



# FCC RF Test Report

**APPLICANT** : Huawei Technologies Co. Ltd.  
**EQUIPMENT** : cdma2000 Digital Mobile Phone  
**BRAND NAME** : HUAWEI  
**MODEL NAME** : HUAWEI C8100  
**FCC ID** : QISC8100  
**STANDARD** : FCC Part 15 Subpart C §15.247  
**CLASSIFICATION** : Digital Transmission System (DTS)

The product was received on Apr. 09, 2010 and completely tested on Apr. 20, 2010. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

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

Reviewed by:

Roy Wu / Manager



**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(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.5	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 9.18 dB at 2.09 MHz
3.6	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 4.06 dB at 2376.69 MHz
3.7	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-



# 1 General Description

## 1.1 Applicant

Huawei Technologies Co. Ltd.

Huawei Industrial Base, Bantian Longgang Shenzhen 518128, P.R. China

## 1.2 Manufacturer

Huawei Technologies Co. Ltd.

Huawei Industrial Base, Bantian Longgang Shenzhen 518128, P.R. China

## 1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	cdma2000 Digital Mobile Phone
Brand Name	HUAWEI
Model Name	HUAWEI C8100
FCC ID	QISC8100
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 : 17.85 dBm (60.95 mW) 802.11g : 20.55 dBm (113.50 mW)
Antenna Type	IFA Antenna with gain 0 dBi
HW Version	HC3C8100M Ver.A
SW Version	81002.11.00.01.100
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

**List of Accessory:**

Specification of Accessory		
<b>AC Adapter 1</b>	<b>Brand Name</b>	HUAWEI
	<b>Model Name</b>	HS-050040U6
	<b>S/N</b>	BYXXXXXX
	<b>Power Rating</b>	I/P:100-240Vac, 50-60Hz, 0.2A; O/P: 5.0Vdc, 400mA
<b>AC Adapter 2</b>	<b>Brand Name</b>	HUAWEI
	<b>Model Name</b>	HS-050040U6
	<b>S/N</b>	HKXXXXXX
	<b>Power Rating</b>	I/P:100-240Vac, 50-60Hz, 0.2A; O/P: 5.0Vdc, 400mA
<b>Battery</b>	<b>Brand Name</b>	HUAWEI
	<b>Model Name</b>	HB5A2H
	<b>Power Rating</b>	3.7Vdc, 1150mAh
	<b>Type</b>	Li-ion
<b>Earphone</b>	<b>Brand Name</b>	HUAWEI
	<b>Model Name</b>	EMC179P-YE29
	<b>Signal Line Type</b>	1.55 meter non-shielded cable without ferrite core
<b>USB Cable</b>	<b>Brand Name</b>	HUAWEI
	<b>Model Name</b>	LSA00017
	<b>Signal Line Type</b>	1.03 meter shielded cable without ferrite core

**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	
<b>Test Site No.</b>	<b>Sporton Site No.</b>	
	CO01-KS	03CH01-KS

## 1.5 Applied Standards

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

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 (Measurement Guidelines of DTS)
- ANSI C63.4-2003
- IC RSS-210 Issue 7

**Remark:**

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

## 1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	PC	Dell	MT320	FCC DoC	N/A	Unshielded, 1.8 m
2.	(USB) Mouse	Dell	MO56UC	FCC DoC	Shielded, 1.8 m	N/A
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	LCD Monitor	QBELL	LC91	FCC DoC	Shielded, 1.2 m	Unshielded, 1.8 m
5.	Bluetooth Earphone	Nokia	HS-12W	PYAHS-12W	N/A	N/A
6.	iPod	Apple	A1199	FCC DoC	Shielded, 1.0 m	N/A
7.	(USB) Keyboard	Dell	L100	FCC DoC	Shielded, 1.8 m	N/A
8.	Print	HP	Laser Jet 1018	FCC DoC	Shielded, 1.8 m	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)			
		At DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	16.76	16.70	16.08	16.65
CH 06	2437 MHz	17.06	17.05	16.77	17.64
CH 11	2462 MHz	17.59	<b>17.85</b>	17.38	17.67

Channel	Frequency	2.4GHz 802.11g RF Power (dBm)							
		At OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	19.23	19.10	19.15	18.56	19.22	19.20	19.53	19.33
CH 06	2437 MHz	19.86	19.44	19.58	19.10	19.95	19.76	19.62	19.25
CH 11	2462 MHz	<b>20.55</b>	20.26	20.25	19.64	20.34	20.29	20.15	19.75

**Remark:**

1. The data rates of WLAN 802.11b/g were set in 2Mbps for 802.11b and 6Mbps for 802.11g, for all the test cases due to the highest RF output power.
2. The EUT is programmed to transmit signals continuously for all testing.

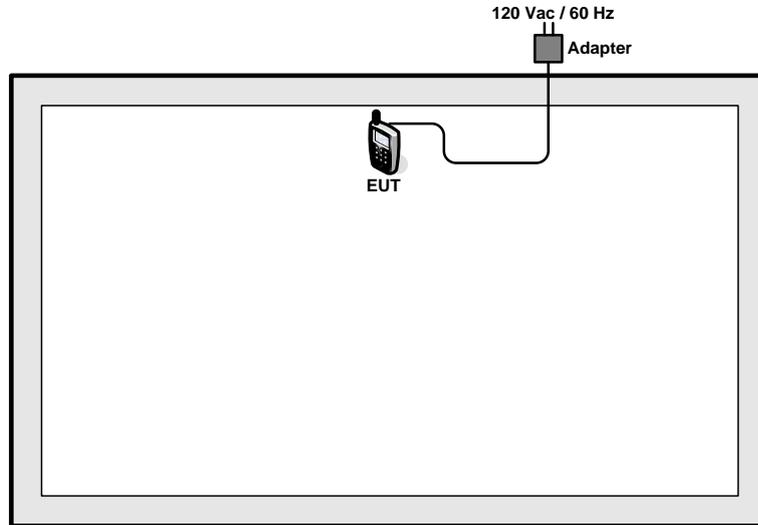
## 2.2 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). Pre-scanned tests were conducted to determine the final configuration from all possible combinations. The following tables are showing the test modes as the worst cases and recorded in this report.

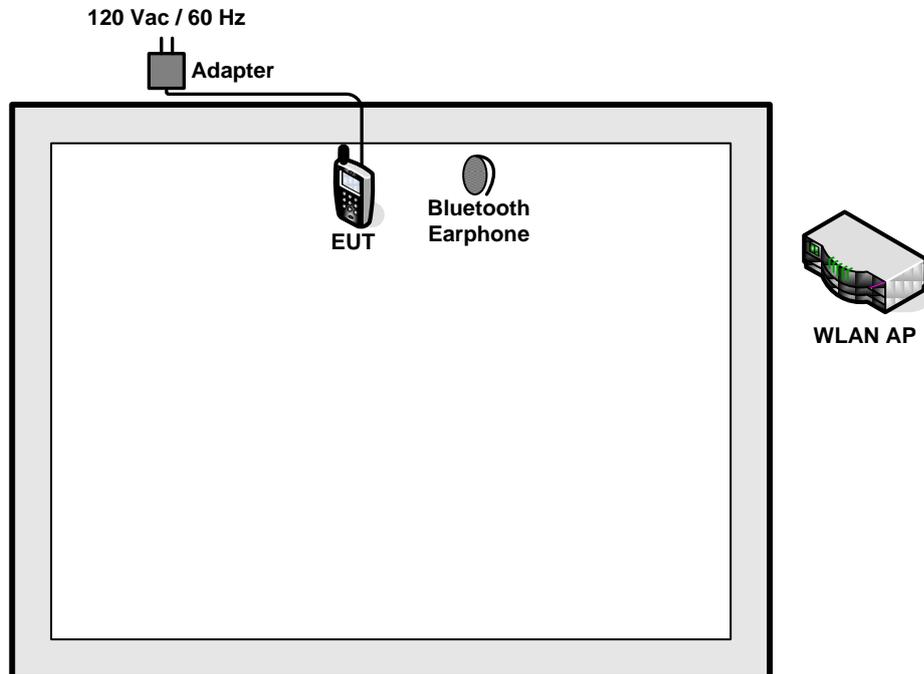
Test Cases		
Test Item	802.11b	802.11g
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz	Mode 4 : 802.11g CH01_2412 MHz
	Mode 2 : 802.11b CH06_2437 MHz	Mode 5 : 802.11g CH06_2437 MHz
	Mode 3 : 802.11b CH11_2462 MHz	Mode 6 : 802.11g CH11_2462 MHz
Radiated TCs	Mode 1 : 802.11b CH01_2412 MHz	Mode 4 : 802.11g CH01_2412 MHz
	Mode 2 : 802.11b CH06_2437 MHz	Mode 5 : 802.11g CH06_2437 MHz
	Mode 3 : 802.11b CH11_2462 MHz	Mode 6 : 802.11g CH11_2462 MHz
AC Conducted Emission	Mode 1 :Bluetooth Link + WLAN Link + Adapter 1	
	Mode 2 :Bluetooth Link + WLAN Link + Adapter 2	
	Mode 3 :Bluetooth Link + WLAN Link + USB Cable (Link with PC)	
<b>Remark:</b> The worst case of conducted emission is mode 2; only the test data of it was reported.		

