

FCC RF Test Report

APPLICANT : Motorola Mobility, Inc.
EQUIPMENT : GSM / EGPRS Mobile Phone
BRAND NAME : MOTOROLA
MODEL NAME / MARKETING NAME : EX116
TYPE NAME : M0CE9
GPPD Number : 3305
FCC ID : IHDT56MD2
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Dec. 01, 2011 and completely tested on Dec. 27, 2011. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

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

Reviewed by:



Jones Tsai / Manager



SPORTON INTERNATIONAL 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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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR1D0145B	Rev. 01	Initial issue of report	Dec. 27, 2011

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 18.85 dB at 2.760 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 4.15 dB at 2483.500 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 / Marketing Name	EX116
Type Name	M0CE9
FCC ID	IHDT56MD2
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Channel Spacing	5 MHz
Maximum Output Power to Antenna	802.11b : 17.87 dBm (0.0612 W) 802.11g : 21.55 dBm (0.1429 W)
Antenna Type	IFA Antenna with gain 1.33 dBi
HW Version	P2
SW Version	ERIN_G_07.0B.00RD_D
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. 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.
	TH02-HY	03CH07-HY	722060/4086B-1

Test Site	SPORTON INTERNATIONAL (KUNSHAN) 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. :		
	TH01-KS	03CH01-KS	CO01-KS

1.5 Applied Standards

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

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

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, 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.	Bluetooth Base Station	R&S	CBT32	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
4.	Notebook	Acer	Trave Imate 2413Lei	QDS-BRCM1016	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	DC Power Supply	GW	GPS-30300	N/A	N/A	Unshielded, 1.8 m
6.	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:

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	17.63	17.75	17.65	17.77
CH 06	2437 MHz	17.16	17.24	17.18	17.26
CH 11	2462 MHz	17.74	17.85	17.76	17.87
Duty cycle		100.00	100.00	100.00	100.00

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	21.27	21.17	21.19	21.25	21.14	21.18	21.09	21.08
CH 06	2437 MHz	21.38	21.33	21.36	21.34	21.34	21.33	21.32	21.31
CH 11	2462 MHz	21.55	21.48	21.53	21.51	21.48	21.47	21.45	21.42
Duty cycle		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

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

2.2 Test Mode

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

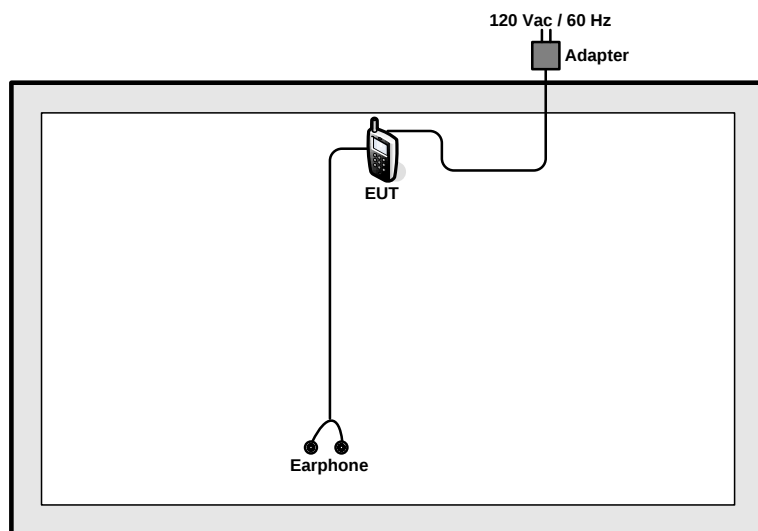
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations, laptop / tablet modes.

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

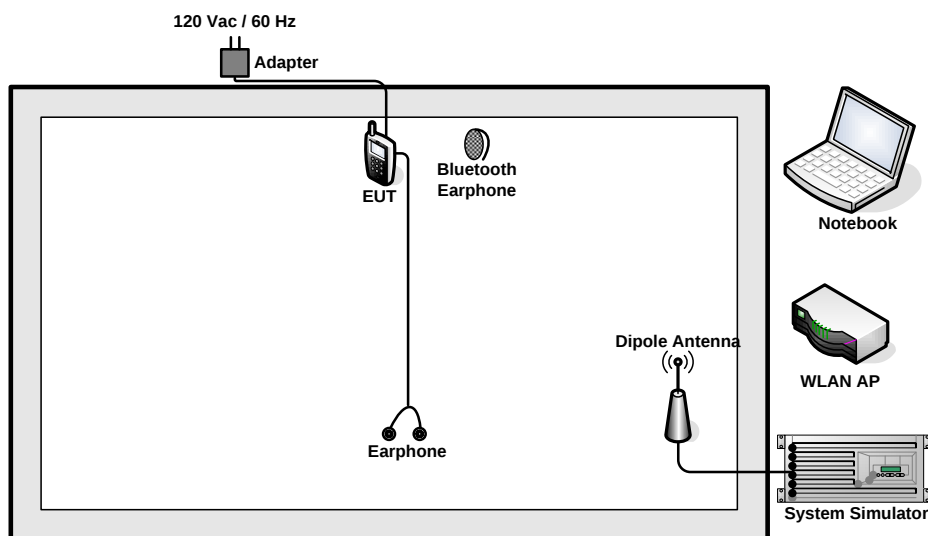
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz
Radiated TCs	Mode 1 : 802.11b 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 + 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 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.

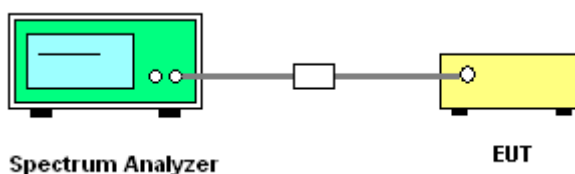
3.1.2 Measuring Instruments

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

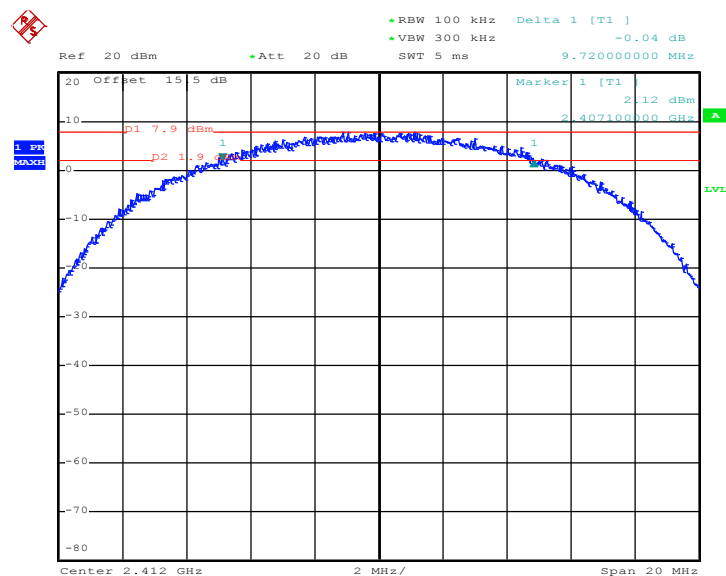


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~25℃
Test Engineer :	Zhi Lu	Relative Humidity :	45~46%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	9.72	0.5	Pass
06	2437	10.20	0.5	Pass
11	2462	10.84	0.5	Pass

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



Date: 3.DEC.2011 00:16:34



Ref 20 dBm • Att 20 dB SWT 5 ms Delta 1 [T1] 0.32 dB 10.20000000 MHz

Marker 1 [T1] 1.84 dBm 2.431920000 GHz

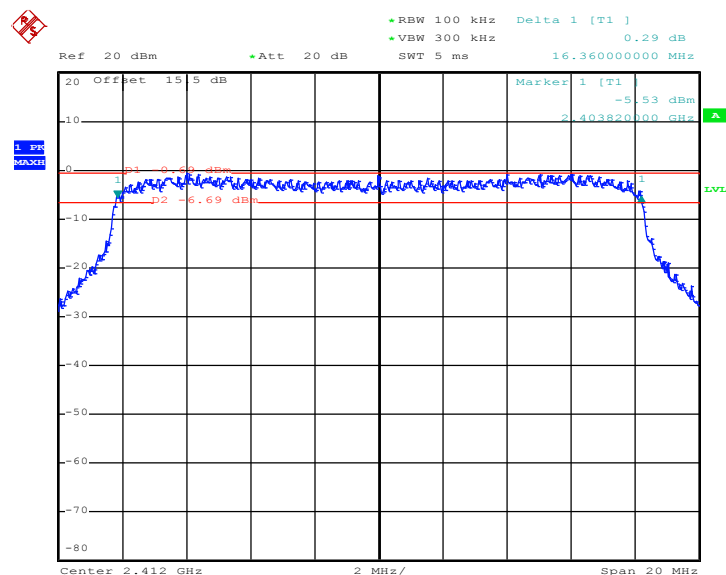
Center 2.437 GHz 2 MHz/ Span 20 MHz

Date: 3.DEC.2011 00:33:44

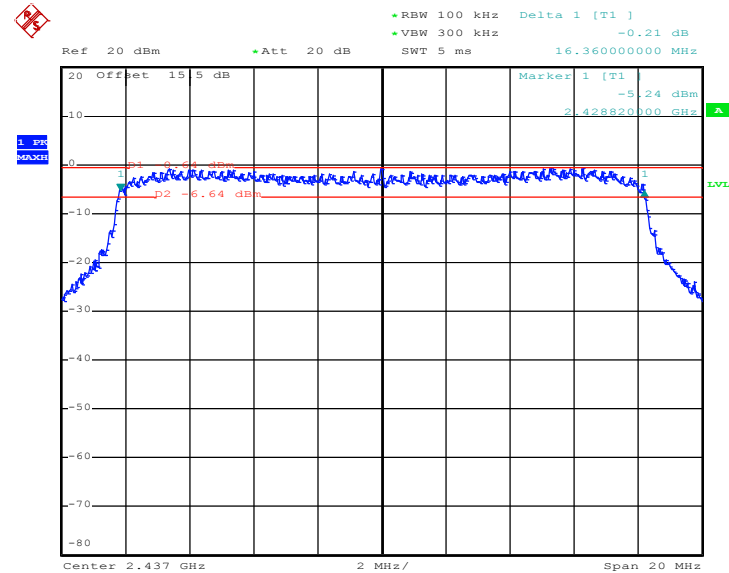
Date: 3.DEC.2011 00:51:16

Test Mode :	Mode 4, 5, 6	Temperature :	24~25°C
Test Engineer :	Zhi Lu	Relative Humidity :	45~46%

