



FCC RF Test Report

APPLICANT : Motorola Mobility, Inc.
EQUIPMENT : Mobile Phone
BRAND NAME : Motorola
MODEL NAME : XT615
MARKETING NAME : XT615
GPPD NUMBER : 3192
FCC ID : IHDP56MM6
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Jan. 18, 2012 and completely tested on Jan. 23, 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.



TABLE OF CONTENTS

REVISION HISTORY..... 3

SUMMARY OF TEST RESULT 4

1 GENERAL DESCRIPTION 5

 1.1 Applicant 5

 1.2 Manufacturer 5

 1.3 Feature of Equipment Under Test 5

 1.4 Testing Site 6

 1.5 Applied Standards 6

 1.6 Ancillary Equipment List 6

2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST 7

 2.1 RF Power 7

 2.2 Test Mode 8

 2.3 Connection Diagram of Test System 9

 2.4 RF Utility 9

3 TEST RESULT 10

 3.1 6dB Bandwidth Measurement 10

 3.2 Output Power Measurement 17

 3.3 Band Edges Measurement 19

 3.4 Spurious Emission Measurement 27

 3.5 Power Spectral Density Measurement 37

 3.6 AC Conducted Emission Measurement 44

 3.7 Radiated Emission Measurement 48

 3.8 Antenna Requirements 70

4 LIST OF MEASURING EQUIPMENT 71

5 UNCERTAINTY OF EVALUATION 72

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 5.80 dB at 1.838 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.95 dB at 2484.420 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Motorola Mobility, Inc.
 8F., No. 9, Songgao Rd., Taipei 110, Taiwan, R.O.C.

1.2 Manufacturer

Chi Mei Communication Systems, Inc.
 No. 4, Mingsheng Street, Tucheng District, New Taipei City, 23678, Taiwan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Mobile Phone
Brand Name	Motorola
Model Name	XT615
Marketing Name	XT615
FCC ID	IHDP56MM6
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 : 18.57 dBm (0.0719 W) 802.11g : 22.18 dBm (0.1652 W) 802.11n (BW 20MHz) : 21.43 dBm (0.1390 W)
Antenna Type	PIFA Antenna with gain -0.7 dBi
HW Version	PR3
SW Version	V1_470
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

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.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
4.	Bluetooth Earphone	Sony Ericsson	HPM-78	PY7DDA-2029	N/A	N/A
5.	Notebook	DELL	P20G	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

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	18.57	18.32	18.28	18.47
CH 06	2437 MHz	18.46	18.53	18.48	18.43
CH 11	2462 MHz	18.42	18.50	18.45	18.51

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	21.63	21.59	21.23	21.22	21.13	21.1	21.46	21.35
CH 06	2437 MHz	22.11	22.10	22.00	21.95	21.93	22.03	21.81	21.82
CH 11	2462 MHz	22.18	22.12	22.00	22.05	22.03	21.92	22.03	21.92

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	21.04	21.03	20.61	20.59	20.72	20.65	20.79	20.64
CH 06	2437 MHz	21.37	21.13	20.95	21.24	21.02	21.03	21.37	21.24
CH 11	2462 MHz	21.43	21.37	21.04	21.09	21.13	21.05	21.39	21.31

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).

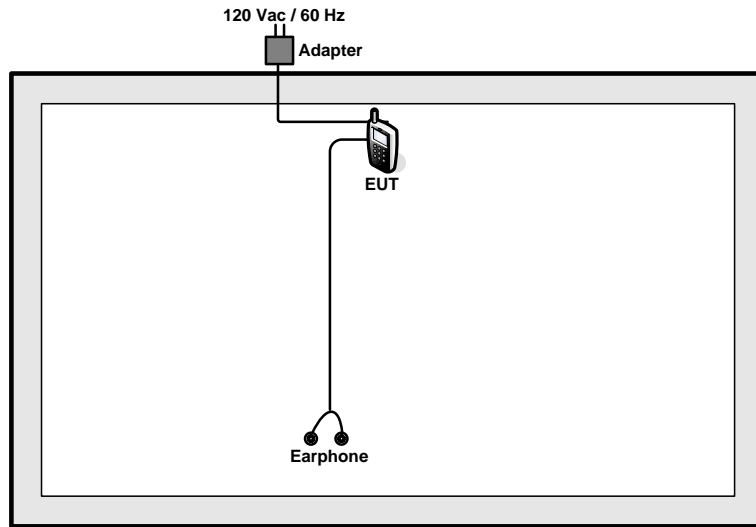
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

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

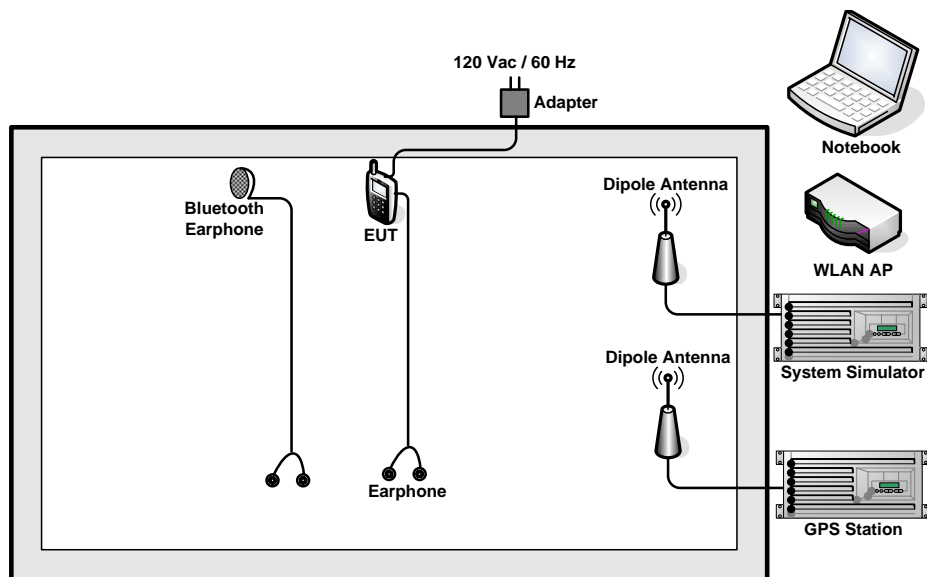
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 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 + WLAN Link + Bluetooth Link + GPS Rx + Earphone + USB Cable (Charging from Adapter)	

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

For WLAN function, key in “* # * # 767 # * # *” 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.

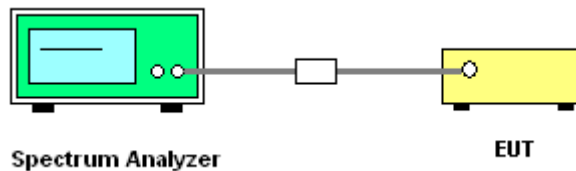
3.1.2 Measuring Instruments

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



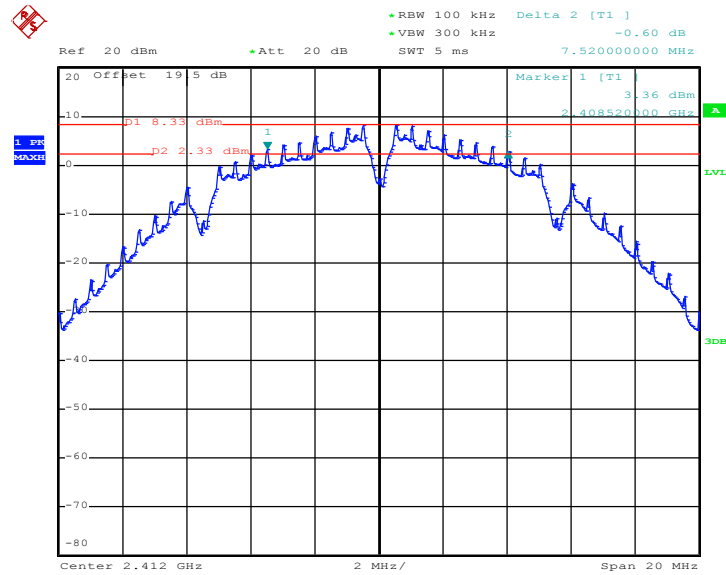


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	22~24°C
Test Engineer :	Reece Li	Relative Humidity :	58~61%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	7.52	0.5	Pass
06	2437	8.04	0.5	Pass
11	2462	8.04	0.5	Pass

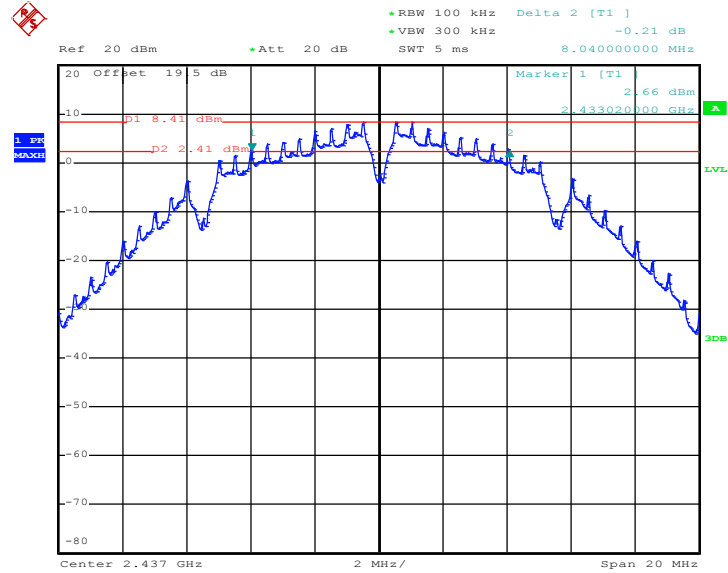
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 20.JAN.2012 22:17:30

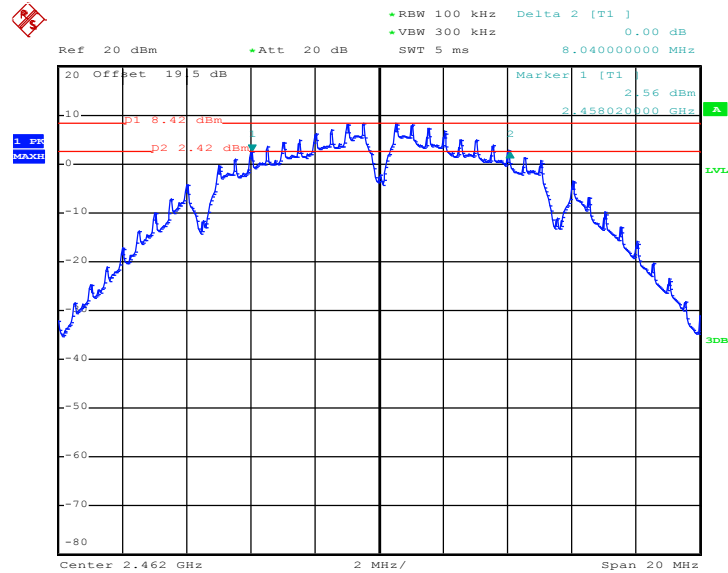


Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



Date: 20.JAN.2012 22:05:04

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



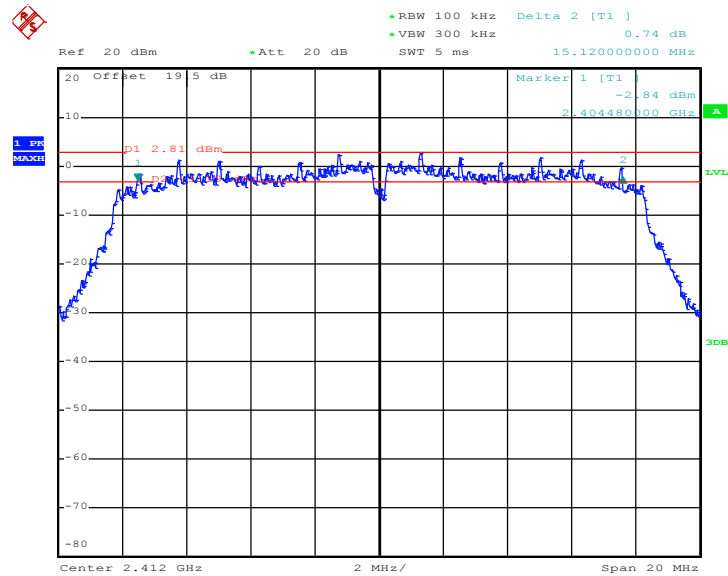
Date: 20.JAN.2012 23:17:38



Test Mode :	Mode 4, 5, 6	Temperature :	22~24°C
Test Engineer :	Reece Li	Relative Humidity :	58~61%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.12	0.5	Pass
06	2437	15.08	0.5	Pass
11	2462	15.08	0.5	Pass

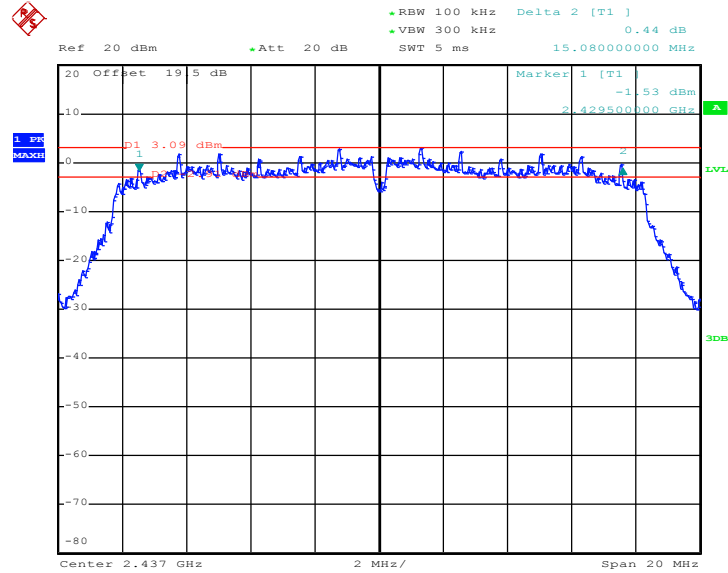
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



