



FCC RF Test Report

APPLICANT : Xiaomi Communications Co., Ltd.
EQUIPMENT : Mobile Phone
BRAND NAME : MI
MODEL NAME : M1806E7TG
FCC ID : 2AFZZ-RMSE7TG
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Jun. 26, 2018 and testing was completed on Jul. 11, 2018. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

James Huang

Approved by: James Huang / Manager



Sporton International (Kunshan) Inc.

No.3-2 Ping-Xiang Rd, Kunshan Development Zone Kunshan City Jiangsu Province 215335
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 Applicable Standards.....	7
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	8
2.1 Carrier Frequency and Channel	8
2.2 Test Mode	10
2.3 Connection Diagram of Test System.....	12
2.4 Support Unit used in test configuration and system	12
2.5 EUT Operation Test Setup	13
2.6 Measurement Results Explanation Example.....	13
3 TEST RESULT.....	14
3.1 26dB & 99% Occupied Bandwidth Measurement	14
3.2 Maximum Conducted Output Power Measurement	16
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
FR862604D	Rev. 01	Initial issue of report	Aug. 02, 2018

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	2.1049 & 15.403(i)	26dB & 99% Bandwidth	-	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	≤ 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 5.77 dB at 5149.760 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 11.06 dB at 0.169 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

Xiaomi Communications Co., Ltd.

The Rainbow City of China Resources, NO.68, Qinghe Middle Street, Haidian District, Beijing, China

1.2 Manufacturer

Xiaomi Communications Co., Ltd.

The Rainbow City of China Resources, NO.68, Qinghe Middle Street, Haidian District, Beijing, China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Phone
Brand Name	MI
Model Name	M1806E7TG
FCC ID	2AFZZ-RMSE7TG
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/DC-HSDPA/ HSPA+(16QAM uplink is not supported)/LTE WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
IMEI Code	Conducted:868931030100348/868931030104951 Conduction: 868931030100777/868931030105388 Radiation: 868931030107201/868931030107814
HW Version	P2.0
SW Version	MIUI 9
EUT Stage	Identical Prototype

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

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz 5500 MHz ~ 5720 MHz
Maximum Output Power to Antenna	<5180 MHz ~ 5240 MHz> 802.11a : 16.25 dBm / 0.0422 W 802.11n HT20 : 13.99 dBm / 0.0251 W 802.11n HT40 : 13.74 dBm / 0.0237 W 802.11ac VHT20 : 12.03 dBm / 0.0160 W 802.11ac VHT40 : 11.84 dBm / 0.0153 W 802.11ac VHT80 : 11.82 dBm / 0.0152 W <5260 MHz ~ 5320 MHz> 802.11a : 16.27 dBm / 0.0424 W 802.11n HT20 : 13.95 dBm / 0.0248 W 802.11n HT40 : 13.85 dBm / 0.0243 W 802.11ac VHT20 : 11.98 dBm / 0.0158 W 802.11ac VHT40 : 11.82 dBm / 0.0152 W 802.11ac VHT80 : 11.79 dBm / 0.0151 W <5500 MHz ~ 5720 MHz > 802.11a : 15.91 dBm / 0.0390 W 802.11n HT20 : 13.97 dBm / 0.0249 W 802.11n HT40 : 13.84 dBm / 0.0242 W 802.11ac VHT20 : 11.90 dBm / 0.0155 W 802.11ac VHT40 : 11.80 dBm / 0.0151 W 802.11ac VHT80 : 11.71 dBm / 0.0148 W
99% Occupied Bandwidth	<5180 MHz ~ 5240 MHz> 802.11a : 17.48 MHz 802.11n HT20 : 18.63 MHz 802.11n HT40 : 36.56 MHz 802.11ac VHT80 : 75.76 MHz <5260 MHz ~ 5320 MHz> 802.11a : 17.43 MHz 802.11n HT20 : 18.68 MHz 802.11n HT40 : 36.56 MHz 802.11ac VHT80 : 75.76 MHz <5500 MHz ~ 5720 MHz > 802.11a : 17.48 MHz 802.11n HT20 : 18.73 MHz 802.11n HT40 : 36.66 MHz 802.11ac VHT80 : 75.76 MHz
Antenna Type / Gain	<5180 MHz ~ 5240 MHz> PIFA Antenna with gain -4.40 dBi <5260 MHz ~ 5320 MHz> PIFA Antenna with gain -3.40 dBi <5500 MHz ~ 5720 MHz > PIFA Antenna with gain -3.90 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 802.11an 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 (Kunshan) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600155-0) and the FCC designation No. is CN5013.

