FCC RF Test Report

APPLICANT	: Lenovo (Shanghai) Electronics Technology Co., Ltd.
EQUIPMENT	: Portable Tablet Computer
BRAND NAME	: lenovo
MODEL NAME	: YOGA Tablet 2-1051F
FCC ID	: O57YT21051F
STANDARD	: FCC Part 15 Subpart C §15.247
CLASSIFICATION	: (DTS) Digital Transmission System

The product was received on Jun. 24, 2014 and testing was completed on Aug. 03, 2014. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

Testing Laboratory 2627

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

TABLE OF CONTENTS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR462001-03C	Rev. 01	Initial issue of report	Aug. 13, 2014

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.2	15.247(b)	Power Output Measurement	≤ 30dBm	Pass	-
3.3	15.247(e)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	Conducted Band Edges	≤ 20dBc	Pass	-
		Conducted Spurious Emission		Pass	-
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 4.97 dB at 30.000 MHz for Quasi-Peak
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 8.12 dB at 0.340 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Lenovo (Shanghai) Electronics Technology Co., Ltd.

No. 68 Building, 199 Fenju Road, Wai Gao Qiao FTZ, Shanghai, China

1.2 Manufacturer

Lenovo PC HK Limited

23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, Hong Kong

1.3 Factory

LENOVO MOBILE COMMUNICATION TECHNOLOGY CO LTD

NO.999 QISHAN NORTH 2ND ROAD, INFORMATION & OPTOELECTRONICS PARK, TORCH HIGH TECH, XIAMEN FUJIAN 361009, CHINA

LENOVO MOBILE COMMUNICATION (WUHAN) CO LTD

19 GAOXIN 4TH RD EAST LAKE HIGH-TECH, ZONE WUHAN HUBEI 430205, CHINA

1.4 Product Feature of Equipment Under Test

Product Feature	
Equipment	Portable Tablet Computer
Brand Name	lenovo
Model Name	YOGA Tablet 2-1051F
FCC ID	O57YT21051F
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 Bluetooth v3.0 + EDR/Bluetooth v4.0 LE
HW Version	Lenovopad YOGA Tablet 2-1051F
SW Version	Lenovo TAB2-W10-S100001-140527-PRC
EUT Stage	Production Unit

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. There are two types of EUT sample 1 and sample 2, the differences between two samples is only different supplier for Battery/EMMC/Panel/Touch panel/front and back camera.

1.5 Product Specification subjective to this standard

<table>
<tr><th colspan="2">Product Specification subjective to this standard</th></tr>
<tr><td>Tx/Rx Channel Frequency Range</td><td>2412 MHz ~ 2462 MHz</td></tr>
<tr><td>Maximum Output Power to antenna</td><td>802.11b : 14.44 dBm (0.0278 W)
802.11g : 20.51 dBm (0.1125 W)
802.11n HT20 : 21.94 dBm (0.1563 W)
802.11n HT40 : 17.65 dBm (0.0582 W)</td></tr>
<tr><td>Antenna Type</td><td>Chain Port 0: IFA Antenna
Chain Port 1: IFA Antenna</td></tr>
<tr><td>Antenna Gain</td><td>Chain Port 0 : 0.00 dBi
Chain Port 1 : -0.50 dBi
Chain Port 0 + 1 : 2.76 dBi</td></tr>
<tr><td>Type of Modulation</td><td>802.11b : DSSS (DBPSK / DQPSK / CCK)
802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)</td></tr>
<tr><td>Antenna Function for Transmitter</td><td>
<table>
<tr><th></th><th>Chain Port 0 Ant. 1</th><th>Chain Port 1 Ant. 2</th></tr>
<tr><td>802.11 b</td><td>V</td><td>V</td></tr>
<tr><td>802.11 g</td><td>V</td><td>V</td></tr>
<tr><td>802.11 n SISO</td><td>V</td><td>V</td></tr>
<tr><td>802.11 n MIMO</td><td>V</td><td>V</td></tr>
</table>
</td></tr>
</table>

1.6 Modification of EUT

No modifications are made to the EUT during all test items.

1.7 Testing Location

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.			
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958			
Test Site No.	**Sporton Site No.**			**FCC Registration No.**
	TH01-KS	03CH01-KS	CO01-KS	149928

1.8 Applicable Standards

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

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ANSI C63.4-2003

Remark:

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

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals 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) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane) were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437		

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test shown in the following tables.

Channel	Frequency (MHz)	Chain Port	2.4GHz 802.11b RF Power (dBm)				
			Data Rate	Power vs. Data Rate			
			1Mbps	Channel	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412	0	**14.44**	CH 01	14.14	14.08	14.38
CH 06	2437	0	14.07				
CH 11	2462	0	13.98				
CH 01	2412	1	**14.43**	CH 01	14.41	14.34	13.99
CH 06	2437	1	13.91				
CH 11	2462	1	13.93				

Channel	Frequency (MHz)	Chain Port	2.4GHz 802.11g RF Power (dBm)							
			Data Rate	Power vs. Data Rate						
			6Mbps	Channel	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
CH 01	2412	0	**18.93**	CH 01	18.74	18.79	18.68	18.86	18.67	18.54	18.47
CH 06	2437	0	18.75								
CH 11	2462	0	18.53								
CH 01	2412	1	**20.51**	CH 01	19.84	19.45	19.68	19.72	19.36	19.28	19.35
CH 06	2437	1	20.27								
CH 11	2462	1	20.28								

Channel	Frequency (MHz)	Chain Port	2.4GHz 802.11n HT-20 RF Power (dBm)							
			MCS Index	Power vs. MCS Index						
			MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412	0	**21.39**	CH 01	21.26	21.26	21.06	21.12	21.19	20.98	21.27
CH 06	2437	0	20.80								
CH 11	2462	0	20.96								
CH 01	2412	1	**21.25**	CH 01	20.98	20.55	20.67	20.62	20.29	20.45	20.84
CH 06	2437	1	20.69								
CH 11	2462	1	20.71								
Channel	Frequency (MHz)	Chain Port	MCS Index	Channel	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
			MCS8								
CH 01	2412	0+1(0)	**18.58**	CH 01	18.51	18.42	18.36	18.37	18.47	18.42	18.57
CH 06	2437	0+1(0)	18.32								
CH 11	2462	0+1(0)	18.44								
CH 01	2412	0+1(1)	**19.25**	CH 01	19.23	19.02	18.56	18.31	18.43	18.55	18.36
CH 06	2437	0+1(1)	18.56								
CH 11	2462	0+1(1)	18.23								
CH 01	2412	0+1	**21.94**	CH 01	21.90	21.74	21.47	21.35	21.46	21.50	21.48
CH 06	2437	0+1	21.45								
CH 11	2462	0+1	21.35								

Channel	Frequency (MHz)	Chain Port	2.4GHz 802.11n HT-40 RF Power (dBm)							
			MCS Index	Power vs. MCS Index						
			MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 03	2422	0	16.56	CH 06	16.68	16.86	16.82	16.23	16.85	16.67	16.87
CH 06	2437	0	**16.89**								
CH 09	2452	0	16.77								
CH 03	2422	1	16.64	CH 06	16.89	16.88	16.90	16.70	16.87	16.83	16.79
CH 06	2437	1	**16.92**								
CH 09	2452	1	16.78								
Channel	Frequency (MHz)	Chain Port	MCS Index	Channel	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
			MCS8								
CH 03	2422	0+1(0)	13.93	CH 09	12.22	14.41	12.77	12.41	12.75	12.38	12.66
CH 06	2437	0+1(0)	14.31								
CH 09	2452	0+1(0)	**14.68**								
CH 03	2422	0+1(1)	13.86	CH 09	14.39	14.44	14.36	14.12	14.29	14.26	14.52
CH 06	2437	0+1(1)	14.23								
CH 09	2452	0+1(1)	**14.59**								
CH 03	2422	0+1	16.91	CH 09	16.45	17.44	16.65	16.36	16.60	16.43	16.70
CH 06	2437	0+1	17.28								
CH 09	2452	0+1	**17.65**								

Note: Chain Port 0+1 is a calculated result from sum of the power Chain Port 0+1(0) and Chain Port 0+1(1).

2.3 Test Mode

Final results of test modes, data rates and test channels are shown as following table.

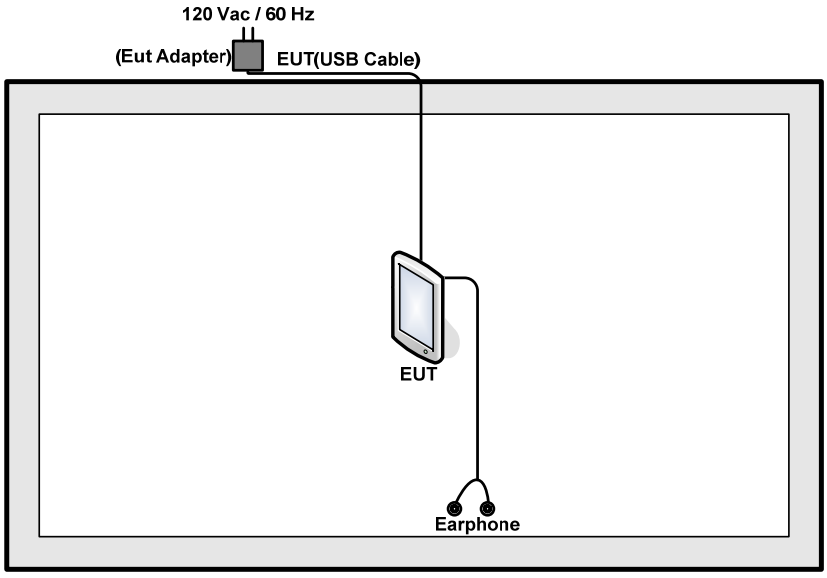
Test Cases				
	Test Items	**Mode**	**Data Rate**	**Test Channel**
Conducted TCs	**6dB BW Power Spectral Density**	**802.11b**	**1 Mbps**	**1/6/11**
		802.11g	**6 Mbps**	**1/6/11**
		802.11n HT20	**MCS0/8**	**1/6/11**
		802.11n HT40	**MCS0/8**	**3/6/9**
	Output Power	**802.11b**	**1 Mbps**	**1/6/11**
		802.11g	**6 Mbps**	**1/6/11**
		802.11n HT20	**MCS0/8**	**1/6/11**
		802.11n HT40	**MCS0/8**	**3/6/9**
	Conducted Band Edge	**802.11b**	**1 Mbps**	**1/11**
		802.11g	**6 Mbps**	**1/11**
		802.11n HT20	**MCS0/8**	**1/11**
		802.11n HT40	**MCS0/8**	**3/9**
	Conducted Spurious Emission	**802.11b**	**1 Mbps**	**1/6/11**
		802.11g	**6 Mbps**	**1/6/11**
		802.11n HT20	**MCS0/8**	**1/6/11**
		802.11n HT40	**MCS0/8**	**3/6/9**
Radiated TCs	**Radiated Band Edge**	**802.11b**	**1 Mbps**	**1/11**
		802.11g	**6 Mbps**	**1/11**
		802.11n HT20	**MCS8**	**1/11**
		802.11n HT40	**MCS8**	**3/9**
	Radiated Spurious Emission	**802.11b**	**1 Mbps**	**1/6/11**
		802.11g	**6 Mbps**	**1/6/11**
		802.11n HT20	**MCS8**	**1/6/11**
		802.11n HT40	**MCS8**	**3/6/9**
AC Conducted Emission	Mode 1 : Bluetooth Link + WLAN 2.4GHz Link + Earphone + Battery 1 + USB Cable 1 (Charging from Adapter 1) for Sample 1 Mode 2 Bluetooth Link + WLAN 2.4GHz Link + Earphone + Battery 2 + USB Cable 2 (Charging from Adapter 2) for Sample 2			

Remark:

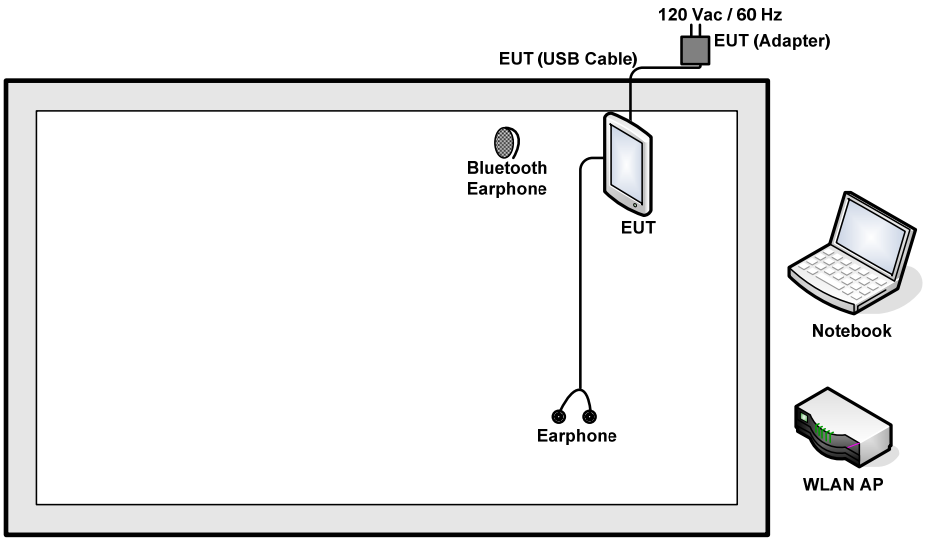
1. The worst case of conducted emission is mode 2; only the test data of it was reported.
2. For Radiated Test Cases, all the test modes were performed with Adapter 1, Battery 1, Earphone and USB Cable 1 for Sample 1, only the worst mode (802.11b CH01) based on Sample 1 need to verify Adapter 2, Battery 2 and USB Cable 2 for Sample 2.

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Lenovo	LBH505	N/A	N/A	N/A
2.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
3.	Notebook	Lenovo	G480	PRC4	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
4.	Earphone	Lenovo	SH100	N/A	Unshielded, 1.2 m	N/A

2.6 EUT Operation Test Setup

For WLAN function, the engineering test program was provided and enabled to make EUT continuous transmit/receive.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

2.7 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 6 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 6 + 10 = 16 (dB)

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.

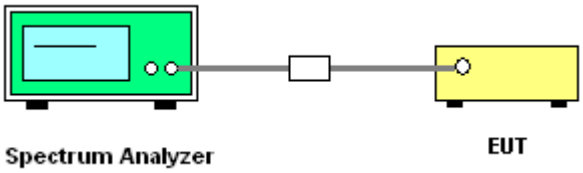
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. Measure and record the results in the test report.

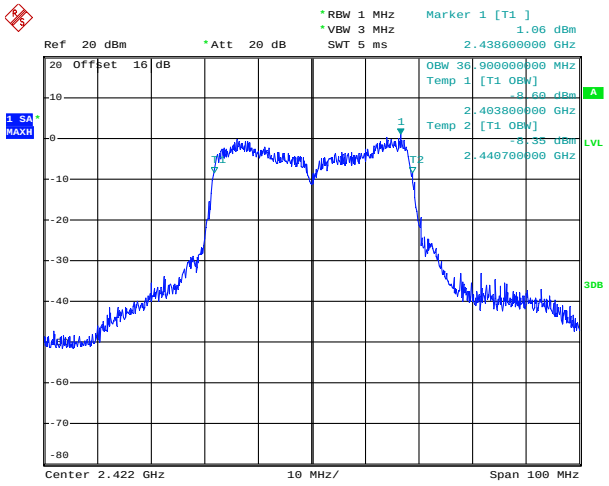
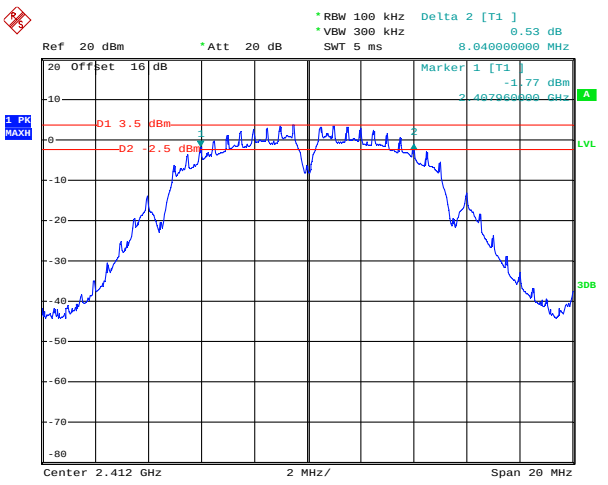
3.1.4 Test Setup



3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

Test Band :	2.4GHz	Temperature :	24~25℃
Test Engineer :	Issac Song	Relative Humidity :	49~51%

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	99% Bandwidth (MHz)		6dB Bandwidth (MHz)		6dB Bandwidth Min. Limit (MHz)	Pass/Fail
					Chain Port 0	Chain Port 1	Chain Port 0	Chain Port 1		
11b	1Mbps	1	1	2412	11.15	-	8.04	-	0.50	Pass
11b	1Mbps	1	6	2437	11.20	-	8.52	-	0.50	Pass
11b	1Mbps	1	11	2462	11.30	-	8.52	-	0.50	Pass
11g	6Mbps	1	1	2412	-	16.95	-	15.12	0.50	Pass
11g	6Mbps	1	6	2437	-	17.20	-	15.68	0.50	Pass
11g	6Mbps	1	11	2462	-	17.20	-	15.92	0.50	Pass
HT20	MCS0	1	1	2412	17.55	-	15.04	-	0.50	Pass
HT20	MCS0	1	6	2437	17.60	-	13.84	-	0.50	Pass
HT20	MCS0	1	11	2462	17.85	-	15.28	-	0.50	Pass
HT40	MCS0	1	3	2422	-	36.80	-	35.68	0.50	Pass
HT40	MCS0	1	6	2437	-	36.60	-	35.12	0.50	Pass
HT40	MCS0	1	9	2452	-	36.60	-	35.76	0.50	Pass
HT20	MCS8	2	1	2412	17.50	17.60	15.02	15.08	0.50	Pass
HT20	MCS8	2	6	2437	17.50	17.55	13.84	14.48	0.50	Pass
HT20	MCS8	2	11	2462	17.70	17.80	15.08	15.68	0.50	Pass
HT40	MCS8	2	3	2422	36.90	36.90	35.68	35.68	0.50	Pass
HT40	MCS8	2	6	2437	36.40	36.40	35.04	35.12	0.50	Pass
HT40	MCS8	2	9	2452	36.60	36.60	36.08	36.24	0.50	Pass

Maximum 99% Occupied Bandwidth	Minimum 6dB Bandwidth
	
Date: 4.JUL.2014 03:52:57	Date: 15.JUL.2014 00:36:05

Note : The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Peak Output Power Measurement

3.2.1 Limit of Peak Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna with directional gain greater than 6dBi is 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.

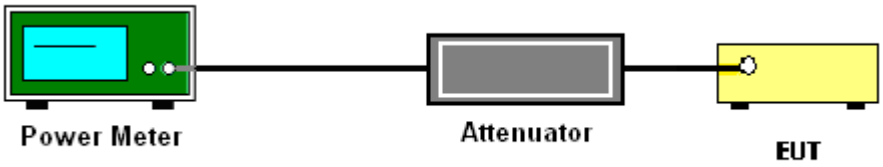
3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v03r02.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Test Band :	2.4GHz	Temperature :	24~25℃
Test Engineer :	Issac Song	Relative Humidity :	49~51%

Mod.	Data Rate	N_{TX}	CH.	Freq. (MHz)	Peak Conducted Power (dBm)			Max. Limit (dBm)		DG (dBi)		Pass/Fail
					Chain Port 0	Chain Port 1	SUM	Chain Port 0	Chain Port 1	Chain Port 0	Chain Port 1	
11b	1Mbps	1	1	2412	14.44	14.43	-	30.00	30.00	0.00	-0.50	Pass
11b	1Mbps	1	6	2437	14.07	13.91		30.00	30.00	0.00	-0.50	Pass
11b	1Mbps	1	11	2462	13.98	13.93		30.00	30.00	0.00	-0.50	Pass
11g	6Mbps	1	1	2412	18.93	20.51		30.00	30.00	0.00	-0.50	Pass
11g	6Mbps	1	6	2437	18.75	20.27		30.00	30.00	0.00	-0.50	Pass
11g	6Mbps	1	11	2462	18.53	20.28		30.00	30.00	0.00	-0.50	Pass
HT20	MCS0	1	1	2412	21.39	21.25		30.00	30.00	0.00	-0.50	Pass
HT20	MCS0	1	6	2437	20.80	20.69		30.00	30.00	0.00	-0.50	Pass
HT20	MCS0	1	11	2462	20.96	20.71		30.00	30.00	0.00	-0.50	Pass
HT40	MCS0	1	3	2422	16.56	16.64		30.00	30.00	0.00	-0.50	Pass
HT40	MCS0	1	6	2437	16.89	16.92		30.00	30.00	0.00	-0.50	Pass
HT40	MCS0	1	9	2452	16.77	16.78		30.00	30.00	0.00	-0.50	Pass
HT20	MCS8	2	1	2412	18.58	19.25	21.94	30.00		2.76		Pass
HT20	MCS8	2	6	2437	18.32	18.56	21.45	30.00		2.76		Pass
HT20	MCS8	2	11	2462	18.44	18.23	21.35	30.00		2.76		Pass
HT40	MCS8	2	3	2422	13.93	13.86	16.91	30.00		2.76		Pass
HT40	MCS8	2	6	2437	14.31	14.23	17.28	30.00		2.76		Pass
HT40	MCS8	2	9	2452	14.68	14.59	17.65	30.00		2.76		Pass

Note: Measured power (dBm) has offset with cable loss.

