FCC RF Test Report

APPLICANT	:	Lenovo (Shanghai) Electronics Technology Co., Ltd.
EQUIPMENT	:	Portable Tablet Computer
BRAND NAME	:	lenovo
MODEL NAME	:	YOGA Tablet 2-830F
FCC ID	:	O57YT2830F
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DTS) Digital Transmission System

The product was received on Jun. 20, 2014 and testing was completed on Aug. 05, 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.
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APPENDIX A. SETUP PHOTOGRAPHS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR462003-01C	Rev. 01	Initial issue of report	Aug. 12, 2014

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	RSS-210 A8.2(a)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.1	-	RSS-Gen 4.6.1	99% Bandwidth	-	Pass	-
3.2	15.247(b)	RSS-210 A8.4	Power Output Measurement	≤ 30dBm	Pass	-
3.3	15.247(e)	RSS-210 A8.2(b)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	RSS-210 A8.5	Conducted Band Edges	≤ 20dBc	Pass	-
			Conducted Spurious Emission		Pass	-
3.5	15.247(d)	RSS-210 A8.5	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 2.13 dB at 2378.000 MHz
3.6	15.207	RSS-Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 8.96 dB at 0.620 MHz
3.7	15.203 & 15.247(b)	RSS-210 A8.4	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 2-830F
FCC ID	O57YT2830F
EUT supports Radios application	WLAN2.4GHz 802.11b/g/n HT20/HT40 WLAN5GHz 802.11a/n HT20/HT40 Bluetooth v3.0+EDR/Bluetooth v4.0 LE
HW Version	S100
SW Version	H001
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 are 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>802.11b/g/n : 2412 MHz ~ 2462 MHz</td></tr>
<tr><td>Maximum (Peak) Output Power to antenna</td><td>Chain Port 0
802.11b : 18.84 dBm (0.0766 W)
802.11g : 21.72 dBm (0.1486 W)
802.11n HT20 : 21.39 dBm (0.1377 W)
802.11n HT40 : 16.89 dBm (0.0489 W)
Chain Port 1
802.11b : 17.23 dBm (0.0528 W)
802.11g : 21.63 dBm (0.1455 W)
802.11n HT20 : 21.25 dBm (0.1334 W)
802.11n HT40 : 16.92 dBm (0.0492 W)
Chain Port 0+1
802.11n HT20 : 21.79 dBm (0.1510 W)
802.11n HT40 : 17.42 dBm (0.0552 W)</td></tr>
<tr><td>99% Occupied Bandwidth</td><td>802.11b : 11.05MHz
802.11g : 17.20MHz
802.11n HT20 : 17.85MHz
802.11n HT40 : 36.90MHz</td></tr>
<tr><td>Antenna Type</td><td>Chain Port 0: IFA Antenna with gain 0.00 dBi
Chain Port 1: IFA Antenna with gain -0.50 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</th><th>Chain Port 1</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/IC Registration No.**
	TH01-KS	CO01-KS	03CH01-KS	149928/4086E-1

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
- IC RSS-210 Issue 8
- IC RSS-Gen Issue 3
- NOTICE 2012-DRS0126

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.
3. Per the section 2.2.3 of Notice of 2012-DRS0126, " Receivers Excluded from Industry Canada Requirements", only radiocommunication receivers operating in stand-alone mode within the band 30-960 MHz and scanner receivers are subject to Industry Canada requirements.

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).

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	18.84	CH 01	18.76	18.79	18.61
CH 06	2437	0	18.44				
CH 11	2462	0	18.46				
CH 01	2412	1	17.23	CH 01	17.06	17.18	17.14
CH 06	2437	1	16.78				
CH 11	2462	1	16.46				

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	21.72	CH 01	21.27	20.87	20.97	20.64	21.26	20.91	21.11
CH 06	2437	0	21.37								
CH 11	2462	0	21.03								
CH 01	2412	1	21.63	CH 01	21.45	21.35	21.29	21.16	21.37	21.05	21.28
CH 06	2437	1	21.33								
CH 11	2462	1	21.49								

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)	18.79	CH 01	18.69	18.59	18.49	18.84	18.56	18.71	18.69
CH 06	2437	0+1(0)	18.50								
CH 11	2462	0+1(0)	18.55								
CH 01	2412	0+1(1)	18.77	CH 01	18.71	18.63	18.59	18.63	18.54	18.57	18.63
CH 06	2437	0+1(1)	18.55								
CH 11	2462	0+1(1)	18.76								
CH 01	2412	0+1	**21.79**	CH 01	21.71	21.62	21.55	21.75	21.56	21.65	21.67
CH 06	2437	0+1	21.54								
CH 11	2462	0+1	21.67								

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)	13.74	CH 09	12.02	14.23	12.60	12.22	12.60	12.27	12.44
CH 06	2437	0+1(0)	14.12								
CH 09	2452	0+1(0)	**14.47**								
CH 03	2422	0+1(1)	13.69	CH 09	14.11	14.23	14.17	13.98	14.05	14.02	13.97
CH 06	2437	0+1(1)	14.02								
CH 09	2452	0+1(1)	**14.34**								
CH 03	2422	0+1	16.73	CH 09	16.20	17.24	16.47	16.20	16.40	16.24	16.28
CH 06	2437	0+1	17.08								
CH 09	2452	0+1	**17.42**								

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).

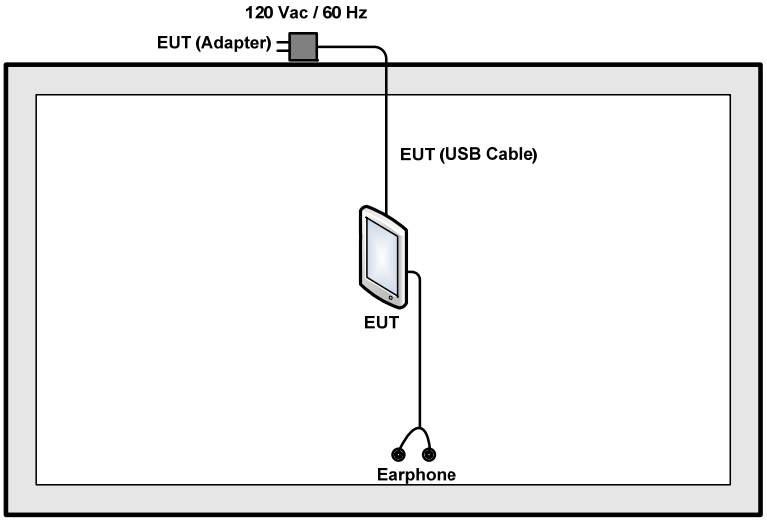
2.3 Test Mode

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

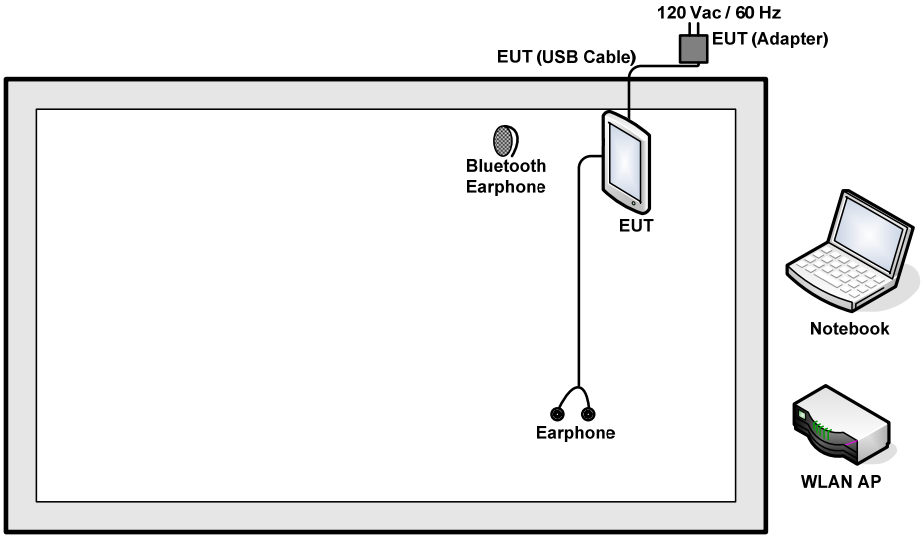
Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Conducted TCs	6dB and 99% BW Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
	Conducted Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	6.5 Mbps	1/11
		802.11n HT40	13.5 Mbps	3/9
	Conducted Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
Radiated TCs	Radiated Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	6.5 Mbps	1/11
		802.11n HT40	13.5 Mbps	3/9
	Radiated Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
AC Conducted Emission	Mode 1 : Bluetooth Link + WLAN (2.4G) Link + USB Cable 1 (Charging from Adapter 1) + Battery 1 + Earphone for Sample 1 Mode 2 : Bluetooth Link + WLAN (2.4G) Link + USB Cable 2 (Charging from Adapter 2) + Battery 2 + Earphone for Sample 2			
Remark: The worst case of conducted emission is mode 2; only the test data of it was reported.				

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.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
2.	Notebook	Lenovo	G480	N/A	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	Bluetooth Earphone	Lenovo	LBH505	N/A	N/A	N/A
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 and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

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

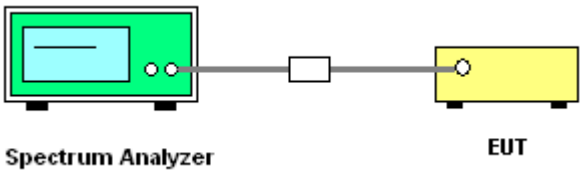
3.1.2 Measuring Instruments

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. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 1MHz and set the Video bandwidth (VBW) = 3MHz.
6. Measure and record the results in the test report.

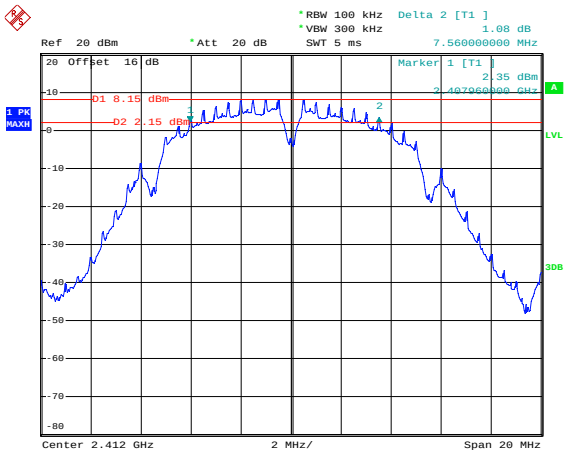
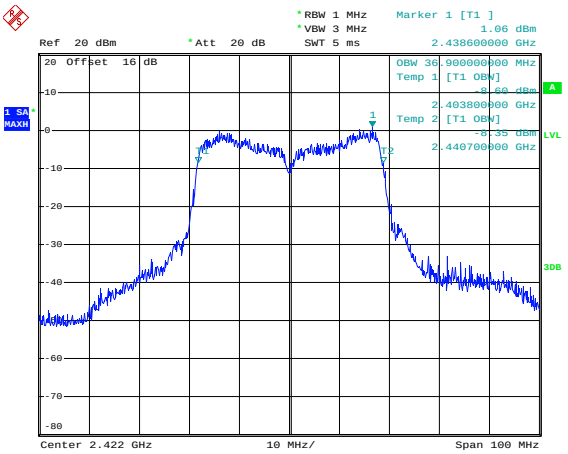
3.1.4 Test Setup



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	11.05	-	7.56	-	0.5	Pass
11b	1Mbps	1	6	2437	11.00	-	8.00	-	0.5	Pass
11b	1Mbps	1	11	2462	11.05	-	8.04	-	0.5	Pass
11g	6Mbps	1	1	2412	17.05	-	15.64	-	0.5	Pass
11g	6Mbps	1	6	2437	17.20	-	15.48	-	0.5	Pass
11g	6Mbps	1	11	2462	17.05	-	15.32	-	0.5	Pass
HT20	MCS0	1	1	2412	17.55	-	15.04	-	0.5	Pass
HT20	MCS0	1	6	2437	17.60	-	13.84	-	0.5	Pass
HT20	MCS0	1	11	2462	17.85	-	15.28	-	0.5	Pass
HT40	MCS0	1	3	2422	-	36.80	-	35.68	0.5	Pass
HT40	MCS0	1	6	2437	-	36.60	-	35.12	0.5	Pass
HT40	MCS0	1	9	2452	-	36.60	-	35.76	0.5	Pass
HT20	MCS8	2	1	2412	17.50	17.60	15.02	15.08	0.5	Pass
HT20	MCS8	2	6	2437	17.50	17.55	13.84	14.48	0.5	Pass
HT20	MCS8	2	11	2462	17.70	17.80	15.08	15.68	0.5	Pass
HT40	MCS8	2	3	2422	36.90	36.90	35.68	35.68	0.5	Pass
HT40	MCS8	2	6	2437	36.40	36.40	35.04	35.12	0.5	Pass
HT40	MCS8	2	9	2452	36.60	36.60	36.08	36.24	0.5	Pass

Minimum 6dB Bandwidth	Maximum 99% Occupied Bandwidth
	

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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 and 5725-5850MHz, 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.

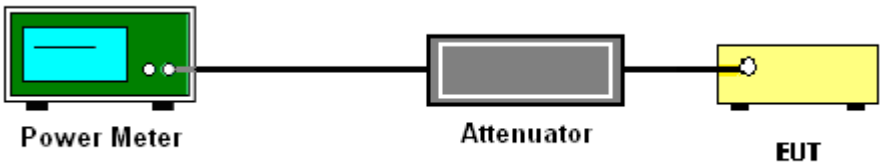
3.2.2 Measuring Instruments

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	18.84	17.23	-	30.00	30.00	0.00	-0.50	Pass
11b	1Mbps	1	6	2437	18.44	16.78		30.00	30.00	0.00	-0.50	Pass
11b	1Mbps	1	11	2462	18.46	16.46		30.00	30.00	0.00	-0.50	Pass
11g	6Mbps	1	1	2412	21.72	21.63		30.00	30.00	0.00	-0.50	Pass
11g	6Mbps	1	6	2437	21.37	21.33		30.00	30.00	0.00	-0.50	Pass
11g	6Mbps	1	11	2462	21.03	21.49		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	18.79	18.77	21.79	30.00		2.76		Pass
HT20	MCS8	2	6	2437	18.50	18.55	21.54	30.00		2.76		Pass
HT20	MCS8	2	11	2462	18.55	18.76	21.67	30.00		2.76		Pass
HT40	MCS8	2	3	2422	13.74	13.69	16.73	30.00		2.76		Pass
HT40	MCS8	2	6	2437	14.12	14.02	17.08	30.00		2.76		Pass
HT40	MCS8	2	9	2452	14.47	14.34	17.42	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	15.70	13.47	-
11b	1Mbps	1	6	2437	0.00	0.00	14.98	13.24	
11b	1Mbps	1	11	2462	0.00	0.00	14.89	12.92	
11g	6Mbps	1	1	2412	0.20	0.21	11.11	10.78	
11g	6Mbps	1	6	2437	0.20	0.21	10.47	10.45	
11g	6Mbps	1	11	2462	0.20	0.21	10.23	10.37	
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	9.32	9.09	12.21
HT20	MCS8	2	6	2437	0.42	0.42	9.12	8.96	12.05
HT20	MCS8	2	11	2462	0.42	0.42	9.14	9.04	12.10
HT40	MCS8	2	3	2422	0.43	0.43	4.20	4.00	7.11
HT40	MCS8	2	6	2437	0.43	0.43	4.44	3.97	7.22
HT40	MCS8	2	9	2452	0.43	0.43	4.63	4.17	7.42

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.

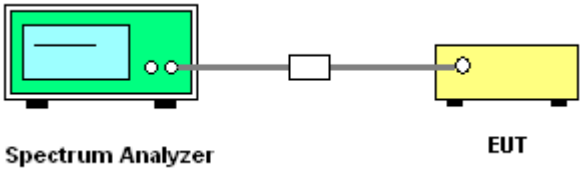
   If measurements performed using method (2) plus 10 log (N) exceeds the emission limit, the test should choose method (1) before declaring that the device fails the emission limit.

   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



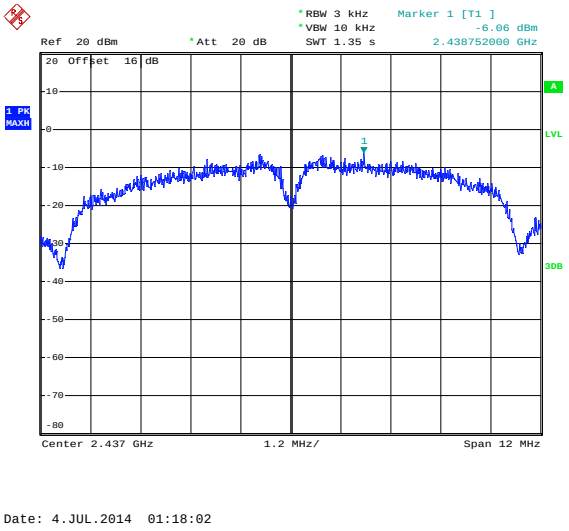
3.3.5 Test Result of Power Spectral Density

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	-6.64	-	-	0.00	-0.50	8.00	8.00	Pass
11b	1Mbps	1	6	2437	-6.06	-		0.00	-0.50	8.00	8.00	Pass
11b	1Mbps	1	11	2462	-6.65	-		0.00	-0.50	8.00	8.00	Pass
11g	6Mbps	1	1	2412	-14.46	-		0.00	-0.50	8.00	8.00	Pass
11g	6Mbps	1	6	2437	-14.29	-		0.00	-0.50	8.00	8.00	Pass
11g	6Mbps	1	11	2462	-14.52	-		0.00	-0.50	8.00	8.00	Pass
HT20	MCS0	1	1	2412	-12.47	-		0.00	-0.50	8.00	8.00	Pass
HT20	MCS0	1	6	2437	-13.23	-		0.00	-0.50	8.00	8.00	Pass
HT20	MCS0	1	11	2462	-12.14	-		0.00	-0.50	8.00	8.00	Pass
HT40	MCS0	1	3	2422	-	-21.29		0.00	-0.50	8.00	8.00	Pass
HT40	MCS0	1	6	2437	-	-20.52		0.00	-0.50	8.00	8.00	Pass
HT40	MCS0	1	9	2452	-	-20.65		0.00	-0.50	8.00	8.00	Pass
HT20	MCS8	2	1	2412	-15.20	-14.43	-11.42	2.76		8.00		Pass
HT20	MCS8	2	6	2437	-15.25	-14.95	-11.94	2.76		8.00		Pass
HT20	MCS8	2	11	2462	-14.91	-15.93	-11.90	2.76		8.00		Pass
HT40	MCS8	2	3	2422	-21.92	-22.63	-18.91	2.76		8.00		Pass
HT40	MCS8	2	6	2437	-21.92	-21.51	-18.50	2.76		8.00		Pass
HT40	MCS8	2	9	2452	-22.62	-22.22	-19.21	2.76		8.00		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).

