FCC RF Test Report

APPLICANT	:	Kaleidescope LLC
EQUIPMENT	:	Electronic Display Device
MODEL NAME	:	D01200
FCC ID	:	ZEE-1013
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	Digital Transmission System (DTS)

The product was received on Mar. 17, 2011 and completely tested on Mar. 17, 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:

Roy Wu / Manager

Testing Laboratory 1190

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

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR130328-01	Rev. 01	Initial issue of report	Jun. 22, 2011

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	≥ 0.5MHz	Pass
3.2	15.247(b)	A8.4	Power Output	≤ 30dBm	Pass
3.3	15.247(d)	A8.5	Frequency Band Edges	≤ 20dBc	Pass
3.4	15.247(d)	A8.5	Spurious Emission	< 20 dBc	Pass
3.5	15.247(e)	A8.2(b)	Power Spectral Density	≤ 8dBm	Pass
3.6	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass

1 General Description

1.1 Applicant

Kaleidescope LLC
211 E. 7th St. Suite 620
Austin, TX 78701-3334

1.2 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Electronic Display Device
Model Name	D01200
FCC ID	ZEE-1013
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 : 16.92 dBm (0.05 W) 802.11g : 22.28 dBm (0.17 W) 802.11n (BW 20MHz) : 21.86 dBm (0.15 W)
Antenna Type	Fixed Internal Antenna with gain 1 dBi
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.3 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1st 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

1.4 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.

1.5 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Adapter	N/A	N/A	N/A	N/A	Unshielded, 1.8 m
2.	iPod Earphone	Apple	N/A	N/A	Unshielded, 1 m	N/A
3.	Earphone	SONY	MH610	N/A	N/A	Unshielded, 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	16.88	16.90	16.83	**16.92**
CH 06	2437 MHz	16.78	-	-	16.84
CH 11	2462 MHz	16.77	-	-	16.72

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	21.25	-	-	-	-	-	-	22.05
CH 06	2437 MHz	21.32	21.44	21.38	21.46	21.67	22.23	21.92	**22.28**
CH 11	2462 MHz	20.78	-	-	-	-	-	-	22.02

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		OFDM Data Rate							
		M0	M1	M2	M3	M4	M5	M6	M7
CH 01	2412 MHz	21.51	21.62	21.42	**21.86**	21.06	21.79	19.94	20.08
CH 06	2437 MHz	21.41	-	-	21.65	-	-	-	-
CH 11	2462 MHz	20.89	-	-	21.42	-	-	-	-

Remark:

1. The data rates of WLAN 802.11b/g/n were set in 11Mbps for 802.11b, 54Mbps for 802.11g, and M3 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.

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: conduction (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).

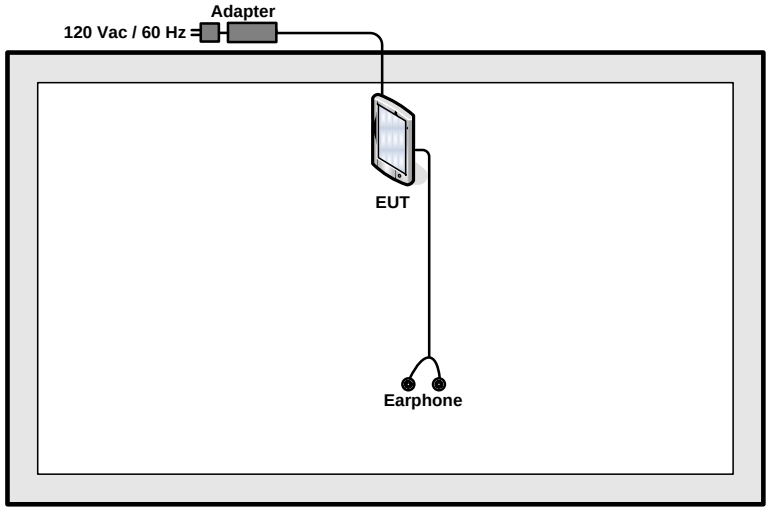
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations, tablet modes.

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

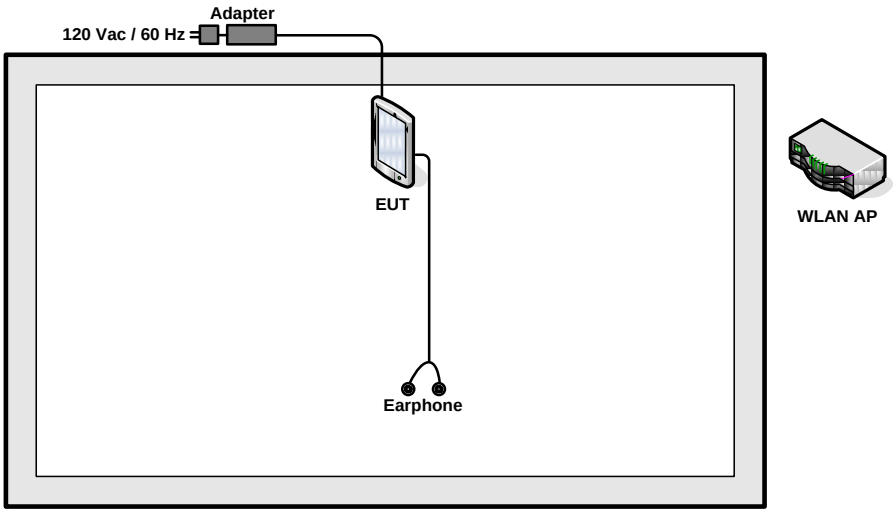
Test Cases		
Test Item	**802.11b (Modulation : DSSS)**	**802.11g/n (Modulation : OFDM)**
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (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 :EUT + Adapter + Earphone	
Remark: The worst case of radiated emission plane is X plane.		

2.3 Connection Diagram of Test System

<EUT with Adapter Mode>



<EUT with Adapter in WLAN Link Mode>



2.4 RF Utility

The programmed RF utility 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.

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

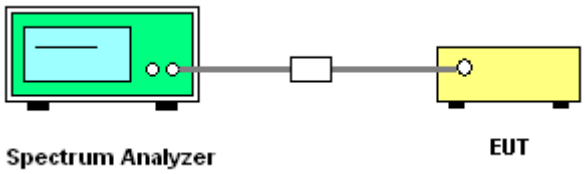
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

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

3.1.4 Test Setup

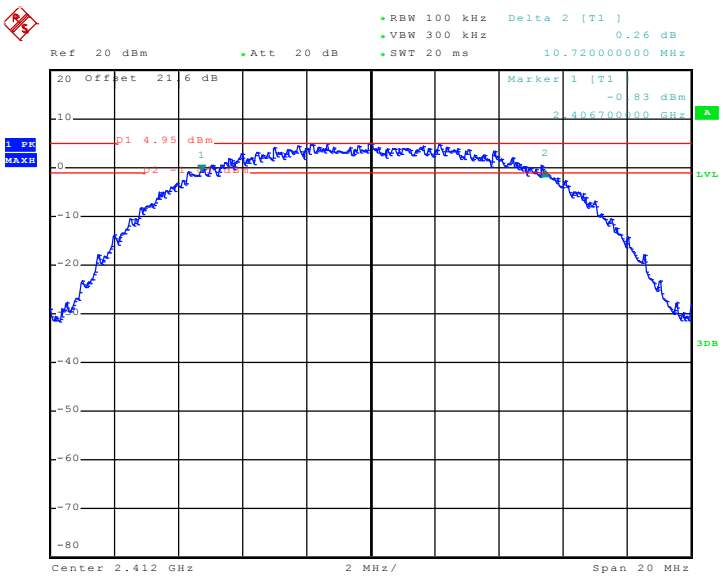


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

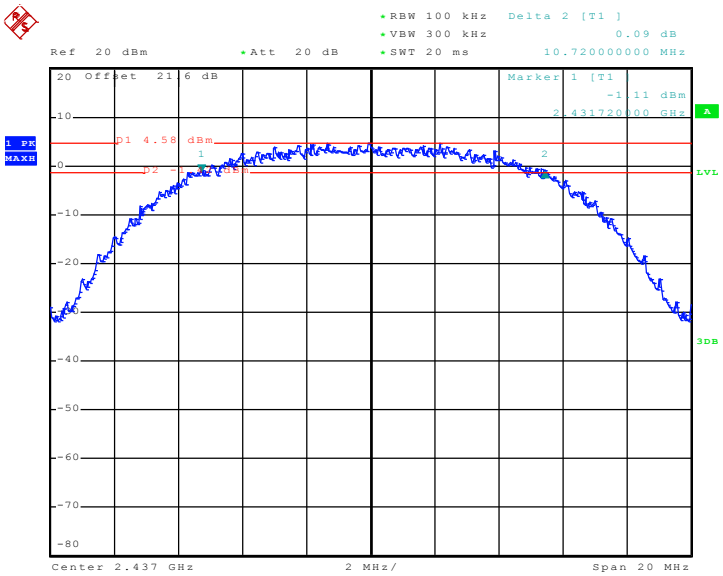
Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	10.72	0.5	Pass
06	2437	10.72	0.5	Pass
11	2462	10.76	0.5	Pass

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



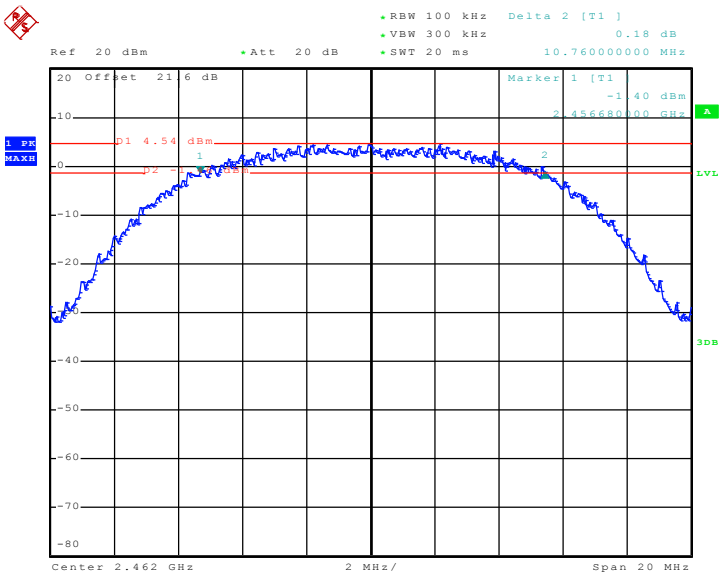
Date: 14.MAR.2011 22:35:48

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



Date: 14.MAR.2011 22:50:02

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

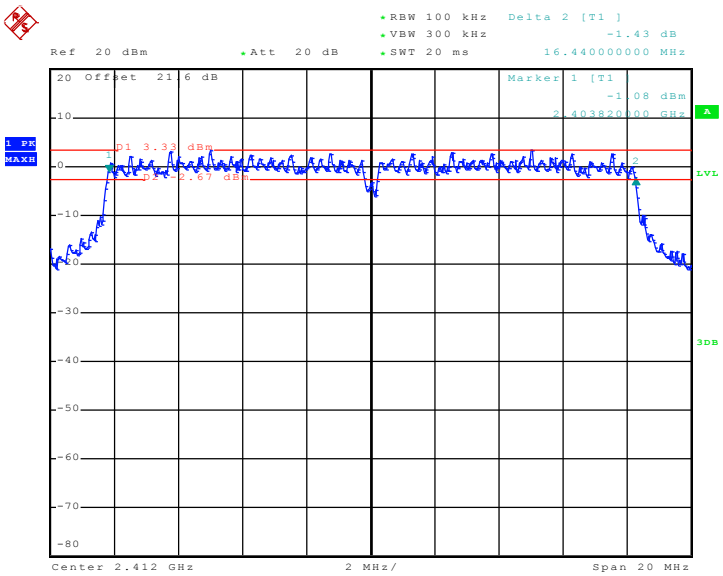


Date: 14.MAR.2011 23:02:23

Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

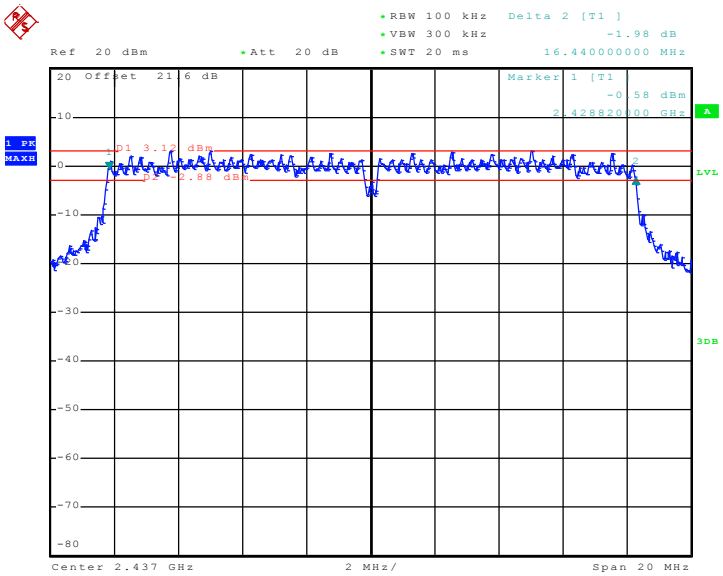
Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.44	0.5	Pass
06	2437	16.44	0.5	Pass
11	2462	16.40	0.5	Pass

