



FCC RF Test Report

APPLICANT : Lenovo(Shanghai) Electronics Technology Co., Ltd.
EQUIPMENT : Portable Tablet Computer
BRAND NAME : Lenovo
MODEL NAME : Lenovo TB-8604F
FCC ID : O57TB8604F
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Mar. 08, 2019 and testing was completed on Apr. 04, 2019. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

This report contains data that were produced under subcontract by Laboratory SPORTON INTERNATIONAL INC.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.

Approved by: James Huang / Manager



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR930802D	Rev. 01	Initial issue of report	Apr. 18, 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 3.25 dB at 5149.760 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 10.34 dB at 0.497 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

Lenovo(Shanghai) Electronics Technology Co., Ltd.

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

1.2 Manufacturer

Lenovo PC HK Limited

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

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Portable Tablet Computer
Brand Name	Lenovo
Model Name	Lenovo TB-8604F
FCC ID	O57TB8604F
EUT supports Radios application	WLAN 2.4GHz 802.11a/b/g/n HT20 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE FM Receiver / GNSS
HW Version	Lenovo Tablet TB-8604F
SW Version	TB-8604F_RF01_190415
EUT Stage	Identical Prototype

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

1.4 Component List

Note: There are two types of EUT, the detail difference please refer to the follow table, according to the difference, we choose sample 1 to full test.

Component	Sample 1		Sample 2	
	Specifications	Supplier	Specifications	Supplier
CPU	APQ-8017-0-720BNSP-T	Qualcomm	APQ-8017-0-720BNSP-TR-0	Qualcomm
FLASH (2+32)	KMQD60013M-B318	Samsung	KMQD60013M-B318	Samsung
Rear Camera	LCK5A01	TIANSI	LE5104AM	LCE
Battery	L16D1P34	SCUD	L16D1P34	SCUD
usb	SLQ-A055A	SAIBAO	SLQ-A055A	SAIBAO
Panel	TV080WXM-NL5	BOE	TV080WXM-NL5	BOE

1.5 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 : 10.40 dBm / 0.0110 W 802.11n HT20 : 10.30 dBm / 0.0107 W 802.11n HT40 : 10.40 dBm / 0.0110 W 802.11ac VHT20 : 10.20 dBm / 0.0105 W 802.11ac VHT40 : 10.30 dBm / 0.0107 W 802.11ac VHT80 : 10.40 dBm / 0.0110 W <5260 MHz ~ 5320 MHz> 802.11a : 10.20 dBm / 0.0105 W 802.11n HT20 : 10.40 dBm / 0.0110 W 802.11n HT40 : 10.30 dBm / 0.0107 W 802.11ac VHT20 : 10.30 dBm / 0.0107 W 802.11ac VHT40 : 10.20 dBm / 0.0105 W 802.11ac VHT80 : 10.40 dBm / 0.0110 W <5500 MHz ~ 5720 MHz > 802.11a : 10.40 dBm / 0.0110 W 802.11n HT20 : 10.40 dBm / 0.0110 W 802.11n HT40 : 10.40 dBm / 0.0110 W 802.11ac VHT20 : 10.30 dBm / 0.0107 W 802.11ac VHT40 : 10.30 dBm / 0.0107 W 802.11ac VHT80 : 10.40 dBm / 0.0110 W
99% Occupied Bandwidth	<5180 MHz ~ 5240 MHz> 802.11a : 17.05 MHz 802.11n HT20 : 18.10 MHz 802.11n HT40 : 36.60 MHz 802.11ac VHT80 : 75.72 MHz <5260 MHz ~ 5320 MHz> 802.11a : 17.05 MHz 802.11n HT20 : 18.05 MHz 802.11n HT40 : 36.60 MHz 802.11ac VHT80 : 75.72 MHz <5500 MHz ~ 5720 MHz > 802.11a : 17.10 MHz 802.11n HT20 : 18.10 MHz 802.11n HT40 : 36.50 MHz 802.11ac VHT80 : 75.72 MHz
Antenna Type / Gain	<5180 MHz ~ 5240 MHz > monopole Antenna with gain -6.50 dBi <5260 MHz ~ 5320 MHz > monopole Antenna with gain -6.50 dBi <5500 MHz ~ 5720 MHz > monopole Antenna with gain -6.50 dBi
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)

Note: For 802.11an HT20 / ac VHT20 and 802.11an HT40 / ac VHT40 mode, the whole testing have assessed only 802.11an HT20/HT40 by referring to their maximum conducted power.



1.6 Modification of EUT

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

1.7 Testing Location

Sporton International (Kunshan) Inc is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600155-0).

Test Site	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone, Jiangsu Province 215335, China TEL : 86-512-57900158 FAX : 86-512-57900958		
Test Site No.	Sporton Site No.	FCC designation No.	FCC Test Firm Registration No.
	CO01-KS 03CH05-KS	CN5013	630927

SPORTON INTERNATIONAL INC. is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and under the FCC-recognized accredited testing laboratories by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist. Taoyuan City Taiwan Tel: 886-3-327-3456 FAX: +886-3-327-0978	
Test Site No.	Sporton Site No.	FCC designation No.
	TH05-HY	TW1190

Remark: Test data subcontracted: all conducted test item in this report



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 (X 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)
5180-5240 MHz Band 1 (U-NII-1)	36	5180	44	5220
	38*	5190	46*	5230
	40	5200	48	5240
	42 [#]	5210		
Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5260-5320 MHz Band 2 (U-NII-2A)	52	5260	60	5300
	54*	5270	62*	5310
	56	5280	64	5320
	58 [#]	5290		
Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5500-5700 MHz Band 3 (U-NII-2C)	100	5500	112	5560
	102*	5510	116	5580
	104	5520	132	5660
	106 [#]	5530	134*	5670
	108	5540	136	5680
	110*	5550	140	5700



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.

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 : Bluetooth Link + WLAN Link(2.4G) + Battery 1 + Earphone + USB Cable 1(Charging from Adapter) for Sample1
Remark: For Radiated Test Cases, The tests were performed with Adapter 1, Battery 1, Earphone, USB Cable 1 and Sample 1	



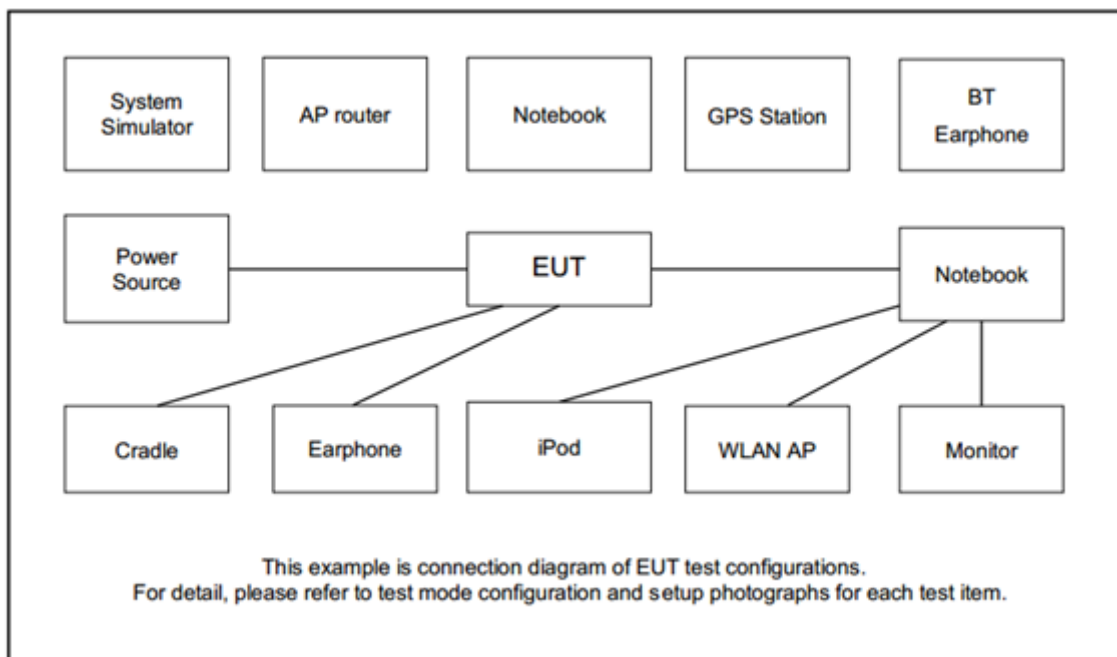
Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5700MHz
		802.11a	802.11a	802.11a
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140
Straddle		-	-	144

Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5700MHz
		802.11n HT20	802.11n HT20	802.11n HT20
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140
Straddle		-	-	144

Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5700MHz
		802.11n HT40	802.11n HT40	802.11n HT40
L	Low	38	54	102
M	Middle	-	-	110
H	High	46	62	134
Straddle		-	-	142

Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5700MHz
		802.11ac VHT80	802.11ac VHT80	802.11ac VHT80
L	Low	-	-	-
M	Middle	42	58	106
H	High	-	-	-
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.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Lenovo	LBH308	N/A	N/A	N/A
3.	Notebook	Lenovo	G480	N/A	N/A	AC I/P: Unshielded, 1.8m DC O/P: Shielded, 1.8 m
4.	Earphone	Lenovo	P121	N/A	N/A	N/A
5.	Adapter	MOTO	SC-61	N/A	N/A	Adapter
6.	SD Card	Kingston	8GB	N/A	N/A	SD Card



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 6.8 dB and 20dB attenuator.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 6.8 + 20 = 26.8 \text{ (dB)}\end{aligned}$$

3 Test Result

3.1 26dB & 99% Occupied Bandwidth Measurement

3.1.1 Description of 26dB & 99% Occupied Bandwidth

This section is for reporting purpose only.

There is no restriction limits for bandwidth.