## 2.3 Connection Diagram of Test System

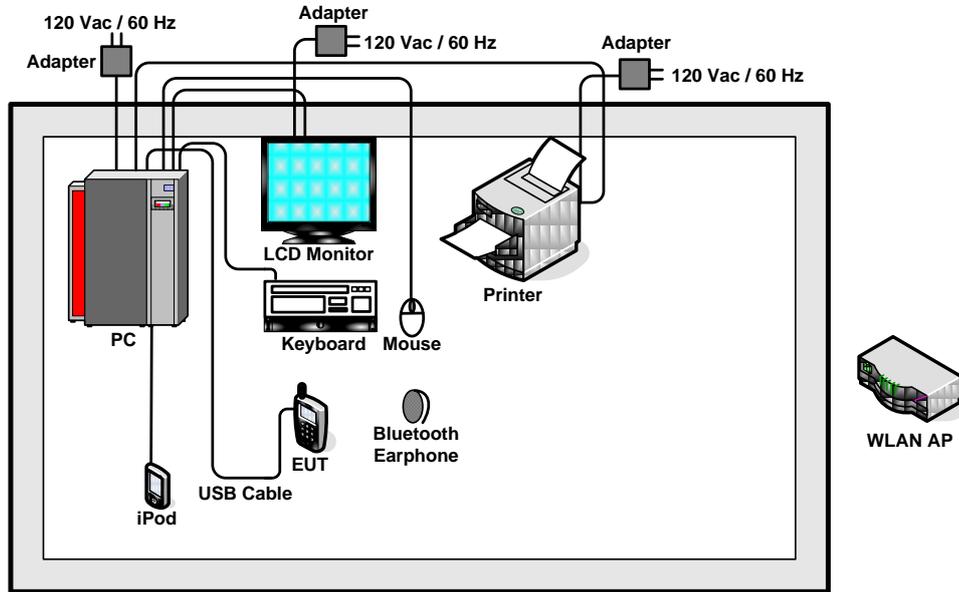
<WLAN Tx Mode>



<EUT with Adapter Mode>



<EUT with USB Cable (Link with PC) Mode>



## 2.4 RF Utility

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

### 3 Test Result

#### 3.1 6dB Bandwidth Measurement

##### 3.1.1 Limit of 6dB Bandwidth

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

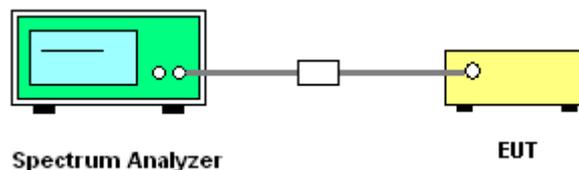
##### 3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

##### 3.1.3 Test Procedures

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

##### 3.1.4 Test Setup



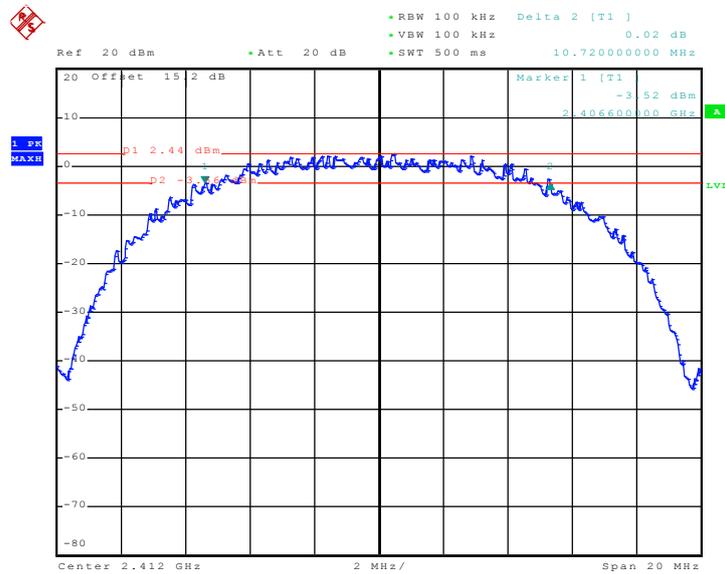


3.1.5 Test Result of 6dB Bandwidth

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

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	10.72	0.5	Pass
06	2437	10.24	0.5	Pass
11	2462	10.24	0.5	Pass

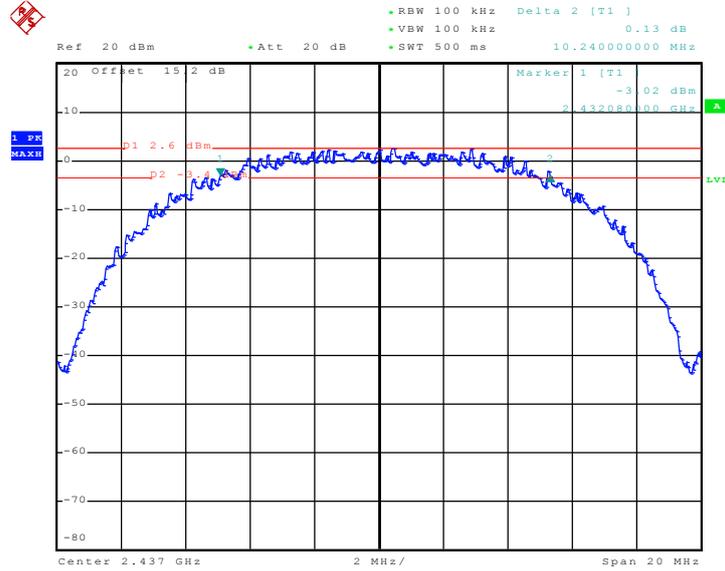
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



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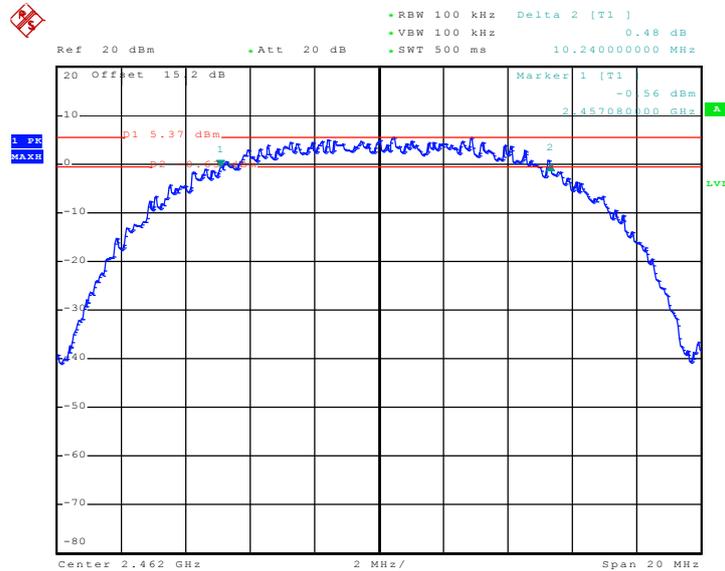


Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



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



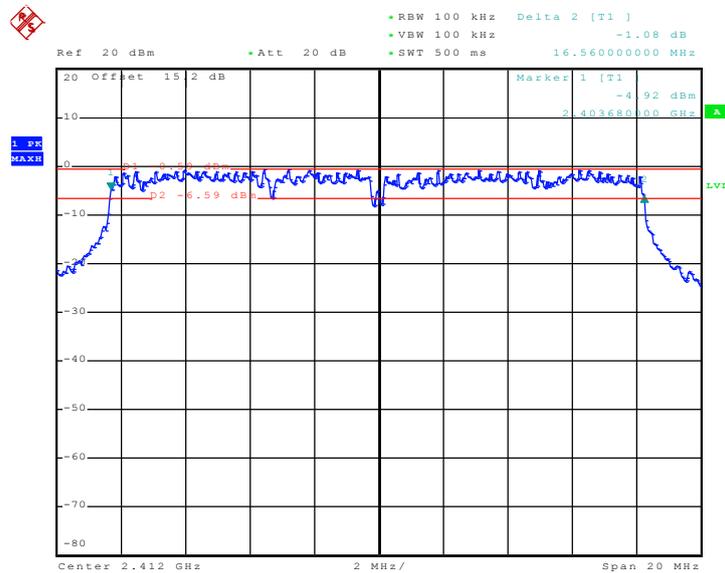
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Test Mode :	Mode 4, 5, 6	Temperature :	20~21°C
Test Engineer :	Sky Liu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.56	0.5	Pass
06	2437	16.56	0.5	Pass
11	2462	16.56	0.5	Pass

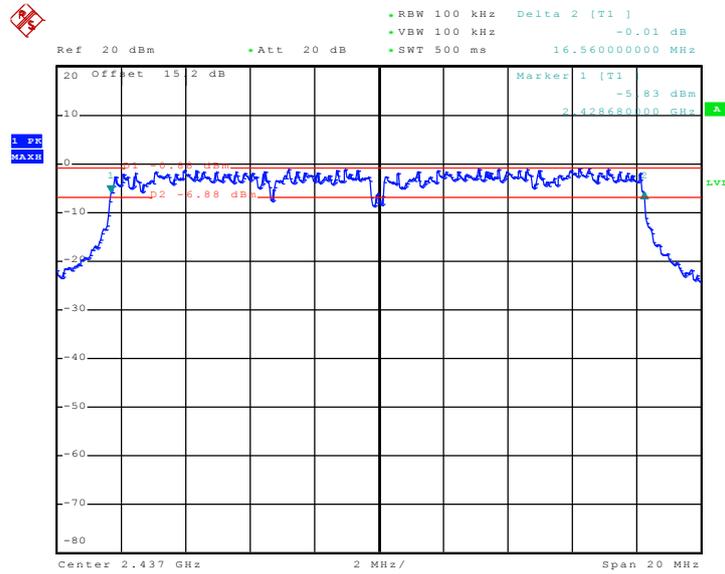
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



