FCC RF Test Report

APPLICANT	:	Acer Incorporated
EQUIPMENT	:	Smart HandHeld
BRAND NAME	:	Acer
MODEL NAME	:	P300
FCC ID	:	HLZDMP300EU
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	Digital Transmission System (DTS)

The product was received on Jun. 04, 2010 and completely tested on Jun. 17, 2010. 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.

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APPENDIX A. PHOTOGRAPHS OF EUT

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR012605-02A	Rev. 01	Initial issue of report	Jun. 23, 2010

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	≥ 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	Under limit 17.7 dB at 0.326 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.45 dB at 2389.99 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, Hsin Tai Wu Rd., Hsichih Taipei Hsien 221, Taiwan

1.2 Manufacturer

Futaijing Precision Electronics (Beijing) Co., Ltd.
No. 9, Jinxiu Stree, Beijing Economic Technology Development Area

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Smart HandHeld
Brand Name	Acer
Model Name	P300
FCC ID	HLZDMP300EU
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 : 17.96 dBm (62.52 mW) 802.11g : 23.30 dBm (213.80 mW)
Antenna Type	PIFA Antenna with gain -3.5 dBi
Type of Antenna Connector	N/A
HW Version	0.400-1 (PVT)
SW Version	ACER_P300_1.004c.01_EN
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM)
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 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	TW1022/4086B-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 7

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.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		At DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	17.83	17.85	17.91	**17.96**
CH 06	2437 MHz	16.90	16.88	16.88	16.87
CH 11	2462 MHz	16.23	16.75	16.28	16.88

Channel	Frequency	2.4GHz 802.11g RF Power (dBm)							
		At OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	**23.30**	22.40	23.20	22.64	23.27	23.13	22.94	22.79
CH 06	2437 MHz	23.17	22.32	22.76	22.24	22.88	22.47	22.51	22.75
CH 11	2462 MHz	22.05	22.14	22.8	22.19	22.78	22.39	22.33	22.31

Remark:

1. The data rates of WLAN 802.11b/g were set in 11Mbps for 802.11b and 6Mbps for 802.11g, 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: conducted emission (150 kHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

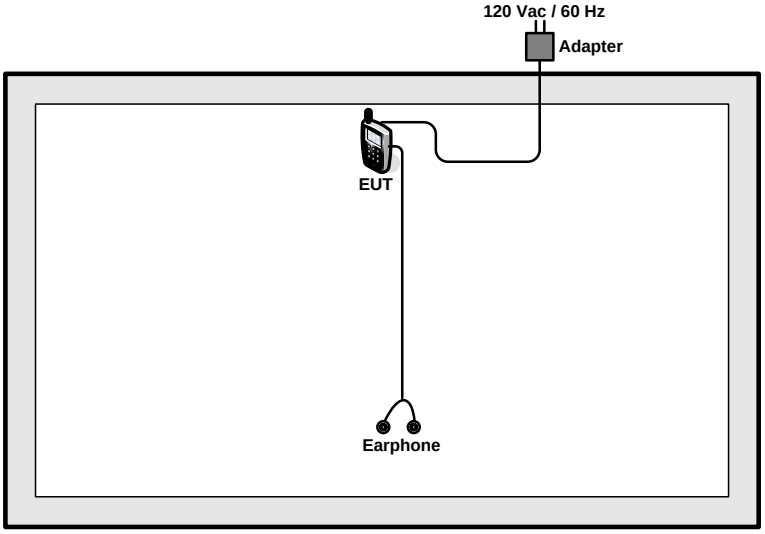
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

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

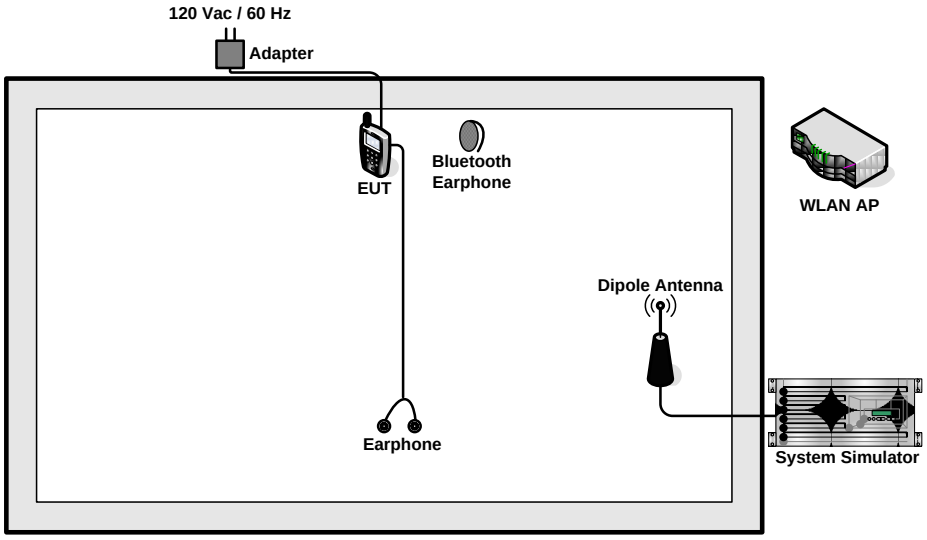
Test Cases		
Test Item	**802.11b**	**802.11g**
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4 : 802.11g CH01_2412 MHz Mode 5 : 802.11g CH06_2437 MHz Mode 6 : 802.11g CH11_2462 MHz
Radiated TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b 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
AC Conducted Emission	Mode 1 :GSM850 Idle + Buletooth Link + WLAN Link + MPEG4 + Earphone + Adapter	

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<EUT with Adapter Mode>



2.4 RF Utility

The programmed RF utility, “shortcut to WifiTool.exe” 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 Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

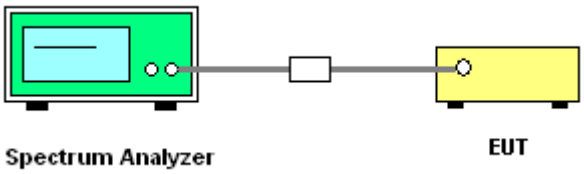
3.1.2 Measuring Instruments

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

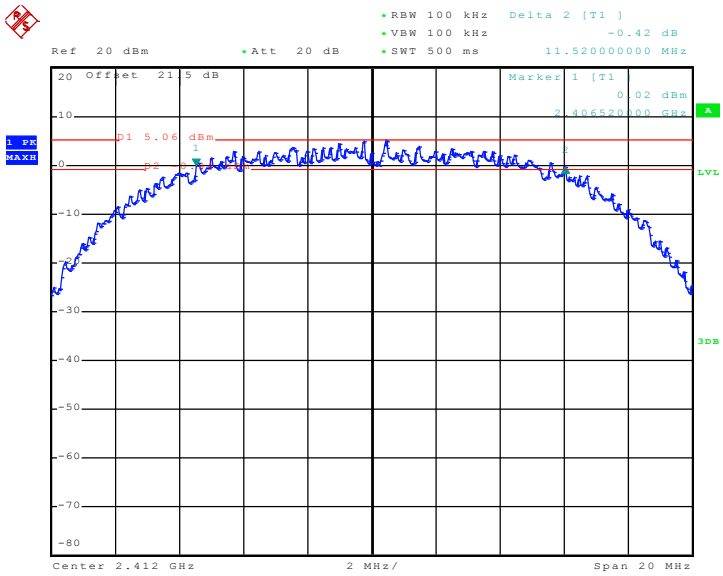


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	**Temperature :**	24~27℃
Test Engineer :	Mac Lin	**Relative Humidity :**	47~50%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	11.52	0.5	Pass
06	2437	11.52	0.5	Pass
11	2462	11.52	0.5	Pass

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



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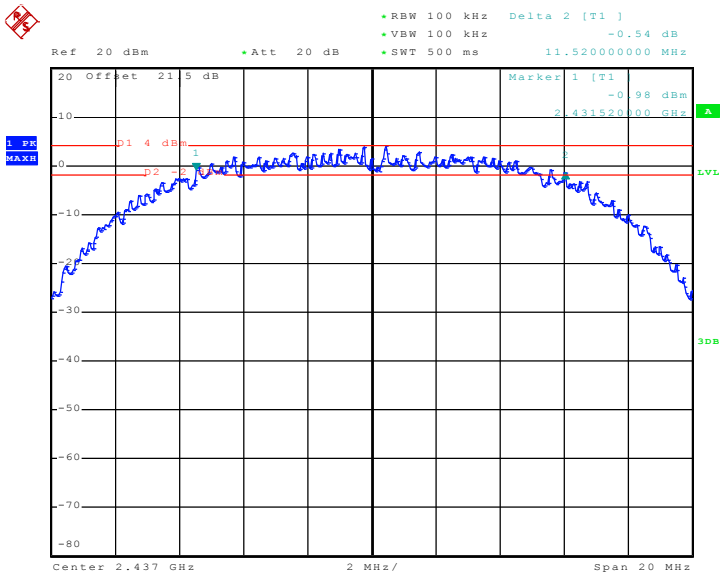
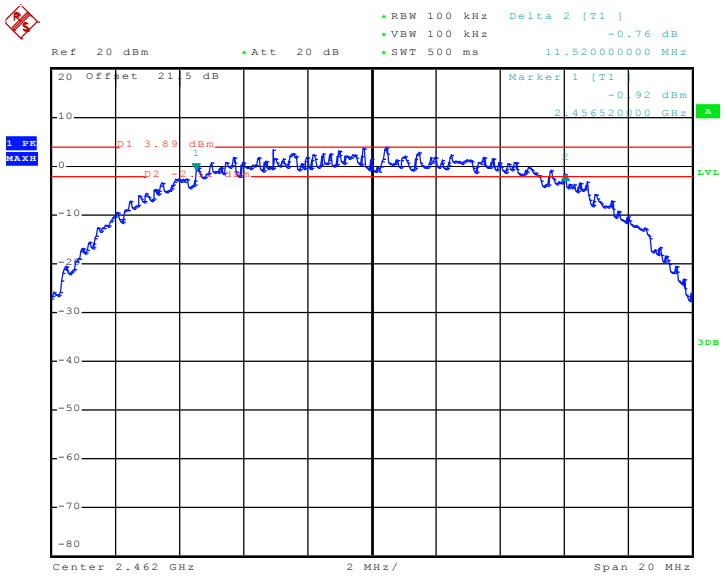
Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



