

# FCC RF Test Report

APPLICANT : ARS Global Guiding, Inc.  
EQUIPMENT : ARS2 DEVICE  
BRAND NAME : ARS2 Device  
MODEL NAME : ARS2  
FCC ID : YA2ARS2  
STANDARD : FCC Part 15 Subpart C §15.247  
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Oct. 18, 2011 and completely tested on Mar. 31, 2012. We, SPORTON INTERNATIONAL (KUNSHAN) 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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## REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR1O1803B	Rev. 01	Initial issue of report	Apr. 13, 2012

## 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 3.48 dB at 17.75 MHz
3.7	15.247(d)	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.03 dB at 109.38 MHz for peak Under limit 2.26 dB at 161.49 MHz for Quasi-Peak
3.8	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

# 1 General Description

## 1.1 Applicant

**ARS Global Guiding, Inc.**

2674 East Walnut Street, Pasadena, California, United States, 91107

## 1.2 Manufacturer

**ARS Global Guiding, Inc.**

2674 East Walnut Street, Pasadena, California, United States, 91107

## 1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	ARS2 DEVICE
Brand Name	ARS2 Device
Model Name	ARS2
FCC ID	YA2ARS2
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 : 17.35 dBm (0.054 W) 802.11g : 14.86 dBm (0.031 W) 802.11n (BW 20MHz) : 12.49 dBm (0.018 W)
Antenna Type	Chip Antenna with gain 3.0 dBi
HW Version	ARS2-V5.0
SW Version	ARS2-2.03.08
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

### 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>			<b>FCC/IC Registration No.</b>
	TH01-KS	CO01-KS	03CH01-KS	149928/4086E-1

## 1.5 Applied Standards

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

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

### 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 (Verification), recorded in a separate test report.

## 1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Base Station	R&S	CMU200	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	GW	GPS-30300	N/A	N/A	Unshielded, 1.8 m
3.	Bluetooth Earphone	Nokia	BH-106	QTLBH-106	N/A	N/A
4.	Notebook	DELL	P08S	QDS-BRCM1030	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
5.	Router	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m

## 2 Test Configuration of Equipment Under Test

### 2.1 RF Power

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

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	17.21	17.18	17.16	17.15
CH 06	2437 MHz	17.35	17.32	17.28	17.25
CH 11	2462 MHz	16.97	16.94	16.95	16.92

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	14.86	14.82	14.78	14.74	14.67	14.64	14.57	14.44
CH 06	2437 MHz	14.75	14.69	14.63	14.59	14.51	14.46	14.42	14.43
CH 11	2462 MHz	14.42	14.39	14.22	14.13	14.05	14.01	13.96	13.95

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	12.49	12.46	12.43	12.25	12.18	12.07	12.04	12.13
CH 06	2437 MHz	12.26	12.24	12.18	12.09	12.05	11.96	11.88	11.92
CH 11	2462 MHz	12.22	12.16	12.09	11.92	11.86	11.81	11.73	11.77

**Remark:**

1. The data rates of WLAN 802.11b/g/n were set in 1Mbps for 802.11b, 6Mbps for 802.11g, and 6.5Mbps 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).

Pre-scanned tests were conducted to determine the final configuration from all possible combinations.

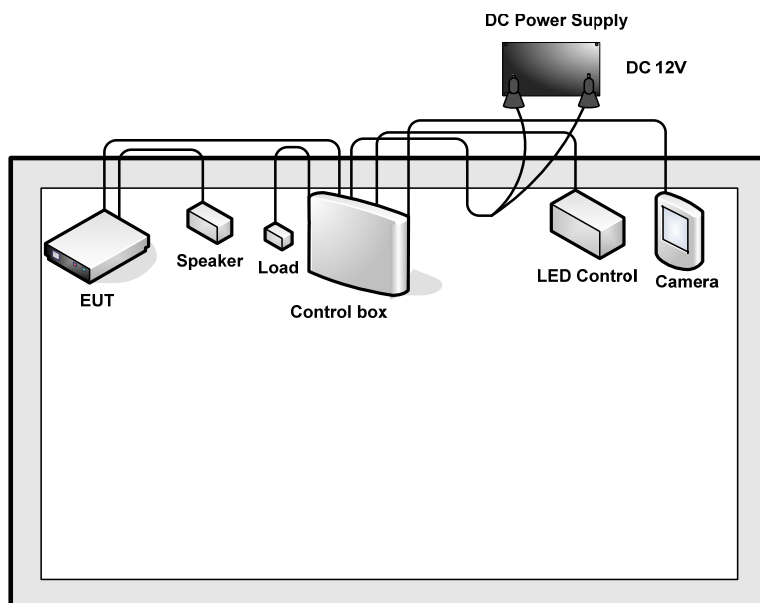
The following tables are showing the test modes as the worst cases and recorded in this report.

Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 MHz Mode 8: 802.11n (BW 20M)_CH06_2437 MHz Mode 9: 802.11n (BW 20M)_CH11_2462 MHz
Radiated TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 MHz Mode 8: 802.11n (BW 20M)_CH06_2437 MHz Mode 9: 802.11n (BW 20M)_CH11_2462 MHz
AC Conducted Emission	Mode 1 : GSM 850 Idle + Bluetooth Link + WLAN Link (DC12V)	

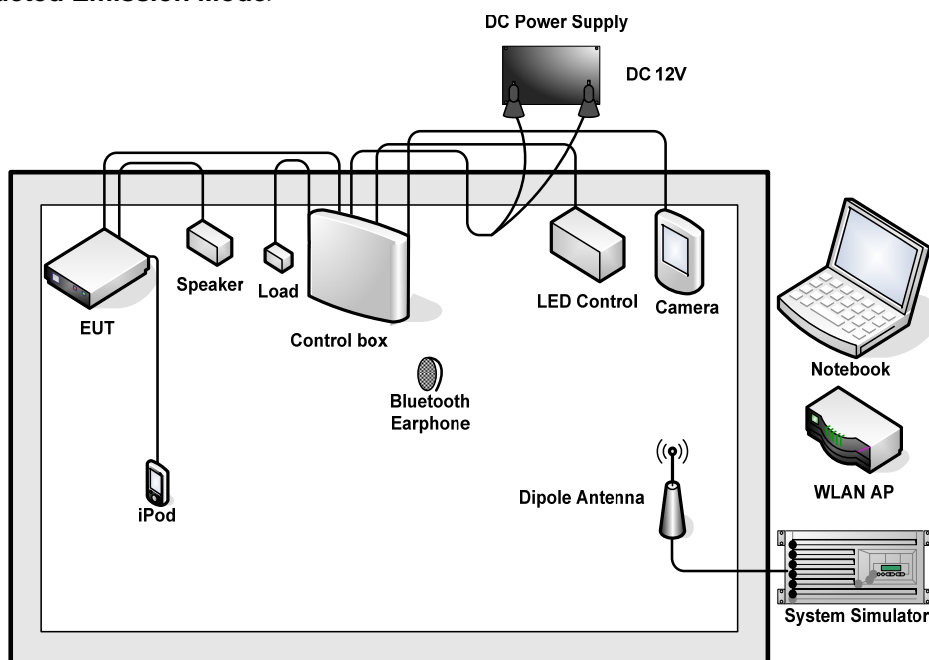


## 2.3 Connection Diagram of Test System

### <WLAN Tx Mode>



### <AC Conducted Emission Mode>



## 2.4 RF Utility

The programmed RF utility “ADB” is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

### 3 Test Result

#### 3.1 6dB Bandwidth Measurement

##### 3.1.1 Limit of 6dB Bandwidth

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

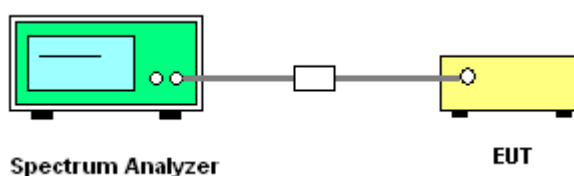
##### 3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

##### 3.1.3 Test Procedures

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

##### 3.1.4 Test Setup

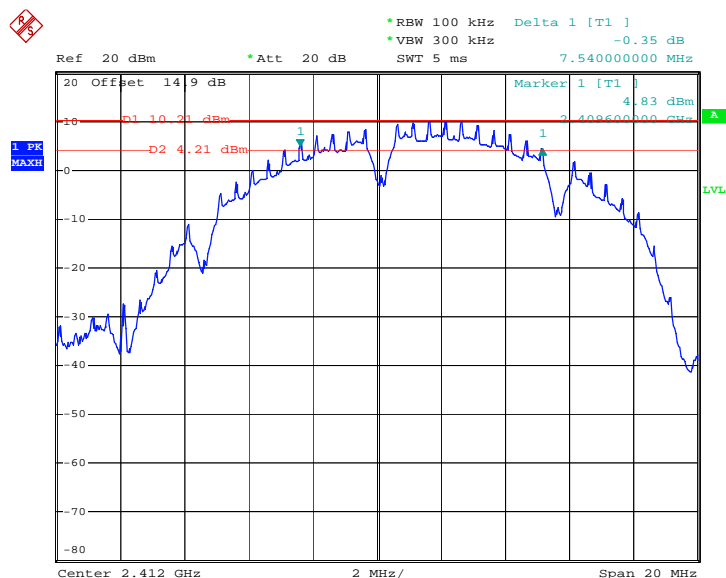


### 3.1.5 Test Result of 6dB Bandwidth

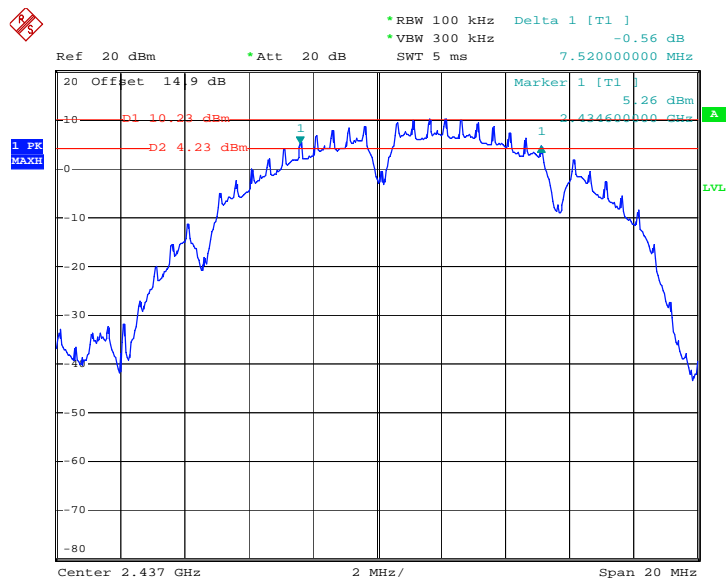
Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	7.54	0.5	Pass
06	2437	7.52	0.5	Pass
11	2462	7.52	0.5	Pass

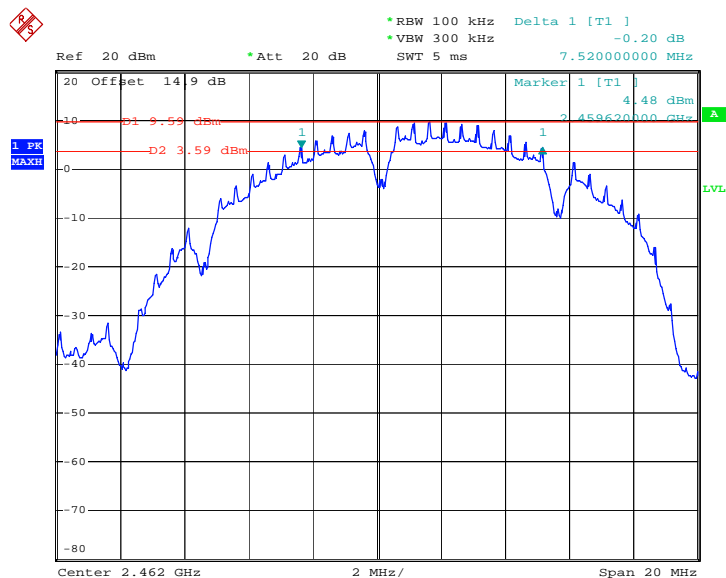
**Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01**



Date: 28.FEB.2012 13:46:45

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


Date: 28.FEB.2012 14:02:22

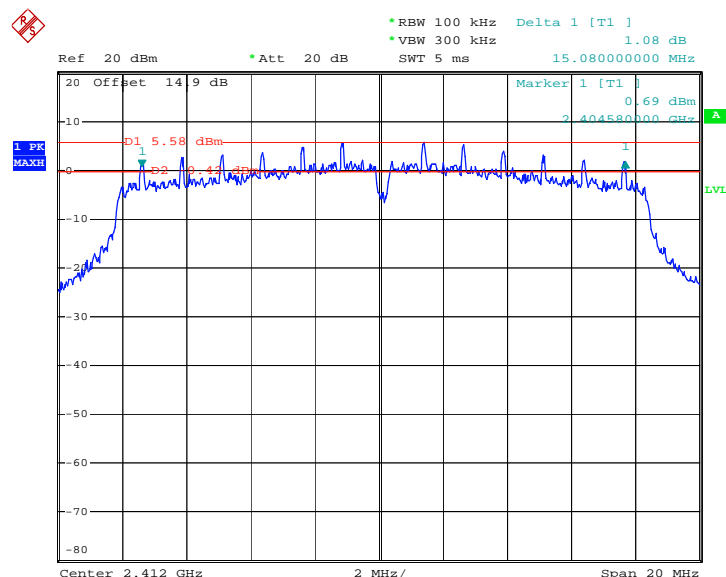
**Mode 3 : 6 dB Bandwidth Plot on 802.11b Channel 11**


Date: 28.FEB.2012 14:13:34

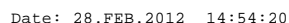


Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

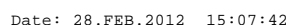
Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.08	0.5	Pass
06	2437	15.08	0.5	Pass
11	2462	15.08	0.5	Pass

