



FCC RF Test Report

APPLICANT : OnePlus Technology (Shenzhen) Co., Ltd
EQUIPMENT : Smart Phone
BRAND NAME : ONEPLUS
MODEL NAME : GM1925
FCC ID : 2ABZ2-GM1925
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Apr. 22, 2019 and testing was completed on May 14, 2019. 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.

Derreck Chen

Reviewed by: Derreck Chen / Supervisor

Eric Shih

Approved by: Eric Shih / Manager



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR942205E	Rev. 01	Initial issue of report	Jun. 10, 2019



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	≤ 24 dBm	Pass	-
3.3	15.407(a)	Power Spectral Density	≤ 11 dBm	Pass	-
3.4	15.407(b)	Unwanted Emissions	15.407(b) & 15.209(a)	Pass	Under limit 3.13 dB at 5149.240 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 7.42 dB at 0.170 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

OnePlus Technology (Shenzhen) Co., Ltd

18C02, 18C03, 18C04 and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen

1.2 Product Feature of Equipment Under Test

Product Feature	
Equipment	Smart Phone
Brand Name	ONEPLUS
Model Name	GM1925
FCC ID	2ABZ2-GM1925
EUT supports Radios application	GSM/CDMA/WCDMA/LTE/5G NR WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR / EDR / LE NFC/GNSS
IMEI Code	Conducted: 99001361002076/990013610020765 Conduction: 990013610030764 Radiation: 990013610031028
HW Version	31
SW Version	9.5.5.GM25CC
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.

1.3 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	MIMO<Ant.1+2> <5180 MHz ~ 5240 MHz> 802.11a : 20.97 dBm / 0.1250 W 802.11n HT20 : 20.93 dBm / 0.1239 W 802.11n HT40 : 21.16 dBm / 0.1306 W 802.11ac VHT20 : 20.90 dBm / 0.1230 W 802.11ac VHT40 : 21.13 dBm / 0.1297 W 802.11ac VHT80 : 18.87 dBm / 0.0771 W <5260 MHz ~ 5320 MHz> 802.11a : 20.06 dBm / 0.1014 W 802.11n HT20 : 19.90 dBm / 0.0977 W 802.11n HT40 : 20.32 dBm / 0.1076 W 802.11ac VHT20 : 19.86 dBm / 0.0968 W 802.11ac VHT40 : 20.23 dBm / 0.1054 W 802.11ac VHT80 : 19.02 dBm / 0.0798 W <5500 MHz ~ 5720 MHz > 802.11a : 19.83 dBm / 0.0962 W 802.11n HT20 : 19.81 dBm / 0.0957 W 802.11n HT40 : 20.13 dBm / 0.1030 W 802.11ac VHT20 : 19.76 dBm / 0.0946 W 802.11ac VHT40 : 20.09 dBm / 0.1021 W 802.11ac VHT80 : 18.70 dBm / 0.0741 W
99% Occupied Bandwidth	MIMO<Ant.1+2> <5180 MHz ~ 5240 MHz> 802.11a : 17.58 MHz 802.11n HT20 : 18.88 MHz 802.11n HT40 : 36.66 MHz 802.11ac VHT80 : 75.64 MHz <5260 MHz ~ 5320 MHz> 802.11a : 17.53 MHz 802.11n HT20 : 18.88 MHz 802.11n HT40 : 36.56 MHz 802.11ac VHT80 : 75.76 MHz <5500 MHz ~ 5720 MHz > 802.11a : 17.68 MHz 802.11n HT20 : 18.93 MHz 802.11n HT40 : 36.66 MHz 802.11ac VHT80 : 75.76 MHz
Antenna Gain / Gain	<5150 MHz ~ 5250 MHz> <Ant. 1> : PIFA Antenna with gain -3.00 dBi <Ant. 2> : PIFA Antenna with gain -3.00 dBi <5250 MHz ~ 5350 MHz> <Ant. 1> : PIFA Antenna with gain -3.00 dBi <Ant. 2> : PIFA Antenna with gain -3.00 dBi <5470 MHz ~ 5725 MHz> <Ant. 1> : PIFA Antenna with gain -3.00 dBi <Ant. 2> : PIFA Antenna with gain -3.00 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	-	-
	802.11 a/n/ac MIMO	V	V

Note:

1. For 802.11n HT20 / ac VHT20 and 802.11n HT40 / ac VHT40 mode, the whole testing have assessed only 802.11an HT20/ HT40 by referring to their maximum conducted power.
2. The 5GHz WLAN can transmit in MIMO antenna mode only and it has no SISO antenna mode.

1.4 Modification of EUT

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



1.5 Testing Location

Sporton International (Shenzhen) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International (Shenzhen) Inc.		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	CO01-SZ TH01-SZ	CN1256	421272

Test Firm	Sporton International (Shenzhen) Inc.		
Test Site Location	No. 3 Bldg the third floor of south, Shahe River west, Fengzeyuan Warehouse, Nanshan Shenzhen, 518055 People's Republic of China TEL: +86-755-33202398		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	03CH03-SZ	CN1256	421272

1.6 Applicable Standards

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

- ♦ 47 CFR 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

- a. 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: conduction emission (150 kHz to 30 MHz), radiation 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 (Y plane) were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5150-5250 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)
5250-5350 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)
5470-5725 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 modes are considering the modulation and worse data rates as below table.

MIMO Mode

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

Test Cases	
AC Conducted Emission	Mode 1 : GSM 850 Idle + Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter)
Remark: For Radiated Test Cases, The tests were performed with Adapter	



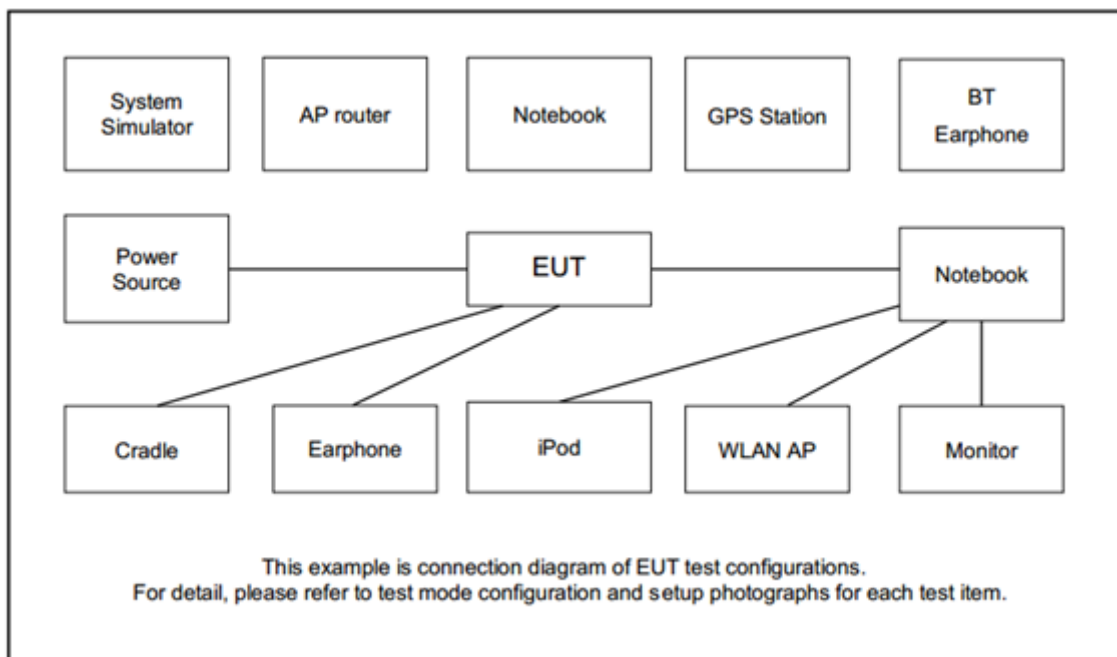
Ch. #		Band I : 5150-5250 MHz	Band II : 5250-5350 MHz	Band III : 5470-5725MHz
		802.11a	802.11a	802.11a
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140
Straddle		-	-	144

Ch. #		Band I : 5150-5250 MHz	Band II : 5250-5350 MHz	Band III : 5470-5725MHz
		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 : 5150-5250 MHz	Band II : 5250-5350 MHz	Band III : 5470-5725MHz
		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 : 5150-5250 MHz	Band II : 5250-5350 MHz	Band III : 5470-5725MHz
		802.11ac VHT80	802.11ac VHT80	802.11ac VHT80
L	Low	-	-	106
M	Middle	42	58	-
H	High	-	-	-
Straddle		-	-	138

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
2.	BT Base Station	R&S	CBT	N/A	N/A	Unshielded,1.8m
3.	WLAN AP	D-Link	DIR-820L	KA2IR820LA1	N/A	Unshielded,1.8m
4.	Notebook	Lenovo	E540	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	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 the 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 6.6 dB and 10dB attenuator.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 6.6 + 10 = 16.6 \text{ (dB)}\end{aligned}$$

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.

For Straddle Channel, According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, If the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

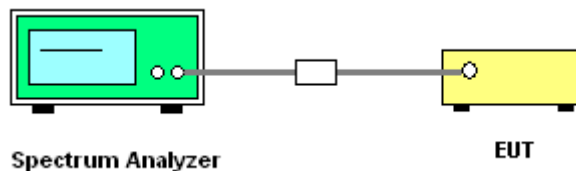
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

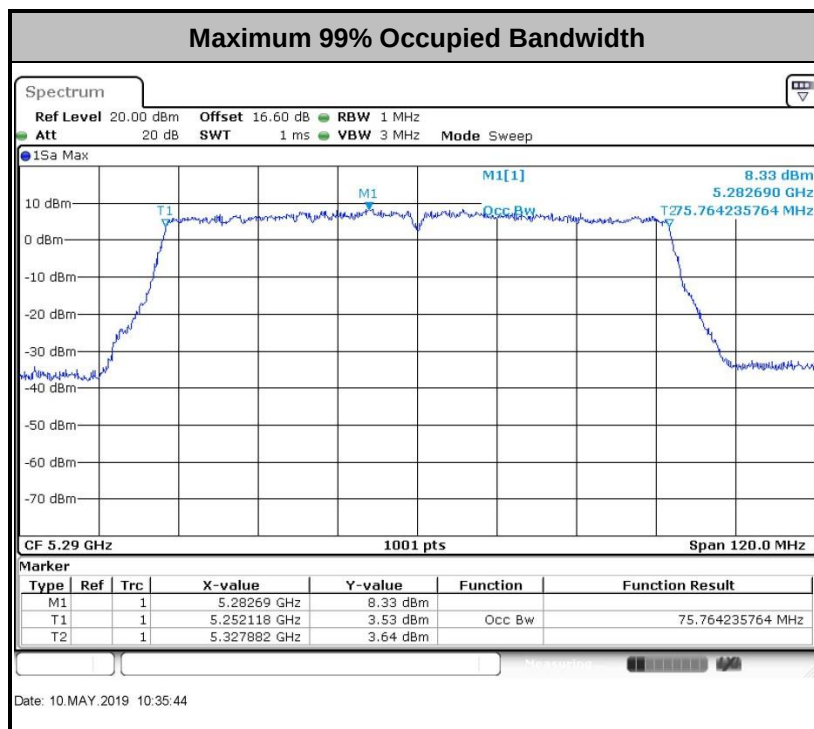
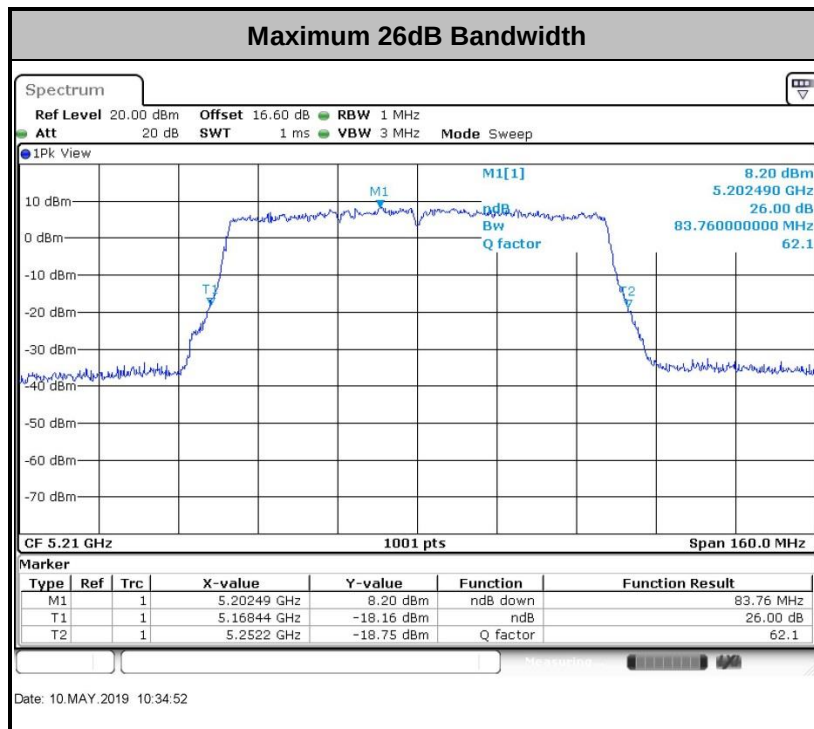
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section C) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB 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 dBm $10 \log B$, where B is the 26 dB emission bandwidth in megahertz.

