



FCC RF Test Report

APPLICANT : Bullitt Group
EQUIPMENT : Rugged Smart Phone
BRAND NAME : CAT
MODEL NAME : S42
FCC ID : ZL5S42E
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Dec. 23, 2019 and testing was completed on Mar. 04, 2020. 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.

Reviewed by: Derreck Chen / Supervisor

Approved by: Eric Shih / Manager



Sporton International (ShenZhen) Inc.

**1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055
People's Republic of China**



TABLE OF CONTENTS

REVISION HISTORY.....	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant	5
1.2 Manufacturer.....	5
1.3 Product Feature of Equipment Under Test.....	5
1.4 Product Specification of Equipment Under Test.....	6
1.5 Modification of EUT	7
1.6 Testing Location	7
1.7 Test Software.....	7
1.8 Applicable Standards.....	8
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	9
2.1 Carrier Frequency and Channel	9
2.2 Test Mode.....	11
2.3 Connection Diagram of Test System.....	13
2.4 Support Unit used in test configuration and system	14
2.5 EUT Operation Test Setup	14
2.6 Measurement Results Explanation Example.....	14
3 TEST RESULT	15
3.1 26dB & 99% Occupied Bandwidth Measurement	15
3.2 Maximum Conducted Output Power Measurement	17
3.3 Power Spectral Density Measurement	19
3.4 Unwanted Emissions Measurement.....	22
3.5 AC Conducted Emission Measurement.....	27
3.6 Automatically Discontinue Transmission	29
3.7 Antenna Requirements	30
4 LIST OF MEASURING EQUIPMENT	31
5 UNCERTAINTY OF EVALUATION	32
APPENDIX A. CONDUCTED TEST RESULTS	
APPENDIX B. AC CONDUCTED EMISSION TEST RESULT	
APPENDIX C. RADIATED SPURIOUS EMISSION	
APPENDIX D. DUTY CYCLE PLOTS	
APPENDIX E. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR9D2309-01E	Rev. 01	Initial issue of report	Apr. 30, 2020

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 3.23 dB at 5150.000 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 4.02 dB at 0.290 MHz
3.6	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.7	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.



1 General Description

1.1 Applicant

Bullitt Group

One Valpy, Valpy Street, Reading, Berkshire, England RG1 1AR

1.2 Manufacturer

Bullitt Group

One Valpy, Valpy Street, Reading, Berkshire, England RG1 1AR

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Rugged Smart Phone
Brand Name	CAT
Model Name	S42
FCC ID	ZL5S42E
EUT supports Radios application	GSM/WCDMA/LTE/NFC WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE GNSS/ FM Receiver
IMEI Code	Conducted : 354401110003581/354401110010586 Conduction : 354401110003003/354401110010008 Radiation : 354401110003490
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 ~ 5720 MHz
Maximum Output Power to Antenna	<5180 MHz ~ 5240 MHz> 802.11a : 18.41 dBm / 0.0693 W 802.11n HT20 : 18.25 dBm / 0.0668 W 802.11n HT40 : 16.33 dBm / 0.0430 W 802.11ac VHT20 : 18.18 dBm / 0.0658 W 802.11ac VHT40 : 16.25 dBm / 0.0422 W 802.11ac VHT80 : 13.33 dBm / 0.0215 W <5260 MHz ~ 5320 MHz> 802.11a : 18.57 dBm / 0.0719 W 802.11n HT20 : 18.26 dBm / 0.0670 W 802.11n HT40 : 16.23 dBm / 0.0420 W 802.11ac VHT20 : 18.18 dBm / 0.0658 W 802.11ac VHT40 : 16.16 dBm / 0.0413 W 802.11ac VHT80 : 13.36 dBm / 0.0217 W <5500 MHz ~ 5720 MHz > 802.11a : 18.45 dBm / 0.0700 W 802.11n HT20 : 18.34 dBm / 0.0682 W 802.11n HT40 : 16.24 dBm / 0.0421 W 802.11ac VHT20 : 18.27 dBm / 0.0671 W 802.11ac VHT40 : 16.17 dBm / 0.0414 W 802.11ac VHT80 : 13.16 dBm / 0.0207 W
99% Occupied Bandwidth	<5180 MHz ~ 5240 MHz> 802.11a : 16.88 MHz 802.11n HT20 : 17.88 MHz 802.11n HT40 : 36.36 MHz 802.11ac VHT80 : 75.16 MHz <5260 MHz ~ 5320 MHz> 802.11a : 16.78 MHz 802.11n HT20 : 17.88 MHz 802.11n HT40 : 36.26 MHz 802.11ac VHT80 : 75.40 MHz <5500 MHz ~ 5720 MHz > 802.11a : 16.88 MHz 802.11n HT20 : 17.93 MHz 802.11n HT40 : 36.36 MHz 802.11ac VHT80 : 75.28 MHz
Antenna Type / Gain	<5150 MHz ~ 5250 MHz> IFA Antenna with gain -1.00 dBi <5250 MHz ~ 5350 MHz> IFA Antenna with gain -1.00 dBi <5470 MHz ~ 5725 MHz> IFA Antenna with gain -1.00 dBi
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)

Note:



1. WLAN operation in 5600 MHz ~ 5650 MHz is notched.
2. For 802.11n HT20 / ac VHT20 and 802.11n HT40 / ac VHT40 mode, the whole testing have assessed only 802.11n HT20/ HT40 by referring to their maximum 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/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.
	03CH01-SZ	CN1256	421272

1.7 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH01-SZ	AUDIX	E3	6.2009-8-24
2.	CO01-SZ	AUDIX	E3	6.120613b



1.8 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.
- ♦ 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 (Z 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)
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.

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 : GSM850 Idle + Bluetooth Link + WLAN (5G) Link + Earphone 1 + USB Cable 1(Charging from Adapter 3) + SIM 1



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

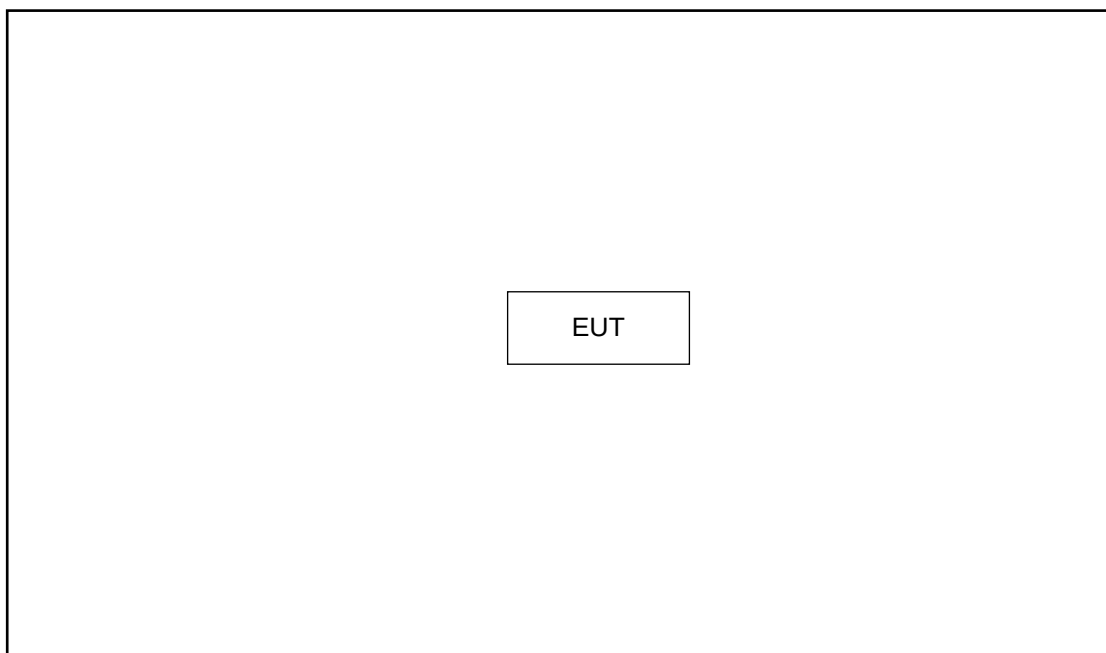
Ch. #		Band I : 5150-5250 MHz	Band II : 5250-5350 MHz	Band III : 5470-5725MHz
		802.11n HT20	802.11n HT20	802.11n HT20
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140
Straddle		-	-	144

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

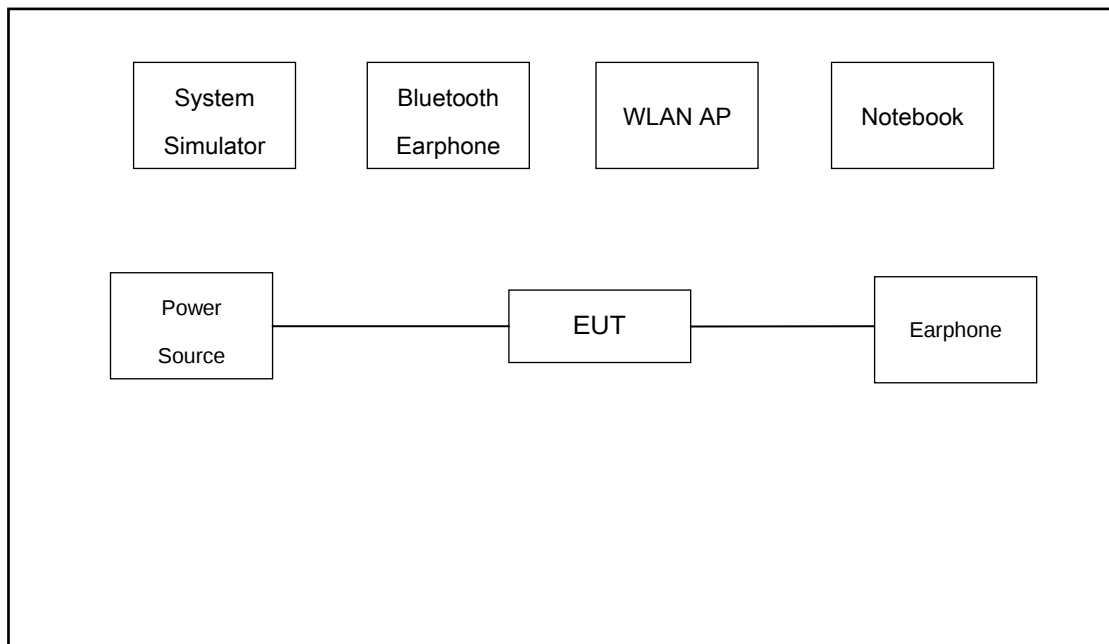
Ch. #		Band I : 5150-5250 MHz	Band II : 5250-5350 MHz	Band III : 5470-5725MHz
		802.11ac VHT80	802.11ac VHT80	802.11ac VHT80
L	Low	-	-	106
M	Middle	42	58	-
H	High	-	-	-
Straddle		-	-	138

2.3 Connection Diagram of Test System

For Radiation Spurious Emission



For AC Conducted Emission



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
2.	WLAN AP	Dlink	DIR-820L	KA2IR820LA1	N/A	Unshielded,1.8m
3.	Notebook	Lenovo	E540	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Samsung	EO-MG900	PYAHS-107W	N/A	N/A
5.	SD Card	N/A	MicroSD HC	FCC DoC	N/A	N/A

2.5 EUT Operation Test Setup

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

For AC power line conducted emissions, the EUT was set to connect with the Notebook under large package sizes transmission.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss 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.

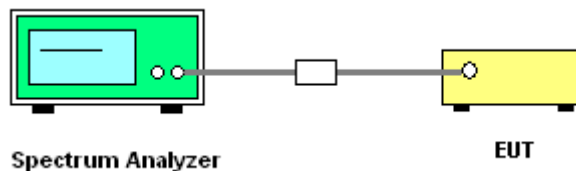
3.1.2 Measuring Instruments

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.