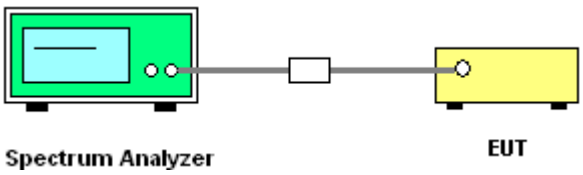
3.4.2 Measuring Instruments

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



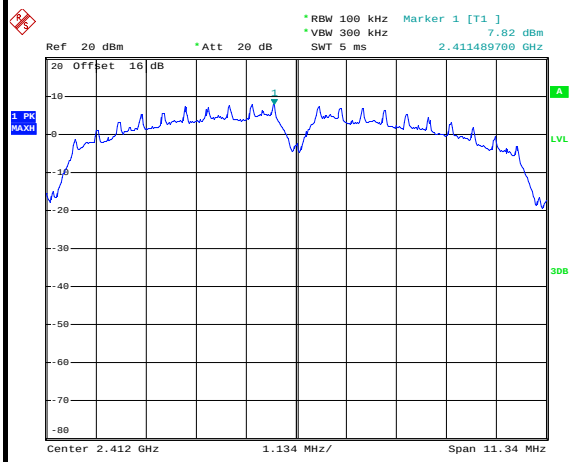
3.4.5 Test Result of Conducted Band Edges and Spurious Emission

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

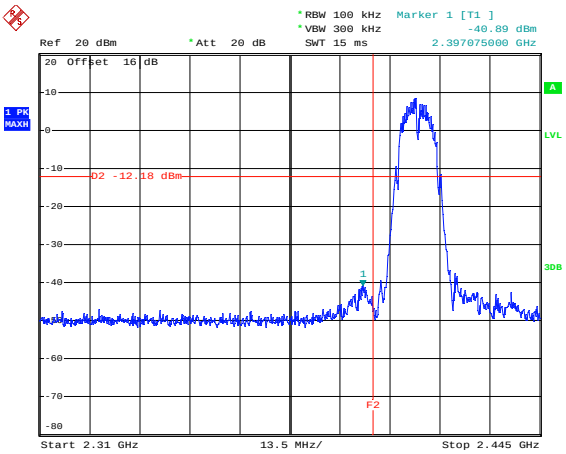
WLAN 802.11b Channel 01

100kHz PSD reference Level



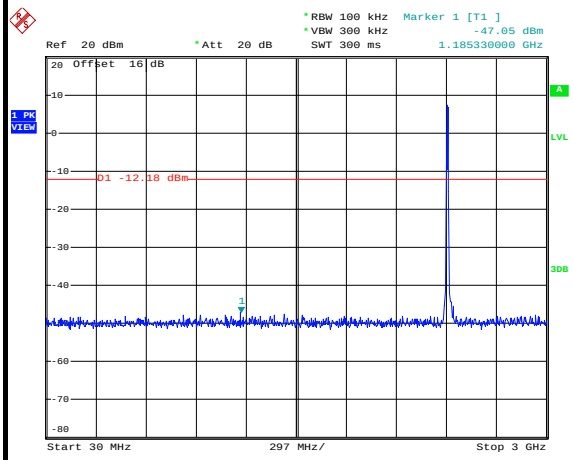
Date: 4.JUL.2014 01:13:08

Low Channel Plot



Date: 4.JUL.2014 01:13:22

Spurious Emission 30MHz~3GHz



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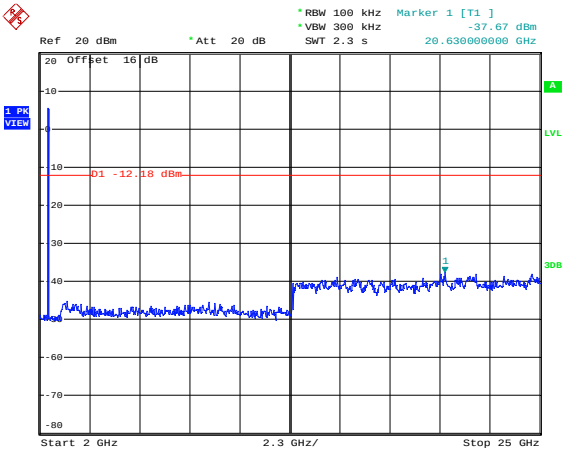
Spurious Emission 2GHz~25GHz

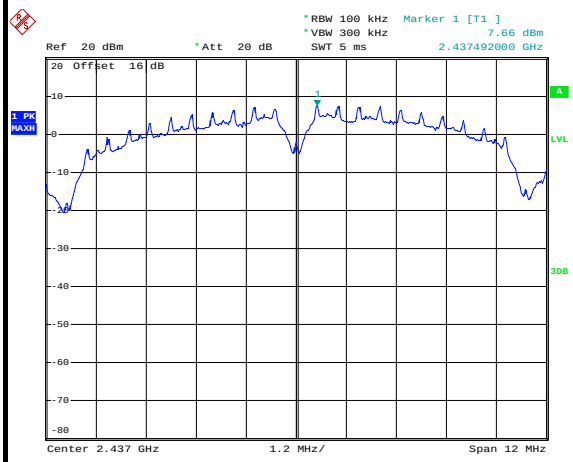


Date: 4.JUL.2014 01:14:00

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

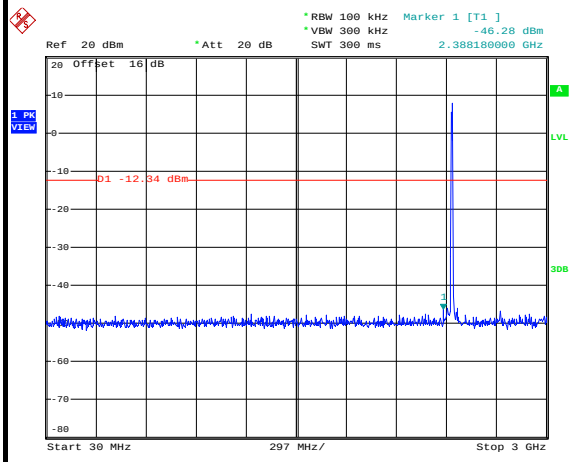
WLAN 802.11b Channel 06

100kHz PSD reference Level



Date: 4.JUL.2014 01:18:11

Spurious Emission 30MHz~3GHz



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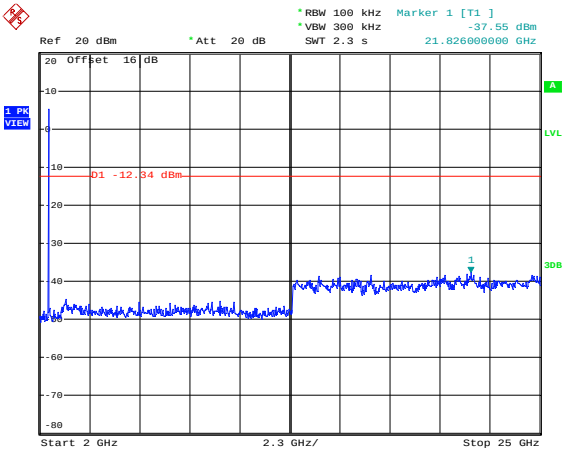
Spurious Emission 2GHz~25GHz

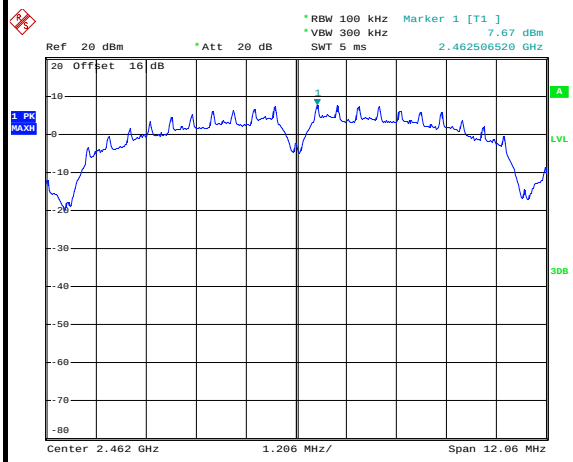


Date: 4.JUL.2014 01:18:49

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



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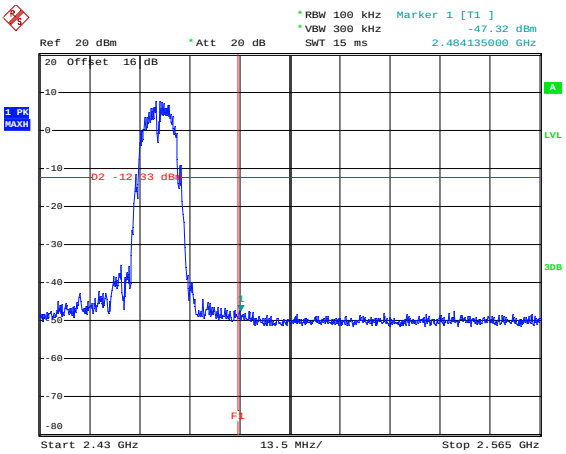
High Channel Plot



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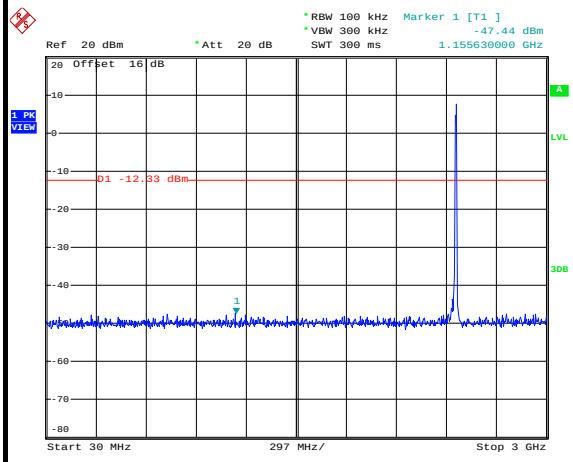
Spurious Emission 30MHz~3GHz



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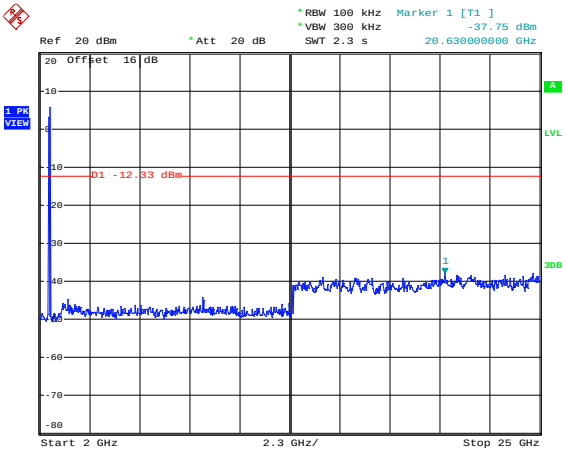
Spurious Emission 2GHz~25GHz

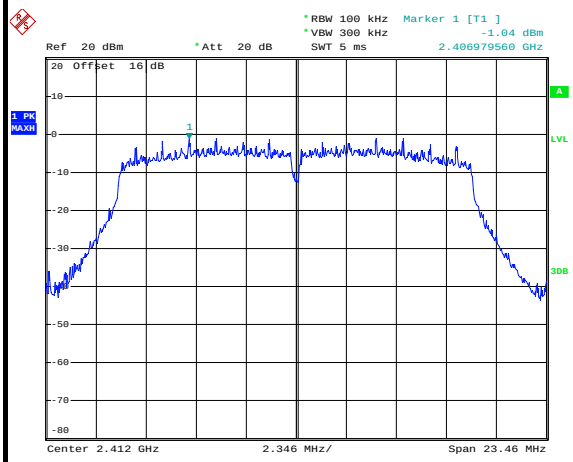


Date: 4.JUL.2014 01:24:20

Number of TX :	1	**Chain Port :**	0
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



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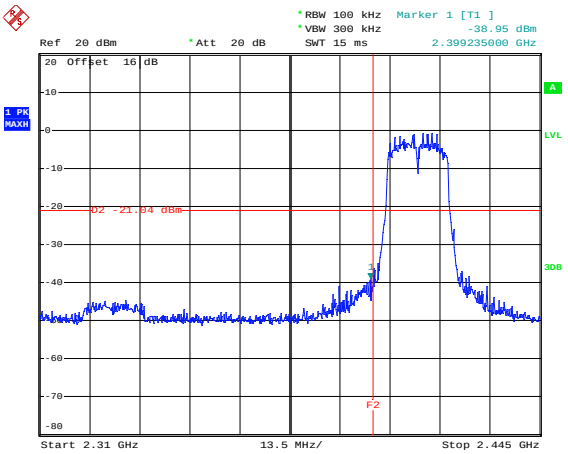
Low Channel Plot



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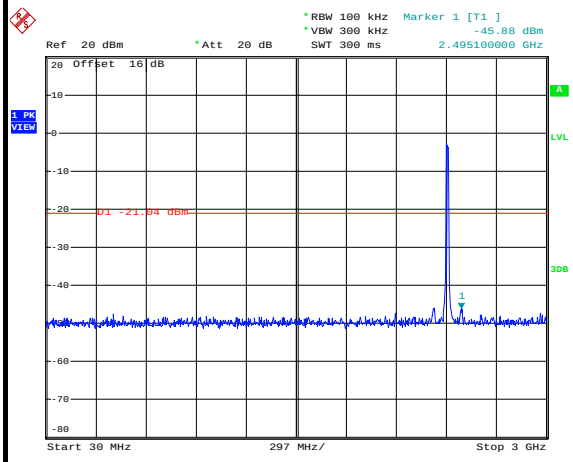
Spurious Emission 30MHz~3GHz



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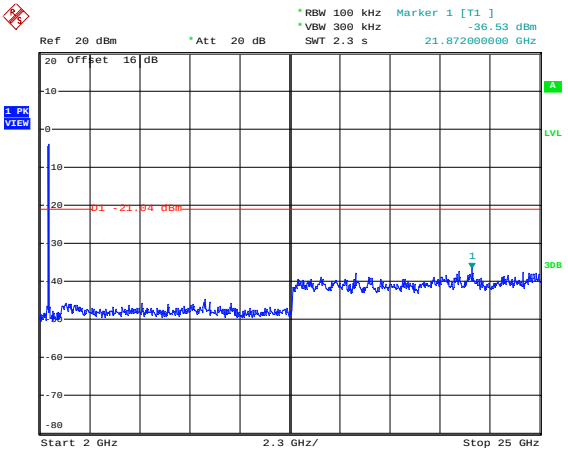
Spurious Emission 2GHz~25GHz



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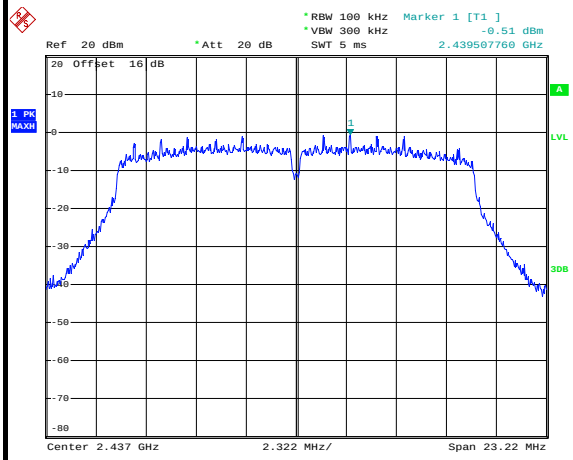
Number of TX :	1	**Chain Port :**	0
Test Mode :	802.11g	**Temperature :**	24~25℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	49~51%
Test Channel :	06	**Test Engineer :**	Issac Song

WLAN 802.11g Channel 06

100kHz PSD reference Level



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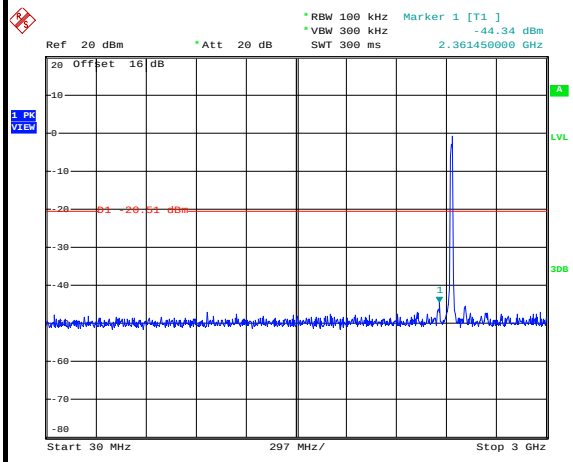
Spurious Emission 30MHz~3GHz



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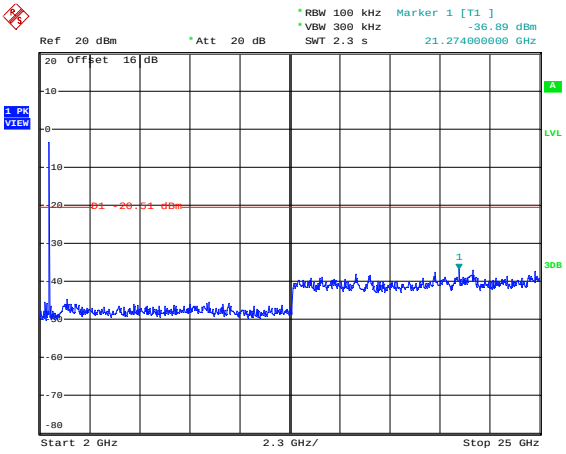
Spurious Emission 2GHz~25GHz



