FCC RF Test Report

APPLICANT	:	Huawei Technologies CO., Ltd.
EQUIPMENT	:	Wireless Repeater
BRAND NAME	:	HUAWEI
MODEL NAME	:	WS320
FCC ID	:	QISWS320
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	Digital Transmission System (DTS)

The product was received on Jun. 25, 2010 and completely tested on Jul. 24, 2010. We, SPORTON INTERNATIONAL (KUNSHAN) 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:

Anderson Chiu

Anderson Chiu / Vice Manager

Testing Laboratory 1190

SPORTON INTERNATIONAL (KUNSHAN) INC.

No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR062612	Rev. 01	Initial issue of report	Aug. 03, 2010

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 16.69 dB at 1.87 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 0.92 dB at 4924 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Huawei Technologies CO., Ltd.
Administration Building, Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R.C.

1.2 Manufacturer

Huawei Technologies CO., Ltd.
Administration Building, Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R.C.

1.3 Factory

Askey Technology (Jiangsu) Ltd.
No. 1388, JiaoTong Road, WuJiang Economic-Technological Development Area, Jiangsu Province, P.R.C.

1.4 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Wireless Repeater
Brand Name	HUAWEI
Model Name	WS320
FCC ID	QISWS320
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 : 15.05 dBm (0.032 W) 802.11g : 16.82 dBm (0.048 W) 802.11n (BW 20MHz) : 16.81 dBm (0.048 W) 802.11n (BW 40MHz) : 16.60 dBm (0.046 W)
Antenna Type	PCB Antenna with gain 2 dBi
HW Version	WS320XRA VER.B
SW Version	V100R001
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.

1.5 Testing Site

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958
Test Site No.	**Sporton Site No. :** TH01-KS ; 03CH01-KS

1.6 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 7

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

1.7 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	Dell	P08S	QDS-BRCM1030	N/A	AC I/P: Unshielded, 1.84m DC O/P: Shielded, 0.9m

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)			
		At DSSS Data Rate			
		MCS0	MCS1	MCS2	MCS3
CH 01	2412 MHz	**15.05**	14.90	14.80	14.90
CH 06	2437 MHz	13.40	13.10	13.00	13.50
CH 11	2462 MHz	14.10	14.10	13.80	14.40

Channel	Frequency	2.4GHz 802.11g RF Power (dBm)							
		At OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412 MHz	16.62	15.80	16.34	16.02	16.35	16.10	15.67	**16.82**
CH 06	2437 MHz	15.60	14.88	15.20	14.10	15.30	14.65	14.25	16.12
CH 11	2462 MHz	16.50	15.10	15.50	14.70	15.60	14.70	15.30	15.65

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		At OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412 MHz	15.95	16.17	16.55	16.80	16.31	16.04	**16.81**	16.31
CH 06	2437 MHz	14.30	14.60	15.27	15.50	14.84	14.53	15.50	14.88
CH 11	2462 MHz	13.66	14.01	14.47	14.90	14.18	14.25	14.44	14.17

Channel	Frequency	2.4GHz 802.11n (BW 40MHz) RF Power (dBm)							
		At OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 03	2422 MHz	15.80	15.37	15.82	15.66	16.14	16.56	**16.60**	15.72
CH 06	2437 MHz	14.82	14.35	15.50	14.80	15.12	15.27	15.67	14.80
CH 09	2452 MHz	14.07	13.42	14.25	13.86	14.14	14.40	15.11	13.84

Remark:

1. The data rates of WLAN 802.11b/g/n were set in MCS0 for 802.11b, MCS7 for 802.11g, MCS6 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.

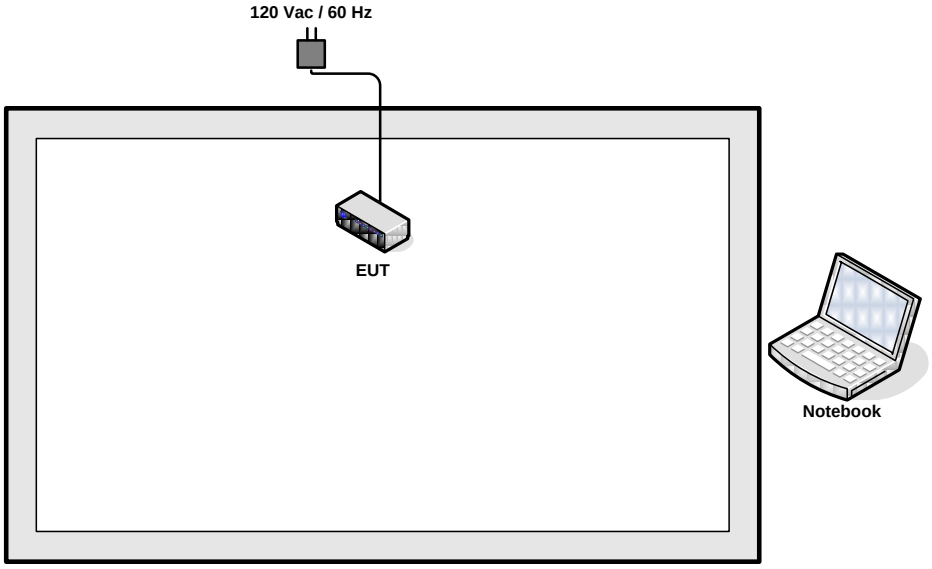
2.2 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its ecmission 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 ： WLAN Link	

2.3 Connection Diagram of Test System



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.

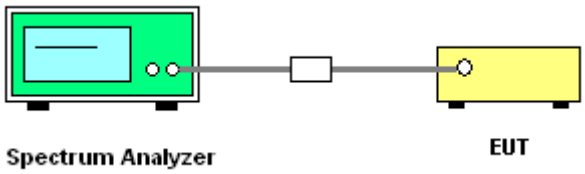
3.1.2 Measuring Instruments

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

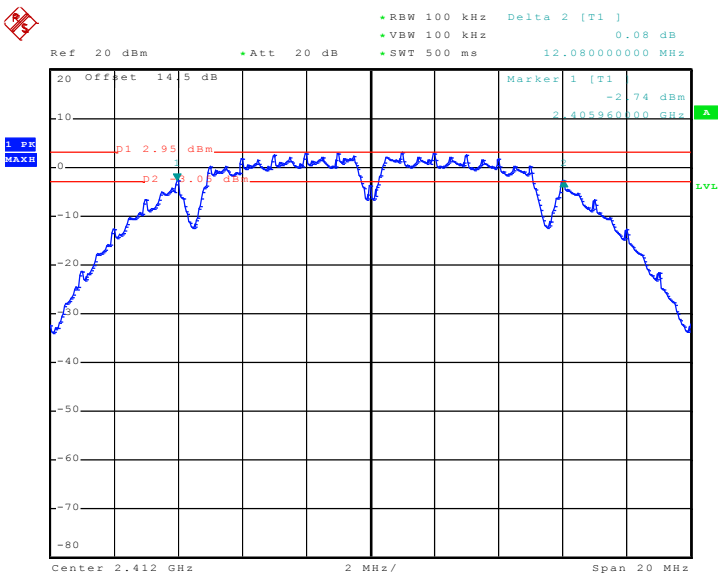


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	20~21℃
Test Engineer :	Sky Liu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	12.08	0.5	Pass
06	2437	12.08	0.5	Pass
11	2462	11.16	0.5	Pass

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



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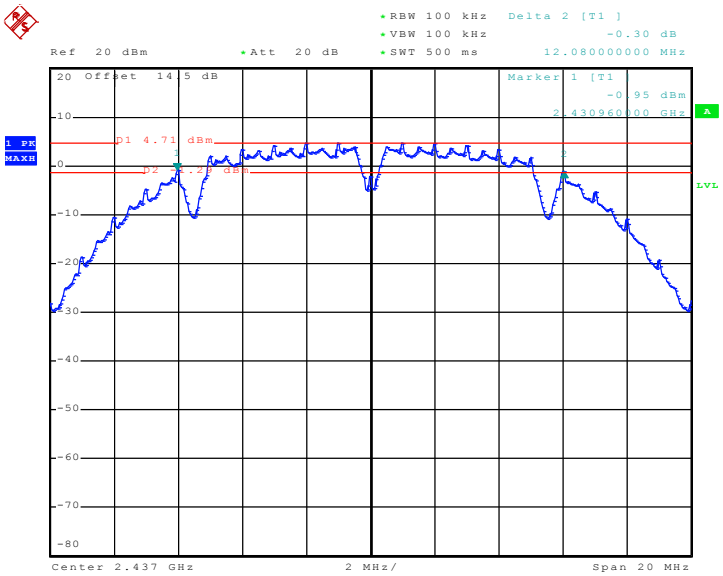
Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



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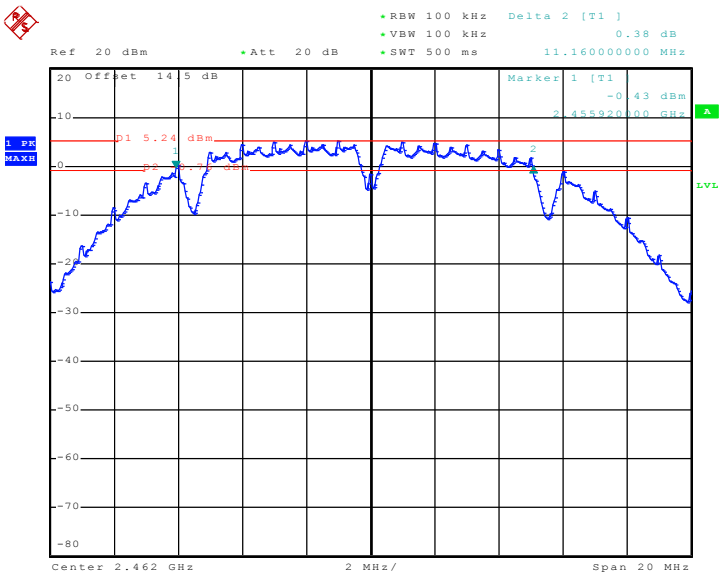
Mode 3 : 6 dB Bandwidth Plot on 802.11b Channel 11



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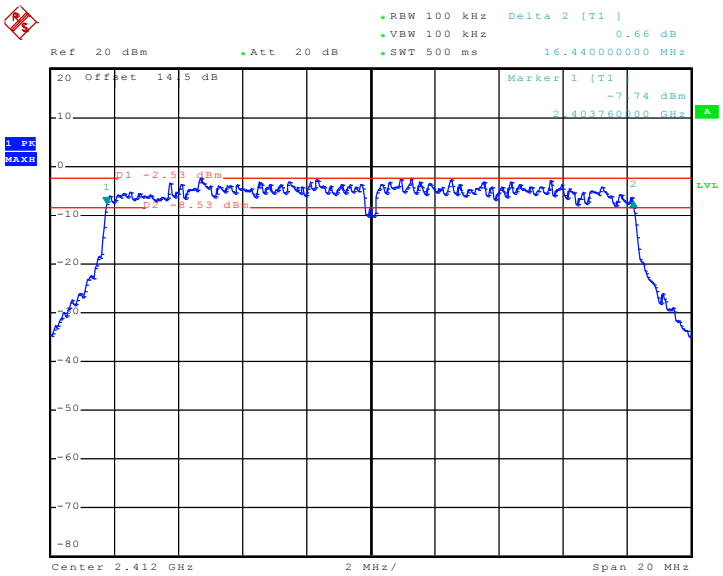
Test Mode :	Mode 4, 5, 6	Temperature :	20~21℃
Test Engineer :	Sky Liu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.44	0.5	Pass
06	2437	16.44	0.5	Pass
11	2462	16.44	0.5	Pass

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



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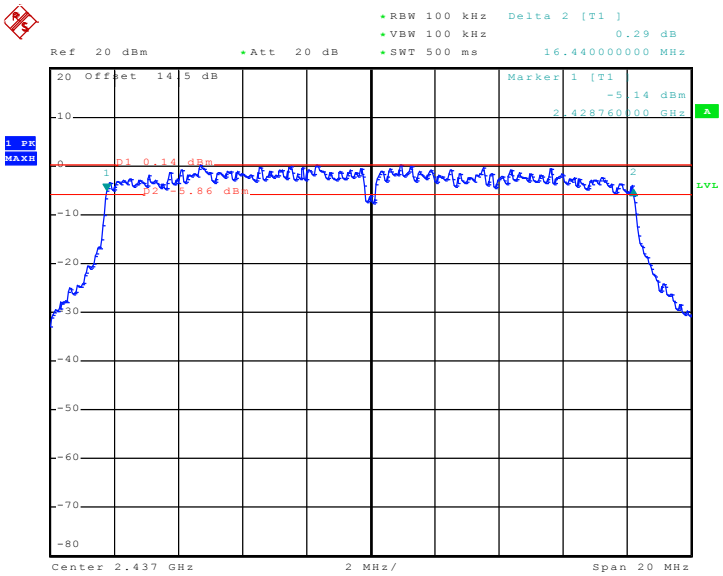
Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



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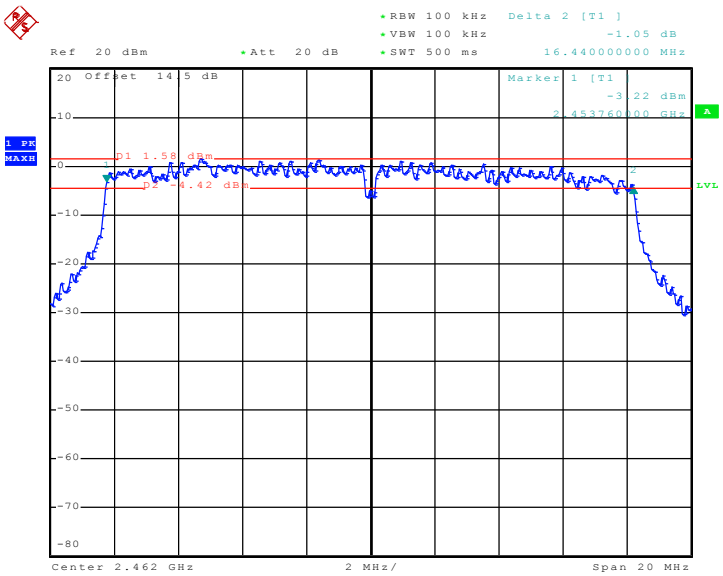
Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11

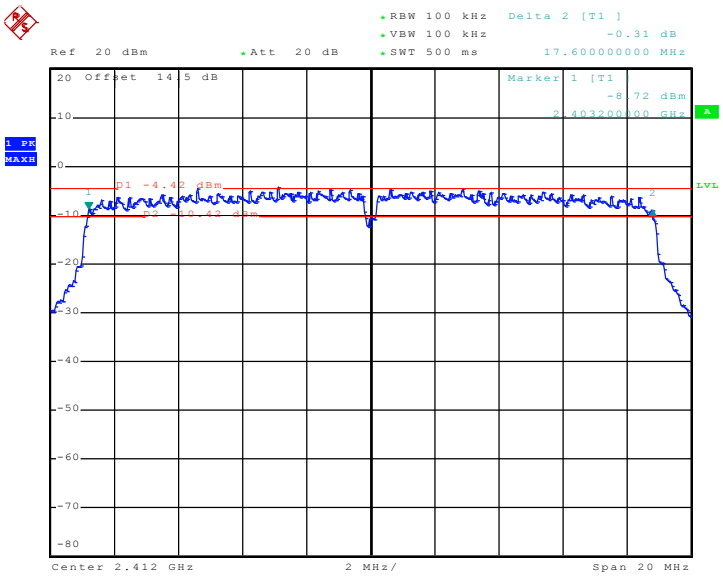


Date: 24.JUN.2010 14:09:12

Test Mode :	Mode 7, 8, 9	Temperature :	20~21℃
Test Engineer :	Sky Liu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.60	0.5	Pass
06	2437	17.60	0.5	Pass
11	2462	17.60	0.5	Pass

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



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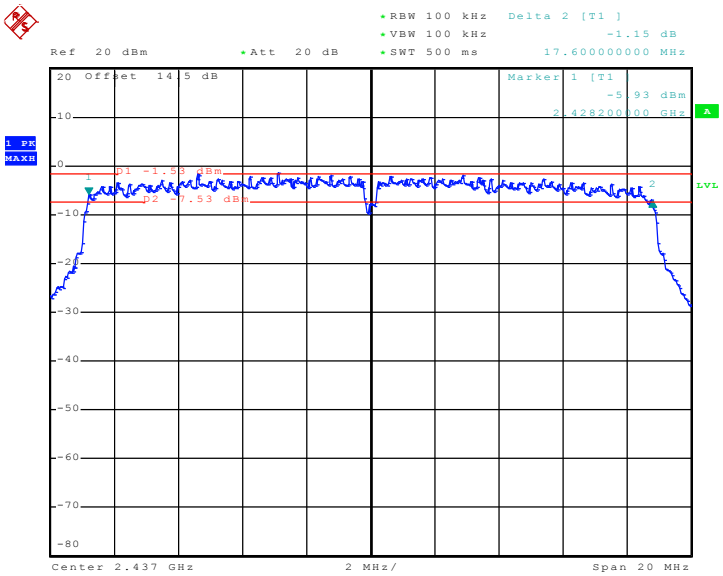
Mode 8 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 06



