FCC RF Test Report

APPLICANT	:	Fujitsu Toshiba Mobile Communications Ltd.
EQUIPMENT	:	CDMA FJI12 (GSM900/1800/1900,CDMA2000,Bluetooth and Wi-Fi)
BRAND NAME	:	Fujitsu Toshiba Mobile Communications Ltd.
MODEL NAME	:	FJI12
FCC ID	:	YUW-FJI12
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	Digital Transmission System (DTS)

The product was received on Sep. 03, 2011 and completely tested on Oct. 26, 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

Jones Tsai / Manager

Testing Laboratory 1190

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
FR190327B	Rev. 01	Initial issue of report	Nov. 07, 2011
FR190327B	Rev. 02	Update report of revising list measuring equipment	Nov. 08, 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	≥ 0.5MHz	Pass	-
3.2	15.247(b)	A8.4	Power Output	≤ 30dBm	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	≤ 20dBc	Pass	-
3.4	15.247(d)	A8.5	Spurious Emission	< 20 dBc	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	≤ 8dBm	Pass	-
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 11.6 dB at 1.47 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 1.14 dB at 2389.99 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 FJI12 (GSM900/1800/1900,CDMA2000,Bluetooth and Wi-Fi)
Brand Name	Fujitsu Toshiba Mobile Communications Ltd.
Model Name	FJI12
FCC ID	YUW-FJI12
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 : 17.05 dBm (0.0507 W) 802.11g : 21.52 dBm (0.1419 W) 802.11n (BW 20MHz) : 21.29 dBm (0.1346 W)
Antenna Type	Chip Antenna with gain -2.60 dBi
HW Version	CS1
SW Version	CS1
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 1st 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, 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.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	AC Adapter	Au by KDDI	0204PTA	FCC DoC	N/A	Unshielded, 1.5m
5.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	**17.05**	16.94	16.92	16.90
CH 06	2437 MHz	16.52	-	-	-
CH 11	2462 MHz	16.48	-	-	-

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	**21.52**	21.45	21.44	21.41	21.32	21.30	21.27	21.24
CH 06	2437 MHz	21.03	-	-	-	-	-	-	-
CH 11	2462 MHz	20.71	-	-	-	-	-	-	-

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	**21.29**	21.27	21.24	21.18	21.10	21.01	20.95	20.91
CH 06	2437 MHz	20.71	-	-	-	-	-	-	-
CH 11	2462 MHz	20.45	-	-	-	-	-	-	-

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. 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).

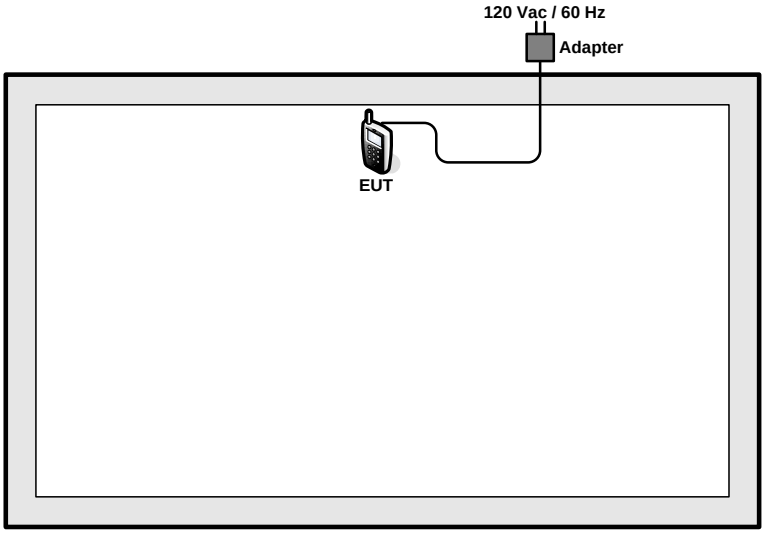
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

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

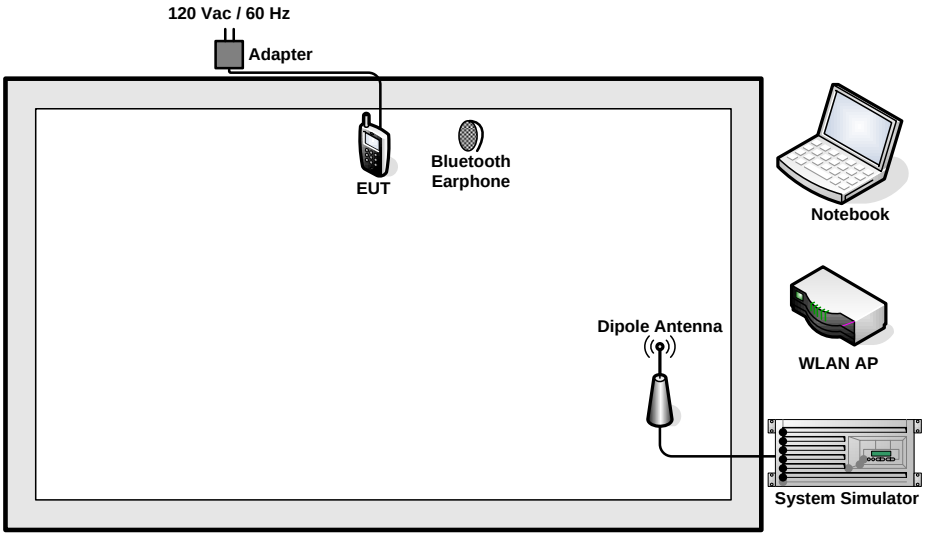
Test Cases		
Test Item	**802.11b (Modulation : DSSS)**	**802.11g/n (Modulation : OFDM)**
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (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 + Adapter + Battery Mode 2 : 802.11b CH06_2437 MHz + Adapter + Battery Mode 3 : 802.11b CH11_2462 MHz + Adapter + Battery	Mode 4: 802.11g_CH01_2412 MHz + Adapter + Battery Mode 5: 802.11g_CH06_2437 MHz + Adapter + Battery Mode 6: 802.11g_CH11_2462 MHz + Adapter + Battery Mode 7: 802.11n (BW 20M)_CH01_2412 MHz + Adapter + Battery Mode 8: 802.11n (BW 20M)_CH06_2437 MHz + Adapter + Battery Mode 9: 802.11n (BW 20M)_CH11_2462 MHz + Adapter + Battery
AC Conducted Emission	Mode 1 :GSM850 Idle + Bluetooth Link + WLAN Link + Camera + Adapter + Battery	

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

The programmed RF utility “adb” 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.

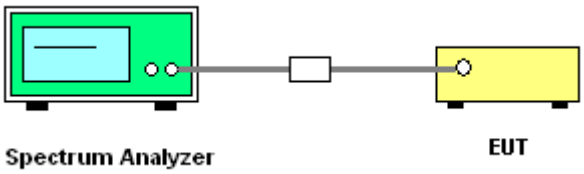
3.1.2 Measuring Instruments

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

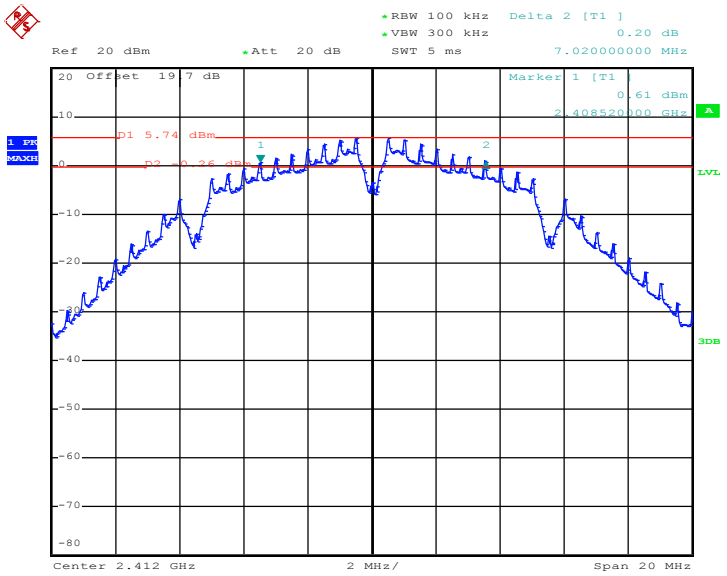


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	**Temperature :**	22~24℃
Test Engineer :	Reece Li	**Relative Humidity :**	52~55%

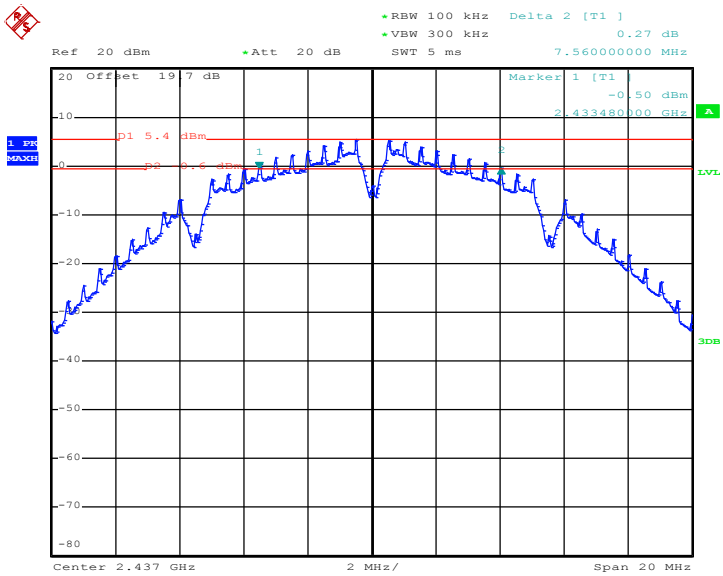
Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	7.02	0.5	Pass
06	2437	7.56	0.5	Pass
11	2462	7.04	0.5	Pass

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



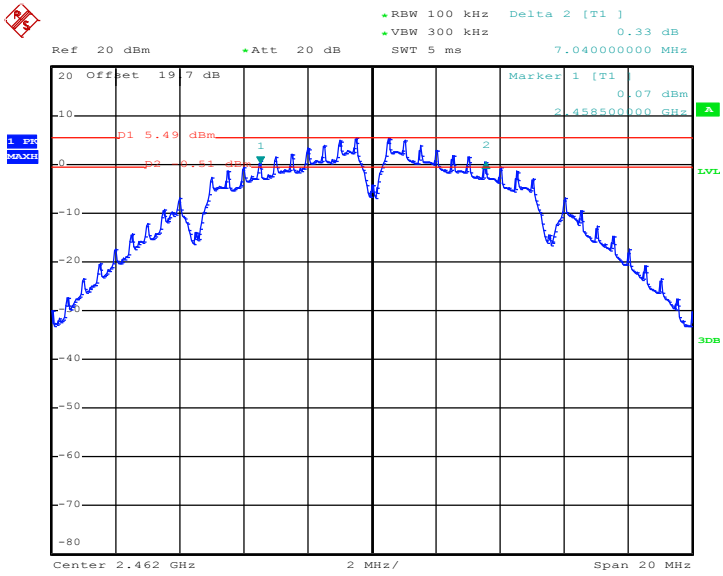
Date: 27.SEP.2011 22:03:59

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



Date: 27.SEP.2011 22:36:34

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

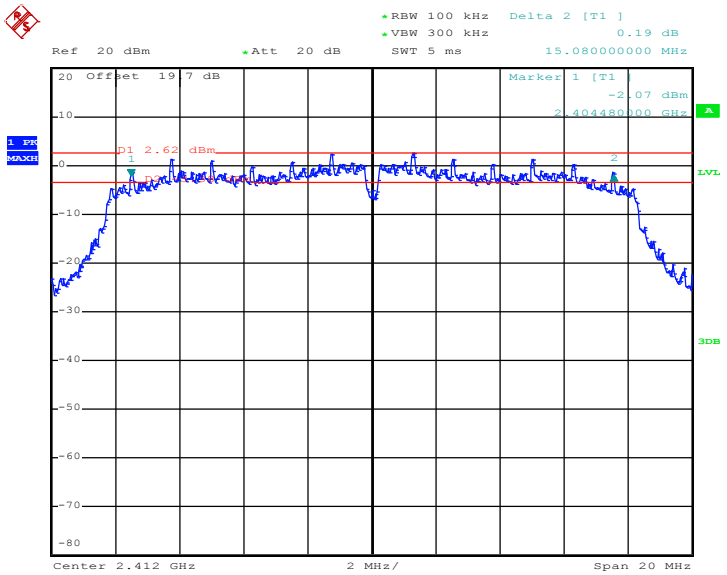


Date: 27.SEP.2011 22:58:21

Test Mode :	Mode 4, 5, 6	**Temperature :**	22~24℃
Test Engineer :	Reece Li	**Relative Humidity :**	52~55%

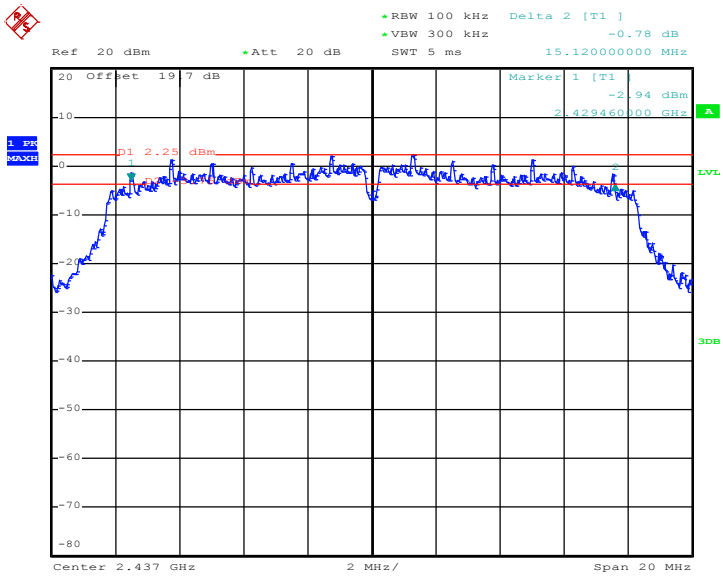
Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.08	0.5	Pass
06	2437	15.12	0.5	Pass
11	2462	15.12	0.5	Pass

