

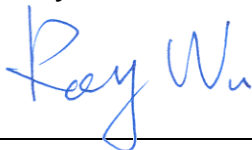
FCC RF Test Report

APPLICANT : Motorola Mobility, Inc.
EQUIPMENT : GSM / EGPRS Mobile Phone
BRAND NAME : Motorola
MODEL NAME : EX118
GPPD NUMBER : 3048
FCC ID : IHDT56MK2
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Mar. 29, 2011 and completely tested on Apr. 13, 2011. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

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

Reviewed by:



Roy Wu / Manager



SPORTON INTERNATIONAL INC.

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



TABLE OF CONTENTS

REVISION HISTORY.....3

SUMMARY OF TEST RESULT4

1 GENERAL DESCRIPTION5

 1.1 Applicant5

 1.2 Manufacturer.....5

 1.3 Feature of Equipment Under Test5

 1.4 Testing Site.....6

 1.5 Applied Standards6

 1.6 Ancillary Equipment List6

2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST7

 2.1 RF Power.....7

 2.2 Test Mode.....8

 2.3 Connection Diagram of Test System.....9

 2.4 RF Utility9

3 TEST RESULT.....10

 3.1 6dB Bandwidth Measurement10

 3.2 Output Power Measurement.....15

 3.3 Band Edges Measurement17

 3.4 Spurious Emission Measurement.....23

 3.5 Power Spectral Density Measurement30

 3.6 AC Conducted Emission Measurement.....35

 3.7 Radiated Emission Measurement.....39

 3.8 Antenna Requirements54

4 LIST OF MEASURING EQUIPMENT55

5 UNCERTAINTY OF EVALUATION.....56

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	A8.4	Power Output	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.4	15.247(d)	A8.5	Spurious Emission	$< 20\text{ dBc}$	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.6	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 15.4 dB at 5.72 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 4.59 dB at 2483.5 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Motorola Mobility, Inc.

No. 1, Wang Jing East Road, Chao Yang District Beijing, China 100102

1.2 Manufacturer

Arima Communications Corp.

6F., No. 866, Jhongjheng Rd., Jhonghe Dist., New Taipei City 23586, Taiwan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	GSM / EGPRS Mobile Phone
Brand Name	Motorola
Model Name	EX118
FCC ID	IHDT56MK2
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 : 16.94 dBm (0.049 W) 802.11g : 20.19 dBm (0.104 W)
Antenna Type	PIFA Antenna with gain 0.12 dBi
HW Version	P2
SW Version	BREA_G_07.0C.00R_S_WIFI
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : 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

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH07-HY	722060/4086B-1

1.5 Applied Standards

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

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

Remark:

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

1.6 Ancillary Equipment List

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

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

< Average Power >

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 11	2462 MHz	15.20	15.09	14.92	14.97

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 11	2462 MHz	11.88	11.67	11.65	11.61	11.61	11.49	11.5	11.6

< Peak Power >

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 11	2462 MHz	16.94	16.85	16.52	16.79

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 11	2462 MHz	20.19	20.05	19.99	19.97	20.07	20.03	20.14	20.13

Remark:

1. The data rates of WLAN 802.11b/g were set in 1Mbps for 802.11b and 6Mbps for 802.11g, for all the test cases due to the highest RF output power.
2. The EUT is programmed to transmit signals continuously for all testing.
3. Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports.

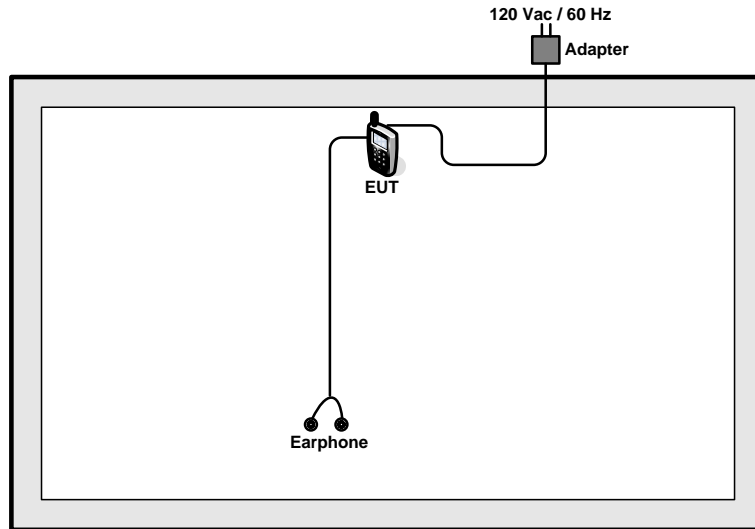
2.2 Test Mode

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.

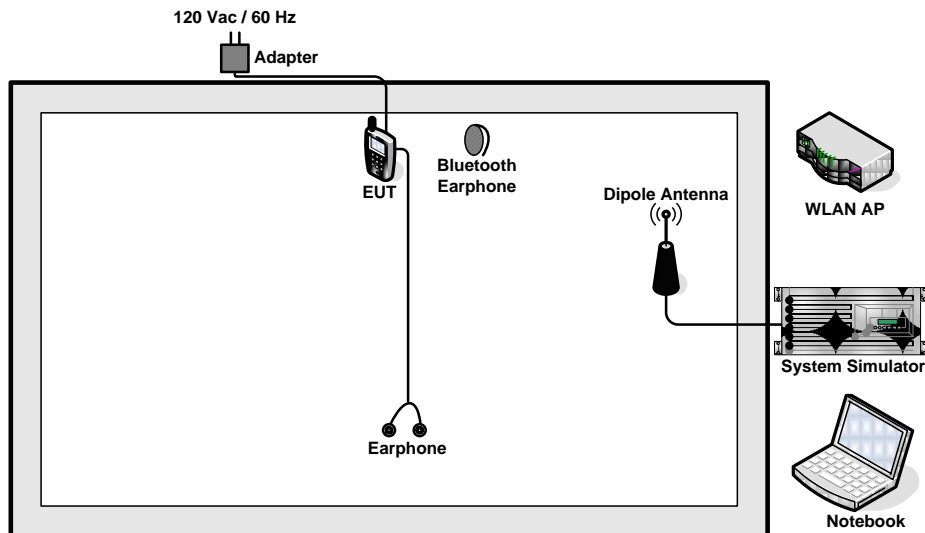
Test Cases		
Test Item	802.11b	802.11g
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4 : 802.11g CH01_2412 MHz Mode 5 : 802.11g CH06_2437 MHz Mode 6 : 802.11g CH11_2462 MHz
Radiated TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 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
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN Link + Earphone + Camera + Adapter	

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

For WLAN function, key in “* #3646633 #” on the EUT directly. Then, the EUT 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.

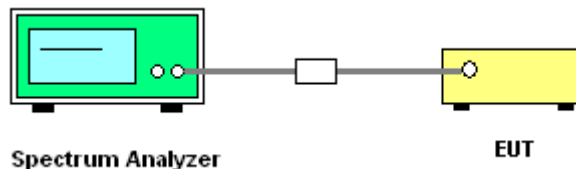
3.1.2 Measuring Instruments

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



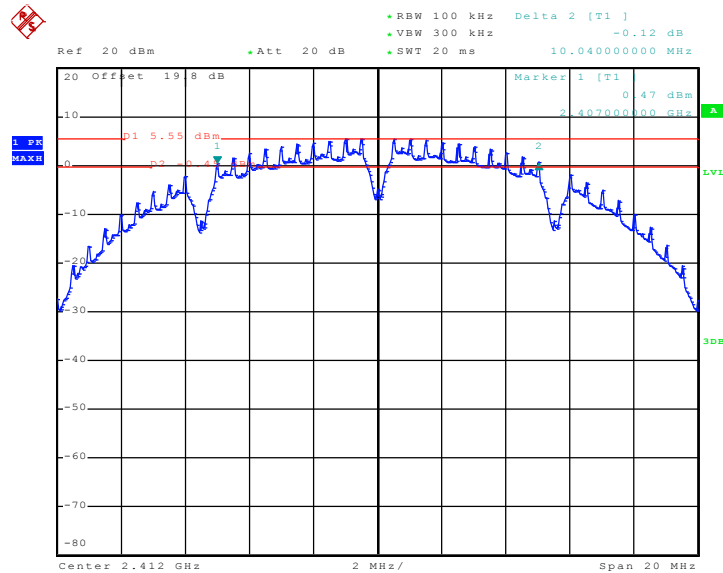


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	10.04	0.5	Pass
06	2437	10.04	0.5	Pass
11	2462	10.00	0.5	Pass

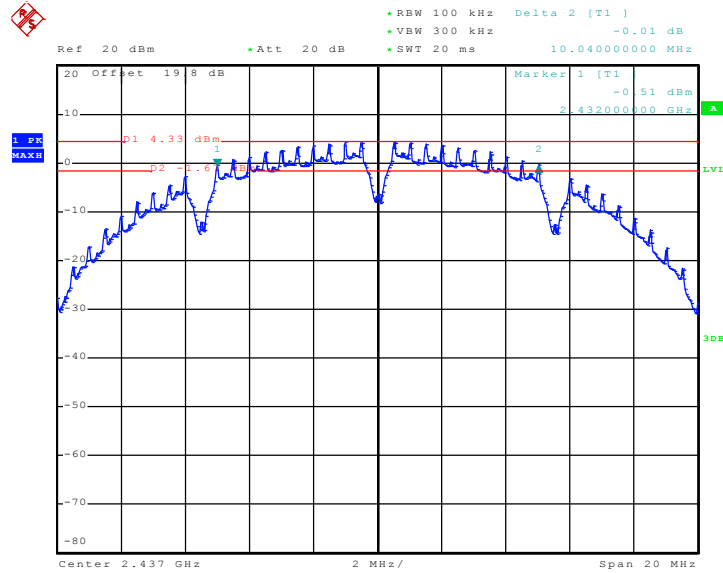
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 31.MAR.2011 15:56:31