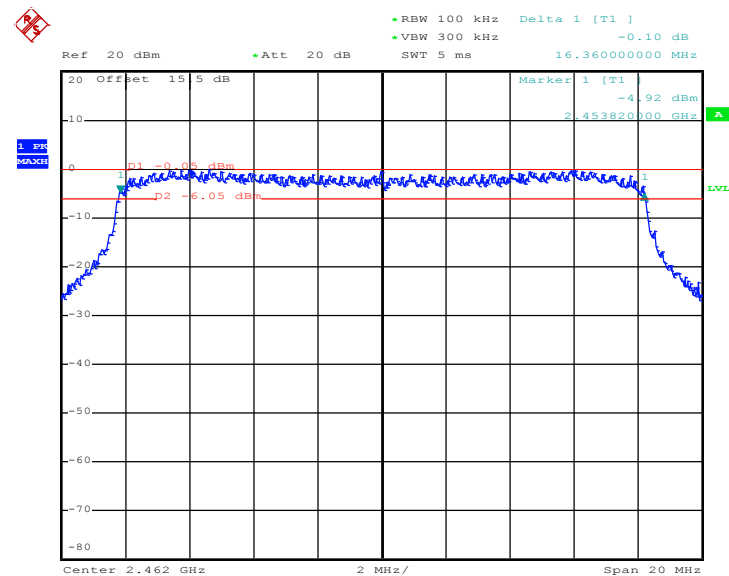
Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.36	0.5	Pass
06	2437	16.36	0.5	Pass
11	2462	13.36	0.5	Pass

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


Date: 3.DEC.2011 01:05:38

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


Date: 3.DEC.2011 01:20:20

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


Date: 3.DEC.2011 01:37:24

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.

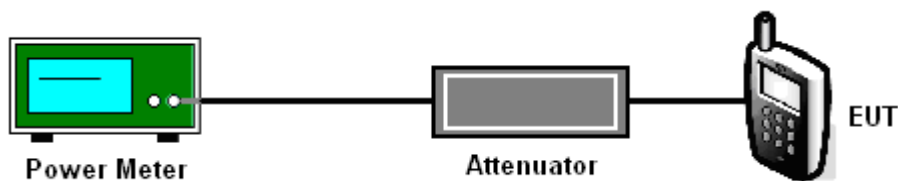
3.2.2 Measuring Instruments

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 :	24~25℃
Test Engineer :	Zhi Lu	Relative Humidity :	45~46%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	17.77	30	Pass
06	2437	17.26	30	Pass
11	2462	17.87	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~25℃
Test Engineer :	Zhi Lu	Relative Humidity :	45~46%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.27	30	Pass
06	2437	21.38	30	Pass
11	2462	21.55	30	Pass

3.3 Band Edges Measurement

3.3.1 Limit of Band Edges

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

3.3.2 Measuring Instruments

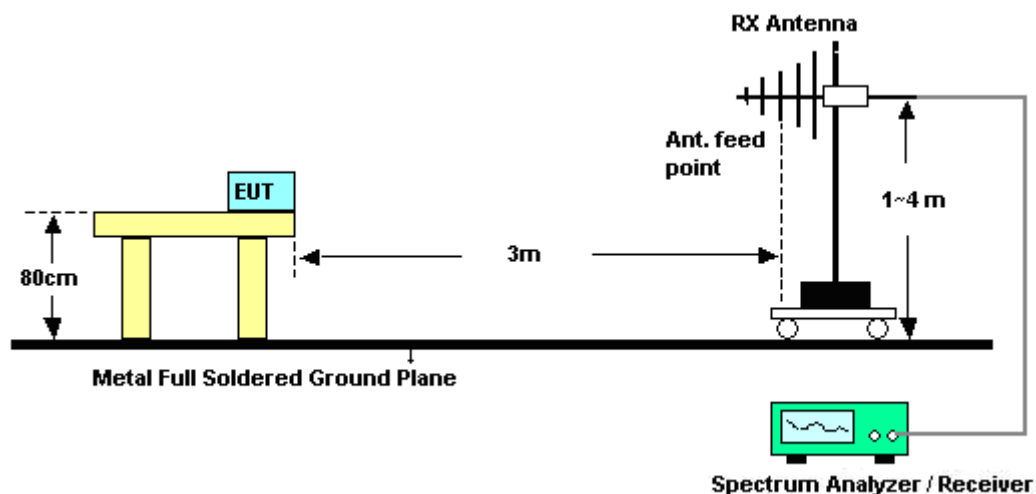
See list of measuring instruments of this test report.

3.3.3 Test Procedures

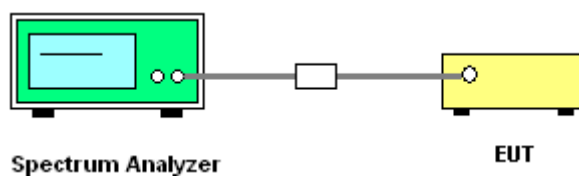
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 KHz, Video bandwidth (VBW) $\geq$ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized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

3.3.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>



3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	21~22℃
Test Band :	802.11b	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Could Peng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	55.36	-18.64	74	53.08	32.86	3.47	34.05	100	8	Peak
2390	45.18	-8.82	54	42.9	32.86	3.47	34.05	100	8	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.85	51.62	-22.38	74	49.34	32.86	3.47	34.05	147	0	Peak
2388.85	41.29	-12.71	54	39.01	32.86	3.47	34.05	147	0	Average

Test Mode :	Mode 3	Temperature :	21~22℃
Test Band :	802.11b	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Could Peng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	53.82	-20.18	74	51.33	33.01	3.68	34.2	104	34	Peak
2483.5	44.49	-9.51	54	42	33.01	3.68	34.2	104	34	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	53.41	-20.59	74	50.92	33.01	3.68	34.2	194	15	Peak
2483.5	43.49	-10.51	54	41	33.01	3.68	34.2	194	15	Average

Test Mode :	Mode 4	Temperature :	21~22°C
Test Band :	802.11g	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Could Peng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	66.68	-7.32	74	64.4	32.86	3.47	34.05	105	36	Peak
2390	46.97	-7.03	54	44.69	32.86	3.47	34.05	105	36	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	62.62	-11.38	74	60.34	32.86	3.47	34.05	140	54	Peak
2390	45.78	-8.22	54	43.5	32.86	3.47	34.05	140	54	Average

Test Mode :	Mode 6	Temperature :	21~22°C
Test Band :	802.11g	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Could Peng

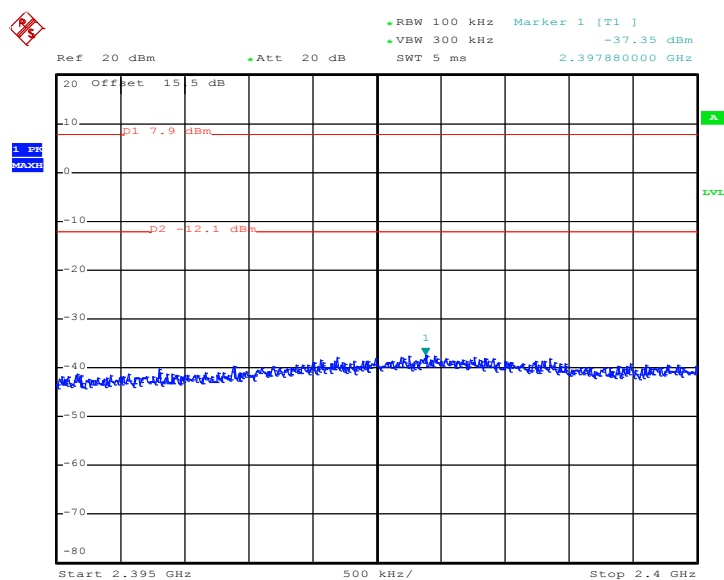
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	67.7	-6.3	74	65.21	33.01	3.68	34.2	132	360	Peak
2483.5	49.08	-4.92	54	46.59	33.01	3.68	34.2	132	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
2483.5	67.5	-6.5	74	65.01	33.01	3.68	34.2	200	360	Peak
2483.5	47.49	-6.51	54	45	33.01	3.68	34.2	200	360	Average

3.3.6 Test Plots of Conducted Band Edges

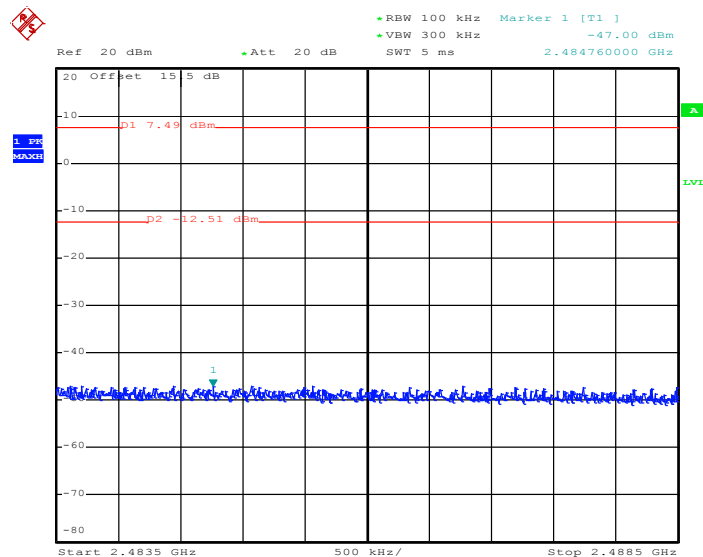
Test Mode :	Mode 1 and 3	Temperature :	24~25℃
Test Band :	802.11b	Relative Humidity :	45~46%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11b Channel 01