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



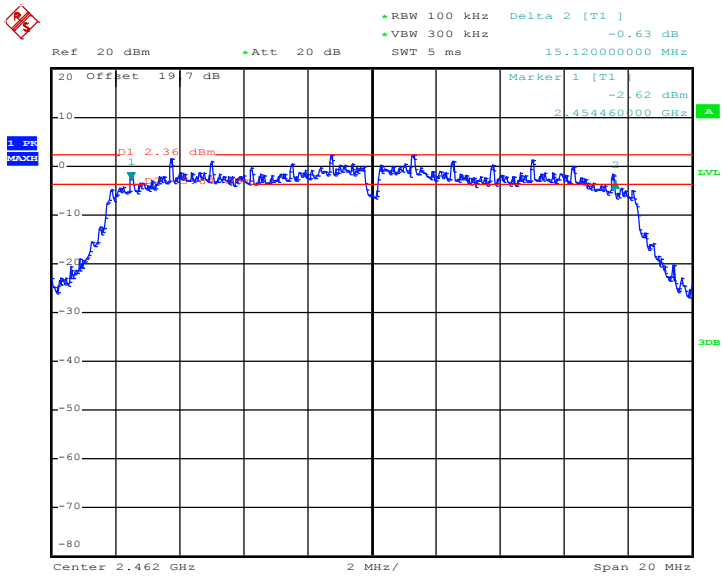
Date: 27.SEP.2011 23:14:01

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



Date: 27.SEP.2011 23:29:28

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

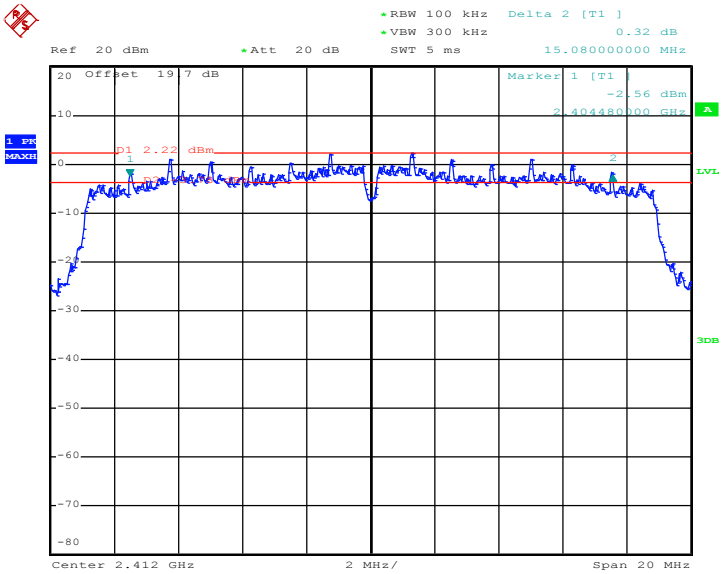


Date: 27.SEP.2011 23:46:00

Test Mode :	Mode 7, 8, 9	**Temperature :**	22~24℃
Test Engineer :	Reece Li	**Relative Humidity :**	52~55%

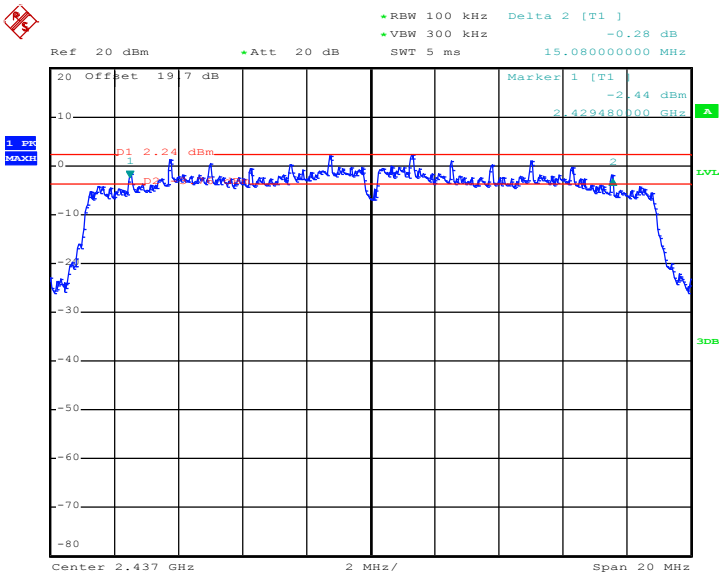
Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.08	0.5	Pass
06	2437	15.08	0.5	Pass
11	2462	16.04	0.5	Pass

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



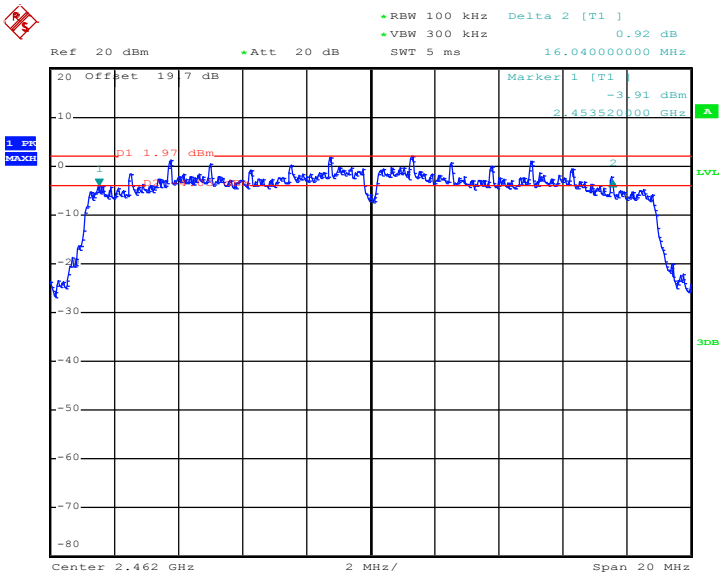
Date: 28.SEP.2011 00:02:39

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



Date: 28.SEP.2011 00:22:03

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



Date: 28.SEP.2011 00:39:06

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.

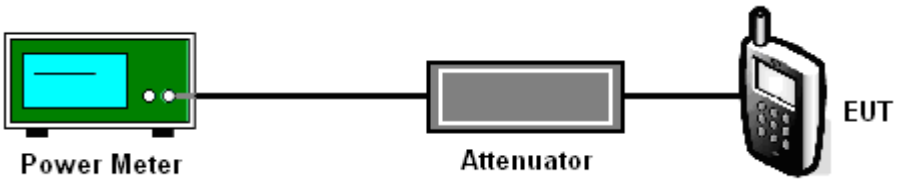
3.2.2 Measuring Instruments

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 :**	22~24℃
Test Engineer :	Reece Li	**Relative Humidity :**	52~55%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	17.05	30	Pass
06	2437	16.52	30	Pass
11	2462	16.48	30	Pass

Test Mode :	Mode 4, 5, 6	**Temperature :**	22~24℃
Test Engineer :	Reece Li	**Relative Humidity :**	52~55%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.52	30	Pass
06	2437	21.03	30	Pass
11	2462	20.71	30	Pass

Test Mode :	Mode 7, 8, 9	**Temperature :**	22~24℃
Test Engineer :	Reece Li	**Relative Humidity :**	52~55%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.29	30	Pass
06	2437	20.71	30	Pass
11	2462	20.45	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

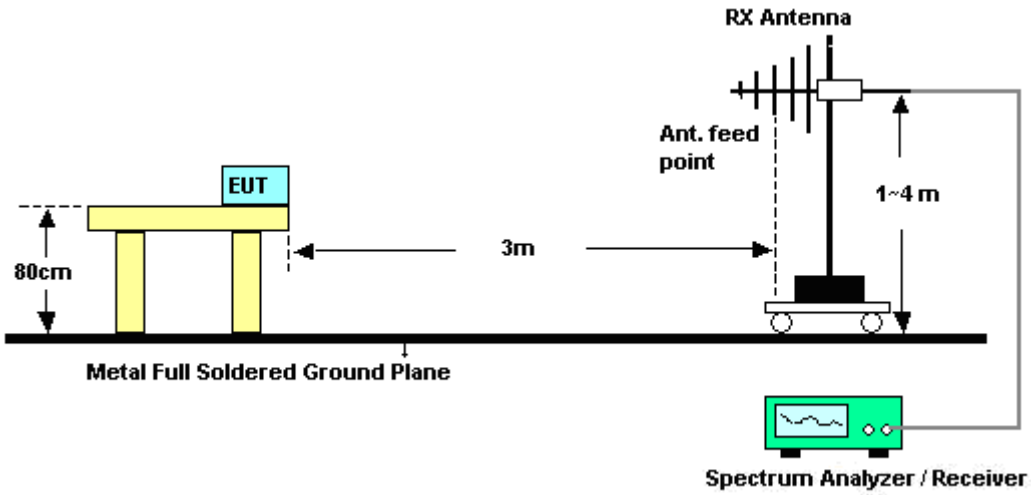
See list of measuring instruments of this test report.

3.3.3 Test Procedures

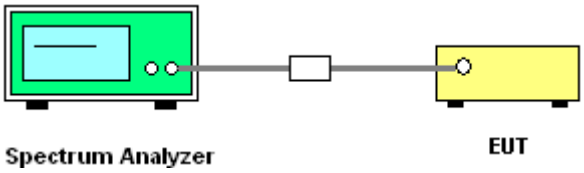
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) ≥ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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 :**	23~25℃
Test Band :	802.11b	**Relative Humidity :**	42~44%
Test Channel :	01	**Test Engineer :**	Elvis Chen

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	57.34	-16.66	74	54.43	31.9	5.4	34.39	100	23	Peak
2389.99	46.85	-7.15	54	43.94	31.9	5.4	34.39	100	23	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	52.5	-21.5	74	49.59	31.9	5.4	34.39	100	130	Peak
2389.99	41.3	-12.7	54	38.39	31.9	5.4	34.39	100	130	Average

Test Mode :	Mode 3	**Temperature :**	23~25℃
Test Band :	802.11b	**Relative Humidity :**	42~44%
Test Channel :	11	**Test Engineer :**	Elvis Chen

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	54.5	-19.5	74	51.37	31.98	5.52	34.37	100	30	Peak
2483.5	46.19	-7.81	54	43.06	31.98	5.52	34.37	100	30	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	52.89	-21.11	74	49.76	31.98	5.52	34.37	100	122	Peak
2483.85	43.77	-10.23	54	40.64	31.98	5.52	34.37	100	122	Average

Test Mode :	Mode 4	**Temperature :**	23~25℃
Test Band :	802.11g	**Relative Humidity :**	42~44%
Test Channel :	01	**Test Engineer :**	Elvis Chen

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	71.63	-2.37	74	68.72	31.9	5.4	34.39	102	23	Peak
2389.99	52.86	-1.14	54	49.95	31.9	5.4	34.39	102	23	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	66.98	-7.02	74	64.07	31.9	5.4	34.39	100	129	Peak
2389.99	48.02	-5.98	54	45.11	31.9	5.4	34.39	100	129	Average

Test Mode :	Mode 6	**Temperature :**	23~25℃
Test Band :	802.11g	**Relative Humidity :**	42~44%
Test Channel :	11	**Test Engineer :**	Elvis Chen

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	70.5	-3.5	74	67.37	31.98	5.52	34.37	150	26	Peak
2483.5	51	-3	54	47.87	31.98	5.52	34.37	150	26	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	67.59	-6.41	74	64.46	31.98	5.52	34.37	100	124	Peak
2483.5	47.61	-6.39	54	44.48	31.98	5.52	34.37	100	124	Average

Test Mode :	Mode 7	**Temperature :**	23~25℃
Test Band :	802.11n (BW 20MHz)	**Relative Humidity :**	42~44%
Test Channel :	01	**Test Engineer :**	Elvis Chen

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	72.22	-1.78	74	69.31	31.9	5.4	34.39	100	21	Peak
2389.99	52.22	-1.78	54	49.31	31.9	5.4	34.39	100	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	68.23	-5.77	74	65.32	31.9	5.4	34.39	100	129	Peak
2389.99	47.86	-6.14	54	44.95	31.9	5.4	34.39	100	129	Average

Test Mode :	Mode 9	**Temperature :**	23~25℃
Test Band :	802.11n (BW 20MHz)	**Relative Humidity :**	42~44%
Test Channel :	11	**Test Engineer :**	Elvis Chen

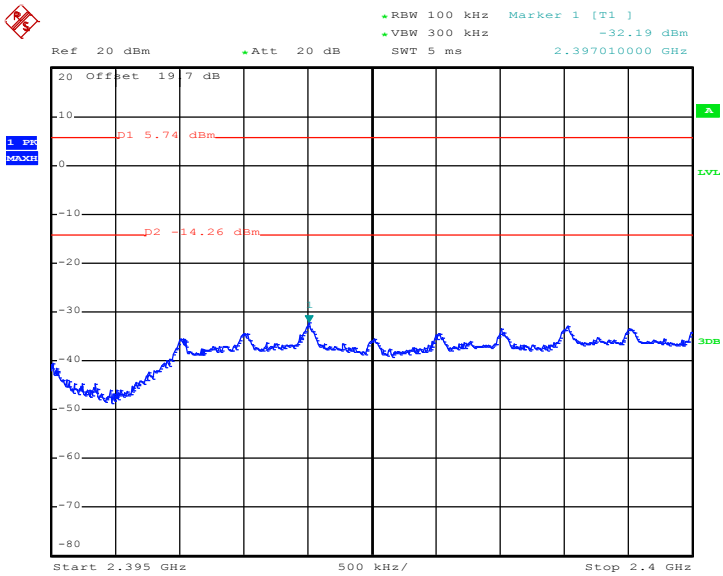
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.85	71.55	-2.45	74	68.42	31.98	5.52	34.37	124	24	Peak
2483.85	51.45	-2.55	54	48.32	31.98	5.52	34.37	124	24	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	67.16	-6.84	74	64.03	31.98	5.52	34.37	100	122	Peak
2483.5	47.65	-6.35	54	44.52	31.98	5.52	34.37	100	122	Average

3.3.6 Test Plots of Conducted Band Edges

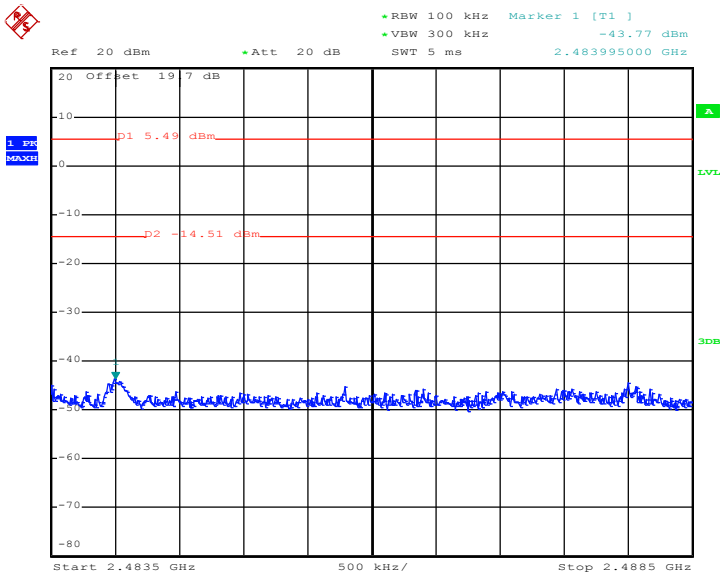
Test Mode :	Mode 1 and 3	**Temperature :**	22~24℃
Test Band :	802.11b	**Relative Humidity :**	52~55%
Test Channel :	01 and 11	**Test Engineer :**	Reece Li