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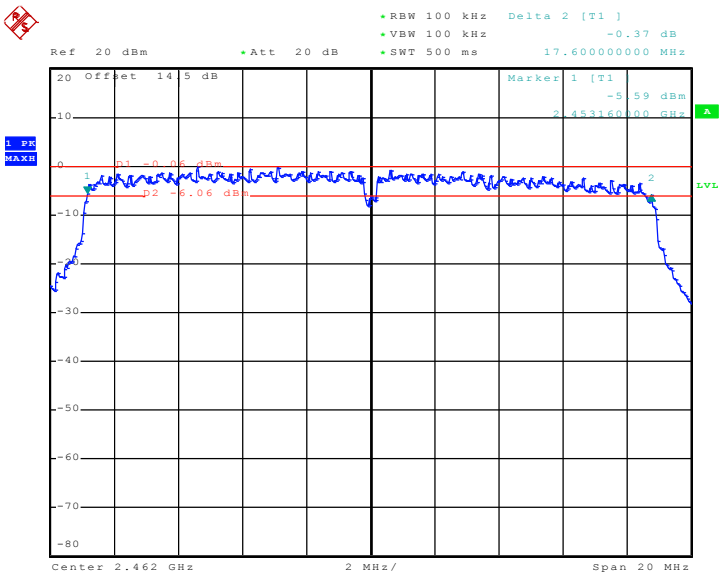
Mode 9 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 11



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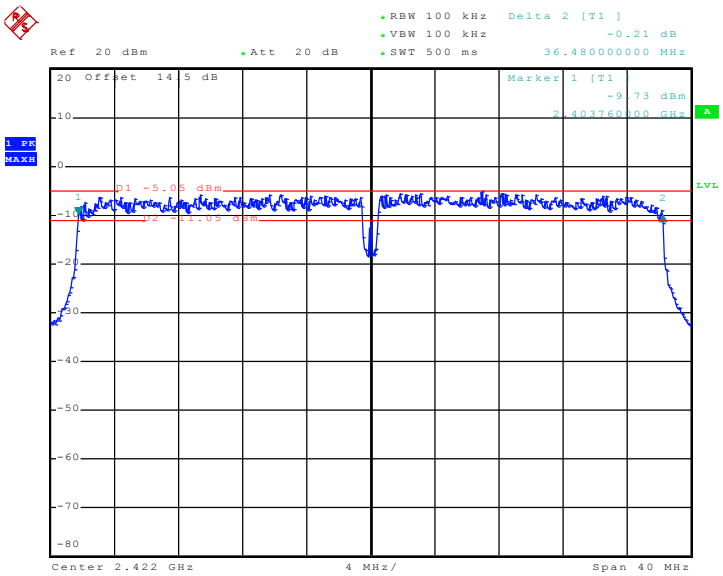
Test Mode :	Mode 10, 11, 12	Temperature :	20~21℃
Test Engineer :	Sky Liu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11n (BW 40MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
03	2422	36.48	0.5	Pass
06	2437	36.40	0.5	Pass
09	2452	35.84	0.5	Pass

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



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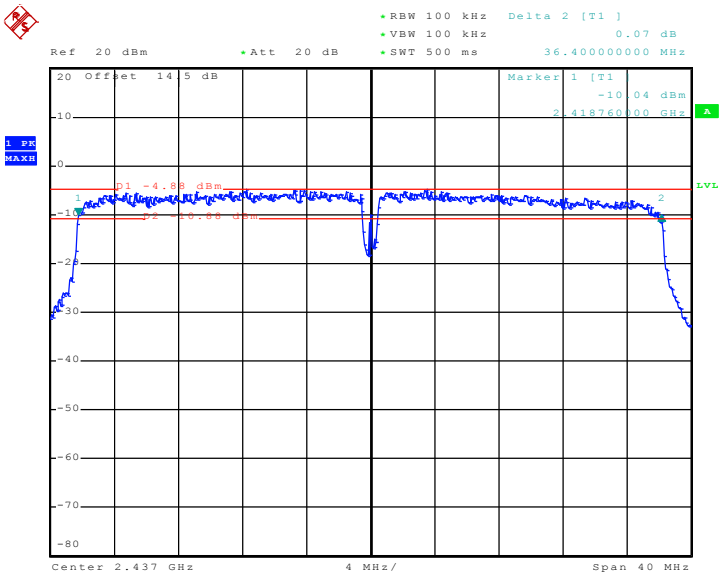
Mode 11 : 6 dB Bandwidth Plot on 802.11n(BW 40MHz) Channel 06



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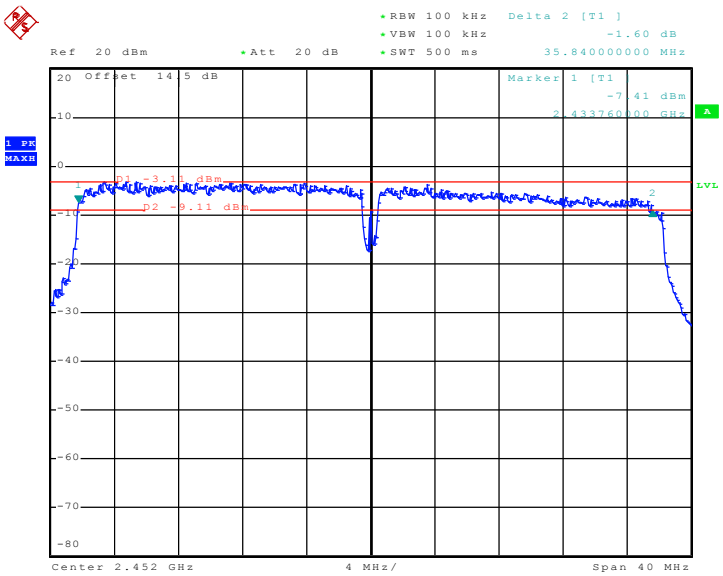
Mode 12 : 6 dB Bandwidth Plot on 802.11n(BW 40MHz) Channel 09



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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.

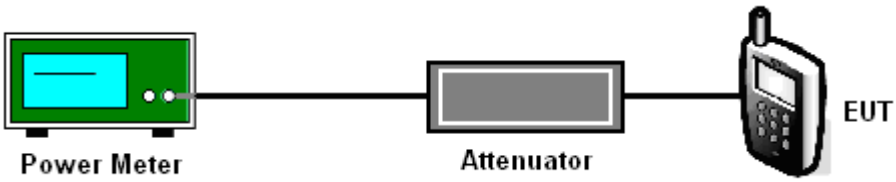
3.2.2 Measuring Instruments

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 :	20~21℃
Test Engineer :	Sky Liu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	15.05	30	Pass
06	2437	13.40	30	Pass
11	2462	14.10	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	20~21℃
Test Engineer :	Sky Liu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.82	30	Pass
06	2437	16.12	30	Pass
11	2462	15.65	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	20~21℃
Test Engineer :	Sky Liu	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.81	30	Pass
06	2437	15.50	30	Pass
11	2462	14.44	30	Pass

Test Mode :	Mode 10, 11, 12	Temperature :	20~21
Test Engineer :	Sky Liu	Relative Humidity :	40~41

Channel	Frequency (MHz)	802.11n (BW 40MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	16.60	30	Pass
06	2437	15.67	30	Pass
09	2452	15.11	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

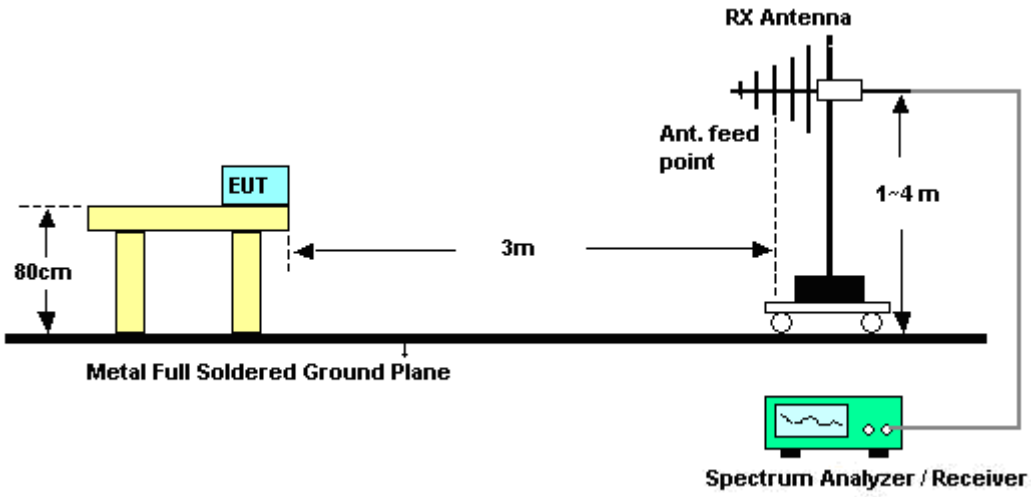
See list of measuring instruments of this test report.

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>



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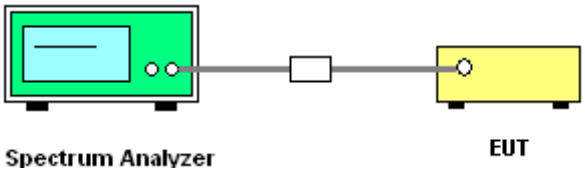


3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	22~23℃
Test Band :	802.11b	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Mark Qu

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
2360.35	53.67	-20.33	74	52.57	32.81	3.12	34.83	186	89	Peak
2360.35	45.49	-8.51	54	44.39	32.81	3.12	34.83	186	89	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
2382	50.4	-23.6	74	49.28	32.83	3.13	34.84	100	263	Peak
2382	43.3	-10.7	54	42.18	32.83	3.13	34.84	100	263	Average

Test Mode :	Mode 3	Temperature :	22~23℃
Test Band :	802.11b	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Mark Qu

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
2486.51	49.91	-24.09	74	48.55	33.01	3.2	34.85	132	34	Peak
2486.51	37.36	-16.64	54	36	33.01	3.2	34.85	132	34	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2486.32	45.89	-28.11	74	44.53	33.01	3.2	34.85	103	25	Peak
2486.32	36.36	-17.64	54	35	33.01	3.2	34.85	103	25	Average

Test Mode :	Mode 4	Temperature :	22~23℃
Test Band :	802.11g	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Mark Qu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.8	54.79	-19.21	74	53.62	32.86	3.15	34.84	202	128	Peak
2389.8	41.37	-12.63	54	40.2	32.86	3.15	34.84	202	128	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
2389.8	50.42	-23.58	74	49.25	32.86	3.15	34.84	202	155	Peak
2389.8	39.17	-14.83	54	38	32.86	3.15	34.84	202	155	Average

Test Mode :	Mode 6	Temperature :	22~23℃
Test Band :	802.11g	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Mark Qu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.85	56.53	-17.47	74	55.17	33.01	3.2	34.85	137	337	Peak
2483.85	41.36	-12.64	54	40	33.01	3.2	34.85	137	337	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	51	-23	74	49.64	33.01	3.2	34.85	103	78	Peak
2483.66	36.36	-17.64	54	35	33.01	3.2	34.85	103	78	Average

Test Mode :	Mode 7	Temperature :	22~23℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Mark Qu

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
2389.61	58.63	-15.37	74	57.48	32.86	3.13	34.84	100	27	Peak
2389.61	48.36	-5.64	54	47.21	32.86	3.13	34.84	100	27	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
2389.23	54.32	-19.68	74	53.17	32.86	3.13	34.84	200	178	Peak
2389.23	40.16	-13.84	54	39.01	32.86	3.13	34.84	200	178	Average

Test Mode :	Mode 9	Temperature :	22~23℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Mark Qu

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
2485.37	52.98	-21.02	74	51.62	33.01	3.2	34.85	202	326	Peak
2485.37	37.36	-16.64	54	36	33.01	3.2	34.85	202	326	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
2484.61	48.9	-25.1	74	47.54	33.01	3.2	34.85	191	130	Peak
2484.61	35.36	-18.64	54	34	33.01	3.2	34.85	191	130	Average

Test Mode :	Mode 10	Temperature :	22~23℃
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	41~42%
Test Channel :	03	Test Engineer :	Mark Qu

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
2389.23	61.92	-12.08	74	60.77	32.86	3.13	34.84	200	130	Peak
2389.23	49.86	-4.14	54	48.71	32.86	3.13	34.84	200	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
2389.42	68.27	-5.73	74	67.12	32.86	3.13	34.84	105	178	Peak
2389.42	52.26	-1.74	54	51.11	32.86	3.13	34.84	105	178	Average

Test Mode :	Mode 12	Temperature :	22~23℃
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	41~42%
Test Channel :	09	Test Engineer :	Mark Qu

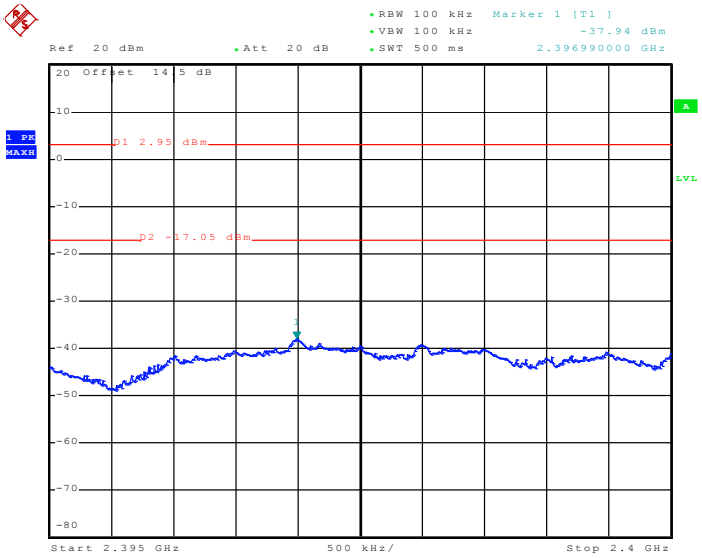
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.85	56.16	-17.84	74	54.8	33.01	3.2	34.85	179	101	Peak
2483.85	45.46	-8.54	54	44.1	33.01	3.2	34.85	179	101	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	63.72	-10.28	74	62.36	33.01	3.2	34.85	202	178	Peak
2485.18	49.56	-4.44	54	48.2	33.01	3.2	34.85	202	178	Average

3.3.6 Test Plots of Conducted Band Edges

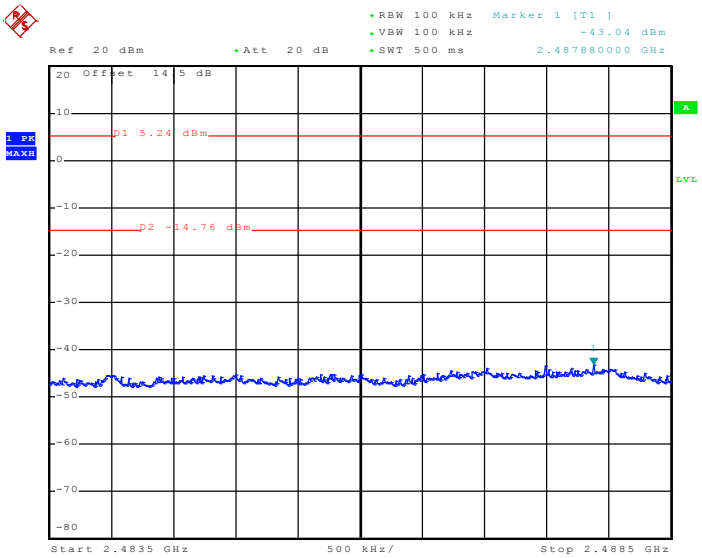
Test Mode :	Mode 1 and 3	Temperature :	20~21℃
Test Band :	802.11b	Relative Humidity :	40~41%
Test Channel :	01 and 11	Test Engineer :	Sky Liu

Low Band Edge Plot on 802.11b Channel 01



Date: 24.JUN.2010 13:50:28

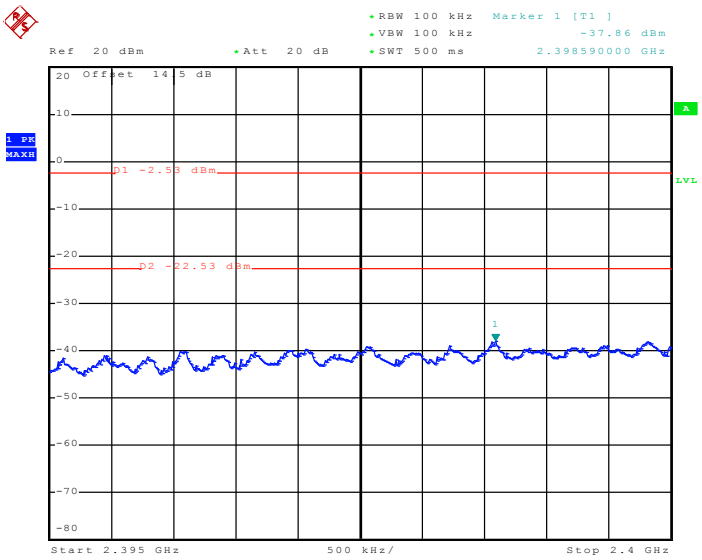
High Band Edge Plot on 802.11b Channel 11