3.2.6 Test Result of Average output Power (Reporting Only)

Test Band :	2.4GHz	Temperature :	24~25℃
Test Engineer :	Issac Song	Relative Humidity :	49~51%

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)		
					Chain Port 0	Chain Port 1	Chain Port 0	Chain Port 1	Sum Power
11b	1Mbps	1	1	2412	0.00	0.00	10.94	10.86	-
11b	1Mbps	1	6	2437	0.00	0.00	10.42	10.25	
11b	1Mbps	1	11	2462	0.00	0.00	10.46	10.31	
11g	6Mbps	1	1	2412	0.20	0.21	8.89	10.17	
11g	6Mbps	1	6	2437	0.20	0.21	8.75	9.96	
11g	6Mbps	1	11	2462	0.20	0.21	8.69	9.84	
HT20	MCS0	1	1	2412	0.22	0.22	11.37	11.19	
HT20	MCS0	1	6	2437	0.22	0.22	11.21	10.96	
HT20	MCS0	1	11	2462	0.22	0.22	11.23	10.90	
HT40	MCS0	1	3	2422	0.22	0.23	7.15	7.17	
HT40	MCS0	1	6	2437	0.22	0.23	7.20	7.54	
HT40	MCS0	1	9	2452	0.22	0.23	7.07	7.15	
HT20	MCS8	2	1	2412	0.42	0.42	8.73	8.74	11.74
HT20	MCS8	2	6	2437	0.42	0.42	8.29	8.29	11.30
HT20	MCS8	2	11	2462	0.42	0.42	8.26	8.40	11.34
HT40	MCS8	2	3	2422	0.43	0.43	4.40	4.20	7.31
HT40	MCS8	2	6	2437	0.43	0.43	4.64	4.17	7.42
HT40	MCS8	2	9	2452	0.43	0.43	4.83	4.37	7.62

Note: Measured power (dBm) has offset with cable loss and duty factor.

3.3 Power Spectral Density Measurement

3.3.1 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.

3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.
7. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

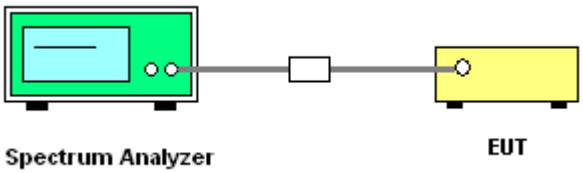
   If measurements performed using method (2) plus 10 log (N) exceeds the emission limit, the test should choose method (1) before declaring that the device fails the emission limit.

   Method (1): Measure and sum the spectra across the outputs.

   The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

   Method (2): Measure and add 10 log (N) dB, where N is the number of outputs. (N=2)

3.3.4 Test Setup



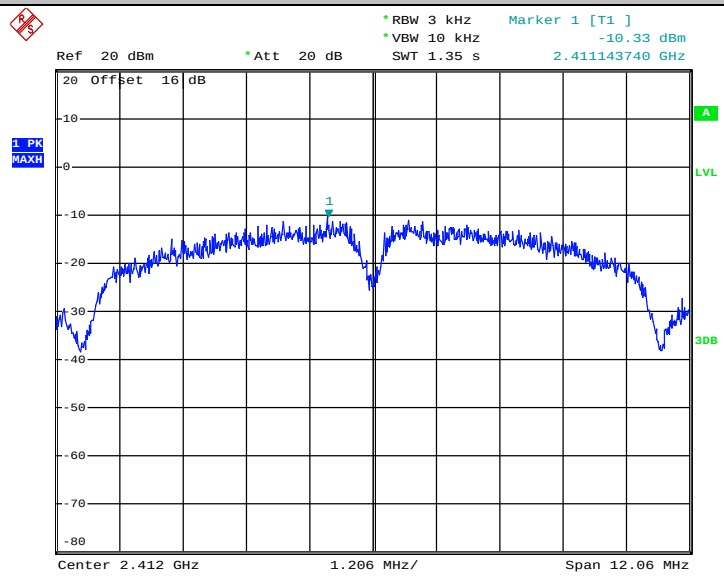
3.3.5 Test Result of Power Spectral Density

Test Band :	2.4GHz	Temperature :	24~25℃
Test Engineer :	Issac Song	Relative Humidity :	49~51%

Mod.	Data Rate	N_{TX}	CH.	Freq. (MHz)	Peak Power Density (dBm/3kHz)			Max. Limit (dBm/3kHz)		DG (dBi)		Pass/Fail
					Chain Port 0	Chain Port 1	Worst +10log(2)	Chain Port 0	Chain Port 1	Chain Port 0	Chain Port 1	
11b	1Mbps	1	1	2412	-10.33	-		8.00	-	0.00	-0.50	Pass
11b	1Mbps	1	6	2437	-10.50	-		8.00	-	0.00	-0.50	Pass
11b	1Mbps	1	11	2462	-11.05	-		8.00	-	0.00	-0.50	Pass
11g	6Mbps	1	1	2412	-	-13.41		-	8.00	0.00	-0.50	Pass
11g	6Mbps	1	6	2437	-	-14.19		-	8.00	0.00	-0.50	Pass
11g	6Mbps	1	11	2462	-	-14.61		-	8.00	0.00	-0.50	Pass
HT20	MCS0	1	1	2412	-12.47	-	-	8.00	-	0.00	-0.50	Pass
HT20	MCS0	1	6	2437	-13.23	-		8.00	-	0.00	-0.50	Pass
HT20	MCS0	1	11	2462	-12.14	-		8.00	-	0.00	-0.50	Pass
HT40	MCS0	1	3	2422	-	-21.29		-	8.00	0.00	-0.50	Pass
HT40	MCS0	1	6	2437	-	-20.52		-	8.00	0.00	-0.50	Pass
HT40	MCS0	1	9	2452	-	-20.65		-	8.00	0.00	-0.50	Pass
HT20	MCS8	2	1	2412	-15.20	-14.43	-11.42	8.00		2.76		Pass
HT20	MCS8	2	6	2437	-15.25	-14.95	-11.94	8.00		2.76		Pass
HT20	MCS8	2	11	2462	-14.91	-15.93	-11.90	8.00		2.76		Pass
HT40	MCS8	2	3	2422	-21.92	-22.63	-18.91	8.00		2.76		Pass
HT40	MCS8	2	6	2437	-21.92	-21.51	-18.50	8.00		2.76		Pass
HT40	MCS8	2	9	2452	-22.62	-22.22	-19.21	8.00		2.76		Pass

Note: Measured power density (dBm) has offset with cable loss.

Worst Case Power Density (dBm/3kHz)



3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.4.4 Test Setup

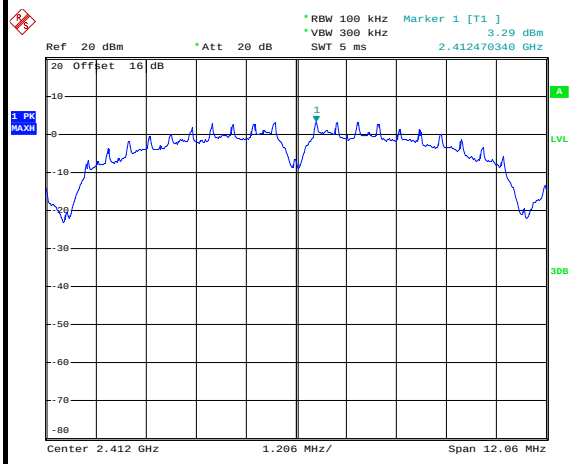
3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Number of TX = 1, Chain Port 0 (Measured)

Number of TX	1	**Chain Port :**	0
Test Mode :	802.11b	**Temperature :**	24~25℃
Test Band :	2.4GHz Low	**Relative Humidity :**	49~51%
Test Channel :	01	**Test Engineer :**	Issac Song

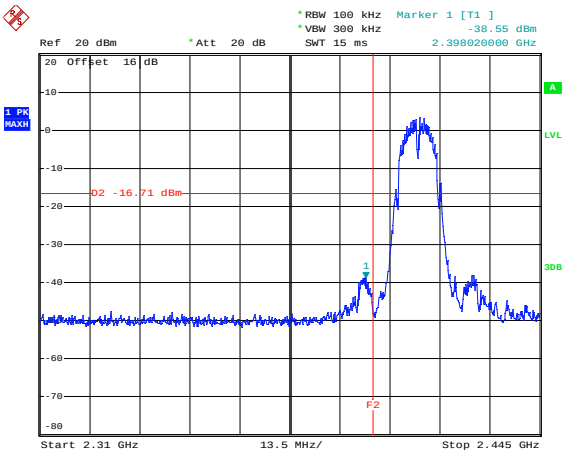
WLAN 802.11b Channel 01

100kHz PSD reference Level



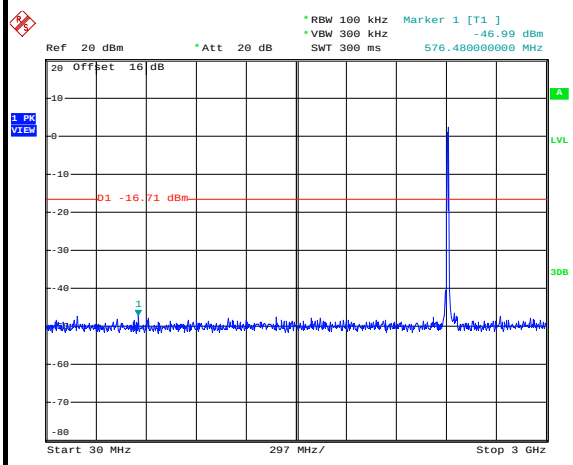
Date: 15.JUL.2014 00:36:35

Low Channel Plot



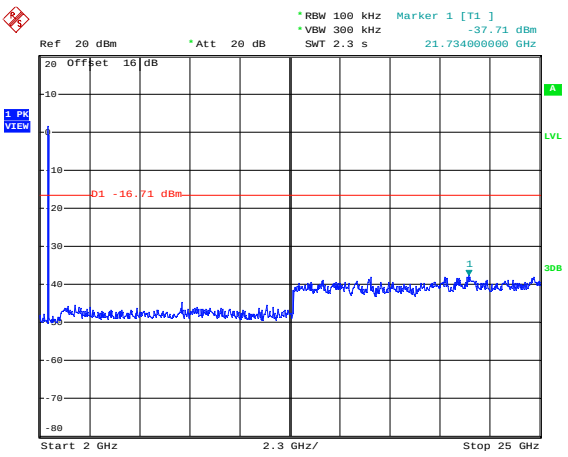
Date: 15.JUL.2014 00:36:49

Spurious Emission 30MHz~3GHz



Date: 15.JUL.2014 00:42:01

Spurious Emission 2GHz~25GHz

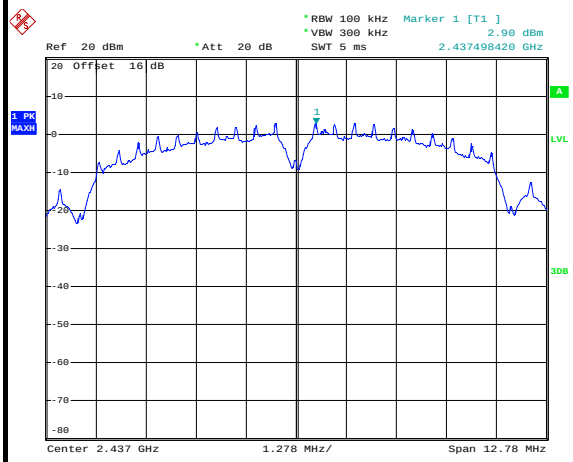


Date: 15.JUL.2014 00:40:16

Number of TX :	1	**Chain Port :**	0
Test Mode :	802.11b	**Temperature :**	24~25℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	49~51%
Test Channel :	06	**Test Engineer :**	Issac Song

WLAN 802.11b Channel 06

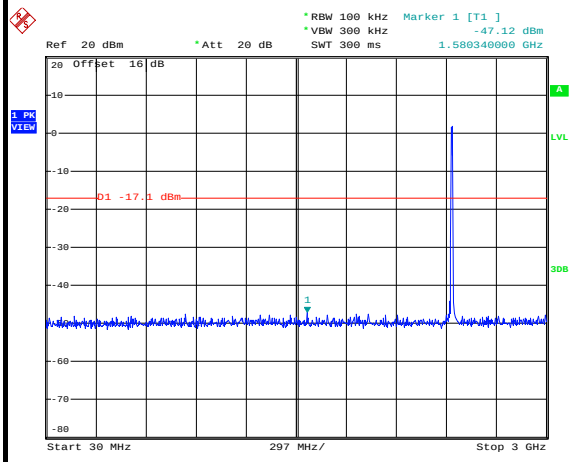
100kHz PSD reference Level



Date: 15.JUL.2014 00:50:36

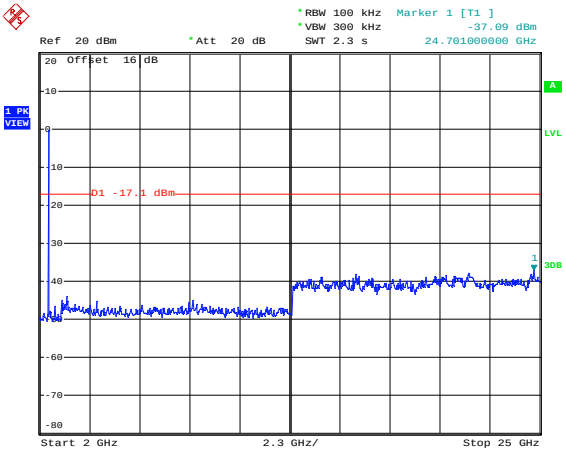
Mid Channel Plot

Spurious Emission 30MHz~3GHz



Date: 15.JUL.2014 00:50:55

Spurious Emission 2GHz~25GHz

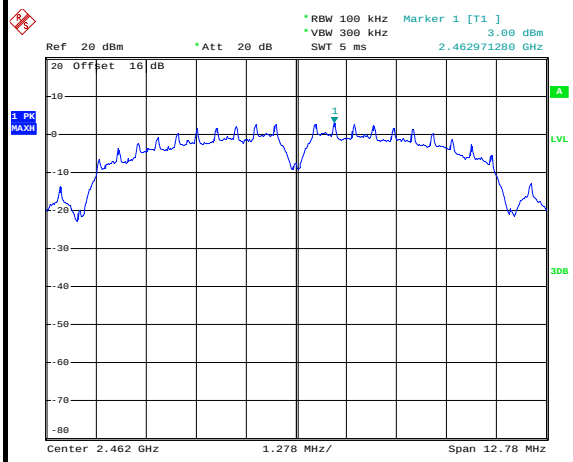


Date: 15.JUL.2014 00:51:14

Number of TX :	1	**Chain Port :**	0
Test Mode :	802.11b	**Temperature :**	24~25℃
Test Band :	2.4GHz High	**Relative Humidity :**	49~51%
Test Channel :	11	**Test Engineer :**	Issac Song

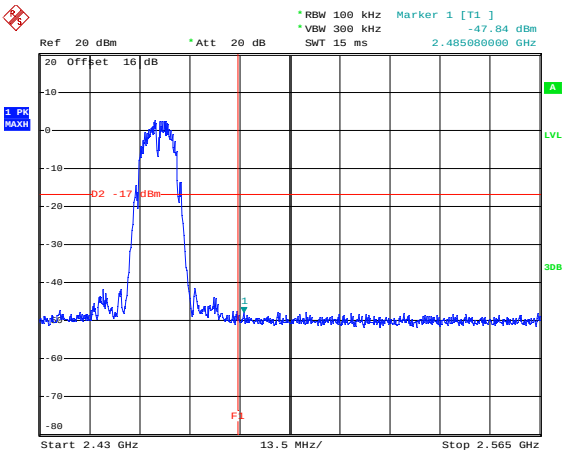
WLAN 802.11b Channel 11

100kHz PSD reference Level



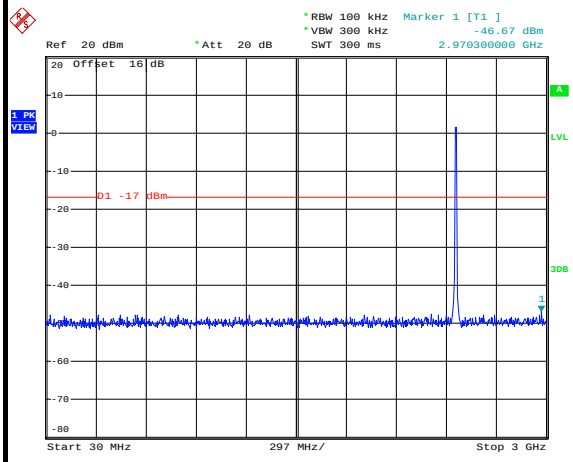
Date: 15.JUL.2014 00:55:06

High Channel Plot



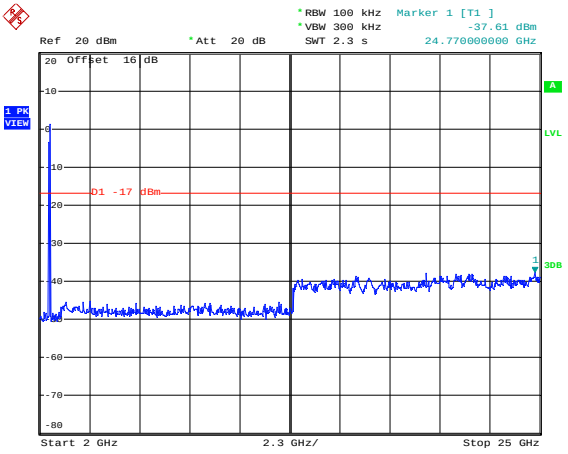
Date: 15.JUL.2014 00:55:20

Spurious Emission 30MHz~3GHz



Date: 15.JUL.2014 00:55:39

Spurious Emission 2GHz~25GHz

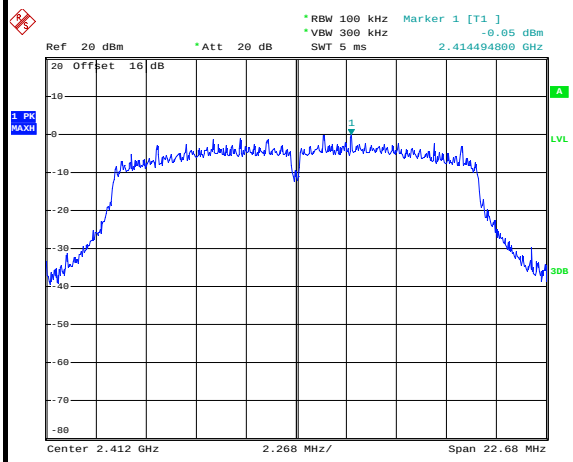


Date: 15.JUL.2014 00:55:57

Number of TX :	1	**Chain Port :**	1
Test Mode :	802.11g	**Temperature :**	24~25℃
Test Band :	2.4GHz Low	**Relative Humidity :**	49~51%
Test Channel :	01	**Test Engineer :**	Issac Song