Date: 20.JAN.2012 23:01:59

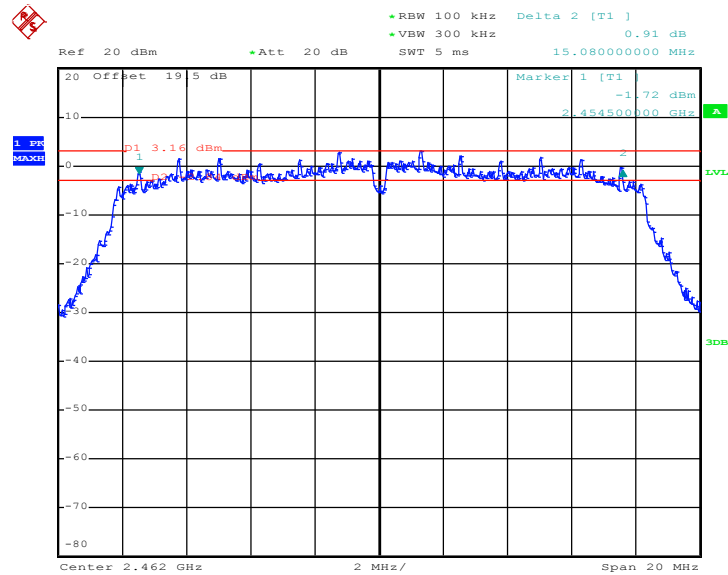


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



Date: 20.JAN.2012 22:50:32

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



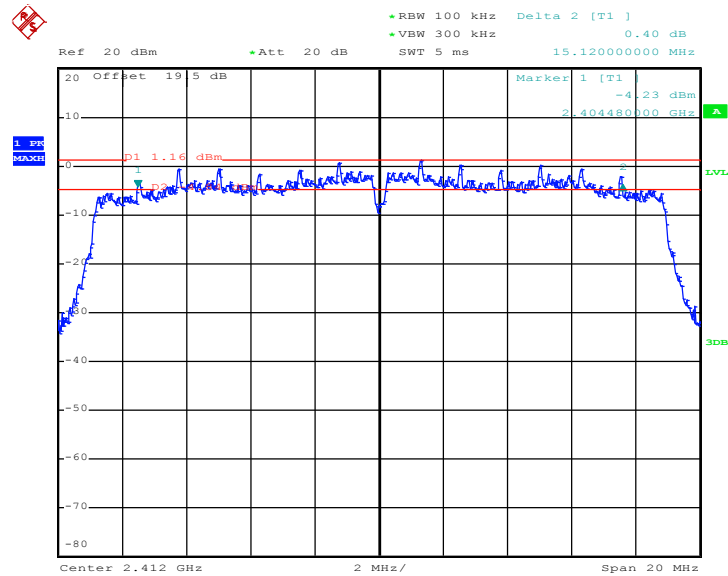
Date: 20.JAN.2012 22:37:36



Test Mode :	Mode 7, 8, 9	Temperature :	22~24°C
Test Engineer :	Reece Li	Relative Humidity :	58~61%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.12	0.5	Pass
06	2437	15.08	0.5	Pass
11	2462	15.08	0.5	Pass

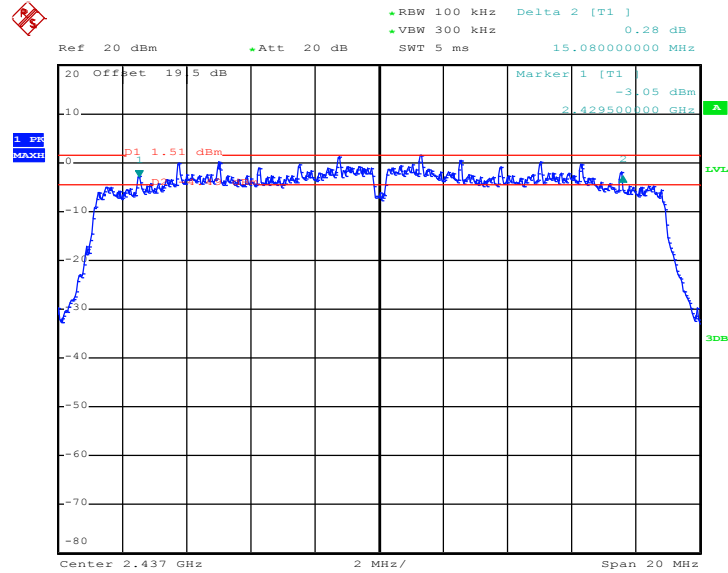
Mode 7 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 01



Date: 20.JAN.2012 23:21:49

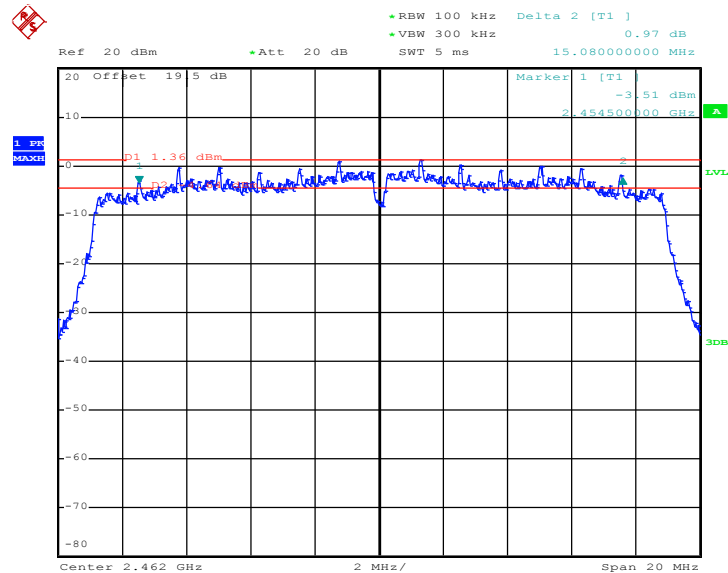


Mode 8 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 06



Date: 20.JAN.2012 23:36:58

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



Date: 20.JAN.2012 23:48:50

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.

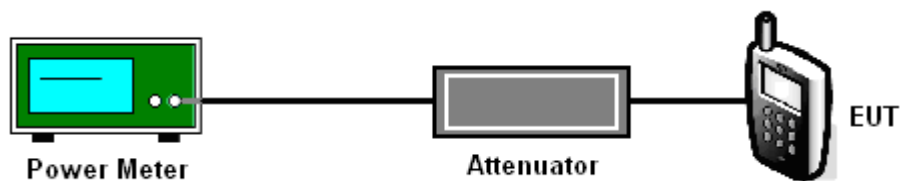
3.2.2 Measuring Instruments

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. Measure the power by power meter.

3.2.4 Test Setup





3.2.5 Test Result of Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	22~24°C
Test Engineer :	Reece Li	Relative Humidity :	58~61%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	18.57	30	Pass
06	2437	18.46	30	Pass
11	2462	18.42	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	22~24°C
Test Engineer :	Reece Li	Relative Humidity :	58~61%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.63	30	Pass
06	2437	22.11	30	Pass
11	2462	22.18	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	22~24°C
Test Engineer :	Reece Li	Relative Humidity :	58~61%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.04	30	Pass
06	2437	21.37	30	Pass
11	2462	21.43	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

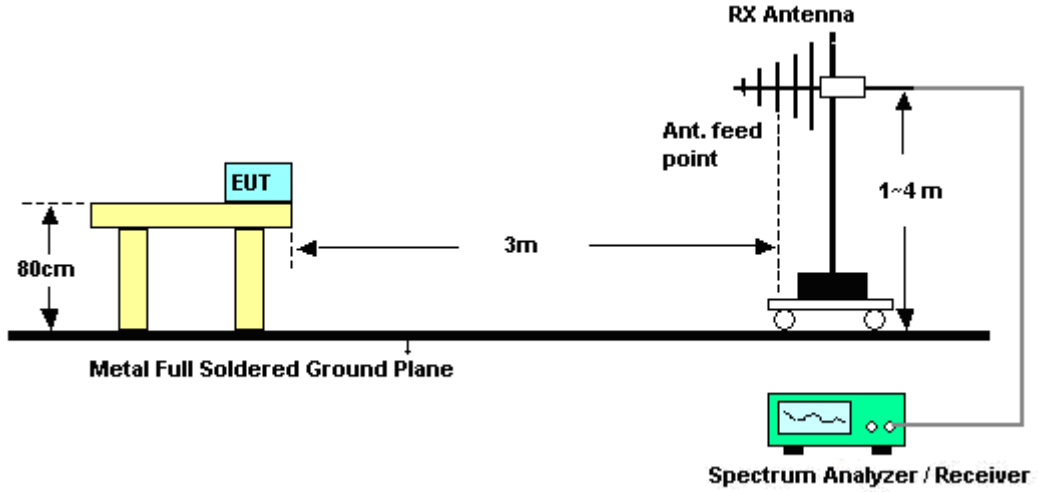
See list of measuring instruments of this test report.

3.3.3 Test Procedures

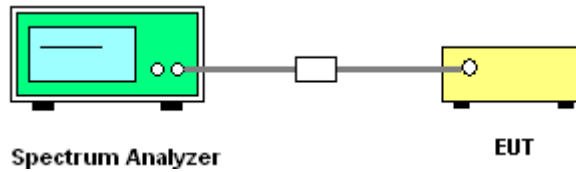
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 KHz, Video bandwidth (VBW) \geq RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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 :	19~20°C
Test Band :	802.11b	Relative Humidity :	43~44%
Test Channel :	01	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.85	54.41	-19.59	74	50.28	32.06	6.03	33.96	102	25	Peak
2388.85	43.71	-10.29	54	39.58	32.06	6.03	33.96	102	25	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
2385.81	48.49	-25.51	74	44.36	32.06	6.03	33.96	126	282	Peak
2385.81	37.86	-16.14	54	33.73	32.06	6.03	33.96	126	282	Average

Test Mode :	Mode 3	Temperature :	19~20°C
Test Band :	802.11b	Relative Humidity :	43~44%
Test Channel :	11	Test Engineer :	Gavin Wu

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
2492.02	55.51	-18.49	74	51.13	32.2	6.18	34	101	23	Peak
2492.02	46.35	-7.65	54	41.97	32.2	6.18	34	101	23	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2485.18	50.24	-23.76	74	45.88	32.18	6.18	34	101	149	Peak
2485.18	39.76	-14.24	54	35.4	32.18	6.18	34	101	149	Average



Test Mode :	Mode 4	Temperature :	19~20°C
Test Band :	802.11g	Relative Humidity :	43~44%
Test Channel :	01	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	66.64	-7.36	74	62.51	32.06	6.03	33.96	102	25	Peak
2389.99	43.38	-10.62	54	39.25	32.06	6.03	33.96	102	25	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
2389.61	57.05	-16.95	74	52.92	32.06	6.03	33.96	125	281	Peak
2389.61	37.85	-16.15	54	33.72	32.06	6.03	33.96	125	281	Average

Test Mode :	Mode 6	Temperature :	19~20°C
Test Band :	802.11g	Relative Humidity :	43~44%
Test Channel :	11	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.42	70.05	-3.95	74	65.69	32.18	6.18	34	100	4	Peak
2484.42	48.29	-5.71	54	43.93	32.18	6.18	34	100	4	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
2483.66	63.81	-10.19	74	59.45	32.18	6.18	34	140	149	Peak
2483.66	42.95	-11.05	54	38.59	32.18	6.18	34	140	149	Average



Test Mode :	Mode 7	Temperature :	19~20°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	43~44%
Test Channel :	01	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	61.97	-12.03	74	57.84	32.06	6.03	33.96	125	22	Peak
2389.99	42.62	-11.38	54	38.49	32.06	6.03	33.96	125	22	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
2389.42	53.22	-20.78	74	49.09	32.06	6.03	33.96	100	84	Peak
2389.42	36.62	-17.38	54	32.49	32.06	6.03	33.96	100	84	Average

Test Mode :	Mode 9	Temperature :	19~20°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	43~44%
Test Channel :	11	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.42	63.68	-10.32	74	59.32	32.18	6.18	34	100	177	Peak
2484.42	45.44	-8.56	54	41.08	32.18	6.18	34	100	177	Average

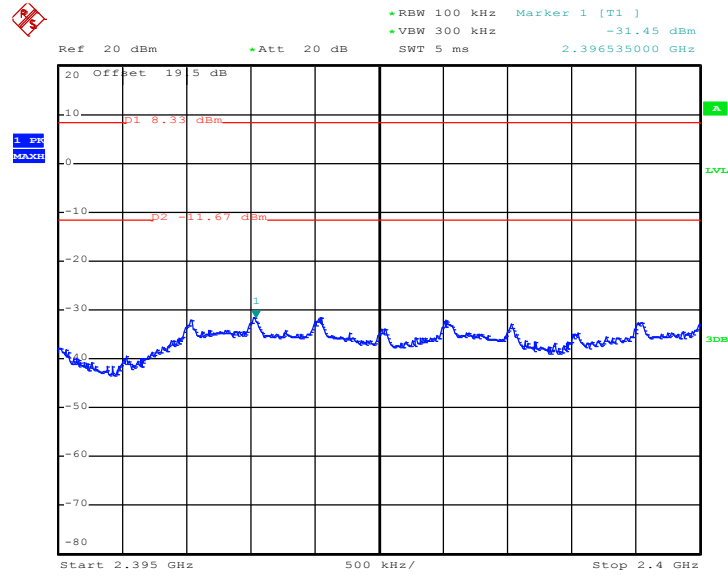
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2488.98	57.95	-16.05	74	53.57	32.2	6.18	34	140	142	Peak
2488.98	39.81	-14.19	54	35.43	32.2	6.18	34	140	142	Average



3.3.6 Test Plots of Conducted Band Edges

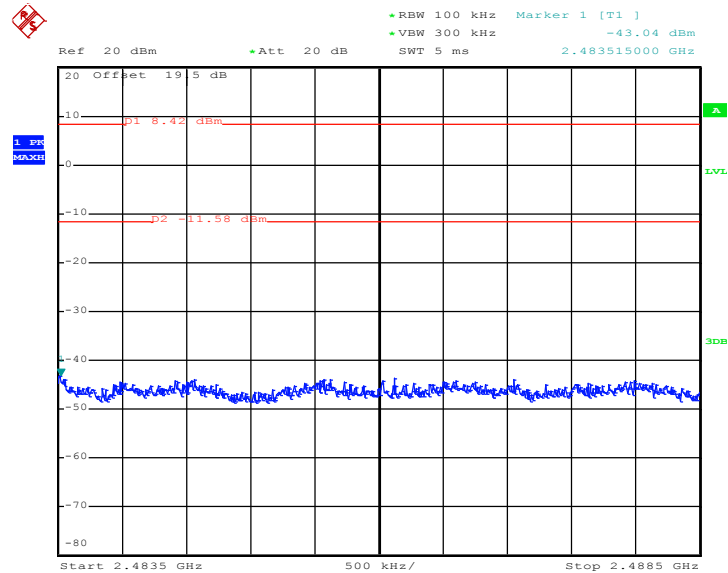
Test Mode :	Mode 1 and 3	Temperature :	22~24°C
Test Band :	802.11b	Relative Humidity :	58~61%
Test Channel :	01 and 11	Test Engineer :	Reece Li

