



FCC RF Test Report

APPLICANT : Lenovo(Shanghai) Electronics Technology Co., Ltd.
EQUIPMENT : Mirage Camera
BRAND NAME : Lenovo
MODEL NAME : Lenovo VR-4501F
FCC ID : O57VR4501F
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Jul. 14, 2017 and testing was completed on Aug. 21, 2017. 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.



Approved by: James Huang / Manager

Sporton International (Kunshan) Inc.

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China***



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR771401C	Rev. 01	Initial issue of report	Sep. 12, 2017



SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	2.1049 15.403(i)	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)	Pass	-
3.3	15.407(a)	RSS-247 Section 6	Power Spectral Density	FCC ≤ 11 dBm/MHz (depend on band)	Pass	-
3.4	15.407(b)	RSS-247 Section 6	Unwanted Emissions	15.407(b) 15.209(a)	Pass	Under limit 3.76 dB at 5463.280 MHz
3.5	15.207	RSS-Gen 8.8	AC Conducted Emission	15.207(a)	Pass	Under limit 5.34 dB at 0.164 MHz
3.6	15.407(g)	-	Frequency Stability	Within Operation Band	Pass	-
3.7	15.407(c)	RSS-247 6.4(a)	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., 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 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mirage Camera
Brand Name	Lenovo
Model Name	Lenovo VR-4501F
FCC ID	O57VR4501F
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n HT20/HT40/ WLAN 5GHz 802.11a/n HT20/HT40/ WLAN 5GHz 802.11ac VHT20/VHT40/VHT80/ Bluetooth v 4.2 LE
HW Version	DVT2
SW Version	VR4501F_S100025_170622
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

Standards-related Product Specification	
Tx/Rx Frequency Range	5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz 5500 MHz ~ 5720 MHz
Maximum Output Power to Antenna	<5180 MHz ~ 5240 MHz> 802.11a : 16.47 dBm / 0.0444 W 802.11n HT20 : 16.26 dBm / 0.0423 W 802.11n HT40 : 16.23 dBm / 0.0420 W 802.11ac VHT20 : 16.20 dBm / 0.0417 W 802.11ac VHT40 : 16.36 dBm / 0.0433 W 802.11ac VHT80 : 15.97 dBm / 0.0395 W <5260 MHz ~ 5320 MHz> 802.11a : 15.98 dBm / 0.0396 W 802.11n HT20 : 15.68 dBm / 0.0370 W 802.11n HT40 : 15.52 dBm / 0.0356 W 802.11ac VHT20 : 15.65 dBm / 0.0367 W 802.11ac VHT40 : 15.91 dBm / 0.0390 W 802.11ac VHT80 : 15.76 dBm / 0.0377 W <5500 MHz ~ 5720 MHz > 802.11a : 13.97 dBm / 0.0249 W 802.11n HT20 : 13.91 dBm / 0.0246 W 802.11n HT40 : 13.89 dBm / 0.0245 W 802.11ac VHT20 : 13.82 dBm / 0.0241 W 802.11ac VHT40 : 13.76 dBm / 0.0238 W 802.11ac VHT80 : 13.79 dBm / 0.0239 W
99% Occupied Bandwidth	<5180 MHz ~ 5240 MHz> 802.11a : 18.58 MHz 802.11n HT20 : 19.33 MHz 802.11n VHT40 : 36.76 MHz 802.11ac VHT80 : 74.81 MHz <5260 MHz ~ 5320 MHz> 802.11a : 18.63 MHz 802.11n HT20 : 19.28 MHz 802.11n VHT40 : 36.76 MHz 802.11ac VHT80 : 74.81 MHz <5500 MHz ~ 5720 MHz > 802.11a : 18.58 MHz 802.11n HT20 : 19.43 MHz 802.11n HT40 : 36.86 MHz 802.11ac VHT80 : 74.81 MHz
Antenna Type / Gain	<5180 MHz ~ 5240 MHz> LDS Antenna with gain -0.20 dBi <5260 MHz ~ 5320 MHz> LDS Antenna with gain -0.20 dBi <5500 MHz ~ 5720 MHz> LDS Antenna with gain -0.20 dBi
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)

Note:

- For 802.11n HT20 / ac VHT20 and 802.11n HT40 / ac VHT40 mode, the whole testing assessed only 802.11n HT20/ ac VHT40 (for 5180 ~ 5320 MHz) and 802.11n HT20/ HT40 (for 5500 ~ 5720 MHz) by referring to their higher conducted power.

1.5 Specification of Accessory

Specification of Accessory				
AC Adapter 1 (EU)	Brand Name	Lenovo(Huntkey)	Model Name	C-P57
	Power Rating	I/P: 100-240Vac, 150mA, O/P: 5Vdc, 1000mA		
AC Adapter 1 (US)	Brand Name	Lenovo(Huntkey)	Model Name	C-P56
	Power Rating	I/P: 100-240Vac, 150mA, O/P: 5Vdc, 1000mA		
AC Adapter 1 (AU)	Brand Name	Lenovo(Huntkey)	Model Name	C-P59
	Power Rating	I/P: 100-240Vac, 150mA, O/P: 5Vdc, 1000mA		
AC Adapter 1 (AR)	Brand Name	Lenovo(Huntkey)	Model Name	C-P60
	Power Rating	I/P: 100-240Vac, 150mA, O/P: 5Vdc, 1000mA		
AC Adapter 1 (Korea)	Brand Name	Lenovo(Huntkey)	Model Name	C-P61
	Power Rating	I/P: 100-240Vac, 150mA, O/P: 5Vdc, 1000mA		
AC Adapter 2 (EU)	Brand Name	Lenovo(Acbel)	Model Name	C-P57
	Power Rating	I/P: 100-240Vac, 150mA, O/P: 5Vdc, 1000mA		
AC Adapter 2 (US)	Brand Name	Lenovo(Acbel)	Model Name	C-P56
	Power Rating	I/P: 100-240Vac, 150mA, O/P: 5Vdc, 1000mA		
AC Adapter 2 (UK)	Brand Name	Lenovo(Acbel)	Model Name	C-P58
	Power Rating	I/P: 100-240Vac, 150mA, O/P: 5Vdc, 1000mA		
AC Adapter 2 (IN)	Brand Name	Lenovo(Acbel)	Model Name	C-P45
	Power Rating	I/P: 100-240Vac, 150mA, O/P: 5Vdc, 1000mA		
AC Adapter 3 (UK)	Brand Name	Lenovo(Huntkey)	Model Name	C-P58
	Power Rating	I/P: 100-240Vac, 150mA, O/P: 5Vdc, 1000mA		
Battery 1	Brand Name	Lenovo (Sunwoda)	Model Name	L17D1P34
	Power Rating	3.82Vdc,2200mAh	Type	Li-ion, Polymer
Battery 2	Brand Name	Lenovo (SCUD)	Model Name	L17D1P34
	Power Rating	3.82Vdc,2200mAh	Type	Li-ion, Polymer
USB Cable	Brand Name	Lenovo (SGE)	Model Name	SGE-A025A
	Signal Line	1.0meter, shielded cable, without core		

1.6 Component List

There are two samples under test, the difference between two samples are shown as below table, the difference will not affect RF performance, so we only choose sample 1 to perform RF test:

Component	Sample 1	Sample 2
Memory(2+16G)	HYNIX H9TQ17ABJTBCUR-KUM	SAMSUNG KMQE60013M-B318



1.7 Modification of EUT

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

1.8 Testing Location

Sporton Lab is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600155-0) and the FCC designation No is CN5013.

Test Site	Sporton International (Kunshan) Inc.		
Test Site Location	No.3-2 Ping-Xiang Rd, Kunshan Development Zone Kunshan City Jiangsu Province 215335 China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.		FCC Test Firm Registration No.
	TH01-KS	CO01-KS	630927

Sporton Lab is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600156-0) and the FCC designation No is CN5019.

Test Site	Sporton International (Shenzhen) Inc.		
Test Site Location	No. 3 Bldg the third floor of south, Shahe River west, Fengzeyuan Warehouse, Nanshan District Shenzhen City Guangdong Province 518055 China TEL: +86-755-3320-2398		
Test Site No.	Sporton Site No.		FCC Test Firm Registration No.
	03CH03-SZ		577730

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



1.9 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 v01r04
- ♦ FCC KDB 644545 D03 Guidance for IEEE 802.11ac New Rules v01
- ♦ ANSI C63.10-2013
- ♦ IC RSS-247 Issue 2
- ♦ IC RSS-Gen Issue 4

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 were recorded in this report.

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
	38*	5190	46*	5230
	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
	54*	5270	62*	5310
	56	5280	64	5320
	58 [#]	5290	-	-

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5500-5720 MHz Band 3 (U-NII-2C)	100	5500	112	5560
	102*	5510	116	5580
	104	5520	132	5660
	106 [#]	5530	134*	5670
	108	5540	136	5680
	110*	5550	140	5700

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
TDWR Channel	118*	5590	124	5620
	120	5600	126*	5630
	122 [#]	5610	128	5640



Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
Straddle Channel	138 [#]	5690	144	5720
	142 [*]	5710	-	-

Note:

1. The above Frequency and Channel in "*" were 802.11n HT40 and 802.11ac VHT40.
2. The above Frequency and Channel in "[#]" were 802.11ac VHT80.

2.2 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates as below table.

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT40	MCS0
802.11ac VHT80	MCS0

Test Cases	
AC Conducted Emission	Mode 1 : Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter 1) + Battery 1
	Mode 2 : Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter 2) + Battery 2
Remark: - For Radiated Test Cases, The tests were performance with Adapter and USB Cable. - The worst case of conducted emission is mode 2; only the test data of it was reported.	



Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5720MHz
		802.11a	802.11a	802.11a
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140
Straddle		-	-	144

Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5720MHz
		802.11n HT20	802.11n HT20	802.11n HT20
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140
Straddle		-	-	144

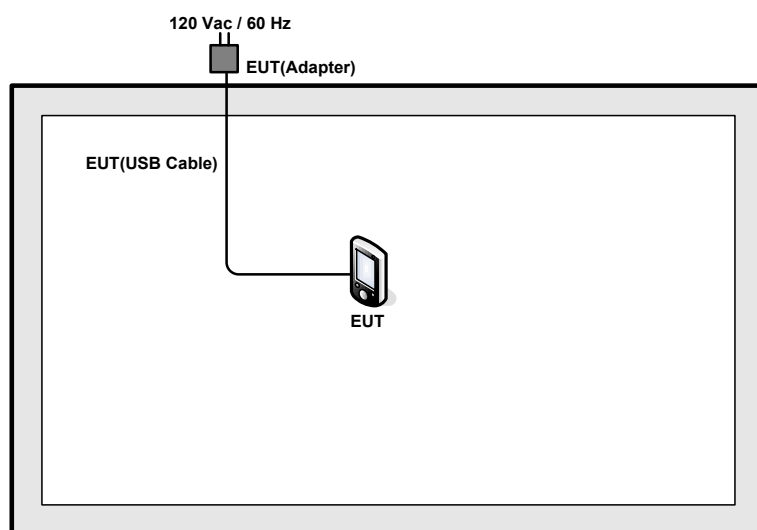
Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5720MHz
		802.11n HT40	802.11n HT40	802.11n HT40
L	Low	38	54	102
M	Middle	-	-	110
H	High	46	62	134
Straddle		-	-	142

Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5720MHz
		802.11ac VHT40	802.11ac VHT40	802.11ac VHT40
L	Low	38	54	102
M	Middle	-	-	110
H	High	46	62	134
Straddle		-	-	142

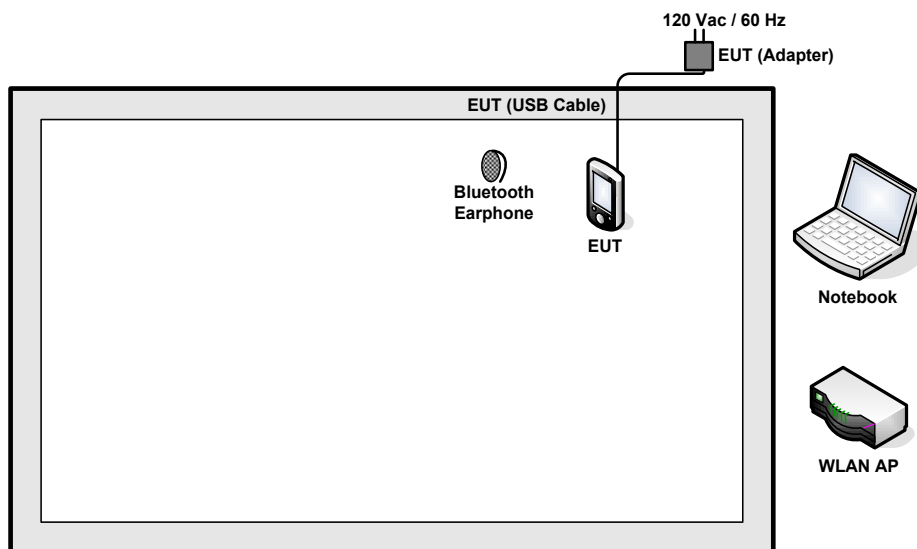
Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5720MHz
		802.11ac VHT80	802.11ac VHT80	802.11ac VHT80
L	Low	-	-	106
M	Middle	42	58	-
H	High	-	-	122
Straddle		-	-	138

2.3 Connection Diagram of Test System

< Radiated Emission Mode>



<AC Conducted Emission Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	LINKYS	WRT600	Q87-WRT600NV11	N/A	Unshielded, 1.8m
2.	Notebook	Lenovo	G480	N/A	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	Bluetooth Earphone	Lenovo	LBH308	N/A	N/A	N/A

2.5 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.

2.6 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 6.9dB.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)}. \\ &= 6.9(\text{dB})\end{aligned}$$

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.

