



FCC RF Test Report

APPLICANT : Motorola Mobility, Inc.
EQUIPMENT : GSM / WCDMA Mobile Phone
BRAND NAME : Motorola
MODEL NAME : EX430
MARKETING NAME : MOTOGO! , EX430
GPPD NUMBER : 3326
FCC ID : IHDT56NE3
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Mar. 06, 2012 and completely tested on Mar. 22, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

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

Reviewed by:

Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

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



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SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	A8.4	Power Output	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.4	15.247(d)	A8.5	Spurious Emission	$< 20\text{ dBc}$	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 20.33 dB at 0.900 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 4.55 dB at 38.640 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Motorola Mobility, Inc.
8F., No. 9, Songgao Rd., Taipei 110, Taiwan

1.2 Manufacturer

Arima Communications Corp.
6F., No. 866, Jhongheng Rd., Jhonghe Dist., New Taipei City 23586, Taiwan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	GSM / WCDMA Mobile Phone
Brand Name	Motorola
Model Name	EX430
Marketing Name	MOTOGO! , EX430
FCC ID	IHDT56NE3
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 : 19.27 dBm (0.0845 W) 802.11g : 22.24 dBm (0.1675 W)
Antenna Type	PIFA Antenna with gain 1.02 dBi
HW Version	PCR
SW Version	SILVQ_W_07.07.00RDS
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

Remark: 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. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	03CH01-KS	CO01-KS	149928/4086E-1

1.5 Applied Standards

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

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 (Measurement Guidelines of DTS)
- ♦ ANSI C63.4-2003
- ♦ IC RSS-210 Issue 8
- ♦ IC RSS-Gen Issue 3

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, 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.	Router	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	PP42L	FCC DoC	N/A	AC I/P: Unshielded, 0.8 m DC O/P: Shielded, 1.8 m
4.	Notebook	Acer	Travel Mate 2413Lci	QDS-BRCM1016	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
6.	Bluetooth Earphone	Nokia	BH-106	QTLBH-106	N/A	N/A
7.	DC Power Supply	GW	GPS-60300	N/A	N/A	Unshielded, 1.8 m

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	19.16	19.09	18.91	18.96
CH 06	2437 MHz	19.11	19.02	18.63	18.61
CH 11	2462 MHz	19.27	19.21	19.03	19.05

Channel	Frequency	2.4GHz 802.11g RF Power (dBm)							
		OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	22.24	22.21	22.14	22.13	22.21	22.18	22.12	21.08
CH 06	2437 MHz	21.98	21.88	21.91	21.86	21.75	21.87	21.89	21.78
CH 11	2462 MHz	22.19	22.05	22.13	22.02	22.09	22.05	22.06	22.01

Remark: The EUT is programmed to transmit signals continuously for all testing.

2.2 Maximum Peak Conducted Output Power:

Band	2.4GHz 802.11b RF Power (dBm)			2.4GHz 802.11g RF Power (dBm)		
	1	6	11	1	6	11
Channel	1	6	11	1	6	11
Frequency (MHz)	2412	2437	2462	2412	2437	2462
Peak Power	19.16	19.11	19.27	22.24	21.98	22.19

Remark:

The data rates of WLAN 802.11b/g/n were set in 1Mbps for 802.11b, 6Mbps for 802.11g for all the test cases due to the highest RF output power.

2.3 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).

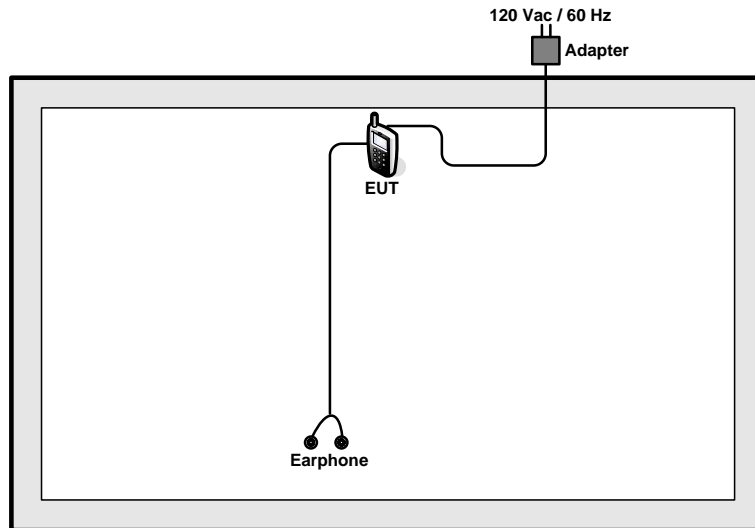
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations, laptop / tablet modes.

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

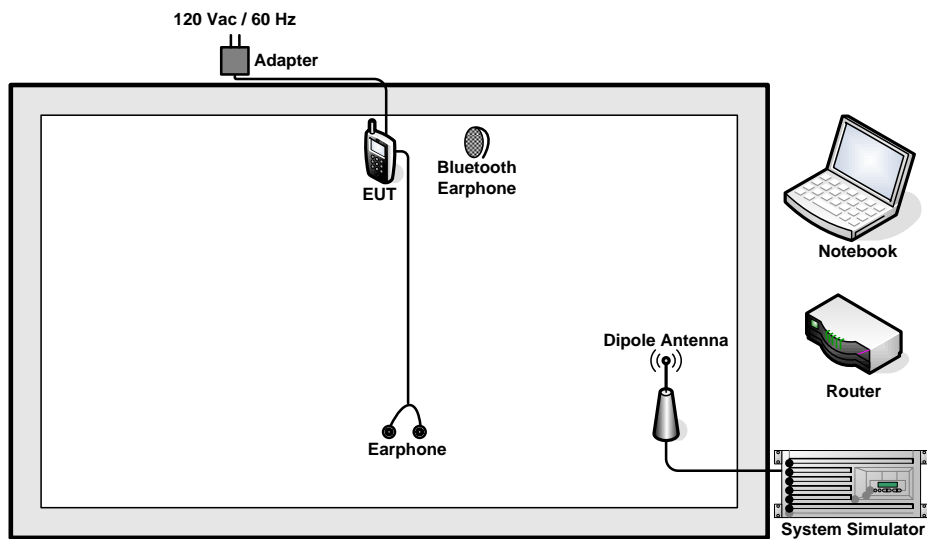
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz
Radiated TCs	Mode 1 : 802.11b 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 + Adapter + Earphone + Camera + Battery Mode 2 : GSM1900 Idle + Bluetooth Link + WLAN Link + Adapter + Earphone + MP3 + Battery	
Remark: The worst case of conducted emission is mode 2; only the test data of it was reported.		

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 RF Utility

For WLAN function, key in “* #3646633 #” on the EUT directly. Then, the EUT provides functions like channel selection and power level for continuous transmitting and receiving signals.

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

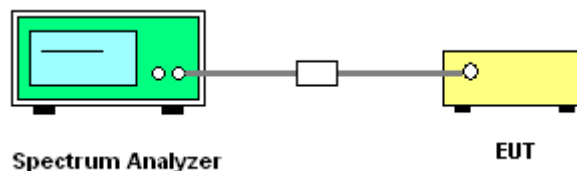
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

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

3.1.4 Test Setup



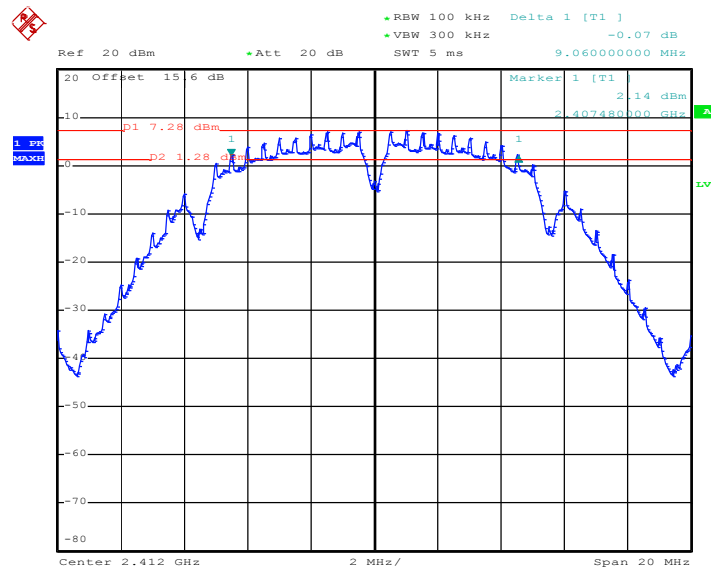


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	23~24°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	9.06	0.5	Pass
06	2437	9.04	0.5	Pass
11	2462	9.04	0.5	Pass

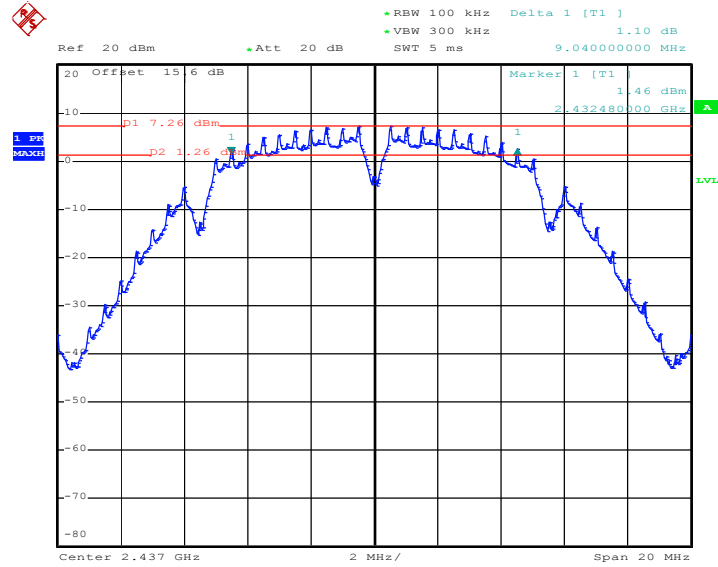
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