Low Band Edge Plot on 802.11b Channel 01



Date: 20.JAN.2012 22:18:39

High Band Edge Plot on 802.11b Channel 11

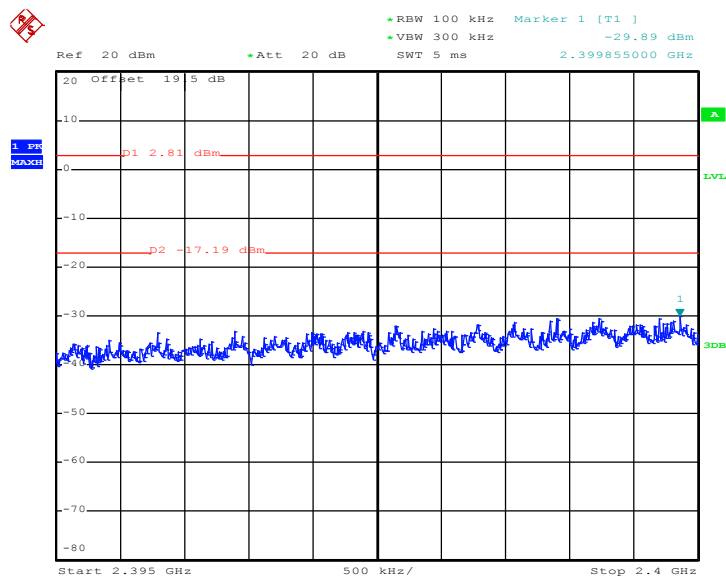


Date: 20.JAN.2012 23:18:25



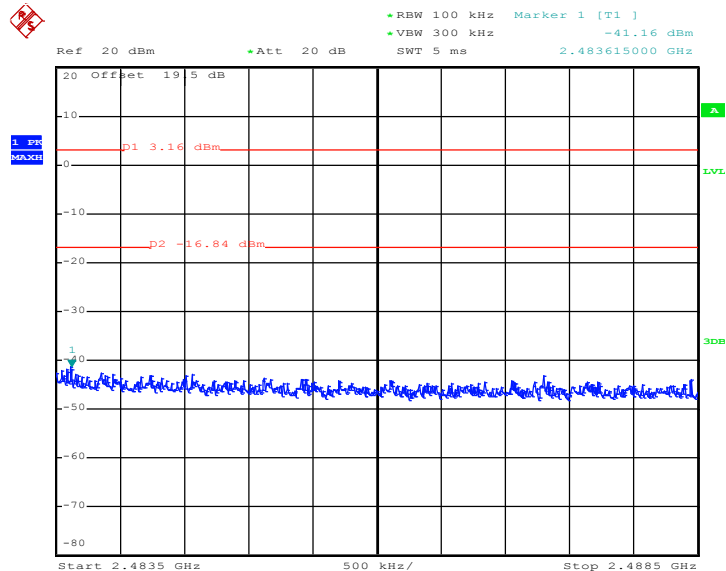
Test Mode :	Mode 4 and 6	Temperature :	22~24°C
Test Band :	802.11g	Relative Humidity :	58~61%
Test Channel :	01 and 11	Test Engineer :	Reece Li

Low Band Edge Plot on 802.11g Channel 01



Date: 20.JAN.2012 23:03:09

High Band Edge Plot on 802.11g Channel 11

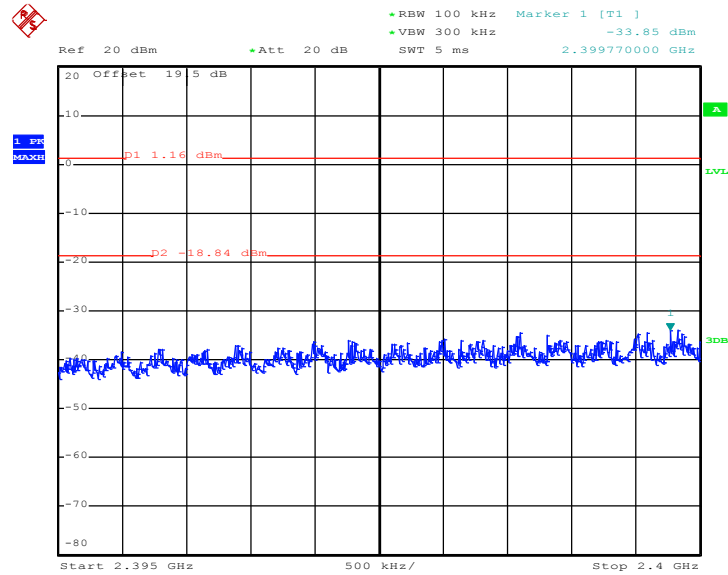


Date: 20.JAN.2012 22:38:24



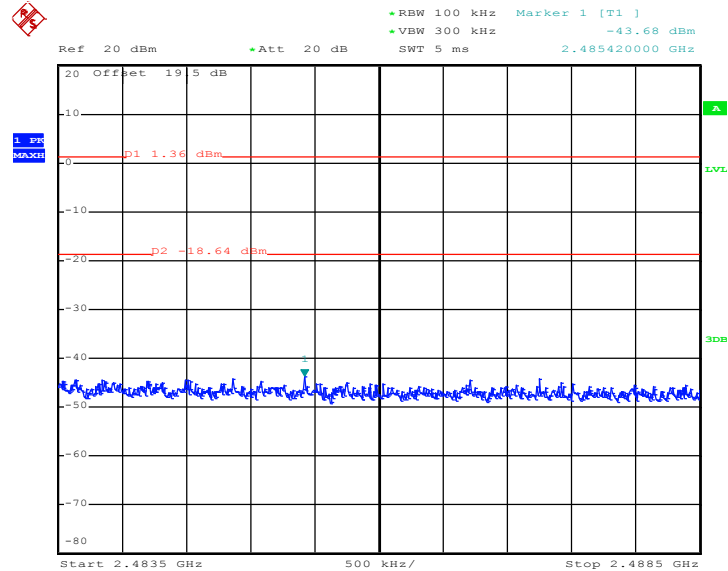
Test Mode :	Mode 7 and 9	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	58~61%
Test Channel :	01 and 11	Test Engineer :	Reece Li

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



Date: 20.JAN.2012 23:22:59

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



Date: 20.JAN.2012 23:49:38

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.

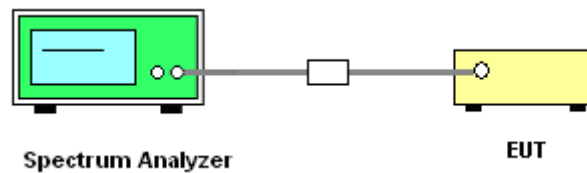
3.4.2 Measuring Instruments

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

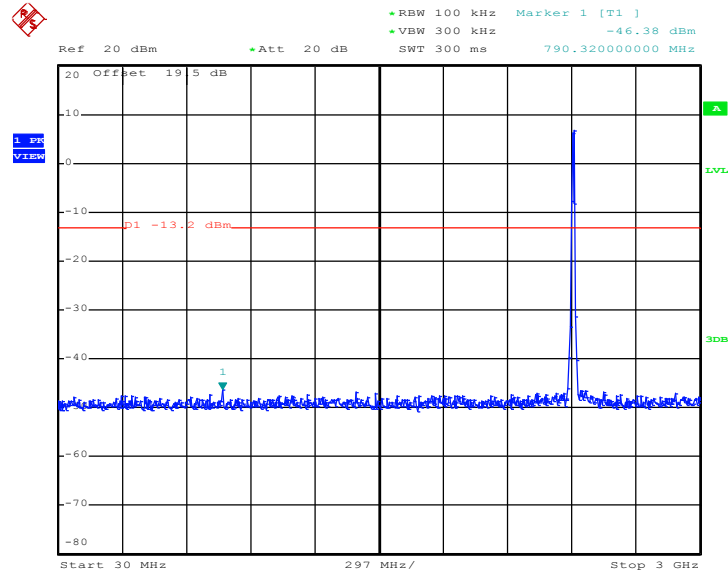




3.4.5 Test Plots of Spurious Emission

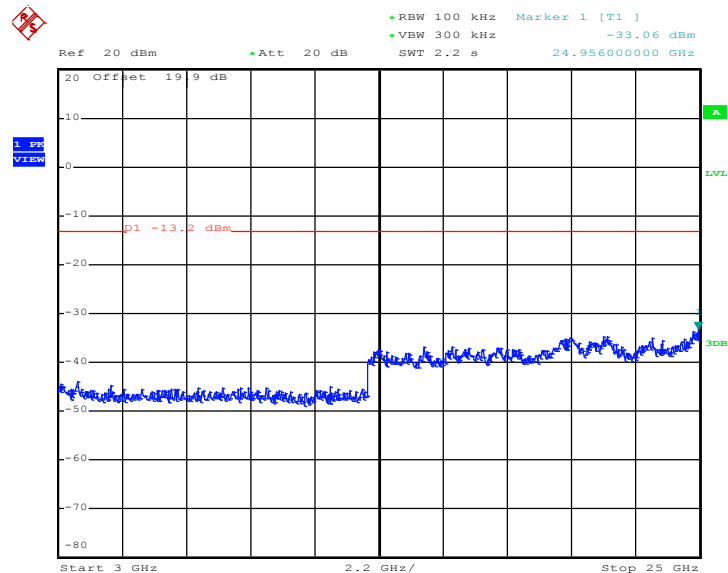
Test Mode :	Mode 1	Temperature :	22~24°C
Test Band :	802.11b	Relative Humidity :	58~61%
Test Channel :	01	Test Engineer :	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 20.JAN.2012 21:42:20

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

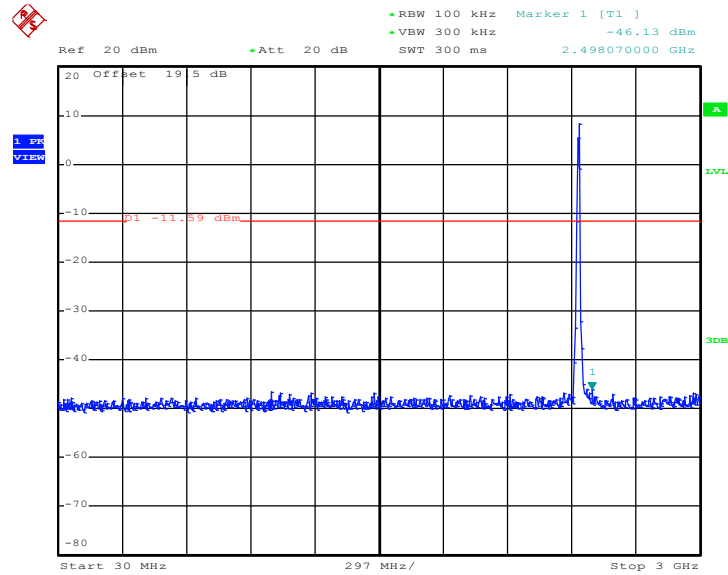


Date: 20.JAN.2012 21:42:37



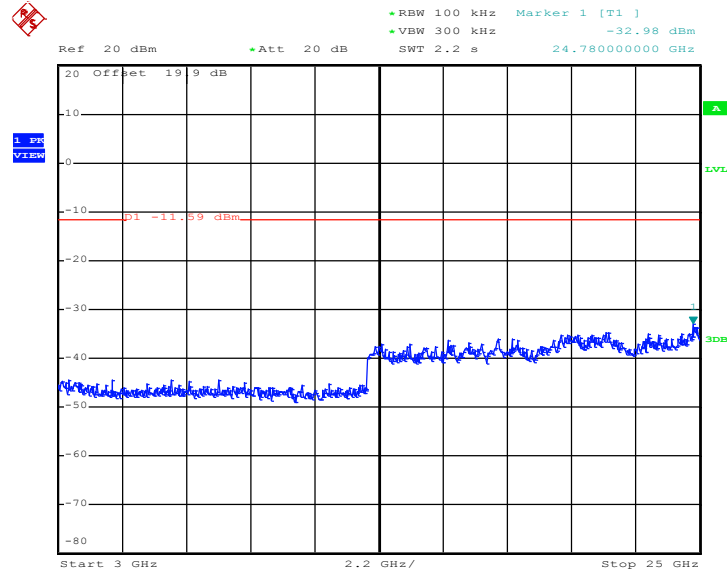
Test Mode :	Mode 2	Temperature :	22~24°C
Test Band :	802.11b	Relative Humidity :	58~61%
Test Channel :	06	Test Engineer :	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 21.JAN.2012 00:07:04

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

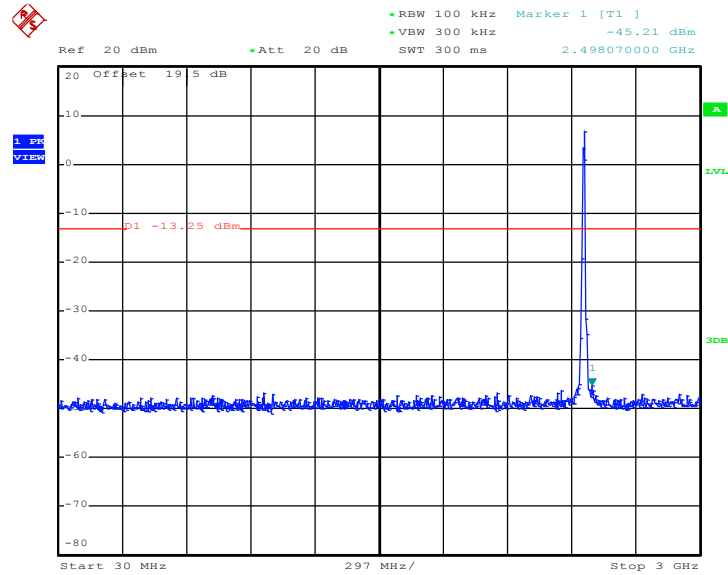


Date: 21.JAN.2012 00:07:21



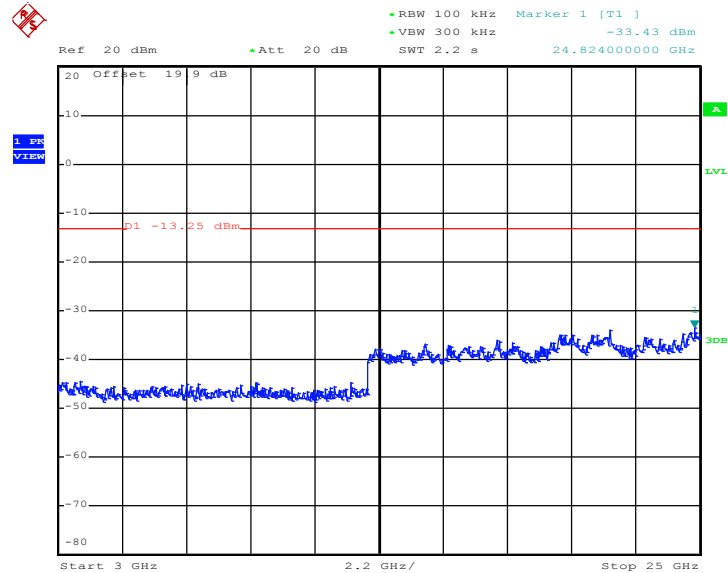
Test Mode :	Mode 3	Temperature :	22~24°C
Test Band :	802.11b	Relative Humidity :	58~61%
Test Channel :	11	Test Engineer :	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 20.JAN.2012 22:30:54

