

FCC RF Test Report

APPLICANT : Acer Incorporated
EQUIPMENT : Smart HandHeld
BRAND NAME : Acer
MODEL NAME : E320
FCC ID : HLZDME320NFC
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Jul. 31, 2011 and completely tested on Aug. 16, 2011. 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	9
2.3 Connection Diagram of Test System	10
2.4 RF Utility	11
3 TEST RESULT	12
3.1 6dB and 99% Bandwidth Measurement	12
3.2 Output Power Measurement	25
3.3 Band Edges Measurement	27
3.4 Spurious Emission Measurement	35
3.5 Power Spectral Density Measurement	45
3.6 AC Conducted Emission Measurement	52
3.7 Radiated Emission Measurement	56
3.8 Antenna Requirements	77
4 LIST OF MEASURING EQUIPMENT	78
5 UNCERTAINTY OF EVALUATION	79
APPENDIX A. PHOTOGRAPHS OF EUT	
APPENDIX B. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR172802-06B	Rev. 01	Initial issue of report	Aug. 29, 2011

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	-
3.1	-	Gen 4.4.1	99% Bandwidth	-	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 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 14.1 dB at 0.16 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.08 dB at 2389.42 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Acer Incorporated

8F., No. 88, Sec. 1, Xintai 5th. Rd., Xizhi Dist, New Taipei City 22181, Taiwan (R.O.C)

1.2 Manufacturer

COMPAL COMMUNICATIONS(NANJING) CO., LTD.

No. 68-2, Suyuan Road, Nanjing Export Processing Zone (South Area), P.R China

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Smart HandHeld
Brand Name	Acer
Model Name	E320
FCC ID	HLZDME320NFC
Tx/Rx Frequency Range	WLAN :2400 MHz ~ 2483.5 MHz NFC : 13.56 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 : 18.62 dBm (0.0728 W) 802.11g : 23.74 dBm (0.2366 W) 802.11n (BW 20MHz) : 22.90 dBm (0.1950 W)
Antenna Type	WLAN : PIFA Antenna with gain 1.4 dBi NFC : Fixed Internal Antenna
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) NFC : ASK
EUT Stage	Identical Prototype

Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of Digital Transmission System (DTS).
3. 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 (DoC), 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.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	Vostro 1510	FCC DoC	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:

<Peak Power>

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	18.24	-	-	-
CH 06	2437 MHz	18.62	18.60	18.32	18.56
CH 11	2462 MHz	18.21	-	-	-

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	22.80	-	-	-	-	-	-	-
CH 06	2437 MHz	23.74	23.70	23.69	23.45	23.57	23.56	23.60	23.68
CH 11	2462 MHz	22.63	-	-	-	-	-	-	-

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		OFDM Data Rate							
		MCS=0	MCS=1	MCS=2	MCS=3	MCS=4	MCS=5	MCS=6	MCS=7
		6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mbps
CH 01	2412 MHz	22.30	-	-	-	-	-	-	-
CH 06	2437 MHz	22.90	22.28	21.97	21.57	21.63	21.77	21.34	21.75
CH 11	2462 MHz	22.00	-	-	-	-	-	-	-

<Average Power>

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	15.26	-	-	-
CH 06	2437 MHz	15.57	15.55	15.05	15.27
CH 11	2462 MHz	15.22	-	-	-

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	12.01	-	-	-	-	-	-	-
CH 06	2437 MHz	13.63	13.48	13.6	13.18	13.12	12.73	12.36	12.23
CH 11	2462 MHz	11.95	-	-	-	-	-	-	-

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		OFDM Data Rate							
		MCS=0	MCS=1	MCS=2	MCS=3	MCS=4	MCS=5	MCS=6	MCS=7
		6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mbps
CH 01	2412 MHz	11.20	-	-	-	-	-	-	-
CH 06	2437 MHz	11.73	11.47	11.1	11.12	10.87	10.45	10.44	10.33
CH 11	2462 MHz	10.95	-	-	-	-	-	-	-

Remark:

1. The data rates of WLAN 802.11b/g/n were set in 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n (BW 20MHz) for all the test cases due to the highest RF output power.
2. The EUT is programmed to transmit signals continuously for all testing.
3. Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports.
4. The EUT have support 802.11n (BW 20 MHz) function only, not support 802.11n (BW 40 MHz) function.

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).

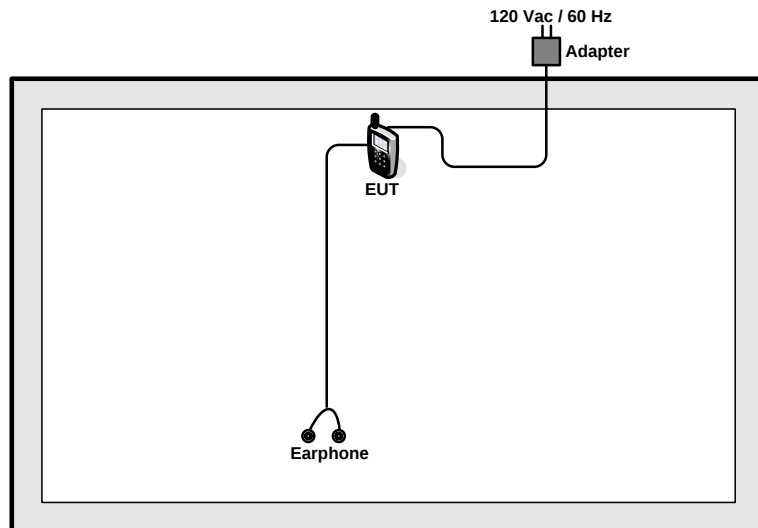
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations, laptop / tablet modes.

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

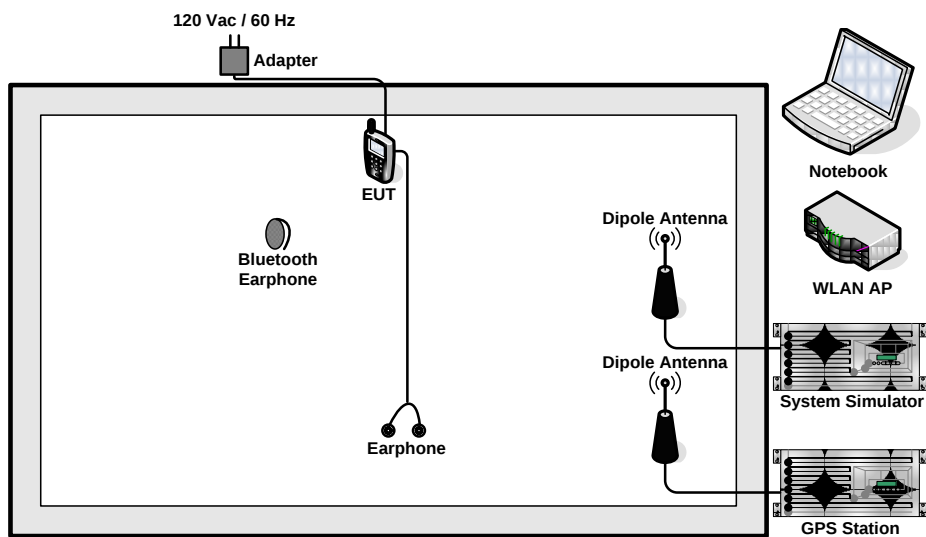
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 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 (2.4G) 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

The programmed RF utility “ADB Command” is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

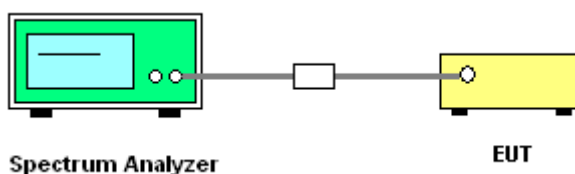
3.1.2 Measuring Instruments

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

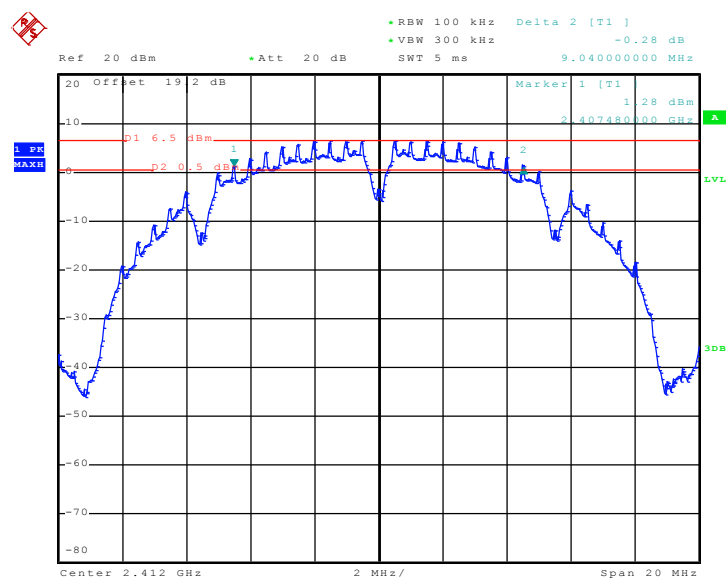


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	23~25°C
Test Engineer :	Pinkston Tu	Relative Humidity :	53~56%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	9.04	0.5	Pass
06	2437	9.04	0.5	Pass
11	2462	9.04	0.5	Pass

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



Date: 5.AUG.2011 13:29:42

[illegible]

Date: 5.AUG.2011 13:53:24

RBW 100 kHz Delta 2 [T1]
 VBW 300 kHz 0.55 dB
 Ref 20 dBm Att 20 dB SWT 5 ms 9.040000000 MHz

20 OffSet 19.2 dB
 10
 0
 -10
 -20
 -30
 -40
 -50
 -60
 -70
 -80

Marker 1 [T1]
 0.78 dBm
 2.457460000 GHz

1 6.14 dBm
 2 0.14 dBm

1. VPK
 MAXH

1.72
 30dB

Center 2.462 GHz 2 MHz/ Span 20 MHz

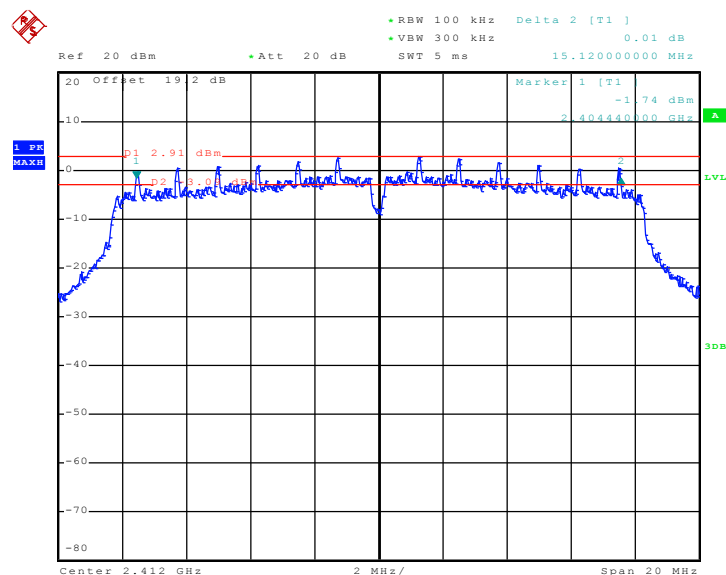
Date: 5.AUG.2011 14:37:36



Test Mode :	Mode 4, 5, 6	Temperature :	23~25°C
Test Engineer :	Pinkston Tu	Relative Humidity :	53~56%

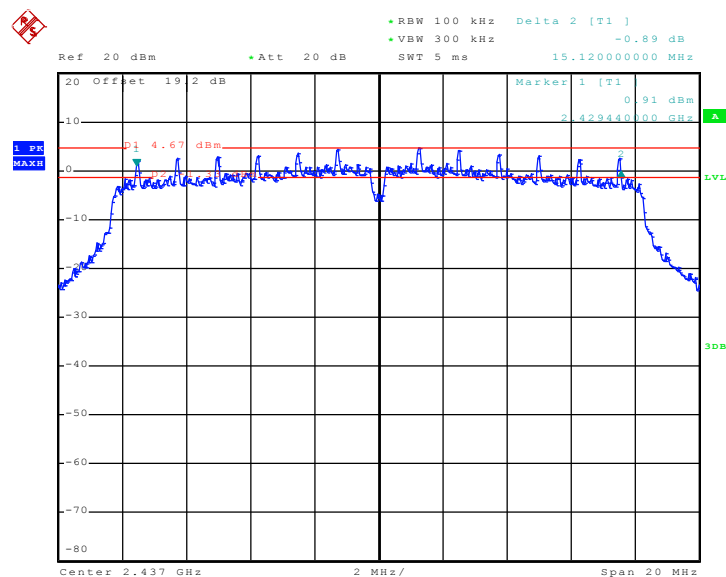
Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.12	0.5	Pass
06	2437	15.12	0.5	Pass
11	2462	15.12	0.5	Pass

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



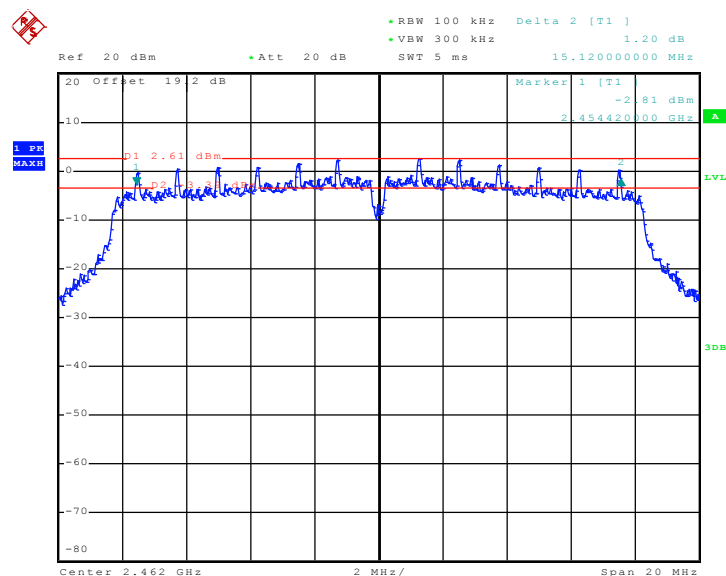
Date: 5.AUG.2011 14:18:48

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



Date: 5.AUG.2011 15:28:28

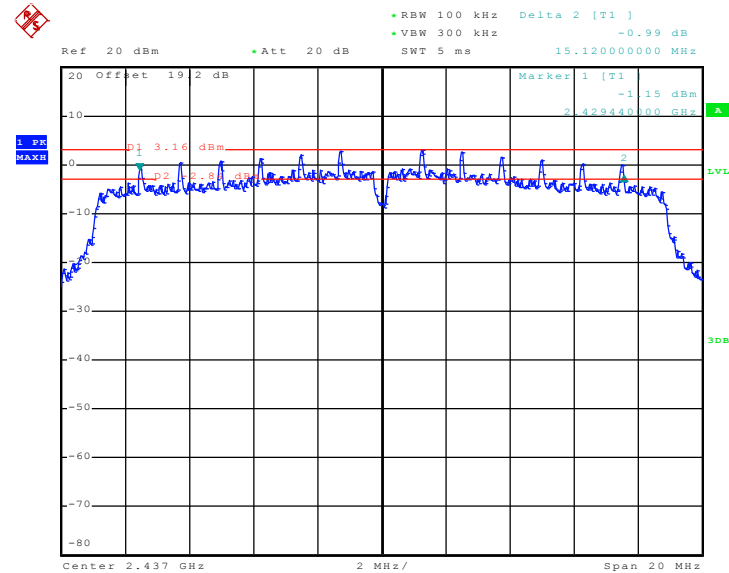
Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11



