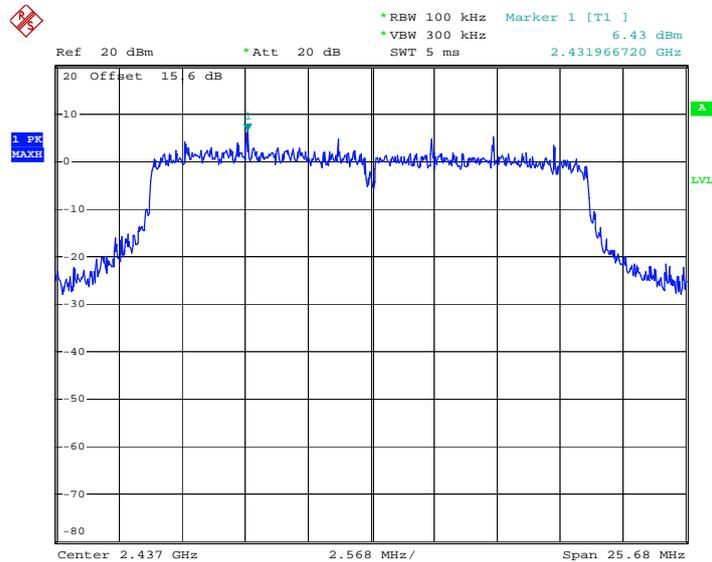


PSD 100KHz Plot on 802.11n HT20 Channel 01



Date: 21.NOV.2012 13:44:43

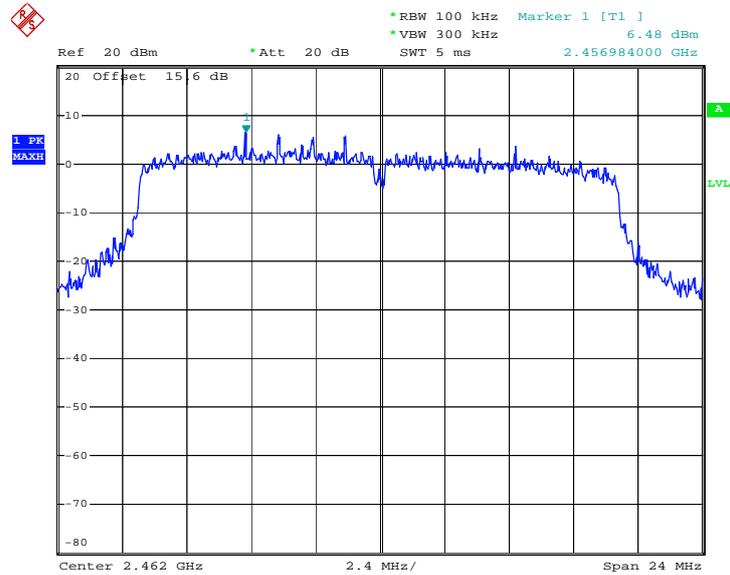
PSD 100KHz Plot on 802.11n HT20 Channel 06



Date: 21.NOV.2012 13:48:59



PSD 100KHz Plot on 802.11n HT20 Channel 11

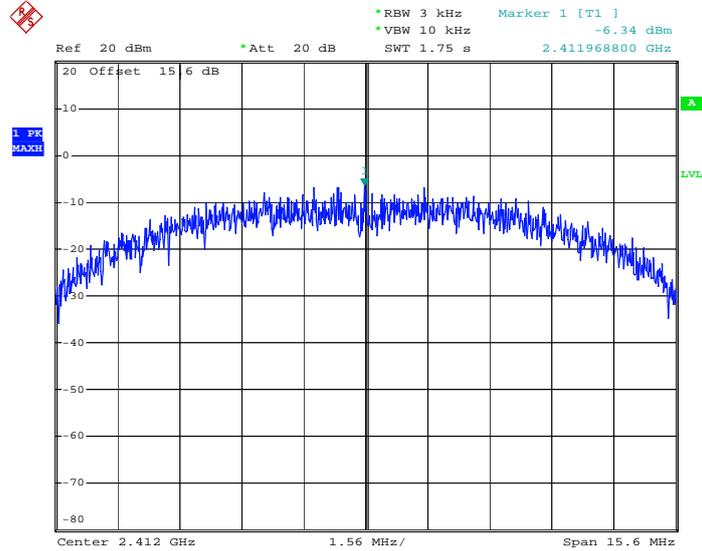


Date: 21.NOV.2012 13:51:47



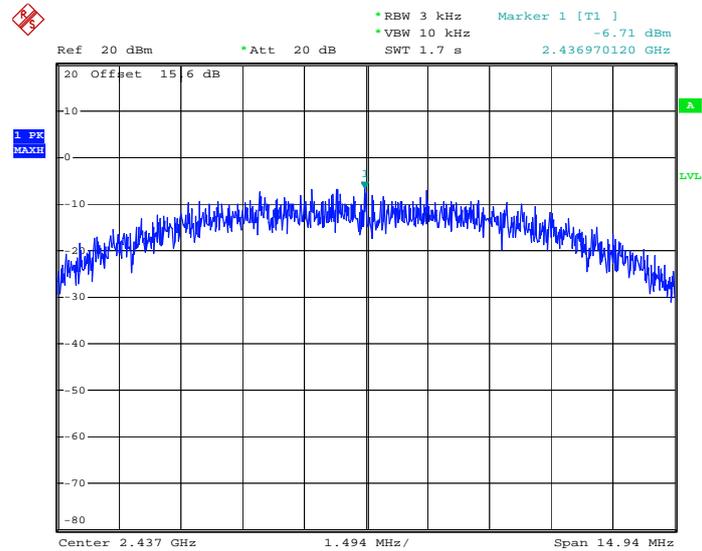
3.3.7 Test Result of Power Spectral Density Plots (3KHz)