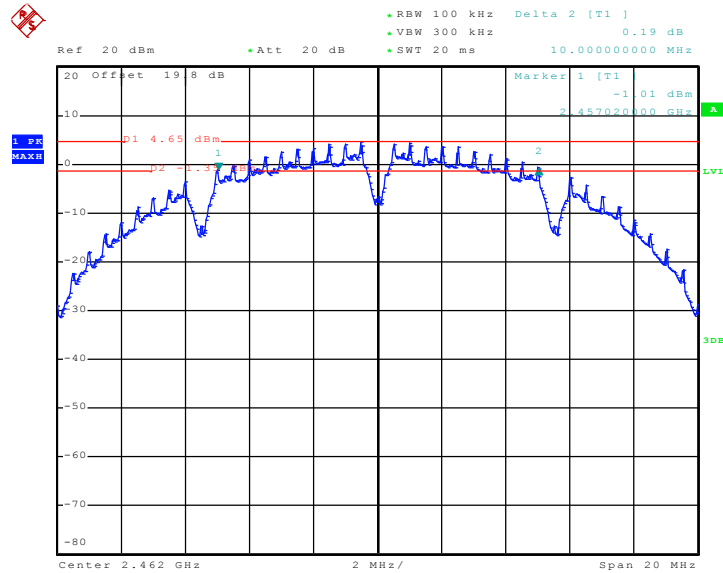


Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



Date: 31.MAR.2011 16:10:11

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



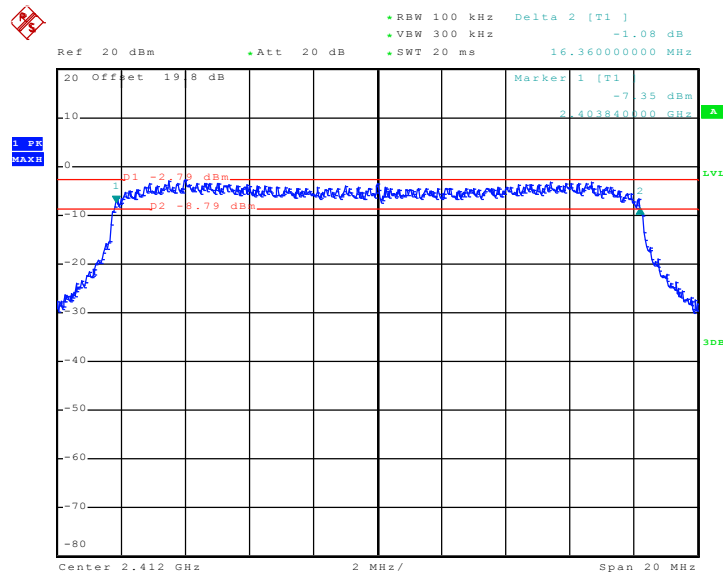
Date: 31.MAR.2011 16:22:14



Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.36	0.5	Pass
06	2437	16.36	0.5	Pass
11	2462	16.34	0.5	Pass

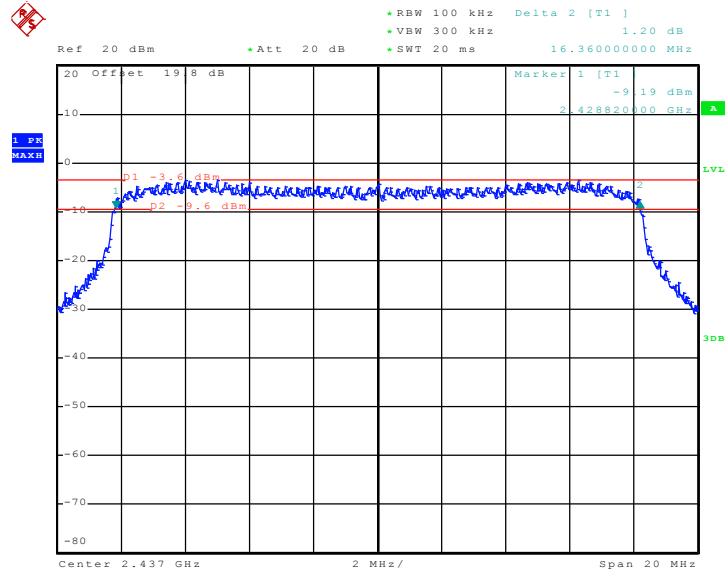
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



Date: 31.MAR.2011 16:49:47

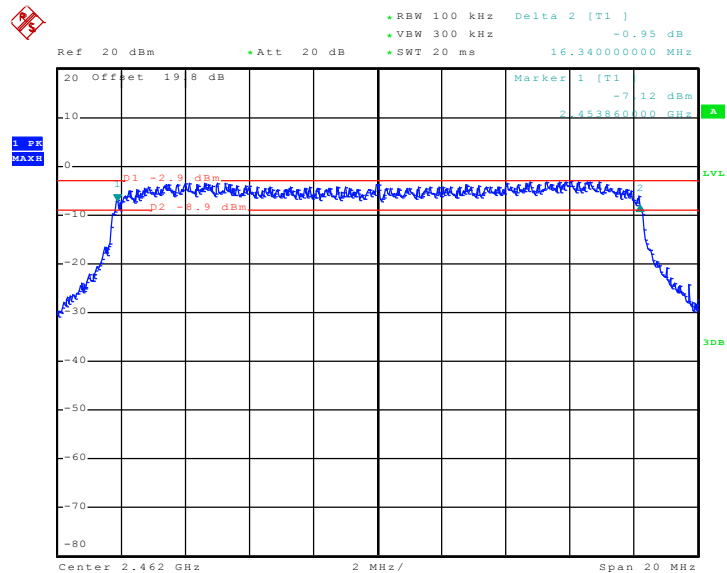


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



Date: 31.MAR.2011 17:08:01

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



Date: 31.MAR.2011 16:34:46

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.

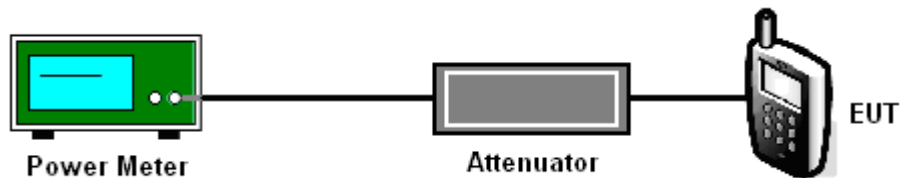
3.2.2 Measuring Instruments

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 :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.35	30	Pass
06	2437	15.12	30	Pass
11	2462	16.94	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.78	30	Pass
06	2437	18.48	30	Pass
11	2462	20.19	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

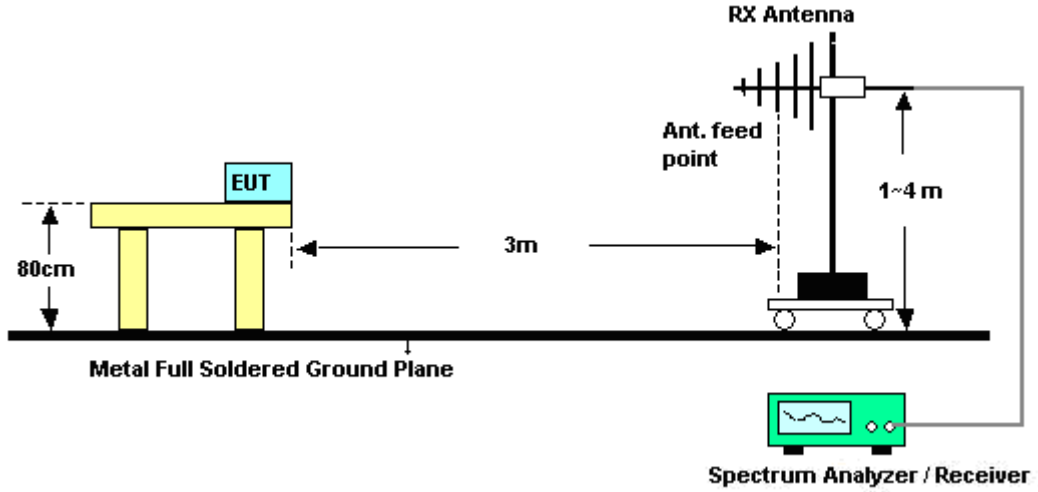
See list of measuring instruments of this test report.

3.3.3 Test Procedures

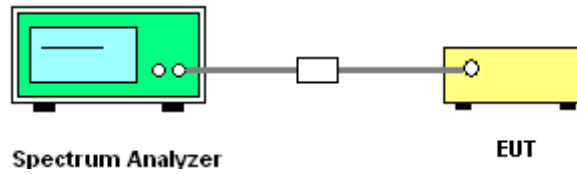
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) \geq RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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 :	22~26°C
Test Band :	802.11b	Relative Humidity :	54~60%
Test Channel :	01	Test Engineer :	Wii Chang

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
2386.38	51.52	-22.48	74	47.16	32.18	6.03	33.85	118	42	Peak
2386.38	44.86	-9.14	54	40.5	32.18	6.03	33.85	118	42	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
2384.29	47.85	-26.15	74	43.51	32.16	6.03	33.85	129	49	Peak
2384.29	39.35	-14.65	54	35.01	32.16	6.03	33.85	129	49	Average

Test Mode :	Mode 3	Temperature :	22~26°C
Test Band :	802.11b	Relative Humidity :	54~60%
Test Channel :	11	Test Engineer :	Wii Chang

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
2488.22	51.53	-22.47	74	46.95	32.3	6.18	33.9	138	359	Peak
2488.22	43.94	-10.06	54	39.36	32.3	6.18	33.9	138	359	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
2488.22	49.85	-24.15	74	45.27	32.3	6.18	33.9	127	44	Peak
2488.22	41.75	-12.25	54	37.17	32.3	6.18	33.9	127	44	Average



Test Mode :	Mode 4	Temperature :	22~26°C
Test Band :	802.11g	Relative Humidity :	54~60%
Test Channel :	01	Test Engineer :	Wii Chang

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
2389.99	63.94	-10.06	74	59.58	32.18	6.03	33.85	149	50	Peak
2389.99	43.44	-10.56	54	39.08	32.18	6.03	33.85	149	50	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
2389.61	61.1	-12.9	74	56.74	32.18	6.03	33.85	128	43	Peak
2389.61	39.9	-14.1	54	35.54	32.18	6.03	33.85	128	43	Average

Test Mode :	Mode 6	Temperature :	22~26°C
Test Band :	802.11g	Relative Humidity :	54~60%
Test Channel :	11	Test Engineer :	Wii Chang

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	69.41	-4.59	74	64.85	32.28	6.18	33.9	139	360	Peak
2483.5	44.55	-9.45	54	39.99	32.28	6.18	33.9	139	360	Average