For the 5.47–5.6 GHz and 5.65–5.725 GHz band, the maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever power is less. The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz.

For Straddle Channel, According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, If the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

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

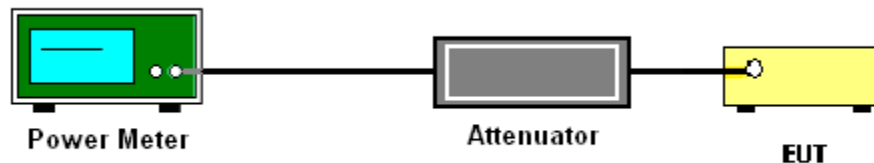
The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

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.

For Straddle Channel, According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, If the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

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.

For Straddle Channel, According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, If the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

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

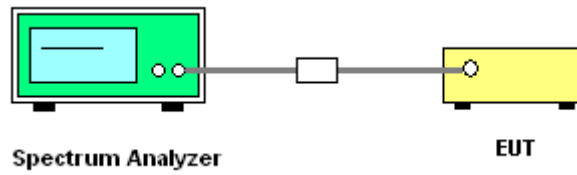
(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

- 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.
1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
 2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
 3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

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

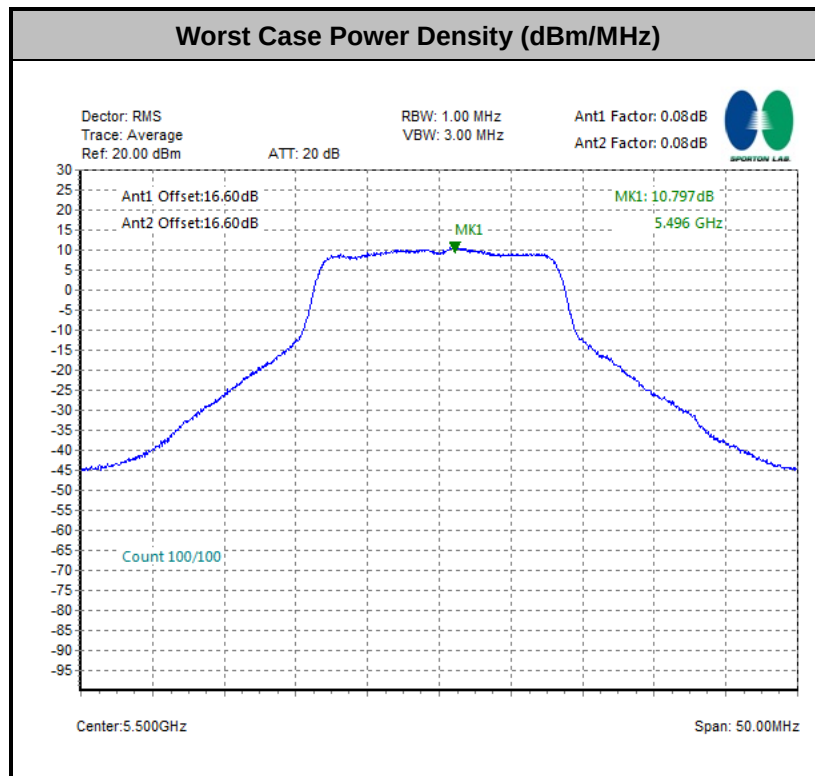
The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of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



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

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



EIRP (dBm)	Field Strength at 3m (dBμV/m)
- 27	68.2

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

$$\text{EIRP} = E_{\text{Meas}} + 20\log(d_{\text{Meas}}) - 104.7$$

where

EIRP is the equivalent isotropically radiated power, in dBm

E_{Meas} is the field strength of the emission at the measurement distance, in dBμV/m

d_{Meas} is the measurement distance, in m

3.4.2 Measuring Instruments

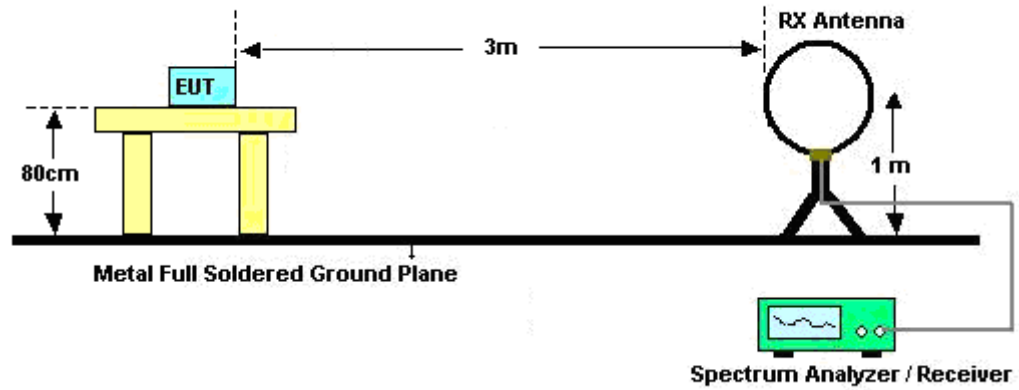
The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

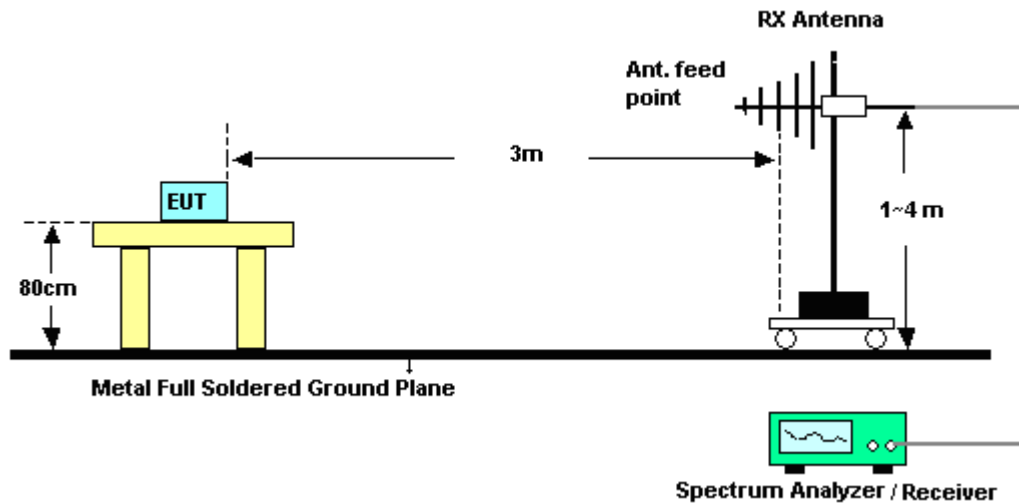
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section G) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak 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

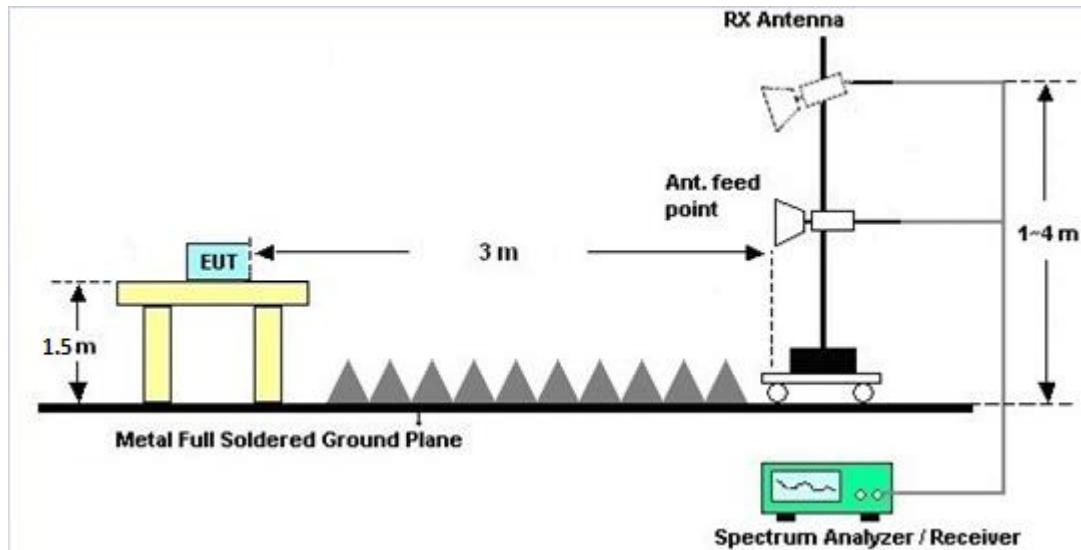
For radiated emissions below 30MHz



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.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.4.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C.

3.4.7 Duty Cycle

Please refer to Appendix D.

3.4.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix C.

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.

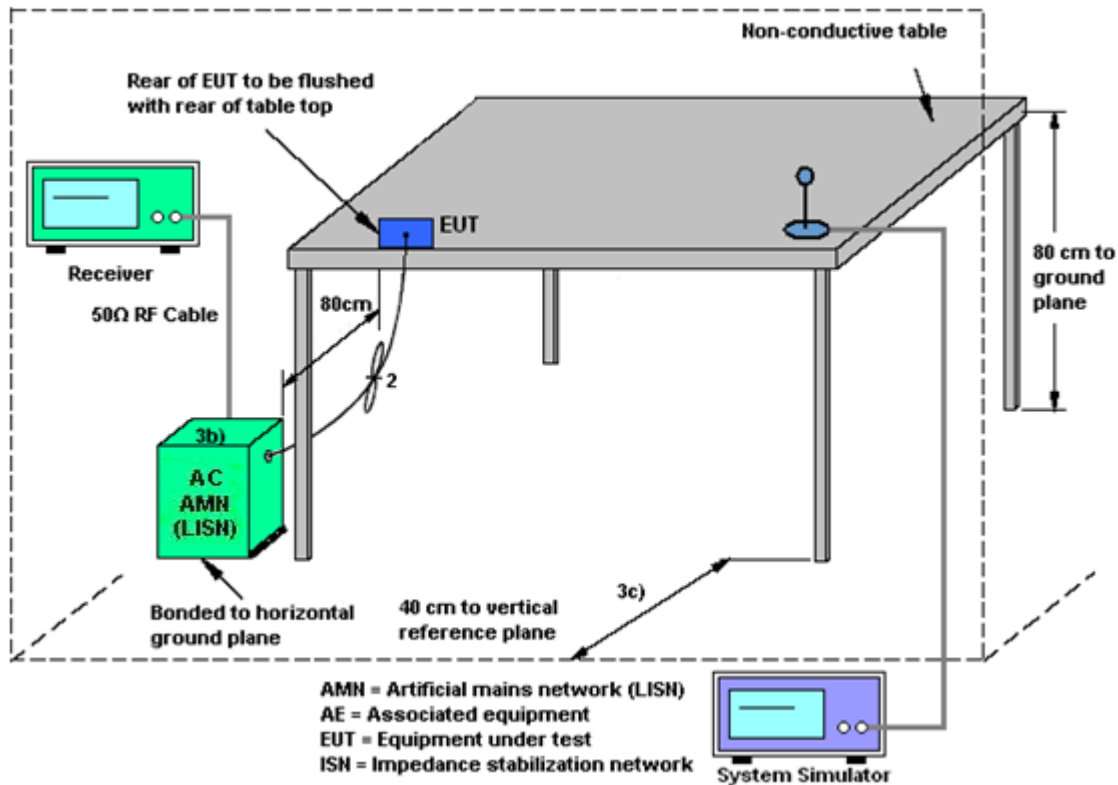
3.5.2 Measuring Instruments

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

Please refer to Appendix B.