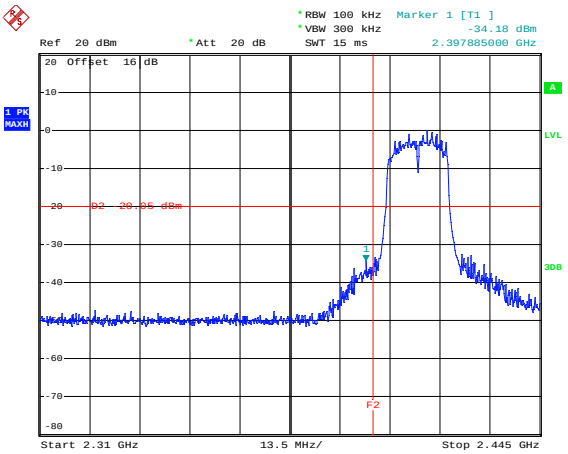
WLAN 802.11g Channel 01

100kHz PSD reference Level



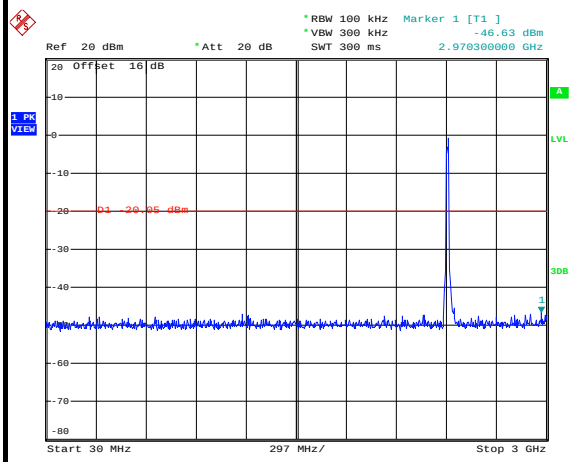
Date: 15.JUL.2014 01:02:33

Low Channel Plot



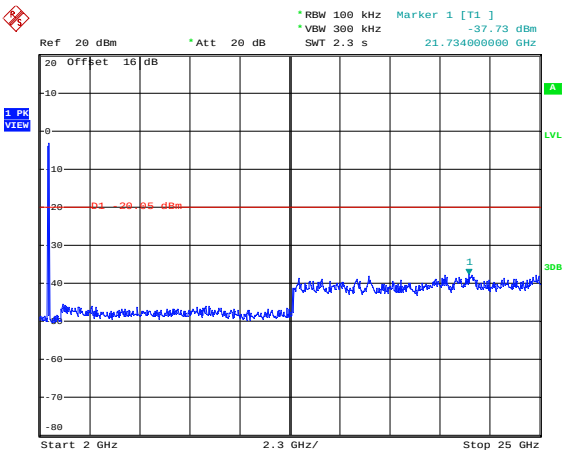
Date: 15.JUL.2014 01:02:47

Spurious Emission 30MHz~3GHz



Date: 15.JUL.2014 01:03:06

Spurious Emission 2GHz~25GHz

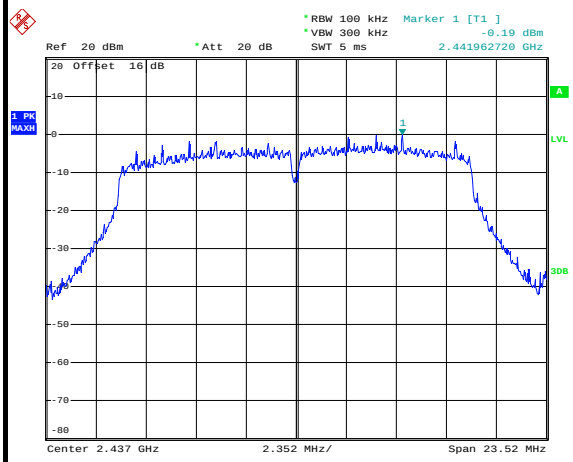


Date: 15.JUL.2014 01:03:24

Number of TX :	1	**Chain Port :**	1
Test Mode :	802.11g	**Temperature :**	24~25℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	49~51%
Test Channel :	06	**Test Engineer :**	Issac Song

WLAN 802.11g Channel 06

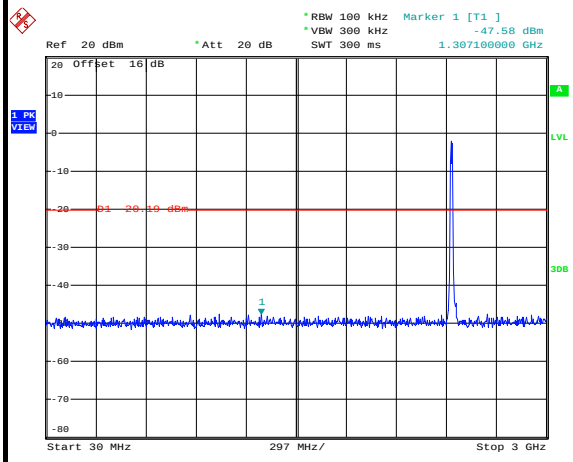
100kHz PSD reference Level



Date: 15.JUL.2014 01:07:01

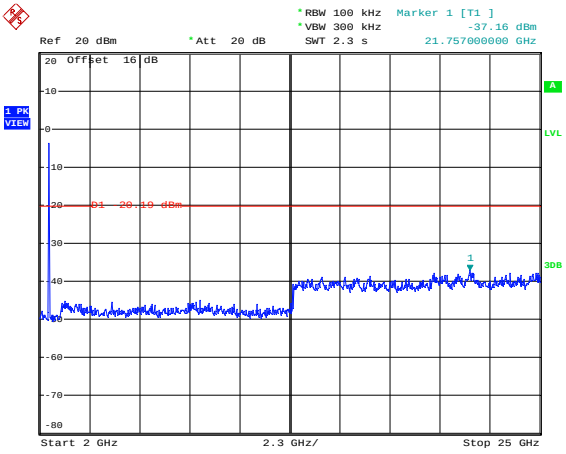
Mid Channel Plot

Spurious Emission 30MHz~3GHz



Date: 15.JUL.2014 01:07:21

Spurious Emission 2GHz~25GHz

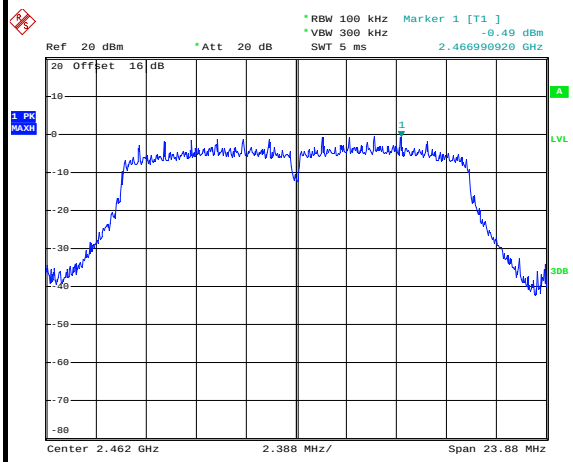


Date: 15.JUL.2014 01:07:39

Number of TX :	1	**Chain Port :**	1
Test Mode :	802.11g	**Temperature :**	24~25℃
Test Band :	2.4GHz High	**Relative Humidity :**	49~51%
Test Channel :	11	**Test Engineer :**	Issac Song

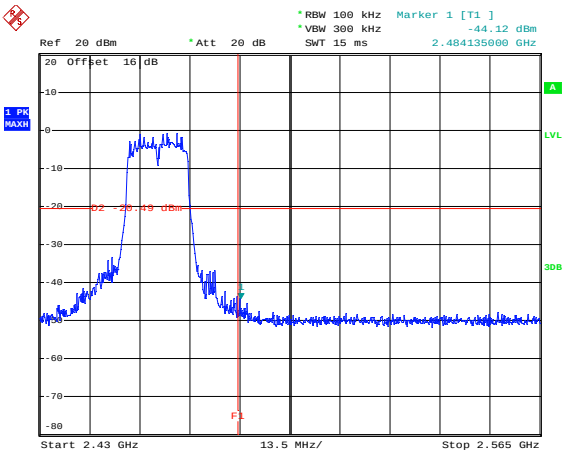
WLAN 802.11g Channel 11

100kHz PSD reference Level



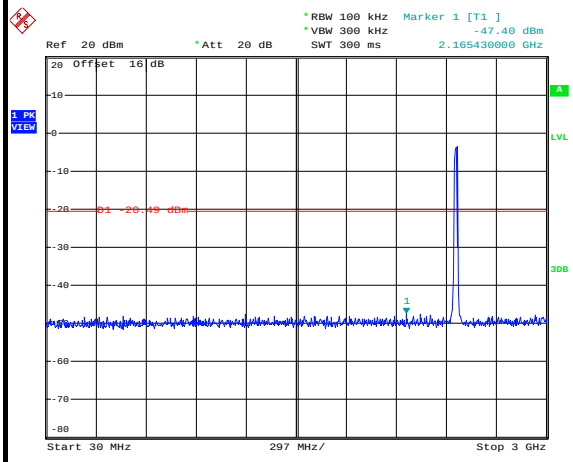
Date: 15.JUL.2014 01:11:43

High Channel Plot



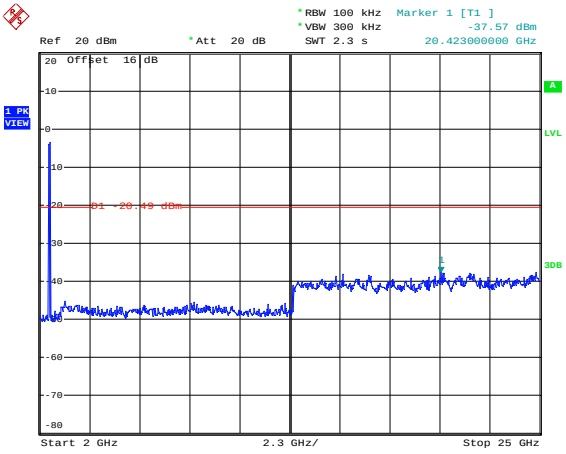
Date: 15.JUL.2014 01:11:57

Spurious Emission 30MHz~3GHz



Date: 15.JUL.2014 01:12:16

Spurious Emission 2GHz~25GHz

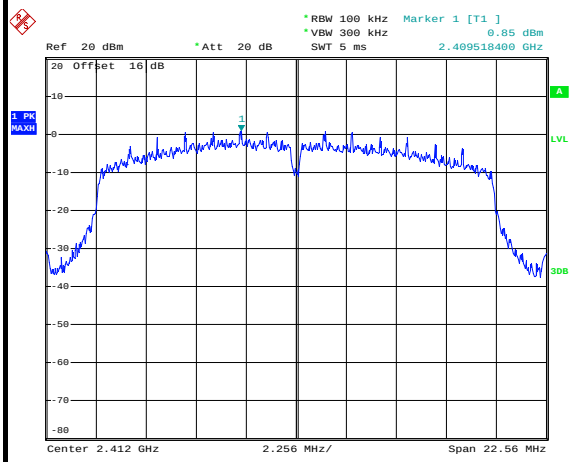


Date: 15.JUL.2014 01:12:35

Number of TX :	1	**Chain Port :**	0
Test Mode :	802.11n HT20	**Temperature :**	24~25℃
Test Band :	2.4GHz Low	**Relative Humidity :**	49~51%
Test Channel :	01	**Test Engineer :**	Issac Song

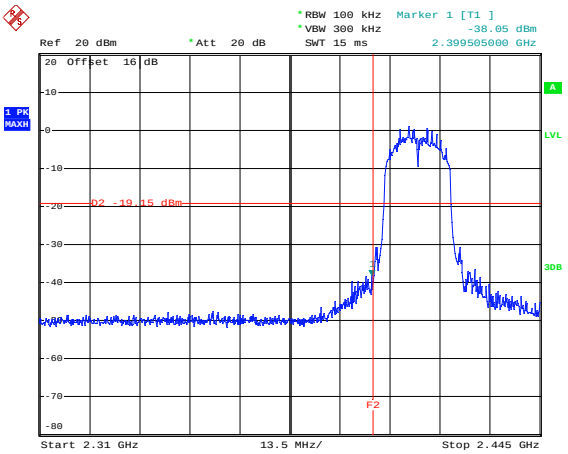
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



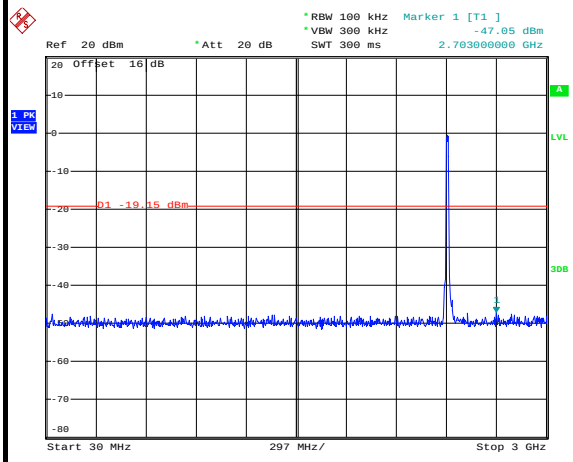
Date: 4.JUL.2014 02:16:48

Low Channel Plot



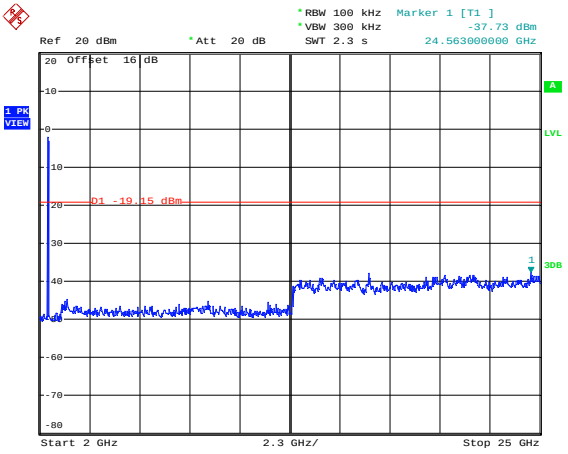
Date: 4.JUL.2014 02:17:01

Spurious Emission 30MHz~3GHz



Date: 4.JUL.2014 02:17:21

Spurious Emission 2GHz~25GHz

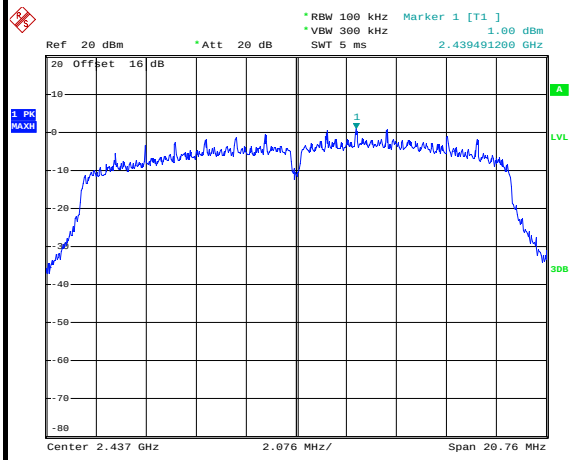


Date: 4.JUL.2014 02:17:39

Number of TX :	1	**Chain Port :**	0
Test Mode :	802.11n HT20	**Temperature :**	24~25℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	49~51%
Test Channel :	06	**Test Engineer :**	Issac Song

WLAN 802.11n HT20 Channel 06

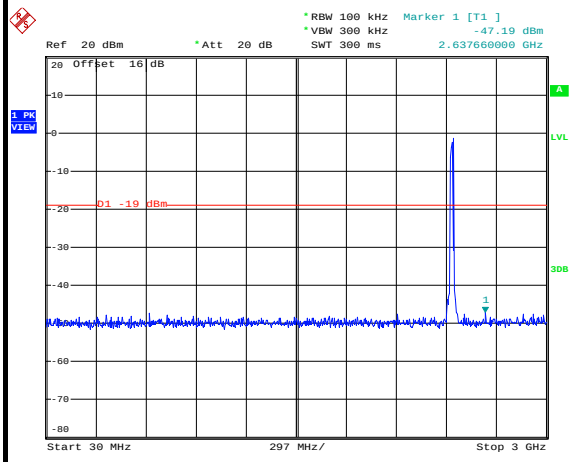
100kHz PSD reference Level



Date: 4.JUL.2014 02:21:01

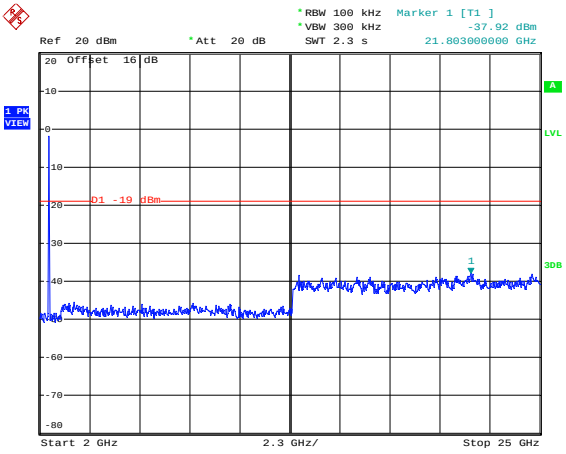
Mid Channel Plot

Spurious Emission 30MHz~3GHz



Date: 4.JUL.2014 02:21:21

Spurious Emission 2GHz~25GHz

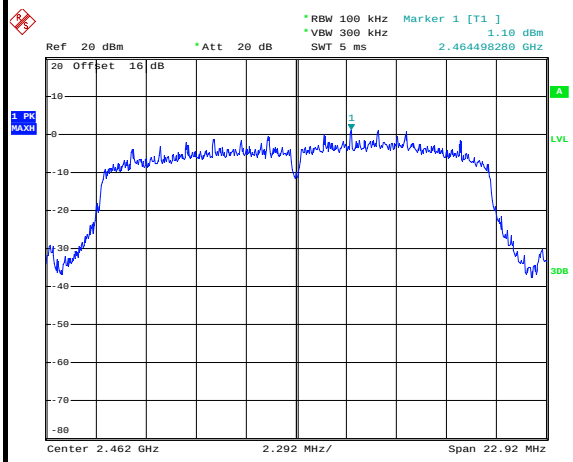


Date: 4.JUL.2014 02:21:39

Number of TX :	1	**Chain Port :**	0
Test Mode :	802.11n HT20	**Temperature :**	24~25℃
Test Band :	2.4GHz High	**Relative Humidity :**	49~51%
Test Channel :	11	**Test Engineer :**	Issac Song

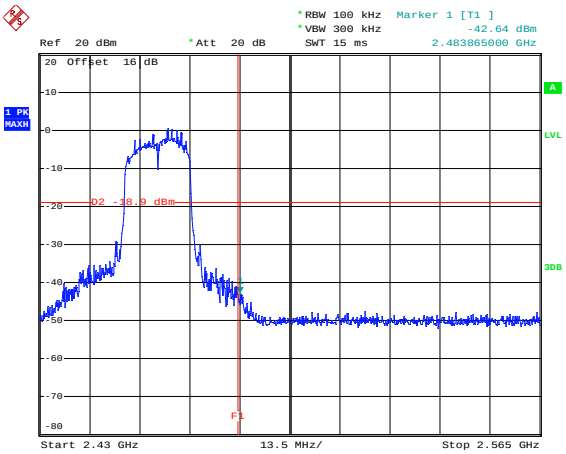
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