Test Site	Sporton International (Kunshan) Inc.			
Test Site Location	No.3-2 Ping-Xiang Rd, Kunshan Development Zone Kunshan City Jiangsu Province 215335 China TEL : +86-512-57900158 FAX : +86-512-57900958			
Test Site No.	Sporton Site No.			FCC Test Firm Registration No.
	TH01-KS	03CH02-KS	CO01-KS	630927

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

1.7 Applicable Standards

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

- ♦ FCC Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- ♦ 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)
5180-5240 MHz Band 1 (U-NII-1)	36	5180	44	5220
	38*	5190	46*	5230
	40	5200	48	5240
	42 [#]	5210		
Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5260-5320 MHz Band 2 (U-NII-2A)	52	5260	60	5300
	54*	5270	62*	5310
	56	5280	64	5320
	58 [#]	5290		
Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5500-5720 MHz Band 3 (U-NII-2C)	100	5500	112	5560
	102*	5510	116	5580
	104	5520	132	5660
	106 [#]	5530	134*	5670
	108	5540	136	5680
	110*	5550	140	5700



Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
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 Link(5GHz) + USB Cable 2(Charging from Adapter 2) + Earphone
Remark: For Radiated Test Cases, The tests were performed with Adapter, Earphone and USB Cable.	



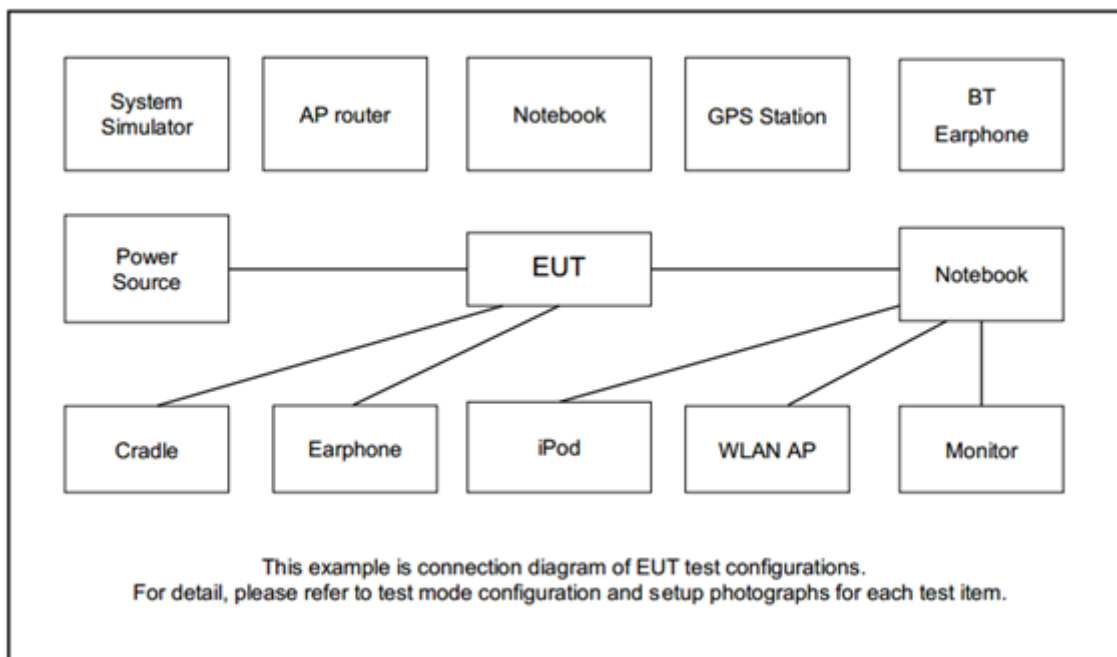
Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5720MHz
		802.11a	802.11a	802.11a
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140
Straddle		-	-	144

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

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

Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5720MHz
		802.11ac 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.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
2.	Bluetooth Earphone	Xiaomi	LYEJ02LM	N/A	N/A	N/A
3.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded,1.8m
4.	Notebook	Lenovo	G480	N/A	N/A	shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m
5.	SD Card	Kingston	8GB	N/A	N/A	N/A



2.5 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuous 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 between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 6.5 dB.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} \\ &= 6.5(\text{dB})\end{aligned}$$

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.