PSD 3KHz Plot on 802.11b Channel 01



Date: 21.NOV.2012 13:27:48

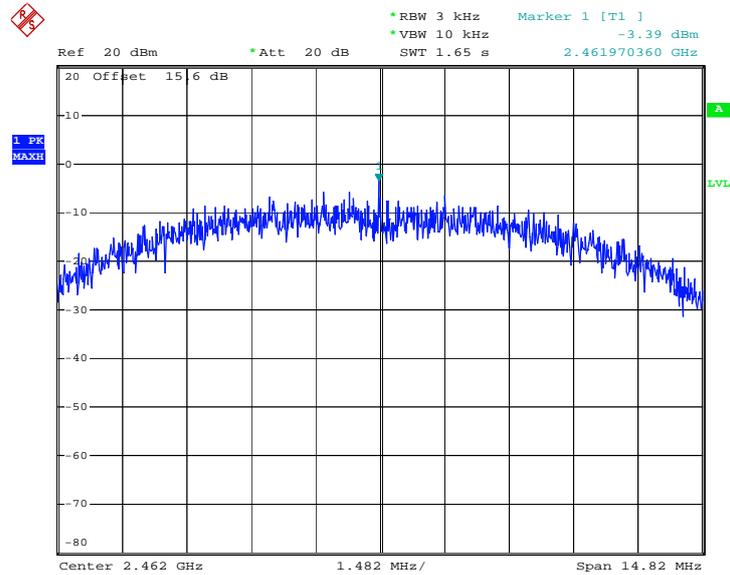
PSD 3KHz Plot on 802.11b Channel 06



Date: 21.NOV.2012 13:30:51

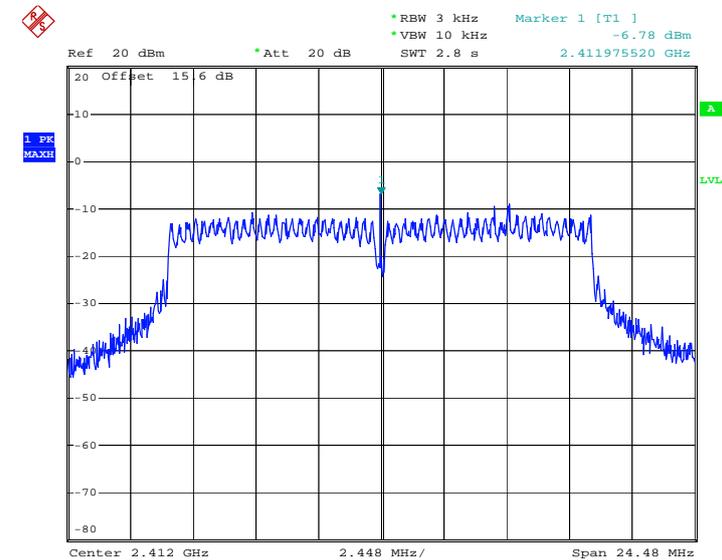


PSD 3KHz Plot on 802.11b Channel 11



Date: 21.NOV.2012 13:32:48

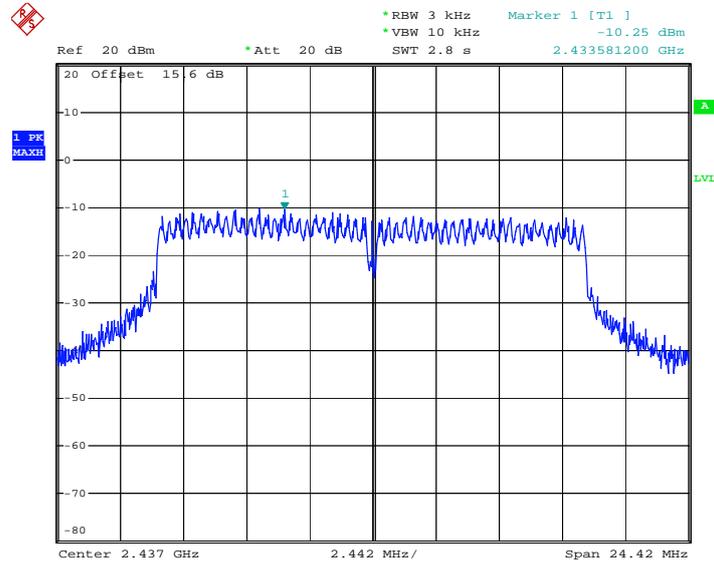
PSD 3KHz Plot on 802.11g Channel 01



Date: 21.NOV.2012 13:35:45

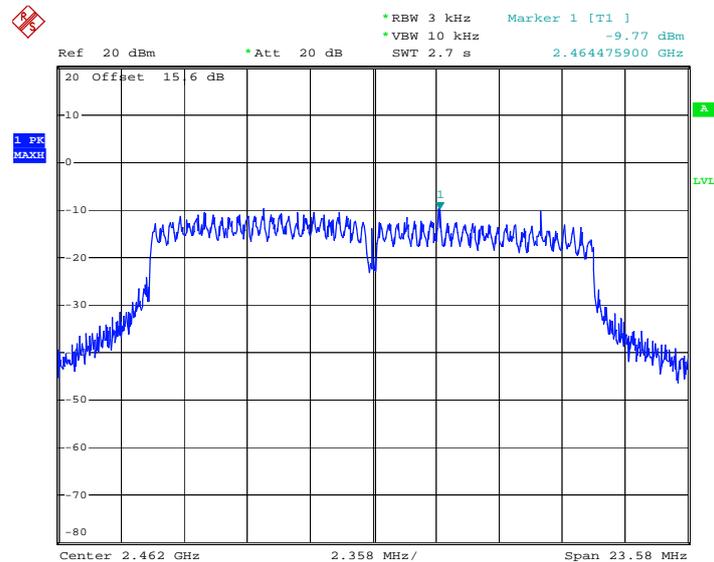


PSD 3KHz Plot on 802.11g Channel 06



Date: 21.NOV.2012 13:38:13

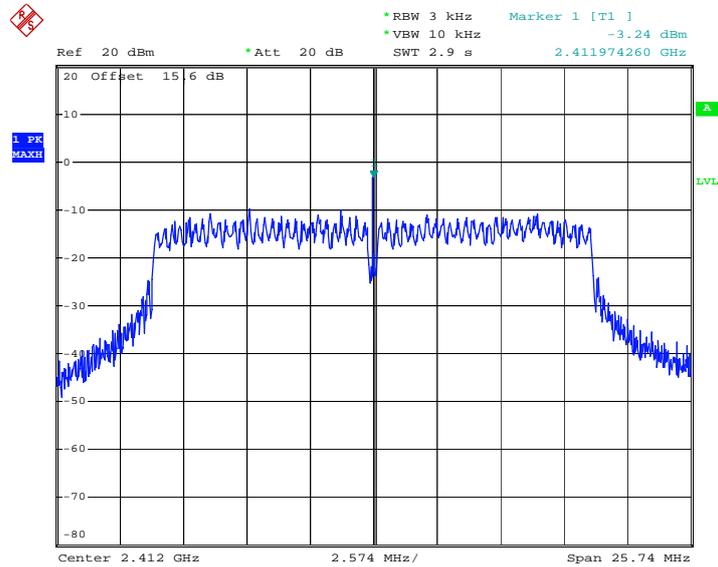
PSD 3KHz Plot on 802.11g Channel 11



Date: 21.NOV.2012 13:40:58

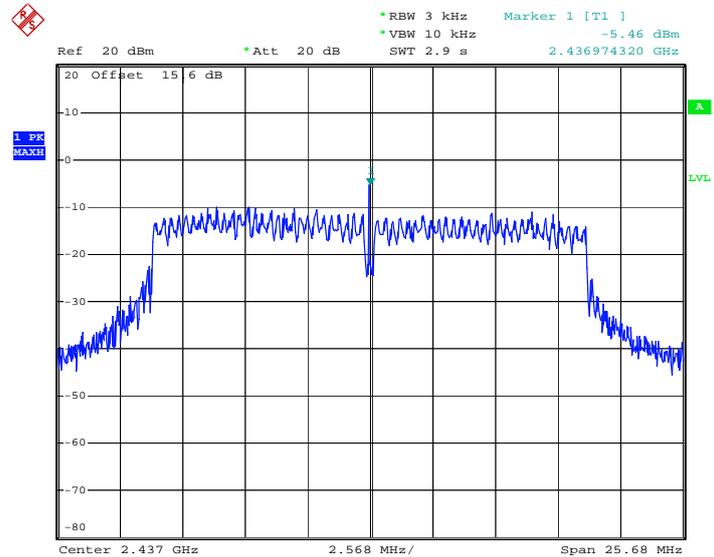


PSD 3KHz Plot on 802.11n HT20 Channel 01



Date: 21.NOV.2012 13:44:33

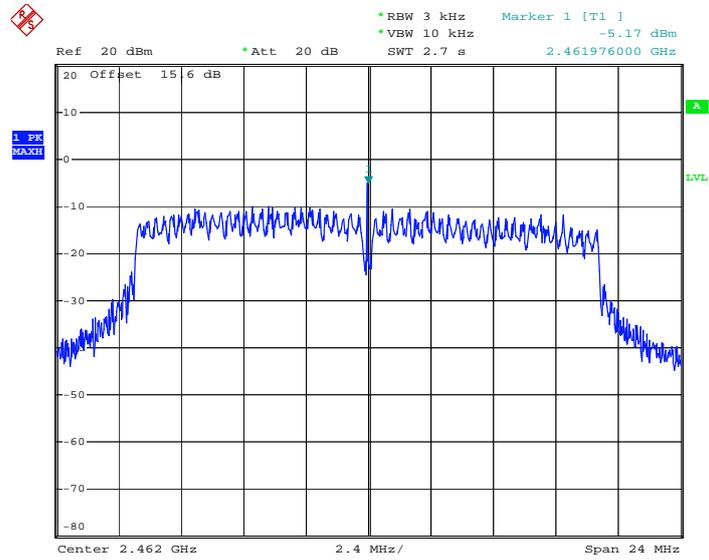
PSD 3KHz Plot on 802.11n HT20 Channel 06



Date: 21.NOV.2012 13:48:49



PSD 3KHz Plot on 802.11n HT20 Channel 11



Date: 21.NOV.2012 13:51:37

3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

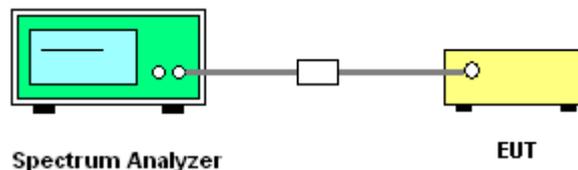
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. The testing follows 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.

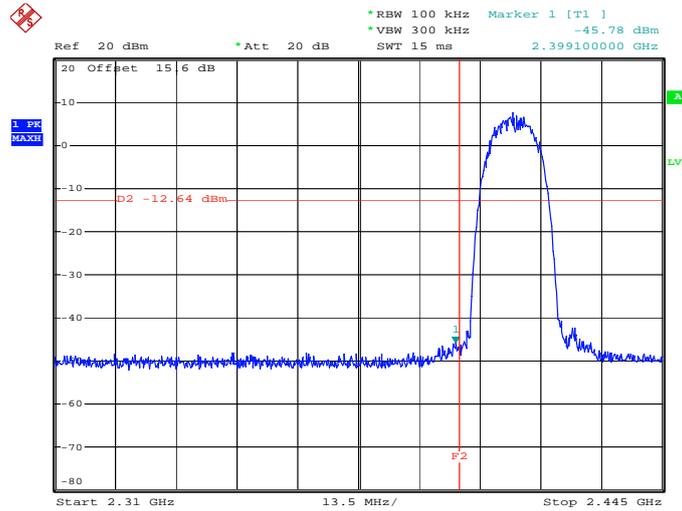
3.4.4 Test Setup



3.4.5 Test Plots of Conducted Band Edges

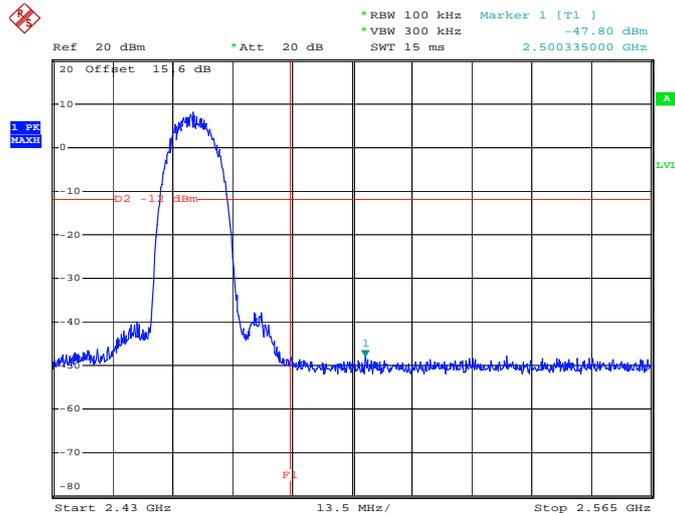
Test Mode :	802.11b	Temperature :	21~22°C
Test Band :	Low and High	Relative Humidity :	41~42%
Test Channel :	01 and 11	Test Engineer :	Cloud Peng

Low Band Edge Plot on 802.11b Channel 01



Date: 21.NOV.2012 13:28:14

High Band Edge Plot on 802.11b Channel 11

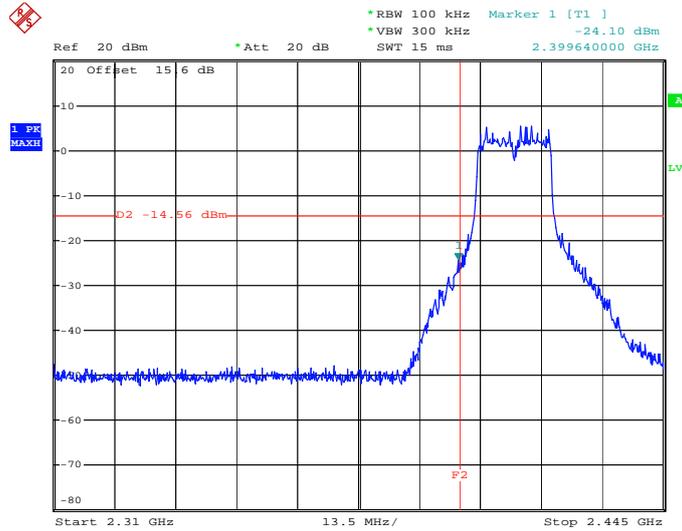


Date: 21.NOV.2012 13:33:14



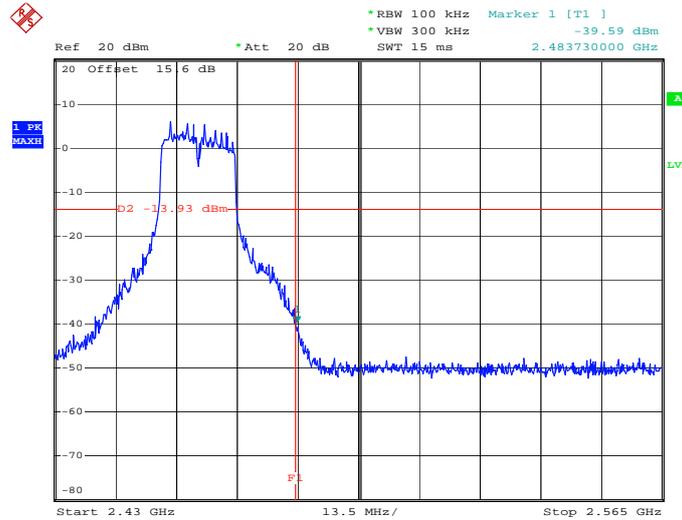
Test Mode :	802.11g	Temperature :	21~22°C
Test Band :	Low and High	Relative Humidity :	41~42%
Test Channel :	01 and 11	Test Engineer :	Cloud Peng

