



FCC RF Test Report

APPLICANT : Compal Communications, INC.
EQUIPMENT : SMART PHONE
BRAND NAME : COMPALCOMM
MODEL NAME : CAP6
FCC ID : QQX-CAP6
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Jan. 03, 2011 and completely tested on Jan. 12, 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:

Anderson Chiu

Anderson Chiu / Deputy Manager



SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR110305B	Rev. 01	Initial issue of report	Jan. 21, 2011

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	A8.4	Power Output	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.4	15.247(d)	A8.5	Spurious Emission	$< 20\text{ dBc}$	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.6	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 7.2 dB at 1.782 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 10.63 dB at 2331.09 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Compal Communications, INC.

No. 385, Yangguang Street, Neihu, Taipei (114), Taiwan, R.O.C.

1.2 Manufacturer

Compal Communications (Nanjing) Co., Ltd.

Nanjing Jiangning Export Processing Zone (South Area) No. 68-2 Suyuan Street

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	SMART PHONE
Brand Name	COMPALCOMM
Model Name	CAP6
FCC ID	QQX-CAP6
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 : 17.29 dBm (0.05 W) 802.11g : 11.94 dBm (0.02 W)
Antenna Type	Fixed Internal Antenna with gain -4.1 dBi
HW Version	0A
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 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH07-HY	722060/4086B-1

1.5 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 (Measurement Guidelines of DTS)
- ANSI C63.4-2003
- IC RSS-210 Issue 8

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B (DoC), recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

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	17.05	17.2	17.17	17.29
CH 06	2437 MHz	16.82	-	-	17.23
CH 11	2462 MHz	16.93	-	-	17.24

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	11.84	-	-	-	-	-	-	-
CH 06	2437 MHz	11.74	-	-	-	-	-	-	-
CH 11	2462 MHz	11.94	11.74	11.04	10.97	10.78	10.49	10.11	10.47

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.

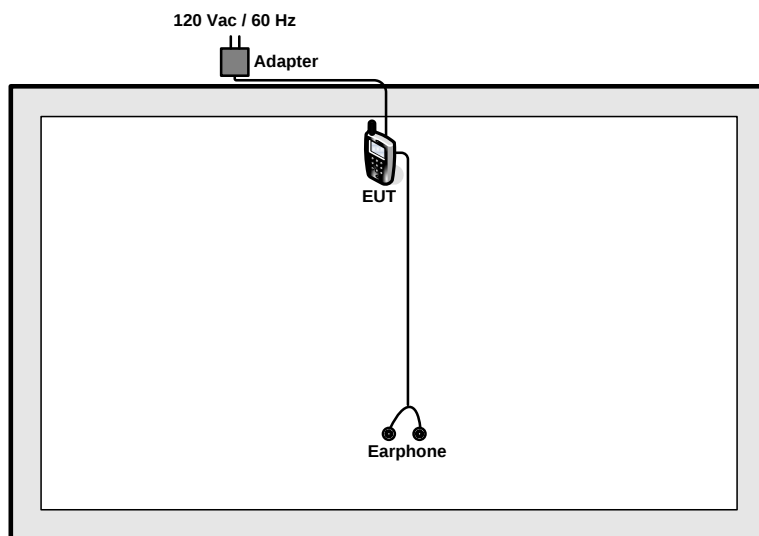
2.2 Test Mode

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 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.

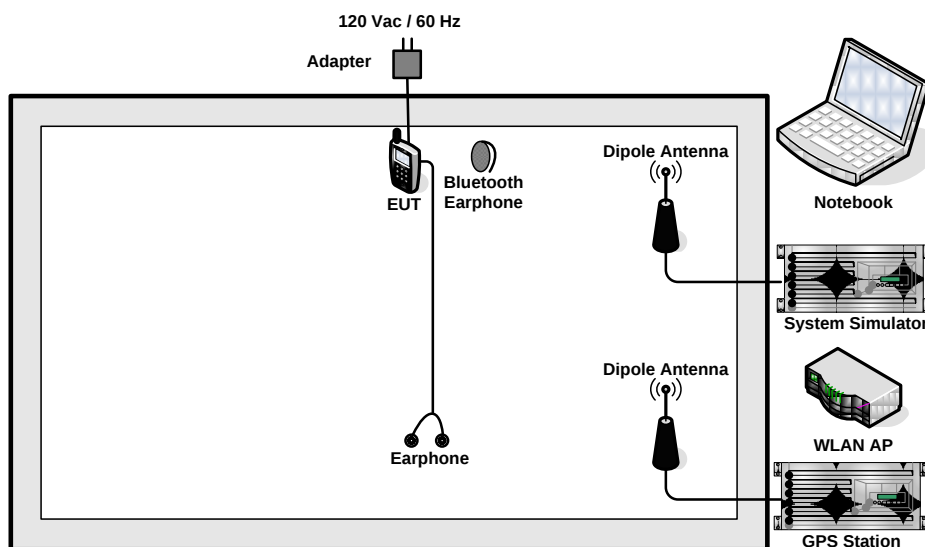
Test Cases		
Test Item	802.11b	802.11g
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz	Mode 4 : 802.11g CH01_2412 MHz
	Mode 2 : 802.11b CH06_2437 MHz	Mode 5 : 802.11g CH06_2437 MHz
	Mode 3 : 802.11b CH11_2462 MHz	Mode 6 : 802.11g CH11_2462 MHz
Radiated TCs	Mode 1 : 802.11b CH01_2412 MHz	Mode 4 : 802.11g CH01_2412 MHz
	Mode 2 : 802.11b CH06_2437 MHz	Mode 5 : 802.11g CH06_2437 MHz
	Mode 3 : 802.11b CH11_2462 MHz	Mode 6 : 802.11g CH11_2462 MHz
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN Link + GPS Rx + Earphone + USB Cable (Charging from Adapter)	

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

The programmed RF utility, "WiFi Tx" 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.

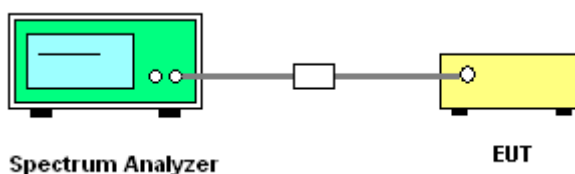
3.1.2 Measuring Instruments

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



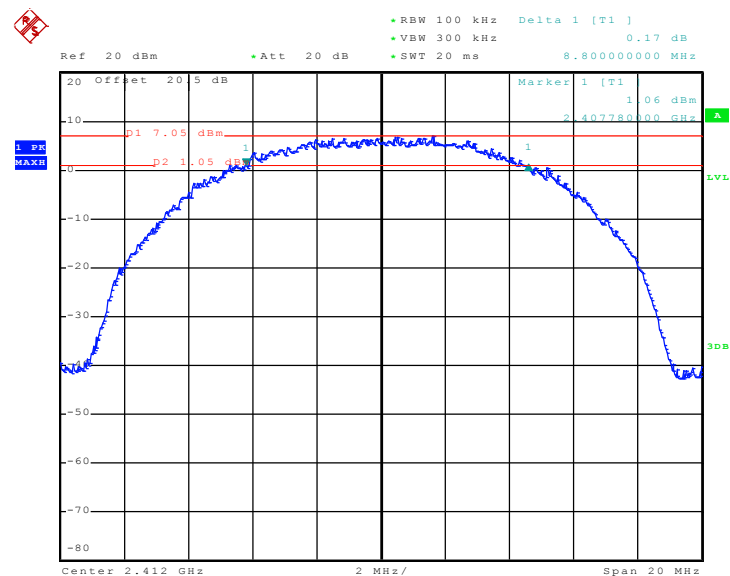


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	48~51%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	8.80	0.5	Pass
06	2437	8.44	0.5	Pass
11	2462	9.24	0.5	Pass

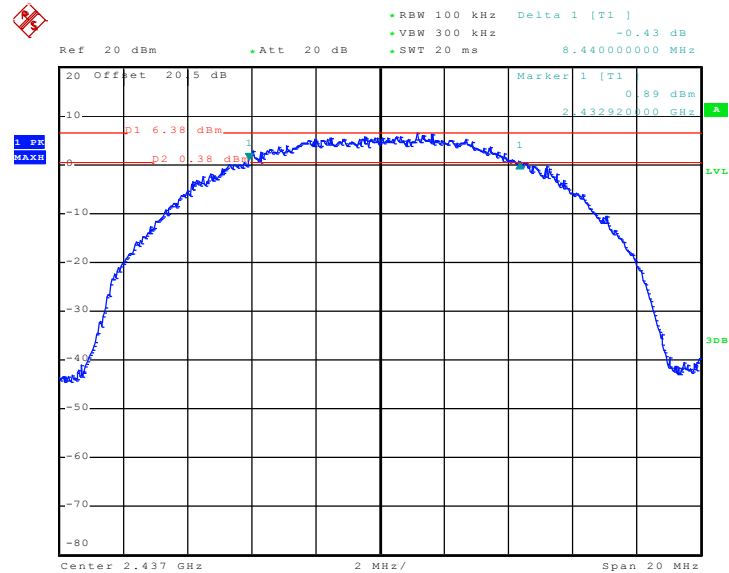
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 11.JAN.2011 15:16:01

