



# FCC RF Test Report

**APPLICANT** : Lenovo (Shanghai) Electronics Technology Co., Ltd.  
**EQUIPMENT** : Portable Tablet Computer  
**BRAND NAME** : Lenovo  
**MODEL NAME** : Lenovo YB1-X90F  
**FCC ID** : O57YB1X90F  
**STANDARD** : FCC Part 15 Subpart E §15.407  
**CLASSIFICATION** : (NII) Unlicensed National Information Infrastructure

The product was received on Dec. 07, 2015 and testing was completed on Jan. 31, 2016. 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.

*James Huang*

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Prepared by: James Huang / Manager



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Approved by: Jones Tsai / Manager

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



# TABLE OF CONTENTS

**REVISION HISTORY..... 3**

**SUMMARY OF TEST RESULT ..... 4**

**1 GENERAL DESCRIPTION ..... 5**

    1.1 Applicant ..... 5

    1.2 Manufacturer ..... 5

    1.3 Feature of Equipment Under Test ..... 5

    1.4 Product Specification of Equipment Under Test..... 6

    1.5 Component List..... 8

    1.6 Modification of EUT ..... 9

    1.7 Testing Location ..... 9

    1.8 Applicable Standards..... 9

**2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST ..... 10**

    2.1 Carrier Frequency Channel ..... 10

    2.2 Pre-Scanned RF Power ..... 11

    2.3 Test Mode ..... 17

    2.4 Connection Diagram of Test System ..... 20

    2.5 Support Unit used in test configuration and system ..... 21

    2.6 EUT Operation Test Setup ..... 21

    2.7 Measurement Results Explanation Example..... 22

**3 TEST RESULT ..... 23**

    3.1 26dB & 99% Occupied Bandwidth Measurement ..... 23

    3.2 Maximum Conducted Output Power Measurement ..... 25

    3.3 Power Spectral Density Measurement ..... 27

    3.4 Unwanted Radiated Emission Measurement ..... 30

    3.5 AC Conducted Emission Measurement..... 36

    3.6 Frequency Stability Measurement ..... 40

    3.7 Automatically Discontinue Transmission ..... 41

    3.8 Antenna Requirements ..... 42

**4 LIST OF MEASURING EQUIPMENTS..... 44**

**5 UNCERTAINTY OF EVALUATION ..... 45**

**APPENDIX A. CONDUCTED TEST RESULTS**

**APPENDIX B. RADIATED TEST RESULTS**

**APPENDIX C. SETUP PHOTOGRAPHS**



### REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR5N3007-01D	Rev. 01	Initial issue of report	Feb. 15, 2016



## SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	2.1049 15.403(j)	RSS-247 Section 6	26dB & 99% Bandwidth	-	Pass	-
3.2	15.407(a)	RSS-247 Section 6	Maximum Conducted Output Power	FCC ≤24 dBm (depend on band) IC RSS-247 Section 6 Limit	Pass	-
3.3	15.407(a)	RSS-247 Section 6	Power Spectral Density	FCC ≤11 dBm (depend on band) IC RSS-247 Section 6 Limit	Pass	-
3.4	15.407(b)	RSS-247 Section 6	Unwanted Emissions	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	Under limit 1.59 dB at 5113.550 MHz
3.5	15.207	RSS-Gen 8.8	AC Conducted Emission	15.207(a)	Pass	Under limit 5.29 dB at 1.460 MHz
3.6	15.407(g)	-	Frequency Stability	Within Operation Band	Pass	-
3.7	15.407(c)	RSS-247 6.4(2)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.8	15.203 & 15.407(a)	N/A	Antenna Requirement	N/A	Pass	-



# 1 General Description

## 1.1 Applicant

Lenovo (Shanghai) Electronics Technology Co., Ltd.

NO.68 BUILDING, 199 FENJU RD, China (Shanghai) Pilot Free Trade Zone, 200131, CHINA

## 1.2 Manufacturer

Lenovo PC HK Limited

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

## 1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Portable Tablet Computer
Brand Name	Lenovo
Model Name	Lenovo YB1-X90F
FCC ID	O57YB1X90F
EUT supports Radios application	WLAN2.4GHz 802.11b/g/n HT20/ WLAN5GHz 802.11a/n HT20/HT40/ WLAN5GHz 802.11ac VHT20/VHT40/VHT80/ Bluetooth v3.0+EDR/Bluetooth v4.0 LE
HW Version	Lenovo YB1-X90F
SW Version	YB1-X90F_151203
EUT Stage	Identical Prototype

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.



### 1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
<b>Tx/Rx Frequency Range</b>	5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz 5500 MHz ~ 5700 MHz
<b>Maximum Output Power to Antenna</b>	<p><b>&lt;5180 MHz ~ 5240 MHz&gt;</b>  802.11a : 16.10 dBm / 0.0407 W  802.11n HT20 : 12.94 dBm / 0.0197 W  802.11n HT40 : 13.20 dBm / 0.0209 W  802.11ac VHT20 : 15.22 dBm / 0.0333 W  802.11ac VHT40 : 12.06 dBm / 0.0161 W  802.11ac VHT80 : 12.98 dBm / 0.0199 W</p> <p><b>&lt;5260 MHz ~ 5320 MHz&gt;</b>  802.11a : 16.06 dBm / 0.0404 W  802.11n HT20 : 12.97 dBm / 0.0198 W  802.11n HT40 : 14.42 dBm / 0.0277 W  802.11ac VHT20 : 15.13 dBm / 0.0326 W  802.11ac VHT40 : 13.26 dBm / 0.0212 W  802.11ac VHT80 : 13.95 dBm / 0.0248 W</p> <p><b>&lt;5500 MHz ~ 5700 MHz&gt;</b>  802.11a : 16.28 dBm / 0.0425 W  802.11n HT20 : 13.34 dBm / 0.0216 W  802.11n HT40 : 14.02 dBm / 0.0252 W  802.11ac VHT20 : 14.65 dBm / 0.0292 W  802.11ac VHT40 : 13.62 dBm / 0.0230 W  802.11ac VHT80 : 12.43 dBm / 0.0175 W</p>
<b>99% Occupied Bandwidth</b>	<p><b>&lt;5180 MHz ~ 5240 MHz&gt;</b>  802.11a : 18.28 MHz  802.11n HT20 : 19.33 MHz  802.11n HT40 : 36.76 MHz  802.11ac VHT20: 18.88 MHz  802.11ac VHT40 : 36.96 MHz  802.11ac VHT80 : 75.88 MHz</p> <p><b>&lt;5260 MHz ~ 5320 MHz&gt;</b>  802.11a : 18.08 MHz  802.11n HT20 : 19.03 MHz  802.11n HT40 : 36.76 MHz  802.11ac VHT20: 18.88 MHz  802.11ac VHT40 : 36.86 MHz  802.11ac VHT80 : 75.88 MHz</p> <p><b>&lt;5500 MHz ~ 5700 MHz&gt;</b>  802.11a : 18.18 MHz  802.11n HT20 : 19.03 MHz  802.11n HT40 : 36.86 MHz  802.11ac VHT20: 19.03 MHz  802.11ac VHT40 : 36.96 MHz  802.11ac VHT80 : 75.88 MHz</p>



<b>Antenna Type</b>	PIFA Antenna		
<b>Antenna Gain</b>	<p>&lt;5180 MHz ~ 5240 MHz&gt;:            Chain Port 1 : 0.63 dBi            Chain Port 2 : 0.03 dBi            &lt;5260 MHz ~ 5320 MHz&gt;:            Chain Port 1 : 1.20 dBi            Chain Port 2 : 0.10 dBi            &lt;5500 MHz ~ 5700 MHz&gt;:            Chain Port 1 : 0.09 dBi            Chain Port 2 : -1.58 dBi</p>		
<b>Type of Modulation</b>	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)		
<b>Antenna Function Description</b>		Chain Port 1	Chain Port 2
	802.11a	V	V
	802.11n/ac SISO	V	V
	802.11n/ac MIMO	V	V



### 1.5 Component List

**Note:** There are two types of EUT, the details refer the following table. According to the difference, we evaluate is not affect RF performance, so only choose sample 1 to perform RF test.

Component	Sample 1	Sample 2
CPU	Intel Cherry Trail-T4	Intel Cherry Trail-T4
Flash	Samsung KLMBG4WEBD-B031	Toshiba THGBMFG9C4LBAIR
LCD	INX P101KDA-AK0;10.1;IPS;1200×1920;MIPI;2.5	AUO B101UAN07.1;10.1;IPS1200×1920MIPI;2.5
TP	O-Film TP_GFF_OF/MCF-101-2292	GIS TP_GFF_GIS/TC101GFL11 V.A
Front Camera	Primax CCM L202V 2M OV2740 COB 24PIN BtoB	Ofilm CCM L2740F00 2M OV2740 COB 24PIN BtoB
Back Camera	Ofilm CCM L8858A20 8M OV8858 COB 31PIN ZIF	Ofilm CCM L8858A20 8M OV8858 COB 31PIN ZIF
Battery	CELXPERT L15C2P31 3.8V;32.3Wh;8500mAh; 2cell bty	CELXPERT L15C2P31 3.8V;32.3Wh;8500mAh; 2cell bty





### 1.6 Modification of EUT

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

### 1.7 Testing Location

<b>Test Site</b>	SPORTON INTERNATIONAL (KUNSHAN) INC.			
<b>Test Site Location</b>	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958			
<b>Test Site No.</b>	<b>Sporton Site No.</b>			<b>FCC/IC Registration No.</b>
	TH01-KS	CO01-KS	03CH03-KS	306251/4086E

**Note:** The test site complies with ANSI C63.4 2014 requirement.

### 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 E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v01
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- FCC KDB 644545 D03 Guidance for IEEE 802 11ac New Rules v01
- ANSI C63.10-2013

**Remark:**

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



## 2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.

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

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

### 2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5180- 5240 MHz Band 1 (U-NII-1)	36	5180	44	5220
	<b>38</b>	<b>5190</b>	<b>46</b>	<b>5230</b>
	40	5200	48	5240
	42	5210		

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5260-5320 MHz Band 2 (U-NII-2A)	52	5260	60	5300
	<b>54</b>	<b>5270</b>	<b>62</b>	<b>5310</b>
	56	5280	64	5320
	58	5290		

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5500-5700 MHz Band 3 (U-NII-2C)	100	5500	112	5560
	<b>102</b>	<b>5510</b>	116	5580
	104	5520	132	5660
	106	5530	<b>134</b>	<b>5670</b>
	108	5540	136	5680
	<b>110</b>	<b>5550</b>	140	5700

**Note:** The above Frequency and Channel in boldface were 802.11n HT40.



## 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 in the following tables. Final Output Power equals to Measured Output Power adds the duty factor.

WLAN 5GHz 802.11a Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain Port	Data Rate	Channel	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
			6Mbps								
CH 36	5180	1	14.56	CH 48	15.20	15.32	15.27	15.55	15.46	14.99	15.53
CH 44	5220	1	15.01							15.32	
CH 48	5240	1	15.28							<b>15.72</b>	
CH 52	5260	1	14.96	CH 64	15.26	15.29	15.31	15.46	15.31	15.27	15.37
CH 60	5300	1	15.11							15.56	
CH 64	5320	1	15.15							<b>15.59</b>	
CH 100	5500	1	15.75	CH 140	15.65	15.64	15.77	15.86	15.76	16.01	15.91
CH 116	5580	1	15.68							16.11	
CH 140	5700	1	15.78							<b>16.14</b>	
CH 36	5180	2	15.14	CH 48	15.70	15.73	15.77	15.92	16.01	15.45	16.08
CH 44	5220	2	15.53							15.90	
CH 48	5240	2	15.71							<b>16.10</b>	
CH 52	5260	2	15.52	CH 64	15.67	15.67	15.53	15.73	15.91	15.78	15.88
CH 60	5300	2	15.75							16.03	
CH 64	5320	2	15.82							<b>16.06</b>	
CH 100	5500	2	15.98	CH 100	15.88	15.95	15.96	16.15	16.14	<b>16.28</b>	16.03
CH 116	5580	2	15.86							16.21	
CH 140	5700	2	15.56							15.73	



WLAN 5GHz 802.11n-HT20 Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain Port	MCS Index	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
			MCS0								
CH 36	5180	1	12.28	CH 48	12.38	12.16	12.46	12.65	12.64	12.59	12.52
CH 44	5220	1	12.30								12.66
CH 48	5240	1	12.33								12.68
CH 52	5260	1	12.34	CH 64	12.47	12.50	12.74	12.81	12.75	12.77	12.74
CH 60	5300	1	12.44								12.67
CH 64	5320	1	12.51								12.83
CH 100	5500	1	13.00	CH 100	12.84	12.94	13.19	13.21	13.16	13.15	13.25
CH 116	5580	1	12.73								13.06
CH 140	5700	1	12.84								13.20
CH 36	5180	2	11.73	CH 48	11.62	11.58	11.91	12.01	12.03	11.89	12.03
CH 44	5220	2	11.69								11.93
CH 48	5240	2	11.84								12.05
CH 52	5260	2	11.77	CH 64	11.79	11.80	12.15	12.03	12.16	12.11	12.09
CH 60	5300	2	11.73								12.05
CH 64	5320	2	11.94								12.19
CH 100	5500	2	12.84	CH 100	12.79	12.73	12.91	12.93	13.03	13.04	13.13
CH 116	5580	2	12.46								12.84
CH 140	5700	2	12.40								12.73
Channel	Frequency (MHz)	Chain Port	MCS Index	Channel	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
			MCS8								
CH 36	5180	1+2(1)	9.21	CH 48	9.49	9.31	9.63	9.67	9.72	9.57	9.47
CH 44	5220	1+2(1)	9.46								9.66
CH 48	5240	1+2(1)	9.48								9.74
CH 52	5260	1+2(1)	9.28	CH 64	9.35	9.34	9.69	9.59	9.66	9.60	9.54
CH 60	5300	1+2(1)	9.37								9.61
CH 64	5320	1+2(1)	9.53								9.71
CH 100	5500	1+2(1)	10.10	CH 100	9.89	9.88	10.11	10.18	10.22	10.23	10.38
CH 116	5580	1+2(1)	9.76								10.20
CH 140	5700	1+2(1)	9.78								10.09
CH 36	5180	1+2(2)	9.86	CH 48	9.76	9.78	10.09	10.08	9.95	9.98	10.07
CH 44	5220	1+2(2)	9.78								10.02
CH 48	5240	1+2(2)	9.88								10.11
CH 52	5260	1+2(2)	9.92	CH 64	9.94	9.74	10.09	10.18	10.19	10.08	10.15
CH 60	5300	1+2(2)	9.78								10.11
CH 64	5320	1+2(2)	9.95								10.20
CH 100	5500	1+2(2)	9.81	CH 100	9.93	9.96	10.22	10.26	10.19	10.15	10.28
CH 116	5580	1+2(2)	9.65								10.13
CH 140	5700	1+2(2)	9.52								9.84
CH 36	5180	1+2	12.55	CH 48	12.64	12.56	12.88	12.89	12.85	12.79	12.79
CH 44	5220	1+2	12.63								12.86
CH 48	5240	1+2	12.69								12.94
CH 52	5260	1+2	12.62	CH 64	12.66	12.55	12.90	12.91	12.94	12.86	12.87
CH 60	5300	1+2	12.59								12.88
CH 64	5320	1+2	12.75								12.97
CH 100	5500	1+2	12.97	CH 100	12.92	12.93	13.18	13.23	13.21	13.20	13.34
CH 116	5580	1+2	12.71								13.18
CH 140	5700	1+2	12.66								12.98



WLAN 5GHz 802.11n-HT40 Average Power (dBm)																		
Power vs. Channel				Power vs. Data Rate														
Channel	Frequency (MHz)	Chain Port	MCS Index	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7							
			MCS0															
CH 38	5190	1	11.74	CH 46	12.04	12.02	12.19	12.17	12.25	12.23	11.82							
CH 46	5230	1	12.14								12.28							
CH 54	5270	1	11.83								CH 62	11.97	12.03	12.21	12.12	12.06	12.15	11.87
CH 62	5310	1	12.09															12.22
CH 102	5510	1	11.86															11.92
CH 110	5550	1	11.73								CH 102	11.85	11.72	11.78	11.87	11.88	11.90	11.86
CH 134	5670	1	11.47															11.52
CH 38	5190	2	11.17	CH 46	11.46	11.36	11.62	11.58	11.54	11.60	11.33							
CH 46	5230	2	11.55								11.65							
CH 54	5270	2	11.18								CH 62	11.50	11.48	11.53	11.59	11.56	11.52	11.29
CH 62	5310	2	11.45															11.62
CH 102	5510	2	11.74															11.79
CH 110	5550	2	11.69								CH 102	11.71	11.66	11.77	11.68	11.75	11.73	11.75
CH 134	5670	2	11.24															11.52
Channel	Frequency (MHz)	Chain Port	MCS Index MCS8	Channel	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15							
CH 38	5190	1+2(1)	9.63	CH 46	9.67	9.73	9.80	9.88	9.90	9.89	9.84							
CH 46	5230	1+2(1)	9.70								9.92							
CH 54	5270	1+2(1)	10.58								CH 62	10.93	10.85	11.13	11.15	11.11	11.09	10.84
CH 62	5310	1+2(1)	10.95															11.18
CH 102	5510	1+2(1)	10.68															10.72
CH 110	5550	1+2(1)	10.87								CH 110	10.74	10.69	10.82	10.95	10.75	10.80	10.99
CH 134	5670	1+2(1)	10.41															10.68
CH 38	5190	1+2(2)	10.14	CH 46	10.19	10.23	10.29	10.36	10.34	10.43	10.34							
CH 46	5230	1+2(2)	10.31								10.45							
CH 54	5270	1+2(2)	11.23								CH 62	11.40	11.43	11.53	11.57	11.44	11.61	11.36
CH 62	5310	1+2(2)	11.50															11.64
CH 102	5510	1+2(2)	10.78															10.87
CH 110	5550	1+2(2)	10.85								CH 110	10.84	10.83	10.96	10.82	11.00	11.01	11.04
CH 134	5670	1+2(2)	10.38															10.41
CH 38	5190	1+2	12.90	CH 46	12.95	13.00	13.06	13.14	13.13	13.18	13.10							
CH 46	5230	1+2	13.02								13.20							
CH 54	5270	1+2	13.93								CH 62	14.18	14.16	14.34	14.38	14.29	14.37	14.11
CH 62	5310	1+2	14.24															14.42
CH 102	5510	1+2	13.74															13.80
CH 110	5550	1+2	13.87								CH 110	13.80	13.77	13.90	13.90	13.89	13.92	14.02
CH 134	5670	1+2	13.40															13.55