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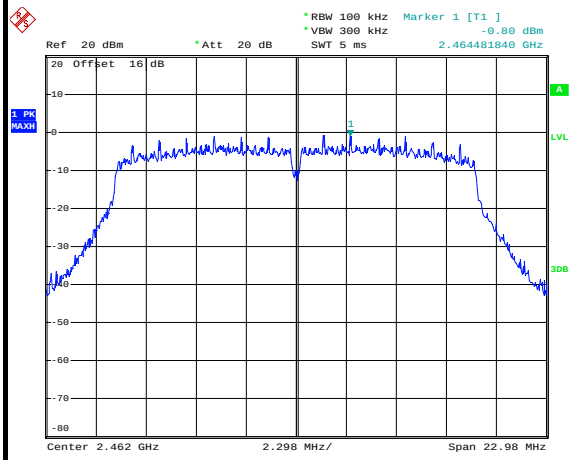
Number of TX :	1	**Chain Port :**	0
Test Mode :	802.11g	**Temperature :**	24~25℃
Test Band :	2.4GHz High	**Relative Humidity :**	49~51%
Test Channel :	11	**Test Engineer :**	Issac Song

WLAN 802.11g Channel 11

100kHz PSD reference Level



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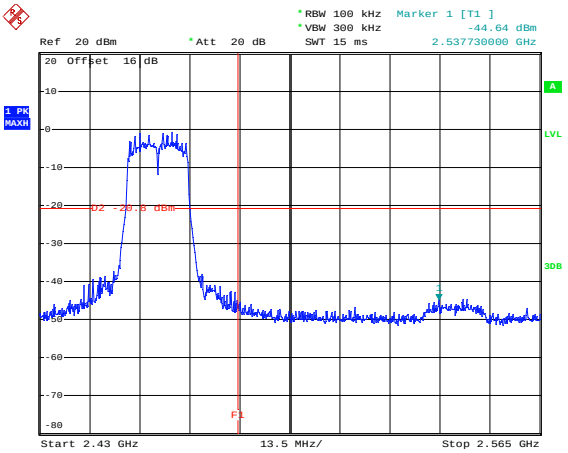
High Channel Plot



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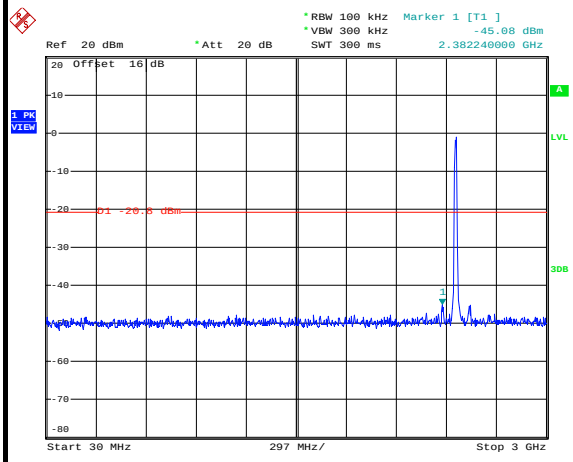
Spurious Emission 30MHz~3GHz



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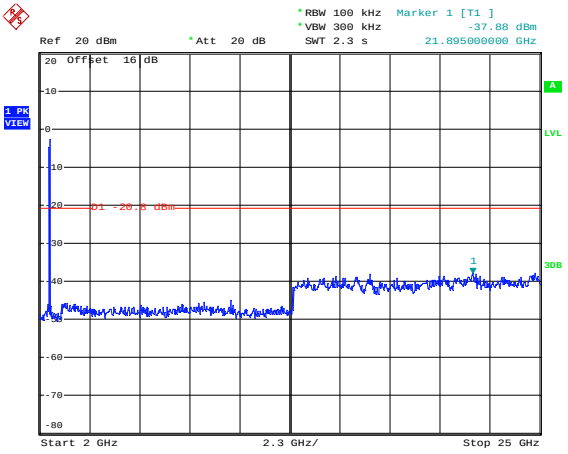
Spurious Emission 2GHz~25GHz

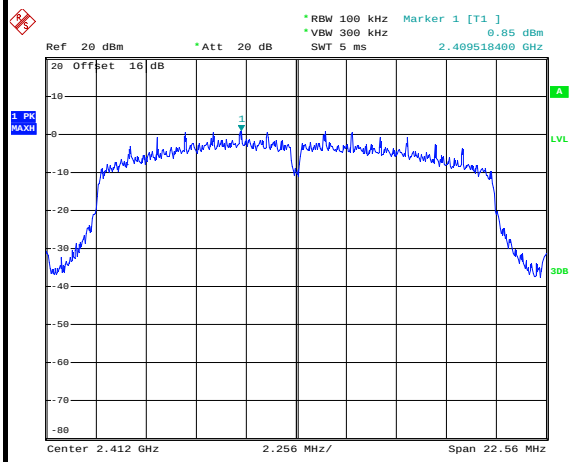


Date: 17.JUL.2014 12:01:47

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



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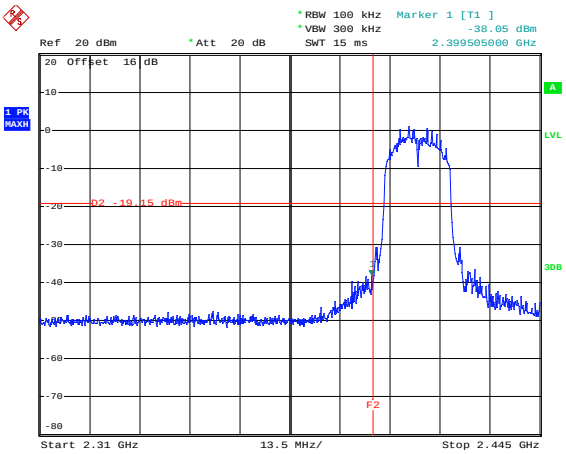
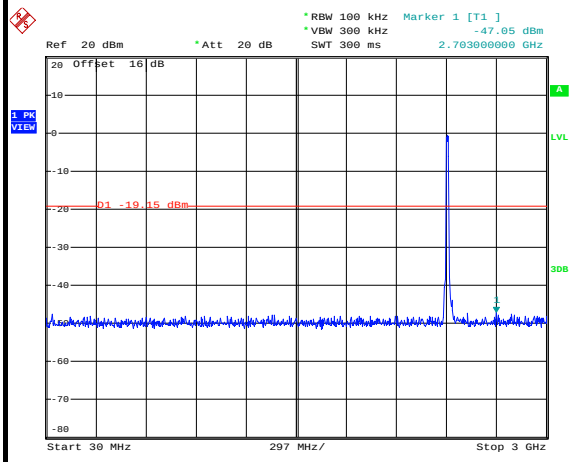
Low Channel Plot



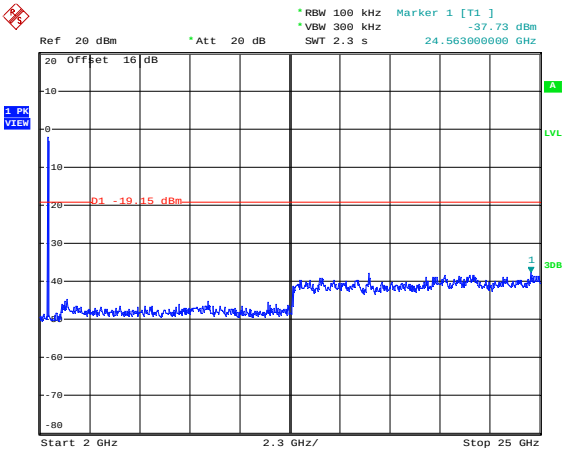
Date: 4.JUL.2014 02:17:01

Spurious Emission 30MHz~3GHz



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

Spurious Emission 2GHz~25GHz

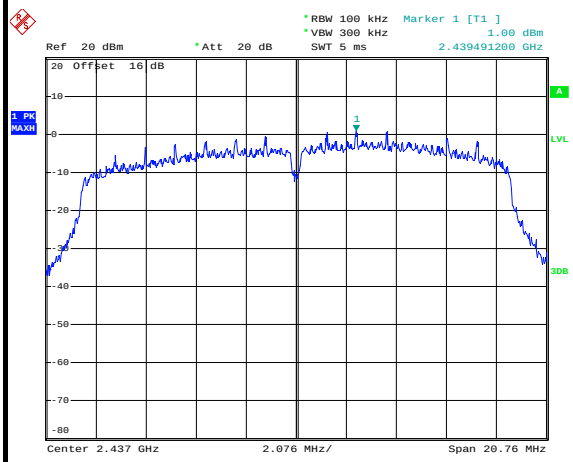


Date: 4.JUL.2014 02:17:39

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

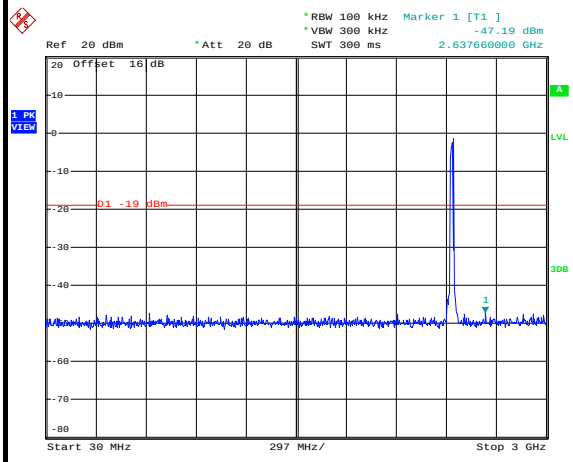
WLAN 802.11n HT20 Channel 06

100kHz PSD reference Level



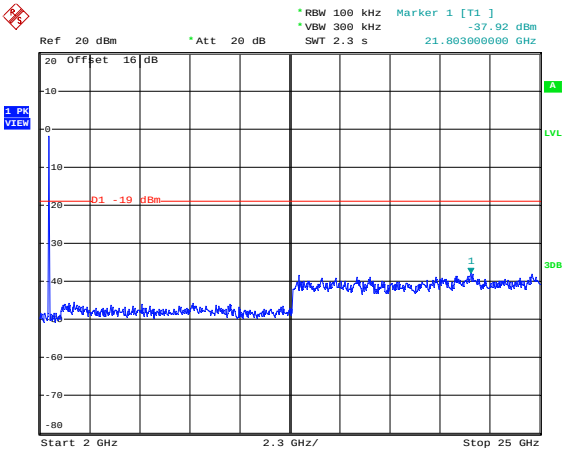
Date: 4.JUL.2014 02:21:01

Spurious Emission 30MHz~3GHz



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

Spurious Emission 2GHz~25GHz

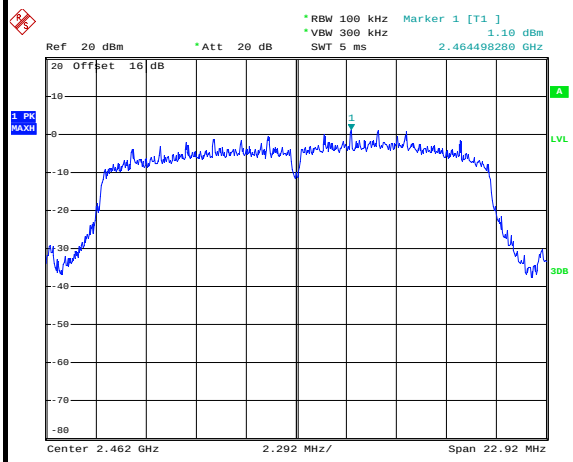


Date: 4.JUL.2014 02:21:39

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

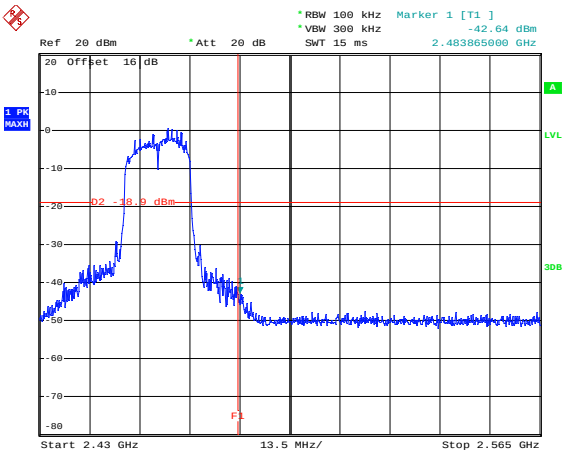
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



