



FCC RF Test Report

APPLICANT : Motorola Mobility Inc.
EQUIPMENT : Quad-Band GSM/GPRS/EDGE and Dual-Band WCDMA Mobile Phone with BT/Wifi
BRAND NAME : Motorola
MODEL NAME : XT320
MARKETING NAME : MOTOROLA DEFY MINI
TYPE NAME : M0C5A
GPPD NUMBER : 3162
FCC ID : IHDP56MK2
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Dec. 02, 2011 and completely tested on Jan. 03, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 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 INC., the test report shall not be reproduced except in full.

Reviewed by:

Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.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	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.4	15.247(d)	A8.5	Spurious Emission	$< 20\text{ dBc}$	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 5.60 dB at 1.974 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.37 dB at 59.430 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

Motorola Mobility Inc.

No. 1, Wang Jing East Road, Chao Yang District, 100102 Beijing, P. R. China

1.2 Manufacturer

Gongqingcheng Cellon Communication Technology Co., LTD.

New industrial park, GongQingCheng, Jiujiang city, Jiangxi Province, China Postal code: 332020

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Quad-Band GSM/GPRS/EDGE and Dual-Band WCDMA Mobile Phone with BT/Wifi
Brand Name	Motorola
Model Name	XT320
Marketing Name	MOTOROLA DEFY MINI
Type Name	M0C5A
FCC ID	IHDP56MK2
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Channel Spacing	5 MHz
Maximum Output Power to Antenna	802.11b : 19.41 dBm (0.087 W) 802.11g : 22.05 dBm (0.160 W) 802.11n (BW 20MHz) : 21.86 dBm (0.153 W)
Antenna Type	PIFA Antenna with gain 1.10 dBi
HW Version	B3
SW Version	TNBST_4_0A.12.10.RDD
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

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 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH07-HY	722060/4086B-1

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.		
	TH01-KS	03CH01-KS	CO01-KS

1.5 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 (Measurement Guidelines of DTS)
- ANSI C63.4-2003
- IC RSS-210 Issue 8

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.



1.6 Ancillary Equipment List

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.	Router	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
3.	DC Power Supply	GW	GPC-60300	N/A	N/A	Unshielded, 1.8 m
4.	Notebook	Acer	Trave Imate 2413 Lci	QDS-BRCM1016	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Power

Preliminary tests were performed in different data rate and recorded the RF power output in the following table:

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	19.08	19.02	18.91	19.07
CH 06	2437 MHz	19.37	19.29	19.33	19.35
CH 11	2462 MHz	19.41	19.38	19.38	19.39

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	21.96	21.95	21.89	21.91	21.96	21.94	21.91	21.98
CH 06	2437 MHz	22.03	22.01	19.98	22.02	20.01	21.97	21.97	22.05
CH 11	2462 MHz	21.57	21.65	21.65	21.62	21.68	21.53	21.68	21.69

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412 MHz	21.78	21.75	21.51	21.62	21.77	21.63	21.66	21.65
CH 06	2437 MHz	21.86	21.81	21.76	21.75	21.81	21.78	21.79	21.82
CH 11	2462 MHz	21.48	21.47	21.46	21.39	21.41	21.39	21.45	21.42

Remark: The EUT is programmed to transmit signals continuously for all testing.

2.2 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 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), radiated emission (30 MHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

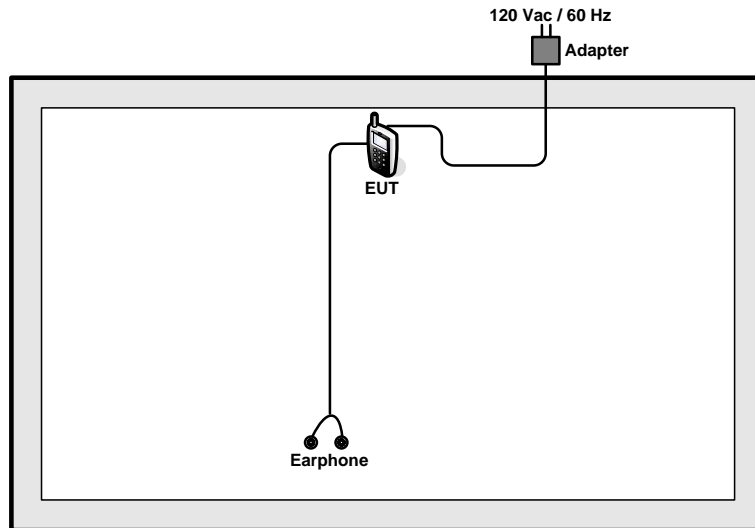
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations, laptop / tablet modes.

The following tables are showing the test modes as the worst cases (E1 plane) and recorded in this report.

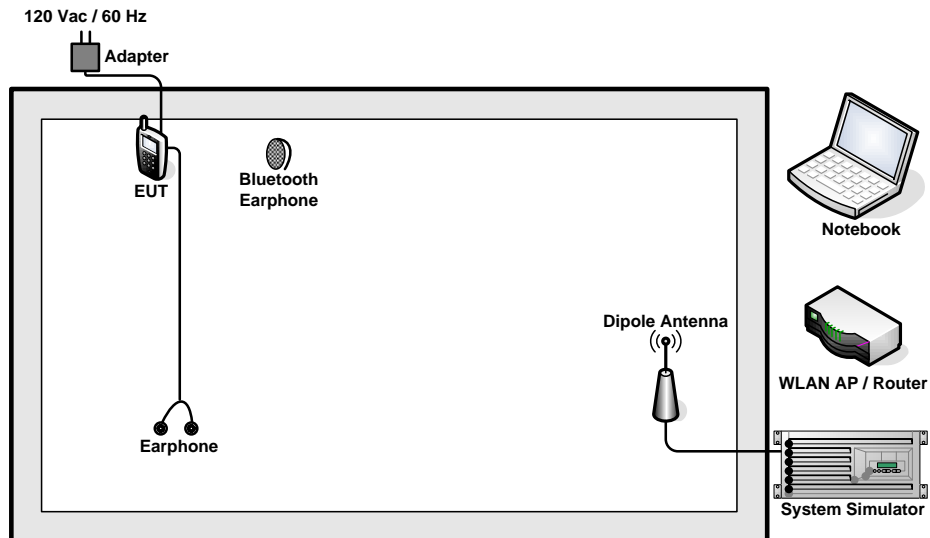
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 MHz Mode 8: 802.11n (BW 20M)_CH06_2437 MHz Mode 9: 802.11n (BW 20M)_CH11_2462 MHz
Radiated TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 MHz Mode 8: 802.11n (BW 20M)_CH06_2437 MHz Mode 9: 802.11n (BW 20M)_CH11_2462 MHz
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN Link + Camera + Earphone + Adapter Mode 2 : GSM1900 Idle + Bluetooth Link + WLAN Link + MPEG4 + Earphone + Adapter	
Remark: For conducted emission, the worst case is mode 2; only the test data of this mode was reported.		

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

Execute "WiFi test" on the EUT directly. Then, the EUT provides functions like channel selection and power level for continuous transmitting and receiving signals.

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.

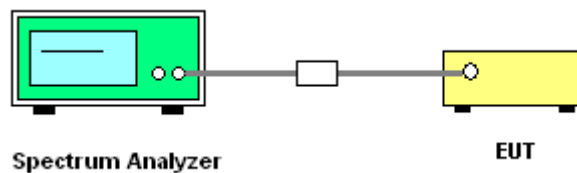
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 KHz. In order to make an accurate measurement, set the span greater than RBW. The 6 dB bandwidth must be greater than 500 KHz.
4. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

3.1.4 Test Setup



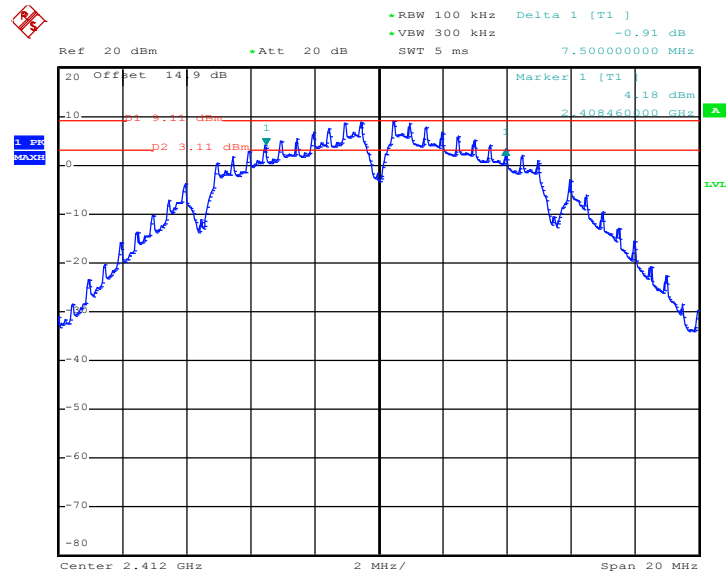


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Zhi Lu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	7.50	0.5	Pass
06	2437	7.08	0.5	Pass
11	2462	7.04	0.5	Pass

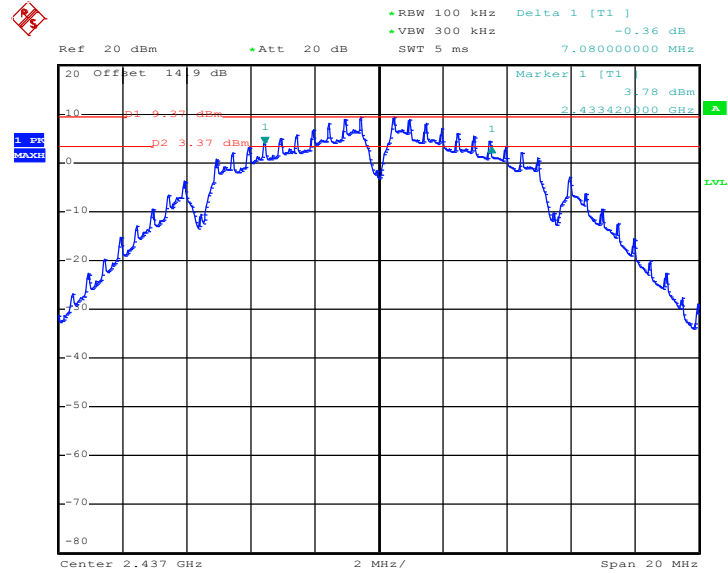
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 20.DEC.2011 09:17:51

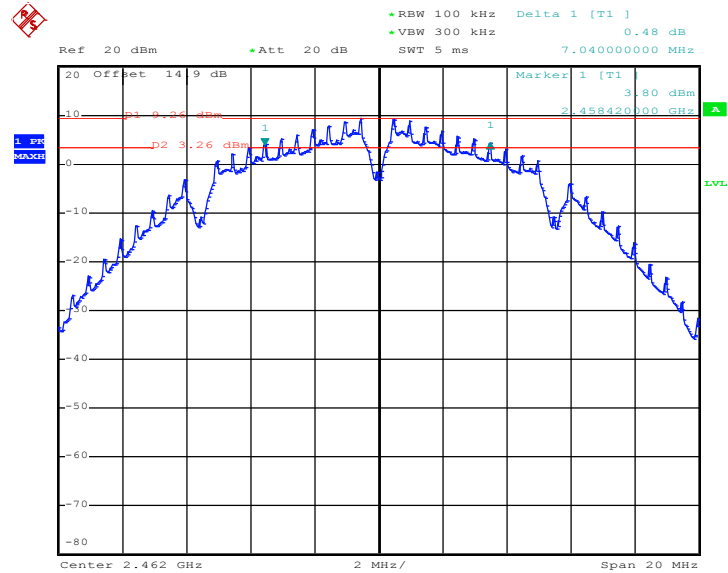


Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



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Mode 3 : 6 dB Bandwidth Plot on 802.11b Channel 11



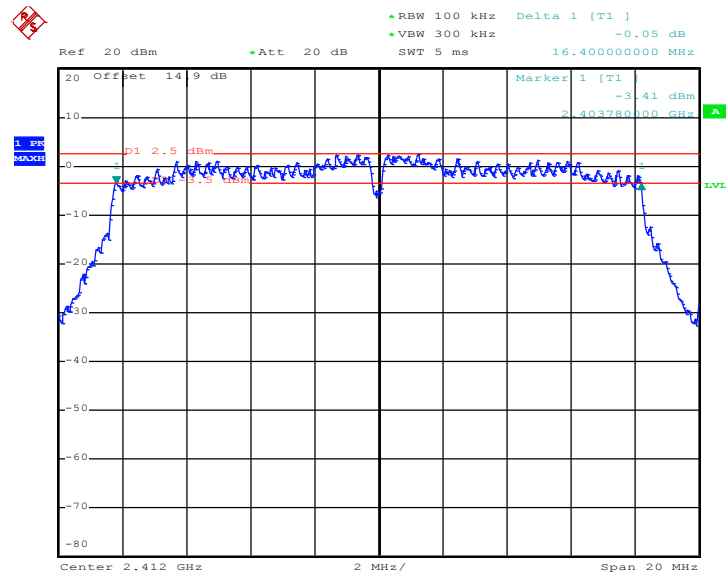
Date: 20.DEC.2011 09:56:35



Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Zhi Lu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.40	0.5	Pass
06	2437	16.36	0.5	Pass
11	2462	16.32	0.5	Pass

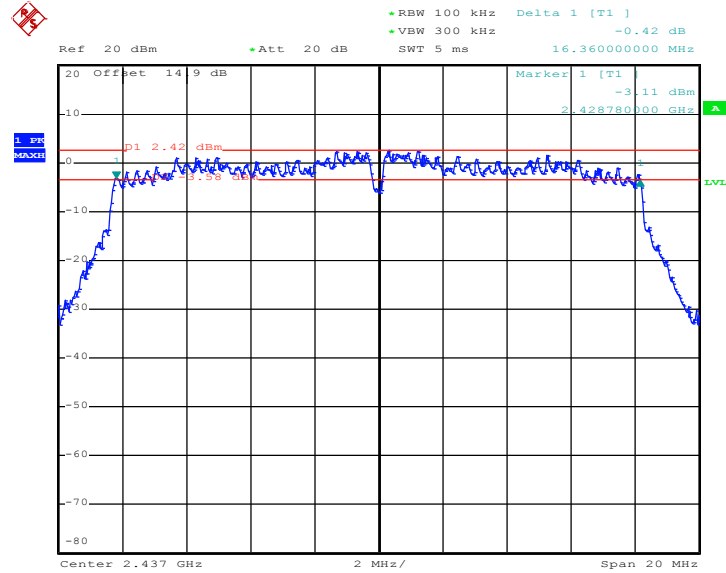
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



