

# FCC RF Test Report

APPLICANT : ZTE CORPORATION  
EQUIPMENT : CDMA Tablet  
BRAND NAME : ZTE  
MODEL NAME : V55  
FCC ID : Q78-V55  
STANDARD : FCC Part 15 Subpart C §15.247  
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Jul. 27, 2011 and completely tested on Aug. 30, 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:



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Jones Tsai / Manager



**SPORTON INTERNATIONAL (KUNSHAN) INC.**  
**No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.**



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## SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	Power Output	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(d)	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.4	15.247(d)	Spurious Emission	$< 20\text{ dBc}$	Pass	-
3.5	15.247(e)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 10.18 dB at 0.50 MHz
3.7	15.247(d)	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 2.89 dB at 2483.66 MHz
3.8	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

# 1 General Description

## 1.1 Applicant

**ZTE CORPORATION**

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

## 1.2 Manufacturer

**ZTE CORPORATION**

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

## 1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	CDMA Tablet
Brand Name	ZTE
Model Name	V55
FCC ID	Q78-V55
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 : 17.77 dBm (0.060 W) 802.11g : 24.41 dBm (0.276 W)
Antenna Type	PIFA Antenna with gain 2.2 dBi
HW Version	110602
SW Version	V55V1.1.0B01
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

<b>Test Site</b>	SPORTON INTERNATIONAL (KUNSHAN) INC.		
<b>Test Site Location</b>	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
<b>Test Site No.</b>	<b>Sporton Site No.</b>		
	TH01-KS	CO01-KS	03CH01-KS

## 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

**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 (Certification), 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.	Router	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
4.	Notebook	Acer	Trave Imate 2413Lci	QDS-BRCM1016	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	17.77	17.75	17.68	17.72
CH 06	2437 MHz	17.49	17.36	17.45	17.69
CH 11	2462 MHz	17.16	17.24	17.12	17.34

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	24.41	24.39	24.35	24.21	24.06	24.21	24.23	24.30
CH 06	2437 MHz	24.35	24.33	24.37	24.15	24.25	24.15	24.21	24.21
CH 11	2462 MHz	24.30	24.28	24.26	24.08	24.15	24.09	24.20	24.20

**Remark:**

1. The data rates of WLAN 802.11b/g were set in 1Mbps 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.

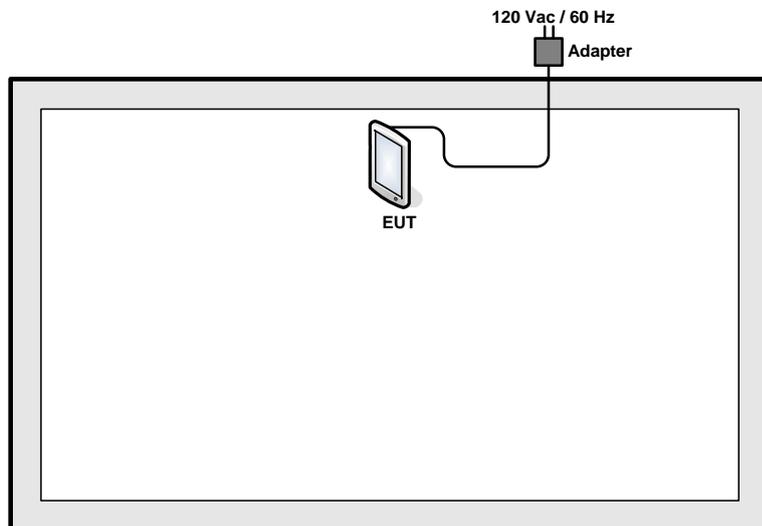
## 2.2 Test Mode

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.

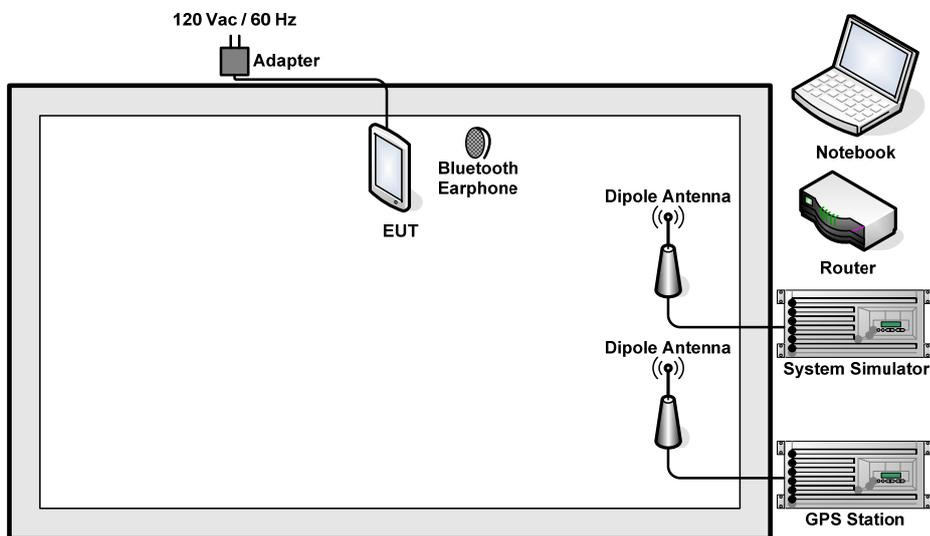
<b>Test Cases</b>		
<b>Test Item</b>	<b>802.11b</b>	<b>802.11g</b>
<b>Conducted TCs</b>	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4 : 802.11g CH01_2412 MHz Mode 5 : 802.11g CH06_2437 MHz Mode 6 : 802.11g CH11_2462 MHz
<b>Radiated TCs</b>	Mode 1 : 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
<b>AC Conducted Emission</b>	Mode 1 : CDMA850 Idle + Bluetooth Link + WLAN Link + Adapter + Camera + GPS Rx	

## 2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>





## **2.4 RF Utility**

The programmed RF utility, executed "CMD" command 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.

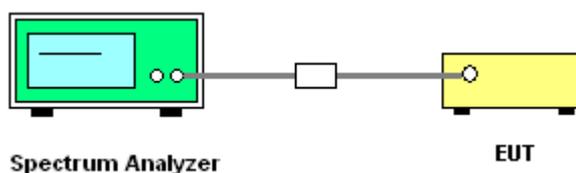
##### 3.1.2 Measuring Instruments

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



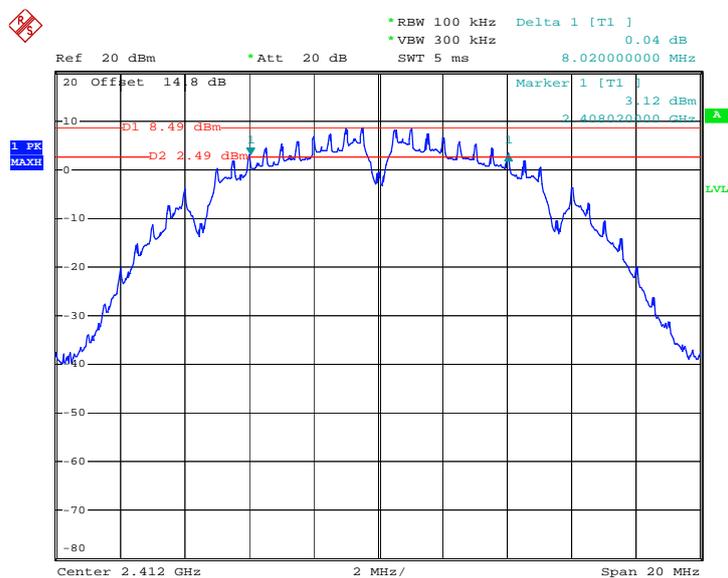


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	23~24°C
Test Engineer :	Jack Liu	Relative Humidity :	45~47%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	8.02	0.5	Pass
06	2437	8.04	0.5	Pass
11	2462	8.06	0.5	Pass

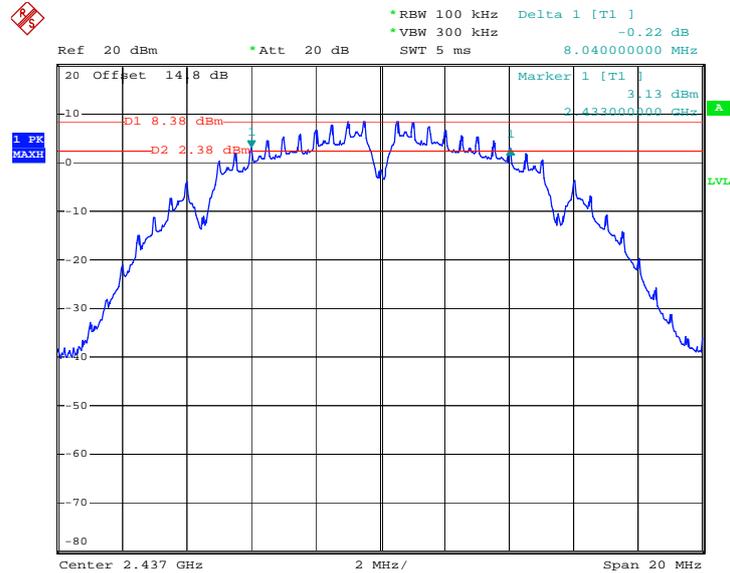
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 28.AUG.2011 14:42:43

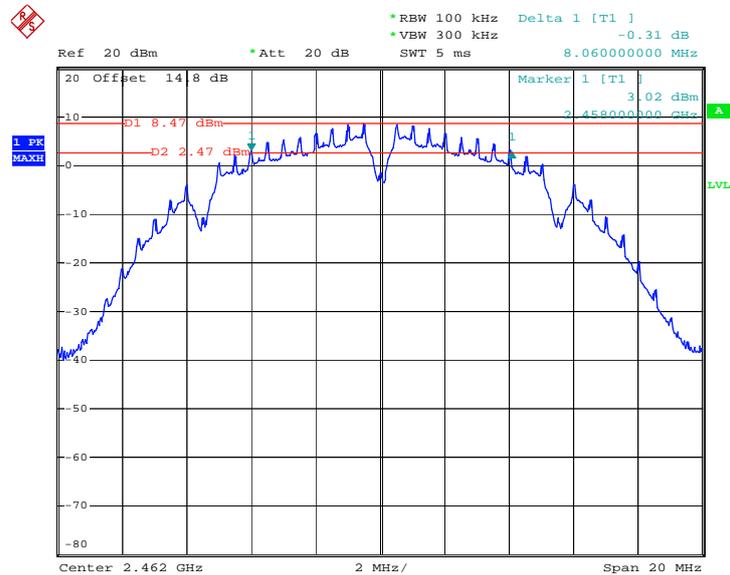


Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



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



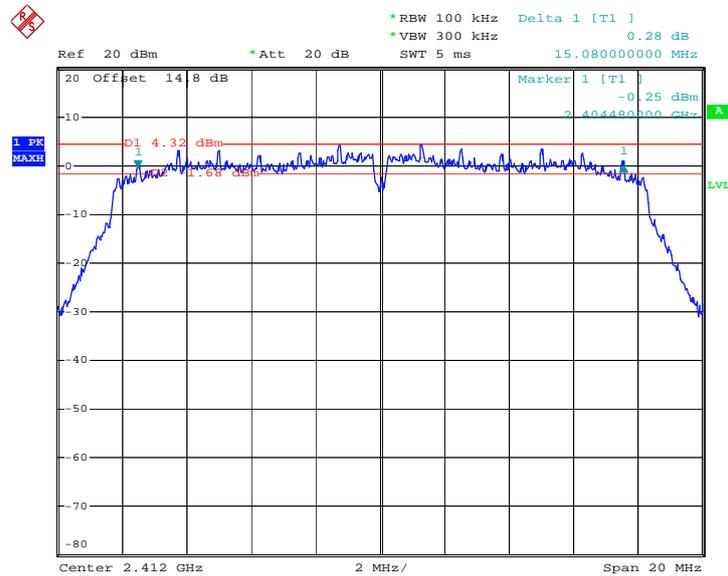
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Test Mode :	Mode 4, 5, 6	Temperature :	23~24°C
Test Engineer :	Jack Liu	Relative Humidity :	45~47%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.08	0.5	Pass
06	2437	15.14	0.5	Pass
11	2462	15.12	0.5	Pass