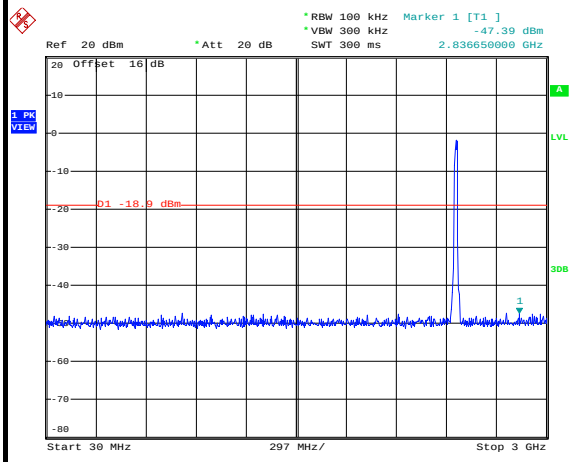
Date: 4.JUL.2014 02:24:39

High Channel Plot



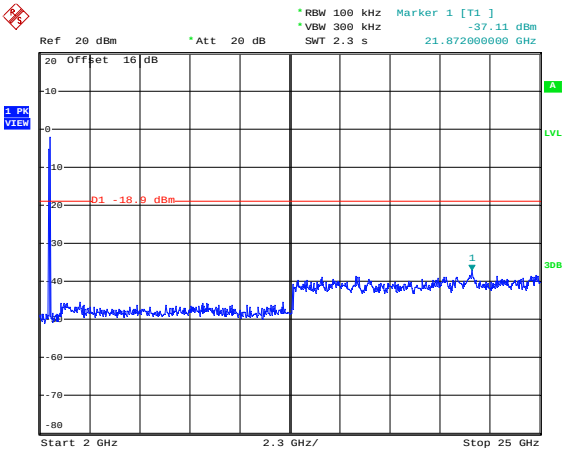
Date: 4.JUL.2014 02:24:53

Spurious Emission 30MHz~3GHz



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

Spurious Emission 2GHz~25GHz

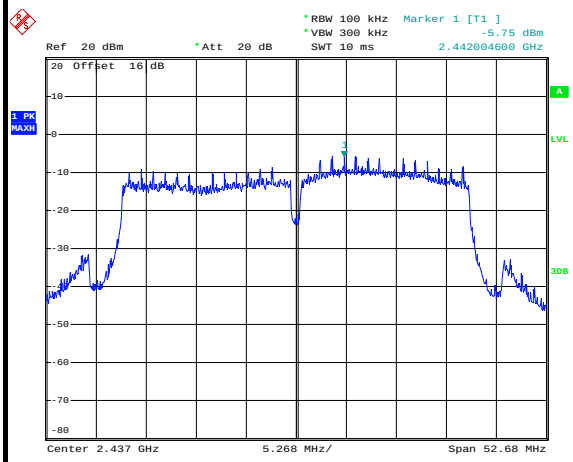


Date: 4.JUL.2014 02:25:31

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

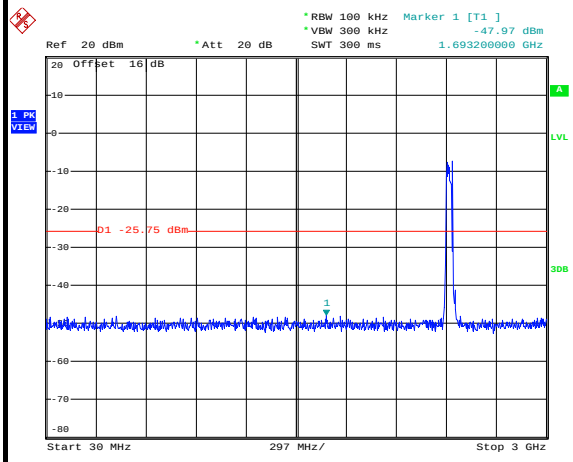
WLAN 802.11n HT40 Channel 06

100kHz PSD reference Level



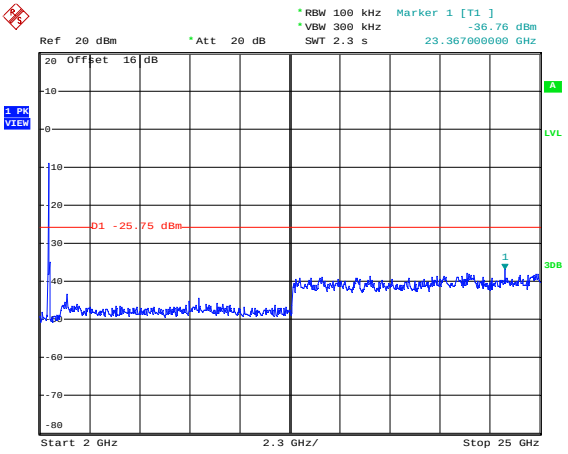
Date: 3.AUG.2014 18:15:33

Spurious Emission 30MHz~3GHz



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

Spurious Emission 2GHz~25GHz

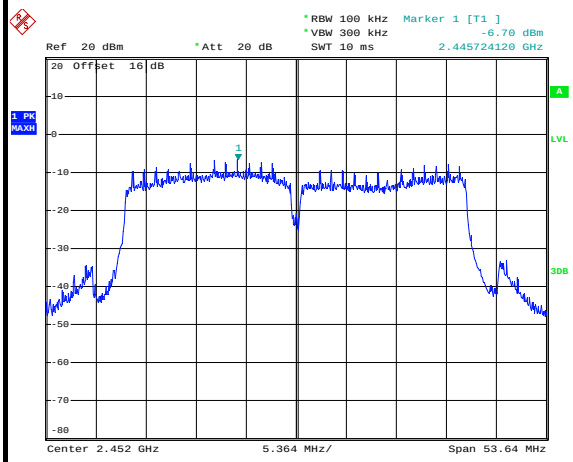


Date: 3.AUG.2014 18:27:11

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

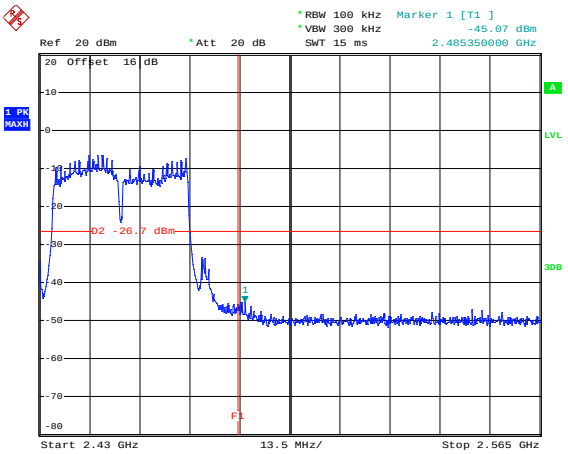
WLAN 802.11n HT40 Channel 09

100kHz PSD reference Level



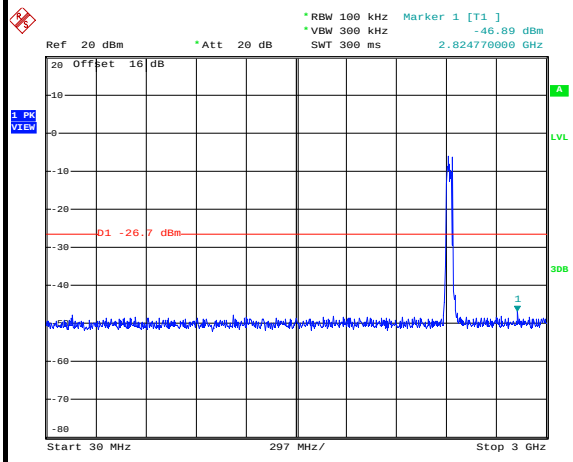
Date: 3.AUG.2014 19:27:04

High Channel Plot



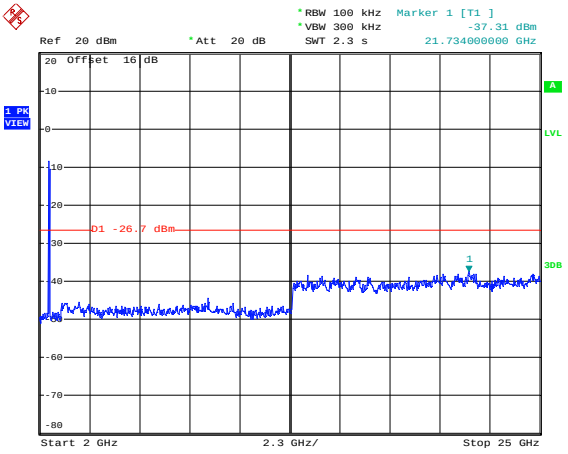
Date: 3.AUG.2014 19:27:26

Spurious Emission 30MHz~3GHz



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

Spurious Emission 2GHz~25GHz



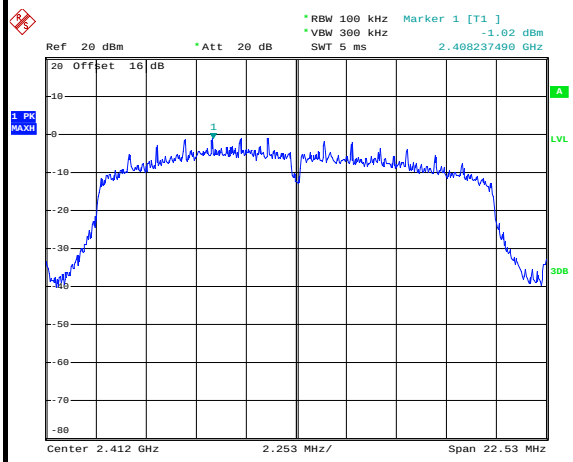
Date: 3.AUG.2014 19:31:19

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

Number of TX :	2	**Chain Port:**	0+1(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

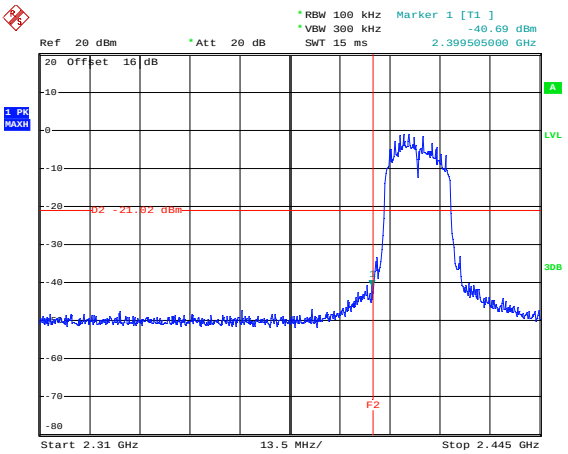
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



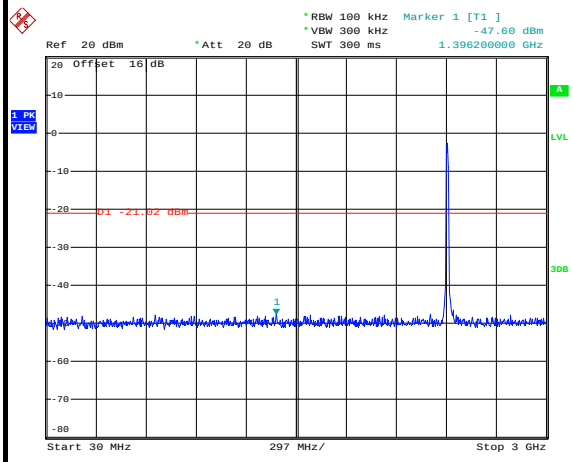
Date: 4.JUL.2014 02:30:49

Low Channel Plot



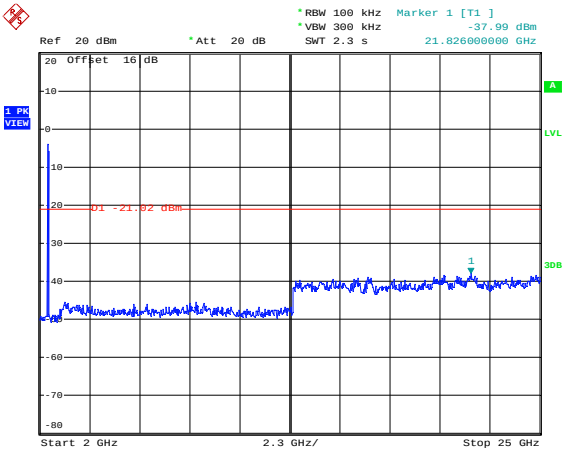
Date: 4.JUL.2014 02:31:03

Spurious Emission 30MHz~3GHz



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

Spurious Emission 2GHz~25GHz

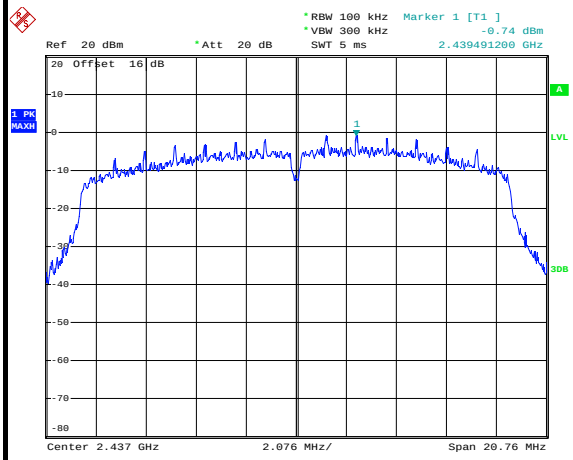


Date: 4.JUL.2014 02:31:40

Number of TX :	2	**Chain Port:**	0+1(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

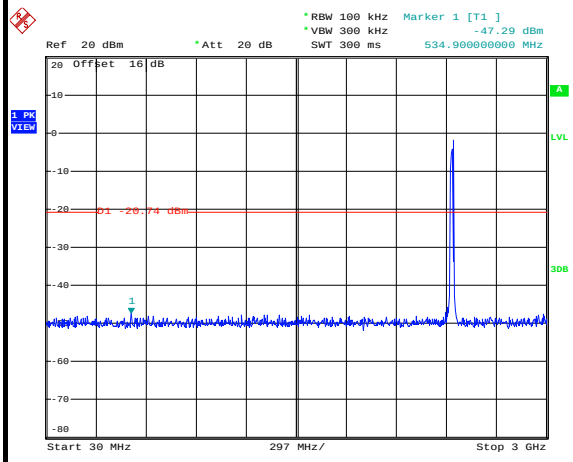
WLAN 802.11n HT20 Channel 06

100kHz PSD reference Level



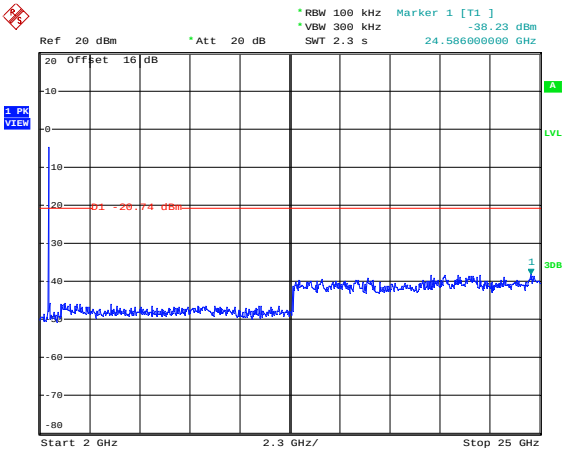
Date: 4.JUL.2014 02:34:37

Spurious Emission 30MHz~3GHz



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

Spurious Emission 2GHz~25GHz

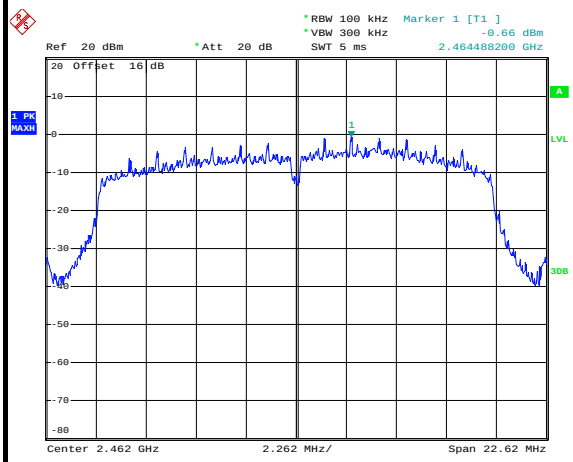


Date: 4.JUL.2014 02:35:15

Number of TX :	2	**Chain Port:**	0+1(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

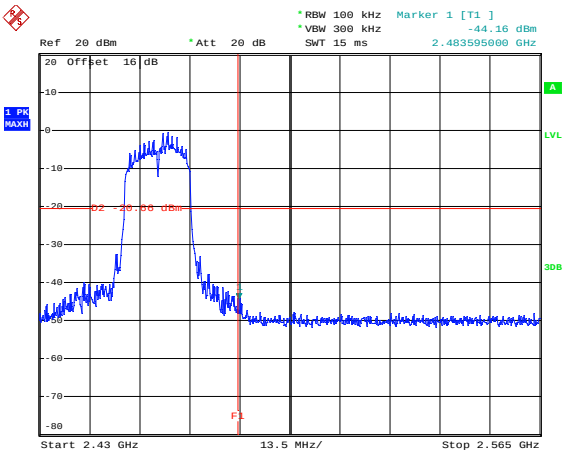
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



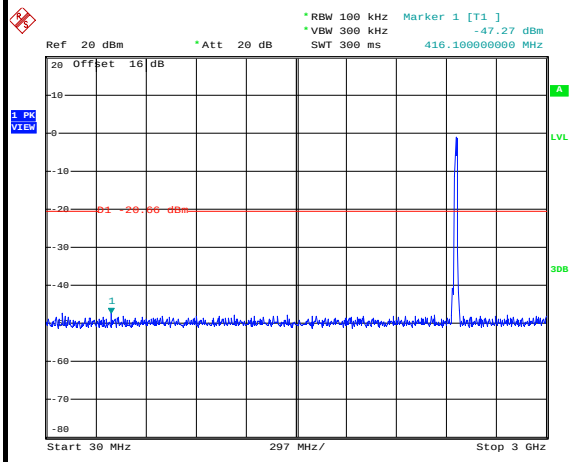
Date: 4.JUL.2014 02:38:15

High Channel Plot



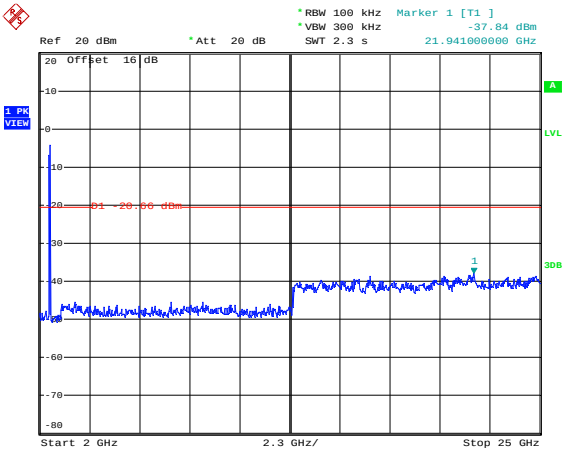
Date: 4.JUL.2014 02:38:29

Spurious Emission 30MHz~3GHz



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

Spurious Emission 2GHz~25GHz

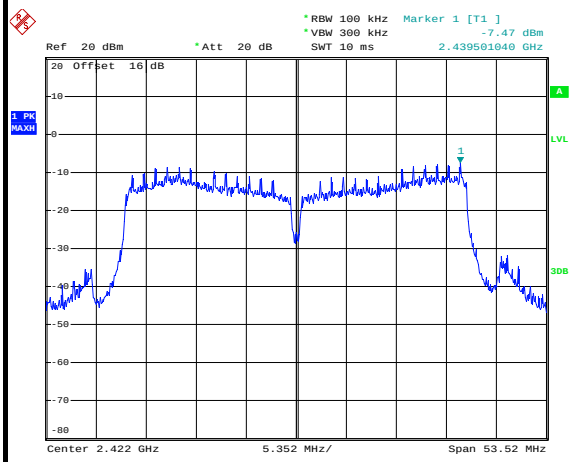


Date: 4.JUL.2014 02:39:07

Number of TX :	2	**Chain Port:**	0+1(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

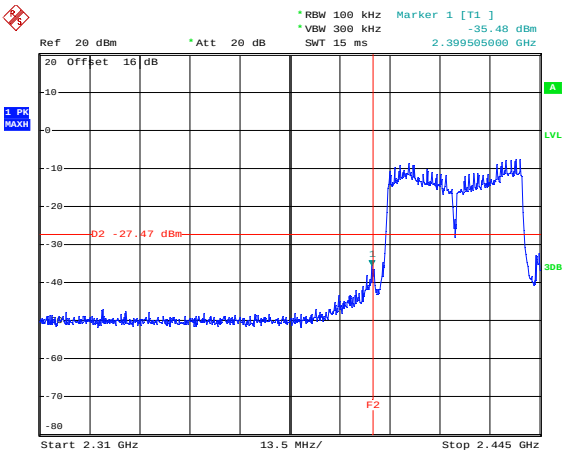
WLAN 802.11n HT40 Channel 03

100kHz PSD reference Level



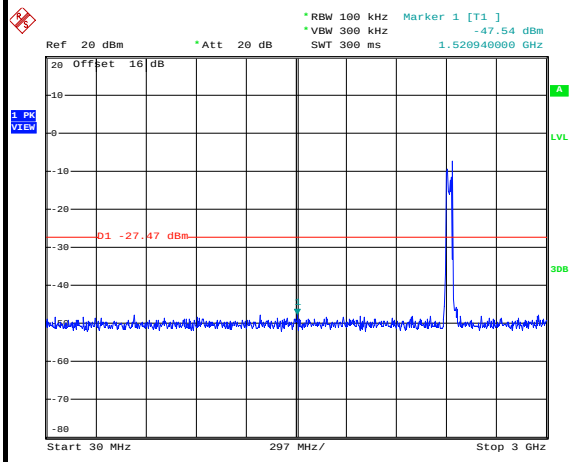
Date: 4.JUL.2014 03:51:55

Low Channel Plot



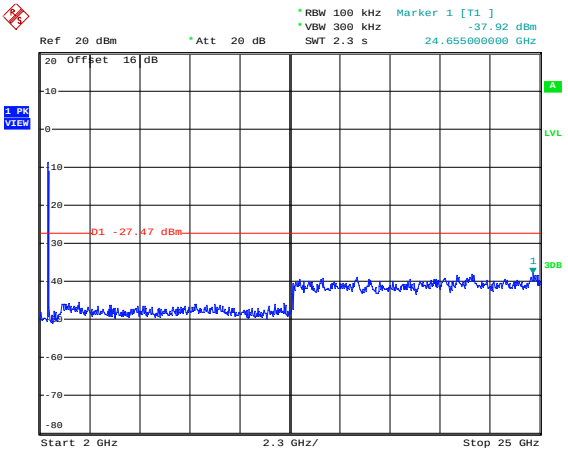
Date: 4.JUL.2014 03:52:09

Spurious Emission 30MHz~3GHz



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

Spurious Emission 2GHz~25GHz

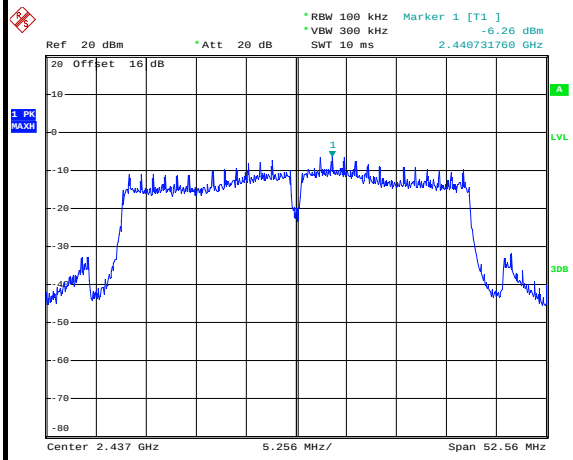


Date: 4.JUL.2014 03:54:44

Number of TX :	2	**Chain Port:**	0+1(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