Low Band Edge Plot on 802.11g Channel 01



Date: 21.NOV.2012 13:36:11

High Band Edge Plot on 802.11g Channel 11

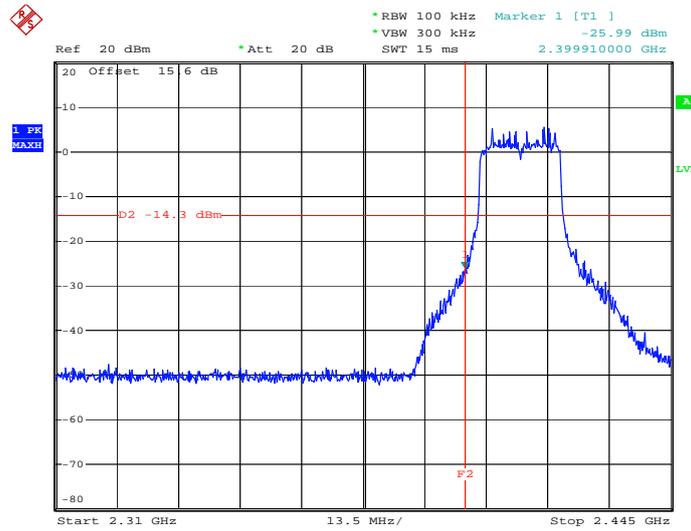


Date: 21.NOV.2012 13:41:24



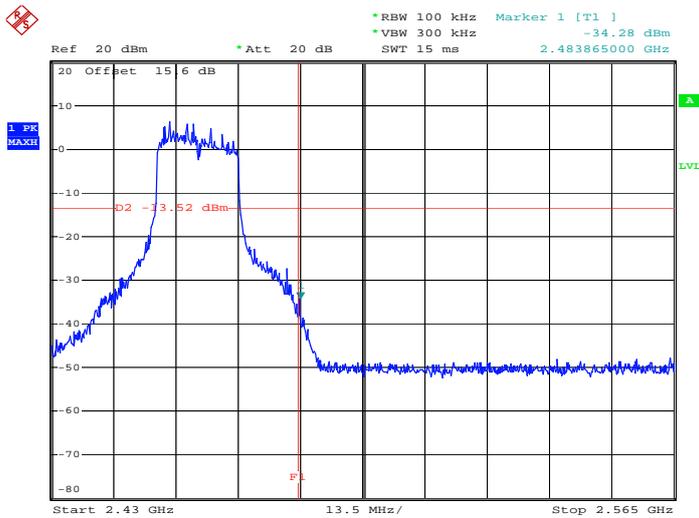
Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Band :	Low and High	Relative Humidity :	41~42%
Test Channel :	01 and 11	Test Engineer :	Cloud Peng

Low Band Edge Plot on 802.11n HT20 Channel 01



Date: 21.NOV.2012 13:44:59

High Band Edge Plot on 802.11n HT20 Channel 11



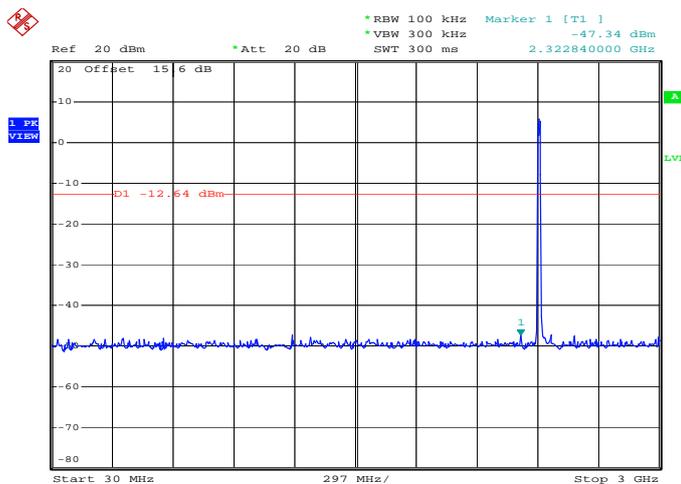
Date: 21.NOV.2012 13:52:03

3.4.6 Test Plots of Spurious Emission

Test Mode :	802.11b	Temperature :	21~22°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	41~42%
Test Channel :	01, 06, 11	Test Engineer :	Cloud Peng

802.11b 30 MHz~3 GHz

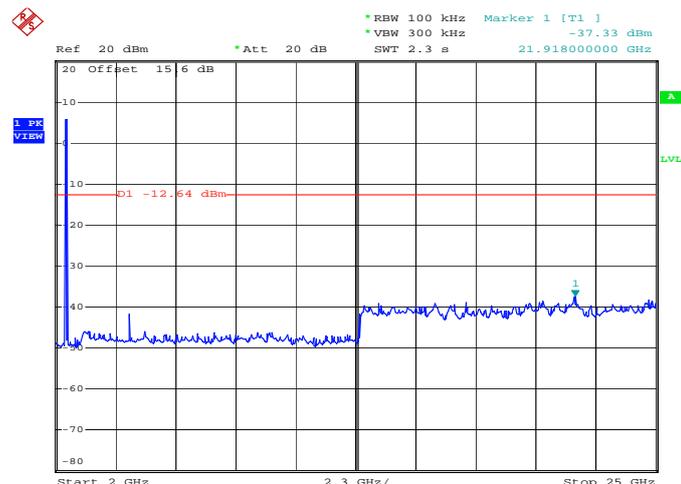
Conducted Spurious Emission Plot on Channel 01



Date: 21.NOV.2012 15:30:50

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 01

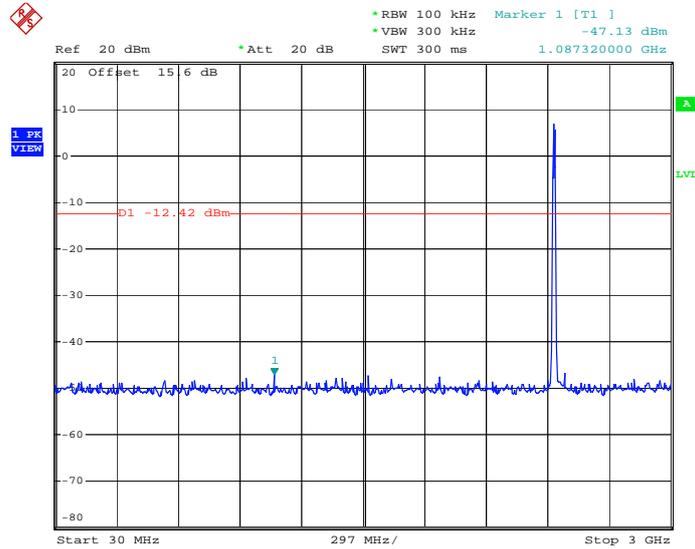


Date: 21.NOV.2012 15:32:21



802.11b 30 MHz~3 GHz

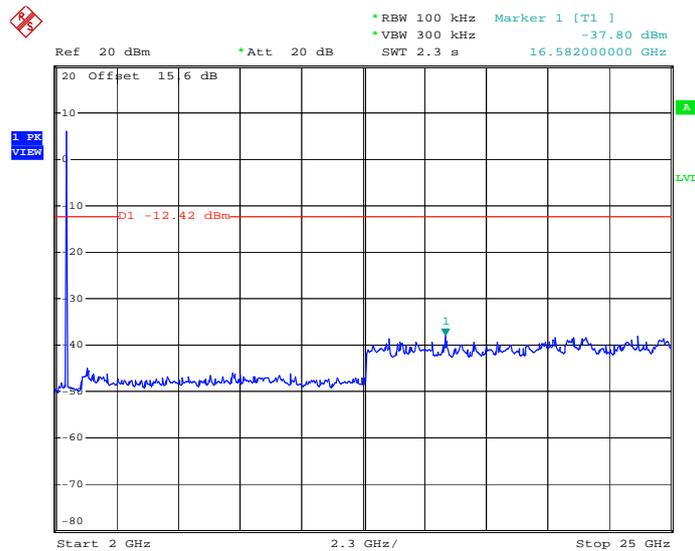
Conducted Spurious Emission Plot on Channel 06