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

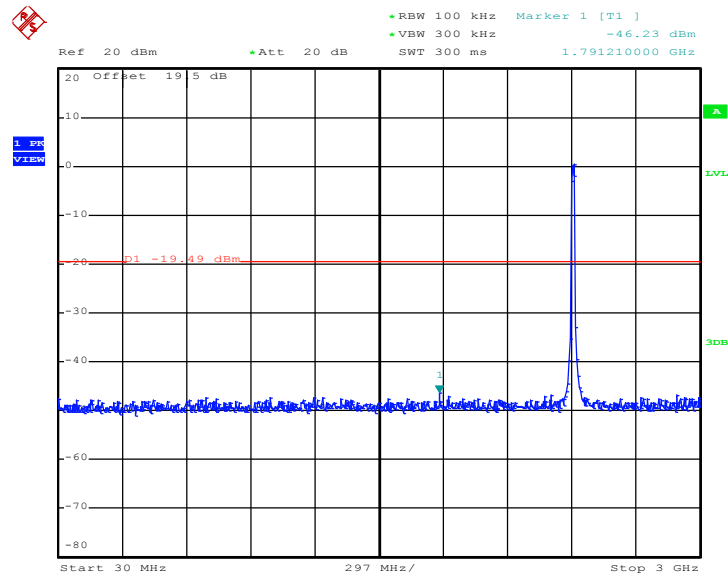


Date: 20.JAN.2012 22:31:11



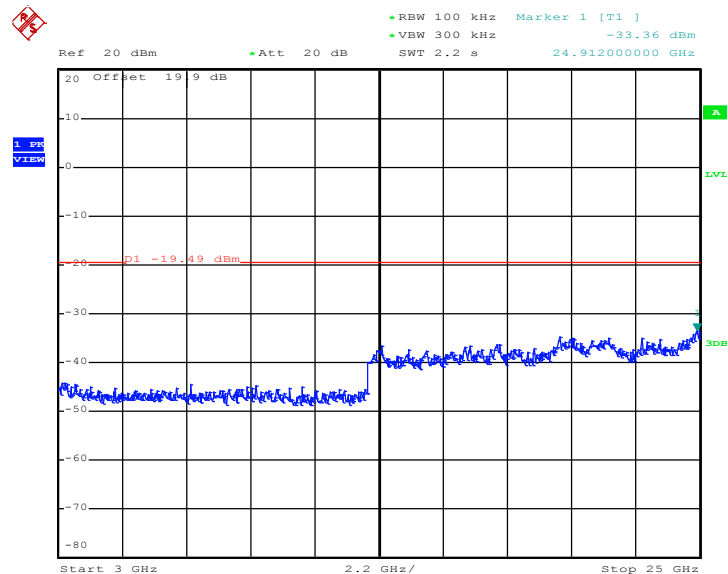
Test Mode :	Mode 4	Temperature :	22~24°C
Test Band :	802.11g	Relative Humidity :	58~61%
Test Channel :	01	Test Engineer :	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 20.JAN.2012 23:14:42

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

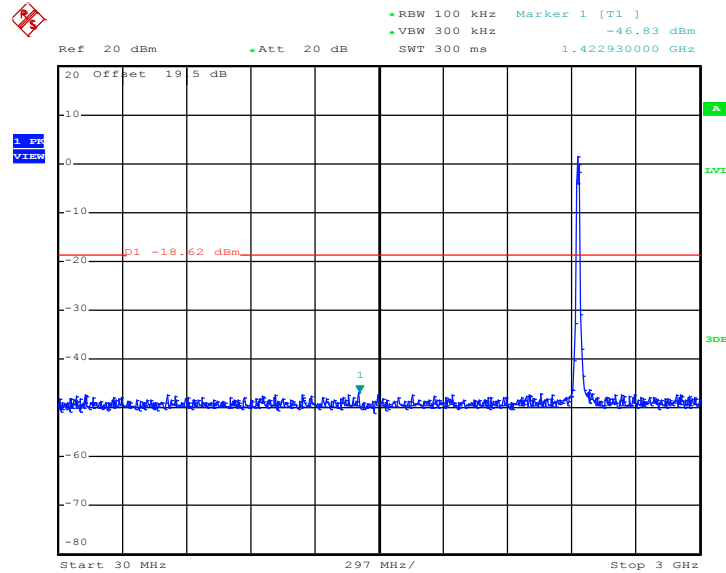


Date: 20.JAN.2012 23:14:59



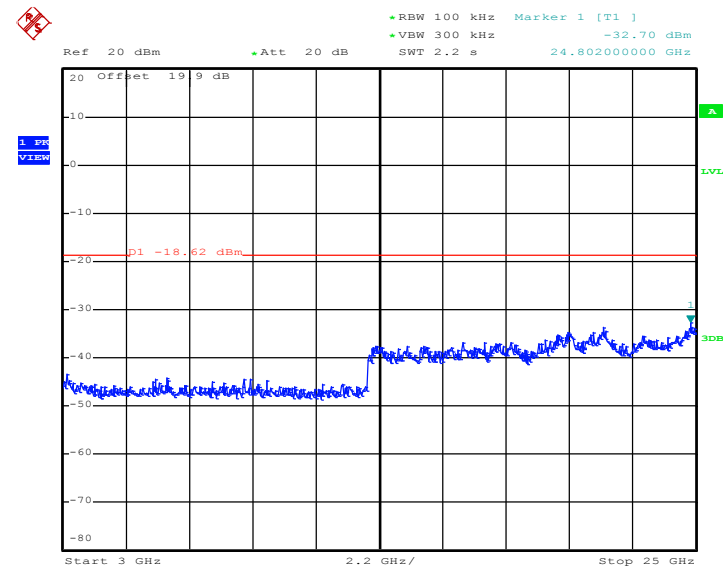
Test Mode :	Mode 5	Temperature :	22~24°C
Test Band :	802.11g	Relative Humidity :	58~61%
Test Channel :	06	Test Engineer :	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 20.JAN.2012 23:00:03

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

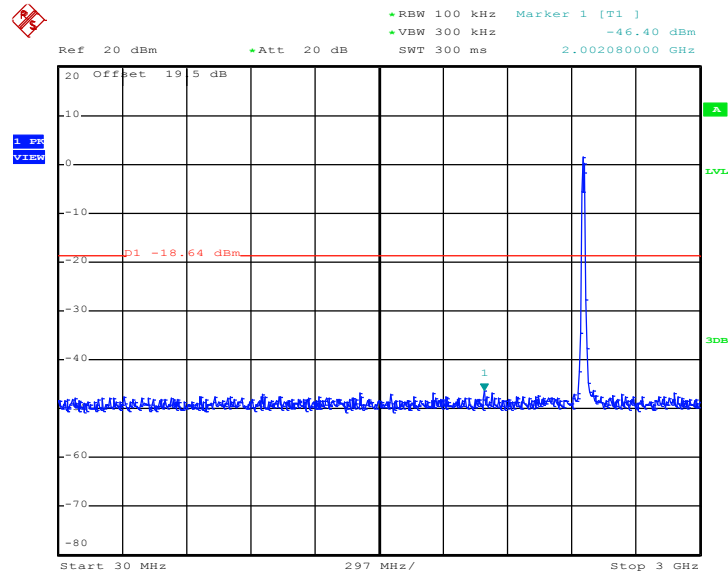


Date: 20.JAN.2012 23:00:21



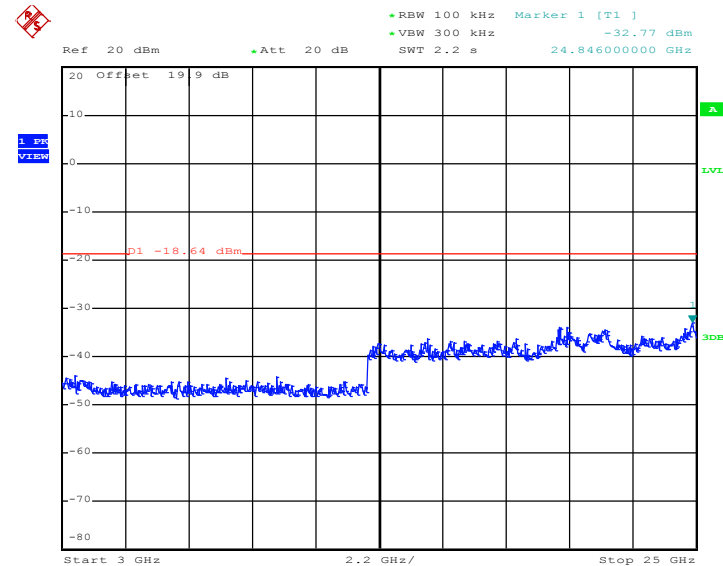
Test Mode :	Mode 6	Temperature :	22~24°C
Test Band :	802.11g	Relative Humidity :	58~61%
Test Channel :	11	Test Engineer :	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 20.JAN.2012 22:47:51

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

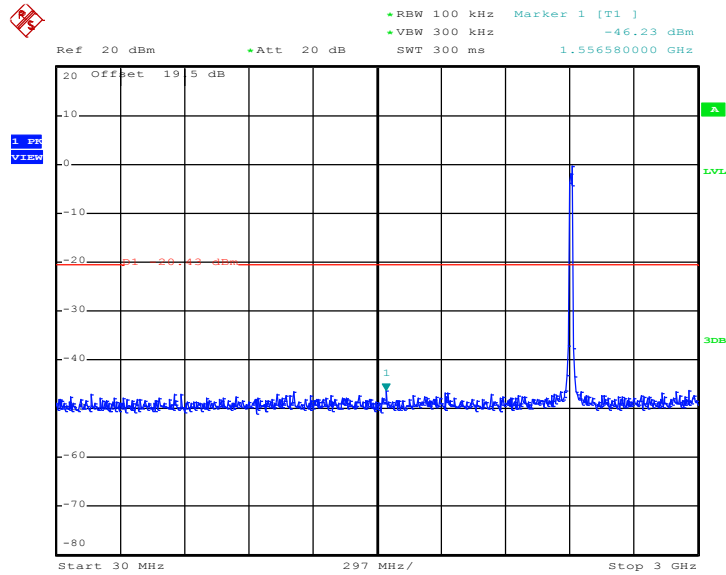


Date: 20.JAN.2012 22:48:08



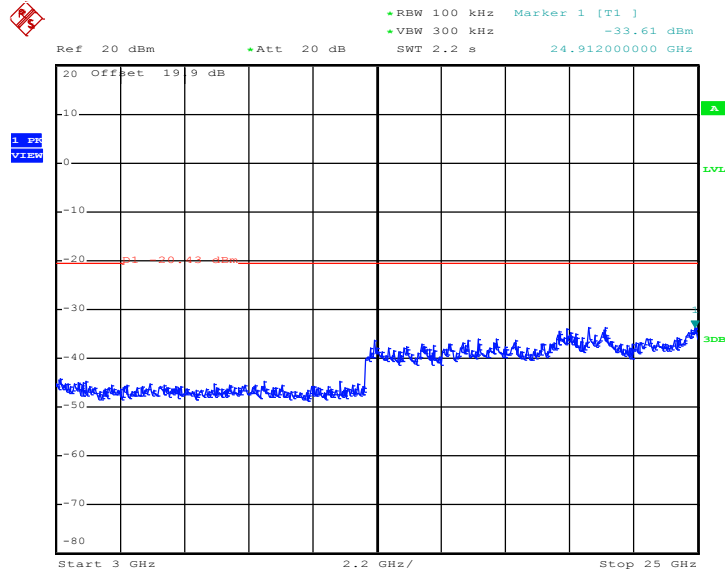
Test Mode :	Mode 7	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	58~61%
Test Channel :	01	Test Engineer :	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 21.JAN.2012 00:05:09

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

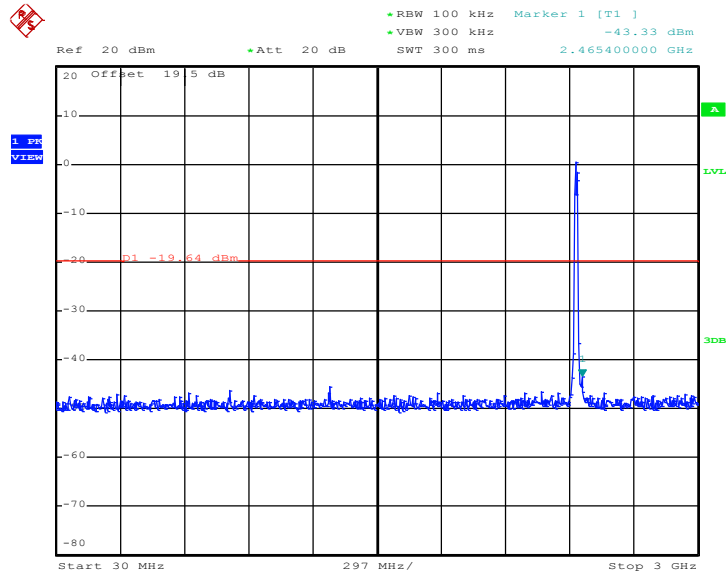


Date: 21.JAN.2012 00:05:27



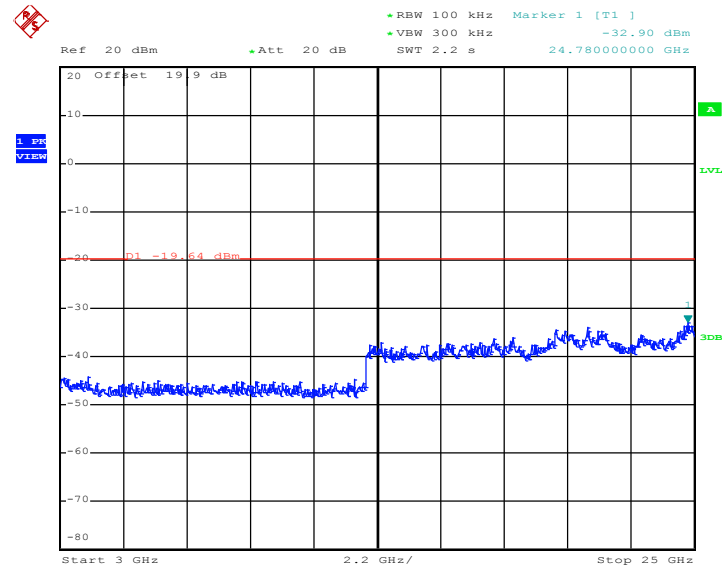
Test Mode :	Mode 8	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	58~61%
Test Channel :	06	Test Engineer :	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 20.JAN.2012 23:46:46