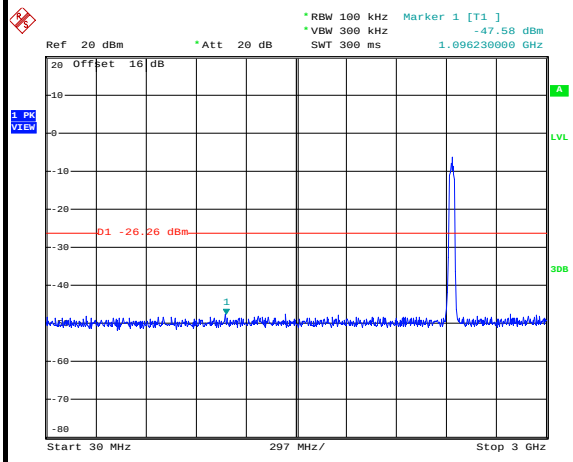
WLAN 802.11n HT40 Channel 06

100kHz PSD reference Level



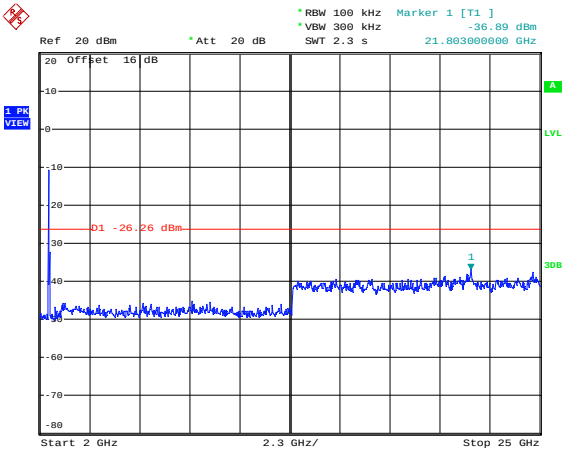
Date: 4.JUL.2014 03:58:58

Spurious Emission 30MHz~3GHz



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

Spurious Emission 2GHz~25GHz

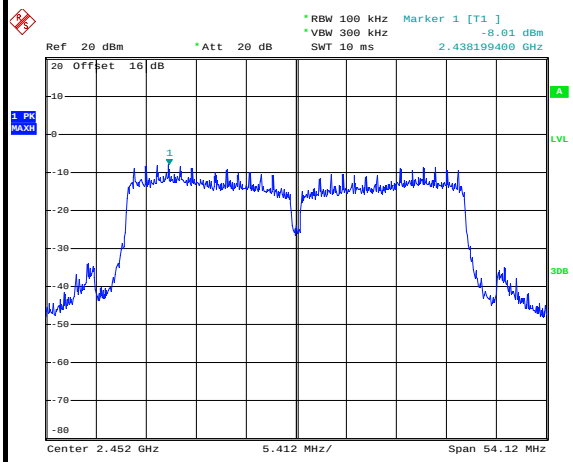


Date: 4.JUL.2014 03:59:36

Number of TX :	2	**Chain Port:**	0+1(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

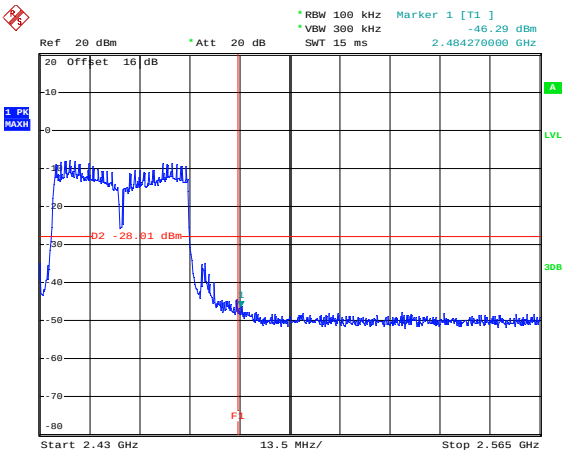
WLAN 802.11n HT40 Channel 09

100kHz PSD reference Level



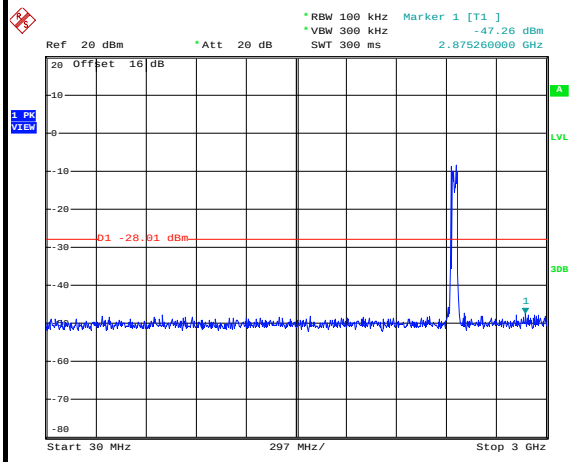
Date: 4.JUL.2014 04:03:34

High Channel Plot



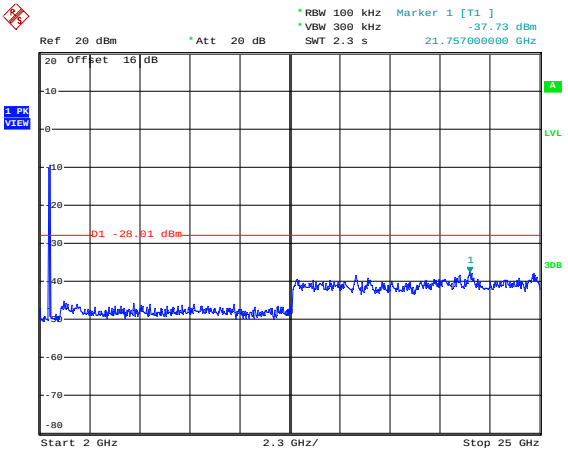
Date: 4.JUL.2014 04:03:48

Spurious Emission 30MHz~3GHz



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

Spurious Emission 2GHz~25GHz



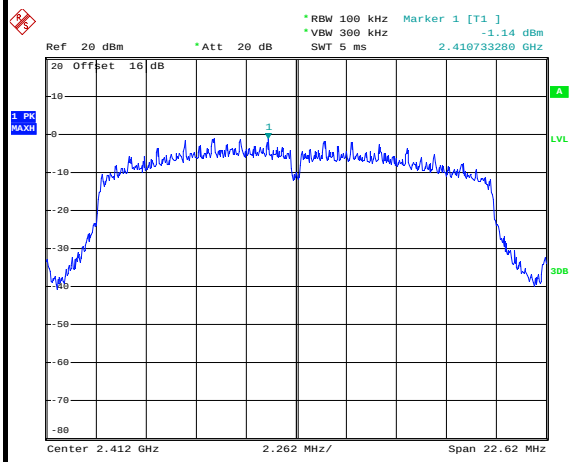
Date: 4.JUL.2014 04:06:11

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

Number of TX :	2	**Chain Port:**	0+1(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

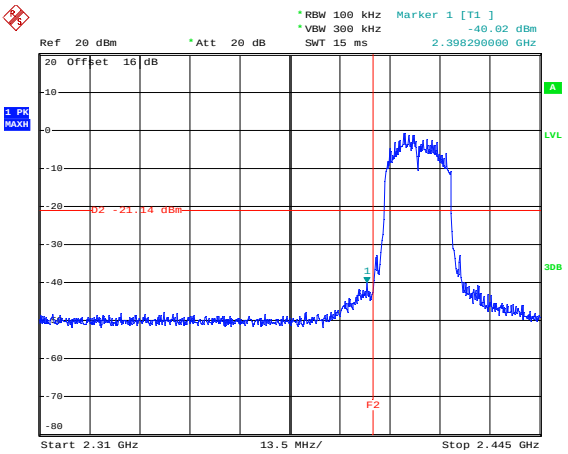
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



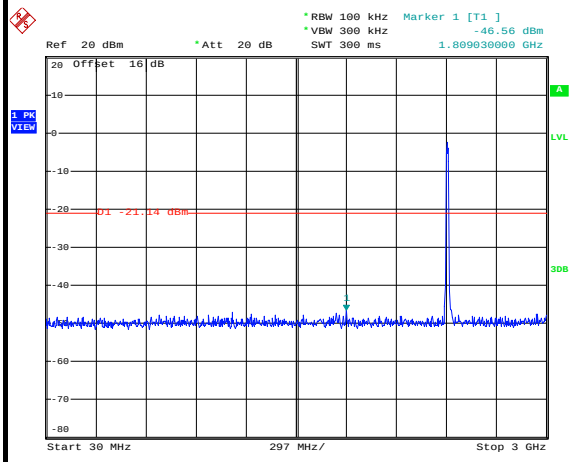
Date: 4.JUL.2014 02:43:33

Low Channel Plot



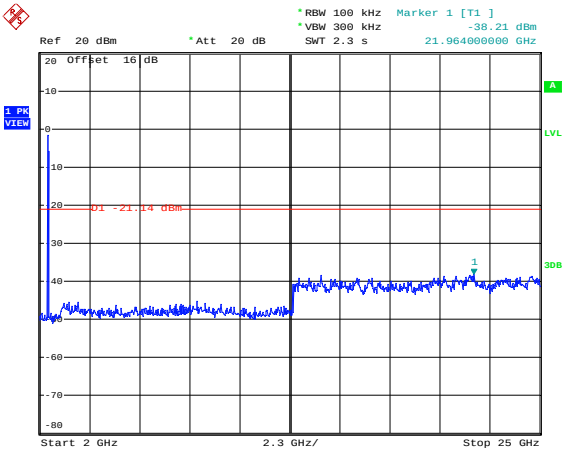
Date: 4.JUL.2014 02:44:58

Spurious Emission 30MHz~3GHz



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

Spurious Emission 2GHz~25GHz

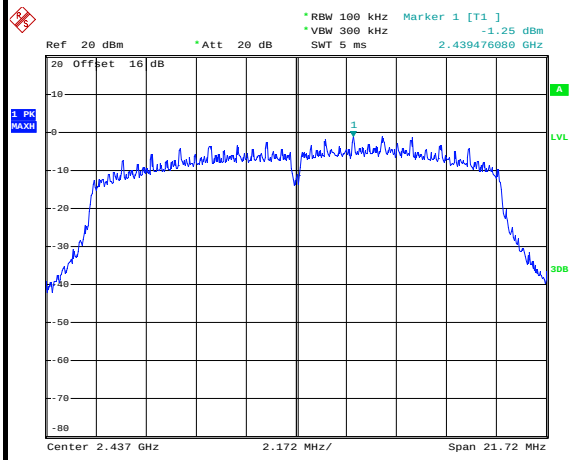


Date: 4.JUL.2014 02:44:24

Number of TX :	2	**Chain Port:**	0+1(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

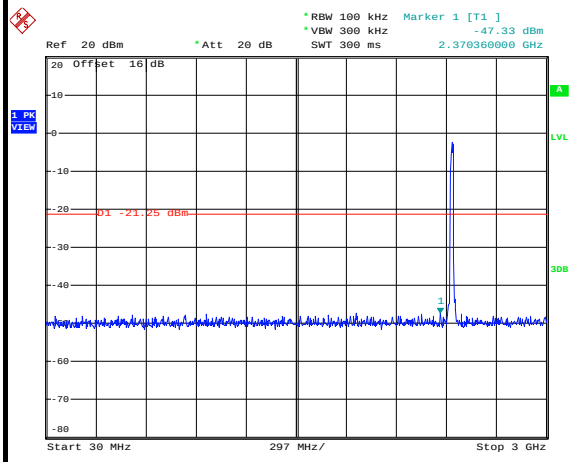
WLAN 802.11n HT20 Channel 06

100kHz PSD reference Level



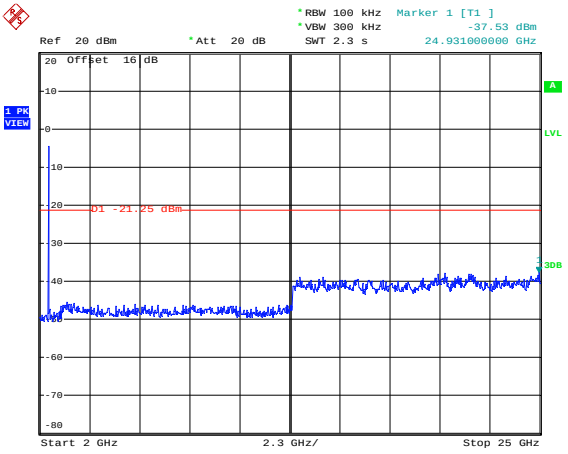
Date: 4.JUL.2014 02:48:05

Spurious Emission 30MHz~3GHz



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

Spurious Emission 2GHz~25GHz

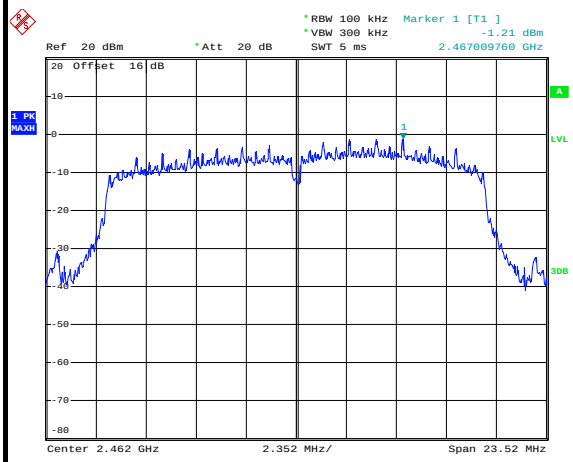


Date: 4.JUL.2014 02:48:43

Number of TX :	2	**Chain Port:**	0+1(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

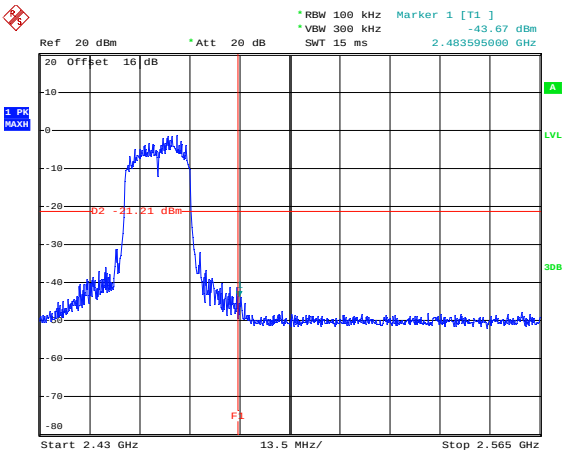
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



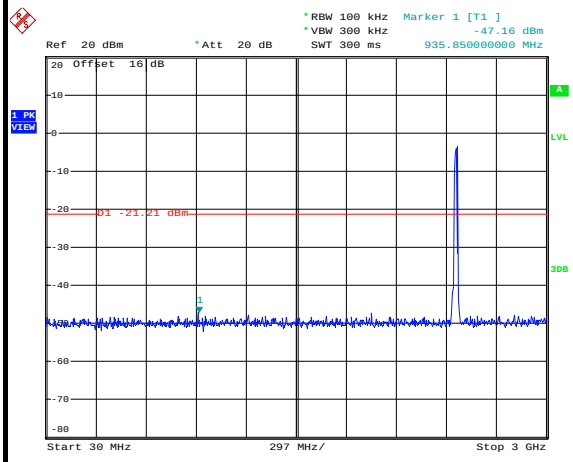
Date: 4.JUL.2014 02:55:23

High Channel Plot



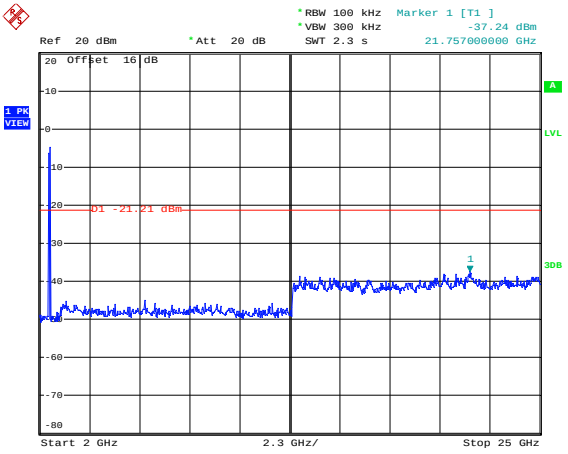
Date: 4.JUL.2014 02:55:37

Spurious Emission 30MHz~3GHz



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

Spurious Emission 2GHz~25GHz

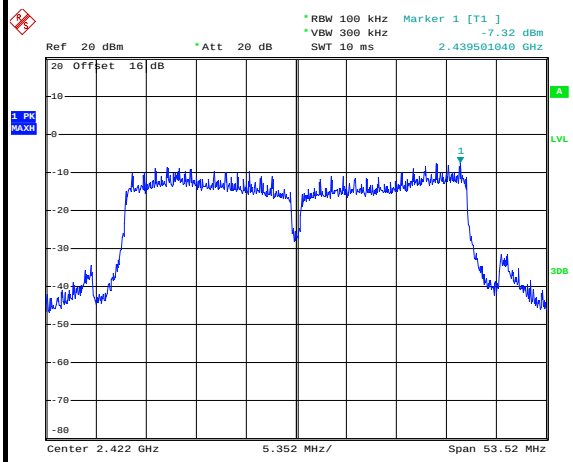


Date: 4.JUL.2014 02:56:14

Number of TX :	2	**Chain Port:**	0+1(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