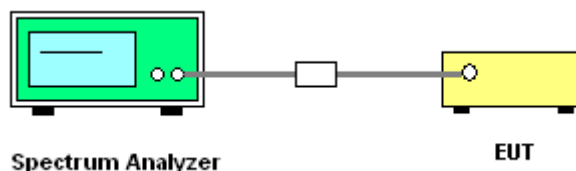
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

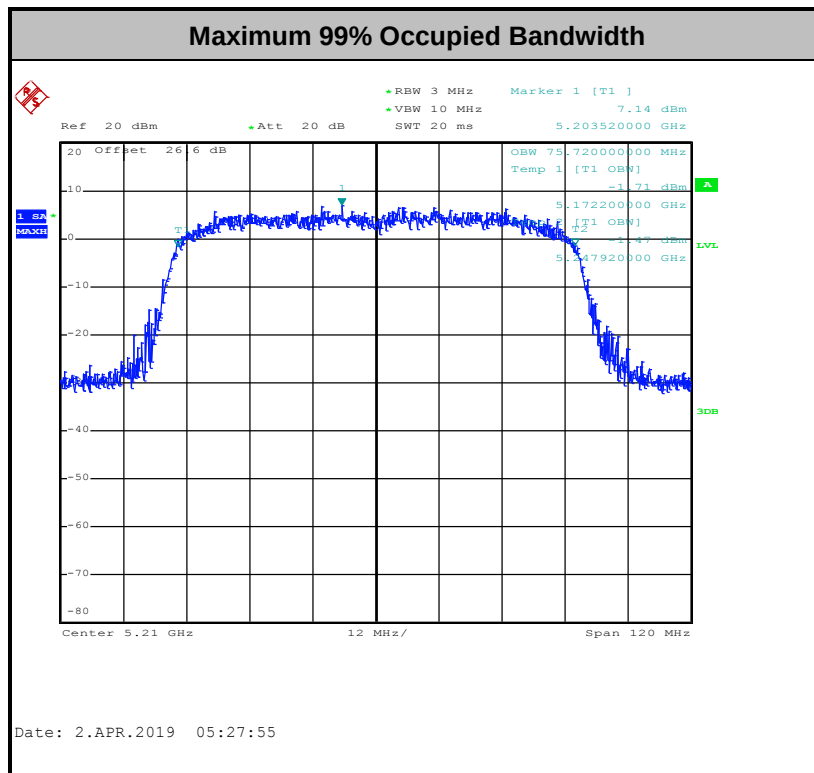
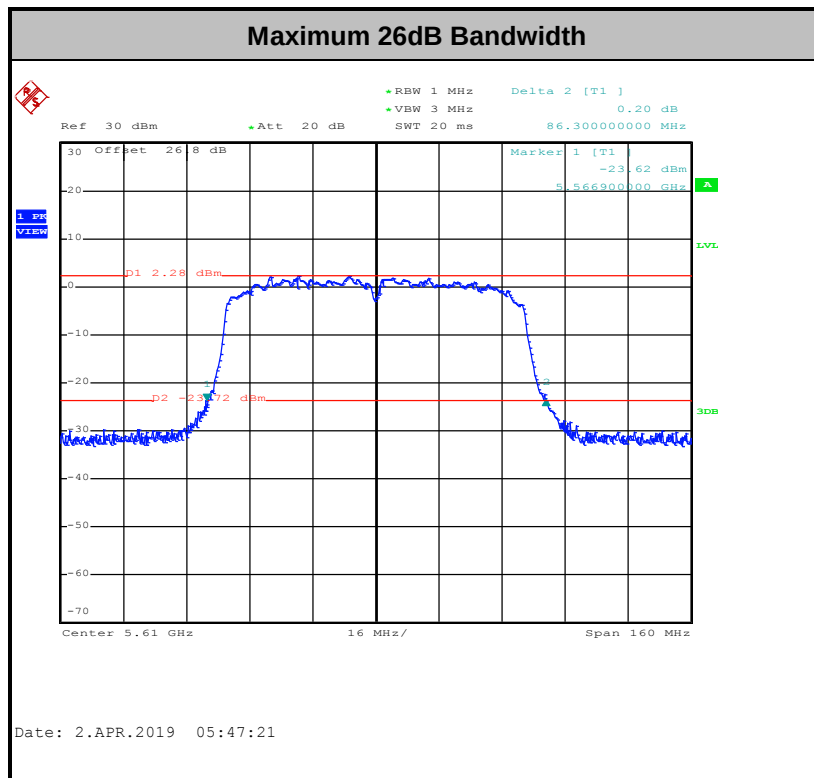
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section C) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
7. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1MHz and set the Video bandwidth (VBW) $\geq 3 * RBW$.
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

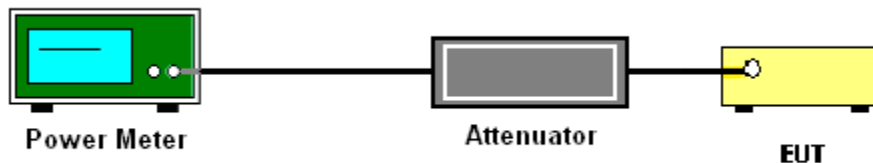
The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

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.

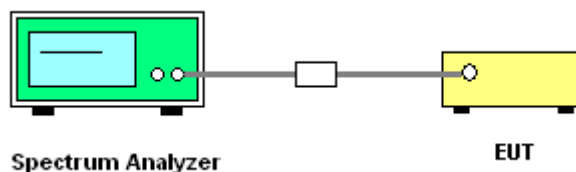
Section F) Maximum power spectral density.

Method SA-2

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

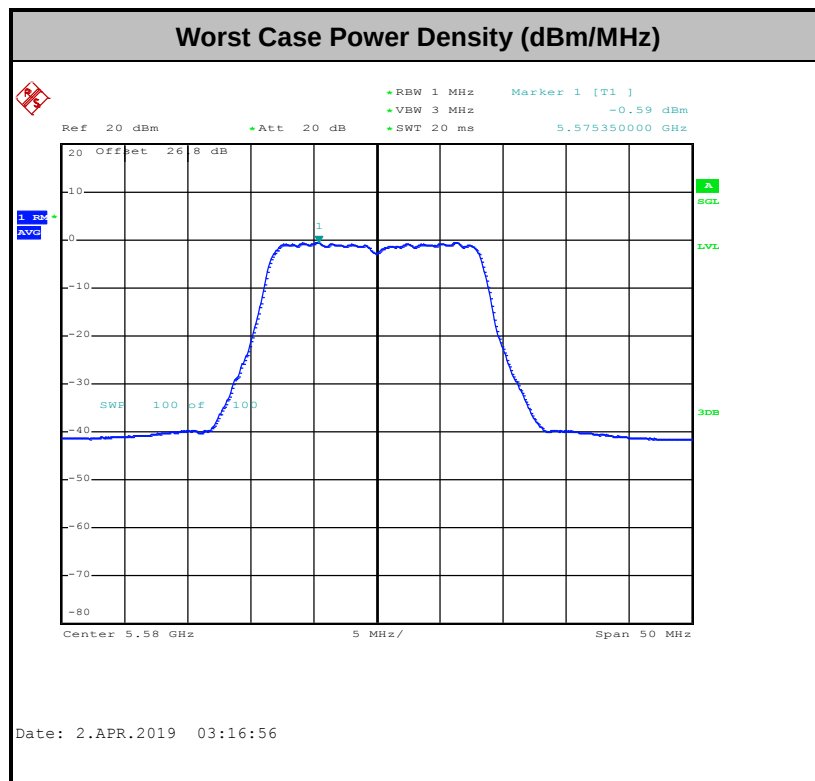
- Measure the duty cycle.
 - Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 1 MHz.
 - Set VBW $\geq$ 3 MHz.
 - Number of points in sweep $\geq$ 2 Span / RBW.
 - Sweep time = auto.
 - Detector = RMS
 - Trace average at least 100 traces in power averaging mode.
 - 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	68.3

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

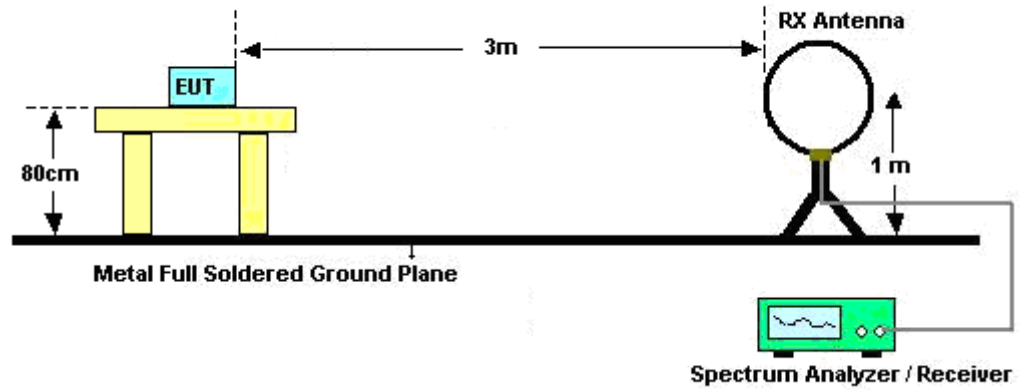
The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

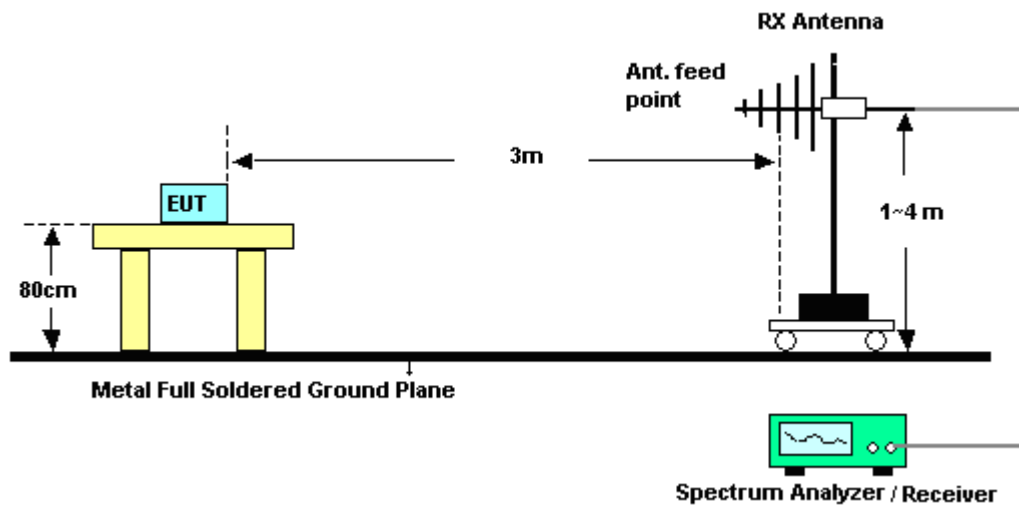
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section G) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak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