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

Date: 28.FEB.2012 14:38:31

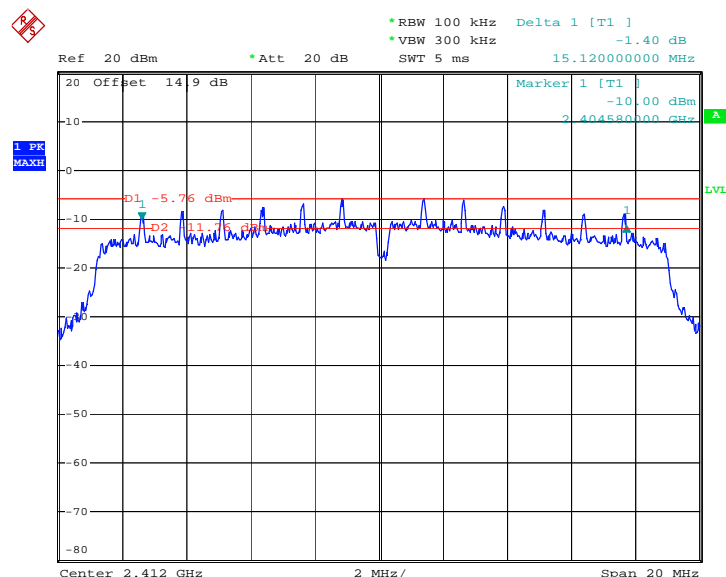


### Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11



<b>Test Mode :</b>	Mode 7, 8, 9	<b>Temperature :</b>	24~26°C
<b>Test Engineer :</b>	Zhi Lu	<b>Relative Humidity :</b>	47~48%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.12	0.5	Pass
06	2437	15.12	0.5	Pass
11	2462	15.12	0.5	Pass

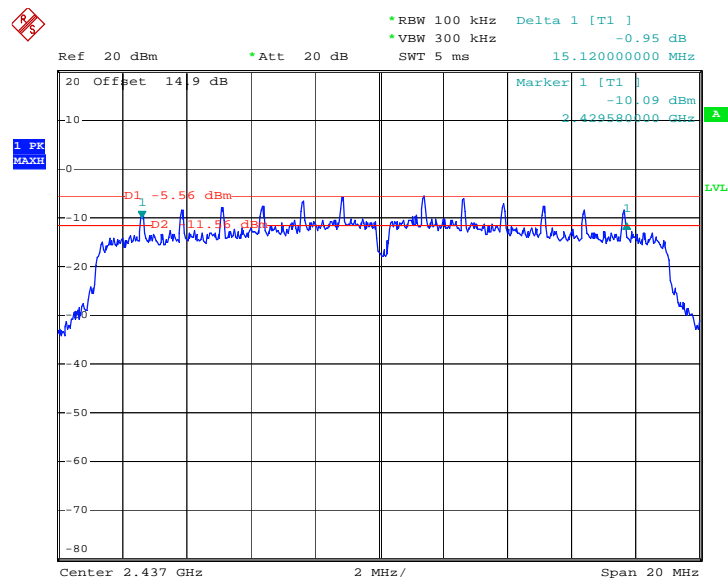
**Mode 7 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 01**


Date: 28.FEB.2012 15:25:52



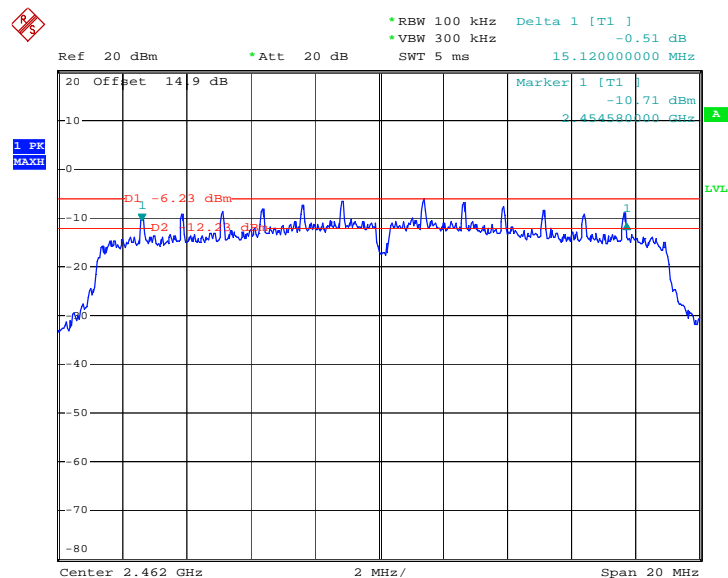


Mode 8 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 06



Date: 28.FEB.2012 15:41:31

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



Date: 28.FEB.2012 15:57:38

## 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.

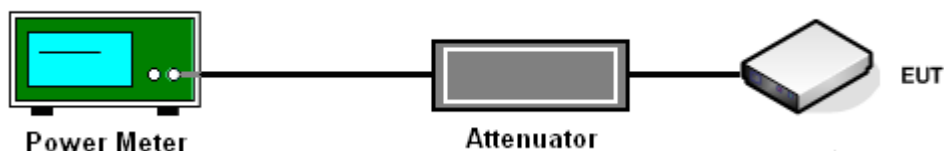
### 3.2.2 Measuring Instruments

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>	24~26℃
<b>Test Engineer :</b>	Zhi Lu	<b>Relative Humidity :</b>	47~48%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	17.21	30	Pass
06	2437	17.35	30	Pass
11	2462	16.97	30	Pass

<b>Test Mode :</b>	Mode 4, 5, 6	<b>Temperature :</b>	24~26℃
<b>Test Engineer :</b>	Zhi Lu	<b>Relative Humidity :</b>	47~48%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	14.86	30	Pass
06	2437	14.75	30	Pass
11	2462	14.42	30	Pass

<b>Test Mode :</b>	Mode 7, 8, 9	<b>Temperature :</b>	24~26℃
<b>Test Engineer :</b>	Zhi Lu	<b>Relative Humidity :</b>	47~48%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	12.49	30	Pass
06	2437	12.26	30	Pass
11	2462	12.22	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

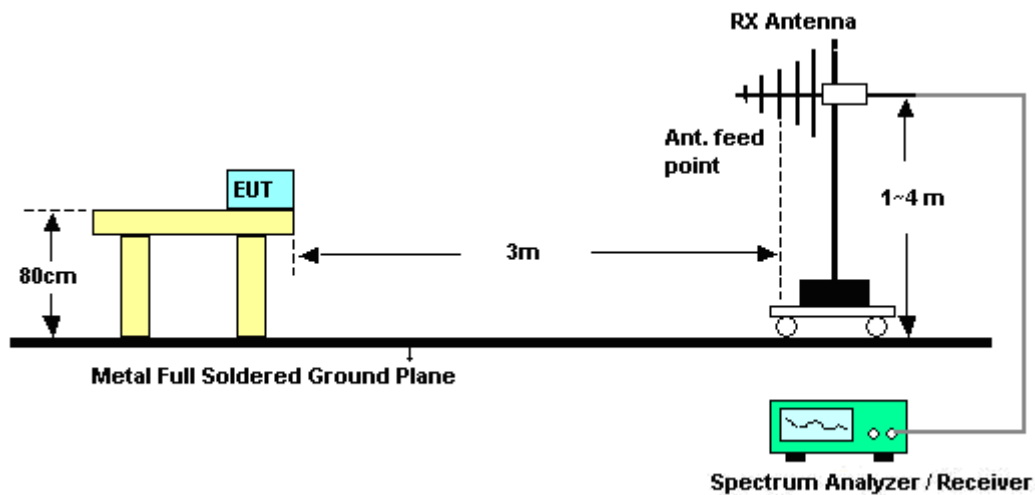
See list of measuring instruments of this test report.

#### 3.3.3 Test Procedures

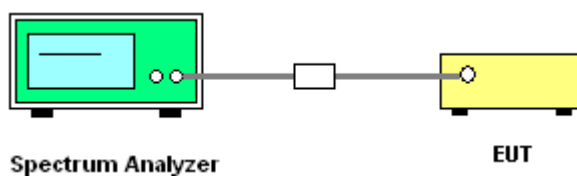
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW)  $\geq$  RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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

<b>Test Mode :</b>	Mode 1	<b>Temperature :</b>	21~22°C
<b>Test Band :</b>	802.11b	<b>Relative Humidity :</b>	41~42%
<b>Test Channel :</b>	01	<b>Test Engineer :</b>	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
2372.7	54.94	-19.06	74	52.7	32.83	3.42	34.01	200	360	Peak
2372.7	39.34	-14.66	54	37.1	32.83	3.42	34.01	200	360	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	51.34	-22.66	74	49.06	32.86	3.47	34.05	100	0	Peak
2390	40.48	-13.52	54	38.2	32.86	3.47	34.05	100	0	Average

<b>Test Mode :</b>	Mode 3	<b>Temperature :</b>	21~22°C
<b>Test Band :</b>	802.11b	<b>Relative Humidity :</b>	41~42%
<b>Test Channel :</b>	11	<b>Test Engineer :</b>	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
2483.5	58.71	-15.29	74	56.22	33.01	3.68	34.2	200	41	Peak
2483.5	48.96	-5.04	54	46.47	33.01	3.68	34.2	200	41	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	56.33	-17.67	74	53.84	33.01	3.68	34.2	100	0	Peak
2483.5	46.15	-7.85	54	43.66	33.01	3.68	34.2	100	0	Average



<b>Test Mode :</b>	Mode 4	<b>Temperature :</b>	21~22°C
<b>Test Band :</b>	802.11g	<b>Relative Humidity :</b>	41~42%
<b>Test Channel :</b>	01	<b>Test Engineer :</b>	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
2390	68.74	-5.26	74	66.46	32.86	3.47	34.05	200	51	Peak
2390	49.1	-4.9	54	46.82	32.86	3.47	34.05	200	51	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	63.04	-10.96	74	60.76	32.86	3.47	34.05	100	10	Peak
2390	42.4	-11.6	54	40.12	32.86	3.47	34.05	100	10	Average

<b>Test Mode :</b>	Mode 6	<b>Temperature :</b>	21~22°C
<b>Test Band :</b>	802.11g	<b>Relative Humidity :</b>	41~42%
<b>Test Channel :</b>	11	<b>Test Engineer :</b>	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
2483.5	70.96	-3.04	74	68.47	33.01	3.68	34.2	200	56	Peak
2483.5	52.11	-1.89	54	49.62	33.01	3.68	34.2	200	56	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	63	-11	74	60.51	33.01	3.68	34.2	100	112	Peak
2483.5	42.02	-11.98	54	39.53	33.01	3.68	34.2	100	112	Average

<b>Test Mode :</b>	Mode 7	<b>Temperature :</b>	21~22°C
<b>Test Band :</b>	802.11n (BW 20MHz)	<b>Relative Humidity :</b>	41~42%
<b>Test Channel :</b>	01	<b>Test Engineer :</b>	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 )	Preamplifier Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2390	50.14	-23.86	74	47.86	32.86	3.47	34.05	200	26	Peak
2390	38.64	-15.36	54	36.36	32.86	3.47	34.05	200	26	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 )	Preamplifier Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2357.31	49.83	-24.17	74	47.62	32.81	3.38	33.98	100	118	Peak
2357.31	36.83	-17.17	54	34.62	32.81	3.38	33.98	100	118	Average

<b>Test Mode :</b>	Mode 9	<b>Temperature :</b>	21~22°C
<b>Test Band :</b>	802.11n (BW 20MHz)	<b>Relative Humidity :</b>	41~42%
<b>Test Channel :</b>	11	<b>Test Engineer :</b>	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 )	Preamplifier Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2483.5	55.26	-18.74	74	52.77	33.01	3.68	34.2	200	311	Peak
2483.5	41.15	-12.85	54	38.66	33.01	3.68	34.2	200	311	Average

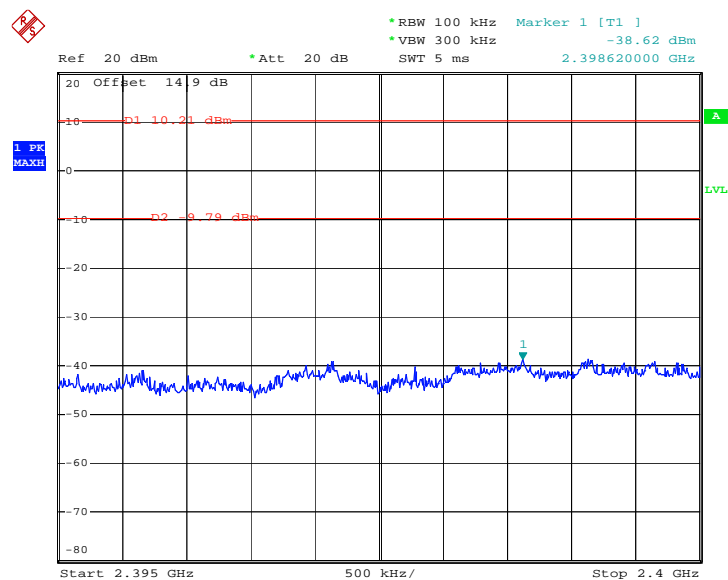
ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamplifier Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2489.36	49.9	-24.1	74	47.36	33.05	3.72	34.23	100	106	Peak
2489.36	36.89	-17.11	54	34.35	33.05	3.72	34.23	100	106	Average



### 3.3.6 Test Plots of Conducted Band Edges

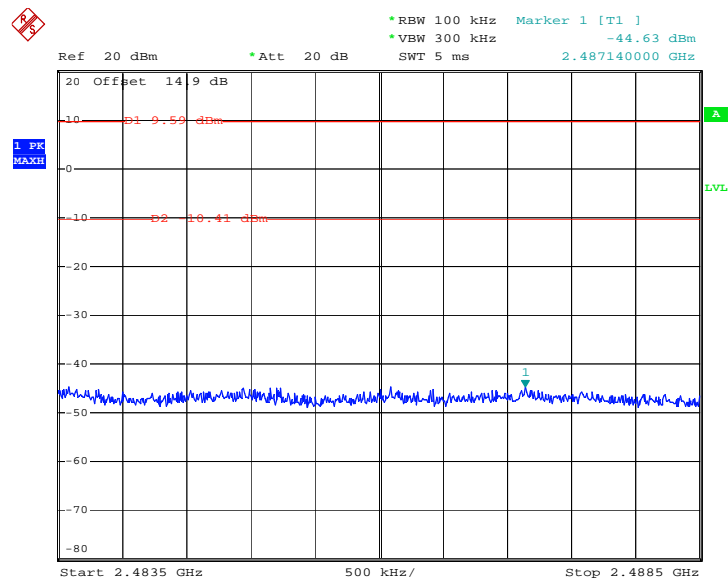
Test Mode :	Mode 1 and 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

