



FCC RF Test Report

APPLICANT : Innowi Inc.
EQUIPMENT : ChecOut M
BRAND NAME : Innowi
MODEL NAME : IWCHT-M101
FCC ID : 2AO2Y-IWCHTM101
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Dec. 01, 2017 and testing was completed on Feb. 04, 2018. We, Sporton International (Shenzhen) 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 (Shenzhen) Inc., the test report shall not be reproduced except in full.



Approved by: Eric Shih / Manager

Sporton International (Shenzhen) Inc.

***1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen City
Guangdong Province 518055 China***



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR7D0101E	Rev. 01	Initial issue of report	Apr. 23, 2018



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	2.1049 15.403(i)	26dB & 99% Bandwidth	-	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	FCC ≤ 24 dBm (depend on band)	Pass	-
3.3	15.407(a)	Power Spectral Density	FCC ≤ 11 dBm (depend on band)	Pass	-
3.4	15.407(b)	Unwanted Emissions	15.407(b) 15.209(a)	Pass	Under limit 1.21 dB at 5468.800 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 14.00 dB at 0.530 MHz
3.6	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.7	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

Innowi Inc.

3240 Scott Blvd. Santa Clara CA 95054 USA

1.2 Manufacturer

Innowi Inc.

3240 Scott Blvd. Santa Clara CA 95054 USA

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	ChecOut M
Brand Name	Innowi
Model Name	IWCHT-M101
FCC ID	2AO2Y-IWCHTM101
EUT supports Radios application	NFC/ WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT80 Bluetooth v2.0+EDR/ Bluetooth v4.1 LE
HW Version	Rev.4
SW Version	Android 6.0, Microsoft Windows 10, Payment Firmware 1.10.1
EUT Stage	Production Unit

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 ~ 5700 MHz
Maximum Output Power to Antenna	<5180 MHz ~ 5240 MHz> <Ant. 1> 802.11a : 16.04 dBm / 0.0402 W 802.11n HT20 : 14.01 dBm / 0.0252 W 802.11n HT40 : 14.49 dBm / 0.0281 W 802.11ac VHT80 : 12.07 dBm / 0.0161 W <Ant. 2> 802.11a : 12.97 dBm / 0.0198 W 802.11n HT20 : 10.96 dBm / 0.0125 W 802.11n HT40 : 11.49 dBm / 0.0141 W 802.11ac VHT80 : 9.01 dBm / 0.0080 W MIMO <Ant. 1+2> 802.11a : 17.49 dBm / 0.0561 W 802.11n HT20 : 15.60 dBm / 0.0363 W 802.11n HT40 : 16.19 dBm / 0.0416 W 802.11ac VHT80 : 13.79 dBm / 0.0239 W <5260 MHz ~ 5320 MHz> <Ant. 1> 802.11a : 15.51 dBm / 0.0356 W 802.11n HT20 : 13.41 dBm / 0.0219 W 802.11n HT40 : 13.97 dBm / 0.0249 W 802.11ac VHT80 : 11.57 dBm / 0.0144 W <Ant. 2> 802.11a : 12.75 dBm / 0.0188 W 802.11n HT20 : 10.97 dBm / 0.0125 W 802.11n HT40 : 11.33 dBm / 0.0136 W 802.11ac VHT80 : 8.92 dBm / 0.0078 W MIMO <Ant. 1+2> 802.11a : 17.16 dBm / 0.0520 W 802.11n HT20 : 15.11 dBm / 0.0324 W 802.11n HT40 : 15.74 dBm / 0.0375 W 802.11ac VHT80 : 13.44 dBm / 0.0221 W <5500 MHz ~ 5700 MHz > <Ant. 1> 802.11a : 15.13 dBm / 0.0326 W 802.11n HT20 : 13.05 dBm / 0.0202 W 802.11n HT40 : 13.55 dBm / 0.0226 W 802.11ac VHT80 : 10.97 dBm / 0.0125 W <Ant. 2> 802.11a : 12.92 dBm / 0.0196 W 802.11n HT20 : 10.99 dBm / 0.0126 W 802.11n HT40 : 11.52 dBm / 0.0142 W 802.11ac VHT80 : 9.06 dBm / 0.0081 W MIMO <Ant. 1+2> 802.11a : 16.89 dBm / 0.0489 W 802.11n HT20 : 14.87 dBm / 0.0307 W 802.11n HT40 : 15.54 dBm / 0.0358 W 802.11ac VHT80 : 13.15 dBm / 0.0207 W

Standards-related Product Specification			
99% Occupied Bandwidth	<5180 MHz ~ 5240 MHz> 802.11a : 18.68 MHz 802.11n HT20 : 19.23 MHz 802.11n HT40 : 36.86 MHz 802.11ac VHT80 : 75.76 MHz <5260 MHz ~ 5320 MHz> 802.11a : 18.68 MHz 802.11n HT20 : 19.23 MHz 802.11n HT40 : 36.66 MHz 802.11ac VHT80 : 75.88 MHz <5500 MHz ~ 5700 MHz > 802.11a : 19.13 MHz 802.11n HT20 : 19.13 MHz 802.11n HT40 : 36.86 MHz 802.11ac VHT80 : 75.88 MHz		
	Antenna Type Ant. 1 : Internal Inverted-L (PCB) Antenna Ant. 2 : Internal Inverted-F (Top Bezel) Antenna		
Antenna Gain	<5180 MHz ~ 5240 MHz> Ant. 1 : 2.35 dBi Ant. 2 : -2.19 dBi <5260 MHz ~ 5320 MHz> Ant. 1 : 2.66 dBi Ant. 2 : -2.0 dBi <5500 MHz ~ 5700 MHz > Ant. 1 : 1.53 dBi Ant. 2 : 0.76 dBi		
	Type of Modulation 802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)		
Antenna Function Description		Ant. 1	Ant. 2
	802.11 a/n/ac SISO	V	V
	802.11 a/n/ac MIMO	V	V

Note:

1. WLAN operation in 5600 MHz ~ 5650 MHz is notched.
2. MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2.
3. For SISO & MIMO mode, the whole testing has assessed only MIMO mode by referring to their higher conducted power.

1.5 Modification of EUT

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

1.6 Testing Location

Sporton International (Shenzhen) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600156-0) and the FCC designation No. are CN5018 and CN5019.

Test Site	Sporton International (Shenzhen) Inc.		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen City Guangdong Province 518055 China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595		
Test Site No.	Sporton Site No.		FCC Test Firm Registration No.
	TH01-SZ	CO01-SZ	251365

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.
	03CH01-SZ		577730

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

1.7 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 v02r01
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ 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 (Z plane) were recorded in this report.

2.1 Carrier Frequency and 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)
5500-5700 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

Note:

1. The above Frequency and Channel in "*" were 802.11n HT40.
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.

Single Antenna

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

MIMO Antenna

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

Test Cases	
AC Conducted	Mode 1 : Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter 1)
Emission	Mode 2 : Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter 2)
Remark: 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

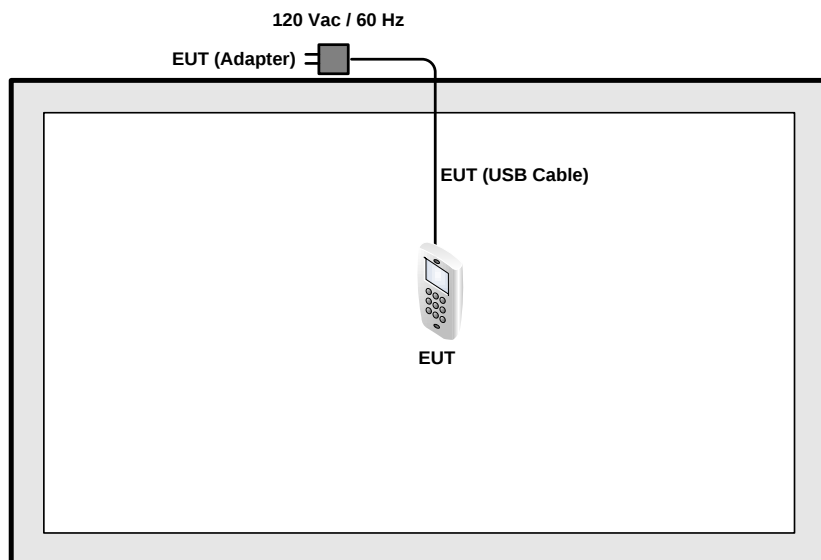
Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5700MHz
		802.11n HT20	802.11n HT20	802.11n HT20
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140

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

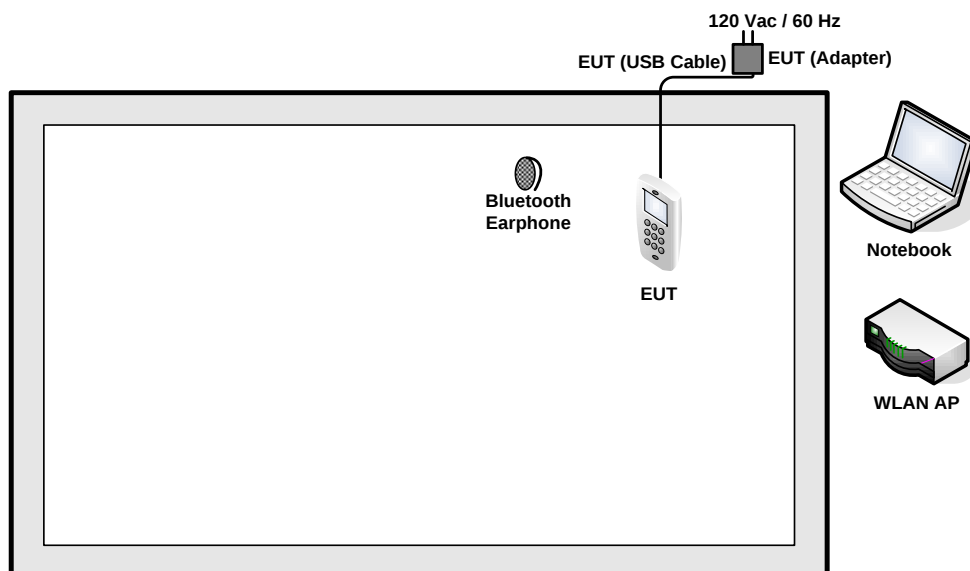
Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5700MHz
		802.11ac VHT80	802.11ac VHT80	802.11ac VHT80
L	Low	-	-	-
M	Middle	42	58	106
H	High	-	-	-

2.3 Connection Diagram of Test System

<WLAN Tx 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	D-Link	DIR-820L	KA2IR820LA1	N/A	Unshielded, 1.8 m
2.	Notebook	Lenovo	E450	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	Bluetooth Earphone	Samsung	EO-MG900	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 WLAN AP 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 and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

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

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 6.3 dB and 10dB attenuator.

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\
 &= 6.3 + 10 = 16.3 \text{ (dB)}
 \end{aligned}$$

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.