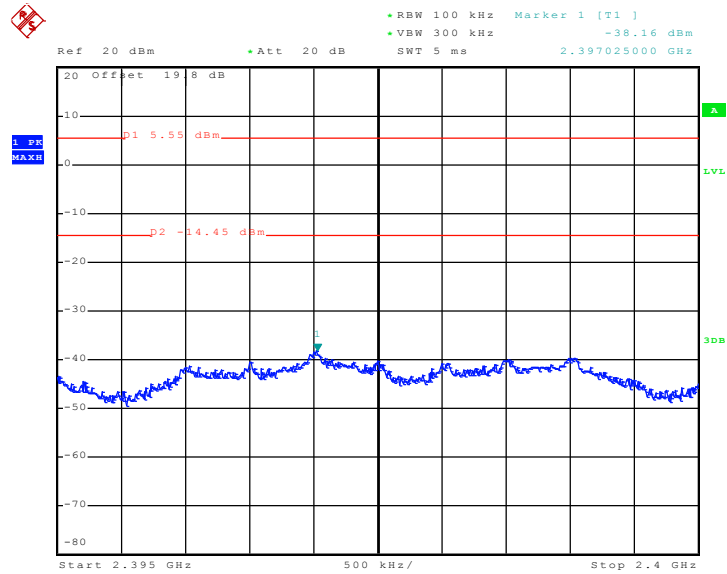
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.85	68.42	-5.58	74	63.86	32.28	6.18	33.9	126	46	Peak
2483.85	43.75	-10.25	54	39.19	32.28	6.18	33.9	126	46	Average



3.3.6 Test Plots of Conducted Band Edges

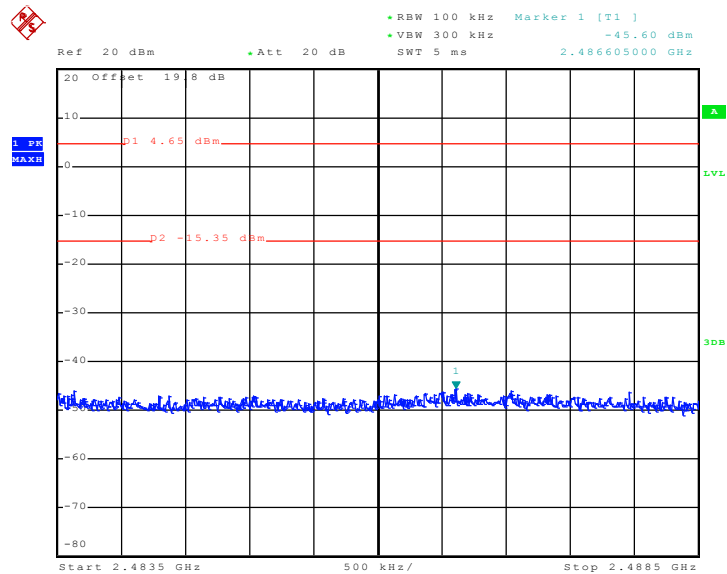
Test Mode :	Mode 1 and 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Hank Yu

Low Band Edge Plot on 802.11b Channel 01



Date: 31.MAR.2011 15:57:40

High Band Edge Plot on 802.11b Channel 11

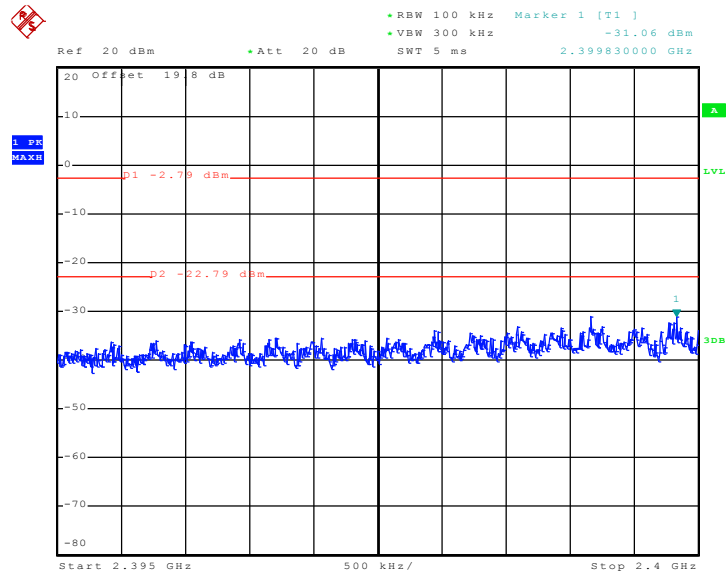


Date: 31.MAR.2011 16:23:00



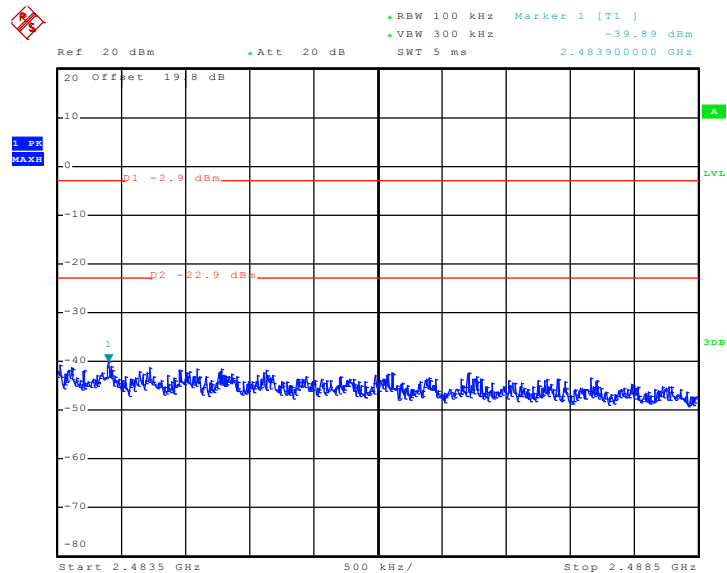
Test Mode :	Mode 4 and 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Hank Yu

Low Band Edge Plot on 802.11g Channel 01



Date: 31.MAR.2011 16:51:03

High Band Edge Plot on 802.11g Channel 11



Date: 31.MAR.2011 16:35:32

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.

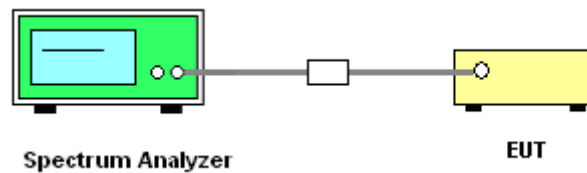
3.4.2 Measuring Instruments

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.

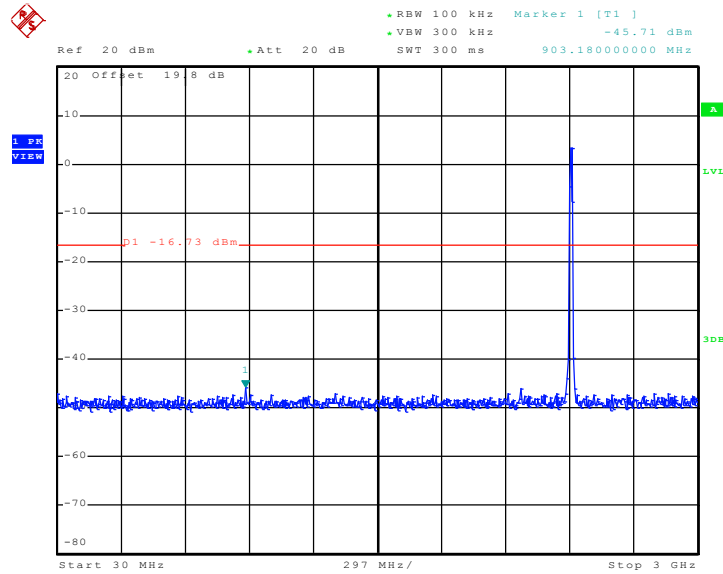
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

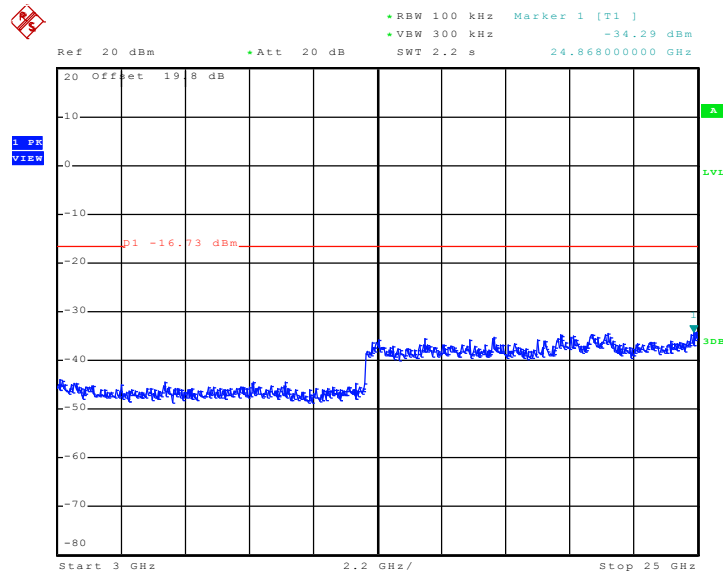
Test Mode :	Mode 1	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 31.MAR.2011 17:20:43

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

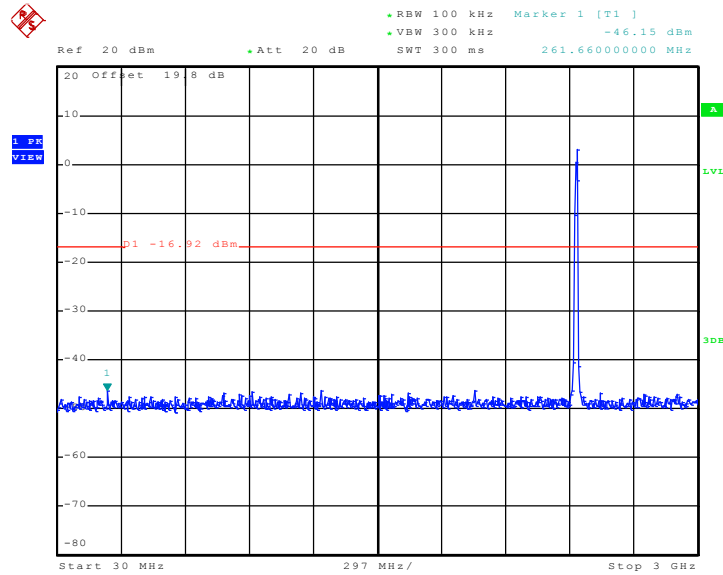


Date: 31.MAR.2011 17:21:00



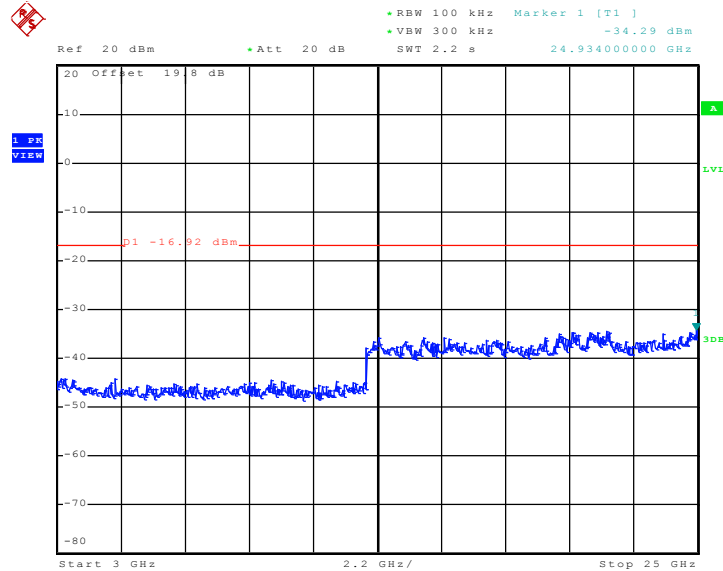
Test Mode :	Mode 2	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 31.MAR.2011 16:19:40