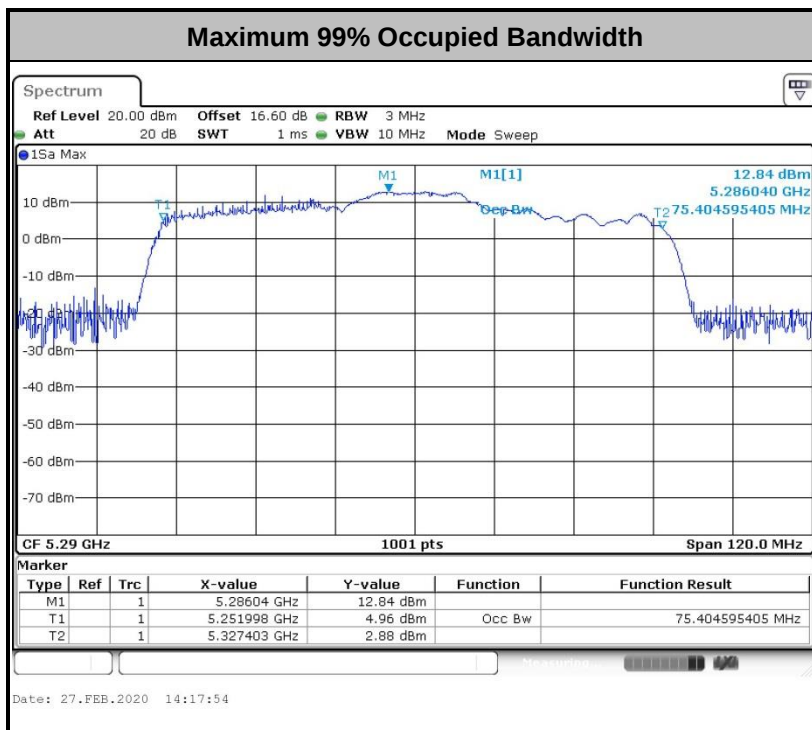
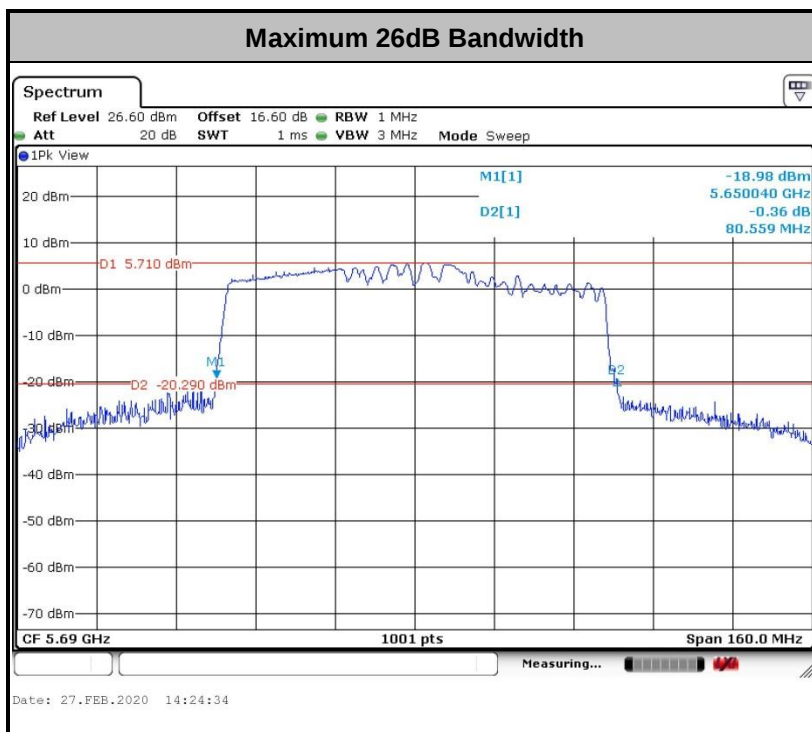
3.1.4 Test Setup





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

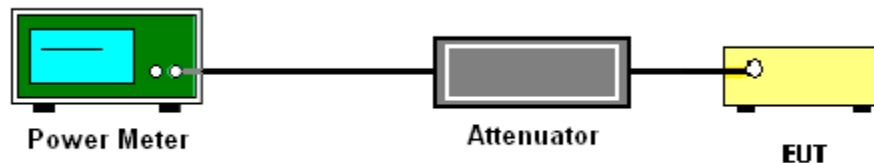
The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

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.

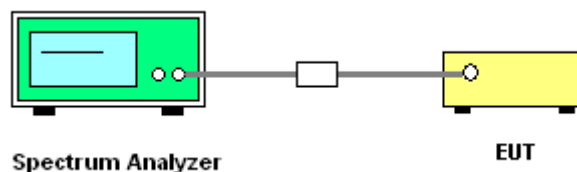
Section F) Maximum power spectral density.

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.

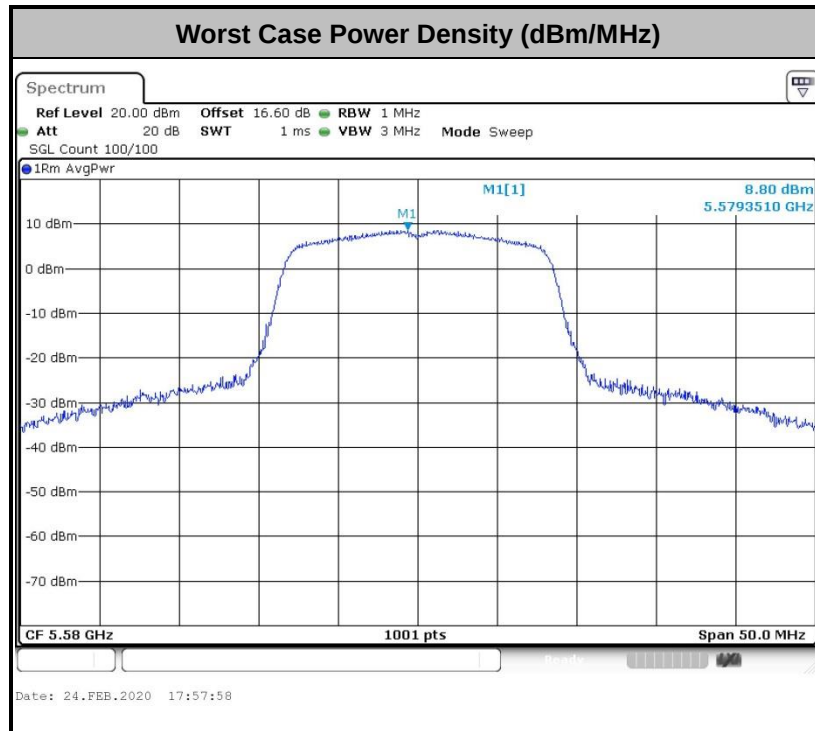
3.3.4 Test Setup





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

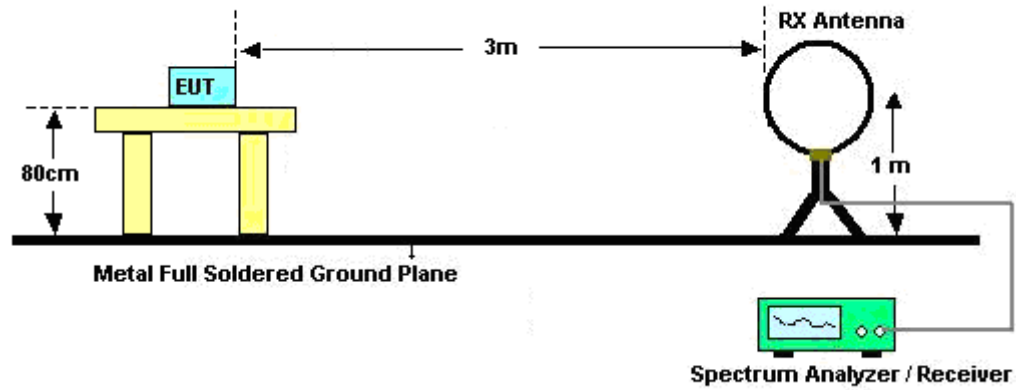
The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

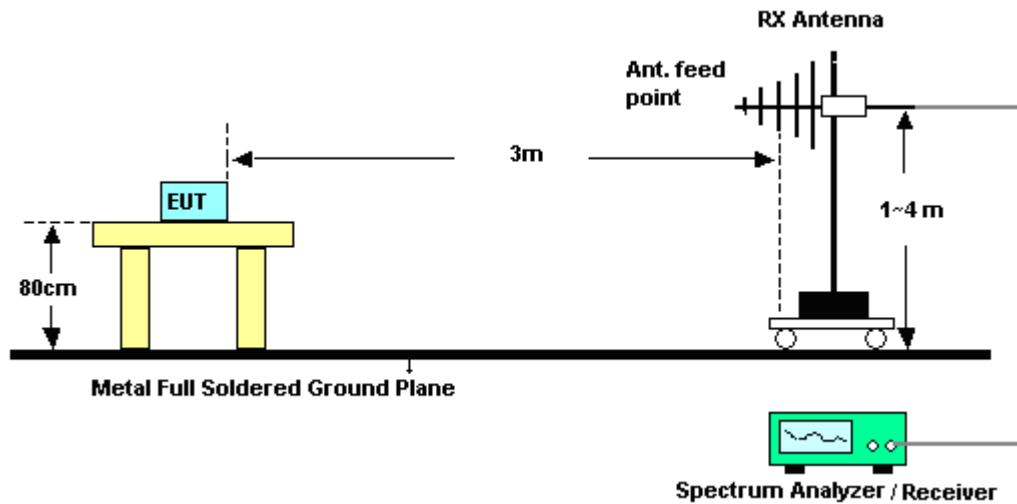
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section G) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak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

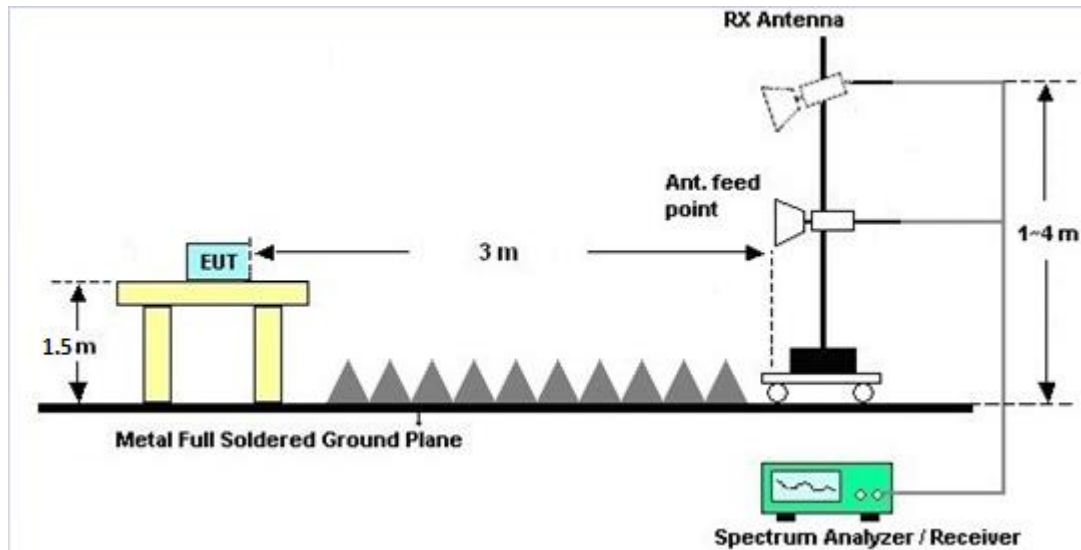
For radiated emissions below 30MHz



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.