Low Band Edge Plot on 802.11b Channel 01



Date: 27.SEP.2011 22:05:07

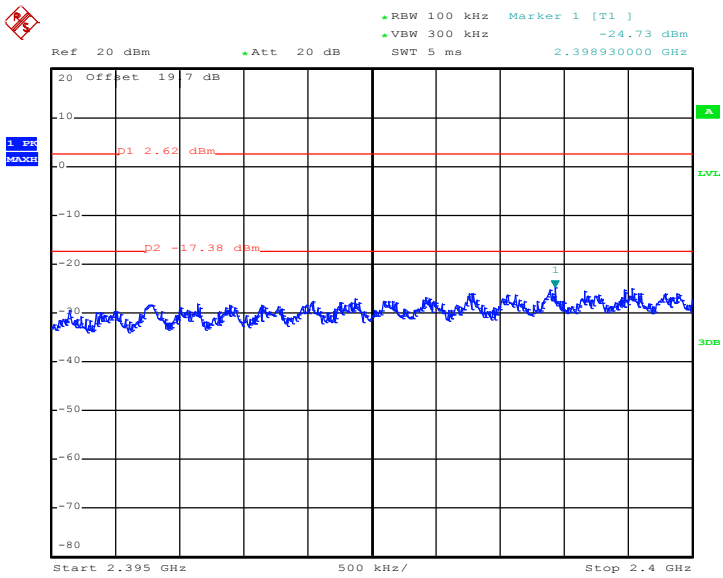
High Band Edge Plot on 802.11b Channel 11



Date: 27.SEP.2011 22:59:07

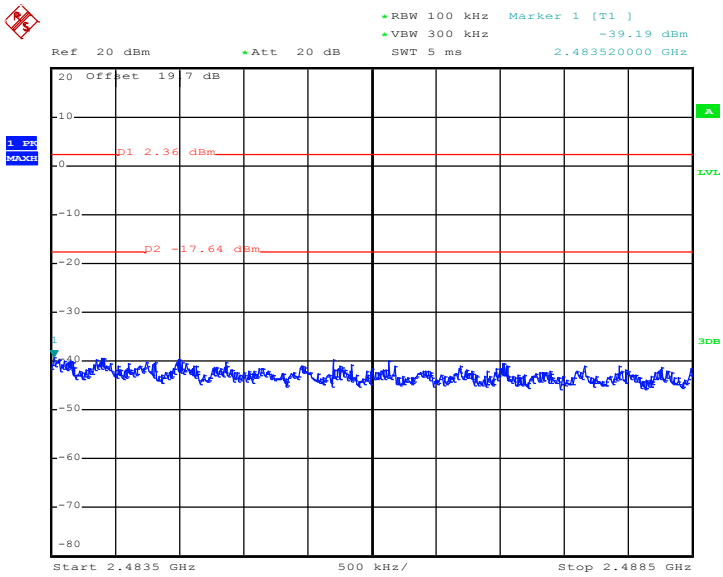
Test Mode :	Mode 4 and 6	**Temperature :**	22~24℃
Test Band :	802.11g	**Relative Humidity :**	52~55%
Test Channel :	01 and 11	**Test Engineer :**	Reece Li

Low Band Edge Plot on 802.11g Channel 01



Date: 27.SEP.2011 23:15:09

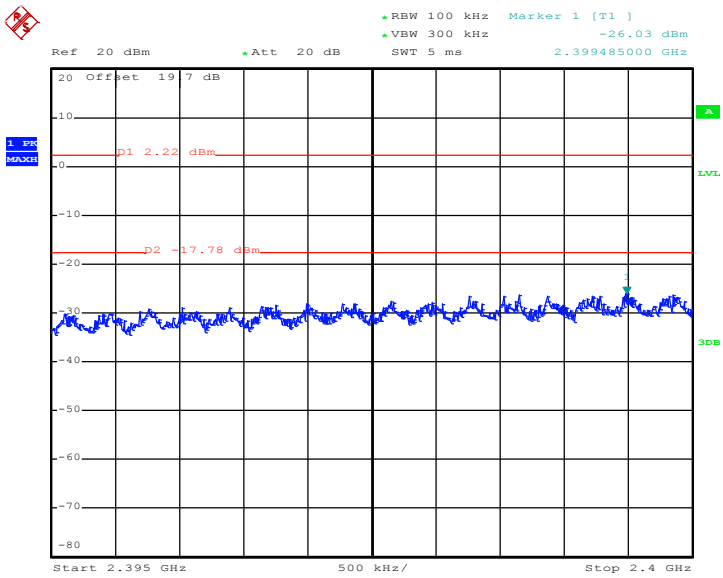
High Band Edge Plot on 802.11g Channel 11



Date: 27.SEP.2011 23:46:47

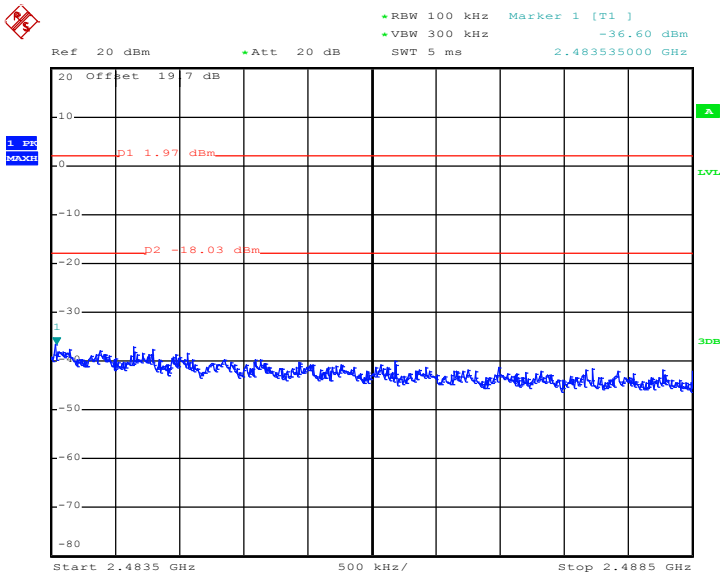
Test Mode :	Mode 7 and 9	**Temperature :**	22~24℃
Test Band :	802.11n (BW 20MHz)	**Relative Humidity :**	52~55%
Test Channel :	01 and 11	**Test Engineer :**	Reece Li

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



Date: 28.SEP.2011 00:03:47

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



Date: 28.SEP.2011 00:39:52

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

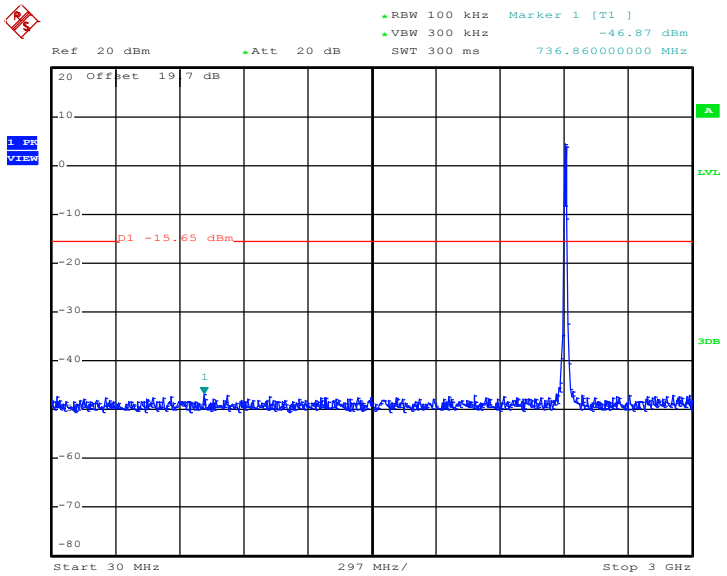
1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set RBW = 100 kHz, Video bandwidth (VBW) ≥ RBW, scan up through 10th harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz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

3.4.4 Test Setup

3.4.5 Test Plots of Spurious Emission

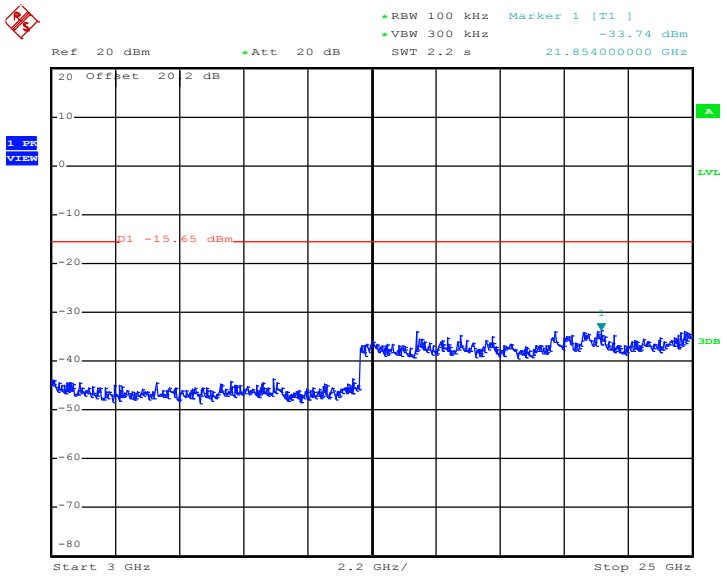
Test Mode :	Mode 1	**Temperature :**	22~24℃
Test Band :	802.11b	**Relative Humidity :**	52~55%
Test Channel :	01	**Test Engineer :**	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 28.SEP.2011 09:05:34

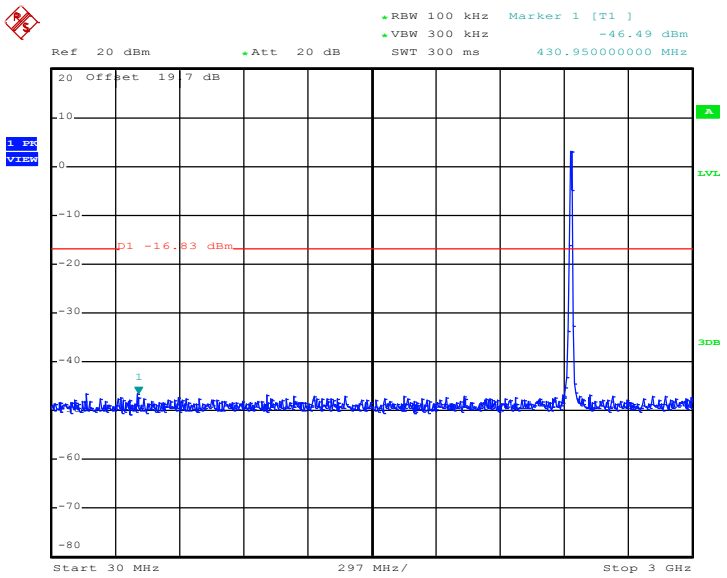
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 28.SEP.2011 09:05:51

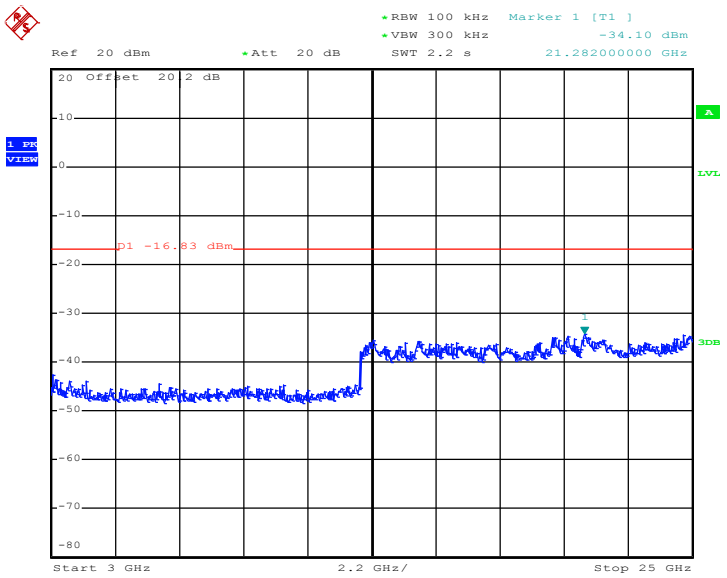
Test Mode :	Mode 2	**Temperature :**	22~24℃
Test Band :	802.11b	**Relative Humidity :**	52~55%
Test Channel :	06	**Test Engineer :**	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 27.SEP.2011 22:36:59

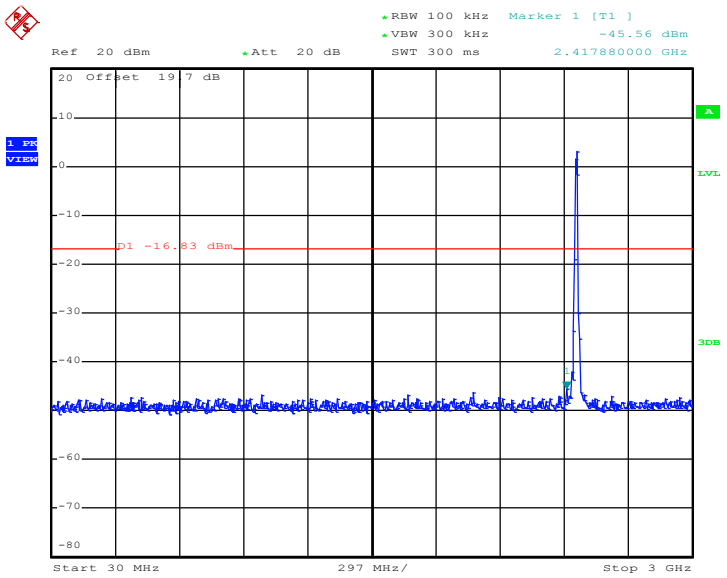
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 27.SEP.2011 22:37:16

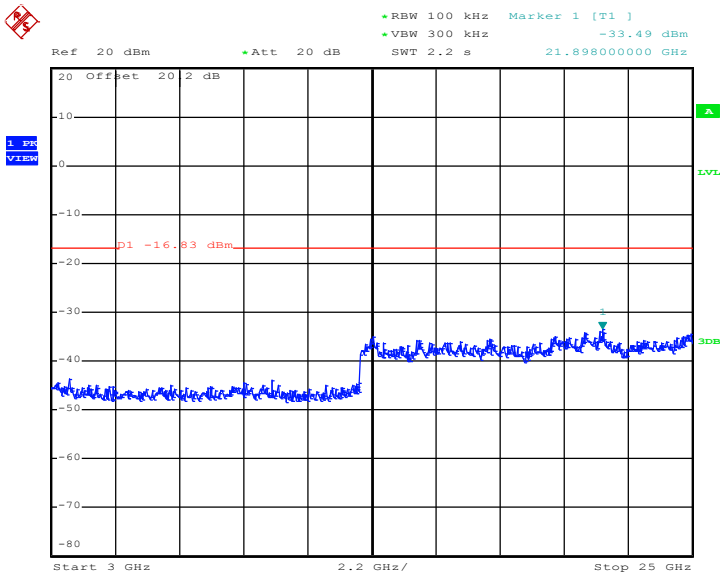
Test Mode :	Mode 3	**Temperature :**	22~24℃
Test Band :	802.11b	**Relative Humidity :**	52~55%
Test Channel :	11	**Test Engineer :**	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 27.SEP.2011 22:59:28

