



# FCC RF Test Report

**APPLICANT** : Huawei Technologies Co., Ltd.  
**EQUIPMENT** : Home Gateway  
**BRAND NAME** : HUAWEI  
**MODEL NAME** : HG552d  
**FCC ID** : QISHG552D  
**STANDARD** : FCC Part 15 Subpart C §15.247  
**CLASSIFICATION** : Digital Transmission System (DTS)

The product was received on Apr. 07, 2011 and completely tested on May 05, 2011. We, SPORTON INTERNATIONAL (KUNSAHN) 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 (KUNSAHN) 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.....7

**2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST .....8**

    2.1 RF Power .....8

    2.2 Test Mode .....11

    2.3 Connection Diagram of Test System .....12

    2.4 RF Utility.....13

**3 TEST RESULT .....14**

    3.1 6dB Bandwidth Measurement .....14

    3.2 Output Power Measurement .....27

    3.3 Band Edges Measurement.....30

    3.4 Spurious Emission Measurement.....42

    3.5 Power Spectral Density Measurement.....61

    3.6 AC Conducted Emission Measurement .....74

    3.7 Radiated Emission Measurement.....78

    3.8 Antenna Requirements .....105

**4 LIST OF MEASURING EQUIPMENT .....106**

**5 UNCERTAINTY OF EVALUATION.....107**

**APPENDIX A. PHOTOGRAPHS OF EUT**

**APPENDIX B. SETUP PHOTOGRAPHS**



**SUMMARY OF TEST RESULT**

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	A8.4	Power Output	$\leq 30\text{dBm}$	Pass	-
0	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.3	15.247(d)	A8.5	Spurious Emission	$< 20\text{ dBc}$	Pass	-
3.4	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.5	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 13.57 dB at 2.25 MHz
3.6	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 0.36 dB at 2483.5 MHz
3.7	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 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Home Gateway
Brand Name	HUAWEI
Model Name	HG552d
FCC ID	QISHG552D
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Channel Spacing	5 MHz
Maximum Output Power to Antenna	802.11b : 16.24 dBm (0.04 W) 802.11g : 23.71 dBm (0.24 W) 802.11n (BW 20MHz) : 25.37 dBm (0.34 W) 802.11n (BW 40MHz) : 24.37 dBm (0.27 W)
Antenna Type	PCB Antenna with gain 2.00 dBi
HW Version	HG552d VER.B
SW Version	HG552dV100R001C07B011
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

### Remark:

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



### 1.4 Testing Site

<b>Test Site</b>	SPORTON INTERNATIONAL(KUNSHAN) INC.	
<b>Test Site Location</b>	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 / FAX: +86-0512-5790-0958	
<b>Test Site No.</b>	<b>Sporton Site No.</b>	
	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:

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

**Remark:**

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



### 1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	Acer	Trave lmate2413Lci	QDS-BRCM1016	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
2.	Notebook	DELL	P08S	2DS-BRCM1030	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
3.	iPod	Apple	A1199	FCC DoC	Unshielded, 1.2 m	N/A
4.	Router	LINKSYS	WRT600N	Q87-WRT600NV11	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
5.	Telephone	BBK	HCD007(6082)TSD	N/A	N/A	N/A
6.	Telephone	BBK	HCD007(6082)TSD	N/A	N/A	N/A
7.	CO	Askey	AMA1011	N/A	N/A	Unshielded, 1.8 m
8.	ADSL	Dynalink	RTA1320	FCC DoC	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m



## 2 Test Configuration of Equipment Under Test

### 2.1 RF Power

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

Channel	Frequency	Chain	2.4GHz 802.11b RF Power (dBm)			
			DSSS Data Rate			
			1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	A	14.32	14.31	14.28	14.34
CH 06	2437 MHz	A	14.24	14.22	14.25	14.28
CH 11	2462 MHz	A	14.4	14.45	14.41	14.48
CH 01	2412 MHz	B	15.32	15.31	15.27	15.25
CH 06	2437 MHz	B	15.71	15.68	15.81	15.87
CH 11	2462 MHz	B	16.21	16.22	16.2	16.24

Channel	Frequency	Chain	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	A	20.62	21.02	22.08	21.15	20.78	22.54	19.56	20.72
CH 06	2437 MHz	A	20.62	20.85	21.98	21.06	20.66	22.34	19.41	20.65
CH 11	2462 MHz	A	20.95	21.16	22.1	21.23	20.91	22.58	19.45	20.71
CH 01	2412 MHz	B	21.32	21.54	22.51	21.67	21.42	22.88	20.12	20.44
CH 06	2437 MHz	B	21.83	22.01	22.95	22.25	21.88	23.34	20.56	21.58
CH 11	2462 MHz	B	22.05	22.45	23.32	22.56	22.32	23.71	20.98	22.13



Channel	Frequency	Chain	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
			OFDM Data Rate							
			MCS0	MCS1	MCS=2	MCS=3	MCS=4	MCS=5	MCS=6	MCS=7
CH 01	2412 MHz	A	21.44	21.16	21.18	20.8	20.71	20.88	18.91	18.42
CH 06	2437 MHz	A	21.33	21.04	21.08	20.46	20.45	20.78	19.11	18.46
CH 11	2462 MHz	A	21.51	21.26	21.24	20.75	20.64	20.81	19.52	18.81
CH 01	2412 MHz	B	21.44	21.37	21.35	21.21	20.94	21.18	20.06	19.51
CH 06	2437 MHz	B	22.15	21.98	21.86	21.88	21.4	21.86	20.87	19.94
CH 11	2462 MHz	B	22.98	22.74	22.48	22.14	21.96	22.23	21.62	20.24
Channel	Frequency	Chain	MCS=8	MCS=9	MCS=10	MCS=11	MCS=12	MCS=13	MCS=14	MCS=15
CH 01	2412 MHz	A+B(A)	20.12	20.24	19.96	21.08	19.53	19.35	18.12	18.52
		A+B(B)	20.39	21.12	21.08	23.34	22.40	20.16	18.93	19.06
		A+B	23.27	23.71	23.57	25.37	24.21	22.78	21.55	21.81
CH 06	2437 MHz	A+B(A)	20.11	20.21	19.67	21.06	19.54	19.12	18.12	18.08
		A+B(B)	21.03	21.56	21.34	23.09	21.87	21.03	18.87	18.96
		A+B	23.60	23.95	23.60	25.20	23.87	23.19	21.52	21.55
CH 11	2462 MHz	A+B(A)	19.71	19.96	19.62	20.65	19.33	19.02	18.08	17.96
		A+B(B)	21.08	21.88	21.54	23.41	22.15	21.87	19.84	19.95
		A+B	23.46	24.04	23.70	25.26	23.98	23.69	22.06	22.08



Channel	Frequency	Chain	2.4GHz 802.11n (BW 40MHz) RF Power (dBm)							
			OFDM Data Rate							
			MCS0	MCS1	MCS=2	MCS=3	MCS=4	MCS=5	MCS=6	MCS=7
CH 03	2422 MHz	A	20.54	20.13	20.57	20.56	19.87	20.01	18.86	17.89
CH 06	2437 MHz	A	21.21	20.92	21.02	20.96	20.33	21.54	19.11	18.24
CH 09	2452 MHz	A	21.33	20.96	21.18	20.94	20.45	21.48	18.98	18.54
CH 03	2422 MHz	B	21.98	21.56	21.86	21.48	20.98	22.02	19.67	19.61
CH 06	2437 MHz	B	22.76	22.16	22.56	22.36	21.76	22.46	20.54	19.91
CH 09	2452 MHz	B	22.58	21.98	22.32	22.02	21.63	22.54	20.52	19.92
Channel	Frequency	Chain	MCS=8	MCS=9	MCS=10	MCS=11	MCS=12	MCS=13	MCS=14	MCS=15
CH 03	2422 MHz	A+B(A)	20.01	20.23	19.98	20.28	19.76	19.25	17.86	17.21
		A+B(B)	21.92	21.87	21.35	21.53	21.06	20.43	18.98	18.23
		A+B	24.08	24.14	23.73	23.96	23.47	22.89	21.47	20.76
CH 06	2437 MHz	A+B(A)	20.31	20.52	20.11	20.39	19.98	19.56	18.12	17.12
		A+B(B)	22.21	21.91	21.86	21.85	21.26	20.86	19.37	18.87
		A+B	24.37	24.28	24.08	24.19	23.68	23.27	21.80	21.09
CH 09	2452 MHz	A+B(A)	20.22	20.47	20.14	20.43	19.83	19.71	18.02	17.98
		A+B(B)	22.04	21.78	21.08	21.54	21.24	20.13	19.80	18.89
		A+B	24.23	24.18	23.65	24.03	23.60	22.94	22.01	21.47

**Remark:**

1. The data rates of WLAN 802.11b/g/n were set in 11Mbps for 802.11b, 36Mbps for 802.11g, MCS11 for 802.11n (BW 20MHz), and MCS8 for 802.11n (BW 40MHz) for all the test cases due to the highest RF output power.
2. The EUT is programmed to transmit signals continuously for all testing.
3. For MIMO mode, each radio port was individually measured, and then summed together according to the FCC KDB Pub 66291. For example, the 802.11n (BW=20MHz) at channel 01 (2412MHz), MCS8, the wording of A+B(A) represents that the power measured at chain A under MIMO mode is 20.12dBm, and the A+B(B) represents that the power measured at chain B, then the summation A+B is 23.27dBm from the formula  $10\log [(A \text{ chain in mW}) + (B \text{ chain in mW})]$ .



## 2.2 Test Mode

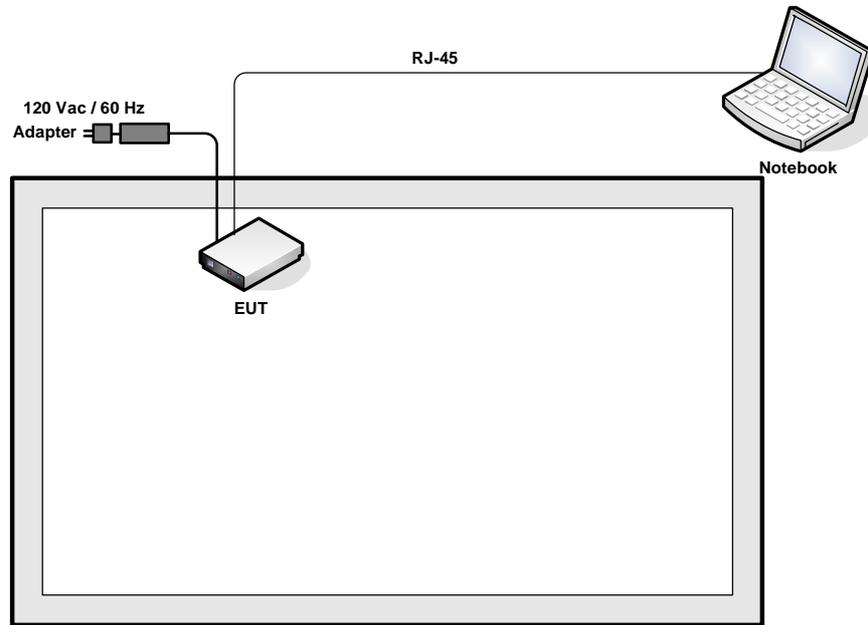
The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic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

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

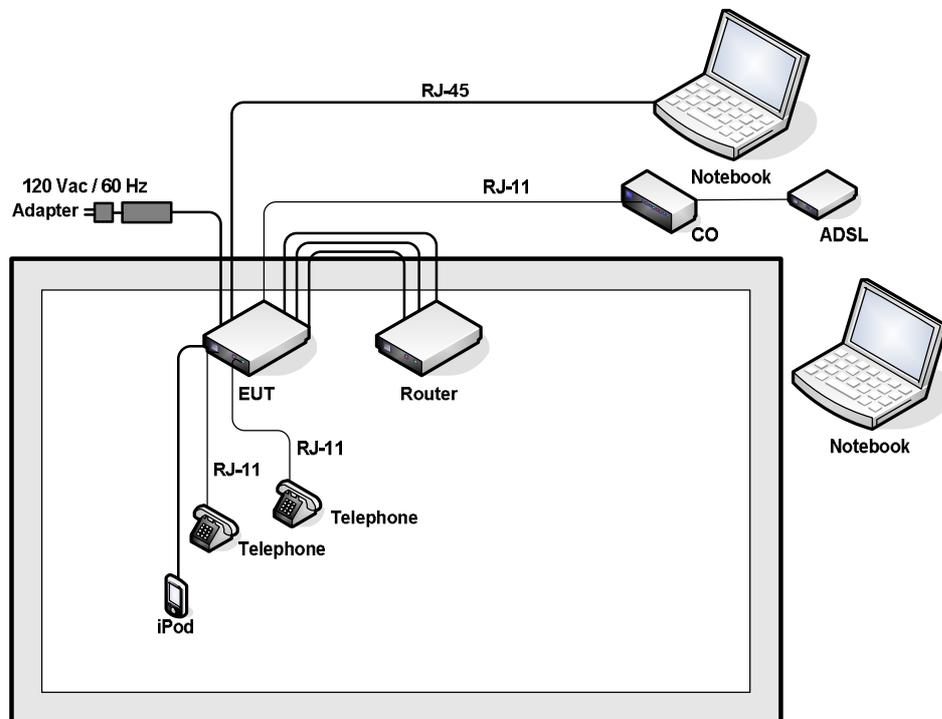
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 MHz Mode 8: 802.11n (BW 20M)_CH06_2437 MHz Mode 9: 802.11n (BW 20M)_CH11_2462 MHz Mode 10: 802.11n (BW 40M)_CH03_2422 MHz Mode 11: 802.11n (BW 40M)_CH06_2437 MHz Mode 12: 802.11n (BW 40M)_CH09_2452 MHz
Radiated TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 MHz Mode 8: 802.11n (BW 20M)_CH06_2437 MHz Mode 9: 802.11n (BW 20M)_CH11_2462 MHz Mode 10: 802.11n (BW 40M)_CH03_2422 MHz Mode 11: 802.11n (BW 40M)_CH06_2437 MHz Mode 12: 802.11n (BW 40M)_CH09_2452 MHz
AC Conducted Emission	Mode 1 : WLAN Link + RJ11 Link + RJ45 Link + Adapter 1	
<b>Remark:</b>		
1. The worst case of conducted emission is mode 1; only the test data of it was reported.		

## 2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>





## **2.4 RF Utility**

The programmed RF utility “TELNET” 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.

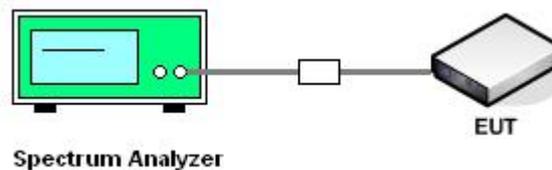
##### 3.1.2 Measuring Instruments

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





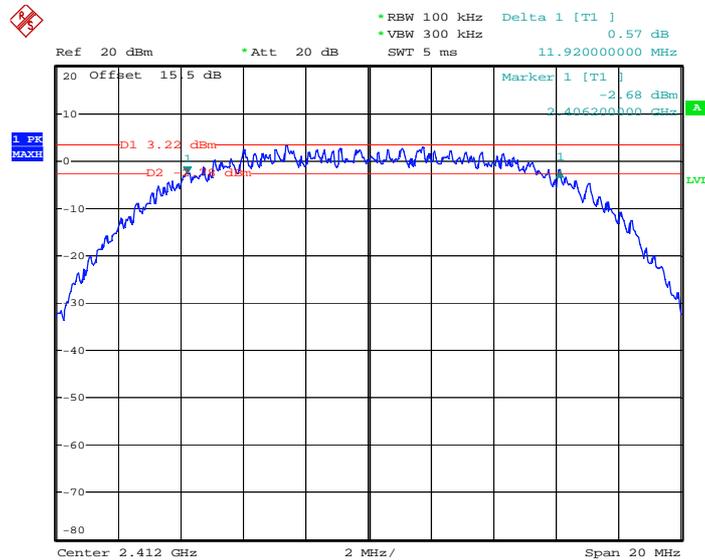
3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	20~21°C
Test Engineer :	Jason Chia	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	11.92	0.5	Pass
06	2437	11.92	0.5	Pass
11	2462	11.92	0.5	Pass

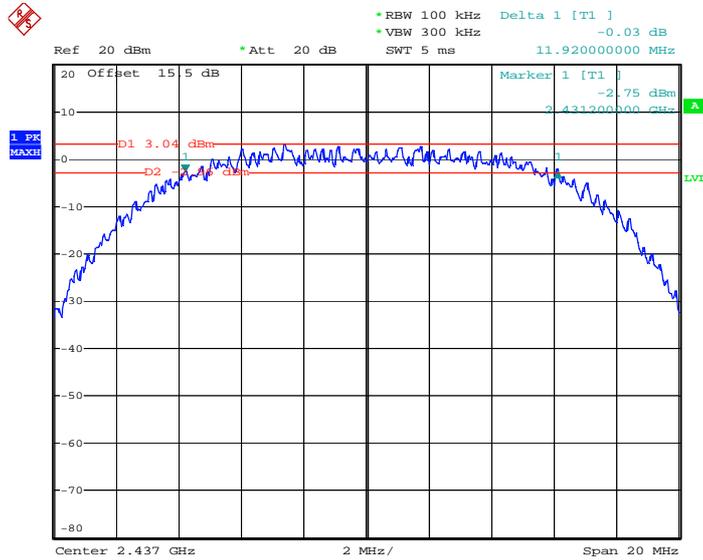
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01- Chain B



Date: 5.MAY.2011 08:53:04

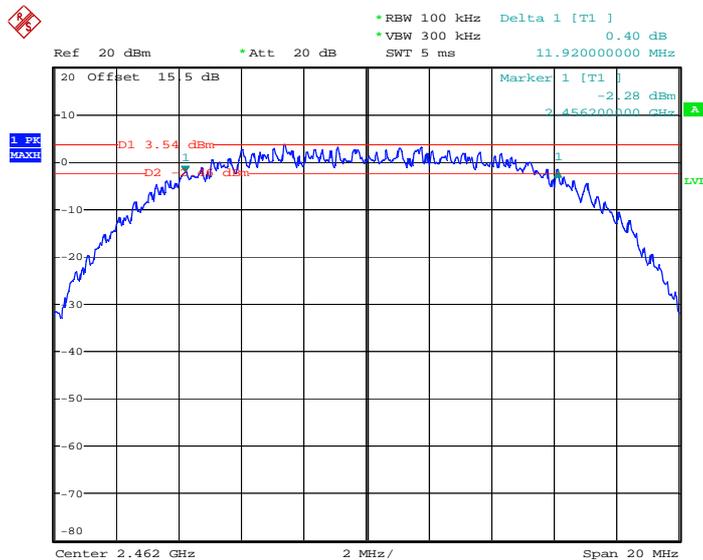


Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06- Chain B



Date: 5.MAY.2011 10:15:54

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



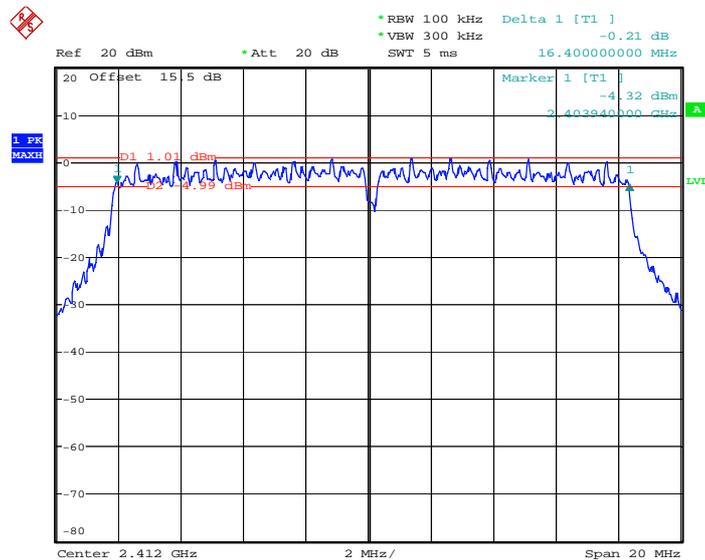
Date: 5.MAY.2011 10:27:44



Test Mode :	Mode 4, 5, 6	Temperature :	20~21°C
Test Engineer :	Jason Chia	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.40	0.5	Pass
06	2437	16.40	0.5	Pass
11	2462	16.40	0.5	Pass

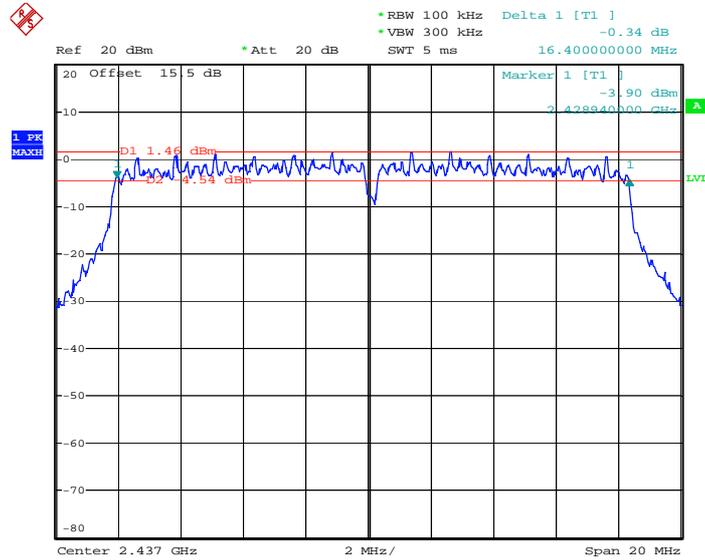
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01- Chain B



Date: 5.MAY.2011 11:54:24

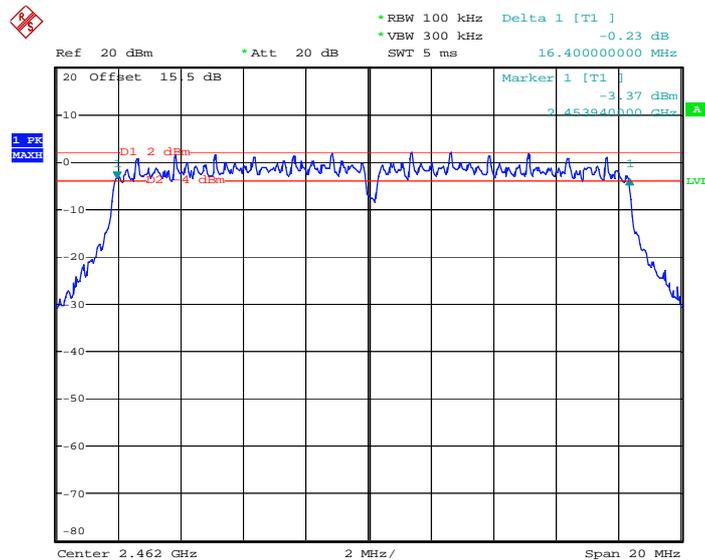


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06- Chain B



Date: 5.MAY.2011 11:51:07

Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11- Chain B



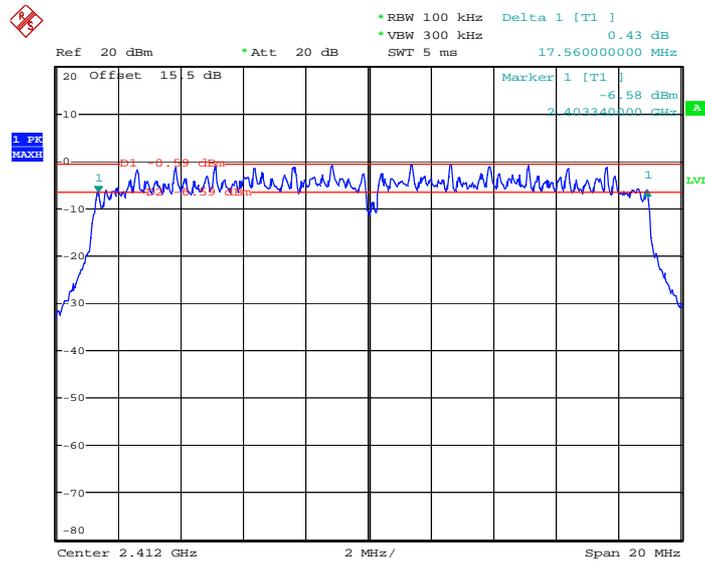
Date: 5.MAY.2011 11:37:36



Test Mode :	Mode 7, 8, 9	Temperature :	20~21°C
Test Engineer :	Jason Chia	Relative Humidity :	40~41%