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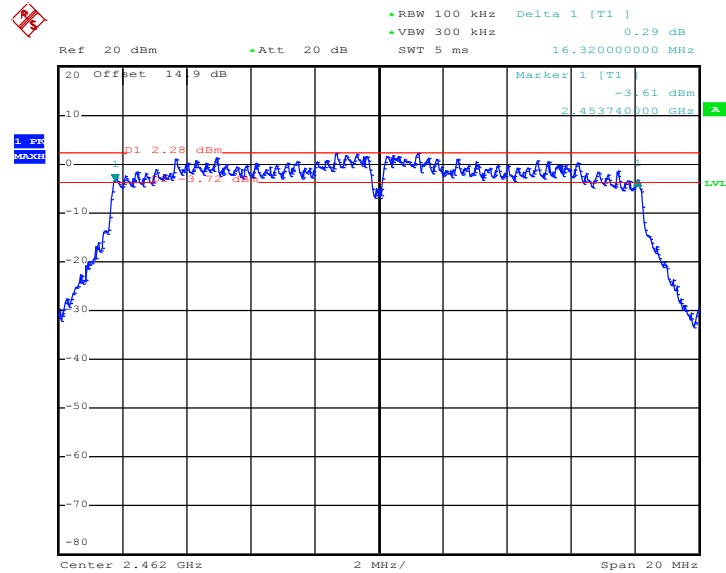


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



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Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11



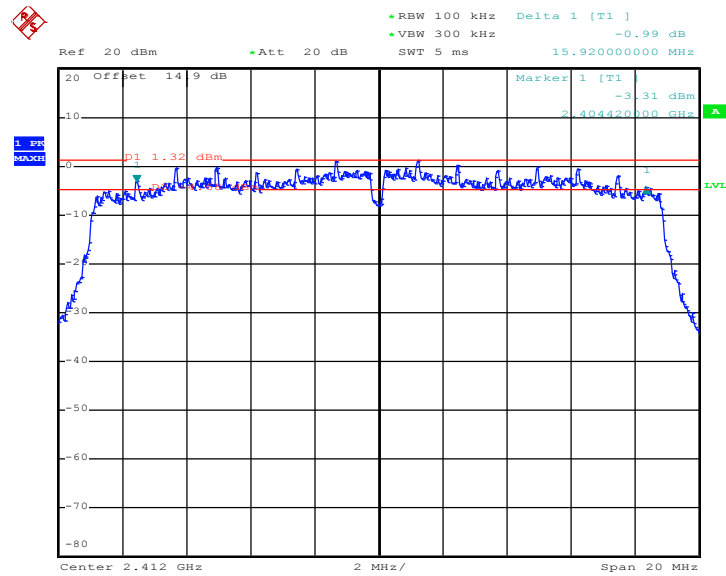
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Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Zhi Lu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.92	0.5	Pass
06	2437	15.08	0.5	Pass
11	2462	15.04	0.5	Pass

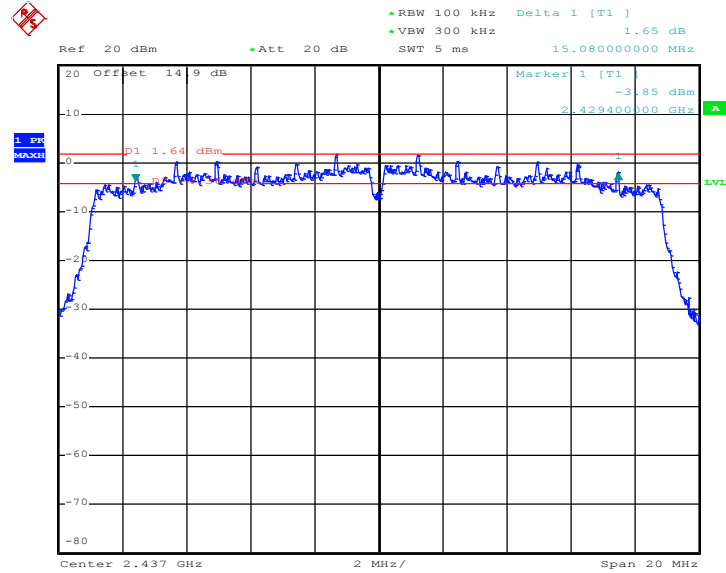
Mode 7 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 01



Date: 20.DEC.2011 13:22:32

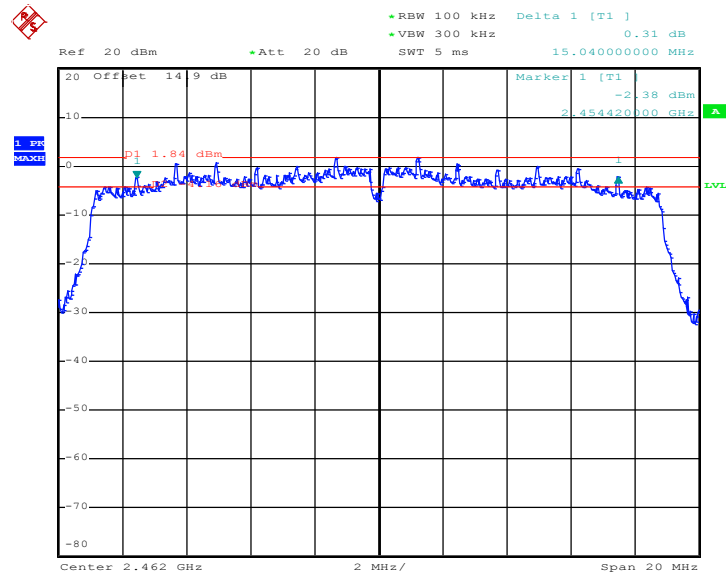


Mode 8 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 06



Date: 20.DEC.2011 13:52:28

Mode 9 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 11



Date: 20.DEC.2011 14:06:32

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.

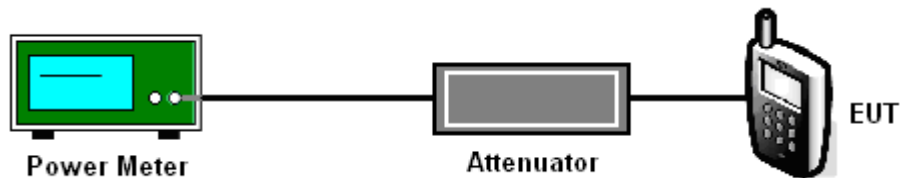
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the power meter by a low loss cable.
3. Measured and recorded the peak power by power meter.

3.2.4 Test Setup



3.2.5 Test Result of Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Zhi Lu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.08	30	Pass
06	2437	19.37	30	Pass
11	2462	19.41	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Zhi Lu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.98	30	Pass
06	2437	22.05	30	Pass
11	2462	21.69	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Zhi Lu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.78	30	Pass
06	2437	21.86	30	Pass
11	2462	21.48	30	Pass

3.3 Band Edges Measurement

3.3.1 Limit of Band Edges

In any 100 KHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. 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.

3.3.2 Measuring Instruments

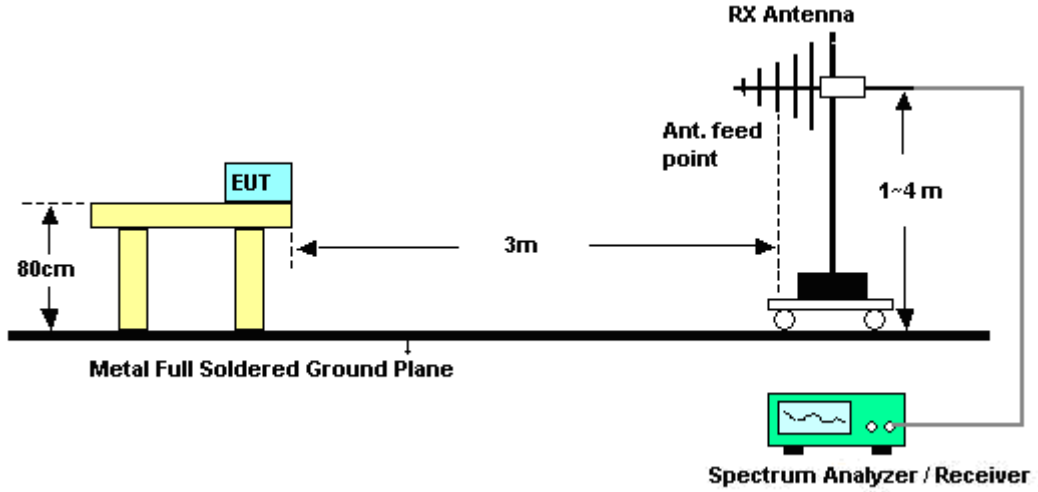
See list of measuring instruments of this test report.

3.3.3 Test Procedures

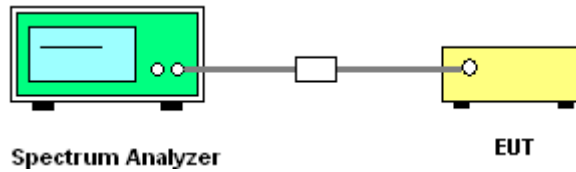
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 KHz, Video bandwidth (VBW) \geq RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 KHz RBW. Note: If the device complies with the use of power option 2 the attenuation under this paragraph shall be 30 dB instead of 20 dB.
3. Radiated emission test: Apply to band edge emissions that fall in the restricted bands listed in FCC Section 15.205. The maximum permitted average field strength is listed in FCC Section 15.209. A pre-amp is necessary for this measurement. For measurements above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep=Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation as in FCC Section 15.35(b) and (c).

3.3.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>





3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	21~22°C
Test Band :	802.11b	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Cloud Peng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	54.23	-19.77	74	51.95	32.86	3.47	34.05	200	62	Peak
2390	43.34	-10.66	54	41.06	32.86	3.47	34.05	200	62	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	53.01	-20.99	74	50.73	32.86	3.47	34.05	100	22	Peak
2390	44	-10	54	41.72	32.86	3.47	34.05	100	22	Average

Test Mode :	Mode 3	Temperature :	21~22°C
Test Band :	802.11b	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Cloud Peng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.85	57.37	-16.63	74	54.88	33.01	3.68	34.2	200	60	Peak
2483.85	47.42	-6.58	54	44.93	33.01	3.68	34.2	200	60	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.85	57.57	-16.43	74	55.08	33.01	3.68	34.2	100	62	Peak
2483.85	48.33	-5.67	54	45.84	33.01	3.68	34.2	100	62	Average



Test Mode :	Mode 4	Temperature :	21~22°C
Test Band :	802.11g	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Cloud Peng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	58.91	-15.09	74	56.63	32.86	3.47	34.05	200	31	Peak
2390	44.93	-9.07	54	42.65	32.86	3.47	34.05	200	31	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	54.35	-19.65	74	52.07	32.86	3.47	34.05	100	112	Peak
2390	41.84	-12.16	54	39.56	32.86	3.47	34.05	100	112	Average

Test Mode :	Mode 6	Temperature :	21~22°C
Test Band :	802.11g	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Cloud Peng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	63.05	-10.95	74	60.56	33.01	3.68	34.2	200	25	Peak
2483.5	43.35	-10.65	54	40.86	33.01	3.68	34.2	200	25	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	65.19	-8.81	74	62.7	33.01	3.68	34.2	100	220	Peak
2483.5	45.11	-8.89	54	42.62	33.01	3.68	34.2	100	220	Average



Test Mode :	Mode 7	Temperature :	21~22°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Cloud Peng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	63.74	-10.26	74	61.46	32.86	3.47	34.05	200	50	Peak
2390	49.9	-4.1	54	47.62	32.86	3.47	34.05	200	50	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	60.26	-13.74	74	57.98	32.86	3.47	34.05	100	28	Peak
2390	46.84	-7.16	54	44.56	32.86	3.47	34.05	100	28	Average

Test Mode :	Mode 9	Temperature :	21~22°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Cloud Peng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.53	63.11	-10.89	74	60.62	33.01	3.68	34.2	200	26	Peak
2483.53	49.65	-4.35	54	47.16	33.01	3.68	34.2	200	26	Average

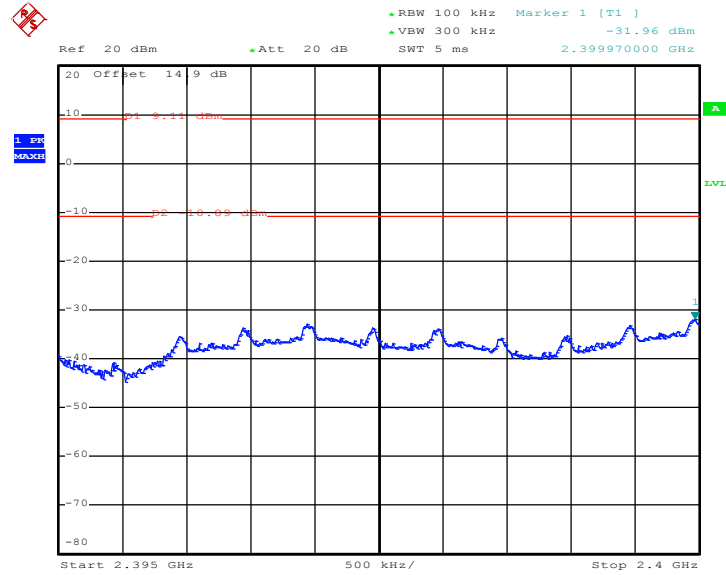
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	64.39	-9.61	74	61.9	33.01	3.68	34.2	100	28	Peak
2483.5	49.77	-4.23	54	47.28	33.01	3.68	34.2	100	28	Average



3.3.6 Test Plots of Conducted Band Edges

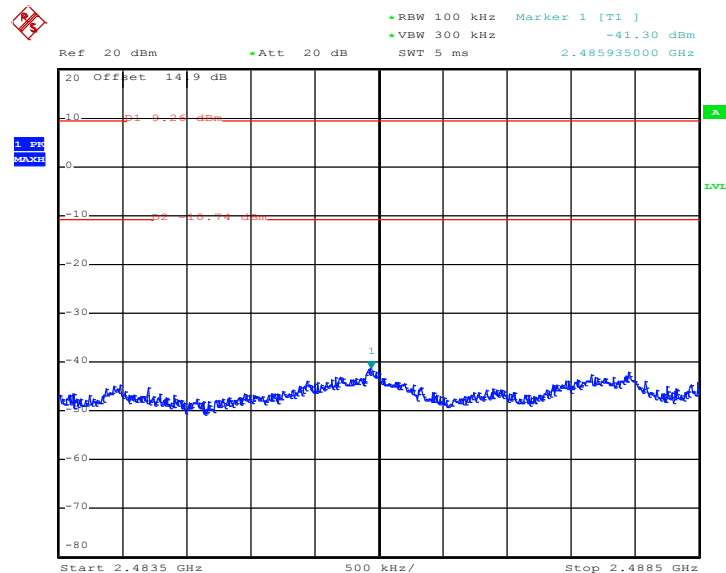
Test Mode :	Mode 1 and 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11b Channel 01