**Low Band Edge Plot on 802.11b Channel 01**



Date: 28.FEB.2012 13:48:00

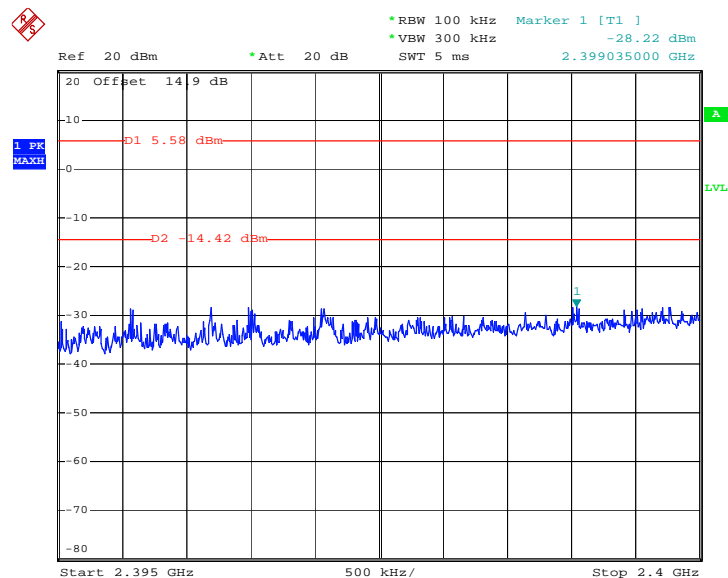
**High Band Edge Plot on 802.11b Channel 11**



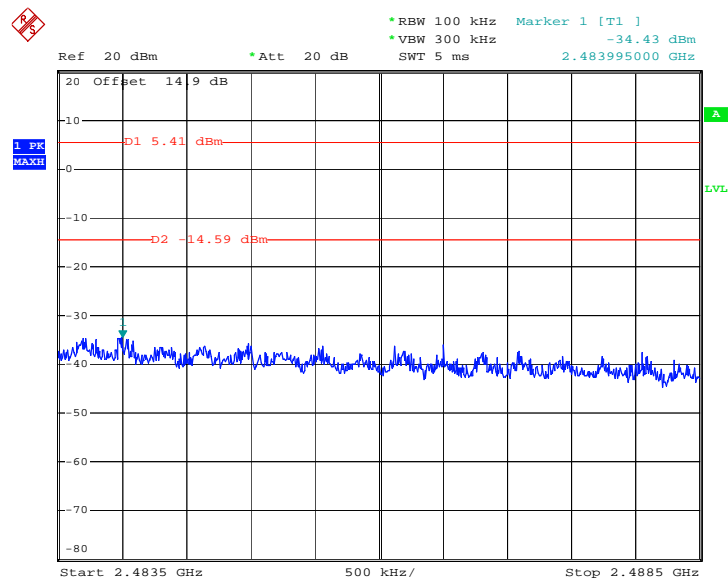
Date: 28.FEB.2012 14:14:22



Test Mode :	Mode 4 and 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

**Low Band Edge Plot on 802.11g Channel 01**

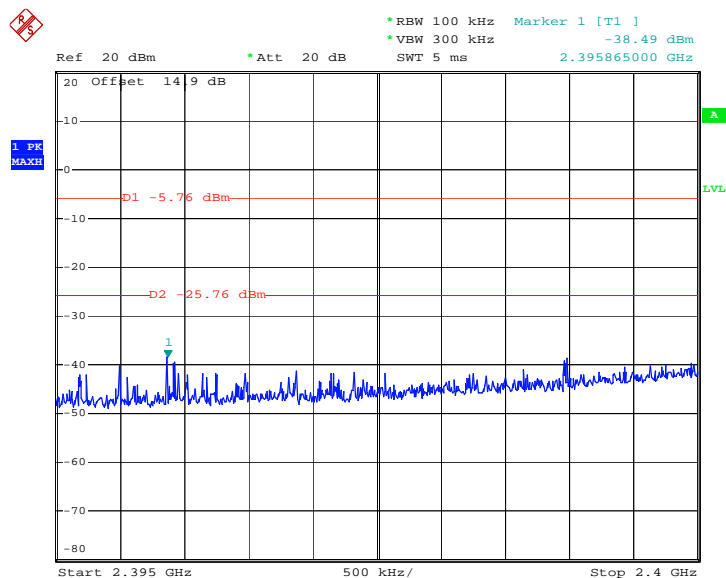
Date: 28.FEB.2012 14:40:10

**High Band Edge Plot on 802.11g Channel 11**

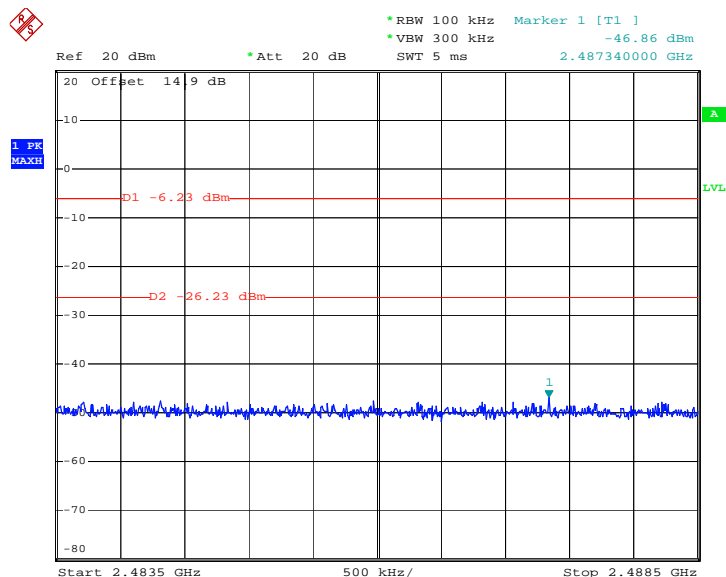
Date: 28.FEB.2012 15:08:32



Test Mode :	Mode 7 and 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

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

Date: 28.FEB.2012 15:27:04

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

Date: 28.FEB.2012 15:58:54

### 3.4 Spurious Emission Measurement

#### 3.4.1 Limit of Spurious Emission Measurement

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

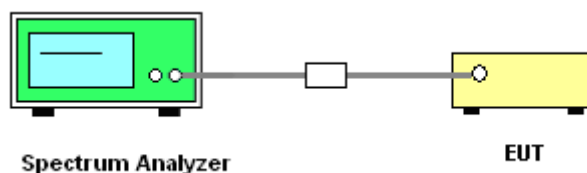
#### 3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.4.3 Test Procedure

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

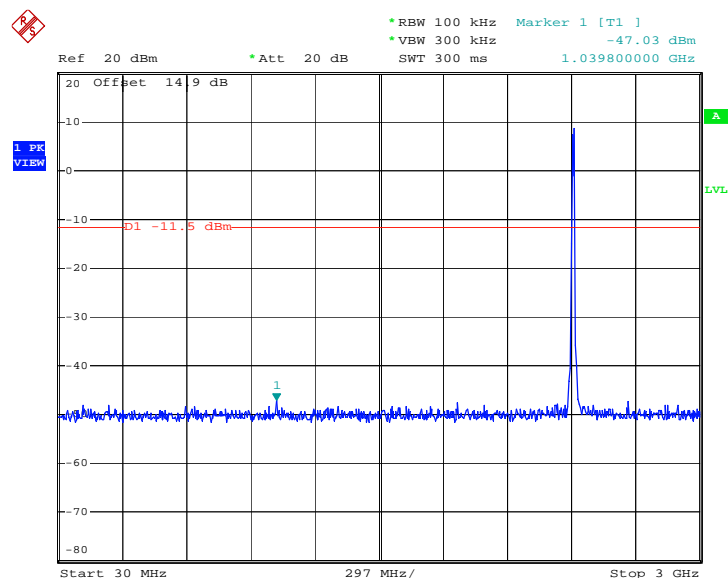
#### 3.4.4 Test Setup



### 3.4.5 Test Plots of Spurious Emission

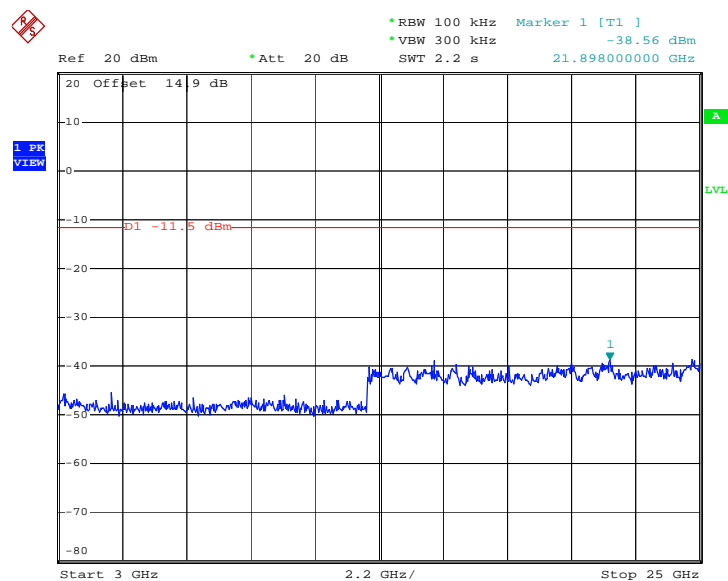
Test Mode :	Mode 1	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Zhi Lu

#### Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 28.FEB.2012 13:48:49

#### Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

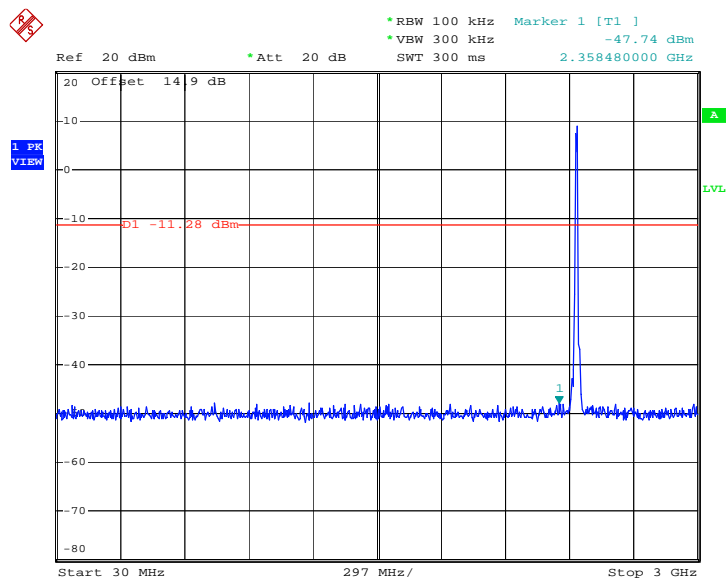


Date: 28.FEB.2012 13:49:06



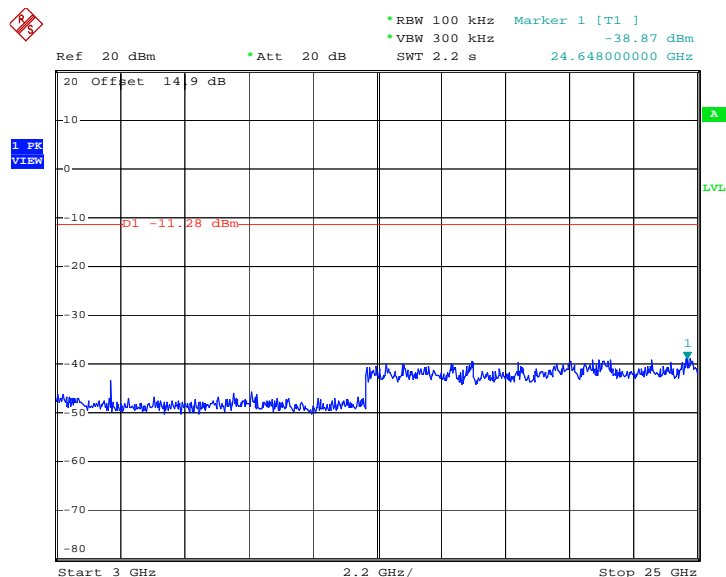
Test Mode :	Mode 2	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	06	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 28.FEB.2012 14:03:10

