

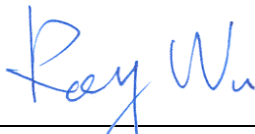
FCC RF Test Report

APPLICANT : D-Link Corporation
EQUIPMENT : 3.75G Mobile Router
BRAND NAME : D-Link
MODEL NAME : DWR-530
FCC ID : KA2WR530A1
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Dec. 07, 2010 and completely tested on Jan. 24, 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.



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR0D0736	Rev. 01	Initial issue of report	Mar. 10, 2011
FR0D0736	Rev. 02	Update report for revising equipment name	Mar. 21, 2011

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	A8.4	Power Output	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
0	15.247(d)	A8.5	Spurious Emission	$< 20\text{ dBc}$	Pass	-
0	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 27.6 dB at 23.99 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 2.58 dB at 2385.62 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

D-Link Corporation

No. 289, Sinhu 3rd Rd., Neihu District Taipei City 114, Taiwan

1.2 Manufacturer

AzureWave Technologies, Inc.

8F., No. 94, Baozhong Rd., Xindian District ,Taipei City 231, Taiwan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	3.75G Mobile Router
Brand Name	D-Link
Model Name	DWR-530
FCC ID	KA2WR530A1
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 : 16.97 dBm (0.05 W) 802.11g : 23.70 dBm (0.23 W) 802.11n (BW 20MHz) : 23.91 dBm (0.25 W) 802.11n (BW 40MHz) : 24.73 dBm (0.30 W)
Antenna Type	Chip Antenna with gain 0.7 dBi
HW Version	A1
SW Version	1:00
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

Remark:

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

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH06-HY	722060/4086B-1

1.5 Applied Standards

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

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

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.	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	16.60	-	-	-
CH 06	2437 MHz	16.67	-	-	-
CH 11	2462 MHz	16.97	16.93	16.31	16.92

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	23.35	-	-	-	-	-	-	-
CH 06	2437 MHz	23.17	-	-	-	-	-	-	-
CH 11	2462 MHz	23.70	23.00	23.24	23.59	23.66	23.48	23.13	23.27

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	23.63	-	-	-	-	-	-	-
CH 06	2437 MHz	23.35	-	-	-	-	-	-	-
CH 11	2462 MHz	23.86	23.87	23.83	23.90	23.14	23.81	23.82	23.89
Channel	Frequency	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
CH 01	2412 MHz	-	-	-	-	-	-	-	23.69
CH 06	2437 MHz	-	-	-	-	-	-	-	23.54
CH 11	2462 MHz	23.20	23.34	23.47	23.44	23.41	23.06	23.33	23.91



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	23.87	-	-	-	-	24.65	-	-
CH 06	2437 MHz	23.69	-	-	-	-	24.51	-	-
CH 09	2452 MHz	23.76	23.73	24.30	24.60	24.44	24.73	24.05	23.67
Channel	Frequency	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
CH 03	2422 MHz	-	-	-	-	-	-	-	-
CH 06	2437 MHz	-	-	-	-	-	-	-	-
CH 09	2452 MHz	23.29	23.08	22.70	23.12	23.16	23.60	24.07	23.07

Remark:

1. The data rates of WLAN 802.11b/g/n were set in 1Mbps for 802.11b, 6Mbps for 802.11g, MCS15 for 802.11n (BW 20MHz), and MCS5 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: conducted emission (150 kHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

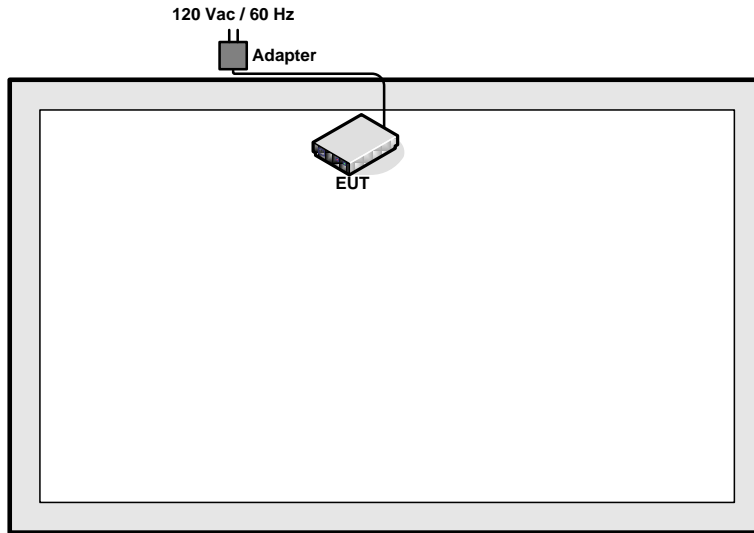
Pre-scanned tests were conducted to determine the final configuration from all possible combinations.

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

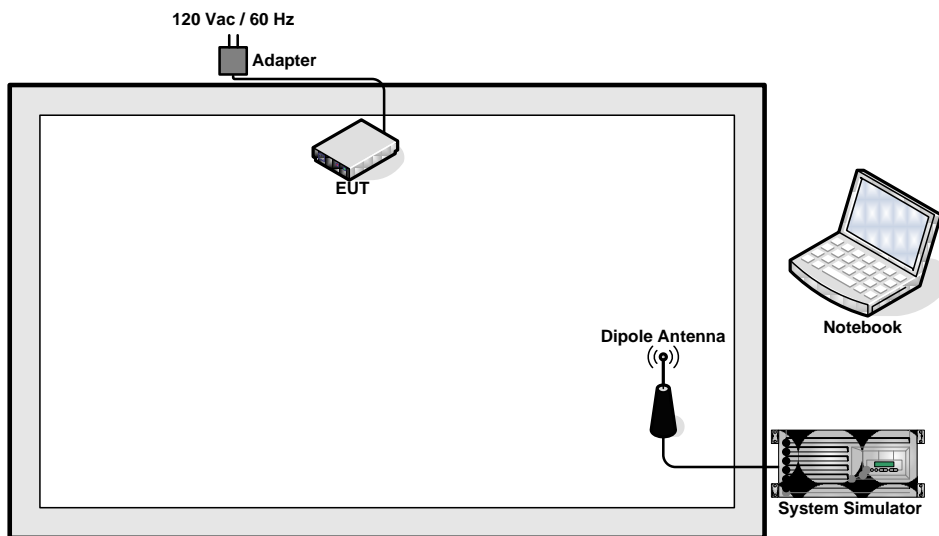
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 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 (GPRS 8) Idle + WLAN Link + Adapter	

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

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

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

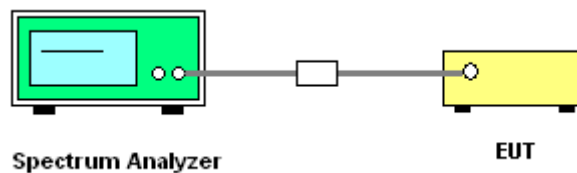
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

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

3.1.4 Test Setup

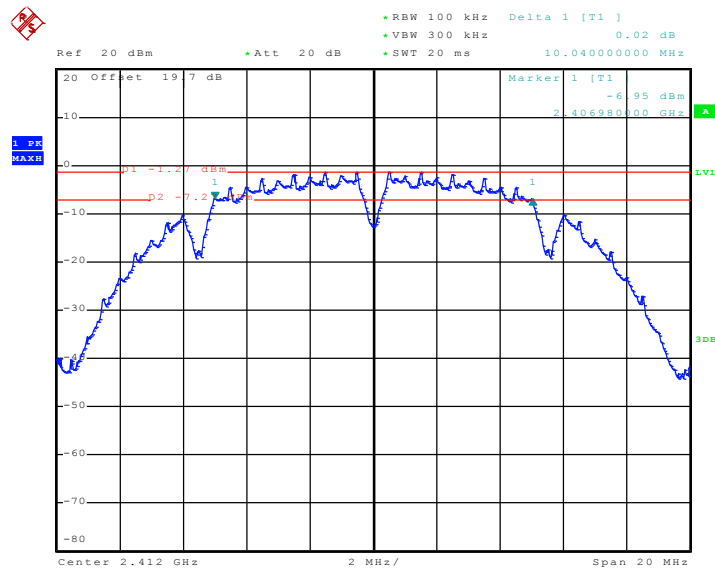


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
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	10.04	0.5	Pass
06	2437	10.04	0.5	Pass
11	2462	10.02	0.5	Pass

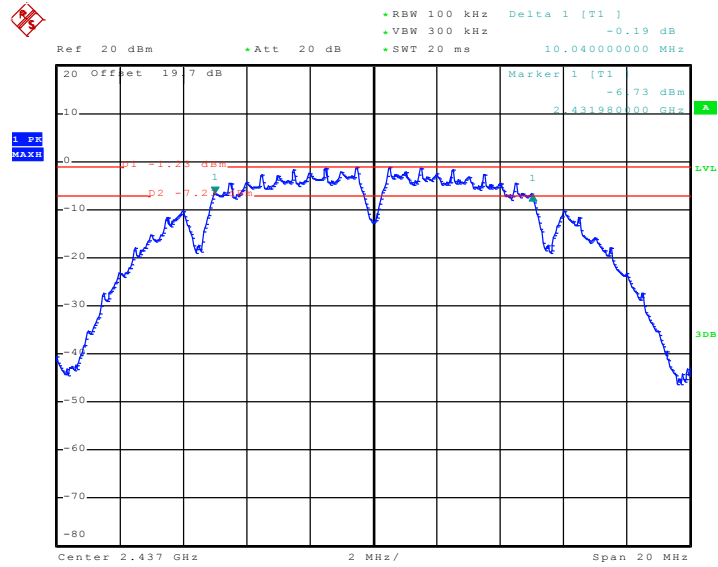
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 21.JAN.2011 11:10:54

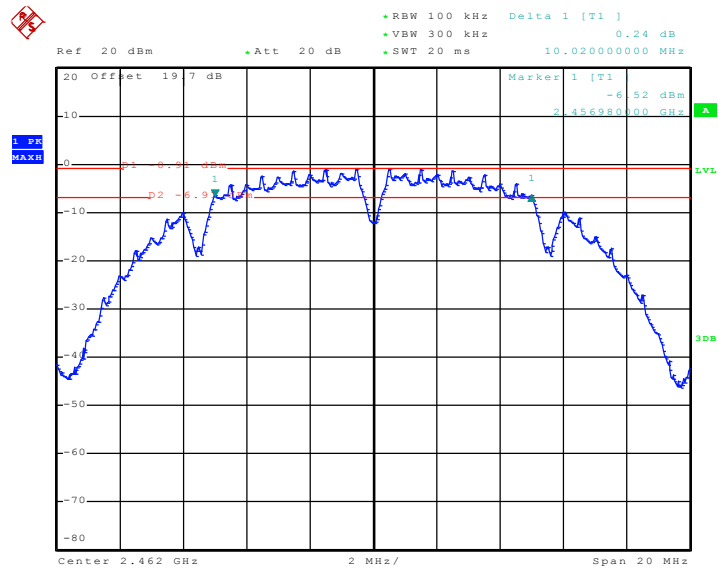


Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



Date: 21.JAN.2011 11:24:01

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



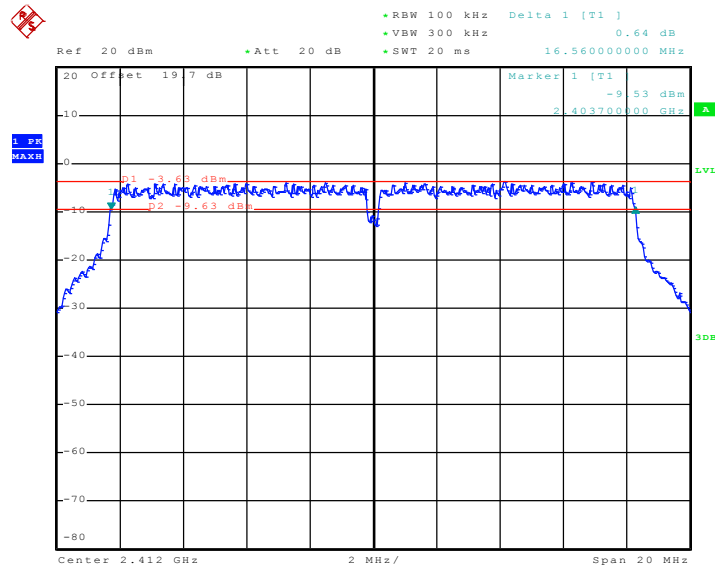
Date: 21.JAN.2011 11:36:18



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	16.56	0.5	Pass
06	2437	16.54	0.5	Pass
11	2462	16.54	0.5	Pass

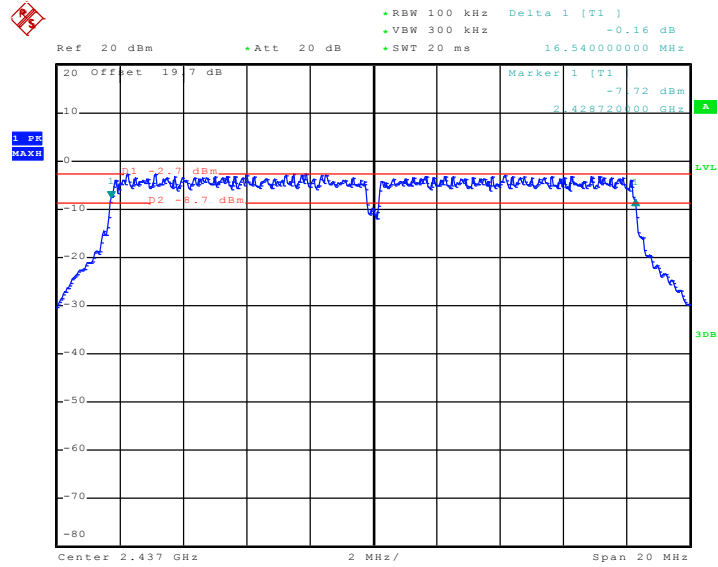
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



Date: 21.JAN.2011 13:32:06

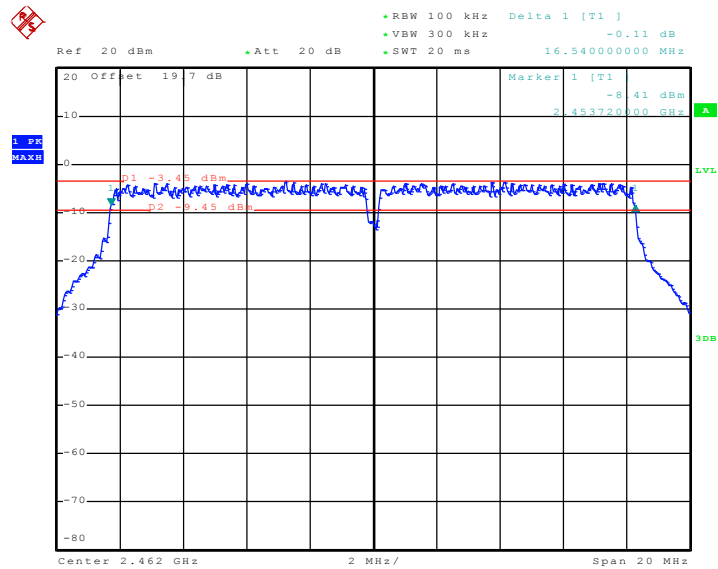


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



Date: 21.JAN.2011 12:30:39

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



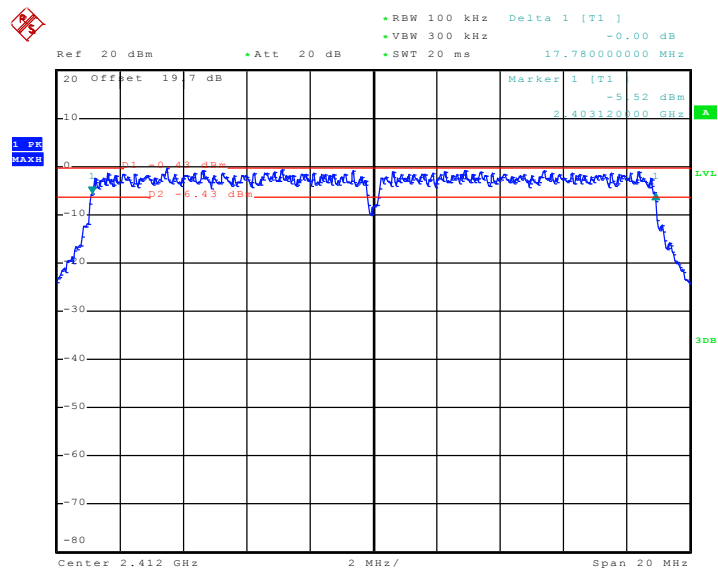
Date: 21.JAN.2011 11:50:16



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	17.78	0.5	Pass
06	2437	17.80	0.5	Pass
11	2462	17.78	0.5	Pass

