

FCC RF Test Report

APPLICANT : ViewSonic Corporation
EQUIPMENT : Tablet PC
BRAND NAME : ViewSonic
MODEL NAME : VS14109
FCC ID : GSS-VS14109
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Aug. 29, 2011 and completely tested on Sep. 20, 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
FR182919B	Rev. 01	Initial issue of report	Sep. 27, 2011

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.1	-	Gen 4.6.1	99% Bandwidth	-	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 13.6 dB at 0.17 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 1.63 dB at 2484.42 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

ViewSonic Corporation

381 Brea Canyon Road, Walnut, CA 91789, USA

1.2 Manufacturer

ViewSonic Corporation

381 Brea Canyon Road, Walnut, CA 91789, USA

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Tablet PC
Brand Name	ViewSonic
Model Name	VS14109
FCC ID	GSS-VS14109
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 : 19.44 dBm (0.0879 W) 802.11g : 23.01 dBm (0.2000 W) 802.11n (BW 20MHz) : 22.99 dBm (0.1991 W)
Antenna Type	PIFA Antenna with gain -3.50 dBi
HW Version	PR1
SW Version	1.030_9000
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	03CH05-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.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	LCD Monitor	Dell	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
4.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
5.	Notebook	DELL	P20G	FCC DoC	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
6.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	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	18.82	-	-	-
CH 06	2437 MHz	19.44	19.17	19.39	19.31
CH 11	2462 MHz	19.03	-	-	-

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	22.76	-	-	-	-	-	-	-
CH 06	2437 MHz	23.01	22.9	22.66	22.75	22.71	22.75	22.83	22.93
CH 11	2462 MHz	22.80	-	-	-	-	-	-	-

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	22.81	-	-	-	-	-	-	-
CH 06	2437 MHz	22.99	22.84	22.82	22.77	22.82	22.79	22.87	22.90
CH 11	2462 MHz	22.53	-	-	-	-	-	-	-

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.

2.2 Test Mode

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

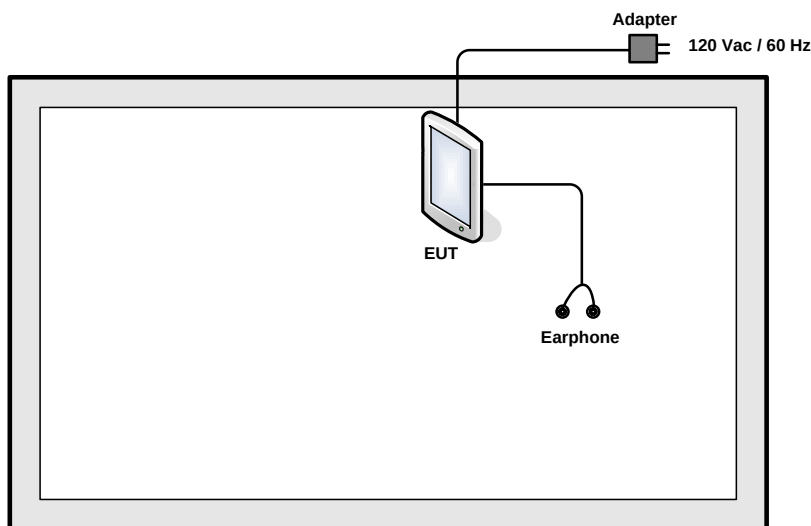
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations, laptop / tablet modes.

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

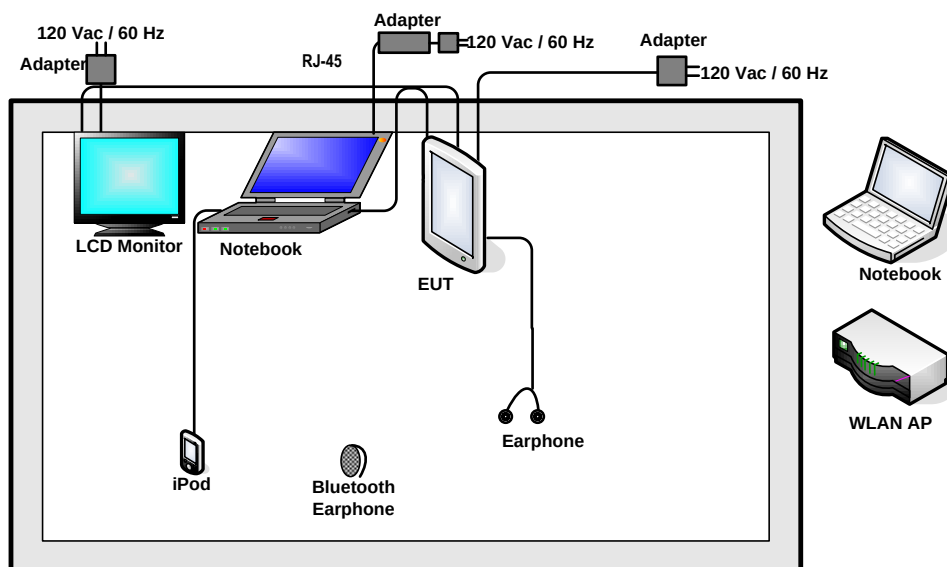
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 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 :WLAN Link + Bluetooth Link + Earphone + Camera + Adapter + USB Cable (Date Link with Notebook) + HDMI Cable (Link with HDMI TV)	
Remark: The worst case of conducted emission is mode 9; only the test data of it was reported.		

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 and 99% Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

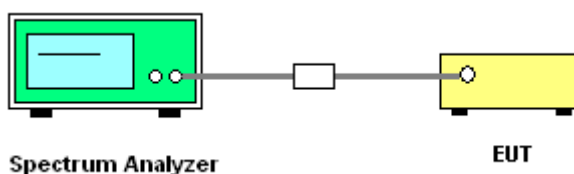
3.1.2 Measuring Instruments

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

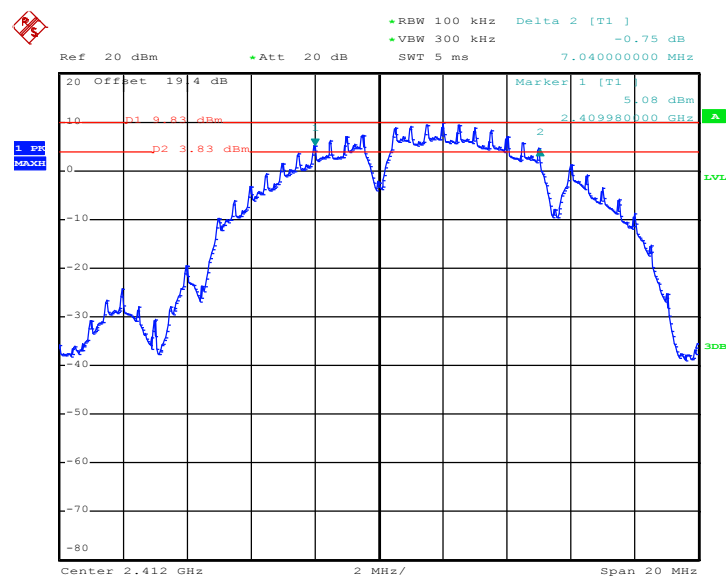


3.1.5 Test Result of 6dB Bandwidth

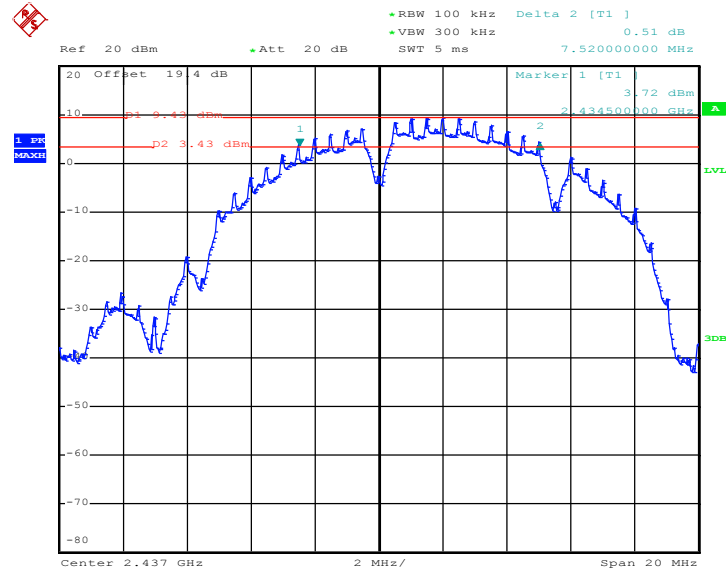
Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	7.04	0.5	Pass
06	2437	7.52	0.5	Pass
11	2462	7.52	0.5	Pass

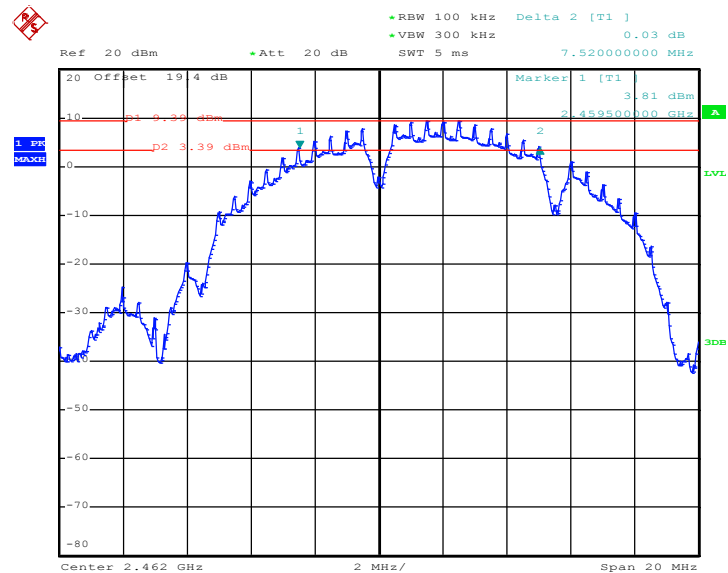
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 14.SEP.2011 14:44:28

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


Date: 14.SEP.2011 15:01:46

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


Date: 14.SEP.2011 15:14:30



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

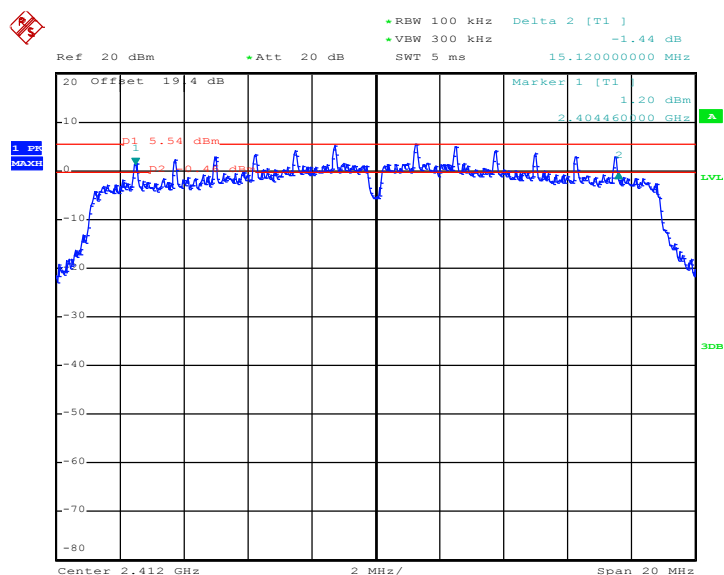




Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

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

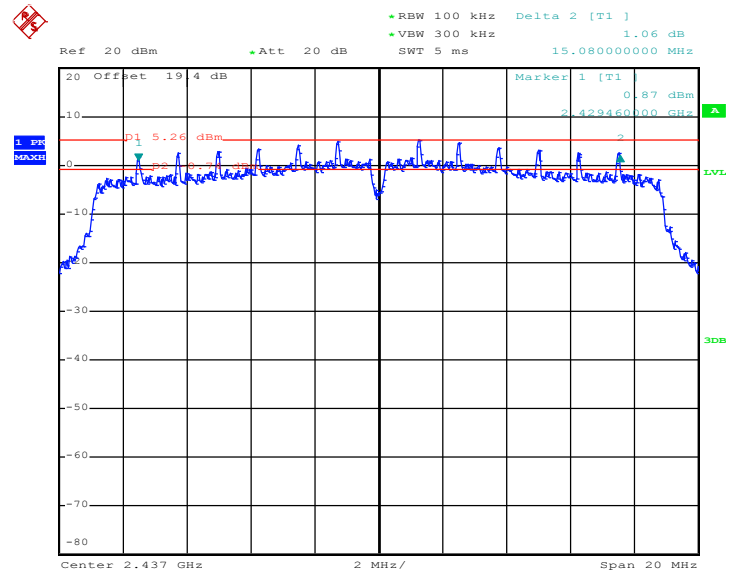
Mode 7 : 6 dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 01



