

FCC RF Test Report

APPLICANT : INQ Mobile Ltd.
EQUIPMENT : mobile phone
BRAND NAME : INQ
MODEL NAME : T2-218U
FCC ID : ZEN0020241907
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Sep. 29, 2010 and completely tested on Feb. 11, 2011. We, SPORTON INTERNATIONAL (KUNSHAN) 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:



Roy Wu / Manager



SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR092959B	Rev. 01	Initial issue of report	Feb. 14, 2011
FR092959B	Rev. 02	Update report for revising FCC ID	Mar. 28, 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 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 11.02 dB at 1.08 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 0.2 dB at 2483.50 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

INQ Mobile Ltd.

PO Box 957, Offshore Incorporations Centre, Road Town, Tortola, British Virgin Islands

1.2 Manufacturer

Huizhou BYD Electronic Co., Ltd.

Xiangshui River, Economic Development Zone, Daya Bay, Huizhou, Guangdong, 516083, P.R.China

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	mobile phone
Brand Name	INQ
Model Name	T2-218U
FCC ID	ZEN0020241907
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 : 22.24 dBm (0.168 W) 802.11g : 24.18 dBm (0.262 W)
Antenna Type	Chip Antenna with gain -5.50 dBi
HW Version	W701T_MB_US_B4
SW Version	BDLT_V0.3_GCF_20101217_B_eng
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of Digital Transmission System (DTS).
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978	
Test Site No.	Sporton Site No.	
	TH01-KS	03CH01-KS

1.5 Applied Standards

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

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

Remark:

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

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
3.	DC Power Supply	GW	GPC-60300	N/A	N/A	Unshielded, 1.8 m
4.	Bluetooth Earphone	Cellink	BTBS-6025-F	PQY-4710874200357	N/A	N/A
5.	Notebook	Dell	P08S	QDS-BRCM1030	N/A	AC I/P: Unshielded, 1.84m DC O/P: Shielded, 0.9m
6.	Router	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	20.30	20.28	20.24	20.31
CH 06	2437 MHz	21.45	21.32	21.42	21.37
CH 11	2462 MHz	22.11	22.24	22.21	22.14

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	23.90	23.96	23.88	23.64	23.71	23.77	23.91	23.96
CH 06	2437 MHz	24.13	23.97	23.95	23.92	23.94	24.02	24.12	24.18
CH 11	2462 MHz	24.03	23.92	23.95	24.01	23.98	24.02	24.13	24.15

Remark:

1. The data rates of WLAN 802.11b/g were set in 2Mbps for 802.11b and 54Mbps for 802.11g, for all the test cases due to the highest RF output power.
2. The EUT is programmed to transmit signals continuously for all testing.

2.2 Test Mode

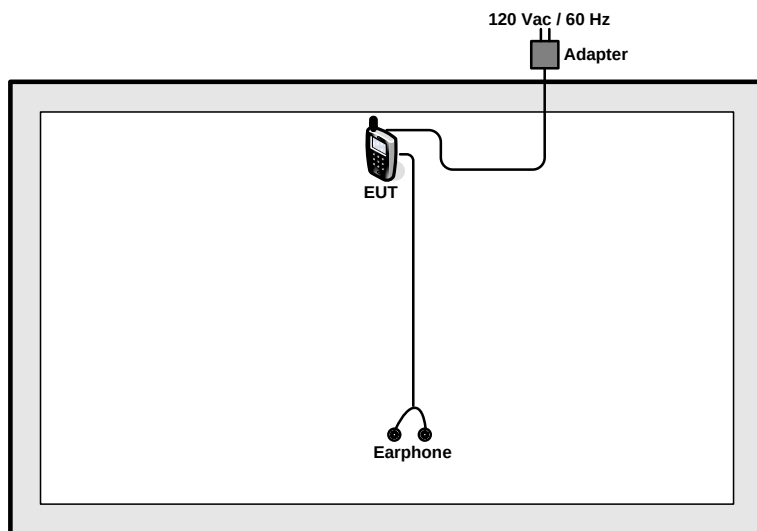
The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic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

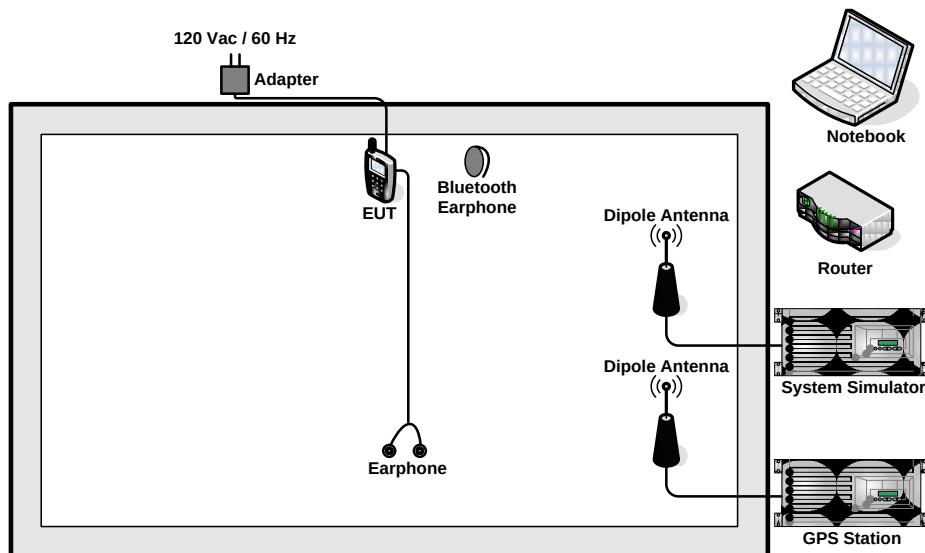
Test Cases		
Test Item	802.11b	802.11g
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4 : 802.11g CH01_2412 MHz Mode 5 : 802.11g CH06_2437 MHz Mode 6 : 802.11g CH11_2462 MHz
Radiated TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437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

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>





2.4 RF Utility

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

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

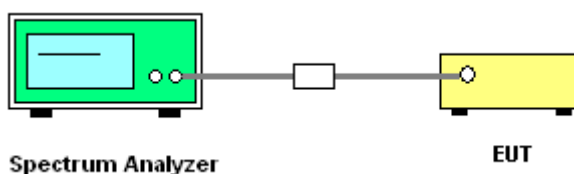
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

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

3.1.4 Test Setup

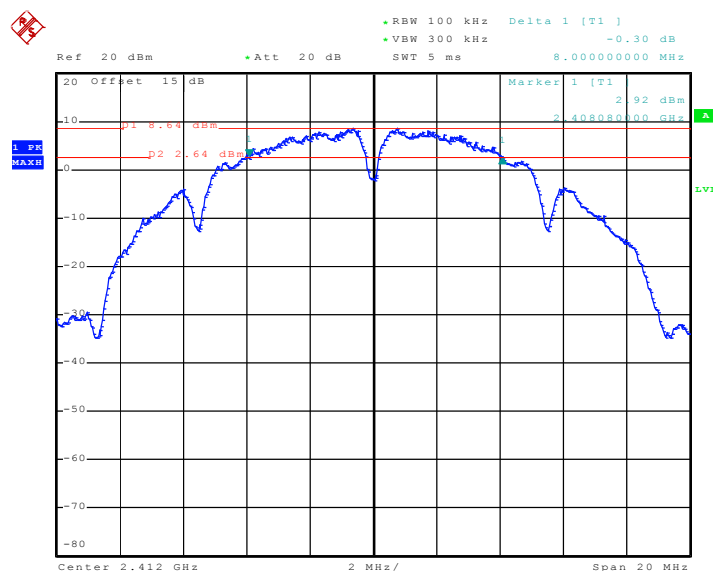


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	22~25℃
Test Engineer :	Morris Li	Relative Humidity :	40~43%

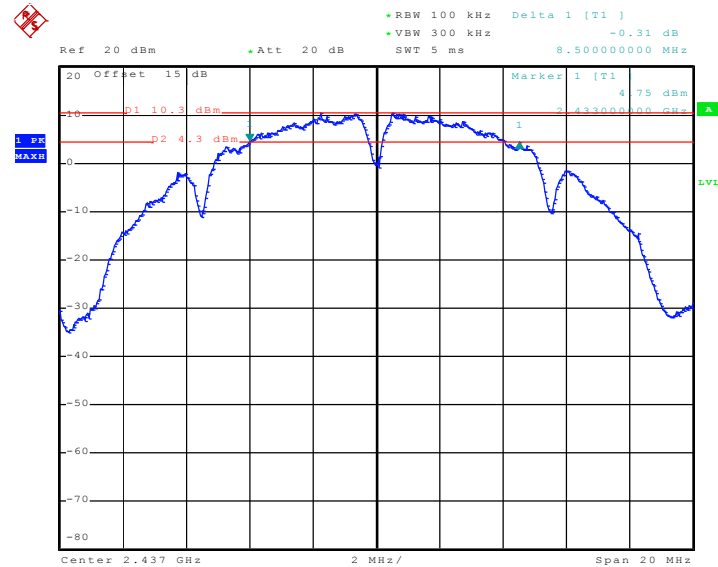
Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	8.00	0.5	Pass
06	2437	8.50	0.5	Pass
11	2462	8.04	0.5	Pass