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

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = GANT + Array Gain, where Array Gain is as follows.

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

Array Gain = $10 \log(\text{NANT}/\text{NSS}=1)$ dB.

For power measurements on IEEE 802.11 devices,

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

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

The EUT supports CDD mode.

For power, the directional gain GANT 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.

	Ant. 1 (dBi)	Ant. 2 (dBi)	Power (dBi)	PSD (dBi)	Reduction (dB)	Reduction (dB)
Band I	-3.00	-3.00	-3.00	0.01	0.00	0.00
Band II	-3.00	-3.00	-3.00	0.01	0.00	0.00
Band III	-3.00	-3.00	-3.00	0.01	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. 18, 2019	May 10, 2019	Apr. 17, 2020	Conducted (TH01-SZ)
Pulse Power Sensor	Anritsu	MA2411B	1207253	30MHz~40GHz	Dec. 22, 2018	May 10, 2019	Dec. 21, 2019	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	50MHz Bandwidth	Dec. 22, 2018	May 10, 2019	Dec. 21, 2019	Conducted (TH01-SZ)
EMI Test Receiver	R&S	ESR7	101404	9kHz~7GHz	Apr. 18, 2019	May 12, 2019~ May 14, 2019	Apr. 17, 2020	Radiation (03CH03-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY551502 13	10Hz~44GHz	Apr. 18, 2019	May 12, 2019~ May 14, 2019	Apr. 17, 2020	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 29, 2018	May 12, 2019~ May 14, 2019	May 28, 2020	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6111D	41909	30MHz~1GHz	Aug. 28, 2018	May 12, 2019~ May 14, 2019	Aug. 27, 2019	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-147 4	1GHz~18GHz	Feb. 07, 2019	May 12, 2019~ May 14, 2019	Feb. 06, 2020	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18GHz~40GHz	Mar. 30, 2019	May 12, 2019~ May 14, 2019	Mar. 29, 2020	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 30, 2018	May 12, 2019~ May 14, 2019	Jul. 30, 2019	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1988315	18GHz~40GHz	Jul. 26, 2018	May 12, 2019~ May 14, 2019	Jul. 25, 2019	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102210	0.01Hz~3000MHz	Oct. 18, 2018	May 12, 2019~ May 14, 2019	Oct. 17, 2019	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P-R	1943528	1GHz~18GHz	Oct. 18, 2018	May 12, 2019~ May 14, 2019	Oct. 17, 2019	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY395013 02	500MHz~26.5GHz	Dec. 23, 2018	May 12, 2019~ May 14, 2019	Dec. 22, 2019	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010001 985	N/A	NCR	May 12, 2019~ May 14, 2019	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	May 12, 2019~ May 14, 2019	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	May 12, 2019~ May 14, 2019	NCR	Radiation (03CH03-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Dec. 23, 2018	May 11, 2019	Dec. 22, 2019	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Oct. 18, 2018	May 11, 2019	Oct. 17, 2019	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Dec. 23, 2018	May 11, 2019	Dec. 22, 2019	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000 891	100Vac~250Vac	Jul. 18, 2018	May 11, 2019	Jul. 17, 2019	Conduction (CO01-SZ)

5 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.10-2013. All the measurement uncertainty value were shown with a coverage $K=2$ to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

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

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.8 dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.6 dB
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Appendix A. Conducted Test Results

Report Number : FR942205E

Test Engineer:	Jensen Wu	Temperature:	24~26	°C
Test Date:	2019/5/10	Relative Humidity:	50~53	%

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	17.58	17.48	23.33	23.08	-	-	22.43	-	
11a	6Mbps	2	44	5220	17.58	17.48	23.98	22.93	-	-	22.43	-	
11a	6Mbps	2	48	5240	17.48	17.53	23.58	22.88	-	-	22.43	-	
HT20	MCS0	2	36	5180	18.53	18.78	24.28	24.53	-	-	22.68	-	
HT20	MCS0	2	44	5220	18.88	18.68	25.72	24.38	-	-	22.71	-	
HT20	MCS0	2	48	5240	18.88	18.78	25.38	24.73	-	-	22.74	-	
HT40	MCS0	2	38	5190	36.66	36.46	41.63	41.90	-	-	23.01	-	
HT40	MCS0	2	46	5230	36.46	36.36	41.63	41.81	-	-	23.01	-	
VHT80	MCS0	2	42	5210	75.64	75.52	83.76	83.28	-	-	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	2	36	5180	0.08	0.08	17.63	17.93	20.79	24.00		-3.00		Pass	
11a	6Mbps	2	44	5220	0.08	0.08	17.38	18.19	20.81	24.00		-3.00		Pass	
11a	6Mbps	2	48	5240	0.08	0.08	17.65	18.25	20.97	24.00		-3.00		Pass	
HT20	MCS0	2	36	5180	0.08	0.11	17.32	17.92	20.64	24.00		-3.00		Pass	
HT20	MCS0	2	44	5220	0.08	0.11	17.08	17.99	20.57	24.00		-3.00		Pass	
HT20	MCS0	2	48	5240	0.08	0.11	17.62	18.21	20.93	24.00		-3.00		Pass	
HT40	MCS0	2	38	5190	0.17	0.18	16.83	17.20	20.03	24.00		-3.00		Pass	
HT40	MCS0	2	46	5230	0.17	0.18	17.75	18.52	21.16	24.00		-3.00		Pass	
VHT20	MCS0	2	36	5180	0.17	0.16	17.28	17.86	20.59	24.00		-3.00		Pass	
VHT20	MCS0	2	44	5220	0.17	0.16	17.07	17.89	20.51	24.00		-3.00		Pass	
VHT20	MCS0	2	48	5240	0.17	0.16	17.61	18.16	20.90	24.00		-3.00		Pass	
VHT40	MCS0	2	38	5190	0.32	0.30	16.72	17.15	19.95	24.00		-3.00		Pass	
VHT40	MCS0	2	46	5230	0.32	0.30	17.73	18.48	21.13	24.00		-3.00		Pass	
VHT80	MCS0	2	42	5210	0.60	0.57	15.61	16.09	18.87	24.00		-3.00		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	0.08	0.08			10.53	11.00	0.01			Pass	
11a	6Mbps	2	44	5220	0.08	0.08			10.49	11.00	0.01			Pass	
11a	6Mbps	2	48	5240	0.08	0.08			10.61	11.00	0.01			Pass	
HT20	MCS0	2	36	5180	0.08	0.11			10.32	11.00	0.01			Pass	
HT20	MCS0	2	44	5220	0.08	0.11			10.23	11.00	0.01			Pass	
HT20	MCS0	2	48	5240	0.08	0.11			10.05	11.00	0.01			Pass	
HT40	MCS0	2	38	5190	0.17	0.18			7.34	11.00	0.01			Pass	
HT40	MCS0	2	46	5230	0.17	0.18			7.39	11.00	0.01			Pass	
VHT80	MCS0	2	42	5210	0.60	0.57			3.28	11.00	0.01			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	17.43	17.53	23.88	23.08	23.41		29.41		23.98		
11a	6Mbps	2	60	5300	17.43	17.48	23.73	23.03	23.41		29.41		23.98		
11a	6Mbps	2	64	5320	17.53	17.53	23.93	23.48	23.44		29.44		23.98		
HT20	MCS0	2	52	5260	18.88	18.73	25.43	24.78	23.73		29.73		23.98		
HT20	MCS0	2	60	5300	18.88	18.78	25.92	24.83	23.74		29.74		23.98		
HT20	MCS0	2	64	5320	18.68	18.73	24.83	24.43	23.71		29.71		23.98		
HT40	MCS0	2	54	5270	36.56	36.46	41.72	41.90	23.98		30.00		23.98		
HT40	MCS0	2	62	5310	36.56	36.46	41.81	41.81	23.98		30.00		23.98		
VHT80	MCS0	2	58	5290	75.76	75.64	83.76	82.64	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	2	52	5260	0.08	0.08	16.56	17.19	19.89	23.98		-3.00		26.99	Pass
11a	6Mbps	2	60	5300	0.08	0.08	16.78	17.28	20.04	23.98		-3.00		26.99	Pass
11a	6Mbps	2	64	5320	0.08	0.08	16.87	17.23	20.06	23.98		-3.00		26.99	Pass
HT20	MCS0	2	52	5260	0.08	0.11	16.63	17.01	19.83	23.98		-3.00		26.99	Pass
HT20	MCS0	2	60	5300	0.08	0.11	16.41	16.99	19.72	23.98		-3.00		26.99	Pass
HT20	MCS0	2	64	5320	0.08	0.11	16.83	16.96	19.90	23.98		-3.00		26.99	Pass
HT40	MCS0	2	54	5270	0.17	0.18	16.85	17.51	20.20	23.98		-3.00		26.99	Pass
HT40	MCS0	2	62	5310	0.17	0.18	17.08	17.53	20.32	23.98		-3.00		26.99	Pass
VHT20	MCS0	2	52	5260	0.17	0.16	16.62	16.96	19.80	23.98		-3.00		26.99	Pass
VHT20	MCS0	2	60	5300	0.17	0.16	16.39	16.95	19.69	23.98		-3.00		26.99	Pass
VHT20	MCS0	2	64	5320	0.17	0.16	16.81	16.89	19.86	23.98		-3.00		26.99	Pass
VHT40	MCS0	2	54	5270	0.32	0.30	16.82	17.43	20.15	23.98		-3.00		26.99	Pass
VHT40	MCS0	2	62	5310	0.32	0.30	17.02	17.41	20.23	23.98		-3.00		26.99	Pass
VHT80	MCS0	2	58	5290	0.60	0.57	15.87	16.15	19.02	23.98		-3.00		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	0.08	0.08			10.52	11.00	0.01			Pass	
11a	6Mbps	2	60	5300	0.08	0.08			10.65	11.00	0.01			Pass	
11a	6Mbps	2	64	5320	0.08	0.08			10.72	11.00	0.01			Pass	
HT20	MCS0	2	52	5260	0.08	0.11			10.34	11.00	0.01			Pass	
HT20	MCS0	2	60	5300	0.08	0.11			10.35	11.00	0.01			Pass	
HT20	MCS0	2	64	5320	0.08	0.11			10.43	11.00	0.01			Pass	
HT40	MCS0	2	54	5270	0.17	0.18			7.48	11.00	0.01			Pass	
HT40	MCS0	2	62	5310	0.17	0.18			7.57	11.00	0.01			Pass	
VHT80	MCS0	2	58	5290	0.60	0.57			3.49	11.00	0.01			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	17.68	17.53	24.43	22.78	23.44		29.44		23.98		
11a	6Mbps	2	116	5580	17.63	17.48	24.13	22.73	23.43		29.43		23.98		
11a	6Mbps	2	140	5700	17.63	17.53	24.83	23.18	23.44		29.44		23.98		
11a	6Mbps	2	144	5720	17.63	17.53	24.73	23.08	23.44		29.44		23.98		
HT20	MCS0	2	100	5500	18.83	18.68	25.33	24.58	23.71		29.71		23.98		
HT20	MCS0	2	116	5580	18.93	18.78	25.57	24.83	23.74		29.74		23.98		
HT20	MCS0	2	140	5700	18.93	18.73	25.48	24.73	23.73		29.73		23.98		
HT20	MCS0	2	144	5720	18.93	18.68	25.28	24.23	23.71		29.71		23.98		
HT40	MCS0	2	102	5510	36.66	36.46	41.72	41.99	23.98		30.00		23.98		
HT40	MCS0	2	110	5550	36.66	36.46	41.72	42.17	23.98		30.00		23.98		
HT40	MCS0	2	134	5670	36.66	36.46	41.99	41.99	23.98		30.00		23.98		
HT40	MCS0	2	142	5710	36.56	36.56	41.81	42.08	23.98		30.00		23.98		
VHT80	MCS0	2	106	5530	75.64	75.52	83.44	82.96	23.98		30.00		23.98		
VHT80	MCS0	2	122	5610	75.64	75.52	83.76	83.12	23.98		30.00		23.98		
VHT80	MCS0	2	138	5690	75.76	75.52	83.76	83.44	23.98		30.00		23.98		