WLAN 5GHz 802.11ac VHT20 Average Power (dBm)																				
Power vs. Channel				Power vs. Data Rate																
Channel	Frequency (MHz)	Chain Port	MCS Index	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8								
			MCS0																	
CH 36	5180	1	11.16	CH 48	11.61	11.68	12.02	12.00	12.01	11.96	11.94	11.48								
CH 44	5220	1	11.60									11.83								
CH 48	5240	1	11.69									12.06								
CH 52	5260	1	11.16									11.47								
CH 60	5300	1	11.57									CH 64	11.74	11.64	11.96	11.93	11.94	11.89	11.92	11.91
CH 64	5320	1	11.76																	12.18
CH 100	5500	1	11.41																	11.75
CH 116	5580	1	11.37									CH 100	11.42	11.33	11.61	11.71	11.69	11.66	11.63	11.67
CH 140	5700	1	11.18																	11.50
CH 36	5180	2	11.46	CH 48	11.94	11.89	12.22	12.31	12.34	12.35	12.29									11.90
CH 44	5220	2	11.93									12.22								
CH 48	5240	2	12.03									12.40								
CH 52	5260	2	11.58									CH 64	11.79	11.87	12.10	12.14	12.13	12.06	12.09	11.96
CH 60	5300	2	11.93																	12.12
CH 64	5320	2	11.99																	12.16
CH 100	5500	2	11.36									CH 100	11.23	11.28	11.49	11.55	11.61	11.62	11.56	11.64
CH 116	5580	2	11.23																	11.43
CH 140	5700	2	10.72																	11.21
CH 36	5180	1+2(1)	11.12	CH 48	11.76	11.50	12.03	12.12	12.00	12.01	12.04	11.46								
CH 44	5220	1+2(1)	11.48									11.82								
CH 48	5240	1+2(1)	11.63									12.14								
CH 52	5260	1+2(1)	11.22									CH 64	11.70	11.77	11.81	11.93	11.91	11.98	11.96	11.60
CH 60	5300	1+2(1)	11.60																	11.94
CH 64	5320	1+2(1)	11.63																	12.00
CH 100	5500	1+2(1)	11.45									CH 100	11.56	11.31	11.55	11.67	11.56	11.51	11.59	11.72
CH 116	5580	1+2(1)	11.05																	11.58
CH 140	5700	1+2(1)	11.08																	11.55
CH 36	5180	1+2(2)	11.45	CH 48	12.07	12.07	12.24	12.26	12.19	12.15	12.20	11.83								
CH 44	5220	1+2(2)	11.76									12.15								
CH 48	5240	1+2(2)	11.97									12.28								
CH 52	5260	1+2(2)	11.56									CH 64	11.83	11.98	12.13	12.20	12.22	12.19	12.17	11.88
CH 60	5300	1+2(2)	11.90																	12.11
CH 64	5320	1+2(2)	12.12																	12.24
CH 100	5500	1+2(2)	11.38									CH 100	11.28	11.39	11.46	11.48	11.54	11.49	11.52	11.55
CH 116	5580	1+2(2)	11.22																	11.51
CH 140	5700	1+2(2)	11.07																	11.12
CH 36	5180	1+2	14.30	CH 48	14.93	14.80	15.15	15.21	15.10	15.09	15.13	14.66								
CH 44	5220	1+2	14.63									15.00								
CH 48	5240	1+2	14.81									15.22								
CH 52	5260	1+2	14.40									CH 64	14.78	14.88	14.99	15.08	15.08	15.10	15.08	14.75
CH 60	5300	1+2	14.76																	15.04
CH 64	5320	1+2	14.89																	15.13
CH 100	5500	1+2	14.42									CH 100	14.44	14.36	14.52	14.59	14.56	14.51	14.57	14.65
CH 116	5580	1+2	14.14																	14.56
CH 140	5700	1+2	14.08																	14.35



WLAN 5GHz 802.11ac VHT40 Average Power (dBm)													
Power vs. Channel				Power vs. Data Rate									
Channel	Frequency (MHz)	Chain Port	MCS Index MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
CH 38	5190	1	10.87	CH 46	10.79	10.71	11.03	11.05	10.94	11.00	10.87	10.98	10.94
CH 46	5230	1	10.97										11.08
CH 54	5270	1	11.82	CH 62	12.07	12.06	12.03	12.29	12.27	12.28	12.14	12.19	12.08
CH 62	5310	1	12.08										12.30
CH 102	5510	1	11.75	CH 102	11.82	11.80	11.85	11.88	11.91	11.75	11.71	11.89	11.99
CH 110	5550	1	11.69										11.93
CH 134	5670	1	11.60										11.86
CH 38	5190	2	11.09										CH 46
CH 46	5230	2	11.53	11.54									
CH 54	5270	2	11.16	CH 62	11.33	11.38	11.46	11.43	11.47	11.49	11.51	11.46	11.22
CH 62	5310	2	11.48										11.53
CH 102	5510	2	11.79	CH 102	11.66	11.71	11.70	11.78	11.75	11.76	11.69	11.68	11.81
CH 110	5550	2	11.62										11.75
CH 134	5670	2	11.21										11.38
CH 38	5190	1+2(1)	8.52										CH 46
CH 46	5230	1+2(1)	8.57	8.84									
CH 54	5270	1+2(1)	9.62	CH 62	9.64	9.68	9.90	9.86	9.72	9.79	9.84	9.99	9.82
CH 62	5310	1+2(1)	9.66										10.03
CH 102	5510	1+2(1)	10.33	CH 102	10.38	10.49	10.40	10.32	10.39	10.41	10.50	10.55	10.58
CH 110	5550	1+2(1)	10.30										10.52
CH 134	5670	1+2(1)	10.00										10.27
CH 38	5190	1+2(2)	9.12										CH 46
CH 46	5230	1+2(2)	9.17	9.25									
CH 54	5270	1+2(2)	10.31	CH 62	10.28	10.29	10.34	10.39	10.42	10.44	10.31	10.38	10.39
CH 62	5310	1+2(2)	10.36										10.47
CH 102	5510	1+2(2)	10.50	CH 102	10.33	10.39	10.62	10.42	10.52	10.61	10.50	10.43	10.65
CH 110	5550	1+2(2)	10.48										10.61
CH 134	5670	1+2(2)	9.71										9.79
CH 38	5190	1+2	11.84										CH 46
CH 46	5230	1+2	11.89	12.06									
CH 54	5270	1+2	12.99	CH 62	12.98	13.00	13.13	13.14	13.09	13.14	13.09	13.20	13.12
CH 62	5310	1+2	13.04										13.26
CH 102	5510	1+2	13.43	CH 102	13.37	13.45	13.52	13.38	13.46	13.52	13.51	13.50	13.62
CH 110	5550	1+2	13.41										13.57
CH 134	5670	1+2	12.87										13.04



WLAN 5GHz 802.11ac VHT80 Average Power (dBm)													
Power vs. Channel				Power vs. Data Rate									
Channel	Frequency (MHz)	Chain Port	MCS Index	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
			MCS0										
CH 42	5210	1	11.36	CH 42	11.26	11.31	11.67	11.71	11.70	11.66	11.69	11.77	11.79
CH 58	5290	1	11.43	CH 58	11.36	11.41	11.71	11.78	11.68	11.72	11.62	11.74	11.81
CH 106	5530	1	11.06	CH 122	11.20	11.27	11.63	11.67	11.70	11.65	11.64	11.68	11.59
CH 122	5610	1	11.33										11.71
CH 42	5210	2	11.78	CH 42	11.77	11.74	12.05	12.07	11.98	12.09	12.02	12.06	12.12
CH 58	5290	2	11.88	CH 58	11.75	11.83	12.06	12.10	12.03	12.05	11.99	12.12	12.18
CH 106	5530	2	11.20	CH 122	11.15	11.25	11.41	11.45	11.48	11.51	11.46	11.49	11.38
CH 122	5610	2	11.29										11.53
CH 42	5210	1+2(1)	9.24	CH 42	9.15	9.11	9.43	9.55	9.57	9.66	9.58	9.68	9.74
CH 58	5290	1+2(1)	10.20	CH 58	10.31	10.40	10.60	10.53	10.65	10.72	10.58	10.67	10.75
CH 106	5530	1+2(1)	8.78	CH 122	8.83	8.87	9.17	9.06	9.13	9.20	9.10	9.18	9.22
CH 122	5610	1+2(1)	8.70										9.25
CH 42	5210	1+2(2)	9.69	CH 42	9.73	9.79	10.07	10.17	9.99	10.15	10.05	10.18	10.20
CH 58	5290	1+2(2)	10.72	CH 58	10.79	10.78	11.08	11.11	11.01	11.06	11.02	11.09	11.13
CH 106	5530	1+2(2)	9.19	CH 106	9.16	9.20	9.59	9.56	9.47	9.57	9.44	9.58	9.62
CH 122	5610	1+2(2)	8.90										9.38
CH 42	5210	1+2	12.48	CH 42	12.46	12.47	12.77	12.88	12.79	12.92	12.83	12.94	12.98
CH 58	5290	1+2	13.48	CH 58	13.57	13.60	13.86	13.84	13.84	13.90	13.82	13.89	13.95
CH 106	5530	1+2	12.00	CH 106	12.01	12.05	12.40	12.33	12.31	12.39	12.28	12.39	12.43
CH 122	5610	1+2	11.81										12.32

**Note:** Chain Port 1+2 is a calculated result from sum of the power Chain Port 1+2(1) and Chain Port 1+2(2).





### 2.3 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates from the power table described in section 2.2.

Modulation	Data Rate
802.11a	48 Mbps
802.11n HT20	MCS7/MCS15
802.11n HT40	MCS7/MCS15
802.11ac VHT20	MCS8
802.11ac VHT40	MCS9
802.11ac VHT80	MCS9

Test Cases	
<b>AC Conducted Emission</b>	Mode 1 : Bluetooth Link + WLAN (5GHz) Link + Earphone + USB Cable 1 (Charging from Adapter 12V) for Sample 1 Mode 2 : Bluetooth Link + WLAN (5GHz) Link + Earphone + USB Cable 2 (Charging from Adapter 5.2V) for Sample 2
<b>Remark:</b> 1. For Radiated TCs, the tests were performed with adapter, earphone and USB cable 1 for sample 1. 2. The worst case of conducted emission is mode 1; only the test data of it was reported.	



Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5700MHz
		802.11a	802.11a	802.11a
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140

Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5700MHz
		802.11n HT20	802.11n HT20	802.11n HT20
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140

Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5700MHz
		802.11n HT40	802.11n HT40	802.11n HT40
L	Low	38	54	102
M	Middle	-	-	110
H	High	46	62	134



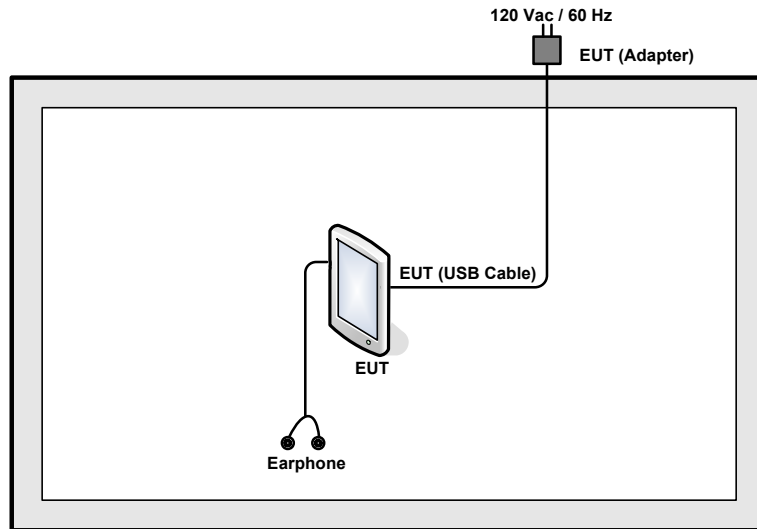
Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5700MHz
		802.11ac VHT20	802.11ac VHT20	802.11ac VHT20
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140

Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5700MHz
		802.11ac VHT40	802.11ac VHT40	802.11ac VHT40
L	Low	38	54	102
M	Middle	-	-	110
H	High	46	62	134

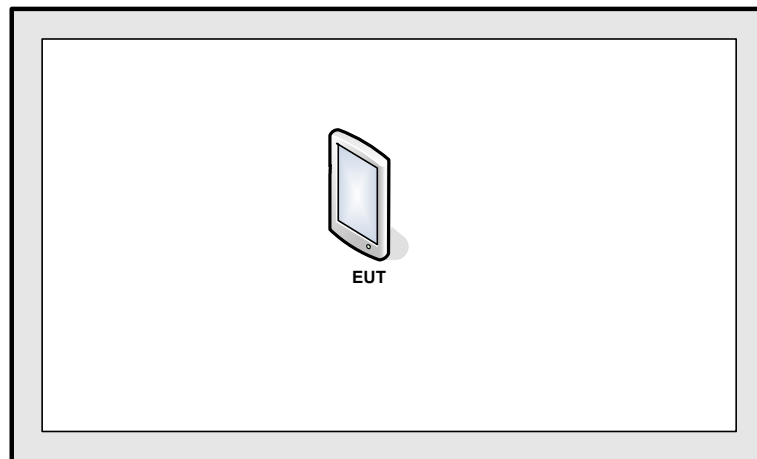
Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5700MHz
		802.11ac VHT80	802.11ac VHT80	802.11ac VHT80
L	Low	-	-	106
M	Middle	42	58	-
H	High	-	-	122

## 2.4 Connection Diagram of Test System

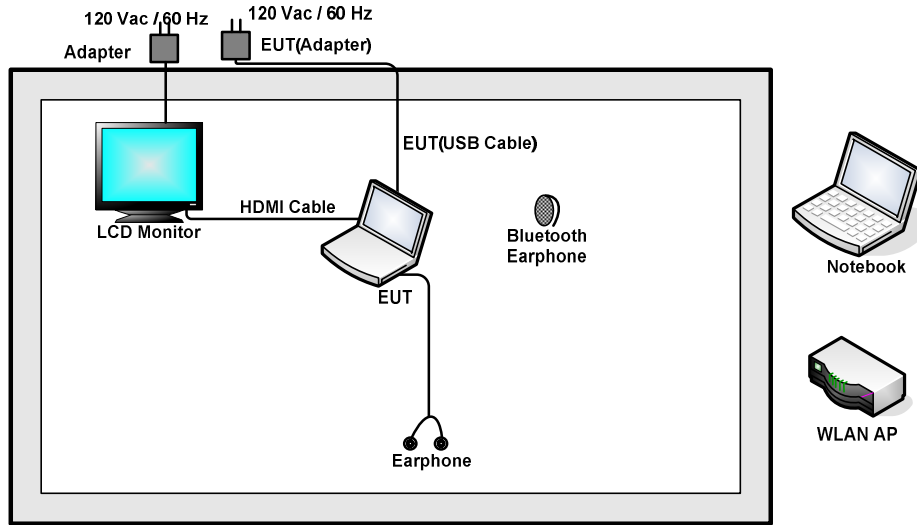
<WLAN5GHz 802.11a/n HT40/WLAN5GHz 802.11ac VHT20/VHT40/VHT80 Tx Mode>



<WLAN5GHz 802.11n HT20 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.	Notebook	Lenovo	G480	PRC4	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
2.	WLAN AP	LINKSYS	WRT600N	Q87-WRT600NV11	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-Link	DIR-855	KA21R855A2	N/A	Unshielded, 1.8 m
4.	Bluetooth Earphone	Lenovo	LBH 308	FCC DoC	N/A	N/A
5.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
6.	DC Power Supply	GW INSTEK	GPD-2303S	N/A	N/A	Unshielded, 1.8 m
7.	Earphone	Lenovo	LH102	N/A	Unshielded, 1.2m	N/A
8.	LCD Monitor	Dell	P2715Qt	N/A	N/A	Unshielded, 1.8 m
9.	HDMI Cable	N/A	N/A	N/A	Shielded, 1.5m	N/A

**2.6 EUT Operation Test Setup**

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuously transmit/receive.

For AC power line conducted emissions, the EUT was set to connect with the Notebook 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 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.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 7.0 dB.

Offset (dB) = RF cable loss(dB).  
= 7.0 (dB)

### 3 Test Result

#### 3.1 26dB & 99% Occupied Bandwidth Measurement

##### 3.1.1 Description of 26dB & 99% Occupied Bandwidth

This section is for reporting purpose only.

There is no restriction limits for bandwidth.

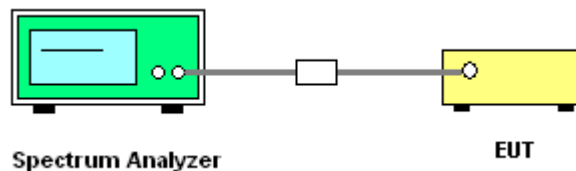
##### 3.1.2 Measuring Instruments

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

##### 3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01. Section C) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
7. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1MHz and set the Video bandwidth (VBW)  $\geq 3 * RBW$ .
8. Measure and record the results in the test report.

