

FCC RF Test Report

APPLICANT : Motorola Mobility, Inc.
EQUIPMENT : Quad-Band GSM/GPRS/EDGE and Dual-Band
WCDMA Mobile Phone with BT/Wifi
BRAND NAME : Motorola
MODEL NAME /
MARKET NAME : XT560
TYPE NAME : M0CB0
GPPD NUMBER : 3248
FCC ID : IHDT56NB2
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Dec. 29, 2011 and completely tested on Feb. 10, 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 7.49 dB at 1.800 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.08 dB at 4924.000 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, 100102 Beijing, P. R. China

1.2 Manufacturer

Foxconn (TianJin) Precision Industry Co., Ltd.

No. 207, Nanhai Road, TEDA, Tianjin, P.R. China, 300457

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Quad-Band GSM/GPRS/EDGE and Dual-Band WCDMA Mobile Phone with BT/Wifi
Brand Name	Motorola
Model Name	XT560
Type Name	M0CB0
FCC ID	IHDT56NB2
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 : 17.64 dBm (0.058 W) 802.11g : 20.08 dBm (0.102 W) 802.11n (BW 20MHz) : 19.98 dBm (0.100 W)
Antenna Type	PIFA Antenna with gain -4.00 dBi
HW Version	PR2.5
SW Version	1_400_9000
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

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.
	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. :	FCC/IC Registration No.
	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

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	Acer	Travel mate 2413Lci	QDS-BRCM1016	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

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	16.93	16.98	16.96	17.11
CH 06	2437 MHz	17.34	17.61	17.47	17.56
CH 11	2462 MHz	17.52	17.62	17.51	17.64

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	19.62	19.67	19.58	19.36	19.46	19.41	19.67	19.56
CH 06	2437 MHz	19.68	19.69	19.81	19.79	19.79	19.68	19.83	19.92
CH 11	2462 MHz	20.03	20.05	19.95	20.01	20.02	19.91	19.96	20.08

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
		6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mps
CH 01	2412 MHz	19.53	19.47	19.59	19.61	19.54	19.28	19.39	19.46
CH 06	2437 MHz	19.81	19.83	19.68	19.53	19.66	19.45	19.86	19.98
CH 11	2462 MHz	19.68	19.67	19.76	19.61	19.58	19.41	19.85	19.92

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).

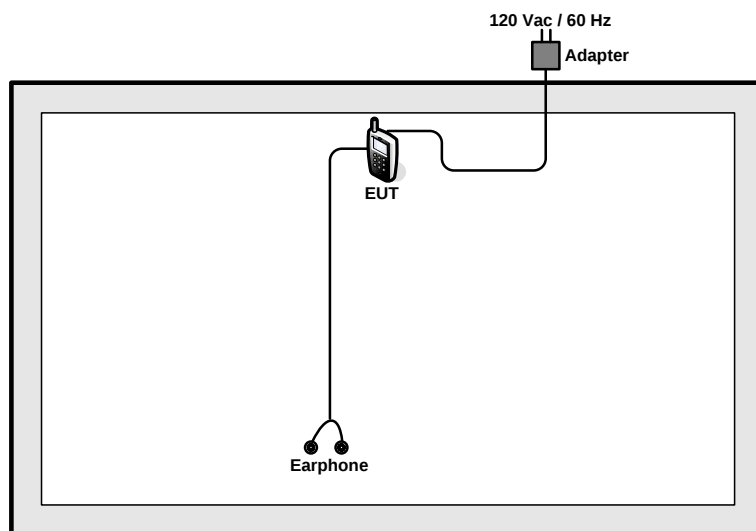
Pre-scanned tests were conducted to determine the final configuration from all possible combinations. Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

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

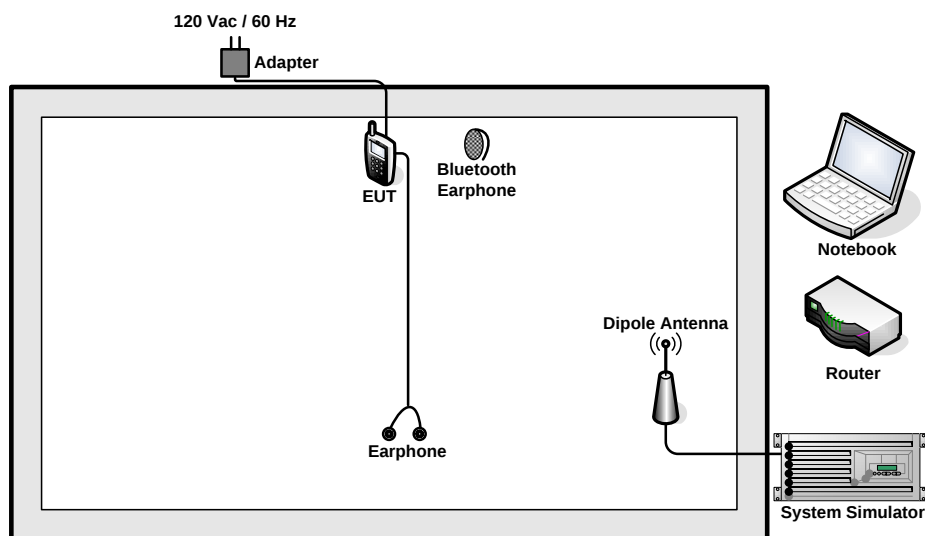
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 MHz Mode 8: 802.11n (BW 20M)_CH06_2437 MHz Mode 9: 802.11n (BW 20M)_CH11_2462 MHz
Radiated TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 MHz Mode 8: 802.11n (BW 20M)_CH06_2437 MHz Mode 9: 802.11n (BW 20M)_CH11_2462 MHz
AC Conducted Emission	Mode 1 :GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone + Camera Mode 2 GSM1900 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone + MPEG4	
Remark:		
1. For radiated TCs, the test was performance with adapter, USB cable, and earphone.		
2. For conducted emission, the worst case is mode 1; only the test data of this mode was reported.		

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

For WLAN function, key in “* # * # 767 # * # *” 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.

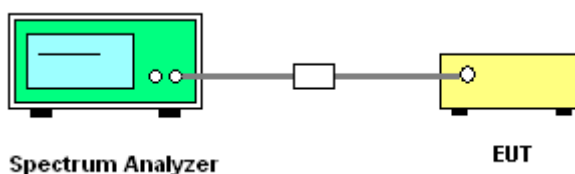
3.1.2 Measuring Instruments

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

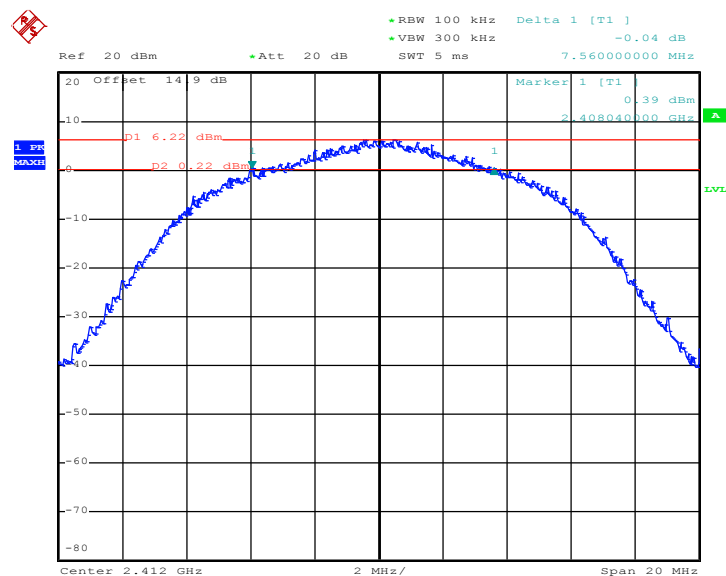


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	23~24℃
Test Engineer :	Zhi lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	7.56	0.5	Pass
06	2437	6.88	0.5	Pass
11	2462	7.34	0.5	Pass

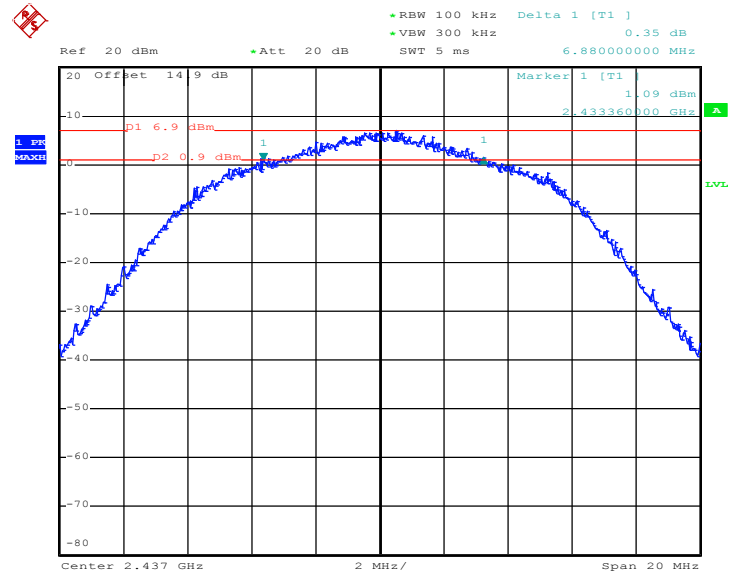
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 1.FEB.2012 09:03:00

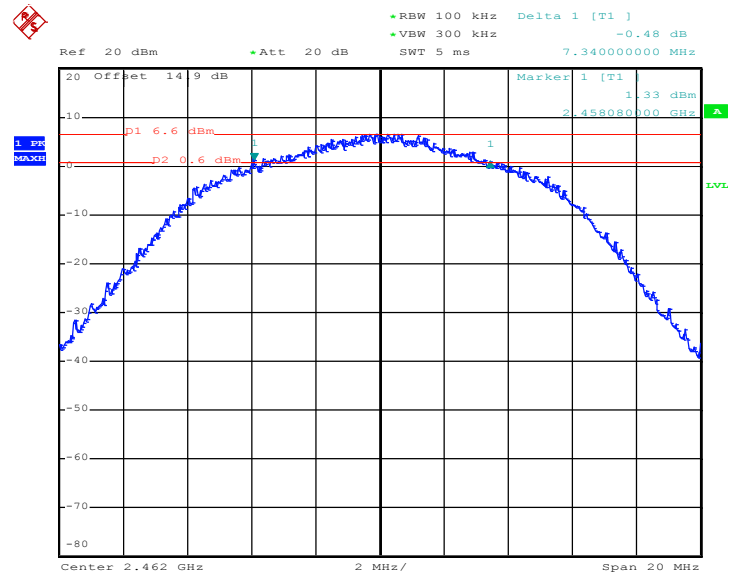


Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



Date: 1.FEB.2012 09:17:11

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



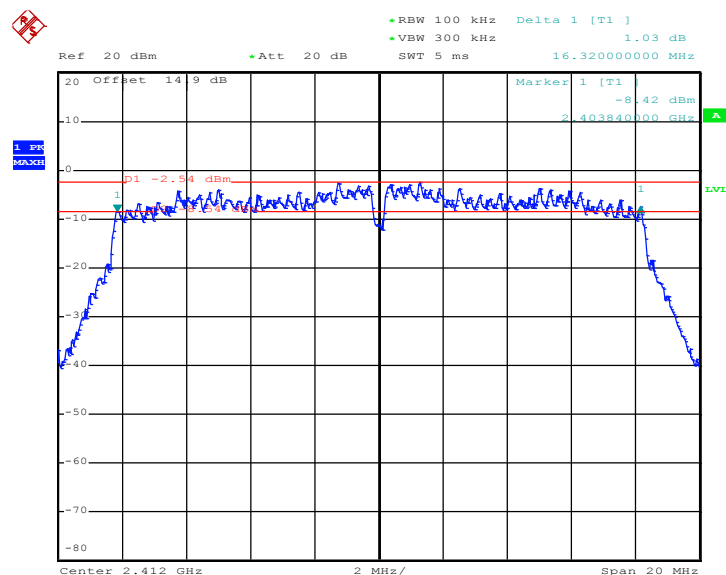
Date: 1.FEB.2012 09:31:47



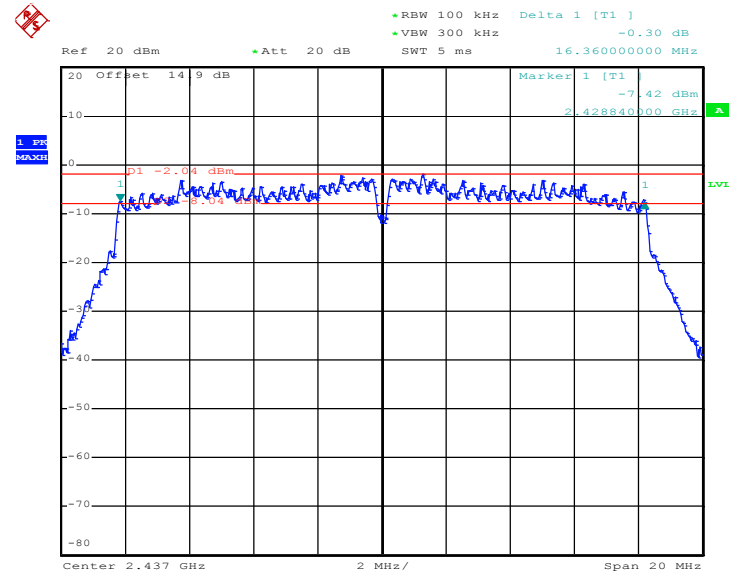
Test Mode :	Mode 4, 5, 6	Temperature :	23~24°C
Test Engineer :	Zhi lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.32	0.5	Pass
06	2437	16.36	0.5	Pass
11	2462	16.32	0.5	Pass