Date: 9.JUN.2010 16:33:45

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

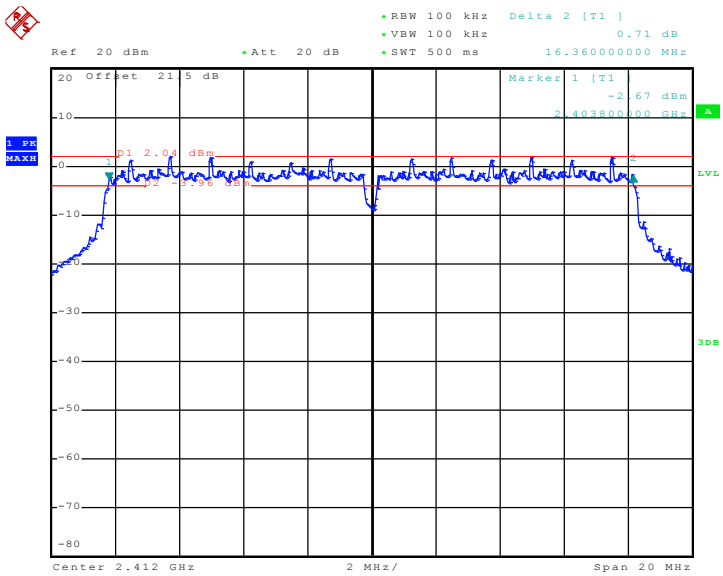


Date: 9.JUN.2010 16:35:32

Test Mode :	Mode 4, 5, 6	**Temperature :**	24~27℃
Test Engineer :	Mac Lin	**Relative Humidity :**	47~50%

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

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



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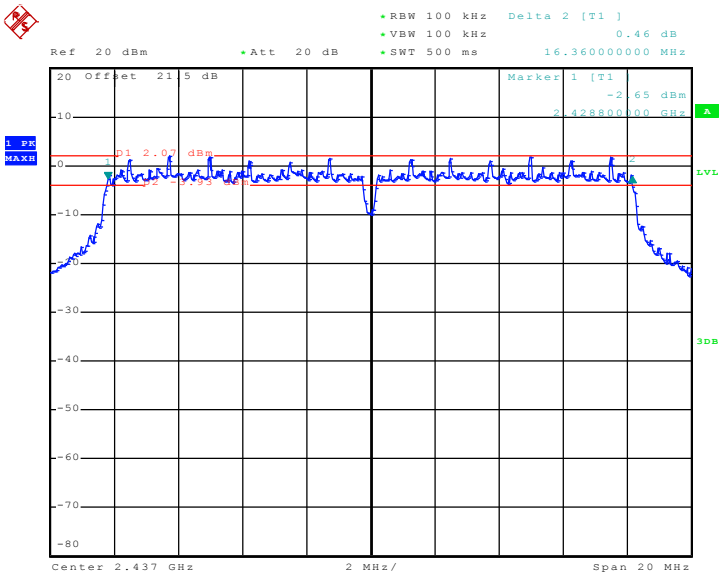
Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



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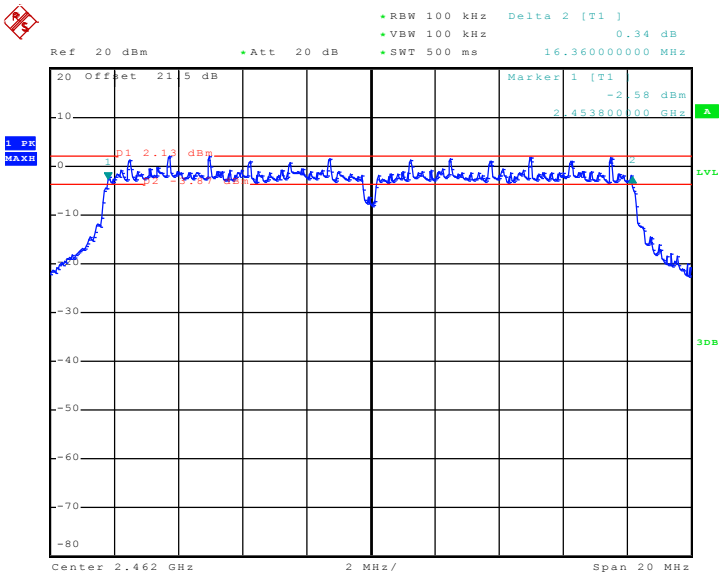
Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11



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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.

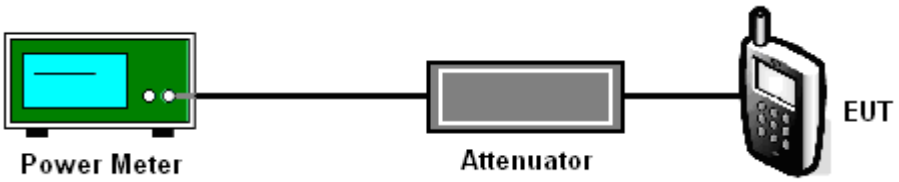
3.2.2 Measuring Instruments

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 :**	24~27℃
Test Engineer :	Mac Lin	**Relative Humidity :**	47~50%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	17.96	30	Pass
06	2437	16.87	30	Pass
11	2462	16.88	30	Pass

Test Mode :	Mode 4, 5, 6	**Temperature :**	24~27℃
Test Engineer :	Mac Lin	**Relative Humidity :**	47~50%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	23.30	30	Pass
06	2437	23.17	30	Pass
11	2462	22.05	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

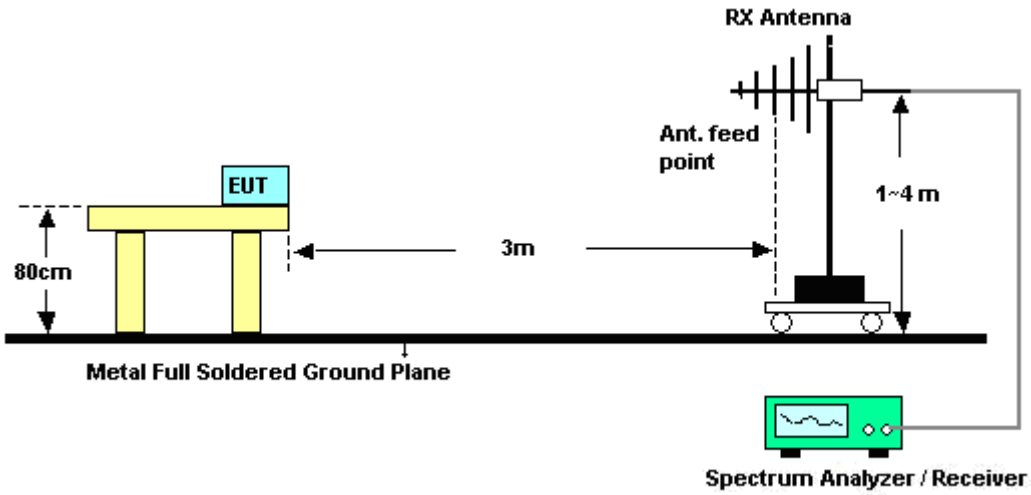
See list of measuring instruments of this test report.

3.3.3 Test Procedures

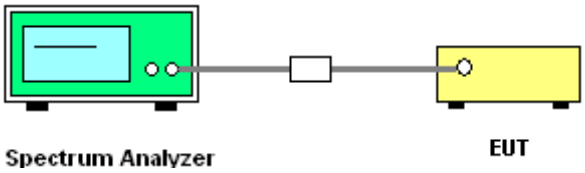
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) ≥ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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 :**	24~25℃
Test Band :	802.11b	**Relative Humidity :**	49~50%
Test Channel :	01	**Test Engineer :**	Duncan Lin

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
2386.57	51.84	-22.16	74.00	48.4	32.13	5.46	34.15	102	334	Peak
2386.57	40.64	-13.36	54.00	37.2	32.13	5.46	34.15	102	334	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
2388.09	48.69	-25.31	74.00	45.25	32.13	5.46	34.15	125	354	Peak
2388.09	36.76	-17.24	54.00	33.32	32.13	5.46	34.15	125	354	Average

Test Mode :	Mode 3	**Temperature :**	24~25℃
Test Band :	802.11b	**Relative Humidity :**	49~50%
Test Channel :	11	**Test Engineer :**	Duncan Lin

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	49.56	-24.44	74.00	46.1	32.27	5.38	34.19	100	338	Peak
2483.5	36.11	-17.89	54.00	32.65	32.27	5.38	34.19	100	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
2484.61	45.73	-28.27	74.00	42.27	32.27	5.38	34.19	180	346	Peak
2484.61	33.48	-20.52	54.00	30.02	32.27	5.38	34.19	180	346	Average

Test Mode :	Mode 4	**Temperature :**	24~25℃
Test Band :	802.11g	**Relative Humidity :**	49~50%
Test Channel :	01	**Test Engineer :**	Duncan Lin

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	67.5	-6.5	74.00	64.07	32.13	5.46	34.16	103	333	Peak
2389.99	50.55	-3.45	54.00	47.12	32.13	5.46	34.16	103	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
2389.99	62.76	-11.24	74.00	59.33	32.13	5.46	34.16	124	353	Peak
2389.99	45.73	-8.27	54.00	42.3	32.13	5.46	34.16	124	353	Average

Test Mode :	Mode 6	**Temperature :**	24~25℃
Test Band :	802.11g	**Relative Humidity :**	49~50%
Test Channel :	11	**Test Engineer :**	Duncan Lin

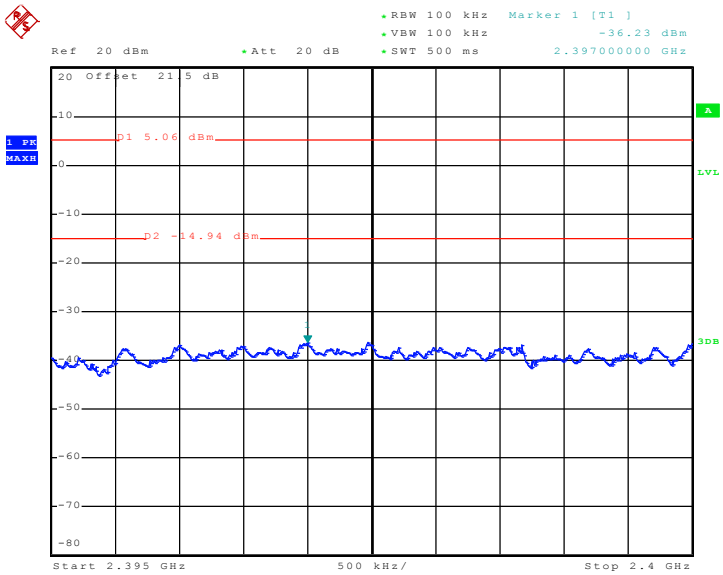
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	66.13	-7.87	74.00	62.67	32.27	5.38	34.19	102	323	Peak
2483.50	48.4	-5.6	54.00	44.94	32.27	5.38	34.19	102	323	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
2483.50	60.31	-13.69	74.00	56.85	32.27	5.38	34.19	100	314	Peak
2483.50	42.55	-11.45	54.00	39.09	32.27	5.38	34.19	100	314	Average

3.3.6 Test Plots of Conducted Band Edges

Test Mode :	Mode 1 and 3	**Temperature :**	24~27℃
Test Band :	802.11b	**Relative Humidity :**	47~50%
Test Channel :	01 and 11	**Test Engineer :**	Mac Lin