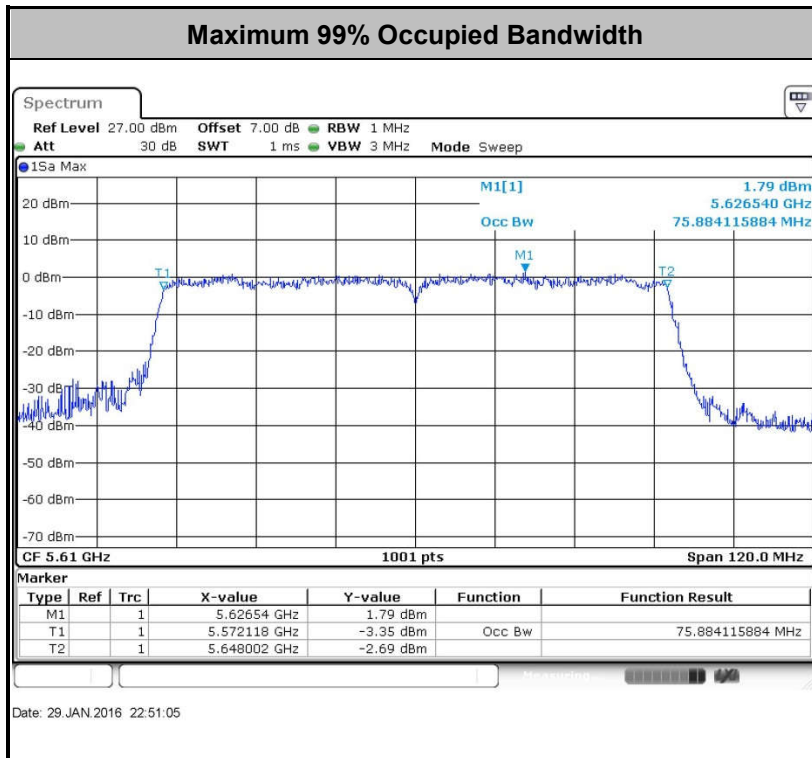
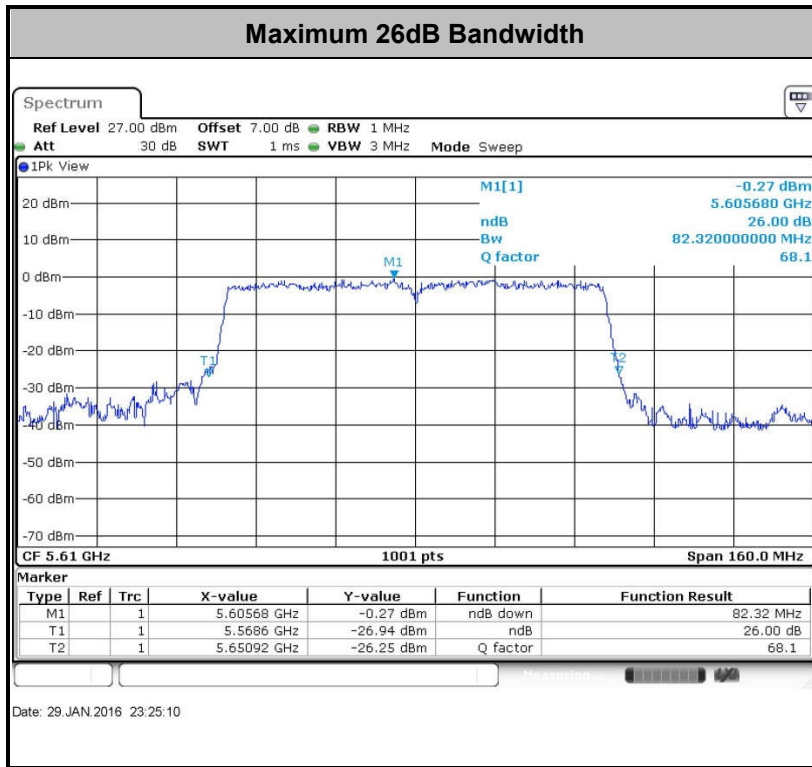
##### 3.1.4 Test Setup





### 3.1.5 Test Result of 26dB & 99% Occupied Bandwidth Plots

Please refer to Appendix A.



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





## 3.2 Maximum Conducted Output Power Measurement

### 3.2.1 Limit of Maximum Conducted Output Power

#### <FCC 14-30 CFR 15.407>

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW.

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or  $11 \text{ dBm} + 10 \log B$ , where B is the 26 dB emission bandwidth in megahertz.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note that U-NII-2 band, devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

### 3.2.2 Measuring Instruments

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

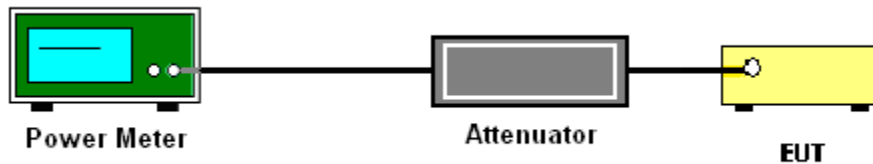
### 3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor,  $10 \log(1/x)$ , where  $x$  is the duty cycle.

### 3.2.4 Test Setup



### 3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.



### **3.3 Power Spectral Density Measurement**

#### **3.3.1 Limit of Power Spectral Density**

**<FCC 14-30 CFR 15.407>**

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band.

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### **3.3.2 Measuring Instruments**

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

### 3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.  
Section F) Maximum power spectral density.

#### # Method SA-2 #

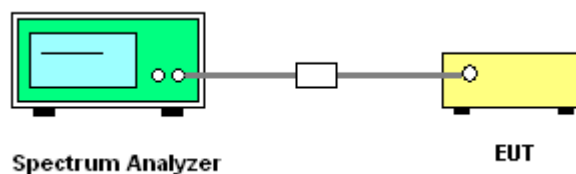
(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

1. The testing follows Method SA-2 of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.
  - Measure the duty cycle.
  - Set span to encompass the entire emission bandwidth (EBW) of the signal.
  - Set RBW = 1 MHz.
  - Set VBW  $\geq$  3 MHz.
  - Number of points in sweep  $\geq$  2 Span / RBW.
  - Sweep time = auto.
  - Detector = RMS
  - Trace average at least 100 traces in power averaging mode.
  - Add  $10 \log(1/x)$ , where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add  $10 \log(1/0.25) = 6$  dB if the duty cycle is 25 percent.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
4. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

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.

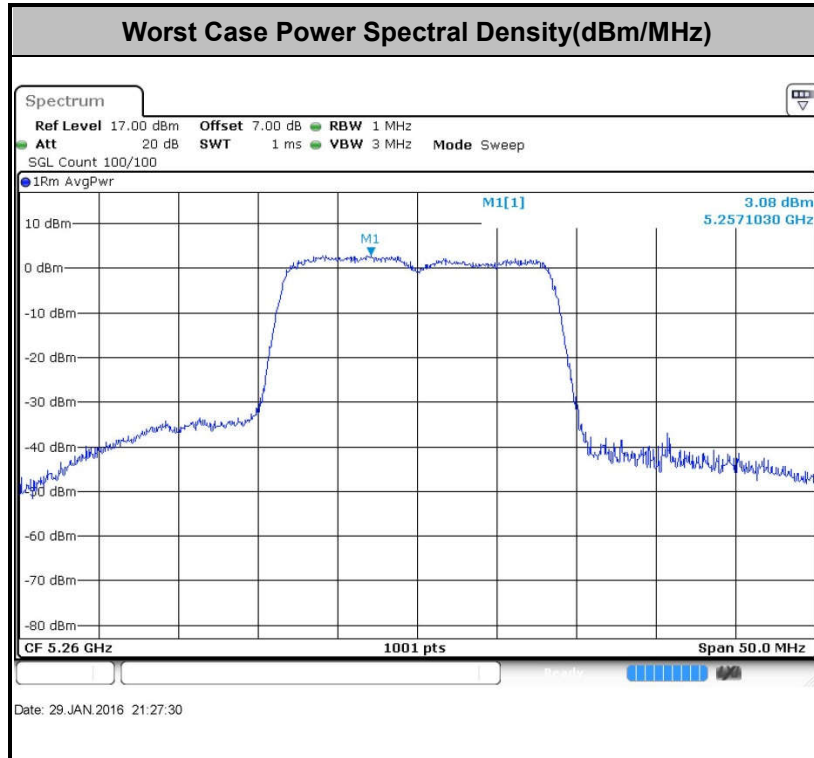
### 3.3.4 Test Setup





### 3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.





### 3.4 Unwanted Radiated Emission Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part15.205.

#### 3.4.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27dBm/MHz.

For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5600 MHz and 5650-5725MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

(2) Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table

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

**Note:** The following formula is used to convert the EIRP to field strength.

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts)}$$



<b>EIRP (dBm)</b>	<b>Field Strength at 3m (dBμV/m)</b>
-17	78.3
- 27	68.3

(3) KDB789033 v01 G)2)c) As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.

### **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 789033 D02 General UNII Test Procedures New Rules v01. Section G) Unwanted emissions measurement.

(1) Procedure for Unwanted Emissions Measurements Below 1000MHz

- RBW = 120 kHz
- VBW = 300 kHz
- Detector = Peak
- Trace mode = max hold

(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

- RBW = 1 MHz
- VBW ≥ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- $VBW \geq 1/T$ , when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

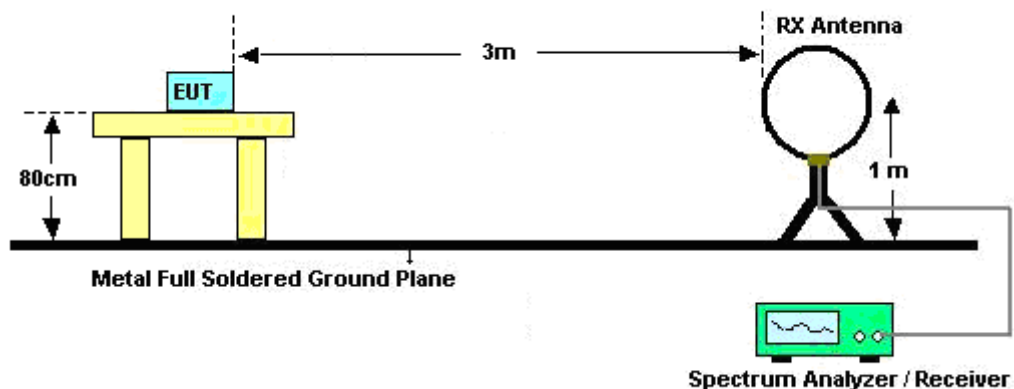
Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1	802.11a	65.333	0.196	5.102	10kHz
2	802.11a	65.772	0.196	5.102	10kHz
1+2	802.11n HT20	57.627	0.136	7.353	10kHz
1+2	802.11n HT40	46.809	0.088	11.364	12kHz
1+2	802.11ac VHT20	50.000	0.100	10.000	10kHz
1+2	802.11ac VHT40	39.286	0.066	15.152	16kHz
1+2	802.11ac VHT80	35.443	0.056	17.857	19kHz



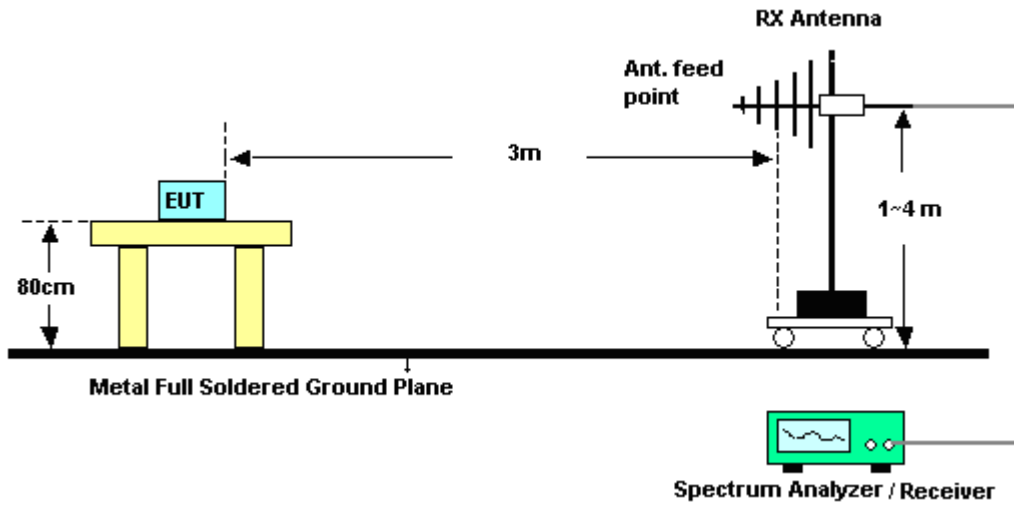
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

### 3.4.4 Test Setup

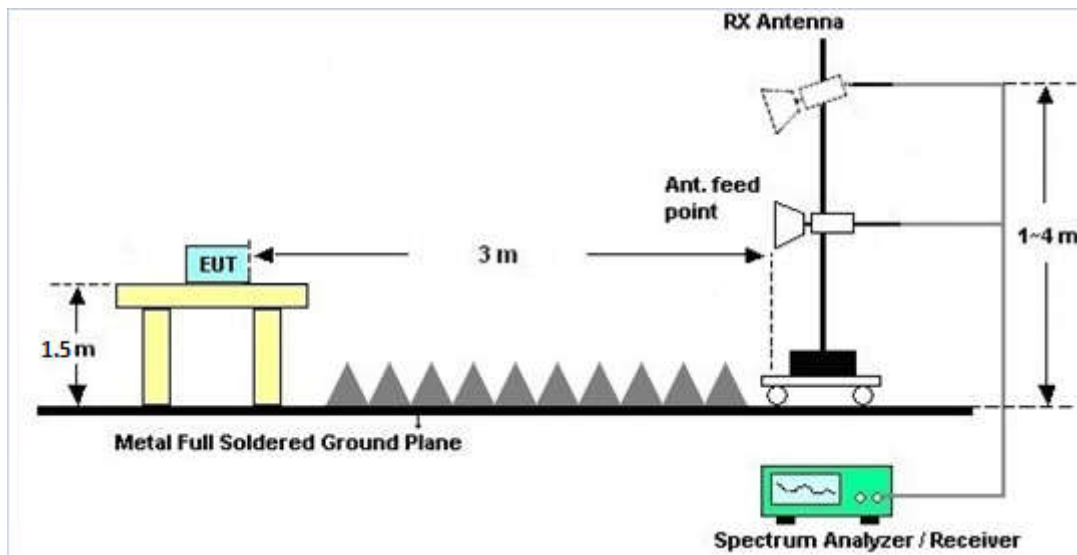
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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.



### **3.4.6 Test Result of Radiated Band Edges**

Please refer to Appendix B.

### **3.4.7 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic)**

Please refer to Appendix B.



### 3.5 AC Conducted Emission Measurement

#### 3.5.1 Limit of AC Conducted Emission

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

Frequency of emission (MHz)	Conducted limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency.

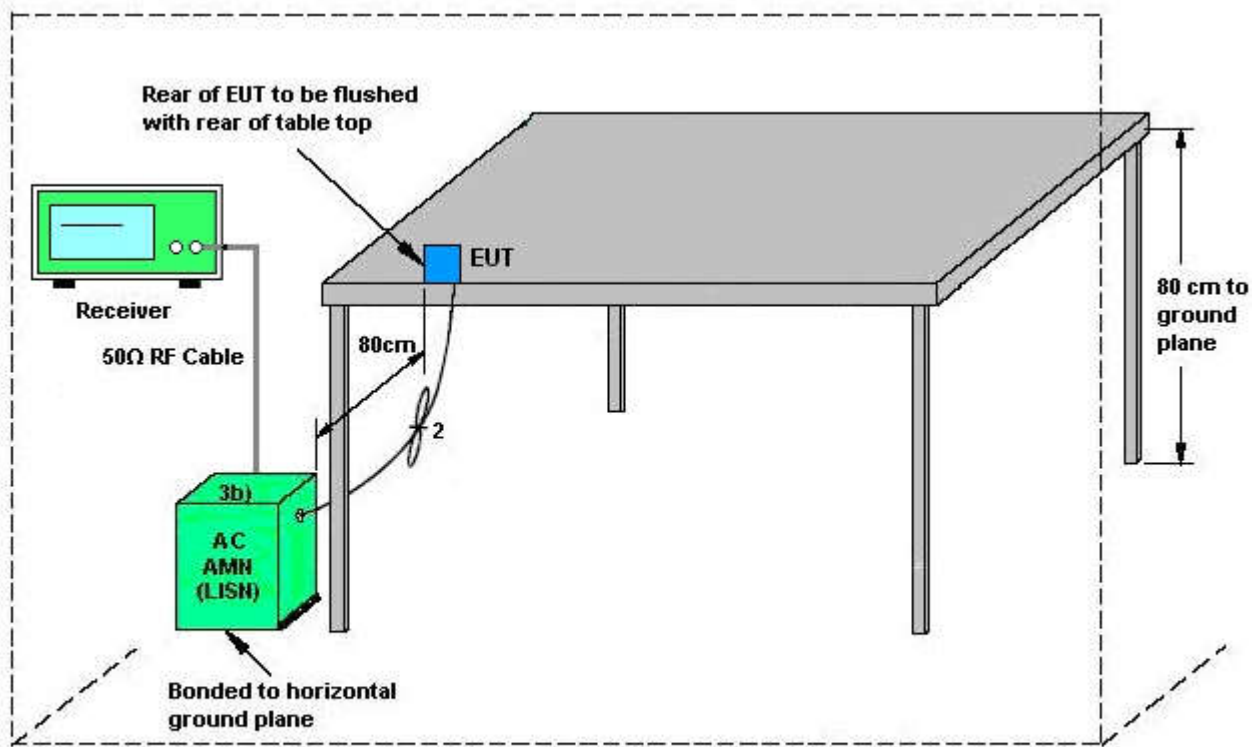
#### 3.5.2 Measuring Instruments

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

#### 3.5.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room 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.