Date: 9.APR.2010 15:37:10

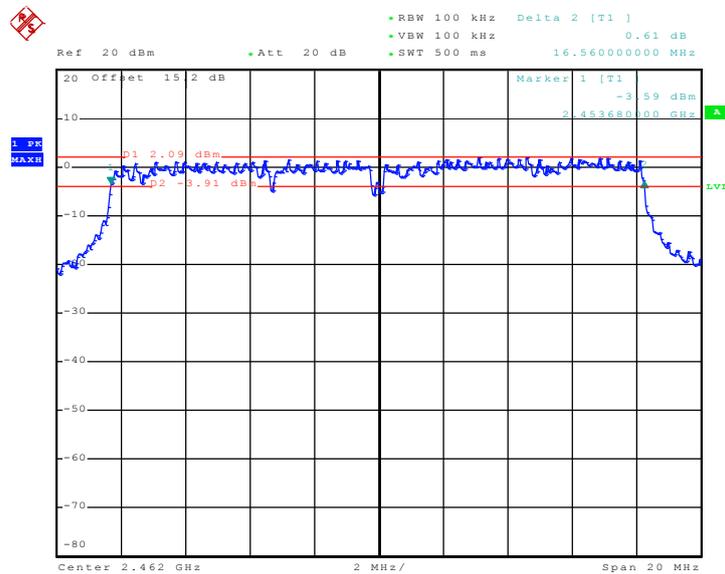


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



Date: 9.APR.2010 15:42:07

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



Date: 9.APR.2010 15:53:46

## 3.2 Output Power Measurement

### 3.2.1 Limit of Output Power

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

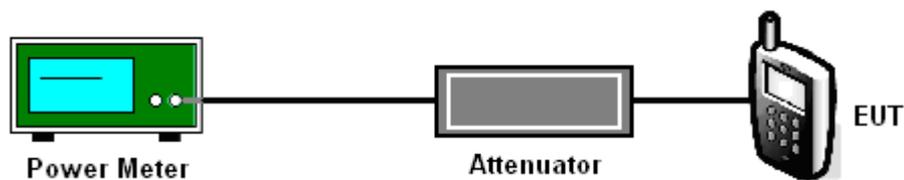
### 3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.2.3 Test Procedures

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

### 3.2.4 Test Setup





3.2.5 Test Result of Output Power

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

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.70	30	Pass
06	2437	17.05	30	Pass
11	2462	17.85	30	Pass

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

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.23	30	Pass
06	2437	19.86	30	Pass
11	2462	20.55	30	Pass



### **3.3 Band Edges Measurement**

#### **3.3.1 Limit of Band Edges**

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

#### **3.3.2 Measuring Instruments**

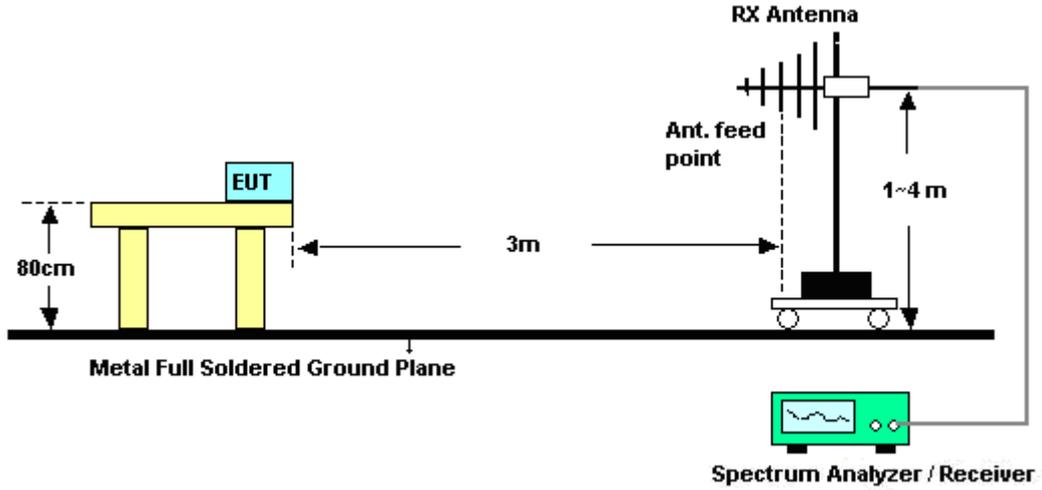
See list of measuring instruments of this test report.

#### **3.3.3 Test Procedures**

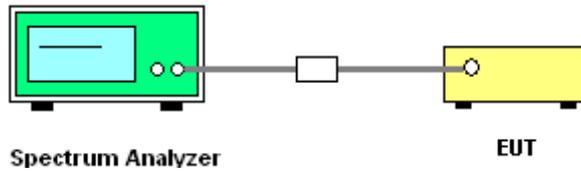
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW)  $\geq$  RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized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

### 3.3.4 Test Setup

#### <Radiated Band Edges>



#### <Conducted Band Edges>





3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	21~22°C
Test Band :	802.11b	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	Haitou Yin

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
2367.76	54.01	-19.99	74	52.91	32.81	3.13	34.84	100	52	Peak
2367.76	44.43	-9.57	54	43.33	32.81	3.13	34.84	100	52	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2388.85	52.72	-21.28	74	51.57	32.86	3.13	34.84	177	325	Peak
2388.85	44.68	-9.32	54	43.53	32.86	3.13	34.84	177	325	Average

Test Mode :	Mode 3	Temperature :	21~22°C
Test Band :	802.11b	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	Haitou Yin

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
2484.99	53.61	-20.39	74	52.25	33.01	3.2	34.85	125	61	Peak
2484.99	42.66	-11.34	54	41.3	33.01	3.2	34.85	125	61	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
2485.56	56.33	-17.67	74	54.97	33.01	3.2	34.85	200	329	Peak
2485.56	43.83	-10.17	54	42.47	33.01	3.2	34.85	200	329	Average



Test Mode :	Mode 4	Temperature :	21~22°C
Test Band :	802.11g	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	Haitou Yin

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2389.8	60.29	-13.71	74	59.12	32.86	3.15	34.84	200	345	Peak
2389.8	44.52	-9.48	54	43.35	32.86	3.15	34.84	200	345	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2389.99	57.1	-16.9	74	55.93	32.86	3.15	34.84	104	329	Peak
2389.99	41.48	-12.52	54	40.31	32.86	3.15	34.84	104	329	Average

Test Mode :	Mode 6	Temperature :	21~22°C
Test Band :	802.11g	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	Haitou Yin

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	59.98	-14.02	74	58.62	33.01	3.2	34.85	124	326	Peak
2483.5	42.48	-11.52	54	41.12	33.01	3.2	34.85	124	326	Average

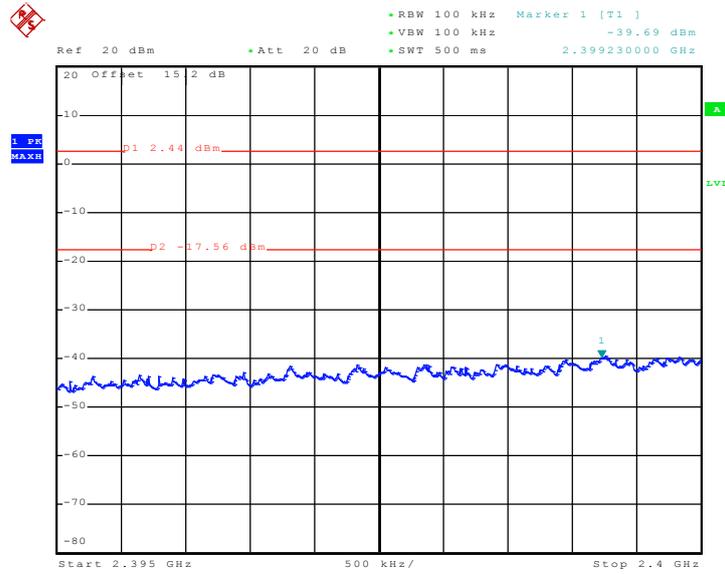
ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2483.5	62.9	-11.1	74	61.54	33.01	3.2	34.85	200	326	Peak
2483.5	44.01	-9.99	54	42.65	33.01	3.2	34.85	200	326	Average



### 3.3.6 Test Plots of Conducted Band Edges

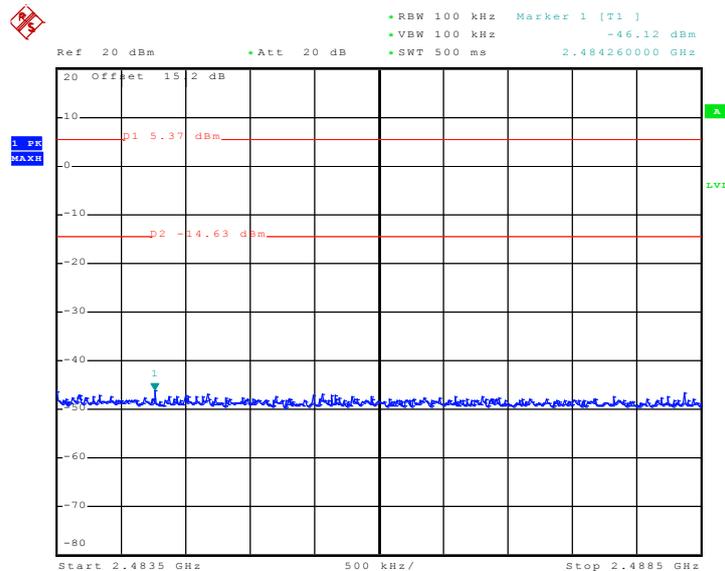
Test Mode :	Mode 1 and 3	Temperature :	20~21°C
Test Band :	802.11b	Relative Humidity :	40~41%
Test Channel :	01 and 11	Test Engineer :	Sky Liu