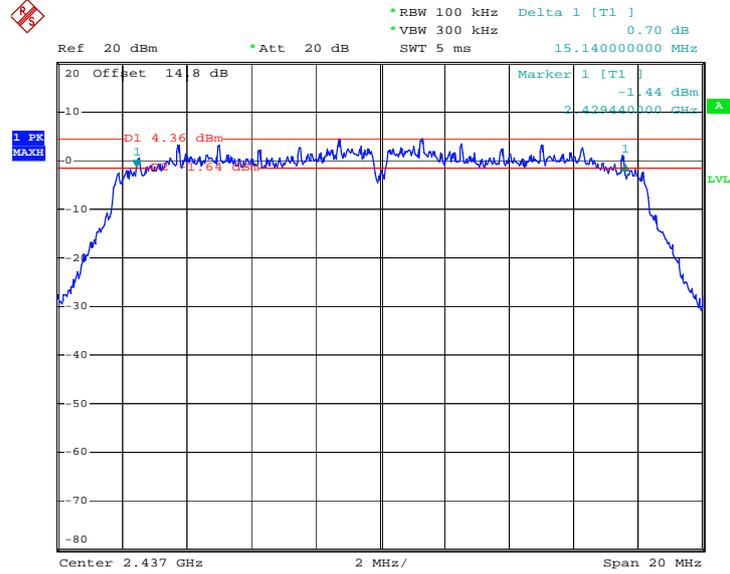
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



Date: 28.AUG.2011 15:34:43

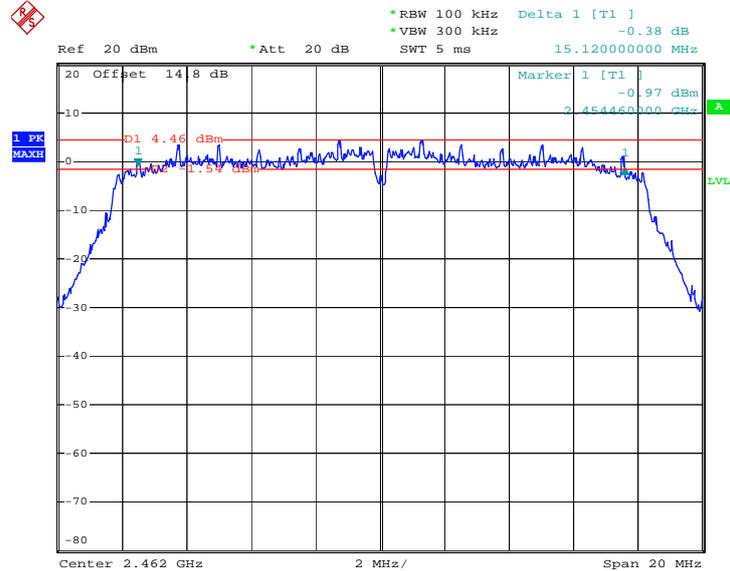


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



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



Date: 28.AUG.2011 16:03:02

## 3.2 Output Power Measurement

### 3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

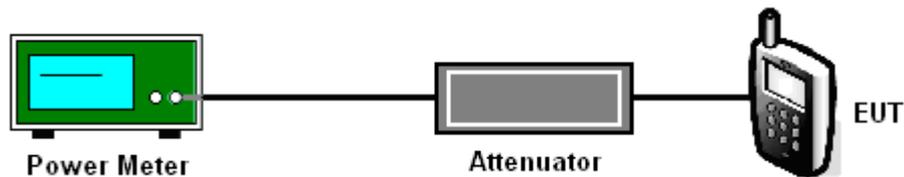
### 3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.2.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the power meter by a low loss cable.
3. Measure the power by power meter.

### 3.2.4 Test Setup





3.2.5 Test Result of Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	23~24°C
Test Engineer :	Jack Liu	Relative Humidity :	45~47%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	17.77	30	Pass
06	2437	17.49	30	Pass
11	2462	17.16	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	23~24°C
Test Engineer :	Jack Liu	Relative Humidity :	45~47%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	24.41	30	Pass
06	2437	24.35	30	Pass
11	2462	24.30	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

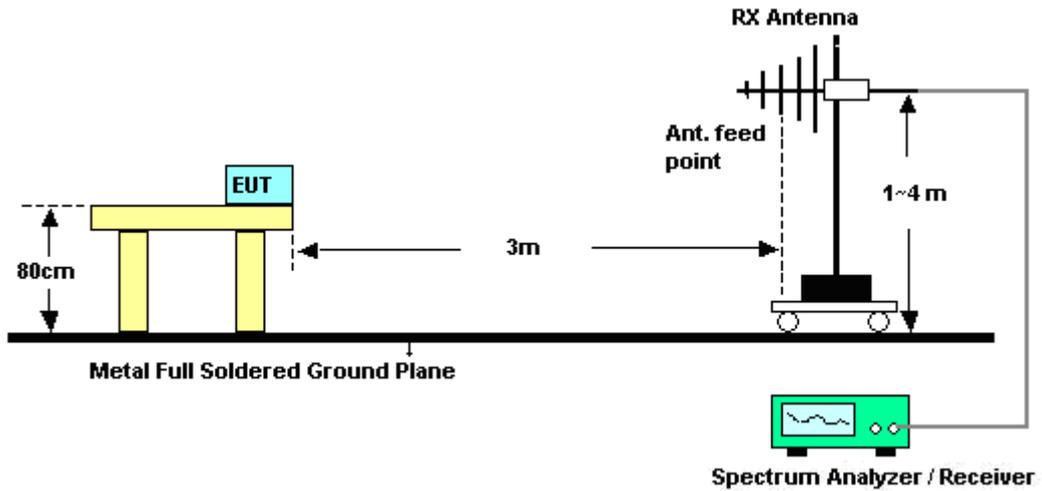
See list of measuring instruments of this test report.

#### 3.3.3 Test Procedures

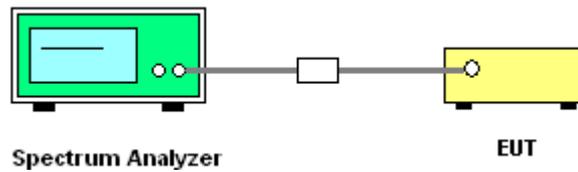
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW)  $\geq$  RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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 :	23~24°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Chenmy Cheng

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
2332.99	56.29	-17.71	74	54.16	32.76	3.27	33.9	100	223	Peak
2332.99	43.87	-10.13	54	41.74	32.76	3.27	33.9	100	223	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
2333.37	53.39	-20.61	74	51.26	32.76	3.27	33.9	100	116	Peak
2333.37	41.56	-12.44	54	39.43	32.76	3.27	33.9	100	116	Average

Test Mode :	Mode 3	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Chenmy Cheng

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
2490.69	53.36	-20.64	74	50.82	33.05	3.72	34.23	100	118	Peak
2490.69	42.66	-11.34	54	40.12	33.05	3.72	34.23	100	118	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
2497.15	49.84	-24.16	74	47.3	33.05	3.72	34.23	100	337	Peak
2497.15	39.22	-14.78	54	36.68	33.05	3.72	34.23	100	337	Average



Test Mode :	Mode 4	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Chenmy Cheng

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
2330.14	55.86	-18.14	74	53.73	32.76	3.27	33.9	153	28	Peak
2330.14	45.81	-8.19	54	43.68	32.76	3.27	33.9	153	28	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
2332.61	54.19	-19.81	74	52.06	32.76	3.27	33.9	100	117	Peak
2332.61	39.99	-14.01	54	37.86	32.76	3.27	33.9	100	117	Average

Test Mode :	Mode 6	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Chenmy Cheng

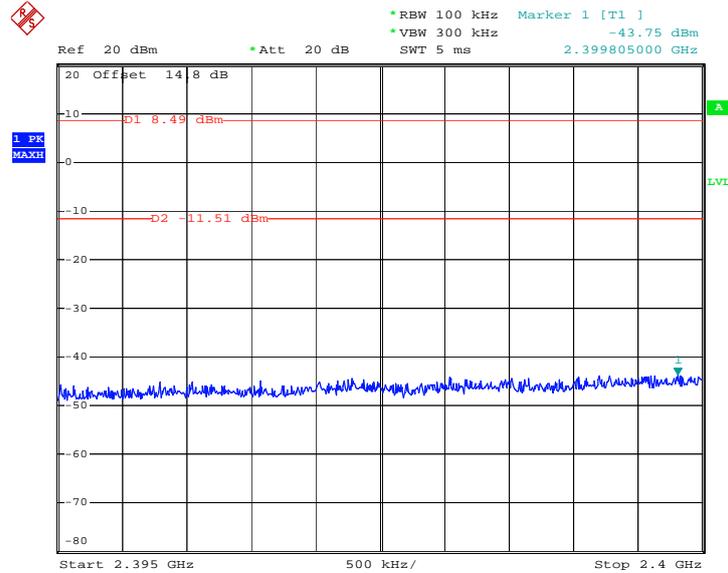
ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2483.66	64.37	-9.63	74	61.88	33.01	3.68	34.2	100	116	Peak
2483.66	51.11	-2.89	54	48.62	33.01	3.68	34.2	100	116	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	56.46	-17.54	74	53.97	33.01	3.68	34.2	100	347	Peak
2483.5	44.14	-9.86	54	41.65	33.01	3.68	34.2	100	347	Average