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



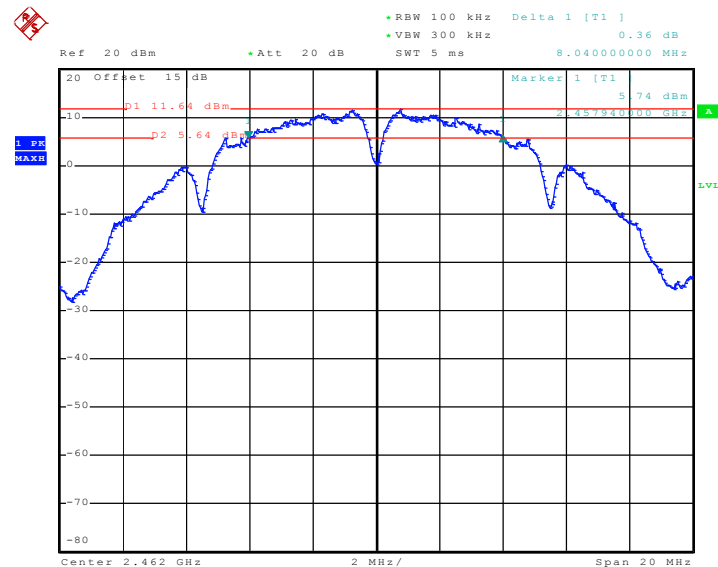
TH-01

Date: 25.DEC.2010 18:53:02

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


TH-01

Date: 23.DEC.2010 17:41:25

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


TH-01

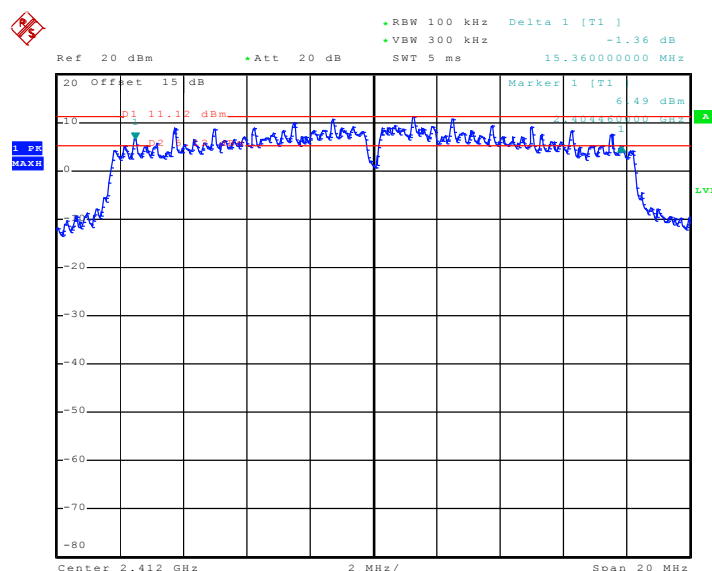
Date: 23.DEC.2010 17:43:48



Test Mode :	Mode 4, 5, 6	Temperature :	22~25°C
Test Engineer :	Morris Li	Relative Humidity :	40~43%

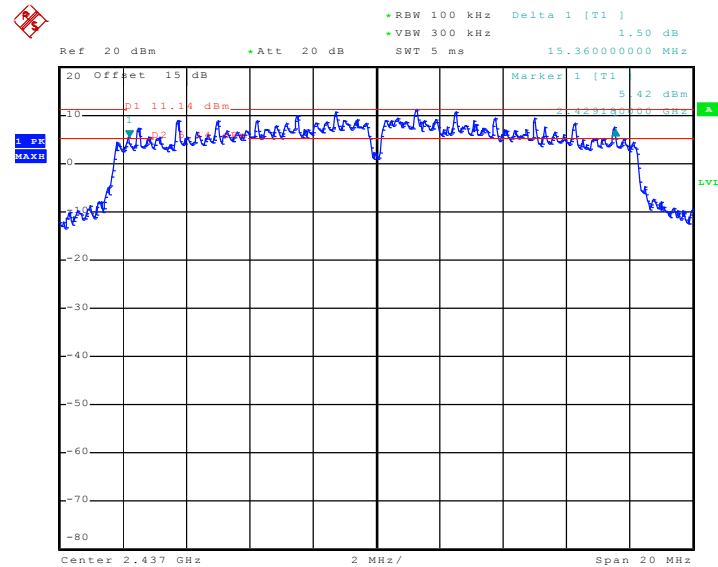
Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.36	0.5	Pass
06	2437	15.36	0.5	Pass
11	2462	15.08	0.5	Pass

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



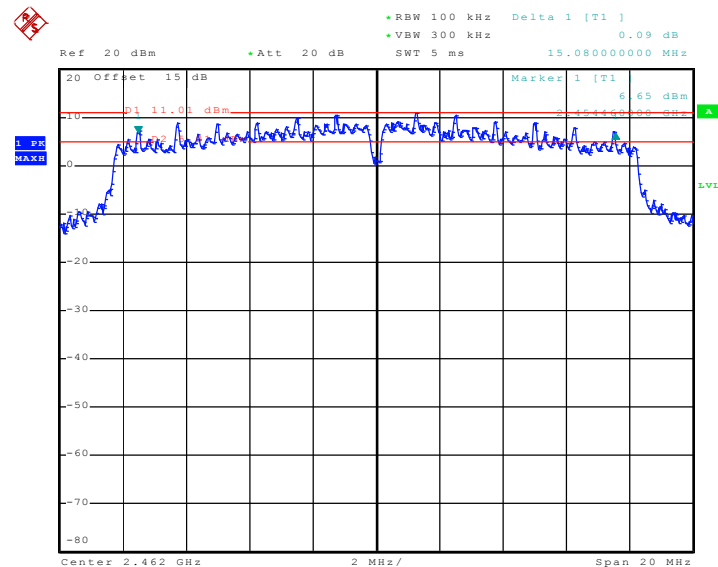
TH-01

Date: 23.DEC.2010 16:17:47

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


TH-01

Date: 23.DEC.2010 16:24:00

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


TH-01

Date: 23.DEC.2010 16:27:00

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.

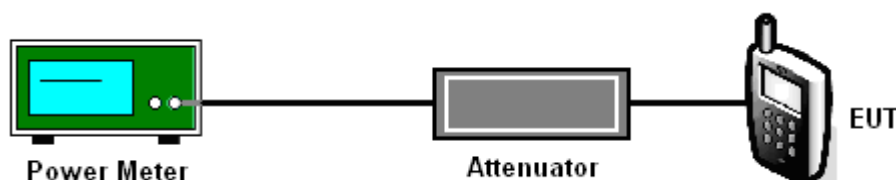
3.2.2 Measuring Instruments

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 :	22~25℃
Test Engineer :	Morris Li	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	20.28	30	Pass
06	2437	21.32	30	Pass
11	2462	22.24	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	22~25℃
Test Engineer :	Morris Li	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	23.96	30	Pass
06	2437	24.18	30	Pass
11	2462	24.15	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

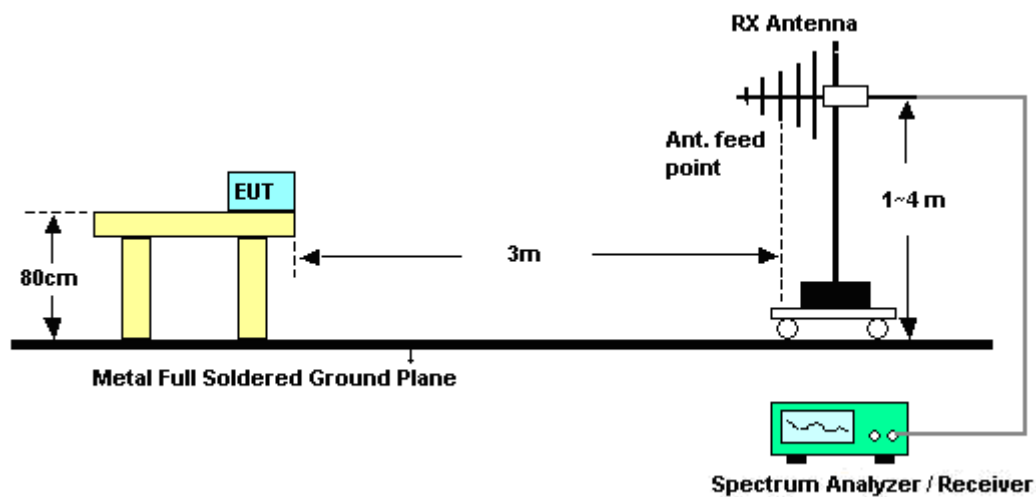
See list of measuring instruments of this test report.

3.3.3 Test Procedures

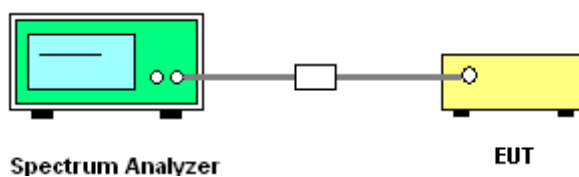
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) $\geq$ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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 :	42~43%
Test Channel :	01	Test Engineer :	Jason Chia

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.23	62.42	-11.58	74	60.14	32.86	3.47	34.05	100	170	Peak
2389.23	34.78	-19.22	54	32.5	32.86	3.47	34.05	100	170	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
2387.52	58.53	-15.47	74	56.25	32.86	3.47	34.05	100	320	Peak
2387.52	41.78	-12.22	54	39.5	32.86	3.47	34.05	100	320	Average

Test Mode :	Mode 3	Temperature :	22~23℃
Test Band :	802.11b	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	Jason Chia

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.99	63.05	-10.95	74	60.56	33.01	3.68	34.2	100	0	Peak
2484.99	43.39	-10.61	54	40.9	33.01	3.68	34.2	100	0	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.85	61.58	-12.42	74	59.09	33.01	3.68	34.2	100	330	Peak
2483.85	40.49	-13.51	54	38	33.01	3.68	34.2	100	330	Average



Test Mode :	Mode 4	Temperature :	22~23°C
Test Band :	802.11g	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	Jason Chia

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
2387.14	65.07	-8.93	74	62.79	32.86	3.47	34.05	100	230	Peak
2387.14	41.78	-12.22	54	39.5	32.86	3.47	34.05	100	230	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	71.86	-2.14	74	69.58	32.86	3.47	34.05	200	348	Peak
2390	46.78	-7.22	54	44.5	32.86	3.47	34.05	200	348	Average

Test Mode :	Mode 6	Temperature :	22~23°C
Test Band :	802.11g	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	Jason Chia