Low Band Edge Plot on 802.11b Channel 01



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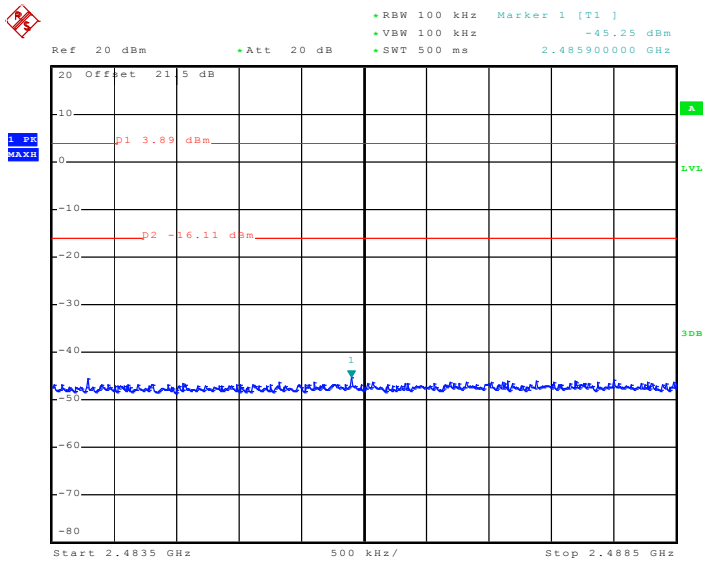
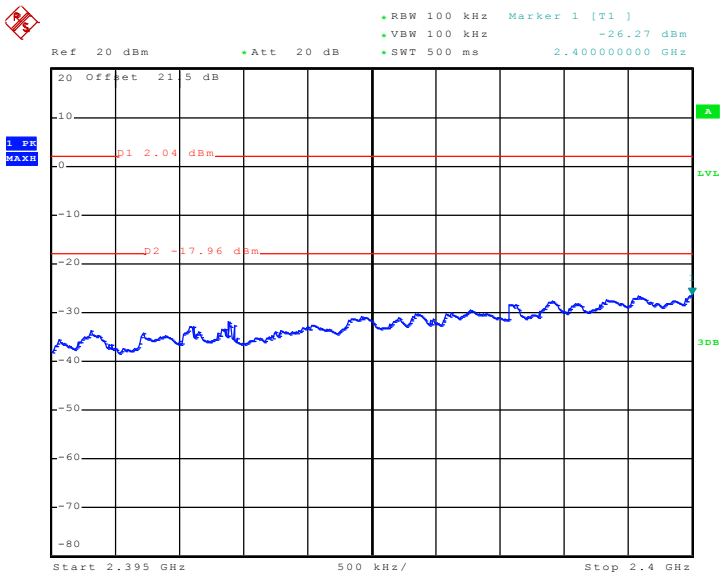
High Band Edge Plot on 802.11b Channel 11



Date: 9.JUN.2010 16:37:08

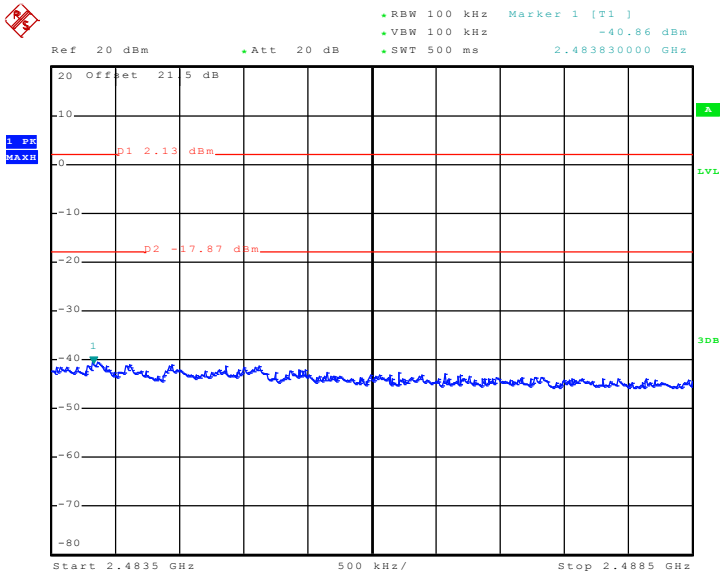
Test Mode :	Mode 4 and 6	**Temperature :**	24~27℃
Test Band :	802.11g	**Relative Humidity :**	47~50%
Test Channel :	01 and 11	**Test Engineer :**	Mac Lin

Low Band Edge Plot on 802.11g Channel 01



Date: 9.JUN.2010 17:39:32

High Band Edge Plot on 802.11g Channel 11



Date: 9.JUN.2010 17:45:04

3.4 Spurious Emission Measurement

3.4.1 Limit of Spurious Emission Measurement

All harmonics/spurs 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

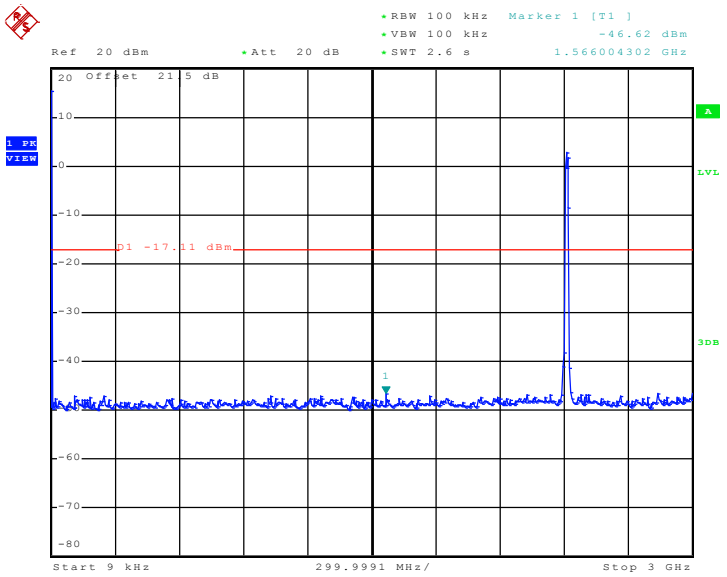
1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set RBW = 100 kHz, Video bandwidth (VBW) ≥ RBW, scan up through 10th harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz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

3.4.4 Test Setup

3.4.5 Test Plots of Spurious Emission

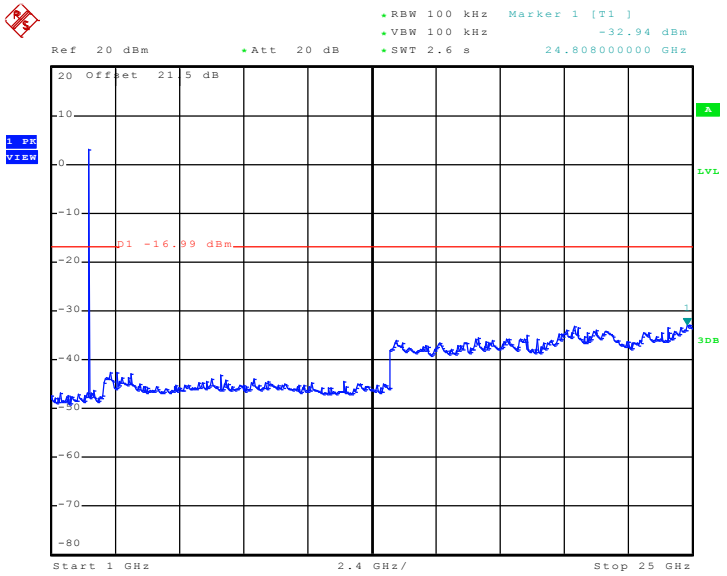
Test Mode :	Mode 1	**Temperature :**	24~27℃
Test Band :	802.11b	**Relative Humidity :**	47~50%
Test Channel :	01	**Test Engineer :**	Mac Lin

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 9.JUN.2010 18:05:05

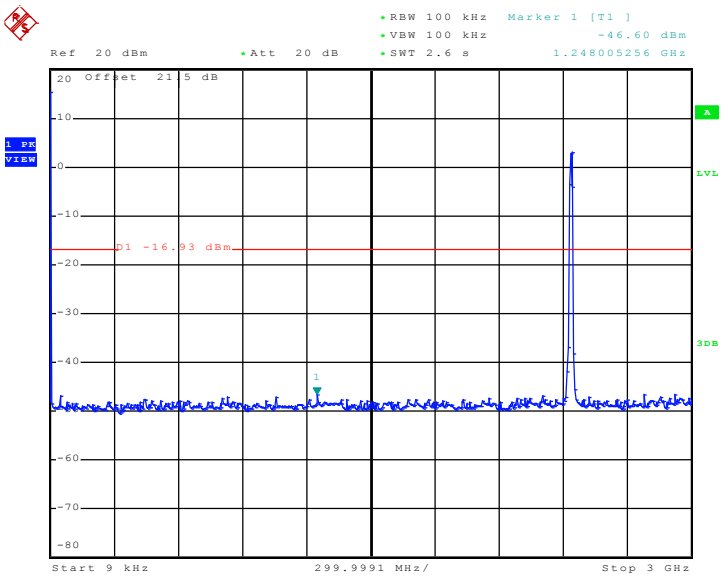
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 9.JUN.2010 19:48:36

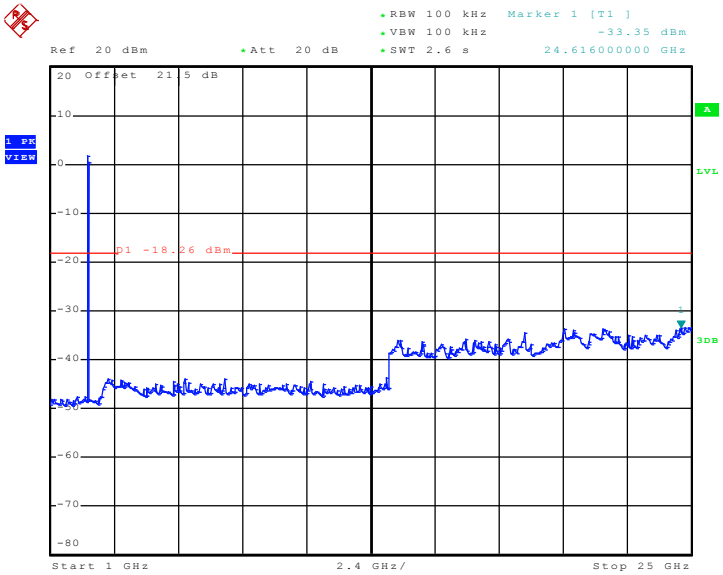
Test Mode :	Mode 2	**Temperature :**	24~27℃
Test Band :	802.11b	**Relative Humidity :**	47~50%
Test Channel :	06	**Test Engineer :**	Mac Lin