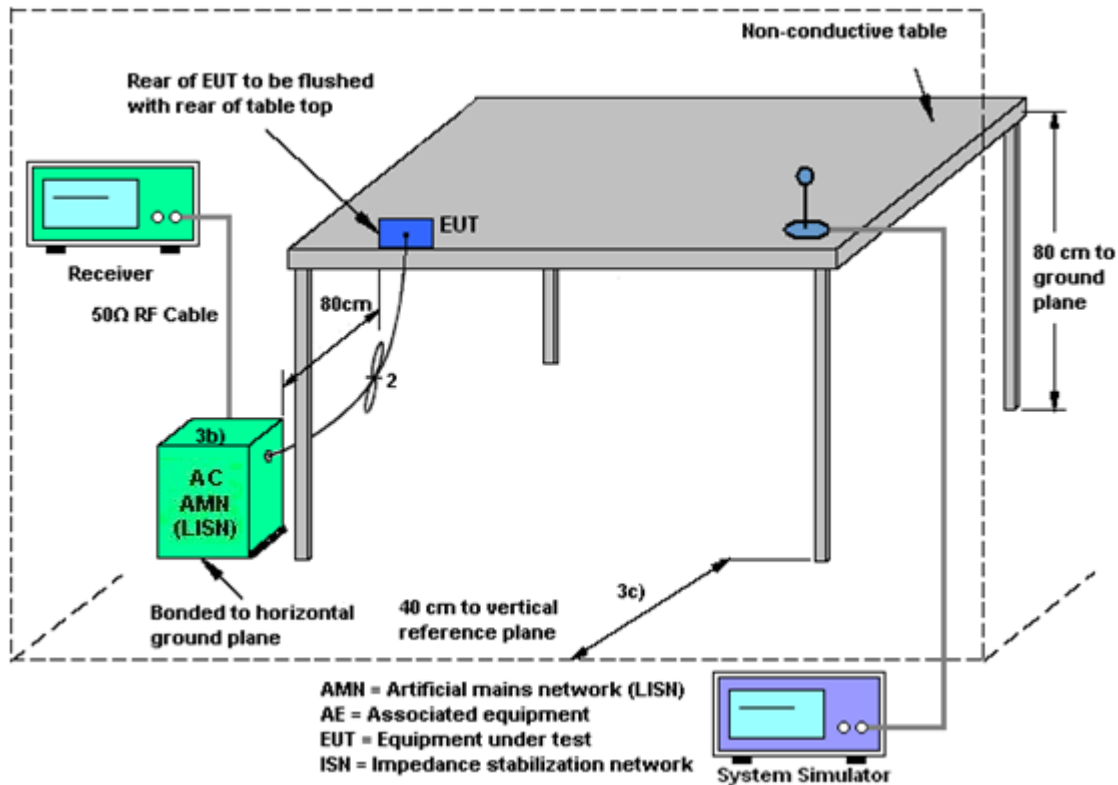
3.5.2 Measuring Instruments

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

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



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	Feb. 24, 2020~ Feb. 27, 2020	Apr. 17, 2020	Conducted (TH01-SZ)
Pulse Power Sensor	Anritsu	MA2411B	1207253	30MHz~40GHz	Dec. 26, 2019	Feb. 24, 2020~ Feb. 27, 2020	Dec. 25, 2020	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	50MHz Bandwidth	Dec. 26, 2019	Feb. 24, 2020~ Feb. 27, 2020	Dec. 25, 2020	Conducted (TH01-SZ)
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Jul. 22, 2019	Feb. 29, 2020~ Mar. 04, 2020	Jul. 21, 2020	Radiation (03CH01-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Apr. 18, 2019	Feb. 29, 2020~ Mar. 04, 2020	Apr. 17, 2020	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 29, 2018	Feb. 29, 2020~ Mar. 04, 2020	May 28, 2020	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz~2GHz	Jul. 19, 2019	Feb. 29, 2020~ Mar. 04, 2020	Jul. 18, 2020	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Aug. 27, 2019	Feb. 29, 2020~ Mar. 04, 2020	Aug. 26, 2020	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18GHz~40GHz	Apr. 18, 2019	Feb. 29, 2020~ Mar. 04, 2020	Apr. 17, 2020	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 19, 2019	Feb. 29, 2020~ Mar. 04, 2020	Apr. 18, 2020	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P-R	1943528	1GHz~18GHz	Oct. 18, 2019	Feb. 29, 2020~ Mar. 04, 2020	Oct. 17, 2020	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270104	0.5GHz~26.5GHz	Dec. 27, 2019	Feb. 29, 2020~ Mar. 04, 2020	Dec. 26, 2020	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 22, 2019	Feb. 29, 2020~ Mar. 04, 2020	Jul. 21, 2020	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Feb. 29, 2020~ Mar. 04, 2020	NCR	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Feb. 29, 2020~ Mar. 04, 2020	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Feb. 29, 2020~ Mar. 04, 2020	NCR	Radiation (03CH01-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Dec. 26, 2019	Jan. 16, 2020	Dec. 25, 2020	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Oct. 17, 2019	Jan. 16, 2020	Oct. 16, 2020	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Dec. 26, 2019	Jan. 16, 2020	Dec. 25, 2020	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 23, 2019	Jan. 16, 2020	Jul. 22, 2020	Conduction (CO01-SZ)

NCR: No Calibration Required

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
---	-------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.8dB
---	-------

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

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

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.3dB
---	-------



Appendix A. Conducted Test Results

Report Number : FR9D2309-01E

Test Engineer:	Hayden Chen	Temperature:	21~25	°C
Test Date:	2020/2/24~2020/2/27	Relative Humidity:	51~54	%

TEST RESULTS DATA
26dB and 99% OBW

Band I										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)	IC 99% Bandwidth Power Limit (dBm)	IC 99% Bandwidth EIRP Limit (dBm)		
11a	6Mbps	1	36	5180	16.78	32.77	-	22.25		
11a	6Mbps	1	44	5220	16.83	36.11	-	22.26		
11a	6Mbps	1	48	5240	16.88	37.96	-	22.27		
HT20	MCS0	1	36	5180	17.83	29.22	-	22.51		
HT20	MCS0	1	44	5220	17.88	34.07	-	22.52		
HT20	MCS0	1	48	5240	17.88	30.32	-	22.52		
HT40	MCS0	1	38	5190	36.26	44.24	-	23.01		
HT40	MCS0	1	46	5230	36.36	44.60	-	23.01		
VHT80	MCS0	1	42	5210	75.16	80.40	-	23.01		

TEST RESULTS DATA
Average Power Table

FCC Band I										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)		Pass/Fail
11a	6Mbps	1	36	5180	0.00	17.05	24.00	-1.00		Pass
11a	6Mbps	1	44	5220	0.00	18.33	24.00	-1.00		Pass
11a	6Mbps	1	48	5240	0.00	18.41	24.00	-1.00		Pass
HT20	MCS0	1	36	5180	0.00	16.91	24.00	-1.00		Pass
HT20	MCS0	1	44	5220	0.00	18.06	24.00	-1.00		Pass
HT20	MCS0	1	48	5240	0.00	18.25	24.00	-1.00		Pass
HT40	MCS0	1	38	5190	0.00	15.89	24.00	-1.00		Pass
HT40	MCS0	1	46	5230	0.00	16.33	24.00	-1.00		Pass
VHT20	MCS0	1	36	5180	0.00	16.82	24.00	-1.00		Pass
VHT20	MCS0	1	44	5220	0.00	17.98	24.00	-1.00		Pass
VHT20	MCS0	1	48	5240	0.00	18.18	24.00	-1.00		Pass
VHT40	MCS0	1	38	5190	0.00	15.80	24.00	-1.00		Pass
VHT40	MCS0	1	46	5230	0.00	16.25	24.00	-1.00		Pass
VHT80	MCS0	1	42	5210	0.00	13.33	24.00	-1.00		Pass

TEST RESULTS DATA
Power Spectral Density

FCC Band I										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm/MHz)	DG (dBi)	-	Pass/Fail
11a	6Mbps	1	36	5180	0.00	7.78	11.00	-1.00		Pass
11a	6Mbps	1	44	5220	0.00	8.35	11.00	-1.00		Pass
11a	6Mbps	1	48	5240	0.00	8.66	11.00	-1.00		Pass
HT20	MCS0	1	36	5180	0.00	7.65	11.00	-1.00		Pass
HT20	MCS0	1	44	5220	0.00	7.64	11.00	-1.00		Pass
HT20	MCS0	1	48	5240	0.00	7.35	11.00	-1.00		Pass
HT40	MCS0	1	38	5190	0.00	3.29	11.00	-1.00		Pass
HT40	MCS0	1	46	5230	0.00	3.30	11.00	-1.00		Pass
VHT80	MCS0	1	42	5210	0.00	-1.83	11.00	-1.00		Pass

TEST RESULTS DATA
Average Power Table

FCC Band II										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
11a	6M bps	1	52	5260	0.00	18.57	23.98	-1.00	26.99	Pass
11a	6M bps	1	60	5300	0.00	18.51	23.98	-1.00	26.99	Pass
11a	6M bps	1	64	5320	0.00	18.01	23.98	-1.00	26.99	Pass
HT20	MCS 0	1	52	5260	0.00	18.26	23.98	-1.00	26.99	Pass
HT20	MCS 0	1	60	5300	0.00	18.21	23.98	-1.00	26.99	Pass
HT20	MCS 0	1	64	5320	0.00	17.76	23.98	-1.00	26.99	Pass
HT40	MCS 0	1	54	5270	0.00	16.23	23.98	-1.00	26.99	Pass
HT40	MCS 0	1	62	5310	0.00	15.94	23.98	-1.00	26.99	Pass
VHT20	MCS 0	1	52	5260	0.00	18.18	23.98	-1.00	26.99	Pass
VHT20	MCS 0	1	60	5300	0.00	18.13	23.98	-1.00	26.99	Pass
VHT20	MCS 0	1	64	5320	0.00	17.71	23.98	-1.00	26.99	Pass
VHT40	MCS 0	1	54	5270	0.00	16.16	23.98	-1.00	26.99	Pass
VHT40	MCS 0	1	62	5310	0.00	15.81	23.98	-1.00	26.99	Pass
VHT80	MCS 0	1	58	5290	0.00	13.36	23.98	-1.00	26.99	Pass

TEST RESULTS DATA
26dB and 99% OBW

Band II										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)	IC 99% Bandwidth Power Limit (dBm)	IC 99% Bandwidth EIRP Limit (dBm)	FCC 26dB Bandwidth Power Limit (dBm)	Note
11a	6M bps	1	52	5260	16.78	31.72	23.25	29.25	23.98	
11a	6M bps	1	60	5300	16.78	34.77	23.25	29.25	23.98	
11a	6M bps	1	64	5320	16.78	36.51	23.25	29.25	23.98	
HT20	MCS 0	1	52	5260	17.78	35.41	23.50	29.50	23.98	
HT20	MCS 0	1	60	5300	17.78	28.82	23.50	29.50	23.98	
HT20	MCS 0	1	64	5320	17.88	35.91	23.52	29.52	23.98	
HT40	MCS 0	1	54	5270	36.26	41.36	23.98	30.00	23.98	
HT40	MCS 0	1	62	5310	36.26	45.67	23.98	30.00	23.98	
VHT80	MCS 0	1	58	5290	75.40	80.24	23.98	30.00	23.98	

TEST RESULTS DATA
Power Spectral Density

Band II										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm/MHz)	DG (dBi)		Pass/Fail
11a	6M bps	1	52	5260	0.00	8.07	11.00	-1.00		Pass
11a	6M bps	1	60	5300	0.00	8.49	11.00	-1.00		Pass
11a	6M bps	1	64	5320	0.00	8.39	11.00	-1.00		Pass
HT20	MCS 0	1	52	5260	0.00	7.71	11.00	-1.00		Pass
HT20	MCS 0	1	60	5300	0.00	7.52	11.00	-1.00		Pass
HT20	MCS 0	1	64	5320	0.00	8.07	11.00	-1.00		Pass
HT40	MCS 0	1	54	5270	0.00	3.30	11.00	-1.00		Pass
HT40	MCS 0	1	62	5310	0.00	3.53	11.00	-1.00		Pass
VHT80	MCS 0	1	58	5290	0.00	-1.44	11.00	-1.00		Pass