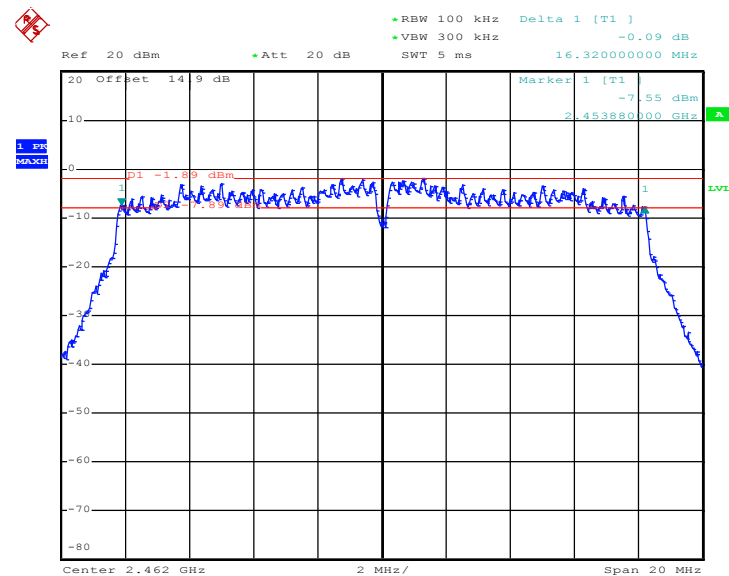
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



Date: 1.FEB.2012 09:54:03

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


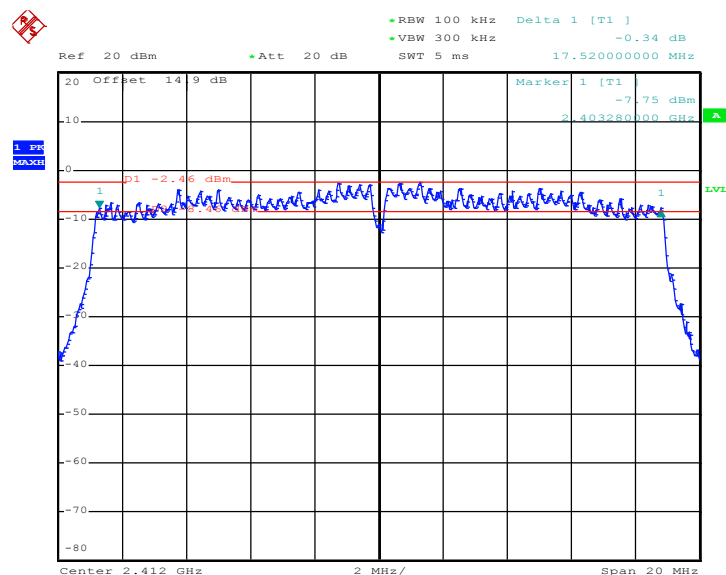
Date: 1.FEB.2012 10:29:36

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


Date: 1.FEB.2012 10:44:15

Test Mode :	Mode 7, 8, 9	Temperature :	23~24°C
Test Engineer :	Zhi lu	Relative Humidity :	47~48%

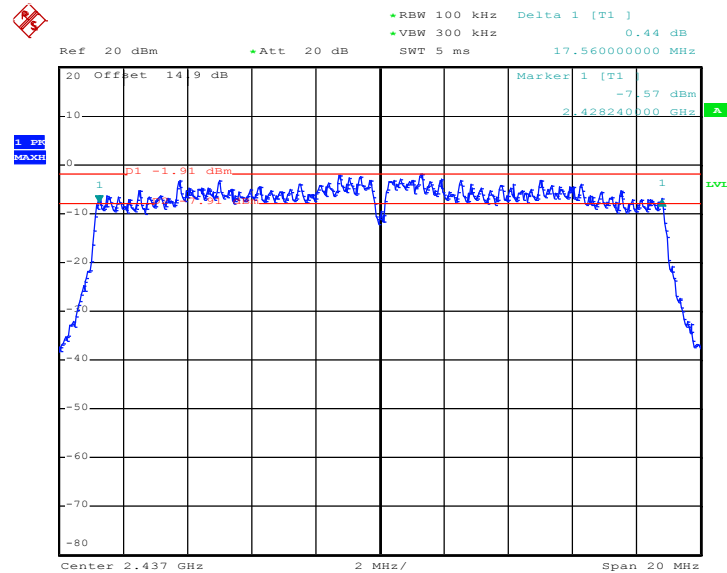
Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.52	0.5	Pass
06	2437	17.56	0.5	Pass
11	2462	17.56	0.5	Pass

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


Date: 1.FEB.2012 11:00:58

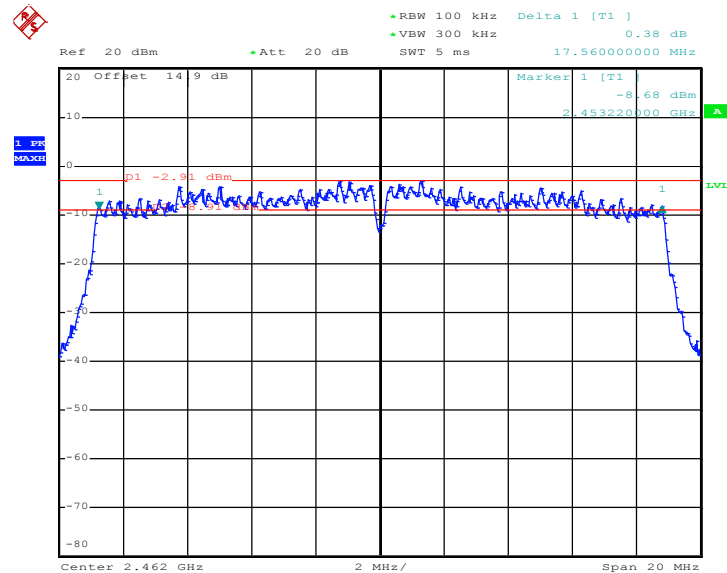


Mode 8 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 06



Date: 1.FEB.2012 11:14:56

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



Date: 1.FEB.2012 11:30:19

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.

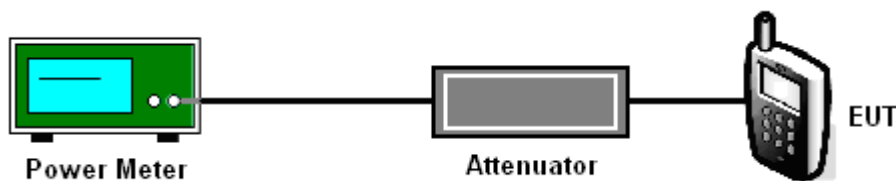
3.2.2 Measuring Instruments

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℃
Test Engineer :	Zhi lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	17.11	30	Pass
06	2437	17.56	30	Pass
11	2462	17.64	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	23~24℃
Test Engineer :	Zhi lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.56	30	Pass
06	2437	19.92	30	Pass
11	2462	20.08	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	23~24℃
Test Engineer :	Zhi lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.46	30	Pass
06	2437	19.98	30	Pass
11	2462	19.92	30	Pass

3.3 Band Edges Measurement

3.3.1 Limit of Band Edges

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

3.3.2 Measuring Instruments

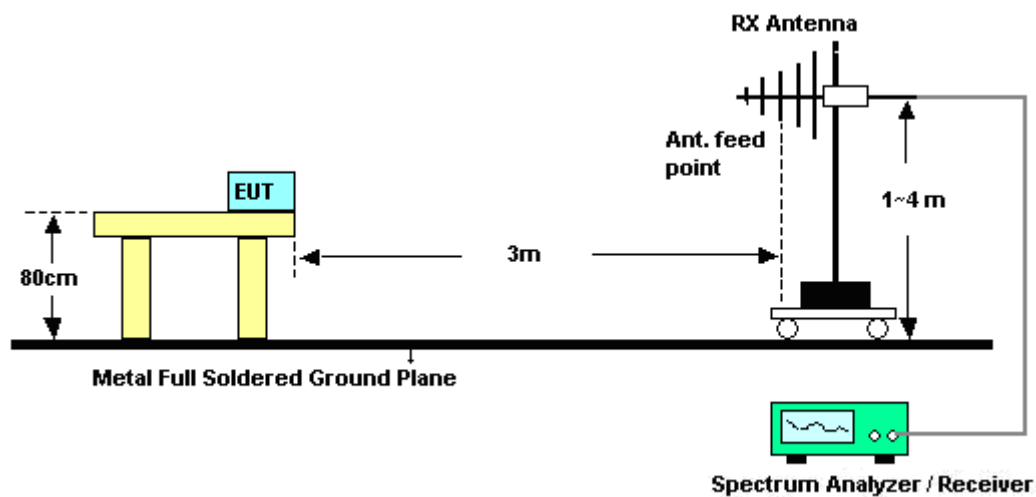
See list of measuring instruments of this test report.

3.3.3 Test Procedures

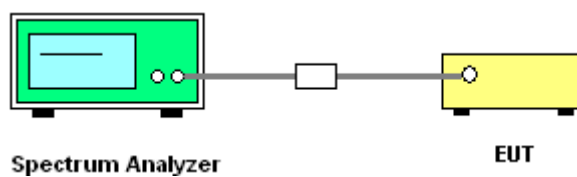
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 KHz, Video bandwidth (VBW) $\geq$ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized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

3.3.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>



3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	22~23℃
Test Band :	802.11b	Relative Humidity :	50~52%
Test Channel :	01	Test Engineer :	David Yang

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
2389.42	47.7	-26.3	74	43.57	32.06	6.03	33.96	187	23	Peak
2389.42	36.07	-17.93	54	31.94	32.06	6.03	33.96	187	23	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
2385.62	52.32	-21.68	74	48.19	32.06	6.03	33.96	115	351	Peak
2385.62	41.29	-12.71	54	37.16	32.06	6.03	33.96	115	351	Average

Test Mode :	Mode 3	Temperature :	22~23℃
Test Band :	802.11b	Relative Humidity :	50~52%
Test Channel :	11	Test Engineer :	David Yang

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
2492.02	48.87	-25.13	74	44.49	32.2	6.18	34	126	32	Peak
2492.02	39.79	-14.21	54	35.41	32.2	6.18	34	126	32	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
2492.21	51.14	-22.86	74	46.76	32.2	6.18	34	115	320	Peak
2492.21	43	-11	54	38.62	32.2	6.18	34	115	320	Average

Test Mode :	Mode 4	Temperature :	22~23℃
Test Band :	802.11g	Relative Humidity :	50~52%
Test Channel :	01	Test Engineer :	David Yang

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
2389.99	53.34	-20.66	74	49.21	32.06	6.03	33.96	100	24	Peak
2389.99	35.44	-18.56	54	31.31	32.06	6.03	33.96	100	24	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
2387.9	57.26	-16.74	74	53.13	32.06	6.03	33.96	143	343	Peak
2387.9	38.09	-15.91	54	33.96	32.06	6.03	33.96	143	343	Average

Test Mode :	Mode 6	Temperature :	22~23℃
Test Band :	802.11g	Relative Humidity :	50~52%
Test Channel :	11	Test Engineer :	David Yang

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
2484.61	52.19	-21.81	74	47.83	32.18	6.18	34	183	20	Peak
2484.61	36.29	-17.71	54	31.93	32.18	6.18	34	183	20	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
2484.42	56.13	-17.87	74	51.77	32.18	6.18	34	142	318	Peak
2484.42	38.07	-15.93	54	33.71	32.18	6.18	34	142	318	Average

Test Mode :	Mode 7	Temperature :	22~23℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~52%
Test Channel :	01	Test Engineer :	David Yang

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
2389.61	51.76	-22.24	74	47.63	32.06	6.03	33.96	187	41	Peak
2389.61	35.41	-18.59	54	31.28	32.06	6.03	33.96	187	41	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
2389.99	59.04	-14.96	74	54.91	32.06	6.03	33.96	116	340	Peak
2389.99	40.27	-13.73	54	36.14	32.06	6.03	33.96	116	340	Average

Test Mode :	Mode 9	Temperature :	22~23℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~52%
Test Channel :	11	Test Engineer :	David Yang

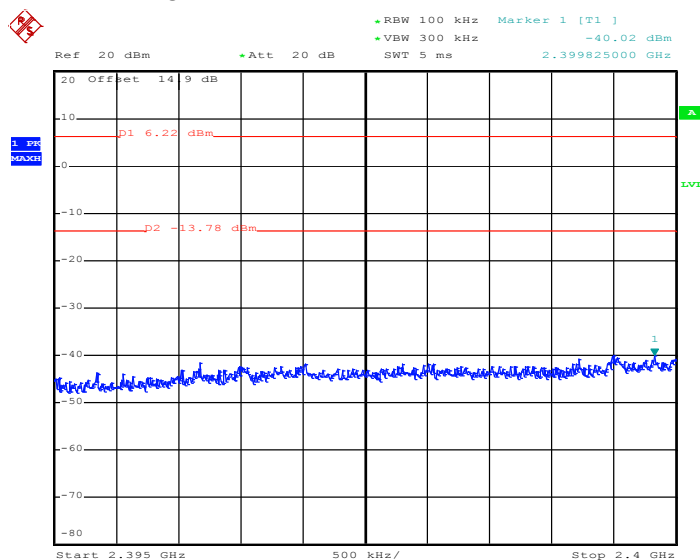
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.61	50.34	-23.66	74	45.98	32.18	6.18	34	184	37	Peak
2484.61	35.92	-18.08	54	31.56	32.18	6.18	34	184	37	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	51.36	-22.64	74	47	32.18	6.18	34	167	353	Peak
2483.5	36.67	-17.33	54	32.31	32.18	6.18	34	167	353	Average