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

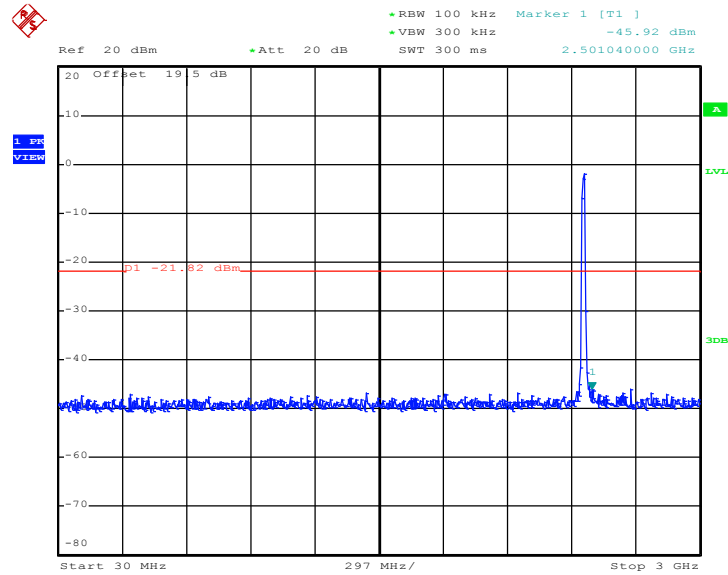


Date: 20.JAN.2012 23:47:03



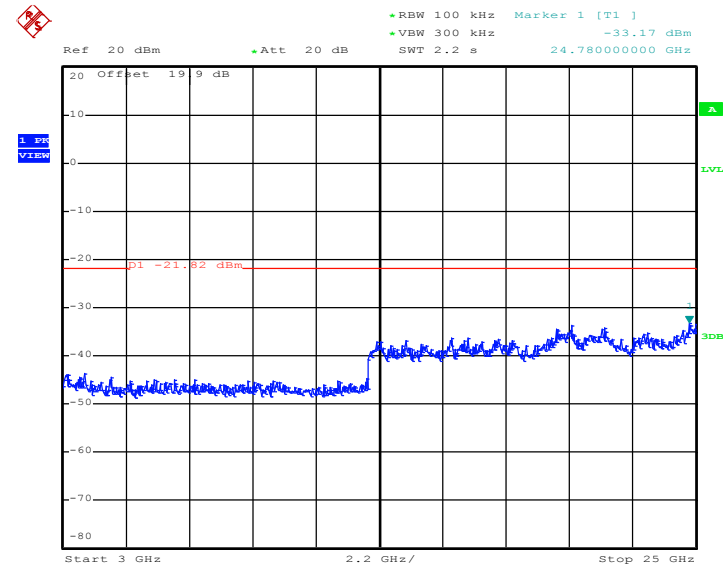
Test Mode :	Mode 9	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	58~61%
Test Channel :	11	Test Engineer :	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 20.JAN.2012 23:59:21

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 20.JAN.2012 23:59:39

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.

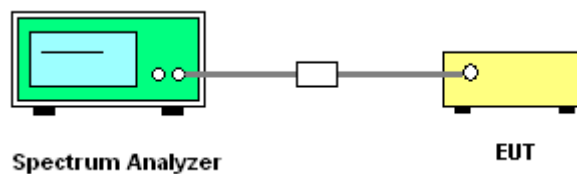
3.5.2 Measuring Instruments

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



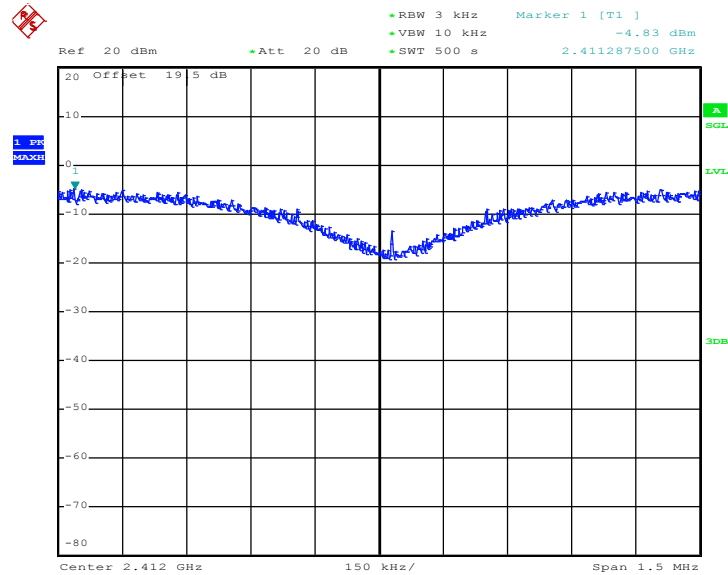


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	22~24°C
Test Engineer :	Reece Li	Relative Humidity :	58~61%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-4.83	8	Pass
06	2437	-3.83	8	Pass
11	2462	-3.70	8	Pass

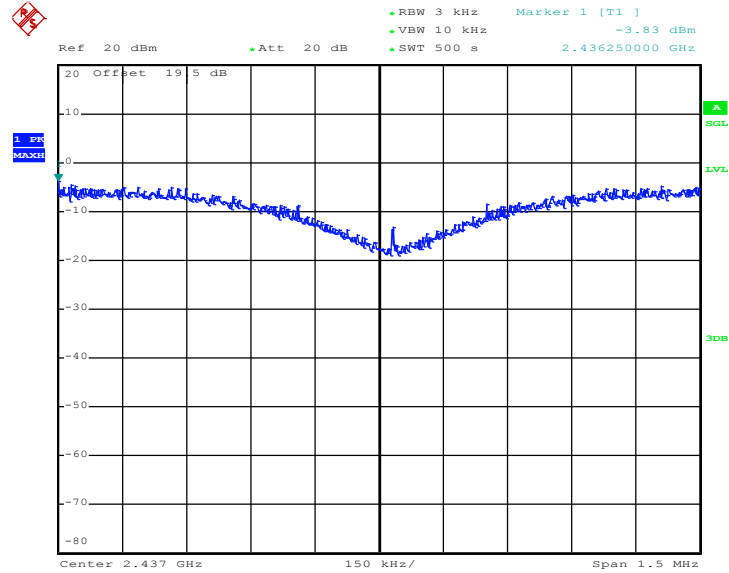
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 20.JAN.2012 22:03:14

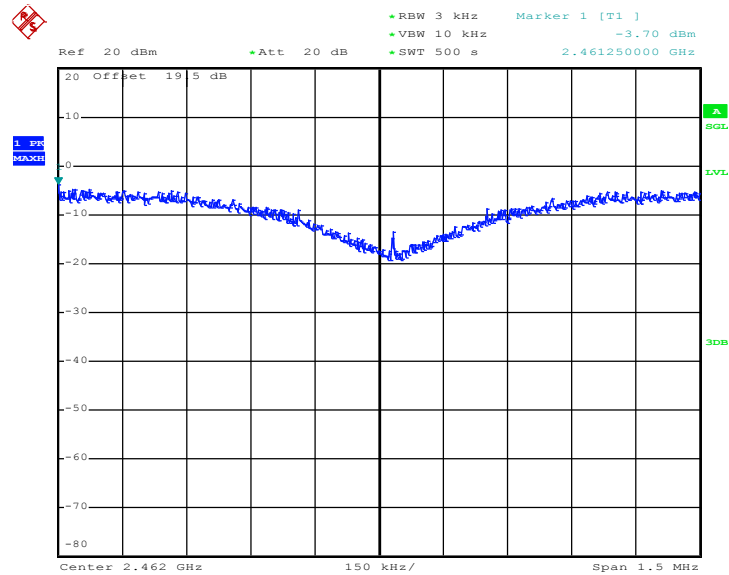


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 20.JAN.2012 22:14:14

Mode 3 : PSD Plot on 802.11b Channel 11



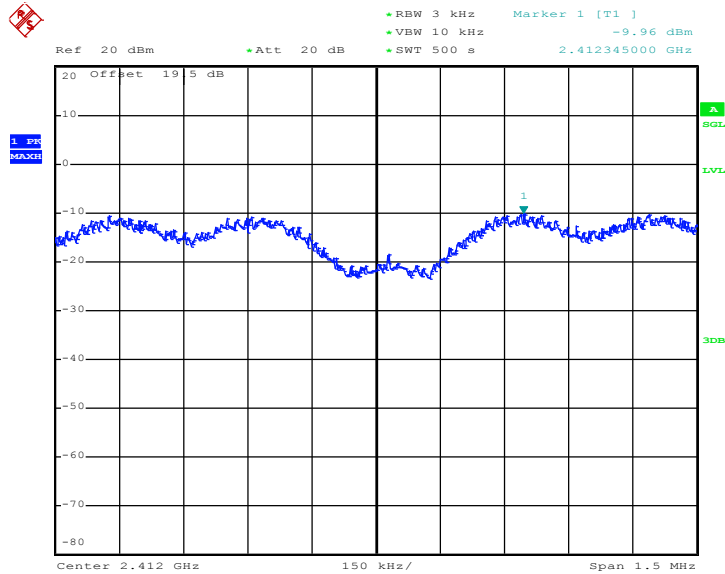
Date: 20.JAN.2012 22:30:33



Test Mode :	Mode 4, 5, 6	Temperature :	22~24°C
Test Engineer :	Reece Li	Relative Humidity :	58~61%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-9.96	8	Pass
06	2437	-9.45	8	Pass
11	2462	-9.88	8	Pass

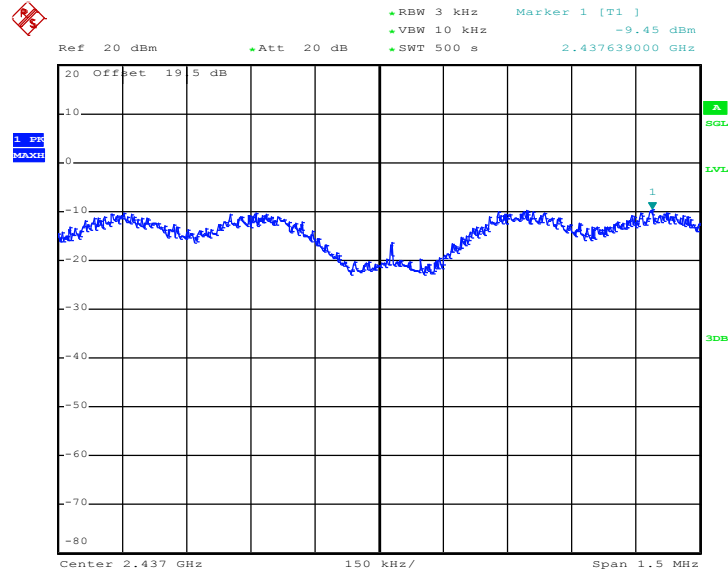
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 20.JAN.2012 23:12:55

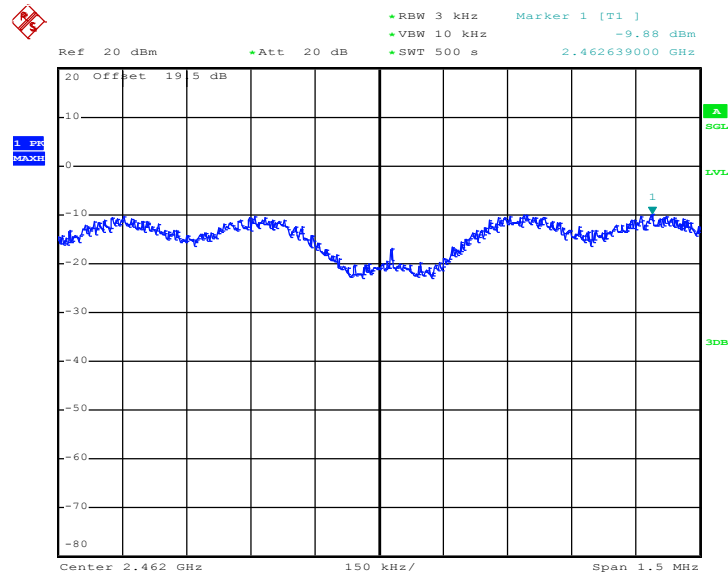


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 20.JAN.2012 22:59:42

Mode 6 : PSD Plot on 802.11g Channel 11



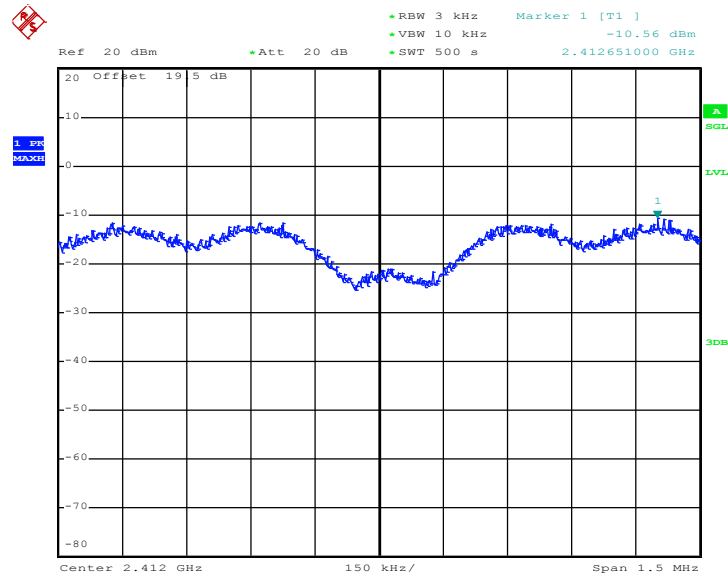
Date: 20.JAN.2012 22:47:29



Test Mode :	Mode 7, 8, 9	Temperature :	22~24°C
Test Engineer :	Reece Li	Relative Humidity :	58~61%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-10.56	8	Pass
06	2437	-10.48	8	Pass
11	2462	-10.72	8	Pass