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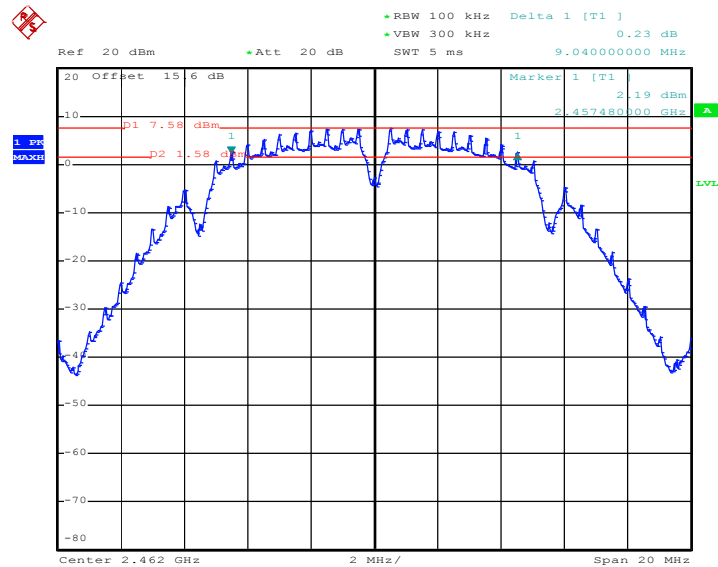


Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



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



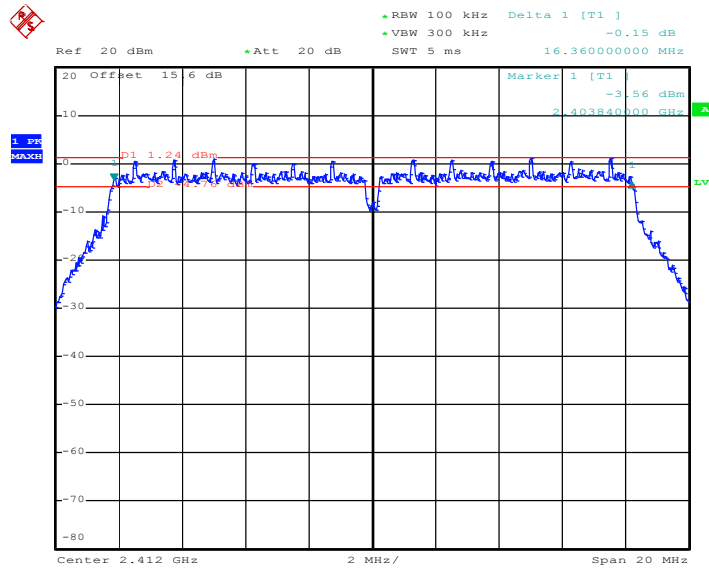
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Test Mode :	Mode 4, 5, 6	Temperature :	23~24°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.36	0.5	Pass
06	2437	16.34	0.5	Pass
11	2462	16.40	0.5	Pass

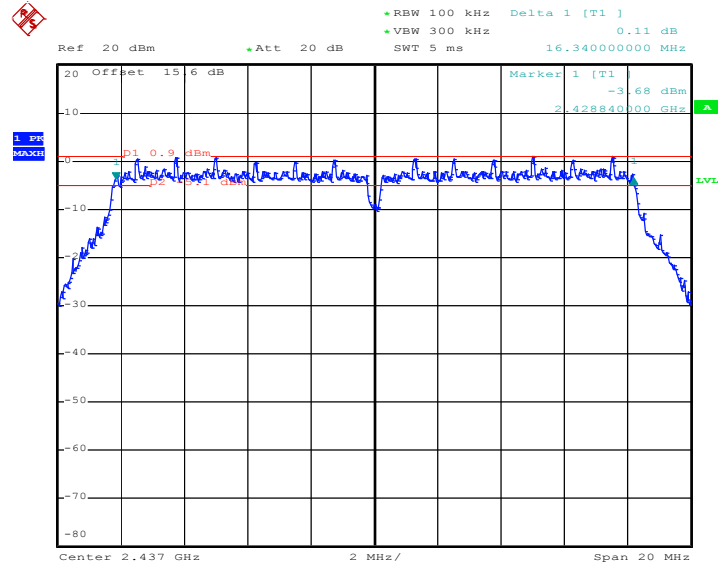
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



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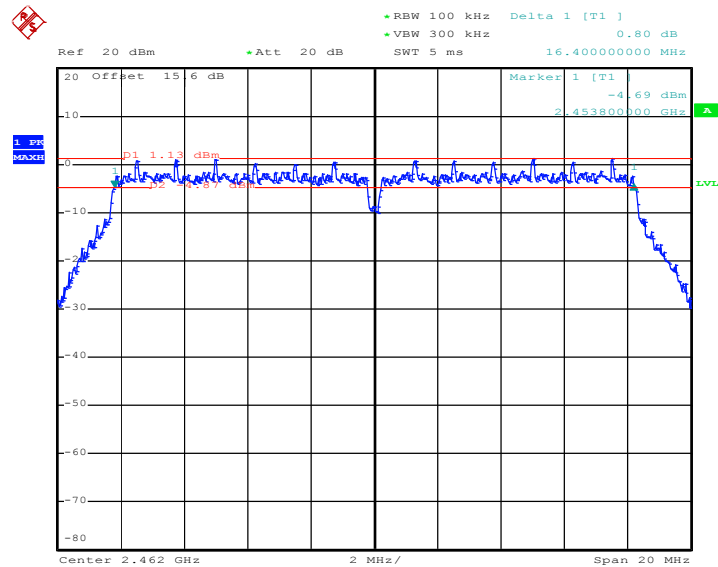


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



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



Date: 14.MAR.2012 19:07:14

3.2 Output Power Measurement

3.2.1 Limit of Output Power

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

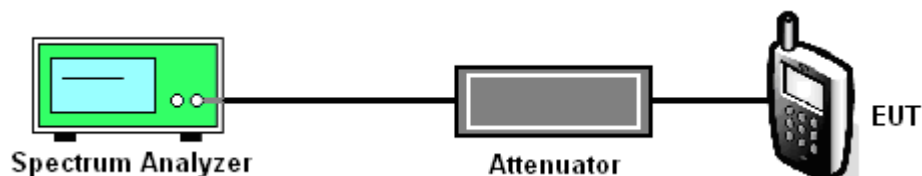
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

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

3.2.4 Test Setup





3.2.5 Test Result of Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	23~24°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.16	30	Pass
06	2437	19.11	30	Pass
11	2462	19.27	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	23~24°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.24	30	Pass
06	2437	21.98	30	Pass
11	2462	22.19	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

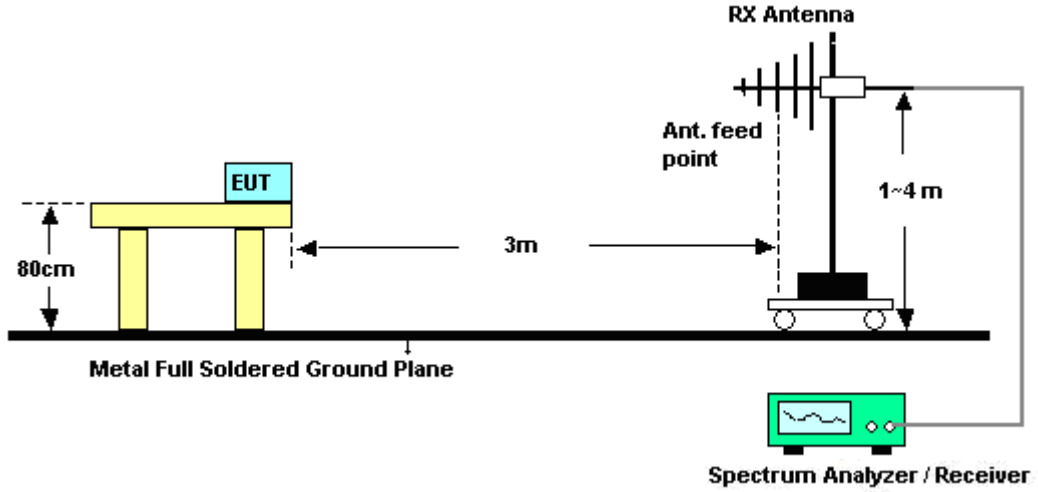
See list of measuring instruments of this test report.

3.3.3 Test Procedures

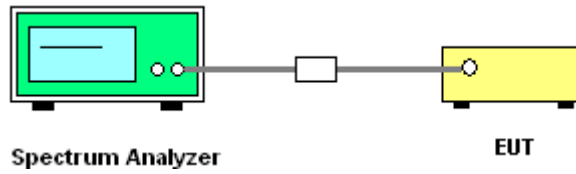
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 KHz, Video bandwidth (VBW) \geq RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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 :	21~22°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Chenmy Cheng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2361.3	47.58	-26.42	74	45.37	32.81	3.38	33.98	110	354	Peak
2361.3	35.27	-18.73	54	33.06	32.81	3.38	33.98	110	354	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.42	48.39	-25.61	74	46.11	32.86	3.47	34.05	113	337	Peak
2389.42	35.57	-18.43	54	33.29	32.86	3.47	34.05	113	337	Average

Test Mode :	Mode 3	Temperature :	21~22°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Chenmy Cheng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2486.51	49.74	-24.26	74	47.25	33.01	3.68	34.2	142	223	Peak
2486.51	37.51	-16.49	54	35.02	33.01	3.68	34.2	142	223	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	48.29	-25.71	74	45.8	33.01	3.68	34.2	120	0	Peak
2483.5	35.63	-18.37	54	33.14	33.01	3.68	34.2	120	0	Average



Test Mode :	Mode 4	Temperature :	21~22°C
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Chenmy Cheng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.04	63.62	-10.38	74	61.34	32.86	3.47	34.05	200	316	Peak
2389.04	41.48	-12.52	54	39.2	32.86	3.47	34.05	200	316	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.61	63.59	-10.41	74	61.31	32.86	3.47	34.05	102	50	Peak
2389.61	42.15	-11.85	54	39.87	32.86	3.47	34.05	102	50	Average