### 3.3.6 Test Plots of Conducted Band Edges

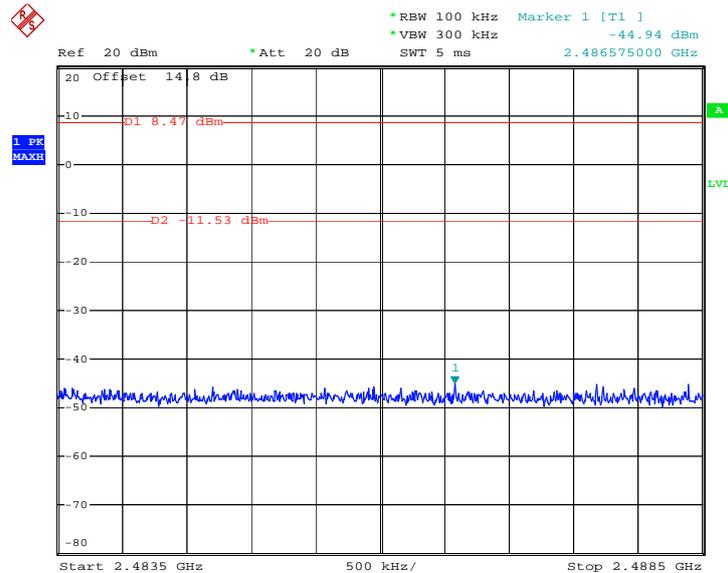
Test Mode :	Mode 1 and 3	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	45~47%
Test Channel :	01 and 11	Test Engineer :	Jack Liu

Low Band Edge Plot on 802.11b Channel 01



Date: 28.AUG.2011 14:45:28

High Band Edge Plot on 802.11b Channel 11

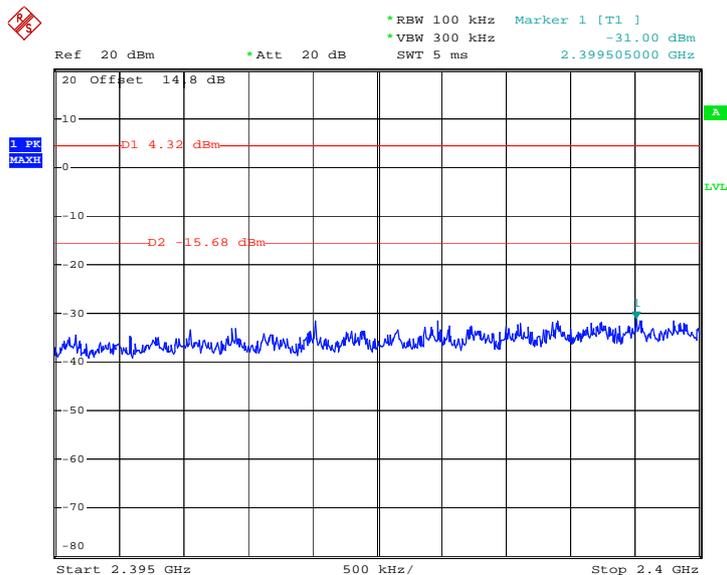


Date: 28.AUG.2011 15:17:11



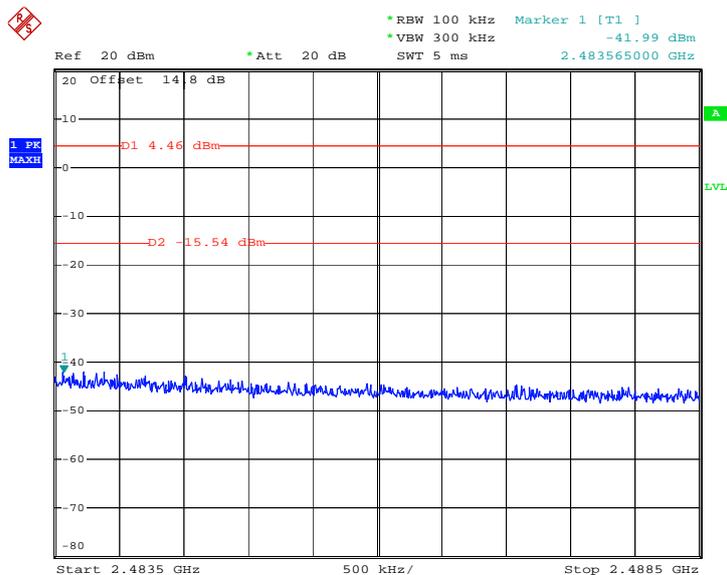
Test Mode :	Mode 4 and 6	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	45~47%
Test Channel :	01 and 11	Test Engineer :	Jack Liu

Low Band Edge Plot on 802.11g Channel 01



Date: 28.AUG.2011 15:36:03

High Band Edge Plot on 802.11g Channel 11



Date: 28.AUG.2011 16:04:04

## 3.4 Spurious Emission Measurement

### 3.4.1 Limit of Spurious Emission Measurement

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

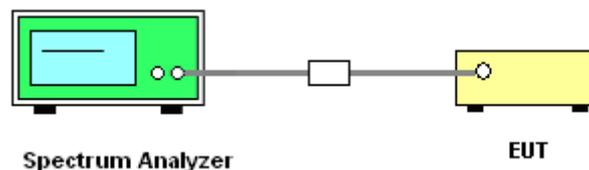
### 3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.4.3 Test Procedure

1. The transmitter output was connected to the spectrum analyzer via a low loss 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.

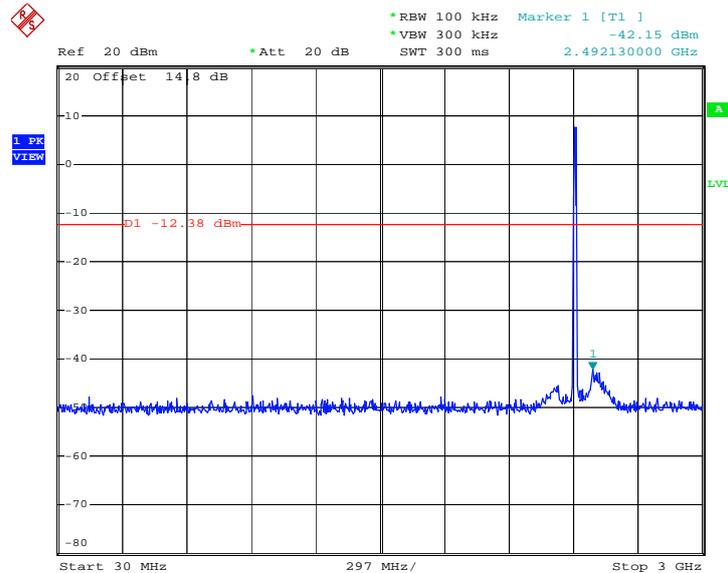
### 3.4.4 Test Setup



### 3.4.5 Test Plots of Spurious Emission

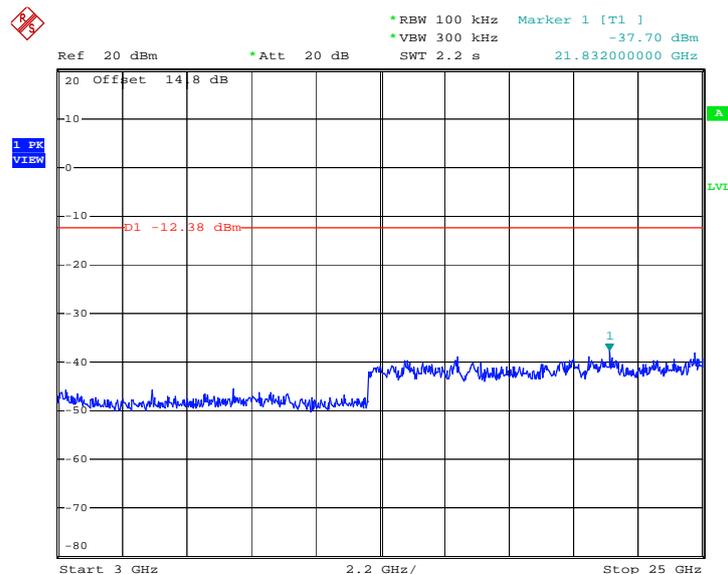
Test Mode :	Mode 1	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	45~47%
Test Channel :	01	Test Engineer :	Jack Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 28.AUG.2011 14:46:13

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

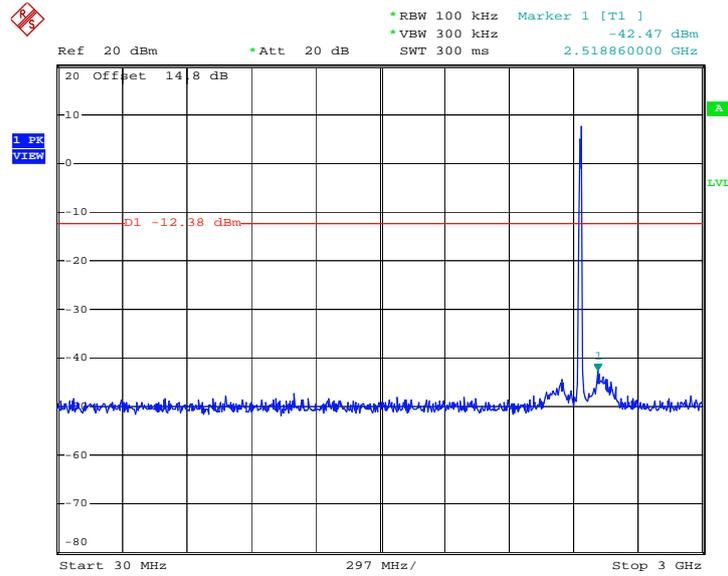


Date: 28.AUG.2011 14:46:30



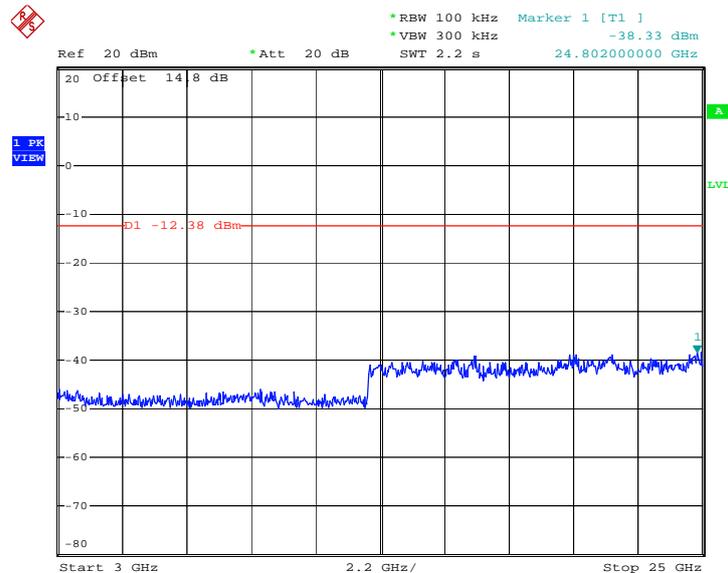
Test Mode :	Mode 2	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	45~47%
Test Channel :	06	Test Engineer :	Jack Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 28.AUG.2011 15:01:30