TEST RESULTS DATA
26dB and 99% OBW

Band III										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)	IC 99% Bandwidth Power Limit (dBm)	IC 99% Bandwidth EIRP Limit (dBm)	FCC 26dB Bandwidth Power Limit (dBm)	Note
11a	6M bps	1	100	5500	16.88	35.96	23.27	29.27	23.98	
11a	6M bps	1	116	5580	16.78	33.27	23.25	29.25	23.98	
11a	6M bps	1	140	5700	16.88	35.46	23.27	29.27	23.98	
11a	6Mbps	1	144	5720	16.78	36.76	23.25	29.25	23.98	
HT20	MCS 0	1	100	5500	17.73	34.72	23.49	29.49	23.98	
HT20	MCS 0	1	116	5580	17.93	31.57	23.54	29.54	23.98	
HT20	MCS 0	1	140	5700	17.78	32.22	23.50	29.50	23.98	
HT20	MCS0	1	144	5720	17.78	35.66	23.50	29.50	23.98	
HT40	MCS 0	1	102	5510	36.16	41.63	23.98	30.00	23.98	
HT40	MCS 0	1	110	5550	36.36	47.02	23.98	30.00	23.98	
HT40	MCS 0	1	134	5670	36.36	52.51	23.98	30.00	23.98	
HT40	MCS0	1	142	5710	36.16	42.89	23.98	30.00	23.98	
VHT80	MCS 0	1	106	5530	75.28	79.60	23.98	30.00	23.98	
VHT80	MCS0	1	138	5690	75.28	80.56	23.98	30.00	23.98	

TEST RESULTS DATA
Average Power Table

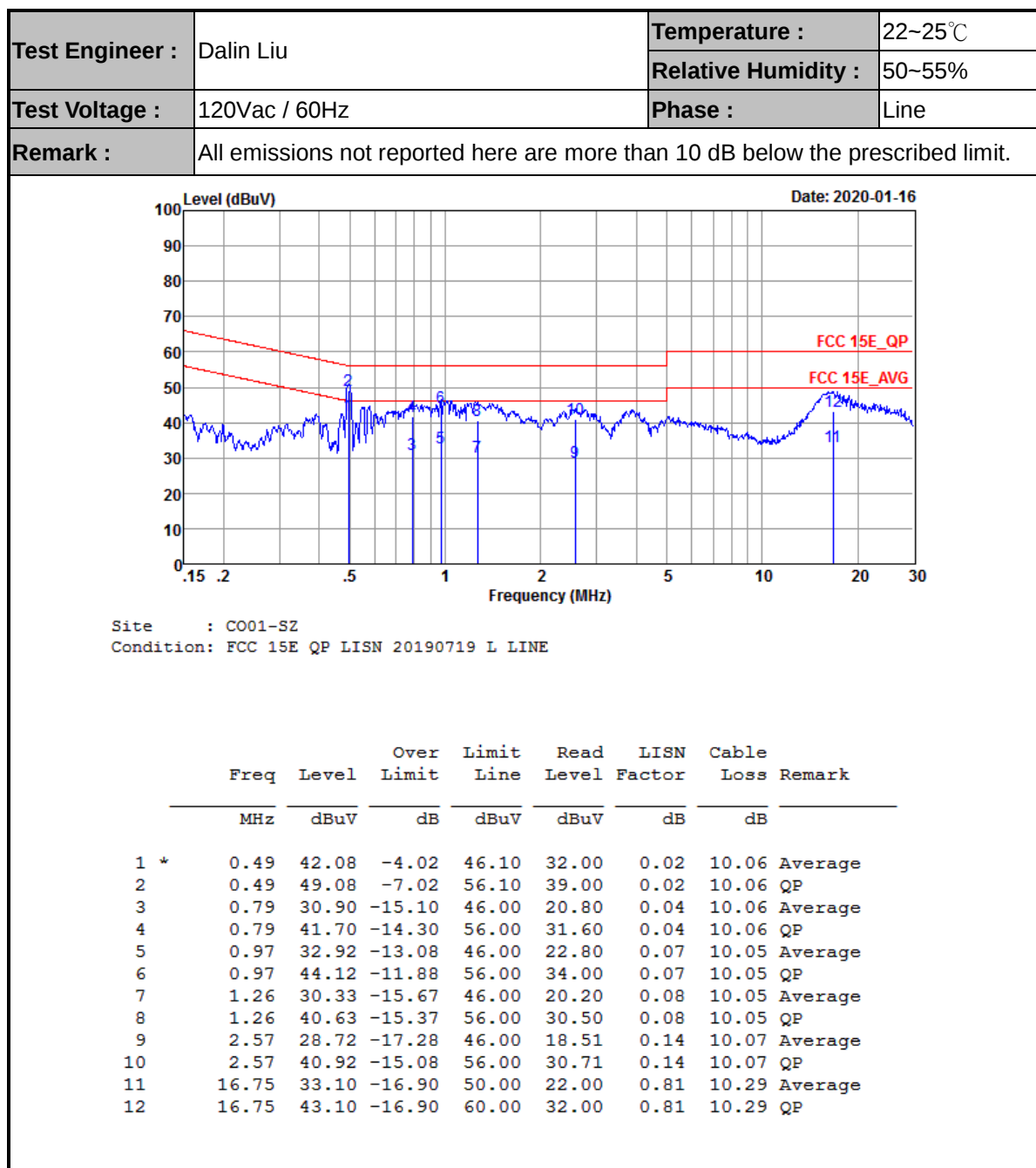
FCC Band III										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
11a	6M bps	1	100	5500	0.00	18.30	23.98	-1.00	26.99	Pass
11a	6M bps	1	116	5580	0.00	18.45	23.98	-1.00	26.99	Pass
11a	6M bps	1	140	5700	0.00	18.39	23.98	-1.00	26.99	Pass
11a	6M bps	1	144	5720	0.00	18.32	23.98	-1.00	26.99	Pass
HT20	MCS 0	1	100	5500	0.00	18.26	23.98	-1.00	26.99	Pass
HT20	MCS 0	1	116	5580	0.00	18.34	23.98	-1.00	26.99	Pass
HT20	MCS 0	1	140	5700	0.00	18.21	23.98	-1.00	26.99	Pass
HT20	MCS 0	1	144	5720	0.00	18.25	23.98	-1.00	26.99	Pass
HT40	MCS 0	1	102	5510	0.00	16.11	23.98	-1.00	26.99	Pass
HT40	MCS 0	1	110	5550	0.00	16.24	23.98	-1.00	26.99	Pass
HT40	MCS 0	1	134	5670	0.00	16.15	23.98	-1.00	26.99	Pass
HT40	MCS 0	1	142	5710	0.00	16.16	23.98	-1.00	26.99	Pass
VHT20	MCS 0	1	100	5500	0.00	18.18	23.98	-1.00	26.99	Pass
VHT20	MCS 0	1	116	5580	0.00	18.27	23.98	-1.00	26.99	Pass
VHT20	MCS 0	1	140	5700	0.00	18.13	23.98	-1.00	26.99	Pass
VHT20	MCS 0	1	144	5720	0.00	18.18	23.98	-1.00	26.99	Pass
VHT40	MCS 0	1	102	5510	0.00	16.03	23.98	-1.00	26.99	Pass
VHT40	MCS 0	1	110	5550	0.00	16.17	23.98	-1.00	26.99	Pass
VHT40	MCS 0	1	134	5670	0.00	16.07	23.98	-1.00	26.99	Pass
VHT40	MCS 0	1	142	5710	0.00	16.09	23.98	-1.00	26.99	Pass
VHT80	MCS 0	1	106	5530	0.00	13.16	23.98	-1.00	26.99	Pass
VHT80	MCS 0	1	138	5690	0.00	13.11	23.98	-1.00	26.99	Pass

TEST RESULTS DATA
Power Spectral Density

Band III										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm/MHz)	DG (dBi)		Pass/Fail
11a	6M bps	1	100	5500	0.00	8.67	11.00	-1.00		Pass
11a	6M bps	1	116	5580	0.00	8.80	11.00	-1.00		Pass
11a	6M bps	1	140	5700	0.00	8.55	11.00	-1.00		Pass
11a	6Mbps	1	144	5720	0.00	8.69	11.00	-1.00		Pass
HT20	MCS 0	1	100	5500	0.00	7.72	11.00	-1.00		Pass
HT20	MCS 0	1	116	5580	0.00	7.88	11.00	-1.00		Pass
HT20	MCS 0	1	140	5700	0.00	8.05	11.00	-1.00		Pass
HT20	MCS0	1	144	5720	0.00	7.90	11.00	-1.00		Pass
HT40	MCS 0	1	102	5510	0.00	3.32	11.00	-1.00		Pass
HT40	MCS 0	1	110	5550	0.00	3.29	11.00	-1.00		Pass
HT40	MCS 0	1	134	5670	0.00	3.70	11.00	-1.00		Pass
HT40	MCS0	1	142	5710	0.00	3.39	11.00	-1.00		Pass
VHT80	MCS 0	1	106	5530	0.00	-1.19	11.00	-1.00		Pass
VHT80	MCS0	1	138	5690	0.00	-1.29	11.00	-1.00		Pass

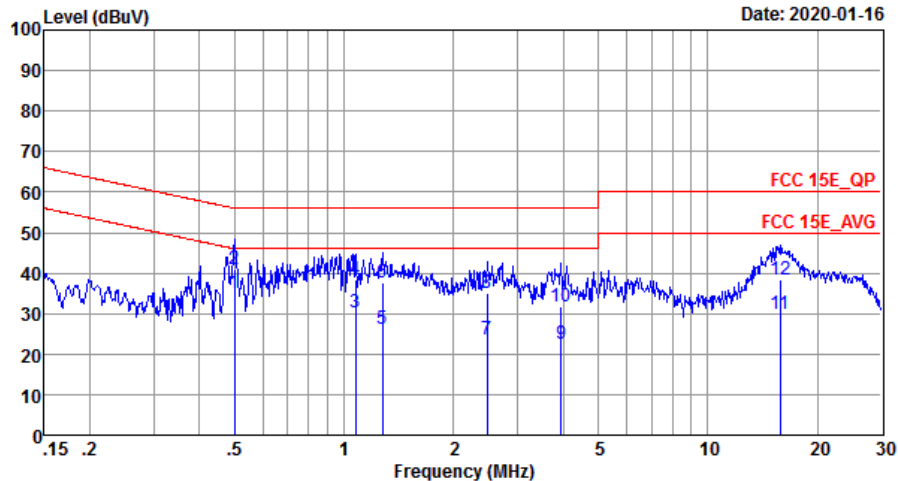


Appendix B. AC Conducted Emission Test Results





Test Engineer :	Dalin Liu	Temperature :	22~25℃
		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 : C001-SZ
Condition: FCC 15E QP LISN 20190719 N NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1 *	0.50	35.08	-10.93	46.01	25.00	0.02	10.06	Average
2	0.50	41.08	-14.93	56.01	31.00	0.02	10.06	QP
3	1.08	30.10	-15.90	46.00	20.00	0.05	10.05	Average
4	1.08	38.40	-17.60	56.00	28.30	0.05	10.05	QP
5	1.28	26.30	-19.70	46.00	16.20	0.05	10.05	Average
6	1.28	37.60	-18.40	56.00	27.50	0.05	10.05	QP
7	2.47	23.51	-22.49	46.00	13.40	0.04	10.07	Average
8	2.47	35.11	-20.89	56.00	25.00	0.04	10.07	QP
9	3.94	22.48	-23.52	46.00	12.30	0.05	10.13	Average
10	3.94	31.78	-24.22	56.00	21.60	0.05	10.13	QP
11	15.80	29.96	-20.04	50.00	19.30	0.37	10.29	Average
12	15.80	38.36	-21.64	60.00	27.70	0.37	10.29	QP

Note:

1. Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
2. Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)