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 9.JUN.2010 18:06:21

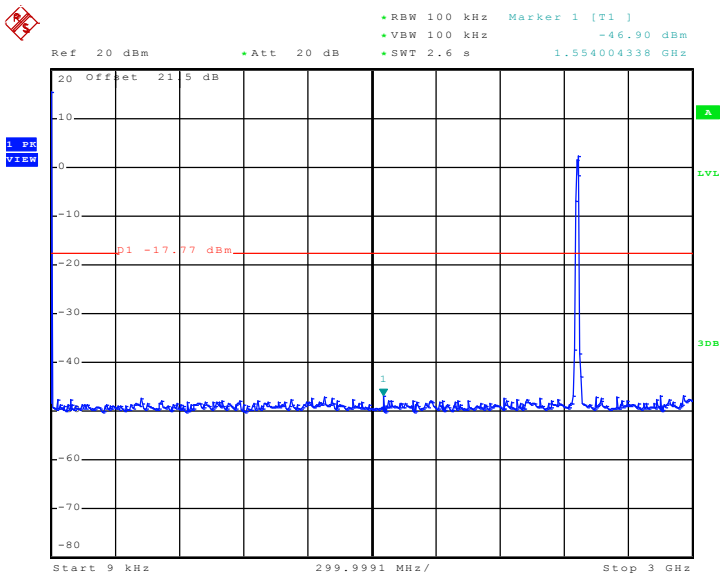
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 9.JUN.2010 18:10:15

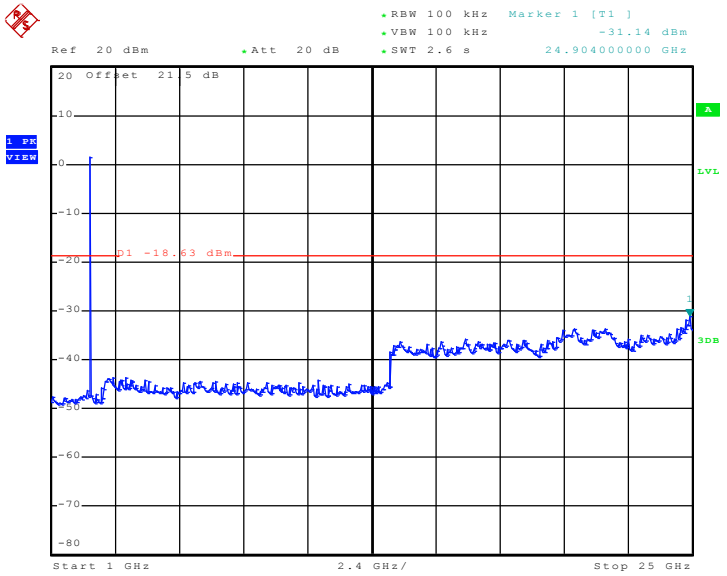
Test Mode :	Mode 3	**Temperature :**	24~27℃
Test Band :	802.11b	**Relative Humidity :**	47~50%
Test Channel :	11	**Test Engineer :**	Mac Lin

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 9.JUN.2010 18:07:08

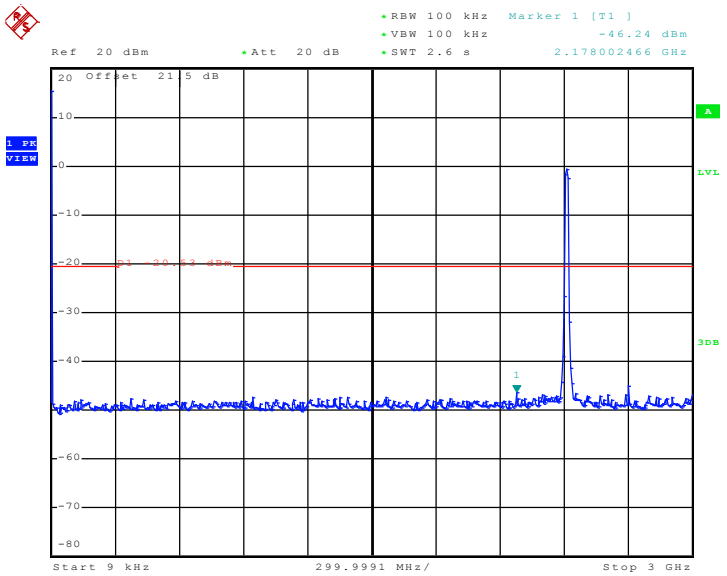
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 9.JUN.2010 18:08:43

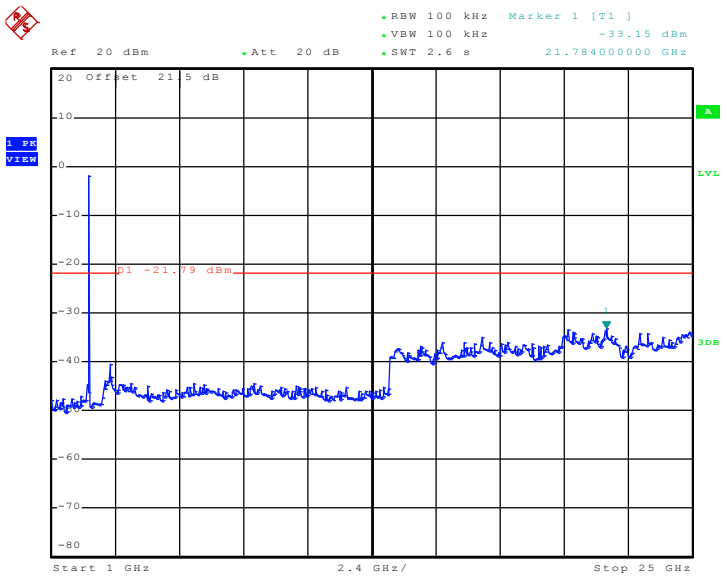
Test Mode :	Mode 4	**Temperature :**	24~27℃
Test Band :	802.11g	**Relative Humidity :**	47~50%
Test Channel :	01	**Test Engineer :**	Mac Lin

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 9.JUN.2010 18:20:06

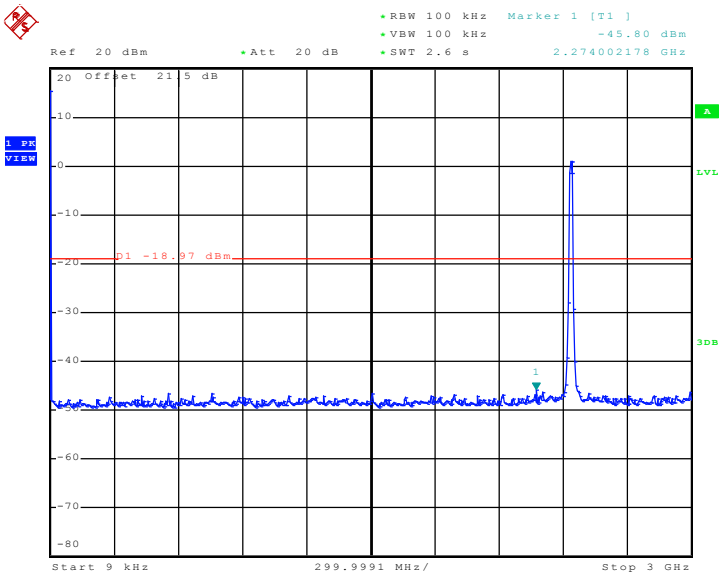
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 9.JUN.2010 18:11:44

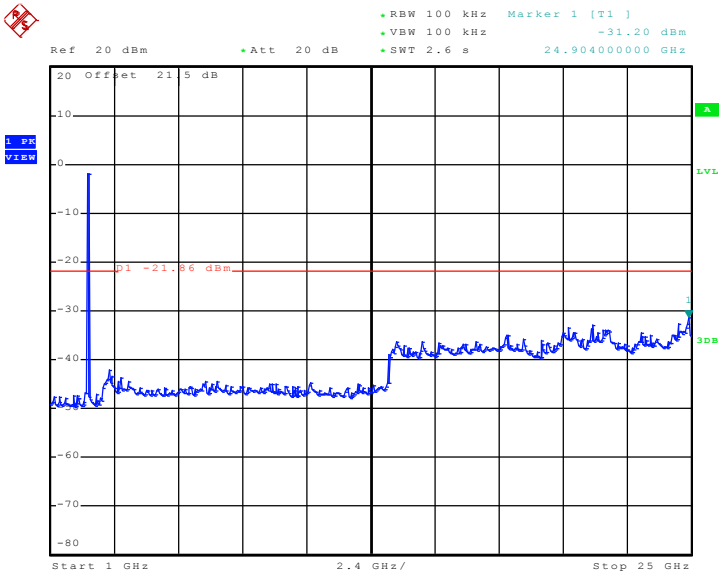
Test Mode :	Mode 5	**Temperature :**	24~27℃
Test Band :	802.11g	**Relative Humidity :**	47~50%
Test Channel :	06	**Test Engineer :**	Mac Lin

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 9.JUN.2010 18:19:25

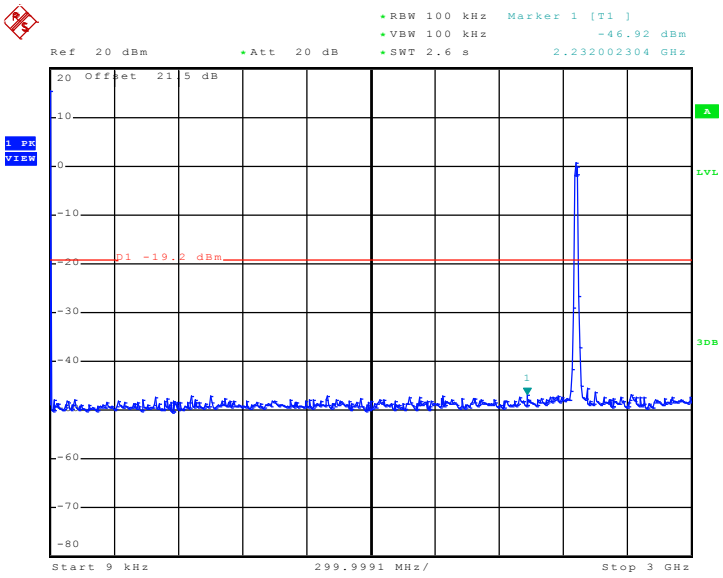
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 9.JUN.2010 18:12:32

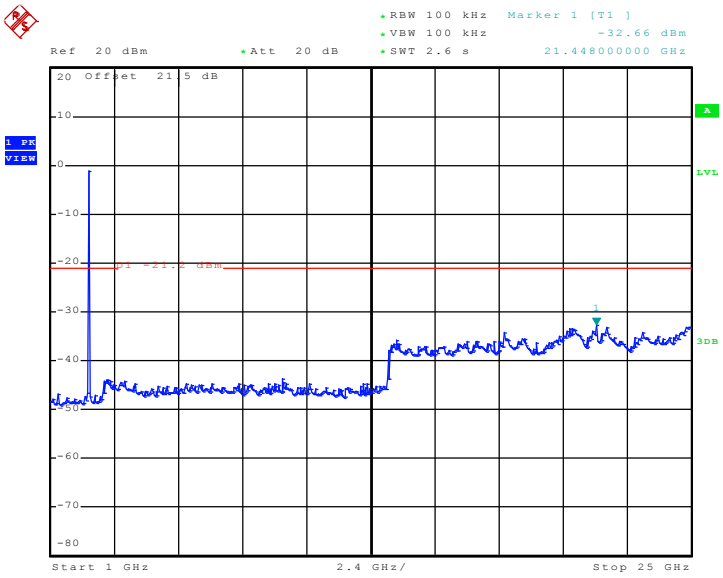
Test Mode :	Mode 6	**Temperature :**	24~27℃
Test Band :	802.11g	**Relative Humidity :**	47~50%
Test Channel :	11	**Test Engineer :**	Mac Lin

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 9.JUN.2010 18:15:23

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 9.JUN.2010 18:13:40

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.