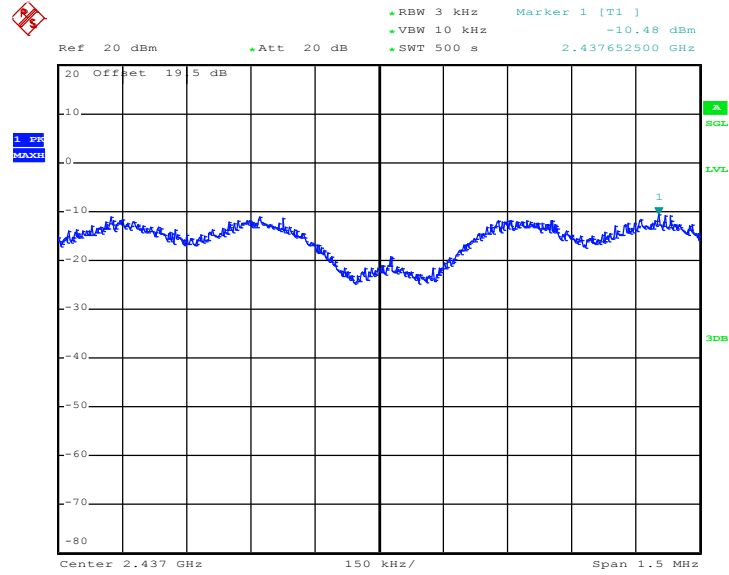
Mode 7 : PSD Plot on 802.11n (BW 20MHz) Channel 01



Date: 20.JAN.2012 23:32:02

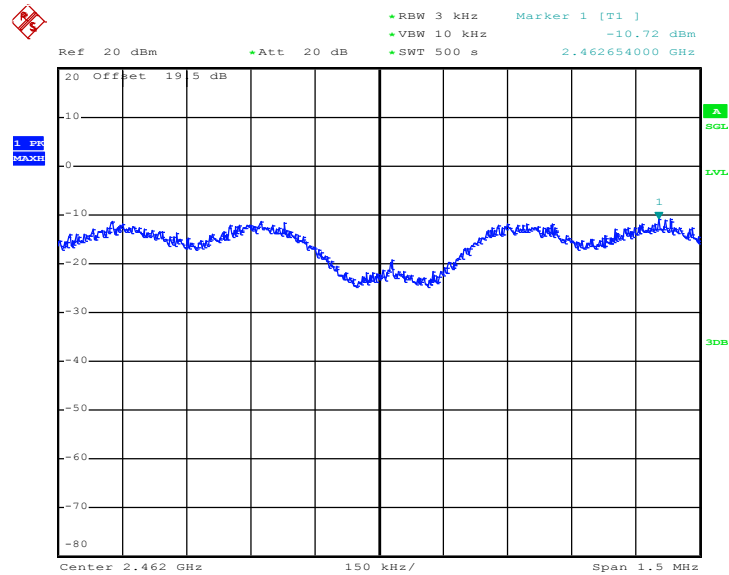


Mode 8 : PSD Plot on 802.11n (BW 20MHz) Channel 06



Date: 20.JAN.2012 23:46:24

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



Date: 20.JAN.2012 23:59:00

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.

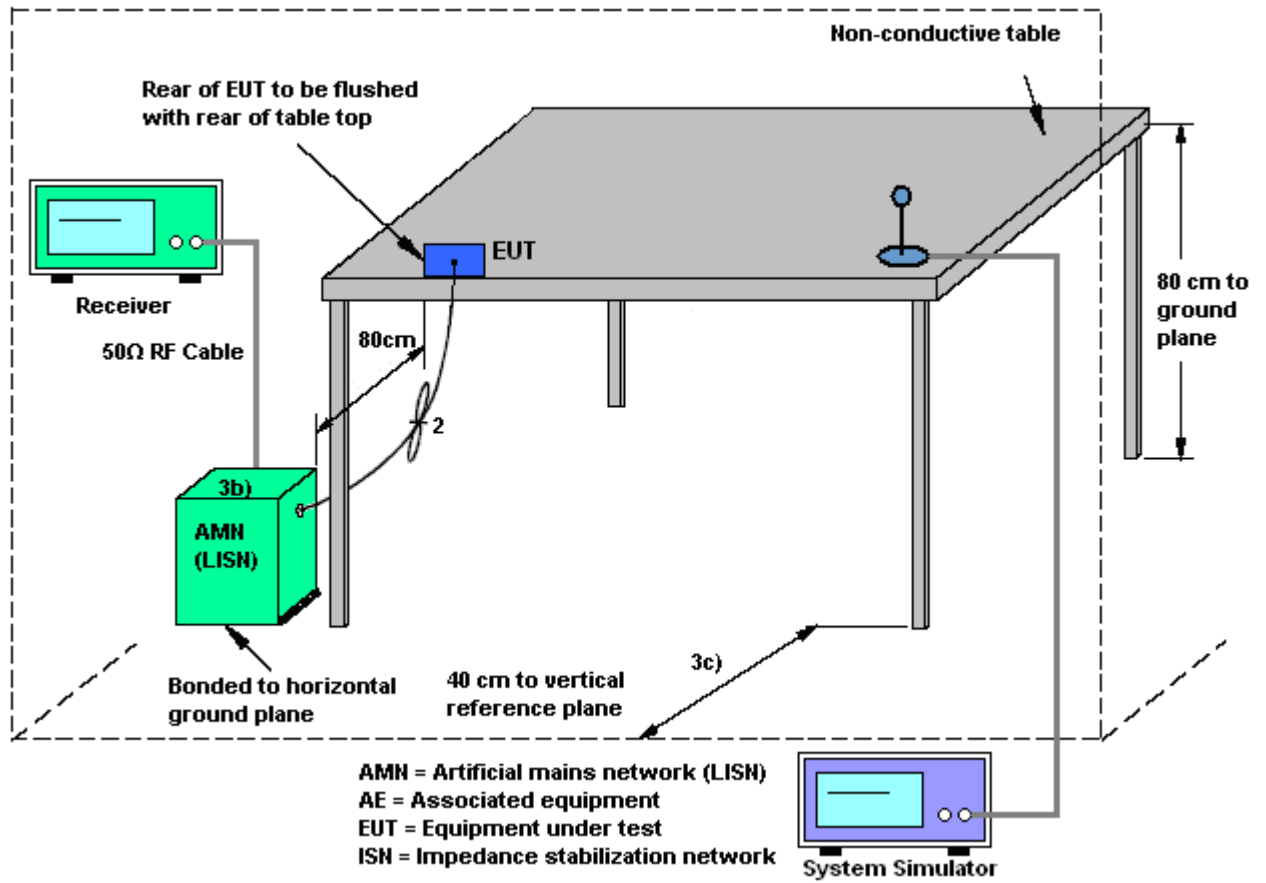
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

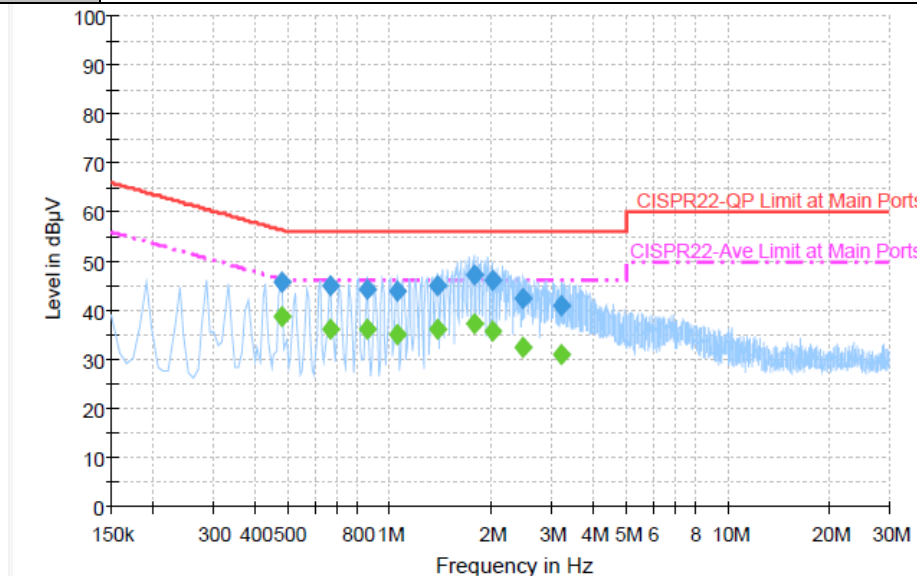
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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 1	Temperature :	21~23°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + WLAN Link + Bluetooth Link + GPS Rx + Earphone + USB Cable (Charging from Adapter)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

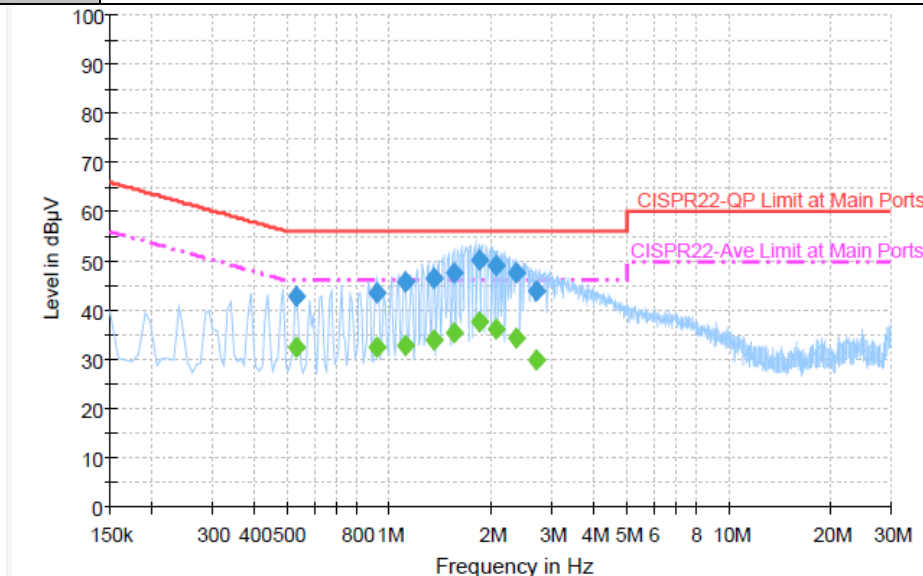
Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.478000	45.7	Off	L1	19.4	10.7	56.4
0.670000	44.9	Off	L1	19.4	11.1	56.0
0.862000	44.5	Off	L1	19.5	11.5	56.0
1.054000	43.8	Off	L1	19.4	12.2	56.0
1.390000	44.9	Off	L1	19.4	11.1	56.0
1.774000	47.1	Off	L1	19.4	8.9	56.0
2.014000	46.0	Off	L1	19.4	10.0	56.0
2.486000	42.4	Off	L1	19.4	13.6	56.0
3.222000	41.1	Off	L1	19.5	14.9	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.478000	38.9	Off	L1	19.4	7.5	46.4
0.670000	36.2	Off	L1	19.4	9.8	46.0
0.862000	36.0	Off	L1	19.5	10.0	46.0
1.054000	35.0	Off	L1	19.4	11.0	46.0
1.390000	36.2	Off	L1	19.4	9.8	46.0
1.774000	37.3	Off	L1	19.4	8.7	46.0
2.014000	35.7	Off	L1	19.4	10.3	46.0
2.486000	32.5	Off	L1	19.4	13.5	46.0
3.222000	31.0	Off	L1	19.5	15.0	46.0



Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + WLAN Link + Bluetooth Link + GPS Rx + Earphone + USB Cable (Charging from 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)
0.534000	42.9	Off	N	19.3	13.1	56.0
0.918000	43.6	Off	N	19.4	12.4	56.0
1.118000	45.7	Off	N	19.4	10.3	56.0
1.350000	46.4	Off	N	19.5	9.6	56.0
1.542000	47.7	Off	N	19.4	8.3	56.0
1.838000	50.2	Off	N	19.5	5.8	56.0
2.070000	49.2	Off	N	19.5	6.8	56.0
2.374000	47.5	Off	N	19.6	8.5	56.0
2.710000	44.0	Off	N	19.5	12.0	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.534000	32.3	Off	N	19.3	13.7	46.0
0.918000	32.6	Off	N	19.4	13.4	46.0
1.118000	33.0	Off	N	19.4	13.0	46.0
1.350000	34.1	Off	N	19.5	11.9	46.0
1.542000	35.5	Off	N	19.4	10.5	46.0
1.838000	37.8	Off	N	19.5	8.2	46.0
2.070000	36.0	Off	N	19.5	10.0	46.0
2.374000	34.4	Off	N	19.6	11.6	46.0
2.710000	30.0	Off	N	19.5	16.0	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

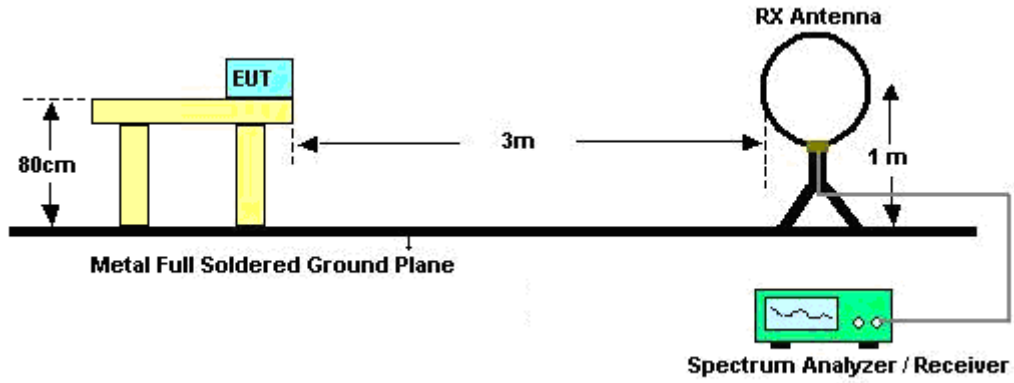
See list of measuring instruments of this test report.