Date: 5.AUG.2011 15:05:54

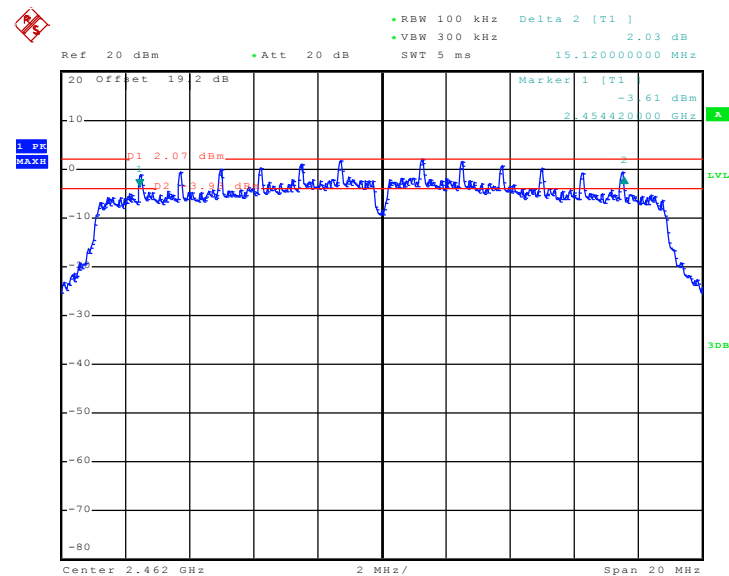


Mode 8 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 06



Date: 5.AUG.2011 16:23:49

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



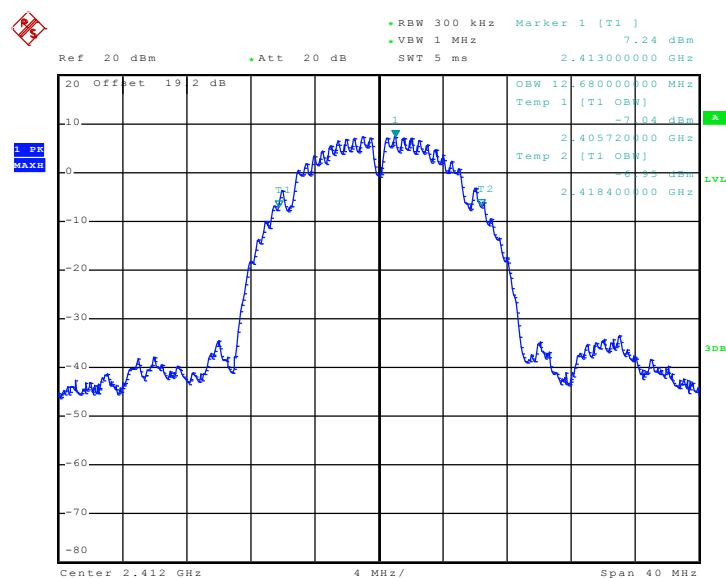
Date: 5.AUG.2011 16:03:19

3.1.6 Test Result of 99% Occupied Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	23~25°C
Test Engineer :	Pinkston Tu	Relative Humidity :	53~56%

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	12.68	Pass
06	2437	12.76	Pass
11	2462	12.80	Pass

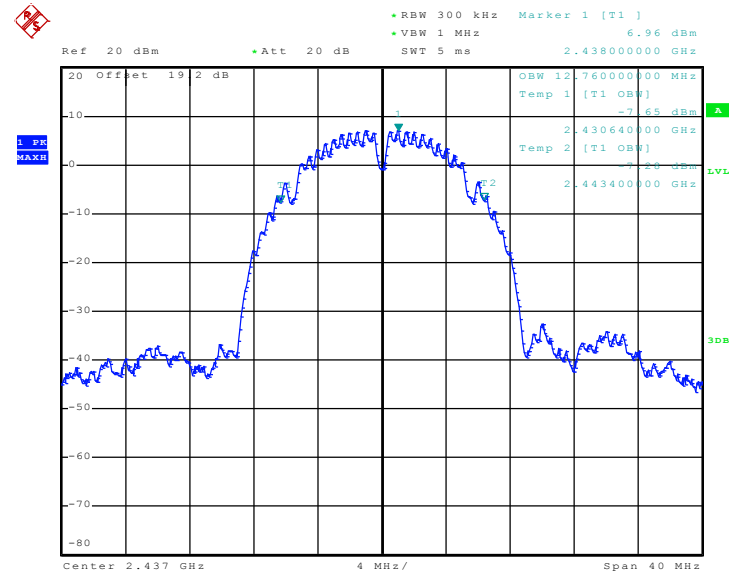
Mode 1 : 99% Occupied Bandwidth Plot on 802.11b Channel 01



Date: 5.AUG.2011 13:31:48

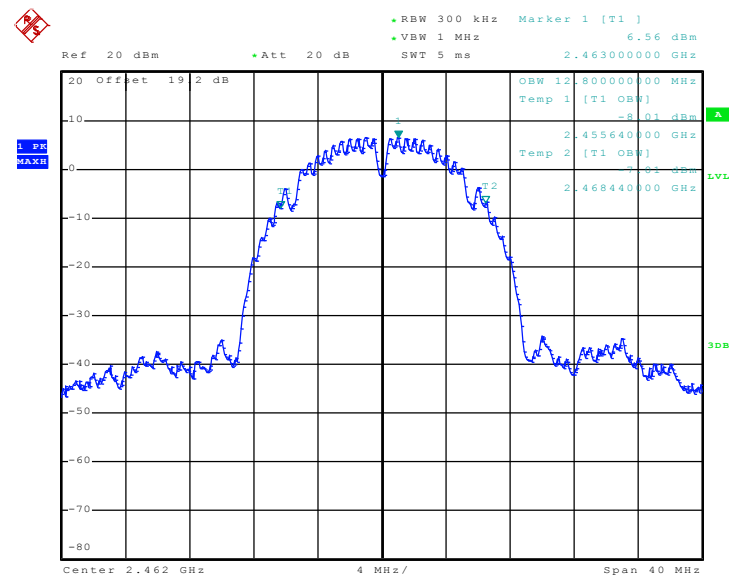


Mode 2 : 99% Occupied Bandwidth Plot on 802.11b Channel 06



Date: 5.AUG.2011 13:54:09

Mode 3 : 99% Occupied Bandwidth Plot on 802.11b Channel 11



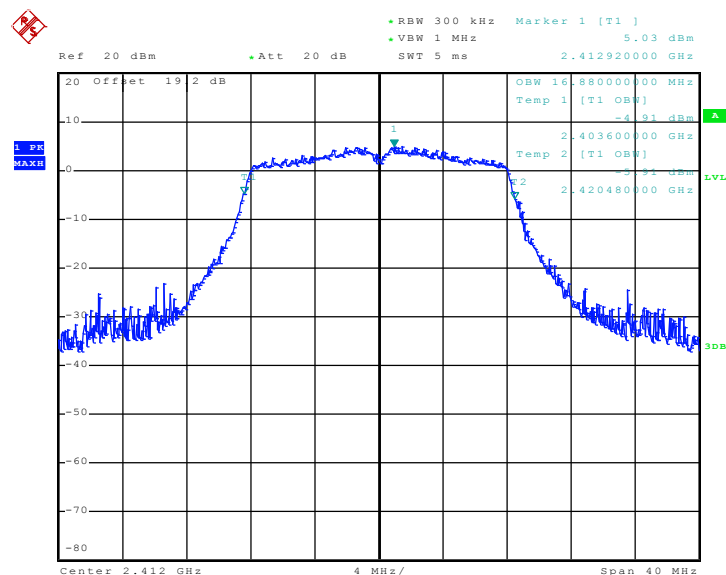
Date: 5.AUG.2011 14:39:11



Test Mode :	Mode 4, 5, 6	Temperature :	23~25°C
Test Engineer :	Pinkston Tu	Relative Humidity :	53~56%

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	16.88	Pass
06	2437	16.88	Pass
11	2462	16.84	Pass

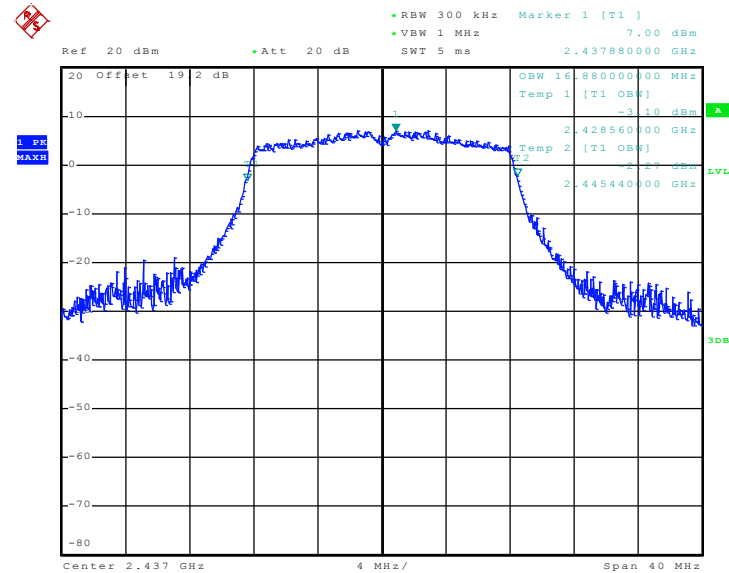
Mode 4 : 99% Occupied Bandwidth Plot on 802.11g Channel 01



Date: 5.AUG.2011 14:20:49

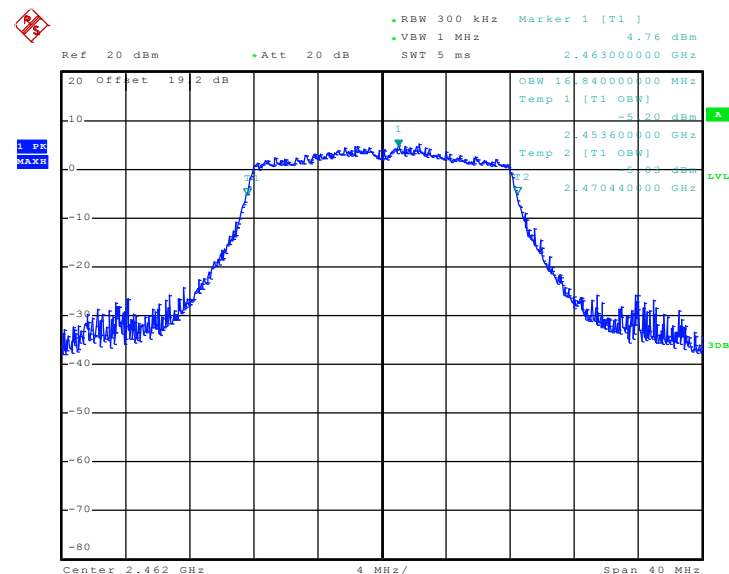


Mode 5 : 99% Occupied Bandwidth Plot on 802.11g Channel 06



Date: 5.AUG.2011 15:34:23

Mode 6 : 99% Occupied Bandwidth Plot on 802.11g Channel 11



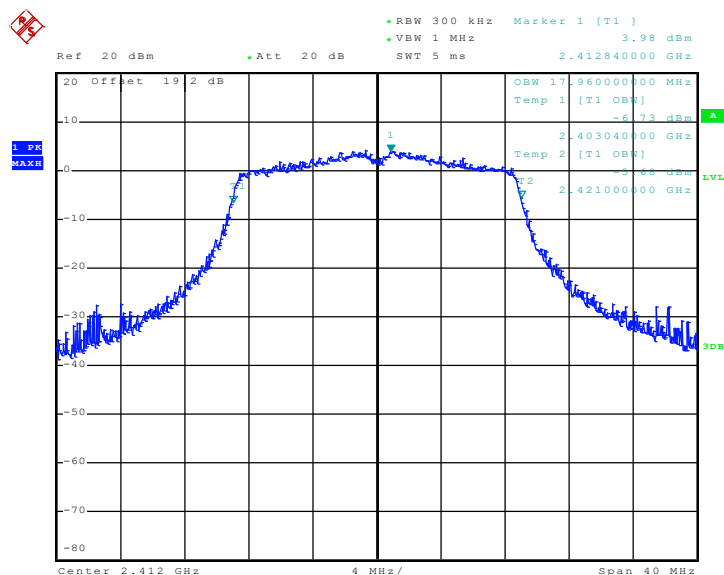
Date: 5.AUG.2011 15:07:32



Test Mode :	Mode 7, 8, 9	Temperature :	23~25°C
Test Engineer :	Pinkston Tu	Relative Humidity :	53~56%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	17.96	Pass
06	2437	17.96	Pass
11	2462	17.96	Pass

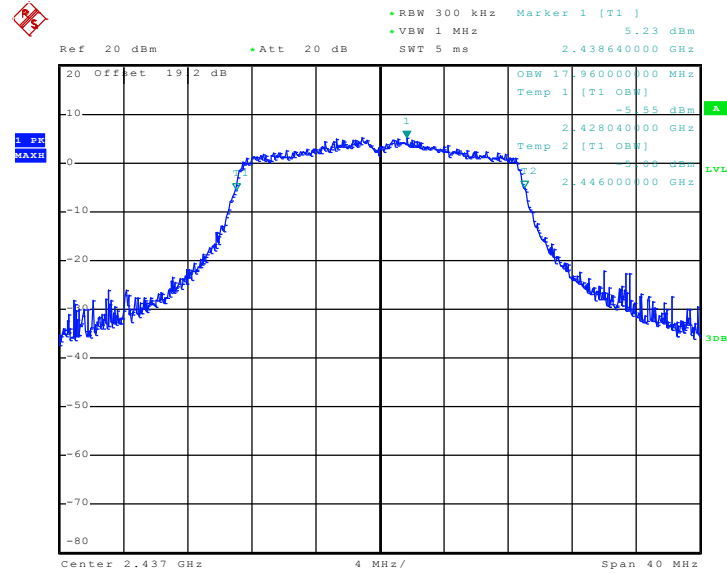
Mode 7 : 99% Occupied Bandwidth Plot on 802.11n (BW 20MHz) Channel 01



Date: 5.AUG.2011 15:48:19

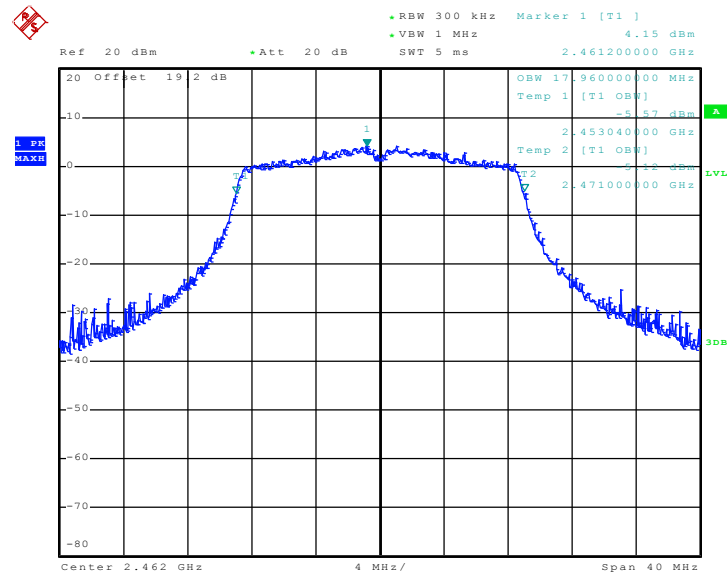


Mode 8 : 99% Occupied Bandwidth Plot on 802.11n (BW 20MHz) Channel 06



Date: 5.AUG.2011 16:24:36

Mode 9 : 99% Occupied Bandwidth Plot on 802.11n (BW 20MHz) Channel 11



Date: 5.AUG.2011 16:04:56

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.