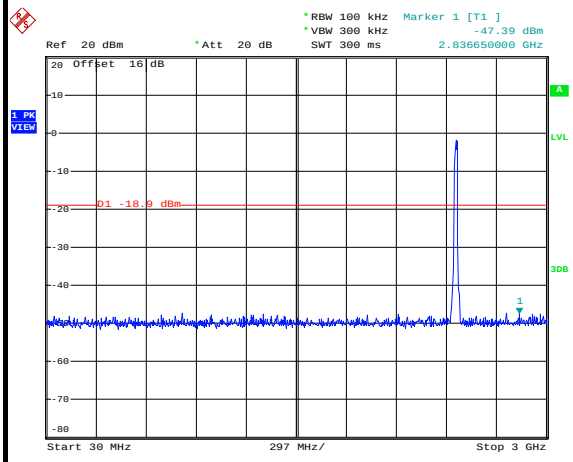
Date: 4.JUL.2014 02:24:39

High Channel Plot



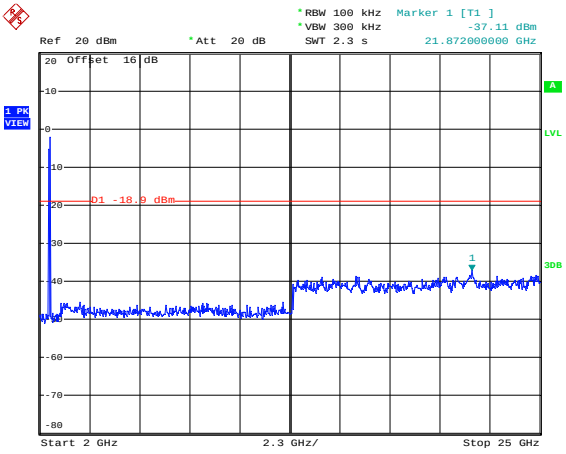
Date: 4.JUL.2014 02:24:53

Spurious Emission 30MHz~3GHz



Date: 4.JUL.2014 02:25:12

Spurious Emission 2GHz~25GHz

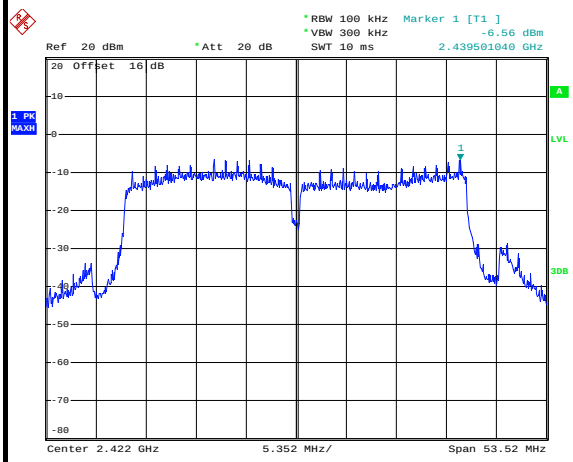


Date: 4.JUL.2014 02:25:31

Number of TX :	1	**Chain Port :**	1
Test Mode :	802.11n HT40	**Temperature :**	24~25℃
Test Band :	2.4GHz Low	**Relative Humidity :**	49~51%
Test Channel :	03	**Test Engineer :**	Issac Song

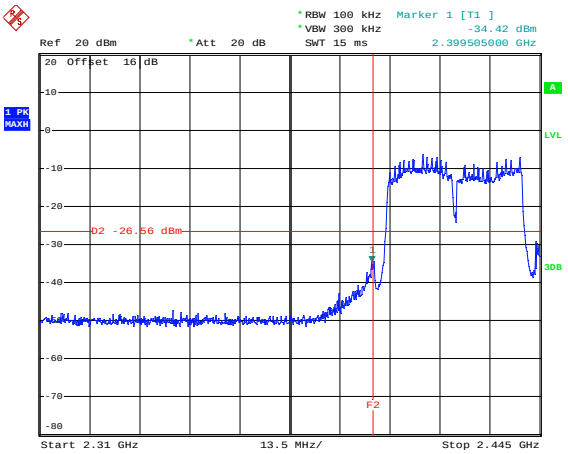
WLAN 802.11n HT40 Channel 03

100kHz PSD reference Level



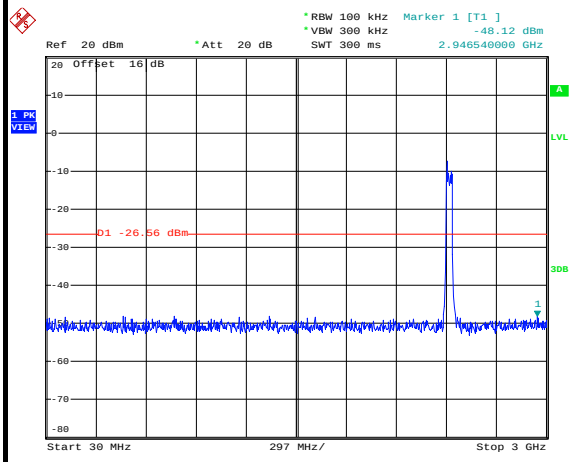
Date: 3.AUG.2014 19:08:45

Low Channel Plot



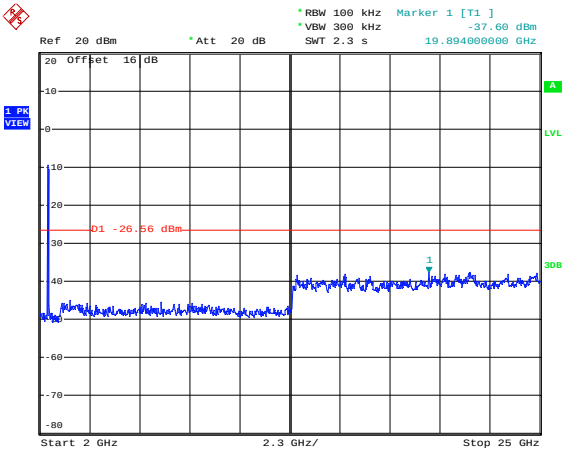
Date: 3.AUG.2014 19:09:18

Spurious Emission 30MHz~3GHz



Date: 3.AUG.2014 20:25:19

Spurious Emission 2GHz~25GHz

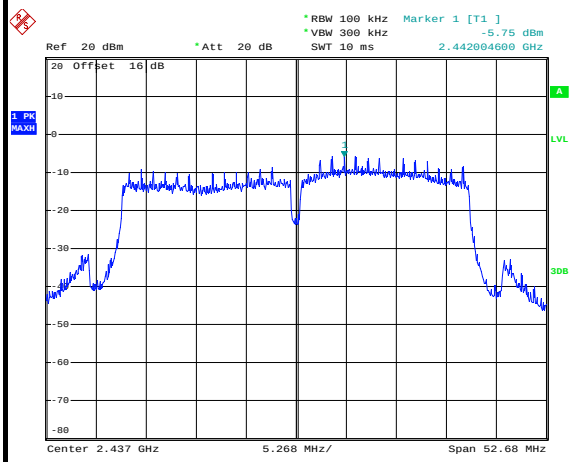


Date: 3.AUG.2014 19:18:01

Number of TX :	1	**Chain Port :**	1
Test Mode :	802.11n HT40	**Temperature :**	24~25℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	49~51%
Test Channel :	06	**Test Engineer :**	Issac Song

WLAN 802.11n HT40 Channel 06

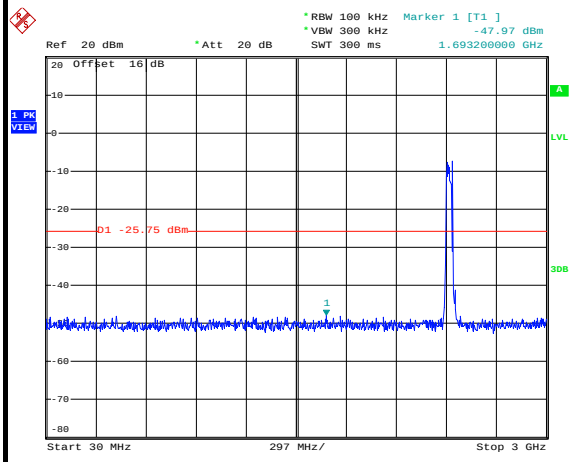
100kHz PSD reference Level



Date: 3.AUG.2014 18:15:33

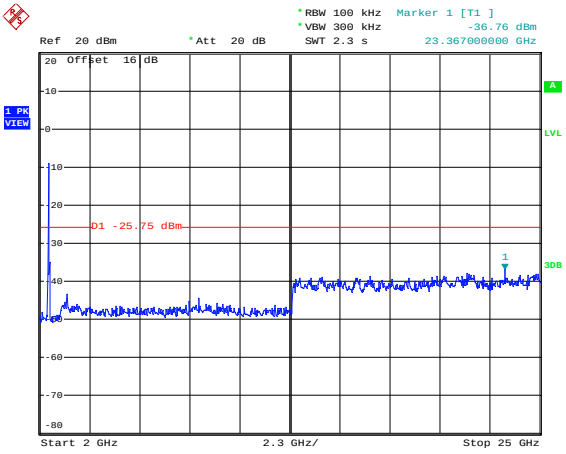
Mid Channel Plot

Spurious Emission 30MHz~3GHz



Date: 3.AUG.2014 20:35:25

Spurious Emission 2GHz~25GHz

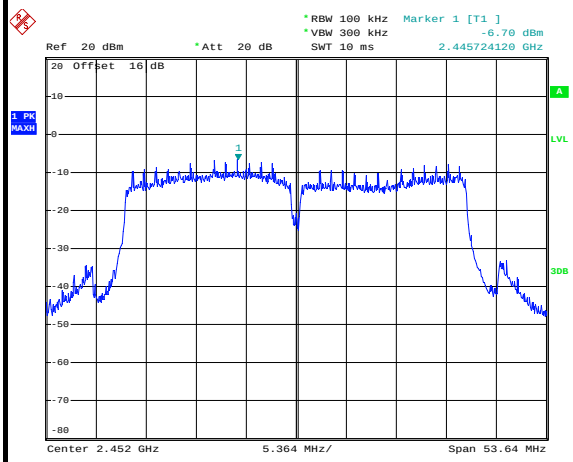


Date: 3.AUG.2014 18:27:11

Number of TX :	1	**Chain Port :**	1
Test Mode :	802.11n HT40	**Temperature :**	24~25℃
Test Band :	2.4GHz High	**Relative Humidity :**	49~51%
Test Channel :	09	**Test Engineer :**	Issac Song

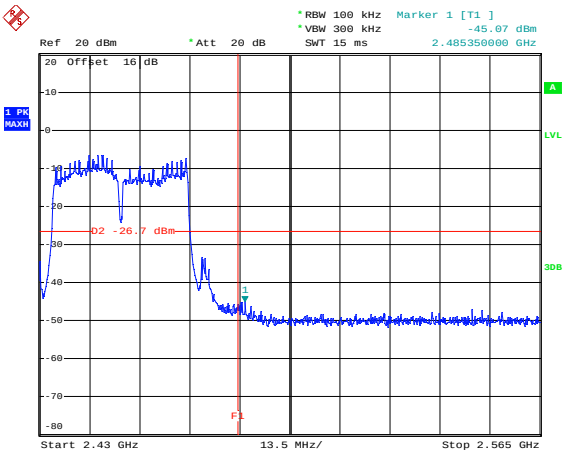
WLAN 802.11n HT40 Channel 09

100kHz PSD reference Level



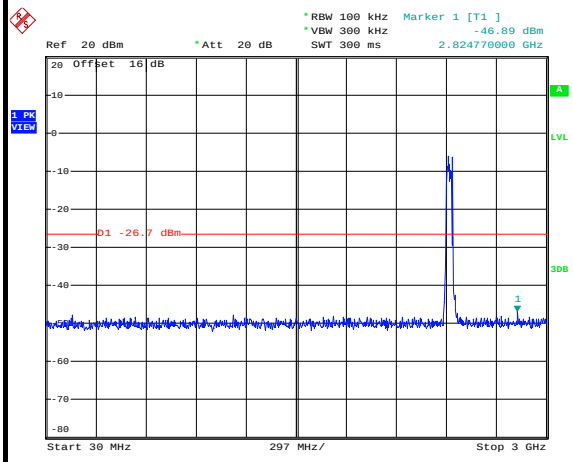
Date: 3.AUG.2014 19:27:04

High Channel Plot



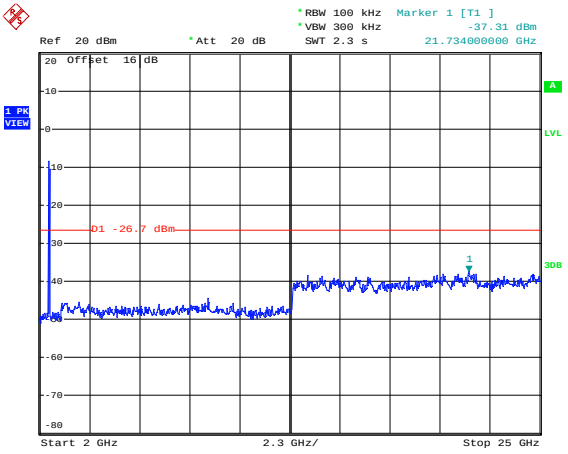
Date: 3.AUG.2014 19:27:26

Spurious Emission 30MHz~3GHz



Date: 3.AUG.2014 20:40:54

Spurious Emission 2GHz~25GHz



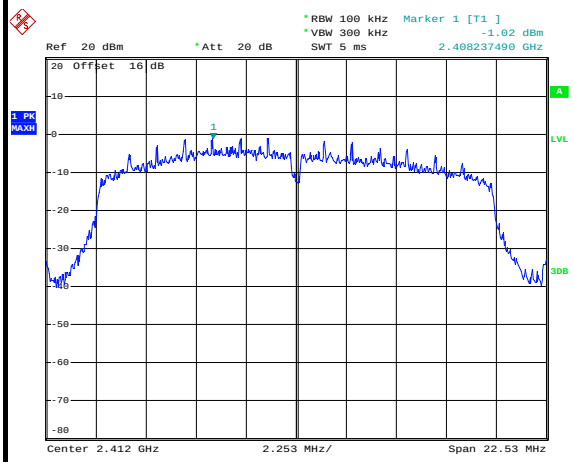
Date: 3.AUG.2014 19:31:19

Number of TX = 2, Chain Port 0+1(0) (Measured)

Number of TX :	2	**Chain Port :**	0
Test Mode :	802.11n HT20	**Temperature :**	24~25℃
Test Band :	2.4GHz Low	**Relative Humidity :**	49~51%
Test Channel :	01	**Test Engineer :**	Issac Song

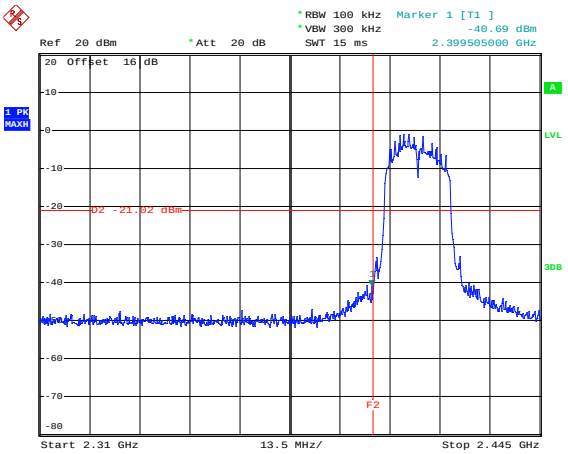
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



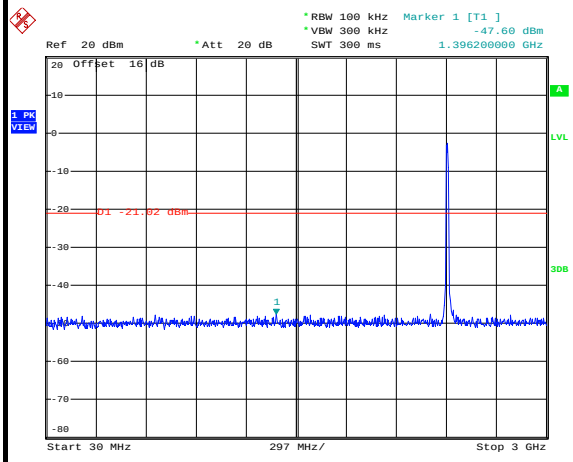
Date: 4.JUL.2014 02:30:49

Low Channel Plot



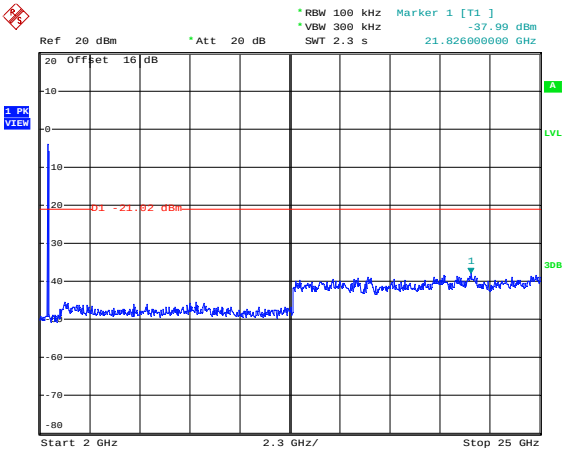
Date: 4.JUL.2014 02:31:03

Spurious Emission 30MHz~3GHz



Date: 4.JUL.2014 02:31:22

Spurious Emission 2GHz~25GHz

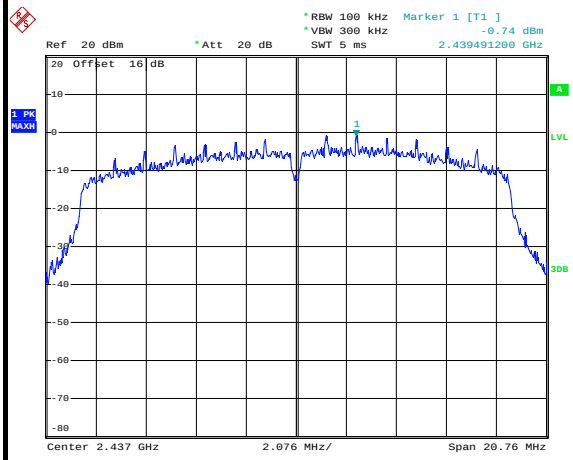


Date: 4.JUL.2014 02:31:40

Number of TX :	2	**Chain Port :**	0
Test Mode :	802.11n HT20	**Temperature :**	24~25℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	49~51%
Test Channel :	06	**Test Engineer :**	Issac Song

WLAN 802.11n HT20 Channel 06

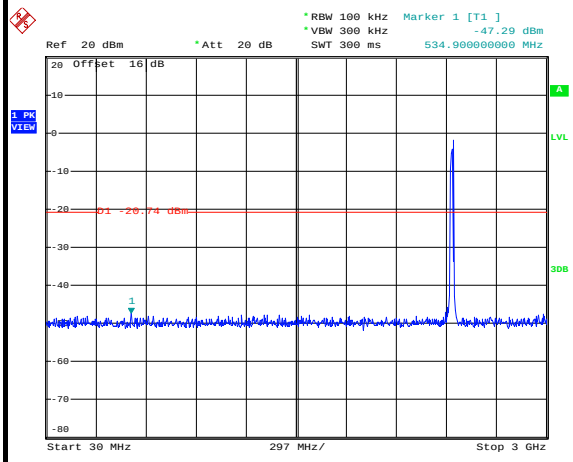
100kHz PSD reference Level



Date: 4.JUL.2014 02:34:37

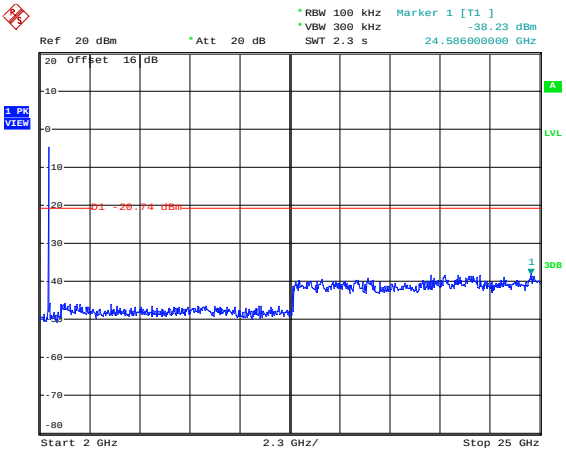
Mid Channel Plot

Spurious Emission 30MHz~3GHz



Date: 4.JUL.2014 02:34:57

Spurious Emission 2GHz~25GHz

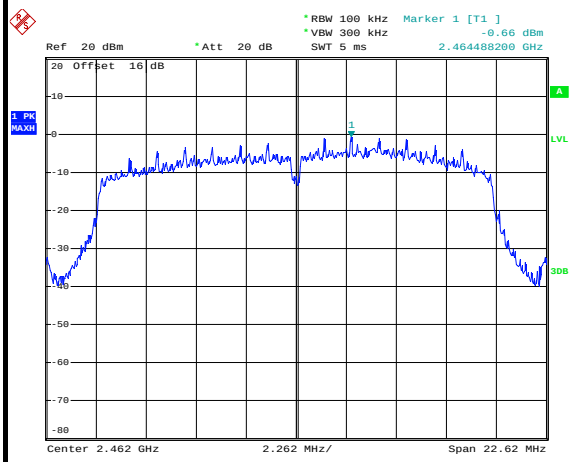


Date: 4.JUL.2014 02:35:15

Number of TX :	2	**Chain Port :**	0
Test Mode :	802.11n HT20	**Temperature :**	24~25℃
Test Band :	2.4GHz High	**Relative Humidity :**	49~51%
Test Channel :	11	**Test Engineer :**	Issac Song