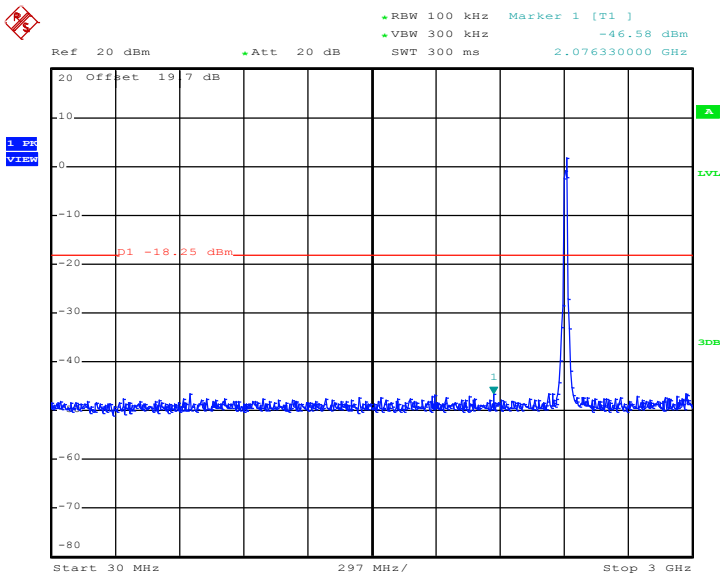
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 27.SEP.2011 22:59:45

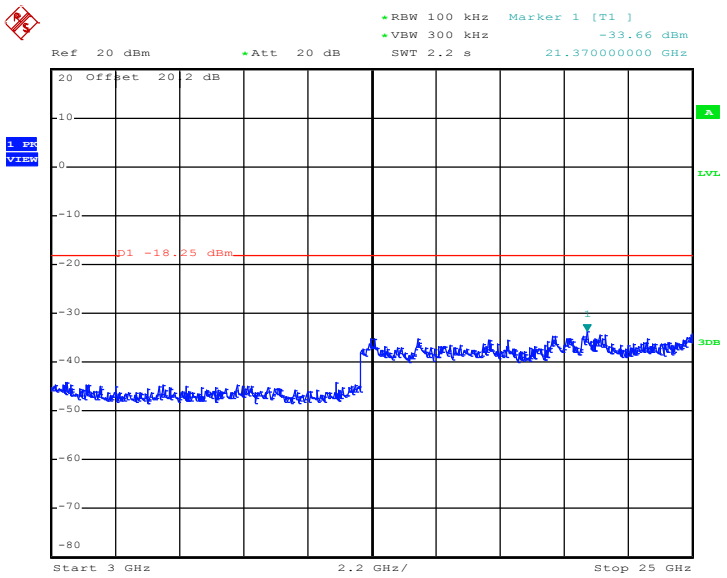
Test Mode :	Mode 4	**Temperature :**	22~24℃
Test Band :	802.11g	**Relative Humidity :**	52~55%
Test Channel :	01	**Test Engineer :**	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 27.SEP.2011 23:15:30

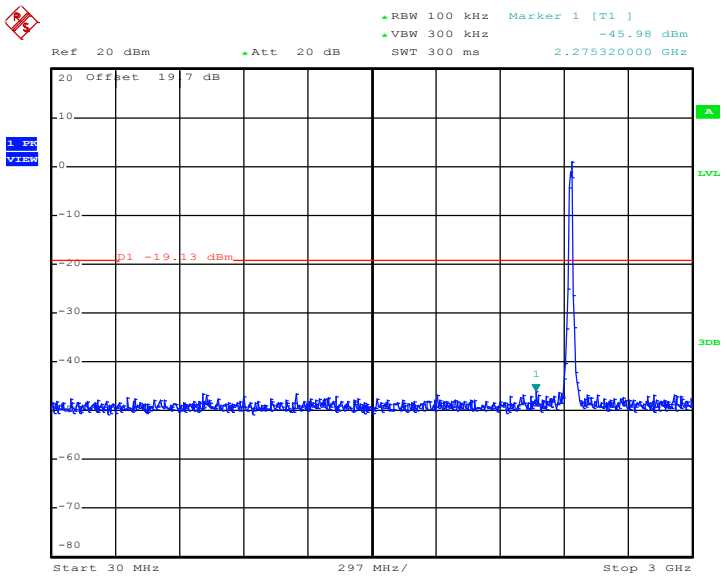
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 27.SEP.2011 23:15:46

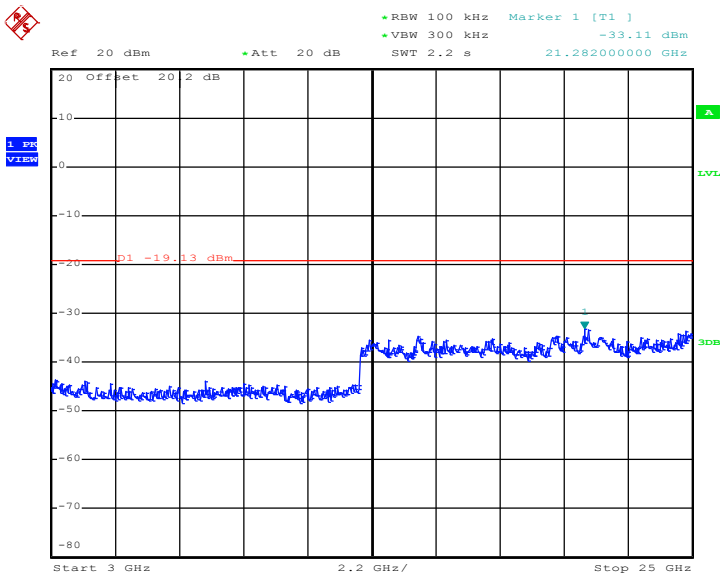
Test Mode :	Mode 5	**Temperature :**	22~24℃
Test Band :	802.11g	**Relative Humidity :**	52~55%
Test Channel :	06	**Test Engineer :**	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 28.SEP.2011 09:35:25

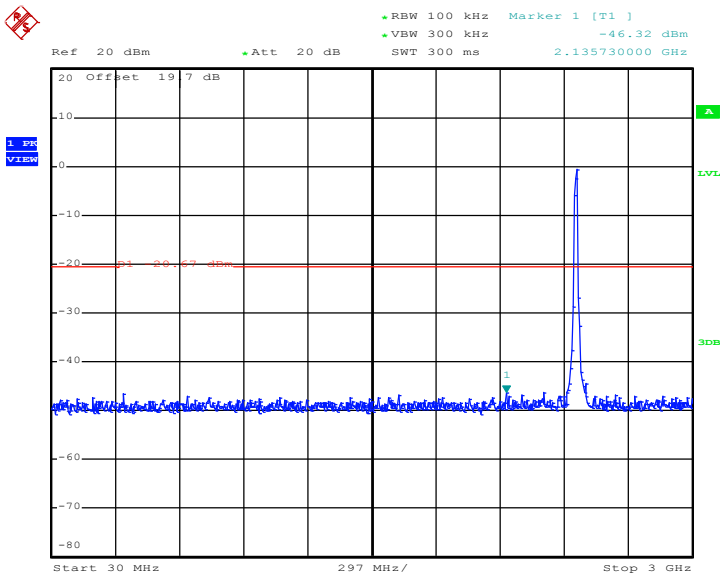
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 28.SEP.2011 09:35:42

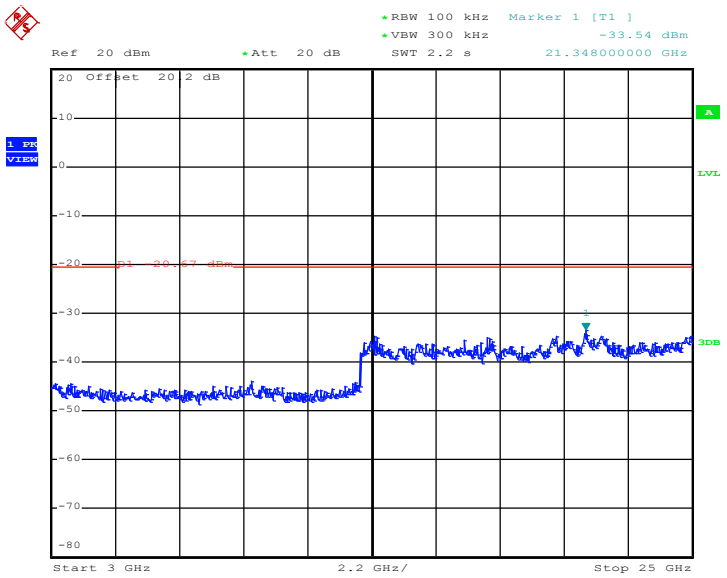
Test Mode :	Mode 6	**Temperature :**	22~24℃
Test Band :	802.11g	**Relative Humidity :**	52~55%
Test Channel :	11	**Test Engineer :**	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 27.SEP.2011 23:56:16

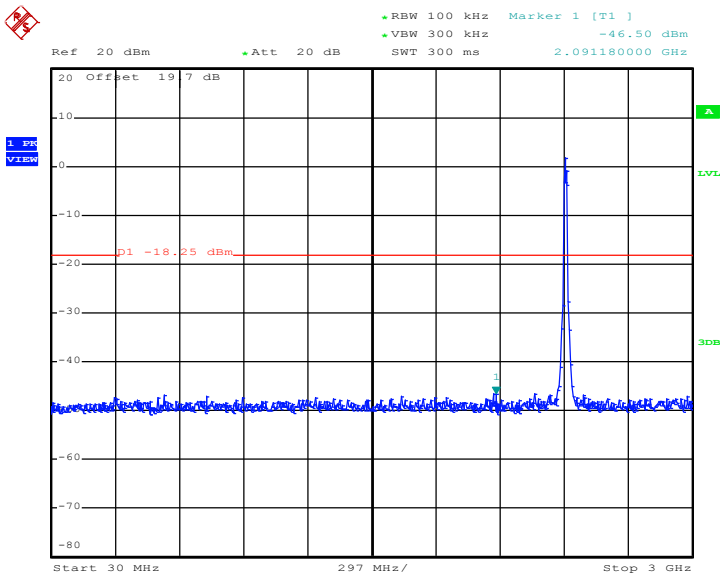
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 27.SEP.2011 23:56:33

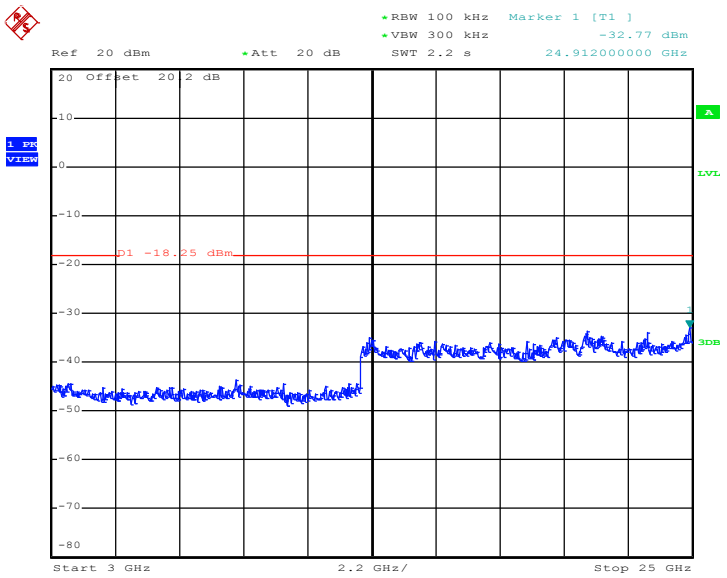
Test Mode :	Mode 7	**Temperature :**	22~24℃
Test Band :	802.11n (BW 20MHz)	**Relative Humidity :**	52~55%
Test Channel :	01	**Test Engineer :**	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 28.SEP.2011 00:13:27

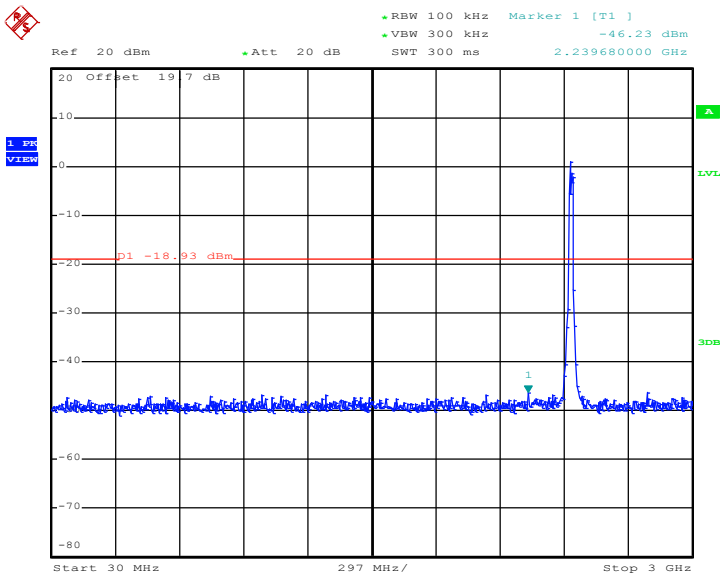
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 28.SEP.2011 00:13:44

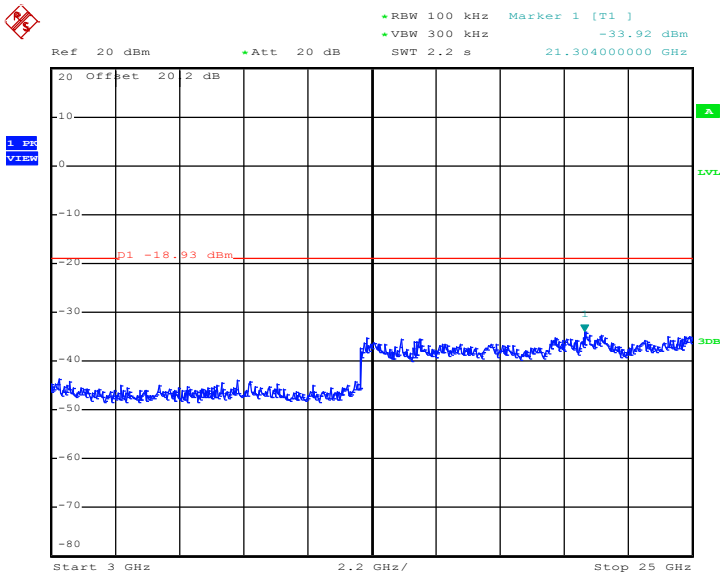
Test Mode :	Mode 8	**Temperature :**	22~24℃
Test Band :	802.11n (BW 20MHz)	**Relative Humidity :**	52~55%
Test Channel :	06	**Test Engineer :**	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 28.SEP.2011 00:31:42