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



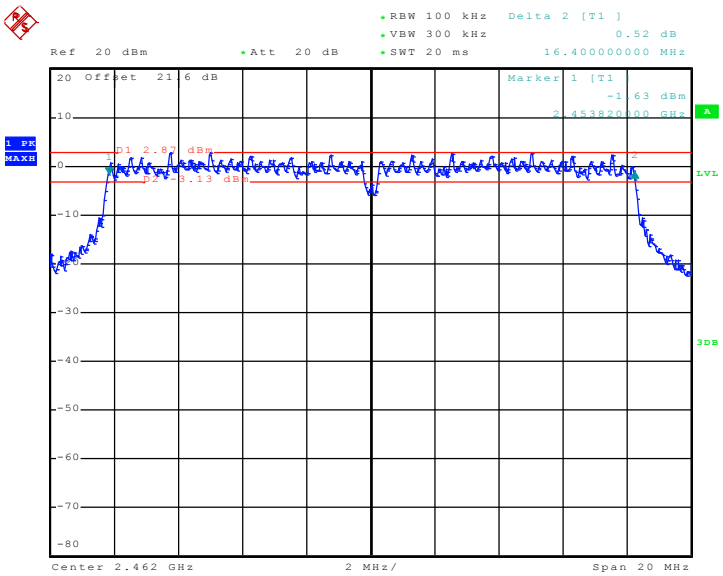
Date: 14.MAR.2011 23:37:58

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



Date: 14.MAR.2011 23:17:22

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

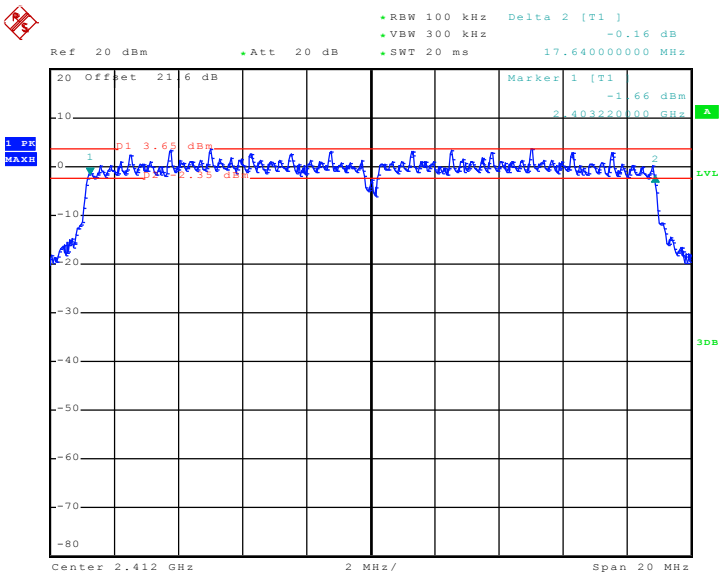


Date: 14.MAR.2011 23:50:43

Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

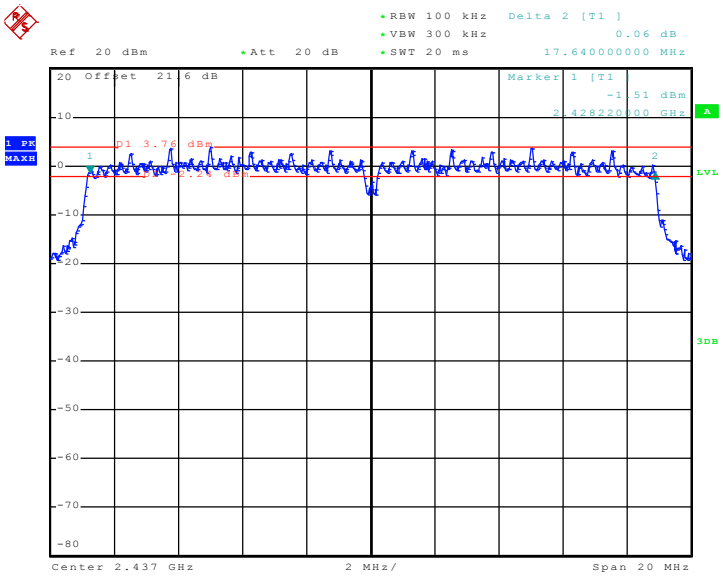
Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.64	0.5	Pass
06	2437	17.64	0.5	Pass
11	2462	17.68	0.5	Pass

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



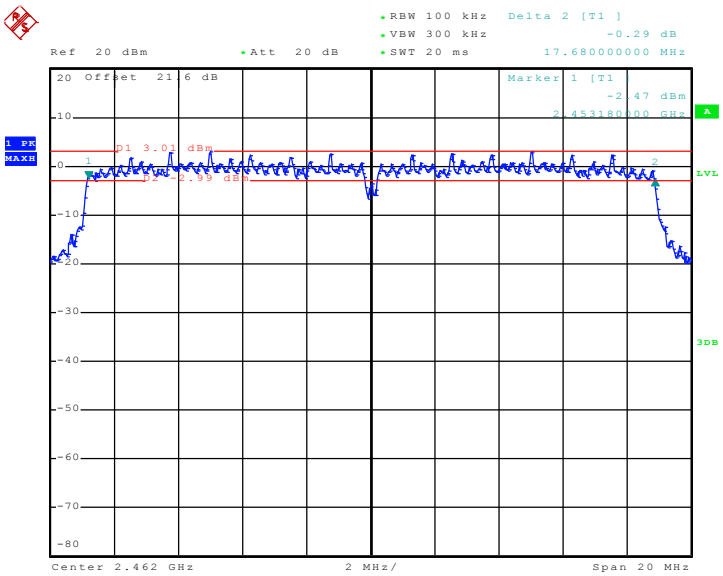
Date: 15.MAR.2011 00:17:55

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



Date: 15.MAR.2011 00:31:22

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



Date: 15.MAR.2011 00:05:49

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.

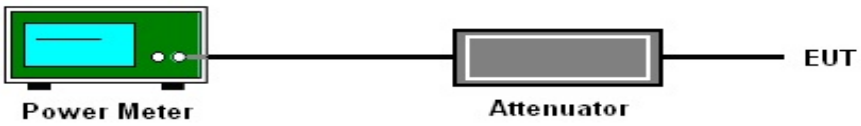
3.2.2 Measuring Instruments

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 :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.92	30	Pass
06	2437	16.84	30	Pass
11	2462	16.72	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.05	30	Pass
06	2437	22.28	30	Pass
11	2462	22.02	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.86	30	Pass
06	2437	21.65	30	Pass
11	2462	21.42	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

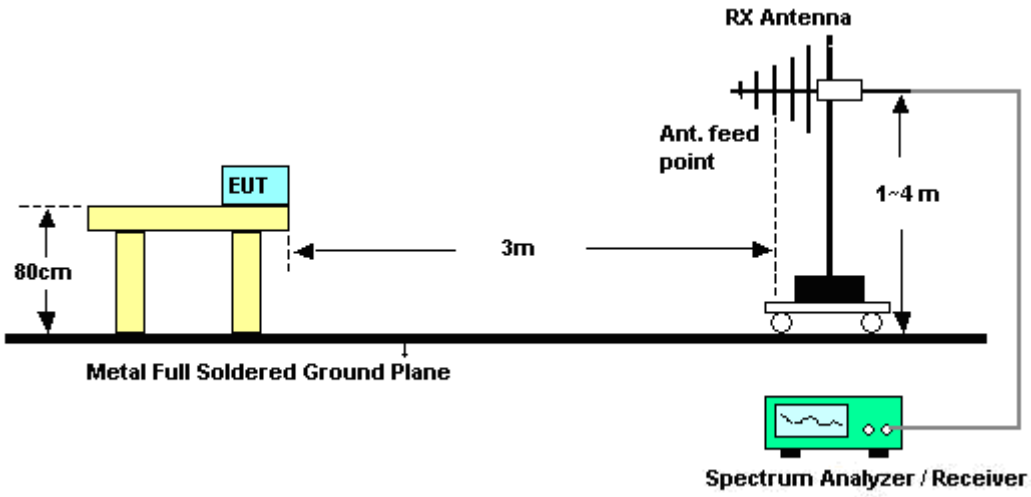
See list of measuring instruments of this test report.

3.3.3 Test Procedures

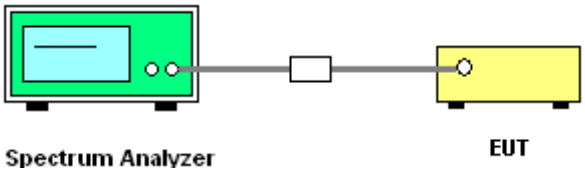
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) ≥ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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 :	23~24℃
Test Band :	802.11b	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Kai Wang

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
2389.61	54.47	-19.53	74	50.11	32.18	6.03	33.85	100	331	Peak
2389.61	41.95	-12.05	54	37.59	32.18	6.03	33.85	100	331	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
2389.61	51.42	-22.58	74	47.06	32.18	6.03	33.85	115	274	Peak
2389.61	39.64	-14.36	54	35.28	32.18	6.03	33.85	115	274	Average

Test Mode :	Mode 3	Temperature :	23~24℃
Test Band :	802.11b	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Kai Wang

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
2487.65	57.97	-16.03	74	53.41	32.28	6.18	33.9	100	321	Peak
2487.65	47.32	-6.68	54	42.74	32.3	6.18	33.9	100	321	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
2489.93	56.04	-17.96	74	51.48	32.28	6.18	33.9	136	277	Peak
2489.93	45.25	-8.75	54	40.67	32.3	6.18	33.9	136	277	Average

Test Mode :	Mode 4	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Kai Wang

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	73.59	-0.41	74	69.23	32.18	6.03	33.85	127	325	Peak
2389.99	53.14	-0.86	54	48.78	32.18	6.03	33.85	127	325	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	67.32	-6.68	74	62.96	32.18	6.03	33.85	100	291	Peak
2389.99	46.98	-7.02	54	42.62	32.18	6.03	33.85	100	291	Average

Test Mode :	Mode 6	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Kai Wang

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	72.72	-1.28	74	68.16	32.28	6.18	33.9	100	321	Peak
2483.5	52.5	-1.5	54	47.94	32.28	6.18	33.9	100	321	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	68.57	-5.43	74	64.01	32.28	6.18	33.9	119	289	Peak
2483.5	49.53	-4.47	54	44.97	32.28	6.18	33.9	119	289	Average

Test Mode :	Mode 7	Temperature :	23~24℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Kai Wang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	71.72	-2.28	74	67.36	32.18	6.03	33.85	126	324	Peak
2390	53.36	-0.64	54	49	32.18	6.03	33.85	126	324	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
2389.61	66.18	-7.82	74	61.82	32.18	6.03	33.85	100	291	Peak
2389.61	47.18	-6.82	54	42.82	32.18	6.03	33.85	100	291	Average

Test Mode :	Mode 9	Temperature :	23~24℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Kai Wang

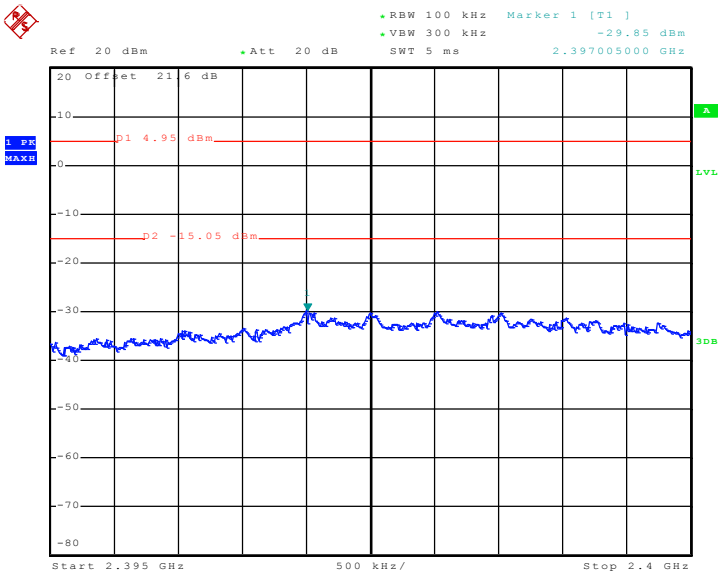
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	71.28	-2.72	74	66.72	32.28	6.18	33.9	100	321	Peak
2483.5	53.64	-0.36	54	49.08	32.28	6.18	33.9	100	321	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	67.72	-6.28	74	63.16	32.28	6.18	33.9	119	289	Peak
2483.5	50.25	-3.75	54	45.69	32.28	6.18	33.9	119	289	Average

3.3.6 Test Plots of Conducted Band Edges

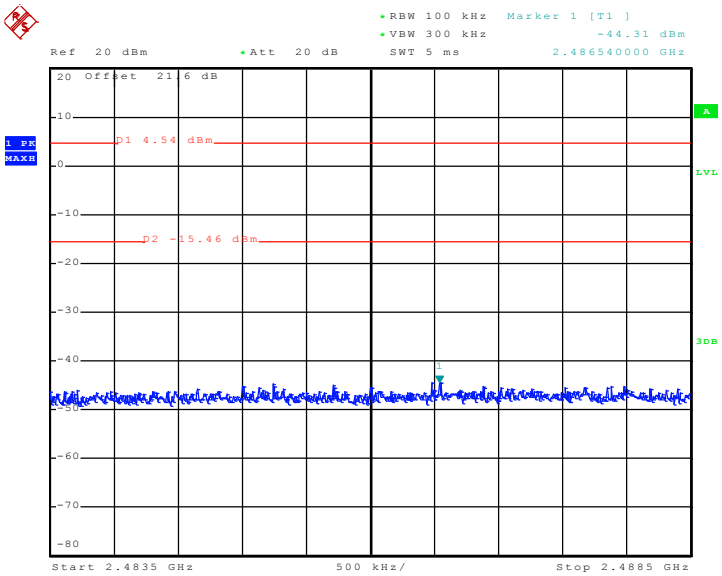
Test Mode :	Mode 1 and 3	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	40~44%
Test Channel :	01 and 11	Test Engineer :	Phoenix Chen

