

# FCC RF Test Report

APPLICANT : ZTE CORPORATION  
EQUIPMENT : LTE Mobile Hotspot  
BRAND NAME : ZTE  
MODEL NAME : EuFi890  
FCC ID : Q78-EUFI890  
STANDARD : FCC Part 15 Subpart C §15.247  
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Dec. 28, 2010 and completely tested on May 14, 2011. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:



Jones Tsai / Manager



**SPORTON INTERNATIONAL (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	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 12.07 dB at 0.39 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 4.46 dB at 894.3 MHz
3.8	15.203 & 15.247(b)	A8.4	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	LTE Mobile Hotspot
Brand Name	ZTE
Model Name	EuFi890
FCC ID	Q78-EUFI890
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 : 15.03 dBm (0.032 W) 802.11g : 21.11 dBm (0.129 W) 802.11n (BW 20MHz) : 21.12 dBm (0.129 W)
Antenna Type	PCB Antenna with gain 1 dBi
Type of Antenna Connector	N/A
HW Version	NA
SW Version	NA
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : 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. 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	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
- ♦ 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.	Notebook	Acer	Trave Imate2413Lci	QDS-BRCM1016	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m

## 2 Test Configuration of Equipment Under Test

### 2.1 RF Power

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

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	14.66	14.89	15.03	14.86
CH 06	2437 MHz	14.45	14.62	14.81	14.74
CH 11	2462 MHz	14.28	14.35	14.65	14.65

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	20.78	20.87	20.98	21.02	21.11	21.08	21.04	21.02
CH 06	2437 MHz	20.64	20.71	20.74	20.81	20.95	20.87	20.76	20.75
CH 11	2462 MHz	20.45	20.54	20.71	20.75	20.81	20.74	20.64	20.61

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		OFDM Data Rate							
		MCS=0	MCS=1	MCS=2	MCS=3	MCS=4	MCS=5	MCS=6	MCS=7
		6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mbps
CH 01	2412 MHz	20.98	21.05	21.02	21.12	21.02	20.98	20.97	21.02
CH 06	2437 MHz	20.84	20.86	20.98	21.06	20.81	20.88	20.81	20.75
CH 11	2462 MHz	20.56	20.71	20.82	20.86	20.66	20.71	20.68	20.62

**Remark:**

1. The data rates of WLAN 802.11b/g/n were set in 5.5Mbps for 802.11b, 24Mbps for 802.11g, MCS3 for 802.11n (BW 20MHz) for all the test cases due to the highest RF output power.
2. The EUT is programmed to transmit signals continuously for all testing.

## 2.2 Test Mode

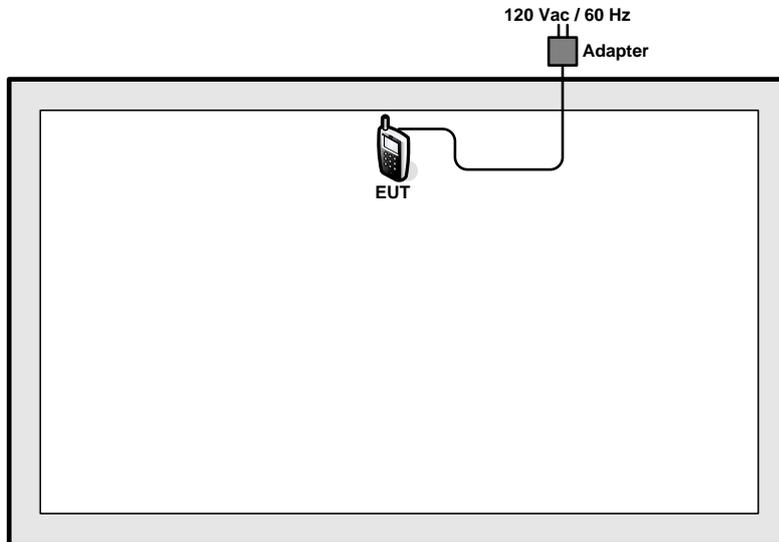
The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

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

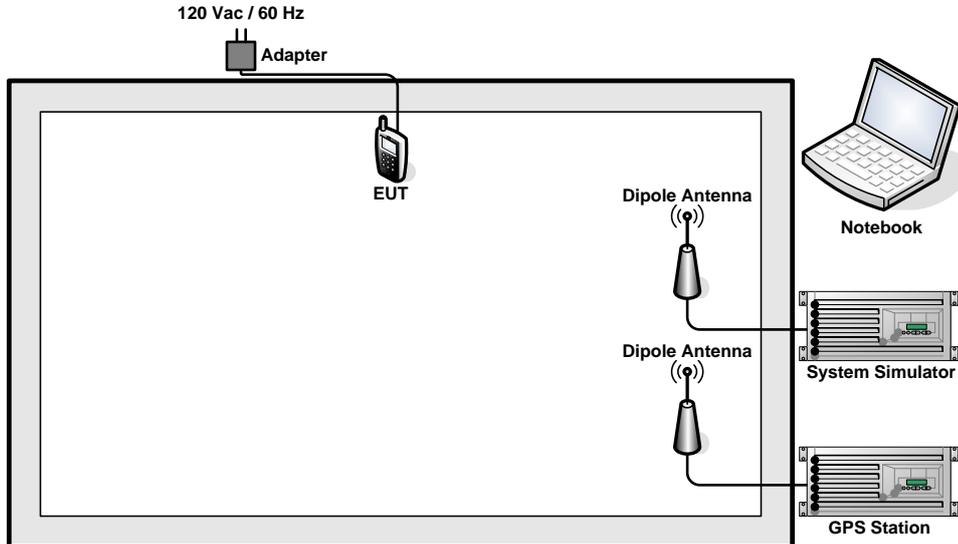
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
<b>Conducted TCs</b>	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 MHz Mode 8: 802.11n (BW 20M)_CH06_2437 MHz Mode 9: 802.11n (BW 20M)_CH11_2462 MHz
<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 Mode 7: 802.11n (BW 20M)_CH01_2412 MHz Mode 8: 802.11n (BW 20M)_CH06_2437 MHz Mode 9: 802.11n (BW 20M)_CH11_2462 MHz
<b>AC Conducted Emission</b>	Mode 1 : WCDMA1900 Idle + GPS RX + Adapter + WLAN Link	

## 2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>





## **2.4 RF Utility**

The programmed RF utility "QRCT" is installed in Notebook 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.

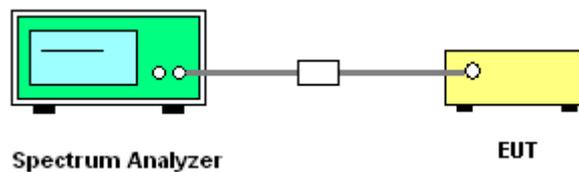
##### 3.1.2 Measuring Instruments

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

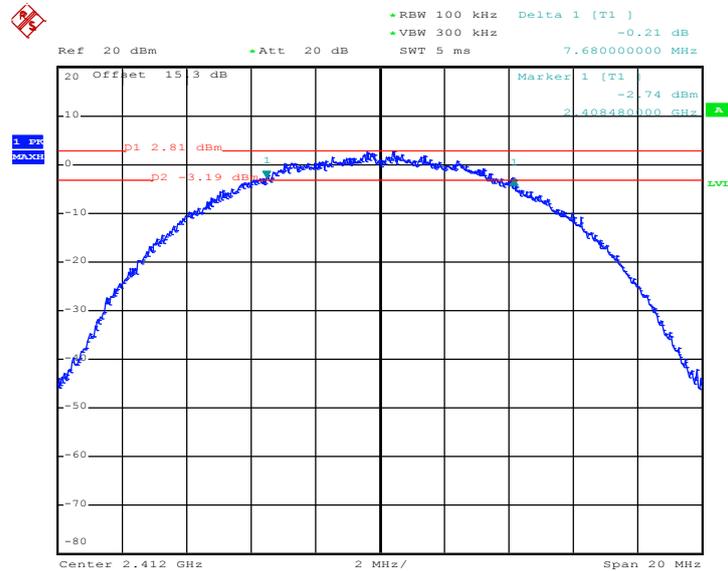


### 3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	20~21°C
Test Engineer :	Fly Chen	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	7.68	0.5	Pass
06	2437	7.88	0.5	Pass
11	2462	7.72	0.5	Pass

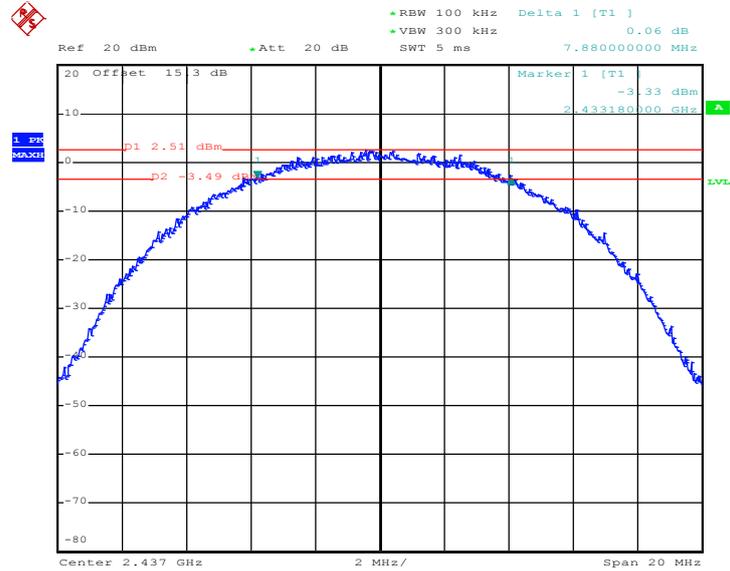
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 9.MAY.2011 13:02:08

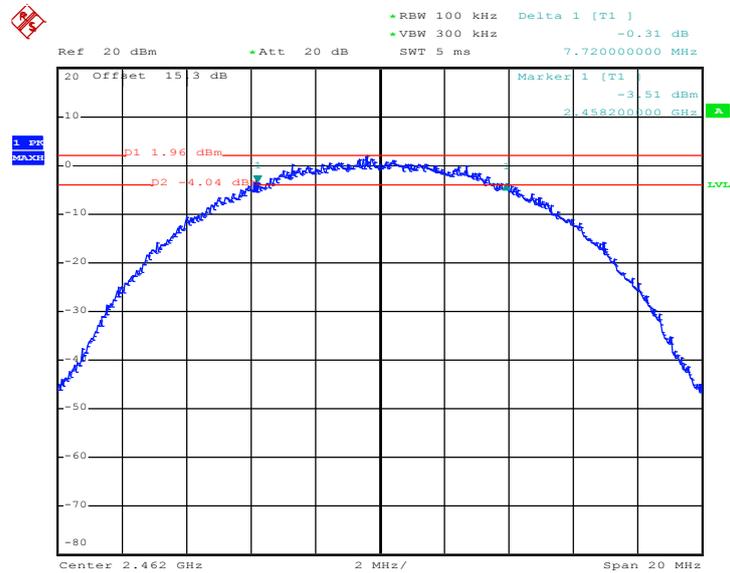


Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



Date: 9.MAY.2011 13:15:43

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



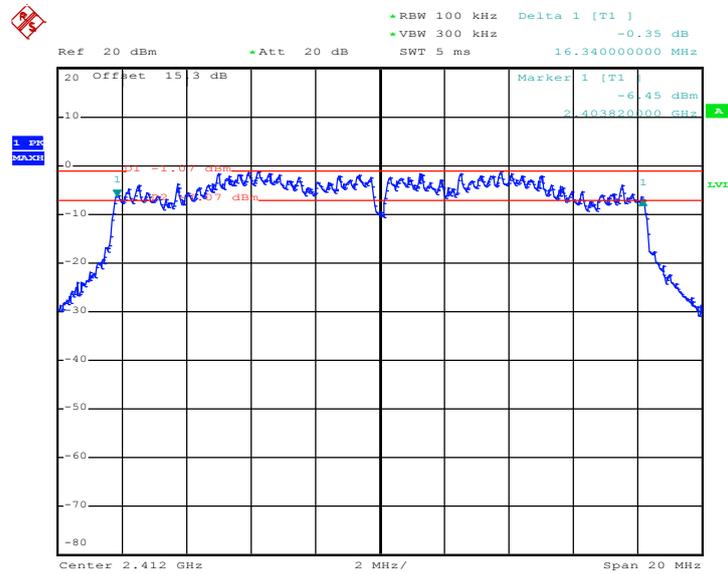
Date: 9.MAY.2011 13:28:23



Test Mode :	Mode 4, 5, 6	Temperature :	20~21°C
Test Engineer :	Fly Chen	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.34	0.5	Pass
06	2437	16.50	0.5	Pass
11	2462	16.40	0.5	Pass

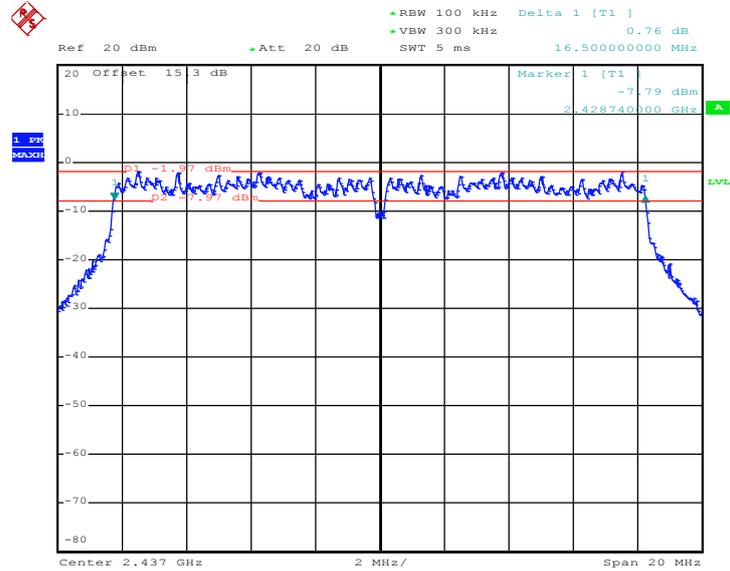
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