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



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

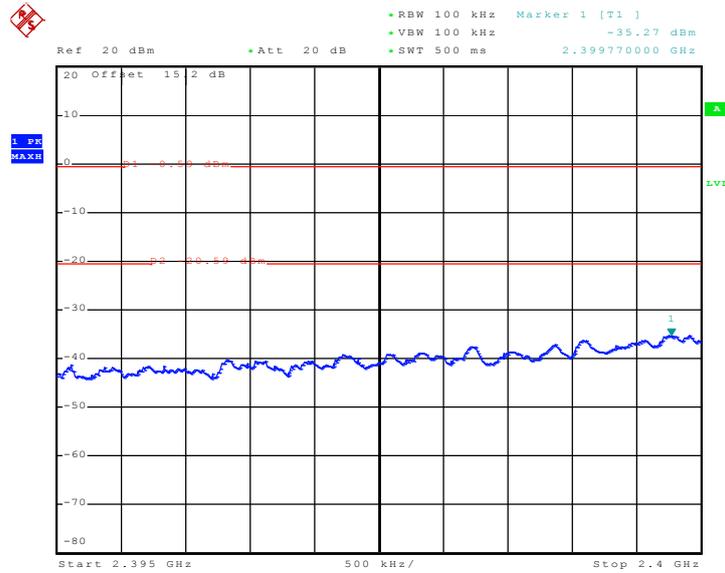


Date: 9.APR.2010 13:42:07



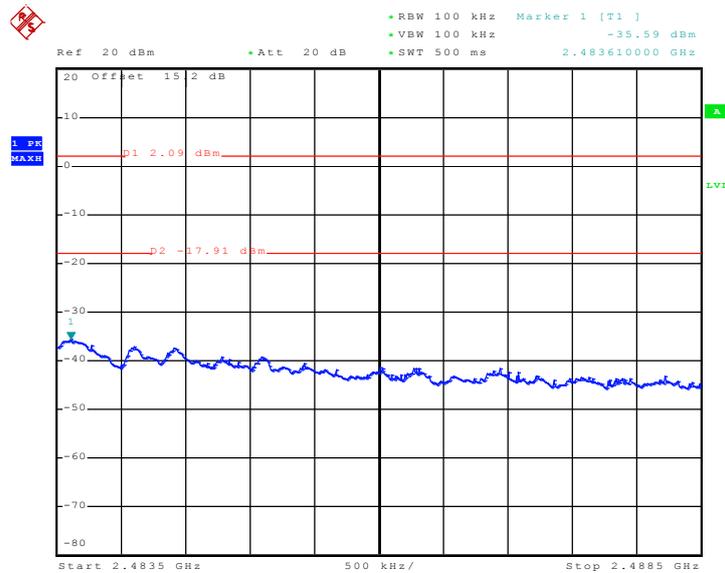
Test Mode :	Mode 4 and 6	Temperature :	20~21°C
Test Band :	802.11g	Relative Humidity :	40~41%
Test Channel :	01 and 11	Test Engineer :	Sky Liu

Low Band Edge Plot on 802.11g Channel 01



Date: 14.APR.2010 11:33:43

High Band Edge Plot on 802.11g Channel 11



Date: 9.APR.2010 16:00:04

## 3.4 Power Spectral Density Measurement

### 3.4.1 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.

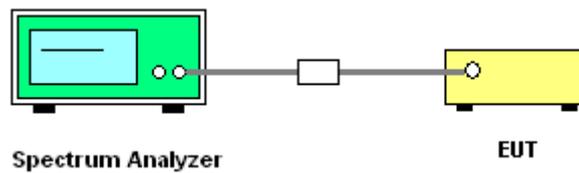
### 3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.4.3 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.

### 3.4.4 Test Setup



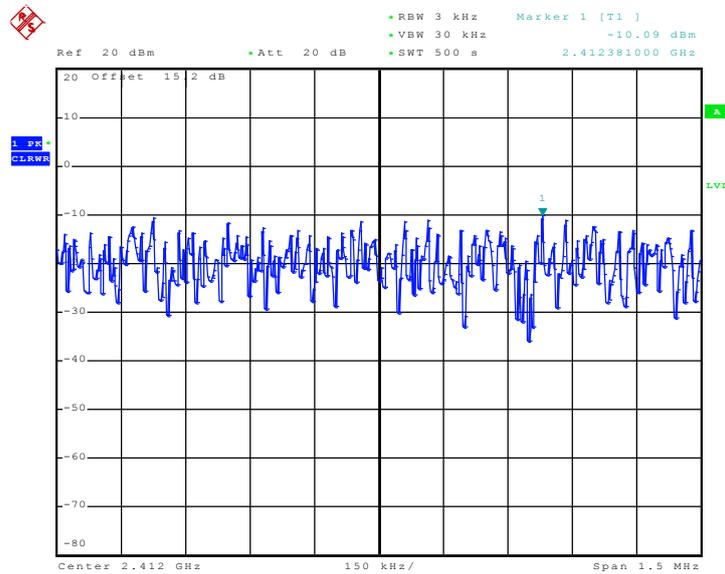


3.4.5 Test Result of Power Spectral Density

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

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-10.09	8	Pass
06	2437	-10.36	8	Pass
11	2462	-7.59	8	Pass

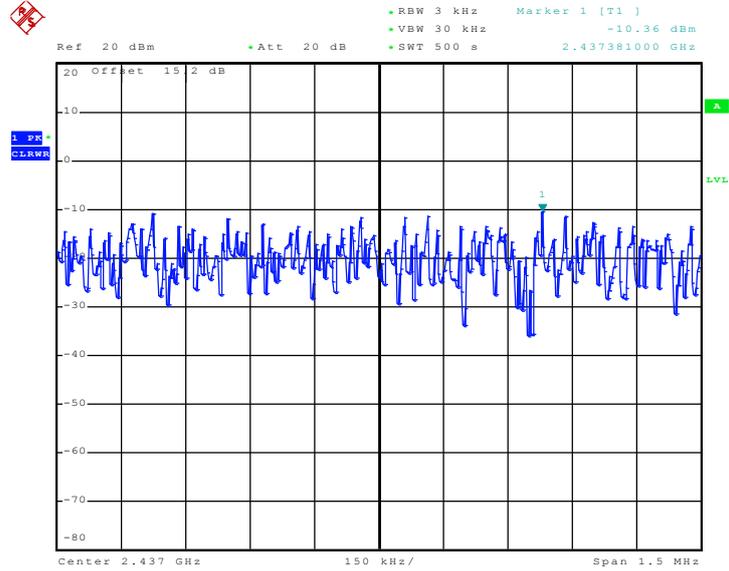
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 9.APR.2010 14:33:13

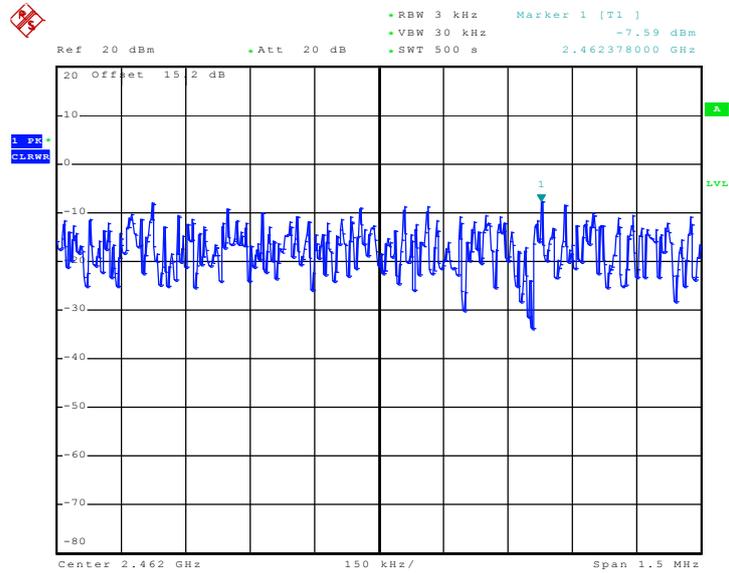


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 9.APR.2010 14:15:13

Mode 3 : PSD Plot on 802.11b Channel 11



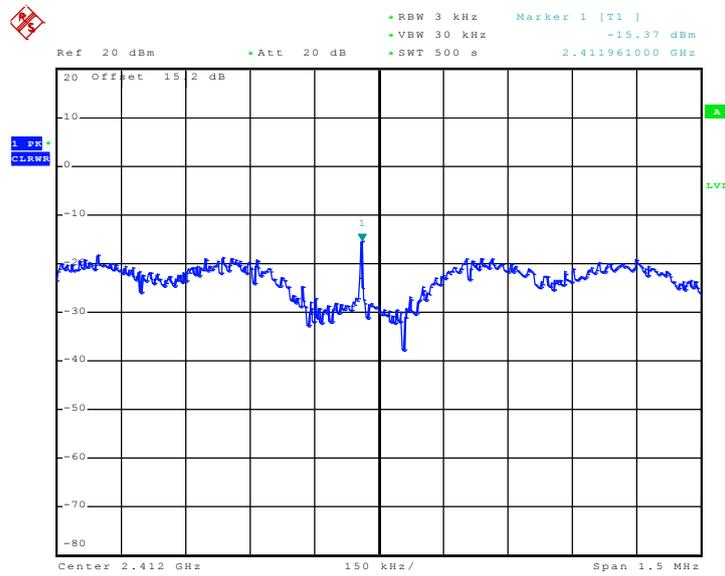
Date: 9.APR.2010 15:09:39



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

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-15.37	8	Pass
06	2437	-16.85	8	Pass
11	2462	-15.62	8	Pass

