

FCC RF Test Report

APPLICANT : ZTE CORPORATION
EQUIPMENT : WCDMA GSM (GPRS) Dual-Mode
Digital Mobile Phone
BRAND NAME : ZTE
MODEL NAME : ZTE-U V857
FCC ID : Q78-UV857
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Jan. 11, 2012 and completely tested on Feb. 07, 2012. 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:



Jones Tsai / Manager



SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.

TABLE OF CONTENTS

REVISION HISTORY.....	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant.....	5
1.2 Manufacturer.....	5
1.3 Feature of Equipment Under Test	5
1.4 Testing Site.....	6
1.5 Applied Standards	6
1.6 Ancillary Equipment List	6
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	6
2.1 RF Power	7
2.2 Test Mode.....	9
2.3 Connection Diagram of Test System.....	10
2.4 RF Utility	10
3 TEST RESULT.....	11
3.1 6dB Bandwidth Measurement	11
3.2 Output Power Measurement.....	20
3.3 Band Edges Measurement.....	22
3.4 Spurious Emission Measurement.....	32
3.5 Power Spectral Density Measurement	45
3.6 AC Conducted Emission Measurement.....	54
3.7 Radiated Emission Measurement.....	58
3.8 Antenna Requirements.....	85
4 LIST OF MEASURING EQUIPMENT	86
5 UNCERTAINTY OF EVALUATION.....	87
APPENDIX A. PHOTOGRAPHS OF EUT	
APPENDIX B. SETUP PHOTOGRAPHS	

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR220201B	Rev. 01	Initial issue of report	Feb. 07, 2012

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	Power Output	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(d)	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.4	15.247(d)	Spurious Emission	$< 20\text{ dBc}$	Pass	-
3.5	15.247(e)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 12.73 dB at 0.31 MHz
3.7	15.247(d)	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.64 dB at 2488.03 MHz
3.8	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

1.2 Manufacturer

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	WCDMA GSM (GPRS) Dual-Mode Digital Mobile Phone
Brand Name	ZTE
Model Name	ZTE-U V857
FCC ID	Q78-UV857
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Channel Spacing	5 MHz
Maximum Output Power to Antenna	802.11b : 18.72 dBm (0.074 W) 802.11g : 22.51 dBm (0.178 W) 802.11n (BW 20MHz) : 22.39 dBm (0.173 W) 802.11n (BW 40MHz) : 22.58 dBm (0.181 W)
Antenna Type	PIFA Antenna with gain -2.00 dBi
HW Version	WMAB
SW Version	ZTE-CN-W850-W1900-P173A30V0.0.1B01T
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

Remark:

- For other wireless features of this EUT, test report will be issued separately.
- This test report recorded only product characteristics and test results of Digital Transmission System (DTS).
- 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 (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	CO01-KS	03CH01-KS

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

Remark:

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

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	Signal Generator	R&S	SMR40	N/A	N/A	Unshielded, 1.8 m
3.	Router	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	PP42L	N/A	N/A	AC I/P: Unshielded, 0.9 m DC O/P: Shielded, 1.8 m
5.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	18.65	18.56	18.58	18.52
CH 06	2437 MHz	18.72	18.68	15.63	18.57
CH 11	2462 MHz	18.58	18.53	18.55	15.48

Channel	Frequency	2.4GHz 802.11g RF Power (dBm)							
		OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	22.09	21.89	21.79	21.84	22.01	21.95	21.89	21.84
CH 06	2437 MHz	22.36	22.01	21.89	22.22	22.28	21.89	22.05	21.95
CH 11	2462 MHz	22.51	22.42	22.34	22.38	22.38	22.48	22.32	22.41

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		OFDM Data Rate							
		MCS=0	MCS=1	MCS=2	MCS=3	MCS=4	MCS=5	MCS=6	MCS=7
		6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mbps
CH 01	2412 MHz	22.35	22.27	21.84	21.54	21.78	21.76	22.21	21.86
CH 06	2437 MHz	22.32	22.08	21.69	21.36	21.62	21.56	22.13	21.54
CH 11	2462 MHz	22.39	21.98	21.87	21.76	21.84	22.02	22.27	21.96

Channel	Frequency	2.4GHz 802.11n (BW 40MHz) RF Power (dBm)							
		OFDM Data Rate							
		MCS=0	MCS=1	MCS=2	MCS=3	MCS=4	MCS=5	MCS=6	MCS=7
		6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mbps
CH 03	2422 MHz	22.25	21.75	21.43	21.66	21.63	22.02	21.68	21.64
CH 06	2437 MHz	22.34	21.74	21.56	21.58	21.51	21.78	21.71	21.54
CH 09	2452 MHz	22.58	21.87	21.68	21.85	21.78	22.26	21.87	21.74

Remark:

1. The data rates of WLAN 802.11b/g/n were set in 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n (BW 20MHz) and 802.11n (BW 40MHz) for all the test cases due to the highest RF output power.
2. The EUT is programmed to transmit signals continuously for all testing.

2.2 Test Mode

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

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

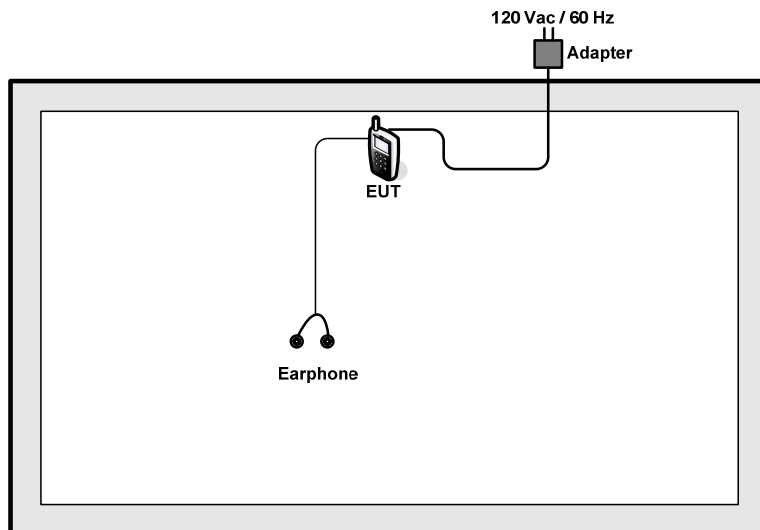
The following tables are showing the test modes as the worst cases (E1 plane) and recorded in this report.

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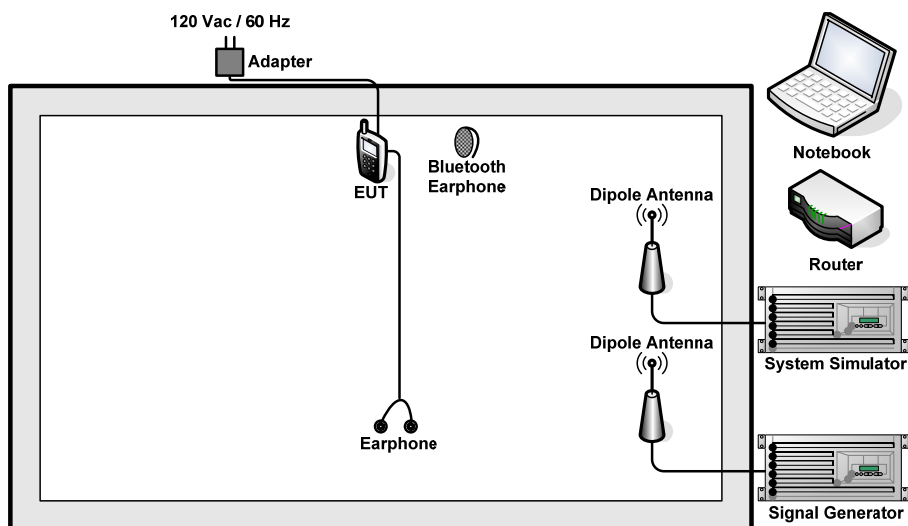
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 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 : GSM 850 Idle + Bluetooth Link + WIFI Link + Adapter + Earphone + FM Rx	

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

The programmed RF utility “SP META Tool” 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.

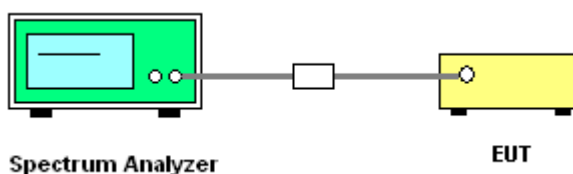
3.1.2 Measuring Instruments

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

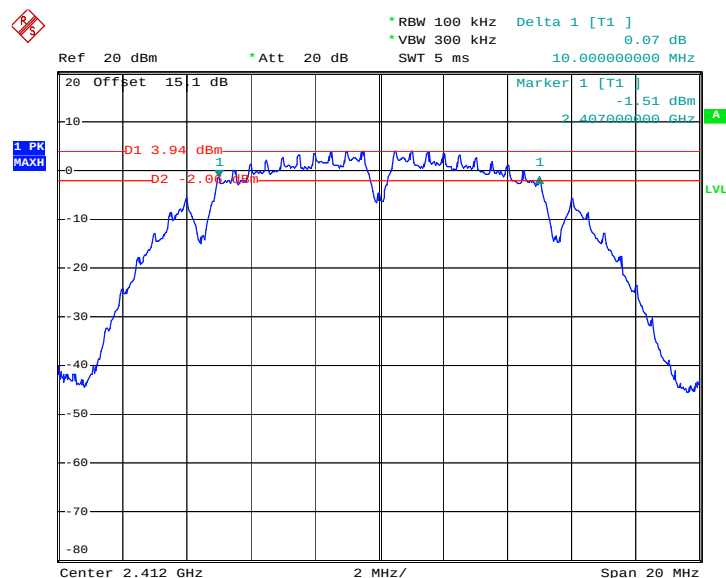


3.1.5 Test Result of 6dB Bandwidth

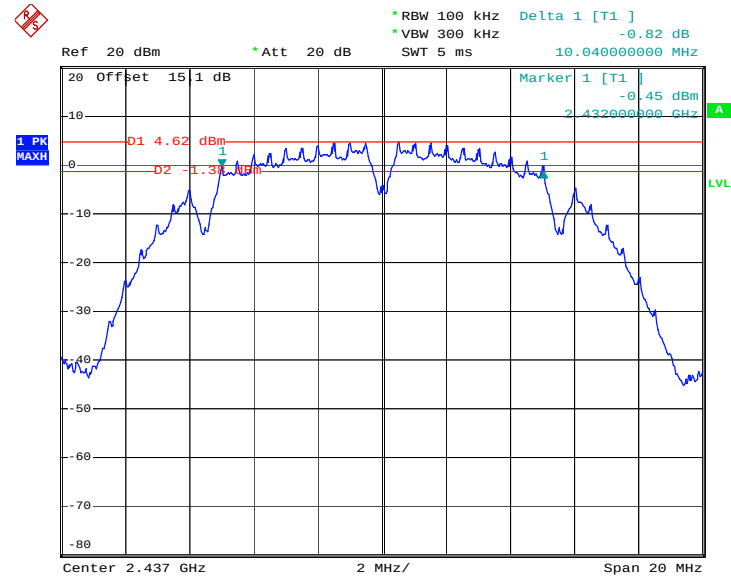
Test Mode :	Mode 1, 2, 3	Temperature :	24~25℃
Test Engineer :	Zhi Lu	Relative Humidity :	48~49%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	10.00	0.5	Pass
06	2437	10.04	0.5	Pass
11	2462	10.00	0.5	Pass

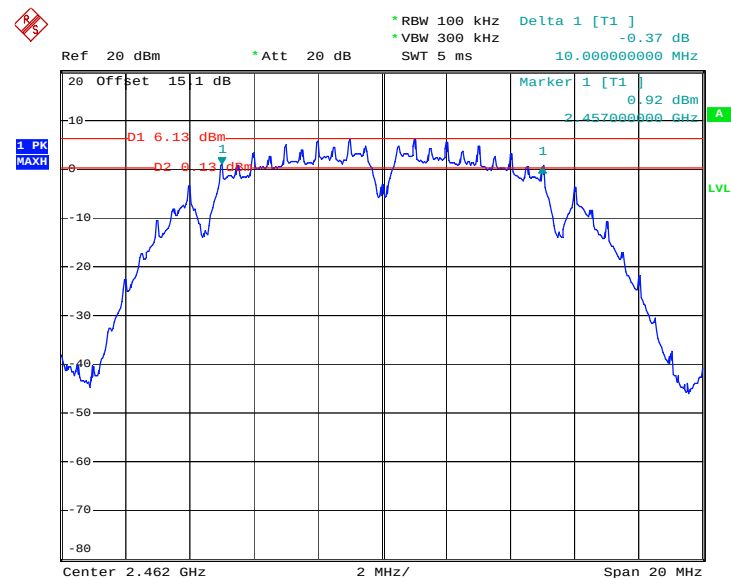
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 1.FEB.2012 18:10:19

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


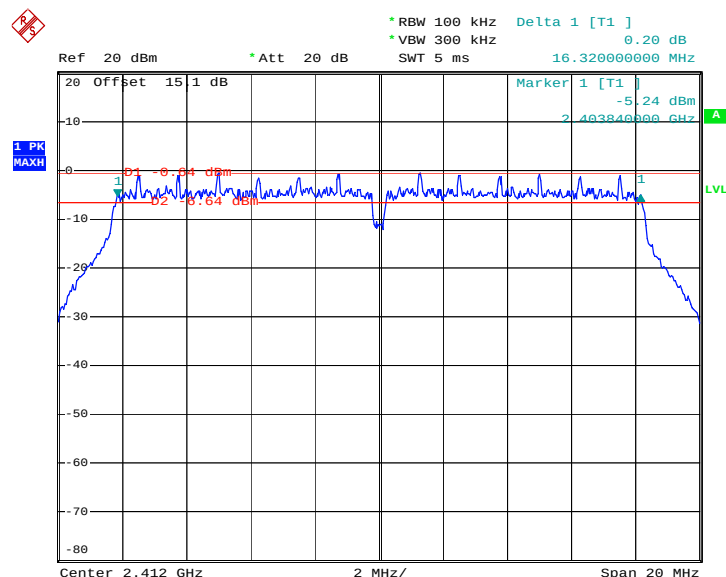
Date: 1.FEB.2012 18:30:31

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


Date: 1.FEB.2012 18:50:52

Test Mode :	Mode 4, 5, 6	Temperature :	24~25°C
Test Engineer :	Zhi Lu	Relative Humidity :	48~49%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.32	0.5	Pass
06	2437	16.32	0.5	Pass
11	2462	16.32	0.5	Pass

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


Date: 1.FEB.2012 19:08:39



Ref 20 dBm Att 20 dB RBW 100 kHz VBW 300 kHz Delta 1 [T1] 0.13 dB
SWT 5 ms 16.32000000 MHz

20 Offset 15 1 dB

Marker 1 [T1] -5.23 dBm
2 42849999 GHz

1 PK MAX

01 -0.61 dBm
02 -8.61 dBm

Center 2.437 GHz 2 MHz/ Span 20 MHz

Date: 1.FEB.2012 19:25:37

Ref 20 dBm Att 20 dB RBW 100 kHz VBW 300 kHz SWT 5 ms Delta 1 [T1] 0.24 dB 16.32000000 MHz

20 Offset 15 1 dB

1 PK MAX

Marker 1 [T1] -4.90 dBm 2 453840000 GHz

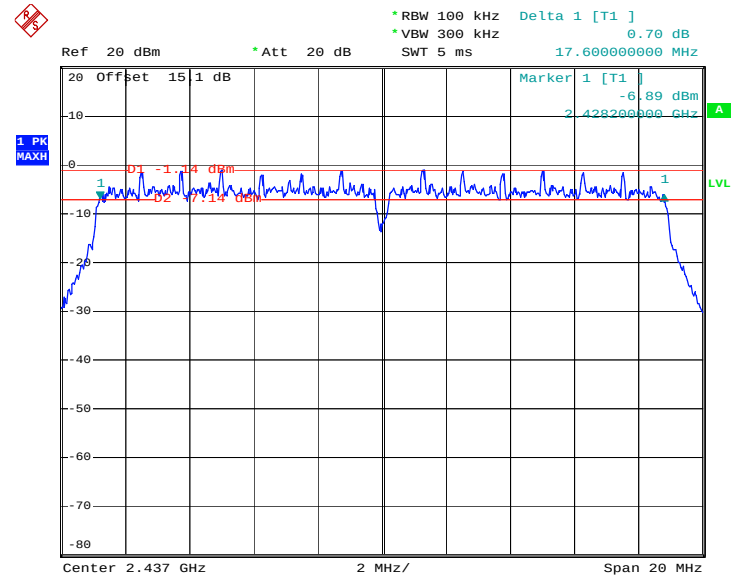
01 -0.07 dBm 02 -0.07 dBm

Center 2.462 GHz 2 MHz/ Span 20 MHz

Date: 1.FEB.2012 19:41:53

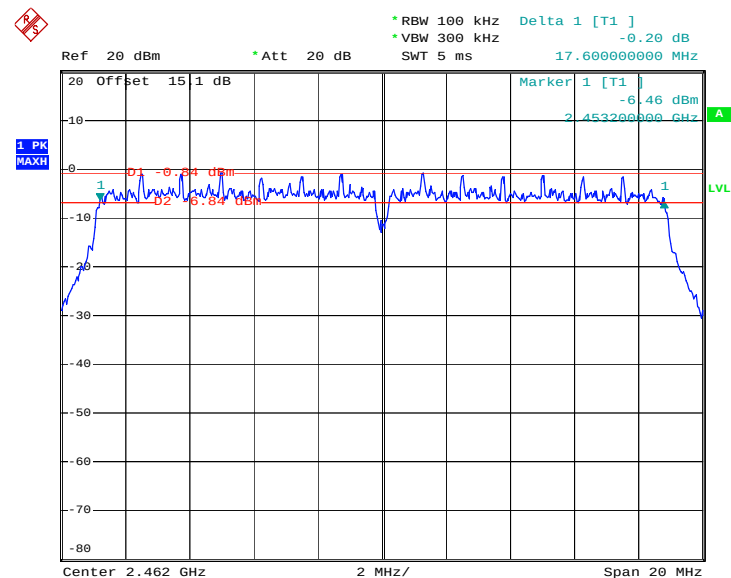


Mode 8 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 06



Date: 1.FEB.2012 20:17:07

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



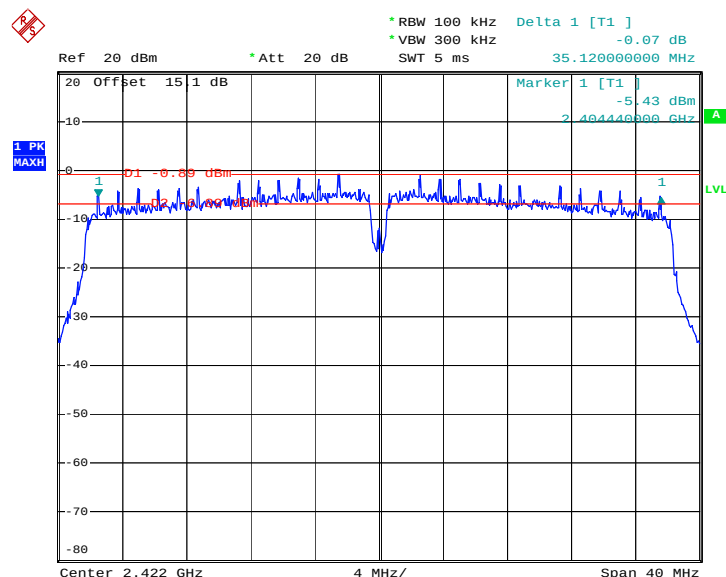
Date: 1.FEB.2012 20:35:47



Test Mode :	Mode 10, 11, 12	Temperature :	24~25°C
Test Engineer :	Zhi Lu	Relative Humidity :	48~49%