TEST RESULTS DATA
Average Power Table

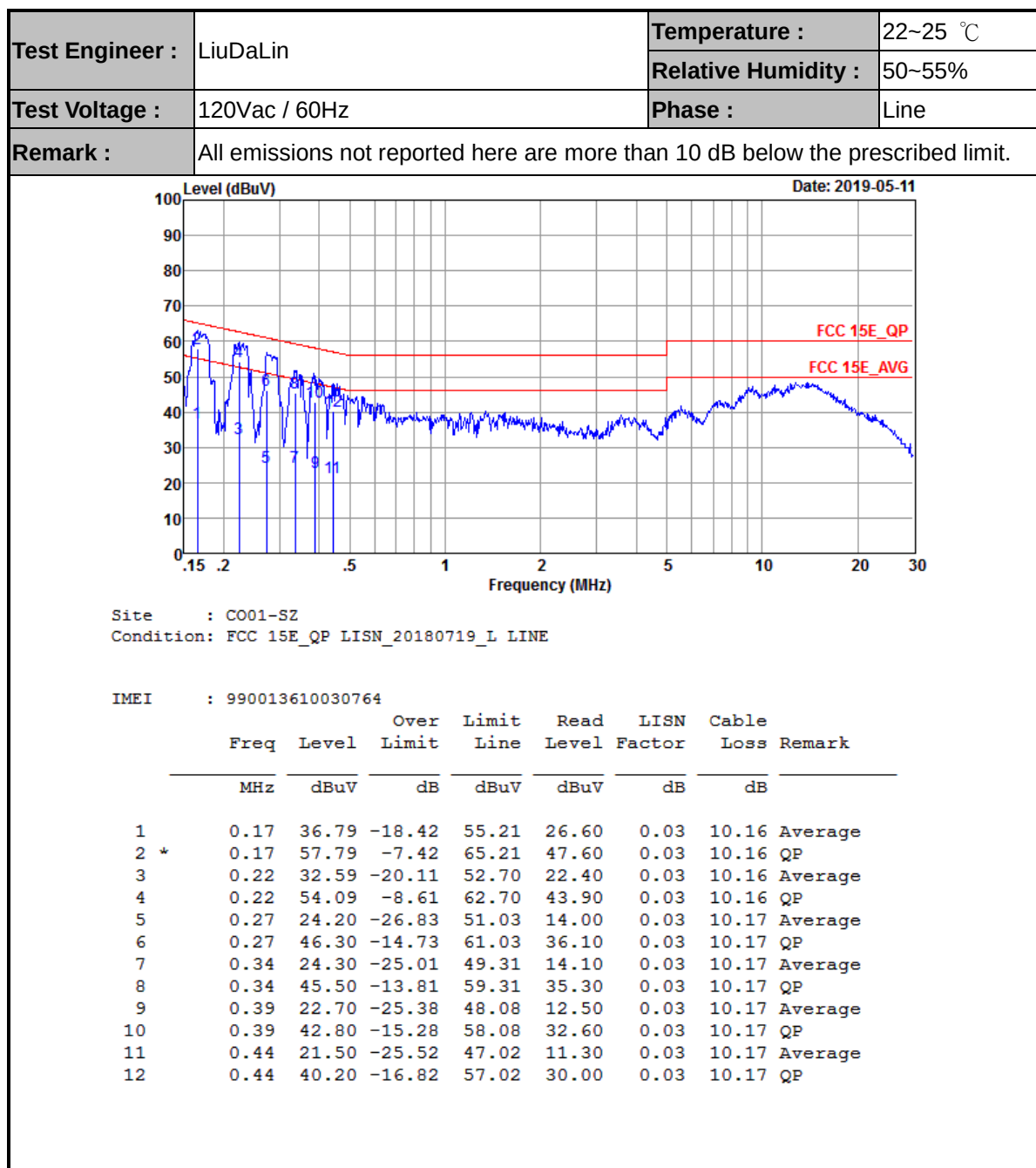
FCC Band III															
Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	2	100	5500	0.08	0.08	16.42	17.19	19.83	23.98		-3.00		26.99	Pass
11a	6Mbps	2	116	5580	0.08	0.08	16.01	17.13	19.61	23.98		-3.00		26.99	Pass
11a	6Mbps	2	140	5700	0.08	0.08	15.88	17.08	19.53	23.98		-3.00		26.99	Pass
11a	6Mbps	2	144	5720	0.08	0.08	15.85	17.00	19.47	23.98		-3.00		26.99	Pass
HT20	MCS0	2	100	5500	0.08	0.11	16.44	17.13	19.81	23.98		-3.00		26.99	Pass
HT20	MCS0	2	116	5580	0.08	0.11	15.80	17.02	19.46	23.98		-3.00		26.99	Pass
HT20	MCS0	2	140	5700	0.08	0.11	15.60	17.04	19.39	23.98		-3.00		26.99	Pass
HT20	MCS0	2	144	5720	0.08	0.11	15.55	16.96	19.32	23.98		-3.00		26.99	Pass
HT40	MCS0	2	102	5510	0.17	0.18	16.80	17.41	20.13	23.98		-3.00		26.99	Pass
HT40	MCS0	2	110	5550	0.17	0.18	16.48	17.47	20.01	23.98		-3.00		26.99	Pass
HT40	MCS0	2	134	5670	0.17	0.18	16.04	17.21	19.68	23.98		-3.00		26.99	Pass
HT40	MCS0	2	142	5710	0.17	0.18	16.00	17.32	19.72	23.98		-3.00		26.99	Pass
VHT20	MCS0	2	100	5500	0.17	0.16	16.39	17.08	19.76	23.98		-3.00		26.99	Pass
VHT20	MCS0	2	116	5580	0.17	0.16	15.78	16.96	19.42	23.98		-3.00		26.99	Pass
VHT20	MCS0	2	140	5700	0.17	0.16	15.57	16.98	19.34	23.98		-3.00		26.99	Pass
VHT20	MCS0	2	144	5720	0.17	0.16	15.51	16.87	19.25	23.98		-3.00		26.99	Pass
VHT40	MCS0	2	102	5510	0.32	0.30	16.77	17.36	20.09	23.98		-3.00		26.99	Pass
VHT40	MCS0	2	110	5550	0.32	0.30	16.44	17.43	19.97	23.98		-3.00		26.99	Pass
VHT40	MCS0	2	134	5670	0.32	0.30	16.01	17.15	19.63	23.98		-3.00		26.99	Pass
VHT40	MCS0	2	142	5710	0.32	0.30	15.96	17.29	19.69	23.98		-3.00		26.99	Pass
VHT80	MCS0	2	106	5530	0.60	0.57	15.26	16.07	18.70	23.98		-3.00		26.99	Pass
VHT80	MCS0	2	122	5610	0.60	0.57	14.82	16.01	18.47	23.98		-3.00		26.99	Pass
VHT80	MCS0	2	138	5690	0.60	0.57	14.90	16.03	18.51	23.98		-3.00		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	0.08	0.08			10.80	11.00		0.01		Pass
11a	6Mbps	2	116	5580	0.08	0.08			10.48	11.00		0.01		Pass
11a	6Mbps	2	140	5700	0.08	0.08			10.10	11.00		0.01		Pass
11a	6Mbps	2	144	5720	0.08	0.08			10.05	11.00		0.01		Pass
HT20	MCS0	2	100	5500	0.08	0.11			10.18	11.00		0.01		Pass
HT20	MCS0	2	116	5580	0.08	0.11			9.85	11.00		0.01		Pass
HT20	MCS0	2	140	5700	0.08	0.11			9.62	11.00		0.01		Pass
HT20	MCS0	2	144	5720	0.08	0.11			9.62	11.00		0.01		Pass
HT40	MCS0	2	102	5510	0.17	0.18			7.43	11.00		0.01		Pass
HT40	MCS0	2	110	5550	0.17	0.18			7.38	11.00		0.01		Pass
HT40	MCS0	2	134	5670	0.17	0.18			7.01	11.00		0.01		Pass
HT40	MCS0	2	142	5710	0.17	0.18			7.16	11.00		0.01		Pass
VHT80	MCS0	2	106	5530	0.60	0.57			3.34	11.00		0.01		Pass
VHT80	MCS0	2	122	5610	0.60	0.57			3.36	11.00		0.01		Pass
VHT80	MCS0	2	138	5690	0.60	0.57			3.27	11.00		0.01		Pass

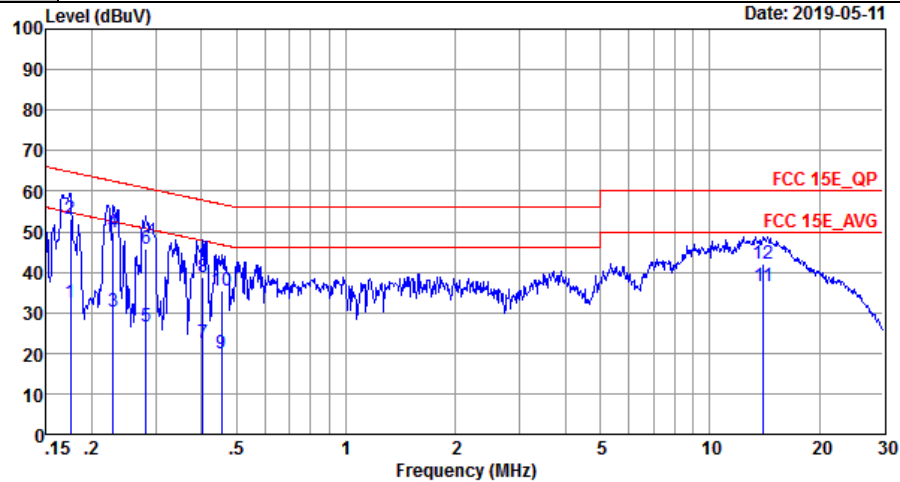


Appendix B. AC Conducted Emission Test Results





Test Engineer :	LiuDaLin	Temperature :	22~25 °C
		Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-SZ
Condition: FCC 15E QP LISN_20180719_N NEUTRAL

IMEI : 990013610030764

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.17	32.59	-22.13	54.72	22.40	0.03	10.16	Average
2 *	0.17	53.19	-11.53	64.72	43.00	0.03	10.16	QP
3	0.23	30.29	-22.19	52.48	20.10	0.03	10.16	Average
4	0.23	49.69	-12.79	62.48	39.50	0.03	10.16	QP
5	0.28	26.40	-24.36	50.76	16.20	0.03	10.17	Average
6	0.28	45.60	-15.16	60.76	35.40	0.03	10.17	QP
7	0.40	22.39	-25.38	47.77	12.20	0.02	10.17	Average
8	0.40	38.89	-18.88	57.77	28.70	0.02	10.17	QP
9	0.45	19.79	-27.01	46.80	9.60	0.02	10.17	Average
10	0.45	35.49	-21.31	56.80	25.30	0.02	10.17	QP
11	14.06	36.37	-13.63	50.00	25.80	0.30	10.27	Average
12	14.06	42.17	-17.83	60.00	31.60	0.30	10.27	QP



Appendix C. Radiated Spurious Emission

Band 1 - 5150~5250MHz

WIFI 802.11a (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)
802.11a CH 36 5180MHz		5123.5	47.11	-26.89	74	39.81	31.36	10.77	34.83	128	351	P	H
		5150	38.34	-15.66	54	31.04	31.36	10.77	34.83	128	351	A	H
	*	5180	104.54	-	-	97.18	31.38	10.81	34.83	128	351	P	H
		5180	99.48	-	-	92.12	31.38	10.81	34.83	128	351	A	H
		5006.76	47.38	-26.62	74	40.23	31.3	10.65	34.8	240	6	P	V
		5149.5	38.75	-15.25	54	31.45	31.36	10.77	34.83	240	6	A	V
	*	5180	106.56	-	-	99.2	31.38	10.81	34.83	240	6	P	V
		5180	100.93	-	-	93.57	31.38	10.81	34.83	240	6	A	V
802.11a CH 44 5220MHz		5137.02	47.02	-26.98	74	39.72	31.36	10.77	34.83	247	48	P	H
		5150	37.84	-16.16	54	30.54	31.36	10.77	34.83	247	48	A	H
	*	5220	104.21	-	-	96.81	31.4	10.85	34.85	247	48	P	H
		5220	99.52	-	-	92.12	31.4	10.85	34.85	247	48	A	H
		5408.16	46.58	-27.42	74	38.92	31.49	11.05	34.88	247	48	P	H
		5452.56	35.88	-18.12	54	28.17	31.51	11.09	34.89	247	48	A	H
		5048.62	47.58	-26.42	74	40.38	31.32	10.69	34.81	101	343	P	V
		5150	37.59	-16.41	54	30.29	31.36	10.77	34.83	101	343	A	V
	*	5220	107.34	-	-	99.94	31.4	10.85	34.85	101	343	P	V
		5220	101.05	-	-	93.65	31.4	10.85	34.85	101	343	A	V
		5375.52	44.74	-29.26	74	37.14	31.47	11.01	34.88	101	343	P	V
		5453.28	36.48	-17.52	54	28.77	31.51	11.09	34.89	101	343	A	V