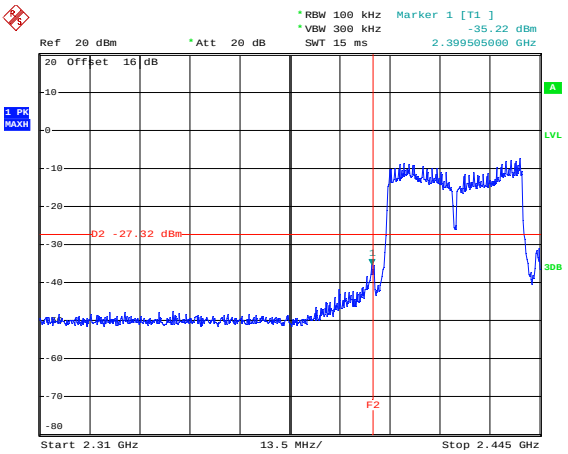
WLAN 802.11n HT40 Channel 03

100kHz PSD reference Level



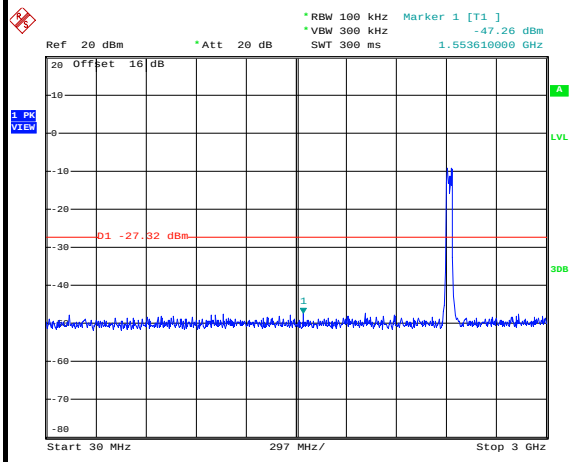
Date: 4.JUL.2014 04:11:14

Low Channel Plot



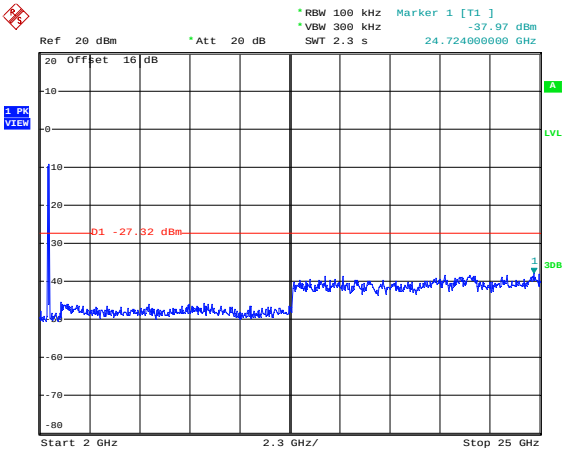
Date: 4.JUL.2014 04:11:28

Spurious Emission 30MHz~3GHz



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

Spurious Emission 2GHz~25GHz

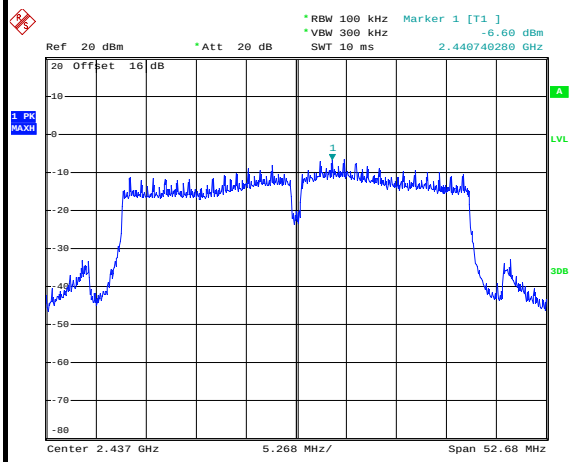


Date: 4.JUL.2014 04:13:23

Number of TX :	2	Chain Port:	0+1(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

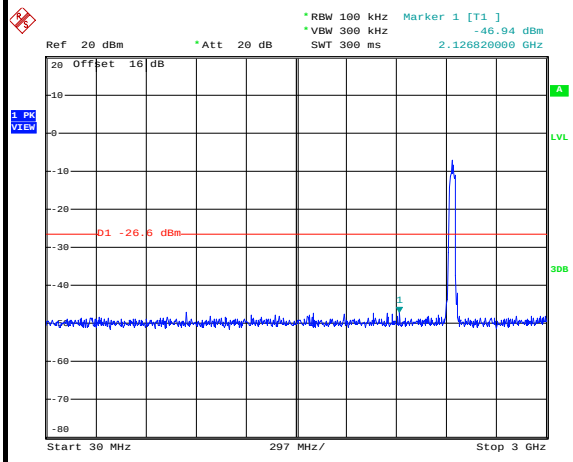
WLAN 802.11n HT40 Channel 06

100kHz PSD reference Level



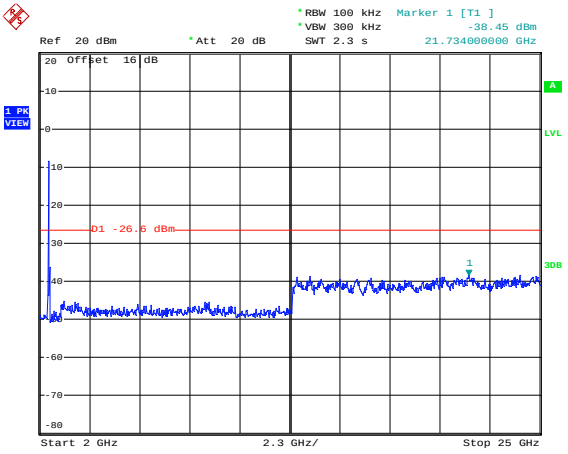
Date: 4.JUL.2014 04:23:55

Spurious Emission 30MHz~3GHz



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

Spurious Emission 2GHz~25GHz

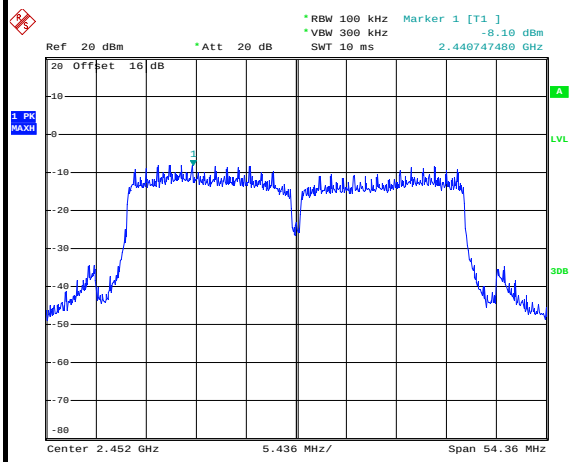


Date: 4.JUL.2014 04:24:33

Number of TX :	2	**Chain Port:**	0+1(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

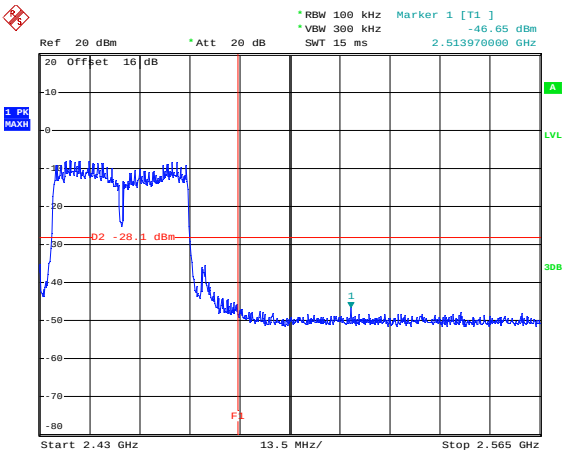
WLAN 802.11n HT40 Channel 09

100kHz PSD reference Level



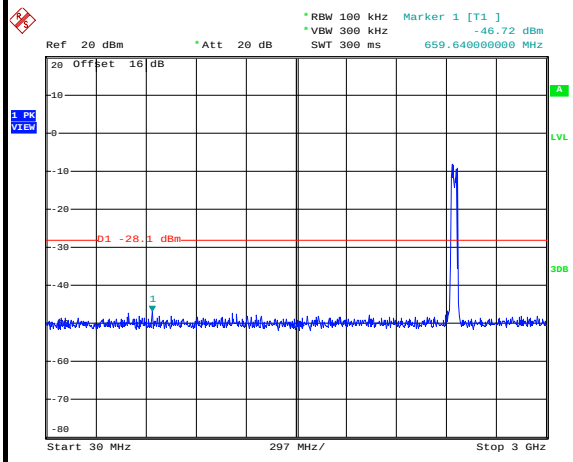
Date: 4.JUL.2014 04:26:47

High Channel Plot



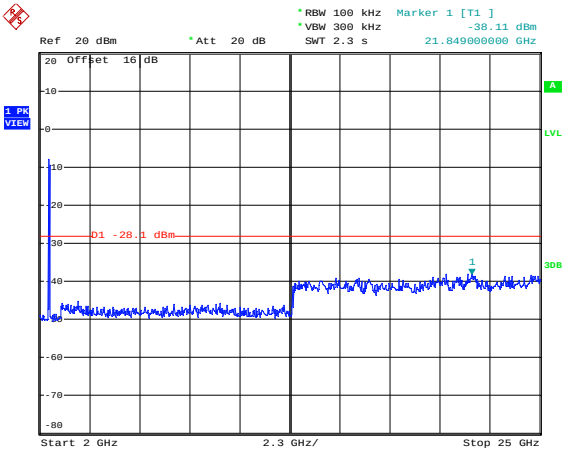
Date: 4.JUL.2014 04:27:01

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.

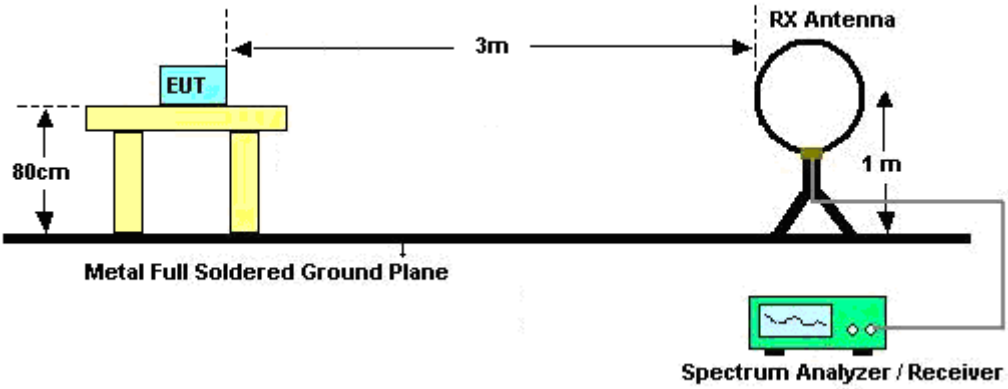
3.5.3 Test Procedure

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.

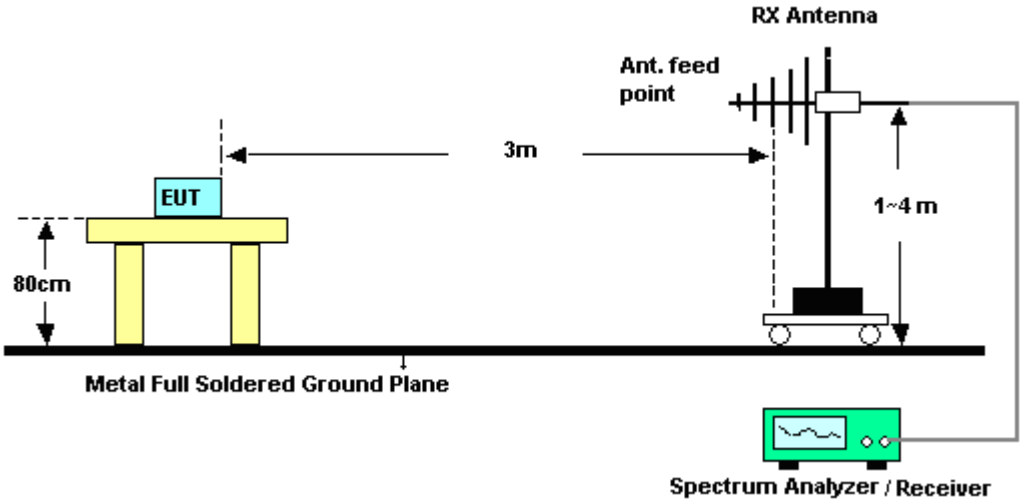
Chain Port	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
0	802.11b	100	-	-	10Hz
1	802.11b	100	-	-	
0	802.11g	95.39	2.07	0.48	1kHz
1	802.11g	95.37	2.06	0.49	
0+1	2.4GHz 802.11n HT20	90.88	0.99	1.01	3KHz
0+1	2.4GHz 802.11n HT40	90.63	0.99	1.01	3KHz

3.5.4 Test Setup

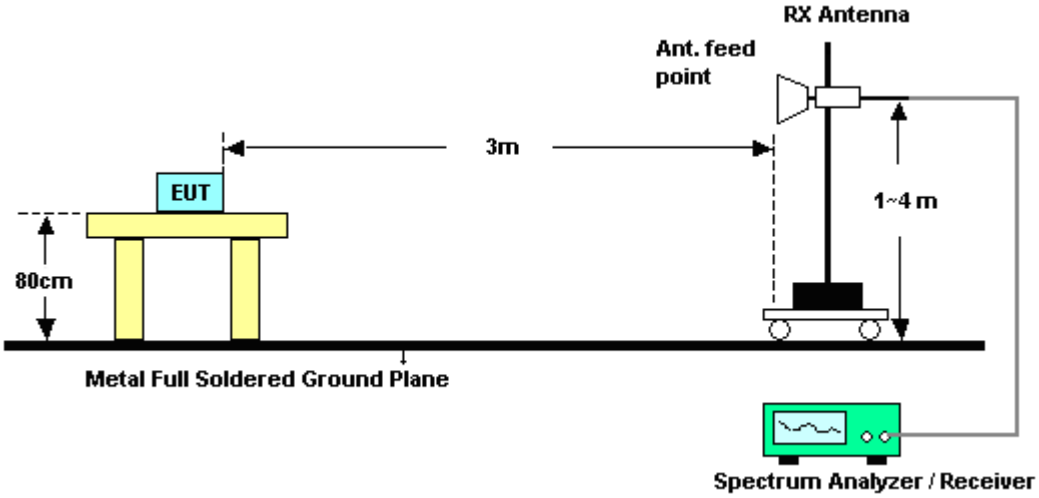
For radiated emissions below 30MHz



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

For Sample 1

< Chain Port 0>

Test Mode :	802.11b	**Temperature :**	22~23°C
Test Band :	Low	**Relative Humidity :**	42~43%
Test Channel :	01	**Test Engineer :**	Simon Liu

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
2328.90	56.24	-17.76	74	58.22	31.86	2.59	36.43	164	348	Peak
2330.70	48.23	-5.77	54	50.21	31.86	2.59	36.43	164	348	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
2328.36	56.08	-17.92	74	58.06	31.86	2.59	36.43	111	141	Peak
2329.26	48.23	-5.77	54	50.21	31.86	2.59	36.43	111	141	Average

Test Mode :	802.11b	**Temperature :**	22~23°C
Test Band :	High	**Relative Humidity :**	42~43%
Test Channel :	11	**Test Engineer :**	Simon Liu

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
2485.90	55.60	-18.40	74	56.63	32.08	2.68	35.79	130	142	Peak
2487.64	40.23	-13.77	54	41.19	32.10	2.68	35.74	130	142	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
2485.81	56.98	-17.02	74	58.01	32.08	2.68	35.79	100	356	Peak
2487.67	42.40	-11.60	54	43.36	32.1	2.68	35.74	100	356	Average

Test Mode :	802.11g	**Temperature :**	22~23°C
Test Band :	Low	**Relative Humidity :**	42~43%
Test Channel :	01	**Test Engineer :**	Simon Liu

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
2389.65	66.1	-7.90	74	67.58	31.96	2.64	36.08	172	185	Peak
2332.50	44.66	-9.34	54	46.64	31.86	2.59	36.43	172	185	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
2389.74	67.40	-6.60	74	68.88	31.96	2.64	36.08	100	269	Peak
2333.76	43.71	-10.29	54	45.69	31.86	2.59	36.43	100	269	Average

Test Mode :	802.11g	**Temperature :**	22~23°C
Test Band :	High	**Relative Humidity :**	42~43%
Test Channel :	11	**Test Engineer :**	Simon Liu

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
2484.88	68.11	-5.89	74	69.14	32.08	2.68	35.79	131	144	Peak
2483.80	41.62	-12.38	54	42.65	32.08	2.68	35.79	131	144	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
2485.66	69.68	-4.32	74	70.71	32.08	2.68	35.79	161	47	Peak
2483.50	42.48	-11.52	54	43.51	32.08	2.68	35.79	161	47	Average

< Chain Port 1>

Test Mode :	802.11b	**Temperature :**	22~23°C
Test Band :	Low	**Relative Humidity :**	42~43%
Test Channel :	01	**Test Engineer :**	Simon Liu

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
2386.05	57.06	-16.94	74	58.54	31.96	2.64	36.08	100	239	Peak
2330.70	50.09	-3.91	54	52.07	31.86	2.59	36.43	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
2329.89	55.75	-18.25	74	57.73	31.86	2.59	36.43	100	221	Peak
2330.70	47.50	-6.50	54	49.48	31.86	2.59	36.43	100	221	Average

Test Mode :	802.11b	**Temperature :**	22~23°C
Test Band :	High	**Relative Humidity :**	42~43%
Test Channel :	11	**Test Engineer :**	Simon Liu

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
2488.78	55.85	-18.15	74	56.81	32.1	2.68	35.74	119	302	Peak
2487.67	44.76	-9.24	54	45.72	32.1	2.68	35.74	119	302	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
2488.33	52.21	-21.79	74	53.17	32.1	2.68	35.74	172	139	Peak
2483.50	36.42	-17.58	54	37.45	32.08	2.68	35.79	172	139	Average

Test Mode :	802.11g	**Temperature :**	22~23°C
Test Band :	Low	**Relative Humidity :**	42~43%
Test Channel :	01	**Test Engineer :**	Simon Liu

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
2388.57	69.2	-4.80	74	70.68	31.96	2.64	36.08	121	307	Peak
2390.00	48.39	-5.61	54	49.87	31.96	2.64	36.08	121	307	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
2389.56	64.94	-9.06	74	66.42	31.96	2.64	36.08	100	225	Peak
2333.13	46.75	-7.25	54	48.73	31.86	2.59	36.43	100	225	Average

Test Mode :	802.11g	**Temperature :**	22~23°C
Test Band :	High	**Relative Humidity :**	42~43%
Test Channel :	11	**Test Engineer :**	Simon Liu

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	63.47	-10.53	74	64.5	32.08	2.68	35.79	122	289	Peak
2483.50	43.82	-10.18	54	44.85	32.08	2.68	35.79	122	289	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
2486.05	64.94	-9.06	74	65.97	32.08	2.68	35.79	122	265	Peak
2483.50	44.25	-9.75	54	45.28	32.08	2.68	35.79	122	265	Average

< Chain Port 0+1>

Test Mode :	802.11n HT20	**Temperature :**	22~23°C
Test Band :	Low	**Relative Humidity :**	42~43%
Test Channel :	01	**Test Engineer :**	Simon Liu

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
2384.97	67.38	-6.62	74	68.97	31.93	2.64	36.16	100	234	Peak
2333.40	49.18	-4.82	54	51.16	31.86	2.59	36.43	100	234	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
2389.47	65.86	-8.14	74	67.34	31.96	2.64	36.08	100	299	Peak
2390.00	46.93	-7.07	54	48.41	31.96	2.64	36.08	100	299	Average

Test Mode :	802.11n HT20	**Temperature :**	22~23°C
Test Band :	High	**Relative Humidity :**	42~43%
Test Channel :	11	**Test Engineer :**	Simon Liu