Channel	Frequency (MHz)	802.11n (BW 40MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
03	2422	35.12	0.5	Pass
06	2437	35.04	0.5	Pass
09	2452	35.04	0.5	Pass

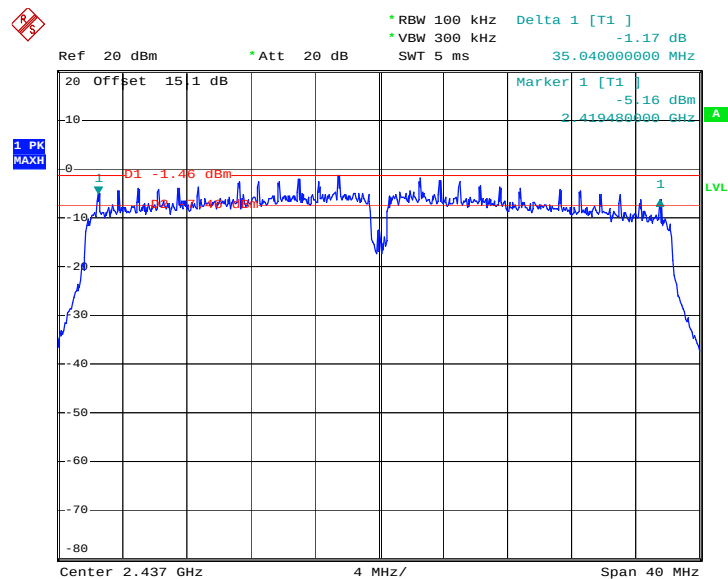
Mode 10 : 6 dB Bandwidth Plot on 802.11n(BW 40MHz) Channel 03



Date: 7.FEB.2012 20:02:49

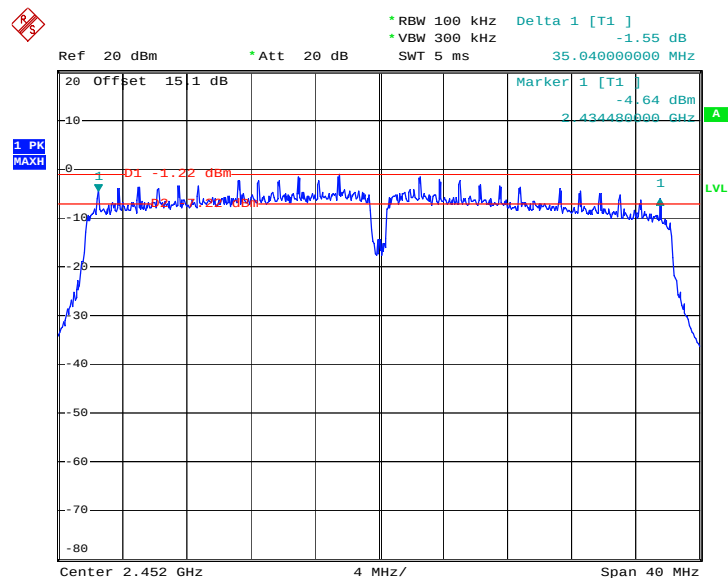


Mode 11 : 6 dB Bandwidth Plot on 802.11n(BW 40MHz) Channel 06



Date: 7.FEB.2012 20:15:28

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



Date: 7.FEB.2012 20:27:34

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.

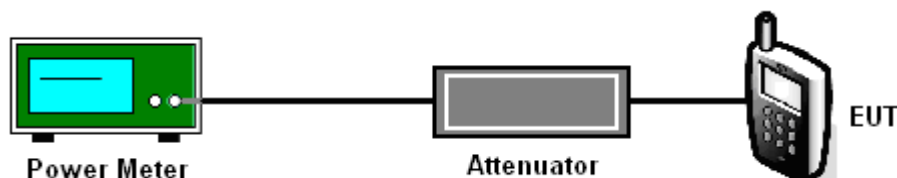
3.2.2 Measuring Instruments

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 :	24~25℃
Test Engineer :	Zhi Lu	Relative Humidity :	48~49%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	18.65	30	Pass
06	2437	18.72	30	Pass
11	2462	18.58	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~25℃
Test Engineer :	Zhi Lu	Relative Humidity :	48~49%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.09	30	Pass
06	2437	22.36	30	Pass
11	2462	22.51	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	24~25℃
Test Engineer :	Zhi Lu	Relative Humidity :	48~49%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.35	30	Pass
06	2437	22.32	30	Pass
11	2462	22.39	30	Pass

Test Mode :	Mode 10, 11, 12	Temperature :	24~25
Test Engineer :	Zhi Lu	Relative Humidity :	48~49

Channel	Frequency (MHz)	802.11n (BW 40MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	22.25	30	Pass
06	2437	22.34	30	Pass
09	2452	22.58	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

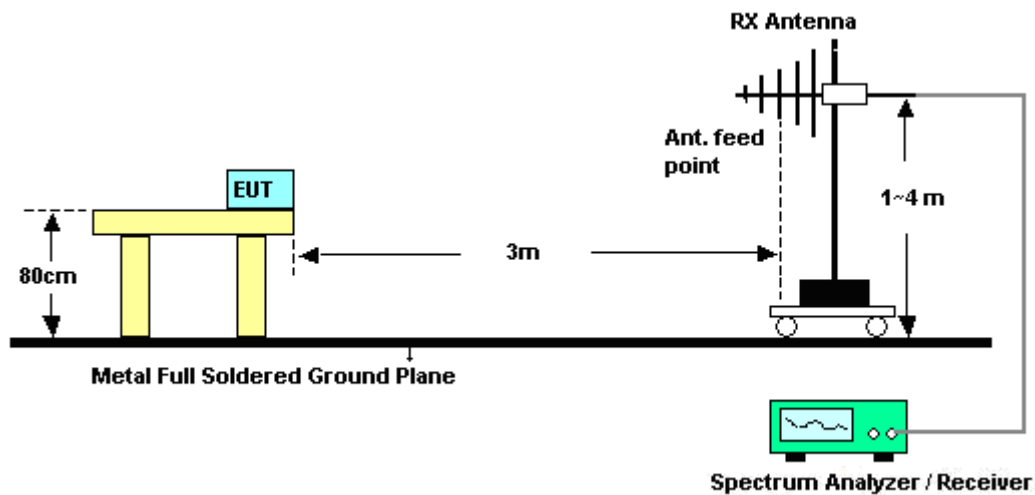
See list of measuring instruments of this test report.

3.3.3 Test Procedures

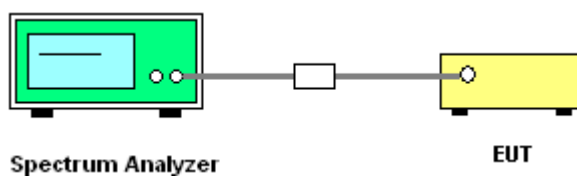
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) $\geq$ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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 :	21~22℃
Test Band :	802.11b	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Jack Li

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	50.7	-23.3	74	48.42	32.86	3.47	34.05	200	0	Peak
2390	39.07	-14.93	54	36.79	32.86	3.47	34.05	200	0	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	50.78	-23.22	74	48.5	32.86	3.47	34.05	100	16	Peak
2390	38.65	-15.35	54	36.37	32.86	3.47	34.05	100	16	Average

Test Mode :	Mode 3	Temperature :	21~22℃
Test Band :	802.11b	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Jack Li

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2488.03	54.42	-19.58	74	51.88	33.05	3.72	34.23	200	18	Peak
2488.03	49.77	-4.23	54	47.23	33.05	3.72	34.23	200	18	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
2488.03	54.58	-19.42	74	52.04	33.05	3.72	34.23	100	3	Peak
2488.03	50.36	-3.64	54	47.82	33.05	3.72	34.23	100	3	Average



Test Mode :	Mode 4	Temperature :	21~22°C
Test Band :	802.11g	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Jack Li

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	49.89	-24.11	74	47.61	32.86	3.47	34.05	200	0	Peak
2390	37.93	-16.07	54	35.65	32.86	3.47	34.05	200	0	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	60.02	-13.98	74	57.74	32.86	3.47	34.05	100	351	Peak
2390	44.91	-9.09	54	42.63	32.86	3.47	34.05	100	351	Average

Test Mode :	Mode 6	Temperature :	21~22°C
Test Band :	802.11g	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Jack Li

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	49.73	-24.27	74	47.24	33.01	3.68	34.2	200	26	Peak
2483.5	37.72	-16.28	54	35.23	33.01	3.68	34.2	200	26	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.66	52.67	-21.33	74	50.18	33.01	3.68	34.2	100	0	Peak
2483.66	41.05	-12.95	54	38.56	33.01	3.68	34.2	100	0	Average



Test Mode :	Mode 7	Temperature :	21~22℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Jack Li

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	51.65	-22.35	74	49.37	32.86	3.47	34.05	200	18	Peak
2390	38.61	-15.39	54	36.33	32.86	3.47	34.05	200	18	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	53.22	-20.78	74	50.94	32.86	3.47	34.05	100	28	Peak
2390	39.84	-14.16	54	37.56	32.86	3.47	34.05	100	28	Average

Test Mode :	Mode 9	Temperature :	21~22℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Jack Li

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	51.15	-22.85	74	48.66	33.01	3.68	34.2	100	0	Peak
2483.5	38.22	-15.78	54	35.73	33.01	3.68	34.2	100	0	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	55.85	-18.15	74	53.36	33.01	3.68	34.2	100	0	Peak
2483.5	42.76	-11.24	54	40.27	33.01	3.68	34.2	100	0	Average



Test Mode :	Mode 10	Temperature :	21~22℃
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	41~42%
Test Channel :	03	Test Engineer :	Jack Li

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	52.73	-21.27	74	50.45	32.86	3.47	34.05	100	0	Peak
2390	40.54	-13.46	54	38.26	32.86	3.47	34.05	100	0	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2385.62	53.67	-20.33	74	51.39	32.86	3.47	34.05	100	0	Peak
2385.62	40.38	-13.62	54	38.1	32.86	3.47	34.05	100	0	Average

Test Mode :	Mode 12	Temperature :	21~22℃
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	41~42%
Test Channel :	09	Test Engineer :	Jack Li

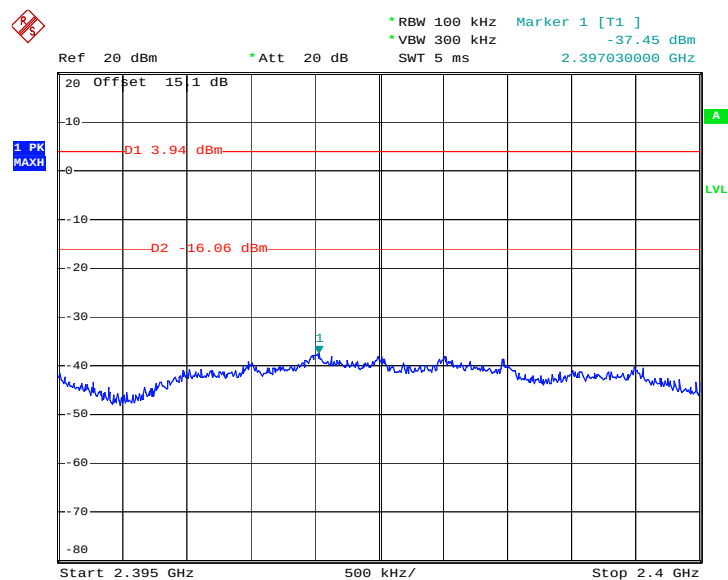
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	48.85	-25.15	74	46.36	33.01	3.68	34.2	100	0	Peak
2483.5	38.59	-15.41	54	36.1	33.01	3.68	34.2	100	0	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	49.25	-24.75	74	46.76	33.01	3.68	34.2	100	0	Peak
2483.5	39.05	-14.95	54	36.56	33.01	3.68	34.2	100	0	Average

3.3.6 Test Plots of Conducted Band Edges

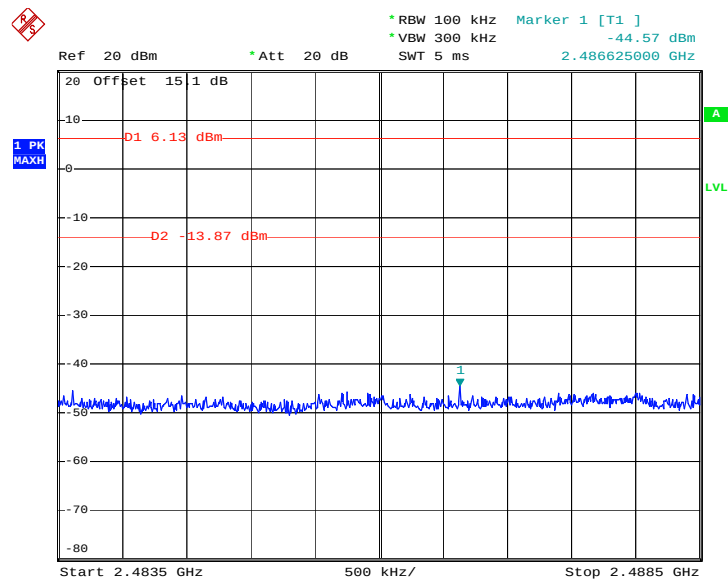
Test Mode :	Mode 1 and 3	Temperature :	24~25°C
Test Band :	802.11b	Relative Humidity :	48~49%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11b Channel 01



Date: 1.FEB.2012 18:11:30

High Band Edge Plot on 802.11b Channel 11

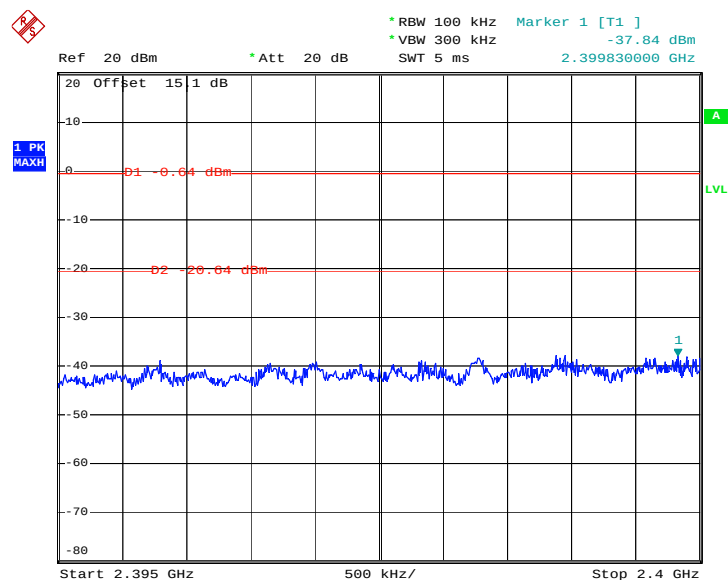


Date: 1.FEB.2012 18:51:41



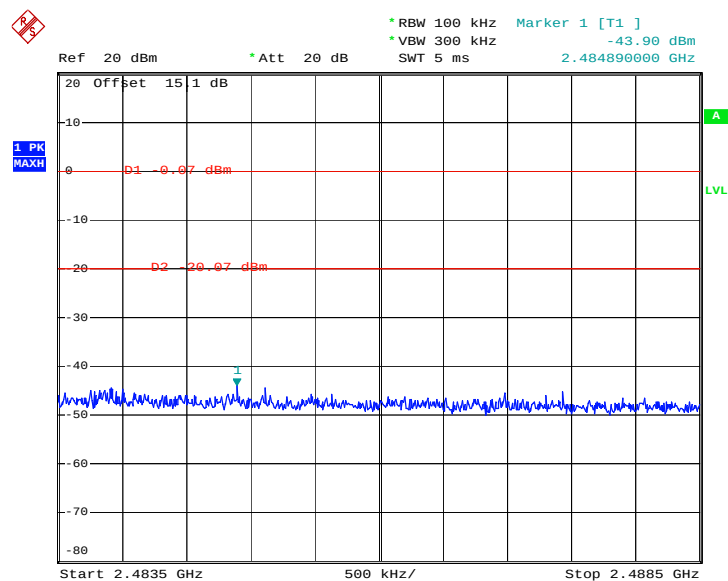
Test Mode :	Mode 4 and 6	Temperature :	24~25°C
Test Band :	802.11g	Relative Humidity :	48~49%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11g Channel 01