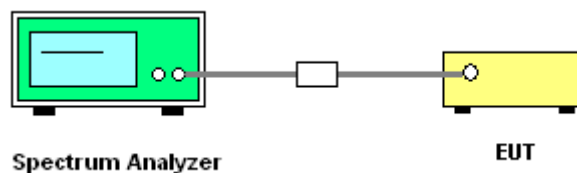
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

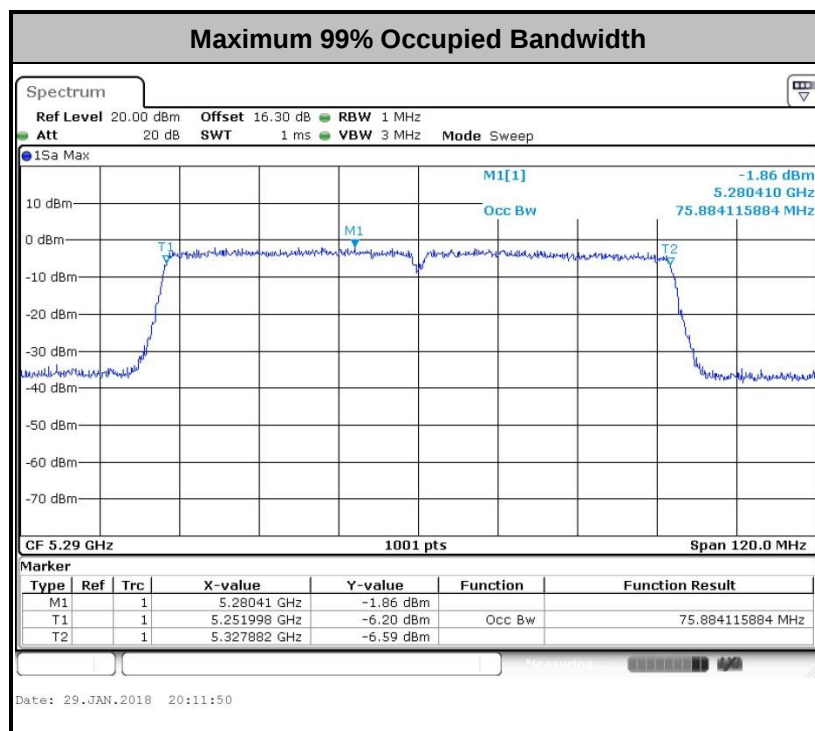
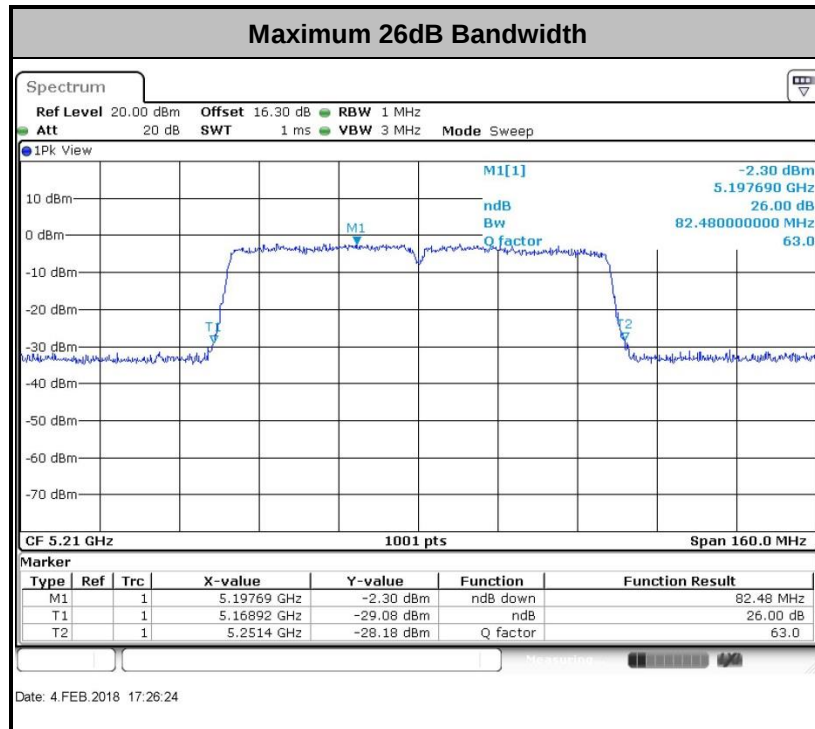
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section C) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB 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

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

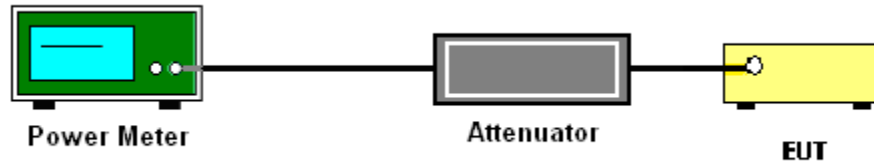
The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 for CDD modes.

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

For normal channel:



3.2.5 Test Result of 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 v02r01.

Section F) Maximum power spectral density.

Method SA-2

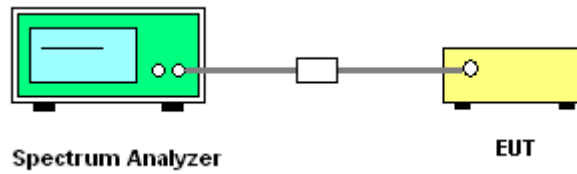
(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

1. The testing follows Method SA-2 of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
 - 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 (a): Measure and sum the spectra across the outputs.

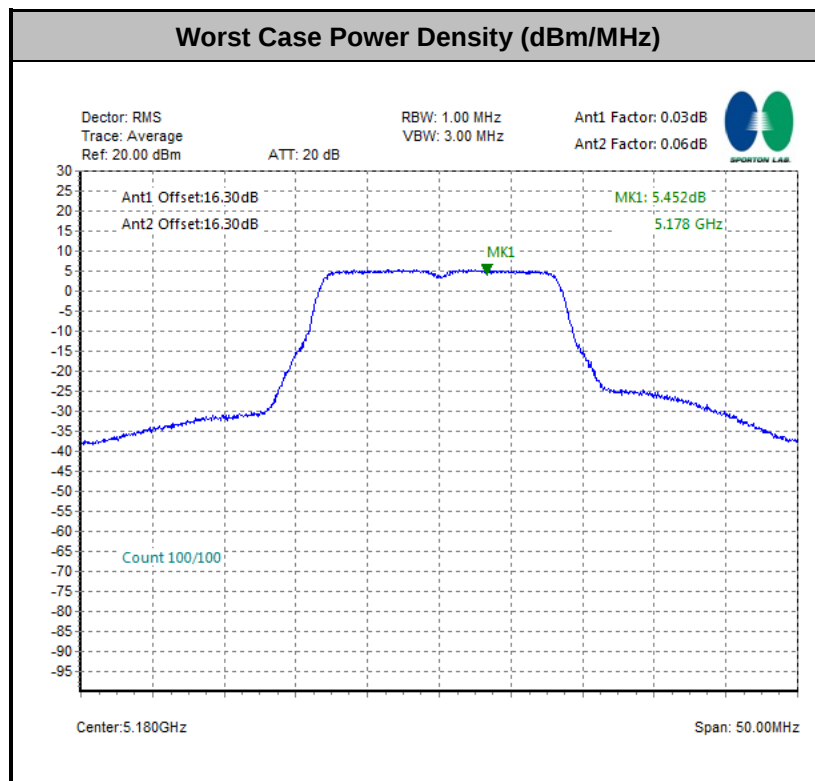
The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of 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 Emissions 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 5470-5600 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 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.

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



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 v02r01.

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

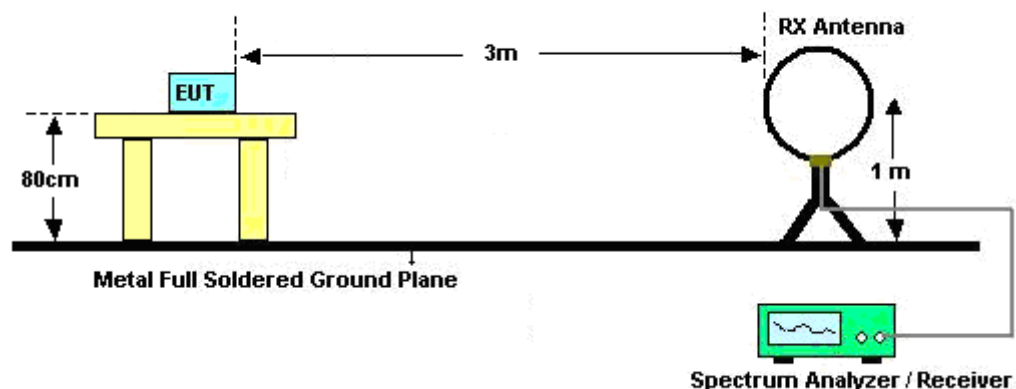
(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

- 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.

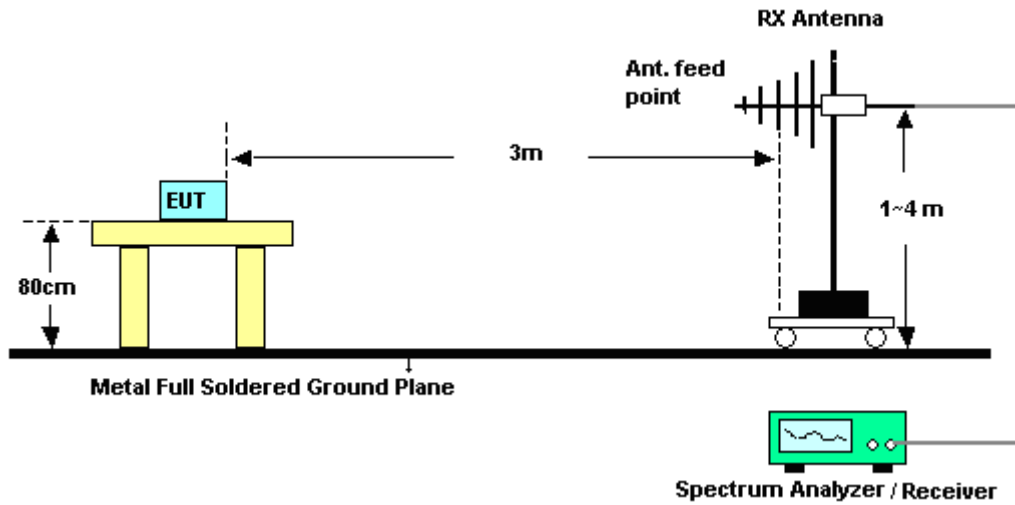
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband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

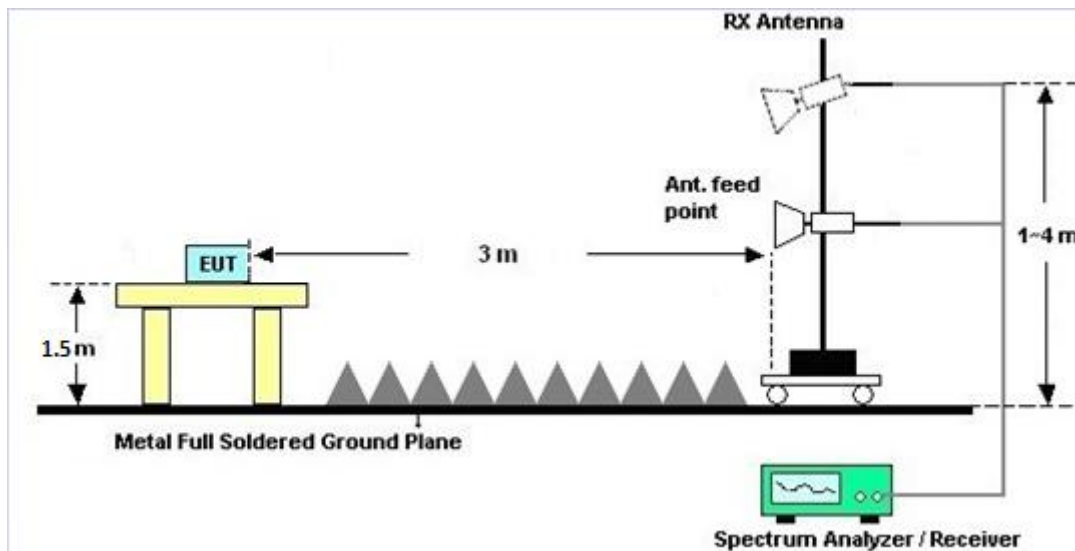
For radiated emissions below 30MHz



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 Emissions (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.