Date: 21.NOV.2012 15:35:03

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 06

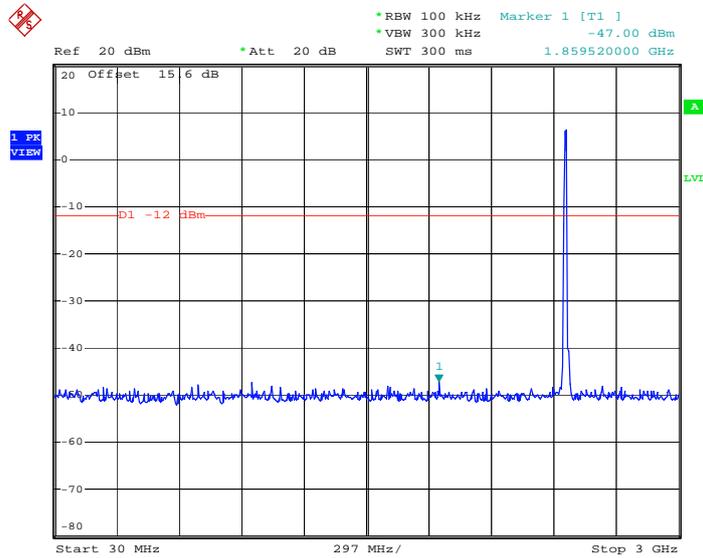


Date: 21.NOV.2012 15:33:28



802.11b 30 MHz~3 GHz

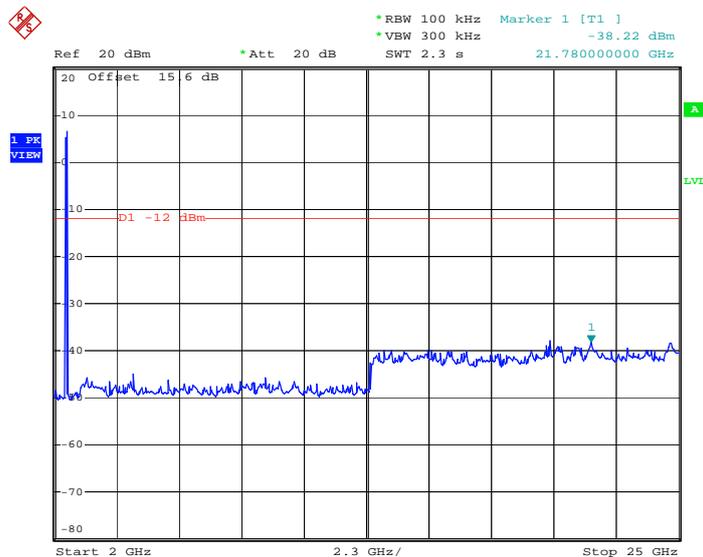
Conducted Spurious Emission Plot on Channel 11



Date: 21.NOV.2012 15:36:23

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



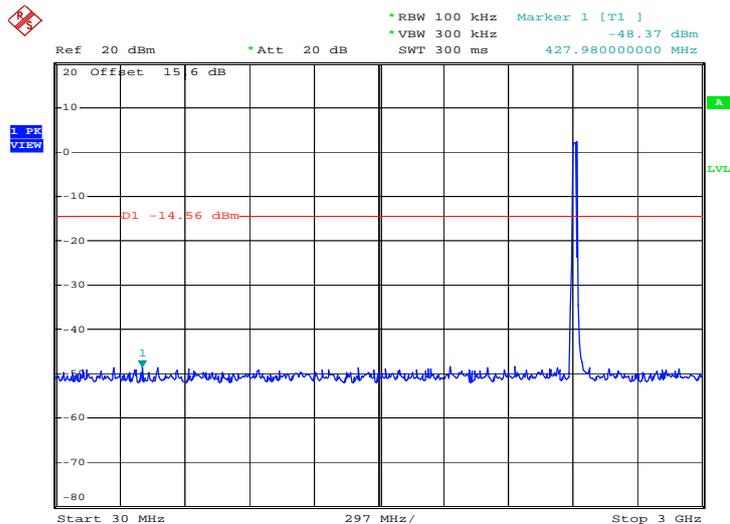
Date: 21.NOV.2012 15:37:51



Test Mode :	802.11g	Temperature :	21~22°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	41~42%
Test Channel :	01, 06, 11	Test Engineer :	Cloud Peng

802.11g 30 MHz~3 GHz

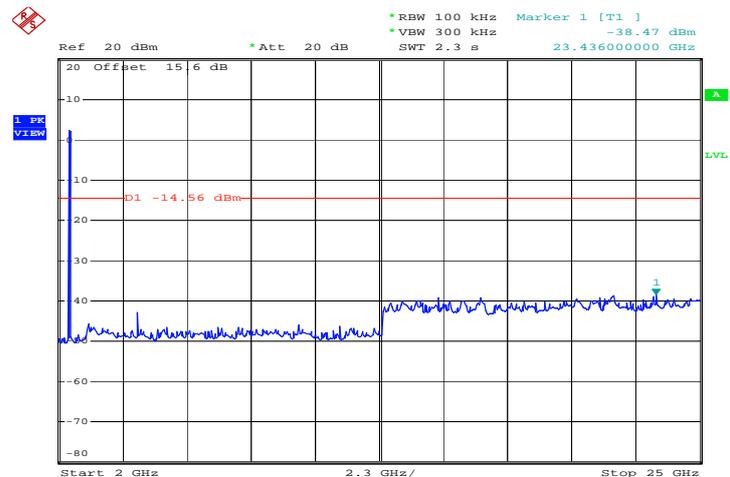
Conducted Spurious Emission Plot on Channel 01



Date: 21.NOV.2012 15:40:21

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 01

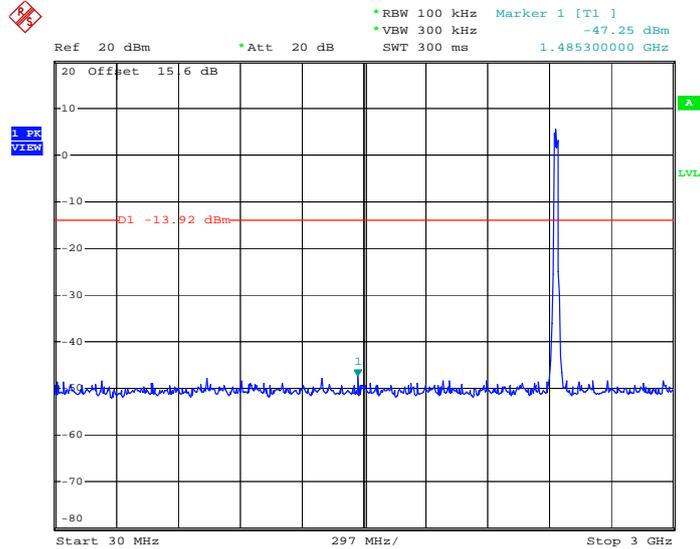


Date: 21.NOV.2012 15:39:47



802.11g 30 MHz~3 GHz

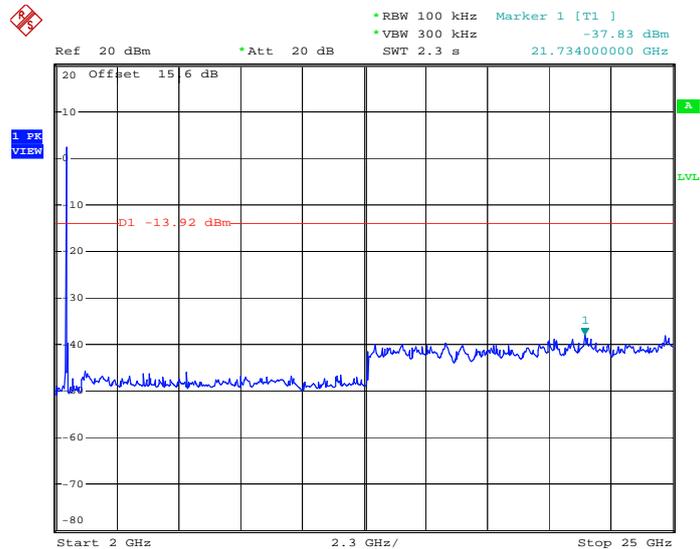
Conducted Spurious Emission Plot on Channel 06



Date: 21.NOV.2012 15:41:14

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 06

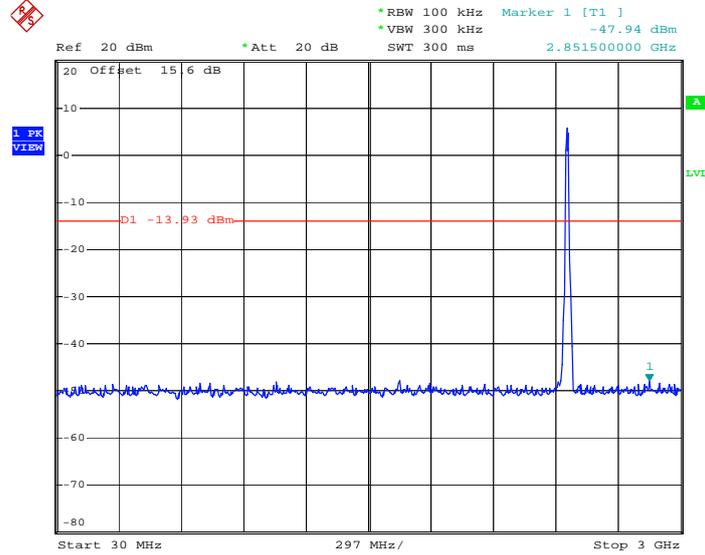


Date: 21.NOV.2012 15:42:14



802.11g 30 MHz~3 GHz

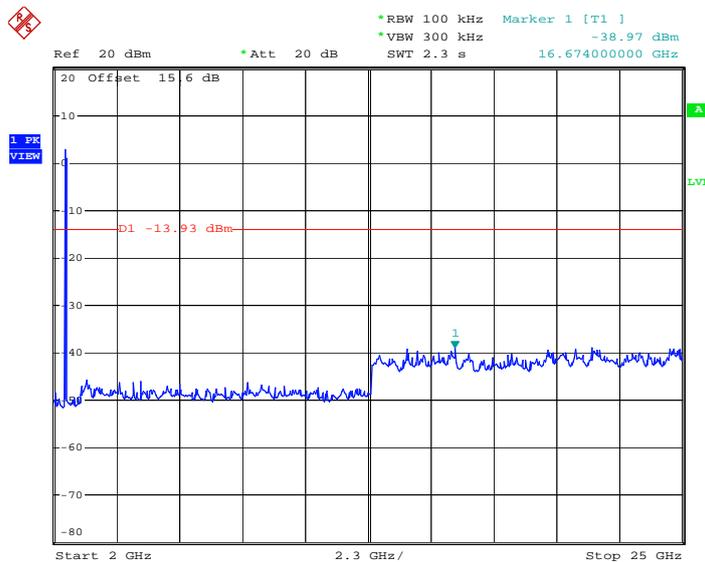
Conducted Spurious Emission Plot on Channel 11