Date: 14.SEP.2011 16:15:56

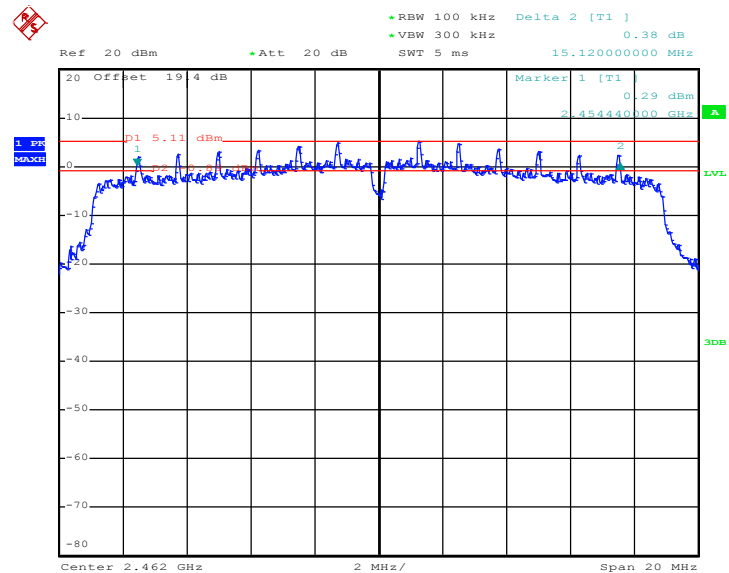


Mode 8 : 6 dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 06



Date: 14.SEP.2011 16:48:25

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



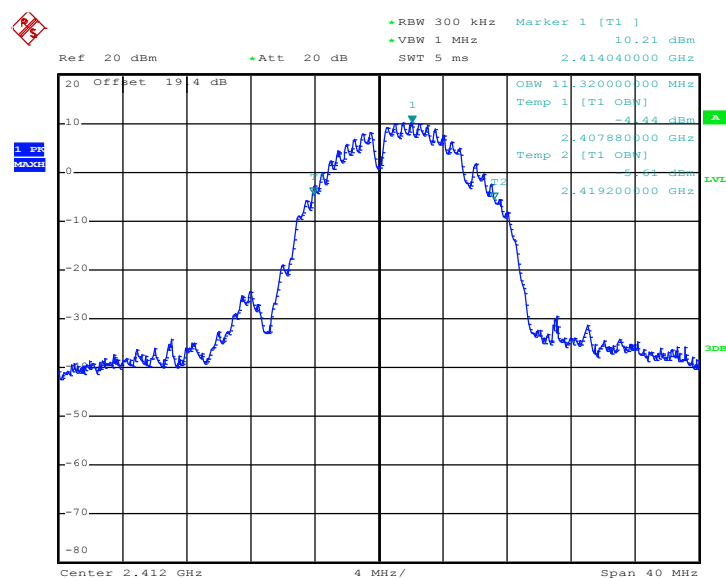
Date: 14.SEP.2011 16:30:27

3.1.6 Test Result of 99% Occupied Bandwidth

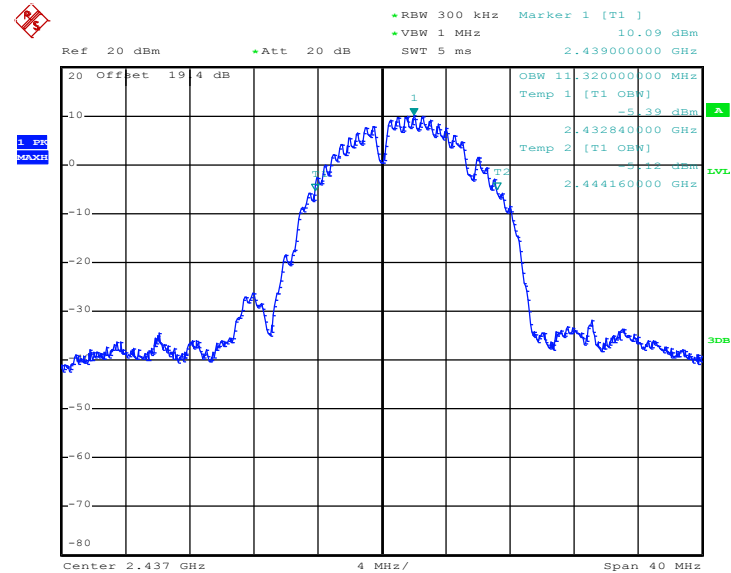
Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	11.32	Pass
06	2437	11.32	Pass
11	2462	11.32	Pass

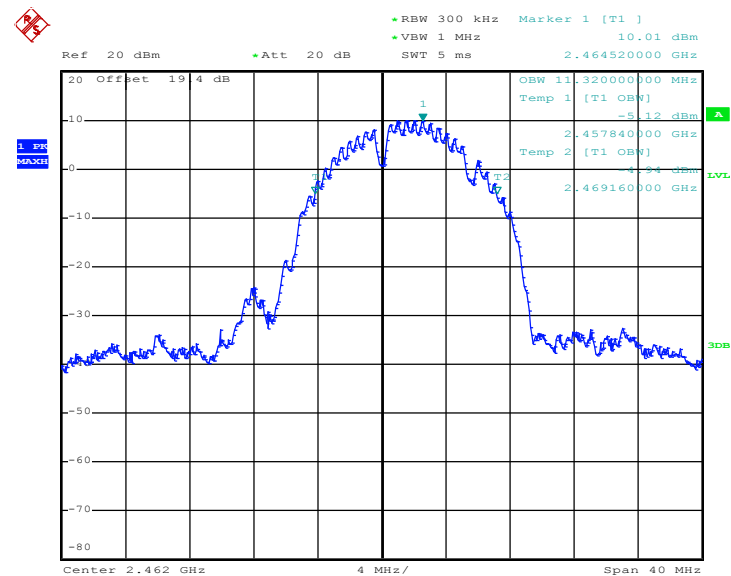
Mode 1 : 99% Occupied Bandwidth Plot on 802.11b Channel 01



Date: 14.SEP.2011 14:46:01

Mode 2 : 99% Occupied Bandwidth Plot on 802.11b Channel 06


Date: 14.SEP.2011 15:02:32

Mode 3 : 99% Occupied Bandwidth Plot on 802.11b Channel 11


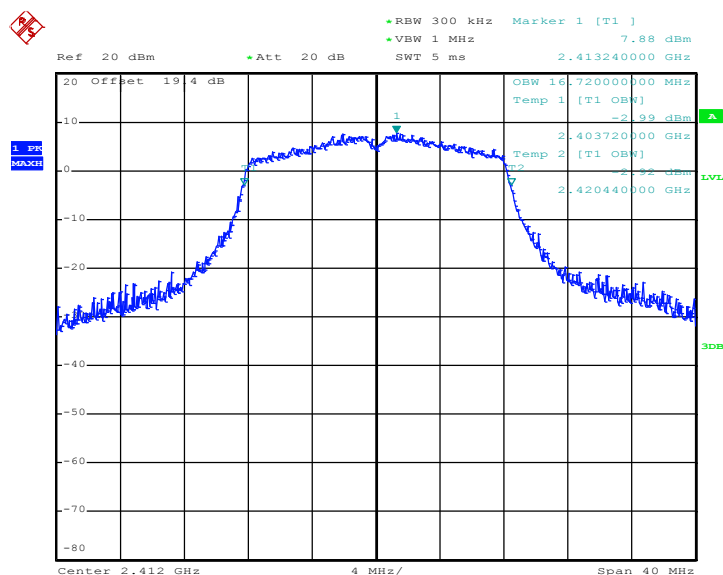
Date: 14.SEP.2011 15:15:41



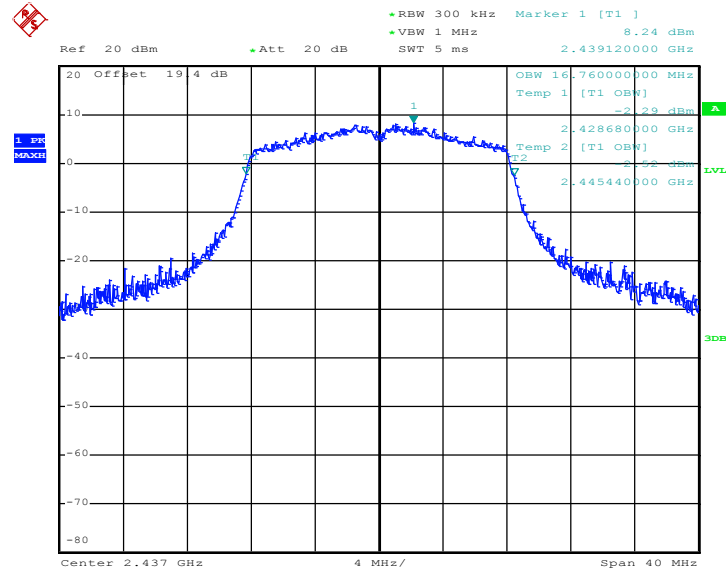
Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	16.72	Pass
06	2437	16.76	Pass
11	2462	16.76	Pass

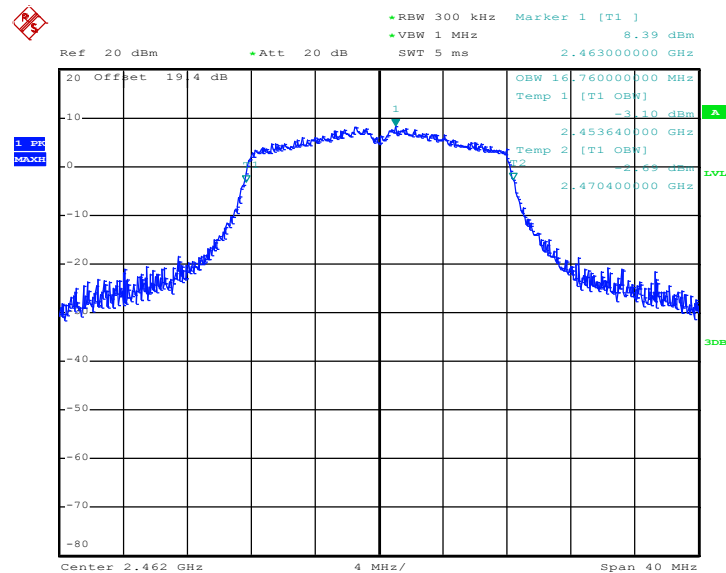
Mode 4 : 99% Occupied Bandwidth Plot on 802.11g Channel 01



Date: 14.SEP.2011 15:43:18

Mode 5 : 99% Occupied Bandwidth Plot on 802.11g Channel 06


Date: 14.SEP.2011 15:56:58

Mode 6 : 99% Occupied Bandwidth Plot on 802.11g Channel 11


Date: 14.SEP.2011 15:30:52



Channel	Frequency (MHz)	802.11n (BW 20MHz) 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	18.00	Pass
06	2437	17.96	Pass
11	2462	17.96	Pass

• RBW 300 kHz Marker 1 [T1]
 • VBW 1 MHz 7.24 dBm
 • Att 20 dB SWT 5 ms 2.413440000 GHz

20 Offset 19.4 dB
 10
 0
 -10
 -20
 -30
 -40
 -50
 -60
 -70
 -80

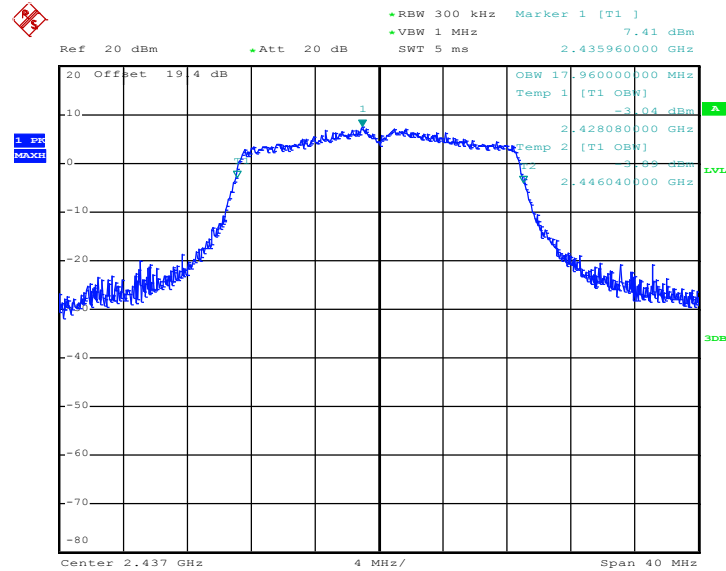
OBW 18.000000000 MHz
 Temp 1 [T1 OBW]
 -3.11 dBm
 2.403080000 GHz
 Temp 2 [T1 OBW]
 -2.68 dBm
 2.421080000 GHz

1.99 MHz
 2.412 GHz
 4 MHz/
 Span 40 MHz

Date: 14.SEP.2011 16:17:29

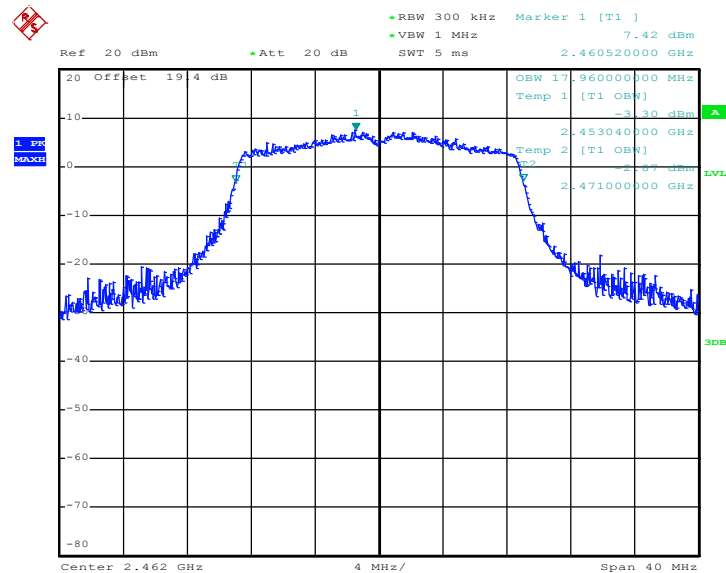


Mode 8 : 99% Occupied Bandwidth Plot on 802.11n (BW 20MHz) Channel 06



Date: 14.SEP.2011 16:48:55

Mode 9 : 99% Occupied Bandwidth Plot on 802.11n (BW 20MHz) Channel 11



Date: 14.SEP.2011 16:31:39

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.

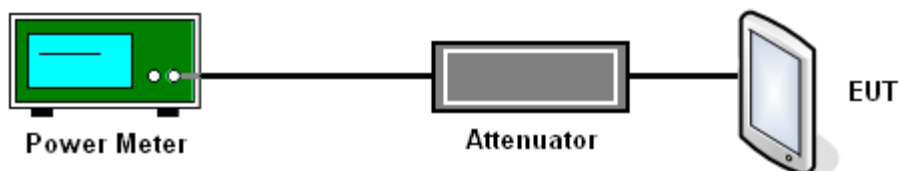
3.2.2 Measuring Instruments

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	18.82	30	Pass
06	2437	19.44	30	Pass
11	2462	19.03	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	22.76	30	Pass
06	2437	23.01	30	Pass
11	2462	22.80	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	22.81	30	Pass
06	2437	22.99	30	Pass
11	2462	22.53	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

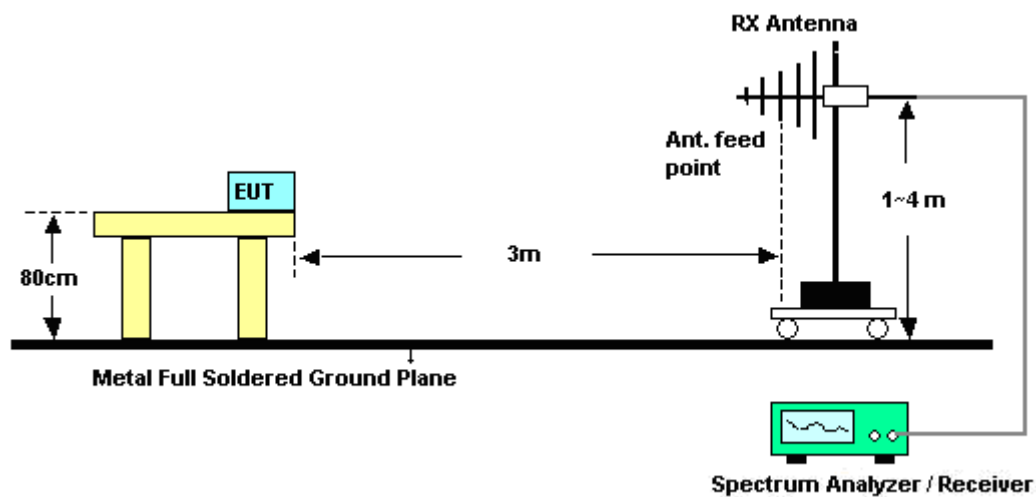
See list of measuring instruments of this test report.

