

FCC RF Test Report

APPLICANT : Fujitsu Toshiba Mobile Communications Ltd.
EQUIPMENT : CDMA FJI11(GSM900/1800/1900,CDMA2000,Bluetooth and Wi-Fi)
BRAND NAME : Fujitsu Toshiba Mobile Communications Ltd.
MODEL NAME : FJI11
FCC ID : YUW-FJI11
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Aug. 19, 2011 and completely tested on Oct. 08, 2011. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

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

Reviewed by:



Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

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



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR181934B	Rev. 01	Initial issue of report	Oct. 19, 2011

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	A8.4	Power Output	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.4	15.247(d)	A8.5	Spurious Emission	$< 20\text{ dBc}$	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 17.6 dB at 0.15 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 2.46 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

Fujitsu Toshiba Mobile Communications Ltd.

1-1, Kamikodanaka 4-chome, Nakahara-ku Kawasaki 211-8588, Japan

1.2 Manufacturer

Fujitsu Toshiba Mobile Communications Ltd.

1-1, Kamikodanaka 4-chome, Nakahara-ku Kawasaki 211-8588, Japan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	CDMA FJI11(GSM900/1800/1900,CDMA2000,Bluetooth and Wi-Fi)
Brand Name	Fujitsu Toshiba Mobile Communications Ltd.
Model Name	FJI11
FCC ID	YUW-FJI11
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 : 17.62 dBm (0.0578 W) 802.11g : 23.60 dBm (0.2291 W) 802.11n (BW 20MHz) : 23.32 dBm (0.2148 W)
Antenna Type	Chip Antenna with gain -2.60 dBi
HW Version	CS1.0
SW Version	CS1.0
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : 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.		FCC/IC Registration No.
	CO05-HY	03CH06-HY	722060/4086B-1

1.5 Applied Standards

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

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

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B (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	Pendulum	GSG-54	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Notebook	DELL	P20G	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
6.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
7.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
8.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A
9.	Adapter	KDDI	0204PTA	N/A	N/A	Shielded, 1.6 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	15.15	-	-	-
CH 06	2437 MHz	17.62	17.59	17.50	17.34
CH 11	2462 MHz	15.64	-	-	-

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	21.54	-	-	-	-	-	-	-
CH 06	2437 MHz	23.60	23.53	23.40	23.32	23.40	23.54	23.32	23.54
CH 11	2462 MHz	22.52	-	-	-	-	-	-	-

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		OFDM Data Rate							
		MCS=0	MCS=1	MCS=2	MCS=3	MCS=4	MCS=5	MCS=6	MCS=7
		6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mbps
CH 01	2412 MHz	21.50	-	-	-	-	-	-	-
CH 06	2437 MHz	23.32	22.96	22.95	22.88	22.94	22.75	22.79	23.03
CH 11	2462 MHz	22.25	-	-	-	-	-	-	-

Remark:

1. The data rates of WLAN 802.11b/g/n were set in 1Mbps for 802.11b, 6Mbps for 802.11g, and 6.5Mbps for 802.11n (BW 20MHz) for all the test cases due to the highest RF output power.
2. The EUT is programmed to transmit signals continuously for all testing.
3. Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports.
4. The EUT have support 802.11n (BW 20 MHz) function only, not support 802.11n (BW 40 MHz) function.

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).

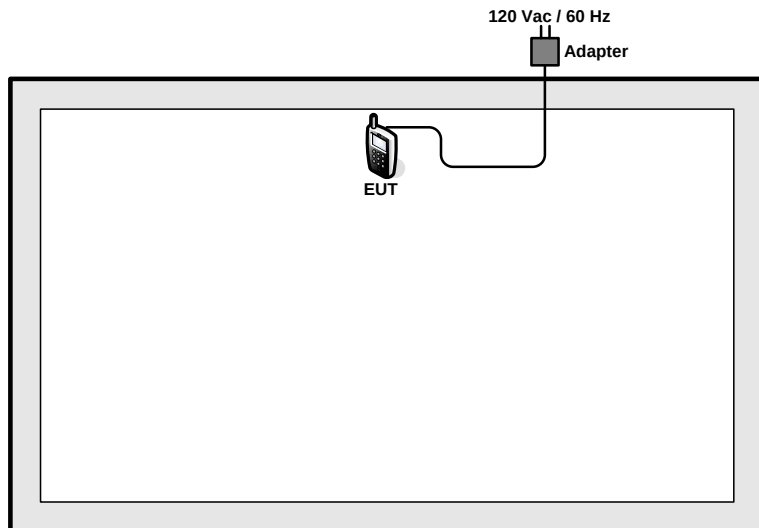
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

The following tables are showing the test modes as the worst cases (E1 plane) and recorded in this report.

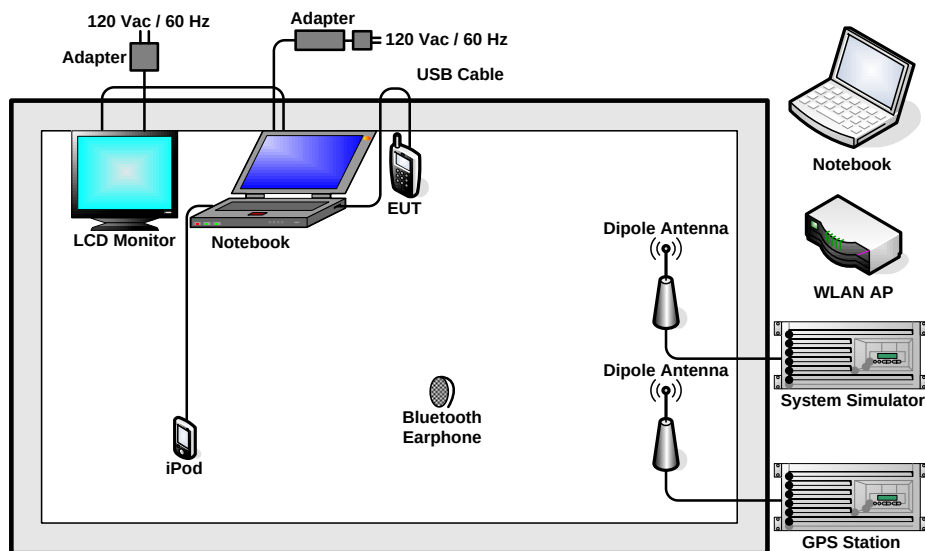
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 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 : GSM1900 Idle + Bluetooth Link + WLAN Link + GPS Rx + USB Cable (Charging from Notebook)	

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>





2.4 RF Utility

The programmed RF utility "WlanTest_Frame" 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.

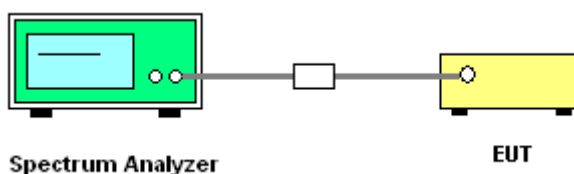
3.1.2 Measuring Instruments

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

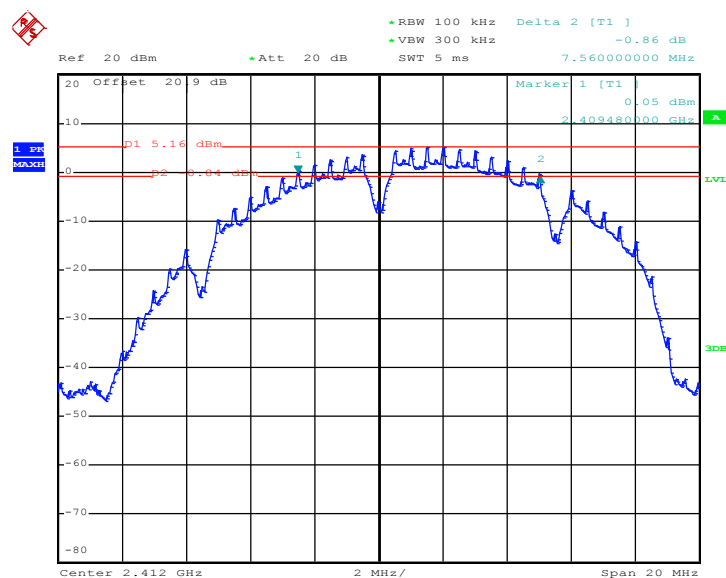


3.1.5 Test Result of 6dB Bandwidth

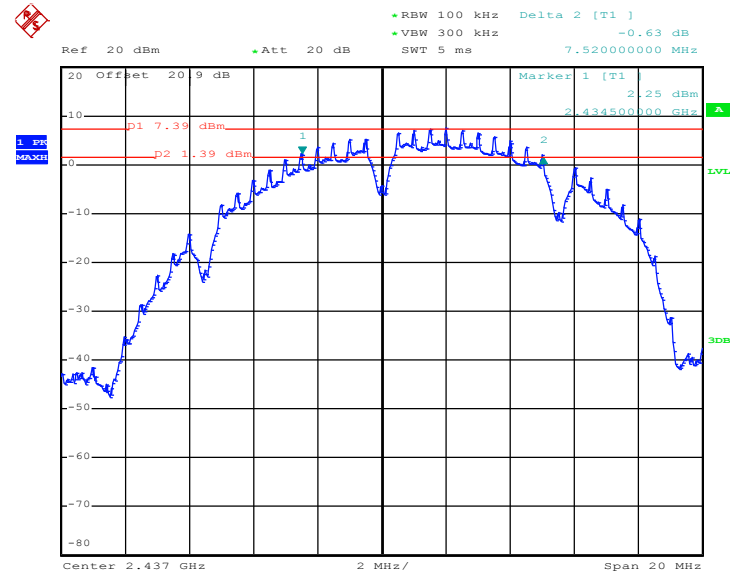
Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	7.56	0.5	Pass
06	2437	7.52	0.5	Pass
11	2462	7.56	0.5	Pass

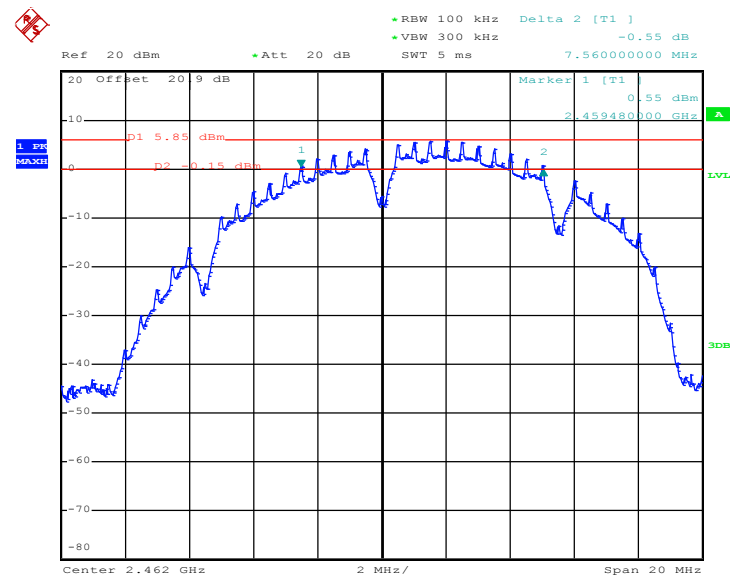
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 3.OCT.2011 13:38:52

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


Date: 3.OCT.2011 13:28:49

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


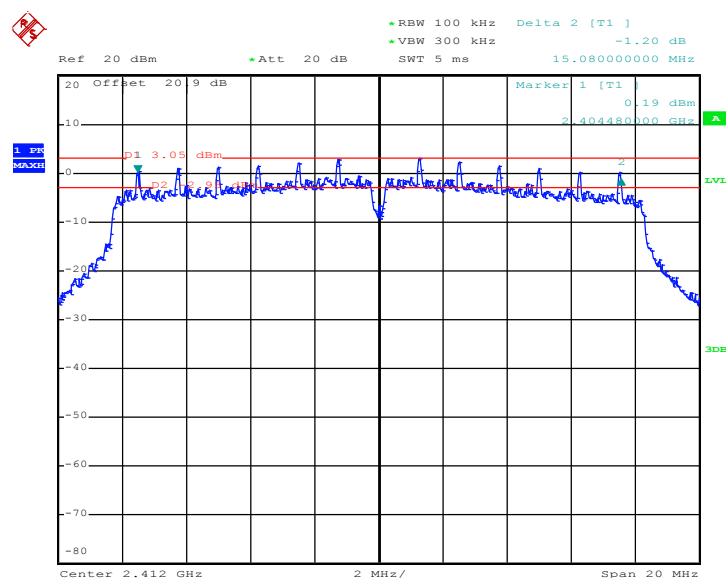
Date: 3.OCT.2011 13:31:39



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

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.08	0.5	Pass
06	2437	15.12	0.5	Pass
11	2462	15.12	0.5	Pass

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



Date: 3.OCT.2011 11:40:24



*RBW 100 kHz Delta 2 [T1]
 *VBW 300 kHz -0.69 dB
 Ref 20 dBm Att 20 dB
 SWT 5 ms 15.12000000 MHz

20 Offset 20.9 dB
 20 dBm
 10
 0
 -10
 -20
 -30
 -40
 -50
 -60
 -70
 -80

Marker 1 [T1]
 0.12 dBm
 2.429460000 GHz

1. Pk
 4.13 dBm
 2.437 GHz

2.42946 GHz

Center 2.437 GHz 2 MHz/ Span 20 MHz

Date: 15.SEP.2011 15:06:46

• RBW 100 kHz Delta 2 [T1]
 • VBW 300 kHz -0.28 dB
 Ref 20 dBm • Att 20 dB SWT 5 ms 15.120000000 MHz