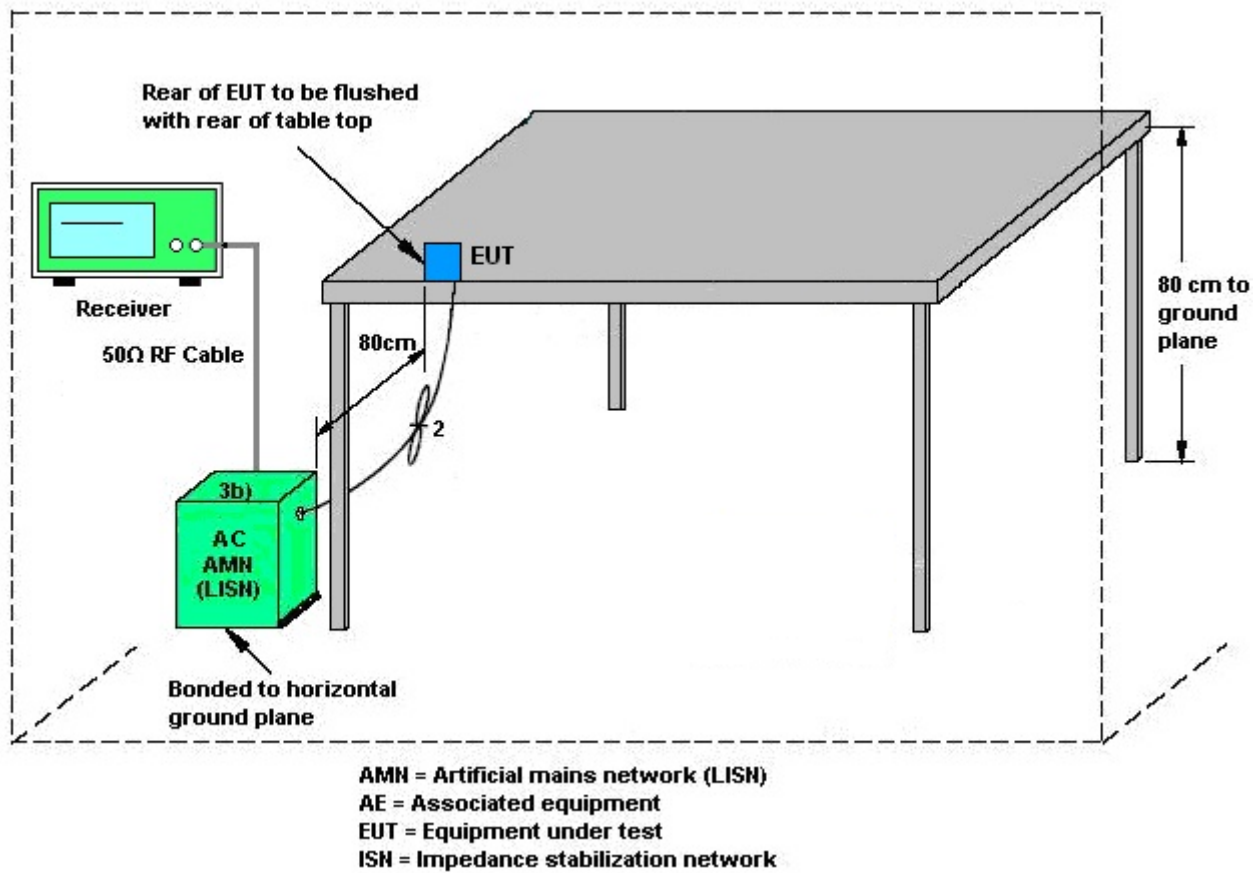
3.5.2 Measuring Instruments

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.

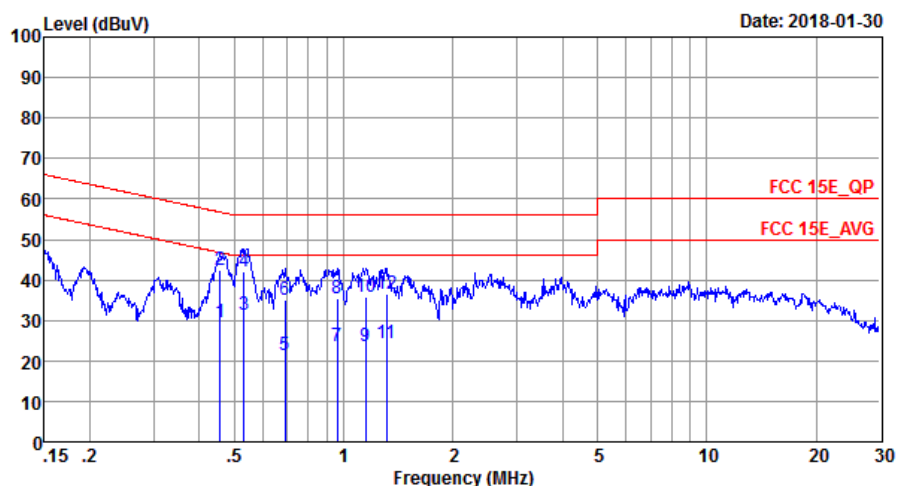
3.5.4 Test Setup





3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	24~25℃
Test Engineer :	Peng Wang	Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter 1)		

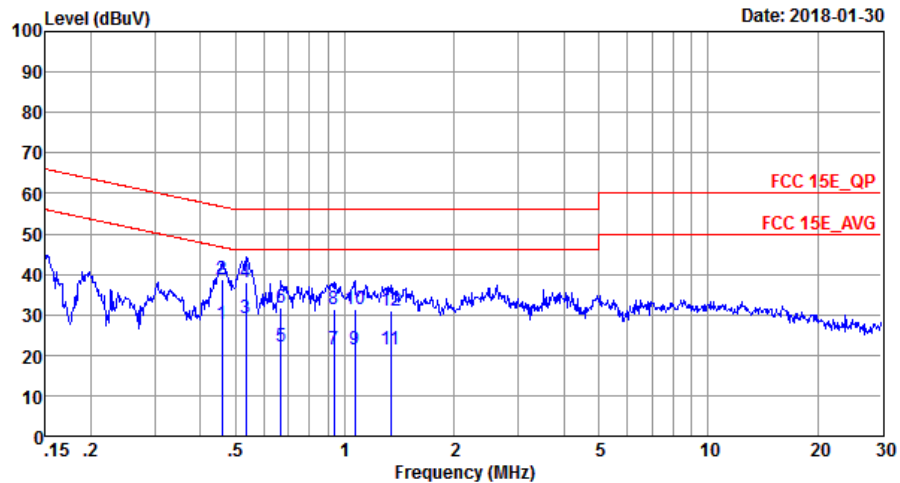


Site : C001-SZ
Condition: FCC 15E_QP LISN_20170907_L LINE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.46	29.70	-17.06	46.76	19.60	0.02	10.08	Average
2	0.46	42.50	-14.26	56.76	32.40	0.02	10.08	QP
3	0.53	31.50	-14.50	46.00	21.40	0.02	10.08	Average
4 *	0.53	42.00	-14.00	56.00	31.90	0.02	10.08	QP
5	0.69	21.40	-24.60	46.00	11.30	0.02	10.08	Average
6	0.69	34.90	-21.10	56.00	24.80	0.02	10.08	QP
7	0.96	23.55	-22.45	46.00	13.40	0.06	10.09	Average
8	0.96	35.25	-20.75	56.00	25.10	0.06	10.09	QP
9	1.15	23.77	-22.23	46.00	13.60	0.08	10.09	Average
10	1.15	35.67	-20.33	56.00	25.50	0.08	10.09	QP
11	1.31	24.18	-21.82	46.00	13.99	0.09	10.10	Average
12	1.31	36.58	-19.42	56.00	26.39	0.09	10.10	QP



Test Mode :	Mode 1	Temperature :	24~25°C
Test Engineer :	Peng Wang	Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter 1)		



Site : C001-SZ
Condition: FCC 15E_QP LISN_20170907_N NEUTRAL

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.46	27.80	-18.91	46.71	17.70	0.02	10.08	Average
2	0.46	38.90	-17.81	56.71	28.80	0.02	10.08	QP
3 *	0.53	29.00	-17.00	46.00	18.90	0.02	10.08	Average
4	0.53	37.90	-18.10	56.00	27.80	0.02	10.08	QP
5	0.67	22.00	-24.00	46.00	11.90	0.02	10.08	Average
6	0.67	31.60	-24.40	56.00	21.50	0.02	10.08	QP
7	0.93	21.43	-24.57	46.00	11.30	0.04	10.09	Average
8	0.93	31.53	-24.47	56.00	21.40	0.04	10.09	QP
9	1.07	21.54	-24.46	46.00	11.40	0.05	10.09	Average
10	1.07	31.24	-24.76	56.00	21.10	0.05	10.09	QP
11	1.34	21.35	-24.65	46.00	11.20	0.05	10.10	Average
12	1.34	30.85	-25.15	56.00	20.70	0.05	10.10	QP



3.6 Automatically Discontinue Transmission

3.6.1 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.

3.6.2 Measuring Instruments

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

3.6.3 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.

3.7 Antenna Requirements

3.7.1 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.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = $10 \log(N_{ANT}/N_{SS}=1)$ dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain G_{ANT} is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

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.

			DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
	Ant 1 (dBi)	Ant 2 (dBi)				
Band I	2.35	-2.19	2.35	3.38	0.00	0.00
Band II	2.66	-2.00	2.66	3.65	0.00	0.00
Band III	1.53	0.76	1.53	4.16	0.00	0.00

Power limit reduction = Composite gain – 6dBi, (min = 0)

PSD limit reduction = Composite gain + PSD Array gain – 6dBi, (min = 0)



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 20, 2017	Jan. 29, 2018~ Feb. 04, 2018	Apr. 19, 2018	Conducted (TH01-SZ)
Pulse Power Sensor	Anritsu	MA2411B	1207253	30MHz~40GHz	Dec. 26, 2017	Jan. 29, 2018~ Feb. 04, 2018	Dec. 25, 2018	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	50MHz Bandwidth	Dec. 26, 2017	Jan. 29, 2018~ Feb. 04, 2018	Dec. 25, 2018	Conducted (TH01-SZ)
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Apr. 20, 2017	Feb. 01, 2018	Apr. 19, 2018	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 14, 2017	Feb. 01, 2018	May 13, 2018	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	23188	30MHz~2GHz	Apr. 25, 2017	Feb. 01, 2018	Apr. 24, 2018	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	119436	1GHz~18GHz	Jul. 28, 2017	Feb. 01, 2018	Jul. 27, 2018	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz~40GHz	Jun. 16, 2017	Feb. 01, 2018	Jun. 15, 2018	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 20, 2017	Feb. 01, 2018	Apr. 19, 2018	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P-R	1707137	1GHz~18GHz	Oct. 19, 2017	Feb. 01, 2018	Oct. 18, 2018	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270104	0.5GHz~26.5GHz	Oct. 19, 2017	Feb. 01, 2018	Oct. 18, 2018	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 18, 2017	Feb. 01, 2018	Jul. 17, 2018	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Feb. 01, 2018	NCR	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Feb. 01, 2018	NCR	Radiation (03CH01-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Dec. 26, 2017	Jan. 30, 2018	Dec. 25, 2018	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Dec. 26, 2017	Jan. 30, 2018	Dec. 25, 2018	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	MessTec	3816/2SH	00103892	9kHz~30MHz	Dec. 26, 2017	Jan. 30, 2018	Dec. 25, 2018	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 19, 2017	Jan. 30, 2018	Jul. 18, 2018	Conduction (CO01-SZ)

NCR: No Calibration Required

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.6 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.8 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0 dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.3 dB
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Bruce Huang	Temperature:	21~25	°C
Test Date:	2018/1/29~2018/2/4	Relative Humidity:	51~54	%