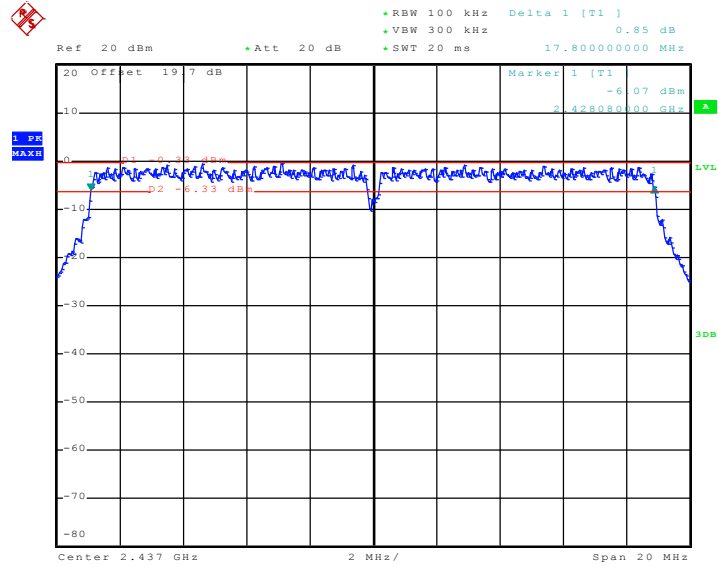
Mode 7 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 01



Date: 24.JAN.2011 14:14:28

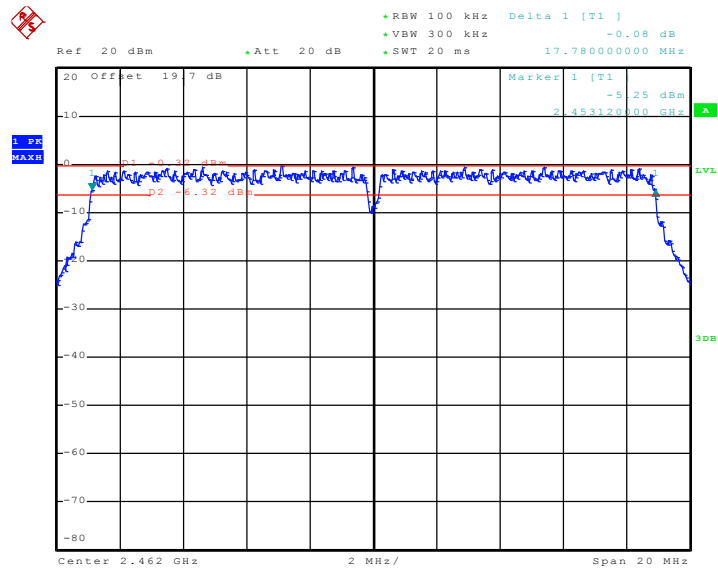


Mode 8 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 06



Date: 24.JAN.2011 14:28:06

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



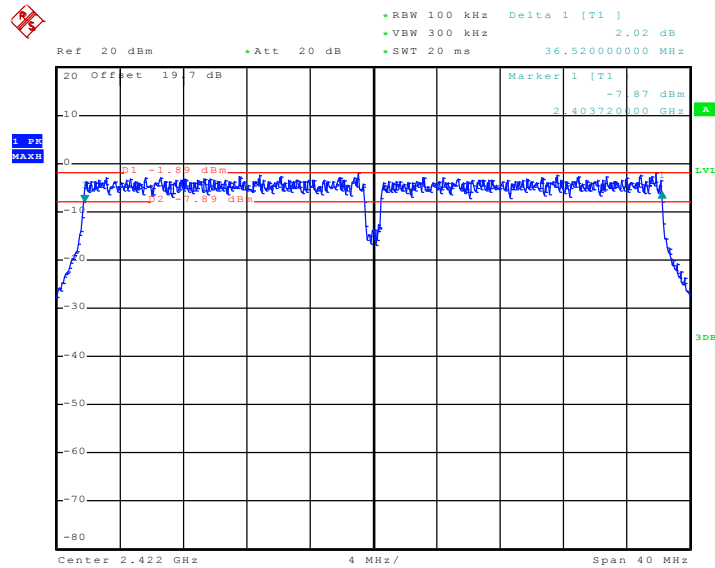
Date: 24.JAN.2011 14:40:46



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	36.52	0.5	Pass
06	2437	36.52	0.5	Pass
09	2452	36.44	0.5	Pass

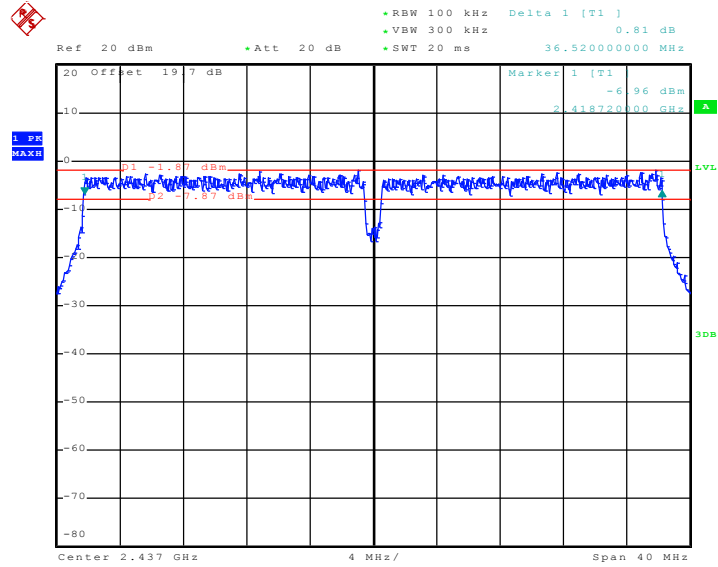
Mode 10 : 6 dB Bandwidth Plot on 802.11n(BW 40MHz) Channel 03



Date: 24.JAN.2011 14:59:07

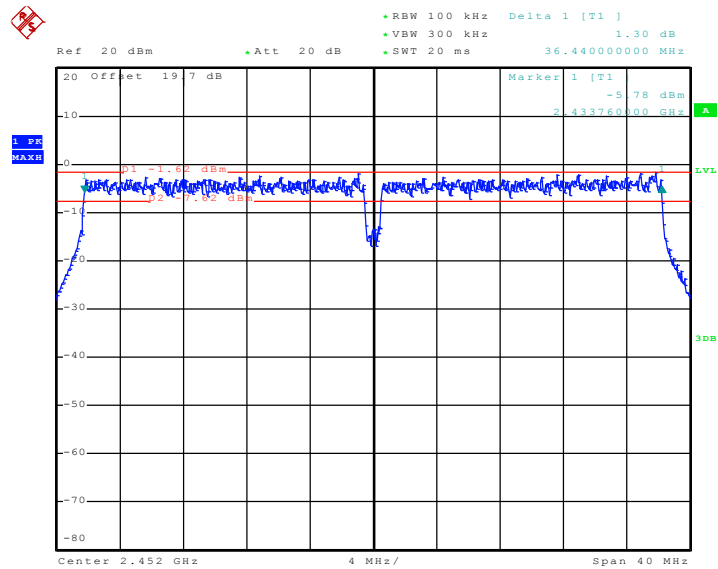


Mode 11 : 6 dB Bandwidth Plot on 802.11n(BW 40MHz) Channel 06



Date: 24.JAN.2011 15:12:03

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



Date: 24.JAN.2011 15:25:21

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.

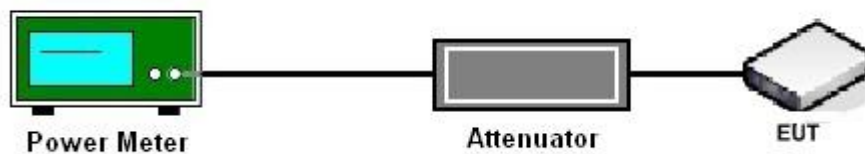
3.2.2 Measuring Instruments

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°C
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.60	30	Pass
06	2437	16.67	30	Pass
11	2462	16.97	30	Pass

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

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	23.35	30	Pass
06	2437	23.17	30	Pass
11	2462	23.70	30	Pass

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

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	23.69	30	Pass
06	2437	23.54	30	Pass
11	2462	23.91	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	24.65	30	Pass
06	2437	24.51	30	Pass
09	2452	24.73	30	Pass

3.3 Band Edges Measurement

3.3.1 Limit of Band Edges

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

3.3.2 Measuring Instruments

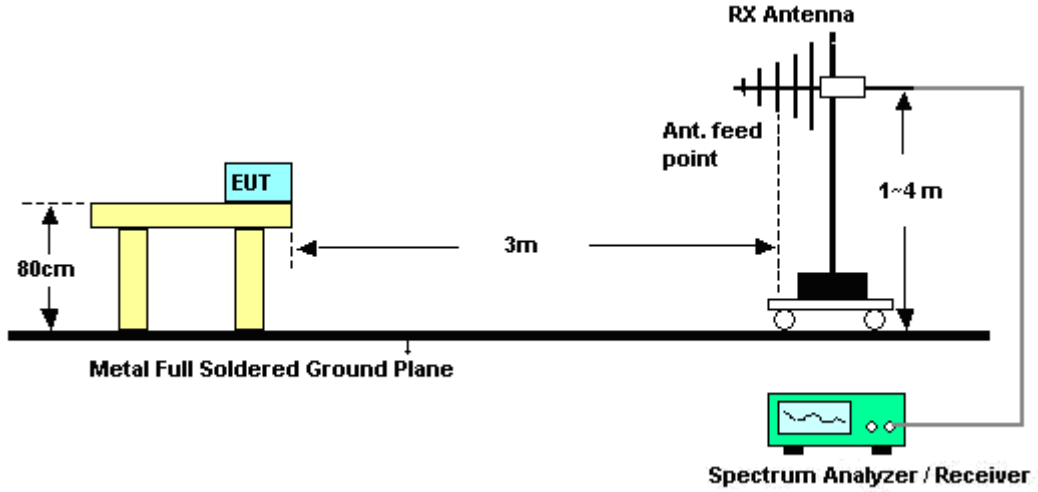
See list of measuring instruments of this test report.

3.3.3 Test Procedures

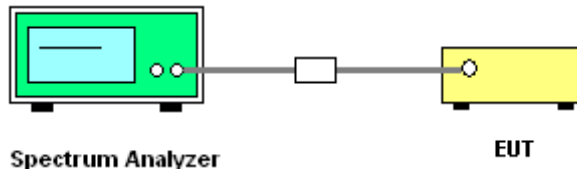
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) \geq RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized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

3.3.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>





3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	21~23°C
Test Band :	802.11b	Relative Humidity :	43~44%
Test Channel :	01	Test Engineer :	Kai Wang and Kay Wu

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
2388.85	50.02	-23.98	74	48.59	31.9	3.92	34.39	100	106	Peak
2388.85	37.29	-16.71	54	35.86	31.9	3.92	34.39	100	106	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
2327.29	47.98	-26.02	74	46.57	31.88	3.92	34.39	106	346	Peak
2327.29	34.02	-19.98	54	32.78	31.83	3.82	34.41	106	346	Average

Test Mode :	Mode 3	Temperature :	21~23°C
Test Band :	802.11b	Relative Humidity :	43~44%
Test Channel :	11	Test Engineer :	Kai Wang and Kay Wu

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
2495.25	48.75	-25.25	74	47.09	31.98	4.05	34.37	100	99	Peak
2495.25	34.97	-19.03	54	33.29	32	4.05	34.37	100	99	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
2495.05	48.01	-25.99	74	46.35	31.98	4.05	34.37	100	348	Peak
2495.05	33.26	-20.74	54	31.58	32	4.05	34.37	100	348	Average



Test Mode :	Mode 4	Temperature :	21~23°C
Test Band :	802.11g	Relative Humidity :	43~44%
Test Channel :	01	Test Engineer :	Kai Wang and Kay Wu

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	66.46	-7.54	74	65.03	31.9	3.92	34.39	100	130	Peak
2389.99	45.34	-8.66	54	43.91	31.9	3.92	34.39	100	130	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.85	60.47	-13.53	74	59.04	31.9	3.92	34.39	105	347	Peak
2388.85	39.44	-14.56	54	38.01	31.9	3.92	34.39	105	347	Average

Test Mode :	Mode 6	Temperature :	21~23°C
Test Band :	802.11g	Relative Humidity :	43~44%
Test Channel :	11	Test Engineer :	Kai Wang and Kay Wu

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	63.99	-10.01	74	62.33	31.98	4.05	34.37	100	99	Peak
2483.5	46.14	-7.86	54	44.48	31.98	4.05	34.37	100	99	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	58.84	-15.16	74	57.18	31.98	4.05	34.37	100	349	Peak
2483.5	40.64	-13.36	54	38.98	31.98	4.05	34.37	100	349	Average



Test Mode :	Mode 7	Temperature :	21~23°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	43~44%
Test Channel :	01	Test Engineer :	Kai Wang and Kay Wu

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	66.44	-7.56	74	65.01	31.9	3.92	34.39	102	131	Peak
2389.99	44.9	-9.1	54	43.47	31.9	3.92	34.39	102	131	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	60.54	-13.46	74	59.11	31.9	3.92	34.39	105	348	Peak
2389.42	39.38	-14.62	54	37.95	31.9	3.92	34.39	105	348	Average

Test Mode :	Mode 9	Temperature :	21~23°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	43~44%
Test Channel :	11	Test Engineer :	Kai Wang and Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.61	60.22	-13.78	74	58.56	31.98	4.05	34.37	100	100	Peak
2484.61	42.17	-11.83	54	40.51	31.98	4.05	34.37	100	100	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.42	55.34	-18.66	74	53.68	31.98	4.05	34.37	100	348	Peak
2484.42	37.84	-16.16	54	36.18	31.98	4.05	34.37	100	348	Average



Test Mode :	Mode 10	Temperature :	21~23°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	43~44%
Test Channel :	03	Test Engineer :	Kai Wang and Kay Wu

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
2385.62	71.42	-2.58	74	69.99	31.9	3.92	34.39	123	92	Peak
2385.62	50.13	-3.87	54	48.7	31.9	3.92	34.39	123	92	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.85	61.1	-12.9	74	59.67	31.9	3.92	34.39	125	293	Peak
2388.85	42.46	-11.54	54	41.03	31.9	3.92	34.39	125	293	Average

Test Mode :	Mode 12	Temperature :	21~23°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	43~44%
Test Channel :	09	Test Engineer :	Kai Wang and Kay Wu

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
2487.65	65.33	-8.67	74	63.65	32	4.05	34.37	100	129	Peak
2487.65	48.09	-5.91	54	46.41	32	4.05	34.37	100	129	Average

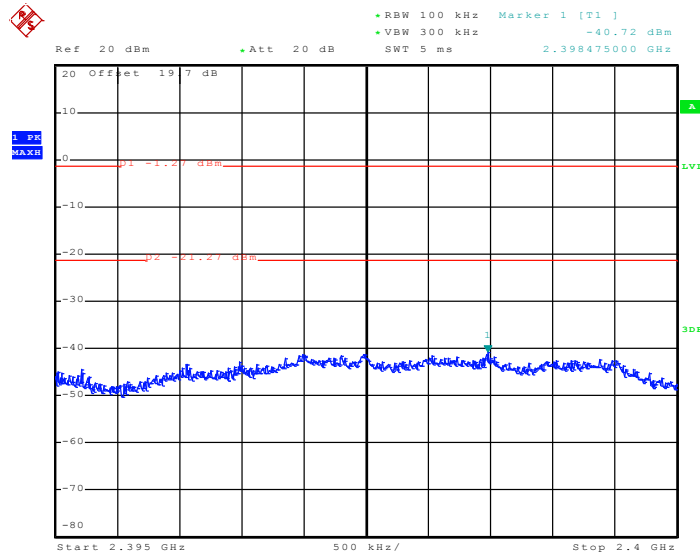
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2487.46	62.29	-11.71	74	60.63	31.98	4.05	34.37	100	265	Peak
2487.46	45.71	-8.29	54	44.05	31.98	4.05	34.37	100	265	Average



3.3.6 Test Plots of Conducted Band Edges

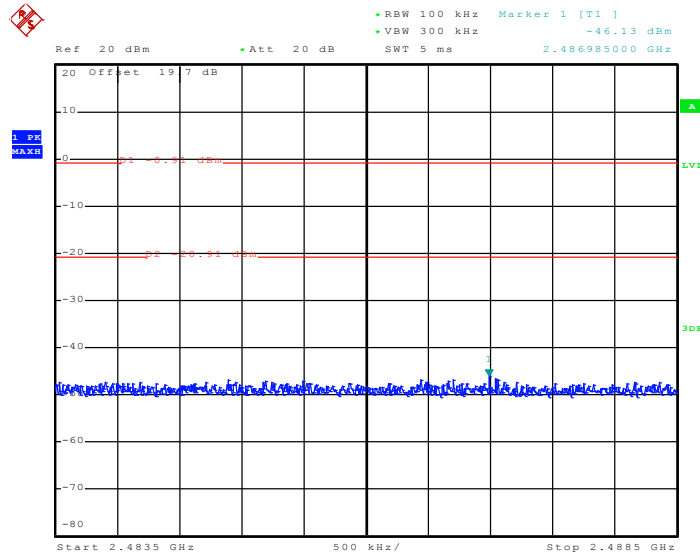
Test Mode :	Mode 1 and 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