3.7.3 Test Procedures

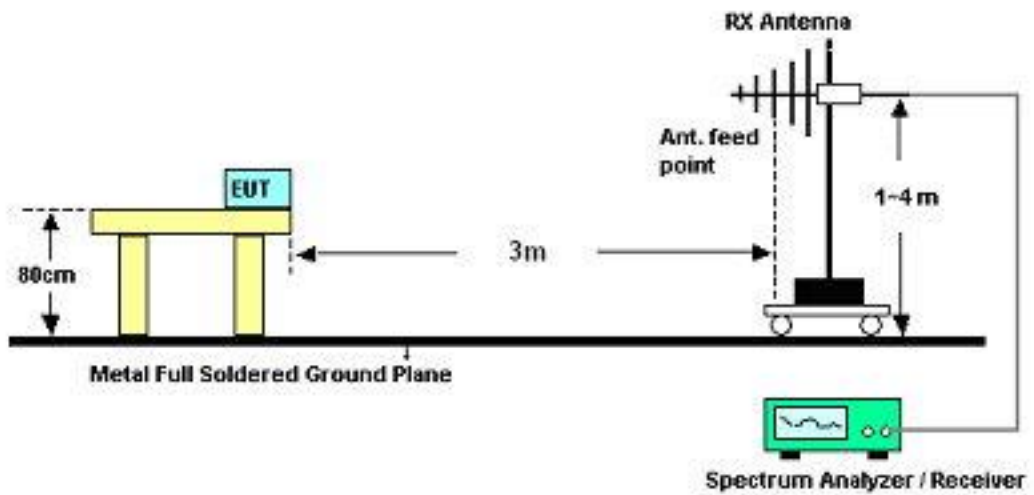
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
 - (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 KHz for $f < 1$ GHz; VBW \geq RBW; Sweep = 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

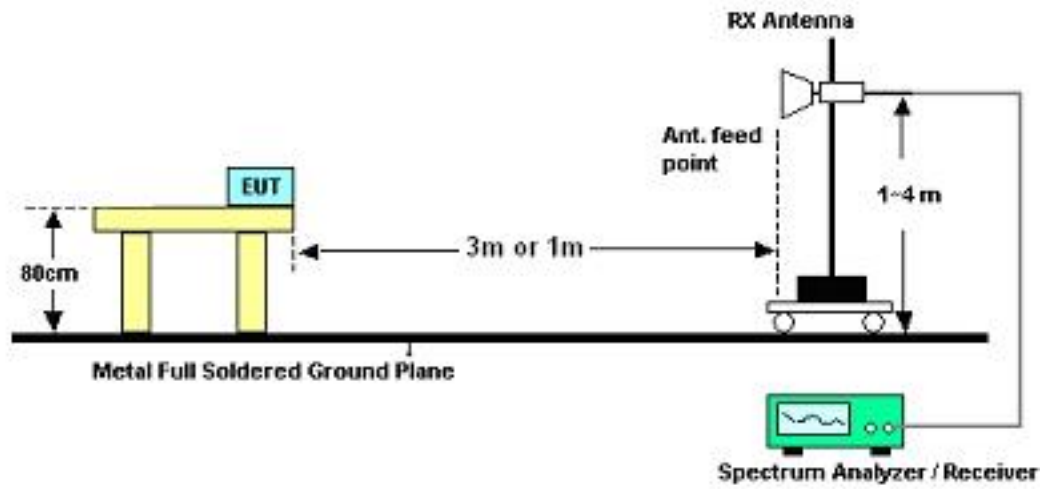
For radiated emissions below 30MHz



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 :	Gavin Wu	Temperature :	19~20°C
		Relative Humidity :	43~44%

Frequency	Measurement Distance	Field Strength	Antenna Factor	Distance Factor	Limit Distance	Field Strength at Limit Distance (30m)	Limit (30m)
(MHz)	(m)	(dBμV/m)	(dB/m)	(dB/decade)	(m)	(dBμV/m)	(dBμV/m)
0.03277	3	-4.08	20.10	40	30	-44.08	29.54
19.20	3	11.73	19.70	40	30	-28.27	29.54
26.0000	3	12.07	20.50	40	30	-27.93	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 :	19~20°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signal which can be ignored.		

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
54.57	25.17	-14.83	40	48.7	7.3	0.72	31.55	106	147	Peak
106.41	22.01	-21.49	43.5	42.1	10.43	1.03	31.55	-	-	Peak
266.25	23.61	-22.39	46	40.55	12.83	1.62	31.39	-	-	Peak
304.2	21.44	-24.56	46	37.56	13.43	1.78	31.33	-	-	Peak
693.4	23.05	-22.95	46	30.4	20.55	2.93	30.83	-	-	Peak
758.5	22.88	-23.12	46	29.04	21.47	3.07	30.7	-	-	Peak
2388.85	54.41	-19.59	74	50.28	32.06	6.03	33.96	102	25	Peak
2388.85	43.71	-10.29	54	39.58	32.06	6.03	33.96	102	25	Average
2412	107.62	-	-	103.44	32.08	6.07	33.97	102	25	Peak
2412	102.16	-	-	97.98	32.08	6.07	33.97	102	25	Average
2486	38.71	-15.29	54	34.35	32.18	6.18	34	102	25	Average
2486	50.92	-23.08	74	46.56	32.18	6.18	34	102	25	Peak
4824	42.83	-31.17	74	58.72	34.1	9.12	59.11	100	0	Peak



Test Mode :	Mode 1	Temperature :	19~20°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. For example, 102.36 dBuV/m - 20dB = 82.36 dBuV/m.		

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
54.3	27.33	-12.67	40	50.86	7.3	0.72	31.55	115	126	Peak
92.37	26.46	-17.04	43.5	48.18	8.84	0.96	31.52	-	-	Peak
207.93	27.71	-15.79	43.5	48.19	9.64	1.35	31.47	-	-	Peak
388.2	20.45	-25.55	46	33.86	15.69	2.12	31.22	-	-	Peak
649.3	21.81	-24.19	46	29.65	20.19	2.84	30.87	-	-	Peak
757.8	22.81	-23.19	46	28.98	21.46	3.07	30.7	-	-	Peak
2385.81	48.49	-25.51	74	44.36	32.06	6.03	33.96	126	282	Peak
2385.81	37.86	-16.14	54	33.73	32.06	6.03	33.96	126	282	Average
2412	102.36	-	-	98.18	32.08	6.07	33.97	126	282	Peak
2412	97.27	-	-	93.09	32.08	6.07	33.97	126	282	Average
2484	32.75	-21.25	54	28.39	32.18	6.18	34	126	282	Average
2484	44.96	-29.04	74	40.6	32.18	6.18	34	126	282	Peak
4824	43.26	-30.74	74	59.15	34.1	9.12	59.11	100	0	Peak
7236	45.44	-36.92	82.36	57.82	35.7	10.03	58.11	100	0	Peak



Test Mode :	Mode 2	Temperature :	19~20°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored 2. 9748 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
57.81	21.85	-18.15	40	46.14	6.5	0.75	31.54	108	215	Peak
106.41	19.1	-24.4	43.5	39.19	10.43	1.03	31.55	-	-	Peak
256.26	25.58	-20.42	46	42.75	12.68	1.57	31.42	-	-	Peak
503.7	19.13	-26.87	46	29.58	18.15	2.46	31.06	-	-	Peak
556.2	19.95	-26.05	46	29.31	19.04	2.57	30.97	-	-	Peak
676.6	21.64	-24.36	46	29.18	20.41	2.89	30.84	-	-	Peak
2390	49.67	-24.33	74	45.54	32.06	6.03	33.96	102	22	Peak
2390	38.81	-15.19	54	34.68	32.06	6.03	33.96	102	22	Average
2437	107.05	-	-	102.82	32.1	6.11	33.98	102	22	Peak
2437	101.86	-	-	97.6	32.13	6.11	33.98	102	22	Average
2484	53.21	-20.79	74	48.85	32.18	6.18	34	102	22	Peak
2484	41.71	-12.29	54	37.35	32.18	6.18	34	102	22	Average
4874	43.91	-30.09	74	59.72	34.1	9.13	59.04	100	0	Peak
9748	45.99	-41.06	87.05	56.93	36.76	11.94	59.64	100	0	Peak



Test Mode :	Mode 2	Temperature :	19~20°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. 9748 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
54.57	23.87	-16.13	40	47.4	7.3	0.72	31.55	-	-	Peak
92.37	27.82	-15.68	43.5	49.54	8.84	0.96	31.52	116	139	Peak
106.41	23.76	-19.74	43.5	43.85	10.43	1.03	31.55	-	-	Peak
302.1	20.64	-25.36	46	36.81	13.38	1.78	31.33	-	-	Peak
338.5	19.95	-26.05	46	35.02	14.35	1.88	31.3	-	-	Peak
760.6	22.92	-23.08	46	29.04	21.5	3.08	30.7	-	-	Peak
2390	46.14	-27.86	74	42.01	32.06	6.03	33.96	187	20	Peak
2390	34.95	-19.05	54	30.82	32.06	6.03	33.96	187	20	Average
2437	102.42	-	-	98.16	32.13	6.11	33.98	187	20	Peak
2437	97.19	-	-	92.93	32.13	6.11	33.98	187	20	Average
2484	48.94	-25.06	74	44.58	32.18	6.18	34	187	20	Peak
2484	37.63	-16.37	54	33.27	32.18	6.18	34	187	20	Average
4874	46.48	-27.52	74	62.29	34.1	9.13	59.04	100	0	Peak
7311	47.23	-26.77	74	59.6	35.7	10.06	58.13	100	0	Peak
9748	45.83	-36.59	82.42	56.77	36.76	11.94	59.64	100	0	Peak



Test Mode :	Mode 3	Temperature :	19~20°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

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
58.62	21.02	-18.98	40	45.51	6.3	0.75	31.54	127	216	Peak
106.41	18.79	-24.71	43.5	38.88	10.43	1.03	31.55	-	-	Peak
226.29	19.02	-26.98	46	38.09	10.92	1.46	31.45	-	-	Peak
315.4	21.95	-24.05	46	37.75	13.72	1.8	31.32	-	-	Peak
556.9	19.5	-26.5	46	28.84	19.06	2.57	30.97	-	-	Peak
663.3	22.04	-23.96	46	29.73	20.3	2.87	30.86	-	-	Peak
2382	46.79	-27.21	74	42.69	32.03	6.03	33.96	101	23	Peak
2382	34.65	-19.35	54	30.55	32.03	6.03	33.96	101	23	Average
2462	107.42	-	-	103.12	32.15	6.14	33.99	101	23	Peak
2462	102.1	-	-	97.8	32.15	6.14	33.99	101	23	Average
2492.02	55.51	-18.49	74	51.13	32.2	6.18	34	101	23	Peak
2492.02	46.35	-7.65	54	41.97	32.2	6.18	34	101	23	Average
4924	44.17	-29.83	74	59.88	34.1	9.15	58.96	100	0	Peak



Test Mode :	Mode 3	Temperature :	19~20°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

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
40.26	24.99	-15.01	40	42.97	12.9	0.63	31.51	117	138	Peak
92.37	27.95	-15.55	43.5	49.67	8.84	0.96	31.52	-	-	Peak
232.5	27.97	-18.03	46	46.52	11.39	1.5	31.44	-	-	Peak
377.7	22.29	-23.71	46	36.04	15.4	2.09	31.24	-	-	Peak
578.6	20.73	-25.27	46	29.61	19.44	2.63	30.95	-	-	Peak
668.9	21.88	-24.12	46	29.5	20.35	2.88	30.85	-	-	Peak
2342	45.24	-28.76	74	41.25	31.98	5.95	33.94	101	149	Peak
2342	32.48	-21.52	54	28.49	31.98	5.95	33.94	101	149	Average
2462	101.74	-	-	97.44	32.15	6.14	33.99	101	149	Peak
2462	96.56	-	-	92.26	32.15	6.14	33.99	101	149	Average
2485.18	50.24	-23.76	74	45.88	32.18	6.18	34	101	149	Peak
2485.18	39.76	-14.24	54	35.4	32.18	6.18	34	101	149	Average
4924	46.83	-27.17	74	62.54	34.1	9.15	58.96	100	0	Peak
7386	45.1	-28.9	74	57.47	35.7	10.1	58.17	100	0	Peak



Test Mode :	Mode 4	Temperature :	19~20°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signal which can be ignored.		

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
58.89	20.93	-19.07	40	45.42	6.3	0.75	31.54	109	235	Peak
106.41	19.22	-24.28	43.5	39.31	10.43	1.03	31.55	-	-	Peak
240.33	23.11	-22.89	46	41.07	11.93	1.53	31.42	-	-	Peak
514.2	20.05	-25.95	46	30.28	18.33	2.48	31.04	-	-	Peak
617.8	21.52	-24.48	46	29.74	19.94	2.74	30.9	-	-	Peak
680.1	21.4	-24.6	46	28.9	20.44	2.9	30.84	-	-	Peak
2389.99	66.64	-7.36	74	62.51	32.06	6.03	33.96	102	25	Peak
2389.99	43.38	-10.62	54	39.25	32.06	6.03	33.96	102	25	Average
2412	107.59	-	-	103.41	32.08	6.07	33.97	102	25	Peak
2412	87.4	-	-	83.22	32.08	6.07	33.97	102	25	Average
2486	37.48	-16.52	54	33.12	32.18	6.18	34	102	25	Average
2486	50.99	-23.01	74	46.63	32.18	6.18	34	102	25	Peak



Test Mode :	Mode 4	Temperature :	19~20°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. 9648 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
92.37	27.9	-15.6	43.5	49.62	8.84	0.96	31.52	107	161	Peak
106.41	24.58	-18.92	43.5	44.67	10.43	1.03	31.55	-	-	Peak
193.62	26.07	-17.43	43.5	47.23	9.04	1.3	31.5	-	-	Peak
332.9	18.79	-27.21	46	34.05	14.19	1.86	31.31	-	-	Peak
565.3	20.3	-25.7	46	29.46	19.21	2.59	30.96	-	-	Peak
710.2	22.47	-23.53	46	29.56	20.75	2.96	30.8	-	-	Peak
2389.61	57.05	-16.95	74	52.92	32.06	6.03	33.96	125	281	Peak
2389.61	37.85	-16.15	54	33.72	32.06	6.03	33.96	125	281	Average
2412	102.28	-	-	98.1	32.08	6.07	33.97	125	281	Peak
2412	82	-	-	77.82	32.08	6.07	33.97	125	281	Average
2500	32.44	-21.56	54	28.06	32.2	6.18	34	125	281	Average
2500	45.48	-28.52	74	41.1	32.2	6.18	34	125	281	Peak
7236	46.62	-35.66	82.28	59	35.7	10.03	58.11	100	0	Peak
9648	45.34	-28.66	82.28	56.42	36.59	11.99	59.66	100	0	Peak