Appendix C. 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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 36 5180MHz		5145.6	62.02	-11.98	74	45.94	34.9	14.28	33.1	242	78	P	H
		5150	50.77	-3.23	54	34.69	34.9	14.28	33.1	242	78	A	H
	*	5180	103.83	-	-	87.87	34.9	14.16	33.1	242	78	P	H
		5180	97.85	-	-	81.89	34.9	14.16	33.1	242	78	A	H
		5145.6	53.98	-20.02	74	37.9	34.9	14.28	33.1	371	345	P	V
		5150	44.15	-9.85	54	28.07	34.9	14.28	33.1	371	345	A	V
	*	5180	96.01	-	-	80.05	34.9	14.16	33.1	371	345	P	V
		5180	90.52	-	-	74.56	34.9	14.16	33.1	371	345	A	V
802.11a CH 44 5220MHz		5089.44	54.95	-19.05	74	38.74	34.9	14.41	33.1	226	79	P	H
		5149.5	43.85	-10.15	54	27.77	34.9	14.28	33.1	226	79	A	H
	*	5220	104.48	-	-	88.65	34.9	14.03	33.1	226	79	P	H
		5220	97.68	-	-	81.85	34.9	14.03	33.1	226	79	A	H
		5374.08	53.29	-20.71	74	36.88	34.9	14.61	33.1	226	79	P	H
		5386.08	43.35	-10.65	54	26.94	34.9	14.61	33.1	226	79	A	H
		5028.34	53.28	-20.72	74	36.82	34.9	14.66	33.1	328	338	P	V
		5042.9	43.26	-10.74	54	26.93	34.9	14.53	33.1	328	338	A	V
	*	5220	96.34	-	-	80.51	34.9	14.03	33.1	328	338	P	V
		5220	90.92	-	-	75.09	34.9	14.03	33.1	328	338	A	V
		5449.92	53.87	-20.13	74	37.52	34.9	14.55	33.1	328	338	P	V
		5434.8	43.16	-10.84	54	26.81	34.9	14.55	33.1	328	338	A	V



802.11a CH 48 5240MHz		5078.26	54.32	-19.68	74	38.11	34.9	14.41	33.1	241	76	P	H
		5074.1	43.53	-10.47	54	27.2	34.9	14.53	33.1	241	76	A	H
	*	5240	104.89	-	-	88.91	34.9	14.18	33.1	241	76	P	H
		5240	98.97	-	-	82.99	34.9	14.18	33.1	241	76	A	H
		5382.48	53.61	-20.39	74	37.2	34.9	14.61	33.1	241	76	P	H
		5406.96	43.47	-10.53	54	26.91	34.9	14.76	33.1	241	76	A	H
		5081.12	53.77	-20.23	74	37.56	34.9	14.41	33.1	344	326	P	V
		5042.64	43.27	-10.73	54	26.94	34.9	14.53	33.1	344	326	A	V
	*	5240	97.14	-	-	81.16	34.9	14.18	33.1	344	326	P	V
		5240	91.34	-	-	75.36	34.9	14.18	33.1	344	326	A	V
		5385.36	53.21	-20.79	74	36.8	34.9	14.61	33.1	344	326	P	V
		5459.76	43.17	-10.83	54	26.82	34.9	14.55	33.1	344	326	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 36 5180MHz		10360	50.9	-17.3	68.2	49.83	39.61	20.45	58.99	152	260	P	H
		15540	48.24	-25.76	74	46.2	37.81	23.16	58.93	189	238	P	H
		10360	48.18	-20.02	68.2	47.11	39.61	20.45	58.99	152	260	P	V
		15540	49.77	-24.23	74	47.73	37.81	23.16	58.93	189	238	P	V
802.11a CH 44 5220MHz		10440	49.32	-18.88	68.2	48.02	39.75	20.47	58.92	150	230	P	H
		15660	50.45	-23.55	74	48.75	37.5	23.26	59.06	160	225	P	H
		10440	50.31	-17.89	68.2	49.01	39.75	20.47	58.92	150	230	P	V
		15660	49.85	-24.15	74	48.15	37.5	23.26	59.06	160	225	P	V
802.11a CH 48 5240MHz		10480	50.34	-17.86	68.2	48.86	39.86	20.48	58.86	150	290	P	H
		15720	50.2	-23.8	74	48.7	37.32	23.3	59.12	150	291	P	H
		10480	51.8	-16.4	68.2	50.32	39.86	20.48	58.86	150	289	P	V
		15720	50.95	-23.05	74	49.45	37.32	23.3	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	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		5149.76	63.01	-10.99	74	46.93	34.9	14.28	33.1	244	82	P	H
		5150	50.49	-3.51	54	34.41	34.9	14.28	33.1	244	82	A	H
	*	5180	103.55	-	-	87.59	34.9	14.16	33.1	244	82	P	H
		5180	97.38	-	-	81.42	34.9	14.16	33.1	244	82	A	H
		5149.99	56.58	-17.42	74	40.5	34.9	14.28	33.1	360	49	P	V
		5150	44.28	-9.72	54	28.2	34.9	14.28	33.1	360	49	A	V
	*	5180	95.35	-	-	79.39	34.9	14.16	33.1	360	49	P	V
		5180	89.81	-	-	73.85	34.9	14.16	33.1	360	49	A	V
802.11n HT20 CH 44 5220MHz		5027.56	55.34	-18.66	74	38.88	34.9	14.66	33.1	255	73	P	H
		5149.5	44.03	-9.97	54	27.95	34.9	14.28	33.1	255	73	A	H
	*	5220	104.16	-	-	88.33	34.9	14.03	33.1	255	73	P	H
		5220	97.69	-	-	81.86	34.9	14.03	33.1	255	73	A	H
		5404.8	53.36	-20.64	74	36.8	34.9	14.76	33.1	255	73	P	H
		5385.6	43.67	-10.33	54	27.26	34.9	14.61	33.1	255	73	A	H
		5042.12	54.54	-19.46	74	38.21	34.9	14.53	33.1	363	17	P	V
		5045.24	43.56	-10.44	54	27.23	34.9	14.53	33.1	363	17	A	V
	*	5220	97.02	-	-	81.19	34.9	14.03	33.1	363	17	P	V
		5220	90.36	-	-	74.53	34.9	14.03	33.1	363	17	A	V
		5364.48	54.13	-19.87	74	37.72	34.9	14.61	33.1	363	17	P	V
		5438.88	43.43	-10.57	54	27.08	34.9	14.55	33.1	363	17	A	V



802.11n HT20 CH 48 5240MHz		5046.28	53.83	-20.17	74	37.5	34.9	14.53	33.1	255	83	P	H
		5070.98	43.9	-10.1	54	27.57	34.9	14.53	33.1	255	83	A	H
	*	5240	104.38	-	-	88.4	34.9	14.18	33.1	255	83	P	H
		5240	97.6	-	-	81.62	34.9	14.18	33.1	255	83	A	H
		5387.76	53.97	-20.03	74	37.41	34.9	14.76	33.1	255	83	P	H
		5402.4	43.65	-10.35	54	27.09	34.9	14.76	33.1	255	83	A	H
		5075.92	53.49	-20.51	74	37.28	34.9	14.41	33.1	360	14	P	V
		5043.94	43.53	-10.47	54	27.2	34.9	14.53	33.1	360	14	A	V
	*	5240	96.44	-	-	80.46	34.9	14.18	33.1	360	14	P	V
		5240	90.07	-	-	74.09	34.9	14.18	33.1	360	14	A	V
		5399.04	53.34	-20.66	74	36.78	34.9	14.76	33.1	360	14	P	V
		5400.48	43.48	-10.52	54	26.92	34.9	14.76	33.1	360	14	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n		10360	53.58	-14.62	68.2	52.51	39.61	20.45	58.99	152	260	P	H
HT20		15540	50.82	-23.18	74	48.78	37.81	23.16	58.93	189	238	P	H
CH 36		10360	51.94	-16.26	68.2	50.87	39.61	20.45	58.99	152	260	P	V
5180MHz		15540	50.19	-23.81	74	48.15	37.81	23.16	58.93	189	238	P	V
802.11n		10440	50.22	-17.98	68.2	48.92	39.75	20.47	58.92	150	230	P	H
HT20		15660	50.77	-23.23	74	49.07	37.5	23.26	59.06	160	225	P	H
CH 44		10440	53.53	-14.67	68.2	52.23	39.75	20.47	58.92	150	230	P	V
5220MHz		15660	50.61	-23.39	74	48.91	37.5	23.26	59.06	160	225	P	V
802.11n		10480	49.08	-19.12	68.2	47.6	39.86	20.48	58.86	150	289	P	H
HT20		15720	47.43	-26.57	74	45.93	37.32	23.3	59.12	150	291	P	H
CH 48		10480	48.93	-19.27	68.2	47.45	39.86	20.48	58.86	150	289	P	V
5240MHz		15720	48.35	-25.65	74	46.85	37.32	23.3	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	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		5134.16	52.45	-21.55	74	38.02	33.85	13.68	33.1	122	131	P	H
		5141.18	44.05	-9.95	54	29.6	33.87	13.68	33.1	122	131	A	H
	*	5190	86.04	-	-	71.45	33.92	13.77	33.1	122	131	P	H
		5190	80.94	-	-	66.35	33.92	13.77	33.1	122	131	A	H
		5358.08	53.89	-20.11	74	38.76	34.13	14.1	33.1	122	131	P	H
		5402.88	44.35	-9.65	54	29.09	34.2	14.16	33.1	122	131	A	H
		5041.34	52.21	-21.79	74	38.06	33.74	13.51	33.1	130	181	P	V
		5047.06	44.64	-9.36	54	30.49	33.74	13.51	33.1	130	181	A	V
	*	5190	91.29	-	-	76.7	33.92	13.77	33.1	130	181	P	V
		5190	85.07	-	-	70.48	33.92	13.77	33.1	130	181	A	V
		5441.8	51.71	-22.29	74	36.3	34.24	14.27	33.1	130	181	P	V
		5366.48	44.26	-9.74	54	29.11	34.15	14.1	33.1	130	181	A	V
802.11n HT40 CH 46 5230MHz		5140.14	56.33	-17.67	74	40.25	34.9	14.28	33.1	240	81	P	H
		5150	44.55	-9.45	54	28.47	34.9	14.28	33.1	240	81	A	H
	*	5230	99.03	-	-	83.2	34.9	14.03	33.1	240	81	P	H
		5230	93.18	-	-	77.35	34.9	14.03	33.1	240	81	A	H
		5426.16	54.06	-19.94	74	37.5	34.9	14.76	33.1	240	81	P	H
		5361.12	43.63	-10.37	54	27.22	34.9	14.61	33.1	240	81	A	H
		5088.4	53.74	-20.26	74	37.53	34.9	14.41	33.1	291	10	P	V
		5042.64	43.52	-10.48	54	27.19	34.9	14.53	33.1	291	10	A	V
	*	5230	91.25	-	-	75.42	34.9	14.03	33.1	291	10	P	V
		5230	86.19	-	-	70.36	34.9	14.03	33.1	291	10	A	V
		5372.16	53.33	-20.67	74	36.92	34.9	14.61	33.1	291	10	P	V
		5433.12	43.47	-10.53	54	27.12	34.9	14.55	33.1	291	10	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	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		10380	48.07	-20.13	68.2	46.94	39.64	20.46	58.97	150	360	P	H
HT40		15570	46.65	-27.35	74	44.7	37.72	23.2	58.97	155	360	P	H
CH 38		10380	49.52	-18.68	68.2	48.39	39.64	20.46	58.97	150	360	P	V
5190MHz		15570	47.72	-26.28	74	45.77	37.72	23.2	58.97	155	360	P	V
802.11n		10460	47.97	-20.23	68.2	46.6	39.79	20.48	58.9	150	360	P	H
HT40		15690	47.2	-26.8	74	45.58	37.41	23.3	59.09	150	225	P	H
CH 46		10460	50.18	-18.02	68.2	48.81	39.79	20.48	58.9	150	360	P	V
5230MHz		15690	49.61	-24.39	74	47.99	37.41	23.3	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	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		5130.52	55.42	-18.58	74	39.34	34.9	14.28	33.1	233	73	P	H
		5149.76	46.81	-7.19	54	30.73	34.9	14.28	33.1	233	73	A	H
	*	5210	92.21	-	-	76.38	34.9	14.03	33.1	233	73	P	H
		5210	86.19	-	-	70.36	34.9	14.03	33.1	233	73	A	H
		5363.76	53.63	-20.37	74	37.22	34.9	14.61	33.1	233	73	P	H
		5398.56	43.49	-10.51	54	26.93	34.9	14.76	33.1	233	73	A	H
		5089.7	53.72	-20.28	74	37.51	34.9	14.41	33.1	379	49	P	V
		5044.72	43.54	-10.46	54	27.21	34.9	14.53	33.1	379	49	A	V
	*	5210	85.16	-	-	69.33	34.9	14.03	33.1	379	49	P	V
		5210	79.25	-	-	63.42	34.9	14.03	33.1	379	49	A	V
		5432.4	53.36	-20.64	74	37.01	34.9	14.55	33.1	379	49	P	V
		5459.76	43.44	-10.56	54	27.09	34.9	14.55	33.1	379	49	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