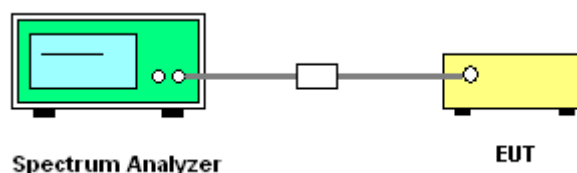
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

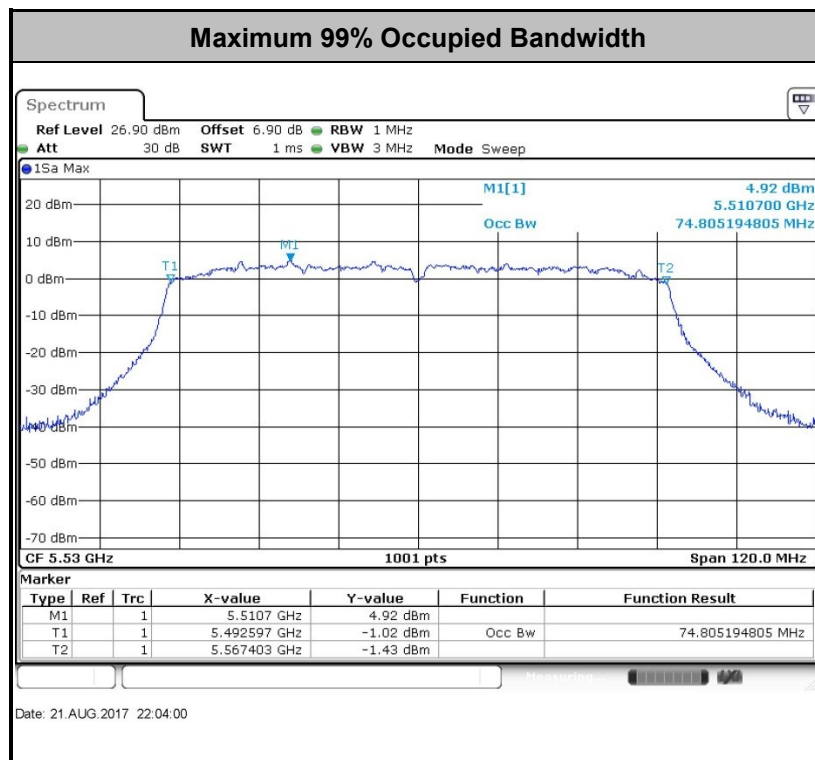
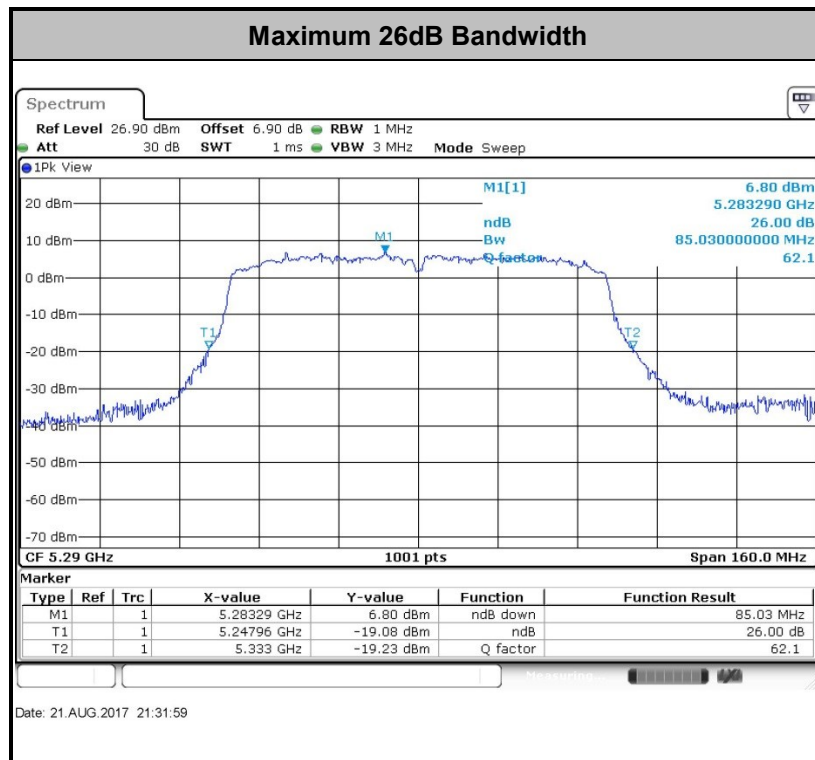
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04. Section C) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB 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) $\geq 3 * \text{RBW}$.
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 5.25–5.725 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.

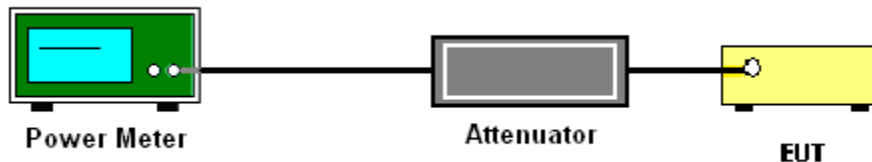
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.

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 5.25–5.725 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 v01r04.

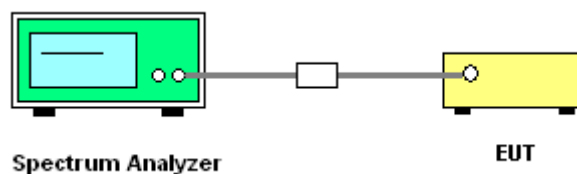
Section F) Maximum power spectral density.

Method SA-2

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

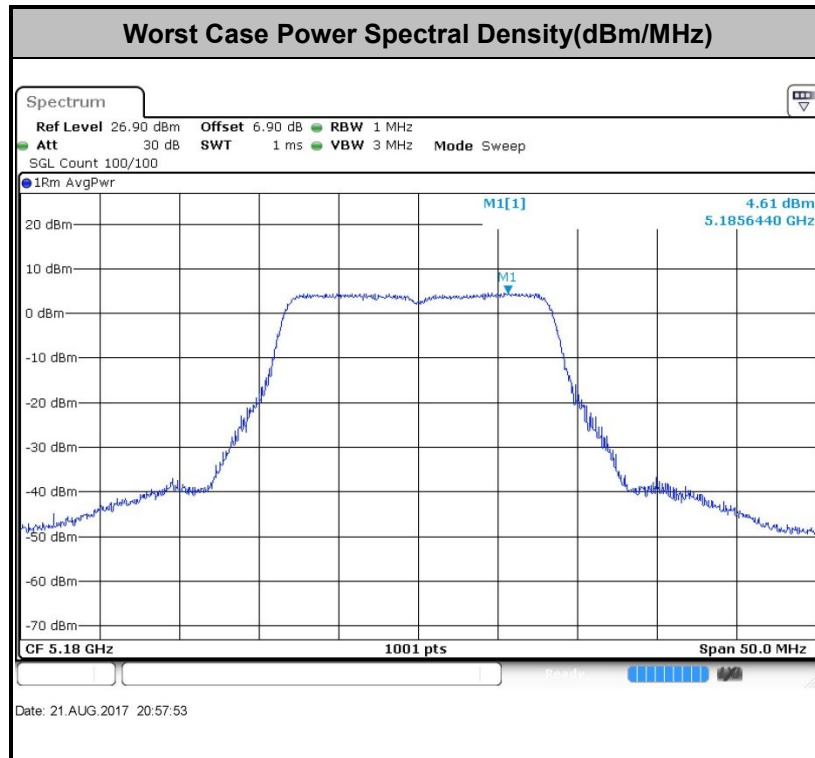
1. The testing follows Method SA-2 of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.
 - Measure the duty cycle.
 - Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 1 MHz.
 - Set VBW $\geq$ 3 MHz.
 - Number of points in sweep $\geq$ 2 Span / RBW.
 - 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.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.



Note: Average Power Density (dB) = Measured value+ Duty Factor

3.4 Unwanted Radiated Emission Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

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 5470-5725MHz band: all emissions outside of the 5470-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

- (2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits 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.

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

EIRP (dBm)	Field Strength at 3m (dBμV/m)
- 27	68.3

(3) KDB789033 D01 v01r04 G)2)c)

- (i) Section 15.407(b)(1) to (b)(3) specify the unwanted emission limits for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz.³
- (ii) Section 15.407(b)(4) specifies the unwanted emission limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are in terms of a Peak detector. An alternative to the band emissions mask is specified in Section 15.407(b)(4)(ii). The alternative limits are based on the highest antenna gain specified in the filing. There are also marketing and importation restrictions for the devices using the alternative limit.⁴

Note 3: An out-of-band emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz peak emission limit.

Note 4: Only devices with antenna gains of 10 dBi or less may be approved using the emission limits specified in Section 15.247(d) till March 2, 2018; all other devices operating in this band must use the mask specified in Section 15.407(b)(4)(i).

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 v01r04.
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 $\geq$ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

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

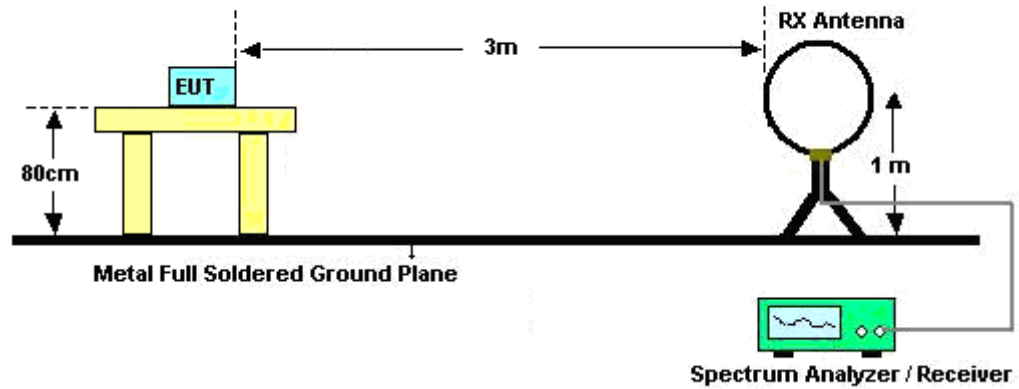
- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.



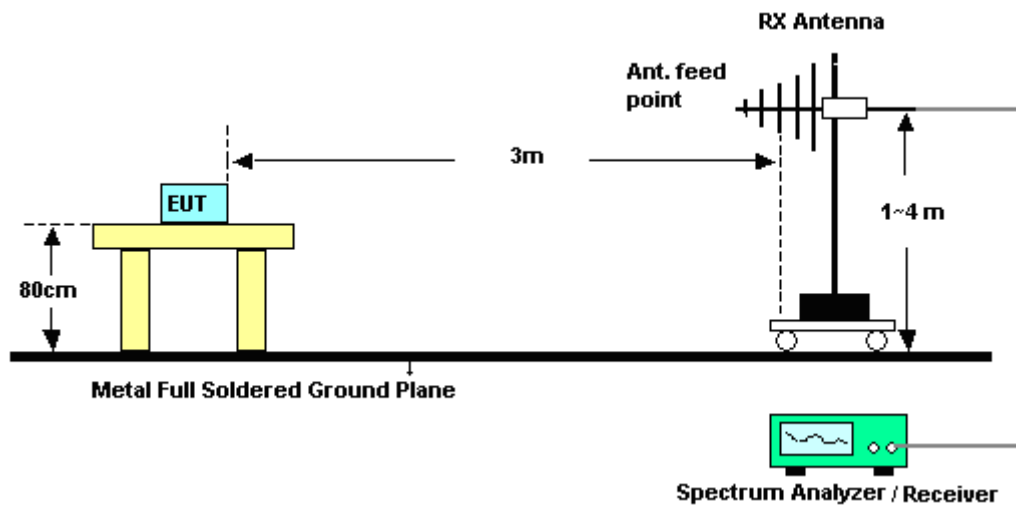
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband 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

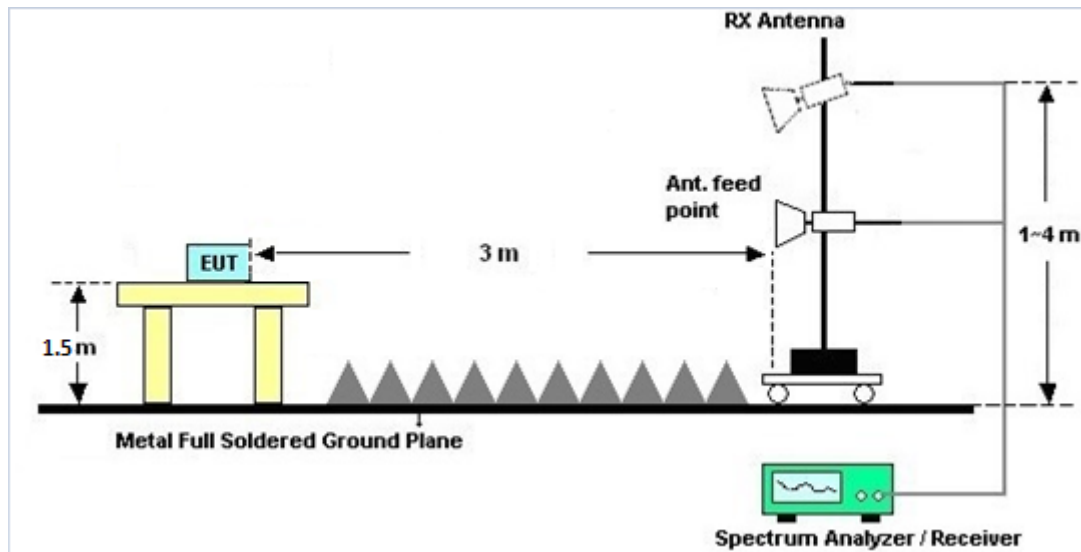
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.4.5 Test Results of Radiated Spurious 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 was not reported.

3.4.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B.

3.4.7 Duty Cycle

Please refer to Appendix C.

3.4.8 Test Result of Radiated Spurious 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 μ 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.