Channel	Frequency (MHz)	Chain	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	A+B(A)	17.56	0.5	Pass
06	2437	A+B(A)	17.28	0.5	Pass
11	2462	A+B(A)	17.28	0.5	Pass
01	2412	A+B(B)	17.32	0.5	Pass
06	2437	A+B(B)	17.52	0.5	Pass
11	2462	A+B(B)	17.52	0.5	Pass

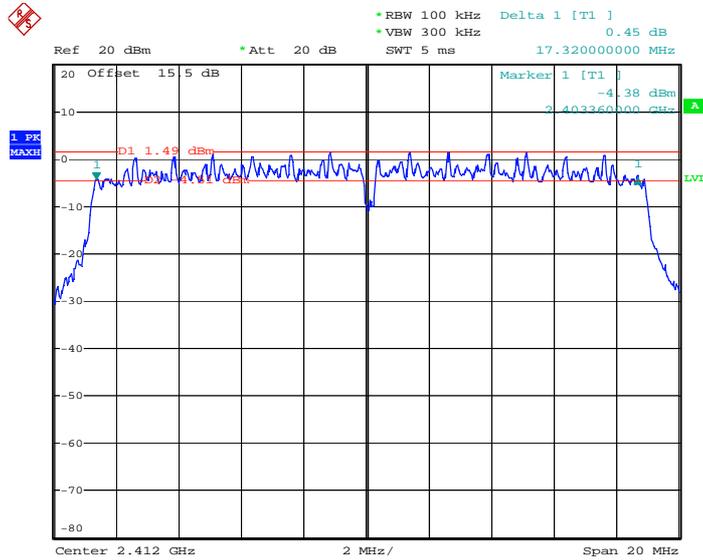
**Mode 7 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel  
01- Chain A+B(A)**



Date: 5.MAY.2011 14:18:18

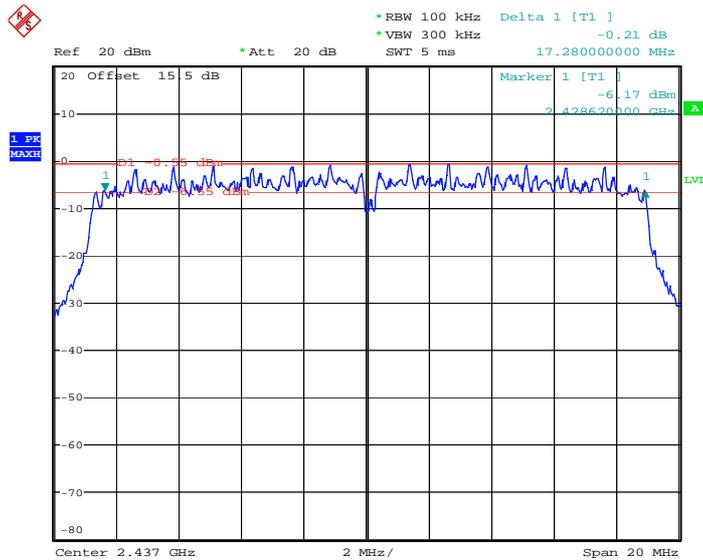


Mode 7 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel  
01- Chain A+B(B)



Date: 5.MAY.2011 13:03:47

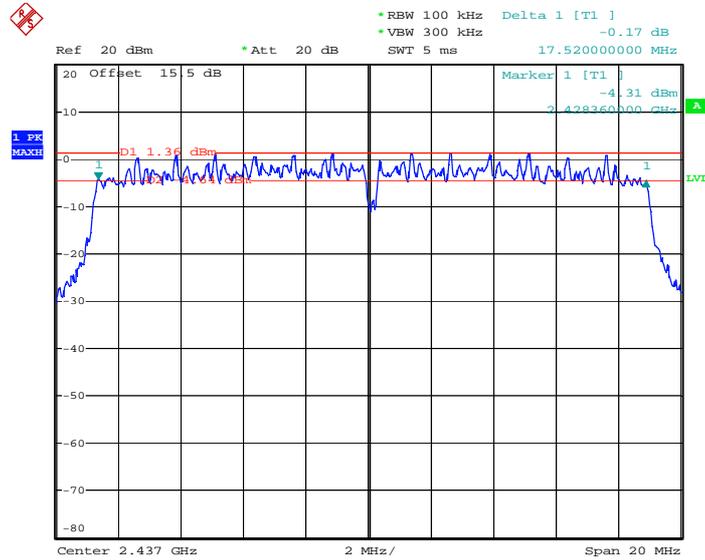
Mode 8 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel  
06- Chain A+B(A)



Date: 5.MAY.2011 14:05:06

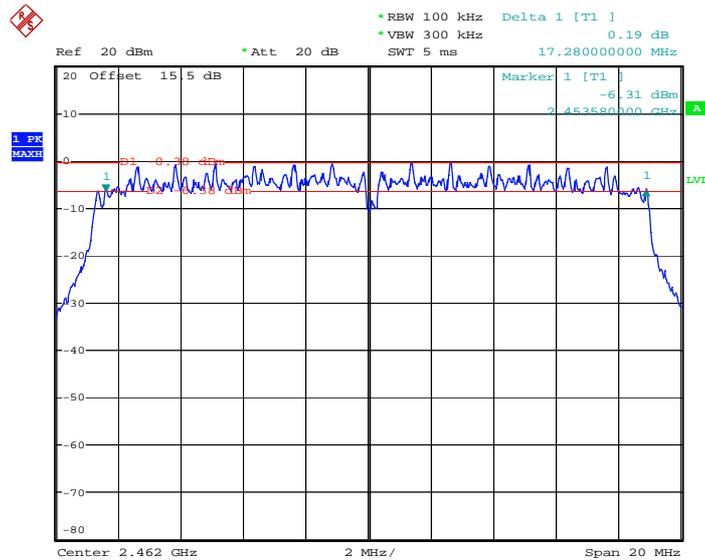


Mode 8 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel  
06- Chain A+B(B)



Date: 5.MAY.2011 13:19:23

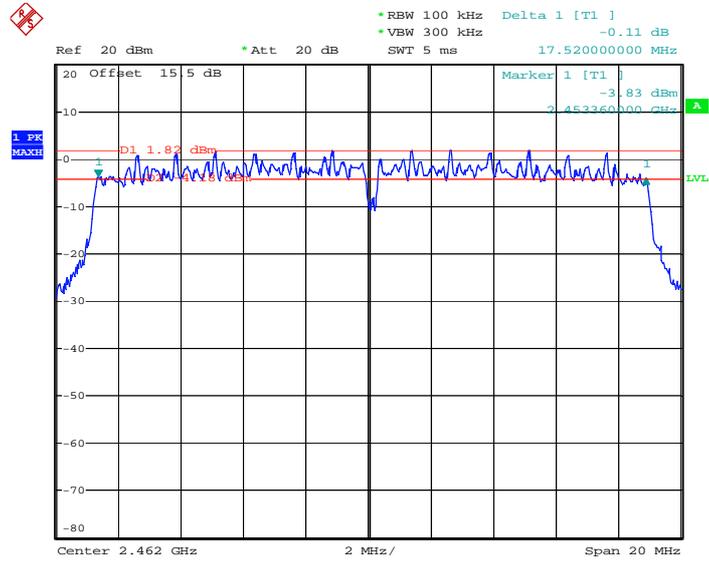
Mode 9 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 11  
- Chain A+B(A)



Date: 5.MAY.2011 13:48:44



Mode 9 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 11  
- Chain A+B(B)



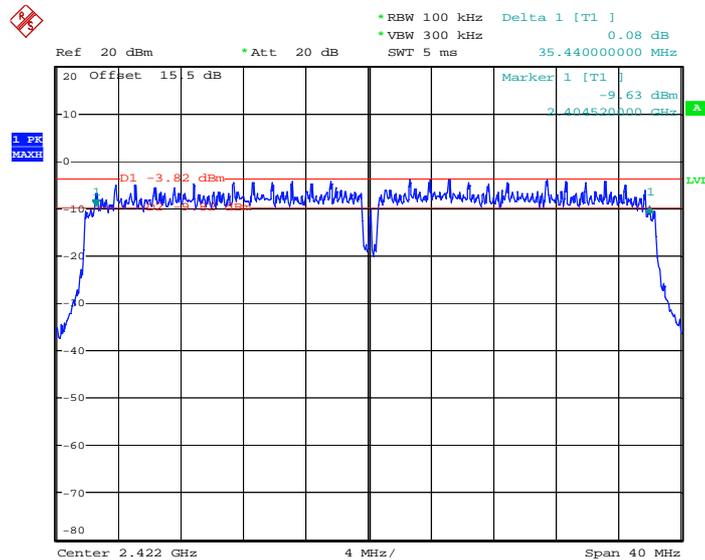
Date: 5.MAY.2011 13:33:56



Test Mode :	Mode 10, 11, 12	Temperature :	20~21°C
Test Engineer :	Jason Chia	Relative Humidity :	40~41%

Channel	Frequency (MHz)	Chain	802.11n (BW 40MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
03	2422	A+B(A)	35.44	0.5	Pass
06	2437	A+B(A)	35.36	0.5	Pass
09	2452	A+B(A)	35.36	0.5	Pass
03	2422	A+B(B)	35.12	0.5	Pass
06	2437	A+B(B)	35.12	0.5	Pass
09	2452	A+B(B)	35.12	0.5	Pass

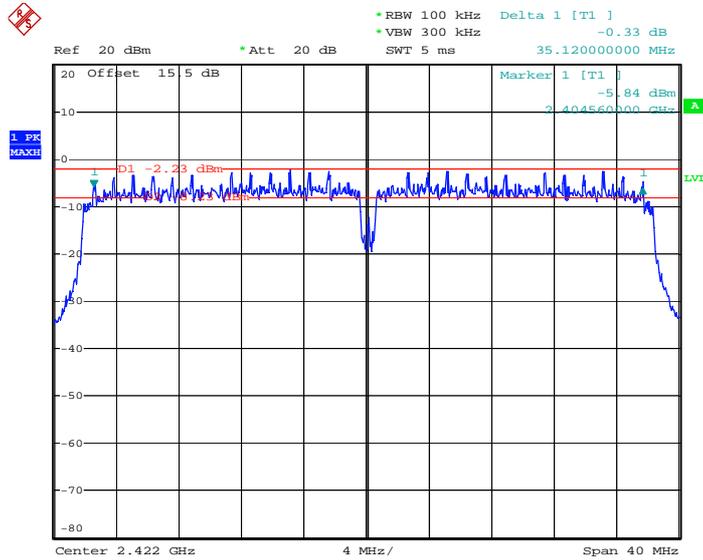
**Mode 10 : 6 dB Bandwidth Plot on 802.11n(BW 40MHz) Channel 03-Chain A+B(A)**



Date: 5.MAY.2011 14:33:45

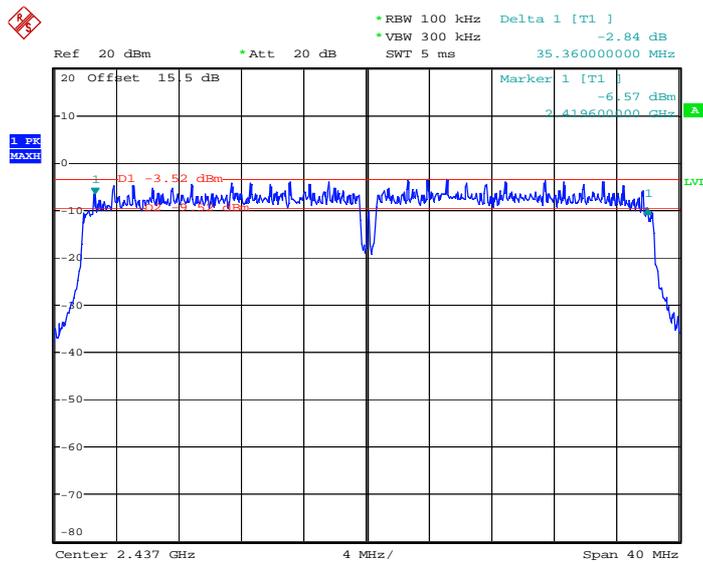


Mode 10 : 6 dB Bandwidth Plot on 802.11n(BW 40MHz) Channel 03-  
Chain A+B(B)



Date: 5.MAY.2011 15:46:15

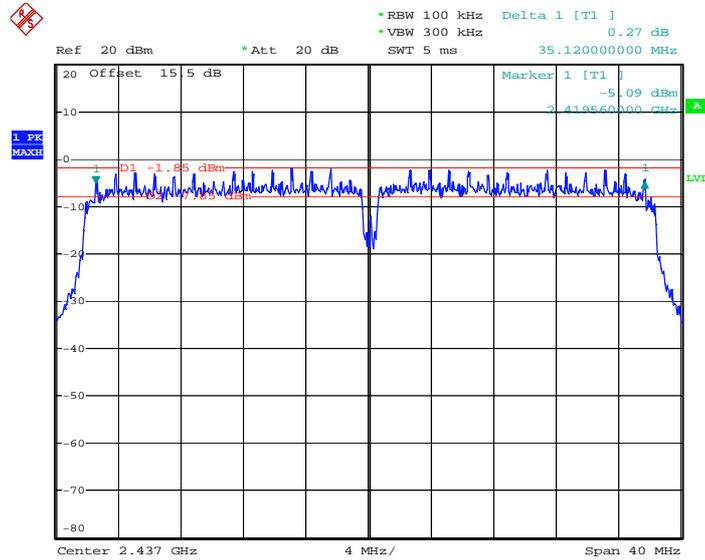
Mode 11 : 6 dB Bandwidth Plot on 802.11n(BW 40MHz) Channel 06  
- Chain A+B(A)



Date: 5.MAY.2011 14:49:46

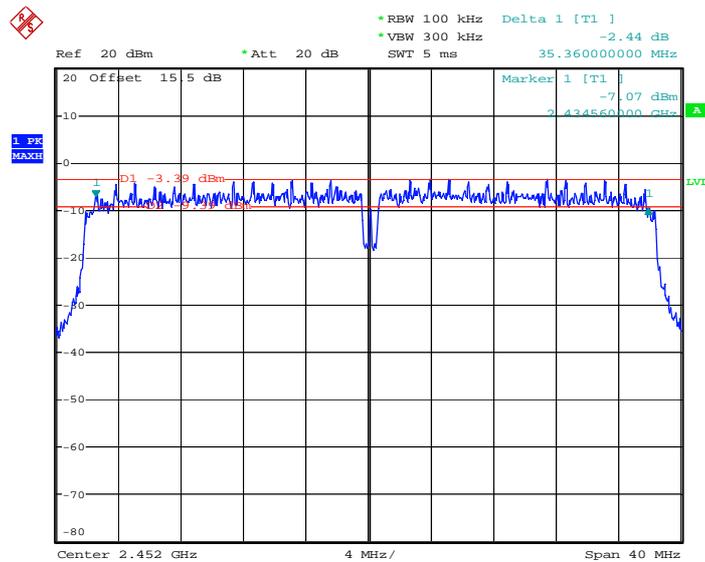


Mode 11 : 6 dB Bandwidth Plot on 802.11n(BW 40MHz) Channel 06  
- Chain A+B(B)



Date: 5.MAY.2011 15:34:24

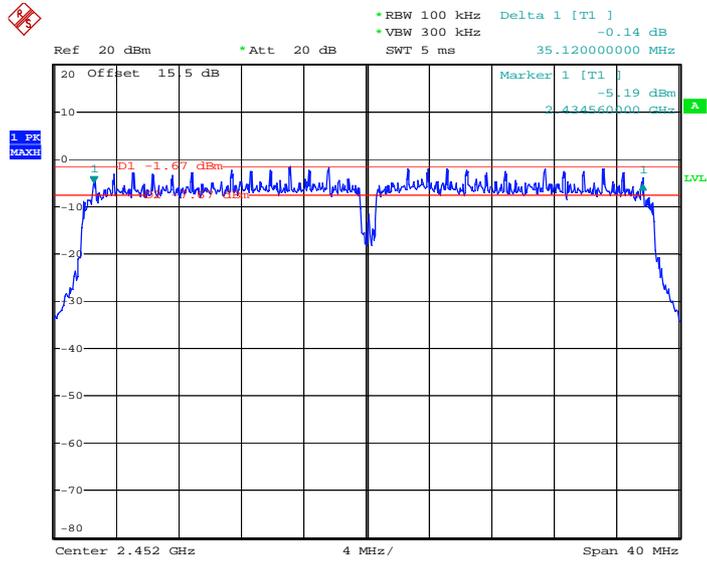
Mode 12 : 6 dB Bandwidth Plot on 802.11n(BW 40MHz) Channel 09-  
Chain A+B(A)



Date: 5.MAY.2011 15:05:21



Mode 12 : 6 dB Bandwidth Plot on 802.11n(BW 40MHz) Channel 09-  
Chain A+B(B)



Date: 5.MAY.2011 15:20:02

## 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.

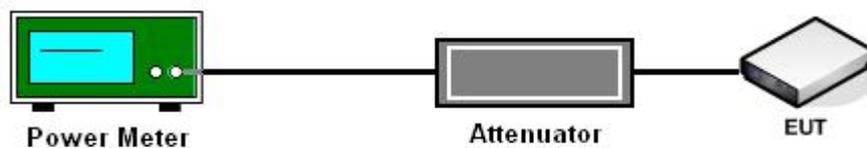
### 3.2.2 Measuring Instruments

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°C
Test Engineer :	Jason Chia	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	15.25	30	Pass
06	2437	15.87	30	Pass
11	2462	16.24	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	20~21°C
Test Engineer :	Jason Chia	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.88	30	Pass
06	2437	23.34	30	Pass
11	2462	23.71	30	Pass



<b>Test Mode :</b>	Mode 7, 8, 9	<b>Temperature :</b>	20~21°C
<b>Test Engineer :</b>	Jason Chia	<b>Relative Humidity :</b>	40~41%

Channel	Frequency (MHz)	Chain	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	A+B	25.37	30	Pass
06	2437	A+B	25.20	30	Pass
11	2462	A+B	25.26	30	Pass

<b>Test Mode :</b>	Mode 10, 11, 12	<b>Temperature :</b>	20~21
<b>Test Engineer :</b>	Jason Chia	<b>Relative Humidity :</b>	40~41

Channel	Frequency (MHz)	Chain	802.11n (BW 40MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
03	2422	A+B	24.08	30	Pass
06	2437	A+B	24.37	30	Pass
09	2452	A+B	24.37	30	Pass

Note: The description of power measurement, please refers to the remark 3 of section 2.1 of this report.



## **Band Edges Measurement**

### **3.2.6 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.

### **3.2.7 Measuring Instruments**

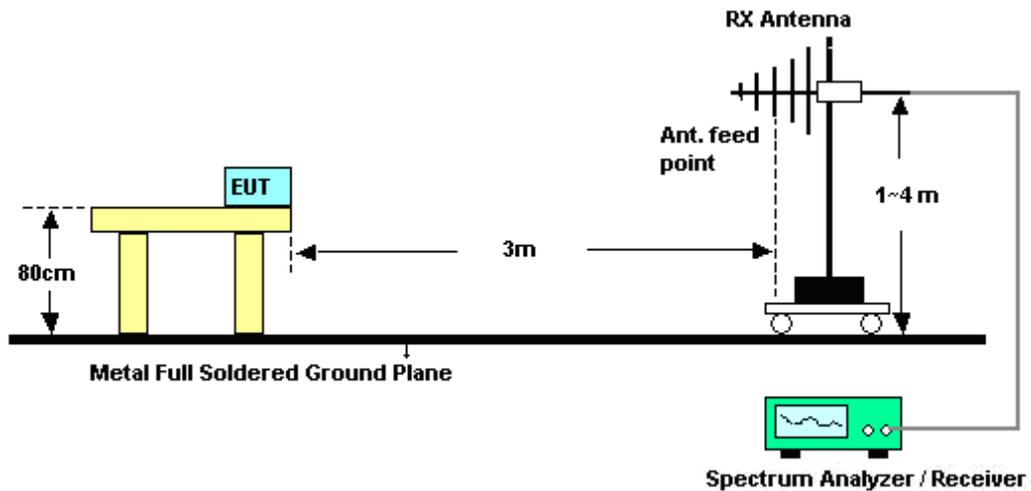
See list of measuring instruments of this test report.

### **3.2.8 Test Procedures**

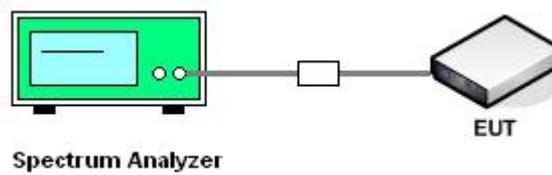
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW)  $\geq$  RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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).