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

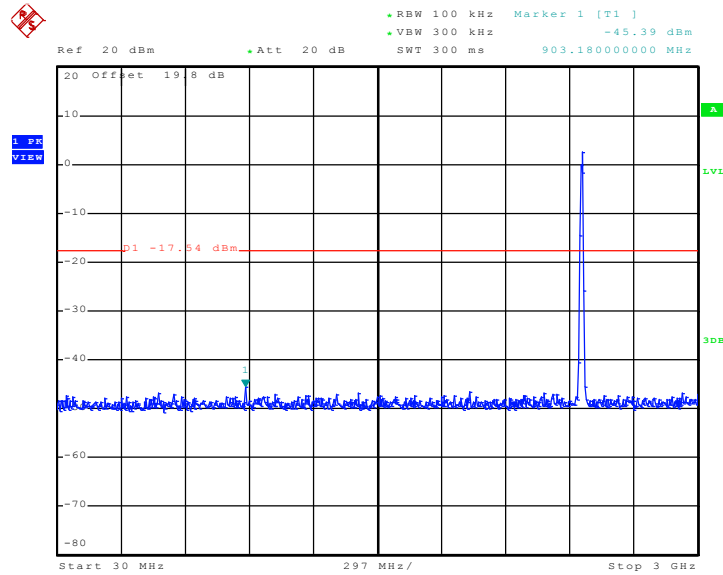


Date: 31.MAR.2011 16:19:57



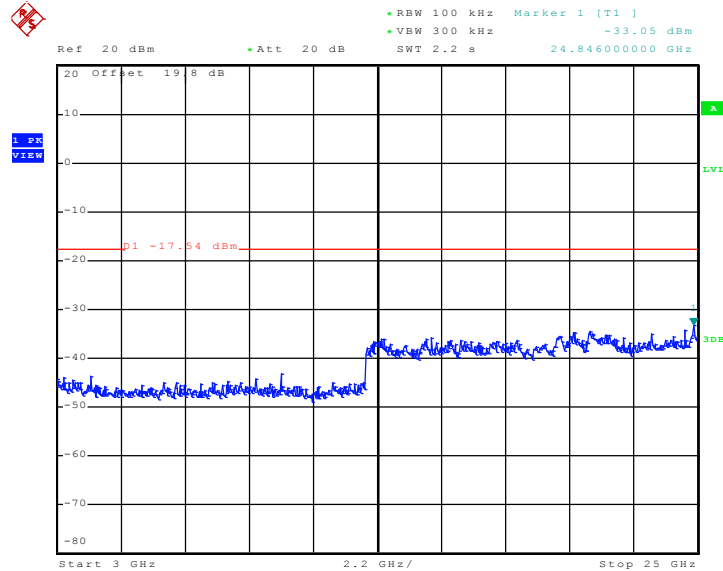
Test Mode :	Mode 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 31.MAR.2011 17:24:29

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

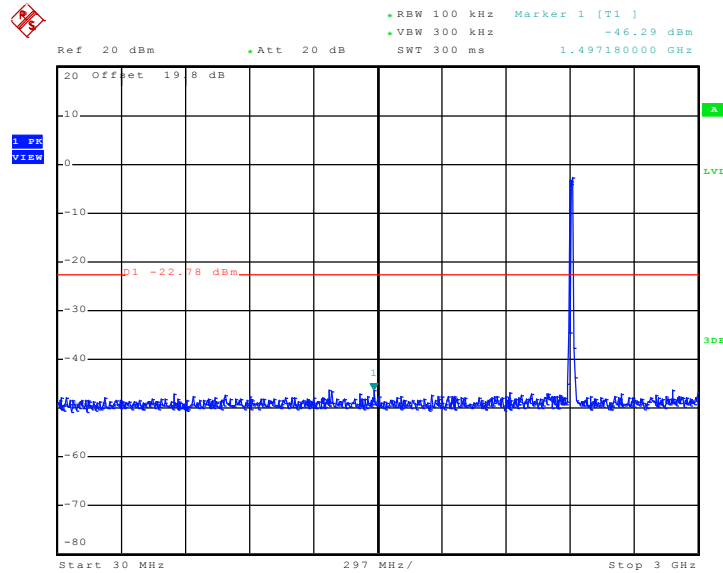


Date: 31.MAR.2011 17:24:46



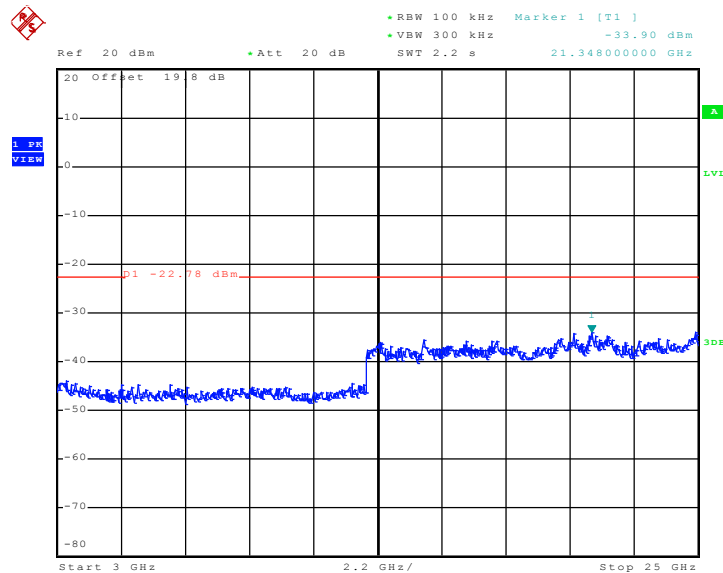
Test Mode :	Mode 4	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 13.APR.2011 19:45:48

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

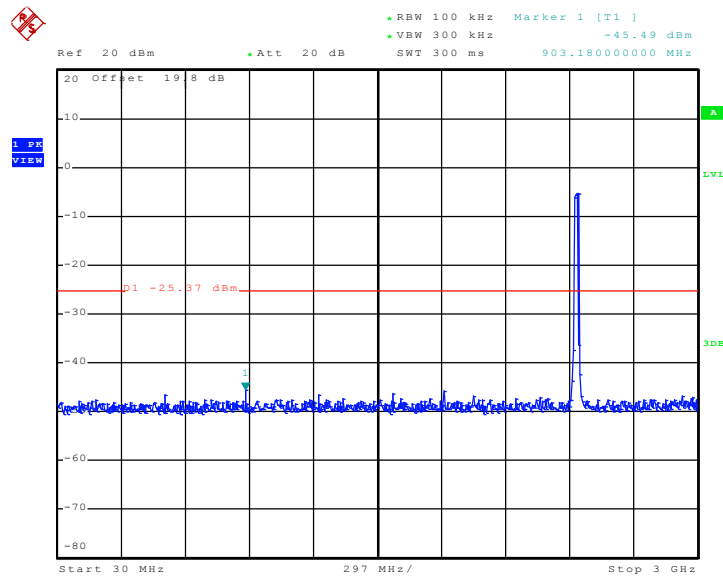


Date: 13.APR.2011 19:46:05



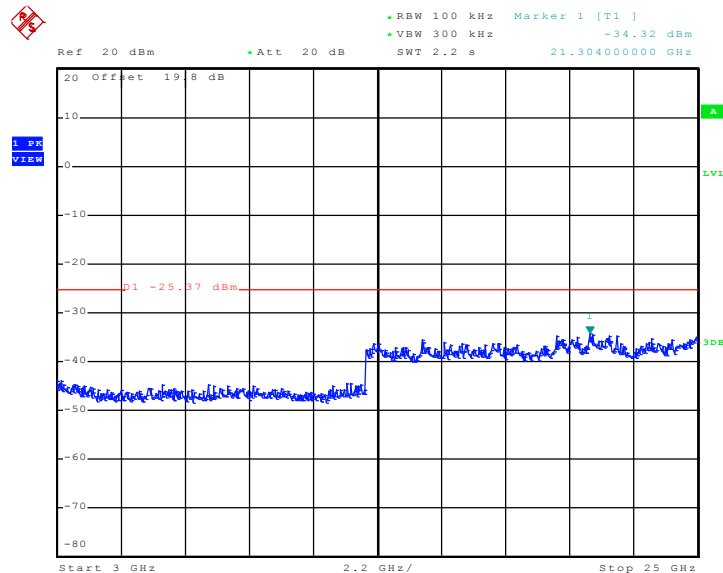
Test Mode :	Mode 5	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 31.MAR.2011 17:17:40

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

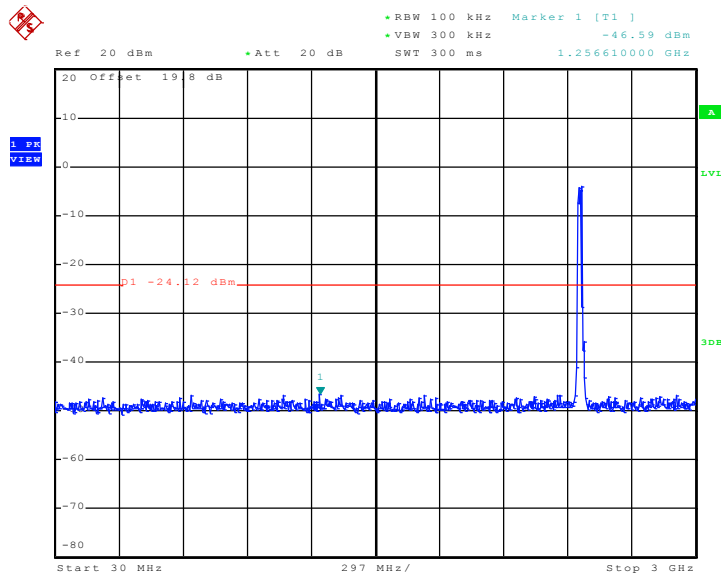


Date: 31.MAR.2011 17:17:57



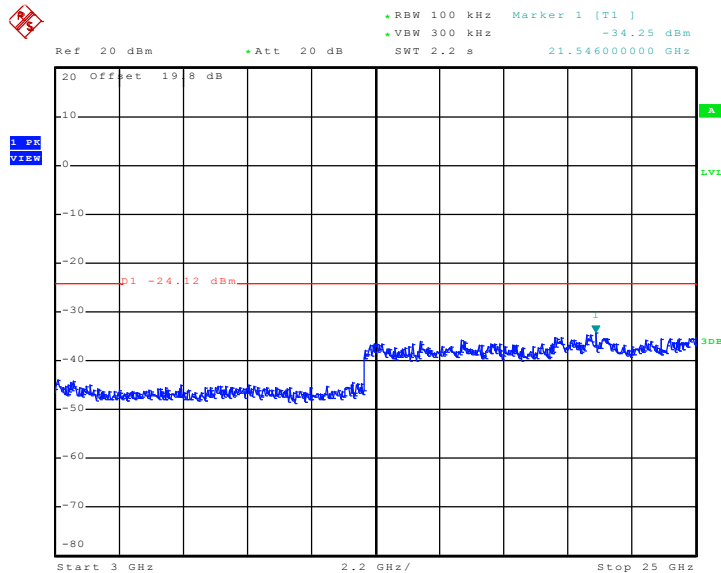
Test Mode :	Mode 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 31.MAR.2011 16:46:03