### 3.5.4 Test Setup

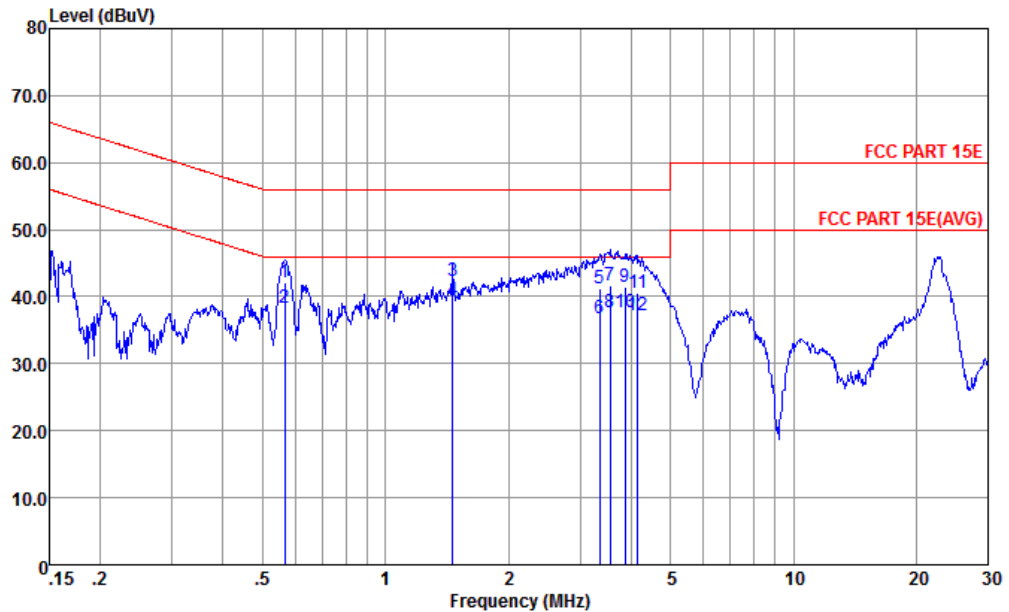


AMN = Artificial mains network (LISN)  
AE = Associated equipment  
EUT = Equipment under test  
ISN = Impedance stabilization network



3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	22~24°C
Test Engineer :	Amos Zhang	Relative Humidity :	44~46%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	Bluetooth Link + WLAN (5GHz) Link + Earphone + USB Cable 1 (Charging from Adapter 12V) for Sample 1		

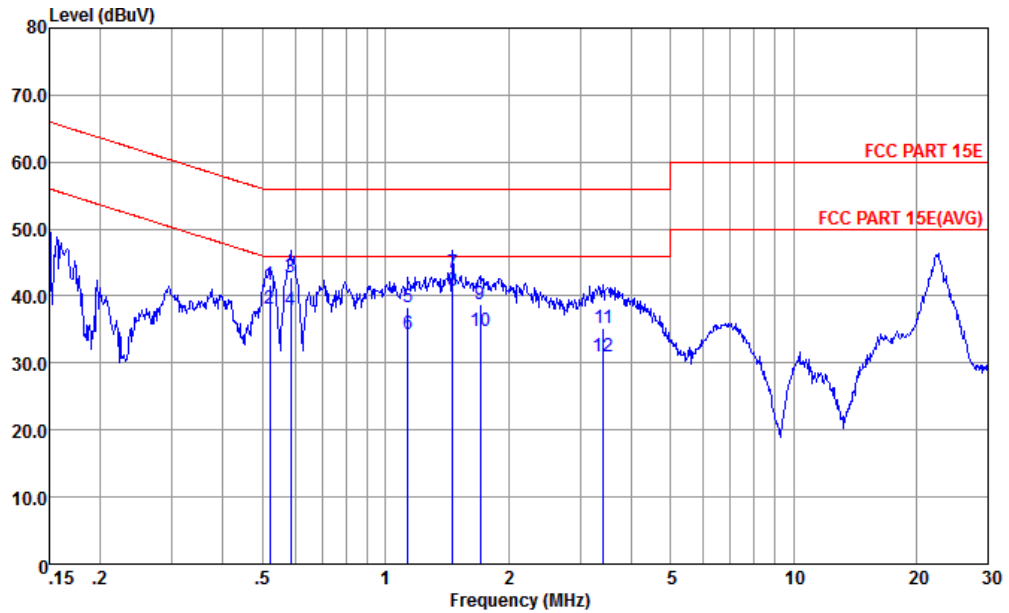


Site : CO01-KS  
 Condition : FCC PART 15E LISN-L-20151024 LINE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.57	42.19	-13.81	56.00	31.80	0.23	10.16	QP
2	0.57	38.29	-7.71	46.00	27.90	0.23	10.16	Average
3	1.46	42.25	-13.75	56.00	31.90	0.21	10.14	QP
4 *	1.46	39.45	-6.55	46.00	29.10	0.21	10.14	Average
5	3.35	41.14	-14.86	56.00	30.79	0.19	10.16	QP
6	3.35	36.84	-9.16	46.00	26.49	0.19	10.16	Average
7	3.55	41.75	-14.25	56.00	31.40	0.19	10.16	QP
8	3.55	37.65	-8.35	46.00	27.30	0.19	10.16	Average
9	3.86	41.45	-14.55	56.00	31.10	0.19	10.16	QP
10	3.86	37.55	-8.45	46.00	27.20	0.19	10.16	Average
11	4.16	40.66	-15.34	56.00	30.30	0.19	10.17	QP
12	4.16	37.26	-8.74	46.00	26.90	0.19	10.17	Average



Test Mode :	Mode 1	Temperature :	22~24°C
Test Engineer :	Amos Zhang	Relative Humidity :	44~46%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Link + WLAN (5GHz) Link + Earphone + USB Cable 1 (Charging from Adapter 12V) for Sample 1		



Site : CO01-KS  
 Condition : FCC PART 15E LISN-N-20151024 NEUTRAL

mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.52	41.69	-14.31	56.00	31.21	0.32	10.16	QP
2	0.52	38.09	-7.91	46.00	27.61	0.32	10.16	Average
3	0.59	42.79	-13.21	56.00	32.30	0.33	10.16	QP
4	0.59	37.99	-8.01	46.00	27.50	0.33	10.16	Average
5	1.14	38.31	-17.69	56.00	27.80	0.37	10.14	QP
6	1.14	34.41	-11.59	46.00	23.90	0.37	10.14	Average
7	1.46	43.41	-12.59	56.00	32.89	0.38	10.14	QP
8 *	1.46	40.71	-5.29	46.00	30.19	0.38	10.14	Average
9	1.71	38.72	-17.28	56.00	28.20	0.38	10.14	QP
10	1.71	34.82	-11.18	46.00	24.30	0.38	10.14	Average
11	3.42	35.23	-20.77	56.00	24.70	0.37	10.16	QP
12	3.42	31.03	-14.97	46.00	20.50	0.37	10.16	Average

## 3.6 Frequency Stability Measurement

### 3.6.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

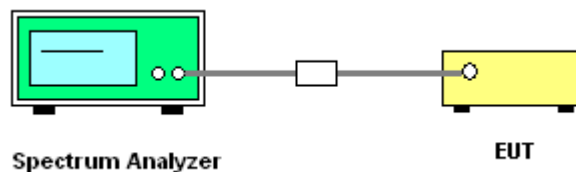
### 3.6.2 Measuring Instruments

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

### 3.6.3 Test Procedures

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

### 3.6.4 Test Setup



### 3.6.5 Test Result of Frequency Stability

Please refer to Appendix A.





## **3.7 Automatically Discontinue Transmission**

### **3.7.1 Limit of Automatically Discontinue Transmission**

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

### **3.7.2 Measuring Instruments**

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

### **3.7.3 Test Result of Automatically Discontinue Transmission**

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

### 3.8 Antenna Requirements

#### 3.8.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2) ,if transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### 3.8.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

#### 3.8.3 Antenna Gain

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

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

where

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

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

$N_{ANT}$  = the total number of antennas

$g_{j,k} = 10^{G_k / 20}$  if the  $k$ th antenna is being fed by spatial stream  $j$ , or zero if it is not;  
 $G_k$  is the gain in dBi of the  $k$ th 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	Chain	DG	DG	Power	PSD
	Port 1	Port 2	for	for	Limit	Limit
			Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
<b>Band I</b>	0.63	0.03	3.35	3.35	0.00	0.00
<b>Band II</b>	1.20	0.10	3.68	3.68	0.00	0.00
<b>Band III</b>	0.09	-1.58	2.31	2.31	0.00	0.00

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

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



## 4 List of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV30	101338	9kHz~30GHz	May 04, 2015	Jan. 29, 2016	May 03, 2016	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	30MHz~40GHz	Jan. 20, 2016	Jan. 29, 2016	Jan. 19, 2017	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 20, 2016	Jan. 29, 2016	Jan. 19, 2017	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	-40~+150°C	Oct. 24, 2015	Jan. 29, 2016	Oct. 23, 2016	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz; Max 30dBm	Sep. 10, 2015	Jan. 31, 2016	Sep. 09, 2016	Radiation (03CH03-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz-44GHz	Jun. 05, 2015	Jan. 31, 2016	Jun. 04, 2016	Radiation (03CH03-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 07, 2015	Jan. 31, 2016	Nov. 06, 2016	Radiation (03CH03-KS)
Bilog Antenna	TeseQ	CBL6112D	23182	25MHz-2GHz	Jan. 16, 2016	Jan. 31, 2016	Jan. 15, 2017	Radiation (03CH03-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1356	1GHz~18GHz	Jun. 25, 2015	Jan. 31, 2016	Jun. 24, 2016	Radiation (03CH03-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz ~40GHz	Mar. 03, 2015	Jan. 31, 2016	Mar. 02, 2016	Radiation (03CH03-KS)
Amplifier	Burgeon	BPA-530	102212	0.01MHz-3000M Hz	Aug. 10, 2015	Jan. 31, 2016	Aug. 09, 2016	Radiation (03CH03-KS)
Amplifier	MITEQ	TTA1840-35-HG	1887435	18~40GHz	Aug. 27, 2015	Jan. 31, 2016	Aug. 26, 2016	Radiation (03CH03-KS)
high gain Amplifier	MITEQ	AMF-7D-00101800-30-10P	1889560	1GHz-18GHz	Aug. 10, 2015	Jan. 31, 2016	Aug. 09, 2016	Radiation (03CH03-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Oct. 24, 2015	Jan. 31, 2016	Oct. 23, 2016	Radiation (03CH03-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Jan. 31, 2016	NCR	Radiation (03CH03-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Jan. 31, 2016	NCR	Radiation (03CH03-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Jan. 31, 2016	NCR	Radiation (03CH03-KS)
EMI Receiver	R&S	ESC17	100768	9kHz~7GHz	May 04, 2015	Jan. 19, 2016	May 03, 2016	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 24, 2015	Jan. 19, 2016	Oct. 23, 2016	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 24, 2015	Jan. 19, 2016	Oct. 23, 2016	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 24, 2015	Jan. 19, 2016	Oct. 23, 2016	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 dB
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.5 dB
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## **Appendix A. Conducted Test Results**

Test Engineer:	Issac Song	Temperature:	24~25	°C
Test Date:	2016/1/29	Relative Humidity:	49~51	%

**TEST RESULTS DATA**  
**26dB and 99% OBW**

Band I													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26 dB Bandwidth (MHz)		IC 99% Bandwidth Power Limit (dBm)		IC 99% Bandwidth EIRP Limit (dBm)		Note
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11a	48Mbps	1	36	5180		18.23		22.33	-			22.61	
11a	48Mbps	1	44	5220		18.28		22.43	-			22.62	
11a	48Mbps	1	48	5240		17.38		19.88	-			22.40	
HT20	MCS7	1	36	5180	19.18		22.93		-		22.83		
HT20	MCS7	1	44	5220	19.13		22.88		-		22.82		
HT20	MCS7	1	48	5240	17.98		20.28		-		22.55		
HT40	MCS7	1	38	5190	36.76		40.82		-		23.01		
HT40	MCS7	1	46	5230	36.66		40.73		-		23.01		
VHT20	MCS8	1	36	5180		18.83		22.63	-			22.75	
VHT20	MCS8	1	44	5220		18.88		22.68	-			22.76	
VHT20	MCS8	1	48	5240		17.88		20.23	-			22.52	
VHT40	MCS9	1	38	5190		36.76		41.09	-			23.01	
VHT40	MCS9	1	46	5230		36.96		41.18	-			23.01	
VHT80	MCS9	1	42	5210		75.88		81.84	-			23.01	
HT20	MCS15	2	36	5180	19.08	19.03	22.33	22.58	-		22.79		
HT20	MCS15	2	44	5220	19.33	19.13	22.63	22.83	-		22.82		
HT20	MCS15	2	48	5240	17.93	17.98	20.18	20.33	-		22.54		
HT40	MCS15	2	38	5190	36.66	36.76	40.73	40.73	-		23.01		
HT40	MCS15	2	46	5230	36.66	36.66	40.82	40.46	-		23.01		
VHT20	MCS8	2	36	5180	18.78	18.83	22.43	22.38	-		22.74		
VHT20	MCS8	2	44	5220	18.68	18.83	22.63	22.63	-		22.71		
VHT20	MCS8	2	48	5240	17.88	17.88	20.38	20.18	-		22.52		
VHT40	MCS9	2	38	5190	36.56	36.46	40.73	40.64	-		23.01		
VHT40	MCS9	2	46	5230	36.56	36.66	40.64	40.46	-		23.01		
VHT80	MCS9	2	42	5210	75.76	75.76	81.36	81.04	-		23.01		



**TEST RESULTS DATA**  
**Average Power Table**

FCC Band I														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	48Mbps	1	36	5180	1.85	1.82	14.99	15.45		24.00	24.00	0.63	0.03	Pass
11a	48Mbps	1	44	5220	1.85	1.82	15.32	15.90		24.00	24.00	0.63	0.03	Pass
11a	48Mbps	1	48	5240	1.85	1.82	15.72	16.10		24.00	24.00	0.63	0.03	Pass
HT20	MCS7	1	36	5180	1.58	1.57	12.52	12.03		24.00	24.00	0.63	0.03	Pass
HT20	MCS7	1	44	5220	1.58	1.57	12.66	11.93		24.00	24.00	0.63	0.03	Pass
HT20	MCS7	1	48	5240	1.58	1.57	12.68	12.05		24.00	24.00	0.63	0.03	Pass
HT40	MCS7	1	38	5190	2.44	2.51	11.82	11.33		24.00	24.00	0.63	0.03	Pass
HT40	MCS7	1	46	5230	2.44	2.51	12.28	11.65		24.00	24.00	0.63	0.03	Pass
VHT20	MCS8	1	36	5180	1.76	1.79	11.48	11.90		24.00	24.00	0.63	0.03	Pass
VHT20	MCS8	1	44	5220	1.76	1.79	11.83	12.22		24.00	24.00	0.63	0.03	Pass
VHT20	MCS8	1	48	5240	1.76	1.79	12.06	12.40		24.00	24.00	0.63	0.03	Pass
VHT40	MCS9	1	38	5190	3.40	3.20	10.94	11.22		24.00	24.00	0.63	0.03	Pass
VHT40	MCS9	1	46	5230	3.40	3.20	11.08	11.54		24.00	24.00	0.63	0.03	Pass
VHT80	MCS9	1	42	5210	4.14	4.09	11.79	12.12		24.00	24.00	0.63	0.03	Pass
HT20	MCS15	2	36	5180	2.43	2.39	9.47	10.07	12.79	24.00		3.35		Pass
HT20	MCS15	2	44	5220	2.43	2.39	9.66	10.02	12.86	24.00		3.35		Pass
HT20	MCS15	2	48	5240	2.43	2.39	9.74	10.11	12.94	24.00		3.35		Pass
HT40	MCS15	2	38	5190	3.30	3.30	9.84	10.34	13.10	24.00		3.35		Pass
HT40	MCS15	2	46	5230	3.30	3.30	9.92	10.45	13.20	24.00		3.35		Pass
VHT20	MCS8	2	36	5180	3.01	3.01	11.46	11.83	14.66	24.00		3.35		Pass
VHT20	MCS8	2	44	5220	3.01	3.01	11.82	12.15	15.00	24.00		3.35		Pass
VHT20	MCS8	2	48	5240	3.01	3.01	12.14	12.28	15.22	24.00		3.35		Pass
VHT40	MCS9	2	38	5190	4.06	3.93	8.68	9.16	11.93	24.00		3.35		Pass
VHT40	MCS9	2	46	5230	4.06	3.93	8.84	9.25	12.06	24.00		3.35		Pass
VHT80	MCS9	2	42	5210	4.61	4.51	9.74	10.20	12.98	24.00		3.35		Pass

**TEST RESULTS DATA**  
**Power Spectral Density**

FCC Band I														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Power Density (dBm/MHz)			Average PSD Limit (dBm/MHz)		DG (dBi)		Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	48Mbps	1	36	5180	1.85	1.82		2.78		11.00	11.00	0.63	0.03	Pass
11a	48Mbps	1	44	5220	1.85	1.82		3.60		11.00	11.00	0.63	0.03	Pass
11a	48Mbps	1	48	5240	1.85	1.82		3.46		11.00	11.00	0.63	0.03	Pass
HT20	MCS7	1	36	5180	1.58	1.57	-0.58			11.00	11.00	0.63	0.03	Pass
HT20	MCS7	1	44	5220	1.58	1.57	-0.42			11.00	11.00	0.63	0.03	Pass
HT20	MCS7	1	48	5240	1.58	1.57	0.41			11.00	11.00	0.63	0.03	Pass
HT40	MCS7	1	38	5190	2.44	2.51	-3.55			11.00	11.00	0.63	0.03	Pass
HT40	MCS7	1	46	5230	2.44	2.51	-3.03			11.00	11.00	0.63	0.03	Pass
VHT20	MCS8	1	36	5180	1.76	1.79		0.14		11.00	11.00	0.63	0.03	Pass
VHT20	MCS8	1	44	5220	1.76	1.79		-0.06		11.00	11.00	0.63	0.03	Pass
VHT20	MCS8	1	48	5240	1.76	1.79		0.73		11.00	11.00	0.63	0.03	Pass
VHT40	MCS9	1	38	5190	3.40	3.20		-3.42		11.00	11.00	0.63	0.03	Pass
VHT40	MCS9	1	46	5230	3.40	3.20		-3.61		11.00	11.00	0.63	0.03	Pass
VHT80	MCS9	1	42	5210	4.14	4.09		-5.28		11.00	11.00	0.63	0.03	Pass
HT20	MCS15	2	36	5180	2.43	2.39			0.53	11.00		3.35		Pass
HT20	MCS15	2	44	5220	2.43	2.39			0.51	11.00		3.35		Pass
HT20	MCS15	2	48	5240	2.43	2.39			0.47	11.00		3.35		Pass
HT40	MCS15	2	38	5190	3.30	3.30			-1.90	11.00		3.35		Pass
HT40	MCS15	2	46	5230	3.30	3.30			-1.97	11.00		3.35		Pass
VHT20	MCS8	2	36	5180	3.01	3.01			2.79	11.00		3.35		Pass
VHT20	MCS8	2	44	5220	3.01	3.01			3.19	11.00		3.35		Pass
VHT20	MCS8	2	48	5240	3.01	3.01			2.74	11.00		3.35		Pass
VHT40	MCS9	2	38	5190	4.06	3.93			-2.65	11.00		3.35		Pass
VHT40	MCS9	2	46	5230	4.06	3.93			-2.08	11.00		3.35		Pass
VHT80	MCS9	2	42	5210	4.61	4.51			-4.34	11.00		3.35		Pass