Test Mode :	Mode 6	Temperature :	21~22°C
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Chenmy Cheng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.85	56.17	-17.83	74	53.68	33.01	3.68	34.2	102	297	Peak
2483.85	40.3	-13.7	54	37.81	33.01	3.68	34.2	102	297	Average

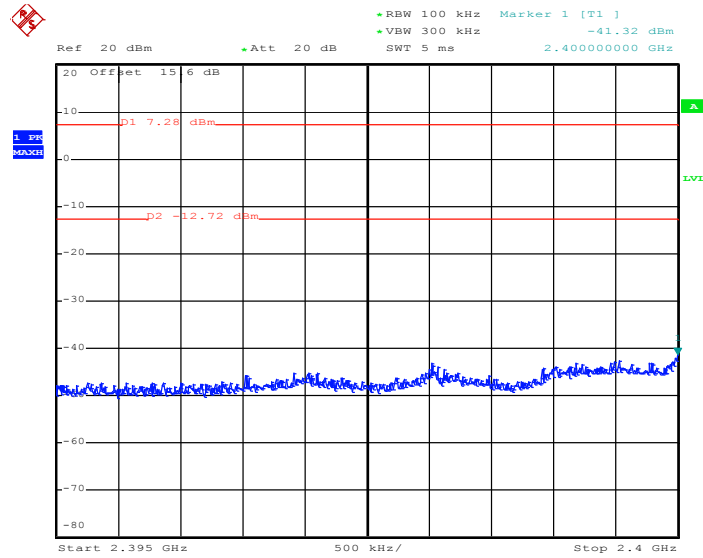
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.23	54.04	-19.96	74	51.55	33.01	3.68	34.2	124	239	Peak
2484.23	39.98	-14.02	54	37.49	33.01	3.68	34.2	124	239	Average



3.3.6 Test Plots of Conducted Band Edges

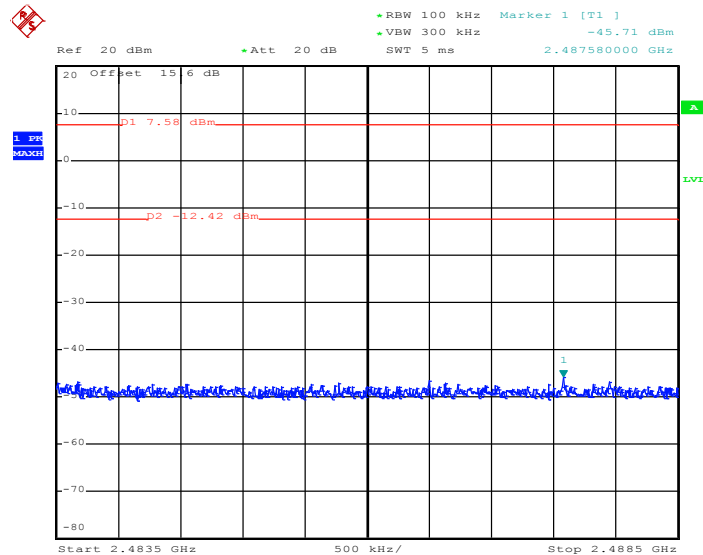
Test Mode :	Mode 1 and 3	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11b Channel 01



Date: 14.MAR.2012 17:37:55

High Band Edge Plot on 802.11b Channel 11

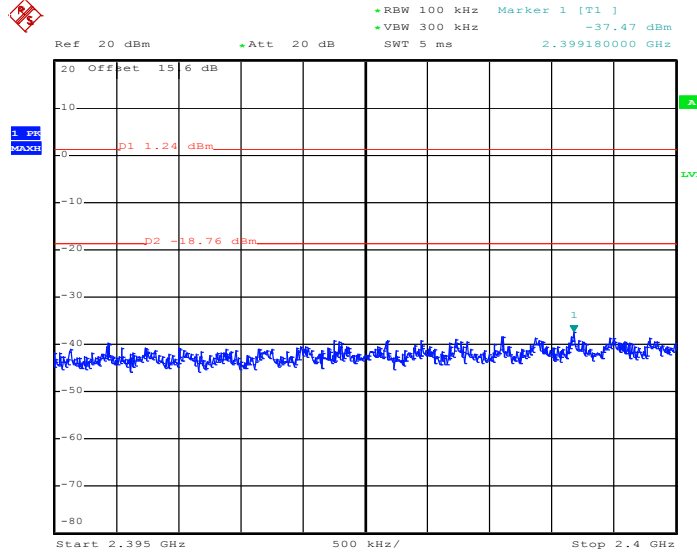


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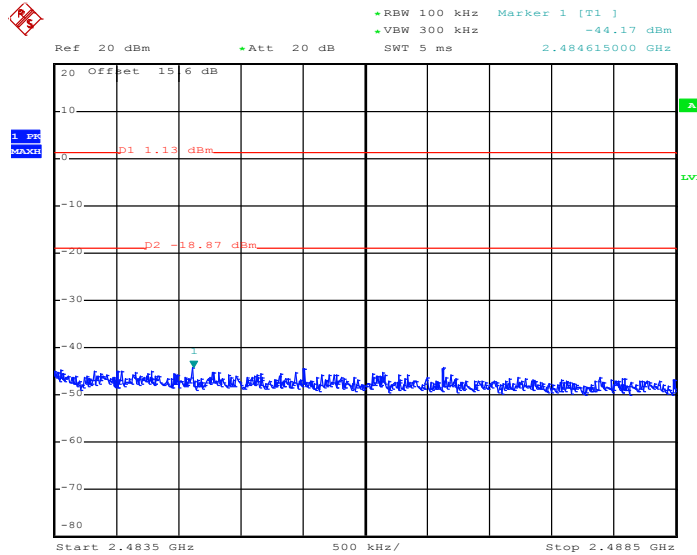
Test Mode :	Mode 4 and 6	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11g Channel 01



Date: 14.MAR.2012 19:39:07

High Band Edge Plot on 802.11g Channel 11



Date: 14.MAR.2012 19:08:21

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.

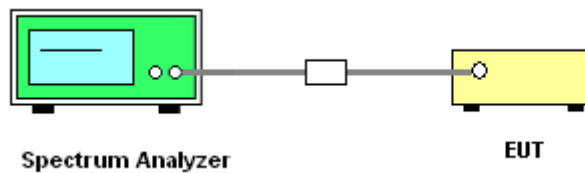
3.4.2 Measuring Instruments

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

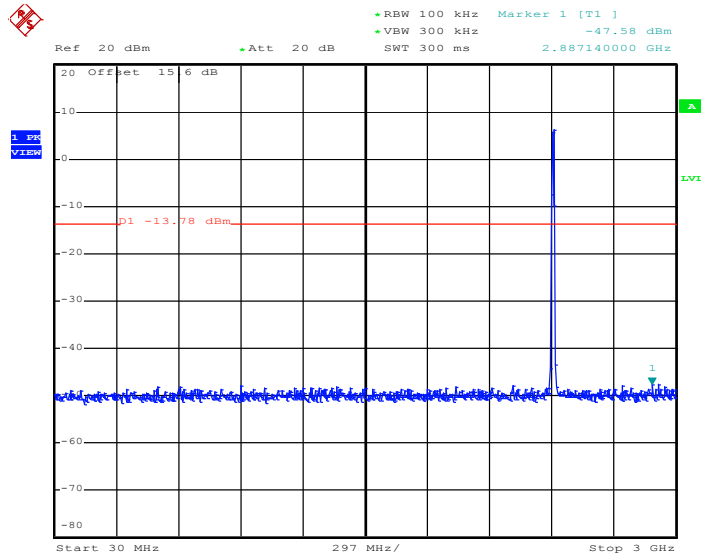




3.4.5 Test Plots of Spurious Emission

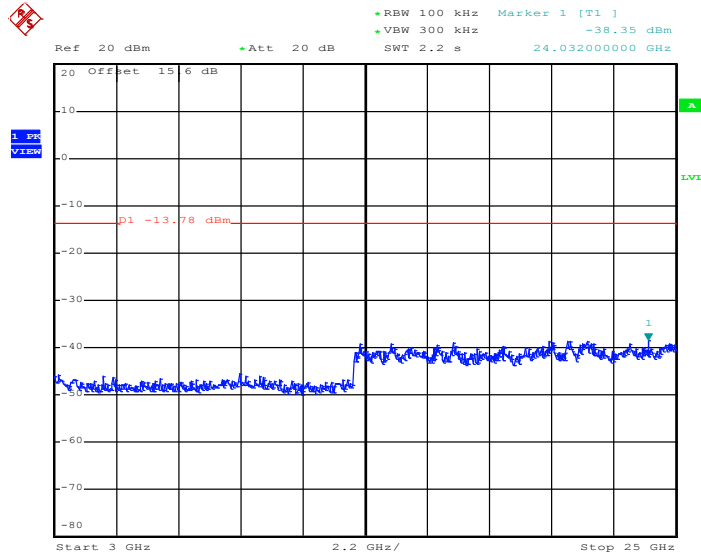
Test Mode :	Mode 1	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 14.MAR.2012 17:38:50