Date: 3.DEC.2011 00:19:46

High Band Edge Plot on 802.11b Channel 11

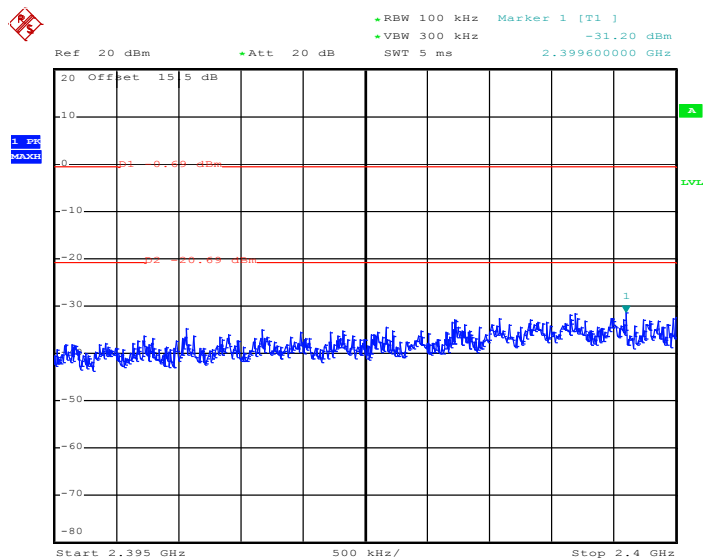


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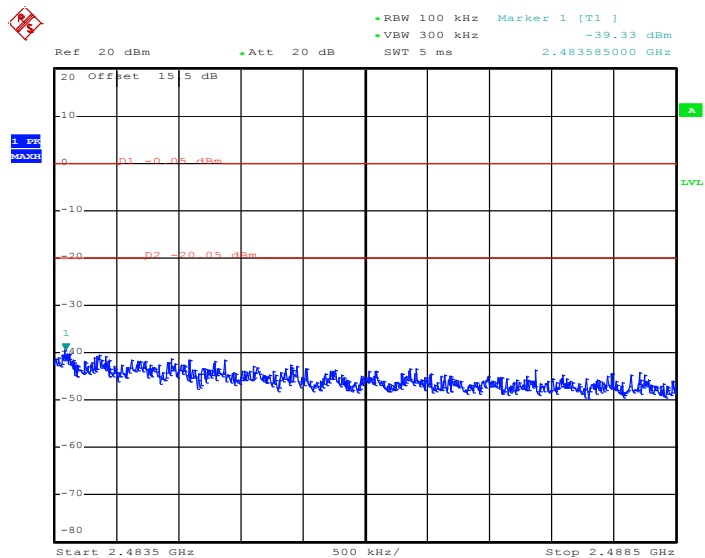
Test Mode :	Mode 4 and 6	Temperature :	24~25℃
Test Band :	802.11g	Relative Humidity :	45~46%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11g Channel 01



Date: 3.DEC.2011 01:06:51

High Band Edge Plot on 802.11g Channel 11



Date: 3.DEC.2011 01:38:11

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.

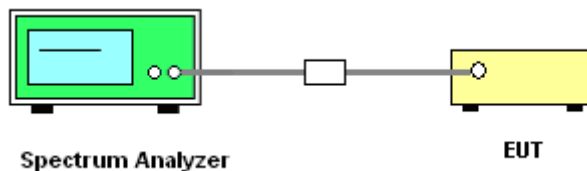
3.4.2 Measuring Instruments

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.

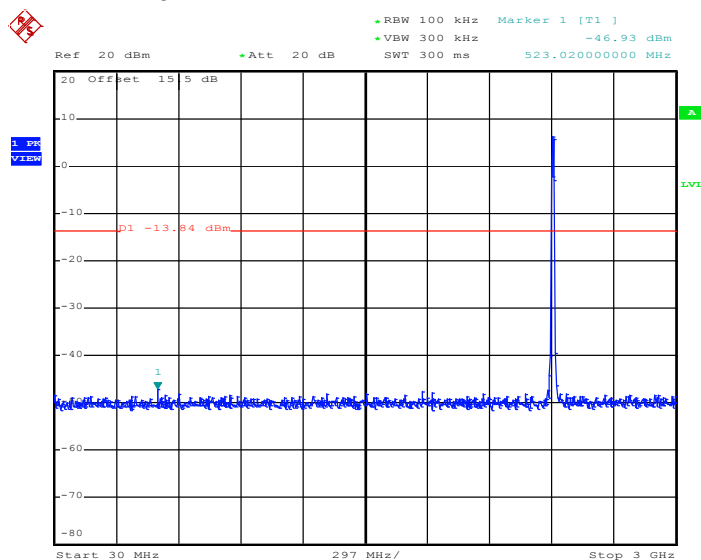
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

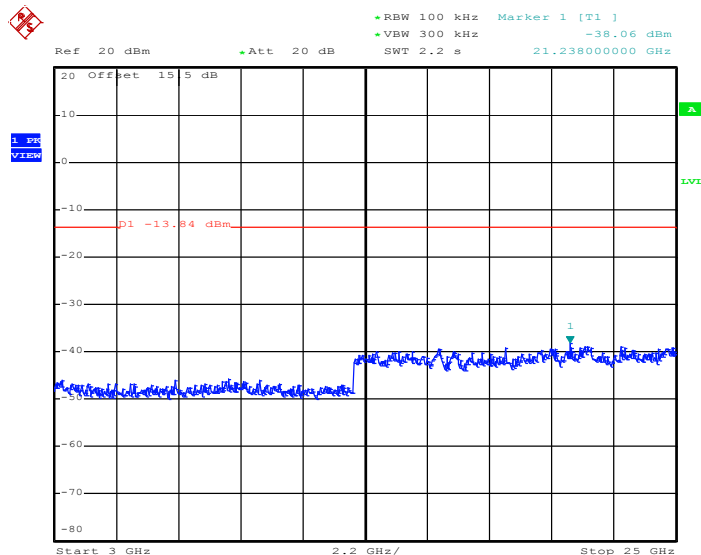
Test Mode :	Mode 1	Temperature :	24~25°C
Test Band :	802.11b	Relative Humidity :	45~46%
Test Channel :	01	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 3.DEC.2011 00:21:26

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

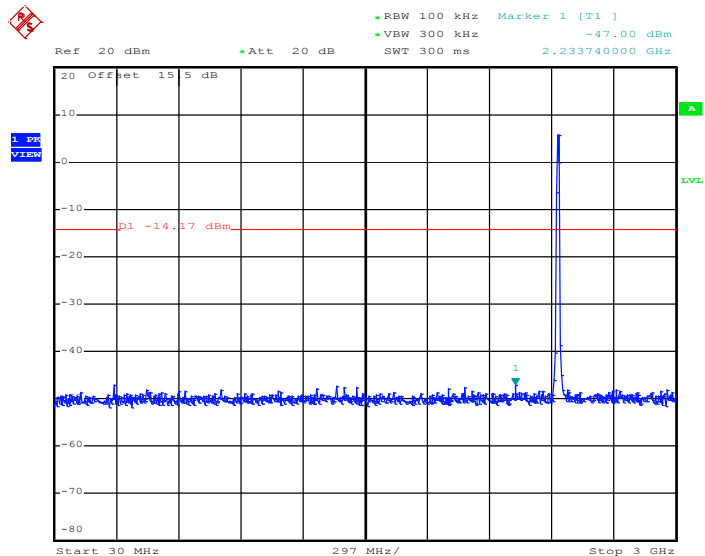


Date: 3.DEC.2011 00:21:43



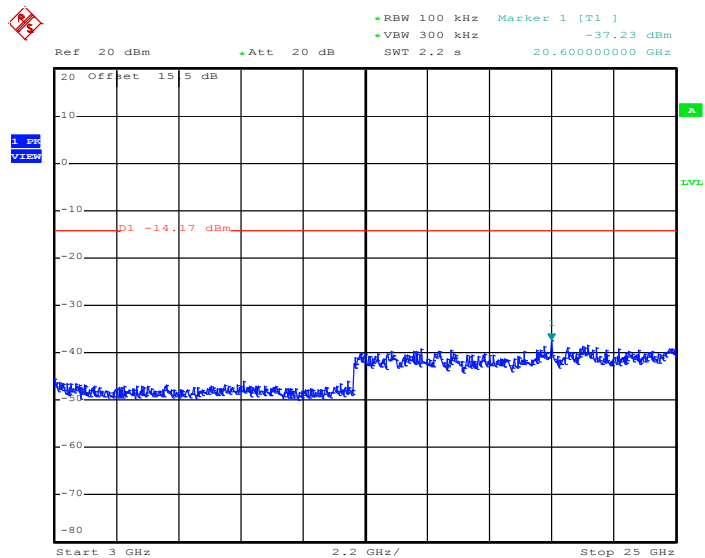
Test Mode :	Mode 2	Temperature :	24~25°C
Test Band :	802.11b	Relative Humidity :	45~46%
Test Channel :	06	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 3.DEC.2011 00:35:42

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

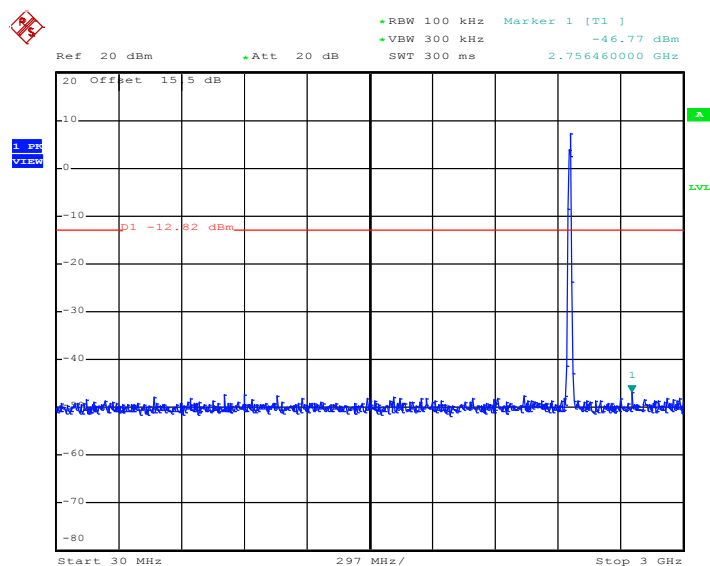


Date: 3.DEC.2011 00:35:59



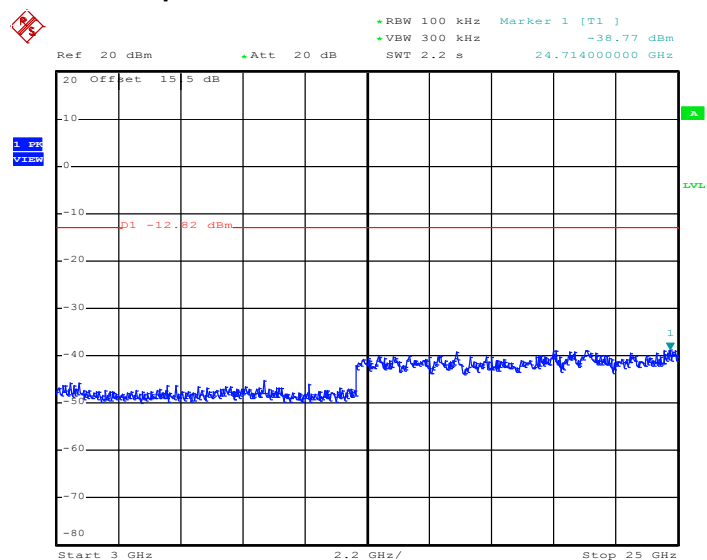
Test Mode :	Mode 3	Temperature :	24~25℃
Test Band :	802.11b	Relative Humidity :	45~46%
Test Channel :	11	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