Date: 20.DEC.2011 09:19:04

High Band Edge Plot on 802.11b Channel 11

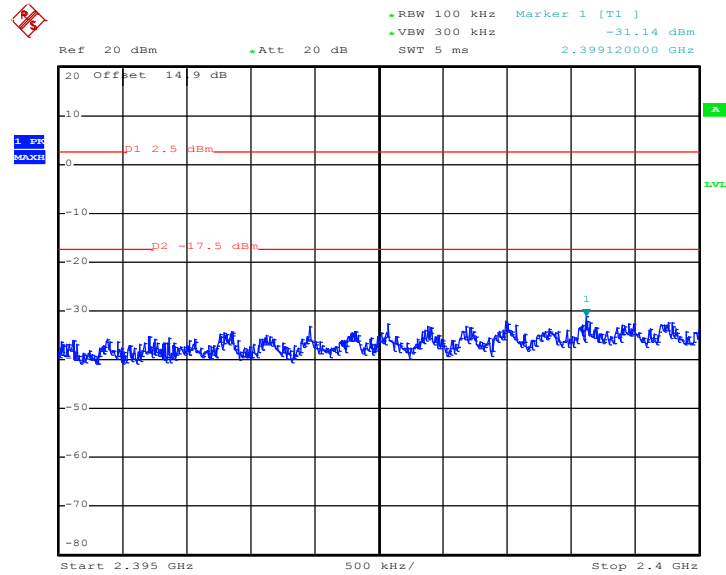


Date: 20.DEC.2011 09:57:23



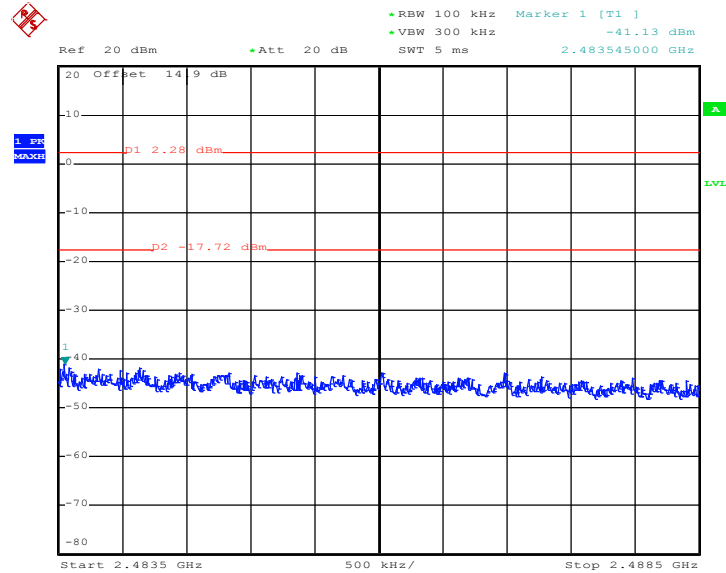
Test Mode :	Mode 4 and 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11g Channel 01



Date: 20.DEC.2011 11:41:30

High Band Edge Plot on 802.11g Channel 11

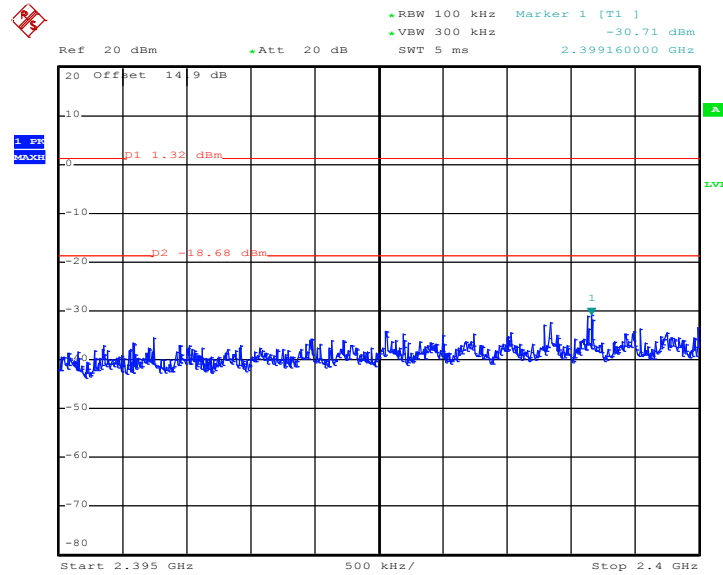


Date: 20.DEC.2011 13:08:17



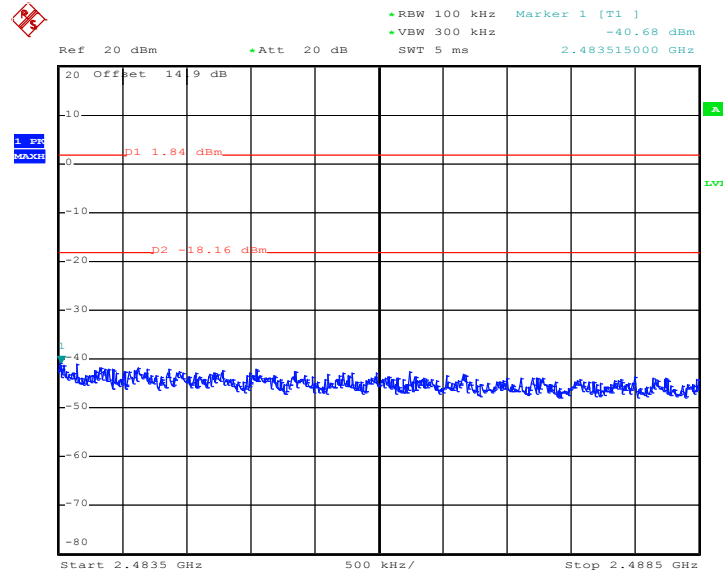
Test Mode :	Mode 7 and 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11n (BW 20MHz) Channel 01



Date: 20.DEC.2011 13:23:43

High Band Edge Plot on 802.11n (BW 20MHz) Channel 11



Date: 20.DEC.2011 14:07:25

3.4 Spurious Emission Measurement

3.4.1 Limit of Spurious Emission Measurement

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

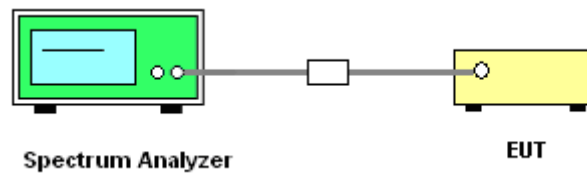
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedure

1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set RBW = 100 KHz, Video bandwidth (VBW) \geq RBW, scan up through 10th harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 KHz RBW.

3.4.4 Test Setup

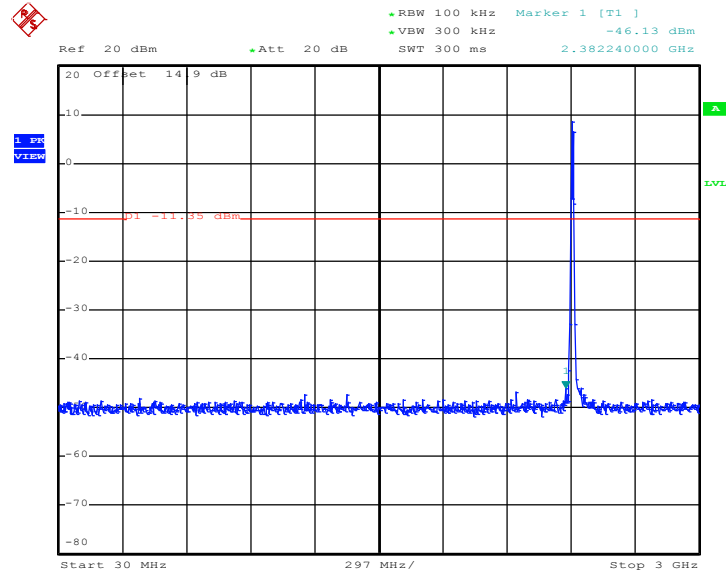




3.4.5 Test Plots of Spurious Emission

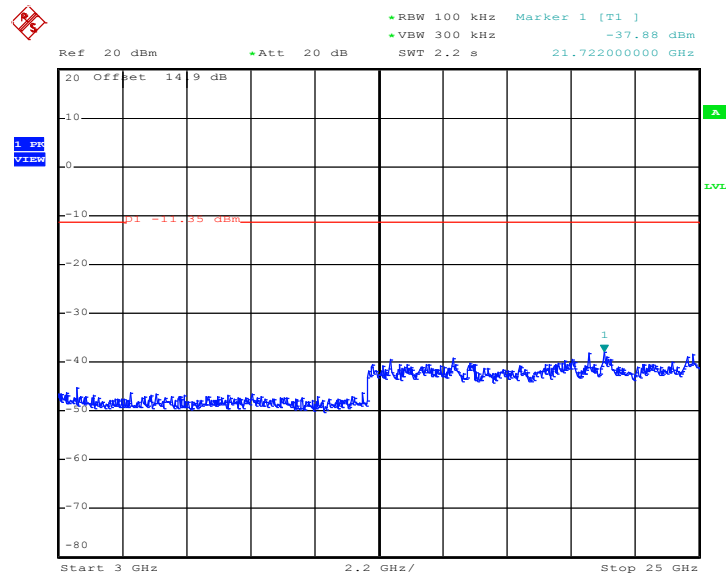
Test Mode :	Mode 1	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 20.DEC.2011 09:25:23

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

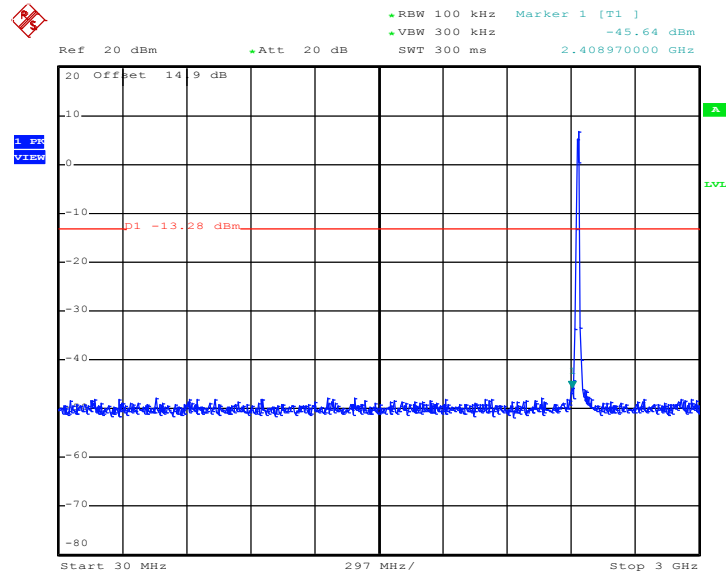


Date: 20.DEC.2011 09:25:39



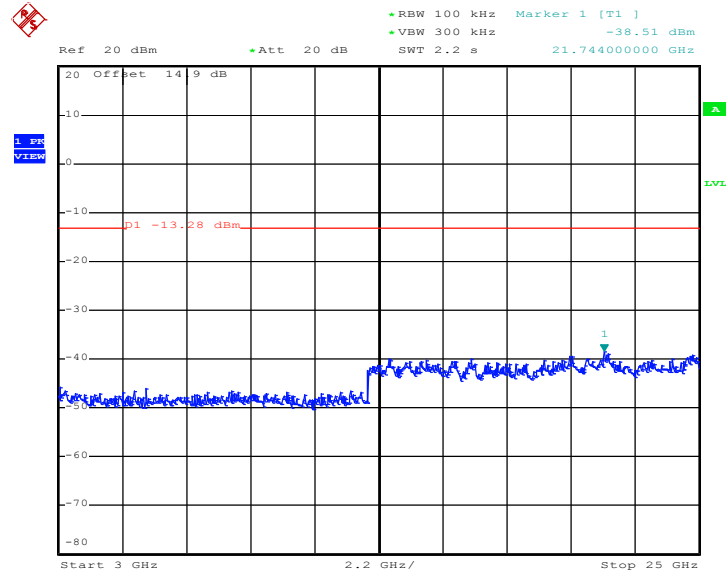
Test Mode :	Mode 2	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 20.DEC.2011 09:45:06

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

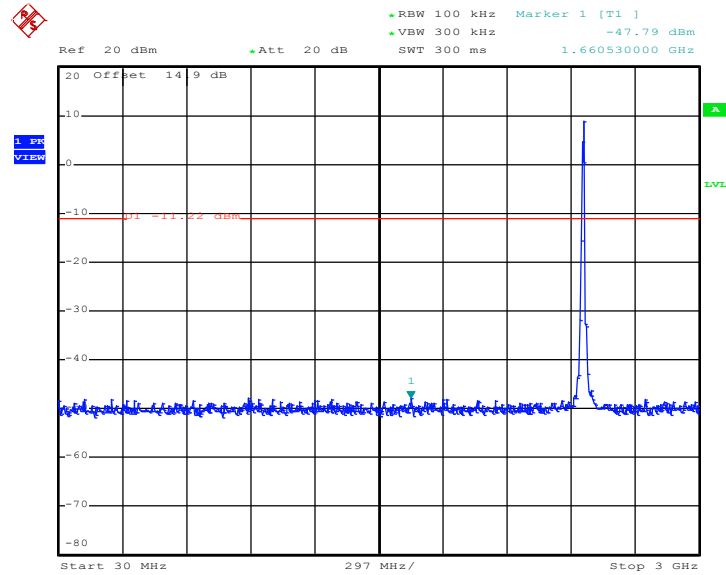


Date: 20.DEC.2011 09:45:22



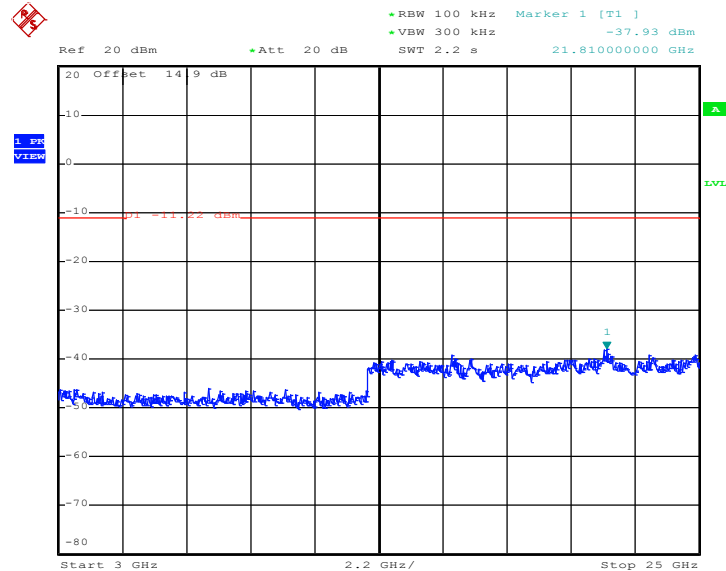
Test Mode :	Mode 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 20.DEC.2011 09:58:44