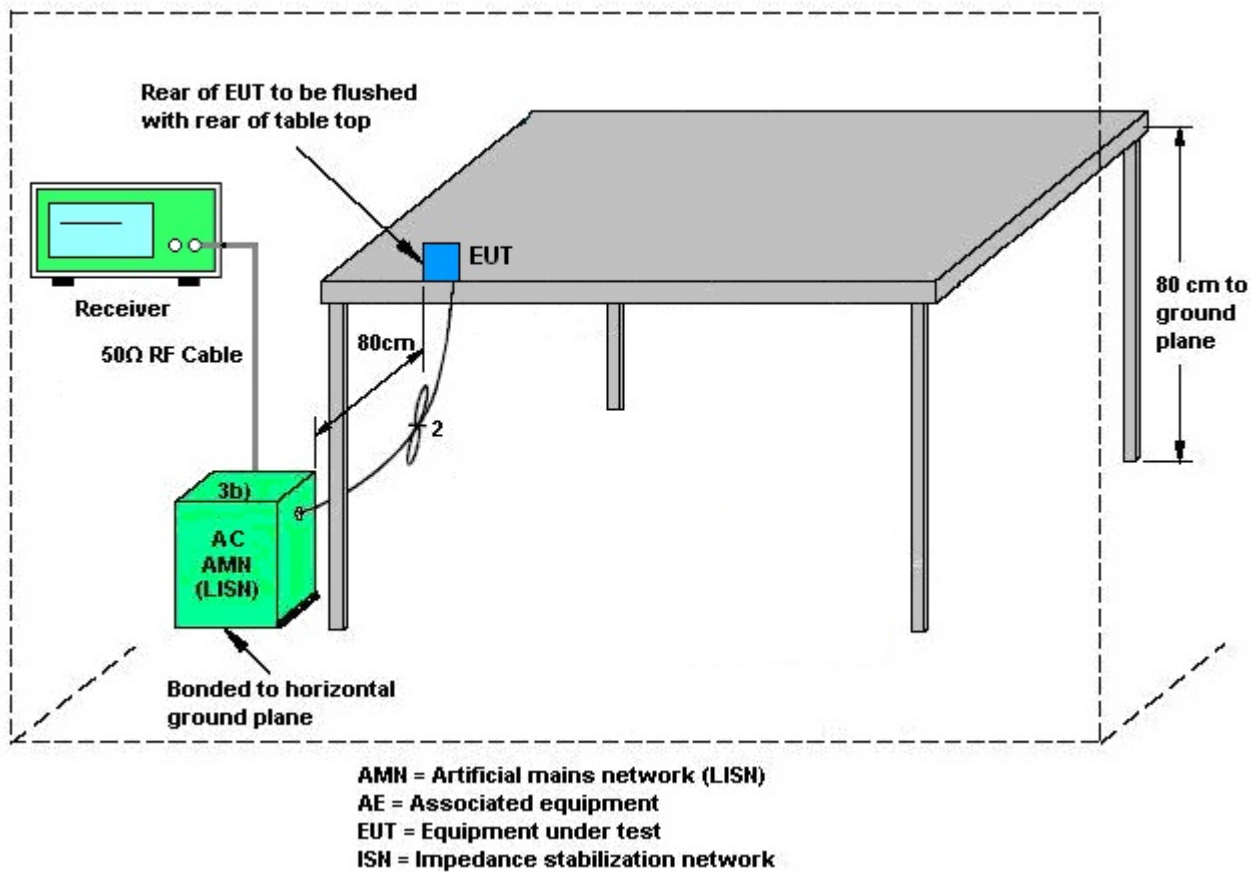
3.5.2 Measuring Instruments

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.

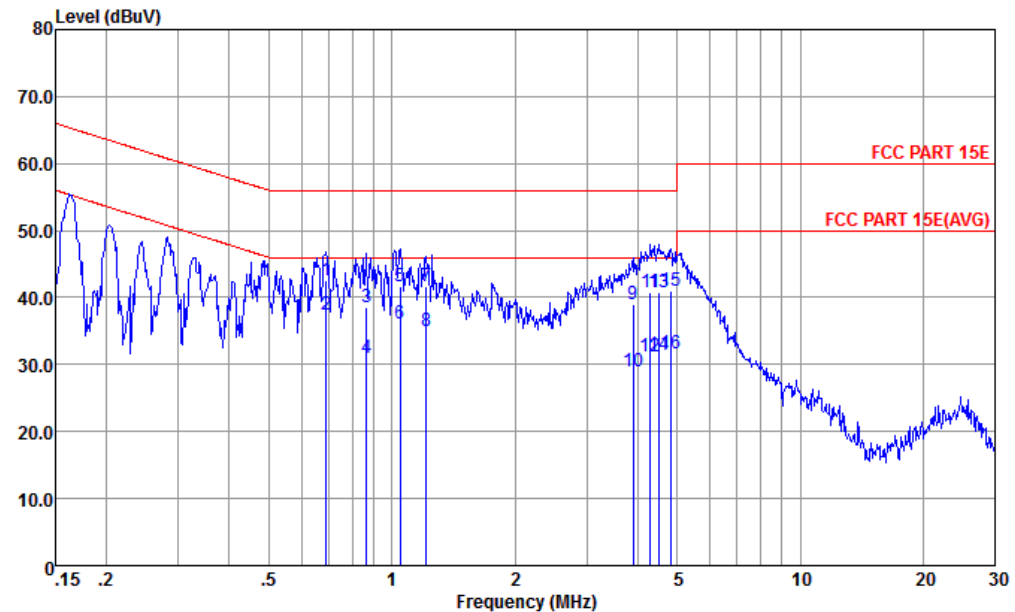
3.5.4 Test Setup





3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	Temperature :	23~25℃
Test Engineer :	Amos Zhang	Relative Humidity :	44~46%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter 2) + Battery 2		

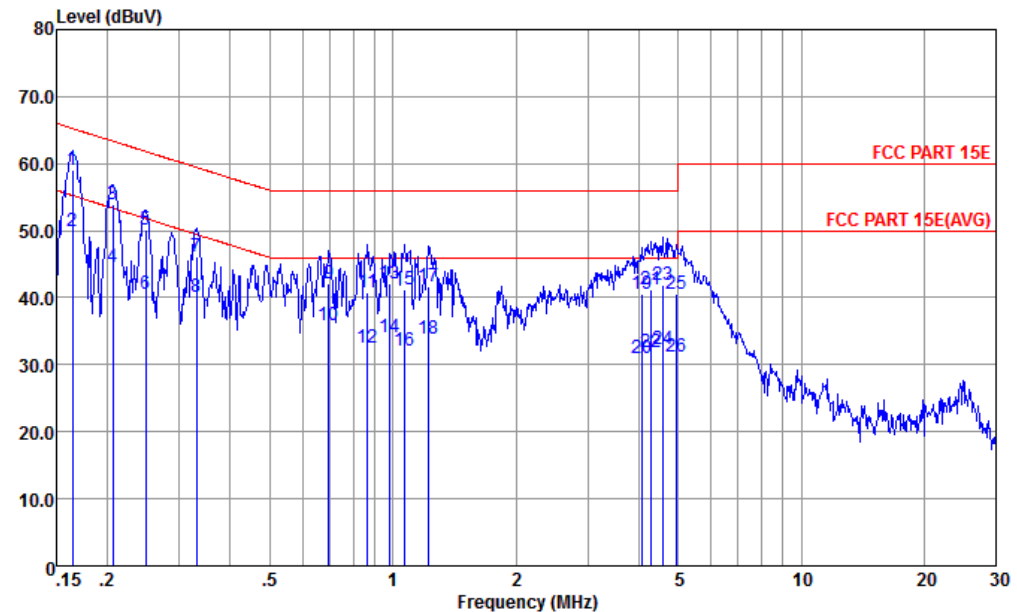


Site : CO01-KS
Condition : FCC PART 15E LISN-L-161017-060103 LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.690	42.63	-13.37	56.00	32.20	0.25	10.18	QP
2 *	0.690	37.53	-8.47	46.00	27.10	0.25	10.18	Average
3	0.866	38.53	-17.47	56.00	28.09	0.26	10.18	QP
4	0.866	31.03	-14.97	46.00	20.59	0.26	10.18	Average
5	1.049	41.75	-14.25	56.00	31.30	0.26	10.19	QP
6	1.049	36.05	-9.95	46.00	25.60	0.26	10.19	Average
7	1.216	41.64	-14.36	56.00	31.20	0.25	10.19	QP
8	1.216	35.04	-10.96	46.00	24.60	0.25	10.19	Average
9	3.901	38.95	-17.05	56.00	28.50	0.21	10.24	QP
10	3.901	29.05	-16.95	46.00	18.60	0.21	10.24	Average
11	4.292	40.75	-15.25	56.00	30.30	0.21	10.24	QP
12	4.292	31.25	-14.75	46.00	20.80	0.21	10.24	Average
13	4.525	40.75	-15.25	56.00	30.30	0.21	10.24	QP
14	4.525	31.35	-14.65	46.00	20.90	0.21	10.24	Average
15	4.822	41.05	-14.95	56.00	30.60	0.21	10.24	QP
16	4.822	31.75	-14.25	46.00	21.30	0.21	10.24	Average



Test Mode :	Mode 2	Temperature :	23~25℃
Test Engineer :	Amos Zhang	Relative Humidity :	44~46%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter 2) + Battery 2		

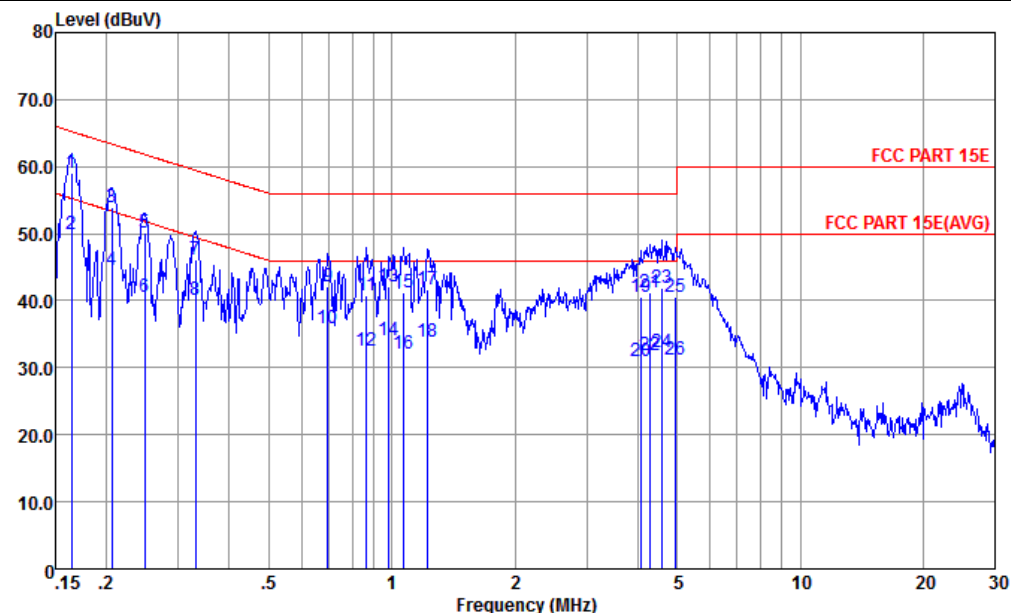


Site : CO01-KS
Condition : FCC PART 15E LISN-N-161017-060103 NEUTRAL

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.164	59.01	-6.24	65.25	48.30	0.34	10.37	QP
2 *	0.164	49.91	-5.34	55.25	39.20	0.34	10.37	Average
3	0.206	53.96	-9.40	63.36	43.30	0.33	10.33	QP
4	0.206	44.56	-8.80	53.36	33.90	0.33	10.33	Average
5	0.248	50.13	-11.69	61.82	39.50	0.34	10.29	QP
6	0.248	40.53	-11.29	51.82	29.90	0.34	10.29	Average
7	0.330	46.19	-13.25	59.44	35.59	0.36	10.24	QP
8	0.330	40.19	-9.25	49.44	29.59	0.36	10.24	Average
9	0.697	42.06	-13.94	56.00	31.50	0.38	10.18	QP
10	0.697	35.86	-10.14	46.00	25.30	0.38	10.18	Average
11	0.866	40.87	-15.13	56.00	30.30	0.39	10.18	QP
12	0.866	32.47	-13.53	46.00	21.90	0.39	10.18	Average
13	0.984	42.09	-13.91	56.00	31.50	0.40	10.19	QP
14	0.984	34.19	-11.81	46.00	23.60	0.40	10.19	Average
15	1.071	41.19	-14.81	56.00	30.60	0.40	10.19	QP
16	1.071	32.19	-13.81	46.00	21.60	0.40	10.19	Average
17	1.223	41.69	-14.31	56.00	31.10	0.40	10.19	QP



Test Mode :	Mode 2	Temperature :	23~25°C
Test Engineer :	Amos Zhang	Relative Humidity :	44~46%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter 2) + Battery 2		



Site : CO01-KS
Condition : FCC PART 15E LISN-N-161017-060103 NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
18	1.223	33.89	-12.11	46.00	23.30	0.40	10.19	Average
19	4.070	40.53	-15.47	56.00	29.90	0.39	10.24	QP
20	4.070	30.93	-15.07	46.00	20.30	0.39	10.24	Average
21	4.292	41.23	-14.77	56.00	30.60	0.39	10.24	QP
22	4.292	31.93	-14.07	46.00	21.30	0.39	10.24	Average
23	4.574	41.93	-14.07	56.00	31.31	0.38	10.24	QP
24	4.574	32.23	-13.77	46.00	21.61	0.38	10.24	Average
25	4.952	40.52	-15.48	56.00	29.90	0.38	10.24	QP
26	4.952	31.22	-14.78	46.00	20.60	0.38	10.24	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.