### 3.2.9 Test Setup

#### <Radiated Band Edges>



#### <Conducted Band Edges>





3.2.10 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	20~21°C
Test Band :	802.11b	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Xin Peng

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
2372.13	51.81	-22.19	74	49.57	32.83	3.42	34.01	100	0	Peak
2372.13	42.18	-11.82	54	39.94	32.83	3.42	34.01	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
2331.09	56.76	-17.24	74	54.63	32.76	3.27	33.9	123	298	Peak
2331.09	48.87	-5.13	54	46.74	32.76	3.27	33.9	123	298	Average

Test Mode :	Mode 3	Temperature :	20~21°C
Test Band :	802.11b	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Xin Peng

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	40.29	-13.71	54	37.8	33.01	3.68	34.2	100	240	Average
2483.5	51.06	-22.94	74	48.57	33.01	3.68	34.2	100	240	Peak

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	56.41	-17.59	74	53.92	33.01	3.68	34.2	200	0	Peak
2483.5	44.87	-9.13	54	42.38	33.01	3.68	34.2	200	0	Average



Test Mode :	Mode 4	Temperature :	20~21°C
Test Band :	802.11g	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Xin Peng

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
2359.02	51.68	-22.32	74	49.47	32.81	3.38	33.98	100	231	Peak
2359.02	42.64	-11.36	54	40.43	32.81	3.38	33.98	100	231	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
2330.52	56.69	-17.31	74	54.56	32.76	3.27	33.9	100	315	Peak
2330.52	46.66	-7.34	54	44.53	32.76	3.27	33.9	100	315	Average

Test Mode :	Mode 6	Temperature :	20~21°C
Test Band :	802.11g	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Xin Peng

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	42.46	-11.54	54	39.97	33.01	3.68	34.2	100	317	Average
2483.5	53.7	-20.3	74	51.21	33.01	3.68	34.2	100	317	Peak

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	45.09	-8.91	54	42.6	33.01	3.68	34.2	100	358	Average
2483.5	60.06	-13.94	74	57.57	33.01	3.68	34.2	100	358	Peak



Test Mode :	Mode 7	Temperature :	20~21°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Xin Peng

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	58.33	-15.67	74	56.05	32.86	3.47	34.05	200	331	Peak
2390	43.88	-10.12	54	41.6	32.86	3.47	34.05	200	331	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
2492.21	41.44	-12.56	54	38.9	33.05	3.72	34.23	200	360	Average
2492.21	59.21	-14.79	74	56.67	33.05	3.72	34.23	200	360	Peak

Test Mode :	Mode 9	Temperature :	20~21°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Xin Peng

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2386.19	56.16	-17.84	74	53.88	32.86	3.47	34.05	100	360	Peak
2386.19	42.39	-11.61	54	40.11	32.86	3.47	34.05	100	360	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2483.5	64.78	-9.22	74	62.29	33.01	3.68	34.2	200	296	Peak
2483.5	48.26	-5.74	54	45.77	33.01	3.68	34.2	200	296	Average



Test Mode :	Mode 10	Temperature :	20~21°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	40~41%
Test Channel :	03	Test Engineer :	Xin Peng

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	70.8	-3.2	74	68.52	32.86	3.47	34.05	200	16	Peak
2390	47.64	-6.36	54	45.36	32.86	3.47	34.05	200	16	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2483.5	64.15	-9.85	74	61.66	33.01	3.68	34.2	200	360	Peak
2483.5	42.93	-11.07	54	40.44	33.01	3.68	34.2	200	360	Average

Test Mode :	Mode 12	Temperature :	20~21°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	40~41%
Test Channel :	09	Test Engineer :	Xin Peng

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	63.58	-10.42	74	61.3	32.86	3.47	34.05	200	360	Peak
2390	47.93	-6.07	54	45.65	32.86	3.47	34.05	200	360	Average

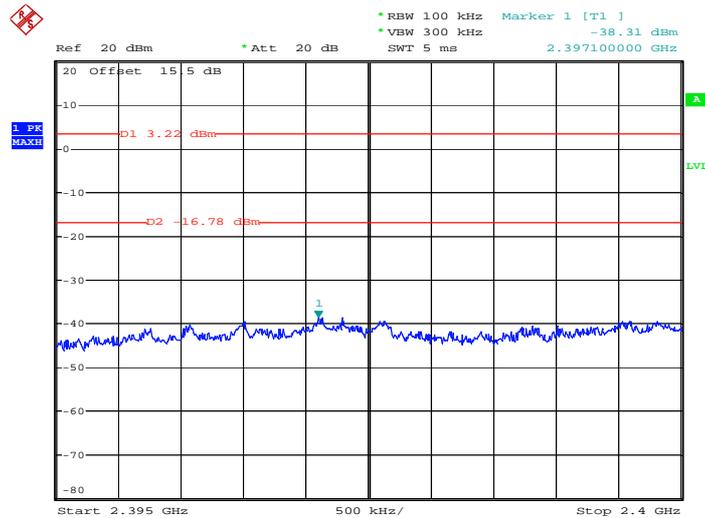
ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2483.5	53.05	-0.95	54	50.56	33.01	3.68	34.2	141	314	Average
2483.5	71.76	-2.24	74	69.27	33.01	3.68	34.2	141	314	Peak



### 3.2.11 Test Plots of Conducted Band Edges

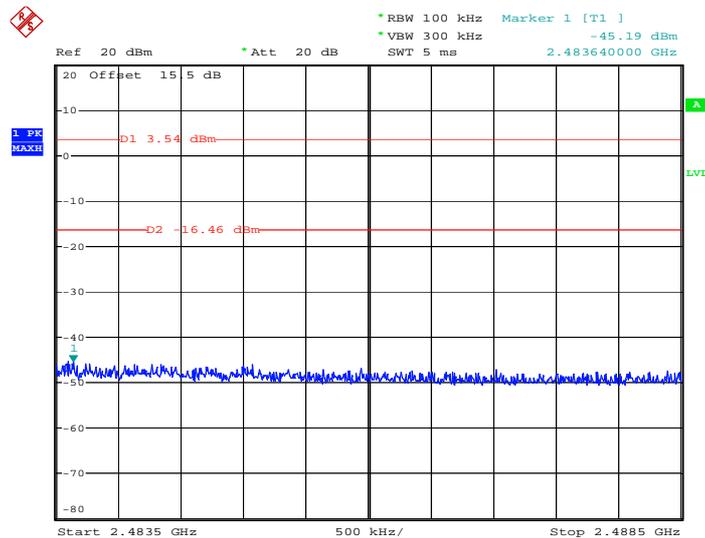
Test Mode :	Mode 1 and 3	Temperature :	20~21°C
Test Band :	802.11b	Relative Humidity :	40~41%
Test Channel :	01 and 11	Test Engineer :	Jason Chia

#### Low Band Edge Plot on 802.11b Channel 01



Date: 5.MAY.2011 08:54:17

#### High Band Edge Plot on 802.11b Channel 11

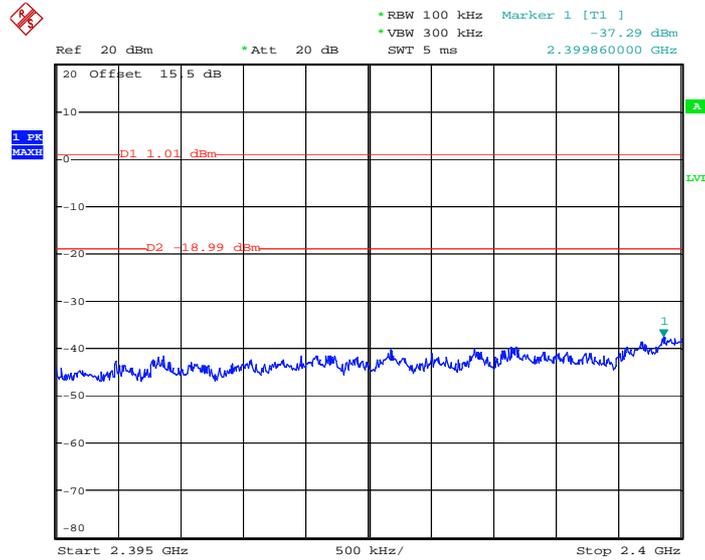


Date: 5.MAY.2011 10:28:35



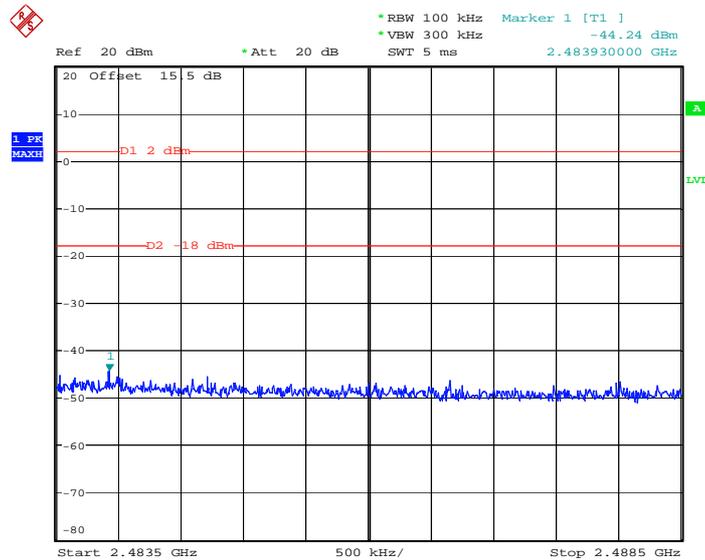
Test Mode :	Mode 4 and 6	Temperature :	20~21°C
Test Band :	802.11g	Relative Humidity :	40~41%
Test Channel :	01 and 11	Test Engineer :	Jason Chia

Low Band Edge Plot on 802.11g Channel 01



Date: 5.MAY.2011 11:55:35

High Band Edge Plot on 802.11g Channel 11



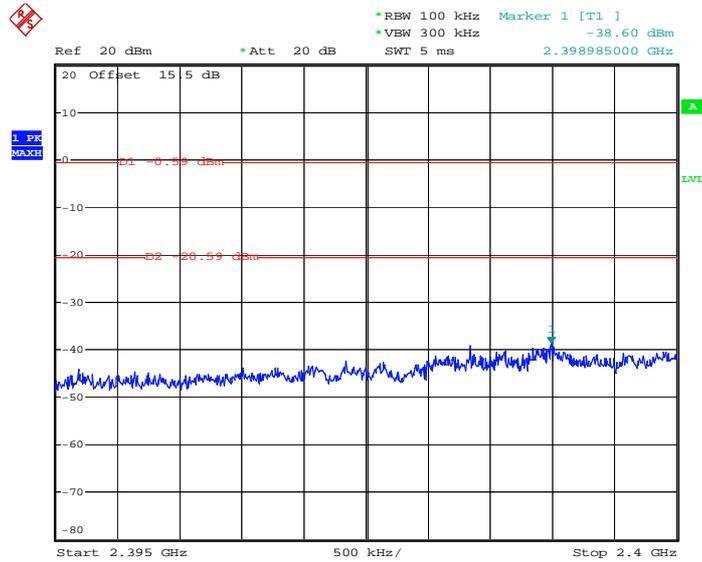
Date: 5.MAY.2011 11:38:24



Test Mode :	Mode 7 and 9	Temperature :	20~21°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~41%
Test Channel :	01 and 11	Test Engineer :	Jason Chia

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

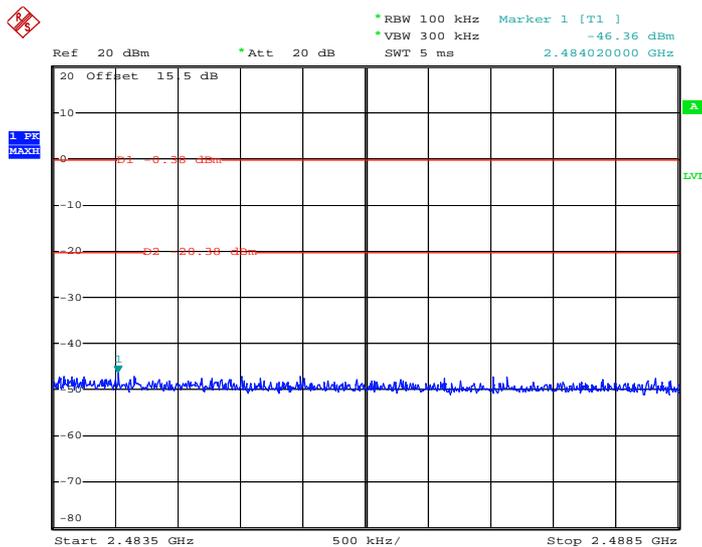
A+B(A)



Date: 5.MAY.2011 14:19:46

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

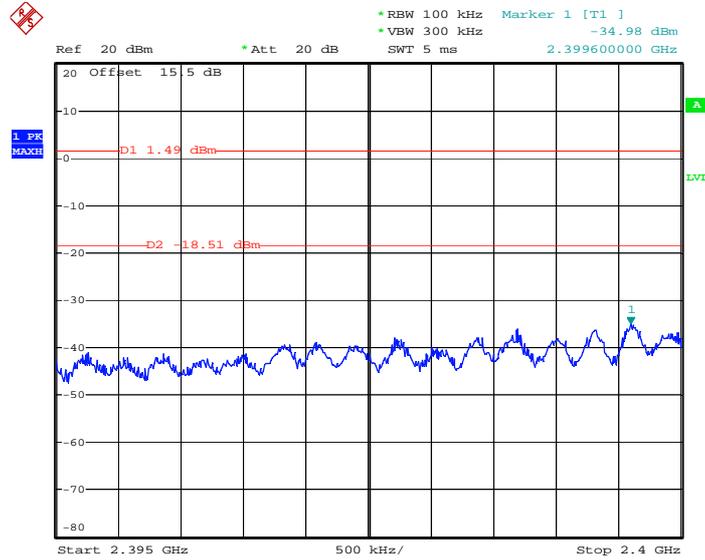
A+B(A)



Date: 5.MAY.2011 13:49:40

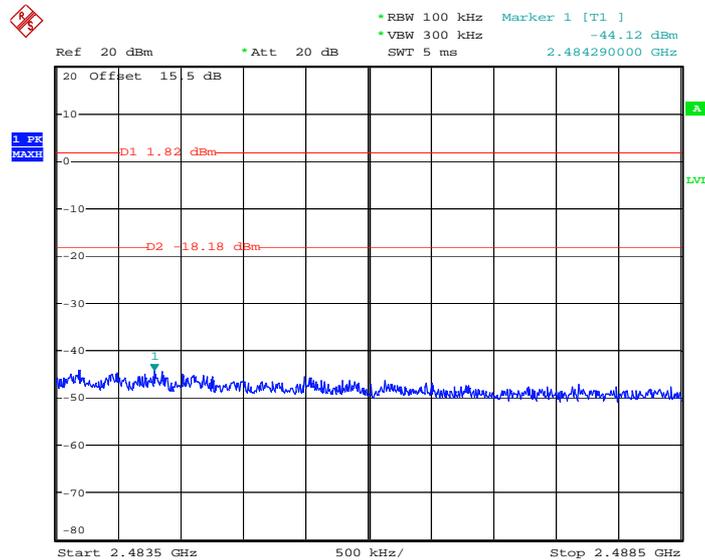


Low Band Edge Plot on 802.11n (BW 20MHz) Channel 01- Chain A+B(B)



Date: 5.MAY.2011 13:04:56

High Band Edge Plot on 802.11n (BW 20MHz) Channel 11- Chain A+B(B)



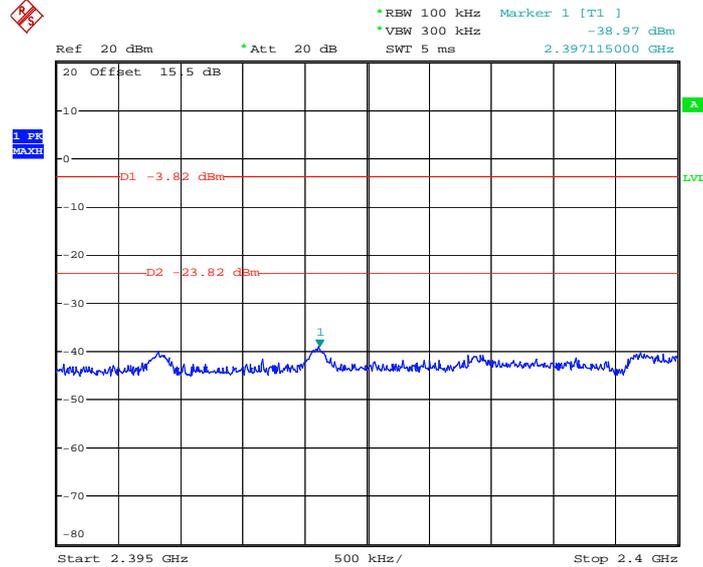
Date: 5.MAY.2011 13:34:51



Test Mode :	Mode 10 and 12	Temperature :	20~21°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	40~41%
Test Channel :	03 and 09	Test Engineer :	Jason Chia

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

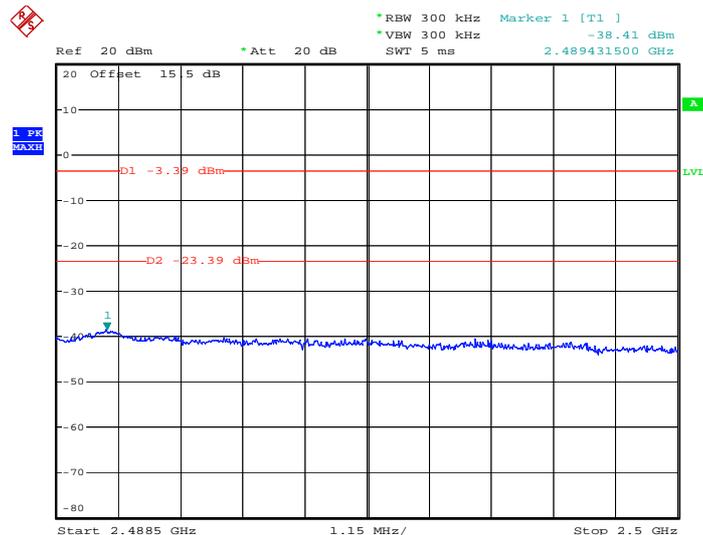
A+B(A)



Date: 5.MAY.2011 14:34:58

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

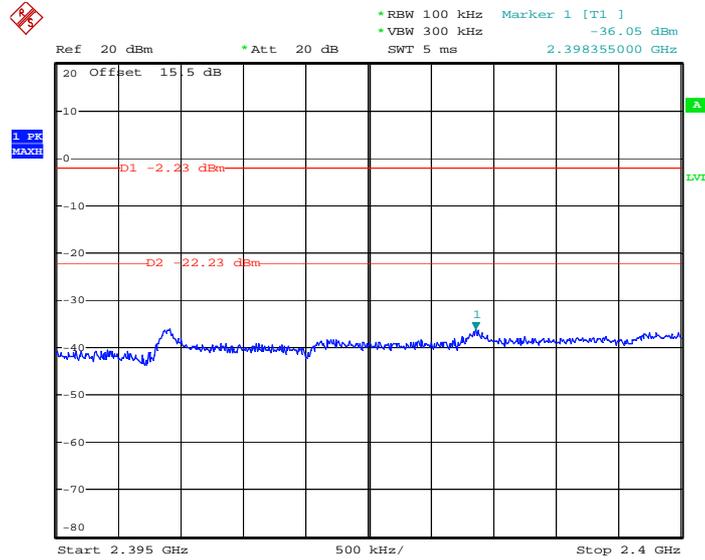
A+B(A)



Date: 5.MAY.2011 15:06:12

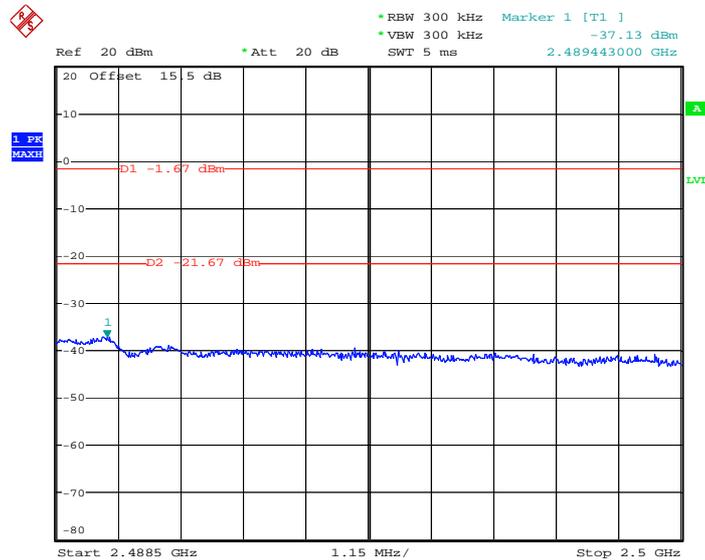


Low Band Edge Plot on 802.11n (BW 40MHz) Channel 03- Chain A+B(B)



Date: 5.MAY.2011 15:47:24

High Band Edge Plot on 802.11n (BW 40MHz) Channel 09- Chain A+B(B)



Date: 5.MAY.2011 15:20:51

### 3.3 Spurious Emission Measurement

#### 3.3.1 Limit of Spurious Emission Measurement

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

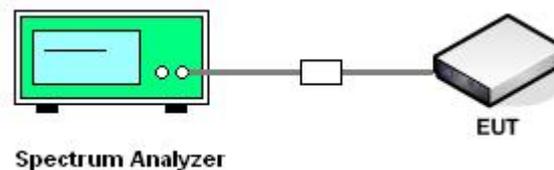
#### 3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.3.3 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.

#### 3.3.4 Test Setup

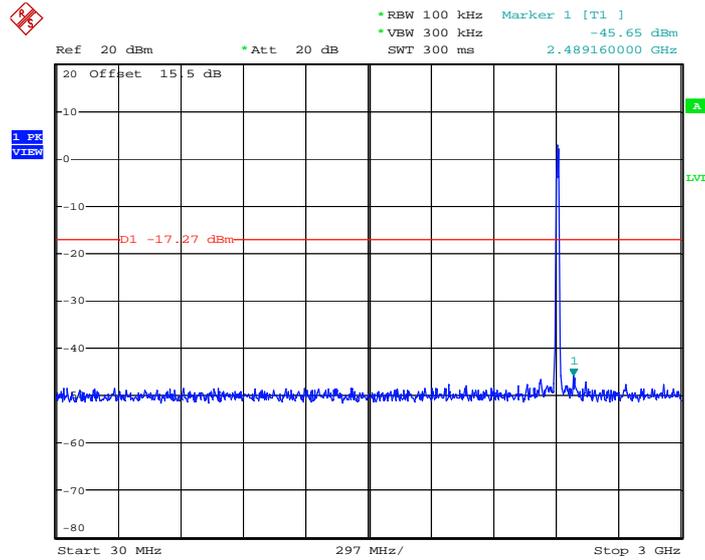




3.3.5 Test Plots of Spurious Emission

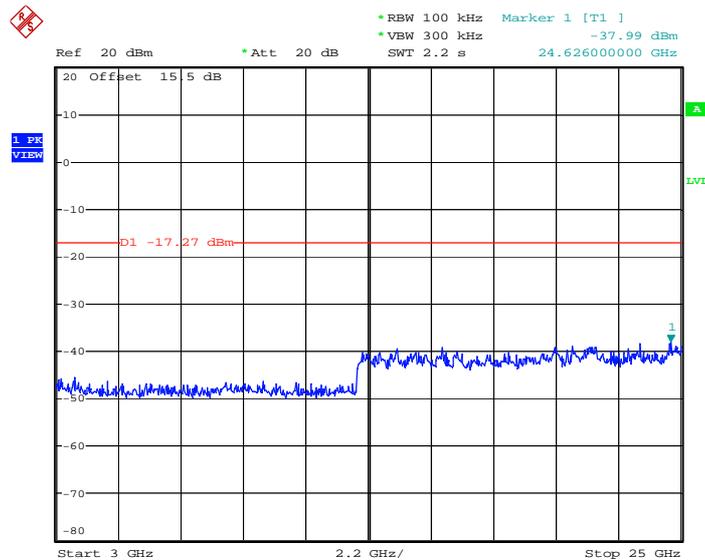
Test Mode :	Mode 1	Temperature :	20~21°C
Test Band :	802.11b	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Jason Chia

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.MAY.2011 10:03:03

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

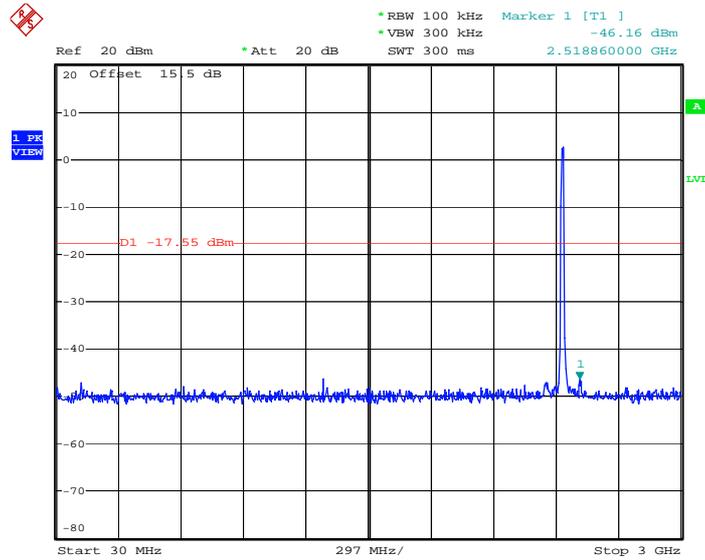


Date: 5.MAY.2011 10:03:20



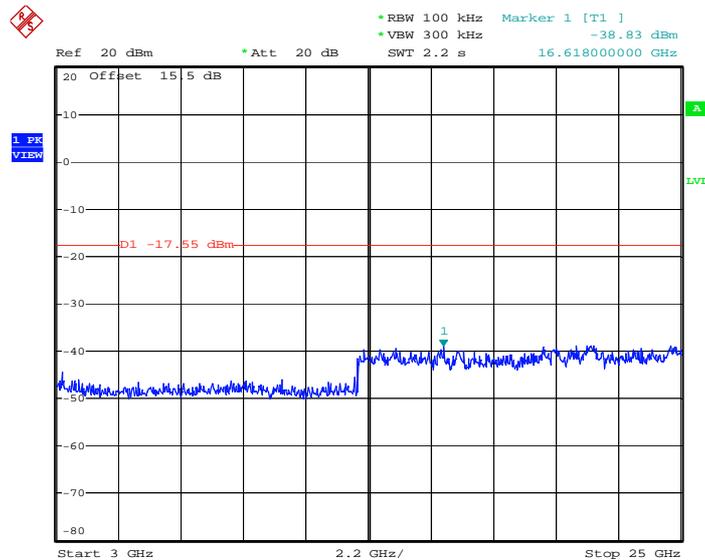
Test Mode :	Mode 2	Temperature :	20~21°C
Test Band :	802.11b	Relative Humidity :	40~41%
Test Channel :	06	Test Engineer :	Jason Chia