Date: 9.MAY.2011 13:48:19

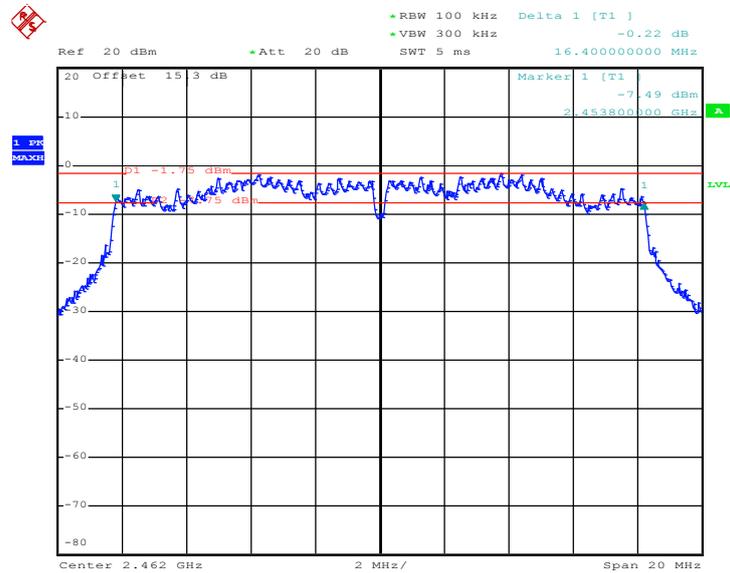


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



Date: 9.MAY.2011 14:02:15

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



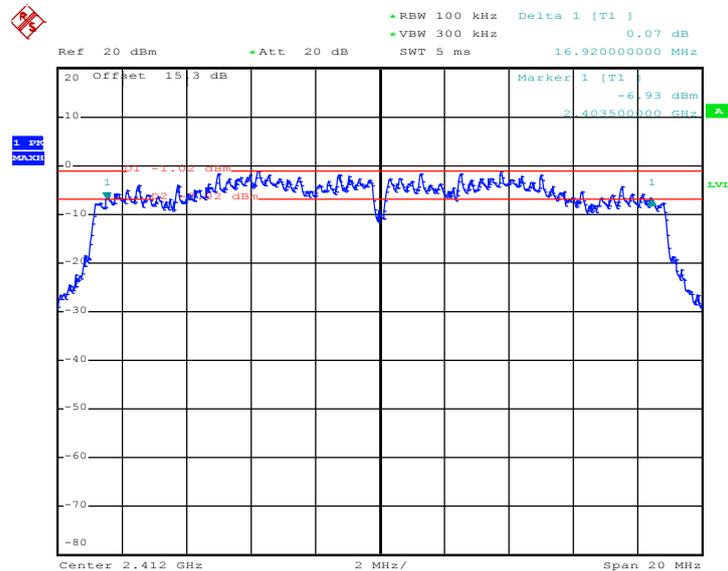
Date: 9.MAY.2011 14:15:12



Test Mode :	Mode 7, 8, 9	Temperature :	20~21°C
Test Engineer :	Fly Chen	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.92	0.5	Pass
06	2437	17.64	0.5	Pass
11	2462	17.28	0.5	Pass

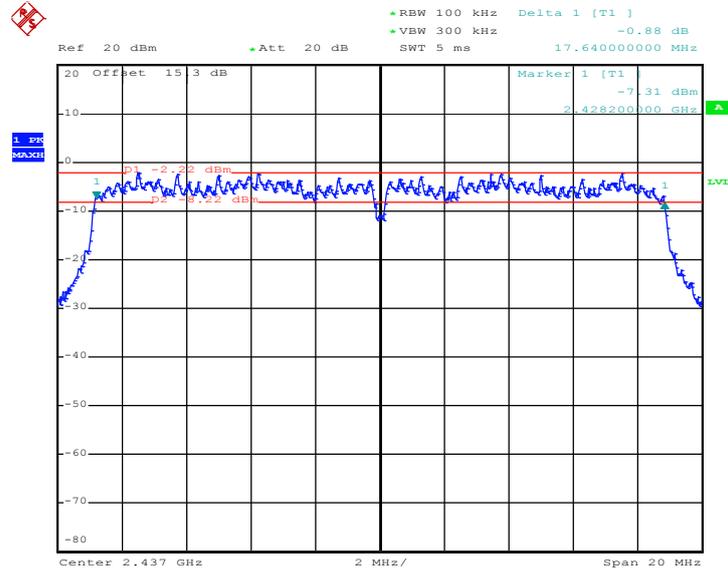
Mode 7 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 01



Date: 9.MAY.2011 14:48:37

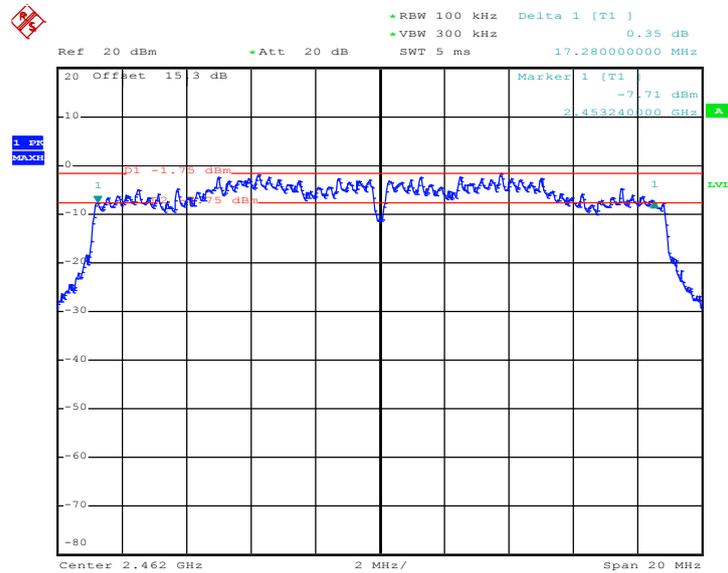


Mode 8 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 06



Date: 9.MAY.2011 14:52:50

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



Date: 9.MAY.2011 15:07:17

## 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.

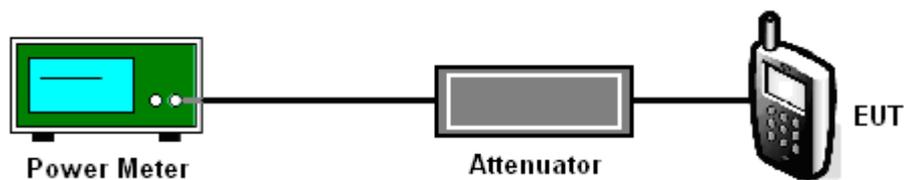
### 3.2.2 Measuring Instruments

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

<b>Test Mode :</b>	Mode 1, 2, 3	<b>Temperature :</b>	20~21°C
<b>Test Engineer :</b>	Fly Chen	<b>Relative Humidity :</b>	40~41%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	15.03	30	Pass
06	2437	14.81	30	Pass
11	2462	14.65	30	Pass

<b>Test Mode :</b>	Mode 4, 5, 6	<b>Temperature :</b>	20~21°C
<b>Test Engineer :</b>	Fly Chen	<b>Relative Humidity :</b>	40~41%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.11	30	Pass
06	2437	20.95	30	Pass
11	2462	20.81	30	Pass

<b>Test Mode :</b>	Mode 7, 8, 9	<b>Temperature :</b>	20~21°C
<b>Test Engineer :</b>	Fly Chen	<b>Relative Humidity :</b>	40~41%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.12	30	Pass
06	2437	21.06	30	Pass
11	2462	20.86	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

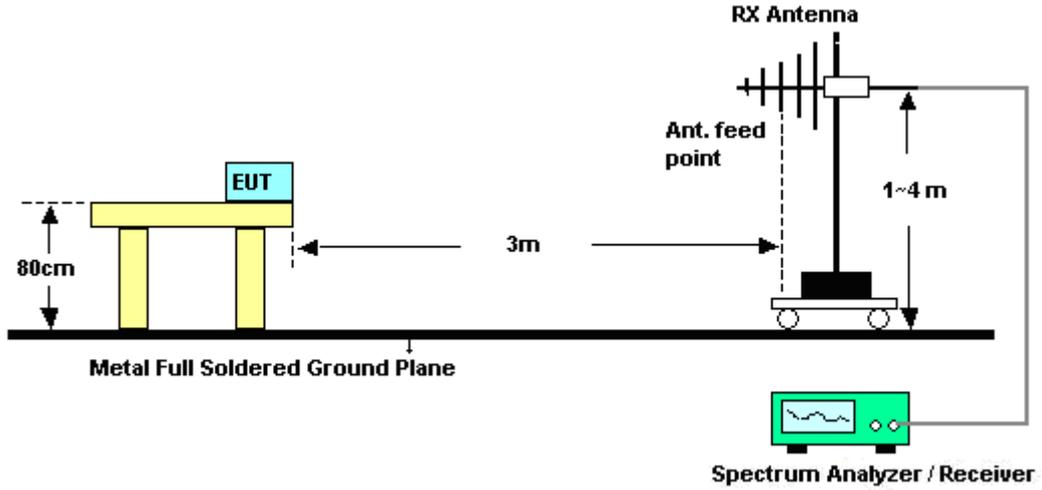
See list of measuring instruments of this test report.

#### 3.3.3 Test Procedures

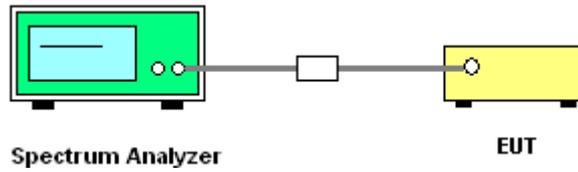
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW)  $\geq$  RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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 :	20~21°C
Test Band :	802.11b	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Cloud Peng

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2390	49.92	-24.08	74	47.64	32.86	3.47	34.05	200	331	Peak
2390	43.77	-10.23	54	41.49	32.86	3.47	34.05	200	331	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2390	49.19	-24.81	74	46.91	32.86	3.47	34.05	123	265	Peak
2390	43.25	-10.75	54	40.97	32.86	3.47	34.05	123	265	Average

Test Mode :	Mode 3	Temperature :	20~21°C
Test Band :	802.11b	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Cloud Peng

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	51.55	-22.45	74	49.06	33.01	3.68	34.2	200	305	Peak
2483.5	42.17	-11.83	54	39.68	33.01	3.68	34.2	200	305	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	50.04	-23.96	74	47.55	33.01	3.68	34.2	200	330	Peak
2483.5	43.85	-10.15	54	41.36	33.01	3.68	34.2	200	330	Average



Test Mode :	Mode 4	Temperature :	20~21°C
Test Band :	802.11g	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Cloud Peng

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2390	58.69	-15.31	74	56.41	32.86	3.47	34.05	200	330	Peak
2390	45.39	-8.61	54	43.11	32.86	3.47	34.05	200	330	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
2390	52.96	-21.04	74	50.68	32.86	3.47	34.05	100	263	Peak
2390	43.49	-10.51	54	41.21	32.86	3.47	34.05	100	263	Average

Test Mode :	Mode 6	Temperature :	20~21°C
Test Band :	802.11g	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Cloud Peng

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	58.31	-15.69	74	55.82	33.01	3.68	34.2	123	321	Peak
2483.5	46.39	-7.61	54	43.9	33.01	3.68	34.2	123	321	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2484.42	55.06	-18.94	74	52.57	33.01	3.68	34.2	118	296	Peak
2484.42	44.21	-9.79	54	41.72	33.01	3.68	34.2	118	296	Average



Test Mode :	Mode 7	Temperature :	20~21°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Cloud Peng

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2390	53.8	-20.2	74	51.52	32.86	3.47	34.05	200	340	Peak
2390	43.6	-10.4	54	41.32	32.86	3.47	34.05	200	340	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2390	51.69	-22.31	74	49.41	32.86	3.47	34.05	100	259	Peak
2390	42.34	-11.66	54	40.06	32.86	3.47	34.05	100	259	Average

Test Mode :	Mode 9	Temperature :	20~21°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Cloud Peng

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	55.74	-18.26	74	53.25	33.01	3.68	34.2	159	319	Peak
2483.5	46.1	-7.9	54	43.61	33.01	3.68	34.2	159	319	Average