Date: 24.JUN.2010 13:46:52

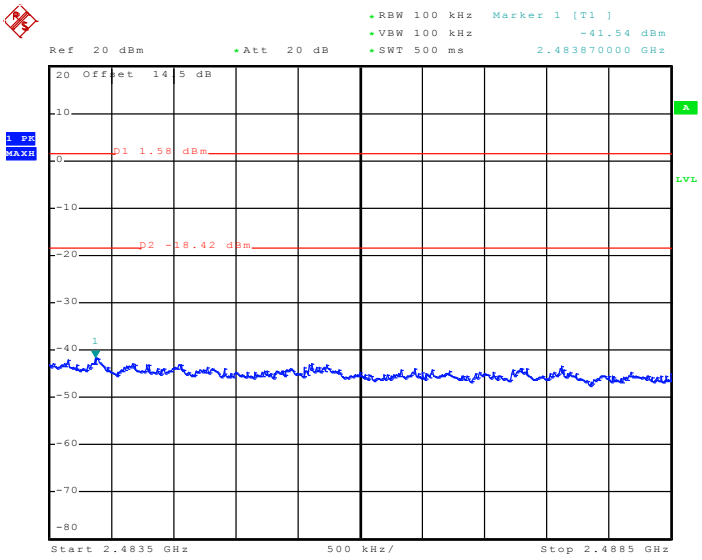
Test Mode :	Mode 4 and 6	Temperature :	20~21℃
Test Band :	802.11g	Relative Humidity :	40~41%
Test Channel :	01 and 11	Test Engineer :	Sky Liu

Low Band Edge Plot on 802.11g Channel 01



Date: 24.JUN.2010 14:16:50

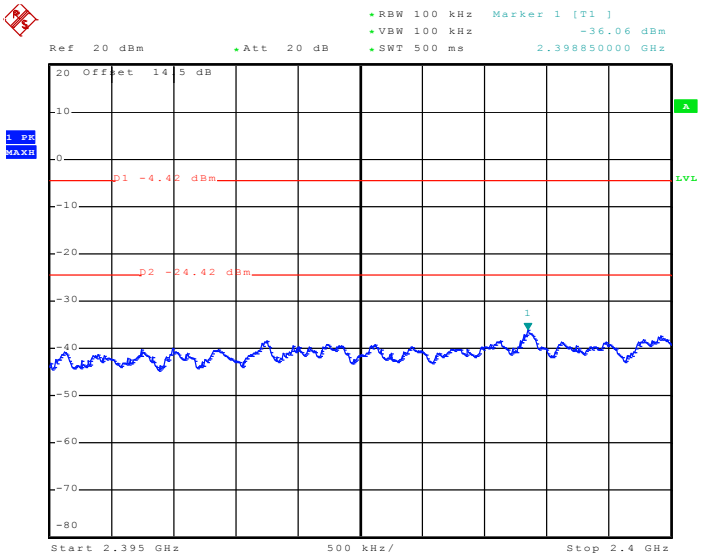
High Band Edge Plot on 802.11g Channel 11



Date: 24.JUN.2010 14:18:28

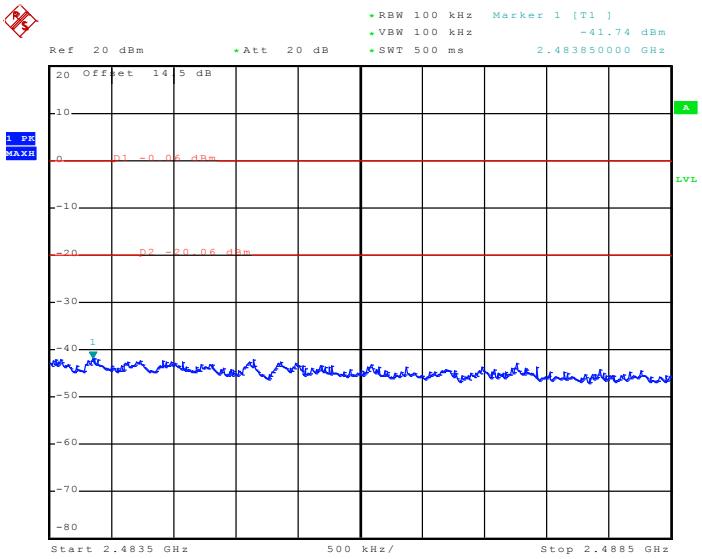
Test Mode :	Mode 7 and 9	Temperature :	20~21℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~41%
Test Channel :	01 and 11	Test Engineer :	Sky Liu

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



Date: 24.JUN.2010 14:32:51

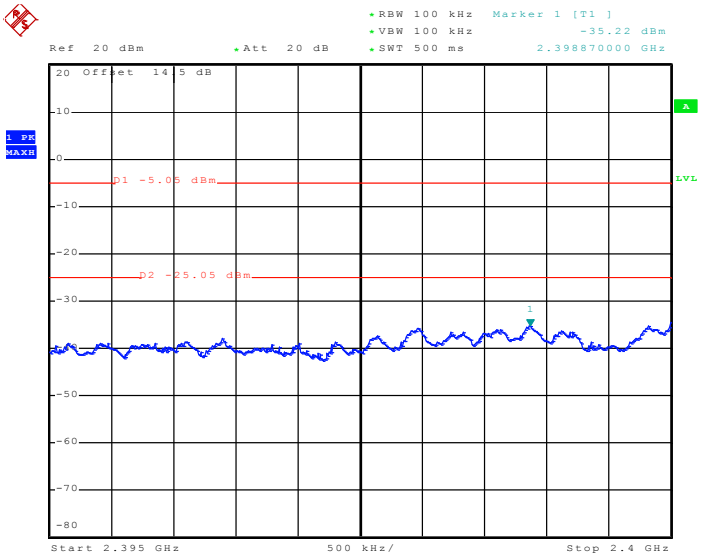
High Band Edge Plot on 802.11n (BW 20MHz) Channel 11



Date: 24.JUN.2010 14:29:05

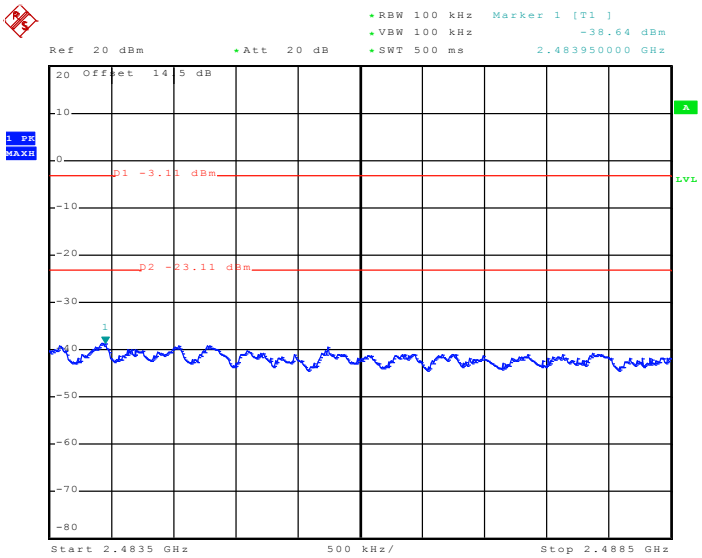
Test Mode :	Mode 10 and 12	Temperature :	20~21℃
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	40~41%
Test Channel :	03 and 09	Test Engineer :	Sky Liu

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



Date: 24.JUN.2010 14:52:43

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



Date: 24.JUN.2010 14:53:58

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.

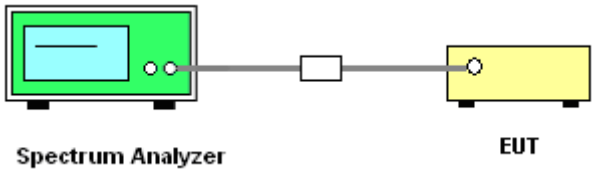
3.4.2 Measuring Instruments

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.

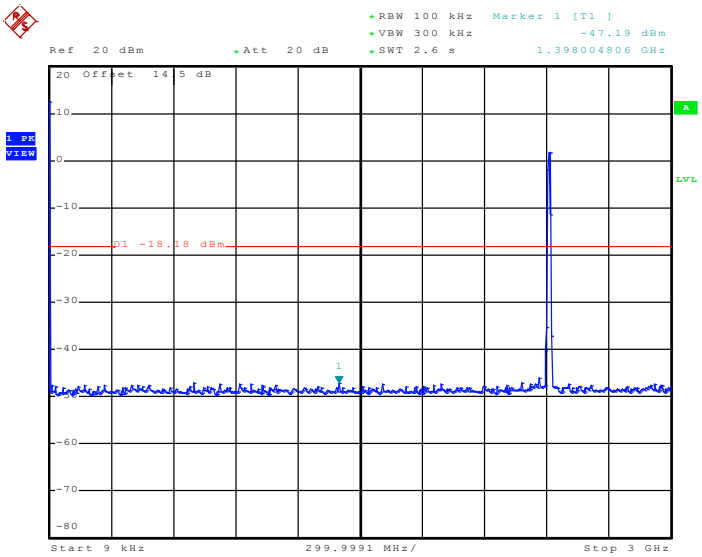
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

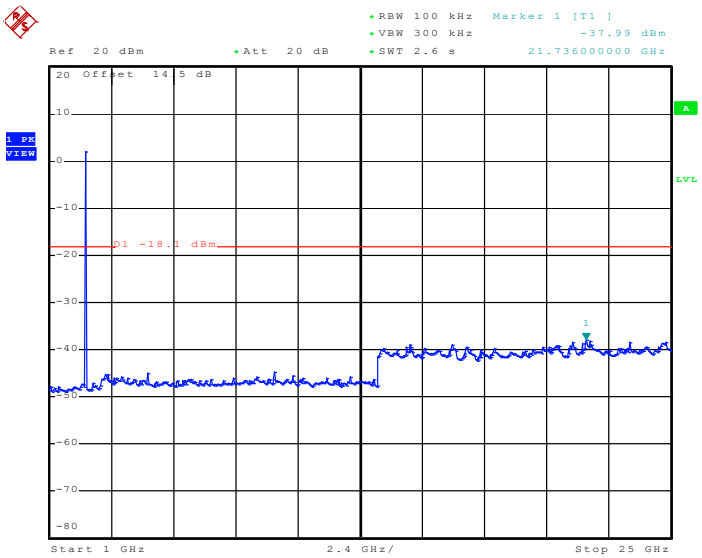
Test Mode :	Mode 1	Temperature :	20~21℃
Test Band :	802.11b	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Sky Liu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 27.JUL.2010 13:02:03

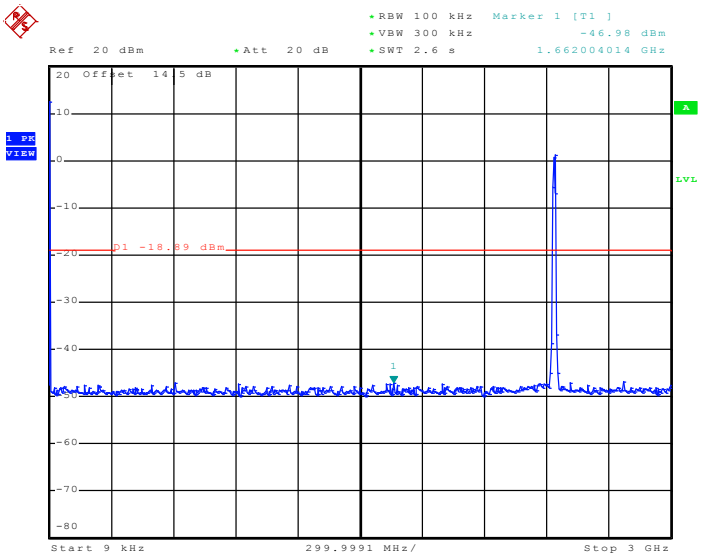
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 27.JUL.2010 12:03:35

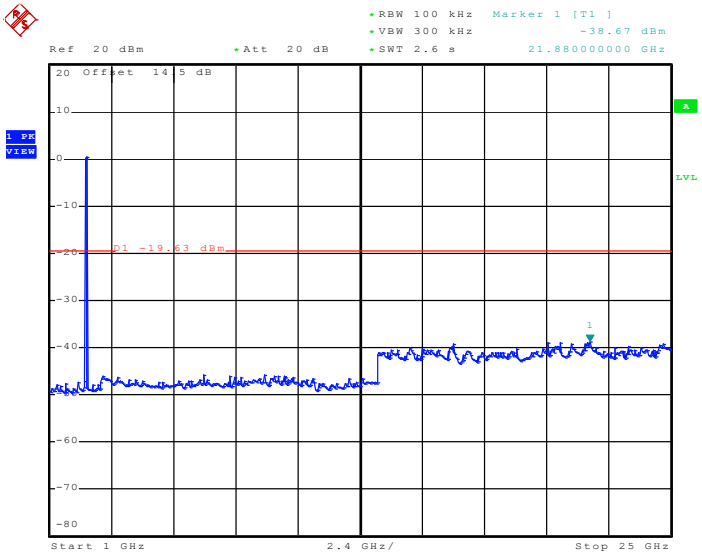
Test Mode :	Mode 2	Temperature :	20~21℃
Test Band :	802.11b	Relative Humidity :	40~41%
Test Channel :	06	Test Engineer :	Sky Liu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 27.JUL.2010 13:03:32

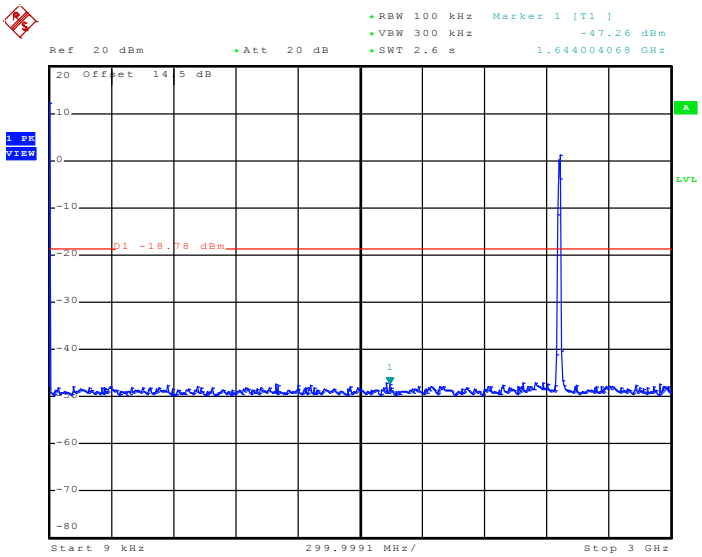
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 27.JUL.2010 12:05:01

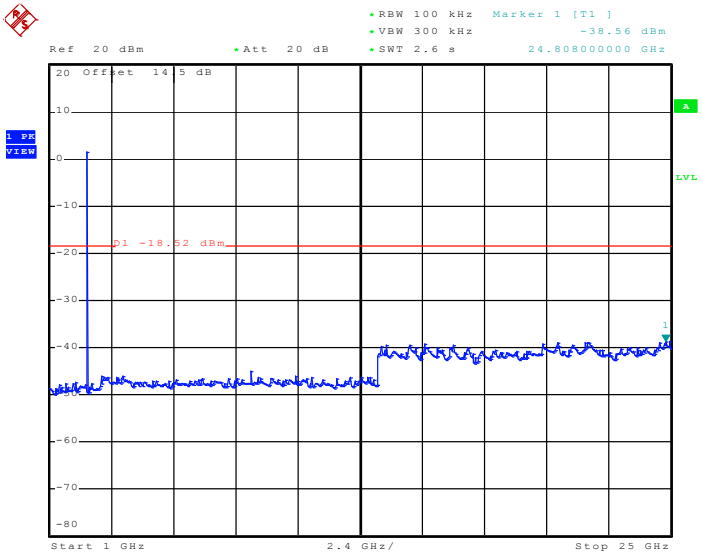
Test Mode :	Mode 3	Temperature :	20~21℃
Test Band :	802.11b	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Sky Liu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 27.JUL.2010 13:04:56

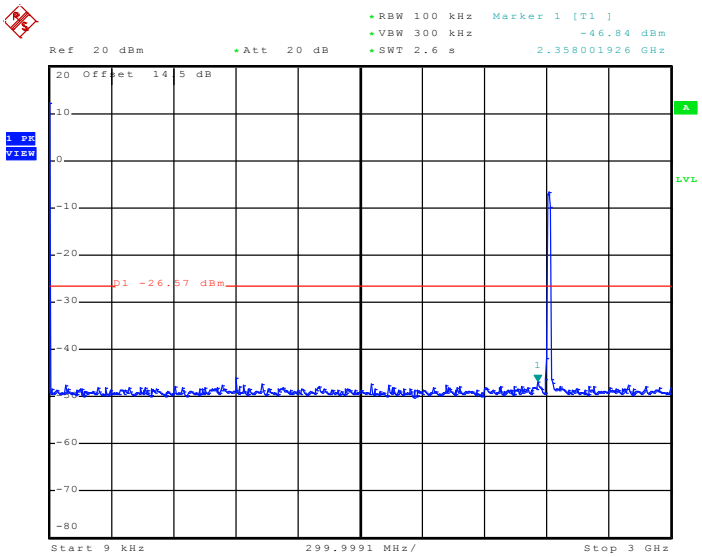
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 27.JUL.2010 12:08:20