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

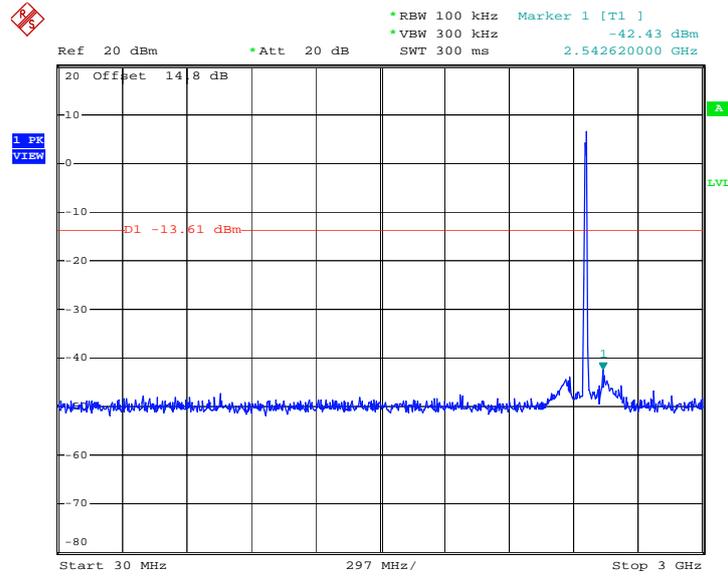


Date: 28.AUG.2011 15:01:47



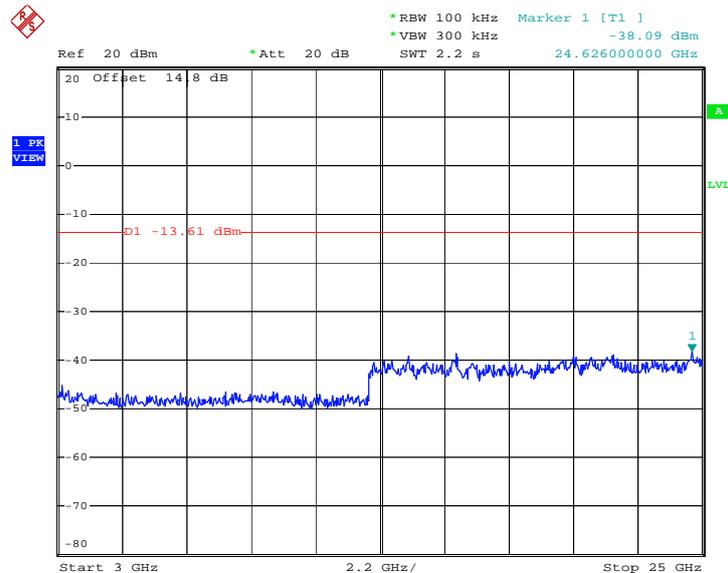
Test Mode :	Mode 3	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	45~47%
Test Channel :	11	Test Engineer :	Jack Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 28.AUG.2011 15:18:06

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

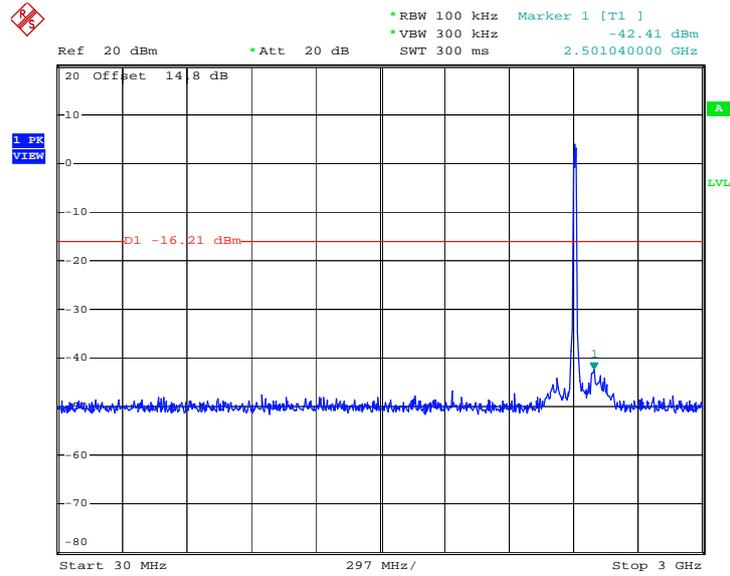


Date: 28.AUG.2011 15:18:23



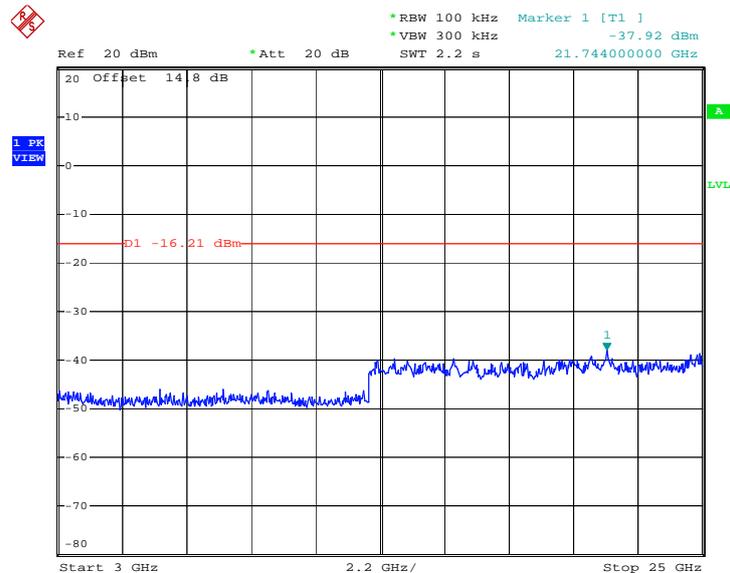
Test Mode :	Mode 4	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	45~47%
Test Channel :	01	Test Engineer :	Jack Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 28.AUG.2011 15:36:56

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

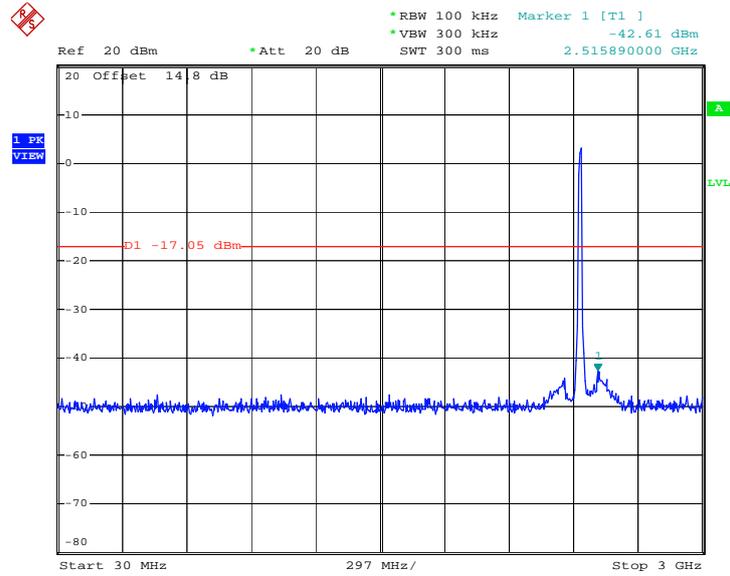


Date: 28.AUG.2011 15:37:13



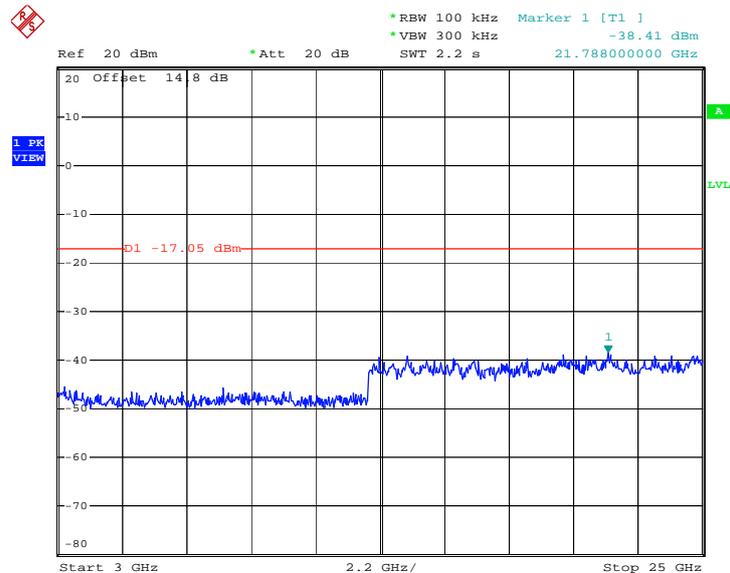
Test Mode :	Mode 5	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	45~47%
Test Channel :	06	Test Engineer :	Jack Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 28.AUG.2011 15:50:30

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

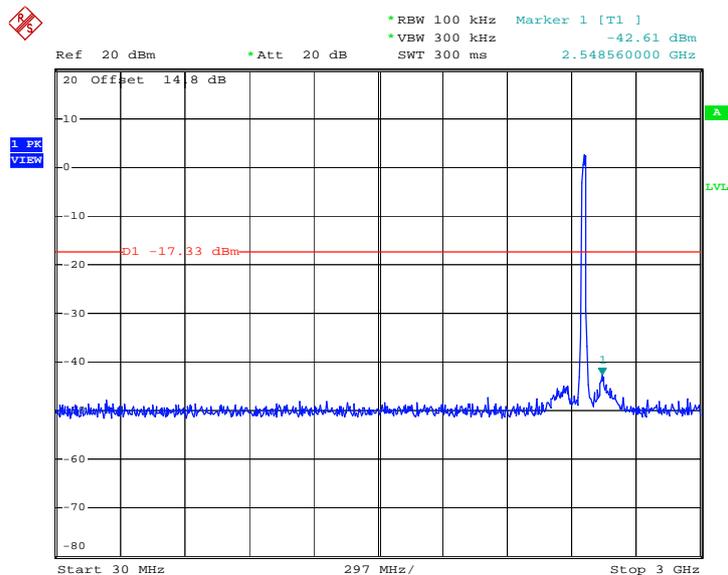


Date: 28.AUG.2011 15:50:47



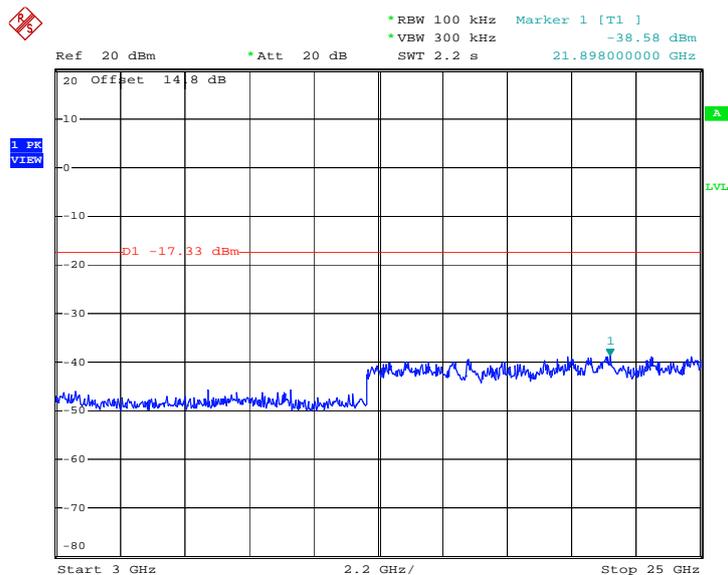
Test Mode :	Mode 6	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	45~47%
Test Channel :	11	Test Engineer :	Jack Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 28.AUG.2011 16:05:56