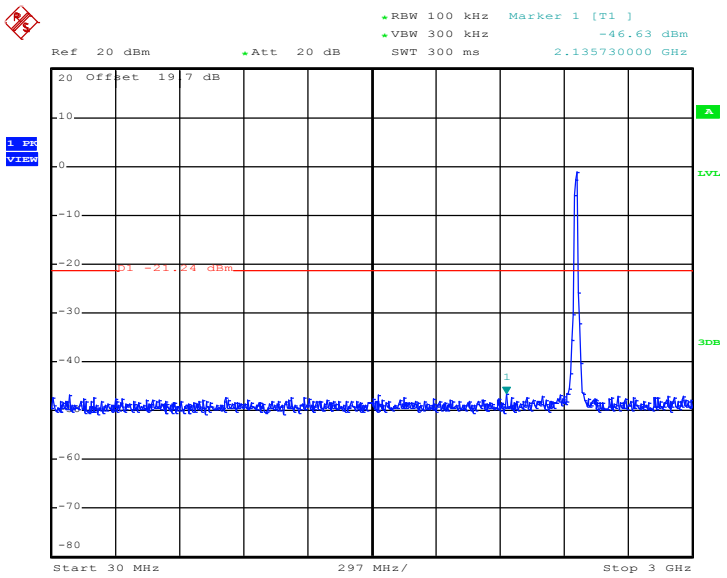
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 28.SEP.2011 00:31:58

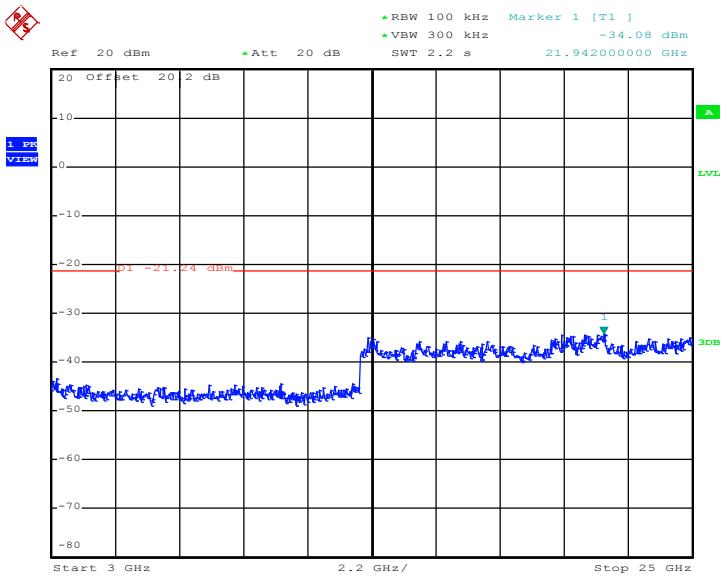
Test Mode :	Mode 9	**Temperature :**	22~24℃
Test Band :	802.11n (BW 20MHz)	**Relative Humidity :**	52~55%
Test Channel :	11	**Test Engineer :**	Reece Li

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 28.SEP.2011 00:49:16

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 28.SEP.2011 00:49:32

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.

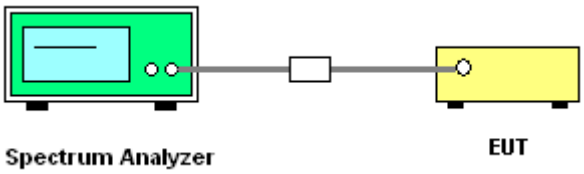
3.5.2 Measuring Instruments

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

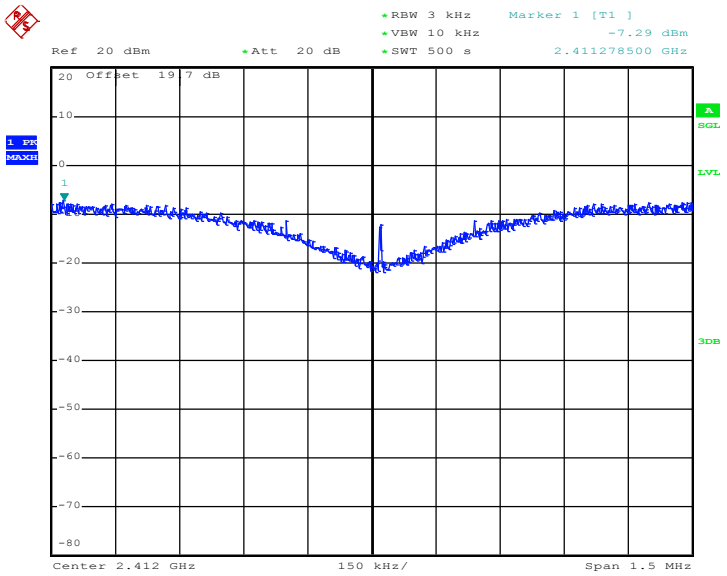


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	**Temperature :**	22~24℃
Test Engineer :	Reece Li	**Relative Humidity :**	52~55%

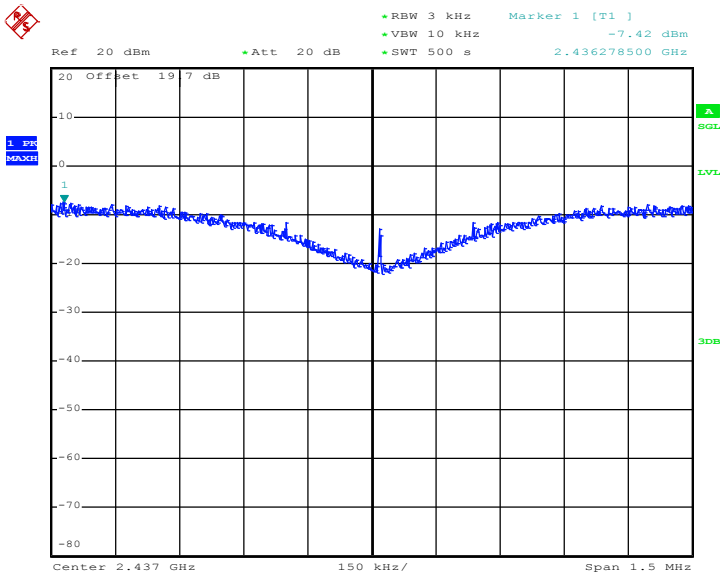
Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-7.29	8	Pass
06	2437	-7.42	8	Pass
11	2462	-7.82	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01



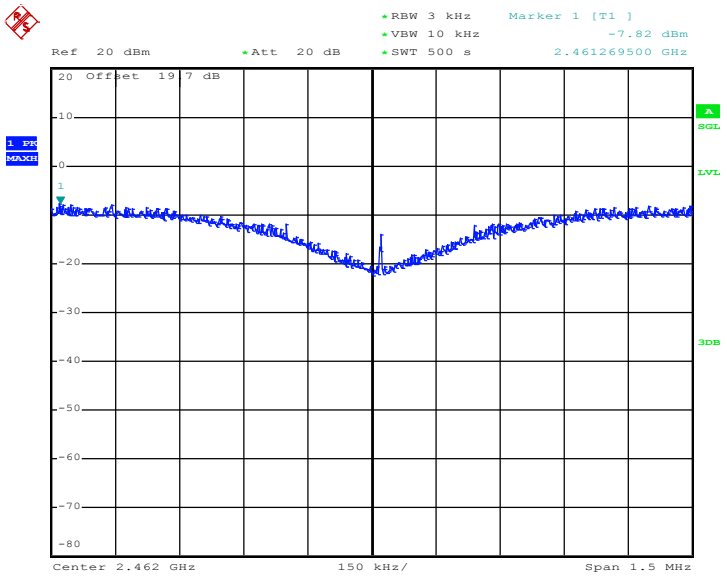
Date: 27.SEP.2011 22:33:06

Mode 2 : PSD Plot on 802.11b Channel 06



Date: 27.SEP.2011 22:53:14

Mode 3 : PSD Plot on 802.11b Channel 11

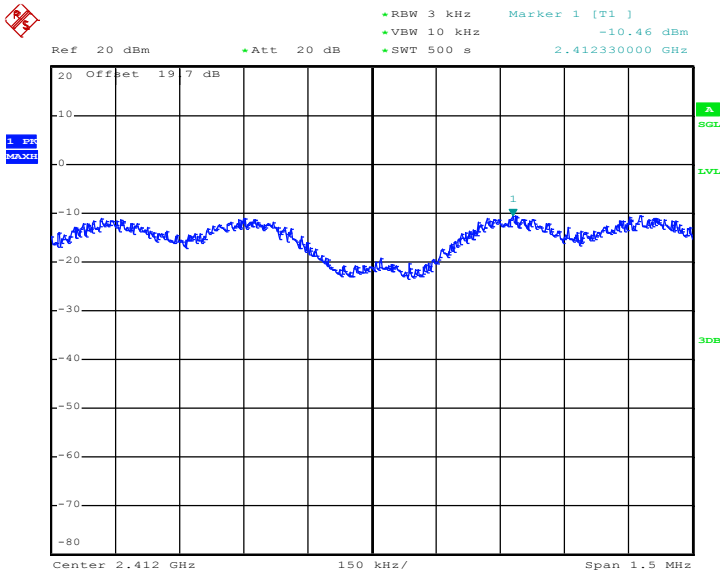


Date: 27.SEP.2011 23:09:40

Test Mode :	Mode 4, 5, 6	**Temperature :**	22~24℃
Test Engineer :	Reece Li	**Relative Humidity :**	52~55%

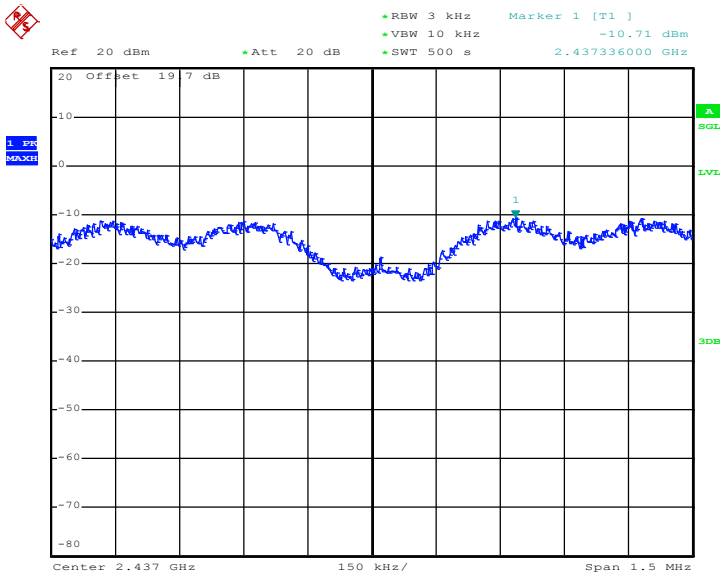
Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-10.46	8	Pass
06	2437	-10.71	8	Pass
11	2462	-10.70	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01



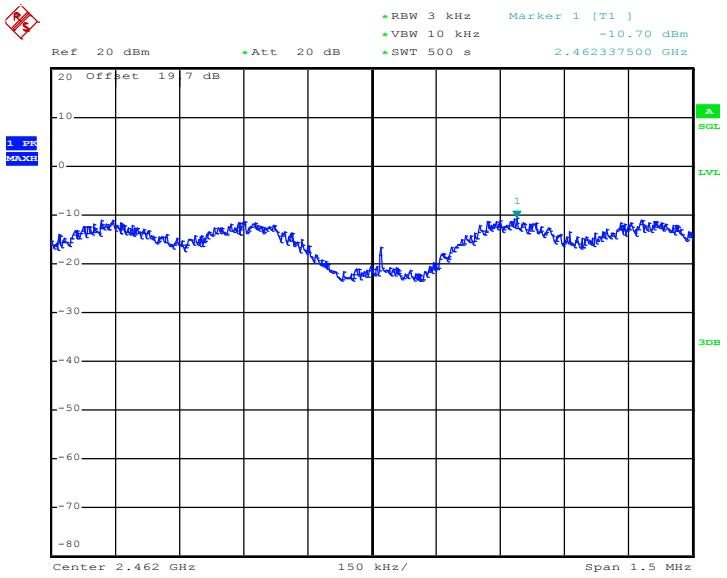
Date: 27.SEP.2011 23:25:16

Mode 5 : PSD Plot on 802.11g Channel 06



Date: 27.SEP.2011 23:38:44

Mode 6 : PSD Plot on 802.11g Channel 11

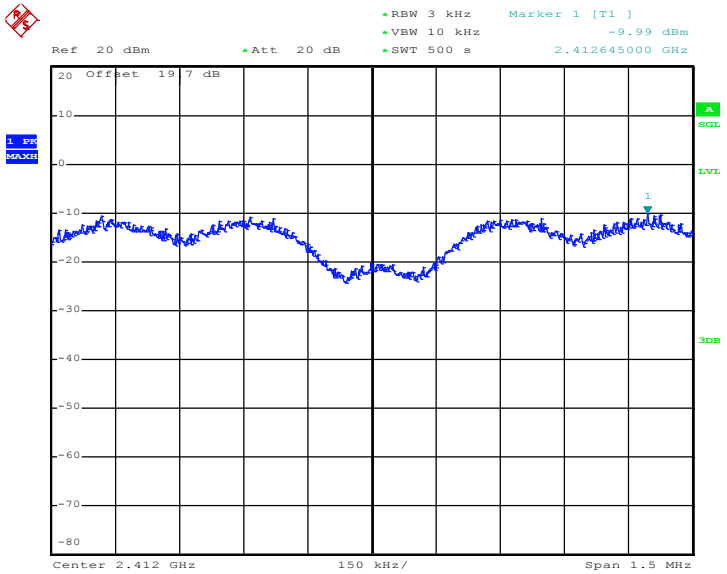


Date: 27.SEP.2011 23:55:55

Test Mode :	Mode 7, 8, 9	**Temperature :**	22~24℃
Test Engineer :	Reece Li	**Relative Humidity :**	52~55%