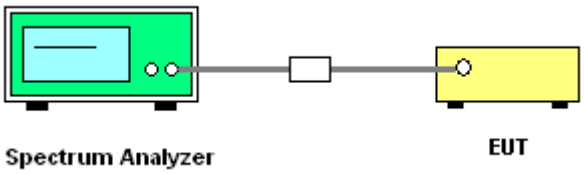
3.5.2 Measuring Instruments

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

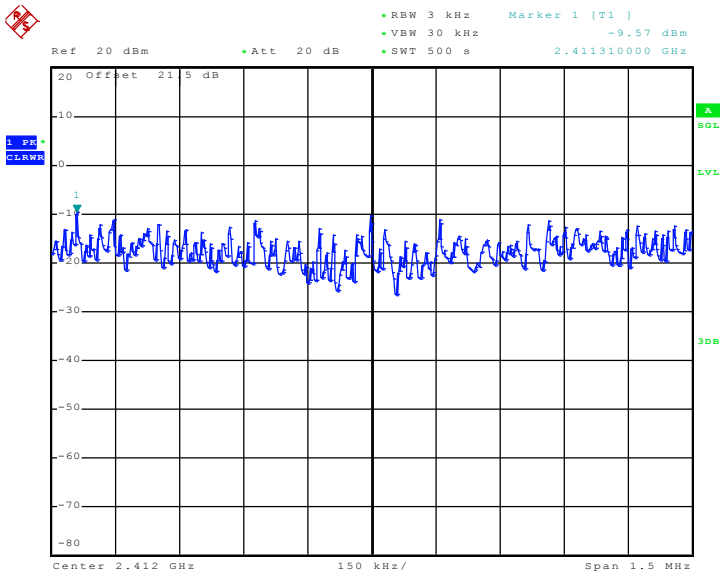


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	**Temperature :**	24~27℃
Test Engineer :	Mac Lin	**Relative Humidity :**	47~50%

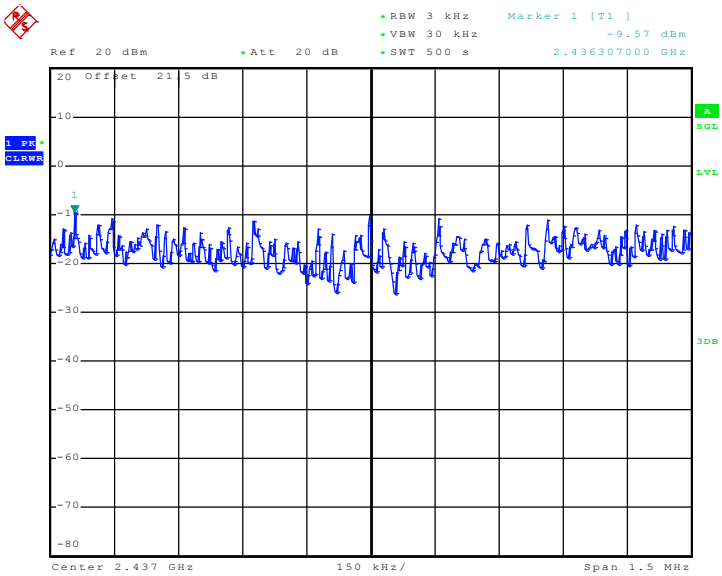
Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-9.57	8	Pass
06	2437	-9.57	8	Pass
11	2462	-9.23	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01



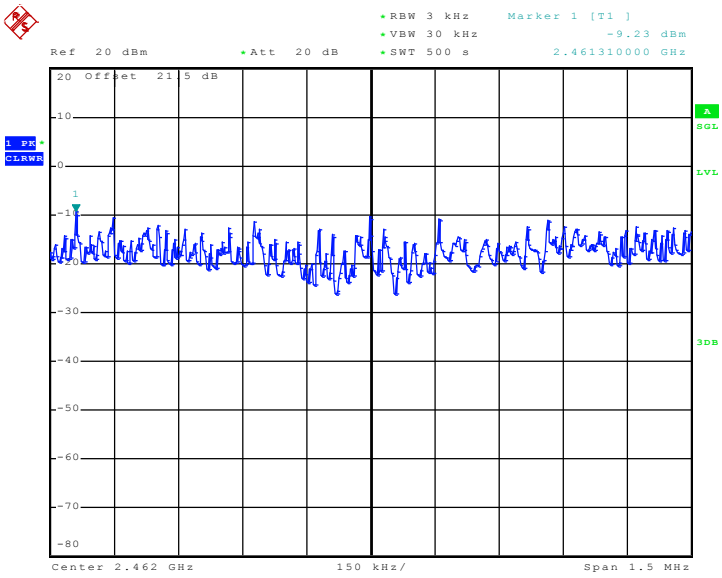
Date: 9.JUN.2010 20:10:49

Mode 2 : PSD Plot on 802.11b Channel 06



Date: 9.JUN.2010 19:22:14

Mode 3 : PSD Plot on 802.11b Channel 11

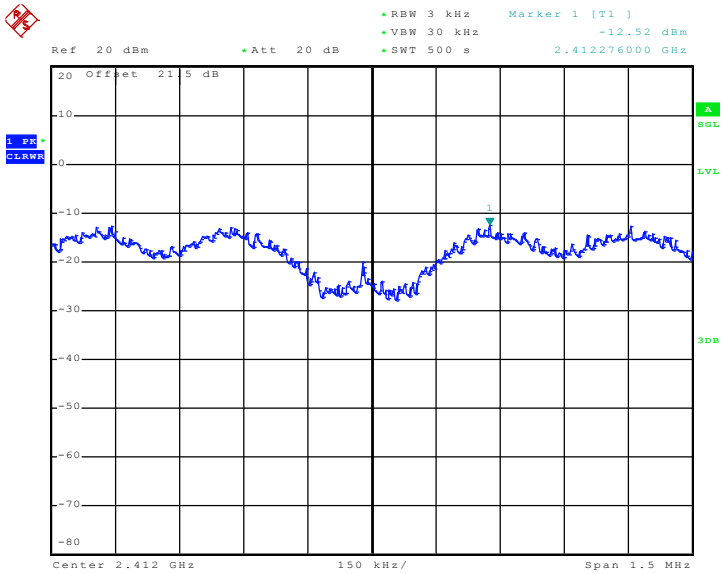


Date: 9.JUN.2010 19:36:03

Test Mode :	Mode 4, 5, 6	**Temperature :**	24~27℃
Test Engineer :	Mac Lin	**Relative Humidity :**	47~50%

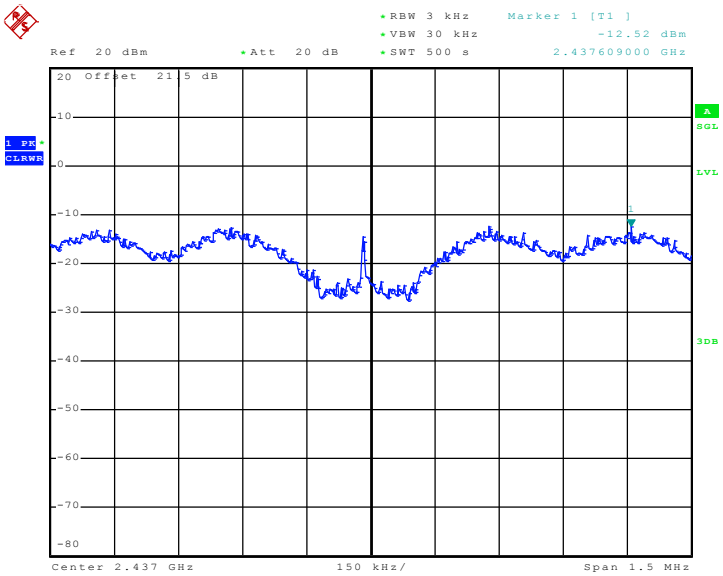
Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-12.52	8	Pass
06	2437	-12.52	8	Pass
11	2462	-12.25	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01



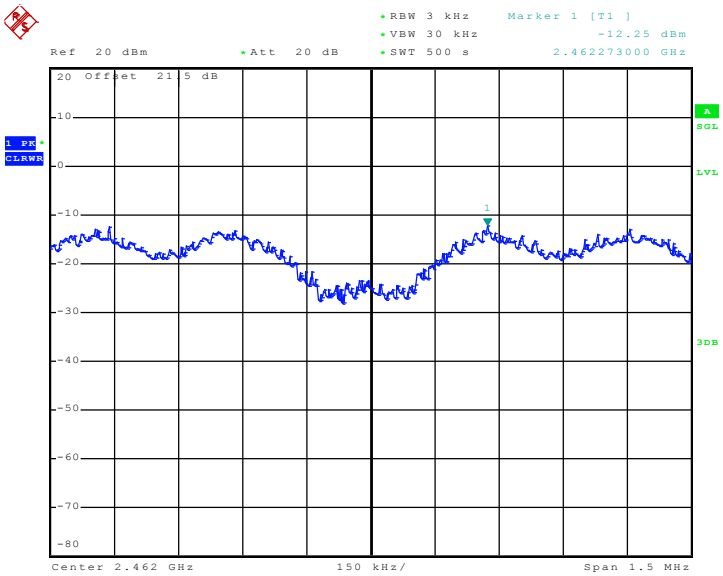
Date: 9.JUN.2010 18:31:10

Mode 5 : PSD Plot on 802.11g Channel 06



Date: 9.JUN.2010 18:53:24

Mode 6 : PSD Plot on 802.11g Channel 11



Date: 9.JUN.2010 19:02:57

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.