20 Offset 20 9 dB
 Marker 1 [T1] 0.14 dBm
 2.454460000 GHz

1. 4.36 dBm
 2. 4.36 dBm

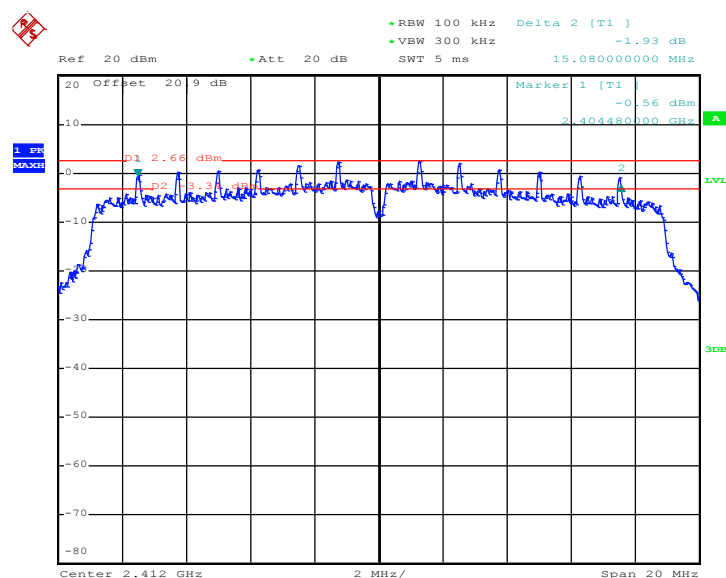
Center 2.462 GHz 2 MHz/
 Span 20 MHz

Date: 3.OCT.2011 11:25:48

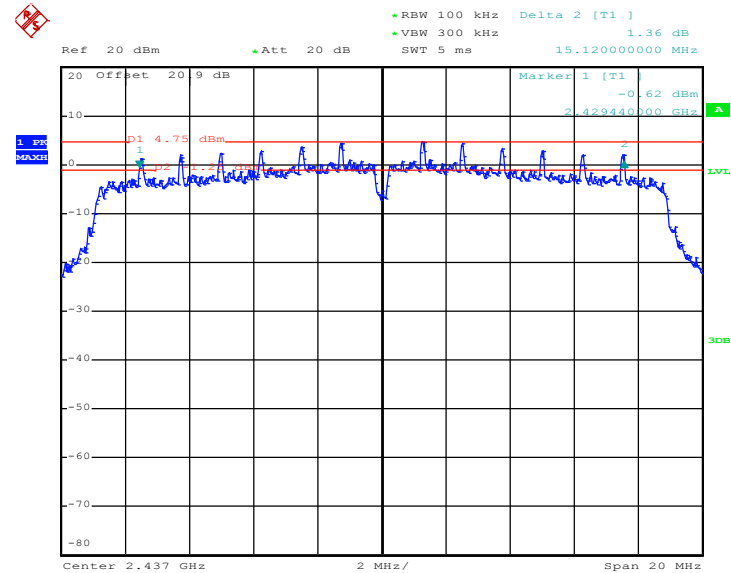
Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.08	0.5	Pass
06	2437	15.12	0.5	Pass
11	2462	15.08	0.5	Pass

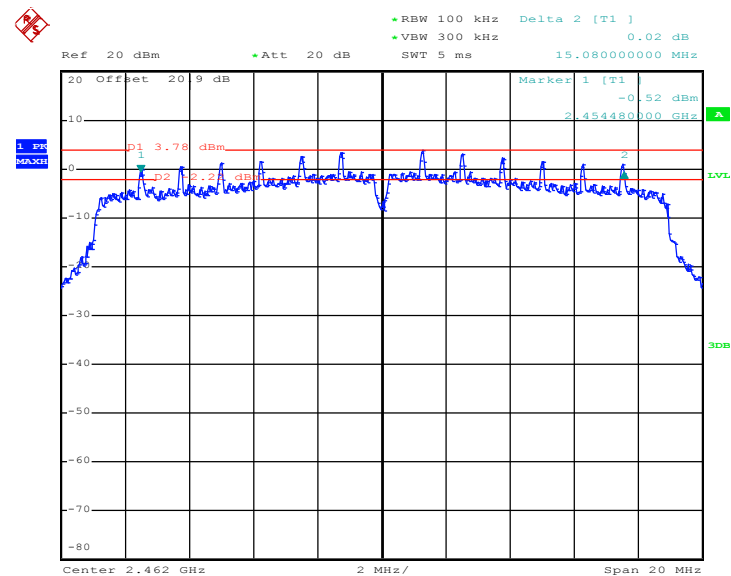
Mode 7 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 01



Date: 3.OCT.2011 12:01:36

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


Date: 3.OCT.2011 12:40:57

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


Date: 3.OCT.2011 12:22:02

3.2 Output Power Measurement

3.2.1 Limit of Output Power

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

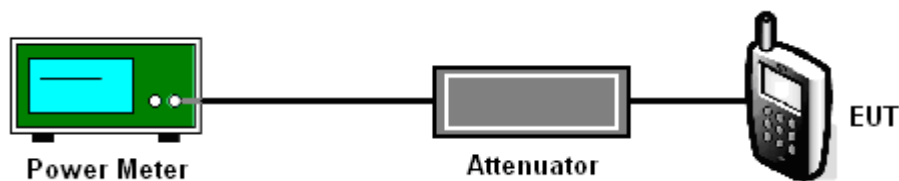
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

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

3.2.4 Test Setup



3.2.5 Test Result of Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	15.15	30	Pass
06	2437	17.62	30	Pass
11	2462	15.64	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.54	30	Pass
06	2437	23.60	30	Pass
11	2462	22.52	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.50	30	Pass
06	2437	23.32	30	Pass
11	2462	22.25	30	Pass

3.3 Band Edges Measurement

3.3.1 Limit of Band Edges

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

3.3.2 Measuring Instruments

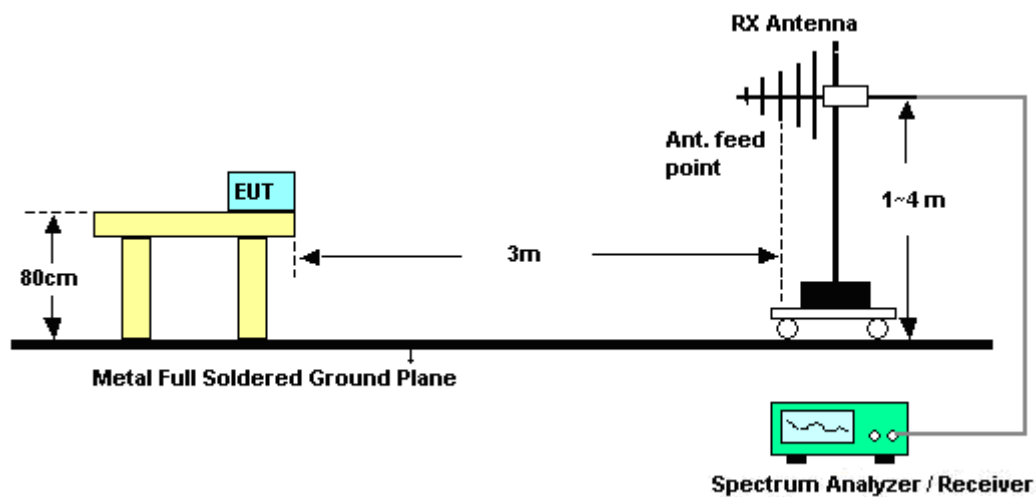
See list of measuring instruments of this test report.

3.3.3 Test Procedures

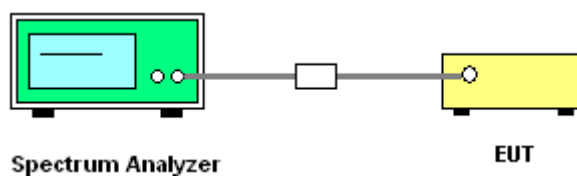
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) $\geq$ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized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

3.3.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>



3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	21~22℃
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Kai Wang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	50.11	-23.89	74	47.2	31.9	5.4	34.39	102	17	Peak
2389.99	36.86	-17.14	54	33.95	31.9	5.4	34.39	102	17	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.85	47.61	-26.39	74	44.7	31.9	5.4	34.39	100	268	Peak
2388.85	34.84	-19.16	54	31.93	31.9	5.4	34.39	100	268	Average

Test Mode :	Mode 3	Temperature :	21~22℃
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Kai Wang

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	51.39	-22.61	74	48.26	31.98	5.52	34.37	100	354	Peak
2483.5	39.47	-14.53	54	36.34	31.98	5.52	34.37	100	354	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
2484.42	50.4	-23.6	74	47.27	31.98	5.52	34.37	187	275	Peak
2484.42	37.42	-16.58	54	34.29	31.98	5.52	34.37	187	275	Average



Test Mode :	Mode 4	Temperature :	21~22℃
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Kai Wang

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
2389.61	65.52	-8.48	74	62.61	31.9	5.4	34.39	188	21	Peak
2389.61	43.97	-10.03	54	41.06	31.9	5.4	34.39	188	21	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	62.75	-11.25	74	59.84	31.9	5.4	34.39	100	51	Peak
2389.99	41.26	-12.74	54	38.35	31.9	5.4	34.39	100	51	Average

Test Mode :	Mode 6	Temperature :	21~22℃
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Kai Wang

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	71.54	-2.46	74	68.41	31.98	5.52	34.37	100	353	Peak
2483.5	49.37	-4.63	54	46.24	31.98	5.52	34.37	100	353	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	66.68	-7.32	74	63.55	31.98	5.52	34.37	100	88	Peak
2483.5	45.38	-8.62	54	42.25	31.98	5.52	34.37	100	88	Average



Test Mode :	Mode 7	Temperature :	21~22℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Kai Wang

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
2389.61	61.43	-12.57	74	58.52	31.9	5.4	34.39	190	13	Peak
2389.61	42.28	-11.72	54	39.37	31.9	5.4	34.39	190	13	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.61	62.47	-11.53	74	59.56	31.9	5.4	34.39	100	49	Peak
2389.61	41.67	-12.33	54	38.76	31.9	5.4	34.39	100	49	Average

Test Mode :	Mode 9	Temperature :	21~22℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Kai Wang

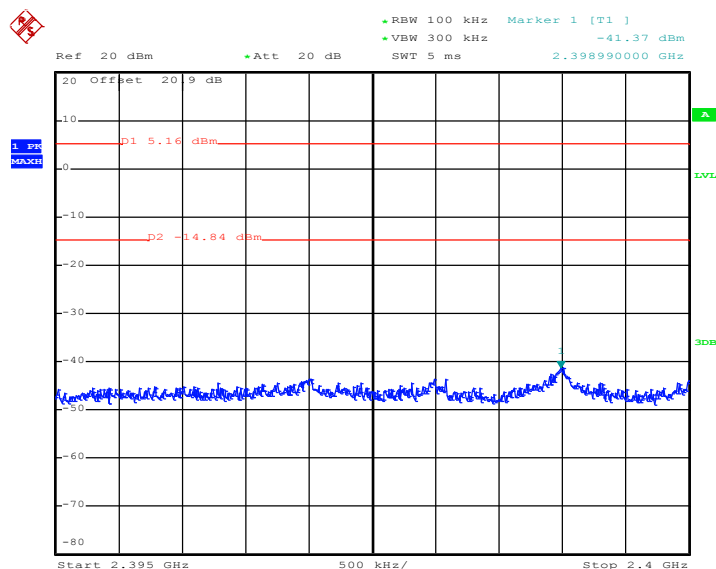
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.42	70.08	-3.92	74	66.95	31.98	5.52	34.37	100	16	Peak
2484.42	51.32	-2.68	54	48.19	31.98	5.52	34.37	100	16	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
2484.42	69.16	-4.84	74	66.03	31.98	5.52	34.37	100	73	Peak
2484.42	48.27	-5.73	54	45.14	31.98	5.52	34.37	100	73	Average

3.3.6 Test Plots of Conducted Band Edges

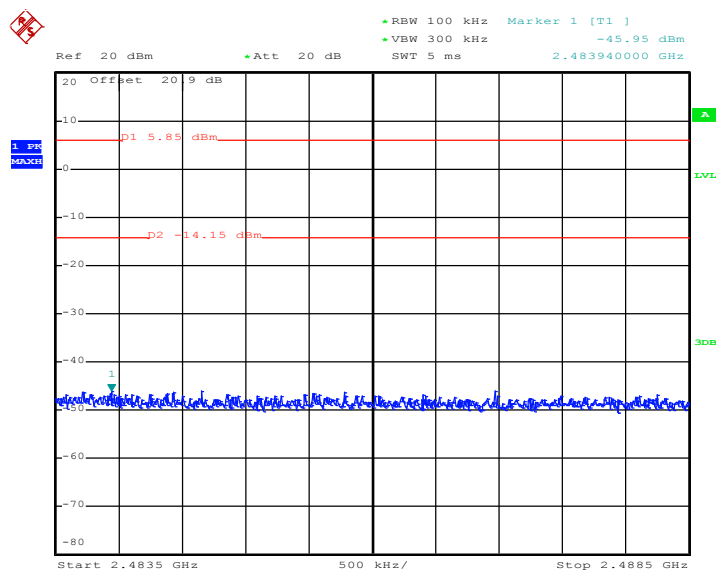
Test Mode :	Mode 1 and 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

