

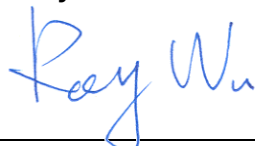
FCC RF Test Report

APPLICANT : Option nv
EQUIPMENT : GTM671W
BRAND NAME : Option
MODEL NAME : MO6712
FCC ID : NCMOMO6712
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Nov. 26, 2010 and completely tested on May. 04, 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:



Roy Wu / Manager



SPORTON INTERNATIONAL INC.

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

SPORTON INTERNATIONAL INC.

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FCC ID : NCMOMO6712

Page Number : 1 of 96

Report Issued Date : May. 05, 2011

Report Version : Rev. 02



TABLE OF CONTENTS

REVISION HISTORY	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant	5
1.2 Manufacturer	5
1.3 Feature of Equipment Under Test	5
1.4 Testing Site	6
1.5 Applied Standards	6
1.6 Ancillary Equipment List	6
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	7
2.1 RF Power	7
2.2 Test Mode	8
2.3 Connection Diagram of Test System	9
2.4 RF Utility	10
3 TEST RESULT	11
3.1 6dB and 99% Bandwidth Measurement	11
3.2 Output Power Measurement	28
3.3 Band Edges Measurement	30
3.4 Spurious Emission Measurement	40
3.5 Power Spectral Density Measurement	53
3.6 AC Conducted Emission Measurement	62
3.7 Radiated Emission Measurement	66
3.8 Antenna Requirements	93
4 LIST OF MEASURING EQUIPMENT	94
5 UNCERTAINTY OF EVALUATION	95
APPENDIX A. PHOTOGRAPHS OF EUT	
APPENDIX B. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR0N2627	Rev. 01	Initial issue of report	Apr. 20, 2011
FR0N2627	Rev. 02	Update report for adding conducted emission data	May. 05, 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 4.4.1	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 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 15.3 dB at 0.51 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 2.15 dB at 2483.66 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Option nv

Gaston Geenslaan 14, 3001 Leuven, Belgium

1.2 Manufacturer

Option nv

Gaston Geenslaan 14, 3001 Leuven, Belgium

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	GTM671W
Brand Name	Option
Model Name	MO6712
FCC ID	NCMOMO6712
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 : 17.07 dBm (0.051 W) 802.11g : 21.64 dBm (0.146 W) 802.11n (BW 20MHz) : 19.34 dBm (0.086 W) 802.11n (BW 40MHz) : 19.40 dBm (0.087 W)
Antenna Type	Dipole Antenna with gain 0 dBi
HW Version	3.1
SW Version	1.7.3.0
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

Remark:

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

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH07-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

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 (Certification), recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
3.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A
4.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
5.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
6.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	16.91	-	-	-
CH 06	2437 MHz	16.93	-	-	-
CH 11	2462 MHz	17.07	17.01	17.03	16.9

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	20.85	21.13	21.19	21.52	21.61	21.24	20.85	21.64
CH 06	2437 MHz	20.82	-	-	-	-	-	-	21.24
CH 11	2462 MHz	20.77	-	-	-	-	-	-	21.07

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412 MHz	18.63	-	-	-	-	-	-	19.08
CH 06	2437 MHz	18.88	19.30	19.11	19.21	19.21	19.31	19.32	19.34
CH 11	2462 MHz	18.77	-	-	-	-	-	-	19.22

Channel	Frequency	2.4GHz 802.11n (BW 40MHz) RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 03	2422 MHz	18.76	19.03	19.28	19.01	19.19	18.57	18.60	19.40
CH 06	2437 MHz	18.72	-	-	-	-	-	-	18.82
CH 09	2452 MHz	18.62	-	-	-	-	-	-	19.05

Remark:

1. The data rates of WLAN 802.11b/g/n were set in 1Mbps for 802.11b, 54Mbps for 802.11g, MCS7 for 802.11n (BW 20MHz), and MCS7 for 802.11n (BW 40MHz) for all the test cases due to the highest RF output power.
2. The EUT is programmed to transmit signals continuously for all testing.

2.2 Test Mode

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

Pre-scanned tests were conducted to determine the final configuration from all possible combinations.

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

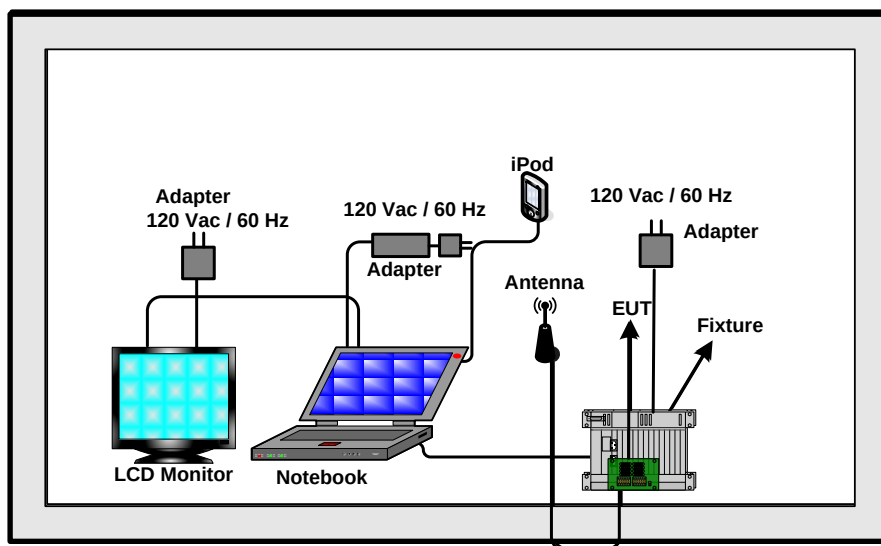
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 MHz Mode 8: 802.11n (BW 20M)_CH06_2437 MHz Mode 9: 802.11n (BW 20M)_CH11_2462 MHz Mode 10: 802.11n (BW 40M)_CH03_2422 MHz Mode 11: 802.11n (BW 40M)_CH06_2437 MHz Mode 12: 802.11n (BW 40M)_CH09_2452 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 Mode 10: 802.11n (BW 40M)_CH03_2422 MHz Mode 11: 802.11n (BW 40M)_CH06_2437 MHz Mode 12: 802.11n (BW 40M)_CH09_2452 MHz
AC Conducted Emission	Mode 1 : GSM850 Idle + WLAN Idle + GPS Rx + Adapter	

Note :

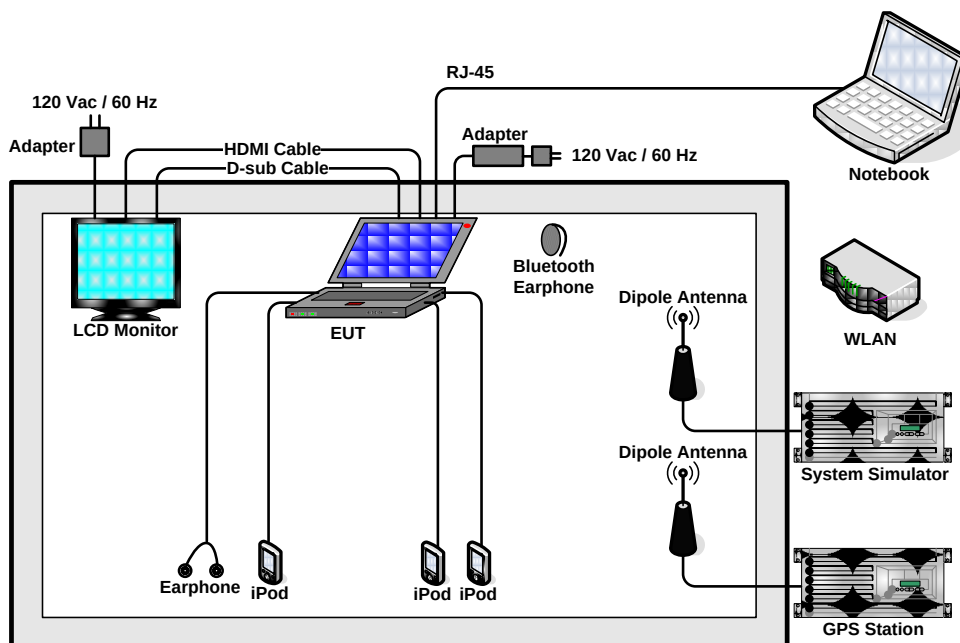
1. Because there are individual antennas for each WWAN and WLAN, the co-location test modes are not required

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>





2.4 RF Utility

The programmed RF utility "wifi.Tx.bat" 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.

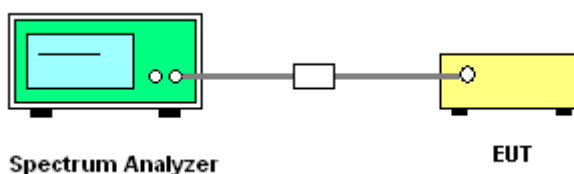
3.1.2 Measuring Instruments

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, Video Bandwidth (VBW) = 300kHz. 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

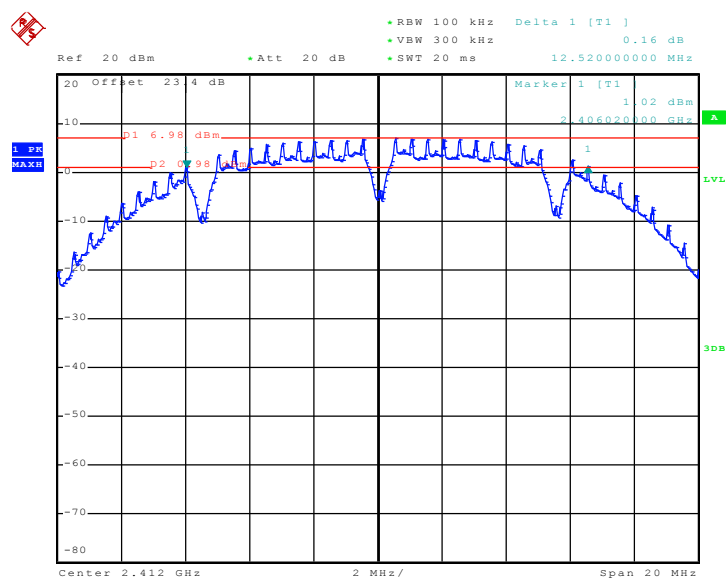


3.1.5 Test Result of 6dB Bandwidth

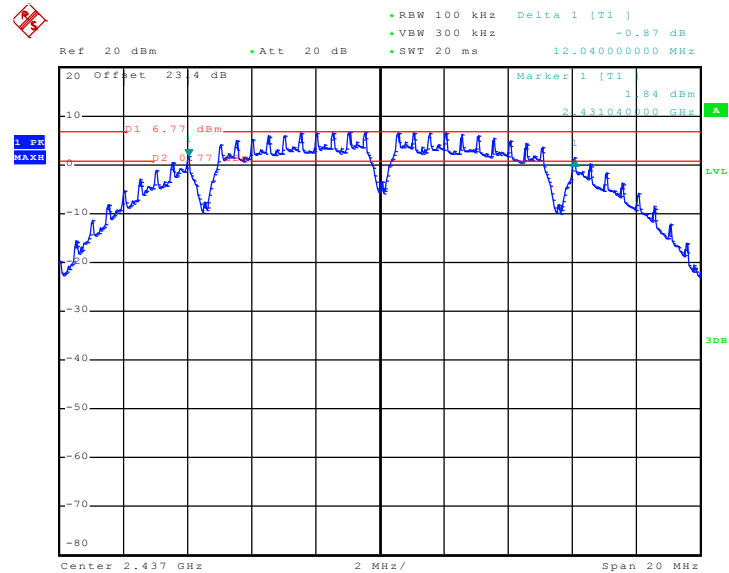
Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	12.52	0.5	Pass
06	2437	12.04	0.5	Pass
11	2462	12.54	0.5	Pass

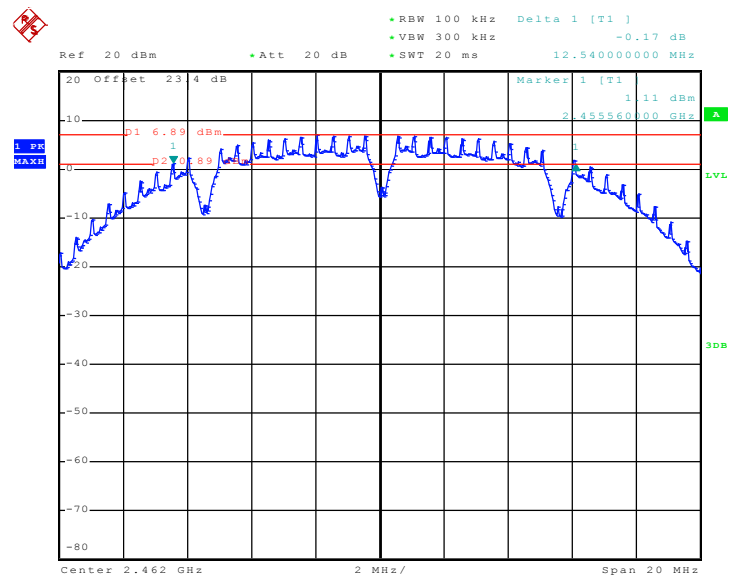
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 26.JAN.2011 14:08:09

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


Date: 26.JAN.2011 14:22:06

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


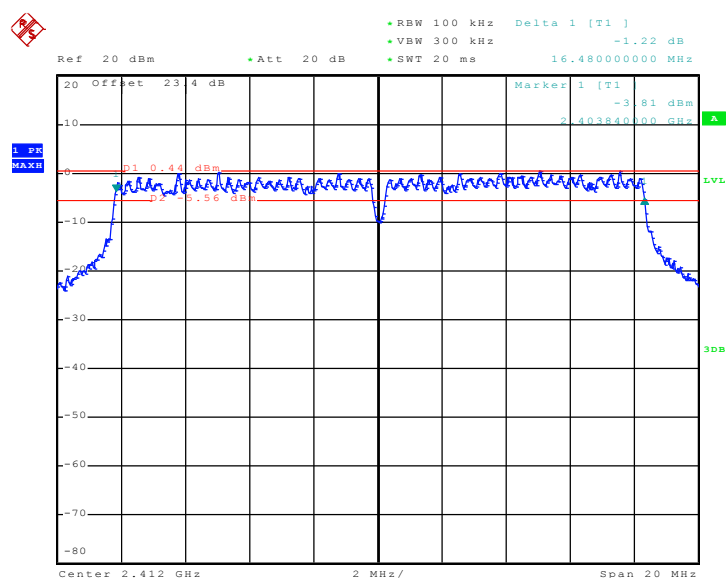
Date: 26.JAN.2011 08:18:13



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

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.48	0.5	Pass
06	2437	16.46	0.5	Pass
11	2462	16.50	0.5	Pass

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



Date: 26.JAN.2011 09:22:13



• RBW 100 kHz Delta 1 [T1]
 • VBW 300 kHz -1.23 dB
 • SWT 20 ms 16.46000000 MHz

Ref 20 dBm Att 20 dB

20 Offset 23.4 dB
 Marker 1 [T1]
 -3.07 dBm
 2.42882000 GHz

LVL
 MAX

1.02 dBm
 -1.23 dBm

Center 2.437 GHz 2 MHz/ Span 20 MHz

Date: 26.JAN.2011 09:26:54

• RBW 100 kHz Delta 1 [T1]
 • VBW 300 kHz -0.38 dB
 • SWT 20 ms 16.50000000 MHz

Ref 20 dBm Att 20 dB

20 Offset 23.4 dB

Marker 1 [T1]
 -4.49 dBm
 2.453800000 GHz

LVL
 3dB

1.99
 MAX

Center 2.462 GHz Span 20 MHz

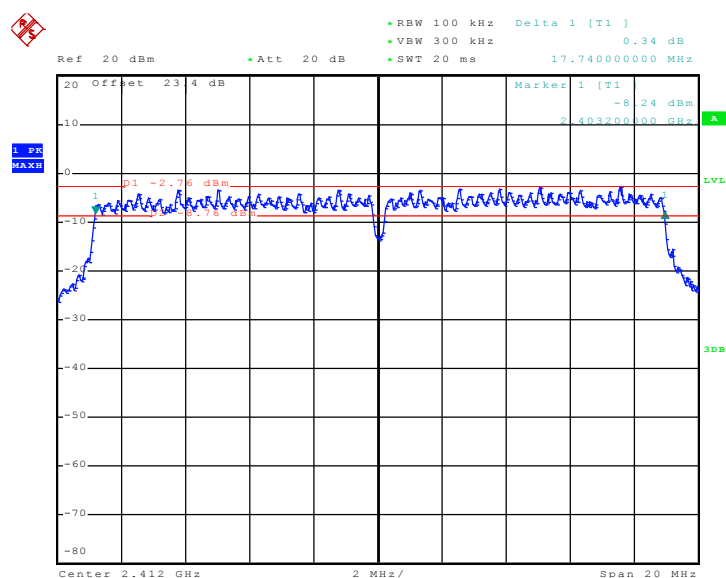
Date: 26.JAN.2011 09:31:11



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	17.74	0.5	Pass
06	2437	17.70	0.5	Pass
11	2462	17.70	0.5	Pass

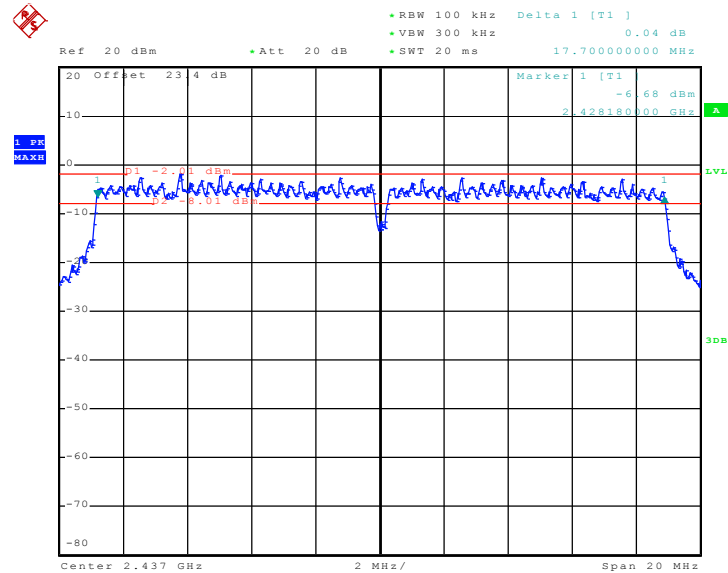
Mode 7 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 01