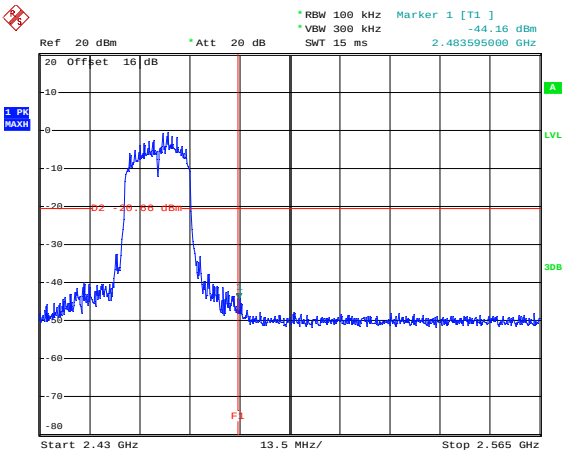
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



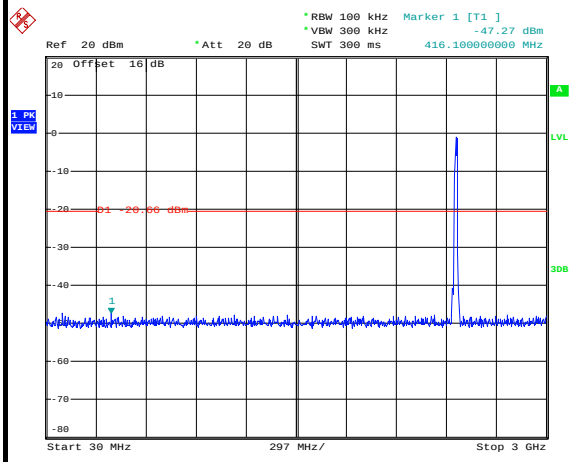
Date: 4.JUL.2014 02:38:15

High Channel Plot



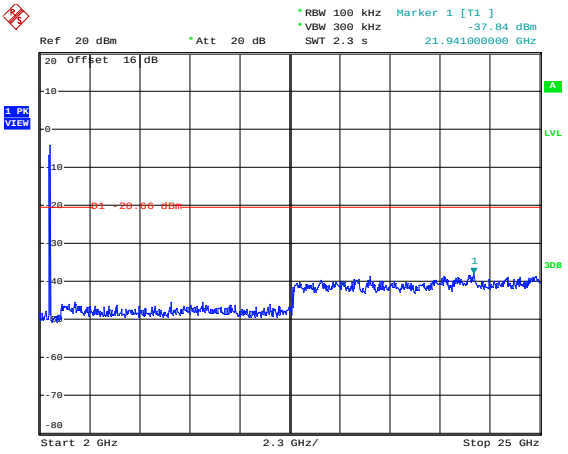
Date: 4.JUL.2014 02:38:29

Spurious Emission 30MHz~3GHz



Date: 4.JUL.2014 02:38:48

Spurious Emission 2GHz~25GHz

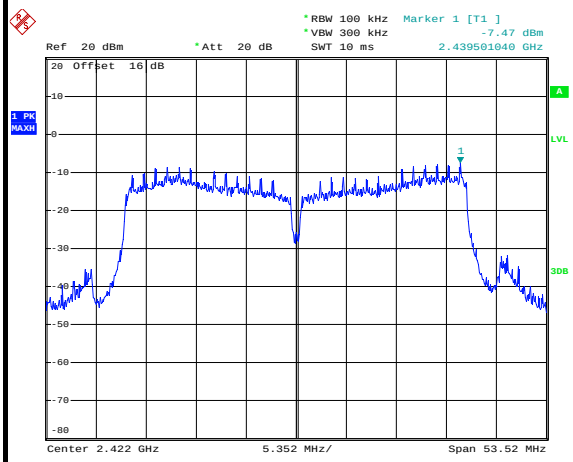


Date: 4.JUL.2014 02:39:07

Number of TX :	2	**Chain Port :**	0
Test Mode :	802.11n HT40	**Temperature :**	24~25℃
Test Band :	2.4GHz Low	**Relative Humidity :**	49~51%
Test Channel :	03	**Test Engineer :**	Issac Song

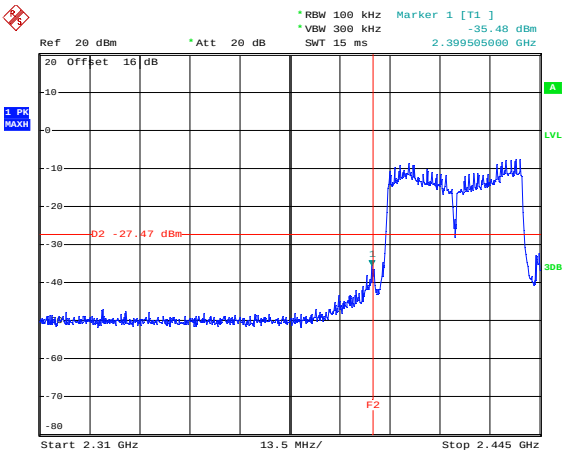
WLAN 802.11n HT40 Channel 03

100kHz PSD reference Level



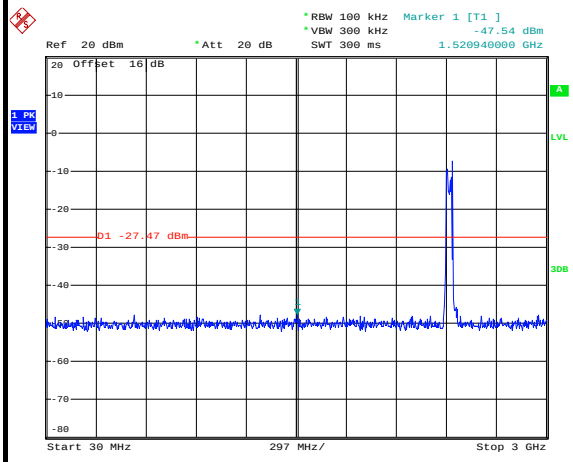
Date: 4.JUL.2014 03:51:55

Low Channel Plot



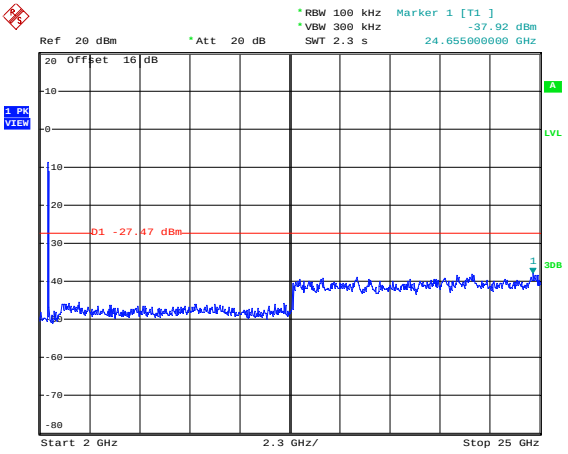
Date: 4.JUL.2014 03:52:09

Spurious Emission 30MHz~3GHz



Date: 4.JUL.2014 03:55:54

Spurious Emission 2GHz~25GHz

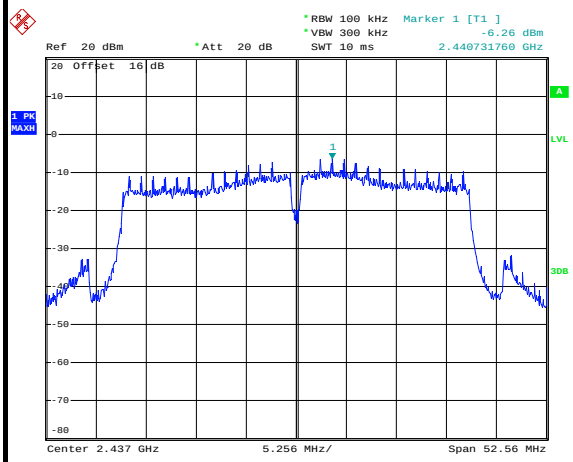


Date: 4.JUL.2014 03:54:44

Number of TX :	2	**Chain Port :**	0
Test Mode :	802.11n HT40	**Temperature :**	24~25℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	49~51%
Test Channel :	06	**Test Engineer :**	Issac Song

WLAN 802.11n HT40 Channel 06

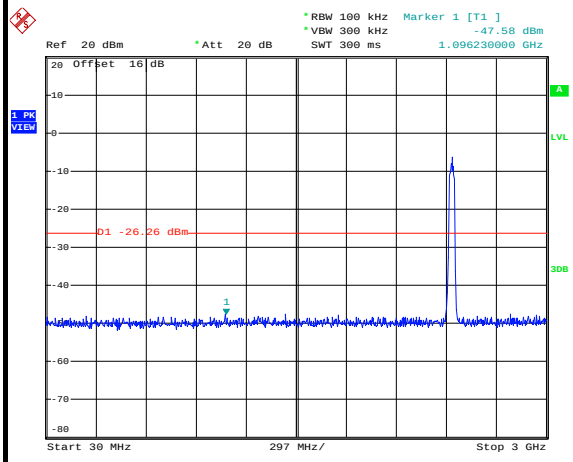
100kHz PSD reference Level



Date: 4.JUL.2014 03:58:58

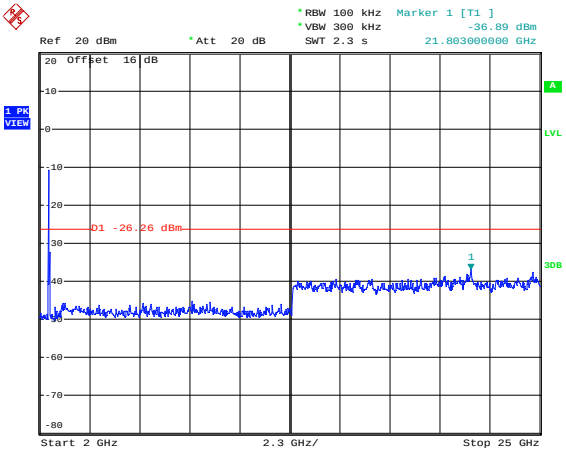
Mid Channel Plot

Spurious Emission 30MHz~3GHz



Date: 4.JUL.2014 03:59:18

Spurious Emission 2GHz~25GHz

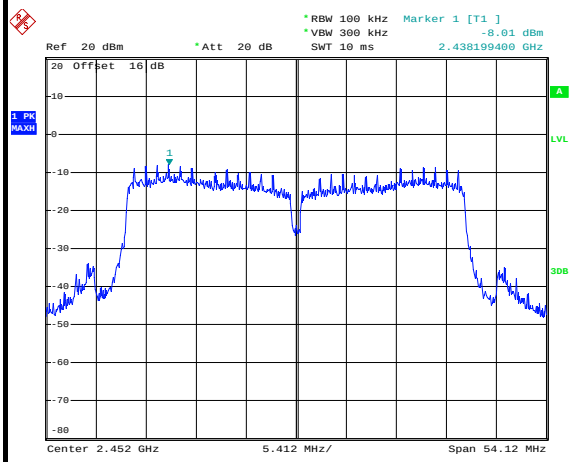


Date: 4.JUL.2014 03:59:36

Number of TX :	2	**Chain Port :**	0
Test Mode :	802.11n HT40	**Temperature :**	24~25℃
Test Band :	2.4GHz High	**Relative Humidity :**	49~51%
Test Channel :	09	**Test Engineer :**	Issac Song

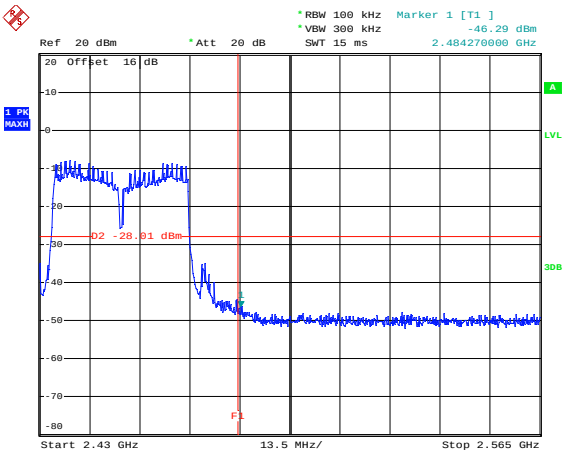
WLAN 802.11n HT40 Channel 09

100kHz PSD reference Level



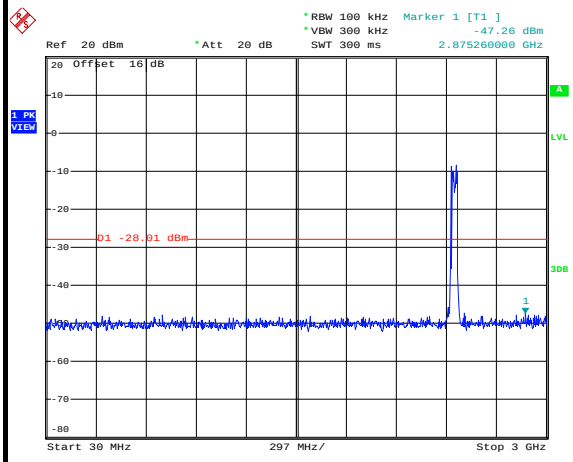
Date: 4.JUL.2014 04:03:34

High Channel Plot



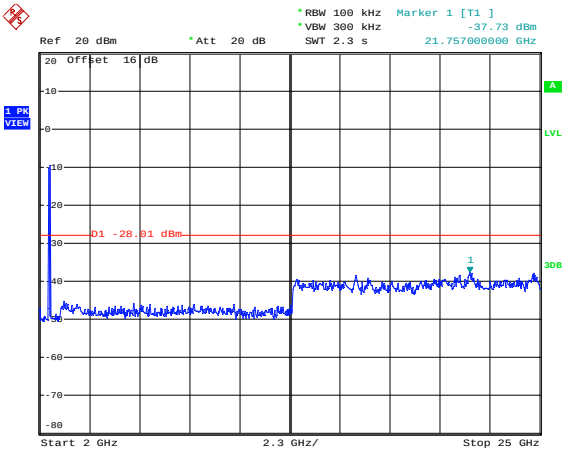
Date: 4.JUL.2014 04:03:48

Spurious Emission 30MHz~3GHz



Date: 4.JUL.2014 04:07:00

Spurious Emission 2GHz~25GHz



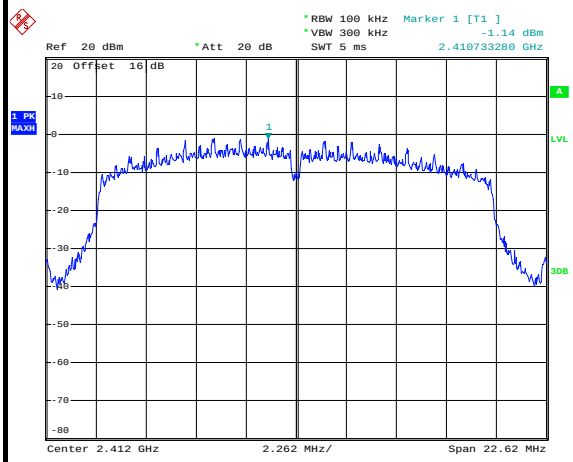
Date: 4.JUL.2014 04:06:11

Number of TX = 2, Chain Port 0+1(1) (Measured)

Number of TX :	2	**Chain Port :**	1
Test Mode :	802.11n HT20	**Temperature :**	24~25℃
Test Band :	2.4GHz Low	**Relative Humidity :**	49~51%
Test Channel :	01	**Test Engineer :**	Issac Song

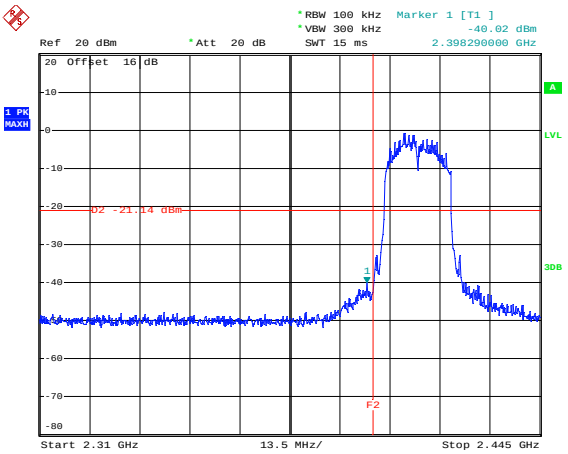
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



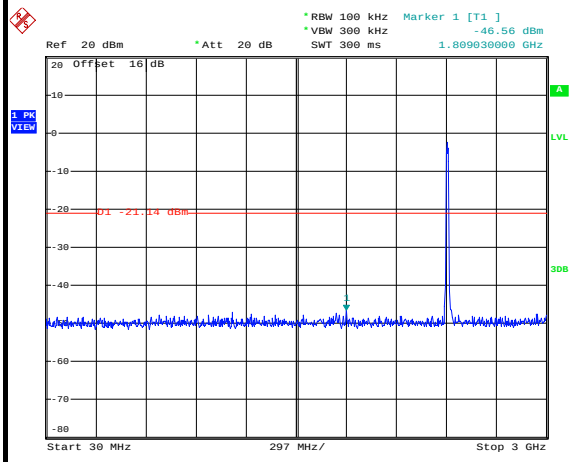
Date: 4.JUL.2014 02:43:33

Low Channel Plot



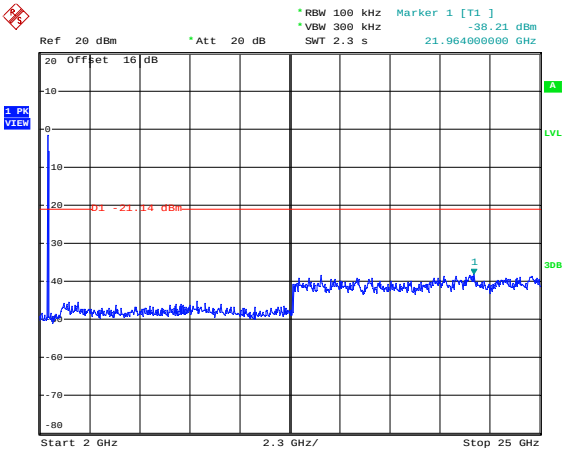
Date: 4.JUL.2014 02:44:58

Spurious Emission 30MHz~3GHz



Date: 4.JUL.2014 02:44:06

Spurious Emission 2GHz~25GHz

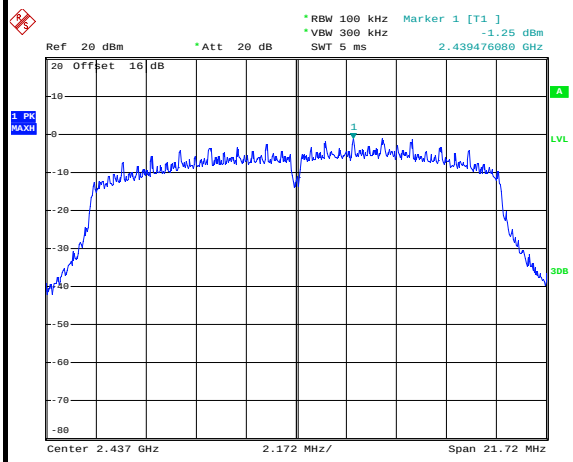


Date: 4.JUL.2014 02:44:24

Number of TX :	2	**Chain Port :**	1
Test Mode :	802.11n HT20	**Temperature :**	24~25℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	49~51%
Test Channel :	06	**Test Engineer :**	Issac Song