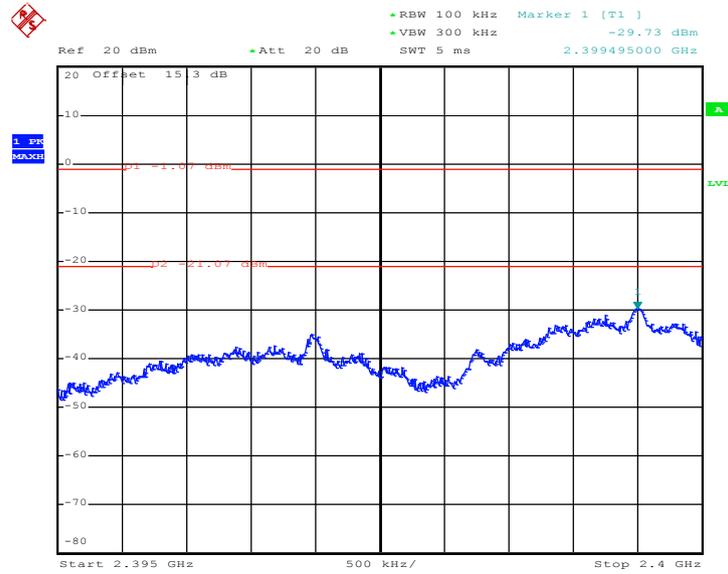
ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2483.5	45.6	-8.4	54	43.11	33.01	3.68	34.2	166	240	Average
2483.5	58.14	-15.86	74	55.65	33.01	3.68	34.2	166	240	Peak





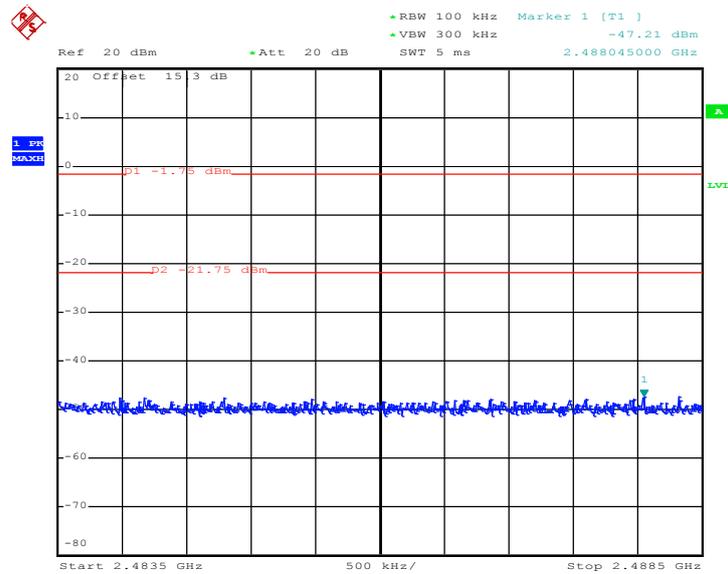
Test Mode :	Mode 4 and 6	Temperature :	20~21°C
Test Band :	802.11g	Relative Humidity :	40~41%
Test Channel :	01 and 11	Test Engineer :	Fly Chen

Low Band Edge Plot on 802.11g Channel 01



Date: 9.MAY.2011 13:49:35

High Band Edge Plot on 802.11g Channel 11

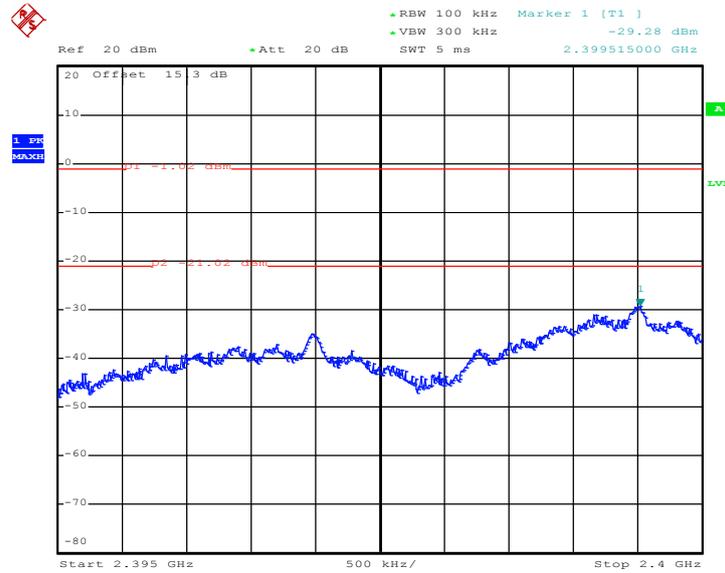


Date: 9.MAY.2011 14:16:07



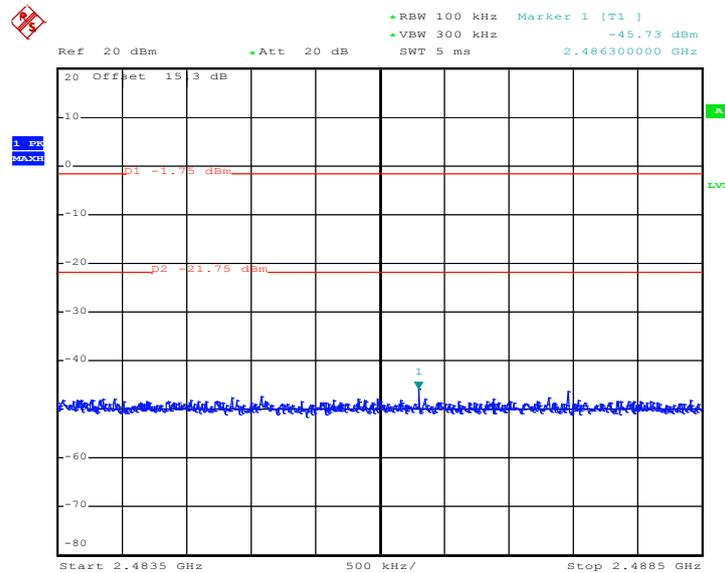
Test Mode :	Mode 7 and 9	Temperature :	20~21°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~41%
Test Channel :	01 and 11	Test Engineer :	Fly Chen

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



Date: 9.MAY.2011 14:49:59

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



Date: 9.MAY.2011 15:08:52

## 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.

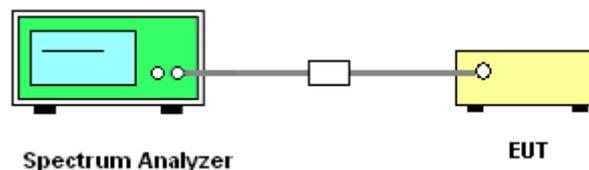
### 3.4.2 Measuring Instruments

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

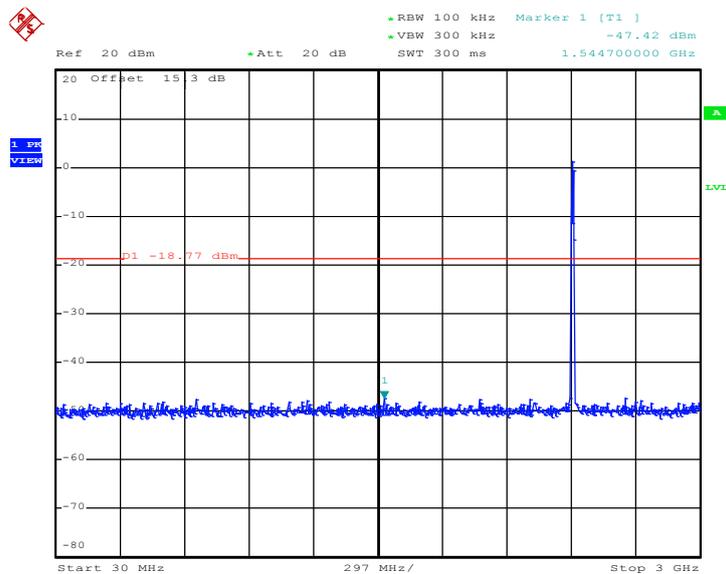




### 3.4.5 Test Plots of Spurious Emission

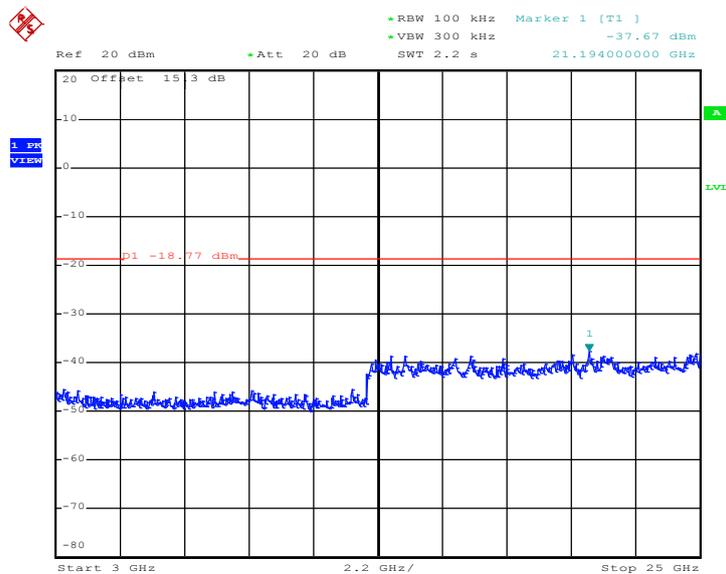
Test Mode :	Mode 1	Temperature :	20~21°C
Test Band :	802.11b	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 9.MAY.2011 13:04:16

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

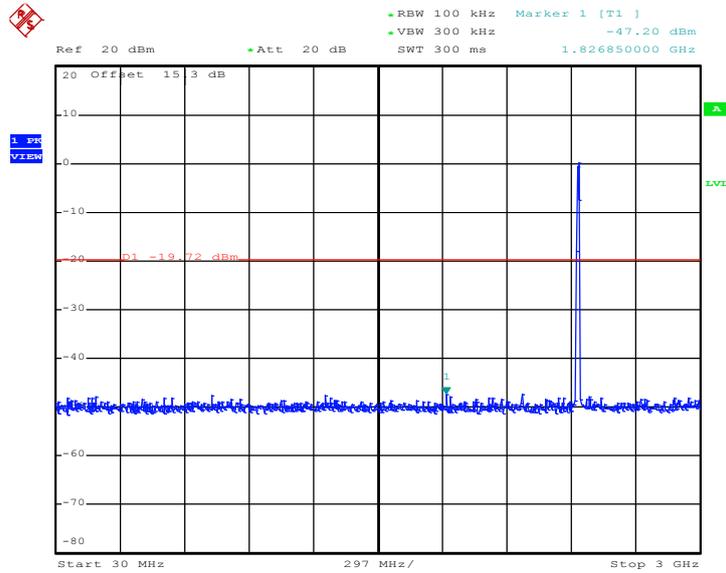


Date: 9.MAY.2011 13:04:33



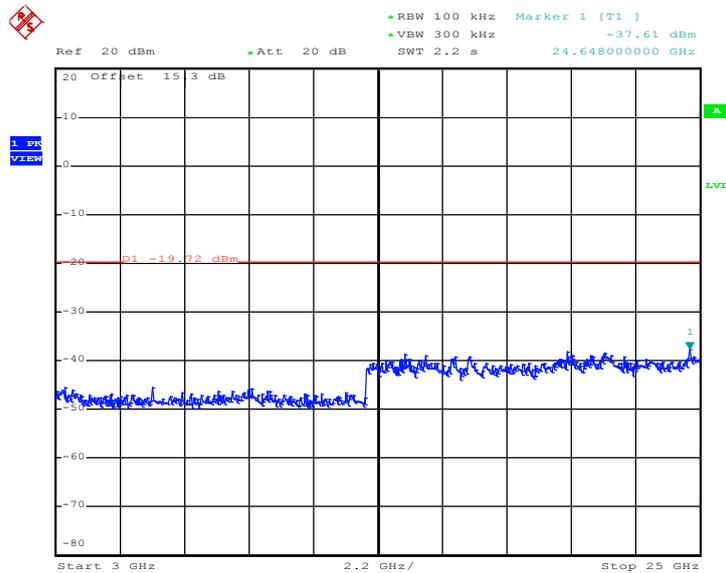
Test Mode :	Mode 2	Temperature :	20~21°C
Test Band :	802.11b	Relative Humidity :	40~41%
Test Channel :	06	Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 9.MAY.2011 13:16:45

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

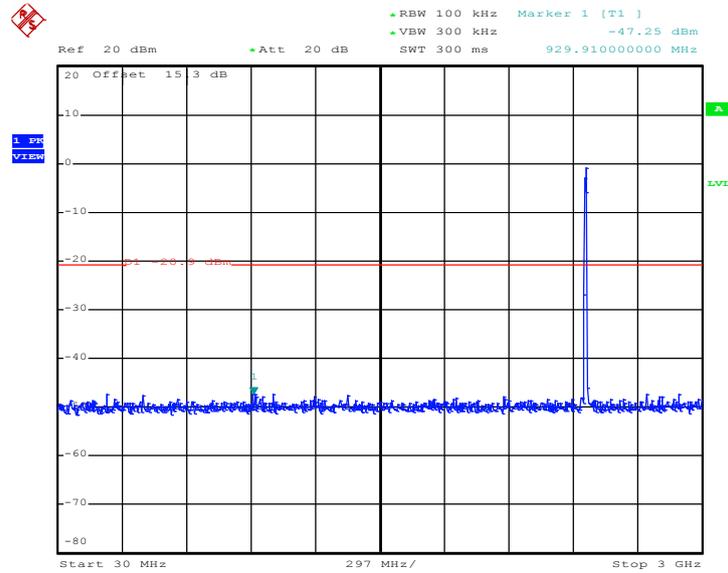


Date: 9.MAY.2011 13:17:02



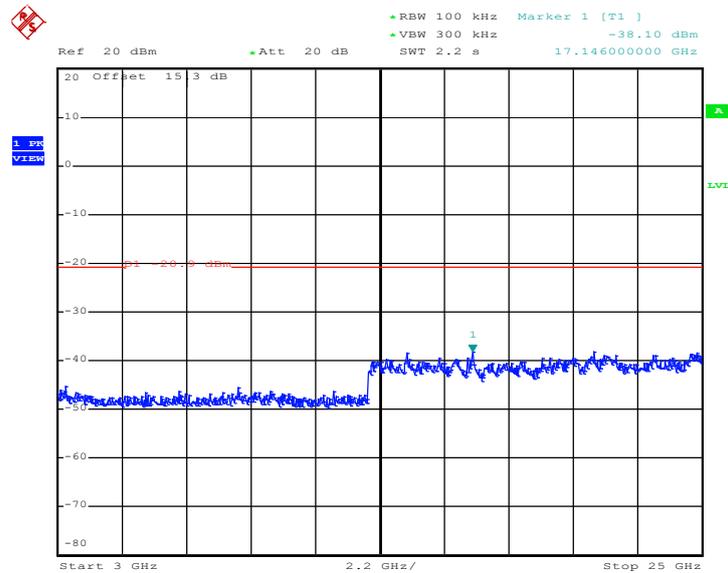
Test Mode :	Mode 3	Temperature :	20~21°C
Test Band :	802.11b	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 9.MAY.2011 13:30:34