Low Band Edge Plot on 802.11b Channel 01



Date: 14.MAR.2011 22:36:57

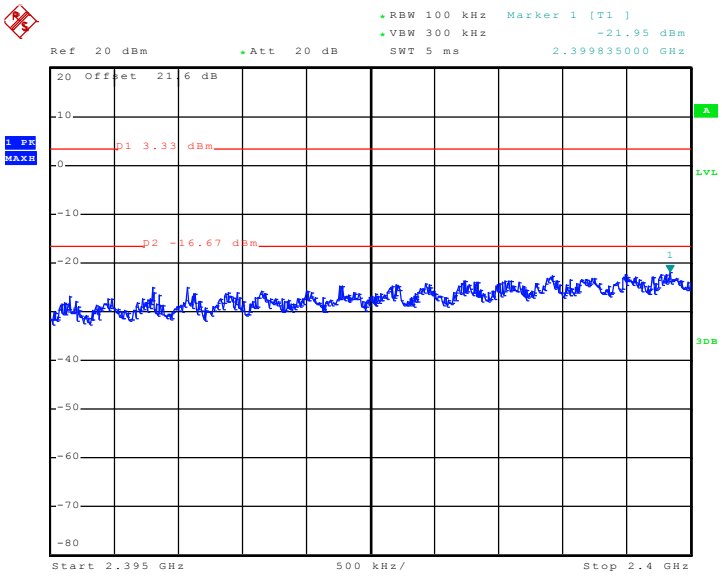
High Band Edge Plot on 802.11b Channel 11



Date: 14.MAR.2011 23:03:09

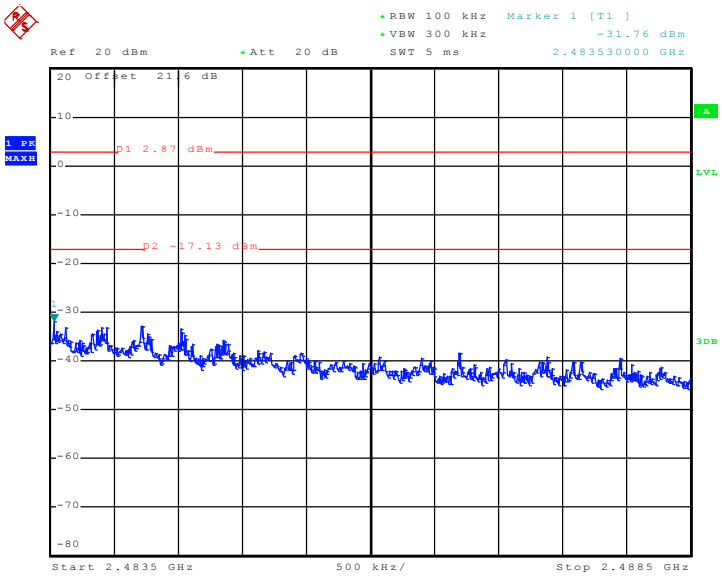
Test Mode :	Mode 4 and 6	**Temperature :**	24~26℃
Test Band :	802.11g	**Relative Humidity :**	40~44%
Test Channel :	01 and 11	**Test Engineer :**	Phoenix Chen

Low Band Edge Plot on 802.11g Channel 01



Date: 14.MAR.2011 23:39:07

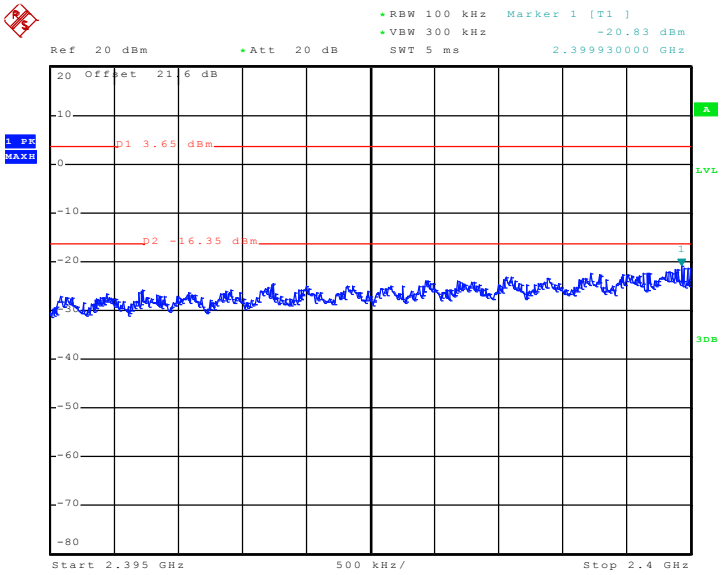
High Band Edge Plot on 802.11g Channel 11



Date: 14.MAR.2011 23:51:29

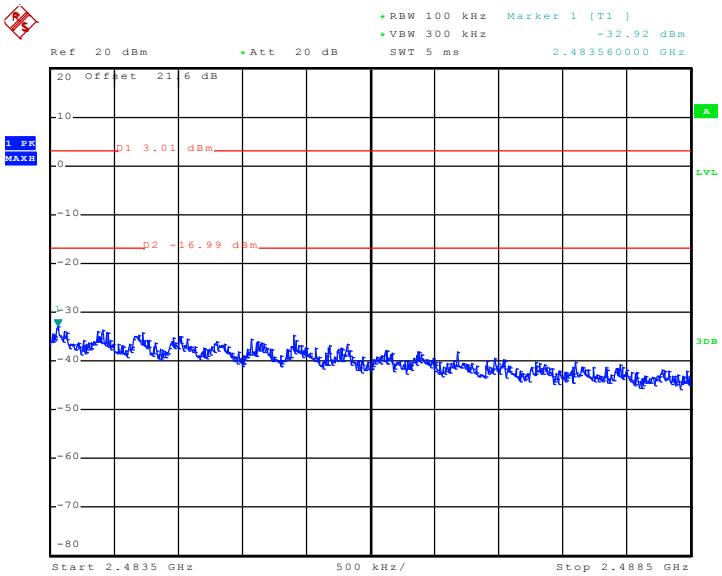
Test Mode :	Mode 7 and 9	**Temperature :**	24~26℃
Test Band :	802.11n (BW 20MHz)	**Relative Humidity :**	40~44%
Test Channel :	01 and 11	**Test Engineer :**	Phoenix Chen

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



Date: 15.MAR.2011 00:19:03

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



Date: 15.MAR.2011 00:06:36

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.

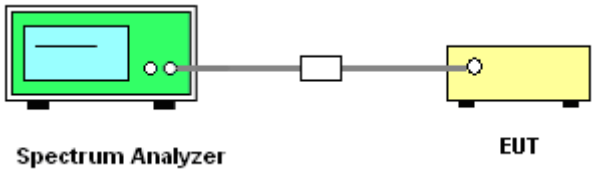
3.4.2 Measuring Instruments

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) ≥ RBW, scan up through 10th harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

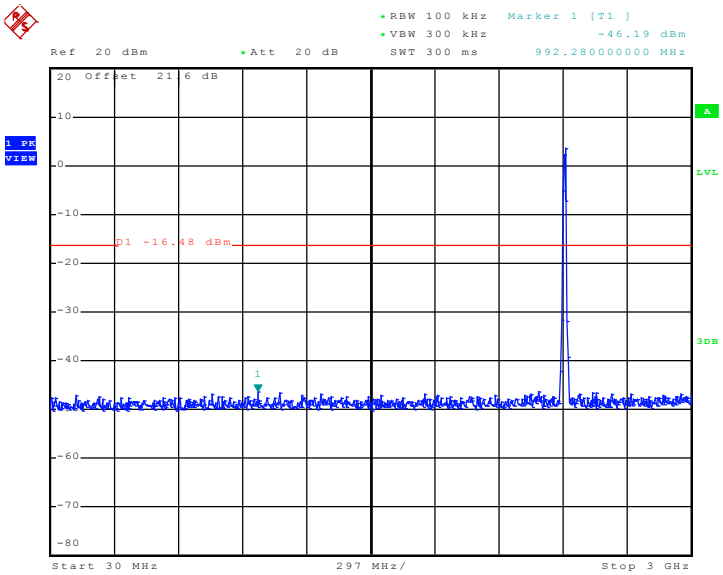
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

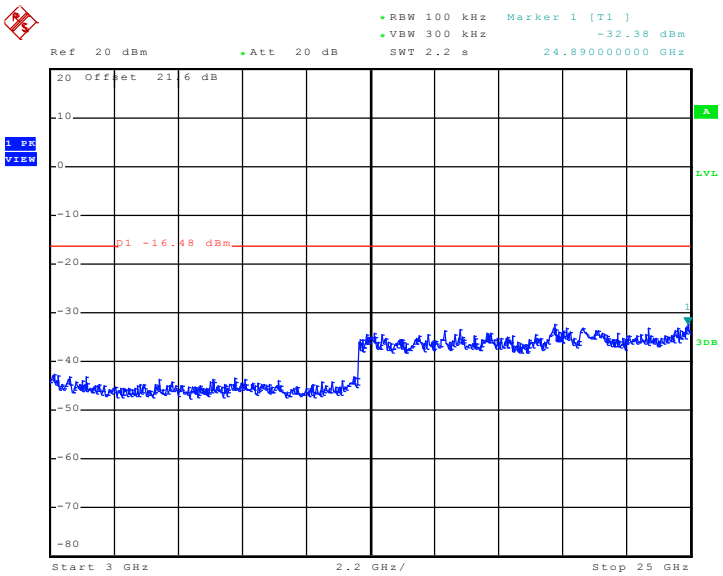
Test Mode :	Mode 1	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	40~44%
Test Channel :	01	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 14.MAR.2011 22:47:59

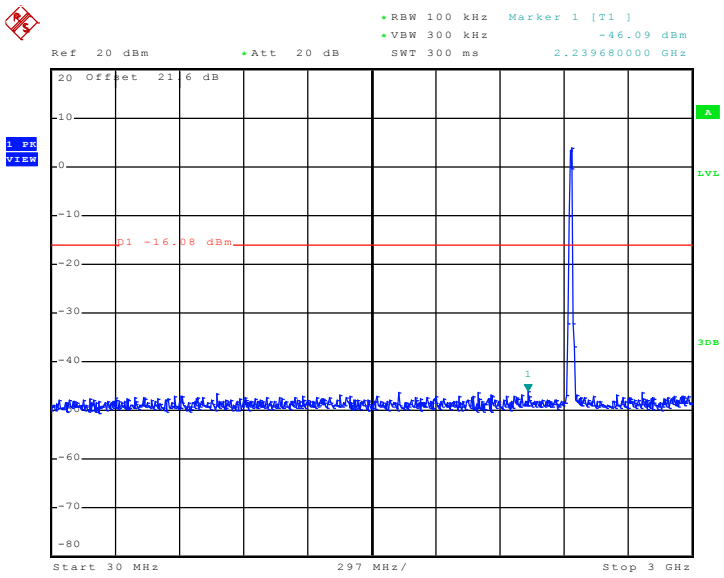
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 14.MAR.2011 22:48:16

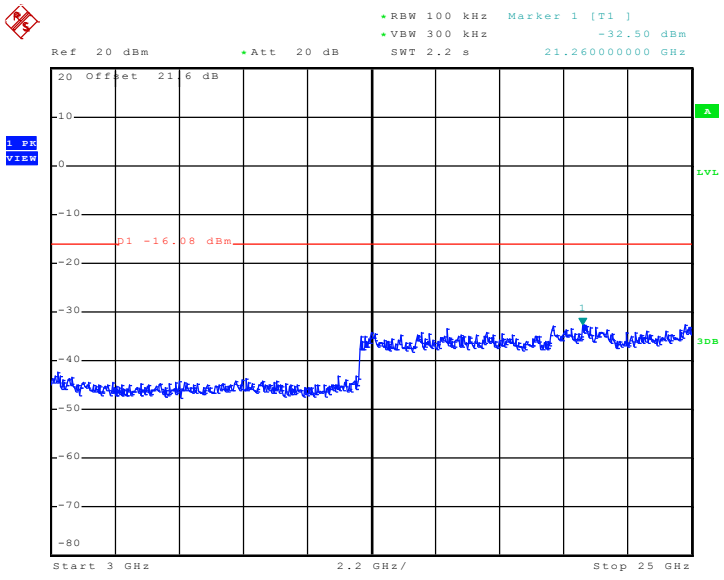
Test Mode :	Mode 2	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	40~44%
Test Channel :	06	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 14.MAR.2011 23:15:45

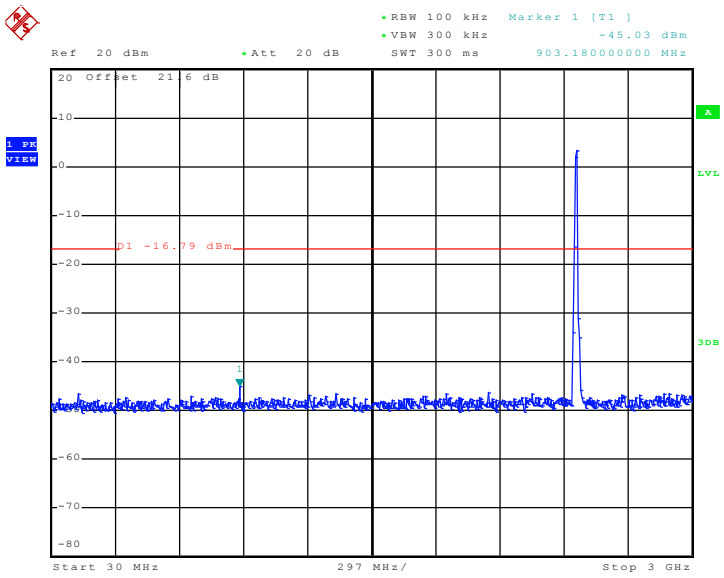
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 14.MAR.2011 23:16:02