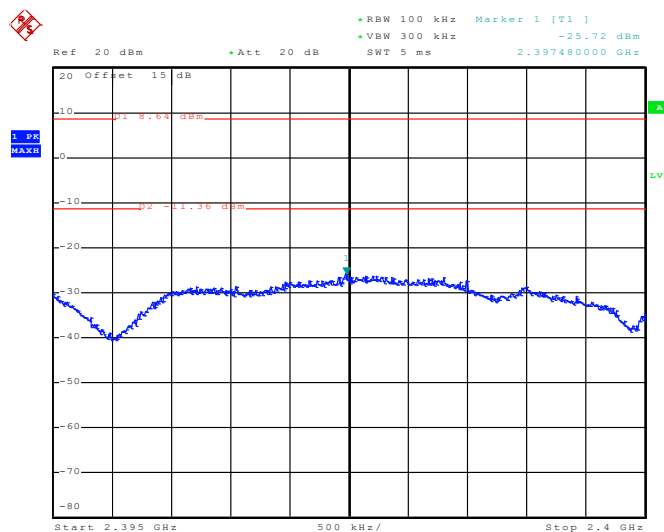
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	70.93	-3.07	74	68.44	33.01	3.68	34.2	100	50	Peak
2483.5	47.79	-6.21	54	45.3	33.01	3.68	34.2	100	50	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	73.8	-0.2	74	71.31	33.01	3.68	34.2	100	95	Peak
2483.5	44.99	-9.01	54	42.5	33.01	3.68	34.2	100	95	Average

3.3.6 Test Plots of Conducted Band Edges

Test Mode :	Mode 1 and 3	Temperature :	22~25℃
Test Band :	802.11b	Relative Humidity :	40~43%
Test Channel :	01 and 11	Test Engineer :	Morris Li

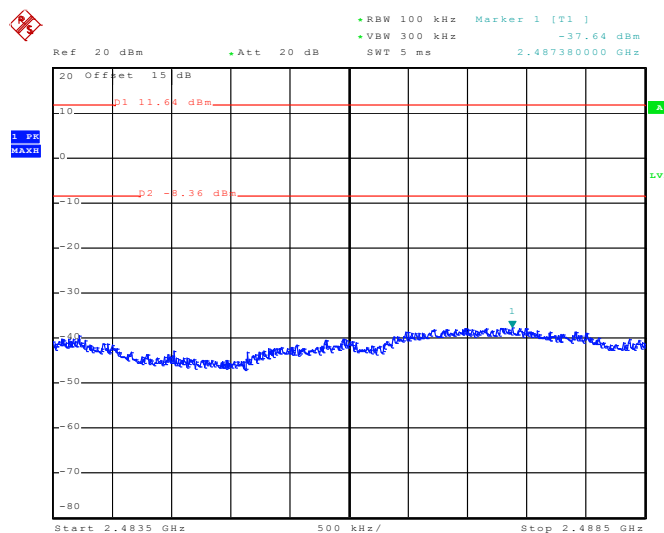
Low Band Edge Plot on 802.11b Channel 01



TH-01

Date: 25.DEC.2010 18:54:15

High Band Edge Plot on 802.11b Channel 11



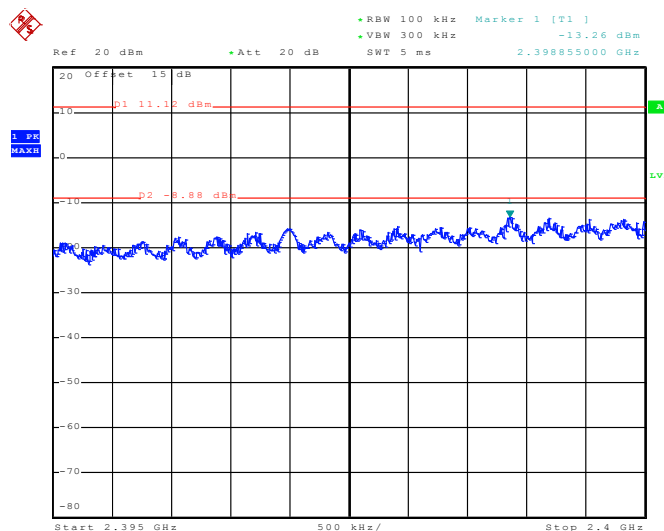
TH-01

Date: 23.DEC.2010 17:44:44



Test Mode :	Mode 4 and 6	Temperature :	22~25℃
Test Band :	802.11g	Relative Humidity :	40~43%
Test Channel :	01 and 11	Test Engineer :	Morris Li

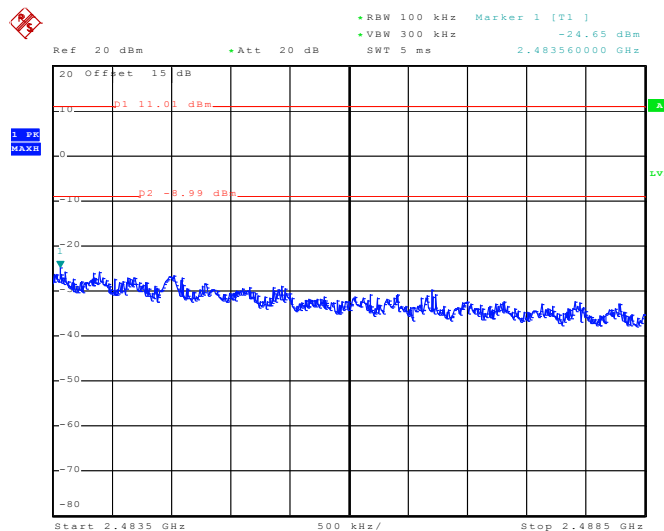
Low Band Edge Plot on 802.11g Channel 01



TH-01

Date: 23.DEC.2010 16:19:32

High Band Edge Plot on 802.11g Channel 11



TH-01

Date: 23.DEC.2010 16:27:56

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.

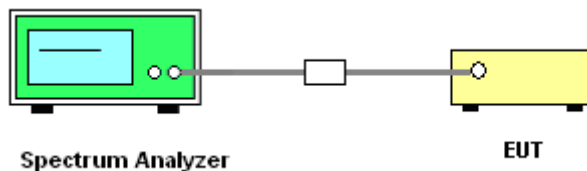
3.4.2 Measuring Instruments

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.

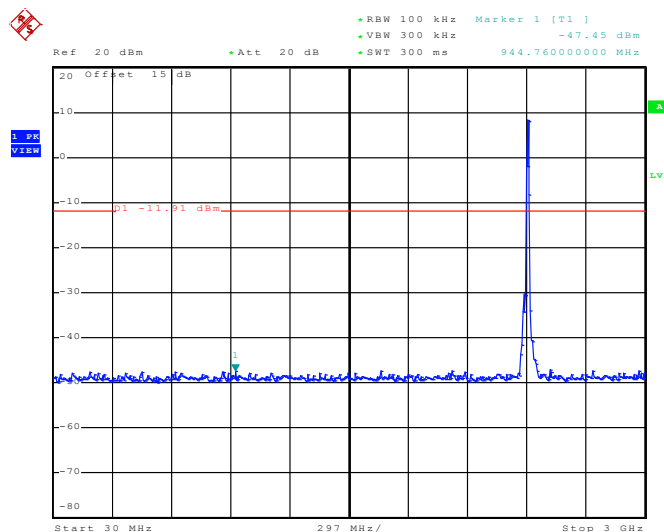
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

Test Mode :	Mode 1	Temperature :	22~25°C
Test Band :	802.11b	Relative Humidity :	40~43%
Test Channel :	01	Test Engineer :	Morris Li

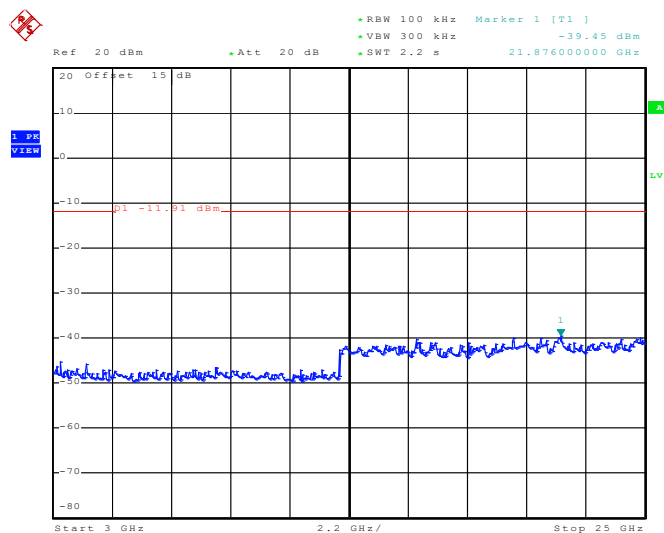
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