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 28.AUG.2011 16:06:13

## 3.5 Power Spectral Density Measurement

### 3.5.1 Limit of Power Spectral Density

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

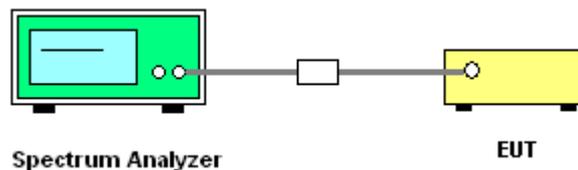
### 3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.5.3 Test Procedures

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

### 3.5.4 Test Setup

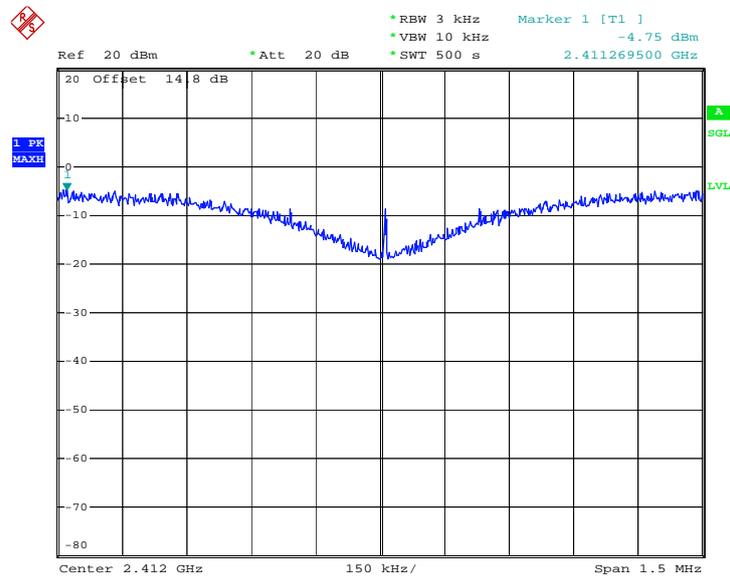


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	23~24°C
Test Engineer :	Jack Liu	Relative Humidity :	45~47%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-4.75	8	Pass
06	2437	-4.50	8	Pass
11	2462	-4.75	8	Pass

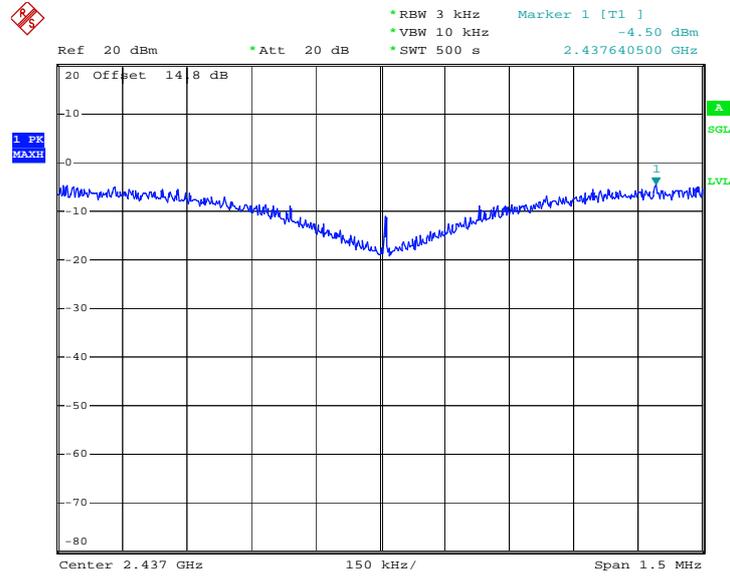
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 28.AUG.2011 14:57:04

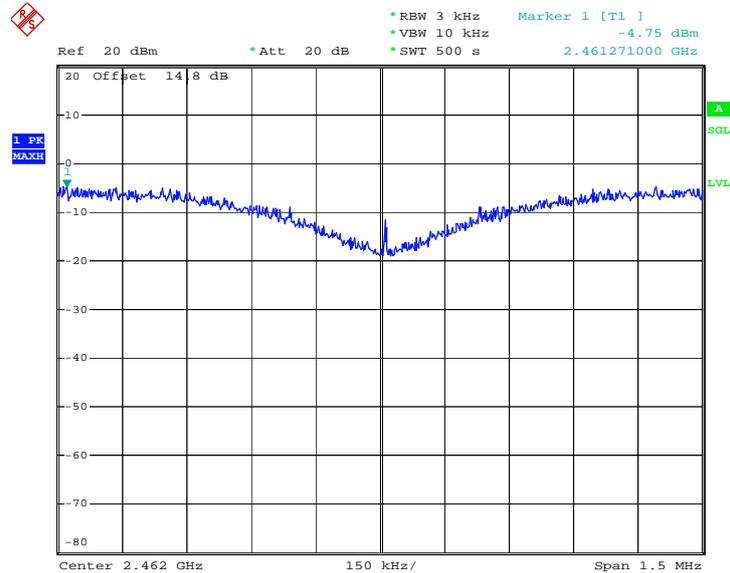


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 28.AUG.2011 15:13:24

Mode 3 : PSD Plot on 802.11b Channel 11



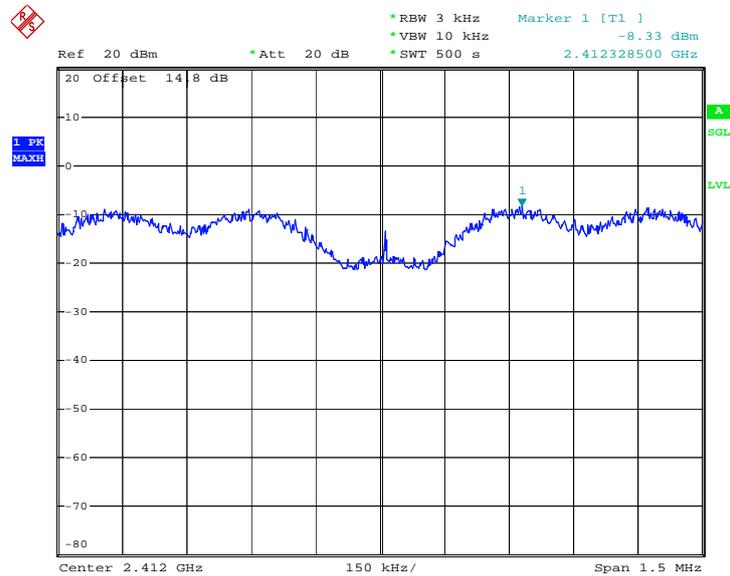
Date: 28.AUG.2011 15:28:13



Test Mode :	Mode 4, 5, 6	Temperature :	23~24°C
Test Engineer :	Jack Liu	Relative Humidity :	45~47%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-8.33	8	Pass
06	2437	-8.50	8	Pass
11	2462	-8.53	8	Pass

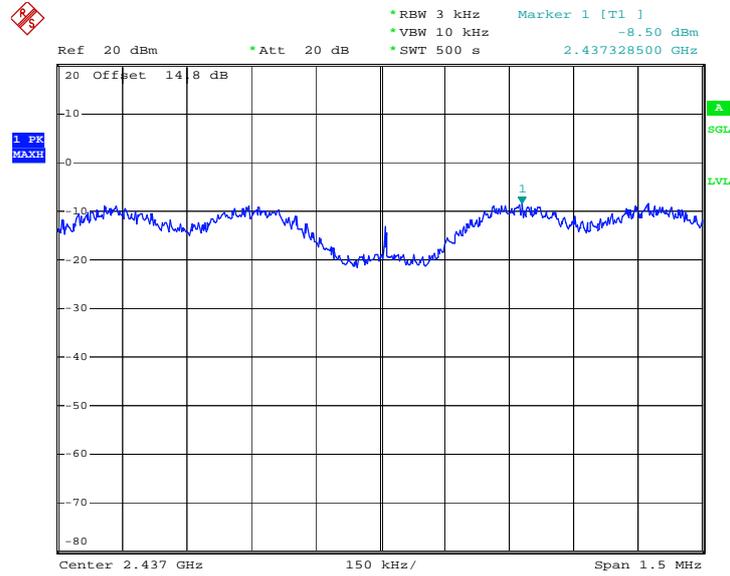
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 28.AUG.2011 15:46:15

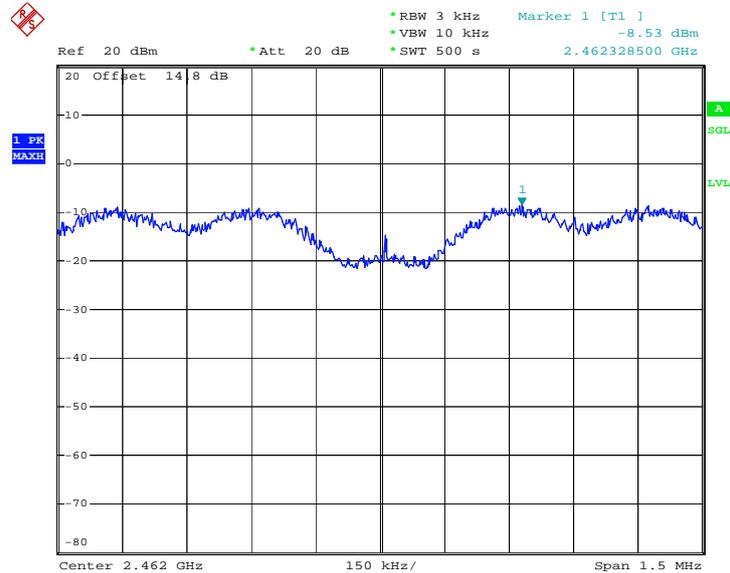


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 28.AUG.2011 16:00:08

Mode 6 : PSD Plot on 802.11g Channel 11



Date: 28.AUG.2011 16:17:17

## 3.6 AC Conducted Emission Measurement

### 3.6.1 Limit of AC Conducted Emission

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

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

\*Decreases with the logarithm of the frequency.