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 31.MAR.2011 16:46:20

3.5 Power Spectral Density Measurement

3.5.1 Limit of Power Spectral Density

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

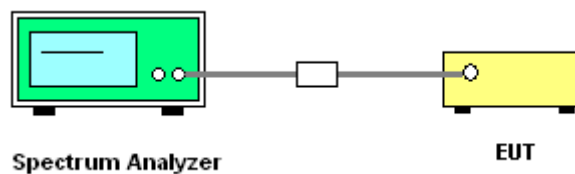
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

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

3.5.4 Test Setup



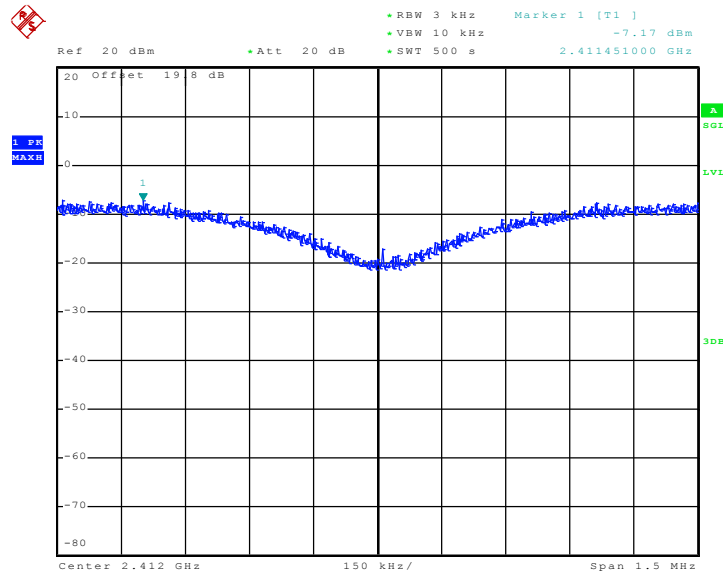


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-7.17	8	Pass
06	2437	-8.29	8	Pass
11	2462	-7.16	8	Pass

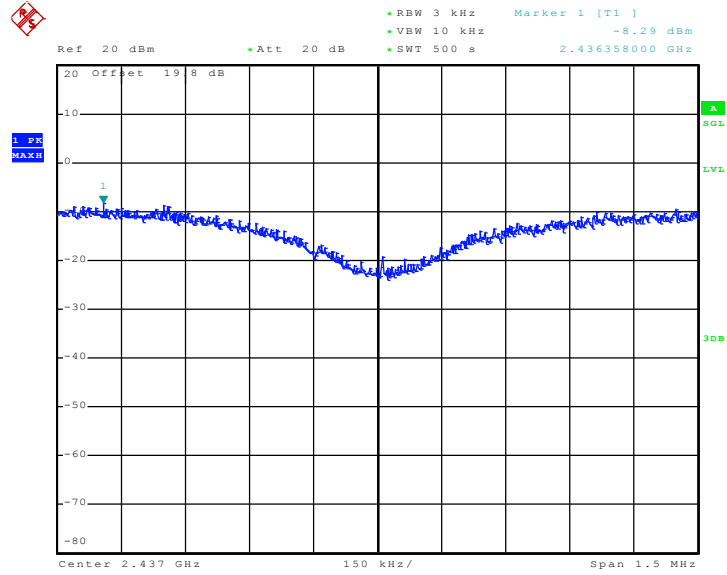
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 31.MAR.2011 16:06:56

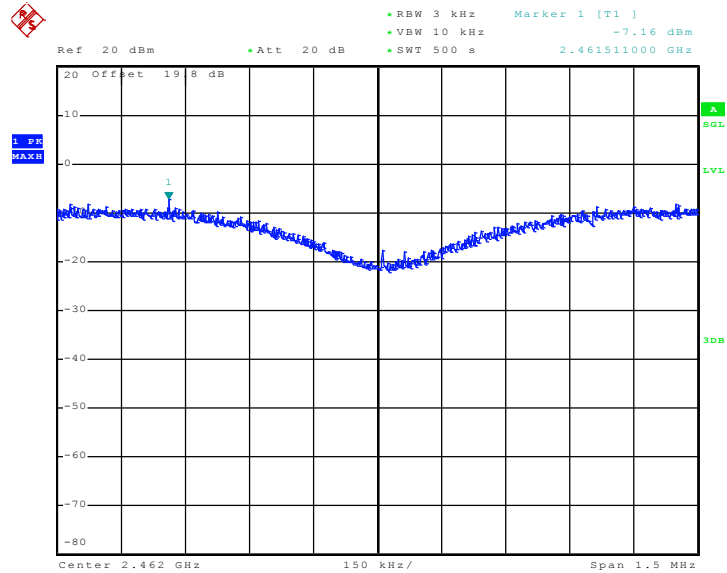


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 31.MAR.2011 16:19:20

Mode 3 : PSD Plot on 802.11b Channel 11



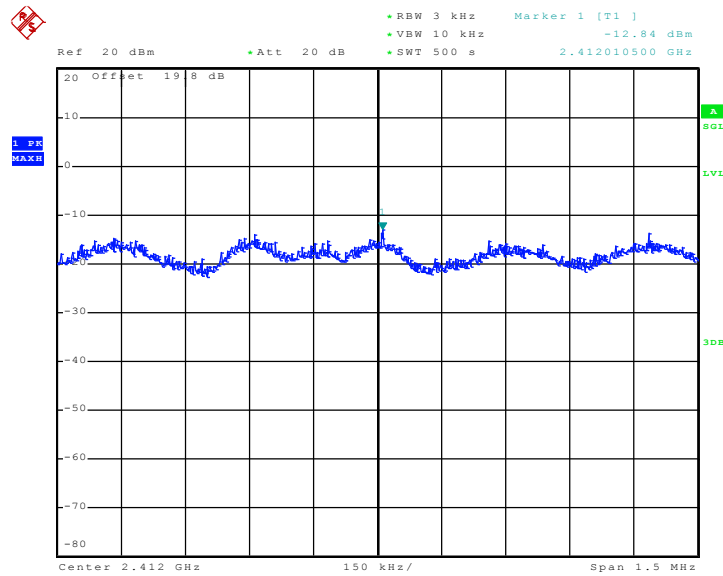
Date: 31.MAR.2011 16:32:08



Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-12.84	8	Pass
06	2437	-13.39	8	Pass
11	2462	-10.55	8	Pass

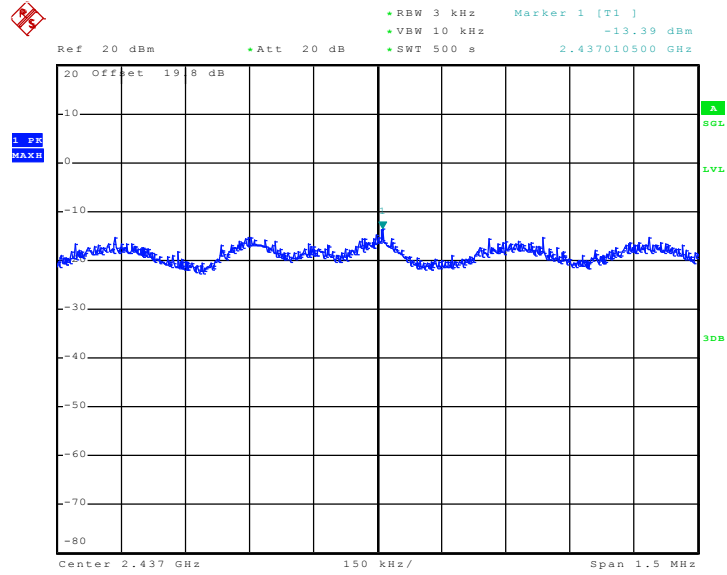
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 31.MAR.2011 17:00:16