**TEST RESULTS DATA**  
**26dB and 99% OBW**

Band II															
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26 dB Bandwidth (MHz)		IC 99% Bandwidth Power Limit (dBm)		IC 99% Bandwidth EIRP Limit (dBm)		FCC 26dB Bandwidth Power Limit (dBm)		Note
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11a	48Mbps	1	52	5260		17.33		19.88		23.39		29.39		23.98	
11a	48Mbps	1	60	5300		18.08		22.38		23.57		29.57		23.98	
11a	48Mbps	1	64	5320		18.08		22.43		23.57		29.57		23.98	
HT20	MCS7	1	52	5260	17.93		20.23		23.54		29.54		23.98		
HT20	MCS7	1	60	5300	18.83		22.68		23.75		29.75		23.98		
HT20	MCS7	1	64	5320	18.98		22.78		23.78		29.78		23.98		
HT40	MCS7	1	54	5270	36.76		40.55		23.98		30.00		23.98		
HT40	MCS7	1	62	5310	36.56		40.55		23.98		30.00		23.98		
VHT20	MCS8	1	52	5260	17.98		20.18		23.55		29.55		23.98		
VHT20	MCS8	1	60	5300	18.83		22.73		23.75		29.75		23.98		
VHT20	MCS8	1	64	5320	18.88		22.68		23.76		29.76		23.98		
VHT40	MCS9	1	54	5270	36.86		40.91		23.98		30.00		23.98		
VHT40	MCS9	1	62	5310	36.76		40.91		23.98		30.00		23.98		
VHT80	MCS9	1	58	5290		75.88		81.84		23.98		30.00		23.98	
HT20	MCS15	2	52	5260	17.88	17.93	20.13	20.23	23.52		29.52		23.98		
HT20	MCS15	2	60	5300	18.88	18.78	22.63	22.63	23.74		29.74		23.98		
HT20	MCS15	2	64	5320	19.03	18.98	22.38	22.48	23.78		29.78		23.98		
HT40	MCS15	2	54	5270	36.66	36.66	40.28	40.64	23.98		30.00		23.98		
HT40	MCS15	2	62	5310	36.66	36.66	40.46	40.64	23.98		30.00		23.98		
VHT20	MCS8	2	52	5260	17.93	17.88	20.28	20.13	23.52		29.52		23.98		
VHT20	MCS8	2	60	5300	18.73	18.83	22.63	22.63	23.73		29.73		23.98		
VHT20	MCS8	2	64	5320	18.88	18.78	22.68	22.53	23.74		29.74		23.98		
VHT40	MCS9	2	54	5270	36.56	36.66	40.55	40.46	23.98		30.00		23.98		
VHT40	MCS9	2	62	5310	36.56	36.46	40.73	40.64	23.98		30.00		23.98		
VHT80	MCS9	2	58	5290	75.76	75.52	81.20	81.36	23.98		30.00		23.98		

**TEST RESULTS DATA**  
**Average Power Table**

FCC Band II															
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail	
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	48Mbps	1	52	5260	1.85	1.82	15.27	15.78			23.98	1.20	0.10	Pass	
11a	48Mbps	1	60	5300	1.85	1.82	15.56	16.03			23.98	1.20	0.10	Pass	
11a	48Mbps	1	64	5320	1.85	1.82	15.59	16.06			23.98	1.20	0.10	Pass	
HT20	MCS7	1	52	5260	1.58	1.57	12.74	12.09			23.98	1.20	0.10	Pass	
HT20	MCS7	1	60	5300	1.58	1.57	12.67	12.05			23.98	1.20	0.10	Pass	
HT20	MCS7	1	64	5320	1.58	1.57	12.83	12.19			23.98	1.20	0.10	Pass	
HT40	MCS7	1	54	5270	2.44	2.51	11.87	11.29			23.98	1.20	0.10	Pass	
HT40	MCS7	1	62	5310	2.44	2.51	12.22	11.62			23.98	1.20	0.10	Pass	
VHT20	MCS8	1	52	5260	1.76	1.79	11.47	11.96			23.98	1.20	0.10	Pass	
VHT20	MCS8	1	60	5300	1.76	1.79	11.91	12.12			23.98	1.20	0.10	Pass	
VHT20	MCS8	1	64	5320	1.76	1.79	12.18	12.16			23.98	1.20	0.10	Pass	
VHT40	MCS9	1	54	5270	3.40	3.20	12.08	11.22			23.98	1.20	0.10	Pass	
VHT40	MCS9	1	62	5310	3.40	3.20	12.30	11.53			23.98	1.20	0.10	Pass	
VHT80	MCS9	1	58	5290	4.14	4.09	11.81	12.18				23.98	1.20	0.10	Pass
HT20	MCS15	2	52	5260	2.43	2.39	9.54	10.15	12.87		23.98		3.68	Pass	
HT20	MCS15	2	60	5300	2.43	2.39	9.61	10.11	12.88		23.98		3.68	Pass	
HT20	MCS15	2	64	5320	2.43	2.39	9.71	10.20	12.97		23.98		3.68	Pass	
HT40	MCS15	2	54	5270	3.30	3.30	10.84	11.36	14.11		23.98		3.68	Pass	
HT40	MCS15	2	62	5310	3.30	3.30	11.18	11.64	14.42		23.98		3.68	Pass	
VHT20	MCS8	2	52	5260	3.01	3.01	11.60	11.88	14.75		23.98		3.68	Pass	
VHT20	MCS8	2	60	5300	3.01	3.01	11.94	12.11	15.04		23.98		3.68	Pass	
VHT20	MCS8	2	64	5320	3.01	3.01	12.00	12.24	15.13		23.98		3.68	Pass	
VHT40	MCS9	2	54	5270	4.06	3.93	9.82	10.39	13.12		23.98		3.68	Pass	
VHT40	MCS9	2	62	5310	4.06	3.93	10.03	10.47	13.26		23.98		3.68	Pass	
VHT80	MCS9	2	58	5290	4.61	4.51	10.75	11.13	13.95		23.98		3.68	Pass	

**TEST RESULTS DATA**  
**Power Spectral Density**

Band II														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Power Density (dBm/MHz)			Average PSD Limit (dBm/MHz)		DG (dBi)		Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	48Mbps	1	52	5260	1.85	1.82		4.90		11.00	11.00	1.20	0.10	Pass
11a	48Mbps	1	60	5300	1.85	1.82		4.46		11.00	11.00	1.20	0.10	Pass
11a	48Mbps	1	64	5320	1.85	1.82		4.26		11.00	11.00	1.20	0.10	Pass
HT20	MCS7	1	52	5260	1.58	1.57	1.04			11.00	11.00	1.20	0.10	Pass
HT20	MCS7	1	60	5300	1.58	1.57	0.78			11.00	11.00	1.20	0.10	Pass
HT20	MCS7	1	64	5320	1.58	1.57	1.02			11.00	11.00	1.20	0.10	Pass
HT40	MCS7	1	54	5270	2.44	2.51	-2.76			11.00	11.00	1.20	0.10	Pass
HT40	MCS7	1	62	5310	2.44	2.51	-2.34			11.00	11.00	1.20	0.10	Pass
VHT20	MCS8	1	52	5260	1.76	1.79	0.22			11.00	11.00	1.20	0.10	Pass
VHT20	MCS8	1	60	5300	1.76	1.79	0.38			11.00	11.00	1.20	0.10	Pass
VHT20	MCS8	1	64	5320	1.76	1.79	-0.10			11.00	11.00	1.20	0.10	Pass
VHT40	MCS9	1	54	5270	3.40	3.20	-2.16			11.00	11.00	1.20	0.10	Pass
VHT40	MCS9	1	62	5310	3.40	3.20	-2.46			11.00	11.00	1.20	0.10	Pass
VHT80	MCS9	1	58	5290	4.14	4.09	-4.69			11.00	11.00	1.20	0.10	Pass
HT20	MCS15	2	52	5260	2.43	2.39			0.85	11.00		3.68		Pass
HT20	MCS15	2	60	5300	2.43	2.39			0.82	11.00		3.68		Pass
HT20	MCS15	2	64	5320	2.43	2.39			0.96	11.00		3.68		Pass
HT40	MCS15	2	54	5270	3.30	3.30			-0.71	11.00		3.68		Pass
HT40	MCS15	2	62	5310	3.30	3.30			-0.46	11.00		3.68		Pass
VHT20	MCS8	2	52	5260	3.01	3.01			3.24	11.00		3.68		Pass
VHT20	MCS8	2	60	5300	3.01	3.01			2.80	11.00		3.68		Pass
VHT20	MCS8	2	64	5320	3.01	3.01			3.17	11.00		3.68		Pass
VHT40	MCS9	2	54	5270	4.06	3.93			-1.21	11.00		3.68		Pass
VHT40	MCS9	2	62	5310	4.06	3.93			-1.36	11.00		3.68		Pass
VHT80	MCS9	2	58	5290	4.61	4.51			-3.35	11.00		3.68		Pass

**TEST RESULTS DATA**  
**26dB and 99% OBW**

Band III															
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26 dB Bandwidth (MHz)		IC 99% Bandwidth Power Limit (dBm)		IC 99% Bandwidth EIRP Limit (dBm)		FCC 26dB Bandwidth Power Limit (dBm)		Note
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11a	48Mbps	1	100	5500		18.18		22.48		23.60		29.60		23.98	
11a	48Mbps	1	116	5580		17.33		20.13		23.39		29.39		23.98	
11a	48Mbps	1	140	5700		18.18		22.38		23.60		29.60		23.98	
HT20	MCS7	1	100	5500	19.03		22.78		23.79		29.79		23.98		
HT20	MCS7	1	116	5580	18.03		20.23		23.56		29.56		23.98		
HT20	MCS7	1	140	5700	18.98		22.63		23.78		29.78		23.98		
HT40	MCS7	1	102	5510	36.56		40.64		23.98		30.00		23.98		
HT40	MCS7	1	110	5550	36.56		40.82		23.98		30.00		23.98		
HT40	MCS7	1	134	5670	36.66		40.73		23.98		30.00		23.98		
VHT20	MCS8	1	100	5500	19.03		22.58		23.79		29.79		23.98		
VHT20	MCS8	1	116	5580	17.93		20.18		23.54		29.54		23.98		
VHT20	MCS8	1	140	5700	18.88		22.58		23.76		29.76		23.98		
VHT40	MCS9	1	102	5510	36.96		41.00		23.98		30.00		23.98		
VHT40	MCS9	1	110	5550	36.96		41.09		23.98		30.00		23.98		
VHT40	MCS9	1	134	5670	36.86		41.00		23.98		30.00		23.98		
VHT80	MCS9	1	106	5530	75.88		81.20		23.98		30.00		23.98		
VHT80	MCS9	1	122	5610	75.88		82.16		23.98		30.00		23.98		
HT20	MCS15	2	100	5500	18.88	19.03	22.48	22.78	23.76		29.76		23.98		
HT20	MCS15	2	116	5580	17.93	17.88	20.28	20.23	23.52		29.52		23.98		
HT20	MCS15	2	140	5700	18.93	18.88	22.38	22.53	23.76		29.76		23.98		
HT40	MCS15	2	102	5510	36.86	36.76	40.55	40.91	23.98		30.00		23.98		
HT40	MCS15	2	110	5550	36.76	36.76	40.91	40.73	23.98		30.00		23.98		
HT40	MCS15	2	134	5670	36.76	36.66	40.91	40.82	23.98		30.00		23.98		
VHT20	MCS8	2	100	5500	18.78	18.83	22.63	22.68	23.74		29.74		23.98		
VHT20	MCS8	2	116	5580	17.88	17.93	20.08	20.23	23.52		29.52		23.98		
VHT20	MCS8	2	140	5700	18.88	18.78	22.58	22.63	23.74		29.74		23.98		
VHT40	MCS9	2	102	5510	36.76	36.56	40.73	40.64	23.98		30.00		23.98		
VHT40	MCS9	2	110	5550	36.76	36.56	40.73	40.64	23.98		30.00		23.98		
VHT40	MCS9	2	134	5670	36.76	36.46	40.73	40.73	23.98		30.00		23.98		
VHT80	MCS9	2	106	5530	75.76	75.64	82.00	81.36	23.98		30.00		23.98		
VHT80	MCS9	2	122	5610	75.76	75.64	82.32	81.52	23.98		30.00		23.98		

**TEST RESULTS DATA**  
**Average Power Table**

FCC Band III														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	48Mbps	1	100	5500	1.85	1.82	16.01	16.28			23.98	0.09	-1.58	Pass
11a	48Mbps	1	116	5580	1.85	1.82	16.11	16.21			23.98	0.09	-1.58	Pass
11a	48Mbps	1	140	5700	1.85	1.82	16.14	15.73			23.98	0.09	-1.58	Pass
HT20	MCS7	1	100	5500	1.58	1.57	13.25	13.13			23.98	0.09	-1.58	Pass
HT20	MCS7	1	116	5580	1.58	1.57	13.06	12.84			23.98	0.09	-1.58	Pass
HT20	MCS7	1	140	5700	1.58	1.57	13.20	12.73			23.98	0.09	-1.58	Pass
HT40	MCS7	1	102	5510	2.44	2.51	11.92	11.79			23.98	0.09	-1.58	Pass
HT40	MCS7	1	110	5550	2.44	2.51	11.86	11.75			23.98	0.09	-1.58	Pass
HT40	MCS7	1	134	5670	2.44	2.51	11.52	11.52			23.98	0.09	-1.58	Pass
VHT20	MCS8	1	100	5500	1.76	1.79	11.75	11.64			23.98	0.09	-1.58	Pass
VHT20	MCS8	1	116	5580	1.76	1.79	11.67	11.43			23.98	0.09	-1.58	Pass
VHT20	MCS8	1	140	5700	1.76	1.79	11.50	11.21			23.98	0.09	-1.58	Pass
VHT40	MCS9	1	102	5510	3.40	3.20	11.99	11.81			23.98	0.09	-1.58	Pass
VHT40	MCS9	1	110	5550	3.40	3.20	11.93	11.75			23.98	0.09	-1.58	Pass
VHT40	MCS9	1	134	5670	3.40	3.20	11.86	11.38			23.98	0.09	-1.58	Pass
VHT80	MCS9	1	106	5530	4.14	4.09	11.59	11.38			23.98	0.09	-1.58	Pass
VHT80	MCS9	1	122	5610	4.14	4.09	11.71	11.53			23.98	0.09	-1.58	Pass
HT20	MCS15	2	100	5500	2.43	2.39	10.38	10.28	13.34		23.98		2.31	Pass
HT20	MCS15	2	116	5580	2.43	2.39	10.20	10.13	13.18		23.98		2.31	Pass
HT20	MCS15	2	140	5700	2.43	2.39	10.09	9.84	12.98		23.98		2.31	Pass
HT40	MCS15	2	102	5510	3.30	3.30	10.72	10.87	13.80		23.98		2.31	Pass
HT40	MCS15	2	110	5550	3.30	3.30	10.99	11.04	14.02		23.98		2.31	Pass
HT40	MCS15	2	134	5670	3.30	3.30	10.68	10.41	13.55		23.98		2.31	Pass
VHT20	MCS8	2	100	5500	3.01	3.01	11.72	11.55	14.65		23.98		2.31	Pass
VHT20	MCS8	2	116	5580	3.01	3.01	11.58	11.51	14.56		23.98		2.31	Pass
VHT20	MCS8	2	140	5700	3.01	3.01	11.55	11.12	14.35		23.98		2.31	Pass
VHT40	MCS9	2	102	5510	4.06	3.93	10.58	10.65	13.62		23.98		2.31	Pass
VHT40	MCS9	2	110	5550	4.06	3.93	10.52	10.61	13.57		23.98		2.31	Pass
VHT40	MCS9	2	134	5670	4.06	3.93	10.27	9.79	13.04		23.98		2.31	Pass
VHT80	MCS9	2	106	5530	4.61	4.51	9.22	9.62	12.43		23.98		2.31	Pass
VHT80	MCS9	2	122	5610	4.61	4.51	9.25	9.38	12.32		23.98		2.31	Pass