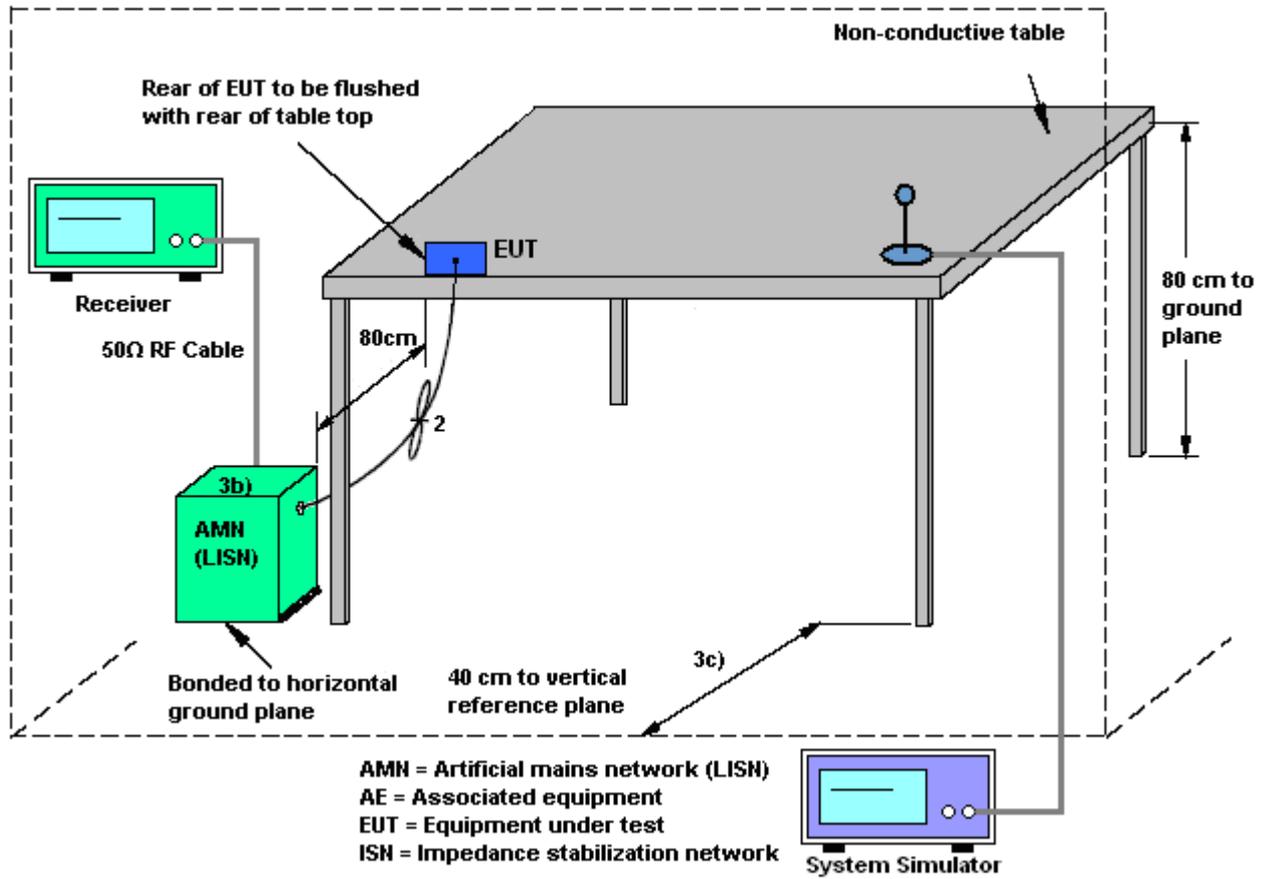
### 3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.6.3 Test Procedures

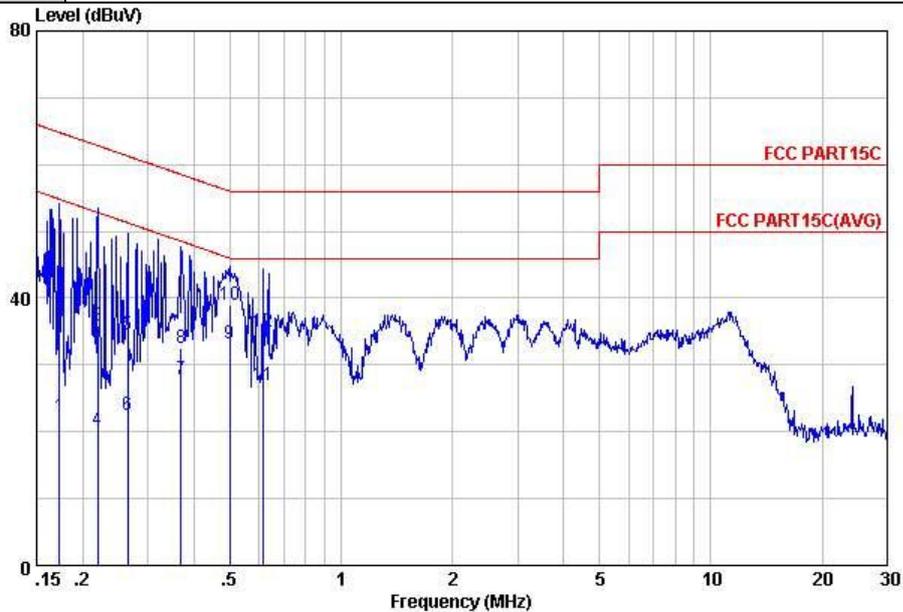
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network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

### 3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	21~22°C
Test Engineer :	Jack Li	Relative Humidity :	45~46%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	CDMA850 Idle + Bluetooth Link + WLAN Link + Adapter + Camera + GPS Rx		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

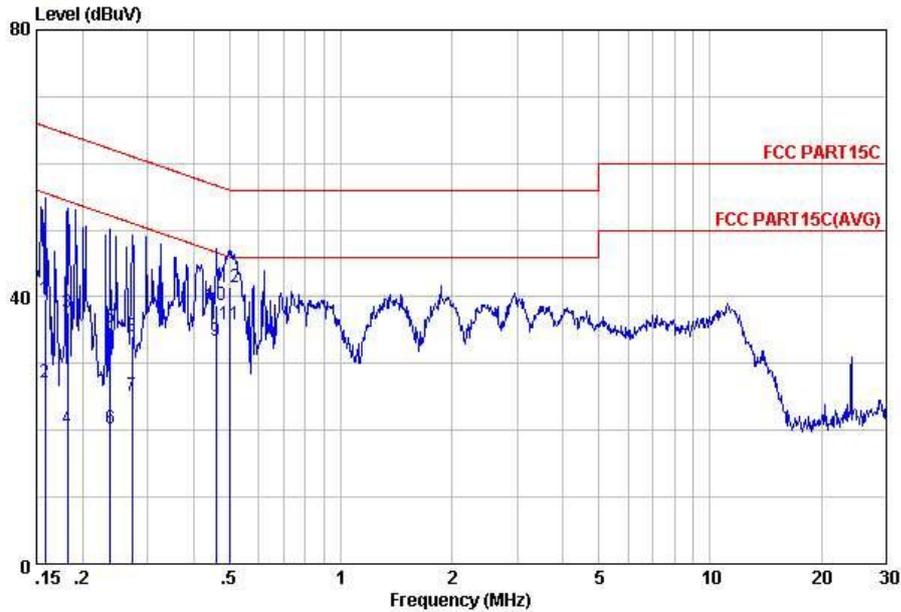


Site : C001-KS  
 Condition: FCC PART15C LISN-100807 LINE  
 Project : (FR) 172707  
 mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.17	22.37	-32.44	54.81	12.30	-0.07	10.14	Average
2	0.17	38.47	-26.34	64.81	28.40	-0.07	10.14	QP
3	0.22	35.78	-27.05	62.83	25.70	-0.07	10.15	QP
4	0.22	20.18	-32.65	52.83	10.10	-0.07	10.15	Average
5	0.26	34.59	-26.70	61.29	24.50	-0.07	10.16	QP
6	0.26	22.49	-28.80	51.29	12.40	-0.07	10.16	Average
7	0.37	27.91	-20.61	48.52	17.81	-0.08	10.18	Average
8	0.37	32.61	-25.91	58.52	22.51	-0.08	10.18	QP
9	0.50	33.23	-12.78	46.01	23.10	-0.08	10.21	Average
10	0.50	39.03	-16.98	56.01	28.90	-0.08	10.21	QP
11	0.61	26.94	-19.06	46.00	16.81	-0.09	10.22	Average
12	0.61	34.94	-21.06	56.00	24.81	-0.09	10.22	QP



Test Mode :	Mode 1	Temperature :	21~22°C
Test Engineer :	Jack Li	Relative Humidity :	45~46%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	CDMA850 Idle + Bluetooth Link + WLAN Link + Adapter + Camera + GPS Rx		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS  
 Condition: FCC PART15C LISN-100807 NEUTRAL  
 Project : (FR) 172707  
 mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.16	39.65	-25.91	65.56	29.60	-0.09	10.14	QP
2	0.16	27.25	-28.31	55.56	17.20	-0.09	10.14	Average
3	0.18	37.67	-26.70	64.37	27.60	-0.08	10.15	QP
4	0.18	20.17	-34.20	54.37	10.10	-0.08	10.15	Average
5	0.24	35.49	-26.68	62.17	25.40	-0.07	10.16	QP
6	0.24	20.19	-31.98	52.17	10.10	-0.07	10.16	Average
7	0.27	25.09	-25.98	51.07	15.00	-0.07	10.16	Average
8	0.27	34.19	-26.88	61.07	24.10	-0.07	10.16	QP
9	0.46	33.32	-13.39	46.71	23.20	-0.08	10.20	Average
10	0.46	38.82	-17.89	56.71	28.70	-0.08	10.20	QP
11	0.50	35.83	-10.18	46.01	25.70	-0.08	10.21	Average
12	0.50	41.43	-14.58	56.01	31.30	-0.08	10.21	QP

### 3.7 Radiated Emission Measurement

#### 3.7.1 Limit of Radiated Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

#### 3.7.2 Measuring Instruments

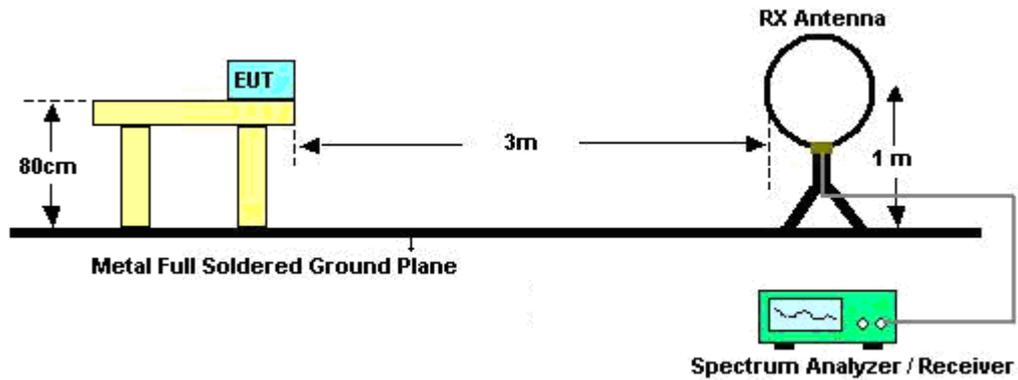
See list of measuring instruments of this test report.