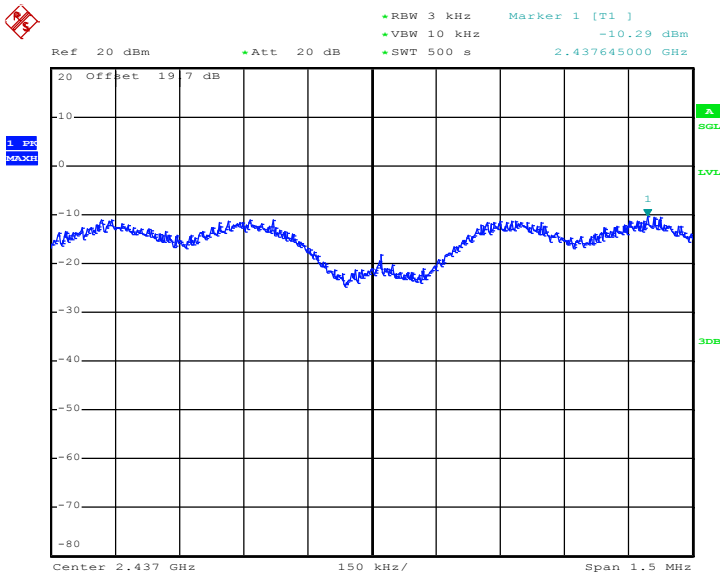
Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-9.99	8	Pass
06	2437	-10.29	8	Pass
11	2462	-10.26	8	Pass

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



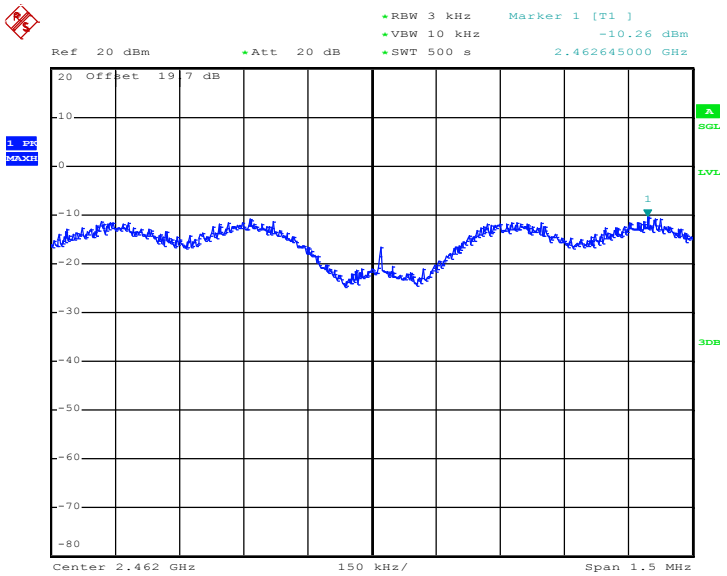
Date: 28.SEP.2011 00:13:07

Mode 8 : PSD Plot on802.11n (BW 20MHz) Channel 06



Date: 28.SEP.2011 00:31:21

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



Date: 28.SEP.2011 00:48:55

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.

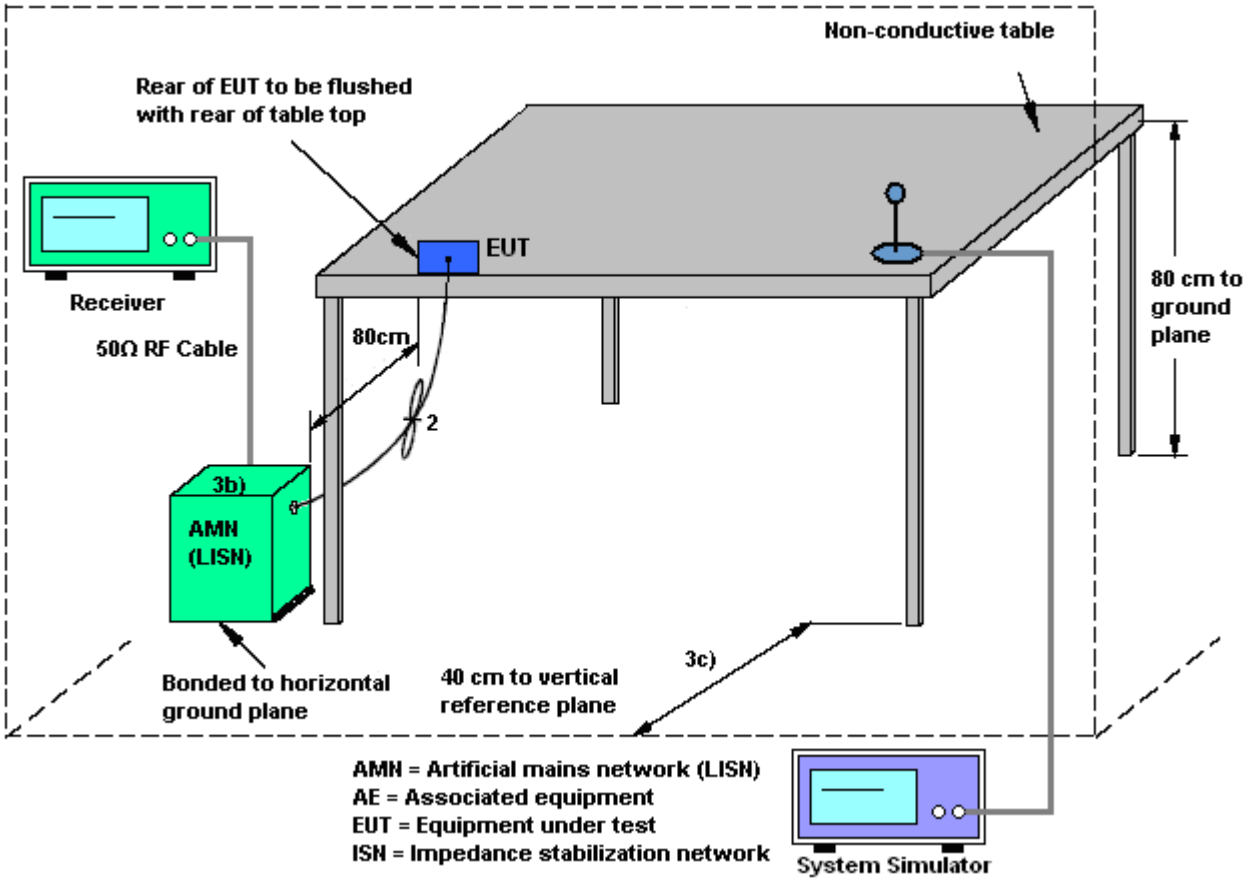
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

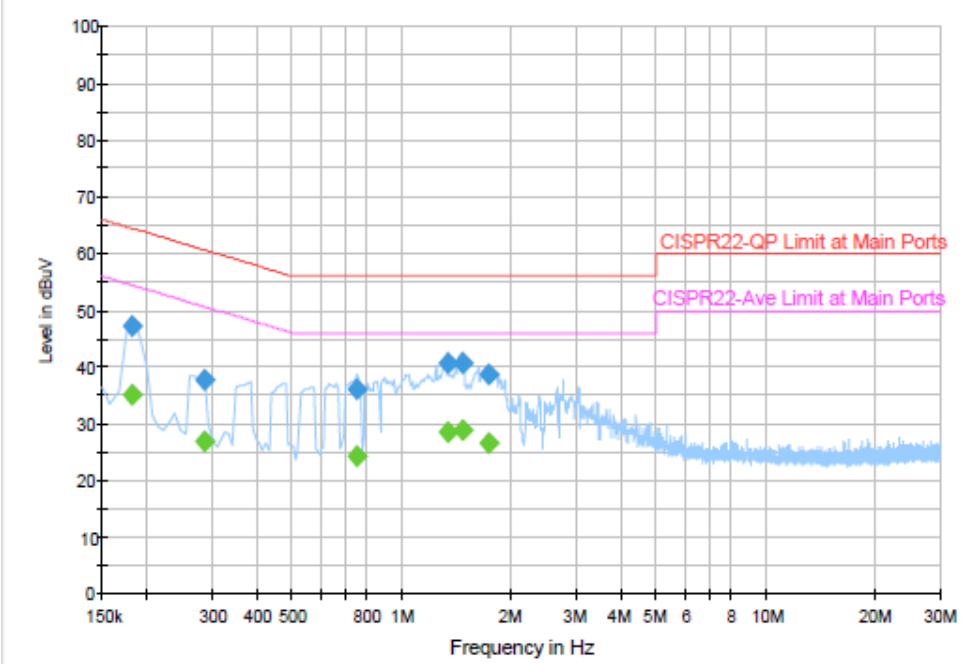
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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℃
Test Engineer :	Kai-Chun Chu	**Relative Humidity :**	40~42%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + Camera + Adapter + Battery		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



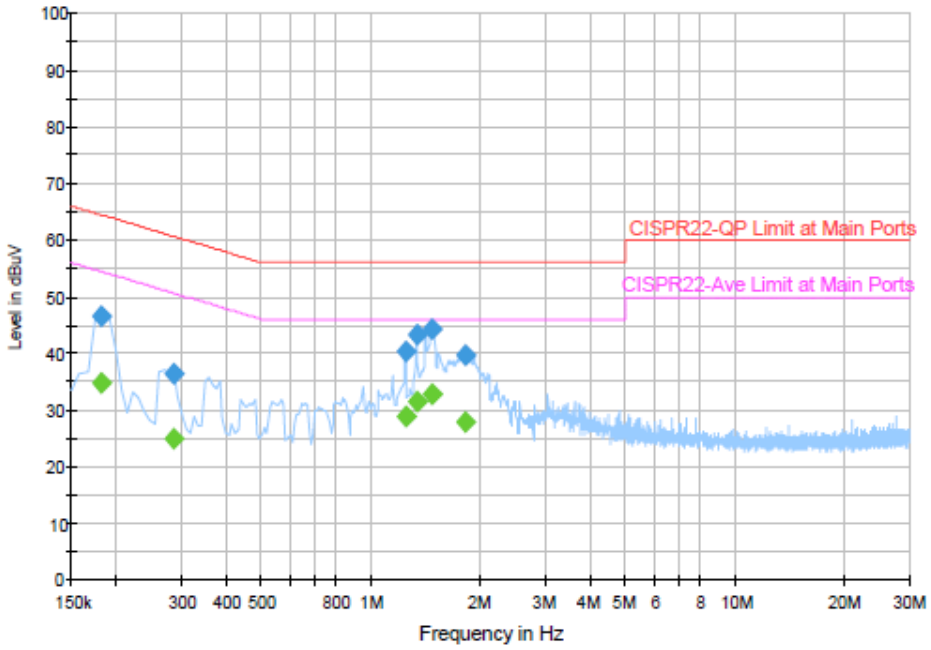
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	47.2	Off	L1	19.4	17.2	64.4
0.286000	37.8	Off	L1	19.4	22.8	60.6
0.750000	36.2	Off	L1	19.4	19.8	56.0
1.326000	40.6	Off	L1	19.4	15.4	56.0
1.470000	40.6	Off	L1	19.4	15.4	56.0
1.726000	38.8	Off	L1	19.4	17.2	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	35.0	Off	L1	19.4	19.4	54.4
0.286000	26.8	Off	L1	19.4	23.8	50.6
0.750000	24.3	Off	L1	19.4	21.7	46.0
1.326000	28.6	Off	L1	19.4	17.4	46.0
1.470000	28.7	Off	L1	19.4	17.3	46.0
1.726000	26.6	Off	L1	19.4	19.4	46.0

Test Mode :	Mode 1	**Temperature :**	20~22℃
Test Engineer :	Kai-Chun Chu	**Relative Humidity :**	40~42%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + Camera + Adapter + Battery		
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)
0.182000	46.7	Off	N	19.4	17.7	64.4
0.286000	36.4	Off	N	19.4	24.2	60.6
1.238000	40.4	Off	N	19.5	15.6	56.0
1.326000	43.3	Off	N	19.5	12.7	56.0
1.470000	44.4	Off	N	19.5	11.6	56.0
1.814000	39.7	Off	N	19.5	16.3	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	34.7	Off	N	19.4	19.7	54.4
0.286000	24.8	Off	N	19.4	25.8	50.6
1.238000	28.8	Off	N	19.5	17.2	46.0
1.326000	31.5	Off	N	19.5	14.5	46.0
1.470000	32.7	Off	N	19.5	13.3	46.0
1.814000	27.8	Off	N	19.5	18.2	46.0

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

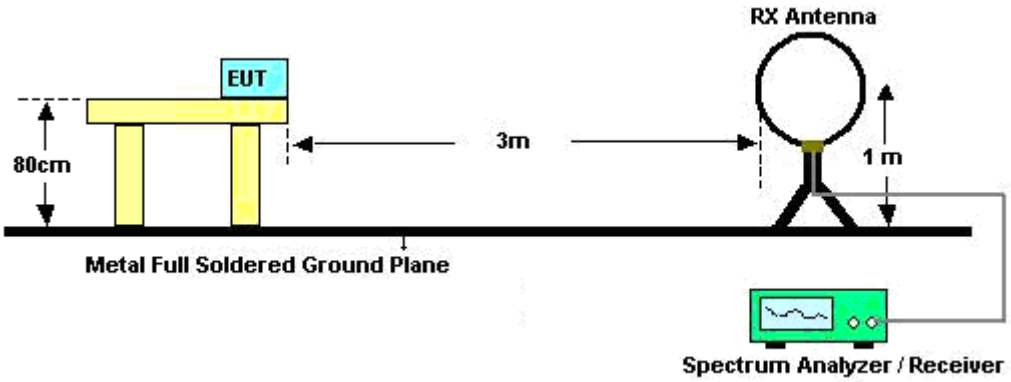
See list of measuring instruments of this test report.