WLAN 802.11n HT20 Channel 06

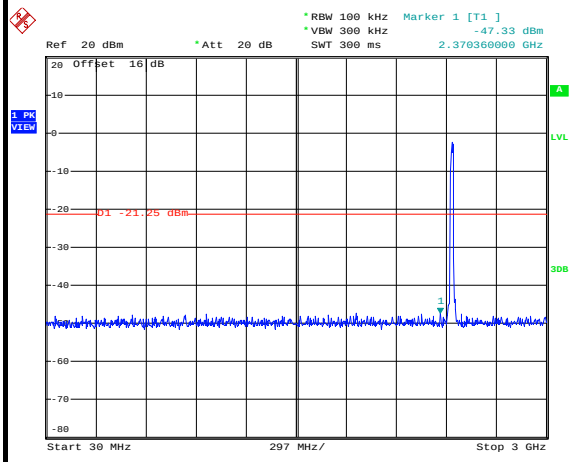
100kHz PSD reference Level



Date: 4.JUL.2014 02:48:05

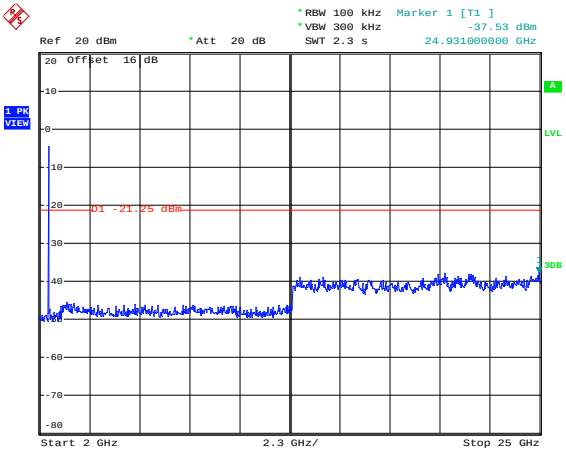
High Channel Plot

Spurious Emission 30MHz~3GHz



Date: 4.JUL.2014 02:48:25

Spurious Emission 2GHz~25GHz

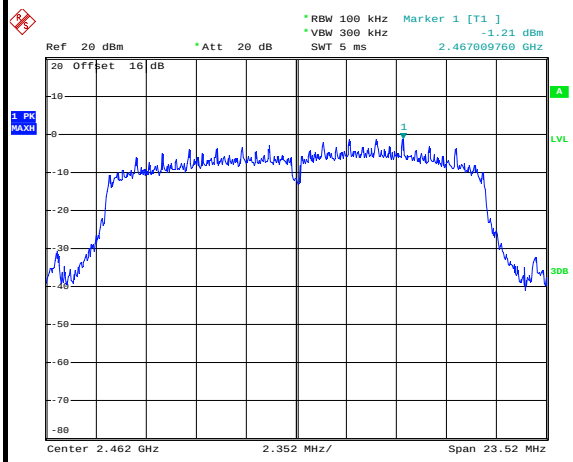


Date: 4.JUL.2014 02:48:43

Number of TX :	2	**Chain Port :**	1
Test Mode :	802.11n HT20	**Temperature :**	24~25℃
Test Band :	2.4GHz High	**Relative Humidity :**	49~51%
Test Channel :	11	**Test Engineer :**	Issac Song

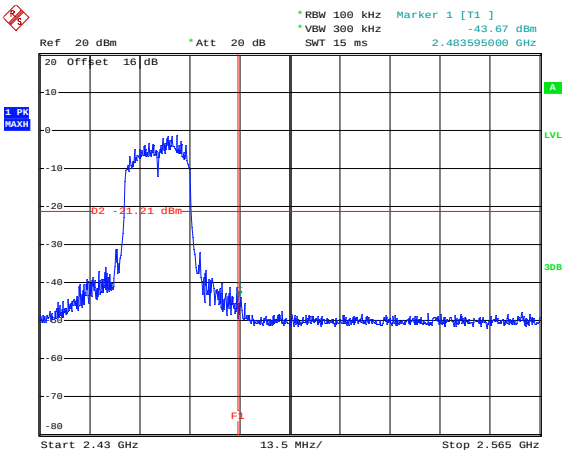
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



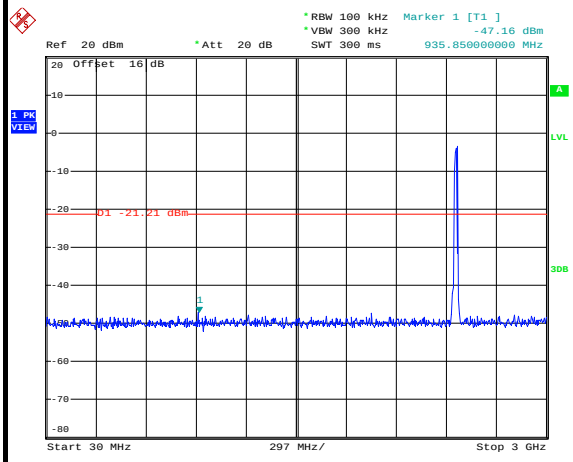
Date: 4.JUL.2014 02:55:23

High Channel Plot



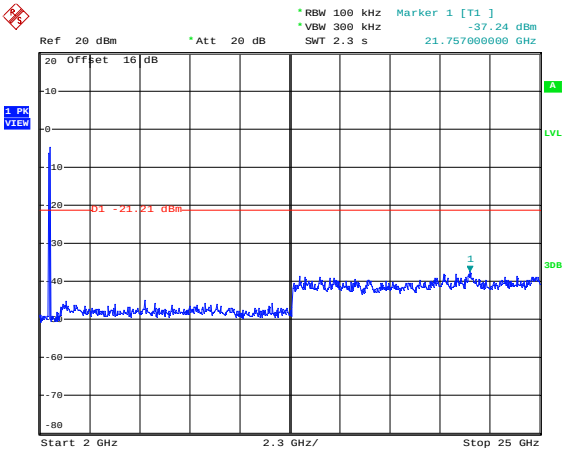
Date: 4.JUL.2014 02:55:37

Spurious Emission 30MHz~3GHz



Date: 4.JUL.2014 02:55:56

Spurious Emission 2GHz~25GHz

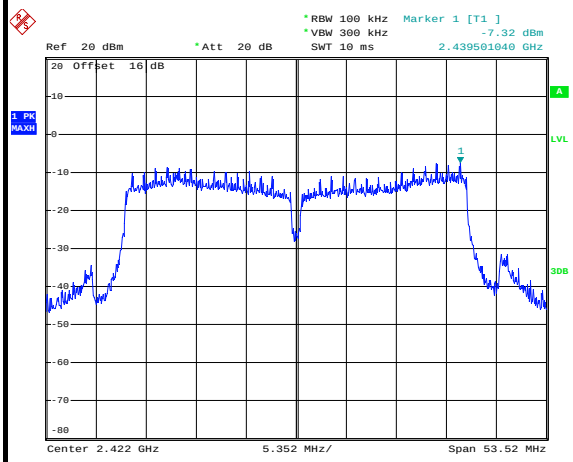


Date: 4.JUL.2014 02:56:14

Number of TX :	2	**Chain Port :**	1
Test Mode :	802.11n HT40	**Temperature :**	24~25℃
Test Band :	2.4GHz Low	**Relative Humidity :**	49~51%
Test Channel :	03	**Test Engineer :**	Issac Song

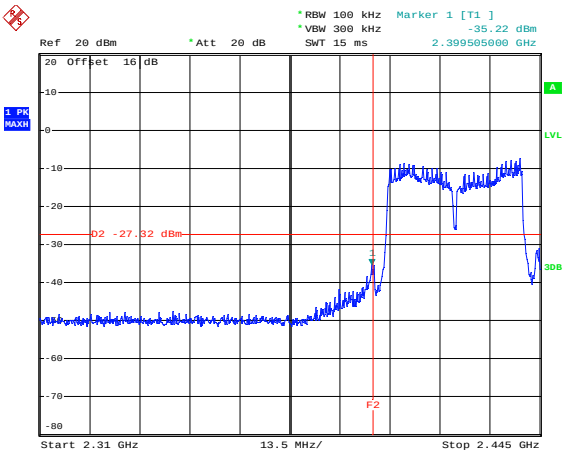
WLAN 802.11n HT40 Channel 03

100kHz PSD reference Level



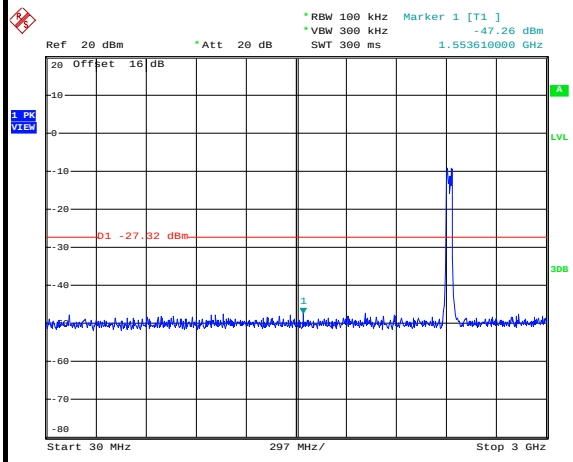
Date: 4.JUL.2014 04:11:14

Low Channel Plot



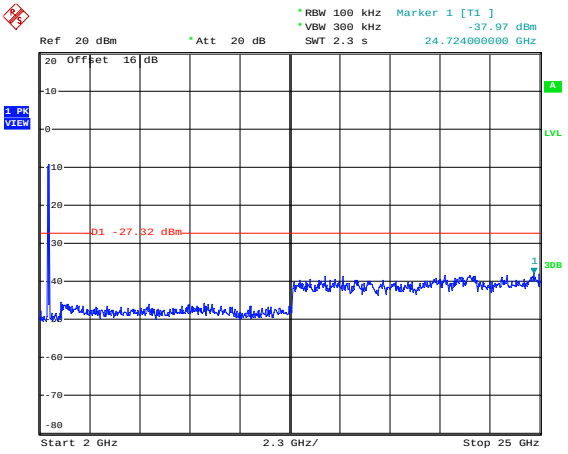
Date: 4.JUL.2014 04:11:28

Spurious Emission 30MHz~3GHz



Date: 4.JUL.2014 04:14:11

Spurious Emission 2GHz~25GHz

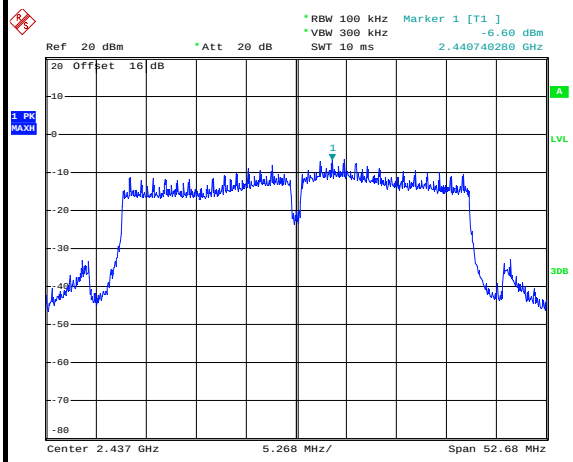


Date: 4.JUL.2014 04:13:23

Number of TX :	2	**Chain Port :**	1
Test Mode :	802.11n HT40	**Temperature :**	24~25℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	49~51%
Test Channel :	06	**Test Engineer :**	Issac Song

WLAN 802.11n HT40 Channel 06

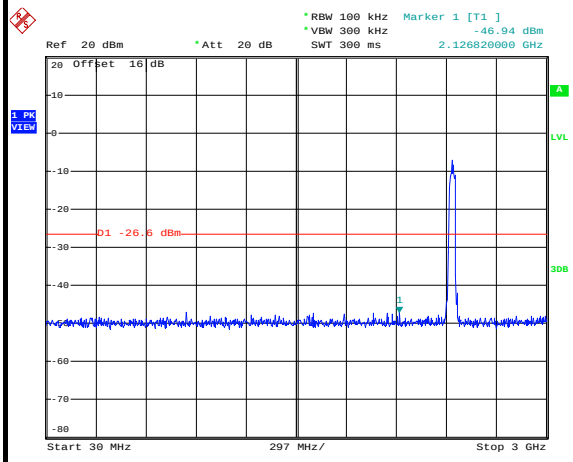
100kHz PSD reference Level



Date: 4.JUL.2014 04:23:55

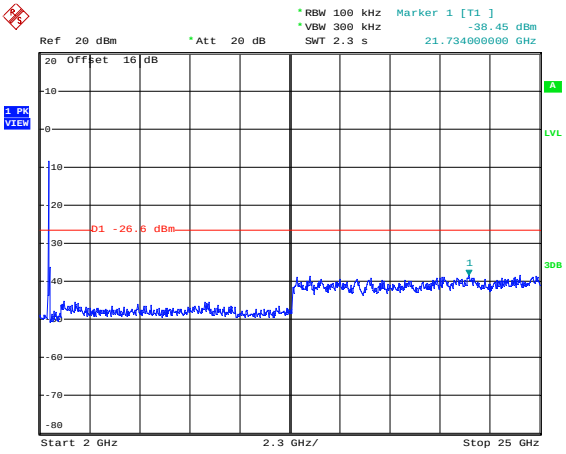
Mid Channel Plot

Spurious Emission 30MHz~3GHz



Date: 4.JUL.2014 04:24:15

Spurious Emission 2GHz~25GHz

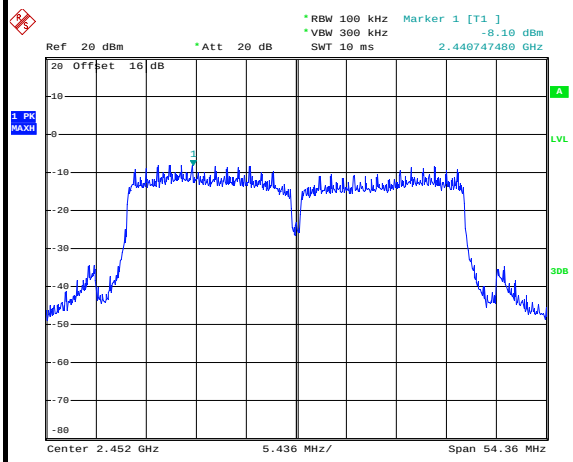


Date: 4.JUL.2014 04:24:33

Number of TX :	2	**Chain Port :**	1
Test Mode :	802.11n HT40	**Temperature :**	24~25℃
Test Band :	2.4GHz High	**Relative Humidity :**	49~51%
Test Channel :	09	**Test Engineer :**	Issac Song

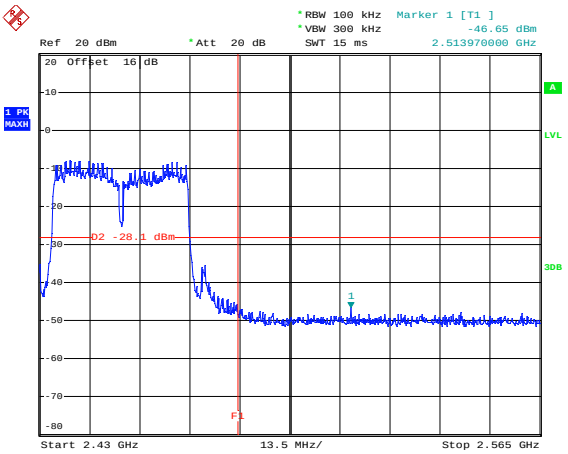
WLAN 802.11n HT40 Channel 09

100kHz PSD reference Level



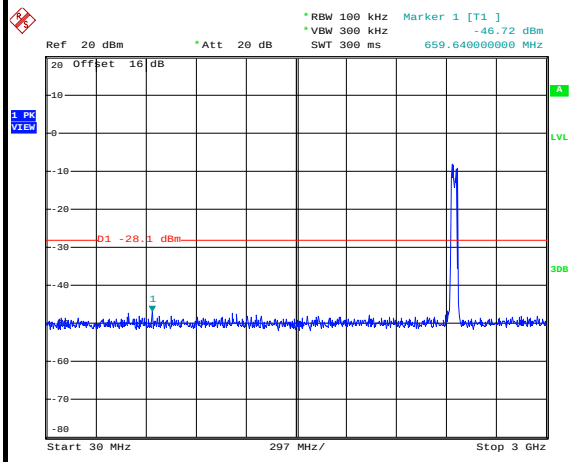
Date: 4.JUL.2014 04:26:47

High Channel Plot



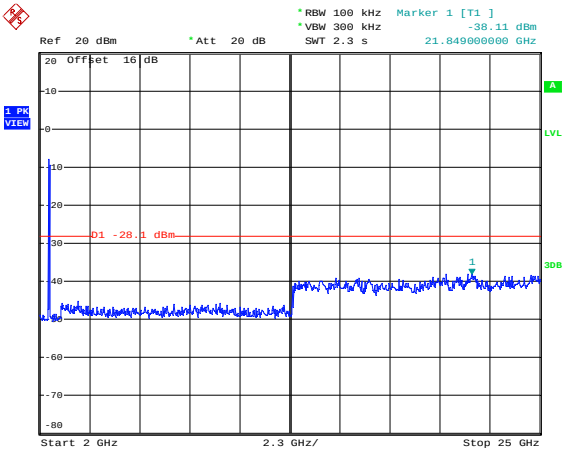
Date: 4.JUL.2014 04:27:01

Spurious Emission 30MHz~3GHz



Date: 4.JUL.2014 04:29:28

Spurious Emission 2GHz~25GHz



Date: 4.JUL.2014 04:28:33

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

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

3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

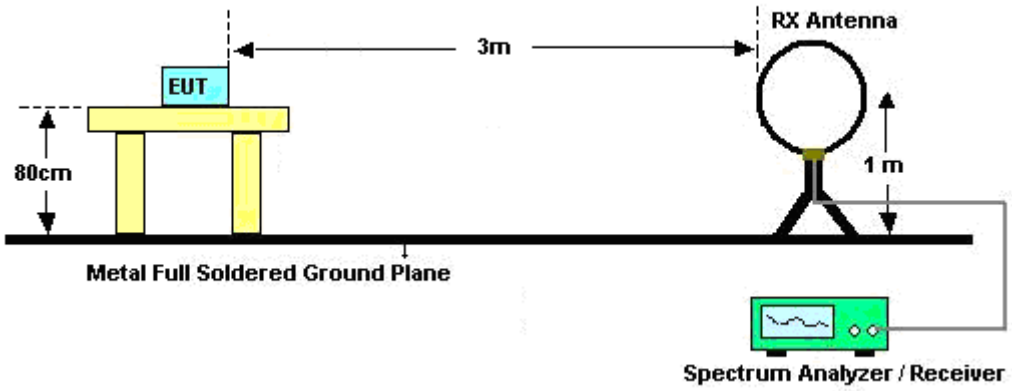
3.5.3 Test Procedure

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

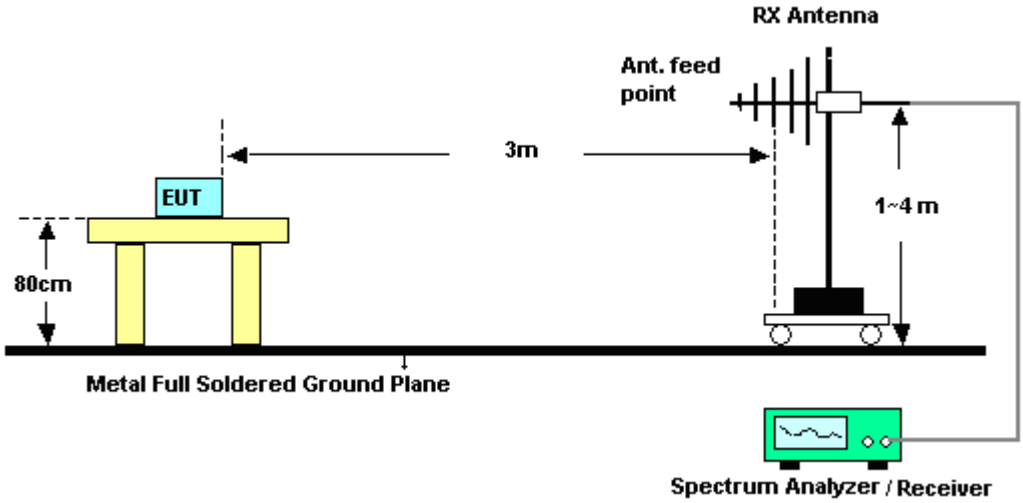
Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
0	802.11b	100.00	-	-	10Hz
1	802.11b	100.00	-	-	10Hz
0	802.11g	95.39	2.070	0.483	1kHz
1	802.11g	95.37	2.060	0.485	1kHz
0+1	2.4GHz 802.11n HT20	90.88	0.996	1.004	3kHz
0+1	2.4GHz 802.11n HT20	90.63	0.986	1.014	3kHz