#### 3.7.3 Test Procedures

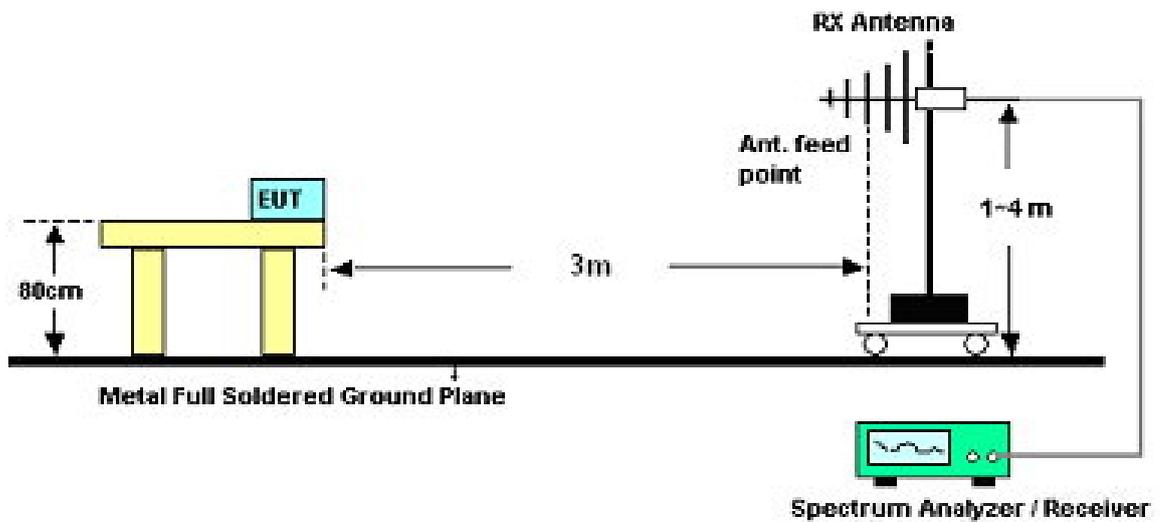
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
  - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for  $f \geq 1$  GHz, 100 kHz for  $f < 1$  GHz; VBW  $\geq$  RBW; Sweep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

### 3.7.4 Test Setup

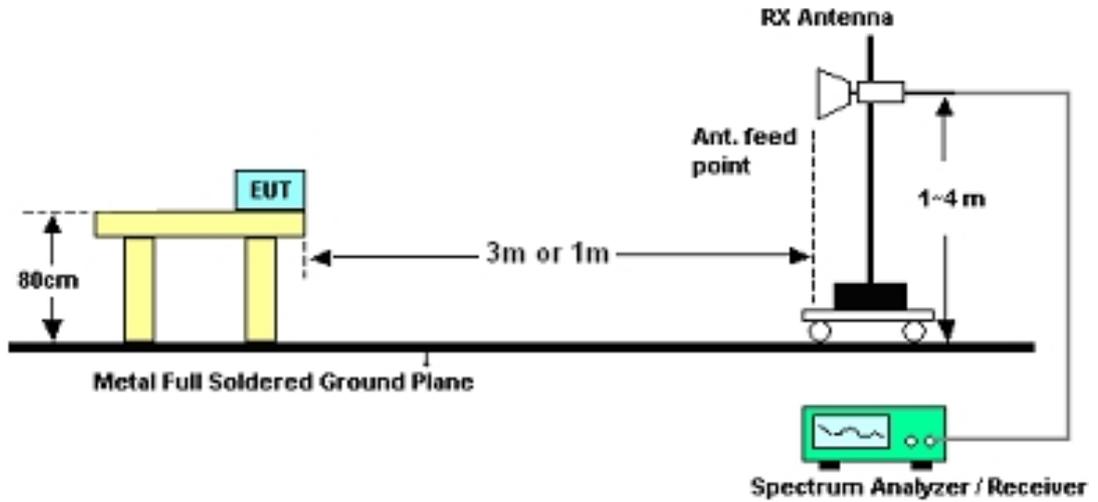
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

Test Engineer :	Chenmy Cheng	Temperature :	23~24°C	
		Relative Humidity :	47~48%	
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 ~ 10<sup>th</sup> Harmonic)

Test Mode :	Mode 1	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	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
110.46	21.53	-21.97	43.5	39.27	11.8	0.43	29.97	-	-	Peak
119.37	23.42	-20.08	43.5	41.14	11.8	0.45	29.97	-	-	Peak
214.41	19.53	-23.97	43.5	39.2	9.71	0.61	29.99	-	-	Peak
461	26.08	-19.92	46	38.5	16.45	0.91	29.78	-	-	Peak
575.8	30.83	-15.17	46	40.89	18.55	1.04	29.65	100	12	Peak
806.8	29.79	-16.21	46	38.22	19.92	1.25	29.6	-	-	Peak
2332.99	56.29	-17.71	74	54.16	32.76	3.27	33.9	100	223	Peak
2332.99	43.87	-10.13	54	41.74	32.76	3.27	33.9	100	223	Average
2412	107.26	-	-	104.93	32.89	3.52	34.08	100	352	Peak
2412	102.32	-	-	99.99	32.89	3.52	34.08	100	352	Average
2491.45	60.21	-13.79	74	57.67	33.05	3.72	34.23	100	332	Peak
2491.45	50.17	-3.83	54	47.63	33.05	3.72	34.23	100	332	Average



<b>Test Mode :</b>	Mode 1	<b>Temperature :</b>	23~24°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	47~48%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2412 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
43.23	26.2	-13.8	40	46.01	10.03	0.27	30.11	100	69	Peak
86.16	22.34	-17.66	40	44.09	7.89	0.37	30.01	-	-	Peak
173.64	20.91	-22.59	43.5	41.31	8.95	0.55	29.9	-	-	Peak
575.8	30.36	-15.64	46	40.42	18.55	1.04	29.65	-	-	Peak
691.3	29.09	-16.91	46	38.44	19.25	1.12	29.72	-	-	Peak
806.8	25.11	-20.89	46	33.54	19.92	1.25	29.6	-	-	Peak
2333.37	53.39	-20.61	74	51.26	32.76	3.27	33.9	100	116	Peak
2333.37	41.56	-12.44	54	39.43	32.76	3.27	33.9	100	116	Average
2412	97.01	-	-	94.68	32.89	3.52	34.08	100	40	Average
2412	101.42	-	-	99.09	32.89	3.52	34.08	100	40	Peak
2494.3	53.5	-20.5	74	50.96	33.05	3.72	34.23	100	335	Peak
2494.3	41.87	-12.13	54	39.33	33.05	3.72	34.23	100	335	Average



Test Mode :	Mode 2	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	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
113.7	22.48	-21.02	43.5	40.21	11.8	0.44	29.97	-	-	Peak
117.75	22.49	-21.01	43.5	40.21	11.8	0.45	29.97	-	-	Peak
214.41	18.62	-24.88	43.5	38.29	9.71	0.61	29.99	-	-	Peak
575.8	30.92	-15.08	46	40.98	18.55	1.04	29.65	100	228	Peak
806.8	29.06	-16.94	46	37.49	19.92	1.25	29.6	-	-	Peak
946.1	25.89	-28.11	54	33.39	20.71	1.33	29.54	-	-	Peak
2354.65	54.24	-19.76	74	52.03	32.81	3.38	33.98	120	287	Peak
2354.65	44.24	-9.76	54	42.03	32.81	3.38	33.98	120	287	Average
2437	106.17	-	-	103.77	32.95	3.6	34.15	200	360	Peak
2437	99.36	-	-	96.96	32.95	3.6	34.15	200	360	Average
2492.4	53.92	-20.08	74	51.38	33.05	3.72	34.23	200	16	Peak
2492.4	42.73	-11.27	54	40.19	33.05	3.72	34.23	200	16	Average



Test Mode :	Mode 2	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	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
41.34	25.45	-14.55	40	44.32	10.95	0.26	30.08	100	166	Peak
85.08	21.42	-18.58	40	43.36	7.7	0.37	30.01	-	-	Peak
115.32	20.89	-22.61	43.5	38.62	11.8	0.44	29.97	-	-	Peak
461	28.12	-17.88	46	40.54	16.45	0.91	29.78	-	-	Peak
575.8	31.14	-14.86	46	41.2	18.55	1.04	29.65	-	-	Peak
806.8	28.19	-17.81	46	36.62	19.92	1.25	29.6	-	-	Peak
2358.26	52.95	-21.05	74	50.74	32.81	3.38	33.98	100	118	Peak
2358.26	42.54	-11.46	54	40.33	32.81	3.38	33.98	100	118	Average
2437	99.38	-	-	96.98	32.95	3.6	34.15	100	94	Peak
2437	95.27	-	-	92.87	32.95	3.6	34.15	100	94	Average
2495.82	50.84	-23.16	74	48.3	33.05	3.72	34.23	163	116	Peak
2495.82	41.23	-12.77	54	38.69	33.05	3.72	34.23	163	116	Average



<b>Test Mode :</b>	Mode 3	<b>Temperature :</b>	23~24°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	47~48%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
120.18	17.5	-26	43.5	35.22	11.8	0.45	29.97	-	-	Peak
143.4	20.34	-23.16	43.5	39.28	10.55	0.5	29.99	-	-	Peak
223.32	16.13	-29.87	46	35.13	10.33	0.63	29.96	-	-	Peak
414.8	23.4	-22.6	46	36.28	16.08	0.86	29.82	-	-	Peak
446.3	22.46	-23.54	46	35.07	16.28	0.9	29.79	-	-	Peak
867.7	23.91	-22.09	46	31.73	20.49	1.29	29.6	100	169	Peak
2382.77	56.18	-17.82	74	53.94	32.83	3.42	34.01	100	12	Peak
2382.77	45.91	-8.09	54	43.67	32.83	3.42	34.01	100	12	Average
2462	107.26	-	-	104.81	32.98	3.64	34.17	186	0	Peak
2462	100.83	-	-	98.38	32.98	3.64	34.17	186	0	Average
2490.69	53.36	-20.64	74	50.82	33.05	3.72	34.23	100	118	Peak
2490.69	42.66	-11.34	54	40.12	33.05	3.72	34.23	100	118	Average