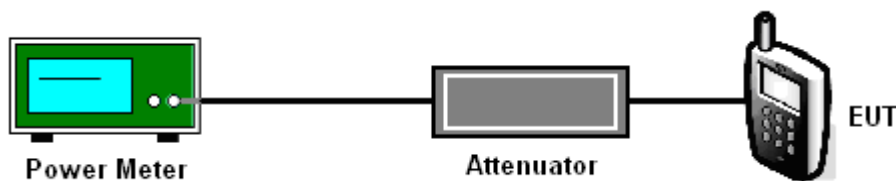
3.2.2 Measuring Instruments

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 :	23~25℃
Test Engineer :	Pinkston Tu	Relative Humidity :	53~56%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	18.24	30	Pass
06	2437	18.62	30	Pass
11	2462	18.21	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	23~25℃
Test Engineer :	Pinkston Tu	Relative Humidity :	53~56%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.80	30	Pass
06	2437	23.74	30	Pass
11	2462	22.63	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	23~25℃
Test Engineer :	Pinkston Tu	Relative Humidity :	53~56%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.30	30	Pass
06	2437	22.90	30	Pass
11	2462	22.00	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

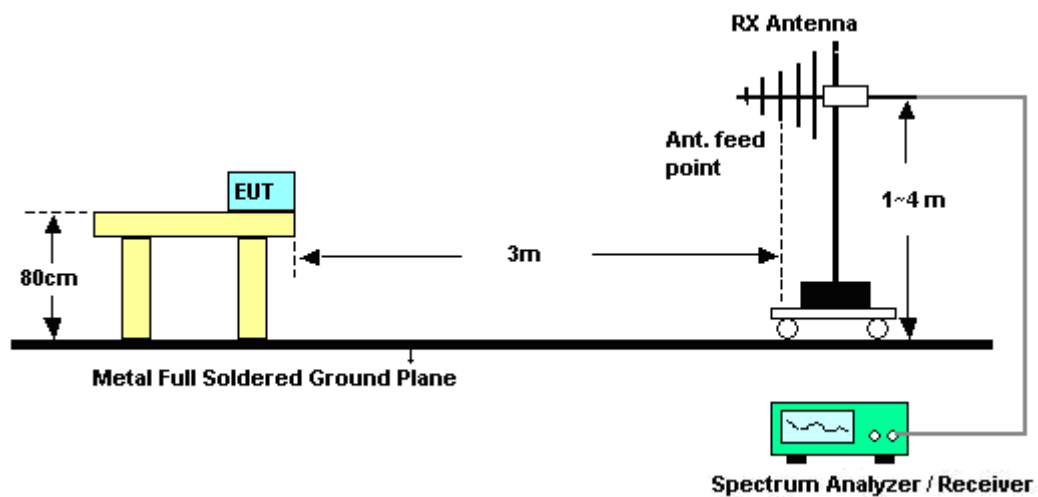
See list of measuring instruments of this test report.

3.3.3 Test Procedures

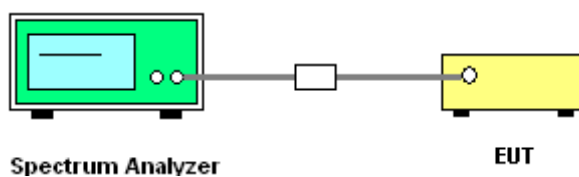
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) $\geq$ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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 :	24~26℃
Test Band :	802.11b	Relative Humidity :	50~52%
Test Channel :	01	Test Engineer :	Lewis He / David Yang

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
2387.33	54.89	-19.11	74	50.53	32.18	6.03	33.85	103	340	Peak
2387.33	43.67	-10.33	54	39.31	32.18	6.03	33.85	103	340	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
2389.99	48.94	-25.06	74	44.58	32.18	6.03	33.85	102	49	Peak
2389.99	39.5	-14.5	54	35.14	32.18	6.03	33.85	102	49	Average

Test Mode :	Mode 3	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	50~52%
Test Channel :	11	Test Engineer :	Lewis He / David Yang

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
2483.66	58.2	-15.8	74	53.64	32.28	6.18	33.9	129	333	Peak
2483.66	50.13	-3.87	54	45.57	32.28	6.18	33.9	129	333	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
2483.66	54.78	-19.22	74	50.22	32.28	6.18	33.9	101	57	Peak
2483.66	45.43	-8.57	54	40.87	32.28	6.18	33.9	101	57	Average



Test Mode :	Mode 4	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~52%
Test Channel :	01	Test Engineer :	Lewis He / David Yang

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
2389.99	69.84	-4.16	74	65.48	32.18	6.03	33.85	103	340	Peak
2389.99	49.37	-4.63	54	45.01	32.18	6.03	33.85	103	340	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
2389.99	63.04	-10.96	74	58.68	32.18	6.03	33.85	101	50	Peak
2389.99	43.04	-10.96	54	38.68	32.18	6.03	33.85	101	50	Average

Test Mode :	Mode 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~52%
Test Channel :	11	Test Engineer :	Lewis He / David Yang

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	70.66	-3.34	74	66.1	32.28	6.18	33.9	128	338	Peak
2483.5	50.62	-3.38	54	46.06	32.28	6.18	33.9	128	338	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	64.44	-9.56	74	59.88	32.28	6.18	33.9	100	57	Peak
2483.5	45.25	-8.75	54	40.69	32.28	6.18	33.9	100	57	Average



Test Mode :	Mode 7	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~52%
Test Channel :	01	Test Engineer :	Lewis He / David Yang

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
2389.42	70.92	-3.08	74	66.56	32.18	6.03	33.85	103	336	Peak
2389.42	50.41	-3.59	54	46.05	32.18	6.03	33.85	103	336	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
2389.99	62.71	-11.29	74	58.35	32.18	6.03	33.85	100	49	Peak
2389.99	43.39	-10.61	54	39.03	32.18	6.03	33.85	100	49	Average

Test Mode :	Mode 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~52%
Test Channel :	11	Test Engineer :	Lewis He / David Yang

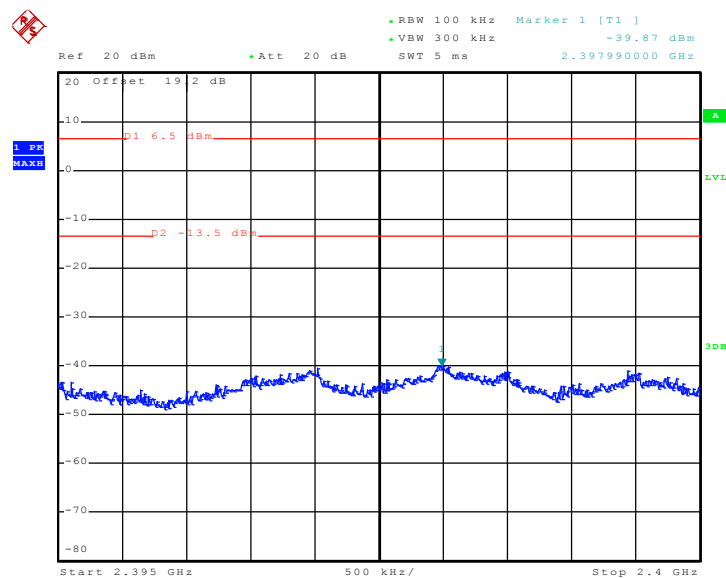
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.85	70.39	-3.61	74	65.83	32.28	6.18	33.9	101	340	Peak
2483.85	50.76	-3.24	54	46.2	32.28	6.18	33.9	101	340	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	61.92	-12.08	74	57.36	32.28	6.18	33.9	100	264	Peak
2483.5	43.51	-10.49	54	38.95	32.28	6.18	33.9	100	264	Average

3.3.6 Test Plots of Conducted Band Edges

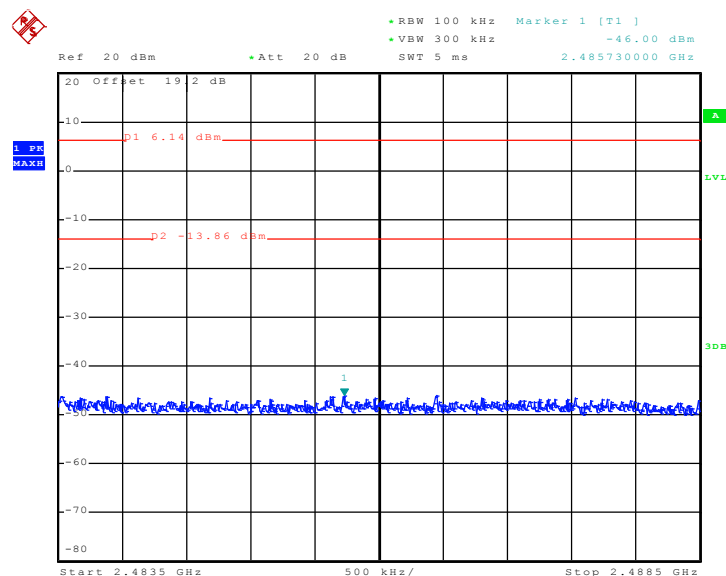
Test Mode :	Mode 1 and 3	Temperature :	23~25°C
Test Band :	802.11b	Relative Humidity :	53~56%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

Low Band Edge Plot on 802.11b Channel 01



Date: 5.AUG.2011 13:31:07

High Band Edge Plot on 802.11b Channel 11

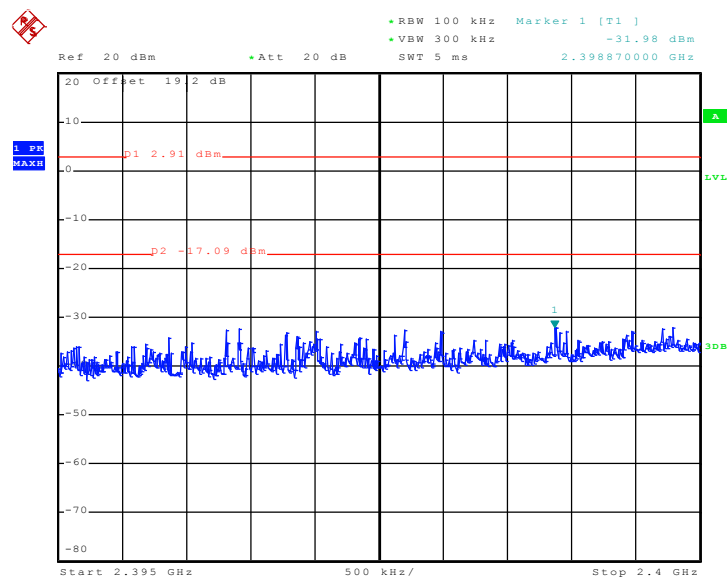


Date: 5.AUG.2011 14:38:31



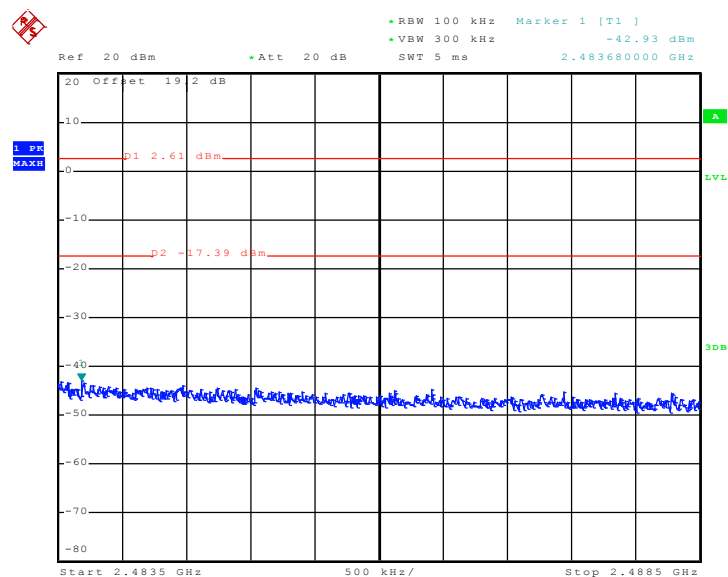
Test Mode :	Mode 4 and 6	Temperature :	23~25°C
Test Band :	802.11g	Relative Humidity :	53~56%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

Low Band Edge Plot on 802.11g Channel 01



Date: 5.AUG.2011 14:20:09

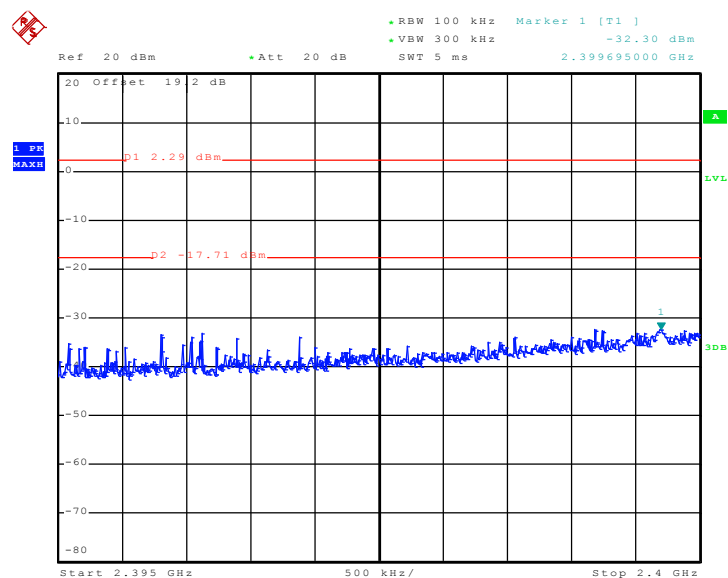
High Band Edge Plot on 802.11g Channel 11



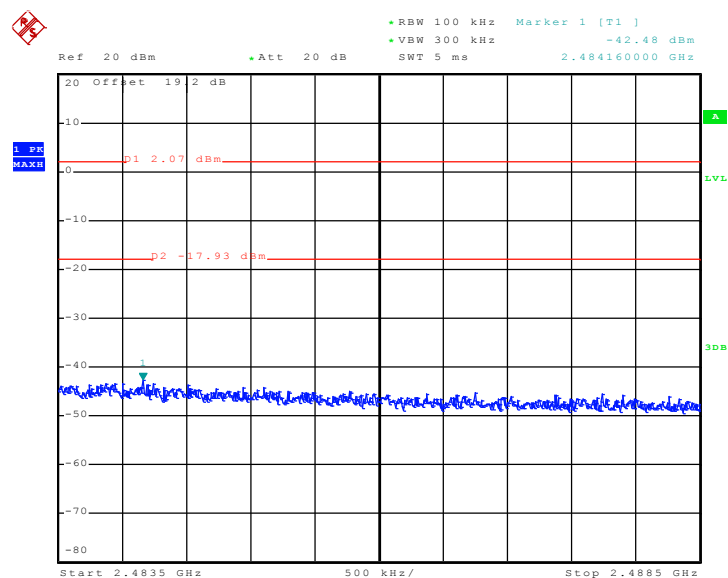
Date: 5.AUG.2011 15:06:52



Test Mode :	Mode 7 and 9	Temperature :	23~25°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	53~56%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

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

Date: 5.AUG.2011 15:47:38

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

Date: 5.AUG.2011 16:04:14

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.