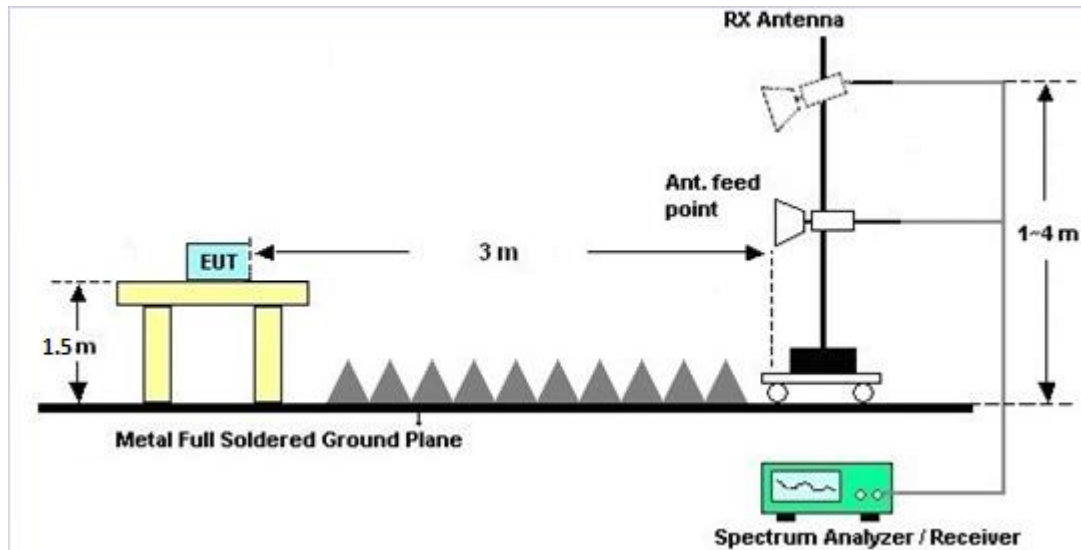
For radiated emissions below 30MHz



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.

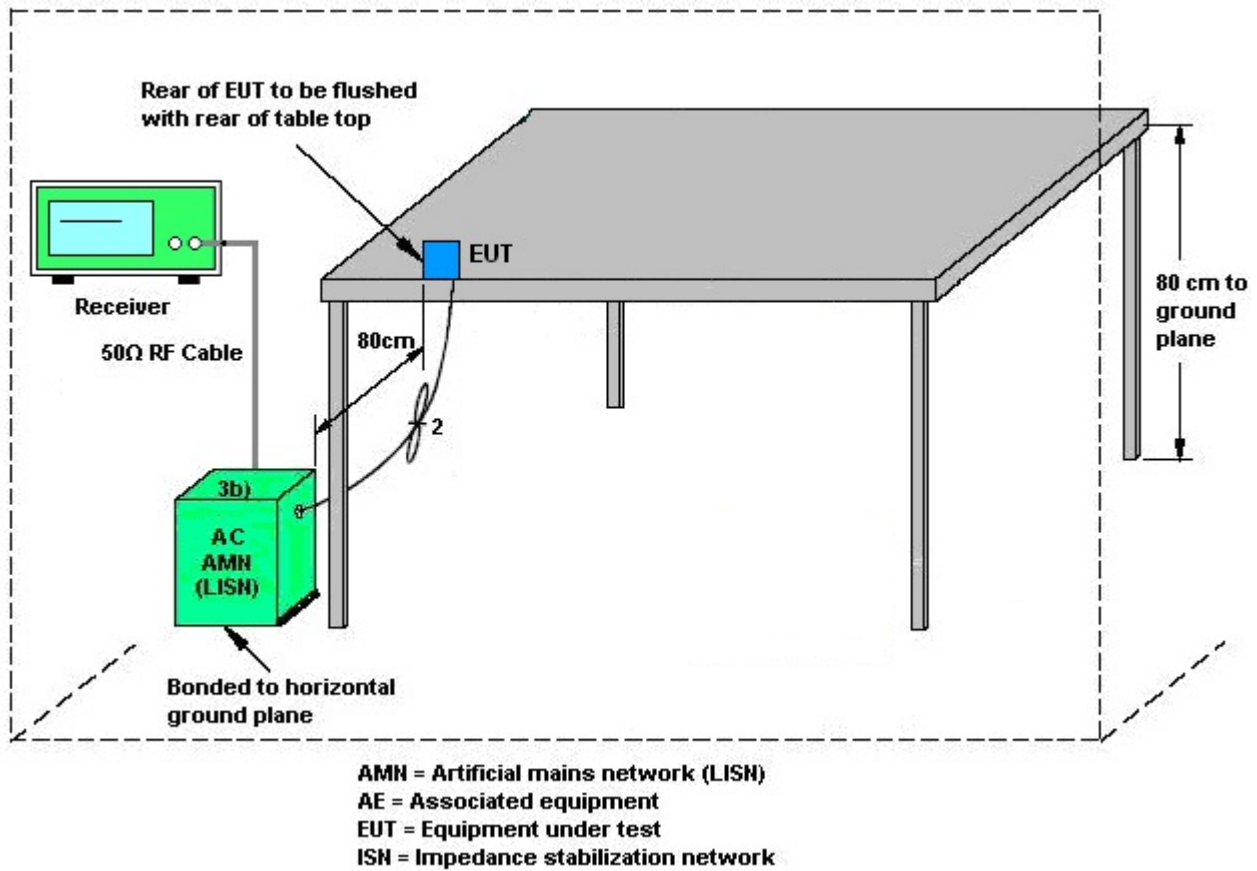
3.5.2 Measuring Instruments

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
Hygrometer	Testo	DTM-303A	TP157075	N/A	Nov. 05, 2018	Mar. 20, 2019~ Apr. 04, 2019	Nov. 04, 2019	Conducted (TH05-HY)
Power Sensor	DARE	RadiPower	15I00041S NO09	10MHz~6GHz	May. 07, 2018	Mar. 20, 2019~ Apr. 04, 2019	May. 06, 2019	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100057	9kHz~40GHz	Nov. 21, 2018	Mar. 20, 2019~ Apr. 04, 2019	Nov. 20, 2019	Conducted (TH05-HY)
Switch Box & RF Cable	EM	EMSW18	SW107090 3	N/A	Dec 19, 2018	Mar. 20, 2019~ Apr. 04, 2019	Dec 18 2019	Conducted (TH05-HY)
EMI Test Receiver	Keysight	N9038A	MY572901 51	3Hz~8.5GHz; Max 30dBm	Jun. 25, 2018	Mar. 26, 2019~ Mar. 27, 2019	Jun. 24, 2019	Radiation (03CH05-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY551502 44	10Hz~44GHz	Apr. 17, 2018	Mar. 26, 2019~ Mar. 27, 2019	Apr. 16, 2019	Radiation (03CH05-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 19, 2018	Mar. 26, 2019~ Mar. 27, 2019	Oct. 18, 2019	Radiation (03CH05-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz~1GHz	Jun. 12, 2018	Mar. 26, 2019~ Mar. 27, 2019	Jun. 11, 2019	Radiation (03CH05-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75959	1GHz~18GHz	Jan. 27, 2019	Mar. 26, 2019~ Mar. 27, 2019	Jan. 26, 2020	Radiation (03CH05-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2019	Mar. 26, 2019~ Mar. 27, 2019	Jan. 04, 2020	Radiation (03CH05-KS)
Amplifier	com-power	PA-103A	161069	1MHz ~1000MHz / 32 dB	Apr. 17, 2018	Mar. 26, 2019~ Mar. 27, 2019	Apr. 16, 2019	Radiation (03CH05-KS)
Amplifier	MITEQ	TTA1840-35-HG	2014749	18~40GHz	Jan. 14, 2019	Mar. 26, 2019~ Mar. 27, 2019	Jan. 13, 2020	Radiation (03CH05-KS)
high gain Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	2025788	1Ghz-18Ghz	Apr. 17, 2018	Mar. 26, 2019~ Mar. 27, 2019	Apr. 16, 2019	Radiation (03CH05-KS)
Amplifier	Keysight	83017A	MY572801 06	500MHz~26.5G Hz	Apr. 18, 2018	Mar. 26, 2019~ Mar. 27, 2019	Apr. 17, 2019	Radiation (03CH05-KS)
AC Power Source	Chroma	61601	F1040900 04	N/A	NCR	Mar. 26, 2019~ Mar. 27, 2019	NCR	Radiation (03CH05-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Mar. 26, 2019~ Mar. 27, 2019	NCR	Radiation (03CH05-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Mar. 26, 2019~ Mar. 27, 2019	NCR	Radiation (03CH05-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 19, 2018	Apr. 02, 2019	Apr. 18, 2019	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 12, 2018	Apr. 02, 2019	Oct. 11, 2019	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Nov. 19, 2018	Apr. 02, 2019	Nov. 18, 2019	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000 0811	AC 0V~300V, 45Hz~1000Hz	Oct. 12, 2018	Apr. 02, 2019	Oct. 11, 2019	Conduction (CO01-KS)

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% ($U = 2Uc(y)$)	2.9dB
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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% ($U = 2Uc(y)$)	5.0 dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0 dB
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Appendix A. Conducted Test Results

Report Number : FR930802D

Test Engineer:	Luffy Lin/Richard Qiu/AnAn Wu	Temperature:	21~25	°C
Test Date:	2019/3/20~2019/4/4	Relative Humidity:	51~54	%

TEST RESULTS DATA
26dB and 99% OBW

Band I													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26 dB Bandwidth (MHz)		IC 99% Bandwidth Power Limit (dBm)		IC 99% Bandwidth EIRP Limit (dBm)		Note
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	36	5180	16.90	-	23.65	-	-	-	22.28	-	
11a	6Mbps	1	44	5220	17.00	-	23.90	-	-	-	22.30	-	
11a	6Mbps	1	48	5240	17.05	-	24.15	-	-	-	22.32	-	
HT20	MCS0	1	36	5180	18.10	-	24.99	-	-	-	22.58	-	
HT20	MCS0	1	44	5220	18.05	-	24.20	-	-	-	22.56	-	
HT20	MCS0	1	48	5240	18.05	-	24.60	-	-	-	22.56	-	
HT40	MCS0	1	38	5190	36.60	-	45.36	-	-	-	23.01	-	
HT40	MCS0	1	46	5230	36.60	-	45.27	-	-	-	23.01	-	
VHT80	MCS0	1	42	5210	75.72	-	85.22	-	-	-	23.01	-	