3.3.3 Test Procedures

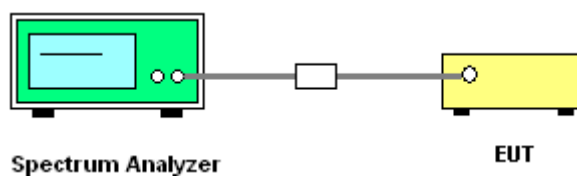
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) $\geq$ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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 :	25~26°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Lewis He

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	53.05	-20.95	74	50.53	32.02	4.58	34.08	112	61	Peak
2389.99	42.9	-11.1	54	40.38	32.02	4.58	34.08	112	61	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
2384	51.17	-22.83	74	48.67	32	4.58	34.08	114	335	Peak
2384	42.82	-11.18	54	40.32	32	4.58	34.08	114	335	Average

Test Mode :	Mode 3	Temperature :	25~26°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Lewis He

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	57.74	-16.26	74	55.09	32.09	4.64	34.08	110	66	Peak
2483.5	44.71	-9.29	54	42.06	32.09	4.64	34.08	110	66	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	57.43	-16.57	74	54.78	32.09	4.64	34.08	116	335	Peak
2483.5	45.79	-8.21	54	43.14	32.09	4.64	34.08	116	335	Average



Test Mode :	Mode 4	Temperature :	25~26°C
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Lewis He

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
2389.8	63.63	-10.37	74	61.11	32.02	4.58	34.08	136	70	Peak
2389.8	43.02	-10.98	54	40.5	32.02	4.58	34.08	136	70	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
2389.42	62.02	-11.98	74	59.5	32.02	4.58	34.08	135	59	Peak
2389.42	43.31	-10.69	54	40.79	32.02	4.58	34.08	135	59	Average

Test Mode :	Mode 6	Temperature :	25~26°C
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Lewis He

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	64.19	-9.81	74	61.54	32.09	4.64	34.08	127	345	Peak
2483.5	46.24	-7.76	54	43.59	32.09	4.64	34.08	127	345	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	70.86	-3.14	74	68.21	32.09	4.64	34.08	132	45	Peak
2483.85	50.5	-3.5	54	47.85	32.09	4.64	34.08	132	45	Average



Test Mode :	Mode 7	Temperature :	25~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Lewis He

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	70.57	-3.43	74	68.05	32.02	4.58	34.08	139	71	Peak
2389.99	49.24	-4.76	54	46.72	32.02	4.58	34.08	139	71	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
2389.04	70.97	-3.03	74	68.45	32.02	4.58	34.08	137	52	Peak
2389.04	52.12	-1.88	54	49.6	32.02	4.58	34.08	137	52	Average

Test Mode :	Mode 9	Temperature :	25~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Lewis He

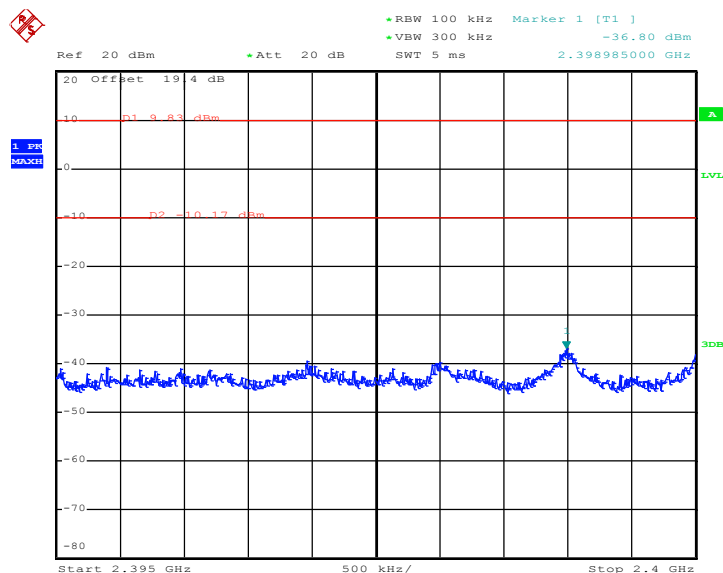
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.42	70.26	-3.74	74	67.61	32.09	4.64	34.08	113	66	Peak
2484.42	52.37	-1.63	54	49.72	32.09	4.64	34.08	113	66	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
2486.13	70.15	-3.85	74	67.5	32.09	4.64	34.08	134	75	Peak
2486.13	49.8	-4.2	54	47.15	32.09	4.64	34.08	134	75	Average

3.3.6 Test Plots of Conducted Band Edges

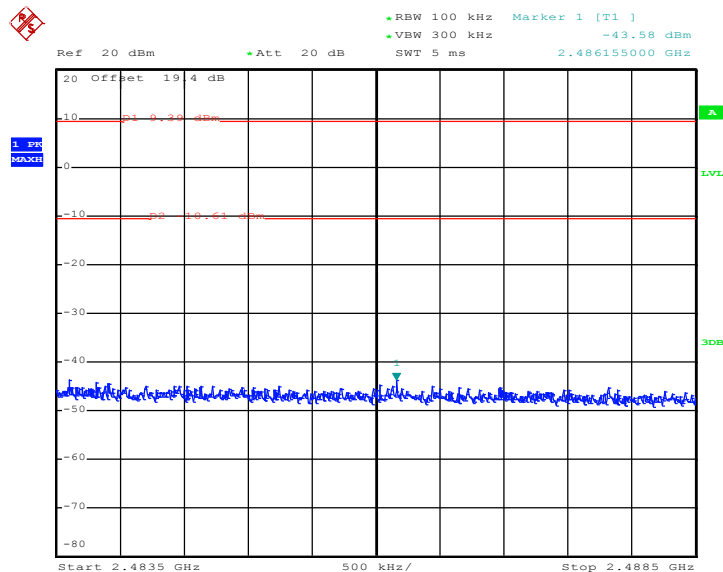
Test Mode :	Mode 1 and 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

Low Band Edge Plot on 802.11b Channel 01



Date: 14.SEP.2011 14:45:36

High Band Edge Plot on 802.11b Channel 11

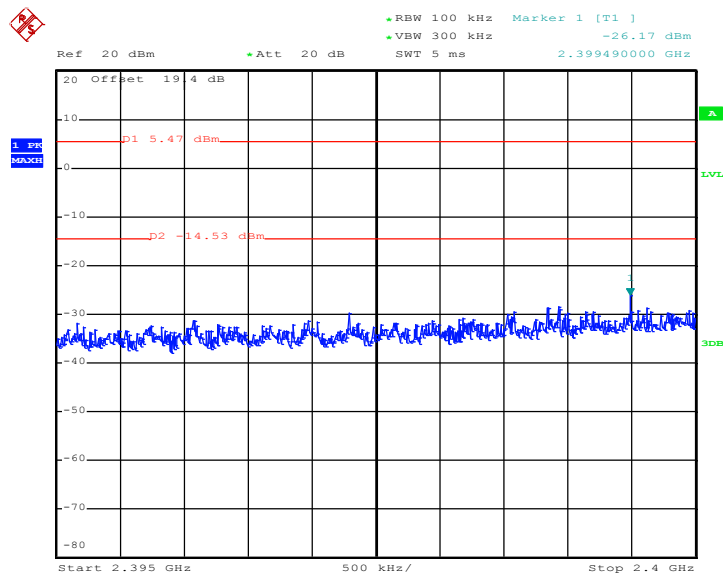


Date: 14.SEP.2011 15:15:16



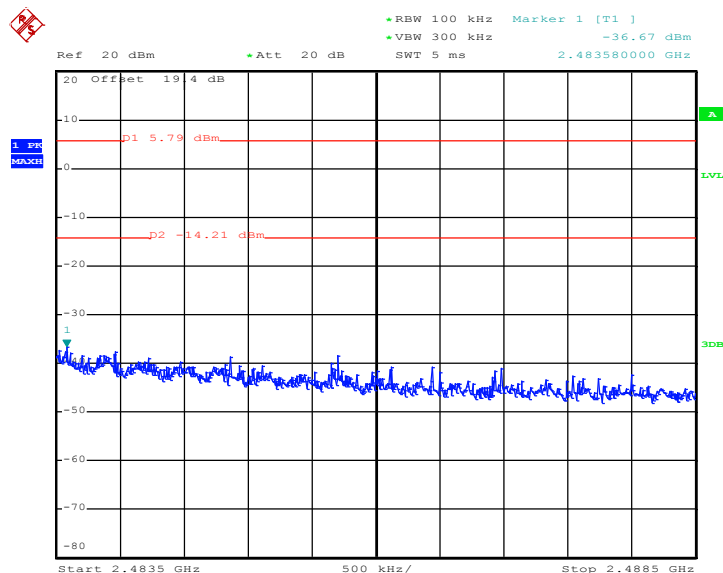
Test Mode :	Mode 4 and 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

Low Band Edge Plot on 802.11g Channel 01



Date: 14.SEP.2011 15:42:52

High Band Edge Plot on 802.11g Channel 11

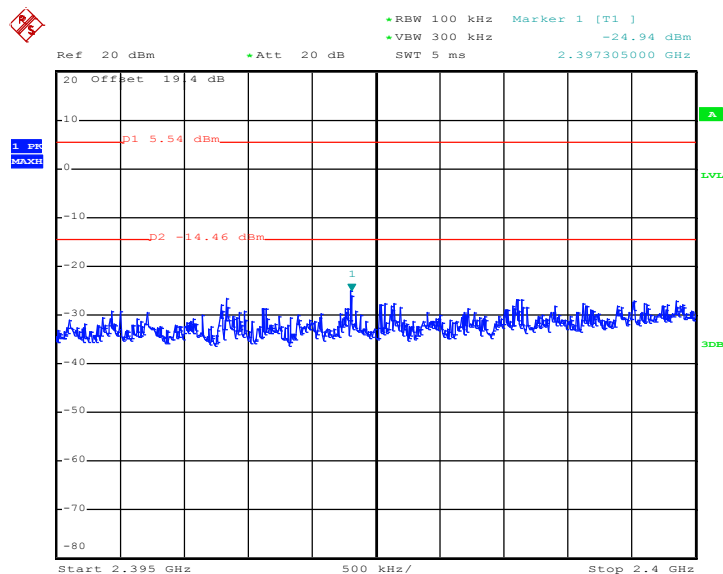


Date: 14.SEP.2011 15:30:26



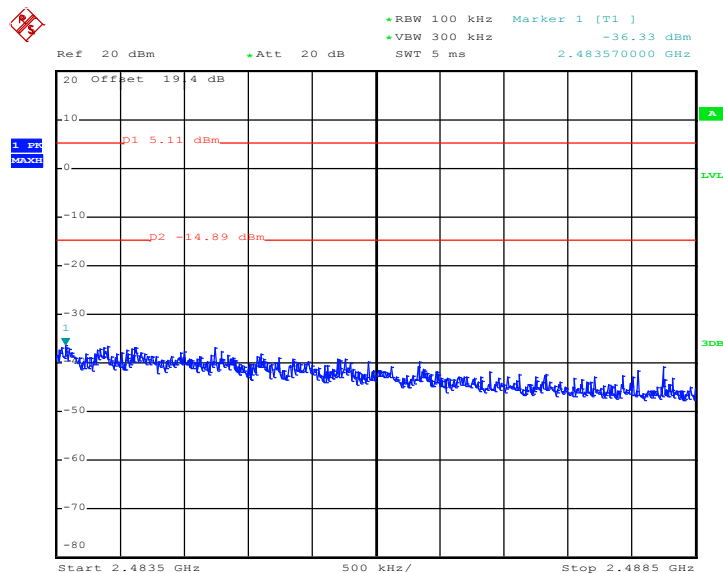
Test Mode :	Mode 7 and 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

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



Date: 14.SEP.2011 16:17:04

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



Date: 14.SEP.2011 16:31:14

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.

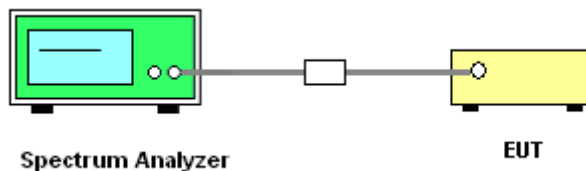
3.4.2 Measuring Instruments

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.

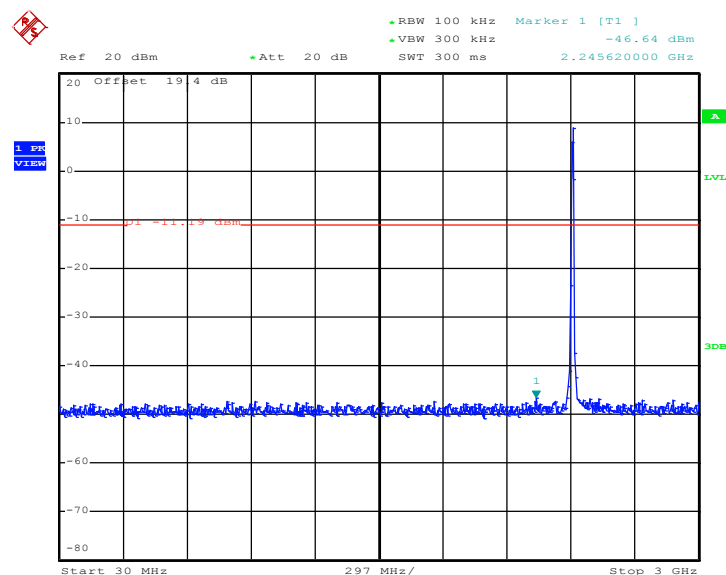
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

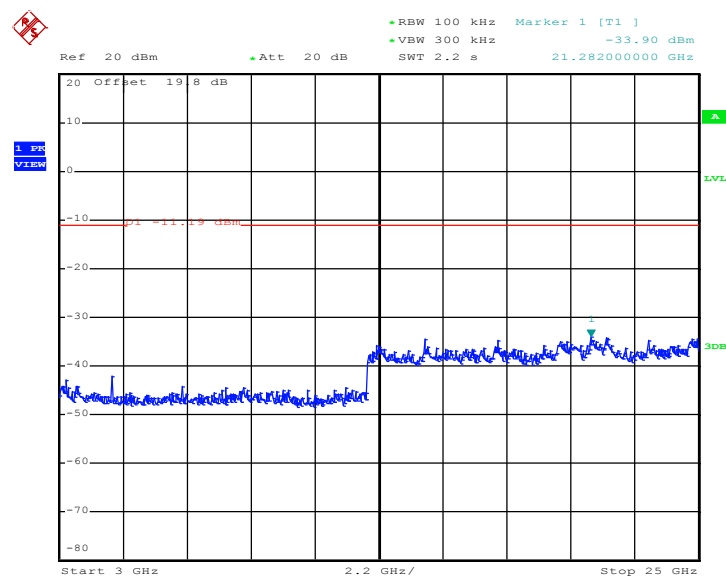
Test Mode :	Mode 1	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 14.SEP.2011 14:55:00