Low Band Edge Plot on 802.11b Channel 01



Date: 3.OCT.2011 13:40:00

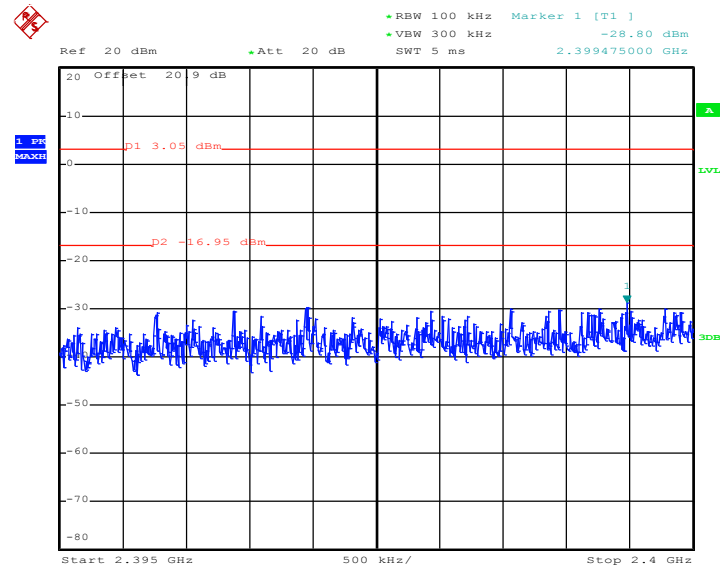
High Band Edge Plot on 802.11b Channel 11



Date: 3.OCT.2011 13:32:25

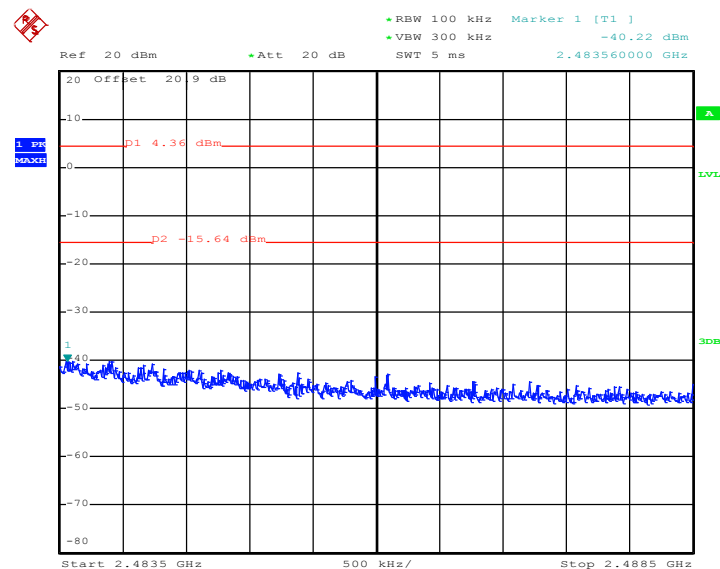
Test Mode :	Mode 4 and 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

Low Band Edge Plot on 802.11g Channel 01



Date: 3.OCT.2011 11:41:32

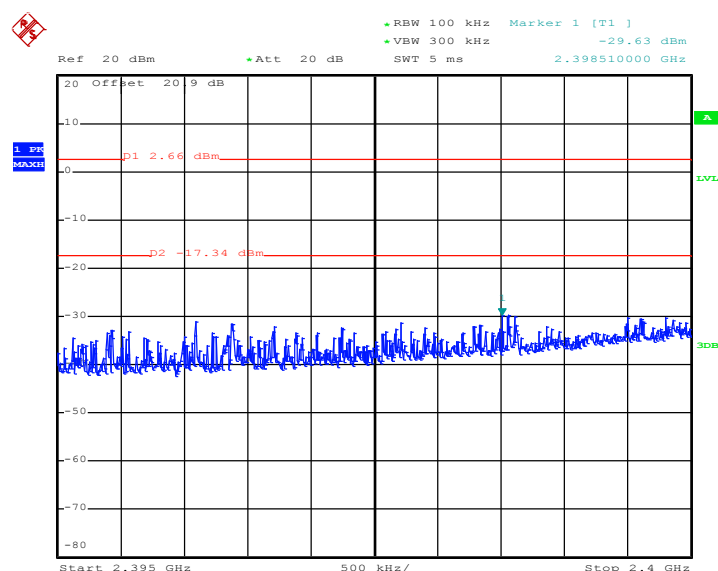
High Band Edge Plot on 802.11g Channel 11



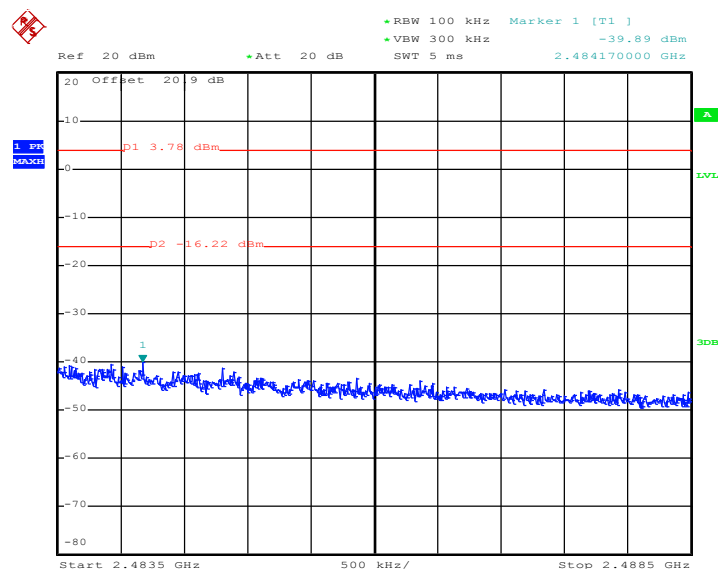
Date: 3.OCT.2011 11:26:35



Test Mode :	Mode 7 and 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

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

Date: 3.OCT.2011 12:02:44

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

Date: 3.OCT.2011 12:22:49

3.4 Spurious Emission Measurement

3.4.1 Limit of Spurious Emission Measurement

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

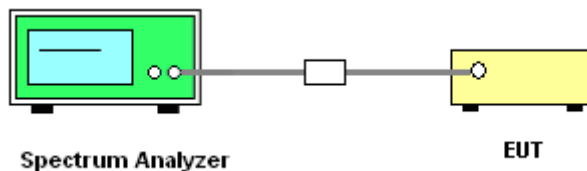
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedure

1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set RBW = 100 kHz, Video bandwidth (VBW) $\geq$ RBW, scan up through 10th harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

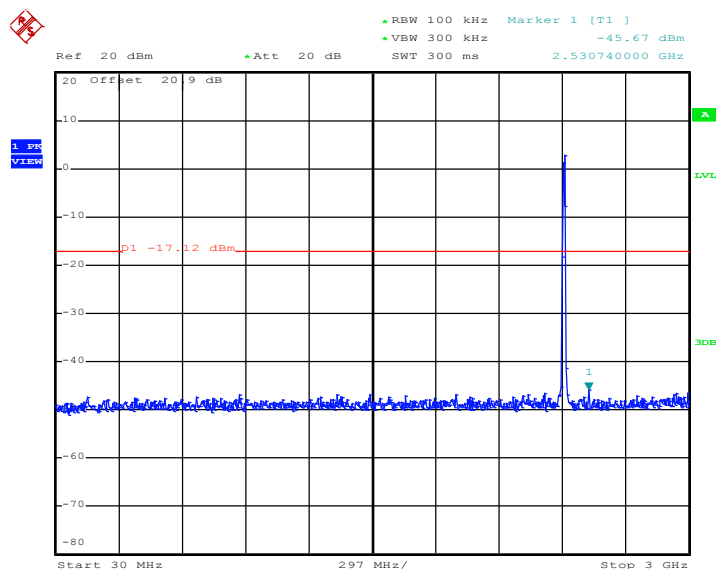
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

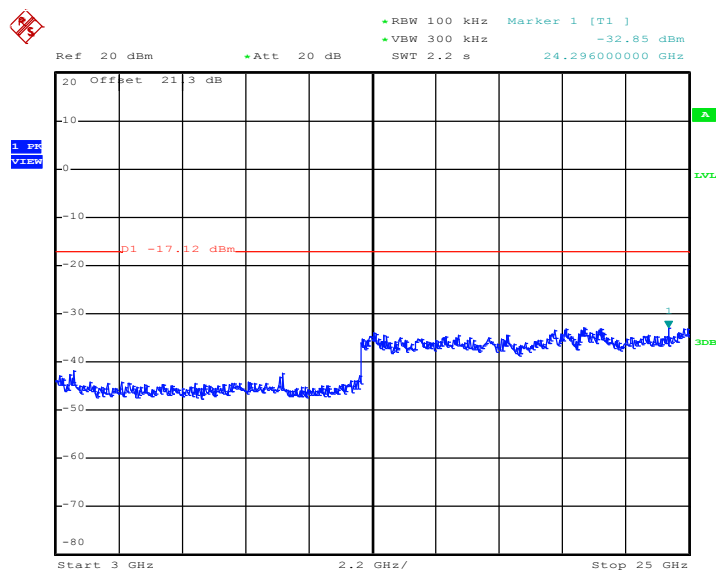
Test Mode :	Mode 1	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 3.OCT.2011 11:09:00

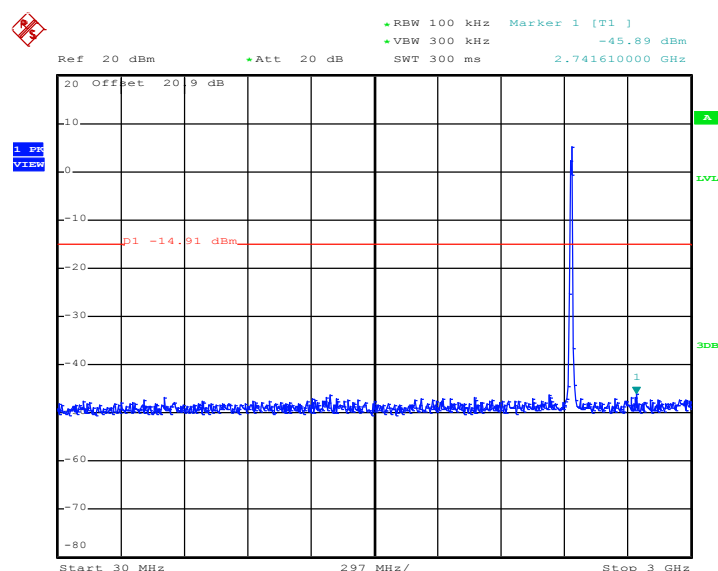
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



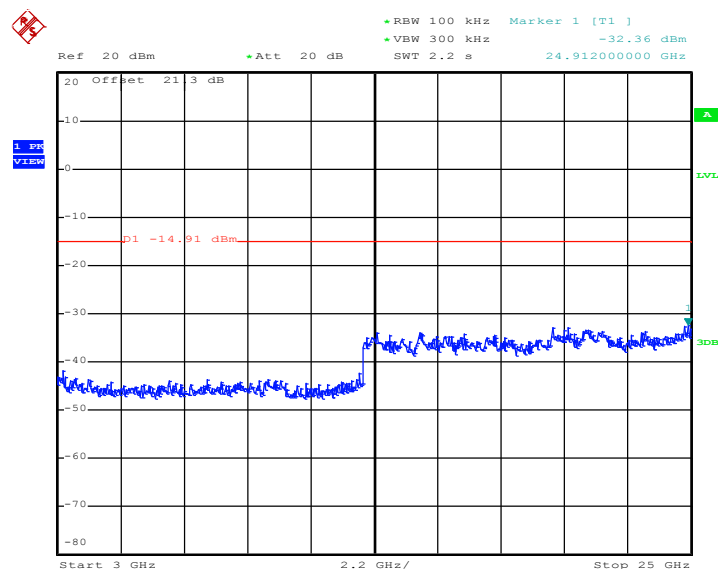
Date: 3.OCT.2011 11:09:17



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

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

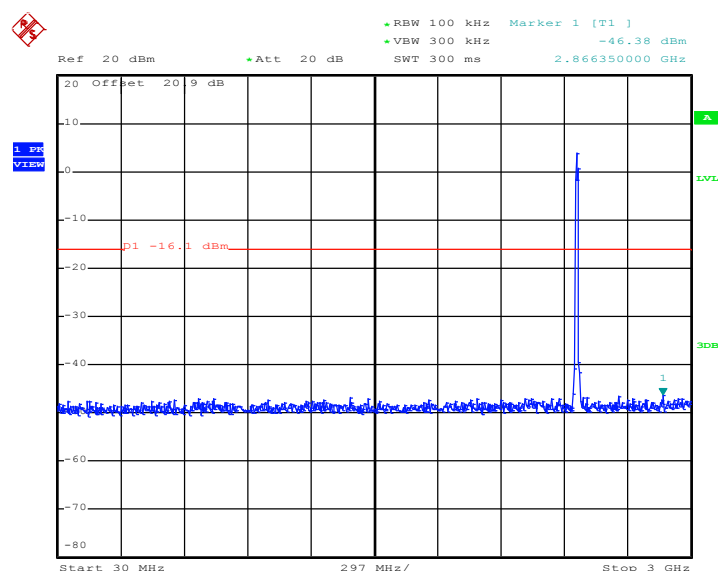
Date: 3.OCT.2011 11:09:57

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

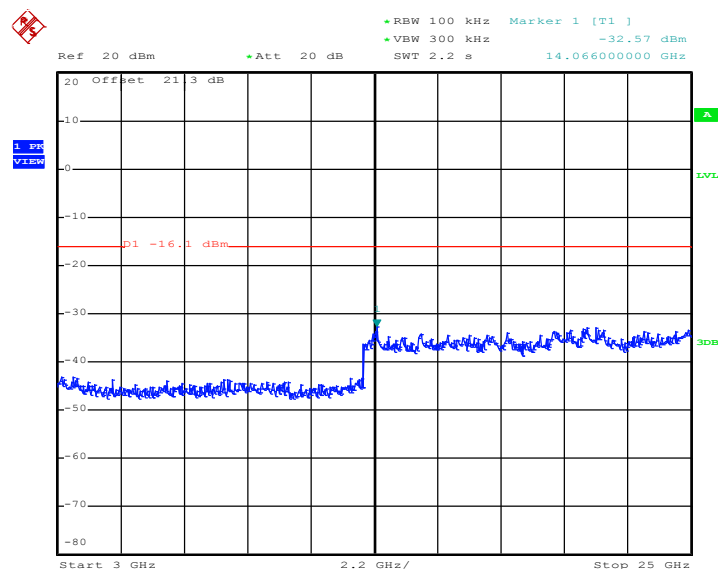
Date: 3.OCT.2011 11:10:14



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

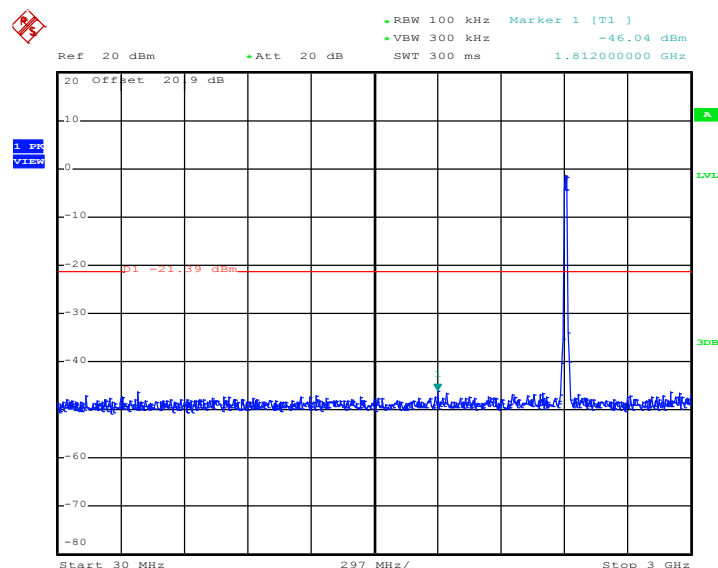
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 3.OCT.2011 11:10:53