TEST RESULTS DATA
Average Power Table

FCC Band I											
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)		FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	36	5180	10.30	-	24.00	-	-6.50	-	Pass
11a	6Mbps	1	44	5220	10.40	-	24.00	-	-6.50	-	Pass
11a	6Mbps	1	48	5240	10.30	-	24.00	-	-6.50	-	Pass
HT20	MCS0	1	36	5180	10.20	-	24.00	-	-6.50	-	Pass
HT20	MCS0	1	44	5220	10.30	-	24.00	-	-6.50	-	Pass
HT20	MCS0	1	48	5240	10.30	-	24.00	-	-6.50	-	Pass
HT40	MCS0	1	38	5190	10.40	-	24.00	-	-6.50	-	Pass
HT40	MCS0	1	46	5230	10.40	-	24.00	-	-6.50	-	Pass
VHT20	MCS0	1	36	5180	10.10	-	24.00	-	-6.50	-	Pass
VHT20	MCS0	1	44	5220	10.20	-	24.00	-	-6.50	-	Pass
VHT20	MCS0	1	48	5240	10.10	-	24.00	-	-6.50	-	Pass
VHT40	MCS0	1	38	5190	10.30	-	24.00	-	-6.50	-	Pass
VHT40	MCS0	1	46	5230	10.30	-	24.00	-	-6.50	-	Pass
VHT80	MCS0	1	42	5210	10.40	-	24.00	-	-6.50	-	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	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	36	5180	0.43	-	-1.27	-	11.00	-	-6.50	-	Pass
11a	6Mbps	1	44	5220	0.43	-	-0.89	-	11.00	-	-6.50	-	Pass
11a	6Mbps	1	48	5240	0.43	-	-0.87	-	11.00	-	-6.50	-	Pass
HT20	MCS0	1	36	5180	0.62	-	-1.11	-	11.00	-	-6.50	-	Pass
HT20	MCS0	1	44	5220	0.62	-	-0.90	-	11.00	-	-6.50	-	Pass
HT20	MCS0	1	48	5240	0.62	-	-0.93	-	11.00	-	-6.50	-	Pass
HT40	MCS0	1	38	5190	0.57	-	-3.47	-	11.00	-	-6.50	-	Pass
HT40	MCS0	1	46	5230	0.57	-	-3.37	-	11.00	-	-6.50	-	Pass
VHT80	MCS0	1	42	5210	0.17	-	-6.30	-	11.00	-	-6.50	-	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	1	52	5260	17.00	-	25.60	-	23.30	-	29.30	-	23.98	-	
11a	6Mbps	1	60	5300	17.05	-	23.90	-	23.32	-	29.32	-	23.98	-	
11a	6Mbps	1	64	5320	17.00	-	24.05	-	23.30	-	29.30	-	23.98	-	
HT20	MCS0	1	52	5260	18.05	-	24.25	-	23.56	-	29.56	-	23.98	-	
HT20	MCS0	1	60	5300	18.05	-	24.05	-	23.56	-	29.56	-	23.98	-	
HT20	MCS0	1	64	5320	18.05	-	24.25	-	23.56	-	29.56	-	23.98	-	
HT40	MCS0	1	54	5270	36.50	-	45.54	-	23.98	-	30.00	-	23.98	-	
HT40	MCS0	1	62	5310	36.60	-	45.28	-	23.98	-	30.00	-	23.98	-	
VHT80	MCS0	1	58	5290	75.72	-	85.96	-	23.98	-	30.00	-	23.98	-	

TEST RESULTS DATA**Average Power Table**

FCC Band II												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	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	Ant 1	Ant 2		
11a	6Mbps	1	52	5260	10.20	-	23.98	-	-6.50	-	26.99	Pass
11a	6Mbps	1	60	5300	10.20	-	23.98	-	-6.50	-	26.99	Pass
11a	6Mbps	1	64	5320	10.20	-	23.98	-	-6.50	-	26.99	Pass
HT20	MCS0	1	52	5260	10.40	-	23.98	-	-6.50	-	26.99	Pass
HT20	MCS0	1	60	5300	10.40	-	23.98	-	-6.50	-	26.99	Pass
HT20	MCS0	1	64	5320	10.40	-	23.98	-	-6.50	-	26.99	Pass
HT40	MCS0	1	54	5270	10.30	-	23.98	-	-6.50	-	26.99	Pass
HT40	MCS0	1	62	5310	10.30	-	23.98	-	-6.50	-	26.99	Pass
VHT20	MCS0	1	52	5260	10.30	-	23.98	-	-6.50	-	26.99	Pass
VHT20	MCS0	1	60	5300	10.30	-	23.98	-	-6.50	-	26.99	Pass
VHT20	MCS0	1	64	5320	10.30	-	23.98	-	-6.50	-	26.99	Pass
VHT40	MCS0	1	54	5270	10.20	-	23.98	-	-6.50	-	26.99	Pass
VHT40	MCS0	1	62	5310	10.20	-	23.98	-	-6.50	-	26.99	Pass
VHT80	MCS0	1	58	5290	10.40	-	23.98	-	-6.50	-	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	1	52	5260	0.43	-	-1.12	-		11.00	-	-6.50	-	Pass
11a	6Mbps	1	60	5300	0.43	-	-1.29	-		11.00	-	-6.50	-	Pass
11a	6Mbps	1	64	5320	0.43	-	-1.19	-		11.00	-	-6.50	-	Pass
HT20	MCS0	1	52	5260	0.62	-	-1.17	-		11.00	-	-6.50	-	Pass
HT20	MCS0	1	60	5300	0.62	-	-1.29	-		11.00	-	-6.50	-	Pass
HT20	MCS0	1	64	5320	0.62	-	-1.22	-		11.00	-	-6.50	-	Pass
HT40	MCS0	1	54	5270	0.57	-	-3.92	-		11.00	-	-6.50	-	Pass
HT40	MCS0	1	62	5310	0.57	-	-3.77	-		11.00	-	-6.50	-	Pass
VHT80	MCS0	1	58	5290	0.17	-	-6.58	-		11.00	-	-6.50	-	Pass

TEST RESULTS DATA
26dB and 99% OBW

Band III																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth In U-NII 2C (MHz)		26 dB Bandwidth In U-NII 2C (MHz)		IC 99% Bandwidth Power Limit (dBm)		IC 99% Bandwidth EIRP Limit (dBm)		FCC 26dB Bandwidth Power Limit (dBm)		6 dB Bandwidth for Straddle Channel (MHz)	
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2
11a	6Mbps	1	100	5500	17.00	-	23.70	-	23.30	-	29.30	-	23.98	-	----	----
11a	6Mbps	1	116	5580	17.00	-	23.85	-	23.30	-	29.30	-	23.98	-	----	----
11a	6Mbps	1	140	5700	17.10	-	24.15	-	23.33	-	29.33	-	23.98	-	----	----
11a	6Mbps	1	144	5720	13.50	-	17.15	-	22.30	-	28.30	-	23.34	-	3.15	-
HT20	MCS0	1	100	5500	18.10	-	24.20	-	23.58	-	29.58	-	23.98	-	----	----
HT20	MCS0	1	116	5580	18.05	-	24.00	-	23.56	-	29.56	-	23.98	-	----	----
HT20	MCS0	1	140	5700	18.05	-	26.60	-	23.56	-	29.56	-	23.98	-	----	----
HT20	MCS0	1	144	5720	14.05	-	17.10	-	22.48	-	28.48	-	23.33	-	3.75	-
HT40	MCS0	1	102	5510	36.40	-	45.72	-	23.98	-	30.00	-	23.98	-	----	----
HT40	MCS0	1	110	5550	36.50	-	45.30	-	23.98	-	30.00	-	23.98	-	----	----
HT40	MCS0	1	134	5670	36.50	-	46.42	-	23.98	-	30.00	-	23.98	-	----	----
HT40	MCS0	1	142	5710	33.30	-	38.31	-	23.98	-	30.00	-	23.98	-	2.55	-
VHT80	MCS0	1	106	5530	75.72	-	85.41	-	23.98	-	30.00	-	23.98	-	----	----
VHT80	MCS0	1	122	5610	75.60	-	86.30	-	23.98	-	30.00	-	23.98	-	----	----
VHT80	MCS0	1	138	5690	72.92	-	77.00	-	23.98	-	30.00	-	23.98	-	2.54	-