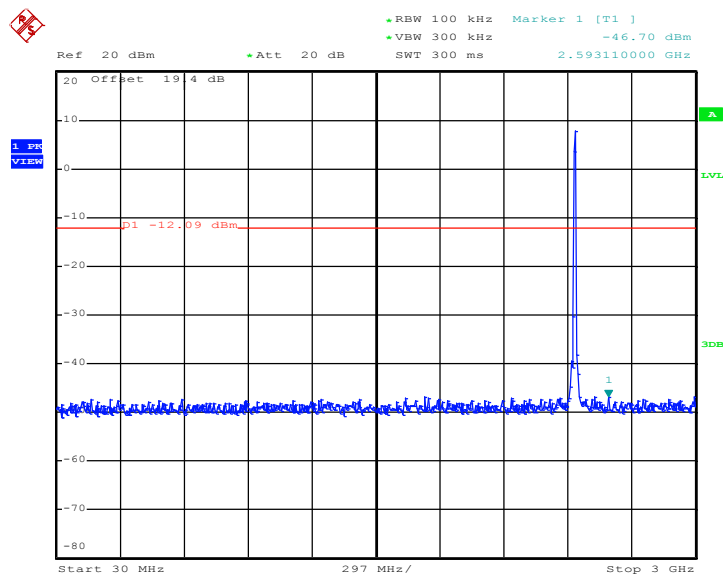
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



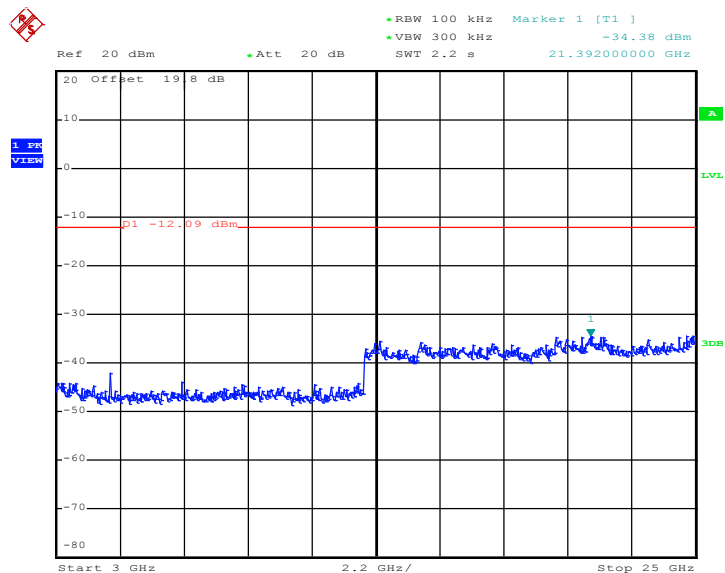
Date: 14.SEP.2011 14:55:17



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

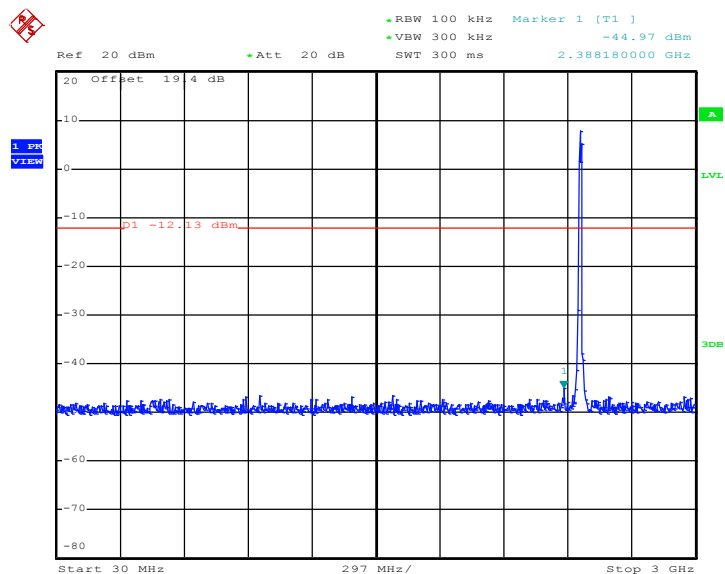
Date: 14.SEP.2011 15:11:27

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

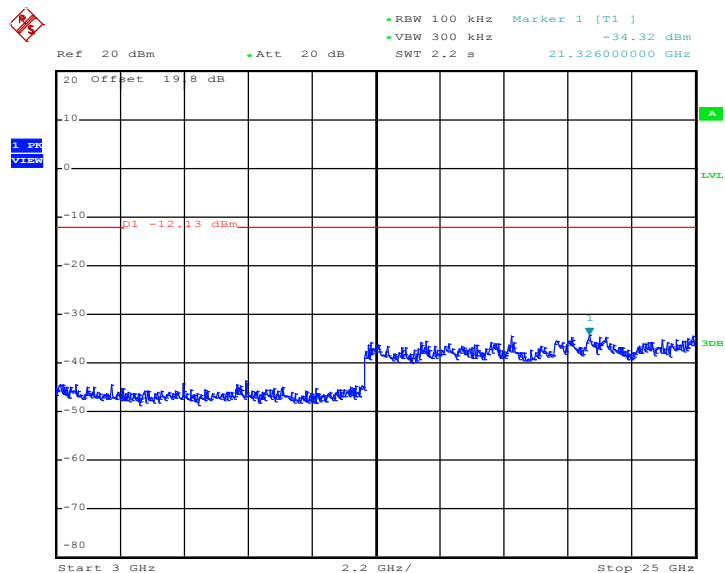
Date: 14.SEP.2011 15:11:44



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

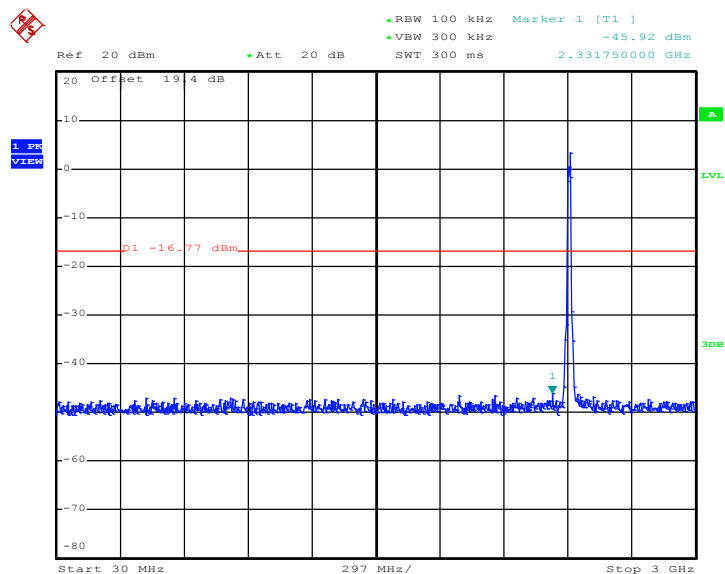
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 14.SEP.2011 15:25:36

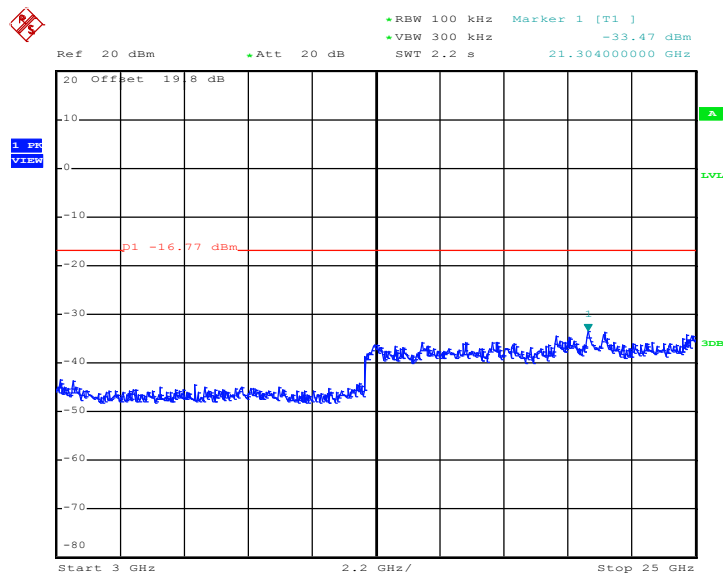
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 14.SEP.2011 15:25:53

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


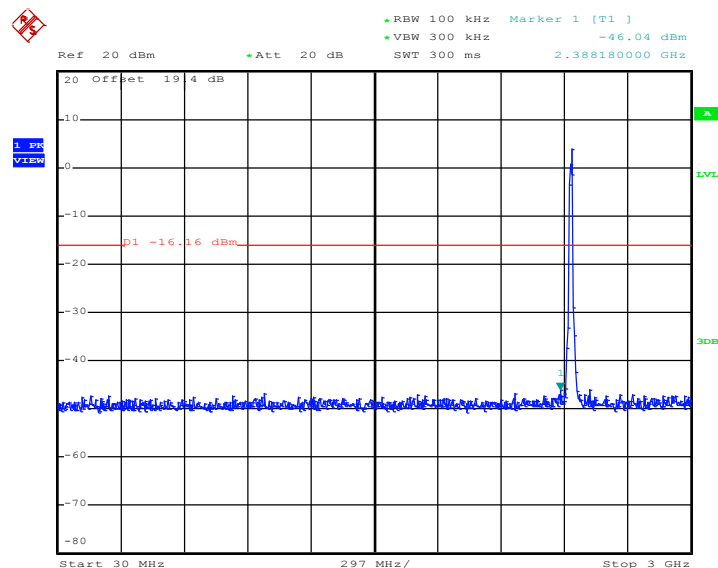
Date: 14.SEP.2011 15:52:24

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


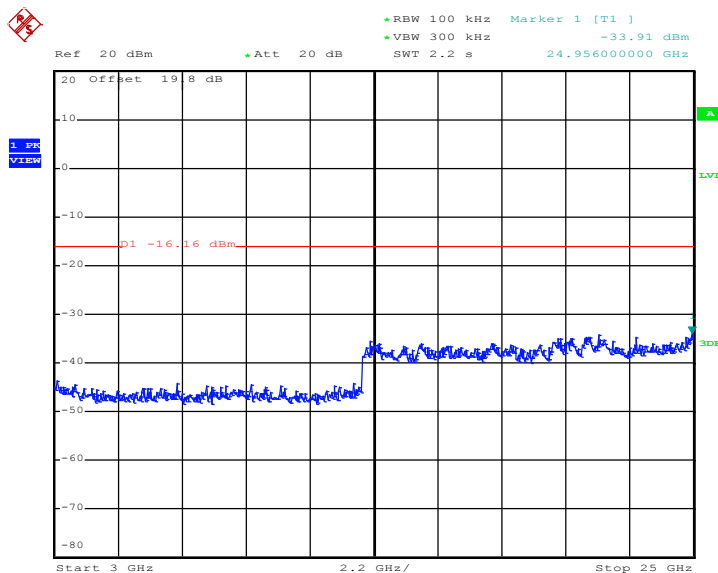
Date: 14.SEP.2011 15:52:41



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

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 14.SEP.2011 16:05:59

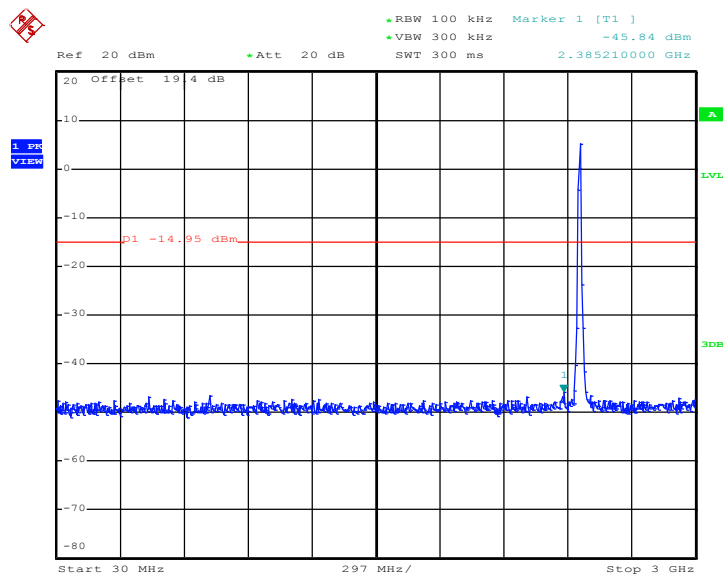
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 14.SEP.2011 16:06:16



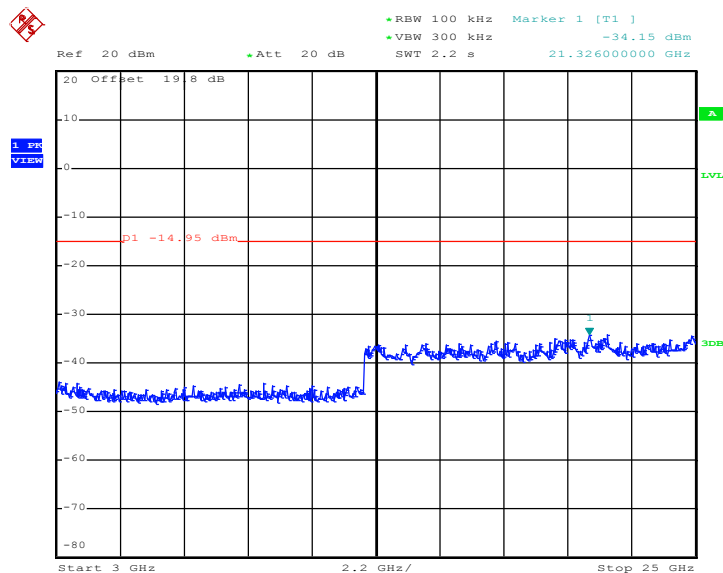
Test Mode :	Mode 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 14.SEP.2011 15:39:48