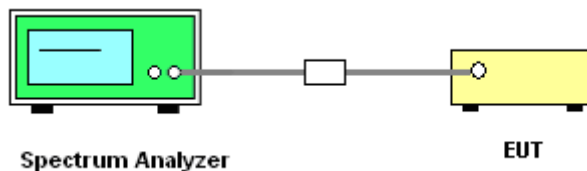
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedure

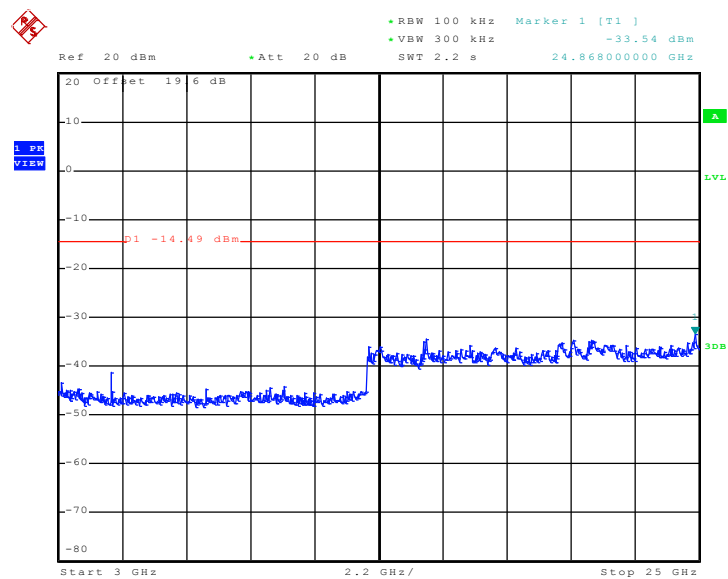
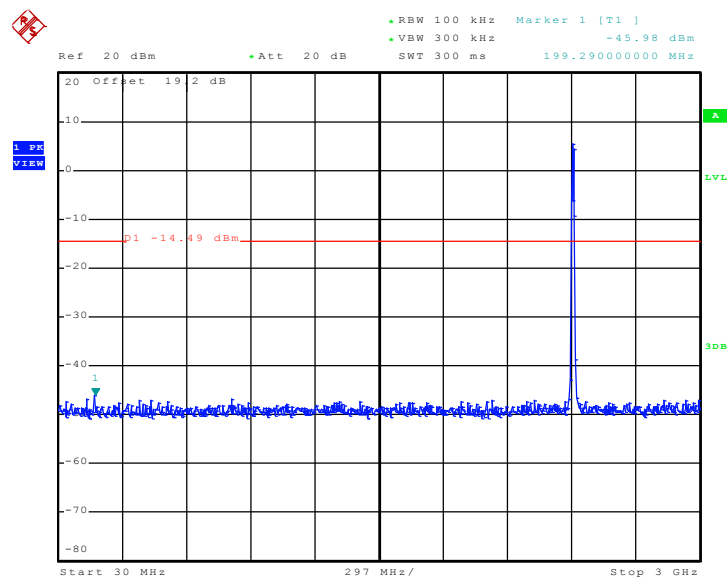
1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set RBW = 100 kHz, Video bandwidth (VBW) $\geq$ RBW, scan up through 10th harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100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

3.4.4 Test Setup





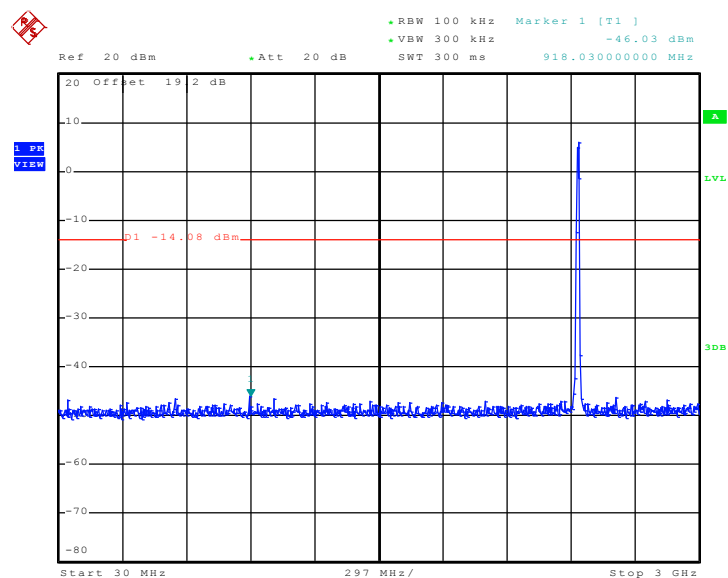
Test Mode :	Mode 1	Temperature :	23~25℃
Test Band :	802.11b	Relative Humidity :	53~56%
Test Channel :	01	Test Engineer :	Pinkston Tu





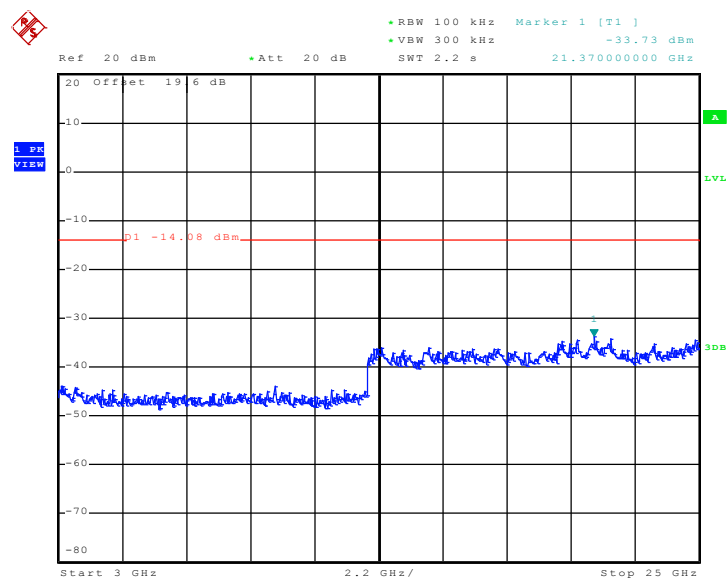
Test Mode :	Mode 2	Temperature :	23~25°C
Test Band :	802.11b	Relative Humidity :	53~56%
Test Channel :	06	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.AUG.2011 14:03:29

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

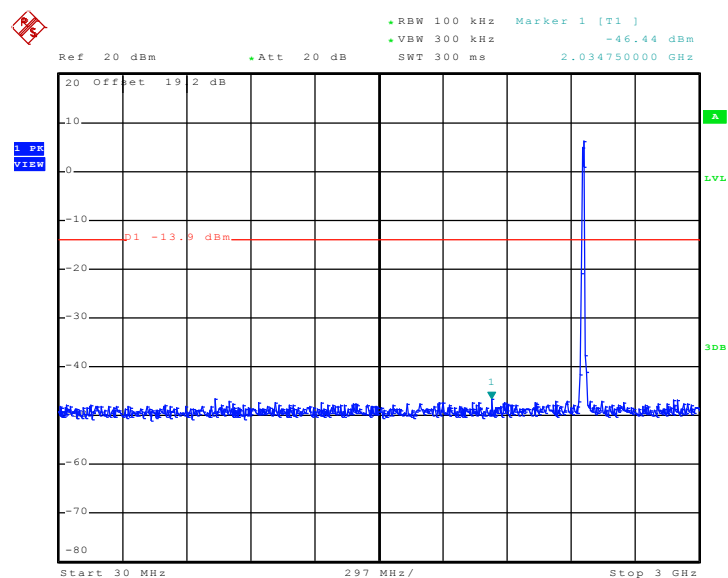


Date: 5.AUG.2011 14:03:50



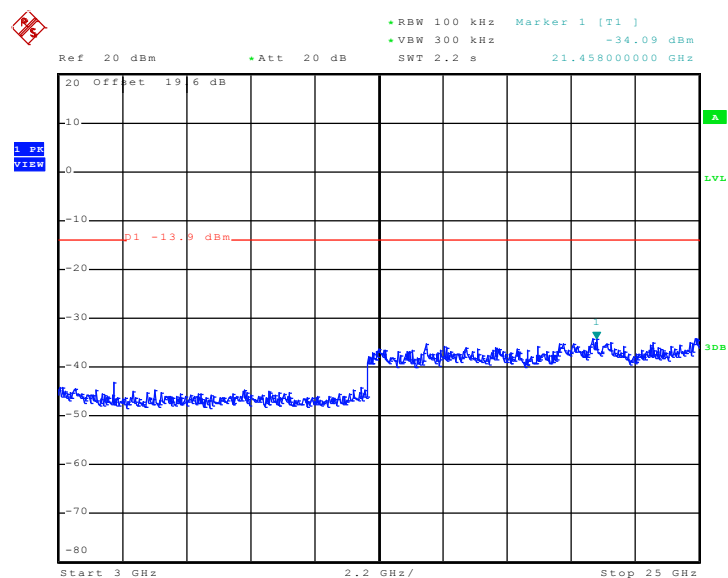
Test Mode :	Mode 3	Temperature :	23~25°C
Test Band :	802.11b	Relative Humidity :	53~56%
Test Channel :	11	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.AUG.2011 14:49:07

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

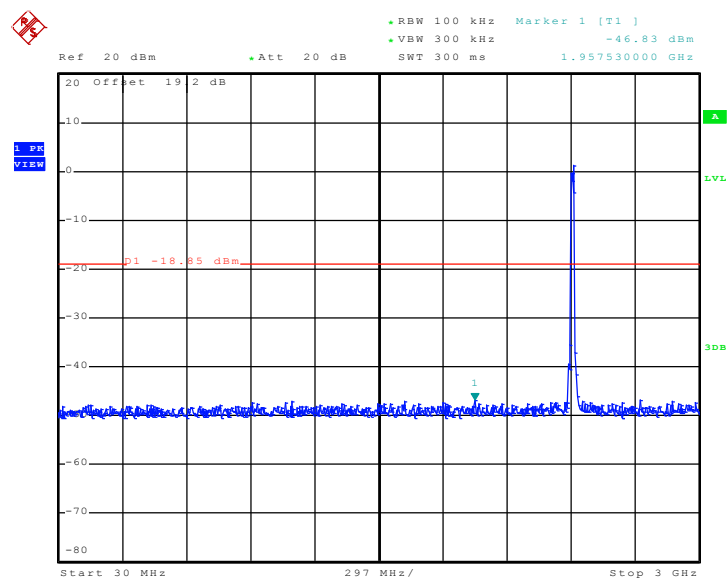


Date: 5.AUG.2011 14:49:31



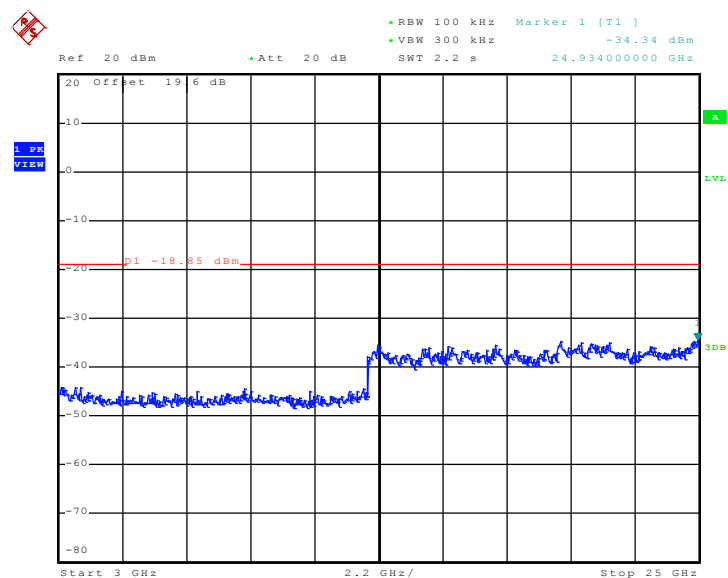
Test Mode :	Mode 4	Temperature :	23~25°C
Test Band :	802.11g	Relative Humidity :	53~56%
Test Channel :	01	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.AUG.2011 14:33:21

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

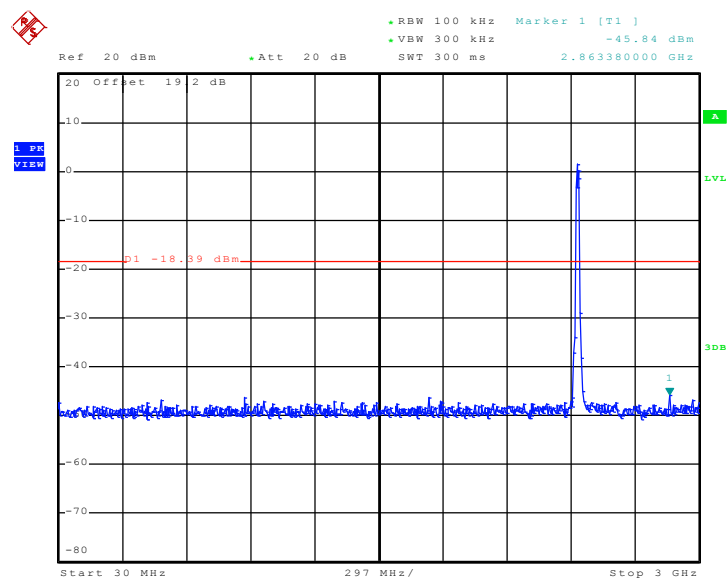


Date: 5.AUG.2011 14:33:43



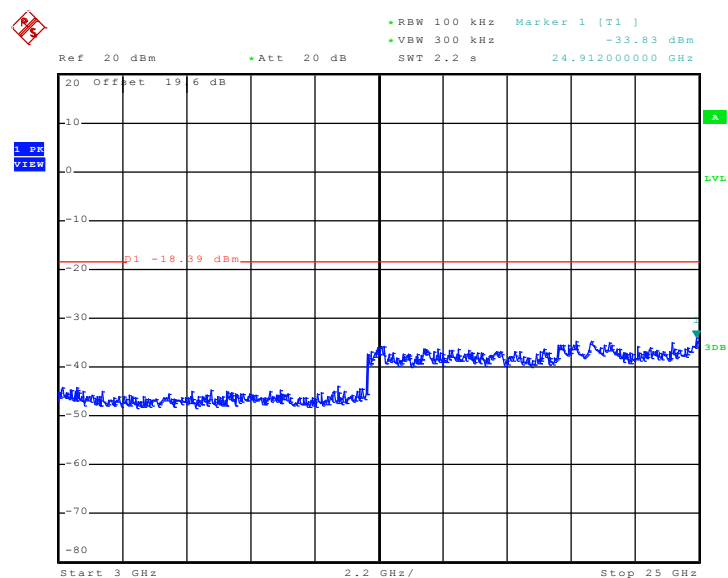
Test Mode :	Mode 5	Temperature :	23~25
Test Band :	802.11g	Relative Humidity :	53~56
Test Channel :	06	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.AUG.2011 15:43:36