3.7.3 Test Procedures

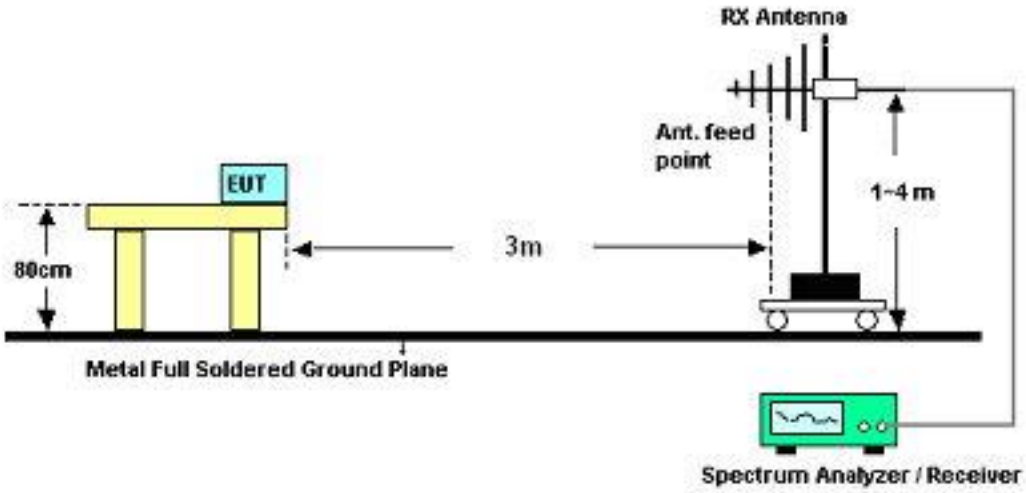
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
   (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
   (2) Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.
   Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1m]) (dB)
3. 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

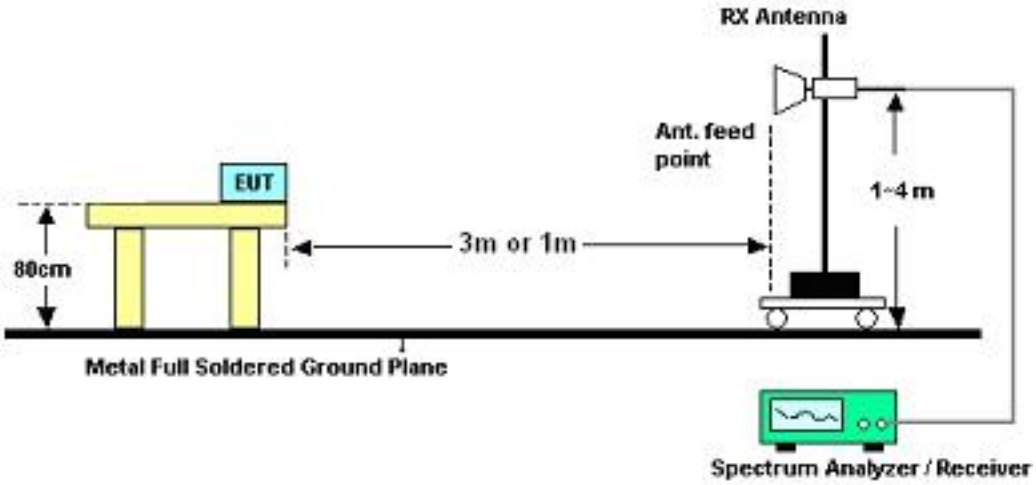
For radiated emissions below 30MHz



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 :	Elvis Chen	**Temperature :**	23~25℃
		Relative Humidity :	42~44%

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 (specific distance / 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 :**	23~25℃
Test Channel :	01	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**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
42.69	25.28	-14.72	40	44.92	11.25	0.81	31.7	100	21	Peak
208.74	26.5	-17	43.5	46.52	9.92	1.69	31.63	-	-	Peak
233.58	28.42	-17.58	46	46.67	11.58	1.79	31.62	-	-	Peak
315.4	29.85	-16.15	46	45.54	13.82	2.11	31.62	-	-	Peak
367.9	30.96	-15.04	46	45.29	15.02	2.29	31.64	-	-	Peak
925.8	26.24	-19.76	46	32.06	21.75	3.78	31.35	-	-	Peak
2389.99	46.85	-7.15	54	43.94	31.9	5.4	34.39	100	23	Average
2389.99	57.34	-16.66	74	54.43	31.9	5.4	34.39	100	23	Peak
2412	100.71	-	-	97.76	31.91	5.43	34.39	100	23	Average
2412	106.8	-	-	103.85	31.91	5.43	34.39	100	23	Peak
2492	51.41	-22.59	74	48.26	32	5.52	34.37	100	23	Peak
2492	43.38	-10.62	54	40.23	32	5.52	34.37	100	23	Average
7236	52.97	-33.83	86.8	62.64	35.66	11.02	56.35	100	0	Peak

Test Mode :	Mode 1	**Temperature :**	23~25℃
Test Channel :	01	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**Polarization :**	Vertical
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
43.23	28.33	-11.67	40	48.51	10.71	0.81	31.7	-	-	Peak
159.33	32.1	-11.4	43.5	52.13	10.14	1.48	31.65	100	67	Peak
208.74	30.38	-13.12	43.5	50.4	9.92	1.69	31.63	-	-	Peak
367.9	27.02	-18.98	46	41.35	15.02	2.29	31.64	-	-	Peak
406.4	24.93	-21.07	46	38.41	15.9	2.42	31.8	-	-	Peak
952.4	25.45	-20.55	46	30.9	21.87	3.79	31.11	-	-	Peak
2389.99	41.3	-12.7	54	38.39	31.9	5.4	34.39	100	130	Average
2389.99	52.5	-21.5	74	49.59	31.9	5.4	34.39	100	130	Peak
2412	97.02	-	-	94.07	31.91	5.43	34.39	100	130	Average
2412	103.48	-	-	100.53	31.91	5.43	34.39	100	130	Peak
2492	49.59	-24.41	74	46.44	32	5.52	34.37	100	130	Peak
2492	40.22	-13.78	54	37.07	32	5.52	34.37	100	130	Average
7236	52.63	-30.85	83.48	62.3	35.66	11.02	56.35	100	0	Peak

Test Mode :	Mode 2	**Temperature :**	23~25℃
Test Channel :	06	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**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
208.74	25.8	-17.7	43.5	45.82	9.92	1.69	31.63	-	-	Peak
233.04	27.89	-18.11	46	46.2	11.52	1.78	31.61	-	-	Peak
257.88	28.42	-17.58	46	45.46	12.79	1.88	31.71	-	-	Peak
315.4	30.54	-15.46	46	46.23	13.82	2.11	31.62	100	45	Peak
367.9	29.93	-16.07	46	44.26	15.02	2.29	31.64	-	-	Peak
407.8	25.17	-20.83	46	38.64	15.92	2.42	31.81	-	-	Peak
2358	51.61	-22.39	74	48.78	31.86	5.37	34.4	100	24	Peak
2358	43.31	-10.69	54	40.48	31.86	5.37	34.4	100	24	Average
2437	107.09	-	-	104.06	31.95	5.46	34.38	100	24	Peak
2437	100.8	-	-	97.77	31.95	5.46	34.38	100	24	Average
2484	39.63	-14.37	54	36.5	31.98	5.52	34.37	100	24	Average
2484	48.85	-25.15	74	45.72	31.98	5.52	34.37	100	24	Peak
7311	53.54	-20.46	74	63.13	35.61	11.12	56.32	149	345	Peak
7311	47.42	-6.58	54	57.01	35.61	11.12	56.32	149	345	Average

Test Mode :	Mode 2	**Temperature :**	23~25℃
Test Channel :	06	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**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
42.69	28.7	-11.3	40	48.34	11.25	0.81	31.7	-	-	Peak
159.33	32.31	-11.19	43.5	52.34	10.14	1.48	31.65	-	-	Peak
208.74	32.61	-10.89	43.5	52.63	9.92	1.69	31.63	100	174	Peak
364.4	27.76	-18.24	46	42.12	14.96	2.28	31.6	-	-	Peak
399.4	23.98	-22.02	46	37.6	15.76	2.41	31.79	-	-	Peak
901.3	25.52	-20.48	46	31.71	21.63	3.76	31.58	-	-	Peak
2390	49.68	-24.32	74	46.77	31.9	5.4	34.39	100	111	Peak
2390	41.88	-12.12	54	38.97	31.9	5.4	34.39	100	111	Average
2437	97.26	-	-	94.23	31.95	5.46	34.38	100	111	Average
2437	103.29	-	-	100.26	31.95	5.46	34.38	100	111	Peak
2484	47.73	-26.27	74	44.6	31.98	5.52	34.37	100	111	Peak
2484	38.68	-15.32	54	35.55	31.98	5.52	34.37	100	111	Average
7311	53.12	-20.88	74	62.71	35.61	11.12	56.32	102	351	Peak
7311	47.34	-6.66	54	56.93	35.61	11.12	56.32	102	351	Average

Test Mode :	Mode 3	**Temperature :**	23~25℃
Test Channel :	11	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**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
42.69	25.25	-14.75	40	44.89	11.25	0.81	31.7	100	27	Peak
208.74	27.06	-16.44	43.5	47.08	9.92	1.69	31.63	-	-	Peak
233.58	28.58	-17.42	46	46.83	11.58	1.79	31.62	-	-	Peak
315.4	30.27	-15.73	46	45.96	13.82	2.11	31.62	-	-	Peak
358.8	30.46	-15.54	46	44.94	14.82	2.26	31.56	-	-	Peak
952.4	25.73	-20.27	46	31.18	21.87	3.79	31.11	-	-	Peak
2382	51.46	-22.54	74	48.57	31.88	5.4	34.39	100	30	Peak
2382	44	-10	54	41.11	31.88	5.4	34.39	100	30	Average
2462	106.56	-	-	103.48	31.97	5.49	34.38	100	30	Peak
2462	100.29	-	-	97.21	31.97	5.49	34.38	100	30	Average
2483.5	46.19	-7.81	54	43.06	31.98	5.52	34.37	100	30	Average
2483.5	54.5	-19.5	74	51.37	31.98	5.52	34.37	100	30	Peak
7386	55.13	-18.87	74	64.64	35.56	11.22	56.29	104	346	Peak
7386	50.03	-3.97	54	59.54	35.56	11.22	56.29	104	346	Average

Test Mode :	Mode 3	**Temperature :**	23~25℃
Test Channel :	11	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**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	28.96	-11.04	40	49.14	10.71	0.81	31.7	-	-	Peak
159.33	31.24	-12.26	43.5	51.27	10.14	1.48	31.65	-	-	Peak
208.74	33.14	-10.36	43.5	53.16	9.92	1.69	31.63	100	74	Peak
371.4	28.03	-17.97	46	42.27	15.11	2.31	31.66	-	-	Peak
409.9	26.22	-19.78	46	39.62	15.98	2.43	31.81	-	-	Peak
957.3	25.87	-20.13	46	31.27	21.89	3.79	31.08	-	-	Peak
2390	50.23	-23.77	74	47.32	31.9	5.4	34.39	100	122	Peak
2390	42.22	-11.78	54	39.31	31.9	5.4	34.39	100	122	Average
2462	96.85	-	-	93.77	31.97	5.49	34.38	100	122	Average
2462	102.92	-	-	99.84	31.97	5.49	34.38	100	122	Peak
2483.85	52.89	-21.11	74	49.76	31.98	5.52	34.37	100	122	Peak
2483.85	43.77	-10.23	54	40.64	31.98	5.52	34.37	100	122	Average
7386	55.66	-18.34	74	65.17	35.56	11.22	56.29	100	352	Peak
7386	48.77	-5.23	54	58.28	35.56	11.22	56.29	100	352	Average

Test Mode :	Mode 4	**Temperature :**	23~25℃
Test Channel :	01	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**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
41.88	24.74	-15.26	40	43.85	11.78	0.81	31.7	100	104	Peak
208.74	26.64	-16.86	43.5	46.66	9.92	1.69	31.63	-	-	Peak
257.88	28.88	-17.12	46	45.92	12.79	1.88	31.71	-	-	Peak
313.3	29.88	-16.12	46	45.63	13.77	2.11	31.63	-	-	Peak
362.3	29.98	-16.02	46	44.37	14.91	2.28	31.58	-	-	Peak
409.9	25.5	-20.5	46	38.9	15.98	2.43	31.81	-	-	Peak
2389.99	52.86	-1.14	54	49.95	31.9	5.4	34.39	102	23	Average
2389.99	71.63	-2.37	74	68.72	31.9	5.4	34.39	102	23	Peak
2412	94.31	-	-	91.36	31.91	5.43	34.39	102	23	Average
2412	108.62	-	-	105.67	31.91	5.43	34.39	102	23	Peak
2486	52.92	-21.08	74	49.79	31.98	5.52	34.37	102	23	Peak
2486	42.14	-11.86	54	39.01	31.98	5.52	34.37	102	23	Average
7236	52.67	-35.95	88.62	62.34	35.66	11.02	56.35	100	0	Peak

Test Mode :	Mode 4	**Temperature :**	23~25℃
Test Channel :	01	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**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
43.23	29.09	-10.91	40	49.27	10.71	0.81	31.7	100	147	Peak
159.33	31.49	-12.01	43.5	51.52	10.14	1.48	31.65	-	-	Peak
208.74	30.98	-12.52	43.5	51	9.92	1.69	31.63	-	-	Peak
367.9	29.11	-16.89	46	43.44	15.02	2.29	31.64	-	-	Peak
407.8	25.61	-20.39	46	39.08	15.92	2.42	31.81	-	-	Peak
838.3	25.82	-20.18	46	33.14	21.1	3.5	31.92	-	-	Peak
2389.99	48.02	-5.98	54	45.11	31.9	5.4	34.39	100	129	Average
2389.99	66.98	-7.02	74	64.07	31.9	5.4	34.39	100	129	Peak
2412	105.71	-	-	102.76	31.91	5.43	34.39	100	129	Peak
2412	90.8	-	-	87.85	31.91	5.43	34.39	100	129	Average
2492	41.27	-12.73	54	38.12	32	5.52	34.37	100	129	Average
2492	51.87	-33.84	74	48.72	32	5.52	34.37	100	129	Peak

Test Mode :	Mode 5	**Temperature :**	23~25℃
Test Channel :	06	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**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	24.71	-15.29	40	44.35	11.25	0.81	31.7	-	-	Peak
208.74	27.89	-15.61	43.5	47.91	9.92	1.69	31.63	-	-	Peak
233.58	28.34	-17.66	46	46.59	11.58	1.79	31.62	-	-	Peak
313.3	30.72	-15.28	46	46.47	13.77	2.11	31.63	100	97	Peak
364.4	30.63	-15.37	46	44.99	14.96	2.28	31.6	-	-	Peak
409.9	26.08	-19.92	46	39.48	15.98	2.43	31.81	-	-	Peak
2390	61.25	-12.75	74	58.34	31.9	5.4	34.39	100	24	Peak
2390	43.3	-10.7	54	40.39	31.9	5.4	34.39	100	24	Average
2437	108.86	-	-	105.85	31.93	5.46	34.38	100	24	Peak
2437	93.87	-	-	90.84	31.95	5.46	34.38	100	24	Average
2484	42	-12	54	38.87	31.98	5.52	34.37	100	24	Average
2484	58.92	-15.08	74	55.79	31.98	5.52	34.37	100	24	Peak
7311	53.92	-20.08	74	63.51	35.61	11.12	56.32	100	345	Peak
7311	40.54	-13.46	54	50.13	35.61	11.12	56.32	100	345	Average