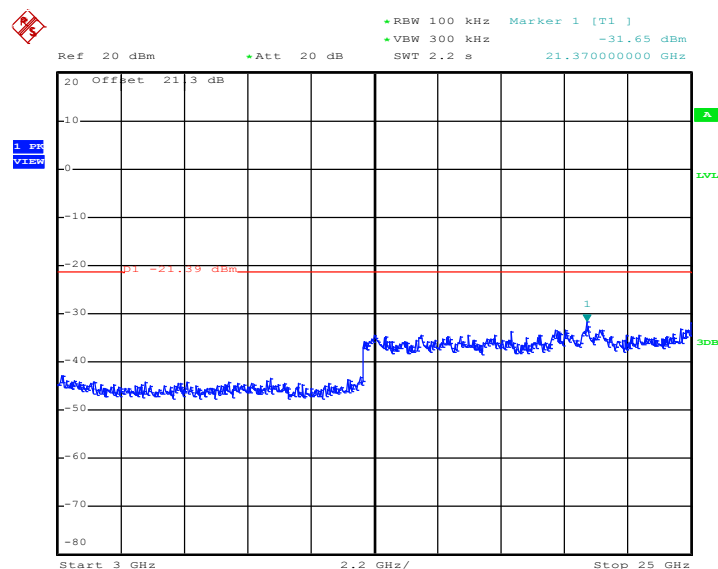
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 3.OCT.2011 11:11:10

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

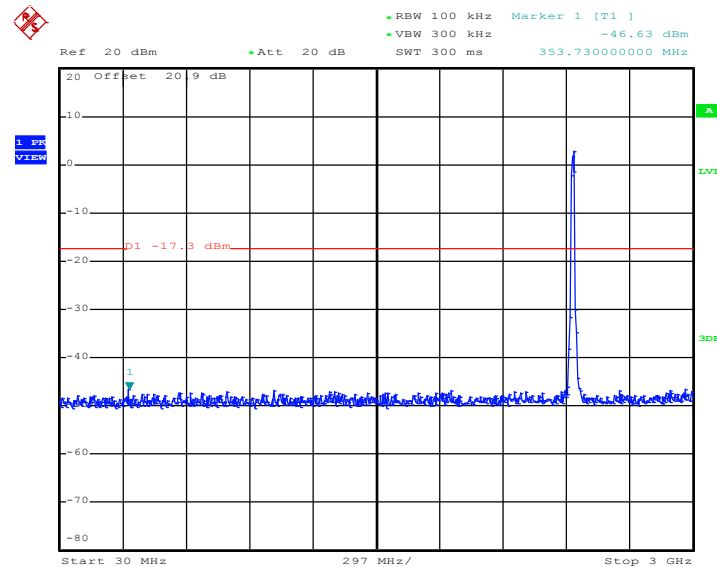
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 3.OCT.2011 11:16:40

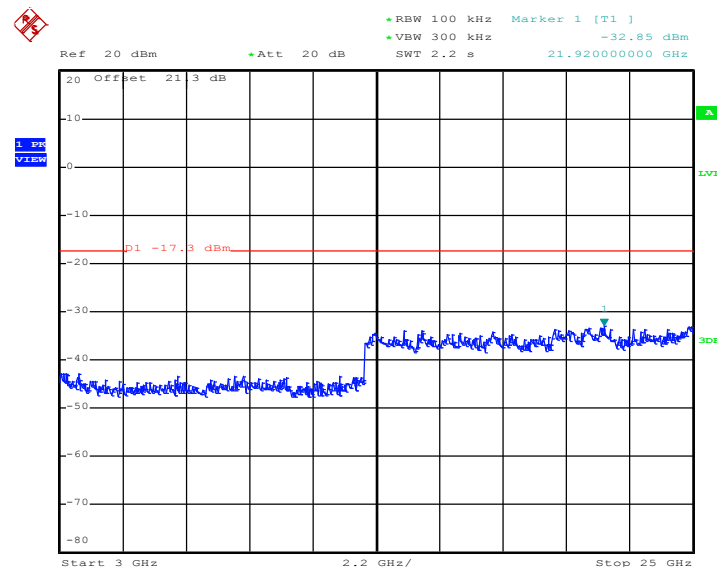
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


Date: 3.OCT.2011 11:16:57

Test Mode :	Mode 5	Temperature :	24~26
Test Band :	802.11g	Relative Humidity :	50~53
Test Channel :	06	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 3.OCT.2011 11:15:43

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


Date: 3.OCT.2011 11:15:59



Test Mode :	Mode 6	Temperature :	24~26℃
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Pinkston Tu

• RBW 100 kHz Marker 1 [T1] -45.76 dBm
 • VBW 300 kHz
 • Att 20 dB SWT 300 ms 2.388180000 GHz

Ref 20 dBm 20 dB

20 Offset 20 9 dB

1.9%
 VIEW

P1 -18.51 dBm

Start 30 MHz 297 MHz/ Stop 3 GHz

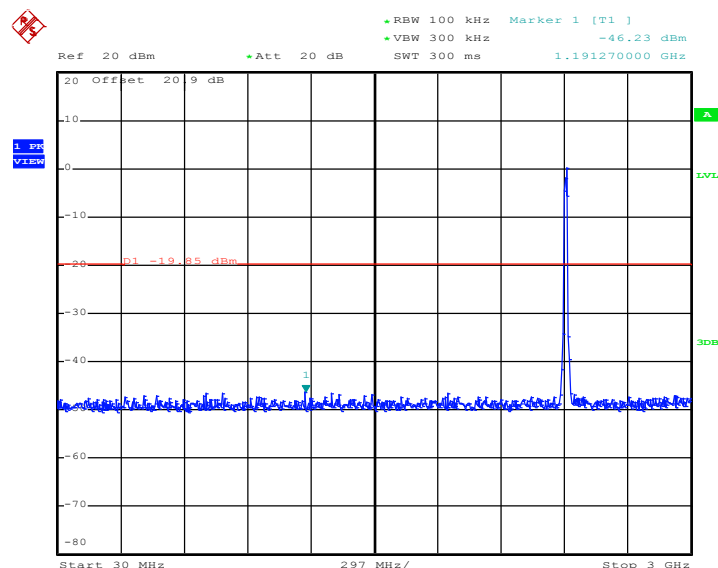
Date: 3.OCT.2011 11:14:42

• RBW 100 kHz Marker 1 [T1] -32.73 dBm
 • VBW 300 kHz
 Ref 20 dBm • Att 20 dB SWT 2.2 s 20.77600000 GHz

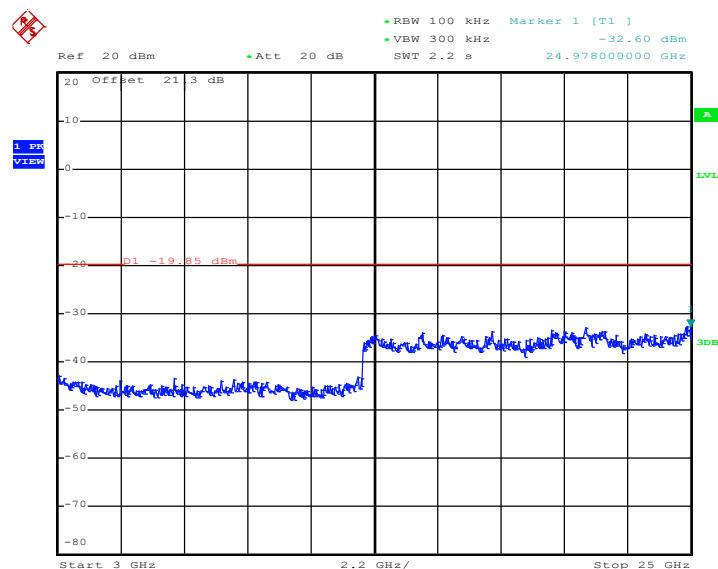
20 Offset 21 3 dB
 1.9%
 VIEW
 P1 -18.51 dBm
 1
 3dB
 Start 3 GHz 2.2 GHz/ Stop 25 GHz

Date: 3.OCT.2011 11:14:59

Test Mode :	Mode 7	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


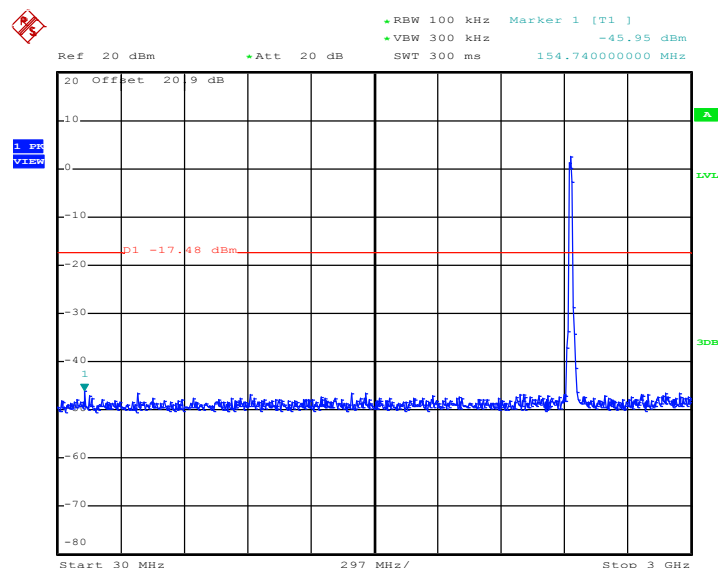
Date: 3.OCT.2011 11:18:49

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


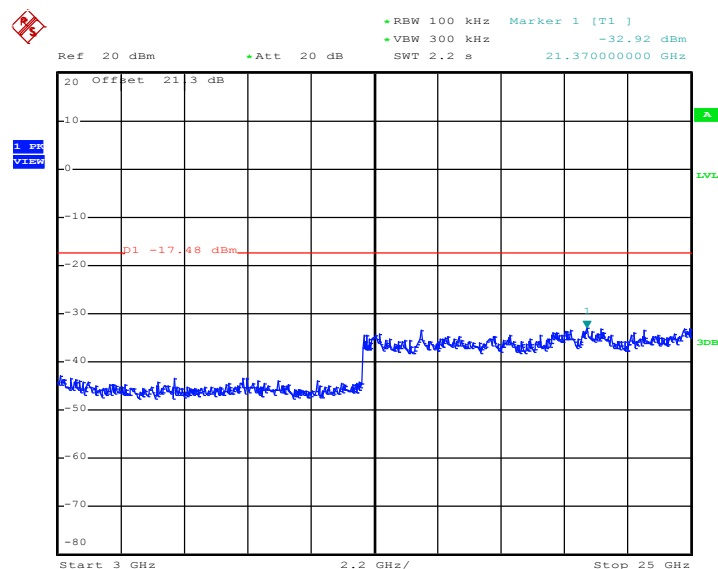
Date: 3.OCT.2011 11:19:06



Test Mode :	Mode 8	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 3.OCT.2011 11:20:22

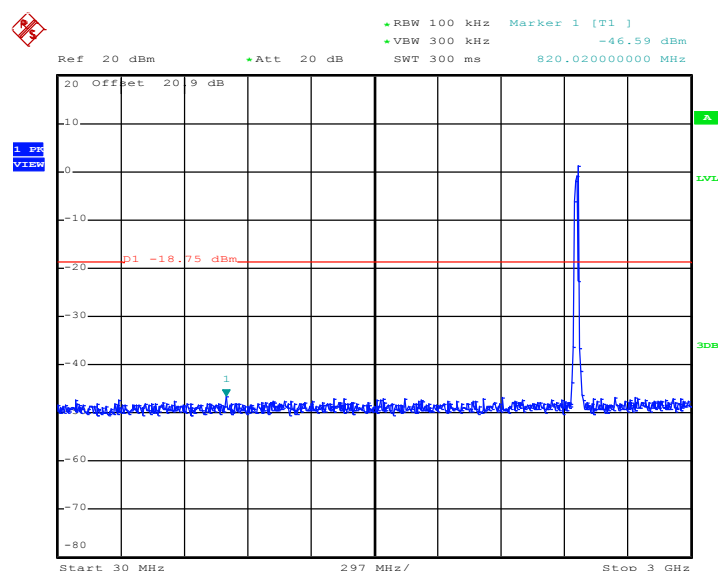
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 3.OCT.2011 11:20:39