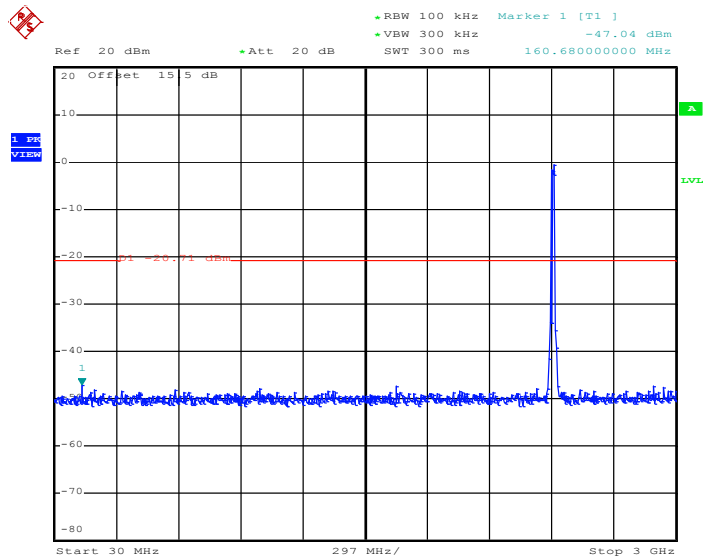
Date: 3.DEC.2011 00:53:16

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

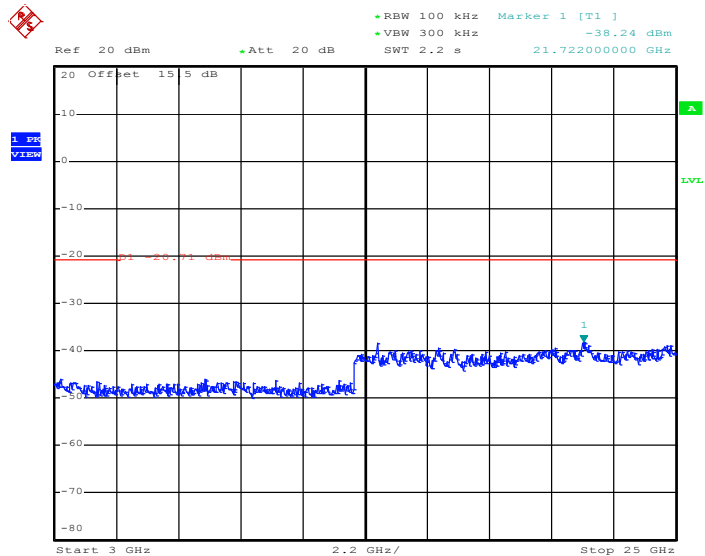


Date: 3.DEC.2011 00:53:34

Test Mode :	Mode 4	Temperature :	24~25°C
Test Band :	802.11g	Relative Humidity :	45~46%
Test Channel :	01	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 3.DEC.2011 01:08:34

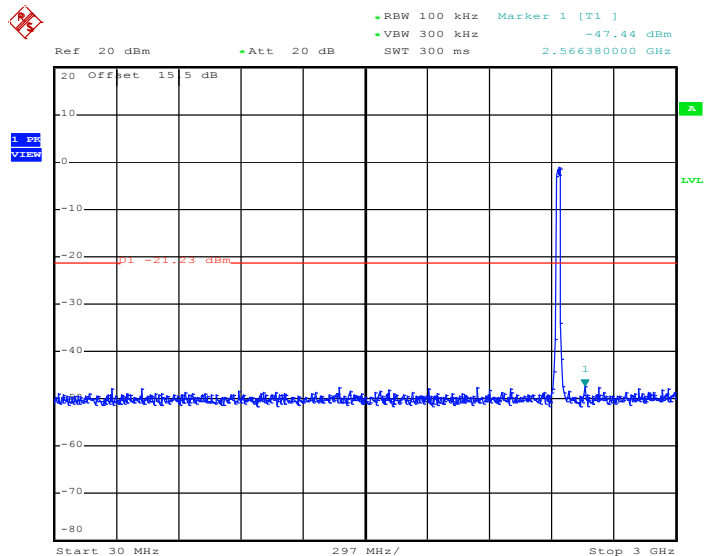
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


Date: 3.DEC.2011 01:08:51



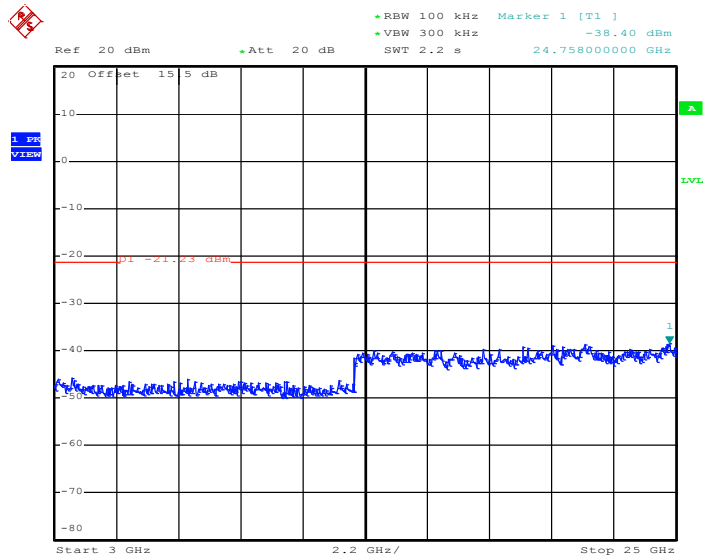
Test Mode :	Mode 5	Temperature :	24~25
Test Band :	802.11g	Relative Humidity :	45~46
Test Channel :	06	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 3.DEC.2011 01:23:12

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

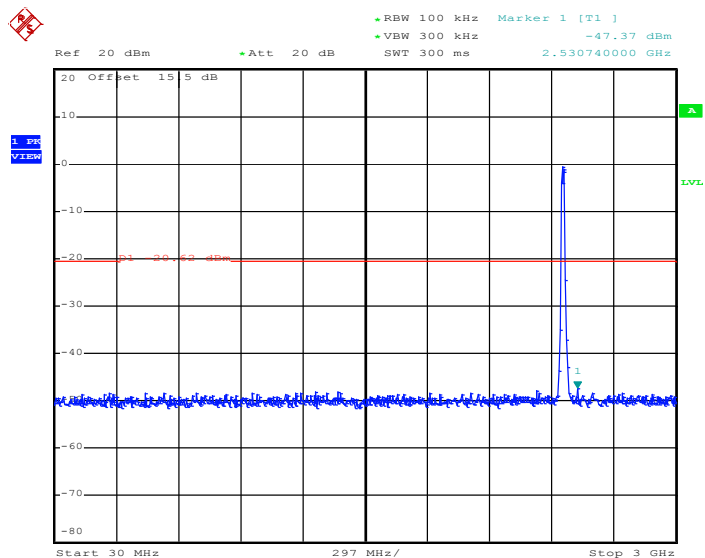


Date: 3.DEC.2011 01:23:29



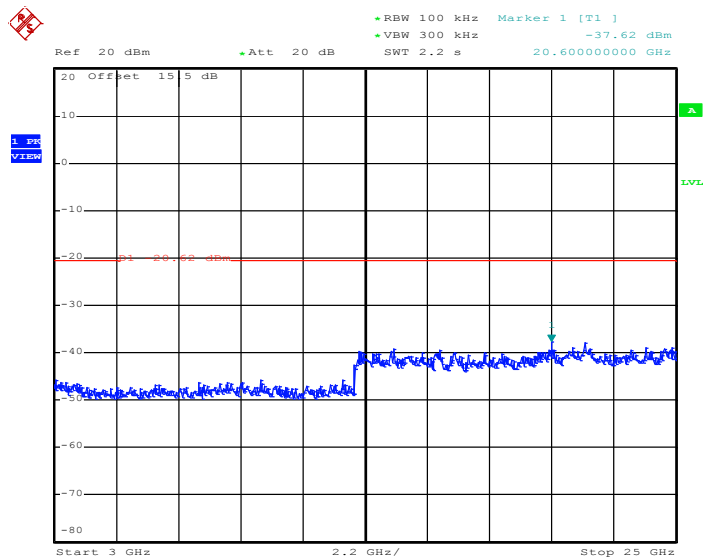
Test Mode :	Mode 6	Temperature :	24~25℃
Test Band :	802.11g	Relative Humidity :	45~46%
Test Channel :	11	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 3.DEC.2011 01:39:01

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 3.DEC.2011 01:39:18

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.