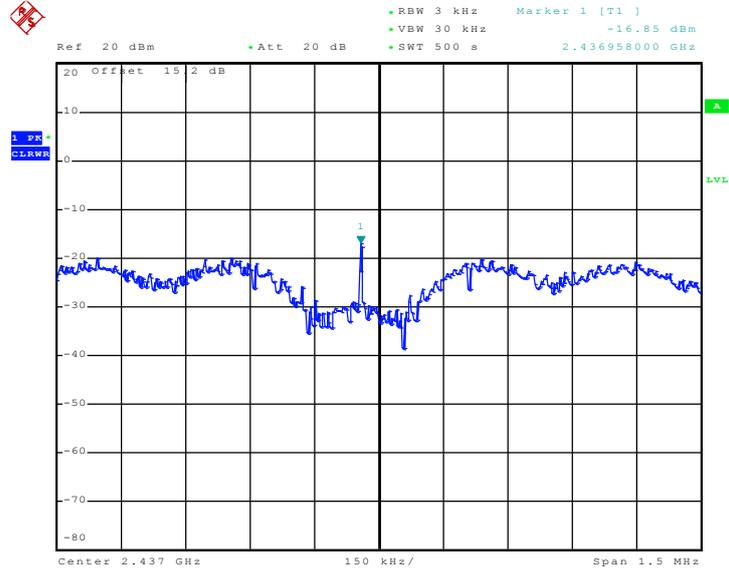
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 9.APR.2010 17:13:25

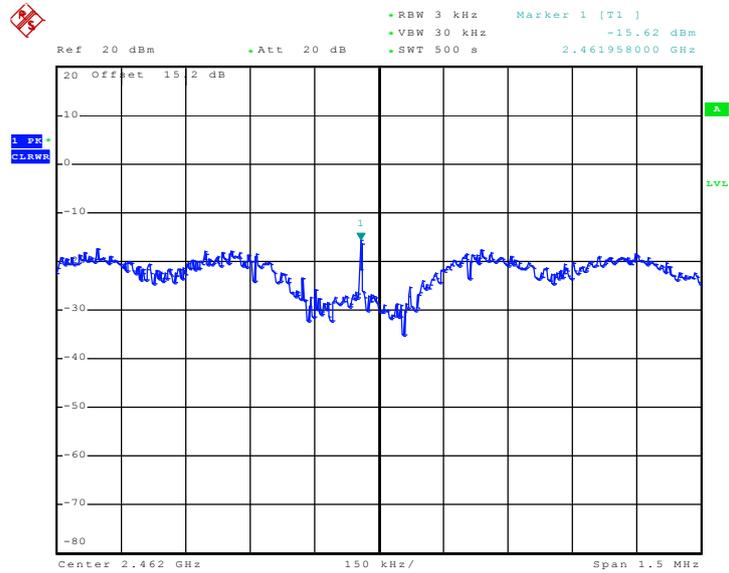


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 9.APR.2010 17:34:39

Mode 6 : PSD Plot on 802.11g Channel 11



Date: 9.APR.2010 17:56:17

## 3.5 AC Conducted Emission Measurement

### 3.5.1 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.

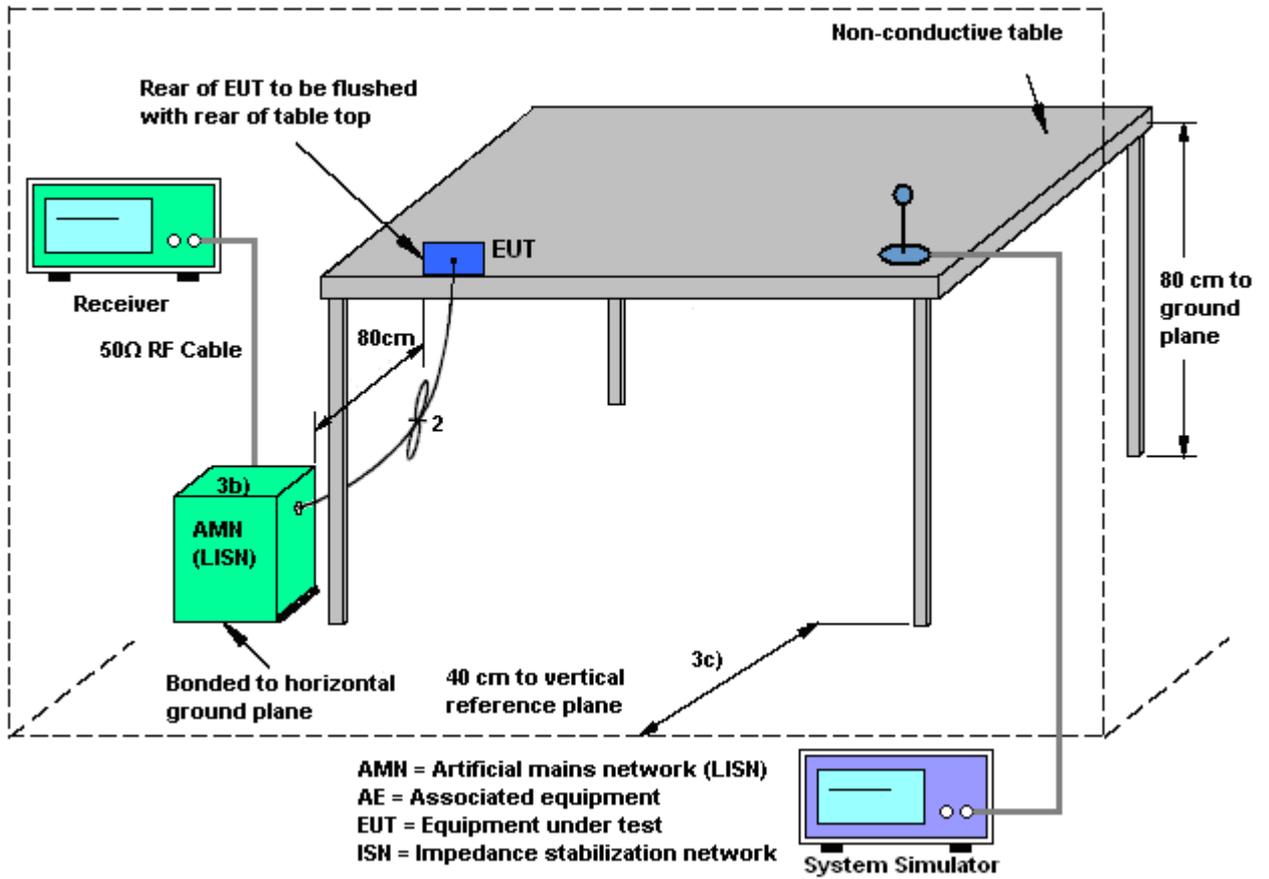
### 3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.5.3 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.

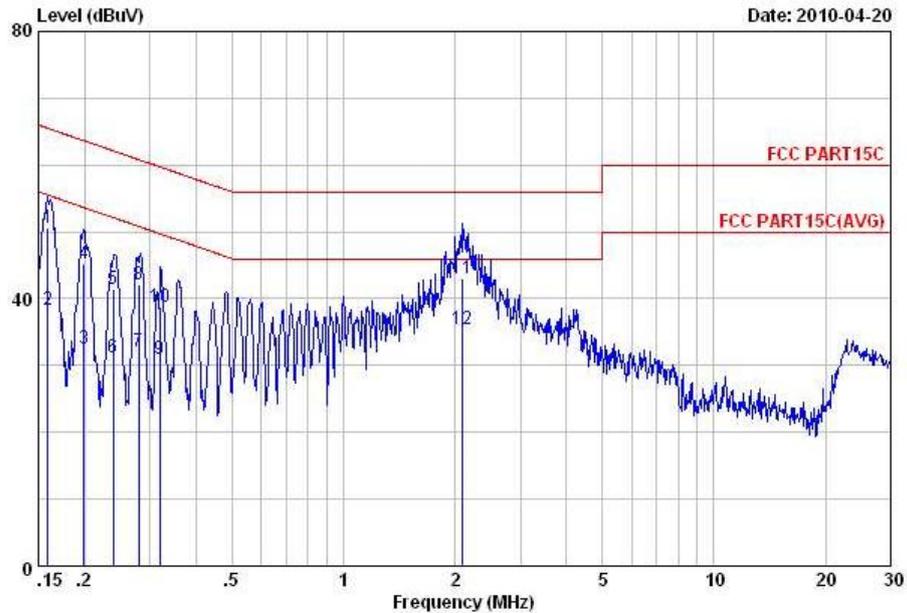
### 3.5.4 Test Setup





3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	Temperature :	22~23°C
Test Engineer :	Chao Wang	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	Bluetooth Link + WLAN Link + Adapter 2		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