Test Mode :	Mode 3	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	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
40.53	28.09	-11.91	40	46.25	11.64	0.25	30.05	122	302	Peak
85.62	20.01	-19.99	40	41.95	7.7	0.37	30.01	-	-	Peak
142.05	18.83	-24.67	43.5	37.69	10.64	0.49	29.99	-	-	Peak
446.3	21.52	-24.48	46	34.13	16.28	0.9	29.79	-	-	Peak
853.7	23.07	-22.93	46	30.93	20.51	1.28	29.65	-	-	Peak
960.1	26.34	-27.66	54	33.75	20.79	1.34	29.54	-	-	Peak
2380.3	53.25	-20.75	74	51.01	32.83	3.42	34.01	100	26	Peak
2380.3	42.87	-11.13	54	40.63	32.83	3.42	34.01	100	26	Average
2462	97.91	-	-	95.46	32.98	3.64	34.17	100	196	Peak
2462	93.6	-	-	91.15	32.98	3.64	34.17	100	196	Average
2497.15	49.84	-24.16	74	47.3	33.05	3.72	34.23	100	337	Peak
2497.15	39.22	-14.78	54	36.68	33.05	3.72	34.23	100	337	Average



<b>Test Mode :</b>	Mode 4	<b>Temperature :</b>	23~24°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	47~48%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	2412 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
32.43	18.62	-21.38	40	32.43	16.04	0.24	30.09	116	325	Peak
121.26	16.02	-27.48	43.5	33.75	11.79	0.45	29.97	-	-	Peak
142.32	18.15	-25.35	43.5	37.01	10.64	0.49	29.99	-	-	Peak
414.1	22.31	-23.69	46	35.21	16.07	0.85	29.82	-	-	Peak
446.3	24.1	-21.9	46	36.71	16.28	0.9	29.79	-	-	Peak
960.1	26.3	-27.7	54	33.71	20.79	1.34	29.54	-	-	Peak
2330.14	55.86	-18.14	74	53.73	32.76	3.27	33.9	153	28	Peak
2330.14	45.81	-8.19	54	43.68	32.76	3.27	33.9	153	28	Average
2412	106.97	-	-	104.64	32.89	3.52	34.08	100	340	Peak
2412	92.7	-	-	90.37	32.89	3.52	34.08	100	340	Average
2493.35	47.7	-6.3	54	45.16	33.05	3.72	34.23	100	345	Average
2493.35	60.12	-13.88	74	57.58	33.05	3.72	34.23	100	345	Peak



Test Mode :	Mode 4	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	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
34.86	24.35	-15.65	40	39.11	15.1	0.23	30.09	-	-	Peak
40.26	28.25	-11.75	40	46.41	11.64	0.25	30.05	100	206	Peak
44.85	26.64	-13.36	40	46.9	9.6	0.27	30.13	-	-	Peak
724.9	22.64	-23.36	46	31.53	19.6	1.15	29.64	-	-	Peak
825	23.43	-22.57	46	31.61	20.18	1.26	29.62	-	-	Peak
960.1	26.27	-27.73	54	33.68	20.79	1.34	29.54	-	-	Peak
2332.61	54.19	-19.81	74	52.06	32.76	3.27	33.9	100	117	Peak
2332.61	39.99	-14.01	54	37.86	32.76	3.27	33.9	100	117	Average
2412	99.84	-	-	97.51	32.89	3.52	34.08	100	39	Peak
2412	87.55	-	-	85.22	32.89	3.52	34.08	100	39	Average
2495.63	52.22	-21.78	74	49.68	33.05	3.72	34.23	100	36	Peak
2495.63	40.16	-13.84	54	37.62	33.05	3.72	34.23	100	36	Average



Test Mode :	Mode 5	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	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
112.62	21.93	-21.57	43.5	39.66	11.8	0.44	29.97	-	-	Peak
117.75	22.74	-20.76	43.5	40.46	11.8	0.45	29.97	-	-	Peak
174.99	16.98	-26.52	43.5	37.45	8.87	0.55	29.89	-	-	Peak
321	22.68	-23.32	46	38.28	13.59	0.76	29.95	-	-	Peak
446.3	23.27	-22.73	46	35.88	16.28	0.9	29.79	-	-	Peak
575.8	26.44	-19.56	46	36.5	18.55	1.04	29.65	118	210	Peak
2354.84	54.65	-19.35	74	52.44	32.81	3.38	33.98	100	86	Peak
2354.84	43.78	-10.22	54	41.57	32.81	3.38	33.98	100	86	Average
2437	104.26	-	-	101.86	32.95	3.6	34.15	100	0	Peak
2437	91.02	-	-	88.62	32.95	3.6	34.15	100	0	Average
2489.74	52.03	-21.97	74	49.49	33.05	3.72	34.23	100	111	Peak
2489.74	40.18	-13.82	54	37.64	33.05	3.72	34.23	100	111	Average



<b>Test Mode :</b>	Mode 5	<b>Temperature :</b>	23~24°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	47~48%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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
39.72	25.52	-14.48	40	42.99	12.3	0.25	30.02	-	-	Peak
44.58	27.63	-12.37	40	47.89	9.6	0.27	30.13	102	326	Peak
115.05	21.08	-22.42	43.5	38.81	11.8	0.44	29.97	-	-	Peak
575.8	26.23	-19.77	46	36.29	18.55	1.04	29.65	-	-	Peak
691.3	26.56	-19.44	46	35.91	19.25	1.12	29.72	-	-	Peak
806.8	24.46	-21.54	46	32.89	19.92	1.25	29.6	-	-	Peak
2355.79	53.73	-20.27	74	51.52	32.81	3.38	33.98	100	300	Peak
2355.79	43.17	-10.83	54	40.96	32.81	3.38	33.98	100	300	Average
2437	97.27	-	-	94.87	32.95	3.6	34.15	200	323	Peak
2437	86.05	-	-	83.65	32.95	3.6	34.15	200	323	Average
2488.79	49.22	-24.78	74	46.68	33.05	3.72	34.23	100	338	Peak
2488.79	38.8	-15.2	54	36.26	33.05	3.72	34.23	100	338	Average



<b>Test Mode :</b>	Mode 6	<b>Temperature :</b>	23~24°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	47~48%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
31.08	18.69	-21.31	40	31.23	17.29	0.25	30.08	162	209	Peak
139.62	19.67	-23.83	43.5	38.28	10.9	0.49	30	-	-	Peak
223.32	16.66	-29.34	46	35.66	10.33	0.63	29.96	-	-	Peak
414.1	21.5	-24.5	46	34.4	16.07	0.85	29.82	-	-	Peak
867	22.37	-23.63	46	30.2	20.49	1.29	29.61	-	-	Peak
960.1	25.68	-28.32	54	33.09	20.79	1.34	29.54	-	-	Peak
2383.91	58.95	-15.05	74	56.71	32.83	3.42	34.01	100	95	Peak
2383.91	46.6	-7.4	54	44.36	32.83	3.42	34.01	100	95	Average
2462	106.05	-	-	103.6	32.98	3.64	34.17	100	218	Peak
2462	95.09	-	-	92.64	32.98	3.64	34.17	100	218	Average
2483.66	51.11	-2.89	54	48.62	33.01	3.68	34.2	100	116	Average
2483.66	64.37	-9.63	74	61.88	33.01	3.68	34.2	100	116	Peak



Test Mode :	Mode 6	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	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
39.99	28.33	-11.67	40	45.8	12.3	0.25	30.02	100	116	Peak
44.85	26.37	-13.63	40	46.63	9.6	0.27	30.13	-	-	Peak
51.33	22.28	-17.72	40	44.92	7.21	0.28	30.13	-	-	Peak
669.6	21.21	-24.79	46	30.75	19.04	1.1	29.68	-	-	Peak
891.5	22.64	-23.36	46	30.38	20.46	1.3	29.5	-	-	Peak
960.1	26.37	-27.63	54	33.78	20.79	1.34	29.54	-	-	Peak
2369.47	54.47	-19.53	74	52.23	32.83	3.42	34.01	100	212	Peak
2369.47	41.92	-12.08	54	39.68	32.83	3.42	34.01	100	212	Average
2462	97.06	-	-	94.61	32.98	3.64	34.17	100	228	Peak
2462	86.21	-	-	83.76	32.98	3.64	34.17	100	228	Average
2483.5	56.46	-17.54	74	53.97	33.01	3.68	34.2	100	347	Peak
2483.5	44.14	-9.86	54	41.65	33.01	3.68	34.2	100	347	Average



## **3.8 Antenna Requirements**

### **3.8.1 Standard Applicable**

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

### **3.8.2 Antenna Connected Construction**

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

### **3.8.3 Antenna Gain**

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

## 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Jan. 07, 2011	Jan. 06, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY451015 55	N/A	Aug. 23, 2011	Aug. 22, 2012	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY444211 98	N/A	Aug. 23, 2011	Aug. 22, 2012	Conducted (TH01-KS)
EMI Receiver	R&S	ESC17	100768	9kHz~7GHz	Jun. 02, 2011	Jun. 01, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Jan. 07, 2011	Jan. 06, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Jan. 07, 2011	Jan. 06, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000 0811	N/A	Nov. 10, 2010	Nov. 09, 2011	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 16, 2010	Nov. 15, 2011	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 07, 2010	Dec. 06, 2011	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 09, 2010	Dec. 08, 2011	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A023 70	1GHz~26.5GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Actice hore antenna	com-power	AHA-118	701023	1G-18GHz	Nov. 09, 2010	Nov. 08, 2011	Radiation (03CH01-KS)
Signal Generator	R&S	SMR40	100455	10MHz~40GHz	Jan. 06, 2011	Jan. 05, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA1702 49	15-40GHz	Oct. 15, 2010	Oct. 14, 2011	Radiation (03CH01-KS)
System Simulator	R&S	CMU200	837587/06 6	Full-Band	Jan. 07, 2011	Jan. 06, 2012	-
GPS Station	T&E	GS-50	N/A	N/A	N/A	N/A	-

## 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
<b>Combined Standard Uncertainty <math>U_c(y)</math></b>	<b>1.13</b>		
<b>Measuring Uncertainty for a Level of Confidence of 95% (<math>U = 2U_c(y)</math>)</b>	<b>2.26</b>		

### 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
<b>Combined Standard Uncertainty <math>U_c(y)</math></b>	<b>1.27</b>		
<b>Measuring Uncertainty for a Level of Confidence of 95% (<math>U = 2U_c(y)</math>)</b>	<b>2.54</b>		

**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
<b>Combined Standard Uncertainty Uc(y)</b>	<b>2.36</b>				
<b>Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))</b>	<b>4.72</b>				



## **Appendix A. Photographs of EUT**

Please refer to Sporton report number EP172707 as below.