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

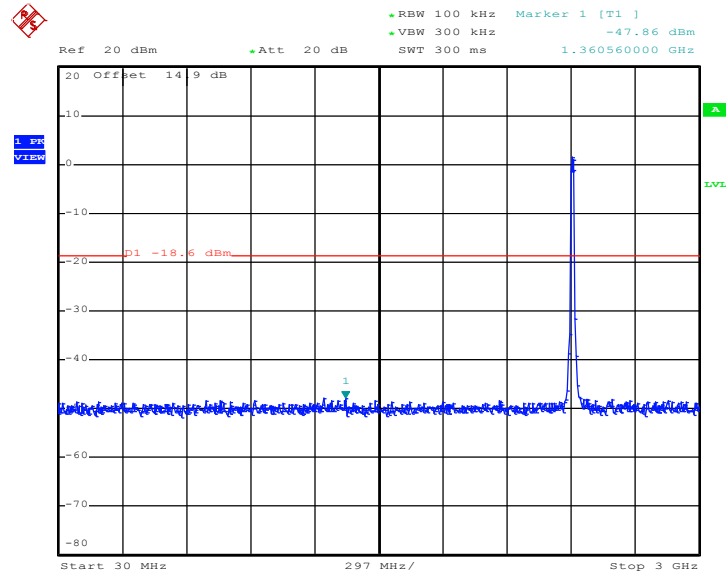


Date: 20.DEC.2011 09:59:01



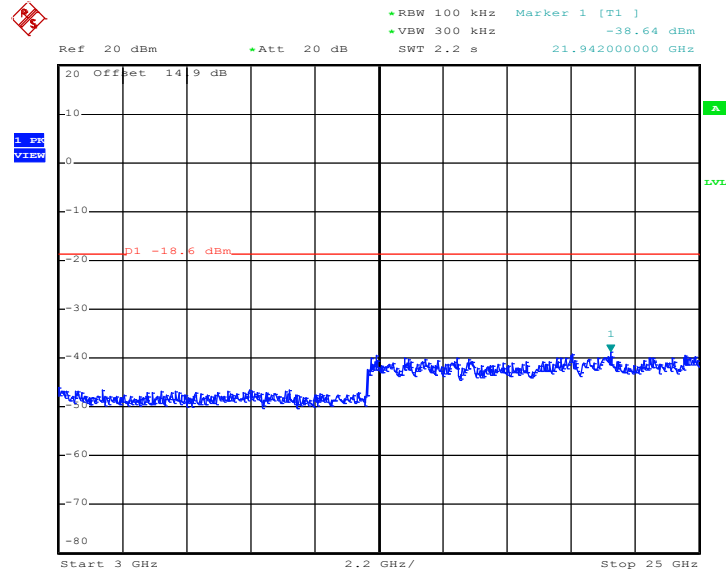
Test Mode :	Mode 4	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 20.DEC.2011 11:43:31

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

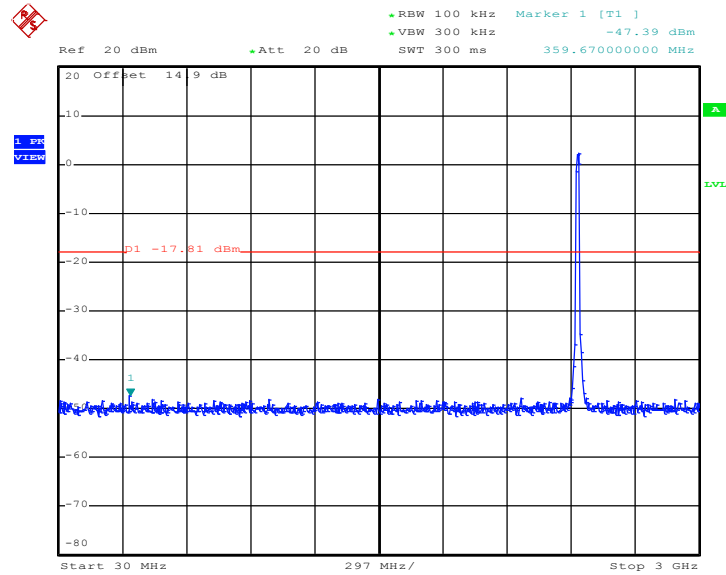


Date: 20.DEC.2011 11:43:48



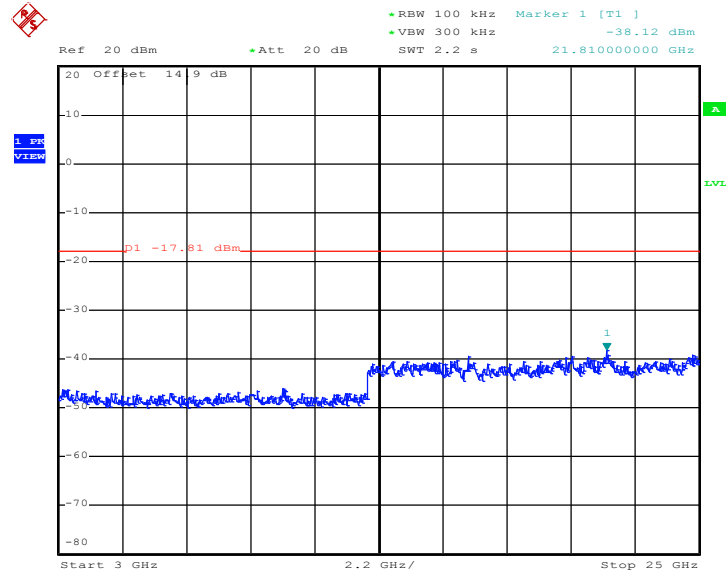
Test Mode :	Mode 5	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 20.DEC.2011 11:56:05

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

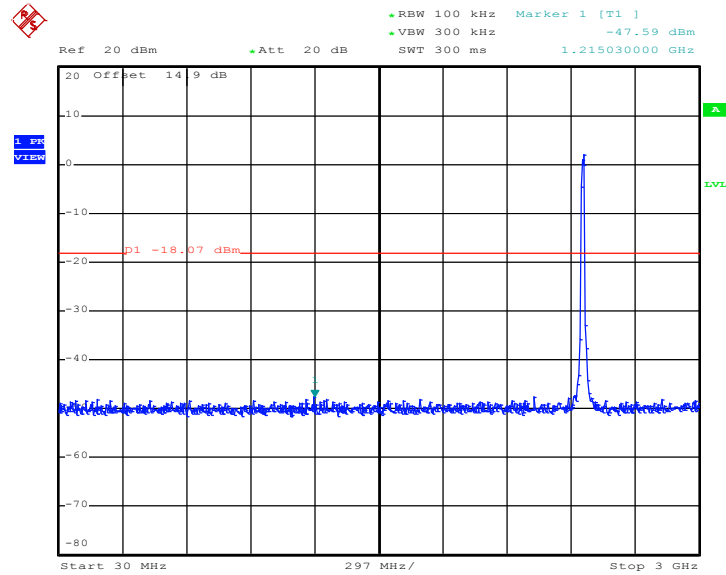


Date: 20.DEC.2011 11:56:22



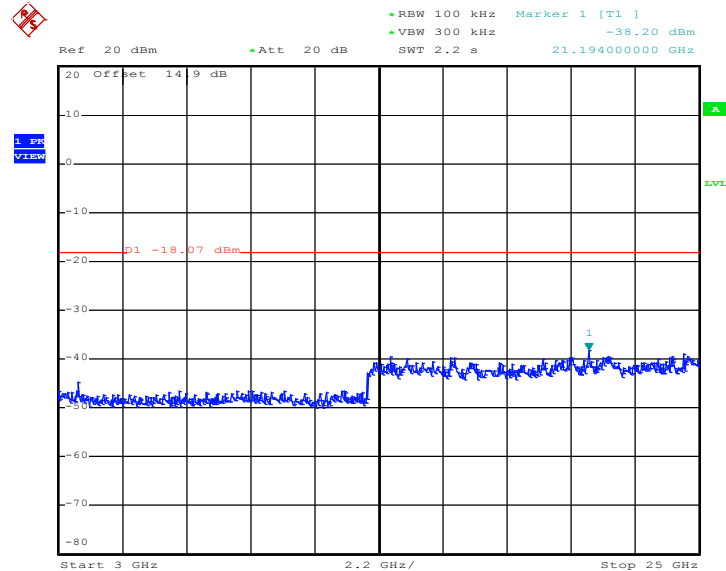
Test Mode :	Mode 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 20.DEC.2011 13:10:35

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

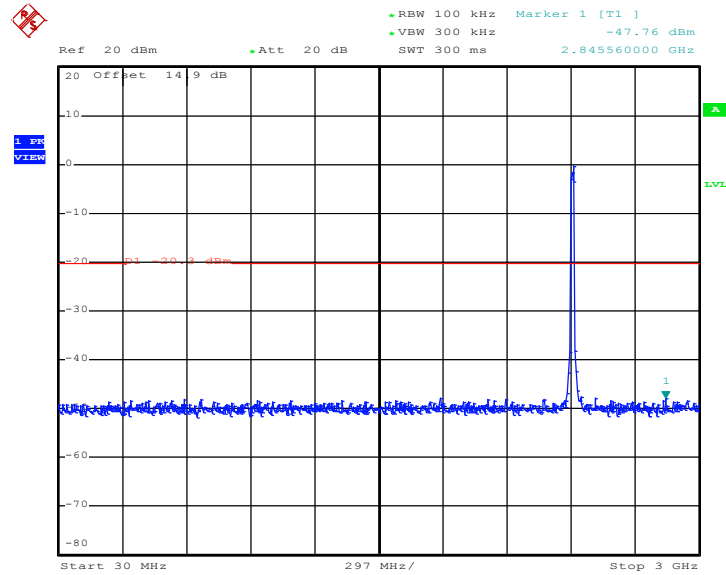


Date: 20.DEC.2011 13:10:52



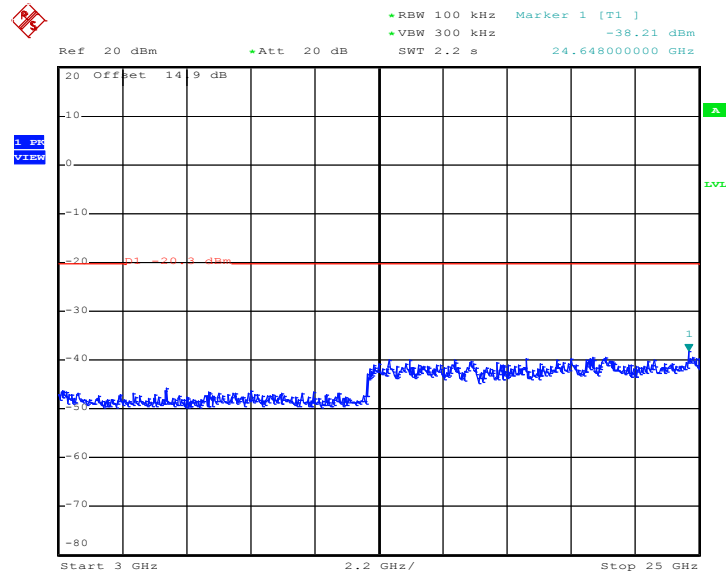
Test Mode :	Mode 7	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 20.DEC.2011 13:28:18

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

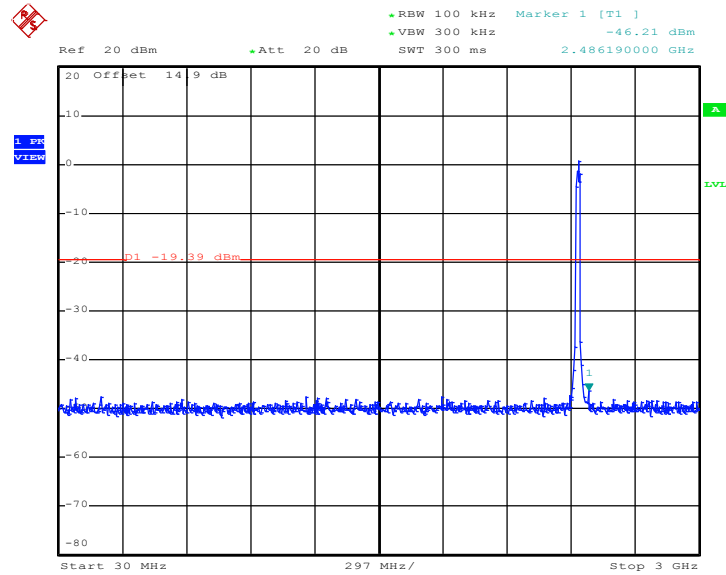


Date: 20.DEC.2011 13:28:35



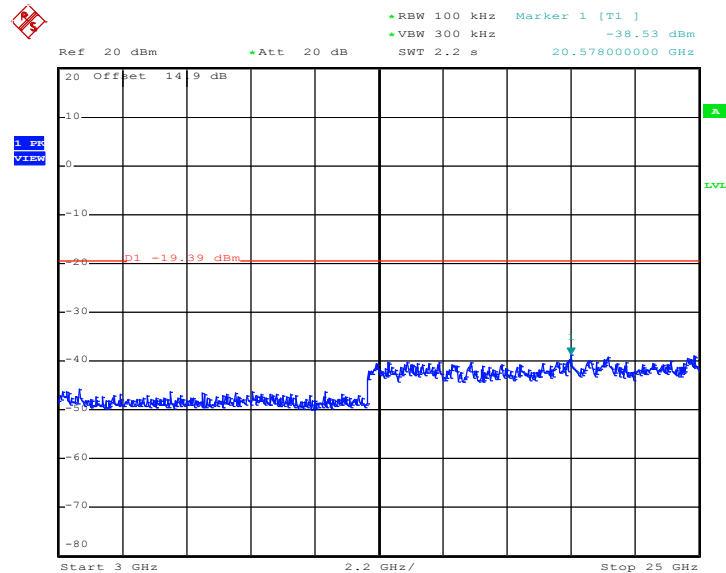
Test Mode :	Mode 8	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 20.DEC.2011 14:02:22