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

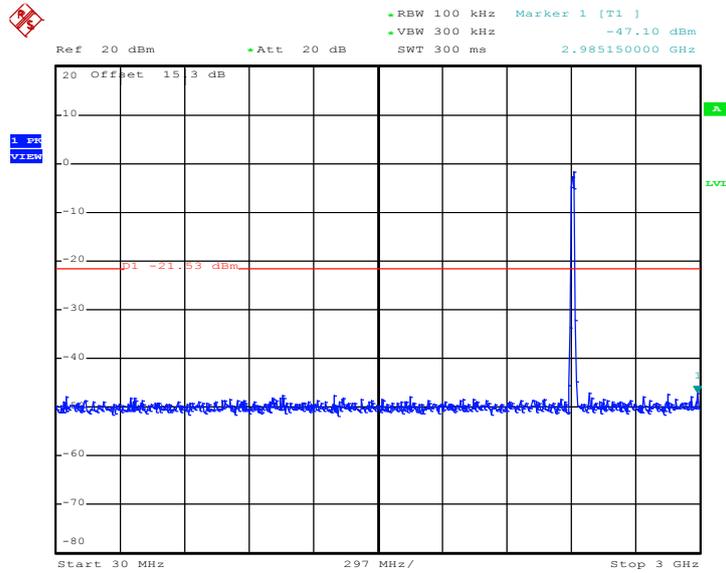


Date: 9.MAY.2011 13:30:50



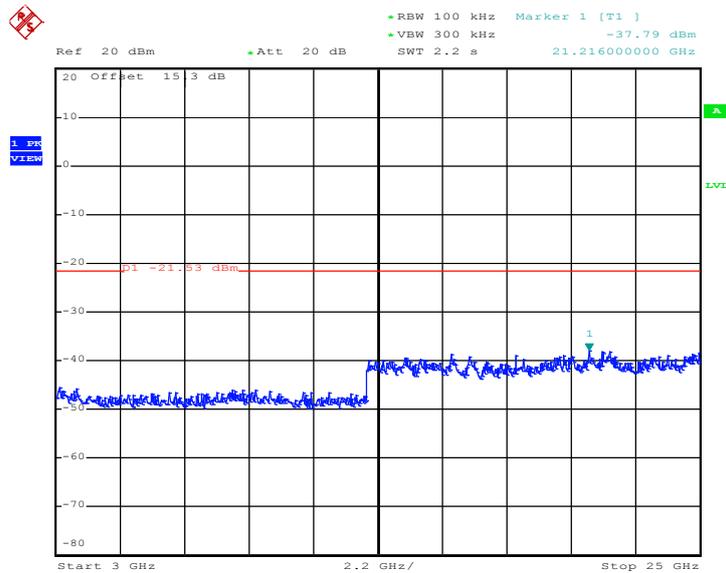
Test Mode :	Mode 4	Temperature :	20~21°C
Test Band :	802.11g	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 9.MAY.2011 13:50:32

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

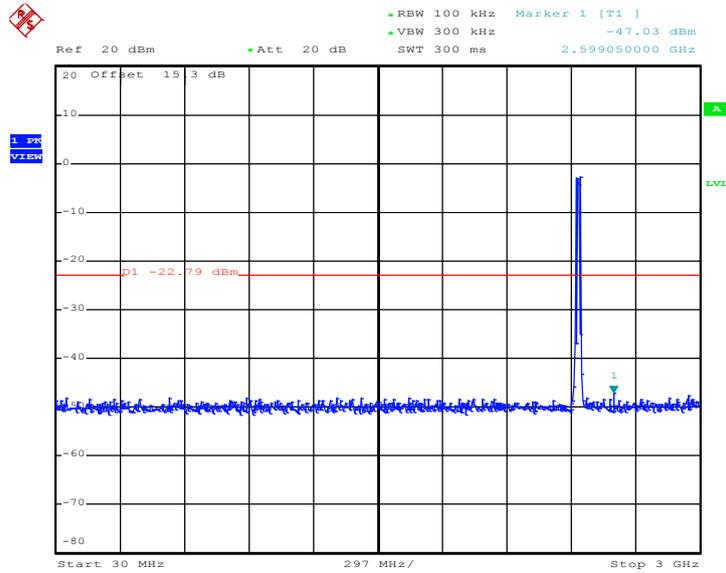


Date: 9.MAY.2011 13:50:49



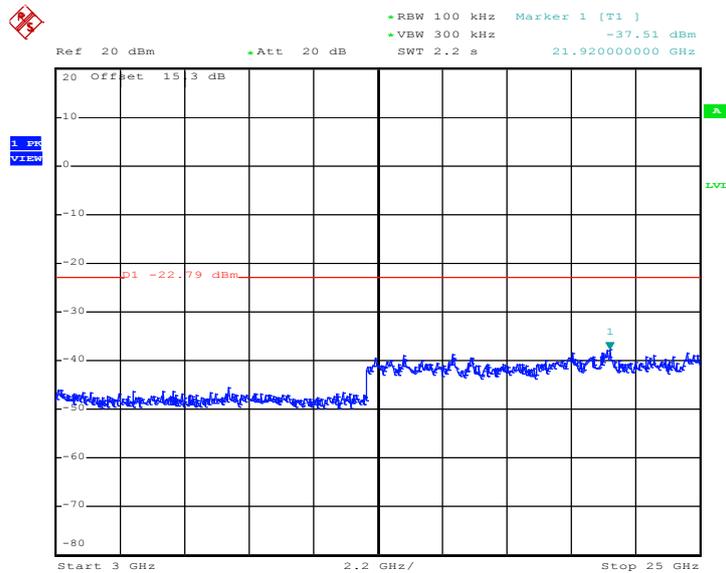
Test Mode :	Mode 5	Temperature :	20~21
Test Band :	802.11g	Relative Humidity :	40~41
Test Channel :	06	Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 9.MAY.2011 14:03:11

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

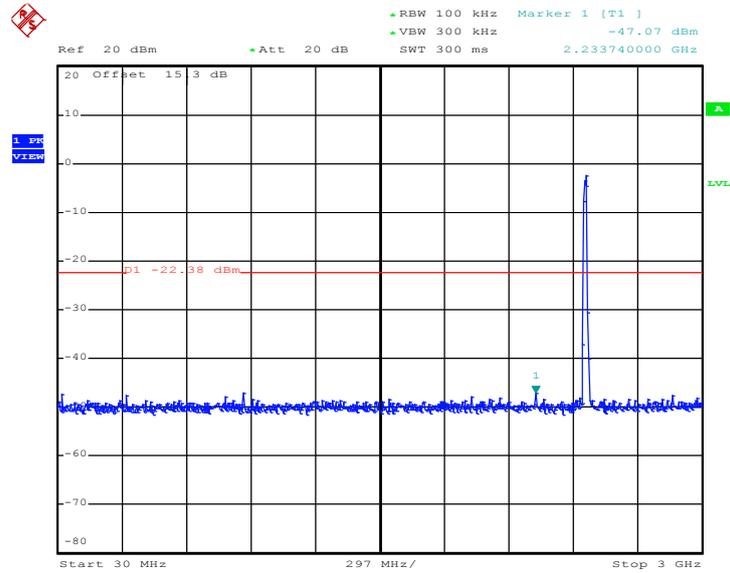


Date: 9.MAY.2011 14:03:28



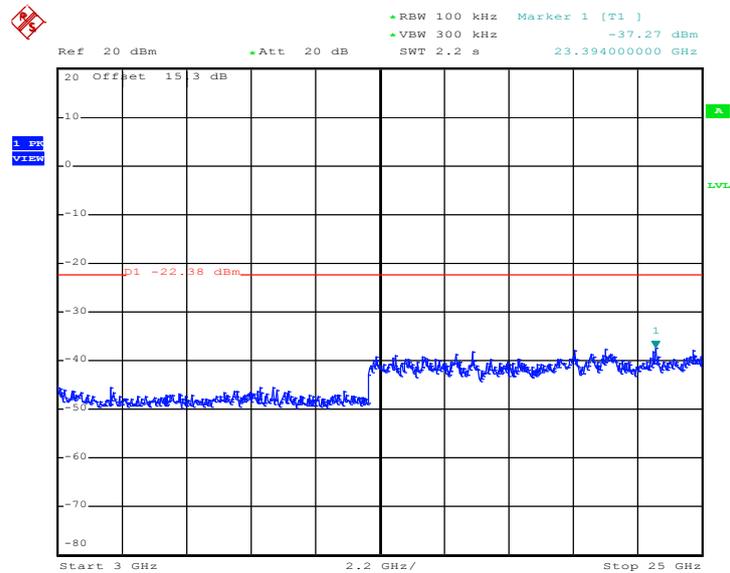
Test Mode :	Mode 6	Temperature :	20~21°C
Test Band :	802.11g	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 9.MAY.2011 14:17:55

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

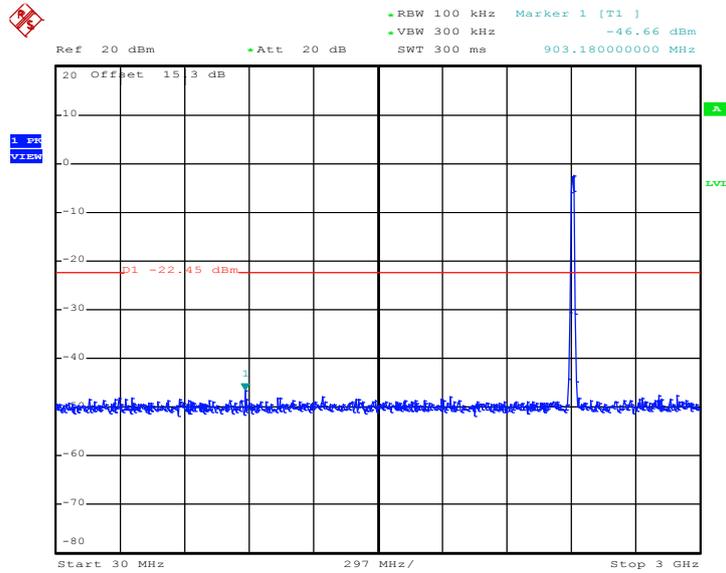


Date: 9.MAY.2011 14:18:12



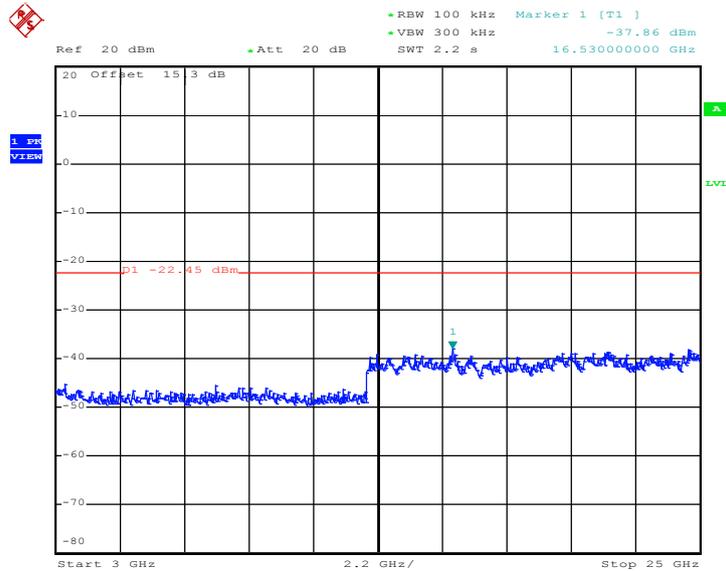
Test Mode :	Mode 7	Temperature :	20~21°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 9.MAY.2011 14:50:23