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



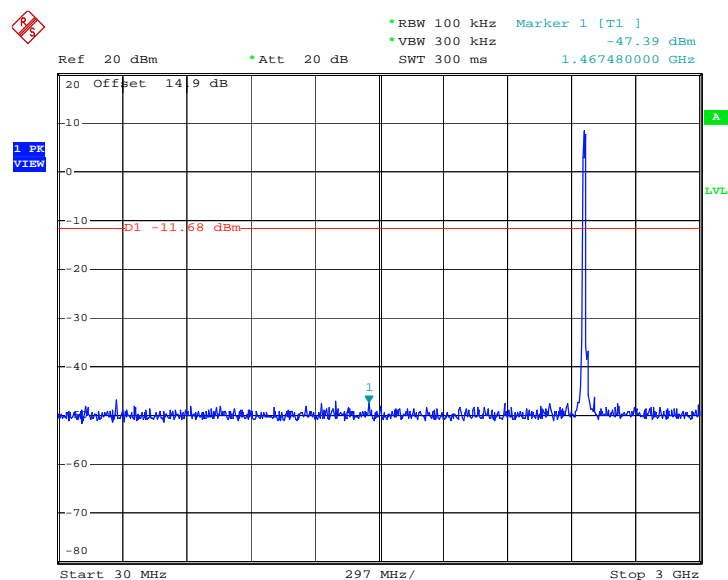
Date: 28.FEB.2012 14:03:27



**Report No. : FR1O1803B**

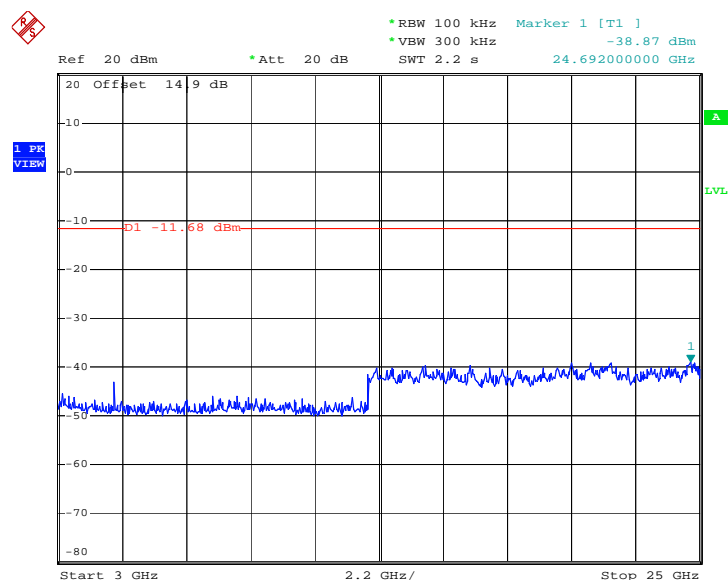
<b>Test Mode :</b>	Mode 3	<b>Temperature :</b>	24~26℃
<b>Test Band :</b>	802.11b	<b>Relative Humidity :</b>	47~48%
<b>Test Channel :</b>	11	<b>Test Engineer :</b>	Zhi Lu

### Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 28.FEB.2012 14:26:06

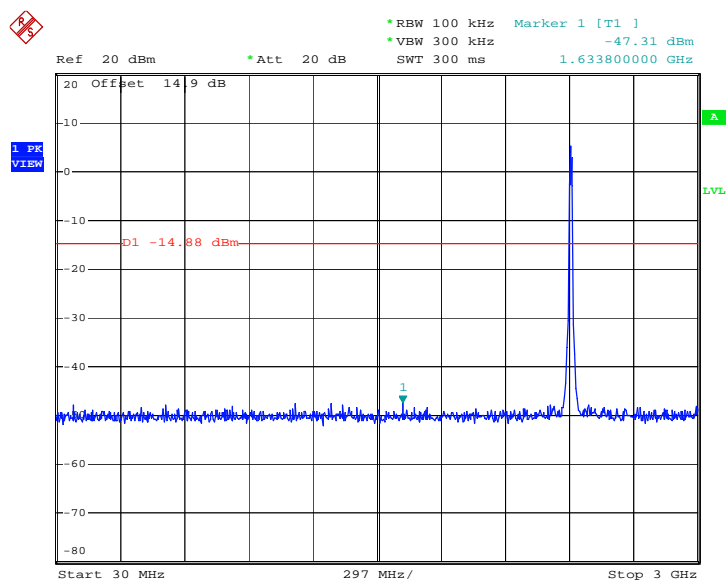
### Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



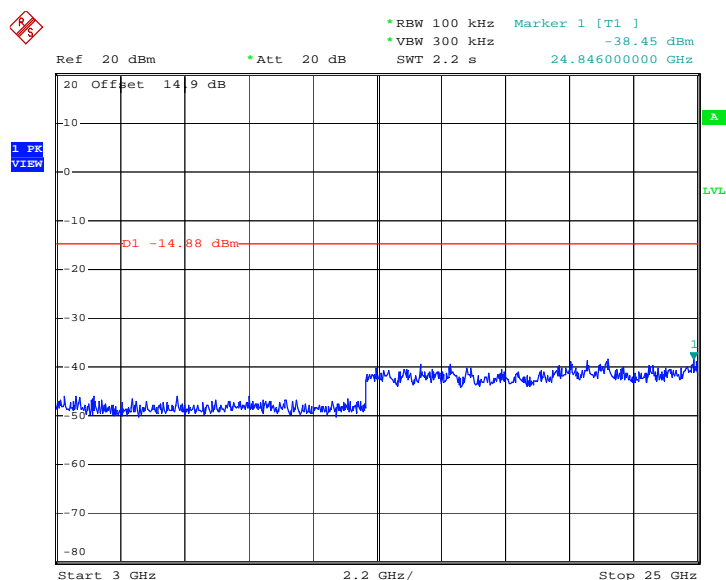
Date: 28.FEB.2012 14:20:37



Test Mode :	Mode 4	Temperature :	24~26℃
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Zhi Lu

**Conducted Spurious Emission Plot between 30MHz ~ 3 GHz**

Date: 28.FEB.2012 14:41:09

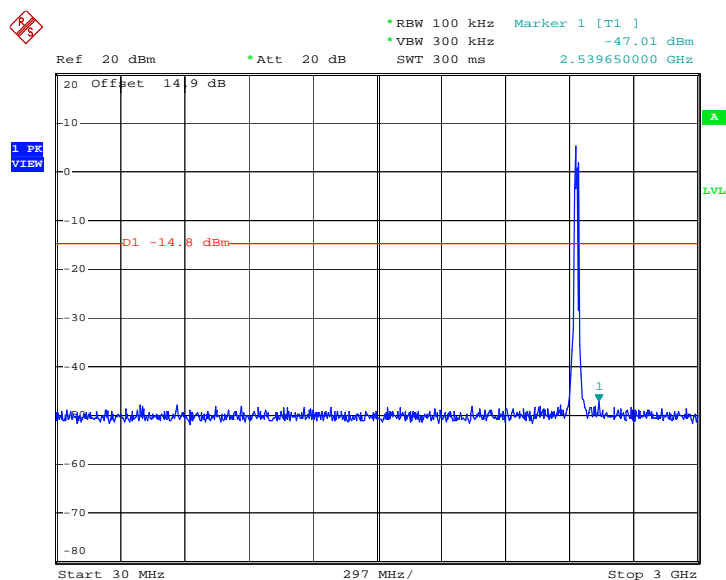
**Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz**

Date: 28.FEB.2012 14:41:26

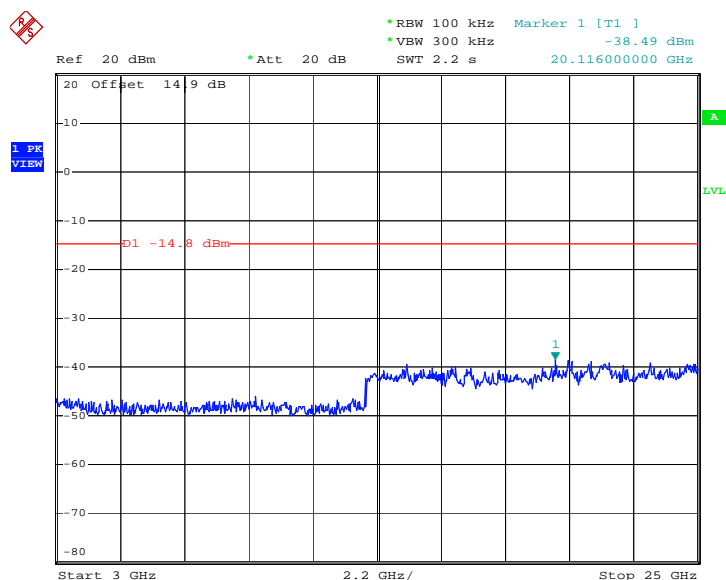




Test Mode :	Mode 5	Temperature :	24~26
Test Band :	802.11g	Relative Humidity :	47~48
Test Channel :	06	Test Engineer :	Zhi Lu

**Conducted Spurious Emission Plot between 30MHz ~ 3 GHz**

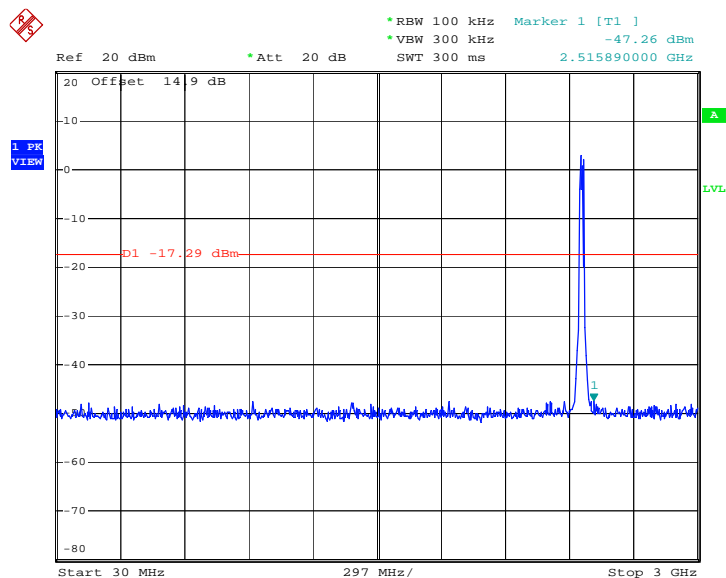
Date: 28.FEB.2012 14:55:09

**Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz**

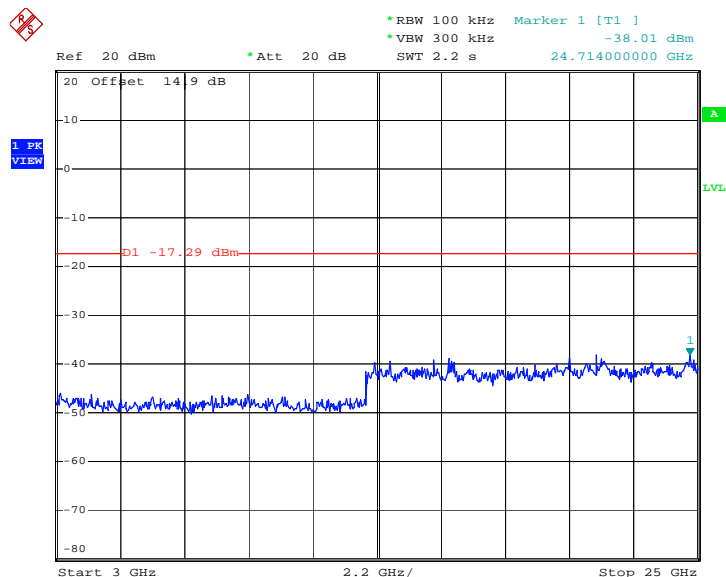
Date: 28.FEB.2012 14:55:26



Test Mode :	Mode 6	Temperature :	24~26℃
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Zhi Lu

**Conducted Spurious Emission Plot between 30MHz ~ 3 GHz**

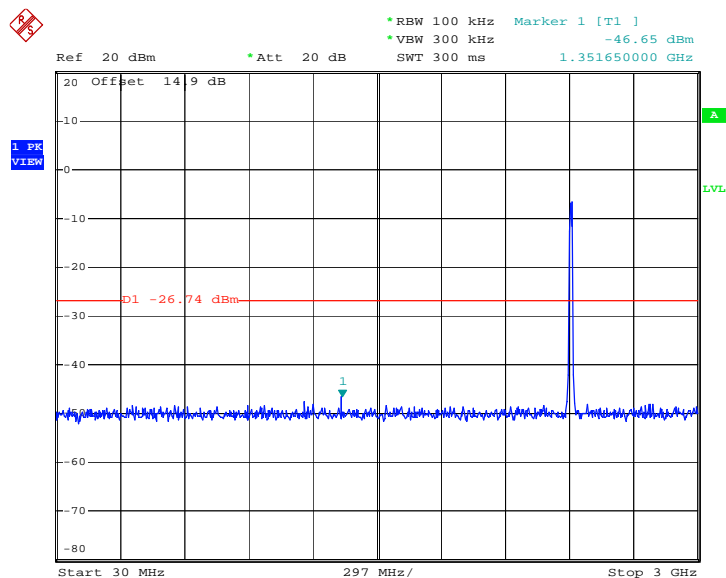
Date: 28.FEB.2012 15:09:29

**Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz**

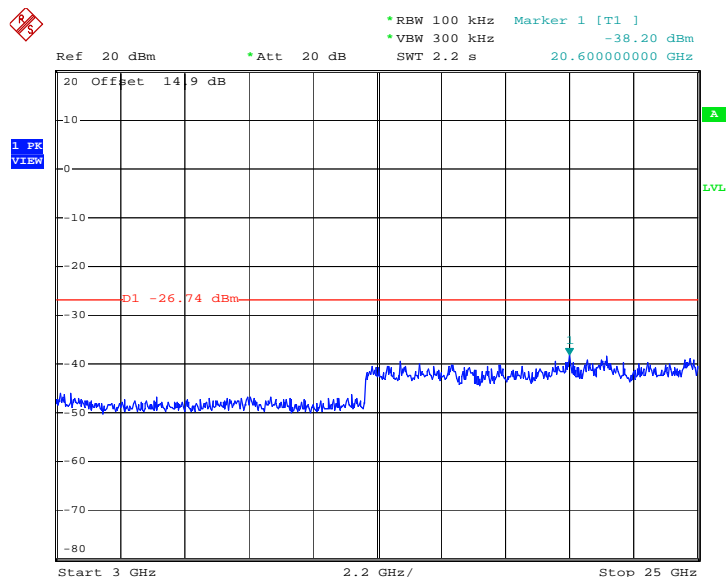
Date: 28.FEB.2012 15:09:46



Test Mode :	Mode 7	Temperature :	24~26℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Zhi Lu