3.3.6 Test Plots of Conducted Band Edges

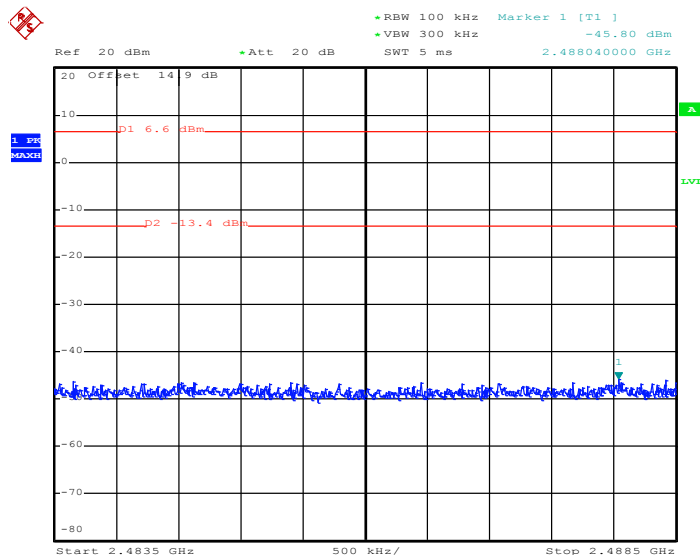
Test Mode :	Mode 1 and 3	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Zhi lu

Low Band Edge Plot on 802.11b Channel 01



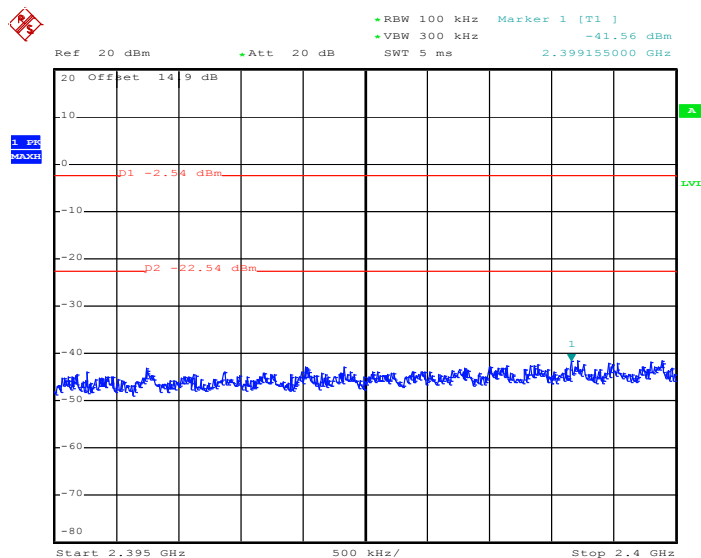
Date: 1.FEB.2012 09:04:14

High Band Edge Plot on 802.11b Channel 11

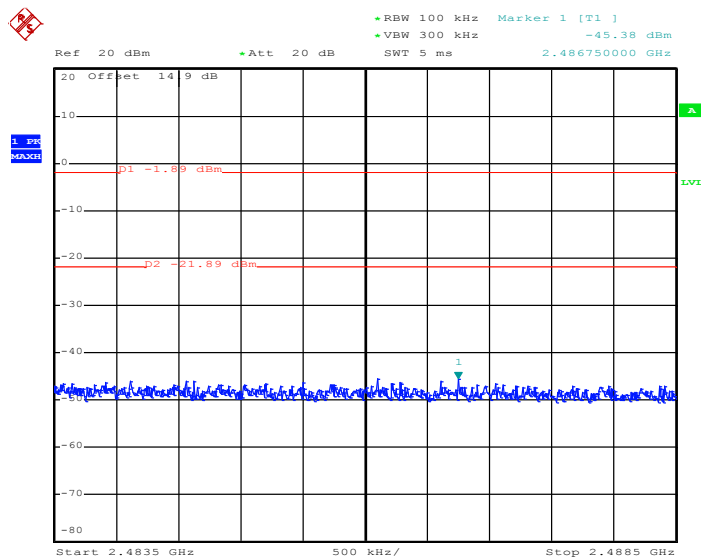


Date: 1.FEB.2012 09:32:46

Test Mode :	Mode 4 and 6	Temperature :	23~24℃
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: 1.FEB.2012 10:14:28

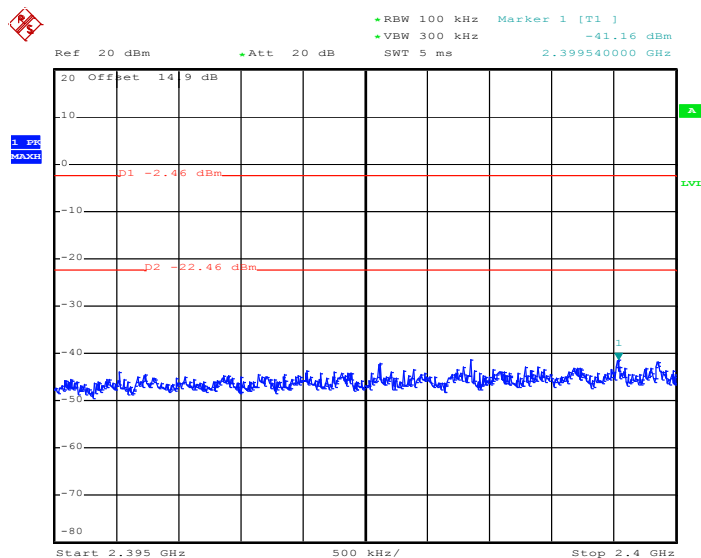
High Band Edge Plot on 802.11g Channel 11


Date: 1.FEB.2012 10:45:04



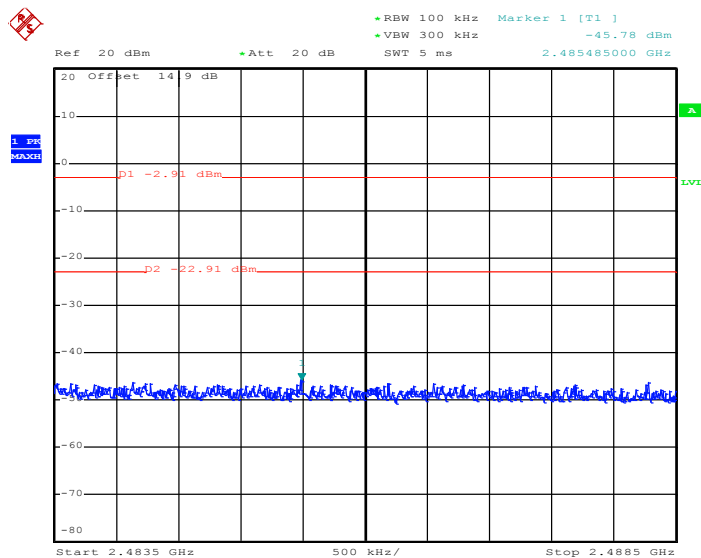
Test Mode :	Mode 7 and 9	Temperature :	23~24℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Zhi lu

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



Date: 1.FEB.2012 11:02:10

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



Date: 1.FEB.2012 11:31:11

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.

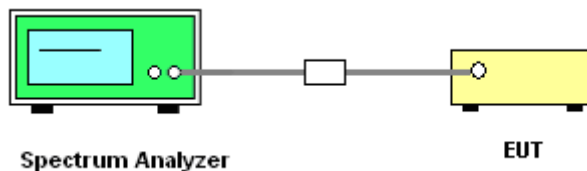
3.4.2 Measuring Instruments

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.

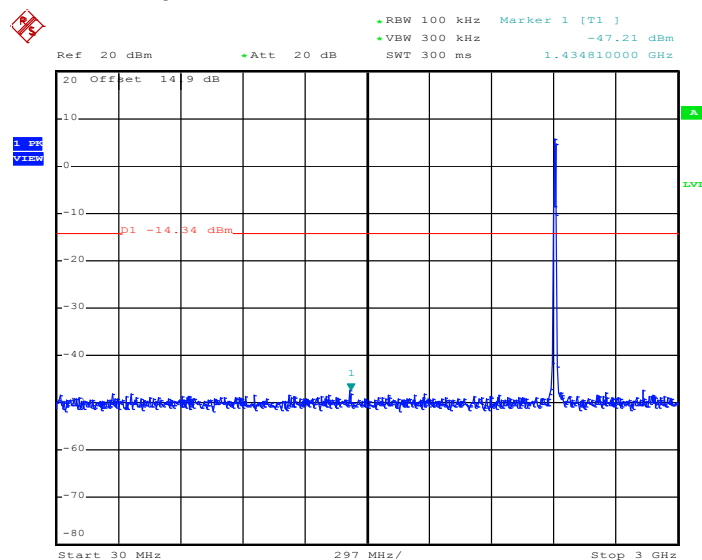
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

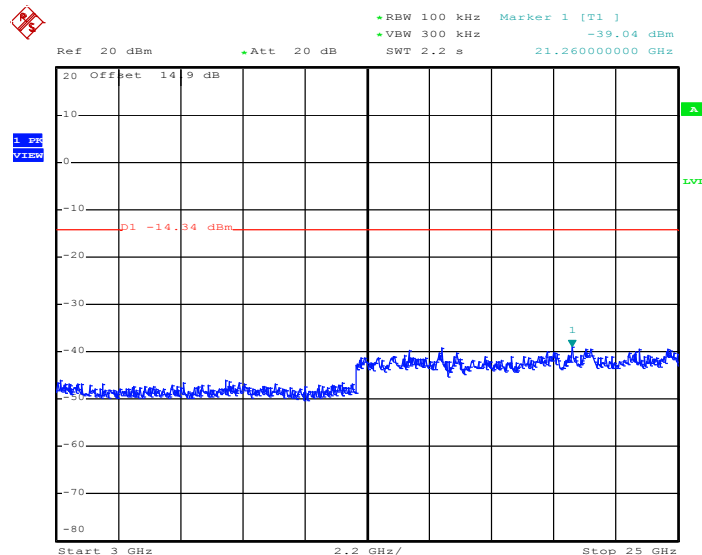
Test Mode :	Mode 1	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Zhi lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 1.FEB.2012 09:05:35

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

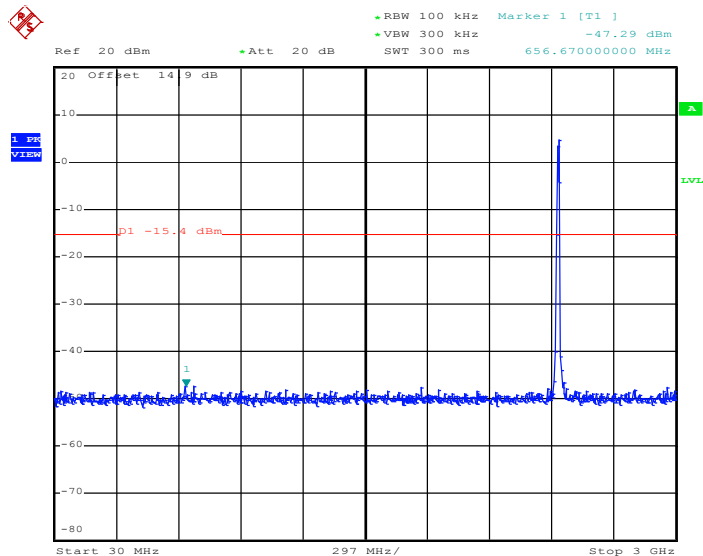


Date: 1.FEB.2012 09:05:52



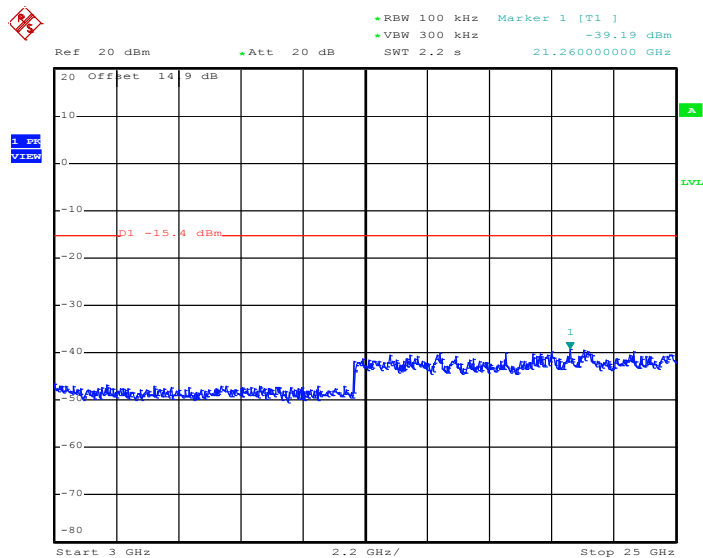
Test Mode :	Mode 2	Temperature :	23~24℃
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	06	Test Engineer :	Zhi lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