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

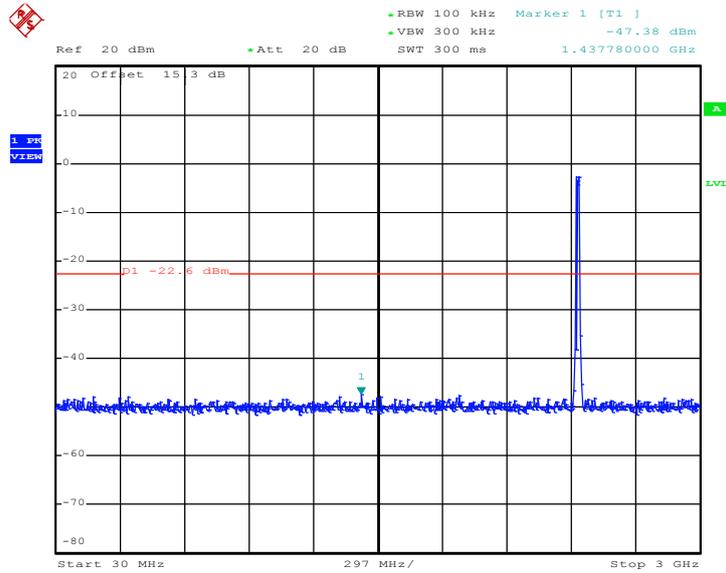


Date: 9.MAY.2011 14:50:40



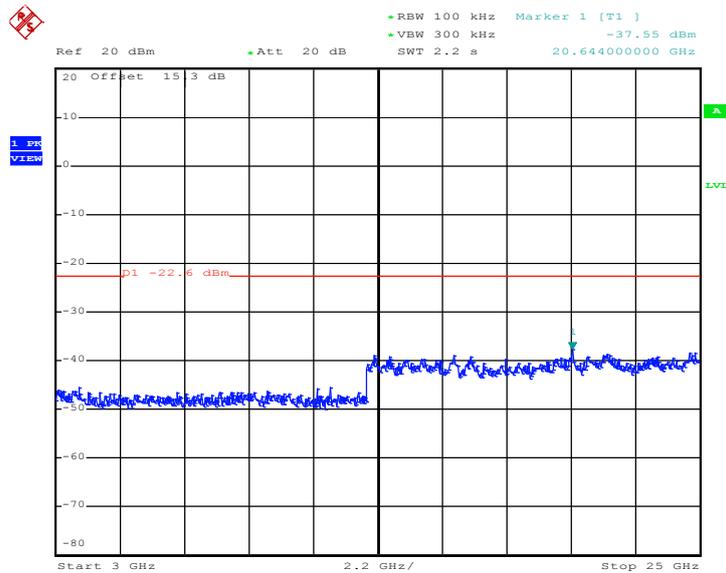
Test Mode :	Mode 8	Temperature :	20~21°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~41%
Test Channel :	06	Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 9.MAY.2011 14:53:53

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

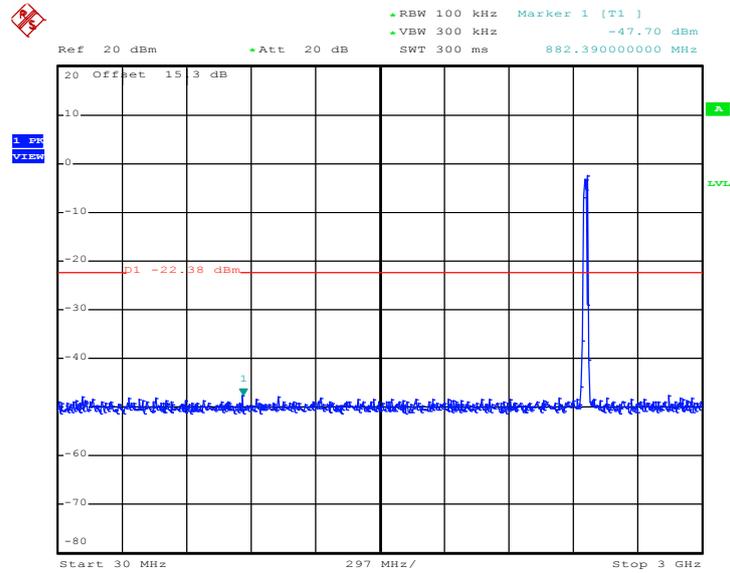


Date: 9.MAY.2011 14:54:10



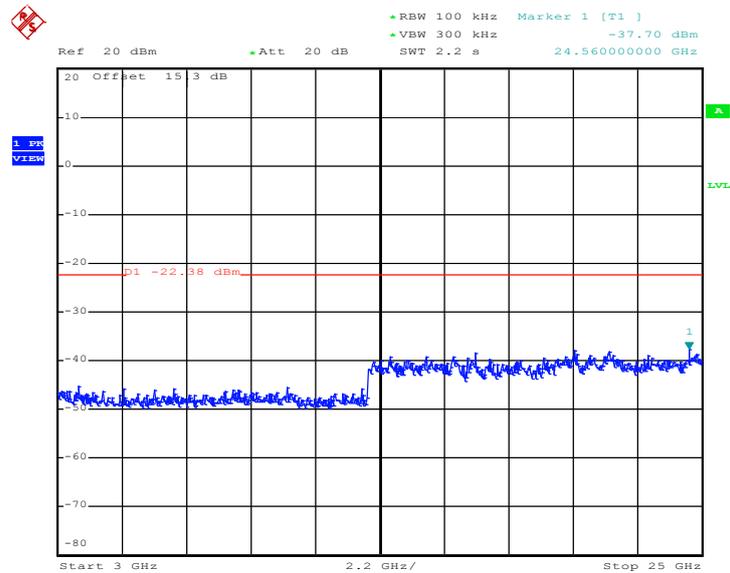
Test Mode :	Mode 9	Temperature :	20~21°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 9.MAY.2011 15:10:09

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 9.MAY.2011 15:10:26

## 3.5 Power Spectral Density Measurement

### 3.5.1 Limit of Power Spectral Density

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

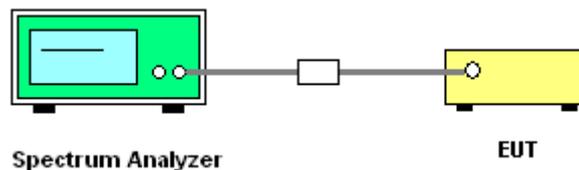
### 3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.5.3 Test Procedures

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

### 3.5.4 Test Setup



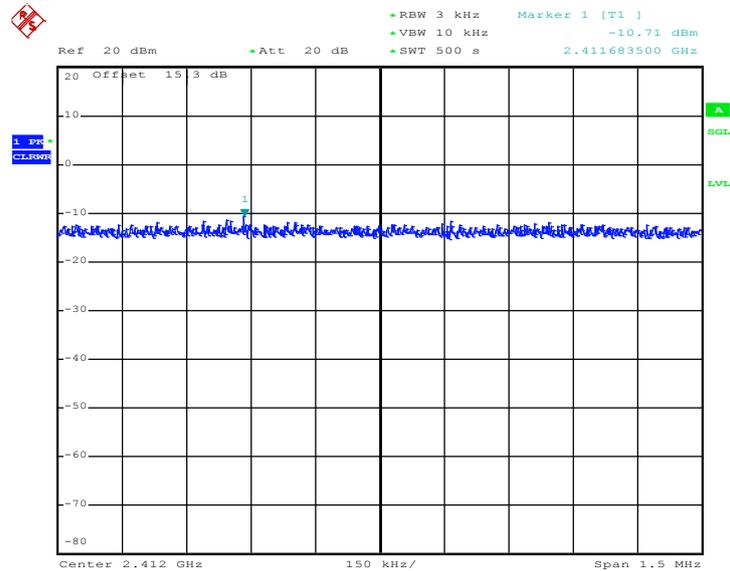


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	20~21°C
Test Engineer :	Fly Chen	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-10.71	8	Pass
06	2437	-11.19	8	Pass
11	2462	-11.14	8	Pass

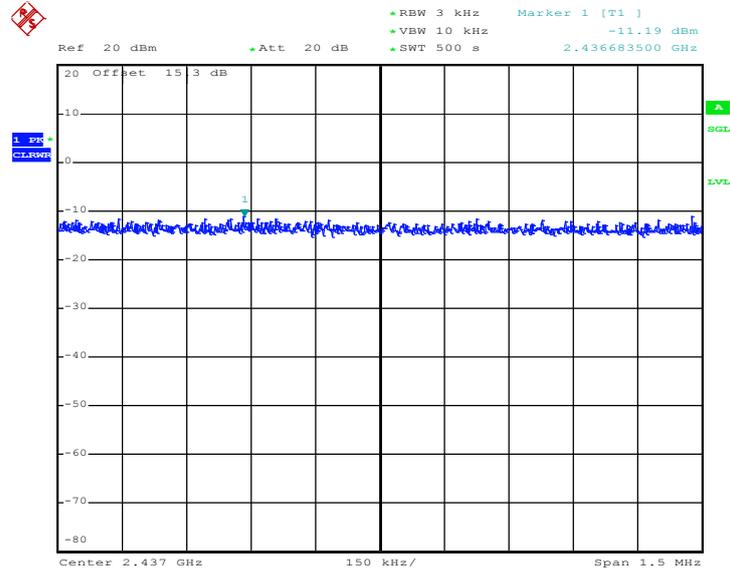
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 9.MAY.2011 13:13:30

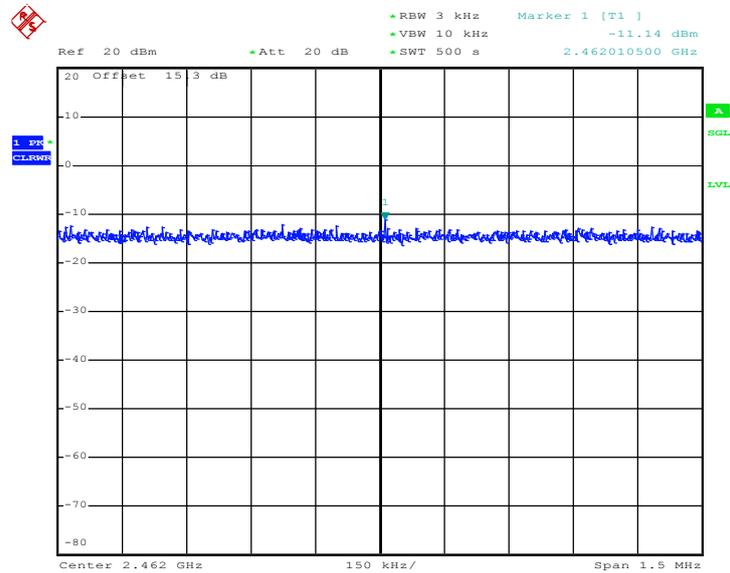


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 9.MAY.2011 13:26:02

Mode 3 : PSD Plot on 802.11b Channel 11



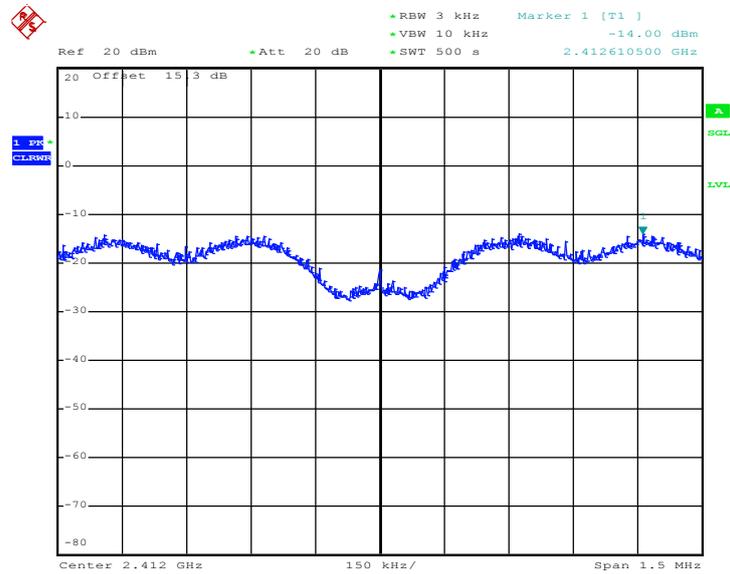
Date: 9.MAY.2011 13:40:38



Test Mode :	Mode 4, 5, 6	Temperature :	20~21°C
Test Engineer :	Fly Chen	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-14.00	8	Pass
06	2437	-14.22	8	Pass
11	2462	-13.98	8	Pass

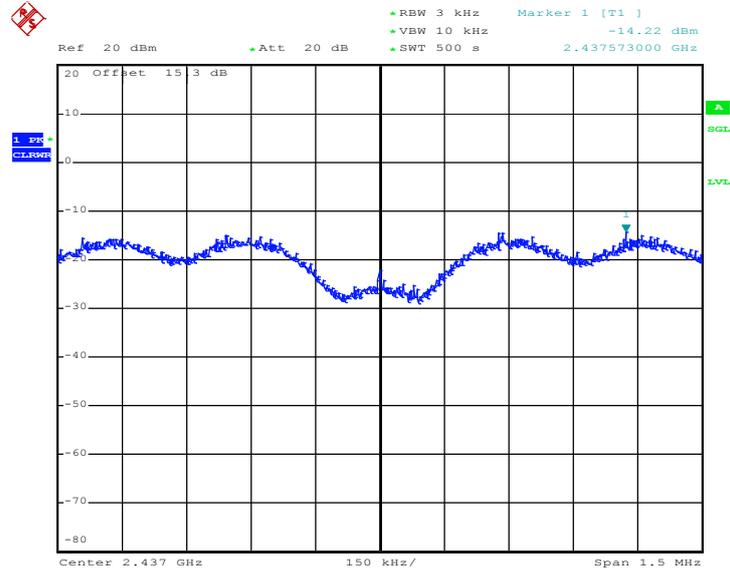
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 9.MAY.2011 13:59:41