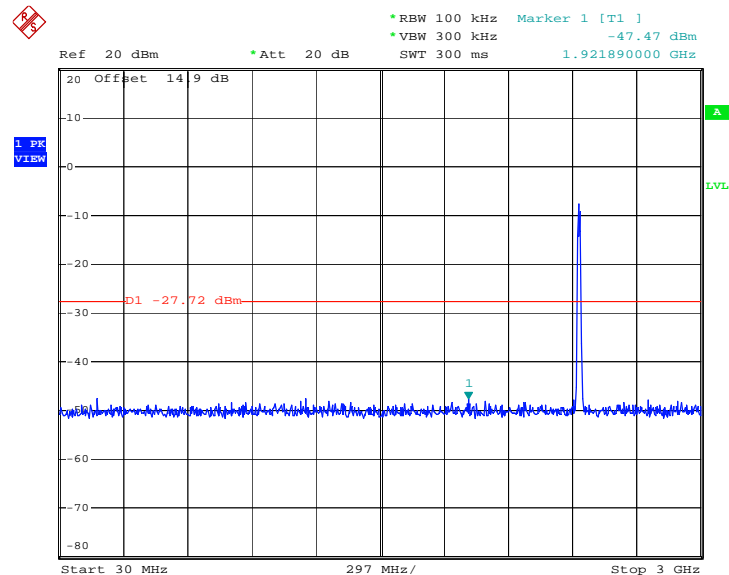
**Conducted Spurious Emission Plot between 30MHz ~ 3 GHz**

Date: 28.FEB.2012 15:28:05

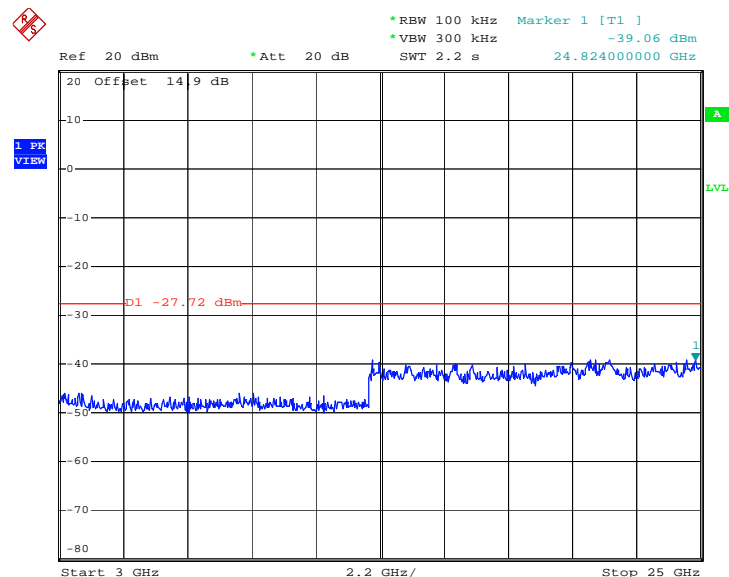
**Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz**

Date: 28.FEB.2012 15:28:22

<b>Test Mode :</b>	Mode 8	<b>Temperature :</b>	24~26℃
<b>Test Band :</b>	802.11n (BW 20MHz)	<b>Relative Humidity :</b>	47~48%
<b>Test Channel :</b>	06	<b>Test Engineer :</b>	Zhi Lu

**Conducted Spurious Emission Plot between 30MHz ~ 3 GHz**


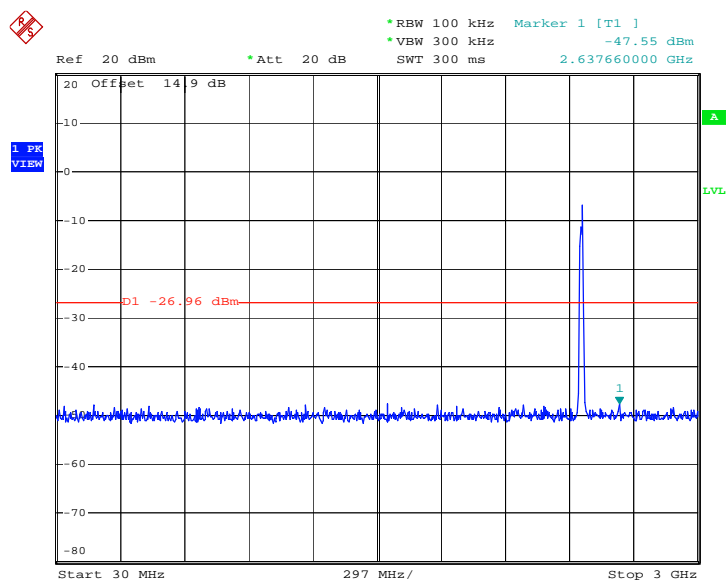
Date: 28.FEB.2012 15:42:25

**Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz**


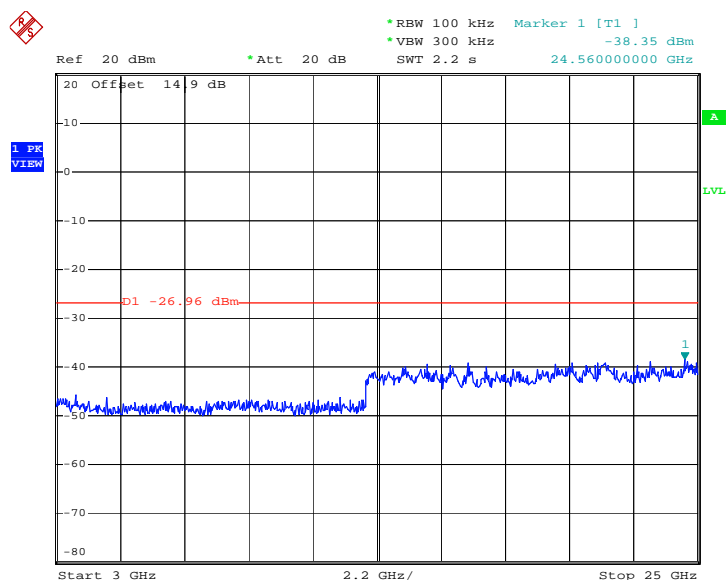
Date: 28.FEB.2012 15:42:42



Test Mode :	Mode 9	Temperature :	24~26℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Zhi Lu

**Conducted Spurious Emission Plot between 30MHz ~ 3 GHz**

Date: 28.FEB.2012 16:00:23

**Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz**

Date: 28.FEB.2012 16:00:40

### 3.5 Power Spectral Density Measurement

#### 3.5.1 Limit of Power Spectral Density

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

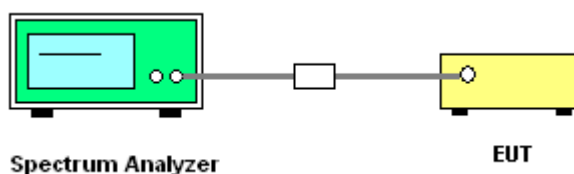
#### 3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.5.3 Test Procedures

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

#### 3.5.4 Test Setup

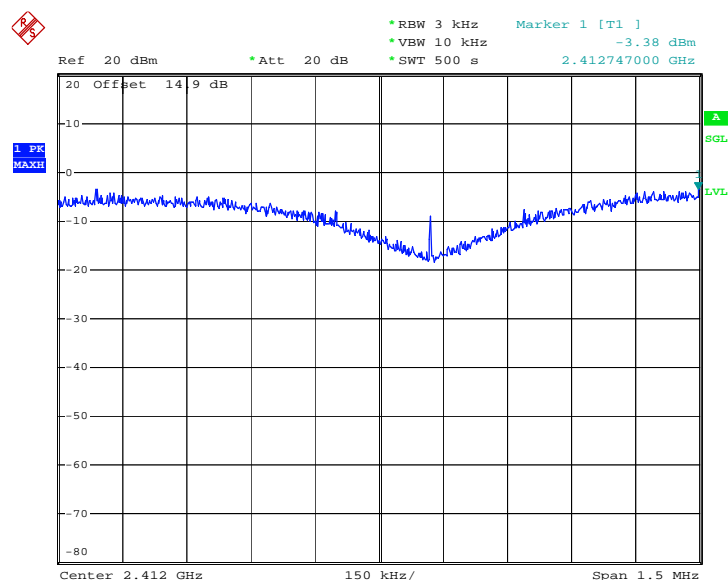


### 3.5.5 Test Result of Power Spectral Density

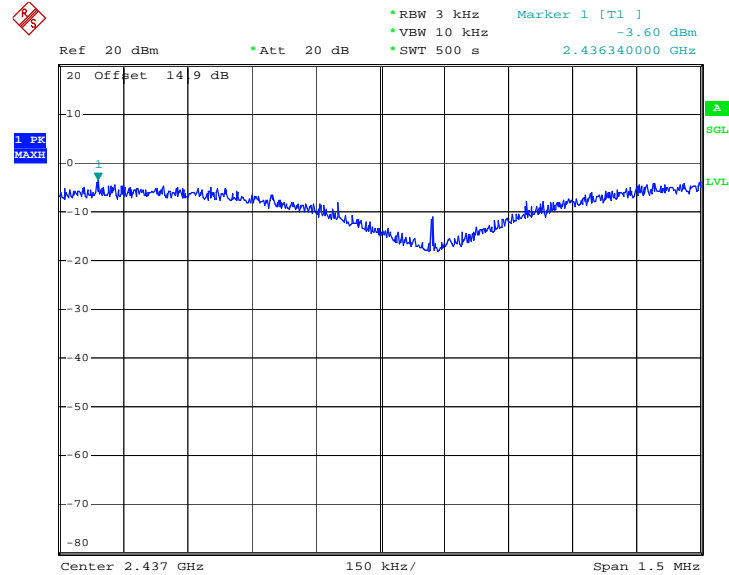
<b>Test Mode :</b>	Mode 1, 2, 3	<b>Temperature :</b>	24~26℃
<b>Test Engineer :</b>	Zhi Lu	<b>Relative Humidity :</b>	47~48%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-3.38	8	Pass
06	2437	-3.60	8	Pass
11	2462	-4.30	8	Pass

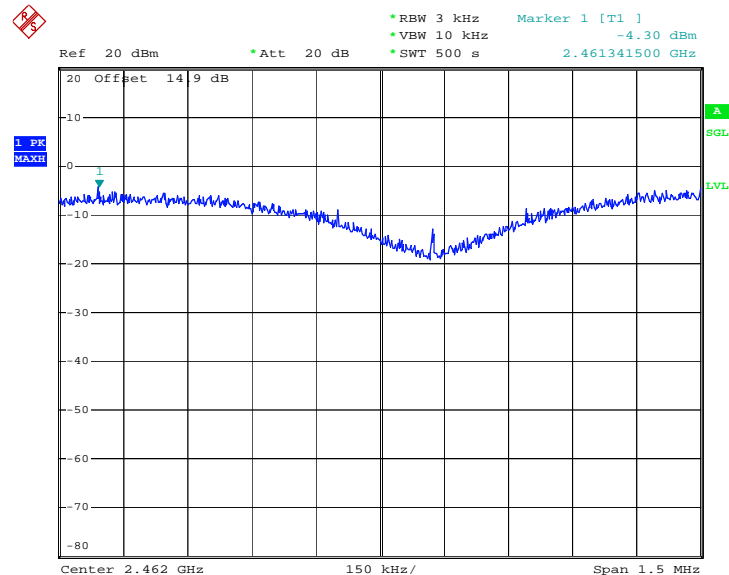
**Mode 1 : PSD Plot on 802.11b Channel 01**



Date: 28.FEB.2012 14:00:17

**Mode 2 : PSD Plot on 802.11b Channel 06**


Date: 28.FEB.2012 14:12:09

**Mode 3 : PSD Plot on 802.11b Channel 11**


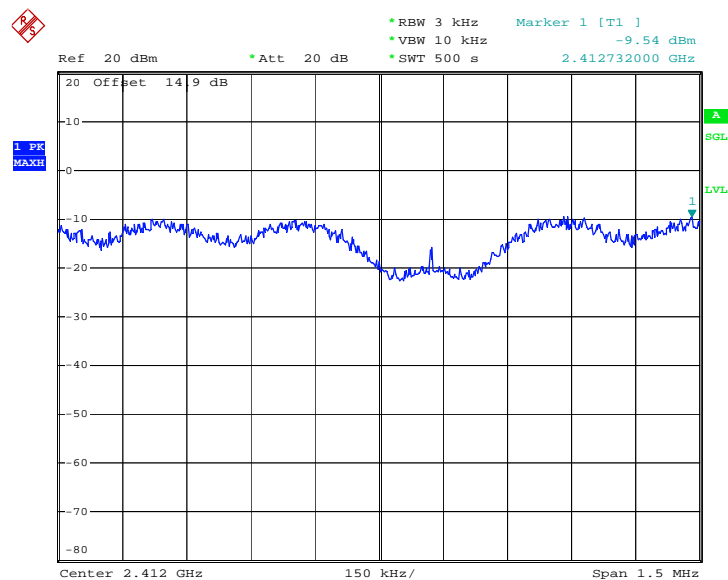
Date: 28.FEB.2012 14:36:12





Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

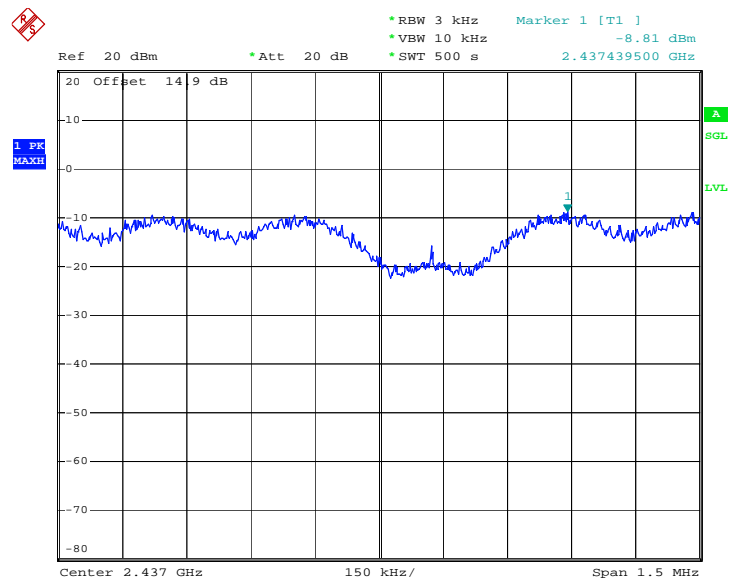
Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-9.54	8	Pass
06	2437	-8.81	8	Pass
11	2462	-9.25	8	Pass