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

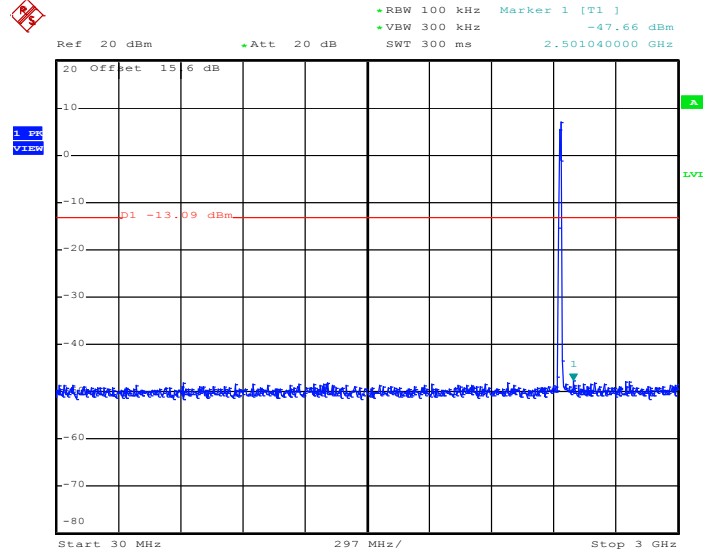


Date: 14.MAR.2012 17:39:07



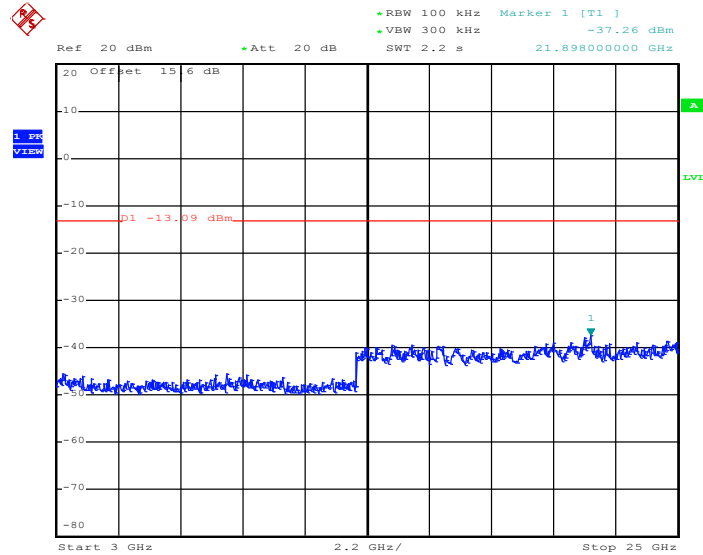
Test Mode :	Mode 2	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	06	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 14.MAR.2012 18:24:51

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

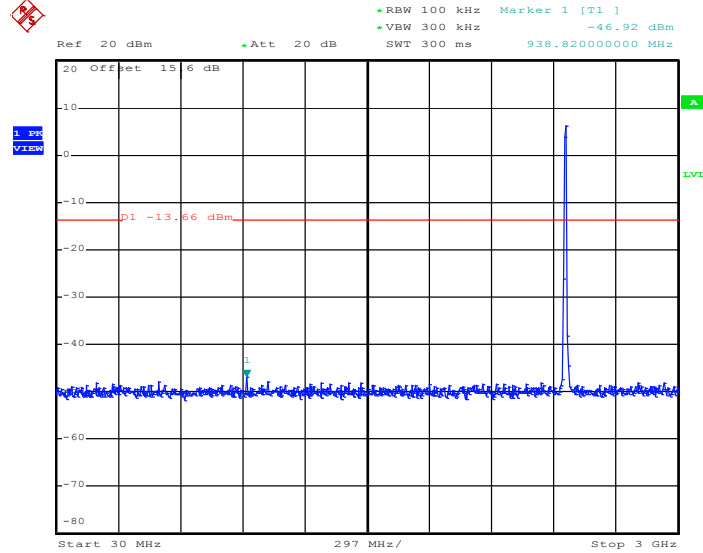


Date: 14.MAR.2012 18:25:08



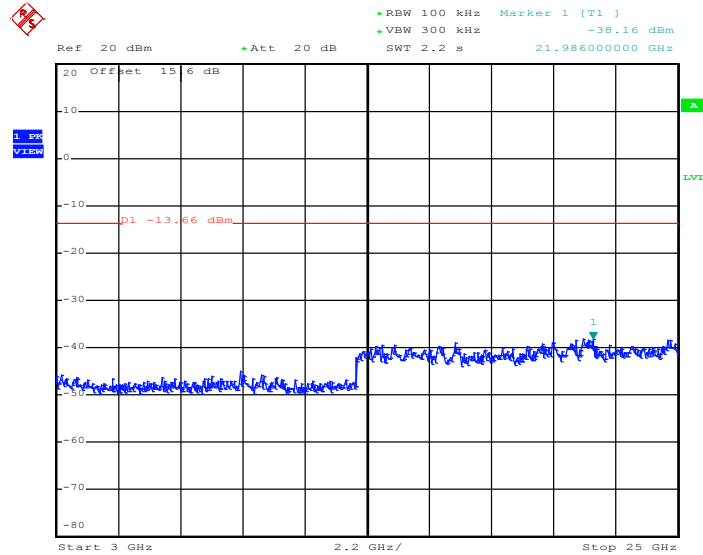
Test Mode :	Mode 3	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 14.MAR.2012 18:41:08

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

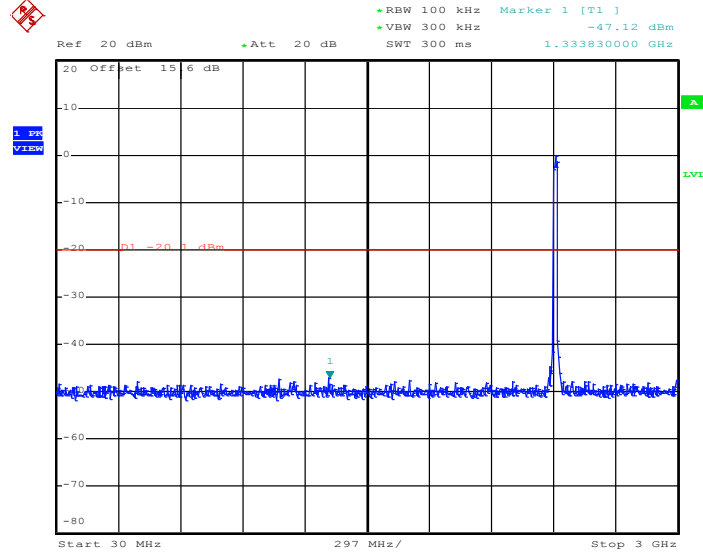


Date: 14.MAR.2012 18:41:25



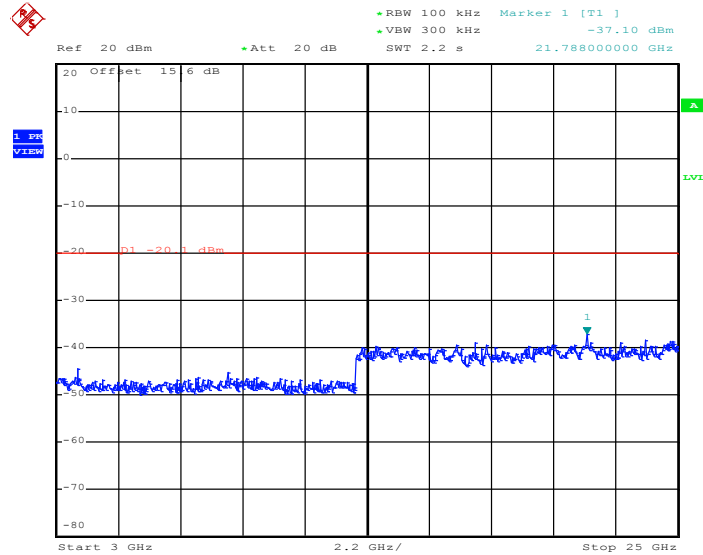
Test Mode :	Mode 4	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 14.MAR.2012 19:41:54

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

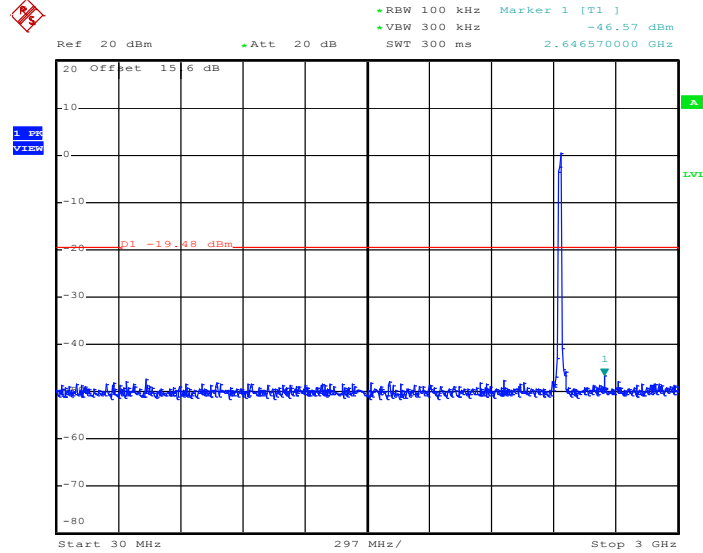


Date: 14.MAR.2012 19:42:11



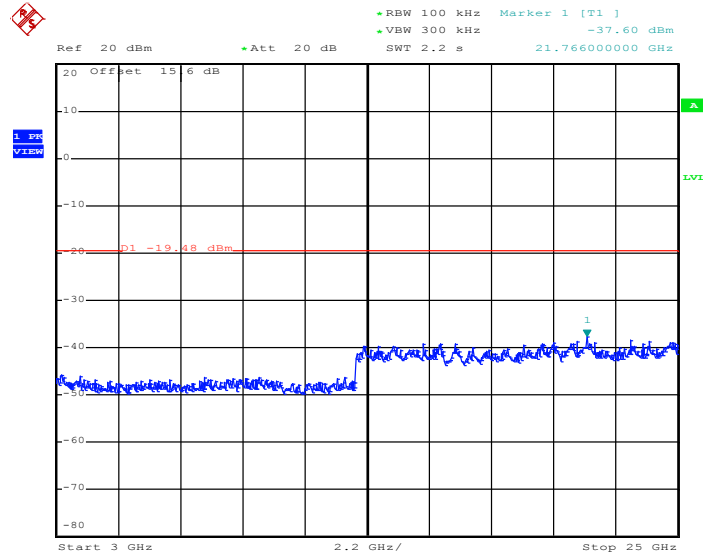
Test Mode :	Mode 5	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	06	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 14.MAR.2012 19:25:27