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

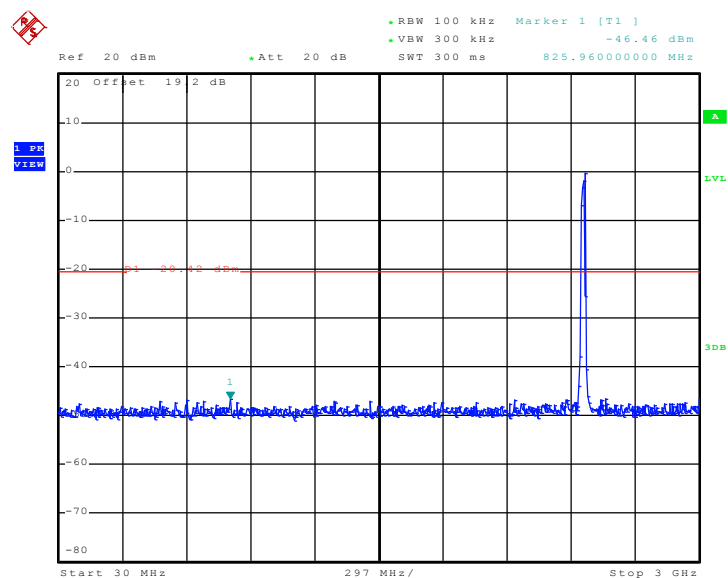


Date: 5.AUG.2011 15:43:57



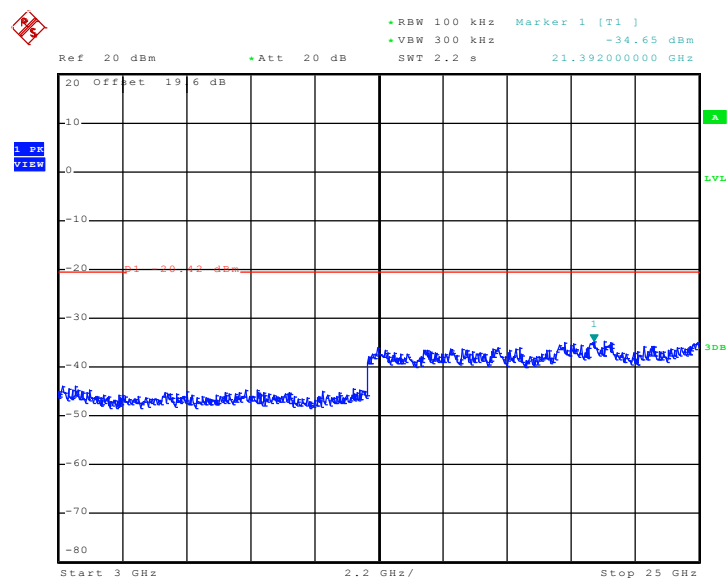
Test Mode :	Mode 6	Temperature :	23~25°C
Test Band :	802.11g	Relative Humidity :	53~56%
Test Channel :	11	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.AUG.2011 15:20:22

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

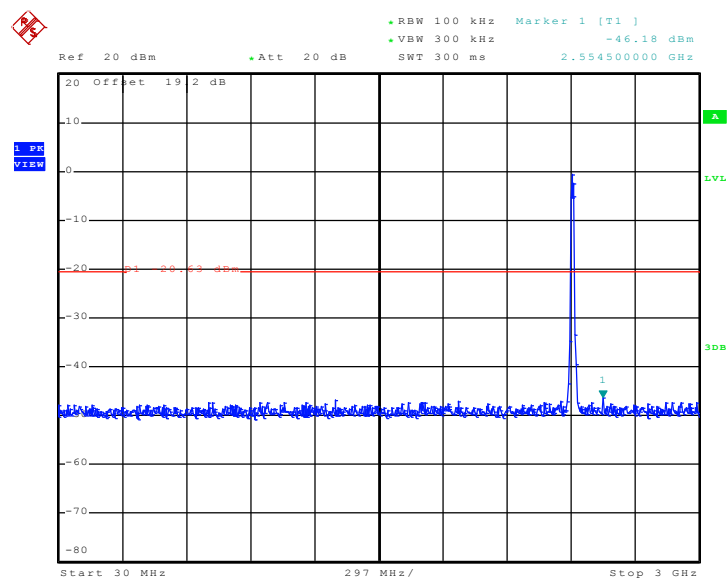


Date: 5.AUG.2011 15:20:43



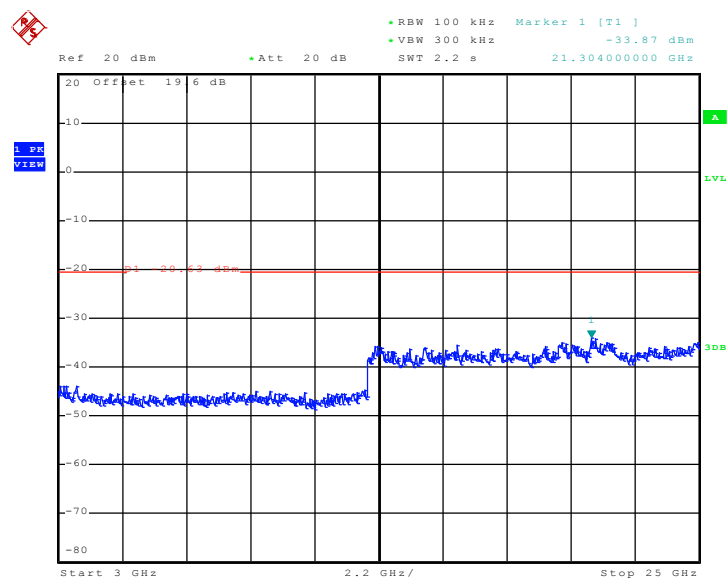
Test Mode :	Mode 7	Temperature :	23~25°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	53~56%
Test Channel :	01	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.AUG.2011 15:57:41

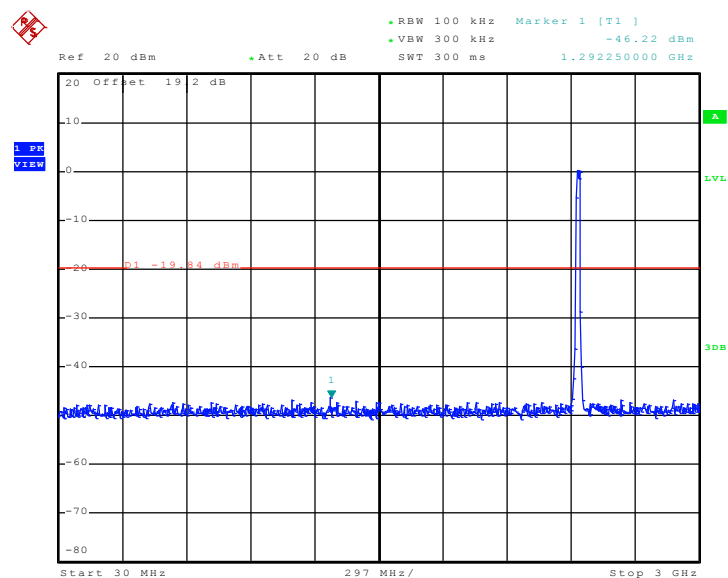
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



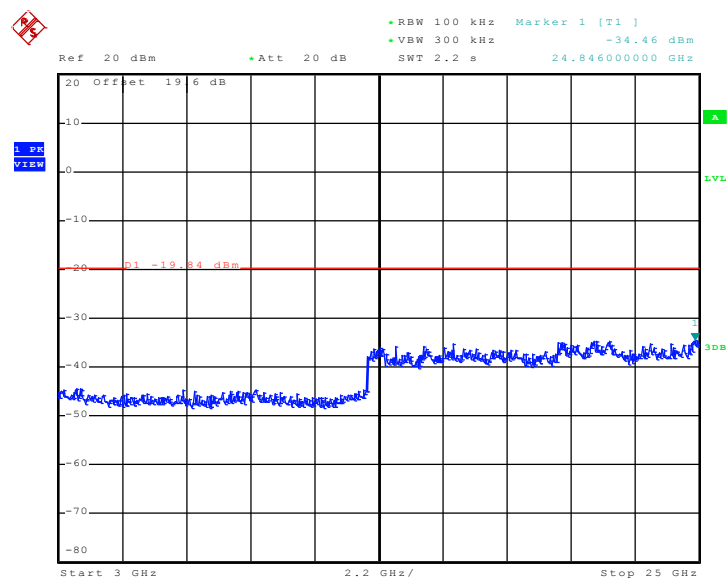
Date: 5.AUG.2011 15:58:02



Test Mode :	Mode 8	Temperature :	23~25°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	53~56%
Test Channel :	06	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

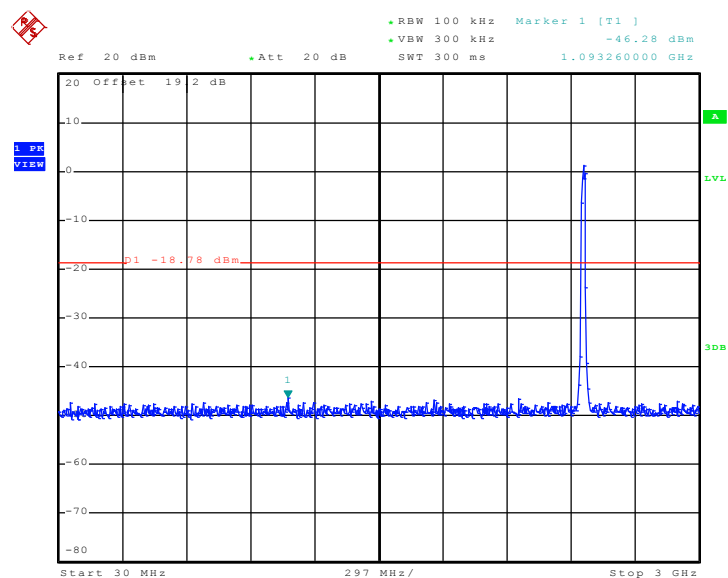
Date: 5.AUG.2011 16:34:44

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

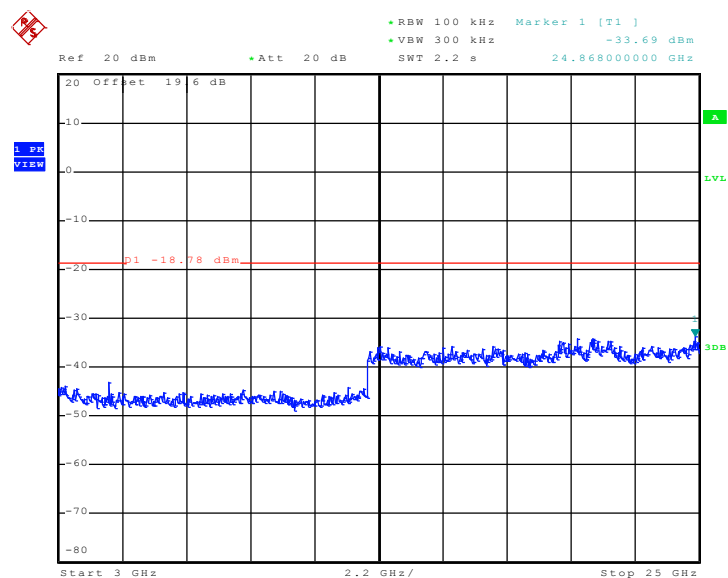
Date: 5.AUG.2011 16:35:07



Test Mode :	Mode 9	Temperature :	23~25°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	53~56%
Test Channel :	11	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 5.AUG.2011 16:21:05

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 5.AUG.2011 16:21:26

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.

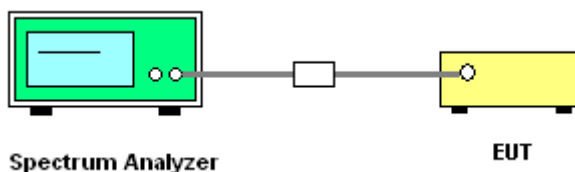
3.5.2 Measuring Instruments

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

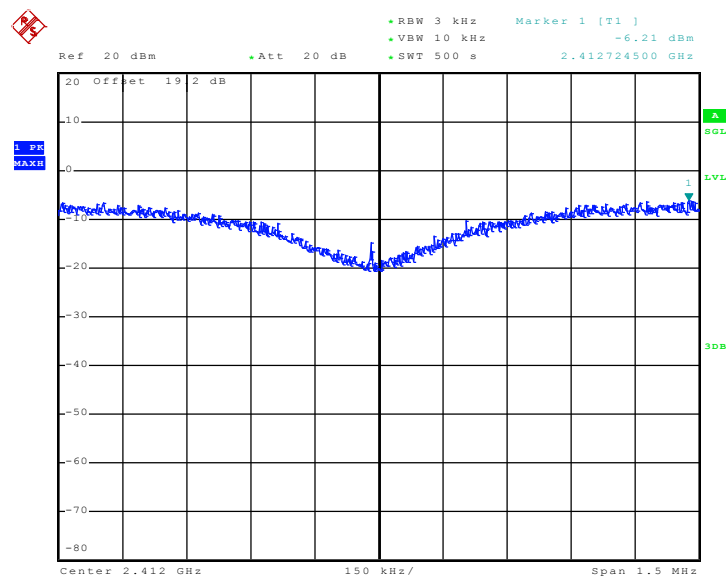


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	23~25℃
Test Engineer :	Pinkston Tu	Relative Humidity :	53~56%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-6.21	8	Pass
06	2437	-6.44	8	Pass
11	2462	-6.98	8	Pass

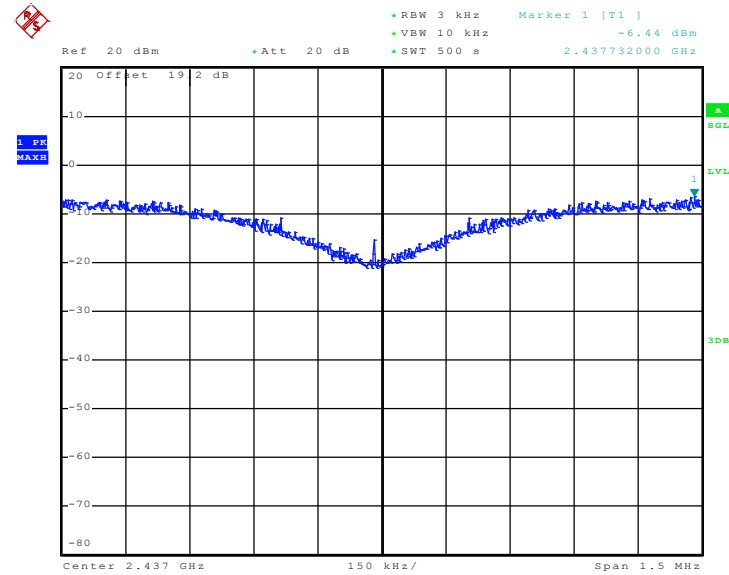
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 5.AUG.2011 13:40:31