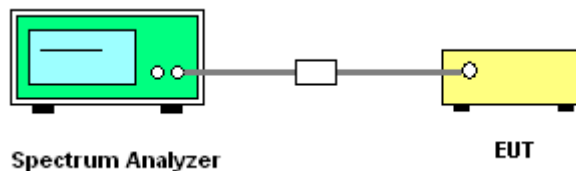
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

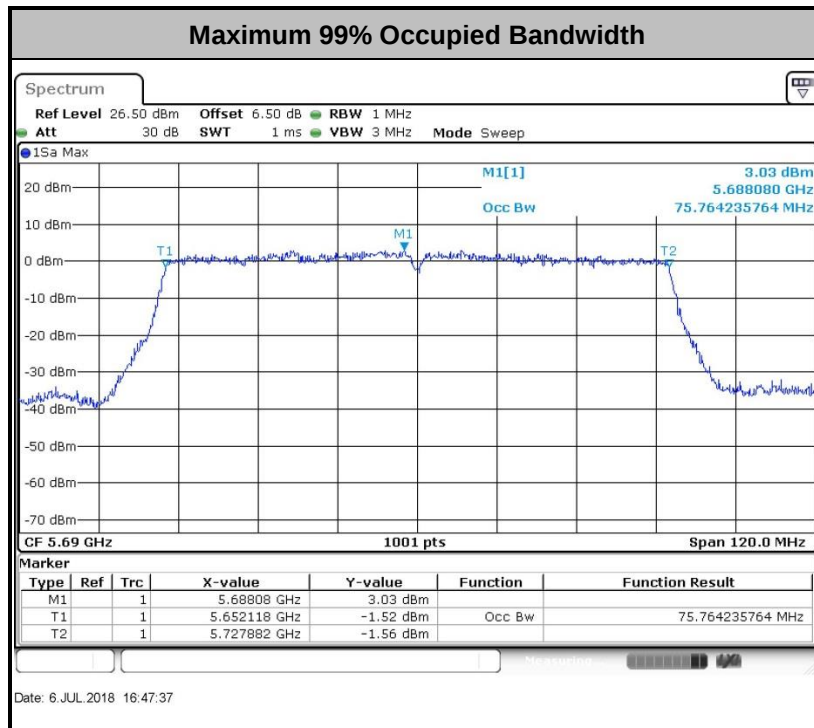
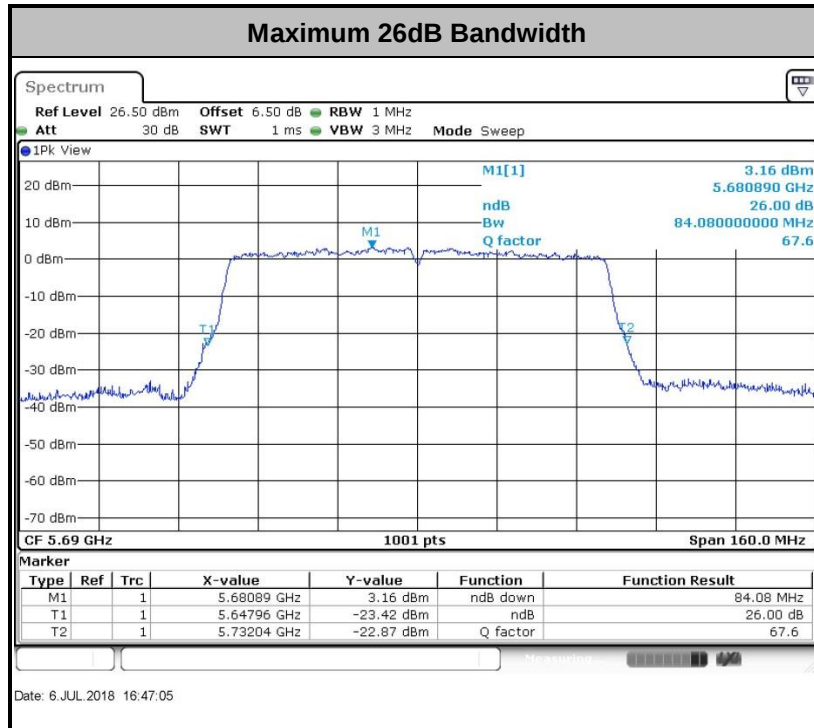
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section C) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB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

3.1.4 Test Setup



3.1.5 Test Result of 26dB & 99% Occupied Bandwidth

Please refer to Appendix A.



Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

<FCC 14-30 CFR 15.407>

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW.

For the 5.25–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz.

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

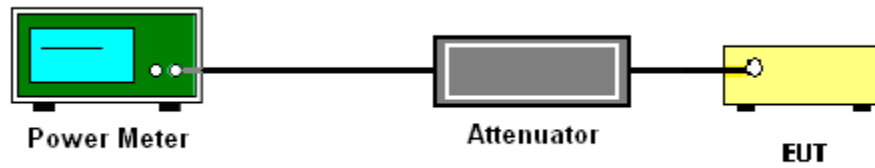
The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

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.

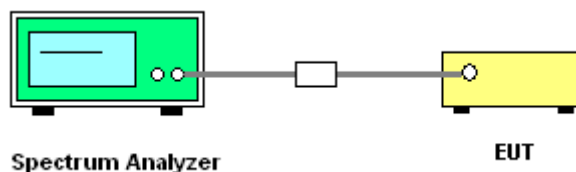
Section F) Maximum power spectral density.

Method SA-2

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

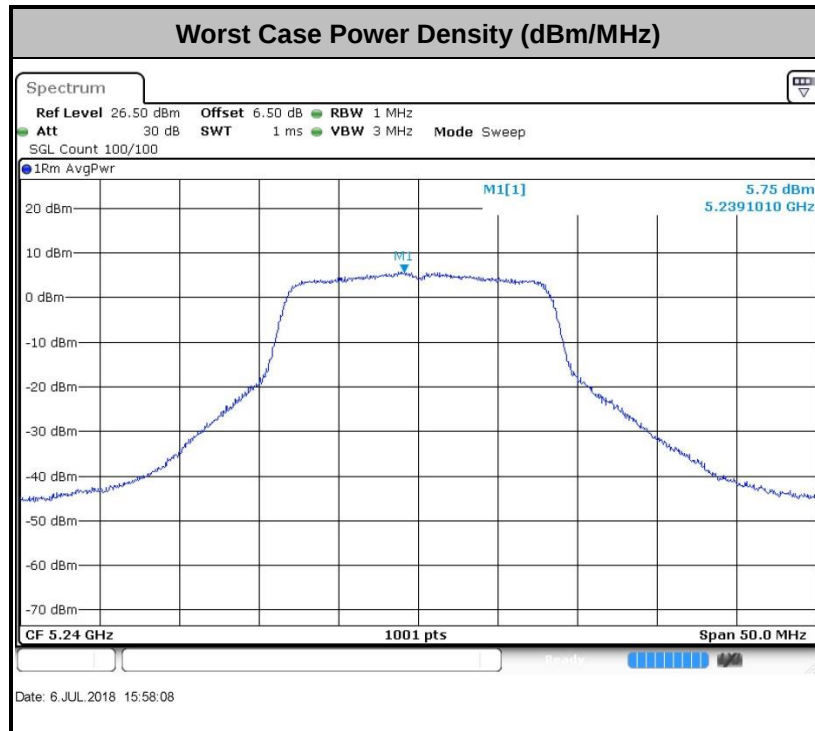
- Measure the duty cycle.
 - Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 1 MHz.
 - Set VBW $\geq$ 3 MHz.
 - Number of points in sweep $\geq$ 2 Span / RBW.
 - Sweep time = auto.
 - Detector = RMS
 - Trace average at least 100 traces in power averaging mode.
 -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

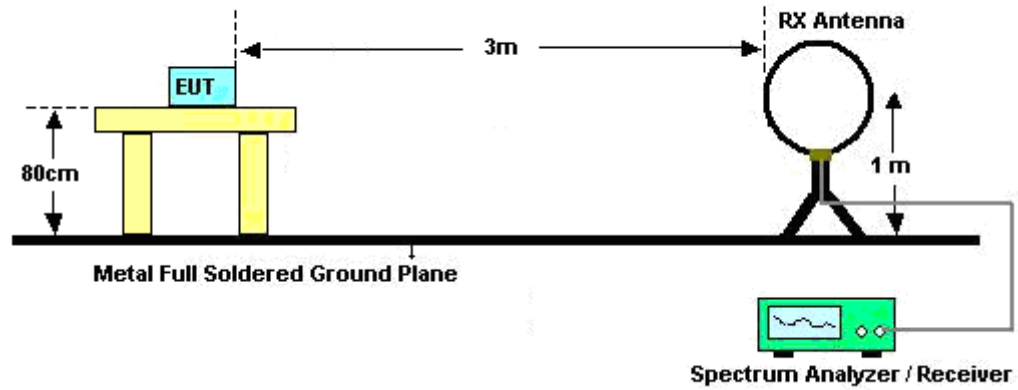
The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