802.11a CH 48 5240MHz		5059.02	47.4	-26.6	74	40.2	31.32	10.69	34.81	238	44	P	H
		5107.12	37.23	-16.77	54	29.97	31.35	10.73	34.82	238	44	A	H
	*	5240	104.65	-	-	97.2	31.41	10.89	34.85	238	44	P	H
		5240	99.8	-	-	92.35	31.41	10.89	34.85	238	44	A	H
		5436	45.02	-28.98	74	37.32	31.5	11.09	34.89	238	44	P	H
		5451.36	35.9	-18.1	54	28.19	31.51	11.09	34.89	238	44	A	H
		5089.18	46.78	-27.22	74	39.53	31.34	10.73	34.82	108	342	P	V
		5107.12	37.44	-16.56	54	30.18	31.35	10.73	34.82	108	342	A	V
	*	5240	106.68	-	-	99.23	31.41	10.89	34.85	108	342	P	V
		5240	102.1	-	-	94.65	31.41	10.89	34.85	108	342	A	V
		5416.56	46.39	-27.61	74	38.74	31.49	11.05	34.89	108	342	P	V
		5433.84	36.28	-17.72	54	28.58	31.5	11.09	34.89	108	342	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)	Preamplifier Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 36 5180MHz		10360	47.37	-20.83	68.2	50.89	39.84	15.63	58.99	152	260	P	H
		15540	46.22	-27.78	74	46.87	38.85	19.43	58.93	189	238	P	H
		10360	47.64	-20.56	68.2	51.16	39.84	15.63	58.99	152	260	P	V
		15540	46.82	-27.18	74	47.47	38.85	19.43	58.93	189	238	P	V
802.11a CH 44 5220MHz		10440	47.85	-20.35	68.2	51.13	39.93	15.71	58.92	150	230	P	H
		15660	47.39	-26.61	74	48.63	38.32	19.5	59.06	160	225	P	H
		10440	47.19	-21.01	68.2	50.47	39.93	15.71	58.92	150	230	P	V
		15660	47.53	-26.47	74	48.77	38.32	19.5	59.06	160	225	P	V
802.11a CH 48 5240MHz		10480	47.38	-20.82	68.2	50.5	39.99	15.75	58.86	150	289	P	H
		15720	47.18	-26.82	74	48.76	38.01	19.53	59.12	150	291	P	H
		10480	47.25	-20.95	68.2	50.37	39.99	15.75	58.86	150	289	P	V
		15720	46.53	-27.47	74	48.11	38.01	19.53	59.12	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		5097.5	47.51	-26.49	74	40.26	31.34	10.73	34.82	144	3	P	H
		5145.34	39.3	-14.7	54	32	31.36	10.77	34.83	144	3	A	H
	*	5180	105.43	-	-	98.07	31.38	10.81	34.83	144	3	P	H
		5180	97.57	-	-	90.21	31.38	10.81	34.83	144	3	A	H
		5135.98	46.78	-27.22	74	39.48	31.36	10.77	34.83	111	345	P	V
		5149.24	39.08	-14.92	54	31.78	31.36	10.77	34.83	111	345	A	V
	*	5180	106.85	-	-	99.49	31.38	10.81	34.83	111	345	P	V
		5180	99.71	-	-	92.35	31.38	10.81	34.83	111	345	A	V
802.11n HT20 CH 44 5220MHz		5029.64	47.22	-26.78	74	40.07	31.31	10.65	34.81	117	6	P	H
		5141.18	38.02	-15.98	54	30.72	31.36	10.77	34.83	117	6	A	H
	*	5220	105.85	-	-	98.45	31.4	10.85	34.85	117	6	P	H
		5220	99.53	-	-	92.13	31.4	10.85	34.85	117	6	A	H
		5452.56	45.29	-28.71	74	37.58	31.51	11.09	34.89	117	6	P	H
		5452.08	36.74	-17.26	54	29.03	31.51	11.09	34.89	117	6	A	H
		5107.9	47.35	-26.65	74	40.09	31.35	10.73	34.82	119	343	P	V
		5146.12	38.31	-15.69	54	31.01	31.36	10.77	34.83	119	343	A	V
	*	5220	107.42	-	-	100.02	31.4	10.85	34.85	119	343	P	V
		5220	101.01	-	-	93.61	31.4	10.85	34.85	119	343	A	V
		5395.44	45.08	-28.92	74	37.42	31.49	11.05	34.88	119	343	P	V
		5452.56	37.29	-16.71	54	29.58	31.51	11.09	34.89	119	343	A	V



802.11n HT20 CH 48 5240MHz		5133.64	46.23	-27.77	74	38.93	31.36	10.77	34.83	114	5	P	H
		5145.34	37.97	-16.03	54	30.67	31.36	10.77	34.83	114	5	A	H
	*	5240	105.81	-	-	98.36	31.41	10.89	34.85	114	5	P	H
		5240	99.35	-	-	91.9	31.41	10.89	34.85	114	5	A	H
		5447.52	44.65	-29.35	74	36.94	31.51	11.09	34.89	114	5	P	H
		5449.44	36.63	-17.37	54	28.92	31.51	11.09	34.89	114	5	A	H
		5143.78	47.29	-26.71	74	39.99	31.36	10.77	34.83	117	342	P	V
		5140.4	38.12	-15.88	54	30.82	31.36	10.77	34.83	117	342	A	V
	*	5240	106.86	-	-	99.41	31.41	10.89	34.85	117	342	P	V
		5240	100.46	-	-	93.01	31.41	10.89	34.85	117	342	A	V
		5407.2	45.69	-28.31	74	38.03	31.49	11.05	34.88	117	342	P	V
		5357.04	37.08	-16.92	54	29.48	31.46	11.01	34.87	117	342	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)	Preamplifier Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 36 5180MHz		10360	47.22	-20.98	68.2	50.74	39.84	15.63	58.99	152	260	P	H
		15540	46.07	-27.93	74	46.72	38.85	19.43	58.93	189	238	P	H
		10360	48.02	-20.18	68.2	51.54	39.84	15.63	58.99	152	260	P	V
		15540	46.6	-27.4	74	47.25	38.85	19.43	58.93	189	238	P	V
802.11n HT20 CH 44 5220MHz		10440	47.64	-20.56	68.2	50.92	39.93	15.71	58.92	150	230	P	H
		15660	46.61	-27.39	74	47.85	38.32	19.5	59.06	160	225	P	H
		10440	48.14	-20.06	68.2	51.42	39.93	15.71	58.92	150	230	P	V
		15660	47.54	-26.46	74	48.78	38.32	19.5	59.06	160	225	P	V
802.11n HT20 CH 48 5240MHz		10480	47.49	-20.71	68.2	50.61	39.99	15.75	58.86	150	289	P	H
		15720	48.09	-25.91	74	49.67	38.01	19.53	59.12	150	291	P	H
		10480	47.73	-20.47	68.2	50.85	39.99	15.75	58.86	150	289	P	V
		15720	48.45	-25.55	74	50.03	38.01	19.53	59.12	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		5140.4	55.75	-18.25	74	48.45	31.36	10.77	34.83	110	350	P	H
		5144.56	48.02	-5.98	54	40.72	31.36	10.77	34.83	110	350	A	H
	*	5190	102.09	-	-	94.74	31.38	10.81	34.84	110	350	P	H
		5190	95.88	-	-	88.53	31.38	10.81	34.84	110	350	A	H
		5436.48	45.61	-28.39	74	37.91	31.5	11.09	34.89	110	350	P	H
		5414.36	37.53	-16.47	54	29.88	31.49	11.05	34.89	110	350	A	H
		5146.9	57.67	-16.33	74	50.37	31.36	10.77	34.83	237	354	P	V
		5149.24	50.87	-3.13	54	43.57	31.36	10.77	34.83	237	354	A	V
	*	5190	106.07	-	-	98.72	31.38	10.81	34.84	237	354	P	V
		5190	100.1	-	-	92.75	31.38	10.81	34.84	237	354	A	V
		5371.52	45.57	-28.43	74	37.97	31.47	11.01	34.88	237	354	P	V
		5421.08	37.95	-16.05	54	30.3	31.49	11.05	34.89	237	354	A	V
802.11n HT40 CH 46 5230MHz		5107.12	46.47	-27.53	74	39.21	31.35	10.73	34.82	110	349	P	H
		5143.52	38.68	-15.32	54	31.38	31.36	10.77	34.83	110	349	A	H
	*	5230	103.26	-	-	95.85	31.41	10.85	34.85	110	349	P	H
		5230	95.95	-	-	88.54	31.41	10.85	34.85	110	349	A	H
		5439.84	45.17	-28.83	74	37.47	31.5	11.09	34.89	110	349	P	H
		5453	38.01	-15.99	54	30.3	31.51	11.09	34.89	110	349	A	H
		5028.6	45.78	-28.22	74	38.63	31.31	10.65	34.81	218	3	P	V
		5148.46	38.71	-15.29	54	31.41	31.36	10.77	34.83	218	3	A	V
	*	5230	105.43	-	-	98.02	31.41	10.85	34.85	218	3	P	V
		5230	99.73	-	-	92.32	31.41	10.85	34.85	218	3	A	V
		5452.16	45.75	-28.25	74	38.04	31.51	11.09	34.89	218	3	P	V
		5452.16	39.1	-14.9	54	31.39	31.51	11.09	34.89	218	3	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	48.35	-19.85	68.2	51.78	39.87	15.67	58.97	150	360	P	H
		15570	47.7	-26.3	74	48.52	38.7	19.45	58.97	155	360	P	H
		10380	47.99	-20.21	68.2	51.42	39.87	15.67	58.97	150	360	P	V
		15570	47.37	-26.63	74	48.19	38.7	19.45	58.97	155	360	P	V
802.11n HT40 CH 46 5230MHz		10460	48.48	-19.72	68.2	51.68	39.95	15.75	58.9	150	360	P	H
		15690	48.28	-25.72	74	49.67	38.17	19.53	59.09	150	225	P	H
		10460	48.37	-19.83	68.2	51.57	39.95	15.75	58.9	150	360	P	V
		15690	47.9	-26.1	74	49.29	38.17	19.53	59.09	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		5148.2	55.82	-18.18	74	48.52	31.36	10.77	34.83	119	350	P	H
		5142.74	49.21	-4.79	54	41.91	31.36	10.77	34.83	119	350	A	H
	*	5210	97.36	-	-	89.95	31.4	10.85	34.84	119	350	P	H
		5210	92.06	-	-	84.65	31.4	10.85	34.84	119	350	A	H
		5350.56	46.27	-27.73	74	38.67	31.46	11.01	34.87	119	350	P	H
		5455.2	38.98	-15.02	54	31.27	31.51	11.09	34.89	119	350	A	H
		5133.9	55.32	-18.68	74	48.02	31.36	10.77	34.83	117	340	P	V
		5147.94	49.52	-4.48	54	42.22	31.36	10.77	34.83	117	340	A	V
	*	5210	99.35	-	-	91.94	31.4	10.85	34.84	117	340	P	V
		5210	93.04	-	-	85.63	31.4	10.85	34.84	117	340	A	V
		5372.64	45.5	-28.5	74	37.9	31.47	11.01	34.88	117	340	P	V
		5449.92	39.24	-14.76	54	31.53	31.51	11.09	34.89	117	340	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 VHT80 CH 42 5210MHz		10420	47.11	-21.09	68.2	50.42	39.91	15.71	58.93	150	360	P	H
		15630	46.19	-27.81	74	47.36	38.39	19.48	59.04	150	225	P	H
		10420	47.53	-20.67	68.2	50.84	39.91	15.71	58.93	150	360	P	V
		15630	47.32	-26.68	74	48.49	38.39	19.48	59.04	150	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 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 52 5260MHz		5100.8	45.86	-28.14	74	38.61	31.34	10.73	34.82	121	9	P	H
		5107.1	36.01	-17.99	54	28.75	31.35	10.73	34.82	121	9	A	H
	*	5260	102.98	-	-	95.52	31.42	10.89	34.85	121	9	P	H
		5260	99.12	-	-	91.66	31.42	10.89	34.85	121	9	A	H
		5358.96	46.23	-27.77	74	38.63	31.46	11.01	34.87	121	9	P	H
		5452.56	35.87	-18.13	54	28.16	31.51	11.09	34.89	121	9	A	H
		5148.4	46.5	-27.5	74	39.2	31.36	10.77	34.83	223	346	P	V
		5107.1	35.94	-18.06	54	28.68	31.35	10.73	34.82	223	346	A	V
	*	5260	106.05	-	-	98.59	31.42	10.89	34.85	223	346	P	V
		5260	100.57	-	-	93.11	31.42	10.89	34.85	223	346	A	V
		5426.64	45.96	-28.04	74	38.27	31.49	11.09	34.89	223	346	P	V
		5350.08	36.38	-17.62	54	28.78	31.46	11.01	34.87	223	346	A	V
802.11a CH 60 5300MHz		5080.5	45.72	-28.28	74	38.47	31.33	10.73	34.81	108	356	P	H
		5107.45	36.01	-17.99	54	28.75	31.35	10.73	34.82	108	356	A	H
	*	5300	103.35	-	-	95.84	31.44	10.93	34.86	108	356	P	H
		5300	99.19	-	-	91.68	31.44	10.93	34.86	108	356	A	H
		5351.52	46.64	-27.36	74	39.04	31.46	11.01	34.87	108	356	P	H
		5350.32	37.42	-16.58	54	29.82	31.46	11.01	34.87	108	356	A	H
		5101.5	45.8	-28.2	74	38.55	31.34	10.73	34.82	217	346	P	V
		5145.6	35.87	-18.13	54	28.57	31.36	10.77	34.83	217	346	A	V
	*	5300	106.27	-	-	98.76	31.44	10.93	34.86	217	346	P	V
		5300	101.29	-	-	93.78	31.44	10.93	34.86	217	346	A	V
		5353.2	47.83	-26.17	74	40.23	31.46	11.01	34.87	217	346	P	V
		5350.08	38.42	-15.58	54	30.82	31.46	11.01	34.87	217	346	A	V