Low Band Edge Plot on 802.11b Channel 01



Date: 21.JAN.2011 11:12:02

High Band Edge Plot on 802.11b Channel 11

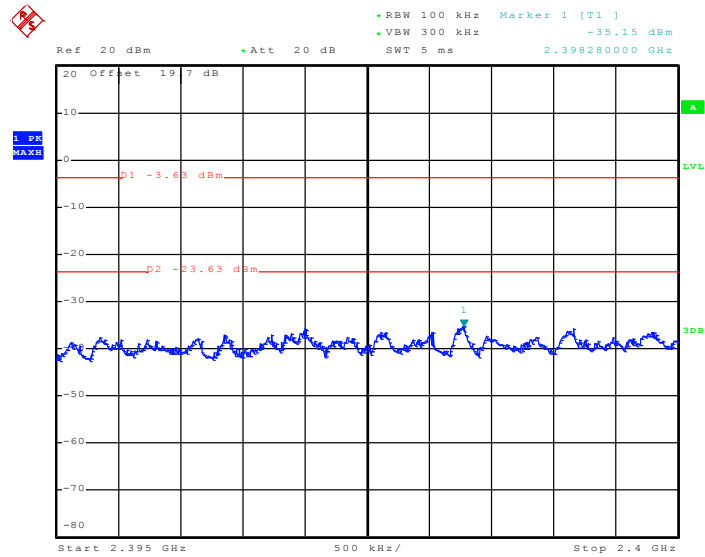


Date: 21.JAN.2011 11:37:04



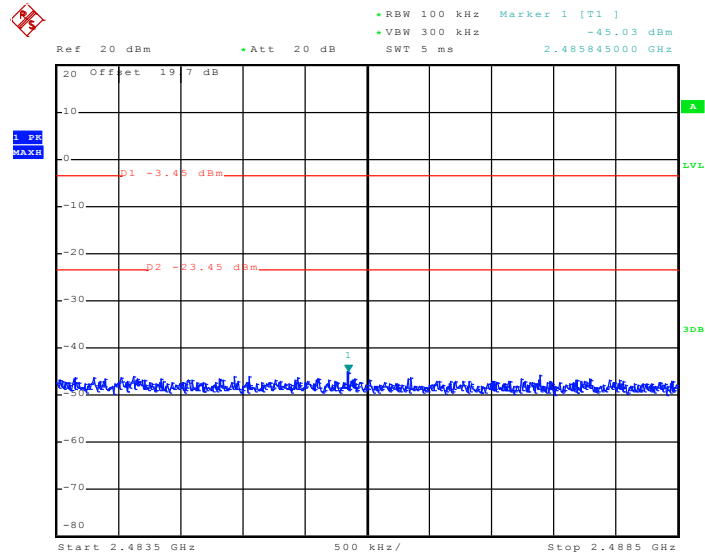
Test Mode :	Mode 4 and 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

Low Band Edge Plot on 802.11g Channel 01



Date: 21.JAN.2011 13:33:14

High Band Edge Plot on 802.11g Channel 11

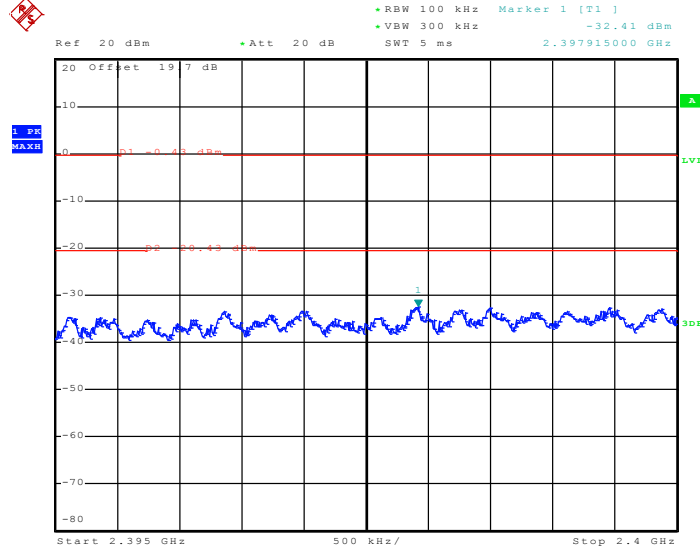


Date: 21.JAN.2011 11:51:03



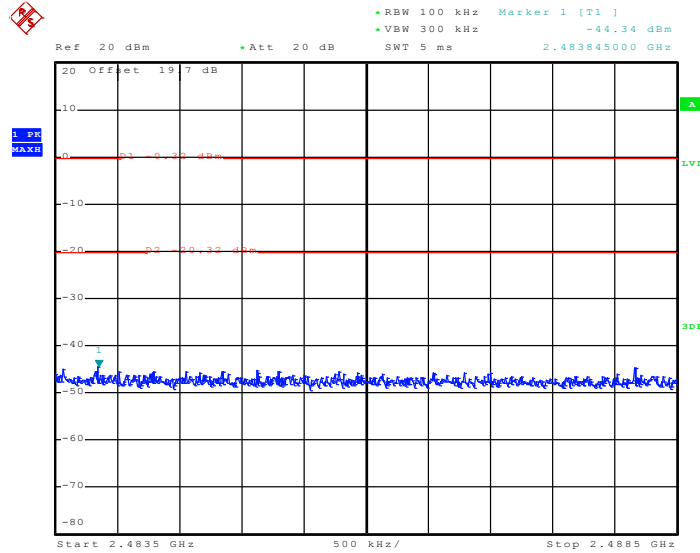
Test Mode :	Mode 7 and 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

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



Date: 24.JAN.2011 14:15:36

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

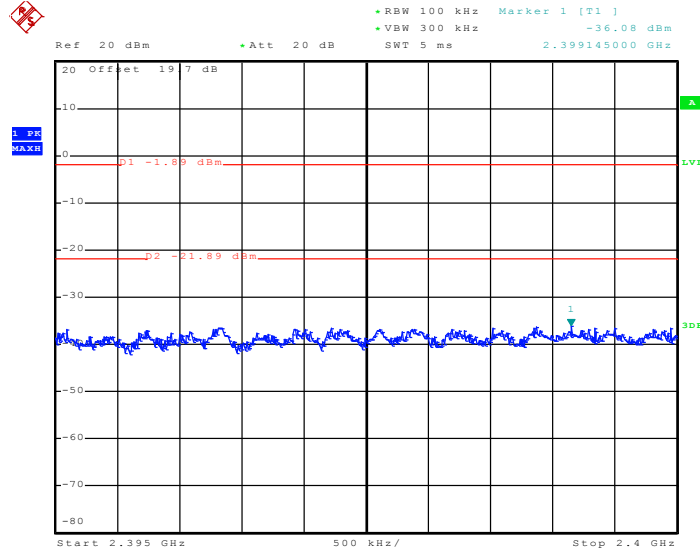


Date: 24.JAN.2011 14:41:33



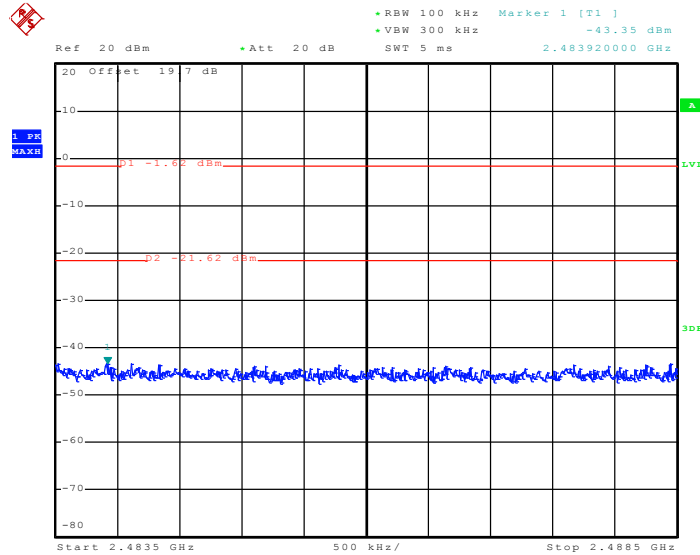
Test Mode :	Mode 10 and 12	Temperature :	24~26°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	50~53%
Test Channel :	03 and 09	Test Engineer :	Pinkston Tu

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



Date: 24.JAN.2011 15:00:15

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



Date: 24.JAN.2011 15:25:46

3.4 Spurious Emission Measurement

3.4.1 Limit of Spurious Emission Measurement

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

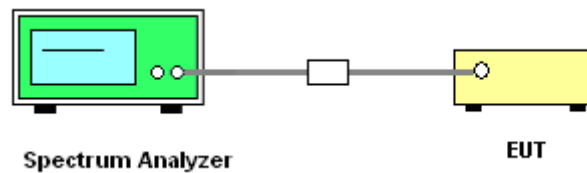
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedure

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

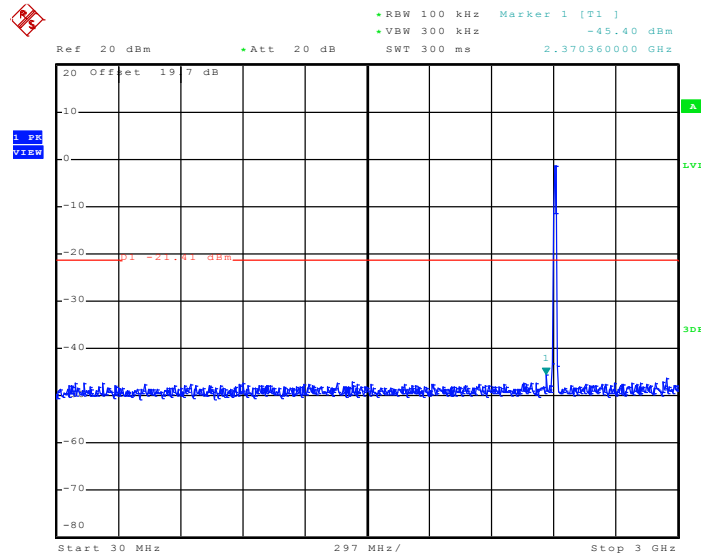
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

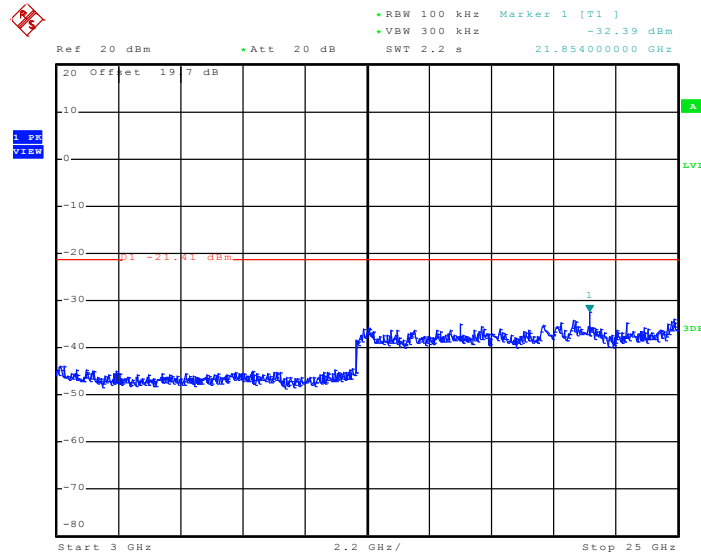
Test Mode :	Mode 1	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 21.JAN.2011 11:21:51

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

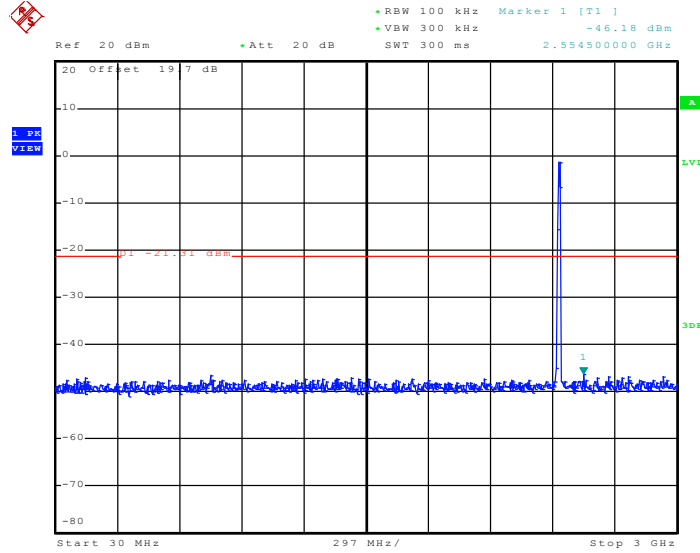


Date: 21.JAN.2011 11:22:08



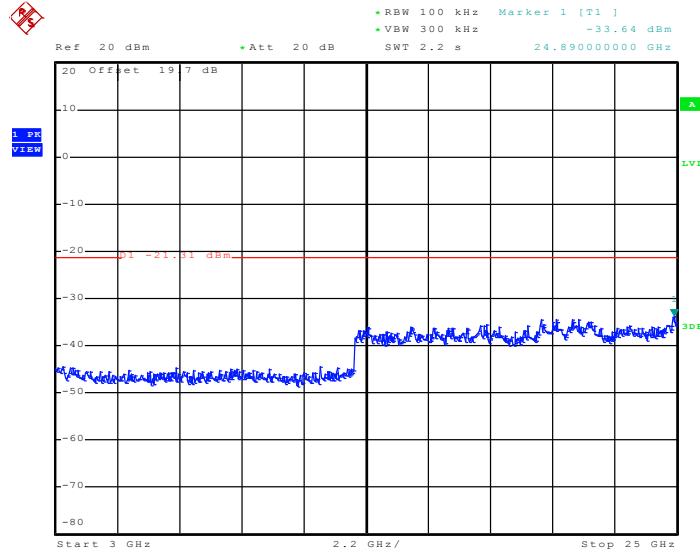
Test Mode :	Mode 2	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 21.JAN.2011 11:33:35

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

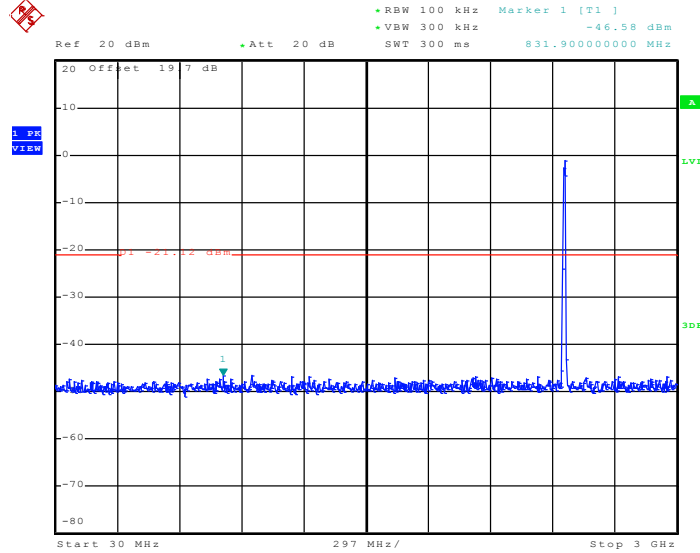


Date: 21.JAN.2011 11:33:52



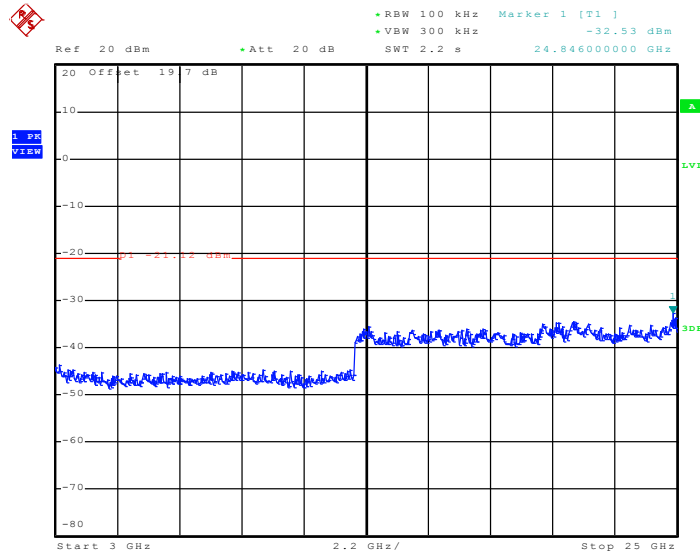
Test Mode :	Mode 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 21.JAN.2011 11:46:30