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.MAY.2011 10:16:51

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

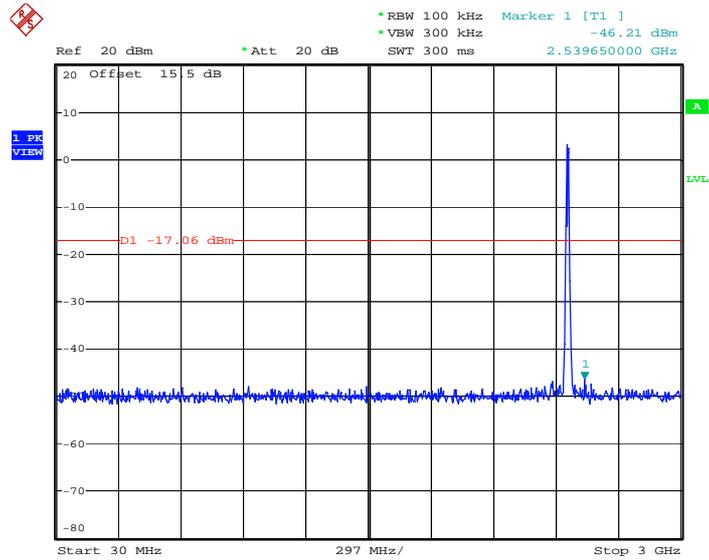


Date: 5.MAY.2011 10:17:08



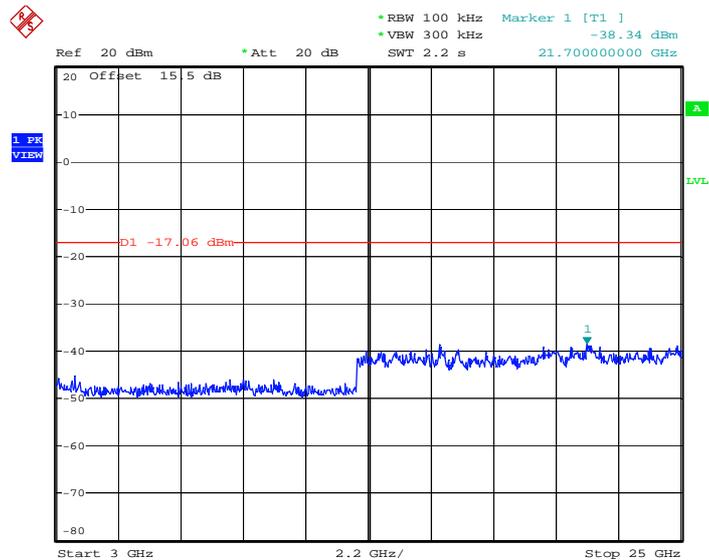
Test Mode :	Mode 3	Temperature :	20~21°C
Test Band :	802.11b	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Jason Chia

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.MAY.2011 10:30:15

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

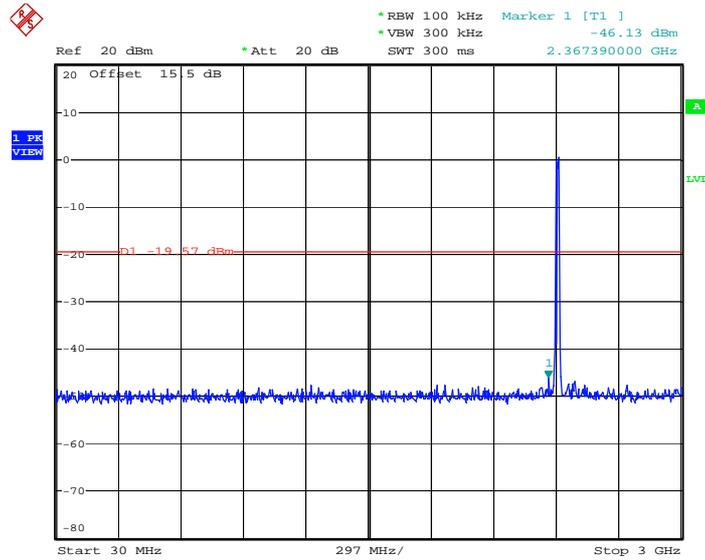


Date: 5.MAY.2011 10:30:32



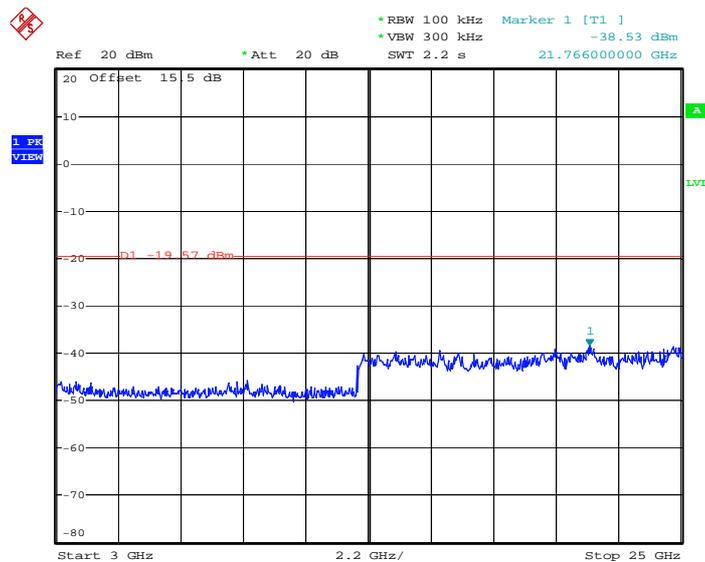
Test Mode :	Mode 4	Temperature :	20~21°C
Test Band :	802.11g	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Jason Chia

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.MAY.2011 11:57:25

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

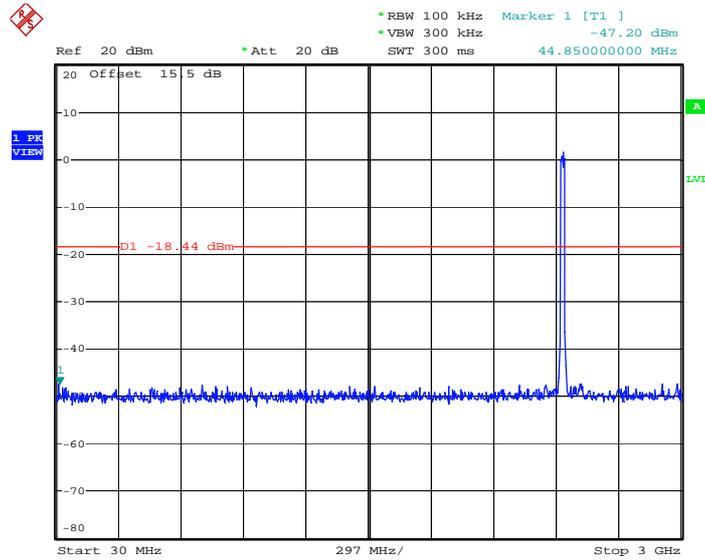


Date: 5.MAY.2011 11:57:41



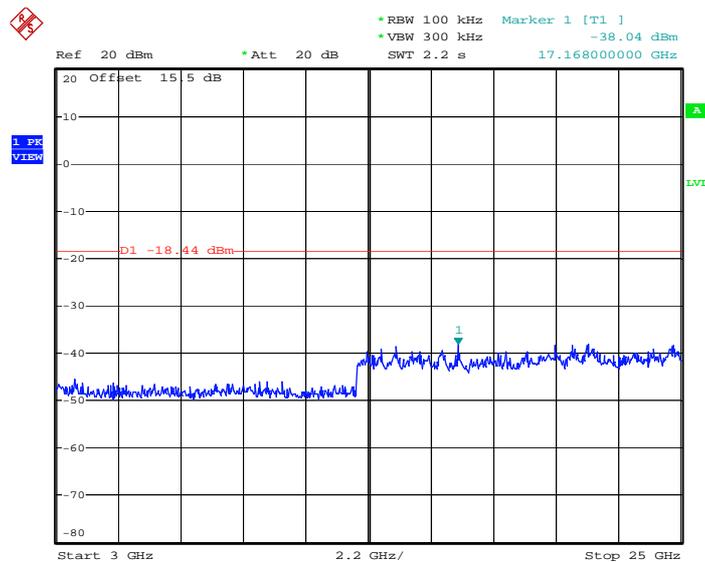
Test Mode :	Mode 5	Temperature :	20~21
Test Band :	802.11g	Relative Humidity :	40~41
Test Channel :	06	Test Engineer :	Jason Chia

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.MAY.2011 11:51:35

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

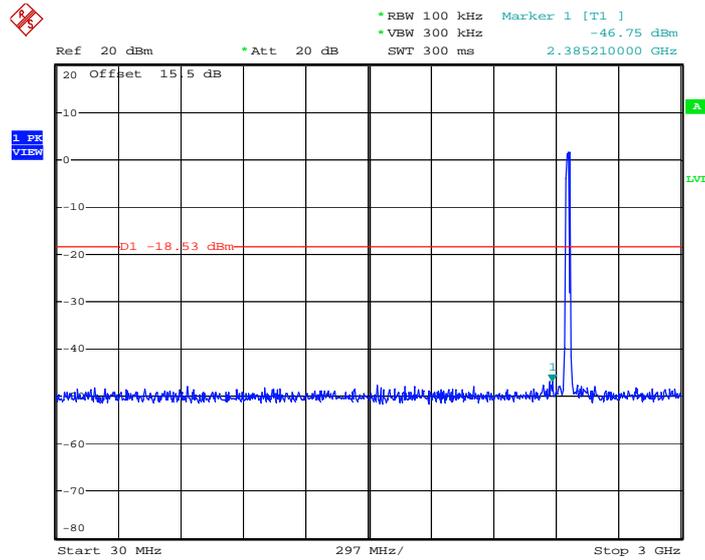


Date: 5.MAY.2011 11:51:52



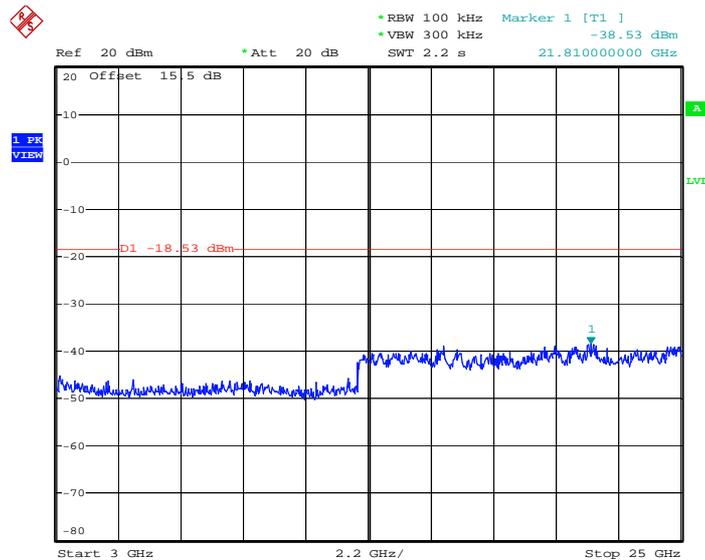
Test Mode :	Mode 6	Temperature :	20~21°C
Test Band :	802.11g	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Jason Chia

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.MAY.2011 11:39:25

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz

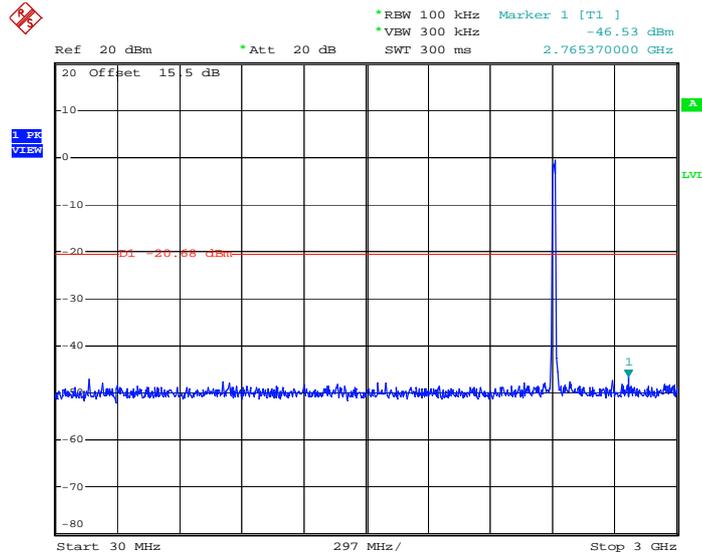


Date: 5.MAY.2011 11:39:43



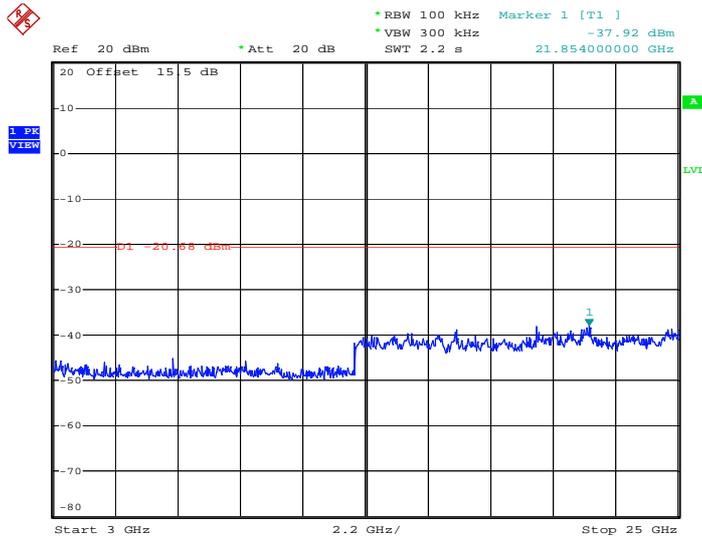
Test Mode :	Mode 7	Temperature :	20~21°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Jason Chia

**Conducted Spurious Emission Plot between 30MHz ~ 3 GHz-  
Chain A+B(A)**



Date: 5.MAY.2011 14:20:45

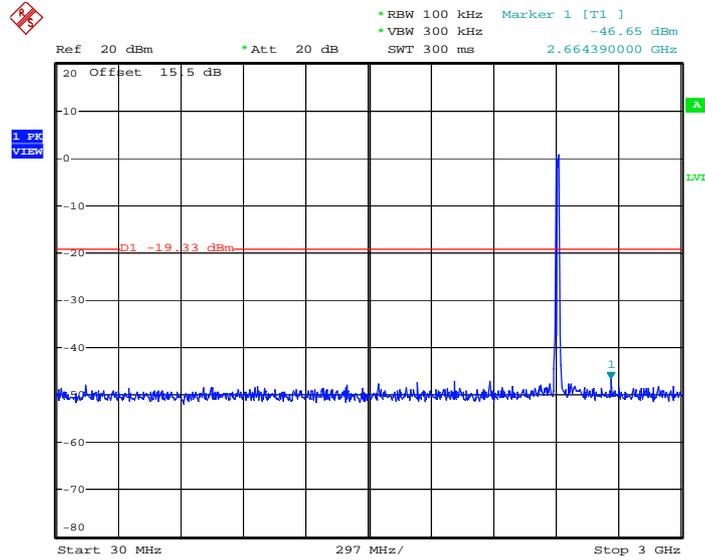
**Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz-  
Chain A+B(A)**



Date: 5.MAY.2011 14:21:02

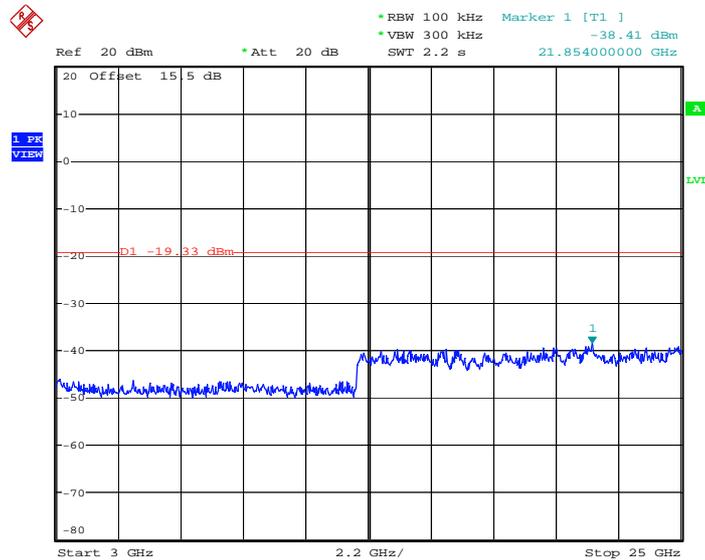


### Conducted Spurious Emission Plot between 30MHz ~ 3 GHz- Chain A+B(B)



Date: 5.MAY.2011 13:06:07

### Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz- Chain A+B(B)

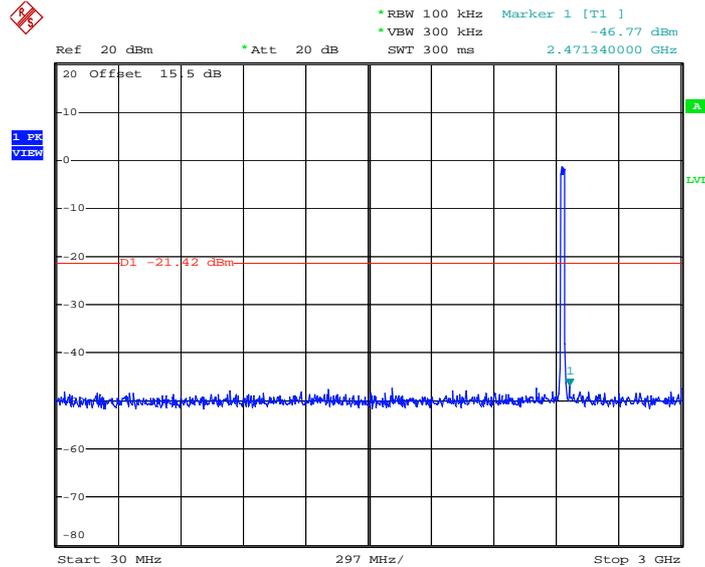


Date: 5.MAY.2011 13:06:24



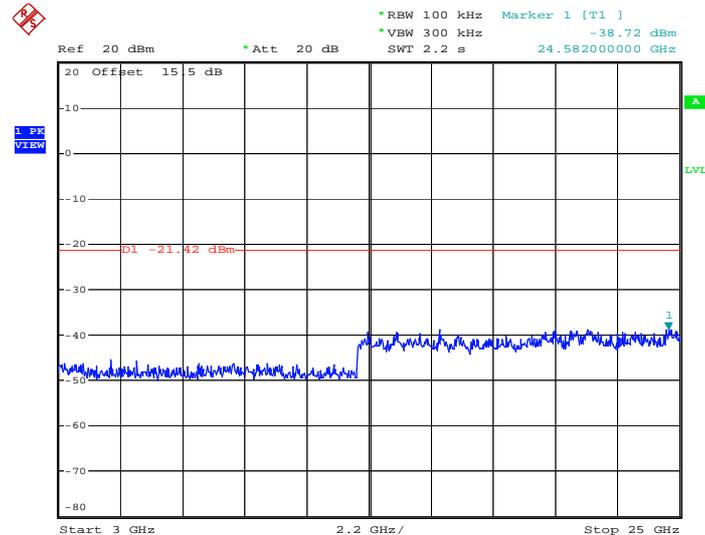
Test Mode :	Mode 8	Temperature :	20~21°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~41%
Test Channel :	06	Test Engineer :	Jason Chia

**Conducted Spurious Emission Plot between 30MHz ~ 3 GHz-  
Chain A+B(A)**



Date: 5.MAY.2011 14:06:22

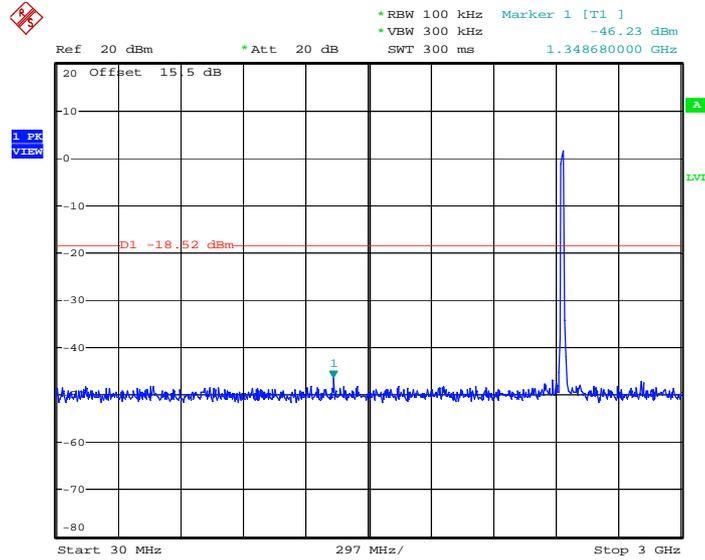
**Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz-  
Chain A+B(A)**



Date: 5.MAY.2011 14:06:39

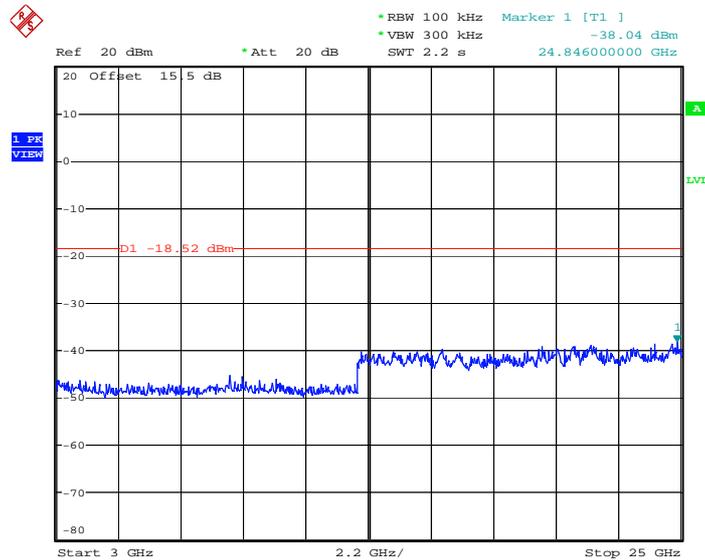


Conducted Spurious Emission Plot between 30MHz ~ 3 GHz-  
Chain A+B(B)



Date: 5.MAY.2011 13:21:35

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz-  
Chain A+B(B)

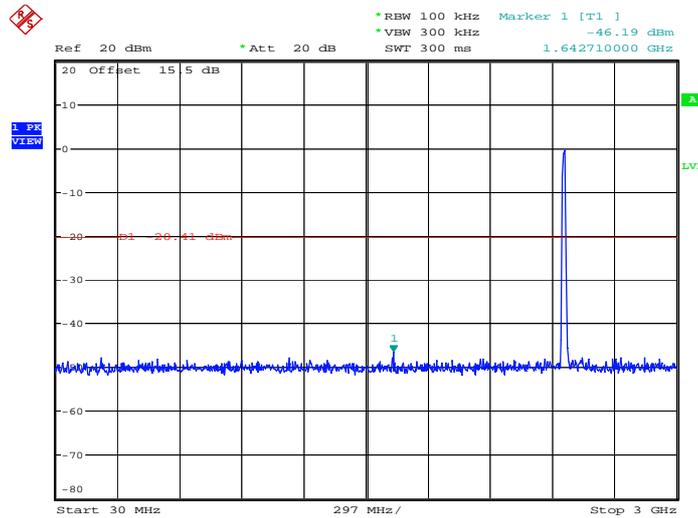


Date: 5.MAY.2011 13:21:52



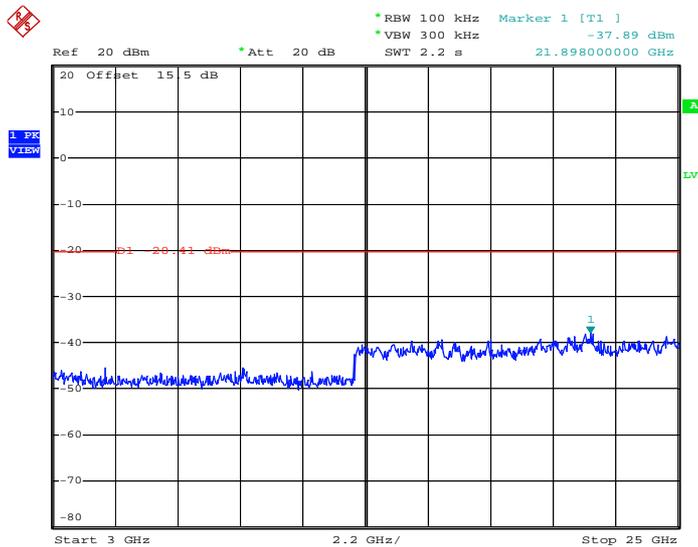
Test Mode :	Mode 9	Temperature :	20~21°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Jason Chia