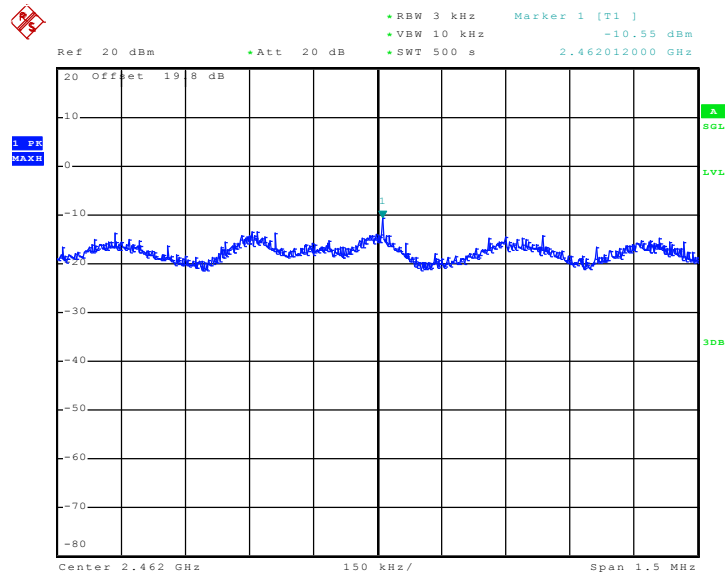


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 31.MAR.2011 17:17:19

Mode 6 : PSD Plot on 802.11g Channel 11



Date: 31.MAR.2011 16:45:42

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

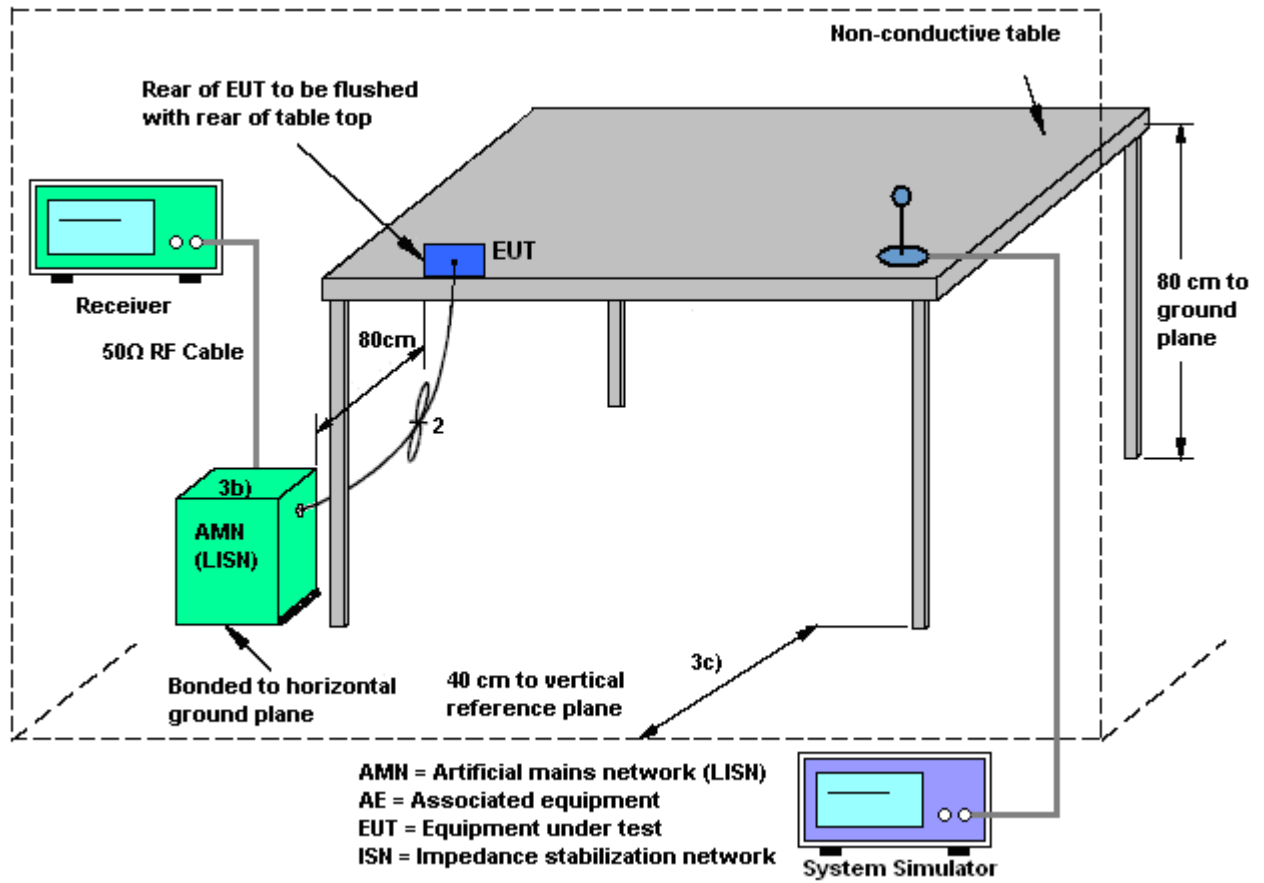
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

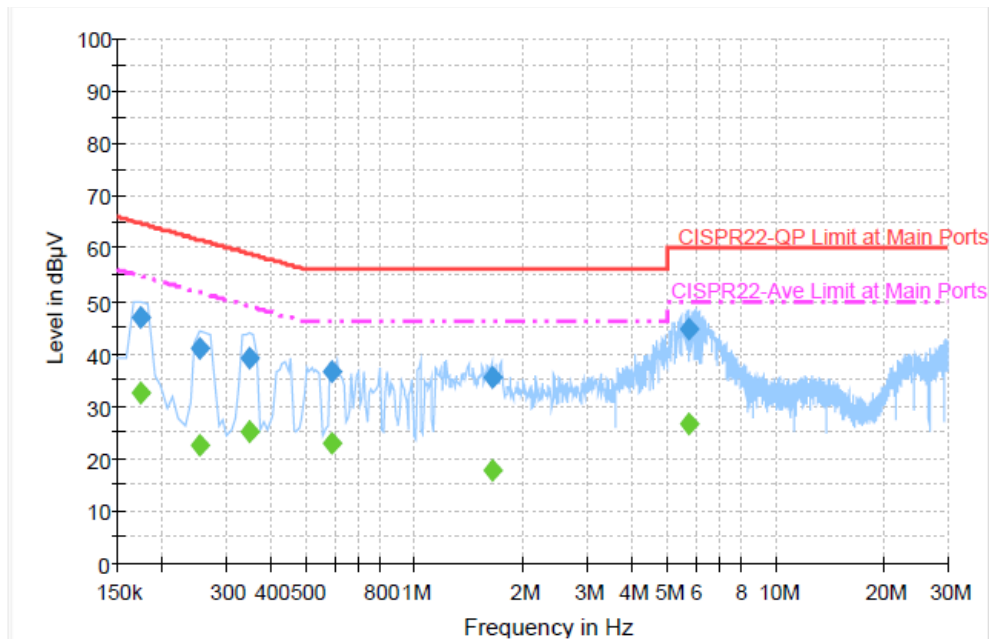
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network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

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

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



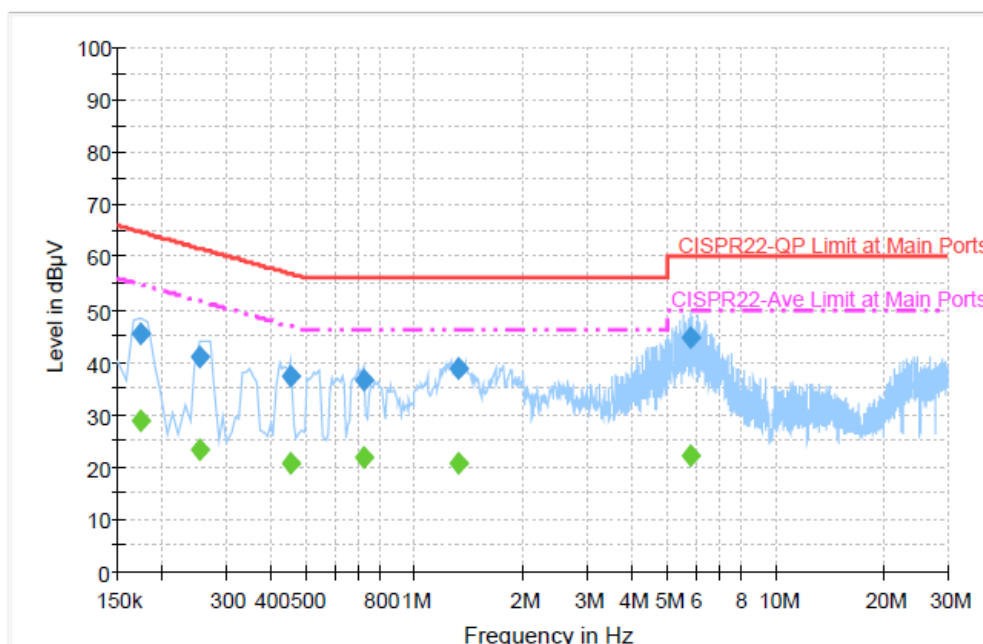
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.174000	46.8	Off	L1	19.4	18.0	64.8
0.254000	40.9	Off	L1	19.4	20.7	61.6
0.350000	39.3	Off	L1	19.4	19.7	59.0
0.590000	36.4	Off	L1	19.4	19.6	56.0
1.638000	35.5	Off	L1	19.4	20.5	56.0
5.726000	44.6	Off	L1	19.5	15.4	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.174000	32.4	Off	L1	19.4	22.4	54.8
0.254000	22.5	Off	L1	19.4	29.1	51.6
0.350000	25.3	Off	L1	19.4	23.7	49.0
0.590000	22.9	Off	L1	19.4	23.1	46.0
1.638000	17.6	Off	L1	19.4	28.4	46.0
5.726000	26.5	Off	L1	19.5	23.5	50.0

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



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	45.5	Off	N	19.4	19.3	64.8
0.254000	41.0	Off	N	19.4	20.6	61.6
0.454000	37.4	Off	N	19.4	19.4	56.8
0.726000	36.6	Off	N	19.5	19.4	56.0
1.326000	38.6	Off	N	19.5	17.4	56.0
5.806000	44.6	Off	N	19.5	15.4	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	28.8	Off	N	19.4	26.0	54.8
0.254000	23.3	Off	N	19.4	28.3	51.6
0.454000	20.8	Off	N	19.4	26.0	46.8
0.726000	21.6	Off	N	19.5	24.4	46.0
1.326000	20.6	Off	N	19.5	25.4	46.0
5.806000	22.3	Off	N	19.5	27.7	50.0

3.7 Radiated Emission Measurement

3.7.1 Limit of Radiated Emission

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

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

3.7.2 Measuring Instruments

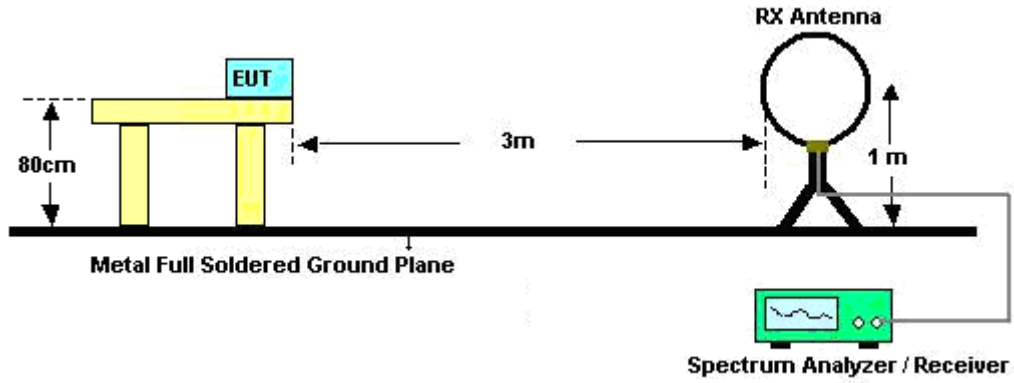
See list of measuring instruments of this test report.