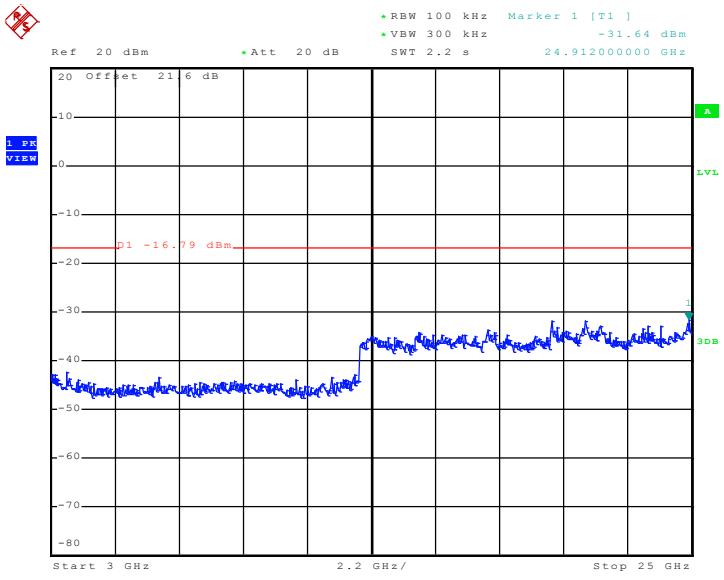
Test Mode :	Mode 3	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	40~44%
Test Channel :	11	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 14.MAR.2011 23:12:29

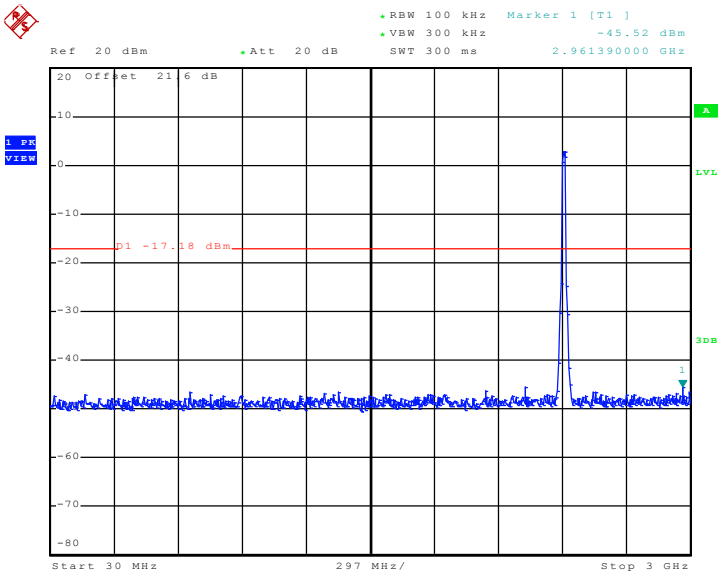
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 14.MAR.2011 23:12:46

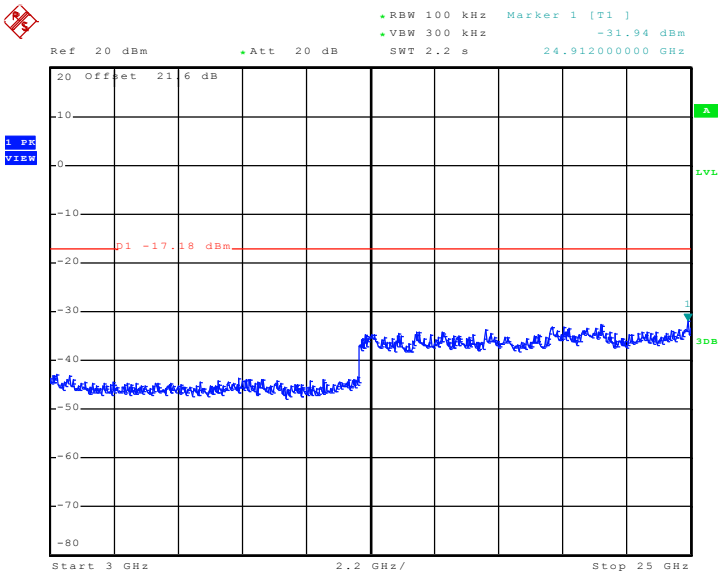
Test Mode :	Mode 4	Temperature :	24~26℃
Test Band :	802.11g	Relative Humidity :	40~44%
Test Channel :	01	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 14.MAR.2011 23:48:59

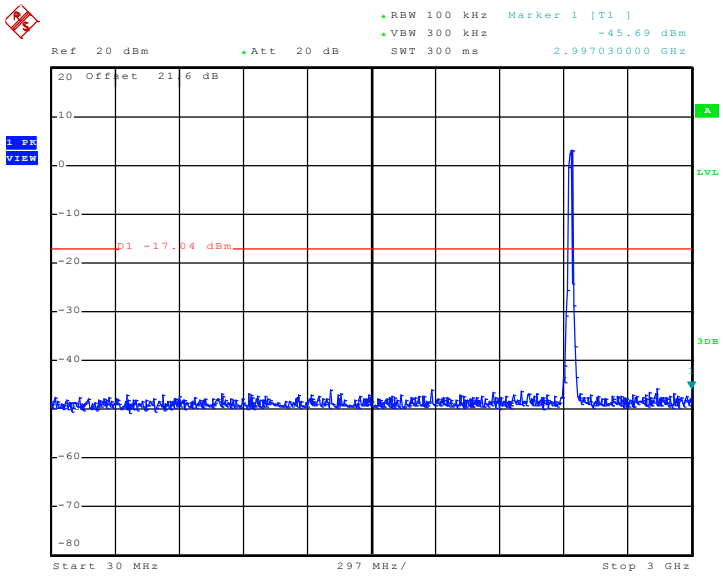
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 14.MAR.2011 23:49:16

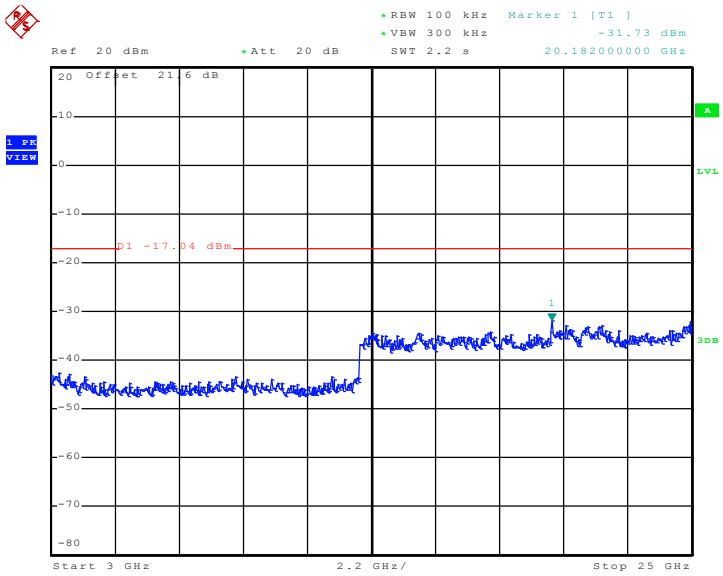
Test Mode :	Mode 5	Temperature :	24~26
Test Band :	802.11g	Relative Humidity :	40~44
Test Channel :	06	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 14.MAR.2011 23:26:48

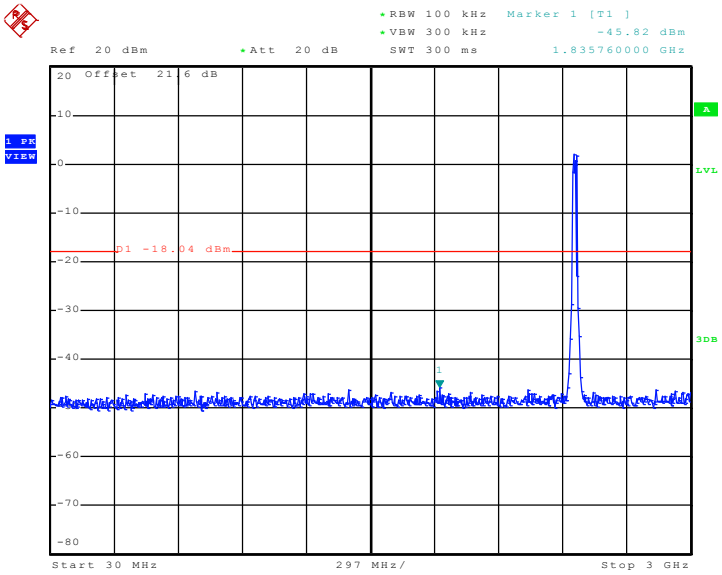
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 14.MAR.2011 23:27:05

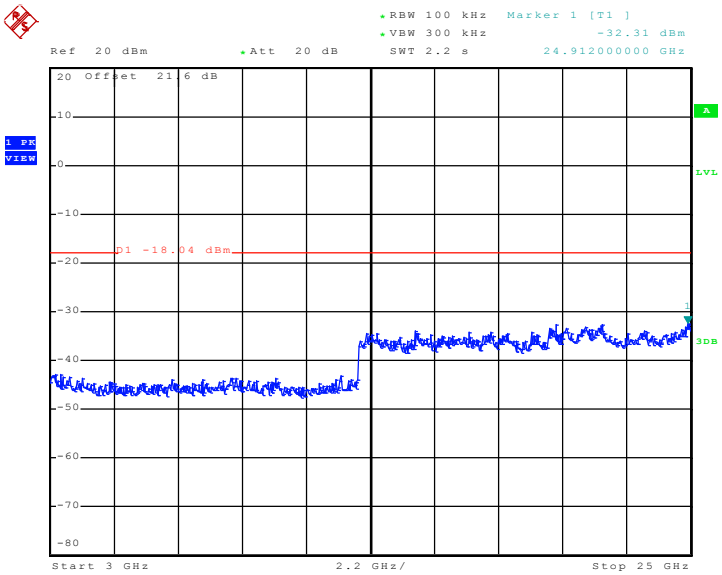
Test Mode :	Mode 6	Temperature :	24~26℃
Test Band :	802.11g	Relative Humidity :	40~44%
Test Channel :	11	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 15.MAR.2011 00:02:26

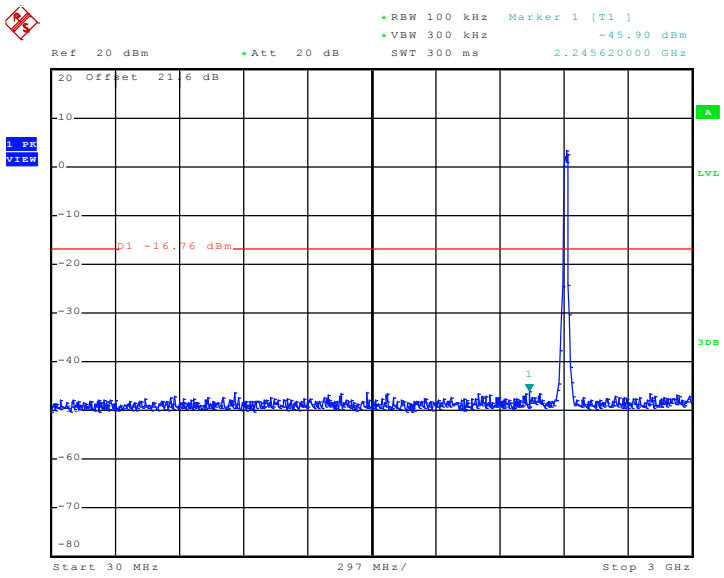
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 15.MAR.2011 00:02:43

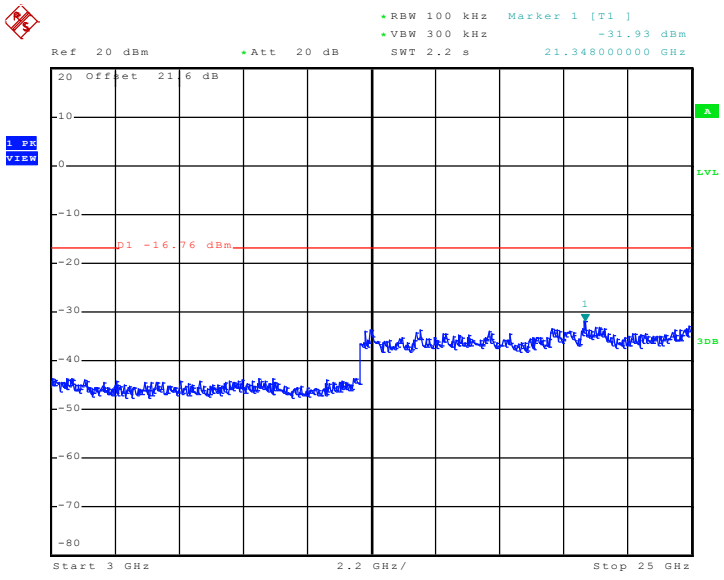
Test Mode :	Mode 7	Temperature :	24~26℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~44%
Test Channel :	01	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 15.MAR.2011 00:19:50