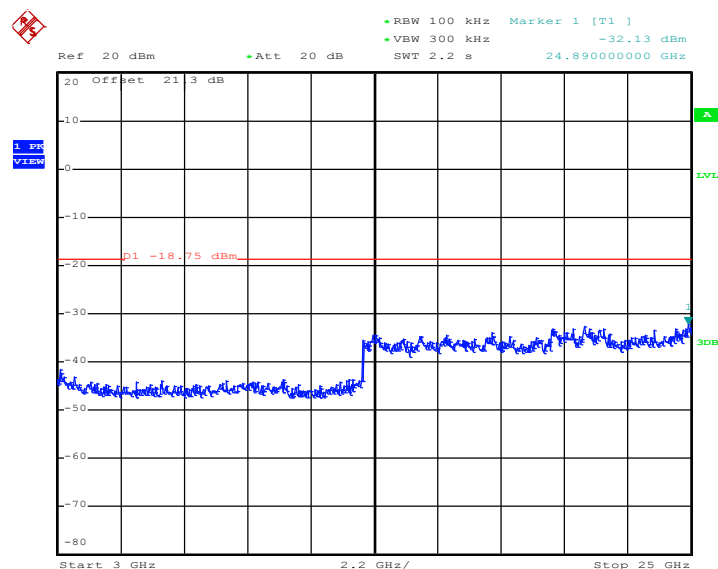
Test Mode :	Mode 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 3.OCT.2011 11:21:24

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 3.OCT.2011 11:21:41

3.5 Power Spectral Density Measurement

3.5.1 Limit of Power Spectral Density

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

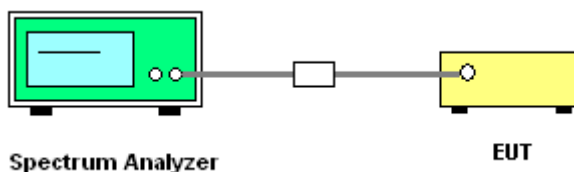
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

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

3.5.4 Test Setup

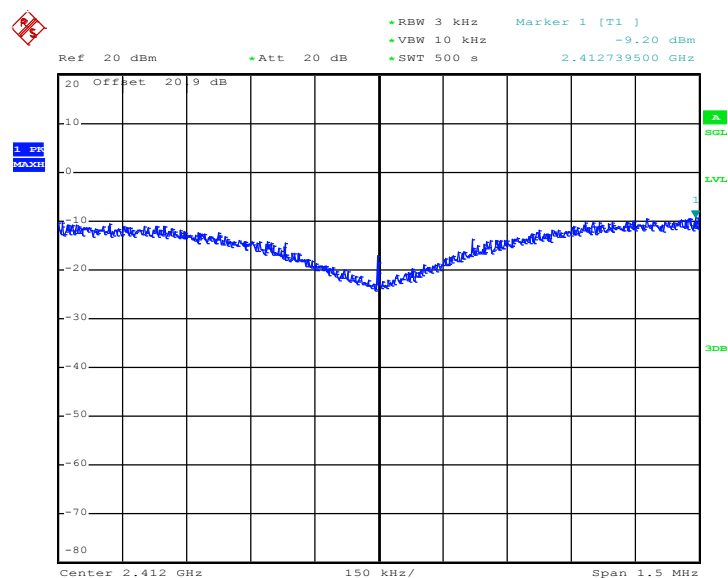


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

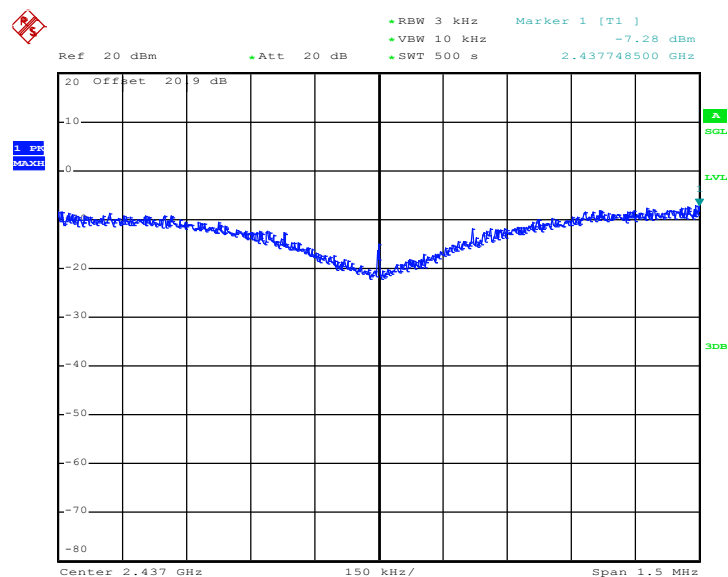
Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-9.20	8	Pass
06	2437	-7.28	8	Pass
11	2462	-8.28	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01



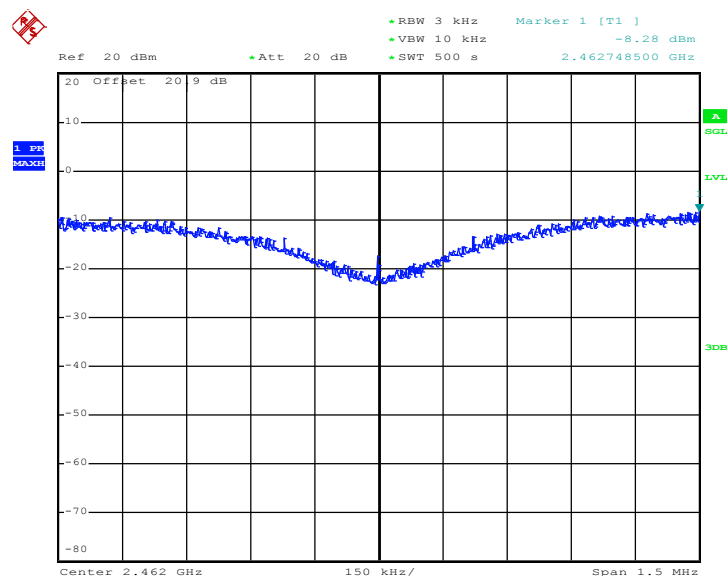
Date: 15.SEP.2011 14:27:02

Mode 2 : PSD Plot on 802.11b Channel 06



Date: 15.SEP.2011 14:13:52

Mode 3 : PSD Plot on 802.11b Channel 11



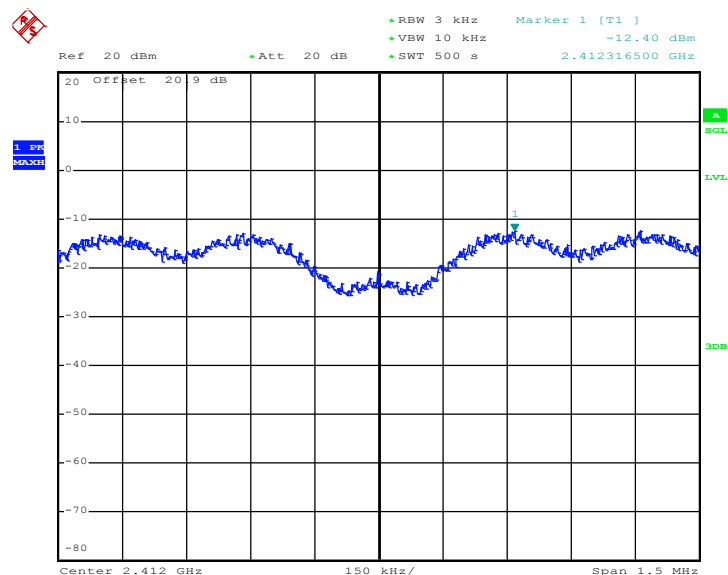
Date: 15.SEP.2011 14:02:44



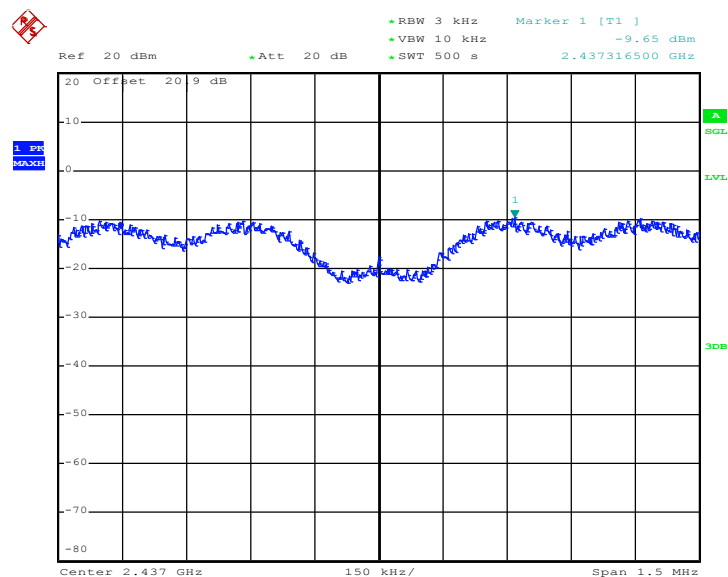
Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-12.40	8	Pass
06	2437	-9.65	8	Pass
11	2462	-10.39	8	Pass

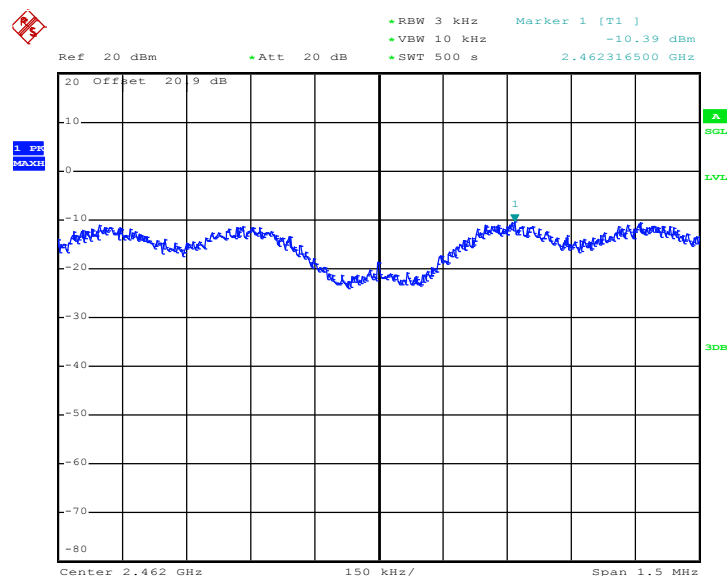
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 15.SEP.2011 15:00:22

Mode 5 : PSD Plot on 802.11g Channel 06


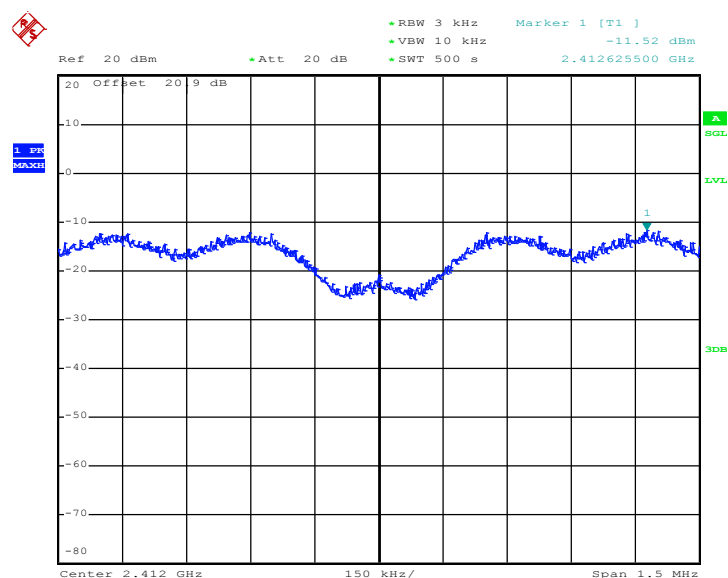
Date: 3.OCT.2011 11:52:15

Mode 6 : PSD Plot on 802.11g Channel 11


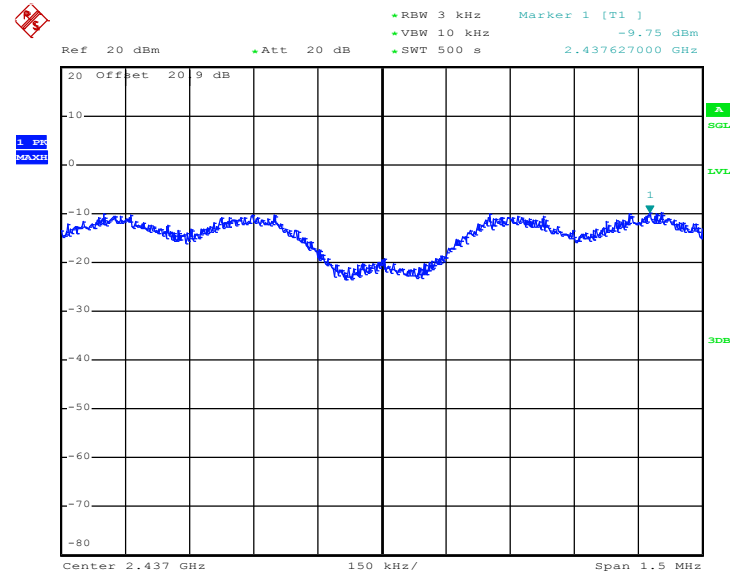
Date: 3.OCT.2011 11:35:42

Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

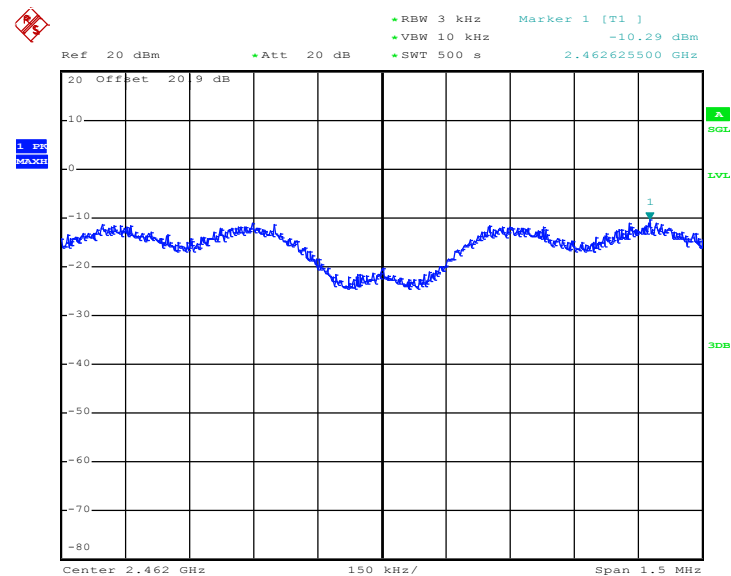
Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-11.52	8	Pass
06	2437	-9.75	8	Pass
11	2462	-10.29	8	Pass