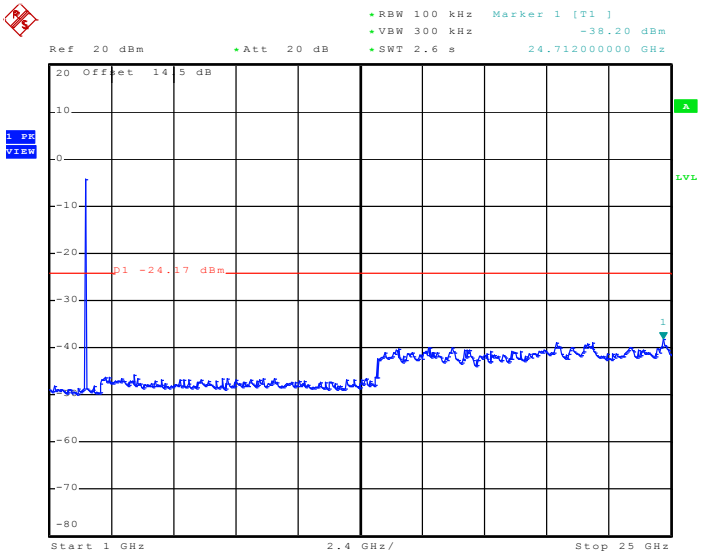
Test Mode :	Mode 4	Temperature :	20~21℃
Test Band :	802.11g	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Sky Liu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 27.JUL.2010 12:55:43

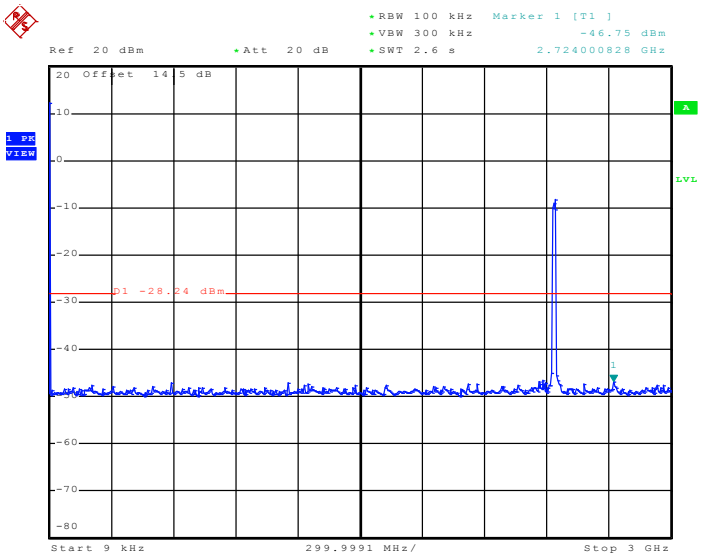
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 27.JUL.2010 12:13:16

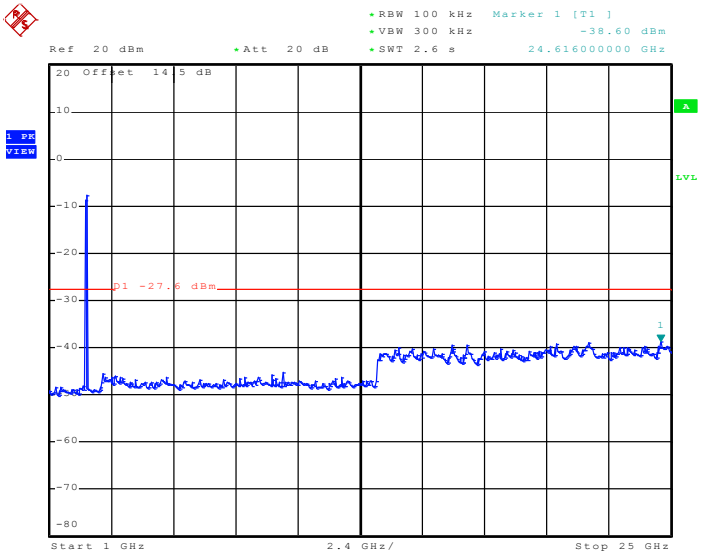
Test Mode :	Mode 5	Temperature :	20~21℃
Test Band :	802.11g	Relative Humidity :	40~41%
Test Channel :	06	Test Engineer :	Sky Liu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 27.JUL.2010 12:57:17

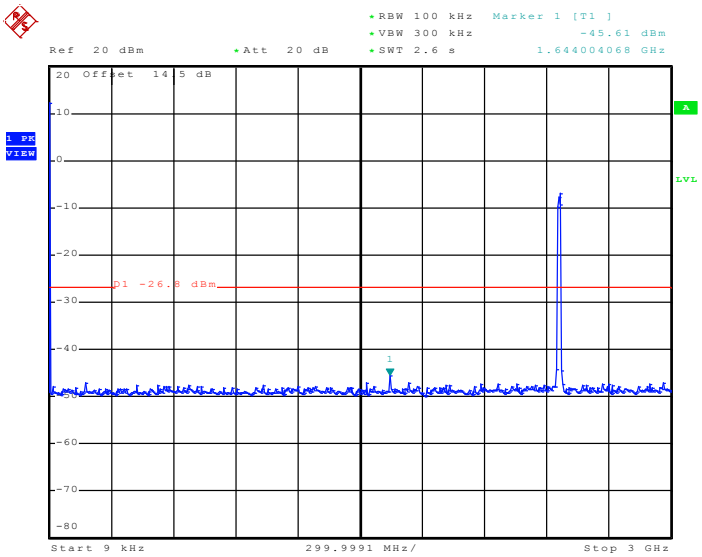
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 27.JUL.2010 12:11:03

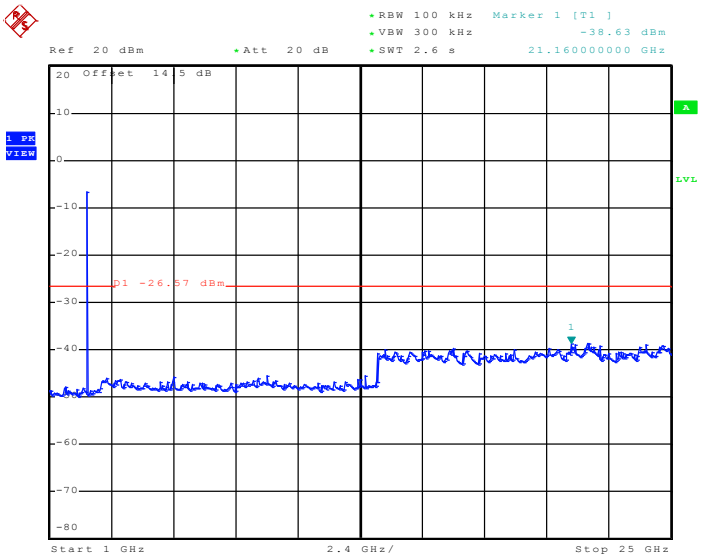
Test Mode :	Mode 6	Temperature :	20~21℃
Test Band :	802.11g	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Sky Liu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 27.JUL.2010 12:59:12

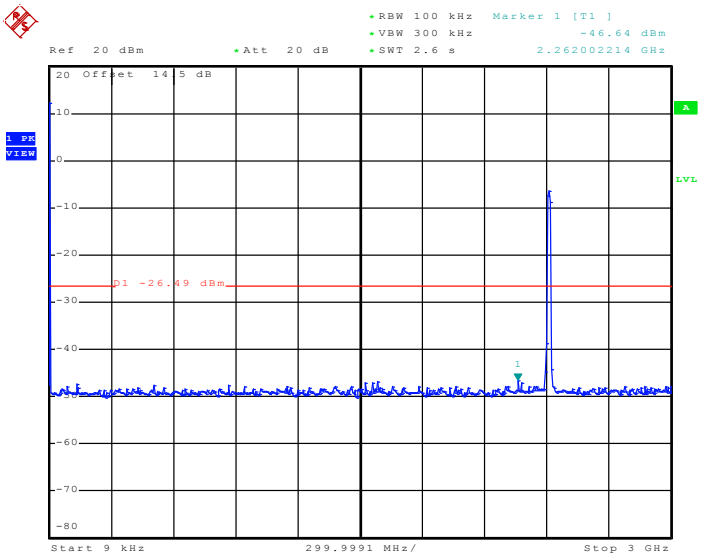
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 27.JUL.2010 12:12:12

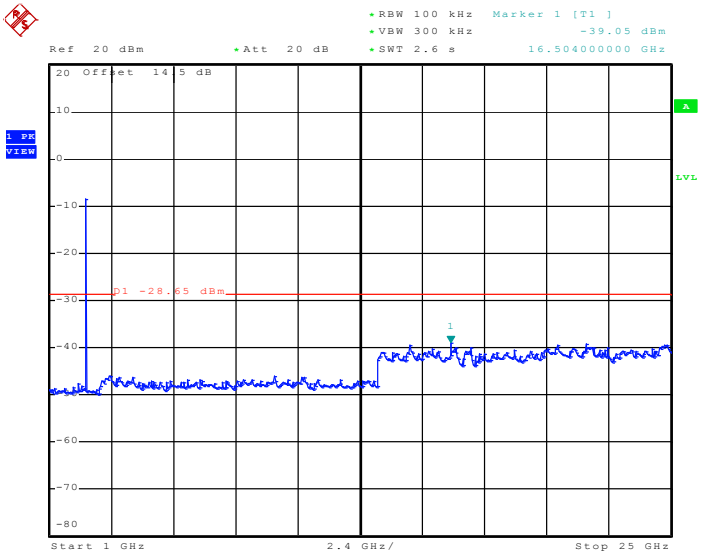
Test Mode :	Mode 7	Temperature :	20~21℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Sky Liu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 27.JUL.2010 12:51:26

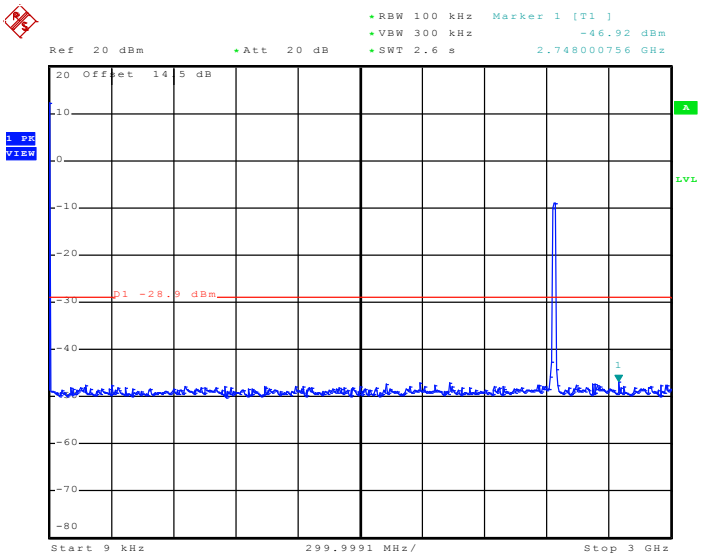
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 27.JUL.2010 12:33:24

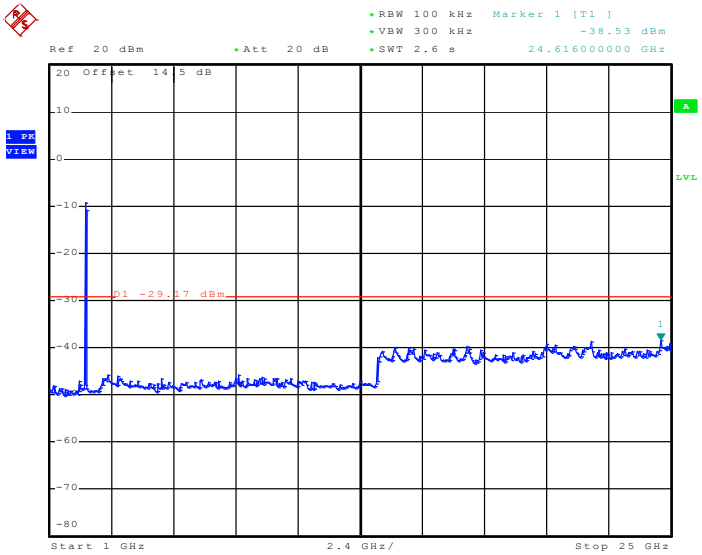
Test Mode :	Mode 8	Temperature :	20~21℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~41%
Test Channel :	06	Test Engineer :	Sky Liu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 27.JUL.2010 12:52:34

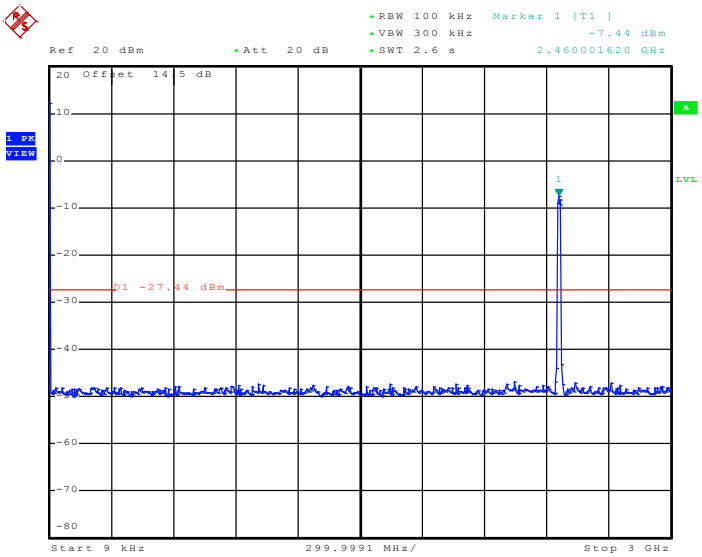
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 27.JUL.2010 12:34:42

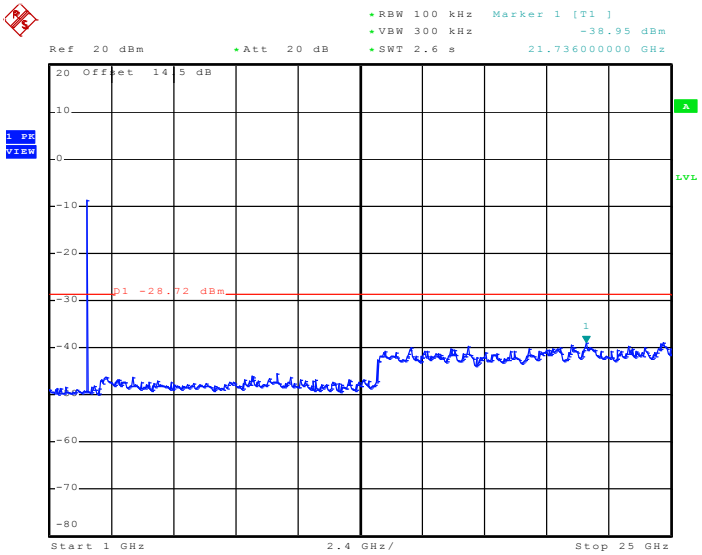
Test Mode :	Mode 9	Temperature :	20~21℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Sky Liu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 27.JUL.2010 12:53:50

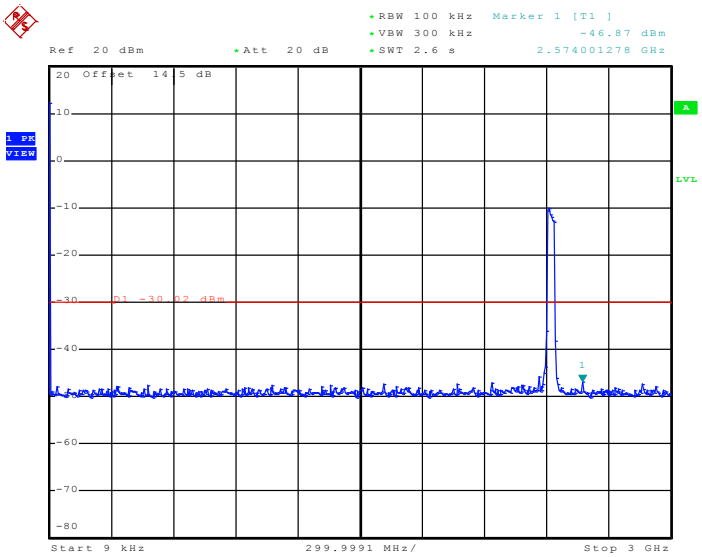
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 27.JUL.2010 12:35:47

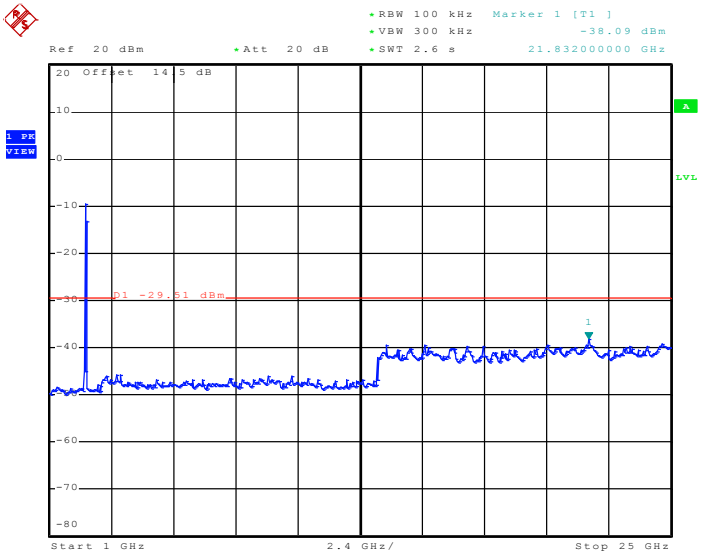
Test Mode :	Mode 10	Temperature :	20~21℃
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	40~41%
Test Channel :	03	Test Engineer :	Sky Liu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 27.JUL.2010 12:50:09

