FCC RF Test Report

APPLICANT	:	D-Link Co.
EQUIPMENT	:	HSUPA 3G VPN Router
BRAND NAME	:	D-Link
MODEL NAME	:	DWR-555
FCC ID	:	KA2IR555A1 Q78-ZTEMF210V (Contain WWAN Module)
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	Digital Transmission System (DTS)

The product was received on Oct. 07, 2010 and completely tested on Jan. 18, 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:

Anderson Chiu

Anderson Chiu / Deputy Manager

Testing Laboratory 1190

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

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 9
2.3 Connection Diagram of Test System 10
2.4 RF Utility 10

3 TEST RESULT **11**

3.1 6dB Bandwidth Measurement 11
3.2 Output Power Measurement 20
3.3 Band Edges Measurement 22
3.4 Spurious Emission Measurement 32
3.5 Power Spectral Density Measurement 45
3.6 AC Conducted Emission Measurement 54
3.7 Radiated Emission Measurement 58
3.8 Antenna Requirements 83

4 LIST OF MEASURING EQUIPMENT **84**

5 UNCERTAINTY OF EVALUATION **85**

APPENDIX A. PHOTOGRAPHS OF EUT

APPENDIX B. SETUP PHOTOGRAPHS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR0O0725	Rev. 01	Initial issue of report	Jan. 24, 2011

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.2	15.247(b)	A8.4	Power Output	≤ 30dBm	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	≤ 20dBc	Pass	-
3.4	15.247(d)	A8.5	Spurious Emission	< 20 dBc	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	≤ 8dBm	Pass	-
3.6	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 9.1 dB at 23.12 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 2.76 dB at 4824 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

D-Link Co.
No. 289, Sinhu 3rd Rd., Neihu District Taipei City 114 Taiwan

1.2 Manufacturer

Advance Multimedia Internet Technology Inc.
No. 28, Lane 31, Sec. 1, Huandong Rd., Sinshih Township, Tainan County 74146, Taiwan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	HSUPA 3G VPN Router
Brand Name	D-Link
Model Name	DWR-555
FCC ID	KA2IR555A1 Q78-ZTEMF210V (Contain WWAN Module)
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 : 18.76 dBm (0.08 W) 802.11g : 20.83 dBm (0.12 W) 802.11n (BW 20MHz) : 21.80 dBm (0.15 W) 802.11n (BW 40MHz) : 21.27 dBm (0.13 W)
Antenna Type	PIFA Antenna with gain 2.83 dBi
HW Version	A1
SW Version	V1.00
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

Remark:

1. This test report recorded only product characteristics and test results of Digital Transmission System (DTS).
2. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	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 (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.	Phone	HTT	HTT-198	N/A	N/A	N/A
3.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 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	17.93	-	-	-
CH 06	2437 MHz	**18.76**	18.62	18.72	18.75
CH 11	2462 MHz	18.35	-	-	-

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	19.94	-	-	-	-	-	-	-
CH 06	2437 MHz	**20.83**	19.85	20.40	20.22	19.85	19.84	19.50	20.81
CH 11	2462 MHz	20.11	-	-	-	-	-	-	-

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
CH 01	2412 MHz	21.27	-	-	-	-	-	-	-
CH 06	2437 MHz	**21.80**	21.12	21.52	21.41	21.34	20.92	21.43	21.14
CH 11	2462 MHz	21.21	-	-	-	-	-	-	-
Channel	**Frequency**	**MCS=8**	**MCS=9**	**MCS=10**	**MCS=11**	**MCS=12**	**MCS=13**	**MCS=14**	**MCS=15**
CH 01	2412 MHz	-	-	-	-	-	-	-	-
CH 06	2437 MHz	19.15	19.14	19.14	19.13	19.11	19.12	19.09	19.10
CH 11	2462 MHz	-	-	-	-	-	-	-	-

Channel	Frequency	2.4GHz 802.11n (BW 40MHz) RF Power (dBm)							
		OFDM Data Rate							
		MCS=0	MCS=1	MCS=2	MCS=3	MCS=4	MCS=5	MCS=6	MCS=7
CH 03	2422 MHz	**21.27**	21.12	21.15	21.25	21.26	21.24	21.25	21.22
CH 06	2437 MHz	21.01	-	-	-	-	-	-	-
CH 09	2452 MHz	20.68	-	-	-	-	-	-	-
Channel	**Frequency**	**MCS=8**	**MCS=9**	**MCS=10**	**MCS=11**	**MCS=12**	**MCS=13**	**MCS=14**	**MCS=15**
CH 03	2422 MHz	19.35	19.31	19.32	19.30	19.33	19.34	19.31	19.33
CH 06	2437 MHz	-	-	-	-	-	-	-	-
CH 09	2452 MHz	-	-	-	-	-	-	-	-

Remark:

1. The data rates of WLAN 802.11b/g/n were set in 1Mbps for 802.11b, 6Mbps for 802.11g, MCS=0 for 802.11n (BW 20MHz) and 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

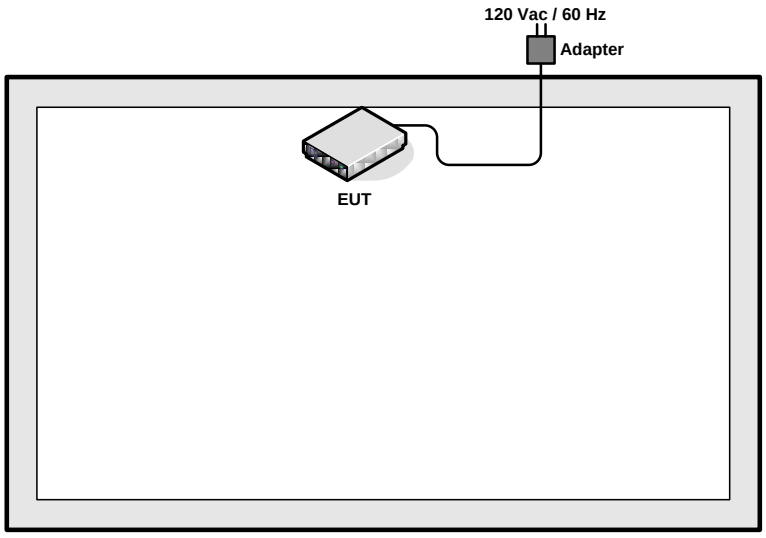
The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic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

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

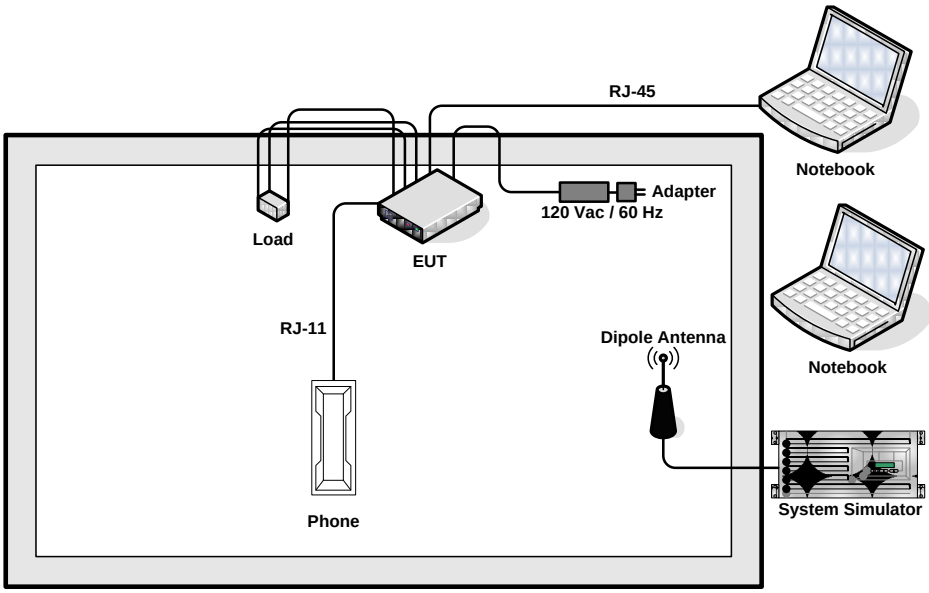
Test Cases		
Test Item	**802.11b (Modulation : DSSS)**	**802.11g/n (Modulation : OFDM)**
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (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)_CH09_2452 MHz
AC Conducted Emission	Mode 1 :GSM850 Idle + WLAN Link + RJ-45 Link + Adapter + RJ-11 Idle Mode 2 :WCDMA Band V Idle + WLAN Link + RJ-45 Link + Adapter + RJ-11 Idle	
Remark: 1. The worst case of conducted emission is mode 2; only the test data of it was reported. 2. Mode 4~6 and 10~11 of radiation test only performed Band Edges.		

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

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

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

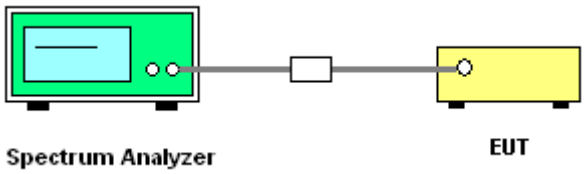
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

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

3.1.4 Test Setup

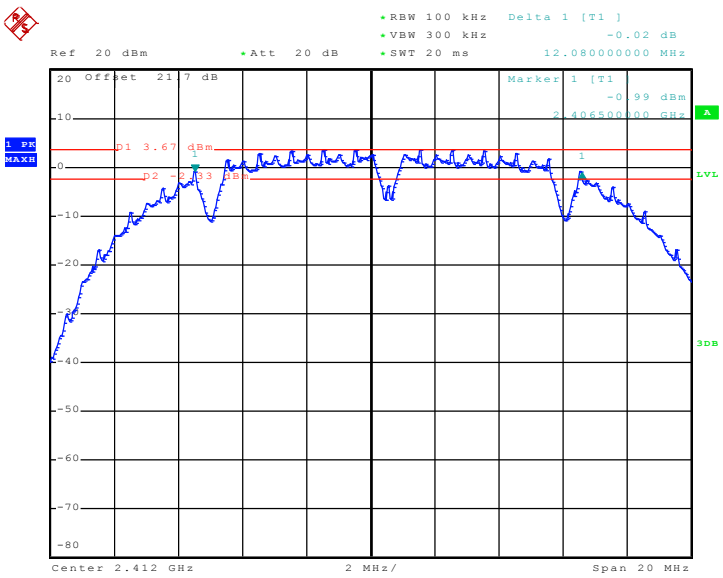


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

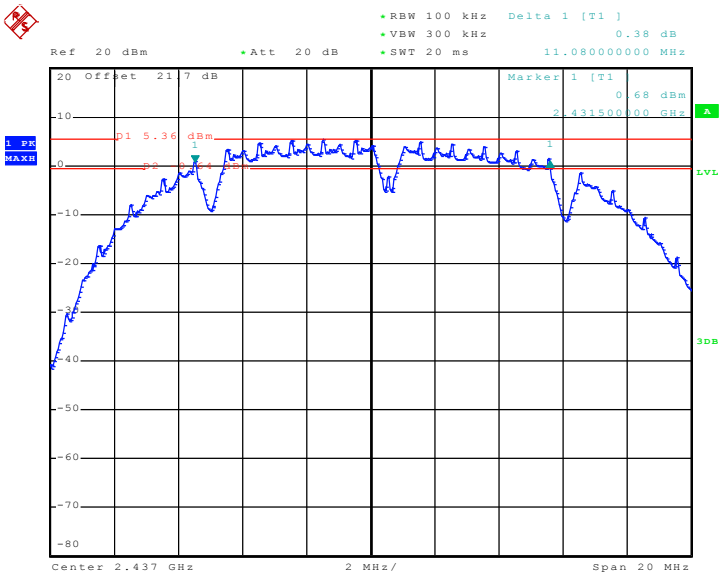
Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	12.08	0.5	Pass
06	2437	11.08	0.5	Pass
11	2462	11.26	0.5	Pass

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



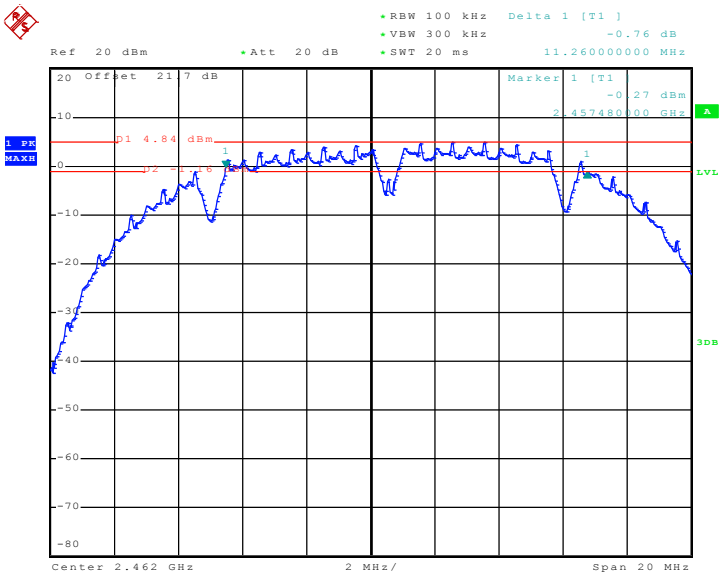
Date: 29.DEC.2010 10:58:34

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



Date: 29.DEC.2010 11:28:03

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

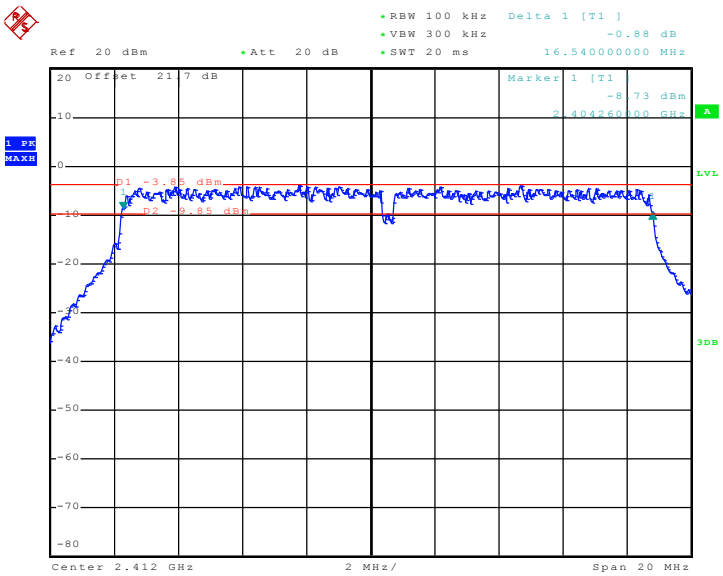


Date: 29.DEC.2010 11:44:03

Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

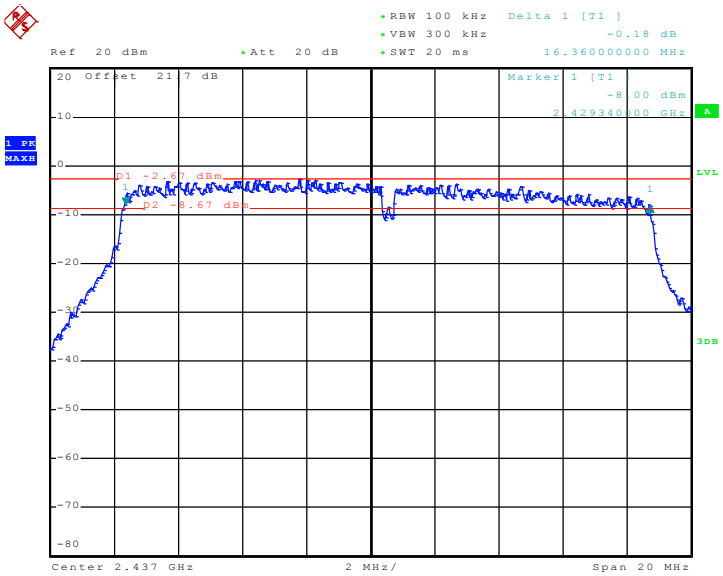
Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.54	0.5	Pass
06	2437	16.36	0.5	Pass
11	2462	16.38	0.5	Pass