TH-01

Date: 11.FEB.2011 10:30:59

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

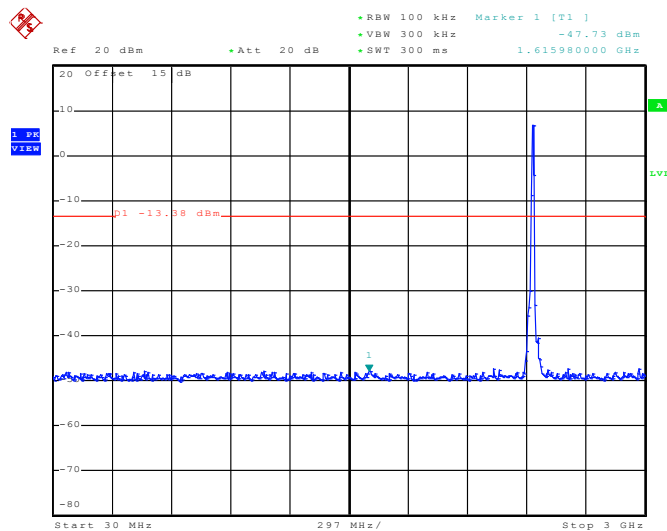


TH-01

Date: 11.FEB.2011 10:31:54

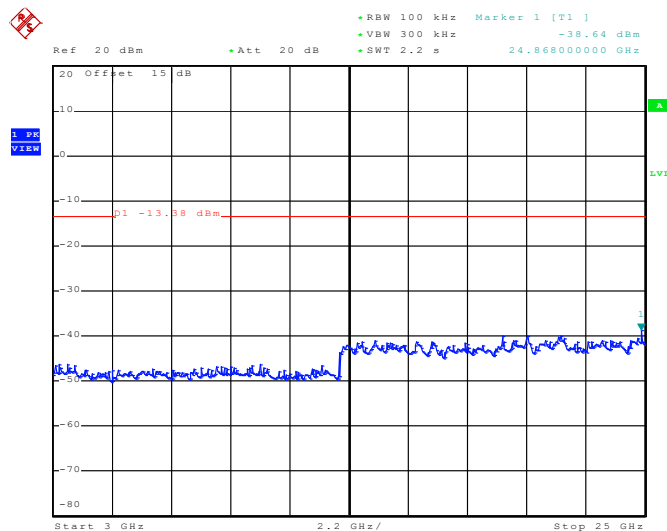


Test Mode :	Mode 2	Temperature :	22~25°C
Test Band :	802.11b	Relative Humidity :	40~43%
Test Channel :	06	Test Engineer :	Morris Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

TH-01

Date: 11.FEB.2011 10:35:38

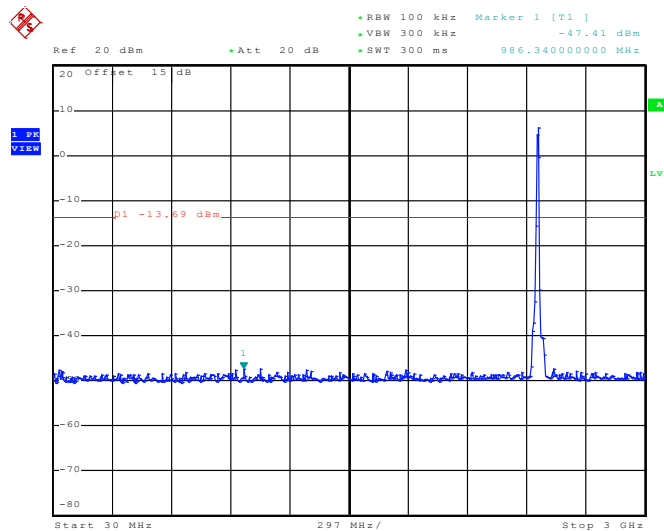
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

TH-01

Date: 11.FEB.2011 10:36:28

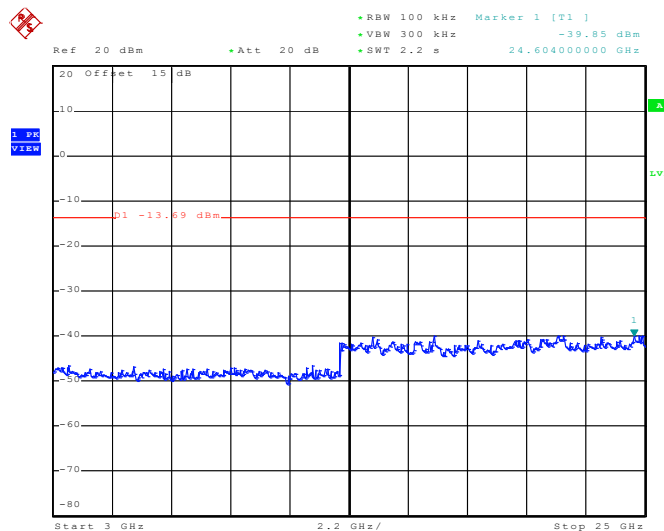


Test Mode :	Mode 3	Temperature :	22~25°C
Test Band :	802.11b	Relative Humidity :	40~43%
Test Channel :	11	Test Engineer :	Morris Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

TH-01

Date: 11.FEB.2011 10:38:07

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

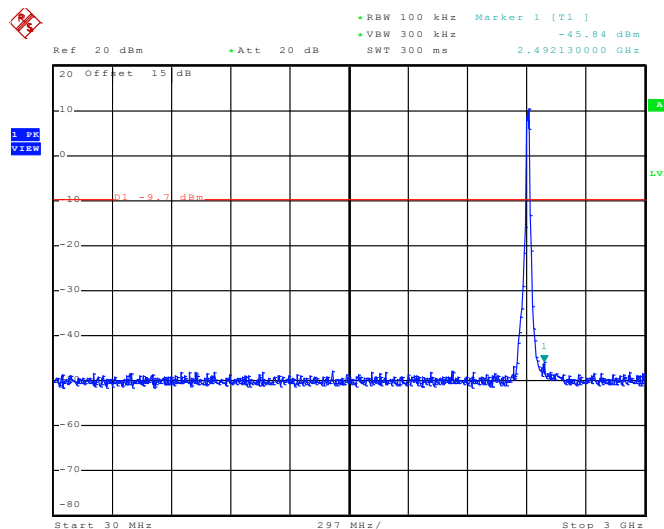
TH-01

Date: 11.FEB.2011 10:38:53



Test Mode :	Mode 4	Temperature :	22~25°C
Test Band :	802.11g	Relative Humidity :	40~43%
Test Channel :	01	Test Engineer :	Morris Li

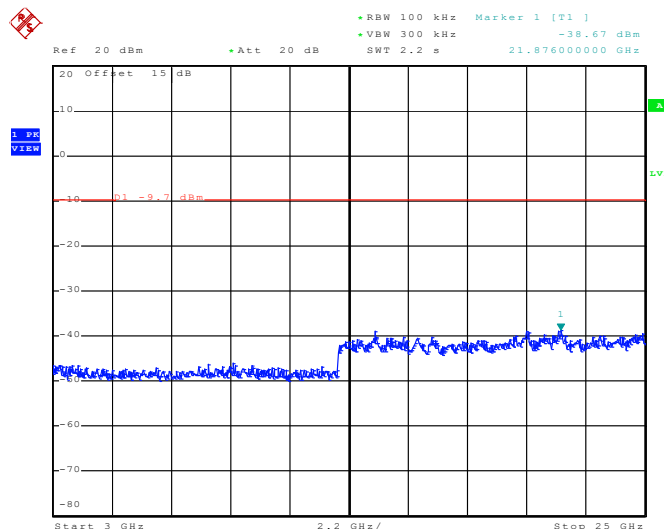
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



TH-01

Date: 23.DEC.2010 18:01:31

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



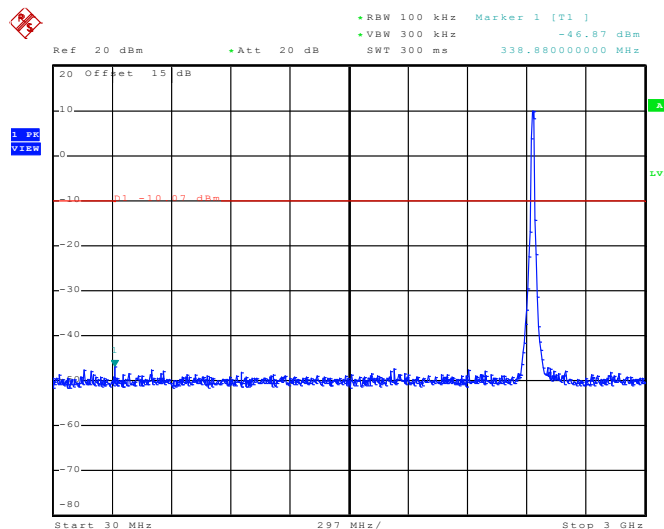
TH-01

Date: 23.DEC.2010 18:01:48



Test Mode :	Mode 5	Temperature :	22~25°C
Test Band :	802.11g	Relative Humidity :	40~43%
Test Channel :	06	Test Engineer :	Morris Li

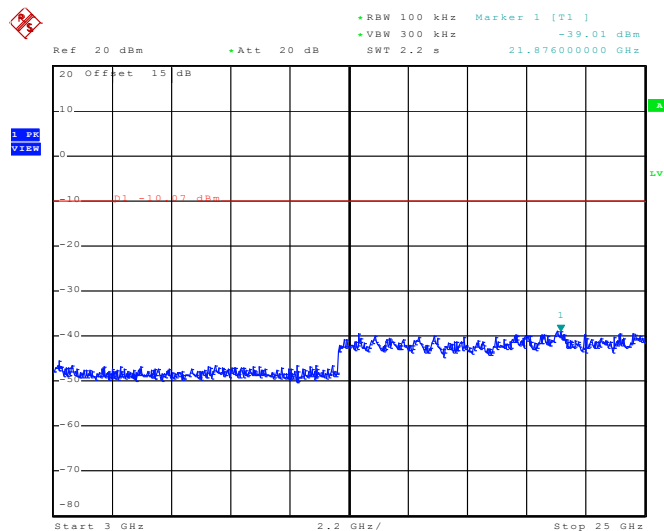
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



TH-01

Date: 23.DEC.2010 18:02:32

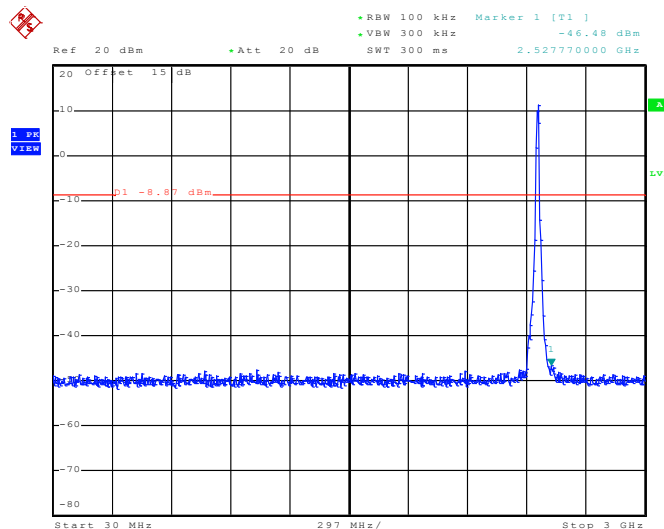
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