Date: 21.NOV.2012 15:43:27

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



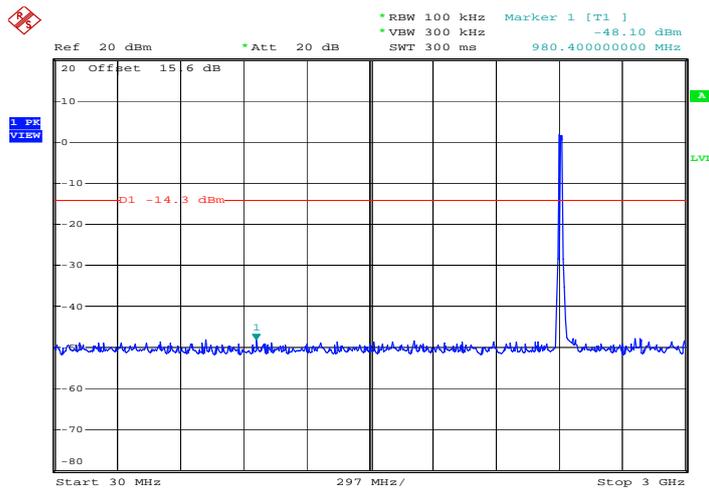
Date: 21.NOV.2012 15:42:55



Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	41~42%
Test Channel :	01, 06, 11	Test Engineer :	Cloud Peng

802.11n HT20 30 MHz~3 GHz

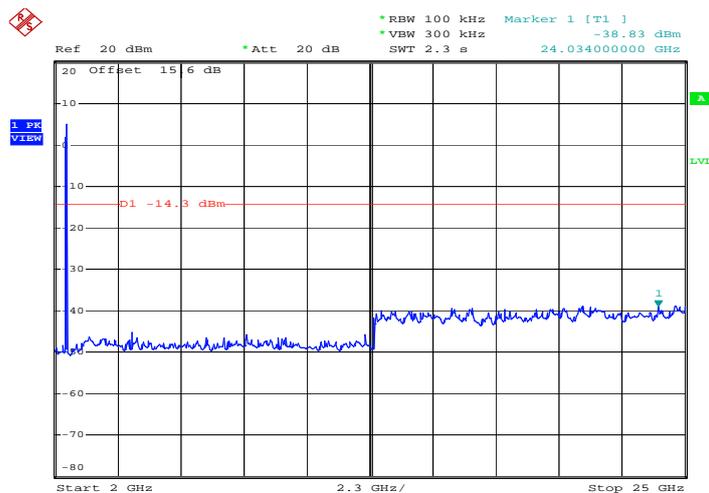
Conducted Spurious Emission Plot on Channel 01



Date: 21.NOV.2012 15:45:42

802.11n HT20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 01

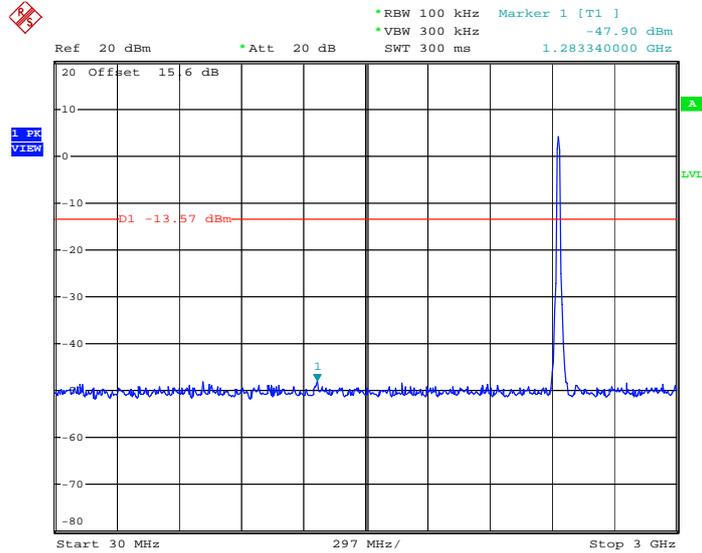


Date: 21.NOV.2012 15:46:17



802.11n HT20 30 MHz~3 GHz

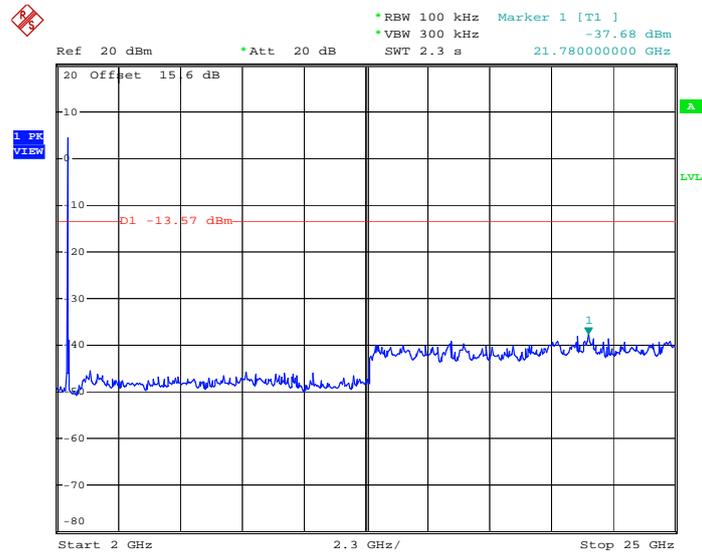
Conducted Spurious Emission Plot on Channel 06



Date: 21.NOV.2012 15:47:42

802.11n HT20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 06

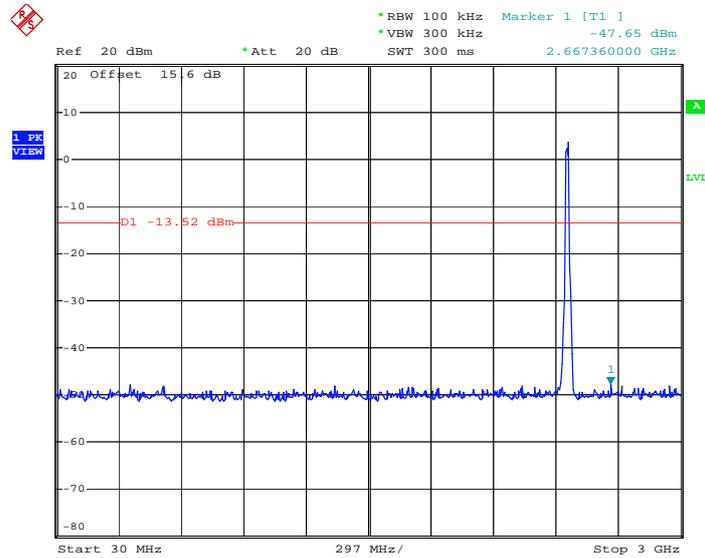


Date: 21.NOV.2012 15:47:08



802.11n HT20 30 MHz~3 GHz

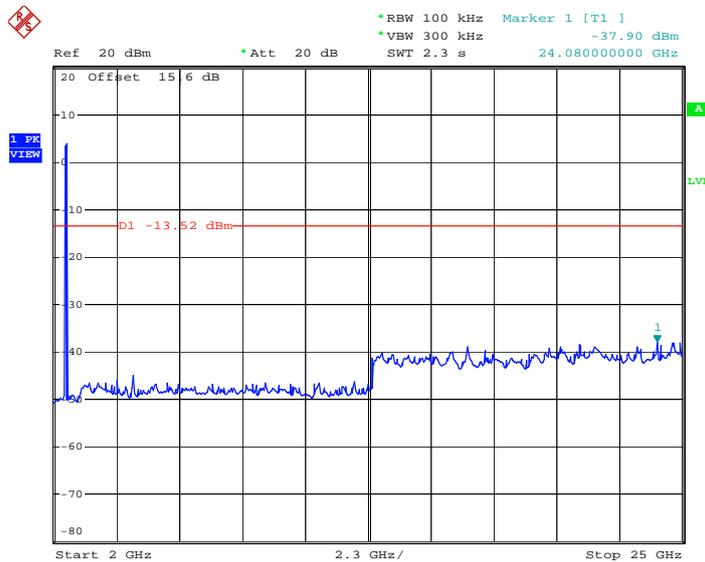
Conducted Spurious Emission Plot on Channel 11



Date: 21.NOV.2012 15:48:24

802.11n HT20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



Date: 21.NOV.2012 15:48:54



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

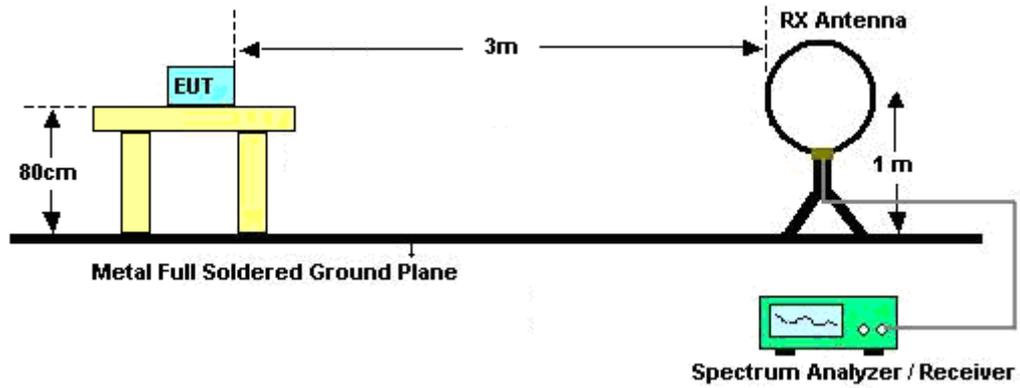
1. The testing follows the guidelines in ANSI C63. 10-2009
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better 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	97.01	1.300	0.77	1KHZ
802.11g	97.16	2.050	0.49	1KHZ
802.11n HT20	97.76	1.916	0.52	1KHZ

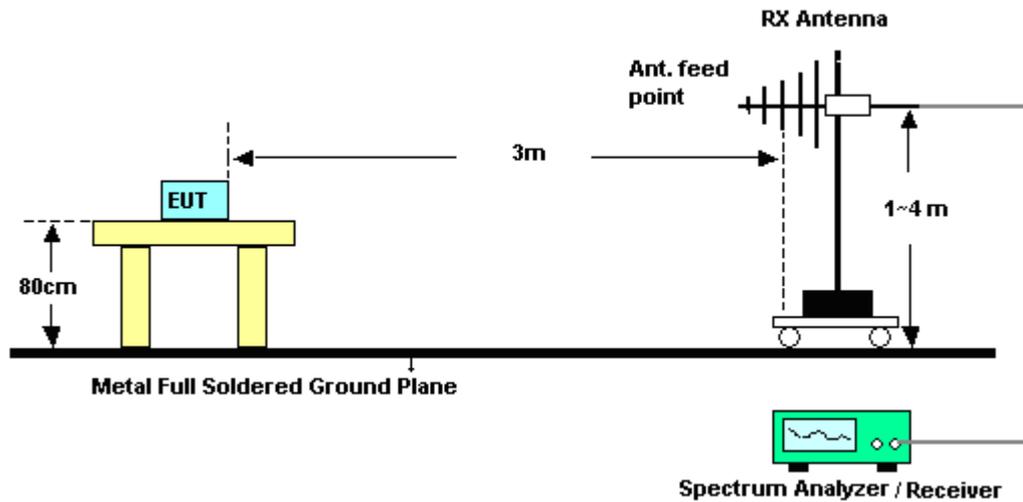
Note: For average measurement with duty cycle < 98%, use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.