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


Date: 3.OCT.2011 12:17:32

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


Date: 3.OCT.2011 13:17:42

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


Date: 3.OCT.2011 12:38:51

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

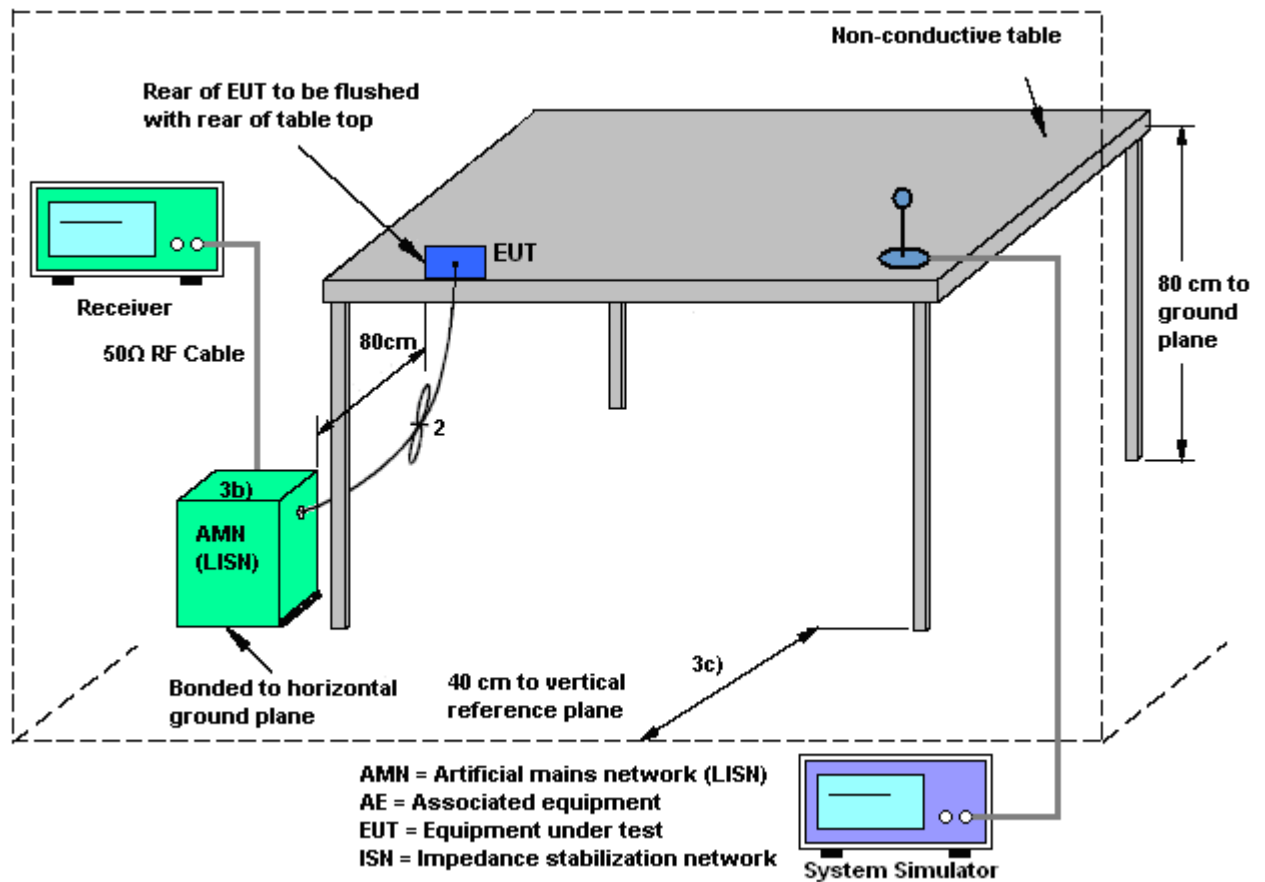
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

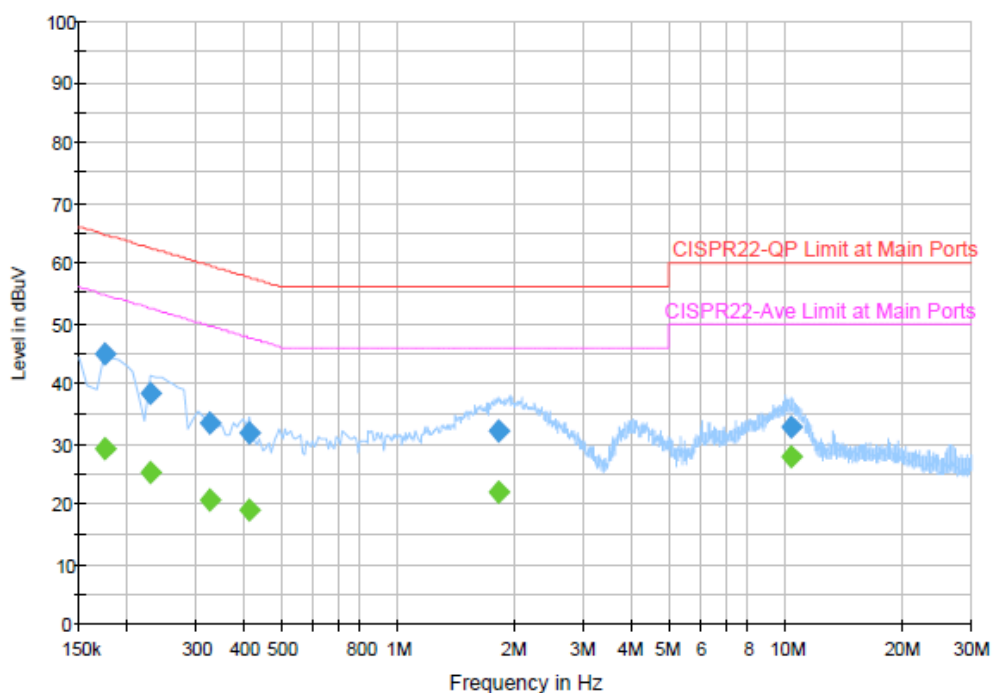
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network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

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Link + GPS Rx + USB Cable (Charging from Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



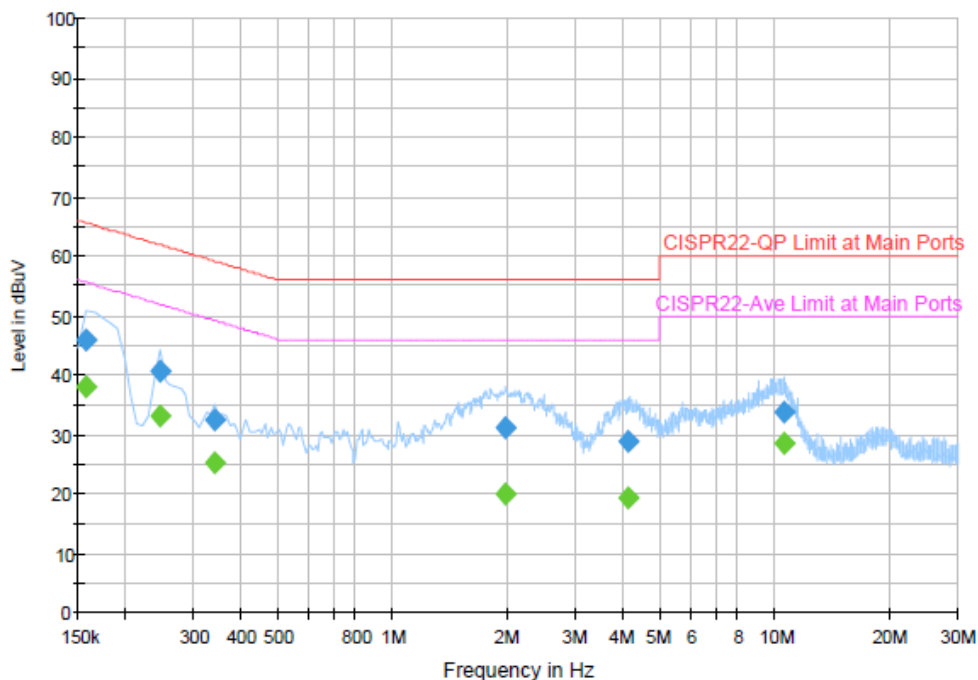
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.174000	44.9	Off	L1	19.4	19.9	64.8
0.230000	38.3	Off	L1	19.4	24.1	62.4
0.326000	33.5	Off	L1	19.4	26.1	59.6
0.414000	31.9	Off	L1	19.5	25.7	57.6
1.806000	32.0	Off	L1	19.4	24.0	56.0
10.318000	32.9	Off	L1	19.6	27.1	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.174000	29.2	Off	L1	19.4	25.6	54.8
0.230000	25.1	Off	L1	19.4	27.3	52.4
0.326000	20.5	Off	L1	19.4	29.1	49.6
0.414000	18.9	Off	L1	19.5	28.7	47.6
1.806000	22.1	Off	L1	19.4	23.9	46.0
10.318000	27.8	Off	L1	19.6	22.2	50.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Link + GPS Rx + USB Cable (Charging from Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	46.0	Off	N	19.4	19.6	65.6
0.246000	40.6	Off	N	19.4	21.3	61.9
0.342000	32.6	Off	N	19.4	26.6	59.2
1.966000	31.1	Off	N	19.5	24.9	56.0
4.142000	29.0	Off	N	19.5	27.0	56.0
10.550000	33.7	Off	N	19.6	26.3	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	38.0	Off	N	19.4	17.6	55.6
0.246000	33.0	Off	N	19.4	18.9	51.9
0.342000	25.1	Off	N	19.4	24.1	49.2
1.966000	20.0	Off	N	19.5	26.0	46.0
4.142000	19.4	Off	N	19.5	26.6	46.0
10.550000	28.4	Off	N	19.6	21.6	50.0

3.7 Radiated Emission Measurement

3.7.1 Limit of Radiated Emission

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

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

3.7.2 Measuring Instruments

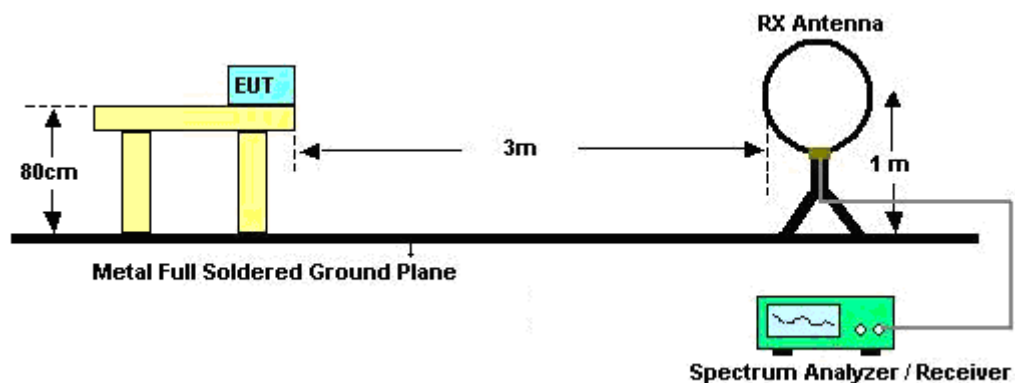
See list of measuring instruments of this test report.