Date: 26.JAN.2011 09:50:19

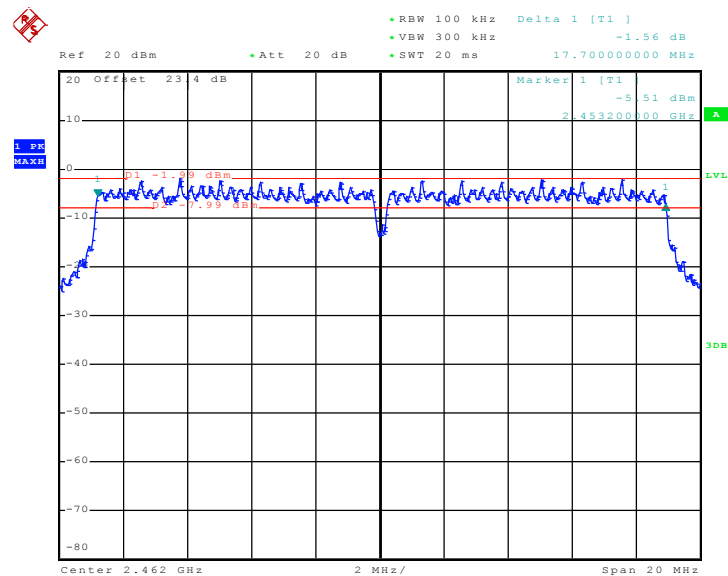


Mode 8 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 06



Date: 26.JAN.2011 10:10:50

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



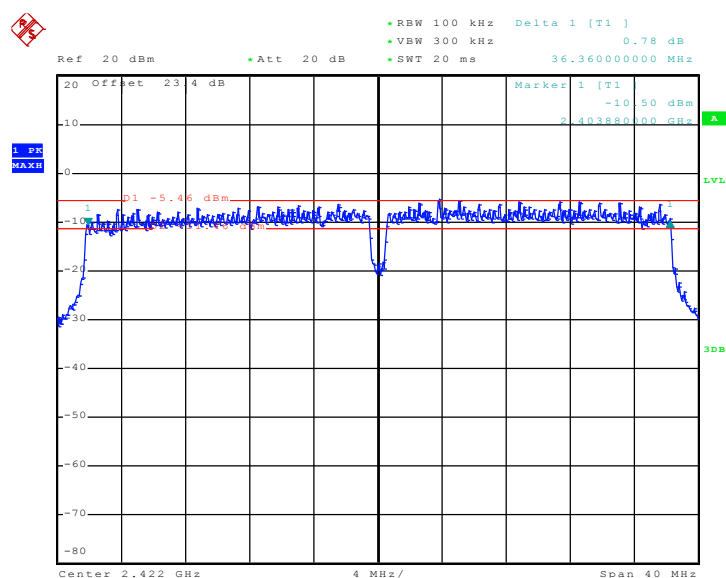
Date: 26.JAN.2011 10:23:50



Test Mode :	Mode 10, 11, 12	Temperature :	24~26°C
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n (BW 40MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
03	2422	36.36	0.5	Pass
06	2437	36.40	0.5	Pass
09	2452	36.52	0.5	Pass

Mode 10 : 6 dB Bandwidth Plot on 802.11n(BW 40MHz) Channel 03



Date: 26.JAN.2011 11:36:41



• RBW 100 kHz Delta 1 [T1]
 • VBW 300 kHz 1.20 dB
 • SWT 20 ms 36.40000000 MHz

Ref 20 dBm Att 20 dB

20 Offset 23.4 dB
 -10
 -20
 -30
 -40
 -50
 -60
 -70
 -80

Marker 1 [T1] -11.17 dBm
 2.43800000 GHz

1. PRG
 MAXM

-5.8 dBm
 -11.8 dBm

LVL
 3dB

Center 2.437 GHz Span 40 MHz

Date: 26.JAN.2011 11:07:37

• RBW 100 kHz Delta 1 [T1]
 • VSW 300 kHz 0.20 dB
 • SWT 20 ms 36.52000000 MHz

Ref 20 dBm Att 20 dB

20 Offset 23 4 dB
 -10
 -0
 -1
 -2
 -30
 -40
 -50
 -60
 -70
 -80

Marker 1 (T1)
 -10 63 dBm
 2.433760000 GHz

1.999
 MAXM

D1 -4.66 dBm

1

LVL
 3DB

Center 2.452 GHz 4 MHz/ Span 40 MHz

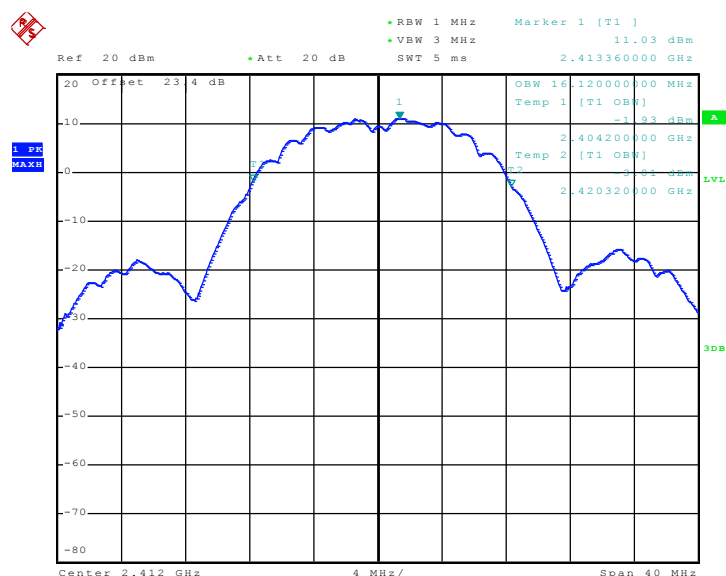
Date: 26.JAN.2011 11:22:00

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	16.12	Pass
06	2437	16.04	Pass
11	2462	17.04	Pass

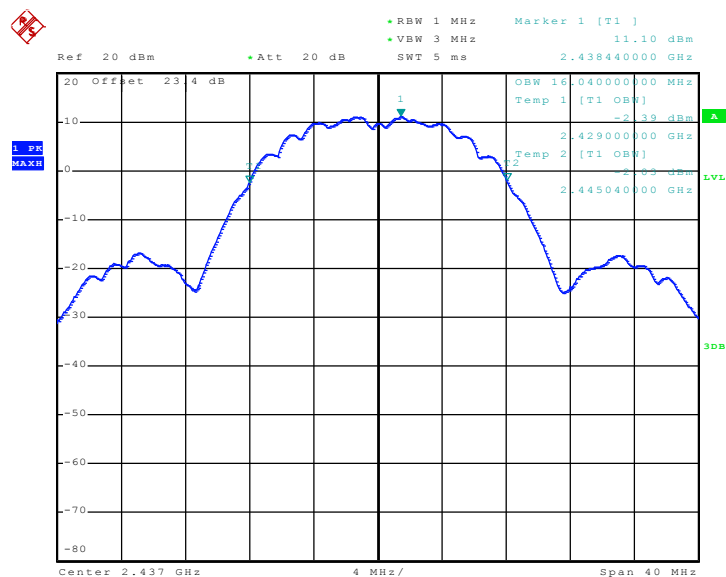
Mode 1 : 99% Occupied Bandwidth Plot on 802.11b Channel 01



Date: 26.JAN.2011 14:09:43

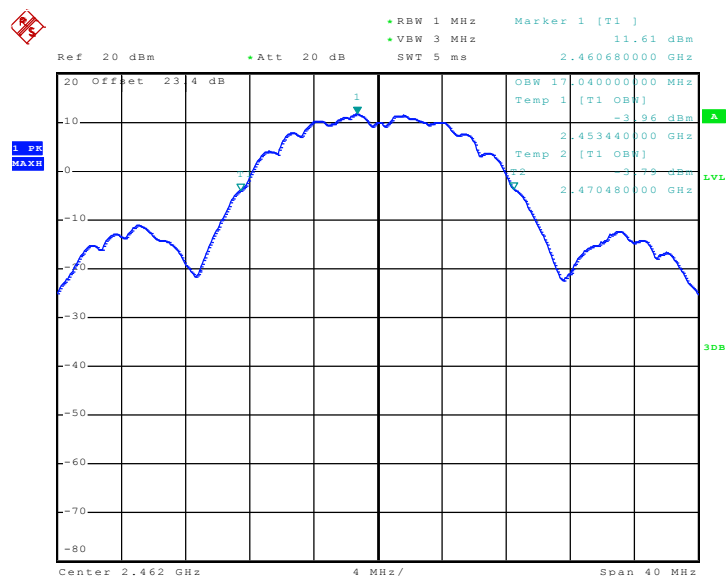


Mode 2 : 99% Occupied Bandwidth Plot on 802.11b Channel 06



Date: 26.JAN.2011 14:22:35

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



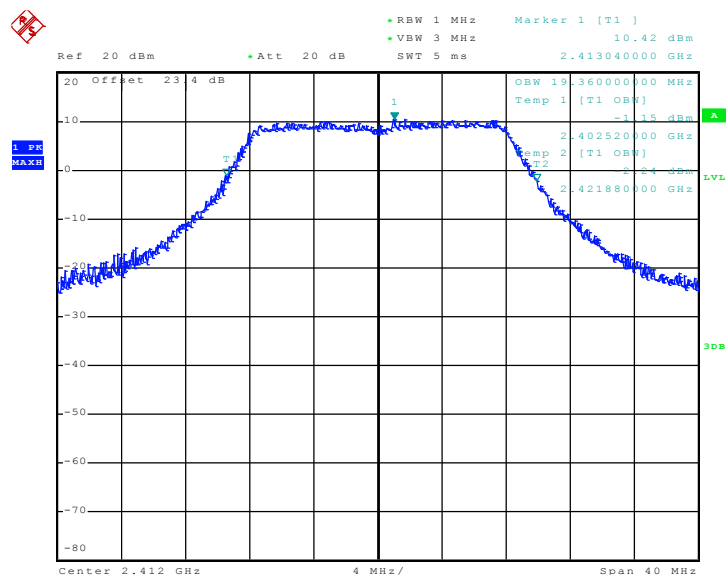
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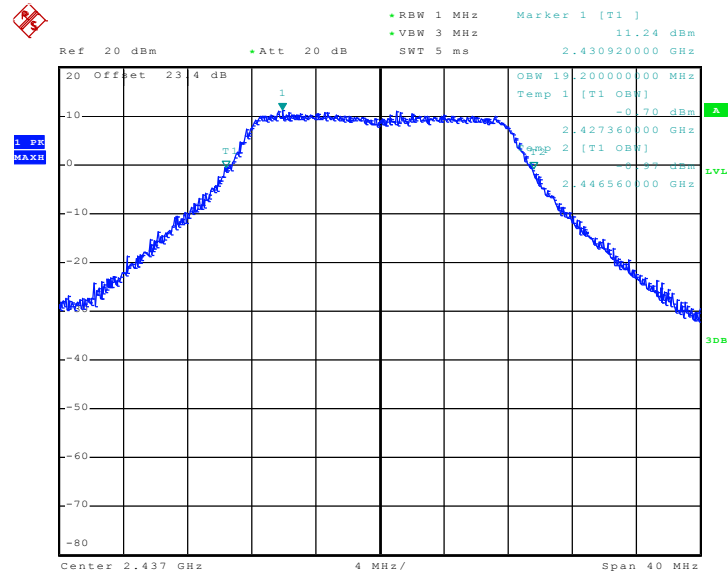
Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	19.36	Pass
06	2437	19.20	Pass
11	2462	19.52	Pass

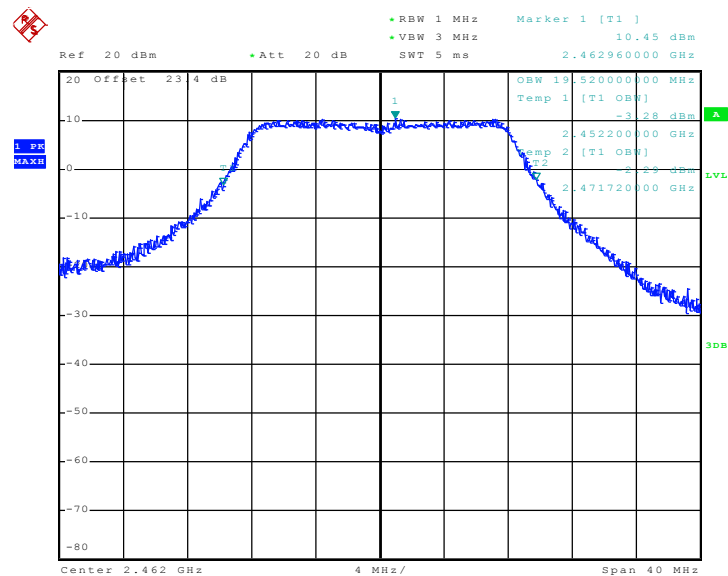
Mode 4 : 99% Occupied Bandwidth Plot on 802.11g Channel 01



Date: 26.JAN.2011 09:23:52

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


Date: 26.JAN.2011 09:27:26

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


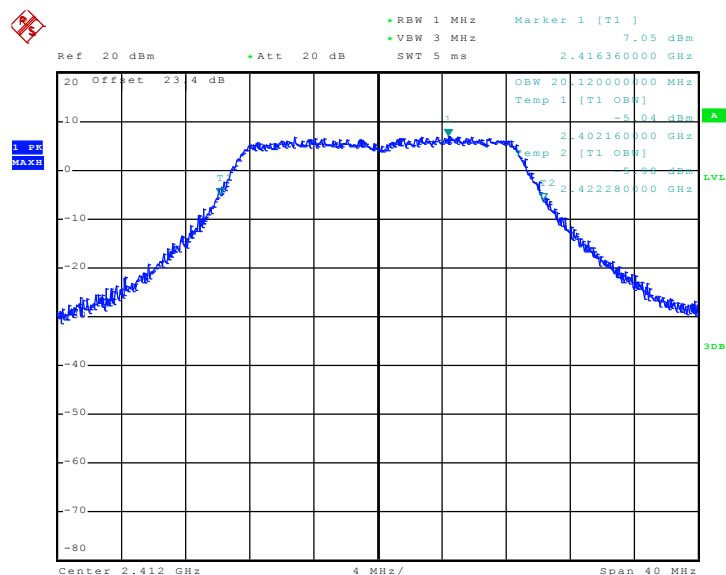
Date: 26.JAN.2011 09:32:26



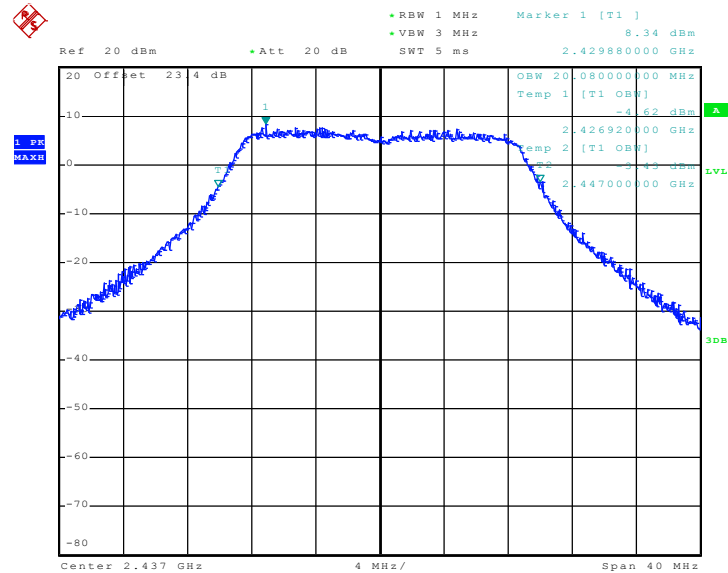
Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	20.12	Pass
06	2437	20.08	Pass
11	2462	20.20	Pass

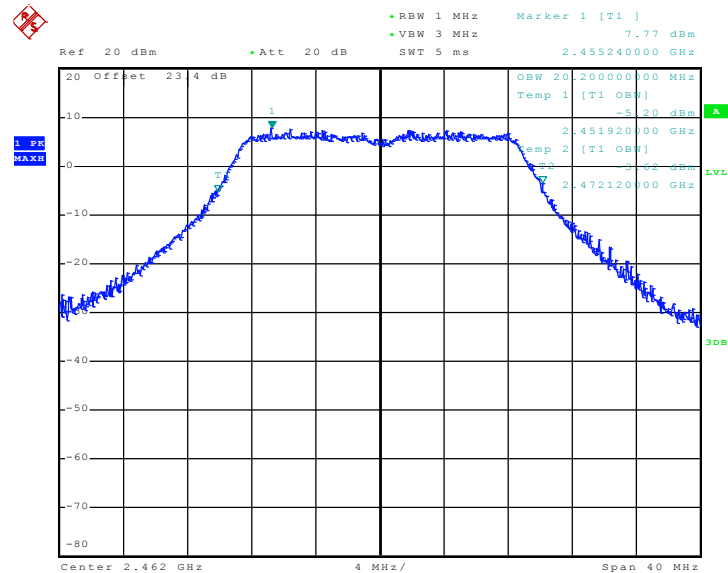
Mode 7 : 99% Occupied Bandwidth Plot on 802.11n(BW 20MHz) Channel 01



Date: 26.JAN.2011 09:51:59

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


Date: 26.JAN.2011 10:11:22

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


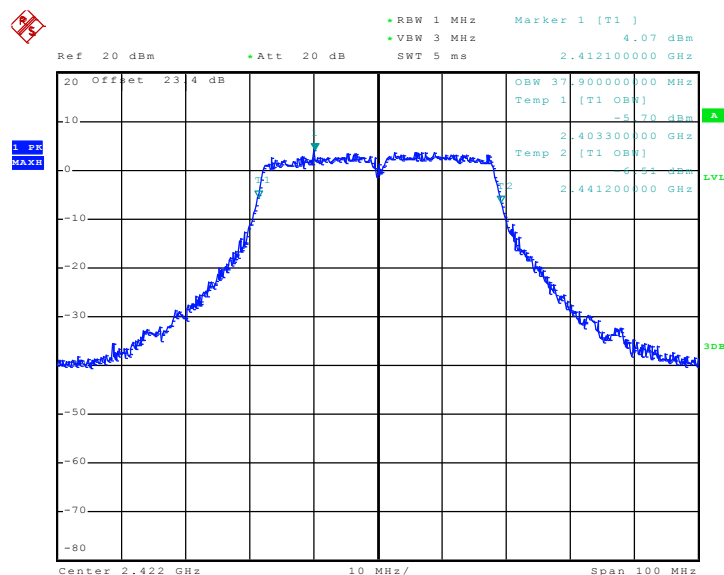
Date: 26.JAN.2011 10:25:04



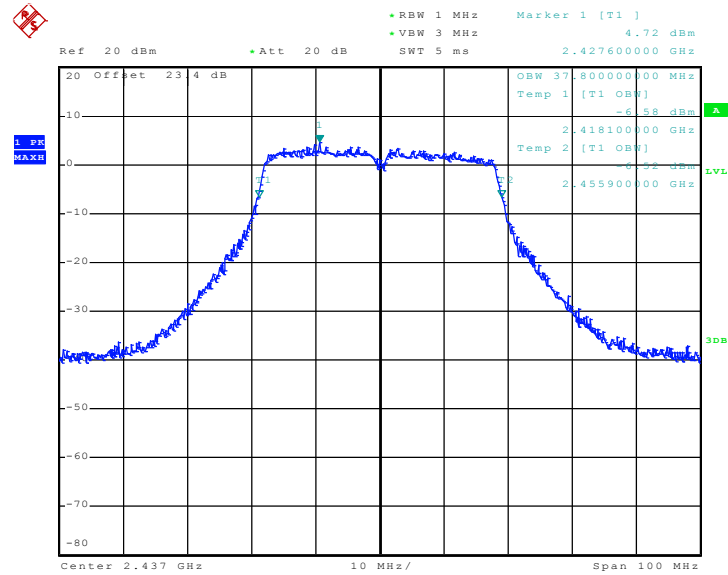
Test Mode :	Mode 10, 11, 12	Temperature :	24~26°C
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 99% Occupied Bandwidth (MHz)	Pass/Fail
03	2422	37.90	Pass
06	2437	37.80	Pass
09	2452	38.30	Pass

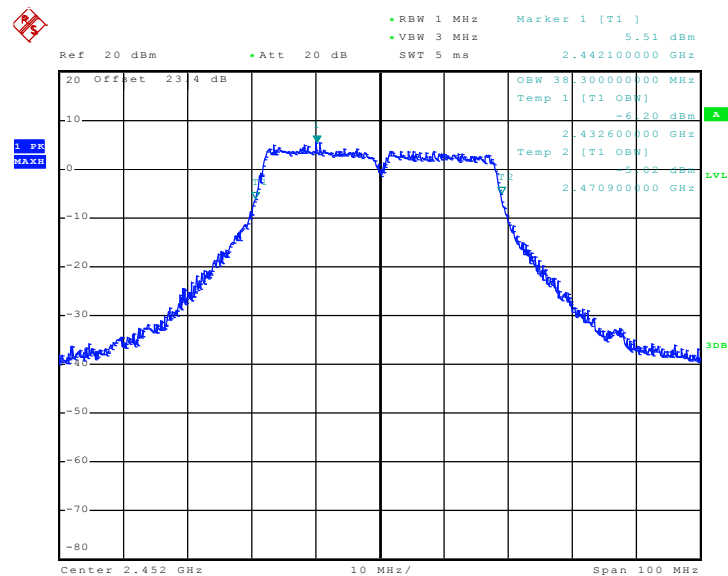
Mode 10 : 99% Occupied Bandwidth Plot on 802.11n(BW 40MHz) Channel 03



Date: 26.JAN.2011 11:38:25

Mode 11 : 99% Occupied Bandwidth Plot on 802.11n(BW 40MHz) Channel 06


Date: 26.JAN.2011 11:08:09

Mode 12 : 99% Occupied Bandwidth Plot on 802.11n(BW 40MHz) Channel 09


Date: 26.JAN.2011 11:23:16

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.