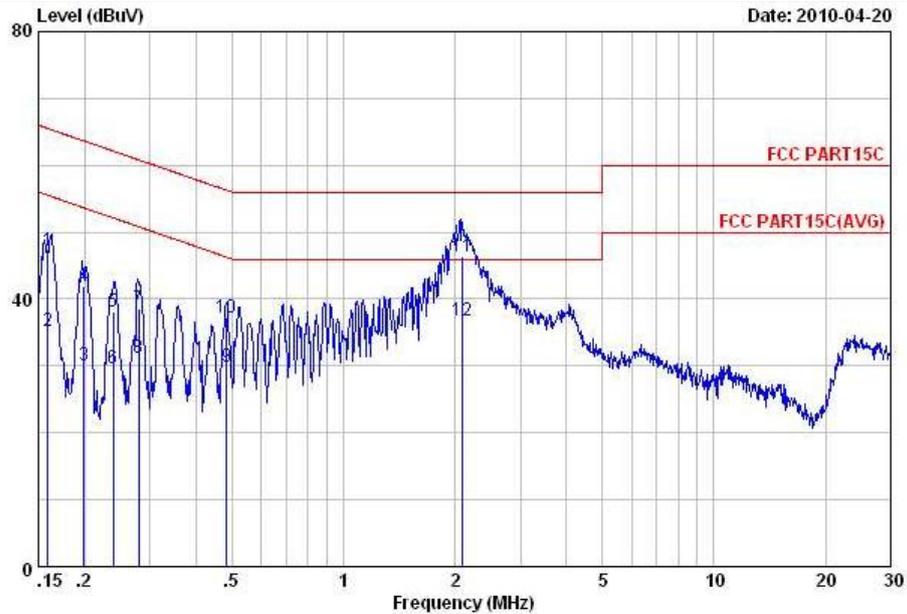


Site : C001-KS  
 Condition: FCC PART15C LISN-071001 LINE  
 EUT : (FR) 040201  
 Memo : Mode 2

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.16	50.57	-14.95	65.52	40.50	-0.07	10.14	QP
2	0.16	38.37	-17.15	55.52	28.30	-0.07	10.14	Average
3	0.20	32.58	-21.07	53.65	22.50	-0.07	10.15	Average
4	0.20	45.28	-18.37	63.65	35.20	-0.07	10.15	QP
5	0.24	41.49	-20.64	62.13	31.40	-0.07	10.16	QP
6	0.24	31.19	-20.94	52.13	21.10	-0.07	10.16	Average
7	0.28	31.99	-18.83	50.82	21.89	-0.07	10.17	Average
8	0.28	42.09	-18.73	60.82	31.99	-0.07	10.17	QP
9	0.32	30.90	-18.83	49.73	20.81	-0.08	10.17	Average
10	0.32	38.80	-20.93	59.73	28.71	-0.08	10.17	QP
11	2.09	43.02	-12.98	56.00	32.80	-0.11	10.33	QP
12	2.09	35.42	-10.58	46.00	25.20	-0.11	10.33	Average



Test Mode :	Mode 2	Temperature :	22~23°C
Test Engineer :	Chao Wang	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Link + WLAN Link + Adapter 2		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS  
 Condition: FCC PART15C LISN-071001 NEUTRAL  
 EUT : (FR) 040201  
 Memo : Mode 2

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.16	47.26	-18.26	65.52	37.21	-0.09	10.14	QP
2	0.16	35.26	-20.26	55.52	25.21	-0.09	10.14	Average
3	0.20	30.18	-23.47	53.65	20.10	-0.07	10.15	Average
4	0.20	41.88	-21.77	63.65	31.80	-0.07	10.15	QP
5	0.24	38.19	-23.94	62.13	28.10	-0.07	10.16	QP
6	0.24	29.59	-22.54	52.13	19.50	-0.07	10.16	Average
7	0.28	38.59	-22.23	60.82	28.49	-0.07	10.17	QP
8	0.28	31.09	-19.73	50.82	20.99	-0.07	10.17	Average
9	0.48	29.93	-16.36	46.29	19.80	-0.08	10.21	Average
10	0.48	37.13	-19.16	56.29	27.00	-0.08	10.21	QP
11	2.09	46.32	-9.68	56.00	36.10	-0.11	10.33	QP
12	2.09	36.82	-9.18	46.00	26.60	-0.11	10.33	Average

### 3.6 Radiated Emission Measurement

#### 3.6.1 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

#### 3.6.2 Measuring Instruments

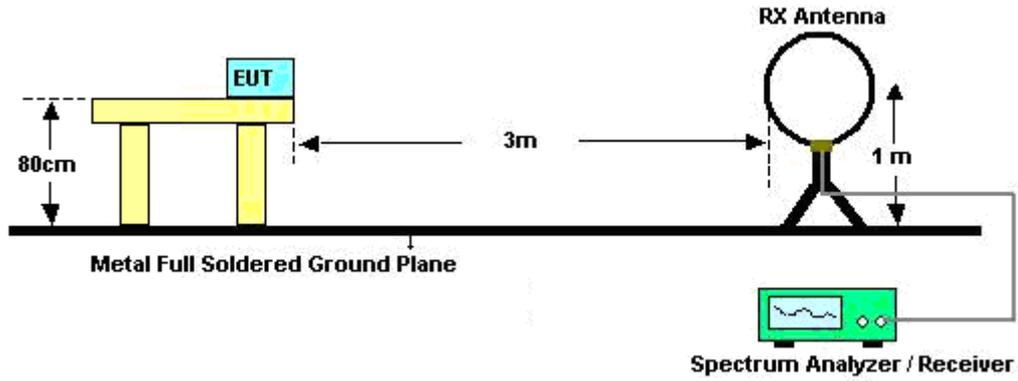
See list of measuring instruments of this test report.

#### 3.6.3 Test Procedures

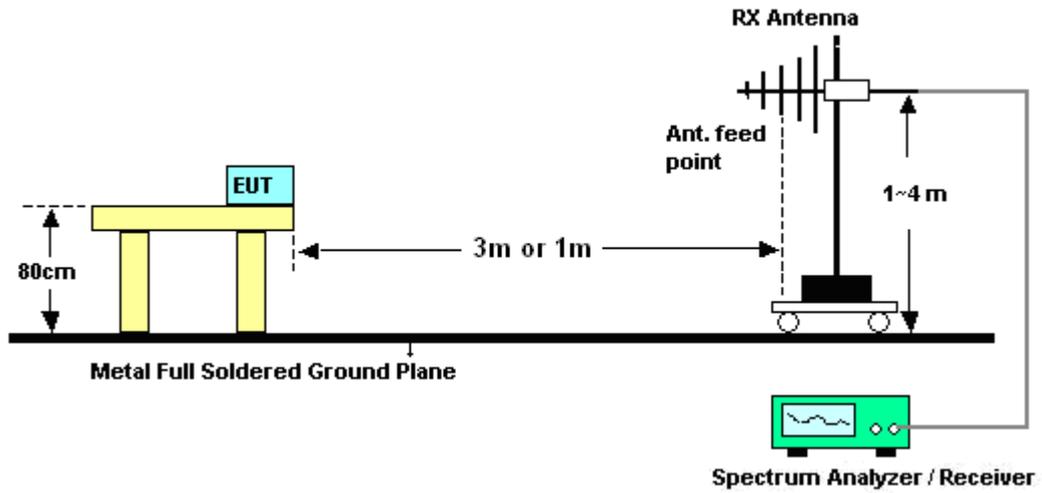
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
  - (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for  $f \geq 1$  GHz, 100 kHz for  $f < 1$  GHz; VBW  $\geq$ 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

### 3.6.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz





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

Test Engineer :	Haitou Yin	Temperature :	21~22°C
		Relative Humidity :	42~43%

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.



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

Test Mode :	Mode 1	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Haitou Yin	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
30.81	33.79	-6.21	40	44.88	17.29	0.26	28.64	100	133	Peak
47.28	31.9	-8.1	40	51.72	8.5	0.31	28.63	-	-	Peak
85.89	28.48	-11.52	40	48.83	7.89	0.4	28.64	-	-	Peak
645.8	25.61	-20.39	46	33.98	18.88	1.09	28.34	-	-	Peak
738.9	26.47	-19.53	46	33.36	19.8	1.17	27.86	-	-	Peak
848.1	27.32	-18.68	46	32.73	20.49	1.26	27.16	-	-	Peak
2367.76	54.01	-19.99	74	52.91	32.81	3.13	34.84	100	52	Peak
2367.76	44.43	-9.57	54	43.33	32.81	3.13	34.84	100	52	Average
2412	110.06	-	-	108.86	32.89	3.15	34.84	100	41	Peak
2412	104.05	-	-	102.85	32.89	3.15	34.84	100	41	Average
2457.44	55.19	-18.81	74	53.88	32.98	3.18	34.85	124	60	Peak
2457.44	45.19	-8.81	54	43.88	32.98	3.18	34.85	124	60	Average
2498.67	53.01	-20.99	74	51.6	33.05	3.21	34.85	100	62	Peak
2498.67	44.08	-9.92	54	42.67	33.05	3.21	34.85	100	62	Average
4830	49.98	-24.02	74	44.33	35.17	4.68	34.2	100	34	Peak
4830	40.84	-13.16	54	35.19	35.17	4.68	34.2	100	34	Average



<b>Test Mode :</b>	Mode 1	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Haitou Yin	<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
32.97	21.73	-18.27	40	34.05	16.04	0.27	28.63	-	-	Peak
46.74	15.95	-24.05	40	35.4	8.88	0.3	28.63	-	-	Peak
86.7	16.45	-23.55	40	36.79	7.89	0.4	28.63	-	-	Peak
622.7	24.81	-21.19	46	33.43	18.72	1.07	28.41	-	-	Peak
713	26.9	-19.1	46	34.25	19.43	1.15	27.93	-	-	Peak
933.5	27.8	-18.2	46	32.67	20.65	1.31	26.83	100	290	Peak
2388.85	52.72	-21.28	74	51.57	32.86	3.13	34.84	177	325	Peak
2388.85	44.68	-9.32	54	43.53	32.86	3.13	34.84	177	325	Average
2412	108.56	-	-	107.36	32.89	3.15	34.84	200	352	Peak
2412	102	-	-	100.8	32.89	3.15	34.84	200	352	Average
2454.97	56.56	-17.44	74	55.25	32.98	3.18	34.85	200	327	Peak
2454.97	47.23	-6.77	54	45.92	32.98	3.18	34.85	200	327	Average
2479.48	55.04	-18.96	74	53.68	33.01	3.2	34.85	200	319	Peak
2479.48	42.5	-11.5	54	41.14	33.01	3.2	34.85	200	319	Average
2497.72	54.79	-19.21	74	53.38	33.05	3.21	34.85	200	322	Peak
2497.72	45.65	-8.35	54	44.24	33.05	3.21	34.85	200	322	Average