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

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		10420	48.39	-19.81	68.2	47.13	39.72	20.47	58.93	150	220	P	H
VHT80		15630	48.59	-25.41	74	46.86	37.54	23.23	59.04	213	256	P	H
CH 42		10420	51.22	-16.98	68.2	49.96	39.72	20.47	58.93	100	220	P	V
5210MHz		15630	50.09	-23.91	74	48.36	37.54	23.23	59.04	125	130	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 2 - 5250~5350MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 52 5260MHz		5103.48	53.55	-20.45	74	37.34	34.9	14.41	33.1	253	65	P	H
		5092.82	43.54	-10.46	54	27.33	34.9	14.41	33.1	253	65	P	H
		5260	104.09	-	-	88.11	34.9	14.18	33.1	253	65	A	H
	*	5260	97.57	-	-	81.59	34.9	14.18	33.1	253	65	P	H
		5378.88	53.73	-20.27	74	37.32	34.9	14.61	33.1	253	65	A	H
		5428.8	43.5	-10.5	54	27.15	34.9	14.55	33.1	253	65	P	H
		5103.48	53.16	-20.84	74	36.95	34.9	14.41	33.1	114	219	P	V
		5046.02	43.25	-10.75	54	26.92	34.9	14.53	33.1	114	219	P	V
		5260	95.14	-	-	79.16	34.9	14.18	33.1	114	219	A	V
	*	5260	90.3	-	-	74.32	34.9	14.18	33.1	114	219	P	V
		5413.44	53.49	-20.51	74	36.93	34.9	14.76	33.1	114	219	A	V
		5434.56	43.17	-10.83	54	26.82	34.9	14.55	33.1	114	219	P	V
802.11a CH 60 5300MHz	*	5049	52.55	-21.45	74	36.22	34.9	14.53	33.1	248	64	P	H
		5044.8	43.39	-10.61	54	27.06	34.9	14.53	33.1	248	64	P	H
		5300	104.6	-	-	88.48	34.9	14.32	33.1	248	64	A	H
		5300	97.21	-	-	81.09	34.9	14.32	33.1	248	64	P	H
		5351.76	56.85	-17.15	74	40.44	34.9	14.61	33.1	248	64	A	H
		5350.08	45.04	-8.96	54	28.63	34.9	14.61	33.1	248	64	P	H
	*	5053.2	53.03	-20.97	74	36.7	34.9	14.53	33.1	117	218	P	V
		5042.7	43.23	-10.77	54	26.9	34.9	14.53	33.1	117	218	P	V
		5300	95.47	-	-	79.35	34.9	14.32	33.1	117	218	A	V
		5300	90.27	-	-	74.15	34.9	14.32	33.1	117	218	P	V
		5384.16	54.06	-19.94	74	37.65	34.9	14.61	33.1	117	218	A	V
		5350.08	43.2	-10.8	54	26.79	34.9	14.61	33.1	117	218	P	V



Band 2 5250~5350MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 52 5260MHz		10520	50.82	-17.38	68.2	49.25	39.9	20.49	58.82	150	220	P	H
		15780	50.52	-23.48	74	49.15	37.18	23.37	59.18	159	345	P	H
		10520	51.18	-17.02	68.2	49.61	39.9	20.49	58.82	150	220	P	V
		15780	50.55	-23.45	74	49.18	37.18	23.37	59.18	159	345	P	V
802.11a CH 60 5300MHz		10600	50.3	-23.7	74	48.6	39.92	20.51	58.73	185	215	P	H
		15900	50.1	-23.9	74	49.06	36.87	23.47	59.3	196	190	P	H
		10600	50.6	-23.4	74	48.9	39.92	20.51	58.73	185	215	P	V
		15900	50.04	-23.96	74	49	36.87	23.47	59.3	196	190	P	V
802.11a CH 64 5320MHz		10640	50.31	-23.69	74	48.54	39.93	20.53	58.69	152	135	P	H
		15960	50.54	-23.46	74	49.68	36.69	23.54	59.37	173	245	P	H
		10640	50.06	-23.94	74	48.29	39.93	20.53	58.69	152	135	P	V
		15960	50.32	-23.68	74	49.46	36.69	23.54	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	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		5075.14	55.14	-18.86	74	38.81	34.9	14.53	33.1	250	78	P	H
		5091	43.86	-10.14	54	27.65	34.9	14.41	33.1	250	78	A	H
	*	5260	104.08	-	-	88.1	34.9	14.18	33.1	250	78	P	H
		5260	97.54	-	-	81.56	34.9	14.18	33.1	250	78	A	H
		5425.2	54.45	-19.55	74	37.89	34.9	14.76	33.1	250	78	P	H
		5350.08	43.74	-10.26	54	27.33	34.9	14.61	33.1	250	78	A	H
		5039.78	53.77	-20.23	74	37.44	34.9	14.53	33.1	361	15	P	V
		5045.24	43.54	-10.46	54	27.21	34.9	14.53	33.1	361	15	A	V
	*	5260	97.42	-	-	81.44	34.9	14.18	33.1	361	15	P	V
		5260	91.6	-	-	75.62	34.9	14.18	33.1	361	15	A	V
		5362.08	53.31	-20.69	74	36.9	34.9	14.61	33.1	361	15	P	V
		5432.88	43.48	-10.52	54	27.13	34.9	14.55	33.1	361	15	A	V
802.11n HT20 CH 60 5300MHz		5031.85	52.89	-21.11	74	36.43	34.9	14.66	33.1	251	68	P	H
		5045.15	43.68	-10.32	54	27.35	34.9	14.53	33.1	251	68	A	H
	*	5300	104.13	-	-	88.01	34.9	14.32	33.1	251	68	P	H
		5300	97.98	-	-	81.86	34.9	14.32	33.1	251	68	A	H
		5353.44	59.11	-14.89	74	42.7	34.9	14.61	33.1	251	68	P	H
		5350.08	47.28	-6.72	54	30.87	34.9	14.61	33.1	251	68	A	H
		5060.9	54.29	-19.71	74	37.96	34.9	14.53	33.1	354	15	P	V
		5044.1	43.56	-10.44	54	27.23	34.9	14.53	33.1	354	15	A	V
	*	5300	97.29	-	-	81.17	34.9	14.32	33.1	354	15	P	V
		5300	91.07	-	-	74.95	34.9	14.32	33.1	354	15	A	V
		5428.56	54.91	-19.09	74	38.56	34.9	14.55	33.1	354	15	P	V
		5350.32	43.64	-10.36	54	27.23	34.9	14.61	33.1	354	15	A	V



802.11n HT20 CH 64 5320MHz	*	5320	103.69	-	-	87.42	34.9	14.47	33.1	231	70	P	H
		5320	97.32	-	-	81.05	34.9	14.47	33.1	231	70	A	H
		5355.2	63.26	-10.74	74	46.85	34.9	14.61	33.1	231	70	P	H
		5350.08	50.54	-3.46	54	34.13	34.9	14.61	33.1	231	70	A	H
	*	5320	97.14	-	-	80.87	34.9	14.47	33.1	352	13	P	V
		5320	90.95	-	-	74.68	34.9	14.47	33.1	352	13	A	V
		5350.4	56.95	-17.05	74	40.54	34.9	14.61	33.1	352	13	P	V
		5350.08	45.87	-8.13	54	29.46	34.9	14.61	33.1	352	13	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 2 5250~5350MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n		10520	49.51	-18.69	68.2	47.94	39.9	20.49	58.82	150	220	P	H
HT20		15780	49.42	-24.58	74	48.05	37.18	23.37	59.18	159	345	P	H
CH 52		10520	50.17	-18.03	68.2	48.6	39.9	20.49	58.82	150	220	P	V
5260MHz		15780	50.01	-23.99	74	48.64	37.18	23.37	59.18	159	345	P	V
802.11n		10600	48.75	-25.25	74	47.05	39.92	20.51	58.73	185	215	P	H
HT20		15900	47.49	-26.51	74	46.45	36.87	23.47	59.3	196	190	P	H
CH 60		10600	47.64	-26.36	74	45.94	39.92	20.51	58.73	185	215	P	V
5300MHz		15900	47.96	-26.04	74	46.92	36.87	23.47	59.3	196	190	P	V
802.11n		10640	50.29	-23.71	74	48.52	39.93	20.53	58.69	152	135	P	H
HT20		15960	50.8	-23.2	74	49.94	36.69	23.54	59.37	173	245	P	H
CH 64		10640	50.77	-23.23	74	49	39.93	20.53	58.69	152	135	P	V
5320MHz		15960	50.15	-23.85	74	49.29	36.69	23.54	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	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		5106.34	54.88	-19.12	74	38.67	34.9	14.41	33.1	239	80	P	H
		5095.16	43.64	-10.36	54	27.43	34.9	14.41	33.1	239	80	A	H
	*	5270	99.98	-	-	84	34.9	14.18	33.1	239	80	P	H
		5270	93.61	-	-	77.63	34.9	14.18	33.1	239	80	A	H
		5362.32	54.06	-19.94	74	37.65	34.9	14.61	33.1	239	80	P	H
		5350.8	44.34	-9.66	54	27.93	34.9	14.61	33.1	239	80	A	H
		5056.42	54.32	-19.68	74	37.99	34.9	14.53	33.1	357	14	P	V
		5042.9	43.5	-10.5	54	27.17	34.9	14.53	33.1	357	14	A	V
	*	5270	92.34	-	-	76.36	34.9	14.18	33.1	357	14	P	V
		5270	87.63	-	-	71.65	34.9	14.18	33.1	357	14	A	V
		5353.2	53.71	-20.29	74	37.3	34.9	14.61	33.1	357	14	P	V
		5429.76	43.51	-10.49	54	27.16	34.9	14.55	33.1	357	14	A	V
802.11n HT40 CH 62 5310MHz		5010.15	53.57	-20.43	74	37.11	34.9	14.66	33.1	234	71	P	H
		5042	43.56	-10.44	54	27.23	34.9	14.53	33.1	234	71	A	H
	*	5310	98.51	-	-	82.24	34.9	14.47	33.1	234	71	P	H
		5310	91.63	-	-	75.36	34.9	14.47	33.1	234	71	A	H
		5351.52	62.66	-11.34	74	46.25	34.9	14.61	33.1	234	71	P	H
		5351.04	50.02	-3.98	54	33.61	34.9	14.61	33.1	234	71	A	H
		5026.25	53.37	-20.63	74	36.91	34.9	14.66	33.1	355	13	P	V
		5043.75	43.5	-10.5	54	27.17	34.9	14.53	33.1	355	13	A	V
	*	5310	92.2	-	-	75.93	34.9	14.47	33.1	355	13	P	V
		5310	86.39	-	-	70.12	34.9	14.47	33.1	355	13	A	V
		5350.8	59.83	-14.17	74	43.42	34.9	14.61	33.1	355	13	P	V
		5350.08	45.93	-8.07	54	29.52	34.9	14.61	33.1	355	13	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	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	48.62	-19.58	68.2	47.01	39.91	20.5	58.8	150	220	P	H
		15810	48.2	-25.8	74	46.92	37.09	23.4	59.21	168	345	P	H
		10540	48.89	-19.31	68.2	47.28	39.91	20.5	58.8	150	220	P	V
		15810	47.84	-26.16	74	46.56	37.09	23.4	59.21	168	345	P	V
802.11n HT40 CH 62 5310MHz		10620	46.62	-27.38	74	44.88	39.92	20.53	58.71	150	220	P	H
		15930	47.9	-26.1	74	46.95	36.78	23.5	59.33	160	100	P	H
		10620	48.35	-25.65	74	46.61	39.92	20.53	58.71	150	220	P	V
		15930	48.93	-25.07	74	47.98	36.78	23.5	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	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		5073.32	55.25	-18.75	74	38.92	34.9	14.53	33.1	232	65	P	H
		5043.68	43.55	-10.45	54	27.22	34.9	14.53	33.1	232	65	A	H
	*	5290	92.69	-	-	76.57	34.9	14.32	33.1	232	65	P	H
		5290	87.35	-	-	71.23	34.9	14.32	33.1	232	65	A	H
		5358.96	56.76	-17.24	74	40.35	34.9	14.61	33.1	232	65	P	H
		5350.32	45.87	-8.13	54	29.46	34.9	14.61	33.1	232	65	A	H
		5032.24	55.88	-18.12	74	39.42	34.9	14.66	33.1	376	14	P	V
		5041.86	43.6	-10.4	54	27.27	34.9	14.53	33.1	376	14	A	V
	*	5290	87.2	-	-	71.08	34.9	14.32	33.1	376	14	P	V
		5290	81.97	-	-	65.85	34.9	14.32	33.1	376	14	A	V
		5455.68	53.83	-20.17	74	37.48	34.9	14.55	33.1	376	14	P	V
		5401.44	43.62	-10.38	54	27.06	34.9	14.76	33.1	376	14	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**Band 2 5250~5350MHz****WIFI 802.11ac VHT80 (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		10580	49.18	-19.02	68.2	47.5	39.92	20.51	58.75	159	360	P	H
VHT80		15870	49.79	-24.21	74	48.73	36.91	23.43	59.28	159	0	P	H
CH 58		10580	45.83	-22.37	68.2	44.15	39.92	20.51	58.75	159	360	P	V
5290MHz		15870	46.33	-27.67	74	45.27	36.91	23.43	59.28	159	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 3 - 5470~5725MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 100 5500MHz		5457.84	56.08	-17.92	74	39.73	34.9	14.55	33.1	104	270	P	H
		5469.84	59.27	-8.93	68.2	43.13	34.9	14.34	33.1	104	270	P	H
		5459.92	45.01	-8.99	54	28.66	34.9	14.55	33.1	104	270	A	H
		5500	104.37	-	-	88.23	34.9	14.34	33.1	104	270	P	H
		5500	97.65	-	-	81.51	34.9	14.34	33.1	104	270	A	H
		5433.52	53.45	-20.55	74	37.1	34.9	14.55	33.1	364	342	P	V
		5468.88	56.55	-11.65	68.2	40.41	34.9	14.34	33.1	364	342	P	V
		5459.92	44.13	-9.87	54	27.78	34.9	14.55	33.1	364	342	A	V
		5500	96.3	-	-	80.16	34.9	14.34	33.1	364	342	P	V
		5500	91.26	-	-	75.12	34.9	14.34	33.1	364	342	A	V
802.11a CH 116 5580MHz		5399.2	53.14	-20.86	74	36.58	34.9	14.76	33.1	242	59	P	H
		5466.64	53.72	-14.48	68.2	37.58	34.9	14.34	33.1	242	59	P	H
		5418.4	43.39	-10.61	54	26.83	34.9	14.76	33.1	242	59	A	H
		5580	104.11	-	-	88.25	35.04	13.92	33.1	242	59	P	H
		5580	97.07	-	-	81.21	35.04	13.92	33.1	242	59	A	H
		5763.74	53.9	-14.3	68.2	37.6	35.42	13.98	33.1	242	59	P	H
		5389.84	54.56	-19.44	74	38	34.9	14.76	33.1	372	337	P	V
		5470	52.18	-16.02	68.2	36.04	34.9	14.34	33.1	372	337	P	V
		5419.36	43.17	-10.83	54	26.61	34.9	14.76	33.1	372	337	A	V
		5580	97.16	-	-	81.3	35.04	13.92	33.1	372	337	P	V
		5580	91.22	-	-	75.36	35.04	13.92	33.1	372	337	A	V
		5756.81	51.41	-16.79	68.2	35.11	35.42	13.98	33.1	372	337	P	V