3.7.3 Test Procedures

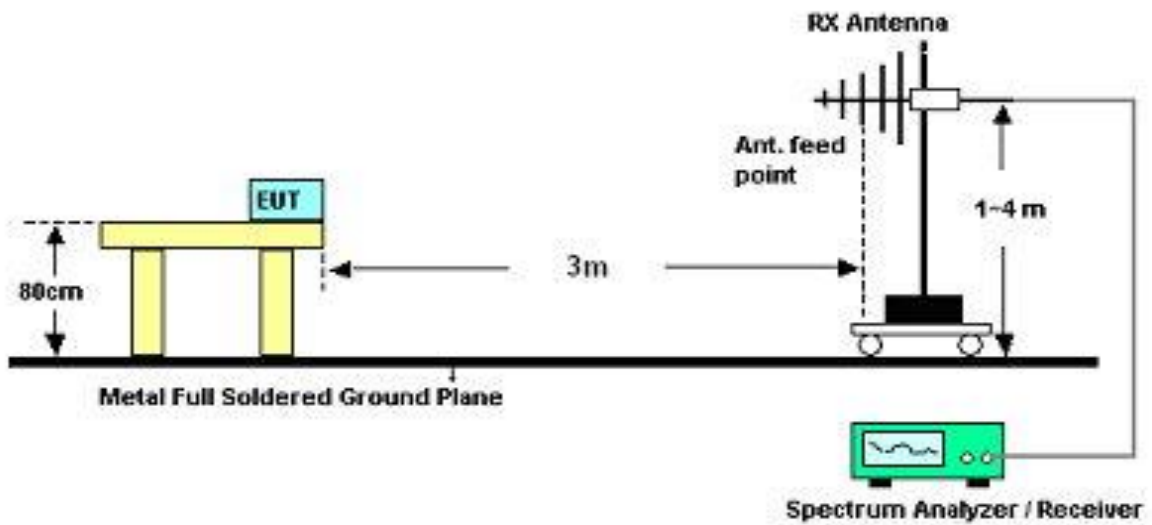
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
 - (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW \geq RBW; Sweep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

3.7.4 Test Setup

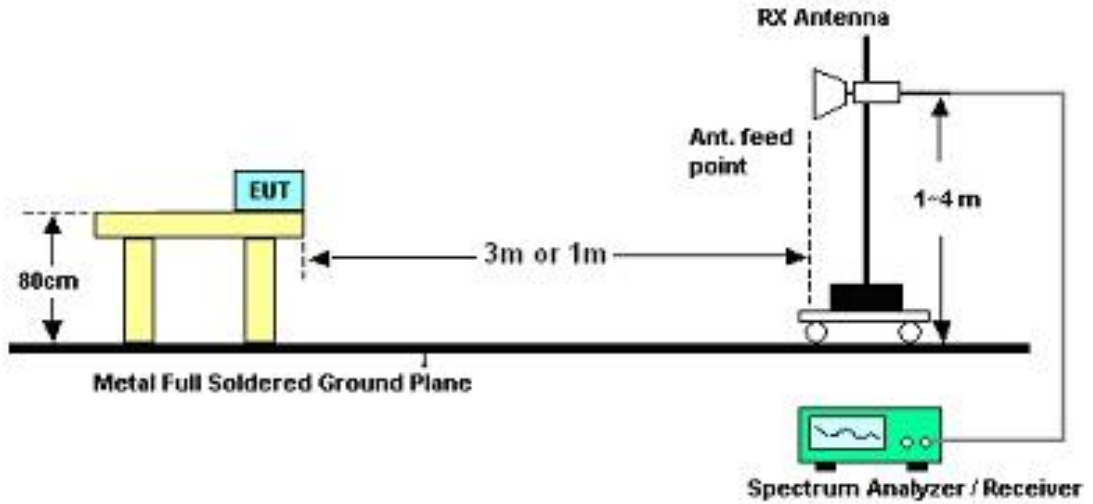
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

Test Engineer :	Wii Chang	Temperature :	22~26°C	
		Relative Humidity :	54~60%	
Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

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

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

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



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

Test Mode :	Mode 1	Temperature :	22~26°C
Test Channel :	01	Relative Humidity :	54~60%
Test Engineer :	Wii Chang	Polarization :	Horizontal
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.62	29.68	-10.32	40	44.55	16.04	0.55	31.46	191	106	Peak
41.34	23.28	-16.72	40	42.12	12.04	0.63	31.51	-	-	Peak
91.02	21.55	-21.95	43.5	43.33	8.79	0.95	31.52	-	-	Peak
716.5	22.06	-23.94	46	28.71	21.15	2.98	30.78	-	-	Peak
799.8	25.26	-20.74	46	30.33	22.47	3.14	30.68	-	-	Peak
996.5	26.76	-27.24	54	28.99	24.84	3.51	30.58	-	-	Peak
2386.38	44.86	-9.14	54	40.5	32.18	6.03	33.85	118	42	Average
2386.38	51.52	-22.48	74	47.16	32.18	6.03	33.85	118	42	Peak
2412	104.93	-	-	100.53	32.2	6.07	33.87	118	42	Peak
2412	101.13	-	-	96.73	32.2	6.07	33.87	118	42	Average
2486	32.89	-21.11	54	28.33	32.28	6.18	33.9	118	42	Average
2486	44.17	-29.83	74	39.61	32.28	6.18	33.9	118	42	Peak



Test Mode :	Mode 1	Temperature :	22~26°C
Test Channel :	01	Relative Humidity :	54~60%
Test Engineer :	Wii Chang	Polarization :	Vertical
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.54	28.84	-11.16	40	43.49	16.27	0.54	31.46	-	-	Peak
91.02	33.93	-9.57	43.5	55.71	8.79	0.95	31.52	117	210	Peak
269.22	20.73	-25.27	46	37.48	12.98	1.64	31.37	-	-	Peak
595.4	21.95	-24.05	46	30.5	19.7	2.68	30.93	-	-	Peak
792.1	24.58	-21.42	46	29.78	22.35	3.13	30.68	-	-	Peak
976.2	27.11	-26.89	54	29.62	24.58	3.49	30.58	-	-	Peak
2384.29	39.35	-14.65	54	35.01	32.16	6.03	33.85	129	49	Average
2384.29	47.85	-26.15	74	43.51	32.16	6.03	33.85	129	49	Peak
2412	100.76	-	-	96.36	32.2	6.07	33.87	129	49	Peak
2412	97.13	-	-	92.73	32.2	6.07	33.87	129	49	Average
2484	32.33	-21.67	54	27.77	32.28	6.18	33.9	129	49	Average
2484	43.13	-30.87	74	38.57	32.28	6.18	33.9	129	49	Peak



Test Mode :	Mode 2	Temperature :	22~26°C
Test Channel :	06	Relative Humidity :	54~60%
Test Engineer :	Wii Chang	Polarization :	Horizontal
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.62	28.56	-11.44	40	43.43	16.04	0.55	31.46	110	147	Peak
40.53	22.53	-17.47	40	40.91	12.5	0.63	31.51	-	-	Peak
91.02	22.78	-20.72	43.5	44.56	8.79	0.95	31.52	-	-	Peak
750.1	22.58	-23.42	46	28.55	21.67	3.06	30.7	-	-	Peak
831.3	25.75	-20.25	46	30.41	22.83	3.22	30.71	-	-	Peak
982.5	26.25	-27.75	54	28.67	24.67	3.49	30.58	-	-	Peak
2382	44.33	-29.67	74	39.99	32.16	6.03	33.85	118	35	Peak
2382	33.91	-20.09	54	29.57	32.16	6.03	33.85	118	35	Average
2437	105.29	-	-	100.82	32.24	6.11	33.88	118	35	Peak
2437	101.57	-	-	97.1	32.24	6.11	33.88	118	35	Average
2484	44.93	-29.07	74	40.37	32.28	6.18	33.9	118	35	Peak
2484	33.91	-20.09	54	29.35	32.28	6.18	33.9	118	35	Average



Test Mode :	Mode 2	Temperature :	22~26°C
Test Channel :	06	Relative Humidity :	54~60%
Test Engineer :	Wii Chang	Polarization :	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.62	28.85	-11.15	40	43.72	16.04	0.55	31.46	-	-	Peak
91.02	33.31	-10.19	43.5	55.09	8.79	0.95	31.52	130	228	Peak
210.9	23.69	-19.81	43.5	43.94	9.86	1.36	31.47	-	-	Peak
761.3	22.97	-23.03	46	28.73	21.86	3.08	30.7	-	-	Peak
864.2	25.59	-20.41	46	29.81	23.21	3.29	30.72	-	-	Peak
993.7	26.99	-27.01	54	29.25	24.82	3.5	30.58	-	-	Peak
2364	44.75	-29.25	74	40.47	32.13	5.99	33.84	126	50	Peak
2364	32.7	-21.3	54	28.42	32.13	5.99	33.84	126	50	Average
2437	100.69	-	-	96.22	32.24	6.11	33.88	126	50	Peak
2437	97.03	-	-	92.56	32.24	6.11	33.88	126	50	Average
2484	44.31	-29.69	74	39.75	32.28	6.18	33.9	126	50	Peak
2484	33.4	-20.6	54	28.84	32.28	6.18	33.9	126	50	Average



Test Mode :	Mode 3	Temperature :	22~26°C
Test Channel :	11	Relative Humidity :	54~60%
Test Engineer :	Wii Chang	Polarization :	Horizontal
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.89	28.96	-11.04	40	43.83	16.04	0.55	31.46	144	256	Peak
41.34	22.36	-17.64	40	41.2	12.04	0.63	31.51	-	-	Peak
91.02	22.61	-20.89	43.5	44.39	8.79	0.95	31.52	-	-	Peak
736.1	22.76	-23.24	46	29	21.46	3.03	30.73	-	-	Peak
845.3	25.81	-20.19	46	30.28	23	3.26	30.73	-	-	Peak
993.7	26.76	-27.24	54	29.02	24.82	3.5	30.58	-	-	Peak
2388	33.67	-20.33	54	29.31	32.18	6.03	33.85	138	359	Average
2388	44.74	-29.26	74	40.38	32.18	6.03	33.85	138	359	Peak
2462	100.99	-	-	96.48	32.26	6.14	33.89	138	359	Average
2462	104.64	-	-	100.13	32.26	6.14	33.89	138	359	Peak
2488.22	43.94	-10.06	54	39.36	32.3	6.18	33.9	138	359	Average
2488.22	51.53	-22.47	74	46.95	32.3	6.18	33.9	138	359	Peak