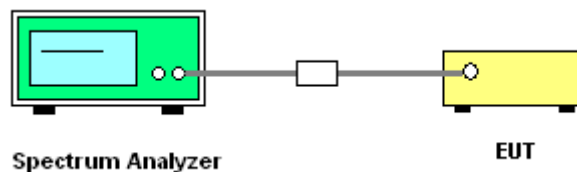
3.6.2 Measuring Instruments

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

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

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



4 List of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Aug. 08, 2017	Aug. 21, 2017	Aug. 07, 2018	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 19, 2017	Aug. 21, 2017	Jan. 18, 2018	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 19, 2017	Aug. 21, 2017	Jan. 18, 2018	Conducted (TH01-KS)
Thermal Chamber	Hongzhan	LP-150U	HZ014011440	-40~+150°C 20%~95%RH	Apr. 18, 2017	Aug. 21, 2017	Apr. 17, 2018	Conducted (TH01-KS)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr. 20, 2017	Aug. 17, 2017	Apr. 19, 2018	Radiation (03CH03-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 20, 2017	Aug. 17, 2017	Apr. 19, 2018	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 14, 2017	Aug. 17, 2017	May 13, 2018	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz~2GHz	May 14, 2017	Aug. 17, 2017	May 13, 2018	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	Jul. 09, 2017	Aug. 17, 2017	Jul. 08, 2018	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18GHz~40GHz	Jun. 16, 2017	Aug. 17, 2017	Jun. 15, 2018	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102210	0.01Hz ~3000MHz	Oct. 11, 2016	Aug. 17, 2017	Oct. 10, 2017	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P-R	1943528	1GHz~18GHz	Oct. 11, 2016	Aug. 17, 2017	Oct. 10, 2017	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5G Hz	Jan. 06, 2017	Aug. 17, 2017	Jan. 05, 2018	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 21, 2017	Aug. 17, 2017	Jul. 20, 2018	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Aug. 17, 2017	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Aug. 17, 2017	NCR	Radiation (03CH03-SZ)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 20, 2017	Jul. 22, 2017	Apr. 19, 2018	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 13, 2016	Jul. 22, 2017	Oct. 12, 2017	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 13, 2016	Jul. 22, 2017	Oct. 12, 2017	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 13, 2016	Jul. 22, 2017	Oct. 12, 2017	Conduction (CO01-KS)

NCR: No Calibrate Requirement

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.3dB
--	-------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	5.1dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	5.0dB
--	-------

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	5.0dB
--	-------



Appendix A. Conducted Test Results

Report Number : FR771401C

Test Engineer:	Silent Hai	Temperature:	21~25	°C
Test Date:	2017/8/21	Relative Humidity:	51~55	%

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)		
11a	6Mbps	1	36	5180	18.58	23.58	-	22.69		
11a	6Mbps	1	44	5220	18.48	23.63	-	22.67		
11a	6Mbps	1	48	5240	18.53	23.63	-	22.68		
HT20	MCS0	1	36	5180	19.33	23.63	-	22.86		
HT20	MCS0	1	44	5220	19.33	23.78	-	22.86		
HT20	MCS0	1	48	5240	19.18	23.83	-	22.83		
VHT40	MCS0	1	38	5190	36.76	44.51	-	23.01		
VHT40	MCS0	1	46	5230	36.66	44.42	-	23.01		
VHT80	MCS0	1	42	5210	74.81	84.24	-	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
11a	6Mbps	1	36	5180	0.58	16.47	24.00	-0.20		Pass
11a	6Mbps	1	44	5220	0.58	16.25	24.00	-0.20		Pass
11a	6Mbps	1	48	5240	0.58	15.74	24.00	-0.20		Pass
HT20	MCS0	1	36	5180	0.64	16.26	24.00	-0.20		Pass
HT20	MCS0	1	44	5220	0.64	15.92	24.00	-0.20		Pass
HT20	MCS0	1	48	5240	0.64	15.75	24.00	-0.20		Pass
HT40	MCS0	1	38	5190	0.64	16.23	24.00	-0.20		Pass
HT40	MCS0	1	46	5230	0.64	16.05	24.00	-0.20		Pass
VHT20	MCS0	1	36	5180	0.77	16.20	24.00	-0.20		Pass
VHT20	MCS0	1	44	5220	0.77	15.98	24.00	-0.20		Pass
VHT20	MCS0	1	48	5240	0.77	15.62	24.00	-0.20		Pass
VHT40	MCS0	1	38	5190	1.47	16.36	24.00	-0.20		Pass
VHT40	MCS0	1	46	5230	1.47	16.22	24.00	-0.20		Pass
VHT80	MCS0	1	42	5210	2.58	15.97	24.00	-0.20		Pass

TEST RESULTS DATA
Power Spectral Density

FCC Band I										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm/MHz)	DG (dBi)	-	Pass/Fail
11a	6Mbps	1	36	5180	0.58	5.19	11.00	-0.20		Pass
11a	6Mbps	1	44	5220	0.58	4.65	11.00	-0.20		Pass
11a	6Mbps	1	48	5240	0.58	4.95	11.00	-0.20		Pass
HT20	MCS0	1	36	5180	0.64	4.76	11.00	-0.20		Pass
HT20	MCS0	1	44	5220	0.64	4.60	11.00	-0.20		Pass
HT20	MCS0	1	48	5240	0.64	4.22	11.00	-0.20		Pass
VHT40	MCS0	1	38	5190	1.47	2.97	11.00	-0.20		Pass
VHT40	MCS0	1	46	5230	1.47	2.16	11.00	-0.20		Pass
VHT80	MCS0	1	42	5210	2.58	0.02	11.00	-0.20		Pass

TEST RESULTS DATA
26dB and 99% OBW

Band II										
Mod.	Data Rate	N _{TX}	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
11a	6M bps	1	52	5260	18.58	23.58	23.69	29.69	23.98	
11a	6M bps	1	60	5300	18.63	23.43	23.70	29.70	23.98	
11a	6M bps	1	64	5320	18.53	23.33	23.68	29.68	23.98	
HT20	MCS 0	1	52	5260	19.28	23.98	23.85	29.85	23.98	
HT20	MCS 0	1	60	5300	19.28	23.93	23.85	29.85	23.98	
HT20	MCS 0	1	64	5320	19.28	23.78	23.85	29.85	23.98	
VHT40	MCS 0	1	54	5270	36.56	44.42	23.98	30.00	23.98	
VHT40	MCS 0	1	62	5310	36.76	44.51	23.98	30.00	23.98	
VHT80	MCS 0	1	58	5290	74.81	85.03	23.98	30.00	23.98	

TEST RESULTS DATA
Average Power Table

FCC Band II										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
11a	6M bps	1	52	5260	0.58	15.73	23.98	-0.20	26.99	Pass
11a	6M bps	1	60	5300	0.58	15.98	23.98	-0.20	26.99	Pass
11a	6M bps	1	64	5320	0.58	15.55	23.98	-0.20	26.99	Pass
HT20	MCS 0	1	52	5260	0.64	15.59	23.98	-0.20	26.99	Pass
HT20	MCS 0	1	60	5300	0.64	15.68	23.98	-0.20	26.99	Pass
HT20	MCS 0	1	64	5320	0.64	15.55	23.98	-0.20	26.99	Pass
HT40	MCS 0	1	54	5270	0.64	15.52	23.98	-0.20	26.99	Pass
HT40	MCS 0	1	62	5310	0.64	15.39	23.98	-0.20	26.99	Pass
VHT20	MCS 0	1	52	5260	0.77	15.65	23.98	-0.20	26.99	Pass
VHT20	MCS 0	1	60	5300	0.77	15.51	23.98	-0.20	26.99	Pass
VHT20	MCS 0	1	64	5320	0.77	15.49	23.98	-0.20	26.99	Pass
VHT40	MCS 0	1	54	5270	1.47	15.89	23.98	-0.20	26.99	Pass
VHT40	MCS 0	1	62	5310	1.47	15.91	23.98	-0.20	26.99	Pass
VHT80	MCS 0	1	58	5290	2.58	15.76	23.98	-0.20	26.99	Pass

TEST RESULTS DATA
Power Spectral Density

Band II										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm/MHz)	DG (dBi)		Pass/Fail
11a	6M bps	1	52	5260	0.58	4.26	11.00	-0.20		Pass
11a	6M bps	1	60	5300	0.58	4.51	11.00	-0.20		Pass
11a	6M bps	1	64	5320	0.58	4.34	11.00	-0.20		Pass
HT20	MCS 0	1	52	5260	0.64	4.08	11.00	-0.20		Pass
HT20	MCS 0	1	60	5300	0.64	4.07	11.00	-0.20		Pass
HT20	MCS 0	1	64	5320	0.64	4.20	11.00	-0.20		Pass
VHT40	MCS 0	1	54	5270	1.47	1.75	11.00	-0.20		Pass
VHT40	MCS 0	1	62	5310	1.47	2.08	11.00	-0.20		Pass
VHT80	MCS 0	1	58	5290	2.58	-1.16	11.00	-0.20		Pass

TEST RESULTS DATA
26dB and 99% OBW

Band III										
Mod.	Data Rate	N _{TX}	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
11a	6M bps	1	100	5500	18.58	23.53	23.69	29.69	23.98	
11a	6M bps	1	116	5580	18.43	23.38	23.66	29.66	23.98	
11a	6M bps	1	140	5700	18.48	23.73	23.67	29.67	23.98	
11a	6M bps	1	144	5720	18.33	23.63	23.63	29.63	23.98	
HT20	MCS 0	1	100	5500	19.38	23.68	23.87	29.87	23.98	
HT20	MCS 0	1	116	5580	19.38	23.88	23.87	29.87	23.98	
HT20	MCS 0	1	140	5700	19.43	23.83	23.88	29.88	23.98	
HT20	MCS 0	1	144	5720	19.33	23.98	23.86	29.86	23.98	
HT40	MCS 0	1	102	5510	36.76	44.60	23.98	30.00	23.98	
HT40	MCS 0	1	110	5550	36.86	44.51	23.98	30.00	23.98	
HT40	MCS 0	1	134	5670	36.76	44.60	23.98	30.00	23.98	
HT40	MCS 0	1	142	5710	36.86	44.60	23.98	30.00	23.98	
VHT80	MCS 0	1	106	5530	74.81	84.72	23.98	30.00	23.98	
VHT80	MCS 0	1	122	5610	74.81	85.03	23.98	30.00	23.98	
VHT80	MCS 0	1	138	5690	74.81	84.88	23.98	30.00	23.98	

TEST RESULTS DATA
Average Power Table

FCC Band III										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
11a	6M bps	1	100	5500	0.58	12.83	23.98	-0.20	26.99	Pass
11a	6M bps	1	116	5580	0.58	13.00	23.98	-0.20	26.99	Pass
11a	6M bps	1	140	5700	0.58	13.97	23.98	-0.20	26.99	Pass
11a	6M bps	1	144	5720	0.58	13.47	23.98	-0.20	26.99	Pass
HT20	MCS 0	1	100	5500	0.64	12.99	23.98	-0.20	26.99	Pass
HT20	MCS 0	1	116	5580	0.64	13.10	23.98	-0.20	26.99	Pass
HT20	MCS 0	1	140	5700	0.64	13.91	23.98	-0.20	26.99	Pass
HT20	MCS 0	1	144	5720	0.64	13.45	23.98	-0.20	26.99	Pass
HT40	MCS 0	1	102	5510	0.64	13.78	23.98	-0.20	26.99	Pass
HT40	MCS 0	1	110	5550	0.64	13.89	23.98	-0.20	26.99	Pass
HT40	MCS 0	1	134	5670	0.64	13.79	23.98	-0.20	26.99	Pass
HT40	MCS 0	1	142	5710	0.64	13.86	23.98	-0.20	26.99	Pass
VHT20	MCS 0	1	100	5500	0.77	12.92	23.98	-0.20	26.99	Pass
VHT20	MCS 0	1	116	5580	0.77	13.05	23.98	-0.20	26.99	Pass
VHT20	MCS 0	1	140	5700	0.77	13.82	23.98	-0.20	26.99	Pass
VHT20	MCS 0	1	144	5720	0.77	13.54	23.98	-0.20	26.99	Pass
VHT40	MCS 0	1	102	5510	1.47	12.95	23.98	-0.20	26.99	Pass
VHT40	MCS 0	1	110	5550	1.47	13.55	23.98	-0.20	26.99	Pass
VHT40	MCS 0	1	134	5670	1.47	13.58	23.98	-0.20	26.99	Pass
VHT40	MCS 0	1	142	5710	1.47	13.76	23.98	-0.20	26.99	Pass
VHT80	MCS 0	1	106	5530	2.58	13.13	23.98	-0.20	26.99	Pass
VHT80	MCS 0	1	122	5610	2.58	13.59	23.98	-0.20	26.99	Pass
VHT80	MCS 0	1	138	5690	2.58	13.79	23.98	-0.20	26.99	Pass

TEST RESULTS DATA
Power Spectral Density

Band III										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm/MHz)	DG (dBi)		Pass/Fail
11a	6M bps	1	100	5500	0.58	1.82	11.00	-0.20		Pass
11a	6M bps	1	116	5580	0.58	2.27	11.00	-0.20		Pass
11a	6M bps	1	140	5700	0.58	2.40	11.00	-0.20		Pass
11a	6M bps	1	144	5720	0.58	2.59	11.00	-0.20		Pass
HT20	MCS 0	1	100	5500	0.64	1.63	11.00	-0.20		Pass
HT20	MCS 0	1	116	5580	0.64	1.33	11.00	-0.20		Pass
HT20	MCS 0	1	140	5700	0.64	2.36	11.00	-0.20		Pass
HT20	MCS 0	1	144	5720	0.64	2.58	11.00	-0.20		Pass
HT40	MCS 0	1	102	5510	1.47	-0.63	11.00	-0.20		Pass
HT40	MCS 0	1	110	5550	1.47	-0.46	11.00	-0.20		Pass
HT40	MCS 0	1	134	5670	1.47	-0.10	11.00	-0.20		Pass
HT40	MCS 0	1	142	5710	1.47	0.23	11.00	-0.20		Pass
VHT80	MCS 0	1	106	5530	2.58	-3.43	11.00	-0.20		Pass
VHT80	MCS 0	1	122	5610	2.58	-3.22	11.00	-0.20		Pass
VHT80	MCS 0	1	138	5690	2.58	-2.88	11.00	-0.20		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	6Mbps	1	36	5180	5179.975	-0.025	-4.83	50	3.82	
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	-30	3.82	
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	20	4.35	
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	20	3.5	
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	20	3.82	