3.5.4 Test Setup

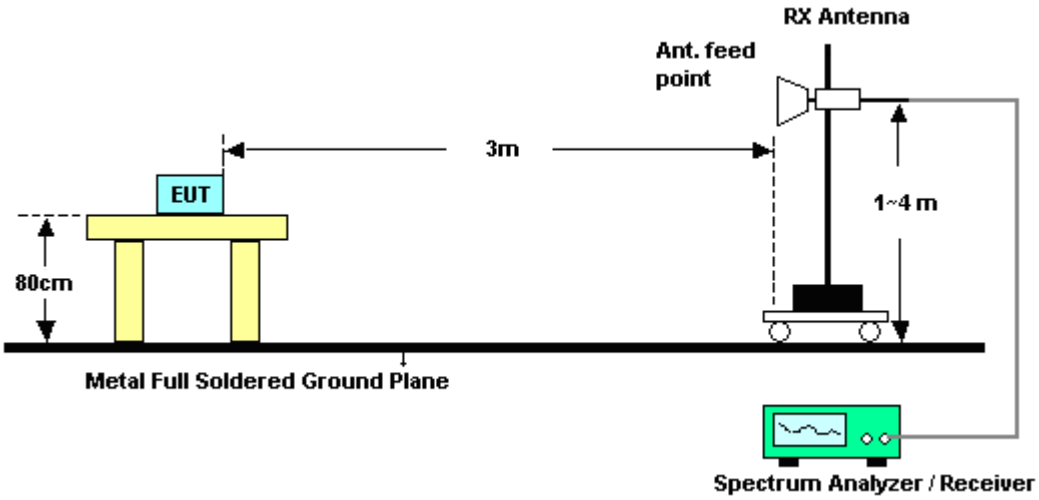
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.5.6 Test Result of Radiated Spurious at Band Edges

<Sample #1>

Test Mode :	802.11b - Chain Port 0	**Temperature :**	22~23°C
Test Band :	Low	**Relative Humidity :**	42~43%
Test Channel :	01	**Test Engineer :**	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2328.9	57.49	-16.51	74	54.42	32.76	3.54	33.23	200	133	Peak
2329.17	51.01	-2.99	54	47.94	32.76	3.54	33.23	200	133	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2330.7	55.97	-18.03	74	52.9	32.76	3.54	33.23	196	6	Peak
2330.79	48.99	-5.01	54	45.92	32.76	3.54	33.23	196	6	Average

Test Mode :	802.11b - Chain Port 0	**Temperature :**	22~23°C
Test Band :	High	**Relative Humidity :**	42~43%
Test Channel :	11	**Test Engineer :**	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2487.46	49.86	-24.14	74	46.49	33.01	3.65	33.29	100	54	Peak
2486.98	38.83	-15.17	54	35.46	33.01	3.65	33.29	100	54	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2487.16	48.31	-25.69	74	44.94	33.01	3.65	33.29	100	165	Peak
2483.5	35.89	-18.11	54	32.52	33.01	3.65	33.29	100	165	Average

Test Mode :	802.11b - Chain Port 1	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2331.15	56.53	-17.47	74	53.46	32.76	3.54	33.23	100	244	Peak
2330.79	49.43	-4.57	54	46.36	32.76	3.54	33.23	100	244	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2331.33	54.46	-19.54	74	51.39	32.76	3.54	33.23	155	242	Peak
2328.99	44.27	-9.73	54	41.2	32.76	3.54	33.23	155	242	Average

Test Mode :	802.11b - Chain Port 1	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2487.31	51.57	-22.43	74	48.2	33.01	3.65	33.29	100	236	Peak
2486.74	40.37	-13.63	54	37	33.01	3.65	33.29	100	236	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2488.42	50	-24	74	46.59	33.05	3.66	33.3	100	96	Peak
2486.77	39.25	-14.75	54	35.88	33.01	3.65	33.29	100	96	Average

Test Mode :	802.11g - Chain Port 0	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.83	69.48	-4.52	74	66.29	32.86	3.59	33.26	100	128	Peak
2326.56	50.13	-3.87	54	47.06	32.76	3.54	33.23	100	128	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2387.13	61.86	-12.14	74	58.67	32.86	3.59	33.26	100	325	Peak
2326.56	46.14	-7.86	54	43.07	32.76	3.54	33.23	100	325	Average

Test Mode :	802.11g - Chain Port 0	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2487.76	66.63	-7.37	74	63.22	33.05	3.66	33.3	100	50	Peak
2483.83	40.78	-13.22	54	37.41	33.01	3.65	33.29	100	50	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.49	65.44	-8.56	74	62.07	33.01	3.65	33.29	100	132	Peak
2485.12	38.99	-15.01	54	35.62	33.01	3.65	33.29	100	132	Average

Test Mode :	802.11g - Chain Port 1	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.03	69.58	-4.42	74	66.39	32.86	3.59	33.26	100	238	Peak
2332.68	49.62	-4.38	54	46.55	32.76	3.54	33.23	100	239	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.66	65.37	-8.63	74	62.18	32.86	3.59	33.26	100	214	Peak
2332.86	47.01	-6.99	54	43.94	32.76	3.54	33.23	100	214	Average

Test Mode :	802.11g - Chain Port 1	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2486.71	63.96	-10.04	74	60.59	33.01	3.65	33.29	100	295	Peak
2483.53	44.99	-9.01	54	41.62	33.01	3.65	33.29	100	295	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2486.08	63.43	-10.57	74	60.06	33.01	3.65	33.29	100	255	Peak
2483.5	42.42	-11.58	54	39.05	33.01	3.65	33.29	100	255	Average

Test Mode :	802.11n HT20 - Chain Port 0+1	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.83	67.56	-6.44	74	64.37	32.86	3.59	33.26	100	129	Peak
2333.13	48.83	-5.17	54	45.76	32.76	3.54	33.23	100	129	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.65	63.07	-10.93	74	59.88	32.86	3.59	33.26	100	10	Peak
2332.68	48.16	-5.84	54	45.09	32.76	3.54	33.23	100	10	Average

Test Mode :	802.11n HT20 - Chain Port 0+1	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.01	66.5	-7.5	74	63.13	33.01	3.65	33.29	100	117	Peak
2483.98	42.57	-11.43	54	39.2	33.01	3.65	33.29	100	117	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.71	64.12	-9.88	74	60.75	33.01	3.65	33.29	100	357	Peak
2483.95	38.9	-15.1	54	35.53	33.01	3.65	33.29	100	357	Average

Test Mode :	802.11n HT40 - Chain Port 0+1	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	03	Test Engineer :	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.11	67.64	-6.36	74	64.45	32.86	3.59	33.26	100	124	Peak
2389.38	49.39	-4.61	54	46.2	32.86	3.59	33.26	100	124	Average
2490.55	50.01	-23.99	74	46.6	33.05	3.66	33.3	100	120	Peak
2485.87	34.86	-19.14	54	31.49	33.01	3.65	33.29	100	120	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2387.58	62.92	-11.08	74	59.73	32.86	3.59	33.26	100	357	Peak
2388.93	45.98	-8.02	54	42.79	32.86	3.59	33.26	100	357	Average
2488.99	49.18	-24.82	74	45.77	33.05	3.66	33.3	100	162	Peak
2484.16	34.48	-19.52	54	31.11	33.01	3.65	33.29	100	162	Average

Test Mode :	802.11n HT40 - Chain Port 0+1	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	09	Test Engineer :	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.93	53.36	-20.64	74	50.17	32.86	3.59	33.26	112	150	Peak
2389.92	36.81	-17.19	54	33.62	32.86	3.59	33.26	112	150	Average
2491.21	65.12	-8.88	74	61.71	33.05	3.66	33.3	100	51	Peak
2483.56	43.67	-10.33	54	40.3	33.01	3.65	33.29	100	51	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.48	51.1	-22.9	74	47.91	32.86	3.59	33.26	100	321	Peak
2389.74	35.34	-18.66	54	32.15	32.86	3.59	33.26	100	321	Average
2485.93	61.99	-12.01	74	58.62	33.01	3.65	33.29	100	48	Peak
2483.71	40.32	-13.68	54	36.95	33.01	3.65	33.29	100	52	Average

<Sample #2>

Test Mode :	802.11b - Chain Port 0	**Temperature :**	22~23°C
Test Band :	Low	**Relative Humidity :**	42~43%
Test Channel :	01	**Test Engineer :**	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2328.63	58.46	-15.54	74	55.39	32.76	3.54	33.23	200	132	Peak
2330.97	50.96	-3.04	54	47.89	32.76	3.54	33.23	200	132	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2328.27	57.4	-16.6	74	54.33	32.76	3.54	33.23	164	21	Peak
2329.17	51.65	-2.35	54	48.58	32.76	3.54	33.23	164	21	Average

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

Note: Pre-scanned all test modes and only choose the worst case mode recorded in the test report for radiated spurious emission below 1GHz.

<Sample #1>

Test Mode :	802.11b - Chain Port 0	**Temperature :**	22~23°C
Test Channel :	01	**Relative Humidity :**	42~43%
Test Engineer :	Star Wei	**Polarization :**	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	101.67	-	-	98.44	32.89	3.61	33.27	100	127	Peak
2412	96.25	-	-	93.02	32.89	3.61	33.27	100	127	Average
4824	47.29	-26.71	74	40.67	35.17	5.25	33.8	100	125	Peak

Test Mode :	802.11b - Chain Port 0	**Temperature :**	22~23°C
Test Channel :	01	**Relative Humidity :**	42~43%
Test Engineer :	Star Wei	**Polarization :**	Vertical
Remark :	2412 MHz is Fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	99.44	-	-	96.21	32.89	3.61	33.27	161	38	Peak
2412	94.6	-	-	91.37	32.89	3.61	33.27	161	38	Average
4826	52.74	-21.26	74	46.12	35.17	5.25	33.8	100	222	Peak
4826	44.19	-9.81	54	37.57	35.17	5.25	33.8	100	222	Average

Test Mode :	802.11b - Chain Port 0	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	1. 2437 MHz is Fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2358	57.1	-16.9	74	53.97	32.81	3.57	33.25	100	133	Peak
2358	49.03	-4.97	54	45.9	32.81	3.57	33.25	100	133	Average
2437	103.28	-	-	99.98	32.95	3.63	33.28	184	124	Peak
2437	97.57	-	-	94.27	32.95	3.63	33.28	184	124	Average
4874	47.07	-26.93	74	40.41	35.18	5.28	33.8	100	0	Peak
7312	48.16	-25.84	74	39.48	36.2	6.61	34.13	100	23	Peak

Test Mode :	802.11b - Chain Port 0	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	1. 2437 MHz is Fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2358	53.16	-20.84	74	50.03	32.81	3.57	33.25	100	210	Peak
2358	47.52	-6.48	54	44.39	32.81	3.57	33.25	100	210	Average
2437	99.19	-	-	95.89	32.95	3.63	33.28	102	149	Peak
2437	94.29	-	-	90.99	32.95	3.63	33.28	102	149	Average
4874	51.56	-22.44	74	44.9	35.18	5.28	33.8	100	269	Peak
4874	42.58	-11.42	54	35.92	35.18	5.28	33.8	100	269	Average
7312	47.65	-26.35	74	38.97	36.2	6.61	34.13	100	261	Peak

Test Mode :	802.11b - Chain Port 0	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2380	53.9	-20.1	74	50.75	32.83	3.58	33.26	100	137	Peak
2380	46.36	-7.64	54	43.21	32.83	3.58	33.26	100	137	Average
2462	101.29	-	-	97.96	32.98	3.64	33.29	100	51	Peak
2462	96.47	-	-	93.14	32.98	3.64	33.29	100	51	Average
4924	47.77	-26.23	74	41.07	35.19	5.31	33.8	100	265	Peak
7386	50.59	-23.41	74	41.81	36.24	6.7	34.16	100	124	Peak

Test Mode :	802.11b - Chain Port 0	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	99.01	-	-	95.68	32.98	3.64	33.29	100	153	Peak
2462	93.51	-	-	90.18	32.98	3.64	33.29	100	153	Average
4924	52.06	-21.94	74	45.36	35.19	5.31	33.8	154	3	Peak
4924	44.55	-9.45	54	37.85	35.19	5.31	33.8	154	3	Average
7386	49.03	-24.97	74	40.25	36.24	6.7	34.16	132	226	Peak

Test Mode :	802.11b - Chain Port 1	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	106.01	-	-	102.78	32.89	3.61	33.27	100	236	Peak
2412	100.81	-	-	97.58	32.89	3.61	33.27	100	236	Average
4824	47.31	-26.69	74	40.69	35.17	5.25	33.8	100	154	Peak

Test Mode :	802.11b - Chain Port 1	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	2412 MHz is Fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	102.44	-	-	99.21	32.89	3.61	33.27	100	258	Peak
2412	97.39	-	-	94.16	32.89	3.61	33.27	100	258	Average
4824	52.16	-21.84	74	45.54	35.17	5.25	33.8	100	0	Peak
4824	44.15	-9.85	54	37.53	35.17	5.25	33.8	100	0	Average

Test Mode :	802.11b - Chain Port 1	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	1. 2437 MHz is Fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2356	58.15	-15.85	74	55.02	32.81	3.57	33.25	100	96	Peak
2356	49.15	-4.85	54	46.02	32.81	3.57	33.25	100	96	Average
2437	104.29	-	-	100.99	32.95	3.63	33.28	100	200	Peak
2437	99.44	-	-	96.14	32.95	3.63	33.28	100	200	Average
4874	48.49	-25.51	74	41.83	35.18	5.28	33.8	100	231	Peak
7312	48.16	-25.84	74	39.48	36.2	6.61	34.13	100	162	Peak

Test Mode :	802.11b - Chain Port 1	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	1. 2437 MHz is Fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2356	54.85	-19.15	74	51.72	32.81	3.57	33.25	100	145	Peak
2356	45.28	-8.72	54	42.15	32.81	3.57	33.25	100	145	Average
2437	101.81	-	-	98.51	32.95	3.63	33.28	100	269	Peak
2437	96.6	-	-	93.3	32.95	3.63	33.28	100	269	Average
4874	52.52	-21.48	74	45.86	35.18	5.28	33.8	100	346	Peak
4874	45.49	-8.51	54	38.83	35.18	5.28	33.8	100	346	Average
7312	49.61	-24.39	74	40.93	36.2	6.61	34.13	100	268	Peak

Test Mode :	802.11b - Chain Port 1	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2382	57.84	-16.16	74	54.69	32.83	3.58	33.26	123	221	Peak
2382	47.57	-6.43	54	44.42	32.83	3.58	33.26	123	221	Average
2462	102.77	-	-	99.44	32.98	3.64	33.29	100	240	Peak
2462	97.85	-	-	94.52	32.98	3.64	33.29	100	240	Average
4924	48.68	-25.32	74	41.98	35.19	5.31	33.8	100	169	Peak
7386	49.1	-24.9	74	40.32	36.24	6.7	34.16	166	295	Peak

Test Mode :	802.11b - Chain Port 1	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	101	-	-	97.67	32.98	3.64	33.29	100	262	Peak
2462	95.86	-	-	92.53	32.98	3.64	33.29	100	262	Average
4924	50.66	-23.34	74	43.96	35.19	5.31	33.8	100	162	Peak
7386	49.31	-24.69	74	40.53	36.24	6.7	34.16	102	220	Peak

Test Mode :	802.11g - Chain Port 0	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	102.04	-	-	98.81	32.89	3.61	33.27	155	125	Peak
2412	91.16	-	-	87.93	32.89	3.61	33.27	155	125	Average
4824	46.82	-27.18	74	40.2	35.17	5.25	33.8	100	182	Peak

Test Mode :	802.11g - Chain Port 0	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	101.04	-	-	97.81	32.89	3.61	33.27	152	143	Peak
2412	90.43	-	-	87.2	32.89	3.61	33.27	152	143	Average
4824	48.88	-25.12	74	42.26	35.17	5.25	33.8	100	0	Peak

Test Mode :	802.11g - Chain Port 0	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2362	61.19	-12.81	74	58.06	32.81	3.57	33.25	100	127	Peak
2362	48.62	-5.38	54	45.49	32.81	3.57	33.25	100	127	Average
2437	102.21	-	-	98.91	32.95	3.63	33.28	112	132	Peak
2437	90.81	-	-	87.51	32.95	3.63	33.28	112	132	Average
4874	46.39	-27.61	74	39.73	35.18	5.28	33.8	100	260	Peak
7312	48.39	-25.61	74	39.71	36.2	6.61	34.13	112	0	Peak

Test Mode :	802.11g - Chain Port 0	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2362	56.12	-17.88	74	52.99	32.81	3.57	33.25	100	120	Peak
2362	46.26	-7.74	54	43.13	32.81	3.57	33.25	100	120	Average
2437	99.34	-	-	96.04	32.95	3.63	33.28	100	146	Peak
2437	88.24	-	-	84.94	32.95	3.63	33.28	100	146	Average
4874	49.51	-24.49	74	42.85	35.18	5.28	33.8	100	236	Peak
7312	47.87	-26.13	74	39.19	36.2	6.61	34.13	100	220	Peak

Test Mode :	802.11g - Chain Port 0	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2380	61.39	-12.61	74	58.24	32.83	3.58	33.26	100	134	Peak
2380	48.99	-5.01	54	45.84	32.83	3.58	33.26	100	134	Average
2462	105.44	-	-	102.11	32.98	3.64	33.29	100	123	Peak
2462	93.81	-	-	90.48	32.98	3.64	33.29	100	123	Average
4924	48.56	-25.44	74	41.86	35.19	5.31	33.8	100	236	Peak
7386	48.24	-25.76	74	39.46	36.24	6.7	34.16	100	236	Peak

Test Mode :	802.11g - Chain Port 0	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2378	60.58	-13.42	74	57.43	32.83	3.58	33.26	100	28	Peak
2378	48.51	-5.49	54	45.36	32.83	3.58	33.26	100	28	Average
2462	102.98	-	-	99.65	32.98	3.64	33.29	100	148	Peak
2462	91.28	-	-	87.95	32.98	3.64	33.29	100	148	Average
4924	47.63	-26.37	74	40.93	35.19	5.31	33.8	100	15	Peak
7386	49.19	-24.81	74	40.41	36.24	6.7	34.16	100	162	Peak

Test Mode :	802.11g - Chain Port 1	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	3. 2412 MHz is fundamental signal which can be ignored. 4. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	109.24	-	-	106.01	32.89	3.61	33.27	100	232	Peak
2412	97	-	-	93.77	32.89	3.61	33.27	100	232	Average
4824	46.32	-27.68	74	39.7	35.17	5.25	33.8	100	269	Peak

Test Mode :	802.11g - Chain Port 1	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	104.72	-	-	101.49	32.89	3.61	33.27	100	270	Peak
2412	93.14	-	-	89.91	32.89	3.61	33.27	100	270	Average
4824	47.54	-26.46	74	40.92	35.17	5.25	33.8	133	269	Peak

Test Mode :	802.11g - Chain Port 1	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2362	62.62	-11.38	74	59.49	32.81	3.57	33.25	100	176	Peak
2362	49.47	-4.53	54	46.34	32.81	3.57	33.25	100	176	Average
2437	106.98	-	-	103.68	32.95	3.63	33.28	117	201	Peak
2437	95.09	-	-	91.79	32.95	3.63	33.28	117	201	Average
4874	47.28	-26.72	74	40.62	35.18	5.28	33.8	112	33	Peak
7312	48.48	-25.52	74	39.8	36.2	6.61	34.13	100	261	Peak

Test Mode :	802.11g - Chain Port 1	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2356	61.98	-12.02	74	58.85	32.81	3.57	33.25	123	274	Peak
2356	49.88	-4.12	54	46.75	32.81	3.57	33.25	123	274	Average
2437	104.59	-	-	101.29	32.95	3.63	33.28	100	271	Peak
2437	92.85	-	-	89.55	32.95	3.63	33.28	100	271	Average
4874	49.54	-24.46	74	42.88	35.18	5.28	33.8	100	154	Peak
7312	48.86	-25.14	74	40.18	36.2	6.61	34.13	100	269	Peak

Test Mode :	802.11g - Chain Port 1	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2386	63.24	-10.76	74	60.05	32.86	3.59	33.26	100	295	Peak
2386	50.98	-3.02	54	47.79	32.86	3.59	33.26	100	295	Average
2462	105.88	-	-	102.55	32.98	3.64	33.29	200	203	Peak
2462	93.65	-	-	90.32	32.98	3.64	33.29	200	203	Average
4924	46.79	-27.21	74	40.09	35.19	5.31	33.8	100	0	Peak
7386	49.34	-24.66	74	40.56	36.24	6.7	34.16	162	212	Peak