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
2483.86	68.24	-5.76	74	69.27	32.08	2.68	35.79	100	195	Peak
2483.50	44.87	-9.13	54	45.9	32.08	2.68	35.79	100	195	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
2483.80	70.7	-3.30	74	71.73	32.08	2.68	35.79	158	46	Peak
2484.16	44.79	-9.21	54	45.82	32.08	2.68	35.79	158	46	Average

Test Mode :	802.11n HT40	**Temperature :**	22~23°C
Test Band :	Low	**Relative Humidity :**	42~43%
Test Channel :	03	**Test Engineer :**	Simon Liu

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
2389.92	70.65	-3.35	74	72.13	31.96	2.64	36.08	100	306	Peak
2384.34	49.58	-4.42	54	51.17	31.93	2.64	36.16	100	306	Average
2483.50	48.54	-25.46	74	49.57	32.08	2.68	35.79	100	306	Peak
2489.53	35.91	-18.09	54	36.87	32.1	2.68	35.74	100	306	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
2390.00	66.05	-7.95	74	67.53	31.96	2.64	36.08	103	344	Peak
2389.47	44.98	-9.02	54	46.46	31.96	2.64	36.08	103	344	Average
2487.70	56.18	-17.82	74	57.14	32.1	2.68	35.74	103	344	Peak
2483.56	36.99	-17.01	54	38.02	32.08	2.68	35.79	103	344	Average

Test Mode :	802.11n HT40	**Temperature :**	22~23°C
Test Band :	High	**Relative Humidity :**	42~43%
Test Channel :	09	**Test Engineer :**	Simon Liu

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
2385.24	51.51	-22.49	74	53.1	31.93	2.64	36.16	114	157	Peak
2336.46	35.88	-18.12	54	37.75	31.88	2.59	36.34	114	157	Average
2484.61	62.49	-11.51	74	63.52	32.08	2.68	35.79	114	157	Peak
2483.50	37.75	-16.25	54	38.78	32.08	2.68	35.79	114	157	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
2388.21	53.1	-20.90	74	54.58	31.96	2.64	36.08	102	340	Peak
2386.59	36.11	-17.89	54	37.59	31.96	2.64	36.08	102	340	Average
2484.49	68.28	-5.72	74	69.31	32.08	2.68	35.79	102	340	Peak
2483.50	40.66	-13.34	54	41.69	32.08	2.68	35.79	102	340	Average

For Sample 2

< Chain Port 0+1>

Test Mode :	802.11n HT20	**Temperature :**	22~23°C
Test Band :	High	**Relative Humidity :**	42~43%
Test Channel :	11	**Test Engineer :**	Simon Liu

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
2484.34	67.06	-6.94	74	68.09	32.08	2.68	35.79	100	299	Peak
2483.50	45.42	-8.58	54	46.45	32.08	2.68	35.79	100	299	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
2483.56	67.18	-6.82	74	68.21	32.08	2.68	35.79	152	284	Peak
2483.65	43.24	-10.76	54	44.27	32.08	2.68	35.79	152	284	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.

For Sample 1

< Chain Port 0>

Test Mode :	802.11b	**Temperature :**	22~23°C
Test Channel :	01	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Horizontal
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	104.78	-	-	106.16	31.98	2.66	36.02	113	169	Peak
2412	100.25	-	-	101.63	31.98	2.66	36.02	113	169	Average
2496	56.16	-17.84	74	57.12	32.1	2.68	35.74	100	148	Peak
2496	47.84	-6.16	54	48.8	32.1	2.68	35.74	100	148	Average
4824	44.38	-29.62	74	43.18	34.07	3.78	36.65	132	224	Peak

Test Mode :	802.11b	**Temperature :**	22~23°C
Test Channel :	01	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**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	106.1	-	-	107.48	31.98	2.66	36.02	132	336	Peak
2412	101.67	-	-	103.05	31.98	2.66	36.02	132	336	Average
2496	58.36	-15.64	74	59.32	32.1	2.68	35.74	100	0	Peak
2496	50.95	-3.05	54	51.91	32.1	2.68	35.74	100	0	Average
4824	43.16	-30.84	74	41.96	34.07	3.78	36.65	124	234	Peak

Test Mode :	802.11b	**Temperature :**	22~23°C
Test Channel :	06	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Horizontal
Remark :	2437 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
2358	54.55	-19.45	74	56.27	31.91	2.62	36.25	200	343	Peak
2358	46.14	-7.86	54	47.86	31.91	2.62	36.25	200	343	Average
2437	104.53	-	-	105.75	32.03	2.66	35.91	110	173	Peak
2437	100.24	-	-	101.46	32.03	2.66	35.91	110	173	Average
4874	47.32	-26.68	74	46.36	34.02	3.78	36.84	126	321	Peak
7312	45.69	-28.31	74	44.1	35.72	4.73	38.86	100	254	Peak

Test Mode :	802.11b	**Temperature :**	22~23°C
Test Channel :	06	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Vertical
Remark :	2437 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
2360	56.53	-17.47	74	58.25	31.91	2.62	36.25	114	302	Peak
2360	48.13	-5.87	54	49.85	31.91	2.62	36.25	114	302	Average
2437	105.65	-	-	106.87	32.03	2.66	35.91	102	336	Peak
2437	101.22	-	-	102.44	32.03	2.66	35.91	102	336	Average
4874	50.12	-23.88	74	49.16	34.02	3.78	36.84	114	58	Peak
7312	46.4	-27.60	74	44.81	35.72	4.73	38.86	124	358	Peak

Test Mode :	802.11b	**Temperature :**	22~23°C
Test Channel :	11	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Horizontal
Remark :	2462 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
2384	53.89	-20.11	74	55.48	31.93	2.64	36.16	108	175	Peak
2384	44.9	-9.10	54	46.49	31.93	2.64	36.16	108	175	Average
2462	102.01	-	-	103.14	32.05	2.67	35.85	108	175	Peak
2462	98.71	-	-	99.84	32.05	2.67	35.85	108	175	Average
4924	42.83	-31.17	74	42.11	33.97	3.78	37.03	100	236	Peak
7386	46.31	-27.69	74	44.97	35.76	4.77	39.19	157	264	Peak

Test Mode :	802.11b	**Temperature :**	22~23°C
Test Channel :	11	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Vertical
Remark :	2462 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
2386	55.84	-18.16	74	57.32	31.96	2.64	36.08	184	221	Peak
2386	48.08	-5.92	54	49.56	31.96	2.64	36.08	184	221	Average
2462	105.45	-	-	106.58	32.05	2.67	35.85	100	337	Peak
2462	101.02	-	-	102.15	32.05	2.67	35.85	100	337	Average
4924	42.39	-31.61	74	41.67	33.97	3.78	37.03	123	214	Peak
7386	47.17	-26.83	74	45.83	35.76	4.77	39.19	102	234	Peak

Test Mode :	802.11g	**Temperature :**	22~23°C
Test Channel :	01	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Horizontal
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	101.73	-	-	103.11	31.98	2.66	36.02	109	150	Peak
2412	90.21	-	-	91.59	31.98	2.66	36.02	109	150	Average
2498	57.56	-16.44	74	58.52	32.1	2.68	35.74	100	229	Peak
2498	42.1	-11.90	54	43.06	32.1	2.68	35.74	100	229	Average
4824	44.57	-29.43	74	43.37	34.07	3.78	36.65	114	258	Peak

Test Mode :	802.11g	**Temperature :**	22~23°C
Test Channel :	01	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**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	103.61	-	-	104.99	31.98	2.66	36.02	131	345	Peak
2412	92.05	-	-	93.43	31.98	2.66	36.02	131	345	Average
2498	59.34	-14.66	74	60.3	32.1	2.68	35.74	100	9	Peak
2498	46.06	-7.94	54	47.02	32.1	2.68	35.74	100	9	Average
4824	44.62	-29.38	74	43.42	34.07	3.78	36.65	163	207	Peak

Test Mode :	802.11g	**Temperature :**	22~23°C
Test Channel :	06	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Horizontal
Remark :	2437 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
2356	54.76	-19.24	74	56.49	31.91	2.61	36.25	200	119	Peak
2356	41.14	-12.86	54	42.87	31.91	2.61	36.25	200	119	Average
2437	101.35	-	-	102.57	32.03	2.66	35.91	166	204	Peak
2437	89.74	-	-	90.96	32.03	2.66	35.91	166	204	Average
4874	42.96	-31.04	74	42	34.02	3.78	36.84	112	324	Peak
7312	46.85	-27.15	74	45.26	35.72	4.73	38.86	102	125	Peak

Test Mode :	802.11g	**Temperature :**	22~23°C
Test Channel :	06	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Vertical
Remark :	2437 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
2358	56.74	-17.26	74	58.46	31.91	2.62	36.25	100	293	Peak
2358	44.06	-9.94	54	45.78	31.91	2.62	36.25	100	293	Average
2437	101.76	-	-	102.98	32.03	2.66	35.91	100	337	Peak
2437	90.33	-	-	91.55	32.03	2.66	35.91	100	337	Average
4874	42.78	-31.22	74	41.82	34.02	3.78	36.84	124	324	Peak
7312	44.87	-29.13	74	43.28	35.72	4.73	38.86	132	214	Peak

Test Mode :	802.11g	**Temperature :**	22~23°C
Test Channel :	11	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Horizontal
Remark :	2462 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
2378	53.56	-20.44	74	55.15	31.93	2.64	36.16	100	130	Peak
2378	40.41	-13.59	54	42	31.93	2.64	36.16	100	130	Average
2462	102.75	-	-	103.88	32.05	2.67	35.85	196	28	Peak
2462	90.04	-	-	91.17	32.05	2.67	35.85	196	28	Average
4924	41.99	-32.01	74	41.27	33.97	3.78	37.03	100	221	Peak
7386	45.21	-28.79	74	43.87	35.76	4.77	39.19	132	102	Peak

Test Mode :	802.11g	**Temperature :**	22~23°C
Test Channel :	11	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Vertical
Remark :	2462 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
2386	55.39	-18.61	74	56.87	31.96	2.64	36.08	100	276	Peak
2386	43.02	-10.98	54	44.5	31.96	2.64	36.08	100	276	Average
2462	104.12	-	-	105.25	32.05	2.67	35.85	100	340	Peak
2462	92.44	-	-	93.57	32.05	2.67	35.85	100	340	Average
4924	42.72	-31.28	74	42	33.97	3.78	37.03	115	234	Peak
7386	46.04	-27.96	74	44.7	35.76	4.77	39.19	100	0	Peak

< Chain Port 1>

Test Mode :	802.11b	**Temperature :**	22~23°C
Test Channel :	01	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**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	106.62	-	-	108	31.98	2.66	36.02	100	296	Peak
2412	102.17	-	-	103.55	31.98	2.66	36.02	100	296	Average
4824	45.47	-28.53	74	44.27	34.07	3.78	36.65	102	247	Peak

Test Mode :	802.11b	**Temperature :**	22~23°C
Test Channel :	01	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**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	101.78	-	-	103.16	31.98	2.66	36.02	178	0	Peak
2412	97.43	-	-	98.81	31.98	2.66	36.02	178	0	Average
4824	45.23	-28.77	74	44.03	34.07	3.78	36.65	195	234	Peak

Test Mode :	802.11b	**Temperature :**	22~23°C
Test Channel :	06	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Horizontal
Remark :	2437 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
2356	59.60	-14.4	74	61.33	31.91	2.61	36.25	105	302	Peak
2356	52.79	-2.21	54	54.52	31.91	2.61	36.25	105	302	Average
2437	106.26	-	-	107.48	32.03	2.66	35.91	100	300	Peak
2437	101.78	-	-	103	32.03	2.66	35.91	100	300	Average
4874	47.77	-26.23	74	46.81	34.02	3.78	36.84	102	321	Peak
7312	48.34	-25.66	74	46.75	35.72	4.73	38.86	127	236	Peak

Test Mode :	802.11b	**Temperature :**	22~23°C
Test Channel :	06	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Vertical
Remark :	2437 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
2358	55.57	-18.43	74	57.29	31.91	2.62	36.25	100	225	Peak
2358	47.59	-26.41	54	49.31	31.91	2.62	36.25	100	225	Average
2437	102.28	-	-	103.5	32.03	2.66	35.91	182	243	Peak
2437	98.16	-	-	99.38	32.03	2.66	35.91	182	243	Average
4874	50.7	-23.30	74	49.74	34.02	3.78	36.84	114	235	Peak
7312	48.26	-25.74	74	46.67	35.72	4.73	38.86	102	258	Peak

Test Mode :	802.11b	**Temperature :**	22~23°C
Test Channel :	11	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Horizontal
Remark :	2462 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
2382	56.82	-17.18	74	58.41	31.93	2.64	36.16	128	235	Peak
2382	49.43	-4.57	54	51.02	31.93	2.64	36.16	128	235	Average
2462	104.13	-	-	105.26	32.05	2.67	35.85	100	306	Peak
2462	99.72	-	-	100.85	32.05	2.67	35.85	100	306	Average
4924	44.14	-29.86	74	43.42	33.97	3.78	37.03	102	330	Peak
7386	46.63	-27.37	74	45.29	35.76	4.77	39.19	115	234	Peak

Test Mode :	802.11b	**Temperature :**	22~23°C
Test Channel :	11	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Vertical
Remark :	2462 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
2384	54.41	-19.59	74	56	31.93	2.64	36.16	100	180	Peak
2384	44.43	-9.57	54	46.02	31.93	2.64	36.16	100	180	Average
2462	102.11	-	-	103.24	32.05	2.67	35.85	182	271	Peak
2462	97.33	-	-	98.46	32.05	2.67	35.85	182	271	Average
4924	43.37	-30.63	74	42.65	33.97	3.78	37.03	115	221	Peak
7386	46.27	-27.73	74	44.93	35.76	4.77	39.19	125	332	Peak

Test Mode :	802.11g	**Temperature :**	22~23°C
Test Channel :	01	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**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	104.70	-	-	106.08	31.98	2.66	36.02	121	307	Peak
2412	92.74	-	-	94.12	31.98	2.66	36.02	121	307	Average
4824	43.55	-30.45	74	42.35	34.07	3.78	36.65	102	332	Peak

Test Mode :	802.11g	**Temperature :**	22~23°C
Test Channel :	01	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**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	103.11	-	-	104.49	31.98	2.66	36.02	181	238	Peak
2412	90.6	-	-	91.98	31.98	2.66	36.02	181	238	Average
4824	46.07	-27.93	74	44.87	34.07	3.78	36.65	115	301	Peak

Test Mode :	802.11g	**Temperature :**	22~23°C
Test Channel :	06	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Horizontal
Remark :	2437 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
2360	62.33	-11.67	74	64.05	31.91	2.62	36.25	100	304	Peak
2360	50.29	-3.71	54	52.01	31.91	2.62	36.25	100	304	Average
2437	107.51	-	-	108.73	32.03	2.66	35.91	100	298	Peak
2437	95.81	-	-	97.03	32.03	2.66	35.91	100	298	Average
4874	42.69	-31.31	74	41.73	34.02	3.78	36.84	112	224	Peak
7312	46.03	-27.97	74	44.44	35.72	4.73	38.86	102	356	Peak

Test Mode :	802.11g	**Temperature :**	22~23°C
Test Channel :	06	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Vertical
Remark :	2437 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
2362	59.35	-14.65	74	61.07	31.91	2.62	36.25	100	221	Peak
2362	46.69	-7.31	54	48.41	31.91	2.62	36.25	100	221	Average
2437	100.14	-	-	101.36	32.03	2.66	35.91	179	224	Peak
2437	89.57	-	-	90.79	32.03	2.66	35.91	179	224	Average
4874	43.47	-30.53	74	42.51	34.02	3.78	36.84	187	204	Peak
7312	45.54	-28.46	74	43.95	35.72	4.73	38.86	125	236	Peak

Test Mode :	802.11g	**Temperature :**	22~23°C
Test Channel :	11	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Horizontal
Remark :	2462 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
2384	63.69	-10.31	74	65.28	31.93	2.64	36.16	104	301	Peak
2384	51.04	-2.96	54	52.63	31.93	2.64	36.16	104	301	Average
2462	106.56	-	-	107.69	32.05	2.67	35.85	100	302	Peak
2462	94.53	-	-	95.66	32.05	2.67	35.85	100	302	Average
4924	42.82	-31.18	74	42.1	33.97	3.78	37.03	148	264	Peak
7386	46.36	-27.64	74	45.02	35.76	4.77	39.19	112	305	Peak

Test Mode :	802.11g	**Temperature :**	22~23°C
Test Channel :	11	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Vertical
Remark :	2462 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
2380	60.55	-13.45	74	62.14	31.93	2.64	36.16	142	0	Peak
2380	47.82	-6.18	54	49.41	31.93	2.64	36.16	142	0	Average
2462	102.88	-	-	104.01	32.05	2.67	35.85	114	0	Peak
2462	91.67	-	-	92.8	32.05	2.67	35.85	114	0	Average
4924	42.84	-31.16	74	42.12	33.97	3.78	37.03	164	247	Peak
7386	46.37	-27.63	74	45.03	35.76	4.77	39.19	100	257	Peak

< Chain Port 0+1>

Test Mode :	802.11n HT20	**Temperature :**	22~23°C
Test Channel :	01	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**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	105.64	-	-	107.02	31.98	2.66	36.02	100	234	Peak
2412	94.35	-	-	95.73	31.98	2.66	36.02	100	234	Average
4824	44.67	-29.33	74	43.47	34.07	3.78	36.65	112	257	Peak

Test Mode :	802.11n HT20	**Temperature :**	22~23°C
Test Channel :	01	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**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	106.56	-	-	107.94	31.98	2.66	36.02	167	326	Peak
2412	94.43	-	-	95.81	31.98	2.66	36.02	167	326	Average
4824	45.45	-28.55	74	44.25	34.07	3.78	36.65	134	235	Peak

Test Mode :	802.11n HT20	**Temperature :**	22~23°C
Test Channel :	06	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Horizontal
Remark :	2437 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
2354	64.07	-9.93	74	65.8	31.91	2.61	36.25	103	312	Peak
2354	51.82	-2.18	54	53.55	31.91	2.61	36.25	103	312	Average
2437	105.31	-	-	106.53	32.03	2.66	35.91	100	241	Peak
2437	93.15	-	-	94.37	32.03	2.66	35.91	100	241	Average
4874	44.18	-29.82	74	43.22	34.02	3.78	36.84	104	224	Peak
7312	45.97	-28.03	74	44.38	35.72	4.73	38.86	114	225	Peak