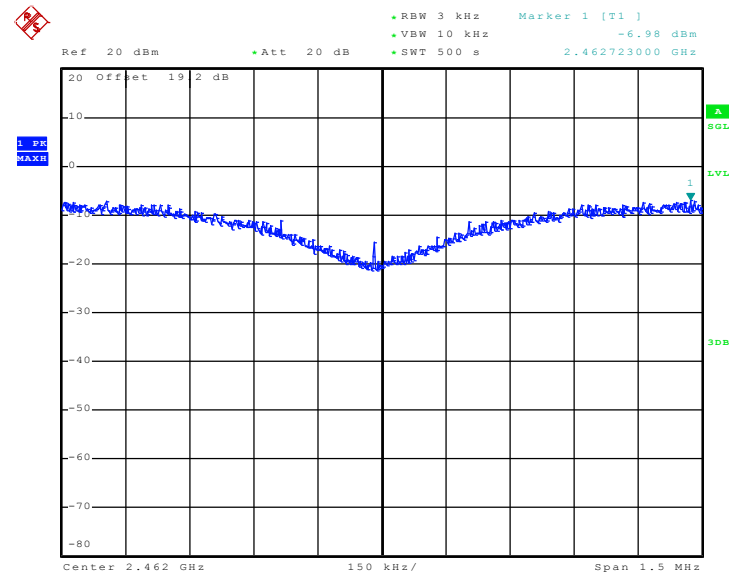


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 5.AUG.2011 14:03:04

Mode 3 : PSD Plot on 802.11b Channel 11



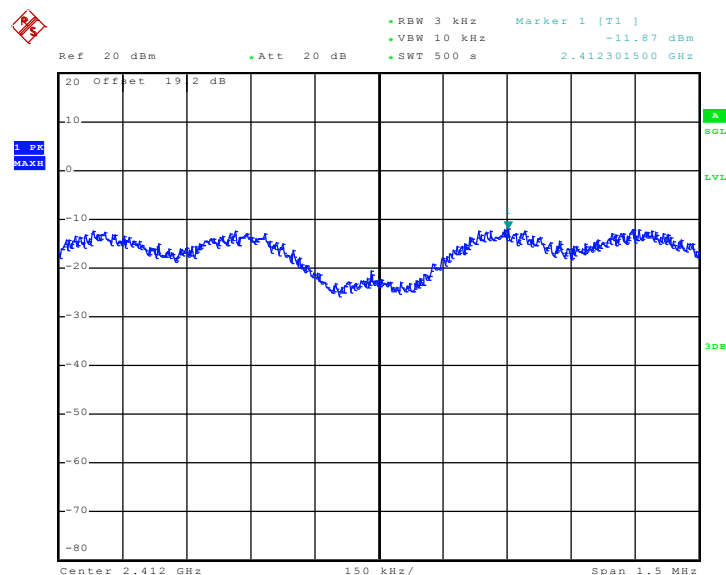
Date: 5.AUG.2011 14:48:42



Test Mode :	Mode 4, 5, 6	Temperature :	23~25°C
Test Engineer :	Pinkston Tu	Relative Humidity :	53~56%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-11.87	8	Pass
06	2437	-9.82	8	Pass
11	2462	-12.03	8	Pass

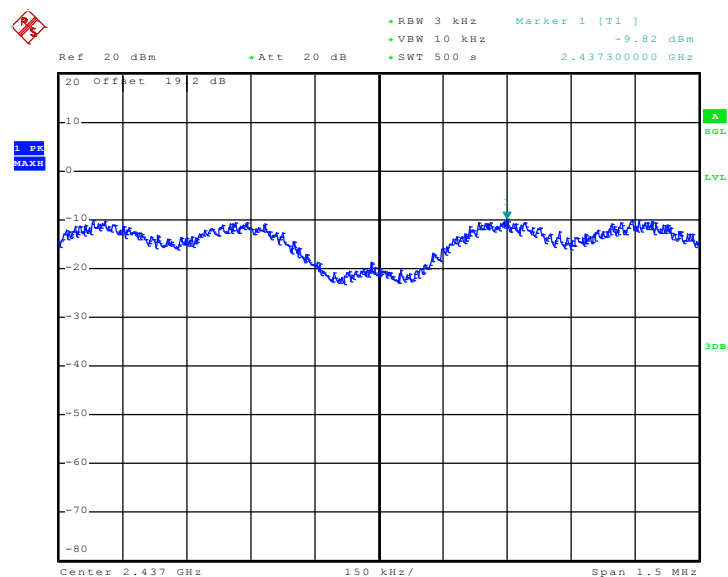
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 5.AUG.2011 14:32:54

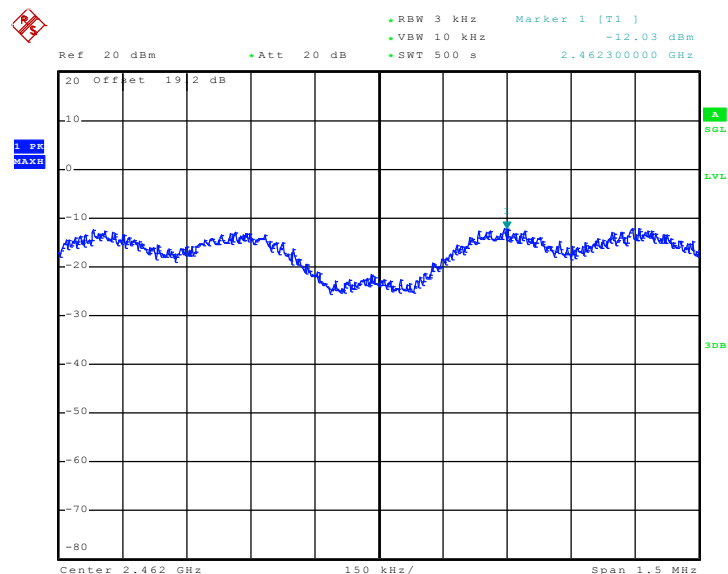


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 5.AUG.2011 15:43:10

Mode 6 : PSD Plot on 802.11g Channel 11



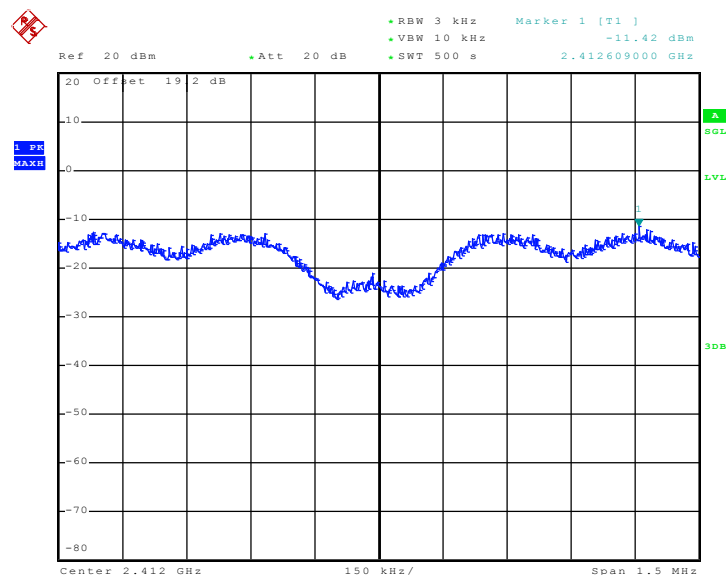
Date: 5.AUG.2011 15:17:24



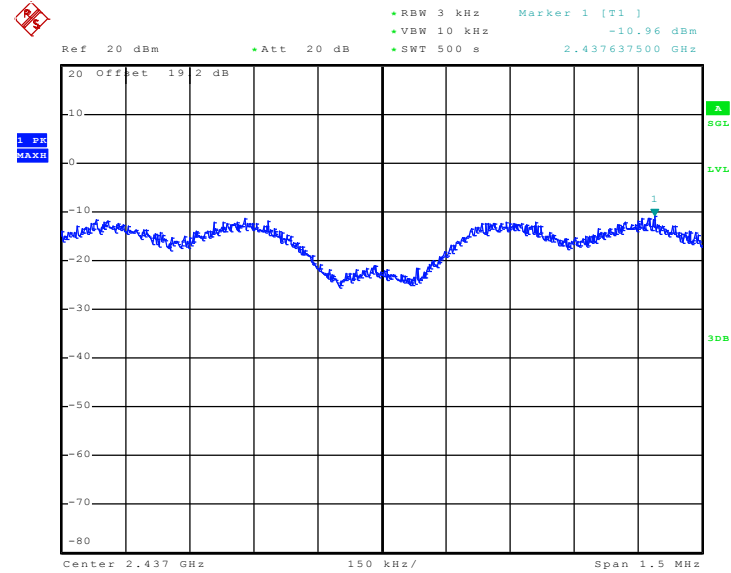
Test Mode :	Mode 7, 8, 9	Temperature :	23~25°C
Test Engineer :	Pinkston Tu	Relative Humidity :	53~56%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-11.42	8	Pass
06	2437	-10.96	8	Pass
11	2462	-11.43	8	Pass

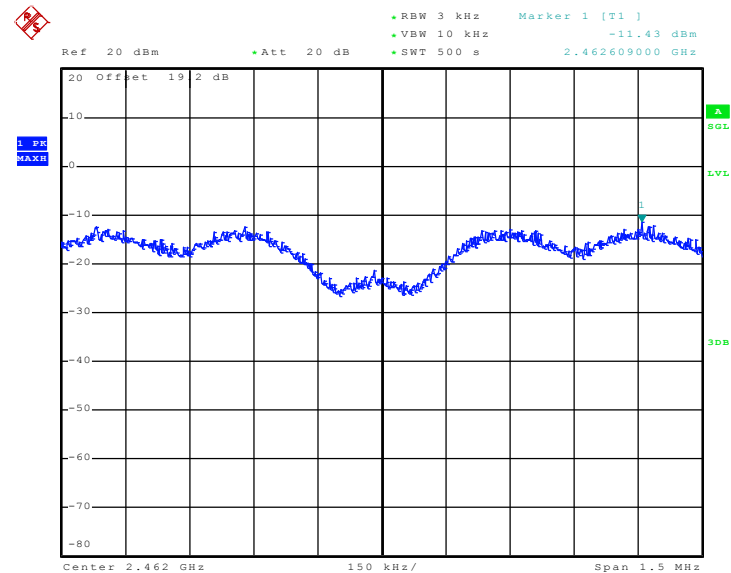
Mode 7 : PSD Plot on 802.11n (BW 20MHz) Channel 01



Date: 5.AUG.2011 15:57:16

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


Date: 5.AUG.2011 16:34:19

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


Date: 5.AUG.2011 16:15:00

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.

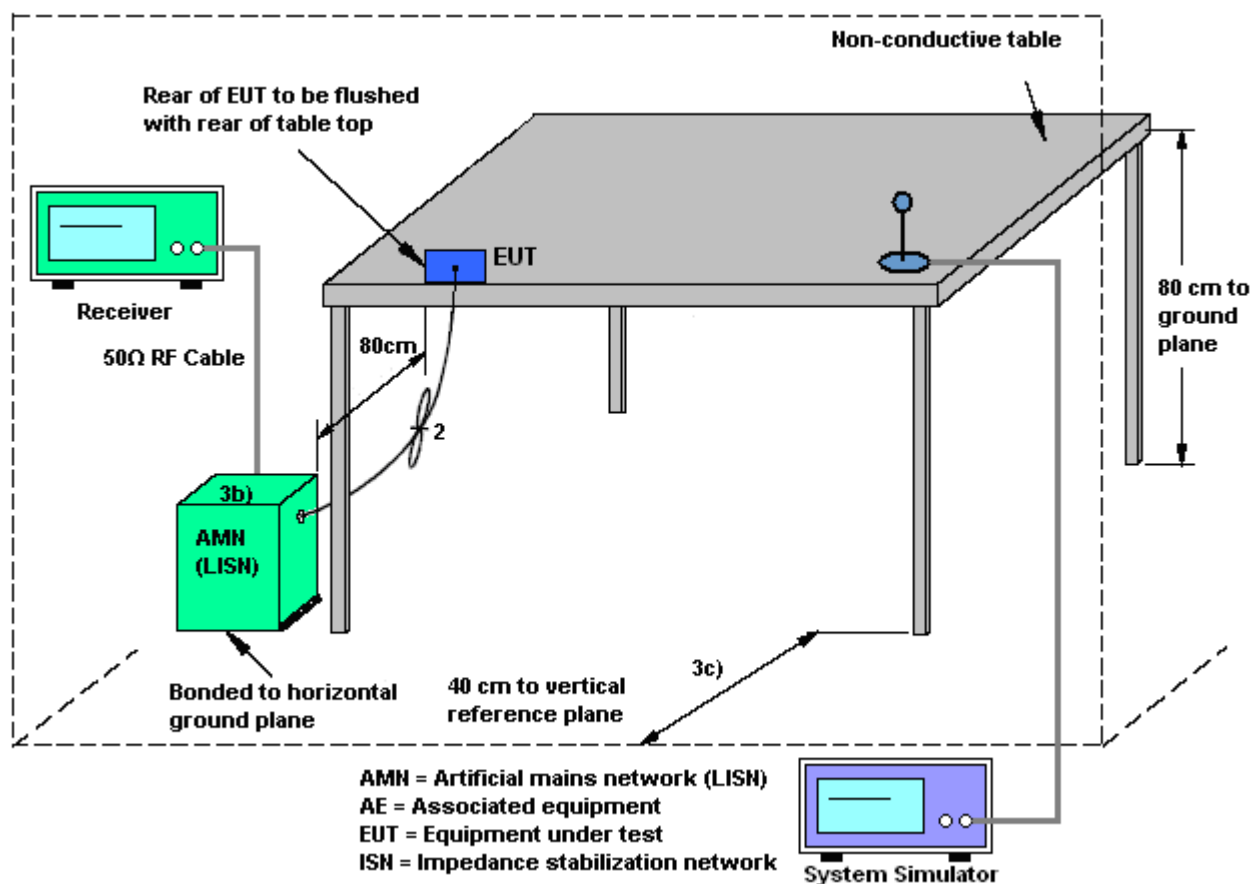
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

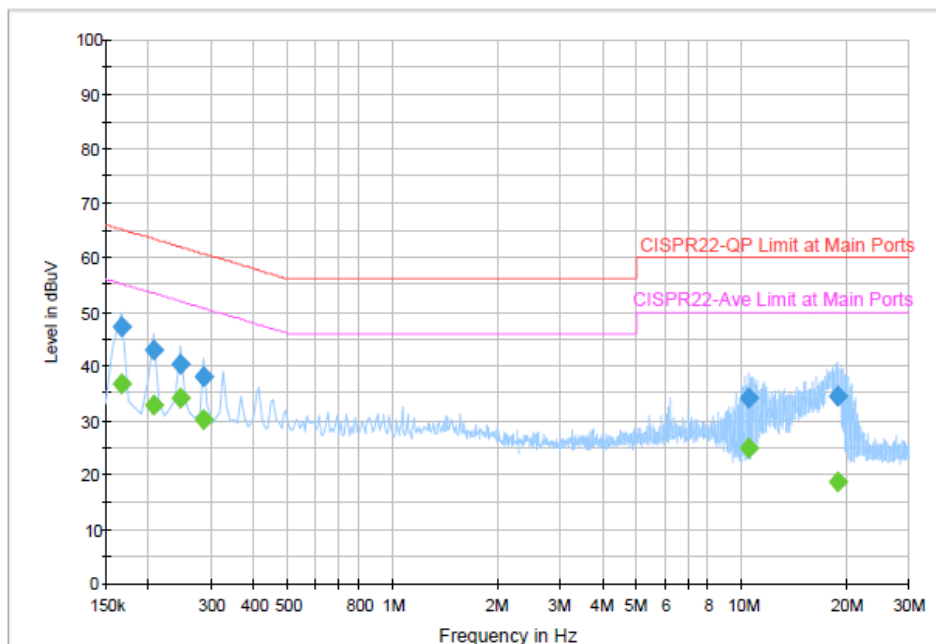
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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 :	20~22°C
Test Engineer :	Hayden Wu	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + GPS Rx + Earphone + USB Cable (Charging from Adapter)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