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

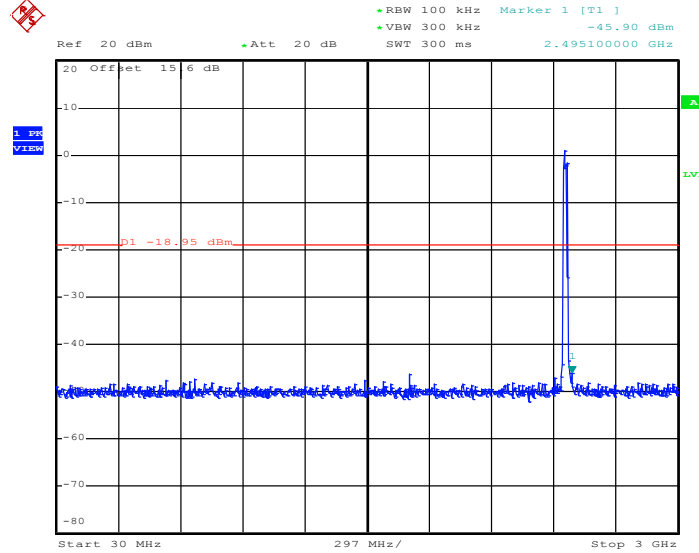


Date: 14.MAR.2012 19:25:44



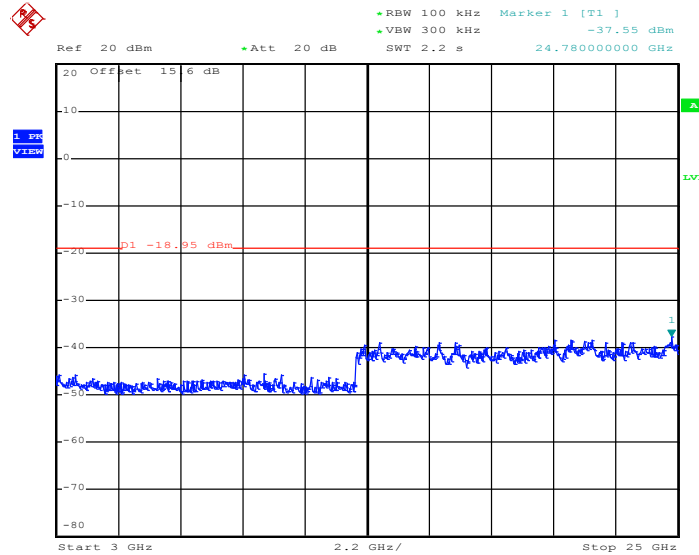
Test Mode :	Mode 6	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 14.MAR.2012 19:11:39

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 14.MAR.2012 19:11:56

3.5 Power Spectral Density Measurement

3.5.1 Limit of Power Spectral Density

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

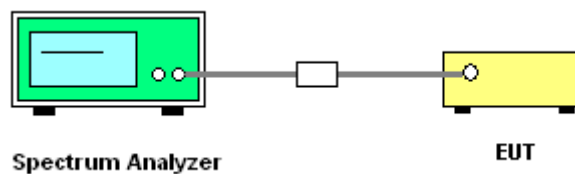
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

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

3.5.4 Test Setup



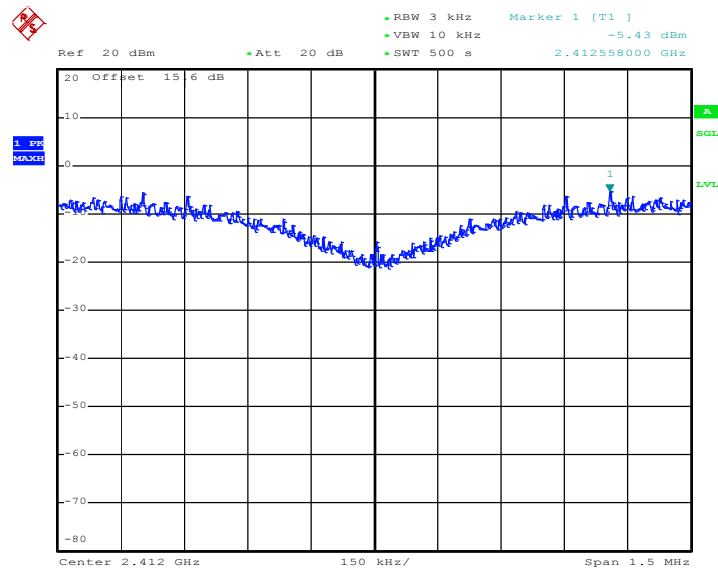


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	23~24°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-5.43	8	Pass
06	2437	-6.85	8	Pass
11	2462	-4.78	8	Pass

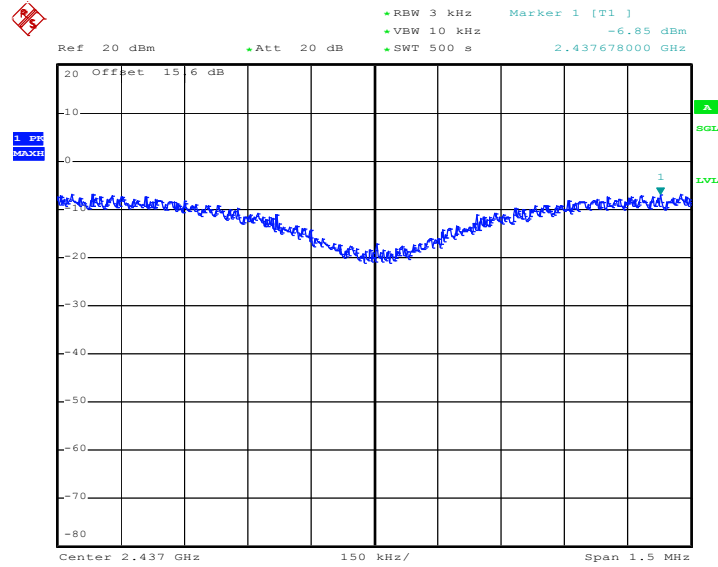
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 14.MAR.2012 18:19:22

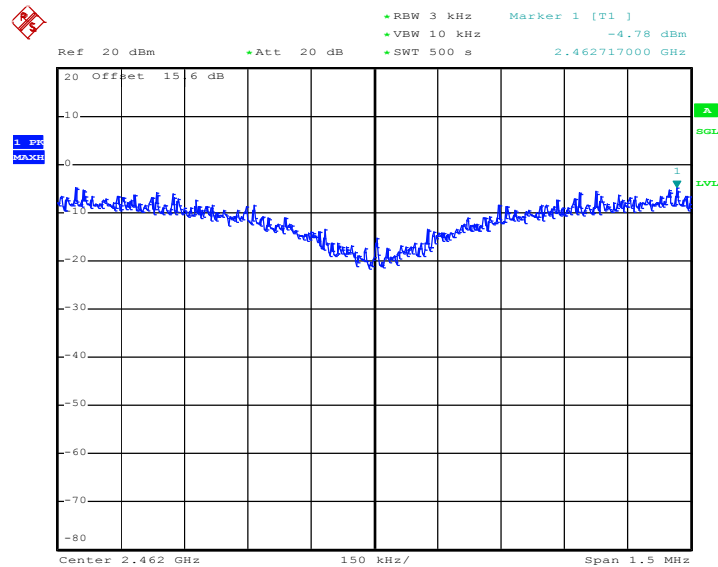


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 14.MAR.2012 18:36:14

Mode 3 : PSD Plot on 802.11b Channel 11



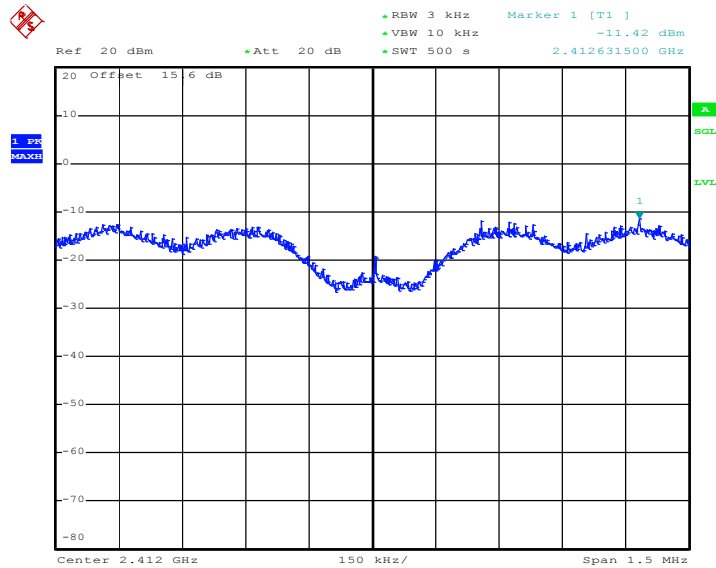
Date: 14.MAR.2012 19:02:47



Test Mode :	Mode 4, 5, 6	Temperature :	23~24°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-11.42	8	Pass
06	2437	-12.05	8	Pass
11	2462	-11.08	8	Pass