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



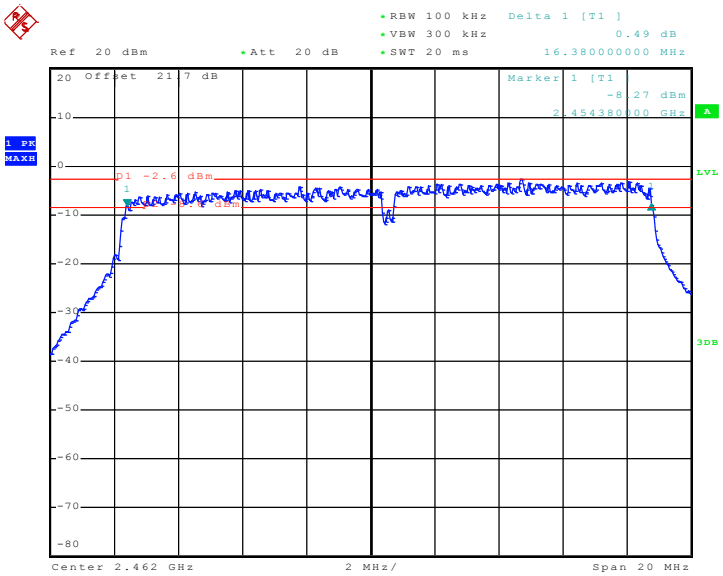
Date: 29.DEC.2010 12:00:40

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



Date: 29.DEC.2010 12:13:43

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

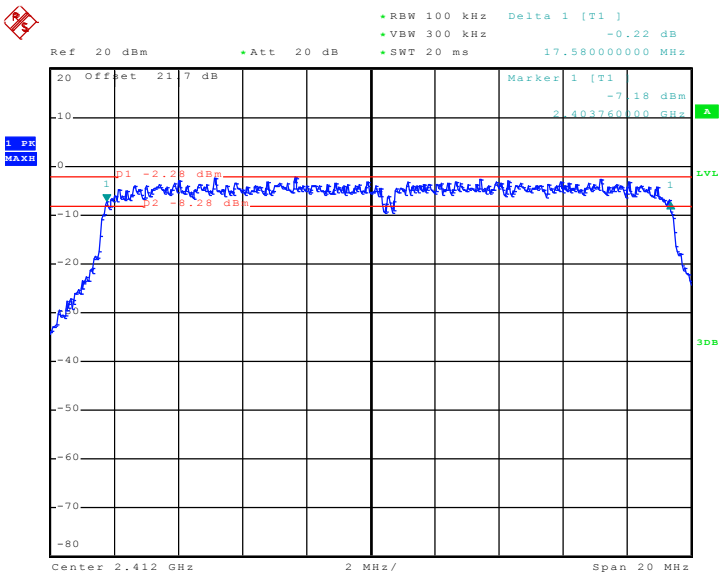


Date: 29.DEC.2010 12:45:14

Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

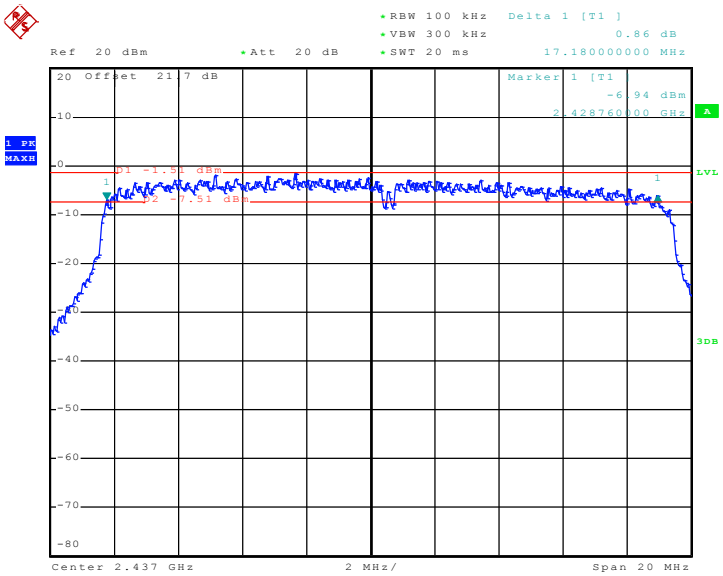
Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.58	0.5	Pass
06	2437	17.18	0.5	Pass
11	2462	17.58	0.5	Pass

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



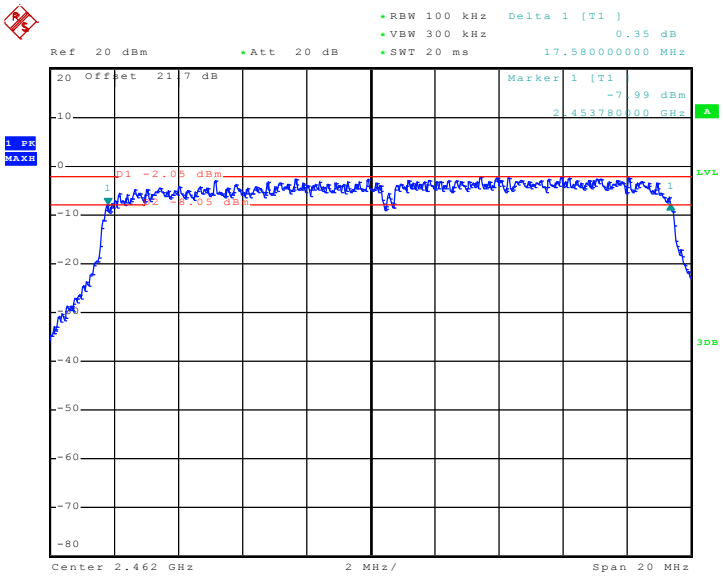
Date: 29.DEC.2010 13:47:10

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



Date: 29.DEC.2010 14:02:33

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

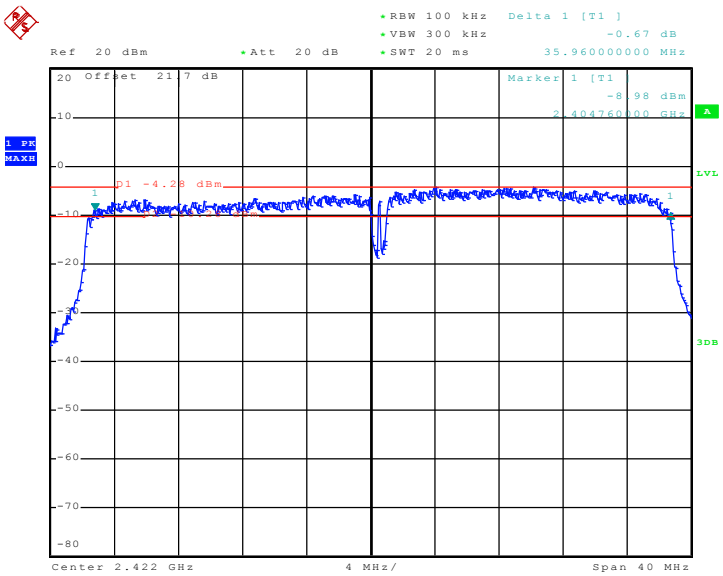


Date: 29.DEC.2010 14:20:53

Test Mode :	Mode 10, 11, 12	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

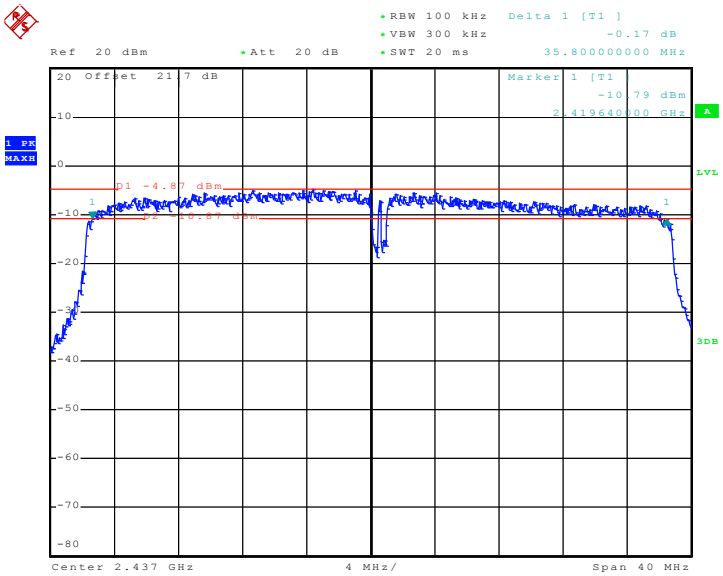
Channel	Frequency (MHz)	802.11n (BW 40MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
03	2422	35.96	0.5	Pass
06	2437	35.80	0.5	Pass
09	2452	36.32	0.5	Pass

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



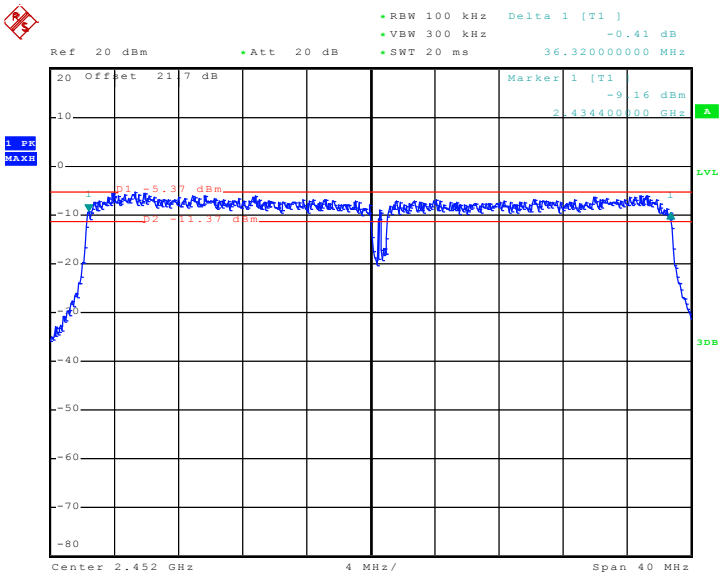
Date: 29.DEC.2010 14:37:58

Mode 11 : 6 dB Bandwidth Plot on 802.11n(BW 40MHz) Channel 06



Date: 29.DEC.2010 14:54:46

Mode 12 : 6 dB Bandwidth Plot on 802.11n(BW 40MHz) Channel 09



Date: 29.DEC.2010 15:09:33

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.

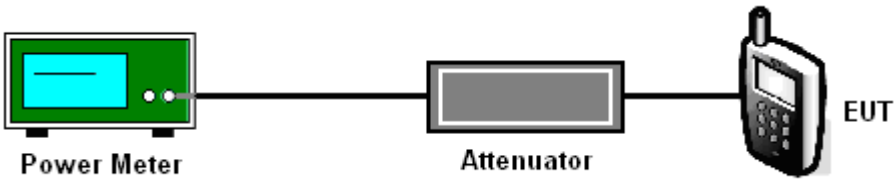
3.2.2 Measuring Instruments

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 :	Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	17.93	30	Pass
06	2437	18.76	30	Pass
11	2462	18.35	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.94	30	Pass
06	2437	20.83	30	Pass
11	2462	20.11	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.27	30	Pass
06	2437	21.80	30	Pass
11	2462	21.21	30	Pass

Test Mode :	Mode 10, 11, 12	Temperature :	24~26
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44

Channel	Frequency (MHz)	802.11n (BW 40MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	21.27	30	Pass
06	2437	21.01	30	Pass
09	2452	20.68	30	Pass

3.3 Band Edges Measurement

3.3.1 Limit of Band Edges

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

3.3.2 Measuring Instruments

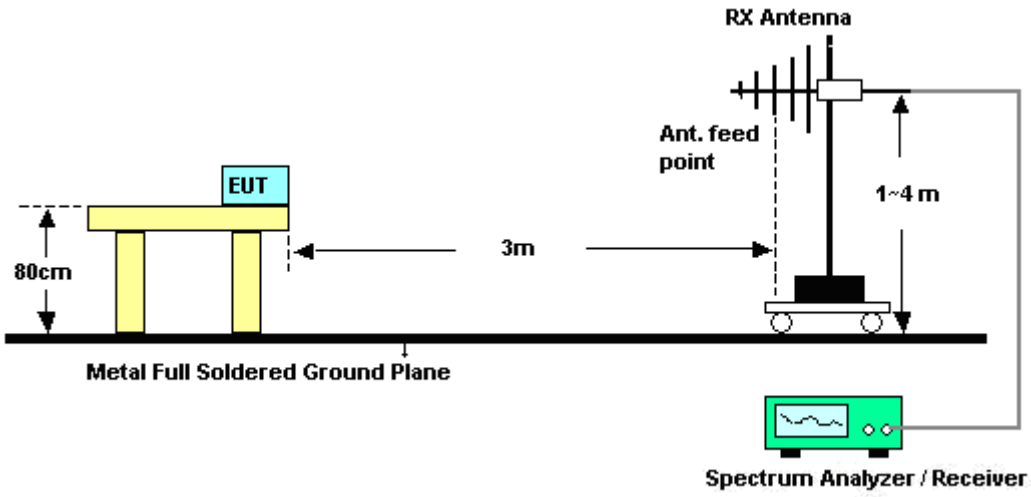
See list of measuring instruments of this test report.

3.3.3 Test Procedures

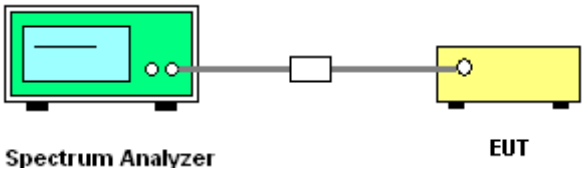
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) ≥ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized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

3.3.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>



3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	23~24℃
Test Band :	802.11b	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	David Yang

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
2390	55.55	-18.45	74	51.19	32.18	6.03	33.85	105	125	Peak
2390	43.66	-10.34	54	39.3	32.18	6.03	33.85	105	125	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	51.71	-22.29	74	47.35	32.18	6.03	33.85	102	161	Peak
2390	40.04	-13.96	54	35.68	32.18	6.03	33.85	102	161	Average

Test Mode :	Mode 3	Temperature :	23~24℃
Test Band :	802.11b	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	David Yang

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	57.19	-16.81	74	52.63	32.28	6.18	33.9	103	124	Peak
2483.66	46.45	-7.55	54	41.89	32.28	6.18	33.9	103	124	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
2485.18	54.65	-19.35	74	50.09	32.28	6.18	33.9	100	190	Peak
2485.18	43.07	-10.93	54	38.51	32.28	6.18	33.9	100	190	Average

Test Mode :	Mode 4	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	David Yang

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	61.02	-12.98	74	56.66	32.18	6.03	33.85	105	123	Peak
2389.99	43.29	-10.71	54	38.93	32.18	6.03	33.85	105	123	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.61	56.14	-17.86	74	51.78	32.18	6.03	33.85	102	164	Peak
2389.61	39.06	-14.94	54	34.7	32.18	6.03	33.85	102	164	Average

Test Mode :	Mode 6	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	David Yang

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	60.87	-13.13	74	56.31	32.28	6.18	33.9	103	124	Peak
2483.66	45.55	-8.45	54	40.99	32.28	6.18	33.9	103	124	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	56.54	-17.46	74	51.98	32.28	6.18	33.9	100	191	Peak
2483.66	41.15	-12.85	54	36.59	32.28	6.18	33.9	100	191	Average

Test Mode :	Mode 7	Temperature :	23~24℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	David Yang

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	61.75	-12.25	74	57.39	32.18	6.03	33.85	103	124	Peak
2389.99	43.21	-10.79	54	38.85	32.18	6.03	33.85	103	124	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.61	54.31	-19.69	74	49.95	32.18	6.03	33.85	103	163	Peak
2389.61	40.65	-13.35	54	36.29	32.18	6.03	33.85	103	163	Average

Test Mode :	Mode 9	Temperature :	23~24℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	David Yang

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	61.5	-12.5	74	56.94	32.28	6.18	33.9	104	124	Peak
2483.66	44.06	-9.94	54	39.5	32.28	6.18	33.9	104	124	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
2485.37	51.93	-22.07	74	47.37	32.28	6.18	33.9	103	162	Peak
2485.37	39.01	-14.99	54	34.45	32.28	6.18	33.9	103	162	Average

Test Mode :	Mode 10	Temperature :	23~24℃
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	42~43%
Test Channel :	03	Test Engineer :	David Yang

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
2384.1	60.78	-13.22	74	56.44	32.16	6.03	33.85	104	124	Peak
2384.1	46.72	-7.28	54	42.38	32.16	6.03	33.85	104	124	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	57.72	-16.28	74	53.36	32.18	6.03	33.85	100	164	Peak
2389.42	43.76	-10.24	54	39.4	32.18	6.03	33.85	100	164	Average

Test Mode :	Mode 11	Temperature :	23~24℃
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	42~43%
Test Channel :	09	Test Engineer :	David Yang