Date: 1.FEB.2012 19:09:51

High Band Edge Plot on 802.11g Channel 11

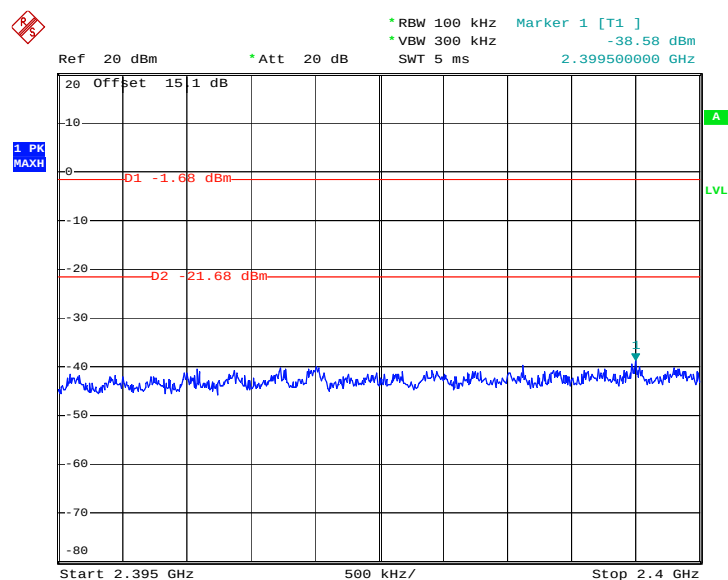


Date: 1.FEB.2012 19:42:47



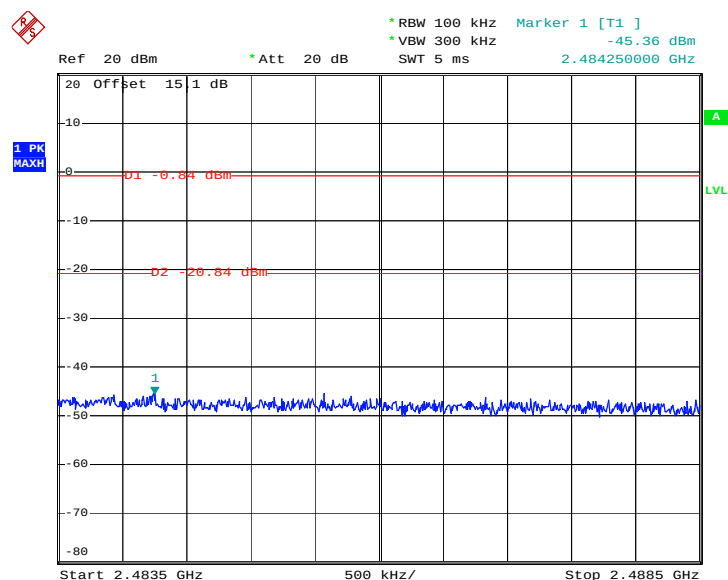
Test Mode :	Mode 7 and 9	Temperature :	24~25°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	48~49%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

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



Date: 1.FEB.2012 20:11:36

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

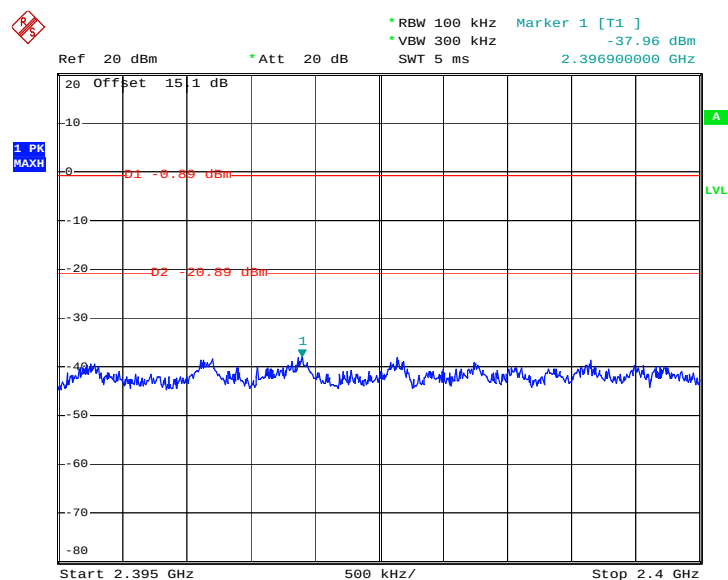


Date: 1.FEB.2012 20:36:38



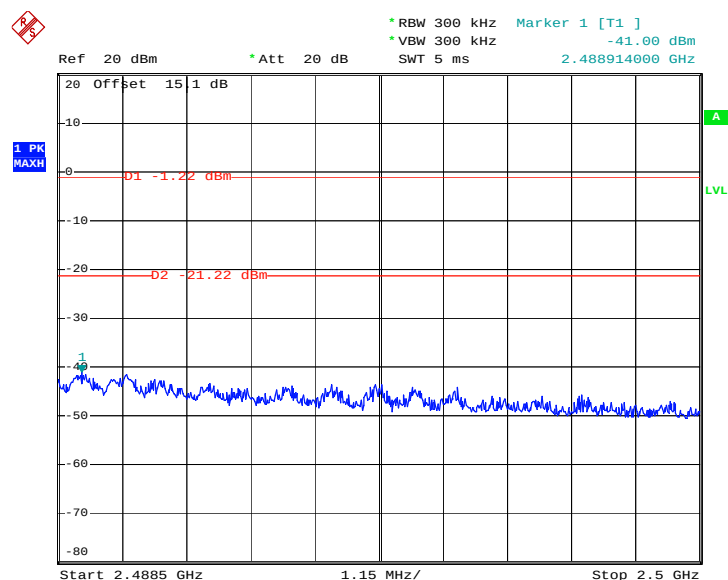
Test Mode :	Mode 10 and 12	Temperature :	24~25℃
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	48~49%
Test Channel :	03 and 09	Test Engineer :	Zhi Lu

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



Date: 7.FEB.2012 20:03:58

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



Date: 7.FEB.2012 20:28:22

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.

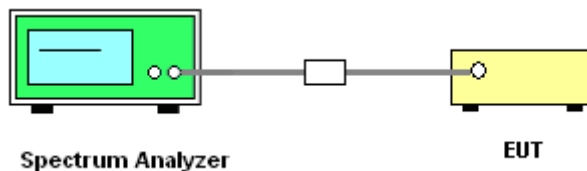
3.4.2 Measuring Instruments

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.

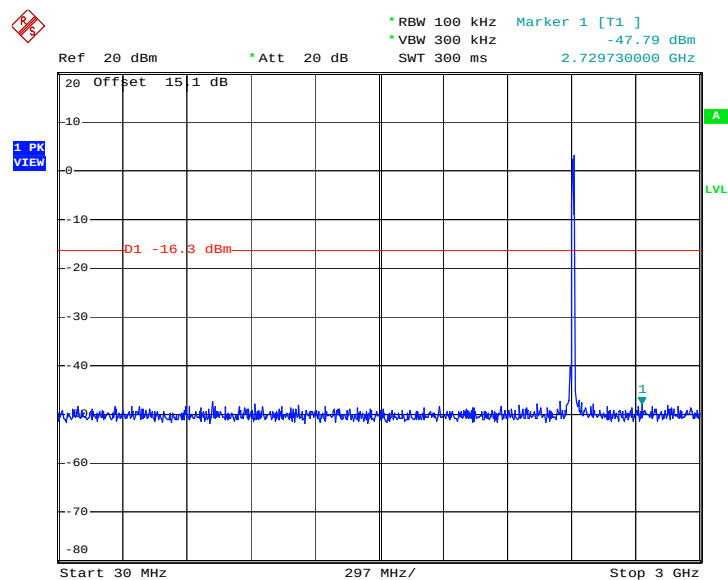
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

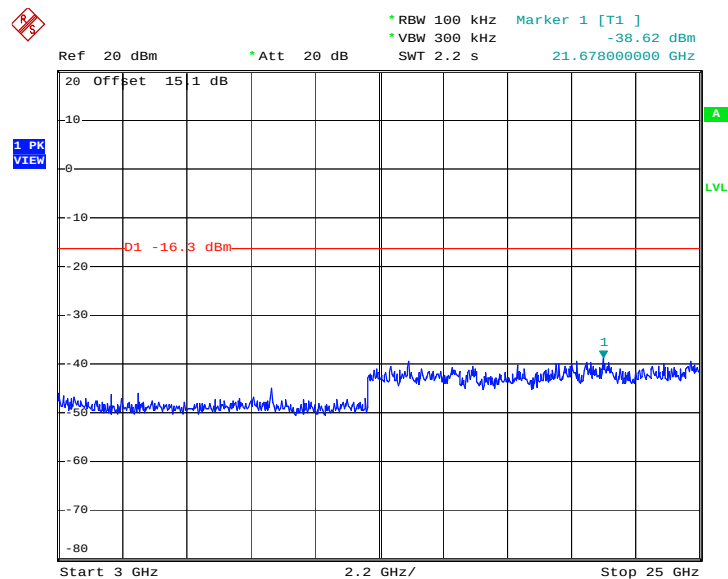
Test Mode :	Mode 1	Temperature :	24~25°C
Test Band :	802.11b	Relative Humidity :	48~49%
Test Channel :	01	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



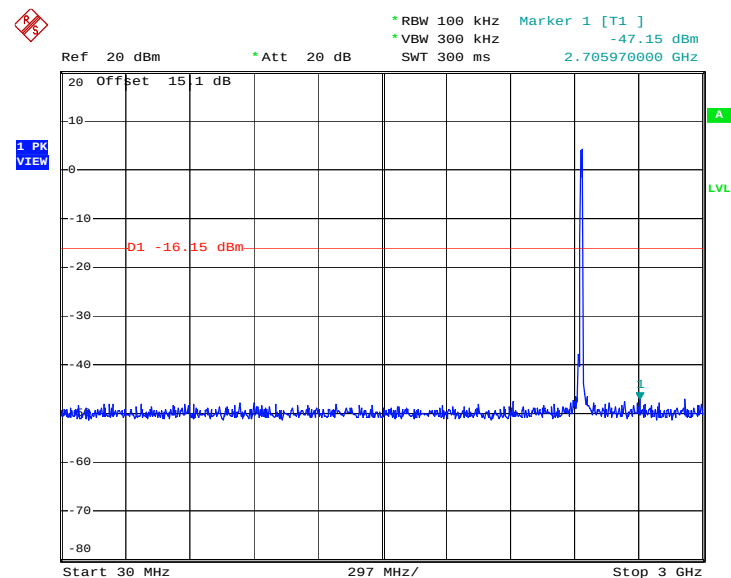
Date: 1.FEB.2012 18:17:59

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

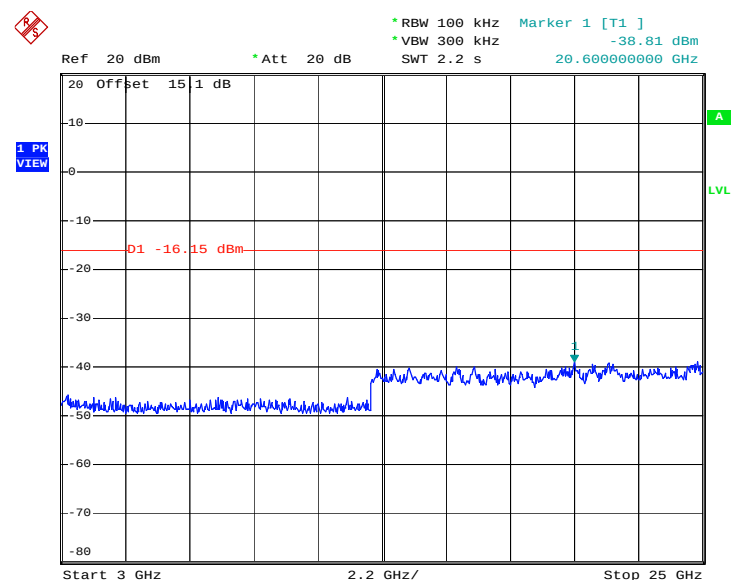


Date: 1.FEB.2012 18:18:32

Test Mode :	Mode 2	Temperature :	24~25°C
Test Band :	802.11b	Relative Humidity :	48~49%
Test Channel :	06	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 1.FEB.2012 18:36:15

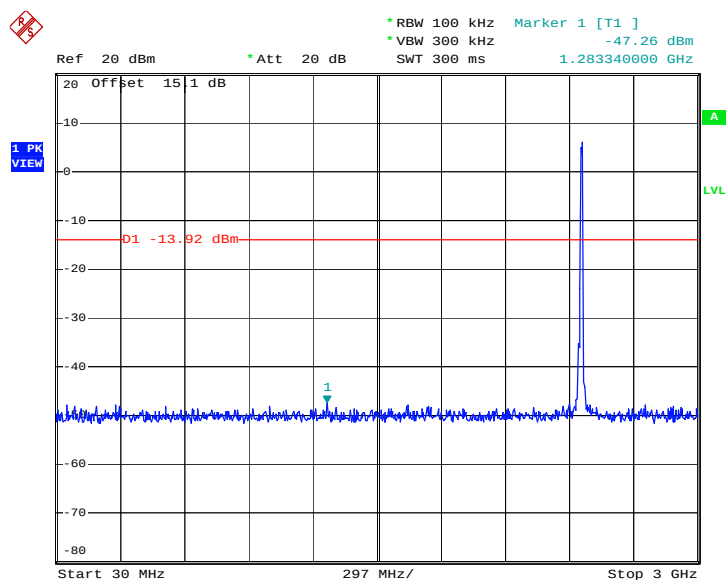
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


Date: 1.FEB.2012 18:37:06



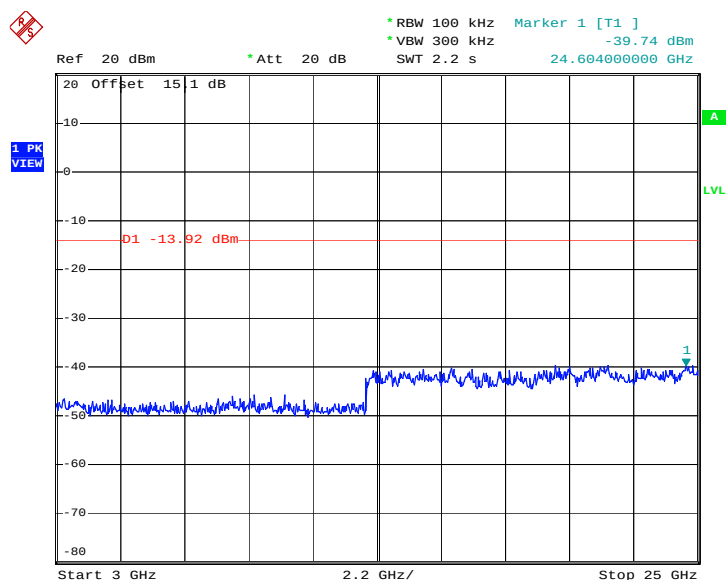
Test Mode :	Mode 3	Temperature :	24~25℃
Test Band :	802.11b	Relative Humidity :	48~49%
Test Channel :	11	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



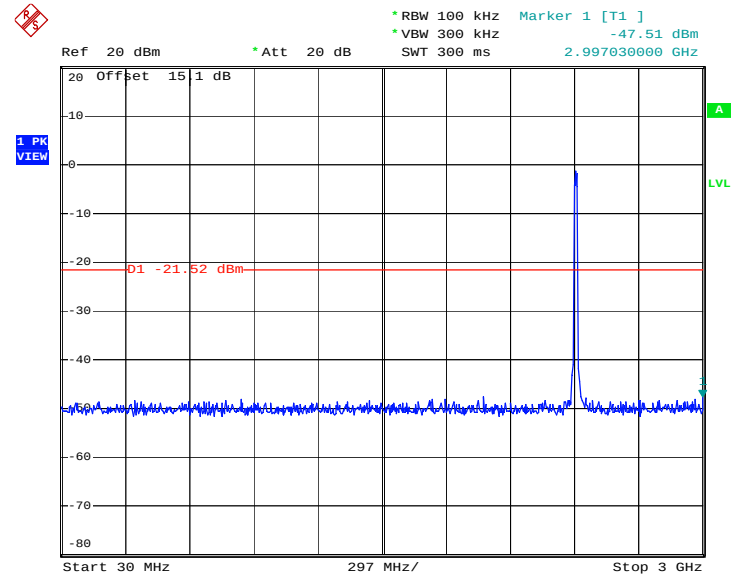
Date: 1.FEB.2012 18:53:58

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

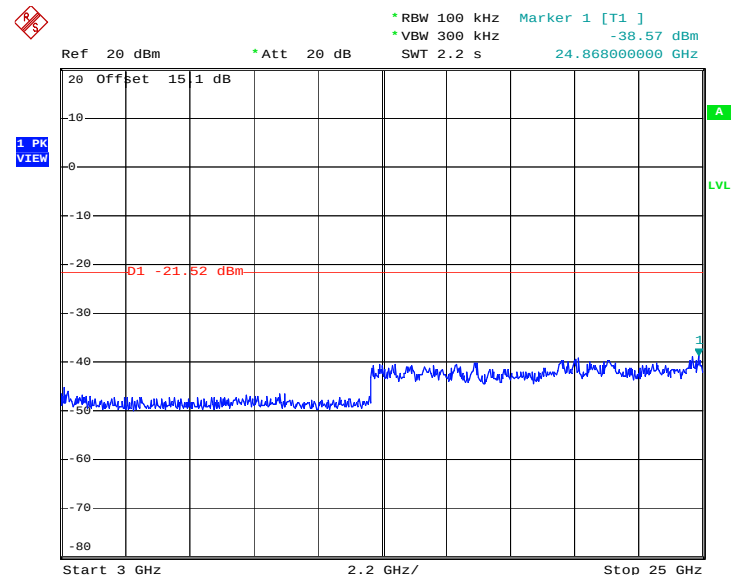


Date: 1.FEB.2012 18:54:15

Test Mode :	Mode 4	Temperature :	24~25°C
Test Band :	802.11g	Relative Humidity :	48~49%
Test Channel :	01	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 1.FEB.2012 19:12:41