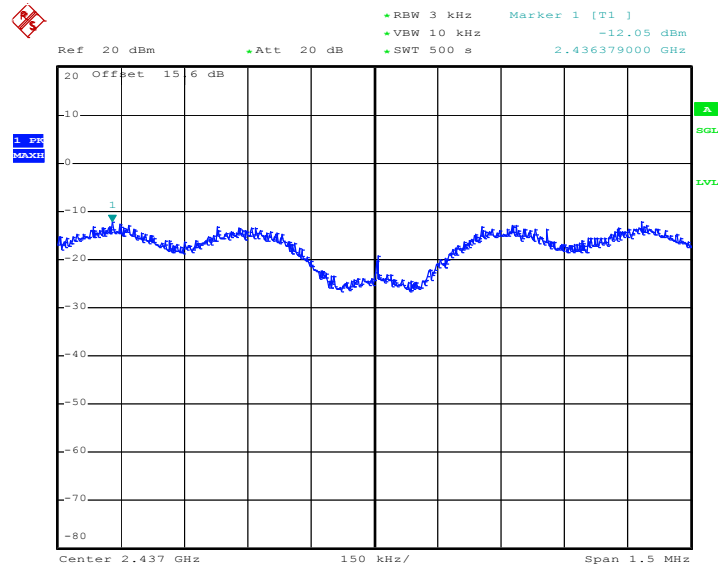
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 14.MAR.2012 19:51:28

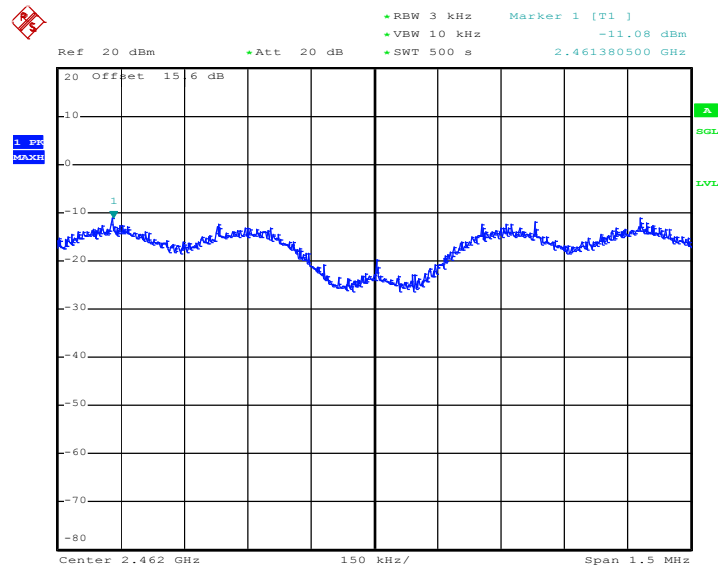


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 14.MAR.2012 19:35:36

Mode 6 : PSD Plot on 802.11g Channel 11



Date: 14.MAR.2012 19:21:59

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

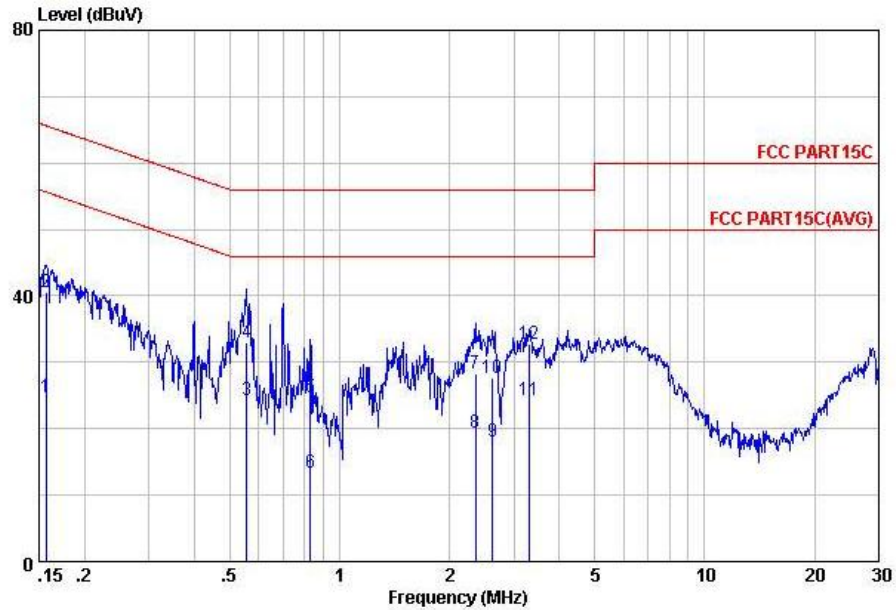
See list of measuring instruments of this test report.

3.6.3 Test Procedures

4. The testing follows the guidelines in ANSI C63.4-2003.
5. 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.
6. Connect EUT to the power mains through a line impedance stabilization network (LISN).
7. All the support units are connecting to the other LISN.
8. The LISN provides 50 ohm coupling impedance for the measuring instrument.
9. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
10. Both sides of AC line were checked for maximum conducted interference.
11. The frequency range from 150 KHz to 30 MHz was searched.
12. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	19~20°C
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Link + Adapter + Earphone + MP3 + Battery		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

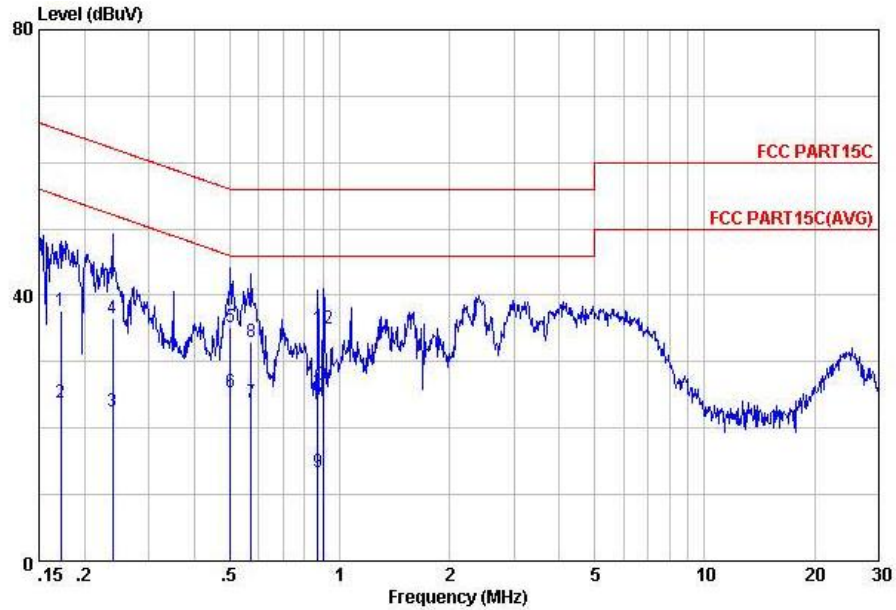


Site : C001-KS
 Condition: FCC PART15C LISN-100807 LINE
 mode : Mode 2

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.16	24.67	-30.98	55.65	14.60	-0.07	10.14	Average
2	0.16	40.57	-25.08	65.65	30.50	-0.07	10.14	QP
3	0.56	24.33	-21.67	46.00	14.19	-0.08	10.22	Average
4	0.56	32.93	-23.07	56.00	22.79	-0.08	10.22	QP
5	0.83	24.75	-31.25	56.00	14.59	-0.09	10.25	QP
6	0.83	13.35	-32.65	46.00	3.19	-0.09	10.25	Average
7	2.36	28.23	-27.77	56.00	17.99	-0.11	10.35	QP
8	2.36	19.33	-26.67	46.00	9.09	-0.11	10.35	Average
9	2.62	18.14	-27.86	46.00	7.89	-0.11	10.36	Average
10	2.62	27.64	-28.36	56.00	17.39	-0.11	10.36	QP
11	3.29	24.25	-21.75	46.00	13.99	-0.12	10.38	Average
12	3.29	32.85	-23.15	56.00	22.59	-0.12	10.38	QP



Test Mode :	Mode 1	Temperature :	19~20°C
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Link + Adapter + Earphone + MP3 + Battery		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



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

mode : Mode 2

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.17	37.76	-27.10	64.86	27.70	-0.08	10.14	QP
2	0.17	23.86	-31.00	54.86	13.80	-0.08	10.14	Average
3	0.24	22.59	-29.54	52.13	12.50	-0.07	10.16	Average
4	0.24	36.49	-25.64	62.13	26.40	-0.07	10.16	QP
5	0.50	35.23	-20.77	56.00	25.10	-0.08	10.21	QP
6	0.50	25.43	-20.57	46.00	15.30	-0.08	10.21	Average
7	0.57	23.74	-22.26	46.00	13.60	-0.08	10.22	Average
8	0.57	32.94	-23.06	56.00	22.80	-0.08	10.22	QP
9	0.87	13.36	-32.64	46.00	3.20	-0.09	10.25	Average
10	0.87	26.56	-29.44	56.00	16.40	-0.09	10.25	QP
11	0.90	25.67	-20.33	46.00	15.51	-0.09	10.25	Average
12	0.90	34.97	-21.03	56.00	24.81	-0.09	10.25	QP

3.7 Radiated Emission Measurement

3.7.1 Limit of Radiated Emission

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

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

3.7.2 Measuring Instruments

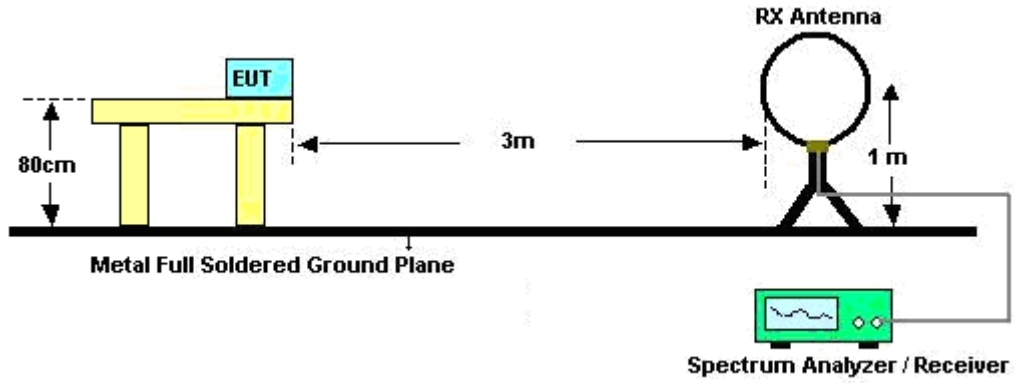
See list of measuring instruments of this test report.