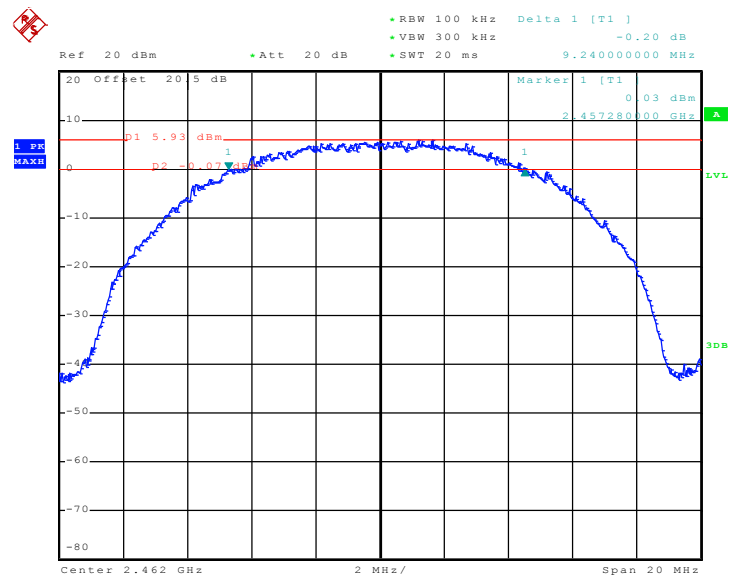


Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



Date: 11.JAN.2011 15:30:54

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

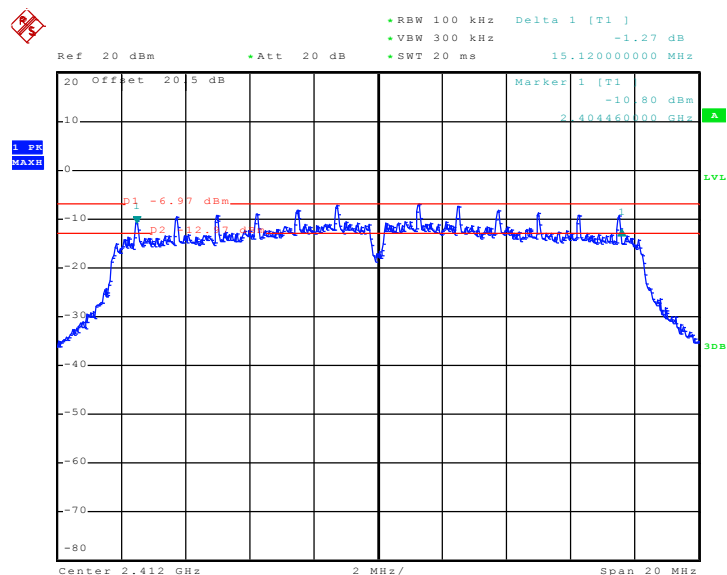


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Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Phoenix Chen	Relative Humidity :	48~51%

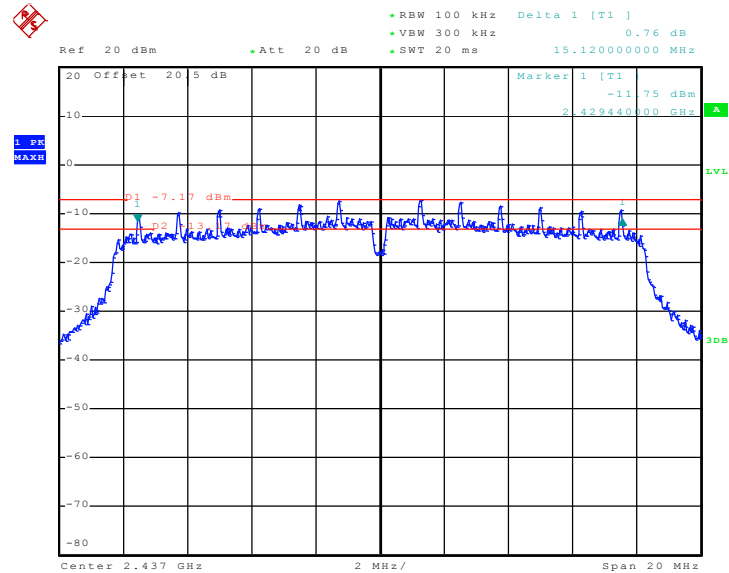
Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.12	0.5	Pass
06	2437	15.12	0.5	Pass
11	2462	15.10	0.5	Pass

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

Date: 11.JAN.2011 15:57:37

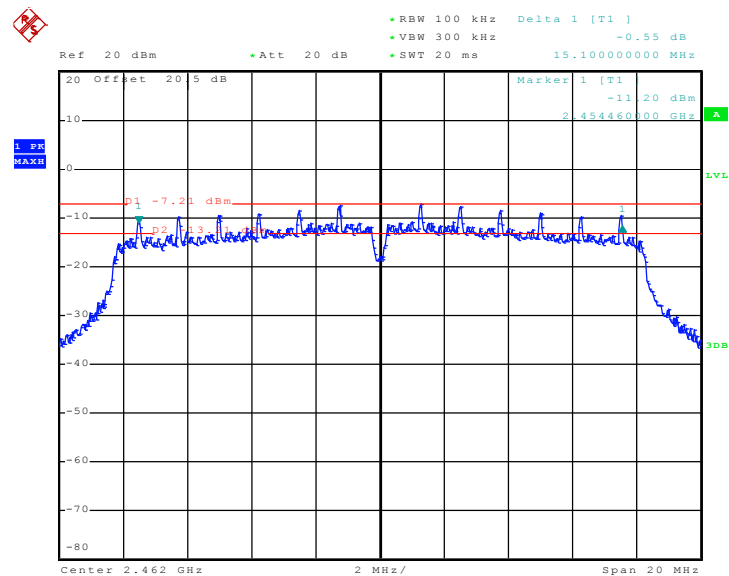


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



Date: 11.JAN.2011 16:13:30

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



Date: 11.JAN.2011 16:25:27

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.

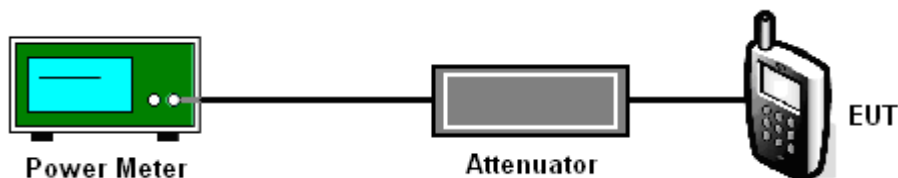
3.2.2 Measuring Instruments

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 :	48~51%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	17.29	30	Pass
06	2437	17.23	30	Pass
11	2462	17.24	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	48~51%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	11.84	30	Pass
06	2437	11.74	30	Pass
11	2462	11.94	30	Pass

3.3 Band Edges Measurement

3.3.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB.

3.3.2 Measuring Instruments

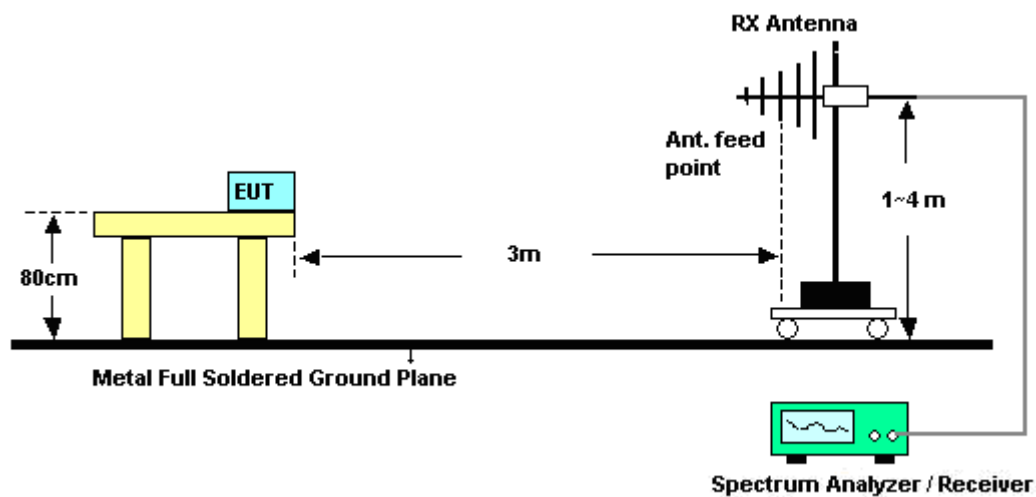
See list of measuring instruments of this test report.

3.3.3 Test Procedures

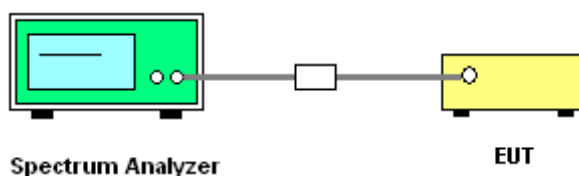
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) $\geq$ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized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

3.3.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>





3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	21~24℃
Test Band :	802.11b	Relative Humidity :	47~53%
Test Channel :	01	Test Engineer :	Jason 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
2333.94	52.64	-21.36	74	48.43	32.09	5.95	33.83	200	216	Peak
2333.94	42.6	-11.4	54	38.39	32.09	5.95	33.83	200	216	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
2331.09	54.12	-19.88	74	49.93	32.09	5.92	33.82	100	255	Peak
2331.09	43.37	-10.63	54	39.18	32.09	5.92	33.82	100	255	Average

Test Mode :	Mode 3	Temperature :	21~24℃
Test Band :	802.11b	Relative Humidity :	47~53%
Test Channel :	11	Test Engineer :	Jason 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	54.41	-19.59	74	49.85	32.28	6.18	33.9	200	234	Peak
2483.5	41.77	-12.23	54	37.21	32.28	6.18	33.9	200	234	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.66	49.48	-24.52	74	44.92	32.28	6.18	33.9	100	181	Peak
2483.66	36.6	-17.4	54	32.04	32.28	6.18	33.9	100	181	Average



Test Mode :	Mode 4	Temperature :	21~24℃
Test Band :	802.11g	Relative Humidity :	47~53%
Test Channel :	01	Test Engineer :	Jason 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	52.46	-21.54	74	48.1	32.18	6.03	33.85	172	10	Peak
2389.61	37.71	-16.29	54	33.35	32.18	6.03	33.85	172	10	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	51.44	-22.56	74	47.08	32.18	6.03	33.85	100	255	Peak
2389.99	36.63	-17.37	54	32.27	32.18	6.03	33.85	100	255	Average

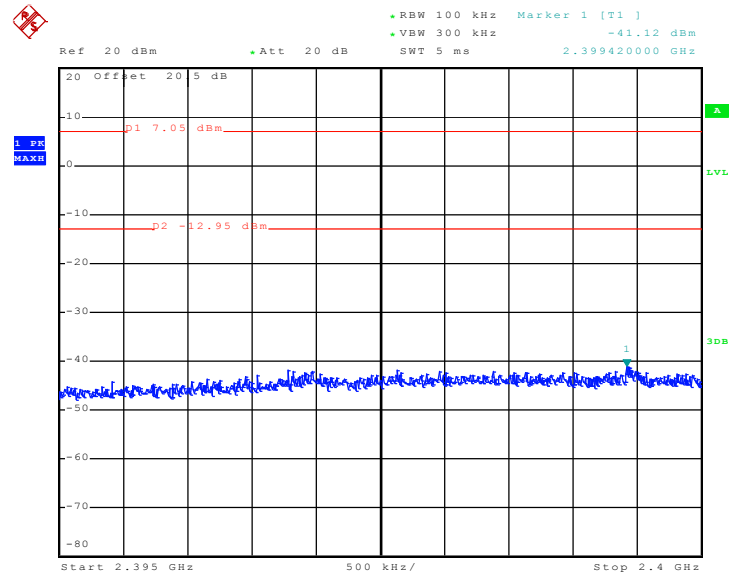
Test Mode :	Mode 6	Temperature :	21~24℃
Test Band :	802.11g	Relative Humidity :	47~53%
Test Channel :	11	Test Engineer :	Jason Wang