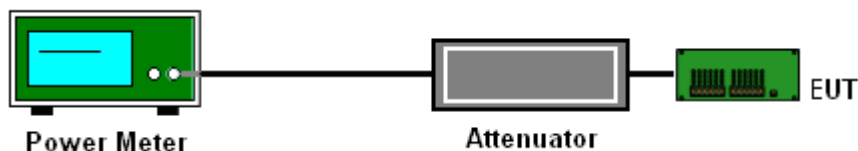
3.2.2 Measuring Instruments

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	16.91	30	Pass
06	2437	16.93	30	Pass
11	2462	17.07	30	Pass

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

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.64	30	Pass
06	2437	21.24	30	Pass
11	2462	21.07	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	19.08	30	Pass
06	2437	19.34	30	Pass
11	2462	19.22	30	Pass

Test Mode :	Mode 10, 11, 12	Temperature :	24~26
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53

Channel	Frequency (MHz)	802.11n (BW 40MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	19.40	30	Pass
06	2437	18.82	30	Pass
09	2452	19.05	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

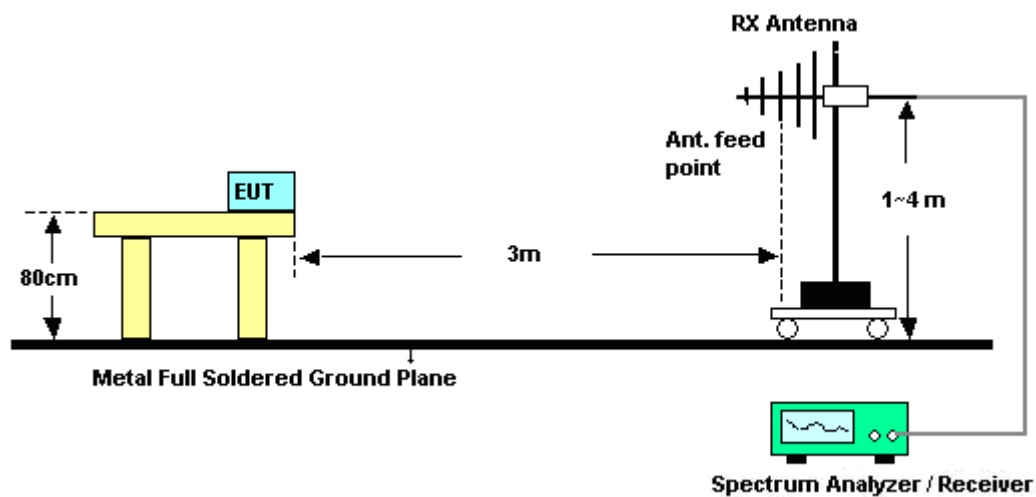
See list of measuring instruments of this test report.

3.3.3 Test Procedures

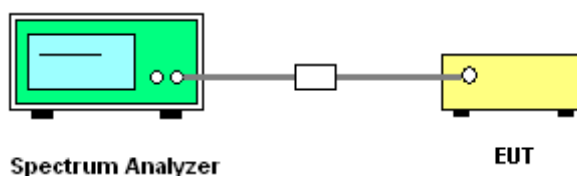
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) $\geq$ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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 = 1MHz, Sweep = Auto for Peak detector, RBW = 1MHz, VBW = 10 Hz, Sweep=Auto for Average detector. 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 :	23~24℃
Test Band :	802.11b	Relative Humidity :	50~51%
Test Channel :	01	Test Engineer :	Ivan Chiang

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
2386.38	47.16	-26.84	74	42.8	32.18	6.03	33.85	100	234	Peak
2386.38	36.68	-17.32	54	32.32	32.18	6.03	33.85	100	234	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
2385.81	50.34	-23.66	74	45.98	32.18	6.03	33.85	100	63	Peak
2385.81	41.22	-12.78	54	36.86	32.18	6.03	33.85	100	63	Average

Test Mode :	Mode 3	Temperature :	23~24℃
Test Band :	802.11b	Relative Humidity :	50~51%
Test Channel :	11	Test Engineer :	Ivan Chiang

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	48.48	-25.52	74	43.92	32.28	6.18	33.9	200	259	Peak
2483.5	38.01	-15.99	54	33.45	32.28	6.18	33.9	200	259	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	52.95	-21.05	74	48.39	32.28	6.18	33.9	122	297	Peak
2483.5	44.01	-9.99	54	39.45	32.28	6.18	33.9	122	297	Average

Test Mode :	Mode 4	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	50~51%
Test Channel :	01	Test Engineer :	Ivan Chiang

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
2389.42	60.79	-13.21	74	56.43	32.18	6.03	33.85	100	234	Peak
2389.42	41.42	-12.58	54	37.06	32.18	6.03	33.85	100	234	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	69.39	-4.61	74	65.03	32.18	6.03	33.85	100	64	Peak
2389.99	48.93	-5.07	54	44.57	32.18	6.03	33.85	100	64	Average

Test Mode :	Mode 6	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	50~51%
Test Channel :	11	Test Engineer :	Ivan Chiang

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
2492.02	59.48	-14.52	74	54.9	32.3	6.18	33.9	144	236	Peak
2492.02	39	-15	54	34.42	32.3	6.18	33.9	144	236	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	64.71	-9.29	74	60.15	32.28	6.18	33.9	106	357	Peak
2483.5	45.56	-8.44	54	41	32.28	6.18	33.9	106	357	Average



Test Mode :	Mode 7	Temperature :	23~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~51%
Test Channel :	01	Test Engineer :	Ivan Chiang

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	64.24	-9.76	74	59.88	32.18	6.03	33.85	101	26	Peak
2389.99	43.55	-10.45	54	39.19	32.18	6.03	33.85	101	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
2389.42	69.33	-4.67	74	64.97	32.18	6.03	33.85	100	353	Peak
2389.42	48.79	-5.21	54	44.43	32.18	6.03	33.85	100	353	Average

Test Mode :	Mode 9	Temperature :	23~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~51%
Test Channel :	11	Test Engineer :	Ivan Chiang

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
2483.66	60.37	-13.63	74	55.81	32.28	6.18	33.9	100	305	Peak
2483.66	43.46	-10.54	54	38.9	32.28	6.18	33.9	100	305	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	66.92	-7.08	74	62.36	32.28	6.18	33.9	100	354	Peak
2483.5	49.94	-4.06	54	45.38	32.28	6.18	33.9	100	354	Average

Test Mode :	Mode 10	Temperature :	23~24°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	50~51%
Test Channel :	03	Test Engineer :	Ivan Chiang

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	64.49	-9.51	74	60.13	32.18	6.03	33.85	100	59	Peak
2389.99	47.01	-6.99	54	42.65	32.18	6.03	33.85	100	59	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	69.82	-4.18	74	65.46	32.18	6.03	33.85	103	357	Peak
2389.99	51.69	-2.31	54	47.33	32.18	6.03	33.85	103	357	Average

Test Mode :	Mode 12	Temperature :	23~24°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	50~51%
Test Channel :	09	Test Engineer :	Ivan Chiang

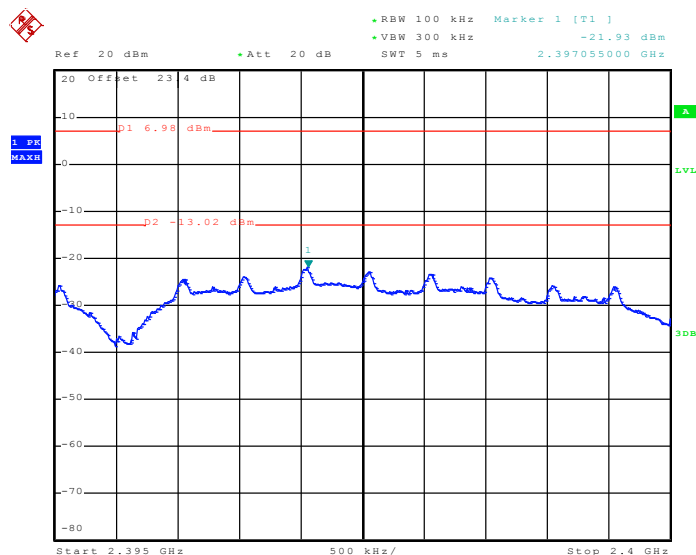
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.66	56.77	-17.23	74	52.21	32.28	6.18	33.9	100	58	Peak
2483.66	40.39	-13.61	54	35.83	32.28	6.18	33.9	100	58	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
2483.66	71.09	-2.91	74	66.53	32.28	6.18	33.9	100	355	Peak
2483.66	51.85	-2.15	54	47.29	32.28	6.18	33.9	100	355	Average

3.3.6 Test Plots of Conducted Band Edges

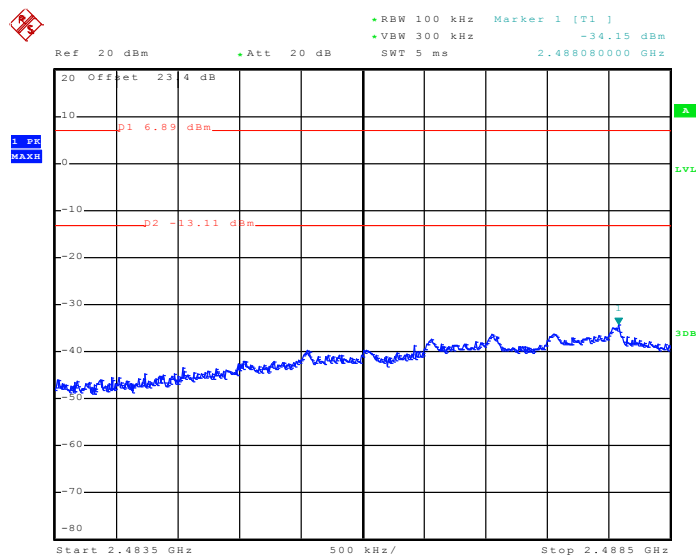
Test Mode :	Mode 1 and 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

Low Band Edge Plot on 802.11b Channel 01



Date: 26.JAN.2011 14:09:17

High Band Edge Plot on 802.11b Channel 11



Date: 26.JAN.2011 08:19:01



Low Band Edge Plot on 802.11g Channel 01



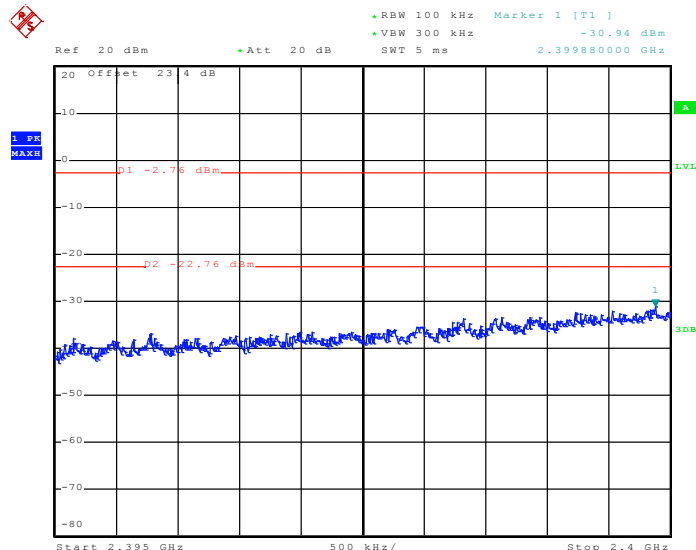
High Band Edge Plot on 802.11g Channel 11





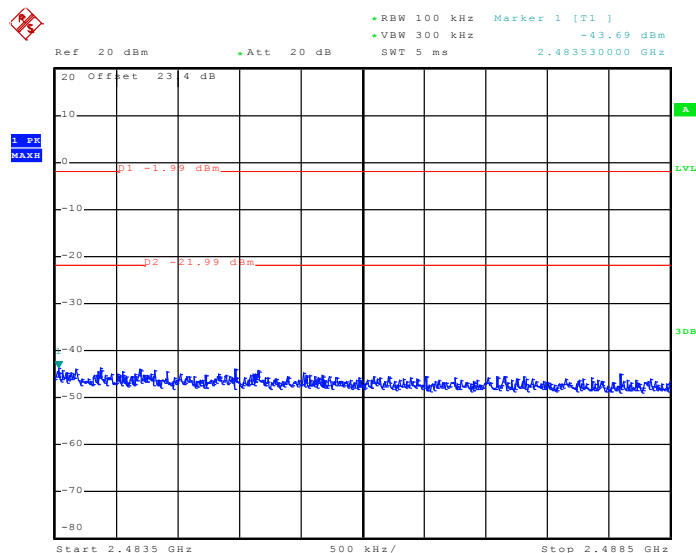
Test Mode :	Mode 7 and 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

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



Date: 26.JAN.2011 09:51:32

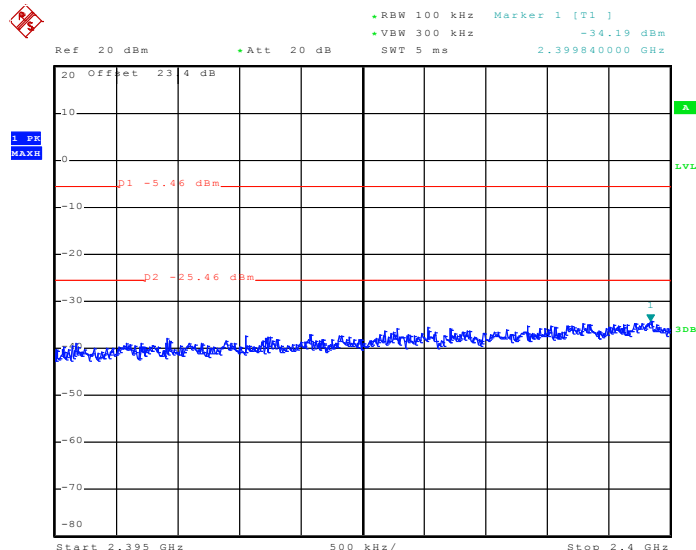
High Band Edge Plot on 802.11n (BW 20MHz) Channel 11



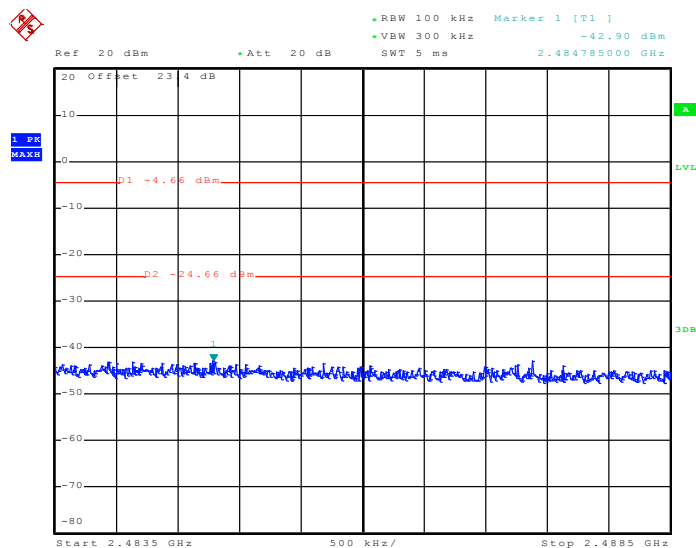
Date: 26.JAN.2011 10:24:38



Test Mode :	Mode 10 and 12	Temperature :	24~26°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	50~53%
Test Channel :	03 and 09	Test Engineer :	Pinkston Tu

Low Band Edge Plot on 802.11n (BW 40MHz) Channel 03

Date: 26.JAN.2011 11:37:57

High Band Edge Plot on 802.11n (BW 40MHz) Channel 09

Date: 26.JAN.2011 11:22:27

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.

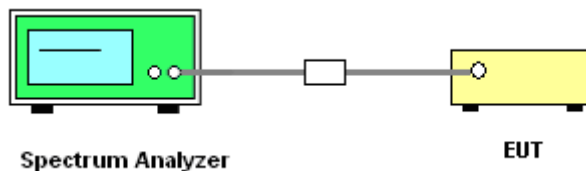
3.4.2 Measuring Instruments

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) = 300 kHz, 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.