TEST RESULTS DATA
Average Power Table

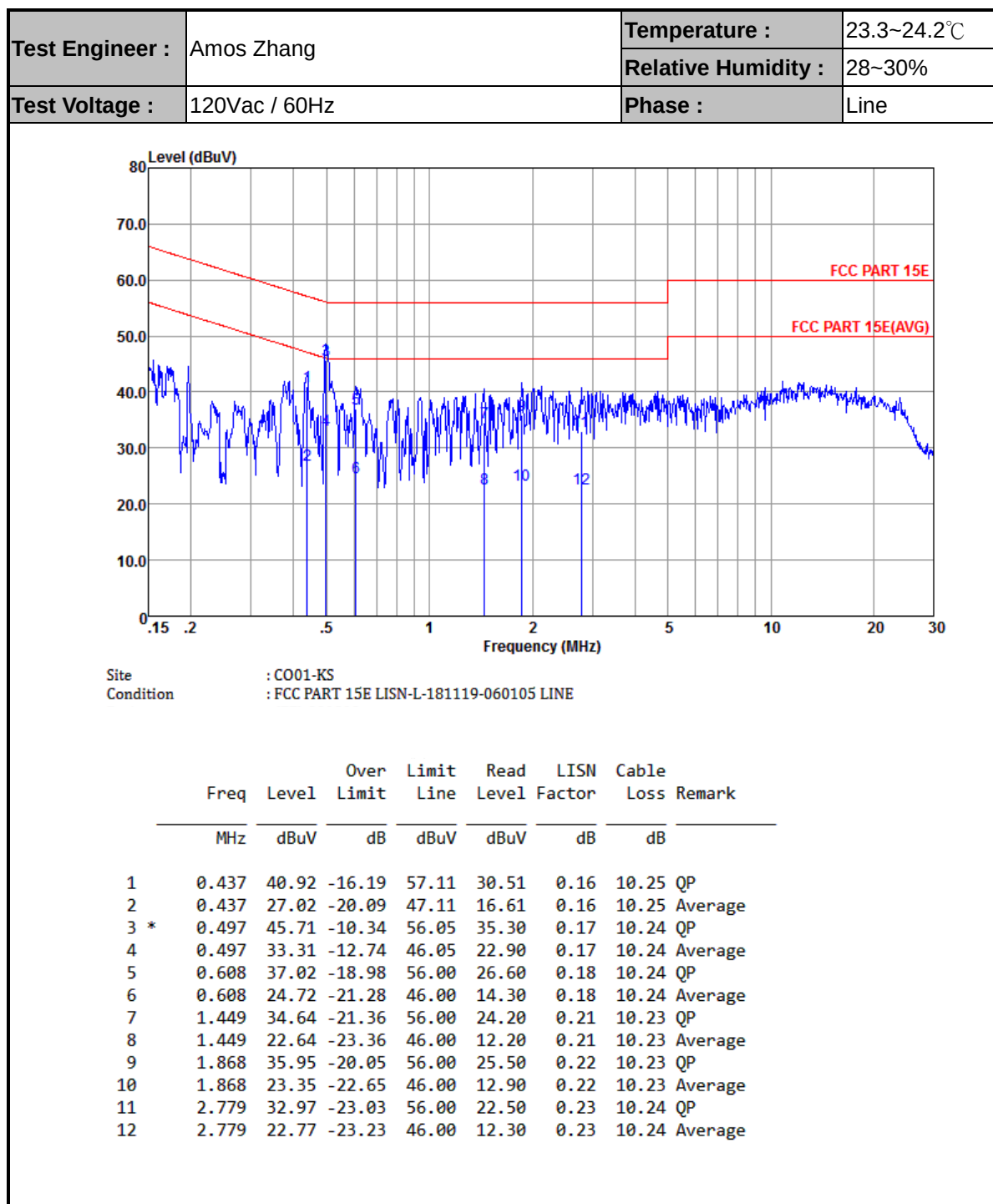
FCC Band III													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	100	5500	10.30	-		23.98	-	-6.50	-	26.99	Pass
11a	6Mbps	1	116	5580	10.40	-		23.98	-	-6.50	-	26.99	Pass
11a	6Mbps	1	140	5700	10.40	-		23.98	-	-6.50	-	26.99	Pass
11a	6Mbps	1	144	5720	10.40	-		23.34	-	-6.50	-	26.99	Pass
HT20	MCS0	1	100	5500	10.40	-		23.98	-	-6.50	-	26.99	Pass
HT20	MCS0	1	116	5580	10.40	-		23.98	-	-6.50	-	26.99	Pass
HT20	MCS0	1	140	5700	10.40	-		23.98	-	-6.50	-	26.99	Pass
HT20	MCS0	1	144	5720	10.40	-		23.33	-	-6.50	-	26.99	Pass
HT40	MCS0	1	102	5510	10.30	-		23.98	-	-6.50	-	26.99	Pass
HT40	MCS0	1	110	5550	10.30	-		23.98	-	-6.50	-	26.99	Pass
HT40	MCS0	1	134	5670	10.40	-		23.98	-	-6.50	-	26.99	Pass
HT40	MCS0	1	142	5710	10.30	-		23.98	-	-6.50	-	26.99	Pass
VHT20	MCS0	1	100	5500	10.20	-		23.98	-	-6.50	-	26.99	Pass
VHT20	MCS0	1	116	5580	10.30	-		23.98	-	-6.50	-	26.99	Pass
VHT20	MCS0	1	140	5700	10.20	-		23.98	-	-6.50	-	26.99	Pass
VHT20	MCS0	1	144	5720	10.30	-		23.98	-	-6.50	-	26.99	Pass
VHT40	MCS0	1	102	5510	10.20	-		23.98	-	-6.50	-	26.99	Pass
VHT40	MCS0	1	110	5550	10.20	-		23.98	-	-6.50	-	26.99	Pass
VHT40	MCS0	1	134	5670	10.30	-		23.98	-	-6.50	-	26.99	Pass
VHT40	MCS0	1	142	5710	10.20	-		23.98	-	-6.50	-	26.99	Pass
VHT80	MCS0	1	106	5530	10.40	-		23.98	-	-6.50	-	26.99	Pass
VHT80	MCS0	1	122	5610	10.30	-		23.98	-	-6.50	-	26.99	Pass
VHT80	MCS0	1	138	5690	10.40	-		23.98	-	-6.50	-	26.99	Pass

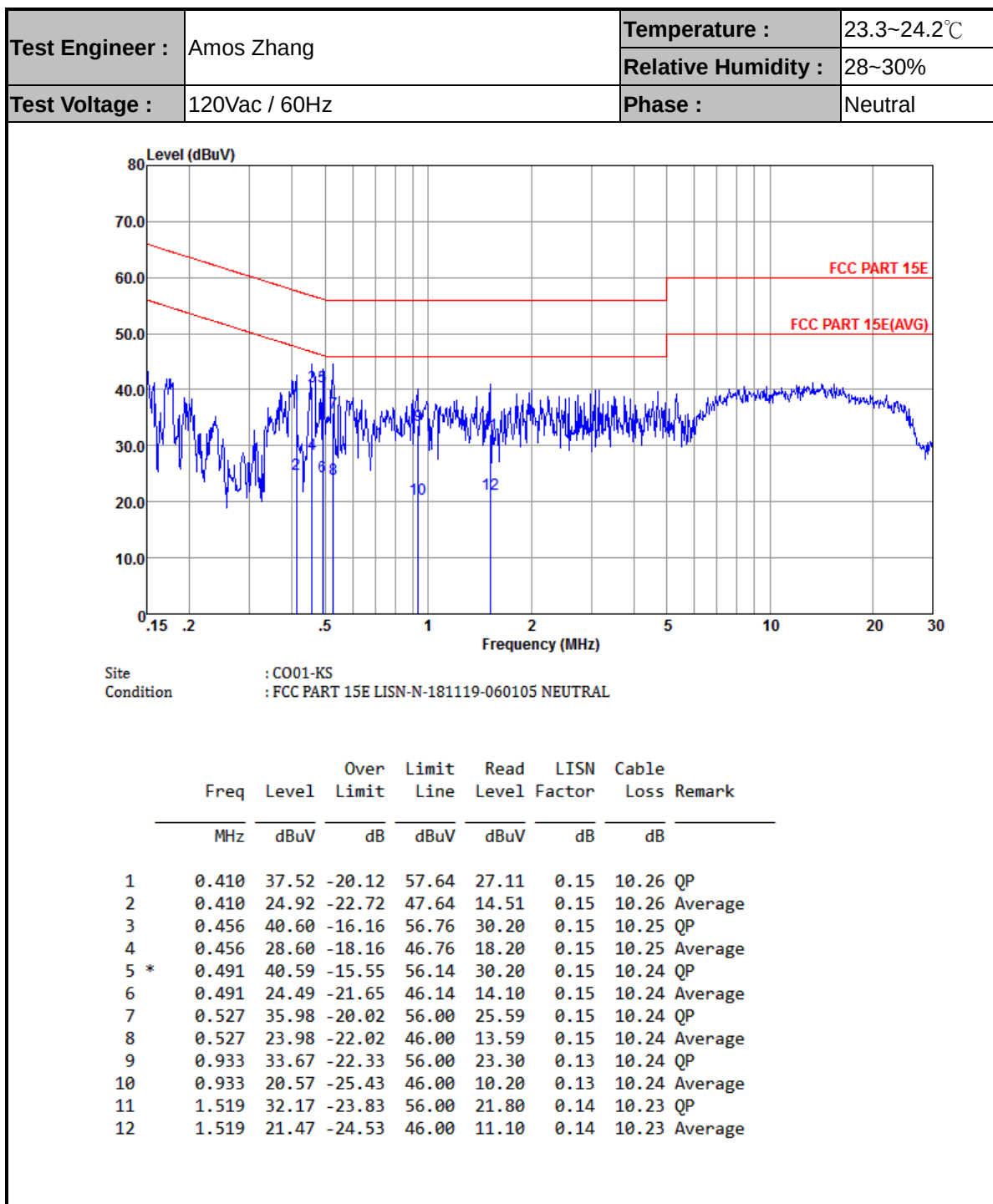
TEST RESULTS DATA
Power Spectral Density

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	1	100	5500	0.43	-	-0.49	-		11.00	-	-6.50	-	Pass
11a	6Mbps	1	116	5580	0.43	-	-0.16	-		11.00	-	-6.50	-	Pass
11a	6Mbps	1	140	5700	0.43	-	-0.53	-		11.00	-	-6.50	-	Pass
11a	6Mbps	1	144	5720	0.43	-	-0.45	-		11.00	-	-6.50	-	Pass
HT20	MCS0	1	100	5500	0.62	-	-0.64	-		11.00	-	-6.50	-	Pass
HT20	MCS0	1	116	5580	0.62	-	-0.76	-		11.00	-	-6.50	-	Pass
HT20	MCS0	1	140	5700	0.62	-	-0.79	-		11.00	-	-6.50	-	Pass
HT20	MCS0	1	144	5720	0.62	-	-0.91	-		11.00	-	-6.50	-	Pass
HT40	MCS0	1	102	5510	0.57	-	-3.07	-		11.00	-	-6.50	-	Pass
HT40	MCS0	1	110	5550	0.57	-	-3.26	-		11.00	-	-6.50	-	Pass
HT40	MCS0	1	134	5670	0.57	-	-3.93	-		11.00	-	-6.50	-	Pass
HT40	MCS0	1	142	5710	0.57	-	-3.81	-		11.00	-	-6.50	-	Pass
VHT80	MCS0	1	106	5530	0.17	-	-6.16	-		11.00	-	-6.50	-	Pass
VHT80	MCS0	1	122	5610	0.17	-	-6.31	-		11.00	-	-6.50	-	Pass
VHT80	MCS0	1	138	5690	0.17	-	-6.00	-		11.00	-	-6.50	-	Pass