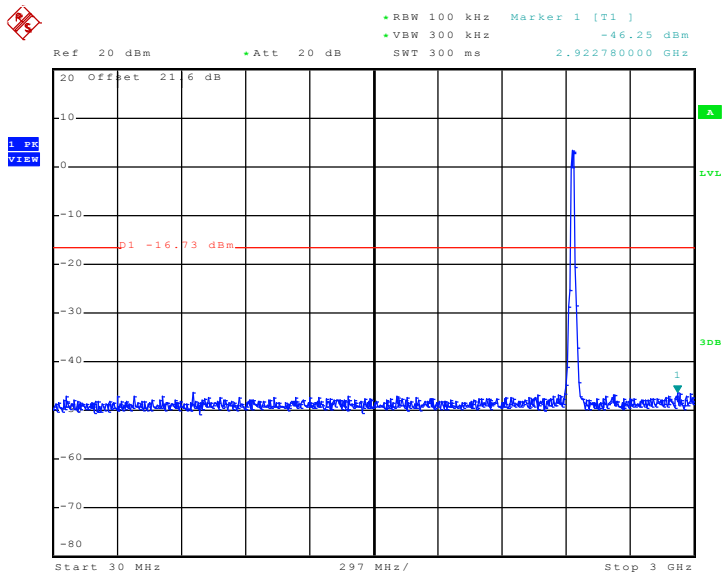
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 15.MAR.2011 00:20:10

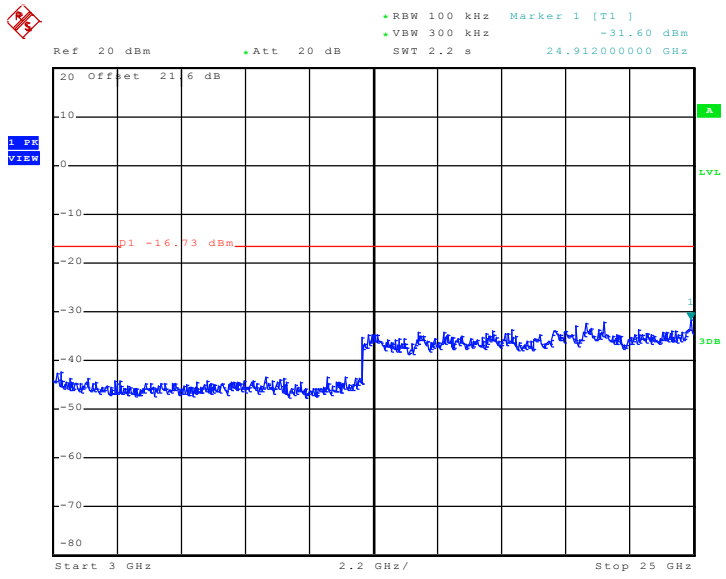
Test Mode :	Mode 8	Temperature :	24~26℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~44%
Test Channel :	06	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 15.MAR.2011 00:32:09

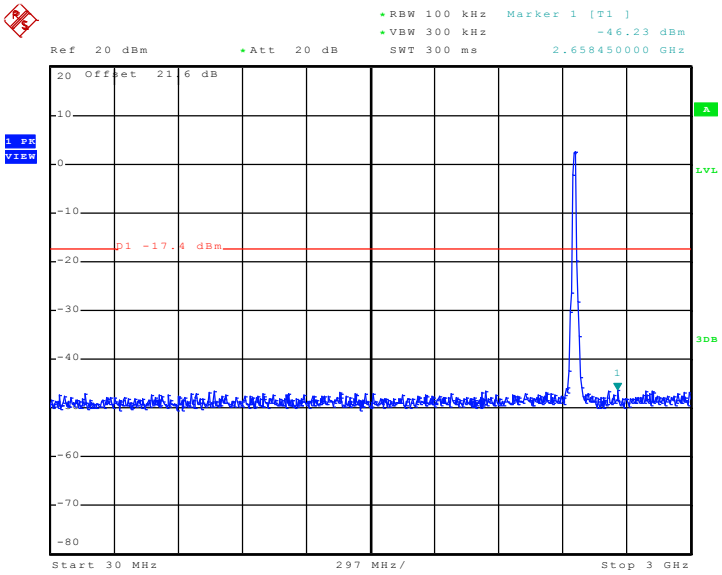
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 15.MAR.2011 00:32:27

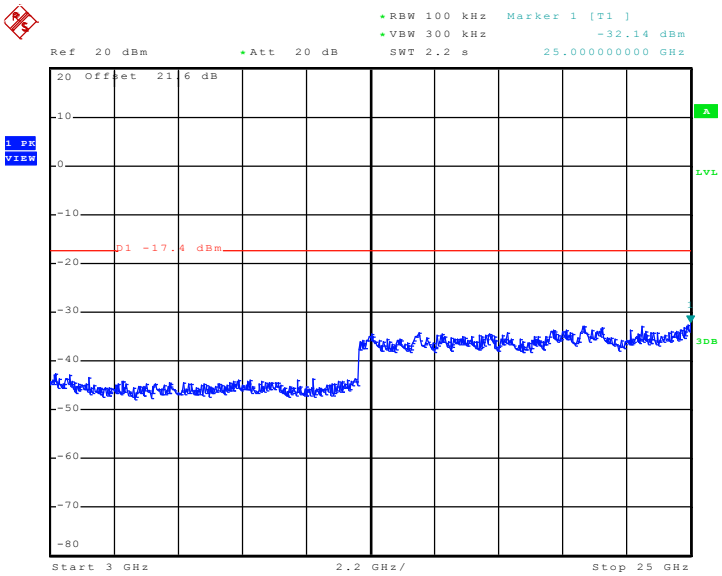
Test Mode :	Mode 9	Temperature :	24~26℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~44%
Test Channel :	11	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 15.MAR.2011 00:29:52

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 15.MAR.2011 00:30:09

3.5 Power Spectral Density Measurement

3.5.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

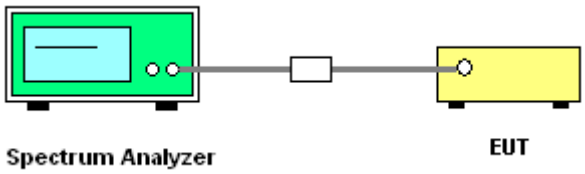
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

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

3.5.4 Test Setup

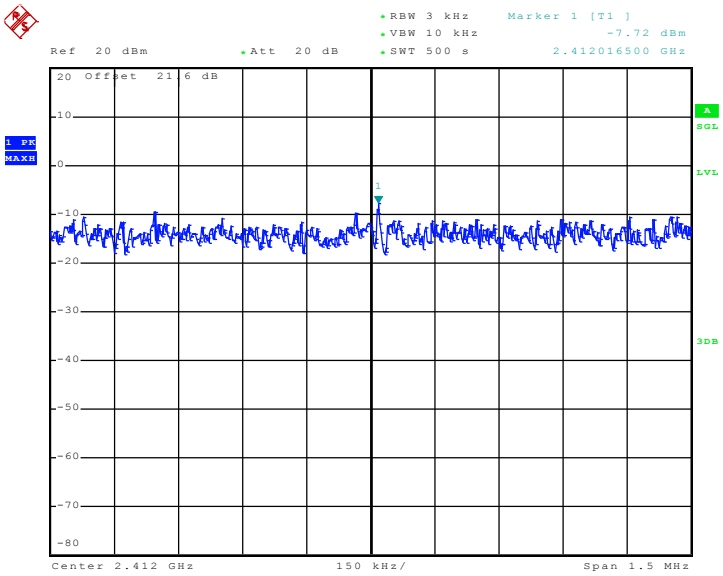


3.5.5 Test Result of Power Spectral Density

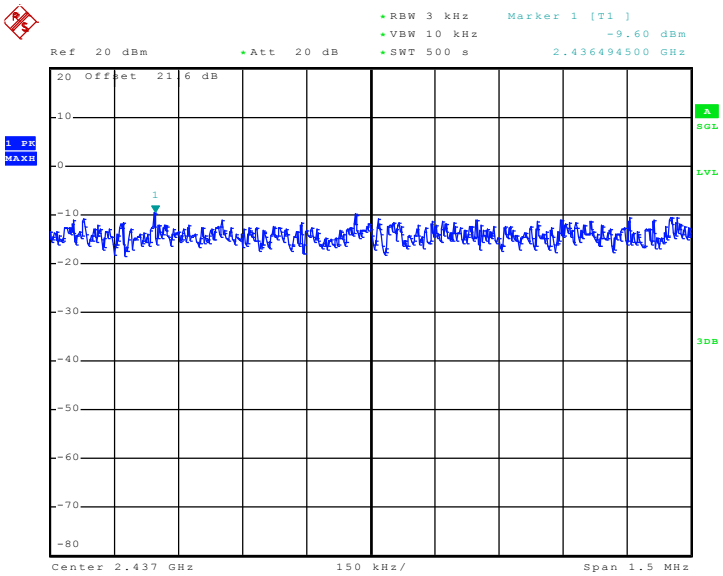
Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-7.72	8	Pass
06	2437	-9.60	8	Pass
11	2462	-9.75	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01

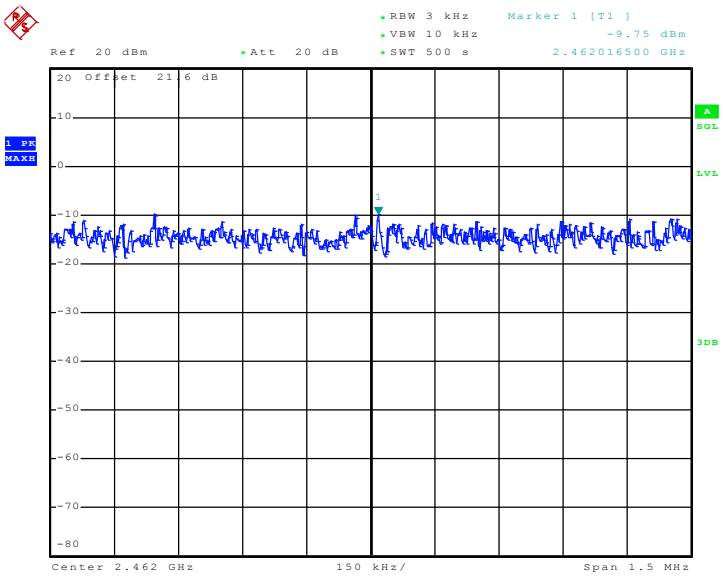


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 14.MAR.2011 22:59:39

Mode 3 : PSD Plot on 802.11b Channel 11

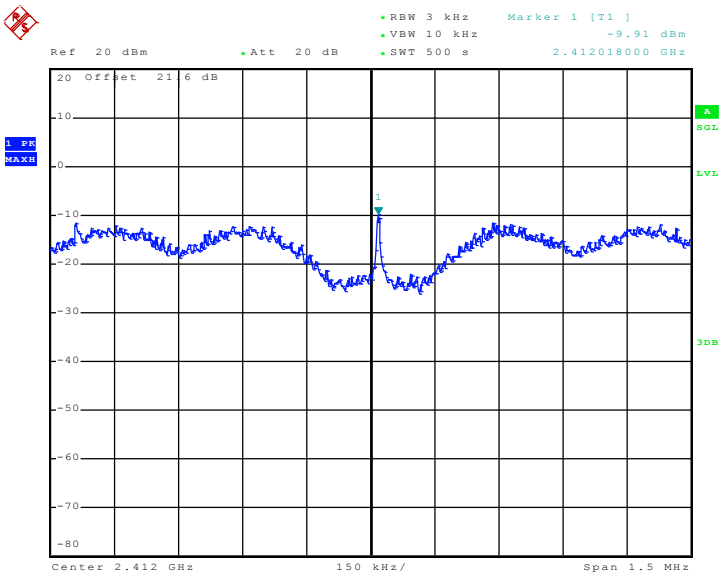


Date: 14.MAR.2011 23:12:08

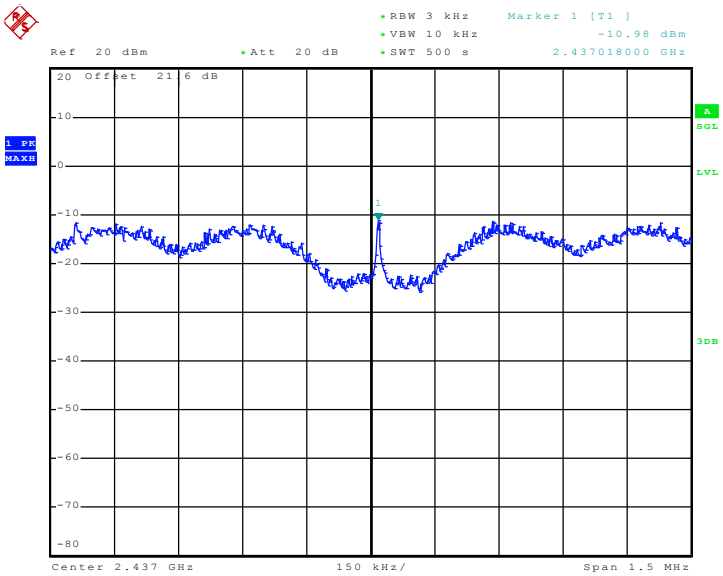
Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-9.91	8	Pass
06	2437	-10.98	8	Pass
11	2462	-9.69	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01