802.11a CH 140 5700MHz		5700	104.56	-	-	88.47	35.28	13.91	33.1	241	58	P	H
		5700	97.35	-	-	81.26	35.28	13.91	33.1	241	58	A	H
		5725.4	64.83	-3.37	68.2	48.67	35.35	13.91	33.1	241	58	P	H
		5700	96.74	-	-	80.65	35.28	13.91	33.1	373	325	P	V
		5700	91.05	-	-	74.96	35.28	13.91	33.1	373	325	A	V
		5726.92	57.15	-11.05	68.2	40.99	35.35	13.91	33.1	373	325	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	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 100 5500MHz		11000	50.94	-23.06	74	48.62	40	20.62	58.3	163	230	P	H
		16500	57.21	-10.99	68.2	54.56	37.5	23.99	58.84	178	296	P	H
		11000	50.03	-23.97	74	47.71	40	20.62	58.3	163	230	P	V
		16500	56.93	-11.27	68.2	54.28	37.5	23.99	58.84	178	296	P	V
802.11a CH 116 5580MHz		11160	50.25	-23.75	74	47.58	40.1	20.68	58.11	170	200	P	H
		16740	58.46	-9.74	68.2	53.96	38.85	24.23	58.58	156	350	P	H
		11160	50.58	-23.42	74	47.91	40.1	20.68	58.11	170	200	P	V
		16740	57.42	-10.78	68.2	52.92	38.85	24.23	58.58	156	350	P	V
802.11a CH 140 5700MHz		11400	50.1	-23.9	74	46.96	40.24	20.75	57.85	157	285	P	H
		17100	49.52	-18.68	68.2	42.5	40.64	24.54	58.16	165	246	P	H
		11400	50.31	-23.69	74	47.17	40.24	20.75	57.85	157	285	P	V
		17100	49.99	-18.21	68.2	42.97	40.64	24.54	58.16	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	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		5459.12	58.75	-15.25	74	42.4	34.9	14.55	33.1	263	64	P	H
		5468.72	64.57	-3.63	68.2	48.43	34.9	14.34	33.1	263	64	P	H
		5460	47.6	-6.4	54	31.25	34.9	14.55	33.1	263	64	A	H
	*	5500	104.34	-	-	88.2	34.9	14.34	33.1	263	64	P	H
		5500	97.83	-	-	81.69	34.9	14.34	33.1	263	64	A	H
		5429.04	53.76	-20.24	74	37.41	34.9	14.55	33.1	390	68	P	V
		5465.52	56.03	-12.17	68.2	39.89	34.9	14.34	33.1	390	68	P	V
		5459.92	44.12	-9.88	54	27.77	34.9	14.55	33.1	390	68	A	V
	*	5500	96.56	-	-	80.42	34.9	14.34	33.1	390	68	P	V
		5500	90.35	-	-	74.21	34.9	14.34	33.1	390	68	A	V
802.11n HT20 CH 116 5580MHz		5149.24	62.37	-11.63	74	46.29	34.9	14.28	33.1	241	77	P	H
		5149.76	49.73	-4.27	54	33.65	34.9	14.28	33.1	241	77	A	H
	*	5190	98.61	-	-	82.65	34.9	14.16	33.1	241	77	P	H
		5190	92.81	-	-	76.85	34.9	14.16	33.1	241	77	A	H
		5376.28	54.48	-19.52	74	38.07	34.9	14.61	33.1	241	77	P	H
		5437.6	43.53	-10.47	54	27.18	34.9	14.55	33.1	241	77	A	H
		5149.99	57.23	-16.77	74	41.15	34.9	14.28	33.1	396	115	P	V
		5150	46.01	-7.99	54	29.93	34.9	14.28	33.1	396	115	A	V
	*	5190	91.18	-	-	75.22	34.9	14.16	33.1	396	115	P	V
		5190	86.21	-	-	70.25	34.9	14.16	33.1	396	115	A	V
		5449.36	52.64	-21.36	74	36.29	34.9	14.55	33.1	396	115	P	V
		5459.16	43.37	-10.63	54	27.02	34.9	14.55	33.1	396	115	A	V



802.11n HT20 CH 140 5700MHz	*	5700	103.91	-	-	87.82	35.28	13.91	33.1	257	64	P	H
		5700	97.84	-	-	81.75	35.28	13.91	33.1	257	64	A	H
		5725.72	64.86	-3.34	68.2	48.7	35.35	13.91	33.1	257	64	P	H
	*	5700	97.3	-	-	81.21	35.28	13.91	33.1	389	21	P	V
		5700	91.05	-	-	74.96	35.28	13.91	33.1	389	21	A	V
		5726.04	61.76	-6.44	68.2	45.6	35.35	13.91	33.1	389	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 HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n		11000	48.52	-25.48	74	46.2	40	20.62	58.3	163	230	P	H
HT20		16500	50.07	-18.13	68.2	47.42	37.5	23.99	58.84	178	296	P	H
CH 100		11000	48.49	-25.51	74	46.17	40	20.62	58.3	163	230	P	V
5500MHz		16500	48.69	-19.51	68.2	46.04	37.5	23.99	58.84	178	296	P	V
802.11n		11160	47.31	-26.69	74	44.64	40.1	20.68	58.11	170	200	P	H
HT20		16740	46.86	-21.34	68.2	42.36	38.85	24.23	58.58	156	350	P	H
CH 116		11160	49.03	-24.97	74	46.36	40.1	20.68	58.11	170	200	P	V
5580MHz		16740	48.15	-20.05	68.2	43.65	38.85	24.23	58.58	156	350	P	V
802.11n		11400	47.41	-26.59	74	44.27	40.24	20.75	57.85	157	285	P	H
HT20		17100	46.92	-21.28	68.2	39.9	40.64	24.54	58.16	165	246	P	H
CH 140		11400	46.34	-27.66	74	43.2	40.24	20.75	57.85	157	285	P	V
5700MHz		17100	46.71	-21.49	68.2	39.69	40.64	24.54	58.16	165	246	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 102 5510MHz		5459.68	58.55	-15.45	74	42.2	34.9	14.55	33.1	264	61	P	H
		5469.28	61.68	-6.52	68.2	45.54	34.9	14.34	33.1	264	61	P	H
		5459.92	47.31	-6.69	54	30.96	34.9	14.55	33.1	264	61	A	H
	*	5510	99.7	-	-	83.77	34.9	14.13	33.1	264	61	P	H
		5510	92.79	-	-	76.86	34.9	14.13	33.1	264	61	A	H
		5745.155	51.95	-16.25	68.2	35.69	35.38	13.98	33.1	264	61	P	H
		5449.84	55.77	-18.23	74	39.42	34.9	14.55	33.1	277	10	P	V
		5468.8	60.77	-7.43	68.2	44.63	34.9	14.34	33.1	277	10	P	V
		5459.92	45.51	-8.49	54	29.16	34.9	14.55	33.1	277	10	A	V
	*	5510	91.79	-	-	75.86	34.9	14.13	33.1	277	10	P	V
		5510	86.29	-	-	70.36	34.9	14.13	33.1	277	10	A	V
		5727.2	51.82	-16.38	68.2	35.66	35.35	13.91	33.1	277	10	P	V
802.11n HT40 CH 110 5550MHz		5420.08	54.15	-19.85	74	37.59	34.9	14.76	33.1	243	66	P	H
		5470	54.1	-14.1	68.2	37.96	34.9	14.34	33.1	243	66	P	H
		5459.92	44.23	-9.77	54	27.88	34.9	14.55	33.1	243	66	A	H
	*	5550	99.18	-	-	83.36	35	13.92	33.1	243	66	P	H
		5550	92.24	-	-	76.42	35	13.92	33.1	243	66	A	H
		5727.2	52.52	-15.68	68.2	36.36	35.35	13.91	33.1	243	66	P	H
		5378.56	54.5	-19.5	74	38.09	34.9	14.61	33.1	277	4	P	V
		5462.08	52.87	-15.33	68.2	36.52	34.9	14.55	33.1	277	4	P	V
		5459.2	43.49	-10.51	54	27.14	34.9	14.55	33.1	277	4	A	V
	*	5550	92.03	-	-	76.21	35	13.92	33.1	277	4	P	V
		5550	86.14	-	-	70.32	35	13.92	33.1	277	4	A	V
		5760.275	53.07	-15.13	68.2	36.77	35.42	13.98	33.1	277	4	P	V