802.11a CH 64 5320MHz	*	5320	103.66	-	-	96.11	31.45	10.97	34.87	104	357	P	H
		5320	99.43	-	-	91.88	31.45	10.97	34.87	104	357	A	H
		5364.8	47.46	-26.54	74	39.86	31.47	11.01	34.88	104	357	P	H
		5353.12	37.83	-16.17	54	30.23	31.46	11.01	34.87	104	357	A	H
	*	5320	106.78	-	-	99.23	31.45	10.97	34.87	128	26	P	V
		5320	101.21	-	-	93.66	31.45	10.97	34.87	128	26	A	V
		5353.6	50.07	-23.93	74	42.47	31.46	11.01	34.87	128	26	P	V
		5366.4	40.32	-13.68	54	32.72	31.47	11.01	34.88	128	26	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)	Preamplifier Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 52 5260MHz		10520	47.51	-20.69	68.2	50.52	40.03	15.78	58.82	150	220	P	H
		15780	47.61	-26.39	74	49.42	37.79	19.58	59.18	159	345	P	H
		10520	47.5	-20.7	68.2	50.51	40.03	15.78	58.82	150	220	P	V
		15780	45.57	-28.43	74	47.38	37.79	19.58	59.18	159	345	P	V
802.11a CH 60 5300MHz		10600	47.62	-26.38	74	50.36	40.13	15.86	58.73	185	215	P	H
		15900	48.08	-25.92	74	50.47	37.26	19.65	59.3	196	190	P	H
		10600	48.16	-25.84	74	50.9	40.13	15.86	58.73	185	215	P	V
		15900	47.86	-26.14	74	50.25	37.26	19.65	59.3	196	190	P	V
802.11a CH 64 5320MHz		10640	48.99	-25.01	74	51.61	40.17	15.9	58.69	152	135	P	H
		15960	47.67	-26.33	74	50.39	36.95	19.7	59.37	173	245	P	H
		10640	49.12	-24.88	74	51.74	40.17	15.9	58.69	152	135	P	V
		15960	47.03	-26.97	74	49.75	36.95	19.7	59.37	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		5006.24	46.83	-27.17	74	39.68	31.3	10.65	34.8	103	354	P	H
		5069.42	37.91	-16.09	54	30.71	31.32	10.69	34.81	103	354	A	H
	*	5260	104.05	-	-	96.59	31.42	10.89	34.85	103	354	P	H
		5260	97.51	-	-	90.05	31.42	10.89	34.85	103	354	A	H
		5380.8	46.58	-27.42	74	38.97	31.48	11.01	34.88	103	354	P	H
		5455.2	36.8	-17.2	54	29.09	31.51	11.09	34.89	103	354	A	H
		5067.08	46.21	-27.79	74	39.01	31.32	10.69	34.81	116	20	P	V
		5086.06	37.75	-16.25	54	30.5	31.33	10.73	34.81	116	20	A	V
	*	5260	106.97	-	-	99.51	31.42	10.89	34.85	116	20	P	V
		5260	100.02	-	-	92.56	31.42	10.89	34.85	116	20	A	V
		5389.68	46.19	-27.81	74	38.54	31.48	11.05	34.88	116	20	P	V
		5356.56	37.71	-16.29	54	30.11	31.46	11.01	34.87	116	20	A	V
802.11n HT20 CH 60 5300MHz		5065.45	47.33	-26.67	74	40.13	31.32	10.69	34.81	133	349	P	H
		5117.95	38.39	-15.61	54	31.1	31.35	10.77	34.83	133	349	A	H
	*	5300	105.02	-	-	97.51	31.44	10.93	34.86	133	349	P	H
		5300	98.19	-	-	90.68	31.44	10.93	34.86	133	349	A	H
		5373.84	47.44	-26.56	74	39.84	31.47	11.01	34.88	133	349	P	H
		5351.04	38.1	-15.9	54	30.5	31.46	11.01	34.87	133	349	A	H
		5050.4	47	-27	74	39.8	31.32	10.69	34.81	115	341	P	V
		5147	38.27	-15.73	54	30.97	31.36	10.77	34.83	115	341	A	V
	*	5300	107.15	-	-	99.64	31.44	10.93	34.86	115	341	P	V
		5300	100.57	-	-	93.06	31.44	10.93	34.86	115	341	A	V
		5367.12	46.98	-27.02	74	39.38	31.47	11.01	34.88	115	341	P	V
		5351.52	39.67	-14.33	54	32.07	31.46	11.01	34.87	115	341	A	V



802.11n HT20 CH 64 5320MHz	*	5320	105.22	-	-	97.67	31.45	10.97	34.87	107	351	P	H
		5320	98.65	-	-	91.1	31.45	10.97	34.87	107	351	A	H
		5390.56	47.28	-26.72	74	39.63	31.48	11.05	34.88	107	351	P	H
		5357.92	38.61	-15.39	54	31.01	31.46	11.01	34.87	107	351	A	H
	*	5320	106.72	-	-	99.17	31.45	10.97	34.87	111	341	P	V
		5320	99.83	-	-	92.28	31.45	10.97	34.87	111	341	A	V
		5355.04	48	-26	74	40.4	31.46	11.01	34.87	111	341	P	V
		5353.12	40.14	-13.86	54	32.54	31.46	11.01	34.87	111	341	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	47.42	-20.78	68.2	50.43	40.03	15.78	58.82	150	220	P	H
		15780	46.37	-27.63	74	48.18	37.79	19.58	59.18	159	345	P	H
		10520	46.98	-21.22	68.2	49.99	40.03	15.78	58.82	150	220	P	V
		15780	47.28	-26.72	74	49.09	37.79	19.58	59.18	159	345	P	V
802.11n HT20 CH 60 5300MHz		10600	47.35	-26.65	74	50.09	40.13	15.86	58.73	185	215	P	H
		15900	45.56	-28.44	74	47.95	37.26	19.65	59.3	196	190	P	H
		10600	47.2	-26.8	74	49.94	40.13	15.86	58.73	185	215	P	V
		15900	46.21	-27.79	74	48.6	37.26	19.65	59.3	196	190	P	V
802.11n HT20 CH 64 5320MHz		10640	48.69	-25.31	74	51.31	40.17	15.9	58.69	152	135	P	H
		15960	46.72	-27.28	74	49.44	36.95	19.7	59.37	173	245	P	H
		10640	48.6	-25.4	74	51.22	40.17	15.9	58.69	152	135	P	V
		15960	46.82	-27.18	74	49.54	36.95	19.7	59.37	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		5114.45	47.55	-26.45	74	40.3	31.35	10.73	34.83	127	348	P	H
		5046.55	39.08	-14.92	54	31.88	31.32	10.69	34.81	127	348	A	H
	*	5270	102.59	-	-	95.13	31.42	10.89	34.85	127	348	P	H
		5270	96	-	-	88.54	31.42	10.89	34.85	127	348	A	H
		5417.28	46.16	-27.84	74	38.51	31.49	11.05	34.89	127	348	P	H
		5443.92	37.73	-16.27	54	30.03	31.5	11.09	34.89	127	348	A	H
		5046.28	46.72	-27.28	74	39.52	31.32	10.69	34.81	230	338	P	V
		5046.28	39.38	-14.62	54	32.18	31.32	10.69	34.81	230	338	A	V
	*	5270	106.57	-	-	99.11	31.42	10.89	34.85	230	338	P	V
		5270	99.64	-	-	92.18	31.42	10.89	34.85	230	338	A	V
		5384.16	46.64	-27.36	74	39.03	31.48	11.01	34.88	230	338	P	V
		5350.32	38.61	-15.39	54	31.01	31.46	11.01	34.87	230	338	A	V
802.11n HT40 CH 62 5310MHz		5059.15	46.86	-27.14	74	39.66	31.32	10.69	34.81	109	360	P	H
		5082.95	38.89	-15.11	54	31.64	31.33	10.73	34.81	109	360	A	H
	*	5310	100.94	-	-	93.38	31.45	10.97	34.86	109	360	P	H
		5310	95.6	-	-	88.04	31.45	10.97	34.86	109	360	A	H
		5358	50.28	-23.72	74	42.68	31.46	11.01	34.87	109	360	P	H
		5350.08	43.91	-10.09	54	36.31	31.46	11.01	34.87	109	360	A	H
		5091.35	46.94	-27.06	74	39.69	31.34	10.73	34.82	187	342	P	V
		5105.35	39.23	-14.77	54	31.98	31.34	10.73	34.82	187	342	A	V
	*	5310	105.81	-	-	98.25	31.45	10.97	34.86	187	342	P	V
		5310	98.82	-	-	91.26	31.45	10.97	34.86	187	342	A	V
		5350.08	52.64	-21.36	74	45.04	31.46	11.01	34.87	187	342	P	V
		5350.08	46.86	-7.14	54	39.26	31.46	11.01	34.87	187	342	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)	Preamplifier Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 54 5270MHz		10540	48.14	-20.06	68.2	51.07	40.05	15.82	58.8	150	220	P	H
		15810	48.43	-25.57	74	50.41	37.63	19.6	59.21	168	345	P	H
		10540	48.61	-19.59	68.2	51.54	40.05	15.82	58.8	150	220	P	V
		15810	48.47	-25.53	74	50.45	37.63	19.6	59.21	168	345	P	V
802.11n HT40 CH 62 5310MHz		10620	47.61	-26.39	74	50.27	40.15	15.9	58.71	150	220	P	H
		15930	45.2	-28.8	74	47.75	37.1	19.68	59.33	160	100	P	H
		10620	47.57	-26.43	74	50.23	40.15	15.9	58.71	150	220	P	V
		15930	44.87	-29.13	74	47.42	37.1	19.68	59.33	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		5044.72	46.49	-27.51	74	39.29	31.32	10.69	34.81	123	3	P	H
		5067.34	40.39	-33.61	74	33.19	31.32	10.69	34.81	123	3	A	H
	*	5290	97.51	-	-	90.01	31.43	10.93	34.86	123	3	P	H
		5290	91.62	-	-	84.12	31.43	10.93	34.86	123	3	A	H
		5351.28	51.44	-22.56	74	43.84	31.46	11.01	34.87	123	3	P	H
		5351.76	45.74	-8.26	54	38.14	31.46	11.01	34.87	123	3	A	H
		5110.76	48.18	-25.82	74	40.92	31.35	10.73	34.82	243	337	P	V
		5095.16	40.92	-33.08	74	33.67	31.34	10.73	34.82	243	337	A	V
	*	5290	99.85	-	-	92.35	31.43	10.93	34.86	243	337	P	V
		5290	92.46	-	-	84.96	31.43	10.93	34.86	243	337	A	V
		5366.16	52.8	-21.2	74	45.2	31.47	11.01	34.88	243	337	P	V
		5353.92	47.11	-6.89	54	39.51	31.46	11.01	34.87	243	337	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 VHT80 CH 58 5290MHz		10580	47.63	-20.57	68.2	50.41	40.11	15.86	58.75	185	215	P	H
		15870	45.93	-28.07	74	48.25	37.33	19.63	59.28	196	190	P	H
		10580	47.83	-20.37	68.2	50.61	40.11	15.86	58.75	170	232	P	V
		15870	46.27	-27.73	74	48.59	37.33	19.63	59.28	190	130	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		5436.08	47.16	-26.84	74	39.46	31.5	11.09	34.89	149	352	P	H
		5468.08	47.52	-20.68	68.2	39.77	31.52	11.13	34.9	149	352	P	H
		5460	38.21	-15.79	54	30.5	31.51	11.09	34.89	149	352	A	H
	*	5500	104.48	-	-	96.71	31.54	11.13	34.9	149	352	P	H
		5500	99.9	-	-	92.13	31.54	11.13	34.9	149	352	A	H
		5449.2	48.99	-25.01	74	41.28	31.51	11.09	34.89	130	26	P	V
		5463.76	49.75	-18.45	68.2	42.04	31.52	11.09	34.9	130	26	P	V
		5459.6	40.04	-13.96	54	32.33	31.51	11.09	34.89	130	26	A	V
	*	5500	108.69	-	-	100.92	31.54	11.13	34.9	130	26	P	V
		5500	102.89	-	-	95.12	31.54	11.13	34.9	130	26	A	V
802.11a CH 116 5580MHz		5459.92	46.23	-27.77	74	38.52	31.51	11.09	34.89	100	352	P	H
		5519.92	48.55	-19.65	68.2	40.74	31.54	11.17	34.9	100	352	P	H
		5452.72	36.14	-17.86	54	28.43	31.51	11.09	34.89	100	352	A	H
	*	5580	103.94	-	-	96.06	31.57	11.21	34.9	100	352	P	H
		5580	99.66	-	-	91.78	31.57	11.21	34.9	100	352	A	H
		5731.93	46.2	-22	68.2	37.82	31.91	11.37	34.9	100	352	P	H
		5453.2	46.53	-27.47	74	38.82	31.51	11.09	34.89	102	11	P	V
		5466.4	45.78	-22.42	68.2	38.03	31.52	11.13	34.9	102	11	P	V
		5459.92	36.82	-17.18	54	29.11	31.51	11.09	34.89	102	11	A	V
	*	5580	107.99	-	-	100.11	31.57	11.21	34.9	102	11	P	V
		5580	104.01	-	-	96.13	31.57	11.21	34.9	102	11	A	V
		5755.87	47.07	-21.13	68.2	38.53	32.03	11.41	34.9	102	11	P	V