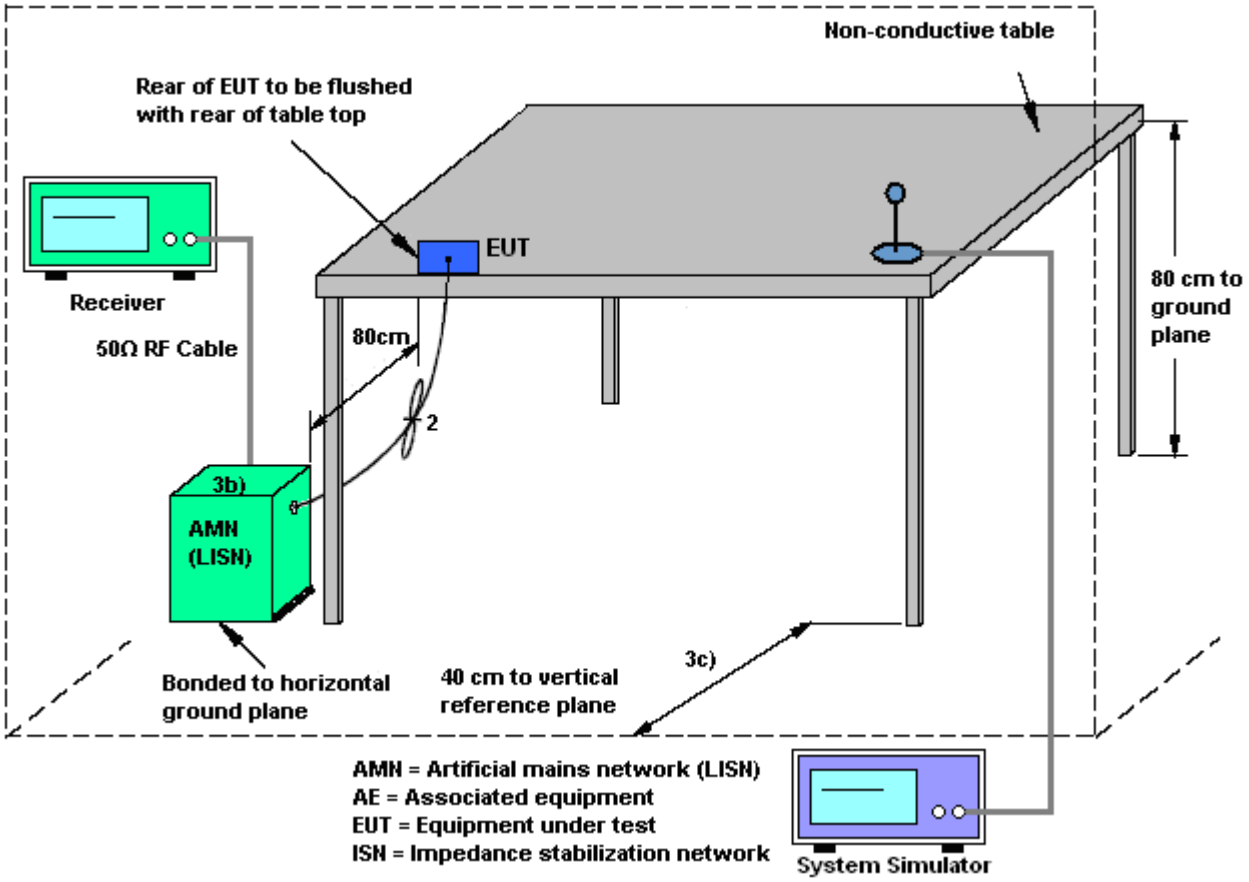
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

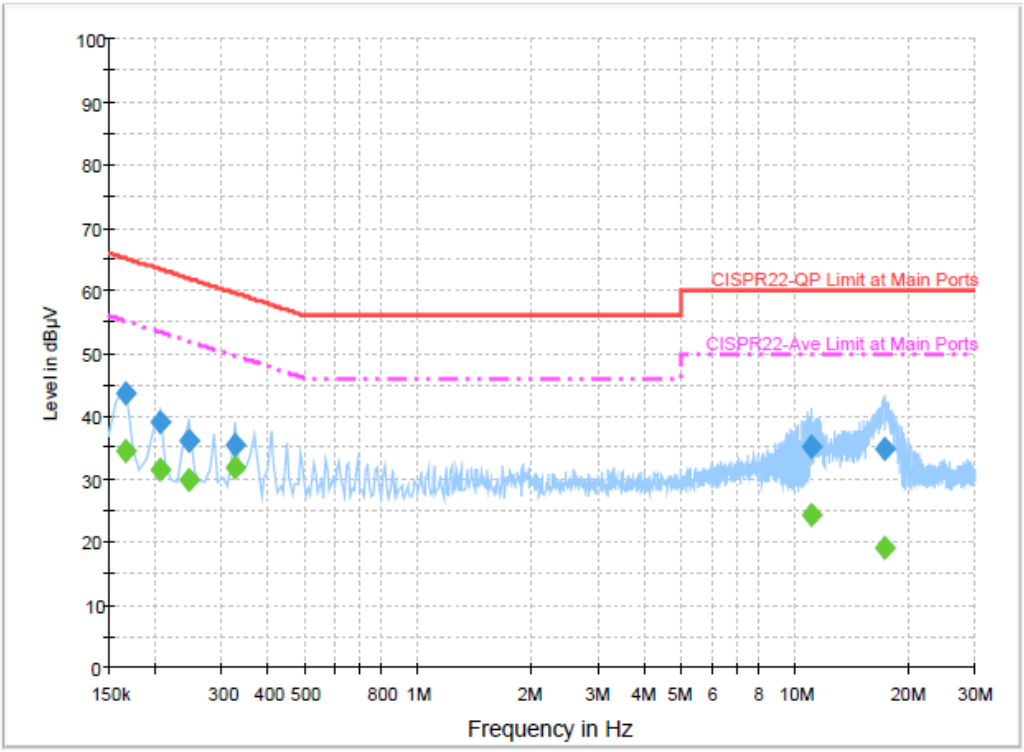
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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℃
Test Engineer :	Novic Jiang	**Relative Humidity :**	40~42%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	GSM850 Idle + Buletooth Link + WLAN Link + MPEG4 + Earphone + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



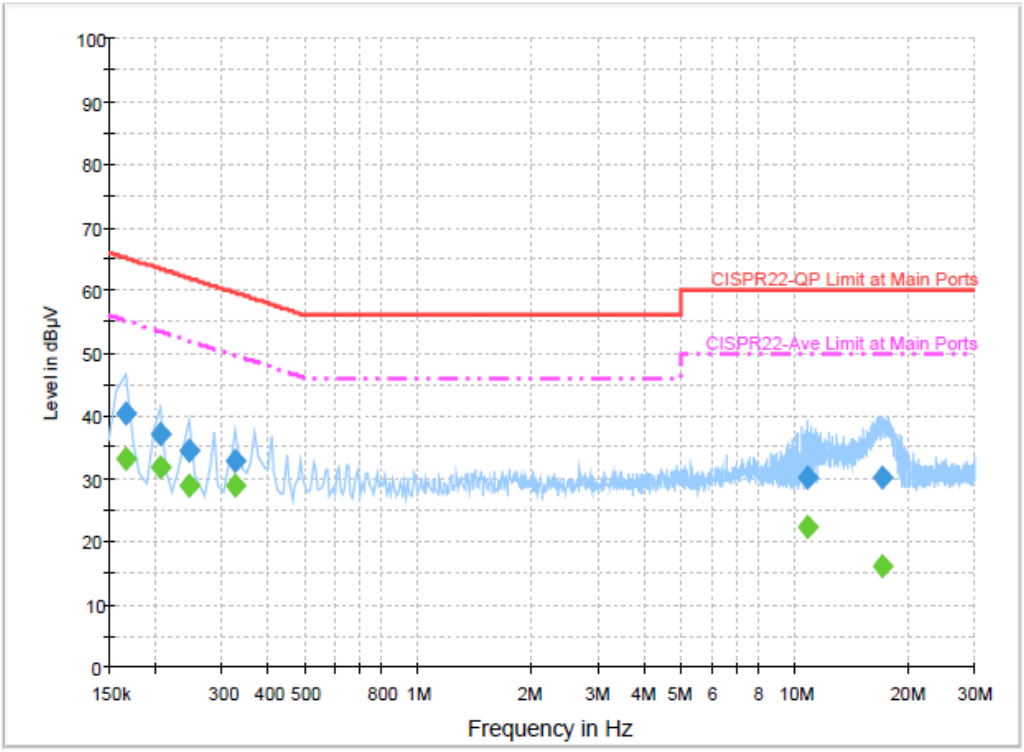
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	43.5	Off	L1	19.3	21.7	65.2
0.206000	39.0	Off	L1	19.3	24.4	63.4
0.246000	36.2	Off	L1	19.4	25.7	61.9
0.326000	35.3	Off	L1	19.3	24.3	59.6
11.062000	35.0	Off	L1	19.6	25.0	60.0
17.174000	34.6	Off	L1	19.7	25.4	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	34.5	Off	L1	19.3	20.7	55.2
0.206000	31.6	Off	L1	19.3	21.8	53.4
0.246000	29.8	Off	L1	19.4	22.1	51.9
0.326000	31.9	Off	L1	19.3	17.7	49.6
11.062000	24.2	Off	L1	19.6	25.8	50.0
17.174000	18.9	Off	L1	19.7	31.1	50.0

Test Mode :	Mode 1	**Temperature :**	20~22℃
Test Engineer :	Novic Jiang	**Relative Humidity :**	40~42%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	GSM850 Idle + Buletooth Link + WLAN Link + MPEG4 + Earphone + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	40.4	Off	N	19.3	24.8	65.2
0.206000	37.0	Off	N	19.3	26.4	63.4
0.246000	34.4	Off	N	19.4	27.5	61.9
0.326000	32.8	Off	N	19.3	26.8	59.6
10.742000	30.2	Off	N	19.7	29.8	60.0
17.014000	30.3	Off	N	19.8	29.7	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	33.2	Off	N	19.3	22.0	55.2
0.206000	31.7	Off	N	19.3	21.7	53.4
0.246000	28.7	Off	N	19.4	23.2	51.9
0.326000	28.8	Off	N	19.3	20.8	49.6
10.742000	22.2	Off	N	19.7	27.8	50.0
17.014000	16.1	Off	N	19.8	33.9	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

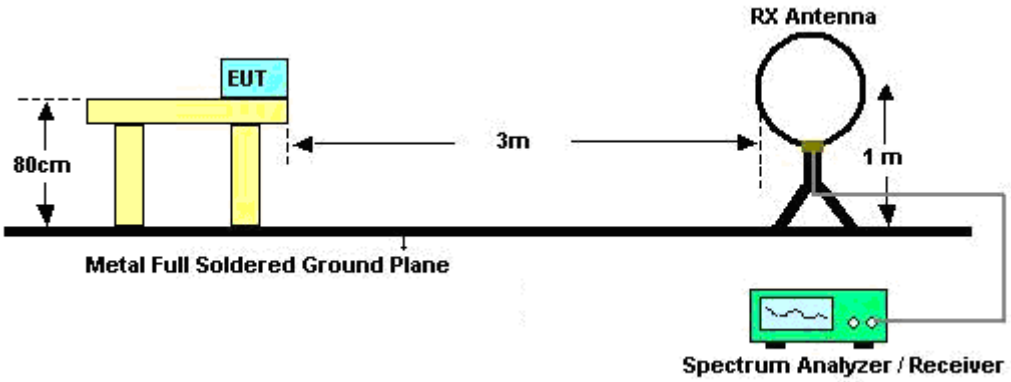
See list of measuring instruments of this test report.