Appendix B. AC Conducted Emission Test Results







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	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 36 5180MHz		5126.4	54.39	-19.61	74	44.93	34.27	8.14	32.95	128	163	P	H
		5127.36	45.2	-8.8	54	35.74	34.27	8.14	32.95	128	163	A	H
	*	5186	103.29	-	-	93.67	34.37	8.17	32.92	128	163	P	H
		5186	95.65	-	-	86.03	34.37	8.17	32.92	128	163	A	H
		5127.84	54.47	-19.53	74	45.01	34.27	8.14	32.95	315	241	P	V
		5127.68	45.2	-8.8	54	35.74	34.27	8.14	32.95	315	241	A	V
	*	5184	103.35	-	-	93.73	34.37	8.17	32.92	315	241	P	V
		5184	96.48	-	-	86.86	34.37	8.17	32.92	315	241	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	42.82	-25.48	68.3	56.34	37.67	11.87	63.06	100	360	P	H
		10360	44.48	-23.82	68.3	58	37.67	11.87	63.06	100	360	P	V
802.11a CH 44 5220MHz		10440	43.36	-24.94	68.3	56.74	37.73	11.93	63.04	100	360	P	H
		10440	43.53	-24.77	68.3	56.91	37.73	11.93	63.04	100	360	P	V
802.11a CH 48 5240MHz		10480	43.87	-24.43	68.3	57.15	37.78	11.97	63.03	100	360	P	H
		10480	43.74	-24.56	68.3	57.02	37.78	11.97	63.03	100	360	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		5128.16	56.99	-17.01	74	47.53	34.27	8.14	32.95	101	37	P	H
		5128.48	47.61	-6.39	54	38.15	34.27	8.14	32.95	101	37	A	H
	*	5174	105.99	-	-	96.37	34.37	8.17	32.92	101	37	P	H
		5174	98.49	-	-	88.87	34.37	8.17	32.92	101	37	A	H
		5127.52	55.57	-18.43	74	46.11	34.27	8.14	32.95	300	282	P	V
		5128.32	44.92	-9.08	54	35.46	34.27	8.14	32.95	300	282	A	V
	*	5182	103.09	-	-	93.47	34.37	8.17	32.92	300	282	P	V
		5182	95.78	-	-	86.16	34.37	8.17	32.92	300	282	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20		10360	43.01	-25.29	68.3	56.53	37.67	11.87	63.06	100	360	P	H
CH 36 5180MHz		10360	44.57	-23.73	68.3	58.09	37.67	11.87	63.06	100	360	P	V
802.11n HT20		10440	44.45	-23.85	68.3	57.83	37.73	11.93	63.04	100	360	P	H
CH 44 5220MHz		10440	43.83	-24.47	68.3	57.21	37.73	11.93	63.04	100	360	P	V
802.11n HT20		10480	43.56	-24.74	68.3	56.84	37.78	11.97	63.03	100	360	P	H
CH 48 5240MHz		10480	44.56	-23.74	68.3	57.84	37.78	11.97	63.03	100	360	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		5149.44	60.53	-13.47	74	54.59	34.3	8.14	36.5	120	289	P	H
		5149.76	47.09	-6.91	54	41.15	34.3	8.14	36.5	120	289	A	H
	*	5178	101.27	-	-	95.22	34.37	8.17	36.49	120	289	P	H
		5178	93.7	-	-	87.65	34.37	8.17	36.49	120	289	A	H
		5354.28	48.14	-25.86	74	41.59	34.7	8.3	36.45	120	289	P	H
		5376.24	38.72	-15.28	54	32.17	34.7	8.3	36.45	120	289	A	H
		5145.92	66.77	-7.23	74	60.83	34.3	8.14	36.5	268	282	P	V
	!	5149.44	49.77	-4.23	54	43.83	34.3	8.14	36.5	268	282	A	V
	*	5180	102.88	-	-	96.83	34.37	8.17	36.49	268	282	P	V
		5180	95.16	-	-	89.11	34.37	8.17	36.49	268	282	A	V
		5390.64	48.57	-25.43	74	42	34.7	8.32	36.45	268	282	P	V
		5376.42	39.44	-14.56	54	32.89	34.7	8.3	36.45	268	282	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 HT40 CH 38 5190MHz		10380	43.56	-24.74	68.3	57.03	37.68	11.9	63.05	100	360	P	H
		10380	45.76	-22.54	68.3	59.23	37.68	11.9	63.05	100	360	P	V
802.11n HT40 CH 46 5230MHz		10460	43.32	-24.98	68.3	56.64	37.75	11.97	63.04	100	360	P	H
		10460	44.45	-23.85	68.3	57.77	37.75	11.97	63.04	100	360	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		5141.12	62.74	-11.26	74	53.25	34.3	8.14	32.95	305	51	P	H
	!	5149.76	50.75	-3.25	54	41.24	34.3	8.14	32.93	305	51	A	H
	*	5230	100.31	-	-	90.52	34.47	8.2	32.88	305	51	P	H
		5230	93.47	-	-	83.68	34.47	8.2	32.88	305	51	A	H
		5384.52	52.55	-21.45	74	42.34	34.7	8.3	32.79	305	51	P	H
		5359.5	43.62	-10.38	54	33.42	34.7	8.3	32.8	305	51	A	H
		5148.96	60.29	-13.71	74	50.78	34.3	8.14	32.93	296	37	P	V
	!	5149.98	48.8	-5.2	54	39.29	34.3	8.14	32.93	296	37	A	V
	*	5196	97.05	-	-	87.35	34.4	8.2	32.9	296	37	P	V
		5196	90.5	-	-	80.8	34.4	8.2	32.9	296	37	A	V
		5392.08	51.33	-22.67	74	41.1	34.7	8.32	32.79	296	37	P	V
		5378.76	42.97	-11.03	54	32.76	34.7	8.3	32.79	296	37	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 VHT80		10420	44.16	-24.14	68.3	57.56	37.72	11.93	63.05	100	360	P	H
CH 42 5210MHz		10420	44.7	-23.6	68.3	58.1	37.72	11.93	63.05	100	360	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 64 5320MHz	*	5314	103.06	-	-	93	34.63	8.27	32.84	118	164	P	H
		5314	95.7	-	-	85.64	34.63	8.27	32.84	118	164	A	H
		5374.3	52.85	-21.15	74	42.64	34.7	8.3	32.79	118	164	P	H
		5372.4	44.09	-9.91	54	33.89	34.7	8.3	32.8	118	164	A	H
	*	5314	103.06	-	-	93	34.63	8.27	32.84	301	240	P	V
		5314	95.55	-	-	85.49	34.63	8.27	32.84	301	240	A	V
		5374.3	52.57	-21.43	74	42.36	34.7	8.3	32.79	301	240	P	V
		5372.2	43.93	-10.07	54	33.73	34.7	8.3	32.8	301	240	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 2 5250~5350MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 52 5260MHz		10520	42.69	-25.61	68.3	55.9	37.82	12	63.03	100	360	P	H
		10520	44.29	-24.01	68.3	57.5	37.82	12	63.03	100	360	P	V
802.11a CH 60 5300MHz		10600	42.63	-31.37	74	55.68	37.9	12.06	63.01	100	360	P	H
		10600	43.27	-30.73	74	56.32	37.9	12.06	63.01	100	360	P	V
802.11a CH 64 5320MHz		10640	43.92	-30.08	74	56.93	37.9	12.09	63	100	360	P	H
		10640	44.59	-29.41	74	57.6	37.9	12.09	63	100	360	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 64 5320MHz	*	5328	104.88	-	-	94.76	34.67	8.27	32.82	100	67	P	H
		5328	95.91	-	-	85.79	34.67	8.27	32.82	100	67	A	H
		5351.7	57.38	-16.62	74	47.18	34.7	8.3	32.8	100	67	P	H
		5371.7	46.63	-7.37	54	36.43	34.7	8.3	32.8	100	67	A	H
	*	5328	102.59	-	-	92.47	34.67	8.27	32.82	300	281	P	V
		5328	95.42	-	-	85.3	34.67	8.27	32.82	300	281	A	V
		5373	52.72	-21.28	74	42.52	34.7	8.3	32.8	300	281	P	V
		5371.7	44.49	-9.51	54	34.29	34.7	8.3	32.8	300	281	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 HT20 CH 52 5260MHz		10520	43.39	-24.91	68.3	56.6	37.82	12	63.03	100	360	P	H
		10520	43.69	-24.61	68.3	56.9	37.82	12	63.03	100	360	P	V
802.11n HT20 CH 60 5300MHz		10600	42.98	-31.02	74	56.03	37.9	12.06	63.01	100	360	P	H
		10600	42.9	-31.1	74	55.95	37.9	12.06	63.01	100	360	P	V
802.11n HT20 CH 64 5320MHz		10640	43.92	-30.08	74	56.93	37.9	12.09	63	100	360	P	H
		10640	42.28	-31.72	74	55.29	37.9	12.09	63	100	360	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 62 5310MHz		5144.16	51.13	-22.87	74	45.19	34.3	8.14	36.5	284	46	P	H
		5129.28	40.75	-13.25	54	34.84	34.27	8.14	36.5	284	46	A	H
	*	5296	101.93	-	-	95.55	34.6	8.25	36.47	284	46	P	H
		5296	94.24	-	-	87.86	34.6	8.25	36.47	284	46	A	H
	!	5351.8	68.78	-5.22	74	62.23	34.7	8.3	36.45	284	46	P	H
	!	5350	49.43	-4.57	54	42.88	34.7	8.3	36.45	284	46	A	H
		5115.52	51.76	-22.24	74	45.9	34.23	8.14	36.51	288	284	P	V
		5107.36	40.83	-13.17	54	35.01	34.23	8.1	36.51	288	284	A	V
	*	5298	102.03	-	-	95.65	34.6	8.25	36.47	288	284	P	V
		5298	93.62	-	-	87.24	34.6	8.25	36.47	288	284	A	V
		5351.4	64.71	-9.29	74	58.16	34.7	8.3	36.45	288	284	P	V
	!	5350.6	48.99	-5.01	54	42.44	34.7	8.3	36.45	288	284	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	43.73	-24.57	68.3	56.89	37.83	12.03	63.02	100	360	P	H
		10540	44.49	-23.81	68.3	57.65	37.83	12.03	63.02	100	360	P	V
802.11n HT40 CH 62 5310MHz		10620	44.99	-29.01	74	58.01	37.9	12.09	63.01	100	360	P	H
		10620	44.61	-29.39	74	57.63	37.9	12.09	63.01	100	360	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		5115.52	51.24	-22.76	74	45.38	34.23	8.14	36.51	298	47	P	H
		5112.8	42.18	-11.82	54	36.36	34.23	8.1	36.51	298	47	A	H
	*	5270	100.71	-	-	94.42	34.53	8.23	36.47	298	47	P	H
		5270	92.81	-	-	86.52	34.53	8.23	36.47	298	47	A	H
		5376.4	60.22	-13.78	74	53.67	34.7	8.3	36.45	298	47	P	H
	!	5350.5	50.59	-3.41	54	44.04	34.7	8.3	36.45	298	47	A	H
		5129.44	50.52	-23.48	74	44.61	34.27	8.14	36.5	289	281	P	V
		5120.64	41.63	-12.37	54	35.77	34.23	8.14	36.51	289	281	A	V
	*	5264	97.86	-	-	91.57	34.53	8.23	36.47	289	281	P	V
		5264	90.17	-	-	83.88	34.53	8.23	36.47	289	281	A	V
		5371.1	56	-18	74	49.45	34.7	8.3	36.45	289	281	P	V
		5350.4	45.48	-8.52	54	38.93	34.7	8.3	36.45	289	281	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 VHT80		10580	44.99	-23.31	68.3	58.06	37.88	12.06	63.01	100	360	P	H
CH 58 5290MHz		10580	44.43	-23.87	68.3	57.5	37.88	12.06	63.01	100	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 802.11a (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		5355.6	52.93	-21.07	74	42.73	34.7	8.3	32.8	104	155	P	H
		5468.72	51.97	-16.33	68.3	41.61	34.7	8.4	32.74	104	155	P	H
		5447.6	44.53	-9.47	54	34.23	34.7	8.36	32.76	104	155	A	H
	*	5504	102.64	-	-	92.25	34.7	8.4	32.71	104	155	P	H
		5504	95.38	-	-	84.99	34.7	8.4	32.71	104	155	A	H
		5447.76	52.16	-21.84	74	41.86	34.7	8.36	32.76	299	280	P	V