Test Mode :	Mode 3	Temperature :	22~26°C
Test Channel :	11	Relative Humidity :	54~60%
Test Engineer :	Wii Chang	Polarization :	Vertical
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.54	28.31	-11.69	40	42.96	16.27	0.54	31.46	-	-	Peak
91.02	33.51	-9.99	43.5	55.29	8.79	0.95	31.52	128	338	Peak
275.97	20.61	-25.39	46	37.24	13.09	1.64	31.36	-	-	Peak
825.7	25.12	-20.88	46	29.86	22.76	3.21	30.71	-	-	Peak
928.6	26.3	-19.7	46	29.54	23.98	3.41	30.63	-	-	Peak
1000	27.08	-26.92	54	29.26	24.89	3.51	30.58	-	-	Peak
2334	32.79	-21.21	54	28.58	32.09	5.95	33.83	127	44	Average
2334	44.94	-29.06	74	40.73	32.09	5.95	33.83	127	44	Peak
2462	98.71	-	-	94.2	32.26	6.14	33.89	127	44	Average
2462	102.38	-	-	97.87	32.26	6.14	33.89	127	44	Peak
2488.22	41.75	-12.25	54	37.17	32.3	6.18	33.9	127	44	Average
2488.22	49.85	-24.15	74	45.27	32.3	6.18	33.9	127	44	Peak



Test Mode :	Mode 4	Temperature :	22~26°C
Test Channel :	01	Relative Humidity :	54~60%
Test Engineer :	Wii Chang	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	27.62	-12.38	40	42.27	16.27	0.54	31.46	155	227	Peak
91.02	20.65	-22.85	43.5	42.43	8.79	0.95	31.52	-	-	Peak
207.93	20.83	-22.67	43.5	41.3	9.65	1.35	31.47	-	-	Peak
722.1	22.61	-23.39	46	29.15	21.24	2.99	30.77	-	-	Peak
887.3	24.54	-21.46	46	28.45	23.48	3.32	30.71	-	-	Peak
988.1	26.57	-27.43	54	28.91	24.74	3.5	30.58	-	-	Peak
2389.99	43.44	-10.56	54	39.08	32.18	6.03	33.85	149	50	Average
2389.99	63.94	-10.06	74	59.58	32.18	6.03	33.85	149	50	Peak
2412	103.9	-	-	99.5	32.2	6.07	33.87	149	50	Peak
2412	94.48	-	-	90.08	32.2	6.07	33.87	149	50	Average
2500	32.81	-21.19	54	28.23	32.3	6.18	33.9	149	50	Average
2500	44.03	-29.97	74	39.45	32.3	6.18	33.9	149	50	Peak



Test Mode :	Mode 4	Temperature :	22~26°C
Test Channel :	01	Relative Humidity :	54~60%
Test Engineer :	Wii Chang	Polarization :	Vertical
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.81	28.79	-11.21	40	43.44	16.27	0.54	31.46	148	216	Peak
91.02	32.05	-11.45	43.5	53.83	8.79	0.95	31.52	-	-	Peak
238.17	20.88	-25.12	46	38.93	11.85	1.52	31.42	-	-	Peak
598.2	20.82	-25.18	46	29.32	19.74	2.68	30.92	-	-	Peak
822.2	24.78	-21.22	46	29.55	22.73	3.2	30.7	-	-	Peak
987.4	26.1	-27.9	54	28.45	24.73	3.5	30.58	-	-	Peak
2389.61	39.9	-14.1	54	35.54	32.18	6.03	33.85	128	43	Average
2389.61	61.1	-12.9	74	56.74	32.18	6.03	33.85	128	43	Peak
2412	100.82	-	-	96.42	32.2	6.07	33.87	128	43	Peak
2412	91.09	-	-	86.69	32.2	6.07	33.87	128	43	Average
2486	32.32	-21.68	54	27.76	32.28	6.18	33.9	128	43	Average
2486	44.11	-29.89	74	39.55	32.28	6.18	33.9	128	43	Peak



Test Mode :	Mode 5	Temperature :	22~26°C
Test Channel :	06	Relative Humidity :	54~60%
Test Engineer :	Wii Chang	Polarization :	Horizontal
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	28.1	-11.9	40	42.52	16.51	0.53	31.46	152	223	Peak
41.88	25.33	-14.67	40	44.17	12.04	0.63	31.51	-	-	Peak
91.02	26.01	-17.49	43.5	47.79	8.79	0.95	31.52	-	-	Peak
670.3	20.02	-25.98	46	27.44	20.55	2.88	30.85	-	-	Peak
771.8	22.76	-23.24	46	28.32	22.03	3.1	30.69	-	-	Peak
869.8	24.43	-21.57	46	28.57	23.28	3.3	30.72	-	-	Peak
2390	45.12	-28.88	74	40.76	32.18	6.03	33.85	112	7	Peak
2390	34.22	-19.78	54	29.86	32.18	6.03	33.85	112	7	Average
2437	104.55	-	-	100.08	32.24	6.11	33.88	112	7	Peak
2437	95.13	-	-	90.66	32.24	6.11	33.88	112	7	Average
2484	45.18	-28.82	74	40.62	32.28	6.18	33.9	112	7	Peak
2484	33.92	-20.08	54	29.36	32.28	6.18	33.9	112	7	Average



Test Mode :	Mode 5	Temperature :	22~26°C
Test Channel :	06	Relative Humidity :	54~60%
Test Engineer :	Wii Chang	Polarization :	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	28.63	-11.37	40	43.05	16.51	0.53	31.46	101	309	Peak
91.02	29.8	-13.7	43.5	51.58	8.79	0.95	31.52	-	-	Peak
138.54	20.36	-23.14	43.5	39.11	11.6	1.2	31.55	-	-	Peak
651.4	21.67	-24.33	46	29.35	20.35	2.84	30.87	-	-	Peak
820.1	24.52	-21.48	46	29.32	22.71	3.19	30.7	-	-	Peak
981.8	26.45	-27.55	54	28.88	24.66	3.49	30.58	-	-	Peak
2364	44.45	-29.55	74	40.17	32.13	5.99	33.84	128	52	Peak
2364	32.87	-21.13	54	28.59	32.13	5.99	33.84	128	52	Average
2437	100.88	-	-	96.41	32.24	6.11	33.88	128	52	Peak
2437	91.4	-	-	86.93	32.24	6.11	33.88	128	52	Average
2484	44.37	-29.63	74	39.81	32.28	6.18	33.9	128	52	Peak
2484	33.21	-20.79	54	28.65	32.28	6.18	33.9	128	52	Average



Test Mode :	Mode 6	Temperature :	22~26°C
Test Channel :	11	Relative Humidity :	54~60%
Test Engineer :	Wii Chang	Polarization :	Horizontal
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.62	24.92	-15.08	40	39.79	16.04	0.55	31.46	109	221	Peak
92.37	22.43	-21.07	43.5	44.09	8.9	0.96	31.52	-	-	Peak
248.97	21.03	-24.97	46	38.31	12.6	1.53	31.41	-	-	Peak
710.9	23.97	-22.03	46	30.73	21.06	2.97	30.79	-	-	Peak
864.2	24.7	-21.3	46	28.92	23.21	3.29	30.72	-	-	Peak
987.4	26.38	-27.62	54	28.73	24.73	3.5	30.58	-	-	Peak
2388	33.47	-20.53	54	29.11	32.18	6.03	33.85	139	360	Average
2388	44.41	-29.59	74	40.05	32.18	6.03	33.85	139	360	Peak
2462	94.44	-	-	89.93	32.26	6.14	33.89	139	360	Average
2462	104.5	-	-	99.99	32.26	6.14	33.89	139	360	Peak
2483.5	44.55	-9.45	54	39.99	32.28	6.18	33.9	139	360	Average
2483.5	69.41	-4.59	74	64.85	32.28	6.18	33.9	139	360	Peak



Test Mode :	Mode 6	Temperature :	22~26°C
Test Channel :	11	Relative Humidity :	54~60%
Test Engineer :	Wii Chang	Polarization :	Vertical
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.54	29.41	-10.59	40	44.06	16.27	0.54	31.46	146	330	Peak
92.37	32	-11.5	43.5	53.66	8.9	0.96	31.52	-	-	Peak
175.53	23.35	-20.15	43.5	44.24	9.4	1.24	31.53	-	-	Peak
607.3	21.35	-24.65	46	29.7	19.85	2.71	30.91	-	-	Peak
816.6	24.88	-21.12	46	29.74	22.66	3.18	30.7	-	-	Peak
993	26.97	-27.03	54	29.25	24.8	3.5	30.58	-	-	Peak
2310	32.63	-21.37	54	28.46	32.07	5.92	33.82	126	46	Average
2310	42.79	-31.21	74	38.62	32.07	5.92	33.82	126	46	Peak
2462	93.44	-	-	88.93	32.26	6.14	33.89	126	46	Average
2462	102.68	-	-	98.17	32.26	6.14	33.89	126	46	Peak
2483.85	43.75	-10.25	54	39.19	32.28	6.18	33.9	126	46	Average
2483.85	68.42	-5.58	74	63.86	32.28	6.18	33.9	126	46	Peak



3.8 Antenna Requirements

3.8.1 Standard Applicable

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

3.8.2 Antenna Connected Construction

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

3.8.3 Antenna Gain

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
System Simulator	R&S	CMU200	117995	N/A	Jun. 08, 2009	Jun. 07, 2011	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 11, 2010	Jun. 10, 2011	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 13, 2010	Sep. 12, 2011	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 14, 2010	Sep. 13, 2011	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB412923 44	N/A	Feb. 18, 2011	Feb. 17, 2012	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US404415 48	N/A	Feb. 18, 2011	Feb. 17, 2012	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D35P	TBN-9307 01	N/A	Jul. 30, 2010	Jul. 29, 2011	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCS 30	100356	9KHz – 2.75GHz	Aug. 16, 2010	Aug. 15, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz – 30MHz	Dec. 03, 2010	Dec. 02, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz – 30MHz	Dec. 01, 2010	Nov. 30, 2011	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	116457	N/A	Jun. 08, 2009	Jun. 07, 2011	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2010	Oct. 30, 2011	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 03, 2010	Dec. 02, 2011	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 19, 2010	Aug. 18, 2011	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170 251	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A023 62	1GHz~ 26.5GHz	Dec. 06, 2010	Dec. 05, 2011	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Mar. 29, 2011	Mar. 28, 2012	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/00 1	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.10	Normal (k=2)	0.05
Cable Loss	0.10	Normal (k=2)	0.05
AMN Insertion Loss	2.50	Rectangular	0.63
Receiver Specification	1.50	Rectangular	0.43
Site Imperfection	1.39	Rectangular	0.80
Mismatch	+0.34 / -0.35	U-Shape	0.24
Combined Standard Uncertainty $U_c(y)$	1.13		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.26		

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

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

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

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