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	58.14	-15.86	74	53.58	32.28	6.18	33.9	197	4	Peak
2483.5	40.23	-13.77	54	35.67	32.28	6.18	33.9	197	4	Average

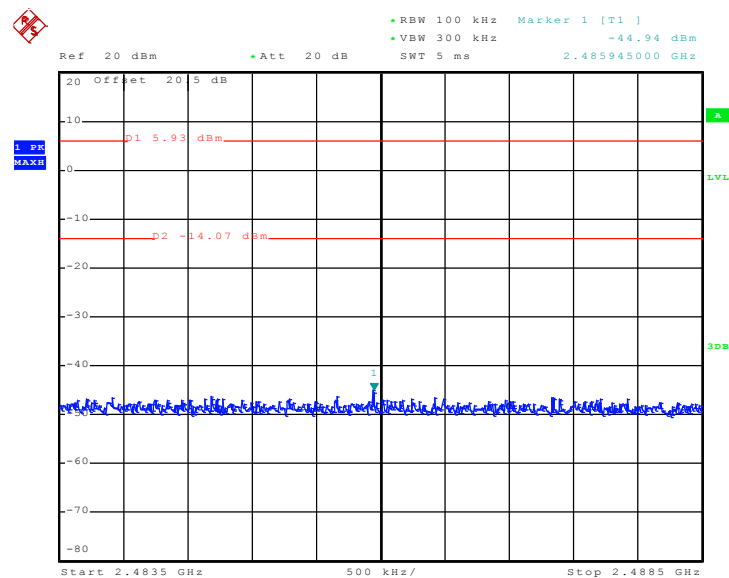
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	57.4	-16.6	74	52.84	32.28	6.18	33.9	100	332	Peak
2483.5	38.67	-15.33	54	34.11	32.28	6.18	33.9	100	332	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 :	48~51%
Test Channel :	01 and 11	Test Engineer :	Phoenix Chen

Low Band Edge Plot on 802.11b Channel 01

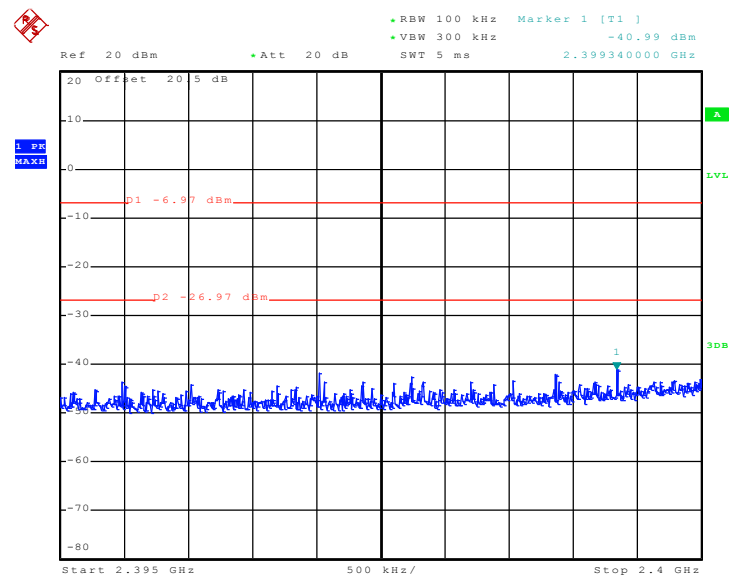
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High Band Edge Plot on 802.11b Channel 11

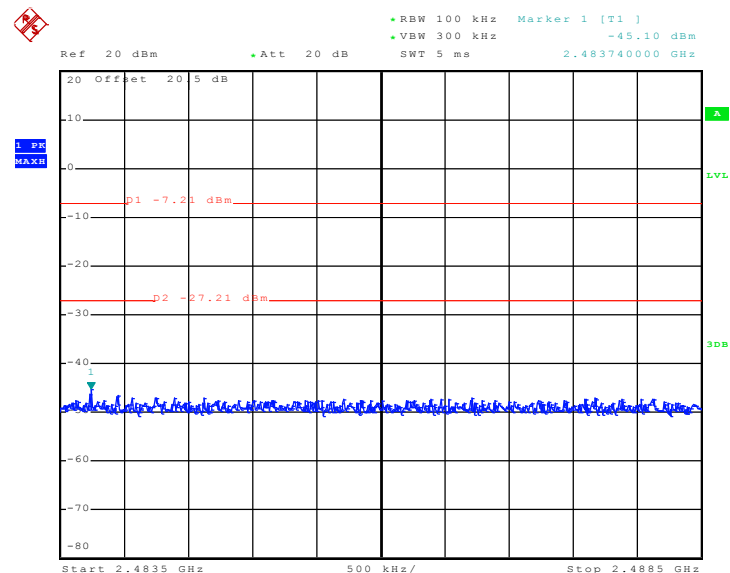
Date: 11.JAN.2011 15:44:45



Test Mode :	Mode 4 and 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	48~51%
Test Channel :	01 and 11	Test Engineer :	Phoenix Chen

Low Band Edge Plot on 802.11g Channel 01

Date: 11.JAN.2011 15:58:47

High Band Edge Plot on 802.11g Channel 11

Date: 11.JAN.2011 16:26:14

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.

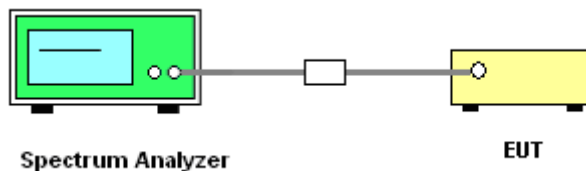
3.4.2 Measuring Instruments

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

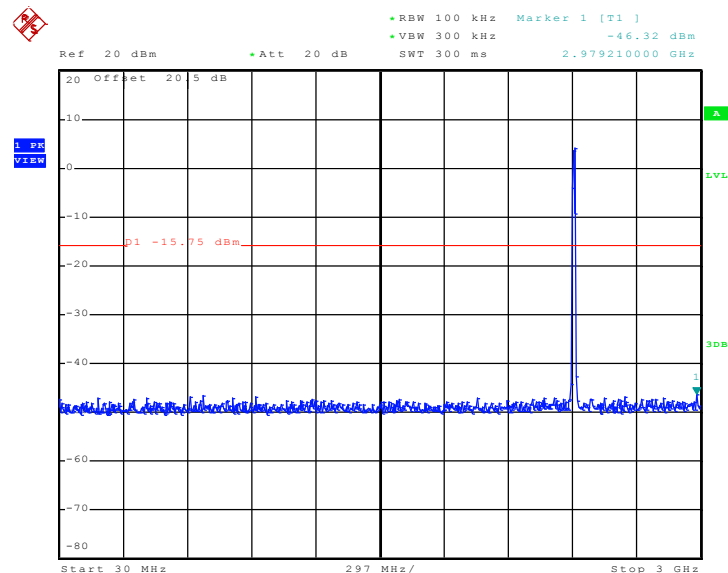
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

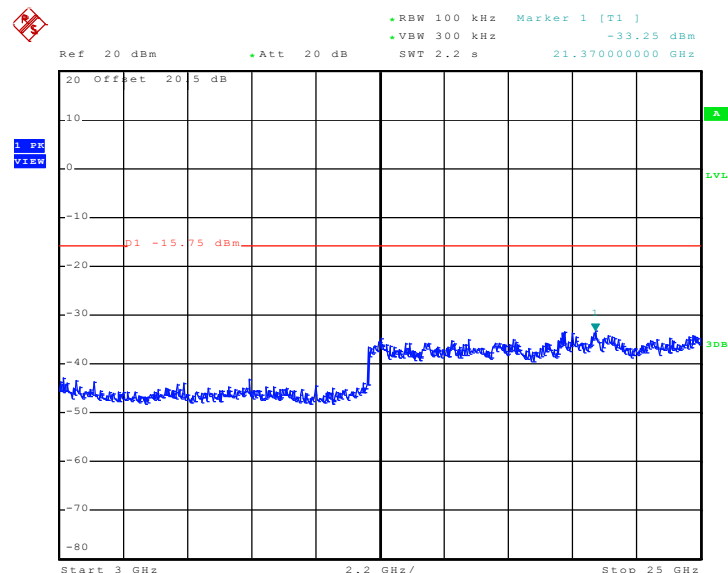
Test Mode :	Mode 1	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	48~51%
Test Channel :	01	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 11.JAN.2011 16:40:41

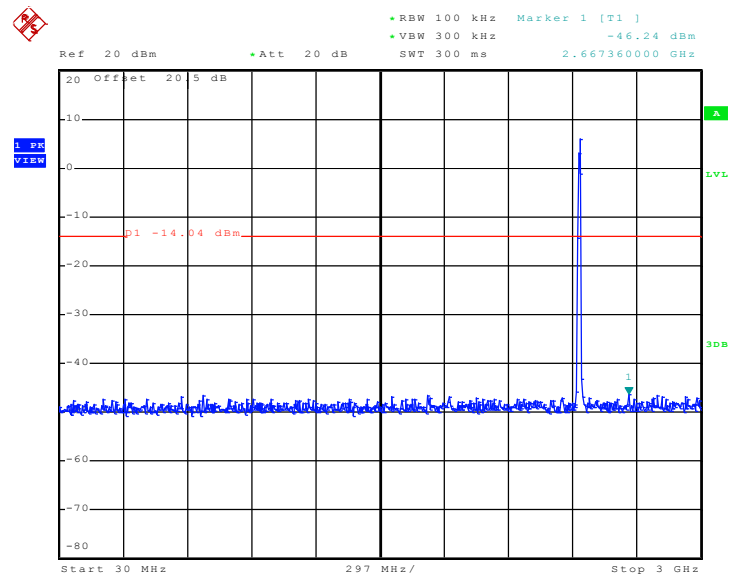
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