**TEST RESULTS DATA**  
**Power Spectral Density**

Band III														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Power Density (dBm/MHz)			Average PSD Limit (dBm/MHz)		DG (dBi)		Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	48Mbps	1	100	5500	1.85	1.82		4.43		11.00	11.00	0.09	-1.58	Pass
11a	48Mbps	1	116	5580	1.85	1.82		4.58		11.00	11.00	0.09	-1.58	Pass
11a	48Mbps	1	140	5700	1.85	1.82		4.76		11.00	11.00	0.09	-1.58	Pass
HT20	MCS7	1	100	5500	1.58	1.57	1.27			11.00	11.00	0.09	-1.58	Pass
HT20	MCS7	1	116	5580	1.58	1.57	1.47			11.00	11.00	0.09	-1.58	Pass
HT20	MCS7	1	140	5700	1.58	1.57	1.58			11.00	11.00	0.09	-1.58	Pass
HT40	MCS7	1	102	5510	2.44	2.51	-3.46			11.00	11.00	0.09	-1.58	Pass
HT40	MCS7	1	110	5550	2.44	2.51	-3.21			11.00	11.00	0.09	-1.58	Pass
HT40	MCS7	1	134	5670	2.44	2.51	-3.09			11.00	11.00	0.09	-1.58	Pass
VHT20	MCS8	1	100	5500	1.76	1.79	-0.42			11.00	11.00	0.09	-1.58	Pass
VHT20	MCS8	1	116	5580	1.76	1.79	-0.36			11.00	11.00	0.09	-1.58	Pass
VHT20	MCS8	1	140	5700	1.76	1.79	-0.33			11.00	11.00	0.09	-1.58	Pass
VHT40	MCS9	1	102	5510	3.40	3.20	-2.61			11.00	11.00	0.09	-1.58	Pass
VHT40	MCS9	1	110	5550	3.40	3.20	-2.84			11.00	11.00	0.09	-1.58	Pass
VHT40	MCS9	1	134	5670	3.40	3.20	-2.31			11.00	11.00	0.09	-1.58	Pass
VHT80	MCS9	1	106	5530	4.14	4.09	-5.59			11.00	11.00	0.09	-1.58	Pass
VHT80	MCS9	1	122	5610	4.14	4.09	-5.44			11.00	11.00	0.09	-1.58	Pass
HT20	MCS15	2	100	5500	2.43	2.39		1.33		11.00		2.31		Pass
HT20	MCS15	2	116	5580	2.43	2.39		1.58		11.00		2.31		Pass
HT20	MCS15	2	140	5700	2.43	2.39		1.11		11.00		2.31		Pass
HT40	MCS15	2	102	5510	3.30	3.30		-1.05		11.00		2.31		Pass
HT40	MCS15	2	110	5550	3.30	3.30		-1.22		11.00		2.31		Pass
HT40	MCS15	2	134	5670	3.30	3.30		-1.81		11.00		2.31		Pass
VHT20	MCS8	2	100	5500	3.01	3.01		2.73		11.00		2.31		Pass
VHT20	MCS8	2	116	5580	3.01	3.01		2.66		11.00		2.31		Pass
VHT20	MCS8	2	140	5700	3.01	3.01		2.43		11.00		2.31		Pass
VHT40	MCS9	2	102	5510	4.06	3.93		-1.26		11.00		2.31		Pass
VHT40	MCS9	2	110	5550	4.06	3.93		-0.81		11.00		2.31		Pass
VHT40	MCS9	2	134	5670	4.06	3.93		-1.19		11.00		2.31		Pass
VHT80	MCS9	2	106	5530	4.61	4.51		-5.23		11.00		2.31		Pass
VHT80	MCS9	2	122	5610	4.61	4.51		-4.97		11.00		2.31		Pass



**TEST RESULTS DATA**  
**Frequency Stability**

Band I										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)	Note
11a	48Mbps	1	36	5180	5180.000	0.000	0.00	25	3.6	
11a	48Mbps	1	36	5180	5180.000	0.000	0.00	25	4.35	
11a	48Mbps	1	36	5180	5180.000	0.000	0.00	25	3.8	
11a	48Mbps	1	36	5180	5180.000	0.000	0.00	-30	3.8	
11a	48Mbps	1	36	5180	5180.000	0.000	0.00	50	3.8	

Band II										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)	Note
11a	48Mbps	1	64	5320	5320.000	0.000	0.00	25	3.6	
11a	48Mbps	1	64	5320	5320.000	0.000	0.00	25	4.35	
11a	48Mbps	1	64	5320	5320.000	0.000	0.00	25	3.8	
11a	48Mbps	1	64	5320	5320.000	0.000	0.00	-30	3.8	
11a	48Mbps	1	64	5320	5320.000	0.000	0.00	50	3.8	

Band III										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)	Note
11a	48Mbps	1	100	5500	5500.025	0.025	4.55	25	3.6	
11a	48Mbps	1	100	5500	5500.025	0.025	4.55	25	4.35	
11a	48Mbps	1	100	5500	5500.025	0.025	4.55	25	3.8	
11a	48Mbps	1	100	5500	5500.025	0.025	4.55	-30	3.8	
11a	48Mbps	1	100	5500	5500.025	0.025	4.55	50	3.8	



## Appendix B. Radiated Test Results

### 15E Band 1 - 5150~5250MHz

#### WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11a CH 36 5180MHz		5147.5	57.56	-16.44	74	54.12	31.84	8.13	36.53	100	10	P	H
	!	5149.5	48.57	-5.43	54	45.13	31.84	8.13	36.53	100	10	A	H
	*	5180	106.7	-	-	103.19	31.85	8.17	36.51	100	10	P	H
	*	5176	99.94	-	-	96.43	31.85	8.17	36.51	100	10	A	H
		5148.1	50.19	-23.81	74	46.75	31.84	8.13	36.53	386	256	P	V
		5148.95	41.3	-12.7	54	37.86	31.84	8.13	36.53	386	256	A	V
	*	5176	97.4	-	-	93.89	31.85	8.17	36.51	386	256	P	V
	*	5176	90.87	-	-	87.36	31.85	8.17	36.51	386	256	A	V
802.11a CH 44 5220MHz	*	5218	108.17	-	-	104.61	31.86	8.2	36.5	109	10	P	H
	*	5216	101.09	-	-	97.53	31.86	8.2	36.5	109	10	A	H
	*	5216	97.69	-	-	94.13	31.86	8.2	36.5	100	251	P	V
	*	5216	90.9	-	-	87.34	31.86	8.2	36.5	100	251	A	V
802.11a CH 48 5240MHz	*	5238	108.2	-	-	104.62	31.87	8.21	36.5	100	11	P	H
	*	5234	101.26	-	-	97.68	31.87	8.21	36.5	100	11	A	H
		5353.05	47.25	-26.75	74	43.55	31.91	8.29	36.5	100	11	P	H
		5350.25	40.27	-13.73	54	36.57	31.91	8.29	36.5	100	11	A	H
	*	5246	98.97	-	-	95.37	31.88	8.22	36.5	359	161	P	V
	*	5246	92.4	-	-	88.8	31.88	8.22	36.5	359	161	A	V
		5382.6	45.39	-28.61	74	41.65	31.92	8.32	36.5	359	161	P	V
		5364.1	38.48	-15.52	54	34.76	31.91	8.31	36.5	359	161	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E band 1 5150~5250MHz  
WIFI 802.11a (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11a		10359	50.12	-23.88	74	61.61	38.02	11.59	61.1	122	184	P	H
CH 36		10359	49.3	-24.7	74	60.79	38.02	11.59	61.1	199	231	P	V
5180MHz													
802.11a		10440	49.75	-24.25	74	61.13	38.06	11.63	61.07	168	29	P	H
CH 44		10440	50.9	-23.1	74	62.28	38.06	11.63	61.07	168	294	P	V
5220MHz													
802.11a		10479	49.85	-24.15	74	61.13	38.09	11.67	61.04	155	267	P	H
CH 48		10479	50.58	-23.42	74	61.86	38.09	11.67	61.04	169	81	P	V
5240MHz													
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E Band 2 - 5250~5350MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11a CH 52 5260MHz		5111.95	47.91	-26.09	74	44.53	31.83	8.1	36.55	113	11	P	H
		5149.2	39.77	-14.23	54	36.33	31.84	8.13	36.53	113	11	A	H
	*	5256	106.99	-	-	103.39	31.88	8.22	36.5	113	11	P	H
	*	5256	101.08	-	-	97.48	31.88	8.22	36.5	113	11	A	H
		5113.1	47.02	-26.98	74	43.64	31.83	8.1	36.55	302	159	P	V
		5102.8	38.72	-15.28	54	35.37	31.83	8.08	36.56	302	159	A	V
	*	5264	98.45	-	-	94.84	31.88	8.23	36.5	302	159	P	V
	*	5262	91.8	-	-	88.19	31.88	8.23	36.5	302	159	A	V
802.11a CH 60 5300MHz	*	5296	107.16	-	-	103.51	31.89	8.26	36.5	105	10	P	H
	*	5302	100.35	-	-	96.7	31.89	8.26	36.5	105	10	A	H
	*	5298	99.15	-	-	95.5	31.89	8.26	36.5	375	161	P	V
	*	5302	92.53	-	-	88.88	31.89	8.26	36.5	375	161	A	V
802.11a CH 64 5320MHz	*	5316	106.83	-	-	103.16	31.9	8.27	36.5	103	11	P	H
	*	5316	100.48	-	-	96.81	31.9	8.27	36.5	103	11	A	H
		5351.05	57.95	-16.05	74	54.25	31.91	8.29	36.5	103	11	P	H
		5351.15	47.38	-6.62	54	43.68	31.91	8.29	36.5	103	11	A	H
	*	5316	98.97	-	-	95.3	31.9	8.27	36.5	314	162	P	V
	*	5316	92.19	-	-	88.52	31.9	8.27	36.5	314	162	A	V
		5350.95	49.11	-24.89	74	45.41	31.91	8.29	36.5	314	162	P	V
		5350.8	40.57	-13.43	54	36.87	31.91	8.29	36.5	314	162	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E band 2 5250~5350MHz
WIFI 802.11a (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test results for channels 52, 60, and 64.

Remark
1. No other spurious found.
2. All results are PASS against Peak and Average limit line.



15E Band 3 - 5470~5725MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11a CH 100 5500MHz		5468.72	51.97	-22.03	74	48.04	31.95	8.38	36.4	100	19	P	H
		5470	46.58	-7.42	54	42.65	31.95	8.38	36.4	100	19	A	H
	*	5506	102.11	-	-	98.1	31.96	8.4	36.35	100	19	P	H
	*	5496	95.77	-	-	91.81	31.95	8.39	36.38	100	19	A	H
		5469.84	49.19	-24.81	74	45.26	31.95	8.38	36.4	347	158	P	V
		5469.84	41.43	-12.57	54	37.5	31.95	8.38	36.4	347	158	A	V
	*	5498	95.73	-	-	91.72	31.96	8.4	36.35	347	158	P	V
	*	5496	89.25	-	-	85.29	31.95	8.39	36.38	347	158	A	V
802.11a CH 116 5580MHz	*	5586	104.97			100.75	31.98	8.47	36.23	100	9	P	H
	*	5582	98.29			94.07	31.98	8.47	36.23	100	9	A	H
	*	5578	96.73			92.55	31.98	8.45	36.25	100	152	P	V
	*	5582	89.91			85.69	31.98	8.47	36.23	100	152	A	V
802.11a CH 140 5700MHz	*	5700	104.21	-	-	99.9	32.02	8.54	36.25	100	10	P	H
	*	5696	97.8	-	-	93.49	32.02	8.54	36.25	100	10	A	H
		5725.48	56.95	-17.05	74	52.62	32.04	8.57	36.28	100	10	P	H
		5725.4	47.76	-6.24	54	43.43	32.04	8.57	36.28	100	10	A	H
	*	5702	97.89	-	-	93.58	32.03	8.55	36.27	396	23	P	V
	*	5702	91.4	-	-	87.09	32.03	8.55	36.27	396	23	A	V
		5725.96	52.65	-21.35	74	48.32	32.04	8.57	36.28	396	23	P	V
		5725.48	42.55	-11.45	54	38.22	32.04	8.57	36.28	396	23	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**15E band 3 - 5470~5725MHz  
WIFI 802.11a (Harmonic @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11a		11001	49.91	-24.09	74	60.29	38.4	12.01	60.79	100	168	P	H
CH 100		11001	49.23	-24.77	74	59.61	38.4	12.01	60.79	168	77	P	V
5500MHz													
802.11a		11160	49.07	-24.93	74	59.18	38.47	12.13	60.71	132	167	P	H
CH 116		11160	48.98	-25.02	74	59.09	38.47	12.13	60.71	301	229	P	V
5580MHz													
802.11a		11400	47.96	-26.04	74	57.7	38.56	12.29	60.59	122	196	P	H
CH 140		11400	47.34	-26.66	74	57.08	38.56	12.29	60.59	166	254	P	V
5700MHz													
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**Note symbol**

*	<b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency per 15.209(c).
!	Test result is <b>over limit</b> line.
P/A	<b>Peak</b> or <b>Average</b>
H/V	<b>Horizontal</b> or <b>Vertical</b>





A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H
2412MHz													

- Level(dBμV/m) =  
Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
- Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

**For Peak Limit @ 2390MHz:**

- Level(dBμV/m)  
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)  
= 55.45 (dBμV/m)
- Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 55.45(dBμV/m) – 74(dBμV/m)  
= -18.55(dB)

**For Average Limit @ 2390MHz:**

- Level(dBμV/m)  
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)  
= 43.54 (dBμV/m)
- Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 43.54(dBμV/m) – 54(dBμV/m)  
= -10.46(dB)

**Both peak and average measured complies with the limit line, so test result is “PASS”.**



15E Band 1 - 5150~5250MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11a CH 36 5180MHz		5149.95	54.93	-19.07	74	51.49	31.84	8.13	36.53	113	354	P	H
		5149.15	44.55	-9.45	54	41.11	31.84	8.13	36.53	113	354	A	H
	*	5176	102.64	-	-	99.13	31.85	8.17	36.51	113	354	P	H
	*	5176	96.07	-	-	92.56	31.85	8.17	36.51	113	354	A	H
		5147.85	49.45	-24.55	74	46.01	31.84	8.13	36.53	357	203	P	V
		5149.3	40.47	-13.53	54	37.03	31.84	8.13	36.53	357	203	A	V
	*	5186	97.89	-	-	94.38	31.85	8.17	36.51	357	203	P	V
	*	5182	90.99	-	-	87.48	31.85	8.17	36.51	357	203	A	V
802.11a CH 44 5220MHz	*	5220	103.19	-	-	99.63	31.86	8.2	36.5	113	354	P	H
	*	5216	96.35	-	-	92.79	31.86	8.2	36.5	113	354	A	H
	*	5226	98.12	-	-	94.54	31.87	8.21	36.5	352	205	P	V
	*	5222	91.04	-	-	87.48	31.86	8.2	36.5	352	205	A	V
802.11a CH 48 5240MHz	*	5238	103.17	-	-	99.59	31.87	8.21	36.5	100	353	P	H
	*	5246	96.26	-	-	92.66	31.88	8.22	36.5	100	353	A	H
		5390.85	47.87	-26.13	74	44.13	31.92	8.32	36.5	100	353	P	H
		5388.4	40.24	-13.76	54	36.5	31.92	8.32	36.5	100	353	A	H
	*	5246	97.66	-	-	94.06	31.88	8.22	36.5	313	210	P	V
	*	5242	90.44	-	-	86.84	31.88	8.22	36.5	313	210	A	V
		5376.4	46.42	-27.58	74	42.7	31.91	8.31	36.5	313	210	P	V
		5393	38.86	-15.14	54	35.12	31.92	8.32	36.5	313	210	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E band 1 5150~5250MHz
WIFI 802.11a (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test results for channels 36, 44, and 48.

Remark
1. No other spurious found.
2. All results are PASS against Peak and Average limit line.



15E Band 2 - 5250~5350MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11a CH 52 5260MHz		5116.65	47.41	-26.59	74	44.03	31.83	8.1	36.55	113	355	P	H
		5115.05	39.53	-14.47	54	36.15	31.83	8.1	36.55	113	355	A	H
	*	5266	104.4	-	-	100.79	31.88	8.23	36.5	113	355	P	H
	*	5266	97.06	-	-	93.45	31.88	8.23	36.5	113	355	A	H
		5110.1	47.07	-26.93	74	43.69	31.83	8.1	36.55	368	203	P	V
		5138.65	39.19	-14.81	54	35.78	31.84	8.11	36.54	368	203	A	V
	*	5266	98.65	-	-	95.04	31.88	8.23	36.5	368	203	P	V
	*	5256	92.02	-	-	88.42	31.88	8.22	36.5	368	203	A	V
802.11a CH 60 5300MHz	*	5306	105.73	-	-	102.08	31.89	8.26	36.5	115	11	P	H
	*	5302	98.73	-	-	95.08	31.89	8.26	36.5	115	11	A	H
	*	5306	99.56	-	-	95.91	31.89	8.26	36.5	323	205	P	V
	*	5302	92.66	-	-	89.01	31.89	8.26	36.5	323	205	A	V
802.11a CH 64 5320MHz	*	5322	105.35	-	-	101.68	31.9	8.27	36.5	111	10	P	H
	*	5322	98.82	-	-	95.15	31.9	8.27	36.5	111	10	A	H
		5350.7	59.49	-14.51	74	55.79	31.91	8.29	36.5	111	10	P	H
	!	5350	48.21	-5.79	54	44.51	31.91	8.29	36.5	111	10	A	H
	*	5318	101	-	-	97.33	31.9	8.27	36.5	304	207	P	V
	*	5316	93.8	-	-	90.13	31.9	8.27	36.5	304	207	A	V
		5351.25	52.12	-21.88	74	48.42	31.91	8.29	36.5	304	207	P	V
	5350.35	43.17	-10.83	54	39.47	31.91	8.29	36.5	304	207	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E band 2 5250~5350MHz  
WIFI 802.11a (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11a		10521	49.23	-24.77	74	60.46	38.11	11.69	61.03	112	356	P	H
CH 52		10521	49.52	-24.48	74	60.75	38.11	11.69	61.03	331	277	P	V
5260MHz													
802.11a		10599	48.47	-25.53	74	59.54	38.16	11.75	60.98	100	15	P	H
CH 60		10599	48.71	-25.29	74	59.78	38.16	11.75	60.98	331	281	P	V
5300MHz													
802.11a		10641	48.36	-25.64	74	59.38	38.18	11.77	60.97	106	358	P	H
CH 64		10641	48.48	-25.52	74	59.5	38.18	11.77	60.97	330	277	P	V
5320MHz													
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E Band 3 - 5470~5725MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11a CH 100 5500MHz		5467.12	59.48	-14.52	74	55.55	31.95	8.38	36.4	100	12	P	H
	!	5470	49.56	-4.44	54	45.63	31.95	8.38	36.4	100	12	A	H
	*	5498	105.75	-	-	101.74	31.96	8.4	36.35	100	12	P	H
	*	5496	98.98	-	-	95.02	31.95	8.39	36.38	100	12	A	H
		5464.24	52.62	-21.38	74	48.69	31.95	8.38	36.4	335	204	P	V
		5469.52	45.97	-8.03	54	42.04	31.95	8.38	36.4	335	204	A	V
	*	5498	101.9	-	-	97.89	31.96	8.4	36.35	335	204	P	V
	*	5496	95.38	-	-	91.42	31.95	8.39	36.38	335	204	A	V
802.11a CH 116 5580MHz	*	5586	102.87	-	-	98.65	31.98	8.47	36.23	100	359	P	H
	*	5582	95.78	-	-	91.56	31.98	8.47	36.23	100	359	A	H
	*	5578	97.9	-	-	93.72	31.98	8.45	36.25	310	201	P	V
	*	5574	91.42	-	-	87.24	31.98	8.45	36.25	310	201	A	V
802.11a CH 140 5700MHz	*	5700	102.06	-	-	97.75	32.02	8.54	36.25	133	360	P	H
	*	5696	95.11	-	-	90.8	32.02	8.54	36.25	133	360	A	H
		5725.08	60.39	-13.61	74	56.06	32.04	8.57	36.28	133	360	P	H
	!	5725	49.81	-4.19	54	45.48	32.04	8.57	36.28	133	360	A	H
	*	5694	97.36	-	-	93.05	32.02	8.54	36.25	300	209	P	V
	*	5696	90.87	-	-	86.56	32.02	8.54	36.25	300	209	A	V
		5725.4	55.1	-18.9	74	50.77	32.04	8.57	36.28	300	209	P	V
		5725	45.21	-8.79	54	40.88	32.04	8.57	36.28	300	209	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E band 3 - 5470~5725MHz  
WIFI 802.11a (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11a		11001	49.85	-24.15	74	60.23	38.4	12.01	60.79	100	103	P	H
CH 100		11001	50.1	-23.9	74	60.48	38.4	12.01	60.79	330	192	P	V
5500MHz													
802.11a		11601	48.53	-25.47	74	57.75	38.83	12.43	60.48	105	359	P	H
CH 116		11601	49.67	-24.33	74	58.89	38.83	12.43	60.48	330	191	P	V
5580MHz													
802.11a		11400	49.47	-24.53	74	59.21	38.56	12.29	60.59	100	29	P	H
CH 140		11400	49.87	-24.13	74	59.61	38.56	12.29	60.59	309	277	P	V
5700MHz													
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**Note symbol**