		5461.84	51	-17.3	68.3	40.68	34.7	8.36	32.74	299	280	P	V
		5447.92	44.25	-9.75	54	33.95	34.7	8.36	32.76	299	280	A	V
	*	5506	102.63	-	-	92.2	34.7	8.44	32.71	299	280	P	V
		5506	95.64	-	-	85.21	34.7	8.44	32.71	299	280	A	V
802.11a CH 140 5700MHz	*	5696	106.27	-	-	95.73	34.7	8.58	32.74	100	69	P	H
		5696	99.18	-	-	88.64	34.7	8.58	32.74	100	69	A	H
		5727.96	56.53	-11.77	68.3	45.95	34.77	8.61	32.8	100	69	P	H
	*	5706	103.34	-	-	92.8	34.73	8.61	32.8	312	228	P	V
		5706	96.17	-	-	85.63	34.73	8.61	32.8	312	228	A	V
		5725.32	56.67	-11.63	68.3	46.09	34.77	8.61	32.8	312	228	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	41.97	-32.03	74	54.63	37.9	12.37	62.93	100	360	P	H
		11000	43.97	-30.03	74	56.63	37.9	12.37	62.93	100	360	P	V
802.11a CH 116 5580MHz		11160	43.71	-30.29	74	56.2	37.9	12.51	62.9	100	360	P	H
		11160	44.75	-29.25	74	57.24	37.9	12.51	62.9	100	360	P	V
802.11a CH 140 5700MHz		11400	43.75	-30.25	74	55.92	38	12.68	62.85	100	360	P	H
		11400	45.11	-28.89	74	57.28	38	12.68	62.85	100	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 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 100 5500MHz		5448.56	54.17	-19.83	74	43.87	34.7	8.36	32.76	101	66	P	H
		5467.92	54.77	-13.53	68.3	44.41	34.7	8.4	32.74	101	66	P	H
		5448.08	46.88	-7.12	54	36.58	34.7	8.36	32.76	101	66	A	H
	*	5504	106.04	-	-	95.65	34.7	8.4	32.71	101	66	P	H
		5504	98.61	-	-	88.22	34.7	8.4	32.71	101	66	A	H
		5447.92	52.84	-21.16	74	42.54	34.7	8.36	32.76	313	237	P	V
		5467.44	51.09	-17.21	68.3	40.73	34.7	8.4	32.74	313	237	P	V
		5448.08	44.49	-9.51	54	34.19	34.7	8.36	32.76	313	237	A	V
	*	5504	103.45	-	-	93.06	34.7	8.4	32.71	313	237	P	V
		5504	95.91	-	-	85.52	34.7	8.4	32.71	313	237	A	V
802.11n HT20 CH 140 5700MHz		5725.16	62.11	-6.19	68.3	51.53	34.77	8.61	32.8	303	62	P	H
	*	5694	108.05	-	-	97.51	34.7	8.58	32.74	303	62	P	H
		5694	100.81	-	-	90.27	34.7	8.58	32.74	303	62	A	H
		5725.56	56.41	-11.89	68.3	45.83	34.77	8.61	32.8	297	227	P	V
	*	5698	101.85	-	-	91.31	34.7	8.58	32.74	297	227	P	V
		5698	94.94	-	-	84.4	34.7	8.58	32.74	297	227	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20		11000	44.19	-29.81	74	56.85	37.9	12.37	62.93	100	360	P	H
CH 100 5500MHz		11000	43.85	-30.15	74	56.51	37.9	12.37	62.93	100	360	P	V
802.11n HT20		11160	43.64	-30.36	74	56.13	37.9	12.51	62.9	100	360	P	H
CH 116 5580MHz		11160	45.23	-28.77	74	57.72	37.9	12.51	62.9	100	360	P	V
802.11n HT20		11400	44.21	-29.79	74	56.38	38	12.68	62.85	100	360	P	H
CH 140 5700MHz		11400	46.31	-27.69	74	58.48	38	12.68	62.85	100	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 802.11n 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		5455.44	57.43	-16.57	74	47.11	34.7	8.36	32.74	292	49	P	H
	!	5470	64.28	-4.02	68.3	53.92	34.7	8.4	32.74	292	49	P	H
		5459.92	46.53	-7.47	54	36.21	34.7	8.36	32.74	292	49	A	H
	*	5522	104.17	-	-	93.74	34.7	8.44	32.71	292	49	P	H
		5522	97.17	-	-	86.74	34.7	8.44	32.71	292	49	A	H
		5752.84	52.62	-15.68	68.3	42.01	34.83	8.64	32.86	292	49	P	H
		5456.88	52.63	-21.37	74	42.31	34.7	8.36	32.74	314	242	P	V
		5469.04	59.09	-9.21	68.3	48.73	34.7	8.4	32.74	314	242	P	V
		5459.98	44.02	-9.98	54	33.7	34.7	8.36	32.74	314	242	A	V
	*	5520	100.66	-	-	90.23	34.7	8.44	32.71	314	242	P	V
		5520	93.46	-	-	83.03	34.7	8.44	32.71	314	242	A	V
		5754.12	53.96	-14.34	68.3	43.35	34.83	8.64	32.86	314	242	P	V
802.11n HT40 CH 134 5670MHz		5419.76	51.93	-22.07	74	41.68	34.7	8.32	32.77	292	49	P	H
		5468.4	51.17	-17.13	68.3	40.81	34.7	8.4	32.74	292	49	P	H
		5459.98	43.06	-10.94	54	32.74	34.7	8.36	32.74	292	49	A	H
	*	5666	104.51	-	-	93.91	34.7	8.58	32.68	292	49	P	H
		5666	97.3	-	-	86.7	34.7	8.58	32.68	292	49	A	H
		5728.68	54.13	-14.17	68.3	43.55	34.77	8.61	32.8	292	49	P	H
		5375.92	51.06	-22.94	74	40.85	34.7	8.3	32.79	301	241	P	V
		5469.04	51.49	-16.81	68.3	41.13	34.7	8.4	32.74	301	241	P	V
		5459.98	42.34	-11.66	54	32.02	34.7	8.36	32.74	301	241	A	V
	*	5658	100.41	-	-	89.84	34.7	8.55	32.68	301	241	P	V
		5658	93.02		-	82.45	34.7	8.55	32.68	301	241	A	V
		5761.8	53.29	-15.01	68.3	42.74	34.83	8.64	32.92	301	241	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 HT40 CH 102 5510MHz		11020	43.04	-30.96	74	55.67	37.9	12.4	62.93	100	360	P	H
		11020	43.2	-30.8	74	55.83	37.9	12.4	62.93	100	360	P	V
802.11n HT40 CH 110 5550MHz		11100	43.74	-30.26	74	56.3	37.9	12.45	62.91	100	360	P	H
		11100	45.48	-28.52	74	58.04	37.9	12.45	62.91	100	360	P	V
802.11n HT40 CH 134 5670MHz		11340	43.42	-30.58	74	55.73	37.93	12.62	62.86	100	360	P	H
		11340	45.02	-28.98	74	57.33	37.93	12.62	62.86	100	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		5458.48	51.4	-22.6	74	44.77	34.7	8.36	36.43	374	62	P	H
		5461.36	50.57	-17.73	68.3	43.94	34.7	8.36	36.43	374	62	P	H
		5458.8	42.27	-11.73	54	35.64	34.7	8.36	36.43	374	62	A	H
	*	5532	95.68	-	-	88.95	34.7	8.44	36.41	374	62	P	H
		5532	88.4	-	-	81.67	34.7	8.44	36.41	374	62	A	H
		5749.8	49.79	-18.51	68.3	42.79	34.8	8.64	36.44	374	62	P	H
		5459.92	50.63	-23.37	74	44	34.7	8.36	36.43	351	18	P	V
		5463.12	51.6	-16.7	68.3	44.97	34.7	8.36	36.43	351	18	P	V
		5459.6	41.65	-12.35	54	35.02	34.7	8.36	36.43	351	18	A	V
	*	5510	94.43	-	-	87.71	34.7	8.44	36.42	351	18	P	V
		5510	87.06	-	-	80.34	34.7	8.44	36.42	351	18	A	V
		5727.24	49.47	-18.83	68.3	42.52	34.77	8.61	36.43	351	18	P	V
802.11ac VHT80 CH 122 5610MHz		5384.08	47.86	-26.14	74	41.31	34.7	8.3	36.45	383	64	P	H
		5469.84	47.81	-20.49	68.3	41.14	34.7	8.4	36.43	383	64	P	H
		5436.72	39.76	-14.24	54	33.14	34.7	8.36	36.44	383	64	A	H
	*	5614	95.5	-	-	88.78	34.6	8.52	36.4	383	64	P	H
		5614	88.37	-	-	81.65	34.6	8.52	36.4	383	64	A	H
		5735.64	49.83	-18.47	68.3	42.86	34.8	8.61	36.44	383	64	P	H
		5406.48	49.5	-24.5	74	42.92	34.7	8.32	36.44	337	18	P	V
		5468.08	48.11	-20.19	68.3	41.44	34.7	8.4	36.43	337	18	P	V
		5442	40.84	-13.16	54	34.22	34.7	8.36	36.44	337	18	A	V
	*	5584	95.55	-	-	88.8	34.63	8.52	36.4	337	18	P	V
		5584	87.81	-	-	81.06	34.63	8.52	36.4	337	18	A	V
		5762.04	50.44	-17.86	68.3	43.42	34.83	8.64	36.45	337	18	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 VHT80		10600	43.49	-30.51	74	56.54	37.9	12.06	63.01	100	360	P	H
CH 106 5530MHz		10600	44.34	-29.66	74	57.39	37.9	12.06	63.01	100	360	P	V
802.11ac VHT80		11220	42.96	-31.04	74	55.41	37.9	12.54	62.89	100	360	P	H
CH 122 5610MHz		11220	44.76	-29.24	74	57.21	37.9	12.54	62.89	100	360	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 (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 144 5720MHz	*	5716	108.77	40.47	68.3	101.85	34.73	8.61	36.42	300	360	P	H
		5716	101.18	-	-	94.26	34.73	8.61	36.42	300	360	A	H
	*	5722	102.78	34.48	68.3	95.83	34.77	8.61	36.43	100	0	P	V
		5722	95.26	-	-	88.31	34.77	8.61	36.43	100	0	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a		11440	42.72	-31.28	74	54.82	38.03	12.71	62.84	100	360	P	H
CH 144		11440	46.45	-27.55	74	58.55	38.03	12.71	62.84	100	360	P	V
5720MHz													
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 (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	*	5714	106.51	38.21	68.3	99.59	34.73	8.61	36.42	100	0	P	H
HT20		5714	99.1	-	-	92.18	34.73	8.61	36.42	100	0	A	H
CH 144	*	5726	102.55	34.25	68.3	95.6	34.77	8.61	36.43	300	0	P	V
5720MHz		5726	95.08	-	-	88.13	34.77	8.61	36.43	300	0	A	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	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		11440	43.52	-30.48	74	55.62	38.03	12.71	62.84	100	360	P	H
CH 144 5720MHz		11440	44.9	-29.1	74	57	38.03	12.71	62.84	100	360	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 (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	*	5714	103.97	35.67	68.3	97.05	34.73	8.61	36.42	300	0	P	H
HT40		5714	96.28	-	-	89.36	34.73	8.61	36.42	300	0	A	H
CH 142	*	5702	100.64	32.34	68.3	93.72	34.73	8.61	36.42	100	0	P	V
5710MHz		5702	93.26	-	-	86.34	34.73	8.61	36.42	100	0	A	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 HT40		11420	42.96	-31.04	74	55.11	38.02	12.68	62.85	100	360	P	H
CH 142 5710MHz		11420	46.09	-27.91	74	58.24	38.02	12.68	62.85	100	360	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 (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	*	5680	95.56	27.26	68.3	88.69	34.7	8.58	36.41	300	0	P	H
VHT80		5680	88.21	-	-	81.34	34.7	8.58	36.41	300	0	A	H
CH 138	*	5664	94.97	26.67	68.3	88.09	34.7	8.58	36.4	100	0	P	V
5690MHz		5664	87.55	-	-	80.67	34.7	8.58	36.4	100	0	A	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 VHT80		11380	41.98	-32.02	74	54.2	37.98	12.65	62.85	100	360	P	H
CH 138 5690MHz		11380	43.32	-30.68	74	55.54	37.98	12.65	62.85	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