3.5.4 Test Setup

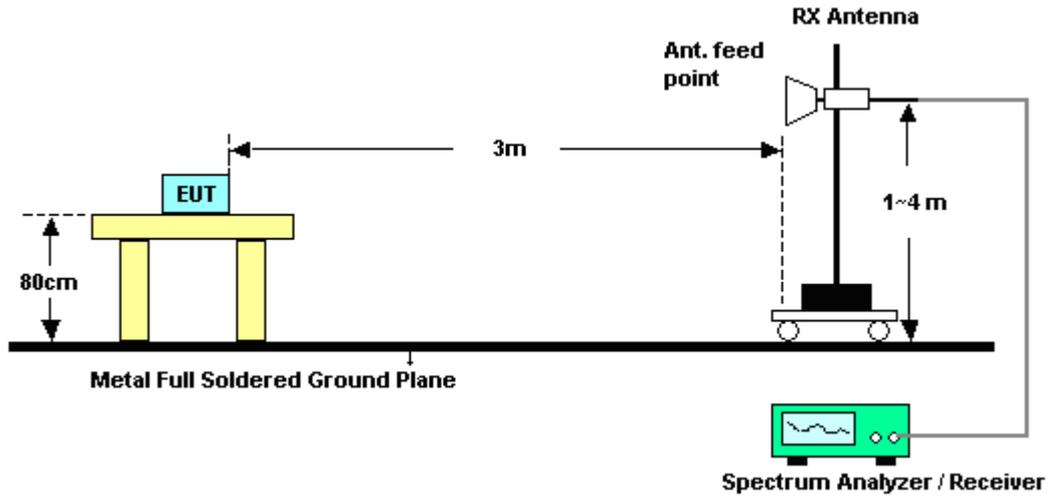
For radiated emissions below 30MHz



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 :	47~48%
Test Channel :	01	Test Engineer :	Chenmy 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
2384.16	52.29	-21.71	74	48.88	32.83	2.09	31.51	100	120	Peak
2381.19	39.64	-14.36	54	36.23	32.83	2.09	31.51	100	91	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
2381.28	51.94	-22.06	74	48.53	32.83	2.09	31.51	200	0	Peak
2389.02	39.82	-14.18	54	36.36	32.86	2.11	31.51	200	201	Average

Test Mode :	802.11b	Temperature :	21~22°C
Test Band :	High	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Chenmy 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
2485.68	56.68	-17.32	74	53.02	33.01	2.16	31.51	100	26	Peak
2483.52	43.22	-10.78	54	39.56	33.01	2.16	31.51	100	61	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
2483.7	58	-16	74	54.34	33.01	2.16	31.51	100	129	Peak
2483.58	42.96	-11.04	54	39.3	33.01	2.16	31.51	100	160	Average



Test Mode :	802.11g	Temperature :	21~22°C
Test Band :	Low	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Chenmy Cheng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	62.36	-11.64	74	58.9	32.86	2.11	31.51	100	181	Peak
2390	42.54	-11.46	54	39.08	32.86	2.11	31.51	100	109	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
2389.47	62.99	-11.01	74	59.53	32.86	2.11	31.51	100	151	Peak
2390	45.24	-8.76	54	41.78	32.86	2.11	31.51	100	96	Average

Test Mode :	802.11g	Temperature :	21~22°C
Test Band :	High	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Chenmy 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
2483.52	72.67	-1.33	74	69.01	33.01	2.16	31.51	100	168	Peak
2483.6	51.47	-2.53	54	47.81	33.01	2.16	31.51	100	166	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.68	69.28	-4.72	74	65.62	33.01	2.16	31.51	100	169	Peak
2483.5	49.58	-4.42	54	45.92	33.01	2.16	31.51	100	183	Average



Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Band :	Low	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Chenmy Cheng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	70.31	-3.69	74	66.85	32.86	2.11	31.51	106	178	Peak
2389.56	49.26	-4.74	54	45.8	32.86	2.11	31.51	106	178	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	68.36	-5.64	74	64.9	32.86	2.11	31.51	103	267	Peak
2390	45.89	-8.11	54	42.43	32.86	2.11	31.51	103	267	Average

Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Band :	High	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Chenmy 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
2483.66	71.72	-2.28	74	68.06	33.01	2.16	31.51	100	192	Peak
2483.56	47.56	-6.44	54	43.9	33.01	2.16	31.51	100	190	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	70.27	-3.73	74	66.61	33.01	2.16	31.51	100	186	Peak
2483.52	49.68	-4.32	54	46.02	33.01	2.16	31.51	100	183	Average



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

Test Mode :	802.11b	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.067	18.7	-21.3	40	32	16.55	0.24	30.09	-	-	Peak
173.205	18.92	-24.58	43.5	39.32	8.95	0.55	29.9	-	-	Peak
244.232	18.03	-27.97	46	35.45	11.75	0.66	29.83	-	-	Peak
414.722	21.97	-24.03	46	34.85	16.08	0.86	29.82	-	-	Peak
560.693	24.77	-21.23	46	34.91	18.52	1.01	29.67	-	-	Peak
942.131	26.17	-19.83	46	33.67	20.7	1.33	29.53	110	100	Peak
2412	105.03	-	-	96.95	32.89	4.24	29.05	107	155	Average
2412	112.97	-	-	104.89	32.89	4.24	29.05	107	155	Peak



Test Mode :	802.11b	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

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
31.731	18.81	-21.19	40	32.11	16.55	0.24	30.09	-	-	Peak
37.812	16.11	-23.89	40	32.23	13.7	0.24	30.06	-	-	Peak
211.527	14.37	-29.13	43.5	34.22	9.54	0.6	29.99	-	-	Peak
475.499	19.82	-26.18	46	31.9	16.75	0.93	29.76	-	-	Peak
737.071	25.93	-20.07	46	34.56	19.78	1.17	29.58	200	0	Peak
948.761	25.52	-20.48	46	33	20.73	1.33	29.54	-	-	Peak
2412	102.41	-	-	94.33	32.89	4.24	29.05	167	272	Average
2412	110.54	-	-	102.46	32.89	4.24	29.05	167	272	Peak



Test Mode :	802.11b	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.067	21.04	-18.96	40	34.34	16.55	0.24	30.09	100	20	Peak
38.346	17.61	-22.39	40	34.42	12.98	0.25	30.04	-	-	Peak
117.773	14.39	-29.11	43.5	32.11	11.8	0.45	29.97	-	-	Peak
287.99	17.81	-28.19	46	34.23	12.82	0.71	29.95	-	-	Peak
801.786	26.16	-19.84	46	34.63	19.87	1.25	29.59	-	-	Peak
948.761	26.94	-19.06	46	34.42	20.73	1.33	29.54	-	-	Peak
2437	106.02	-	-	97.85	32.95	4.25	29.03	100	70	Average
2437	114.9	-	-	106.73	32.95	4.25	29.03	100	70	Peak



Test Mode :	802.11b	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

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
30.424	21.08	-18.92	40	32.9	18	0.26	30.08	200	0	Peak
32.979	19.03	-20.97	40	32.84	16.04	0.24	30.09	-	-	Peak
115.321	15.35	-28.15	43.5	33.08	11.8	0.44	29.97	-	-	Peak
609.922	22.21	-23.79	46	32.12	18.64	1.07	29.62	-	-	Peak
737.071	24.27	-21.73	46	32.9	19.78	1.17	29.58	-	-	Peak
942.131	25.59	-20.41	46	33.09	20.7	1.33	29.53	-	-	Peak
2437	103.77	-	-	95.6	32.95	4.25	29.03	117	61	Average
2437	111.95	-	-	103.78	32.95	4.25	29.03	117	61	Peak



Test Mode :	802.11b	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

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
38.346	23.61	-16.39	40	40.42	12.98	0.25	30.04	-	-	Peak
315.481	25.55	-20.45	46	41.37	13.38	0.75	29.95	-	-	Peak
416.179	24.83	-21.17	46	37.71	16.08	0.86	29.82	-	-	Peak
533.832	30.68	-15.32	46	41.24	18.14	0.99	29.69	100	0	Peak
801.786	26.16	-19.84	46	34.63	19.87	1.25	29.59	-	-	Peak
948.761	26.94	-19.06	46	34.42	20.73	1.33	29.54	-	-	Peak
2462	105.37	-	-	97.13	32.98	4.27	29.01	100	173	Average
2462	114.68	-	-	106.44	32.98	4.27	29.01	100	173	Peak



Test Mode :	802.11b	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

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
30.962	20.58	-19.42	40	33.12	17.29	0.25	30.08	-	-	Peak
62.213	15.43	-24.57	40	39.97	5.27	0.32	30.13	-	-	Peak
125.446	21.12	-22.38	43.5	38.89	11.75	0.46	29.98	-	-	Peak
338.4	23.78	-22.22	46	38.69	14.23	0.8	29.94	-	-	Peak
472.176	24.17	-21.83	46	36.35	16.67	0.92	29.77	-	-	Peak
739.661	31.58	-14.42	46	40.17	19.81	1.17	29.57	200	0	Peak
2462	103.03	-	-	94.79	32.98	4.27	29.01	114	67	Average
2462	111.64	-	-	103.4	32.98	4.27	29.01	114	67	Peak



Test Mode :	802.11g	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

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
31.071	20.04	-19.96	40	32.58	17.29	0.25	30.08	-	-	Peak
36.127	16.84	-23.16	40	32.04	14.65	0.23	30.08	-	-	Peak
175.037	15.72	-27.78	43.5	36.26	8.8	0.55	29.89	-	-	Peak
272.278	20.25	-25.75	46	37.04	12.44	0.69	29.92	-	-	Peak
737.071	25.21	-20.79	46	33.84	19.78	1.17	29.58	-	-	Peak
948.761	28.34	-17.66	46	35.82	20.73	1.33	29.54	100	166	Peak
2412	101.61	-	-	94.72	32.89	4.77	30.77	106	170	Average
2412	113.2	-	-	106.31	32.89	4.77	30.77	106	170	Peak