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

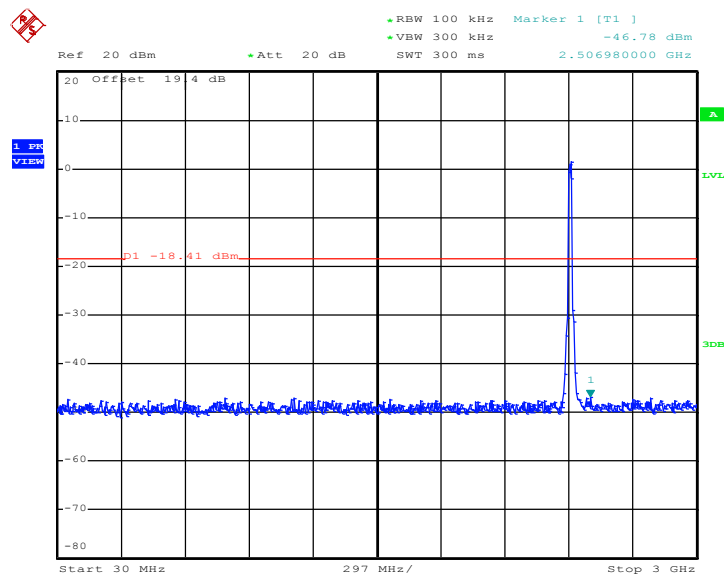


Date: 14.SEP.2011 15:40:05



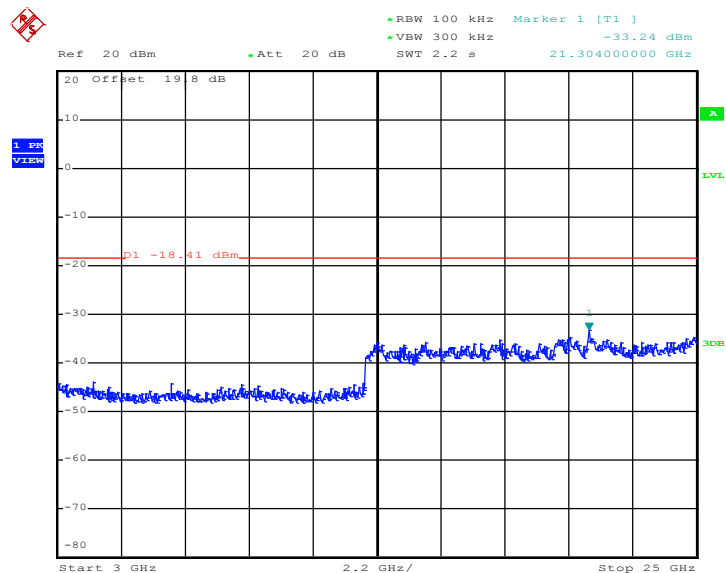
Test Mode :	Mode 7	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 14.SEP.2011 16:27:15

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

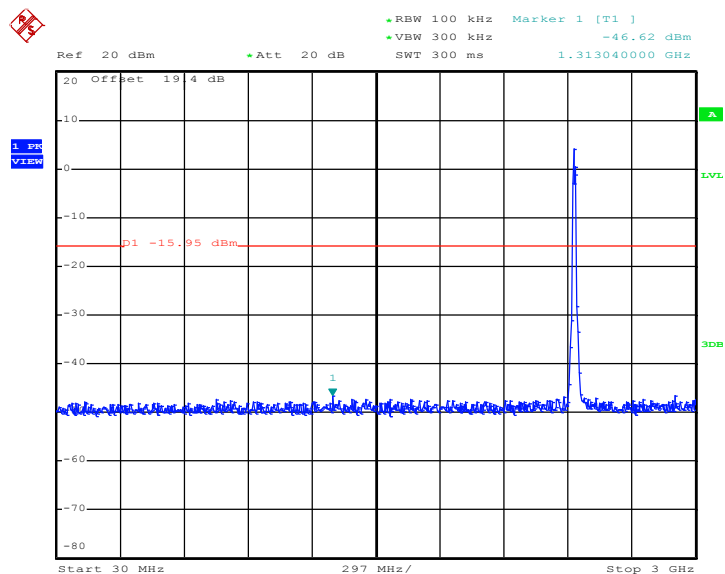


Date: 14.SEP.2011 16:27:32



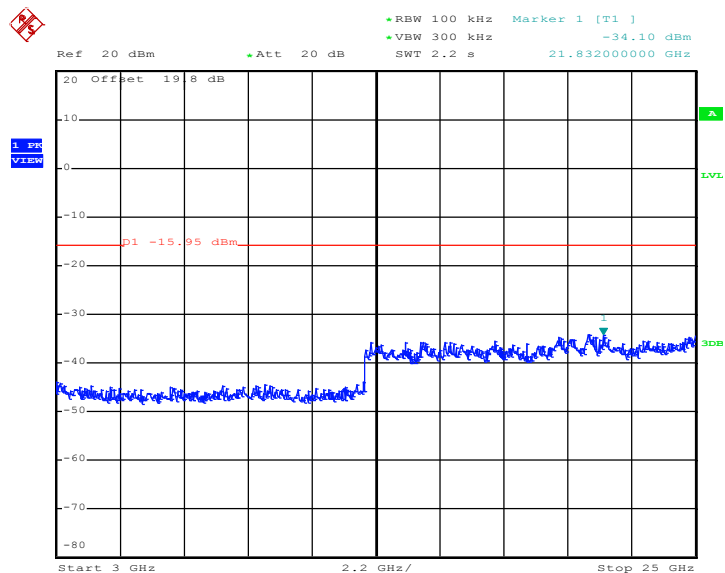
Test Mode :	Mode 8	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 14.SEP.2011 16:58:30

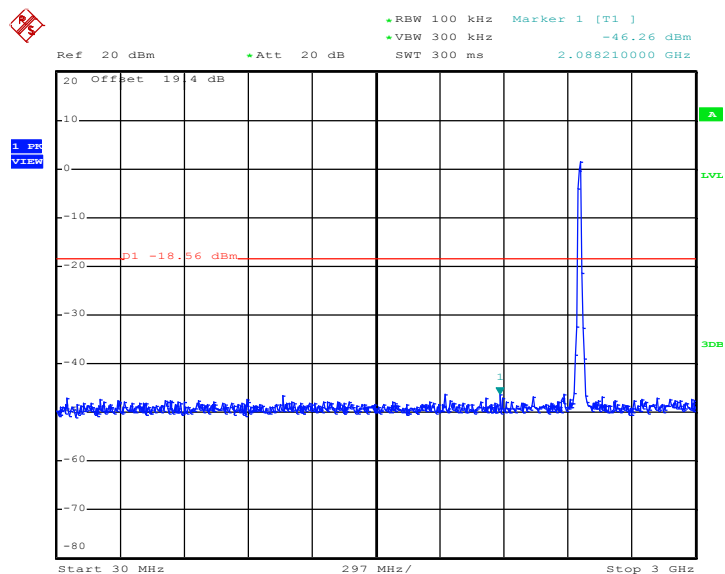
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



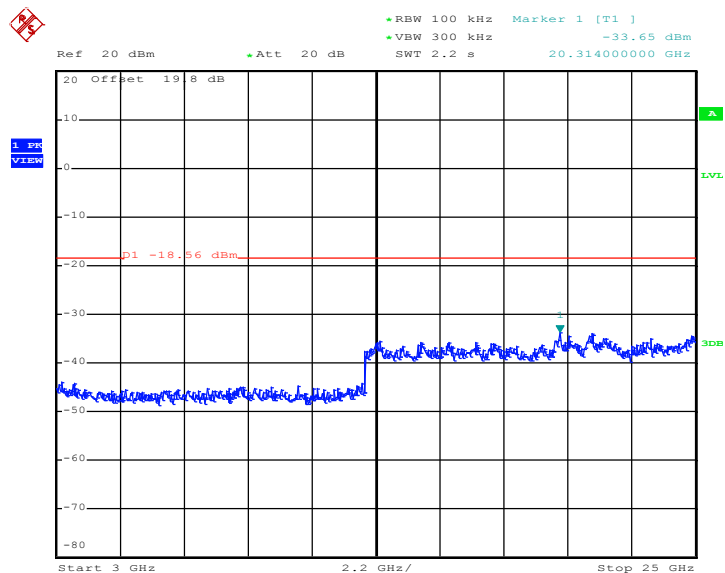
Date: 14.SEP.2011 16:58:47



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: 14.SEP.2011 16:42:36

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 14.SEP.2011 16:42:53

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.

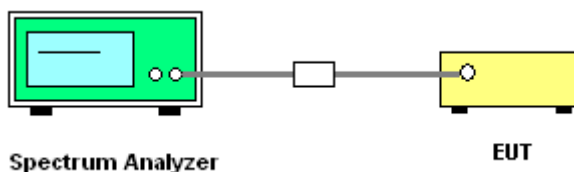
3.5.2 Measuring Instruments

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

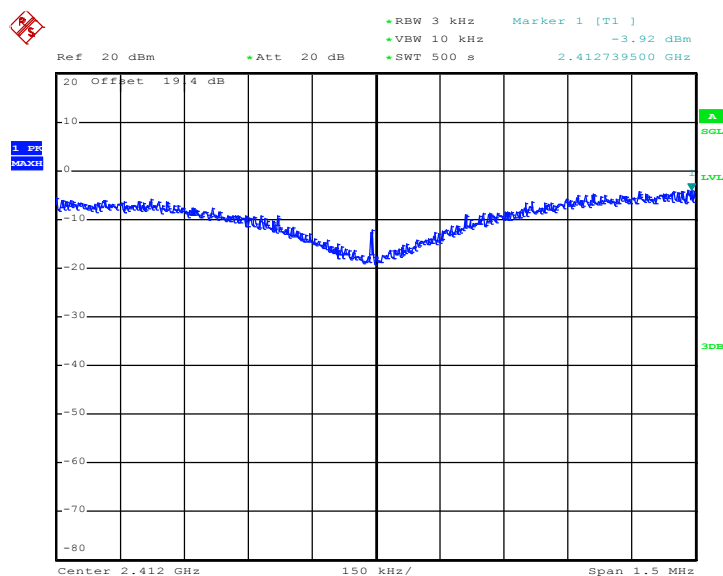


3.5.5 Test Result of Power Spectral Density

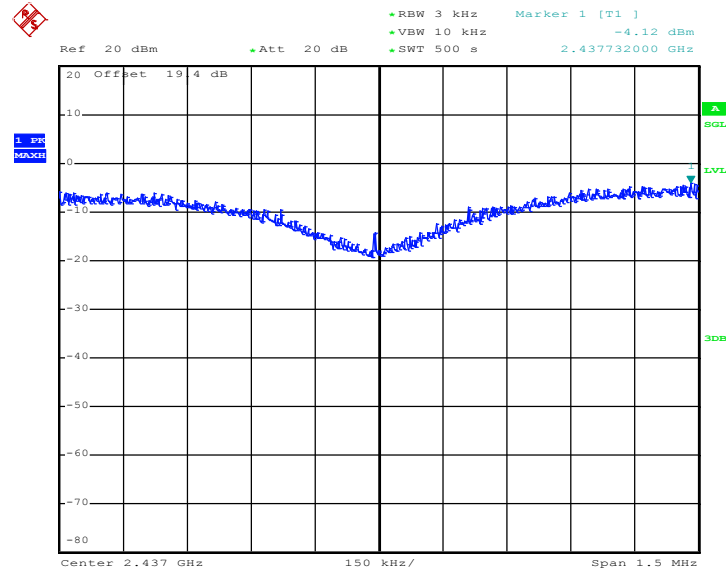
Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-3.92	8	Pass
06	2437	-4.12	8	Pass
11	2462	-3.95	8	Pass

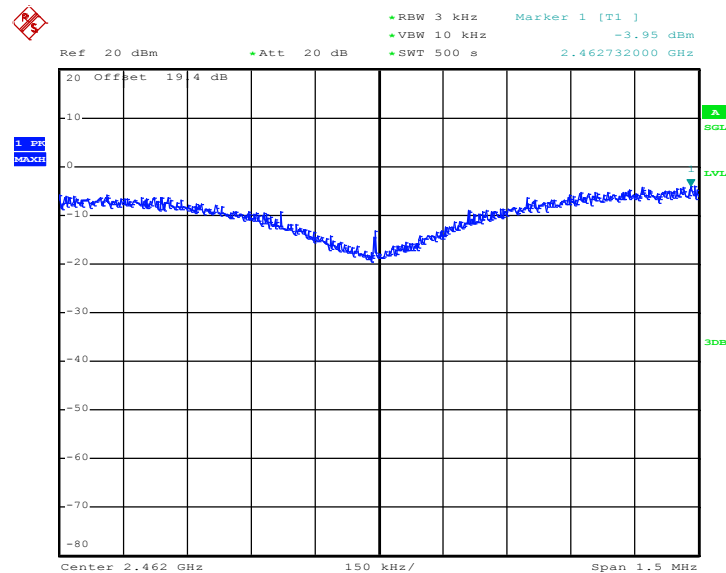
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 14.SEP.2011 14:54:39

Mode 2 : PSD Plot on 802.11b Channel 06


Date: 14.SEP.2011 15:11:06

Mode 3 : PSD Plot on 802.11b Channel 11


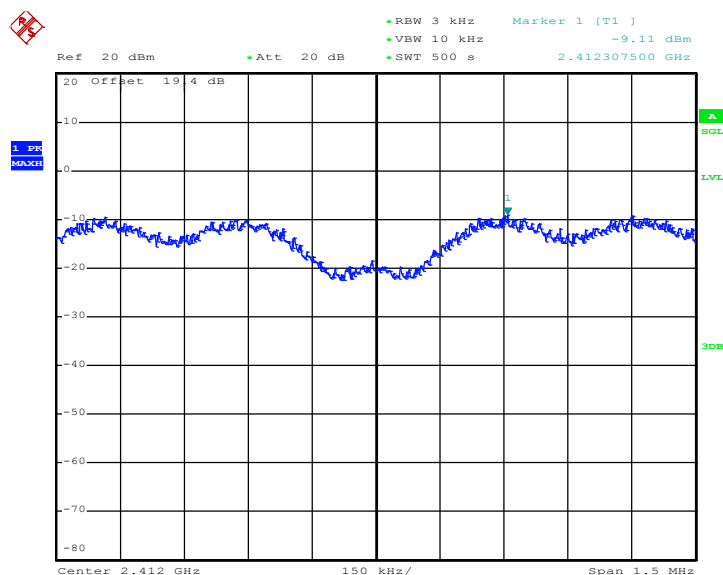
Date: 14.SEP.2011 15:25:15



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	-9.11	8	Pass
06	2437	-8.83	8	Pass
11	2462	-8.86	8	Pass

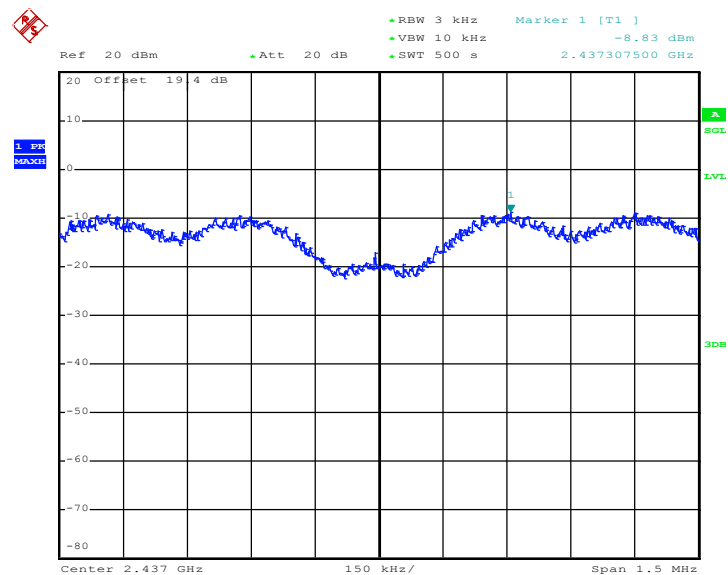
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 14.SEP.2011 15:52:03