3.7.3 Test Procedures

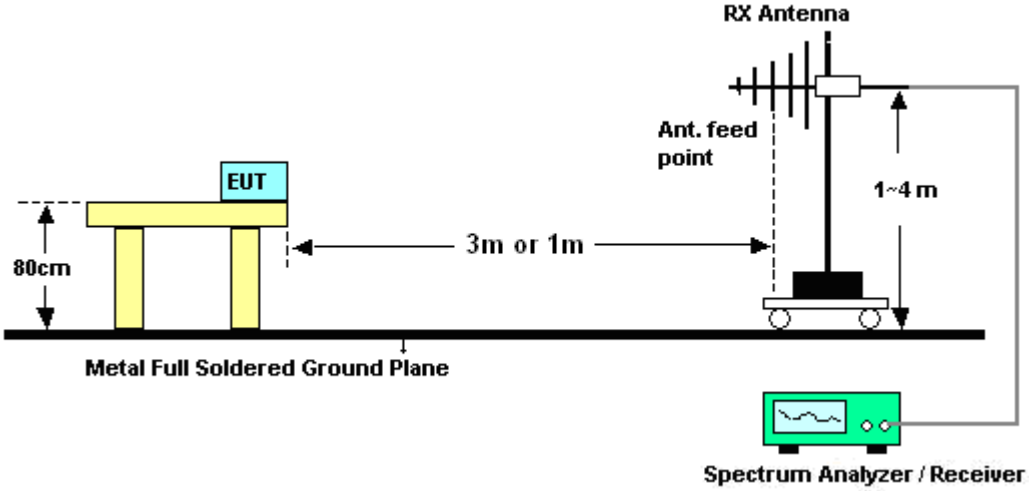
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
   (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; 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 above 30MHz



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

Test Engineer :	Duncan Lin	**Temperature :**	24~25℃
		Relative Humidity :	49~50%

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 :**	24~25℃
Test Channel :	01	**Relative Humidity :**	49~50%
Test Engineer :	Duncan Lin	**Polarization :**	Horizontal
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 9648 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
30	21.36	-18.64	40	32.78	19.51	0.53	31.46	100	296	Peak
187.41	22.57	-20.93	43.5	43.86	8.96	1.27	31.52	-	-	Peak
248.97	23.33	-22.67	46	40.56	12.65	1.53	31.41	-	-	Peak
330.1	20.92	-25.08	46	36.12	14.26	1.85	31.31	-	-	Peak
533.8	20.4	-25.6	46	30.09	18.8	2.52	31.01	-	-	Peak
755	23.58	-22.42	46	29.62	21.59	3.07	30.7	-	-	Peak
2386.57	40.64	-13.36	54	37.2	32.13	5.46	34.15	102	334	Average
2386.57	51.84	-22.16	74	48.4	32.13	5.46	34.15	102	334	Peak
2412	108.2	-	-	104.76	32.16	5.44	34.16	102	334	Peak
2412	99.79	-	-	96.35	32.16	5.44	34.16	102	334	Average
2494	33.92	-20.08	54	30.45	32.3	5.37	34.2	102	334	Average
2494	45.47	-28.53	74	42	32.3	5.37	34.2	102	334	Peak
8433	54.07	-19.93	74	43.04	36	10.13	35.1	100	27	Peak
8433	40.52	-13.48	54	29.49	36	10.13	35.1	100	27	Average
9648	41.3	-46.90	88.20	76.18	-10.32	10.74	35.3	100	0	Peak

Test Mode :	Mode 1	**Temperature :**	24~25℃
Test Channel :	01	**Relative Humidity :**	49~50%
Test Engineer :	Duncan Lin	**Polarization :**	Vertical
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 9648 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
30	24.65	-15.35	40	36.07	19.51	0.53	31.46	100	147	Peak
64.29	23.29	-16.71	40	47.85	6.19	0.79	31.54	-	-	Peak
137.73	24.58	-18.92	43.5	43.23	11.71	1.19	31.55	-	-	Peak
327.3	17.25	-28.75	46	32.54	14.18	1.84	31.31	-	-	Peak
478.5	18.62	-27.38	46	29.59	17.72	2.37	31.06	-	-	Peak
573.7	21.27	-24.73	46	30.03	19.57	2.62	30.95	-	-	Peak
2388.09	36.76	-17.24	54	33.32	32.13	5.46	34.15	125	354	Average
2388.09	48.69	-25.31	74	45.25	32.13	5.46	34.15	125	354	Peak
2412	97.1	-	-	93.66	32.16	5.44	34.16	125	354	Average
2412	105.47	-	-	102.03	32.16	5.44	34.16	125	354	Peak
2486	45.2	-28.8	74	41.74	32.27	5.38	34.19	125	354	Peak
2486	32.36	-21.64	54	28.9	32.27	5.38	34.19	125	354	Average
8325	54.04	-19.96	74	43.08	36	10.06	35.1	100	77	Peak
8325	40.35	-13.65	54	29.39	36	10.06	35.1	100	77	Average
9648	44.48	-40.99	85.47	79.36	-10.32	10.74	35.3	100	0	Peak

Test Mode :	Mode 2	**Temperature :**	24~25℃
Test Channel :	06	**Relative Humidity :**	49~50%
Test Engineer :	Duncan Lin	**Polarization :**	Horizontal
Remark :	1. 2437 MHz is Fundamental Signals which can be ignored. 2. 9741 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
30	21.18	-18.82	40	32.6	19.51	0.53	31.46	100	165	Peak
172.02	22.78	-20.72	43.5	43.54	9.53	1.23	31.52	-	-	Peak
247.89	23.34	-22.66	46	40.68	12.54	1.53	31.41	-	-	Peak
323.8	20.94	-25.06	46	36.33	14.1	1.83	31.32	-	-	Peak
555.5	19.84	-26.16	46	29.01	19.23	2.57	30.97	-	-	Peak
724.9	22.87	-23.13	46	29.46	21.17	3	30.76	-	-	Peak
2380	46.7	-27.3	74	43.27	32.11	5.47	34.15	123	341	Peak
2380	37	-17	54	33.57	32.11	5.47	34.15	123	341	Average
2437	107.42	-	-	103.96	32.22	5.41	34.17	123	341	Peak
2437	99.15	-	-	95.69	32.22	5.41	34.17	123	341	Average
2486	36.4	-17.6	54	32.94	32.27	5.38	34.19	123	341	Average
2486	47.77	-26.23	74	44.31	32.27	5.38	34.19	123	341	Peak
8370	53.54	-20.46	74	42.54	36	10.1	35.1	100	207	Peak
8370	41.15	-12.85	54	30.15	36	10.1	35.1	100	207	Average
9741	44.85	-42.57	87.42	79.46	-10.12	10.81	35.3	100	0	Peak

Test Mode :	Mode 2	**Temperature :**	24~25℃
Test Channel :	06	**Relative Humidity :**	49~50%
Test Engineer :	Duncan Lin	**Polarization :**	Vertical
Remark :	1. 2437 MHz is Fundamental Signals which can be ignored. 2. 9741 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
30	24.63	-15.37	40	36.05	19.51	0.53	31.46	100	56	Peak
64.29	23.62	-16.38	40	48.18	6.19	0.79	31.54	-	-	Peak
162.3	25.32	-18.18	43.5	45.38	10.24	1.22	31.52	-	-	Peak
332.9	18.11	-27.89	46	33.23	14.33	1.86	31.31	-	-	Peak
503	19.11	-26.89	46	29.47	18.24	2.46	31.06	-	-	Peak
679.4	22.79	-23.21	46	30.05	20.68	2.9	30.84	-	-	Peak
2334	47.99	-26.01	74	44.59	32.02	5.51	34.13	122	354	Peak
2334	36.87	-17.13	54	33.47	32.02	5.51	34.13	122	354	Average
2437	105.89	-	-	102.44	32.19	5.43	34.17	122	354	Peak
2437	97.92	-	-	94.46	32.22	5.41	34.17	122	354	Average
2486	34.6	-19.4	54	31.14	32.27	5.38	34.19	122	354	Average
2486	45.27	-28.73	74	41.81	32.27	5.38	34.19	122	354	Peak
8277	53.39	-20.61	74	42.46	36	10.03	35.1	100	97	Peak
8277	40.59	-13.41	54	29.66	36	10.03	35.1	100	97	Average
9741	46.45	-39.44	85.89	81.06	-10.12	10.81	35.3	-	-	Peak

Test Mode :	Mode 3	**Temperature :**	24~25℃
Test Channel :	11	**Relative Humidity :**	49~50%
Test Engineer :	Duncan Lin	**Polarization :**	Horizontal
Remark :	1. 2462 MHz is Fundamental Signals which can be ignored. 2. 9848 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
129.09	21.8	-21.7	43.5	40.45	11.78	1.14	31.57	-	-	Peak
192.54	22.63	-20.87	43.5	43.96	8.88	1.29	31.5	-	-	Peak
243.3	22.89	-23.11	46	40.83	11.95	1.53	31.42	-	-	Peak
323.8	21.31	-24.69	46	36.7	14.1	1.83	31.32	-	-	Peak
710.2	23.8	-22.2	46	30.67	20.97	2.96	30.8	-	-	Peak
878.2	25.76	-20.24	46	30.19	22.97	3.31	30.71	100	182	Peak
2356	48.55	-25.45	74	45.12	32.08	5.49	34.14	100	338	Peak
2356	39.38	-14.62	54	35.95	32.08	5.49	34.14	100	338	Average
2462	107.41	-	-	103.95	32.24	5.4	34.18	100	338	Peak
2462	98.57	-	-	95.11	32.24	5.4	34.18	100	338	Average
2483.5	36.11	-17.89	54	32.65	32.27	5.38	34.19	100	338	Average
2483.5	49.56	-24.44	74	46.1	32.27	5.38	34.19	100	338	Peak
8373	54.14	-19.86	74	43.14	36	10.1	35.1	100	144	Peak
8373	40.99	-13.01	54	29.99	36	10.1	35.1	100	144	Average
9848	47.06	-40.35	87.41	81.37	-9.9	10.89	35.3	100	0	Peak

Test Mode :	Mode 3	**Temperature :**	24~25℃
Test Channel :	11	**Relative Humidity :**	49~50%
Test Engineer :	Duncan Lin	**Polarization :**	Vertical
Remark :	1. 2462 MHz is Fundamental Signals which can be ignored. 2. 9848 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
30.81	24.69	-15.31	40	36.66	18.95	0.54	31.46	104	184	Peak
160.41	24.94	-18.56	43.5	44.86	10.38	1.22	31.52	-	-	Peak
194.7	24.76	-18.74	43.5	46.09	8.86	1.3	31.49	-	-	Peak
455.4	18.57	-27.43	46	30.09	17.26	2.31	31.09	-	-	Peak
696.9	22.64	-23.36	46	29.71	20.82	2.93	30.82	-	-	Peak
895	24.99	-21.01	46	29.23	23.13	3.33	30.7	-	-	Peak
2364	46.24	-27.76	74	42.81	32.08	5.49	34.14	180	346	Peak
2364	35.63	-18.37	54	32.2	32.08	5.49	34.14	180	346	Average
2462	104.63	-	-	101.17	32.24	5.4	34.18	180	346	Peak
2462	95.82	-	-	92.36	32.24	5.4	34.18	180	346	Average
2484.61	33.48	-20.52	54	30.02	32.27	5.38	34.19	180	346	Average
2484.61	45.73	-28.27	74	42.27	32.27	5.38	34.19	180	346	Peak
8310	53.52	-20.48	74	42.57	36	10.05	35.1	100	97	Peak
8310	40.96	-13.04	54	30.01	36	10.05	35.1	100	97	Average
9848	48.19	-36.44	84.63	82.5	-9.9	10.89	35.3	100	0	Peak