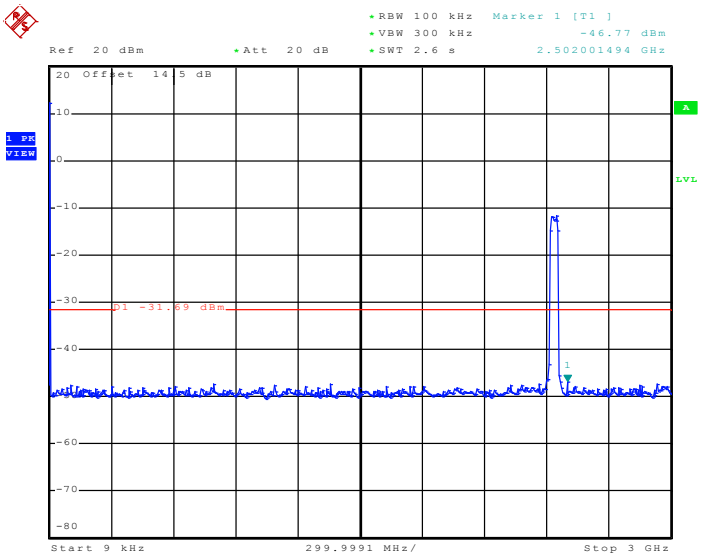
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 27.JUL.2010 12:41:31

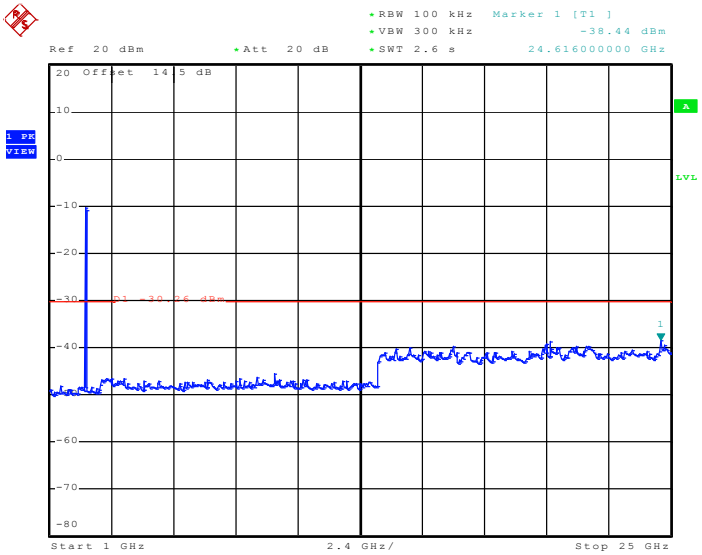
Test Mode :	Mode 11	Temperature :	20~21℃
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	40~41%
Test Channel :	06	Test Engineer :	Sky Liu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 27.JUL.2010 12:49:12

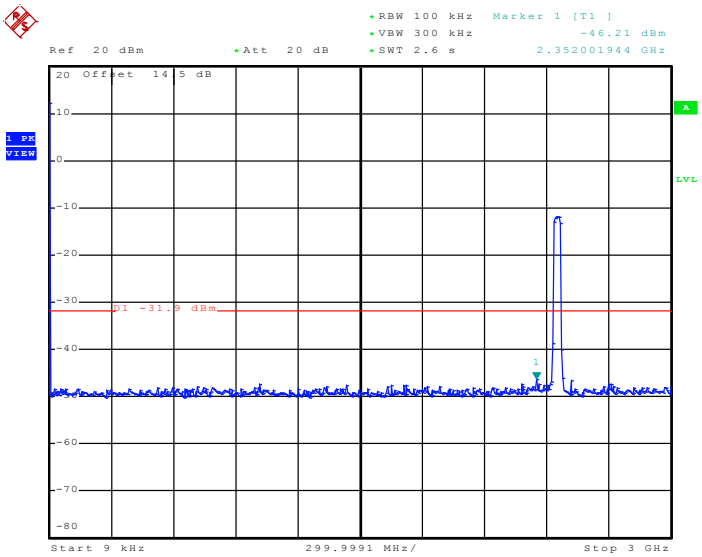
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 27.JUL.2010 12:42:28

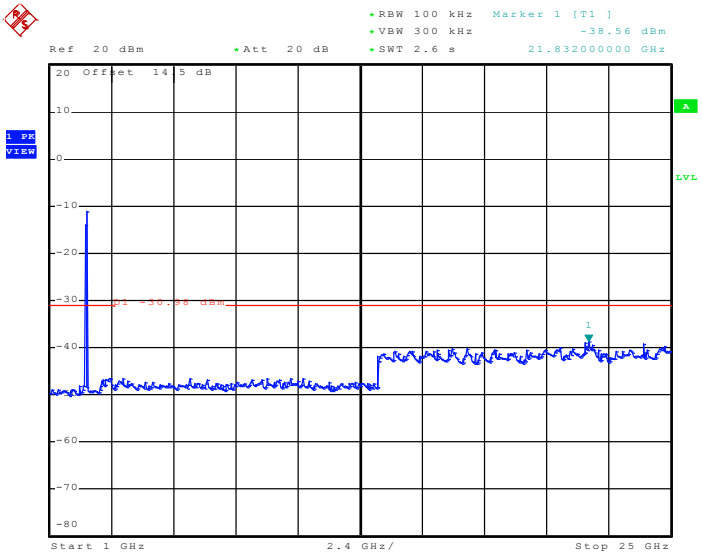
Test Mode :	Mode 12	Temperature :	20~21℃
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	40~41%
Test Channel :	09	Test Engineer :	Sky Liu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 27.JUL.2010 12:48:06

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 27.JUL.2010 12:43:22

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.

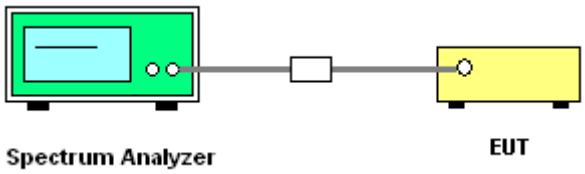
3.5.2 Measuring Instruments

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

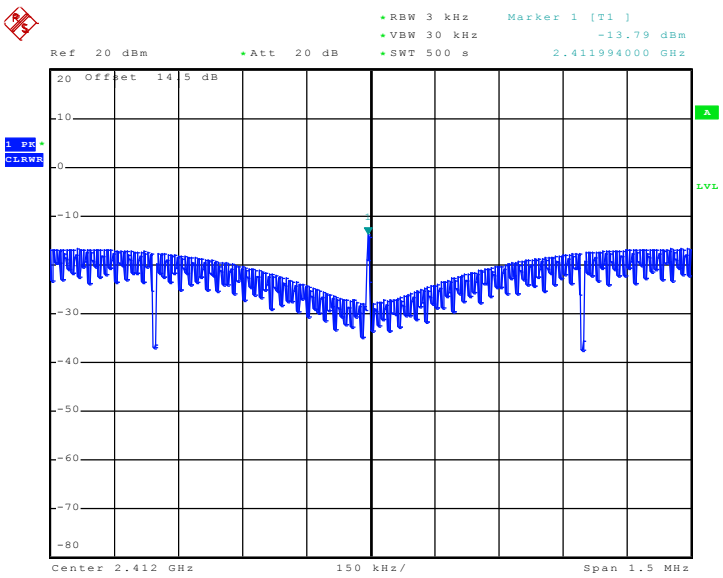


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	20~21℃
Test Engineer :	Sky Liu	Relative Humidity :	40~41%

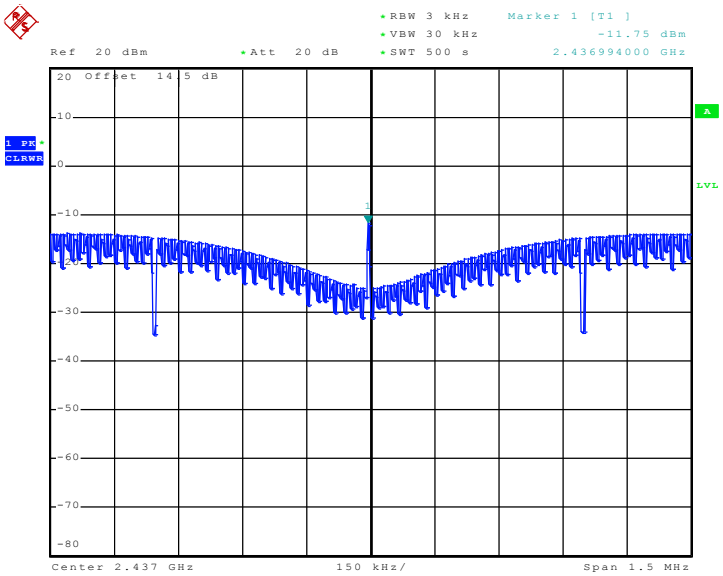
Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-13.79	8	Pass
06	2437	-11.75	8	Pass
11	2462	-10.79	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01



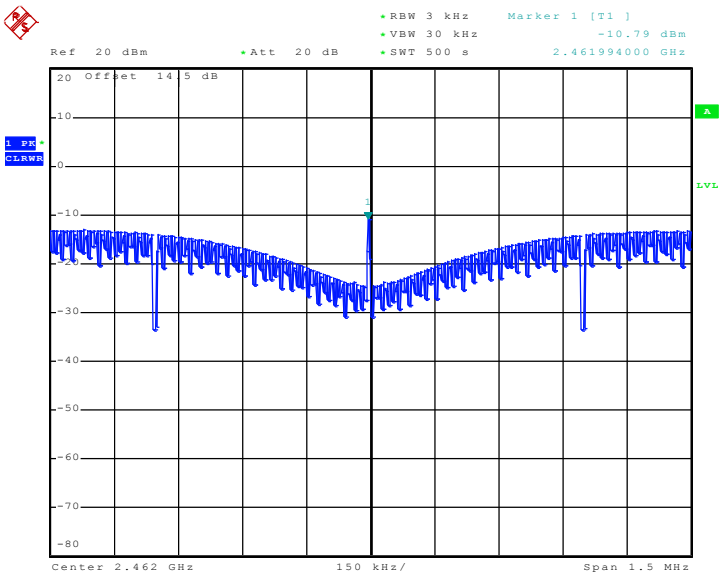
Date: 25.JUN.2010 05:09:32

Mode 2 : PSD Plot on 802.11b Channel 06



Date: 25.JUN.2010 05:31:30

Mode 3 : PSD Plot on 802.11b Channel 11

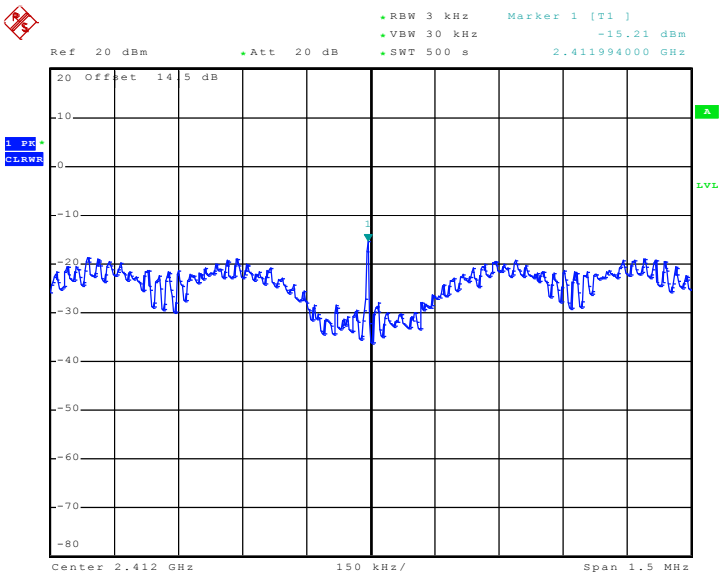


Date: 25.JUN.2010 05:49:01

Test Mode :	Mode 4, 5, 6	Temperature :	20~21℃
Test Engineer :	Sky Liu	Relative Humidity :	40~41%

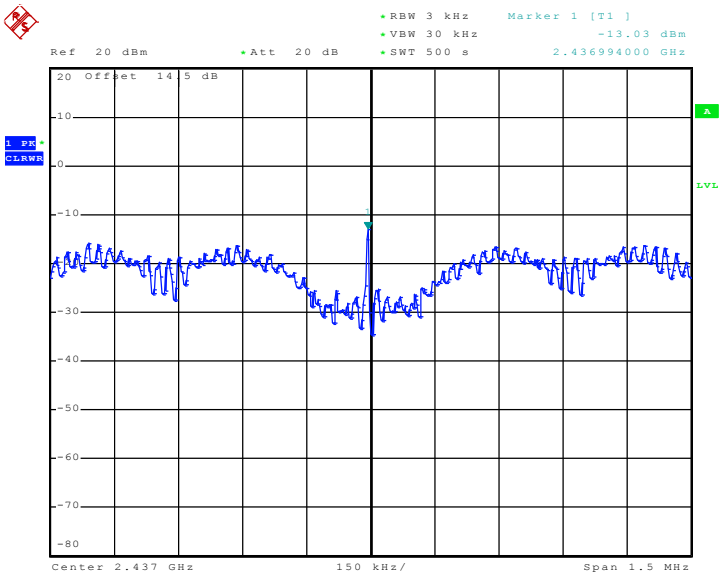
Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-15.21	8	Pass
06	2437	-13.03	8	Pass
11	2462	-10.97	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01



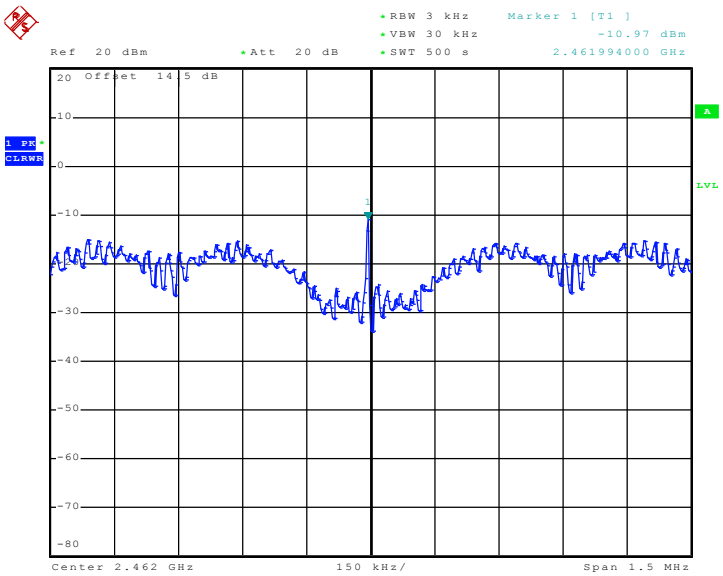
Date: 25.JUN.2010 04:05:52

Mode 5 : PSD Plot on 802.11g Channel 06



Date: 25.JUN.2010 04:25:37

Mode 6 : PSD Plot on 802.11g Channel 11

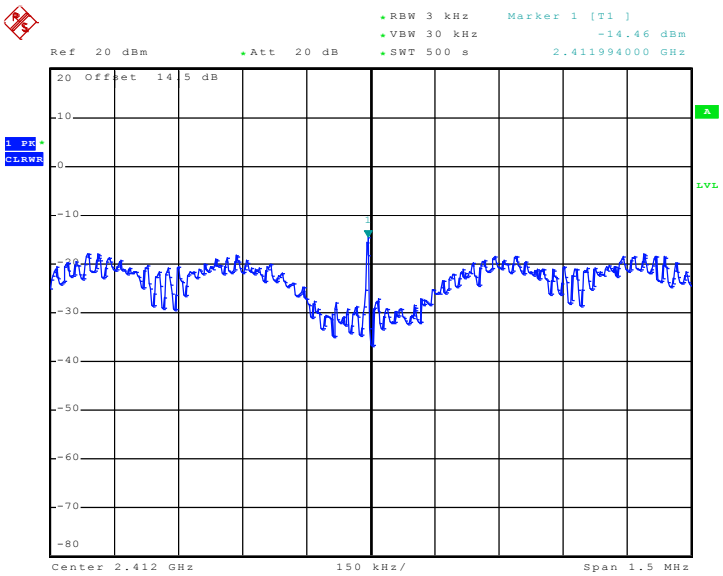


Date: 25.JUN.2010 04:45:43

Test Mode :	Mode 7, 8, 9	Temperature :	20~21℃
Test Engineer :	Sky Liu	Relative Humidity :	40~41%