TH-01

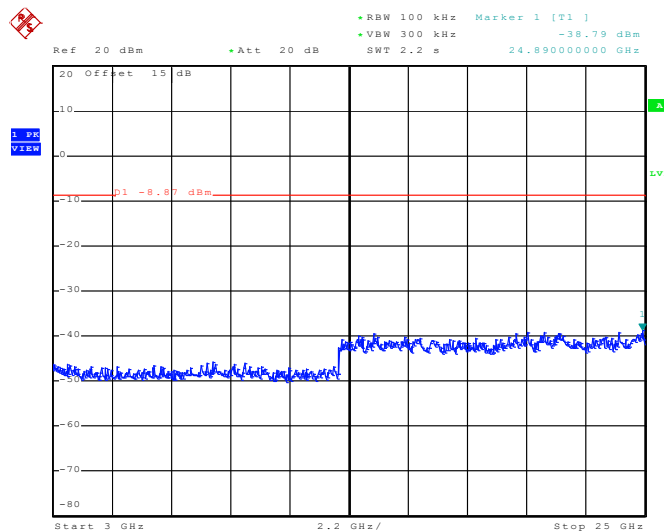
Date: 23.DEC.2010 18:02:49

Test Mode :	Mode 6	Temperature :	22~25°C
Test Band :	802.11g	Relative Humidity :	40~43%
Test Channel :	11	Test Engineer :	Morris Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


TH-01

Date: 23.DEC.2010 18:03:43

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


TH-01

Date: 23.DEC.2010 18:04:00

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.

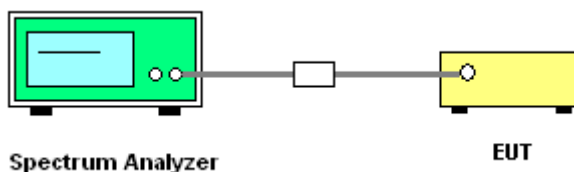
3.5.2 Measuring Instruments

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

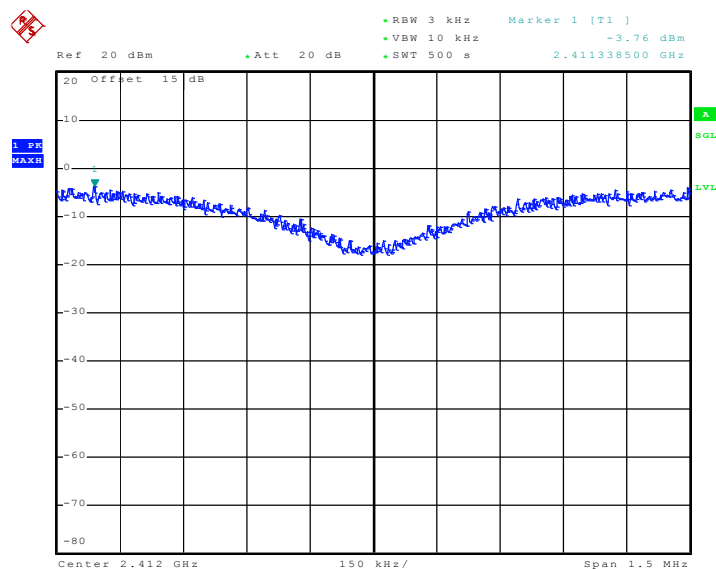


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	22~25℃
Test Engineer :	Morris Li	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-3.76	8	Pass
06	2437	-2.59	8	Pass
11	2462	-1.60	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01

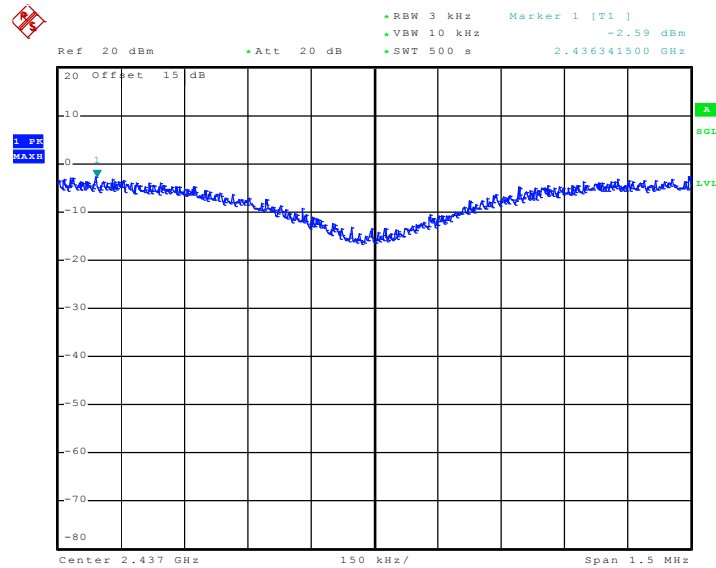


TH-01

Date: 23.DEC.2010 17:55:33



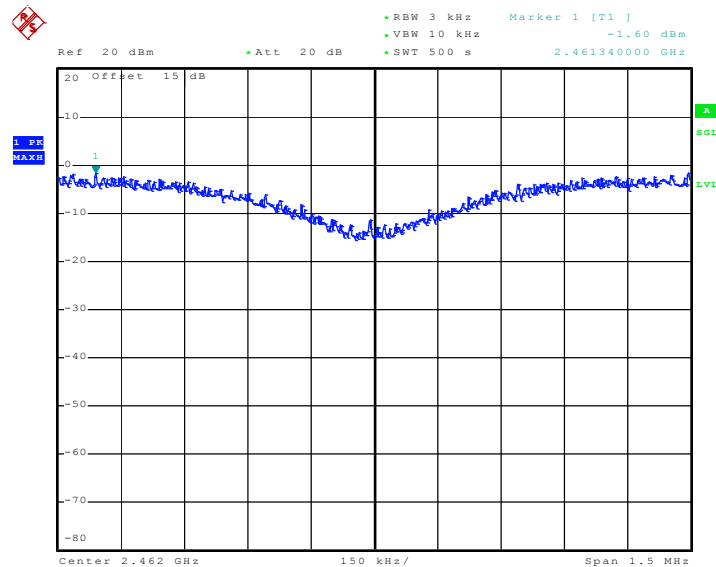
Mode 2 : PSD Plot on 802.11b Channel 06



TH-01

Date: 23.DEC.2010 18:16:07

Mode 3 : PSD Plot on 802.11b Channel 11

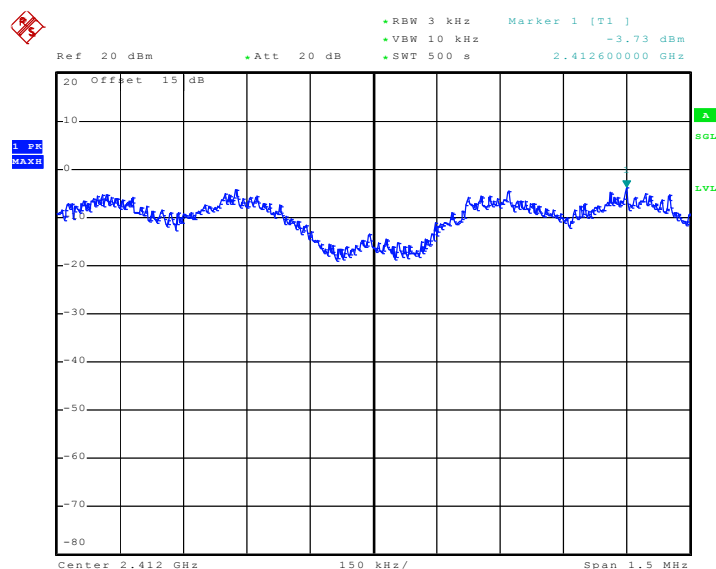


TH-01

Date: 23.DEC.2010 18:40:06

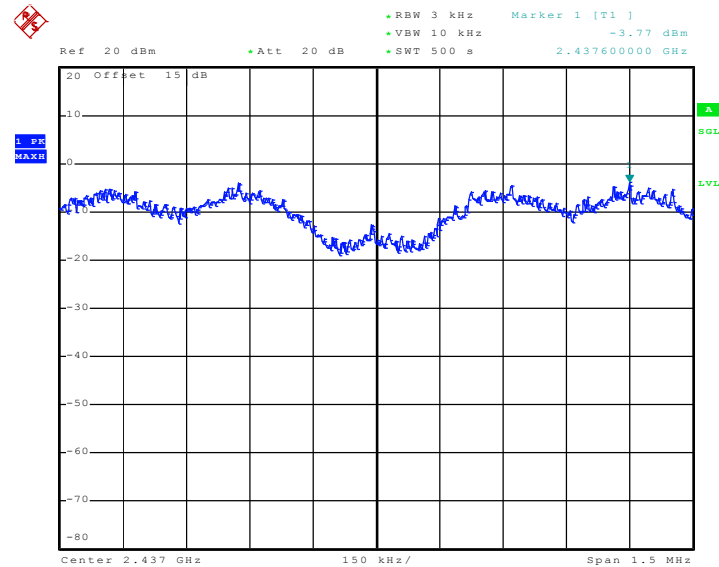
Test Mode :	Mode 4, 5, 6	Temperature :	22~25°C
Test Engineer :	Morris Li	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-3.73	8	Pass
06	2437	-3.77	8	Pass
11	2462	-3.94	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01


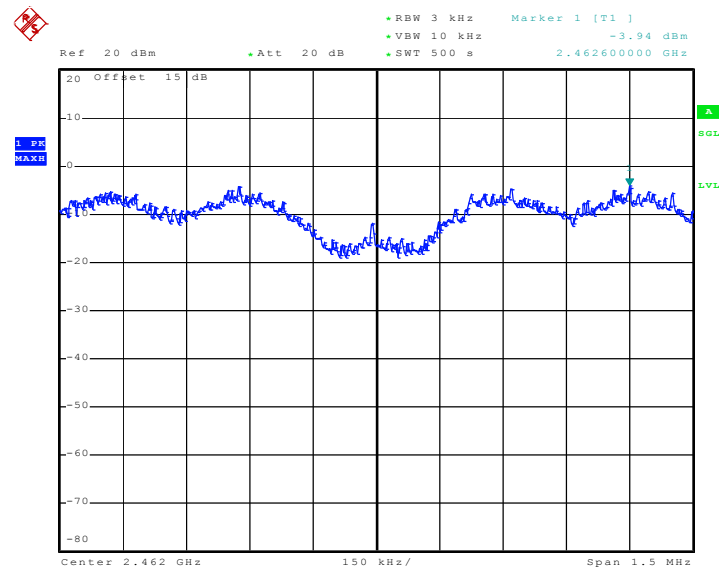
TH-01

Date: 23.DEC.2010 16:45:03

Mode 5 : PSD Plot on 802.11g Channel 06


TH-01

Date: 23.DEC.2010 16:54:39

Mode 6 : PSD Plot on 802.11g Channel 11


TH-01

Date: 23.DEC.2010 17:04:02

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.