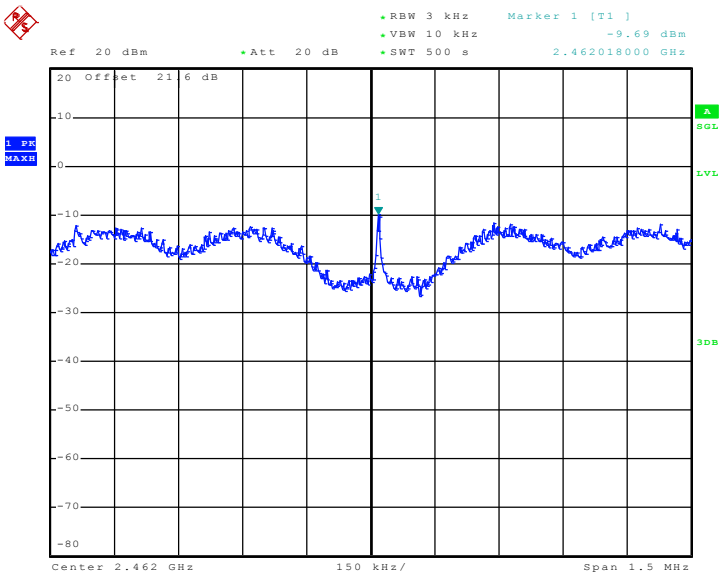


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 14.MAR.2011 23:35:59

Mode 6 : PSD Plot on 802.11g Channel 11

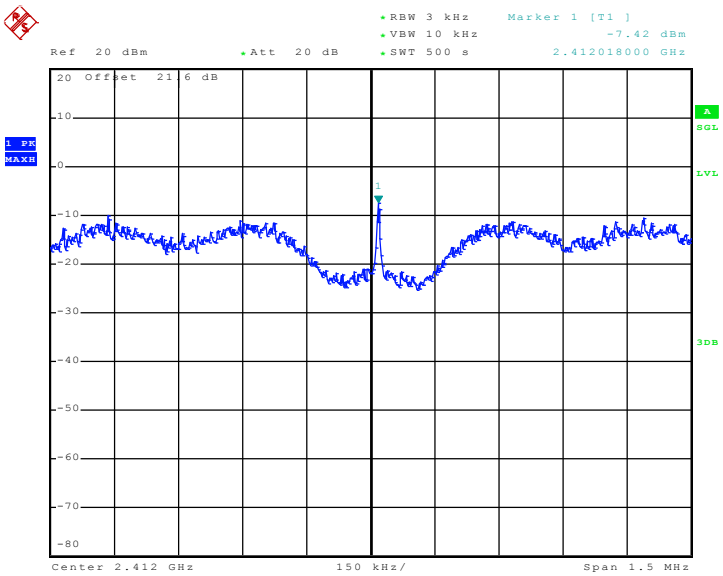


Date: 15.MAR.2011 00:02:05

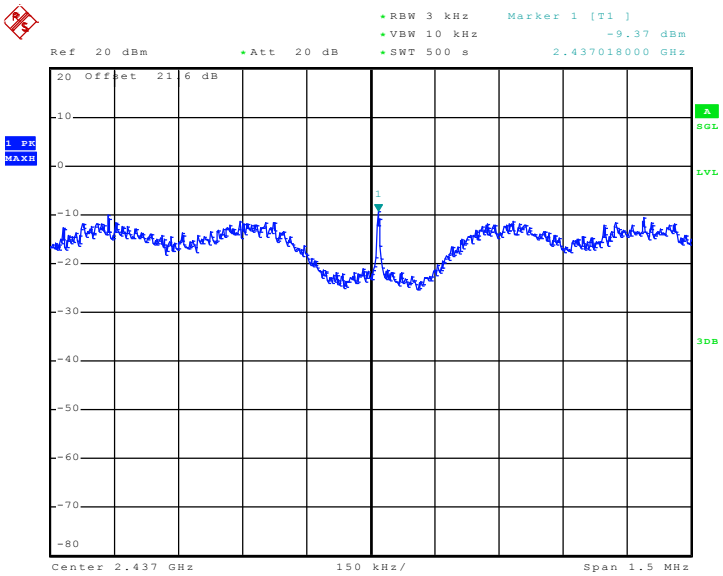
Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-7.42	8	Pass
06	2437	-9.37	8	Pass
11	2462	-8.90	8	Pass

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

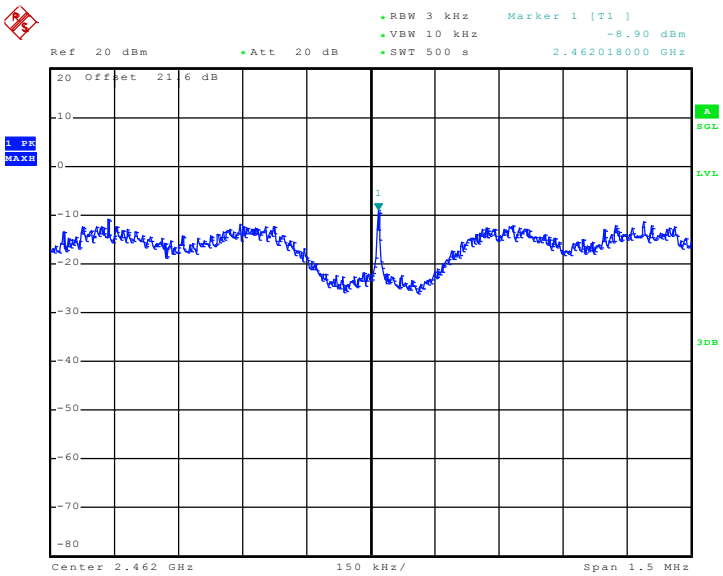


Mode 8 : PSD Plot on802.11n (BW 20MHz) Channel 06



Date: 15.MAR.2011 00:43:08

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



Date: 15.MAR.2011 00:15:38

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.

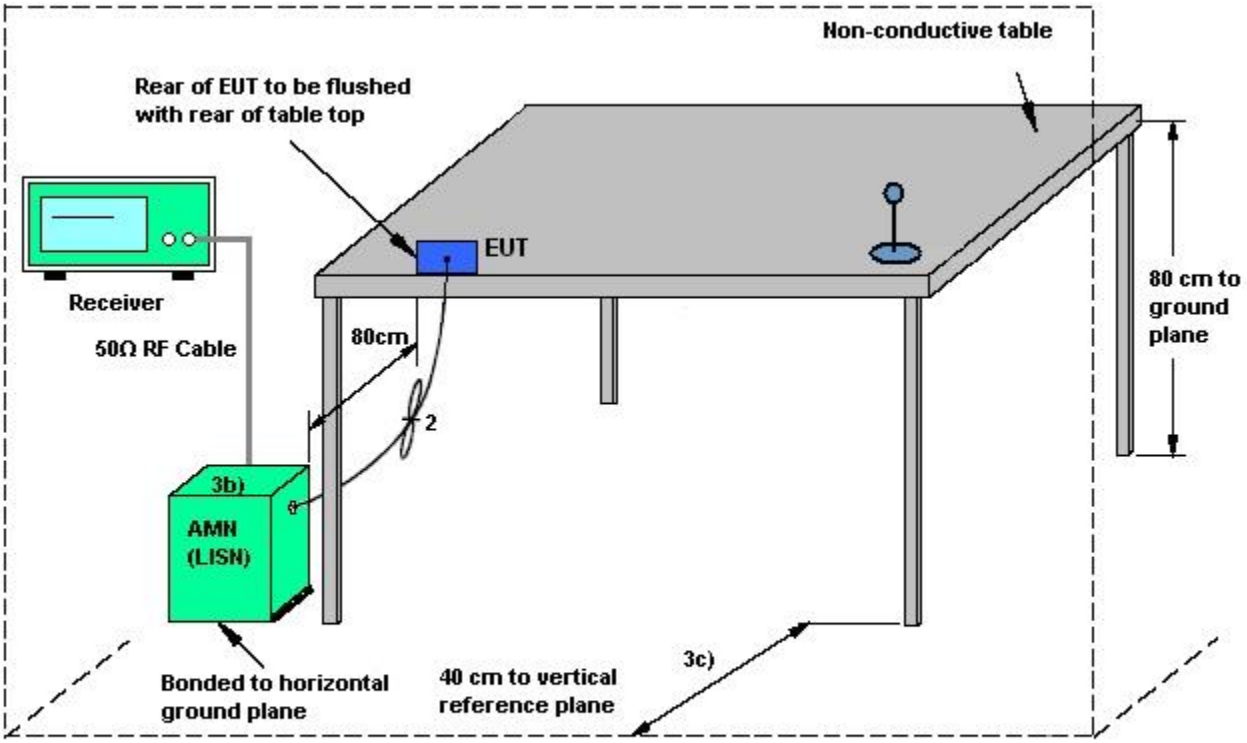
3.6.2 Measuring Instruments

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.

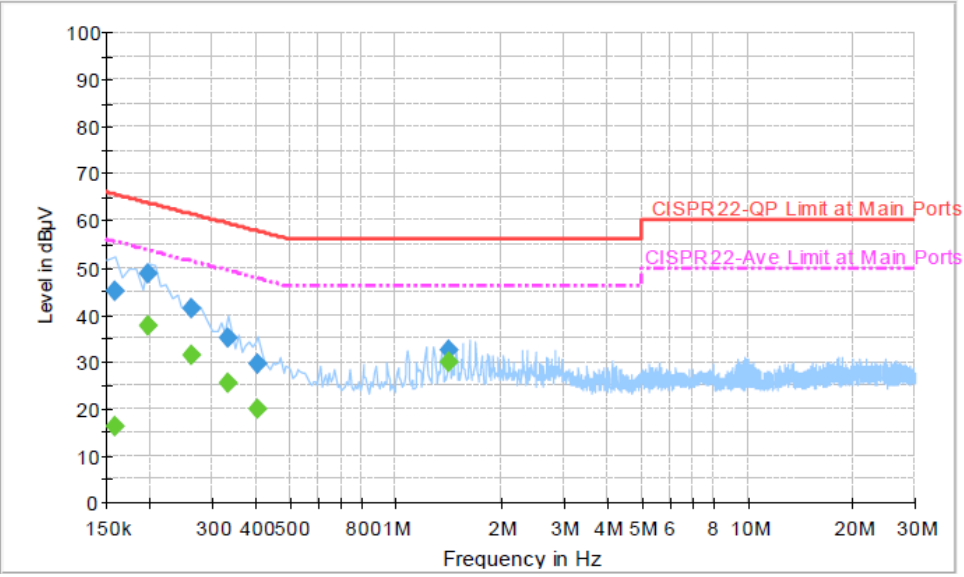
3.6.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~21℃
Test Engineer :	Hayden Wu	Relative Humidity :	49~50%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	EUT + Adapter + Earphone		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



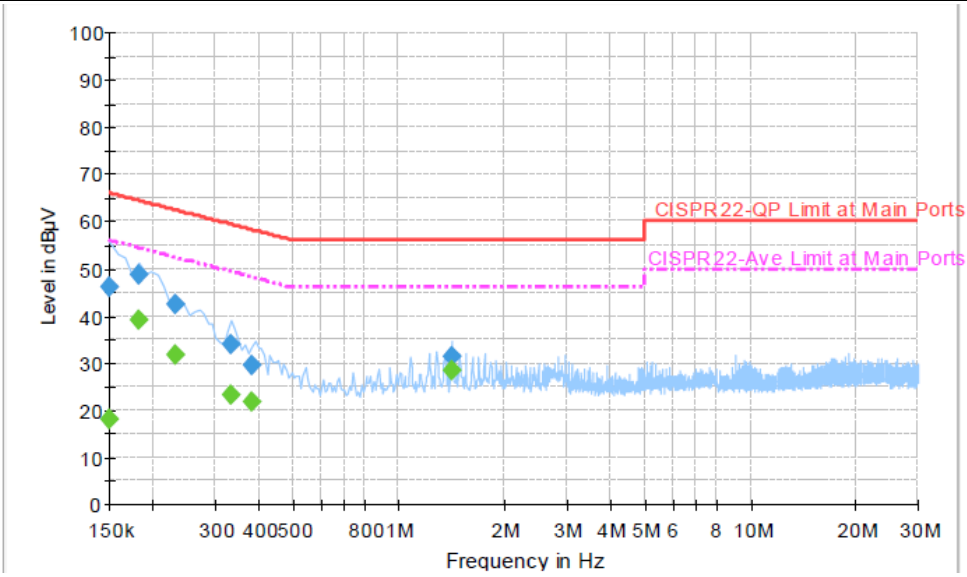
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	45.0	Off	L1	19.3	20.6	65.6
0.198000	48.6	Off	L1	19.3	15.1	63.7
0.262000	41.4	Off	L1	19.3	20.0	61.4
0.334000	35.0	Off	L1	19.3	24.4	59.4
0.406000	29.5	Off	L1	19.4	28.2	57.7
1.414000	32.6	Off	L1	19.4	23.4	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	16.1	Off	L1	19.3	39.5	55.6
0.198000	37.8	Off	L1	19.3	15.9	53.7
0.262000	31.4	Off	L1	19.3	20.0	51.4
0.334000	25.5	Off	L1	19.3	23.9	49.4
0.406000	20.0	Off	L1	19.4	27.7	47.7
1.414000	29.9	Off	L1	19.4	16.1	46.0

Test Mode :	Mode 1	Temperature :	20~21℃
Test Engineer :	Hayden Wu	Relative Humidity :	49~50%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	EUT + Adapter + Earphone		
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)
0.150000	46.0	Off	N	19.4	20.0	66.0
0.182000	48.6	Off	N	19.4	15.8	64.4
0.230000	42.6	Off	N	19.4	19.8	62.4
0.334000	33.8	Off	N	19.3	25.6	59.4
0.382000	29.7	Off	N	19.4	28.5	58.2
1.414000	31.5	Off	N	19.4	24.5	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	18.2	Off	N	19.4	37.8	56.0
0.182000	39.2	Off	N	19.4	15.2	54.4
0.230000	31.9	Off	N	19.4	20.5	52.4
0.334000	23.1	Off	N	19.3	26.3	49.4
0.382000	21.7	Off	N	19.4	26.5	48.2
1.414000	28.3	Off	N	19.4	17.7	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

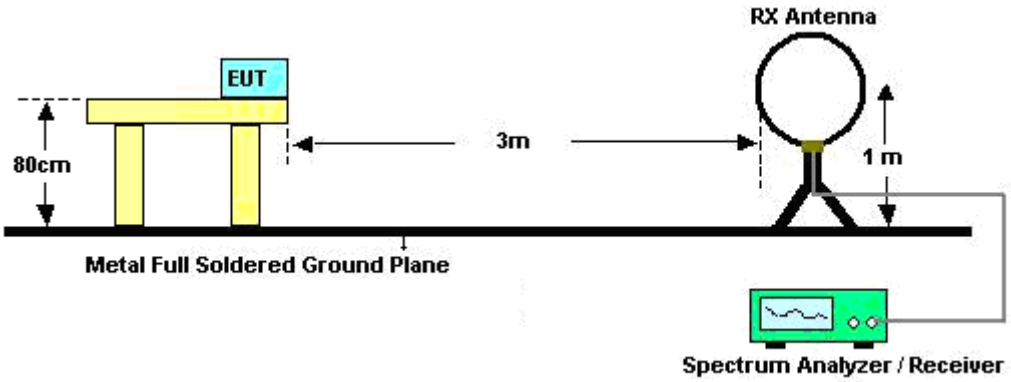
See list of measuring instruments of this test report.