Test Mode :	Mode 4	**Temperature :**	24~25℃
Test Channel :	01	**Relative Humidity :**	49~50%
Test Engineer :	Duncan Lin	**Polarization :**	Horizontal
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 9648 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
30	22.73	-17.27	40	34.15	19.51	0.53	31.46	-	-	Peak
123.69	27.15	-16.35	43.5	45.7	11.89	1.12	31.56	110	165	Peak
187.41	23.49	-20.01	43.5	44.78	8.96	1.27	31.52	-	-	Peak
321.7	21.43	-24.57	46	36.88	14.05	1.82	31.32	-	-	Peak
674.5	21.99	-24.01	46	29.31	20.64	2.89	30.85	-	-	Peak
856.5	24.44	-21.56	46	29.13	22.76	3.28	30.73	-	-	Peak
2389.99	50.55	-3.45	54	47.12	32.13	5.46	34.16	103	333	Average
2389.99	67.5	-6.5	74	64.07	32.13	5.46	34.16	103	333	Peak
2412	98.01	-	-	94.57	32.16	5.44	34.16	103	333	Average
2412	107.65	-	-	104.21	32.16	5.44	34.16	103	333	Peak
2484	49.61	-24.39	74	46.15	32.27	5.38	34.19	103	333	Peak
2484	37.53	-16.47	54	34.07	32.27	5.38	34.19	103	333	Average
8430	53.72	-20.28	74	42.69	36	10.13	35.1	100	54	Peak
8430	40.81	-13.19	54	29.78	36	10.13	35.1	100	54	Average
9648	42.64	-45.01	87.65	77.52	-10.32	10.74	35.3	100	0	Peak

Test Mode :	Mode 4	**Temperature :**	24~25℃
Test Channel :	01	**Relative Humidity :**	49~50%
Test Engineer :	Duncan Lin	**Polarization :**	Vertical
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 9648 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
32.97	26.01	-13.99	40	39.08	17.84	0.56	31.47	116	203	Peak
159.33	25.2	-18.3	43.5	45.04	10.46	1.22	31.52	-	-	Peak
194.7	24.59	-18.91	43.5	45.92	8.86	1.3	31.49	-	-	Peak
400.1	17.56	-28.44	46	30.47	16.13	2.14	31.18	-	-	Peak
618.5	22.91	-23.09	46	30.85	20.21	2.75	30.9	-	-	Peak
820.1	24.21	-21.79	46	29.3	22.42	3.19	30.7	-	-	Peak
2389.99	45.73	-8.27	54	42.3	32.13	5.46	34.16	124	353	Average
2389.99	62.76	-11.24	74	59.33	32.13	5.46	34.16	124	353	Peak
2412	95.38	-	-	91.94	32.16	5.44	34.16	124	353	Average
2412	104.83	-	-	101.39	32.16	5.44	34.16	124	353	Peak
2484	46.19	-27.81	74	42.73	32.27	5.38	34.19	124	353	Peak
2484	35.06	-18.94	54	31.6	32.27	5.38	34.19	124	353	Average
8334	53.73	-20.27	74	42.77	36	10.06	35.1	100	78	Peak
8334	40.89	-13.11	54	29.93	36	10.06	35.1	100	78	Average
9648	44.16	-40.67	84.83	79.04	-10.32	10.74	35.3	100	0	Peak

Test Mode :	Mode 5	**Temperature :**	24~25℃
Test Channel :	06	**Relative Humidity :**	49~50%
Test Engineer :	Duncan Lin	**Polarization :**	Horizontal
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
31.62	20.8	-19.2	40	33.31	18.4	0.55	31.46	-	-	Peak
128.82	25.23	-18.27	43.5	43.88	11.78	1.14	31.57	127	232	Peak
194.7	22.65	-20.85	43.5	43.98	8.86	1.3	31.49	-	-	Peak
323.8	21.16	-24.84	46	36.55	14.1	1.83	31.32	-	-	Peak
668.9	22.21	-23.79	46	29.58	20.6	2.88	30.85	-	-	Peak
845.3	25.09	-20.91	46	29.9	22.66	3.26	30.73	-	-	Peak
2390	51.97	-22.03	74	48.54	32.13	5.46	34.16	125	341	Peak
2390	40.49	-13.51	54	37.06	32.13	5.46	34.16	125	341	Average
2437	107.64	-	-	104.19	32.22	5.41	34.18	125	341	Peak
2437	97.96	-	-	94.5	32.22	5.41	34.17	125	341	Average
2484	39.02	-14.98	54	35.56	32.27	5.38	34.19	125	341	Average
2484	50.61	-23.39	74	47.15	32.27	5.38	34.19	125	341	Peak
8298	53.9	-20.1	74	42.96	36	10.04	35.1	100	75	Peak
8298	40.82	-13.18	54	29.88	36	10.04	35.1	100	75	Average
9748	43.5	-44.14	87.64	78.11	-10.12	10.81	35.3	100	0	Peak

Test Mode :	Mode 5	**Temperature :**	24~25℃
Test Channel :	06	**Relative Humidity :**	49~50%
Test Engineer :	Duncan Lin	**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
32.7	24.93	-15.07	40	38	17.84	0.56	31.47	163	174	Peak
137.46	24.95	-18.55	43.5	43.6	11.71	1.19	31.55	-	-	Peak
162.3	25.35	-18.15	43.5	45.41	10.24	1.22	31.52	-	-	Peak
326.6	17.4	-28.6	46	32.69	14.18	1.84	31.31	-	-	Peak
581.4	21.25	-24.75	46	29.85	19.7	2.64	30.94	-	-	Peak
778.1	23.63	-22.37	46	29.31	21.91	3.1	30.69	-	-	Peak
2380	50.57	-23.43	74	47.14	32.11	5.47	34.15	123	354	Peak
2380	39.12	-14.88	54	35.69	32.11	5.47	34.15	123	354	Average
2437	104.83	-	-	101.38	32.19	5.43	34.17	123	354	Peak
2437	95.41	-	-	91.95	32.22	5.41	34.17	123	354	Average
2484	37.1	-16.9	54	33.64	32.27	5.38	34.19	123	354	Average
2484	49.07	-24.93	74	45.61	32.27	5.38	34.19	123	354	Peak
8409	53.57	-20.43	74	42.55	36	10.12	35.1	100	177	Peak
8409	40.98	-39.08	54	29.96	36	10.12	35.1	100	177	Average
9748	45.75	-39.08	84.83	80.33	-10.1	10.82	35.3	100	0	Peak

Test Mode :	Mode 6	**Temperature :**	24~25℃
Test Channel :	11	**Relative Humidity :**	49~50%
Test Engineer :	Duncan Lin	**Polarization :**	Horizontal
Remark :	1. 2462 MHz is Fundamental Signals which can be ignored. 2. 9848 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
30.27	21.22	-18.78	40	32.64	19.51	0.53	31.46	135	206	Peak
150.69	21.92	-21.58	43.5	41.07	11.2	1.21	31.56	-	-	Peak
187.41	23.04	-20.46	43.5	44.33	8.96	1.27	31.52	-	-	Peak
330.1	21.6	-24.4	46	36.8	14.26	1.85	31.31	-	-	Peak
589.8	20.94	-25.06	46	29.34	19.87	2.66	30.93	-	-	Peak
780.9	23.53	-22.47	46	29.16	21.95	3.11	30.69	-	-	Peak
2382	51.09	-22.91	74	47.66	32.11	5.47	34.15	102	323	Peak
2382	39.17	-14.83	54	35.74	32.11	5.47	34.15	102	323	Average
2462	107.46	-	-	104	32.24	5.4	34.18	102	323	Peak
2462	97.59	-	-	94.13	32.24	5.4	34.18	102	323	Average
2483.5	48.4	-5.6	54	44.94	32.27	5.38	34.19	102	323	Average
2483.5	66.13	-7.87	74	62.67	32.27	5.38	34.19	102	323	Peak
8313	54.69	-19.31	74	43.74	36	10.05	35.1	100	64	Peak
8313	40.74	-13.26	54	29.79	36	10.05	35.1	100	64	Average
9848	46.55	-40.91	87.46	80.86	-9.9	10.89	35.3	100	0	Peak

Test Mode :	Mode 6	**Temperature :**	24~25℃
Test Channel :	11	**Relative Humidity :**	49~50%
Test Engineer :	Duncan Lin	**Polarization :**	Vertical
Remark :	1. 2462 MHz is Fundamental Signals which can be ignored. 2. 9848 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
32.7	25.26	-14.74	40	38.33	17.84	0.56	31.47	142	202	Peak
137.73	25.19	-18.31	43.5	43.84	11.71	1.19	31.55	-	-	Peak
160.41	24.95	-18.55	43.5	44.87	10.38	1.22	31.52	-	-	Peak
430.2	18.23	-27.77	46	30.36	16.75	2.25	31.13	-	-	Peak
598.2	21.52	-24.48	46	29.73	20.03	2.68	30.92	-	-	Peak
797	23.95	-22.05	46	29.31	22.18	3.14	30.68	-	-	Peak
2388	48.42	-25.58	74	44.98	32.13	5.46	34.15	100	314	Peak
2388	35.97	-18.03	54	32.53	32.13	5.46	34.15	100	314	Average
2462	102.2	-	-	98.74	32.24	5.4	34.18	100	314	Peak
2462	92.76	-	-	89.3	32.24	5.4	34.18	100	314	Average
2483.5	42.55	-11.45	54	39.09	32.27	5.38	34.19	100	314	Average
2483.5	60.31	-13.69	74	56.85	32.27	5.38	34.19	100	314	Peak
8253	53.68	-20.32	74	42.76	36	10.02	35.1	100	61	Peak
8253	40.91	-13.09	54	29.99	36	10.02	35.1	100	61	Average
9848	47.67	-34.53	82.20	81.98	-9.9	10.89	35.3	100	0	Peak

3.8 Antenna Requirements

3.8.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.8.2 Antenna Connected Construction

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

3.8.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
System Simulator	R&S	CMU200	117995	N/A	Mar. 19, 2009	Mar. 18, 2011	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 23, 2009	Jun. 22, 2010	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 17, 2009	Sep. 16, 2010	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 10, 2009	Sep. 09, 2010	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Feb. 25, 2010	Feb. 24, 2011	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 25, 2010	Feb. 24, 2011	Conducted (TH02-HY)
Thermal Chamber	TEN BILLION	TTH-D35P	TBN-930701	N/A	Jul. 29, 2009	Jul. 28, 2010	Conducted (TH02-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2009	Oct. 30, 2010	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 04, 2009	Dec. 03, 2010	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 20, 2009	Aug. 19, 2010	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 14, 2009	Oct. 13, 2010	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec.09,2009	Dec. 08, 2010	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Mar. 27, 2010	Mar. 26, 2011	Radiation (03CH07-HY)
System Simulator	R&S	CMU200	105934	N/A	Nov. 11, 2008	Nov. 10, 2010	-

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**				

Appendix A. Photographs of EUT

Please refer to Sporton report number EP012605-02 as below.