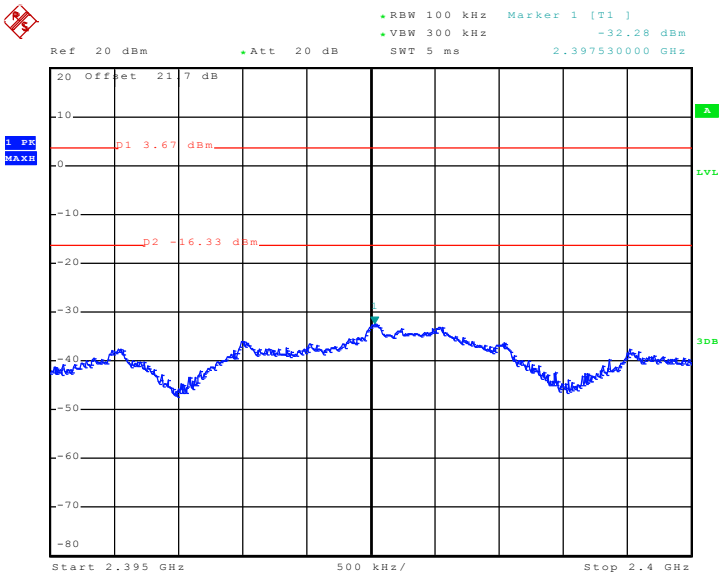
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2488.41	60.53	-13.47	74	55.95	32.3	6.18	33.9	107	123	Peak
2488.41	47.03	-6.97	54	42.45	32.3	6.18	33.9	107	123	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
2485.37	58.93	-15.07	74	54.37	32.28	6.18	33.9	101	163	Peak
2485.37	44.72	-9.28	54	40.16	32.28	6.18	33.9	101	163	Average

3.3.6 Test Plots of Conducted Band Edges

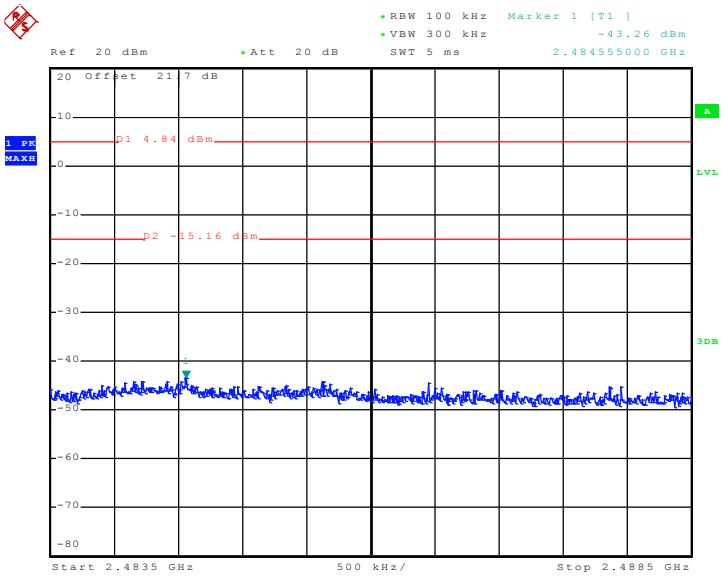
Test Mode :	Mode 1 and 3	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	40~44%
Test Channel :	01 and 11	Test Engineer :	Phoenix Chen

Low Band Edge Plot on 802.11b Channel 01



Date: 29.DEC.2010 10:59:44

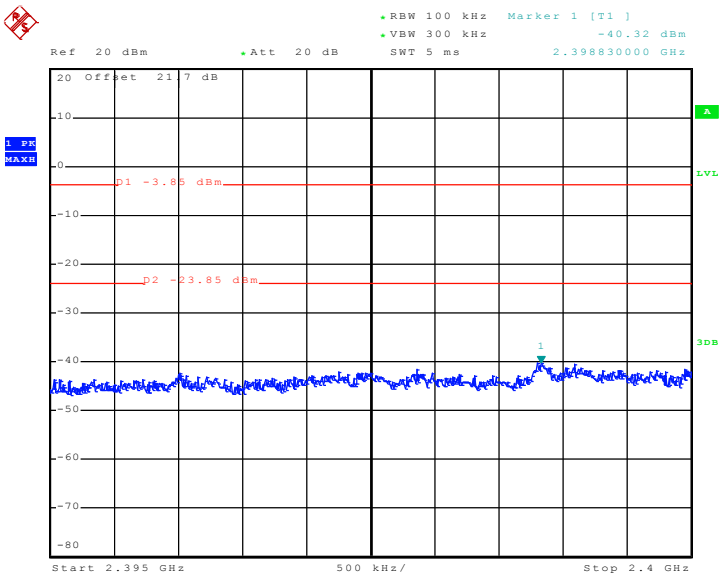
High Band Edge Plot on 802.11b Channel 11



Date: 29.DEC.2010 11:44:50

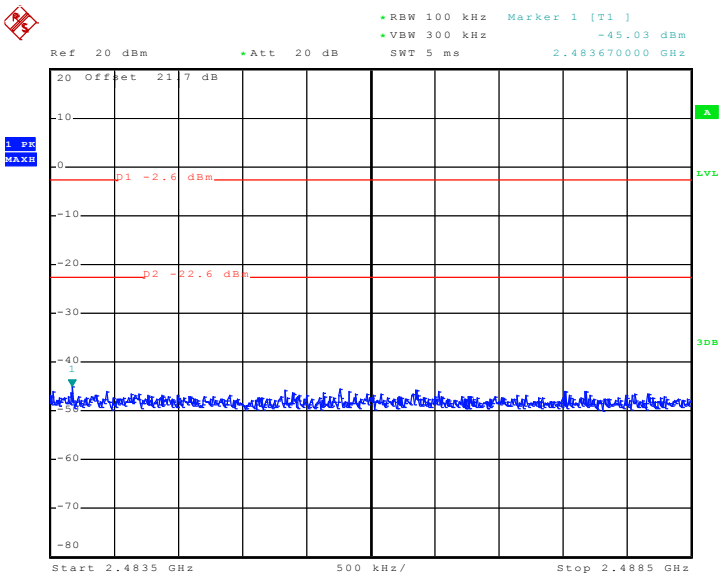
Test Mode :	Mode 4 and 6	Temperature :	24~26℃
Test Band :	802.11g	Relative Humidity :	40~44%
Test Channel :	01 and 11	Test Engineer :	Phoenix Chen

Low Band Edge Plot on 802.11g Channel 01



Date: 29.DEC.2010 12:01:50

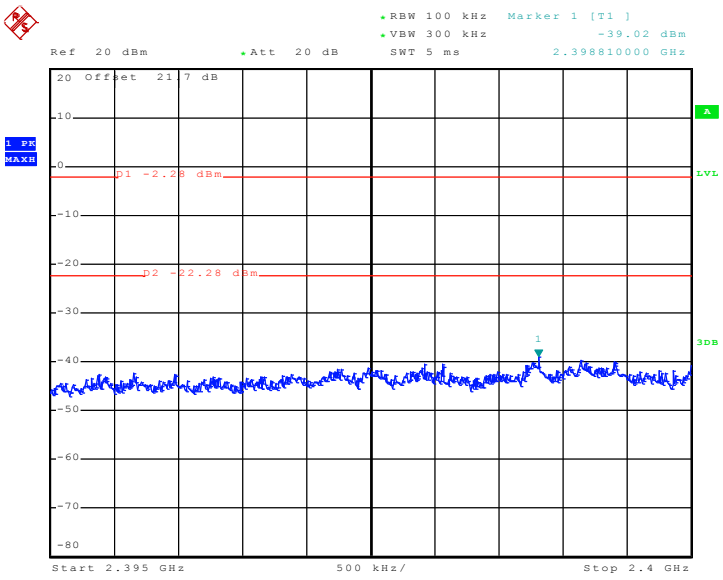
High Band Edge Plot on 802.11g Channel 11



Date: 29.DEC.2010 12:46:02

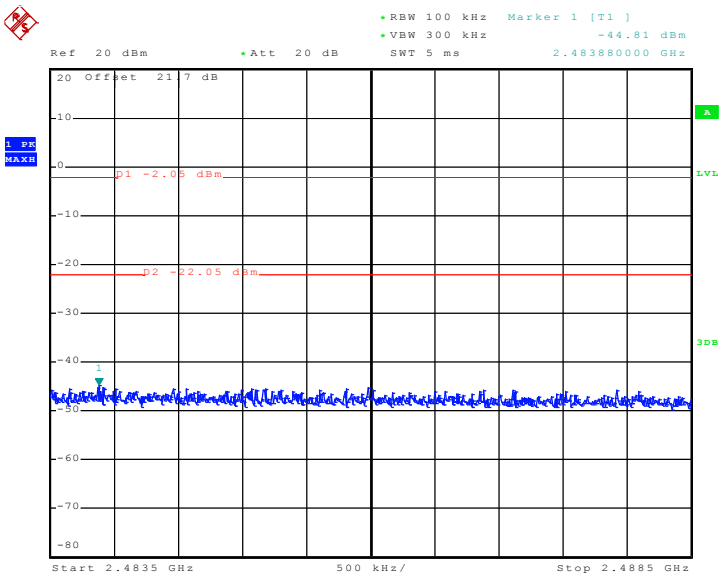
Test Mode :	Mode 7 and 9	Temperature :	24~26℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~44%
Test Channel :	01 and 11	Test Engineer :	Phoenix Chen

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



Date: 29.DEC.2010 13:48:20

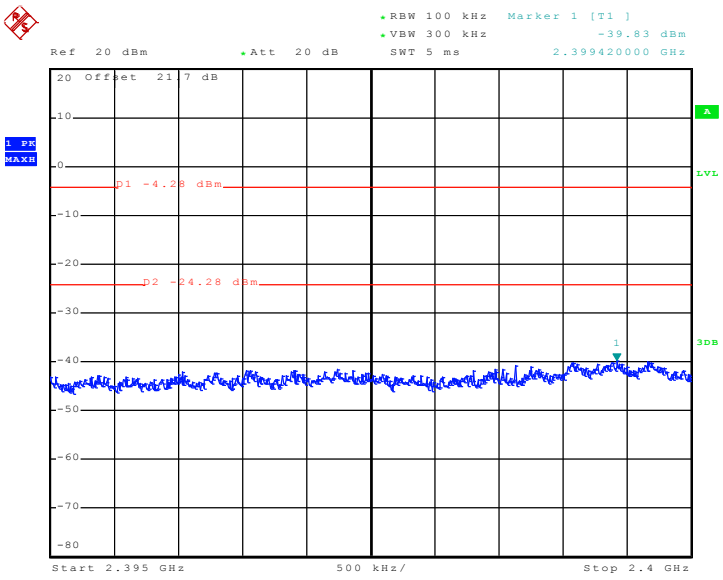
High Band Edge Plot on 802.11n (BW 20MHz) Channel 11



Date: 29.DEC.2010 14:21:40

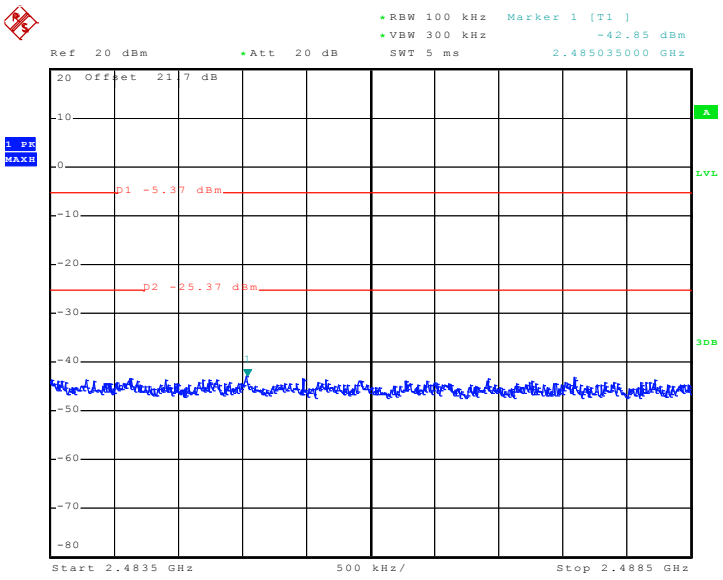
Test Mode :	Mode 10 and 11	**Temperature :**	24~26℃
Test Band :	802.11n (BW 40MHz)	**Relative Humidity :**	40~44%
Test Channel :	03 and 09	**Test Engineer :**	Phoenix Chen

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



Date: 29.DEC.2010 14:39:08

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



Date: 29.DEC.2010 15:09:59

3.4 Spurious Emission Measurement

3.4.1 Limit of Spurious Emission Measurement

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

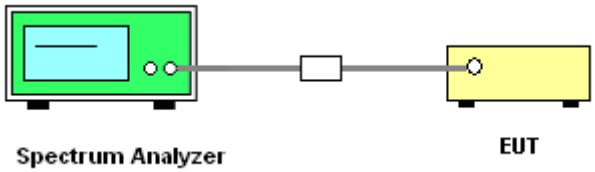
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedure

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

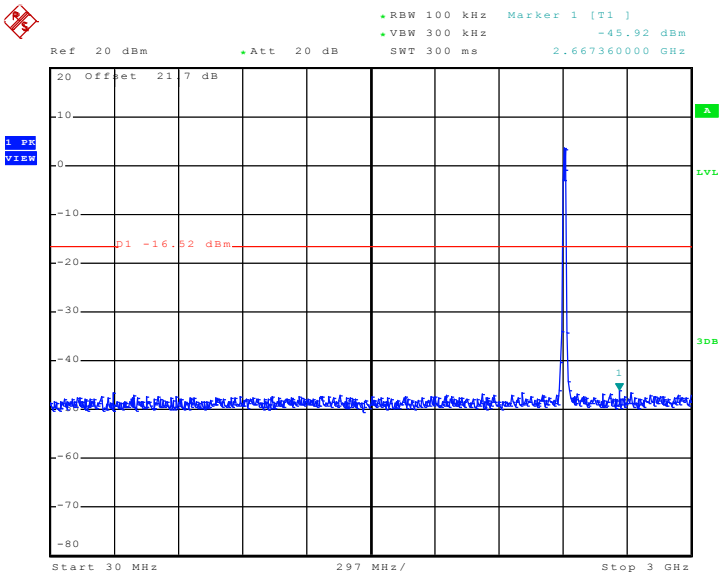
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

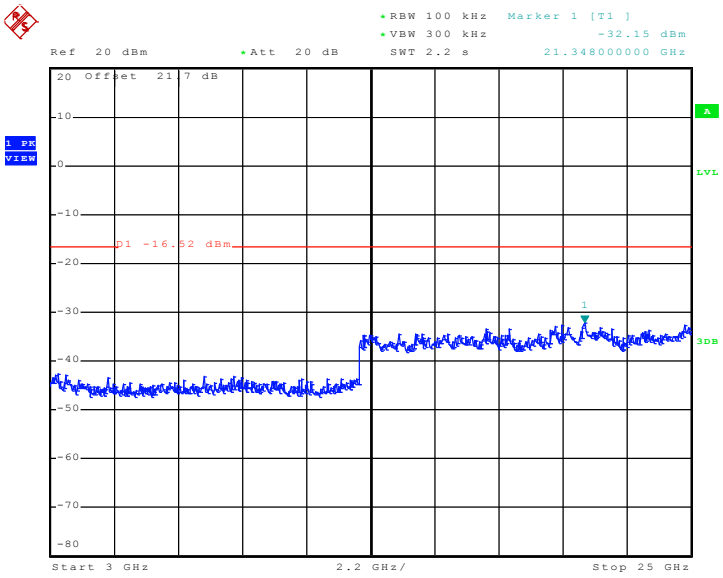
Test Mode :	Mode 1	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	40~44%
Test Channel :	01	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.DEC.2010 11:24:37

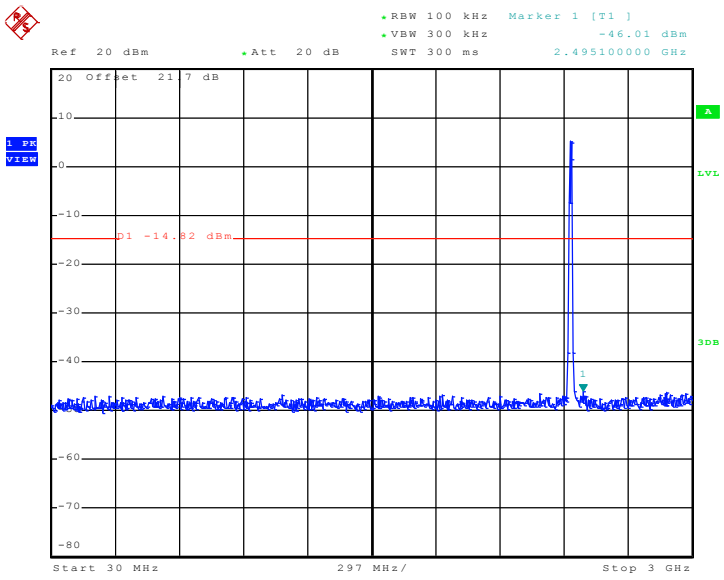
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 29.DEC.2010 11:24:54