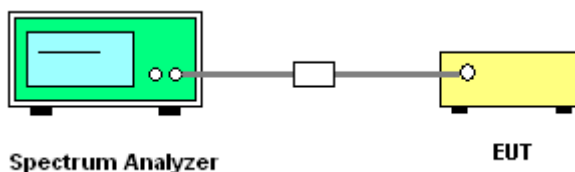
3.5.2 Measuring Instruments

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

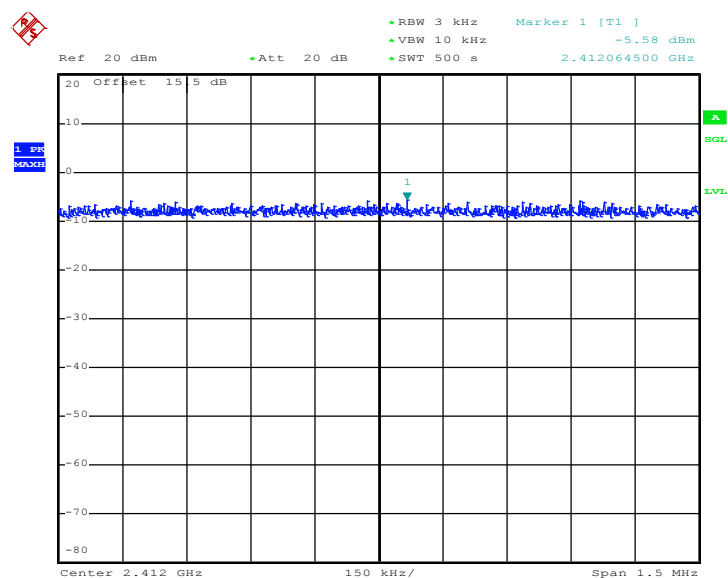


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	24~25℃
Test Engineer :	Zhi Lu	Relative Humidity :	45~46%

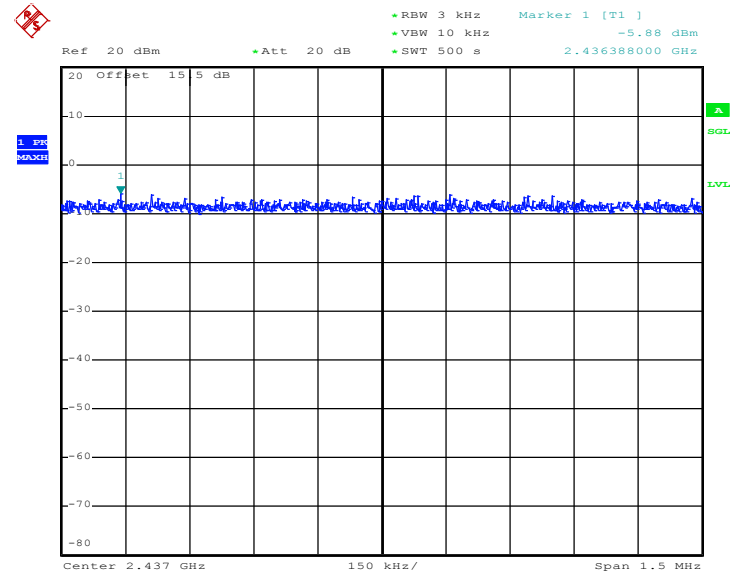
Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-5.58	8	Pass
06	2437	-5.88	8	Pass
11	2462	-5.80	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01



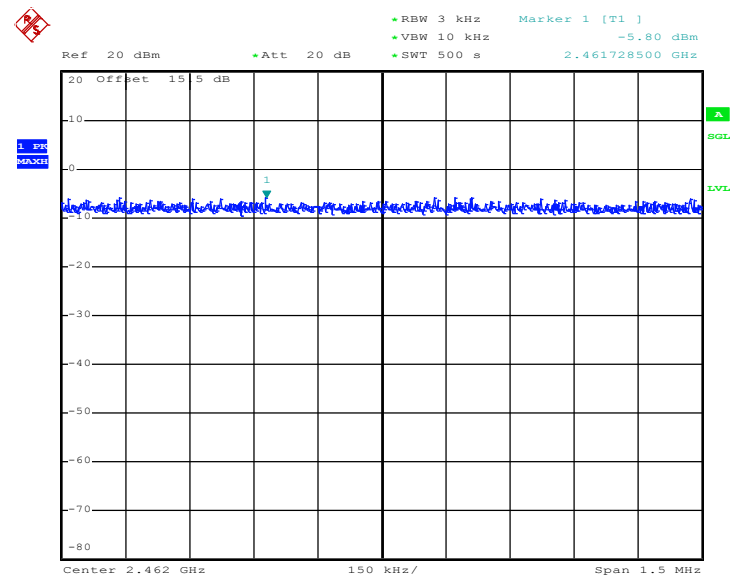
Date: 3.DEC.2011 00:30:50

Mode 2 : PSD Plot on 802.11b Channel 06



Date: 3.DEC.2011 00:47:21

Mode 3 : PSD Plot on 802.11b Channel 11



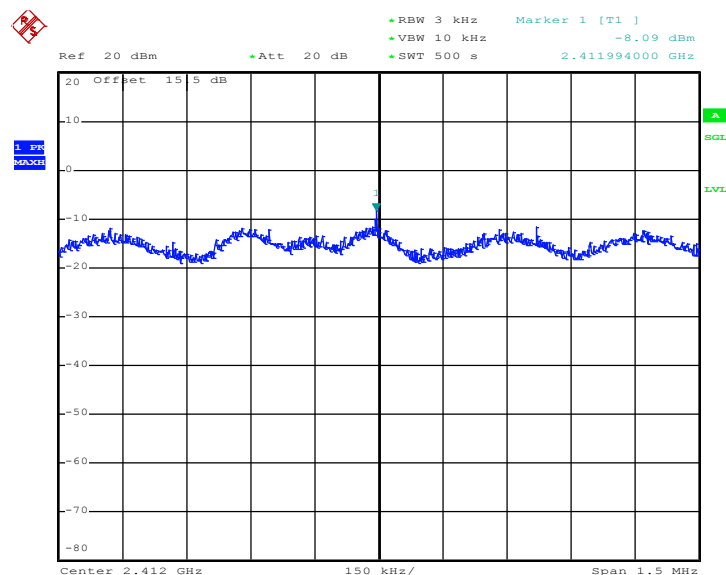
Date: 3.DEC.2011 01:02:50



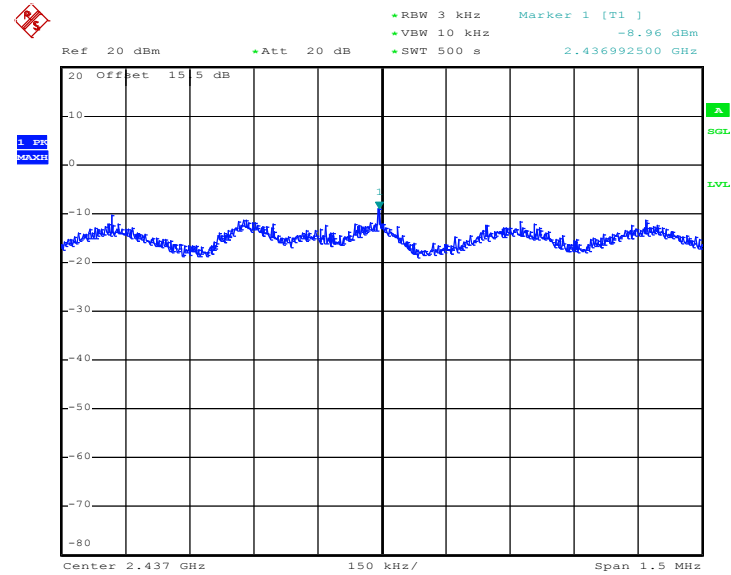
Test Mode :	Mode 4, 5, 6	Temperature :	24~25°C
Test Engineer :	Zhi Lu	Relative Humidity :	45~46%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-8.09	8	Pass
06	2437	-8.96	8	Pass
11	2462	-8.37	8	Pass

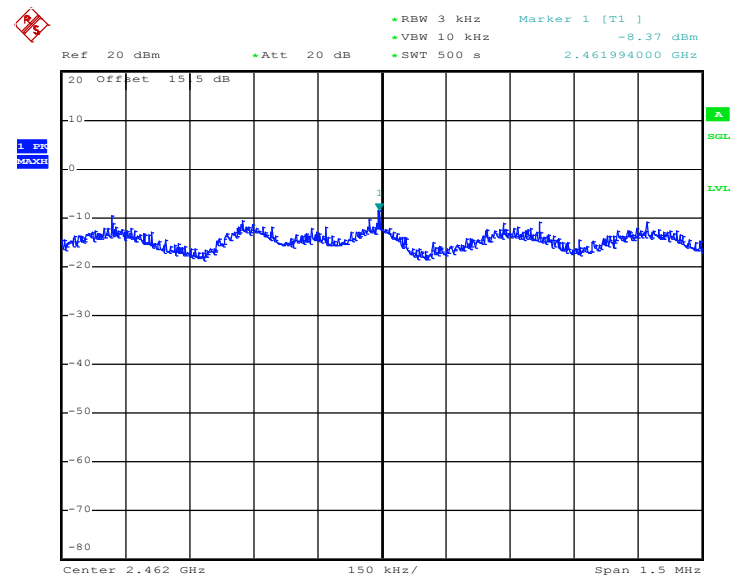
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 3.DEC.2011 01:18:49

Mode 5 : PSD Plot on 802.11g Channel 06


Date: 3.DEC.2011 01:34:59

Mode 6 : PSD Plot on 802.11g Channel 11


Date: 3.DEC.2011 01:49:26

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.