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

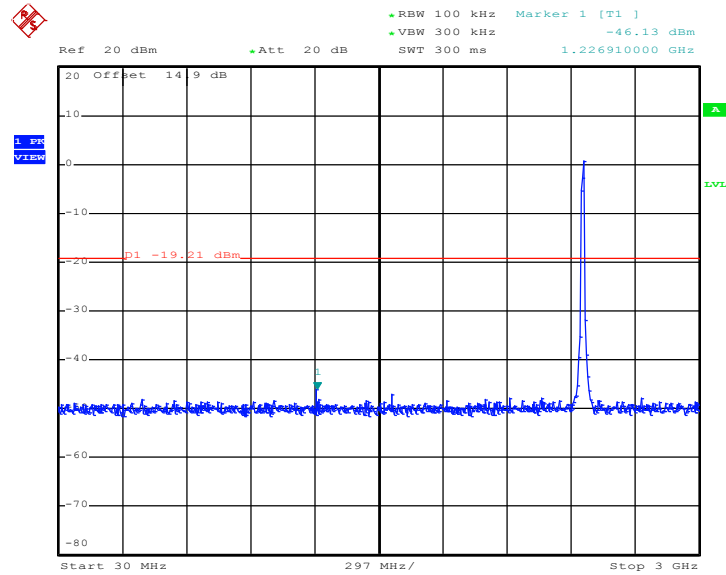


Date: 20 DEC 2011 14:02:39



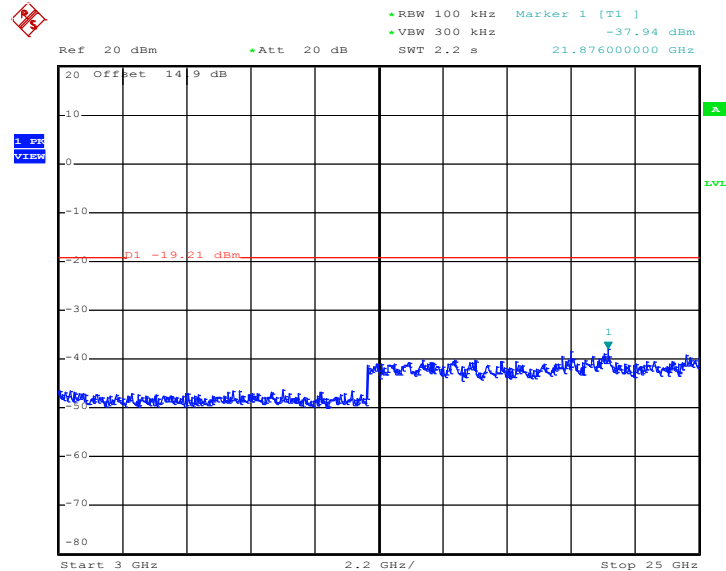
Test Mode :	Mode 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 20.DEC.2011 14:11:09

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 20.DEC.2011 14:11:26

3.5 Power Spectral Density Measurement

3.5.1 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.

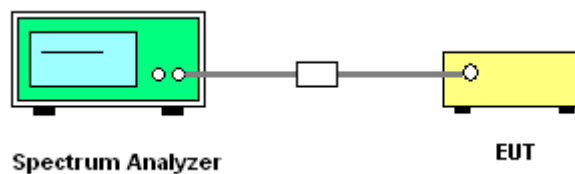
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The test follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Take the measured data from spectrum analyzer.

3.5.4 Test Setup



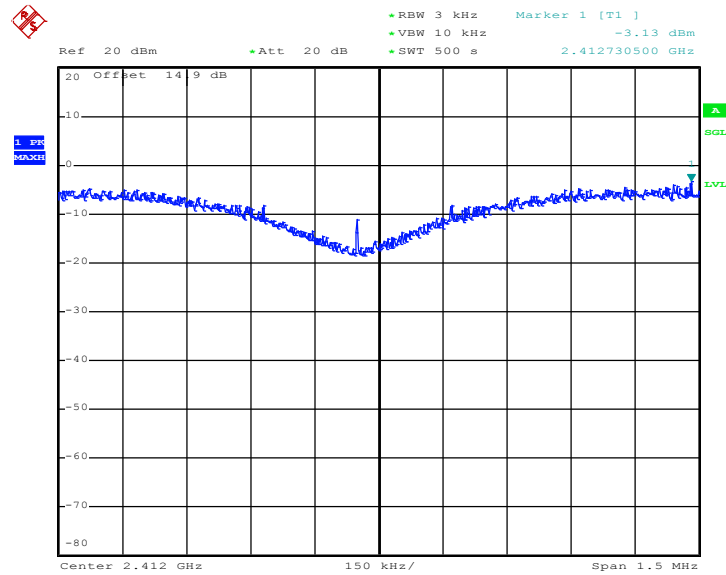


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Zhi Lu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-3.13	8	Pass
06	2437	-2.80	8	Pass
11	2462	-2.92	8	Pass

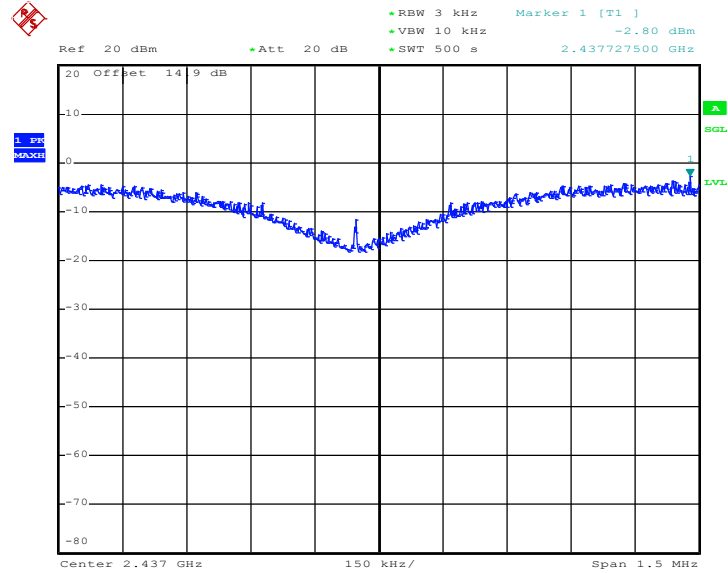
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 20.DEC.2011 09:40:13

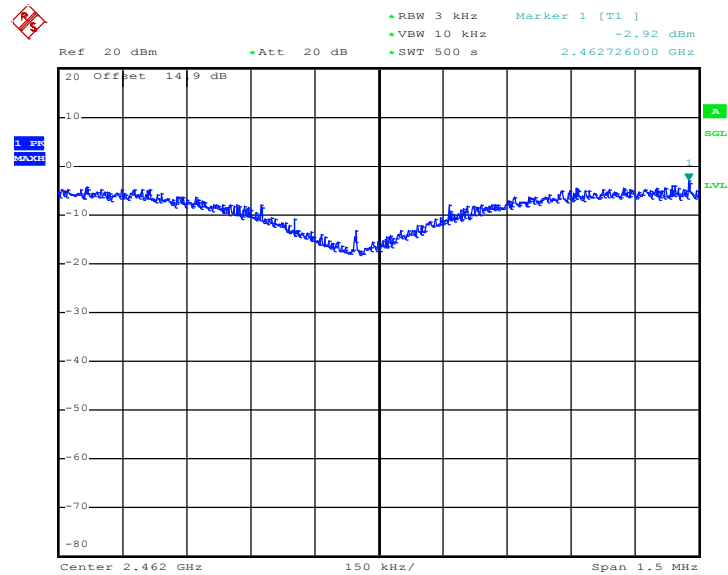


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 20.DEC.2011 09:55:12

Mode 3 : PSD Plot on 802.11b Channel 11



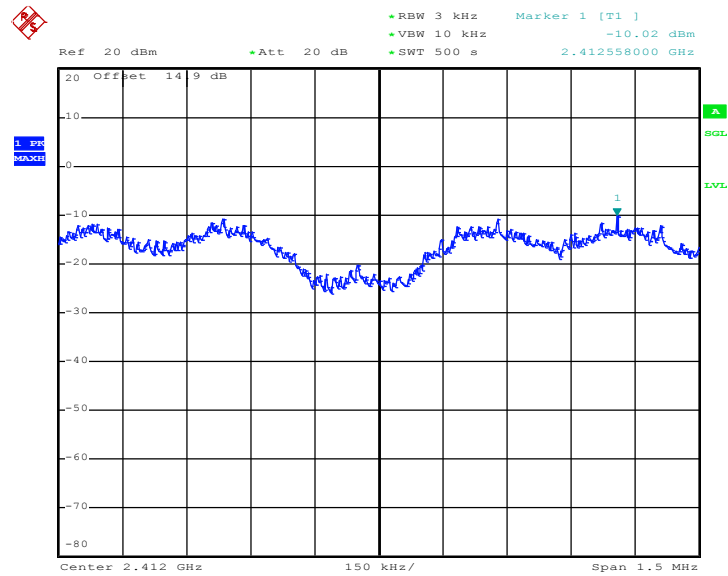
Date: 20.DEC.2011 10:12:33



Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Zhi Lu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-10.02	8	Pass
06	2437	-9.95	8	Pass
11	2462	-10.27	8	Pass

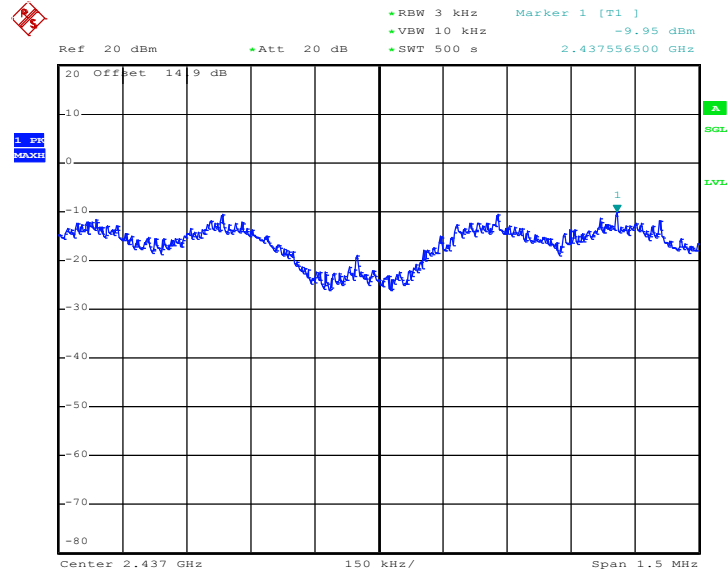
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 20.DEC.2011 11:53:17

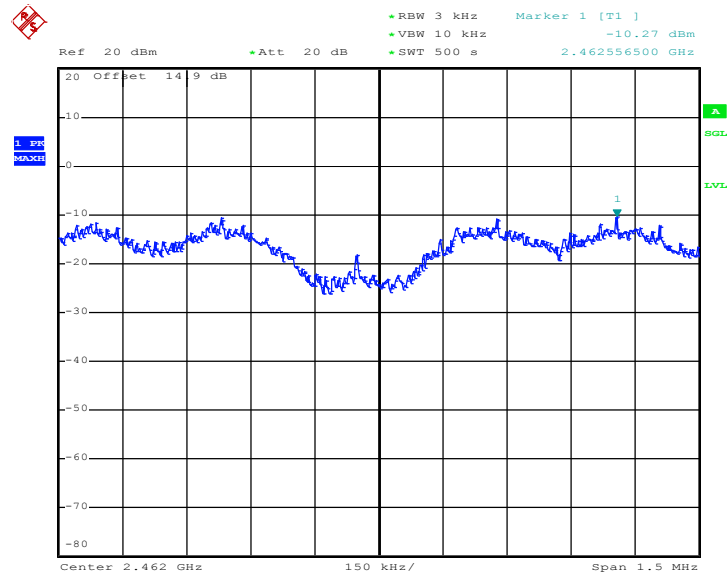


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 20.DEC.2011 12:22:55

Mode 6 : PSD Plot on 802.11g Channel 11



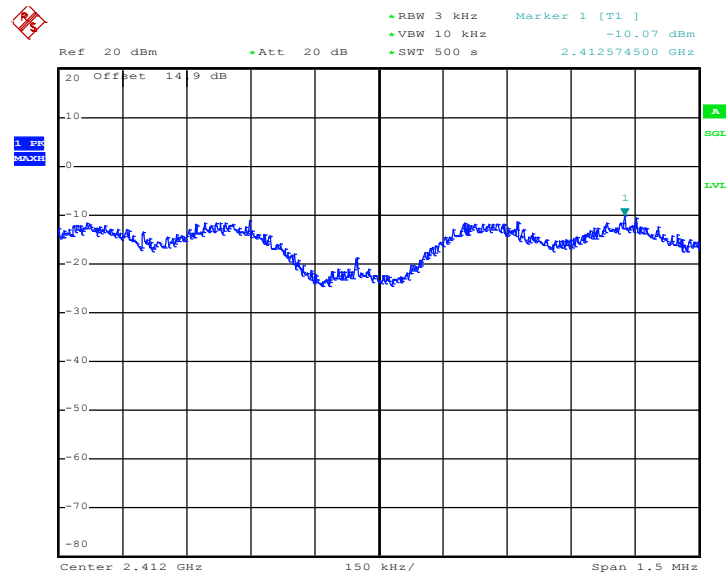
Date: 20.DEC.2011 13:19:50



Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Zhi Lu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-10.07	8	Pass
06	2437	-10.31	8	Pass
11	2462	-10.15	8	Pass