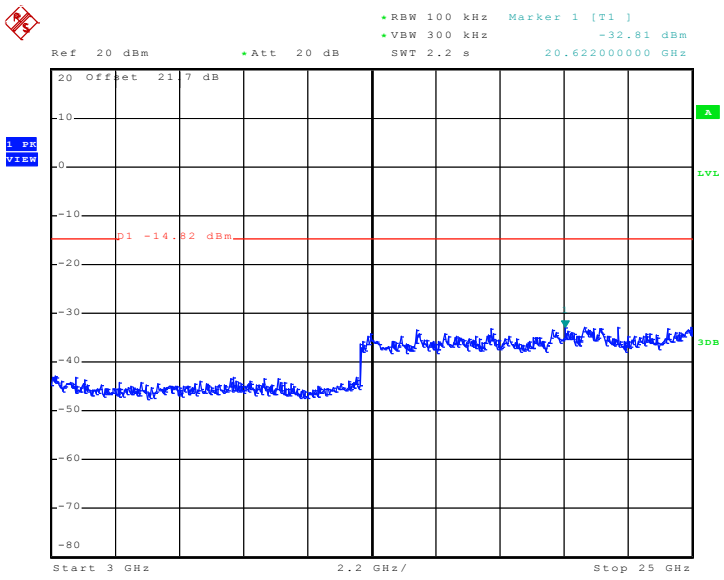
Test Mode :	Mode 2	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	40~44%
Test Channel :	06	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.DEC.2010 11:38:04

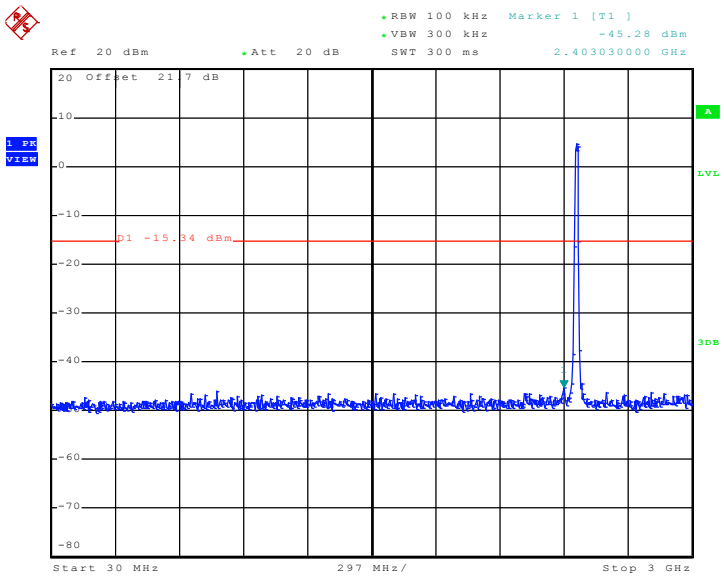
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 29.DEC.2010 11:38:21

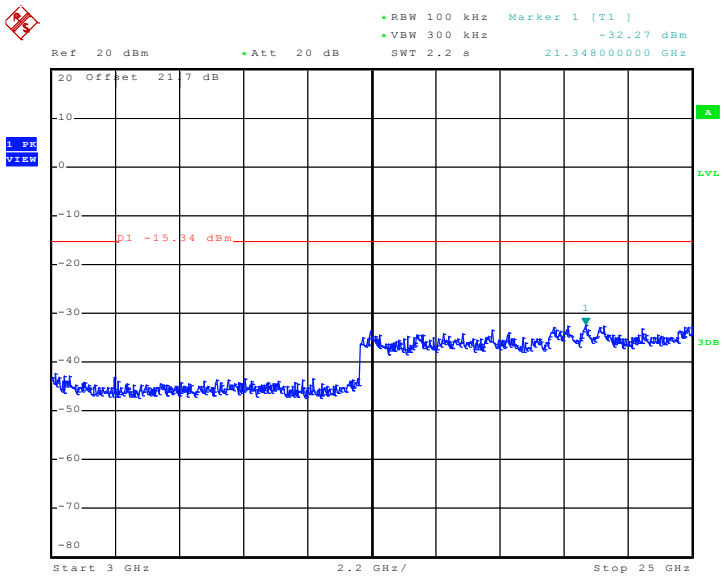
Test Mode :	Mode 3	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	40~44%
Test Channel :	11	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.DEC.2010 11:55:30

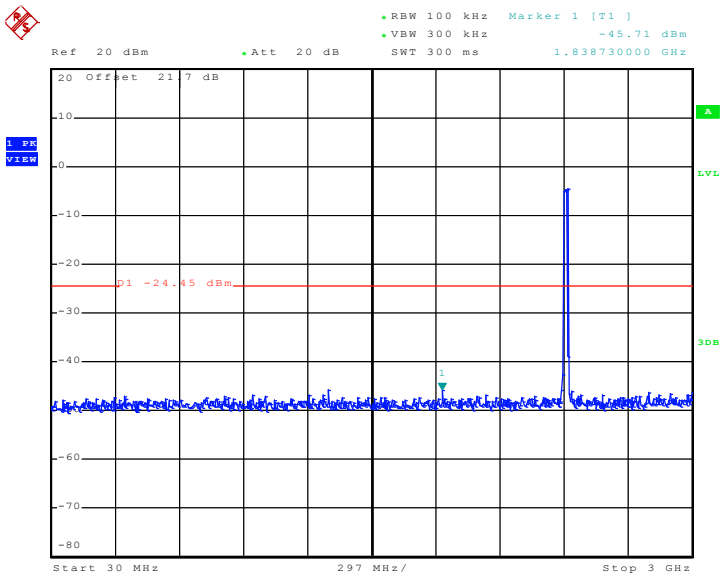
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 29.DEC.2010 11:55:47

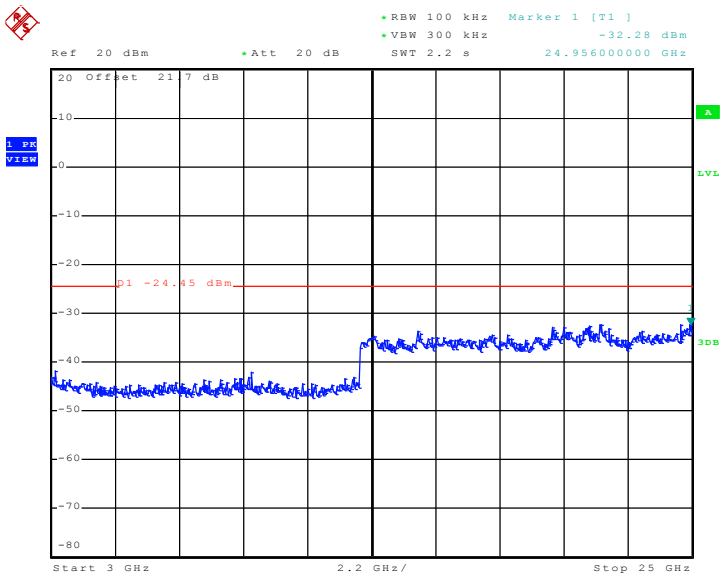
Test Mode :	Mode 4	Temperature :	24~26℃
Test Band :	802.11g	Relative Humidity :	40~44%
Test Channel :	01	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.DEC.2010 12:11:29

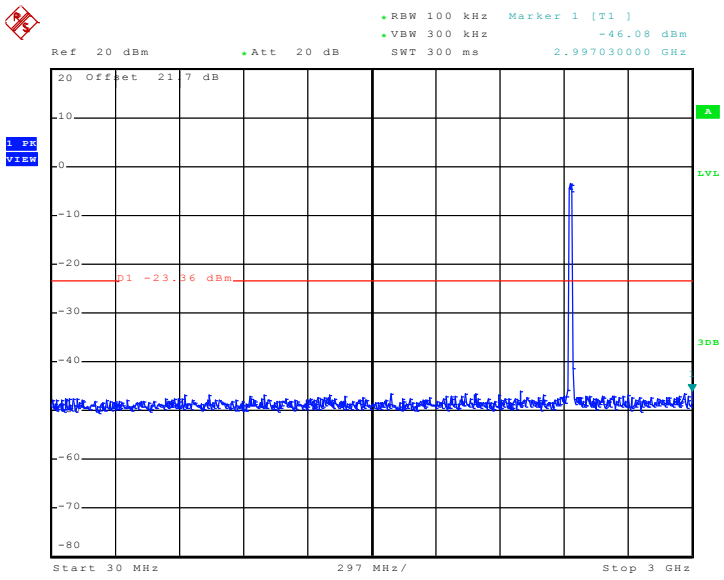
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 29.DEC.2010 12:11:47

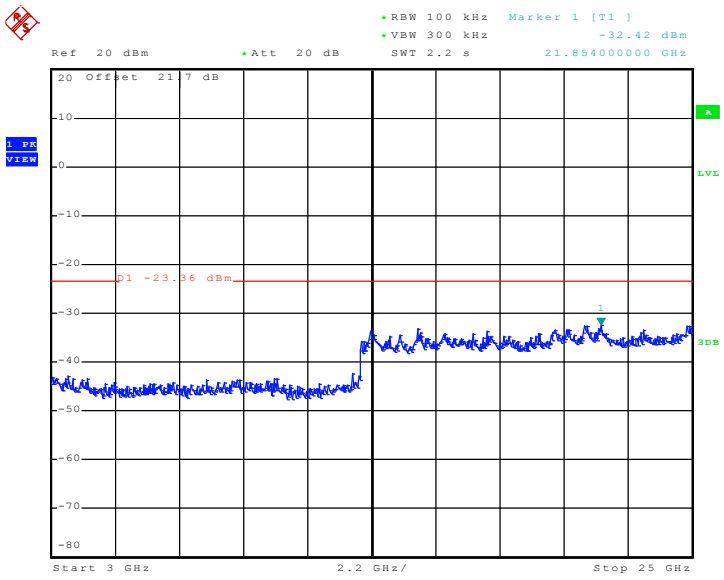
Test Mode :	Mode 5	Temperature :	24~26
Test Band :	802.11g	Relative Humidity :	40~44
Test Channel :	06	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.DEC.2010 12:42:13

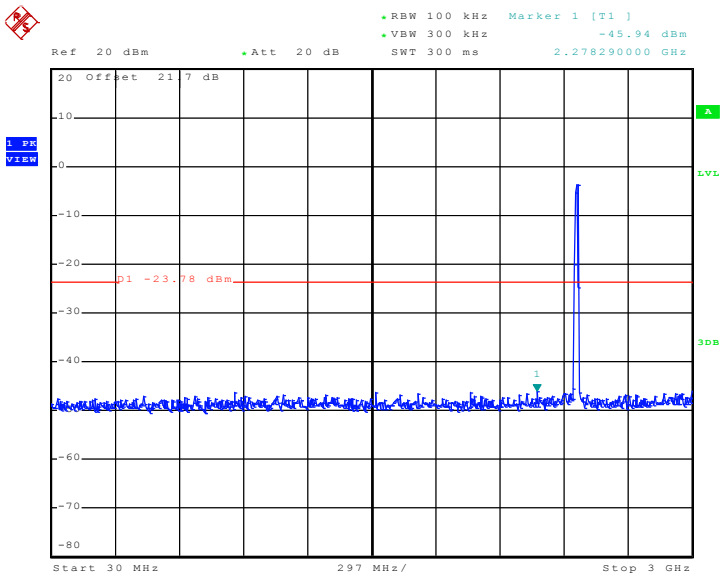
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 29.DEC.2010 12:42:30

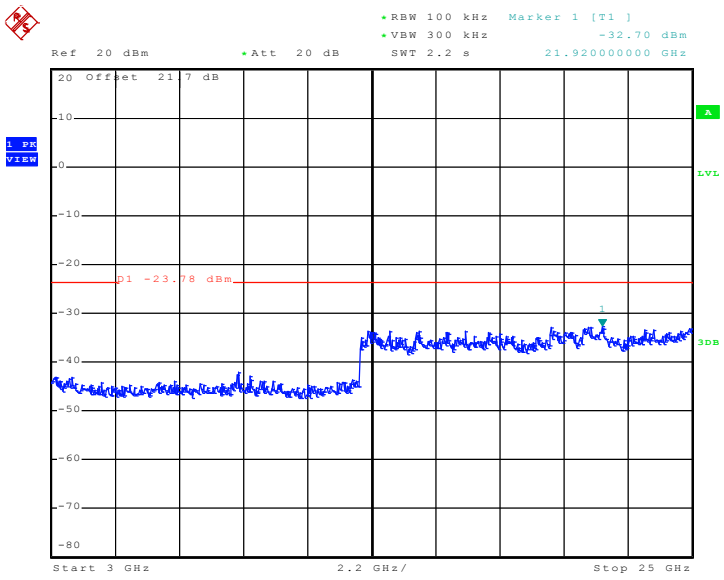
Test Mode :	Mode 6	Temperature :	24~26℃
Test Band :	802.11g	Relative Humidity :	40~44%
Test Channel :	11	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.DEC.2010 13:43:02

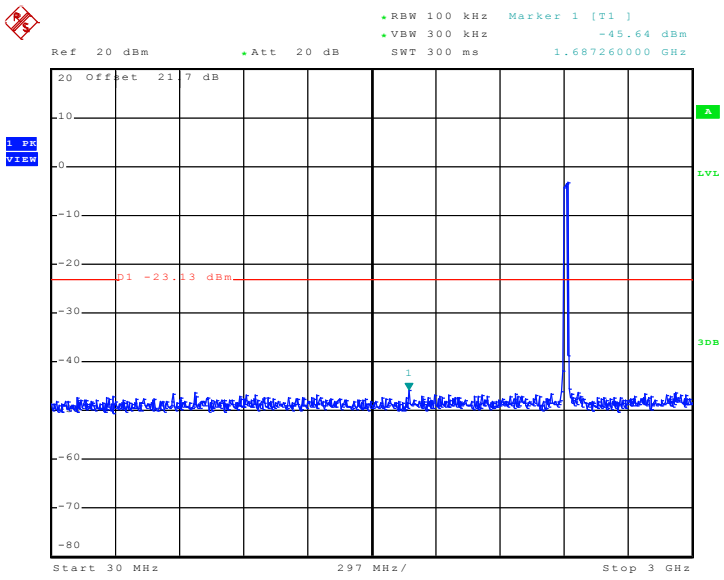
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 29.DEC.2010 13:43:20

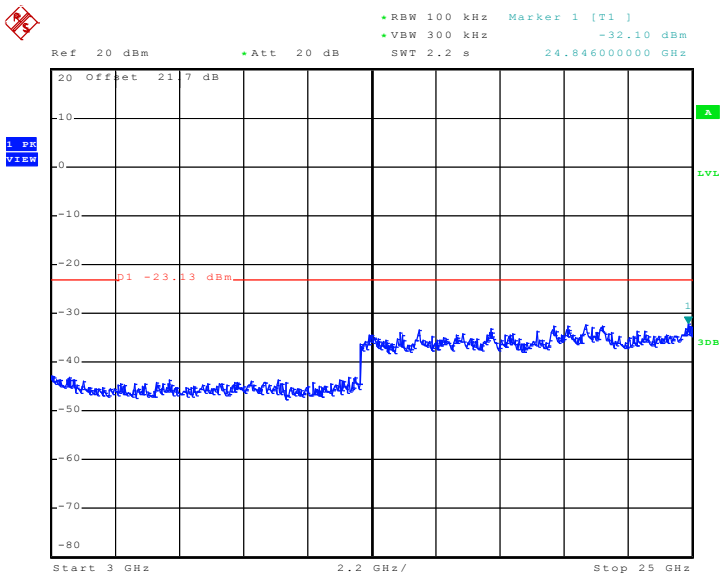
Test Mode :	Mode 7	Temperature :	24~26℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~44%
Test Channel :	01	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.DEC.2010 13:57:47

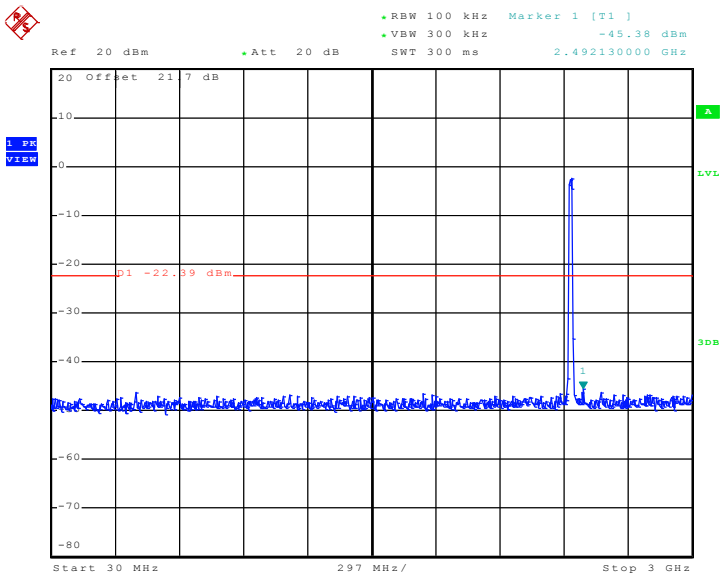
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 29.DEC.2010 13:58:05