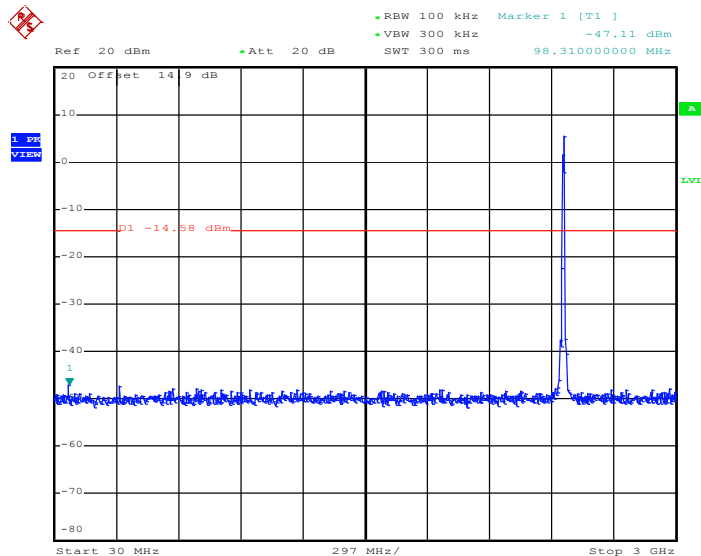
Date: 1.FEB.2012 09:19:33

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

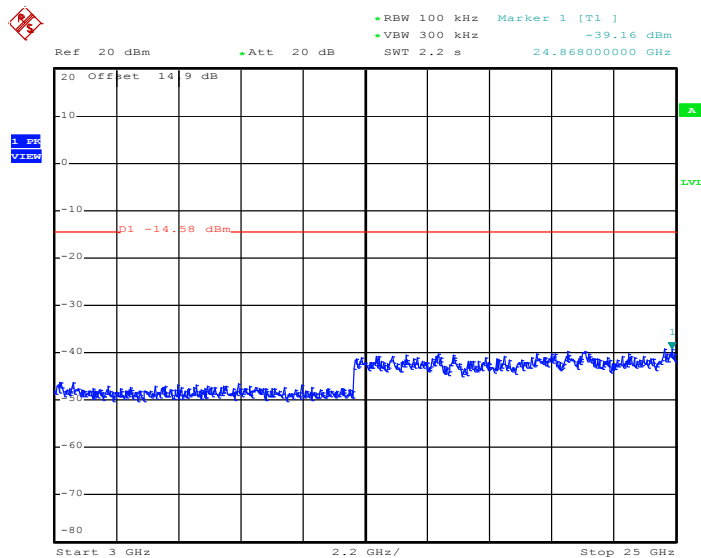


Date: 1.FEB.2012 09:19:50

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


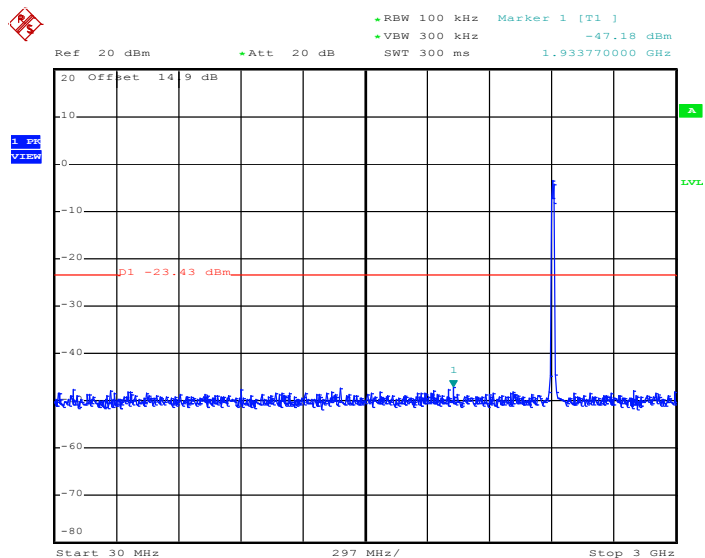
Date: 1.FEB.2012 09:35:34

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


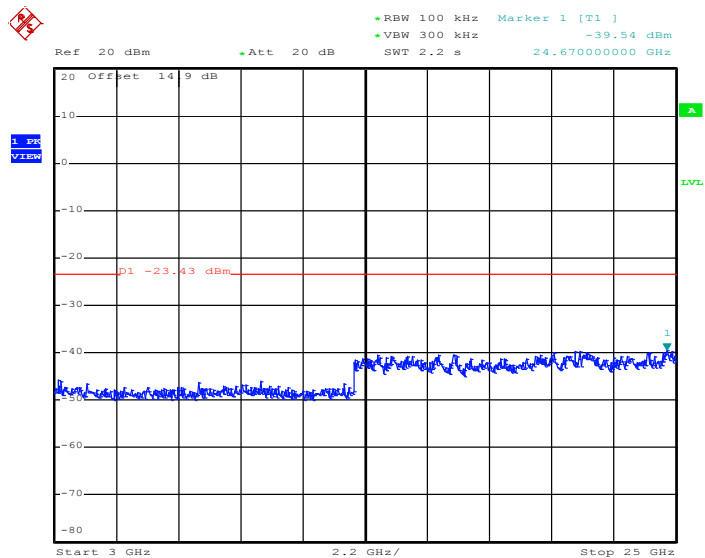
Date: 1.FEB.2012 09:35:51



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

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 1.FEB.2012 10:16:02

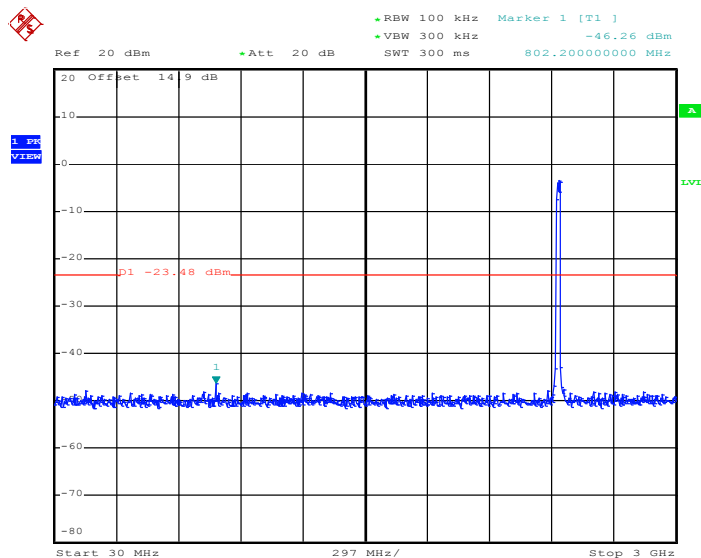
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 1.FEB.2012 10:16:19



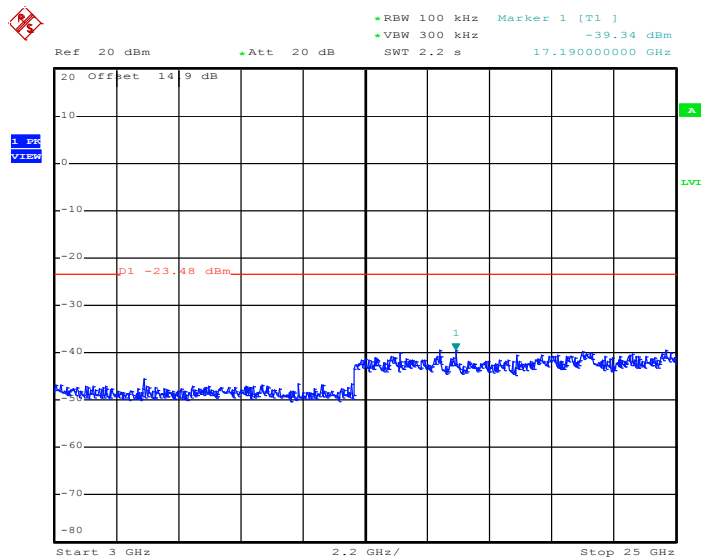
Test Mode :	Mode 5	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	06	Test Engineer :	Zhi lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 1.FEB.2012 10:31:14

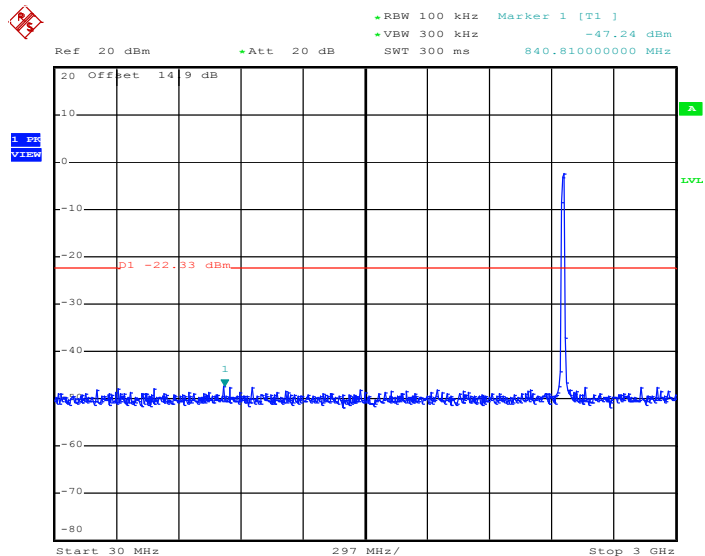
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



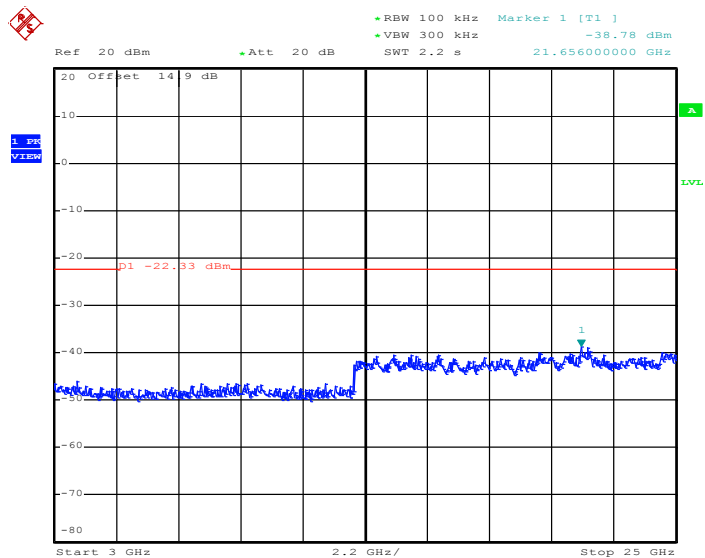
Date: 1.FEB.2012 10:31:31



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

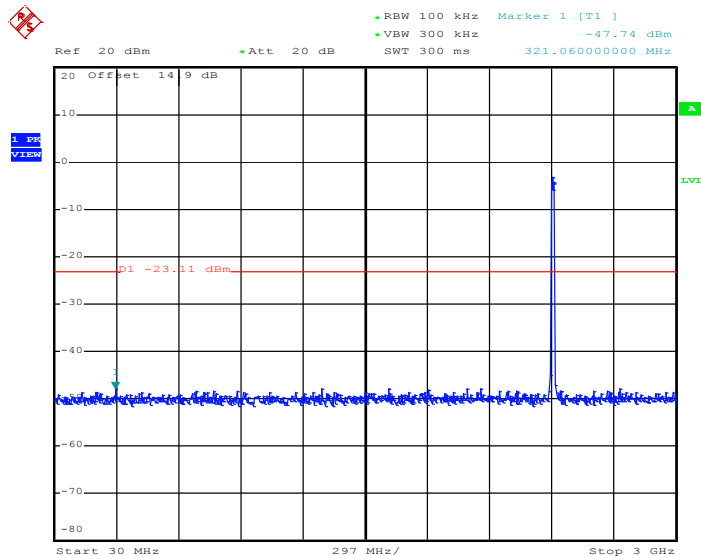
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 1.FEB.2012 10:46:58

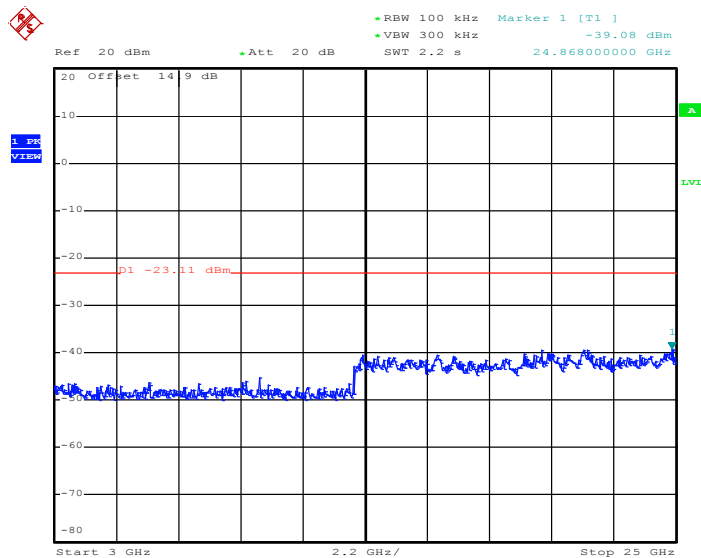
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 1.FEB.2012 10:47:15

Test Mode :	Mode 7	Temperature :	23~24℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Zhi lu

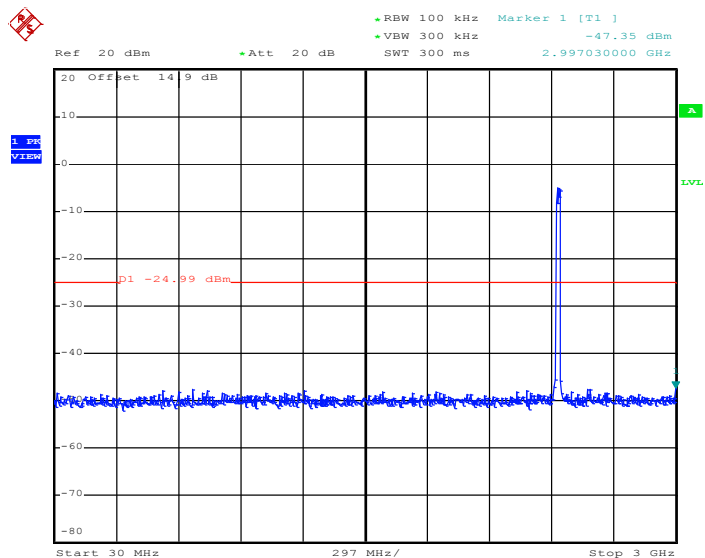
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 1.FEB.2012 11:03:17