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	6Mbps	2	36	5180	18.43	18.68	22.83	22.43	-		22.66		
11a	6Mbps	2	44	5220	18.68	18.63	22.83	22.53	-		22.70		
11a	6Mbps	2	48	5240	17.33	17.33	20.08	19.78	-		22.39		
HT20	MCS0	2	36	5180	19.08	18.98	23.03	22.73	-		22.78		
HT20	MCS0	2	44	5220	19.23	19.03	22.78	22.88	-		22.79		
HT20	MCS0	2	48	5240	17.83	17.83	20.28	20.23	-		22.51		
HT40	MCS0	2	38	5190	36.86	36.56	41.18	40.82	-		23.01		
HT40	MCS0	2	46	5230	36.66	36.56	41.00	40.91	-		23.01		
VHT80	MCS0	2	42	5210	75.64	75.76	81.68	82.48	-		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	6Mbps	1	36	5180	0.05	0.03	16.04	12.67		24.00	24.00	2.35	-2.19	Pass
11a	6Mbps	1	44	5220	0.05	0.03	15.73	12.68		24.00	24.00	2.35	-2.19	Pass
11a	6Mbps	1	48	5240	0.05	0.03	15.82	12.97		24.00	24.00	2.35	-2.19	Pass
HT20	MCS0	1	36	5180	0.05	0.05	14.01	10.75		24.00	24.00	2.35	-2.19	Pass
HT20	MCS0	1	44	5220	0.05	0.05	13.84	10.72		24.00	24.00	2.35	-2.19	Pass
HT20	MCS0	1	48	5240	0.05	0.05	13.73	10.96		24.00	24.00	2.35	-2.19	Pass
HT40	MCS0	1	38	5190	0.09	0.09	14.49	11.38		24.00	24.00	2.35	-2.19	Pass
HT40	MCS0	1	46	5230	0.09	0.09	14.48	11.49		24.00	24.00	2.35	-2.19	Pass
VHT80	MCS0	1	42	5210	0.19	0.19	12.07	9.01		24.00	24.00	2.35	-2.19	Pass
11a	6Mbps	2	36	5180	0.03	0.06	15.75	12.66	17.48	24.00		2.35		Pass
11a	6Mbps	2	44	5220	0.03	0.06	15.68	12.80	17.49	24.00		2.35		Pass
11a	6Mbps	2	48	5240	0.03	0.06	15.55	13.04	17.48	24.00		2.35		Pass
HT20	MCS0	2	36	5180	0.08	0.11	13.86	10.64	15.55	24.00		2.35		Pass
HT20	MCS0	2	44	5220	0.08	0.11	13.73	10.84	15.53	24.00		2.35		Pass
HT20	MCS0	2	48	5240	0.08	0.11	13.74	11.01	15.60	24.00		2.35		Pass
HT40	MCS0	2	38	5190	0.19	0.16	14.39	11.21	16.09	24.00		2.35		Pass
HT40	MCS0	2	46	5230	0.19	0.16	14.43	11.43	16.19	24.00		2.35		Pass
VHT80	MCS0	2	42	5210	0.33	0.33	12.00	9.08	13.79	24.00		2.35		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	6Mbps	2	36	5180	0.03	0.06			5.45	11.00	3.38			Pass	
11a	6Mbps	2	44	5220	0.03	0.06			5.19	11.00	3.38			Pass	
11a	6Mbps	2	48	5240	0.03	0.06			5.38	11.00	3.38			Pass	
HT20	MCS0	2	36	5180	0.08	0.11			2.57	11.00	3.38			Pass	
HT20	MCS0	2	44	5220	0.08	0.11			2.56	11.00	3.38			Pass	
HT20	MCS0	2	48	5240	0.08	0.11			2.21	11.00	3.38			Pass	
HT40	MCS0	2	38	5190	0.19	0.16			0.02	11.00	3.38			Pass	
HT40	MCS0	2	46	5230	0.19	0.16			0.23	11.00	3.38			Pass	
VHT80	MCS0	2	42	5210	0.33	0.33			-5.07	11.00	3.38			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	6Mbps	2	52	5260	17.23	17.23	20.03	19.78	23.36		29.36		23.96		
11a	6Mbps	2	60	5300	18.68	18.28	22.88	22.43	23.62		29.62		23.98		
11a	6Mbps	2	64	5320	18.33	18.63	22.88	22.48	23.63		29.63		23.98		
HT20	MCS0	2	52	5260	17.83	17.88	20.33	20.13	23.51		29.51		23.98		
HT20	MCS0	2	60	5300	19.18	18.93	22.73	22.98	23.77		29.77		23.98		
HT20	MCS0	2	64	5320	19.23	18.98	23.08	22.78	23.78		29.78		23.98		
HT40	MCS0	2	54	5270	36.66	36.56	41.09	40.73	23.98		30.00		23.98		
HT40	MCS0	2	62	5310	36.46	36.66	40.91	40.64	23.98		30.00		23.98		
VHT80	MCS0	2	58	5290	75.76	75.88	82.00	81.68	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)		EIRP Power Limit (dBm)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	52	5260	0.05	0.03	15.51	12.53		23.96	23.96	2.66	-2.00	26.99	Pass
11a	6Mbps	1	60	5300	0.05	0.03	15.20	12.64		23.98	23.98	2.66	-2.00	26.99	Pass
11a	6Mbps	1	64	5320	0.05	0.03	15.06	12.75		23.98	23.98	2.66	-2.00	26.99	Pass
HT20	MCS0	1	52	5260	0.05	0.05	13.41	10.96		23.98	23.98	2.66	-2.00	26.99	Pass
HT20	MCS0	1	60	5300	0.05	0.05	13.27	10.88		23.98	23.98	2.66	-2.00	26.99	Pass
HT20	MCS0	1	64	5320	0.05	0.05	13.17	10.97		23.98	23.98	2.66	-2.00	26.99	Pass
HT40	MCS0	1	54	5270	0.09	0.09	13.97	11.13		23.98	23.98	2.66	-2.00	26.99	Pass
HT40	MCS0	1	62	5310	0.09	0.09	13.76	11.33		23.98	23.98	2.66	-2.00	26.99	Pass
VHT80	MCS0	1	58	5290	0.19	0.19	11.57	8.92		23.98	23.98	2.66	-2.00	26.99	Pass
11a	6Mbps	2	52	5260	0.03	0.06	15.27	12.64	17.16	23.96		2.66		26.99	Pass
11a	6Mbps	2	60	5300	0.03	0.06	14.98	12.72	17.01	23.98		2.66		26.99	Pass
11a	6Mbps	2	64	5320	0.03	0.06	14.99	12.85	17.06	23.98		2.66		26.99	Pass
HT20	MCS0	2	52	5260	0.08	0.11	13.19	10.63	15.11	23.98		2.66		26.99	Pass
HT20	MCS0	2	60	5300	0.08	0.11	13.03	10.75	15.05	23.98		2.66		26.99	Pass
HT20	MCS0	2	64	5320	0.08	0.11	13.05	10.84	15.10	23.98		2.66		26.99	Pass
HT40	MCS0	2	54	5270	0.19	0.16	13.77	11.27	15.71	23.98		2.66		26.99	Pass
HT40	MCS0	2	62	5310	0.19	0.16	13.72	11.46	15.74	23.98		2.66		26.99	Pass
VHT80	MCS0	2	58	5290	0.33	0.33	11.47	9.06	13.44	23.98		2.66		26.99	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	6Mbps	2	52	5260	0.03	0.06			5.45	11.00	3.65			Pass	
11a	6Mbps	2	60	5300	0.03	0.06			5.24	11.00	3.65			Pass	
11a	6Mbps	2	64	5320	0.03	0.06			4.99	11.00	3.65			Pass	
HT20	MCS0	2	52	5260	0.08	0.11			1.77	11.00	3.65			Pass	
HT20	MCS0	2	60	5300	0.08	0.11			1.61	11.00	3.65			Pass	
HT20	MCS0	2	64	5320	0.08	0.11			1.43	11.00	3.65			Pass	
HT40	MCS0	2	54	5270	0.19	0.16			-0.36	11.00	3.65			Pass	
HT40	MCS0	2	62	5310	0.19	0.16			-0.62	11.00	3.65			Pass	
VHT80	MCS0	2	58	5290	0.33	0.33			-5.36	11.00	3.65			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	6Mbps	2	100	5500	18.68	18.53	22.83	22.48	23.68		29.68		23.98		
11a	6Mbps	2	116	5580	17.13	17.43	19.98	20.18	23.34		29.34		23.98		
11a	6Mbps	2	140	5700	18.73	19.13	22.83	22.93	23.73		29.73		23.98		
HT20	MCS0	2	100	5500	19.13	18.98	22.98	22.78	23.78		29.78		23.98		
HT20	MCS0	2	116	5580	17.83	17.88	20.38	20.23	23.51		29.51		23.98		
HT20	MCS0	2	140	5700	19.13	19.03	22.93	22.63	23.79		29.79		23.98		
HT40	MCS0	2	102	5510	36.76	36.86	41.18	41.00	23.98		30.00		23.98		
HT40	MCS0	2	110	5550	36.76	36.66	41.27	40.91	23.98		30.00		23.98		
HT40	MCS0	2	134	5670	36.76	36.76	41.27	40.91	23.98		30.00		23.98		
VHT80	MCS0	2	106	5530	75.88	75.76	82.00	82.00	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)		EIRP Power Limit (dBm)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	100	5500	0.05	0.03	14.70	12.92		23.98	23.98	1.53	0.76	26.99	Pass
11a	6Mbps	1	116	5580	0.05	0.03	14.81	12.88		23.98	23.98	1.53	0.76	26.99	Pass
11a	6Mbps	1	140	5700	0.05	0.03	15.13	12.63		23.98	23.98	1.53	0.76	26.99	Pass
HT20	MCS0	1	100	5500	0.05	0.05	12.66	10.99		23.98	23.98	1.53	0.76	26.99	Pass
HT20	MCS0	1	116	5580	0.05	0.05	12.70	10.95		23.98	23.98	1.53	0.76	26.99	Pass
HT20	MCS0	1	140	5700	0.05	0.05	13.05	10.69		23.98	23.98	1.53	0.76	26.99	Pass
HT40	MCS0	1	102	5510	0.09	0.09	13.26	11.52		23.98	23.98	1.53	0.76	26.99	Pass
HT40	MCS0	1	110	5550	0.09	0.09	13.42	11.52		23.98	23.98	1.53	0.76	26.99	Pass
HT40	MCS0	1	134	5670	0.09	0.09	13.55	11.40		23.98	23.98	1.53	0.76	26.99	Pass
VHT80	MCS0	1	106	5530	0.19	0.19	10.97	9.06		23.98	23.98	1.53	0.76	26.99	Pass
11a	6Mbps	2	100	5500	0.03	0.06	14.55	12.77	16.76	23.98		1.53		26.99	Pass
11a	6Mbps	2	116	5580	0.03	0.06	14.78	12.75	16.89	23.98		1.53		26.99	Pass
11a	6Mbps	2	140	5700	0.03	0.06	14.93	12.32	16.83	23.98		1.53		26.99	Pass
HT20	MCS0	2	100	5500	0.08	0.11	12.50	10.89	14.78	23.98		1.53		26.99	Pass
HT20	MCS0	2	116	5580	0.08	0.11	12.61	10.71	14.77	23.98		1.53		26.99	Pass
HT20	MCS0	2	140	5700	0.08	0.11	12.91	10.46	14.87	23.98		1.53		26.99	Pass
HT40	MCS0	2	102	5510	0.19	0.16	13.24	11.38	15.42	23.98		1.53		26.99	Pass
HT40	MCS0	2	110	5550	0.19	0.16	13.31	11.49	15.50	23.98		1.53		26.99	Pass
HT40	MCS0	2	134	5670	0.19	0.16	13.55	11.19	15.54	23.98		1.53		26.99	Pass
VHT80	MCS0	2	106	5530	0.33	0.33	10.95	9.13	13.15	23.98		1.53		26.99	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	6Mbps	2	100	5500	0.03	0.06			5.10	11.00		4.16		Pass	
11a	6Mbps	2	116	5580	0.03	0.06			5.29	11.00		4.16		Pass	
11a	6Mbps	2	140	5700	0.03	0.06			4.94	11.00		4.16		Pass	
HT20	MCS0	2	100	5500	0.08	0.11			1.78	11.00		4.16		Pass	
HT20	MCS0	2	116	5580	0.08	0.11			1.99	11.00		4.16		Pass	
HT20	MCS0	2	140	5700	0.08	0.11			1.61	11.00		4.16		Pass	
HT40	MCS0	2	102	5510	0.19	0.16			-0.52	11.00		4.16		Pass	
HT40	MCS0	2	110	5550	0.19	0.16			-0.41	11.00		4.16		Pass	
HT40	MCS0	2	134	5670	0.19	0.16			-0.29	11.00		4.16		Pass	
VHT80	MCS0	2	106	5530	0.33	0.33			-5.82	11.00		4.16		Pass	