802.11n HT40 CH 134 5670MHz		5439.6	52.96	-21.04	74	36.61	34.9	14.55	33.1	277	60	P	H
		5461.65	52.42	-15.78	68.2	36.07	34.9	14.55	33.1	277	60	P	H
		5429.45	43.49	-10.51	54	27.14	34.9	14.55	33.1	277	60	A	H
	*	5670	99	-	-	83.01	35.24	13.85	33.1	277	60	P	H
		5670	92.18	-	-	76.19	35.24	13.85	33.1	277	60	A	H
		5726.5	54.95	-13.25	68.2	38.79	35.35	13.91	33.1	277	60	P	H
		5451.85	52.63	-21.37	74	36.28	34.9	14.55	33.1	276	50	P	V
		5464.8	53.09	-15.11	68.2	36.74	34.9	14.55	33.1	276	50	P	V
		5426.65	43.4	-10.6	54	27.05	34.9	14.55	33.1	276	50	A	V
	*	5670	92.73	-	-	76.74	35.24	13.85	33.1	276	50	P	V
		5670	87.35	-	-	71.36	35.24	13.85	33.1	276	50	A	V
		5728.775	53.96	-14.24	68.2	37.8	35.35	13.91	33.1	276	50	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	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n		11020	46.92	-27.08	74	44.55	40.01	20.64	58.28	170	230	P	H
HT40		16530	47.62	-20.58	68.2	44.71	37.69	24.02	58.8	160	300	P	H
CH 102		11020	46.84	-27.16	74	44.47	40.01	20.64	58.28	170	230	P	V
5510MHz		16530	48.01	-20.19	68.2	45.1	37.69	24.02	58.8	160	300	P	V
802.11n		11100	49.17	-24.83	74	46.64	40.06	20.66	58.19	150	200	P	H
HT40		16650	48.11	-20.09	68.2	44.28	38.37	24.13	58.67	180	350	P	H
CH 110		11100	48.66	-25.34	74	46.13	40.06	20.66	58.19	150	200	P	V
5550MHz		16650	48.28	-19.92	68.2	44.45	38.37	24.13	58.67	180	350	P	V
802.11n		11340	49	-25	74	46.01	40.2	20.72	57.93	200	360	P	H
HT40		17010	49.01	-19.19	68.2	42.46	40.36	24.47	58.28	200	360	P	H
CH 134		11340	47.58	-26.42	74	44.59	40.2	20.72	57.93	200	360	P	V
5670MHz		17010	48.29	-19.91	68.2	41.74	40.36	24.47	58.28	200	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 106 5530MHz		5455.84	55.59	-18.41	74	39.24	34.9	14.55	33.1	257	66	P	H
		5469.04	58.94	-9.26	68.2	42.8	34.9	14.34	33.1	257	66	P	H
		5458.24	45.73	-8.27	54	29.38	34.9	14.55	33.1	257	66	A	H
	*	5530	92.68	-	-	76.72	34.93	14.13	33.1	257	66	P	H
		5530	87.19	-	-	71.23	34.93	14.13	33.1	257	66	A	H
		5732.87	53.72	-14.48	68.2	37.56	35.35	13.91	33.1	257	66	P	H
		5399.2	54.61	-19.39	74	38.05	34.9	14.76	33.1	361	3	P	V
		5462.08	53.39	-14.81	68.2	37.04	34.9	14.55	33.1	361	3	P	V
		5430.16	43.68	-10.32	54	27.33	34.9	14.55	33.1	361	3	A	V
	*	5530	86.47	-	-	70.51	34.93	14.13	33.1	361	3	P	V
		5530	80.81	-	-	64.85	34.93	14.13	33.1	361	3	A	V
		5754.92	52.36	-15.84	68.2	36.06	35.42	13.98	33.1	361	3	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	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		11060	47.23	-26.77	74	44.77	40.04	20.65	58.23	-	-	P	H
VHT80		16590	47.42	-20.78	68.2	44.1	37.98	24.09	58.75	-	-	P	H
CH 106		11060	47.09	-26.91	74	44.63	40.04	20.65	58.23	-	-	P	V
5530MHz		16590	47.93	-20.27	68.2	44.61	37.98	24.09	58.75	-	-	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	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 144 5720MHz		11440	50.24	-23.76	74	47.04	40.26	20.76	57.82	157	285	P	H
		17160	52.47	-15.73	68.2	45.08	40.87	24.58	58.06	142	263	P	H
		11440	50.24	-23.76	74	47.04	40.26	20.76	57.82	157	285	P	V
		17160	51.3	-16.9	68.2	43.91	40.87	24.58	58.06	142	263	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	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 144 5720MHz		11440	50.56	-23.44	74	47.36	40.26	20.76	57.82	157	285	P	H
		17160	49.46	-18.74	68.2	42.07	40.87	24.58	58.06	142	263	P	H
		11440	50.11	-23.89	74	46.91	40.26	20.76	57.82	157	285	P	V
		17160	49.26	-18.94	68.2	41.87	40.87	24.58	58.06	142	263	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n		11420	50.03	-23.97	74	46.86	40.25	20.75	57.83	157	285	P	H
HT40		17130	49.53	-18.67	68.2	42.31	40.75	24.58	58.11	165	246	P	H
CH 142		11420	50.97	-23.03	74	47.8	40.25	20.75	57.83	157	285	P	V
5710MHz		17130	49.11	-19.09	68.2	41.89	40.75	24.58	58.11	165	246	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

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

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		11380	50.92	-23.08	74	47.83	40.23	20.73	57.87	129	236	P	H
VHT80		17070	50.68	-17.52	68.2	43.85	40.53	24.51	58.21	184	227	P	H
CH 138		11380	50.41	-23.59	74	47.32	40.23	20.73	57.87	129	236	P	V
5690MHz		17070	50.73	-17.47	68.2	43.9	40.53	24.51	58.21	184	227	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

WIFI 802.11a (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a LF		30	24.55	-15.45	40	29.94	24.9	1.01	31.3	150	300	P	H
		93.05	18.67	-24.83	43.5	32.66	15.8	1.76	31.55	-	-	P	H
		157.07	19.52	-23.98	43.5	32.24	16.38	2.28	31.38	-	-	P	H
		428.67	25.06	-20.94	46	30.1	22.69	3.73	31.46	-	-	P	H
		740.04	30.02	-15.98	46	30.14	26.2	4.89	31.21	-	-	P	H
		980.6	30.59	-23.41	54	28.89	27.31	5.63	31.24	-	-	P	H
		33.88	27.48	-12.52	40	35.11	22.9	1.07	31.6	268	135	P	V
		51.34	26.62	-13.38	40	43.03	13.85	1.31	31.57	-	-	P	V
		92.08	24.25	-19.25	43.5	38.45	15.6	1.75	31.55	-	-	P	V
		209.45	21.85	-21.65	43.5	35.06	15.53	2.63	31.37	-	-	P	V
		638.19	29.98	-16.02	46	31.58	25.3	4.55	31.45	-	-	P	V
		969.93	31.8	-22.2	54	30.25	27.2	5.61	31.26	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Note symbol

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



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

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

1. Level(dBμV/m) =

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

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

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

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

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

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

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

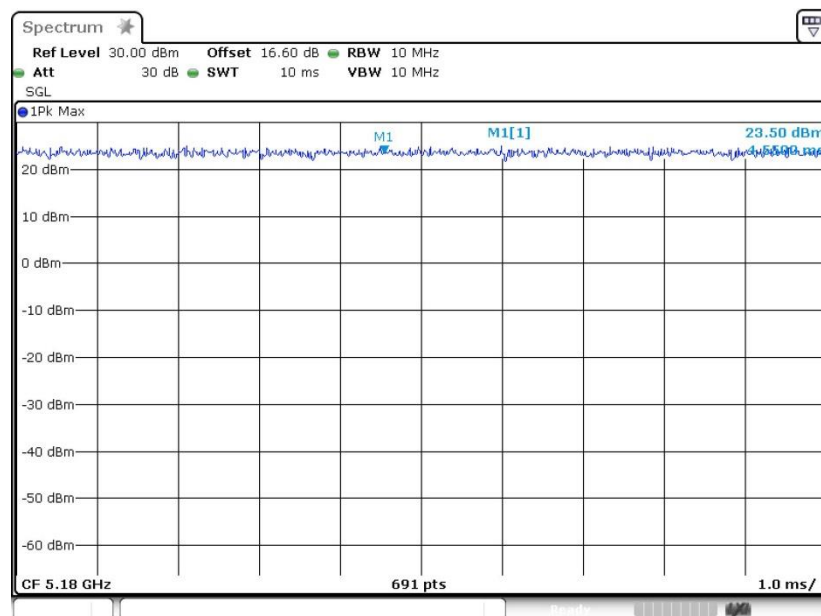
= -10.46(dB)

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

Appendix D. Duty Cycle Plots

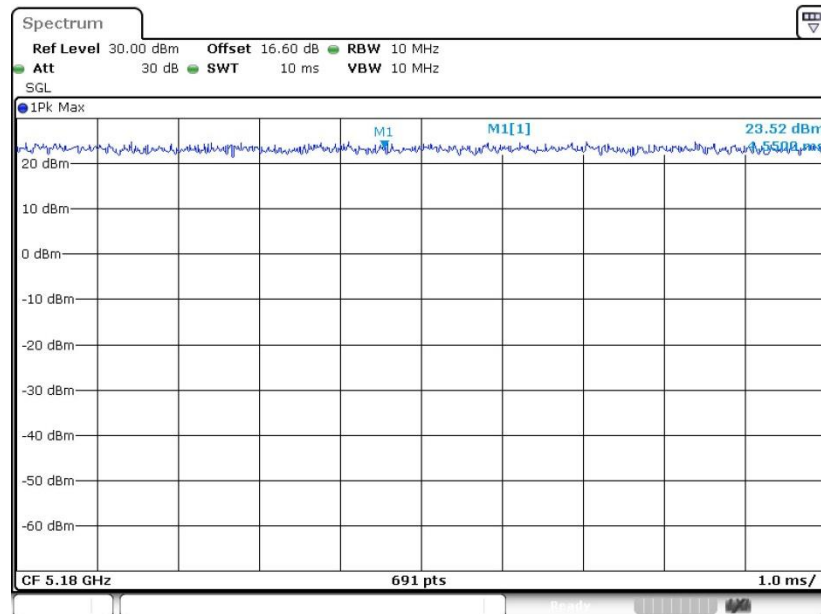
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	100	-	-	10Hz
802.11n HT20	100	-	-	10Hz
802.11n HT40	100	-	-	10Hz
802.11ac VHT80	100	-	-	10Hz

802.11a

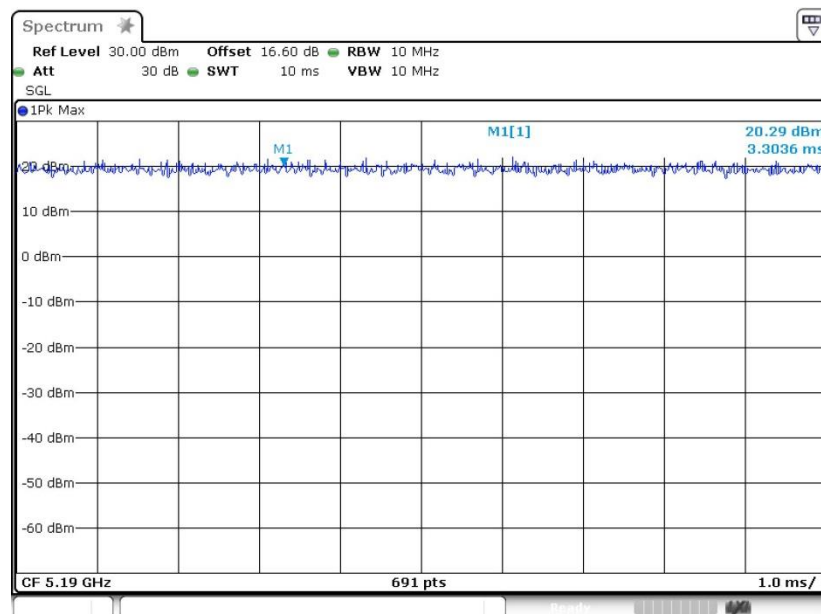




802.11n HT20



802.11n HT40



802.11ac VHT80