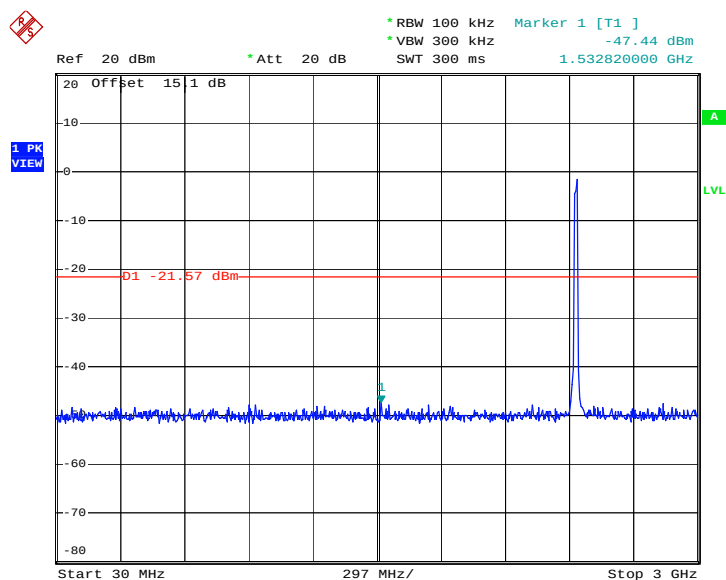
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


Date: 1.FEB.2012 19:12:58



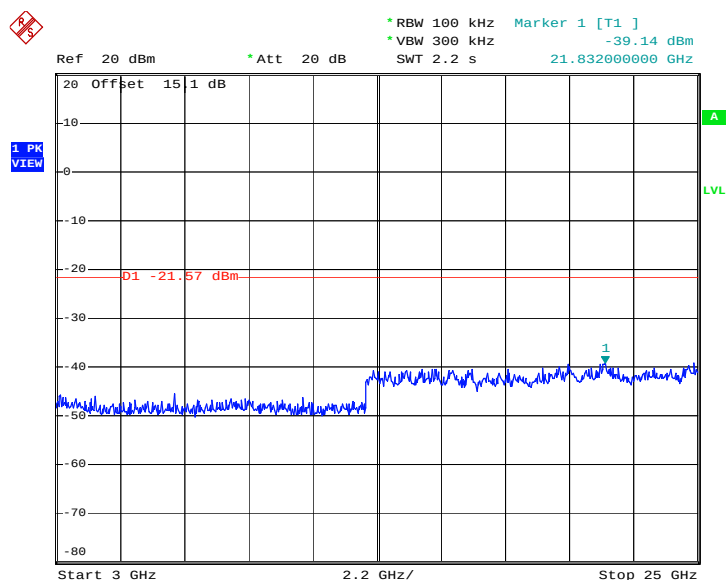
Test Mode :	Mode 5	Temperature :	24~25
Test Band :	802.11g	Relative Humidity :	48~49
Test Channel :	06	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 1.FEB.2012 19:30:26

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

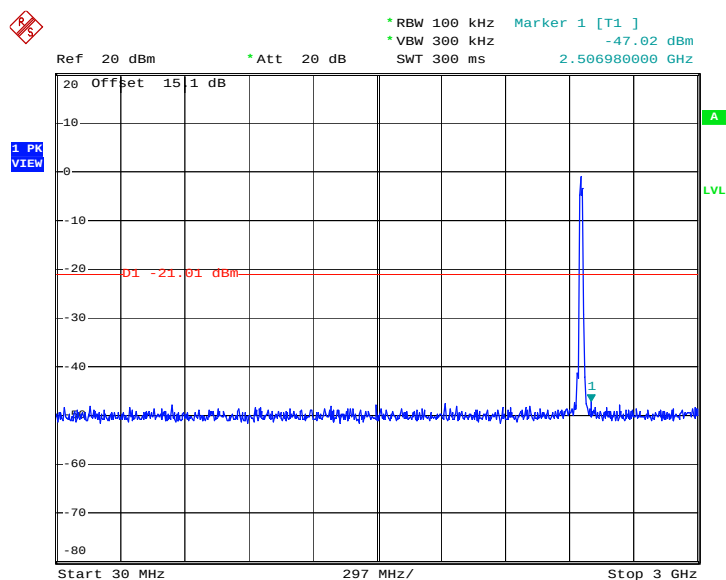


Date: 1.FEB.2012 19:30:43



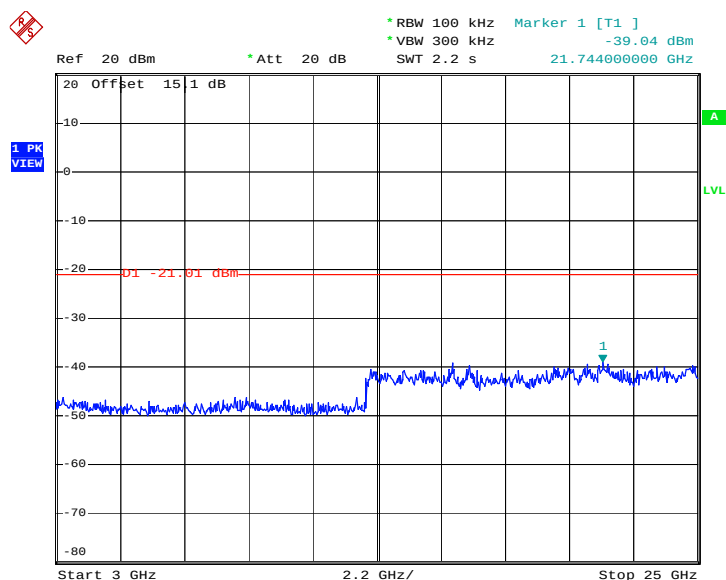
Test Mode :	Mode 6	Temperature :	24~25℃
Test Band :	802.11g	Relative Humidity :	48~49%
Test Channel :	11	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



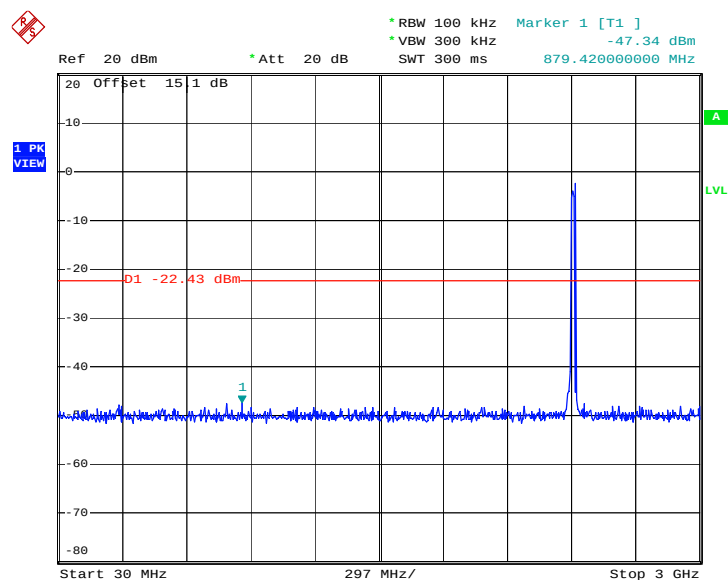
Date: 1.FEB.2012 19:46:47

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

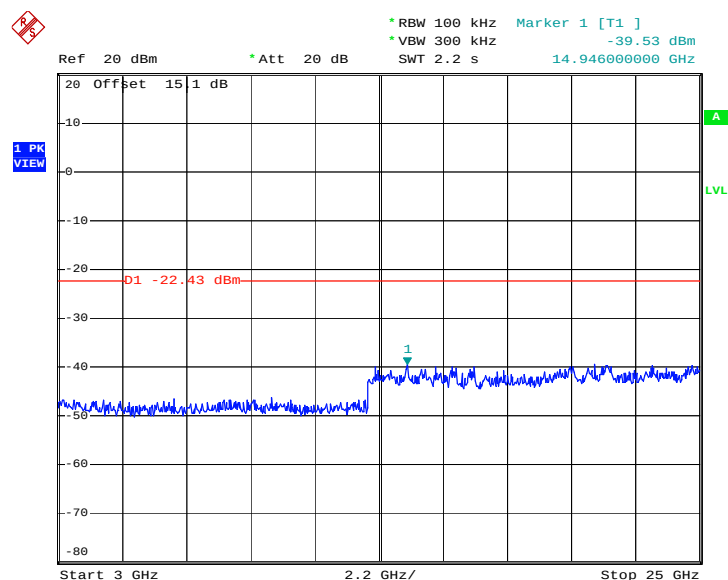


Date: 1.FEB.2012 19:47:04

Test Mode :	Mode 7	Temperature :	24~25°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	48~49%
Test Channel :	01	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


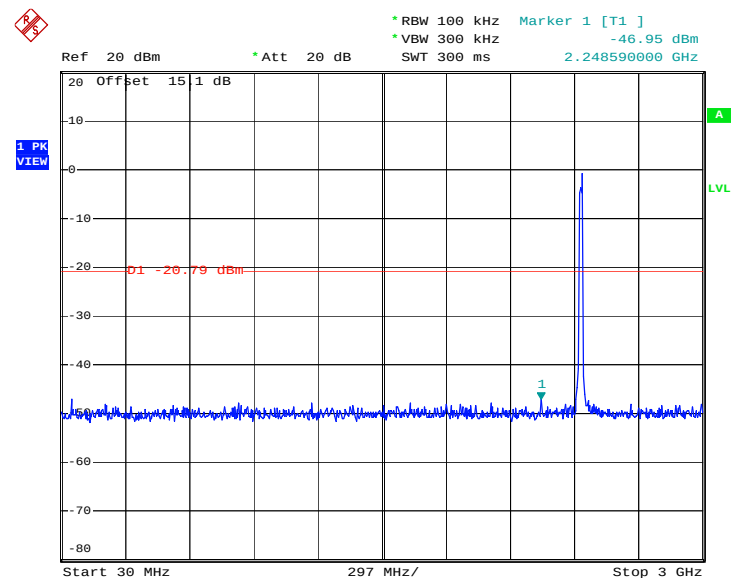
Date: 1.FEB.2012 20:12:55

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


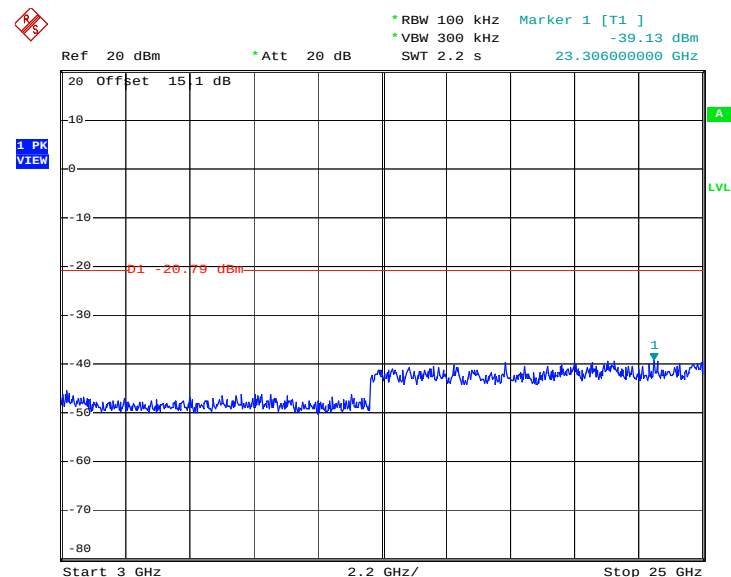
Date: 1.FEB.2012 20:13:12



Test Mode :	Mode 8	Temperature :	24~25°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	48~49%
Test Channel :	06	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 1.FEB.2012 20:23:55

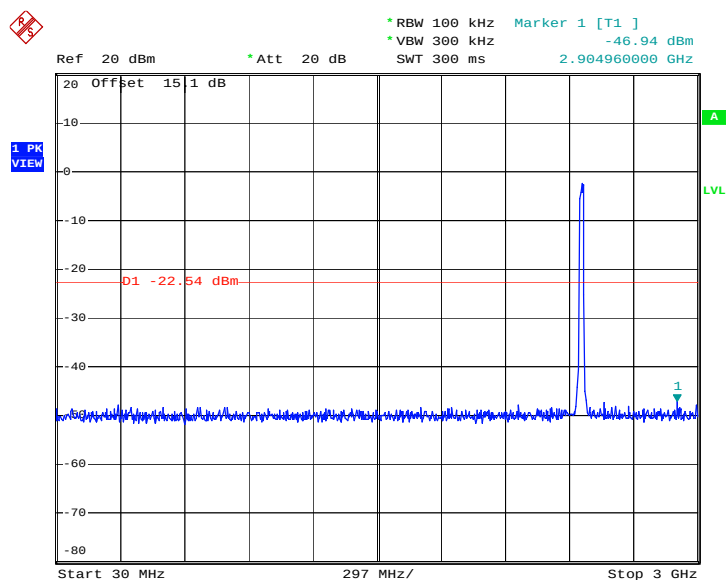
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 1.FEB.2012 20:24:12



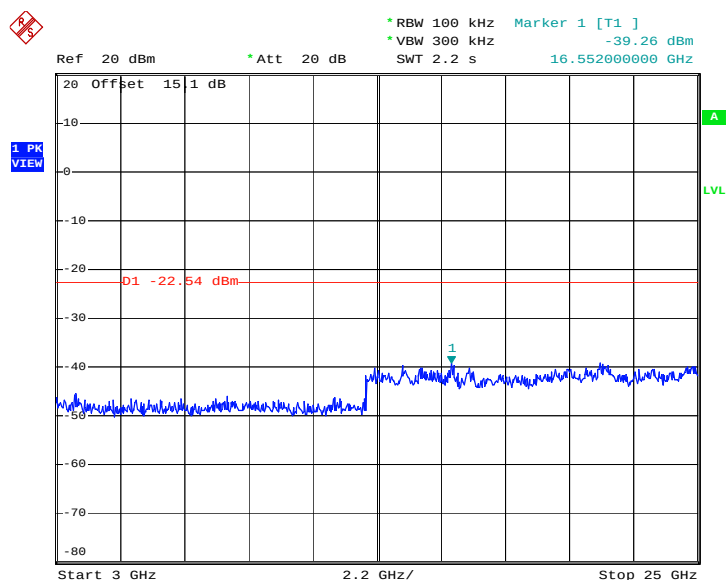
Test Mode :	Mode 9	Temperature :	24~25℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	48~49%
Test Channel :	11	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 1.FEB.2012 20:45:53

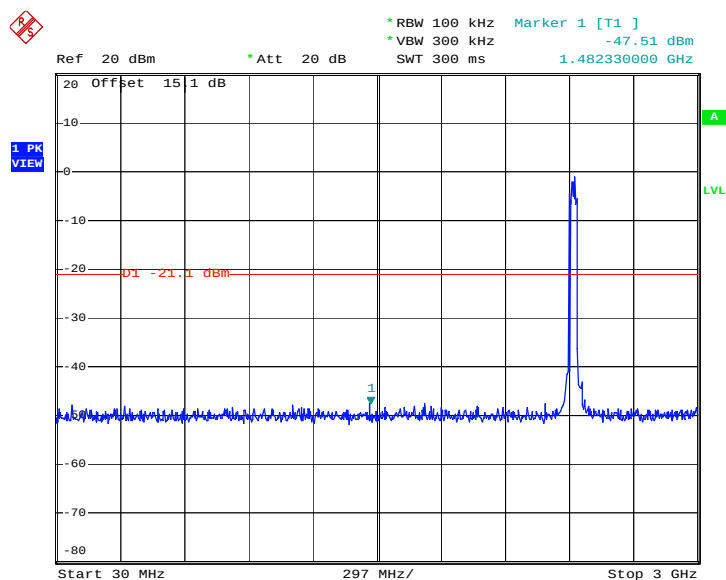
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



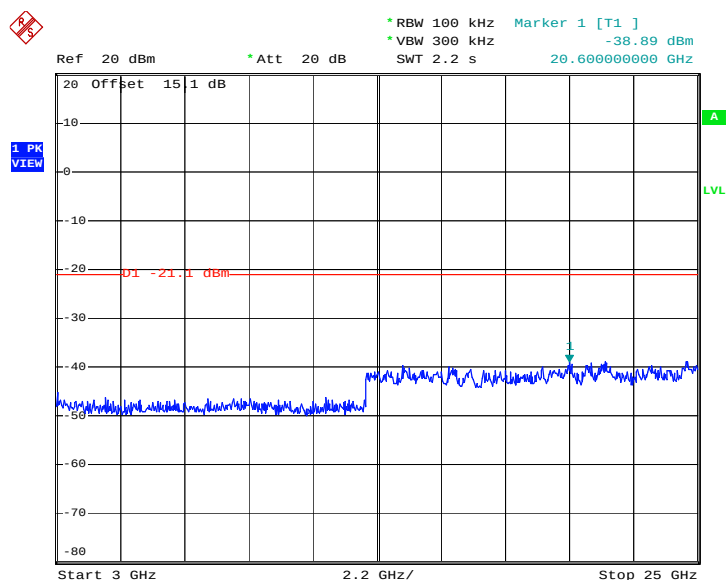
Date: 1.FEB.2012 20:46:10



Test Mode :	Mode 10	Temperature :	24~25℃
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	48~49%
Test Channel :	03	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