802.11a CH 140 5700MHz	*	5700	105.89	-	-	97.64	31.78	11.37	34.9	100	349	P	H
		5700	101.57	-	-	93.32	31.78	11.37	34.9	100	349	A	H
		5728.36	54.34	-13.86	68.2	45.96	31.91	11.37	34.9	100	349	P	H
	*	5700	107.11	-	-	98.86	31.78	11.37	34.9	115	25	P	V
		5700	102.75	-	-	94.5	31.78	11.37	34.9	115	25	A	V
		5725.16	54.9	-13.3	68.2	46.52	31.91	11.37	34.9	115	25	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 (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)	Preamplifier Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 100 5500MHz		11000	48.95	-25.05	74	50.41	40.59	16.25	58.3	163	230	P	H
		16500	48.4	-19.8	68.2	47.86	38.94	20.44	58.84	196	273	P	H
		11000	48.45	-25.55	74	49.91	40.59	16.25	58.3	155	212	P	V
		16500	48.03	-20.17	68.2	47.49	38.94	20.44	58.84	178	296	P	V
802.11a CH 116 5580MHz		11160	48.69	-25.31	74	49.62	40.8	16.38	58.11	183	32	P	H
		16740	49.43	-18.77	68.2	47.23	39.93	20.85	58.58	163	332	P	H
		11160	48.27	-25.73	74	49.2	40.8	16.38	58.11	170	200	P	V
		16740	49.61	-18.59	68.2	47.41	39.93	20.85	58.58	156	350	P	V
802.11a CH 140 5700MHz		11400	49.42	-24.58	74	49.65	41.08	16.54	57.85	157	285	P	H
		17100	50.42	-17.78	68.2	45.74	41.6	21.24	58.16	165	246	P	H
		11400	48.62	-25.38	74	48.85	41.08	16.54	57.85	122	291	P	V
		17100	50.34	-17.86	68.2	45.66	41.6	21.24	58.16	153	102	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		5413.2	45.95	-28.05	74	38.3	31.49	11.05	34.89	110	344	P	H
		5468.72	46.75	-21.45	68.2	39	31.52	11.13	34.9	110	344	P	H
		5458.8	38.46	-15.54	54	30.75	31.51	11.09	34.89	110	344	A	H
	*	5500	104.04	-	-	96.27	31.54	11.13	34.9	110	344	P	H
		5500	97.88	-	-	90.11	31.54	11.13	34.9	110	344	A	H
		5451.92	48.47	-25.53	74	40.76	31.51	11.09	34.89	110	22	P	V
		5463.44	49.53	-18.67	68.2	41.82	31.52	11.09	34.9	110	22	P	V
		5453.36	40.57	-13.43	54	32.86	31.51	11.09	34.89	110	22	A	V
	*	5500	108.83	-	-	101.06	31.54	11.13	34.9	110	22	P	V
		5500	101.1	-	-	93.33	31.54	11.13	34.9	110	22	A	V
802.11n HT20 CH 116 5580MHz		5435.68	45.07	-28.93	74	37.37	31.5	11.09	34.89	103	340	P	H
		5460.88	43.41	-24.79	68.2	35.7	31.51	11.09	34.89	103	340	P	H
		5456.08	36.94	-17.06	54	29.23	31.51	11.09	34.89	103	340	A	H
	*	5580	104.81	-	-	96.93	31.57	11.21	34.9	103	340	P	H
		5580	97.92	-	-	90.04	31.57	11.21	34.9	103	340	A	H
		5737.595	46.12	-22.08	68.2	37.68	31.97	11.37	34.9	103	340	P	H
		5388.88	45.24	-28.76	74	37.59	31.48	11.05	34.88	109	18	P	V
		5466.16	45.27	-22.93	68.2	37.52	31.52	11.13	34.9	109	18	P	V
		5448.4	37.37	-16.63	54	29.66	31.51	11.09	34.89	109	18	A	V
	*	5580	108.04	-	-	100.16	31.57	11.21	34.9	109	18	P	V
		5580	100.99	-	-	93.11	31.57	11.21	34.9	109	18	A	V
		5756.495	45.85	-22.35	68.2	37.31	32.03	11.41	34.9	109	18	P	V



802.11n HT20 CH 140 5700MHz	*	5700	105.74	-	-	97.49	31.78	11.37	34.9	109	340	P	H
		5700	98.28	-	-	90.03	31.78	11.37	34.9	109	340	A	H
		5734.04	50.8	-17.4	68.2	42.42	31.91	11.37	34.9	109	340	P	H
	*	5700	108.22	-	-	99.97	31.78	11.37	34.9	113	19	P	V
		5700	101.43	-	-	93.18	31.78	11.37	34.9	113	19	A	V
		5727.56	51.35	-16.85	68.2	42.97	31.91	11.37	34.9	113	19	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 (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	47.46	-26.54	74	48.92	40.59	16.25	58.3	163	230	P	H
		16500	48.03	-20.17	68.2	47.49	38.94	20.44	58.84	196	273	P	H
		11000	49.03	-24.97	74	50.49	40.59	16.25	58.3	155	212	P	V
		16500	48.74	-19.46	68.2	48.2	38.94	20.44	58.84	178	296	P	V
802.11n HT20 CH 116 5580MHz		11160	48.33	-25.67	74	49.26	40.8	16.38	58.11	183	32	P	H
		16740	49.64	-18.56	68.2	47.44	39.93	20.85	58.58	163	332	P	H
		11160	48.56	-25.44	74	49.49	40.8	16.38	58.11	170	200	P	V
		16740	49.82	-18.38	68.2	47.62	39.93	20.85	58.58	156	350	P	V
802.11n HT20 CH 140 5700MHz		11400	49.06	-24.94	74	49.29	41.08	16.54	57.85	157	285	P	H
		17100	49.19	-19.01	68.2	44.51	41.6	21.24	58.16	165	246	P	H
		11400	48.1	-25.9	74	48.33	41.08	16.54	57.85	122	291	P	V
		17100	49.6	-18.6	68.2	44.92	41.6	21.24	58.16	153	102	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		5451.28	47.72	-26.28	74	40.01	31.51	11.09	34.89	110	1	P	H
		5467.84	49.42	-18.78	68.2	41.67	31.52	11.13	34.9	110	1	P	H
		5458	40.67	-13.33	54	32.96	31.51	11.09	34.89	110	1	A	H
	*	5510	103.56	-	-	95.75	31.54	11.17	34.9	110	1	P	H
		5510	98.03	-	-	90.22	31.54	11.17	34.9	110	1	A	H
		5739.485	47.93	-20.27	68.2	39.45	31.97	11.41	34.9	110	1	P	H
		5459.44	50.07	-23.93	74	42.36	31.51	11.09	34.89	117	21	P	V
		5470	54.72	-13.48	68.2	46.97	31.52	11.13	34.9	117	21	P	V
		5458.72	44.14	-9.86	54	36.43	31.51	11.09	34.89	117	21	A	V
	*	5510	107.49	-	-	99.68	31.54	11.17	34.9	117	21	P	V
		5510	100.93	-	-	93.12	31.54	11.17	34.9	117	21	A	V
		5755.235	47.82	-20.38	68.2	39.28	32.03	11.41	34.9	117	21	P	V
802.11n HT40 CH 110 5550MHz		5459.2	45.7	-28.3	74	37.99	31.51	11.09	34.89	108	349	P	H
		5467.12	44.7	-23.5	68.2	36.95	31.52	11.13	34.9	108	349	P	H
		5442.64	38.19	-15.81	54	30.49	31.5	11.09	34.89	108	349	A	H
	*	5550	103	-	-	95.13	31.56	11.21	34.9	108	349	P	H
		5550	97.53	-	-	89.66	31.56	11.21	34.9	108	349	A	H
		5726.885	46.03	-22.17	68.2	37.65	31.91	11.37	34.9	108	349	P	H
		5454.88	46.65	-27.35	74	38.94	31.51	11.09	34.89	121	21	P	V
		5466.16	46.21	-21.99	68.2	38.46	31.52	11.13	34.9	121	21	P	V
		5458	38.93	-15.07	54	31.22	31.51	11.09	34.89	121	21	A	V
	*	5550	107.22	-	-	99.35	31.56	11.21	34.9	121	21	P	V
		5550	101.52	-	-	93.65	31.56	11.21	34.9	121	21	A	V
		5724.995	47.96	-20.24	68.2	39.58	31.91	11.37	34.9	121	21	P	V