Test Mode :	802.11g	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

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
30.638	20.24	-19.76	40	32.78	17.29	0.25	30.08	-	-	Peak
34.517	18.8	-21.2	40	33.56	15.1	0.23	30.09	-	-	Peak
107.51	14.08	-29.42	43.5	32.05	11.56	0.43	29.96	-	-	Peak
401.839	20.13	-25.87	46	33.11	16.01	0.84	29.83	-	-	Peak
737.071	29.74	-16.26	46	38.37	19.78	1.17	29.58	100	90	Peak
945.44	28.19	-17.81	46	35.69	20.71	1.33	29.54	-	-	Peak
2412	98.46	-	-	91.57	32.89	4.77	30.77	161	260	Average
2412	110.87	-	-	103.98	32.89	4.77	30.77	161	260	Peak



Test Mode :	802.11g	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

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
30.317	20.82	-19.18	40	32.64	18	0.26	30.08	-	-	Peak
39.024	16.45	-23.55	40	33.26	12.98	0.25	30.04	-	-	Peak
272.278	20.09	-25.91	46	36.88	12.44	0.69	29.92	-	-	Peak
545.183	21.43	-24.57	46	31.7	18.41	1	29.68	-	-	Peak
737.071	24.64	-21.36	46	33.27	19.78	1.17	29.58	-	-	Peak
938.833	29.15	-16.85	46	36.67	20.68	1.33	29.53	100	165	Peak
2437	103.27	-	-	96.26	32.95	4.82	30.76	112	180	Average
2437	114.77	-	-	107.76	32.95	4.82	30.76	112	180	Peak



Test Mode :	802.11g	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

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
31.62	21.31	-18.69	40	34.61	16.55	0.24	30.09	-	-	Peak
38.346	16.92	-23.08	40	33.73	12.98	0.25	30.04	-	-	Peak
125.886	14.78	-28.72	43.5	32.56	11.74	0.46	29.98	-	-	Peak
672.845	23.99	-22.01	46	33.49	19.08	1.11	29.69	-	-	Peak
737.071	28	-18	46	36.63	19.78	1.17	29.58	-	-	Peak
938.833	28.63	-17.37	46	36.15	20.68	1.33	29.53	100	0	Peak
2437	97.62	-	-	90.61	32.95	4.82	30.76	121	158	Average
2437	109.21	-	-	102.2	32.95	4.82	30.76	121	158	Peak



Test Mode :	802.11g	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

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
30.424	21.44	-18.56	40	33.26	18	0.26	30.08	-	-	Peak
36.254	16.71	-23.29	40	31.91	14.65	0.23	30.08	-	-	Peak
96.775	14.77	-28.73	43.5	34.31	10.03	0.4	29.97	-	-	Peak
272.278	19.61	-26.39	46	36.4	12.44	0.69	29.92	-	-	Peak
737.071	26.62	-19.38	46	35.25	19.78	1.17	29.58	-	-	Peak
938.833	29.06	-16.94	46	36.58	20.68	1.33	29.53	100	265	Peak
2462	97.5	-	-	90.42	32.98	4.85	30.75	153	272	Average
2462	109.38	-	-	102.3	32.98	4.85	30.75	153	272	Peak



Test Mode :	802.11g	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.067	20.42	-19.58	40	33.72	16.55	0.24	30.09	-	-	Peak
38.888	16.66	-23.34	40	33.47	12.98	0.25	30.04	-	-	Peak
126.329	14.7	-28.8	43.5	32.48	11.74	0.46	29.98	-	-	Peak
672.845	24.3	-21.7	46	33.8	19.08	1.11	29.69	-	-	Peak
737.071	29.53	-16.47	46	38.16	19.78	1.17	29.58	100	29	Peak
948.761	28.24	-17.76	46	35.72	20.73	1.33	29.54	-	-	Peak
2462	96.11	-	-	89.03	32.98	4.85	30.75	150	260	Average
2462	109.23	-	-	102.15	32.98	4.85	30.75	150	260	Peak



Test Mode :	802.11n-HT20	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

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
30.211	22.13	-17.87	40	33.95	18	0.26	30.08	100	196	Peak
34.276	18.05	-21.95	40	32.35	15.56	0.23	30.09	-	-	Peak
107.134	15.34	-28.16	43.5	33.31	11.56	0.43	29.96	-	-	Peak
178.758	14.74	-28.76	43.5	35.51	8.55	0.56	29.88	-	-	Peak
801.786	25	-21	46	33.47	19.87	1.25	29.59	-	-	Peak
948.761	26.62	-19.38	46	34.1	20.73	1.33	29.54	-	-	Peak
2412	99.33	-	-	92.44	32.89	4.77	30.77	111	173	Average
2412	110.41	-	-	103.52	32.89	4.77	30.77	111	173	Peak



Test Mode :	802.11n-HT20	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

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
30.317	22.61	-17.39	40	34.43	18	0.26	30.08	100	69	Peak
33.095	20.11	-19.89	40	33.92	16.04	0.24	30.09	-	-	Peak
126.329	14.76	-28.74	43.5	32.54	11.74	0.46	29.98	-	-	Peak
607.787	23.2	-22.8	46	33.12	18.63	1.07	29.62	-	-	Peak
737.071	25.45	-20.55	46	34.08	19.78	1.17	29.58	-	-	Peak
945.44	26.34	-19.66	46	33.84	20.71	1.33	29.54	-	-	Peak
2412	98.32	-	-	91.43	32.89	4.77	30.77	158	256	Average
2412	109.4	-	-	102.51	32.89	4.77	30.77	158	256	Peak



Test Mode :	802.11n-HT20	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

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
31.62	19.97	-20.03	40	33.27	16.55	0.24	30.09	-	-	Peak
38.752	16.59	-23.41	40	33.4	12.98	0.25	30.04	-	-	Peak
115.321	15.73	-27.77	43.5	33.46	11.8	0.44	29.97	-	-	Peak
416.179	22.62	-23.38	46	35.5	16.08	0.86	29.82	-	-	Peak
801.786	26.37	-19.63	46	34.84	19.87	1.25	29.59	-	-	Peak
942.131	28.84	-17.16	46	36.34	20.7	1.33	29.53	100	293	Peak
2437	92.62	-	-	85.61	32.95	4.82	30.76	100	271	Average
2437	102.37	-	-	95.36	32.95	4.82	30.76	100	271	Peak



Test Mode :	802.11n-HT20	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

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
30.962	21.04	-18.96	40	33.58	17.29	0.25	30.08	100	218	Peak
37.68	17.22	-22.78	40	33.34	13.7	0.24	30.06	-	-	Peak
105.642	14.98	-28.52	43.5	33.23	11.29	0.42	29.96	-	-	Peak
672.845	23.64	-22.36	46	33.14	19.08	1.11	29.69	-	-	Peak
737.071	24.97	-21.03	46	33.6	19.78	1.17	29.58	-	-	Peak
948.761	26.78	-19.22	46	34.26	20.73	1.33	29.54	-	-	Peak
2437	98	-	-	90.99	32.95	4.82	30.76	100	257	Average
2437	109.08	-	-	102.07	32.95	4.82	30.76	100	257	Peak



Test Mode :	802.11n-HT20	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

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
31.18	19.69	-20.31	40	32.23	17.29	0.25	30.08	-	-	Peak
38.888	17.91	-22.09	40	34.72	12.98	0.25	30.04	-	-	Peak
528.246	21.38	-24.62	46	32.11	17.99	0.98	29.7	-	-	Peak
737.071	23.26	-22.74	46	31.89	19.78	1.17	29.58	-	-	Peak
801.786	30.29	-15.71	46	38.76	19.87	1.25	29.59	100	102	Peak
942.131	27.42	-18.58	46	34.92	20.7	1.33	29.53	-	-	Peak
2462	98.74	-	-	91.66	32.98	4.85	30.75	100	186	Average
2462	110.02	-	-	102.94	32.98	4.85	30.75	100	186	Peak



Test Mode :	802.11n-HT20	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

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
30.962	22.25	-17.75	40	34.79	17.29	0.25	30.08	100	81	Peak
57.191	11.39	-28.61	40	35.48	5.75	0.3	30.14	-	-	Peak
124.569	14.69	-28.81	43.5	32.45	11.76	0.46	29.98	-	-	Peak
607.787	21.87	-24.13	46	31.79	18.63	1.07	29.62	-	-	Peak
737.071	23.53	-22.47	46	32.16	19.78	1.17	29.58	-	-	Peak
948.761	26.29	-19.71	46	33.77	20.73	1.33	29.54	-	-	Peak
2462	97.3	-	-	90.22	32.98	4.85	30.75	151	260	Average
2462	108.63	-	-	101.55	32.98	4.85	30.75	151	260	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.