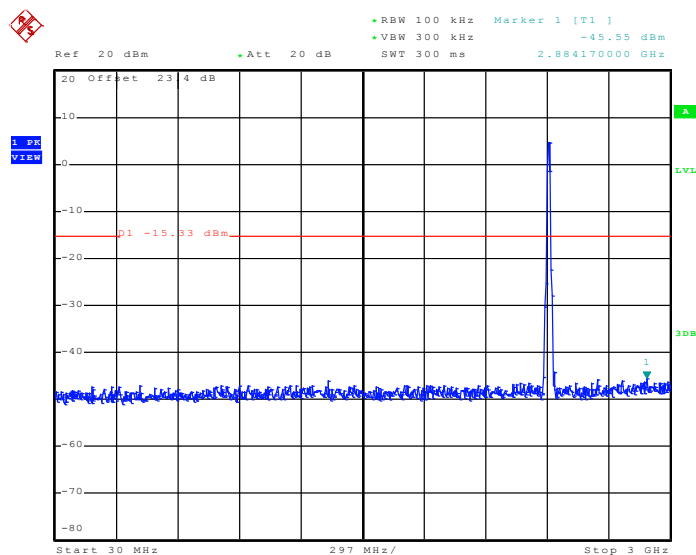
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

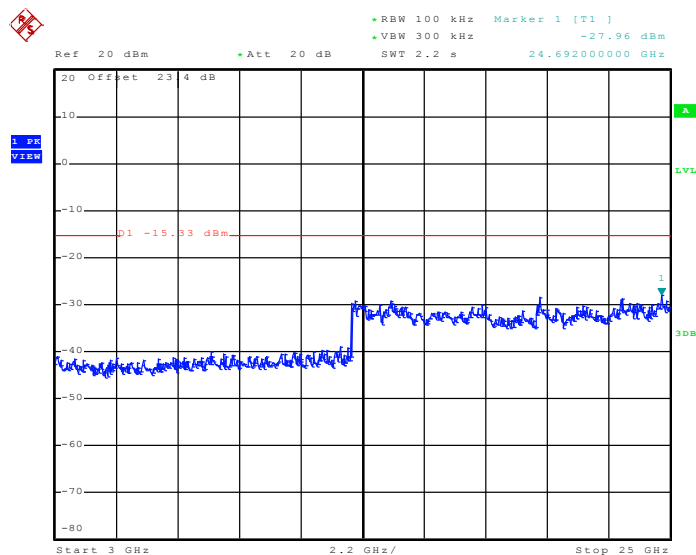
Test Mode :	Mode 1	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 26.JAN.2011 10:41:08

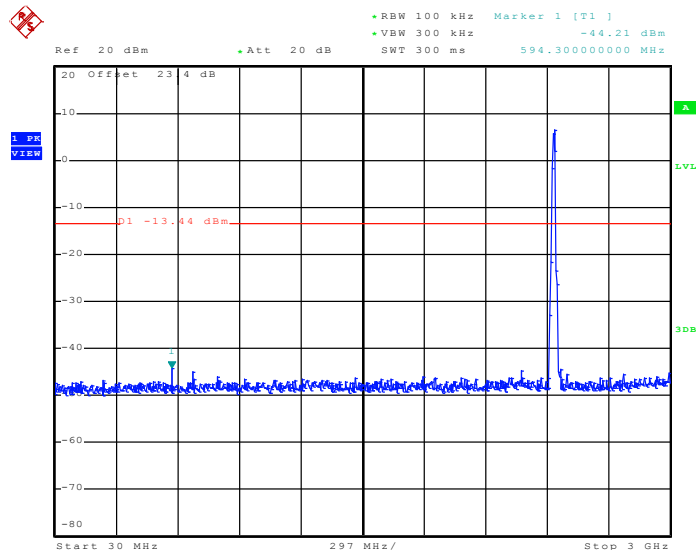
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



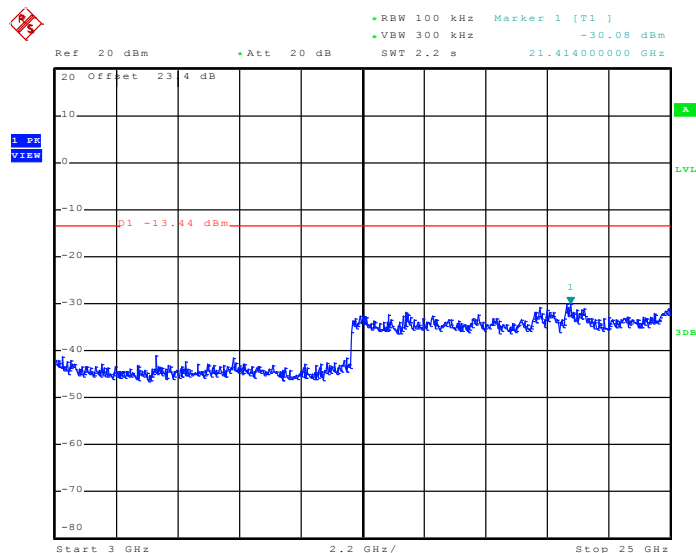
Date: 26.JAN.2011 10:41:39



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

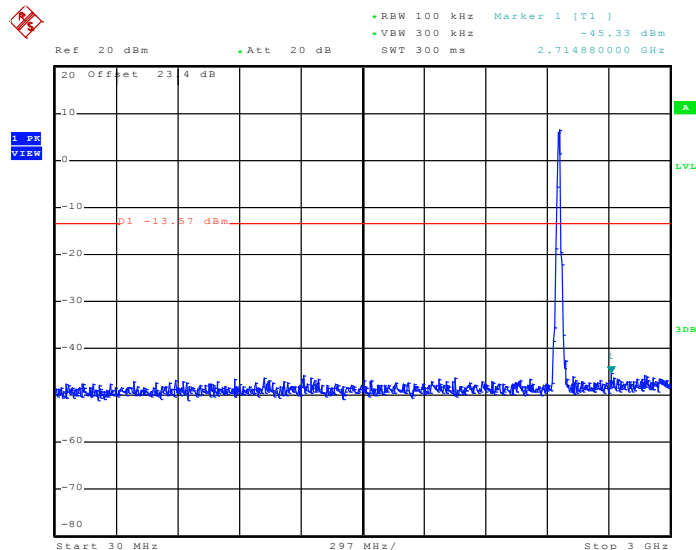
Date: 26.JAN.2011 14:31:47

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

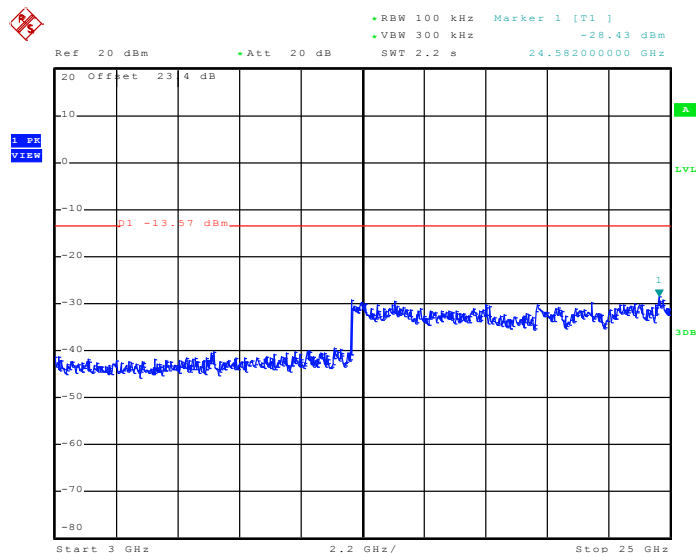
Date: 26.JAN.2011 14:32:04



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

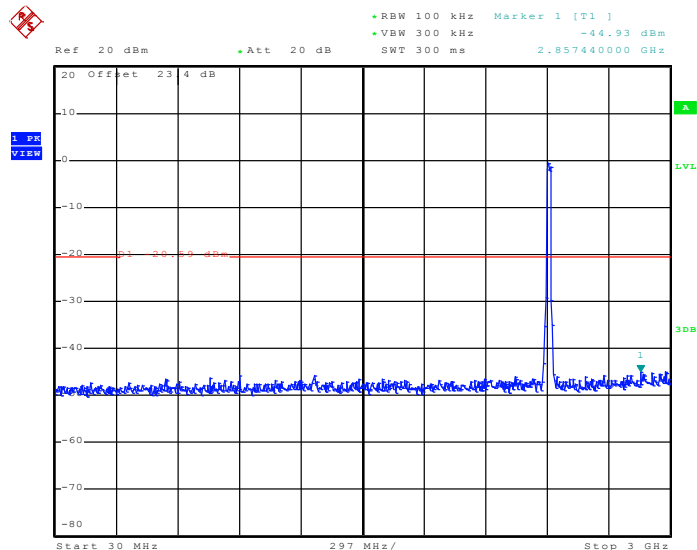
Date: 26.JAN.2011 10:43:02

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

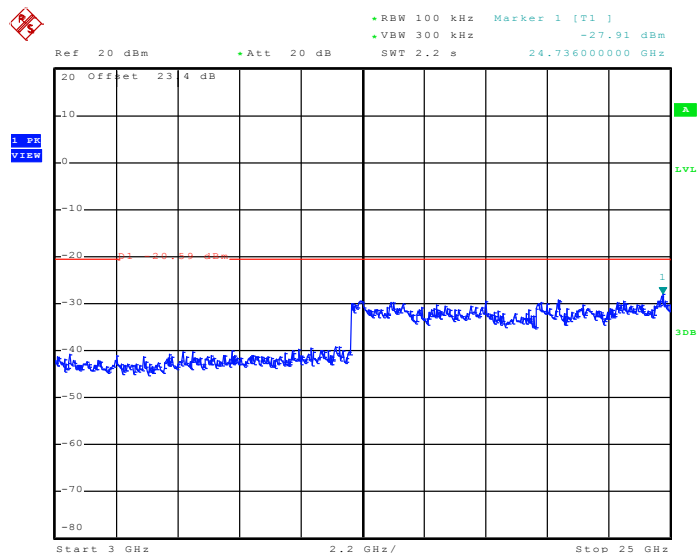
Date: 26.JAN.2011 10:43:31



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

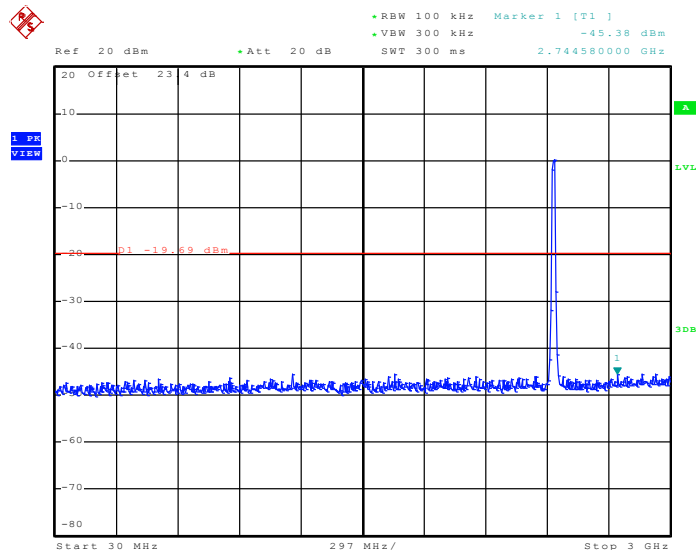
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 26.JAN.2011 09:24:14

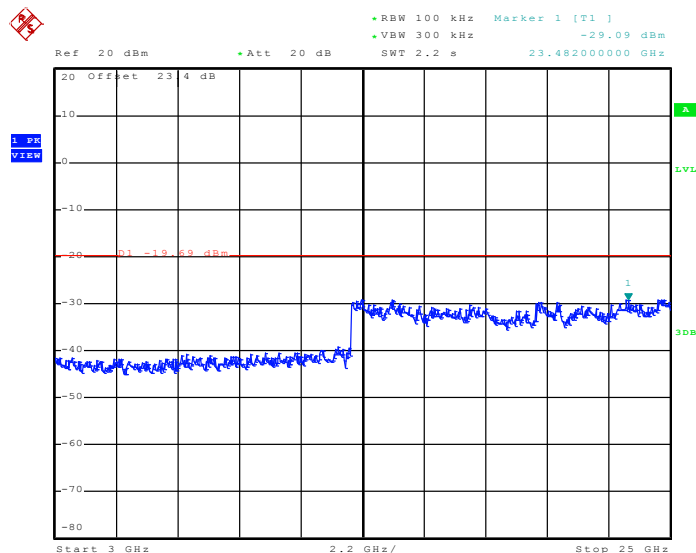
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 26.JAN.2011 09:24:32

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

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 26.JAN.2011 09:27:48

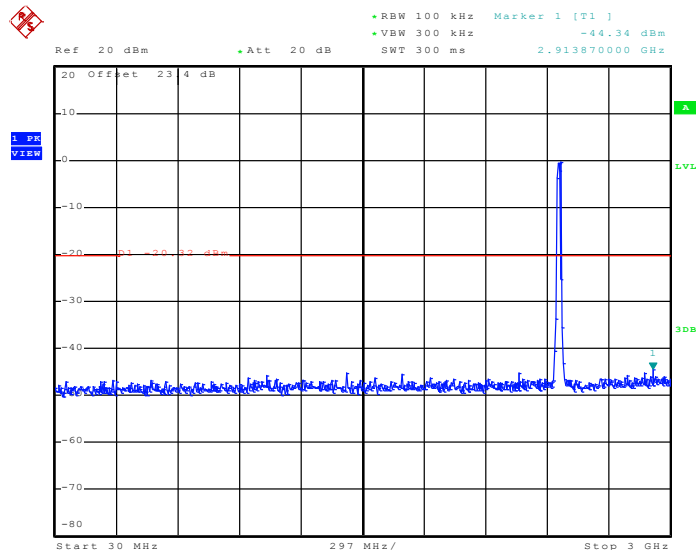
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


Date: 26.JAN.2011 09:28:06



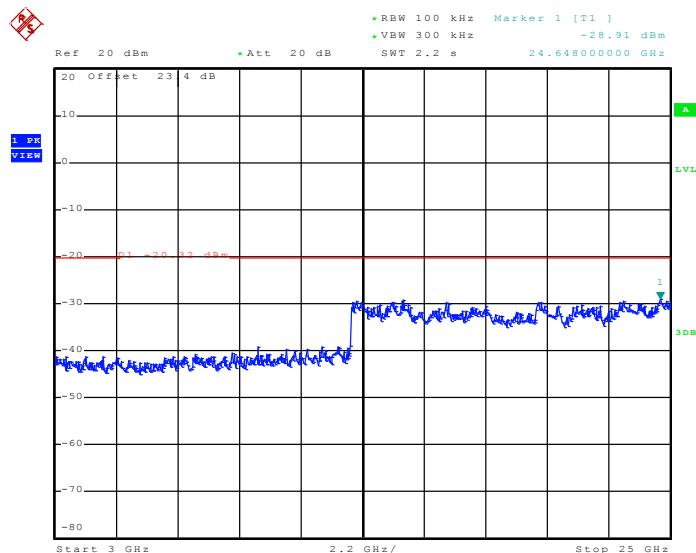
Test Mode :	Mode 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 26.JAN.2011 09:32:48

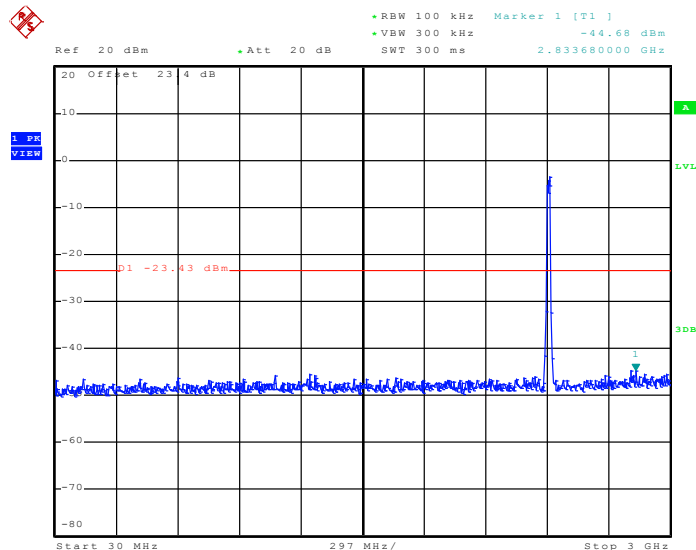
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



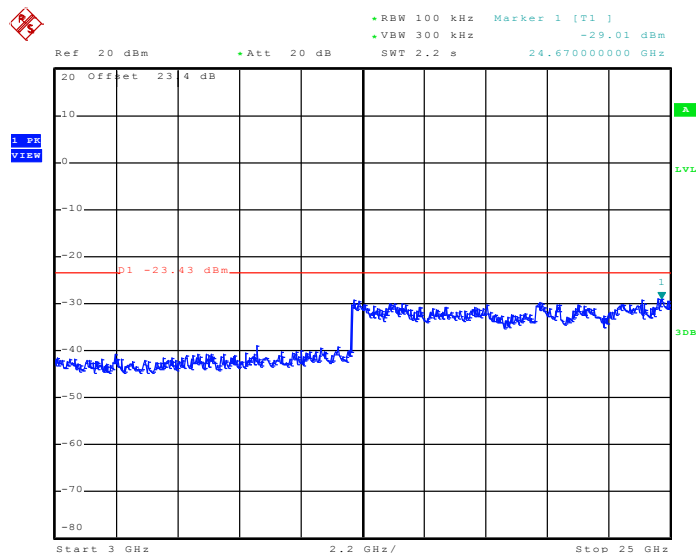
Date: 26.JAN.2011 09:33:06



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

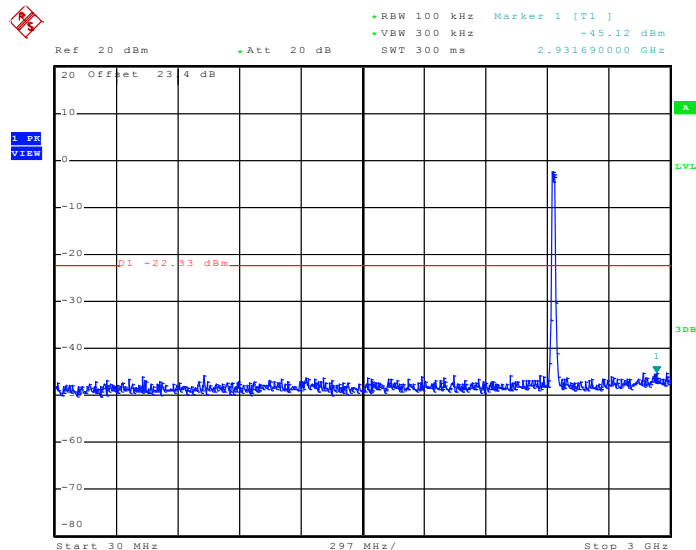
Date: 26.JAN.2011 10:05:43

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

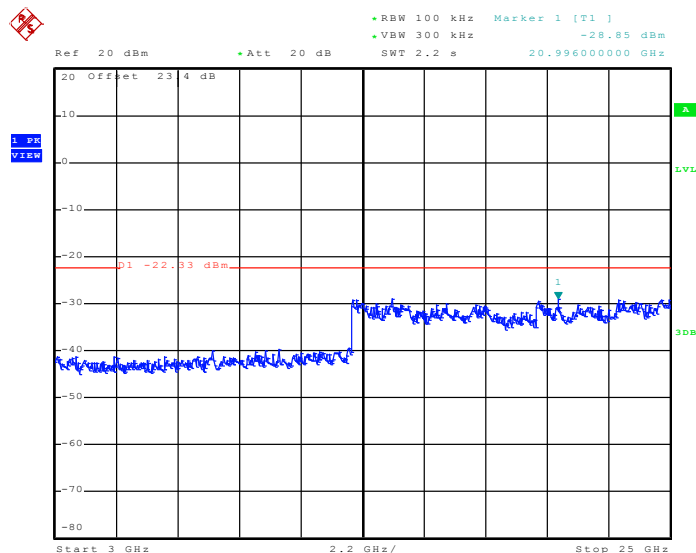
Date: 26.JAN.2011 10:06:01



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: 26.JAN.2011 10:20:19

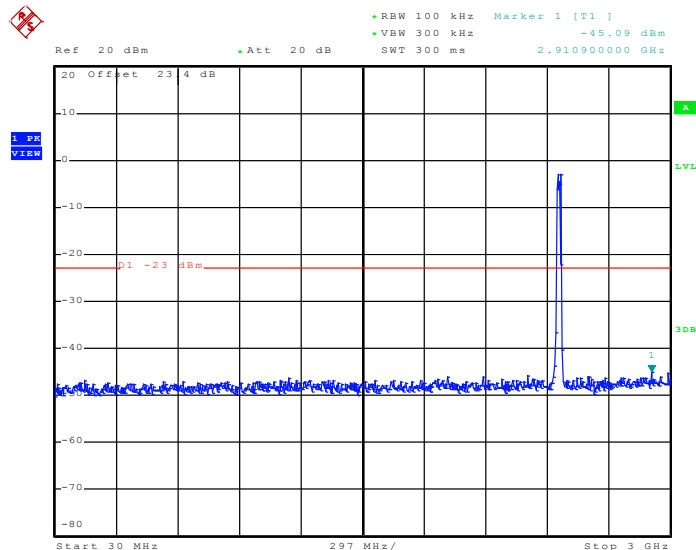
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 26.JAN.2011 10:20:37