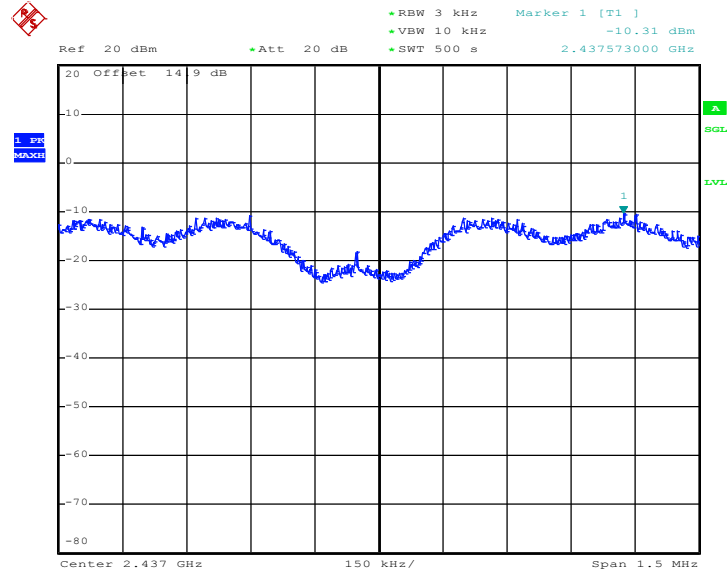
Mode 7 : PSD Plot on 802.11n (BW 20MHz) Channel 01



Date: 20.DEC.2011 13:44:42

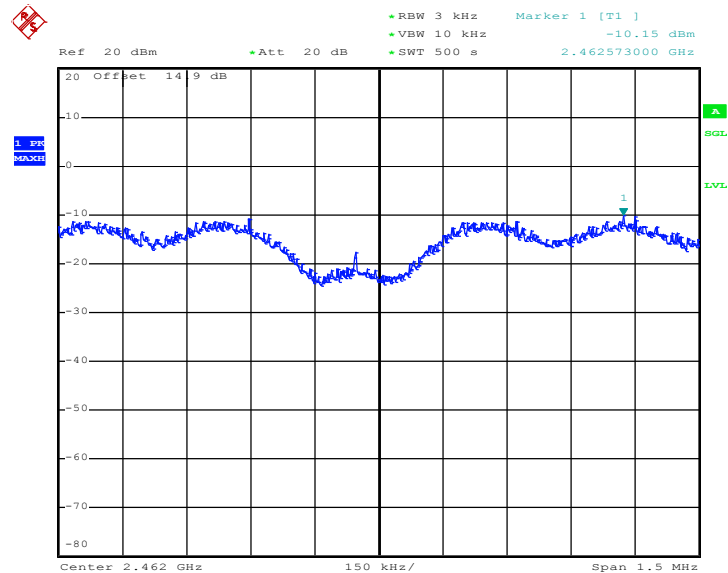


Mode 8 : PSD Plot on 802.11n (BW 20MHz) Channel 06



Date: 20.DEC.2011 14:01:05

Mode 9 : PSD Plot on 802.11n (BW 20MHz) Channel 11



Date: 20.DEC.2011 14:21:08

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.

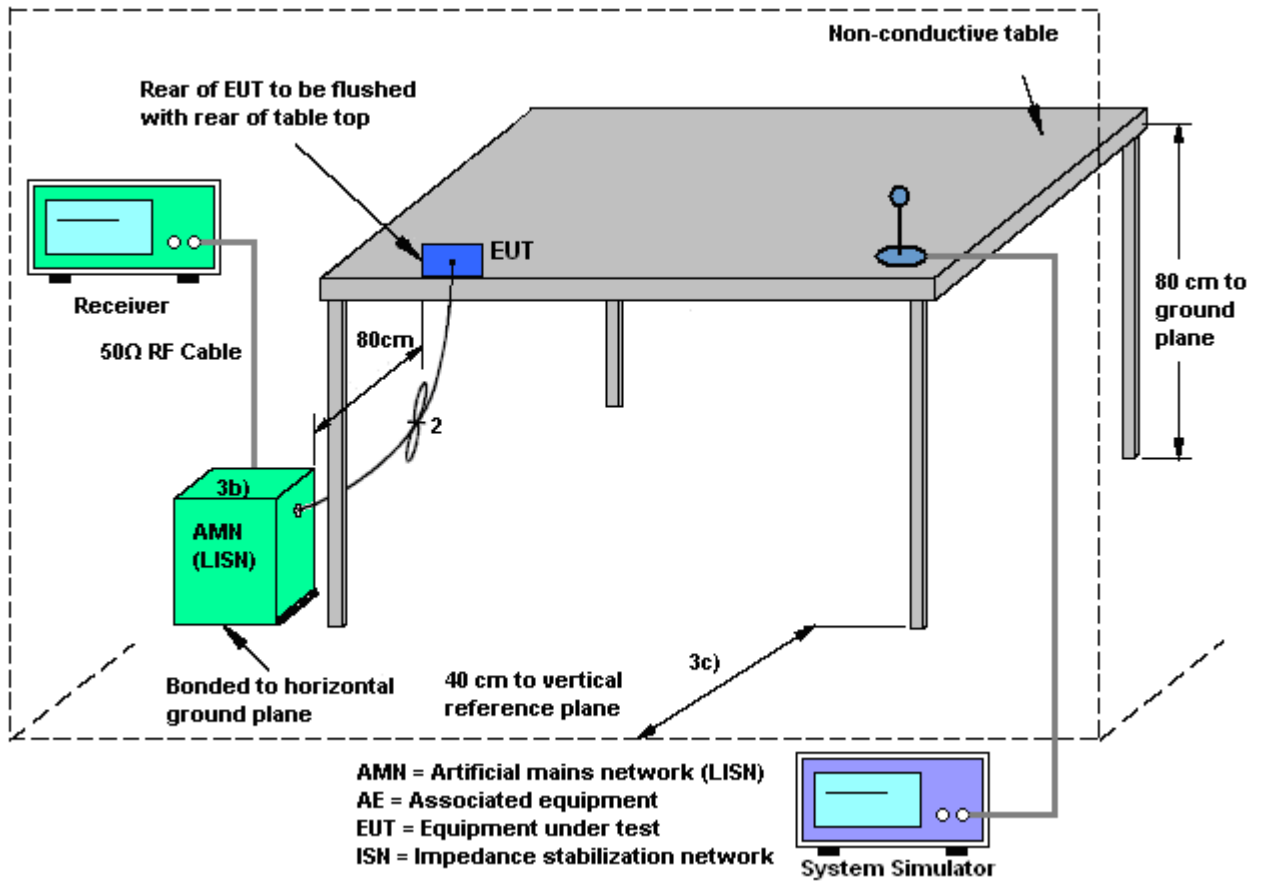
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

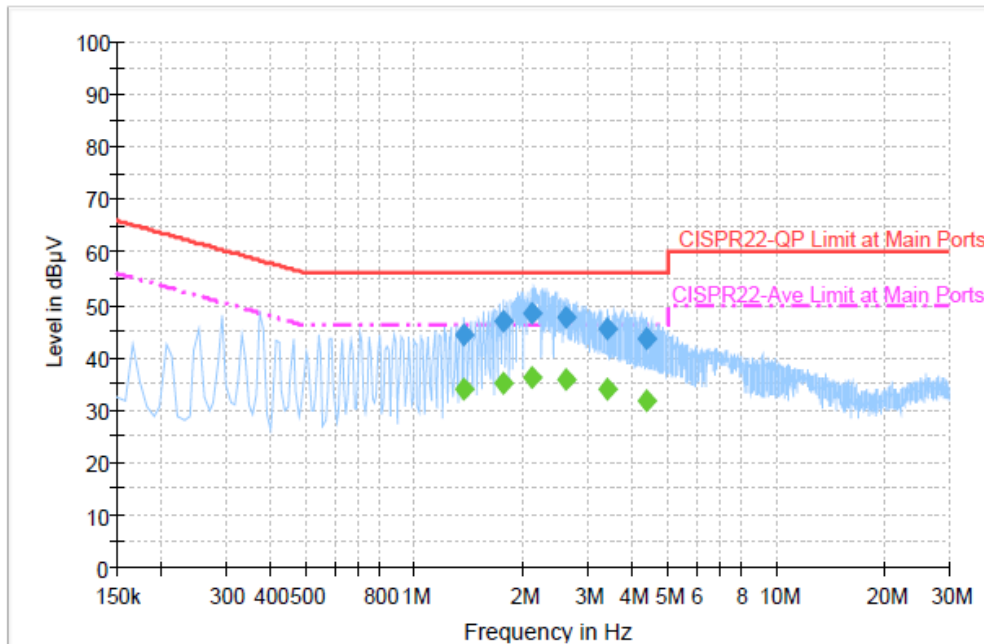
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network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

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	Temperature :	20~22°C
Test Engineer :	Aslen Chiu	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Link + MPEG4 + Earphone + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

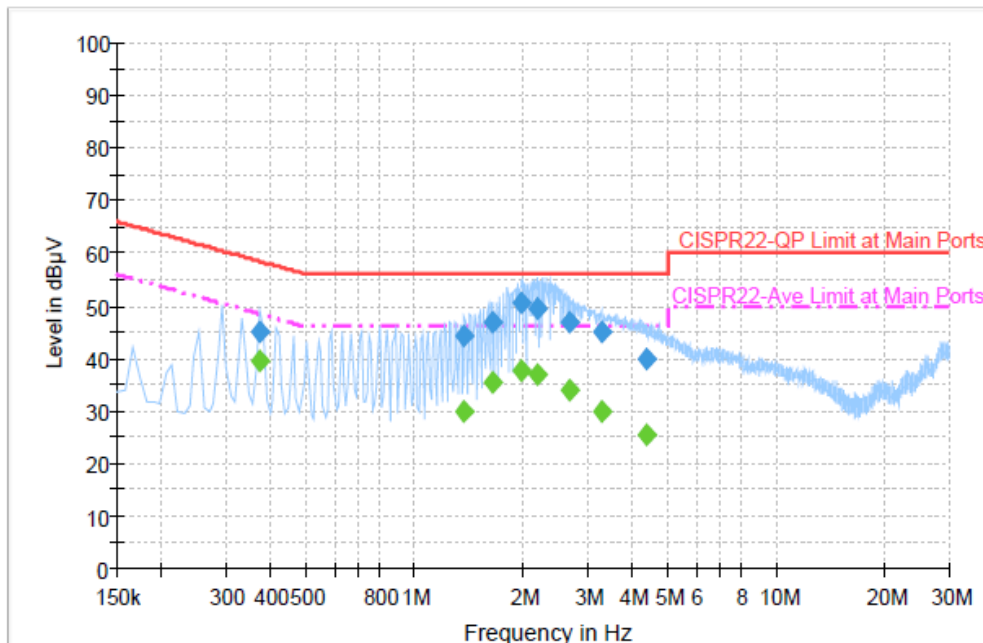
Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
1.374000	44.3	Off	L1	19.4	11.7	56.0
1.766000	46.9	Off	L1	19.4	9.1	56.0
2.102000	48.5	Off	L1	19.4	7.5	56.0
2.622000	47.5	Off	L1	19.5	8.5	56.0
3.414000	45.3	Off	L1	19.5	10.7	56.0
4.37400	43.7	Off	L1	19.5	12.3	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
1.374000	33.8	Off	L1	19.4	12.2	46.0
1.766000	34.9	Off	L1	19.4	11.1	46.0
2.102000	36.1	Off	L1	19.4	9.9	46.0
2.622000	35.7	Off	L1	19.5	10.3	46.0
3.414000	34.0	Off	L1	19.5	12.0	46.0
4.37400	31.8	Off	L1	19.5	14.2	46.0



Test Mode :	Mode 2	Temperature :	20~22°C
Test Engineer :	Aslen Chiu	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Link + MPEG4 + Earphone + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.374000	44.9	Off	N	19.4	13.5	58.4
1.374000	44.2	Off	N	19.5	11.8	56.0
1.638000	47.0	Off	N	19.4	9.0	56.0
1.974000	50.4	Off	N	19.5	5.6	56.0
2.182000	49.3	Off	N	19.5	6.7	56.0
2.670000	47.0	Off	N	19.5	9.0	56.0
3.278000	45.0	Off	N	19.5	11.0	56.0
4.366000	40.0	Off	N	19.5	16.0	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.374000	39.4	Off	N	19.4	9.0	48.4
1.374000	30.0	Off	N	19.5	16.0	46.0
1.638000	35.4	Off	N	19.4	10.6	46.0
1.974000	37.6	Off	N	19.5	8.4	46.0
2.182000	37.0	Off	N	19.5	9.0	46.0
2.670000	33.8	Off	N	19.5	12.2	46.0
3.278000	29.9	Off	N	19.5	16.1	46.0
4.366000	25.4	Off	N	19.5	20.6	46.0

3.7 Radiated Emission Measurement

3.7.1 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

3.7.2 Measuring Instruments

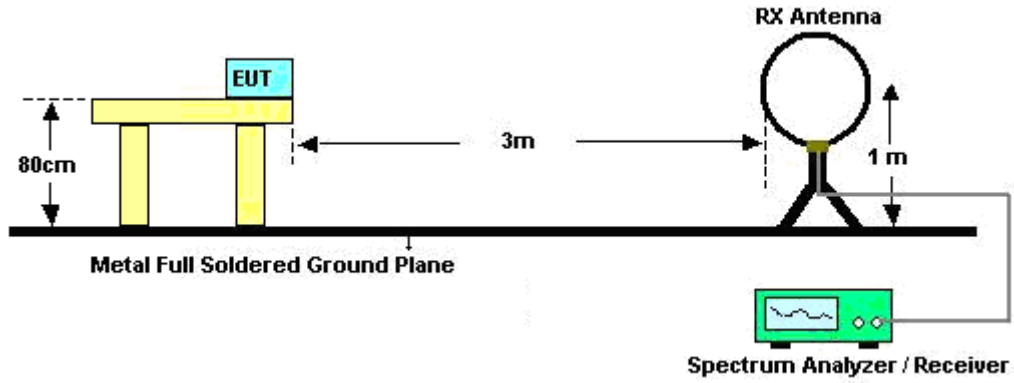
See list of measuring instruments of this test report.