3.7.3 Test Procedures

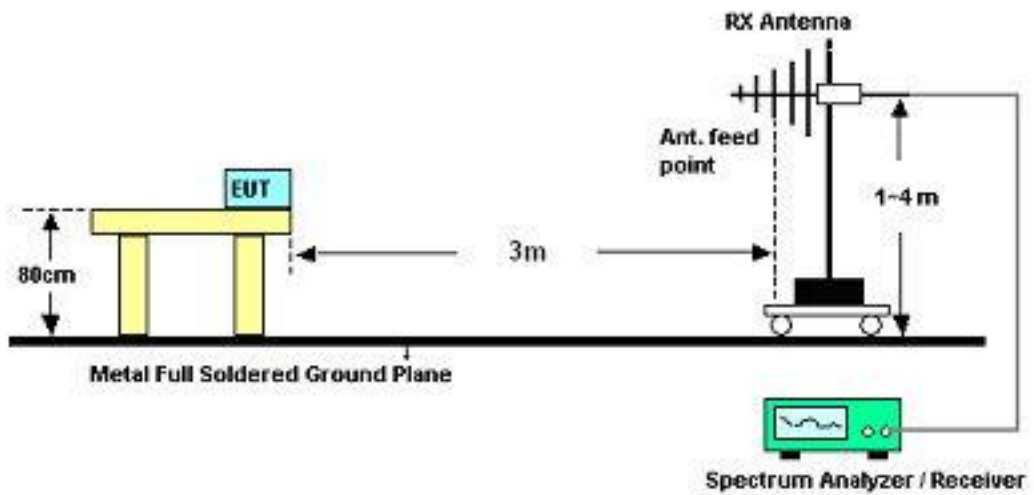
1. Use the following spectrum analyzer settings:
 - (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 KHz for $f < 1$ GHz; VBW \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold.
 - (2) Above 18 GHz shall be extrapolated to the specified 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)
2. 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

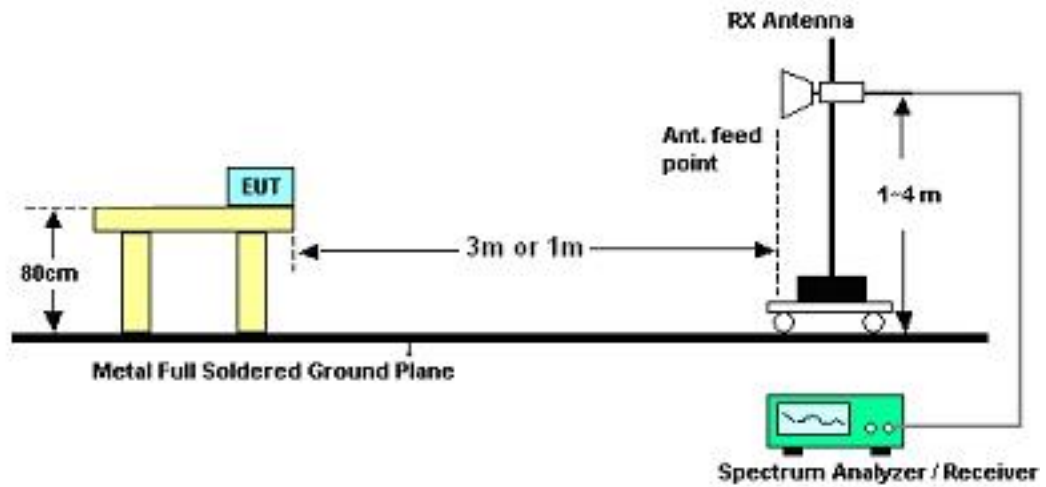
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

The low frequency, which started from 9 KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



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

Test Mode :	Mode 1	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	20.89	-19.11	40	32.71	18	0.26	30.08	-	-	Peak
75.63	21.33	-18.67	40	45.11	5.93	0.35	30.06	142	354	Peak
233.58	19.28	-26.72	46	37.32	11.17	0.65	29.86	-	-	Peak
781.6	21.54	-24.46	46	30.01	19.87	1.23	29.57	-	-	Peak
876.1	23.48	-22.52	46	31.27	20.48	1.29	29.56	-	-	Peak
944	31.13	-22.87	54	38.62	20.71	1.33	29.53	-	-	Peak
2361.3	47.58	-26.42	74	45.37	32.81	3.38	33.98	110	354	Peak
2361.3	35.27	-18.73	54	33.06	32.81	3.38	33.98	110	354	Average
2412	102.67	-	-	100.34	32.89	3.52	34.08	104	320	Peak
2412	100.07	-	-	97.74	32.89	3.52	34.08	104	320	Average
2489.93	48.04	-25.96	74	45.5	33.05	3.72	34.23	142	257	Peak
2489.93	34.73	-19.27	54	32.19	33.05	3.72	34.23	142	257	Average



Test Mode :	Mode 1	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.97	30.65	-9.35	40	44.46	16.04	0.24	30.09	112	13	Peak
52.68	27.23	-12.77	40	50.06	7.01	0.29	30.13	-	-	Peak
75.36	19.96	-20.04	40	43.74	5.93	0.35	30.06	-	-	Peak
825.7	23.81	-22.19	46	31.99	20.18	1.26	29.62	-	-	Peak
873.3	23.02	-22.98	46	30.83	20.48	1.29	29.58	-	-	Peak
951	29.63	-24.37	54	37.11	20.73	1.33	29.54	-	-	Peak
2389.42	48.39	-25.61	74	46.11	32.86	3.47	34.05	113	337	Peak
2389.42	35.57	-18.43	54	33.29	32.86	3.47	34.05	113	337	Average
2412	103.29	-	-	100.96	32.89	3.52	34.08	101	44	Peak
2412	98.44	-	-	96.11	32.89	3.52	34.08	101	44	Average
2498.86	47.09	-26.91	74	44.55	33.05	3.72	34.23	100	0	Peak
2498.86	34.22	-19.78	54	31.68	33.05	3.72	34.23	100	0	Average



Test Mode :	Mode 2	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	2437 MHz is fundamental signal which can be ignored		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	19.95	-20.05	40	31.77	18	0.26	30.08	-	-	Peak
75.09	21.37	-18.63	40	45.29	5.8	0.34	30.06	200	0	Peak
233.58	22.68	-23.32	46	40.72	11.17	0.65	29.86	-	-	Peak
851.6	22.31	-23.69	46	30.18	20.51	1.28	29.66	-	-	Peak
876.1	23.36	-22.64	46	31.15	20.48	1.29	29.56	-	-	Peak
944	29.9	-24.1	54	37.39	20.71	1.33	29.53	-	-	Peak
2368.14	47.73	-26.27	74	45.52	32.81	3.38	33.98	147	334	Peak
2368.14	35.22	-18.78	54	33.01	32.81	3.38	33.98	147	334	Average
2437	102.6	-	-	100.2	32.95	3.6	34.15	139	302	Peak
2437	100.66	-	-	98.26	32.95	3.6	34.15	139	302	Average
2487.46	47.64	-26.36	74	45.15	33.01	3.68	34.2	100	210	Peak
2487.46	35.08	-18.92	54	32.59	33.01	3.68	34.2	100	210	Average



Test Mode :	Mode 2	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.97	31	-9	40	44.81	16.04	0.24	30.09	197	247	Peak
52.68	27.34	-12.66	40	50.17	7.01	0.29	30.13	-	-	Peak
75.09	19.33	-20.67	40	43.25	5.8	0.34	30.06	-	-	Peak
838.3	22.11	-23.89	46	30.11	20.38	1.27	29.65	-	-	Peak
871.2	23.67	-22.33	46	31.48	20.49	1.29	29.59	-	-	Peak
944	29.9	-24.1	54	37.39	20.71	1.33	29.53	-	-	Peak
2339.45	47.81	-26.19	74	45.64	32.78	3.33	33.94	112	103	Peak
2339.45	34.42	-19.58	54	32.25	32.78	3.33	33.94	112	103	Average
2437	101.66	-	-	99.26	32.95	3.6	34.15	101	295	Peak
2437	96.78	-	-	94.38	32.95	3.6	34.15	101	295	Average
2487.08	47.11	-26.89	74	44.62	33.01	3.68	34.2	142	318	Peak
2487.08	33.88	-20.12	54	31.39	33.01	3.68	34.2	142	318	Average



Test Mode :	Mode 3	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.35	21.48	-18.52	40	34.02	17.29	0.25	30.08	159	247	Peak
75.63	16.74	-23.26	40	40.52	5.93	0.35	30.06	-	-	Peak
293.52	16.72	-29.28	46	33.03	12.92	0.72	29.95	-	-	Peak
822.9	22.14	-23.86	46	30.38	20.12	1.26	29.62	-	-	Peak
876.1	23.23	-22.77	46	31.02	20.48	1.29	29.56	-	-	Peak
944	29.37	-24.63	54	36.86	20.71	1.33	29.53	-	-	Peak
2313.8	47.51	-26.49	74	45.42	32.73	3.22	33.86	110	325	Peak
2313.8	35.37	-18.63	54	33.28	32.73	3.22	33.86	110	325	Average
2462	103.64	-	-	101.19	32.98	3.64	34.17	105	319	Peak
2462	100.32	-	-	97.87	32.98	3.64	34.17	105	319	Average
2486.51	49.74	-24.26	74	47.25	33.01	3.68	34.2	142	223	Peak
2486.51	37.51	-16.49	54	35.02	33.01	3.68	34.2	142	223	Average