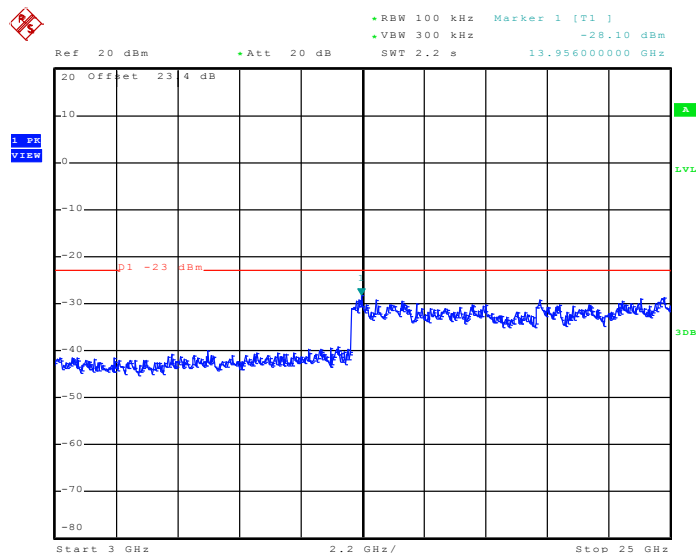
Test Mode :	Mode 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 26.JAN.2011 10:34:02

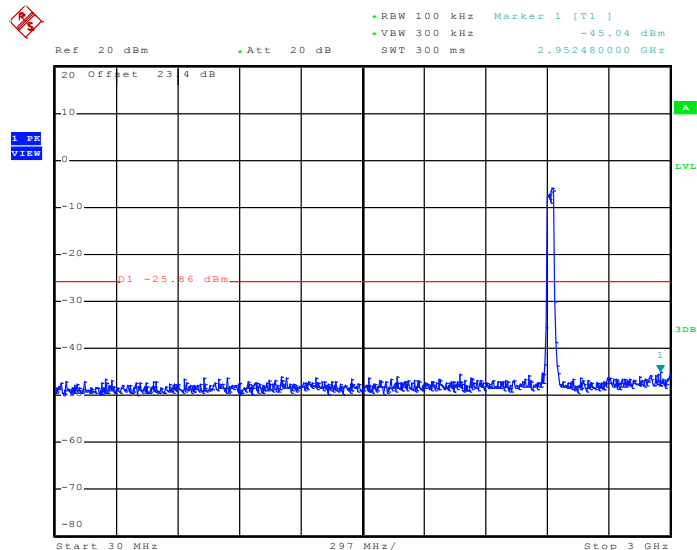
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



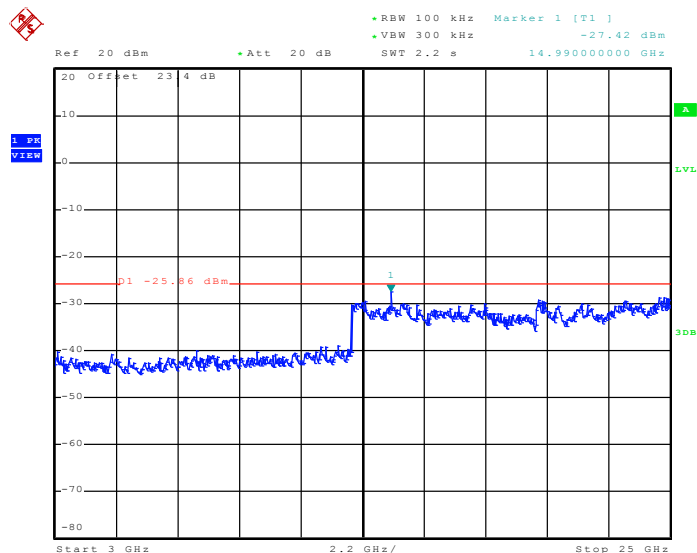
Date: 26.JAN.2011 10:34:20



Test Mode :	Mode 10	Temperature :	24~26°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	50~53%
Test Channel :	03	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

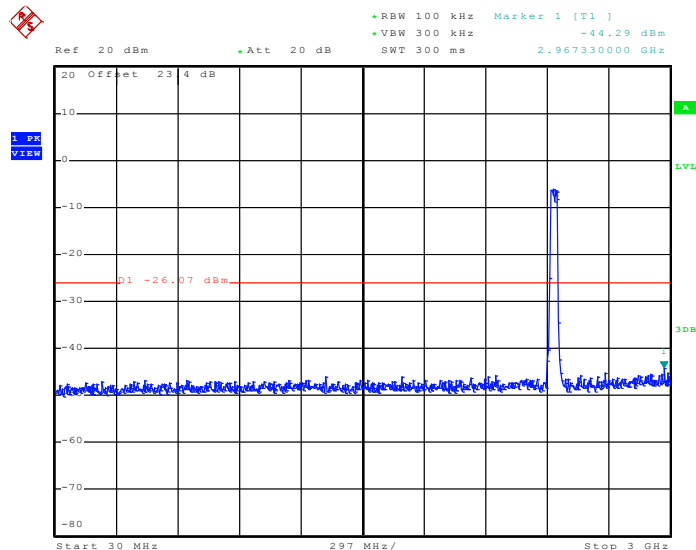
Date: 26.JAN.2011 11:47:35

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

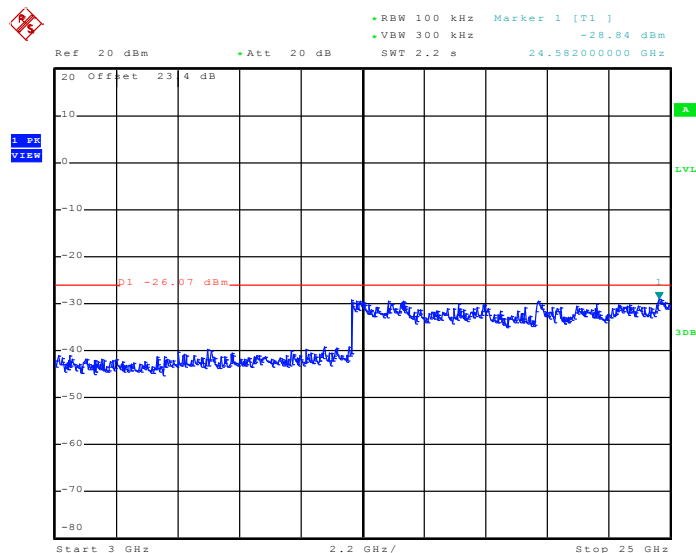
Date: 26.JAN.2011 11:47:52



Test Mode :	Mode 11	Temperature :	24~26°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

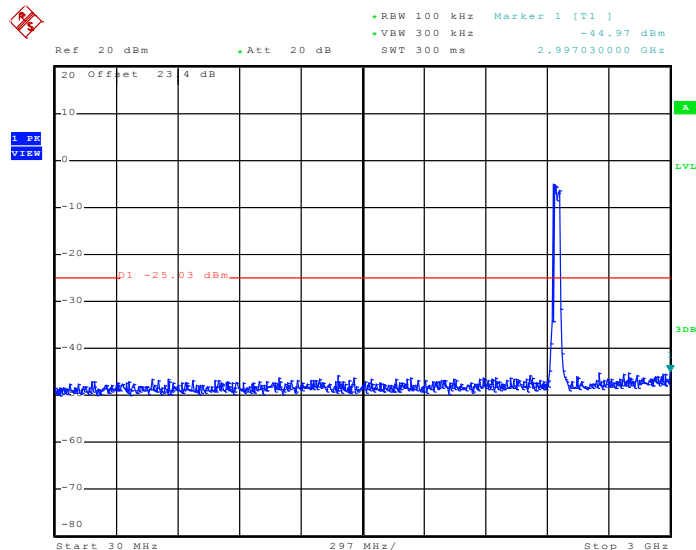
Date: 26.JAN.2011 11:17:52

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

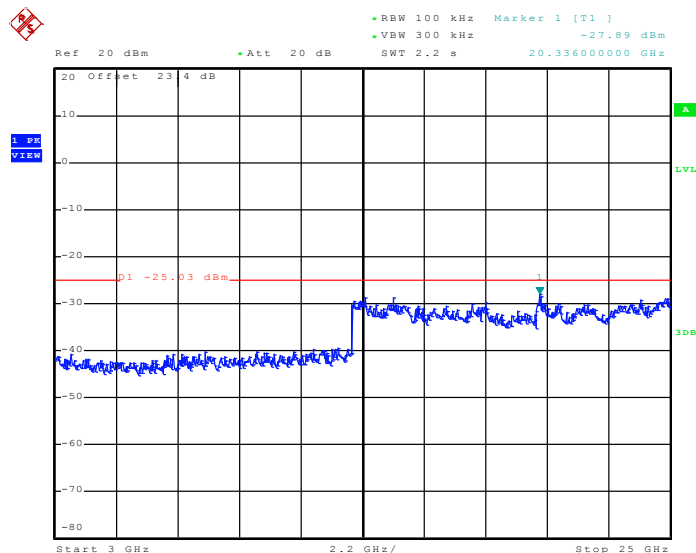
Date: 26.JAN.2011 11:18:10



Test Mode :	Mode 12	Temperature :	24~26°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	50~53%
Test Channel :	09	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 26.JAN.2011 11:32:33

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 26.JAN.2011 11:32:51

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.

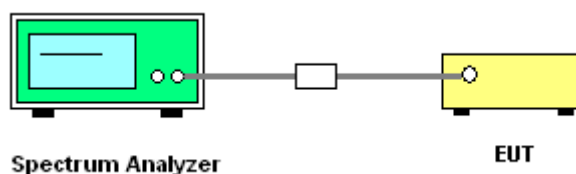
3.5.2 Measuring Instruments

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

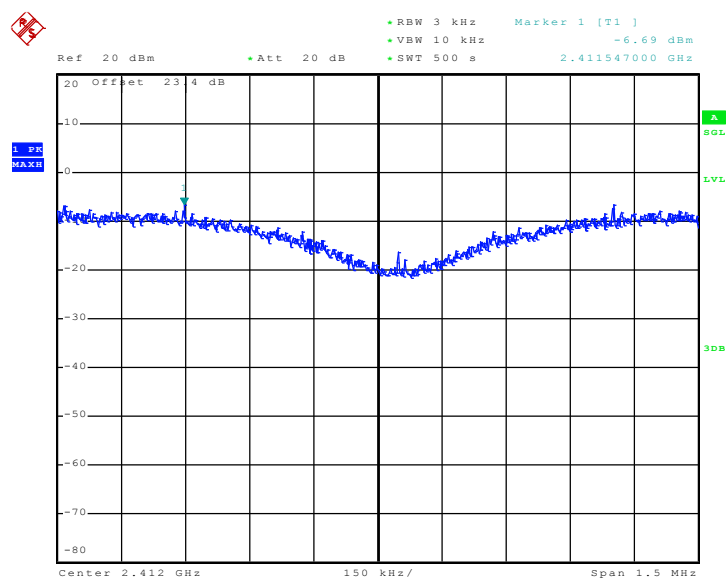


3.5.5 Test Result of Power Spectral Density

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

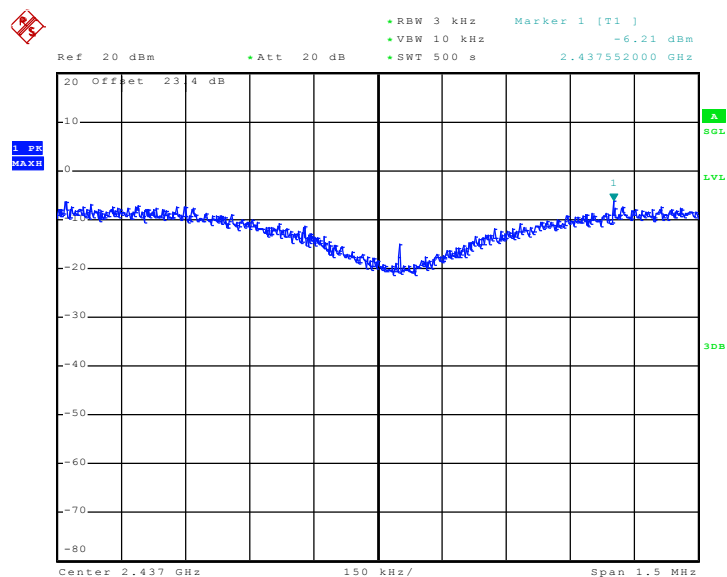
Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-6.69	8	Pass
06	2437	-6.21	8	Pass
11	2462	-6.23	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01



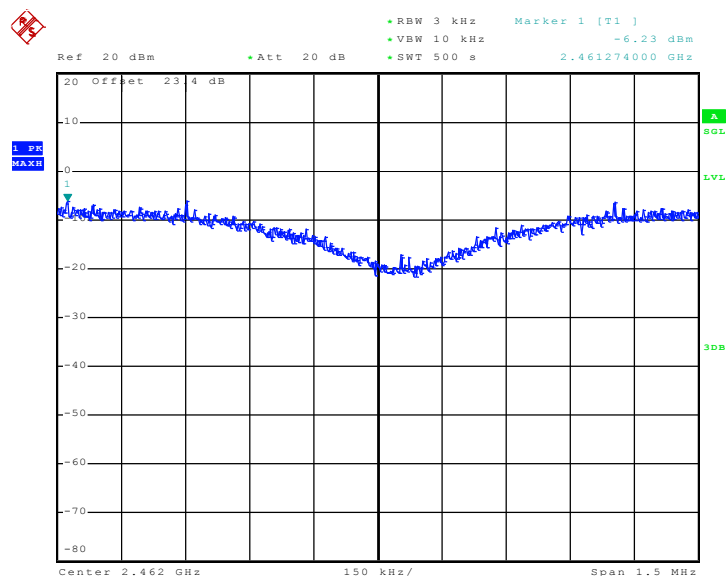
Date: 26.JAN.2011 14:18:21

Mode 2 : PSD Plot on 802.11b Channel 06



Date: 26.JAN.2011 14:31:26

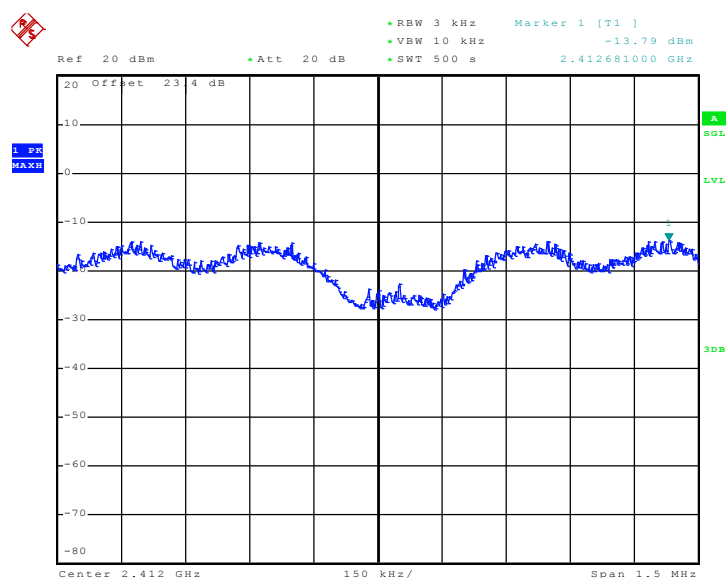
Mode 3 : PSD Plot on 802.11b Channel 11



Date: 26.JAN.2011 08:28:39

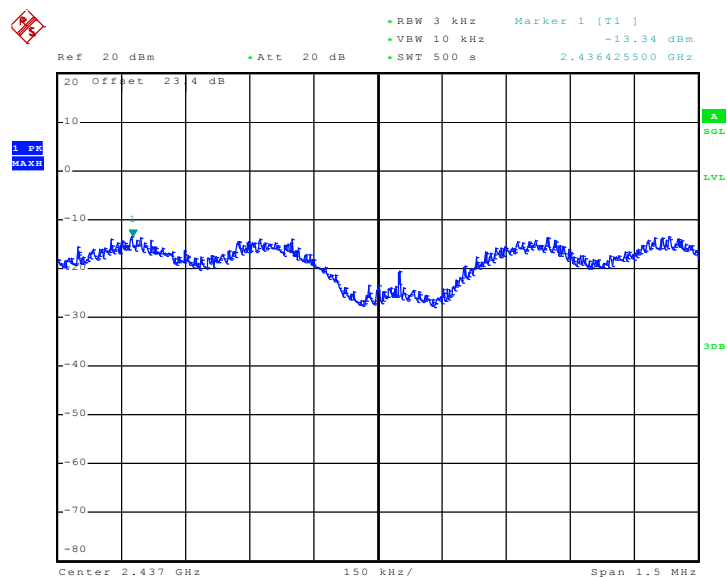
Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-13.79	8	Pass
06	2437	-13.34	8	Pass
11	2462	-13.74	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01