Band II										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6Mbps	1	64	5320	5319.975	-0.025	-4.70	50	3.82	
11a	6Mbps	1	64	5320	5320.025	0.025	4.70	-30	3.82	
11a	6Mbps	1	64	5320	5319.950	-0.050	-9.40	20	4.35	
11a	6Mbps	1	64	5320	5319.975	-0.025	-4.70	20	3.5	
11a	6Mbps	1	64	5320	5319.975	-0.025	-4.70	20	3.82	

Band III										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6Mbps	1	100	5500	5500.000	0.000	0.00	50	3.82	
11a	6Mbps	1	100	5500	5500.025	0.025	4.55	-30	3.82	
11a	6Mbps	1	100	5500	5499.975	-0.025	-4.55	20	4.35	
11a	6Mbps	1	100	5500	5499.975	-0.025	-4.55	20	3.5	
11a	6Mbps	1	100	5500	5499.975	-0.025	-4.55	20	3.82	



Appendix B. Radiated Spurious Emission

Band 1 - 5150~5250MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 36 5180MHz		5086.32	48.78	-25.22	74	41.82	31.93	7.86	32.83	100	129	P	H
		5127.66	40.55	-13.45	54	33.58	31.95	7.87	32.85	100	129	A	H
	*	5180	95.95	-	-	88.96	31.97	7.89	32.87	100	129	P	H
	*	5180	87.91	-	-	80.92	31.97	7.89	32.87	100	129	A	H
		5020.28	49.9	-24.1	74	42.98	31.91	7.82	32.81	100	226	P	V
		5127.4	39.78	-14.22	54	32.81	31.95	7.87	32.85	100	226	A	V
	*	5180	94.21	-	-	87.22	31.97	7.89	32.87	100	226	P	V
	*	5180	85.35	-	-	78.36	31.97	7.89	32.87	100	226	A	V
802.11a CH 44 5220MHz		5118.3	48.23	-25.77	74	41.26	31.95	7.87	32.85	100	309	P	H
		5017.42	39.5	-14.5	54	32.58	31.91	7.82	32.81	100	309	A	H
	*	5220	95.48	-	-	88.46	31.99	7.91	32.88	100	309	P	H
	*	5220	89.99	-	-	82.97	31.99	7.91	32.88	100	309	A	H
		5414.64	46.41	-27.59	74	39.35	32.07	7.96	32.97	100	309	P	H
		5449.08	38.2	-15.8	54	31.09	32.08	8.01	32.98	100	309	A	H
		5124.02	48.71	-25.29	74	41.74	31.95	7.87	32.85	100	21	P	V
		5008.32	39.73	-14.27	54	32.8	31.91	7.82	32.8	100	21	A	V
	*	5220	96.13	-	-	89.11	31.99	7.91	32.88	100	21	P	V
	*	5220	89.1	-	-	82.08	31.99	7.91	32.88	100	21	A	V
		5405.96	46.29	-27.71	74	39.24	32.06	7.96	32.97	100	21	P	V
		5444.04	38.31	-15.69	54	31.21	32.07	8.01	32.98	100	21	A	V



802.11a CH 48 5240MHz		5043.4	48.81	-25.19	74	41.87	31.92	7.84	32.82	100	138	P	H
		5009.8	39.63	-14.37	54	32.7	31.91	7.82	32.8	100	138	A	H
	*	5260	96.98	-	-	89.96	32.01	7.92	32.91	100	138	P	H
	*	5260	86.58	-	-	79.56	32.01	7.92	32.91	100	138	A	H
		5406	47.18	-26.82	74	40.13	32.06	7.96	32.97	100	138	P	H
		5452.08	38.43	-15.57	54	31.33	32.08	8.01	32.99	100	138	A	H
		5006.3	48.38	-25.62	74	41.45	31.91	7.82	32.8	100	11	P	V
		5007	40.19	-13.81	54	33.26	31.91	7.82	32.8	100	11	A	V
	*	5260	98.31	-	-	91.29	32.01	7.92	32.91	100	11	P	V
	*	5260	92.97	-	-	85.95	32.01	7.92	32.91	100	11	A	V
		5359.44	47.69	-26.31	74	40.65	32.04	7.95	32.95	100	11	P	V
		5442.24	38.88	-15.12	54	31.78	32.07	8.01	32.98	100	11	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 36 5180MHz		10360	48.43	-25.57	74	55.66	38.69	10.53	56.45	152	260	P	H
		15540	49.02	-24.98	74	52.63	38.88	13.25	55.74	189	238	P	H
		10360	47.82	-26.18	74	55.05	38.69	10.53	56.45	152	260	P	V
		15540	48.29	-25.71	74	51.9	38.88	13.25	55.74	189	238	P	V
802.11a CH 44 5220MHz		10440	48.65	-25.35	74	55.81	38.75	10.59	56.5	150	230	P	H
		15660	48.75	-25.25	74	52.06	38.81	13.31	55.43	160	225	P	H
		10440	47.8	-26.2	74	54.96	38.75	10.59	56.5	150	230	P	V
		15660	48.26	-25.74	74	51.57	38.81	13.31	55.43	160	225	P	V
802.11a CH 48 5240MHz		10480	49.17	-24.83	74	56.32	38.79	10.61	56.55	150	289	P	H
		15720	50.02	-23.98	74	53.17	38.77	13.33	55.25	150	291	P	H
		10480	48.18	-25.82	74	55.33	38.79	10.61	56.55	150	289	P	V
		15720	50.01	-23.99	74	53.16	38.77	13.33	55.25	150	291	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 36 5180MHz		5017.42	48.81	-25.19	74	41.89	31.91	7.82	32.81	133	305	P	H
		5128.44	41.78	-12.22	54	34.81	31.95	7.87	32.85	133	305	A	H
	*	5180	96.88	-	-	89.89	31.97	7.89	32.87	133	305	P	H
	*	5180	93.52	-	-	86.53	31.97	7.89	32.87	133	305	A	H
		5127.92	48.02	-25.98	74	41.05	31.95	7.87	32.85	100	207	P	V
		5128.44	40.35	-13.65	54	33.38	31.95	7.87	32.85	100	207	A	V
	*	5180	98.46	-	-	91.47	31.97	7.89	32.87	100	207	P	V
	*	5180	94.44	-	-	87.45	31.97	7.89	32.87	100	207	A	V
802.11n HT20 CH 44 5220MHz		5051.22	48.19	-25.81	74	41.25	31.92	7.84	32.82	384	292	P	H
		5048.1	40.2	-13.8	54	33.26	31.92	7.84	32.82	384	292	A	H
	*	5220	95.92	-	-	88.9	31.99	7.91	32.88	384	292	P	H
	*	5220	92.57	-	-	85.55	31.99	7.91	32.88	384	292	A	H
		5432.16	48.28	-25.72	74	41.18	32.07	8.01	32.98	384	292	P	H
		5444.16	38.73	-15.27	54	31.63	32.07	8.01	32.98	384	292	A	H
		5038.22	48.24	-25.76	74	41.29	31.92	7.84	32.81	100	205	P	V
		5003.12	39.88	-14.12	54	32.96	31.9	7.82	32.8	100	205	A	V
	*	5220	98.09	-	-	91.07	31.99	7.91	32.88	100	205	P	V
	*	5220	93.99	-	-	86.97	31.99	7.91	32.88	100	205	A	V
		5445.84	47.14	-26.86	74	40.03	32.08	8.01	32.98	100	205	P	V
		5449.92	38.64	-15.36	54	31.54	32.08	8.01	32.99	100	205	A	V



802.11n HT20 CH 48 5240MHz		5066.04	48.41	-25.59	74	41.46	31.93	7.84	32.82	384	292	P	H
		5005.46	39.96	-14.04	54	33.03	31.91	7.82	32.8	384	292	A	H
	*	5240	95.82	-	-	88.8	31.99	7.92	32.89	384	292	P	H
	*	5240	92.04	-	-	85.02	31.99	7.92	32.89	384	292	A	H
		5411.04	47.74	-26.26	74	40.69	32.06	7.96	32.97	384	292	P	H
		5439.6	38.92	-15.08	54	31.82	32.07	8.01	32.98	384	292	A	H
		5014.82	48.6	-25.4	74	41.67	31.91	7.82	32.8	100	214	P	V
		5050.44	40.21	-13.79	54	33.27	31.92	7.84	32.82	100	214	A	V
	*	5240	98.19	-	-	91.17	31.99	7.92	32.89	100	214	P	V
	*	5240	94.36	-	-	87.34	31.99	7.92	32.89	100	214	A	V
		5450.4	47.59	-26.41	74	40.49	32.08	8.01	32.99	100	214	P	V
		5436.72	38.66	-15.34	54	31.56	32.07	8.01	32.98	100	214	A	V
Remark		1. No other spurious found. 2. All results are PASS against Peak and Average limit line.											



Band 1 5150~5250MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 36 5180MHz		10360	47.16	-26.84	74	54.39	38.69	10.53	56.45	152	260	P	H
		15540	50.88	-23.12	74	54.49	38.88	13.25	55.74	189	238	P	H
		10360	47.02	-26.98	74	54.25	38.69	10.53	56.45	152	260	P	V
		15540	50.04	-23.96	74	53.65	38.88	13.25	55.74	189	238	P	V
802.11n HT20 CH 44 5220MHz		10440	48.05	-25.95	74	55.21	38.75	10.59	56.5	125	230	P	H
		15660	50.59	-23.41	74	53.9	38.81	13.31	55.43	125	230	P	H
		10440	47.36	-26.64	74	54.52	38.75	10.59	56.5	125	230	P	V
		15660	50.25	-23.75	74	53.56	38.81	13.31	55.43	110	225	P	V
802.11n HT20 CH 48 5240MHz		10480	47.61	-26.39	74	54.76	38.79	10.61	56.55	149	289	P	H
		15720	50.25	-23.75	74	53.4	38.77	13.33	55.25	139	291	P	H
		10480	47.87	-26.13	74	55.02	38.79	10.61	56.55	149	289	P	V
		15720	50.82	-23.18	74	53.97	38.77	13.33	55.25	139	291	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz

WIFI 802.11ac VHT40 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT40 CH 38 5190MHz		5145.34	55.11	-18.89	74	48.14	31.96	7.87	32.86	119	286	P	H
		5148.98	47.05	-6.95	54	40.08	31.96	7.87	32.86	119	286	A	H
	*	5190	95.41	-	-	88.42	31.97	7.89	32.87	119	286	P	H
	*	5190	93.22	-	-	86.23	31.97	7.89	32.87	119	286	A	H
		5452.16	48.23	-25.77	74	41.13	32.08	8.01	32.99	119	286	P	H
		5442.92	39.18	-14.82	54	32.08	32.07	8.01	32.98	119	286	A	H
		5148.98	54.67	-19.33	74	47.7	31.96	7.87	32.86	146	38	P	V
		5133.9	43.83	-10.17	54	36.86	31.95	7.87	32.85	146	38	A	V
	*	5190	92.65	-	-	85.66	31.97	7.89	32.87	146	38	P	V
	*	5190	90.45	-	-	83.46	31.97	7.89	32.87	146	38	A	V
		5458.04	47.16	-26.84	74	40.06	32.08	8.01	32.99	146	38	P	V
		5448.8	38.89	-15.11	54	31.78	32.08	8.01	32.98	146	38	A	V
802.11ac VHT40 CH 46 5230MHz		5061.88	48.54	-25.46	74	41.59	31.93	7.84	32.82	213	35	P	H
		5125.32	40.38	-13.62	54	33.41	31.95	7.87	32.85	213	35	A	H
	*	5230	96.35	-	-	89.34	31.99	7.91	32.89	213	35	P	H
	*	5230	93.57	-	-	86.56	31.99	7.91	32.89	213	35	A	H
		5428.08	47.87	-26.13	74	40.77	32.07	8.01	32.98	213	35	P	H
		5454.96	38.98	-15.02	54	31.88	32.08	8.01	32.99	213	35	A	H
		5001.82	48.23	-25.77	74	41.31	31.9	7.82	32.8	100	32	P	V
		5003.9	40.29	-13.71	54	33.36	31.91	7.82	32.8	100	32	A	V
	*	5230	94.66	-	-	87.65	31.99	7.91	32.89	100	32	P	V
	*	5230	89.57	-	-	82.56	31.99	7.91	32.89	100	32	A	V
		5449.92	46.87	-27.13	74	39.77	32.08	8.01	32.99	100	32	P	V
		5450.48	39.02	-14.98	54	31.92	32.08	8.01	32.99	100	32	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz

WIFI 802.11ac VHT40 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		10380	48.53	-25.47	74	55.72	38.71	10.56	56.46	150	360	P	H
VHT40		15570	50.13	-23.87	74	53.65	38.86	13.27	55.65	155	360	P	H
CH 38		10380	48.88	-25.12	74	56.07	38.71	10.56	56.46	150	360	P	V
5190MHz		15570	50.3	-23.7	74	53.82	38.86	13.27	55.65	155	360	P	V
802.11ac		10460	48.83	-25.17	74	55.98	38.76	10.61	56.52	150	360	P	H
VHT40		15690	50.16	-23.84	74	53.38	38.79	13.33	55.34	150	225	P	H
CH 46		10460	48.37	-25.63	74	55.52	38.76	10.61	56.52	150	360	P	V
5230MHz		15690	50.24	-23.76	74	53.46	38.79	13.33	55.34	150	225	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz

WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 42 5210MHz		5125.58	57.26	-16.74	74	50.29	31.95	7.87	32.85	100	304	P	H
		5147.42	43.56	-10.44	54	36.59	31.96	7.87	32.86	100	304	A	H
	*	5210	96.82	-	-	89.8	31.99	7.91	32.88	100	304	P	H
	*	5210	90.08	-	-	83.06	31.99	7.91	32.88	100	304	A	H
		5451.12	46.83	-27.17	74	39.73	32.08	8.01	32.99	100	304	P	H
		5434.8	39.13	-14.87	54	32.03	32.07	8.01	32.98	100	304	A	H
		5136.24	58.85	-15.15	74	51.88	31.95	7.87	32.85	243	360	P	V
		5150	41.67	-12.33	54	34.7	31.96	7.87	32.86	243	360	A	V
	*	5210	90.59	-	-	83.57	31.99	7.91	32.88	243	360	P	V
	*	5210	86.14	-	-	79.12	31.99	7.91	32.88	243	360	A	V
		5443.2	46.14	-27.86	74	39.04	32.07	8.01	32.98	243	360	P	V
		5454	39.44	-14.56	54	32.34	32.08	8.01	32.99	243	360	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**Band 1 5150~5250MHz****WIFI 802.11ac VHT80 (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		10420	46.61	-27.39	74	53.78	38.73	10.59	56.49	153	360	P	H
VHT80		15630	42.68	-31.32	74	46.04	38.82	13.29	55.47	153	0	P	H
CH 42		10420	49.24	-24.76	74	56.41	38.73	10.59	56.49	153	360	P	V
5210MHz		15630	43.32	-30.68	74	46.68	38.82	13.29	55.47	153	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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		5453.92	47.28	-26.72	74	40.18	32.08	8.01	32.99	100	333	P	H
		5446.48	38.37	-15.63	54	31.26	32.08	8.01	32.98	100	333	A	H
	*	5580	94.25	-	-	86.85	32.24	8.16	33	100	333	P	H
	*	5580	87.82	-	-	80.42	32.24	8.16	33	100	333	A	H
		5739.485	48.12	-25.88	74	40.31	32.58	8.23	33	100	333	P	H
		5742.635	38.8	-15.2	54	30.99	32.58	8.23	33	100	333	A	H
		5413.84	47.04	-26.96	74	39.98	32.07	7.96	32.97	127	26	P	V
		5450.32	38.36	-15.64	54	31.26	32.08	8.01	32.99	127	26	A	V
	*	5580	85.47	-	-	78.07	32.24	8.16	33	127	26	P	V
	*	5580	80.52	-	-	73.12	32.24	8.16	33	127	26	A	V
		5738.855	48.65	-25.35	74	40.84	32.58	8.23	33	127	26	P	V
		5750.825	38.96	-15.04	54	31.15	32.58	8.23	33	127	26	A	V
802.11a CH 60 5300MHz	*	5700	91.25	-	-	83.54	32.48	8.23	33	108	322	P	H
	*	5700	86.23	-	-	78.52	32.48	8.23	33	108	322	A	H
		5758.6	47.43	-26.57	74	39.58	32.62	8.23	33	108	322	P	H
		5746.36	38.86	-15.14	54	31.05	32.58	8.23	33	108	322	A	H
	*	5700	84.41	-	-	76.7	32.48	8.23	33	116	93	P	V
	*	5700	79.94	-	-	72.23	32.48	8.23	33	116	93	A	V
		5743.8	47.6	-26.4	74	39.79	32.58	8.23	33	116	93	P	V
		5747.4	38.76	-15.24	54	30.95	32.58	8.23	33	116	93	A	V



802.11a CH 64 5320MHz		5320	95.55	21.55	74	88.51	32.03	7.94	32.93	100	113	P	H
		5320	87.28	33.28	54	80.24	32.03	7.94	32.93	100	113	A	H
		5447.68	47.09	-26.91	74	39.98	32.08	8.01	32.98	100	113	P	H
		5372.32	39.56	-14.44	54	32.51	32.05	7.95	32.95	100	113	A	H
		5320	99.01	25.01	74	91.97	32.03	7.94	32.93	148	30	P	V
		5320	93.07	39.07	54	86.03	32.03	7.94	32.93	148	30	A	V
		5447.84	47.58	-26.42	74	40.47	32.08	8.01	32.98	148	30	P	V
		5372.16	40.35	-13.65	54	33.3	32.05	7.95	32.95	148	30	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 2 5250~5350MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 52 5260MHz		10520	49.16	-24.84	74	56.22	38.83	10.64	56.53	150	220	P	H
		15780	50.81	-23.19	74	53.82	38.73	13.37	55.11	159	345	P	H
		10520	48.94	-25.06	74	56	38.83	10.64	56.53	150	220	P	V
		15780	50.66	-23.34	74	53.67	38.73	13.37	55.11	159	345	P	V
802.11a CH 60 5300MHz		10600	48.36	-25.64	74	55.01	39.01	10.7	56.36	185	215	P	H
		15900	49.39	-24.61	74	52.1	38.66	13.43	54.8	196	190	P	H
		10600	48.71	-25.29	74	55.36	39.01	10.7	56.36	185	215	P	V
		15900	49.71	-24.29	74	52.42	38.66	13.43	54.8	196	190	P	V
802.11a CH 64 5320MHz		10640	49.71	-24.29	74	56.21	39.08	10.72	56.3	152	135	P	H
		15960	49.33	-24.67	74	51.86	38.62	13.47	54.62	173	245	P	H
		10640	48.87	-25.13	74	55.37	39.08	10.72	56.3	152	135	P	V
		15960	50.04	-23.96	74	52.57	38.62	13.47	54.62	173	245	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 2 5250~5350MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 52 5260MHz		5006.5	48.35	-25.65	74	41.42	31.91	7.82	32.8	100	120	P	H
		5005.72	39.9	-14.1	54	32.97	31.91	7.82	32.8	100	120	A	H
	*	5260	95.96	-	-	88.94	32.01	7.92	32.91	100	120	P	H
	*	5260	92.12	-	-	85.1	32.01	7.92	32.91	100	120	A	H
		5456.4	46.89	-27.11	74	39.79	32.08	8.01	32.99	100	120	P	H
		5448.48	38.9	-15.1	54	31.79	32.08	8.01	32.98	100	120	A	H
		5009.88	49.26	-24.74	74	42.33	31.91	7.82	32.8	100	214	P	V
		5085.8	39.92	-14.08	54	32.96	31.93	7.86	32.83	100	214	A	V
	*	5260	98.34	-	-	91.32	32.01	7.92	32.91	100	214	P	V
	*	5260	94.68	-	-	87.66	32.01	7.92	32.91	100	214	A	V
		5431.68	47.85	-26.15	74	40.75	32.07	8.01	32.98	100	214	P	V
		5449.2	38.86	-15.14	54	31.75	32.08	8.01	32.98	100	214	A	V
802.11n HT20 CH 60 5300MHz		5004.9	47.86	-26.14	74	40.93	31.91	7.82	32.8	100	120	P	H
		5003.15	40.1	-13.9	54	33.18	31.9	7.82	32.8	100	120	A	H
	*	5300	95.75	-	-	88.73	32.02	7.93	32.93	100	120	P	H
	*	5300	92.07	-	-	85.05	32.02	7.93	32.93	100	120	A	H
		5423.04	46.97	-27.03	74	39.91	32.07	7.96	32.97	100	120	P	H
		5351.52	40.84	-13.16	54	33.8	32.04	7.95	32.95	100	120	A	H
		5040.95	48.15	-25.85	74	41.2	31.92	7.84	32.81	100	214	P	V
		5007.7	40.39	-13.61	54	33.46	31.91	7.82	32.8	100	214	A	V
	*	5300	98.28	-	-	91.26	32.02	7.93	32.93	100	214	P	V
	*	5300	94.59	-	-	87.57	32.02	7.93	32.93	100	214	A	V
		5352.96	47.54	-26.46	74	40.5	32.04	7.95	32.95	100	214	P	V
		5352	42.29	-11.71	54	35.25	32.04	7.95	32.95	100	214	A	V



802.11n HT20 CH 64 5320MHz	*	5320	94.58	-	-	87.54	32.03	7.94	32.93	100	121	P	H
	*	5320	91.95	-	-	84.91	32.03	7.94	32.93	100	121	A	H
		5459.36	47.88	-26.12	74	40.78	32.08	8.01	32.99	100	121	P	H
		5372	39.35	-14.65	54	32.3	32.05	7.95	32.95	100	121	A	H
	*	5320	97.98	-	-	90.94	32.03	7.94	32.93	100	214	P	V
	*	5320	94.49	-	-	87.45	32.03	7.94	32.93	100	214	A	V
		5404.96	47.36	-26.64	74	40.31	32.06	7.96	32.97	100	214	P	V
		5371.36	39.84	-14.16	54	32.79	32.05	7.95	32.95	100	214	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 2 5250~5350MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n		10520	46.79	-27.21	74	53.85	38.83	10.64	56.53	153	360	P	H
HT20		15780	50.33	-23.67	74	53.34	38.73	13.37	55.11	153	0	P	H
CH 52		10520	46.39	-27.61	74	53.45	38.83	10.64	56.53	153	360	P	V
5260MHz		15780	48.67	-25.33	74	51.68	38.73	13.37	55.11	153	0	P	V
802.11n		10600	49.72	-24.28	74	56.37	39.01	10.7	56.36	185	215	P	H
HT20		15900	49.98	-24.02	74	52.69	38.66	13.43	54.8	196	190	P	H
CH 60		10600	49.55	-24.45	74	56.2	39.01	10.7	56.36	185	215	P	V
5300MHz		15900	50.41	-23.59	74	53.12	38.66	13.43	54.8	196	190	P	V
802.11n		10640	48.4	-25.6	74	54.9	39.08	10.72	56.3	152	135	P	H
HT20		15960	50.09	-23.91	74	52.62	38.62	13.47	54.62	173	245	P	H
CH 64		10640	49.69	-24.31	74	56.19	39.08	10.72	56.3	152	135	P	V
5320MHz		15960	50.32	-23.68	74	52.85	38.62	13.47	54.62	173	245	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 2 5250~5350MHz

WIFI 802.11ac VHT40 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT40 CH 54 5270MHz		5012.6	47.95	-26.05	74	41.02	31.91	7.82	32.8	100	311	P	H
		5008.05	40.5	-13.5	54	33.57	31.91	7.82	32.8	100	311	A	H
	*	5270	94.71	-	-	87.69	32.01	7.92	32.91	100	311	P	H
	*	5270	92.29	-	-	85.27	32.01	7.92	32.91	100	311	A	H
		5437.68	46.51	-27.49	74	39.41	32.07	8.01	32.98	100	311	P	H
		5373.84	39.32	-14.68	54	32.28	32.05	7.95	32.96	100	311	A	H
		5001.05	48.08	-25.92	74	41.16	31.9	7.82	32.8	100	351	P	V
		5006.65	40.14	-13.86	54	33.21	31.91	7.82	32.8	100	351	A	V
	*	5270	93.91	-	-	86.89	32.01	7.92	32.91	100	351	P	V
	*	5270	91.58	-	-	84.56	32.01	7.92	32.91	100	351	A	V
		5452.08	47.01	-26.99	74	39.91	32.08	8.01	32.99	100	351	P	V
		5440.56	39.02	-14.98	54	31.92	32.07	8.01	32.98	100	351	A	V
802.11ac VHT40 CH 62 5310MHz		5018.9	48.92	-25.08	74	42	31.91	7.82	32.81	146	322	P	H
		5044.8	40.33	-13.67	54	33.39	31.92	7.84	32.82	146	322	A	H
	*	5310	94.74	-	-	87.7	32.03	7.94	32.93	146	322	P	H
	*	5310	93.31	-	-	86.27	32.03	7.94	32.93	146	322	A	H
		5355.36	50.83	-23.17	74	43.79	32.04	7.95	32.95	146	322	P	H
		5352.24	50.04	-3.96	54	43	32.04	7.95	32.95	146	322	A	H
		5028	48.61	-25.39	74	41.69	31.91	7.82	32.81	100	350	P	V
		5007.35	40.54	-13.46	54	33.61	31.91	7.82	32.8	100	350	A	V
	*	5310	93.89	-	-	86.85	32.03	7.94	32.93	100	350	P	V
	*	5310	91.88	-	-	84.84	32.03	7.94	32.93	100	350	A	V
		5356.08	47.5	-26.5	74	40.46	32.04	7.95	32.95	100	350	P	V
		5350.8	40.8	-13.2	54	33.76	32.04	7.95	32.95	100	350	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												


Band 2 5250~5350MHz
WIFI 802.11ac VHT40 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		10540	49.16	-24.84	74	56.11	38.87	10.67	56.49	150	220	P	H
VHT40		15810	50.09	-23.91	74	53.01	38.71	13.39	55.02	168	345	P	H
CH 54		10540	49.63	-24.37	74	56.58	38.87	10.67	56.49	150	220	P	V
5270MHz		15810	50.3	-23.7	74	53.22	38.71	13.39	55.02	168	345	P	V
802.11ac		10620	49.71	-24.29	74	56.28	39.04	10.72	56.33	150	220	P	H
VHT40		15930	50.34	-23.66	74	52.96	38.64	13.45	54.71	160	100	P	H
CH 62		10620	49.36	-24.64	74	55.93	39.04	10.72	56.33	150	220	P	V
5310MHz		15930	50.07	-23.93	74	52.69	38.64	13.45	54.71	160	100	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 2 5250~5350MHz

WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 58 5290MHz		5125.58	57.26	-16.74	74	50.29	31.95	7.87	32.85	100	304	P	H
		5122.72	42.5	-11.5	54	35.53	31.95	7.87	32.85	100	304	A	H
	*	5290	96.51	-	-	89.49	32.01	7.93	32.92	100	304	P	H
	*	5290	89.44	-	-	82.42	32.01	7.93	32.92	100	304	A	H
		5401.92	45.95	-28.05	74	38.9	32.06	7.96	32.97	100	304	P	H
		5409.36	38.88	-15.12	54	31.83	32.06	7.96	32.97	100	304	A	H
		5070.2	48.55	-25.45	74	41.61	31.93	7.84	32.83	243	360	P	V
		5047.32	40.84	-13.16	54	33.9	31.92	7.84	32.82	243	360	A	V
	*	5290	91.21	-	-	84.19	32.01	7.93	32.92	243	360	P	V
	*	5290	80.97	-	-	73.95	32.01	7.93	32.92	243	360	A	V
		5443.2	46.14	-27.86	74	39.04	32.07	8.01	32.98	243	360	P	V
		5355.12	38.84	-15.16	54	31.8	32.04	7.95	32.95	243	360	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 2 5250~5350MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		10580	47.37	-26.63	74	54.09	38.97	10.7	56.39	153	360	P	H
VHT80		15870	44.08	-29.92	74	46.84	38.67	13.41	54.84	153	0	P	H
CH 58		10580	46.82	-27.18	74	53.54	38.97	10.7	56.39	153	360	P	V
5290MHz		15870	45.37	-28.63	74	48.13	38.67	13.41	54.84	153	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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		5395.44	47.07	-26.93	74	40.01	32.06	7.96	32.96	100	316	P	H
		5447.12	39.23	-14.77	54	32.12	32.08	8.01	32.98	100	316	A	H
		5500	93.71	-	-	86.55	32.1	8.06	33	100	316	P	H
		5500	87.36	-	-	80.2	32.1	8.06	33	100	316	A	H
		5424.56	47.36	-26.64	74	40.31	32.07	7.96	32.98	100	25	P	V
		5447.44	38.87	-15.13	54	31.76	32.08	8.01	32.98	100	25	A	V
		5500	90.51	-	-	83.35	32.1	8.06	33	100	25	P	V
		5500	84.39	-	-	77.23	32.1	8.06	33	100	25	A	V
802.11a CH 116 5580MHz		5453.92	47.28	-26.72	74	40.18	32.08	8.01	32.99	100	333	P	H
		5446.48	38.37	-15.63	54	31.26	32.08	8.01	32.98	100	333	A	H
		5580	94.25	-	-	86.85	32.24	8.16	33	100	333	P	H
		5580	87.82	-	-	80.42	32.24	8.16	33	100	333	A	H
		5739.485	48.12	-25.88	74	40.31	32.58	8.23	33	100	333	P	H
		5742.635	38.8	-15.2	54	30.99	32.58	8.23	33	100	333	A	H
		5413.84	47.04	-26.96	74	39.98	32.07	7.96	32.97	127	26	P	V
		5450.32	38.36	-15.64	54	31.26	32.08	8.01	32.99	127	26	A	V
		5580	85.47	-	-	78.07	32.24	8.16	33	127	26	P	V
		5580	80.52	-	-	73.12	32.24	8.16	33	127	26	A	V
		5738.855	48.65	-25.35	74	40.84	32.58	8.23	33	127	26	P	V
		5750.825	38.96	-15.04	54	31.15	32.58	8.23	33	127	26	A	V



802.11a CH 140 5700MHz		5700	93.94	-	-	86.23	32.48	8.23	33	108	322	P	H
		5700	89.03	-	-	81.32	32.48	8.23	33	108	322	A	H
		5758.6	47.43	-26.57	74	39.58	32.62	8.23	33	108	322	P	H
		5746.36	38.86	-15.14	54	31.05	32.58	8.23	33	108	322	A	H
		5700	84.41	-	-	76.7	32.48	8.23	33	116	93	P	V
		5700	79.94	-	-	72.23	32.48	8.23	33	116	93	A	V
		5743.8	47.6	-26.4	74	39.79	32.58	8.23	33	116	93	P	V
		5747.4	38.76	-15.24	54	30.95	32.58	8.23	33	116	93	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 3 - 5470~5725MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 100 5500MHz		11000	50.29	-23.71	74	55.12	39.8	10.97	55.6	163	230	P	H
		16500	50.01	-23.99	74	50.27	38.5	14.81	53.57	154	0	P	H
		11000	50.68	-23.32	74	55.51	39.8	10.97	55.6	154	360	P	V
		16500	50.04	-23.96	74	50.3	38.5	14.81	53.57	154	0	P	V
802.11a CH 116 5580MHz		11160	50.1	-23.9	74	55.14	39.6	11.1	55.74	170	200	P	H
		16740	50.05	-23.95	74	49.2	39.22	15.57	53.94	156	350	P	H
		11160	48.57	-25.43	74	53.61	39.6	11.1	55.74	170	200	P	V
		16740	50.3	-23.7	74	49.45	39.22	15.57	53.94	156	350	P	V
802.11a CH 140 5700MHz		11400	50.18	-23.82	74	55.54	39.32	11.26	55.94	157	285	P	H
		17100	49.48	-24.52	74	47.09	40.64	16.56	54.81	153	0	P	H
		11400	49.69	-24.31	74	55.05	39.32	11.26	55.94	153	360	P	V
		17100	50.04	-23.96	74	47.65	40.64	16.56	54.81	153	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 100 5500MHz		5448.08	46.6	-27.4	74	39.49	32.08	8.01	32.98	100	316	P	H
		5448.24	40.1	-13.9	54	32.99	32.08	8.01	32.98	100	316	A	H
	*	5500	93.65	-	-	86.49	32.1	8.06	33	100	316	P	H
	*	5500	88.4	-	-	81.24	32.1	8.06	33	100	316	A	H
		5467.76	46.72	-27.28	74	39.56	32.09	8.06	32.99	316	337	P	V
		5470	38.63	-15.37	54	31.47	32.09	8.06	32.99	316	337	A	V
	*	5500	88.01	-	-	80.85	32.1	8.06	33	316	337	P	V
	*	5500	83.28	-	-	76.12	32.1	8.06	33	316	337	A	V
802.11n HT20 CH 116 5580MHz		5422.96	46.57	-27.43	74	39.51	32.07	7.96	32.97	110	318	P	H
		5453.68	38.24	-15.76	54	31.14	32.08	8.01	32.99	110	318	A	H
	*	5580	94.55	-	-	87.15	32.24	8.16	33	110	318	P	H
	*	5580	88.96	-	-	81.56	32.24	8.16	33	110	318	A	H
		5743.895	46.02	-27.98	74	38.21	32.58	8.23	33	110	318	P	H
		5746.73	38.92	-15.08	54	31.11	32.58	8.23	33	110	318	A	H
		5462.32	46.75	-27.25	74	39.65	32.08	8.01	32.99	316	311	P	V
		5441.2	38.37	-15.63	54	31.27	32.07	8.01	32.98	316	311	A	V
	*	5580	86.66	-	-	79.26	32.24	8.16	33	316	311	P	V
	*	5580	81.91	-	-	74.51	32.24	8.16	33	316	311	A	V
		5734.445	47.12	-26.88	74	39.34	32.55	8.23	33	316	311	P	V
		5748.305	38.69	-15.31	54	30.88	32.58	8.23	33	316	311	A	V



802.11n HT20 CH 140 5700MHz	*	5700	92.74	-	-	85.03	32.48	8.23	33	100	317	P	H
	*	5700	87.55	-	-	79.84	32.48	8.23	33	100	317	A	H
		5752.68	47.07	-26.93	74	39.22	32.62	8.23	33	100	317	P	H
		5751.88	39.24	-14.76	54	31.39	32.62	8.23	33	100	317	A	H
	*	5700	86.41	-	-	78.7	32.48	8.23	33	355	118	P	V
	*	5700	82.17	-	-	74.46	32.48	8.23	33	355	118	A	V
		5753.8	48	-26	74	40.15	32.62	8.23	33	355	118	P	V
		5744.76	38.81	-15.19	54	31	32.58	8.23	33	355	118	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 3 - 5470~5725MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n		11000	50.52	-23.48	74	55.35	39.8	10.97	55.6	163	230	P	H
HT20		16500	50.82	-23.18	74	51.08	38.5	14.81	53.57	178	296	P	H
CH 100		11000	50.97	-23.03	74	55.8	39.8	10.97	55.6	163	230	P	V
5500MHz		16500	50.76	-23.24	74	51.02	38.5	14.81	53.57	178	296	P	V
802.11n		11160	50.24	-23.76	74	55.28	39.6	11.1	55.74	170	200	P	H
HT20		16740	50.13	-23.87	74	49.28	39.22	15.57	53.94	156	350	P	H
CH 116		11160	49.82	-24.18	74	54.86	39.6	11.1	55.74	170	200	P	V
5580MHz		16740	50.77	-23.23	74	49.92	39.22	15.57	53.94	156	350	P	V
802.11n		11400	50.05	-23.95	74	55.41	39.32	11.26	55.94	157	285	P	H
HT20		17100	50.86	-23.14	74	48.47	40.64	16.56	54.81	165	246	P	H
CH 140		11400	49.53	-24.47	74	54.89	39.32	11.26	55.94	157	285	P	V
5700MHz		17100	50.31	-23.69	74	47.92	40.64	16.56	54.81	165	246	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 102 5510MHz		5465.2	49.18	-24.82	74	42.07	32.09	8.01	32.99	126	320	P	H
		5457.52	43.96	-10.04	54	36.86	32.08	8.01	32.99	126	320	A	H
	*	5510	95.58			88.37	32.1	8.11	33	126	320	P	H
	*	5510	90			82.79	32.1	8.11	33	126	320	A	H
		5749.88	47.79	-26.21	74	39.98	32.58	8.23	33	126	320	P	H
		5754.605	37.5	-16.5	54	29.65	32.62	8.23	33	126	320	A	H
		5470	47.69	-26.31	74	40.53	32.09	8.06	32.99	243	316	P	V
		5470	37.93	-16.07	54	30.77	32.09	8.06	32.99	243	316	A	V
	*	5510	88.29			81.08	32.1	8.11	33	243	316	P	V
	*	5510	84.34			77.13	32.1	8.11	33	243	316	A	V
		5755.235	47.38	-26.62	74	39.53	32.62	8.23	33	243	316	P	V
		5730.35	37.27	-16.73	54	29.49	32.55	8.23	33	243	316	A	V
802.11n HT40 CH 110 5550MHz		5469.76	48.34	-25.66	74	41.18	32.09	8.06	32.99	100	317	P	H
		5446.24	36.9	-17.1	54	29.79	32.08	8.01	32.98	100	317	A	H
	*	5550	94.05			86.69	32.2	8.16	33	100	317	P	H
	*	5550	89.9			82.54	32.2	8.16	33	100	317	A	H
		5757.44	47.35	-26.65	74	39.5	32.62	8.23	33	100	317	P	H
		5759.645	37.22	-16.78	54	29.37	32.62	8.23	33	100	317	A	H
		5376.4	47.65	-26.35	74	40.61	32.05	7.95	32.96	154	317	P	V
		5456.32	36.83	-17.17	54	29.73	32.08	8.01	32.99	154	317	A	V
	*	5550	90.1			82.74	32.2	8.16	33	154	317	P	V
	*	5550	85.53			78.17	32.2	8.16	33	154	317	A	V
		5734.76	46.88	-27.12	74	39.07	32.58	8.23	33	154	317	P	V
		5747.36	37.26	-16.74	54	29.45	32.58	8.23	33	154	317	A	V



802.11n HT40 CH 134 5670MHz		5421.4	46.79	-27.21	74	39.73	32.07	7.96	32.97	114	322	P	H
		5450.45	36.57	-17.43	54	29.47	32.08	8.01	32.99	114	322	A	H
	*	5670	93.2			85.54	32.44	8.22	33	114	322	P	H
	*	5670	88.91			81.25	32.44	8.22	33	114	322	A	H
		5761.5	47.3	-26.7	74	39.45	32.62	8.23	33	114	322	P	H
		5759.4	37.12	-16.88	54	29.27	32.62	8.23	33	114	322	A	H
		5443.8	46.4	-27.6	74	39.3	32.07	8.01	32.98	291	319	P	V
		5460.25	36.63	-17.37	54	29.53	32.08	8.01	32.99	291	319	A	V
	*	5670	89.42			81.76	32.44	8.22	33	291	319	P	V
	*	5670	85.19			77.53	32.44	8.22	33	291	319	A	V
		5739.625	48.09	-25.91	74	40.28	32.58	8.23	33	291	319	P	V
		5727.55	37.18	-16.82	54	29.4	32.55	8.23	33	291	319	A	V
Remark		1. No other spurious found. 2. All results are PASS against Peak and Average limit line.											