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	Preamplifier Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 36 5180MHz		5143.26	54.53	-19.47	74	42.39	33.87	11.37	33.1	175	171	P	H
		5149.24	46.6	-7.4	54	34.46	33.87	11.37	33.1	175	171	A	H
	*	5180	104.2	-	-	91.91	33.92	11.47	33.1	175	171	P	H
	*	5180	94.84	-	-	82.55	33.92	11.47	33.1	175	171	A	H
		5150	59.53	-14.47	74	47.39	33.87	11.37	33.1	103	79	P	V
		5150	48.18	-5.82	54	36.04	33.87	11.37	33.1	103	79	A	V
	*	5180	104.63	-	-	92.34	33.92	11.47	33.1	103	79	P	V
	*	5180	95.42	-	-	83.13	33.92	11.47	33.1	103	79	A	V
802.11a CH 44 5220MHz		5085.54	53.93	-20.07	74	41.98	33.79	11.26	33.1	251	189	P	H
		5034.58	43.41	-10.59	54	31.74	33.72	11.05	33.1	251	189	A	H
	*	5220	104.46	-	-	92.02	33.96	11.58	33.1	251	189	P	H
	*	5220	95.72	-	-	83.28	33.96	11.58	33.1	251	189	A	H
		5360.4	52.68	-21.32	74	39.91	34.13	11.74	33.1	251	189	P	H
		5433.6	43.78	-10.22	54	30.8	34.24	11.84	33.1	251	189	A	H
		5070.72	53.55	-20.45	74	41.73	33.76	11.16	33.1	100	79	P	V
		5071.24	43.46	-10.54	54	31.64	33.76	11.16	33.1	100	79	A	V
	*	5220	104.38	-	-	91.94	33.96	11.58	33.1	100	79	P	V
	*	5220	94.79	-	-	82.35	33.96	11.58	33.1	100	79	A	V
		5382.24	52.09	-21.91	74	39.27	34.18	11.74	33.1	100	79	P	V
		5459.28	43.25	-10.75	54	30.25	34.26	11.84	33.1	100	79	A	V



802.11a CH 48 5240MHz		5013.26	53.75	-20.25	74	42.1	33.7	11.05	33.1	248	170	P	H
		5022.1	43.42	-10.58	54	31.75	33.72	11.05	33.1	248	170	A	H
	*	5240	105.06	-	-	92.56	33.98	11.62	33.1	248	170	P	H
	*	5240	95.68	-	-	83.18	33.98	11.62	33.1	248	170	A	H
		5457.12	52.37	-21.63	74	39.37	34.26	11.84	33.1	248	170	P	H
		5454.72	44.2	-9.8	54	31.2	34.26	11.84	33.1	248	170	A	H
		5084.5	52.91	-21.09	74	40.96	33.79	11.26	33.1	100	79	P	V
		5018.98	43.44	-10.56	54	31.79	33.7	11.05	33.1	100	79	A	V
	*	5240	104.51	-	-	92.01	33.98	11.62	33.1	100	79	P	V
	*	5240	93.98	-	-	81.48	33.98	11.62	33.1	100	79	A	V
		5449.2	52.8	-21.2	74	39.8	34.26	11.84	33.1	100	79	P	V
		5451.6	43.44	-10.56	54	30.44	34.26	11.84	33.1	100	79	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+2	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	45.5	-28.5	74	49.72	37.02	14.61	55.85	152	260	P	H
		15540	50.38	-23.62	74	49.99	40.78	16.34	56.73	189	238	P	H
		10360	46.23	-27.77	74	50.45	37.02	14.61	55.85	152	260	P	V
		15540	50.39	-23.61	74	50	40.78	16.34	56.73	189	238	P	V
802.11a CH 44 5220MHz		10440	46.04	-27.96	74	50.23	37.06	14.63	55.88	150	230	P	H
		15660	50.43	-23.57	74	49.42	41.07	16.43	56.49	160	225	P	H
		10440	45.37	-28.63	74	49.56	37.06	14.63	55.88	150	230	P	V
		15660	50.27	-23.73	74	49.26	41.07	16.43	56.49	160	225	P	V
802.11a CH 48 5240MHz		10480	45.93	-28.07	74	50.1	37.09	14.64	55.9	150	289	P	H
		15720	49.72	-24.28	74	48.38	41.24	16.45	56.35	150	291	P	H
		10480	45.64	-28.36	74	49.81	37.09	14.64	55.9	150	289	P	V
		15720	50.71	-23.29	74	49.37	41.24	16.45	56.35	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+2	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		5138.84	54.03	-19.97	74	41.91	33.85	11.37	33.1	277	157	P	H
		5150	45.1	-8.9	54	32.96	33.87	11.37	33.1	277	157	A	H
	*	5180	99.8	-	-	87.51	33.92	11.47	33.1	277	157	P	H
	*	5180	90.82	-	-	78.53	33.92	11.47	33.1	277	157	A	H
		5048.36	53.15	-20.85	74	41.35	33.74	11.16	33.1	100	29	P	V
		5150	44.58	-9.42	54	32.44	33.87	11.37	33.1	100	29	A	V
	*	5180	98.25	-	-	85.96	33.92	11.47	33.1	100	29	P	V
	*	5180	88.34	-	-	76.05	33.92	11.47	33.1	100	29	A	V
802.11n HT20 CH 44 5220MHz		5087.62	50.51	-23.49	74	38.56	33.79	11.26	33.1	151	116	P	H
		5150	39.89	-14.11	54	27.75	33.87	11.37	33.1	151	116	A	H
	*	5220	99.67	-	-	87.23	33.96	11.58	33.1	151	116	P	H
	*	5220	92.24	-	-	79.8	33.96	11.58	33.1	151	116	A	H
		5421.36	50.61	-23.39	74	37.71	34.22	11.78	33.1	151	116	P	H
		5458.6	40.71	-13.29	54	27.71	34.26	11.84	33.1	151	116	A	H
		5149.24	49.93	-24.07	74	37.79	33.87	11.37	33.1	112	113	P	V
		5098.02	39.84	-14.16	54	27.87	33.81	11.26	33.1	112	113	A	V
	*	5220	95.91	-	-	83.47	33.96	11.58	33.1	112	113	P	V
	*	5220	89.34	-	-	76.9	33.96	11.58	33.1	112	113	A	V
		5457.48	50.26	-23.74	74	37.26	34.26	11.84	33.1	112	113	P	V
		5459.72	40.68	-13.32	54	27.68	34.26	11.84	33.1	112	113	A	V



802.11n HT20 CH 48 5240MHz		5060.84	50.29	-23.71	74	38.47	33.76	11.16	33.1	155	114	P	H
		5093.08	39.93	-14.07	54	27.96	33.81	11.26	33.1	155	114	A	H
	*	5240	99.1	-	-	86.6	33.98	11.62	33.1	155	114	P	H
	*	5240	94.1	-	-	81.6	33.98	11.62	33.1	155	114	A	H
		5456.64	50.93	-23.07	74	37.93	34.26	11.84	33.1	155	114	P	H
		5458.88	40.8	-13.2	54	27.8	34.26	11.84	33.1	155	114	A	H
		5101.92	50.86	-23.14	74	38.89	33.81	11.26	33.1	105	113	P	V
		5096.72	39.85	-14.15	54	27.88	33.81	11.26	33.1	105	113	A	V
	*	5240	95.48	-	-	82.98	33.98	11.62	33.1	105	113	P	V
	*	5240	88.39	-	-	75.89	33.98	11.62	33.1	105	113	A	V
		5430.88	50.68	-23.32	74	37.7	34.24	11.84	33.1	105	113	P	V
		5458.32	40.7	-13.3	54	27.7	34.26	11.84	33.1	105	113	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+2	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	44.45	-29.55	74	48.67	37.02	14.61	55.85	152	260	P	H
		15540	48.18	-25.82	74	47.79	40.78	16.34	56.73	189	238	P	H
		10360	44.74	-29.26	74	48.96	37.02	14.61	55.85	152	260	P	V
		15540	48.75	-25.25	74	48.36	40.78	16.34	56.73	189	238	P	V
802.11n HT20 CH 44 5220MHz		10440	45.52	-28.48	74	49.71	37.06	14.63	55.88	150	230	P	H
		15660	49.17	-24.83	74	48.16	41.07	16.43	56.49	160	225	P	H
		10440	44.9	-29.1	74	49.09	37.06	14.63	55.88	150	230	P	V
		15660	49.77	-24.23	74	48.76	41.07	16.43	56.49	160	225	P	V
802.11n HT20 CH 48 5240MHz		10480	44.25	-29.75	74	48.42	37.09	14.64	55.9	150	289	P	H
		15720	50.28	-23.72	74	48.94	41.24	16.45	56.35	150	291	P	H
		10480	45.72	-28.28	74	49.89	37.09	14.64	55.9	150	289	P	V
		15720	50.17	-23.83	74	48.83	41.24	16.45	56.35	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 HT40 (Band Edge @ 3m)

WIFI Ant. 1+2	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 38 5190MHz		5148.72	58.96	-15.04	74	46.82	33.87	11.37	33.1	277	158	P	H
		5150	49.92	-4.08	54	37.78	33.87	11.37	33.1	277	158	A	H
	*	5190	98.41	-	-	86.12	33.92	11.47	33.1	277	158	P	H
	*	5190	90.05	-	-	77.76	33.92	11.47	33.1	277	158	A	H
		5367.04	52.5	-21.5	74	39.71	34.15	11.74	33.1	277	158	P	H
		5453	44.5	-9.5	54	31.5	34.26	11.84	33.1	277	158	A	H
		5145.86	56.19	-17.81	74	44.05	33.87	11.37	33.1	100	3	P	V
		5150	49.51	-4.49	54	37.37	33.87	11.37	33.1	100	3	A	V
	*	5190	95.51	-	-	83.22	33.92	11.47	33.1	100	3	P	V
	*	5190	87.38	-	-	75.09	33.92	11.47	33.1	100	3	A	V
		5416.88	52.64	-21.36	74	39.74	34.22	11.78	33.1	100	3	P	V
		5453.28	44.56	-9.44	54	31.56	34.26	11.84	33.1	100	3	A	V
802.11n HT40 CH 46 5230MHz		5131.3	52.91	-21.09	74	40.79	33.85	11.37	33.1	252	222	P	H
		5085.8	44.63	-9.37	54	32.68	33.79	11.26	33.1	252	222	A	H
	*	5230	97.74	-	-	85.28	33.98	11.58	33.1	252	222	P	H
	*	5230	89.5	-	-	77.04	33.98	11.58	33.1	252	222	A	H
		5458.8	53	-21	74	40	34.26	11.84	33.1	252	222	P	H
		5455.68	44.65	-9.35	54	31.65	34.26	11.84	33.1	252	222	A	H
		5111.02	52.61	-21.39	74	40.62	33.83	11.26	33.1	100	0	P	V
		5052.78	44.61	-9.39	54	32.81	33.74	11.16	33.1	100	0	A	V
	*	5230	95.7	-	-	83.24	33.98	11.58	33.1	100	0	P	V
	*	5230	86.6	-	-	74.14	33.98	11.58	33.1	100	0	A	V
		5449.68	52.88	-21.12	74	39.88	34.26	11.84	33.1	100	0	P	V
		5448.72	44.56	-9.44	54	31.56	34.26	11.84	33.1	100	0	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 HT40 (Harmonic @ 3m)