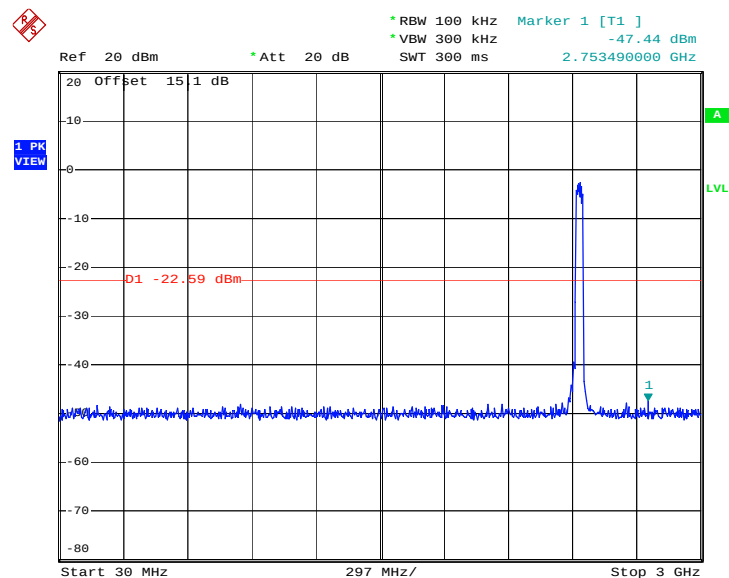
Date: 7.FEB.2012 20:04:47

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

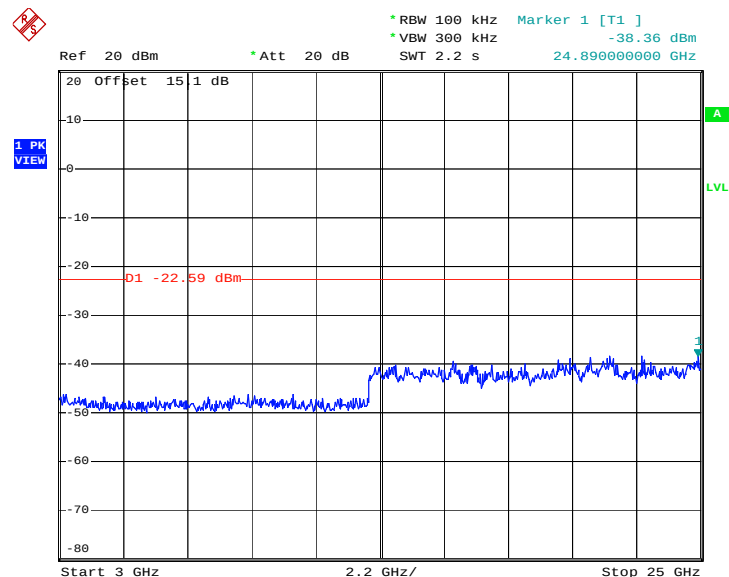
Date: 7.FEB.2012 20:05:04



Test Mode :	Mode 11	Temperature :	24~25°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	48~49%
Test Channel :	06	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 7.FEB.2012 20:16:25

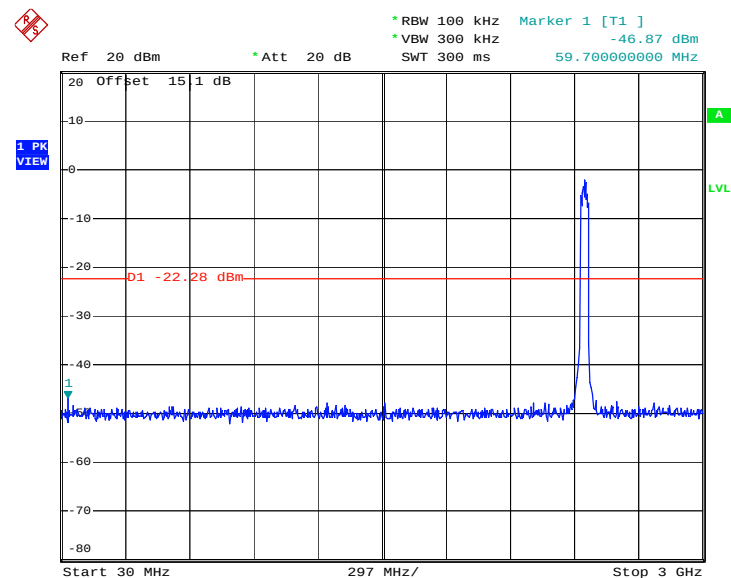
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 7.FEB.2012 20:16:42



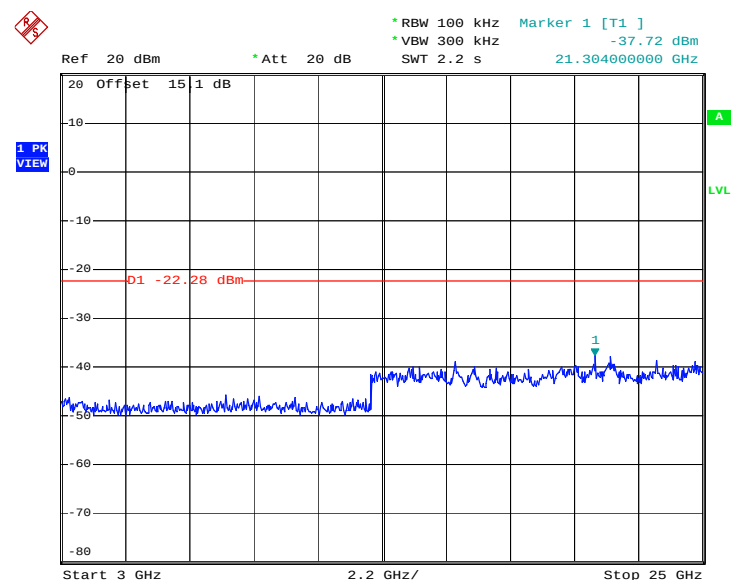
Test Mode :	Mode 12	Temperature :	24~25°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	48~49%
Test Channel :	09	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 7.FEB.2012 20:29:23

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 7.FEB.2012 20:29:40

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.

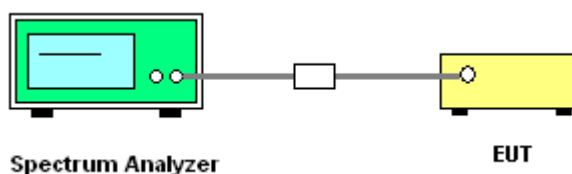
3.5.2 Measuring Instruments

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

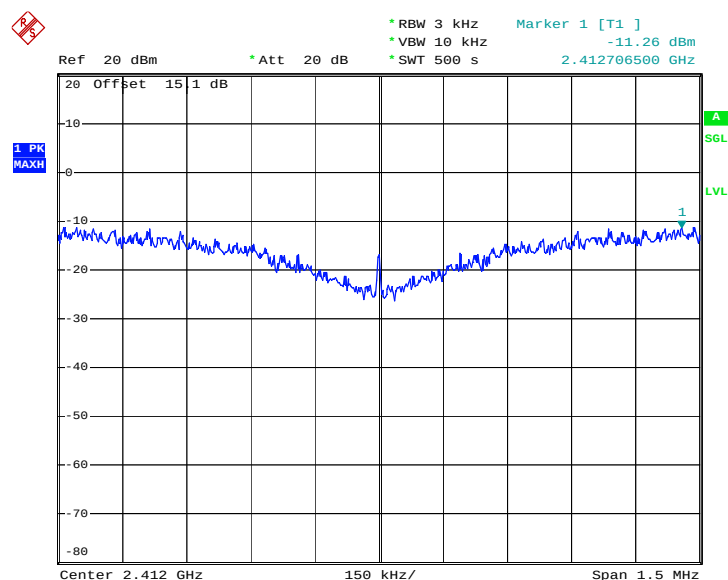


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	24~25℃
Test Engineer :	Zhi Lu	Relative Humidity :	48~49%

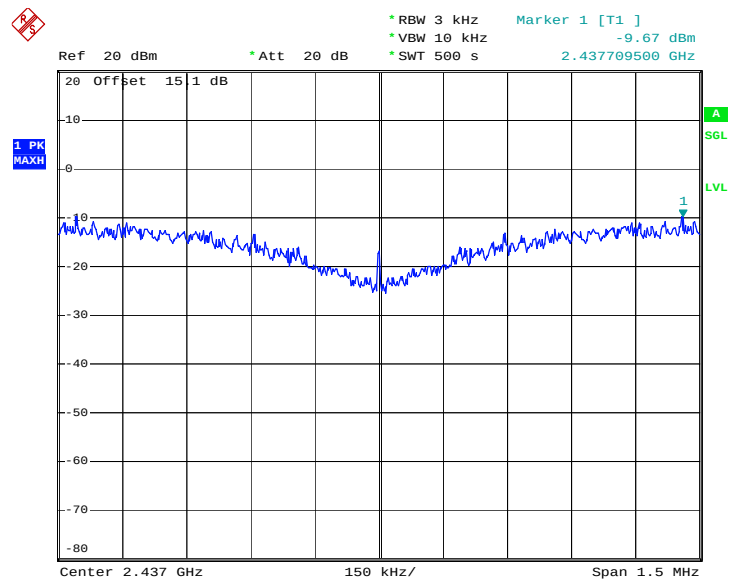
Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-11.26	8	Pass
06	2437	-9.67	8	Pass
11	2462	-3.25	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01



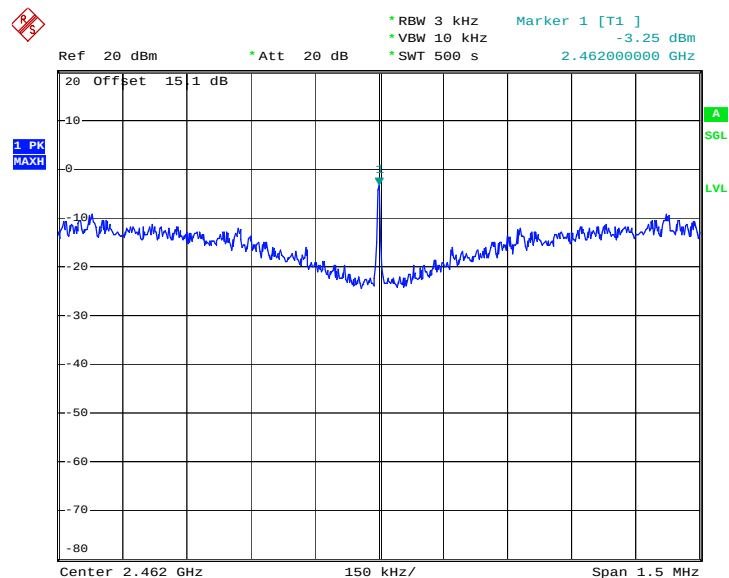
Date: 1.FEB.2012 18:28:44

Mode 2 : PSD Plot on 802.11b Channel 06



Date: 1.FEB.2012 18:48:41

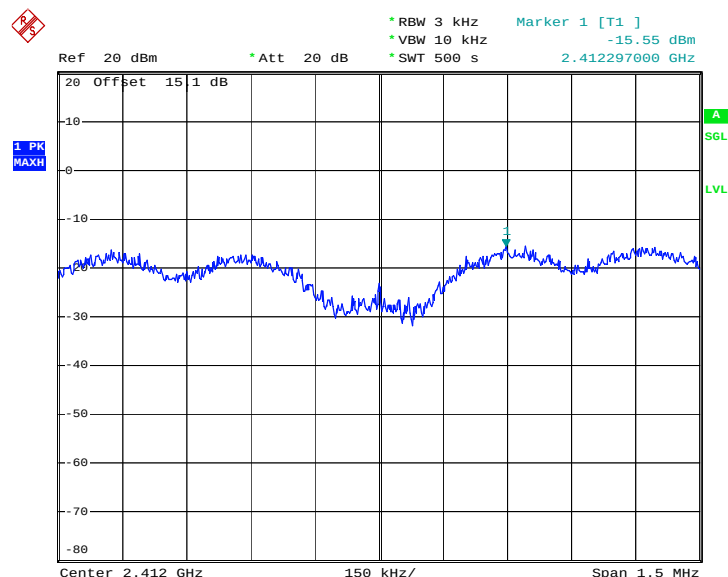
Mode 3 : PSD Plot on 802.11b Channel 11



Date: 1.FEB.2012 19:04:34

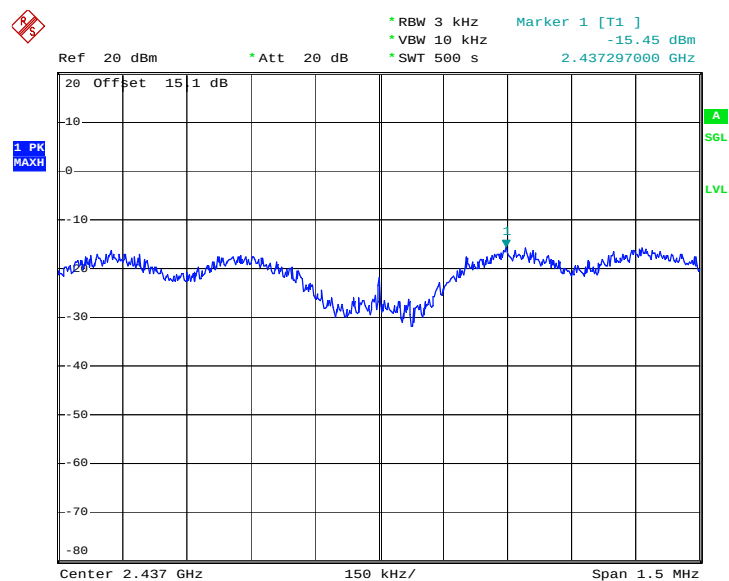
Test Mode :	Mode 4, 5, 6	Temperature :	24~25℃
Test Engineer :	Zhi Lu	Relative Humidity :	48~49%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-15.55	8	Pass
06	2437	-15.45	8	Pass
11	2462	-15.00	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01


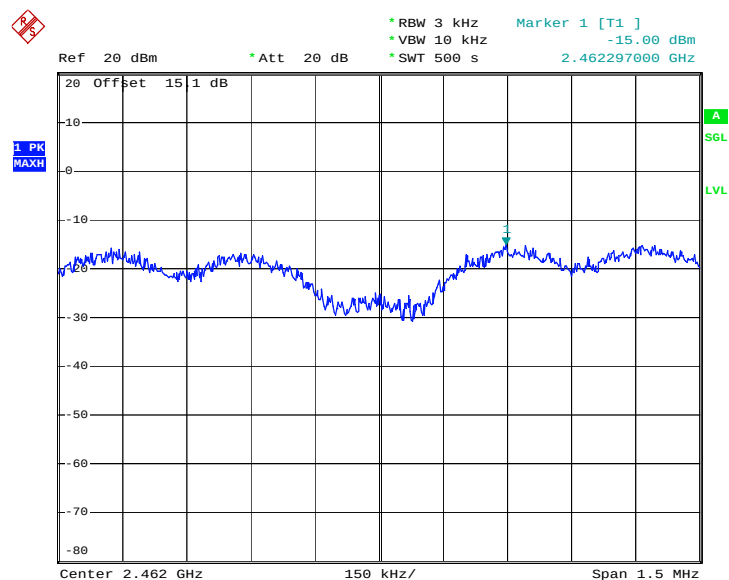
Date: 1.FEB.2012 19:24:30

Mode 5 : PSD Plot on 802.11g Channel 06



Date: 1.FEB.2012 19:40:45

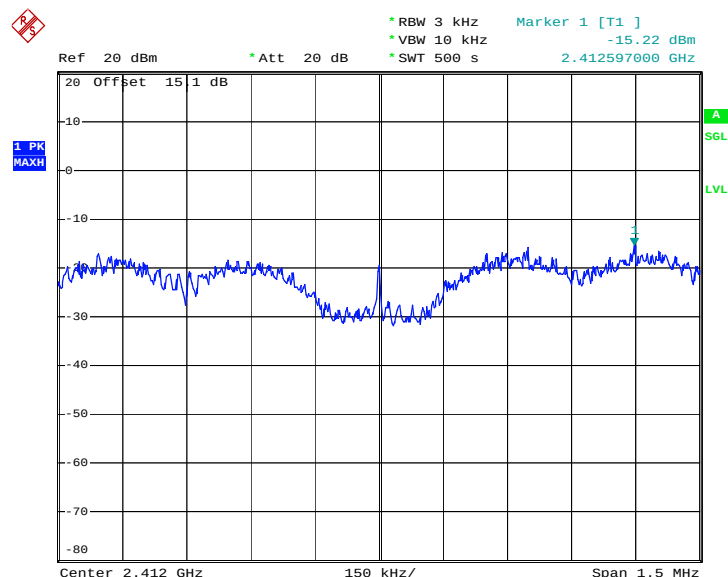
Mode 6 : PSD Plot on 802.11g Channel 11



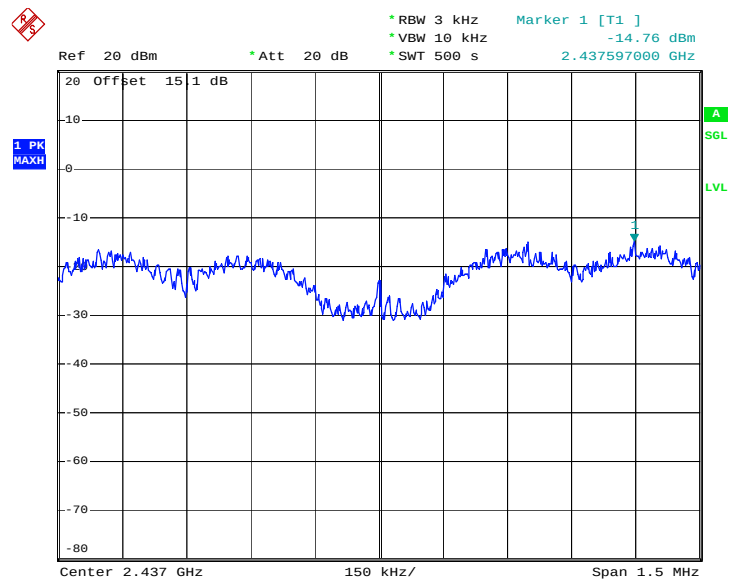
Date: 1.FEB.2012 19:57:23

Test Mode :	Mode 7, 8, 9	Temperature :	24~25℃
Test Engineer :	Zhi Lu	Relative Humidity :	48~49%