Band 3 - 5470~5725MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n		11020	49.94	-24.06	74	54.78	39.78	10.99	55.61	170	230	P	H
HT40		16530	50.42	-23.58	74	50.53	38.6	14.91	53.62	160	300	P	H
CH 102		11020	50.13	-23.87	74	54.97	39.78	10.99	55.61	170	230	P	V
5510MHz		16530	50.35	-23.65	74	50.46	38.6	14.91	53.62	160	300	P	V
802.11n		11100	49.11	-24.89	74	54.07	39.68	11.05	55.69	150	200	P	H
HT40		16650	49.97	-24.03	74	49.57	38.97	15.24	53.81	180	350	P	H
CH 110		11100	49.42	-24.58	74	54.38	39.68	11.05	55.69	150	200	P	V
5550MHz		16650	50.64	-23.36	74	50.24	38.97	15.24	53.81	180	350	P	V
802.11n		11340	49.55	-24.45	74	54.83	39.4	11.21	55.89	200	360	P	H
HT40		17010	50.7	-23.3	74	48.66	40.11	16.34	54.41	200	360	P	H
CH 134		11340	49.65	-24.35	74	54.93	39.4	11.21	55.89	200	360	P	V
5670MHz		17010	50.34	-23.66	74	48.3	40.11	16.34	54.41	200	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 3 5470~5725MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 106 5530MHz		5438.56	56	-18	74	48.9	32.07	8.01	32.98	153	141	P	H
		5463.28	50.24	-3.76	54	43.13	32.09	8.01	32.99	153	141	A	H
	*	5530	87.38	-	-	80.14	32.13	8.11	33	153	141	P	H
	*	5530	84.8	-	-	77.56	32.13	8.11	33	153	141	A	H
		5759.645	47.8	-26.2	74	39.95	32.62	8.23	33	153	141	P	H
		5745.47	38.28	-15.72	54	30.47	32.58	8.23	33	153	141	A	H
		5451.52	47.73	-26.27	74	40.63	32.08	8.01	32.99	275	111	P	V
		5467.12	46.61	-7.39	54	39.45	32.09	8.06	32.99	275	111	A	V
	*	5530	83.81	-	-	76.57	32.13	8.11	33	275	111	P	V
	*	5530	79.24	-	-	72	32.13	8.11	33	275	111	A	V
		5747.99	48.54	-25.46	74	40.73	32.58	8.23	33	275	111	P	V
		5746.1	38.23	-15.77	54	30.42	32.58	8.23	33	275	111	A	V
802.11ac VHT80 CH 122 5610MHz		5373.28	46.67	-27.33	74	39.63	32.05	7.95	32.96	100	300	P	H
		5469.04	38.18	-15.82	54	31.02	32.09	8.06	32.99	100	300	A	H
	*	5610	87.76	-	-	80.24	32.31	8.21	33	100	300	P	H
	*	5610	83.2	-	-	75.68	32.31	8.21	33	100	300	A	H
		5743.895	46.89	-27.11	74	39.08	32.58	8.23	33	100	300	P	H
		5749.88	38.5	-15.5	54	30.69	32.58	8.23	33	100	300	A	H
		5455.84	46.18	-27.82	74	39.08	32.08	8.01	32.99	100	141	P	V
		5461.12	37.68	-16.32	54	30.58	32.08	8.01	32.99	100	141	A	V
	*	5610	83.71	-	-	76.19	32.31	8.21	33	100	141	P	V
	*	5610	80.17	-	-	72.65	32.31	8.21	33	100	141	A	V
		5751.455	47.41	-26.59	74	39.6	32.58	8.23	33	100	141	P	V
		5745.155	38.23	-15.77	54	30.42	32.58	8.23	33	100	141	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 3 5470~5725MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		11060	50.6	-23.4	74	55.52	39.72	11.02	55.66	153	360	P	H
VHT80		16590	47.5	-26.5	74	47.31	38.76	15.13	53.7	153	0	P	H
CH 106		11060	49.77	-24.23	74	54.69	39.72	11.02	55.66	153	360	P	V
5530MHz		16590	47.24	-26.76	74	47.05	38.76	15.13	53.7	153	0	P	V
802.11ac		11220	48.03	-25.97	74	53.15	39.54	11.13	55.79	153	360	P	H
VHT80		16830	47.58	-26.42	74	46.38	39.48	15.79	54.07	153	0	P	H
CH 122		11220	49.05	-24.95	74	54.17	39.54	11.13	55.79	153	360	P	V
5610MHz		16830	46.7	-27.3	74	45.5	39.48	15.79	54.07	153	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 3 - Straddle Channel
WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 144 5720MHz		11440	47.68	-26.32	74	53.08	39.28	11.29	55.97	151	360	P	H
		17160	47.58	-26.42	74	44.97	41.07	16.67	55.13	151	0	P	H
		11440	47.42	-26.58	74	52.82	39.28	11.29	55.97	151	360	P	V
		17160	49.67	-24.33	74	47.06	41.07	16.67	55.13	151	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 3 - Straddle Channel
WIFI 802.11ac VHT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		11440	50.15	-23.85	74	55.55	39.28	11.29	55.97	152	360	P	H
VHT20		17160	50.37	-23.63	74	47.76	41.07	16.67	55.13	152	0	P	H
CH 144		11440	49.12	-24.88	74	54.52	39.28	11.29	55.97	152	360	P	V
5720MHz		17160	48.01	-25.99	74	45.4	41.07	16.67	55.13	152	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 3 - Straddle Channel
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n		11420	48.97	-25.03	74	54.37	39.3	11.26	55.96	151	360	P	H
HT40		17130	48.76	-25.24	74	46.21	40.85	16.67	54.97	151	0	P	H
CH 142		11420	47.86	-26.14	74	53.26	39.3	11.26	55.96	151	360	P	V
5710MHz		17130	46.73	-27.27	74	44.18	40.85	16.67	54.97	151	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 3 - Straddle Channel
WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		11380	48.62	-25.38	74	53.97	39.34	11.24	55.93	152	360	P	H
VHT80		17070	50.24	-23.76	74	48.01	40.43	16.45	54.65	152	0	P	H
CH 138		11380	48.59	-25.41	74	53.94	39.34	11.24	55.93	152	360	P	V
5690MHz		17070	50.16	-23.84	74	47.93	40.43	16.45	54.65	152	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ac VHT80 LF		30.97	25.98	-14.02	40	32.59	24.52	0.65	31.78	100	0	P	H
		107.6	24.03	-19.47	43.5	37.89	16.73	0.96	31.55	-	-	P	H
		215.27	22.39	-21.11	43.5	36.45	15.93	1.27	31.26	-	-	P	H
		488.81	26.14	-19.86	46	32.84	22.73	1.73	31.16	-	-	P	H
		676.02	28.5	-17.5	46	32.21	25.46	2.05	31.22	-	-	P	H
		946.65	31.8	-14.2	46	31.79	28.87	2.41	31.27	-	-	P	H
		30.97	32	-8	40	38.61	24.52	0.65	31.78	100	0	P	V
		119.24	26.54	-16.96	43.5	40.02	17.08	0.96	31.52	-	-	P	V
		172.59	22.8	-20.7	43.5	36.28	16.69	1.17	31.34	-	-	P	V
		465.53	25.21	-20.79	46	32.67	21.99	1.73	31.18	-	-	P	V
		674.08	27.94	-18.06	46	31.68	25.44	2.05	31.23	-	-	P	V
		881.66	32.31	-13.69	46	33.1	28.18	2.3	31.27	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	P eak or A verage
H/V	H orizontal or V ertical



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													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. 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)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. 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)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

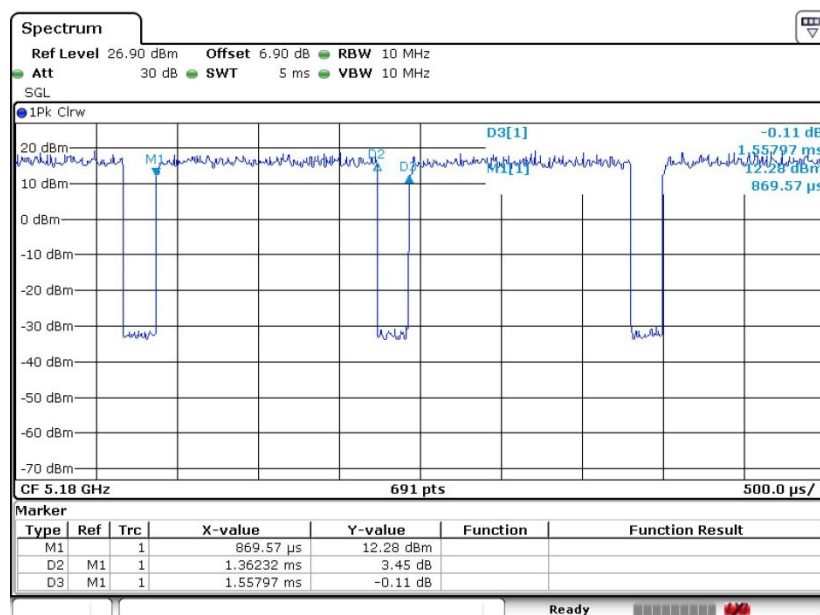
= -10.46(dB)

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

Appendix C. Duty Cycle Plots

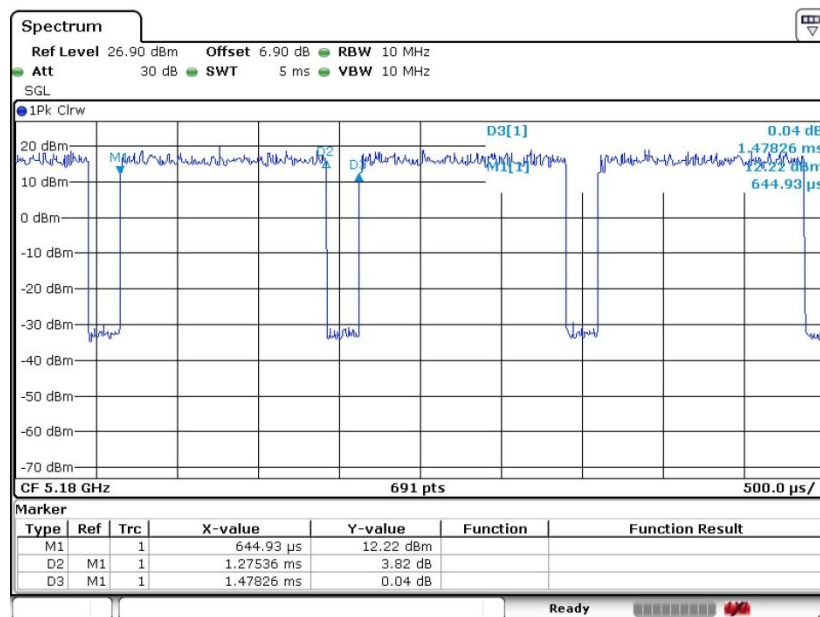
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	87.44	1.362	0.734	1 kHz
802.11n HT20	86.27	1.275	0.784	1 kHz
802.11n HT40	86.38	1.232	0.812	1 kHz
802.11ac VHT20	83.68	0.981	1.019	3 kHz
802.11ac VHT40	71.28	0.493	2.028	3 kHz
802.11ac VHT80	55.20	0.246	4.065	10kHz

802.11a

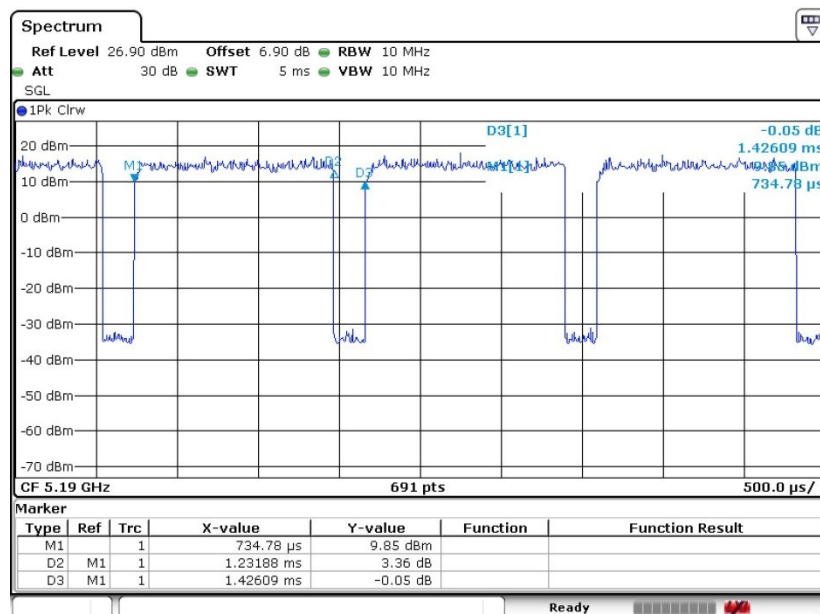




802.11n HT20

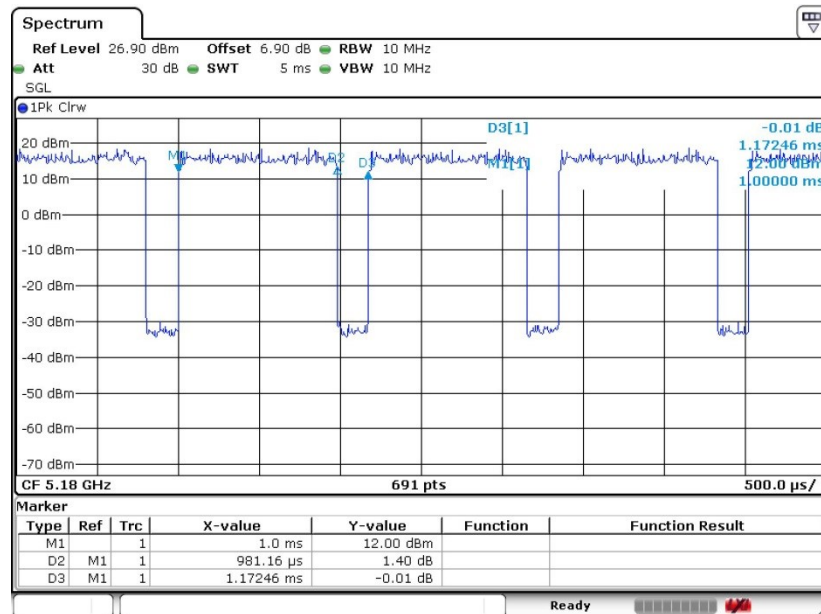


802.11n HT40



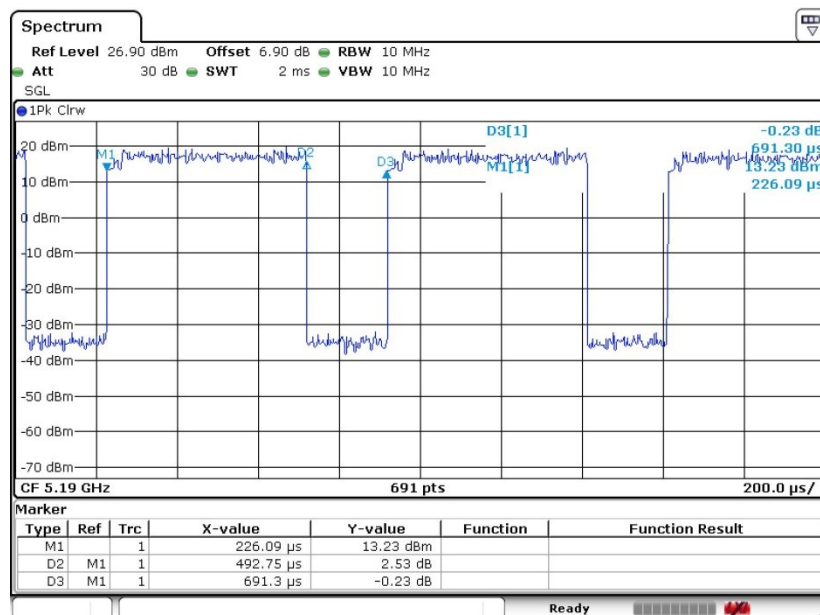


802.11ac VHT20





802.11ac VHT40



802.11ac VHT80