**Conducted Spurious Emission Plot between 30MHz ~ 3 GHz-  
Chain A+B(A)**



Date: 5.MAY.2011 13:51:02

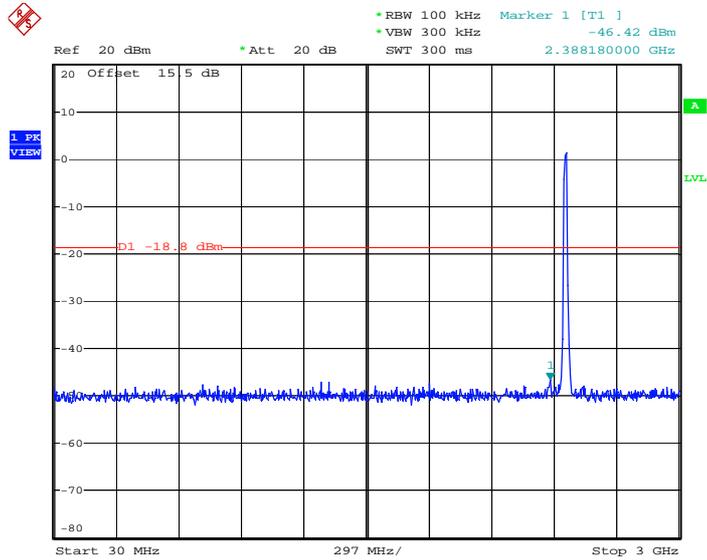
**Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz-  
Chain A+B(A)**



Date: 5.MAY.2011 13:51:20

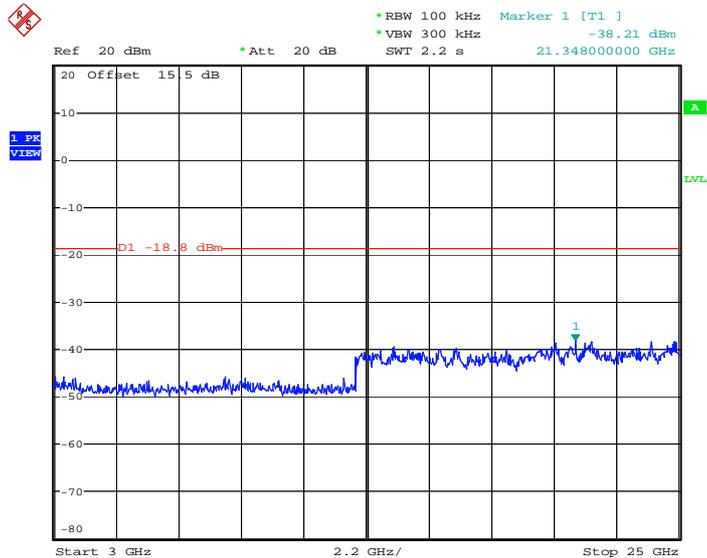


### Conducted Spurious Emission Plot between 30MHz ~ 3 GHz- Chain A+B(B)



Date: 5.MAY.2011 13:35:58

### Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz- Chain A+B(B)

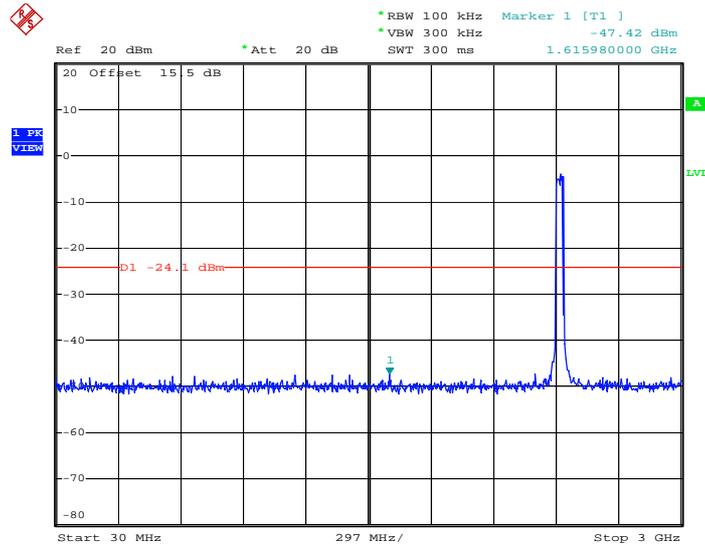


Date: 5.MAY.2011 13:36:16



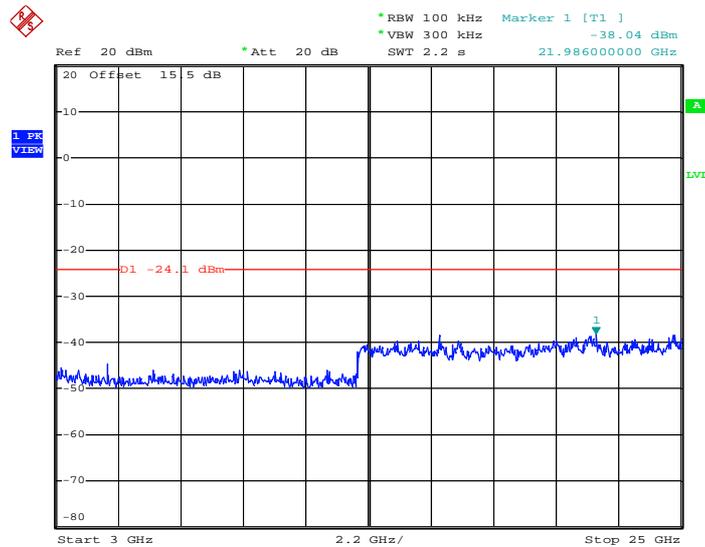
Test Mode :	Mode 10	Temperature :	20~21°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	40~41%
Test Channel :	03	Test Engineer :	Jason Chia

**Conducted Spurious Emission Plot between 30MHz ~ 3 GHz-  
Chain A+B(A)**



Date: 5.MAY.2011 14:35:56

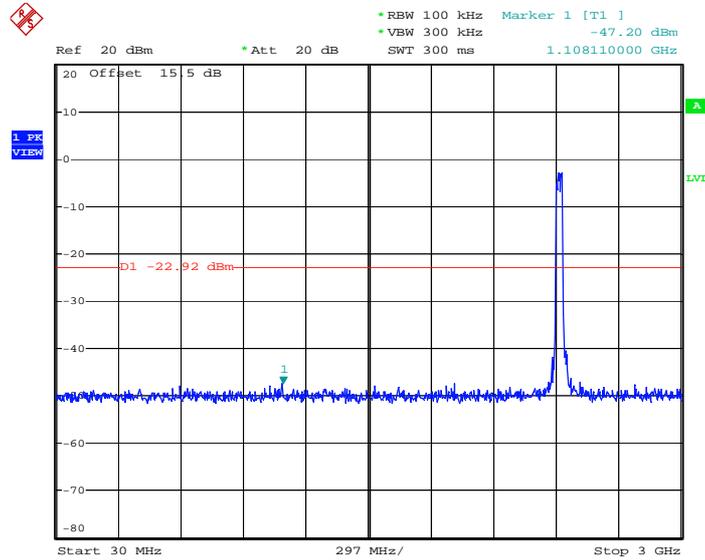
**Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz-  
Chain A+B(A)**



Date: 5.MAY.2011 14:36:14

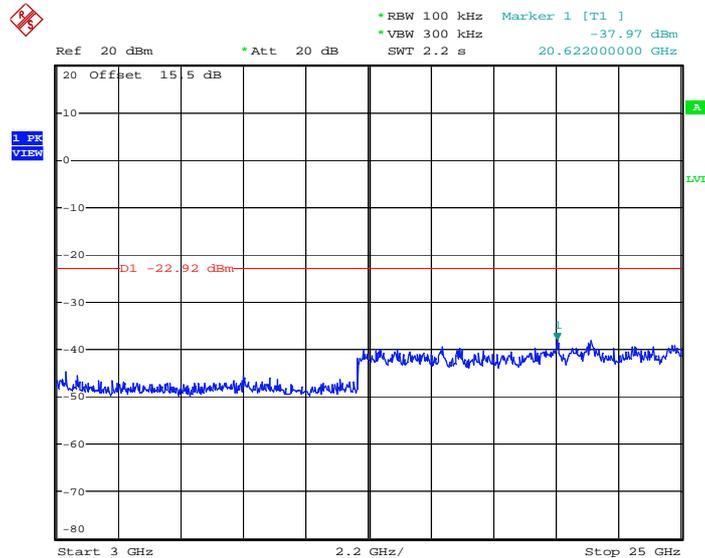


### Conducted Spurious Emission Plot between 30MHz ~ 3 GHz- Chain A+B(B)



Date: 5.MAY.2011 15:48:15

### Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz- Chain A+B(B)

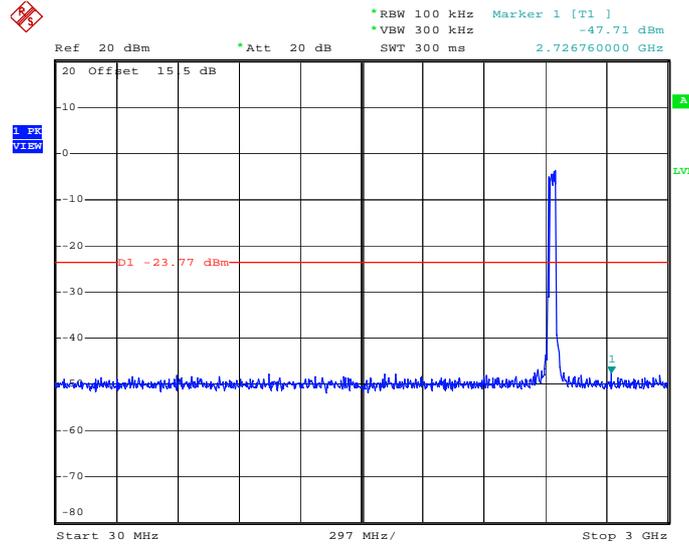


Date: 5.MAY.2011 15:48:32



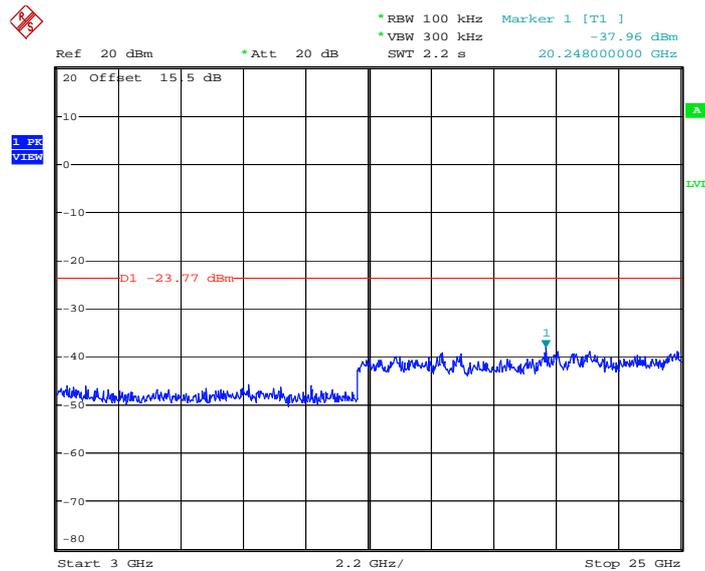
Test Mode :	Mode 11	Temperature :	20~21°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	40~41%
Test Channel :	06	Test Engineer :	Jason Chia

**Conducted Spurious Emission Plot between 30MHz ~ 3 GHz-  
Chain A+B(A)**



Date: 5.MAY.2011 14:51:11

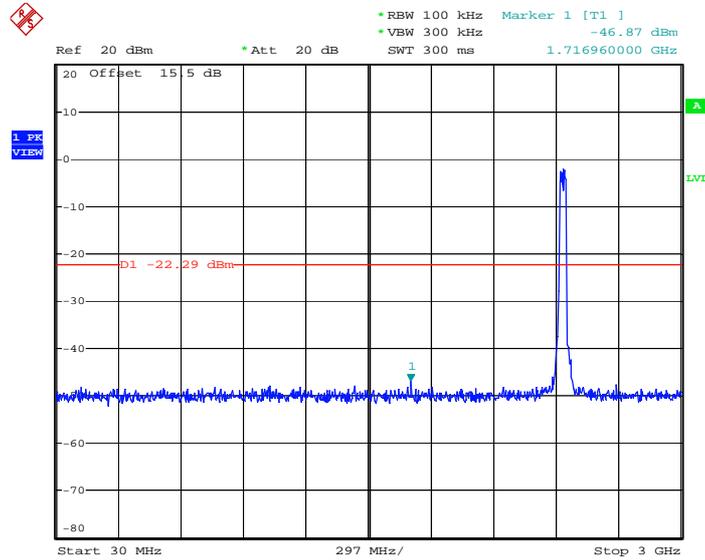
**Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz-  
Chain A+B(A)**



Date: 5.MAY.2011 14:51:28

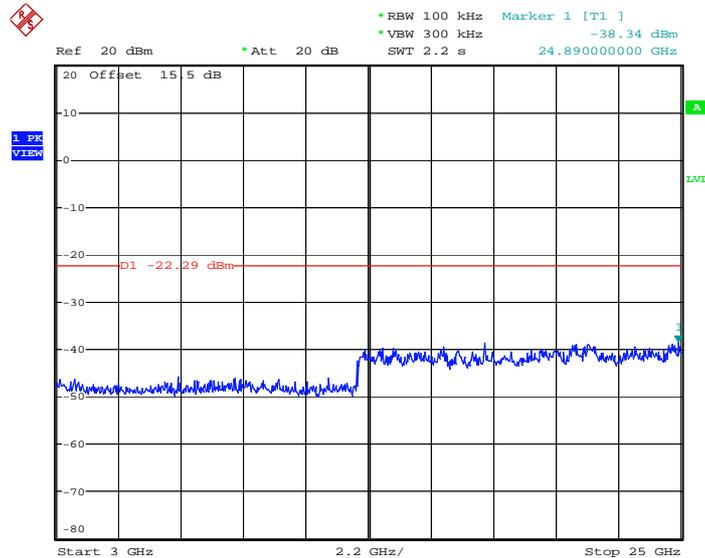


Conducted Spurious Emission Plot between 30MHz ~ 3 GHz-  
Chain A+B(B)



Date: 5.MAY.2011 15:35:13

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz-  
Chain A+B(B)

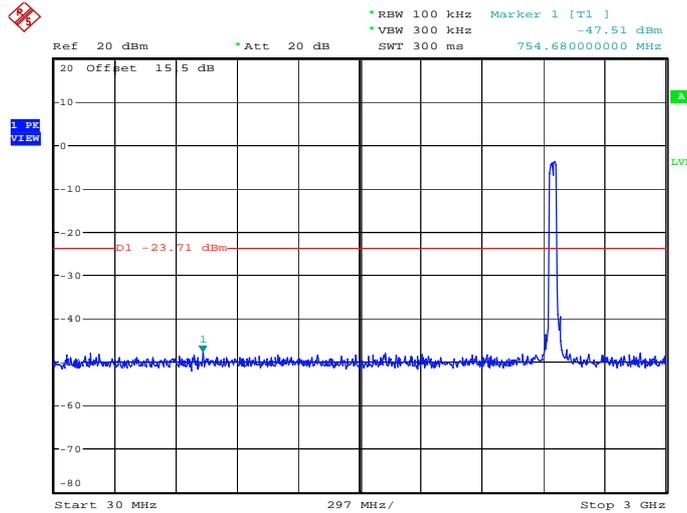


Date: 5.MAY.2011 15:35:30



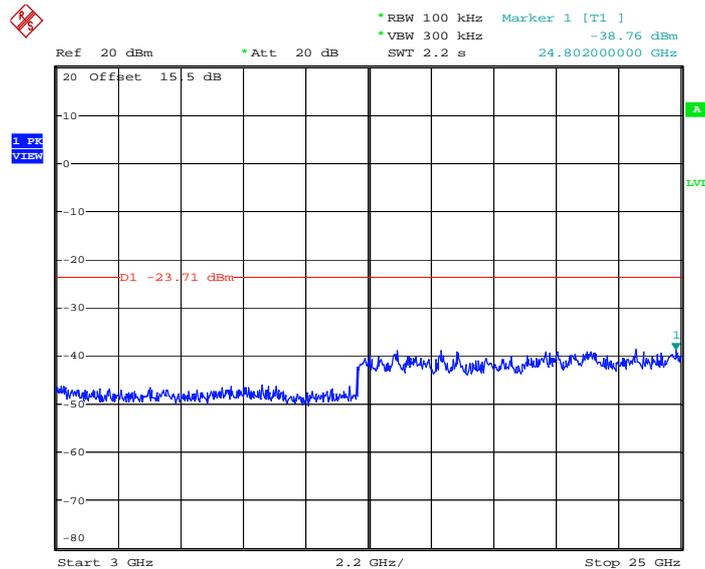
Test Mode :	Mode 12	Temperature :	20~21°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	40~41%
Test Channel :	09	Test Engineer :	Jason Chia

**Conducted Spurious Emission Plot between 30MHz ~ 3 GHz-  
Chain A+B(A)**



Date: 5.MAY.2011 15:07:00

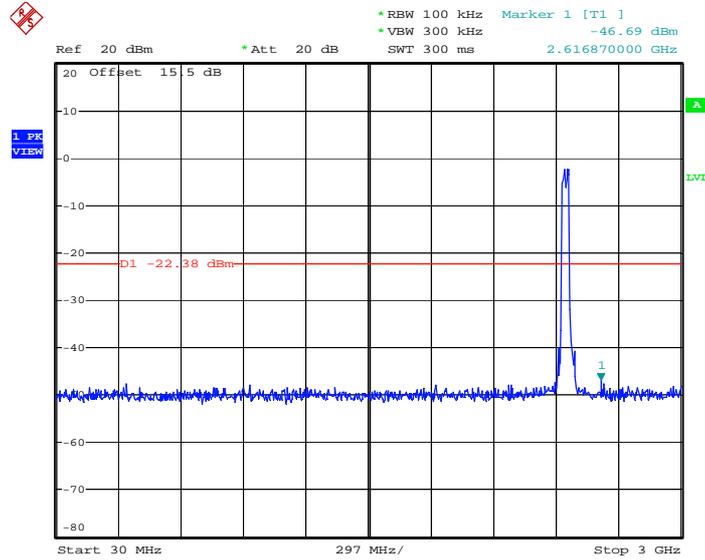
**Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz-  
Chain A+B(A)**



Date: 5.MAY.2011 15:07:17

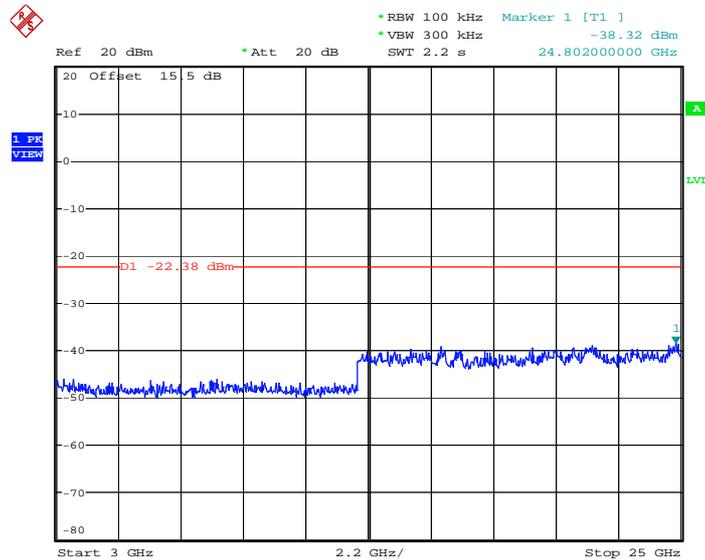


Conducted Spurious Emission Plot between 30MHz ~ 3 GHz-  
Chain A+B(B)



Date: 5.MAY.2011 15:21:37

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz-  
Chain A+B(B)



Date: 5.MAY.2011 15:21:54

## 3.4 Power Spectral Density Measurement

### 3.4.1 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.

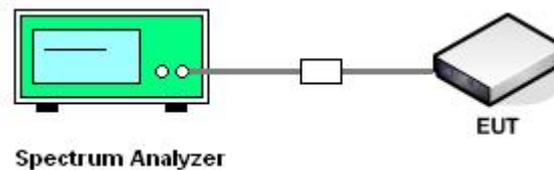
### 3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.4.3 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.

### 3.4.4 Test Setup



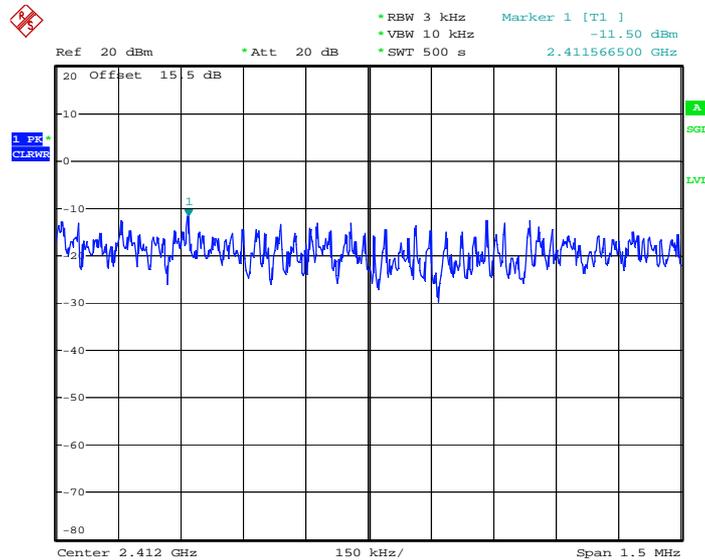


3.4.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	20~21°C
Test Engineer :	Jason Chia	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-11.50	8	Pass
06	2437	-11.37	8	Pass
11	2462	-10.92	8	Pass

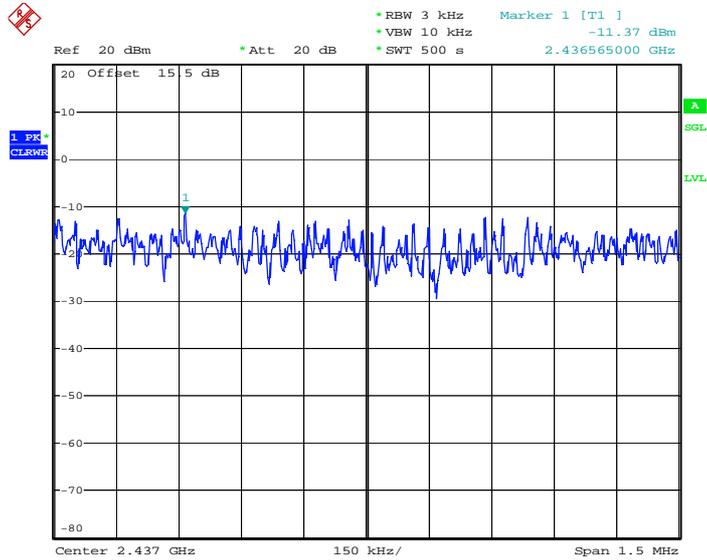
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 5.MAY.2011 10:13:14

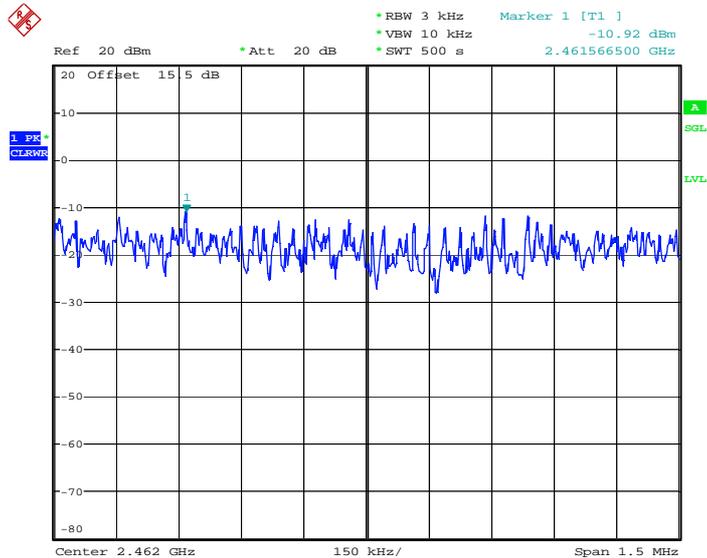


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 5.MAY.2011 10:25:55

Mode 3 : PSD Plot on 802.11b Channel 11



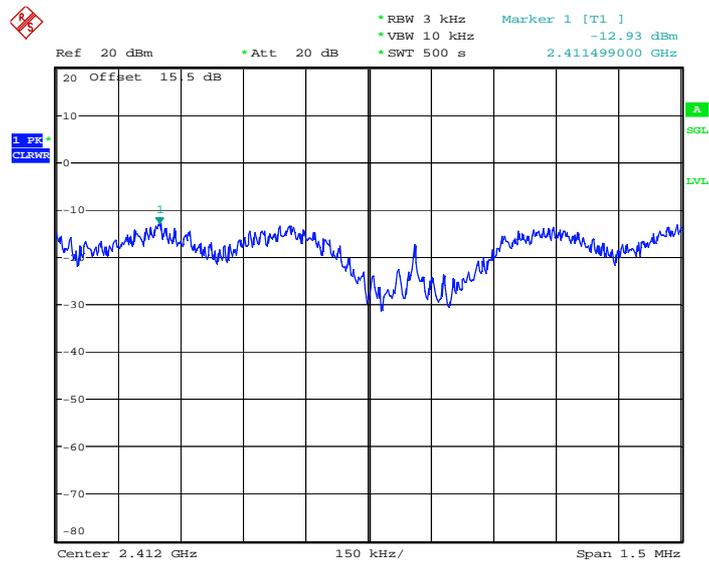
Date: 5.MAY.2011 10:48:00



Test Mode :	Mode 4, 5, 6	Temperature :	20~21°C
Test Engineer :	Jason Chia	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-12.93	8	Pass
06	2437	-12.40	8	Pass
11	2462	-12.04	8	Pass