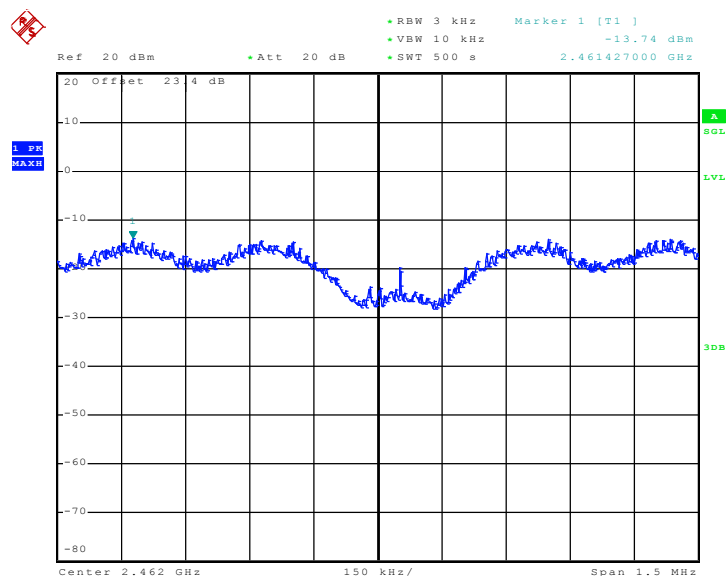
Date: 26.JAN.2011 09:13:31

Mode 5 : PSD Plot on 802.11g Channel 06



Date: 26.JAN.2011 08:55:35

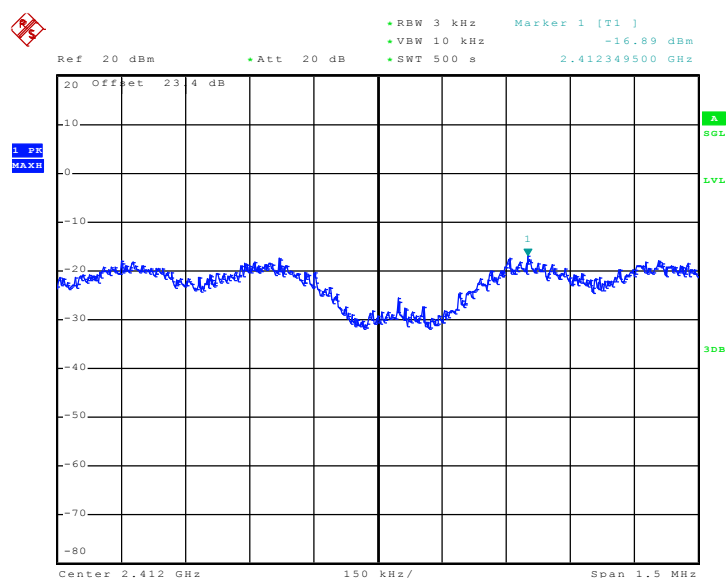
Mode 6 : PSD Plot on 802.11g Channel 11



Date: 26.JAN.2011 08:43:24

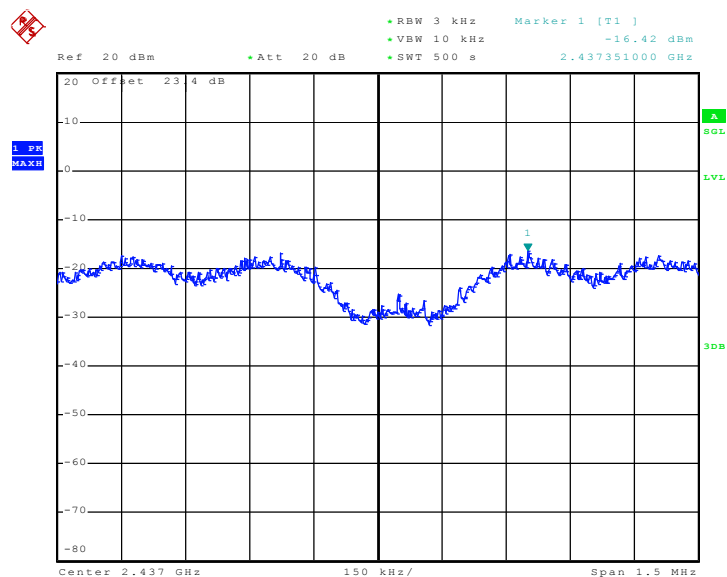
Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-16.89	8	Pass
06	2437	-16.42	8	Pass
11	2462	-16.43	8	Pass

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


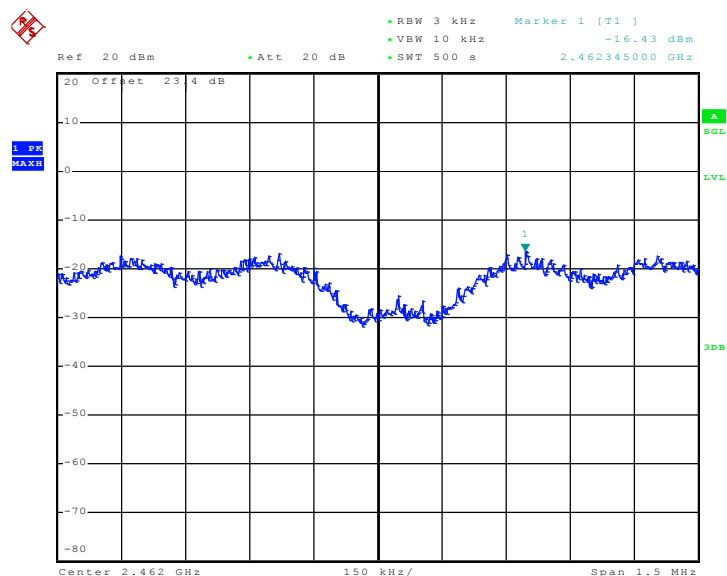
Date: 26.JAN.2011 10:05:21

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



Date: 26.JAN.2011 10:19:57

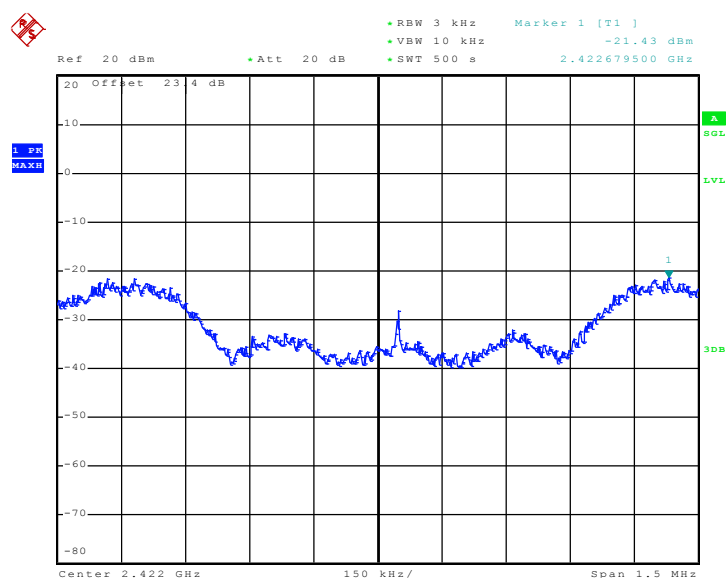
Mode 9 : PSD Plot on 802.11n (BW 20MHz) Channel 11



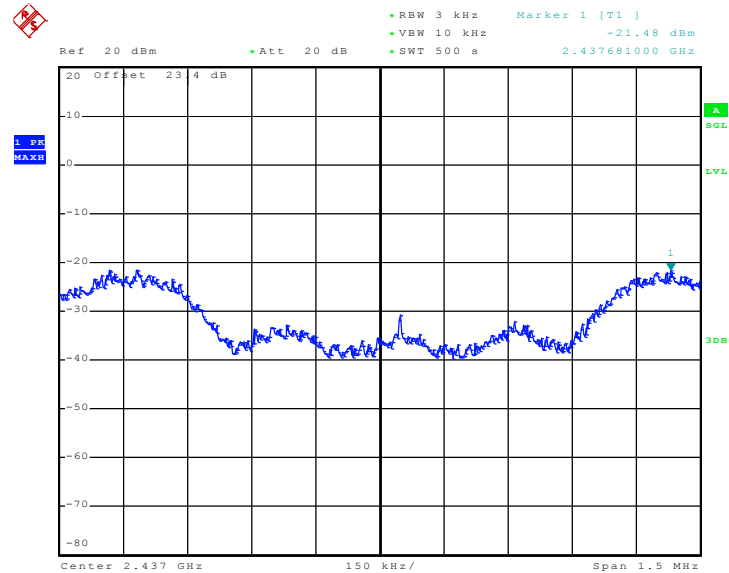
Date: 26.JAN.2011 10:33:40

Test Mode :	Mode 10, 11, 12	Temperature :	24~26
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53

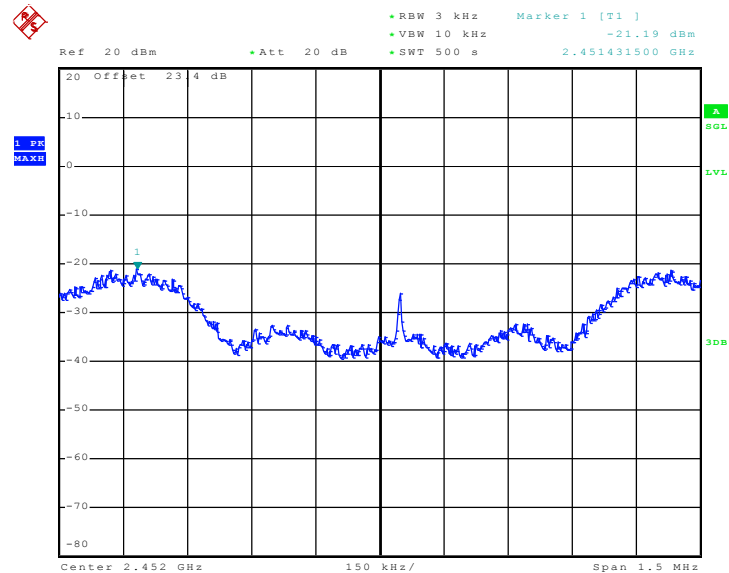
Channel	Frequency (MHz)	802.11n (BW 40MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	-21.43	8	Pass
06	2437	-21.48	8	Pass
09	2452	-21.19	8	Pass

Mode 10 : PSD Plot on 802.11n (BW 40MHz) Channel 03


Date: 26.JAN.2011 11:47:12

Mode 11 : PSD Plot on 802.11n (BW 40MHz) Channel 06


Date: 26.JAN.2011 11:17:30

Mode 12 : PSD Plot on 802.11n (BW 40MHz) Channel 09


Date: 26.JAN.2011 11:32:10

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

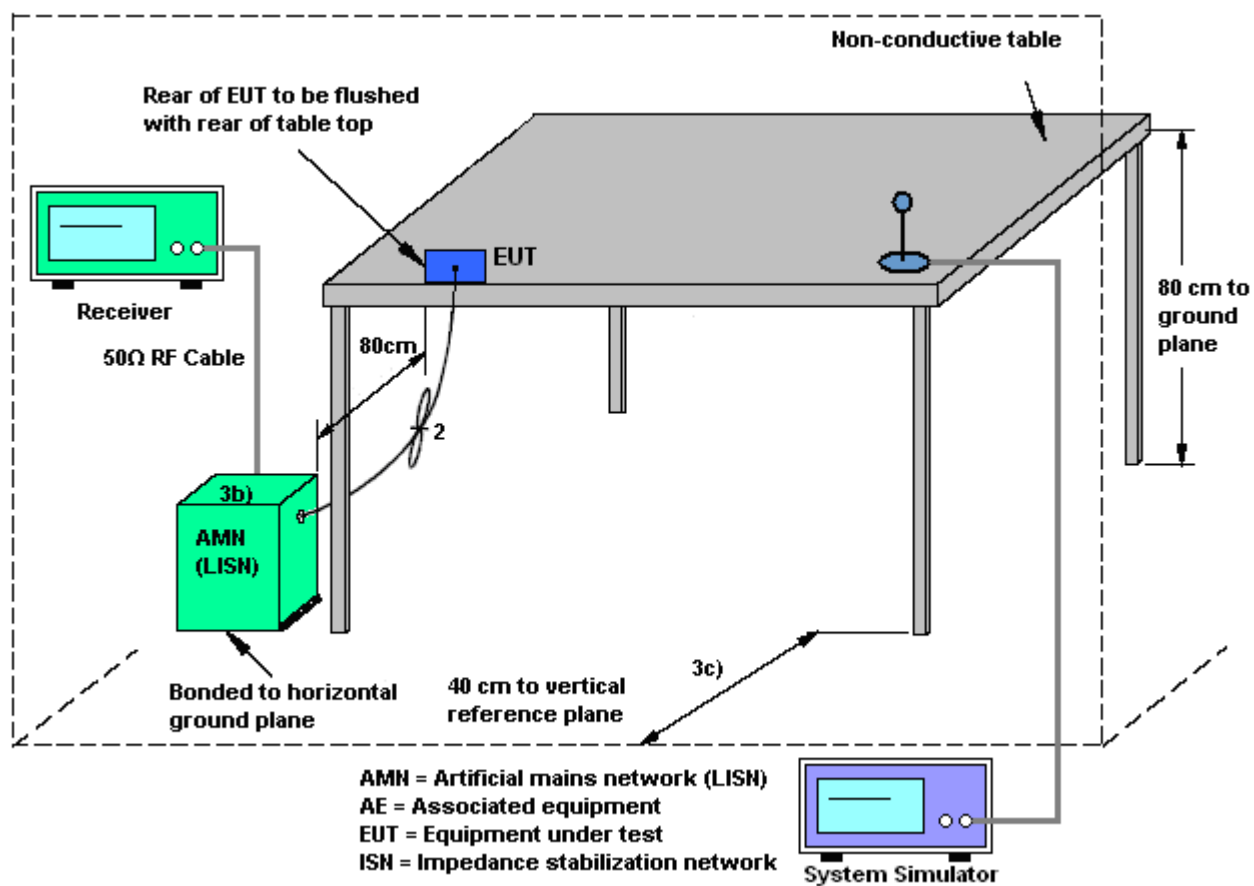
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

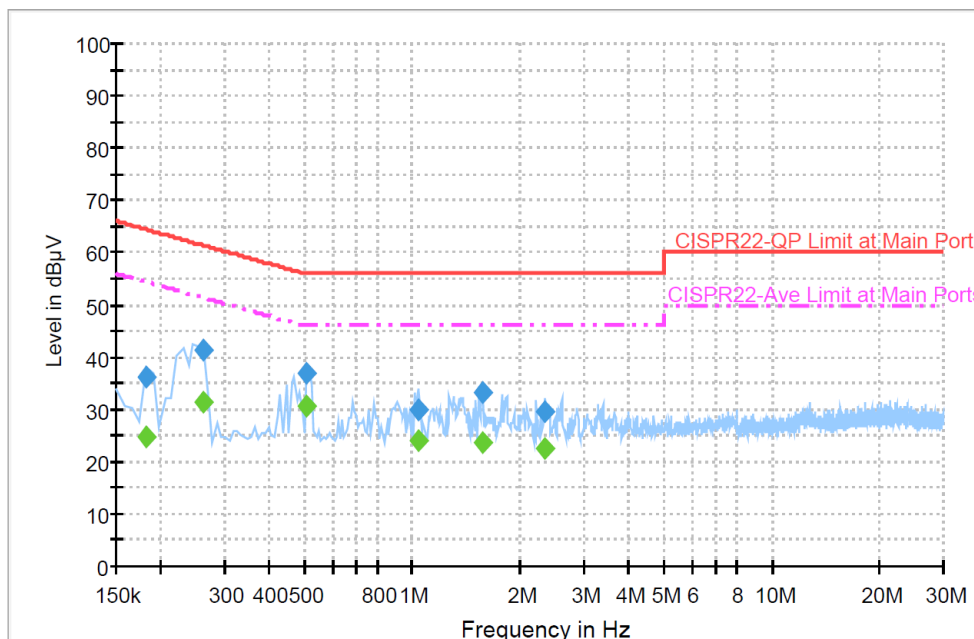
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network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

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + WLAN Idle + GPS Rx + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



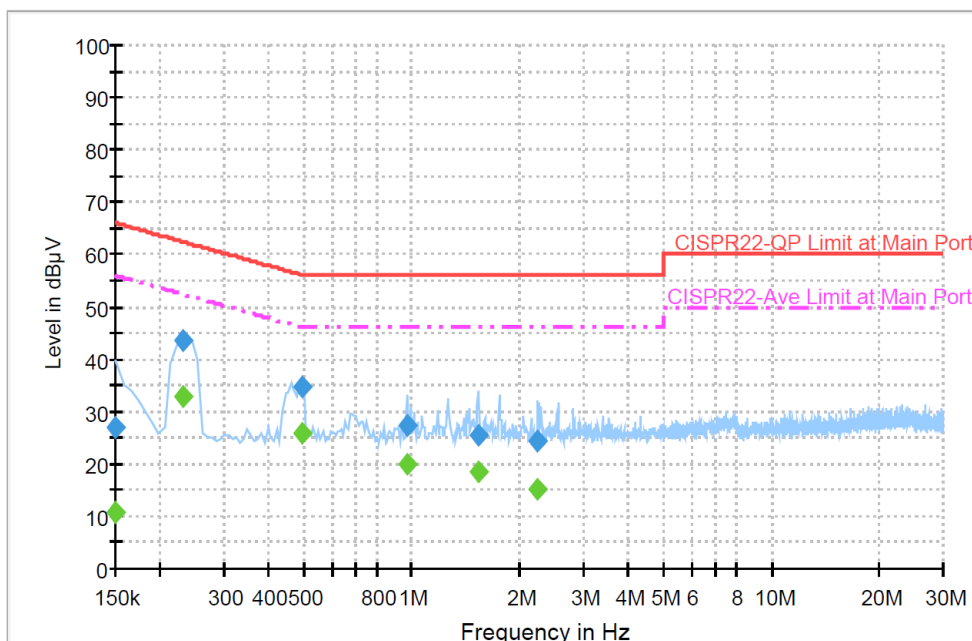
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.182000	36.0	Off	L1	19.4	28.4	64.4
0.262000	41.4	Off	L1	19.4	20.0	61.4
0.510000	36.9	Off	L1	19.4	19.1	56.0
1.038000	29.8	Off	L1	19.4	26.2	56.0
1.566000	33.2	Off	L1	19.4	22.8	56.0
2.350000	29.5	Off	L1	19.5	26.5	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.182000	24.8	Off	L1	19.4	29.6	54.4
0.262000	31.4	Off	L1	19.4	20.0	51.4
0.510000	30.7	Off	L1	19.4	15.3	46.0
1.038000	24.1	Off	L1	19.4	21.9	46.0
1.566000	23.8	Off	L1	19.4	22.2	46.0
2.350000	22.5	Off	L1	19.5	23.5	46.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + WLAN Idle + GPS Rx + Adapter		
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)
0.150000	26.8	Off	N	19.4	39.2	66.0
0.230000	43.6	Off	N	19.5	18.8	62.4
0.494000	34.8	Off	N	19.4	21.3	56.1
0.974000	27.4	Off	N	19.5	28.6	56.0
1.526000	25.5	Off	N	19.5	30.5	56.0
2.230000	24.4	Off	N	19.5	31.6	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	10.8	Off	N	19.4	45.2	56.0
0.230000	32.9	Off	N	19.5	19.5	52.4
0.494000	25.9	Off	N	19.4	30.2	46.1
0.974000	20.0	Off	N	19.5	26.0	46.0
1.526000	18.4	Off	N	19.5	27.6	46.0
2.230000	15.3	Off	N	19.5	30.7	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