Test Mode :	802.11n HT20	**Temperature :**	22~23°C
Test Channel :	06	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Vertical
Remark :	2437 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
2354	60.71	-13.29	74	62.44	31.91	2.61	36.25	102	173	Peak
2354	48.02	-5.98	54	49.75	31.91	2.61	36.25	102	173	Average
2437	104.19	-	-	105.41	32.03	2.66	35.91	186	241	Peak
2437	92.19	-	-	93.41	32.03	2.66	35.91	186	241	Average
4874	43.76	-30.24	74	42.8	34.02	3.78	36.84	147	235	Peak
7312	45.65	-28.35	74	44.06	35.72	4.73	38.86	100	58	Peak

Test Mode :	802.11n HT20	**Temperature :**	22~23°C
Test Channel :	11	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Horizontal
Remark :	2462 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
95.96	25.48	-18.02	43.5	47.7	9.95	0.43	32.6	-	-	Peak
172.59	31.77	-11.73	43.5	54.38	9.06	0.83	32.5	-	-	Peak
191.99	32.54	-10.96	43.5	55.54	8.76	0.71	32.47	100	25	Peak
240.49	30.26	-15.74	46	50.9	11	0.84	32.48	-	-	Peak
481.05	34.96	-11.04	46	48.61	17.3	1.22	32.17	-	-	Peak
960.23	32.56	-21.44	54	41.79	20.76	1.72	31.71	-	-	Peak
2378	62.72	-11.28	74	64.31	31.93	2.64	36.16	100	301	Peak
2378	51.87	-2.13	54	53.46	31.93	2.64	36.16	100	301	Average
2462	105.5	-	-	106.63	32.05	2.67	35.85	100	303	Peak
2462	94.09	-	-	95.22	32.05	2.67	35.85	100	303	Average
4924	42.92	-31.08	74	42.2	33.97	3.78	37.03	103	224	Peak
7386	45.56	-28.44	74	44.22	35.76	4.77	39.19	167	224	Peak

Test Mode :	802.11n HT20	**Temperature :**	22~23°C
Test Channel :	11	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Vertical
Remark :	2462 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
45.52	25.78	-14.22	40	48.48	9.65	0.31	32.66	-	-	Peak
98.87	33.22	-10.28	43.5	54.97	10.45	0.43	32.63	200	0	Peak
120.21	26.99	-16.51	43.5	47.15	11.9	0.58	32.64	-	-	Peak
171.62	25.88	-17.62	43.5	48.41	9.14	0.83	32.5	-	-	Peak
481.05	26.62	-19.38	46	40.27	17.3	1.22	32.17	-	-	Peak
563.5	29.1	-16.90	46	41.48	18.46	1.25	32.09	-	-	Peak
2378	59.93	-14.07	74	61.52	31.93	2.64	36.16	160	230	Peak
2378	47.36	-6.64	54	48.95	31.93	2.64	36.16	160	230	Average
2462	104.25	-	-	105.38	32.05	2.67	35.85	133	300	Peak
2462	91.94	-	-	93.07	32.05	2.67	35.85	133	300	Average
4924	45.63	-28.37	74	44.91	33.97	3.78	37.03	124	305	Peak
7386	47.42	-26.58	74	46.08	35.76	4.77	39.19	100	0	Peak

Test Mode :	802.11n HT40	**Temperature :**	22~23°C
Test Channel :	01	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**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	94.87	-	-	96.17	32	2.66	35.96	112	147	Peak
2422	84.11	-	-	85.41	32	2.66	35.96	112	147	Average
4844	44.01	-29.99	74	42.89	34.06	3.78	36.72	112	301	Peak
7266	45.12	-28.88	74	43.42	35.71	4.72	38.73	152	247	Peak

Test Mode :	802.11n HT40	**Temperature :**	22~23°C
Test Channel :	01	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**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	96.57	-	-	97.87	32	2.66	35.96	103	344	Peak
2422	85.69	-	-	86.99	32	2.66	35.96	103	344	Average
4844	43.73	-30.27	74	42.61	34.06	3.78	36.72	124	254	Peak
7266	44.76	-29.24	74	43.06	35.71	4.72	38.73	102	314	Peak

Test Mode :	802.11n HT40	**Temperature :**	22~23°C
Test Channel :	06	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**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	94.25	-	-	95.47	32.03	2.66	35.91	110	137	Peak
2437	82.89	-	-	84.11	32.03	2.66	35.91	110	137	Average
4874	42.91	-31.09	74	41.95	34.02	3.78	36.84	128	334	Peak
7312	45.72	-28.28	74	44.13	35.72	4.73	38.86	125	302	Peak

Test Mode :	802.11n HT40	**Temperature :**	22~23°C
Test Channel :	06	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**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	96.98	-	-	98.2	32.03	2.66	35.91	104	337	Peak
2437	85.88	-	-	87.1	32.03	2.66	35.91	104	337	Average
4874	42.92	-31.08	74	41.96	34.02	3.78	36.84	114	205	Peak
7312	45.51	-28.49	74	43.92	35.72	4.73	38.86	165	226	Peak

Test Mode :	802.11n HT40	**Temperature :**	22~23°C
Test Channel :	11	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**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	94.14	-	-	95.35	32.03	2.67	35.91	114	157	Peak
2452	81.85	-	-	83.06	32.03	2.67	35.91	114	157	Average
4904	42.52	-31.48	74	41.71	33.99	3.78	36.96	100	235	Peak
7356	46.26	-27.74	74	44.82	35.74	4.76	39.06	105	108	Peak

Test Mode :	802.11n HT40	**Temperature :**	22~23°C
Test Channel :	11	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**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	96.41	-	-	97.62	32.03	2.67	35.91	102	340	Peak
2452	84.88	-	-	86.09	32.03	2.67	35.91	102	340	Average
4904	43.76	-30.24	74	42.95	33.99	3.78	36.96	168	67	Peak
7356	45.71	-28.29	74	44.27	35.74	4.76	39.06	186	237	Peak

Test Mode :	802.11n HT20	**Temperature :**	22~23°C
Test Channel :	149	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Horizontal
Remark :	1. 5745 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
5745	99.45	-	-	99.35	34.6	4.18	38.68	100	234	Peak
5745	87.95	-	-	87.85	34.6	4.18	38.68	100	234	Average
11490	30.39	-43.61	74	55.96	4.47	6.32	36.36	100	0	Peak

Test Mode :	802.11n HT20	**Temperature :**	22~23°C
Test Channel :	149	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Vertical
Remark :	1. 5745 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
5745	92.6	-	-	92.5	34.6	4.18	38.68	100	224	Peak
5745	81.32	-	-	81.22	34.6	4.18	38.68	100	224	Average
11490	32.46	-41.54	74	58.03	4.47	6.32	36.36	102	86	Peak

For Sample 2

< Chain Port 0+1>

Test Mode :	802.11n HT20	**Temperature :**	22~23°C
Test Channel :	11	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Horizontal
Remark :	2462 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
2378	63.13	-10.87	74	64.72	31.93	2.64	36.16	100	301	Peak
2378	49.99	-4.01	54	51.58	31.93	2.64	36.16	100	301	Average
2462	104.6	-	-	105.73	32.05	2.67	35.85	100	299	Peak
2462	93.55	-	-	94.68	32.05	2.67	35.85	100	299	Average
4924	43.95	-30.05	74	43.23	33.97	3.78	37.03	100	25	Peak
7386	39.9	-34.10	74	38.56	35.76	4.77	39.19	100	68	Peak

Test Mode :	802.11n HT20	**Temperature :**	22~23°C
Test Channel :	11	**Relative Humidity :**	42~43%
Test Engineer :	Simon Liu	**Polarization :**	Vertical
Remark :	2462 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
2378	60.36	-13.64	74	61.95	31.93	2.64	36.16	113	286	Peak
2378	47.43	-6.57	54	49.02	31.93	2.64	36.16	113	286	Average
2462	104.12	-	-	105.25	32.05	2.67	35.85	152	284	Peak
2462	91.82	-	-	92.95	32.05	2.67	35.85	152	284	Average
4924	44.04	-29.96	74	43.32	33.97	3.78	37.03	100	158	Peak
7386	39.61	-34.39	74	38.27	35.76	4.77	39.19	101	228	Peak

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.

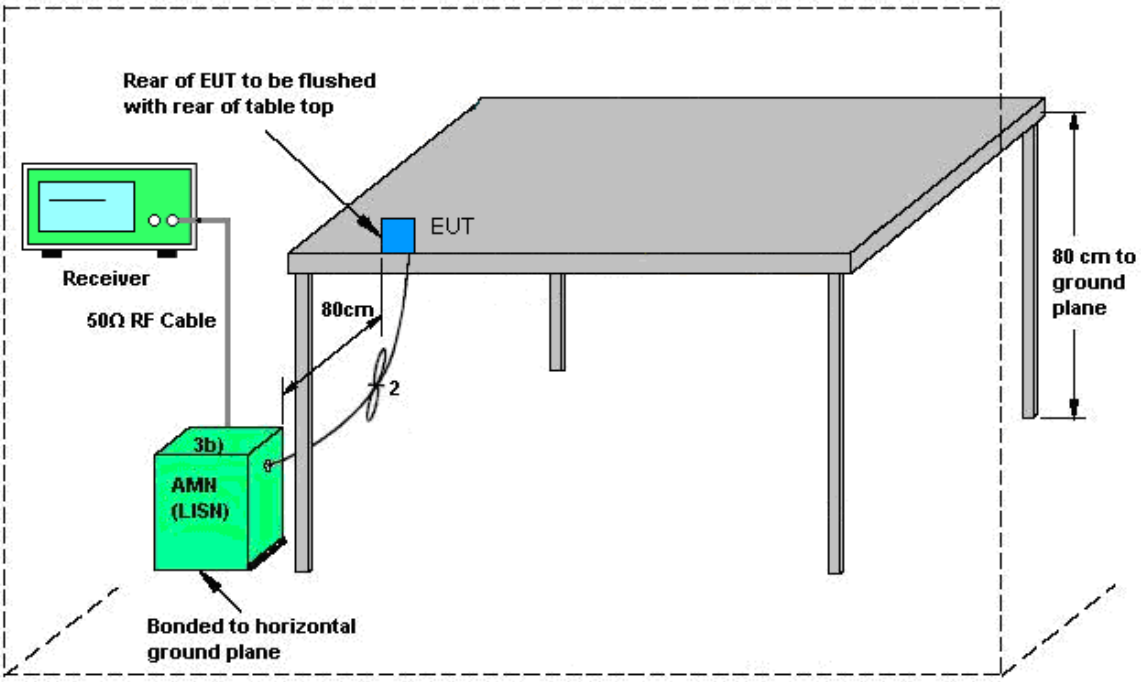
3.6.2 Measuring Instruments

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.

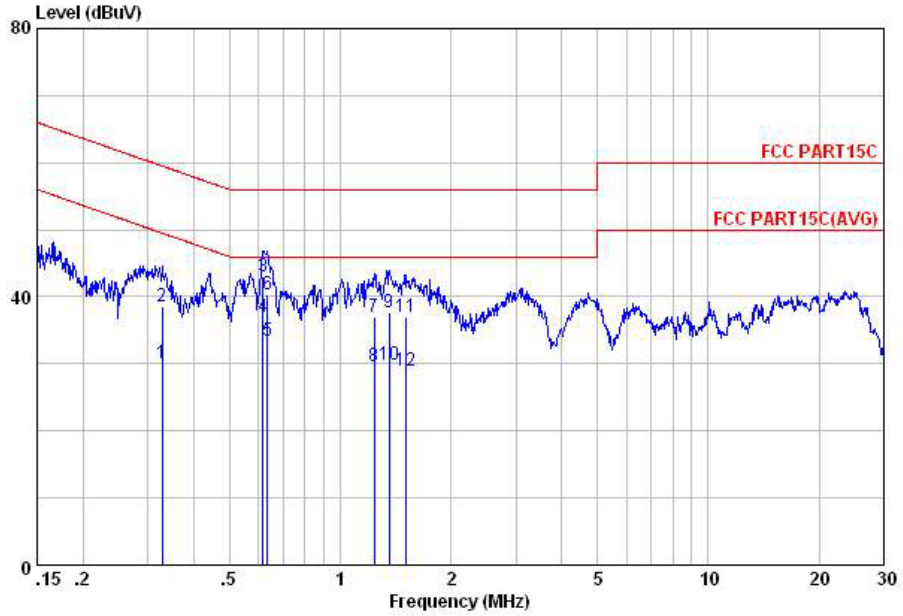
3.6.4 Test Setup



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

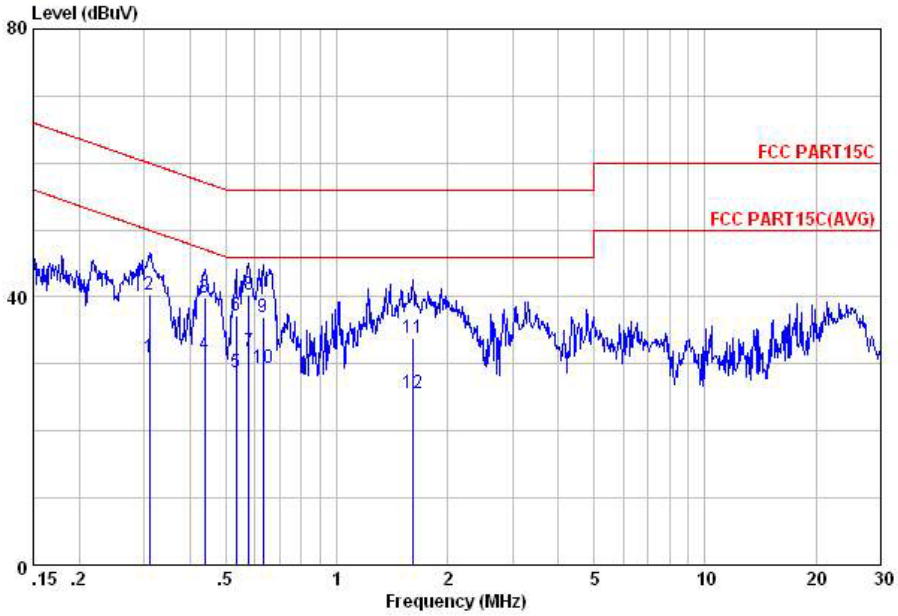
Test Mode :	Mode 2	**Temperature :**	22~24℃
Test Engineer :	Eligah Wang	**Relative Humidity :**	37~39%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	Bluetooth Link + WLAN (2.4G) Link + USB Cable 2 (Charging from Adapter 2) + Battery 2 + Earphone for Sample 2		



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

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.33	30.16	-19.33	49.49	19.30	0.52	10.34	Average
2	0.33	38.46	-21.03	59.49	27.60	0.52	10.34	QP
3	0.62	43.04	-12.96	56.00	32.60	0.20	10.24	QP
4	0.62	37.04	-8.96	46.00	26.60	0.20	10.24	Average
5	0.63	33.33	-12.67	46.00	22.90	0.20	10.23	Average
6	0.63	40.33	-15.67	56.00	29.90	0.20	10.23	QP
7	1.24	36.98	-19.02	56.00	26.70	0.10	10.18	QP
8	1.24	29.58	-16.42	46.00	19.30	0.10	10.18	Average
9	1.36	37.58	-18.42	56.00	27.30	0.10	10.18	QP
10	1.36	29.88	-16.12	46.00	19.60	0.10	10.18	Average
11	1.50	36.89	-19.11	56.00	26.60	0.10	10.19	QP
12	1.50	28.89	-17.11	46.00	18.60	0.10	10.19	Average

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 (2.4G) Link + USB Cable 2 (Charging from Adapter 2) + Battery 2 + Earphone for Sample 2		



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

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.31	30.95	-19.02	49.97	19.90	0.68	10.37	Average
2	0.31	40.35	-19.62	59.97	29.30	0.68	10.37	QP
3	0.44	39.93	-17.18	57.11	29.30	0.36	10.27	QP
4	0.44	31.53	-15.58	47.11	20.90	0.36	10.27	Average
5	0.53	28.84	-17.16	46.00	18.29	0.29	10.26	Average
6	0.53	37.14	-18.86	56.00	26.59	0.29	10.26	QP
7	0.58	31.91	-14.09	46.00	21.40	0.26	10.25	Average
8	0.58	40.41	-15.59	56.00	29.90	0.26	10.25	QP
9	0.63	37.06	-18.94	56.00	26.60	0.23	10.23	QP
10	0.63	29.36	-16.64	46.00	18.90	0.23	10.23	Average
11	1.61	33.89	-22.11	56.00	23.60	0.10	10.19	QP
12	1.61	25.59	-20.41	46.00	15.30	0.10	10.19	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

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

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.

	Chain Port 0 (dBi)	Chain Port 1 (dBi)	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
2.4 GHz	0.00	-0.50	2.76	2.76	0.00	0.00
5 GHz	0.50	0.00	3.26	3.26	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~ Aug. 03, 2014	Dec. 27, 2014	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	30MHz~40GHz	Feb. 27, 2014	Jul. 04, 2014~ Aug. 03, 2014	Feb. 26, 2015	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Feb. 27, 2014	Jul. 04, 2014~ Aug. 03, 2014	Feb. 26, 2015	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 05, 2013	Aug. 05, 2014	Nov. 04, 2014	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 28, 2013	Aug. 05, 2014	Dec. 27, 2014	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 09, 2013	Aug. 05, 2014	Oct. 08, 2014	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Jan. 08, 2014	Aug. 05, 2014	Jan. 07, 2015	Radiation (03CH01-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75959	1GHz~18GHz	Jan. 08, 2014	Aug. 05, 2014	Jan. 07, 2015	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701030	1GHz~18GHz	Nov. 18, 2013	Aug. 05, 2014	Nov. 17, 2014	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Mar. 10, 2014	Aug. 05, 2014	Mar. 09, 2015	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161073	1MHz~1GHz	May 04, 2014	Aug. 05, 2014	May 03, 2015	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02371	1GHz~26.5GHz	Dec. 10, 2013	Aug. 05, 2014	Dec. 09, 2014	Radiation (03CH01-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Aug. 05, 2014	NCR	Radiation (03CH01-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Aug. 05, 2014	NCR	Radiation (03CH01-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Aug. 05, 2014	NCR	Radiation (03CH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	May 04, 2014	Jul. 25, 2014	May 03, 2015	Conduction (CO01-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