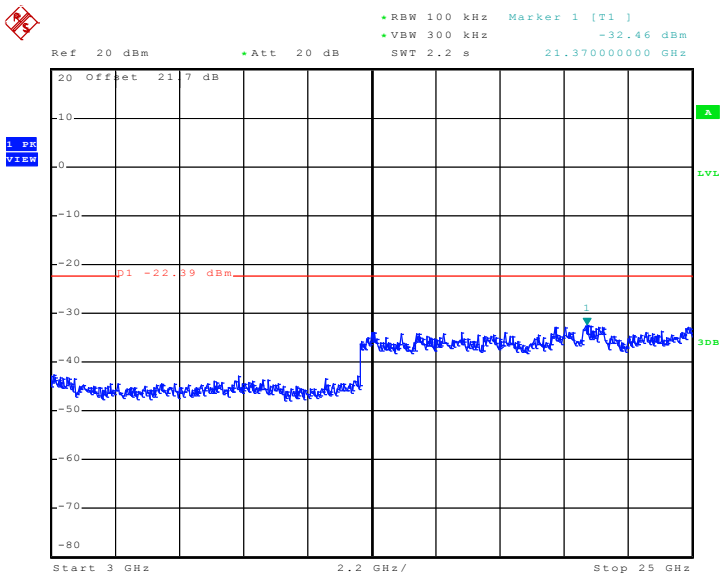
Test Mode :	Mode 8	Temperature :	24~26℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~44%
Test Channel :	06	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.DEC.2010 14:12:46

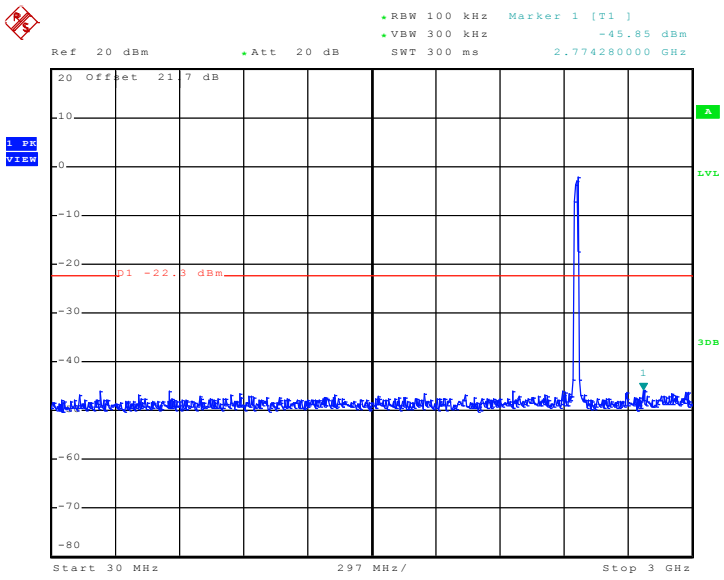
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 29.DEC.2010 14:13:03

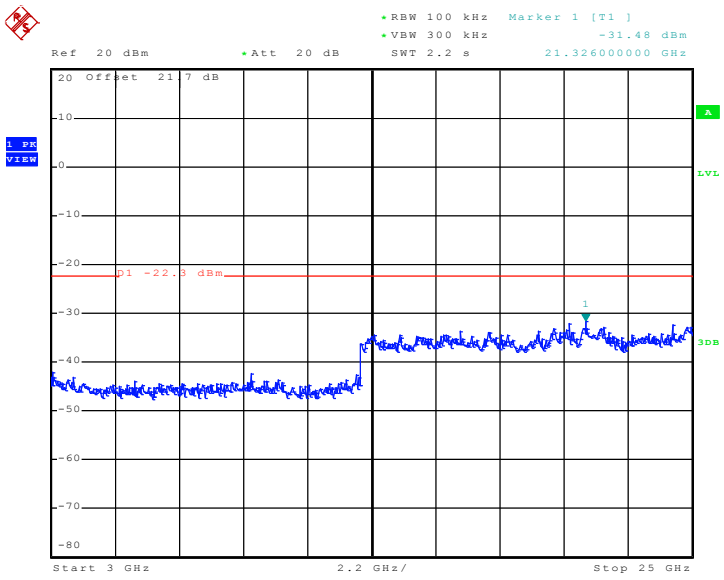
Test Mode :	Mode 9	Temperature :	24~26℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~44%
Test Channel :	11	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.DEC.2010 14:31:07

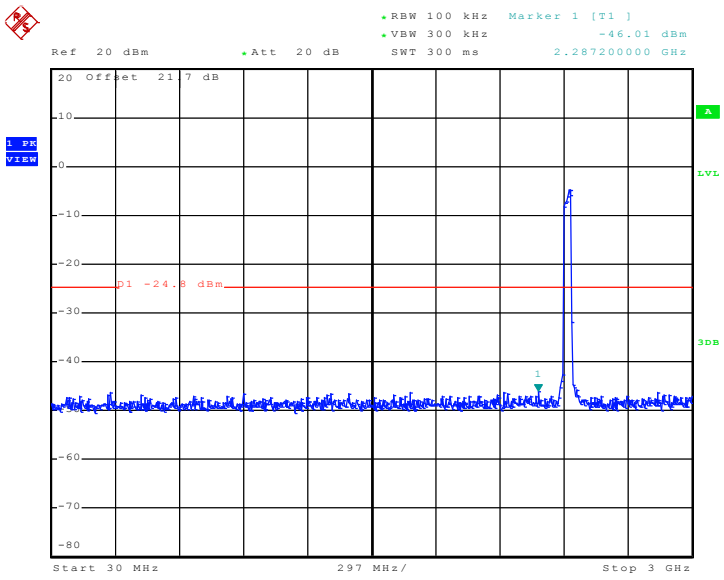
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 29.DEC.2010 14:31:25

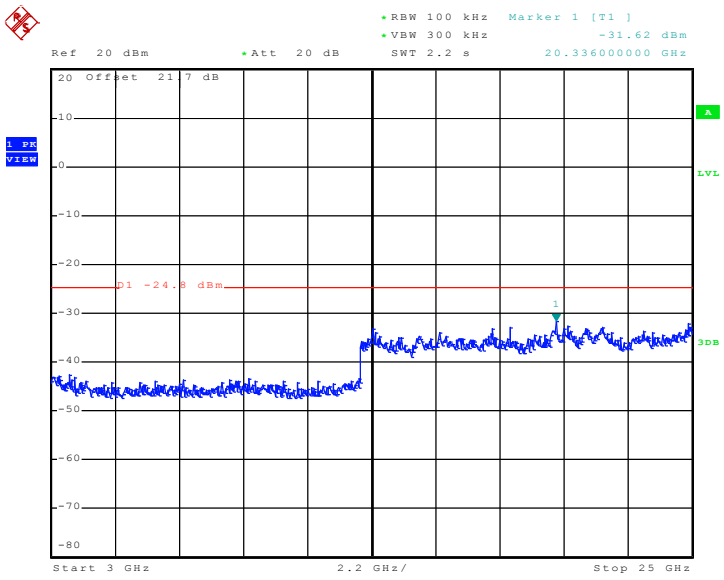
Test Mode :	Mode 10	Temperature :	24~26℃
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	40~44%
Test Channel :	03	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.DEC.2010 14:49:50

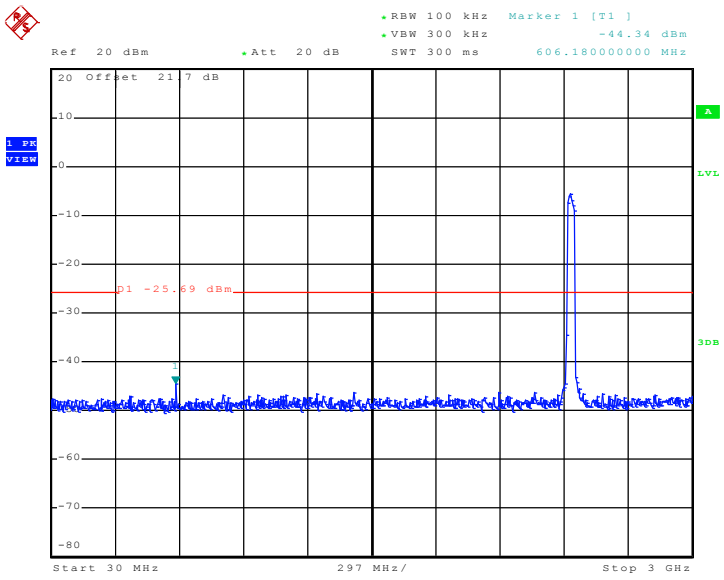
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 29.DEC.2010 14:50:07

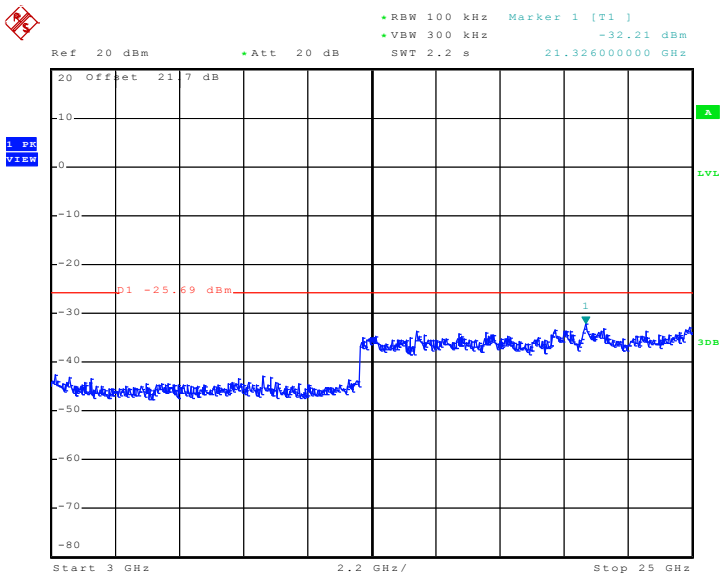
Test Mode :	Mode 11	Temperature :	24~26℃
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	40~44%
Test Channel :	06	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.DEC.2010 15:04:26

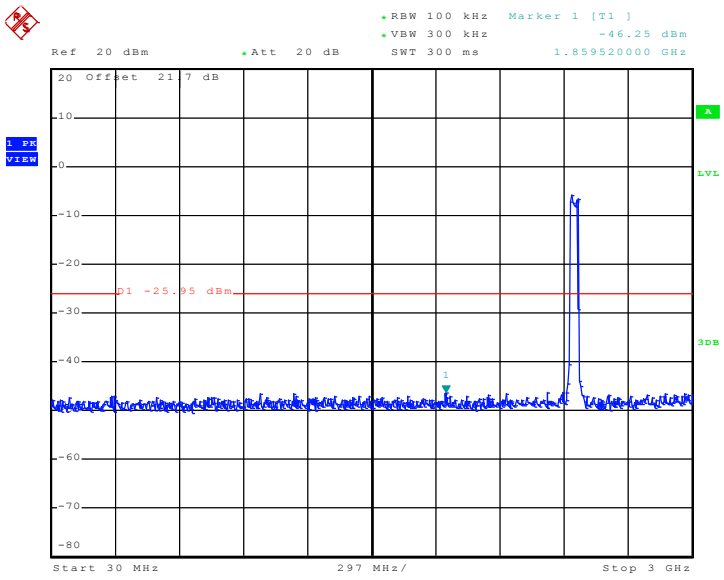
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 29.DEC.2010 15:04:44

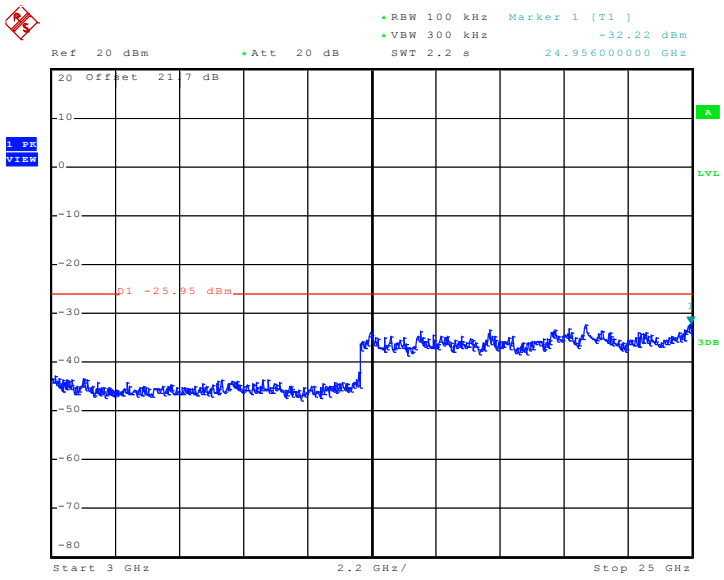
Test Mode :	Mode 12	Temperature :	24~26℃
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	40~44%
Test Channel :	09	Test Engineer :	Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.DEC.2010 15:19:52

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 29.DEC.2010 15:20:09

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.

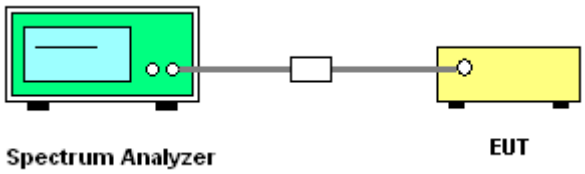
3.5.2 Measuring Instruments

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

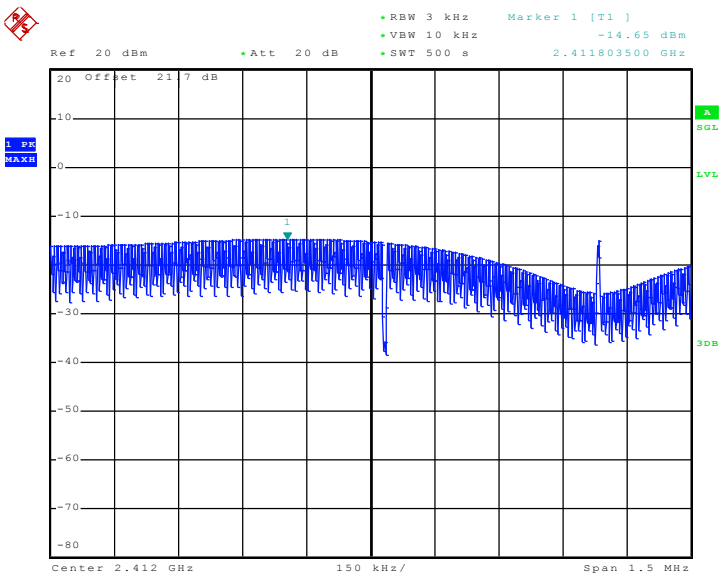


3.5.5 Test Result of Power Spectral Density

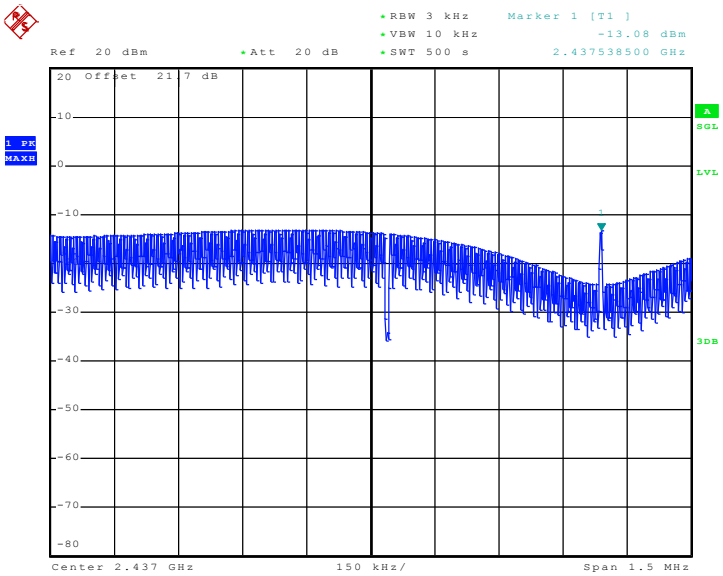
Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-14.65	8	Pass
06	2437	-13.08	8	Pass
11	2462	-13.49	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01