3.7.3 Test Procedures

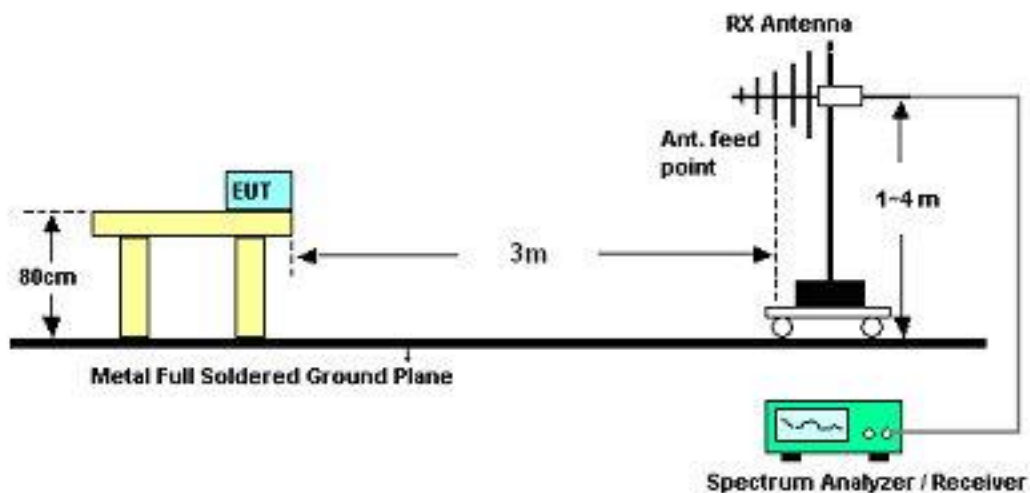
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep =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

3.7.4 Test Setup

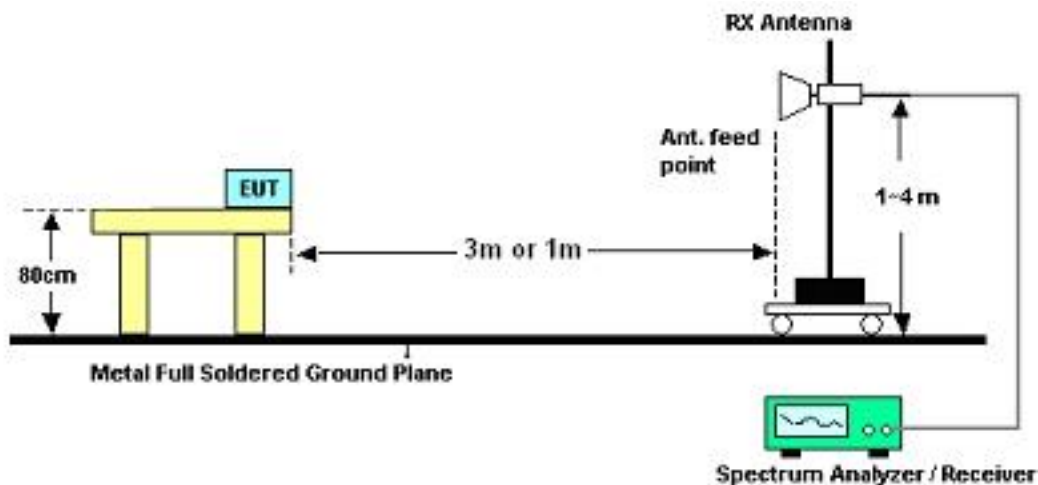
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

Test Engineer :	Kai Wang	Temperature :	21~22℃	
		Relative Humidity :	47~48%	

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 :	21~22℃
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 7236 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	16.57	-23.43	40	29.66	17.91	0.72	31.72	-	-	Peak
199.83	21.17	-22.33	43.5	41.81	9.35	1.66	31.65	-	-	Peak
297.03	20.85	-25.15	46	37.05	13.41	2.05	31.66	-	-	Peak
301.4	21.07	-24.93	46	37.17	13.5	2.07	31.67	-	-	Peak
735.4	23.22	-22.78	46	32.1	19.87	3.33	32.08	-	-	Peak
927.9	25.92	-20.08	46	31.71	21.76	3.78	31.33	100	49	Peak
2389.99	36.86	-17.14	54	33.95	31.9	5.4	34.39	102	17	Average
2389.99	50.11	-23.89	74	47.2	31.9	5.4	34.39	102	17	Peak
2412	96.59	-	-	93.64	31.91	5.43	34.39	102	17	Average
2412	100.81	-	-	97.86	31.91	5.43	34.39	102	17	Peak
2484	46.32	-27.68	74	43.19	31.98	5.52	34.37	102	17	Peak
2484	33.71	-20.29	54	30.58	31.98	5.52	34.37	102	17	Average
4824	50.16	-23.84	74	63.65	34.4	7.96	55.85	100	0	Peak
7236	49.81	-31	80.81	59.48	35.66	11.02	56.35	100	0	Peak



Test Mode :	Mode 1	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	17.05	-22.95	40	30.14	17.91	0.72	31.72	-	-	Peak
42.69	24.29	-15.71	40	43.93	11.25	0.81	31.7	100	119	Peak
199.83	21.58	-21.92	43.5	42.22	9.35	1.66	31.65	-	-	Peak
589.8	22.49	-23.51	46	32.63	19.03	2.91	32.08	-	-	Peak
775.3	23.94	-22.06	46	32.2	20.42	3.36	32.04	-	-	Peak
922.3	26.38	-19.62	46	32.27	21.73	3.77	31.39	-	-	Peak
2388.85	34.84	-19.16	54	31.93	31.9	5.4	34.39	100	268	Average
2388.85	47.61	-26.39	74	44.7	31.9	5.4	34.39	100	268	Peak
2412	94.27	-	-	91.32	31.91	5.43	34.39	100	268	Average
2412	98.56	-	-	95.61	31.91	5.43	34.39	100	268	Peak
2492	45.49	-28.51	74	42.34	32	5.52	34.37	100	268	Peak
2492	32.82	-21.18	54	29.67	32	5.52	34.37	100	268	Average
4824	48.12	-25.88	74	61.61	34.4	7.96	55.85	100	0	Peak

Test Mode :	Mode 2	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	16.28	-23.72	40	29.37	17.91	0.72	31.72	-	-	Peak
42.69	22.82	-17.18	40	42.46	11.25	0.81	31.7	100	48	Peak
199.83	19.25	-24.25	43.5	39.89	9.35	1.66	31.65	-	-	Peak
311.9	20.59	-25.41	46	36.38	13.75	2.1	31.64	-	-	Peak
722.8	23.18	-22.82	46	32.23	19.7	3.31	32.06	-	-	Peak
953.8	25.86	-20.14	46	31.29	21.88	3.79	31.1	-	-	Peak
2390	46.3	-27.7	74	43.39	31.9	5.4	34.39	102	357	Peak
2390	34.01	-19.99	54	31.1	31.9	5.4	34.39	102	357	Average
2437	105.99	-	-	102.96	31.95	5.46	34.38	102	357	Peak
2437	102.18	-	-	99.15	31.95	5.46	34.38	102	357	Average
2484	47.18	-26.82	74	44.05	31.98	5.52	34.37	102	357	Peak
2484	34.97	-19.03	54	31.84	31.98	5.52	34.37	102	357	Average
4874	50.62	-23.38	74	64.11	34.37	8.01	55.87	100	0	Peak
7311	51.41	-22.59	74	61	35.61	11.12	56.32	100	62	Peak
7311	45.31	-8.69	54	54.9	35.61	11.12	56.32	100	62	Average

Test Mode :	Mode 2	Temperature :	21~22°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	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
48.09	22.42	-17.58	40	44.51	8.78	0.84	31.71	100	129	Peak
101.28	21.74	-21.76	43.5	41.43	10.76	1.23	31.68	-	-	Peak
199.83	20.6	-22.9	43.5	41.24	9.35	1.66	31.65	-	-	Peak
640.9	23.16	-22.84	46	32.87	19.26	3.03	32	-	-	Peak
771.8	24	-22	46	32.32	20.38	3.35	32.05	-	-	Peak
922.3	25.65	-20.35	46	31.54	21.73	3.77	31.39	-	-	Peak
2334	45.04	-28.96	74	42.28	31.83	5.34	34.41	100	270	Peak
2334	33.48	-20.52	54	30.72	31.83	5.34	34.41	100	270	Average
2437	101.98	-	-	98.95	31.95	5.46	34.38	100	270	Peak
2437	97.99	-	-	94.96	31.95	5.46	34.38	100	270	Average
2484	45.44	-28.56	74	42.31	31.98	5.52	34.37	100	270	Peak
2484	33.74	-20.26	54	30.61	31.98	5.52	34.37	100	270	Average
4874	47.83	-26.17	74	61.32	34.37	8.01	55.87	100	0	Peak

Test Mode :	Mode 3	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	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
30	16.37	-23.63	40	29.46	17.91	0.72	31.72	-	-	Peak
42.69	20.19	-19.81	40	39.83	11.25	0.81	31.7	-	-	Peak
101.28	13.06	-30.44	43.5	32.75	10.76	1.23	31.68	-	-	Peak
413.4	19.77	-26.23	46	33.12	16.04	2.43	31.82	-	-	Peak
717.9	22.28	-23.72	46	31.4	19.63	3.3	32.05	-	-	Peak
952.4	26.21	-19.79	46	31.66	21.87	3.79	31.11	100	172	Peak
2388	46.64	-27.36	74	43.73	31.9	5.4	34.39	100	354	Peak
2388	36.34	-17.66	54	33.43	31.9	5.4	34.39	100	354	Average
2462	104.02	-	-	100.94	31.97	5.49	34.38	100	354	Peak
2462	99.55	-	-	96.47	31.97	5.49	34.38	100	354	Average
2483.5	51.39	-22.61	74	48.26	31.98	5.52	34.37	100	354	Peak
2483.5	39.47	-14.53	54	36.34	31.98	5.52	34.37	100	354	Average
4924	49.63	-24.37	74	63.15	34.34	8.04	55.9	100	0	Peak
7386	51.41	-22.59	74	60.92	35.56	11.22	56.29	103	36	Peak
7386	45.28	-8.72	54	54.79	35.56	11.22	56.29	103	36	Average

Test Mode :	Mode 3	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	17.13	-22.87	40	30.22	17.91	0.72	31.72	-	-	Peak
43.23	23.68	-16.32	40	43.86	10.71	0.81	31.7	100	139	Peak
91.29	16.36	-27.14	43.5	37.69	9.24	1.15	31.72	-	-	Peak
509.3	20.31	-25.69	46	31.46	17.95	2.7	31.8	-	-	Peak
750.8	23.64	-22.36	46	32.31	20.09	3.35	32.11	-	-	Peak
925.8	25.31	-20.69	46	31.13	21.75	3.78	31.35	-	-	Peak
2382	45.99	-28.01	74	43.1	31.88	5.4	34.39	187	275	Peak
2382	35.08	-18.92	54	32.19	31.88	5.4	34.39	187	275	Average
2462	100.77	-	-	97.69	31.97	5.49	34.38	187	275	Peak
2462	96.65	-	-	93.57	31.97	5.49	34.38	187	275	Average
2484.42	50.4	-23.6	74	47.27	31.98	5.52	34.37	187	275	Peak
2484.42	37.42	-16.58	54	34.29	31.98	5.52	34.37	187	275	Average
4924	46.24	-27.76	74	59.76	34.34	8.04	55.9	100	0	Peak

Test Mode :	Mode 4	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 7236 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	16.04	-23.96	40	29.13	17.91	0.72	31.72	-	-	Peak
42.69	20.62	-19.38	40	40.26	11.25	0.81	31.7	100	158	Peak
113.43	13	-30.5	43.5	31.69	11.72	1.3	31.71	-	-	Peak
388.9	18.48	-27.52	46	32.37	15.51	2.37	31.77	-	-	Peak
717.9	22.28	-23.72	46	31.4	19.63	3.3	32.05	-	-	Peak
945.4	25.98	-20.02	46	31.52	21.84	3.79	31.17	-	-	Peak
2389.61	65.52	-8.48	74	62.61	31.9	5.4	34.39	188	21	Peak
2389.61	43.97	-10.03	54	41.06	31.9	5.4	34.39	188	21	Average
2412	104.93	-	-	101.98	31.91	5.43	34.39	188	21	Peak
2412	93.23	-	-	90.28	31.91	5.43	34.39	188	21	Average
2484	46.97	-27.03	74	43.84	31.98	5.52	34.37	188	21	Peak
2484	35.14	-18.86	54	32.01	31.98	5.52	34.37	188	21	Average
4824	49.33	-24.67	74	62.82	34.4	7.96	55.85	100	0	Peak
7236	49.41	-35.52	84.93	59.08	35.66	11.02	56.35	100	0	Peak



Test Mode :	Mode 4	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	16.29	-23.71	40	29.38	17.91	0.72	31.72	-	-	Peak
43.23	23.22	-16.78	40	43.4	10.71	0.81	31.7	100	165	Peak
91.29	16.99	-26.51	43.5	38.32	9.24	1.15	31.72	-	-	Peak
409.9	18.11	-27.89	46	31.51	15.98	2.43	31.81	-	-	Peak
659.8	22.42	-23.58	46	32.01	19.3	3.09	31.98	-	-	Peak
876.8	24.9	-21.1	46	31.55	21.43	3.66	31.74	-	-	Peak
2389.99	62.75	-11.25	74	59.84	31.9	5.4	34.39	100	51	Peak
2389.99	41.26	-12.74	54	38.35	31.9	5.4	34.39	100	51	Average
2412	100.93	-	-	97.98	31.91	5.43	34.39	100	51	Peak
2412	88.83	-	-	85.88	31.91	5.43	34.39	100	51	Average
2486	45.64	-28.36	74	42.51	31.98	5.52	34.37	100	51	Peak
2486	32.91	-21.09	54	29.78	31.98	5.52	34.37	100	51	Average
4824	46.74	-27.26	74	60.23	34.4	7.96	55.85	100	0	Peak

Test Mode :	Mode 5	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	15.92	-24.08	40	29.01	17.91	0.72	31.72	-	-	Peak
211.98	22.42	-21.08	43.5	42.16	10.18	1.71	31.63	-	-	Peak
265.98	22.08	-23.92	46	38.94	12.92	1.92	31.7	-	-	Peak
582.8	22.45	-23.55	46	32.65	18.94	2.9	32.04	-	-	Peak
785.8	23.83	-22.17	46	31.91	20.57	3.36	32.01	-	-	Peak
952.4	25.83	-20.17	46	31.28	21.87	3.79	31.11	100	148	Peak
2390	50.01	-23.99	74	47.1	31.9	5.4	34.39	100	352	Peak
2390	35.31	-18.69	54	32.4	31.9	5.4	34.39	100	352	Average
2437	105.99	-	-	102.96	31.95	5.46	34.38	100	352	Peak
2437	94.44	-	-	91.41	31.95	5.46	34.38	100	352	Average
2484	52.13	-21.87	74	49	31.98	5.52	34.37	100	352	Peak
2484	37.24	-16.76	54	34.11	31.98	5.52	34.37	100	352	Average
4874	46.97	-27.03	74	60.47	34.37	8	55.87	100	0	Peak
7311	54.52	-19.48	74	64.11	35.61	11.12	56.32	100	62	Peak
7311	40.77	-13.23	54	50.36	35.61	11.12	56.32	100	62	Average