WIFI Ant. 1+2	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 38 5190MHz		10380	45.42	-28.58	74	49.63	37.03	14.62	55.86	150	360	P	H
		15570	49.02	-24.98	74	48.44	40.87	16.37	56.66	155	360	P	H
		10380	44.7	-29.3	74	48.91	37.03	14.62	55.86	150	360	P	V
		15570	49.31	-24.69	74	48.73	40.87	16.37	56.66	155	360	P	V
802.11n HT40 CH 46 5230MHz		10460	44.37	-29.63	74	48.54	37.07	14.64	55.88	150	360	P	H
		15690	50.05	-23.95	74	48.86	41.16	16.45	56.42	150	225	P	H
		10460	44.68	-29.32	74	48.85	37.07	14.64	55.88	150	360	P	V
		15690	50.15	-23.85	74	48.96	41.16	16.45	56.42	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+2	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		5132.86	53.65	-20.35	74	41.53	33.85	11.37	33.1	238	115	P	H
		5117.26	46.01	-7.99	54	33.91	33.83	11.37	33.1	238	115	A	H
	*	5210	91.57	-	-	79.13	33.96	11.58	33.1	238	115	P	H
	*	5210	84.69	-	-	72.25	33.96	11.58	33.1	238	115	A	H
		5424.96	50.4	-23.6	74	37.5	34.22	11.78	33.1	238	115	P	H
		5440.8	42.44	-11.56	54	29.46	34.24	11.84	33.1	238	115	A	H
		5114.66	54.09	-19.91	74	41.99	33.83	11.37	33.1	100	89	P	V
		5121.16	45.71	-8.29	54	33.61	33.83	11.37	33.1	100	89	A	V
	*	5210	88.9	-	-	76.46	33.96	11.58	33.1	100	89	P	V
	*	5210	80.96	-	-	68.52	33.96	11.58	33.1	100	89	A	V
		5398.8	50.8	-23.2	74	37.92	34.2	11.78	33.1	100	89	P	V
		5434.56	42.58	-11.42	54	29.6	34.24	11.84	33.1	100	89	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+2	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	46.16	-27.84	74	50.35	37.05	14.63	55.87	150	230	P	H
VHT80		15630	49	-25	74	48.09	41.03	16.4	56.52	160	225	P	H
CH 42		10420	45.47	-28.53	74	49.66	37.05	14.63	55.87	150	230	P	V
5210MHz		15630	49.25	-24.75	74	48.34	41.03	16.4	56.52	160	225	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+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 52 5260MHz		5104.78	53	-21	74	41.03	33.81	11.26	33.1	253	164	P	H
		5034.32	43.41	-10.59	54	31.74	33.72	11.05	33.1	253	164	A	H
	*	5260	105.45	-	-	92.91	34.02	11.62	33.1	253	164	P	H
	*	5260	99.42	-	-	86.88	34.02	11.62	33.1	253	164	A	H
		5454	53.05	-20.95	74	40.05	34.26	11.84	33.1	253	164	P	H
		5458.32	43.45	-10.55	54	30.45	34.26	11.84	33.1	253	164	A	H
		5064.22	53.71	-20.29	74	41.89	33.76	11.16	33.1	100	79	P	V
		5039.52	43.43	-10.57	54	31.63	33.74	11.16	33.1	100	79	A	V
	*	5260	102.59	-	-	90.05	34.02	11.62	33.1	100	79	P	V
	*	5260	96.49	-	-	83.95	34.02	11.62	33.1	100	79	A	V
		5361.6	52.52	-21.48	74	39.73	34.15	11.74	33.1	100	79	P	V
		5458.8	43.27	-10.73	54	30.27	34.26	11.84	33.1	100	79	A	V
802.11a CH 60 5300MHz		5018.9	52.46	-21.54	74	40.81	33.7	11.05	33.1	248	163	P	H
		5034.65	43.4	-10.6	54	31.73	33.72	11.05	33.1	248	163	A	H
	*	5300	105.34	-	-	92.71	34.07	11.66	33.1	248	163	P	H
	*	5300	95.93	-	-	83.3	34.07	11.66	33.1	248	163	A	H
		5415.84	52.6	-21.4	74	39.7	34.22	11.78	33.1	248	163	P	H
		5350.56	44.6	-9.4	54	31.83	34.13	11.74	33.1	248	163	A	H
		5046.55	52.27	-21.73	74	40.47	33.74	11.16	33.1	100	78	P	V
		5079.1	43.4	-10.6	54	31.45	33.79	11.26	33.1	100	78	A	V
	*	5300	101.31	-	-	88.68	34.07	11.66	33.1	100	78	P	V
	*	5300	92.61	-	-	79.98	34.07	11.66	33.1	100	78	A	V
		5434.08	52.6	-21.4	74	39.62	34.24	11.84	33.1	100	78	P	V
		5457.84	43.34	-10.66	54	30.34	34.26	11.84	33.1	100	78	A	V



802.11a CH 64 5320MHz	*	5320	105.83	-	-	93.14	34.09	11.7	33.1	267	161	P	H
	*	5320	95.37	-	-	82.68	34.09	11.7	33.1	267	161	A	H
		5352.48	55.52	-18.48	74	42.75	34.13	11.74	33.1	267	161	P	H
		5351.52	46.81	-7.19	54	34.04	34.13	11.74	33.1	267	161	A	H
	*	5320	102.85	-	-	90.16	34.09	11.7	33.1	100	79	P	V
	*	5320	93.49	-	-	80.8	34.09	11.7	33.1	100	79	A	V
		5350.72	54.16	-19.84	74	41.39	34.13	11.74	33.1	100	79	P	V
		5350.56	45.66	-8.34	54	32.89	34.13	11.74	33.1	100	79	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+2	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	45.93	-28.07	74	50.08	37.11	14.65	55.91	150	220	P	H
		15780	49.91	-24.09	74	48.29	41.36	16.51	56.25	159	345	P	H
		10520	45.56	-28.44	74	49.71	37.11	14.65	55.91	150	220	P	V
		15780	49.03	-24.97	74	47.41	41.36	16.51	56.25	159	345	P	V
802.11a CH 60 5300MHz		10600	46.15	-27.85	74	50.26	37.16	14.67	55.94	185	215	P	H
		15900	50.5	-23.5	74	48.27	41.65	16.59	56.01	196	190	P	H
		10600	45.05	-28.95	74	49.16	37.16	14.67	55.94	185	215	P	V
		15900	49.81	-24.19	74	47.58	41.65	16.59	56.01	196	190	P	V
802.11a CH 64 5320MHz		10640	45.22	-28.78	74	49.32	37.18	14.68	55.96	152	135	P	H
		15960	50.19	-23.81	74	47.6	41.82	16.64	55.87	173	245	P	H
		10640	45.16	-28.84	74	49.26	37.18	14.68	55.96	152	135	P	V
		15960	49.28	-24.72	74	46.69	41.82	16.64	55.87	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+2	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		5060.2	49.96	-24.04	74	38.14	33.76	11.16	33.1	138	114	P	H
		5094.85	39.86	-14.14	54	27.89	33.81	11.26	33.1	138	114	A	H
	*	5260	98.07	-	-	85.53	34.02	11.62	33.1	138	114	P	H
	*	5260	92.44	-	-	79.9	34.02	11.62	33.1	138	114	A	H
		5456.88	50.73	-23.27	74	37.73	34.26	11.84	33.1	138	114	P	H
		5458.08	40.73	-13.27	54	27.73	34.26	11.84	33.1	138	114	A	H
		5069.3	53.18	-20.82	74	41.36	33.76	11.16	33.1	100	0	P	V
		5029.4	43.38	-10.62	54	31.71	33.72	11.05	33.1	100	0	A	V
	*	5260	94.39	-	-	81.85	34.02	11.62	33.1	100	0	P	V
	*	5260	88.12	-	-	75.58	34.02	11.62	33.1	100	0	A	V
		5420.16	52.14	-21.86	74	39.24	34.22	11.78	33.1	100	0	P	V
		5457.6	43.3	-10.7	54	30.3	34.26	11.84	33.1	100	0	A	V
802.11n HT20 CH 60 5300MHz		5025.9	52.66	-21.34	74	40.99	33.72	11.05	33.1	250	159	P	H
		5033.6	43.35	-10.65	54	31.68	33.72	11.05	33.1	250	159	A	H
	*	5300	99.04	-	-	86.41	34.07	11.66	33.1	250	159	P	H
	*	5300	92.43	-	-	79.8	34.07	11.66	33.1	250	159	A	H
		5437.44	52.51	-21.49	74	39.53	34.24	11.84	33.1	250	159	P	H
		5355.12	44.01	-9.99	54	31.24	34.13	11.74	33.1	250	159	A	H
		5054.6	53.19	-20.81	74	41.37	33.76	11.16	33.1	100	0	P	V
		5011.2	43.37	-10.63	54	31.72	33.7	11.05	33.1	100	0	A	V
	*	5300	95.1	-	-	82.47	34.07	11.66	33.1	100	0	P	V
	*	5300	89.43	-	-	76.8	34.07	11.66	33.1	100	0	A	V
		5361.36	52.41	-21.59	74	39.62	34.15	11.74	33.1	100	0	P	V
		5458.32	43.32	-10.68	54	30.32	34.26	11.84	33.1	100	0	A	V



802.11n HT20 CH 64 5320MHz	*	5320	99.47	-	-	86.78	34.09	11.7	33.1	250	159	P	H
	*	5320	92.49	-	-	79.8	34.09	11.7	33.1	250	159	A	H
		5369.28	52.97	-21.03	74	40.18	34.15	11.74	33.1	250	159	P	H
		5375.36	44.13	-9.87	54	31.34	34.15	11.74	33.1	250	159	A	H
	*	5320	96.08	-	-	83.39	34.09	11.7	33.1	100	0	P	V
	*	5320	89.49	-	-	76.8	34.09	11.7	33.1	100	0	A	V
		5408.8	52.4	-21.6	74	39.52	34.2	11.78	33.1	100	0	P	V
		5458.24	43.31	-10.69	54	30.31	34.26	11.84	33.1	100	0	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+2	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		10520	45.49	-28.51	74	49.64	37.11	14.65	55.91	150	220	P	H
		15780	49.6	-24.4	74	47.98	41.36	16.51	56.25	159	345	P	H
		10520	45.58	-28.42	74	49.73	37.11	14.65	55.91	150	220	P	V
		15780	49.62	-24.38	74	48	41.36	16.51	56.25	159	345	P	V
802.11n HT20 CH 60 5300MHz		10600	44.31	-29.69	74	48.42	37.16	14.67	55.94	185	215	P	H
		15900	49.6	-24.4	74	47.37	41.65	16.59	56.01	196	190	P	H
		10600	44.7	-29.3	74	48.81	37.16	14.67	55.94	185	215	P	V
		15900	50.06	-23.94	74	47.83	41.65	16.59	56.01	196	190	P	V
802.11n HT20 CH 64 5320MHz		10640	44.01	-29.99	74	48.11	37.18	14.68	55.96	152	135	P	H
		15960	49.92	-24.08	74	47.33	41.82	16.64	55.87	173	245	P	H
		10640	44.24	-29.76	74	48.34	37.18	14.68	55.96	152	135	P	V
		15960	50.59	-23.41	74	48	41.82	16.64	55.87	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 HT40 (Band Edge @ 3m)

WIFI Ant. 1+2	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 54 5270MHz		5050.44	53.49	-20.51	74	41.69	33.74	11.16	33.1	264	247	P	H
		5044.98	44.54	-9.46	54	32.74	33.74	11.16	33.1	264	247	A	H
	*	5270	97.34	-	-	84.8	34.02	11.62	33.1	264	247	P	H
	*	5270	88.14	-	-	75.6	34.02	11.62	33.1	264	247	A	H
		5459.52	52.18	-21.82	74	39.18	34.26	11.84	33.1	264	247	P	H
		5436.96	44.59	-9.41	54	31.61	34.24	11.84	33.1	264	247	A	H
		5032.24	53.56	-20.44	74	41.89	33.72	11.05	33.1	100	0	P	V
		5005.2	44.81	-9.19	54	33.16	33.7	11.05	33.1	100	0	A	V
	*	5270	95.45	-	-	82.91	34.02	11.62	33.1	100	0	P	V
	*	5270	86.35	-	-	73.81	34.02	11.62	33.1	100	0	A	V
		5459.28	52.46	-21.54	74	39.46	34.26	11.84	33.1	100	0	P	V
		5454	44.47	-9.53	54	31.47	34.26	11.84	33.1	100	0	A	V
802.11n HT40 CH 62 5310MHz		5084.7	52.78	-21.22	74	40.83	33.79	11.26	33.1	246	248	P	H
		5047.6	44.82	-9.18	54	33.02	33.74	11.16	33.1	246	248	A	H
	*	5310	97.63	-	-	84.94	34.09	11.7	33.1	246	248	P	H
	*	5310	89.33	-	-	76.64	34.09	11.7	33.1	246	248	A	H
		5354.64	55.96	-18.04	74	43.19	34.13	11.74	33.1	246	248	P	H
		5350.08	50.07	-3.93	54	37.3	34.13	11.74	33.1	246	248	A	H
		5051.45	52.36	-21.64	74	40.56	33.74	11.16	33.1	100	0	P	V
		5036.75	44.57	-9.43	54	32.79	33.72	11.16	33.1	100	0	A	V
	*	5310	94.05	-	-	81.42	34.07	11.66	33.1	100	0	P	V
	*	5310	85.23	-	-	72.6	34.07	11.66	33.1	100	0	A	V
		5352.24	55.16	-18.84	74	42.39	34.13	11.74	33.1	100	0	P	V
		5350.32	46.68	-7.32	54	33.91	34.13	11.74	33.1	100	0	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 HT40 (Harmonic @ 3m)