**Mode 4 : PSD Plot on 802.11g Channel 01**

Date: 28.FEB.2012 14:53:01

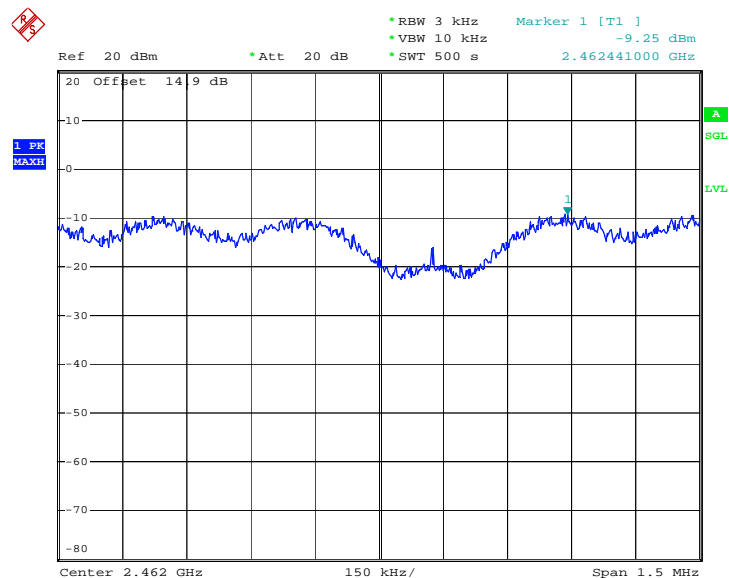


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 28.FEB.2012 15:05:44

Mode 6 : PSD Plot on 802.11g Channel 11



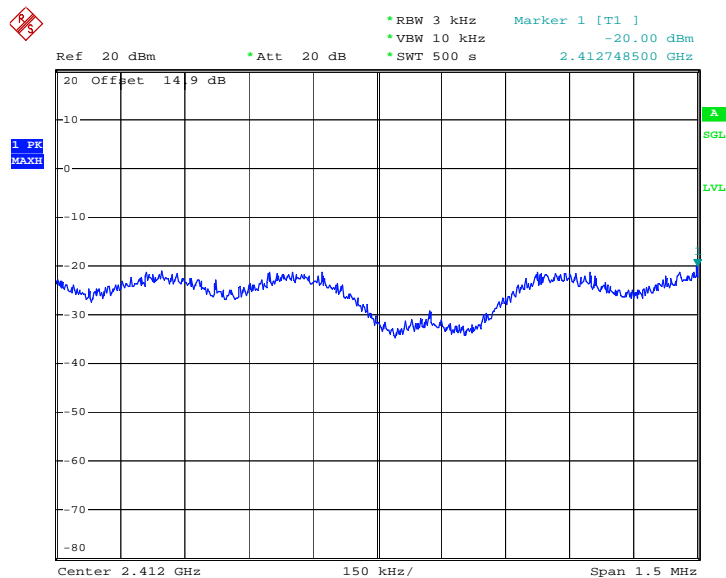
Date: 28.FEB.2012 15:23:30



<b>Test Mode :</b>	Mode 7, 8, 9	<b>Temperature :</b>	24~26℃
<b>Test Engineer :</b>	Zhi Lu	<b>Relative Humidity :</b>	47~48%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-20.00	8	Pass
06	2437	-20.40	8	Pass
11	2462	-20.97	8	Pass

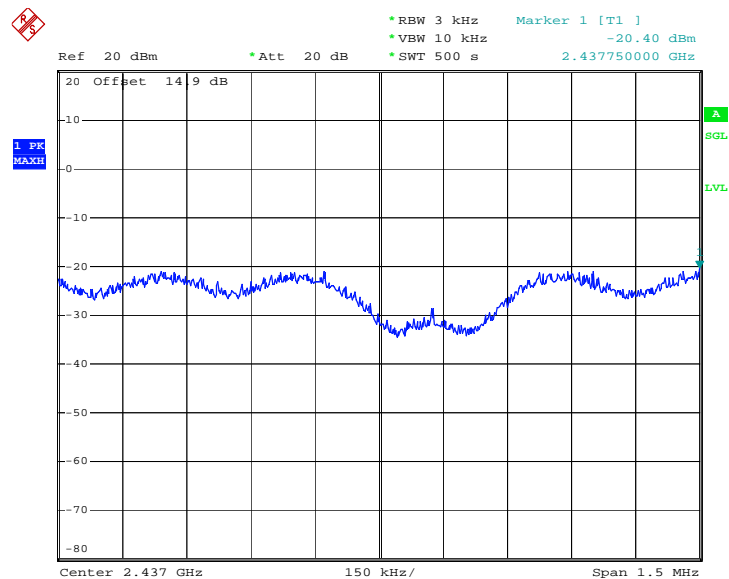
**Mode 7 : PSD Plot on 802.11n (BW 20MHz) Channel 01**



Date: 28.FEB.2012 15:40:12

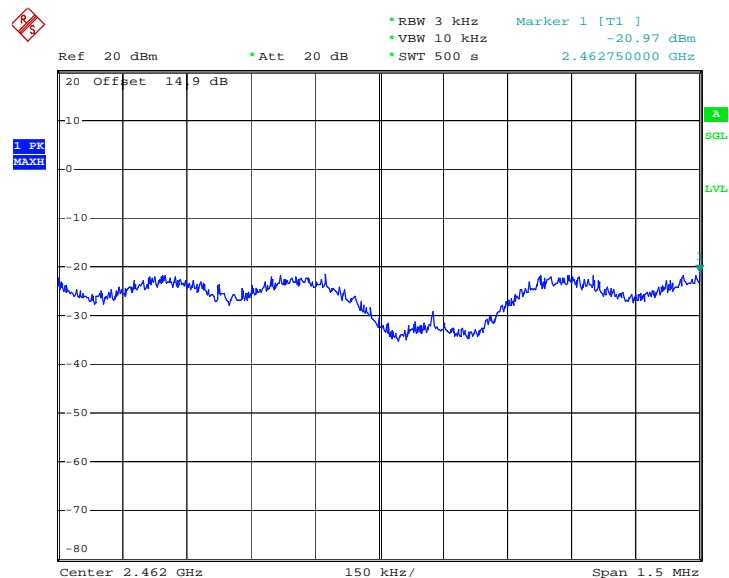


Mode 8 : PSD Plot on 802.11n (BW 20MHz) Channel 06



Date: 28.FEB.2012 15:52:08

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



Date: 28.FEB.2012 16:09:22

## 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

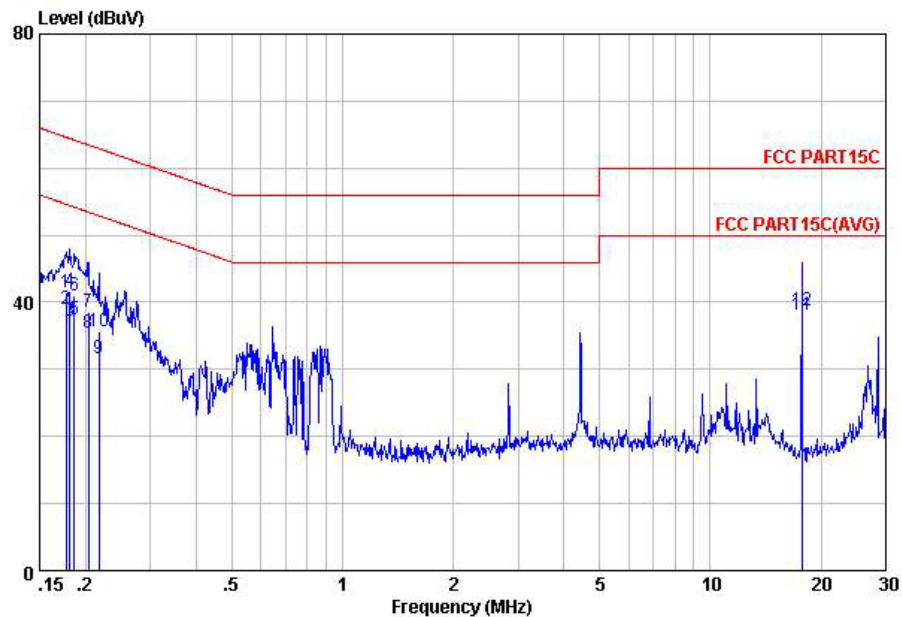
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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 :	19~20°C
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM 850 Idle + Bluetooth Link + WLAN Link (DC12V)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



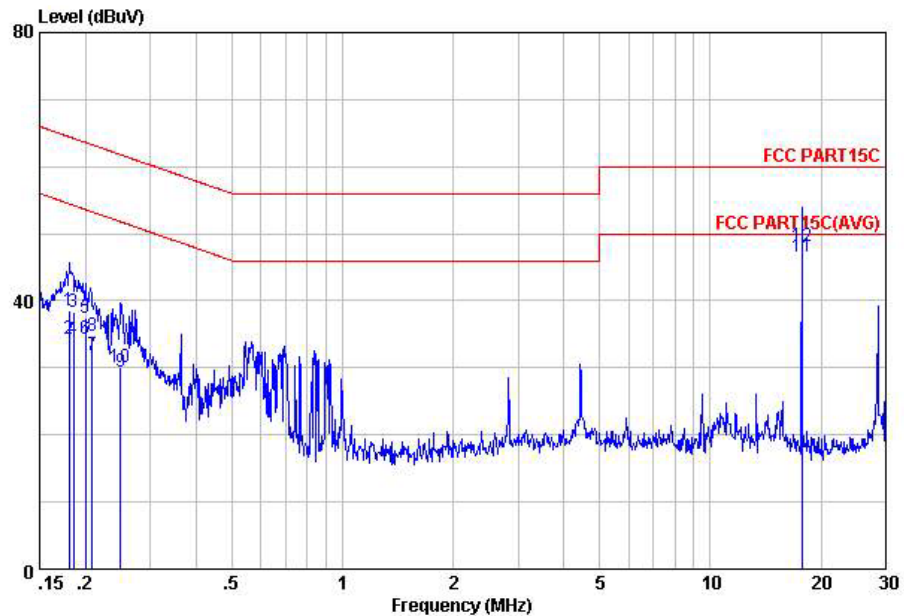
Site : C001-KS  
Condition: FCC PART15C DC LISN-100807 LINE

mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.18	41.35	-23.29	64.64	31.69	-0.49	10.15	QP
2	0.18	38.95	-15.69	54.64	29.29	-0.49	10.15	Average
3	0.18	37.26	-17.16	54.42	27.59	-0.48	10.15	Average
4	0.18	41.56	-22.86	64.42	31.89	-0.48	10.15	QP
5	0.19	37.47	-16.73	54.20	27.79	-0.47	10.15	Average
6	0.19	41.07	-23.13	64.20	31.39	-0.47	10.15	QP
7	0.20	38.61	-24.84	63.45	28.90	-0.44	10.15	QP
8	0.20	35.51	-17.94	53.45	25.80	-0.44	10.15	Average
9	0.22	31.74	-21.18	52.92	22.00	-0.41	10.15	Average
10	0.22	35.64	-27.28	62.92	25.90	-0.41	10.15	QP
11	17.75	38.02	-11.98	50.00	27.70	-0.22	10.54	Average
12	17.75	38.82	-21.18	60.00	28.50	-0.22	10.54	QP



<b>Test Mode :</b>	Mode 1	<b>Temperature :</b>	19~20°C
<b>Test Engineer :</b>	Tom Wang	<b>Relative Humidity :</b>	39~40%
<b>Test Voltage :</b>	120Vac / 60Hz	<b>Phase :</b>	Neutral
<b>Function Type :</b>	GSM 850 Idle + Bluetooth Link + WLAN Link (DC12V)		
<b>Remark :</b>	All emissions not reported here are more than 10 dB below the prescribed limit.		



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

mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.18	38.56	-25.90	64.46	28.89	-0.48	10.15	QP
2	0.18	34.26	-20.20	54.46	24.59	-0.48	10.15	Average
3	0.19	38.27	-25.97	64.24	28.60	-0.48	10.15	QP
4	0.19	34.37	-19.87	54.24	24.70	-0.48	10.15	Average
5	0.20	37.40	-26.22	63.62	27.70	-0.45	10.15	QP
6	0.20	34.30	-19.32	53.62	24.60	-0.45	10.15	Average
7	0.21	31.82	-21.45	53.27	22.10	-0.43	10.15	Average
8	0.21	34.82	-28.45	63.27	25.10	-0.43	10.15	QP
9	0.25	29.45	-22.33	51.78	19.60	-0.31	10.16	Average
10	0.25	30.05	-31.73	61.78	20.20	-0.31	10.16	QP
11	17.75	46.52	-3.48	50.00	36.20	-0.22	10.54	Average
12	17.75	48.12	-11.88	60.00	37.80	-0.22	10.54	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

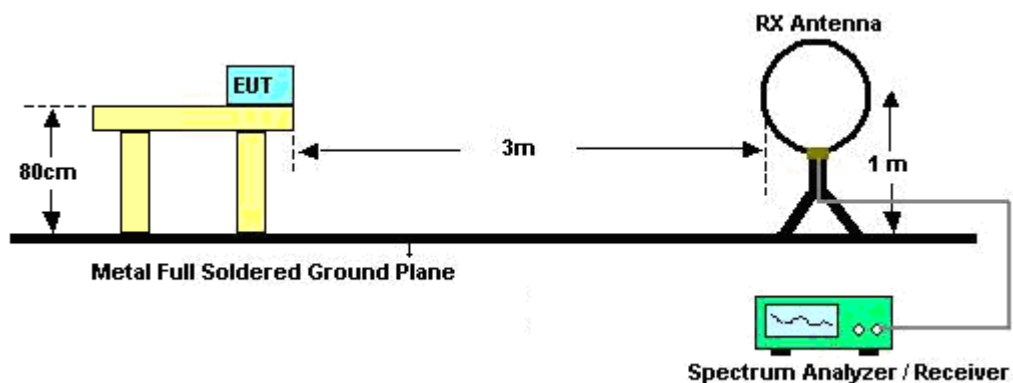
See list of measuring instruments of this test report.