<b>Test Mode :</b>	Mode 2	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Haitou Yin	<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
30.54	35.89	-4.11	40	46.98	17.29	0.26	28.64	100	100	Peak
36.21	34.48	-5.52	40	48.18	14.65	0.28	28.63	-	-	Peak
47.28	31.15	-8.85	40	50.97	8.5	0.31	28.63	-	-	Peak
559.7	24.35	-21.65	46	33.38	18.51	1.03	28.57	-	-	Peak
631.8	25.5	-20.5	46	34	18.8	1.08	28.38	-	-	Peak
756.4	27.6	-18.4	46	34.32	19.9	1.2	27.82	-	-	Peak
2348	52.33	-21.67	74	51.26	32.78	3.12	34.83	100	45	Peak
2348	44.86	-9.14	54	43.79	32.78	3.12	34.83	100	45	Average
2390	54.18	-19.82	74	53.01	32.86	3.15	34.84	100	44	Peak
2390	45.74	-8.26	54	44.57	32.86	3.15	34.84	100	44	Average
2437	107.43	-	-	106.15	32.95	3.17	34.84	123	43	Peak
2437	102.5	-	-	101.22	32.95	3.17	34.84	123	43	Average
2480	52.87	-21.13	74	51.51	33.01	3.2	34.85	100	62	Peak
2480	44.35	-9.65	54	42.99	33.01	3.2	34.85	100	62	Average
2488	52.38	-21.62	74	50.98	33.05	3.2	34.85	124	62	Peak
2488	42.29	-11.71	54	40.89	33.05	3.2	34.85	124	62	Average
2524	51.74	-22.26	74	50.25	33.12	3.23	34.86	120	61	Peak
2524	42.84	-11.16	54	41.35	33.12	3.23	34.86	120	61	Average



<b>Test Mode :</b>	Mode 2	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Haitou Yin	<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
47.01	16.5	-23.5	40	36.32	8.5	0.31	28.63	-	-	Peak
72.66	16.31	-23.69	40	39	5.55	0.37	28.61	-	-	Peak
94.26	19.72	-23.78	43.5	38.24	9.66	0.43	28.61	-	-	Peak
542.2	24.77	-21.23	46	34.02	18.35	1.01	28.61	-	-	Peak
650.7	25.19	-20.81	46	33.51	18.91	1.1	28.33	-	-	Peak
867.7	27.79	-18.21	46	33.13	20.49	1.28	27.11	100	23	Peak
2348	51.27	-22.73	74	50.2	32.78	3.12	34.83	173	332	Peak
2348	45.99	-8.01	54	44.92	32.78	3.12	34.83	173	332	Average
2392	52.89	-21.11	74	51.72	32.86	3.15	34.84	168	340	Peak
2392	46.8	-7.2	54	45.63	32.86	3.15	34.84	168	340	Average
2437	103.58	-	-	102.3	32.95	3.17	34.84	200	340	Average
2437	109.46	-	-	108.18	32.95	3.17	34.84	200	340	Peak
2486	54.95	-19.05	74	53.59	33.01	3.2	34.85	200	332	Peak
2486	46.34	-7.66	54	44.98	33.01	3.2	34.85	200	332	Average
2524	52.46	-21.54	74	50.97	33.12	3.23	34.86	197	324	Peak
2524	43.76	-10.24	54	42.27	33.12	3.23	34.86	197	324	Average



<b>Test Mode :</b>	Mode 3	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Haitou Yin	<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
30.54	35.09	-4.91	40	46.18	17.29	0.26	28.64	100	360	Peak
47.01	31.43	-8.57	40	51.25	8.5	0.31	28.63	-	-	Peak
75.9	27.77	-12.23	40	50.11	5.93	0.37	28.64	-	-	Peak
552	24.05	-21.95	46	33.12	18.5	1.02	28.59	-	-	Peak
756.4	26.54	-19.46	46	33.26	19.9	1.2	27.82	-	-	Peak
843.9	28.05	-17.95	46	33.55	20.45	1.25	27.2	-	-	Peak
2374.98	55.5	-18.5	74	54.38	32.83	3.13	34.84	100	41	Peak
2374.98	46.77	-7.23	54	45.65	32.83	3.13	34.84	100	41	Average
2395.69	43.31	-10.69	54	42.14	32.86	3.15	34.84	100	46	Average
2395.69	54.16	-19.84	74	52.99	32.86	3.15	34.84	100	46	Peak
2416.97	48.62	-5.38	54	47.4	32.89	3.17	34.84	100	42	Average
2416.97	58.23	-15.77	74	57.01	32.89	3.17	34.84	100	42	Peak
2462	101.67	-	-	100.36	32.98	3.18	34.85	100	46	Average
2462	108.8	-	-	107.49	32.98	3.18	34.85	100	46	Peak
2484.99	53.61	-20.39	74	52.25	33.01	3.2	34.85	125	61	Peak
2484.99	42.66	-11.34	54	41.3	33.01	3.2	34.85	125	61	Average
2506	52.65	-21.35	74	51.21	33.08	3.21	34.85	100	62	Peak
2506	44.17	-9.83	54	42.73	33.08	3.21	34.85	100	62	Average
2550	52.36	-21.64	74	50.82	33.15	3.25	34.86	124	63	Peak
2550	44.5	-9.5	54	42.96	33.15	3.25	34.86	124	63	Average
3526	51.74	-22.26	74	47.94	34.42	3.91	34.53	100	0	Peak
3526	47.19	-6.81	54	43.39	34.42	3.91	34.53	100	0	Average



<b>Test Mode :</b>	Mode 3	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Haitou Yin	<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
35.13	20.67	-19.33	40	33.92	15.1	0.28	28.63	-	-	Peak
74.82	14.91	-25.09	40	37.38	5.8	0.37	28.64	-	-	Peak
96.96	18.4	-25.1	43.5	36.54	10.03	0.43	28.6	-	-	Peak
574.4	25.08	-20.92	46	34.01	18.55	1.05	28.53	-	-	Peak
732.6	26.1	-19.9	46	33.09	19.72	1.16	27.87	-	-	Peak
909.7	27.33	-18.67	46	32.55	20.49	1.29	27	100	180	Peak
2376.69	56	-18	74	54.88	32.83	3.13	34.84	142	332	Peak
2376.69	49.94	-4.06	54	48.82	32.83	3.13	34.84	142	332	Average
2392.08	54.41	-19.59	74	53.24	32.86	3.15	34.84	171	339	Peak
2392.08	44.97	-9.03	54	43.8	32.86	3.15	34.84	171	339	Average
2417.35	58.31	-15.69	74	57.09	32.89	3.17	34.84	174	322	Peak
2417.35	49.51	-4.49	54	48.29	32.89	3.17	34.84	174	322	Average
2462	111.91	-	-	110.6	32.98	3.18	34.85	200	326	Peak
2462	105	-	-	103.69	32.98	3.18	34.85	200	326	Average
2485.56	56.33	-17.67	74	54.97	33.01	3.2	34.85	200	329	Peak
2485.56	43.83	-10.17	54	42.47	33.01	3.2	34.85	200	329	Average
2510	53.45	-20.55	74	52.01	33.08	3.21	34.85	128	13	Peak
2510	44.43	-9.57	54	42.99	33.08	3.21	34.85	128	13	Average
2550	53.81	-20.19	74	52.27	33.15	3.25	34.86	102	337	Peak
2550	45.25	-8.75	54	43.71	33.15	3.25	34.86	102	337	Average



<b>Test Mode :</b>	Mode 4	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Haitou Yin	<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
30.54	34.34	-5.66	40	45.43	17.29	0.26	28.64	120	260	Peak
47.01	32.15	-7.85	40	51.97	8.5	0.31	28.63	-	-	Peak
86.16	27.82	-12.18	40	48.17	7.89	0.4	28.64	-	-	Peak
550.6	24.65	-21.35	46	33.72	18.5	1.02	28.59	-	-	Peak
738.9	27.06	-18.94	46	33.95	19.8	1.17	27.86	-	-	Peak
835.5	27.25	-18.75	46	32.94	20.35	1.25	27.29	-	-	Peak
2389.8	60.29	-13.71	74	59.12	32.86	3.15	34.84	200	345	Peak
2389.8	44.52	-9.48	54	43.35	32.86	3.15	34.84	200	345	Average
2412	104.88	-	-	103.68	32.89	3.15	34.84	173	188	Peak
2412	93.54	-	-	92.34	32.89	3.15	34.84	173	188	Average
2448.89	53.07	-20.93	74	51.79	32.95	3.18	34.85	125	326	Peak
2448.89	44.93	-9.07	54	43.65	32.95	3.18	34.85	125	326	Average
2496.01	52.75	-21.25	74	51.34	33.05	3.21	34.85	100	340	Peak
2496.01	38.8	-15.2	54	37.39	33.05	3.21	34.85	100	340	Average
2710	53.08	-20.92	74	51.17	33.41	3.38	34.88	102	2	Peak
2710	40.96	-13.04	54	39.05	33.41	3.38	34.88	102	2	Average
3504	50.17	-23.83	74	46.48	34.35	3.89	34.55	-	-	Peak