3.7.3 Test Procedures

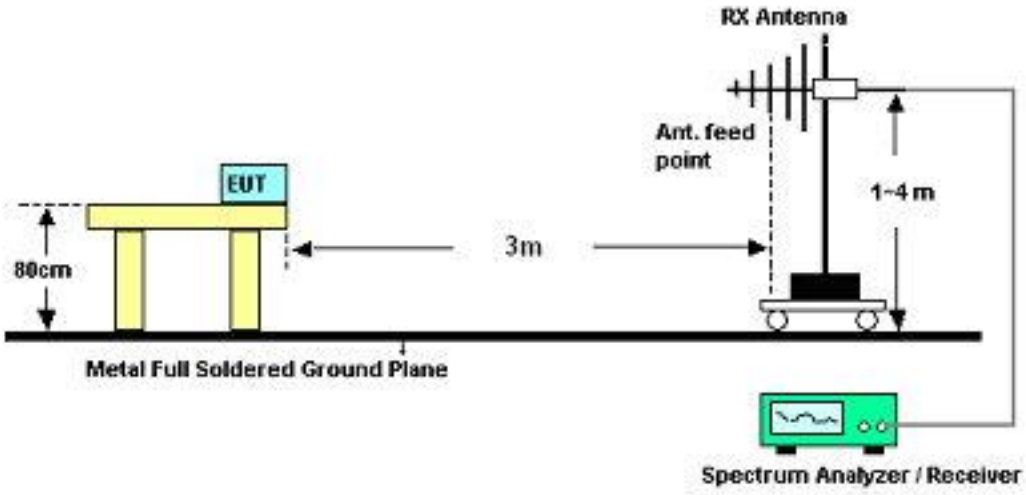
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
   (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; 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 (specific distance [3m] / 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

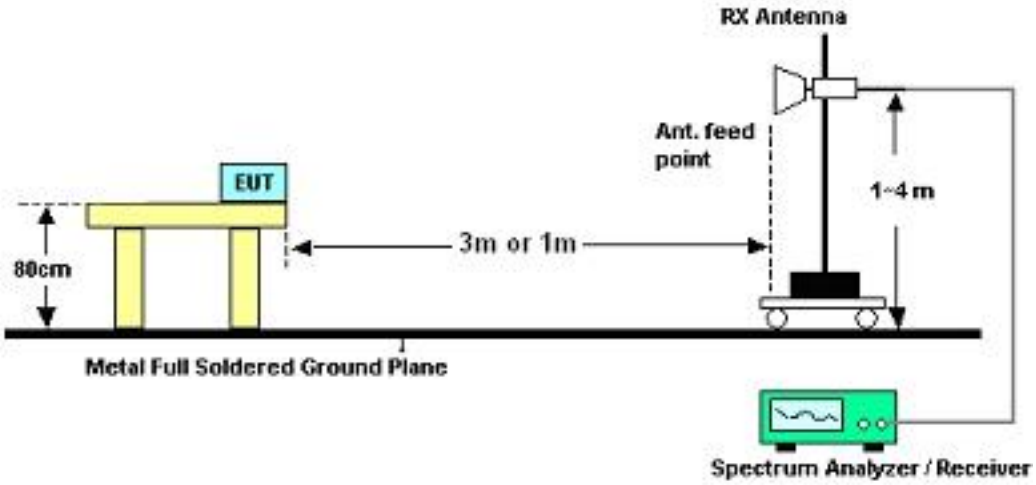
For radiated emissions below 30MHz



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 :	Kai Wang	Temperature :	23~24℃
		Relative Humidity :	46~47%

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 (specific distance / 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 :	23~24℃
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
30.54	18.95	-21.05	40	33.6	16.27	0.54	31.46	-	-	Peak
149.34	21.71	-21.79	43.5	40.91	11.15	1.21	31.56	-	-	Peak
177.69	22.19	-21.31	43.5	43.22	9.26	1.24	31.53	-	-	Peak
472.2	20.64	-25.36	46	31.59	17.76	2.36	31.07	-	-	Peak
752.2	23.81	-22.19	46	29.73	21.72	3.06	30.7	-	-	Peak
909	26.01	-19.99	46	29.59	23.74	3.36	30.68	100	135	Peak
2389.61	54.47	-19.53	74	50.11	32.18	6.03	33.85	100	331	Peak
2389.61	41.95	-12.05	54	37.59	32.18	6.03	33.85	100	331	Average
2412	110.1	-	-	105.7	32.2	6.07	33.87	100	331	Peak
2412	101.07	-	-	96.67	32.2	6.07	33.87	100	331	Average
2494	47.47	-26.53	74	42.89	32.3	6.18	33.9	100	331	Peak
2494	34.68	-19.32	54	30.1	32.3	6.18	33.9	100	331	Average
4824	46.93	-27.07	74	60.19	34.07	9.12	56.45	100	0	Peak

Test Mode :	Mode 1	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
30.54	25.31	-14.69	40	39.96	16.27	0.54	31.46	100	38	Peak
101.01	20.46	-23.04	43.5	41.13	9.87	1	31.54	-	-	Peak
240.33	23.98	-22.02	46	41.89	11.98	1.53	31.42	-	-	Peak
657	21.64	-24.36	46	29.25	20.4	2.85	30.86	-	-	Peak
842.5	24.63	-21.37	46	29.13	22.97	3.25	30.72	-	-	Peak
954.5	26.66	-19.34	46	29.45	24.32	3.46	30.57	-	-	Peak
2389.61	51.42	-22.58	74	47.06	32.18	6.03	33.85	115	274	Peak
2389.61	39.64	-14.36	54	35.28	32.18	6.03	33.85	115	274	Average
2412	108.92	-	-	104.52	32.2	6.07	33.87	115	274	Peak
2412	99.93	-	-	95.53	32.2	6.07	33.87	115	274	Average
2484	47.02	-26.98	74	42.46	32.28	6.18	33.9	115	274	Peak
2484	33.9	-20.1	54	29.34	32.28	6.18	33.9	115	274	Average
4824	47.13	-26.87	74	60.39	34.07	9.12	56.45	100	0	Peak

Test Mode :	Mode 2	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
31.89	18.3	-21.7	40	33.17	16.04	0.55	31.46	-	-	Peak
143.13	20.18	-23.32	43.5	39.11	11.42	1.2	31.55	-	-	Peak
178.5	21.05	-22.45	43.5	42.15	9.18	1.25	31.53	-	-	Peak
419.7	20.05	-25.95	46	32.09	16.9	2.21	31.15	-	-	Peak
763.4	23.09	-22.91	46	28.81	21.89	3.08	30.69	-	-	Peak
918.1	26.39	-19.61	46	29.8	23.86	3.38	30.65	100	245	Peak
2340	47.09	-26.91	74	42.86	32.11	5.95	33.83	128	322	Peak
2340	34.72	-19.28	54	30.49	32.11	5.95	33.83	128	322	Average
2437	110.35	-	-	105.9	32.22	6.11	33.88	128	322	Peak
2437	101.31	-	-	96.84	32.24	6.11	33.88	128	322	Average
2486	47.43	-26.57	74	42.87	32.28	6.18	33.9	128	322	Peak
2486	34.74	-19.26	54	30.18	32.28	6.18	33.9	128	322	Average
4874	45.17	-28.83	74	58.45	34.08	9.13	56.49	100	0	Peak

Test Mode :	Mode 2	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
30.54	25.3	-14.7	40	39.95	16.27	0.54	31.46	100	28	Peak
100.74	19.75	-23.75	43.5	40.42	9.87	1	31.54	-	-	Peak
238.98	25.23	-20.77	46	43.28	11.85	1.52	31.42	-	-	Peak
441.4	20.47	-25.53	46	32.06	17.25	2.28	31.12	-	-	Peak
750.1	23.46	-22.54	46	29.43	21.67	3.06	30.7	-	-	Peak
940.5	25.36	-20.64	46	28.37	24.14	3.44	30.59	-	-	Peak
2316	46.38	-27.62	74	42.21	32.07	5.92	33.82	117	266	Peak
2316	34.36	-19.64	54	30.19	32.07	5.92	33.82	117	266	Average
2437	107.1	-	-	102.65	32.22	6.11	33.88	117	266	Peak
2437	98.3	-	-	93.83	32.24	6.11	33.88	117	266	Average
2500	46.56	-27.44	74	41.98	32.3	6.18	33.9	117	266	Peak
2500	33.96	-20.04	54	29.38	32.3	6.18	33.9	117	266	Average
4874	45.04	-28.96	74	58.32	34.08	9.13	56.49	100	0	Peak

Test Mode :	Mode 3	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
31.89	18.7	-21.3	40	33.57	16.04	0.55	31.46	-	-	Peak
175.53	20.98	-22.52	43.5	41.87	9.4	1.24	31.53	-	-	Peak
256.53	19.47	-26.53	46	36.54	12.78	1.57	31.42	-	-	Peak
438.6	20.46	-25.54	46	32.11	17.2	2.27	31.12	-	-	Peak
750.1	23.12	-22.88	46	29.09	21.67	3.06	30.7	-	-	Peak
948.2	25.51	-20.49	46	28.38	24.24	3.46	30.57	100	158	Peak
2316	50	-24	74	45.83	32.07	5.92	33.82	100	321	Peak
2316	34.59	-19.41	54	30.42	32.07	5.92	33.82	100	321	Average
2462	111.42	-	-	106.91	32.26	6.14	33.89	100	321	Peak
2462	102.52	-	-	98.01	32.26	6.14	33.89	100	321	Average
2487.65	57.97	-16.03	74	53.41	32.28	6.18	33.9	100	321	Peak
2487.65	47.32	-6.68	54	42.74	32.3	6.18	33.9	100	321	Average
4924	45.91	-28.09	74	59.19	34.09	9.15	56.52	100	0	Peak

Test Mode :	Mode 3	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
30.81	24.58	-15.42	40	39.23	16.27	0.54	31.46	100	215	Peak
91.02	21.11	-22.39	43.5	42.89	8.79	0.95	31.52	-	-	Peak
280.29	22.33	-23.67	46	38.89	13.15	1.64	31.35	-	-	Peak
575.8	20.87	-25.13	46	29.8	19.4	2.62	30.95	-	-	Peak
747.3	22.94	-23.06	46	28.97	21.63	3.05	30.71	-	-	Peak
925.8	25.86	-20.14	46	29.13	23.96	3.4	30.63	-	-	Peak
2316	45.49	-28.51	74	41.32	32.07	5.92	33.82	136	277	Peak
2316	33.04	-20.96	54	28.87	32.07	5.92	33.82	136	277	Average
2462	108.7	-	-	104.19	32.26	6.14	33.89	136	277	Peak
2462	99.61	-	-	95.1	32.26	6.14	33.89	136	277	Average
2489.93	56.04	-17.96	74	51.48	32.28	6.18	33.9	136	277	Peak
2489.93	45.25	-8.75	54	40.67	32.3	6.18	33.9	136	277	Average

Test Mode :	Mode 4	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
30.54	18.82	-21.18	40	33.47	16.27	0.54	31.46	-	-	Peak
143.13	19.83	-23.67	43.5	38.76	11.42	1.2	31.55	-	-	Peak
174.45	20.49	-23.01	43.5	41.3	9.47	1.24	31.52	-	-	Peak
439.3	20.04	-25.96	46	31.66	17.22	2.28	31.12	-	-	Peak
671.7	21.53	-24.47	46	28.93	20.57	2.88	30.85	-	-	Peak
861.4	25.13	-20.87	46	29.38	23.18	3.29	30.72	100	281	Peak
2389.99	73.59	-0.41	74	69.23	32.18	6.03	33.85	127	325	Peak
2389.99	53.14	-0.86	54	48.78	32.18	6.03	33.85	127	325	Average
2412	109.47	-	-	105.07	32.2	6.07	33.87	127	325	Peak
2412	90.89	-	-	86.49	32.2	6.07	33.87	127	325	Average
2486	47.34	-26.66	74	42.78	32.28	6.18	33.9	127	325	Peak
2486	33.69	-20.31	54	29.13	32.28	6.18	33.9	127	325	Average