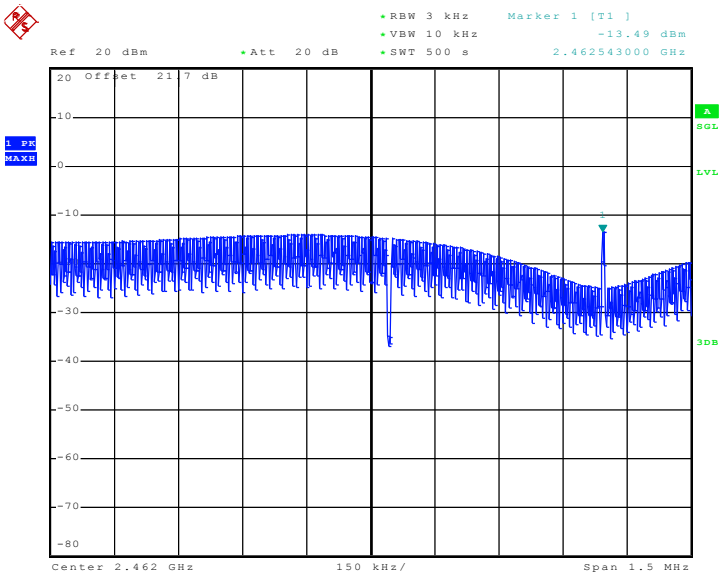


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 29.DEC.2010 11:37:43

Mode 3 : PSD Plot on 802.11b Channel 11

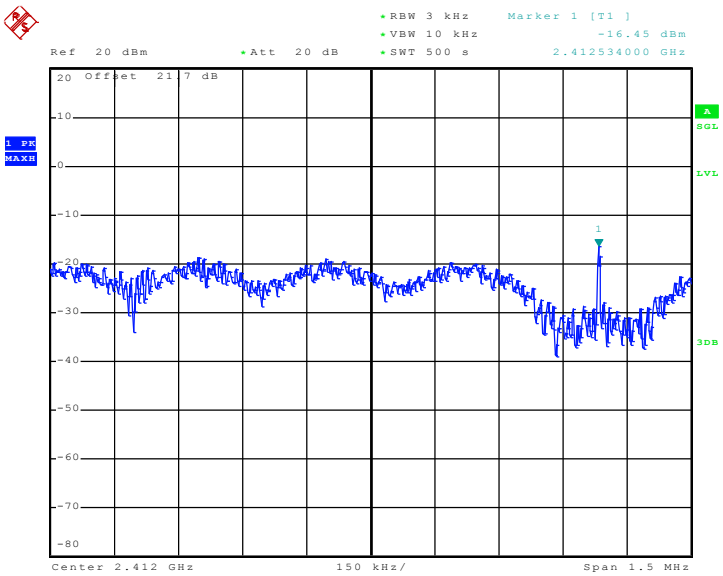


Date: 29.DEC.2010 11:55:08

Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

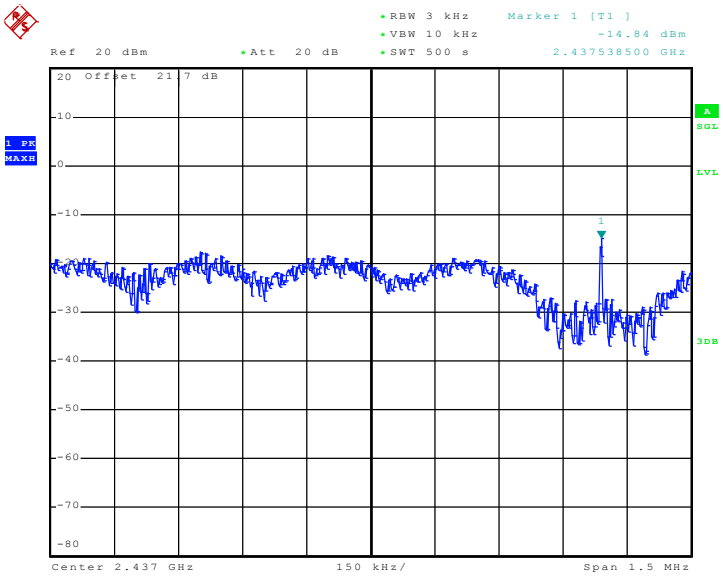
Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-16.45	8	Pass
06	2437	-14.84	8	Pass
11	2462	-15.38	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01



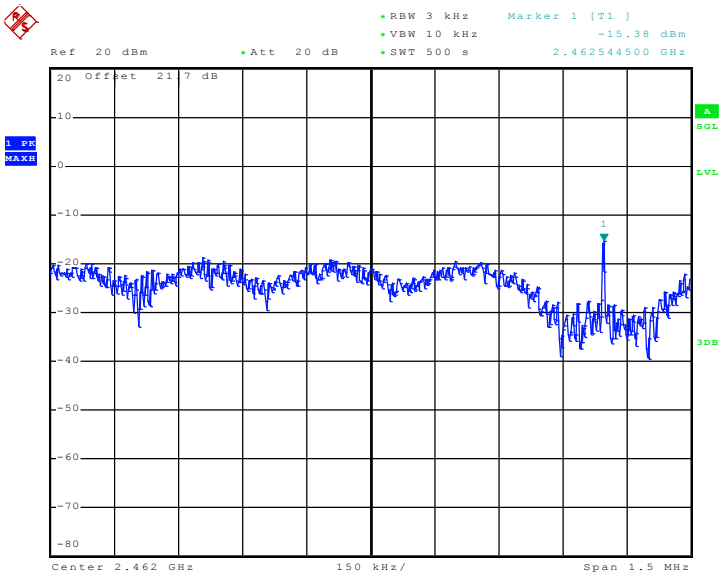
Date: 29.DEC.2010 12:11:08

Mode 5 : PSD Plot on 802.11g Channel 06



Date: 29.DEC.2010 12:41:51

Mode 6 : PSD Plot on 802.11g Channel 11

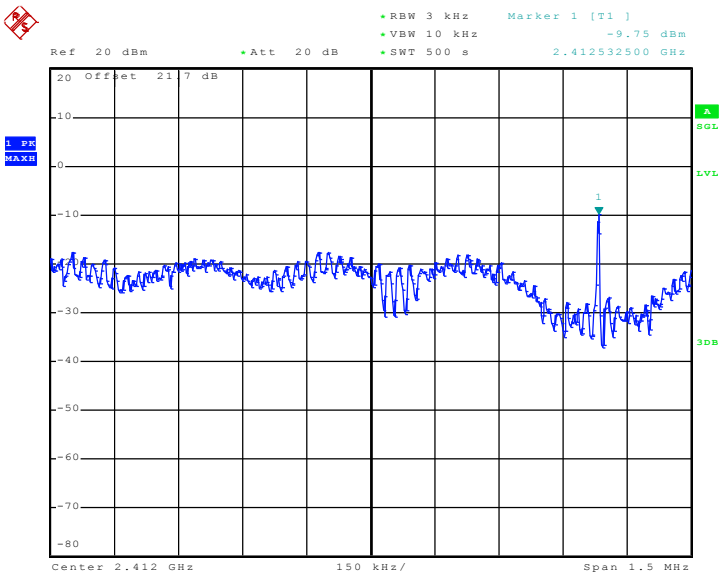


Date: 29.DEC.2010 13:42:41

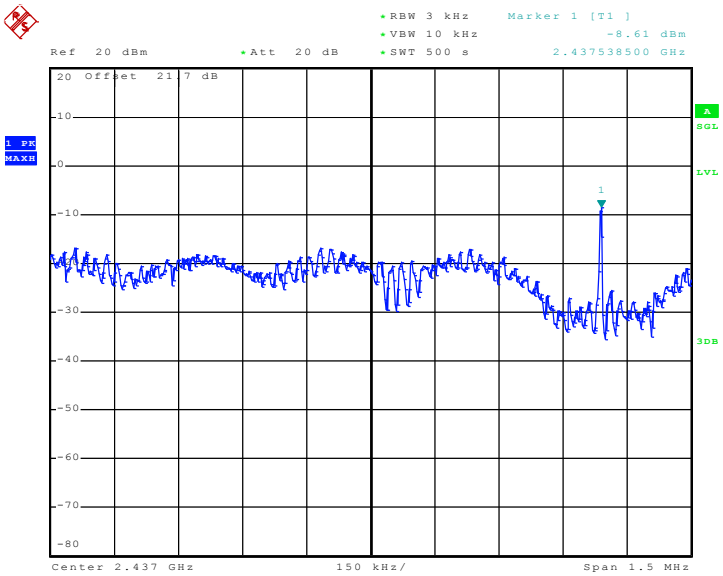
Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-9.75	8	Pass
06	2437	-8.61	8	Pass
11	2462	-9.31	8	Pass

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

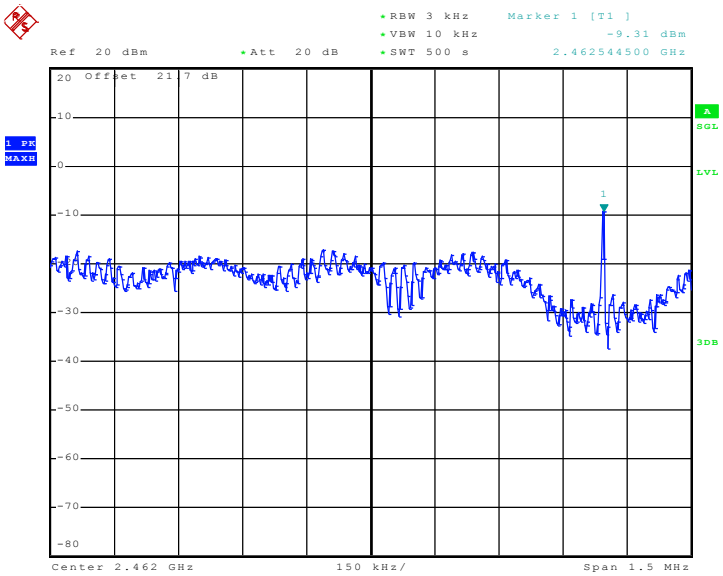


Mode 8 : PSD Plot on802.11n (BW 20MHz) Channel 06



Date: 29.DEC.2010 14:12:25

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

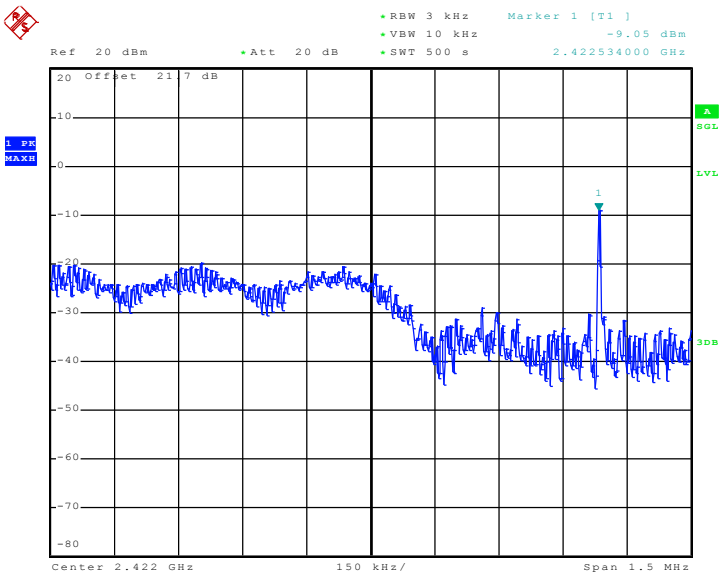


Date: 29.DEC.2010 14:30:46

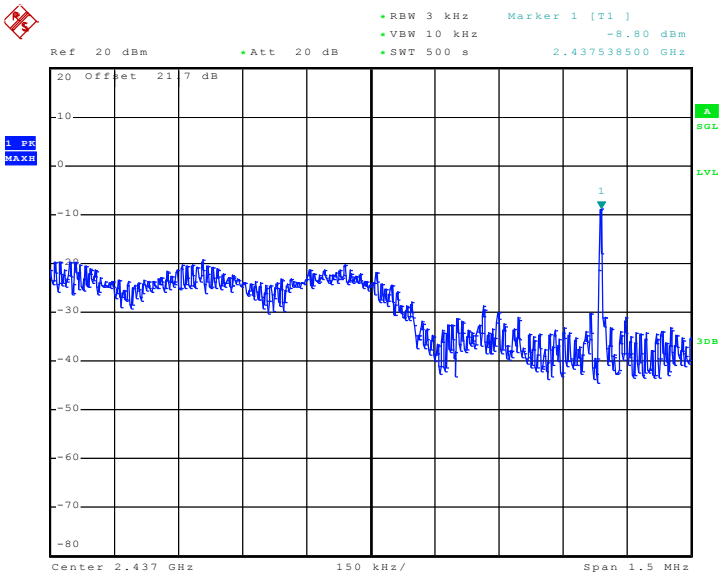
Test Mode :	Mode 10, 11, 12	Temperature :	24~26
Test Engineer :	Phoenix Chen	Relative Humidity :	40~44

Channel	Frequency (MHz)	802.11n (BW 40MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	-9.05	8	Pass
06	2437	-8.80	8	Pass
09	2452	-10.62	8	Pass

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

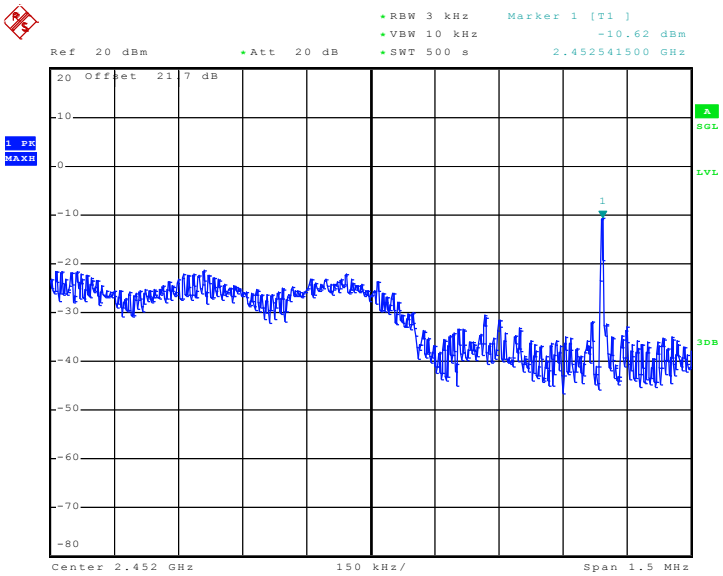


Mode 11 : PSD Plot on802.11n (BW 40MHz) Channel 06



Date: 29.DEC.2010 15:04:05

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



Date: 29.DEC.2010 15:19:30

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.