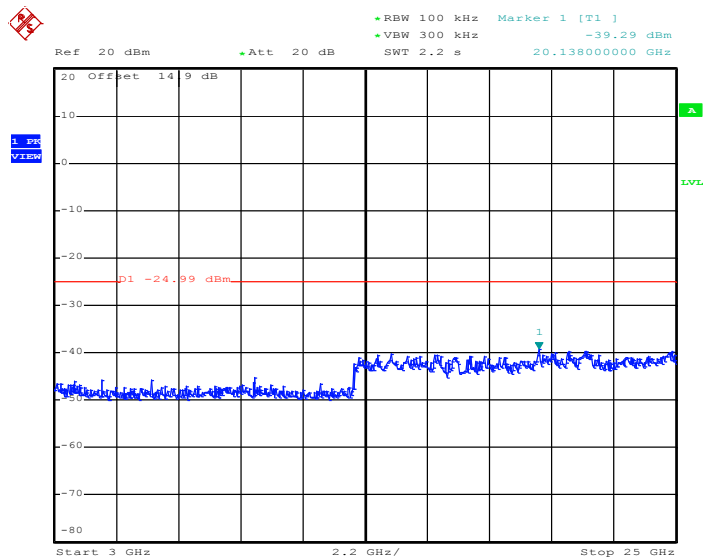
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


Date: 1.FEB.2012 11:03:34

Test Mode :	Mode 8	Temperature :	23~24℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	06	Test Engineer :	Zhi lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 1.FEB.2012 11:25:16

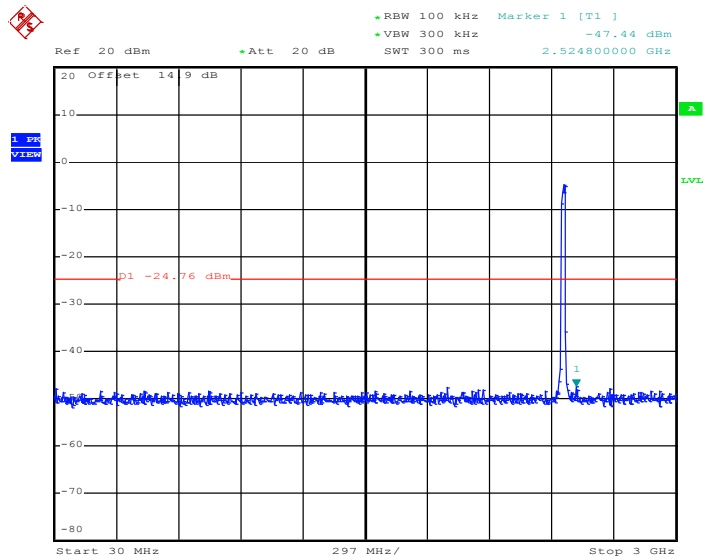
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


Date: 1.FEB.2012 11:25:33



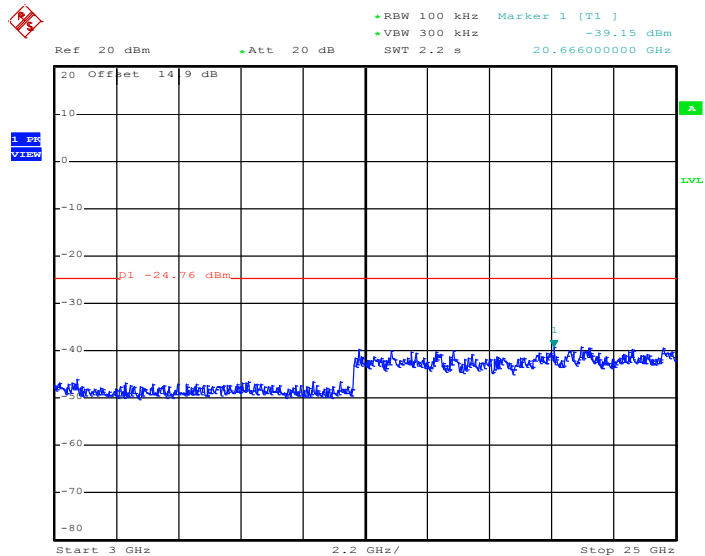
Test Mode :	Mode 9	Temperature :	23~24℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Zhi lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 1.FEB.2012 11:35:20

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 1.FEB.2012 11:35:37

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.

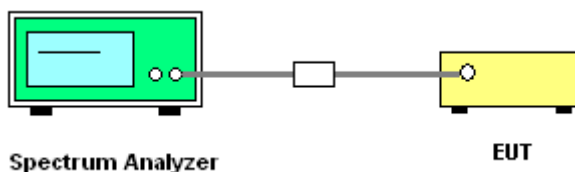
3.5.2 Measuring Instruments

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

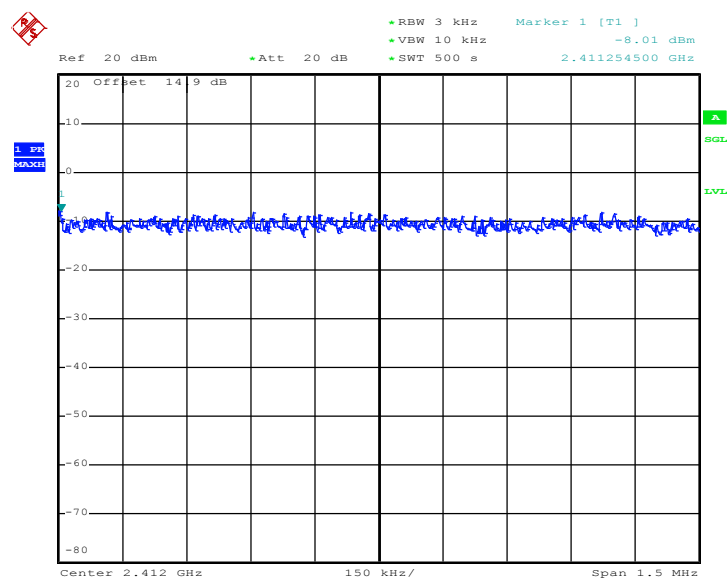


3.5.5 Test Result of Power Spectral Density

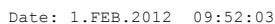
Test Mode :	Mode 1, 2, 3	Temperature :	23~24℃
Test Engineer :	Zhi lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-8.01	8	Pass
06	2437	-6.62	8	Pass
11	2462	-6.86	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01

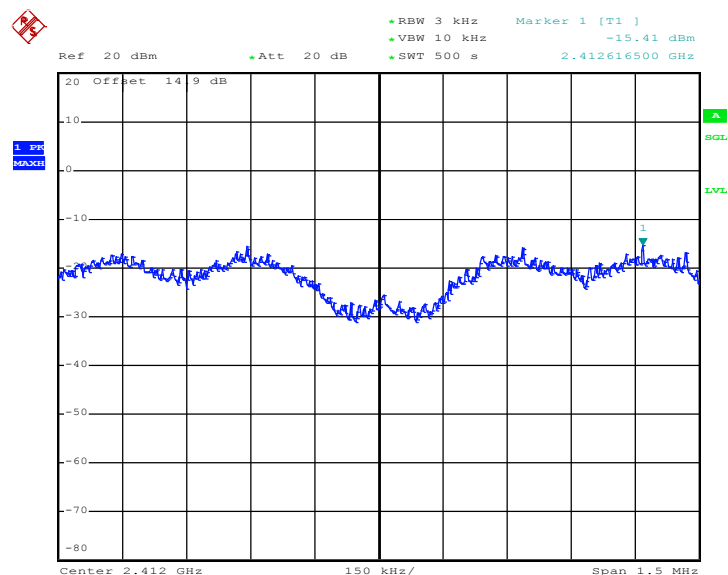


Date: 1.FEB.2012 09:15:25

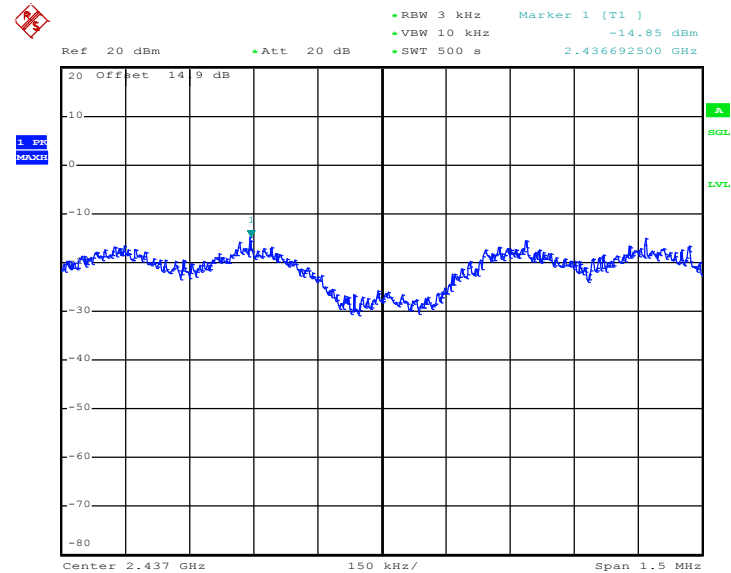


Test Mode :	Mode 4, 5, 6	Temperature :	23~24℃
Test Engineer :	Zhi lu	Relative Humidity :	47~48%

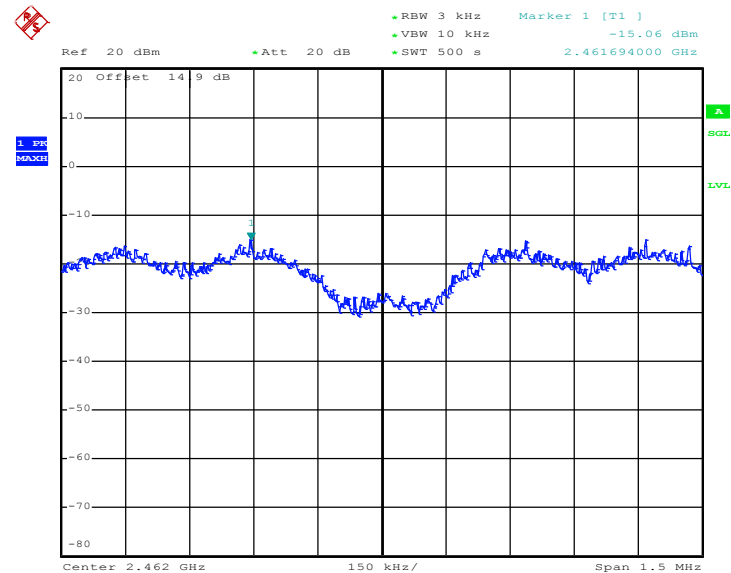
Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-15.41	8	Pass
06	2437	-14.85	8	Pass
11	2462	-15.06	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01


Date: 1.FEB.2012 10:27:58

Mode 5 : PSD Plot on 802.11g Channel 06


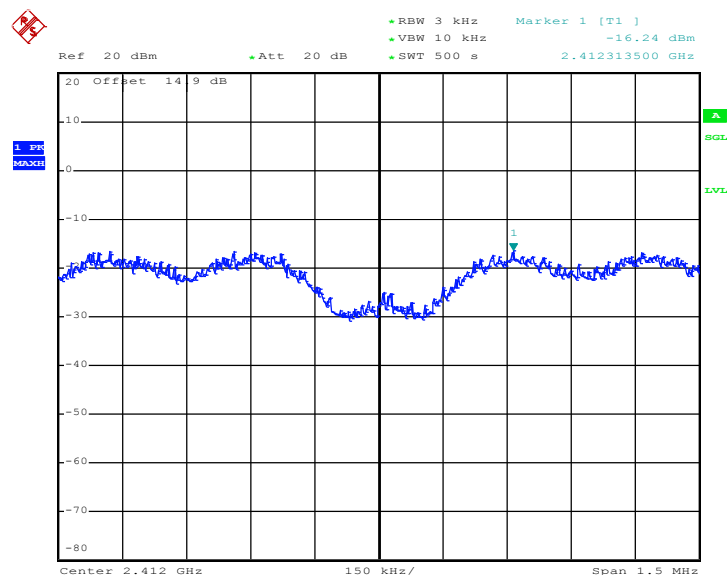
Date: 1.FEB.2012 10:42:58

Mode 6 : PSD Plot on 802.11g Channel 11


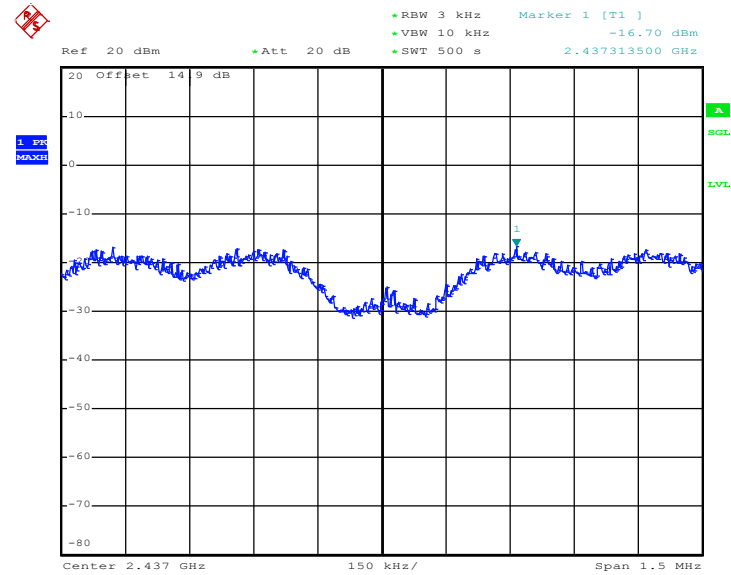
Date: 1.FEB.2012 10:57:57

Test Mode :	Mode 7, 8, 9	Temperature :	23~24℃
Test Engineer :	Zhi lu	Relative Humidity :	47~48%

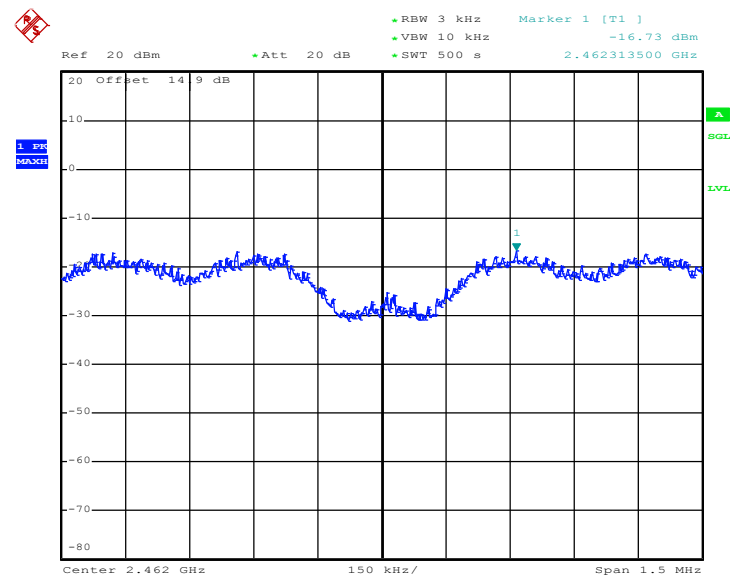
Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-16.24	8	Pass
06	2437	-16.70	8	Pass
11	2462	-16.73	8	Pass

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


Date: 1.FEB.2012 11:13:30

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


Date: 1.FEB.2012 11:24:57

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


Date: 1.FEB.2012 11:52:07

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.