Test Mode :	Mode 5	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
41.88	26.58	-13.42	40	45.69	11.78	0.81	31.7	100	48	Peak
91.29	16.95	-26.55	43.5	38.28	9.24	1.15	31.72	-	-	Peak
199.83	20.37	-23.13	43.5	41.01	9.35	1.66	31.65	-	-	Peak
579.3	23.31	-22.69	46	33.57	18.88	2.89	32.03	-	-	Peak
854.4	25.38	-20.62	46	32.46	21.24	3.56	31.88	-	-	Peak
950.3	26.21	-19.79	46	31.68	21.86	3.79	31.12	-	-	Peak
2390	49.95	-24.05	74	47.04	31.9	5.4	34.39	101	271	Peak
2390	35.48	-18.52	54	32.57	31.9	5.4	34.39	101	271	Average
2437	103.37	-	-	100.36	31.93	5.46	34.38	101	271	Peak
2437	91.18	-	-	88.15	31.95	5.46	34.38	101	271	Average
2484	48.3	-25.7	74	45.17	31.98	5.52	34.37	101	271	Peak
2484	34.82	-19.18	54	31.69	31.98	5.52	34.37	101	271	Average
4874	46.78	-27.22	74	60.28	34.37	8	55.87	100	0	Peak

Test Mode :	Mode 6	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	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
30	16.03	-23.97	40	29.12	17.91	0.72	31.72	-	-	Peak
245.73	20.79	-25.21	46	38.26	12.35	1.83	31.65	-	-	Peak
274.89	21.16	-24.84	46	37.85	13.06	1.95	31.7	-	-	Peak
549.9	21.51	-24.49	46	32.05	18.49	2.85	31.88	-	-	Peak
773.9	24.23	-21.77	46	32.51	20.41	3.35	32.04	-	-	Peak
931.4	25.77	-20.23	46	31.52	21.77	3.78	31.3	100	48	Peak
2388	47.71	-26.29	74	44.8	31.9	5.4	34.39	100	353	Peak
2388	35.68	-18.32	54	32.77	31.9	5.4	34.39	100	353	Average
2462	106.3	-	-	103.22	31.97	5.49	34.38	100	353	Peak
2462	95.13	-	-	92.05	31.97	5.49	34.38	100	353	Average
2483.5	71.54	-2.46	74	68.41	31.98	5.52	34.37	100	353	Peak
2483.5	49.37	-4.63	54	46.24	31.98	5.52	34.37	100	353	Average
4924	47.69	-26.31	74	61.21	34.34	8.04	55.9	100	0	Peak
7386	57.11	-16.89	74	66.62	35.56	11.22	56.29	100	58	Peak
7386	43.18	-10.82	54	52.69	35.56	11.22	56.29	100	58	Average

Test Mode :	Mode 6	Temperature :	21~22℃
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	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
43.23	25.37	-14.63	40	45.55	10.71	0.81	31.7	100	169	Peak
143.13	17.57	-25.93	43.5	36.67	11.15	1.45	31.7	-	-	Peak
199.83	21.23	-22.27	43.5	41.87	9.35	1.66	31.65	-	-	Peak
481.3	19.57	-26.43	46	31.31	17.43	2.6	31.77	-	-	Peak
677.3	22.15	-23.85	46	31.63	19.34	3.17	31.99	-	-	Peak
932.8	25.45	-20.55	46	31.18	21.78	3.78	31.29	-	-	Peak
2382	47.23	-26.77	74	44.34	31.88	5.4	34.39	100	88	Peak
2382	34.53	-19.47	54	31.64	31.88	5.4	34.39	100	88	Average
2462	102.98	-	-	99.9	31.97	5.49	34.38	100	88	Peak
2462	90.27	-	-	87.19	31.97	5.49	34.38	100	88	Average
2483.5	66.68	-7.32	74	63.55	31.98	5.52	34.37	100	88	Peak
2483.5	45.38	-8.62	54	42.25	31.98	5.52	34.37	100	88	Average
4924	45.9	-28.1	74	59.42	34.34	8.04	55.9	100	0	Peak
7386	51.44	-22.56	74	60.95	35.56	11.22	56.29	100	289	Peak
7386	38.59	-15.41	54	48.1	35.56	11.22	56.29	100	289	Average



Test Mode :	Mode 7	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	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
42.69	22.12	-17.88	40	41.76	11.25	0.81	31.7	100	48	Peak
146.64	14.6	-28.9	43.5	33.9	10.95	1.45	31.7	-	-	Peak
199.83	22.34	-21.16	43.5	42.98	9.35	1.66	31.65	-	-	Peak
425.3	18.01	-27.99	46	31.08	16.3	2.46	31.83	-	-	Peak
691.3	22.31	-23.69	46	31.71	19.37	3.23	32	-	-	Peak
939.8	25.3	-20.7	46	30.93	21.81	3.78	31.22	-	-	Peak
2389.61	42.28	-11.72	54	39.37	31.9	5.4	34.39	190	13	Average
2389.61	61.43	-12.57	74	58.52	31.9	5.4	34.39	190	13	Peak
2412	89.72	-	-	86.77	31.91	5.43	34.39	190	13	Average
2412	101.33	-	-	98.38	31.91	5.43	34.39	190	13	Peak
2486	45.52	-28.48	74	42.39	31.98	5.52	34.37	190	13	Peak
2486	34.1	-19.9	54	30.97	31.98	5.52	34.37	190	13	Average
4824	47.33	-26.67	74	60.82	34.4	7.96	55.85	100	0	Peak

Test Mode :	Mode 7	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	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
42.69	27.32	-12.68	40	46.96	11.25	0.81	31.7	100	148	Peak
93.18	16.09	-27.41	43.5	37.06	9.56	1.16	31.69	-	-	Peak
199.83	22.57	-20.93	43.5	43.21	9.35	1.66	31.65	-	-	Peak
444.9	19.21	-26.79	46	31.86	16.7	2.49	31.84	-	-	Peak
689.9	22.32	-23.68	46	31.73	19.37	3.22	32	-	-	Peak
925.8	25.71	-20.29	46	31.53	21.75	3.78	31.35	-	-	Peak
2389.61	41.67	-12.33	54	38.76	31.9	5.4	34.39	100	49	Average
2389.61	62.47	-11.53	74	59.56	31.9	5.4	34.39	100	49	Peak
2412	85.17	-	-	82.22	31.91	5.43	34.39	100	49	Average
2412	96.68	-	-	93.73	31.91	5.43	34.39	100	49	Peak
2492	44.96	-29.04	74	41.81	32	5.52	34.37	100	49	Peak
2492	32.22	-21.78	54	29.07	32	5.52	34.37	100	49	Average

Test Mode :	Mode 8	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	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
42.69	19.76	-20.24	40	39.4	11.25	0.81	31.7	100	83	Peak
199.83	20.17	-23.33	43.5	40.81	9.35	1.66	31.65	-	-	Peak
266.79	21.48	-24.52	46	38.32	12.93	1.92	31.69	-	-	Peak
563.9	21.21	-24.79	46	31.61	18.68	2.87	31.95	-	-	Peak
770.4	23.21	-22.79	46	31.56	20.35	3.35	32.05	-	-	Peak
901.3	25.73	-20.27	46	31.92	21.63	3.76	31.58	-	-	Peak
2390	47.26	-26.74	74	44.35	31.9	5.4	34.39	100	359	Peak
2390	34.67	-19.33	54	31.76	31.9	5.4	34.39	100	359	Average
2437	103.81	-	-	100.78	31.95	5.46	34.38	100	359	Peak
2437	91.39	-	-	88.36	31.95	5.46	34.38	100	359	Average
2484	48.85	-25.15	74	45.72	31.98	5.52	34.37	100	359	Peak
2484	36.1	-17.9	54	32.97	31.98	5.52	34.37	100	359	Average
4874	47.35	-26.65	74	60.85	34.37	8	55.87	100	0	Peak
7311	53.53	-20.47	74	63.12	35.61	11.12	56.32	100	62	Peak
7311	39.37	-14.63	54	48.96	35.61	11.12	56.32	100	62	Average



Test Mode :	Mode 8	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.54	16.63	-23.37	40	30.32	17.31	0.72	31.72	-	-	Peak
43.23	21.75	-18.25	40	41.93	10.71	0.81	31.7	100	169	Peak
101.28	17.71	-25.79	43.5	37.4	10.76	1.23	31.68	-	-	Peak
605.9	22.07	-23.93	46	32.06	19.18	2.94	32.11	-	-	Peak
805.4	23.95	-22.05	46	31.72	20.81	3.38	31.96	-	-	Peak
948.9	25.75	-20.25	46	31.24	21.85	3.79	31.13	-	-	Peak
2390	47.8	-26.2	74	44.89	31.9	5.4	34.39	131	271	Peak
2390	35.82	-18.18	54	32.91	31.9	5.4	34.39	131	271	Average
2437	101.11	-	-	98.1	31.93	5.46	34.38	131	271	Peak
2437	88.98	-	-	85.95	31.95	5.46	34.38	131	271	Average
2484	45.92	-28.08	74	42.79	31.98	5.52	34.37	131	271	Peak
2484	33.74	-20.26	54	30.61	31.98	5.52	34.37	131	271	Average

Test Mode :	Mode 9	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	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
30	15.95	-24.05	40	29.04	17.91	0.72	31.72	-	-	Peak
199.83	20.23	-23.27	43.5	40.87	9.35	1.66	31.65	-	-	Peak
265.44	21.21	-24.79	46	38.07	12.92	1.92	31.7	-	-	Peak
607.3	23.15	-22.85	46	33.14	19.18	2.94	32.11	-	-	Peak
754.3	23.92	-22.08	46	32.53	20.14	3.35	32.1	-	-	Peak
939.8	25.76	-20.24	46	31.39	21.81	3.78	31.22	100	48	Peak
2388	48.01	-25.99	74	45.1	31.9	5.4	34.39	100	16	Peak
2388	35.73	-18.27	54	32.82	31.9	5.4	34.39	100	16	Average
2462	106.4	-	-	103.32	31.97	5.49	34.38	100	16	Peak
2462	94.32	-	-	91.24	31.97	5.49	34.38	100	16	Average
2484.42	70.08	-3.92	74	66.95	31.98	5.52	34.37	100	16	Peak
2484.42	51.32	-2.68	54	48.19	31.98	5.52	34.37	100	16	Average
4924	48.16	-25.84	74	61.68	34.34	8.04	55.9	100	0	Peak
7386	54.56	-19.44	74	64.07	35.56	11.22	56.29	100	183	Peak
7386	40.05	-13.95	54	49.56	35.56	11.22	56.29	100	183	Average

Test Mode :	Mode 9	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
41.88	23.48	-16.52	40	42.59	11.78	0.81	31.7	100	41	Peak
92.64	16.87	-26.63	43.5	37.86	9.56	1.16	31.71	-	-	Peak
199.83	22.43	-21.07	43.5	43.07	9.35	1.66	31.65	-	-	Peak
406.4	18.32	-27.68	46	31.8	15.9	2.42	31.8	-	-	Peak
617.8	23.28	-22.72	46	33.17	19.21	2.97	32.07	-	-	Peak
941.9	25.97	-20.03	46	31.56	21.82	3.79	31.2	-	-	Peak
2390	47.4	-26.6	74	44.49	31.9	5.4	34.39	100	73	Peak
2390	35.54	-18.46	54	32.63	31.9	5.4	34.39	100	73	Average
2462	103	-	-	99.92	31.97	5.49	34.38	100	73	Peak
2462	91.08	-	-	88	31.97	5.49	34.38	100	73	Average
2484.42	69.16	-4.84	74	66.03	31.98	5.52	34.37	100	73	Peak
2484.42	48.27	-5.73	54	45.14	31.98	5.52	34.37	100	73	Average
4924	46.67	-27.33	74	60.19	34.34	8.04	55.9	100	0	Peak
7386	50.13	-23.87	74	59.64	35.56	11.22	56.29	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 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	100055	9kHz~40GHz	Jun. 13, 2011	Jun. 12, 2012	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Feb. 18, 2011	Feb. 17, 2012	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 18, 2011	Feb. 17, 2012	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCI 7	100724	9kHz~7GHz	Aug. 22, 2011	Aug. 21, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz – 30MHz	Dec. 03, 2010	Dec. 02, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz – 30MHz	Dec. 01, 2010	Nov. 30, 2011	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	112403	N/A	Feb. 22, 2011	Feb. 21, 2012	Conduction (CO05-HY)
GPS Station	Pendulum	GSG-54	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
Spectrum Analyzer	R&S	FSP40	100057	9KHz-40GHz	Oct. 25, 2010	Oct. 24, 2011	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/003	20MHz-1000MHz	May 10, 2011	May 09, 2012	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Oct. 31, 2010	Oct. 30, 2011	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz~18GHz	Aug. 01, 2011	Jul. 31, 2012	Radiation (03CH06-HY)
Double Ridge Horn Antenna	Training Research	AH-0801	95119	8GHz~18GHz	Oct. 20, 2010	Oct. 19, 2011	Radiation (03CH06-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz- 26.5GHz	Apr. 14, 2011	Apr. 13, 2012	Radiation (03CH06-HY)
Amplifier	Agilent	310N	186713	9KHz~1GHz	Apr. 14, 2011	Apr. 13, 2012	Radiation (03CH06-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				



Appendix A. Photographs of EUT

Please refer to Sporton report number EP181934 as below.