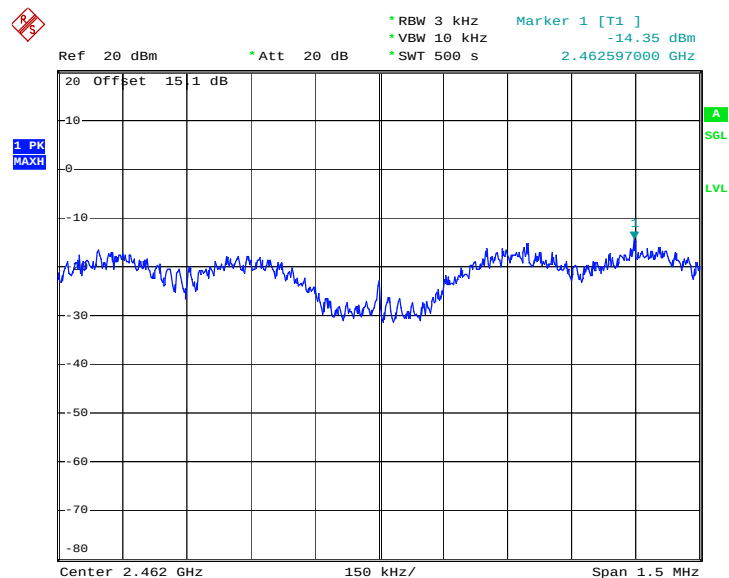
Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-15.22	8	Pass
06	2437	-14.76	8	Pass
11	2462	-14.35	8	Pass

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


Date: 1.FEB.2012 20:10:28

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


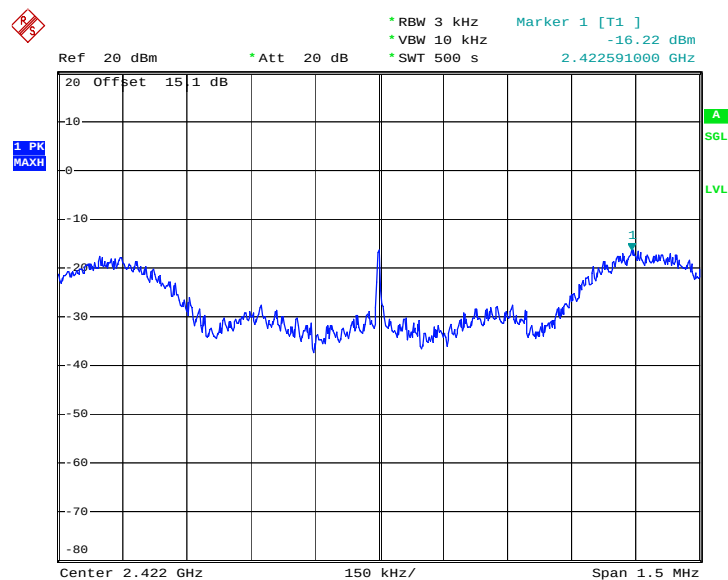
Date: 1.FEB.2012 20:34:13

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


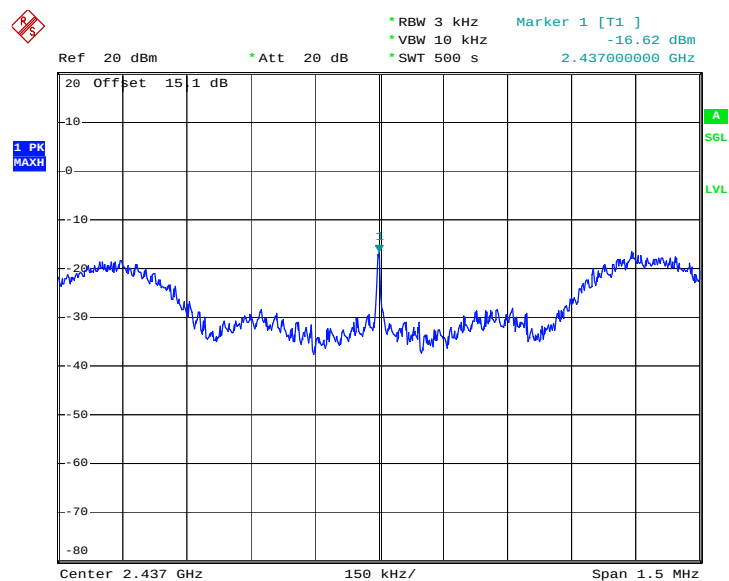
Date: 1.FEB.2012 20:55:24

Test Mode :	Mode 10, 11, 12	Temperature :	24~25
Test Engineer :	Zhi Lu	Relative Humidity :	48~49

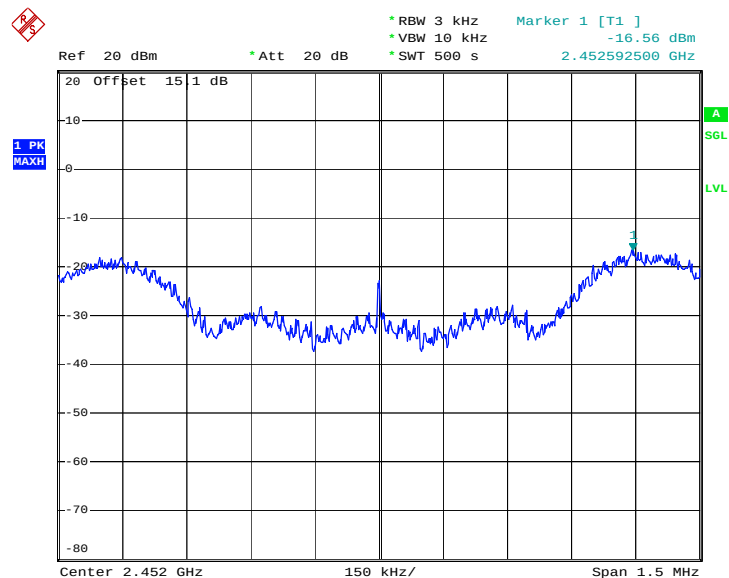
Channel	Frequency (MHz)	802.11n (BW 40MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	-16.22	8	Pass
06	2437	-16.62	8	Pass
09	2452	-16.56	8	Pass

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


Date: 7.FEB.2012 20:14:05

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


Date: 7.FEB.2012 20:25:22

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


Date: 7.FEB.2012 20:38:52

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.

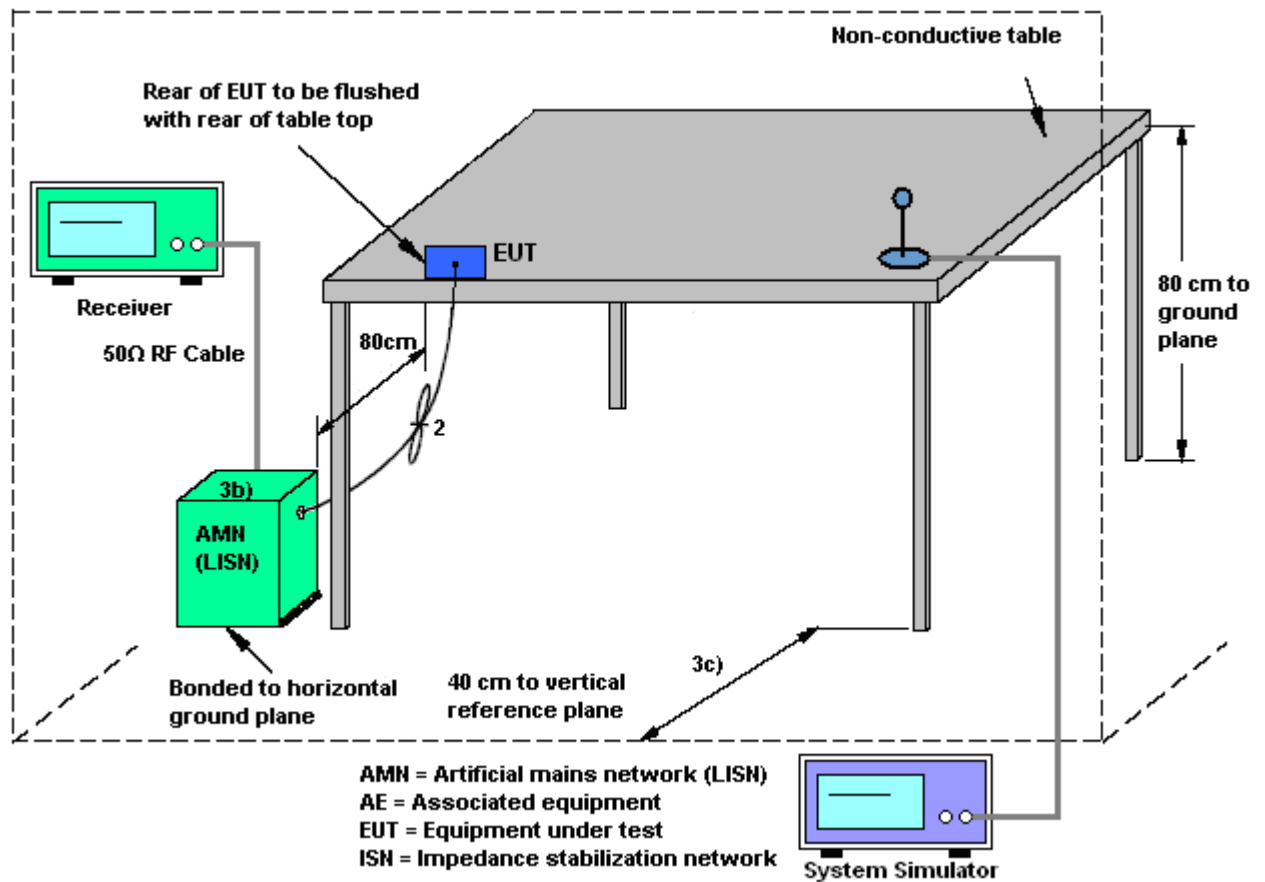
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

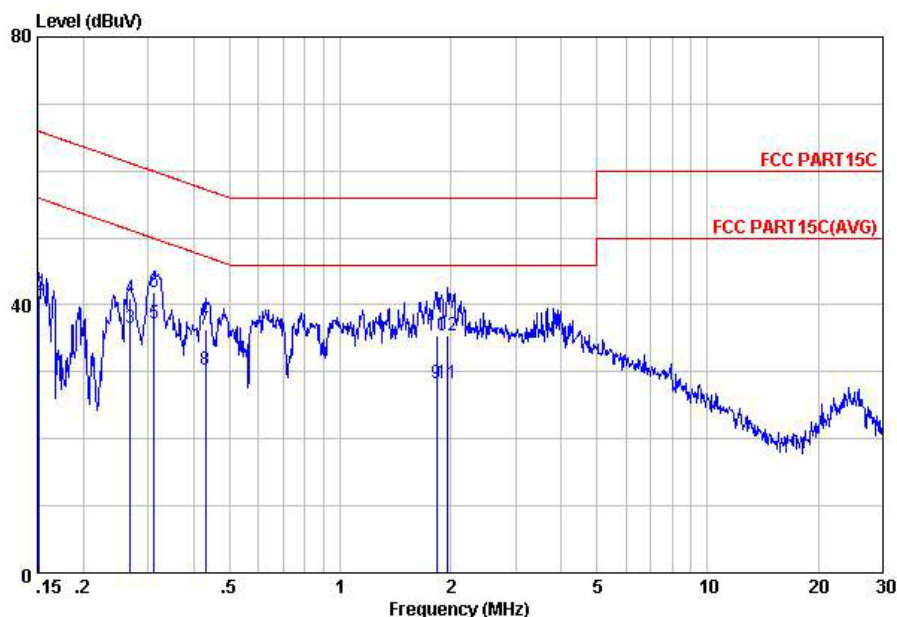
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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

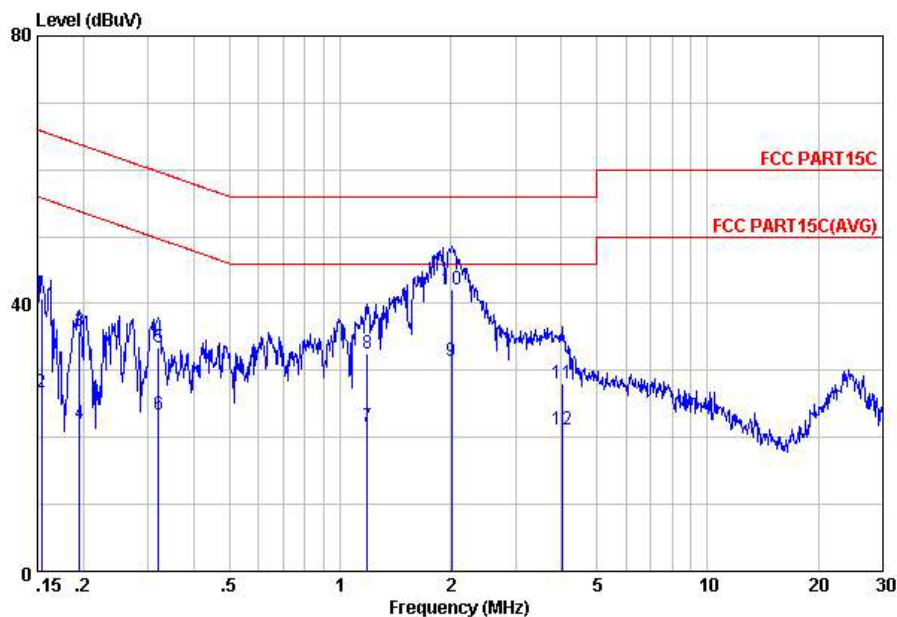
Test Mode :	Mode 1	Temperature :	21~22°C
Test Engineer :	Jack Li	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM 850 Idle + Bluetooth Link + WIFI Link + Adapter + Earphone + FM Rx		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
Condition: FCC PART15C LISN-100807 LINE
Project : (FR) 220201
mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBμV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBμV	dBμV	dB	dB	
1	0.15	30.67	-25.24	55.91	20.60	-0.07	10.14	Average
2	0.15	41.37	-24.54	65.91	31.30	-0.07	10.14	QP
3	0.27	36.59	-14.57	51.16	26.50	-0.07	10.16	Average
4	0.27	40.99	-20.17	61.16	30.90	-0.07	10.16	QP
5	0.31	37.20	-12.73	49.93	27.10	-0.07	10.17	Average
6	0.31	42.00	-17.93	59.93	31.90	-0.07	10.17	QP
7	0.43	36.42	-20.82	57.24	26.30	-0.08	10.20	QP
8	0.43	30.42	-16.82	47.24	20.30	-0.08	10.20	Average
9	1.83	28.41	-17.59	46.00	18.20	-0.11	10.32	Average
10	1.83	35.51	-20.49	56.00	25.30	-0.11	10.32	QP
11	1.96	28.22	-17.78	46.00	18.00	-0.11	10.33	Average
12	1.96	35.42	-20.58	56.00	25.20	-0.11	10.33	QP

Test Mode :	Mode 1	Temperature :	21~22°C
Test Engineer :	Jack Li	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM 850 Idle + Bluetooth Link + WIFI Link + Adapter + Earphone + FM Rx		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
 Condition: FCC PART15C LISN-100807 NEUTRAL
 Project : (FR) 220201
 mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
1	0.15	40.85	-24.93	65.78	30.80	-0.09	10.14	QP
2	0.15	26.65	-29.13	55.78	16.60	-0.09	10.14	Average
3	0.20	35.78	-28.02	63.80	25.70	-0.07	10.15	QP
4	0.20	21.98	-31.82	53.80	11.90	-0.07	10.15	Average
5	0.32	33.50	-26.21	59.71	23.40	-0.08	10.18	QP
6	0.32	23.30	-26.41	49.71	13.20	-0.08	10.18	Average
7	1.18	21.68	-24.32	46.00	11.49	-0.09	10.28	Average
8	1.18	32.48	-23.52	56.00	22.29	-0.09	10.28	QP
9	2.01	31.52	-14.48	46.00	21.30	-0.11	10.33	Average
10	2.01	42.22	-13.78	56.00	32.00	-0.11	10.33	QP
11	4.01	28.16	-27.84	56.00	17.90	-0.13	10.39	QP
12	4.01	21.06	-24.94	46.00	10.80	-0.13	10.39	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

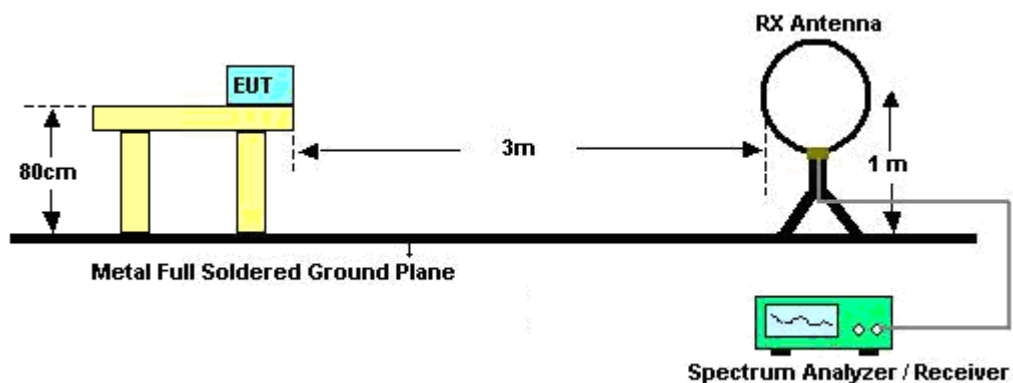
See list of measuring instruments of this test report.