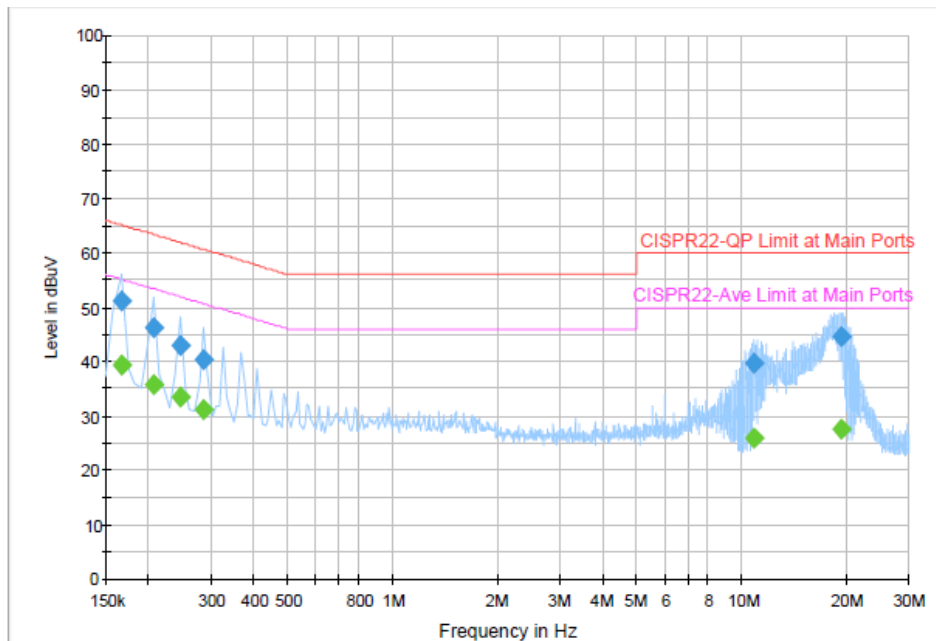
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	47.3	Off	L1	19.4	17.9	65.2
0.206000	43.0	Off	L1	19.4	20.4	63.4
0.246000	40.4	Off	L1	19.4	21.5	61.9
0.286000	37.9	Off	L1	19.4	22.7	60.6
10.446000	34.0	Off	L1	19.6	26.0	60.0
18.646000	34.3	Off	L1	19.7	25.7	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	36.6	Off	L1	19.4	18.6	55.2
0.206000	32.9	Off	L1	19.4	20.5	53.4
0.246000	34.1	Off	L1	19.4	17.8	51.9
0.286000	30.1	Off	L1	19.4	20.5	50.6
10.446000	24.9	Off	L1	19.6	25.1	50.0
18.646000	18.6	Off	L1	19.7	31.4	50.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Hayden Wu	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (2.4G) 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)
0.166000	51.1	Off	N	19.4	14.1	65.2
0.206000	46.4	Off	N	19.4	17.0	63.4
0.246000	42.8	Off	N	19.4	19.1	61.9
0.286000	40.3	Off	N	19.4	20.3	60.6
10.854000	39.8	Off	N	19.6	20.2	60.0
19.302000	44.4	Off	N	19.7	15.6	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	39.3	Off	N	19.4	15.9	55.2
0.206000	35.6	Off	N	19.4	17.8	53.4
0.246000	33.3	Off	N	19.4	18.6	51.9
0.286000	31.3	Off	N	19.4	19.3	50.6
10.854000	26.0	Off	N	19.6	24.0	50.0
19.302000	27.6	Off	N	19.7	22.4	50.0

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

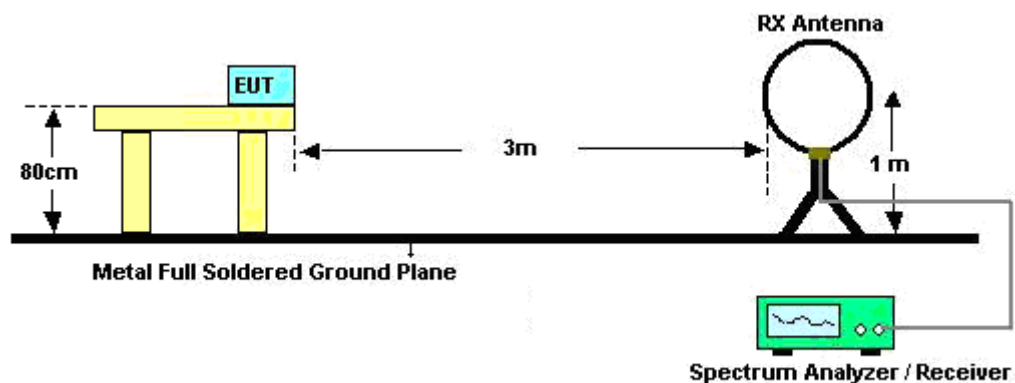
See list of measuring instruments of this test report.

3.7.3 Test Procedures

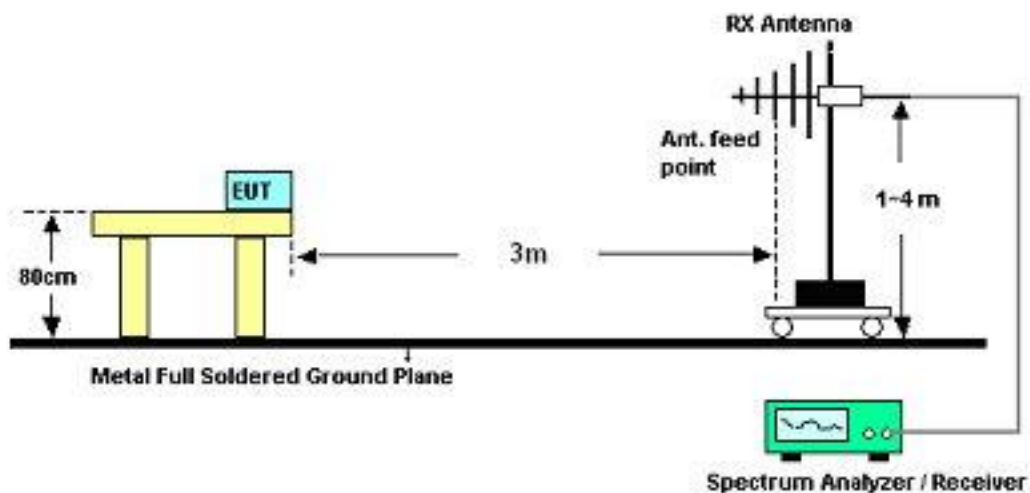
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep =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

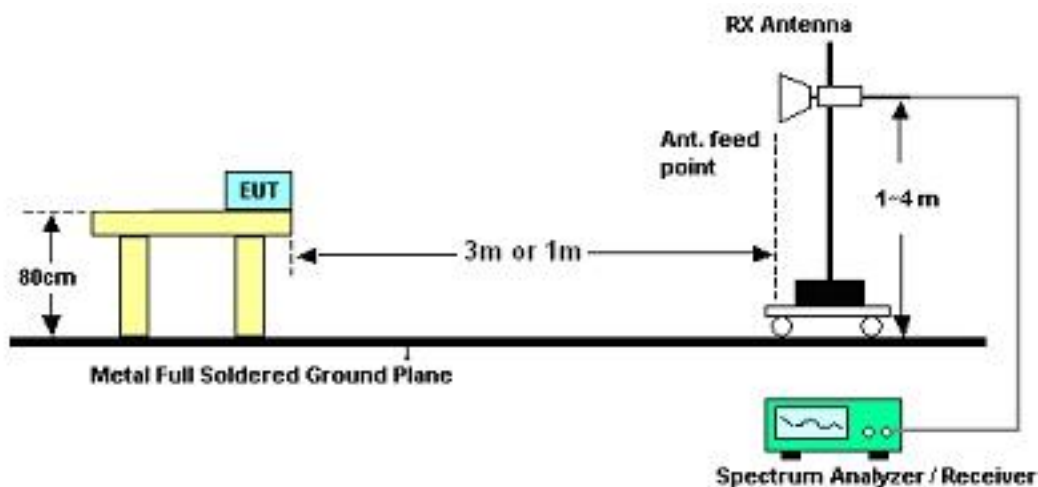
For radiated emissions below 30MHz



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 :	Lewis He / David Yang	Temperature :	24~26℃	
		Relative Humidity :	50~52%	

Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

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

Test Mode :	Mode 1	Temperature :	24~26℃
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	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
88.05	25.53	-17.97	43.5	47.74	8.39	0.93	31.53	-	-	Peak
139.62	26.71	-16.79	43.5	45.46	11.6	1.2	31.55	-	-	Peak
186.06	32.9	-10.6	43.5	54.09	9.06	1.27	31.52	124	100	Peak
307.7	23.25	-22.75	46	39.09	13.7	1.79	31.33	-	-	Peak
505.8	19.39	-26.61	46	29.67	18.32	2.46	31.06	-	-	Peak
738.9	23.5	-22.5	46	29.7	21.5	3.03	30.73	-	-	Peak
2387.33	54.89	-19.11	74	50.53	32.18	6.03	33.85	103	340	Peak
2387.33	43.67	-10.33	54	39.31	32.18	6.03	33.85	103	340	Average
2412	110.71	-	-	106.31	32.2	6.07	33.87	103	340	Peak
2412	106.41	-	-	102.01	32.2	6.07	33.87	103	340	Average
2486	38.77	-15.23	54	34.21	32.28	6.18	33.9	103	340	Average
2486	50.08	-23.92	74	45.52	32.28	6.18	33.9	103	340	Peak
4824	45.37	-28.63	74	61.29	34.07	9.12	59.11	100	0	Peak



Test Mode :	Mode 1	Temperature :	24~26℃
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	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
40.26	33.26	-6.74	40	51.64	12.5	0.63	31.51	111	89	Peak
87.78	25.31	-14.69	40	47.52	8.39	0.93	31.53	-	-	Peak
189.57	29.06	-14.44	43.5	50.22	9.07	1.28	31.51	-	-	Peak
310.5	19.76	-26.24	46	35.5	13.79	1.79	31.32	-	-	Peak
542.2	20.03	-25.97	46	29.62	18.87	2.53	30.99	-	-	Peak
760.6	24.76	-21.24	46	30.54	21.84	3.08	30.7	-	-	Peak
2389.99	48.94	-25.06	74	44.58	32.18	6.03	33.85	102	49	Peak
2389.99	39.5	-14.5	54	35.14	32.18	6.03	33.85	102	49	Average
2412	104.46	-	-	100.06	32.2	6.07	33.87	102	49	Peak
2412	100.14	-	-	95.74	32.2	6.07	33.87	102	49	Average
2484	33.54	-20.46	54	28.98	32.28	6.18	33.9	102	49	Average
2484	45.43	-28.57	74	40.87	32.28	6.18	33.9	102	49	Peak



Test Mode :	Mode 2	Temperature :	24~26℃
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	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
44.58	25.77	-14.23	40	45.95	10.67	0.65	31.5	133	241	Peak
188.22	27.6	-15.9	43.5	48.78	9.06	1.27	31.51	-	-	Peak
223.05	25.38	-20.62	46	44.64	10.75	1.44	31.45	-	-	Peak
307.7	23.79	-22.21	46	39.63	13.7	1.79	31.33	-	-	Peak
508.6	19.41	-26.59	46	29.64	18.35	2.47	31.05	-	-	Peak
741.7	23.6	-22.4	46	29.73	21.55	3.04	30.72	-	-	Peak
2358	53.77	-20.23	74	49.49	32.13	5.99	33.84	157	336	Peak
2358	46.53	-7.47	54	42.25	32.13	5.99	33.84	157	336	Average
2437	110.68	-	-	106.23	32.22	6.11	33.88	157	336	Peak
2437	106.38	-	-	101.91	32.24	6.11	33.88	157	336	Average
2494	49.16	-24.84	74	44.58	32.3	6.18	33.9	157	336	Peak
2494	36.09	-17.91	54	31.51	32.3	6.18	33.9	157	336	Average
4874	47.38	-26.62	74	63.21	34.08	9.13	59.04	100	0	Peak



Test Mode :	Mode 2	Temperature :	24~26℃
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	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
40.26	33.01	-6.99	40	51.39	12.5	0.63	31.51	100	331	Peak
87.78	27.52	-12.48	40	49.73	8.39	0.93	31.53	-	-	Peak
187.14	30.83	-12.67	43.5	52.02	9.06	1.27	31.52	-	-	Peak
318.2	17.74	-28.26	46	33.22	14.03	1.81	31.32	-	-	Peak
514.9	19.7	-26.3	46	29.81	18.45	2.48	31.04	-	-	Peak
769	23.75	-22.25	46	29.37	21.98	3.09	30.69	-	-	Peak
2358	51.53	-22.47	74	47.25	32.13	5.99	33.84	100	49	Peak
2358	44.41	-9.59	54	40.13	32.13	5.99	33.84	100	49	Average
2437	107.39	-	-	102.92	32.24	6.11	33.88	100	49	Peak
2437	103.05	-	-	98.58	32.24	6.11	33.88	100	49	Average
2484	46.28	-27.72	74	41.72	32.28	6.18	33.9	100	49	Peak
2484	34.41	-19.59	54	29.85	32.28	6.18	33.9	100	49	Average
4874	46.35	-27.65	74	62.18	34.08	9.13	59.04	100	0	Peak



Test Mode :	Mode 3	Temperature :	24~26℃
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	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
88.05	24.17	-19.33	43.5	46.38	8.39	0.93	31.53	-	-	Peak
185.25	29.36	-14.14	43.5	50.56	9.06	1.26	31.52	136	201	Peak
223.05	26.89	-19.11	46	46.15	10.75	1.44	31.45	-	-	Peak
307.7	23.77	-22.23	46	39.61	13.7	1.79	31.33	-	-	Peak
540.1	20.9	-25.1	46	30.53	18.84	2.53	31	-	-	Peak
747.3	23.96	-22.04	46	29.99	21.63	3.05	30.71	-	-	Peak
2382	55.52	-18.48	74	51.18	32.16	6.03	33.85	129	333	Peak
2382	49.19	-4.81	54	44.85	32.16	6.03	33.85	129	333	Average
2462	106.61	-	-	102.1	32.26	6.14	33.89	129	333	Average
2462	110.97	-	-	106.46	32.26	6.14	33.89	129	333	Peak
2483.66	58.2	-15.8	74	53.64	32.28	6.18	33.9	129	333	Peak
2483.66	50.13	-3.87	54	45.57	32.28	6.18	33.9	129	333	Average
4924	48.15	-25.85	74	63.87	34.09	9.15	58.96	100	0	Peak



Test Mode :	Mode 3	Temperature :	24~26℃
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	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
32.97	33.06	-6.94	40	48.17	15.8	0.56	31.47	100	72	Peak
40.26	31.49	-8.51	40	49.87	12.5	0.63	31.51	-	-	Peak
88.05	25.95	-17.55	43.5	48.16	8.39	0.93	31.53	-	-	Peak
372.1	17.31	-28.69	46	30.76	15.72	2.08	31.25	-	-	Peak
553.4	21.09	-24.91	46	30.46	19.05	2.56	30.98	-	-	Peak
766.9	23.89	-22.11	46	29.54	21.95	3.09	30.69	-	-	Peak
2382	51.29	-22.71	74	46.95	32.16	6.03	33.85	101	57	Peak
2382	43.54	-10.46	54	39.2	32.16	6.03	33.85	101	57	Average
2462	100.09	-	-	95.58	32.26	6.14	33.89	101	57	Average
2462	104.37	-	-	99.86	32.26	6.14	33.89	101	57	Peak
2483.66	54.78	-19.22	74	50.22	32.28	6.18	33.9	101	57	Peak
2483.66	45.43	-8.57	54	40.87	32.28	6.18	33.9	101	57	Average
4924	47.39	-26.61	74	63.11	34.09	9.15	58.96	100	0	Peak