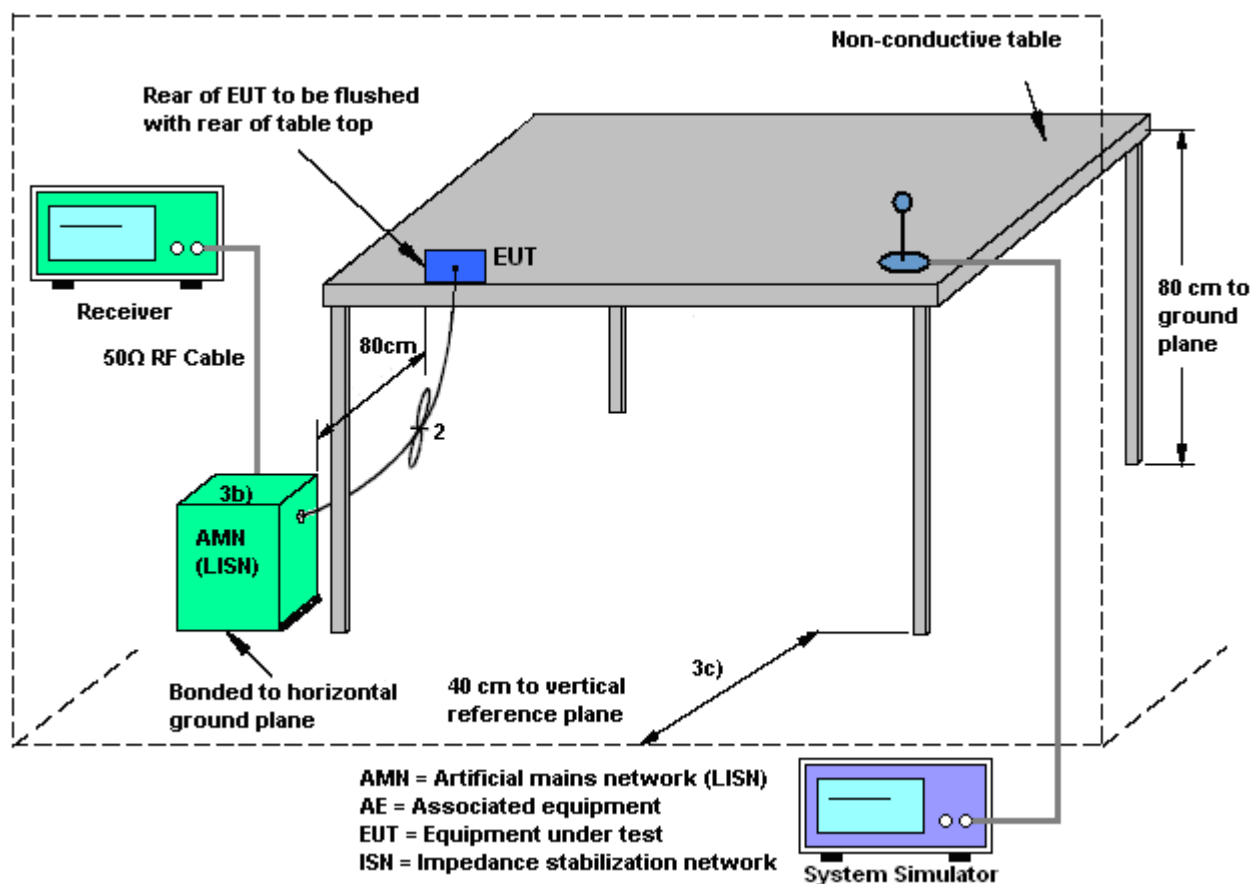
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

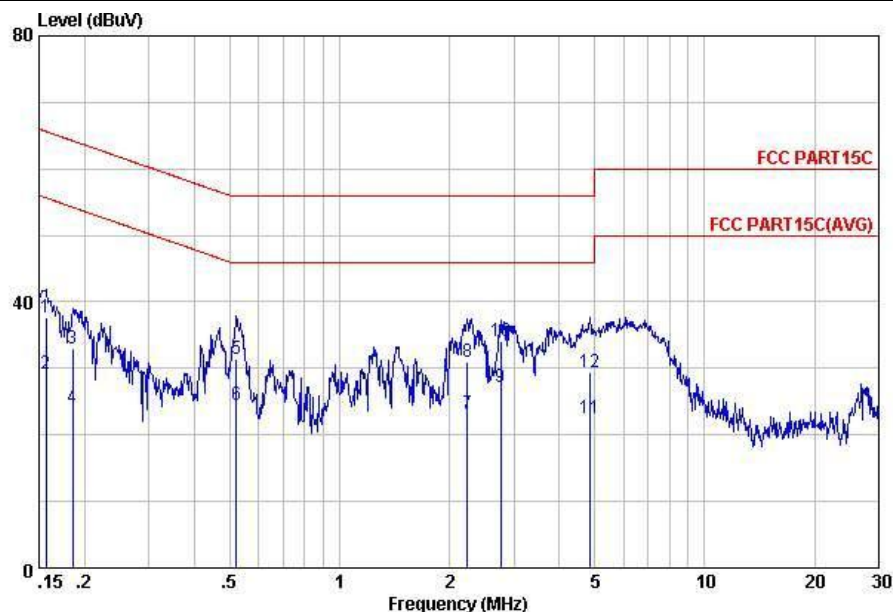
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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

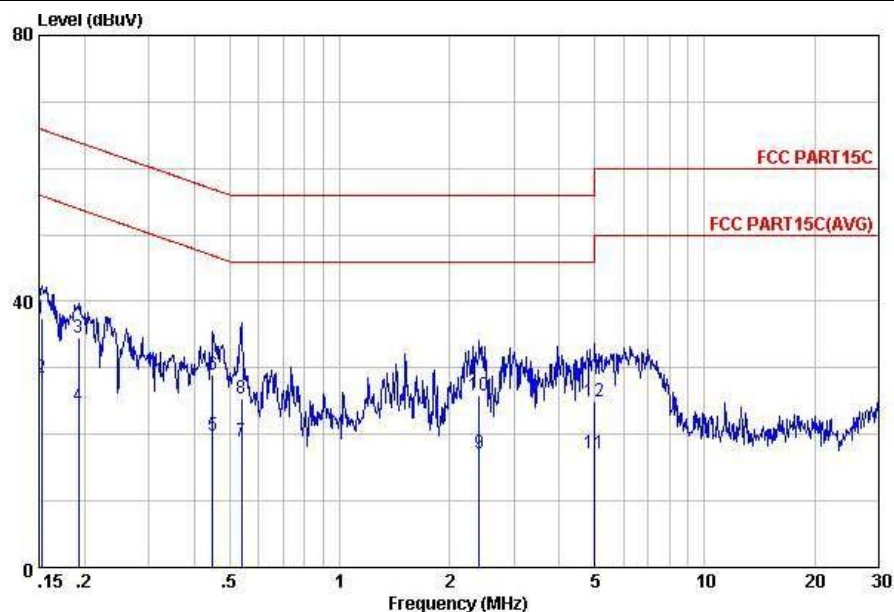
Test Mode :	Mode 1	Temperature :	21~22°C
Test Engineer :	Alva Guo	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + Earphone + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
Condition: FCC PART15C LISN-100807 LINE
Project : (FD) 1D0145
mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBμV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBμV	dBμV	dB	dB	
1	0.16	37.67	-27.98	65.65	27.60	-0.07	10.14	QP
2	0.16	29.27	-26.38	55.65	19.20	-0.07	10.14	Average
3	0.19	32.98	-31.26	64.24	22.90	-0.07	10.15	QP
4	0.19	24.08	-30.16	54.24	14.00	-0.07	10.15	Average
5	0.52	31.53	-24.47	56.00	21.40	-0.08	10.21	QP
6	0.52	24.43	-21.57	46.00	14.30	-0.08	10.21	Average
7	2.24	23.13	-22.87	46.00	12.90	-0.11	10.34	Average
8	2.24	31.03	-24.97	56.00	20.80	-0.11	10.34	QP
9	2.76	27.15	-18.85	46.00	16.91	-0.12	10.36	Average
10	2.76	34.05	-21.95	56.00	23.81	-0.12	10.36	QP
11	4.85	22.57	-23.43	46.00	12.30	-0.13	10.40	Average
12	4.85	29.37	-26.63	56.00	19.10	-0.13	10.40	QP

Test Mode :	Mode 1	Temperature :	21~22℃
Test Engineer :	Alva Guo	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + Earphone + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
 Condition: FCC PART15C LISN-100807 NEUTRAL
 Project : (FD) 1D0145
 mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.15	37.35	-28.52	65.87	27.30	-0.09	10.14	QP
2	0.15	28.45	-27.42	55.87	18.40	-0.09	10.14	Average
3	0.19	34.58	-29.35	63.93	24.50	-0.07	10.15	QP
4	0.19	24.28	-29.65	53.93	14.20	-0.07	10.15	Average
5	0.45	19.82	-27.07	46.89	9.70	-0.08	10.20	Average
6	0.45	28.92	-27.97	56.89	18.80	-0.08	10.20	QP
7	0.54	18.93	-27.07	46.00	8.80	-0.08	10.21	Average
8	0.54	25.33	-30.67	56.00	15.20	-0.08	10.21	QP
9	2.41	17.14	-28.86	46.00	6.90	-0.11	10.35	Average
10	2.41	25.94	-30.06	56.00	15.70	-0.11	10.35	QP
11	5.00	17.07	-32.93	50.00	6.80	-0.13	10.40	Average
12	5.00	24.87	-35.13	60.00	14.60	-0.13	10.40	QP

3.7 Radiated Emission Measurement

3.7.1 Limit of Radiated Emission

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

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

3.7.2 Measuring Instruments

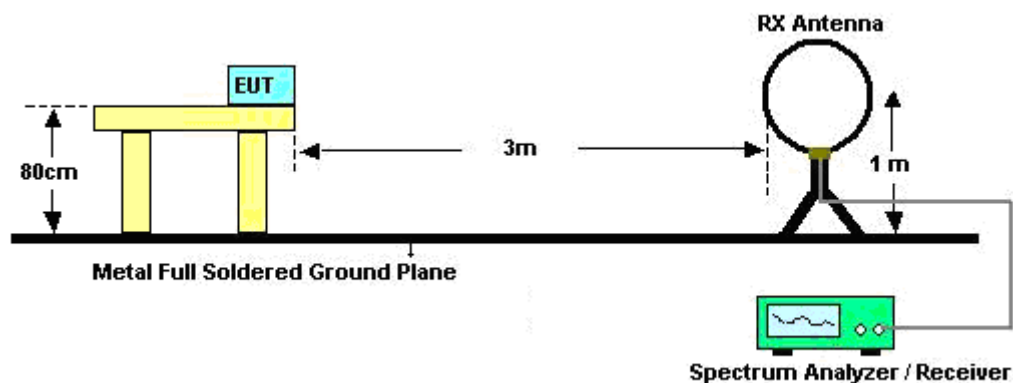
See list of measuring instruments of this test report.