Test Mode :	Mode 5	**Temperature :**	23~25℃
Test Channel :	06	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**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
42.69	29	-11	40	48.64	11.25	0.81	31.7	-	-	Peak
159.33	33.06	-10.44	43.5	53.09	10.14	1.48	31.65	100	159	Peak
208.74	31.73	-11.77	43.5	51.75	9.92	1.69	31.63	-	-	Peak
367.9	29.37	-16.63	46	43.7	15.02	2.29	31.64	-	-	Peak
406.4	25.21	-20.79	46	38.69	15.9	2.42	31.8	-	-	Peak
925.8	25.62	-20.38	46	31.44	21.75	3.78	31.35	-	-	Peak
2390	58.26	-15.74	74	55.35	31.9	5.4	34.39	100	112	Peak
2390	41.3	-12.7	54	38.39	31.9	5.4	34.39	100	112	Average
2437	90.82	-	-	87.79	31.95	5.46	34.38	100	112	Average
2437	106.28	-	-	103.27	31.93	5.46	34.38	100	112	Peak
2484	40.91	-13.09	54	37.78	31.98	5.52	34.37	100	112	Average
2484	56.84	-17.16	74	53.71	31.98	5.52	34.37	100	112	Peak
7311	52.19	-21.81	74	61.78	35.61	11.12	56.32	101	353	Peak
7311	41.16	-12.84	54	50.75	35.61	11.12	56.32	101	353	Average

Test Mode :	Mode 6	**Temperature :**	23~25℃
Test Channel :	11	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**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
208.74	27.44	-16.06	43.5	47.46	9.92	1.69	31.63	-	-	Peak
233.58	29.56	-16.44	46	47.81	11.58	1.79	31.62	-	-	Peak
257.88	26.92	-19.08	46	43.96	12.79	1.88	31.71	-	-	Peak
315.4	30.63	-15.37	46	46.32	13.82	2.11	31.62	100	32	Peak
364.4	30.58	-15.42	46	44.94	14.96	2.28	31.6	-	-	Peak
406.4	26.17	-19.83	46	39.65	15.9	2.42	31.8	-	-	Peak
2388	53.71	-20.29	74	50.8	31.9	5.4	34.39	150	26	Peak
2388	42.04	-11.96	54	39.13	31.9	5.4	34.39	150	26	Average
2462	109.3	-	-	106.22	31.97	5.49	34.38	150	26	Peak
2462	94.24	-	-	91.16	31.97	5.49	34.38	150	26	Average
2483.5	70.5	-3.5	74	67.37	31.98	5.52	34.37	150	26	Peak
2483.5	51	-3	54	47.87	31.98	5.52	34.37	150	26	Average
7386	55.6	-18.4	74	65.11	35.56	11.22	56.29	100	340	Peak
7386	43.45	-10.55	54	52.96	35.56	11.22	56.29	100	340	Average

Test Mode :	Mode 6	**Temperature :**	23~25℃
Test Channel :	11	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**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	28.71	-11.29	40	48.89	10.71	0.81	31.7	-	-	Peak
159.33	33.02	-10.48	43.5	53.05	10.14	1.48	31.65	100	157	Peak
208.74	31.22	-12.28	43.5	51.24	9.92	1.69	31.63	-	-	Peak
364.4	28.69	-17.31	46	43.05	14.96	2.28	31.6	-	-	Peak
409.9	25.12	-20.88	46	38.52	15.98	2.43	31.81	-	-	Peak
950.3	25.25	-20.75	46	30.72	21.86	3.79	31.12	-	-	Peak
2388	51.89	-22.11	74	48.98	31.9	5.4	34.39	100	124	Peak
2388	41.52	-12.48	54	38.61	31.9	5.4	34.39	100	124	Average
2462	90.11	-	-	87.03	31.97	5.49	34.38	100	124	Average
2462	105.99	-	-	102.91	31.97	5.49	34.38	100	124	Peak
2483.5	67.59	-6.41	74	64.46	31.98	5.52	34.37	100	124	Peak
2483.5	47.61	-6.39	54	44.48	31.98	5.52	34.37	100	124	Average
7386	55.39	-18.61	74	64.9	35.56	11.22	56.29	100	349	Peak
7386	41.82	-12.18	54	51.33	35.56	11.22	56.29	100	349	Average

Test Mode :	Mode 7	**Temperature :**	23~25℃
Test Channel :	01	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**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
42.69	24.35	-15.65	40	43.99	11.25	0.81	31.7	100	57	Peak
208.74	26.77	-16.73	43.5	46.79	9.92	1.69	31.63	-	-	Peak
233.58	29.11	-16.89	46	47.36	11.58	1.79	31.62	-	-	Peak
313.3	29.57	-16.43	46	45.32	13.77	2.11	31.63	-	-	Peak
364.4	30.05	-15.95	46	44.41	14.96	2.28	31.6	-	-	Peak
409.9	25.72	-20.28	46	39.12	15.98	2.43	31.81	-	-	Peak
2389.99	52.22	-1.78	54	49.31	31.9	5.4	34.39	100	21	Average
2389.99	72.22	-1.78	74	69.31	31.9	5.4	34.39	100	21	Peak
2412	107.84	-	-	104.89	31.91	5.43	34.39	100	21	Peak
2412	90.81	-	-	87.86	31.91	5.43	34.39	100	21	Average
2486	41.94	-12.06	54	38.81	31.98	5.52	34.37	100	21	Average
2486	52.86	-21.14	74	49.73	31.98	5.52	34.37	100	21	Peak
7236	53.99	-33.85	87.84	63.66	35.66	11.02	56.35	100	0	Peak

Test Mode :	Mode 7	**Temperature :**	23~25℃
Test Channel :	01	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**Polarization :**	Vertical
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
43.23	28.27	-11.73	40	48.45	10.71	0.81	31.7	-	-	Peak
159.33	32.82	-10.68	43.5	52.85	10.14	1.48	31.65	100	77	Peak
208.74	30.62	-12.88	43.5	50.64	9.92	1.69	31.63	-	-	Peak
376.3	28.04	-17.96	46	42.2	15.22	2.33	31.71	-	-	Peak
402.9	25	-21	46	38.56	15.82	2.42	31.8	-	-	Peak
941.9	25.71	-20.29	46	31.3	21.82	3.79	31.2	-	-	Peak
2389.99	47.86	-6.14	54	44.95	31.9	5.4	34.39	100	129	Average
2389.99	68.23	-5.77	74	65.32	31.9	5.4	34.39	100	129	Peak
2412	104.43	-	-	101.48	31.91	5.43	34.39	100	129	Peak
2412	87.9	-	-	84.95	31.91	5.43	34.39	100	129	Average
2486	40.61	-13.39	54	37.48	31.98	5.52	34.37	100	129	Average
2486	51.01	-22.99	74	47.88	31.98	5.52	34.37	100	129	Peak
7236	51.49	-32.94	84.43	61.16	35.66	11.02	56.35	100	0	Peak

Test Mode :	Mode 8	**Temperature :**	23~25℃
Test Channel :	06	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**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
41.88	23.56	-16.44	40	42.67	11.78	0.81	31.7	-	-	Peak
208.74	27.1	-16.4	43.5	47.12	9.92	1.69	31.63	-	-	Peak
233.58	29.85	-16.15	46	48.1	11.58	1.79	31.62	-	-	Peak
315.4	30.49	-15.51	46	46.18	13.82	2.11	31.62	100	81	Peak
367.9	30.15	-15.85	46	44.48	15.02	2.29	31.64	-	-	Peak
409.9	26.35	-19.65	46	39.75	15.98	2.43	31.81	-	-	Peak
2390	60.26	-13.74	74	57.35	31.9	5.4	34.39	100	23	Peak
2390	43.14	-10.86	54	40.23	31.9	5.4	34.39	100	23	Average
2437	108.05	-	-	105.04	31.93	5.46	34.38	100	23	Peak
2437	91.26	-	-	88.23	31.95	5.46	34.38	100	23	Average
2484	42.27	-11.73	54	39.14	31.98	5.52	34.37	100	23	Average
2484	60.99	-13.01	74	57.86	31.98	5.52	34.37	100	23	Peak
7311	53.63	-20.37	74	63.22	35.61	11.12	56.32	100	343	Peak
7311	41.36	-12.64	54	50.95	35.61	11.12	56.32	100	343	Average

Test Mode :	Mode 8	**Temperature :**	23~25℃
Test Channel :	06	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**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
43.23	27.58	-12.42	40	47.76	10.71	0.81	31.7	-	-	Peak
159.33	32.14	-11.36	43.5	52.17	10.14	1.48	31.65	100	44	Peak
208.74	31.99	-11.51	43.5	52.01	9.92	1.69	31.63	-	-	Peak
365.8	29.84	-16.16	46	44.19	14.98	2.29	31.62	-	-	Peak
404.3	24.63	-21.37	46	38.15	15.86	2.42	31.8	-	-	Peak
945.4	25.2	-20.8	46	30.74	21.84	3.79	31.17	-	-	Peak
2390	55.32	-18.68	74	52.41	31.9	5.4	34.39	100	132	Peak
2390	39.91	-14.09	54	37	31.9	5.4	34.39	100	132	Average
2437	87.62	-	-	84.59	31.95	5.46	34.38	100	132	Average
2437	103.6	-	-	100.57	31.95	5.46	34.38	100	132	Peak
2484	54.98	-19.02	74	51.85	31.98	5.52	34.37	100	132	Peak
2484	40.37	-13.63	54	37.24	31.98	5.52	34.37	100	132	Average
7311	53.89	-20.11	74	63.48	35.61	11.12	56.32	100	360	Peak
7311	39.75	-14.25	54	49.34	35.61	11.12	56.32	100	360	Average

Test Mode :	Mode 9	**Temperature :**	23~25℃
Test Channel :	11	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**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
41.88	24.13	-15.87	40	43.24	11.78	0.81	31.7	-	-	Peak
159.33	26.48	-17.02	43.5	46.51	10.14	1.48	31.65	-	-	Peak
208.74	25.79	-17.71	43.5	45.81	9.92	1.69	31.63	-	-	Peak
313.3	29.95	-16.05	46	45.7	13.77	2.11	31.63	-	-	Peak
367.9	30.54	-15.46	46	44.87	15.02	2.29	31.64	100	63	Peak
409.9	26.82	-19.18	46	40.22	15.98	2.43	31.81	-	-	Peak
2388	54.18	-19.82	74	51.27	31.9	5.4	34.39	124	24	Peak
2388	43.07	-10.93	54	40.16	31.9	5.4	34.39	124	24	Average
2462	108.55	-	-	105.47	31.97	5.49	34.38	124	24	Peak
2462	91.64	-	-	88.56	31.97	5.49	34.38	124	24	Average
2483.85	51.45	-2.55	54	48.32	31.98	5.52	34.37	124	24	Average
2483.85	71.55	-2.45	74	68.42	31.98	5.52	34.37	124	24	Peak
7386	55.34	-18.66	74	64.85	35.56	11.22	56.29	100	342	Peak
7386	42.5	-11.5	54	52.01	35.56	11.22	56.29	100	342	Average

Test Mode :	Mode 9	**Temperature :**	23~25℃
Test Channel :	11	**Relative Humidity :**	42~44%
Test Engineer :	Elvis Chen	**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	28.17	-11.83	40	48.35	10.71	0.81	31.7	-	-	Peak
159.33	33.31	-10.19	43.5	53.34	10.14	1.48	31.65	100	12	Peak
208.74	31.44	-12.06	43.5	51.46	9.92	1.69	31.63	-	-	Peak
374.9	28.92	-17.08	46	43.1	15.2	2.32	31.7	-	-	Peak
404.3	25.83	-20.17	46	39.35	15.86	2.42	31.8	-	-	Peak
946.8	25.35	-20.65	46	30.88	21.84	3.79	31.16	-	-	Peak
2390	51.89	-22.11	74	48.98	31.9	5.4	34.39	100	122	Peak
2390	40.98	-13.02	54	38.07	31.9	5.4	34.39	100	122	Average
2462	86.92	-	-	83.84	31.97	5.49	34.38	100	122	Average
2462	103.6	-	-	100.52	31.97	5.49	34.38	100	122	Peak
2483.5	67.16	-6.84	74	64.03	31.98	5.52	34.37	100	122	Peak
2483.5	47.65	-6.35	54	44.52	31.98	5.52	34.37	100	122	Average
7386	55.59	-18.41	74	65.1	35.56	11.22	56.29	101	348	Peak
7386	41.38	-12.62	54	50.89	35.56	11.22	56.29	101	348	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	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 13, 2011	Sep. 27, 2011~ Sep. 28, 2011	Jun. 12, 2012	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 18, 2011	Sep. 27, 2011~ Sep. 28, 2011	Sep. 17, 2012	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 18, 2011	Sep. 27, 2011~ Sep. 28, 2011	Sep. 17, 2012	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Feb. 18, 2011	Sep. 27, 2011~ Sep. 28, 2011	Feb. 17, 2012	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 18, 2011	Sep. 27, 2011~ Sep. 28, 2011	Feb. 17, 2012	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCI 7	100724	9kHz~7GHz	Aug. 22, 2011	Oct. 26, 2011	Aug. 21, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz – 30MHz	Dec. 03, 2010	Oct. 26, 2011	Dec. 02, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz – 30MHz	Dec. 01, 2010	Oct. 26, 2011	Nov. 30, 2011	Conduction (CO05-HY)
AC Power Source	APC	APC-1000 W	N/A	N/A	N/A	Oct. 26, 2011	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	112403	N/A	Feb. 22, 2011	Oct. 26, 2011	Feb. 21, 2012	Conduction (CO05-HY
Spectrum Analyzer	R&S	FSP40	100057	9KHz-40GHz	Oct. 25, 2010	Oct. 13, 2011 ~ Oct. 16, 2011	Oct. 24, 2011	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/003	20MHz-1000MHz	May 10, 2011	Oct. 13, 2011 ~ Oct. 16, 2011	May 09, 2012	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Oct. 31, 2010	Oct. 13, 2011 ~ Oct. 16, 2011	Oct. 30, 2011	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz~18GHz	Aug. 01, 2011	Oct. 13, 2011 ~ Oct. 16, 2011	Jul. 31, 2012	Radiation (03CH06-HY)
Double Ridge Horn Antenna	Training Research	AH-0801	95119	8GHz~18GHz	Oct. 20, 2010	Oct. 13, 2011 ~ Oct. 16, 2011	Oct. 19, 2011	Radiation (03CH06-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 18, 2010	Oct. 13, 2011 ~ Oct. 16, 2011	Oct. 17, 2011	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz- 26.5GHz	Apr. 14, 2011	Oct. 13, 2011 ~ Oct. 16, 2011	Apr. 13, 2012	Radiation (03CH06-HY)
Amplifier	Agilent	310N	186713	9KHz~1GHz	Apr. 14, 2011	Oct. 13, 2011 ~ Oct. 16, 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 Uc(y)	**1.13**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(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 Uc(y)	**1.27**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(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 Γ1 = 0.197 Antenna VSWR Γ2 = 0.194 Uncertainty = 20Log(1-Γ1*Γ2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	**2.36**				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**				

Appendix A. Photographs of EUT

Please refer to Sporton report number EP190327 as below.