#### 3.7.3 Test Procedures

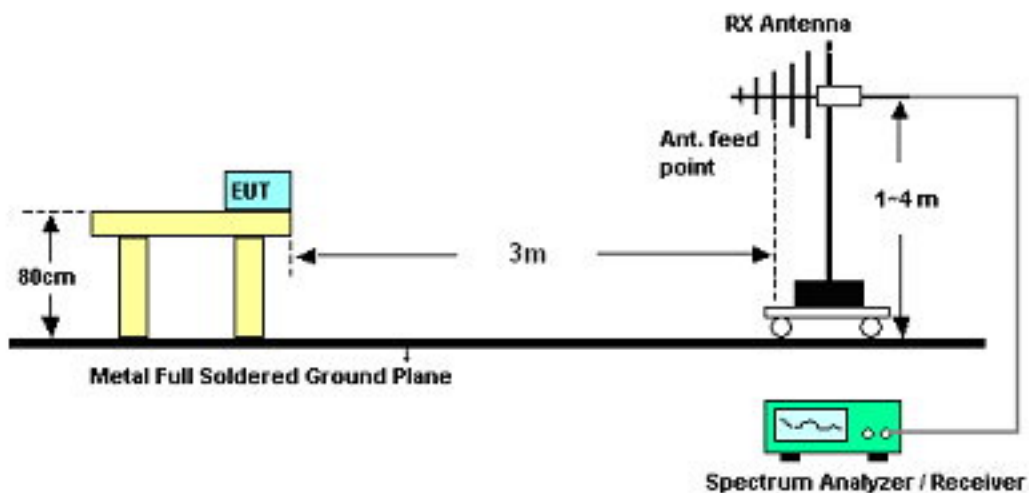
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
  - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for  $f \geq 1$  GHz, 100 kHz for  $f < 1$  GHz; VBW  $\geq$  RBW; Sweep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

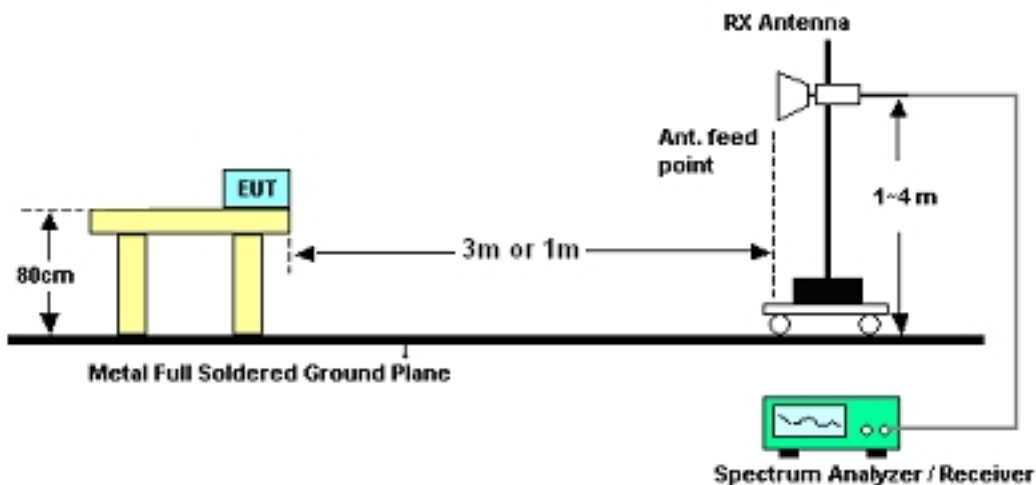
For radiated emissions below 30MHz



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 :	21~22℃	
		Relative Humidity :	41~42%	

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)**

<b>Test Mode :</b>	Mode 1	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	2412 MHz is fundamental signal 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
109.38	40.41	-3.09	43.5	58.15	11.8	0.43	29.97	-	-	Peak
147.45	38.33	-5.17	43.5	57.6	10.21	0.5	29.98	200	102	QP
156.9	40.28	-3.22	43.5	60	9.71	0.52	29.95	-	-	Peak
427.4	38.16	-7.84	46	50.91	16.18	0.88	29.81	-	-	Peak
446.3	39.86	-6.14	46	52.47	16.28	0.9	29.79	-	-	Peak
465.2	36.53	-9.47	46	48.85	16.53	0.92	29.77	-	-	Peak
2372.7	54.94	-19.06	74	52.7	32.83	3.42	34.01	200	360	Peak
2372.7	39.34	-14.66	54	37.1	32.83	3.42	34.01	200	360	Average
2412	110.78	-	-	108.45	32.89	3.52	34.08	100	54	Peak
2412	105.02	-	-	102.69	32.89	3.52	34.08	100	54	Average
2483.5	51.54	-22.46	74	49.05	33.01	3.68	34.2	100	0	Peak
2483.5	36.99	-17.01	54	34.5	33.01	3.68	34.2	100	0	Average

<b>Test Mode :</b>	Mode 1	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2412 MHz is fundamental signal 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
88.59	39.11	-4.39	43.5	60.43	8.3	0.38	30	-	-	Peak
109.11	37.76	-5.74	43.5	55.5	11.8	0.43	29.97	100	236	QP
161.49	39.08	-4.42	43.5	58.95	9.53	0.53	29.93	100	0	QP
446.3	38.42	-7.58	46	51.03	16.28	0.9	29.79	-	-	Peak
484.8	38.32	-7.68	46	50.16	16.97	0.94	29.75	-	-	Peak
503.7	37.27	-8.73	46	48.78	17.26	0.96	29.73	-	-	Peak
2390	51.34	-22.66	74	49.06	32.86	3.47	34.05	100	0	Peak
2390	40.48	-13.52	54	38.2	32.86	3.47	34.05	100	0	Average
2412	106.3	-	-	103.97	32.89	3.52	34.08	100	360	Peak
2412	99.88	-	-	97.55	32.89	3.52	34.08	100	360	Average
2483.5	48.96	-25.04	74	46.47	33.01	3.68	34.2	100	0	Peak
2483.5	38.89	-15.11	54	36.4	33.01	3.68	34.2	100	0	Average

<b>Test Mode :</b>	Mode 2	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	2437 MHz is fundamental signal 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
109.38	38.69	-4.81	43.5	56.43	11.8	0.43	29.97	-	-	Peak
147.18	39.53	-3.97	43.5	58.8	10.21	0.5	29.98	200	0	QP
156.9	40.08	-3.42	43.5	59.8	9.71	0.52	29.95	-	-	Peak
323.8	33.2	-12.8	46	48.67	13.71	0.77	29.95	-	-	Peak
400.1	29.8	-16.2	46	42.79	16	0.84	29.83	-	-	Peak
540.1	31.67	-14.33	46	42.06	18.31	0.99	29.69	-	-	Peak
2390	49.21	-24.79	74	46.93	32.86	3.47	34.05	100	0	Peak
2390	38.98	-15.02	54	36.7	32.86	3.47	34.05	100	0	Average
2437	111.13	-	-	108.73	32.95	3.6	34.15	100	0	Peak
2437	106.52	-	-	104.12	32.95	3.6	34.15	100	0	Average
2483.5	51.25	-22.75	74	48.76	33.01	3.68	34.2	100	0	Peak
2483.5	37.49	-16.51	54	35	33.01	3.68	34.2	100	0	Average

<b>Test Mode :</b>	Mode 2	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2437 MHz is fundamental signal 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
88.59	40.2	-3.3	43.5	61.52	8.3	0.38	30	-	-	Peak
109.11	40.36	-3.14	43.5	58.1	11.8	0.43	29.97	-	-	Peak
161.49	40.8	-2.7	43.5	60.67	9.53	0.53	29.93	100	20	QP
446.3	39.67	-6.33	46	52.28	16.28	0.9	29.79	-	-	Peak
465.2	37.25	-8.75	46	49.57	16.53	0.92	29.77	-	-	Peak
484.8	39.22	-6.78	46	51.06	16.97	0.94	29.75	-	-	Peak
2390	49.04	-24.96	74	46.76	32.86	3.47	34.05	100	360	Peak
2390	38.68	-15.32	54	36.4	32.86	3.47	34.05	100	360	Average
2437	107.75	-	-	105.35	32.95	3.6	34.15	140	355	Peak
2437	103.63	-	-	101.23	32.95	3.6	34.15	140	355	Average
2483.5	49.21	-24.79	74	46.72	33.01	3.68	34.2	100	360	Peak
2483.5	36.99	-17.01	54	34.5	33.01	3.68	34.2	100	360	Average

<b>Test Mode :</b>	Mode 3	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	2462 MHz is fundamental signal 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
109.38	39.07	-4.43	43.5	56.81	11.8	0.43	29.97	-	-	Peak
147.18	38.41	-5.09	43.5	57.68	10.21	0.5	29.98	200	103	QP
156.9	39.47	-4.03	43.5	59.19	9.71	0.52	29.95	-	-	Peak
446.3	38.63	-7.37	46	51.24	16.28	0.9	29.79	-	-	Peak
465.2	37.34	-8.66	46	49.66	16.53	0.92	29.77	-	-	Peak
484.8	36.07	-9.93	46	47.91	16.97	0.94	29.75	-	-	Peak
2385.62	51.31	-22.69	74	49.03	32.86	3.47	34.05	200	12	Peak
2385.62	39.49	-14.51	54	37.21	32.86	3.47	34.05	200	12	Average
2462	110.63	-	-	108.18	32.98	3.64	34.17	200	38	Peak
2462	105.81	-	-	103.36	32.98	3.64	34.17	200	38	Average
2483.5	48.96	-5.04	54	46.47	33.01	3.68	34.2	200	41	Average
2483.5	58.71	-15.29	74	56.22	33.01	3.68	34.2	200	41	Peak



<b>Test Mode :</b>	Mode 3	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2462 MHz is fundamental signal 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
88.59	40.18	-3.32	43.5	61.5	8.3	0.38	30	-	-	Peak
109.38	40.18	-3.32	43.5	57.92	11.8	0.43	29.97	-	-	Peak
161.49	41.24	-2.26	43.5	61.11	9.53	0.53	29.93	100	92	QP
427.4	37.16	-8.84	46	49.91	16.18	0.88	29.81	-	-	Peak
446.3	37.37	-8.63	46	49.98	16.28	0.9	29.79	-	-	Peak
484.8	37.41	-8.59	46	49.25	16.97	0.94	29.75	-	-	Peak
2383.53	50.66	-23.34	74	48.42	32.83	3.42	34.01	100	23	Peak
2383.53	38.76	-15.24	54	36.52	32.83	3.42	34.01	100	23	Average
2462	105.87	-	-	103.42	32.98	3.64	34.17	100	0	Peak
2462	101.61	-	-	99.16	32.98	3.64	34.17	100	0	Average
2483.5	56.33	-17.67	74	53.84	33.01	3.68	34.2	100	0	Peak
2483.5	46.15	-7.85	54	43.66	33.01	3.68	34.2	100	0	Average

<b>Test Mode :</b>	Mode 4	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	2412 MHz is fundamental signal 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
109.38	39.12	-4.38	43.5	56.86	11.8	0.43	29.97	-	-	Peak
147.18	38.35	-5.15	43.5	57.62	10.21	0.5	29.98	200	103	QP
156.9	39.27	-4.23	43.5	58.99	9.71	0.52	29.95	-	-	Peak
446.3	40.34	-5.66	46	52.95	16.28	0.9	29.79	-	-	Peak
465.2	38.5	-7.5	46	50.82	16.53	0.92	29.77	-	-	Peak
484.8	36.65	-9.35	46	48.49	16.97	0.94	29.75	-	-	Peak
2390	68.74	-5.26	74	66.46	32.86	3.47	34.05	200	51	Peak
2390	49.1	-4.9	54	46.82	32.86	3.47	34.05	200	51	Average
2412	106.94	-	-	104.61	32.89	3.52	34.08	200	0	Peak
2412	91.85	-	-	89.52	32.89	3.52	34.08	200	0	Average
2483.5	52.23	-21.77	74	49.74	33.01	3.68	34.2	200	10	Peak
2483.5	37.32	-16.68	54	34.83	33.01	3.68	34.2	200	10	Average

<b>Test Mode :</b>	Mode 4	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2412 MHz is fundamental signal 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
88.59	40.15	-3.35	43.5	61.47	8.3	0.38	30	-	-	Peak
109.11	40.31	-3.19	43.5	58.05	11.8	0.43	29.97	-	-	Peak
161.49	39.32	-4.18	43.5	59.19	9.53	0.53	29.93	100	96	QP
427.4	37.35	-8.65	46	50.1	16.18	0.88	29.81	-	-	Peak
465.2	38.08	-7.92	46	50.4	16.53	0.92	29.77	-	-	Peak
484.8	37.75	-8.25	46	49.59	16.97	0.94	29.75	-	-	Peak
2390	63.04	-10.96	74	60.76	32.86	3.47	34.05	100	10	Peak
2390	42.4	-11.6	54	40.12	32.86	3.47	34.05	100	10	Average
2412	100.79	-	-	98.46	32.89	3.52	34.08	100	0	Peak
2412	86.19	-	-	83.86	32.89	3.52	34.08	100	0	Average
2486.89	50.76	-23.24	74	48.27	33.01	3.68	34.2	100	16	Peak
2486.89	36.64	-17.36	54	34.15	33.01	3.68	34.2	100	16	Average