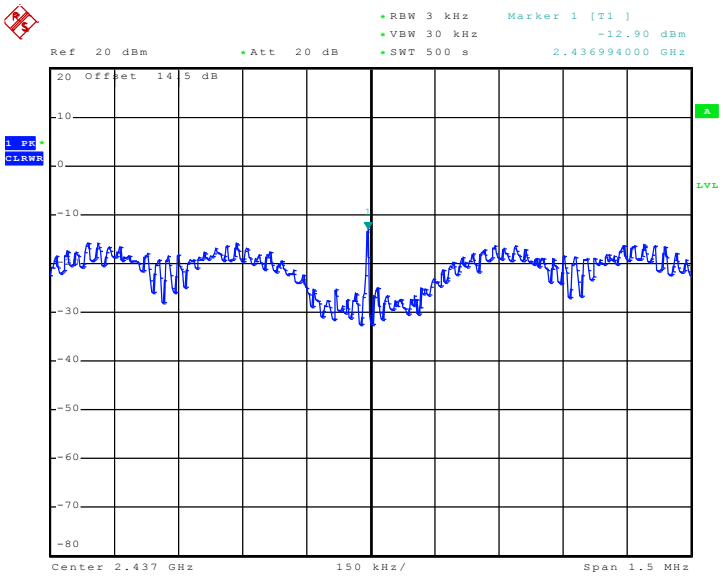
Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-14.46	8	Pass
06	2437	-12.90	8	Pass
11	2462	-11.12	8	Pass

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



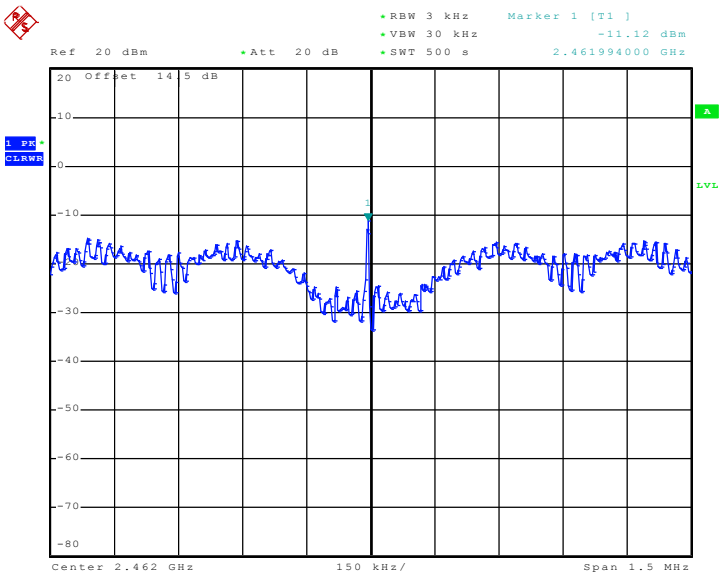
Date: 24.JUN.2010 16:43:43

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



Date: 25.JUN.2010 03:18:29

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

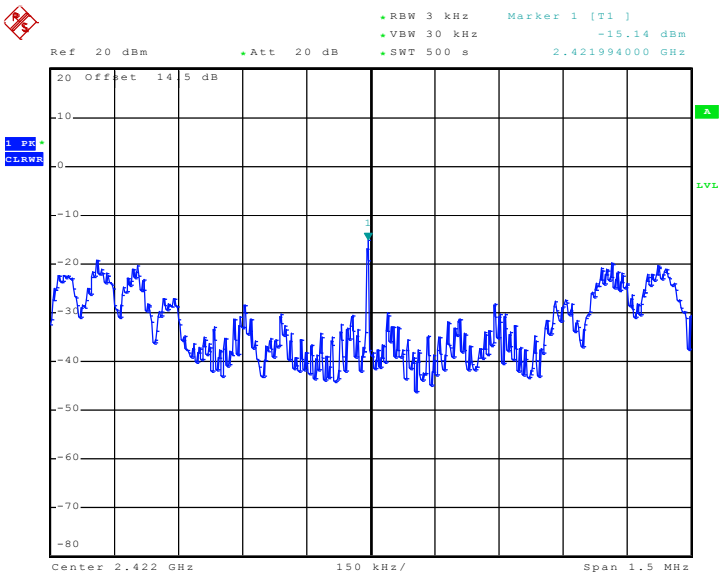


Date: 25.JUN.2010 03:39:07

Test Mode :	Mode 10, 11, 12	Temperature :	20~21℃
Test Engineer :	Sky Liu	Relative Humidity :	40~41%

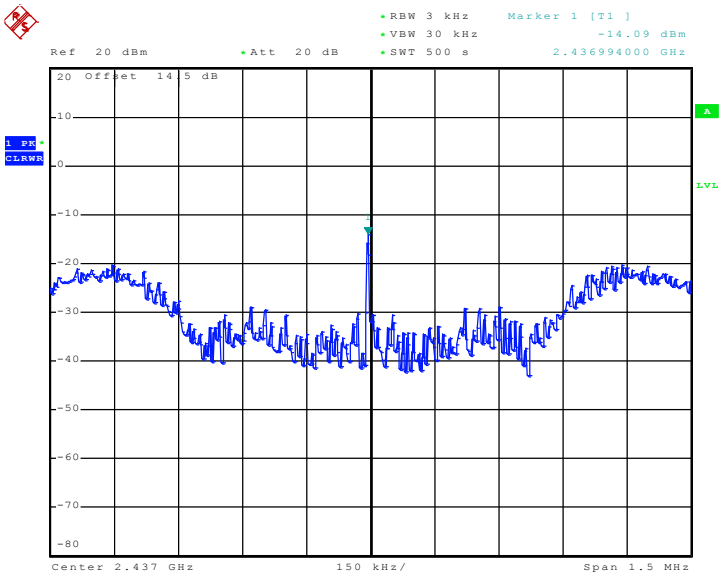
Channel	Frequency (MHz)	802.11n (BW 40MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	-15.14	8	Pass
06	2437	-14.09	8	Pass
09	2452	-12.19	8	Pass

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



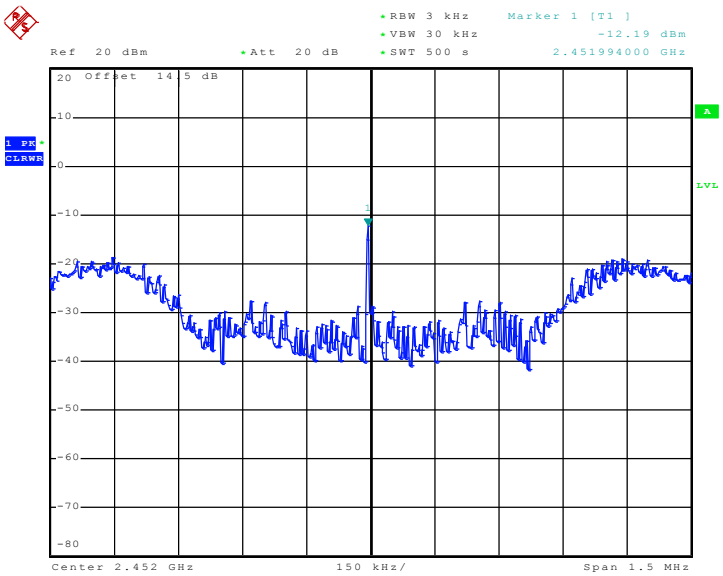
Date: 24.JUN.2010 16:23:03

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



Date: 24.JUN.2010 16:04:27

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



Date: 24.JUN.2010 15:19:54

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

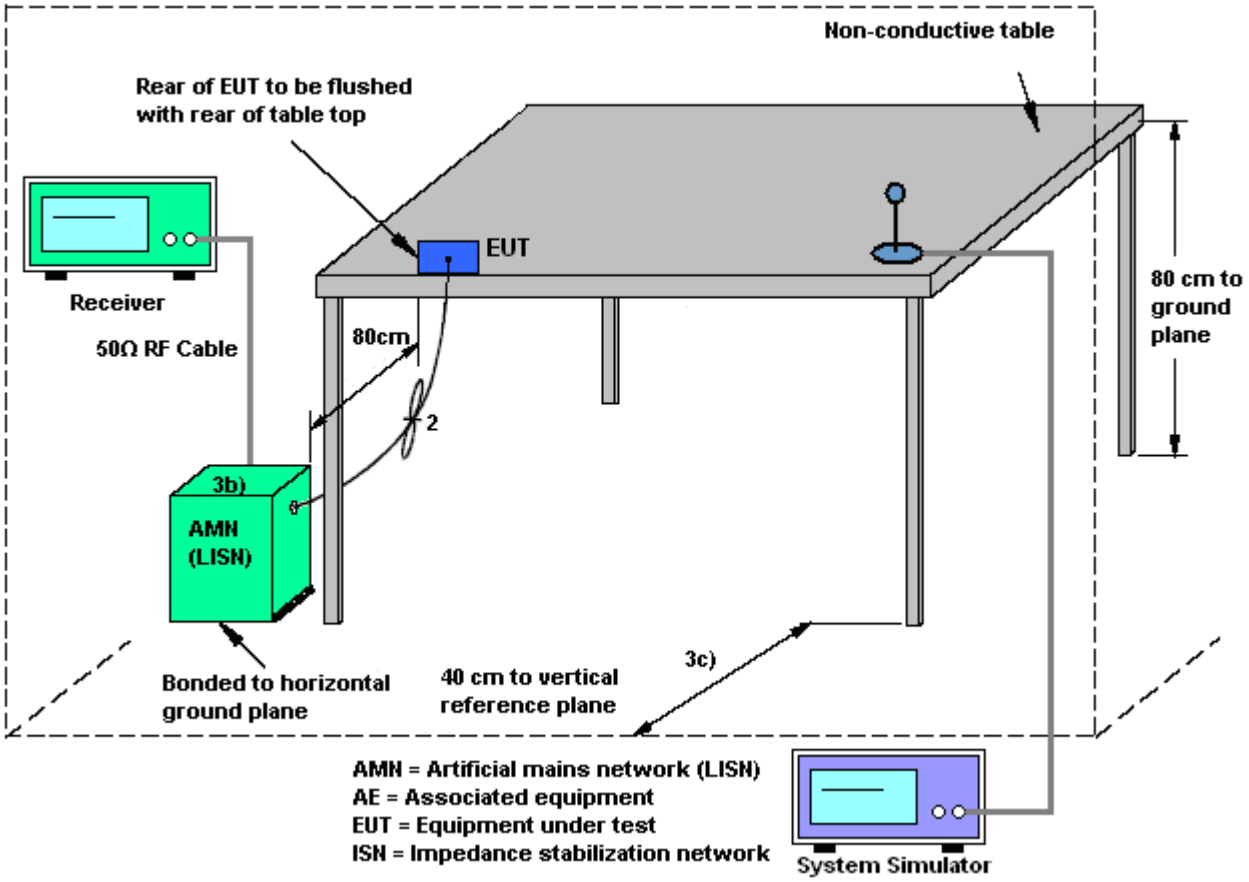
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

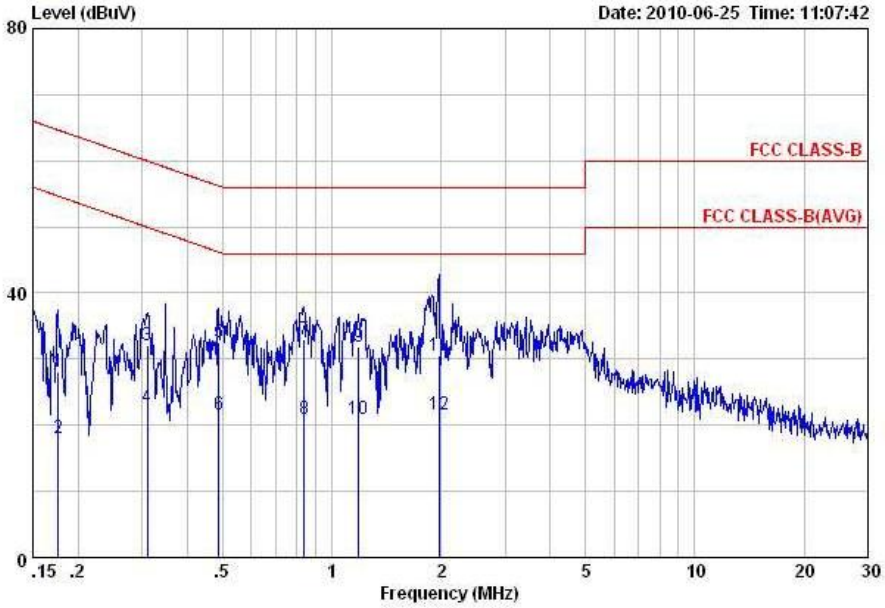
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network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

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

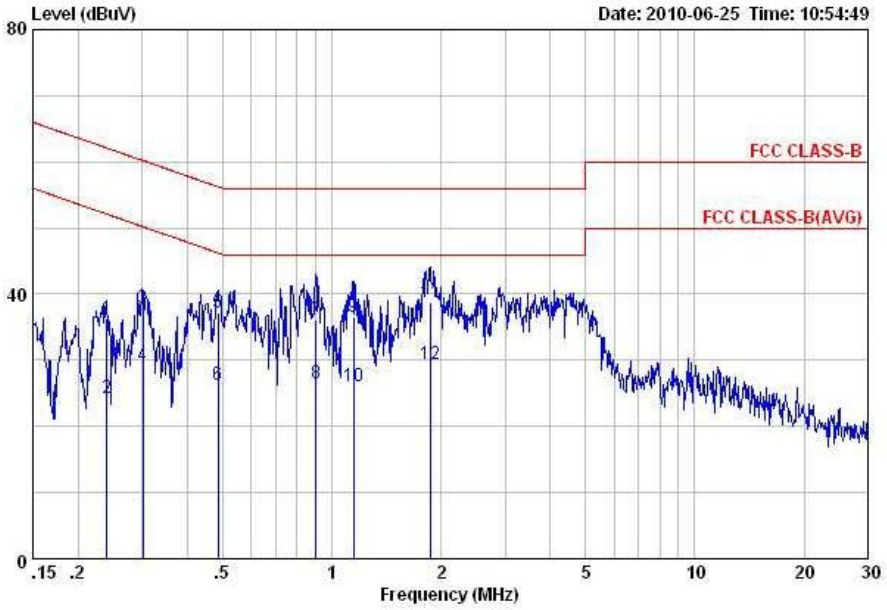
Test Mode :	Mode 1	Temperature :	21~22℃
Test Engineer :	Mark Qu	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
Condition: FCC CLASS-B LISN-071001 LINE
Preject : (FR) 062202
Power : 120Vac/60Hz
Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.18	28.08	-36.58	64.66	18.00	-0.07	10.15	QP
2	0.18	17.98	-36.68	54.66	7.90	-0.07	10.15	Average
3	0.31	32.00	-27.97	59.97	21.90	-0.07	10.17	QP
4	0.31	22.70	-27.27	49.97	12.60	-0.07	10.17	Average
5	0.49	32.63	-23.58	56.21	22.50	-0.08	10.21	QP
6	0.49	21.53	-24.68	46.21	11.40	-0.08	10.21	Average
7	0.84	33.05	-22.95	56.00	22.89	-0.09	10.25	QP
8	0.84	20.85	-25.15	46.00	10.69	-0.09	10.25	Average
9	1.18	31.98	-24.02	56.00	21.80	-0.10	10.28	QP
10	1.18	20.98	-25.02	46.00	10.80	-0.10	10.28	Average
11	1.97	30.62	-25.38	56.00	20.40	-0.11	10.33	QP
12	1.97	21.52	-24.48	46.00	11.30	-0.11	10.33	Average

Test Mode :	Mode 1	Temperature :	21~22℃
Test Engineer :	Mark Qu	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
Condition: FCC CLASS-B LISN-071001 NEUTRAL
Preject : (FR) 062202
Power : 120Vac/60Hz
Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.24	36.29	-25.83	62.12	26.20	-0.07	10.16	QP
2	0.24	24.29	-27.83	52.12	14.20	-0.07	10.16	Average
3	0.30	37.90	-22.31	60.21	27.80	-0.07	10.17	QP
4	0.30	29.20	-21.01	50.21	19.10	-0.07	10.17	Average
5	0.49	37.23	-19.01	56.24	27.10	-0.08	10.21	QP
6	0.49	26.23	-20.01	46.24	16.10	-0.08	10.21	Average
7	0.90	36.17	-19.83	56.00	26.01	-0.09	10.25	QP
8	0.90	26.47	-19.53	46.00	16.31	-0.09	10.25	Average
9	1.15	36.48	-19.52	56.00	26.30	-0.09	10.27	QP
10	1.15	25.98	-20.02	46.00	15.80	-0.09	10.27	Average
11	1.87	38.81	-17.19	56.00	28.60	-0.11	10.32	QP
12	1.87	29.31	-16.69	46.00	19.10	-0.11	10.32	Average

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

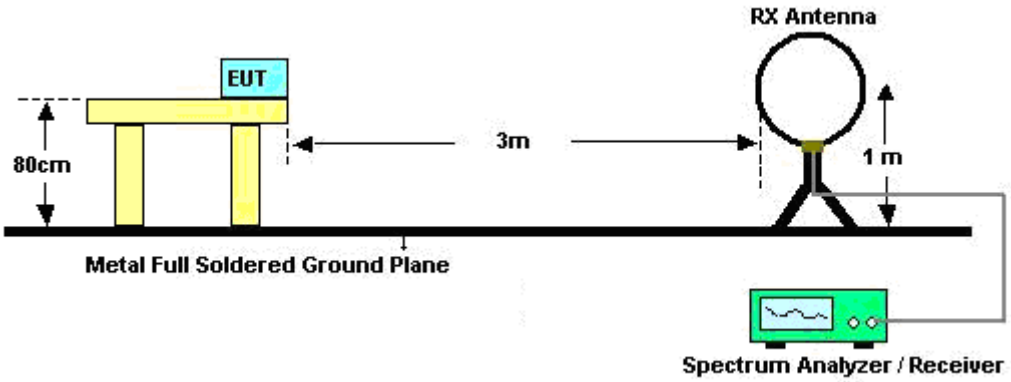
See list of measuring instruments of this test report.