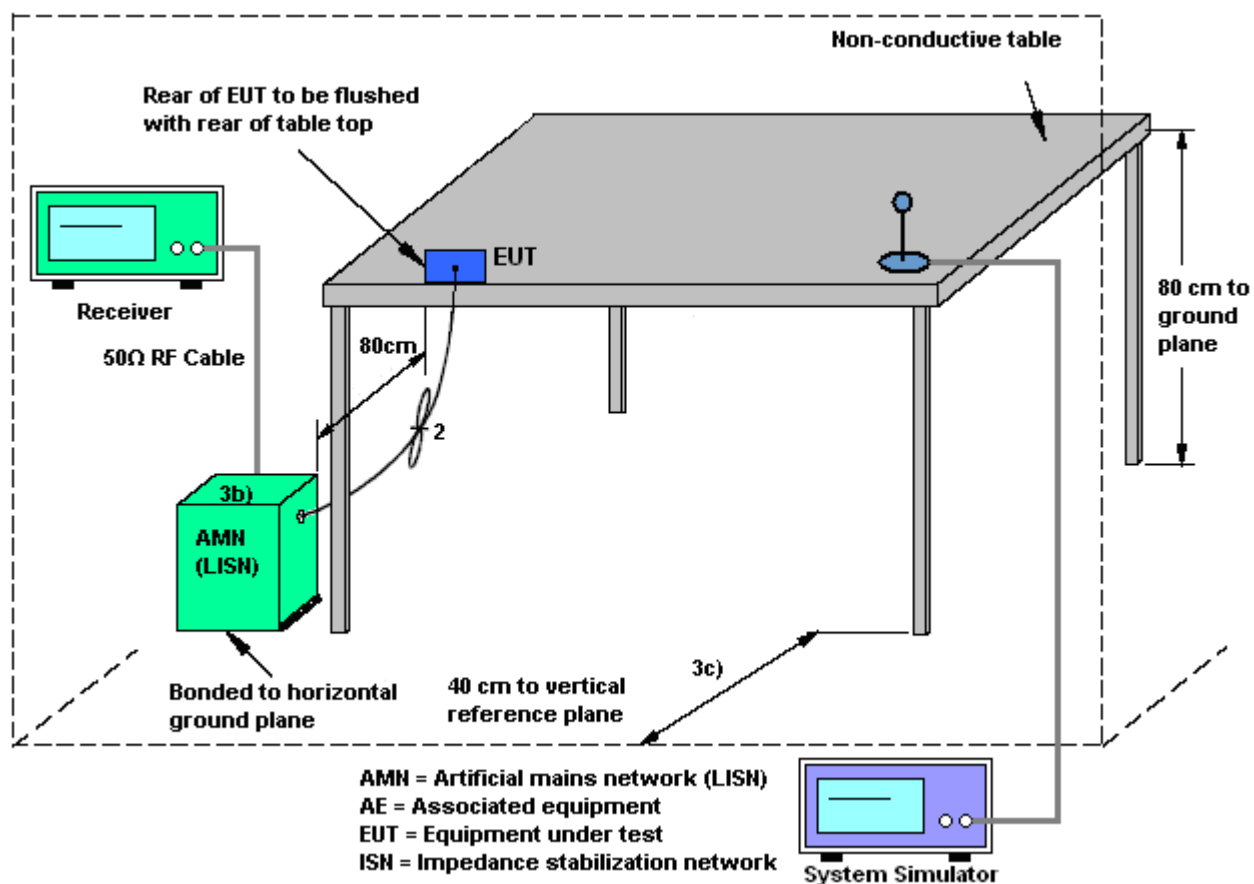
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

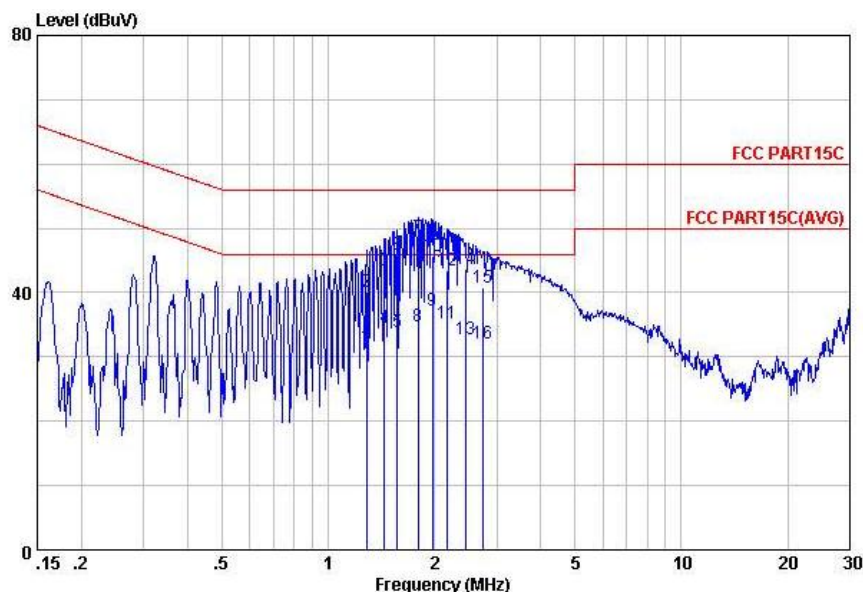
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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 :	Jack Li	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone + Camera		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



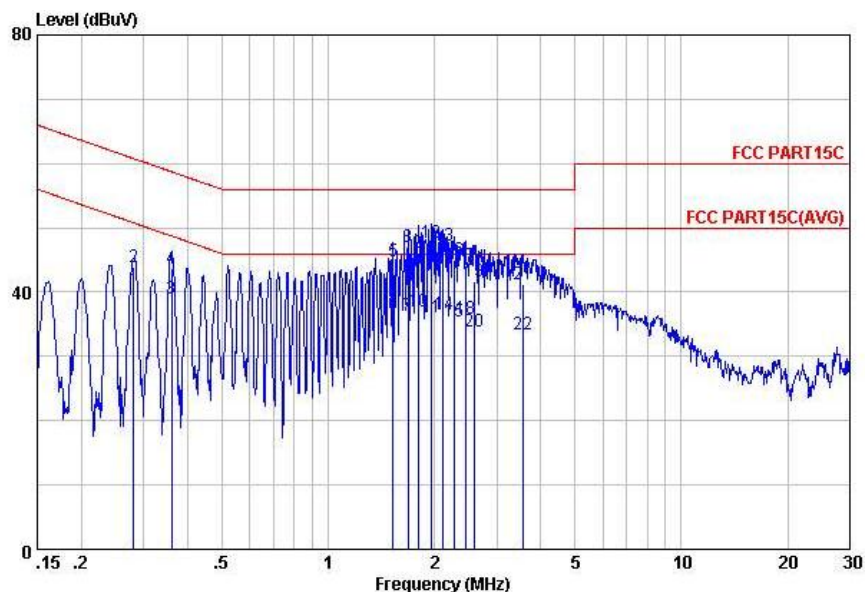
Site : C001-KS
Condition: FCC PART15C LISN-100807 LINE

Mode : mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	1.28	31.58	-14.42	46.00	21.40	-0.10	10.28	Average
2	1.28	40.08	-15.92	56.00	29.90	-0.10	10.28	QP
3	1.44	43.39	-12.61	56.00	33.20	-0.11	10.30	QP
4	1.44	34.49	-11.51	46.00	24.30	-0.11	10.30	Average
5	1.57	33.90	-12.10	46.00	23.71	-0.11	10.30	Average
6	1.57	46.00	-10.00	56.00	35.81	-0.11	10.30	QP
7	1.80	48.51	-7.49	56.00	38.30	-0.11	10.32	QP
8	1.80	34.81	-11.19	46.00	24.60	-0.11	10.32	Average
9	1.97	37.12	-8.88	46.00	26.90	-0.11	10.33	Average
10	1.97	45.62	-10.38	56.00	35.40	-0.11	10.33	QP
11	2.18	35.13	-10.87	46.00	24.90	-0.11	10.34	Average
12	2.18	43.53	-12.47	56.00	33.30	-0.11	10.34	QP
13	2.45	32.84	-13.16	46.00	22.60	-0.11	10.35	Average
14	2.45	43.74	-12.26	56.00	33.50	-0.11	10.35	QP
15	2.75	40.75	-15.25	56.00	30.51	-0.12	10.36	QP
16	2.75	32.05	-13.95	46.00	21.81	-0.12	10.36	Average



Test Mode :	Mode 1	Temperature :	21~22°C
Test Engineer :	Jack Li	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone + Camera		
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 1

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.28	40.29	-10.47	50.76	30.19	-0.07	10.17	Average
2	0.28	43.79	-16.97	60.76	33.69	-0.07	10.17	QP
3	0.36	39.11	-9.63	48.74	29.01	-0.08	10.18	Average
4	0.36	43.71	-15.03	58.74	33.61	-0.08	10.18	QP
5	1.53	44.80	-11.20	56.00	34.60	-0.10	10.30	QP
6	1.53	36.50	-9.50	46.00	26.30	-0.10	10.30	Average
7	1.68	36.41	-9.59	46.00	26.21	-0.11	10.31	Average
8	1.68	47.01	-8.99	56.00	36.81	-0.11	10.31	QP
9	1.80	46.11	-9.89	56.00	35.90	-0.11	10.32	QP
10	1.80	37.01	-8.99	46.00	26.80	-0.11	10.32	Average
11	1.96	36.12	-9.88	46.00	25.90	-0.11	10.33	Average
12	1.96	47.72	-8.28	56.00	37.50	-0.11	10.33	QP
13	2.12	47.33	-8.67	56.00	37.10	-0.11	10.34	QP
14	2.12	36.63	-9.37	46.00	26.40	-0.11	10.34	Average
15	2.28	35.33	-10.67	46.00	25.10	-0.11	10.34	Average
16	2.28	44.93	-11.07	56.00	34.70	-0.11	10.34	QP
17	2.45	44.04	-11.96	56.00	33.80	-0.11	10.35	QP
18	2.45	35.84	-10.16	46.00	25.60	-0.11	10.35	Average
19	2.59	41.74	-14.26	56.00	31.49	-0.11	10.36	QP
20	2.59	33.84	-12.16	46.00	23.59	-0.11	10.36	Average
21	3.57	41.26	-14.74	56.00	31.00	-0.12	10.38	QP
22	3.57	33.36	-12.64	46.00	23.10	-0.12	10.38	Average

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

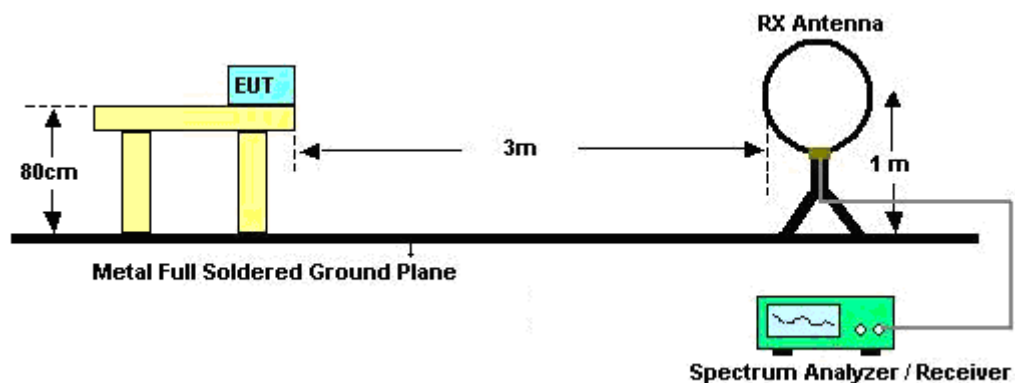
See list of measuring instruments of this test report.