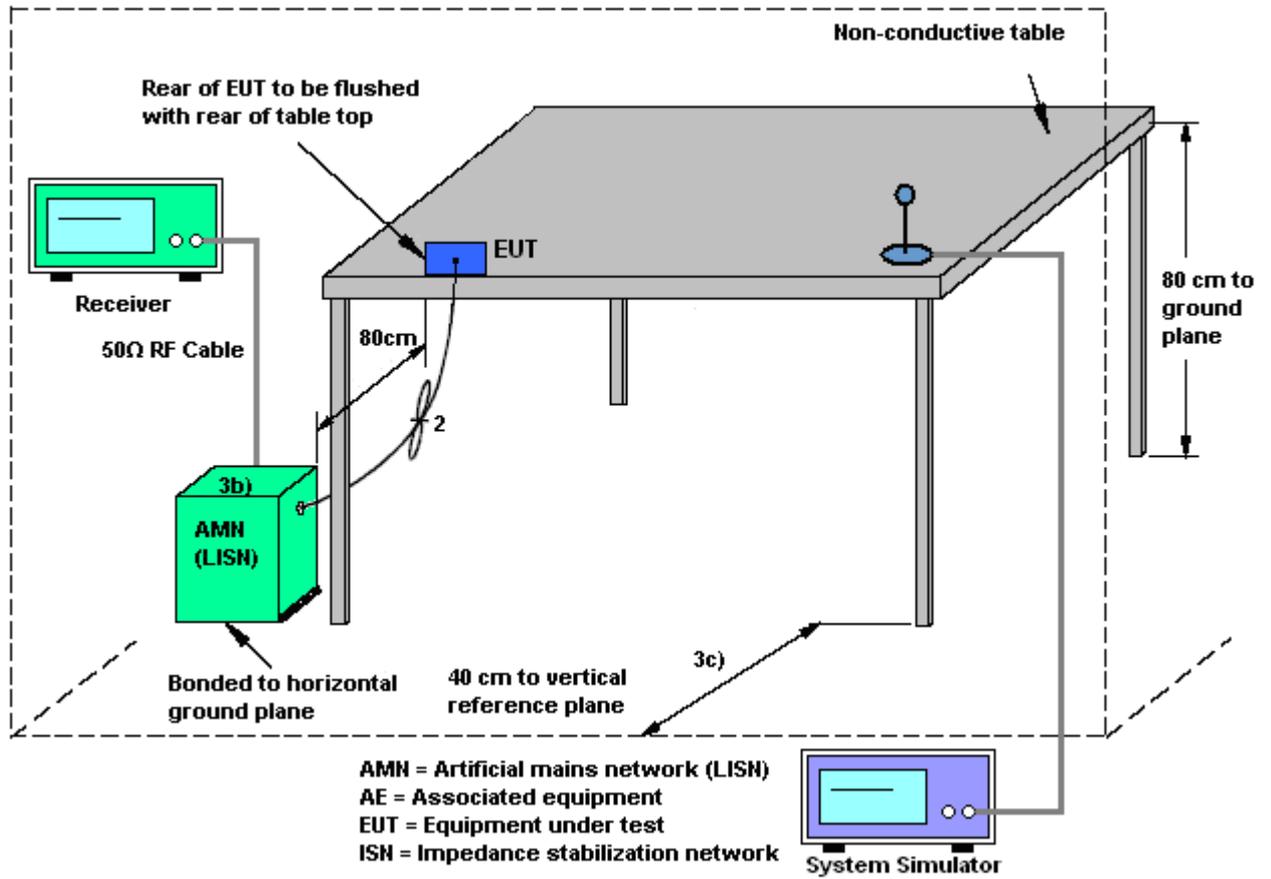
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

1. The testing follows the guidelines in FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02
2. ANSI C63.4-2003 and ANSI C63.10-2009.
3. 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.
4. Connect EUT to the power mains through a line impedance stabilization network (LISN).
5. All the support units are connecting to the other LISN.
6. The LISN provides 50 ohm coupling impedance for the measuring instrument.
7. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
8. Both sides of AC line were checked for maximum conducted interference.
9. The frequency range from 150 KHz to 30 MHz was searched.
10. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

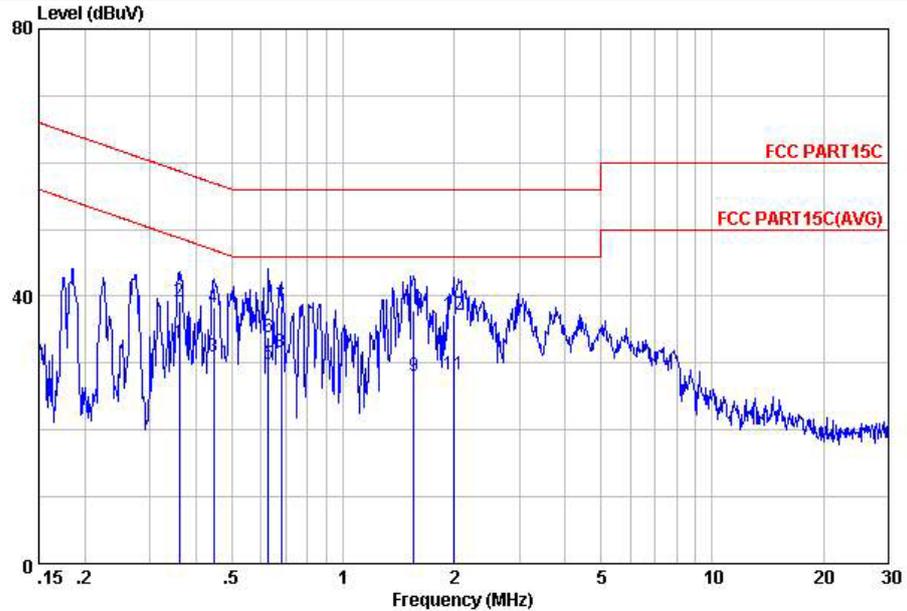
3.6.4 Test Setup





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 (GRPS 8) Idle + WLAN Link + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

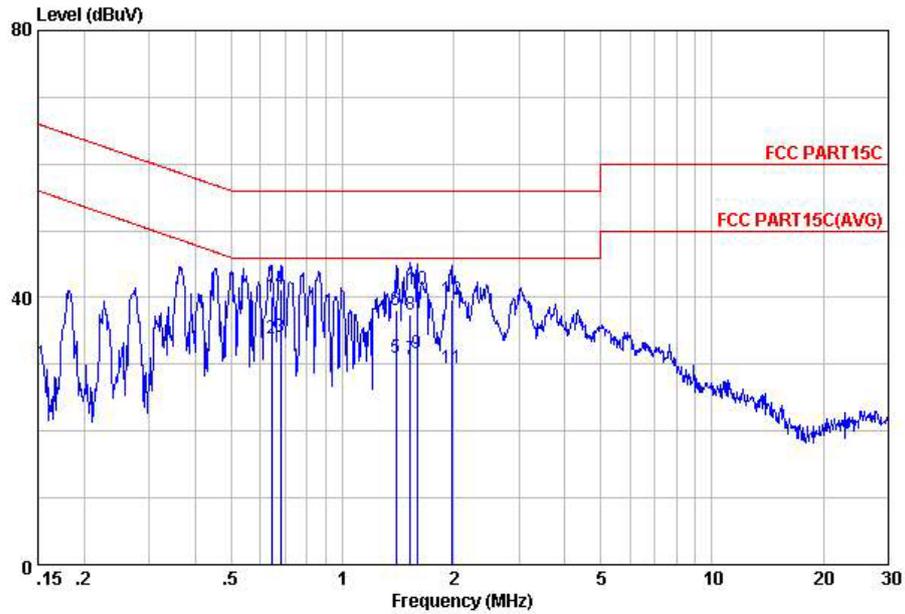


Site : C001-KS
 Condition: FCC PART15C LISN-111230 LINE
 Project : (FR) 292604

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.36	33.03	-15.71	48.74	22.50	-0.08	10.61	Average
2	0.36	39.13	-19.61	58.74	28.60	-0.08	10.61	QP
3	0.45	30.94	-15.99	46.93	20.40	-0.08	10.62	Average
4	0.45	38.24	-18.69	56.93	27.70	-0.08	10.62	QP
5	0.63	29.95	-16.05	46.00	19.41	-0.09	10.63	Average
6	0.63	33.95	-22.05	56.00	23.41	-0.09	10.63	QP
7	0.68	38.46	-17.54	56.00	27.91	-0.09	10.64	QP
8	0.68	31.66	-14.34	46.00	21.11	-0.09	10.64	Average
9	1.55	28.18	-17.82	46.00	17.60	-0.11	10.69	Average
10	1.55	37.78	-18.22	56.00	27.20	-0.11	10.69	QP
11	2.00	28.19	-17.81	46.00	17.60	-0.11	10.70	Average
12	2.00	37.29	-18.71	56.00	26.70	-0.11	10.70	QP



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 (GRPS 8) Idle + WLAN Link + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
 Condition: FCC PART15C LISN-111230 NEUTRAL
 Project : (FR) 292604

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.64	40.06	-15.94	56.00	29.50	-0.08	10.64	QP
2	0.64	33.86	-12.14	46.00	23.30	-0.08	10.64	Average
3	0.68	34.16	-11.84	46.00	23.60	-0.08	10.64	Average
4	0.68	41.26	-14.74	56.00	30.70	-0.08	10.64	QP
5	1.40	31.07	-14.93	46.00	20.50	-0.10	10.67	Average
6	1.40	38.07	-17.93	56.00	27.50	-0.10	10.67	QP
7	1.53	30.68	-15.32	46.00	20.10	-0.10	10.68	Average
8	1.53	37.48	-18.52	56.00	26.90	-0.10	10.68	QP
9	1.59	31.58	-14.42	46.00	20.99	-0.10	10.69	Average
10	1.59	41.18	-14.82	56.00	30.59	-0.10	10.69	QP
11	1.97	29.49	-16.51	46.00	18.90	-0.11	10.70	Average
12	1.97	39.59	-16.41	56.00	29.00	-0.11	10.70	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. 30, 2011	Oct. 11, 2012~ Nov. 21, 2012	Dec. 29, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 22, 2012	Oct. 11, 2012~ Nov. 21, 2012	Aug. 21, 2013	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 22, 2012	Oct. 11, 2012~ Nov. 21, 2012	Aug. 21, 2013	Conducted (TH01-KS)
DC Power Supply	GWINSTEK	GPS-3030D	E1884515	N/A	Aug. 22, 2012	Oct. 11, 2012~ Nov. 21, 2012	Aug. 21, 2013	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 08, 2012	Nov. 21, 2012	Nov. 07, 2013	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Nov. 21, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Nov. 21, 2012	Dec. 07, 2012	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/ 001	9 kHz~30 MHz	Jul. 03, 2012	Nov. 21, 2012	Jul. 02, 2013	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 06, 2012	Nov. 21, 2012	Jan. 05, 2013	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 30, 2011	Nov. 21, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 30, 2011	Nov. 21, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz~18GHz	Nov. 06, 2012	Nov. 21, 2012	Nov. 05, 2013	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Oct. 10, 2012	Nov. 21, 2012	Oct. 09, 2013	Radiation (03CH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 01, 2012	Oct. 09, 2012	May 31, 2013	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 30, 2011	Oct. 09, 2012	Dec. 29, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Dec. 30, 2011	Oct. 09, 2012	Dec. 29, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 16, 2011	Oct. 09, 2012	Nov. 15, 2012	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/066	2G Full-Band	Dec. 30, 2011	Oct. 09, 2012	Dec. 29, 2012	Conduction (CO01-KS)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	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 EP292604 as below.