3.7.3 Test Procedures

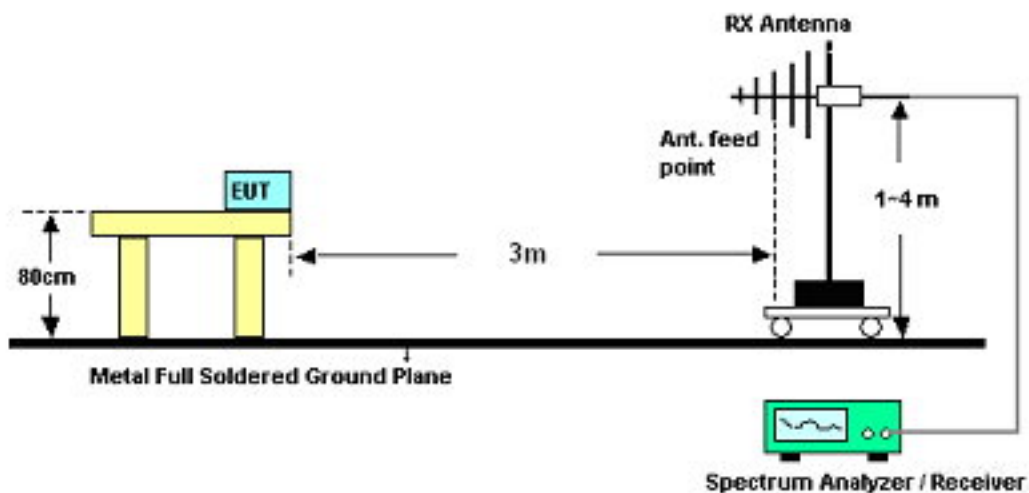
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep =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

3.7.4 Test Setup

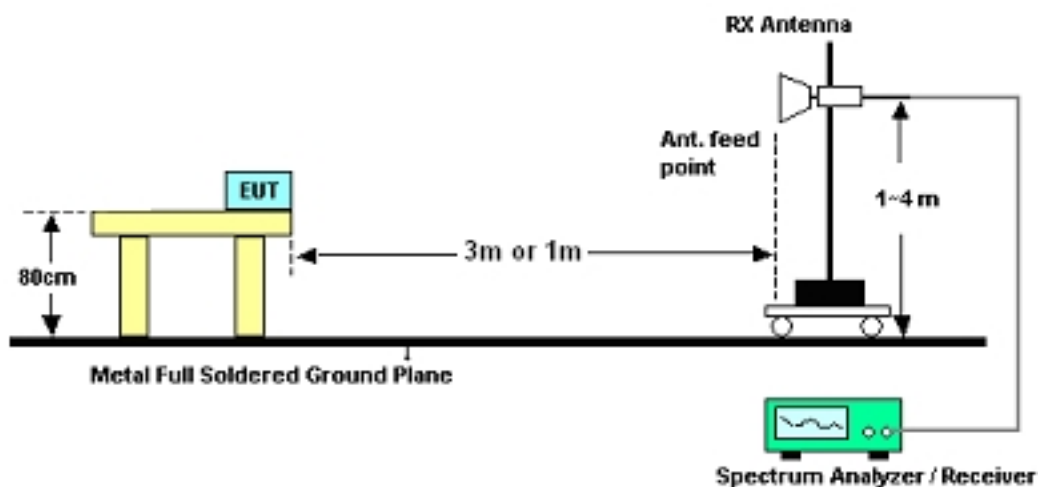
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

Test Engineer :	Jack Li	Temperature :	21~22℃	
		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 = $40 \log (\text{specific distance} / \text{test distance})$ (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 :	21~22℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Jack Li	Polarization :	Horizontal
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
34.05	19.63	-20.37	40	33.93	15.56	0.23	30.09	-	-	Peak
124.5	18.5	-25	43.5	36.26	11.76	0.46	29.98	-	-	Peak
227.37	20.44	-25.56	46	39.07	10.67	0.63	29.93	-	-	Peak
827.1	25.26	-20.74	46	33.4	20.22	1.27	29.63	-	-	Peak
936.3	27.39	-18.61	46	34.93	20.67	1.32	29.53	100	81	Peak
951	30.28	-23.72	54	37.76	20.73	1.33	29.54	-	-	Peak
2390	50.7	-23.3	74	48.42	32.86	3.47	34.05	200	0	Peak
2390	39.07	-14.93	54	36.79	32.86	3.47	34.05	200	0	Average
2412	90.44	-	-	88.11	32.89	3.52	34.08	200	0	Peak
2412	86.28	-	-	83.95	32.89	3.52	34.08	200	0	Average
2495.25	49.4	-24.6	74	46.86	33.05	3.72	34.23	200	0	Peak
2495.25	37.73	-16.27	54	35.19	33.05	3.72	34.23	200	0	Average
4824	54.5	-19.5	74	46.63	35.17	4.97	32.27	100	66	Peak
4824	46.49	-7.51	54	38.62	35.17	4.97	32.27	100	66	Average

Test Mode :	Mode 1	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
43.23	26.75	-13.25	40	46.56	10.03	0.27	30.11	100	66	Peak
88.86	22.37	-21.13	43.5	43.36	8.61	0.39	29.99	-	-	Peak
102.36	21.92	-21.58	43.5	40.59	10.87	0.42	29.96	-	-	Peak
889.4	24.43	-21.57	46	32.18	20.46	1.3	29.51	-	-	Peak
939.8	28.86	-17.14	46	36.37	20.69	1.33	29.53	-	-	Peak
951	29.58	-24.42	54	37.06	20.73	1.33	29.54	-	-	Peak
2390	50.78	-23.22	74	48.5	32.86	3.47	34.05	100	16	Peak
2390	38.65	-15.35	54	36.37	32.86	3.47	34.05	100	16	Average
2412	92.14	-	-	89.81	32.89	3.52	34.08	100	350	Peak
2412	88	-	-	85.67	32.89	3.52	34.08	100	350	Average
2496.39	49.68	-24.32	74	47.14	33.05	3.72	34.23	100	0	Peak
2496.39	38.16	-15.84	54	35.62	33.05	3.72	34.23	100	0	Average
4824	54.96	-19.04	74	47.09	35.17	4.97	32.27	100	0	Peak
4824	46.84	-7.16	54	38.97	35.17	4.97	32.27	100	0	Average

Test Mode :	Mode 2	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
31.89	20.59	-19.41	40	33.89	16.55	0.24	30.09	100	301	Peak
124.23	18.19	-25.31	43.5	35.95	11.76	0.46	29.98	-	-	Peak
225.48	20.42	-25.58	46	39.14	10.59	0.63	29.94	-	-	Peak
830.6	25.66	-20.34	46	33.75	20.27	1.27	29.63	-	-	Peak
878.9	25.07	-20.93	46	32.86	20.47	1.29	29.55	-	-	Peak
951	30.93	-23.07	54	38.41	20.73	1.33	29.54	-	-	Peak
2355.6	50.28	-23.72	74	48.07	32.81	3.38	33.98	200	12	Peak
2355.6	37.47	-16.53	54	35.26	32.81	3.38	33.98	200	12	Average
2437	92.2	-	-	89.8	32.95	3.6	34.15	200	353	Peak
2437	88.03	-	-	85.63	32.95	3.6	34.15	200	353	Average
2492.02	49.91	-24.09	74	47.37	33.05	3.72	34.23	200	20	Peak
2492.02	37.62	-16.38	54	35.08	33.05	3.72	34.23	200	20	Average
4876	54.58	-19.42	74	46.69	35.18	4.98	32.27	200	0	Peak
4876	46.56	-7.44	54	38.67	35.18	4.98	32.27	200	0	Average

Test Mode :	Mode 2	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
32.16	21.4	-18.6	40	34.7	16.55	0.24	30.09	-	-	Peak
43.23	26.72	-13.28	40	46.53	10.03	0.27	30.11	100	21	Peak
88.86	22.65	-20.85	43.5	43.64	8.61	0.39	29.99	-	-	Peak
878.2	25.25	-20.75	46	33.04	20.47	1.29	29.55	-	-	Peak
939.8	29.09	-16.91	46	36.6	20.69	1.33	29.53	-	-	Peak
951	30.69	-23.31	54	38.17	20.73	1.33	29.54	-	-	Peak
2363.39	49.89	-24.11	74	47.68	32.81	3.38	33.98	100	10	Peak
2363.39	37.5	-16.5	54	35.29	32.81	3.38	33.98	100	10	Average
2437	94.87	-	-	92.47	32.95	3.6	34.15	100	350	Peak
2437	90.77	-	-	88.37	32.95	3.6	34.15	100	350	Average
2487.27	49.83	-24.17	74	47.34	33.01	3.68	34.2	100	10	Peak
2487.27	37.58	-16.42	54	35.09	33.01	3.68	34.2	100	10	Average
4874	54.18	-19.82	74	46.29	35.18	4.98	32.27	100	0	Peak
4874	46.47	-7.53	54	38.58	35.18	4.98	32.27	100	0	Average

Test Mode :	Mode 3	Temperature :	21~22℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
31.89	20.91	-19.09	40	34.21	16.55	0.24	30.09	100	188	Peak
88.86	20.23	-23.27	43.5	41.22	8.61	0.39	29.99	-	-	Peak
221.7	19.58	-26.42	46	38.68	10.25	0.62	29.97	-	-	Peak
778.1	24.37	-21.63	46	32.85	19.87	1.22	29.57	-	-	Peak
832	25.36	-20.64	46	33.43	20.3	1.27	29.64	-	-	Peak
951	30.73	-23.27	54	38.21	20.73	1.33	29.54	-	-	Peak
2386.57	49.78	-24.22	74	47.5	32.86	3.47	34.05	200	201	Peak
2386.57	37.59	-16.41	54	35.31	32.86	3.47	34.05	200	201	Average
2462	93.68	-	-	91.23	32.98	3.64	34.17	200	0	Peak
2462	90.01	-	-	87.56	32.98	3.64	34.17	200	0	Average
2488.03	54.42	-19.58	74	51.88	33.05	3.72	34.23	200	18	Peak
2488.03	49.77	-4.23	54	47.23	33.05	3.72	34.23	200	18	Average
4924	54.83	-19.17	74	46.91	35.19	4.99	32.26	100	20	Peak
4924	46.92	-7.08	54	39	35.19	4.99	32.26	100	20	Average

Test Mode :	Mode 3	Temperature :	21~22℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
43.23	26.45	-13.55	40	46.26	10.03	0.27	30.11	100	326	Peak
61.05	19.13	-20.87	40	43.67	5.28	0.31	30.13	-	-	Peak
88.86	23.89	-19.61	43.5	44.88	8.61	0.39	29.99	-	-	Peak
892.9	23.98	-22.02	46	31.72	20.46	1.3	29.5	-	-	Peak
939.8	28.65	-17.35	46	36.16	20.69	1.33	29.53	-	-	Peak
951	30.37	-23.63	54	37.85	20.73	1.33	29.54	-	-	Peak
2363.77	49.13	-24.87	74	46.92	32.81	3.38	33.98	100	0	Peak
2363.77	37.38	-16.62	54	35.17	32.81	3.38	33.98	100	0	Average
2462	94.63	-	-	92.18	32.98	3.64	34.17	100	3	Peak
2462	90.91	-	-	88.46	32.98	3.64	34.17	100	3	Average
2488.03	54.58	-19.42	74	52.04	33.05	3.72	34.23	100	3	Peak
2488.03	50.36	-3.64	54	47.82	33.05	3.72	34.23	100	3	Average
4924	54.24	-19.76	74	46.32	35.19	4.99	32.26	100	0	Peak
4924	46.49	-7.51	54	38.57	35.19	4.99	32.26	100	0	Average

Test Mode :	Mode 4	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
31.35	19.02	-20.98	40	31.56	17.29	0.25	30.08	-	-	Peak
102.36	19.32	-24.18	43.5	37.99	10.87	0.42	29.96	-	-	Peak
185.52	19.64	-23.86	43.5	40.53	8.45	0.57	29.91	-	-	Peak
839.7	26.4	-19.6	46	34.36	20.41	1.28	29.65	100	16	Peak
876.1	25.61	-20.39	46	33.4	20.48	1.29	29.56	-	-	Peak
944	30.29	-23.71	54	37.78	20.71	1.33	29.53	-	-	Peak
2390	49.89	-24.11	74	47.61	32.86	3.47	34.05	200	0	Peak
2390	37.93	-16.07	54	35.65	32.86	3.47	34.05	200	0	Average
2412	95.98	-	-	93.65	32.89	3.52	34.08	200	18	Peak
2412	83.93	-	-	81.6	32.89	3.52	34.08	200	18	Average
2485.18	51.8	-22.2	74	49.31	33.01	3.68	34.2	200	0	Peak
2485.18	37.72	-16.28	54	35.23	33.01	3.68	34.2	200	0	Average

Test Mode :	Mode 4	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
34.05	21.36	-18.64	40	35.66	15.56	0.23	30.09	100	103	Peak
93.18	21.19	-22.31	43.5	41.26	9.51	0.4	29.98	-	-	Peak
185.79	18.96	-24.54	43.5	39.85	8.46	0.57	29.92	-	-	Peak
551.3	22.6	-23.4	46	32.78	18.5	1	29.68	-	-	Peak
844.6	23.72	-22.28	46	31.63	20.46	1.28	29.65	-	-	Peak
944.7	26.4	-27.6	54	33.9	20.71	1.33	29.54	-	-	Peak
2390	60.02	-13.98	74	57.74	32.86	3.47	34.05	100	351	Peak
2390	44.91	-9.09	54	42.63	32.86	3.47	34.05	100	351	Average
2412	101.74	-	-	99.41	32.89	3.52	34.08	100	353	Peak
2412	88.85	-	-	86.52	32.89	3.52	34.08	100	353	Average
2494.68	49.8	-24.2	74	47.26	33.05	3.72	34.23	100	0	Peak
2494.68	36.72	-17.28	54	34.18	33.05	3.72	34.23	100	0	Average
4822	60.15	-13.85	74	52.28	35.17	4.97	32.27	100	5	Peak
4822	46.17	-7.83	54	38.3	35.17	4.97	32.27	100	5	Average

Test Mode :	Mode 5	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
31.08	19.44	-20.56	40	31.98	17.29	0.25	30.08	-	-	Peak
123.96	16.92	-26.58	43.5	34.68	11.76	0.46	29.98	-	-	Peak
185.25	17.3	-26.2	43.5	38.19	8.45	0.57	29.91	-	-	Peak
394.5	21.88	-24.12	46	34.99	15.89	0.84	29.84	-	-	Peak
832	26.27	-19.73	46	34.34	20.3	1.27	29.64	-	-	Peak
936.3	28.32	-17.68	46	35.86	20.67	1.32	29.53	100	336	Peak
2349.9	50.18	-23.82	74	48.01	32.78	3.33	33.94	200	0	Peak
2349.9	36.82	-17.18	54	34.65	32.78	3.33	33.94	200	0	Average
2437	94.83	-	-	92.43	32.95	3.6	34.15	200	10	Peak
2437	82.76	-	-	80.36	32.95	3.6	34.15	200	10	Average
2486.32	50.02	-23.98	74	47.53	33.01	3.68	34.2	200	31	Peak
2486.32	36.81	-17.19	54	34.32	33.01	3.68	34.2	200	31	Average

Test Mode :	Mode 5	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
32.97	21.78	-18.22	40	35.59	16.04	0.24	30.09	100	206	Peak
92.64	19.66	-23.84	43.5	39.73	9.51	0.4	29.98	-	-	Peak
185.25	18.76	-24.74	43.5	39.65	8.45	0.57	29.91	-	-	Peak
540.1	24.54	-21.46	46	34.93	18.31	0.99	29.69	-	-	Peak
841.8	24.38	-21.62	46	32.32	20.43	1.28	29.65	-	-	Peak
944.7	28.04	-25.96	54	35.54	20.71	1.33	29.54	-	-	Peak
2373.46	50.89	-23.11	74	48.65	32.83	3.42	34.01	100	18	Peak
2373.46	37.45	-16.55	54	35.21	32.83	3.42	34.01	100	18	Average
2437	101.15	-	-	98.75	32.95	3.6	34.15	100	0	Peak
2437	88.79	-	-	86.39	32.95	3.6	34.15	100	0	Average
2489.55	50.32	-23.68	74	47.78	33.05	3.72	34.23	100	26	Peak
2489.55	37.15	-16.85	54	34.61	33.05	3.72	34.23	100	26	Average
4876	62.27	-11.73	74	54.38	35.18	4.98	32.27	100	6	Peak
4876	48.05	-5.95	54	40.16	35.18	4.98	32.27	100	6	Average

Test Mode :	Mode 6	Temperature :	21~22℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
32.16	20.18	-19.82	40	33.48	16.55	0.24	30.09	100	236	Peak
186.06	17.47	-26.03	43.5	38.36	8.46	0.57	29.92	-	-	Peak
282.45	18.95	-27.05	46	35.49	12.7	0.71	29.95	-	-	Peak
832.7	24.32	-21.68	46	32.37	20.32	1.27	29.64	-	-	Peak
944.7	27.31	-26.69	54	34.81	20.71	1.33	29.54	-	-	Peak
960.1	25.35	-28.65	54	32.76	20.79	1.34	29.54	-	-	Peak
2373.46	50.1	-23.9	74	47.86	32.83	3.42	34.01	200	12	Peak
2373.46	36.75	-17.25	54	34.51	32.83	3.42	34.01	200	12	Average
2462	94.66	-	-	92.21	32.98	3.64	34.17	200	0	Peak
2462	82.71	-	-	80.26	32.98	3.64	34.17	200	0	Average
2483.5	49.73	-24.27	74	47.24	33.01	3.68	34.2	200	26	Peak
2483.5	37.72	-16.28	54	35.23	33.01	3.68	34.2	200	26	Average