3.7.3 Test Procedures

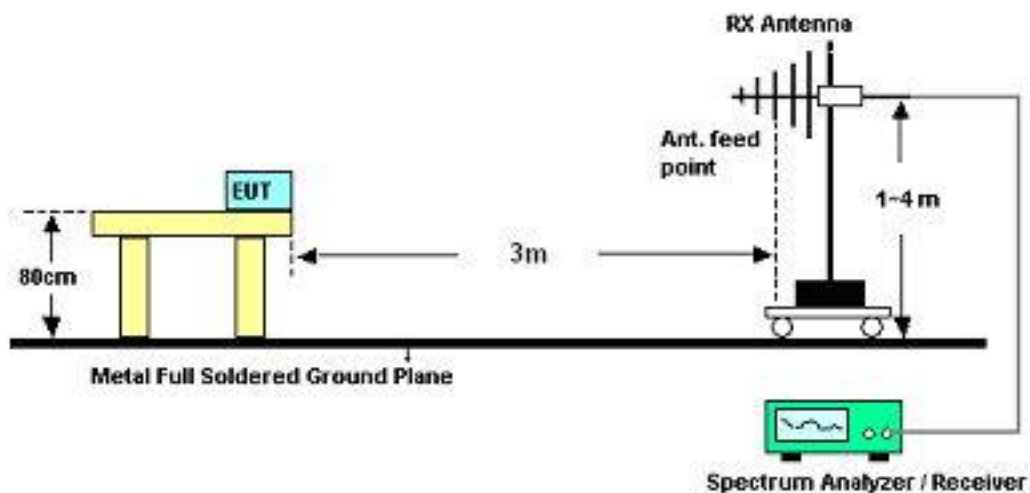
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 KHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep =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

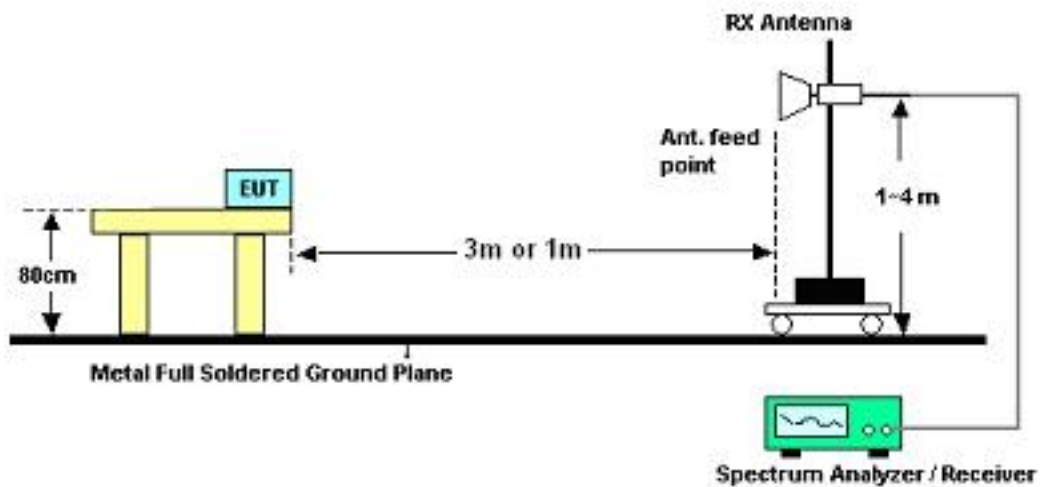
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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 :	22~23°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	David Yang	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
30.54	20.87	-19.13	40	32.51	19.28	0.54	31.46	121	307	Peak
218.46	22.6	-23.4	46	42.27	10.38	1.41	31.46	-	-	Peak
270.3	24.81	-21.19	46	41.65	12.89	1.64	31.37	-	-	Peak
312.6	23.12	-22.88	46	39.01	13.64	1.79	31.32	-	-	Peak
430.2	19.21	-26.79	46	31.45	16.65	2.25	31.14	-	-	Peak
785.8	23.05	-22.95	46	28.74	21.88	3.12	30.69	-	-	Peak
2389.42	47.7	-26.3	74	43.57	32.06	6.03	33.96	187	23	Peak
2389.42	36.07	-17.93	54	31.94	32.06	6.03	33.96	187	23	Average
2412	100.5	-	-	96.32	32.08	6.07	33.97	187	23	Peak
2412	94.69	-	-	90.51	32.08	6.07	33.97	187	23	Average
2484	31.75	-22.25	54	27.39	32.18	6.18	34	187	23	Average
2484	43.94	-30.06	74	39.58	32.18	6.18	34	187	23	Peak
4824	47.27	-26.73	74	63.16	34.1	9.12	59.11	100	0	Peak

Test Mode :	Mode 1	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	David Yang	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
31.89	26	-14	40	38.35	18.56	0.55	31.46	100	33	Peak
73.74	24.05	-15.95	40	47.93	6.81	0.85	31.54	-	-	Peak
223.86	30.24	-15.76	46	49.47	10.78	1.44	31.45	-	-	Peak
301.4	22.31	-23.69	46	38.52	13.35	1.77	31.33	-	-	Peak
416.2	26.21	-19.79	46	38.83	16.34	2.2	31.16	-	-	Peak
727	22.06	-23.94	46	28.8	21.01	3.01	30.76	-	-	Peak
2385.62	52.32	-21.68	74	48.19	32.06	6.03	33.96	115	351	Peak
2385.62	41.29	-12.71	54	37.16	32.06	6.03	33.96	115	351	Average
2412	103.98	-	-	99.8	32.08	6.07	33.97	115	351	Peak
2412	98.67	-	-	94.49	32.08	6.07	33.97	115	351	Average
2484	33.9	-20.1	54	29.54	32.18	6.18	34	115	351	Average
2484	45.58	-28.42	74	41.22	32.18	6.18	34	115	351	Peak
4824	51.5	-22.5	74	67.39	34.1	9.12	59.11	113	292	Peak
4824	48.65	-5.35	54	64.54	34.1	9.12	59.11	113	292	Average

Test Mode :	Mode 2	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	David Yang	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
31.89	19.56	-20.44	40	31.91	18.56	0.55	31.46	-	-	Peak
238.98	23.48	-22.52	46	41.59	11.79	1.52	31.42	-	-	Peak
264.9	24.08	-21.92	46	41.05	12.81	1.62	31.4	-	-	Peak
312.6	26.43	-19.57	46	42.32	13.64	1.79	31.32	131	146	Peak
536.6	18.62	-27.38	46	28.39	18.71	2.52	31	-	-	Peak
788.6	23.62	-22.38	46	29.25	21.93	3.12	30.68	-	-	Peak
2318	43.89	-30.11	74	39.94	31.96	5.92	33.93	187	17	Peak
2318	32.08	-21.92	54	28.13	31.96	5.92	33.93	187	17	Average
2437	100.36	-	-	96.13	32.1	6.11	33.98	187	17	Peak
2437	95.29	-	-	91.03	32.13	6.11	33.98	187	17	Average
2484	44.81	-29.19	74	40.45	32.18	6.18	34	187	17	Peak
2484	32.01	-21.99	54	27.65	32.18	6.18	34	187	17	Average
4874	46.49	-27.51	74	62.3	34.1	9.13	59.04	100	0	Peak

Test Mode :	Mode 2	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	David Yang	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
31.89	26.25	-13.75	40	38.6	18.56	0.55	31.46	100	323	Peak
74.82	24.23	-15.77	40	47.98	6.94	0.85	31.54	-	-	Peak
207.93	28.78	-14.72	43.5	49.26	9.64	1.35	31.47	-	-	Peak
323.8	29.01	-16.99	46	44.54	13.96	1.83	31.32	-	-	Peak
517.7	21.86	-24.14	46	32.01	18.4	2.49	31.04	-	-	Peak
716.5	22.04	-23.96	46	28.99	20.85	2.98	30.78	-	-	Peak
2382	46.94	-27.06	74	42.84	32.03	6.03	33.96	115	314	Peak
2382	35.22	-18.78	54	31.12	32.03	6.03	33.96	115	314	Average
2437	104.81	-	-	100.55	32.13	6.11	33.98	115	314	Peak
2437	99.63	-	-	95.37	32.13	6.11	33.98	115	314	Average
2484	47.63	-26.37	74	43.27	32.18	6.18	34	115	314	Peak
2484	34.95	-19.05	54	30.59	32.18	6.18	34	115	314	Average
4874	51.16	-22.84	74	66.97	34.1	9.13	59.04	100	275	Peak
4874	48.42	-5.58	54	64.23	34.1	9.13	59.04	100	275	Average

Test Mode :	Mode 3	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	David Yang	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
31.62	19.74	-20.26	40	32.09	18.56	0.55	31.46	-	-	Peak
214.41	23.69	-19.81	43.5	43.67	10.11	1.38	31.47	140	161	Peak
281.37	22.77	-23.23	46	39.44	13.04	1.64	31.35	-	-	Peak
301.4	21.7	-24.3	46	37.91	13.35	1.77	31.33	-	-	Peak
408.5	21.11	-24.89	46	33.93	16.18	2.17	31.17	-	-	Peak
673.8	21.69	-24.31	46	29.26	20.39	2.89	30.85	-	-	Peak
2388	44.25	-29.75	74	40.12	32.06	6.03	33.96	126	32	Peak
2388	32.3	-21.7	54	28.17	32.06	6.03	33.96	126	32	Average
2462	100.33	-	-	96.03	32.15	6.14	33.99	126	32	Peak
2462	95.01	-	-	90.71	32.15	6.14	33.99	126	32	Average
2492.02	48.87	-25.13	74	44.49	32.2	6.18	34	126	32	Peak
2492.02	39.79	-14.21	54	35.41	32.2	6.18	34	126	32	Average
4924	50.79	-23.21	74	66.5	34.1	9.15	58.96	100	0	Peak

Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	David Yang	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
31.89	25.84	-14.16	40	38.19	18.56	0.55	31.46	100	112	Peak
71.85	24.32	-15.68	40	48.48	6.55	0.84	31.55	-	-	Peak
231.42	33.62	-12.38	46	52.25	11.32	1.49	31.44	-	-	Peak
307.7	23.12	-22.88	46	39.15	13.51	1.79	31.33	-	-	Peak
584.9	25.95	-20.05	46	34.7	19.54	2.65	30.94	-	-	Peak
785.8	23.13	-22.87	46	28.82	21.88	3.12	30.69	-	-	Peak
2390	46.63	-27.37	74	42.5	32.06	6.03	33.96	115	320	Peak
2390	34.93	-19.07	54	30.8	32.06	6.03	33.96	115	320	Average
2462	99.73	-	-	95.43	32.15	6.14	33.99	115	320	Average
2462	104.07	-	-	99.77	32.15	6.14	33.99	115	320	Peak
2492.21	51.14	-22.86	74	46.76	32.2	6.18	34	115	320	Peak
2492.21	43	-11	54	38.62	32.2	6.18	34	115	320	Average
4924	54.18	-19.82	74	69.89	34.1	9.15	58.96	100	336	Peak
4924	50.92	-3.08	54	66.63	34.1	9.15	58.96	100	336	Average

Test Mode :	Mode 4	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	David Yang	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
32.7	19.35	-20.65	40	32.42	17.84	0.56	31.47	130	166	Peak
221.97	24.7	-21.3	46	44.08	10.65	1.43	31.46	-	-	Peak
236.01	24.63	-21.37	46	42.96	11.59	1.51	31.43	-	-	Peak
335.7	22.96	-23.04	46	38.12	14.27	1.87	31.3	-	-	Peak
410.6	24.05	-21.95	46	36.81	16.22	2.18	31.16	-	-	Peak
663.3	21	-25	46	28.69	20.3	2.87	30.86	-	-	Peak
2389.99	53.34	-20.66	74	49.21	32.06	6.03	33.96	100	24	Peak
2389.99	35.44	-18.56	54	31.31	32.06	6.03	33.96	100	24	Average
2412	97.52	-	-	93.34	32.08	6.07	33.97	100	24	Peak
2412	78.54	-	-	74.36	32.08	6.07	33.97	100	24	Average
2484	30.74	-23.26	54	26.38	32.18	6.18	34	100	24	Average
2484	43.63	-30.37	74	39.27	32.18	6.18	34	100	24	Peak

Test Mode :	Mode 4	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	David Yang	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
31.89	25.81	-14.19	40	38.16	18.56	0.55	31.46	103	89	Peak
74.01	24.34	-15.66	40	48.22	6.81	0.85	31.54	-	-	Peak
199.02	26.14	-17.36	43.5	47.21	9.09	1.32	31.48	-	-	Peak
337.8	21.26	-24.74	46	36.36	14.32	1.88	31.3	-	-	Peak
405.7	24.38	-21.62	46	37.27	16.12	2.16	31.17	-	-	Peak
746.6	22.75	-23.25	46	29.11	21.3	3.05	30.71	-	-	Peak
2387.9	57.26	-16.74	74	53.13	32.06	6.03	33.96	143	343	Peak
2387.9	38.09	-15.91	54	33.96	32.06	6.03	33.96	143	343	Average
2412	102.87	-	-	98.69	32.08	6.07	33.97	143	343	Peak
2412	82.8	-	-	78.62	32.08	6.07	33.97	143	343	Average
2492	31.25	-22.75	54	26.87	32.2	6.18	34	143	343	Average
2492	43.75	-30.25	74	39.37	32.2	6.18	34	143	343	Peak
4824	43.37	-30.63	74	59.26	34.1	9.12	59.11	100	0	Peak

Test Mode :	Mode 5	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	David Yang	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
31.62	20.25	-19.75	40	32.6	18.56	0.55	31.46	-	-	Peak
242.22	31.78	-14.22	46	49.61	12.06	1.53	31.42	132	315	Peak
268.41	23.08	-22.92	46	39.97	12.86	1.63	31.38	-	-	Peak
335	23.66	-22.34	46	38.86	14.24	1.87	31.31	-	-	Peak
554.1	20	-26	46	29.41	19.01	2.56	30.98	-	-	Peak
816.6	23.82	-22.18	46	29.07	22.27	3.18	30.7	-	-	Peak
2364	44.57	-29.43	74	40.52	32.01	5.99	33.95	185	20	Peak
2364	32.47	-21.53	54	28.42	32.01	5.99	33.95	185	20	Average
2437	99.03	-	-	94.77	32.13	6.11	33.98	185	20	Peak
2437	79.78	-	-	75.52	32.13	6.11	33.98	185	20	Average
2484	44	-30	74	39.64	32.18	6.18	34	185	20	Peak
2484	31.27	-22.73	54	26.91	32.18	6.18	34	185	20	Average
4874	43.76	-30.24	74	59.56	34.1	9.14	59.04	100	0	Peak