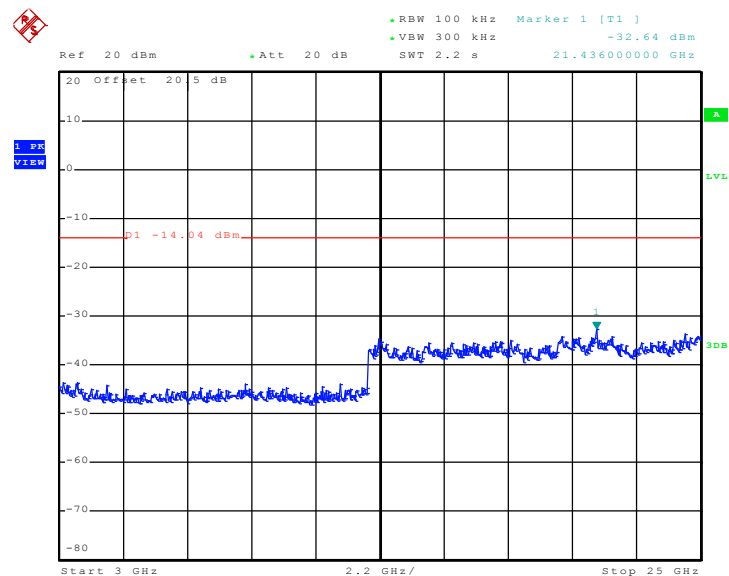
Date: 11.JAN.2011 16:40:58



Test Mode :	Mode 2	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	48~51%
Test Channel :	06	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

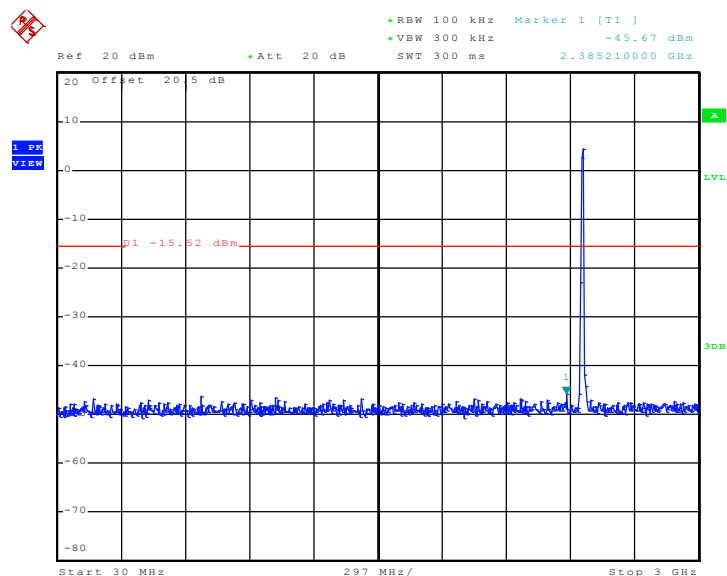
Date: 11.JAN.2011 15:40:39

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 11.JAN.2011 15:40:57

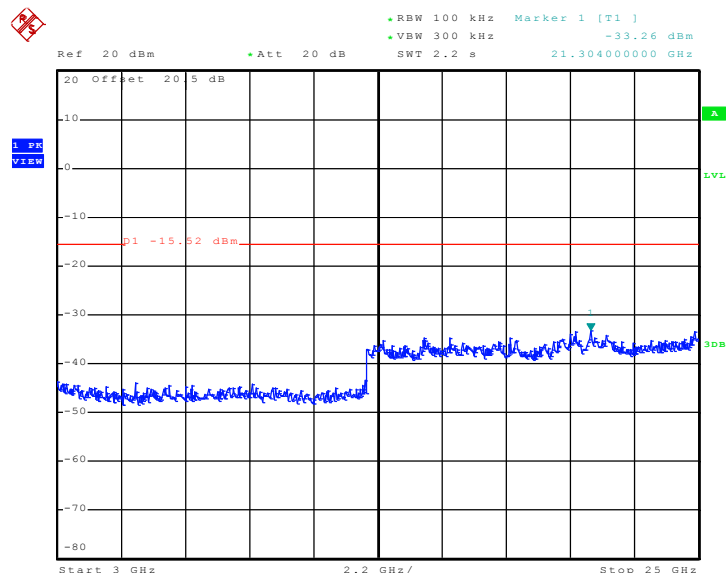
Test Mode :	Mode 3	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	48~51%
Test Channel :	11	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 11.JAN.2011 15:54:16

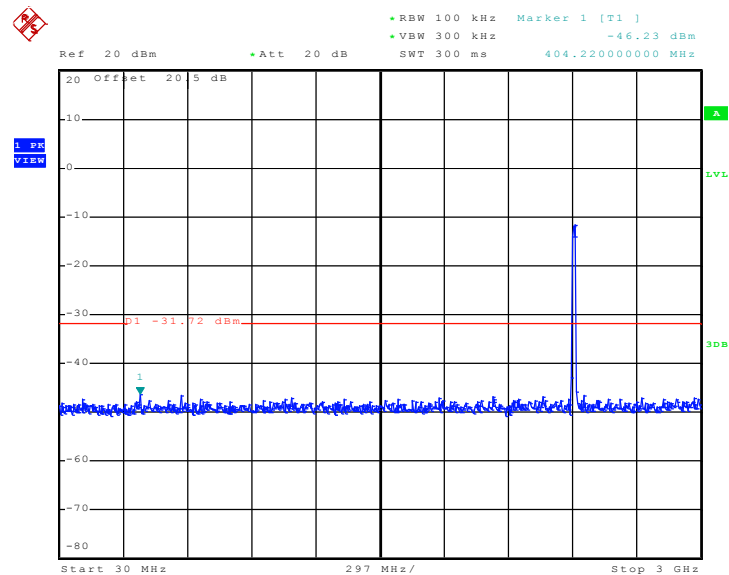
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



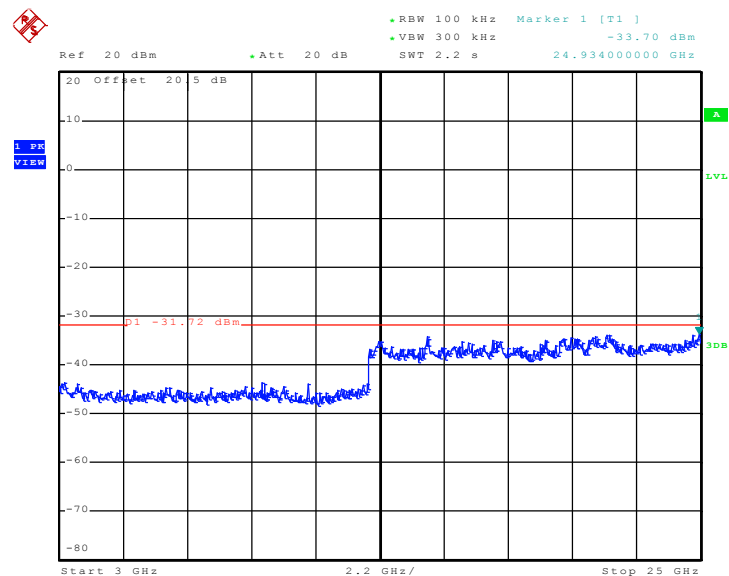
Date: 11.JAN.2011 15:54:34



Test Mode :	Mode 4	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	48~51%
Test Channel :	01	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 11.JAN.2011 16:11:08

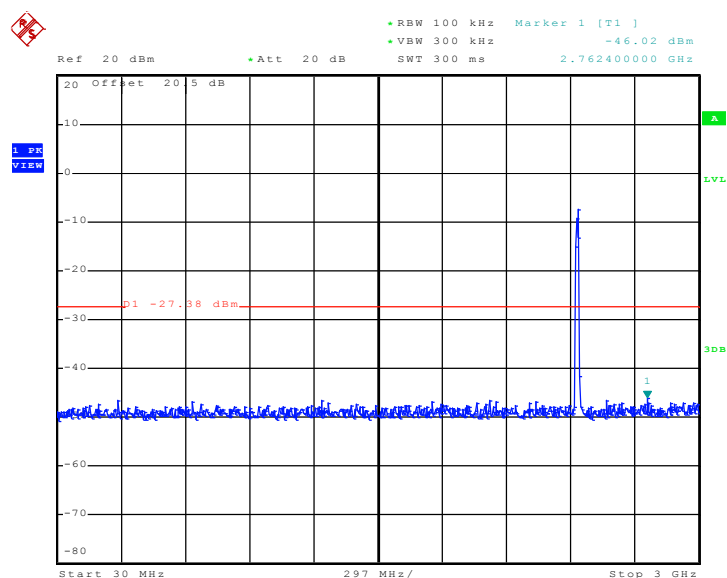
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 11.JAN.2011 16:11:25



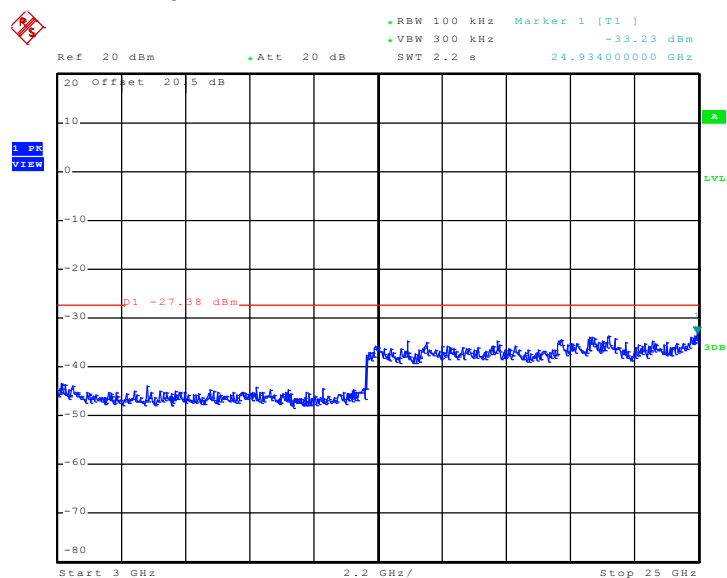
Test Mode :	Mode 5	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	48~51%
Test Channel :	06	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 11.JAN.2011 16:23:21