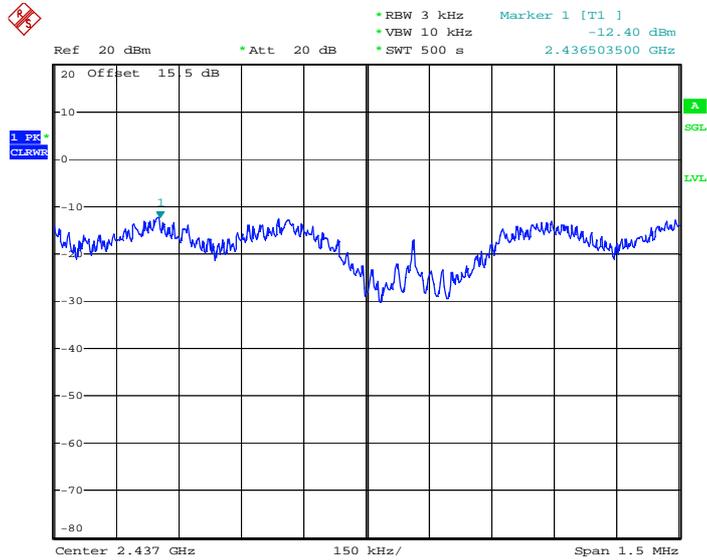
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 5.MAY.2011 11:19:15

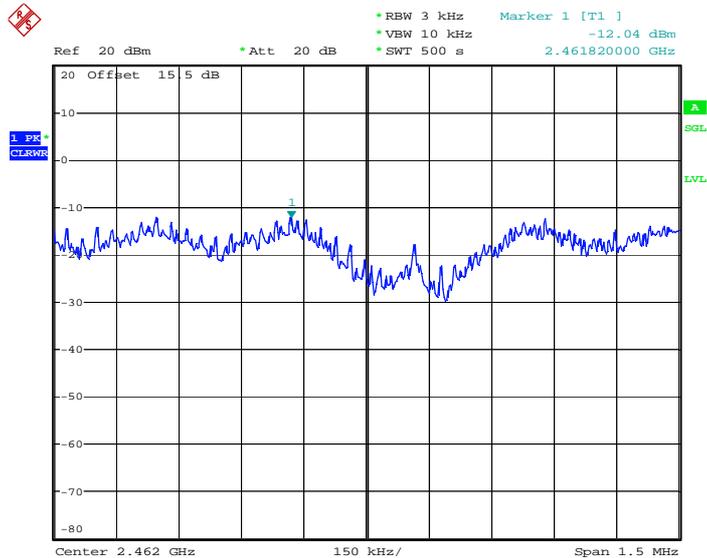


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 5.MAY.2011 11:33:37

Mode 6 : PSD Plot on 802.11g Channel 11



Date: 5.MAY.2011 11:48:38

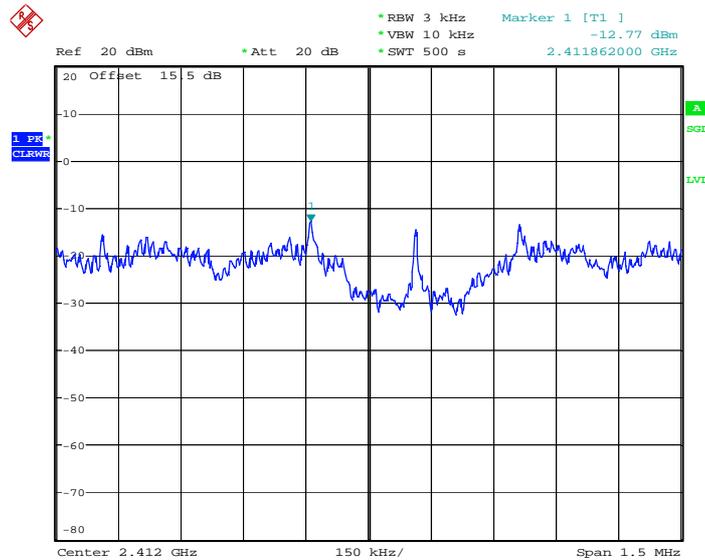


Test Mode :	Mode 7, 8, 9	Temperature :	20~21°C
Test Engineer :	Jason Chia	Relative Humidity :	40~41%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain A+B(A)	Chain A+B(B)	Summation		
01	2412	-12.77	-12.61	-9.68	8	Pass
06	2437	-12.88	-12.06	-9.44	8	Pass
11	2462	-12.77	-11.63	-9.15	8	Pass

Note: PSD was measured at each output and summed the PSDs.

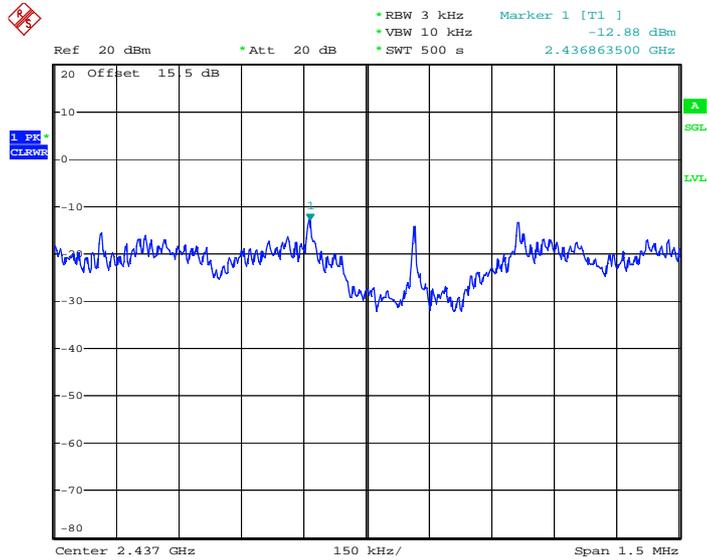
**Mode 7 : PSD Plot on 802.11n (BW 20MHz) Channel 01- Chain A+B(A)**



Date: 5.MAY.2011 14:30:08

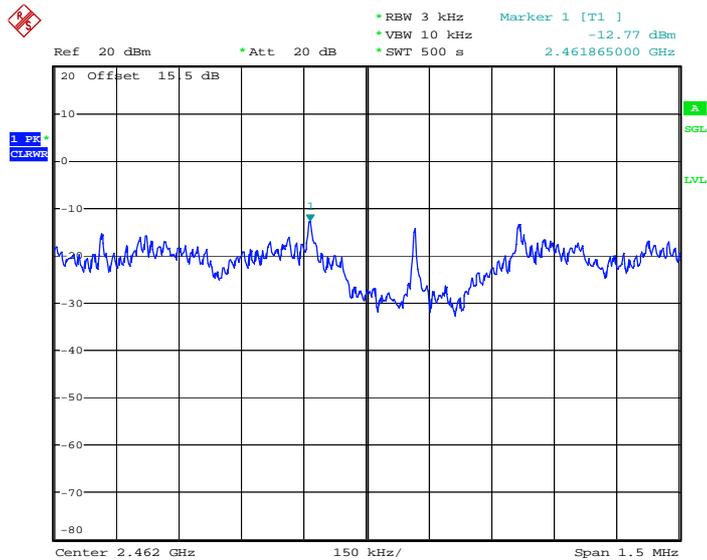


Mode 8 : PSD Plot on 802.11n (BW 20MHz) Channel 06- Chain A+B(A)



Date: 5.MAY.2011 14:16:29

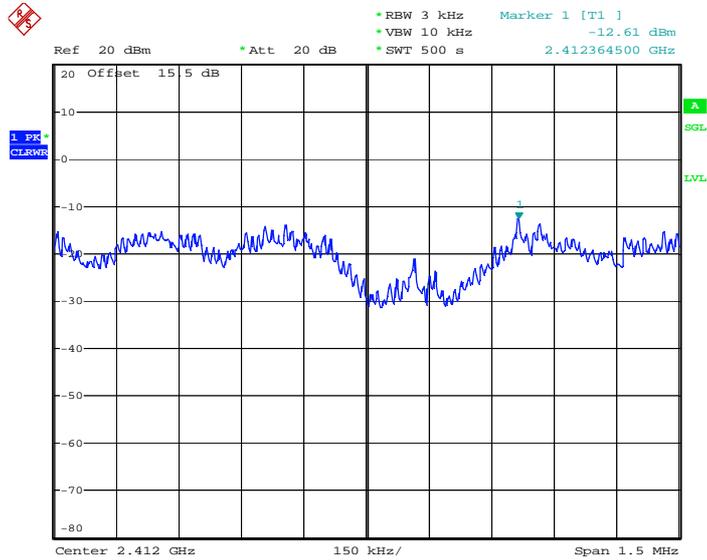
Mode 9 : PSD Plot on 802.11n (BW 20MHz) Channel 11- Chain A+B(A)



Date: 5.MAY.2011 14:02:03

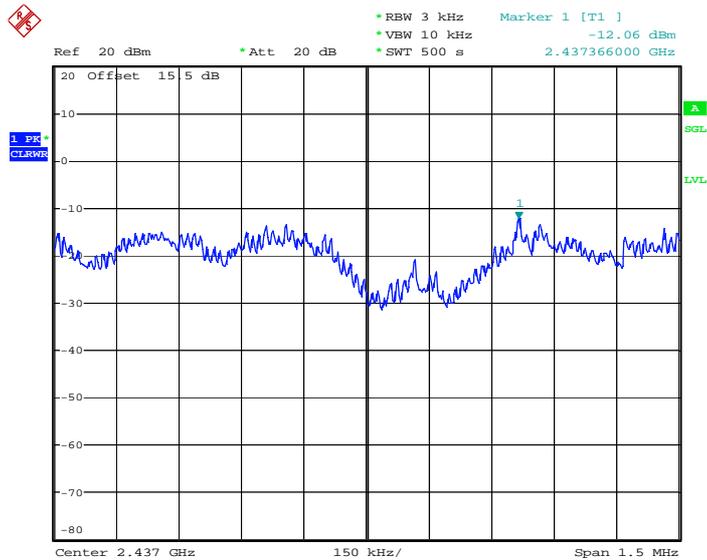


Mode 7 : PSD Plot on 802.11n (BW 20MHz) Channel 01- Chain A+B(B)



Date: 5.MAY.2011 13:15:16

Mode 8 : PSD Plot on 802.11n (BW 20MHz) Channel 06- Chain A+B(B)



Date: 5.MAY.2011 13:31:50

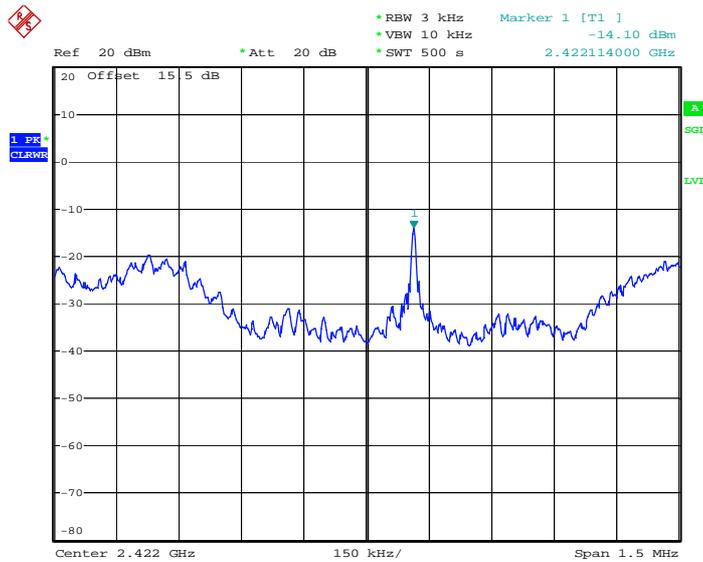




Test Mode :	Mode 10, 11, 12	Temperature :	20~21
Test Engineer :	Jason Chia	Relative Humidity :	40~41

Channel	Frequency (MHz)	802.11n (BW 40MHz) Measured PSD (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain A+B(A)	Chain A+B(B)	Summation		
03	2422	-14.10	-17.81	-12.56	8	Pass
06	2437	-14.09	-17.81	-12.55	8	Pass
09	2452	-13.83	-17.76	-12.35	8	Pass

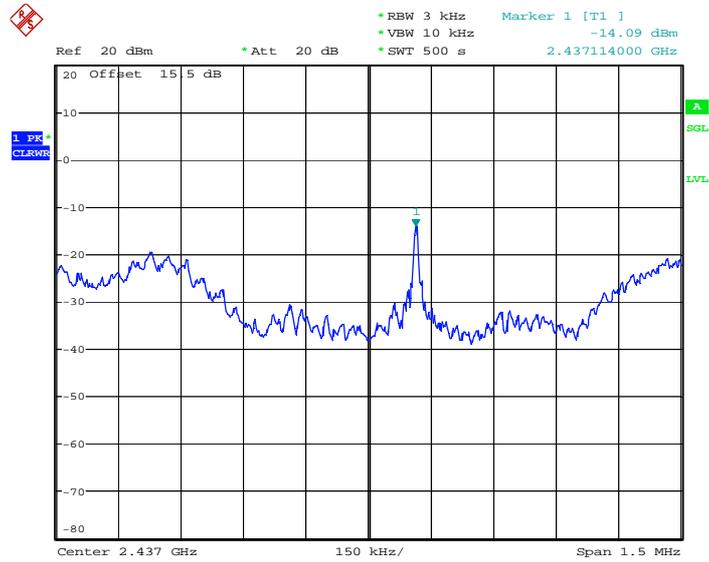
Mode 10 : PSD Plot on 802.11n (BW 40MHz) Channel 03- Chain A+B(A)



Date: 5.MAY.2011 14:46:16

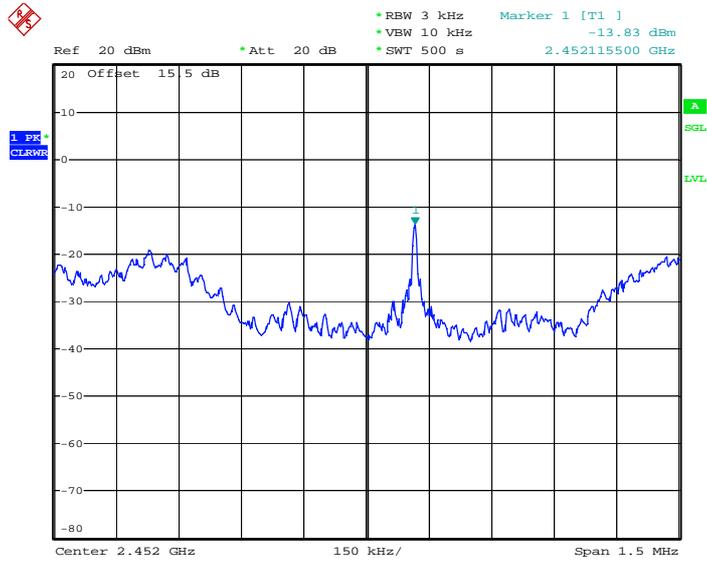


Mode 11 : PSD Plot on 802.11n (BW 40MHz) Channel 06- Chain A+B(A)



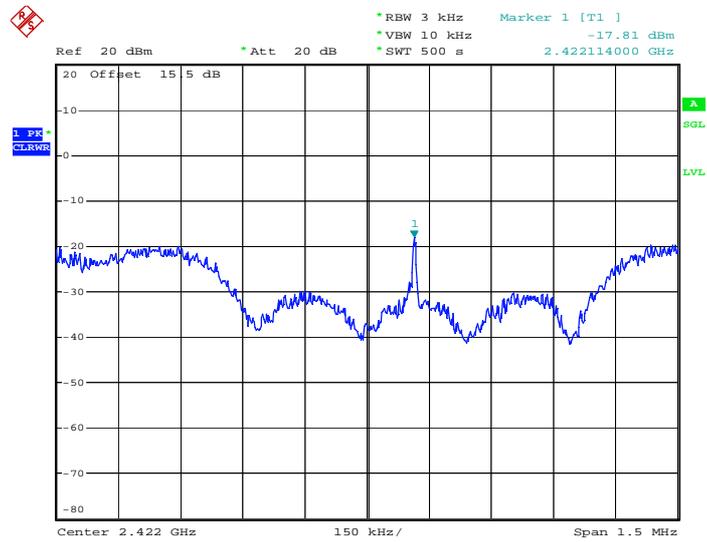
Date: 5.MAY.2011 15:01:52

Mode 12 : PSD Plot on 802.11n (BW 40MHz) Channel 09- Chain A+B(A)



Date: 5.MAY.2011 15:16:03

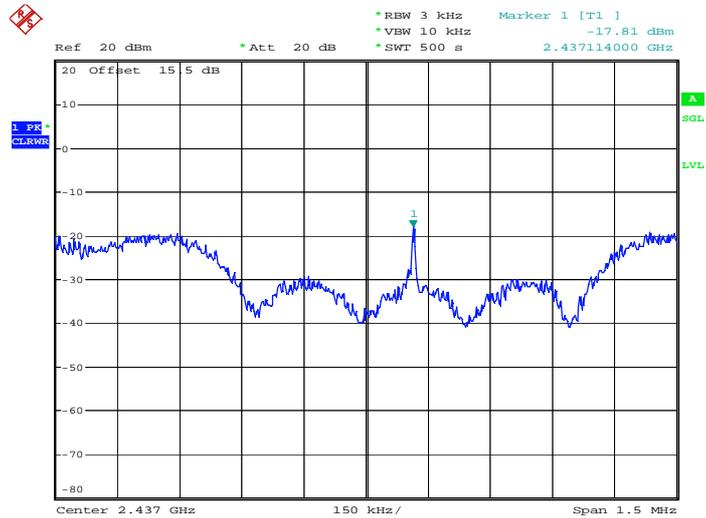
**Mode 10 : PSD Plot on 802.11n (BW 40MHz) Channel 03- Chain A+B(B)**



Date: 5.MAY.2011 15:58:02

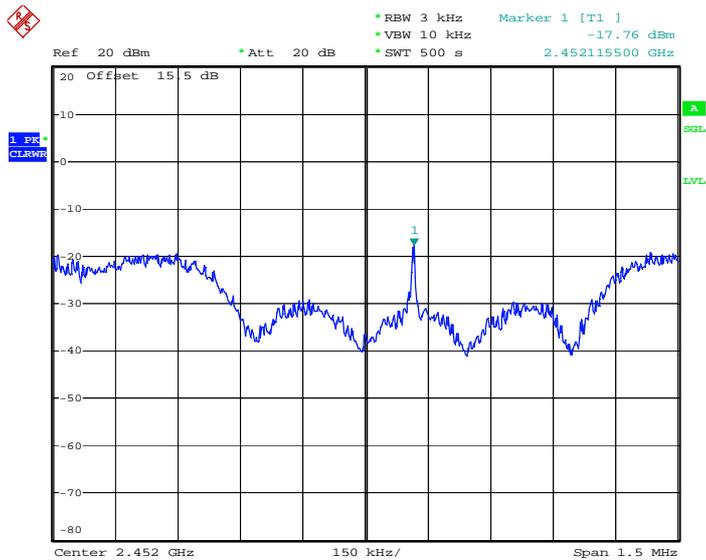


Mode 11 : PSD Plot on 802.11n (BW 40MHz) Channel 06- Chain A+B(B)



Date: 5.MAY.2011 15:44:07

Mode 12 : PSD Plot on 802.11n (BW 40MHz) Channel 09- Chain A+B(B)



Date: 5.MAY.2011 15:31:21

### 3.5 AC Conducted Emission Measurement

#### 3.5.1 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.

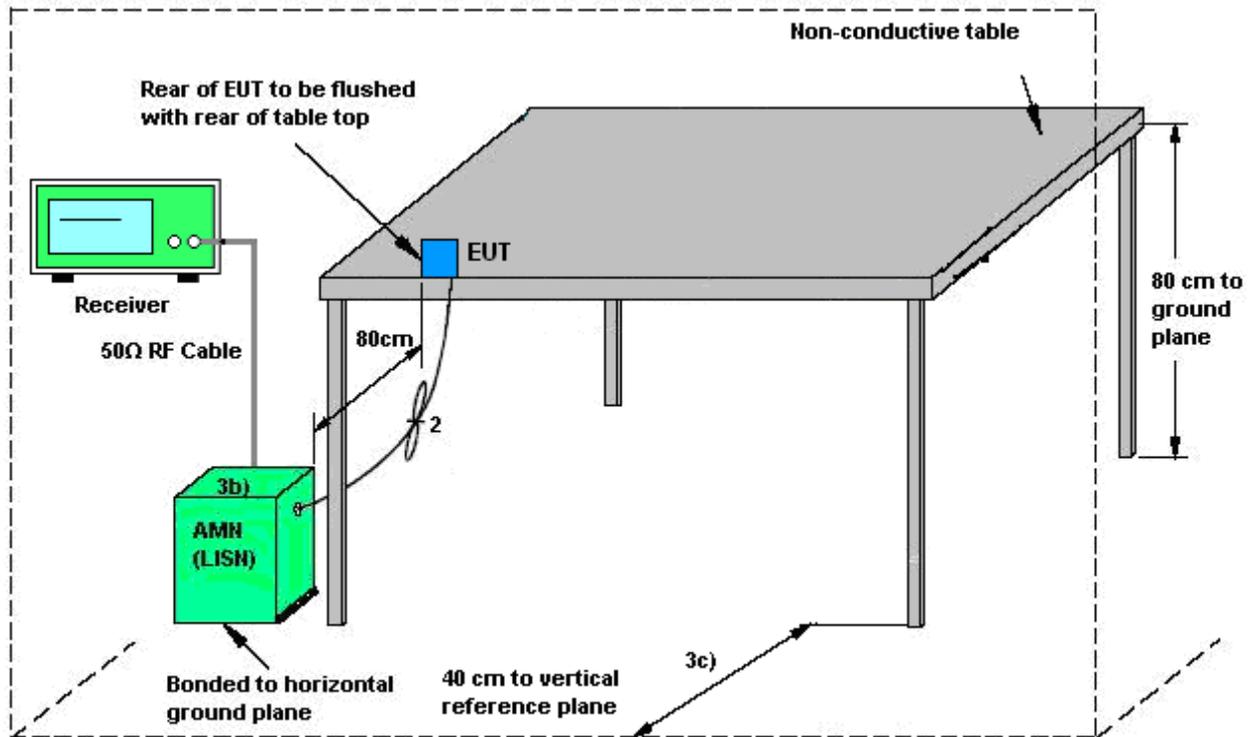
#### 3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.5.3 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.