Test Mode :	Mode 5	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	David Yang	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
31.62	25.27	-14.73	40	37.62	18.56	0.55	31.46	102	100	Peak
98.58	24.74	-18.76	43.5	45.61	9.68	0.99	31.54	-	-	Peak
292.17	28.99	-17.01	46	45.41	13.19	1.71	31.32	-	-	Peak
307.7	23.7	-22.3	46	39.73	13.51	1.79	31.33	-	-	Peak
593.3	26.83	-19.17	46	35.41	19.68	2.67	30.93	-	-	Peak
803.3	23.1	-22.9	46	28.5	22.13	3.15	30.68	-	-	Peak
2388	46.15	-27.85	74	42.02	32.06	6.03	33.96	140	341	Peak
2388	34.06	-19.94	54	29.93	32.06	6.03	33.96	140	341	Average
2437	103.5	-	-	99.27	32.1	6.11	33.98	140	341	Peak
2437	82.45	-	-	78.19	32.13	6.11	33.98	140	341	Average
2492	45.18	-28.82	74	40.8	32.2	6.18	34	140	341	Peak
2492	32.4	-21.6	54	28.02	32.2	6.18	34	140	341	Average
4874	44.15	-29.85	74	59.96	34.1	9.13	59.04	100	0	Peak

Test Mode :	Mode 6	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	David Yang	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
30	20.01	-19.99	40	30.94	20	0.53	31.46	100	352	Peak
105.33	20.89	-22.61	43.5	41.07	10.34	1.03	31.55	-	-	Peak
269.22	24.8	-21.2	46	41.67	12.87	1.64	31.38	-	-	Peak
304.9	22.31	-23.69	46	38.43	13.43	1.78	31.33	-	-	Peak
561.8	20.05	-25.95	46	29.3	19.14	2.58	30.97	-	-	Peak
771.8	22.69	-23.31	46	28.6	21.68	3.1	30.69	-	-	Peak
2390	43.61	-30.39	74	39.48	32.06	6.03	33.96	183	20	Peak
2390	32.23	-21.77	54	28.1	32.06	6.03	33.96	183	20	Average
2462	79.44	-	-	75.14	32.15	6.14	33.99	183	20	Average
2462	98.83	-	-	94.53	32.15	6.14	33.99	183	20	Peak
2484.61	52.19	-21.81	74	47.83	32.18	6.18	34	183	20	Peak
2484.61	36.29	-17.71	54	31.93	32.18	6.18	34	183	20	Average
4924	44.39	-29.61	74	60.1	34.1	9.15	58.96	100	0	Peak

Test Mode :	Mode 6	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	David Yang	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
31.62	25.92	-14.08	40	38.27	18.56	0.55	31.46	-	-	Peak
74.82	24.46	-15.54	40	48.21	6.94	0.85	31.54	-	-	Peak
254.37	32.41	-13.59	46	49.62	12.65	1.55	31.41	122	103	Peak
335	28.42	-17.58	46	43.62	14.24	1.87	31.31	-	-	Peak
545.7	24.02	-21.98	46	33.59	18.88	2.54	30.99	-	-	Peak
769.7	22.95	-23.05	46	28.9	21.65	3.09	30.69	-	-	Peak
2388	45.2	-28.8	74	41.07	32.06	6.03	33.96	142	318	Peak
2388	32.98	-21.02	54	28.85	32.06	6.03	33.96	142	318	Average
2462	82.83	-	-	78.53	32.15	6.14	33.99	142	318	Average
2462	103.43	-	-	99.13	32.15	6.14	33.99	142	318	Peak
2484.42	56.13	-17.87	74	51.77	32.18	6.18	34	142	318	Peak
2484.42	38.07	-15.93	54	33.71	32.18	6.18	34	142	318	Average
4924	46.59	-27.41	74	62.3	34.1	9.15	58.96	100	0	Peak

Test Mode :	Mode 7	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	David Yang	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
30.81	19.73	-20.27	40	31.37	19.28	0.54	31.46	-	-	Peak
237.09	26.57	-19.43	46	44.83	11.66	1.51	31.43	130	162	Peak
296.22	26.55	-19.45	46	42.89	13.25	1.74	31.33	-	-	Peak
340.6	19.79	-26.21	46	34.8	14.4	1.89	31.3	-	-	Peak
484.1	20.45	-25.55	46	31.36	17.76	2.39	31.06	-	-	Peak
736.1	21.76	-24.24	46	28.32	21.14	3.03	30.73	-	-	Peak
2389.61	51.76	-22.24	74	47.63	32.06	6.03	33.96	187	41	Peak
2389.61	35.41	-18.59	54	31.28	32.06	6.03	33.96	187	41	Average
2412	98.89	-	-	94.71	32.08	6.07	33.97	187	41	Peak
2412	80.66	-	-	76.48	32.08	6.07	33.97	187	41	Average
2492	31	-23	54	26.62	32.2	6.18	34	187	41	Average
2492	43.62	-30.38	74	39.24	32.2	6.18	34	187	41	Peak

Test Mode :	Mode 7	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	David Yang	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
31.89	26.68	-13.32	40	39.03	18.56	0.55	31.46	100	123	Peak
99.93	24.89	-18.61	43.5	45.64	9.8	0.99	31.54	-	-	Peak
202.53	25.94	-17.56	43.5	46.79	9.3	1.33	31.48	-	-	Peak
352.5	23.21	-22.79	46	37.78	14.72	1.99	31.28	-	-	Peak
531.7	19.89	-26.11	46	29.76	18.63	2.51	31.01	-	-	Peak
792.1	22.72	-23.28	46	28.29	21.98	3.13	30.68	-	-	Peak
2389.99	59.04	-14.96	74	54.91	32.06	6.03	33.96	116	340	Peak
2389.99	40.27	-13.73	54	36.14	32.06	6.03	33.96	116	340	Average
2412	101.79	-	-	97.61	32.08	6.07	33.97	116	340	Peak
2412	83.27	-	-	79.09	32.08	6.07	33.97	116	340	Average
2484	31.34	-22.66	54	26.98	32.18	6.18	34	116	340	Average
2484	43.48	-30.52	74	39.12	32.18	6.18	34	116	340	Peak
4824	43.57	-30.43	74	59.46	34.1	9.12	59.11	100	0	Peak

Test Mode :	Mode 8	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	David Yang	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	20.93	-19.07	40	31.86	20	0.53	31.46	-	-	Peak
132.33	19.88	-23.62	43.5	38.73	11.56	1.16	31.57	-	-	Peak
229.53	24.22	-21.78	46	42.99	11.19	1.48	31.44	-	-	Peak
327.3	27.69	-18.31	46	43.13	14.03	1.84	31.31	127	249	Peak
391.7	22.14	-23.86	46	35.43	15.79	2.12	31.2	-	-	Peak
696.9	21.98	-24.02	46	29.29	20.58	2.93	30.82	-	-	Peak
2388	43.94	-30.06	74	39.81	32.06	6.03	33.96	186	18	Peak
2388	32.44	-21.56	54	28.31	32.06	6.03	33.96	186	18	Average
2437	98.7	-	-	94.44	32.13	6.11	33.98	186	18	Peak
2437	81.17	-	-	76.91	32.13	6.11	33.98	186	18	Average
2492	43.17	-30.83	74	38.79	32.2	6.18	34	186	18	Peak
2492	31.31	-22.69	54	26.93	32.2	6.18	34	186	18	Average



Test Mode :	Mode 8	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	David Yang	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
31.62	26.13	-13.87	40	38.48	18.56	0.55	31.46	-	-	Peak
72.93	27.38	-12.62	40	51.4	6.68	0.85	31.55	109	323	Peak
202.53	28.94	-14.56	43.5	49.79	9.3	1.33	31.48	-	-	Peak
307	28.5	-17.5	46	44.53	13.51	1.79	31.33	-	-	Peak
489	20.06	-25.94	46	30.85	17.86	2.41	31.06	-	-	Peak
750.1	22.47	-23.53	46	28.77	21.34	3.06	30.7	-	-	Peak
2390	46.43	-27.57	74	42.3	32.06	6.03	33.96	114	340	Peak
2390	33.62	-20.38	54	29.49	32.06	6.03	33.96	114	340	Average
2437	101.72	-	-	97.49	32.1	6.11	33.98	114	340	Peak
2437	83.97	-	-	79.71	32.13	6.11	33.98	114	340	Average
2492	44.53	-29.47	74	40.15	32.2	6.18	34	114	340	Peak
2492	31.74	-22.26	54	27.36	32.2	6.18	34	114	340	Average
4874	43.63	-30.37	74	59.43	34.1	9.14	59.04	100	0	Peak

Test Mode :	Mode 9	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	David Yang	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
31.89	20.37	-19.63	40	32.72	18.56	0.55	31.46	105	221	Peak
132.33	20.7	-22.8	43.5	39.55	11.56	1.16	31.57	-	-	Peak
268.14	25.51	-20.49	46	42.4	12.86	1.63	31.38	-	-	Peak
335	24.47	-21.53	46	39.67	14.24	1.87	31.31	-	-	Peak
540.1	19.45	-26.55	46	29.14	18.78	2.53	31	-	-	Peak
764.1	22.16	-23.84	46	28.21	21.56	3.08	30.69	-	-	Peak
2390	43.84	-30.16	74	39.71	32.06	6.03	33.96	184	37	Peak
2390	31.84	-22.16	54	27.71	32.06	6.03	33.96	184	37	Average
2462	80.84	-	-	76.54	32.15	6.14	33.99	184	37	Average
2462	98.15	-	-	93.85	32.15	6.14	33.99	184	37	Peak
2484.61	50.34	-23.66	74	45.98	32.18	6.18	34	184	37	Peak
2484.61	35.92	-18.08	54	31.56	32.18	6.18	34	184	37	Average
4924	45.33	-28.67	74	61.04	34.1	9.15	58.96	100	0	Peak

Test Mode :	Mode 9	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	David Yang	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
31.62	25.57	-14.43	40	37.92	18.56	0.55	31.46	109	311	Peak
99.66	24.57	-18.93	43.5	45.32	9.8	0.99	31.54	-	-	Peak
285.42	31.55	-14.45	46	48.13	13.09	1.66	31.33	-	-	Peak
307.7	24.08	-21.92	46	40.11	13.51	1.79	31.33	-	-	Peak
592.6	23.78	-22.22	46	32.37	19.67	2.67	30.93	-	-	Peak
792.1	22.9	-23.1	46	28.47	21.98	3.13	30.68	-	-	Peak
2390	44.95	-29.05	74	40.82	32.06	6.03	33.96	167	353	Peak
2390	32.47	-21.53	54	28.34	32.06	6.03	33.96	167	353	Average
2462	101.82	-	-	97.52	32.15	6.14	33.99	167	353	Peak
2462	83.03	-	-	78.73	32.15	6.14	33.99	167	353	Average
2483.5	51.36	-22.64	74	47	32.18	6.18	34	167	353	Peak
2483.5	36.67	-17.33	54	32.31	32.18	6.18	34	167	353	Average
4924	45.57	-28.43	74	61.28	34.1	9.15	58.96	100	0	Peak

3.8 Antenna Requirements

3.8.1 Standard Applicable

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

3.8.2 Antenna Connected Construction

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

3.8.3 Antenna Gain

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Jan. 20, 2012~ Feb. 02, 2012	Dec. 29, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY451015 55	N/A	Aug. 23, 2011	Jan. 20, 2012~ Feb. 02, 2012	Aug. 22, 2012	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY444211 98	N/A	Aug. 23, 2011	Jan. 20, 2012~ Feb. 02, 2012	Aug. 22, 2012	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 02, 2011	Dec. 29, 2011	Jun. 01, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Jan. 07, 2011	Dec. 29, 2011	Jan. 06, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Jan. 07, 2011	Dec. 29, 2011	Jan. 06, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000 0811	N/A	Nov. 16, 2011	Dec. 29, 2011	Nov. 15, 2012	Conduction (CO01-KS)
System Simulator	R&S	CMU200	116456	Full-Band	Sep. 20, 2011	Dec. 29, 2011	Sep. 19, 2012	Conduction (CO01-KS)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 22, 2011	Jan. 26, 2012~ Feb. 10, 2012	Oct. 21, 2012	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP30	101067	9KHz ~ 30GHz	Dec. 06, 2011	Jan. 26, 2012~ Feb. 10, 2012	Dec. 05, 2012	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 10, 2011	Jan. 26, 2012~ Feb. 10, 2012	Aug. 09, 2012	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A023 62	1GHz~ 26.5GHz	Dec. 05, 2011	Jan. 26, 2012~ Feb. 10, 2012	Dec. 04, 2012	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Mar. 29, 2011	Jan. 26, 2012~ Feb. 10, 2012	Mar. 28, 2012	Radiation (03CH07-HY)
EMI TEST RECEIVER	R&S	ESCI 7	100724	9kHz~7GHz	Aug. 22, 2011	Jan. 26, 2012~ Feb. 10, 2012	Aug. 21, 2012	Radiation (03CH07-HY)
Pre Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	159088	1GHz ~ 18GHz	Feb. 21, 2011	Jan. 26, 2012~ Feb. 10, 2012	Feb. 20, 2012	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/00 1	9 kHz~30 MHz	Jul. 29, 2010	Jan. 26, 2012~ Feb. 10, 2012	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				