3.7.3 Test Procedures

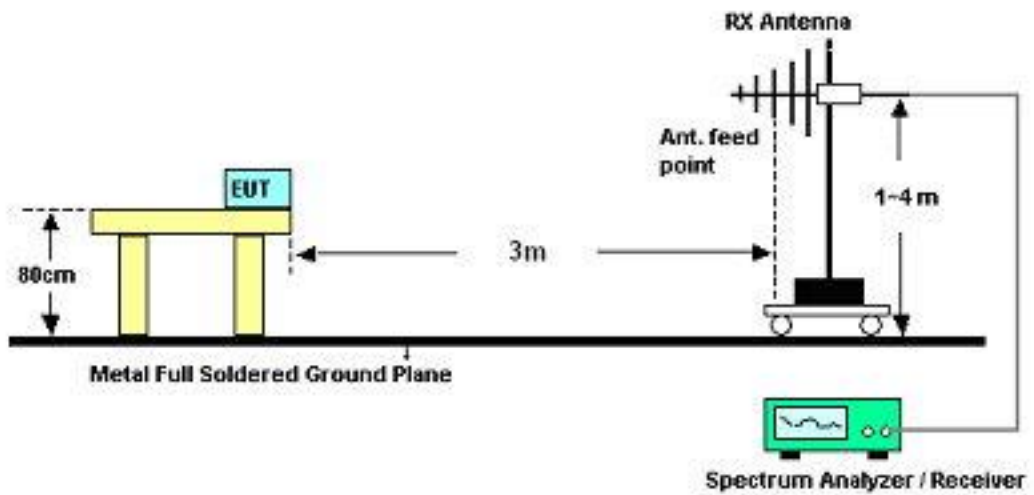
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
 - (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 KHz for $f < 1$ GHz; VBW \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold.
 - (2) Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.
 Distance extrapolation factor = $20 \log(\text{specific distance [3m]} / \text{test distance [1m]})$ (dB)
3. Follow the guidelines in ANSI C63.4-2003 with respect to maximizing the emission by rotating the EUT, measuring the emission for three EUT orthogonal planes, and adjusting the measurement antenna height and polarization. A pre-amp and a high pass filter are used for this test in order to get the good signal level.

3.7.4 Test Setup

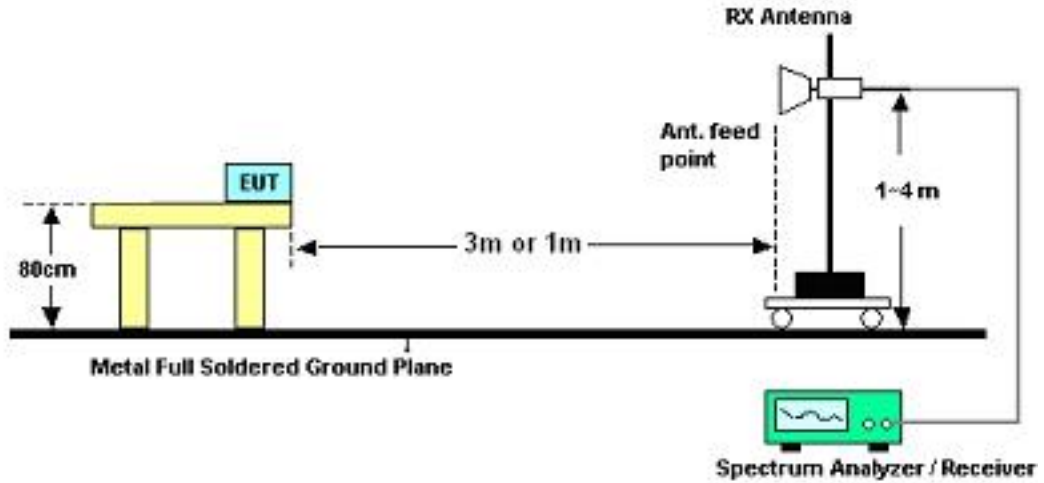
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

Test Engineer :	David Yang	Temperature :	21~23°C
		Relative Humidity :	50~52%

Frequency	Measurement Distance	Field Strength	Antenna Factor	Distance Factor	Limit Distance	Field Strength at Limit Distance (30m)	Limit (30m)
(MHz)	(m)	(dBuV/m)	(dB/m)	(dB/decade)	(m)	(dBuV/m)	(dBuV/m)
0.03277	3	-4.76	19.7	40	30	-44.76	29.54
19.20	3	11.60	19.7	40	30	-28.40	29.54

Note:

- In accordance with 15.33 (a): For each frequency at which a measurement is made at only one distance, the square of an inverse linear distance extrapolation factor (40 dB/decade) is applied.
 Distance extrapolation factor = $40 \log(\text{specific distance} / \text{test distance})$ (dB);
 Limit line = specific limits (dBuV) + distance extrapolation factor.
- The field strength measured is direct conversion of all parameters (antenna factor and distance extrapolation factor) and loaded into the spectrum.
- For example 1:
 Field Strength at 3m=10 (dBuV/m)
 Field Strength at 30m= $10 - 40 \cdot \log(30\text{m}/3\text{m}) = -30$ (dBuV/m)
 For example 2:
 Field Strength at 10m=10 (dBuV/m)
 Field Strength at 30m= $10 - 40 \cdot \log(30\text{m}/10\text{m}) = -9.08$ (dBuV/m)



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

Test Mode :	Mode 1	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Horizontal
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
58.62	19.31	-20.69	40	43.7	5.44	0.31	30.14	-	-	Peak
105.6	24.93	-18.57	43.5	43.18	11.29	0.42	29.96	-	-	Peak
196.59	21.61	-21.89	43.5	42.15	8.86	0.59	29.99	-	-	Peak
837.6	25.55	-20.45	46	33.55	20.38	1.27	29.65	-	-	Peak
936.3	30.02	-15.98	46	37.56	20.67	1.32	29.53	100	186	Peak
960.1	27.56	-26.44	54	34.97	20.79	1.34	29.54	-	-	Peak
2390	54.23	-19.77	74	51.95	32.86	3.47	34.05	200	62	Peak
2390	43.34	-10.66	54	41.06	32.86	3.47	34.05	200	62	Average
2412	104.34	-	-	102.01	32.89	3.52	34.08	200	162	Peak
2412	99.58	-	-	97.25	32.89	3.52	34.08	200	162	Average
2487.08	51.76	-22.24	74	49.27	33.01	3.68	34.2	200	20	Peak
2487.08	41	-13	54	38.51	33.01	3.68	34.2	200	20	Average



Test Mode :	Mode 1	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Vertical
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.16	31.08	-8.92	40	44.38	16.55	0.24	30.09	-	-	Peak
59.43	36.63	-3.37	40	61.02	5.44	0.31	30.14	100	20	Peak
105.06	28.12	-15.38	43.5	46.51	11.15	0.42	29.96	-	-	Peak
537.3	25.23	-20.77	46	35.69	18.24	0.99	29.69	-	-	Peak
936.3	29.82	-16.18	46	37.36	20.67	1.32	29.53	-	-	Peak
960.1	27.21	-26.79	54	34.62	20.79	1.34	29.54	-	-	Peak
2390	53.01	-20.99	74	50.73	32.86	3.47	34.05	100	22	Peak
2390	44	-10	54	41.72	32.86	3.47	34.05	100	22	Average
2412	105.38	-	-	103.05	32.89	3.52	34.08	100	39	Peak
2412	100.59	-	-	98.26	32.89	3.52	34.08	100	39	Average
2493.35	51.75	-22.25	74	49.21	33.05	3.72	34.23	100	60	Peak
2493.35	42.05	-11.95	54	39.51	33.05	3.72	34.23	100	60	Average



Test Mode :	Mode 2	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Horizontal
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
58.08	20.05	-19.95	40	44.3	5.59	0.3	30.14	-	-	Peak
105.87	24.77	-18.73	43.5	43.02	11.29	0.42	29.96	-	-	Peak
196.59	21.48	-22.02	43.5	42.02	8.86	0.59	29.99	-	-	Peak
843.9	25.49	-20.51	46	33.41	20.45	1.28	29.65	-	-	Peak
936.3	28.68	-17.32	46	36.22	20.67	1.32	29.53	100	126	Peak
960.1	26.9	-27.1	54	34.31	20.79	1.34	29.54	-	-	Peak
2388.85	49.97	-24.03	74	47.69	32.86	3.47	34.05	200	110	Peak
2388.85	39.54	-14.46	54	37.26	32.86	3.47	34.05	200	110	Average
2437	107.01	-	-	104.61	32.95	3.6	34.15	200	32	Peak
2437	102.02	-	-	99.62	32.95	3.6	34.15	200	32	Average
2484.99	50.92	-23.08	74	48.43	33.01	3.68	34.2	200	36	Peak
2484.99	41	-13	54	38.51	33.01	3.68	34.2	200	36	Average



Test Mode :	Mode 2	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
42.69	27.76	-12.24	40	47.11	10.48	0.26	30.09	-	-	Peak
58.62	36.49	-3.51	40	60.88	5.44	0.31	30.14	100	30	Peak
105.33	29.16	-14.34	43.5	47.41	11.29	0.42	29.96	-	-	Peak
829.9	25.63	-20.37	46	33.72	20.27	1.27	29.63	-	-	Peak
936.3	28.88	-17.12	46	36.42	20.67	1.32	29.53	-	-	Peak
960.1	26.62	-27.38	54	34.03	20.79	1.34	29.54	-	-	Peak
2362.44	49.63	-24.37	74	47.42	32.81	3.38	33.98	100	126	Peak
2362.44	39.4	-14.6	54	37.19	32.81	3.38	33.98	100	126	Average
2437	107.83	-	-	105.43	32.95	3.6	34.15	100	66	Peak
2437	102.78	-	-	100.38	32.95	3.6	34.15	100	66	Average
2484.99	52.09	-21.91	74	49.6	33.01	3.68	34.2	100	80	Peak
2484.99	41.45	-12.55	54	38.96	33.01	3.68	34.2	100	80	Average



Test Mode :	Mode 3	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Horizontal
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
55.38	19.51	-20.49	40	43.15	6.2	0.29	30.13	-	-	Peak
106.41	25.17	-18.33	43.5	43.28	11.43	0.42	29.96	-	-	Peak
196.05	22.3	-21.2	43.5	42.91	8.8	0.58	29.99	-	-	Peak
825.7	26.11	-19.89	46	34.29	20.18	1.26	29.62	-	-	Peak
848.8	28.73	-17.27	46	36.61	20.5	1.28	29.66	-	-	Peak
936.3	29.08	-16.92	46	36.62	20.67	1.32	29.53	100	263	Peak
2348	49.6	-24.4	74	47.43	32.78	3.33	33.94	200	331	Peak
2348	38.73	-15.27	54	36.56	32.78	3.33	33.94	200	331	Average
2462	108.17	-	-	105.72	32.98	3.64	34.17	200	62	Peak
2462	102.81	-	-	100.36	32.98	3.64	34.17	200	62	Average
2483.85	57.37	-16.63	74	54.88	33.01	3.68	34.2	200	60	Peak
2483.85	47.42	-6.58	54	44.93	33.01	3.68	34.2	200	60	Average



Test Mode :	Mode 3	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Vertical
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
52.14	36.29	-3.71	40	59.12	7.01	0.29	30.13	-	-	Peak
58.08	36.52	-3.48	40	60.77	5.59	0.3	30.14	100	36	Peak
105.06	29.18	-14.32	43.5	47.57	11.15	0.42	29.96	-	-	Peak
848.8	28.03	-17.97	46	35.91	20.5	1.28	29.66	-	-	Peak
936.3	28.64	-17.36	46	36.18	20.67	1.32	29.53	-	-	Peak
960.1	27.97	-26.03	54	35.38	20.79	1.34	29.54	-	-	Peak
2380.11	49.79	-24.21	74	47.55	32.83	3.42	34.01	100	120	Peak
2380.11	39.12	-14.88	54	36.88	32.83	3.42	34.01	100	120	Average
2462	107.9	-	-	105.45	32.98	3.64	34.17	100	60	Peak
2462	103.25	-	-	100.8	32.98	3.64	34.17	100	60	Average
2483.85	57.57	-16.43	74	55.08	33.01	3.68	34.2	100	62	Peak
2483.85	48.33	-5.67	54	45.84	33.01	3.68	34.2	100	62	Average



Test Mode :	Mode 4	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Horizontal
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
104.79	30.18	-13.32	43.5	48.57	11.15	0.42	29.96	100	285	Peak
121.53	20.21	-23.29	43.5	37.94	11.79	0.45	29.97	-	-	Peak
196.86	21.13	-22.37	43.5	41.67	8.86	0.59	29.99	-	-	Peak
848.8	27.35	-18.65	46	35.23	20.5	1.28	29.66	-	-	Peak
936.3	28.48	-17.52	46	36.02	20.67	1.32	29.53	-	-	Peak
960.1	26.86	-27.14	54	34.27	20.79	1.34	29.54	-	-	Peak
2390	58.91	-15.09	74	56.63	32.86	3.47	34.05	200	31	Peak
2390	44.93	-9.07	54	42.65	32.86	3.47	34.05	200	31	Average
2412	105.38	-	-	103.05	32.89	3.52	34.08	200	112	Peak
2412	76.58	-	-	74.25	32.89	3.52	34.08	200	112	Average
2493.54	51.36	-22.64	74	48.82	33.05	3.72	34.23	200	106	Peak
2493.54	37.75	-16.25	54	35.21	33.05	3.72	34.23	200	106	Average



Test Mode :	Mode 4	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Vertical
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
51.87	35.65	-4.35	40	58.48	7.01	0.29	30.13	-	-	Peak
59.43	35.81	-4.19	40	60.2	5.44	0.31	30.14	100	208	Peak
104.79	27.81	-15.69	43.5	46.2	11.15	0.42	29.96	-	-	Peak
848.8	26.11	-19.89	46	33.99	20.5	1.28	29.66	-	-	Peak
936.3	28.52	-17.48	46	36.06	20.67	1.32	29.53	-	-	Peak
960.1	27.29	-26.71	54	34.7	20.79	1.34	29.54	-	-	Peak
2390	54.35	-19.65	74	52.07	32.86	3.47	34.05	100	112	Peak
2390	41.84	-12.16	54	39.56	32.86	3.47	34.05	100	112	Average
2412	104.83	-	-	102.5	32.89	3.52	34.08	100	20	Peak
2412	75.64	-	-	73.31	32.89	3.52	34.08	100	20	Average
2492.02	49.67	-24.33	74	47.13	33.05	3.72	34.23	100	61	Peak
2492.02	36.72	-17.28	54	34.18	33.05	3.72	34.23	100	61	Average



Test Mode :	Mode 5	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Horizontal
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
105.87	29.44	-14.06	43.5	47.69	11.29	0.42	29.96	100	52	Peak
162.3	19.83	-23.67	43.5	39.7	9.53	0.53	29.93	-	-	Peak
197.67	21.29	-22.21	43.5	41.79	8.91	0.59	30	-	-	Peak
848.8	26.62	-19.38	46	34.5	20.5	1.28	29.66	-	-	Peak
936.3	27.62	-18.38	46	35.16	20.67	1.32	29.53	-	-	Peak
960.1	26.98	-27.02	54	34.39	20.79	1.34	29.54	-	-	Peak
2384.29	50.79	-23.21	74	48.55	32.83	3.42	34.01	200	110	Peak
2384.29	36.46	-17.54	54	34.22	32.83	3.42	34.01	200	110	Average
2437	107.25	-	-	104.85	32.95	3.6	34.15	200	18	Peak
2437	77.01	-	-	74.61	32.95	3.6	34.15	200	18	Average
2491.26	52.22	-21.78	74	49.68	33.05	3.72	34.23	200	108	Peak
2491.26	38.16	-15.84	54	35.62	33.05	3.72	34.23	200	108	Average