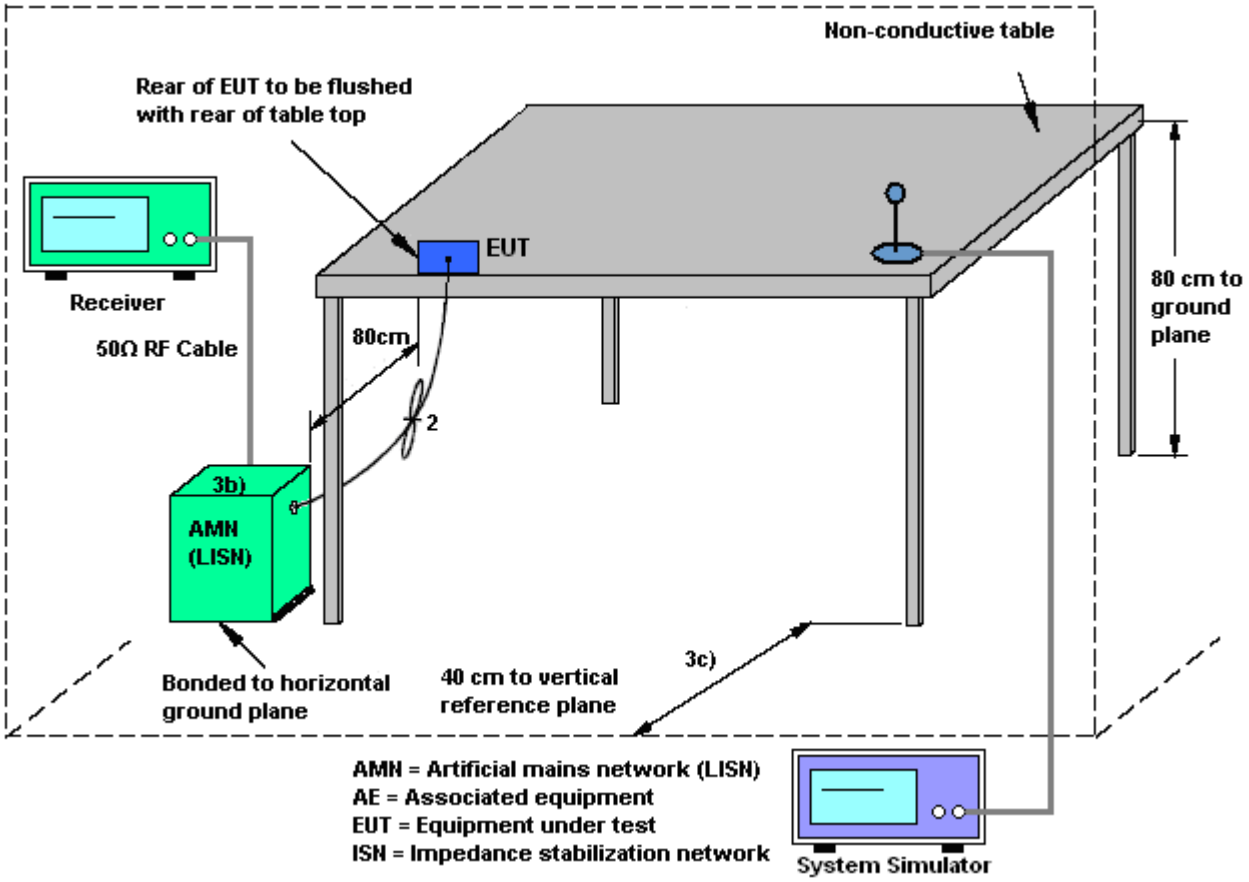
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

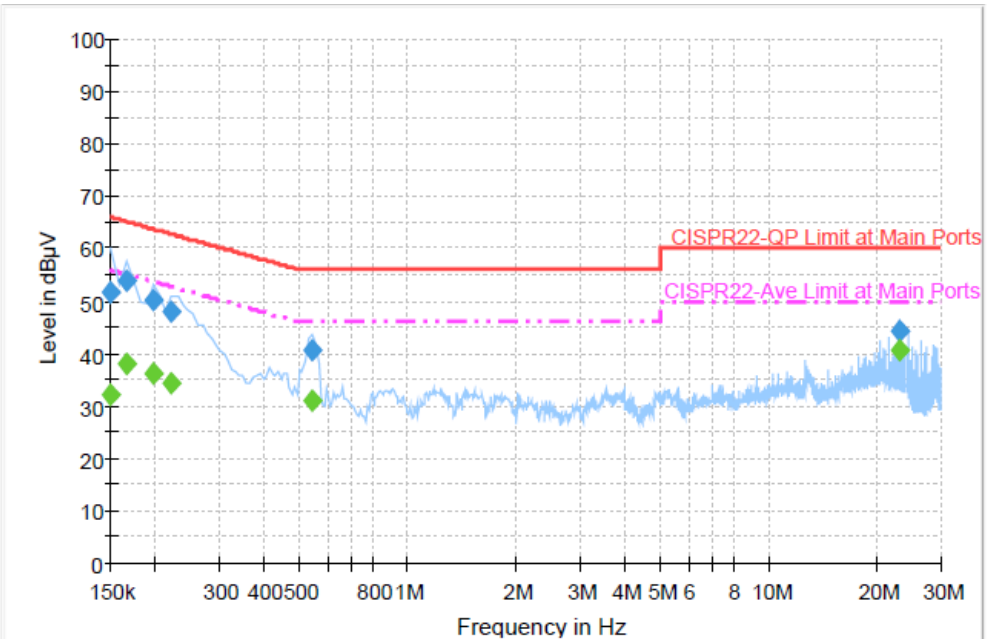
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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 2	**Temperature :**	20~22℃
Test Engineer :	Novic Chiang	**Relative Humidity :**	38~40%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	WCDMA Band V Idle + WLAN Link + RJ-45 Link + Adapter + RJ-11 Idle		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



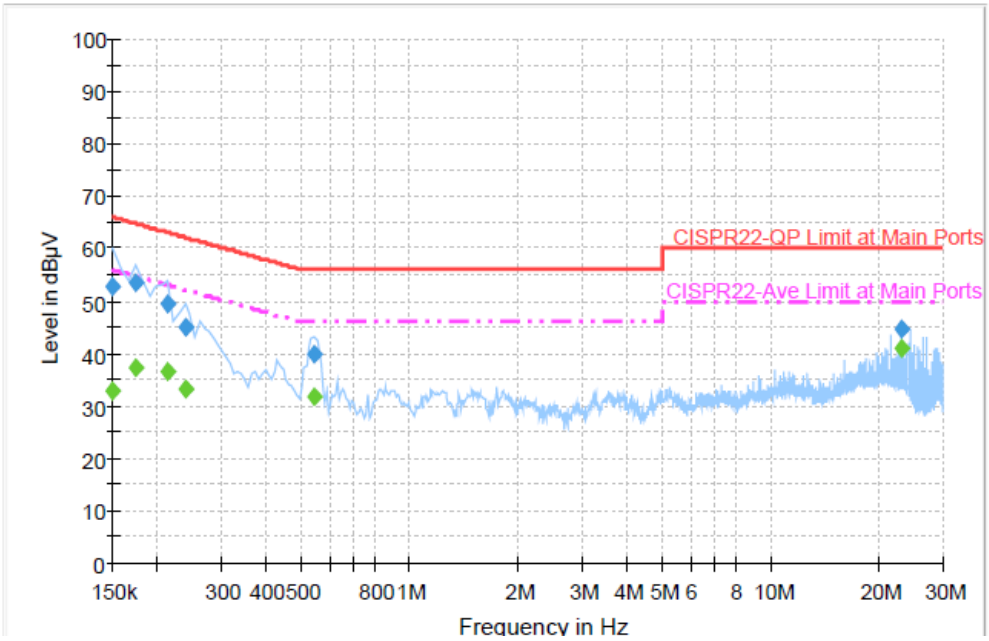
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	51.8	Off	L1	19.4	14.2	66.0
0.166000	53.9	Off	L1	19.3	11.3	65.2
0.198000	50.1	Off	L1	19.3	13.6	63.7
0.222000	48.0	Off	L1	19.3	16.4	64.4
0.542000	40.6	Off	L1	19.3	15.4	56.0
23.126000	44.3	Off	L1	19.8	15.7	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	32.2	Off	L1	19.4	23.8	56.0
0.166000	37.9	Off	L1	19.3	17.3	55.2
0.198000	36.3	Off	L1	19.3	17.4	53.7
0.222000	34.5	Off	L1	19.3	19.9	54.4
0.542000	31.0	Off	L1	19.3	15.0	46.0
23.126000	40.5	Off	L1	19.8	9.5	50.0

Test Mode :	Mode 2	Temperature :	20~22℃
Test Engineer :	Novic Chiang	Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band V Idle + WLAN Link + RJ-45 Link + Adapter + RJ-11 Idle		
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	52.6	Off	N	19.4	13.4	66.0
0.174000	53.4	Off	N	19.3	11.4	64.8
0.214000	49.5	Off	N	19.4	13.5	63.0
0.238000	45.2	Off	N	19.4	17.0	62.2
0.542000	39.9	Off	N	19.3	16.1	56.0
23.126000	44.7	Off	N	19.9	15.3	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	33.0	Off	N	19.4	23.0	56.0
0.174000	37.4	Off	N	19.3	17.4	54.8
0.214000	36.4	Off	N	19.4	16.6	53.0
0.238000	33.1	Off	N	19.4	19.1	52.2
0.542000	31.6	Off	N	19.3	14.4	46.0
23.126000	40.9	Off	N	19.9	9.1	50.0

3.7 Radiated Emission Measurement

3.7.1 Limit of Radiated Emission

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

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

3.7.2 Measuring Instruments

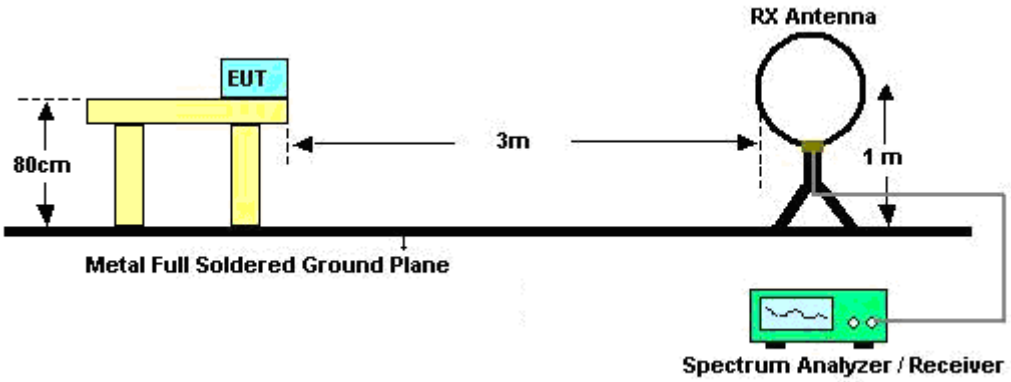
See list of measuring instruments of this test report.

3.7.3 Test Procedures

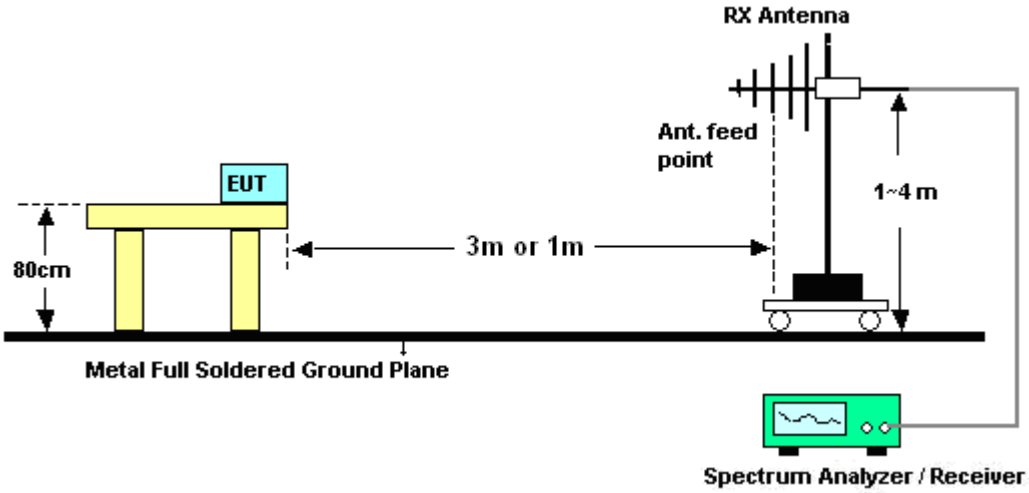
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
   (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto;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

3.7.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



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

Test Engineer :	David Yang	Temperature :	23~24℃
		Relative Humidity :	42~43%

Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

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

Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

Test Mode :	Mode 1	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
127.74	36.64	-6.86	43.5	55.5	11.57	1.14	31.57	-	-	Peak
224.13	29.16	-16.84	46	48.35	10.82	1.44	31.45	-	-	Peak
256.26	37.29	-8.71	46	54.38	12.76	1.57	31.42	-	-	Peak
383.3	39.06	-6.94	46	52.13	16.05	2.11	31.23	-	-	Peak
511.4	42.5	-3.5	46	52.69	18.39	2.47	31.05	158	114	Peak
895.7	40.85	-5.15	46	44.65	23.57	3.33	30.7	-	-	Peak
2390	55.55	-18.45	74	51.19	32.18	6.03	33.85	105	125	Peak
2390	43.66	-10.34	54	39.3	32.18	6.03	33.85	105	125	Average
2412	105.61	-	-	101.21	32.2	6.07	33.87	105	125	Peak
2412	101.86	-	-	97.46	32.2	6.07	33.87	105	125	Average
2492	43.65	-10.35	54	39.07	32.3	6.18	33.9	105	125	Average
2492	55.29	-18.71	74	50.71	32.3	6.18	33.9	105	125	Peak
4824	50.61	-23.39	74	63.87	34.07	9.12	56.45	127	325	Peak
4824	49.32	-4.68	54	62.58	34.07	9.12	56.45	127	325	Average

Test Mode :	Mode 1	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
68.34	27.3	-12.7	40	51.8	6.23	0.83	31.56	-	-	Peak
127.74	31.86	-11.64	43.5	50.72	11.57	1.14	31.57	-	-	Peak
256.26	31.81	-14.19	46	48.9	12.76	1.57	31.42	-	-	Peak
383.3	39.36	-6.64	46	52.43	16.05	2.11	31.23	-	-	Peak
511.4	37.75	-8.25	46	47.94	18.39	2.47	31.05	-	-	Peak
895.7	41.11	-4.89	46	44.91	23.57	3.33	30.7	189	93	Peak
2390	51.71	-22.29	74	47.35	32.18	6.03	33.85	102	161	Peak
2390	40.04	-13.96	54	35.68	32.18	6.03	33.85	102	161	Average
2412	102.14	-	-	97.74	32.2	6.07	33.87	102	161	Peak
2412	98.42	-	-	94.02	32.2	6.07	33.87	102	161	Average
2492	39.72	-14.28	54	35.14	32.3	6.18	33.9	102	161	Average
2492	51.61	-22.39	74	47.03	32.3	6.18	33.9	102	161	Peak
4824	53.66	-20.34	74	66.92	34.07	9.12	56.45	103	195	Peak
4824	51.24	-2.76	54	64.5	34.07	9.12	56.45	103	195	Average

Test Mode :	Mode 2	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
127.74	36.29	-7.21	43.5	55.15	11.57	1.14	31.57	-	-	Peak
229.53	28.56	-17.44	46	47.29	11.23	1.48	31.44	-	-	Peak
256.26	37.39	-8.61	46	54.48	12.76	1.57	31.42	-	-	Peak
383.3	42.19	-3.81	46	55.26	16.05	2.11	31.23	120	341	Peak
511.4	41.11	-4.89	46	51.3	18.39	2.47	31.05	-	-	Peak
895.7	41.66	-4.34	46	45.46	23.57	3.33	30.7	-	-	Peak
2382	54.47	-19.53	74	50.13	32.16	6.03	33.85	104	124	Peak
2382	42.94	-11.06	54	38.6	32.16	6.03	33.85	104	124	Average
2437	107.03	-	-	102.56	32.24	6.11	33.88	104	124	Peak
2437	103.86	-	-	99.39	32.24	6.11	33.88	104	124	Average
2492	54.9	-19.1	74	50.32	32.3	6.18	33.9	104	124	Peak
2492	43.68	-10.32	54	39.1	32.3	6.18	33.9	104	124	Average
4874	47.45	-26.55	74	60.73	34.08	9.13	56.49	100	0	Peak

Test Mode :	Mode 2	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
68.34	26.47	-13.53	40	50.97	6.23	0.83	31.56	-	-	Peak
127.74	31.64	-11.86	43.5	50.5	11.57	1.14	31.57	-	-	Peak
256.26	33.18	-12.82	46	50.27	12.76	1.57	31.42	-	-	Peak
383.3	37.19	-8.81	46	50.26	16.05	2.11	31.23	-	-	Peak
511.4	38.22	-7.78	46	48.41	18.39	2.47	31.05	152	174	Peak
895.7	36.56	-9.44	46	40.36	23.57	3.33	30.7	-	-	Peak
2382	50.01	-23.99	74	45.67	32.16	6.03	33.85	100	162	Peak
2382	38.15	-15.85	54	33.81	32.16	6.03	33.85	100	162	Average
2437	102.05	-	-	97.6	32.22	6.11	33.88	100	162	Peak
2437	98.68	-	-	94.21	32.24	6.11	33.88	100	162	Average
2492	51.14	-22.86	74	46.56	32.3	6.18	33.9	100	162	Peak
2492	39.52	-14.48	54	34.94	32.3	6.18	33.9	100	162	Average
4874	46.48	-27.52	74	59.76	34.08	9.13	56.49	100	0	Peak

Test Mode :	Mode 3	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
127.74	36.32	-7.18	43.5	55.18	11.57	1.14	31.57	-	-	Peak
236.82	27.49	-18.51	46	45.7	11.71	1.51	31.43	-	-	Peak
256.26	37.45	-8.55	46	54.54	12.76	1.57	31.42	-	-	Peak
383.3	39.64	-6.36	46	52.71	16.05	2.11	31.23	-	-	Peak
511.4	42.43	-3.57	46	52.62	18.39	2.47	31.05	191	322	Peak
895.7	40.53	-5.47	46	44.33	23.57	3.33	30.7	-	-	Peak
2382	52.81	-21.19	74	48.47	32.16	6.03	33.85	103	124	Peak
2382	40.46	-13.54	54	36.12	32.16	6.03	33.85	103	124	Average
2462	99.15	-	-	94.64	32.26	6.14	33.89	103	124	Average
2462	102.62	-	-	98.11	32.26	6.14	33.89	103	124	Peak
2483.66	57.19	-16.81	74	52.63	32.28	6.18	33.9	103	124	Peak
2483.66	46.45	-7.55	54	41.89	32.28	6.18	33.9	103	124	Average
4924	47.7	-26.3	74	60.98	34.09	9.15	56.52	100	0	Peak