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

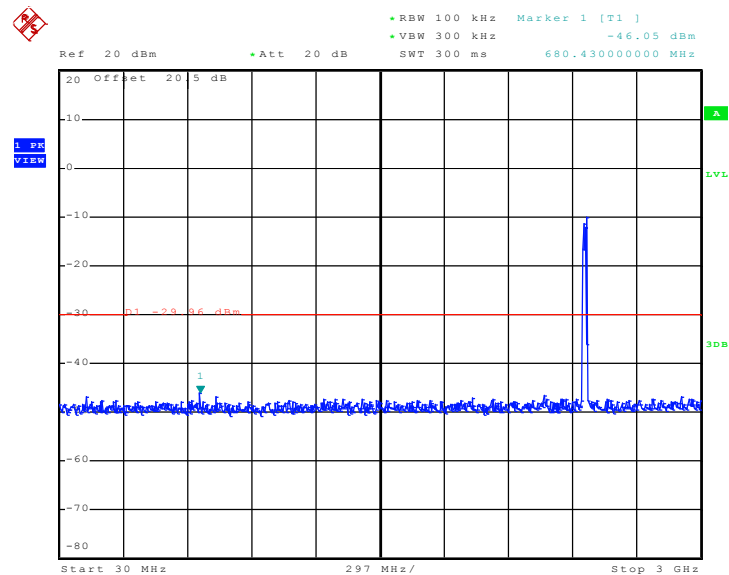


Date: 11.JAN.2011 16:23:38



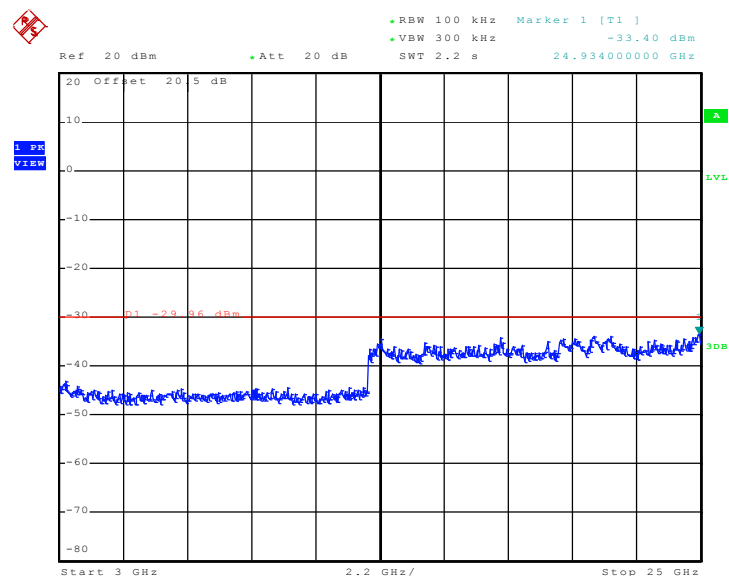
Test Mode :	Mode 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	48~51%
Test Channel :	11	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 11.JAN.2011 16:35:36

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 11.JAN.2011 16:35:54

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.

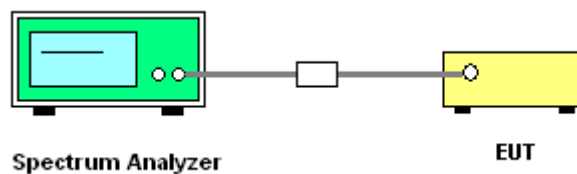
3.5.2 Measuring Instruments

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.

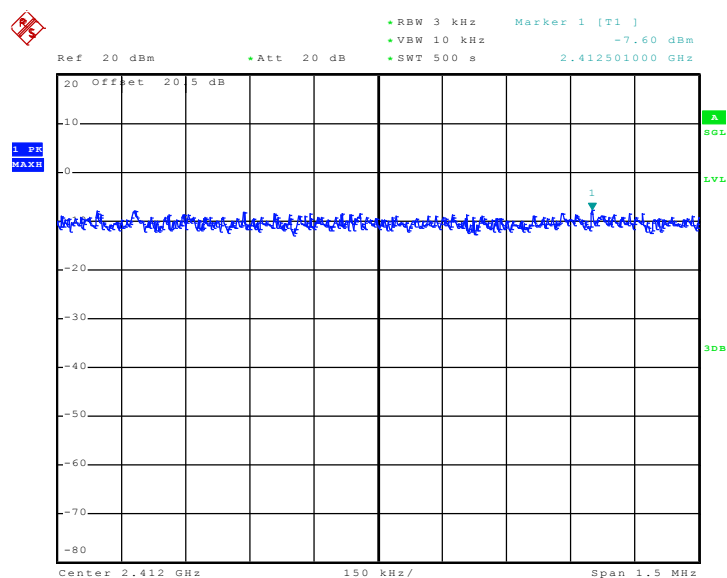
3.5.4 Test Setup



**3.5.5 Test Result of Power Spectral Density**

Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	48~51%

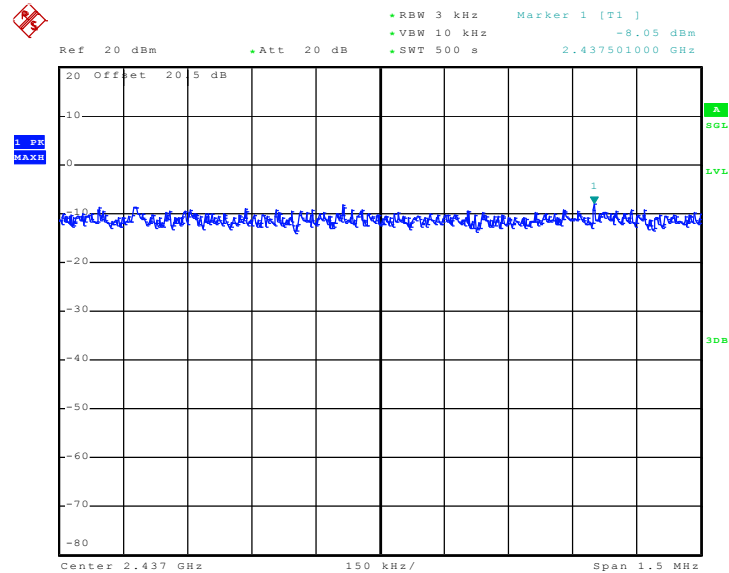
Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-7.60	8	Pass
06	2437	-8.05	8	Pass
11	2462	-8.46	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01

Date: 11.JAN.2011 15:26:45

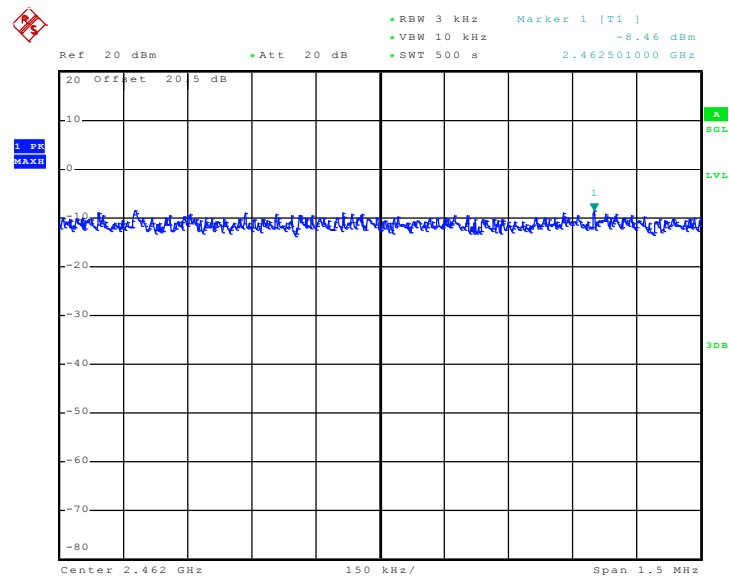


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 11.JAN.2011 15:40:18

Mode 3 : PSD Plot on 802.11b Channel 11

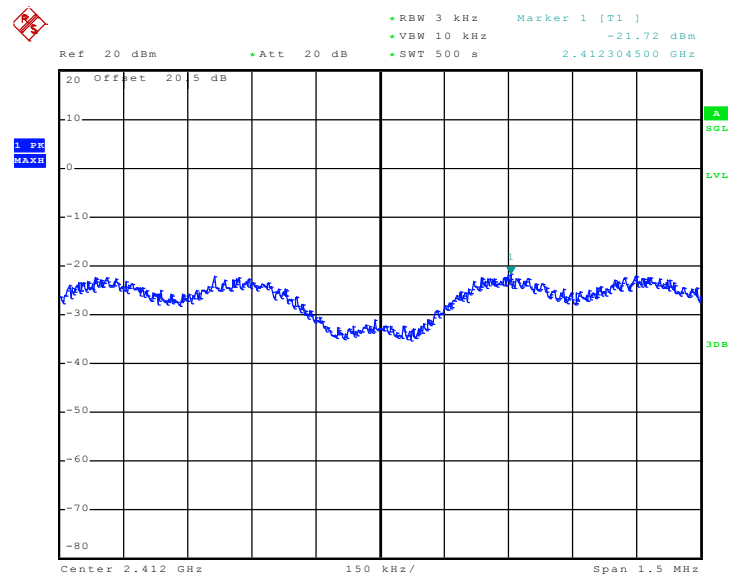


Date: 11.JAN.2011 15:53:55



Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Phoenix Chen	Relative Humidity :	48~51%

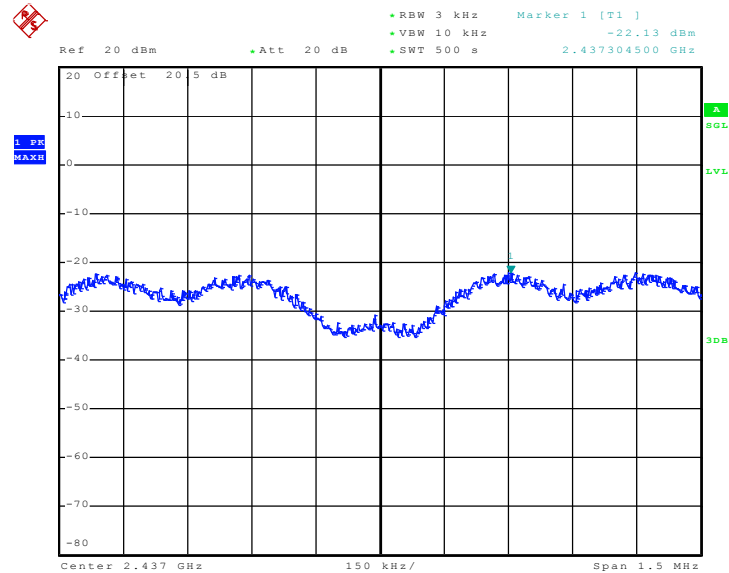
Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-21.72	8	Pass
06	2437	-22.13	8	Pass
11	2462	-21.96	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01