3.7.3 Test Procedures

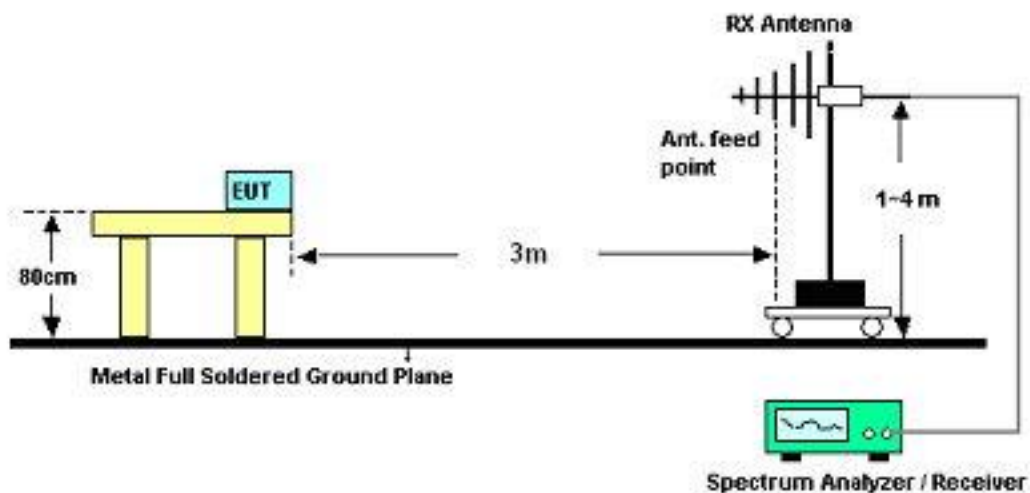
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 KHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep =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

3.7.4 Test Setup

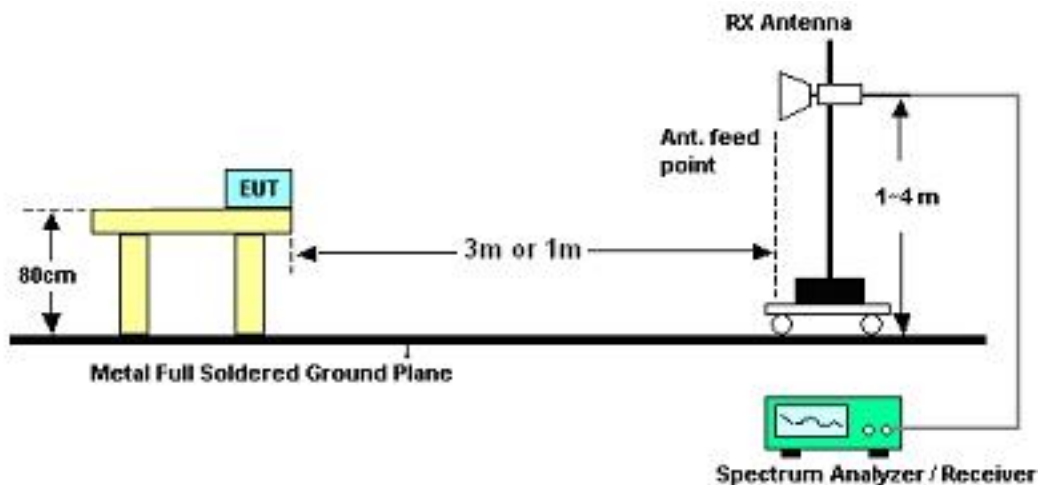
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

Test Engineer :		David Yang		Temperature :		23~25 °C	
				Relative Humidity :		45~48 %	

Frequency	Measurement Distance	Field Strength	Antenna Factor	Distance Factor	Limit Distance	Field Strength at Limit Distance (30m)	Limit (30m)
(MHz)	(m)	(dBuV/m)	(dB/m)	(dB/decade)	(m)	(dBuV/m)	(dBuV/m)
0.33	3	12.42	19.7	40	30	-27.58	29.54

Note:

- In accordance with 15.33 (a): For each frequency at which a measurement is made at only one distance, the square of an inverse linear distance extrapolation factor (40 dB/decade) is applied.
Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor.
- The field strength measured is direct conversion of all parameters (antenna factor and distance extrapolation factor) and loaded into the spectrum.
- For example 1:
Field Strength at 3m=10 (dBuV/m)
Field Strength at 30m=10- $40 \cdot \log(30\text{m}/3\text{m})$ =-30 (dBuV/m)
For example 2:
Field Strength at 10m=10 (dBuV/m)
Field Strength at 30m=10- $40 \cdot \log(30\text{m}/10\text{m})$ =-9.08 (dBuV/m)

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

Test Mode :	Mode 1	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Could Peng	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.7	19.63	-20.37	40	33.44	16.04	0.24	30.09	-	-	Peak
39.99	16.96	-23.04	40	34.43	12.3	0.25	30.02	-	-	Peak
134.22	14.74	-28.76	43.5	32.86	11.39	0.48	29.99	-	-	Peak
391	21.15	-24.85	46	34.37	15.79	0.84	29.85	-	-	Peak
832.7	25.98	-20.02	46	34.03	20.32	1.27	29.64	-	-	Peak
939.8	26.31	-19.69	46	33.82	20.69	1.33	29.53	100	0	Peak
2390	55.36	-18.64	74	53.08	32.86	3.47	34.05	100	8	Peak
2390	45.18	-8.82	54	42.9	32.86	3.47	34.05	100	8	Average
2412	100.66	-	-	98.33	32.89	3.52	34.08	200	32	Average
2412	109.12	-	-	106.79	32.89	3.52	34.08	200	32	Peak
2483.5	49.16	-24.84	74	46.67	33.01	3.68	34.2	100	0	Peak
2483.5	41.17	-12.83	54	38.68	33.01	3.68	34.2	100	0	Average

Test Mode :	Mode 1	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Could Peng	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
41.07	30.48	-9.52	40	48.64	11.64	0.25	30.05	100	0	Peak
52.68	27.43	-12.57	40	50.26	7.01	0.29	30.13	-	-	Peak
57.81	26.92	-13.08	40	51.17	5.59	0.3	30.14	-	-	Peak
507.2	21.82	-24.18	46	33.24	17.34	0.96	29.72	-	-	Peak
876.8	25.28	-20.72	46	33.07	20.48	1.29	29.56	-	-	Peak
941.9	27.86	-26.14	54	35.36	20.7	1.33	29.53	-	-	Peak
2388.85	51.62	-22.38	74	49.34	32.86	3.47	34.05	147	0	Peak
2388.85	41.29	-12.71	54	39.01	32.86	3.47	34.05	147	0	Average
2412	98.61	-	-	96.28	32.89	3.52	34.08	100	179	Average
2412	107.22	-	-	104.89	32.89	3.52	34.08	100	179	Peak
2483.5	48.71	-25.29	74	46.22	33.01	3.68	34.2	100	0	Peak
2483.5	40.05	-13.95	54	37.56	33.01	3.68	34.2	100	0	Average



Test Mode :	Mode 2	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Could Peng	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
35.94	20.75	-19.25	40	35.95	14.65	0.23	30.08	100	0	Peak
79.41	15.41	-24.59	40	38.63	6.47	0.35	30.04	-	-	Peak
212.25	16.28	-27.22	43.5	36.06	9.6	0.61	29.99	-	-	Peak
395.2	20.13	-25.87	46	33.24	15.89	0.84	29.84	-	-	Peak
880.3	25.79	-20.21	46	33.57	20.47	1.29	29.54	-	-	Peak
941.9	25.91	-28.09	54	33.41	20.7	1.33	29.53	-	-	Peak
2390	48.78	-25.22	74	46.5	32.86	3.47	34.05	100	0	Peak
2390	38.4	-15.6	54	36.12	32.86	3.47	34.05	100	0	Average
2437	102.44	-	-	100.04	32.95	3.6	34.15	195	3	Average
2437	109.87	-	-	107.47	32.95	3.6	34.15	195	3	Peak
2483.5	48.85	-25.15	74	46.36	33.01	3.68	34.2	100	0	Peak
2483.5	39.89	-14.11	54	37.4	33.01	3.68	34.2	100	0	Average

Test Mode :	Mode 2	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Could Peng	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
41.07	30.85	-9.15	40	49.01	11.64	0.25	30.05	100	0	Peak
52.95	27.51	-12.49	40	50.55	6.8	0.29	30.13	-	-	Peak
57.54	27.02	-12.98	40	51.11	5.75	0.3	30.14	-	-	Peak
490.4	22.23	-23.77	46	33.95	17.07	0.95	29.74	-	-	Peak
795.6	22.47	-23.53	46	30.96	19.85	1.25	29.59	-	-	Peak
941.9	26.99	-27.01	54	34.49	20.7	1.33	29.53	-	-	Peak
2390	48.14	-25.86	74	45.86	32.86	3.47	34.05	100	0	Peak
2390	40.49	-13.51	54	38.21	32.86	3.47	34.05	100	0	Average
2437	100.13	-	-	97.73	32.95	3.6	34.15	140	0	Average
2437	107.64	-	-	105.24	32.95	3.6	34.15	140	0	Peak
2483.5	48.4	-25.6	74	45.91	33.01	3.68	34.2	100	0	Peak
2483.5	40.05	-13.95	54	37.56	33.01	3.68	34.2	100	0	Average

Test Mode :	Mode 3	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Could Peng	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
32.16	20.12	-19.88	40	33.42	16.55	0.24	30.09	100	0	Peak
79.95	15.55	-24.45	40	38.77	6.47	0.35	30.04	-	-	Peak
213.06	15.98	-27.52	43.5	35.71	9.65	0.61	29.99	-	-	Peak
395.2	20.54	-25.46	46	33.65	15.89	0.84	29.84	-	-	Peak
787.9	23.68	-22.32	46	32.16	19.86	1.24	29.58	-	-	Peak
941.9	25.55	-28.45	54	33.05	20.7	1.33	29.53	-	-	Peak
2390	48.33	-25.67	74	46.05	32.86	3.47	34.05	100	0	Peak
2390	37.06	-16.94	54	34.78	32.86	3.47	34.05	100	0	Average
2462	102.65	-	-	100.2	32.98	3.64	34.17	187	348	Average
2462	110.91	-	-	108.46	32.98	3.64	34.17	187	348	Peak
2483.5	53.82	-20.18	74	51.33	33.01	3.68	34.2	104	34	Peak
2483.5	44.49	-9.51	54	42	33.01	3.68	34.2	104	34	Average