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

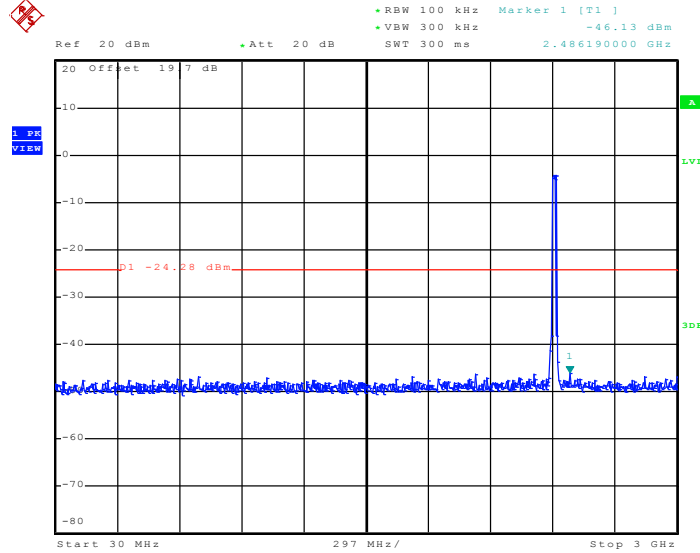


Date: 21.JAN.2011 11:46:47



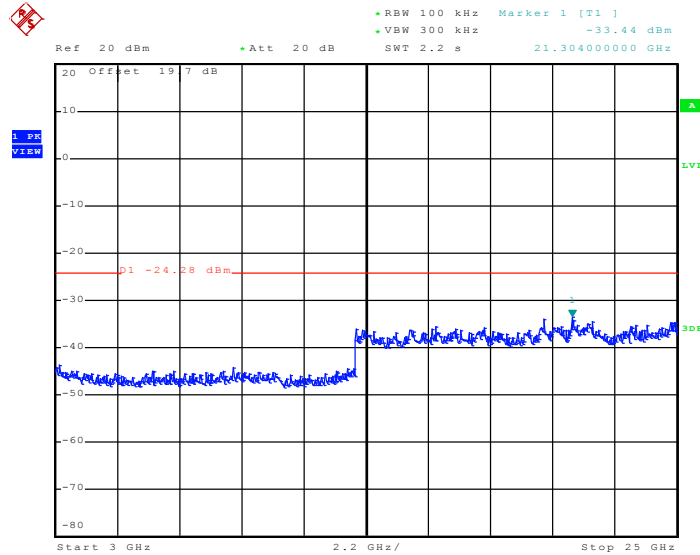
Test Mode :	Mode 4	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 21.JAN.2011 13:42:41

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

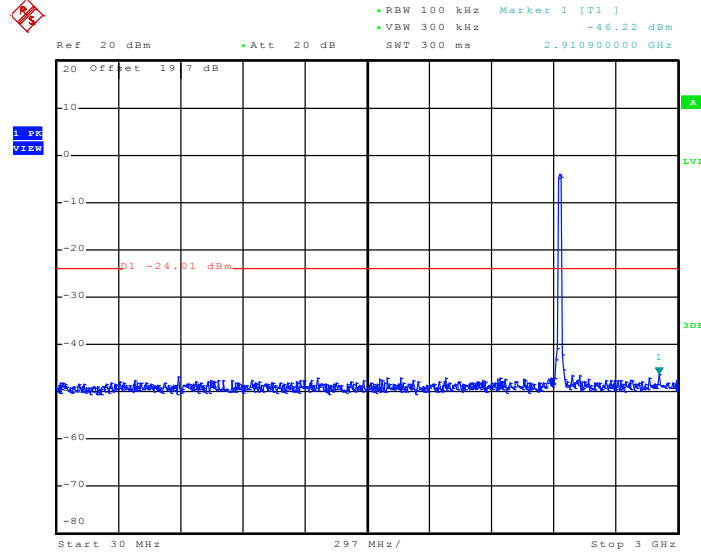


Date: 21.JAN.2011 13:42:58



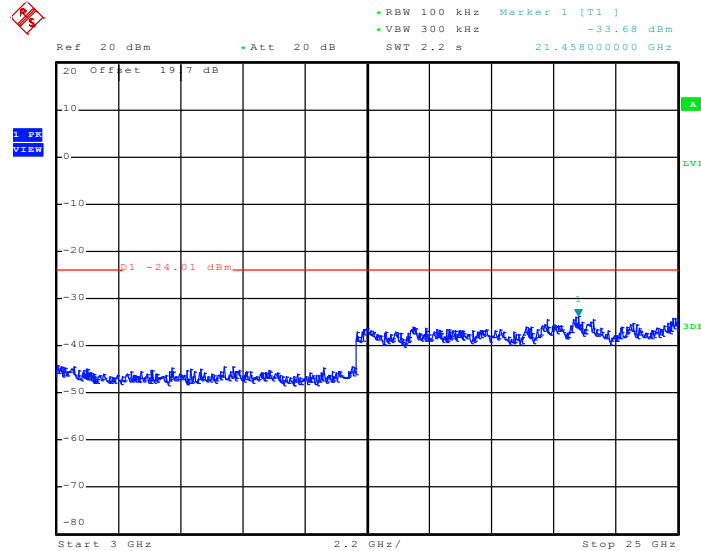
Test Mode :	Mode 5	Temperature :	24~26
Test Band :	802.11g	Relative Humidity :	50~53
Test Channel :	06	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 21.JAN.2011 12:44:18

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

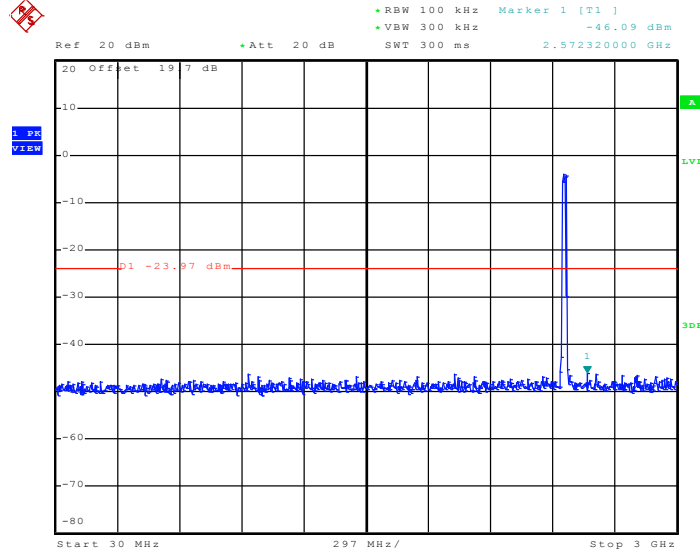


Date: 21.JAN.2011 12:44:35



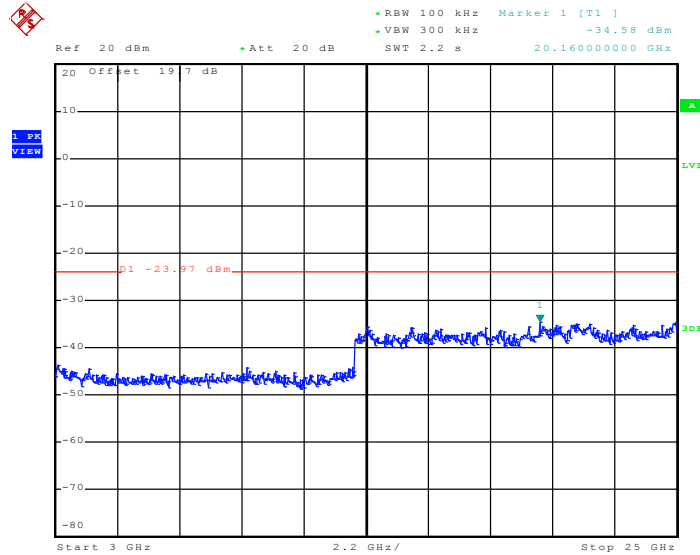
Test Mode :	Mode 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 21.JAN.2011 12:00:26

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

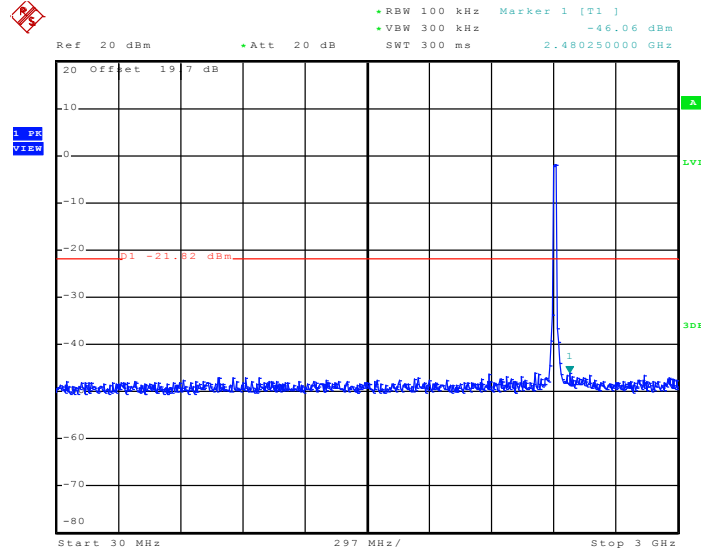


Date: 21.JAN.2011 12:00:43



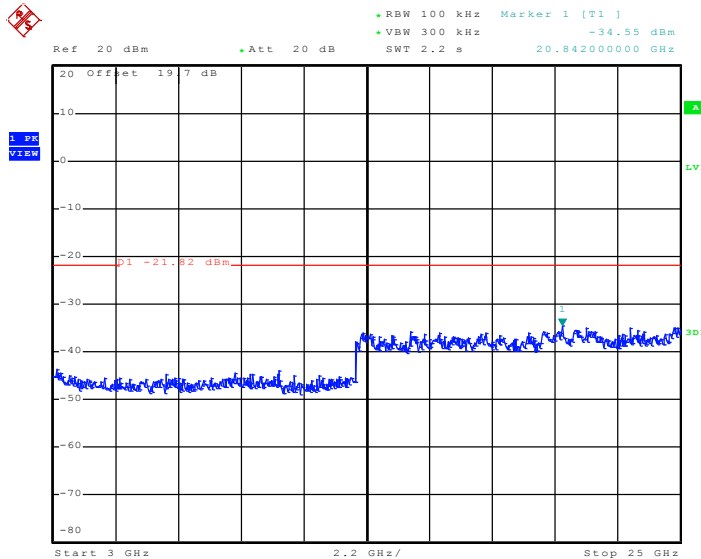
Test Mode :	Mode 7	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 24.JAN.2011 14:25:04

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

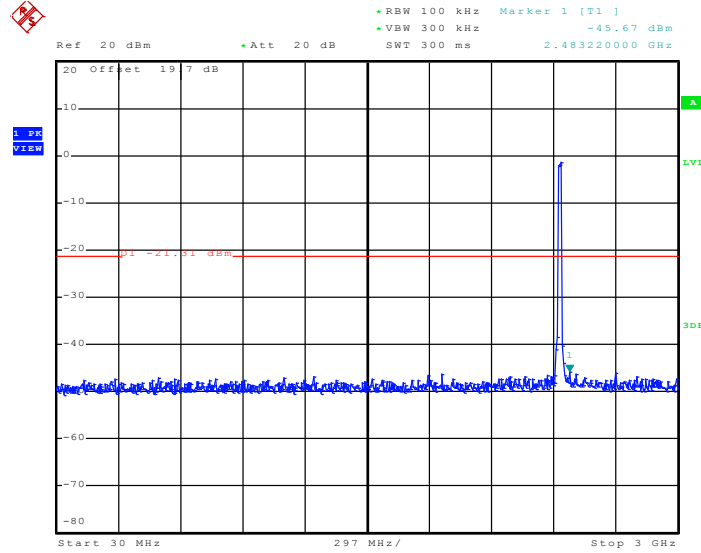


Date: 24.JAN.2011 14:25:21



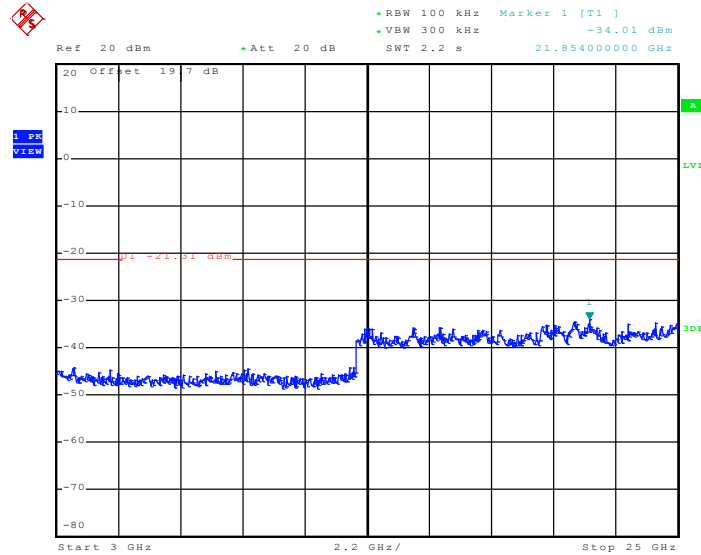
Test Mode :	Mode 8	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 24.JAN.2011 14:37:46

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

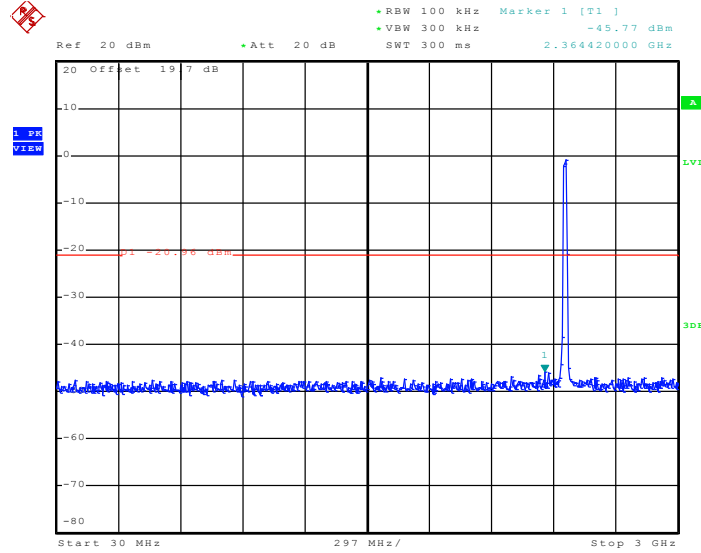


Date: 24.JAN.2011 14:38:03



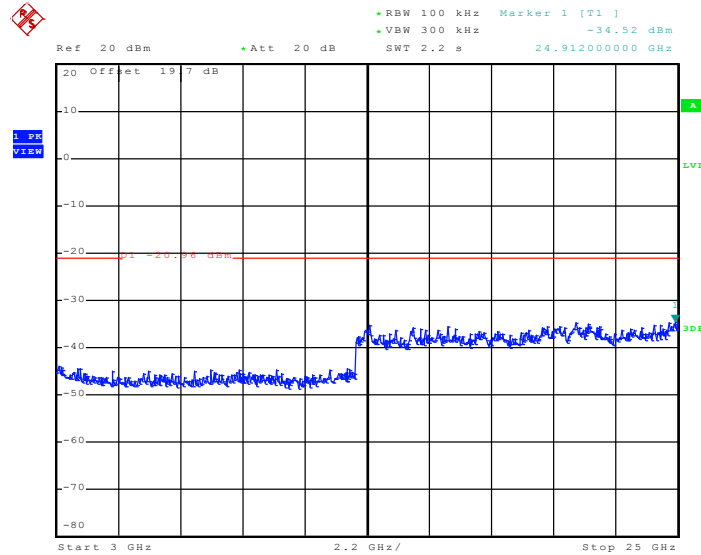
Test Mode :	Mode 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 24.JAN.2011 14:51:02

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

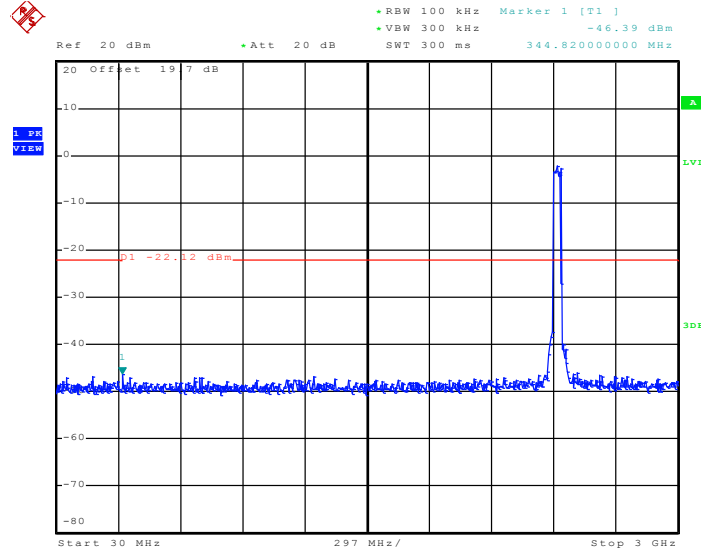


Date: 24.JAN.2011 14:51:19



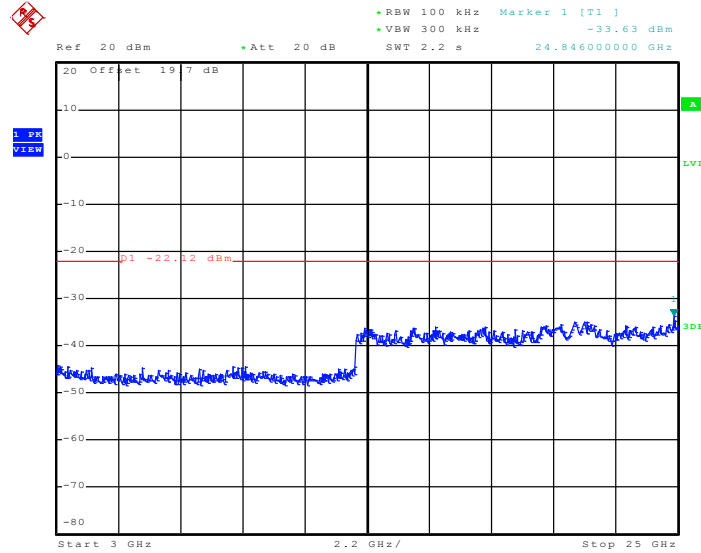
Test Mode :	Mode 10	Temperature :	24~26°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	50~53%
Test Channel :	03	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 24.JAN.2011 15:10:06