*	<b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency per 15.209(c).
!	Test result is <b>over limit</b> line.
P/A	<b>Peak</b> or <b>Average</b>
H/V	<b>Horizontal</b> or <b>Vertical</b>





A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

- Level(dBμV/m) =  
Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
- Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

**For Peak Limit @ 2390MHz:**

- Level(dBμV/m)  
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)  
= 55.45 (dBμV/m)
- Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 55.45(dBμV/m) – 74(dBμV/m)  
= -18.55(dB)

**For Average Limit @ 2390MHz:**

- Level(dBμV/m)  
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)  
= 43.54 (dBμV/m)
- Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 43.54(dBμV/m) – 54(dBμV/m)  
= -10.46(dB)

**Both peak and average measured complies with the limit line, so test result is “PASS”.**



**15E band 1 5150~5250MHz  
WIFI 802.11n HT20 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11n HT20 CH 36 5180MHz		5149.7	58.02	-15.98	74	54.58	31.84	8.13	36.53	100	189	P	H
	!	5149.1	52.23	-1.77	54	48.79	31.84	8.13	36.53	100	189	A	H
	*	5184	103.17	-	-	99.66	31.85	8.17	36.51	100	189	P	H
	*	5184	96.61	-	-	93.1	31.85	8.17	36.51	100	189	A	H
		5148.7	49.7	-24.3	74	46.26	31.84	8.13	36.53	100	338	P	V
		5129.45	39.59	-14.41	54	36.18	31.84	8.11	36.54	100	338	A	V
	*	5176	93.16	-	-	89.65	31.85	8.17	36.51	100	338	P	V
	*	5176	85.63	-	-	82.12	31.85	8.17	36.51	100	338	A	V
802.11n HT20 CH 44 5220MHz	*	5216	103.38	-	-	99.82	31.86	8.2	36.5	100	191	P	H
	*	5218	97.35	-	-	93.79	31.86	8.2	36.5	100	191	A	H
	*	5222	92.42	-	-	88.86	31.86	8.2	36.5	100	62	P	V
	*	5222	85.97	-	-	82.41	31.86	8.2	36.5	100	62	A	V
802.11n HT20 CH 48 5240MHz	*	5244	104.43	-	-	100.83	31.88	8.22	36.5	114	186	P	H
	*	5246	97.24	-	-	93.64	31.88	8.22	36.5	114	186	A	H
		5388.2	47.54	-26.46	74	43.8	31.92	8.32	36.5	114	186	P	H
		5385.75	39.49	-14.51	54	35.75	31.92	8.32	36.5	114	186	A	H
	*	5236	93.01	-	-	89.43	31.87	8.21	36.5	330	49	P	V
	*	5246	86.8	-	-	83.2	31.88	8.22	36.5	330	49	A	V
		5372.5	46.53	-27.47	74	42.81	31.91	8.31	36.5	330	49	P	V
	5375.8	38.76	-15.24	54	35.04	31.91	8.31	36.5	330	49	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**15E band 1 5150~5250MHz  
WIFI 802.11n HT20 (Harmonic @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11n HT20 CH 36 5180MHz		10359	50.99	-23.01	74	62.48	38.02	11.59	61.1	100	0	P	H
		10359	49.8	-24.2	74	61.29	38.02	11.59	61.1	100	360	P	V
802.11n HT20 CH 44 5220MHz		10440	50.99	-23.01	74	62.37	38.06	11.63	61.07	152	221	P	H
		10440	50.36	-23.64	74	61.74	38.06	11.63	61.07	315	109	P	V
802.11n HT20 CH 48 5240MHz		10479	49.59	-24.41	74	60.87	38.09	11.67	61.04	100	0	P	H
		10479	50.64	-23.36	74	61.92	38.09	11.67	61.04	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**15E band 1 5150~5250MHz  
WIFI 802.11n HT40 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11n HT40 CH 38 5190MHz		5149.2	62.27	-11.73	74	58.83	31.84	8.13	36.53	100	12	P	H
	!	5148.35	51.33	-2.67	54	47.89	31.84	8.13	36.53	100	12	A	H
	*	5184	100.71	-	-	97.2	31.85	8.17	36.51	100	12	P	H
	*	5204	94.81	-	-	91.26	31.86	8.19	36.5	100	12	A	H
		5149.65	51.56	-22.44	74	48.12	31.84	8.13	36.53	304	238	P	V
		5147.15	42.02	-11.98	54	38.58	31.84	8.13	36.53	304	238	A	V
	*	5186	90.44	-	-	86.93	31.85	8.17	36.51	304	238	P	V
	*	5176	83.8	-	-	80.29	31.85	8.17	36.51	304	238	A	V
802.11n HT40 CH 46 5230MHz	*	5218	100.09	-	-	96.53	31.86	8.2	36.5	149	13	P	H
	*	5244	95.06	-	-	91.46	31.88	8.22	36.5	149	13	A	H
		5383.55	46.86	-27.14	74	43.12	31.92	8.32	36.5	149	13	P	H
		5383.25	39.77	-14.23	54	36.03	31.92	8.32	36.5	149	13	A	H
	*	5236	91.45	-	-	87.87	31.87	8.21	36.5	313	239	P	V
	*	5236	85.31	-	-	81.73	31.87	8.21	36.5	313	239	A	V
		5358.45	45.62	-28.38	74	41.92	31.91	8.29	36.5	313	239	P	V
	5361.85	38.64	-15.36	54	34.92	31.91	8.31	36.5	313	239	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**15E band 1 5150~5250MHz  
WIFI 802.11n HT40 (Harmonic @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11n HT40 CH 38 5190MHz		10380	50.53	-23.47	74	62	38.03	11.6	61.1	153	16	P	H
		10380	50.24	-23.76	74	61.71	38.03	11.6	61.1	332	197	P	V
802.11n HT40 CH 46 5230MHz		10461	50.52	-23.48	74	61.83	38.08	11.66	61.05	122	16	P	H
		10461	50.07	-23.93	74	61.38	38.08	11.66	61.05	360	197	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E band 1 5150~5250MHz
WIFI 802.11ac VHT20 (Band Edge @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains multiple rows of test data for 802.11ac VHT20 channels 36, 44, and 48.



**15E band 1 5150~5250MHz  
WIFI 802.11ac VHT20 (Harmonic @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11ac VHT20 CH 36 5180MHz		10359	45.83	-28.17	74	57.32	38.02	11.59	61.1	100	0	P	H
		10359	48.3	-25.7	74	59.79	38.02	11.59	61.1	100	360	P	V
802.11ac VHT20 CH 44 5220MHz		10440	48.38	-25.62	74	59.76	38.06	11.63	61.07	100	0	P	H
		10440	47.68	-26.32	74	59.06	38.06	11.63	61.07	100	360	P	V
802.11ac VHT20 CH 48 5240MHz		10479	47.34	-26.66	74	58.62	38.09	11.67	61.04	100	0	P	H
		10479	47.33	-26.67	74	58.61	38.09	11.67	61.04	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**15E band 1 5150~5250MHz  
WIFI 802.11ac VHT40 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11ac VHT40 CH 38 5190MHz		5150	61.21	-12.79	74	57.77	31.84	8.13	36.53	100	10	P	H
	!	5149.05	50.55	-3.45	54	47.11	31.84	8.13	36.53	100	10	A	H
	*	5194	99.53	-	-	95.98	31.86	8.19	36.5	100	10	P	H
	*	5194	94.16	-	-	90.61	31.86	8.19	36.5	100	10	A	H
		5149.6	48.32	-25.68	74	44.88	31.84	8.13	36.53	300	233	P	V
		5149.55	40.69	-13.31	54	37.25	31.84	8.13	36.53	300	233	A	V
	*	5186	89.12	-	-	85.61	31.85	8.17	36.51	300	233	P	V
	*	5196	83.64	-	-	80.09	31.86	8.19	36.5	300	233	A	V
802.11ac VHT40 CH 46 5230MHz	*	5244	100.44	-	-	96.84	31.88	8.22	36.5	100	9	P	H
	*	5234	94.98	-	-	91.4	31.87	8.21	36.5	100	9	A	H
		5360.95	47.69	-26.31	74	43.97	31.91	8.31	36.5	100	9	P	H
		5381.2	40.51	-13.49	54	36.77	31.92	8.32	36.5	100	9	A	H
	*	5236	90.64	-	-	87.06	31.87	8.21	36.5	312	236	P	V
	*	5236	84.84	-	-	81.26	31.87	8.21	36.5	312	236	A	V
		5384.4	46.13	-27.87	74	42.39	31.92	8.32	36.5	312	236	P	V
	5359.2	39.45	-14.55	54	35.75	31.91	8.29	36.5	312	236	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												





**15E band 1 5150~5250MHz  
WIFI 802.11ac VHT40 (Harmonic @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11ac VHT40 CH 38 5190MHz		10380	46.06	-27.94	74	55.58	38.03	13.55	61.1	100	0	P	H
		10380	45.46	-28.54	74	54.98	38.03	13.55	61.1	100	360	P	V
802.11ac VHT40 CH 46 5230MHz		10461	45.93	-28.07	74	55.3	38.08	13.6	61.05	100	0	P	H
		10461	46.18	-27.82	74	55.55	38.08	13.6	61.05	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E band 1 5150~5250MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test data for 802.11ac VHT80 CH 42 5210MHz and a Remark section.



15E band 1 5150~5250MHz
WIFI 802.11ac VHT80 (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains two rows of test data for 802.11ac VHT80 CH 42 at 10419 MHz and a Remark section with two points.



**15E band 2 5250~5350MHz  
WIFI 802.11n HT20 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11n HT20 CH 52 5260MHz		5102.85	53.33	-20.67	74	43.78	31.83	8.08	30.36	102	13	P	H
		5106.3	45.55	-8.45	54	35.99	31.83	8.1	30.37	102	13	A	H
	*	5258	109.48	-	-	99.83	31.88	8.22	30.45	102	13	P	H
	*	5264	103.13	-	-	93.48	31.88	8.23	30.46	102	13	A	H
		5135.55	52.73	-21.27	74	43.16	31.84	8.11	30.38	329	231	P	V
		5122.55	45.49	-8.51	54	35.92	31.84	8.11	30.38	329	231	A	V
	*	5264	100.55	-	-	90.9	31.88	8.23	30.46	329	231	P	V
	*	5266	92.82	-	-	83.17	31.88	8.23	30.46	329	231	A	V
802.11n HT20 CH 60 5300MHz	*	5304	110.24	-	-	100.57	31.89	8.26	30.48	126	11	P	H
	*	5298	102.88	-	-	93.21	31.89	8.26	30.48	126	11	A	H
	*	5302	99.67	-	-	90	31.89	8.26	30.48	320	194	P	V
	*	5304	93.17	-	-	83.5	31.89	8.26	30.48	320	194	A	V
802.11n HT20 CH 64 5320MHz	*	5314	110.05	-	-	100.37	31.9	8.27	30.49	100	11	P	H
	*	5314	103.82	-	-	94.14	31.9	8.27	30.49	100	11	A	H
		5353.1	63.09	-10.91	74	53.4	31.91	8.29	30.51	100	11	P	H
	!	5350.05	51.33	-2.67	54	41.64	31.91	8.29	30.51	100	11	A	H
	*	5324	99.59	-	-	89.91	31.9	8.27	30.49	300	208	P	V
	*	5328	93.67	-	-	83.99	31.9	8.28	30.5	300	208	A	V
		5350.35	56.49	-17.51	74	46.8	31.91	8.29	30.51	300	208	P	V
	5350.1	46.23	-7.77	54	36.54	31.91	8.29	30.51	300	208	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**15E band 2 5250~5350MHz**  
**WIFI 802.11n HT20 (Harmonic @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11n HT20 CH 52 5260MHz		10521	50.85	-23.15	74	62.08	38.11	11.69	61.03	152	110	P	H
		10521	50.65	-23.35	74	61.88	38.11	11.69	61.03	331	129	P	V
802.11n HT20 CH 60 5300MHz		10599	50.77	-23.23	74	61.84	38.16	11.75	60.98	152	113	P	H
		10599	50.69	-23.31	74	61.76	38.16	11.75	60.98	347	216	P	V
802.11n HT20 CH 64 5320MHz		10641	50.35	-23.65	74	61.37	38.18	11.77	60.97	100	0	P	H
		10641	50.58	-23.42	74	61.6	38.18	11.77	60.97	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**15E band 2 5250~5350MHz  
WIFI 802.11n HT40 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11n HT40 CH 54 5270MHz		5104.9	47.12	-26.88	74	43.77	31.83	8.08	36.56	111	14	P	H
		5114.85	39.5	-14.5	54	36.12	31.83	8.1	36.55	111	14	A	H
	*	5278	102.83	-	-	99.19	31.89	8.25	36.5	111	14	P	H
	*	5278	96.47	-	-	92.83	31.89	8.25	36.5	111	14	A	H
		5103.35	46.64	-27.36	74	43.29	31.83	8.08	36.56	307	232	P	V
		5105.15	39.25	-14.75	54	35.9	31.83	8.08	36.56	307	232	A	V
	*	5276	92	-	-	88.36	31.89	8.25	36.5	307	232	P	V
	*	5274	86.66	-	-	83.05	31.88	8.23	36.5	307	232	A	V
802.11n HT40 CH 62 5310MHz	*	5316	100.97	-	-	97.3	31.9	8.27	36.5	111	13	P	H
	*	5318	96.02	-	-	92.35	31.9	8.27	36.5	111	13	A	H
		5350.65	62.55	-11.45	74	58.85	31.91	8.29	36.5	111	13	P	H
	!	5350.4	50.76	-3.24	54	47.06	31.91	8.29	36.5	111	13	A	H
	*	5318	93.07	-	-	89.4	31.9	8.27	36.5	350	206	P	V
	*	5314	87.34	-	-	83.67	31.9	8.27	36.5	350	206	A	V
		5350.95	53.89	-20.11	74	50.19	31.91	8.29	36.5	350	206	P	V
	5353.85	43.38	-10.62	54	39.68	31.91	8.29	36.5	350	206	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**15E band 2 5250~5350MHz  
WIFI 802.11n HT40 (Harmonic @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11n HT40 CH 54 5270MHz		10539	50.4	-23.6	74	61.6	38.12	11.7	61.02	103	19	P	H
		10539	49.76	-24.24	74	60.96	38.12	11.7	61.02	302	167	P	V
802.11n HT40 CH 62 5310MHz		10620	46.99	-27.01	74	58.04	38.17	11.76	60.98	100	0	P	H
		10620	47.44	-26.56	74	58.49	38.17	11.76	60.98	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**15E band 2 5250~5350MHz**  
**WIFI 802.11ac VHT20 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11ac VHT20 CH 52 5260MHz		5109.4	47.48	-26.52	74	44.1	31.83	8.1	36.55	100	14	P	H
		5115.25	39.77	-14.23	54	36.39	31.83	8.1	36.55	100	14	A	H
	*	5258	106.65	-	-	103.05	31.88	8.22	36.5	100	14	P	H
	*	5264	99.36	-	-	95.75	31.88	8.23	36.5	100	14	A	H
		5139.65	47.38	-26.62	74	43.94	31.84	8.13	36.53	100	235	P	V
		5144.7	39.06	-14.94	54	35.62	31.84	8.13	36.53	100	235	A	V
	*	5264	94.64	-	-	91.03	31.88	8.23	36.5	100	235	P	V
	5264	88.3	-	-	84.69	31.88	8.23	36.5	100	235	A	V	
802.11ac VHT20 CH 60 5300MHz	*	5304	112.2	-	-	108.55	31.89	8.26	36.5	100	16	P	H
	*	5304	104.71	-	-	101.06	31.89	8.26	36.5	100	16	A	H
	*	5296	100.25	-	-	96.6	31.89	8.26	36.5	319	236	P	V
	*	5294	94.83	-	-	91.18	31.89	8.26	36.5	319	236	A	V
802.11ac VHT20 CH 64 5320MHz	*	5318	106.75	-	-	103.08	31.9	8.27	36.5	116	13	P	H
	*	5318	99.31	-	-	95.64	31.9	8.27	36.5	116	13	A	H
		5350.65	58.21	-15.79	74	54.51	31.91	8.29	36.5	116	13	P	H
	!	5351.7	49.34	-4.66	54	45.64	31.91	8.29	36.5	116	13	A	H
	*	5316	95.44	-	-	91.77	31.9	8.27	36.5	100	189	P	V
	*	5318	89.68	-	-	86.01	31.9	8.27	36.5	100	189	A	V
		5351.55	48.65	-25.35	74	44.95	31.91	8.29	36.5	100	189	P	V
	5351.8	40.61	-13.39	54	36.91	31.91	8.29	36.5	100	189	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												





**15E band 2 5250~5350MHz**  
**WIFI 802.11ac VHT20 (Harmonic @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11ac VHT20 CH 52 5260MHz		10521	47.34	-26.66	74	58.57	38.11	11.69	61.03	100	0	P	H
		10521	48.56	-25.44	74	59.79	38.11	11.69	61.03	100	360	P	V
802.11ac VHT20 CH 60 5300MHz		10599	47.83	-26.17	74	58.9	38.16	11.75	60.98	100	0	P	H
		10599	46.64	-27.36	74	57.71	38.16	11.75	60.98	100	360	P	V
802.11ac VHT20 CH 64 5320MHz		10641	47	-27	74	58.02	38.18	11.77	60.97	100	0	P	H
		10641	47.64	-26.36	74	58.66	38.18	11.77	60.97	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E band 2 5250~5350MHz
WIFI 802.11ac VHT40 (Band Edge @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test data for 802.11ac VHT40 channels 54 and 62, including frequency, level, and various factors.