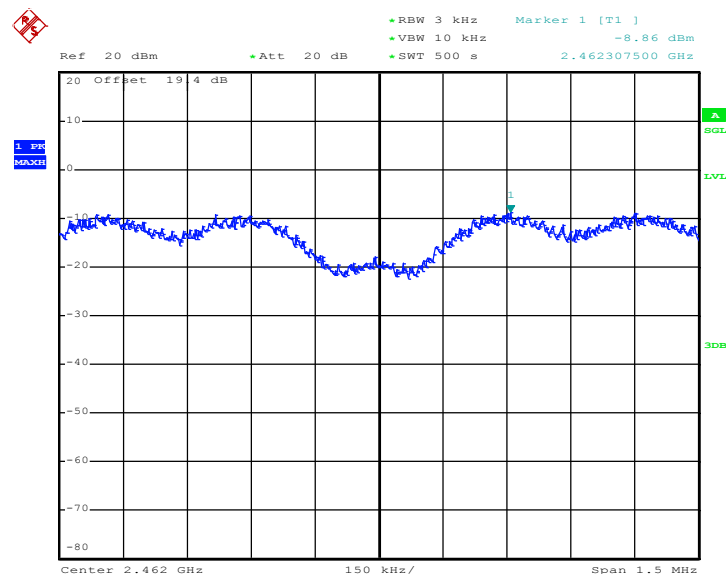


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 14.SEP.2011 16:05:38

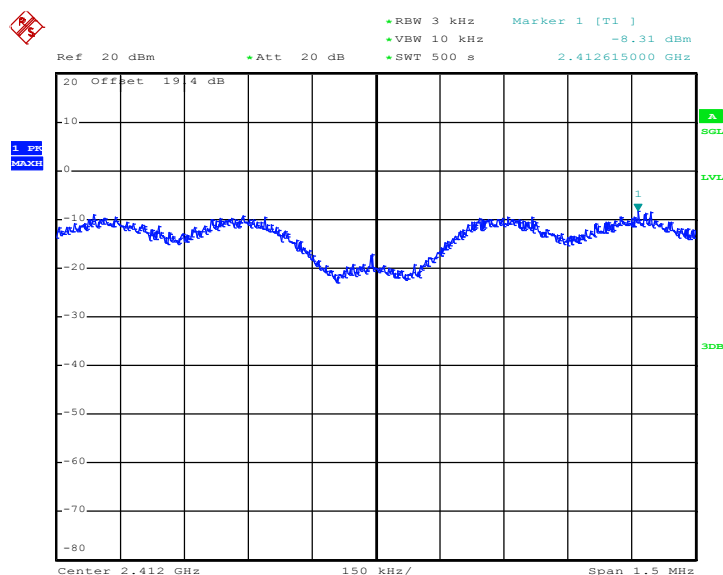
Mode 6 : PSD Plot on 802.11g Channel 11



Date: 14.SEP.2011 15:39:28

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

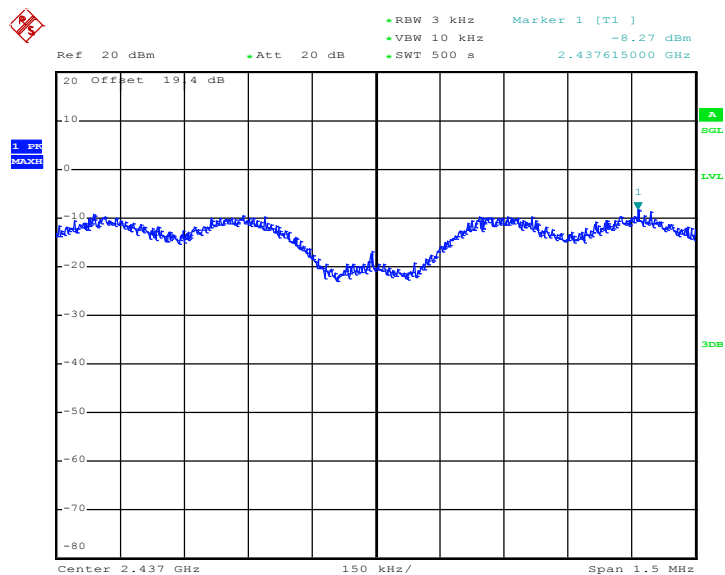
Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-8.31	8	Pass
06	2437	-8.27	8	Pass
11	2462	-8.27	8	Pass

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


Date: 14.SEP.2011 16:26:04

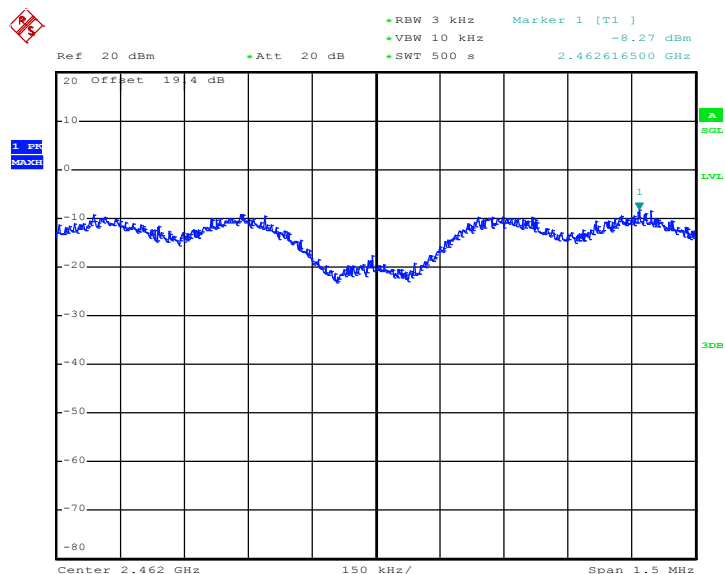


Mode 8 : PSD Plot on 802.11n (BW 20MHz) Channel 06



Date: 14.SEP.2011 16:58:10

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



Date: 14.SEP.2011 16:40:30

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

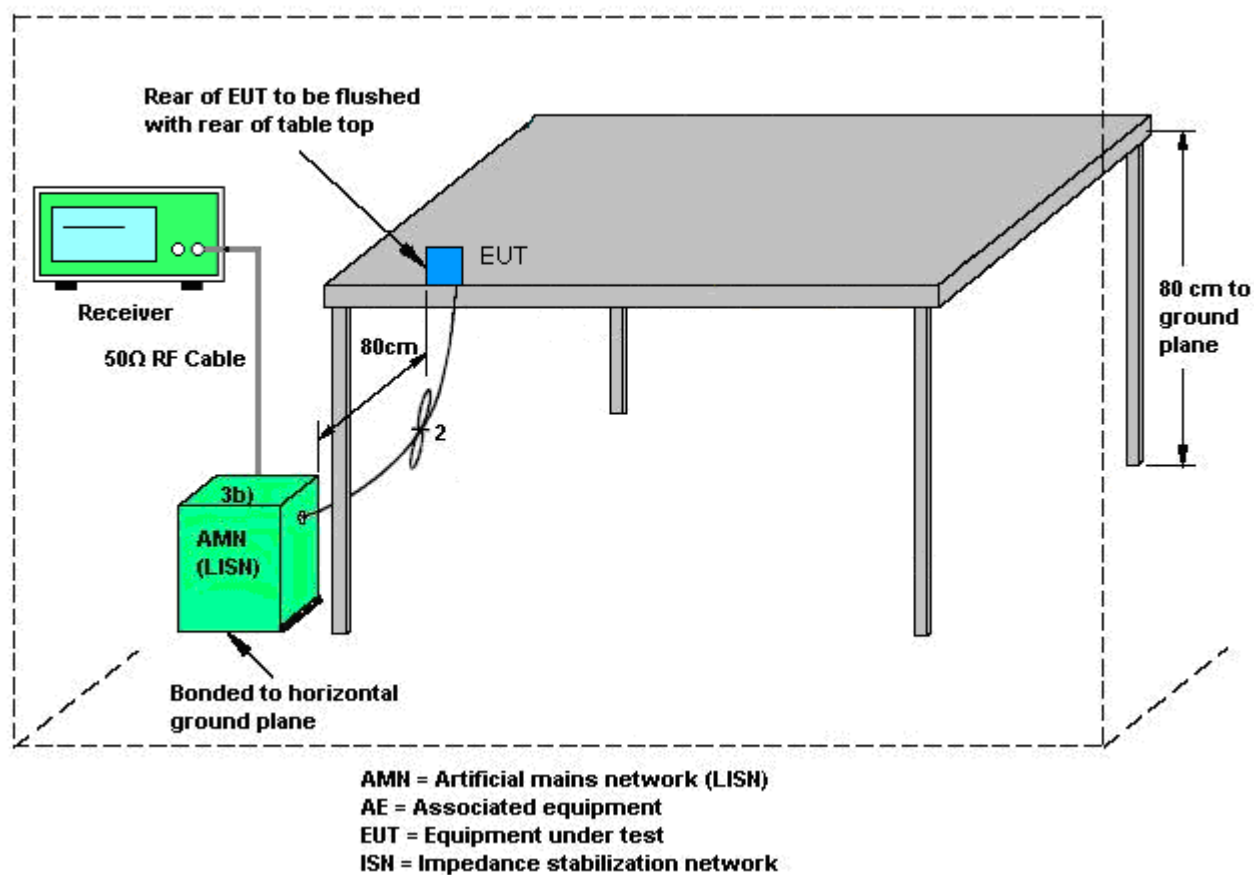
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

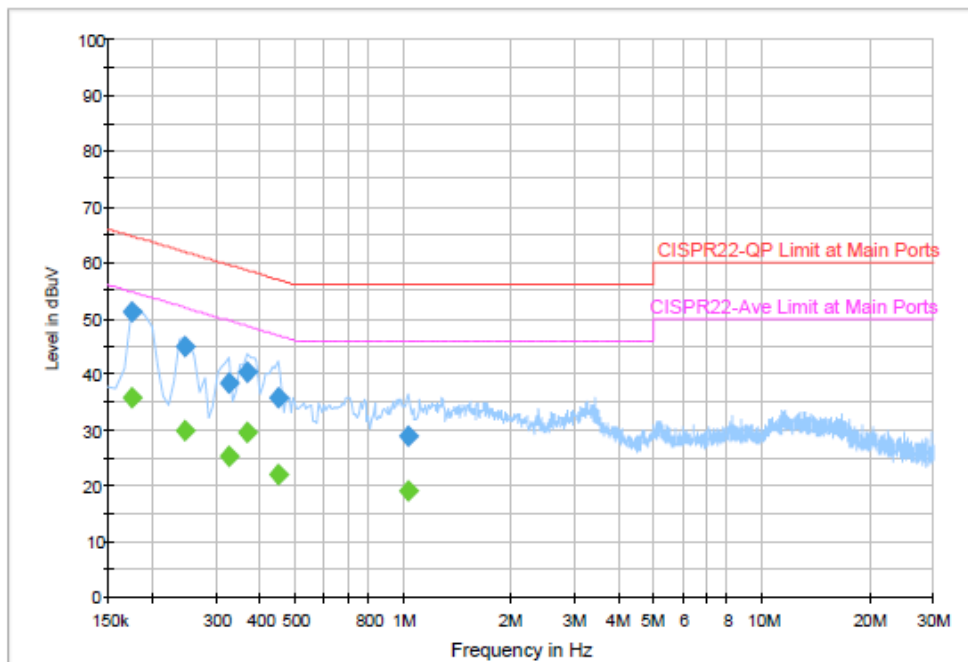
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network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

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link + Bluetooth Link + Earphone + Camera + Adapter + USB Cable (Date Link with Notebook) + HDMI Cable (Link with HDMI TV)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



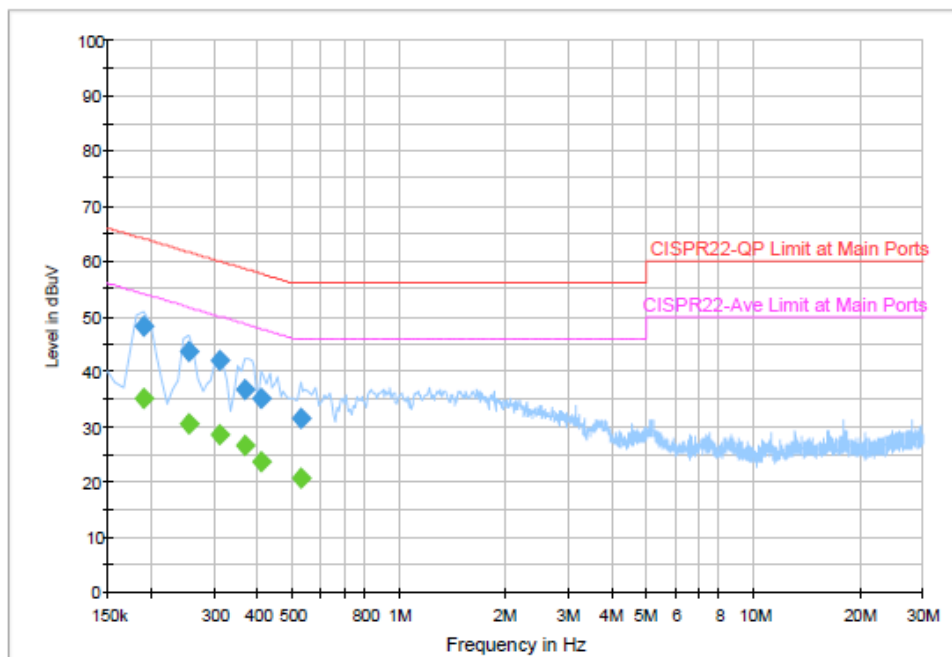
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.174000	51.2	Off	L1	19.4	13.6	64.8
0.246000	44.8	Off	L1	19.4	17.1	61.9
0.326000	38.5	Off	L1	19.4	21.1	59.6
0.366000	40.2	Off	L1	19.4	18.4	58.6
0.446000	35.7	Off	L1	19.4	21.2	56.9
1.030000	28.9	Off	L1	19.4	27.1	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.174000	35.6	Off	L1	19.4	19.2	54.8
0.246000	30.0	Off	L1	19.4	21.9	51.9
0.326000	25.4	Off	L1	19.4	24.2	49.6
0.366000	29.5	Off	L1	19.4	19.1	48.6
0.446000	21.9	Off	L1	19.4	25.0	46.9
1.030000	19.1	Off	L1	19.4	26.9	46.0

Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link + Bluetooth Link + Earphone + Camera + Adapter + USB Cable (Date Link with Notebook) + HDMI Cable (Link with HDMI TV)		
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)
0.190000	48.1	Off	N	19.4	15.9	64.0
0.254000	43.5	Off	N	19.4	18.1	61.6
0.310000	41.9	Off	N	19.4	18.1	60.0
0.366000	36.6	Off	N	19.4	22.0	58.6
0.406000	35.0	Off	N	19.5	22.7	57.7
0.526000	31.5	Off	N	19.4	24.5	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.190000	35.2	Off	N	19.4	18.8	54.0
0.254000	30.6	Off	N	19.4	21.0	51.6
0.310000	28.5	Off	N	19.4	21.5	50.0
0.366000	26.4	Off	N	19.4	22.2	48.6
0.406000	23.7	Off	N	19.5	24.0	47.7
0.526000	20.5	Off	N	19.4	25.5	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

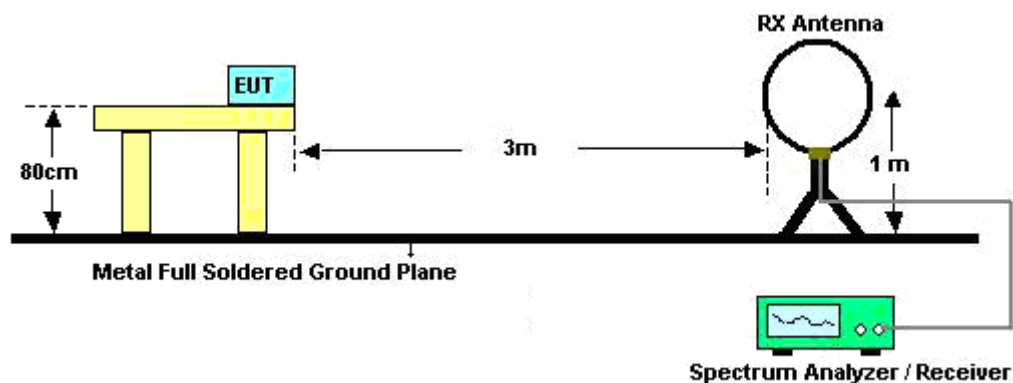
See list of measuring instruments of this test report.