Test Mode :	Mode 5	Temperature :	19~20°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. 9748 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
58.62	22.35	-17.65	40	46.84	6.3	0.75	31.54	105	178	Peak
106.41	19.49	-24.01	43.5	39.58	10.43	1.03	31.55	-	-	Peak
215.22	17.91	-25.59	43.5	37.81	10.18	1.39	31.47	-	-	Peak
383.3	19.15	-26.85	46	32.72	15.55	2.11	31.23	-	-	Peak
668.9	22.21	-23.79	46	29.83	20.35	2.88	30.85	-	-	Peak
750.1	22.67	-23.33	46	28.97	21.34	3.06	30.7	-	-	Peak
2388	53.42	-20.58	74	49.29	32.06	6.03	33.96	102	19	Peak
2388	37.64	-16.36	54	33.51	32.06	6.03	33.96	102	19	Average
2437	107.68	-	-	103.42	32.13	6.11	33.98	102	19	Peak
2437	87.83	-	-	83.57	32.13	6.11	33.98	102	19	Average
2486	53.51	-20.49	74	49.15	32.18	6.18	34	102	19	Peak
2486	39.19	-14.81	54	34.83	32.18	6.18	34	102	19	Average
9748	45.7	-41.98	87.68	56.64	36.76	11.94	59.64	100	0	Peak



Test Mode :	Mode 5	Temperature :	19~20°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. 9748 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
54.57	23.77	-16.23	40	47.3	7.3	0.72	31.55	-	-	Peak
92.37	27.9	-15.6	43.5	49.62	8.84	0.96	31.52	112	153	Peak
106.41	24.78	-18.72	43.5	44.87	10.43	1.03	31.55	-	-	Peak
307.7	21.36	-24.64	46	37.39	13.51	1.79	31.33	-	-	Peak
340.6	23.24	-22.76	46	38.25	14.4	1.89	31.3	-	-	Peak
707.4	23.05	-22.95	46	30.19	20.7	2.96	30.8	-	-	Peak
2388	47.32	-26.68	74	43.19	32.06	6.03	33.96	101	86	Peak
2388	34.4	-19.6	54	30.27	32.06	6.03	33.96	101	86	Average
2437	101.22	-	-	96.99	32.1	6.11	33.98	101	86	Peak
2437	81.04	-	-	76.78	32.13	6.11	33.98	101	86	Average
2484	46.35	-27.65	74	41.99	32.18	6.18	34	101	86	Peak
2484	34.41	-19.59	54	30.05	32.18	6.18	34	101	86	Average
4874	42.93	-31.07	74	58.74	34.1	9.13	59.04	100	0	Peak
7311	44.82	-29.18	74	57.19	35.7	10.06	58.13	100	0	Peak
9748	48.27	-32.95	81.22	59.24	36.74	11.94	59.65	100	0	Peak



Test Mode :	Mode 6	Temperature :	19~20°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

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
57.81	20.57	-19.43	40	44.86	6.5	0.75	31.54	104	197	Peak
106.41	18.51	-24.99	43.5	38.6	10.43	1.03	31.55	-	-	Peak
214.14	17.1	-26.4	43.5	37.08	10.11	1.38	31.47	-	-	Peak
312.6	19.51	-26.49	46	35.4	13.64	1.79	31.32	-	-	Peak
579.3	21.37	-24.63	46	30.25	19.44	2.63	30.95	-	-	Peak
699.7	21.73	-24.27	46	29.02	20.59	2.94	30.82	-	-	Peak
2390	49.15	-24.85	74	45.02	32.06	6.03	33.96	100	4	Peak
2390	35.42	-18.58	54	31.29	32.06	6.03	33.96	100	4	Average
2462	107.83	-	-	103.53	32.15	6.14	33.99	100	4	Peak
2462	87.57	-	-	83.27	32.15	6.14	33.99	100	4	Average
2484.42	70.05	-3.95	74	65.69	32.18	6.18	34	100	4	Peak
2484.42	48.29	-5.71	54	43.93	32.18	6.18	34	100	4	Average



Test Mode :	Mode 6	Temperature :	19~20°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

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
55.38	23.87	-16.13	40	47.59	7.1	0.73	31.55	107	168	Peak
92.37	25.65	-17.85	43.5	47.37	8.84	0.96	31.52	-	-	Peak
106.41	24.64	-18.86	43.5	44.73	10.43	1.03	31.55	-	-	Peak
338.5	20.35	-25.65	46	35.42	14.35	1.88	31.3	-	-	Peak
528.2	19.13	-26.87	46	29.06	18.58	2.51	31.02	-	-	Peak
615	23.42	-22.58	46	31.68	19.92	2.73	30.91	-	-	Peak
2390	45.96	-28.04	74	41.83	32.06	6.03	33.96	140	149	Peak
2390	33.93	-20.07	54	29.8	32.06	6.03	33.96	140	149	Average
2462	82.47	-	-	78.17	32.15	6.14	33.99	140	149	Average
2462	102.19	-	-	97.89	32.15	6.14	33.99	140	149	Peak
2483.66	42.95	-11.05	54	38.59	32.18	6.18	34	140	149	Average
2483.66	63.81	-10.19	74	59.45	32.18	6.18	34	140	149	Peak
4924	43.32	-30.68	74	59.03	34.1	9.15	58.96	100	0	Peak
7386	43.84	-30.16	74	56.21	35.7	10.1	58.17	100	0	Peak



Test Mode :	Mode 7	Temperature :	19~20°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signal which can be ignored.		

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
58.62	22.5	-17.5	40	46.99	6.3	0.75	31.54	114	176	Peak
106.41	17.71	-25.79	43.5	37.8	10.43	1.03	31.55	-	-	Peak
240.06	24.99	-21.01	46	42.95	11.93	1.53	31.42	-	-	Peak
301.4	21.96	-24.04	46	38.17	13.35	1.77	31.33	-	-	Peak
643	21.41	-24.59	46	29.33	20.14	2.82	30.88	-	-	Peak
715.8	21.98	-24.02	46	28.95	20.83	2.98	30.78	-	-	Peak
2389.99	61.97	-12.03	74	57.84	32.06	6.03	33.96	125	22	Peak
2389.99	42.62	-11.38	54	38.49	32.06	6.03	33.96	125	22	Average
2412	105.9	-	-	101.72	32.08	6.07	33.97	125	22	Peak
2412	87.02	-	-	82.84	32.08	6.07	33.97	125	22	Average
2486	36.46	-17.54	54	32.1	32.18	6.18	34	125	22	Average
2486	49.15	-24.85	74	44.79	32.18	6.18	34	125	22	Peak



Test Mode :	Mode 7	Temperature :	19~20°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	2412 MHz is fundamental signal which can be ignored.		

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
40.26	24.33	-15.67	40	42.31	12.9	0.63	31.51	-	-	Peak
92.37	28.66	-14.84	43.5	50.38	8.84	0.96	31.52	107	208	Peak
231.42	23.48	-22.52	46	42.11	11.32	1.49	31.44	-	-	Peak
330.1	20.19	-25.81	46	35.54	14.11	1.85	31.31	-	-	Peak
509.3	18.85	-27.15	46	29.18	18.25	2.47	31.05	-	-	Peak
679.4	22.6	-23.4	46	30.11	20.43	2.9	30.84	-	-	Peak
2389.42	53.22	-20.78	74	49.09	32.06	6.03	33.96	100	84	Peak
2389.42	36.62	-17.38	54	32.49	32.06	6.03	33.96	100	84	Average
2412	99.99	-	-	95.81	32.08	6.07	33.97	100	84	Peak
2412	80.65	-	-	76.47	32.08	6.07	33.97	100	84	Average
2492	33.87	-20.13	54	29.49	32.2	6.18	34	100	84	Average
2492	46.44	-27.56	74	42.06	32.2	6.18	34	100	84	Peak



Test Mode :	Mode 8	Temperature :	19~20°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	2437 MHz is fundamental signal which can be ignored.		

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
58.62	21.25	-18.75	40	45.74	6.3	0.75	31.54	109	154	Peak
106.41	18.05	-25.45	43.5	38.14	10.43	1.03	31.55	-	-	Peak
122.34	19.86	-23.64	43.5	38.61	11.7	1.11	31.56	-	-	Peak
495.3	19.12	-26.88	46	29.76	18	2.43	31.07	-	-	Peak
581.4	20.47	-25.53	46	29.3	19.47	2.64	30.94	-	-	Peak
673.8	21.51	-24.49	46	29.08	20.39	2.89	30.85	-	-	Peak
2390	52.33	-21.67	74	48.2	32.06	6.03	33.96	100	8	Peak
2390	36.94	-17.06	54	32.81	32.06	6.03	33.96	100	8	Average
2437	105.46	-	-	101.23	32.1	6.11	33.98	100	8	Peak
2437	88.18	-	-	83.92	32.13	6.11	33.98	100	8	Average
2484	52.88	-21.12	74	48.52	32.18	6.18	34	100	8	Peak
2484	39.1	-14.9	54	34.74	32.18	6.18	34	100	8	Average



Test Mode :	Mode 8	Temperature :	19~20°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	2437 MHz is fundamental signal which can be ignored.		

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
92.37	24.96	-18.54	43.5	46.68	8.84	0.96	31.52	-	-	Peak
106.41	24.67	-18.83	43.5	44.76	10.43	1.03	31.55	-	-	Peak
203.34	26.55	-16.95	43.5	47.33	9.37	1.33	31.48	103	221	Peak
335.7	24.05	-21.95	46	39.21	14.27	1.87	31.3	-	-	Peak
584.9	20.98	-25.02	46	29.73	19.54	2.65	30.94	-	-	Peak
671	21.58	-24.42	46	29.18	20.37	2.88	30.85	-	-	Peak
2390	45.84	-28.16	74	41.71	32.06	6.03	33.96	102	98	Peak
2390	34.07	-19.93	54	29.94	32.06	6.03	33.96	102	98	Average
2437	100.82	-	-	96.56	32.13	6.11	33.98	102	98	Peak
2437	82.04	-	-	77.78	32.13	6.11	33.98	102	98	Average
2484	47.73	-26.27	74	43.37	32.18	6.18	34	102	98	Peak
2484	35.71	-18.29	54	31.35	32.18	6.18	34	102	98	Average



Test Mode :	Mode 9	Temperature :	19~20°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

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
57.54	22.77	-17.23	40	46.87	6.7	0.74	31.54	107	223	Peak
106.41	17.83	-25.67	43.5	37.92	10.43	1.03	31.55	-	-	Peak
239.25	25.12	-20.88	46	43.15	11.86	1.53	31.42	-	-	Peak
383.3	21.12	-24.88	46	34.69	15.55	2.11	31.23	-	-	Peak
637.4	21.93	-24.07	46	29.91	20.1	2.8	30.88	-	-	Peak
741.7	22.72	-23.28	46	29.17	21.23	3.04	30.72	-	-	Peak
2390	46.99	-27.01	74	42.86	32.06	6.03	33.96	100	177	Peak
2390	35.24	-18.76	54	31.11	32.06	6.03	33.96	100	177	Average
2462	105.12	-	-	100.82	32.15	6.14	33.99	100	177	Peak
2462	87.52	-	-	83.22	32.15	6.14	33.99	100	177	Average
2484.42	63.68	-10.32	74	59.32	32.18	6.18	34	100	177	Peak
2484.42	45.44	-8.56	54	41.08	32.18	6.18	34	100	177	Average



Test Mode :	Mode 9	Temperature :	19~20°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

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
53.49	23.66	-16.34	40	46.99	7.5	0.72	31.55	-	-	Peak
92.37	28.93	-14.57	43.5	50.65	8.84	0.96	31.52	117	142	Peak
106.41	24.75	-18.75	43.5	44.84	10.43	1.03	31.55	-	-	Peak
344.1	20.9	-25.1	46	35.76	14.51	1.92	31.29	-	-	Peak
495.3	19.52	-26.48	46	30.16	18	2.43	31.07	-	-	Peak
598.2	21.3	-24.7	46	29.77	19.77	2.68	30.92	-	-	Peak
2382	44.88	-29.12	74	40.78	32.03	6.03	33.96	140	142	Peak
2382	33.69	-20.31	54	29.59	32.03	6.03	33.96	140	142	Average
2462	99.88	-	-	95.58	32.15	6.14	33.99	140	142	Peak
2462	82.65	-	-	78.35	32.15	6.14	33.99	140	142	Average
2488.98	57.95	-16.05	74	53.57	32.2	6.18	34	140	142	Peak
2488.98	39.81	-14.19	54	35.43	32.2	6.18	34	140	142	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	100055	9kHz~40GHz	Jun. 13, 2011	Jan. 19, 2012 ~ Jan. 21, 2012	Jun. 12, 2012	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 18, 2011	Jan. 19, 2012 ~ Jan. 21, 2012	Sep. 17, 2012	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 18, 2011	Jan. 19, 2012 ~ Jan. 21, 2012	Sep. 17, 2012	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Feb. 18, 2011	Jan. 19, 2012 ~ Jan. 21, 2012	Feb. 17, 2012	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 18, 2011	Jan. 19, 2012 ~ Jan. 21, 2012	Feb. 17, 2012	Conducted (TH02-HY)
EMI Test Receiver	R&S	ESCI 7	100724	9kHz~7GHz	Aug. 22, 2011	Jan. 20, 2012	Aug. 21, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz~30MHz	Dec. 09, 2011	Jan. 20, 2012	Dec. 08, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz~30MHz	Dec. 06, 2011	Jan. 20, 2012	Dec. 05, 2012	Conduction (CO05-HY)
AC Power Source	APC	APC-1000 W	N/A	N/A	N/A	Jan. 20, 2012	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	112403	N/A	Feb. 22, 2011	Jan. 20, 2012	Feb. 21, 2012	Conduction (CO05-HY)
GPS Station	T&E	GS-50	N/A	N/A	N/A	Jan. 20, 2012	N/A	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 22, 2011	Jan. 23, 2012	Oct. 21, 2012	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP30	101067	9KHz ~ 30GHz	Dec. 06, 2011	Jan. 23, 2012	Dec. 05, 2012	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 10, 2011	Jan. 23, 2012	Aug. 09, 2012	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec. 05, 2011	Jan. 23, 2012	Dec. 04, 2012	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Mar. 29, 2011	Jan. 23, 2012	Mar. 28, 2012	Radiation (03CH07-HY)
EMI TEST RECEIVER	R&S	ESCI 7	100724	9kHz~7GHz	Aug. 22, 2011	Jan. 23, 2012	Aug. 21, 2012	Radiation (03CH07-HY)
Pre Amplifier	MITEQ	AMF-7D-00 101800-30-10P	159088	1GHz ~ 18GHz	Feb. 21, 2011	Jan. 23, 2012	Feb. 20, 2012	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jan. 23, 2012	Jul. 28, 2012	Radiation (03CH07-HY)

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				