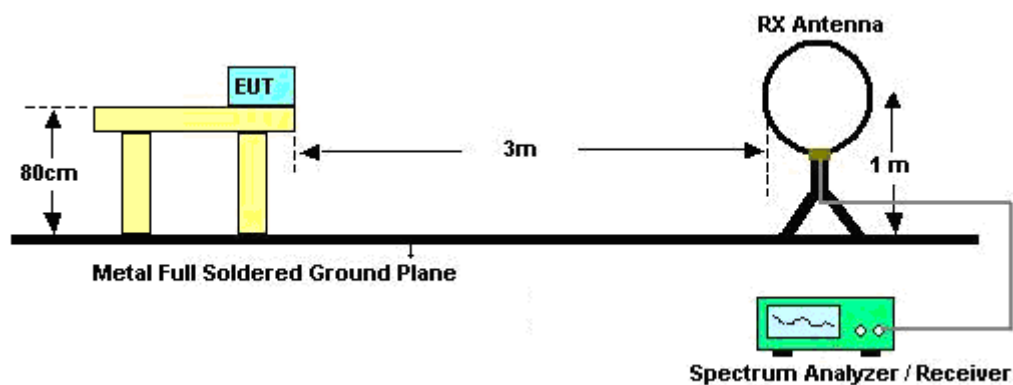
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - If $f < 1$ GHz,
Span = wide enough to fully capture the emission being measured; RBW = 100 kHz; VBW = 300kHz; Sweep = auto; Detector function = peak; Trace = max hold.
 - If $f \geq 1$ GHz,
Span = wide enough to fully capture the emission being measured; RBW = 1 MHz, VBW = 1MHz for Peak mode, RBW = 1 MHz, VBW = 10Hz for Average mode; 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)

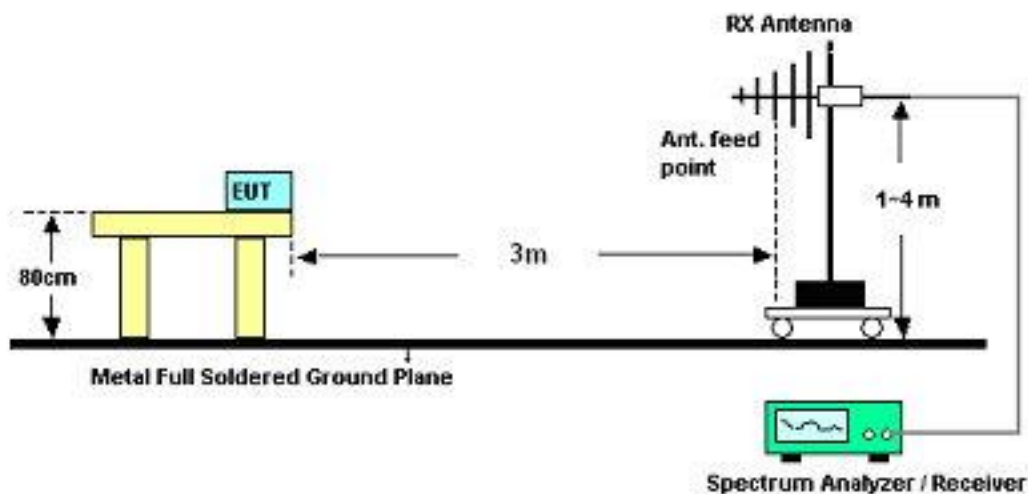
3. Follow the guidelines in ANSI C63.4-2003 with respect to maximizing the emission by rotating the EUT, measuring the emission for three EUT orthogonal planes, and adjusting the measurement antenna height and polarization. A pre-amp and a high pass filter are used for this test in order to get the good signal level.

3.7.4 Test Setup

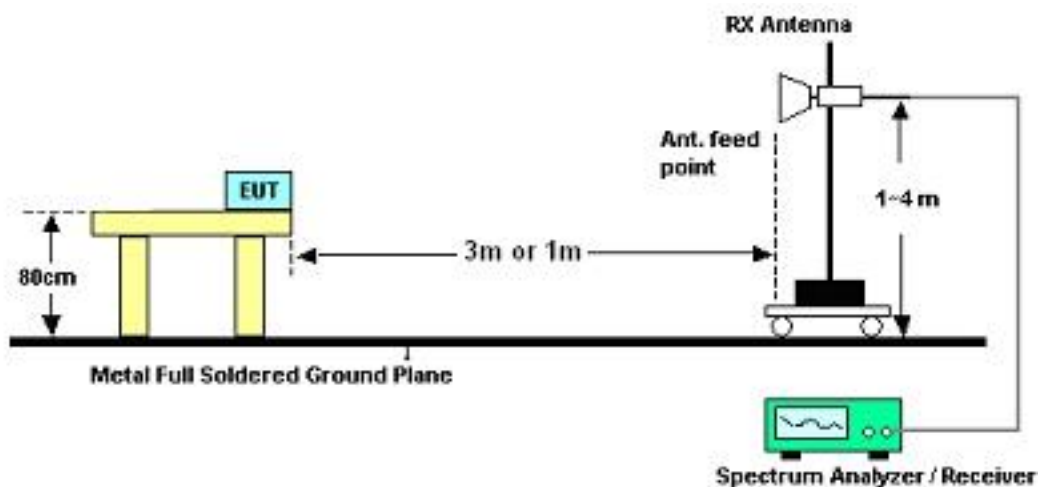
For radiated emissions below 30MHz



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 :	Ivan Chiang	Temperature :	23~24℃	
		Relative Humidity :	50~51%	

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 :	23~24℃
Test Channel :	01	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
99.66	22	-21.5	43.5	42.76	9.79	0.99	31.54	-	-	Peak
199.02	35.98	-7.52	43.5	57.04	9.1	1.32	31.48	-	-	Peak
298.65	43.81	-2.19	46	59.94	13.44	1.76	31.33	100	239	QP
497.4	39.4	-6.6	46	49.85	18.18	2.44	31.07	-	-	Peak
895.7	34.66	-11.34	46	38.46	23.57	3.33	30.7	-	-	Peak
996.5	36.34	-17.66	54	38.57	24.84	3.51	30.58	-	-	Peak
2386.38	47.16	-26.84	74	42.8	32.18	6.03	33.85	100	234	Peak
2386.38	36.68	-17.32	54	32.32	32.18	6.03	33.85	100	234	Average
2412	101.67	-	-	97.27	32.2	6.07	33.87	100	234	Peak
2412	97.67	-	-	93.27	32.2	6.07	33.87	100	234	Average
2494	33.35	-20.65	54	28.77	32.3	6.18	33.9	100	234	Average
2494	45.14	-28.86	74	40.56	32.3	6.18	33.9	100	234	Peak
4989	49.58	-24.42	74	65.18	34.1	9.16	58.86	100	0	Peak

Test Mode :	Mode 1	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
49.98	29.12	-10.88	40	51.68	8.28	0.7	31.54	-	-	Peak
199.02	32.3	-11.2	43.5	53.36	9.1	1.32	31.48	-	-	Peak
299.73	37.37	-8.63	46	53.47	13.46	1.77	31.33	102	147	Peak
498.1	33.92	-12.08	46	44.35	18.2	2.44	31.07	-	-	Peak
780.2	30.07	-15.93	46	35.5	22.15	3.11	30.69	-	-	Peak
996.5	32.89	-21.11	54	35.12	24.84	3.51	30.58	-	-	Peak
2385.81	41.22	-12.78	54	36.86	32.18	6.03	33.85	100	63	Average
2385.81	50.34	-23.66	74	45.98	32.18	6.03	33.85	100	63	Peak
2412	104.51	-	-	100.11	32.2	6.07	33.87	100	63	Peak
2412	100.64	-	-	96.24	32.2	6.07	33.87	100	63	Average
2500	34.27	-19.73	54	29.69	32.3	6.18	33.9	100	63	Average
2500	46.5	-27.5	74	41.92	32.3	6.18	33.9	100	63	Peak
4998	53.34	-20.66	74	68.93	34.1	9.17	58.86	104	304	Peak
4998	36.04	-17.96	54	51.63	34.1	9.17	58.86	104	304	Average

Test Mode :	Mode 2	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
99.66	21.76	-21.74	43.5	42.52	9.79	0.99	31.54	-	-	Peak
199.02	40.48	-3.02	43.5	61.54	9.1	1.32	31.48	-	-	Peak
298.65	43.21	-2.79	46	59.34	13.44	1.76	31.33	100	233	QP
498.1	37.62	-8.38	46	48.05	18.2	2.44	31.07	-	-	Peak
730.5	34.37	-11.63	46	40.74	21.37	3.01	30.75	-	-	Peak
900.6	35.83	-10.17	46	39.55	23.64	3.34	30.7	-	-	Peak
2380	32.28	-21.72	54	27.94	32.16	6.03	33.85	100	329	Average
2380	43.94	-30.06	74	39.6	32.16	6.03	33.85	100	329	Peak
2437	101.54	-	-	97.09	32.22	6.11	33.88	100	329	Peak
2437	97.73	-	-	93.26	32.24	6.11	33.88	100	329	Average
2500	45.27	-28.73	74	40.69	32.3	6.18	33.9	100	329	Peak
2500	33.11	-20.89	54	28.53	32.3	6.18	33.9	100	329	Average
4986	49.44	-24.56	74	65.07	34.1	9.16	58.89	100	0	Peak

Test Mode :	Mode 2	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
49.17	29.33	-10.67	40	51.49	8.68	0.69	31.53	-	-	Peak
200.1	31.87	-11.63	43.5	52.93	9.1	1.32	31.48	-	-	Peak
298.65	39.31	-6.69	46	55.44	13.44	1.76	31.33	100	157	Peak
500.2	33.47	-12.53	46	43.86	18.23	2.45	31.07	-	-	Peak
663.3	31.85	-14.15	46	39.36	20.48	2.87	30.86	-	-	Peak
897.8	32.81	-13.19	46	36.56	23.61	3.34	30.7	-	-	Peak
2388	46.24	-27.76	74	41.88	32.18	6.03	33.85	100	64	Peak
2388	34.38	-39.62	74	30.02	32.18	6.03	33.85	100	64	Peak
2437	106.42	-	-	101.95	32.24	6.11	33.88	100	64	Peak
2437	102.8	-	-	98.33	32.24	6.11	33.88	100	64	Peak
2492	46.36	-27.64	74	41.78	32.3	6.18	33.9	100	64	Peak
2492	34.48	-39.52	74	29.9	32.3	6.18	33.9	100	64	Peak
4998	52.55	-21.45	74	68.14	34.1	9.17	58.86	105	306	Peak
4998	35.38	-18.62	54	50.97	34.1	9.17	58.86	105	306	Average

Test Mode :	Mode 3	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
49.98	30.13	-9.87	40	52.69	8.28	0.7	31.54	-	-	Peak
200.1	36.12	-7.38	43.5	57.18	9.1	1.32	31.48	-	-	Peak
299.73	43.58	-2.42	46	59.68	13.46	1.77	31.33	100	240	QP
497.4	38.98	-7.02	46	49.43	18.18	2.44	31.07	-	-	Peak
897.8	36.14	-9.86	46	39.89	23.61	3.34	30.7	-	-	Peak
996.5	35.3	-18.7	54	37.53	24.84	3.51	30.58	-	-	Peak
2334	43.63	-30.37	74	39.42	32.09	5.95	33.83	200	259	Peak
2334	32.19	-21.81	54	27.98	32.09	5.95	33.83	200	259	Average
2462	100.19	-	-	95.68	32.26	6.14	33.89	200	259	Peak
2462	96.32	-	-	91.81	32.26	6.14	33.89	200	259	Average
2483.5	38.01	-15.99	54	33.45	32.28	6.18	33.9	200	259	Average
2483.5	48.48	-25.52	74	43.92	32.28	6.18	33.9	200	259	Peak
4989	49.32	-24.68	74	64.92	34.1	9.16	58.86	100	0	Peak

Test Mode :	Mode 3	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
49.98	29.47	-10.53	40	52.03	8.28	0.7	31.54	-	-	Peak
199.02	32.34	-11.16	43.5	53.4	9.1	1.32	31.48	-	-	Peak
298.65	38.31	-7.69	46	54.44	13.44	1.76	31.33	110	78	Peak
498.1	34.2	-11.8	46	44.63	18.2	2.44	31.07	-	-	Peak
775.3	32.54	-13.46	46	38.06	22.07	3.1	30.69	-	-	Peak
858.6	34.63	-11.37	46	38.92	23.15	3.28	30.72	-	-	Peak
2390	44.98	-29.02	74	40.62	32.18	6.03	33.85	122	297	Peak
2390	33.45	-20.55	54	29.09	32.18	6.03	33.85	122	297	Average
2462	105.3	-	-	100.79	32.26	6.14	33.89	122	297	Peak
2462	101.35	-	-	96.84	32.26	6.14	33.89	122	297	Average
2483.5	44.01	-9.99	54	39.45	32.28	6.18	33.9	122	297	Average
2483.5	52.95	-21.05	74	48.39	32.28	6.18	33.9	122	297	Peak
4989	52.7	-21.3	74	68.3	34.1	9.16	58.86	105	303	Peak
4989	35.66	-18.34	54	51.26	34.1	9.16	58.86	105	303	Average

Test Mode :	Mode 4	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
50.25	30.19	-9.81	40	52.75	8.28	0.7	31.54	-	-	Peak
199.02	37.29	-6.21	43.5	58.35	9.1	1.32	31.48	-	-	Peak
298.65	43.72	-2.28	46	59.85	13.44	1.76	31.33	100	231	QP
497.4	38.52	-7.48	46	48.97	18.18	2.44	31.07	-	-	Peak
761.3	34.64	-11.36	46	40.4	21.86	3.08	30.7	-	-	Peak
797.7	35.07	-10.93	46	40.19	22.42	3.14	30.68	-	-	Peak
2389.42	41.42	-12.58	54	37.06	32.18	6.03	33.85	100	234	Average
2389.42	60.79	-13.21	74	56.43	32.18	6.03	33.85	100	234	Peak
2412	101.61	-	-	97.21	32.2	6.07	33.87	100	234	Peak
2412	88.65	-	-	84.25	32.2	6.07	33.87	100	234	Average
2494	32.83	-21.17	54	28.25	32.3	6.18	33.9	100	234	Average
2494	45.79	-28.21	74	41.21	32.3	6.18	33.9	100	234	Peak
4986	49.62	-24.38	74	65.25	34.1	9.16	58.89	100	0	Peak

Test Mode :	Mode 4	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
61.05	29.81	-10.19	40	54.85	5.73	0.77	31.54	-	-	Peak
200.1	31.93	-11.57	43.5	52.99	9.1	1.32	31.48	-	-	Peak
298.65	38.55	-7.45	46	54.68	13.44	1.76	31.33	100	211	Peak
497.4	32.97	-13.03	46	43.42	18.18	2.44	31.07	-	-	Peak
663.3	32.73	-13.27	46	40.24	20.48	2.87	30.86	-	-	Peak
939.8	29.67	-16.33	46	32.7	24.13	3.44	30.6	-	-	Peak
2389.99	48.93	-5.07	54	44.57	32.18	6.03	33.85	100	64	Average
2389.99	69.39	-4.61	74	65.03	32.18	6.03	33.85	100	64	Peak
2412	106.04	-	-	101.62	32.22	6.07	33.87	100	64	Peak
2412	91.76	-	-	87.36	32.2	6.07	33.87	100	64	Average
2492	33.6	-20.4	54	29.02	32.3	6.18	33.9	100	64	Average
2492	45.46	-28.54	74	40.88	32.3	6.18	33.9	100	64	Peak
4998	52.46	-21.54	74	68.05	34.1	9.17	58.86	103	303	Peak
4998	35.3	-18.7	54	50.89	34.1	9.17	58.86	103	303	Average

Test Mode :	Mode 5	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
49.17	29.8	-10.2	40	51.96	8.68	0.69	31.53	-	-	Peak
199.02	36.09	-7.41	43.5	57.15	9.1	1.32	31.48	-	-	Peak
299.73	42.77	-3.23	46	58.87	13.46	1.77	31.33	100	251	QP
498.1	38.82	-7.18	46	49.25	18.2	2.44	31.07	-	-	Peak
898.5	34.39	-11.61	46	38.14	23.61	3.34	30.7	-	-	Peak
998.6	38.33	-15.67	54	40.52	24.88	3.51	30.58	-	-	Peak
2340	44.41	-29.59	74	40.18	32.11	5.95	33.83	100	233	Peak
2340	32.17	-21.83	54	27.94	32.11	5.95	33.83	100	233	Average
2437	102.68	-	-	98.21	32.24	6.11	33.88	100	233	Peak
2437	89.32	-	-	84.85	32.24	6.11	33.88	100	233	Average
2492	44.22	-29.78	74	39.64	32.3	6.18	33.9	100	233	Peak
2492	32.86	-21.14	54	28.28	32.3	6.18	33.9	100	233	Average
4977	50.61	-23.39	74	66.24	34.1	9.16	58.89	100	0	Peak

Test Mode :	Mode 5	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
49.17	29.05	-10.95	40	51.21	8.68	0.69	31.53	-	-	Peak
200.1	32.27	-11.23	43.5	53.33	9.1	1.32	31.48	-	-	Peak
299.73	38.52	-7.48	46	54.62	13.46	1.77	31.33	100	133	Peak
498.1	33.18	-12.82	46	43.61	18.2	2.44	31.07	-	-	Peak
666.1	32.26	-13.74	46	39.73	20.51	2.87	30.85	-	-	Peak
929.3	31.4	-14.6	46	34.61	24	3.41	30.62	-	-	Peak
2390	34.05	-19.95	54	29.69	32.18	6.03	33.85	122	300	Average
2390	47.41	-26.59	74	43.05	32.18	6.03	33.85	122	300	Peak
2437	107.45	-	-	103	32.22	6.11	33.88	122	300	Peak
2437	93.46	-	-	88.99	32.24	6.11	33.88	122	300	Average
2484	48.77	-25.23	74	44.21	32.28	6.18	33.9	122	300	Peak
2484	34.78	-19.22	54	30.22	32.28	6.18	33.9	122	300	Average
4989	52.42	-21.58	74	68.02	34.1	9.16	58.86	104	303	Peak
4989	35.27	-18.73	54	50.87	34.1	9.16	58.86	104	303	Average