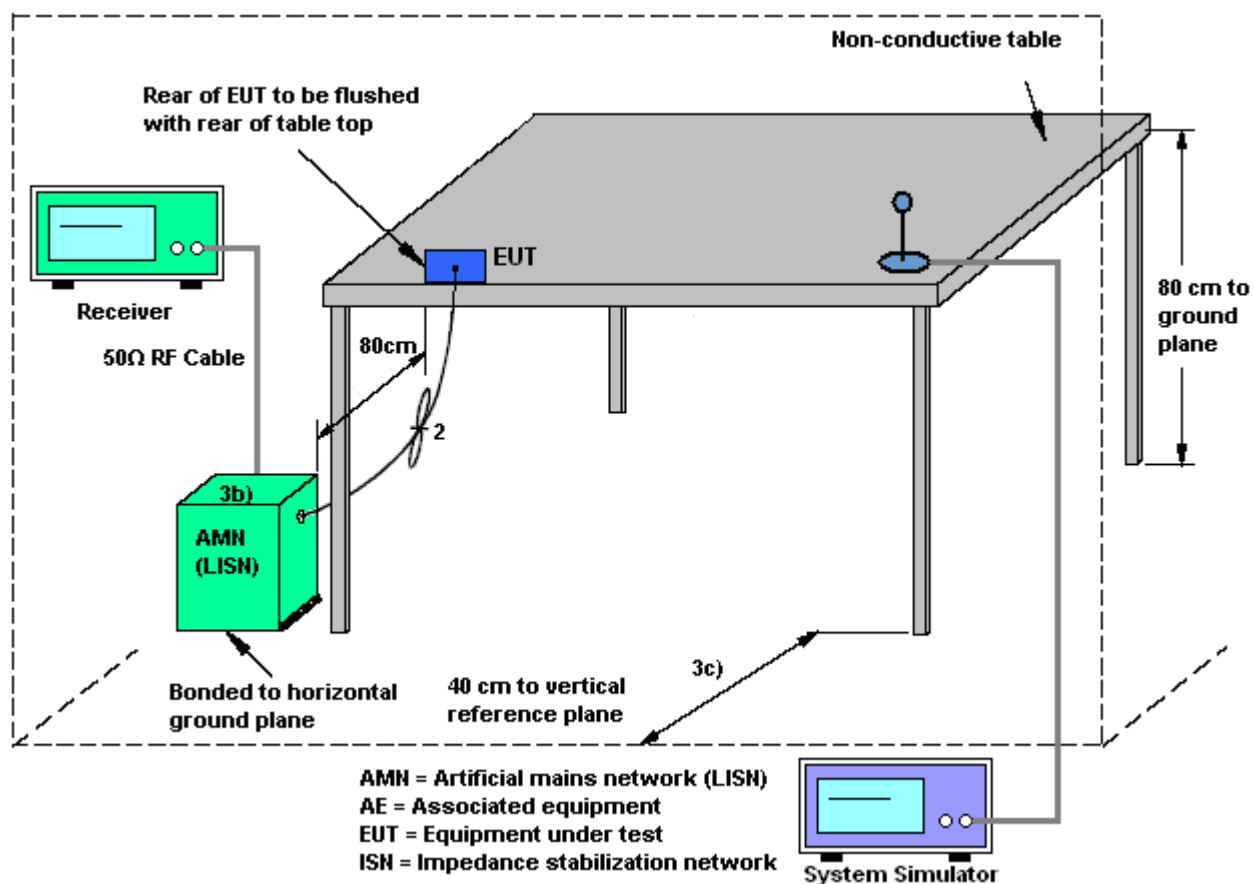
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

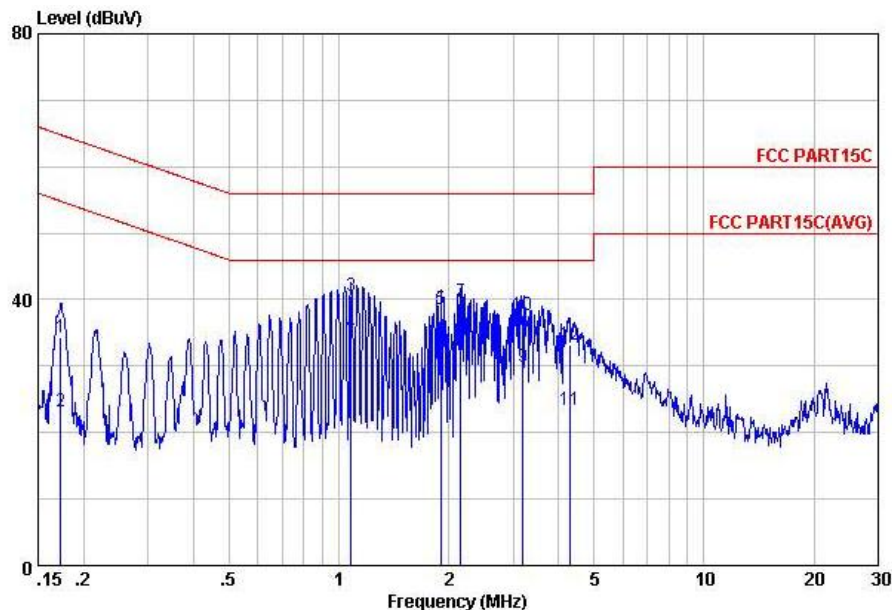
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network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



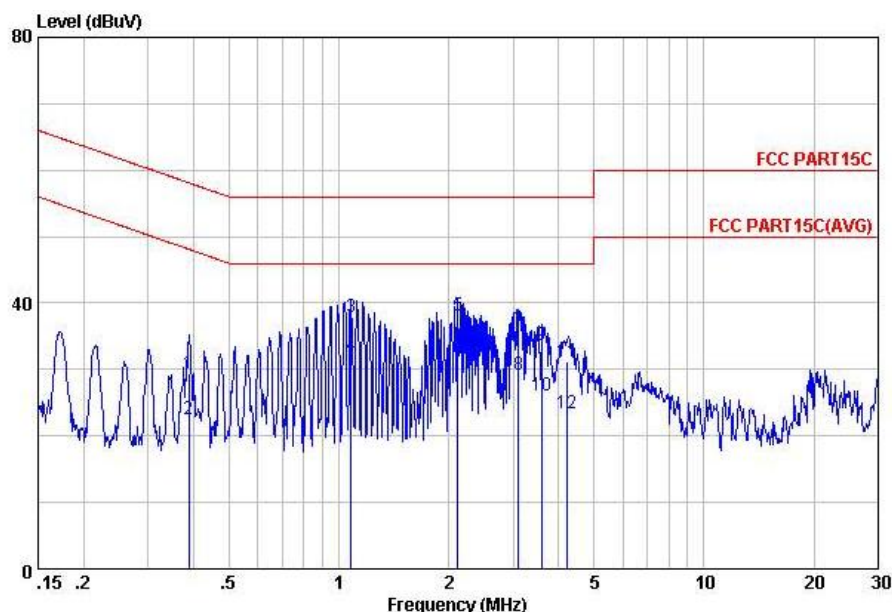
Site : C001-KS
Condition: FCC PART15C LISN-100807 LINE

Mode : mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.17	34.21	-30.61	64.82	23.90	-0.07	10.38	QP
2	0.17	23.21	-31.61	54.82	12.90	-0.07	10.38	Average
3	1.08	40.48	-15.52	56.00	30.10	-0.10	10.48	QP
4	1.08	34.98	-11.02	46.00	24.60	-0.10	10.48	Average
5	1.90	38.53	-17.47	56.00	28.10	-0.11	10.54	QP
6	1.90	31.53	-14.47	46.00	21.10	-0.11	10.54	Average
7	2.16	39.73	-16.27	56.00	29.30	-0.11	10.54	QP
8	2.16	33.93	-12.07	46.00	23.50	-0.11	10.54	Average
9	3.20	29.84	-16.16	46.00	19.40	-0.12	10.56	Average
10	3.20	37.74	-18.26	56.00	27.30	-0.12	10.56	QP
11	4.28	23.37	-22.63	46.00	12.91	-0.13	10.59	Average
12	4.28	33.17	-22.83	56.00	22.71	-0.13	10.59	QP