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

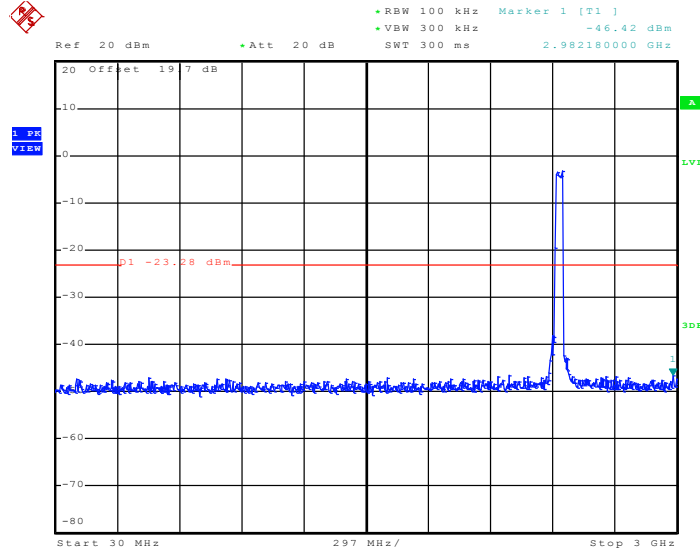


Date: 24.JAN.2011 15:10:23



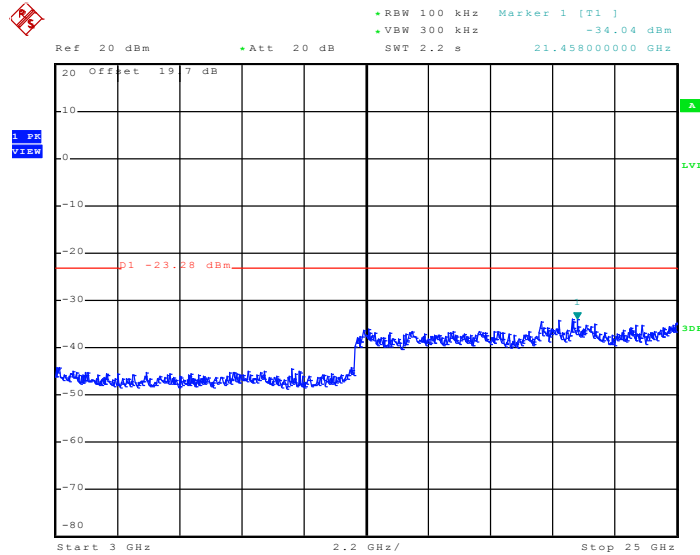
Test Mode :	Mode 11	Temperature :	24~26°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 24.JAN.2011 15:21:33

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

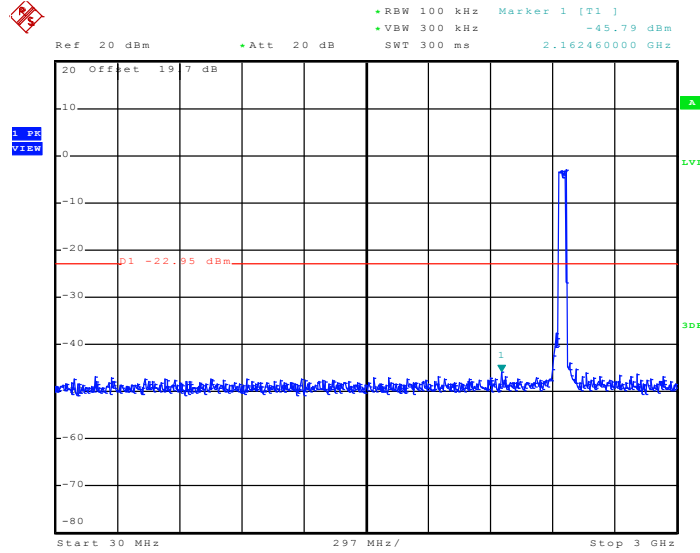


Date: 24.JAN.2011 15:21:50



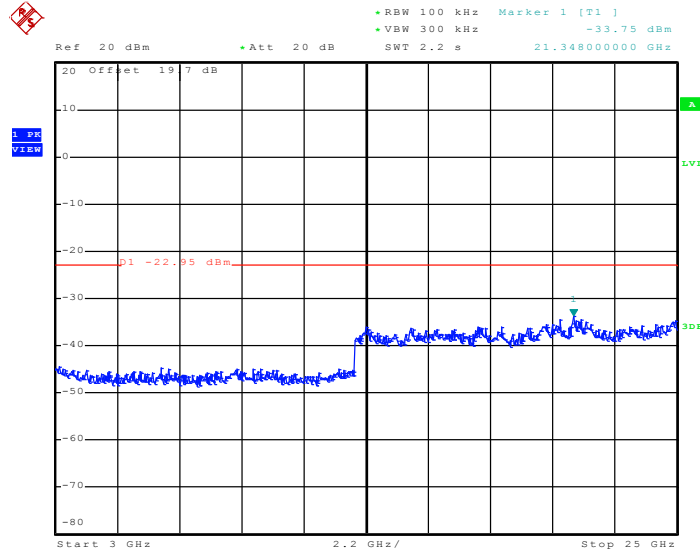
Test Mode :	Mode 12	Temperature :	24~26°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	50~53%
Test Channel :	09	Test Engineer :	Pinkston Tu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 24.JAN.2011 15:37:31

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 24.JAN.2011 15:37:47

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.

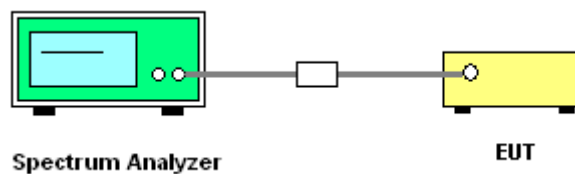
3.5.2 Measuring Instruments

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

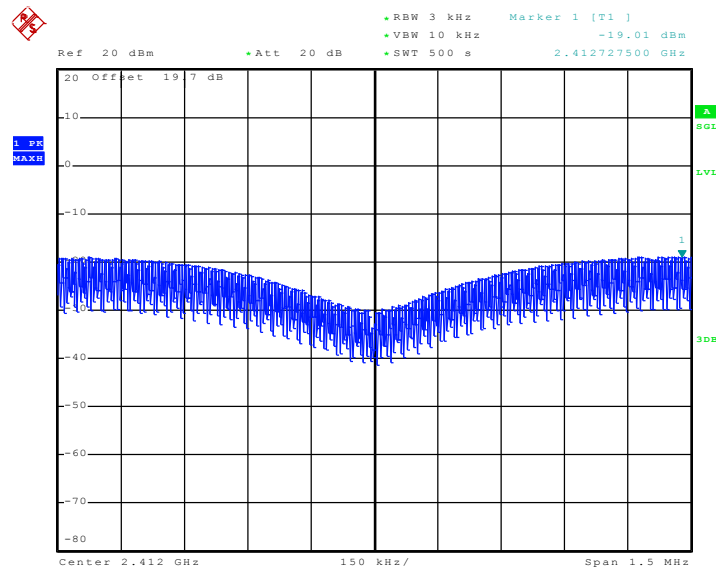


3.5.5 Test Result of Power Spectral Density

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

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-19.01	8	Pass
06	2437	-18.96	8	Pass
11	2462	-18.56	8	Pass

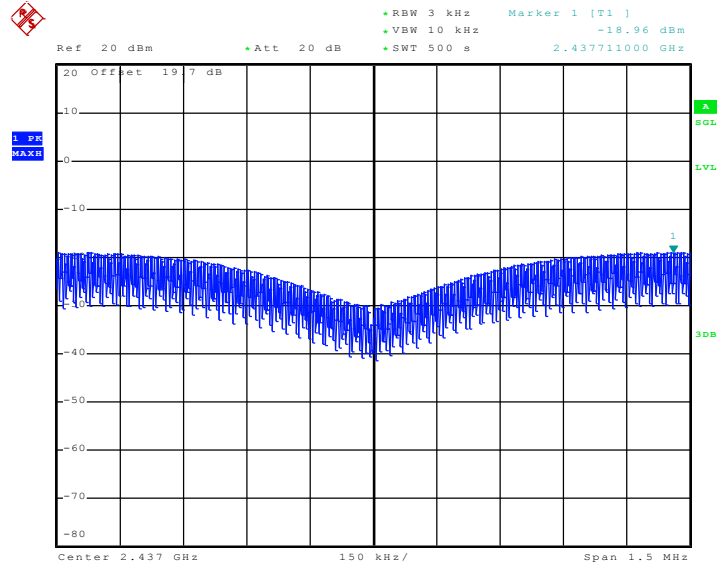
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 21.JAN.2011 11:21:30

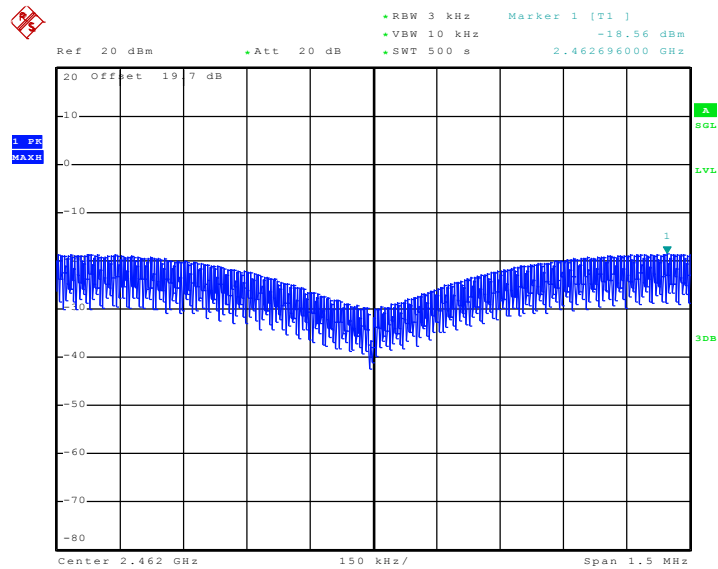


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 21.JAN.2011 11:33:14

Mode 3 : PSD Plot on 802.11b Channel 11



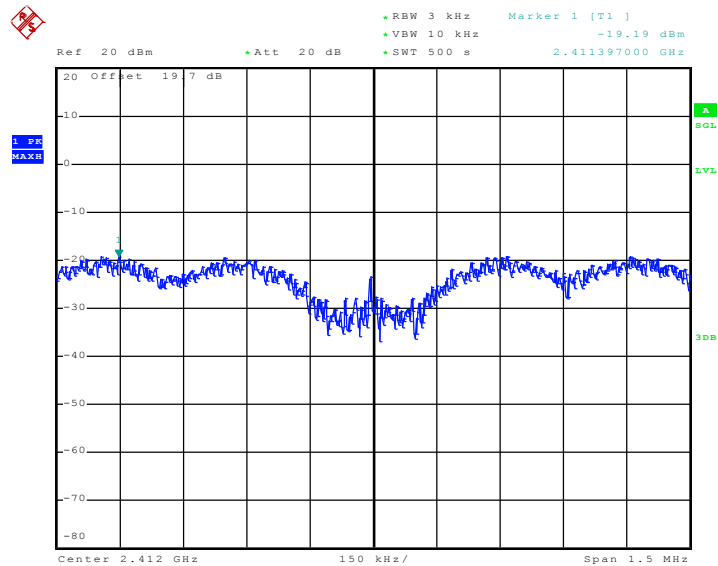
Date: 21.JAN.2011 11:46:09



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

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-19.19	8	Pass
06	2437	-18.41	8	Pass
11	2462	-19.21	8	Pass

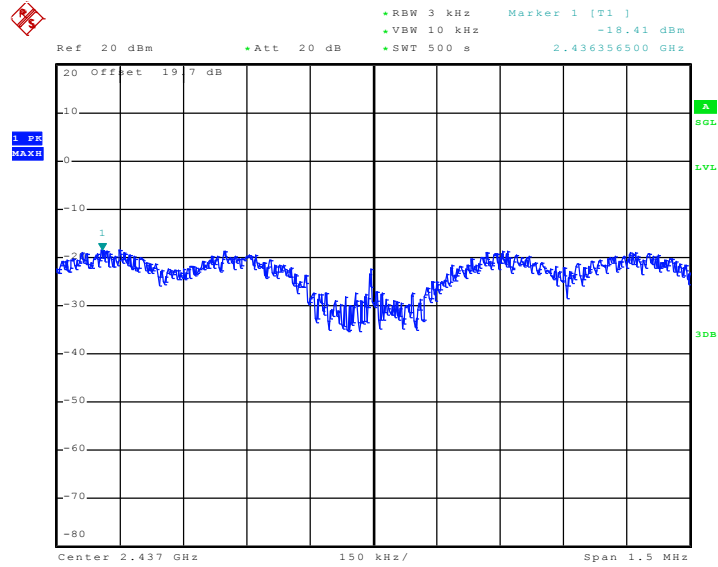
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 21.JAN.2011 13:42:20

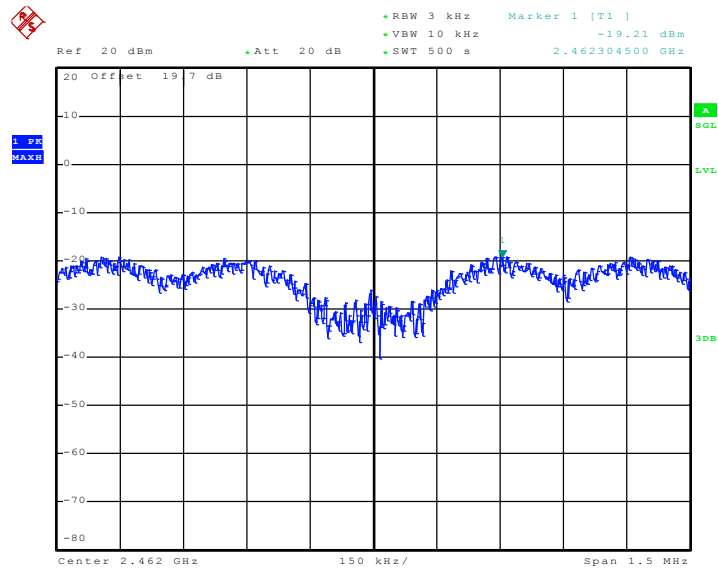


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 21.JAN.2011 12:43:57

Mode 6 : PSD Plot on 802.11g Channel 11



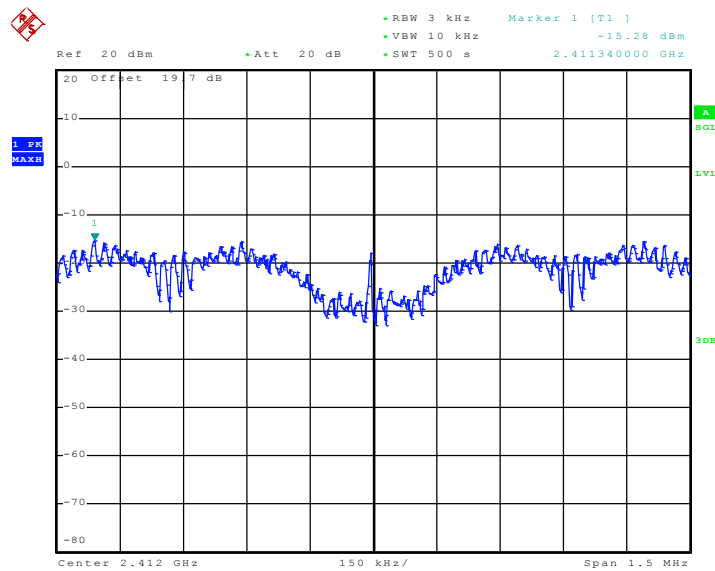
Date: 21.JAN.2011 12:00:05



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

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-15.28	8	Pass
06	2437	-15.49	8	Pass
11	2462	-15.17	8	Pass

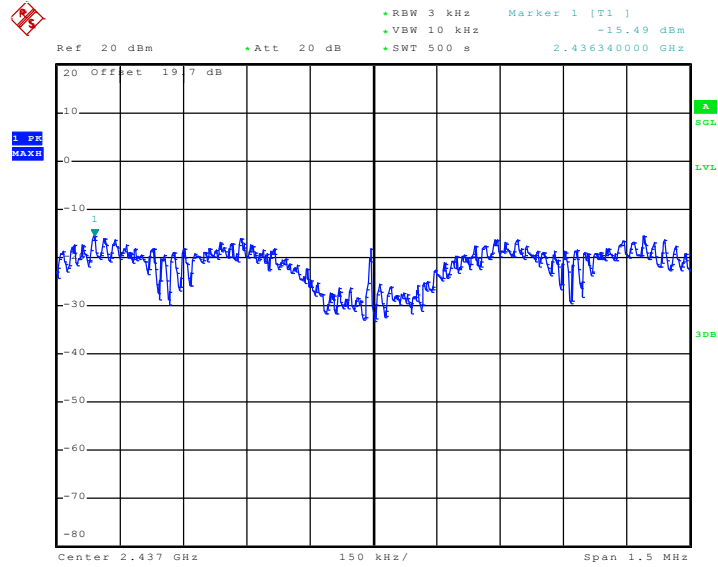
Mode 7 : PSD Plot on 802.11n (BW 20MHz) Channel 01