WIFI Ant. 1+2	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 54 5270MHz		10540	45.33	-28.67	74	49.47	37.12	14.66	55.92	150	220	P	H
		15810	49.59	-24.41	74	47.8	41.44	16.53	56.18	168	345	P	H
		10540	44.95	-29.05	74	49.09	37.12	14.66	55.92	150	220	P	V
		15810	49.23	-24.77	74	47.44	41.44	16.53	56.18	168	345	P	V
802.11n HT40 CH 62 5310MHz		10620	44.67	-29.33	74	48.77	37.17	14.68	55.95	150	220	P	H
		15930	49.34	-24.66	74	46.93	41.73	16.62	55.94	160	100	P	H
		10620	45.01	-28.99	74	49.11	37.17	14.68	55.95	150	220	P	V
		15930	48.85	-25.15	74	46.44	41.73	16.62	55.94	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+2	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		5107.38	50.55	-23.45	74	38.56	33.83	11.26	33.1	254	116	P	H
		5149.5	40.25	-13.75	54	28.11	33.87	11.37	33.1	254	116	A	H
	*	5290	91.53	-	-	78.92	34.05	11.66	33.1	254	116	P	H
	*	5290	84.06	-	-	71.45	34.05	11.66	33.1	254	116	A	H
		5375.76	52.63	-21.37	74	39.84	34.15	11.74	33.1	254	116	P	H
		5350.08	43.49	-10.51	54	30.72	34.13	11.74	33.1	254	116	A	H
		5121.94	50.63	-23.37	74	38.53	33.83	11.37	33.1	100	70	P	V
		5148.2	40.03	-13.97	54	27.89	33.87	11.37	33.1	100	70	A	V
	*	5290	87.08	-	-	74.47	34.05	11.66	33.1	100	70	P	V
	*	5290	79.84	-	-	67.23	34.05	11.66	33.1	100	70	A	V
		5365.92	51.91	-22.09	74	39.12	34.15	11.74	33.1	100	70	P	V
		5350.8	41.32	-12.68	54	28.55	34.13	11.74	33.1	100	70	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+2	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	44.13	-29.87	74	48.25	37.15	14.67	55.94	150	220	P	H
VHT80		15870	49.21	-24.79	74	47.08	41.61	16.56	56.04	168	345	P	H
CH 58		10580	44.45	-29.55	74	48.57	37.15	14.67	55.94	150	220	P	V
5290MHz		15870	49.27	-24.73	74	47.14	41.61	16.56	56.04	168	345	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+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 100 5500MHz		5469.2	58.2	-15.8	74	45.12	34.28	11.9	33.1	266	164	P	H
		5468.72	49.96	-4.04	54	36.88	34.28	11.9	33.1	266	164	A	H
	*	5500	107.67	-	-	94.54	34.33	11.9	33.1	266	164	P	H
	*	5500	97.92	-	-	84.79	34.33	11.9	33.1	266	164	A	H
		5468.72	55.34	-18.66	74	42.26	34.28	11.9	33.1	100	79	P	V
		5469.2	47.14	-6.86	54	34.06	34.28	11.9	33.1	100	79	A	V
	*	5500	101.89	-	-	88.76	34.33	11.9	33.1	100	79	P	V
	*	5500	92.14	-	-	79.01	34.33	11.9	33.1	100	79	A	V
802.11a CH 116 5580MHz		5431.12	53.02	-20.98	74	40.04	34.24	11.84	33.1	261	164	P	H
		5469.04	43.83	-10.17	54	30.75	34.28	11.9	33.1	261	164	A	H
	*	5580	107.68	-	-	94.34	34.41	12.03	33.1	261	164	P	H
	*	5580	97.45	-	-	84.11	34.41	12.03	33.1	261	164	A	H
		5745.47	52.24	-21.76	74	38.24	34.45	12.65	33.1	261	164	P	H
		5736.335	44.02	-9.98	54	30.16	34.45	12.51	33.1	261	164	A	H
		5407.36	51.69	-22.31	74	38.81	34.2	11.78	33.1	100	69	P	V
		5469.52	43.57	-10.43	54	30.49	34.28	11.9	33.1	100	69	A	V
	*	5580	101.83	-	-	88.49	34.41	12.03	33.1	100	69	P	V
	*	5580	93.45	-	-	80.11	34.41	12.03	33.1	100	69	A	V
		5734.76	53.13	-20.87	74	39.27	34.45	12.51	33.1	100	69	P	V
		5735.39	43.98	-10.02	54	30.12	34.45	12.51	33.1	100	69	A	V



802.11a CH 140 5700MHz	*	5700	106.82	-	-	92.93	34.48	12.51	33.1	250	163	P	H
	*	5700	96.64	-	-	82.75	34.48	12.51	33.1	250	163	A	H
		5729.4	59.2	-14.8	74	45.33	34.46	12.51	33.1	250	163	P	H
		5726.76	49.87	-4.13	54	36	34.46	12.51	33.1	250	163	A	H
	*	5700	102.99	-	-	89.1	34.48	12.51	33.1	100	21	P	V
	*	5700	93.22	-	-	79.33	34.48	12.51	33.1	100	21	A	V
		5727.32	56.95	-17.05	74	43.08	34.46	12.51	33.1	100	21	P	V
		5725	48.9	-5.1	54	35.03	34.46	12.51	33.1	100	21	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+2	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	44.89	-29.11	74	48.83	37.4	14.76	56.1	163	230	P	H
		16500	50.16	-23.84	74	45.74	43.27	17.2	56.05	178	296	P	H
		11000	45.64	-28.36	74	49.58	37.4	14.76	56.1	163	230	P	V
		16500	49.74	-24.26	74	45.32	43.27	17.2	56.05	178	296	P	V
802.11a CH 116 5580MHz		11160	44.88	-29.12	74	48.42	37.5	14.81	55.85	170	200	P	H
		16740	50	-24	74	44.75	43.91	17.51	56.17	156	350	P	H
		11160	45.2	-28.8	74	48.74	37.5	14.81	55.85	170	200	P	V
		16740	50.02	-23.98	74	44.77	43.91	17.51	56.17	156	350	P	V
802.11a CH 140 5700MHz		11400	46.37	-27.63	74	49.36	37.64	14.86	55.49	157	285	P	H
		17100	50.26	-23.74	74	44.44	44.29	17.91	56.38	165	246	P	H
		11400	45.77	-28.23	74	48.76	37.64	14.86	55.49	157	285	P	V
		17100	50.1	-23.9	74	44.28	44.29	17.91	56.38	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 HT20 (Band Edge @ 3m)

WIFI Ant. 1+2	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		5468.4	54.52	-19.48	74	41.44	34.28	11.9	33.1	239	176	P	H
		5470	45.71	-8.29	54	32.63	34.28	11.9	33.1	239	176	A	H
	*	5500	101.79	-	-	88.66	34.33	11.9	33.1	239	176	P	H
	*	5500	94.83	-	-	81.7	34.33	11.9	33.1	239	176	A	H
		5435.28	52.95	-21.05	74	39.97	34.24	11.84	33.1	102	359	P	V
		5470	44.8	-9.2	54	31.72	34.28	11.9	33.1	102	359	A	V
	*	5500	100.01	-	-	86.88	34.33	11.9	33.1	102	359	P	V
	*	5500	92.87	-	-	79.74	34.33	11.9	33.1	102	359	A	V
802.11n HT20 CH 116 5580MHz		5454.16	53.45	-20.55	74	40.45	34.26	11.84	33.1	228	177	P	H
		5468.32	43.78	-10.22	54	30.7	34.28	11.9	33.1	228	177	A	H
	*	5580	102.51	-	-	89.17	34.41	12.03	33.1	228	177	P	H
	*	5580	95.74	-	-	82.4	34.41	12.03	33.1	228	177	A	H
		5729.405	53.21	-20.79	74	39.34	34.46	12.51	33.1	228	177	P	H
		5735.075	44.01	-9.99	54	30.15	34.45	12.51	33.1	228	177	A	H
		5401.36	52.15	-21.85	74	39.27	34.2	11.78	33.1	100	358	P	V
		5469.52	43.54	-10.46	54	30.46	34.28	11.9	33.1	100	358	A	V
	*	5580	101.28	-	-	87.94	34.41	12.03	33.1	100	358	P	V
	*	5580	93.48	-	-	80.14	34.41	12.03	33.1	100	358	A	V
		5762.165	54.08	-19.92	74	40.08	34.45	12.65	33.1	100	358	P	V
		5744.525	43.97	-10.03	54	29.97	34.45	12.65	33.1	100	358	A	V



802.11n HT20 CH 140 5700MHz	*	5700	101.71	-	-	87.82	34.48	12.51	33.1	215	179	P	H
	*	5700	94.05	-	-	80.16	34.48	12.51	33.1	215	179	A	H
		5727.72	54.98	-19.02	74	41.11	34.46	12.51	33.1	215	179	P	H
		5725	46.05	-7.95	54	32.18	34.46	12.51	33.1	215	179	A	H
	*	5700	101.4	-	-	87.51	34.48	12.51	33.1	100	354	P	V
	*	5700	94.49	-	-	80.6	34.48	12.51	33.1	100	354	A	V
		5731.56	54.56	-19.44	74	40.69	34.46	12.51	33.1	100	354	P	V
		5725	45.83	-8.17	54	31.96	34.46	12.51	33.1	100	354	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+2	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		11000	45.7	-28.3	74	49.64	37.4	14.76	56.1	163	230	P	H
		16500	50.06	-23.94	74	45.64	43.27	17.2	56.05	178	296	P	H
		11000	44.5	-29.5	74	48.44	37.4	14.76	56.1	163	230	P	V
		16500	50.57	-23.43	74	46.15	43.27	17.2	56.05	178	296	P	V
802.11n HT20 CH 116 5580MHz		11160	43.92	-30.08	74	47.46	37.5	14.81	55.85	170	200	P	H
		16740	50.11	-23.89	74	44.86	43.91	17.51	56.17	156	350	P	H
		11160	44.56	-29.44	74	48.1	37.5	14.81	55.85	170	200	P	V
		16740	50.53	-23.47	74	45.28	43.91	17.51	56.17	156	350	P	V
802.11n HT20 CH 140 5700MHz		11400	46.37	-27.63	74	49.36	37.64	14.86	55.49	157	285	P	H
		17100	50.16	-23.84	74	44.34	44.29	17.91	56.38	165	246	P	H
		11400	45.55	-28.45	74	48.54	37.64	14.86	55.49	157	285	P	V
		17100	50.55	-23.45	74	44.73	44.29	17.91	56.38	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+2	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		5467.84	61.79	-12.21	74	48.71	34.28	11.9	33.1	236	248	P	H
		5468.8	52.79	-1.21	54	39.71	34.28	11.9	33.1	236	248	A	H
	*	5510	101.32	-	-	88.12	34.33	11.97	33.1	236	248	P	H
	*	5510	94.59	-	-	81.39	34.33	11.97	33.1	236	248	A	H
		5725.625	52.49	-21.51	74	38.62	34.46	12.51	33.1	236	248	P	H
		5734.445	45.27	-8.73	54	31.4	34.46	12.51	33.1	236	248	A	H
		5468.56	57.17	-16.83	74	44.09	34.28	11.9	33.1	100	26	P	V
		5468.08	50.24	-3.76	54	37.16	34.28	11.9	33.1	100	26	A	V
	*	5510	97.84	-	-	84.64	34.33	11.97	33.1	100	26	P	V
	*	5510	88.55	-	-	75.35	34.33	11.97	33.1	100	26	A	V
		5760.905	53.1	-20.9	74	39.1	34.45	12.65	33.1	100	26	P	V
		5732.87	45.14	-8.86	54	31.27	34.46	12.51	33.1	100	26	A	V
802.11n HT40 CH 110 5550MHz		5468.08	52.28	-21.72	74	39.2	34.28	11.9	33.1	236	248	P	H
		5468.32	46.09	-7.91	54	33.01	34.28	11.9	33.1	236	248	A	H
	*	5550	101.92	-	-	88.6	34.39	12.03	33.1	236	248	P	H
	*	5550	93.22	-	-	79.9	34.39	12.03	33.1	236	248	A	H
		5757.755	52.53	-21.47	74	38.53	34.45	12.65	33.1	236	248	P	H
		5725.94	45.23	-8.77	54	31.36	34.46	12.51	33.1	236	248	A	H
		5464.96	52.78	-21.22	74	39.76	34.28	11.84	33.1	100	0	P	V
		5466.4	45.49	-8.51	54	32.41	34.28	11.9	33.1	100	0	A	V
	*	5550	98.1	-	-	84.78	34.39	12.03	33.1	100	0	P	V
	*	5550	89.86	-	-	76.54	34.39	12.03	33.1	100	0	A	V
		5728.775	53.06	-20.94	74	39.19	34.46	12.51	33.1	100	0	P	V
		5737.28	45.32	-8.68	54	31.46	34.45	12.51	33.1	100	0	A	V