Test Mode :	Mode 5	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
52.41	35.93	-4.07	40	58.76	7.01	0.29	30.13	100	306	Peak
59.43	35.03	-4.97	40	59.42	5.44	0.31	30.14	-	-	Peak
104.79	27.66	-15.84	43.5	46.05	11.15	0.42	29.96	-	-	Peak
848.8	27.06	-18.94	46	34.94	20.5	1.28	29.66	-	-	Peak
936.3	26.29	-19.71	46	33.83	20.67	1.32	29.53	-	-	Peak
960.1	27.7	-26.3	54	35.11	20.79	1.34	29.54	-	-	Peak
2385.05	50.62	-23.38	74	48.38	32.83	3.42	34.01	100	36	Peak
2385.05	36.57	-17.43	54	34.33	32.83	3.42	34.01	100	36	Average
2437	107.28	-	-	104.88	32.95	3.6	34.15	100	59	Peak
2437	76.6	-	-	74.2	32.95	3.6	34.15	100	59	Average
2487.27	53.75	-20.25	74	51.26	33.01	3.68	34.2	100	12	Peak
2487.27	38.11	-15.89	54	35.62	33.01	3.68	34.2	100	12	Average



Test Mode :	Mode 6	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Horizontal
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
104.79	30.15	-13.35	43.5	48.54	11.15	0.42	29.96	100	302	Peak
160.95	19.88	-23.62	43.5	39.73	9.56	0.53	29.94	-	-	Peak
195.51	21.33	-22.17	43.5	41.94	8.8	0.58	29.99	-	-	Peak
849.5	27.05	-18.95	46	34.92	20.51	1.28	29.66	-	-	Peak
936.3	29.77	-16.23	46	37.31	20.67	1.32	29.53	-	-	Peak
960.1	26.5	-27.5	54	33.91	20.79	1.34	29.54	-	-	Peak
2358.45	49.12	-24.88	74	46.91	32.81	3.38	33.98	200	16	Peak
2358.45	35.83	-18.17	54	33.62	32.81	3.38	33.98	200	16	Average
2462	108.16	-	-	105.71	32.98	3.64	34.17	200	32	Peak
2462	78.26	-	-	75.81	32.98	3.64	34.17	200	32	Average
2483.5	63.05	-10.95	74	60.56	33.01	3.68	34.2	200	25	Peak
2483.5	43.35	-10.65	54	40.86	33.01	3.68	34.2	200	25	Average



Test Mode :	Mode 6	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Vertical
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
52.14	35.76	-4.24	40	58.59	7.01	0.29	30.13	-	-	Peak
58.89	36.02	-3.98	40	60.41	5.44	0.31	30.14	100	180	Peak
103.71	27.42	-16.08	43.5	45.95	11.01	0.42	29.96	-	-	Peak
848.8	30.15	-15.85	46	38.03	20.5	1.28	29.66	-	-	Peak
936.3	28.96	-17.04	46	36.5	20.67	1.32	29.53	-	-	Peak
960.1	27.49	-26.51	54	34.9	20.79	1.34	29.54	-	-	Peak
2382.2	49.17	-24.83	74	46.93	32.83	3.42	34.01	100	106	Peak
2382.2	36.4	-17.6	54	34.16	32.83	3.42	34.01	100	106	Average
2462	107.47	-	-	105.02	32.98	3.64	34.17	100	118	Peak
2462	77.73	-	-	75.28	32.98	3.64	34.17	100	118	Average
2483.5	65.19	-8.81	74	62.7	33.01	3.68	34.2	100	220	Peak
2483.5	45.11	-8.89	54	42.62	33.01	3.68	34.2	100	220	Average



Test Mode :	Mode 7	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Horizontal
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
91.02	23.74	-19.76	43.5	44.22	9.12	0.39	29.99	100	33	Peak
213.06	22.86	-20.64	43.5	42.59	9.65	0.61	29.99	-	-	Peak
298.11	21.73	-24.27	46	37.99	12.97	0.72	29.95	-	-	Peak
400.1	20.57	-25.43	46	33.56	16	0.84	29.83	-	-	Peak
881	23.3	-22.7	46	31.08	20.47	1.29	29.54	-	-	Peak
946.8	24.98	-29.02	54	32.47	20.72	1.33	29.54	-	-	Peak
2390	63.74	-10.26	74	61.46	32.86	3.47	34.05	200	50	Peak
2390	49.9	-4.1	54	47.62	32.86	3.47	34.05	200	50	Average
2412	105.95	-	-	103.62	32.89	3.52	34.08	200	21	Peak
2412	92.7	-	-	90.37	32.89	3.52	34.08	200	21	Average
2483.5	53.49	-20.51	74	51	33.01	3.68	34.2	200	112	Peak
2483.5	40.81	-13.19	54	38.32	33.01	3.68	34.2	200	112	Average



Test Mode :	Mode 7	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Vertical
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
37.29	24.14	-15.86	40	40.26	13.7	0.24	30.06	-	-	Peak
55.11	28.77	-11.23	40	52.41	6.2	0.29	30.13	100	269	Peak
198.75	19.29	-24.21	43.5	39.75	8.95	0.59	30	-	-	Peak
878.2	25.19	-20.81	46	32.98	20.47	1.29	29.55	-	-	Peak
939.8	34.54	-11.46	46	42.05	20.69	1.33	29.53	-	-	Peak
960.1	30.96	-23.04	54	38.37	20.79	1.34	29.54	-	-	Peak
2390	60.26	-13.74	74	57.98	32.86	3.47	34.05	100	28	Peak
2390	46.84	-7.16	54	44.56	32.86	3.47	34.05	100	28	Average
2412	103.88	-	-	101.55	32.89	3.52	34.08	100	31	Peak
2412	91	-	-	88.67	32.89	3.52	34.08	100	31	Average
2483.5	51.47	-22.53	74	48.98	33.01	3.68	34.2	100	12	Peak
2483.5	38.1	-15.9	54	35.61	33.01	3.68	34.2	100	12	Average



Test Mode :	Mode 8	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Horizontal
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
91.83	23.59	-19.91	43.5	43.83	9.35	0.39	29.98	100	228	Peak
106.68	20.12	-23.38	43.5	38.23	11.43	0.42	29.96	-	-	Peak
205.23	21.22	-22.28	43.5	41.37	9.25	0.6	30	-	-	Peak
400.1	21.12	-24.88	46	34.11	16	0.84	29.83	-	-	Peak
853	22.43	-23.57	46	30.29	20.51	1.28	29.65	-	-	Peak
939.8	24.53	-21.47	46	32.04	20.69	1.33	29.53	-	-	Peak
2390	55.45	-18.55	74	53.17	32.86	3.47	34.05	100	0	Peak
2390	43.23	-10.77	54	40.95	32.86	3.47	34.05	100	0	Average
2437	104.9	-	-	102.5	32.95	3.6	34.15	172	163	Peak
2437	91.46	-	-	89.06	32.95	3.6	34.15	172	163	Average
2483.5	51.74	-22.26	74	49.25	33.01	3.68	34.2	100	0	Peak
2483.5	39.59	-14.41	54	37.1	33.01	3.68	34.2	100	0	Average



Test Mode :	Mode 8	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
37.29	23.37	-16.63	40	39.49	13.7	0.24	30.06	-	-	Peak
56.73	28.96	-11.04	40	53.05	5.75	0.3	30.14	100	109	Peak
87.51	19.68	-20.32	40	41.21	8.09	0.38	30	-	-	Peak
876.1	22.48	-23.52	46	30.27	20.48	1.29	29.56	-	-	Peak
939.8	23.88	-22.12	46	31.39	20.69	1.33	29.53	-	-	Peak
958	24.08	-29.92	54	31.5	20.78	1.34	29.54	-	-	Peak
2390	61.4	-12.6	74	59.12	32.86	3.47	34.05	100	90	Peak
2390	48.1	-5.9	54	45.82	32.86	3.47	34.05	100	90	Average
2437	107.55	-	-	105.15	32.95	3.6	34.15	100	105	Peak
2437	95.08	-	-	92.68	32.95	3.6	34.15	100	105	Average
2483.5	43.72	-10.28	54	41.23	33.01	3.68	34.2	147	296	Average
2483.5	56.87	-17.13	74	54.38	33.01	3.68	34.2	147	296	Peak



Test Mode :	Mode 9	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Horizontal
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
91.29	25.31	-18.19	43.5	45.79	9.12	0.39	29.99	100	336	Peak
105.33	21.64	-21.86	43.5	39.89	11.29	0.42	29.96	-	-	Peak
204.96	20.98	-22.52	43.5	41.17	9.21	0.6	30	-	-	Peak
400.1	20.29	-25.71	46	33.28	16	0.84	29.83	-	-	Peak
876.1	22.73	-23.27	46	30.52	20.48	1.29	29.56	-	-	Peak
939.8	25.16	-20.84	46	32.67	20.69	1.33	29.53	-	-	Peak
2388.66	50.84	-23.16	74	48.56	32.86	3.47	34.05	200	20	Peak
2388.66	37.89	-16.11	54	35.61	32.86	3.47	34.05	200	20	Average
2462	104.9	-	-	102.45	32.98	3.64	34.17	200	36	Peak
2462	92.07	-	-	89.62	32.98	3.64	34.17	200	36	Average
2483.53	63.11	-10.89	74	60.62	33.01	3.68	34.2	200	26	Peak
2483.53	49.65	-4.35	54	47.16	33.01	3.68	34.2	200	26	Average



Test Mode :	Mode 9	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Cloud Peng	Polarization :	Vertical
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
34.59	23.44	-16.56	40	38.2	15.1	0.23	30.09	-	-	Peak
55.11	28.46	-11.54	40	52.1	6.2	0.29	30.13	100	22	Peak
198.48	19.58	-23.92	43.5	40.04	8.95	0.59	30	-	-	Peak
683.6	21.89	-24.11	46	31.29	19.19	1.12	29.71	-	-	Peak
844.6	22.78	-23.22	46	30.69	20.46	1.28	29.65	-	-	Peak
939.8	25.54	-20.46	46	33.05	20.69	1.33	29.53	-	-	Peak
2367	49.39	-24.61	74	47.18	32.81	3.38	33.98	100	221	Peak
2367	36.47	-17.53	54	34.26	32.81	3.38	33.98	100	221	Average
2462	105.69	-	-	103.24	32.98	3.64	34.17	100	28	Peak
2462	93.26	-	-	90.81	32.98	3.64	34.17	100	28	Average
2483.5	64.39	-9.61	74	61.9	33.01	3.68	34.2	100	28	Peak
2483.5	49.77	-4.23	54	47.28	33.01	3.68	34.2	100	28	Average



3.8 Antenna Requirements

3.8.1 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.

3.8.2 Antenna Connected Construction

The antennas type used in this product is PIFA Antenna without connector and it is considered to meet antenna requirement.

3.8.3 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	Jan. 07, 2011	Dec. 17, 2011 ~ Dec. 20, 2011	Jan. 06, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 23, 2011	Dec. 17, 2011 ~ Dec. 20, 2011	Aug. 22, 2012	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 23, 2011	Dec. 17, 2011 ~ Dec. 20, 2011	Aug. 22, 2012	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 02, 2011	Dec. 29, 2011	Jun. 01, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Jan. 07, 2011	Dec. 29, 2011	Jan. 06, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Jan. 07, 2011	Dec. 29, 2011	Jan. 06, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 16, 2011	Dec. 29, 2011	Nov. 15, 2012	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/066	Full-Band	Jan. 07, 2011	Dec. 29, 2011	Jan. 06, 2012	Conduction (CO01-KS)
EMI Test Receive	R&S	ESCI 7	100724	9kHz~7GHz	Aug. 22, 2011	Jan. 03, 2012	Aug. 21, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz~30MHz	Dec. 09, 2011	Jan. 03, 2012	Dec. 08, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz~30MHz	Dec. 06, 2011	Jan. 03, 2012	Dec. 05, 2012	Conduction (CO05-HY)
AC Power Source	APC	APC-1000 W	N/A	N/A	N/A	Jan. 03, 2012	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	112403	N/A	Feb. 22, 2011	Jan. 03, 2012	Feb. 21, 2012	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 22, 2011	Dec. 29, 2011	Oct. 21, 2012	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP30	101067	9KHz ~ 30GHz	Dec. 06, 2011	Dec. 29, 2011	Dec. 05, 2012	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 10, 2011	Dec. 29, 2011	Aug. 09, 2012	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec. 05, 2011	Dec. 29, 2011	Dec. 04, 2012	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Mar. 29, 2011	Dec. 29, 2011	Mar. 28, 2012	Radiation (03CH07-HY)
EMI TEST RECEIVER	R&S	ESCI 7	100724	9kHz~7GHz	Aug. 22, 2011	Dec. 29, 2011	Aug. 21, 2012	Radiation (03CH07-HY)
Pre Amplifier	MITEQ	AMF-7D-00101800-30-10P	159088	1GHz ~ 18GHz	Feb. 21, 2011	Dec. 29, 2011	Feb. 20, 2012	Radiation (03CH07-HY)



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 09, 2011	Dec. 29, 2011	Nov. 08, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Jan. 07, 2011	Dec. 29, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	101400	9kHz~30GHz	Jun. 02, 2011	Dec. 29, 2011	Jun. 01, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Dec. 29, 2011	Dec. 07, 2012	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 07, 2011	Dec. 29, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060029	9KHz~2GHz	Jan. 10, 2011	Dec. 29, 2011	Jan. 09, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Jan. 07, 2011	Dec. 29, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1G-18GHz	Nov. 07, 2011	Dec. 29, 2011	Nov. 06, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15-40GHz	Oct. 11, 2011	Dec. 29, 2011	Oct. 10, 2012	Radiation (03CH01-KS)

5 Uncertainty of Evaluation

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

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.10	Normal (k=2)	0.05
Cable Loss	0.10	Normal (k=2)	0.05
AMN Insertion Loss	2.50	Rectangular	0.63
Receiver Specification	1.50	Rectangular	0.43
Site Imperfection	1.39	Rectangular	0.80
Mismatch	+0.34 / -0.35	U-Shape	0.24
Combined Standard Uncertainty $U_c(y)$	1.13		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.26		

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

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty $U_c(y)$	1.27		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54		



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

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\text{Log}(1-\Gamma_1*\Gamma_2)$	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty $U_c(y)$	2.36				
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.72				