Date: 24.JAN.2011 14:24:43

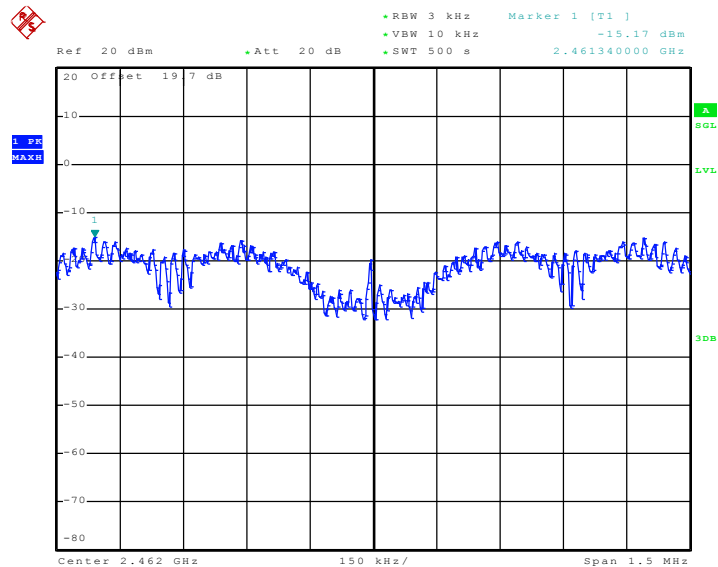


Mode 8 : PSD Plot on 802.11n (BW 20MHz) Channel 06



Date: 24.JAN.2011 14:37:26

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



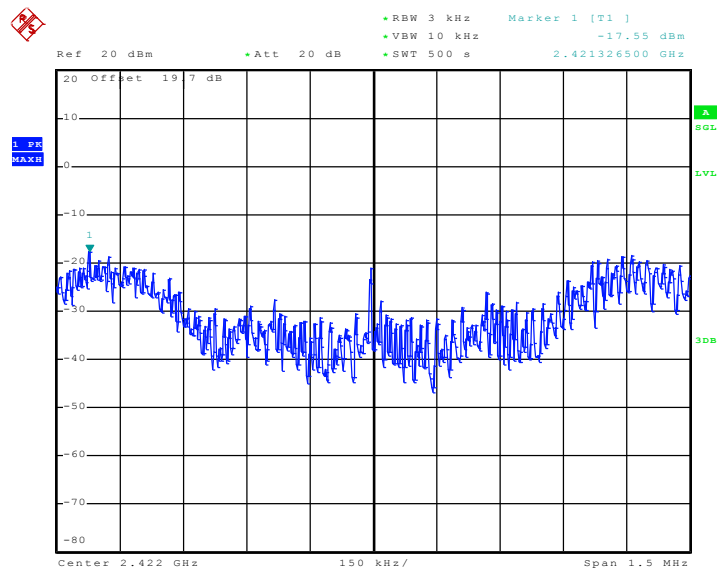
Date: 24.JAN.2011 14:50:42



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	-17.55	8	Pass
06	2437	-17.52	8	Pass
09	2452	-17.50	8	Pass

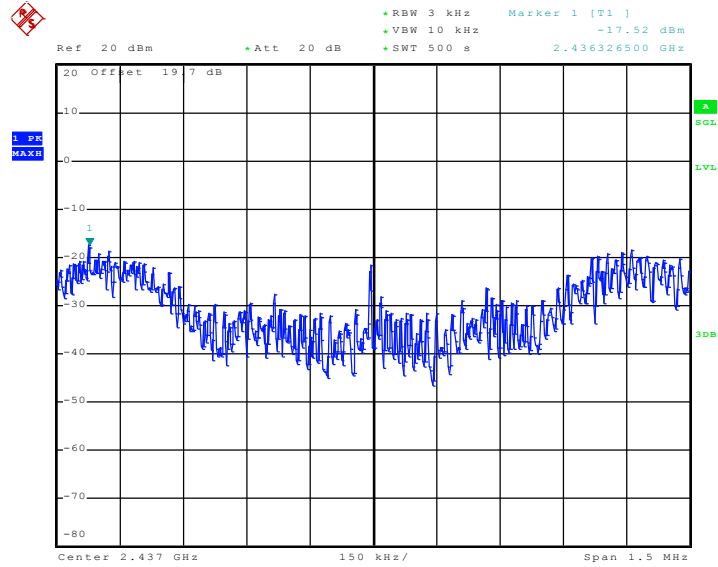
Mode 10 : PSD Plot on 802.11n (BW 40MHz) Channel 03



Date: 24.JAN.2011 15:09:45

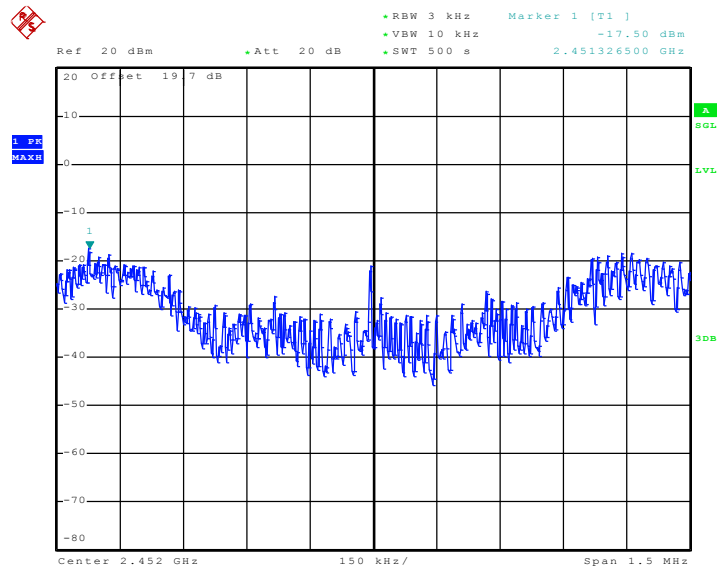


Mode 11 : PSD Plot on 802.11n (BW 40MHz) Channel 06



Date: 24.JAN.2011 15:21:12

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



Date: 24.JAN.2011 15:35:47

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.

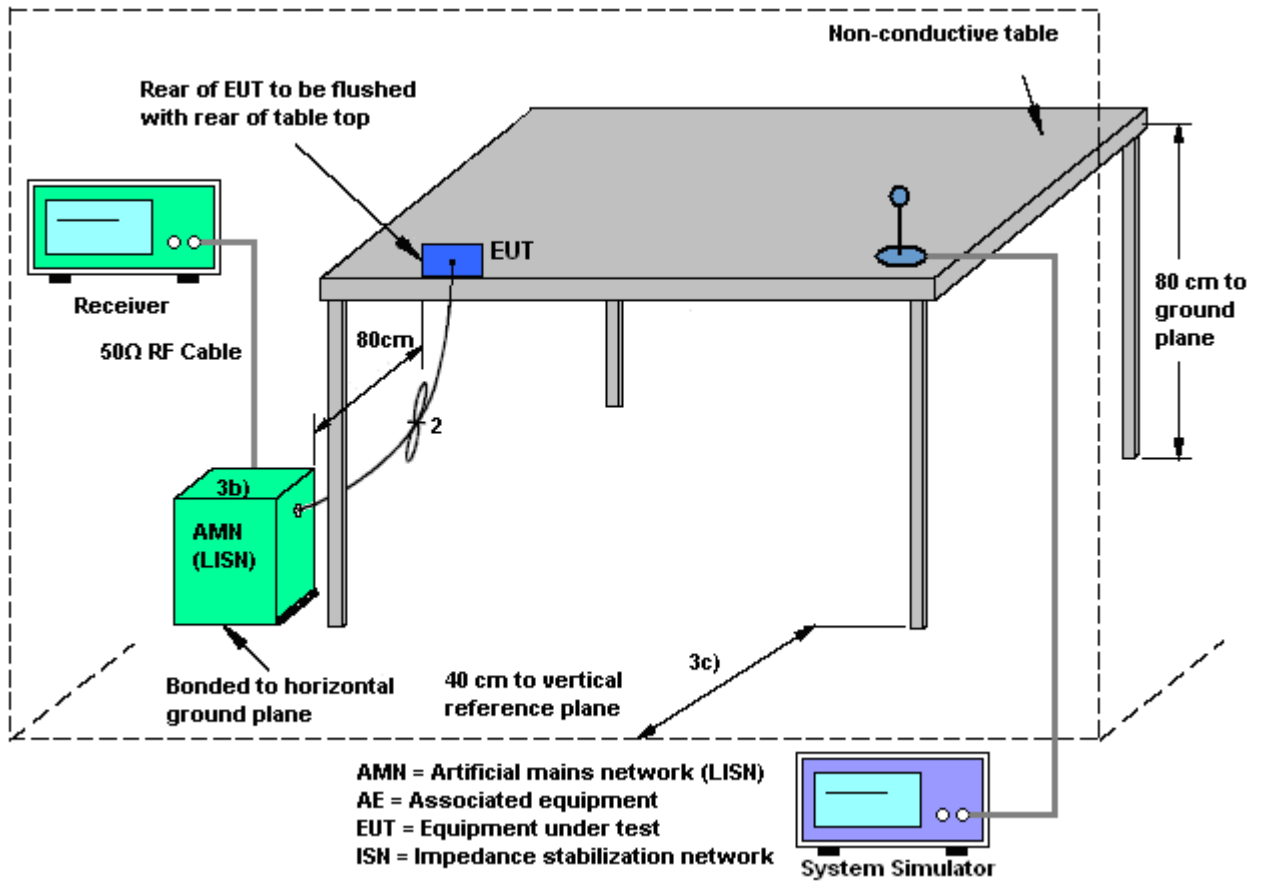
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

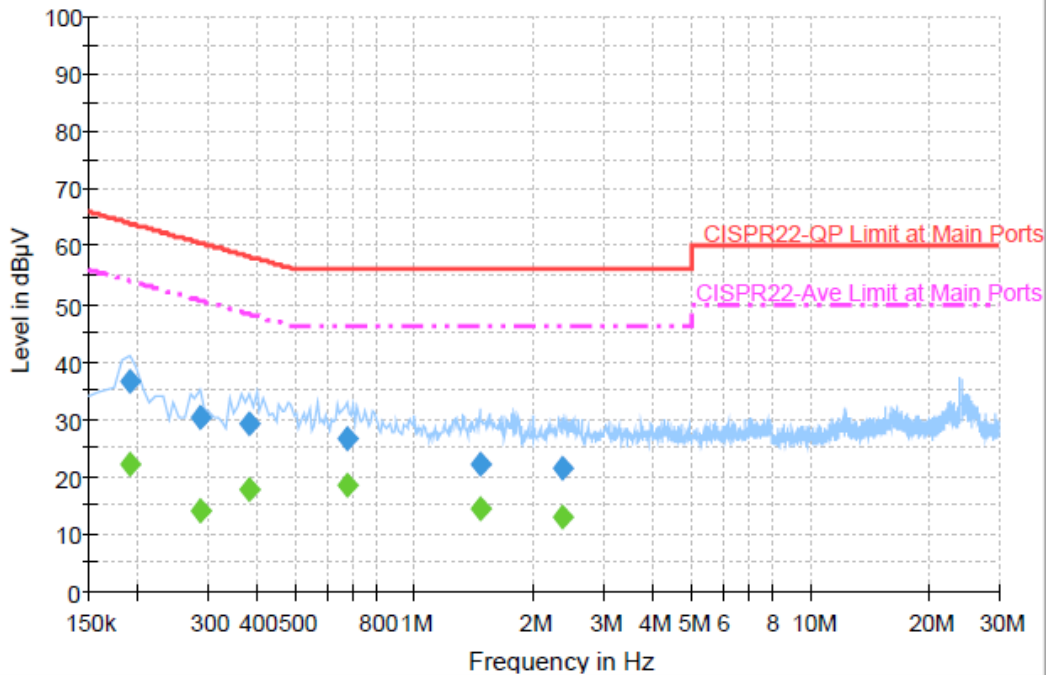
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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 (GPRS 8) Idle + WLAN Link + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



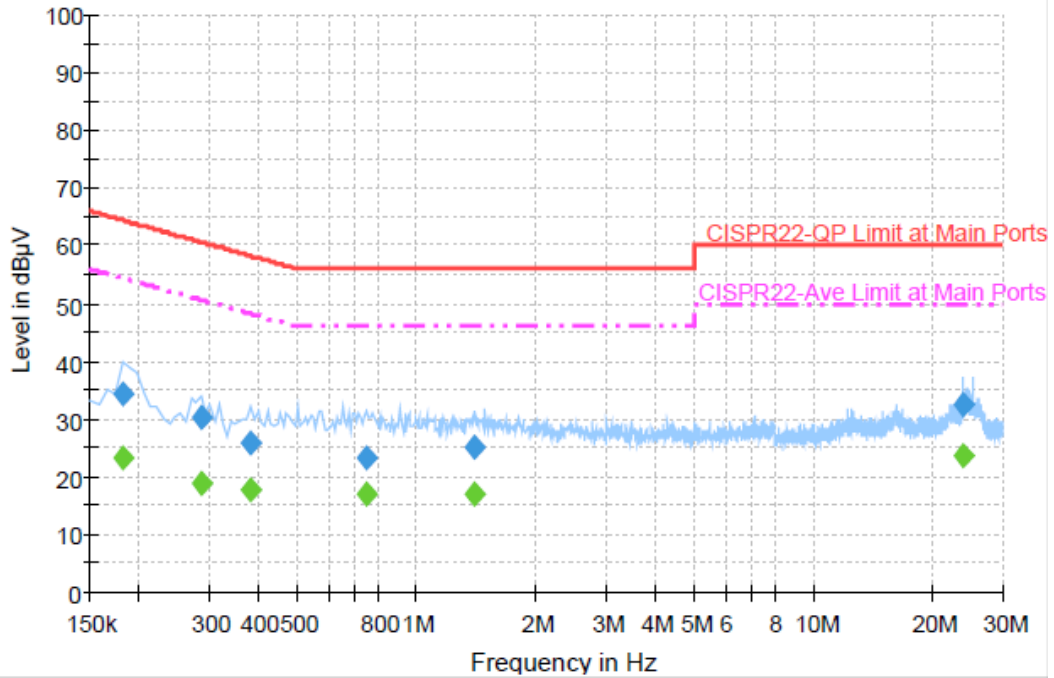
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190000	36.4	Off	L1	19.4	27.6	64.0
0.286000	30.2	Off	L1	19.3	30.4	60.6
0.382000	29.2	Off	L1	19.4	29.0	58.2
0.678000	26.6	Off	L1	19.4	29.4	56.0
1.462000	22.0	Off	L1	19.4	34.0	56.0
2.366000	21.4	Off	L1	19.5	34.6	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190000	22.2	Off	L1	19.4	31.8	54.0
0.286000	14.0	Off	L1	19.3	36.6	50.6
0.382000	17.7	Off	L1	19.4	30.5	48.2
0.678000	18.4	Off	L1	19.4	27.6	46.0
1.462000	14.2	Off	L1	19.4	31.8	46.0
2.366000	12.9	Off	L1	19.5	33.1	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 (GPRS 8) Idle + WLAN Link + 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	34.2	Off	N	19.4	30.2	64.4
0.286000	30.2	Off	N	19.3	30.4	60.6
0.382000	26.0	Off	N	19.4	32.2	58.2
0.750000	23.1	Off	N	19.4	32.9	56.0
1.406000	25.1	Off	N	19.4	30.9	56.0
23.990000	32.4	Off	N	19.9	27.6	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	23.1	Off	N	19.4	31.3	54.4
0.286000	18.9	Off	N	19.3	31.7	50.6
0.382000	17.7	Off	N	19.4	30.5	48.2
0.750000	16.8	Off	N	19.4	29.2	46.0
1.406000	16.8	Off	N	19.4	29.2	46.0
23.990000	23.8	Off	N	19.9	26.2	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

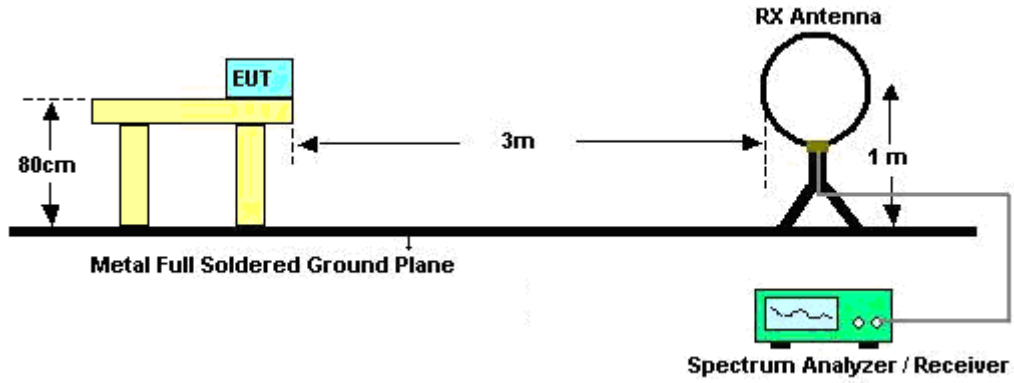
See list of measuring instruments of this test report.