3.7.3 Test Procedures

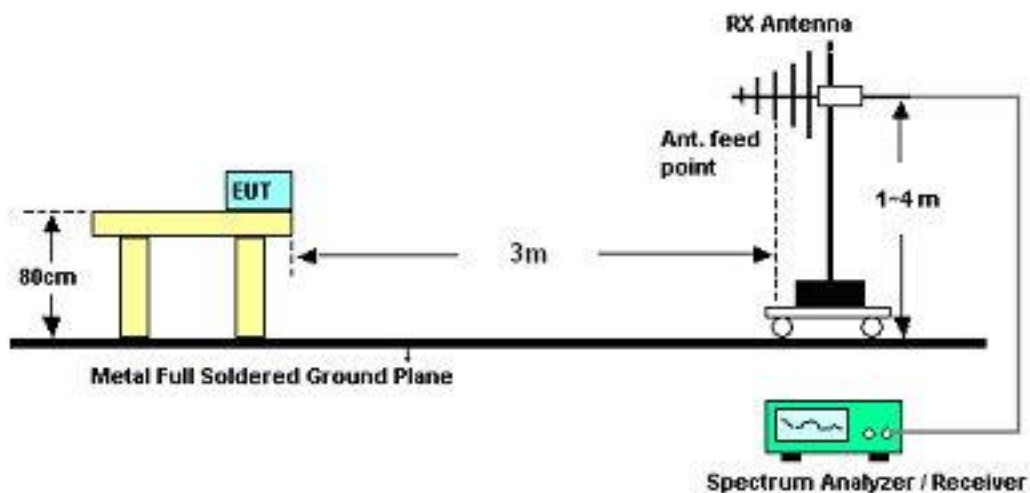
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep =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

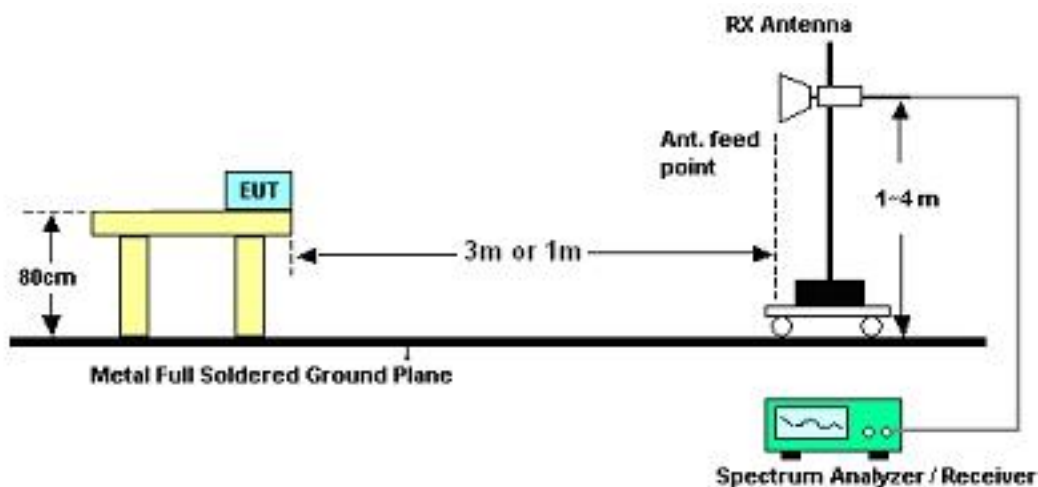
For radiated emissions below 30MHz



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 :	Lewis He	Temperature :	25~26℃	
		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 :	25~26℃
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
98.31	22.23	-21.27	43.5	43.5	9.2	1.09	31.56	-	-	98.31
129.63	21.23	-22.27	43.5	40.66	10.87	1.22	31.52	-	-	129.63
230.07	22.31	-23.69	46	41.98	10.25	1.58	31.5	-	-	230.07
415.5	21.97	-24.03	46	35.97	15.12	2.05	31.17	-	-	415.5
604.5	22.6	-23.4	46	32.29	18.74	2.43	30.86	-	-	604.5
942.6	25.66	-20.34	46	30.25	22.77	3.05	30.41	100	23	942.6
2389.99	42.9	-11.1	54	40.38	32.02	4.58	34.08	112	61	2389.99
2389.99	53.05	-20.95	74	50.53	32.02	4.58	34.08	112	61	2389.99
2412	103.2	-	-	100.66	32.03	4.59	34.08	112	61	2412
2412	107.68	-	-	105.14	32.03	4.59	34.08	112	61	2412
2494	40.17	-13.83	54	37.51	32.1	4.64	34.08	112	61	2494
2494	50.4	-23.6	74	47.74	32.1	4.64	34.08	112	61	2494
4824	45.76	-28.24	74	63.88	33.83	6.51	58.46	100	0	4824
7236	48.64	-25.36	74	62.41	35.6	8.29	57.66	100	0	7236



Test Mode :	Mode 1	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
36.75	28.7	-11.3	40	44.89	14.59	0.74	31.52	100	36	Peak
49.17	27.58	-12.42	40	50.18	8.17	0.8	31.57	-	-	Peak
87.78	21.68	-18.32	40	44.09	8.07	1.06	31.54	-	-	Peak
604.5	25.36	-20.64	46	35.05	18.74	2.43	30.86	-	-	Peak
778.1	24.62	-21.38	46	31.77	20.6	2.79	30.54	-	-	Peak
897.8	26	-20	46	31.7	21.77	3.01	30.48	-	-	Peak
2384	42.82	-11.18	54	40.32	32	4.58	34.08	114	335	Average
2384	51.17	-22.83	74	48.67	32	4.58	34.08	114	335	Peak
2412	103.85	-	-	101.24	32.07	4.62	34.08	114	335	Average
2412	108.37	-	-	105.76	32.07	4.62	34.08	114	335	Peak
2483.5	44.94	-9.06	54	42.29	32.09	4.64	34.08	114	335	Average
2483.5	57.44	-16.56	74	54.79	32.09	4.64	34.08	114	335	Peak
4824	39.18	-14.82	54	57.3	33.83	6.51	58.46	112	22	Average
4824	53.82	-20.18	74	71.94	33.83	6.51	58.46	112	22	Peak

Test Mode :	Mode 2	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
36.75	20.98	-19.02	40	37.17	14.59	0.74	31.52	100	0	Peak
99.39	20.89	-22.61	43.5	41.99	9.39	1.09	31.58	-	-	Peak
129.63	22.15	-21.35	43.5	41.58	10.87	1.22	31.52	-	-	Peak
518.4	21.93	-24.07	46	33.31	17.38	2.27	31.03	-	-	Peak
717.2	21.81	-24.19	46	30.34	19.45	2.68	30.66	-	-	Peak
889.4	24.21	-21.79	46	30	21.7	2.99	30.48	-	-	Peak
2360	38.58	-15.42	54	36.1	31.99	4.57	34.08	108	67	Average
2360	47.43	-26.57	74	44.95	31.99	4.57	34.08	108	67	Peak
2437	102.62	-	-	100.03	32.06	4.61	34.08	108	67	Average
2437	107.1	-	-	104.51	32.06	4.61	34.08	108	67	Peak
2484	37.94	-16.06	54	35.29	32.09	4.64	34.08	108	67	Average
2484	49.72	-24.28	74	47.07	32.09	4.64	34.08	108	67	Peak
7311	47.53	-26.47	74	61.21	35.6	8.42	57.7	100	0	Peak

Test Mode :	Mode 2	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
36.75	27	-13	40	43.19	14.59	0.74	31.52	100	148	Peak
88.32	21.22	-22.28	43.5	43.63	8.07	1.06	31.54	-	-	Peak
225.48	25.63	-20.37	46	45.58	9.98	1.56	31.49	-	-	Peak
518.4	23.6	-22.4	46	34.98	17.38	2.27	31.03	-	-	Peak
604.5	24.69	-21.31	46	34.38	18.74	2.43	30.86	-	-	Peak
806.8	24.2	-21.8	46	30.82	21.07	2.84	30.53	-	-	Peak
2360	39.27	-14.73	54	36.79	31.99	4.57	34.08	113	341	Average
2360	47.86	-26.14	74	45.38	31.99	4.57	34.08	113	341	Peak
2437	103.96	-	-	101.37	32.06	4.61	34.08	113	341	Average
2437	108.58	-	-	105.99	32.06	4.61	34.08	113	341	Peak
2484	38.8	-15.2	54	36.15	32.09	4.64	34.08	113	341	Average
2484	50.95	-23.05	74	48.3	32.09	4.64	34.08	113	341	Peak
4874	49.97	-24.03	74	67.98	33.82	6.53	58.36	100	0	Peak
7311	49	-25	74	62.68	35.6	8.42	57.7	100	0	Peak

Test Mode :	Mode 3	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
36.75	21.83	-18.17	40	38.02	14.59	0.74	31.52	100	142	Peak
98.04	19.74	-23.76	43.5	41.01	9.2	1.09	31.56	-	-	Peak
129.63	20.43	-23.07	43.5	39.86	10.87	1.22	31.52	-	-	Peak
415.5	22.15	-23.85	46	36.15	15.12	2.05	31.17	-	-	Peak
604.5	22.48	-23.52	46	32.17	18.74	2.43	30.86	-	-	Peak
930.7	24.79	-21.21	46	29.68	22.5	3.04	30.43	-	-	Peak
2386	41	-13	54	38.48	32.02	4.58	34.08	110	66	Average
2386	50.61	-23.39	74	48.09	32.02	4.58	34.08	110	66	Peak
2462	102.09	-	-	99.48	32.07	4.62	34.08	110	66	Average
2462	107.65	-	-	105.04	32.07	4.62	34.08	110	66	Peak
2483.5	44.71	-9.29	54	42.06	32.09	4.64	34.08	110	66	Average
2483.5	57.74	-16.26	74	55.09	32.09	4.64	34.08	110	66	Peak
7386	47.64	-26.36	74	61.25	35.6	8.55	57.76	100	0	Peak

Test Mode :	Mode 3	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
36.75	28.11	-11.89	40	44.3	14.59	0.74	31.52	100	25	Peak
87.24	20.47	-19.53	40	43.08	7.89	1.05	31.55	-	-	Peak
204.69	17.45	-26.05	43.5	38.94	8.49	1.48	31.46	-	-	Peak
518.4	23.08	-22.92	46	34.46	17.38	2.27	31.03	-	-	Peak
604.5	25.08	-20.92	46	34.77	18.74	2.43	30.86	-	-	Peak
864.9	24.15	-21.85	46	30.18	21.51	2.95	30.49	-	-	Peak
2386	42.84	-11.16	54	40.32	32.02	4.58	34.08	116	335	Average
2386	50.22	-23.78	74	47.7	32.02	4.58	34.08	116	335	Peak
2462	104.3	-	-	101.69	32.07	4.62	34.08	116	335	Average
2462	108.98	-	-	106.37	32.07	4.62	34.08	116	335	Peak
2483.5	45.79	-8.21	54	43.14	32.09	4.64	34.08	116	335	Average
2483.5	57.43	-16.57	74	54.78	32.09	4.64	34.08	116	335	Peak
4924	46.42	-27.58	74	64.31	33.81	6.56	58.26	100	0	Peak
7386	47.73	-26.27	74	61.34	35.6	8.55	57.76	100	0	Peak

Test Mode :	Mode 4	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
36.75	20.5	-19.5	40	36.69	14.59	0.74	31.52	100	224	Peak
99.39	19.79	-23.71	43.5	40.89	9.39	1.09	31.58	-	-	Peak
129.63	20.55	-22.95	43.5	39.98	10.87	1.22	31.52	-	-	Peak
518.4	22.19	-23.81	46	33.57	17.38	2.27	31.03	-	-	Peak
604.5	22.55	-23.45	46	32.24	18.74	2.43	30.86	-	-	Peak
914.6	24.51	-21.49	46	29.83	22.12	3.02	30.46	-	-	Peak
2389.8	43.02	-10.98	54	40.5	32.02	4.58	34.08	136	70	Average
2389.8	63.63	-10.37	74	61.11	32.02	4.58	34.08	136	70	Peak
2412	91.66	-	-	89.12	32.03	4.59	34.08	136	70	Average
2412	103.86	-	-	101.32	32.03	4.59	34.08	136	70	Peak
2494	41.15	-12.85	54	38.49	32.1	4.64	34.08	136	70	Average
2494	53.8	-20.2	74	51.14	32.1	4.64	34.08	136	70	Peak
4824	45.07	-28.93	74	63.19	33.83	6.51	58.46	100	0	Peak



Test Mode :	Mode 4	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
36.75	28.48	-11.52	40	44.67	14.59	0.74	31.52	100	12	Peak
49.17	26.88	-13.12	40	49.48	8.17	0.8	31.57	-	-	Peak
95.07	24.01	-19.49	43.5	45.56	8.91	1.08	31.54	-	-	Peak
604.5	24.85	-21.15	46	34.54	18.74	2.43	30.86	-	-	Peak
778.1	24.45	-21.55	46	31.6	20.6	2.79	30.54	-	-	Peak
907.6	27.79	-18.21	46	33.28	21.96	3.02	30.47	-	-	Peak
2389.42	43.31	-10.69	54	40.79	32.02	4.58	34.08	135	59	Average
2389.42	62.02	-11.98	74	59.5	32.02	4.58	34.08	135	59	Peak
2412	94.01	-	-	91.47	32.03	4.59	34.08	135	59	Average
2412	106.64	-	-	104.1	32.03	4.59	34.08	135	59	Peak
2490	38.35	-15.65	54	35.69	32.1	4.64	34.08	135	59	Average
2490	49.98	-24.02	74	47.32	32.1	4.64	34.08	135	59	Peak
4824	50.95	-23.05	74	69.07	33.83	6.51	58.46	100	0	Peak