Test Mode :	Mode 3	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
33.24	31.08	-8.92	40	44.89	16.04	0.24	30.09	120	0	Peak
52.68	27.17	-12.83	40	50	7.01	0.29	30.13	-	-	Peak
75.63	20.54	-19.46	40	44.32	5.93	0.35	30.06	-	-	Peak
724.9	21.97	-24.03	46	30.86	19.6	1.15	29.64	-	-	Peak
872.6	22.96	-23.04	46	30.77	20.48	1.29	29.58	-	-	Peak
944	29.95	-24.05	54	37.44	20.71	1.33	29.53	-	-	Peak
2364.72	47.33	-26.67	74	45.12	32.81	3.38	33.98	134	51	Peak
2364.72	35.24	-18.76	54	33.03	32.81	3.38	33.98	134	51	Average
2462	102.46	-	-	100.01	32.98	3.64	34.17	129	63	Peak
2462	98.97	-	-	96.52	32.98	3.64	34.17	129	63	Average
2483.5	48.29	-25.71	74	45.8	33.01	3.68	34.2	120	0	Peak
2483.5	35.63	-18.37	54	33.14	33.01	3.68	34.2	120	0	Average



Test Mode :	Mode 4	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
53.76	25.54	-14.46	40	48.58	6.8	0.29	30.13	-	-	Peak
75.36	21.17	-18.83	40	44.95	5.93	0.35	30.06	-	-	Peak
290.28	18.88	-27.12	46	35.27	12.85	0.71	29.95	-	-	Peak
892.2	23.15	-22.85	46	30.89	20.46	1.3	29.5	-	-	Peak
944	29.71	-24.29	54	37.2	20.71	1.33	29.53	-	-	Peak
990.2	24.48	-29.52	54	31.54	21.05	1.41	29.52	-	-	Peak
2389.04	63.62	-10.38	74	61.34	32.86	3.47	34.05	200	316	Peak
2389.04	41.48	-12.52	54	39.2	32.86	3.47	34.05	200	316	Average
2412	102.92	-	-	100.59	32.89	3.52	34.08	199	320	Peak
2412	87.66	-	-	85.33	32.89	3.52	34.08	199	320	Average
2492.4	47.39	-26.61	74	44.85	33.05	3.72	34.23	115	334	Peak
2492.4	34.62	-19.38	54	32.08	33.05	3.72	34.23	115	334	Average



Test Mode :	Mode 4	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.97	28.14	-11.86	40	41.95	16.04	0.24	30.09	-	-	Peak
42.96	23.98	-16.02	40	43.33	10.48	0.26	30.09	-	-	Peak
93.18	20.8	-22.7	43.5	40.87	9.51	0.4	29.98	-	-	Peak
736.8	21.03	-24.97	46	29.66	19.78	1.17	29.58	-	-	Peak
878.9	22.51	-23.49	46	30.3	20.47	1.29	29.55	-	-	Peak
936.3	30.57	-15.43	46	38.11	20.67	1.32	29.53	-	-	Peak
2389.61	63.59	-10.41	74	61.31	32.86	3.47	34.05	102	50	Peak
2389.61	42.15	-11.85	54	39.87	32.86	3.47	34.05	102	50	Average
2412	101.04	-	-	98.71	32.89	3.52	34.08	100	42	Peak
2412	87.3	-	-	84.97	32.89	3.52	34.08	100	42	Average
2484.23	47.19	-26.81	74	44.7	33.01	3.68	34.2	116	259	Peak
2484.23	34.17	-19.83	54	31.68	33.01	3.68	34.2	116	259	Average



Test Mode :	Mode 5	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	20.82	-19.18	40	32.64	18	0.26	30.08	-	-	Peak
75.09	20.99	-19.01	40	44.91	5.8	0.34	30.06	169	284	Peak
291.63	16.14	-29.86	46	32.49	12.89	0.71	29.95	-	-	Peak
742.4	21.31	-24.69	46	29.87	19.83	1.17	29.56	-	-	Peak
876.1	23.98	-22.02	46	31.77	20.48	1.29	29.56	-	-	Peak
944	30.51	-23.49	54	38	20.71	1.33	29.53	-	-	Peak
2351.8	47.56	-26.44	74	45.35	32.81	3.38	33.98	159	257	Peak
2351.8	34.7	-19.3	54	32.49	32.81	3.38	33.98	159	257	Average
2437	102.02	-	-	99.62	32.95	3.6	34.15	130	301	Peak
2437	88.62	-	-	86.22	32.95	3.6	34.15	130	301	Average
2491.26	48.13	-25.87	74	45.59	33.05	3.72	34.23	148	344	Peak
2491.26	34.91	-19.09	54	32.37	33.05	3.72	34.23	148	344	Average



Test Mode :	Mode 5	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	2437 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.97	30.83	-9.17	40	44.64	16.04	0.24	30.09	-	-	Peak
38.64	35.45	-4.55	40	52.26	12.98	0.25	30.04	200	354	Peak
52.68	27.3	-12.7	40	50.13	7.01	0.29	30.13	-	-	Peak
752.2	22.49	-23.51	46	30.95	19.9	1.18	29.54	-	-	Peak
876.1	24.54	-21.46	46	32.33	20.48	1.29	29.56	-	-	Peak
951	29.85	-24.15	54	37.33	20.73	1.33	29.54	-	-	Peak
2347.62	47.62	-26.38	74	45.45	32.78	3.33	33.94	152	349	Peak
2347.62	35.45	-18.55	54	33.28	32.78	3.33	33.94	152	349	Average
2437	100.34	-	-	97.94	32.95	3.6	34.15	101	81	Peak
2437	85.91	-	-	83.51	32.95	3.6	34.15	101	81	Average
2492.97	47.62	-26.38	74	45.08	33.05	3.72	34.23	200	0	Peak
2492.97	35.7	-18.3	54	33.16	33.05	3.72	34.23	200	0	Average



Test Mode :	Mode 6	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
52.14	23.15	-16.85	40	45.98	7.01	0.29	30.13	-	-	Peak
88.05	25.48	-18.02	43.5	46.8	8.3	0.38	30	-	-	Peak
93.45	27.12	-16.38	43.5	47.19	9.51	0.4	29.98	102	0	Peak
858.6	22.28	-23.72	46	30.14	20.5	1.28	29.64	-	-	Peak
876.1	24.58	-21.42	46	32.37	20.48	1.29	29.56	-	-	Peak
944	32.21	-21.79	54	39.7	20.71	1.33	29.53	-	-	Peak
2362.44	48.07	-25.93	74	45.86	32.81	3.38	33.98	106	328	Peak
2362.44	34.75	-19.25	54	32.54	32.81	3.38	33.98	106	328	Average
2462	102.07	-	-	99.62	32.98	3.64	34.17	104	319	Peak
2462	88.45	-	-	86	32.98	3.64	34.17	104	319	Average
2483.85	56.17	-17.83	74	53.68	33.01	3.68	34.2	102	297	Peak
2483.85	40.3	-13.7	54	37.81	33.01	3.68	34.2	102	297	Average



Test Mode :	Mode 6	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.43	30.62	-9.38	40	44.43	16.04	0.24	30.09	145	273	Peak
52.14	27.09	-12.91	40	49.92	7.01	0.29	30.13	-	-	Peak
75.36	19.83	-20.17	40	43.61	5.93	0.35	30.06	-	-	Peak
846.7	23.06	-22.94	46	30.96	20.48	1.28	29.66	-	-	Peak
884.5	23.07	-22.93	46	30.84	20.47	1.29	29.53	-	-	Peak
951	29.81	-24.19	54	37.29	20.73	1.33	29.54	-	-	Peak
2390	47.51	-26.49	74	45.23	32.86	3.47	34.05	115	248	Peak
2390	34.42	-19.58	54	32.14	32.86	3.47	34.05	115	248	Average
2462	99.7	-	-	97.25	32.98	3.64	34.17	101	318	Peak
2462	84.99	-	-	82.54	32.98	3.64	34.17	101	318	Average
2484.23	54.04	-19.96	74	51.55	33.01	3.68	34.2	124	239	Peak
2484.23	39.98	-14.02	54	37.49	33.01	3.68	34.2	124	239	Average



3.8 Antenna Requirements

3.8.1 Standard Applicable

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

3.8.2 Antenna Connected Construction

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

3.8.3 Antenna Gain

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



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Mar. 09, 2012 ~ Mar. 14, 2012	Dec. 29, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 23, 2011	Mar. 09, 2012 ~ Mar. 14, 2012	Aug. 22, 2012	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 23, 2011	Mar. 09, 2012 ~ Mar. 14, 2012	Aug. 22, 2012	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESC17	100768	9kHz~7GHz	Jun. 02, 2011	Mar. 12, 2012	Jun. 01, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	060103	9kHz~30MHz	Dec. 30, 2011	Mar. 12, 2012	Dec. 29, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	060105	9kHz~30MHz	Dec. 30, 2011	Mar. 12, 2012	Dec. 29, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP0000008 11	N/A	Nov. 16, 2011	Mar. 12, 2012	Nov. 15, 2012	Conduction (CO01-KS)
System Simulator	R&S	CMU200	116456	Full-Band	Sep. 20, 2011	Mar. 12, 2012	Sep. 19, 2012	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 09, 2011	Mar. 22, 2012	Nov. 08, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Mar. 22, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	101400	9kHz~30GHz	Jun. 02, 2011	Mar. 22, 2012	Jun. 01, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Mar. 22, 2012	Dec. 07, 2012	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 06, 2012	Mar. 22, 2012	Jan. 05, 2013	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060029	9KHz~2GHz	Jan. 06, 2012	Mar. 22, 2012	Jan. 05, 2013	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 30, 2011	Mar. 22, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 30, 2011	Mar. 22, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1G-18GHz	Nov. 07, 2011	Mar. 22, 2012	Nov. 06, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15-40GHz	Oct. 11, 2011	Mar. 22, 2012	Oct. 10, 2012	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Mar. 22, 2012	Jul. 28, 2012	Radiation (03CH01-KS)

5 Uncertainty of Evaluation

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

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.10	Normal (k=2)	0.05
Cable Loss	0.10	Normal (k=2)	0.05
AMN Insertion Loss	2.50	Rectangular	0.63
Receiver Specification	1.50	Rectangular	0.43
Site Imperfection	1.39	Rectangular	0.80
Mismatch	+0.34 / -0.35	U-Shape	0.24
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				