WIFI 802.11ac VHT80 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ac VHT80 LF		112.45	13.34	-30.16	43.5	27.35	16.7	1.22	31.93	-	-	P	H
		189.08	19.71	-23.79	43.5	34.5	15.54	1.58	31.91	-	-	P	H
		294.81	22.33	-23.67	46	33.33	19.1	1.97	32.07	-	-	P	H
		436.43	19.55	-26.45	46	27.03	22.36	2.35	32.19	-	-	P	H
		607.15	24.15	-21.85	46	29.12	24.67	2.76	32.4	100	20	P	H
		838.01	24.13	-21.87	46	26.29	26.38	3.33	31.87	-	-	P	H
		39.7	19.92	-20.08	40	33.08	18.1	0.7	31.96	100	10	P	V
		46.49	18.53	-21.47	40	34.85	14.83	0.79	31.94	-	-	P	V
		116.33	15.04	-28.46	43.5	29.05	16.67	1.25	31.93	-	-	P	V
		181.32	16.13	-27.37	43.5	30.79	15.71	1.54	31.91	-	-	P	V
		269.59	24.48	-21.52	46	35.99	18.59	1.91	32.01	-	-	P	V
		612	25.14	-20.86	46	30.05	24.72	2.77	32.4	-	-	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)

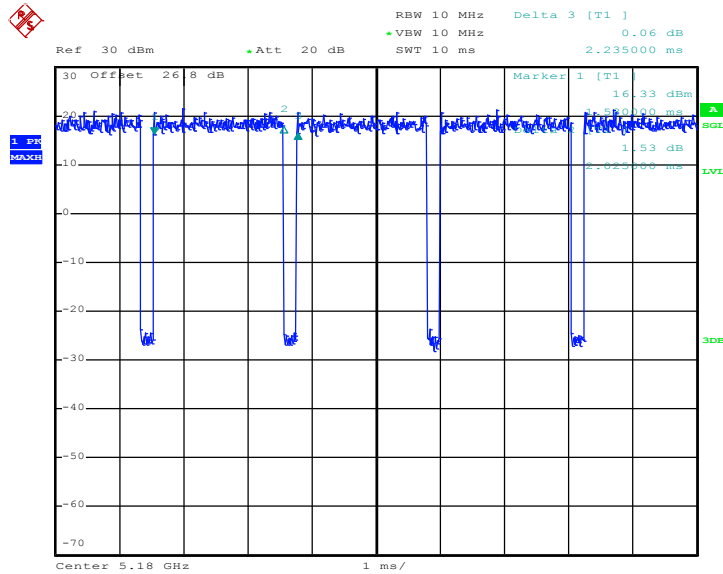
= -10.46(dB)

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

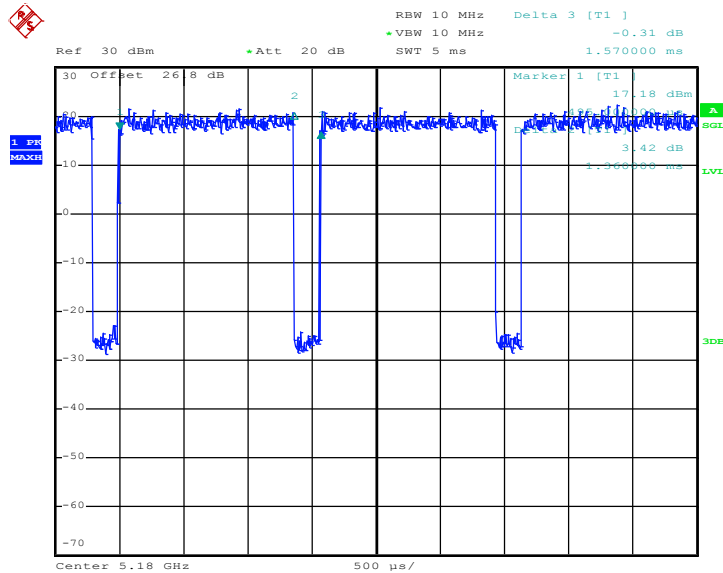
Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	90.60	2.025	0.494	0.75Khz
5GHz 802.11n HT20	86.62	1.360	0.735	0.82Khz
5GHz 802.11n HT40	87.79	1.510	0.662	0.68Khz
5GHz 802.11ac VHT80	96.12	0.248	4.032	4.30Khz

802.11a

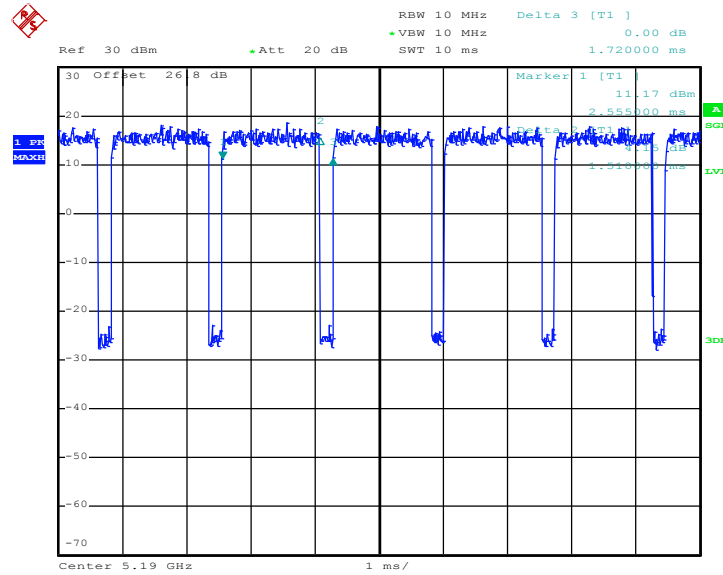


802.11n HT20





802.11n HT40



802.11ac VHT80