Test Mode :	Mode 3	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Could Peng	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
40.8	30.34	-9.66	40	48.5	11.64	0.25	30.05	100	0	Peak
52.41	27.11	-12.89	40	49.94	7.01	0.29	30.13	-	-	Peak
134.22	20.89	-22.61	43.5	39.01	11.39	0.48	29.99	-	-	Peak
496.7	21.3	-24.7	46	32.92	17.15	0.96	29.73	-	-	Peak
767.6	21.74	-24.26	46	30.2	19.89	1.2	29.55	-	-	Peak
941.9	26.87	-27.13	54	34.37	20.7	1.33	29.53	-	-	Peak
2390	48.83	-25.17	74	46.55	32.86	3.47	34.05	200	15	Peak
2390	36.78	-17.22	54	34.5	32.86	3.47	34.05	200	15	Average
2462	100.75	-	-	98.3	32.98	3.64	34.17	200	65	Average
2462	108.57	-	-	106.12	32.98	3.64	34.17	200	65	Peak
2483.5	53.41	-20.59	74	50.92	33.01	3.68	34.2	194	15	Peak
2483.5	43.49	-10.51	54	41	33.01	3.68	34.2	194	15	Average

Test Mode :	Mode 4	Temperature :	21~22°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Could Peng	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.16	25.36	-14.64	40	38.66	16.55	0.24	30.09	100	0	Peak
35.94	23.71	-16.29	40	38.91	14.65	0.23	30.08	-	-	Peak
39.45	21.1	-18.9	40	38.57	12.3	0.25	30.02	-	-	Peak
398	21.12	-24.88	46	34.15	15.96	0.84	29.83	-	-	Peak
882.4	25.87	-20.13	46	33.64	20.47	1.29	29.53	-	-	Peak
939.8	26.3	-19.7	46	33.81	20.69	1.33	29.53	-	-	Peak
2390	66.68	-7.32	74	64.4	32.86	3.47	34.05	105	36	Peak
2390	46.97	-7.03	54	44.69	32.86	3.47	34.05	105	36	Average
2412	95.32	-	-	92.99	32.89	3.52	34.08	188	360	Average
2412	106.58	-	-	104.25	32.89	3.52	34.08	188	360	Peak
2483.5	48.28	-25.72	74	45.79	33.01	3.68	34.2	100	0	Peak
2483.5	41.99	-12.01	54	39.5	33.01	3.68	34.2	100	0	Average

Test Mode :	Mode 4	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Could Peng	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
40.8	30.52	-9.48	40	48.68	11.64	0.25	30.05	100	0	Peak
52.68	27.22	-12.78	40	50.05	7.01	0.29	30.13	-	-	Peak
134.22	20.65	-22.85	43.5	38.77	11.39	0.48	29.99	-	-	Peak
540.8	22.59	-23.41	46	32.96	18.33	0.99	29.69	-	-	Peak
747.3	22.19	-23.81	46	30.68	19.88	1.18	29.55	-	-	Peak
939.8	27.55	-18.45	46	35.06	20.69	1.33	29.53	-	-	Peak
2390	62.62	-11.38	74	60.34	32.86	3.47	34.05	140	54	Peak
2390	45.78	-8.22	54	43.5	32.86	3.47	34.05	140	54	Average
2412	92.85	-	-	90.52	32.89	3.52	34.08	100	360	Average
2412	102.68	-	-	100.35	32.89	3.52	34.08	100	360	Peak
2483.5	48.56	-25.44	74	46.07	33.01	3.68	34.2	100	0	Peak
2483.5	41.48	-12.52	54	38.99	33.01	3.68	34.2	100	0	Average

Test Mode :	Mode 5	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Could Peng	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	28.36	-11.64	40	40.18	18	0.26	30.08	100	0	Peak
59.7	18.16	-21.84	40	42.69	5.3	0.31	30.14	-	-	Peak
134.49	17.34	-26.16	43.5	35.55	11.3	0.48	29.99	-	-	Peak
311.9	22.47	-23.53	46	38.38	13.3	0.74	29.95	-	-	Peak
513.5	22.09	-23.91	46	33.37	17.47	0.97	29.72	-	-	Peak
860	24.82	-21.18	46	32.67	20.5	1.28	29.63	-	-	Peak
2390	49.05	-24.95	74	46.77	32.86	3.47	34.05	100	0	Peak
2390	41.54	-12.46	54	39.26	32.86	3.47	34.05	100	0	Average
2437	98.71	-	-	96.31	32.95	3.6	34.15	165	31	Average
2437	107.85	-	-	105.45	32.95	3.6	34.15	165	31	Peak
2483.5	48.97	-25.03	74	46.48	33.01	3.68	34.2	100	0	Peak
2483.5	40.77	-13.23	54	38.28	33.01	3.68	34.2	100	0	Average



Test Mode :	Mode 5	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Could Peng	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
41.07	30.92	-9.08	40	49.08	11.64	0.25	30.05	100	0	Peak
57.27	27.81	-12.19	40	51.9	5.75	0.3	30.14	-	-	Peak
134.76	21.1	-22.4	43.5	39.31	11.3	0.48	29.99	-	-	Peak
481.3	21.66	-24.34	46	33.58	16.89	0.94	29.75	-	-	Peak
577.9	22.97	-23.03	46	33.01	18.56	1.04	29.64	-	-	Peak
941.9	26.59	-27.41	54	34.09	20.7	1.33	29.53	-	-	Peak
2390	48.46	-25.54	74	46.18	32.86	3.47	34.05	100	0	Peak
2390	39.13	-14.87	54	36.85	32.86	3.47	34.05	100	0	Average
2437	93.72	-	-	91.32	32.95	3.6	34.15	200	0	Average
2437	104.75	-	-	102.35	32.95	3.6	34.15	200	0	Peak
2483.5	49.85	-4.15	54	47.36	33.01	3.68	34.2	100	0	Average
2483.5	40.61	-13.39	54	38.12	33.01	3.68	34.2	100	0	Average



Test Mode :	Mode 6	Temperature :	21~22℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Could Peng	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
32.16	26.91	-13.09	40	40.21	16.55	0.24	30.09	100	0	Peak
35.67	22.7	-17.3	40	37.9	14.65	0.23	30.08	-	-	Peak
212.52	17.1	-26.4	43.5	36.88	9.6	0.61	29.99	-	-	Peak
517.7	21.14	-24.86	46	32.27	17.61	0.97	29.71	-	-	Peak
798.4	24.34	-21.66	46	32.83	19.85	1.25	29.59	-	-	Peak
939.8	25.11	-20.89	46	32.62	20.69	1.33	29.53	-	-	Peak
2390	48.81	-25.19	74	46.53	32.86	3.47	34.05	100	0	Peak
2390	40.18	-13.82	54	37.9	32.86	3.47	34.05	100	0	Average
2462	97.78	-	-	95.33	32.98	3.64	34.17	193	2	Average
2462	107.74	-	-	105.29	32.98	3.64	34.17	193	2	Peak
2483.5	67.7	-6.3	74	65.21	33.01	3.68	34.2	132	360	Peak
2483.5	49.08	-4.92	54	46.59	33.01	3.68	34.2	132	360	Average



Test Mode :	Mode 6	Temperature :	21~22℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Could Peng	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
41.07	30.7	-9.3	40	48.86	11.64	0.25	30.05	100	0	Peak
52.41	28	-12	40	50.83	7.01	0.29	30.13	-	-	Peak
135.3	20.86	-22.64	43.5	39.16	11.21	0.48	29.99	-	-	Peak
473.6	21.57	-24.43	46	33.7	16.7	0.93	29.76	-	-	Peak
577.2	22.3	-23.7	46	32.35	18.56	1.04	29.65	-	-	Peak
941.9	27.02	-26.98	54	34.52	20.7	1.33	29.53	-	-	Peak
2390	48.22	-25.78	74	45.94	32.86	3.47	34.05	100	0	Peak
2390	40.84	-13.16	54	38.56	32.86	3.47	34.05	100	0	Average
2462	94.59	-	-	92.14	32.98	3.64	34.17	200	0	Average
2462	105.17	-	-	102.72	32.98	3.64	34.17	200	0	Peak
2483.5	67.5	-6.5	74	65.01	33.01	3.68	34.2	200	360	Peak
2483.5	47.49	-6.51	54	45	33.01	3.68	34.2	200	360	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 IFA 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	Jan. 07, 2011	Dec. 03, 2011~ Dec. 05, 2011	Jan. 06, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 23, 2011	Dec. 03, 2011~ Dec. 05, 2011	Aug. 22, 2012	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 23, 2011	Dec. 03, 2011~ Dec. 05, 2011	Aug. 22, 2012	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 02, 2011	Dec. 12, 2011	Jun. 01, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Jan. 07, 2011	Dec. 12, 2011	Jan. 06, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Jan. 07, 2011	Dec. 12, 2011	Jan. 06, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 16, 2011	Dec. 12, 2011	Nov. 15, 2012	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/066	Full-Band	Jan. 07, 2011	Dec. 12, 2011	Jan. 06, 2012	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 09, 2011	Dec. 12, 2011	Nov. 08, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Jan. 07, 2011	Dec. 12, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	101400	9kHz~30GHz	Jun. 02, 2011	Dec. 12, 2011	Jun. 01, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Dec. 12, 2011	Dec. 07, 2012	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 07, 2011	Dec. 12, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060029	9KHz~2GHz	Jan. 10, 2011	Dec. 12, 2011	Jan. 09, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Jan. 07, 2011	Dec. 12, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1G-18GHz	Nov. 07, 2011	Dec. 12, 2011	Nov. 06, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15-40GHz	Oct. 11, 2011	Dec. 12, 2011	Oct. 10, 2012	Radiation (03CH01-KS)



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 22, 2011	Dec. 27, 2011	Oct. 21, 2012	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP30	101067	9KHz ~ 30GHz	Dec. 06, 2011	Dec. 27, 2011	Dec. 05, 2012	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 10, 2011	Dec. 27, 2011	Aug. 09, 2012	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec. 05, 2011	Dec. 27, 2011	Dec. 04, 2012	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Mar. 29, 2011	Dec. 27, 2011	Mar. 28, 2012	Radiation (03CH07-HY)
EMI TEST RECEIVER	R&S	ESCI 7	100724	9kHz~7GHz	Aug. 22, 2011	Dec. 27, 2011	Aug. 21, 2012	Radiation (03CH07-HY)
Pre Amplifier	MITEQ	AMF-7D-00 101800-30-10P	159088	1GHz ~ 18GHz	Feb. 21, 2011	Dec. 27, 2011	Feb. 20, 2012	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Dec. 27, 2011	Jul. 28, 2012	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				