Test Mode :	Mode 6	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
49.98	29.62	-10.38	40	52.18	8.28	0.7	31.54	-	-	Peak
199.02	36.82	-6.68	43.5	57.88	9.1	1.32	31.48	-	-	Peak
299.73	43.38	-2.62	46	59.48	13.46	1.77	31.33	100	236	QP
497.4	39.01	-6.99	46	49.46	18.18	2.44	31.07	-	-	Peak
749.4	34.97	-11.03	46	40.94	21.67	3.06	30.7	-	-	Peak
895.7	35.65	-10.35	46	39.45	23.57	3.33	30.7	-	-	Peak
2342	32.24	-21.76	54	28.01	32.11	5.95	33.83	144	236	Average
2342	43.86	-30.14	74	39.63	32.11	5.95	33.83	144	236	Peak
2462	101.63	-	-	97.12	32.26	6.14	33.89	144	236	Peak
2462	88.41	-	-	83.9	32.26	6.14	33.89	144	236	Average
2492.02	39	-15	54	34.42	32.3	6.18	33.9	144	236	Average
2492.02	59.48	-14.52	74	54.9	32.3	6.18	33.9	144	236	Peak
4998	50.64	-23.36	74	66.23	34.1	9.17	58.86	100	0	Peak

Test Mode :	Mode 6	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
49.98	28.86	-11.14	40	51.42	8.28	0.7	31.54	-	-	Peak
200.1	32.02	-11.48	43.5	53.08	9.1	1.32	31.48	-	-	Peak
299.73	38.77	-7.23	46	54.87	13.46	1.77	31.33	100	201	Peak
500.2	33.43	-12.57	46	43.82	18.23	2.45	31.07	-	-	Peak
844.6	32.82	-13.18	46	37.3	22.99	3.26	30.73	-	-	Peak
995.8	34.05	-19.95	54	36.28	24.84	3.51	30.58	-	-	Peak
2326	32.34	-21.66	54	28.15	32.09	5.92	33.82	106	357	Average
2326	46.29	-27.71	74	42.1	32.09	5.92	33.82	106	357	Peak
2462	105.8	-	-	101.29	32.26	6.14	33.89	106	357	Peak
2462	91.81	-	-	87.3	32.26	6.14	33.89	106	357	Average
2483.5	45.56	-8.44	54	41	32.28	6.18	33.9	106	357	Average
2483.5	64.71	-9.29	74	60.15	32.28	6.18	33.9	106	357	Peak
4989	54.24	-19.76	74	69.84	34.1	9.16	58.86	104	305	Peak
4989	37.03	-16.97	54	52.63	34.1	9.16	58.86	104	305	Average

Test Mode :	Mode 7	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
49.98	29.62	-10.38	40	52.18	8.28	0.7	31.54	-	-	Peak
199.02	36.86	-6.64	43.5	57.92	9.1	1.32	31.48	-	-	Peak
298.65	43.13	-2.87	46	59.26	13.44	1.76	31.33	100	223	QP
497.4	38.34	-7.66	46	48.79	18.18	2.44	31.07	-	-	Peak
764.1	33.32	-12.68	46	39.03	21.9	3.08	30.69	-	-	Peak
895.7	34.52	-11.48	46	38.32	23.57	3.33	30.7	-	-	Peak
2389.99	43.55	-10.45	54	39.19	32.18	6.03	33.85	101	26	Average
2389.99	64.24	-9.76	74	59.88	32.18	6.03	33.85	101	26	Peak
2412	97.23	-	-	92.83	32.2	6.07	33.87	101	26	Peak
2412	83.09	-	-	78.69	32.2	6.07	33.87	101	26	Average
2500	32.85	-21.15	54	28.27	32.3	6.18	33.9	101	26	Average
2500	45.57	-28.43	74	40.99	32.3	6.18	33.9	101	26	Peak
4986	48.88	-25.12	74	64.51	34.1	9.16	58.89	100	0	Peak

Test Mode :	Mode 7	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
49.98	28.91	-11.09	40	51.47	8.28	0.7	31.54	-	-	Peak
200.1	32.13	-11.37	43.5	53.19	9.1	1.32	31.48	-	-	Peak
298.65	38.8	-7.2	46	54.93	13.44	1.76	31.33	112	314	Peak
498.1	33.21	-12.79	46	43.64	18.2	2.44	31.07	-	-	Peak
755	29.59	-16.41	46	35.47	21.75	3.07	30.7	-	-	Peak
848.1	31.26	-14.74	46	35.71	23.02	3.26	30.73	-	-	Peak
2389.42	48.79	-5.21	54	44.43	32.18	6.03	33.85	100	353	Average
2389.42	69.33	-4.67	74	64.97	32.18	6.03	33.85	100	353	Peak
2412	102.25	-	-	97.85	32.2	6.07	33.87	100	353	Peak
2412	88.84	-	-	84.44	32.2	6.07	33.87	100	353	Average
2486	35.12	-18.88	54	30.56	32.28	6.18	33.9	100	353	Average
2486	47.37	-26.63	74	42.81	32.28	6.18	33.9	100	353	Peak
4986	53.81	-20.19	74	69.44	34.1	9.16	58.89	105	303	Peak
4986	36.47	-17.53	54	52.1	34.1	9.16	58.89	105	303	Average

Test Mode :	Mode 8	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
49.98	28.31	-11.69	40	50.87	8.28	0.7	31.54	-	-	Peak
199.02	35.89	-7.61	43.5	56.95	9.1	1.32	31.48	-	-	Peak
298.65	43.47	-2.53	46	59.6	13.44	1.76	31.33	100	238	QP
341.3	33.27	-12.73	46	47.92	14.75	1.9	31.3	-	-	Peak
497.4	39.09	-6.91	46	49.54	18.18	2.44	31.07	-	-	Peak
895.7	34.35	-11.65	46	38.15	23.57	3.33	30.7	-	-	Peak
2364	44.58	-29.42	74	40.3	32.13	5.99	33.84	100	59	Peak
2364	33.22	-20.78	54	28.94	32.13	5.99	33.84	100	59	Average
2437	98.89	-	-	94.44	32.22	6.11	33.88	100	59	Peak
2437	85.19	-	-	80.72	32.24	6.11	33.88	100	59	Average
2494	44.78	-29.22	74	40.2	32.3	6.18	33.9	100	59	Peak
2494	32.62	-21.38	54	28.04	32.3	6.18	33.9	100	59	Average
4989	49.35	-24.65	74	64.95	34.1	9.16	58.86	100	0	Peak

Test Mode :	Mode 8	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
49.17	28.84	-11.16	40	51	8.68	0.69	31.53	-	-	Peak
200.1	31.82	-11.68	43.5	52.88	9.1	1.32	31.48	-	-	Peak
299.73	38.6	-7.4	46	54.7	13.46	1.77	31.33	100	182	Peak
498.1	34.29	-11.71	46	44.72	18.2	2.44	31.07	-	-	Peak
811	34.53	-11.47	46	39.46	22.59	3.17	30.69	-	-	Peak
912.5	30.31	-15.69	46	33.82	23.79	3.37	30.67	-	-	Peak
2388	45.39	-28.61	74	41.03	32.18	6.03	33.85	102	358	Peak
2388	34.2	-19.8	54	29.84	32.18	6.03	33.85	102	358	Average
2437	103.77	-	-	99.3	32.24	6.11	33.88	102	358	Peak
2437	89.96	-	-	85.49	32.24	6.11	33.88	102	358	Average
2494	49.55	-24.45	74	44.97	32.3	6.18	33.9	102	358	Peak
2494	35.58	-18.42	54	31	32.3	6.18	33.9	102	358	Average
4977	52.06	-21.94	74	67.69	34.1	9.16	58.89	104	303	Peak
4977	34.78	-19.22	54	50.41	34.1	9.16	58.89	104	303	Average

Test Mode :	Mode 9	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
49.17	29.56	-10.44	40	51.72	8.68	0.69	31.53	-	-	Peak
199.02	36.71	-6.79	43.5	57.77	9.1	1.32	31.48	-	-	Peak
298.65	42.69	-3.31	46	58.82	13.44	1.76	31.33	100	243	QP
498.1	38.08	-7.92	46	48.51	18.2	2.44	31.07	-	-	Peak
898.5	33.83	-12.17	46	37.58	23.61	3.34	30.7	-	-	Peak
996.5	34.2	-19.8	54	36.43	24.84	3.51	30.58	-	-	Peak
2388	45.03	-28.97	74	40.67	32.18	6.03	33.85	100	305	Peak
2388	33.17	-20.83	54	28.81	32.18	6.03	33.85	100	305	Average
2462	97.86	-	-	93.35	32.26	6.14	33.89	100	305	Peak
2462	84.78	-	-	80.27	32.26	6.14	33.89	100	305	Average
2483.66	43.46	-10.54	54	38.9	32.28	6.18	33.9	100	305	Average
2483.66	60.37	-13.63	74	55.81	32.28	6.18	33.9	100	305	Peak
4989	49.52	-24.48	74	65.12	34.1	9.16	58.86	100	0	Peak

Test Mode :	Mode 9	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
49.98	29	-11	40	51.56	8.28	0.7	31.54	-	-	Peak
200.1	31.78	-11.72	43.5	52.84	9.1	1.32	31.48	-	-	Peak
298.65	38.6	-7.4	46	54.73	13.44	1.76	31.33	107	159	Peak
498.1	33.2	-12.8	46	43.63	18.2	2.44	31.07	-	-	Peak
699	32.6	-13.4	46	39.6	20.88	2.94	30.82	-	-	Peak
831.3	32.33	-13.67	46	36.99	22.83	3.22	30.71	-	-	Peak
2388	34.29	-19.71	54	29.93	32.18	6.03	33.85	100	354	Average
2388	45.66	-28.34	74	41.3	32.18	6.03	33.85	100	354	Peak
2462	105.12	-	-	100.61	32.26	6.14	33.89	100	354	Peak
2462	91.33	-	-	86.82	32.26	6.14	33.89	100	354	Average
2483.5	49.94	-4.06	54	45.38	32.28	6.18	33.9	100	354	Average
2483.5	66.92	-7.08	74	62.36	32.28	6.18	33.9	100	354	Peak
4989	52.43	-21.57	74	68.03	34.1	9.16	58.86	104	302	Peak
4989	35.19	-18.81	54	50.79	34.1	9.16	58.86	104	302	Average

Test Mode :	Mode 10	Temperature :	23~24°C
Test Channel :	03	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	2422 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
49.17	28.34	-11.66	40	50.5	8.68	0.69	31.53	-	-	Peak
199.02	36.59	-6.91	43.5	57.65	9.1	1.32	31.48	-	-	Peak
298.65	43.1	-2.9	46	59.23	13.44	1.76	31.33	100	229	QP
498.1	37.49	-8.51	46	47.92	18.2	2.44	31.07	-	-	Peak
895.7	33.28	-12.72	46	37.08	23.57	3.33	30.7	-	-	Peak
1000	37.3	-16.7	54	39.48	24.89	3.51	30.58	-	-	Peak
2389.99	64.49	-9.51	74	60.13	32.18	6.03	33.85	100	59	Peak
2389.99	47.01	-6.99	54	42.65	32.18	6.03	33.85	100	59	Average
2422	93.11	-	-	88.69	32.22	6.07	33.87	100	59	Peak
2422	78.14	-	-	73.72	32.22	6.07	33.87	100	59	Average
2483.5	45.56	-28.44	74	41	32.28	6.18	33.9	100	59	Peak
2483.5	32.85	-21.15	54	28.29	32.28	6.18	33.9	100	59	Average
4989	49.43	-24.57	74	65.03	34.1	9.16	58.86	100	0	Peak

Test Mode :	Mode 10	Temperature :	23~24°C
Test Channel :	03	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	2422 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
49.98	28.96	-11.04	40	51.52	8.28	0.7	31.54	-	-	Peak
200.1	31.67	-11.83	43.5	52.73	9.1	1.32	31.48	-	-	Peak
298.65	38.51	-7.49	46	54.64	13.44	1.76	31.33	128	100	Peak
498.1	33.35	-12.65	46	43.78	18.2	2.44	31.07	-	-	Peak
752.2	31.05	-14.95	46	36.97	21.72	3.06	30.7	-	-	Peak
962.9	31.13	-22.87	54	33.8	24.43	3.47	30.57	-	-	Peak
2389.99	69.82	-4.18	74	65.46	32.18	6.03	33.85	103	357	Peak
2389.99	51.69	-2.31	54	47.33	32.18	6.03	33.85	103	357	Average
2422	99.5	-	-	95.08	32.22	6.07	33.87	103	357	Peak
2422	84.42	-	-	80	32.22	6.07	33.87	103	357	Average
2484	52.64	-21.36	74	48.08	32.28	6.18	33.9	103	357	Peak
2484	36.23	-17.77	54	31.67	32.28	6.18	33.9	103	357	Average
4989	51.89	-22.11	74	67.49	34.1	9.16	58.86	104	305	Peak
4989	34.67	-19.33	54	50.27	34.1	9.16	58.86	104	305	Average



Test Mode :	Mode 11	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
49.98	29.96	-10.04	40	52.52	8.28	0.7	31.54	-	-	Peak
199.02	37.43	-6.07	43.5	58.49	9.1	1.32	31.48	-	-	Peak
299.73	43.61	-2.39	46	59.71	13.46	1.77	31.33	100	240	QP
397.3	28.68	-17.32	46	41.23	16.5	2.14	31.19	-	-	Peak
497.4	37.63	-8.37	46	48.08	18.18	2.44	31.07	-	-	Peak
833.4	32.26	-13.74	46	36.89	22.85	3.23	30.71	-	-	Peak
2389.61	38.14	-15.86	54	33.78	32.18	6.03	33.85	100	59	Average
2389.61	52.89	-21.11	74	48.53	32.18	6.03	33.85	100	59	Peak
2437	80.19	-	-	75.72	32.24	6.11	33.88	100	59	Average
2437	94.69	-	-	90.22	32.24	6.11	33.88	100	59	Peak
2484.61	35.16	-18.84	54	30.6	32.28	6.18	33.9	100	59	Average
2484.61	49.53	-24.47	74	44.97	32.28	6.18	33.9	100	59	Peak
4989	49.57	-24.43	74	65.17	34.1	9.16	58.86	100	0	Peak

Test Mode :	Mode 11	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	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
49.98	29.29	-10.71	40	51.85	8.28	0.7	31.54	-	-	Peak
200.1	31.87	-11.63	43.5	52.93	9.1	1.32	31.48	-	-	Peak
299.73	38.57	-7.43	46	54.67	13.46	1.77	31.33	103	281	Peak
498.1	32.95	-13.05	46	43.38	18.2	2.44	31.07	-	-	Peak
747.3	30.74	-15.26	46	36.77	21.63	3.05	30.71	-	-	Peak
996.5	33.72	-20.28	54	35.95	24.84	3.51	30.58	-	-	Peak
2389.99	41.62	-12.38	54	37.26	32.18	6.03	33.85	100	0	Average
2389.99	58.04	-15.96	74	53.68	32.18	6.03	33.85	100	0	Peak
2437	84.88	-	-	80.41	32.24	6.11	33.88	100	0	Average
2437	100	-	-	95.53	32.24	6.11	33.88	100	0	Peak
2483.85	43.61	-10.39	54	39.05	32.28	6.18	33.9	100	0	Average
2483.85	60.7	-13.3	74	56.14	32.28	6.18	33.9	100	0	Peak
4989	52.39	-21.61	74	67.99	34.1	9.16	58.86	104	303	Peak
4989	35.26	-18.74	54	50.86	34.1	9.16	58.86	104	303	Average

Test Mode :	Mode 12	Temperature :	23~24°C
Test Channel :	09	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	2452 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
49.98	30.16	-9.84	40	52.72	8.28	0.7	31.54	-	-	Peak
200.1	36.57	-6.93	43.5	57.63	9.1	1.32	31.48	-	-	Peak
298.65	43.44	-2.56	46	59.57	13.44	1.76	31.33	100	232	QP
332.2	33.22	-12.78	46	48.19	14.48	1.86	31.31	-	-	Peak
497.4	37.24	-8.76	46	47.69	18.18	2.44	31.07	-	-	Peak
897.8	33.25	-12.75	46	37	23.61	3.34	30.7	-	-	Peak
2390	47.04	-26.96	74	42.68	32.18	6.03	33.85	100	58	Peak
2390	34.22	-19.78	54	29.86	32.18	6.03	33.85	100	58	Average
2452	95.48	-	-	91.03	32.22	6.11	33.88	100	58	Peak
2452	81.22	-	-	76.75	32.24	6.11	33.88	100	58	Average
2483.66	40.39	-13.61	54	35.83	32.28	6.18	33.9	100	58	Average
2483.66	56.77	-17.23	74	52.21	32.28	6.18	33.9	100	58	Peak
4986	49.01	-24.99	74	64.64	34.1	9.16	58.89	100	0	Peak

Test Mode :	Mode 12	Temperature :	23~24°C
Test Channel :	09	Relative Humidity :	50~51%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	2452 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
49.98	29.18	-10.82	40	51.74	8.28	0.7	31.54	-	-	Peak
200.1	31.91	-11.59	43.5	52.97	9.1	1.32	31.48	-	-	Peak
298.65	38.5	-7.5	46	54.63	13.44	1.76	31.33	100	110	Peak
498.1	32.81	-13.19	46	43.24	18.2	2.44	31.07	-	-	Peak
567.4	27.34	-18.66	46	36.44	19.26	2.6	30.96	-	-	Peak
920.2	31.75	-14.25	46	35.12	23.89	3.39	30.65	-	-	Peak
2390	50.12	-23.88	74	45.76	32.18	6.03	33.85	100	355	Peak
2390	36.31	-17.69	54	31.95	32.18	6.03	33.85	100	355	Average
2452	101.33	-	-	96.82	32.26	6.14	33.89	100	355	Peak
2452	87.56	-	-	83.09	32.24	6.11	33.88	100	355	Average
2483.66	51.85	-2.15	54	47.29	32.28	6.18	33.9	100	355	Average
2483.66	71.09	-2.91	74	66.53	32.28	6.18	33.9	100	355	Peak
4980	52.13	-21.87	74	67.76	34.1	9.16	58.89	105	303	Peak
4980	35.03	-18.97	54	50.66	34.1	9.16	58.89	105	303	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 Dipole 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
System Simulator	R&S	CMU200	117995	N/A	Jun. 08, 2009	Jun. 07, 2011	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 11, 2010	Jun. 10, 2011	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 13, 2010	Sep. 12, 2011	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 14, 2010	Sep. 13, 2011	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D35P	TBN-930701	N/A	Jul. 30, 2010	Jul. 29, 2011	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCS 30	100356	9KHz – 2.75GHz	Aug. 16, 2010	Aug. 15, 2011	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)
System Simulator	R&S	CMU200	117591	N/A	Oct. 18, 2010	Oct. 17, 2011	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2010	Oct. 30, 2011	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 03, 2010	Dec. 02, 2011	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 19, 2010	Aug. 18, 2011	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec. 06, 2010	Dec. 05, 2011	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Mar. 29, 2010	Mar. 28, 2011	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

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

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

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

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

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

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



Appendix A. Photographs of EUT

Please refer to Sporton report number EP0N2627 as below.