3.7.3 Test Procedures

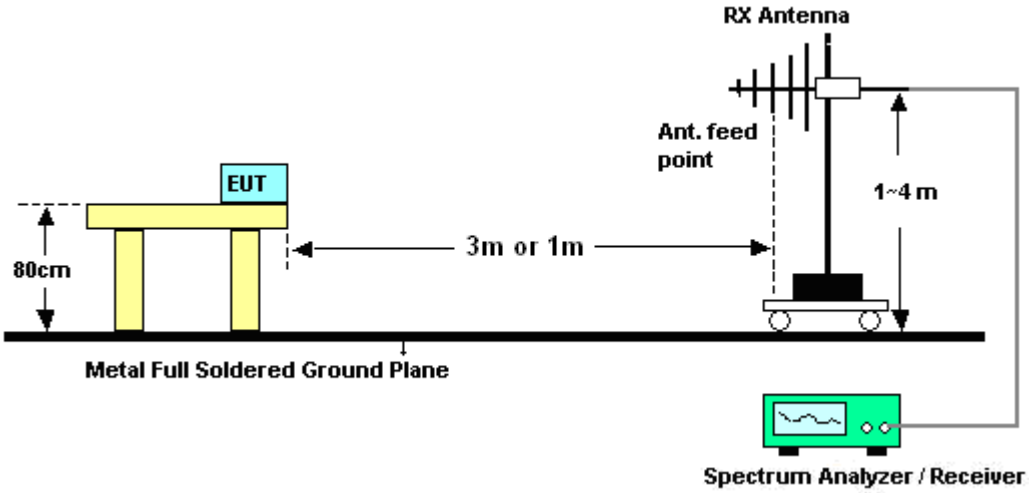
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
   (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; 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 :	Mark Qu	Temperature :	22~23℃
		Relative Humidity :	41~42%

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 :	22~23℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
106.68	17.74	-25.76	43.5	28.86	11.43	0.45	23	-	-	Peak
213.33	19.25	-24.25	43.5	31.92	9.65	0.68	23	-	-	Peak
293.25	21.67	-24.33	46	31	12.9	0.77	23	-	-	Peak
319.6	35.76	-10.24	46	44.42	13.55	0.79	23	-	-	Peak
426.7	36.35	-9.65	46	42.26	16.17	0.9	22.98	120	130	Peak
533.1	38.22	-7.78	46	41.93	18.14	1	22.85	-	-	Peak
2360.35	53.67	-20.33	74	52.57	32.81	3.12	34.83	186	89	Peak
2360.35	45.49	-8.51	54	44.39	32.81	3.12	34.83	186	89	Average
2412	101.73	-	-	100.53	32.89	3.15	34.84	179	97	Peak
2412	97.52	-	-	96.32	32.89	3.15	34.84	179	97	Average
2489	48.16	-25.84	74	46.76	33.05	3.2	34.85	152	330	Peak
2489	44.4	-9.6	54	43	33.05	3.2	34.85	152	330	Average
4826	54.58	-19.42	74	48.93	35.17	4.68	34.2	119	28	Peak
4826	52.87	-1.13	54	47.22	35.17	4.68	34.2	119	28	Average

Test Mode :	Mode 1	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
59.43	28.43	-11.57	40	45.65	5.44	0.34	23	-	-	Peak
106.68	32.67	-10.83	43.5	43.79	11.43	0.45	23	-	-	Peak
159.06	27.21	-16.29	43.5	39.97	9.64	0.6	23	-	-	Peak
426.7	42.52	-3.48	46	48.43	16.17	0.9	22.98	-	-	Peak
533.1	42.95	-3.05	46	46.66	18.14	1	22.85	100	25	Peak
746.6	39.5	-6.5	46	40.27	19.88	1.18	21.83	-	-	Peak
2382	50.4	-23.6	74	49.28	32.83	3.13	34.84	100	263	Peak
2382	43.3	-10.7	54	42.18	32.83	3.13	34.84	100	263	Average
2412	98.59	-	-	97.39	32.89	3.15	34.84	102	73	Peak
2412	92.5	-	-	91.3	32.89	3.15	34.84	102	73	Average
2492.78	45.32	-28.68	74	43.91	33.05	3.21	34.85	100	0	Peak
2492.78	36.61	-17.39	54	35.2	33.05	3.21	34.85	100	0	Average
4826	53.39	-20.61	74	47.74	35.17	4.68	34.2	102	329	Peak
4826	49.65	-4.35	54	44	35.17	4.68	34.2	102	329	Average

Test Mode :	Mode 2	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
203.88	19.24	-24.26	43.5	32.42	9.16	0.66	23	-	-	Peak
250.32	22.26	-23.74	46	32.53	12	0.73	23	-	-	Peak
293.79	23.75	-22.25	46	33.06	12.92	0.77	23	-	-	Peak
319.6	35.78	-10.22	46	44.44	13.55	0.79	23	-	-	Peak
426.7	36.68	-9.32	46	42.59	16.17	0.9	22.98	-	-	Peak
533.1	37.95	-8.05	46	41.66	18.14	1	22.85	112	124	Peak
2360.16	54.68	-19.32	74	53.58	32.81	3.12	34.83	184	100	Peak
2360.16	43.69	-10.31	54	42.59	32.81	3.12	34.83	184	100	Average
2437	100.05	-	-	98.77	32.95	3.17	34.84	202	230	Peak
2437	96.57	-	-	95.29	32.95	3.17	34.84	202	230	Average
2490.5	48.02	-25.98	74	46.62	33.05	3.2	34.85	130	222	Peak
2490.5	38.4	-15.6	54	37	33.05	3.2	34.85	130	222	Average
4876	53.51	-20.49	74	47.82	35.18	4.71	34.2	119	29	Peak
4876	52.01	-1.99	54	46.32	35.18	4.71	34.2	119	29	Average

Test Mode :	Mode 2	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
59.43	28.87	-11.13	40	46.09	5.44	0.34	23	-	-	Peak
106.68	32.17	-11.33	43.5	43.29	11.43	0.45	23	-	-	Peak
157.71	29.17	-14.33	43.5	41.9	9.67	0.6	23	-	-	Peak
426.7	42.88	-3.12	46	48.79	16.17	0.9	22.98	152	24	Peak
533.1	42.73	-3.27	46	46.44	18.14	1	22.85	-	-	Peak
746.6	39.62	-6.38	46	40.39	19.88	1.18	21.83	-	-	Peak
2359.97	48.44	-25.56	74	47.34	32.81	3.12	34.83	102	41	Peak
2359.97	36.29	-17.71	54	35.19	32.81	3.12	34.83	102	41	Average
2437	96.8	-	-	95.52	32.95	3.17	34.84	161	63	Peak
2437	89.94	-	-	88.66	32.95	3.17	34.84	161	63	Average
2495.82	38.41	-15.59	54	37	33.05	3.21	34.85	109	23	Average
2495.82	45.76	-28.24	74	44.35	33.05	3.21	34.85	109	23	Peak
4876	52.87	-21.13	74	47.18	35.18	4.71	34.2	158	0	Peak
4876	48.32	-5.68	54	42.63	35.18	4.71	34.2	158	0	Average

Test Mode :	Mode 3	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
106.68	17.9	-25.6	43.5	29.02	11.43	0.45	23	-	-	Peak
157.71	19.59	-23.91	43.5	32.32	9.67	0.6	23	-	-	Peak
250.32	21.31	-24.69	46	31.58	12	0.73	23	-	-	Peak
319.6	36.33	-9.67	46	44.99	13.55	0.79	23	-	-	Peak
426.7	36.48	-9.52	46	42.39	16.17	0.9	22.98	-	-	Peak
533.1	38.08	-7.92	46	41.79	18.14	1	22.85	124	235	Peak
2320.07	54.79	-19.21	74	53.76	32.76	3.1	34.83	193	80	Peak
2320.07	44.62	-9.38	54	43.59	32.76	3.1	34.83	193	80	Average
2462	100.66	-	-	99.35	32.98	3.18	34.85	157	240	Peak
2462	97.92	-	-	96.61	32.98	3.18	34.85	157	240	Average
2486.51	49.91	-24.09	74	48.55	33.01	3.2	34.85	132	34	Peak
2486.51	37.36	-16.64	54	36	33.01	3.2	34.85	132	34	Average
4924	54.28	-19.72	74	48.54	35.19	4.75	34.2	167	249	Peak
4924	53.08	-0.92	54	47.34	35.19	4.75	34.2	167	249	Average

Test Mode :	Mode 3	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
58.08	26.73	-13.27	40	43.8	5.59	0.34	23	-	-	Peak
106.68	32.53	-10.97	43.5	43.65	11.43	0.45	23	-	-	Peak
291.63	25.18	-20.82	46	34.52	12.89	0.77	23	-	-	Peak
426.7	42.83	-3.17	46	48.74	16.17	0.9	22.98	200	128	Peak
533.1	42.63	-3.37	46	46.34	18.14	1	22.85	-	-	Peak
746.6	39.31	-6.69	46	40.08	19.88	1.18	21.83	-	-	Peak
2383.15	48.95	-25.05	74	47.83	32.83	3.13	34.84	120	225	Peak
2383.15	39.13	-14.87	54	38.01	32.83	3.13	34.84	120	225	Average
2462	96.6	-	-	95.29	32.98	3.18	34.85	103	62	Peak
2462	92.32	-	-	91.01	32.98	3.18	34.85	103	62	Average
2486.32	45.89	-28.11	74	44.53	33.01	3.2	34.85	103	25	Peak
2486.32	36.36	-17.64	54	35	33.01	3.2	34.85	103	25	Average
4924	53.94	-20.06	74	48.2	35.19	4.75	34.2	112	222	Peak
4924	50.14	-3.86	54	44.4	35.19	4.75	34.2	112	222	Average

Test Mode :	Mode 4	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
156.36	21.98	-21.52	43.5	34.63	9.76	0.59	23	-	-	Peak
282.45	29.12	-16.88	46	38.66	12.7	0.76	23	-	-	Peak
292.17	31.82	-14.18	46	41.16	12.89	0.77	23	-	-	Peak
426.7	37.5	-8.5	46	43.41	16.17	0.9	22.98	-	-	Peak
533.1	38.76	-7.24	46	42.47	18.14	1	22.85	125	236	Peak
853.7	37.18	-8.82	46	36.74	20.51	1.26	21.33	-	-	Peak
2389.8	54.79	-19.21	74	53.62	32.86	3.15	34.84	202	128	Peak
2389.8	41.37	-12.63	54	40.2	32.86	3.15	34.84	202	128	Average
2412	101.86	-	-	100.66	32.89	3.15	34.84	199	241	Peak
2412	91.8	-	-	90.6	32.89	3.15	34.84	199	241	Average
2492.97	46.99	-27.01	74	45.58	33.05	3.21	34.85	128	302	Peak
2492.97	39.41	-14.59	54	38	33.05	3.21	34.85	128	302	Average
4818	53.32	-20.68	74	47.67	35.17	4.68	34.2	156	240	Peak
4818	43.85	-10.15	54	38.2	35.17	4.68	34.2	156	240	Average

Test Mode :	Mode 4	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
59.43	32.71	-7.29	40	49.93	5.44	0.34	23	-	-	Peak
106.68	31.62	-11.88	43.5	42.74	11.43	0.45	23	-	-	Peak
159.33	31.15	-12.35	43.5	43.91	9.64	0.6	23	-	-	Peak
426.7	42.58	-3.42	46	48.49	16.17	0.9	22.98	116	353	QP
533.1	44.19	-1.81	46	47.9	18.14	1	22.85	102	342	QP
746.6	40.96	-5.04	46	41.73	19.88	1.18	21.83	-	-	Peak
2389.8	50.42	-23.58	74	49.25	32.86	3.15	34.84	202	155	Peak
2389.8	39.17	-14.83	54	38	32.86	3.15	34.84	202	155	Average
2412	98.41	-	-	97.21	32.89	3.15	34.84	202	165	Peak
2412	88.7	-	-	87.5	32.89	3.15	34.84	202	165	Average
2488.6	44.76	-29.24	74	43.36	33.05	3.2	34.85	156	247	Peak
2488.6	36.4	-17.6	54	35	33.05	3.2	34.85	156	247	Average
4828	52.13	-21.87	74	46.48	35.17	4.68	34.2	202	19	Peak
4828	39.95	-14.05	54	34.3	35.17	4.68	34.2	202	19	Average
7242	52.52	-21.48	74	44.15	36.18	5.91	33.72	145	243	Peak
7242	40.67	-13.33	54	32.3	36.18	5.91	33.72	145	243	Average

Test Mode :	Mode 5	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
106.68	18.08	-25.42	43.5	29.2	11.43	0.45	23	-	-	Peak
201.45	19.79	-23.71	43.5	33.05	9.08	0.66	23	-	-	Peak
292.17	29.34	-16.66	46	38.68	12.89	0.77	23	-	-	Peak
426.7	37.5	-8.5	46	43.41	16.17	0.9	22.98	-	-	Peak
533.1	38.81	-7.19	46	42.52	18.14	1	22.85	-	-	Peak
895	40.64	-5.36	46	39.88	20.45	1.29	20.98	-	-	Peak
2320	53.42	-20.58	74	52.39	32.76	3.1	34.83	202	209	Peak
2320	41.02	-12.98	54	39.99	32.76	3.1	34.83	202	209	Average
2437	99.14	-	-	97.86	32.95	3.17	34.84	202	231	Peak
2437	88.47	-	-	87.19	32.95	3.17	34.84	202	231	Average
2496.96	47.25	-26.75	74	45.84	33.05	3.21	34.85	195	221	Peak
2496.96	39.41	-14.59	54	38	33.05	3.21	34.85	195	221	Average
4874	49.71	-24.29	74	44.02	35.18	4.71	34.2	167	250	Peak
4874	40.1	-13.9	54	34.41	35.18	4.71	34.2	167	250	Average

Test Mode :	Mode 5	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
59.43	33.04	-6.96	40	50.26	5.44	0.34	23	-	-	Peak
106.68	32.18	-11.32	43.5	43.3	11.43	0.45	23	-	-	Peak
156.9	30.26	-13.24	43.5	42.95	9.71	0.6	23	-	-	Peak
426.7	42.77	-3.23	46	48.68	16.17	0.9	22.98	-	-	Peak
533.1	43.79	-2.21	46	47.5	18.14	1	22.85	102	343	QP
746.6	40.56	-5.44	46	41.33	19.88	1.18	21.83	-	-	Peak
2384.29	48.38	-25.62	74	47.26	32.83	3.13	34.84	202	295	Peak
2384.29	38.13	-15.87	54	37.01	32.83	3.13	34.84	202	295	Average
2437	94.83	-	-	93.55	32.95	3.17	34.84	162	64	Peak
2437	83.17	-	-	81.89	32.95	3.17	34.84	162	64	Average
2495.06	44.3	-29.7	74	42.89	33.05	3.21	34.85	148	45	Peak
2495.06	37.41	-16.59	54	36	33.05	3.21	34.85	148	45	Average
4872	48.7	-25.3	74	43.01	35.18	4.71	34.2	103	332	Peak
4872	37.7	-16.3	54	32.01	35.18	4.71	34.2	103	332	Average

Test Mode :	Mode 6	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
59.43	16.69	-23.31	40	33.91	5.44	0.34	23	-	-	Peak
156.36	20.92	-22.58	43.5	33.57	9.76	0.59	23	-	-	Peak
292.17	29.42	-16.58	46	38.76	12.89	0.77	23	-	-	Peak
426.7	37.17	-8.83	46	43.08	16.17	0.9	22.98	-	-	Peak
533.1	38.84	-7.16	46	42.55	18.14	1	22.85	102	202	Peak
853.7	37.21	-8.79	46	36.77	20.51	1.26	21.33	-	-	Peak
2320	54.23	-19.77	74	53.2	32.76	3.1	34.83	202	237	Peak
2320	44.82	-9.18	54	43.79	32.76	3.1	34.83	202	237	Average
2462	102.1	-	-	100.79	32.98	3.18	34.85	140	330	Peak
2462	92.12	-	-	90.81	32.98	3.18	34.85	140	330	Average
2483.85	56.53	-17.47	74	55.17	33.01	3.2	34.85	137	337	Peak
2483.85	41.36	-12.64	54	40	33.01	3.2	34.85	137	337	Average
4926	54.68	-19.32	74	48.94	35.19	4.75	34.2	161	226	Peak
4926	42.94	-11.06	54	37.2	35.19	4.75	34.2	161	226	Average