Test Mode :	Mode 1	Temperature :	21~22℃
Test Engineer :	Huiliu Liu	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + Adapter + Earphone + GPS Rx		
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	0.39	29.44	-28.65	58.09	19.10	-0.08	10.42	QP
2	0.39	22.54	-25.55	48.09	12.20	-0.08	10.42	Average
3	1.08	37.89	-18.11	56.00	27.50	-0.09	10.48	QP
4	1.08	32.19	-13.81	46.00	21.80	-0.09	10.48	Average
5	2.11	38.13	-17.87	56.00	27.70	-0.11	10.54	QP
6	2.11	31.63	-14.37	46.00	21.20	-0.11	10.54	Average
7	3.11	35.93	-20.07	56.00	25.50	-0.12	10.55	QP
8	3.11	29.23	-16.77	46.00	18.80	-0.12	10.55	Average
9	3.58	33.55	-22.45	56.00	23.09	-0.12	10.58	QP
10	3.58	26.15	-19.85	46.00	15.69	-0.12	10.58	Average
11	4.23	31.27	-24.73	56.00	20.81	-0.13	10.59	QP
12	4.23	23.47	-22.53	46.00	13.01	-0.13	10.59	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

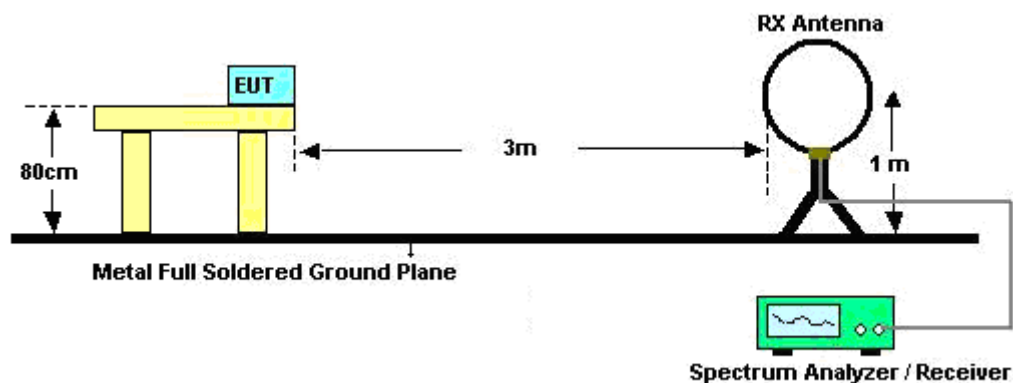
See list of measuring instruments of this test report.

3.7.3 Test Procedures

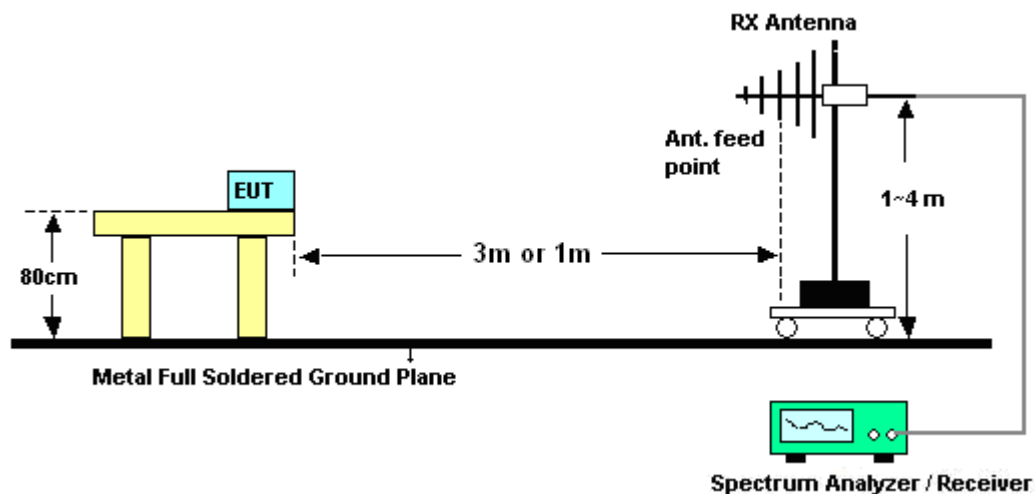
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = 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 above 30MHz



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

Test Engineer :	Jason Chia	Temperature :	22~23℃	
		Relative Humidity :	42~43%	
Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

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

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

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

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

Test Mode :	Mode 1	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Jason Chia	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
102.36	29.84	-13.66	43.5	46.53	10.87	0.42	27.98	-	-	Peak
184.44	24.69	-18.81	43.5	43.86	8.44	0.57	28.18	-	-	Peak
225.48	28.09	-17.91	46	45.04	10.59	0.63	28.17	-	-	Peak
307	22.99	-23.01	46	37.38	13.17	0.73	28.29	-	-	Peak
477.8	19.54	-26.46	46	30.21	16.83	0.94	28.44	-	-	Peak
836.9	32.47	-13.53	46	38.24	20.37	1.27	27.41	100	100	Peak
2389.23	62.42	-11.58	74	60.14	32.86	3.47	34.05	100	170	Peak
2389.23	34.78	-19.22	54	32.5	32.86	3.47	34.05	100	170	Average
2412	103.4	-	-	101.07	32.89	3.52	34.08	100	0	Peak
2412	88.92	-	-	86.59	32.89	3.52	34.08	100	0	Average
2487.27	51.03	-22.97	74	48.54	33.01	3.68	34.2	100	100	Peak
2487.27	33.29	-20.71	54	30.8	33.01	3.68	34.2	100	100	Average

Test Mode :	Mode 1	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Jason Chia	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
102.36	23.64	-19.86	43.5	40.33	10.87	0.42	27.98	-	-	Peak
144.75	20.1	-23.4	43.5	37.2	10.45	0.5	28.05	-	-	Peak
225.48	20.9	-25.1	46	37.85	10.59	0.63	28.17	-	-	Peak
477.8	20.52	-25.48	46	31.19	16.83	0.94	28.44	-	-	Peak
559.7	25.17	-20.83	46	34.01	18.51	1.01	28.36	-	-	Peak
836.9	35.69	-10.31	46	41.46	20.37	1.27	27.41	100	100	Peak
2387.52	41.78	-12.22	54	39.5	32.86	3.47	34.05	100	320	Average
2387.52	58.53	-15.47	74	56.25	32.86	3.47	34.05	100	320	Peak
2412	108.25	-	-	105.92	32.89	3.52	34.08	100	100	Peak
2412	92.82	-	-	90.49	32.89	3.52	34.08	100	100	Average
2489.36	51.97	-22.03	74	49.43	33.05	3.72	34.23	100	300	Peak
2489.36	30.84	-23.16	54	28.3	33.05	3.72	34.23	100	300	Average

Test Mode :	Mode 2	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Jason Chia	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
180.12	24.17	-19.33	43.5	43.4	8.4	0.56	28.19	-	-	Peak
225.48	26.25	-19.75	46	43.2	10.59	0.63	28.17	-	-	Peak
232.23	26.41	-19.59	46	42.91	11.04	0.64	28.18	-	-	Peak
320.3	26.04	-19.96	46	40.05	13.55	0.76	28.32	-	-	Peak
477.8	21	-25	46	31.67	16.83	0.94	28.44	-	-	Peak
836.9	35.4	-10.6	46	41.17	20.37	1.27	27.41	100	40	Peak
2377.45	56.73	-17.27	74	54.49	32.83	3.42	34.01	100	300	Peak
2377.45	31.64	-22.36	54	29.4	32.83	3.42	34.01	100	300	Average
2437	103.21	-	-	100.81	32.95	3.6	34.15	100	0	Peak
2437	89.3	-	-	86.9	32.95	3.6	34.15	100	0	Average
2493.73	55.81	-18.19	74	53.27	33.05	3.72	34.23	100	320	Peak
2493.73	34.94	-19.06	54	32.4	33.05	3.72	34.23	100	320	Average

Test Mode :	Mode 2	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Jason Chia	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
33.24	25.43	-14.57	40	37.23	16.04	0.24	28.08	100	0	Peak
225.48	22.18	-23.82	46	39.13	10.59	0.63	28.17	-	-	Peak
232.23	22.4	-23.6	46	38.9	11.04	0.64	28.18	-	-	Peak
319.6	17.45	-28.55	46	31.46	13.55	0.76	28.32	-	-	Peak
559.7	24.04	-21.96	46	32.88	18.51	1.01	28.36	-	-	Peak
836.2	35.36	-10.64	46	41.15	20.36	1.27	27.42	-	-	Peak
2382.58	51.33	-22.67	74	49.09	32.83	3.42	34.01	200	0	Peak
2382.58	29.84	-24.16	54	27.6	32.83	3.42	34.01	200	0	Average
2437	104.97	-	-	102.57	32.95	3.6	34.15	100	40	Peak
2437	91.2	-	-	88.8	32.95	3.6	34.15	100	40	Average
2483.85	48.96	-25.04	74	46.47	33.01	3.68	34.2	100	30	Peak
2483.85	32.69	-21.31	54	30.2	33.01	3.68	34.2	100	30	Average

Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Jason Chia	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
33.24	26.01	-13.99	40	37.81	16.04	0.24	28.08	-	-	Peak
225.48	20.67	-25.33	46	37.62	10.59	0.63	28.17	-	-	Peak
232.23	20.27	-25.73	46	36.77	11.04	0.64	28.18	-	-	Peak
477.8	19.73	-26.27	46	30.4	16.83	0.94	28.44	-	-	Peak
559.7	23.56	-22.44	46	32.4	18.51	1.01	28.36	-	-	Peak
837.6	37.96	-8.04	46	43.71	20.38	1.27	27.4	100	198	Peak
2389.04	35.88	-18.12	54	33.6	32.86	3.47	34.05	100	289	Average
2389.04	54.34	-19.66	74	52.06	32.86	3.47	34.05	100	289	Peak
2462	96.95	-	-	94.5	32.98	3.64	34.17	200	300	Average
2462	107.35	-	-	104.9	32.98	3.64	34.17	200	300	Peak
2484.99	63.05	-10.95	74	60.56	33.01	3.68	34.2	100	0	Peak
2484.99	43.39	-10.61	54	40.9	33.01	3.68	34.2	100	0	Average