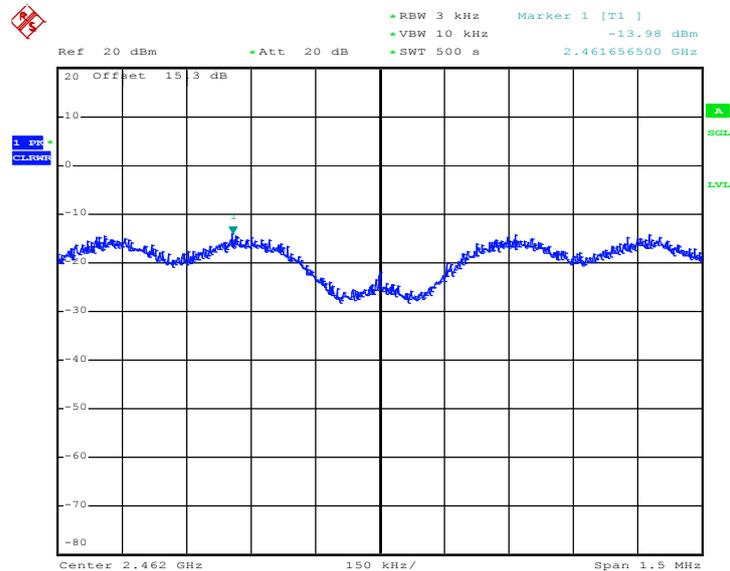


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 9.MAY.2011 14:12:37

Mode 6 : PSD Plot on 802.11g Channel 11



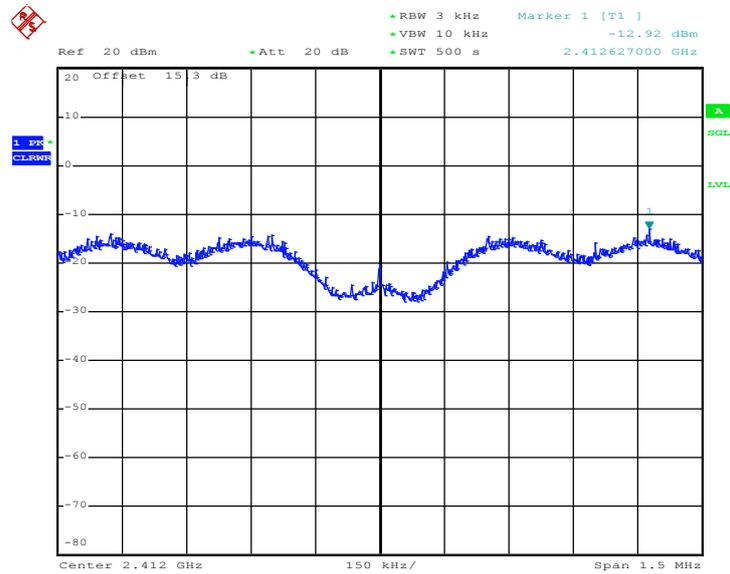
Date: 9.MAY.2011 14:27:35



Test Mode :	Mode 7, 8, 9	Temperature :	20~21°C
Test Engineer :	Fly Chen	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-12.92	8	Pass
06	2437	-15.33	8	Pass
11	2462	-13.99	8	Pass

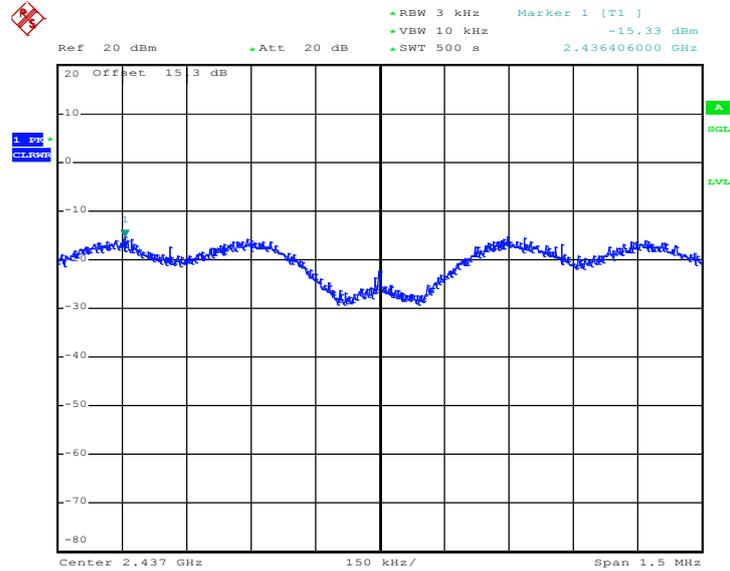
Mode 7 : PSD Plot on 802.11n (BW 20MHz) Channel 01



Date: 9.MAY.2011 14:44:36

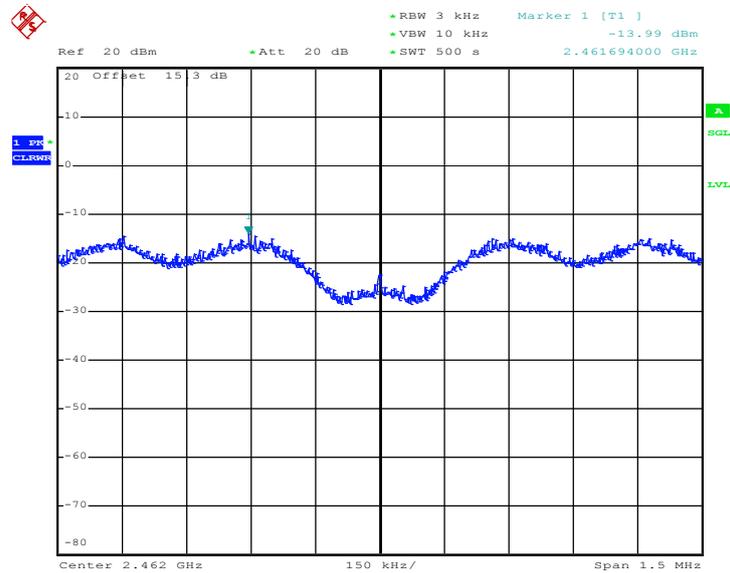


Mode 8 : PSD Plot on 802.11n (BW 20MHz) Channel 06



Date: 9.MAY.2011 15:04:07

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



Date: 9.MAY.2011 15:25:21

## 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.

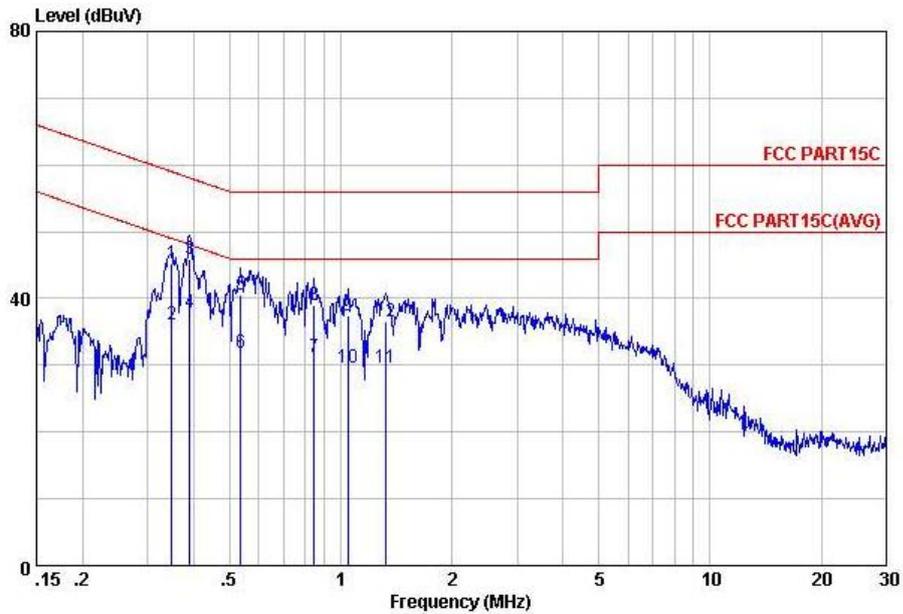
### 3.6.3 Test Procedures

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.



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~21°C
Test Engineer :	Chenmy Cheng	Relative Humidity :	40~41%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA1900 Idle + GPS RX + Adapter + WLAN Link		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



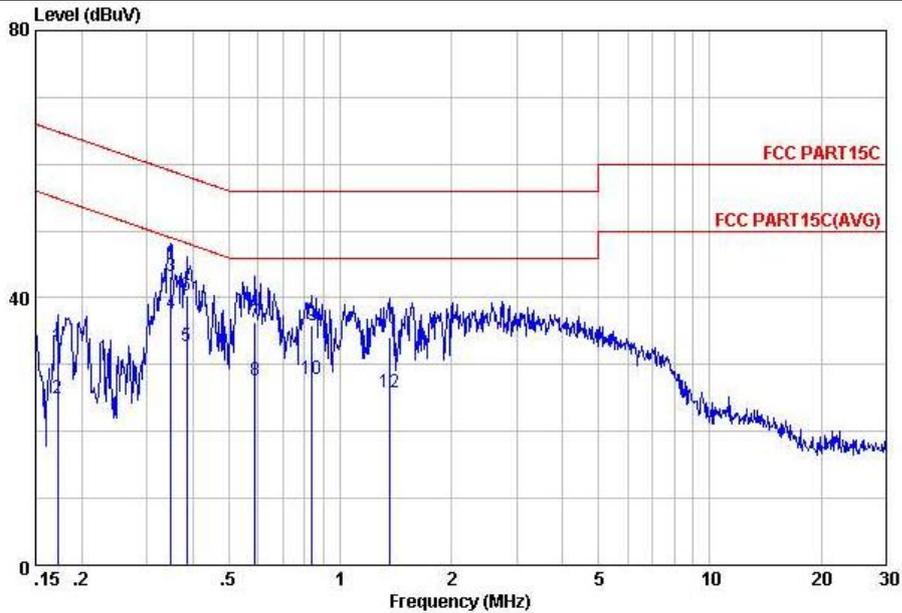
Site : C001-KS  
 Condition: FCC PART15C LISN-100807 LINE

mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.35	45.20	-13.80	59.00	35.10	-0.08	10.18	QP
2	0.35	36.00	-23.00	59.00	25.90	-0.08	10.18	Average
3	0.39	46.01	-12.07	58.08	35.90	-0.08	10.19	QP
4	0.39	37.91	-20.17	58.08	27.80	-0.08	10.19	Average
5	0.53	40.53	-15.47	56.00	30.40	-0.08	10.21	QP
6	0.53	31.93	-24.07	56.00	21.80	-0.08	10.21	Average
7	0.85	31.25	-24.75	56.00	21.10	-0.10	10.25	Average
8	0.85	38.95	-17.05	56.00	28.80	-0.10	10.25	QP
9	1.04	37.47	-18.53	56.00	27.30	-0.10	10.27	QP
10	1.04	29.67	-26.33	56.00	19.50	-0.10	10.27	Average
11	1.32	29.59	-26.41	56.00	19.40	-0.10	10.29	Average
12	1.32	36.49	-19.51	56.00	26.30	-0.10	10.29	QP



Test Mode :	Mode 1	Temperature :	20~21°C
Test Engineer :	Chenmy Cheng	Relative Humidity :	40~41%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA1900 Idle + GPS RX + Adapter + WLAN Link		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS  
 Condition: FCC PART15C LISN-100807 NEUTRAL

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	32.66	-32.20	64.86	22.60	-0.08	10.14	QP
2	0.17	25.06	-39.80	64.86	15.00	-0.08	10.14	Average
3	0.35	43.30	-15.70	59.00	33.20	-0.08	10.18	QP
4	0.35	37.70	-21.30	59.00	27.60	-0.08	10.18	Average
5	0.39	32.71	-25.46	58.17	22.60	-0.08	10.19	Average
6	0.39	40.41	-17.76	58.17	30.30	-0.08	10.19	QP
7	0.59	36.24	-19.76	56.00	26.10	-0.08	10.22	QP
8	0.59	27.74	-28.26	56.00	17.60	-0.08	10.22	Average
9	0.84	35.96	-20.04	56.00	25.80	-0.09	10.25	QP
10	0.84	27.76	-28.24	56.00	17.60	-0.09	10.25	Average
11	1.36	33.99	-22.01	56.00	23.80	-0.10	10.29	QP
12	1.36	25.89	-30.11	56.00	15.70	-0.10	10.29	Average

### 3.7 Radiated Emission Measurement

#### 3.7.1 Limit of Radiated Emission

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

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

#### 3.7.2 Measuring Instruments

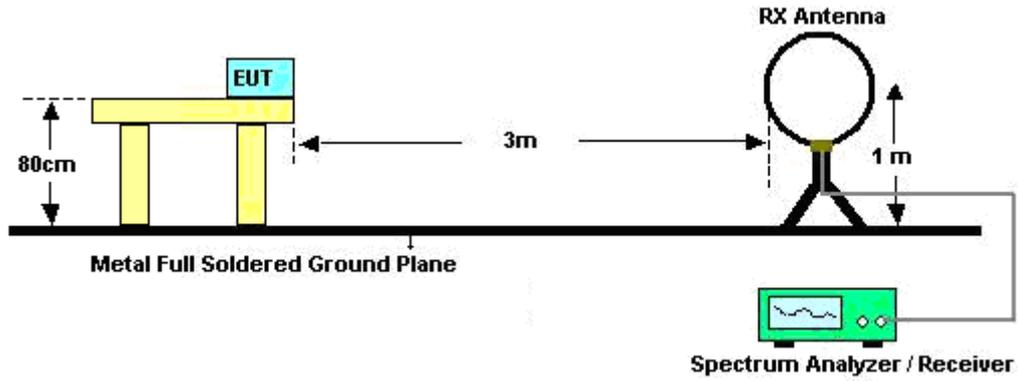
See list of measuring instruments of this test report.