Test Mode :	Mode 6	Temperature :	21~22℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
31.35	21.42	-18.58	40	33.96	17.29	0.25	30.08	100	301	Peak
39.45	18.07	-21.93	40	35.54	12.3	0.25	30.02	-	-	Peak
93.18	18.81	-24.69	43.5	38.88	9.51	0.4	29.98	-	-	Peak
538.7	23.34	-22.66	46	33.78	18.26	0.99	29.69	-	-	Peak
827.8	24.76	-21.24	46	32.9	20.22	1.27	29.63	-	-	Peak
944.7	26.97	-27.03	54	34.47	20.71	1.33	29.54	-	-	Peak
2315.7	50.78	-23.22	74	48.69	32.73	3.22	33.86	100	16	Peak
2315.7	37.71	-16.29	54	35.62	32.73	3.22	33.86	100	16	Average
2462	97.4	-	-	94.95	32.98	3.64	34.17	100	350	Peak
2462	84.99	-	-	82.54	32.98	3.64	34.17	100	350	Average
2483.66	52.67	-21.33	74	50.18	33.01	3.68	34.2	100	0	Peak
2483.66	41.05	-12.95	54	38.56	33.01	3.68	34.2	100	0	Average
4924	57.96	-16.04	74	50.04	35.19	4.99	32.26	100	0	Peak
4924	45.48	-8.52	54	37.56	35.19	4.99	32.26	100	0	Average

Test Mode :	Mode 7	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
31.08	19.15	-20.85	40	31.69	17.29	0.25	30.08	-	-	Peak
130.98	17.26	-26.24	43.5	35.15	11.63	0.47	29.99	-	-	Peak
186.06	18.05	-25.45	43.5	38.94	8.46	0.57	29.92	-	-	Peak
841.1	24.14	-21.86	46	32.09	20.42	1.28	29.65	-	-	Peak
889.4	26.01	-19.99	46	33.76	20.46	1.3	29.51	100	206	Peak
944.7	27.43	-26.57	54	34.93	20.71	1.33	29.54	-	-	Peak
2390	51.65	-22.35	74	49.37	32.86	3.47	34.05	200	18	Peak
2390	38.61	-15.39	54	36.33	32.86	3.47	34.05	200	18	Average
2412	93.15	-	-	90.82	32.89	3.52	34.08	200	0	Peak
2412	80.69	-	-	78.36	32.89	3.52	34.08	200	0	Average
2492.02	49.29	-24.71	74	46.75	33.05	3.72	34.23	200	306	Peak
2492.02	37.15	-16.85	54	34.61	33.05	3.72	34.23	200	306	Average

Test Mode :	Mode 7	Temperature :	21~22℃
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
33.51	21.73	-18.27	40	36.03	15.56	0.23	30.09	100	122	Peak
94.53	18.63	-24.87	43.5	38.4	9.8	0.4	29.97	-	-	Peak
184.98	16.83	-26.67	43.5	37.72	8.45	0.57	29.91	-	-	Peak
532.4	21.7	-24.3	46	32.29	18.11	0.99	29.69	-	-	Peak
839	23.15	-22.85	46	31.13	20.4	1.27	29.65	-	-	Peak
944.7	26.31	-27.69	54	33.81	20.71	1.33	29.54	-	-	Peak
2390	53.22	-20.78	74	50.94	32.86	3.47	34.05	100	28	Peak
2390	39.84	-14.16	54	37.56	32.86	3.47	34.05	100	28	Average
2412	94.74	-	-	92.41	32.89	3.52	34.08	100	350	Peak
2412	83.18	-	-	80.85	32.89	3.52	34.08	100	350	Average
2487.08	50.23	-23.77	74	47.74	33.01	3.68	34.2	100	0	Peak
2487.08	37.14	-16.86	54	34.65	33.01	3.68	34.2	100	0	Average
4824	55.05	-18.95	74	47.18	35.17	4.97	32.27	100	0	Peak
4824	43.11	-10.89	54	35.24	35.17	4.97	32.27	100	0	Average

Test Mode :	Mode 8	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
32.43	19.42	-20.58	40	33.23	16.04	0.24	30.09	-	-	Peak
130.17	17.57	-25.93	43.5	35.39	11.7	0.47	29.99	-	-	Peak
191.19	17.76	-25.74	43.5	38.58	8.55	0.58	29.95	-	-	Peak
394.5	22.57	-23.43	46	35.68	15.89	0.84	29.84	-	-	Peak
838.3	27.1	-18.9	46	35.1	20.38	1.27	29.65	100	106	Peak
944.7	28.97	-25.03	54	36.47	20.71	1.33	29.54	-	-	Peak
2373.27	50.04	-23.96	74	47.8	32.83	3.42	34.01	200	12	Peak
2373.27	36.85	-17.15	54	34.61	32.83	3.42	34.01	200	12	Average
2437	91.45	-	-	89.05	32.95	3.6	34.15	200	6	Peak
2437	79.25	-	-	76.85	32.95	3.6	34.15	200	6	Average
2483.5	50.13	-23.87	74	47.64	33.01	3.68	34.2	200	0	Peak
2483.5	36.8	-17.2	54	34.31	33.01	3.68	34.2	200	0	Average

Test Mode :	Mode 8	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
32.43	23.86	-16.14	40	37.67	16.04	0.24	30.09	100	183	Peak
91.56	16.31	-27.19	43.5	36.79	9.12	0.39	29.99	-	-	Peak
185.25	16.83	-26.67	43.5	37.72	8.45	0.57	29.91	-	-	Peak
539.4	22.15	-23.85	46	32.56	18.29	0.99	29.69	-	-	Peak
834.1	23.35	-22.65	46	31.39	20.33	1.27	29.64	-	-	Peak
944.7	28.09	-25.91	54	35.59	20.71	1.33	29.54	-	-	Peak
2366.62	50.44	-23.56	74	48.23	32.81	3.38	33.98	100	0	Peak
2366.62	37.47	-16.53	54	35.26	32.81	3.38	33.98	100	0	Average
2437	95.72	-	-	93.32	32.95	3.6	34.15	100	0	Peak
2437	84.22	-	-	81.82	32.95	3.6	34.15	100	0	Average
2491.07	49.36	-24.64	74	46.82	33.05	3.72	34.23	100	28	Peak
2491.07	37.67	-16.33	54	35.13	33.05	3.72	34.23	100	28	Average
4874	55.2	-18.8	74	47.31	35.18	4.98	32.27	100	18	Peak
4874	43.17	-10.83	54	35.28	35.18	4.98	32.27	100	18	Average

Test Mode :	Mode 9	Temperature :	21~22℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
31.89	19.09	-20.91	40	32.39	16.55	0.24	30.09	-	-	Peak
133.14	14.26	-29.24	43.5	32.3	11.47	0.48	29.99	-	-	Peak
223.59	15.85	-30.15	46	34.76	10.41	0.63	29.95	-	-	Peak
832	25.61	-20.39	46	33.68	20.3	1.27	29.64	-	-	Peak
889.4	26.57	-19.43	46	34.32	20.46	1.3	29.51	100	335	Peak
946.8	27.93	-26.07	54	35.42	20.72	1.33	29.54	-	-	Peak
2348.95	49.98	-24.02	74	47.81	32.78	3.33	33.94	100	263	Peak
2348.95	36.82	-17.18	54	34.65	32.78	3.33	33.94	100	263	Average
2462	92.68	-	-	90.23	32.98	3.64	34.17	100	360	Peak
2462	80.68	-	-	78.23	32.98	3.64	34.17	100	360	Average
2483.5	51.15	-22.85	74	48.66	33.01	3.68	34.2	100	0	Peak
2483.5	38.22	-15.78	54	35.73	33.01	3.68	34.2	100	0	Average

Test Mode :	Mode 9	Temperature :	21~22℃
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
32.16	22.65	-17.35	40	35.95	16.55	0.24	30.09	100	189	Peak
119.91	17.2	-26.3	43.5	34.92	11.8	0.45	29.97	-	-	Peak
189.84	17.9	-25.6	43.5	38.76	8.5	0.58	29.94	-	-	Peak
779.5	23.01	-22.99	46	31.49	19.87	1.22	29.57	-	-	Peak
871.9	23.83	-22.17	46	31.64	20.49	1.29	29.59	-	-	Peak
944.7	28.17	-25.83	54	35.67	20.71	1.33	29.54	-	-	Peak
2370.61	50.44	-23.56	74	48.2	32.83	3.42	34.01	100	16	Peak
2370.61	37.57	-16.43	54	35.33	32.83	3.42	34.01	100	16	Average
2462	98.06	-	-	95.61	32.98	3.64	34.17	100	6	Peak
2462	86.03	-	-	83.58	32.98	3.64	34.17	100	6	Average
2483.5	55.85	-18.15	74	53.36	33.01	3.68	34.2	100	0	Peak
2483.5	42.76	-11.24	54	40.27	33.01	3.68	34.2	100	0	Average
4926	61.76	-12.24	74	53.84	35.19	4.99	32.26	100	0	Peak
4926	48.18	-5.82	54	40.26	35.19	4.99	32.26	100	0	Average

Test Mode :	Mode 10	Temperature :	21~22℃
Test Channel :	03	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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	19.8	-20.2	40	31.62	18	0.26	30.08	100	0	Peak
130.98	18.26	-25.24	43.5	36.15	11.63	0.47	29.99	-	-	Peak
186.06	18.05	-25.45	43.5	38.94	8.46	0.57	29.92	-	-	Peak
551.3	20.96	-25.04	46	31.14	18.5	1	29.68	-	-	Peak
727.7	21.72	-24.28	46	30.53	19.65	1.16	29.62	-	-	Peak
944.7	26.43	-27.57	54	33.93	20.71	1.33	29.54	-	-	Peak
2390	52.73	-21.27	74	50.45	32.86	3.47	34.05	100	0	Peak
2390	40.54	-13.46	54	38.26	32.86	3.47	34.05	100	0	Average
2422	86.61	-	-	84.25	32.92	3.56	34.12	100	85	Peak
2422	74.35	-	-	71.99	32.92	3.56	34.12	100	85	Average
2483.5	48.05	-25.95	74	45.56	33.01	3.68	34.2	100	0	Peak
2483.5	36.59	-17.41	54	34.1	33.01	3.68	34.2	100	0	Average



Test Mode :	Mode 10	Temperature :	21~22℃
Test Channel :	03	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
30.54	22.15	-17.85	40	34.69	17.29	0.25	30.08	100	0	Peak
91.56	17	-26.5	43.5	37.48	9.12	0.39	29.99	-	-	Peak
183.9	16.36	-27.14	43.5	37.25	8.44	0.57	29.9	-	-	Peak
494.6	20.97	-25.03	46	32.64	17.12	0.95	29.74	-	-	Peak
753.6	21.45	-24.55	46	29.91	19.9	1.18	29.54	-	-	Peak
944.7	25.31	-28.69	54	32.81	20.71	1.33	29.54	-	-	Peak
2385.62	53.67	-20.33	74	51.39	32.86	3.47	34.05	100	0	Peak
2385.62	40.38	-13.62	54	38.1	32.86	3.47	34.05	100	0	Average
2422	85.47	-	-	83.11	32.92	3.56	34.12	100	266	Peak
2422	67.91	-	-	65.55	32.92	3.56	34.12	100	266	Average
2483.5	48.57	-25.43	74	46.08	33.01	3.68	34.2	100	0	Peak
2483.5	37.69	-16.31	54	35.2	33.01	3.68	34.2	100	0	Average

Test Mode :	Mode 11	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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	19.45	-20.55	40	31.27	18	0.26	30.08	-	-	Peak
130.71	17.23	-26.27	43.5	35.12	11.63	0.47	29.99	-	-	Peak
245.46	17.14	-28.86	46	34.52	11.79	0.66	29.83	-	-	Peak
393.8	21.86	-24.14	46	34.99	15.87	0.84	29.84	-	-	Peak
851.6	26.5	-19.5	46	34.37	20.51	1.28	29.66	100	0	Peak
946.8	30.08	-23.92	54	37.57	20.72	1.33	29.54	-	-	Peak
2390	51.87	-22.13	74	49.59	32.86	3.47	34.05	100	0	Peak
2390	39.88	-14.12	54	37.6	32.86	3.47	34.05	100	0	Average
2437	88.16	-	-	85.76	32.95	3.6	34.15	199	125	Peak
2437	74.47	-	-	72.07	32.95	3.6	34.15	199	125	Average
2483.5	49.57	-24.43	74	47.08	33.01	3.68	34.2	100	0	Peak
2483.5	39.45	-14.55	54	36.96	33.01	3.68	34.2	100	0	Average

Test Mode :	Mode 11	Temperature :	21~22℃
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
31.62	25.29	-14.71	40	38.59	16.55	0.24	30.09	100	360	Peak
92.64	17.27	-26.23	43.5	37.34	9.51	0.4	29.98	-	-	Peak
195.51	15.67	-27.83	43.5	36.28	8.8	0.58	29.99	-	-	Peak
500.9	21.9	-24.1	46	33.47	17.2	0.96	29.73	-	-	Peak
585.6	21.69	-24.31	46	31.69	18.58	1.05	29.63	-	-	Peak
946.8	28.4	-25.6	54	35.89	20.72	1.33	29.54	-	-	Peak
2390	48.3	-25.7	74	46.02	32.86	3.47	34.05	100	0	Peak
2390	36.08	-17.92	54	33.8	32.86	3.47	34.05	100	0	Average
2437	84.32	-	-	81.92	32.95	3.6	34.15	100	230	Peak
2437	70.56	-	-	68.16	32.95	3.6	34.15	100	230	Average
2483.5	48.67	-25.33	74	46.18	33.01	3.68	34.2	100	0	Peak
2483.5	38.11	-15.89	54	35.62	33.01	3.68	34.2	100	0	Average

Test Mode :	Mode 12	Temperature :	21~22℃
Test Channel :	09	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
30	19.19	-20.81	40	31.01	18	0.26	30.08	-	-	Peak
184.17	16.45	-27.05	43.5	37.34	8.44	0.57	29.9	-	-	Peak
288.93	16.57	-29.43	46	32.97	12.84	0.71	29.95	-	-	Peak
388.9	22.77	-23.23	46	36.04	15.74	0.84	29.85	-	-	Peak
832	25.61	-20.39	46	33.68	20.3	1.27	29.64	100	0	Peak
946.8	27.93	-26.07	54	35.42	20.72	1.33	29.54	-	-	Peak
2390	48.22	-25.78	74	45.94	32.86	3.47	34.05	100	0	Peak
2390	36.6	-17.4	54	34.32	32.86	3.47	34.05	100	0	Average
2452	90.54	-	-	88.14	32.95	3.6	34.15	200	58	Peak
2452	75.7	-	-	73.3	32.95	3.6	34.15	200	58	Average
2483.5	48.85	-25.15	74	46.36	33.01	3.68	34.2	100	0	Peak
2483.5	38.59	-15.41	54	36.1	33.01	3.68	34.2	100	0	Average

Test Mode :	Mode 12	Temperature :	21~22℃
Test Channel :	09	Relative Humidity :	41~42%
Test Engineer :	Jack Li	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
32.16	23.65	-16.35	40	36.95	16.55	0.24	30.09	100	0	Peak
92.1	16.23	-27.27	43.5	36.47	9.35	0.39	29.98	-	-	Peak
195.51	17.6	-25.9	43.5	38.21	8.8	0.58	29.99	-	-	Peak
568.1	23.31	-22.69	46	33.42	18.53	1.02	29.66	-	-	Peak
679.4	21.64	-24.36	46	31.09	19.14	1.11	29.7	-	-	Peak
944.7	27.17	-26.83	54	34.67	20.71	1.33	29.54	-	-	Peak
2390	48.19	-25.81	74	45.91	32.86	3.47	34.05	100	0	Peak
2390	36.38	-17.62	54	34.1	32.86	3.47	34.05	100	0	Average
2452	89.44	-	-	87.04	32.95	3.6	34.15	100	89	Peak
2452	76.53	-	-	74.13	32.95	3.6	34.15	100	89	Average
2483.5	49.25	-24.75	74	46.76	33.01	3.68	34.2	100	0	Peak
2483.5	39.05	-14.95	54	36.56	33.01	3.68	34.2	100	0	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 PIFA Antenna without connector and it is considered to meet antenna requirement.

3.8.3 Antenna Gain

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Feb. 07, 2012	Dec. 29, 2012	Conducted (TH01-KS)
System Simulator	R&S	CMU200	837587/066	2G Full-Band	Dec. 30, 2011	Feb. 07, 2012	Dec. 29, 2012	Conducted (TH01-KS)
DC Power Supply	TOPWARD	GPS-3030D	E1884515	N/A	Aug. 23, 2011	Feb. 07, 2012	Aug. 22, 2012	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Dec. 30, 2011	Feb. 07, 2012	Dec. 29, 2012	Conducted (TH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 02, 2011	Feb. 03, 2012	Jun. 01, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 30, 2011	Feb. 03, 2012	Dec. 29, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Dec. 30, 2011	Feb. 03, 2012	Dec. 29, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 16, 2011	Feb. 03, 2012	Nov. 15, 2012	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/066	2G Full-Band	Dec. 30, 2011	Feb. 03, 2012	Dec. 29, 2012	Conduction (CO01-KS)
Signal Generator	R&S	SMR40	100455	10MHz~40GHz	Dec. 30, 2011	Feb. 03, 2012	Dec. 29, 2012	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 09, 2011	Feb. 04, 2012	Nov. 08, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Feb. 04, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Feb. 04, 2012	Dec. 07, 2012	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/00	9 kHz~30 MHz	Jul. 28, 2011	Feb. 04, 2012	Jul. 27, 2012	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 06, 2012	Feb. 04, 2012	Jan. 05, 2013	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 30, 2011	Feb. 04, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 30, 2011	Feb. 04, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz~18GHz	Nov. 07, 2011	Feb. 04, 2012	Nov. 06, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Oct. 11, 2011	Feb. 04, 2012	Oct.10, 2012	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 $U_c(y)$	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 EP220201 as below.