### 3.5.4 Test Setup

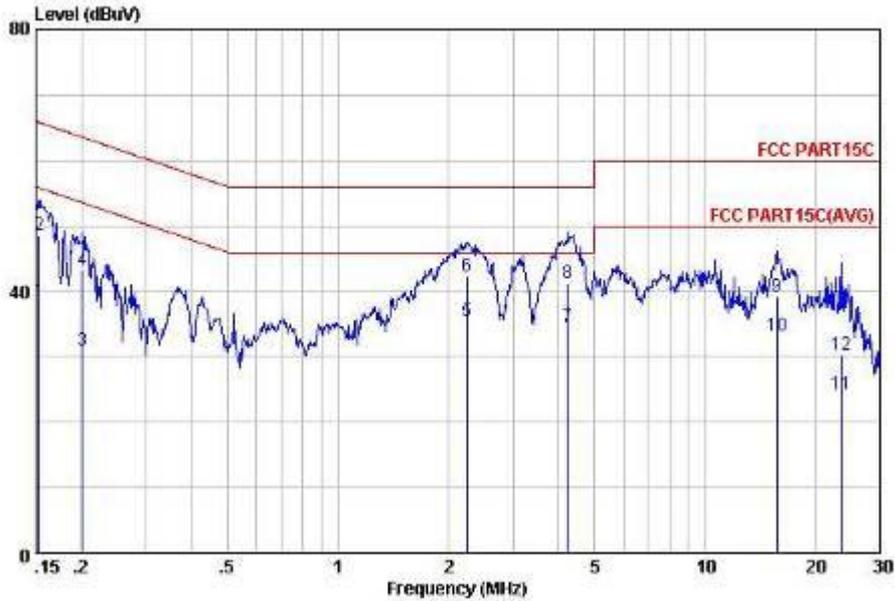


AMN = Artificial mains network (LISN)  
 AE = Associated equipment  
 EUT = Equipment under test  
 ISN = Impedance stabilization network



3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~21°C
Test Engineer :	Jason Chia	Relative Humidity :	40~41%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link + RJ11 Link + RJ45 Link + Adapter 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



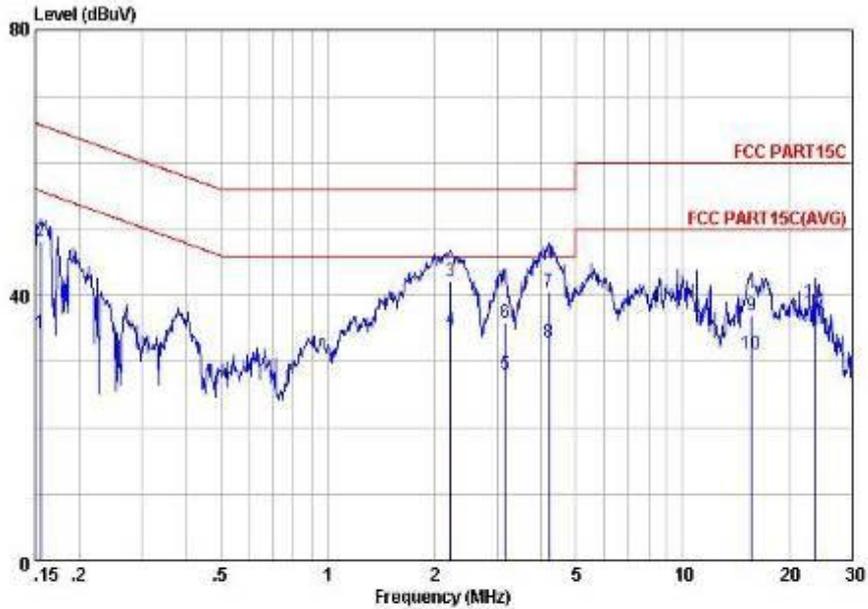
Site : C001-R3  
 Condition: FCC PART15C LISN-100807 LINE

mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15	38.47	-27.35	65.82	28.40	-0.07	10.14	Average
2	0.15	48.67	-17.15	65.82	38.60	-0.07	10.14	QP
3	0.20	30.88	-32.70	63.58	20.80	-0.07	10.15	Average
4	0.20	43.28	-20.30	63.58	33.20	-0.07	10.15	QP
5	2.25	35.33	-20.67	56.00	25.10	-0.11	10.34	Average
6	2.25	42.43	-13.57	56.00	32.20	-0.11	10.34	QP
7	4.22	34.46	-21.54	56.00	24.20	-0.13	10.39	Average
8	4.22	41.26	-14.74	56.00	31.00	-0.13	10.39	QP
9	15.72	39.11	-20.89	60.00	28.60	-0.01	10.52	QP
10	15.72	33.11	-26.89	60.00	22.60	-0.01	10.52	Average
11	23.64	24.26	-35.74	60.00	13.49	0.14	10.63	Average
12	23.64	30.26	-29.74	60.00	19.49	0.14	10.63	QP



Test Mode :	Mode 1	Temperature :	20~21°C
Test Engineer :	Jason Chia	Relative Humidity :	40~41%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link + RJ11 Link + RJ45 Link + Adapter 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-K3  
 Condition: FCC PART15C LISN-100807 NEUTRAL

mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.16	34.35	-31.34	65.69	24.30	-0.09	10.14	Average
2	0.16	40.15	-17.54	65.69	38.10	-0.09	10.14	QP
3	2.21	42.13	-13.87	56.00	31.90	-0.11	10.34	QP
4	2.21	34.73	-21.27	56.00	24.50	-0.11	10.34	Average
5	3.16	28.15	-27.85	56.00	17.90	-0.12	10.37	Average
6	3.16	35.95	-20.05	56.00	25.70	-0.12	10.37	QP
7	4.20	40.56	-15.44	56.00	30.30	-0.13	10.39	QP
8	4.20	33.06	-22.94	56.00	22.80	-0.13	10.39	Average
9	15.63	36.89	-23.11	60.00	26.40	-0.03	10.52	QP
10	15.63	31.29	-28.71	60.00	20.80	-0.03	10.52	Average
11	23.54	39.01	-20.99	60.00	28.30	0.09	10.62	QP
12	23.54	37.41	-22.59	60.00	26.70	0.09	10.62	Average



### 3.6 Radiated Emission Measurement

#### 3.6.1 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

#### 3.6.2 Measuring Instruments

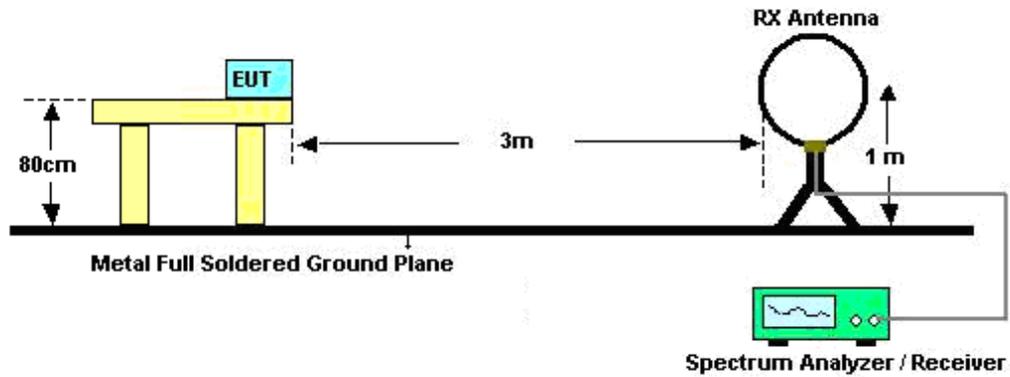
See list of measuring instruments of this test report.

#### 3.6.3 Test Procedures

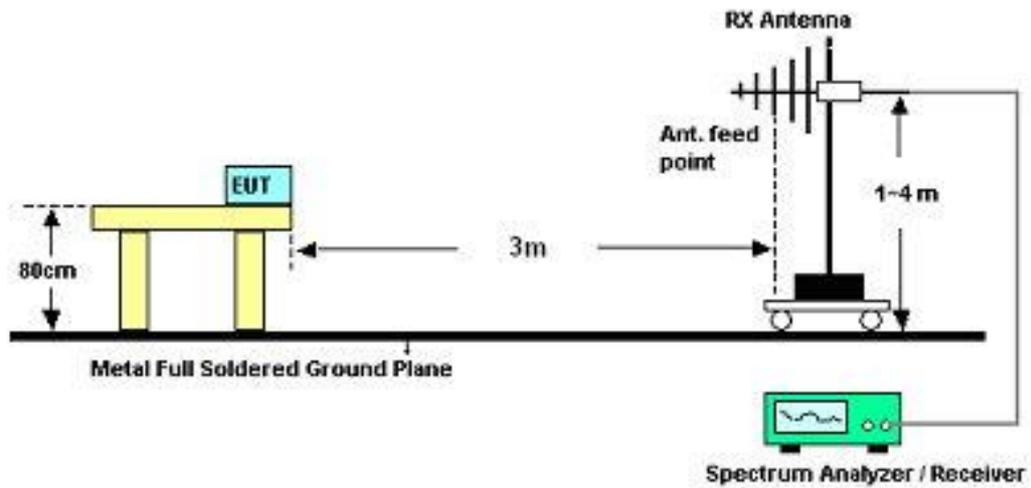
- 1.The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- 2.Use the following spectrum analyzer settings:
  - (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for  $f \geq 1$  GHz, 100 kHz for  $f < 1$  GHz; VBW  $\geq$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

### 3.6.4 Test Setup

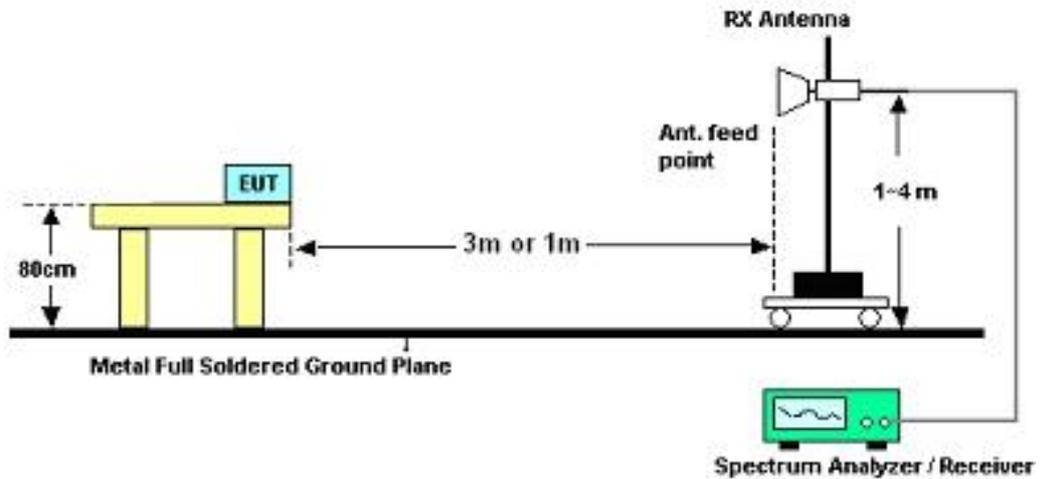
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

Test Engineer :	Xin Peng	Temperature :	20~21°C	
		Relative Humidity :	40~41%	
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.



3.6.6 Test Result of Radiated Emission (30 MHz ~ 10<sup>th</sup> Harmonic)

Test Mode :	Mode 1	Temperature :	20~21°C
Test Channel :	01	Relative Humidity :	40~41%
Test Engineer :	Xin Peng	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
32.16	23.38	-16.62	40	36.68	16.55	0.24	30.09	-	-	Peak
141.24	28.25	-15.25	43.5	47.03	10.73	0.49	30	-	-	Peak
215.76	30.83	-12.67	43.5	50.38	9.83	0.61	29.99	-	-	Peak
473.6	42.9	-3.1	46	55.03	16.7	0.93	29.76	-	-	Peak
512.1	42.99	-3.01	46	54.29	17.45	0.97	29.72	100	0	Peak
717.2	42.33	-3.67	46	51.38	19.48	1.14	29.67	-	-	Peak
2372.13	51.81	-22.19	74	49.57	32.83	3.42	34.01	100	0	Peak
2372.13	42.18	-11.82	54	39.94	32.83	3.42	34.01	100	0	Average
2412	99.77	-	-	97.44	32.89	3.52	34.08	100	330	Peak
2412	85.66	-	-	83.33	32.89	3.52	34.08	100	330	Average
2494.49	41.3	-12.7	54	38.76	33.05	3.72	34.23	100	336	Average
2494.49	52.71	-21.29	74	50.17	33.05	3.72	34.23	100	336	Peak
4826	53.06	-20.94	74	45.19	35.17	4.97	32.27	100	360	Peak
4826	48.1	-5.9	54	40.23	35.17	4.97	32.27	100	360	Average



Test Mode :	Mode 1	Temperature :	20~21°C
Test Channel :	01	Relative Humidity :	40~41%
Test Engineer :	Xin Peng	Polarization :	Vertical
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
51.8	35.66	-4.34	40	58.3	7.21	0.28	30.13	100	159	QP
60.24	36.91	-3.09	40	61.44	5.3	0.31	30.14	-	-	Peak
250.05	32.37	-13.63	46	49.54	12	0.67	29.84	-	-	Peak
400.1	41.25	-4.75	46	54.24	16	0.84	29.83	-	-	Peak
636	40.53	-5.47	46	50.25	18.83	1.09	29.64	-	-	Peak
909	42.34	-3.66	46	50.04	20.49	1.3	29.49	-	-	Peak
2331.09	56.76	-17.24	74	54.63	32.76	3.27	33.9	123	298	Peak
2331.09	48.87	-5.13	54	46.74	32.76	3.27	33.9	123	298	Average
2412	105.02	-	-	102.69	32.89	3.52	34.08	100	300	Peak
2412	92.2	-	-	89.87	32.89	3.52	34.08	100	300	Average
2492.97	56.51	-17.49	74	53.97	33.05	3.72	34.23	110	328	Peak
2492.97	52.02	-1.98	54	49.48	33.05	3.72	34.23	110	328	Average
4826	52.91	-21.09	74	45.04	35.17	4.97	32.27	100	0	Peak
4826	48.88	-5.12	54	41.01	35.17	4.97	32.27	100	0	Average



<b>Test Mode :</b>	Mode 2	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Xin Peng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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	23.31	-16.69	40	36.61	16.55	0.24	30.09	-	-	Peak
141.24	27.87	-15.63	43.5	46.65	10.73	0.49	30	-	-	Peak
247.62	30.61	-15.39	46	47.9	11.88	0.67	29.84	-	-	Peak
490.4	42.33	-3.67	46	54.05	17.07	0.95	29.74	100	360	Peak
505.1	41.45	-4.55	46	52.93	17.29	0.96	29.73	-	-	Peak
706.7	42.22	-3.78	46	51.43	19.36	1.14	29.71	-	-	Peak
2359.02	53.75	-20.25	74	51.54	32.81	3.38	33.98	100	241	Peak
2359.02	43.86	-10.14	54	41.65	32.81	3.38	33.98	100	241	Average
2437	101.4	-	-	99	32.95	3.6	34.15	100	350	Peak
2437	88.73	-	-	86.33	32.95	3.6	34.15	100	350	Average
2491.83	50.73	-23.27	74	48.19	33.05	3.72	34.23	100	360	Peak
2491.83	42.92	-11.08	54	40.38	33.05	3.72	34.23	100	360	Average
4876	52.33	-21.67	74	44.44	35.18	4.98	32.27	100	0	Peak
4876	47.9	-6.1	54	40.01	35.18	4.98	32.27	100	0	Average



<b>Test Mode :</b>	Mode 2	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Xin Peng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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
51.796	35.16	-4.84	40	57.8	7.21	0.28	30.13	100	140	QP
60.24	37	-3	40	61.53	5.3	0.31	30.14	-	-	Peak
250.05	31.54	-14.46	46	48.71	12	0.67	29.84	-	-	Peak
400.1	40.86	-5.14	46	53.85	16	0.84	29.83	-	-	Peak
706.7	39.19	-6.81	46	48.4	19.36	1.14	29.71	100	240	QP
741.7	41.56	-4.44	46	50.12	19.83	1.17	29.56	-	-	Peak
2355.79	58.03	-15.97	74	55.82	32.81	3.38	33.98	124	299	Peak
2355.79	48.77	-5.23	54	46.56	32.81	3.38	33.98	124	299	Average
2437	106.01	-	-	103.61	32.95	3.6	34.15	100	265	Peak
2437	91.73	-	-	89.33	32.95	3.6	34.15	100	265	Average
2491.83	54.2	-19.8	74	51.66	33.05	3.72	34.23	100	0	Peak
2491.83	45.74	-8.26	54	43.2	33.05	3.72	34.23	100	0	Average
4876	53.07	-20.93	74	45.18	35.18	4.98	32.27	100	360	Peak
4876	47.12	-6.88	54	39.23	35.18	4.98	32.27	100	360	Average
7312	50.39	-23.61	74	42.64	36.2	6.6	35.05	100	289	Peak
7312	46.18	-7.82	54	38.43	36.2	6.6	35.05	100	289	Average



<b>Test Mode :</b>	Mode 3	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Xin Peng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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	22.85	-17.15	40	36.15	16.55	0.24	30.09	-	-	Peak
141.24	28.25	-15.25	43.5	47.03	10.73	0.49	30	-	-	Peak
226.29	29.61	-16.39	46	48.33	10.59	0.63	29.94	-	-	Peak
490.4	36.98	-9.02	46	48.7	17.07	0.95	29.74	200	0	QP
512.1	42.99	-3.01	46	54.29	17.45	0.97	29.72	-	-	Peak
706.7	42.56	-3.44	46	51.77	19.36	1.14	29.71	-	-	Peak
2383.53	51.6	-22.4	74	49.36	32.83	3.42	34.01	100	360	Peak
2383.53	40.46	-13.54	54	38.22	32.83	3.42	34.01	100	360	Average
2462	101.75	-	-	99.3	32.98	3.64	34.17	100	360	Peak
2462	88.79	-	-	86.34	32.98	3.64	34.17	100	360	Average
2483.5	40.29	-13.71	54	37.8	33.01	3.68	34.2	100	240	Average
2483.5	51.06	-22.94	74	48.57	33.01	3.68	34.2	100	240	Peak



<b>Test Mode :</b>	Mode 3	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Xin Peng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2462 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
51.6	36.58	-3.42	40	59.22	7.21	0.28	30.13	-	-	Peak
59.97	36.75	-3.25	40	61.28	5.3	0.31	30.14	200	190	Peak
250.05	29.89	-16.11	46	47.06	12	0.67	29.84	-	-	Peak
400.1	40.72	-5.28	46	53.71	16	0.84	29.83	-	-	Peak
706.7	42.83	-3.17	46	52.04	19.36	1.14	29.71	100	0	Peak
741.7	41.07	-4.93	46	49.63	19.83	1.17	29.56	-	-	Peak
2385.43	58.07	-15.93	74	55.83	32.83	3.42	34.01	148	271	Peak
2385.43	50.34	-3.66	54	48.1	32.83	3.42	34.01	148	271	Average
2462	92.8	-	-	90.35	32.98	3.64	34.17	186	0	Average
2462	107.32	-	-	104.87	32.98	3.64	34.17	186	0	Peak
2483.5	56.41	-17.59	74	53.92	33.01	3.68	34.2	200	0	Peak
2483.5	44.87	-9.13	54	42.38	33.01	3.68	34.2	200	0	Average
4926	52.43	-21.57	74	44.51	35.19	4.99	32.26	100	0	Peak
4926	45.92	-8.08	54	38	35.19	4.99	32.26	100	0	Average



<b>Test Mode :</b>	Mode 4	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Xin Peng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
32.16	22.71	-17.29	40	36.01	16.55	0.24	30.09	-	-	Peak
141.24	27.87	-15.63	43.5	46.65	10.73	0.49	30	-	-	Peak
220.89	29.26	-16.74	46	48.44	10.17	0.62	29.97	-	-	Peak
409.2	39.82	-6.18	46	52.75	16.04	0.85	29.82	-	-	Peak
511.98	38.3	-7.7	46	49.6	17.45	0.97	29.72	158	360	QP
657.7	42.88	-3.12	46	52.5	18.95	1.09	29.66	-	-	Peak
2359.02	51.68	-22.32	74	49.47	32.81	3.38	33.98	100	231	Peak
2359.02	42.64	-11.36	54	40.43	32.81	3.38	33.98	100	231	Average
2412	100.18	-	-	97.85	32.89	3.52	34.08	100	300	Peak
2412	85.72	-	-	83.39	32.89	3.52	34.08	100	300	Average
2493.16	52.02	-21.98	74	49.48	33.05	3.72	34.23	100	250	Peak
2493.16	43.88	-10.12	54	41.34	33.05	3.72	34.23	100	250	Average
4824	53.25	-20.75	74	45.38	35.17	4.97	32.27	100	360	Peak
4824	46.58	-7.42	54	38.71	35.17	4.97	32.27	100	360	Average



Test Mode :	Mode 4	Temperature :	20~21°C
Test Channel :	01	Relative Humidity :	40~41%
Test Engineer :	Xin Peng	Polarization :	Vertical
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
51.6	36.36	-3.64	40	59	7.21	0.28	30.13	100	258	QP
60.24	34.57	-5.43	40	59.1	5.3	0.31	30.14	100	116	QP
250.05	32.15	-13.85	46	49.32	12	0.67	29.84	-	-	Peak
400.1	40.62	-5.38	46	53.61	16	0.84	29.83	-	-	Peak
706.7	42.72	-3.28	46	51.93	19.36	1.14	29.71	-	-	Peak
812.4	39.09	-6.91	46	47.45	19.98	1.26	29.6	-	-	Peak
2330.52	56.69	-17.31	74	54.56	32.76	3.27	33.9	100	315	Peak
2330.52	46.66	-7.34	54	44.53	32.76	3.27	33.9	100	315	Average
2412	105.26	-	-	102.93	32.89	3.52	34.08	100	330	Peak
2412	91.27	-	-	88.94	32.89	3.52	34.08	100	330	Average
2494.49	56.46	-17.54	74	53.92	33.05	3.72	34.23	100	328	Peak
2494.49	45.26	-8.74	54	42.72	33.05	3.72	34.23	100	328	Average
4824	51.17	-22.83	74	43.3	35.17	4.97	32.27	100	0	Peak
4824	49.08	-4.92	54	41.21	35.17	4.97	32.27	100	0	Average



<b>Test Mode :</b>	Mode 5	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Xin Peng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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	23.07	-16.93	40	36.37	16.55	0.24	30.09	-	-	Peak
141.24	23.64	-19.86	43.5	42.42	10.73	0.49	30	-	-	Peak
204.96	28.81	-14.69	43.5	49	9.21	0.6	30	-	-	Peak
400.1	39.48	-6.52	46	52.47	16	0.84	29.83	-	-	Peak
657.7	41.49	-4.51	46	51.11	18.95	1.09	29.66	-	-	Peak
717.2	41.6	-4.4	46	50.65	19.48	1.14	29.67	100	360	Peak
2390	48.23	-25.77	74	45.95	32.86	3.47	34.05	100	330	Peak
2390	39.27	-14.73	54	36.99	32.86	3.47	34.05	100	330	Average
2437	100.44	-	-	98.04	32.95	3.6	34.15	100	300	Peak
2437	88.98	-	-	86.58	32.95	3.6	34.15	100	300	Average
2489.17	51.29	-22.71	74	48.75	33.05	3.72	34.23	100	312	Peak
2489.17	36.66	-17.34	54	34.12	33.05	3.72	34.23	100	312	Average
7304	54.19	-19.81	74	46.44	36.2	6.6	35.05	100	360	Peak
7304	44.9	-9.1	54	37.15	36.2	6.6	35.05	100	360	Average



Test Mode :	Mode 5	Temperature :	20~21°C
Test Channel :	06	Relative Humidity :	40~41%
Test Engineer :	Xin Peng	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
51.87	36.96	-3.04	40	59.79	7.01	0.29	30.13	100	185	QP
60.24	36.86	-3.14	40	61.39	5.3	0.31	30.14	-	-	Peak
250.05	30.55	-15.45	46	47.72	12	0.67	29.84	-	-	Peak
400.1	40.7	-5.3	46	53.69	16	0.84	29.83	-	-	Peak
706.7	42.01	-3.99	46	51.22	19.36	1.14	29.71	-	-	Peak
836.9	40.63	-5.37	46	48.64	20.37	1.27	29.65	-	-	Peak
2355.98	57.09	-16.91	74	54.88	32.81	3.38	33.98	118	320	Peak
2355.98	47.56	-6.44	54	45.35	32.81	3.38	33.98	118	320	Average
2437	105.65	-	-	103.25	32.95	3.6	34.15	100	325	Peak
2437	91.56	-	-	89.16	32.95	3.6	34.15	100	325	Average
2490.31	54.63	-19.37	74	52.09	33.05	3.72	34.23	100	300	Peak
2490.31	45.43	-8.57	54	42.89	33.05	3.72	34.23	100	300	Average
4872	51.46	-22.54	74	43.57	35.18	4.98	32.27	100	360	Peak
4872	46.02	-7.98	54	38.13	35.18	4.98	32.27	100	360	Average
7314	54.62	-19.38	74	46.87	36.2	6.6	35.05	100	56	Peak
7314	45.4	-8.6	54	37.65	36.2	6.6	35.05	100	56	Average