Date: 11.JAN.2011 16:10:46

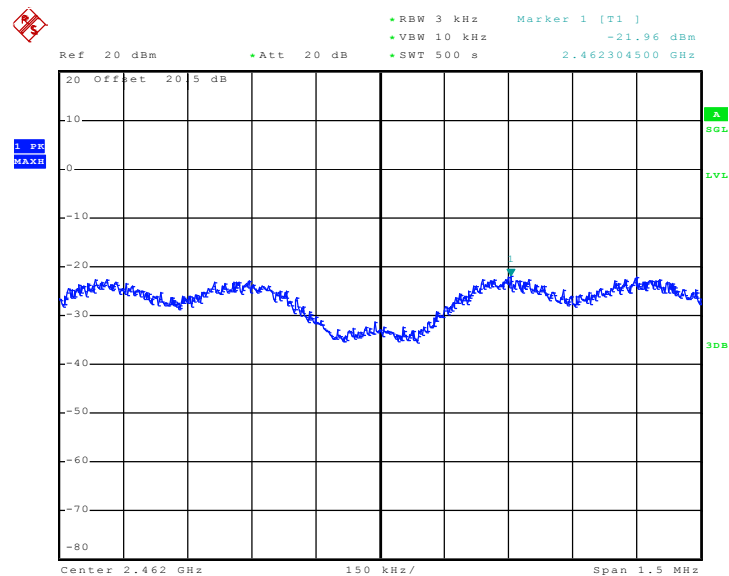


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 11.JAN.2011 16:22:59

Mode 6 : PSD Plot on 802.11g Channel 11



Date: 11.JAN.2011 16:35:15

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

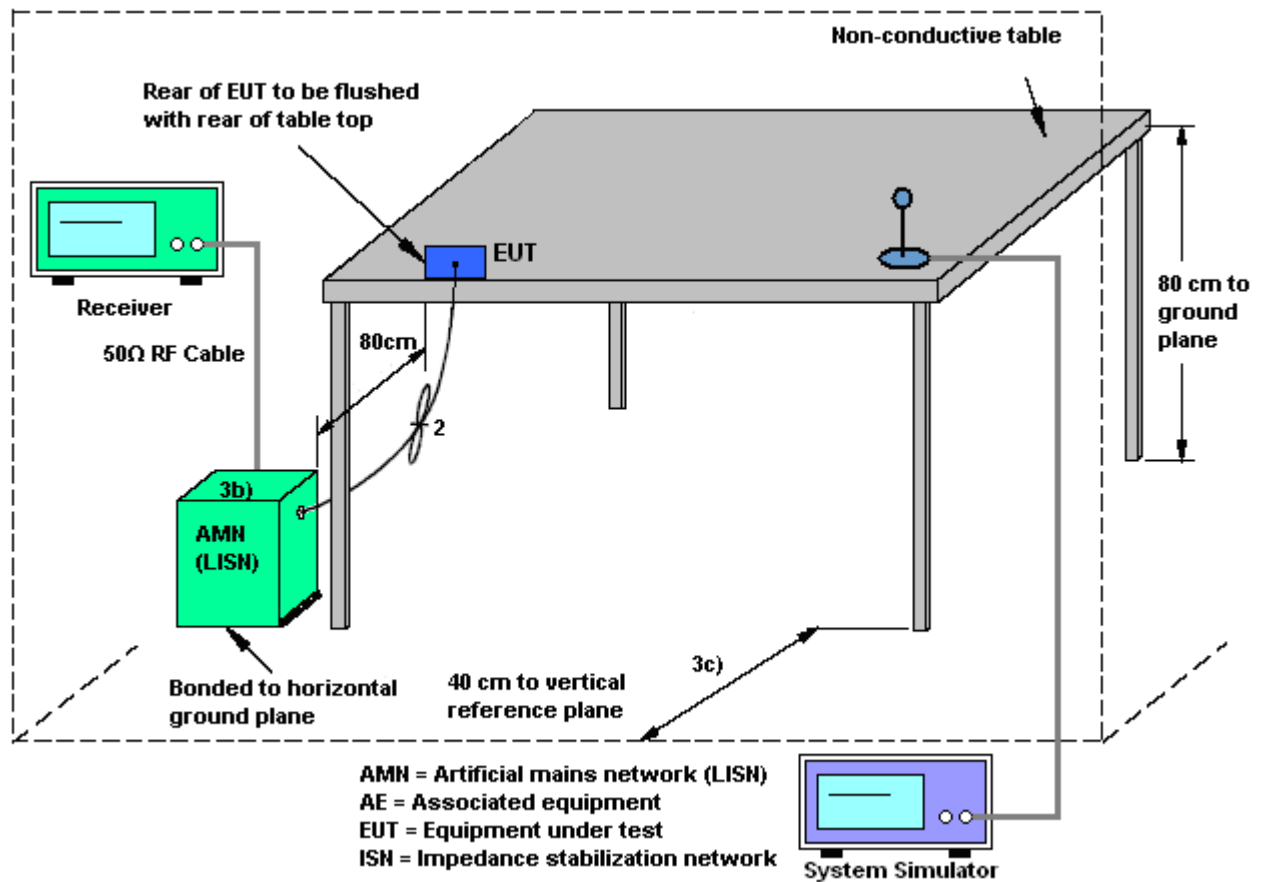
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

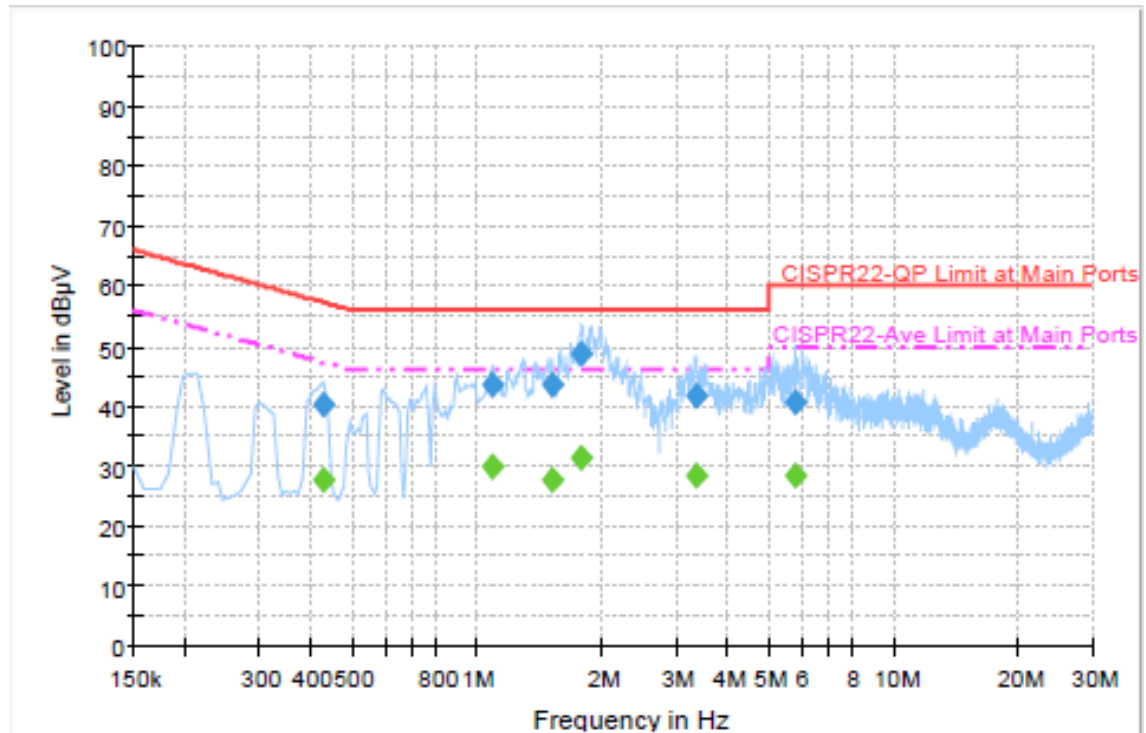
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network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

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + GPS Rx + Earphone + USB Cable (Charging from Adapter)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

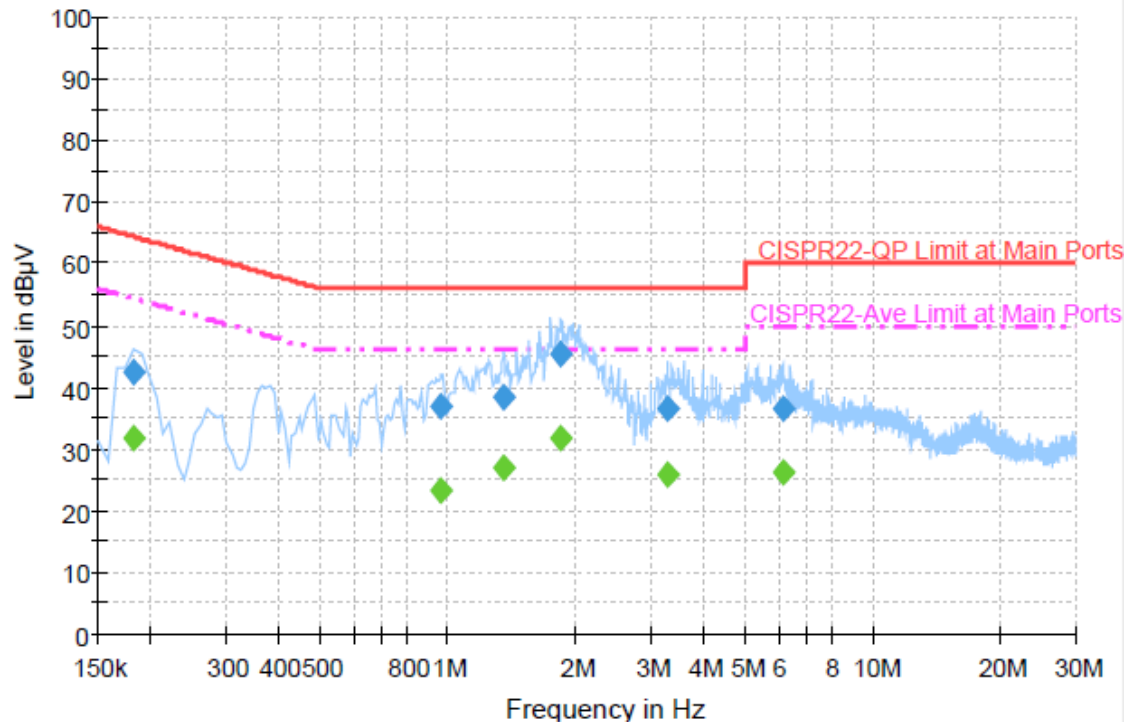
Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.430000	40.1	Off	L1	19.4	17.2	57.3
1.086000	43.7	Off	L1	19.4	12.3	56.0
1.518000	43.6	Off	L1	19.4	12.4	56.0
1.782000	48.8	Off	L1	19.4	7.2	56.0
3.374000	41.6	Off	L1	19.5	14.4	56.0
5.838000	40.4	Off	L1	19.5	19.6	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.430000	27.7	Off	L1	19.4	19.6	47.3
1.086000	30.0	Off	L1	19.4	16.0	46.0
1.518000	27.8	Off	L1	19.4	18.2	46.0
1.782000	31.2	Off	L1	19.4	14.8	46.0
3.374000	28.3	Off	L1	19.5	17.7	46.0
5.838000	28.4	Off	L1	19.5	21.6	50.0



Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + GPS Rx + Earphone + USB Cable (Charging from Adapter)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	42.6	Off	N	19.4	21.8	64.4
0.966000	37.0	Off	N	19.4	19.0	56.0
1.358000	38.4	Off	N	19.5	17.6	56.0
1.846000	45.4	Off	N	19.5	10.6	56.0
3.294000	36.4	Off	N	19.5	19.6	56.0
6.126000	36.4	Off	N	19.5	23.6	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	31.6	Off	N	19.4	22.8	54.4
0.966000	23.3	Off	N	19.4	22.7	46.0
1.358000	27.1	Off	N	19.5	18.9	46.0
1.846000	31.7	Off	N	19.5	14.3	46.0
3.294000	25.8	Off	N	19.5	20.2	46.0
6.126000	26.1	Off	N	19.5	23.9	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

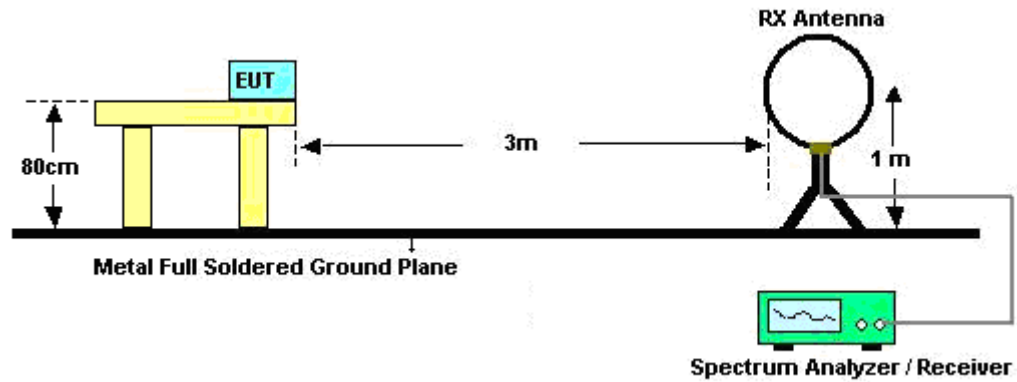
See list of measuring instruments of this test report.

3.7.3 Test Procedures

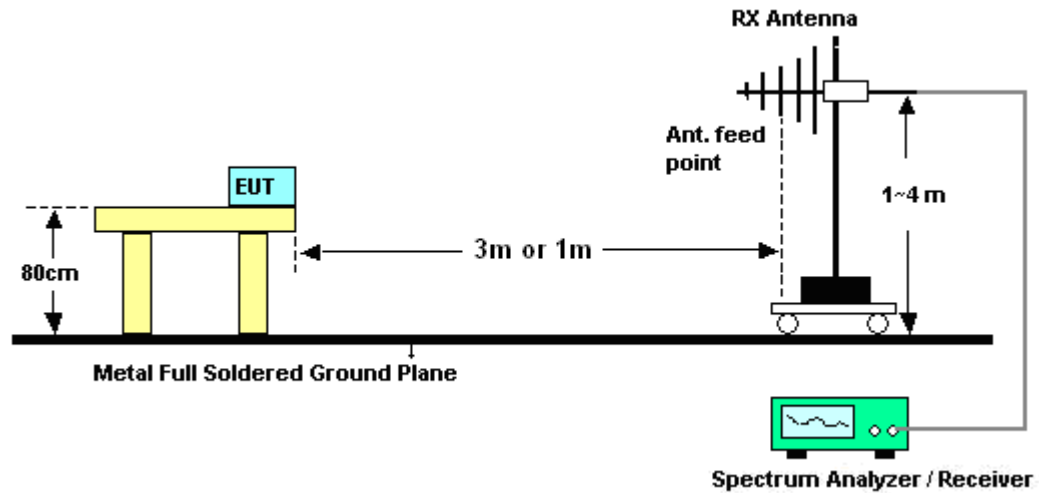
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep =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

3.7.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



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

Test Engineer :	Jason Wang	Temperature :	21~24℃	
		Relative Humidity :	47~53%	
Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

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

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

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

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

Test Mode :	Mode 1	Temperature :	21~24℃
Test Channel :	01	Relative Humidity :	47~53%
Test Engineer :	Jason 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
31.89	17.94	-22.06	40	32.81	16.04	0.55	31.46	-	-	Peak
223.86	21.35	-24.65	46	40.54	10.82	1.44	31.45	-	-	Peak
241.41	23.44	-22.56	46	41.28	12.05	1.53	31.42	-	-	Peak
836.9	25.38	-20.62	46	29.96	22.9	3.24	30.72	-	-	Peak
939.8	25.71	-20.29	46	28.74	24.13	3.44	30.6	101	69	Peak
988.1	26.57	-27.43	54	28.91	24.74	3.5	30.58	-	-	Peak
2333.94	42.6	-11.4	54	38.39	32.09	5.95	33.83	200	216	Average
2333.94	52.64	-21.36	74	48.43	32.09	5.95	33.83	200	216	Peak
2412	111.78	-	-	107.38	32.2	6.07	33.87	200	216	Peak
2412	99.16	-	-	94.76	32.2	6.07	33.87	200	216	Average
2492	43.48	-10.52	54	38.9	32.3	6.18	33.9	200	216	Average
2492	54.82	-19.18	74	50.24	32.3	6.18	33.9	200	216	Peak



Test Mode :	Mode 1	Temperature :	21~24℃
Test Channel :	01	Relative Humidity :	47~53%
Test Engineer :	Jason 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
49.98	25.55	-14.45	40	48.11	8.28	0.7	31.54	176	328	Peak
211.98	23.31	-20.19	43.5	43.42	9.99	1.37	31.47	-	-	Peak
257.61	24.53	-21.47	46	41.58	12.79	1.58	31.42	-	-	Peak
771.8	23.86	-22.14	46	29.42	22.03	3.1	30.69	-	-	Peak
864.9	24.89	-21.11	46	29.1	23.22	3.29	30.72	-	-	Peak
996.5	25.91	-28.09	54	28.14	24.84	3.51	30.58	-	-	Peak
2331.09	43.37	-10.63	54	39.18	32.09	5.92	33.82	100	255	Average
2331.09	54.12	-19.88	74	49.93	32.09	5.92	33.82	100	255	Peak
2412	107.69	-	-	103.29	32.2	6.07	33.87	100	255	Peak
2412	95.06	-	-	90.66	32.2	6.07	33.87	100	255	Average
2492	39.7	-14.3	54	35.12	32.3	6.18	33.9	100	255	Average
2492	50.74	-23.26	74	46.16	32.3	6.18	33.9	100	255	Peak



Test Mode :	Mode 2	Temperature :	21~24℃
Test Channel :	06	Relative Humidity :	47~53%
Test Engineer :	Jason 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
31.62	18.43	-21.57	40	33.3	16.04	0.55	31.46	-	-	Peak
223.86	22.15	-23.85	46	41.34	10.82	1.44	31.45	-	-	Peak
261.93	23.93	-22.07	46	40.88	12.86	1.6	31.41	-	-	Peak
794.2	24.02	-21.98	46	29.19	22.38	3.13	30.68	-	-	Peak
895	25.79	-20.21	46	29.59	23.57	3.33	30.7	180	145	Peak
965	26.11	-27.89	54	28.75	24.45	3.48	30.57	-	-	Peak
2356	50.4	-23.6	74	46.15	32.13	5.95	33.83	197	232	Peak
2356	40.81	-13.19	54	36.56	32.13	5.95	33.83	197	232	Average
2437	109.67	-	-	105.2	32.24	6.11	33.88	197	232	Peak
2437	97.31	-	-	92.84	32.24	6.11	33.88	197	232	Average
2494	49.72	-24.28	74	45.14	32.3	6.18	33.9	197	232	Peak
2494	37.12	-16.88	54	32.54	32.3	6.18	33.9	197	232	Average



Test Mode :	Mode 2	Temperature :	21~24℃
Test Channel :	06	Relative Humidity :	47~53%
Test Engineer :	Jason 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	22.77	-17.23	40	37.19	16.51	0.53	31.46	132	56	Peak
212.25	24.53	-18.97	43.5	44.64	9.99	1.37	31.47	-	-	Peak
250.05	25.52	-20.48	46	42.73	12.67	1.53	31.41	-	-	Peak
758.5	23.5	-22.5	46	29.32	21.81	3.07	30.7	-	-	Peak
912.5	26.05	-19.95	46	29.56	23.79	3.37	30.67	-	-	Peak
988.1	26.76	-27.24	54	29.1	24.74	3.5	30.58	-	-	Peak
2356	48.8	-25.2	74	44.55	32.13	5.95	33.83	100	297	Peak
2356	36.9	-17.1	54	32.65	32.13	5.95	33.83	100	297	Average
2437	106.67	-	-	102.2	32.24	6.11	33.88	100	297	Peak
2437	94.28	-	-	89.81	32.24	6.11	33.88	100	297	Average
2486	46.38	-27.62	74	41.82	32.28	6.18	33.9	100	297	Peak
2486	34.61	-19.39	54	30.05	32.28	6.18	33.9	100	297	Average