<b>Test Mode :</b>	Mode 4	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Haitou Yin	<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
36.21	21.57	-18.43	40	35.27	14.65	0.28	28.63	-	-	Peak
47.01	15.59	-24.41	40	35.41	8.5	0.31	28.63	-	-	Peak
87.24	15.55	-24.45	40	35.69	8.09	0.4	28.63	-	-	Peak
556.9	24.28	-21.72	46	33.32	18.51	1.03	28.58	-	-	Peak
757.8	26.62	-19.38	46	33.34	19.89	1.2	27.81	-	-	Peak
902	27.63	-18.37	46	32.92	20.46	1.29	27.04	100	200	Peak
2389.99	57.1	-16.9	74	55.93	32.86	3.15	34.84	104	329	Peak
2389.99	41.48	-12.52	54	40.31	32.86	3.15	34.84	104	329	Average
2412	102.64	-	-	101.44	32.89	3.15	34.84	100	41	Peak
2412	91.66	-	-	90.46	32.89	3.15	34.84	100	41	Average
2495.44	49.92	-24.08	74	48.51	33.05	3.21	34.85	100	128	Peak
2495.44	38.07	-15.93	54	36.66	33.05	3.21	34.85	100	128	Average
2612	52.44	-21.56	74	50.76	33.26	3.29	34.87	178	359	Peak
2612	40.61	-13.39	54	38.93	33.26	3.29	34.87	178	359	Average



<b>Test Mode :</b>	Mode 5	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Haitou Yin	<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
31.08	34.02	-5.98	40	45.11	17.29	0.26	28.64	100	240	Peak
47.01	32.3	-7.7	40	52.12	8.5	0.31	28.63	-	-	Peak
86.43	28.21	-11.79	40	48.56	7.89	0.4	28.64	-	-	Peak
622	24.14	-21.86	46	32.76	18.72	1.07	28.41	-	-	Peak
826.4	26.68	-19.32	46	32.66	20.2	1.24	27.42	-	-	Peak
937	28.16	-17.84	46	32.98	20.67	1.31	26.8	-	-	Peak
2390	49.48	-24.52	74	48.31	32.86	3.15	34.84	108	318	Peak
2390	38.39	-15.61	54	37.22	32.86	3.15	34.84	108	318	Average
2437	101.63	-	-	100.35	32.95	3.17	34.84	100	327	Peak
2437	90.04	-	-	88.76	32.95	3.17	34.84	100	327	Average
2484	49.4	-24.6	74	48.04	33.01	3.2	34.85	125	325	Peak
2484	38.31	-15.69	54	36.95	33.01	3.2	34.85	125	325	Average
2526	52.19	-21.81	74	50.7	33.12	3.23	34.86	100	328	Peak
2526	39.3	-14.7	54	37.81	33.12	3.23	34.86	100	328	Average
2706	53.8	-20.2	74	51.92	33.38	3.38	34.88	100	0	Peak
2706	40.77	-13.23	54	38.89	33.38	3.38	34.88	100	0	Average
3532	51.78	-22.22	74	47.98	34.42	3.91	34.53	100	360	Peak
3532	47.95	-6.05	54	44.15	34.42	3.91	34.53	100	360	Average



<b>Test Mode :</b>	Mode 5	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Haitou Yin	<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
36.21	21.27	-18.73	40	34.97	14.65	0.28	28.63	-	-	Peak
47.55	15.99	-24.01	40	35.81	8.5	0.31	28.63	-	-	Peak
85.89	16.16	-23.84	40	36.51	7.89	0.4	28.64	-	-	Peak
695.5	25.14	-20.86	46	32.72	19.27	1.14	27.99	-	-	Peak
857.2	27.2	-18.8	46	32.56	20.5	1.27	27.13	-	-	Peak
937.7	28.09	-17.91	46	32.9	20.68	1.31	26.8	100	233	Peak
2390	50.92	-23.08	74	49.75	32.86	3.15	34.84	200	0	Peak
2390	39.31	-14.69	54	38.14	32.86	3.15	34.84	200	0	Average
2437	101.45	-	-	100.17	32.95	3.17	34.84	200	341	Peak
2437	92.55	-	-	91.27	32.95	3.17	34.84	200	341	Average
2492	51.02	-22.98	74	49.61	33.05	3.21	34.85	198	337	Peak
2492	39.82	-14.18	54	38.41	33.05	3.21	34.85	198	337	Average
2616	52.46	-21.54	74	50.78	33.26	3.29	34.87	200	295	Peak
2616	38.56	-15.44	54	36.88	33.26	3.29	34.87	200	295	Average



<b>Test Mode :</b>	Mode 6	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Haitou Yin	<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
30.54	34.13	-5.87	40	45.22	17.29	0.26	28.64	100	140	Peak
47.01	32.34	-7.66	40	52.16	8.5	0.31	28.63	-	-	Peak
85.62	28.51	-11.49	40	49.05	7.7	0.4	28.64	-	-	Peak
603.8	25.51	-20.49	46	34.3	18.62	1.06	28.47	-	-	Peak
766.9	25.98	-20.02	46	32.67	19.89	1.21	27.79	-	-	Peak
910.4	27.82	-18.18	46	33.03	20.5	1.29	27	-	-	Peak
2370.8	52.36	-21.64	74	51.24	32.83	3.13	34.84	100	31	Peak
2370.8	37.55	-16.45	54	36.43	32.83	3.13	34.84	100	31	Average
2420.01	54.94	-19.06	74	53.69	32.92	3.17	34.84	100	42	Peak
2420.01	38.98	-15.02	54	37.73	32.92	3.17	34.84	100	42	Average
2462	102.85	-	-	101.54	32.98	3.18	34.85	100	327	Peak
2462	89.04	-	-	87.73	32.98	3.18	34.85	100	327	Average
2483.5	59.98	-14.02	74	58.62	33.01	3.2	34.85	124	326	Peak
2483.5	42.48	-11.52	54	41.12	33.01	3.2	34.85	124	326	Average
2712	52.66	-21.34	74	50.75	33.41	3.38	34.88	102	360	Peak
2712	40.63	-13.37	54	38.72	33.41	3.38	34.88	102	360	Average
3528	51.38	-22.62	74	47.58	34.42	3.91	34.53	100	360	Peak
3528	47.41	-6.59	54	43.61	34.42	3.91	34.53	100	360	Average



<b>Test Mode :</b>	Mode 6	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Haitou Yin	<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
34.59	21.45	-18.55	40	34.7	15.1	0.28	28.63	-	-	Peak
47.01	16.74	-23.26	40	36.56	8.5	0.31	28.63	-	-	Peak
85.89	16.96	-23.04	40	37.31	7.89	0.4	28.64	-	-	Peak
582.1	24.78	-21.22	46	33.68	18.57	1.05	28.52	-	-	Peak
744.5	26.2	-19.8	46	33	19.86	1.18	27.84	-	-	Peak
881.7	28.32	-17.68	46	33.65	20.47	1.28	27.08	100	360	Peak
2388.47	52.61	-21.39	74	51.46	32.86	3.13	34.84	200	360	Peak
2388.47	38.57	-15.43	54	37.42	32.86	3.13	34.84	200	360	Average
2425.71	54.74	-19.26	74	53.49	32.92	3.17	34.84	200	339	Peak
2425.71	40.39	-13.61	54	39.14	32.92	3.17	34.84	200	339	Average
2462	105.07	-	-	103.76	32.98	3.18	34.85	200	336	Peak
2462	92.15	-	-	90.84	32.98	3.18	34.85	200	336	Average
2483.5	44.01	-9.99	54	42.65	33.01	3.2	34.85	200	326	Average
2483.5	62.9	-11.1	74	61.54	33.01	3.2	34.85	200	326	Peak
2616	54.01	-19.99	74	52.33	33.26	3.29	34.87	178	360	Peak
2616	41	-13	54	39.32	33.26	3.29	34.87	178	360	Average



## **3.7 Antenna Requirements**

### **3.7.1 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.

### **3.7.2 Antenna Connected Construction**

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

### **3.7.3 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. 18, 2010	Jan. 17, 2011	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY451015 55	N/A	Aug. 27, 2009	Aug. 26, 2010	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY444211 98	N/A	Aug. 28, 2009	Aug. 27, 2010	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-9605 02	N/A	Dec. 28, 2009	Dec. 27, 2010	Conducted (TH01-KS)
EMI Receiver	R&S	ESCI	100534	9kHz~2.75GHz	Nov. 17, 2009	Nov. 16, 2010	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Jan. 18, 2010	Jan. 17, 2011	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Jan. 18, 2010	Jan. 17, 2011	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000 0811	N/A	Nov. 26, 2009	Nov. 25, 2010	Conduction (CO01-KS)
EMI Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 17, 2009	Nov. 16, 2010	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Jan. 18, 2010	Jan. 17, 2011	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Jan. 18, 2010	Jan. 17, 2011	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	75959	1GHz~18GHz	Jan. 18, 2010	Jan. 17, 2011	Radiation (03CH01-KS)
Amplifier	Wireless	FPA6592G	60004	30MHz~2GHz	Feb. 02, 2010	Feb. 01, 2011	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A023 70	1GHz~26.5GHz	Jan. 18, 2010	Jan. 17, 2011	Radiation (03CH01-KS)
active hore antenna	com-power	AHA-118	701023	1G-18GHz	Nov. 18, 2009	Nov. 17, 2010	Radiation (03CH01-KS)
Signal Generator	R&S	SMR40	100455	10MHz~40GHz	Jan. 18, 2010	Jan. 17, 2011	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA1702 49	15-40GHz	Oct. 22, 2009	Oct. 21, 2010	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>				