Test Mode :	Mode 4	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
30.81	25.31	-14.69	40	39.96	16.27	0.54	31.46	100	132	Peak
140.97	22.42	-21.08	43.5	41.22	11.55	1.2	31.55	-	-	Peak
221.7	28.06	-17.94	46	47.41	10.68	1.43	31.46	-	-	Peak
346.9	21.26	-24.74	46	35.67	14.93	1.95	31.29	-	-	Peak
682.9	21.98	-24.02	46	29.22	20.69	2.91	30.84	-	-	Peak
946.1	25.37	-20.63	46	28.3	24.2	3.45	30.58	-	-	Peak
2389.99	67.32	-6.68	74	62.96	32.18	6.03	33.85	100	291	Peak
2389.99	46.98	-7.02	54	42.62	32.18	6.03	33.85	100	291	Average
2412	105.83	-	-	101.43	32.2	6.07	33.87	100	291	Peak
2412	87.77	-	-	83.37	32.2	6.07	33.87	100	291	Average
2500	44.57	-29.43	74	39.99	32.3	6.18	33.9	100	291	Peak
2500	32.69	-21.31	54	28.11	32.3	6.18	33.9	100	291	Average

Test Mode :	Mode 5	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
30	22.08	-17.92	40	36.5	16.51	0.53	31.46	100	182	Peak
141.78	23.73	-19.77	43.5	42.57	11.51	1.2	31.55	-	-	Peak
232.5	19.5	-26.5	46	38	11.43	1.5	31.43	-	-	Peak
466.6	20.08	-25.92	46	31.14	17.67	2.34	31.07	-	-	Peak
716.5	22.39	-23.61	46	29.04	21.15	2.98	30.78	-	-	Peak
929.3	26.21	-19.79	46	29.42	24	3.41	30.62	-	-	Peak
2390	57.53	-16.47	74	53.17	32.18	6.03	33.85	102	323	Peak
2390	38.04	-15.96	54	33.68	32.18	6.03	33.85	102	323	Average
2437	111.61	-	-	107.14	32.24	6.11	33.88	102	323	Peak
2437	93.15	-	-	88.68	32.24	6.11	33.88	102	323	Average
2484	55.77	-18.23	74	51.21	32.28	6.18	33.9	102	323	Peak
2484	38.1	-15.9	54	33.54	32.28	6.18	33.9	102	323	Average
4874	45.12	-28.88	74	58.4	34.08	9.13	56.49	100	0	Peak

Test Mode :	Mode 5	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
30.54	25.6	-14.4	40	40.25	16.27	0.54	31.46	100	126	Peak
101.01	19.84	-23.66	43.5	40.51	9.87	1	31.54	-	-	Peak
241.14	22.77	-23.23	46	40.61	12.05	1.53	31.42	-	-	Peak
424.6	19.92	-26.08	46	31.85	16.98	2.23	31.14	-	-	Peak
668.2	21.78	-24.22	46	29.22	20.53	2.88	30.85	-	-	Peak
928.6	25.42	-20.58	46	28.66	23.98	3.41	30.63	-	-	Peak
2390	53.75	-20.25	74	49.39	32.18	6.03	33.85	100	292	Peak
2390	34.97	-19.03	54	30.61	32.18	6.03	33.85	100	292	Average
2437	105.73	-	-	101.26	32.24	6.11	33.88	100	292	Peak
2437	88.72	-	-	84.25	32.24	6.11	33.88	100	292	Average
2484	50.25	-23.75	74	45.69	32.28	6.18	33.9	100	292	Peak
2484	34.63	-19.37	54	30.07	32.28	6.18	33.9	100	292	Average

Test Mode :	Mode 6	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
30	19.84	-20.16	40	34.26	16.51	0.53	31.46	100	289	Peak
176.34	20.73	-22.77	43.5	41.69	9.33	1.24	31.53	-	-	Peak
280.29	18.24	-27.76	46	34.8	13.15	1.64	31.35	-	-	Peak
453.3	20.54	-25.46	46	31.88	17.44	2.31	31.09	-	-	Peak
677.3	22.77	-23.23	46	30.09	20.63	2.89	30.84	-	-	Peak
934.2	25.73	-20.27	46	28.86	24.06	3.42	30.61	-	-	Peak
2356	45.41	-28.59	74	41.16	32.13	5.95	33.83	100	321	Peak
2356	33.28	-20.72	54	29.03	32.13	5.95	33.83	100	321	Average
2462	108.97	-	-	104.46	32.26	6.14	33.89	100	321	Peak
2462	91.32	-	-	86.81	32.26	6.14	33.89	100	321	Average
2483.5	72.72	-1.28	74	68.16	32.28	6.18	33.9	100	321	Peak
2483.5	52.5	-1.5	54	47.94	32.28	6.18	33.9	100	321	Average

Test Mode :	Mode 6	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
30.54	25.75	-14.25	40	40.4	16.27	0.54	31.46	100	182	Peak
139.89	20.65	-22.85	43.5	39.4	11.6	1.2	31.55	-	-	Peak
231.69	25.84	-20.16	46	44.42	11.37	1.49	31.44	-	-	Peak
458.2	19.91	-26.09	46	31.15	17.52	2.32	31.08	-	-	Peak
738.9	22.8	-23.2	46	29	21.5	3.03	30.73	-	-	Peak
931.4	25.71	-20.29	46	28.89	24.02	3.42	30.62	-	-	Peak
2388	45.08	-28.92	74	40.72	32.18	6.03	33.85	119	289	Peak
2388	32.26	-21.74	54	27.9	32.18	6.03	33.85	119	289	Average
2462	104.42	-	-	99.91	32.26	6.14	33.89	119	289	Peak
2462	87.18	-	-	82.67	32.26	6.14	33.89	119	289	Average
2483.5	68.57	-5.43	74	64.01	32.28	6.18	33.9	119	289	Peak
2483.5	49.53	-4.47	54	44.97	32.28	6.18	33.9	119	289	Average

Test Mode :	Mode 7	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
30	20.54	-19.46	40	34.96	16.51	0.53	31.46	100	28	Peak
142.86	20.19	-23.31	43.5	39.08	11.46	1.2	31.55	-	-	Peak
192.81	20.31	-23.19	43.5	41.44	9.08	1.29	31.5	-	-	Peak
458.2	20.03	-25.97	46	31.27	17.52	2.32	31.08	-	-	Peak
729.8	22.88	-23.12	46	29.27	21.35	3.01	30.75	-	-	Peak
904.1	25.41	-20.59	46	29.07	23.68	3.35	30.69	-	-	Peak
2390	71.72	-2.28	74	67.36	32.18	6.03	33.85	126	324	Peak
2390	53.36	-0.64	54	49	32.18	6.03	33.85	126	324	Average
2412	107.51	-	-	103.11	32.2	6.07	33.87	126	324	Peak
2412	92.77	-	-	88.37	32.2	6.07	33.87	126	324	Average
2486	33.75	-20.25	54	29.19	32.28	6.18	33.9	126	324	Average
2486	45.41	-28.59	74	40.85	32.28	6.18	33.9	126	324	Peak
4824	46.25	-27.75	74	59.51	34.07	9.12	56.45	100	0	Peak

Test Mode :	Mode 7	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
30.54	24.93	-15.07	40	39.58	16.27	0.54	31.46	100	159	Peak
101.01	20.58	-22.92	43.5	41.25	9.87	1	31.54	-	-	Peak
241.14	23.24	-22.76	46	41.08	12.05	1.53	31.42	-	-	Peak
422.5	19.62	-26.38	46	31.6	16.95	2.22	31.15	-	-	Peak
640.2	21.39	-24.61	46	29.24	20.22	2.81	30.88	-	-	Peak
867	25.67	-20.33	46	29.85	23.25	3.29	30.72	-	-	Peak
2389.61	66.18	-7.82	74	61.82	32.18	6.03	33.85	100	291	Peak
2389.61	47.18	-6.82	54	42.82	32.18	6.03	33.85	100	291	Average
2412	103.14	-	-	98.74	32.2	6.07	33.87	100	291	Peak
2412	89.16	-	-	84.76	32.2	6.07	33.87	100	291	Average
2494	32.82	-21.18	54	28.24	32.3	6.18	33.9	100	291	Average
2494	44.39	-29.61	74	39.81	32.3	6.18	33.9	100	291	Peak
4824	45.54	-28.46	74	58.8	34.07	9.12	56.45	100	0	Peak

Test Mode :	Mode 8	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
30	20.13	-19.87	40	34.55	16.51	0.53	31.46	100	82	Peak
141.78	19.8	-23.7	43.5	38.64	11.51	1.2	31.55	-	-	Peak
176.61	21.02	-22.48	43.5	41.98	9.33	1.24	31.53	-	-	Peak
467.3	20.03	-25.97	46	31.08	17.68	2.34	31.07	-	-	Peak
738.9	23.38	-22.62	46	29.58	21.5	3.03	30.73	-	-	Peak
920.9	25.44	-20.56	46	28.81	23.89	3.39	30.65	-	-	Peak
2390	59.06	-14.94	74	54.7	32.18	6.03	33.85	102	323	Peak
2390	39.78	-14.22	54	35.42	32.18	6.03	33.85	102	323	Average
2437	111.32	-	-	106.85	32.24	6.11	33.88	102	323	Peak
2437	96.65	-	-	92.18	32.24	6.11	33.88	102	323	Average
2484	56.77	-17.23	74	52.21	32.28	6.18	33.9	102	323	Peak
2484	39.64	-14.36	54	35.08	32.28	6.18	33.9	102	323	Average
4874	44.64	-29.36	74	57.92	34.08	9.13	56.49	100	0	Peak

Test Mode :	Mode 8	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
30.54	25.06	-14.94	40	39.71	16.27	0.54	31.46	100	43	Peak
140.7	22.68	-20.82	43.5	41.48	11.55	1.2	31.55	-	-	Peak
277.86	27.2	-18.8	46	43.79	13.12	1.64	31.35	-	-	Peak
603.8	20.68	-25.32	46	29.09	19.81	2.7	30.92	-	-	Peak
799.8	24.74	-21.26	46	29.81	22.47	3.14	30.68	-	-	Peak
926.5	25.92	-20.08	46	29.19	23.96	3.4	30.63	-	-	Peak
2390	53.2	-20.8	74	48.84	32.18	6.03	33.85	117	292	Peak
2390	35.86	-18.14	54	31.5	32.18	6.03	33.85	117	292	Average
2437	106.48	-	-	102.01	32.24	6.11	33.88	117	292	Peak
2437	92.21	-	-	87.74	32.24	6.11	33.88	117	292	Average
2484	52.38	-21.62	74	47.82	32.28	6.18	33.9	117	292	Peak
2484	37.11	-16.89	54	32.55	32.28	6.18	33.9	117	292	Average

Test Mode :	Mode 9	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
30	21.36	-18.64	40	35.78	16.51	0.53	31.46	100	123	Peak
148.26	19.82	-23.68	43.5	38.98	11.19	1.21	31.56	-	-	Peak
176.61	20.97	-22.53	43.5	41.93	9.33	1.24	31.53	-	-	Peak
441.4	20.22	-25.78	46	31.81	17.25	2.28	31.12	-	-	Peak
680.1	22.57	-23.43	46	29.85	20.66	2.9	30.84	-	-	Peak
906.2	25.06	-20.94	46	28.69	23.7	3.35	30.68	-	-	Peak
2390	45.84	-28.16	74	41.48	32.18	6.03	33.85	100	321	Peak
2390	32.97	-21.03	54	28.61	32.18	6.03	33.85	100	321	Average
2462	107.41	-	-	102.9	32.26	6.14	33.89	100	321	Peak
2462	93.61	-	-	89.1	32.26	6.14	33.89	100	321	Average
2483.5	71.28	-2.72	74	66.72	32.28	6.18	33.9	100	321	Peak
2483.5	53.64	-0.36	54	49.08	32.28	6.18	33.9	100	321	Average

Test Mode :	Mode 9	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	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
30.54	25.52	-14.48	40	40.17	16.27	0.54	31.46	100	325	Peak
101.82	20.24	-23.26	43.5	40.82	9.96	1	31.54	-	-	Peak
226.02	27.64	-18.36	46	46.68	10.95	1.46	31.45	-	-	Peak
615.7	21.14	-24.86	46	29.36	19.94	2.74	30.9	-	-	Peak
788.6	24.24	-21.76	46	29.51	22.29	3.12	30.68	-	-	Peak
897.8	26.66	-19.34	46	30.41	23.61	3.34	30.7	-	-	Peak
2374	44.88	-29.12	74	40.57	32.16	5.99	33.84	119	289	Peak
2374	32.98	-21.02	54	28.67	32.16	5.99	33.84	119	289	Average
2462	102.78	-	-	98.27	32.26	6.14	33.89	119	289	Peak
2462	89.3	-	-	84.79	32.26	6.14	33.89	119	289	Average
2483.5	67.72	-6.28	74	63.16	32.28	6.18	33.9	119	289	Peak
2483.5	50.25	-3.75	54	45.69	32.28	6.18	33.9	119	289	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 Fixed Internal 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
System Simulator	R&S	CMU200	117995	N/A	Jun. 08, 2009	Jun. 07, 2011	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 11, 2010	Jun. 10, 2011	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. 30,2010	Jul. 29, 2011	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCS 30	100356	9KHz – 2.75GHz	Aug. 16, 2010	Aug. 15, 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)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2010	Oct. 30, 2011	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	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, 2010	Mar. 28, 2011	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	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 Uc(y)	**1.13**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(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 Uc(y)	**1.27**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(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 Γ1 = 0.197 Antenna VSWR Γ2 = 0.194 Uncertainty = 20Log(1-Γ1*Γ2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	**2.36**				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**				