Test Mode :	Mode 6	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
59.43	33.34	-6.66	40	50.56	5.44	0.34	23	-	-	Peak
106.68	32.02	-11.48	43.5	43.14	11.43	0.45	23	-	-	Peak
156.9	30.86	-12.64	43.5	43.55	9.71	0.6	23	-	-	Peak
426.7	42.35	-3.65	46	48.26	16.17	0.9	22.98	-	-	Peak
533.8	44.29	-1.71	46	48	18.14	1	22.85	102	345	QP
746.6	40.07	-5.93	46	40.84	19.88	1.18	21.83	-	-	Peak
2374.79	48.99	-25.01	74	47.87	32.83	3.13	34.84	102	332	Peak
2374.79	37.13	-16.87	54	36.01	32.83	3.13	34.84	102	332	Average
2462	96.76	-	-	95.45	32.98	3.18	34.85	103	64	Peak
2462	86.32	-	-	85.01	32.98	3.18	34.85	103	64	Average
2483.66	36.36	-17.64	54	35	33.01	3.2	34.85	103	78	Average
2483.66	51	-23	74	49.64	33.01	3.2	34.85	103	78	Peak
4922	53.74	-20.26	74	48	35.19	4.75	34.2	166	214	Peak
4922	43.04	-10.96	54	37.3	35.19	4.75	34.2	166	214	Average
7384	56.9	-17.1	74	48.49	36.24	5.9	33.73	140	303	Peak
7384	43.41	-10.59	54	35	36.24	5.9	33.73	140	303	Average

Test Mode :	Mode 7	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
30	23.96	-16.04	40	28.86	18	0.25	23.15	-	-	Peak
250.05	21.11	-24.89	46	31.38	12	0.73	23	-	-	Peak
292.17	27.92	-18.08	46	37.26	12.89	0.77	23	-	-	Peak
426.7	37.29	-8.71	46	43.2	16.17	0.9	22.98	-	-	Peak
533.8	38.6	-7.4	46	42.31	18.14	1	22.85	102	115	Peak
746.6	35.21	-10.79	46	35.98	19.88	1.18	21.83	-	-	Peak
2389.61	58.63	-15.37	74	57.48	32.86	3.13	34.84	100	27	Peak
2389.61	48.36	-5.64	54	47.21	32.86	3.13	34.84	100	27	Average
2412	102.63	-	-	101.43	32.89	3.15	34.84	128	325	Peak
2412	91.58	-	-	90.38	32.89	3.15	34.84	128	325	Average
2489.36	47.63	-26.37	74	46.23	33.05	3.2	34.85	100	0	Peak
2489.36	38.3	-15.7	54	36.9	33.05	3.2	34.85	100	0	Average
4826	52.52	-21.48	74	46.87	35.17	4.68	34.2	167	51	Peak
4826	41.65	-12.35	54	36	35.17	4.68	34.2	167	51	Average

Test Mode :	Mode 7	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
59.43	31.69	-8.31	40	48.91	5.44	0.34	23	-	-	Peak
106.68	32.08	-11.42	43.5	43.2	11.43	0.45	23	-	-	Peak
159.6	29.26	-14.24	43.5	42.06	9.6	0.6	23	-	-	Peak
426.7	42.06	-3.94	46	47.97	16.17	0.9	22.98	-	-	Peak
533.8	42.34	-3.66	46	46.05	18.14	1	22.85	122	128	Peak
746.6	40.92	-5.08	46	41.69	19.88	1.18	21.83	-	-	Peak
2389.23	54.32	-19.68	74	53.17	32.86	3.13	34.84	200	178	Peak
2389.23	40.16	-13.84	54	39.01	32.86	3.13	34.84	200	178	Average
2412	99.24	-	-	98.04	32.89	3.15	34.84	100	265	Peak
2412	88.76	-	-	87.56	32.89	3.15	34.84	100	265	Average
2488.41	45.62	-28.38	74	44.22	33.05	3.2	34.85	100	0	Peak
2488.41	37.2	-16.8	54	35.8	33.05	3.2	34.85	100	0	Average
4826	52.3	-21.7	74	46.65	35.17	4.68	34.2	102	346	Peak
4826	39.85	-14.15	54	34.2	35.17	4.68	34.2	102	346	Average

Test Mode :	Mode 8	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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	24.78	-15.22	40	29.68	18	0.25	23.15	-	-	Peak
115.05	20.4	-23.1	43.5	31.14	11.8	0.46	23	-	-	Peak
288.93	27.43	-18.57	46	36.82	12.84	0.77	23	-	-	Peak
426.7	36.99	-9.01	46	42.9	16.17	0.9	22.98	-	-	Peak
533.8	38.37	-7.63	46	42.08	18.14	1	22.85	125	225	Peak
746.6	35.97	-10.03	46	36.74	19.88	1.18	21.83	-	-	Peak
2320.26	55.25	-18.75	74	54.22	32.76	3.1	34.83	202	237	Peak
2320.26	44.52	-9.48	54	43.49	32.76	3.1	34.83	202	237	Average
2437	101.73	-	-	100.45	32.95	3.17	34.84	201	127	Peak
2437	90.47	-	-	89.19	32.95	3.17	34.84	201	127	Average
2489.17	40.4	-13.6	54	39	33.05	3.2	34.85	181	99	Average
2489.17	51.86	-22.14	74	50.46	33.05	3.2	34.85	181	99	Peak

Test Mode :	Mode 8	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
59.7	31.43	-8.57	40	48.79	5.3	0.34	23	-	-	Peak
106.68	32.56	-10.94	43.5	43.68	11.43	0.45	23	-	-	Peak
160.95	30.28	-13.22	43.5	43.12	9.56	0.6	23	-	-	Peak
426.7	42.38	-3.62	46	48.29	16.17	0.9	22.98	-	-	Peak
533.8	42.97	-3.03	46	46.68	18.14	1	22.85	202	125	Peak
746.6	39.95	-6.05	46	40.72	19.88	1.18	21.83	-	-	Peak
2385.62	50.56	-23.44	74	49.41	32.86	3.13	34.84	202	162	Peak
2385.62	38.46	-15.54	54	37.31	32.86	3.13	34.84	202	162	Average
2437	97.77	-	-	96.49	32.95	3.17	34.84	104	69	Peak
2437	84.97	-	-	83.69	32.95	3.17	34.84	104	69	Average
2488.41	46.93	-27.07	74	45.53	33.05	3.2	34.85	195	204	Peak
2488.41	40.4	-13.6	54	39	33.05	3.2	34.85	195	204	Average

Test Mode :	Mode 9	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
213.33	21.14	-22.36	43.5	33.81	9.65	0.68	23	-	-	Peak
250.05	22.61	-23.39	46	32.88	12	0.73	23	-	-	Peak
292.17	28.46	-17.54	46	37.8	12.89	0.77	23	-	-	Peak
319.6	34.06	-11.94	46	42.72	13.55	0.79	23	-	-	Peak
426.7	36.89	-9.11	46	42.8	16.17	0.9	22.98	-	-	Peak
533.8	37.65	-8.35	46	41.36	18.14	1	22.85	100	120	Peak
2319.69	54.8	-19.2	74	53.77	32.76	3.1	34.83	190	71	Peak
2319.69	43.12	-10.88	54	42.09	32.76	3.1	34.83	190	71	Average
2462	87.62	-	-	86.31	32.98	3.18	34.85	134	327	Average
2462	99.45	-	-	98.14	32.98	3.18	34.85	134	327	Peak
2485.37	52.98	-21.02	74	51.62	33.01	3.2	34.85	202	326	Peak
2485.37	37.36	-16.64	54	36	33.01	3.2	34.85	202	326	Average
9844	46.03	-27.97	74	63.75	9.36	6.97	34.05	132	120	Peak
9844	37.18	-16.82	54	54.9	9.36	6.97	34.05	132	120	Average

Test Mode :	Mode 9	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
59.43	30.14	-9.86	40	47.36	5.44	0.34	23	-	-	Peak
106.68	32.61	-10.89	43.5	43.73	11.43	0.45	23	-	-	Peak
159.6	29.72	-13.78	43.5	42.52	9.6	0.6	23	-	-	Peak
426.7	42.44	-3.56	46	48.35	16.17	0.9	22.98	-	-	Peak
533.8	42.97	-3.03	46	46.68	18.14	1	22.85	178	25	Peak
746.6	40.11	-5.89	46	40.88	19.88	1.18	21.83	-	-	Peak
2382.2	48.95	-25.05	74	47.83	32.83	3.13	34.84	136	254	Peak
2382.2	39.13	-14.87	54	38.01	32.83	3.13	34.84	136	254	Average
2462	83.82	-	-	82.51	32.98	3.18	34.85	102	28	Average
2462	95.19	-	-	93.88	32.98	3.18	34.85	102	28	Peak
2484.61	48.9	-25.1	74	47.54	33.01	3.2	34.85	191	130	Peak
2484.61	35.36	-18.64	54	34	33.01	3.2	34.85	191	130	Average
9840	51.62	-22.38	74	69.34	9.36	6.97	34.05	123	305	Peak
9840	40.28	-13.72	54	58	9.36	6.97	34.05	123	305	Average

Test Mode :	Mode 10	Temperature :	22~23℃
Test Channel :	03	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
30	24.32	-15.68	40	29.22	18	0.25	23.15	-	-	Peak
213.6	20.02	-23.48	43.5	32.69	9.65	0.68	23	-	-	Peak
296.22	24.76	-21.24	46	34.03	12.95	0.78	23	-	-	Peak
319.6	35.4	-10.6	46	44.06	13.55	0.79	23	-	-	Peak
426.7	36.64	-9.36	46	42.55	16.17	0.9	22.98	-	-	Peak
533.8	38.43	-7.57	46	42.14	18.14	1	22.85	128	56	Peak
2389.23	61.92	-12.08	74	60.77	32.86	3.13	34.84	200	130	Peak
2389.23	49.86	-4.14	54	48.71	32.86	3.13	34.84	200	130	Average
2422	100.29	-	-	99.04	32.92	3.17	34.84	200	236	Peak
2422	89.69	-	-	88.44	32.92	3.17	34.84	200	236	Average
2491.45	49.55	-24.45	74	48.15	33.05	3.2	34.85	185	242	Peak
2491.45	40.4	-13.6	54	39	33.05	3.2	34.85	185	242	Average

Test Mode :	Mode 10	Temperature :	22~23℃
Test Channel :	03	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
61.32	27.09	-12.91	40	44.47	5.28	0.34	23	-	-	Peak
106.68	32.73	-10.77	43.5	43.85	11.43	0.45	23	-	-	Peak
157.44	28.61	-14.89	43.5	41.3	9.71	0.6	23	-	-	Peak
426.7	42.58	-3.42	46	48.49	16.17	0.9	22.98	136	21	Peak
533.8	42.53	-3.47	46	46.24	18.14	1	22.85	-	-	Peak
746.6	40.18	-5.82	46	40.95	19.88	1.18	21.83	-	-	Peak
2389.42	68.27	-5.73	74	67.12	32.86	3.13	34.84	105	178	Peak
2389.42	52.26	-1.74	54	51.11	32.86	3.13	34.84	105	178	Average
2422	95.54	-	-	94.29	32.92	3.17	34.84	202	163	Peak
2422	85.84	-	-	84.59	32.92	3.17	34.84	202	163	Average
2483.66	47.96	-26.04	74	46.6	33.01	3.2	34.85	125	236	Peak
2483.66	40.36	-13.64	54	39	33.01	3.2	34.85	125	236	Average

Test Mode :	Mode 11	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	Polarization :	Horizontal
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
34.59	22.66	-17.34	40	30.39	15.1	0.28	23.11	-	-	Peak
128.01	21.19	-22.31	43.5	31.97	11.72	0.5	23	-	-	Peak
250.05	21.28	-24.72	46	31.55	12	0.73	23	-	-	Peak
426.7	37.72	-8.28	46	43.63	16.17	0.9	22.98	-	-	Peak
533.8	39.12	-6.88	46	42.83	18.14	1	22.85	145	20	Peak
746.6	36.23	-9.77	46	37	19.88	1.18	21.83	-	-	Peak
2389.8	53.56	-20.44	74	52.39	32.86	3.15	34.84	198	91	Peak
2389.8	41.37	-12.63	54	40.2	32.86	3.15	34.84	198	91	Average
2437	96.56	-	-	95.28	32.95	3.17	34.84	200	236	Peak
2437	88.47	-	-	87.19	32.95	3.17	34.84	200	236	Average
2483.66	51.47	-22.53	74	50.11	33.01	3.2	34.85	174	87	Peak
2483.66	38.86	-15.14	54	37.5	33.01	3.2	34.85	174	87	Average

Test Mode :	Mode 11	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
59.7	27.79	-12.21	40	45.15	5.3	0.34	23	-	-	Peak
106.68	31.84	-11.66	43.5	42.96	11.43	0.45	23	-	-	Peak
159.87	28.08	-15.42	43.5	40.88	9.6	0.6	23	-	-	Peak
426.7	42.26	-3.74	46	48.17	16.17	0.9	22.98	123	225	Peak
533.8	42.05	-3.95	46	45.76	18.14	1	22.85	-	-	Peak
746.6	40.53	-5.47	46	41.3	19.88	1.18	21.83	-	-	Peak
2334.89	50.98	-23.02	74	49.93	32.78	3.1	34.83	200	122	Peak
2334.89	38.55	-15.45	54	37.5	32.78	3.1	34.83	200	122	Average
2437	83.77	-	-	82.49	32.95	3.17	34.84	198	162	Average
2437	94.69	-	-	93.41	32.95	3.17	34.84	198	162	Peak
2484.8	46.54	-27.46	74	45.18	33.01	3.2	34.85	124	232	Peak
2484.8	39.36	-14.64	54	38	33.01	3.2	34.85	124	232	Average

Test Mode :	Mode 12	Temperature :	22~23℃
Test Channel :	09	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
31.08	24.67	-15.33	40	30.25	17.29	0.26	23.13	-	-	Peak
106.68	20.12	-23.38	43.5	31.24	11.43	0.45	23	-	-	Peak
251.67	21.77	-24.23	46	32	12.03	0.74	23	-	-	Peak
426.7	36.94	-9.06	46	42.85	16.17	0.9	22.98	-	-	Peak
533.8	38.5	-7.5	46	42.21	18.14	1	22.85	105	200	Peak
746.6	35.1	-10.9	46	35.87	19.88	1.18	21.83	-	-	Peak
2359.78	55.9	-18.1	74	54.8	32.81	3.12	34.83	170	344	Peak
2359.78	43.49	-10.51	54	42.39	32.81	3.12	34.83	170	344	Average
2452	98.16	-	-	96.88	32.95	3.18	34.85	182	93	Peak
2452	89.28	-	-	88	32.95	3.18	34.85	182	93	Average
2483.85	56.16	-17.84	74	54.8	33.01	3.2	34.85	179	101	Peak
2483.85	45.46	-8.54	54	44.1	33.01	3.2	34.85	179	101	Average

Test Mode :	Mode 12	Temperature :	22~23℃
Test Channel :	09	Relative Humidity :	41~42%
Test Engineer :	Mark Qu	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
58.62	27.07	-12.93	40	44.29	5.44	0.34	23	-	-	Peak
106.68	31.77	-11.73	43.5	42.89	11.43	0.45	23	-	-	Peak
162.03	29.95	-13.55	43.5	42.82	9.53	0.6	23	-	-	Peak
426.7	42.2	-3.8	46	48.11	16.17	0.9	22.98	-	-	Peak
533.8	42.77	-3.23	46	46.48	18.14	1	22.85	100	256	Peak
746.6	39.42	-6.58	46	40.19	19.88	1.18	21.83	-	-	Peak
2388.09	53.87	-20.13	74	52.72	32.86	3.13	34.84	202	169	Peak
2388.09	39.56	-14.44	54	38.41	32.86	3.13	34.84	202	169	Average
2452	95.59	-	-	94.31	32.95	3.18	34.85	138	76	Peak
2452	84.38	-	-	83.1	32.95	3.18	34.85	138	76	Average
2485.18	49.56	-4.44	54	48.2	33.01	3.2	34.85	202	178	Average
2485.18	63.72	-10.28	74	62.36	33.01	3.2	34.85	202	178	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 PCB Antenna without connector and it is considered to meet antenna requirement.

3.8.3 Antenna Gain

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Jan. 18, 2010	Jan. 17, 2011	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 27, 2009	Aug. 26, 2010	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 28, 2009	Aug. 27, 2010	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100724	9kHz – 2.75GHz	Mar. 09, 2010	Mar. 08, 2011	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Jan. 18, 2010	Jan. 17, 2011	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Jan. 18, 2010	Jan. 17, 2011	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 18, 2010	Jan. 17, 2011	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Feb. 02, 2010	Feb. 01, 2011	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Jan. 18, 2010	Jan. 17, 2011	Radiation (03CH01-KS)
Actice hore antenna	com-power	AHA-118	701023	1G-18GHz	Nov. 18, 2009	Nov. 17, 2010	Radiation (03CH01-KS)
Signal Generator	R&S	SMR40	100455	10MHz~40GHz	Jan. 18, 2010	Jan. 17, 2011	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15-40GHz	Oct. 22, 2009	Oct. 21, 2010	Radiation (03CH01-KS)

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 EP062612 as below.