**15E band 2 5250~5350MHz**  
**WIFI 802.11ac VHT40 (Harmonic @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11ac VHT40 CH 54 5270MHz		10539	45.7	-28.3	74	54.96	38.12	13.64	61.02	100	0	P	H
		10539	46.6	-27.4	74	55.86	38.12	13.64	61.02	100	360	P	V
802.11ac VHT40 CH 62 5310MHz		10620	45	-29	74	54.12	38.17	13.69	60.98	100	0	P	H
		10620	46.01	-27.99	74	55.13	38.17	13.69	60.98	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**15E band 2 5250~5350MHz  
WIFI 802.11ac VHT80 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
<b>802.11ac VHT80 CH 58 5290MHz</b>		5141.95	47.34	-26.66	74	43.9	31.84	8.13	36.53	112	12	P	H
		5143.75	40.25	-13.75	54	36.81	31.84	8.13	36.53	112	12	A	H
	*	5288	98.3	-	-	94.66	31.89	8.25	36.5	112	12	P	H
	*	5308	94.07	-	-	90.42	31.89	8.26	36.5	112	12	A	H
		5382.45	59.47	-14.53	74	55.73	31.92	8.32	36.5	112	12	P	H
	!	5387	51.22	-2.78	54	47.48	31.92	8.32	36.5	112	12	A	H
		5124.05	46.37	-27.63	74	42.96	31.84	8.11	36.54	304	227	P	V
		5133.45	39.88	-14.12	54	36.47	31.84	8.11	36.54	304	227	A	V
	*	5306	91.49	-	-	87.84	31.89	8.26	36.5	304	227	P	V
	*	5304	84.78	-	-	81.13	31.89	8.26	36.5	304	227	A	V
		5385.55	50.96	-23.04	74	47.22	31.92	8.32	36.5	304	227	P	V
	5385.05	42.57	-11.43	54	38.83	31.92	8.32	36.5	304	227	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E band 2 5250~5350MHz
WIFI 802.11ac VHT80 (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains two rows of test data for 802.11ac VHT80 CH 58 at 5290MHz and a Remark section with two points.



**15E band 3 - 5470~5725MHz  
WIFI 802.11n HT20 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11n HT20 CH 100 5500MHz		5467.76	58.4	-15.6	74	48.65	31.95	8.38	30.58	116	11	P	H
	!	5469.52	48.64	-5.36	54	38.89	31.95	8.38	30.58	116	11	A	H
	*	5504	107.39	-	-	97.64	31.96	8.4	30.61	116	11	P	H
	*	5504	101.07	-	-	91.32	31.96	8.4	30.61	116	11	A	H
		5467.76	55.58	-18.42	74	45.83	31.95	8.38	30.58	319	208	P	V
		5469.2	47.08	-6.92	54	37.33	31.95	8.38	30.58	319	208	A	V
	*	5496	102.27	-	-	92.52	31.95	8.39	30.59	319	208	P	V
	*	5494	96.2	-	-	86.45	31.95	8.39	30.59	319	208	A	V
802.11n HT20 CH 116 5580MHz	*	5584	107.52			97.73	31.98	8.47	30.66	111	13	P	H
	*	5584	101.03			91.24	31.98	8.47	30.66	111	13	A	H
	*	5582	99.55			89.76	31.98	8.47	30.66	361	207	P	V
	*	5584	94.5			84.71	31.98	8.47	30.66	361	207	A	V
802.11n HT20 CH 140 5700MHz	*	5696	107.26	-	-	97.42	32.02	8.54	30.72	100	14	P	H
	*	5698	101.13	-	-	91.29	32.02	8.54	30.72	100	14	A	H
		5726.36	61.81	-12.19	74	51.94	32.04	8.57	30.74	100	14	P	H
	!	5725.32	51.37	-2.63	54	41.5	32.04	8.57	30.74	100	14	A	H
	*	5702	101.28	-	-	91.43	32.03	8.55	30.73	304	197	P	V
	*	5694	95.1	-	-	85.26	32.02	8.54	30.72	304	197	A	V
		5726.52	57.23	-16.77	74	47.36	32.04	8.57	30.74	304	197	P	V
	5726.2	47.86	-6.14	54	37.99	32.04	8.57	30.74	304	197	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**15E band 3 - 5470~5725MHz  
WIFI 802.11n HT20 (Harmonic @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11n HT20 CH 100 5500MHz		11001	50.83	-23.17	74	61.21	38.4	12.01	60.79	152	163	P	H
		11001	50.29	-23.71	74	60.67	38.4	12.01	60.79	328	219	P	V
802.11n HT20 CH 116 5580MHz		11160	50.87	-23.13	74	60.98	38.47	12.13	60.71	100	0	P	H
		11160	50.31	-23.69	74	60.42	38.47	12.13	60.71	100	360	P	V
802.11n HT20 CH 140 5700MHz		11400	50.57	-23.43	74	60.31	38.56	12.29	60.59	152	69	P	H
		11400	49.52	-24.48	74	59.26	38.56	12.29	60.59	361	137	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**15E band 3 - 5470~5725MHz  
WIFI 802.11n HT40 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11n HT40 CH 102 5510MHz		5467.92	59.75	-14.25	74	55.82	31.95	8.38	36.4	122	14	P	H
	!	5467.92	50.81	-3.19	54	46.88	31.95	8.38	36.4	122	14	A	H
	*	5494	99.76	-	-	95.8	31.95	8.39	36.38	122	14	P	H
	*	5498	93.77	-	-	89.76	31.96	8.4	36.35	122	14	A	H
		5467.92	53.13	-20.87	74	49.2	31.95	8.38	36.4	315	212	P	V
		5467.6	44.66	-9.34	54	40.73	31.95	8.38	36.4	315	212	A	V
	*	5496	93.2	-	-	89.24	31.95	8.39	36.38	315	212	P	V
	*	5496	87.32	-	-	83.36	31.95	8.39	36.38	315	212	A	V
802.11n HT40 CH 110 5550MHz	*	5568	103.97			99.79	31.98	8.45	36.25	100	10	P	H
	*	5564	98.43			94.3	31.97	8.44	36.28	100	10	A	H
	*	5544	97.68			93.58	31.97	8.43	36.3	325	207	P	V
	*	5554	91.66			87.53	31.97	8.44	36.28	325	207	A	V
802.11n HT40 CH 134 5670MHz	*	5676	100.44	-	-	96.13	32.02	8.53	36.24	100	13	P	H
	*	5678	93.55	-	-	89.24	32.02	8.53	36.24	100	13	A	H
		5727.64	54.69	-19.31	74	50.36	32.04	8.57	36.28	100	13	P	H
		5727.48	45.02	-8.98	54	40.69	32.04	8.57	36.28	100	13	A	H
	*	5676	93.46	-	-	89.15	32.02	8.53	36.24	327	214	P	V
	*	5674	87.76	-	-	83.45	32.02	8.53	36.24	327	214	A	V
		5746.36	46.85	-27.15	74	42.51	32.05	8.58	36.29	327	214	P	V
	5727.4	39.99	-14.01	54	35.66	32.04	8.57	36.28	327	214	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												





15E band 3 - 5470~5725MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains three main data rows for channels 102, 110, and 134, each with two sub-rows for different antenna positions (0 and 360 degrees).



**15E band 3 - 5470~5725MHz  
WIFI 802.11ac VHT20 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11ac VHT20 CH 100 5500MHz		5469.84	55.82	-18.18	74	51.89	31.95	8.38	36.4	129	22	P	H
		5466.96	46.42	-7.58	54	42.49	31.95	8.38	36.4	129	22	A	H
	*	5502	103.22	-	-	99.21	31.96	8.4	36.35	129	22	P	H
	*	5498	96.71	-	-	92.7	31.96	8.4	36.35	129	22	A	H
		5464.24	48.88	-25.12	74	44.95	31.95	8.38	36.4	331	207	P	V
		5469.04	41.54	-12.46	54	37.61	31.95	8.38	36.4	331	207	A	V
	*	5504	97.38	-	-	93.37	31.96	8.4	36.35	331	207	P	V
	*	5494	91.1	-	-	87.14	31.95	8.39	36.38	331	207	A	V
802.11ac VHT20 CH 116 5580MHz	*	5582	103.16			98.94	31.98	8.47	36.23	108	16	P	H
	*	5584	96.71			92.49	31.98	8.47	36.23	108	16	A	H
	*	5576	95.66			91.48	31.98	8.45	36.25	313	207	P	V
	*	5574	90.08			85.9	31.98	8.45	36.25	313	207	A	V
802.11ac VHT20 CH 140 5700MHz	*	5702	104.32	-	-	100.01	32.03	8.55	36.27	100	17	P	H
	*	5698	96.46	-	-	92.15	32.02	8.54	36.25	100	17	A	H
		5725.88	62.65	-11.35	74	58.32	32.04	8.57	36.28	100	17	P	H
	!	5729.96	50.34	-3.66	54	46.01	32.04	8.57	36.28	100	17	A	H
	*	5696	96.32	-	-	92.01	32.02	8.54	36.25	300	211	P	V
	*	5694	90.4	-	-	86.09	32.02	8.54	36.25	300	211	A	V
		5726.52	51.47	-22.53	74	47.14	32.04	8.57	36.28	300	211	P	V
	5726.44	43.01	-10.99	54	38.68	32.04	8.57	36.28	300	211	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E band 3 - 5470~5725MHz

WIFI 802.11ac VHT20 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11ac		11001	49.74	-24.26	74	60.12	38.4	12.01	60.79	100	0	P	H
VHT20													
CH 100		11001	47.04	-26.96	74	57.42	38.4	12.01	60.79	100	360	P	V
5500MHz													
802.11ac		11160	50.66	-23.34	74	60.77	38.47	12.13	60.71	100	0	P	H
VHT20													
CH 116		11160	50.33	-23.67	74	60.44	38.47	12.13	60.71	100	360	P	V
5580MHz													
802.11ac		11400	46.49	-27.51	74	56.23	38.56	12.29	60.59	100	0	P	H
VHT20													
CH 140		11400	48.83	-25.17	74	58.57	38.56	12.29	60.59	100	360	P	V
5700MHz													
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**15E band 3 - 5470~5725MHz  
WIFI 802.11ac VHT40 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11ac VHT40 CH 102 5510MHz		5467.44	59.46	-14.54	74	55.53	31.95	8.38	36.4	100	13	P	H
	!	5468.56	51.71	-2.29	54	47.78	31.95	8.38	36.4	100	13	A	H
	*	5498	99.99	-	-	95.98	31.96	8.4	36.35	100	13	P	H
	*	5492	93.92	-	-	89.96	31.95	8.39	36.38	100	13	A	H
		5469.84	50.67	-23.33	74	46.74	31.95	8.38	36.4	327	203	P	V
		5469.36	46.06	-7.94	54	42.13	31.95	8.38	36.4	327	203	A	V
	*	5514	94.53	-	-	90.48	31.96	8.42	36.33	327	203	P	V
	*	5514	88.51	-	-	84.46	31.96	8.42	36.33	327	203	A	V
802.11ac VHT40 CH 110 5550MHz	*	5556	99.35			95.22	31.97	8.44	36.28	100	360	P	H
	*	5554	94.16			90.03	31.97	8.44	36.28	100	360	A	H
	*	5536	92.61			88.51	31.97	8.43	36.3	324	206	P	V
	*	5554	87.77			83.64	31.97	8.44	36.28	324	206	A	V
802.11ac VHT40 CH 134 5670MHz	*	5674	101.02	-	-	96.71	32.02	8.53	36.24	124	7	P	H
	*	5674	95.42	-	-	91.11	32.02	8.53	36.24	124	7	A	H
		5733.32	52.92	-21.08	74	48.59	32.04	8.57	36.28	124	7	P	H
		5727.8	45.59	-8.41	54	41.26	32.04	8.57	36.28	124	7	A	H
	*	5674	95.59	-	-	91.28	32.02	8.53	36.24	325	200	P	V
	*	5674	90.12	-	-	85.81	32.02	8.53	36.24	325	200	A	V
		5735.48	48.72	-25.28	74	44.38	32.05	8.58	36.29	325	200	P	V
	5733.64	41.87	-12.13	54	37.54	32.04	8.57	36.28	325	200	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**15E band 3 - 5470~5725MHz**  
**WIFI 802.11ac VHT40 (Harmonic @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11ac VHT40 CH 102 5510MHz		11019	46.92	-27.08	74	55.37	38.41	13.92	60.78	100	0	P	H
		11019	47.32	-26.68	74	55.77	38.41	13.92	60.78	100	360	P	V
802.11ac VHT40 CH 110 5550MHz		11100	46.72	-27.28	74	55.05	38.44	13.97	60.74	100	0	P	H
		11100	46.32	-27.68	74	54.65	38.44	13.97	60.74	100	360	P	V
802.11ac VHT40 CH 134 5670MHz		11340	44.47	-29.53	74	52.45	38.53	14.11	60.62	100	0	P	H
		11340	45.32	-28.68	74	53.3	38.53	14.11	60.62	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**15E band 3 5470~5725MHz**  
**WIFI 802.11ac VHT80 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11ac VHT80 CH 106 5530MHz		5460.08	63.2	-10.8	74	59.31	31.94	8.37	36.42	115	15	P	H
	!	5459.76	52.07	-1.93	54	48.18	31.94	8.37	36.42	115	15	A	H
	*	5524	96.47	-	-	92.42	31.96	8.42	36.33	115	15	P	H
	*	5528	90.39	-	-	86.34	31.96	8.42	36.33	115	15	A	H
		5752.68	45.7	-28.3	74	41.36	32.05	8.59	36.3	115	15	P	H
		5762.92	40.03	-13.97	54	35.69	32.05	8.59	36.3	115	15	A	H
		5458.8	53.11	-20.89	74	49.22	31.94	8.37	36.42	326	205	P	V
		5446	44.76	-9.24	54	40.87	31.94	8.37	36.42	326	205	A	V
	*	5546	90.01	-	-	85.91	31.97	8.43	36.3	326	205	P	V
	*	5516	84.53	-	-	80.48	31.96	8.42	36.33	326	205	A	V
		5747.08	46.72	-27.28	74	42.38	32.05	8.58	36.29	326	205	P	V
	5735.08	39.99	-14.01	54	35.65	32.05	8.58	36.29	326	205	A	V	
802.11ac VHT80 CH 122 5610MHz		5461.36	47.79	-26.21	74	43.9	31.94	8.37	36.42	113	2	P	H
		5459.44	40.83	-13.17	54	36.94	31.94	8.37	36.42	113	2	A	H
	*	5624	97.52	-	-	93.25	31.99	8.49	36.21	113	2	P	H
	*	5624	91.25	-	-	86.98	31.99	8.49	36.21	113	2	A	H
		5736.84	48.32	-25.68	74	43.98	32.05	8.58	36.29	113	2	P	H
		5725.88	41.04	-12.96	54	36.71	32.04	8.57	36.28	113	2	A	H
		5418.8	46.44	-27.56	74	42.64	31.93	8.34	36.47	315	204	P	V
		5457.68	39.19	-14.81	54	35.3	31.94	8.37	36.42	315	204	A	V
	*	5640	89.3	-	-	85.02	32	8.5	36.22	315	204	P	V
	*	5624	84.86	-	-	80.59	31.99	8.49	36.21	315	204	A	V
		5757.24	45.78	-28.22	74	41.44	32.05	8.59	36.3	315	204	P	V
	5744.44	40.44	-13.56	54	36.1	32.05	8.58	36.29	315	204	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E band 3 5470~5725MHz
WIFI 802.11ac VHT80 (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test results for 802.11ac VHT80 channels 106 and 122.



**15E Emission below 1GHz**  
**WIFI 802.11ac VHT80 (LF @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11ac VHT80 LF		32.91	19.47	-20.53	40	31.58	18.18	0.69	30.98	-	-	P	H
		105.66	12.67	-30.83	43.5	28.65	13.18	1.24	30.4	-	-	P	H
		240.49	29.75	-16.25	46	45.78	12.72	1.73	30.48	100	154	P	H
		481.05	25.61	-20.39	46	35.36	17.95	2.74	30.44	-	-	P	H
		721.61	21.06	-24.94	46	27.53	20.57	3.4	30.44	-	-	P	H
		967.99	24.46	-29.54	54	27.31	23.67	4.02	30.54	-	-	P	H
		32.91	32.4	-7.6	40	44.51	18.18	0.69	30.98	100	154	P	V
		240.49	19.54	-26.46	46	35.57	12.72	1.73	30.48	-	-	P	V
		481.05	23.62	-22.38	46	33.37	17.95	2.74	30.44	-	-	P	V
		600.36	23.6	-22.4	46	33.53	17.2	3.07	30.2	-	-	P	V
		682.81	20.68	-25.32	46	27.66	20.09	3.3	30.37	-	-	P	V
		886.51	20.02	-25.98	46	24.09	22.67	3.81	30.55	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												





**Note symbol**

*	<b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency per 15.209(c).
!	Test result is <b>over limit</b> line.
P/A	<b>Peak</b> or <b>Average</b>
H/V	<b>Horizontal</b> or <b>Vertical</b>



A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

- Level(dBμV/m) =  
Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
- Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

- Level(dBμV/m)  
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)  
= 55.45 (dBμV/m)
- Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 55.45(dBμV/m) – 74(dBμV/m)  
= -18.55(dB)

For Average Limit @ 2390MHz:

- Level(dBμV/m)  
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)  
= 43.54 (dBμV/m)
- Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 43.54(dBμV/m) – 54(dBμV/m)  
= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.