Test Mode :	Mode 3	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Jason Chia	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
225.48	23.58	-22.42	46	40.53	10.59	0.63	28.17	-	-	Peak
232.23	25.06	-20.94	46	41.56	11.04	0.64	28.18	-	-	Peak
238.98	21.38	-24.62	46	37.45	11.46	0.66	28.19	-	-	Peak
314	25.47	-20.53	46	39.67	13.36	0.74	28.3	-	-	Peak
320.3	26.22	-19.78	46	40.23	13.55	0.76	28.32	-	-	Peak
837.6	28.95	-17.05	46	34.7	20.38	1.27	27.4	100	330	Peak
2386.76	52.39	-21.61	74	50.11	32.86	3.47	34.05	100	321	Peak
2386.76	32.78	-21.22	54	30.5	32.86	3.47	34.05	100	321	Average
2462	93.55	-	-	91.1	32.98	3.64	34.17	200	0	Average
2462	108.56	-	-	106.11	32.98	3.64	34.17	200	0	Peak
2483.85	61.58	-12.42	74	59.09	33.01	3.68	34.2	100	330	Peak
2483.85	40.49	-13.51	54	38	33.01	3.68	34.2	100	330	Average

Test Mode :	Mode 4	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Jason Chia	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
225.48	27.27	-18.73	46	44.22	10.59	0.63	28.17	-	-	Peak
232.23	26.2	-19.8	46	42.7	11.04	0.64	28.18	-	-	Peak
239.25	20.71	-25.29	46	36.73	11.51	0.66	28.19	-	-	Peak
307	23.01	-22.99	46	37.4	13.17	0.73	28.29	-	-	Peak
477.8	20.32	-25.68	46	30.99	16.83	0.94	28.44	-	-	Peak
836.9	31.76	-14.24	46	37.53	20.37	1.27	27.41	100	200	Peak
2387.14	65.07	-8.93	74	62.79	32.86	3.47	34.05	100	230	Peak
2387.14	41.78	-12.22	54	39.5	32.86	3.47	34.05	100	230	Average
2412	77.72	-	-	75.39	32.89	3.52	34.08	100	200	Average
2412	102.99	-	-	100.66	32.89	3.52	34.08	100	200	Peak
2488.41	50.14	-23.86	74	47.6	33.05	3.72	34.23	100	0	Peak
2488.41	32.54	-21.46	54	30	33.05	3.72	34.23	100	0	Average

Test Mode :	Mode 4	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Jason Chia	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
225.48	20.97	-25.03	46	37.92	10.59	0.63	28.17	-	-	Peak
232.23	22.45	-23.55	46	38.95	11.04	0.64	28.18	-	-	Peak
238.98	19.46	-26.54	46	35.53	11.46	0.66	28.19	-	-	Peak
477.8	19.82	-26.18	46	30.49	16.83	0.94	28.44	-	-	Peak
559.7	24.58	-21.42	46	33.42	18.51	1.01	28.36	-	-	Peak
836.9	31.83	-14.17	46	37.6	20.37	1.27	27.41	100	200	Peak
2390	71.86	-2.14	74	69.58	32.86	3.47	34.05	200	348	Peak
2390	46.78	-7.22	54	44.5	32.86	3.47	34.05	200	348	Average
2412	108	-	-	105.67	32.89	3.52	34.08	200	223	Peak
2412	87.62	-	-	85.29	32.89	3.52	34.08	200	223	Average
2495.44	52.73	-21.27	74	50.19	33.05	3.72	34.23	200	312	Peak
2495.44	35.44	-18.56	54	32.9	33.05	3.72	34.23	200	312	Average

Test Mode :	Mode 5	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Jason Chia	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
225.48	26.78	-19.22	46	43.73	10.59	0.63	28.17	100	251	Peak
232.23	24.9	-21.1	46	41.4	11.04	0.64	28.18	-	-	Peak
238.98	19.96	-26.04	46	36.03	11.46	0.66	28.19	-	-	Peak
307	23.16	-22.84	46	37.55	13.17	0.73	28.29	-	-	Peak
314	27.35	-18.65	46	41.55	13.36	0.74	28.3	-	-	Peak
836.9	26.48	-19.52	46	32.25	20.37	1.27	27.41	-	-	Peak
2390	55.68	-18.32	74	53.4	32.86	3.47	34.05	100	300	Peak
2390	37.38	-16.62	54	35.1	32.86	3.47	34.05	100	300	Average
2437	107.83	-	-	105.43	32.95	3.6	34.15	200	10	Peak
2437	85.7	-	-	83.3	32.95	3.6	34.15	200	10	Average
2483.5	56.41	-17.59	74	53.92	33.01	3.68	34.2	100	10	Peak
2483.5	34.59	-19.41	54	32.1	33.01	3.68	34.2	100	10	Average

Test Mode :	Mode 5	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Jason Chia	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
33.24	25.71	-14.29	40	37.51	16.04	0.24	28.08	-	-	Peak
225.48	21.68	-24.32	46	38.63	10.59	0.63	28.17	-	-	Peak
232.23	20.84	-25.16	46	37.34	11.04	0.64	28.18	-	-	Peak
314	17.83	-28.17	46	32.03	13.36	0.74	28.3	-	-	Peak
559.7	24.4	-21.6	46	33.24	18.51	1.01	28.36	-	-	Peak
836.9	37.2	-8.8	46	42.97	20.37	1.27	27.41	100	10	Peak
2384.48	57.11	-16.89	74	54.87	32.83	3.42	34.01	100	325	Peak
2384.48	31.14	-22.86	54	28.9	32.83	3.42	34.01	100	325	Average
2437	109.48	-	-	107.08	32.95	3.6	34.15	100	251	Peak
2437	85.5	-	-	83.1	32.95	3.6	34.15	100	251	Average
2483.5	57.06	-16.94	74	54.57	33.01	3.68	34.2	200	0	Peak
2483.5	32.59	-21.41	54	30.1	33.01	3.68	34.2	200	0	Average

Test Mode :	Mode 6	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Jason Chia	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
225.48	29.48	-16.52	46	46.43	10.59	0.63	28.17	-	-	Peak
232.23	26.25	-19.75	46	42.75	11.04	0.64	28.18	-	-	Peak
238.98	23.28	-22.72	46	39.35	11.46	0.66	28.19	-	-	Peak
314	23.09	-22.91	46	37.29	13.36	0.74	28.3	-	-	Peak
320.3	22.83	-23.17	46	36.84	13.55	0.76	28.32	-	-	Peak
837.6	31.14	-14.86	46	36.89	20.38	1.27	27.4	100	95	Peak
2389.23	56.44	-17.56	74	54.16	32.86	3.47	34.05	100	60	Peak
2389.23	35.08	-18.92	54	32.8	32.86	3.47	34.05	100	60	Average
2462	106.87	-	-	104.42	32.98	3.64	34.17	100	0	Peak
2462	86.75	-	-	84.3	32.98	3.64	34.17	100	0	Average
2483.5	70.93	-3.07	74	68.44	33.01	3.68	34.2	100	50	Peak
2483.5	47.79	-6.21	54	45.3	33.01	3.68	34.2	100	50	Average

Test Mode :	Mode 6	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Jason Chia	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
225.48	22.79	-23.21	46	39.74	10.59	0.63	28.17	-	-	Peak
232.23	22.31	-23.69	46	38.81	11.04	0.64	28.18	-	-	Peak
238.98	19.17	-26.83	46	35.24	11.46	0.66	28.19	-	-	Peak
361.6	27.99	-18.01	46	40.82	14.77	0.82	28.42	-	-	Peak
559.7	26.02	-19.98	46	34.86	18.51	1.01	28.36	-	-	Peak
836.9	31.48	-14.52	46	37.25	20.37	1.27	27.41	100	0	Peak
2382.96	50.78	-23.22	74	48.54	32.83	3.42	34.01	100	50	Peak
2382.96	28.14	-25.86	54	25.9	32.83	3.42	34.01	100	50	Average
2462	108.87	-	-	106.42	32.98	3.64	34.17	200	107	Peak
2462	88.05	-	-	85.6	32.98	3.64	34.17	200	107	Average
2483.5	73.8	-0.2	74	71.31	33.01	3.68	34.2	100	95	Peak
2483.5	44.99	-9.01	54	42.5	33.01	3.68	34.2	100	95	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 Chip Antenna without connector and it is considered to meet antenna requirement.

3.8.3 Antenna Gain

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Jan. 07, 2011	Jan. 06, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 24, 2010	Aug. 23, 2011	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 24, 2010	Aug. 23, 2011	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Dec. 28, 2010	Dec. 27, 2011	Conducted (TH01-KS)
DC Power Supply	TOPWARD	3306D	N/A	N/A	N/A	N/A	Conducted (TH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 22, 2010	Jun. 21, 2011	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Jan. 07, 2011	Jan. 06, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Jan. 07, 2011	Jan. 06, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000811	N/A	Nov. 10, 2010	Nov. 09, 2011	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/066	Full-Band	Jan. 07, 2011	Jan. 06, 2012	Conduction (CO01-KS)
GPS Station	T&E	GS-50	N/A	N/A	N/A	N/A	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESCI	100724	9kHz – 2.75GHz	Mar. 09, 2010	Mar. 08, 2011	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 07, 2010	Dec. 06, 2011	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 09, 2010	Dec. 08, 2011	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Active horn antenna	com-power	AHA-118	701023	1G-18GHz	Nov. 09, 2010	Nov. 08, 2011	Radiation (03CH01-KS)
Signal Generator	R&S	SMR40	100455	10MHz~40GHz	Jan. 06, 2011	Jan. 05, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15-40GHz	Oct. 15, 2010	Oct. 14, 2011	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH01-KS)

5 Uncertainty of Evaluation

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

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

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

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

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

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



Appendix A. Photographs of EUT

Please refer to Sporton report number EP092959 as below.