#### 3.7.3 Test Procedures

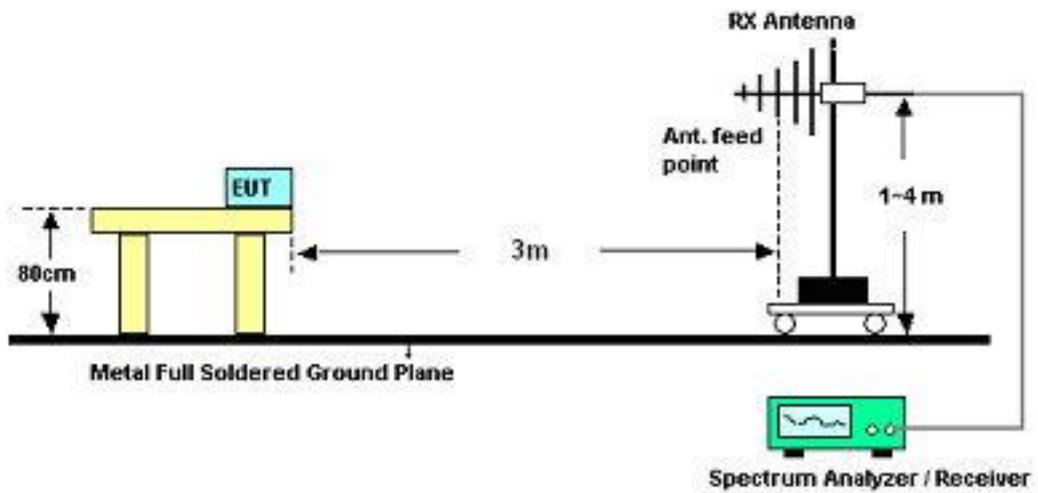
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
  - (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for  $f \geq 1$  GHz, 100 kHz for  $f < 1$  GHz; VBW  $\geq$ 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

### 3.7.4 Test Setup

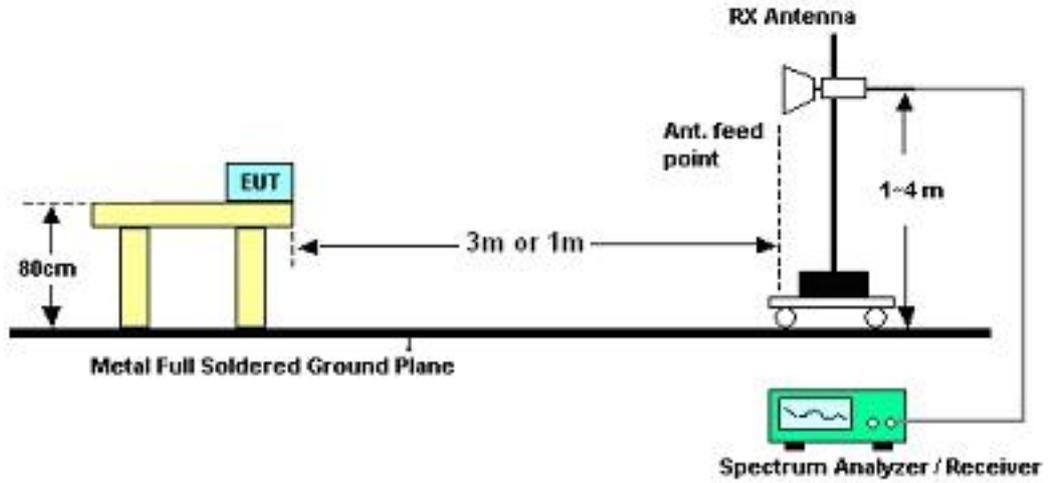
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

<b>Test Engineer :</b>	Cloud Peng	<b>Temperature :</b>	20~21°C	
		<b>Relative Humidity :</b>	40~41%	
Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

**Note:**

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

Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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



3.7.6 Test Result of Radiated Emission (30 MHz ~ 10<sup>th</sup> Harmonic)

Test Mode :	Mode 1	Temperature :	20~21°C
Test Channel :	01	Relative Humidity :	40~41%
Test Engineer :	Cloud Peng	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
102.36	27.66	-15.84	43.5	46.33	10.87	0.42	29.96	-	-	Peak
120.18	28.39	-15.11	43.5	46.11	11.8	0.45	29.97	-	-	Peak
145.29	24.26	-19.24	43.5	43.38	10.37	0.5	29.99	-	-	Peak
331.5	21.36	-24.64	46	36.49	14.02	0.79	29.94	-	-	Peak
908.3	35.6	-10.4	46	43.31	20.48	1.3	29.49	-	-	Peak
939.1	36.39	-9.61	46	43.91	20.68	1.33	29.53	100	0	Peak
2390	49.92	-24.08	74	47.64	32.86	3.47	34.05	200	331	Peak
2390	43.77	-10.23	54	41.49	32.86	3.47	34.05	200	331	Average
2412	101.69	-	-	99.36	32.89	3.52	34.08	200	328	Average
2412	108.6	-	-	106.27	32.89	3.52	34.08	200	328	Peak
2483.5	48.33	-25.67	74	45.84	33.01	3.68	34.2	200	360	Peak
2483.5	40.07	-13.93	54	37.58	33.01	3.68	34.2	200	360	Average



<b>Test Mode :</b>	Mode 1	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Cloud Peng	<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
88.86	19.57	-23.93	43.5	40.56	8.61	0.39	29.99	-	-	Peak
102.36	21.75	-21.75	43.5	40.42	10.87	0.42	29.96	-	-	Peak
217.11	15.43	-30.57	46	34.91	9.89	0.61	29.98	-	-	Peak
346.9	20.27	-25.73	46	34.95	14.44	0.82	29.94	-	-	Peak
871.2	27.67	-18.33	46	35.48	20.49	1.29	29.59	-	-	Peak
939.8	36.52	-9.48	46	44.03	20.69	1.33	29.53	200	100	Peak
2390	49.19	-24.81	74	46.91	32.86	3.47	34.05	123	265	Peak
2390	43.25	-10.75	54	40.97	32.86	3.47	34.05	123	265	Average
2412	99.36	-	-	97.03	32.89	3.52	34.08	100	297	Average
2412	106.15	-	-	103.82	32.89	3.52	34.08	100	297	Peak
2483.5	49.62	-24.38	74	47.13	33.01	3.68	34.2	100	360	Peak
2483.5	41.89	-12.11	54	39.4	33.01	3.68	34.2	100	360	Average



<b>Test Mode :</b>	Mode 2	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Cloud Peng	<b>Polarization :</b>	Horizontal
<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
88.86	25.28	-18.22	43.5	46.27	8.61	0.39	29.99	-	-	Peak
102.36	27.16	-16.34	43.5	45.83	10.87	0.42	29.96	-	-	Peak
297.3	18.84	-27.16	46	35.1	12.97	0.72	29.95	-	-	Peak
341.3	22.65	-23.35	46	37.48	14.3	0.81	29.94	-	-	Peak
468.7	22.05	-23.95	46	34.31	16.59	0.92	29.77	-	-	Peak
939.8	35.56	-10.44	46	43.07	20.69	1.33	29.53	100	360	Peak
2390	49.41	-24.59	74	47.13	32.86	3.47	34.05	100	360	Peak
2390	39.68	-14.32	54	37.4	32.86	3.47	34.05	100	360	Average
2437	102.58	-	-	100.18	32.95	3.6	34.15	161	326	Average
2437	108.53	-	-	106.13	32.95	3.6	34.15	161	326	Peak
2483.5	48.66	-25.34	74	46.17	33.01	3.68	34.2	100	360	Peak
2483.5	39.15	-14.85	54	36.66	33.01	3.68	34.2	100	360	Average



<b>Test Mode :</b>	Mode 2	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Cloud Peng	<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
88.86	23.3	-20.2	43.5	44.29	8.61	0.39	29.99	-	-	Peak
102.36	20.28	-23.22	43.5	38.95	10.87	0.42	29.96	-	-	Peak
172.29	14.78	-28.72	43.5	35.12	9.01	0.55	29.9	-	-	Peak
350.4	20.31	-25.69	46	34.93	14.5	0.82	29.94	-	-	Peak
745.2	22.93	-23.07	46	31.44	19.86	1.18	29.55	-	-	Peak
939.8	35.82	-10.18	46	43.33	20.69	1.33	29.53	100	360	Peak
2390	48.25	-25.75	74	45.97	32.86	3.47	34.05	100	360	Peak
2390	38.96	-15.04	54	36.68	32.86	3.47	34.05	100	360	Average
2437	99.55	-	-	97.15	32.95	3.6	34.15	126	258	Average
2437	106.06	-	-	103.66	32.95	3.6	34.15	126	258	Peak
2483.5	47.82	-26.18	74	45.33	33.01	3.68	34.2	100	360	Peak
2483.5	40.87	-13.13	54	38.38	33.01	3.68	34.2	100	360	Average



<b>Test Mode :</b>	Mode 3	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Cloud Peng	<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
88.86	29.89	-13.61	43.5	50.88	8.61	0.39	29.99	-	-	Peak
102.36	29.8	-13.7	43.5	48.47	10.87	0.42	29.96	-	-	Peak
212.25	14.62	-28.88	43.5	34.4	9.6	0.61	29.99	-	-	Peak
453.3	21.21	-24.79	46	33.76	16.34	0.9	29.79	-	-	Peak
894.3	41.54	-4.46	46	49.28	20.46	1.3	29.5	200	360	Peak
939.8	35.75	-10.25	46	43.26	20.69	1.33	29.53	-	-	Peak
2390	48.57	-25.43	74	46.29	32.86	3.47	34.05	200	360	Peak
2390	40.93	-13.07	54	38.65	32.86	3.47	34.05	200	360	Average
2462	102.08	-	-	99.63	32.98	3.64	34.17	156	326	Average
2462	107.24	-	-	104.79	32.98	3.64	34.17	156	326	Peak
2483.5	51.55	-22.45	74	49.06	33.01	3.68	34.2	200	305	Peak
2483.5	42.17	-11.83	54	39.68	33.01	3.68	34.2	200	305	Average



<b>Test Mode :</b>	Mode 3	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Cloud Peng	<b>Polarization :</b>	Vertical
<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
88.86	22.83	-20.67	43.5	43.82	8.61	0.39	29.99	-	-	Peak
112.35	27.81	-15.69	43.5	45.54	11.8	0.44	29.97	-	-	Peak
132.87	25.19	-18.31	43.5	43.23	11.47	0.48	29.99	-	-	Peak
341.3	20.6	-25.4	46	35.43	14.3	0.81	29.94	-	-	Peak
871.2	26.42	-19.58	46	34.23	20.49	1.29	29.59	-	-	Peak
939.8	35.03	-10.97	46	42.54	20.69	1.33	29.53	100	360	Peak
2390	49.13	-24.87	74	46.85	32.86	3.47	34.05	100	0	Peak
2390	40.93	-13.07	54	38.65	32.86	3.47	34.05	100	0	Average
2462	97	-	-	94.55	32.98	3.64	34.17	200	243	Average
2462	104.31	-	-	101.86	32.98	3.64	34.17	200	243	Peak
2483.5	50.04	-23.96	74	47.55	33.01	3.68	34.2	200	330	Peak
2483.5	43.85	-10.15	54	41.36	33.01	3.68	34.2	200	330	Average



<b>Test Mode :</b>	Mode 4	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Cloud Peng	<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
88.86	19.86	-23.64	43.5	40.85	8.61	0.39	29.99	-	-	Peak
102.09	24.3	-19.2	43.5	43.11	10.74	0.41	29.96	-	-	Peak
228.72	11.31	-34.69	46	29.75	10.83	0.64	29.91	-	-	Peak
342	22.64	-23.36	46	37.44	14.33	0.81	29.94	-	-	Peak
872.6	27.66	-18.34	46	35.47	20.48	1.29	29.58	-	-	Peak
939.8	36.26	-9.74	46	43.77	20.69	1.33	29.53	200	0	Peak
2390	58.69	-15.31	74	56.41	32.86	3.47	34.05	200	330	Peak
2390	45.39	-8.61	54	43.11	32.86	3.47	34.05	200	330	Average
2412	97.2	-	-	94.87	32.89	3.52	34.08	200	330	Average
2412	108.08	-	-	105.75	32.89	3.52	34.08	200	330	Peak
2483.5	47.83	-26.17	74	45.34	33.01	3.68	34.2	200	360	Peak
2483.5	40.05	-13.95	54	37.56	33.01	3.68	34.2	200	360	Average



<b>Test Mode :</b>	Mode 4	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Cloud Peng	<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
88.86	19.41	-24.09	43.5	40.4	8.61	0.39	29.99	-	-	Peak
112.08	30.65	-12.85	43.5	48.38	11.8	0.44	29.97	-	-	Peak
211.44	16.66	-26.84	43.5	36.51	9.54	0.6	29.99	-	-	Peak
354.6	21.78	-24.22	46	36.29	14.6	0.82	29.93	-	-	Peak
872.6	27.72	-18.28	46	35.53	20.48	1.29	29.58	-	-	Peak
939.8	35.73	-10.27	46	43.24	20.69	1.33	29.53	100	360	Peak
2390	52.96	-21.04	74	50.68	32.86	3.47	34.05	100	263	Peak
2390	43.49	-10.51	54	41.21	32.86	3.47	34.05	100	263	Average
2412	95.07	-	-	92.74	32.89	3.52	34.08	154	297	Average
2412	107.25	-	-	104.92	32.89	3.52	34.08	154	297	Peak
2483.5	48.12	-25.88	74	45.63	33.01	3.68	34.2	160	360	Peak
2483.5	41.47	-12.53	54	38.98	33.01	3.68	34.2	160	360	Average