802.11n HT40 CH 134 5670MHz		5442.4	45.54	-28.46	74	37.84	31.5	11.09	34.89	104	348	P	H
		5461.3	44.74	-23.46	68.2	37.03	31.51	11.09	34.89	104	348	P	H
		5420.7	37.81	-16.19	54	30.16	31.49	11.05	34.89	104	348	A	H
	*	5670	103.44	-	-	95.29	31.72	11.33	34.9	104	348	P	H
		5670	96.78	-	-	88.63	31.72	11.33	34.9	104	348	A	H
		5727.55	54.34	-13.86	68.2	45.96	31.91	11.37	34.9	104	348	P	H
		5428.05	45.83	-28.17	74	38.14	31.49	11.09	34.89	117	21	P	V
		5463.4	44.76	-23.44	68.2	37.05	31.52	11.09	34.9	117	21	P	V
		5447.65	39.3	-14.7	54	31.59	31.51	11.09	34.89	117	21	A	V
	*	5670	107.88	-	-	99.73	31.72	11.33	34.9	117	21	P	V
		5670	100.73	-	-	92.58	31.72	11.33	34.9	117	21	A	V
		5727.725	56.02	-12.18	68.2	47.64	31.91	11.37	34.9	117	21	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 (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)	Preamplifier Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 102 5510MHz		11020	49.4	-24.6	74	50.79	40.61	16.28	58.28	170	230	P	H
		16530	49.26	-18.94	68.2	48.48	39.08	20.5	58.8	160	300	P	H
		11020	49.28	-24.72	74	50.67	40.61	16.28	58.28	170	230	P	V
		16530	48.96	-19.24	68.2	48.18	39.08	20.5	58.8	160	300	P	V
802.11n HT40 CH 110 5550MHz		11100	49.39	-24.61	74	50.54	40.71	16.33	58.19	160	220	P	H
		16650	49.63	-18.57	68.2	48.04	39.58	20.68	58.67	180	353	P	H
		11100	48.68	-25.32	74	49.83	40.71	16.33	58.19	155	210	P	V
		16650	49.78	-18.42	68.2	48.19	39.58	20.68	58.67	171	352	P	V
802.11n HT40 CH 134 5670MHz		11340	49.66	-24.34	74	50.1	41	16.49	57.93	195	335	P	H
		17010	50.22	-17.98	68.2	46.18	41.1	21.22	58.28	205	310	P	H
		11340	49.53	-24.47	74	49.97	41	16.49	57.93	205	325	P	V
		17010	49.62	-18.58	68.2	45.58	41.1	21.22	58.28	185	290	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		5458.48	49.22	-24.78	74	41.51	31.51	11.09	34.89	104	349	P	H
		5469.04	48.99	-19.21	68.2	41.24	31.52	11.13	34.9	104	349	P	H
		5436.64	43.7	-10.3	54	36	31.5	11.09	34.89	104	349	A	H
	*	5530	98.51	-	-	90.7	31.54	11.17	34.9	104	349	P	H
		5530	90.81	-	-	83	31.54	11.17	34.9	104	349	A	H
		5748.62	47.74	-20.46	68.2	39.26	31.97	11.41	34.9	104	349	P	H
		5459.92	52.6	-21.4	74	44.89	31.51	11.09	34.89	100	21	P	V
		5468.8	53.15	-15.05	68.2	45.4	31.52	11.13	34.9	100	21	P	V
		5439.04	47.35	-6.65	54	39.65	31.5	11.09	34.89	100	21	A	V
	*	5530	102.18	-	-	94.37	31.54	11.17	34.9	100	21	P	V
		5530	95.4	-	-	87.59	31.54	11.17	34.9	100	21	A	V
		5738.225	46.64	-21.56	68.2	38.2	31.97	11.37	34.9	100	21	P	V
802.11ac VHT80 CH 122 5610MHz		5427.04	45.89	-28.11	74	38.2	31.49	11.09	34.89	104	349	P	H
		5467.12	44.89	-23.31	68.2	37.14	31.52	11.13	34.9	104	349	P	H
		5459.2	39.13	-14.87	54	31.42	31.51	11.09	34.89	104	349	A	H
	*	5610	98.14	-	-	90.21	31.58	11.25	34.9	104	349	P	H
		5610	91.62	-	-	83.69	31.58	11.25	34.9	104	349	A	H
		5728.6	46.83	-21.37	68.2	38.45	31.91	11.37	34.9	104	349	P	H
		5418.64	45.85	-28.15	74	38.2	31.49	11.05	34.89	130	20	P	V
		5465.44	45.81	-22.39	68.2	38.1	31.52	11.09	34.9	130	20	P	V
		5455.12	39.79	-14.21	54	32.08	31.51	11.09	34.89	130	20	A	V
	*	5610	102.53	-	-	94.6	31.58	11.25	34.9	130	20	P	V
		5610	95.52	-	-	87.59	31.58	11.25	34.9	130	20	A	V
		5763.425	48.53	-19.67	68.2	39.99	32.03	11.41	34.9	130	20	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 (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)	Preamplifier Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		11060	48.28	-25.72	74	49.54	40.67	16.3	58.23	170	230	P	H
VHT80		16590	48.58	-19.62	68.2	47.42	39.29	20.62	58.75	155	305	P	H
CH 106		11060	47.77	-26.23	74	49.03	40.67	16.3	58.23	166	212	P	V
5530MHz		16590	48.62	-19.58	68.2	47.46	39.29	20.62	58.75	132	343	P	V
802.11ac		11220	50.44	-23.56	74	51.23	40.86	16.41	58.06	200	360	P	H
VHT80		16830	49.77	-18.43	68.2	47	40.29	20.97	58.49	170	315	P	H
CH 122		11220	49.86	-24.14	74	50.65	40.86	16.41	58.06	155	260	P	V
5610MHz		16830	49.72	-18.48	68.2	46.95	40.29	20.97	58.49	180	220	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+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 144 5720MHz		11440	47.02	-26.98	74	47.15	41.12	16.57	57.82	161	360	P	H
		17160	48.56	-19.64	68.2	43.38	42	21.24	58.06	161	0	P	H
		11440	47.49	-26.51	74	47.62	41.12	16.57	57.82	161	360	P	V
		17160	47.34	-20.86	68.2	42.16	42	21.24	58.06	161	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 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 144 5720MHz		11440	46.94	-27.06	74	47.07	41.12	16.57	57.82	161	360	P	H
		17160	47.9	-20.3	68.2	42.72	42	21.24	58.06	161	0	P	H
		11440	48.12	-25.88	74	48.25	41.12	16.57	57.82	161	360	P	V
		17160	48.78	-19.42	68.2	43.6	42	21.24	58.06	161	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+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 142 5710MHz		11420	47.25	-26.75	74	47.44	41.1	16.54	57.83	161	360	P	H
		17130	48.1	-20.1	68.2	43.17	41.8	21.24	58.11	161	0	P	H
		11420	48.74	-25.26	74	48.93	41.1	16.54	57.83	161	360	P	V
		17130	48.48	-19.72	68.2	43.55	41.8	21.24	58.11	161	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+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		11380	46.65	-27.35	74	46.94	41.06	16.52	57.87	161	360	P	H
VHT80		17070	46.04	-22.16	68.2	41.62	41.4	21.23	58.21	161	0	P	H
CH 138		11380	47.43	-26.57	74	47.72	41.06	16.52	57.87	161	360	P	V
5690MHz		17070	47.21	-20.99	68.2	42.79	41.4	21.23	58.21	161	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

WIFI 802.11n 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		30	23.29	-16.71	40	30.93	24.3	0.56	32.5	-	-	P	H
		159.01	23.6	-19.9	43.5	38.09	16.07	1.32	31.88	-	-	P	H
		342.34	23.61	-22.39	46	33.22	20.27	1.96	31.84	-	-	P	H
		675.05	27.38	-18.62	46	31.85	25	2.82	32.29	-	-	P	H
		891.36	29.7	-16.3	46	30.81	26.66	3.3	31.07	150	326	P	H
		965.08	29.52	-24.48	54	30.41	27.09	3.42	31.4	-	-	P	H
		31.94	30.88	-9.12	40	39.47	23.12	0.59	32.3	133	41	P	V
		90.14	20.48	-23.02	43.5	37	14.6	0.98	32.1	-	-	P	V
		158.04	25.97	-17.53	43.5	40.41	16.13	1.31	31.88	-	-	P	V
		189.08	25.66	-17.84	43.5	40.69	15.38	1.41	31.82	-	-	P	V
		288.99	24.73	-21.27	46	35.86	19.03	1.79	31.95	-	-	P	V
		612	28.44	-17.56	46	32.5	24.75	2.7	31.51	-	-	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	Peak or Average
H/V	Horizontal or Vertical



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 CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		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”.

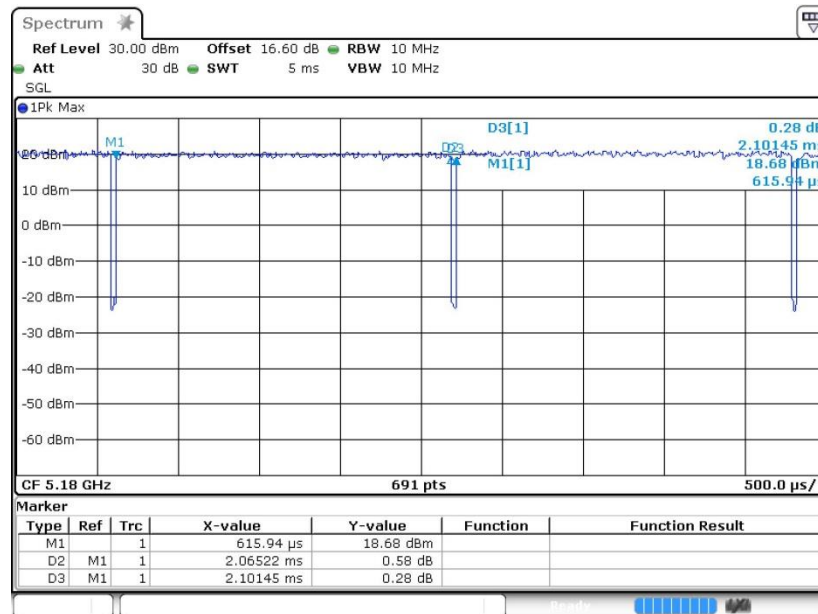
Appendix D. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1+2	802.11a	98.28	-	-	10Hz
1+2	802.11n HT20	98.16	-	-	10Hz
1+2	802.11n HT40	96.16	0.944	1.060	3KHz
1+2	802.11acVHT80	87.62	0.257	3.898	10KHZ

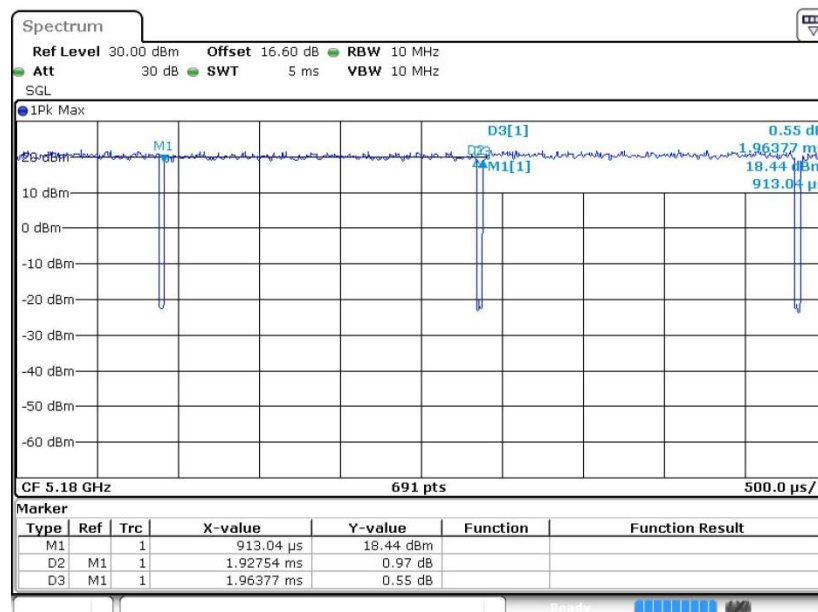


Ant.1+2

802.11a

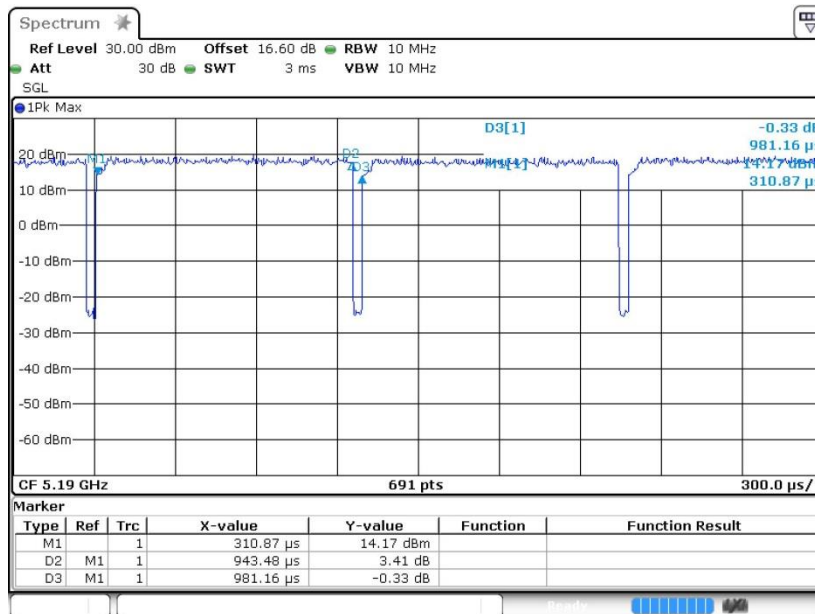


802.11n HT20





802.11n HT40



802.11ac VHT80