Test Mode :	Mode 3	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
64.29	25.81	-14.19	40	50.64	5.92	0.79	31.54	-	-	Peak
127.74	31.47	-12.03	43.5	50.33	11.57	1.14	31.57	-	-	Peak
256.26	32.28	-13.72	46	49.37	12.76	1.57	31.42	-	-	Peak
383.3	38.51	-7.49	46	51.58	16.05	2.11	31.23	-	-	Peak
640.2	37.64	-8.36	46	45.49	20.22	2.81	30.88	-	-	Peak
895.7	40.48	-5.52	46	44.28	23.57	3.33	30.7	152	108	Peak
2388	47.91	-26.09	74	43.55	32.18	6.03	33.85	100	190	Peak
2388	36.28	-17.72	54	31.92	32.18	6.03	33.85	100	190	Average
2462	95.65	-	-	91.14	32.26	6.14	33.89	100	190	Average
2462	99.06	-	-	94.55	32.26	6.14	33.89	100	190	Peak
2485.18	54.65	-19.35	74	50.09	32.28	6.18	33.9	100	190	Peak
2485.18	43.07	-10.93	54	38.51	32.28	6.18	33.9	100	190	Average
4924	47.58	-26.42	74	60.86	34.09	9.15	56.52	100	0	Peak

Test Mode :	Mode 4	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
2389.99	43.29	-10.71	54	38.93	32.18	6.03	33.85	105	123	Average
2389.99	61.02	-12.98	74	56.66	32.18	6.03	33.85	105	123	Peak
2412	97.84	-	-	93.44	32.2	6.07	33.87	105	123	Average
2412	107.33	-	-	102.93	32.2	6.07	33.87	105	123	Peak
2486	53.76	-20.24	74	49.2	32.28	6.18	33.9	105	123	Peak
2486	41.48	-12.52	54	36.92	32.28	6.18	33.9	105	123	Average

Test Mode :	Mode 4	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
2389.61	39.06	-14.94	54	34.7	32.18	6.03	33.85	102	164	Average
2389.61	56.14	-17.86	74	51.78	32.18	6.03	33.85	102	164	Peak
2412	93.99	-	-	89.59	32.2	6.07	33.87	102	164	Average
2412	103.42	-	-	99.02	32.2	6.07	33.87	102	164	Peak
2492	49.15	-24.85	74	44.57	32.3	6.18	33.9	102	164	Peak
2492	37.6	-16.4	54	33.02	32.3	6.18	33.9	102	164	Average

Test Mode :	Mode 5	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
2388	44.51	-9.49	54	40.15	32.18	6.03	33.85	105	124	Average
2388	55.64	-18.36	74	51.28	32.18	6.03	33.85	105	124	Peak
2437	100.09	-	-	95.62	32.24	6.11	33.88	105	124	Average
2437	109.34	-	-	104.89	32.22	6.11	33.88	105	124	Peak
2492	45.02	-8.98	54	40.44	32.3	6.18	33.9	105	124	Average
2492	55.7	-18.3	74	51.12	32.3	6.18	33.9	105	124	Peak

Test Mode :	Mode 5	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
2388	37.85	-16.15	54	33.49	32.18	6.03	33.85	100	108	Average
2388	47.9	-26.1	74	43.54	32.18	6.03	33.85	100	108	Peak
2437	94.65	-	-	90.18	32.24	6.11	33.88	100	108	Average
2437	103.83	-	-	99.38	32.22	6.11	33.88	100	108	Peak
2492	41.61	-12.39	54	37.03	32.3	6.18	33.9	100	108	Average
2492	51.77	-22.23	74	47.19	32.3	6.18	33.9	100	108	Peak

Test Mode :	Mode 6	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
2382	45.32	-8.68	54	40.98	32.16	6.03	33.85	103	124	Average
2382	52.46	-21.54	74	48.12	32.16	6.03	33.85	103	124	Peak
2462	105.85	-	-	101.34	32.26	6.14	33.89	103	124	Peak
2462	96.41	-	-	91.9	32.26	6.14	33.89	103	124	Average
2483.66	45.55	-8.45	54	40.99	32.28	6.18	33.9	103	124	Average
2483.66	60.87	-13.13	74	56.31	32.28	6.18	33.9	103	124	Peak

Test Mode :	Mode 6	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
2382	35.86	-18.14	54	31.52	32.16	6.03	33.85	100	191	Average
2382	47.69	-26.31	74	43.35	32.16	6.03	33.85	100	191	Peak
2462	102	-	-	97.49	32.26	6.14	33.89	100	191	Peak
2462	92.71	-	-	88.2	32.26	6.14	33.89	100	191	Average
2483.66	41.15	-12.85	54	36.59	32.28	6.18	33.9	100	191	Average
2483.66	56.54	-17.46	74	51.98	32.28	6.18	33.9	100	191	Peak

Test Mode :	Mode 7	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
127.74	36.54	-6.96	43.5	55.4	11.57	1.14	31.57	-	-	Peak
229.26	28	-18	46	46.81	11.16	1.47	31.44	-	-	Peak
256.26	39.14	-6.86	46	56.23	12.76	1.57	31.42	-	-	Peak
383.3	39.94	-6.06	46	53.01	16.05	2.11	31.23	-	-	Peak
511.4	42.95	-3.05	46	53.14	18.39	2.47	31.05	141	299	Peak
895.7	41.01	-4.99	46	44.81	23.57	3.33	30.7	-	-	Peak
2389.99	61.75	-12.25	74	57.39	32.18	6.03	33.85	103	124	Peak
2389.99	43.21	-10.79	54	38.85	32.18	6.03	33.85	103	124	Average
2412	107.77	-	-	103.37	32.2	6.07	33.87	103	124	Peak
2412	98.11	-	-	93.71	32.2	6.07	33.87	103	124	Average
2494	41.86	-12.14	54	37.28	32.3	6.18	33.9	103	124	Average
2494	54.33	-19.67	74	49.75	32.3	6.18	33.9	103	124	Peak
4824	51.68	-22.32	74	64.94	34.07	9.12	56.45	100	356	Peak
4824	38.02	-15.98	54	51.28	34.07	9.12	56.45	100	356	Average

Test Mode :	Mode 7	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
67.53	26.02	-13.98	40	50.58	6.17	0.82	31.55	-	-	Peak
127.74	31.12	-12.38	43.5	49.98	11.57	1.14	31.57	-	-	Peak
256.26	32.35	-13.65	46	49.44	12.76	1.57	31.42	-	-	Peak
383.3	37.38	-8.62	46	50.45	16.05	2.11	31.23	-	-	Peak
511.4	38.25	-7.75	46	48.44	18.39	2.47	31.05	-	-	Peak
895.7	40.89	-5.11	46	44.69	23.57	3.33	30.7	126	247	Peak
2389.61	54.31	-19.69	74	49.95	32.18	6.03	33.85	103	163	Peak
2389.61	40.65	-13.35	54	36.29	32.18	6.03	33.85	103	163	Average
2412	106.89	-	-	102.49	32.2	6.07	33.87	103	163	Peak
2412	97.2	-	-	92.8	32.2	6.07	33.87	103	163	Average
2494	39.89	-14.11	54	35.31	32.3	6.18	33.9	103	163	Average
2494	51.7	-22.3	74	47.12	32.3	6.18	33.9	103	163	Peak
4824	53.62	-20.38	74	66.88	34.07	9.12	56.45	149	47	Peak
4824	40.57	-13.43	54	53.83	34.07	9.12	56.45	149	47	Average
9648	53.26	-33.63	86.89	61.44	36.65	11.99	56.82	100	0	Peak

Test Mode :	Mode 8	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
127.74	36.7	-6.8	43.5	55.56	11.57	1.14	31.57	-	-	Peak
168.78	24.26	-19.24	43.5	44.72	9.83	1.23	31.52	-	-	Peak
256.26	35.79	-10.21	46	52.88	12.76	1.57	31.42	-	-	Peak
383.3	39.05	-6.95	46	52.12	16.05	2.11	31.23	-	-	Peak
511.4	39.92	-6.08	46	50.11	18.39	2.47	31.05	-	-	Peak
895.7	41.9	-4.1	46	45.7	23.57	3.33	30.7	136	252	Peak
2382	53.79	-20.21	74	49.45	32.16	6.03	33.85	105	123	Peak
2382	42.41	-11.59	54	38.07	32.16	6.03	33.85	105	123	Average
2437	110.09	-	-	105.64	32.22	6.11	33.88	105	123	Peak
2437	100.73	-	-	96.26	32.24	6.11	33.88	105	123	Average
2492	55.4	-18.6	74	50.82	32.3	6.18	33.9	105	123	Peak
2492	44.78	-9.22	54	40.2	32.3	6.18	33.9	105	123	Average
4874	48.64	-25.36	74	61.92	34.08	9.13	56.49	100	0	Peak

Test Mode :	Mode 8	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
48.09	25.51	-14.49	40	47.28	9.08	0.68	31.53	-	-	Peak
127.74	31.29	-12.21	43.5	50.15	11.57	1.14	31.57	-	-	Peak
256.26	31.52	-14.48	46	48.61	12.76	1.57	31.42	-	-	Peak
383.3	39.08	-6.92	46	52.15	16.05	2.11	31.23	-	-	Peak
769	37.72	-8.28	46	43.34	21.98	3.09	30.69	-	-	Peak
895.7	41.01	-4.99	46	44.81	23.57	3.33	30.7	133	314	Peak
2382	50.34	-23.66	74	46	32.16	6.03	33.85	101	161	Peak
2382	38.14	-15.86	54	33.8	32.16	6.03	33.85	101	161	Average
2437	109.06	-	-	104.61	32.22	6.11	33.88	101	161	Peak
2437	99.41	-	-	94.94	32.24	6.11	33.88	101	161	Average
2492	51.33	-22.67	74	46.75	32.3	6.18	33.9	101	161	Peak
2492	39.69	-14.31	54	35.11	32.3	6.18	33.9	101	161	Average
4874	52.12	-21.88	74	65.4	34.08	9.13	56.49	116	352	Peak
4874	39.11	-14.89	54	52.39	34.08	9.13	56.49	116	352	Average
9748	52.78	-36.28	89.06	60.87	36.81	11.94	56.84	100	0	Peak

Test Mode :	Mode 9	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
127.74	36.43	-7.07	43.5	55.29	11.57	1.14	31.57	-	-	Peak
236.01	28.06	-17.94	46	46.34	11.64	1.51	31.43	-	-	Peak
256.26	39.98	-6.02	46	57.07	12.76	1.57	31.42	-	-	Peak
383.3	39.24	-6.76	46	52.31	16.05	2.11	31.23	-	-	Peak
511.4	42.8	-3.2	46	52.99	18.39	2.47	31.05	152	223	Peak
895.7	41.53	-4.47	46	45.33	23.57	3.33	30.7	-	-	Peak
2382	51.56	-22.44	74	47.22	32.16	6.03	33.85	104	124	Peak
2382	40	-14	54	35.66	32.16	6.03	33.85	104	124	Average
2462	95.8	-	-	91.29	32.26	6.14	33.89	104	124	Average
2462	105.44	-	-	100.93	32.26	6.14	33.89	104	124	Peak
2483.66	61.5	-12.5	74	56.94	32.28	6.18	33.9	104	124	Peak
2483.66	44.06	-9.94	54	39.5	32.28	6.18	33.9	104	124	Average
4924	49.41	-24.59	74	62.69	34.09	9.15	56.52	100	0	Peak

Test Mode :	Mode 9	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
67.53	26.52	-13.48	40	51.08	6.17	0.82	31.55	-	-	Peak
127.74	31.9	-11.6	43.5	50.76	11.57	1.14	31.57	-	-	Peak
256.26	32.84	-13.16	46	49.93	12.76	1.57	31.42	-	-	Peak
383.3	36.72	-9.28	46	49.79	16.05	2.11	31.23	-	-	Peak
511.4	36.98	-9.02	46	47.17	18.39	2.47	31.05	-	-	Peak
895.7	41.47	-4.53	46	45.27	23.57	3.33	30.7	127	286	Peak
2388	50.55	-23.45	74	46.19	32.18	6.03	33.85	103	162	Peak
2388	38.52	-15.48	54	34.16	32.18	6.03	33.85	103	162	Average
2462	94.63	-	-	90.12	32.26	6.14	33.89	103	162	Average
2462	104.57	-	-	100.06	32.26	6.14	33.89	103	162	Peak
2485.37	51.93	-22.07	74	47.37	32.28	6.18	33.9	103	162	Peak
2485.37	39.01	-14.99	54	34.45	32.28	6.18	33.9	103	162	Average
4924	48.63	-25.37	74	61.91	34.09	9.15	56.52	100	0	Peak

Test Mode :	Mode 10	Temperature :	23~24℃
Test Channel :	03	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
2384.1	46.72	-7.28	54	42.38	32.16	6.03	33.85	104	124	Average
2384.1	60.78	-13.22	74	56.44	32.16	6.03	33.85	104	124	Peak
2422	97.72	-	-	93.3	32.22	6.07	33.87	104	124	Average
2422	106.97	-	-	102.52	32.22	6.11	33.88	104	124	Peak
2484	53.61	-20.39	74	49.05	32.28	6.18	33.9	104	124	Peak
2484	41.06	-12.94	54	36.5	32.28	6.18	33.9	104	124	Average

Test Mode :	Mode 10	Temperature :	23~24℃
Test Channel :	03	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
2389.42	43.76	-10.24	54	39.4	32.18	6.03	33.85	100	164	Average
2389.42	57.72	-16.28	74	53.36	32.18	6.03	33.85	100	164	Peak
2422	96.22	-	-	91.8	32.22	6.07	33.87	100	164	Average
2422	105.81	-	-	101.36	32.22	6.11	33.88	100	164	Peak
2492	51.26	-22.74	74	46.68	32.3	6.18	33.9	100	164	Peak
2492	39.24	-14.76	54	34.66	32.3	6.18	33.9	100	164	Average

Test Mode :	Mode 11	Temperature :	23~24℃
Test Channel :	09	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
2390	51.61	-22.39	74	47.25	32.18	6.03	33.85	107	123	Peak
2390	40.01	-13.99	54	35.65	32.18	6.03	33.85	107	123	Average
2452	95.7	-	-	91.23	32.24	6.11	33.88	107	123	Average
2452	105.1	-	-	100.63	32.24	6.11	33.88	107	123	Peak
2488.41	60.53	-13.47	74	55.95	32.3	6.18	33.9	107	123	Peak
2488.41	47.03	-6.97	54	42.45	32.3	6.18	33.9	107	123	Average

Test Mode :	Mode 11	Temperature :	23~24℃
Test Channel :	09	Relative Humidity :	42~43%
Test Engineer :	David Yang	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
2390	37.91	-16.09	54	33.55	32.18	6.03	33.85	101	163	Average
2390	50.02	-23.98	74	45.66	32.18	6.03	33.85	101	163	Peak
2452	103.18	-	-	98.71	32.24	6.11	33.88	101	163	Peak
2452	93.96	-	-	89.49	32.24	6.11	33.88	101	163	Average
2485.37	44.72	-9.28	54	40.16	32.28	6.18	33.9	101	163	Average
2485.37	58.93	-15.07	74	54.37	32.28	6.18	33.9	101	163	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
System Simulator	R&S	CMU200	117995	N/A	Mar. 19, 2009	Mar. 18, 2011	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP30	101329	9kHz~30GHz	Apr. 26, 2010	Apr. 25, 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)
Power Meter	Agilent	E4416A	GB41292344	N/A	Feb. 25, 2010	Feb. 24, 2011	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 25, 2010	Feb. 24, 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)
ISN	Teseq GmbH	ISN T400A	25696	N/A	Jun. 19, 2010	Jun. 18, 2011	Conduction (CO05-HY)
ISN	Teseq GmbH	ISN T800	27134	N/A	Jun. 19, 2010	Jun. 18, 2011	Conduction (CO05-HY)
DC- LISN	R&S	ESH3-26	1000485	0.1MHz~200MHz	Jun. 17, 2010	Jun. 16, 2011	Conduction (CO05-HY)
DC- LISN	R&S	ESH3-26	1000484	0.1MHz~200MHz	Jun. 17, 2010	Jun. 16, 2011	Conduction (CO05-HY)
System Simulator	R&S	CMU200	117995	N/A	Mar. 19, 2009	Mar. 18, 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. 27, 2010	Mar. 26, 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 Uc(y)	**1.13**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.26**		

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

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

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

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ1 = 0.197 Antenna VSWR Γ2 = 0.194 Uncertainty = 20Log(1-Γ1*Γ2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	**2.36**				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**				

Appendix A. Photographs of EUT

Please refer to Sporton report number EP0O0725 as below.