Test Mode :	Mode 5	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
34.86	20.96	-19.04	40	36.26	15.48	0.74	31.52	100	24	Peak
97.77	19.19	-24.31	43.5	40.46	9.2	1.09	31.56	-	-	Peak
134.76	23.3	-20.2	43.5	42.77	10.79	1.25	31.51	-	-	Peak
518.4	21.06	-24.94	46	32.44	17.38	2.27	31.03	-	-	Peak
754.3	23.1	-22.9	46	30.72	20.16	2.76	30.54	-	-	Peak
920.2	23.69	-22.31	46	28.86	22.25	3.03	30.45	-	-	Peak
2358	36.24	-17.76	54	33.76	31.99	4.57	34.08	118	76	Average
2358	46.94	-27.06	74	44.46	31.99	4.57	34.08	118	76	Peak
2437	91.08	-	-	88.49	32.06	4.61	34.08	118	76	Average
2437	103.66	-	-	101.07	32.06	4.61	34.08	118	76	Peak
2484	35.37	-18.63	54	32.72	32.09	4.64	34.08	118	76	Average
2484	46.69	-27.31	74	44.04	32.09	4.64	34.08	118	76	Peak
7311	37.27	-16.73	54	50.95	35.6	8.42	57.7	128	0	Average
7311	51.75	-22.25	74	65.43	35.6	8.42	57.7	128	0	Peak

Test Mode :	Mode 5	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
36.75	27.19	-12.81	40	43.38	14.59	0.74	31.52	100	36	Peak
87.78	21.72	-18.28	40	44.13	8.07	1.06	31.54	-	-	Peak
216.03	15.56	-30.44	46	36.21	9.3	1.53	31.48	-	-	Peak
518.4	22.88	-23.12	46	34.26	17.38	2.27	31.03	-	-	Peak
604.5	25.12	-20.88	46	34.81	18.74	2.43	30.86	-	-	Peak
777.4	24.02	-21.98	46	31.17	20.6	2.79	30.54	-	-	Peak
2360	35.84	-18.16	54	33.36	31.99	4.57	34.08	133	47	Average
2360	47.7	-26.3	74	45.22	31.99	4.57	34.08	133	47	Peak
2437	92.75	-	-	90.16	32.06	4.61	34.08	133	47	Average
2437	106.57	-	-	103.98	32.06	4.61	34.08	133	47	Peak
2484	38.46	-15.54	54	35.81	32.09	4.64	34.08	133	47	Average
2484	52.02	-21.98	74	49.37	32.09	4.64	34.08	133	47	Peak
4874	47.81	-26.19	74	65.82	33.82	6.53	58.36	100	0	Peak
7311	50.31	-23.69	74	63.99	35.6	8.42	57.7	100	0	Peak



Test Mode :	Mode 6	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
36.75	20.98	-19.02	40	37.17	14.59	0.74	31.52	100	240	Peak
99.39	20.49	-23.01	43.5	41.59	9.39	1.09	31.58	-	-	Peak
129.63	19.87	-23.63	43.5	39.3	10.87	1.22	31.52	-	-	Peak
518.4	21.46	-24.54	46	32.84	17.38	2.27	31.03	-	-	Peak
604.5	22.1	-23.9	46	31.79	18.74	2.43	30.86	-	-	Peak
880.3	23.83	-22.17	46	29.71	21.63	2.98	30.49	-	-	Peak
2370	34.53	-19.47	54	32.04	32	4.57	34.08	127	345	Average
2370	45.34	-28.66	74	42.85	32	4.57	34.08	127	345	Peak
2462	91.26	-	-	88.65	32.07	4.62	34.08	127	345	Average
2462	104.24	-	-	101.63	32.07	4.62	34.08	127	345	Peak
2483.5	46.24	-7.76	54	43.59	32.09	4.64	34.08	127	345	Average
2483.5	64.19	-9.81	74	61.54	32.09	4.64	34.08	127	345	Peak
7386	47.53	-26.47	74	61.14	35.6	8.55	57.76	-	-	Peak

Test Mode :	Mode 6	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
36.75	28.67	-11.33	40	44.86	14.59	0.74	31.52	100	35	Peak
98.31	20.69	-22.81	43.5	41.96	9.2	1.09	31.56	-	-	Peak
204.96	20.06	-23.44	43.5	41.55	8.49	1.48	31.46	-	-	Peak
518.4	22.7	-23.3	46	34.08	17.38	2.27	31.03	-	-	Peak
604.5	24.23	-21.77	46	33.92	18.74	2.43	30.86	-	-	Peak
777.4	24.38	-21.62	46	31.53	20.6	2.79	30.54	-	-	Peak
2384	38.07	-15.93	54	35.57	32	4.58	34.08	132	45	Average
2384	49.36	-24.64	74	46.86	32	4.58	34.08	132	45	Peak
2462	94.26	-	-	91.65	32.07	4.62	34.08	132	45	Average
2462	107.11	-	-	104.5	32.07	4.62	34.08	132	45	Peak
2483.85	50.5	-3.5	54	47.85	32.09	4.64	34.08	132	45	Average
2483.85	70.86	-3.14	74	68.21	32.09	4.64	34.08	132	45	Peak
4924	43.41	-30.59	74	61.3	33.81	6.56	58.26	100	0	Peak
7386	47.51	-26.49	74	61.12	35.6	8.55	57.76	100	0	Peak



Test Mode :	Mode 7	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
34.86	20.9	-19.1	40	36.2	15.48	0.74	31.52	100	15	Peak
98.31	20.1	-23.4	43.5	41.37	9.2	1.09	31.56	-	-	Peak
129.63	19.32	-24.18	43.5	38.75	10.87	1.22	31.52	-	-	Peak
518.4	21.07	-24.93	46	32.45	17.38	2.27	31.03	-	-	Peak
759.2	22.14	-23.86	46	29.66	20.25	2.77	30.54	-	-	Peak
902	25.97	-20.03	46	31.62	21.82	3.01	30.48	-	-	Peak
2389.99	49.24	-4.76	54	46.72	32.02	4.58	34.08	139	71	Average
2389.99	70.57	-3.43	74	68.05	32.02	4.58	34.08	139	71	Peak
2412	93.5	-	-	90.96	32.03	4.59	34.08	139	71	Average
2412	106.24	-	-	103.7	32.03	4.59	34.08	139	71	Peak
2490	42.39	-11.61	54	39.73	32.1	4.64	34.08	139	71	Average
2490	54.07	-19.93	74	51.41	32.1	4.64	34.08	139	71	Peak
4824	45.59	-28.41	74	63.71	33.83	6.51	58.46	100	0	Peak



Test Mode :	Mode 7	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
36.75	28.78	-11.22	40	44.97	14.59	0.74	31.52	100	347	Peak
98.31	21.34	-22.16	43.5	42.61	9.2	1.09	31.56	-	-	Peak
147.45	17.42	-26.08	43.5	37.28	10.37	1.27	31.5	-	-	Peak
604.5	24.56	-21.44	46	34.25	18.74	2.43	30.86	-	-	Peak
691.3	23.99	-22.01	46	32.98	19.1	2.64	30.73	-	-	Peak
880.3	24.42	-21.58	46	30.3	21.63	2.98	30.49	-	-	Peak
2389.04	52.12	-1.88	54	49.6	32.02	4.58	34.08	137	52	Average
2389.04	70.97	-3.03	74	68.45	32.02	4.58	34.08	137	52	Peak
2412	94.74	-	-	92.2	32.03	4.59	34.08	137	52	Average
2412	108.11	-	-	105.57	32.03	4.59	34.08	137	52	Peak
2494	41.51	-12.49	54	38.85	32.1	4.64	34.08	137	52	Average
2494	53.36	-20.64	74	50.7	32.1	4.64	34.08	137	52	Peak
4824	50	-24	74	68.12	33.83	6.51	58.46	100	0	Peak

Test Mode :	Mode 8	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
36.75	20.9	-19.1	40	37.09	14.59	0.74	31.52	100	360	Peak
99.93	20.27	-23.23	43.5	41.37	9.39	1.09	31.58	-	-	Peak
129.63	19.52	-23.98	43.5	38.95	10.87	1.22	31.52	-	-	Peak
604.5	22.4	-23.6	46	32.09	18.74	2.43	30.86	-	-	Peak
672.4	21.85	-24.15	46	30.96	19.02	2.62	30.75	-	-	Peak
909.7	24.01	-21.99	46	29.45	22	3.02	30.46	-	-	Peak
2356	35.32	-18.68	54	32.87	31.99	4.55	34.09	112	67	Average
2356	48.52	-25.48	74	46.07	31.99	4.55	34.09	112	67	Peak
2437	92.81	-	-	90.22	32.06	4.61	34.08	112	67	Average
2437	106.99	-	-	104.4	32.06	4.61	34.08	112	67	Peak
2484	38.29	-15.71	54	35.64	32.09	4.64	34.08	112	67	Average
2484	53.39	-20.61	74	50.74	32.09	4.64	34.08	112	67	Peak
7311	46.97	-27.03	74	60.65	35.6	8.42	57.7	100	0	Peak

Test Mode :	Mode 8	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
36.75	27.55	-12.45	40	43.74	14.59	0.74	31.52	100	142	Peak
88.32	20.33	-23.17	43.5	42.74	8.07	1.06	31.54	-	-	Peak
216.03	15.21	-30.79	46	35.86	9.3	1.53	31.48	-	-	Peak
604.5	25.15	-20.85	46	34.84	18.74	2.43	30.86	-	-	Peak
691.3	23.74	-22.26	46	32.73	19.1	2.64	30.73	-	-	Peak
777.4	24.59	-21.41	46	31.74	20.6	2.79	30.54	-	-	Peak
2360	36.54	-17.46	54	34.06	31.99	4.57	34.08	133	48	Average
2360	47.94	-26.06	74	45.46	31.99	4.57	34.08	133	48	Peak
2437	95.11	-	-	92.52	32.06	4.61	34.08	133	48	Average
2437	108.26	-	-	105.67	32.06	4.61	34.08	133	48	Peak
2484	35.83	-18.17	54	33.18	32.09	4.64	34.08	133	48	Average
2484	48.75	-25.25	74	46.1	32.09	4.64	34.08	133	48	Peak
4874	48.34	-25.66	74	66.35	33.82	6.53	58.36	100	0	Peak
7311	48.87	-25.13	74	62.55	35.6	8.42	57.7	100	0	Peak



Test Mode :	Mode 9	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
36.75	20.87	-19.13	40	37.06	14.59	0.74	31.52	100	21	Peak
98.31	20.28	-23.22	43.5	41.55	9.2	1.09	31.56	-	-	Peak
129.63	20.4	-23.1	43.5	39.83	10.87	1.22	31.52	-	-	Peak
518.4	21.22	-24.78	46	32.6	17.38	2.27	31.03	-	-	Peak
604.5	22.6	-23.4	46	32.29	18.74	2.43	30.86	-	-	Peak
898.5	24.4	-21.6	46	30.1	21.77	3.01	30.48	-	-	Peak
2382	38.19	-15.81	54	35.69	32	4.58	34.08	113	66	Average
2382	48.8	-25.2	74	46.3	32	4.58	34.08	113	66	Peak
2462	93.01	-	-	90.4	32.07	4.62	34.08	113	66	Average
2462	105.66	-	-	103.05	32.07	4.62	34.08	113	66	Peak
2484.42	52.37	-1.63	54	49.72	32.09	4.64	34.08	113	66	Average
2484.42	70.26	-3.74	74	67.61	32.09	4.64	34.08	113	66	Peak
7386	46.82	-27.18	74	60.43	35.6	8.55	57.76	100	0	Peak



Test Mode :	Mode 9	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	47~48%
Test Engineer :	Lewis He	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
36.75	27.14	-12.86	40	43.33	14.59	0.74	31.52	100	320	Peak
87.78	20.12	-19.88	40	42.53	8.07	1.06	31.54	-	-	Peak
216.03	15.68	-30.32	46	36.33	9.3	1.53	31.48	-	-	Peak
604.5	24.95	-21.05	46	34.64	18.74	2.43	30.86	-	-	Peak
691.3	24.26	-21.74	46	33.25	19.1	2.64	30.73	-	-	Peak
777.4	24.93	-21.07	46	32.08	20.6	2.79	30.54	-	-	Peak
2386	35.08	-18.92	54	32.56	32.02	4.58	34.08	134	75	Average
2386	46.91	-27.09	74	44.39	32.02	4.58	34.08	134	75	Peak
2462	91.16	-	-	88.55	32.07	4.62	34.08	134	75	Average
2462	103.82	-	-	101.21	32.07	4.62	34.08	134	75	Peak
2486.13	49.8	-4.2	54	47.15	32.09	4.64	34.08	134	75	Average
2486.13	70.15	-3.85	74	67.5	32.09	4.64	34.08	134	75	Peak
7386	47.28	-26.72	74	60.89	35.6	8.55	57.76	100	0	Peak

3.8 Antenna Requirements

3.8.1 Standard Applicable

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

3.8.2 Antenna Connected Construction

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

3.8.3 Antenna Gain

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	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)
Thermal Chamber	Ten Billion	TTH-D35P	TBN-930701	N/A	Jul. 27, 2011	Jul. 26, 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-1000 W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
Spectrum Analyzer	R&S	FSP30	101352	9KHz-30GHz	Nov. 03, 2010	Nov. 02, 2011	Radiation (03CH05-HY)
COM-POWER	Double Ridge Horn	AH-118	701030	1HGz~18GHz	N/A	N/A	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2725	30MHz ~ 1GHz	Nov. 06, 2010	Nov. 05, 2011	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 - 360 degree	N/A	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m - 4 m	N/A	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz ~ 18GHz	Aug. 04, 2011	Aug. 03, 2012	Radiation (03CH05-HY)
COM-POWER	COM-POWER	PA-103	161075	1KHz - 1GHz	Mar. 29, 2011	Mar. 28, 2012	Radiation (03CH05-HY)
Pre Amplifier	EMCI	EMC05184 5	SN980048	1HGz~18GHz	Jul. 19, 2011	Jul. 18, 2012	Radiation (03CH05-HY)
Preamplifier	MITEQ	AMF-7D-00 101800-30-10P	159087	1HGz~18GHz	Feb. 21, 2011	Feb. 20, 2012	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz- 26.5GHz	Apr. 14, 2011	Apr. 13, 2012	Radiation (03CH05-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 EP182919 as below.