Test Mode :	802.11g - Chain Port 1	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2382	61.59	-12.41	74	58.44	32.83	3.58	33.26	120	145	Peak
2382	50.38	-3.62	54	47.23	32.83	3.58	33.26	120	145	Average
2462	103.97	-	-	100.64	32.98	3.64	33.29	100	269	Peak
2462	92.21	-	-	88.88	32.98	3.64	33.29	100	269	Average
4924	49.09	-24.91	74	42.39	35.19	5.31	33.8	100	261	Peak
7386	47.93	-26.07	74	39.15	36.24	6.7	34.16	100	261	Peak

Test Mode :	802.11n HT20 - Chain Port 0+1	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	102.29	-	-	99.06	32.89	3.61	33.27	100	124	Peak
2412	91.35	-	-	88.12	32.89	3.61	33.27	100	124	Average
2494	57.36	-16.64	74	53.95	33.05	3.66	33.3	100	54	Peak
2494	45.51	-8.49	54	42.1	33.05	3.66	33.3	100	54	Average
4824	46.95	-27.05	74	40.33	35.17	5.25	33.8	100	263	Peak

Test Mode :	802.11n HT20 - Chain Port 0+1	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2412	97.78	-	-	94.55	32.89	3.61	33.27	100	177	Peak
2412	85.97	-	-	82.74	32.89	3.61	33.27	100	177	Average
4824	48.53	-25.47	74	41.91	35.17	5.25	33.8	100	326	Peak

Test Mode :	802.11n HT20 - Chain Port 0+1	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2364	59.12	-14.88	74	55.99	32.81	3.57	33.25	152	184	Peak
2364	48.85	-5.15	54	45.72	32.81	3.57	33.25	162	184	Average
2437	102.57	-	-	99.27	32.95	3.63	33.28	181	129	Peak
2437	91.24	-	-	87.94	32.95	3.63	33.28	181	129	Average
4874	49.73	-24.27	74	43.07	35.18	5.28	33.8	100	231	Peak
7311	48.71	-25.29	74	40.03	36.2	6.61	34.13	100	95	Peak

Test Mode :	802.11n HT20 - Chain Port 0+1	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2362	55.7	-18.3	74	52.57	32.81	3.57	33.25	100	0	Peak
2362	44.56	-9.44	54	41.43	32.81	3.57	33.25	100	0	Average
2437	99.39	-	-	96.09	32.95	3.63	33.28	100	154	Peak
2437	87.54	-	-	84.24	32.95	3.63	33.28	100	154	Average
4874	47.39	-26.61	74	40.73	35.18	5.28	33.8	102	31	Peak
7312	48.69	-25.31	74	40.01	36.2	6.61	34.13	100	85	Peak

Test Mode :	802.11n HT20 - Chain Port 0+1	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2384	57.95	-16.05	74	54.8	32.83	3.58	33.26	187	132	Peak
2384	47.47	-6.53	54	44.32	32.83	3.58	33.26	187	132	Average
2462	101.09	-	-	97.76	32.98	3.64	33.29	100	52	Peak
2462	90.8	-	-	87.47	32.98	3.64	33.29	100	52	Average
4924	47.64	-26.36	74	40.94	35.19	5.31	33.8	100	145	Peak
7386	48.94	-25.06	74	40.16	36.24	6.7	34.16	100	169	Peak

Test Mode :	802.11n HT20 - Chain Port 0+1	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2378	54.68	-19.32	74	51.53	32.83	3.58	33.26	100	261	Peak
2378	43.31	-10.69	54	40.16	32.83	3.58	33.26	100	261	Average
2462	98.38	-	-	95.05	32.98	3.64	33.29	100	153	Peak
2462	87.98	-	-	84.65	32.98	3.64	33.29	100	153	Average
4924	48.34	-25.66	74	41.64	35.19	5.31	33.8	100	26	Peak
7386	49.74	-24.26	74	40.96	36.24	6.7	34.16	100	261	Peak

Test Mode :	802.11n HT40 - Chain Port 0+1	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	1. 2422 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2422	95.03	-	-	91.77	32.92	3.62	33.28	100	49	Peak
2422	84.05	-	-	80.79	32.92	3.62	33.28	100	49	Average
4844	45.81	-28.19	74	39.17	35.18	5.26	33.8	141	174	Peak
7266	48.28	-25.72	74	39.64	36.19	6.56	34.11	132	60	Peak

Test Mode :	802.11n HT40 - Chain Port 0+1	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	1. 2422 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2422	91.95	-	-	88.69	32.92	3.62	33.28	100	4	Peak
2422	80.42	-	-	77.16	32.92	3.62	33.28	100	4	Average
4844	45.23	-28.77	74	38.59	35.18	5.26	33.8	133	295	Peak
7266	48.59	-25.41	74	39.95	36.19	6.56	34.11	100	82	Peak

Test Mode :	802.11n HT40 - Chain Port 0+1	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	94.34	-	-	91.04	32.95	3.63	33.28	128	120	Peak
2437	83.84	-	-	80.54	32.95	3.63	33.28	128	120	Average
4874	46.65	-27.35	74	39.99	35.18	5.28	33.8	100	332	Peak
7311	48.79	-25.21	74	40.11	36.2	6.61	34.13	136	30	Peak

Test Mode :	802.11n HT40 - Chain Port 0+1	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2437	92.51	-	-	89.21	32.95	3.63	33.28	100	184	Peak
2437	81.52	-	-	78.22	32.95	3.63	33.28	100	184	Average
4874	47.58	-26.42	74	40.92	35.18	5.28	33.8	100	36	Peak
7312	49.03	-24.97	74	40.35	36.2	6.61	34.13	132	62	Peak

Test Mode :	802.11n HT40 - Chain Port 0+1	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Horizontal
Remark :	1. 2452 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2452	94.18	-	-	90.88	32.95	3.63	33.28	100	56	Peak
2452	83.63	-	-	80.33	32.95	3.63	33.28	100	56	Average
4904	46.61	-27.39	74	39.92	35.19	5.3	33.8	130	223	Peak
7356	48.78	-25.22	74	40.05	36.22	6.66	34.15	119	284	Peak

Test Mode :	802.11n HT40 - Chain Port 0+1	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	1. 2452 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2452	92.41	-	-	89.11	32.95	3.63	33.28	121	42	Peak
2452	81.04	-	-	77.74	32.95	3.63	33.28	121	42	Average
4904	46.41	-27.59	74	39.72	35.19	5.3	33.8	196	302	Peak
7356	48.89	-25.11	74	40.16	36.22	6.66	34.15	133	201	Peak

<Sample #2>

Test Mode :	802.11b - Chain Port 0	**Temperature :**	22~23°C
Test Channel :	01	**Relative Humidity :**	42~43%
Test Engineer :	Star Wei	**Polarization :**	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	24.83	-15.17	40	39.92	18	0.48	33.57	-	-	Peak
117.3	29.81	-13.69	43.5	50.6	11.8	1.01	33.6	100	154	Peak
244.37	27.7	-18.3	46	47.96	11.75	1.44	33.45	-	-	Peak
502.39	20.3	-25.7	46	34.17	17.24	2.02	33.13	-	-	Peak
773.99	23.29	-22.71	46	33.59	19.88	2.53	32.71	-	-	Peak
925.31	24.8	-21.2	46	33.87	20.6	2.77	32.44	-	-	Peak
2412	103.61	-	-	100.38	32.89	3.61	33.27	108	134	Peak
2412	98.35	-	-	95.12	32.89	3.61	33.27	108	134	Average
4824	48.12	-25.88	74	41.5	35.17	5.25	33.8	113	216	Peak

Test Mode :	802.11b - Chain Port 0	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	2412 MHz is Fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	35.03	-4.97	40	50.12	18	0.48	33.57	100	154	QP
119.24	22.06	-21.44	43.5	42.84	11.8	1.02	33.6	-	-	Peak
161.92	23.92	-19.58	43.5	46.81	9.53	1.16	33.58	-	-	Peak
271.53	24.07	-21.93	46	43.53	12.41	1.54	33.41	-	-	Peak
512.09	24.62	-21.38	46	38.25	17.45	2.03	33.11	-	-	Peak
787.57	19.53	-26.47	46	29.81	19.86	2.52	32.66	-	-	Peak
2412	103.02	-	-	99.79	32.89	3.61	33.27	161	49	Peak
2412	98.03	-	-	94.8	32.89	3.61	33.27	161	49	Average
4824	53.12	-20.88	74	46.5	35.17	5.25	33.8	112	145	Peak
4824	44.85	-9.15	54	38.23	35.17	5.25	33.8	112	145	Average

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

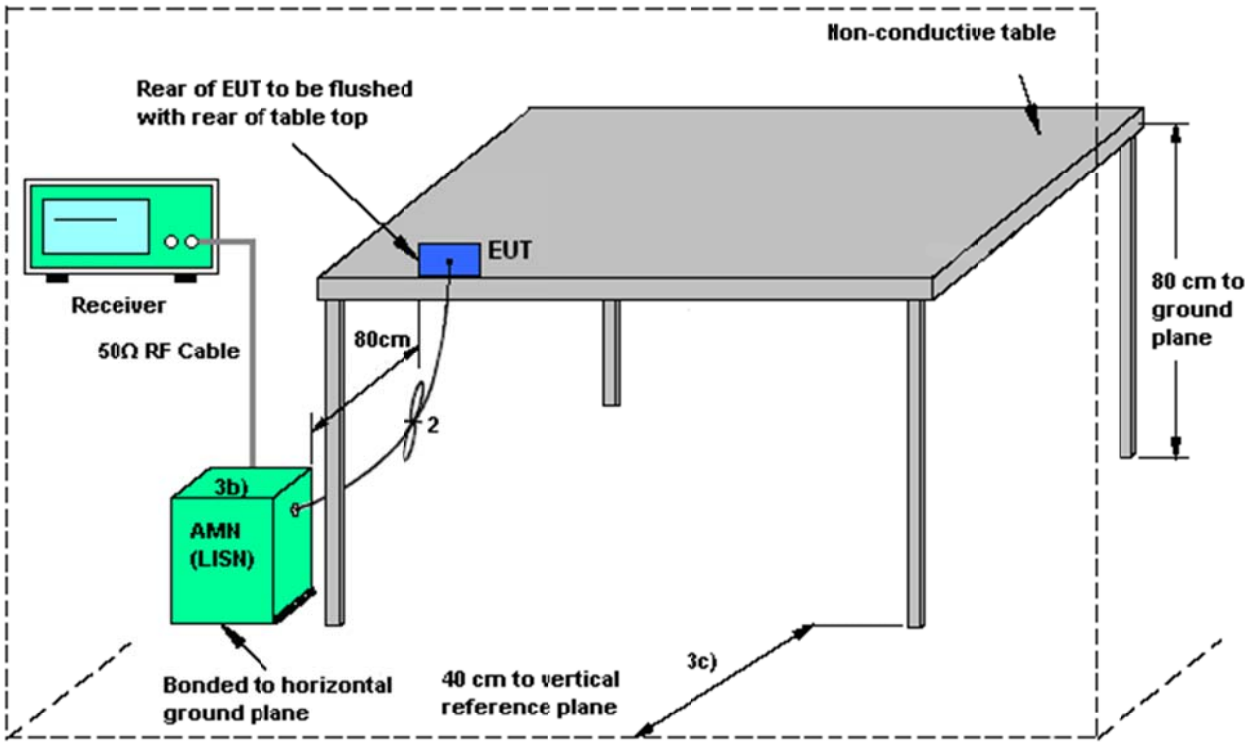
3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

1. 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.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

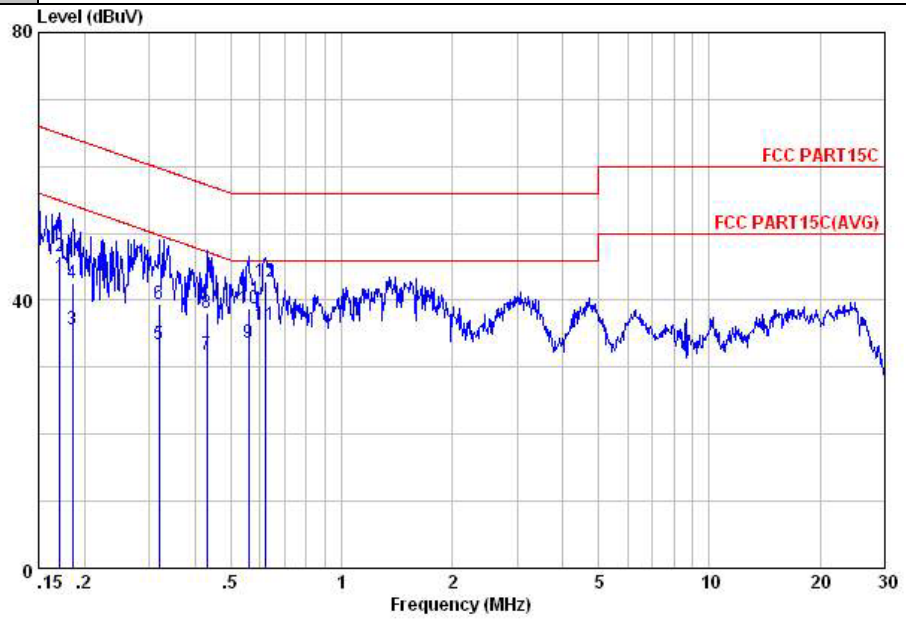
3.6.4 Test Setup



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

3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	Temperature :	22~24℃
Test Engineer :	Eligah Wang	Relative Humidity :	37~39%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	Bluetooth Link + WLAN 2.4GHz Link + Earphone + Battery 2 + USB Cable 2 (Charging from Adapter 2) for Sample 2		

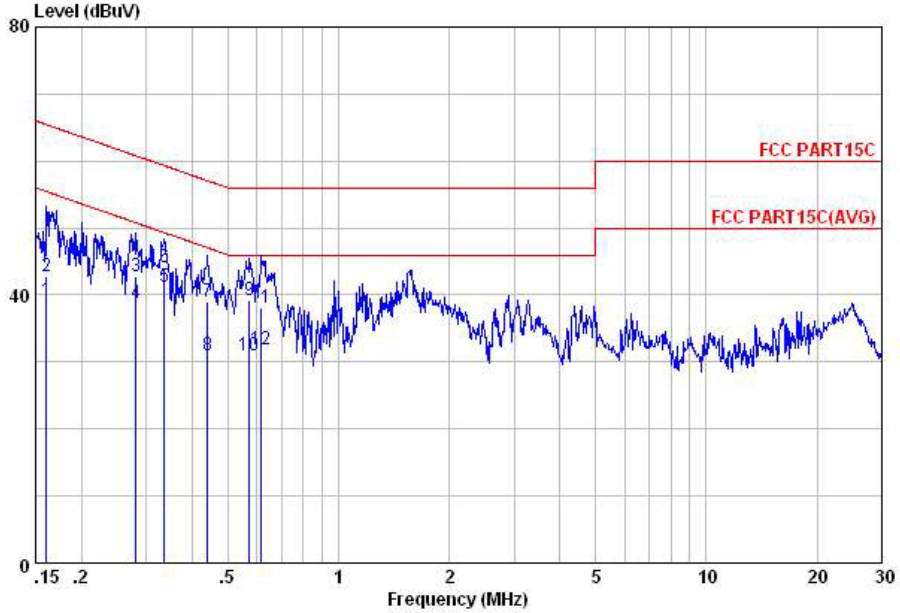


Site : C001-KS
Condition: FCC PART15C LISN-L20130306 LINE

mode : Mode 2

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.17	43.47	-11.43	54.90	31.30	1.53	10.64	Average
2	0.17	46.47	-18.43	64.90	34.30	1.53	10.64	QP
3	0.19	35.70	-18.54	54.24	23.89	1.20	10.61	Average
4	0.19	42.60	-21.64	64.24	30.79	1.20	10.61	QP
5	0.32	33.33	-16.42	49.75	22.39	0.58	10.36	Average
6	0.32	39.53	-20.22	59.75	28.59	0.58	10.36	QP
7	0.43	31.85	-15.39	47.24	21.30	0.27	10.28	Average
8	0.43	38.15	-19.09	57.24	27.60	0.27	10.28	QP
9	0.56	33.75	-12.25	46.00	23.30	0.20	10.25	Average
10	0.56	38.75	-17.25	56.00	28.30	0.20	10.25	QP
11	0.62	36.33	-9.67	46.00	25.90	0.20	10.23	Average
12	0.62	42.73	-13.27	56.00	32.30	0.20	10.23	QP

Test Mode :	Mode 2	Temperature :	22~24℃
Test Engineer :	Eligah Wang	Relative Humidity :	37~39%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Link + WLAN 2.4GHz Link + Earphone + Battery 2 + USB Cable 2 (Charging from Adapter 2) for Sample 2		



Site : C001-KS
Condition: FCC PART15C LISN-N20130306 NEUTRAL

mode : Mode 2

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.16	39.30	-16.13	55.43	26.90	1.73	10.67	Average
2	0.16	42.70	-22.73	65.43	30.30	1.73	10.67	QP
3	0.28	42.83	-17.93	60.76	31.60	0.80	10.43	QP
4	0.28	38.83	-11.93	50.76	27.60	0.80	10.43	Average
5	0.34	41.19	-8.12	49.31	30.30	0.55	10.34	Average
6	0.34	44.19	-15.12	59.31	33.30	0.55	10.34	QP
7	0.44	38.93	-18.14	57.07	28.31	0.35	10.27	QP
8	0.44	30.93	-16.14	47.07	20.31	0.35	10.27	Average
9	0.57	39.11	-16.89	56.00	28.60	0.26	10.25	QP
10	0.57	30.91	-15.09	46.00	20.40	0.26	10.25	Average
11	0.62	38.07	-17.93	56.00	27.60	0.23	10.24	QP
12	0.62	31.77	-14.23	46.00	21.30	0.23	10.24	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 Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

For CDD transmissions, directional gain is calculated as

$$Directional Gain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

N_{SS} = the number of independent spatial streams of data;

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k / 20}$ if the kth antenna is being fed by spatial stream j, or zero if it is not;

G_k is the gain in dBi of the kth antenna.

The EUT supports CDD mode

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain “DG” is calculated as following table.

	Ant. 1 (dBi)	Ant. 2 (dBi)	for Power (dBi)	for PSD (dBi)	Limit Reduction (dB)	Limit Reduction (dB)
2.4 GHz	0.00	-0.50	2.76	2.76	0.00	0.00

Power Limit Reduction = DG(Power) – 6dBi, (min = 0)

PSD Limit Reduction = DG(PSD) – 6dBi, (min = 0)

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 28, 2013	Jul. 04, 2014~ Jul. 15, 2014	Dec. 27, 2014	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	30MHz~40GHz	Feb. 27, 2014	Jul. 04, 2014~ Jul. 15, 2014	Feb. 26, 2015	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Feb. 27, 2014	Jul. 04, 2014~ Jul. 15, 2014	Feb. 26, 2015	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 05, 2013	Jul. 21, 2014	Nov. 04, 2014	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	101399	9kHz~30GHz	May 04, 2014	Jul. 21, 2014	May 03, 2015	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 09, 2013	Jul. 21, 2014	Oct. 08, 2014	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Jan. 08, 2014	Jul. 21, 2014	Jan. 07, 2015	Radiation (03CH01-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75959	1GHz~18GHz	Jan. 08, 2014	Jul. 21, 2014	Jan. 07, 2015	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701030	1GHz~18GHz	Nov. 18, 2013	Jul. 21, 2014	Nov. 17, 2014	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Mar. 10, 2014	Jul. 21, 2014	Mar. 09, 2015	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161073	1MHz~1GHz	May 04, 2014	Jul. 21, 2014	May 03, 2015	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02371	1GHz~26.5GHz	Dec. 10, 2013	Jul. 21, 2014	Dec. 09, 2014	Radiation (03CH01-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Jul. 21, 2014	NCR	Radiation (03CH01-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Jul. 21, 2014	NCR	Radiation (03CH01-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Jul. 21, 2014	NCR	Radiation (03CH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 05, 2013	Jul. 21, 2014	Nov. 04, 2014	Radiation (03CH01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Dec. 10, 2013	Jul. 25, 2014	Dec. 09, 2014	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Dec. 10, 2013	Jul. 25, 2014	Dec. 09, 2014	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Nov. 12, 2013	Jul. 25, 2014	Nov. 11, 2014	Conduction (CO01-KS)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.3**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.5**