3.7.3 Test Procedures

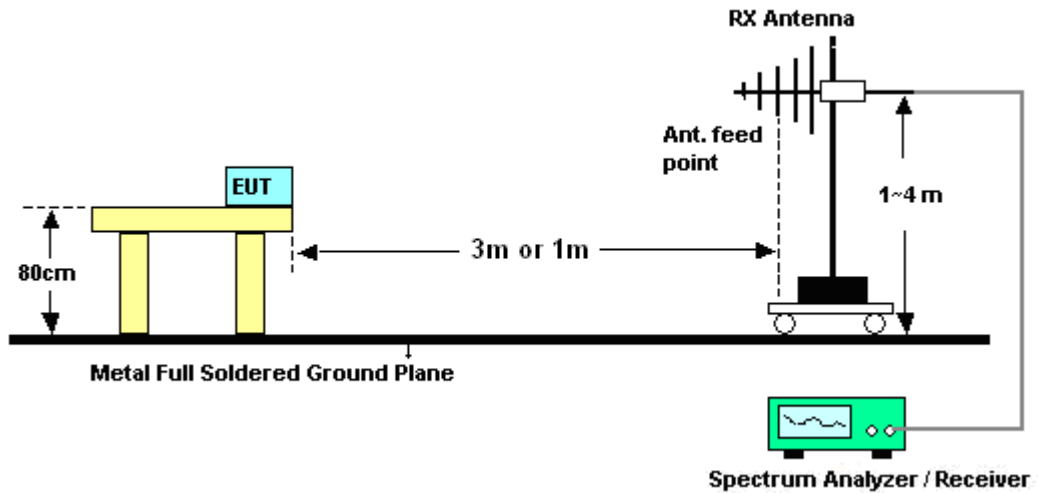
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
 - (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW \geq RBW; Sweep = 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 = $20 \log(\text{specific distance [3m]} / \text{test distance [1m]})$ (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 above 30MHz





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

Test Engineer :	Kai Wang and Kay Wu	Temperature :	21~23°C	
		Relative Humidity :	43~44%	
Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

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

Distance extrapolation factor = $40 \log(\text{specific distance} / \text{test distance})$ (dB);

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



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

Test Mode :	Mode 1	Temperature :	21~23°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
199.29	28.27	-15.23	43.5	48.74	9.35	1.66	31.48	-	-	Peak
231.69	31.71	-14.29	46	49.93	11.46	1.78	31.46	-	-	Peak
268.68	29.55	-16.45	46	46.09	12.96	1.93	31.43	-	-	Peak
862.8	33	-13	46	39.22	21.31	3.6	31.13	-	-	Peak
901.3	33.6	-12.4	46	39.15	21.63	3.76	30.94	100	261	Peak
997.9	35.6	-18.4	54	39.98	22.08	3.82	30.28	-	-	Peak
2388.85	50.02	-23.98	74	48.59	31.9	3.92	34.39	100	106	Peak
2388.85	37.29	-16.71	54	35.86	31.9	3.92	34.39	100	106	Average
2412	102.55	-	-	101.08	31.91	3.95	34.39	100	106	Peak
2412	98.31	-	-	96.84	31.91	3.95	34.39	100	106	Average
2484	46.41	-27.59	74	44.75	31.98	4.05	34.37	100	106	Peak
2484	33.61	-20.39	54	31.95	31.98	4.05	34.37	100	106	Average
4824	47.45	-26.55	74	63.73	34.4	5.77	56.45	100	354	Peak
4824	42.58	-11.42	54	58.86	34.4	5.77	56.45	100	354	Average



Test Mode :	Mode 1	Temperature :	21~23°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
137.19	28.1	-15.4	43.5	46.73	11.47	1.43	31.53	-	-	Peak
214.68	32.06	-11.44	43.5	51.49	10.31	1.71	31.45	100	25	Peak
230.34	34.2	-11.8	46	52.49	11.39	1.78	31.46	-	-	Peak
768.3	29.5	-16.5	46	37.39	20.33	3.35	31.57	-	-	Peak
843.9	32.27	-13.73	46	38.83	21.15	3.52	31.23	-	-	Peak
997.9	31.29	-22.71	54	35.67	22.08	3.82	30.28	-	-	Peak
2327.29	47.98	-26.02	74	46.57	31.88	3.92	34.39	106	346	Peak
2327.29	34.02	-19.98	54	32.78	31.83	3.82	34.41	106	346	Average
2412	97.3	-	-	95.83	31.91	3.95	34.39	106	346	Peak
2412	93.23	-	-	91.76	31.91	3.95	34.39	106	346	Average
2492	45.03	-28.97	74	43.35	32	4.05	34.37	106	346	Peak
2492	32.44	-21.56	54	30.76	32	4.05	34.37	106	346	Average
4824	49.49	-24.51	74	65.77	34.4	5.77	56.45	100	228	Peak
4824	44.86	-9.14	54	61.14	34.4	5.77	56.45	100	228	Average



Test Mode :	Mode 2	Temperature :	21~23°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
200.64	29.02	-14.48	43.5	49.43	9.41	1.66	31.48	-	-	Peak
228.99	33.36	-12.64	46	51.78	11.27	1.77	31.46	-	-	Peak
272.19	28.94	-17.06	46	45.41	13.03	1.94	31.44	-	-	Peak
901.3	33.42	-12.58	46	38.97	21.63	3.76	30.94	100	182	Peak
978.3	36.25	-17.75	54	40.86	21.99	3.81	30.41	-	-	Peak
997.9	35.34	-18.66	54	39.72	22.08	3.82	30.28	-	-	Peak
2388	49.63	-24.37	74	48.2	31.9	3.92	34.39	100	109	Peak
2388	36.67	-17.33	54	35.24	31.9	3.92	34.39	100	109	Average
2437	102.28	-	-	100.72	31.95	3.99	34.38	100	109	Peak
2437	97.94	-	-	96.38	31.95	3.99	34.38	100	109	Average
2494	46.9	-27.1	74	45.22	32	4.05	34.37	100	109	Peak
2494	33.77	-20.23	54	32.09	32	4.05	34.37	100	109	Average
4874	45.97	-28.03	74	62.27	34.37	5.82	56.49	100	2	Peak
4874	41.86	-12.14	54	58.18	34.37	5.8	56.49	100	2	Average



Test Mode :	Mode 2	Temperature :	21~23°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
152.04	27.71	-15.79	43.5	47.06	10.58	1.46	31.39	-	-	Peak
205.23	30.93	-12.57	43.5	50.99	9.73	1.68	31.47	-	-	Peak
230.34	33.59	-12.41	46	51.88	11.39	1.78	31.46	100	139	Peak
652.8	29.68	-16.32	46	38.95	19.29	3.06	31.62	-	-	Peak
768.3	29	-17	46	36.89	20.33	3.35	31.57	-	-	Peak
843.9	31.72	-14.28	46	38.28	21.15	3.52	31.23	-	-	Peak
2372	45.59	-28.41	74	44.22	31.88	3.89	34.4	104	346	Peak
2372	33.61	-20.39	54	32.24	31.88	3.89	34.4	104	346	Average
2437	97.53	-	-	95.99	31.93	3.99	34.38	104	346	Peak
2437	93.6	-	-	92.04	31.95	3.99	34.38	104	346	Average
2492	45.35	-28.65	74	43.67	32	4.05	34.37	104	346	Peak
2492	32.78	-21.22	54	31.1	32	4.05	34.37	104	346	Average
4874	46.98	-27.02	74	63.3	34.37	5.8	56.49	100	230	Peak
4874	43.29	-10.71	54	59.61	34.37	5.8	56.49	100	230	Average



Test Mode :	Mode 3	Temperature :	21~23°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
151.23	16.64	-26.86	43.5	35.93	10.64	1.46	31.39	-	-	Peak
230.88	31.38	-14.62	46	49.67	11.39	1.78	31.46	-	-	Peak
297.84	26.44	-19.56	46	42.43	13.43	2.05	31.47	-	-	Peak
824.3	34.91	-11.09	46	41.82	20.98	3.45	31.34	-	-	Peak
843.9	35.88	-10.12	46	42.44	21.15	3.52	31.23	100	120	Peak
978.3	33.33	-20.67	54	37.94	21.99	3.81	30.41	-	-	Peak
2356	50.83	-23.17	74	49.52	31.86	3.86	34.41	100	99	Peak
2356	37.5	-16.5	54	36.19	31.86	3.86	34.41	100	99	Average
2462	101.47	-	-	99.86	31.97	4.02	34.38	100	99	Peak
2462	97.13	-	-	95.52	31.97	4.02	34.38	100	99	Average
2495.25	48.75	-25.25	74	47.09	31.98	4.05	34.37	100	99	Peak
2495.25	34.97	-19.03	54	33.29	32	4.05	34.37	100	99	Average
4924	46.78	-27.22	74	63.11	34.34	5.85	56.52	100	359	Peak
4924	42.13	-11.87	54	58.46	34.34	5.85	56.52	100	359	Average



Test Mode :	Mode 3	Temperature :	21~23°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
50.79	18.31	-21.69	40	40.99	8.08	0.86	31.62	-	-	Peak
151.23	28.68	-14.82	43.5	47.97	10.64	1.46	31.39	100	229	Peak
226.83	31.02	-14.98	46	49.57	11.14	1.76	31.45	-	-	Peak
652.8	27.59	-18.41	46	36.86	19.29	3.06	31.62	-	-	Peak
768.3	26.58	-19.42	46	34.47	20.33	3.35	31.57	-	-	Peak
843.9	29.09	-16.91	46	35.65	21.15	3.52	31.23	-	-	Peak
2390	46.35	-27.65	74	44.92	31.9	3.92	34.39	100	348	Peak
2390	33.81	-20.19	54	32.38	31.9	3.92	34.39	100	348	Average
2462	96.75	-	-	95.14	31.97	4.02	34.38	100	348	Peak
2462	92.71	-	-	91.1	31.97	4.02	34.38	100	348	Average
2495.05	48.01	-25.99	74	46.35	31.98	4.05	34.37	100	348	Peak
2495.05	33.26	-20.74	54	31.58	32	4.05	34.37	100	348	Average
4924	48.96	-25.04	74	65.29	34.34	5.85	56.52	100	232	Peak
4924	44.51	-9.49	54	60.84	34.34	5.85	56.52	100	232	Average



Test Mode :	Mode 4	Temperature :	21~23°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
141.78	16.95	-26.55	43.5	35.74	11.27	1.44	31.5	-	-	Peak
233.04	31.1	-14.9	46	49.26	11.52	1.78	31.46	-	-	Peak
297.84	27.37	-18.63	46	43.36	13.43	2.05	31.47	-	-	Peak
843.9	35.8	-10.2	46	42.36	21.15	3.52	31.23	100	49	Peak
978.3	34.09	-19.91	54	38.7	21.99	3.81	30.41	-	-	Peak
997.9	34.51	-19.49	54	38.89	22.08	3.82	30.28	-	-	Peak
2389.99	66.46	-7.54	74	65.03	31.9	3.92	34.39	100	130	Peak
2389.99	45.34	-8.66	54	43.91	31.9	3.92	34.39	100	130	Average
2412	105.65	-	-	104.18	31.91	3.95	34.39	100	130	Peak
2412	95.95	-	-	94.48	31.91	3.95	34.39	100	130	Average
2486	48.82	-25.18	74	47.16	31.98	4.05	34.37	100	130	Peak
2486	36.41	-17.59	54	34.75	31.98	4.05	34.37	100	130	Average
4824	47.55	-26.45	74	63.83	34.4	5.77	56.45	101	1	Peak
4824	32.28	-21.72	54	48.56	34.4	5.77	56.45	101	1	Average



Test Mode :	Mode 4	Temperature :	21~23°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
51.33	17.93	-22.07	40	40.75	7.92	0.87	31.61	-	-	Peak
152.04	28.55	-14.95	43.5	47.9	10.58	1.46	31.39	-	-	Peak
230.34	31.69	-14.31	46	49.98	11.39	1.78	31.46	100	121	Peak
652.8	28.74	-17.26	46	38.01	19.29	3.06	31.62	-	-	Peak
843.9	28.72	-17.28	46	35.28	21.15	3.52	31.23	-	-	Peak
997.9	28.54	-25.46	54	32.92	22.08	3.82	30.28	-	-	Peak
2388.85	60.47	-13.53	74	59.04	31.9	3.92	34.39	105	347	Peak
2388.85	39.44	-14.56	54	38.01	31.9	3.92	34.39	105	347	Average
2412	101.29	-	-	99.82	31.91	3.95	34.39	105	347	Peak
2412	91.69	-	-	90.22	31.91	3.95	34.39	105	347	Average
2486	47.31	-26.69	74	45.65	31.98	4.05	34.37	105	347	Peak
2486	34.24	-19.76	54	32.58	31.98	4.05	34.37	105	347	Average
4824	49.17	-24.83	74	65.45	34.4	5.77	56.45	100	119	Peak
4824	33.33	-20.67	54	49.61	34.4	5.77	56.45	100	119	Average



Test Mode :	Mode 5	Temperature :	21~23°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
149.88	17.14	-26.36	43.5	36.36	10.7	1.46	31.38	-	-	Peak
234.39	31.06	-14.94	46	49.08	11.65	1.79	31.46	-	-	Peak
292.44	25.64	-20.36	46	41.74	13.35	2.03	31.48	-	-	Peak
843.9	36.03	-9.97	46	42.59	21.15	3.52	31.23	100	38	Peak
862.8	33.45	-12.55	46	39.67	21.31	3.6	31.13	-	-	Peak
978.3	34.29	-19.71	54	38.9	21.99	3.81	30.41	-	-	Peak
2326	53.46	-20.54	74	52.22	31.83	3.82	34.41	100	108	Peak
2326	40.83	-13.17	54	39.59	31.83	3.82	34.41	100	108	Average
2437	105.21	-	-	103.67	31.93	3.99	34.38	100	108	Peak
2437	95.44	-	-	93.88	31.95	3.99	34.38	100	108	Average
2484	49.78	-24.22	74	48.12	31.98	4.05	34.37	100	108	Peak
2484	36.77	-17.23	54	35.11	31.98	4.05	34.37	100	108	Average
4874	46.52	-27.48	74	62.84	34.37	5.8	56.49	100	121	Peak
4874	32.05	-21.95	54	48.37	34.37	5.8	56.49	100	121	Average



Test Mode :	Mode 5	Temperature :	21~23°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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	18.73	-21.27	40	41.41	8.08	0.86	31.62	-	-	Peak
152.04	29.02	-14.48	43.5	48.37	10.58	1.46	31.39	-	-	Peak
226.83	31.74	-14.26	46	50.29	11.14	1.76	31.45	100	325	Peak
652.8	29.51	-16.49	46	38.78	19.29	3.06	31.62	-	-	Peak
843.9	30.95	-15.05	46	37.51	21.15	3.52	31.23	-	-	Peak
959.4	28.37	-17.63	46	33.21	21.9	3.8	30.54	-	-	Peak
2388	49.44	-24.56	74	48.01	31.9	3.92	34.39	100	348	Peak
2388	36.4	-17.6	54	34.97	31.9	3.92	34.39	100	348	Average
2437	101.18	-	-	99.64	31.93	3.99	34.38	100	348	Peak
2437	91.37	-	-	89.81	31.95	3.99	34.38	100	348	Average
2494	47.5	-26.5	74	45.82	32	4.05	34.37	100	348	Peak
2494	34.66	-19.34	54	32.98	32	4.05	34.37	100	348	Average
4874	48.27	-25.73	74	64.57	34.37	5.82	56.49	100	121	Peak
4874	33.01	-20.99	54	49.33	34.37	5.8	56.49	100	121	Average



Test Mode :	Mode 6	Temperature :	21~23°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
149.34	15.64	-27.86	43.5	34.81	10.76	1.46	31.39	-	-	Peak
233.58	31.11	-14.89	46	49.2	11.58	1.79	31.46	-	-	Peak
297.03	25.45	-20.55	46	41.46	13.41	2.05	31.47	-	-	Peak
843.9	35.9	-10.1	46	42.46	21.15	3.52	31.23	100	105	Peak
920.9	34.08	-11.92	46	39.4	21.72	3.77	30.81	-	-	Peak
978.3	34.79	-19.21	54	39.4	21.99	3.81	30.41	-	-	Peak
2316	54.96	-19.04	74	53.74	31.81	3.82	34.41	100	99	Peak
2316	42.76	-11.24	54	41.54	31.81	3.82	34.41	100	99	Average
2462	104.69	-	-	103.08	31.97	4.02	34.38	100	99	Peak
2462	94.99	-	-	93.38	31.97	4.02	34.38	100	99	Average
2483.5	63.99	-10.01	74	62.33	31.98	4.05	34.37	100	99	Peak
2483.5	46.14	-7.86	54	44.48	31.98	4.05	34.37	100	99	Average
4924	48.79	-25.21	74	65.12	34.35	5.83	56.51	100	359	Peak
4924	32.68	-21.32	54	49.01	34.34	5.85	56.52	100	359	Average