802.11n HT40 CH 134 5670MHz		5445.55	52.33	-21.67	74	39.33	34.26	11.84	33.1	245	244	P	H
		5464.8	44.84	-9.16	54	31.82	34.28	11.84	33.1	245	244	A	H
	*	5670	101.14	-	-	87.39	34.48	12.37	33.1	245	244	P	H
	*	5670	92.85	-	-	79.1	34.48	12.37	33.1	245	244	A	H
		5729.3	55.44	-18.56	74	41.57	34.46	12.51	33.1	245	244	P	H
		5726.15	47.57	-6.43	54	33.7	34.46	12.51	33.1	245	244	A	H
		5365.05	51.95	-22.05	74	39.16	34.15	11.74	33.1	100	31	P	V
		5460.25	44.57	-9.43	54	31.57	34.26	11.84	33.1	100	31	A	V
	*	5670	98.44	-	-	84.69	34.48	12.37	33.1	100	31	P	V
	*	5670	90.1	-	-	76.35	34.48	12.37	33.1	100	31	A	V
		5742.075	54.16	-19.84	74	40.16	34.45	12.65	33.1	100	31	P	V
		5726.15	47.16	-6.84	54	33.29	34.46	12.51	33.1	100	31	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+2	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		11020	44.26	-29.74	74	48.15	37.41	14.77	56.07	170	230	P	H
		16530	49.93	-24.07	74	45.39	43.36	17.25	56.07	160	300	P	H
		11020	45.15	-28.85	74	49.04	37.41	14.77	56.07	170	230	P	V
		16530	49.56	-24.44	74	45.02	43.36	17.25	56.07	160	300	P	V
802.11n HT40 CH 110 5550MHz		11100	44.56	-29.44	74	48.26	37.46	14.79	55.95	150	200	P	H
		16650	50.82	-23.18	74	45.89	43.68	17.38	56.13	180	350	P	H
		11100	44.81	-29.19	74	48.51	37.46	14.79	55.95	150	200	P	V
		16650	50.75	-23.25	74	45.82	43.68	17.38	56.13	180	350	P	V
802.11n HT40 CH 134 5670MHz		11340	45.35	-28.65	74	48.5	37.6	14.84	55.59	200	360	P	H
		17010	50.15	-23.85	74	44.09	44.55	17.82	56.31	200	360	P	H
		11340	45.65	-28.35	74	48.8	37.6	14.84	55.59	200	360	P	V
		17010	50.55	-23.45	74	44.49	44.55	17.82	56.31	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+2	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		5436.16	57.75	-16.25	74	44.77	34.24	11.84	33.1	269	114	P	H
		5442.4	50.71	-3.29	54	37.73	34.24	11.84	33.1	269	114	A	H
	*	5530	93.94	-	-	80.72	34.35	11.97	33.1	269	114	P	H
	*	5530	85.9	-	-	72.68	34.35	11.97	33.1	269	114	A	H
		5735.39	50.31	-23.69	74	36.45	34.45	12.51	33.1	269	114	P	H
		5751.14	43.06	-10.94	54	29.06	34.45	12.65	33.1	269	114	A	H
		5442.16	54.09	-19.91	74	41.11	34.24	11.84	33.1	100	0	P	V
		5442.4	45.38	-8.62	54	32.4	34.24	11.84	33.1	100	0	A	V
	*	5530	90.18	-	-	76.96	34.35	11.97	33.1	100	0	P	V
	*	5530	82.33	-	-	69.11	34.35	11.97	33.1	100	0	A	V
		5741.69	51.41	-22.59	74	37.41	34.45	12.65	33.1	100	0	P	V
		5753.66	42.99	-11.01	54	28.99	34.45	12.65	33.1	100	0	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+2	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		11060	45.17	-28.83	74	48.95	37.44	14.78	56	150	200	P	H
		16590	50.95	-23.05	74	46.22	43.5	17.33	56.1	180	350	P	H
		11060	45.09	-28.91	74	48.87	37.44	14.78	56	150	200	P	V
		16590	49.87	-24.13	74	45.14	43.5	17.33	56.1	180	350	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

WIFI 802.11n HT40 (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)
802.11n HT40 LF		85.29	30.48	-9.52	40	46.56	14.7	0.72	31.5	100	0	P	H
		155.13	32.03	-11.47	43.5	44.02	18.05	1.34	31.38			P	H
		271.53	30.65	-15.35	46	39.7	20.05	1.94	31.04			P	H
		356.89	28.91	-17.09	46	35.94	21.83	2.24	31.1			P	H
		663.41	30.66	-15.34	46	31.2	27.48	3.18	31.2			P	H
		976.72	34.35	-19.65	54	31.38	30.29	4.09	31.41			P	H
		33.88	33.76	-6.24	40	38.48	26.58	0.3	31.6			P	V
		84.32	36.12	-3.88	40	51.9	15	0.72	31.5	100	0	P	V
		156.1	29.19	-14.31	43.5	41.18	18.04	1.35	31.38			P	V
		452.92	28.56	-17.44	46	30.51	26.57	2.58	31.1			P	V
		695.42	31.08	-14.92	46	31.35	27.67	3.26	31.2			P	V
		932.1	33.14	-12.86	46	31.3	29.24	3.9	31.3			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+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

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)

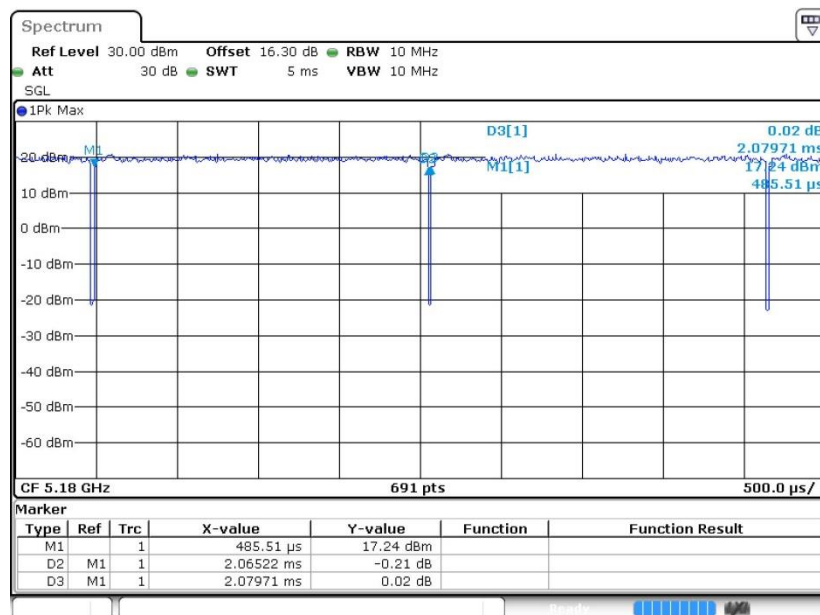
Both peak and average measured complies with the limit line, so test result is “PASS”.



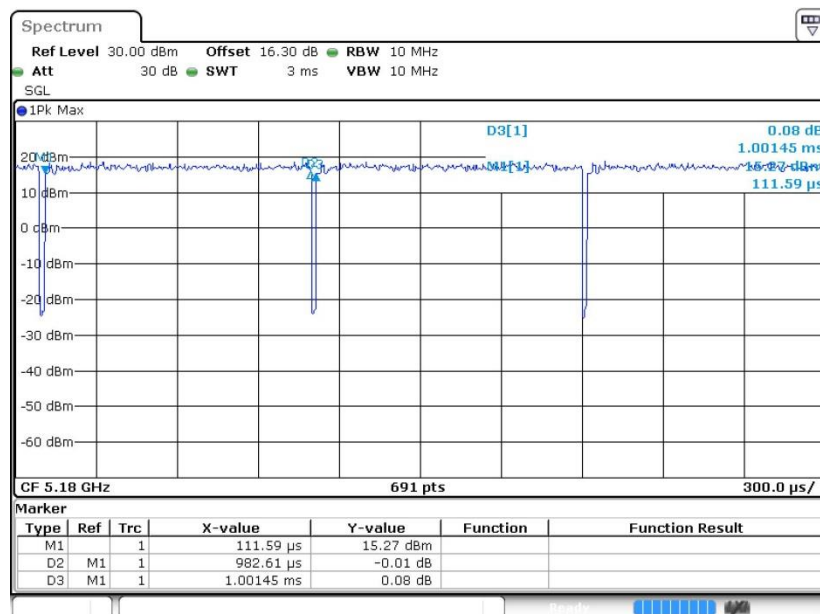
Appendix C. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1+2	802.11a	99.30	-	-	10Hz
1+2	802.11n HT20	98.12	-	-	10Hz
1+2	802.11n HT40	96.36	0.499	2.004	3KHz
1+2	802.11ac VHT80	92.67	0.257	3.891	10KHZ

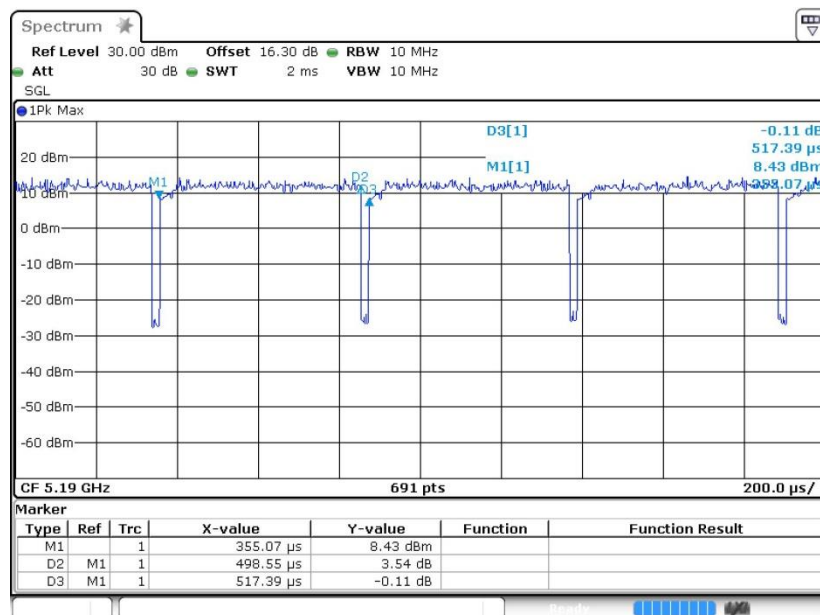
802.11a



802.11n HT20



802.11n HT40



802.11ac VHT80