<b>Test Mode :</b>	Mode 6	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Xin Peng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
32.43	23.17	-16.83	40	36.98	16.04	0.24	30.09	-	-	Peak
141.24	23.87	-19.63	43.5	42.65	10.73	0.49	30	-	-	Peak
253.83	33.6	-12.4	46	50.72	12.06	0.67	29.85	-	-	Peak
400.1	40.08	-5.92	46	53.07	16	0.84	29.83	-	-	Peak
706.7	41.35	-4.65	46	50.56	19.36	1.14	29.71	100	0	Peak
819.4	41.22	-4.78	46	49.49	20.08	1.26	29.61	-	-	Peak
2390	49.35	-24.65	74	47.07	32.86	3.47	34.05	100	0	Peak
2390	39.93	-14.07	54	37.65	32.86	3.47	34.05	100	0	Average
2462	101.65	-	-	99.2	32.98	3.64	34.17	100	320	Peak
2462	91.21	-	-	88.76	32.98	3.64	34.17	100	320	Average
2483.5	42.46	-11.54	54	39.97	33.01	3.68	34.2	100	317	Average
2483.5	53.7	-20.3	74	51.21	33.01	3.68	34.2	100	317	Peak
4918	51.66	-22.34	74	43.74	35.19	4.99	32.26	100	211	Peak
4918	48.09	-5.91	54	40.17	35.19	4.99	32.26	100	211	Average
7388	53.46	-20.54	74	45.78	36.24	6.66	35.22	100	170	Peak
7388	48.03	-5.97	54	40.35	36.24	6.66	35.22	100	170	Average



<b>Test Mode :</b>	Mode 6	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Xin Peng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2462 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
51.6	36.56	-3.44	40	59.2	7.21	0.28	30.13	100	242	QP
59.97	36.05	-3.95	40	60.58	5.3	0.31	30.14	100	360	QP
250.05	30.85	-15.15	46	48.02	12	0.67	29.84	-	-	Peak
400.1	40.45	-5.55	46	53.44	16	0.84	29.83	-	-	Peak
706.7	42.37	-3.63	46	51.58	19.36	1.14	29.71	-	-	Peak
836.9	40.23	-5.77	46	48.24	20.37	1.27	29.65	-	-	Peak
2383.91	56.87	-17.13	74	54.63	32.83	3.42	34.01	100	0	Peak
2383.91	42.24	-11.76	54	40	32.83	3.42	34.01	100	0	Average
2462	105.51	-	-	103.06	32.98	3.64	34.17	100	340	Peak
2462	92.55	-	-	90.1	32.98	3.64	34.17	100	340	Average
2483.5	45.09	-8.91	54	42.6	33.01	3.68	34.2	100	358	Average
2483.5	60.06	-13.94	74	57.57	33.01	3.68	34.2	100	358	Peak
7390	53.44	-20.56	74	45.76	36.24	6.66	35.22	100	202	Peak
7390	47.91	-6.09	54	40.23	36.24	6.66	35.22	100	202	Average



Test Mode :	Mode 7	Temperature :	20~21°C
Test Channel :	01	Relative Humidity :	40~41%
Test Engineer :	Xin Peng	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	21.01	-18.99	40	33.55	17.29	0.25	30.08	-	-	Peak
60.24	17.65	-22.35	40	42.18	5.3	0.31	30.14	-	-	Peak
211.98	29.64	-13.86	43.5	49.42	9.6	0.61	29.99	-	-	Peak
490.4	42.76	-3.24	46	54.48	17.07	0.95	29.74	-	-	Peak
706.7	41.47	-4.53	46	50.68	19.36	1.14	29.71	100	344	QP
824.3	41.05	-4.95	46	49.25	20.16	1.26	29.62	-	-	Peak
2390	58.33	-15.67	74	56.05	32.86	3.47	34.05	200	331	Peak
2390	43.88	-10.12	54	41.6	32.86	3.47	34.05	200	331	Average
2412	109.23	-	-	106.9	32.89	3.52	34.08	200	360	Peak
2412	96.66	-	-	94.33	32.89	3.52	34.08	200	360	Average
2488.6	45.35	-8.65	54	42.81	33.05	3.72	34.23	200	320	Average
2488.6	58.53	-15.47	74	55.99	33.05	3.72	34.23	200	320	Peak
4826	58.21	-15.79	74	50.34	35.17	4.97	32.27	100	320	Peak
4826	52	-2	54	44.13	35.17	4.97	32.27	100	320	Average
7230	54.73	-19.27	74	46.92	36.17	6.52	34.88	100	0	Peak
7230	48.7	-5.3	54	40.89	36.17	6.52	34.88	100	0	Average



Test Mode :	Mode 7	Temperature :	20~21°C
Test Channel :	01	Relative Humidity :	40~41%
Test Engineer :	Xin Peng	Polarization :	Vertical
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
51.6	36.25	-3.75	40	58.89	7.21	0.28	30.13	100	188	QP
61.86	36.86	-3.14	40	61.4	5.27	0.32	30.13	-	-	Peak
250.32	30.24	-15.76	46	47.41	12	0.67	29.84	-	-	Peak
400.1	40.92	-5.08	46	53.91	16	0.84	29.83	-	-	Peak
706.7	42.96	-3.04	46	52.17	19.36	1.14	29.71	-	-	Peak
777.4	40.85	-5.15	46	49.33	19.87	1.22	29.57	-	-	Peak
2390	57.76	-16.24	74	55.48	32.86	3.47	34.05	200	0	Peak
2390	46.66	-7.34	54	44.38	32.86	3.47	34.05	200	0	Average
2412	109.72	-	-	107.39	32.89	3.52	34.08	200	330	Peak
2412	98	-	-	95.67	32.89	3.52	34.08	200	330	Average
2492.21	41.44	-12.56	54	38.9	33.05	3.72	34.23	200	360	Average
2492.21	59.21	-14.79	74	56.67	33.05	3.72	34.23	200	360	Peak
4824	61.87	-12.13	74	54	35.17	4.97	32.27	109	322	Peak
4824	49.94	-4.06	54	42.07	35.17	4.97	32.27	109	322	Average
7240	53.99	-20.01	74	46.2	36.18	6.53	34.92	100	272	Peak
7240	49.13	-4.87	54	41.34	36.18	6.53	34.92	100	272	Average



<b>Test Mode :</b>	Mode 8	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Xin Peng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
31.35	22.01	-17.99	40	34.55	17.29	0.25	30.08	-	-	Peak
141.24	23.36	-20.14	43.5	42.14	10.73	0.49	30	-	-	Peak
290.55	32.73	-13.27	46	49.1	12.87	0.71	29.95	-	-	Peak
490.4	41.76	-4.24	46	53.48	17.07	0.95	29.74	-	-	Peak
706.7	42.99	-3.01	46	52.2	19.36	1.14	29.71	100	320	QP
824.3	42.05	-3.95	46	50.25	20.16	1.26	29.62	-	-	Peak
2363.01	56.59	-17.41	74	54.38	32.81	3.38	33.98	100	331	Peak
2363.01	45.02	-8.98	54	42.81	32.81	3.38	33.98	100	331	Average
2437	110.88	-	-	108.48	32.95	3.6	34.15	100	360	Peak
2437	97.3	-	-	94.9	32.95	3.6	34.15	100	360	Average
2488.98	57.31	-16.69	74	54.77	33.05	3.72	34.23	100	340	Peak
2488.98	45.07	-8.93	54	42.53	33.05	3.72	34.23	100	340	Average
4870	59.25	-14.75	74	51.36	35.18	4.98	32.27	100	13	Peak
4870	47	-7	54	39.11	35.18	4.98	32.27	100	13	Average
7304	54.96	-19.04	74	47.21	36.2	6.6	35.05	100	129	Peak
7304	43.01	-10.99	54	35.26	36.2	6.6	35.05	100	129	Average



<b>Test Mode :</b>	Mode 8	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Xin Peng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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
51.6	35.04	-4.96	40	57.68	7.21	0.28	30.13	100	234	QP
61.86	36.45	-3.55	40	60.99	5.27	0.32	30.13	-	-	Peak
250.32	29.24	-16.76	46	46.41	12	0.67	29.84	-	-	Peak
400.1	41.02	-4.98	46	54.01	16	0.84	29.83	-	-	Peak
706.7	42.79	-3.21	46	52	19.36	1.14	29.71	-	-	Peak
777.4	40.92	-5.08	46	49.4	19.87	1.22	29.57	-	-	Peak
2353.7	56.74	-17.26	74	54.53	32.81	3.38	33.98	100	320	Peak
2353.7	45.42	-8.58	54	43.21	32.81	3.38	33.98	100	320	Average
2437	106.28	-	-	103.88	32.95	3.6	34.15	100	356	Peak
2437	96.3	-	-	93.9	32.95	3.6	34.15	100	356	Average
2488.98	55.83	-18.17	74	53.29	33.05	3.72	34.23	100	0	Peak
2488.98	43.88	-10.12	54	41.34	33.05	3.72	34.23	100	0	Average
4878	59.47	-14.53	74	51.58	35.18	4.98	32.27	100	27	Peak
4878	45.82	-8.18	54	37.93	35.18	4.98	32.27	100	27	Average
7306	55.09	-18.91	74	47.34	36.2	6.6	35.05	100	118	Peak
7306	42.08	-11.92	54	34.33	36.2	6.6	35.05	100	118	Average



<b>Test Mode :</b>	Mode 9	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Xin Peng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
32.43	22.17	-17.83	40	35.98	16.04	0.24	30.09	-	-	Peak
194.16	28.57	-14.93	43.5	49.26	8.7	0.58	29.97	-	-	Peak
253.83	35.6	-10.4	46	52.72	12.06	0.67	29.85	-	-	Peak
400.1	39.08	-6.92	46	52.07	16	0.84	29.83	-	-	Peak
755	42.36	-3.64	46	50.82	19.9	1.18	29.54	100	0	Peak
836.9	39.45	-6.55	46	47.46	20.37	1.27	29.65	-	-	Peak
2386.19	56.16	-17.84	74	53.88	32.86	3.47	34.05	100	360	Peak
2386.19	42.39	-11.61	54	40.11	32.86	3.47	34.05	100	360	Average
2462	110.34	-	-	107.89	32.98	3.64	34.17	100	360	Peak
2462	94.69	-	-	92.24	32.98	3.64	34.17	100	360	Average
2483.47	47.86	-6.14	54	45.37	33.01	3.68	34.2	100	335	Average
2483.47	63.58	-10.42	74	61.09	33.01	3.68	34.2	100	335	Peak
4928	59.23	-14.77	74	51.31	35.19	4.99	32.26	100	28	Peak
4928	45.78	-8.22	54	37.86	35.19	4.99	32.26	100	28	Average
7382	53.01	-20.99	74	45.32	36.23	6.65	35.19	100	49	Peak
7382	48.03	-5.97	54	40.34	36.23	6.65	35.19	100	49	Average



<b>Test Mode :</b>	Mode 9	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Xin Peng	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2462 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level (dBuV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
51.6	36.56	-3.44	40	59.2	7.21	0.28	30.13	100	256	QP
62.13	36.18	-3.82	40	60.72	5.27	0.32	30.13	-	-	Peak
250.05	30.85	-15.15	46	48.02	12	0.67	29.84	-	-	Peak
400.1	39.45	-6.55	46	52.44	16	0.84	29.83	-	-	Peak
741.7	42.69	-3.31	46	51.25	19.83	1.17	29.56	100	0	Peak
904.8	38.26	-7.74	46	45.97	20.47	1.3	29.48	-	-	Peak
2380.87	56.81	-17.19	74	54.57	32.83	3.42	34.01	200	296	Peak
2380.87	43.51	-10.49	54	41.27	32.83	3.42	34.01	200	296	Average
2462	110.08	-	-	107.63	32.98	3.64	34.17	200	296	Peak
2462	101.33	-	-	98.88	32.98	3.64	34.17	200	296	Average
2483.5	64.78	-9.22	74	62.29	33.01	3.68	34.2	200	296	Peak
2483.5	48.26	-5.74	54	45.77	33.01	3.68	34.2	200	296	Average
4928	58.07	-15.93	74	50.15	35.19	4.99	32.26	100	309	Peak
4928	46.5	-7.5	54	38.58	35.19	4.99	32.26	100	309	Average
7392	54.43	-19.57	74	46.75	36.24	6.66	35.22	100	359	Peak
7392	42.22	-11.78	54	34.54	36.24	6.66	35.22	100	359	Average



3.6.7

<b>Test Mode :</b>	Mode 10	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	03	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Xin Peng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
32.43	22.19	-17.81	40	36	16.04	0.24	30.09	-	-	Peak
141.24	28.08	-15.42	43.5	46.86	10.73	0.49	30	-	-	Peak
282.72	31.01	-14.99	46	47.53	12.72	0.71	29.95	-	-	Peak
517.7	41.93	-4.07	46	53.06	17.61	0.97	29.71	-	-	Peak
706.7	42.83	-3.17	46	52.04	19.36	1.14	29.71	100	0	Peak
819.4	42.49	-3.51	46	50.76	20.08	1.26	29.61	-	-	Peak
2390	70.8	-3.2	74	68.52	32.86	3.47	34.05	200	16	Peak
2390	47.64	-6.36	54	45.36	32.86	3.47	34.05	200	16	Average
2422	106.04	-	-	103.68	32.92	3.56	34.12	100	360	Peak
2422	93.79	-	-	91.43	32.92	3.56	34.12	100	360	Average
2483.53	63.8	-10.2	74	61.31	33.01	3.68	34.2	100	360	Peak
2483.53	44.7	-9.3	54	42.21	33.01	3.68	34.2	100	360	Average
4856	56.38	-17.62	74	48.49	35.18	4.98	32.27	100	16	Peak
4856	44.65	-9.35	54	36.76	35.18	4.98	32.27	100	16	Average
7264	50.77	-23.23	74	42.99	36.18	6.55	34.95	100	114	Peak
7264	48.16	-5.84	54	40.38	36.18	6.55	34.95	100	114	Average



Test Mode :	Mode 10	Temperature :	20~21°C
Test Channel :	03	Relative Humidity :	40~41%
Test Engineer :	Xin Peng	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
51.6	36.16	-3.84	40	58.8	7.21	0.28	30.13	100	156	QP
60.24	36.57	-3.43	40	61.1	5.3	0.31	30.14	-	-	Peak
204.96	31.56	-11.94	43.5	51.75	9.21	0.6	30	-	-	Peak
400.1	40.88	-5.12	46	53.87	16	0.84	29.83	-	-	Peak
706.7	42.41	-3.59	46	51.62	19.36	1.14	29.71	-	-	Peak
899.9	39.22	-6.78	46	46.95	20.45	1.3	29.48	-	-	Peak
2390	70.31	-3.69	74	68.03	32.86	3.47	34.05	163	237	Peak
2390	49.59	-4.41	54	47.31	32.86	3.47	34.05	163	237	Average
2422	104.92	-	-	102.56	32.92	3.56	34.12	178	236	Peak
2422	92.54	-	-	90.18	32.92	3.56	34.12	178	236	Average
2483.5	64.15	-9.85	74	61.66	33.01	3.68	34.2	200	360	Peak
2483.5	42.93	-11.07	54	40.44	33.01	3.68	34.2	200	360	Average
4852	55.32	-18.68	74	47.43	35.18	4.98	32.27	100	207	Peak
4852	47.78	-6.22	54	39.89	35.18	4.98	32.27	100	207	Average
7278	50.37	-23.63	74	42.59	36.19	6.57	34.98	100	109	Peak
7278	46.66	-7.34	54	38.88	36.19	6.57	34.98	100	109	Average



<b>Test Mode :</b>	Mode 11	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Xin Peng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
30.54	22.39	-17.61	40	34.93	17.29	0.25	30.08	-	-	Peak
211.98	30.41	-13.09	43.5	50.19	9.6	0.61	29.99	-	-	Peak
273.81	29.53	-16.47	46	46.29	12.47	0.69	29.92	-	-	Peak
518.1	42.13	-3.87	46	53.26	17.61	0.97	29.71	-	-	Peak
706.7	42.69	-3.31	46	51.9	19.36	1.14	29.71	100	189	Peak
819.4	41.49	-4.51	46	49.76	20.08	1.26	29.61	-	-	Peak
2390	65.65	-8.35	74	63.37	32.86	3.47	34.05	147	213	Peak
2390	43.21	-10.79	54	40.93	32.86	3.47	34.05	147	213	Average
2437	107.21	-	-	104.81	32.95	3.6	34.15	200	350	Peak
2437	93.98	-	-	91.58	32.95	3.6	34.15	200	350	Average
2483.5	43.33	-10.67	54	40.84	33.01	3.68	34.2	200	342	Average
2483.5	66.14	-7.86	74	63.65	33.01	3.68	34.2	200	342	Peak
4872	57.2	-16.8	74	49.31	35.18	4.98	32.27	100	0	Peak
4872	45.48	-8.52	54	37.59	35.18	4.98	32.27	100	0	Average
7300	52.27	-21.73	74	44.52	36.2	6.6	35.05	200	0	Peak
7300	45.75	-8.25	54	38	36.2	6.6	35.05	200	0	Average



Test Mode :	Mode 11	Temperature :	20~21°C
Test Channel :	06	Relative Humidity :	40~41%
Test Engineer :	Xin Peng	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
51.6	36.96	-3.04	40	59.6	7.21	0.28	30.13	100	221	QP
62.67	36.41	-3.59	40	60.96	5.25	0.32	30.12	-	-	Peak
250.05	31.3	-14.7	46	48.47	12	0.67	29.84	-	-	Peak
636	40.39	-5.61	46	50.11	18.83	1.09	29.64	-	-	Peak
706.7	41.41	-4.59	46	50.62	19.36	1.14	29.71	-	-	Peak
741.7	40.47	-5.53	46	49.03	19.83	1.17	29.56	-	-	Peak
2390	66.26	-7.74	74	63.98	32.86	3.47	34.05	200	360	Peak
2390	42.28	-11.72	54	40	32.86	3.47	34.05	200	360	Average
2437	104.99	-	-	102.59	32.95	3.6	34.15	160	240	Peak
2437	92	-	-	89.6	32.95	3.6	34.15	160	240	Average
2483.5	67.77	-6.23	74	65.28	33.01	3.68	34.2	153	239	Peak
2483.5	45.06	-8.94	54	42.57	33.01	3.68	34.2	153	239	Average
4884	54.54	-19.46	74	46.65	35.18	4.98	32.27	100	310	Peak
4884	45.27	-8.73	54	37.38	35.18	4.98	32.27	100	310	Average
7296	51.55	-22.45	74	43.78	36.2	6.58	35.01	200	360	Peak
7296	41.76	-12.24	54	33.99	36.2	6.58	35.01	200	360	Average



<b>Test Mode :</b>	Mode 12	<b>Temperature :</b>	20~21°C
<b>Test Channel :</b>	09	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Xin Peng	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
30.54	23.72	-16.28	40	36.26	17.29	0.25	30.08	-	-	Peak
141.24	26.87	-16.63	43.5	45.65	10.73	0.49	30	-	-	Peak
285.96	33.45	-12.55	46	49.91	12.78	0.71	29.95	-	-	Peak
491	42.29	-3.71	46	54.01	17.07	0.95	29.74	100	360	Peak
505.1	41.45	-4.55	46	52.93	17.29	0.96	29.73	200	360	Peak
706.7	41.22	-4.78	46	50.43	19.36	1.14	29.71	-	-	Peak
2390	63.58	-10.42	74	61.3	32.86	3.47	34.05	200	360	Peak
2390	47.93	-6.07	54	45.65	32.86	3.47	34.05	200	360	Average
2452	107.7	-	-	105.3	32.95	3.6	34.15	200	214	Peak
2452	93.53	-	-	91.13	32.95	3.6	34.15	200	214	Average
2483.5	73.64	-0.36	74	71.15	33.01	3.68	34.2	200	12	Peak
2483.5	51.4	-2.6	54	48.91	33.01	3.68	34.2	200	12	Average
4902	57.27	-16.73	74	49.35	35.19	4.99	32.26	100	13	Peak
4902	45.38	-8.62	54	37.46	35.19	4.99	32.26	100	13	Average



Test Mode :	Mode 12	Temperature :	20~21°C
Test Channel :	09	Relative Humidity :	40~41%
Test Engineer :	Xin Peng	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
52	35.16	-4.84	40	57.99	7.01	0.29	30.13	100	156	QP
58.62	36.54	-3.46	40	60.93	5.44	0.31	30.14	-	-	Peak
191.46	29.19	-14.31	43.5	50.01	8.55	0.58	29.95	-	-	Peak
400.1	39.86	-6.14	46	52.85	16	0.84	29.83	-	-	Peak
706.9	40.1	-5.9	46	49.31	19.36	1.14	29.71	100	234	QP
741.7	40.56	-5.44	46	49.12	19.83	1.17	29.56	-	-	Peak
2388.47	65.49	-8.51	74	63.21	32.86	3.47	34.05	100	360	Peak
2388.47	46.66	-7.34	54	44.38	32.86	3.47	34.05	100	360	Average
2452	105.08	-	-	102.68	32.95	3.6	34.15	100	300	Peak
2452	93.4	-	-	91	32.95	3.6	34.15	100	300	Average
2483.5	53.05	-0.95	54	50.56	33.01	3.68	34.2	141	314	Average
2483.5	71.76	-2.24	74	69.27	33.01	3.68	34.2	141	314	Peak
4912	56.92	-17.08	74	49	35.19	4.99	32.26	106	345	Peak
4912	45.27	-8.73	54	37.35	35.19	4.99	32.26	106	345	Average
7354	52.58	-21.42	74	44.88	36.22	6.64	35.16	200	360	Peak
7354	41.7	-12.3	54	34	36.22	6.64	35.16	100	360	Average



## **3.7 Antenna Requirements**

### **3.7.1 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.

### **3.7.2 Antenna Connected Construction**

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

### **3.7.3 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. The MIMO mode is completely uncorrelated gain, therefore, the antenna gain is equal to single antenna gain.



## 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. 07, 2011	Jan. 06, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 24, 2010	Aug. 23, 2011	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 24, 2010	Aug. 23, 2011	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Dec. 28, 2010	Dec. 27, 2011	Conducted (TH01-KS)
DC Power Supply	TOPWARD	3306D	N/A	N/A	N/A	N/A	Conducted (TH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz-7GHz	Jun. 22, 2010	Jun. 21, 2011	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz-30MHz	Jan. 07, 2011	Jan. 06, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz-30MHz	Jan. 07, 2011	Jan. 06, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 10, 2010	Nov. 09, 2011	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz-3GHz	Nov. 16, 2010	Nov. 15, 2011	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz-40GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz-2GHz	Dec. 07, 2010	Dec. 06, 2011	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz-18GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592 G	060004	30MHz-2GHz	Dec. 09, 2010	Dec. 08, 2011	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz-26.5GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Actice hore antenna	com-power	AHA-118	701023	1G-18GHz	Nov. 09, 2010	Nov. 08, 2011	Radiation (03CH01-KS)
Signal Generator	R&S	SMR40	100455	10MHz-40GHz	Jan. 06, 2011	Jan. 05, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA9170	BBHA170249	15-40GHz	Oct. 15, 2010	Oct. 14, 2011	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz-30 MHz	Jul. 29, 2010	Jul. 28, 2011	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
<b>Combined Standard Uncertainty <math>U_c(y)</math></b>	<b>1.13</b>		
<b>Measuring Uncertainty for a Level of Confidence of 95% (<math>U = 2U_c(y)</math>)</b>	<b>2.26</b>		

### 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
<b>Combined Standard Uncertainty <math>U_c(y)</math></b>	<b>1.27</b>		
<b>Measuring Uncertainty for a Level of Confidence of 95% (<math>U = 2U_c(y)</math>)</b>	<b>2.54</b>		



**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
<b>Combined Standard Uncertainty Uc(y)</b>	<b>2.36</b>				
<b>Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))</b>	<b>4.72</b>				



## **Appendix A. Photographs of EUT**

Please refer to Sporton report number EP141234 as below.