Test Mode :	Mode 6	Temperature :	21~23°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
48.63	19.19	-20.81	40	41.2	8.78	0.84	31.63	-	-	Peak
152.04	29.45	-14.05	43.5	48.8	10.58	1.46	31.39	100	56	Peak
231.69	30.77	-15.23	46	48.99	11.46	1.78	31.46	-	-	Peak
652.8	28.45	-17.55	46	37.72	19.29	3.06	31.62	-	-	Peak
843.9	29.85	-16.15	46	36.41	21.15	3.52	31.23	-	-	Peak
997.9	29.64	-24.36	54	34.02	22.08	3.82	30.28	-	-	Peak
2388	48.95	-25.05	74	47.52	31.9	3.92	34.39	100	349	Peak
2388	36.66	-17.34	54	35.23	31.9	3.92	34.39	100	349	Average
2462	100.3	-	-	98.69	31.97	4.02	34.38	100	349	Peak
2462	91.22	-	-	89.61	31.97	4.02	34.38	100	349	Average
2483.5	58.84	-15.16	74	57.18	31.98	4.05	34.37	100	349	Peak
2483.5	40.64	-13.36	54	38.98	31.98	4.05	34.37	100	349	Average
4924	49.75	-24.25	74	66.08	34.34	5.85	56.52	100	120	Peak
4924	33.89	-20.11	54	50.22	34.34	5.85	56.52	100	120	Average



Test Mode :	Mode 7	Temperature :	21~23°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
149.88	16.38	-27.12	43.5	35.6	10.7	1.46	31.38	-	-	Peak
233.04	31.03	-14.97	46	49.19	11.52	1.78	31.46	-	-	Peak
297.84	26.04	-19.96	46	42.03	13.43	2.05	31.47	-	-	Peak
824.3	34.73	-11.27	46	41.64	20.98	3.45	31.34	-	-	Peak
843.9	36.36	-9.64	46	42.92	21.15	3.52	31.23	100	117	Peak
862.8	32.68	-13.32	46	38.9	21.31	3.6	31.13	-	-	Peak
2389.99	66.44	-7.56	74	65.01	31.9	3.92	34.39	102	131	Peak
2389.99	44.9	-9.1	54	43.47	31.9	3.92	34.39	102	131	Average
2412	105.07	-	-	103.6	31.91	3.95	34.39	102	131	Peak
2412	95.55	-	-	94.08	31.91	3.95	34.39	102	131	Average
2492	48.04	-25.96	74	46.36	32	4.05	34.37	102	131	Peak
2492	35.34	-18.66	54	33.66	32	4.05	34.37	102	131	Average



Test Mode :	Mode 7	Temperature :	21~23°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
41.34	20.27	-19.73	40	39.31	11.78	0.81	31.63	-	-	Peak
150.69	28.98	-14.52	43.5	48.2	10.7	1.46	31.38	100	39	Peak
230.34	31.02	-14.98	46	49.31	11.39	1.78	31.46	-	-	Peak
652.8	28.08	-17.92	46	37.35	19.29	3.06	31.62	-	-	Peak
843.9	28.47	-17.53	46	35.03	21.15	3.52	31.23	-	-	Peak
959.4	29.47	-16.53	46	34.31	21.9	3.8	30.54	-	-	Peak
2389.42	60.54	-13.46	74	59.11	31.9	3.92	34.39	105	348	Peak
2389.42	39.38	-14.62	54	37.95	31.9	3.92	34.39	105	348	Average
2412	100.85	-	-	99.41	31.91	3.92	34.39	105	348	Peak
2412	90.9	-	-	89.43	31.91	3.95	34.39	105	348	Average
2484	48.16	-25.84	74	46.5	31.98	4.05	34.37	105	348	Peak
2484	34.2	-19.8	54	32.54	31.98	4.05	34.37	105	348	Average



Test Mode :	Mode 8	Temperature :	21~23°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	Polarization :	Horizontal
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	15.78	-24.22	40	28.83	17.91	0.72	31.68	-	-	Peak
142.59	16.76	-26.74	43.5	35.59	11.21	1.45	31.49	-	-	Peak
231.69	31.43	-14.57	46	49.65	11.46	1.78	31.46	-	-	Peak
824.3	34.75	-11.25	46	41.66	20.98	3.45	31.34	-	-	Peak
843.9	36.03	-9.97	46	42.59	21.15	3.52	31.23	100	251	Peak
862.8	32.98	-13.02	46	39.2	21.31	3.6	31.13	-	-	Peak
2316	54.25	-19.75	74	53.03	31.81	3.82	34.41	100	108	Peak
2316	40.58	-13.42	54	39.36	31.81	3.82	34.41	100	108	Average
2437	104.5	-	-	102.96	31.93	3.99	34.38	100	108	Peak
2437	94.62	-	-	93.06	31.95	3.99	34.38	100	108	Average
2486	49.46	-24.54	74	47.8	31.98	4.05	34.37	100	108	Peak
2486	36.29	-17.71	54	34.63	31.98	4.05	34.37	100	108	Average



Test Mode :	Mode 8	Temperature :	21~23°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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	19.22	-20.78	40	41.9	8.08	0.86	31.62	-	-	Peak
143.94	29.07	-14.43	43.5	47.95	11.15	1.45	31.48	100	158	Peak
221.43	30.99	-15.01	46	49.93	10.75	1.74	31.43	-	-	Peak
652.8	29	-17	46	38.27	19.29	3.06	31.62	-	-	Peak
843.9	28.8	-17.2	46	35.36	21.15	3.52	31.23	-	-	Peak
959.4	29.52	-16.48	46	34.36	21.9	3.8	30.54	-	-	Peak
2366	48.77	-25.23	74	47.42	31.86	3.89	34.4	104	348	Peak
2366	36.4	-17.6	54	35.05	31.86	3.89	34.4	104	348	Average
2437	100.38	-	-	98.84	31.93	3.99	34.38	104	348	Peak
2437	90.46	-	-	88.9	31.95	3.99	34.38	104	348	Average
2484	47.42	-26.58	74	45.76	31.98	4.05	34.37	104	348	Peak
2484	34.53	-19.47	54	32.87	31.98	4.05	34.37	104	348	Average



Test Mode :	Mode 9	Temperature :	21~23°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
151.23	15.97	-27.53	43.5	35.26	10.64	1.46	31.39	-	-	Peak
234.39	30.69	-15.31	46	48.71	11.65	1.79	31.46	-	-	Peak
274.89	26	-20	46	42.43	13.06	1.95	31.44	-	-	Peak
843.9	36.39	-9.61	46	42.95	21.15	3.52	31.23	100	51	Peak
862.8	33.83	-12.17	46	40.05	21.31	3.6	31.13	-	-	Peak
997.9	35.76	-18.24	54	40.14	22.08	3.82	30.28	-	-	Peak
2326	55	-19	74	53.76	31.83	3.82	34.41	100	100	Peak
2326	41.88	-12.12	54	40.64	31.83	3.82	34.41	100	100	Average
2462	103.07	-	-	101.46	31.97	4.02	34.38	100	100	Peak
2462	93.26	-	-	91.65	31.97	4.02	34.38	100	100	Average
2484.61	60.22	-13.78	74	58.56	31.98	4.05	34.37	100	100	Peak
2484.61	42.17	-11.83	54	40.51	31.98	4.05	34.37	100	100	Average



Test Mode :	Mode 9	Temperature :	21~23°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
51.33	19.52	-20.48	40	42.34	7.92	0.87	31.61	-	-	Peak
145.29	28.82	-14.68	43.5	47.8	11.02	1.45	31.45	100	231	Peak
230.34	30.99	-15.01	46	49.28	11.39	1.78	31.46	-	-	Peak
652.8	28.67	-17.33	46	37.94	19.29	3.06	31.62	-	-	Peak
768.3	26.23	-19.77	46	34.12	20.33	3.35	31.57	-	-	Peak
843.9	30.69	-15.31	46	37.25	21.15	3.52	31.23	-	-	Peak
2388	47.52	-26.48	74	46.09	31.9	3.92	34.39	100	348	Peak
2388	35.99	-18.01	54	34.56	31.9	3.92	34.39	100	348	Average
2462	99.08	-	-	97.47	31.97	4.02	34.38	100	348	Peak
2462	89.46	-	-	87.85	31.97	4.02	34.38	100	348	Average
2484.42	55.34	-18.66	74	53.68	31.98	4.05	34.37	100	348	Peak
2484.42	37.84	-16.16	54	36.18	31.98	4.05	34.37	100	348	Average



Test Mode :	Mode 10	Temperature :	21~23°C
Test Channel :	03	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
152.58	23.45	-20.05	43.5	42.8	10.58	1.46	31.39	-	-	Peak
236.28	30.05	-15.95	46	47.93	11.78	1.8	31.46	-	-	Peak
297.84	30.16	-15.84	46	46.15	13.43	2.05	31.47	-	-	Peak
652.8	30.46	-15.54	46	39.73	19.29	3.06	31.62	-	-	Peak
824.3	35.99	-10.01	46	42.9	20.98	3.45	31.34	100	37	Peak
920.9	34.31	-11.69	46	39.63	21.72	3.77	30.81	-	-	Peak
2385.62	50.13	-3.87	54	48.7	31.9	3.92	34.39	123	92	Average
2385.62	71.42	-2.58	74	69.99	31.9	3.92	34.39	123	92	Peak
2422	105.17	-	-	103.7	31.91	3.95	34.39	123	92	Peak
2422	95.74	-	-	94.25	31.93	3.95	34.39	123	92	Average
2484	42.96	-11.04	54	41.3	31.98	4.05	34.37	123	92	Average
2484	57.24	-16.76	74	55.58	31.98	4.05	34.37	123	92	Peak



Test Mode :	Mode 10	Temperature :	21~23°C
Test Channel :	03	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
50.79	18.82	-21.18	40	41.5	8.08	0.86	31.62	-	-	Peak
157.44	25.93	-17.57	43.5	45.61	10.27	1.47	31.42	-	-	Peak
220.08	32.13	-13.87	46	51.13	10.69	1.74	31.43	100	31	Peak
575.8	27.28	-18.72	46	37.19	18.84	2.89	31.64	-	-	Peak
652.8	29.53	-16.47	46	38.8	19.29	3.06	31.62	-	-	Peak
901.3	29.99	-16.01	46	35.54	21.63	3.76	30.94	-	-	Peak
2388.85	42.46	-11.54	54	41.03	31.9	3.92	34.39	125	293	Average
2388.85	61.1	-12.9	74	59.67	31.9	3.92	34.39	125	293	Peak
2422	97.4	-	-	95.93	31.91	3.95	34.39	125	293	Peak
2422	87.78	-	-	86.29	31.93	3.95	34.39	125	293	Average
2484	37.28	-16.72	54	35.62	31.98	4.05	34.37	125	293	Average
2484	48.58	-25.42	74	46.92	31.98	4.05	34.37	125	293	Peak



Test Mode :	Mode 11	Temperature :	21~23°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
151.23	23.4	-20.1	43.5	42.69	10.64	1.46	31.39	-	-	Peak
198.48	23.09	-20.41	43.5	43.57	9.35	1.65	31.48	-	-	Peak
249.24	29.21	-16.79	46	46.22	12.61	1.85	31.47	-	-	Peak
301.4	24.72	-21.28	46	40.61	13.5	2.07	31.46	-	-	Peak
768.3	32.46	-13.54	46	40.35	20.33	3.35	31.57	-	-	Peak
824.3	35.96	-10.04	46	42.87	20.98	3.45	31.34	100	39	Peak
2390	63.09	-10.91	74	61.66	31.9	3.92	34.39	100	130	Peak
2390	46.91	-7.09	54	45.48	31.9	3.92	34.39	100	130	Average
2437	103.85	-	-	102.36	31.93	3.95	34.39	100	130	Peak
2437	94.22	-	-	92.66	31.95	3.99	34.38	100	130	Average
2486	47.65	-6.35	54	45.99	31.98	4.05	34.37	100	130	Average
2486	62.93	-11.07	74	61.27	31.98	4.05	34.37	100	130	Peak



Test Mode :	Mode 11	Temperature :	21~23°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
49.44	19.28	-20.72	40	41.62	8.43	0.85	31.62	-	-	Peak
157.44	25.42	-18.08	43.5	45.1	10.27	1.47	31.42	-	-	Peak
218.73	30.63	-15.37	46	49.7	10.63	1.73	31.43	-	-	Peak
575.8	28.06	-17.94	46	37.97	18.84	2.89	31.64	-	-	Peak
652.8	31.9	-14.1	46	41.17	19.29	3.06	31.62	100	197	Peak
768.3	30.22	-15.78	46	38.11	20.33	3.35	31.57	-	-	Peak
2390	61.45	-12.55	74	60.02	31.9	3.92	34.39	107	58	Peak
2390	42.62	-11.38	54	41.19	31.9	3.92	34.39	107	58	Average
2437	99	-	-	97.51	31.93	3.95	34.39	107	58	Peak
2437	89.65	-	-	88.09	31.95	3.99	34.38	107	58	Average
2484	42.78	-11.22	54	41.12	31.98	4.05	34.37	107	58	Average
2484	61.71	-12.29	74	60.05	31.98	4.05	34.37	107	58	Peak



Test Mode :	Mode 12	Temperature :	21~23°C
Test Channel :	09	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
151.23	22.04	-21.46	43.5	41.33	10.64	1.46	31.39	-	-	Peak
198.48	24.16	-19.34	43.5	44.64	9.35	1.65	31.48	-	-	Peak
249.24	28.28	-17.72	46	45.29	12.61	1.85	31.47	-	-	Peak
652.8	30.63	-15.37	46	39.9	19.29	3.06	31.62	-	-	Peak
768.3	31.69	-14.31	46	39.58	20.33	3.35	31.57	-	-	Peak
824.3	35.26	-10.74	46	42.17	20.98	3.45	31.34	100	114	Peak
2390	57.49	-16.51	74	56.06	31.9	3.92	34.39	100	129	Peak
2390	43.19	-10.81	54	41.76	31.9	3.92	34.39	100	129	Average
2452	102.6	-	-	101.04	31.95	3.99	34.38	100	129	Peak
2452	92.78	-	-	91.22	31.95	3.99	34.38	100	129	Average
2487.65	48.09	-5.91	54	46.41	32	4.05	34.37	100	129	Average
2487.65	65.33	-8.67	74	63.65	32	4.05	34.37	100	129	Peak



Test Mode :	Mode 12	Temperature :	21~23°C
Test Channel :	09	Relative Humidity :	43~44%
Test Engineer :	Kai Wang and Kay Wu	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
150.69	24.61	-18.89	43.5	43.83	10.7	1.46	31.38	-	-	Peak
198.48	29.96	-13.54	43.5	50.44	9.35	1.65	31.48	100	337	Peak
230.34	29.29	-16.71	46	47.58	11.39	1.78	31.46	-	-	Peak
575.8	28.19	-17.81	46	38.1	18.84	2.89	31.64	-	-	Peak
652.8	31.76	-14.24	46	41.03	19.29	3.06	31.62	-	-	Peak
768.3	28.3	-17.7	46	36.19	20.33	3.35	31.57	-	-	Peak
2382	51.02	-22.98	74	49.61	31.88	3.92	34.39	100	265	Peak
2382	39.11	-14.89	54	37.7	31.88	3.92	34.39	100	265	Average
2452	96.77	-	-	95.16	31.97	4.02	34.38	100	265	Peak
2452	87.03	-	-	85.47	31.95	3.99	34.38	100	265	Average
2487.46	62.29	-11.71	74	60.63	31.98	4.05	34.37	100	265	Peak
2487.46	45.71	-8.29	54	44.05	31.98	4.05	34.37	100	265	Average



3.8 Antenna Requirements

3.8.1 Standard Applicable

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

3.8.2 Antenna Connected Construction

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

3.8.3 Antenna Gain

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	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)
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	116457	N/A	Jun. 08, 2009	Jun. 07, 2011	Conduction (CO05-HY)
Spectrum Analyzer	R&S	FSP40	100057	9KHz-40GHz	Oct. 25, 2010	Oct. 24, 2011	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/003	20MHz-1000MHz	Apr. 28, 2010	Apr. 27, 2011	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Oct. 31, 2010	Oct. 31, 2011	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz~18GHz	Aug. 02, 2010	Aug. 01, 2011	Radiation (03CH06-HY)
Double Ridge Horn Antenna	Training Research	AH-0801	95119	8GHz~18GHz	Oct. 20, 2010	Oct. 19, 2011	Radiation (03CH06-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz- 26.5GHz	Apr. 15, 2010	Apr. 14, 2011	Radiation (03CH06-HY)
Amplifier	Agilent	310N	186713	9KHz~1GHz	Apr. 15, 2010	Apr. 14, 2011	Radiation (03CH06-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH06-HY)

5 Uncertainty of Evaluation

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

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

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

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



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

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



Appendix A. Photographs of EUT

Please refer to Sporton report number EP0D0736 as below.