<b>Test Mode :</b>	Mode 5	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Cloud Peng	<b>Polarization :</b>	Horizontal
<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
88.86	26.38	-17.12	43.5	45.37	8.61	0.39	27.99	-	-	Peak
102.36	30.16	-13.34	43.5	46.85	10.87	0.42	27.98	-	-	Peak
173.91	16	-27.5	43.5	34.66	8.95	0.55	28.16	-	-	Peak
340.6	23.88	-22.12	46	37.18	14.28	0.81	28.39	-	-	Peak
871.2	28.15	-17.85	46	33.64	20.49	1.29	27.27	-	-	Peak
939.8	38.52	-7.48	46	43.23	20.69	1.33	26.73	100	360	Peak
2390	48.7	-25.3	74	46.42	32.86	3.47	34.05	200	360	Peak
2390	41.39	-12.61	54	39.11	32.86	3.47	34.05	200	360	Average
2437	97.13	-	-	94.73	32.95	3.6	34.15	100	349	Average
2437	108.19	-	-	105.79	32.95	3.6	34.15	100	349	Peak
2483.5	48.25	-25.75	74	45.76	33.01	3.68	34.2	100	200	Peak
2483.5	40.49	-13.51	54	38	33.01	3.68	34.2	100	200	Average



<b>Test Mode :</b>	Mode 5	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Cloud Peng	<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
74.55	19.07	-20.93	40	40.89	5.8	0.34	27.96	-	-	Peak
102.36	21.9	-21.6	43.5	38.59	10.87	0.42	27.98	-	-	Peak
211.98	18.62	-24.88	43.5	36.55	9.6	0.61	28.14	-	-	Peak
343.4	22.01	-23.99	46	35.25	14.35	0.81	28.4	-	-	Peak
871.2	27.77	-18.23	46	33.26	20.49	1.29	27.27	-	-	Peak
939.8	38.06	-7.94	46	42.77	20.69	1.33	26.73	100	360	Peak
2390	48.14	-25.86	74	45.86	32.86	3.47	34.05	100	0	Peak
2390	39.16	-14.84	54	36.88	32.86	3.47	34.05	100	0	Average
2437	96.59	-	-	94.19	32.95	3.6	34.15	123	296	Average
2437	105.61	-	-	103.21	32.95	3.6	34.15	123	296	Peak
2483.5	48.72	-25.28	74	46.23	33.01	3.68	34.2	100	0	Peak
2483.5	40.11	-13.89	54	37.62	33.01	3.68	34.2	100	0	Average



<b>Test Mode :</b>	Mode 6	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Cloud Peng	<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
102.36	25.81	-17.69	43.5	44.48	10.87	0.42	29.96	-	-	Peak
120.18	19.78	-23.72	43.5	37.5	11.8	0.45	29.97	-	-	Peak
135.57	18.48	-25.02	43.5	36.78	11.21	0.48	29.99	-	-	Peak
343.4	23	-23	46	37.78	14.35	0.81	29.94	-	-	Peak
871.2	27.68	-18.32	46	35.49	20.49	1.29	29.59	-	-	Peak
939.8	36.01	-9.99	46	43.52	20.69	1.33	29.53	200	0	Peak
2390	49.18	-24.82	74	46.9	32.86	3.47	34.05	200	360	Peak
2390	41.68	-12.32	54	39.4	32.86	3.47	34.05	200	360	Average
2462	95.48	-	-	93.03	32.98	3.64	34.17	100	319	Average
2462	107.92	-	-	105.47	32.98	3.64	34.17	100	319	Peak
2483.5	58.31	-15.69	74	55.82	33.01	3.68	34.2	123	321	Peak
2483.5	46.39	-7.61	54	43.9	33.01	3.68	34.2	123	321	Average



<b>Test Mode :</b>	Mode 6	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Cloud Peng	<b>Polarization :</b>	Vertical
<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
88.86	18.24	-25.26	43.5	39.23	8.61	0.39	29.99	-	-	Peak
102.36	19.98	-23.52	43.5	38.65	10.87	0.42	29.96	-	-	Peak
173.1	14.33	-29.17	43.5	34.73	8.95	0.55	29.9	-	-	Peak
489	20.73	-25.27	46	32.48	17.04	0.95	29.74	-	-	Peak
872.6	27.08	-18.92	46	34.89	20.48	1.29	29.58	-	-	Peak
939.8	35.54	-10.46	46	43.05	20.69	1.33	29.53	100	360	Peak
2390	48.35	-25.65	74	46.07	32.86	3.47	34.05	100	360	Peak
2390	38.86	-15.14	54	36.58	32.86	3.47	34.05	100	360	Average
2462	95.85	-	-	93.4	32.98	3.64	34.17	121	298	Average
2462	105.12	-	-	102.67	32.98	3.64	34.17	121	298	Peak
2484.42	55.06	-18.94	74	52.57	33.01	3.68	34.2	118	296	Peak
2484.42	44.21	-9.79	54	41.72	33.01	3.68	34.2	118	296	Average



<b>Test Mode :</b>	Mode 7	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Cloud Peng	<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
88.86	21.28	-22.22	43.5	42.27	8.61	0.39	29.99	200	360	Peak
102.36	25.43	-18.07	43.5	44.1	10.87	0.42	29.96	200	360	Peak
172.83	14.51	-28.99	43.5	34.85	9.01	0.55	29.9	200	360	Peak
493.2	22.4	-23.6	46	34.08	17.11	0.95	29.74	-	-	Peak
876.1	28.68	-17.32	46	36.47	20.48	1.29	29.56	-	-	Peak
939.8	34.95	-11.05	46	42.46	20.69	1.33	29.53	200	0	Peak
2390	53.8	-20.2	74	51.52	32.86	3.47	34.05	200	340	Peak
2390	43.6	-10.4	54	41.32	32.86	3.47	34.05	200	340	Average
2412	95.54	-	-	93.21	32.89	3.52	34.08	200	330	Average
2412	108.71	-	-	106.38	32.89	3.52	34.08	200	330	Peak
2483.5	47.85	-26.15	74	45.36	33.01	3.68	34.2	200	360	Peak
2483.5	41.34	-12.66	54	38.85	33.01	3.68	34.2	200	360	Average



<b>Test Mode :</b>	Mode 7	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Cloud Peng	<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
102.36	19.78	-23.72	43.5	38.45	10.87	0.42	29.96	-	-	Peak
171.48	14.93	-28.57	43.5	35.2	9.08	0.55	29.9	-	-	Peak
211.98	16.41	-27.09	43.5	36.19	9.6	0.61	29.99	-	-	Peak
344.8	20.85	-25.15	46	35.58	14.4	0.81	29.94	-	-	Peak
876.1	25.8	-20.2	46	33.59	20.48	1.29	29.56	-	-	Peak
939.8	34.01	-11.99	46	41.52	20.69	1.33	29.53	100	0	Peak
2390	51.69	-22.31	74	49.41	32.86	3.47	34.05	100	259	Peak
2390	42.34	-11.66	54	40.06	32.86	3.47	34.05	100	259	Average
2412	93.3	-	-	90.97	32.89	3.52	34.08	100	258	Average
2412	104.06	-	-	101.73	32.89	3.52	34.08	100	258	Peak
2483.5	48.43	-25.57	74	45.94	33.01	3.68	34.2	100	360	Peak
2483.5	39.37	-14.63	54	36.88	33.01	3.68	34.2	100	360	Average



<b>Test Mode :</b>	Mode 8	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Cloud Peng	<b>Polarization :</b>	Horizontal
<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
88.86	18.59	-24.91	43.5	39.58	8.61	0.39	29.99	-	-	Peak
102.36	23.51	-19.99	43.5	42.18	10.87	0.42	29.96	-	-	Peak
172.29	12.6	-30.9	43.5	32.94	9.01	0.55	29.9	-	-	Peak
871.2	27.46	-18.54	46	35.27	20.49	1.29	29.59	-	-	Peak
897.8	38.26	-7.74	46	45.99	20.45	1.3	29.48	100	0	Peak
939.8	34.66	-11.34	46	42.17	20.69	1.33	29.53	-	-	Peak
2390	49.85	-24.15	74	47.57	32.86	3.47	34.05	200	360	Peak
2390	38.86	-15.14	54	36.58	32.86	3.47	34.05	200	360	Average
2437	94.52	-	-	92.12	32.95	3.6	34.15	200	328	Average
2437	105.58	-	-	103.18	32.95	3.6	34.15	200	328	Peak
2483.5	48.19	-25.81	74	45.7	33.01	3.68	34.2	200	306	Peak
2483.5	40.76	-13.24	54	38.27	33.01	3.68	34.2	200	306	Average



<b>Test Mode :</b>	Mode 8	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Cloud Peng	<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
88.86	19.01	-24.49	43.5	40	8.61	0.39	29.99	-	-	Peak
102.36	19.67	-23.83	43.5	38.34	10.87	0.42	29.96	-	-	Peak
171.75	14.48	-29.02	43.5	34.75	9.08	0.55	29.9	-	-	Peak
344.1	20.42	-25.58	46	35.18	14.37	0.81	29.94	-	-	Peak
876.1	26.02	-19.98	46	33.81	20.48	1.29	29.56	-	-	Peak
937	34.31	-11.69	46	41.85	20.67	1.32	29.53	100	0	Peak
2390	48.15	-25.85	74	45.87	32.86	3.47	34.05	100	360	Peak
2390	38.14	-15.86	54	35.86	32.86	3.47	34.05	100	360	Average
2437	90.18	-	-	87.78	32.95	3.6	34.15	200	236	Average
2437	101.66	-	-	99.26	32.95	3.6	34.15	200	236	Peak
2483.5	48.46	-25.54	74	45.97	33.01	3.68	34.2	200	0	Peak
2483.5	40.75	-13.25	54	38.26	33.01	3.68	34.2	200	0	Average



<b>Test Mode :</b>	Mode 9	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Cloud Peng	<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
88.86	20.59	-22.91	43.5	41.58	8.61	0.39	29.99	-	-	Peak
102.36	26.16	-17.34	43.5	44.83	10.87	0.42	29.96	200	360	Peak
172.29	14.98	-28.52	43.5	35.32	9.01	0.55	29.9	-	-	Peak
876.1	29.39	-16.61	46	37.18	20.48	1.29	29.56	-	-	Peak
894.3	31.25	-14.75	46	38.99	20.46	1.3	29.5	-	-	Peak
939.8	34.95	-11.05	46	42.46	20.69	1.33	29.53	200	0	Peak
2390	49.5	-24.5	74	47.22	32.86	3.47	34.05	100	360	Peak
2390	40.94	-13.06	54	38.66	32.86	3.47	34.05	100	360	Average
2462	96.61	-	-	94.16	32.98	3.64	34.17	100	320	Average
2462	108.06	-	-	105.61	32.98	3.64	34.17	100	320	Peak
2483.5	55.74	-18.26	74	53.25	33.01	3.68	34.2	159	319	Peak
2483.5	46.1	-7.9	54	43.61	33.01	3.68	34.2	159	319	Average



<b>Test Mode :</b>	Mode 9	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Cloud Peng	<b>Polarization :</b>	Vertical
<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
68.88	14.56	-25.44	40	39.03	5.28	0.34	30.09	-	-	Peak
102.36	18.89	-24.61	43.5	37.56	10.87	0.42	29.96	-	-	Peak
172.83	12.23	-31.27	43.5	32.57	9.01	0.55	29.9	-	-	Peak
876.1	28.22	-17.78	46	36.01	20.48	1.29	29.56	-	-	Peak
898.5	33.34	-12.66	46	41.07	20.45	1.3	29.48	-	-	Peak
939.8	34.87	-11.13	46	42.38	20.69	1.33	29.53	100	360	Peak
2390	48.09	-25.91	74	45.81	32.86	3.47	34.05	200	360	Peak
2390	41.14	-12.86	54	38.86	32.86	3.47	34.05	200	360	Average
2462	94.49	-	-	92.04	32.98	3.64	34.17	166	283	Average
2462	105.51	-	-	103.06	32.98	3.64	34.17	166	283	Peak
2483.5	45.6	-8.4	54	43.11	33.01	3.68	34.2	166	240	Average
2483.5	58.14	-15.86	74	55.65	33.01	3.68	34.2	166	240	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 PCB 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	MY45101555	N/A	Aug. 24, 2010	Aug. 23, 2011	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 24, 2010	Aug. 23, 2011	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Dec. 28, 2010	Dec. 27, 2011	Conducted (TH01-KS)
DC Power Supply	TOPWARD	3306D	N/A	N/A	N/A	N/A	Conducted (TH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 22, 2010	Jun. 21, 2011	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	ABP000000811	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-6592 G	060004	30MHz~2GHz	Dec. 09, 2010	Dec. 08, 2011	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	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	BBHA9170	BBHA170249	15-40GHz	Oct. 15, 2010	Oct. 14, 2011	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH01-KS)

## 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 <math>U_c(y)</math></b>	<b>2.36</b>				
<b>Measuring Uncertainty for a Level of Confidence of 95% (<math>U = 2U_c(y)</math>)</b>	<b>4.72</b>				



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

Please refer to Sporton report number EP0D2830 as below.