Test Mode :	Mode 4	Temperature :	24~26℃
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	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
89.13	22.83	-20.67	43.5	44.89	8.53	0.93	31.52	-	-	Peak
183.09	27.56	-15.94	43.5	48.77	9.05	1.26	31.52	145	192	Peak
217.65	25.09	-20.91	46	44.81	10.34	1.4	31.46	-	-	Peak
307	22.24	-23.76	46	38.08	13.7	1.79	31.33	-	-	Peak
433	18.62	-27.38	46	30.39	17.11	2.25	31.13	-	-	Peak
788.6	24.65	-21.35	46	29.92	22.29	3.12	30.68	-	-	Peak
2389.99	69.84	-4.16	74	65.48	32.18	6.03	33.85	103	340	Peak
2389.99	49.37	-4.63	54	45.01	32.18	6.03	33.85	103	340	Average
2412	110.49	-	-	106.09	32.2	6.07	33.87	103	340	Peak
2412	97.41	-	-	93.01	32.2	6.07	33.87	103	340	Average
2492	43.21	-10.79	54	38.63	32.3	6.18	33.9	103	340	Average
2492	54.06	-19.94	74	49.48	32.3	6.18	33.9	103	340	Peak



Test Mode :	Mode 4	Temperature :	24~26℃
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	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
40.26	31.76	-8.24	40	50.14	12.5	0.63	31.51	110	142	Peak
89.94	27.13	-16.37	43.5	49.03	8.68	0.94	31.52	-	-	Peak
188.22	31.19	-12.31	43.5	52.37	9.06	1.27	31.51	-	-	Peak
421.8	17.72	-28.28	46	29.72	16.93	2.22	31.15	-	-	Peak
624.1	21.87	-24.13	46	29.98	20.03	2.76	30.9	-	-	Peak
788.6	24.44	-21.56	46	29.71	22.29	3.12	30.68	-	-	Peak
2389.99	63.04	-10.96	74	58.68	32.18	6.03	33.85	101	50	Peak
2389.99	43.04	-10.96	54	38.68	32.18	6.03	33.85	101	50	Average
2412	104.24	-	-	99.84	32.2	6.07	33.87	101	50	Peak
2412	91.57	-	-	87.17	32.2	6.07	33.87	101	50	Average
2492	36.55	-17.45	54	31.97	32.3	6.18	33.9	101	50	Average
2492	47.73	-26.27	74	43.15	32.3	6.18	33.9	101	50	Peak



Test Mode :	Mode 5	Temperature :	24~26℃
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	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
86.7	22.95	-17.05	40	45.47	8.1	0.92	31.54	-	-	Peak
188.49	30.21	-13.29	43.5	51.39	9.06	1.27	31.51	135	200	Peak
222.78	25.66	-20.34	46	44.92	10.75	1.44	31.45	-	-	Peak
307.7	23.81	-22.19	46	39.65	13.7	1.79	31.33	-	-	Peak
512.1	19.46	-26.54	46	29.63	18.41	2.47	31.05	-	-	Peak
733.3	23.6	-22.4	46	29.91	21.41	3.02	30.74	-	-	Peak
2356	55.75	-18.25	74	51.5	32.13	5.95	33.83	102	336	Peak
2356	44.61	-9.39	54	40.36	32.13	5.95	33.83	102	336	Average
2437	98.47	-	-	94	32.24	6.11	33.88	102	336	Average
2437	112.4	-	-	107.93	32.24	6.11	33.88	102	336	Peak
2484	55.29	-18.71	74	50.73	32.28	6.18	33.9	102	336	Peak
2484	41.41	-12.59	54	36.85	32.28	6.18	33.9	102	336	Average

Test Mode :	Mode 5	Temperature :	24~26℃
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	Polarization :	Vertical
Remark :	1. 2437 MHz is Fundamental Signals which can be ignored. 2. 9748 MHz is not within a restricted band.		

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
40.26	33.37	-6.63	40	51.75	12.5	0.63	31.51	113	325	Peak
87.78	26.73	-13.27	40	48.94	8.39	0.93	31.53	-	-	Peak
193.62	29.89	-13.61	43.5	51.01	9.08	1.3	31.5	-	-	Peak
424.6	18.42	-27.58	46	30.35	16.98	2.23	31.14	-	-	Peak
676.6	22	-24	46	29.32	20.63	2.89	30.84	-	-	Peak
789.3	25.19	-20.81	46	30.45	22.3	3.12	30.68	-	-	Peak
2358	52.38	-21.62	74	48.1	32.13	5.99	33.84	100	48	Peak
2358	41.26	-12.74	54	36.98	32.13	5.99	33.84	100	48	Average
2437	106.61	-	-	102.14	32.24	6.11	33.88	100	48	Peak
2437	93.66	-	-	89.19	32.24	6.11	33.88	100	48	Average
2484	50.14	-23.86	74	45.58	32.28	6.18	33.9	100	48	Peak
2484	36.68	-17.32	54	32.12	32.28	6.18	33.9	100	48	Average
9748	49.48	-24.52	86.61	60.4	36.79	11.94	59.65	100	0	Peak



Test Mode :	Mode 6	Temperature :	24~26℃
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	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
88.86	22.61	-20.89	43.5	44.68	8.53	0.93	31.53	-	-	Peak
188.22	28.16	-15.34	43.5	49.34	9.06	1.27	31.51	132	182	Peak
217.38	24.7	-21.3	46	44.42	10.34	1.4	31.46	-	-	Peak
307	22.17	-23.83	46	38.01	13.7	1.79	31.33	-	-	Peak
509.3	19.78	-26.22	46	30	18.36	2.47	31.05	-	-	Peak
788.6	24.3	-21.7	46	29.57	22.29	3.12	30.68	-	-	Peak
2382	56.6	-17.4	74	52.26	32.16	6.03	33.85	128	338	Peak
2382	46.34	-7.66	54	42	32.16	6.03	33.85	128	338	Average
2462	97.13	-	-	92.62	32.26	6.14	33.89	128	338	Average
2462	109.54	-	-	105.03	32.26	6.14	33.89	128	338	Peak
2483.5	70.66	-3.34	74	66.1	32.28	6.18	33.9	128	338	Peak
2483.5	50.62	-3.38	54	46.06	32.28	6.18	33.9	128	338	Average
4924	44.6	-29.4	74	60.32	34.09	9.15	58.96	100	0	Peak

Test Mode :	Mode 6	Temperature :	24~26℃
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	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
41.34	26.01	-13.99	40	44.85	12.04	0.63	31.51	-	-	Peak
131.25	29.87	-13.63	43.5	48.71	11.58	1.15	31.57	100	274	Peak
196.05	28.53	-14.97	43.5	49.63	9.09	1.3	31.49	-	-	Peak
402.9	17.85	-28.15	46	30.27	16.61	2.15	31.18	-	-	Peak
579.3	21.24	-24.76	46	30.11	19.44	2.63	30.94	-	-	Peak
811	24.31	-21.69	46	29.24	22.59	3.17	30.69	-	-	Peak
2382	51.79	-22.21	74	47.45	32.16	6.03	33.85	100	57	Peak
2382	40.95	-13.05	54	36.61	32.16	6.03	33.85	100	57	Average
2462	89.2	-	-	84.69	32.26	6.14	33.89	100	57	Average
2462	101.58	-	-	97.07	32.26	6.14	33.89	100	57	Peak
2483.5	64.44	-9.56	74	59.88	32.28	6.18	33.9	100	57	Peak
2483.5	45.25	-8.75	54	40.69	32.28	6.18	33.9	100	57	Average



Test Mode :	Mode 7	Temperature :	24~26℃
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	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
32.7	19.25	-20.75	40	34.36	15.8	0.56	31.47	142	100	Peak
86.7	19.16	-20.84	40	41.68	8.1	0.92	31.54	-	-	Peak
238.98	21.2	-24.8	46	39.25	11.85	1.52	31.42	-	-	Peak
307.7	23.68	-22.32	46	39.52	13.7	1.79	31.33	-	-	Peak
494.6	19.03	-26.97	46	29.54	18.13	2.43	31.07	-	-	Peak
738.2	22.9	-23.1	46	29.11	21.49	3.03	30.73	-	-	Peak
2389.42	70.92	-3.08	74	66.56	32.18	6.03	33.85	103	336	Peak
2389.42	50.41	-3.59	54	46.05	32.18	6.03	33.85	103	336	Average
2412	109.75	-	-	105.35	32.2	6.07	33.87	103	336	Peak
2412	96.79	-	-	92.39	32.2	6.07	33.87	103	336	Average
2494	43.06	-10.94	54	38.48	32.3	6.18	33.9	103	336	Average
2494	53.59	-20.41	74	49.01	32.3	6.18	33.9	103	336	Peak



Test Mode :	Mode 7	Temperature :	24~26℃
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	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
43.5	34.5	-5.5	40	54.23	11.13	0.64	31.5	100	193	Peak
73.74	23.51	-16.49	40	47.57	6.63	0.85	31.54	-	-	Peak
139.62	25.07	-18.43	43.5	43.82	11.6	1.2	31.55	-	-	Peak
386.1	17.8	-28.2	46	30.77	16.14	2.11	31.22	-	-	Peak
526.1	20.86	-25.14	46	30.76	18.62	2.5	31.02	-	-	Peak
778.1	24.13	-21.87	46	29.6	22.12	3.1	30.69	-	-	Peak
2389.99	62.71	-11.29	74	58.35	32.18	6.03	33.85	100	49	Peak
2389.99	43.39	-10.61	54	39.03	32.18	6.03	33.85	100	49	Average
2412	104.34	-	-	99.94	32.2	6.07	33.87	100	49	Peak
2412	91	-	-	86.6	32.2	6.07	33.87	100	49	Average
2492	37.84	-16.16	54	33.26	32.3	6.18	33.9	100	49	Average
2492	48.45	-25.55	74	43.87	32.3	6.18	33.9	100	49	Peak

Test Mode :	Mode 8	Temperature :	24~26℃
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	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
139.89	20.07	-23.43	43.5	38.82	11.6	1.2	31.55	-	-	Peak
199.29	21.41	-22.09	43.5	42.47	9.1	1.32	31.48	-	-	Peak
237.9	22.09	-23.91	46	40.22	11.78	1.52	31.43	-	-	Peak
309.8	23.05	-22.95	46	38.83	13.76	1.79	31.33	-	-	Peak
752.9	24.72	-21.28	46	30.64	21.72	3.06	30.7	-	-	Peak
957.3	27.34	-18.66	46	30.09	24.35	3.47	30.57	102	165	Peak
2356	55.14	-18.86	74	50.89	32.13	5.95	33.83	102	336	Peak
2356	44.34	-9.66	54	40.09	32.13	5.95	33.83	102	336	Average
2437	110.05	-	-	105.58	32.24	6.11	33.88	102	336	Peak
2437	96.51	-	-	92.04	32.24	6.11	33.88	102	336	Average
2484	53.86	-20.14	74	49.3	32.28	6.18	33.9	102	336	Peak
2484	40.45	-13.55	54	35.89	32.28	6.18	33.9	102	336	Average



Test Mode :	Mode 8	Temperature :	24~26℃
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	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
40.53	24.61	-15.39	40	42.99	12.5	0.63	31.51	114	248	Peak
139.62	26	-17.5	43.5	44.75	11.6	1.2	31.55	-	-	Peak
200.1	25.86	-17.64	43.5	46.92	9.1	1.32	31.48	-	-	Peak
514.2	20.05	-25.95	46	30.17	18.44	2.48	31.04	-	-	Peak
646.5	22.94	-23.06	46	30.69	20.29	2.83	30.87	-	-	Peak
771.8	25.28	-20.72	46	30.84	22.03	3.1	30.69	-	-	Peak
2356	52.83	-21.17	74	48.58	32.13	5.95	33.83	100	47	Peak
2356	40.79	-13.21	54	36.54	32.13	5.95	33.83	100	47	Average
2437	104.49	-	-	100.02	32.24	6.11	33.88	100	47	Peak
2437	91.86	-	-	87.39	32.24	6.11	33.88	100	47	Average
2484	48.12	-25.88	74	43.56	32.28	6.18	33.9	100	47	Peak
2484	35.75	-18.25	54	31.19	32.28	6.18	33.9	100	47	Average



Test Mode :	Mode 9	Temperature :	24~26℃
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	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
45.93	24.72	-15.28	40	45.29	10.27	0.66	31.5	100	81	Peak
195.78	21.59	-21.91	43.5	42.69	9.09	1.3	31.49	-	-	Peak
240.06	21.44	-24.56	46	39.35	11.98	1.53	31.42	-	-	Peak
307.7	23.97	-22.03	46	39.81	13.7	1.79	31.33	-	-	Peak
603.8	22.01	-23.99	46	30.42	19.81	2.7	30.92	-	-	Peak
993.7	27.65	-26.35	54	29.91	24.82	3.5	30.58	-	-	Peak
2382	54.26	-19.74	74	49.92	32.16	6.03	33.85	101	340	Peak
2382	43	-11	54	38.66	32.16	6.03	33.85	101	340	Average
2462	94.54	-	-	90.03	32.26	6.14	33.89	101	340	Average
2462	107.58	-	-	103.07	32.26	6.14	33.89	101	340	Peak
2483.85	70.39	-3.61	74	65.83	32.28	6.18	33.9	101	340	Peak
2483.85	50.76	-3.24	54	46.2	32.28	6.18	33.9	101	340	Average

Test Mode :	Mode 9	Temperature :	24~26℃
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Lewis He / David Yang	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
41.61	23.82	-16.18	40	42.66	12.04	0.63	31.51	100	220	Peak
139.62	24.1	-19.4	43.5	42.85	11.6	1.2	31.55	-	-	Peak
200.1	26.15	-17.35	43.5	47.21	9.1	1.32	31.48	-	-	Peak
595.4	20.77	-25.23	46	29.32	19.7	2.68	30.93	-	-	Peak
805.4	26.09	-19.91	46	31.09	22.53	3.15	30.68	-	-	Peak
953.8	26.85	-19.15	46	29.66	24.3	3.46	30.57	-	-	Peak
2382	49.36	-24.64	74	45.02	32.16	6.03	33.85	100	264	Peak
2382	37.62	-16.38	54	33.28	32.16	6.03	33.85	100	264	Average
2462	89.53	-	-	85.02	32.26	6.14	33.89	100	264	Average
2462	102.73	-	-	98.22	32.26	6.14	33.89	100	264	Peak
2483.5	61.92	-12.08	74	57.36	32.28	6.18	33.9	100	264	Peak
2483.5	43.51	-10.49	54	38.95	32.28	6.18	33.9	100	264	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 WLAN : 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	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 13, 2011	Jun. 12, 2012	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 13, 2010	Sep. 12, 2011	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 14, 2010	Sep. 13, 2011	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D35P	TBN-930701	N/A	Jul. 27, 2011	Jul. 26, 2012	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCI 7	100724	9kHz~7GHz	Aug. 19, 2010	Aug. 18, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz ~ 30MHz	Dec. 03, 2010	Dec. 02, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz ~ 30MHz	Dec. 01, 2010	Nov. 30, 2011	Conduction (CO05-HY)
AC Power Source	APC	APC-1000 W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	117591	N/A	Oct. 18, 2010	Oct. 17, 2011	Conduction (CO05-HY)
GPS Station	T&E	GS-50	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2010	Oct. 30, 2011	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP30	101067	9KHz ~ 30GHz	Dec. 03, 2010	Dec. 02, 2011	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 19, 2010	Aug. 18, 2011	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec. 06, 2010	Dec. 05, 2011	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Mar. 29, 2011	Mar. 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				



Appendix A. Photographs of EUT

Please refer to Sporton report number EP172802-06 as below.