Test Mode :	Mode 3	Temperature :	21~24℃
Test Channel :	11	Relative Humidity :	47~53%
Test Engineer :	Jason 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	18.92	-21.08	40	33.79	16.04	0.55	31.46	-	-	Peak
223.86	20.92	-25.08	46	40.11	10.82	1.44	31.45	-	-	Peak
245.73	21.87	-24.13	46	39.42	12.33	1.53	31.41	-	-	Peak
735.4	23.4	-22.6	46	29.68	21.44	3.02	30.74	-	-	Peak
912.5	25.53	-20.47	46	29.04	23.79	3.37	30.67	117	157	Peak
1000	26.4	-27.6	54	28.58	24.89	3.51	30.58	-	-	Peak
2380	50.63	-23.37	74	46.29	32.16	6.03	33.85	200	234	Peak
2380	40.9	-13.1	54	36.56	32.16	6.03	33.85	200	234	Average
2462	110.55	-	-	106.04	32.26	6.14	33.89	200	234	Peak
2462	98.08	-	-	93.57	32.26	6.14	33.89	200	234	Average
2483.5	41.77	-12.23	54	37.21	32.28	6.18	33.9	200	234	Average
2483.5	54.41	-19.59	74	49.85	32.28	6.18	33.9	200	234	Peak



Test Mode :	Mode 3	Temperature :	21~24℃
Test Channel :	11	Relative Humidity :	47~53%
Test Engineer :	Jason 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	22.52	-17.48	40	36.94	16.51	0.53	31.46	135	307	Peak
204.69	25.28	-18.22	43.5	45.98	9.44	1.34	31.48	-	-	Peak
243.3	26.52	-19.48	46	44.22	12.19	1.53	31.42	-	-	Peak
623.4	21.77	-24.23	46	29.88	20.03	2.76	30.9	-	-	Peak
791.4	24.58	-21.42	46	29.8	22.33	3.13	30.68	-	-	Peak
937.7	26.01	-19.99	46	29.07	24.11	3.43	30.6	-	-	Peak
2382	48.5	-25.5	74	44.16	32.16	6.03	33.85	100	181	Peak
2382	39.01	-14.99	54	34.67	32.16	6.03	33.85	100	181	Average
2462	104.98	-	-	100.47	32.26	6.14	33.89	100	181	Peak
2462	93.09	-	-	88.58	32.26	6.14	33.89	100	181	Average
2483.66	36.6	-17.4	54	32.04	32.28	6.18	33.9	100	181	Average
2483.66	49.48	-24.52	74	44.92	32.28	6.18	33.9	100	181	Peak



Test Mode :	Mode 4	Temperature :	21~24℃
Test Channel :	01	Relative Humidity :	47~53%
Test Engineer :	Jason 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
31.89	18.84	-21.16	40	33.71	16.04	0.55	31.46	-	-	Peak
223.86	21.97	-24.03	46	41.16	10.82	1.44	31.45	-	-	Peak
246.54	22.16	-23.84	46	39.64	12.4	1.53	31.41	-	-	Peak
764.1	23.75	-22.25	46	29.46	21.9	3.08	30.69	-	-	Peak
886.6	25.28	-20.72	46	29.2	23.47	3.32	30.71	108	227	Peak
985.3	26.72	-27.28	54	29.09	24.71	3.5	30.58	-	-	Peak
2389.61	37.71	-16.29	54	33.35	32.18	6.03	33.85	172	10	Average
2389.61	52.46	-21.54	74	48.1	32.18	6.03	33.85	172	10	Peak
2412	99.76	-	-	95.36	32.2	6.07	33.87	172	10	Peak
2412	86.76	-	-	82.36	32.2	6.07	33.87	172	10	Average
2486	48.72	-25.28	74	44.16	32.28	6.18	33.9	172	10	Peak
2486	42.27	-11.73	54	37.71	32.28	6.18	33.9	172	10	Average



Test Mode :	Mode 4	Temperature :	21~24℃
Test Channel :	01	Relative Humidity :	47~53%
Test Engineer :	Jason 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	23.02	-16.98	40	37.44	16.51	0.53	31.46	-	-	Peak
42.69	25.88	-14.12	40	45.15	11.59	0.64	31.5	130	339	Peak
227.37	28.31	-17.69	46	47.28	11.02	1.46	31.45	-	-	Peak
738.9	23.43	-22.57	46	29.63	21.5	3.03	30.73	-	-	Peak
853	25.42	-20.58	46	29.8	23.08	3.27	30.73	-	-	Peak
985.3	26.35	-27.65	54	28.72	24.71	3.5	30.58	-	-	Peak
2389.99	36.63	-17.37	54	32.27	32.18	6.03	33.85	100	255	Average
2389.99	51.44	-22.56	74	47.08	32.18	6.03	33.85	100	255	Peak
2412	94.86	-	-	90.46	32.2	6.07	33.87	100	255	Peak
2412	83.01	-	-	78.61	32.2	6.07	33.87	100	255	Average
2492	35.1	-18.9	54	30.52	32.3	6.18	33.9	100	255	Average
2492	46.59	-27.41	74	42.01	32.3	6.18	33.9	100	255	Peak



Test Mode :	Mode 5	Temperature :	21~24℃
Test Channel :	06	Relative Humidity :	47~53%
Test Engineer :	Jason 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	19.16	-20.84	40	34.03	16.04	0.55	31.46	-	-	Peak
223.05	22.07	-23.93	46	41.33	10.75	1.44	31.45	-	-	Peak
237.09	25.47	-20.53	46	43.68	11.71	1.51	31.43	153	110	Peak
791.4	24.27	-21.73	46	29.49	22.33	3.13	30.68	-	-	Peak
861.4	25.38	-20.62	46	29.63	23.18	3.29	30.72	-	-	Peak
965	26.27	-27.73	54	28.91	24.45	3.48	30.57	-	-	Peak
2358	48.01	-25.99	74	43.73	32.13	5.99	33.84	170	10	Peak
2358	36.8	-17.2	54	32.52	32.13	5.99	33.84	170	10	Average
2437	100.24	-	-	95.79	32.22	6.11	33.88	170	10	Peak
2437	88.18	-	-	83.71	32.24	6.11	33.88	170	10	Average
2484	47.91	-26.09	74	43.35	32.28	6.18	33.9	170	10	Peak
2484	36	-18	54	31.44	32.28	6.18	33.9	170	10	Average



Test Mode :	Mode 5	Temperature :	21~24℃
Test Channel :	06	Relative Humidity :	47~53%
Test Engineer :	Jason 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	22.64	-17.36	40	37.06	16.51	0.53	31.46	187	214	Peak
230.61	27.37	-18.63	46	46.02	11.3	1.49	31.44	-	-	Peak
281.37	28.59	-17.41	46	45.13	13.17	1.64	31.35	-	-	Peak
783.7	23.37	-22.63	46	28.74	22.21	3.11	30.69	-	-	Peak
873.3	25.43	-20.57	46	29.54	23.31	3.3	30.72	-	-	Peak
985.3	26.31	-27.69	54	28.68	24.71	3.5	30.58	-	-	Peak
2358	47.7	-26.3	74	43.42	32.13	5.99	33.84	100	322	Peak
2358	36.1	-17.9	54	31.82	32.13	5.99	33.84	100	322	Average
2437	94.81	-	-	90.34	32.24	6.11	33.88	100	322	Peak
2437	82.73	-	-	78.26	32.24	6.11	33.88	100	322	Average
2494	46.55	-27.45	74	41.97	32.3	6.18	33.9	100	322	Peak
2494	33.96	-20.04	54	29.38	32.3	6.18	33.9	100	322	Average



Test Mode :	Mode 6	Temperature :	21~24℃
Test Channel :	11	Relative Humidity :	47~53%
Test Engineer :	Jason 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
66.18	25.17	-14.83	40	49.86	6.04	0.81	31.54	169	331	Peak
254.1	22.09	-23.91	46	39.22	12.73	1.55	31.41	-	-	Peak
294.33	25.06	-20.94	46	41.28	13.38	1.73	31.33	-	-	Peak
685	22.55	-23.45	46	29.76	20.72	2.91	30.84	-	-	Peak
825	25.74	-20.26	46	30.48	22.76	3.21	30.71	-	-	Peak
995.8	27.12	-26.88	54	29.35	24.84	3.51	30.58	-	-	Peak
2382	46.66	-27.34	74	42.32	32.16	6.03	33.85	197	4	Peak
2382	35.52	-18.48	54	31.18	32.16	6.03	33.85	197	4	Average
2462	101.95	-	-	97.44	32.26	6.14	33.89	197	4	Peak
2462	89.52	-	-	85.01	32.26	6.14	33.89	197	4	Average
2483.5	40.23	-13.77	54	35.67	32.28	6.18	33.9	197	4	Average
2483.5	58.14	-15.86	74	53.58	32.28	6.18	33.9	197	4	Peak



Test Mode :	Mode 6	Temperature :	21~24℃
Test Channel :	11	Relative Humidity :	47~53%
Test Engineer :	Jason 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
43.77	21.56	-18.44	40	41.29	11.13	0.64	31.5	134	231	Peak
162.57	23.33	-20.17	43.5	43.43	10.2	1.22	31.52	-	-	Peak
231.69	26.75	-19.25	46	45.33	11.37	1.49	31.44	-	-	Peak
771.8	23.66	-22.34	46	29.22	22.03	3.1	30.69	-	-	Peak
891.5	24.25	-21.75	46	28.1	23.53	3.33	30.71	-	-	Peak
943.3	26.62	-19.38	46	29.58	24.18	3.45	30.59	-	-	Peak
2382	46.18	-27.82	74	41.84	32.16	6.03	33.85	100	332	Peak
2382	34.52	-19.48	54	30.18	32.16	6.03	33.85	100	332	Average
2462	96.98	-	-	92.47	32.26	6.14	33.89	100	332	Peak
2462	85.12	-	-	80.61	32.26	6.14	33.89	100	332	Average
2483.5	38.67	-15.33	54	34.11	32.28	6.18	33.9	100	332	Average
2483.5	57.4	-16.6	74	52.84	32.28	6.18	33.9	100	332	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 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
Spectrum Analyzer	R&S	FSP30	101329	9kHz~30GHz	Apr. 26, 2010	Apr. 25, 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)
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-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	117995	N/A	Mar. 19, 2009	Mar. 18, 2011	Conduction (CO05-HY)
GPS Station	T&E	GS-50	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2010	Oct. 30, 2011	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	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.32dB.GAIN	Mar. 27, 2010	Mar. 26, 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 $U_c(y)$	1.13		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.26		

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

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

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

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



Appendix A. Photographs of EUT

Please refer to Sporton report number EP110305 as below.