<b>Test Mode :</b>	Mode 5	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	2437 MHz is fundamental signal 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
109.38	39.77	-3.73	43.5	57.51	11.8	0.43	29.97	-	-	Peak
147.18	38.1	-5.4	43.5	57.37	10.21	0.5	29.98	200	166	QP
156.9	40.36	-3.14	43.5	60.08	9.71	0.52	29.95	-	-	Peak
427.4	36.45	-9.55	46	49.2	16.18	0.88	29.81	-	-	Peak
446.3	39.25	-6.75	46	51.86	16.28	0.9	29.79	-	-	Peak
465.2	38.01	-7.99	46	50.33	16.53	0.92	29.77	-	-	Peak
2390	50.88	-23.12	74	48.6	32.86	3.47	34.05	200	50	Peak
2390	38.63	-15.37	54	36.35	32.86	3.47	34.05	200	50	Average
2437	107.95	-	-	105.55	32.95	3.6	34.15	200	52	Peak
2437	93.68	-	-	91.28	32.95	3.6	34.15	200	52	Average
2485.94	54.26	-19.74	74	51.77	33.01	3.68	34.2	200	0	Peak
2485.94	39.67	-14.33	54	37.18	33.01	3.68	34.2	200	0	Average

<b>Test Mode :</b>	Mode 5	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2437 MHz is fundamental signal 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
88.59	40.08	-3.42	43.5	61.4	8.3	0.38	30	-	-	Peak
109.38	40.38	-3.12	43.5	58.12	11.8	0.43	29.97	-	-	Peak
161.49	40.82	-2.68	43.5	60.69	9.53	0.53	29.93	100	118	QP
446.3	37.93	-8.07	46	50.54	16.28	0.9	29.79	-	-	Peak
465.2	36.96	-9.04	46	49.28	16.53	0.92	29.77	-	-	Peak
503.7	37.09	-8.91	46	48.6	17.26	0.96	29.73	-	-	Peak
2360.35	49.91	-24.09	74	47.7	32.81	3.38	33.98	100	0	Peak
2360.35	37.83	-16.17	54	35.62	32.81	3.38	33.98	100	0	Average
2437	102.23	-	-	99.83	32.95	3.6	34.15	100	16	Peak
2437	87.58	-	-	85.18	32.95	3.6	34.15	100	16	Average
2483.5	50.87	-23.13	74	48.38	33.01	3.68	34.2	100	0	Peak
2483.5	37.81	-16.19	54	35.32	33.01	3.68	34.2	100	0	Average

<b>Test Mode :</b>	Mode 6	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	2462 MHz is fundamental signal 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
109.11	39.3	-4.2	43.5	57.04	11.8	0.43	29.97	-	-	Peak
147.18	37.54	-5.96	43.5	56.81	10.21	0.5	29.98	200	68	QP
156.9	40.29	-3.21	43.5	60.01	9.71	0.52	29.95	-	-	Peak
427.4	36.07	-9.93	46	48.82	16.18	0.88	29.81	-	-	Peak
446.3	38.26	-7.74	46	50.87	16.28	0.9	29.79	-	-	Peak
465.2	38.64	-7.36	46	50.96	16.53	0.92	29.77	-	-	Peak
2381.44	50.91	-23.09	74	48.67	32.83	3.42	34.01	200	0	Peak
2381.44	37.5	-16.5	54	35.26	32.83	3.42	34.01	200	0	Average
2462	109.37	-	-	106.92	32.98	3.64	34.17	200	52	Peak
2462	94.28	-	-	91.83	32.98	3.64	34.17	200	52	Average
2483.5	70.96	-3.04	74	68.47	33.01	3.68	34.2	200	56	Peak
2483.5	52.11	-1.89	54	49.62	33.01	3.68	34.2	200	56	Average

<b>Test Mode :</b>	Mode 6	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2462 MHz is fundamental signal 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
88.59	40.2	-3.3	43.5	61.52	8.3	0.38	30	-	-	Peak
109.38	40.27	-3.23	43.5	58.01	11.8	0.43	29.97	-	-	Peak
161.49	40.48	-3.02	43.5	60.35	9.53	0.53	29.93	100	68	QP
427.4	36.46	-9.54	46	49.21	16.18	0.88	29.81	-	-	Peak
446.3	39.58	-6.42	46	52.19	16.28	0.9	29.79	-	-	Peak
484.8	36.41	-9.59	46	48.25	16.97	0.94	29.75	-	-	Peak
2371.75	49.86	-24.14	74	47.62	32.83	3.42	34.01	100	0	Peak
2371.75	36.56	-17.44	54	34.32	32.83	3.42	34.01	100	0	Average
2462	102.11	-	-	99.66	32.98	3.64	34.17	100	0	Peak
2462	88.08	-	-	85.63	32.98	3.64	34.17	100	0	Average
2483.5	63	-11	74	60.51	33.01	3.68	34.2	100	112	Peak
2483.5	42.02	-11.98	54	39.53	33.01	3.68	34.2	100	112	Average

<b>Test Mode :</b>	Mode 7	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	2412 MHz is fundamental signal 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
109.11	38.16	-5.34	43.5	55.9	11.8	0.43	29.97	-	-	Peak
147.18	39.59	-3.91	43.5	58.86	10.21	0.5	29.98	200	110	QP
156.9	39.62	-3.88	43.5	59.34	9.71	0.52	29.95	-	-	Peak
427.4	37.53	-8.47	46	50.28	16.18	0.88	29.81	-	-	Peak
446.3	39.19	-6.81	46	51.8	16.28	0.9	29.79	-	-	Peak
465.2	37.26	-8.74	46	49.58	16.53	0.92	29.77	-	-	Peak
2390	50.14	-23.86	74	47.86	32.86	3.47	34.05	200	26	Peak
2390	38.64	-15.36	54	36.36	32.86	3.47	34.05	200	26	Average
2412	95.57	-	-	93.24	32.89	3.52	34.08	200	56	Peak
2412	80.98	-	-	78.65	32.89	3.52	34.08	200	56	Average
2490.88	50.06	-23.94	74	47.52	33.05	3.72	34.23	200	0	Peak
2490.88	37.77	-16.23	54	35.23	33.05	3.72	34.23	200	0	Average



<b>Test Mode :</b>	Mode 7	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2412 MHz is fundamental signal 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
88.59	40.22	-3.28	43.5	61.54	8.3	0.38	30	-	-	Peak
109.38	40.47	-3.03	43.5	58.21	11.8	0.43	29.97	-	-	Peak
161.49	40.31	-3.19	43.5	60.18	9.53	0.53	29.93	100	211	QP
446.3	37.05	-8.95	46	49.66	16.28	0.9	29.79	-	-	Peak
465.2	38.2	-7.8	46	50.52	16.53	0.92	29.77	-	-	Peak
484.8	37.78	-8.22	46	49.62	16.97	0.94	29.75	-	-	Peak
2357.31	49.83	-24.17	74	47.62	32.81	3.38	33.98	100	118	Peak
2357.31	36.83	-17.17	54	34.62	32.81	3.38	33.98	100	118	Average
2412	90.03	-	-	87.7	32.89	3.52	34.08	100	0	Peak
2412	75.64	-	-	73.31	32.89	3.52	34.08	100	0	Average
2489.36	49.89	-24.11	74	47.35	33.05	3.72	34.23	100	0	Peak
2489.36	37.65	-16.35	54	35.11	33.05	3.72	34.23	100	0	Average

<b>Test Mode :</b>	Mode 8	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	2437 MHz is fundamental signal 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
109.11	39.43	-4.07	43.5	57.17	11.8	0.43	29.97	-	-	Peak
147.18	39.44	-4.06	43.5	58.71	10.21	0.5	29.98	200	306	QP
156.9	39.82	-3.68	43.5	59.54	9.71	0.52	29.95	-	-	Peak
446.3	38.36	-7.64	46	50.97	16.28	0.9	29.79	-	-	Peak
465.2	37.95	-8.05	46	50.27	16.53	0.92	29.77	-	-	Peak
484.8	35.96	-10.04	46	47.8	16.97	0.94	29.75	-	-	Peak
2361.49	49.7	-24.3	74	47.49	32.81	3.38	33.98	200	0	Peak
2361.49	36.48	-17.52	54	34.27	32.81	3.38	33.98	200	0	Average
2437	95.64	-	-	93.24	32.95	3.6	34.15	200	50	Peak
2437	80.96	-	-	78.56	32.95	3.6	34.15	200	50	Average
2489.17	49.83	-24.17	74	47.29	33.05	3.72	34.23	200	100	Peak
2489.17	36.67	-17.33	54	34.13	33.05	3.72	34.23	200	100	Average

<b>Test Mode :</b>	Mode 8	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2437 MHz is fundamental signal 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
88.59	40.13	-3.37	43.5	61.45	8.3	0.38	30	-	-	Peak
109.11	40.36	-3.14	43.5	58.1	11.8	0.43	29.97	-	-	Peak
161.49	39	-4.5	43.5	58.87	9.53	0.53	29.93	100	118	QP
446.3	38.47	-7.53	46	51.08	16.28	0.9	29.79	-	-	Peak
465.2	37.17	-8.83	46	49.49	16.53	0.92	29.77	-	-	Peak
484.8	36.78	-9.22	46	48.62	16.97	0.94	29.75	-	-	Peak
2388.85	50.58	-23.42	74	48.3	32.86	3.47	34.05	100	101	Peak
2388.85	37.62	-16.38	54	35.34	32.86	3.47	34.05	100	101	Average
2437	88.67	-	-	86.27	32.95	3.6	34.15	100	0	Peak
2437	74.48	-	-	72.08	32.95	3.6	34.15	100	0	Average
2488.03	49.32	-24.68	74	46.78	33.05	3.72	34.23	100	18	Peak
2488.03	36.76	-17.24	54	34.22	33.05	3.72	34.23	100	18	Average

<b>Test Mode :</b>	Mode 9	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	2462 MHz is fundamental signal 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
109.11	39.18	-4.32	43.5	56.92	11.8	0.43	29.97	-	-	Peak
137.73	39.85	-3.65	43.5	58.31	11.05	0.49	30	-	-	Peak
147.18	39.13	-4.37	43.5	58.4	10.21	0.5	29.98	200	122	QP
427.4	36.63	-9.37	46	49.38	16.18	0.88	29.81	-	-	Peak
446.3	38.84	-7.16	46	51.45	16.28	0.9	29.79	-	-	Peak
465.2	37.28	-8.72	46	49.6	16.53	0.92	29.77	-	-	Peak
2379.92	49.34	-24.66	74	47.1	32.83	3.42	34.01	200	0	Peak
2379.92	36.42	-17.58	54	34.18	32.83	3.42	34.01	200	0	Average
2462	96.56	-	-	94.11	32.98	3.64	34.17	200	56	Peak
2462	82.98	-	-	80.53	32.98	3.64	34.17	200	56	Average
2483.5	55.26	-18.74	74	52.77	33.01	3.68	34.2	200	311	Peak
2483.5	41.15	-12.85	54	38.66	33.01	3.68	34.2	200	311	Average

<b>Test Mode :</b>	Mode 9	<b>Temperature :</b>	21~22℃
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Chenmy Cheng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2462 MHz is fundamental signal 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
88.59	40.26	-3.24	43.5	61.58	8.3	0.38	30	-	-	Peak
109.11	40.46	-3.04	43.5	58.2	11.8	0.43	29.97	-	-	Peak
161.49	38.75	-4.75	43.5	58.62	9.53	0.53	29.93	100	166	QP
446.3	36.79	-9.21	46	49.4	16.28	0.9	29.79	-	-	Peak
465.2	37.51	-8.49	46	49.83	16.53	0.92	29.77	-	-	Peak
484.8	36.75	-9.25	46	48.59	16.97	0.94	29.75	-	-	Peak
2363.96	50.35	-23.65	74	48.14	32.81	3.38	33.98	100	118	Peak
2363.96	37.58	-16.42	54	35.37	32.81	3.38	33.98	100	118	Average
2462	89.34	-	-	86.89	32.98	3.64	34.17	100	0	Peak
2462	74.64	-	-	72.19	32.98	3.64	34.17	100	0	Average
2489.36	49.9	-24.1	74	47.36	33.05	3.72	34.23	100	106	Peak
2489.36	36.89	-17.11	54	34.35	33.05	3.72	34.23	100	106	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 Chip 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	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Mar. 31, 2012	Dec. 29, 2012	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-9605 02	N/A	Dec. 30, 2011	Mar. 31, 2012	Dec. 29, 2012	Conducted (TH01-KS)
DC Power Supply	TOPWARD	GPS-3030D	E1884515	N/A	Aug. 23, 2011	Mar. 31, 2012	Aug. 22, 2012	Conducted (TH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 02, 2011	Mar. 17, 2012	Jun. 01, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 30, 2011	Mar. 17, 2012	Dec. 29, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Dec. 30, 2011	Mar. 17, 2012	Dec. 29, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000 0811	N/A	Nov. 16, 2011	Mar. 17, 2012	Nov. 15, 2012	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/06 6	Full-Band	Dec. 30, 2011	Mar. 17, 2012	Dec. 29, 2012	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 09, 2011	Mar. 27, 2012	Nov. 08, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Mar. 27, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Mar. 27, 2012	Dec. 07, 2012	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/00	9 kHz~30 MHz	Jul. 28, 2011	Mar. 27, 2012	Jul. 27, 2012	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 06, 2012	Mar. 27, 2012	Jan. 05, 2013	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 30, 2011	Mar. 27, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A023 70	1GHz~26.5GHz	Dec. 30, 2011	Mar. 27, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz~18GHz	Nov. 07, 2011	Mar. 27, 2012	Nov. 06, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA1702 49	15GHz~40GHz	Oct. 11, 2011	Mar. 27, 2012	Oct.10, 2012	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	$\pm 0.10$	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	$\pm 1.70$	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	$\pm 0.50$	Normal (k=2)	0.25	1	0.25
Receiver Correction	$\pm 2.00$	Rectangular	1.15	1	1.15
Antenna Factor Directional	$\pm 1.50$	Rectangular	0.87	1	0.87
Site Imperfection	$\pm 2.80$	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 EP1O1803 as below.