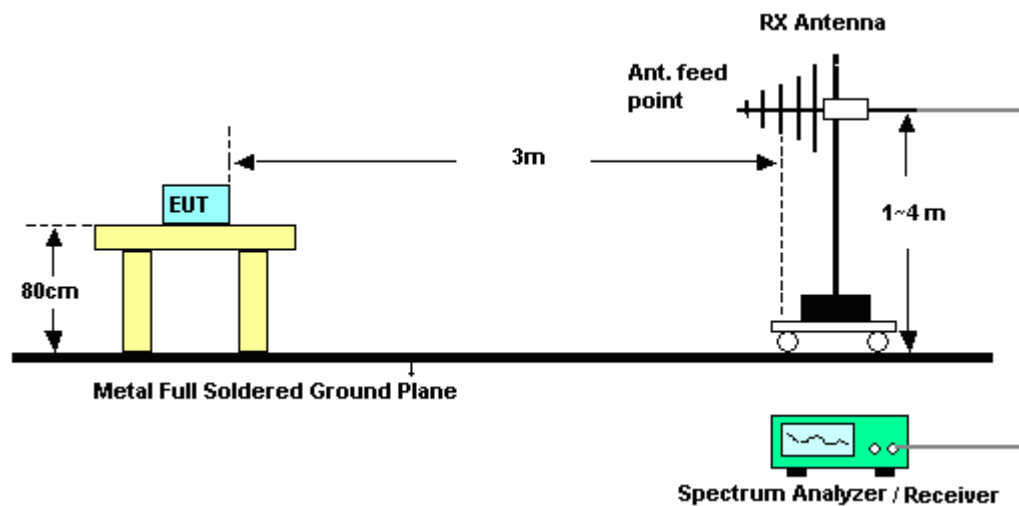
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section G) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak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

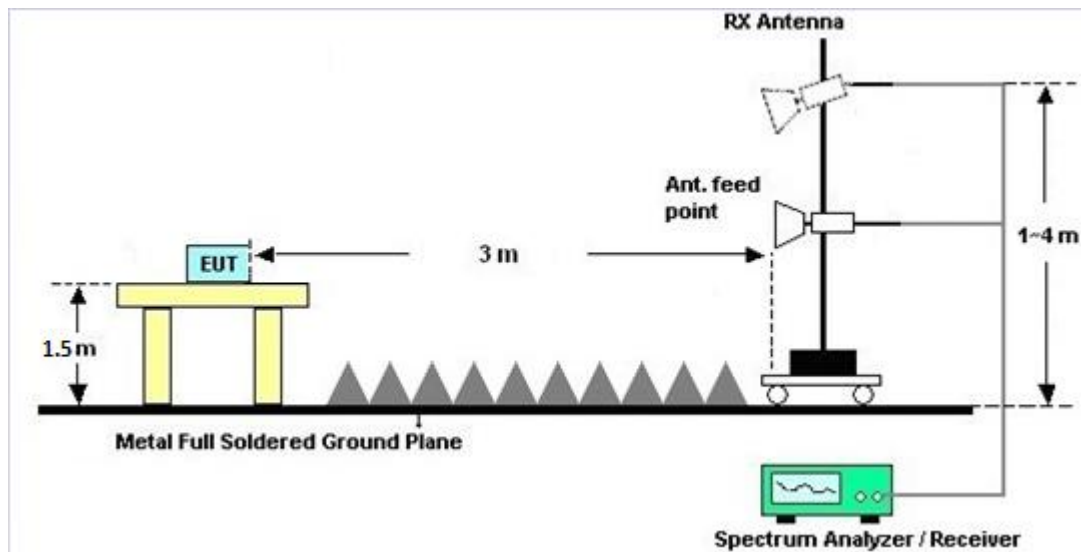
For radiated emissions below 30MHz



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.

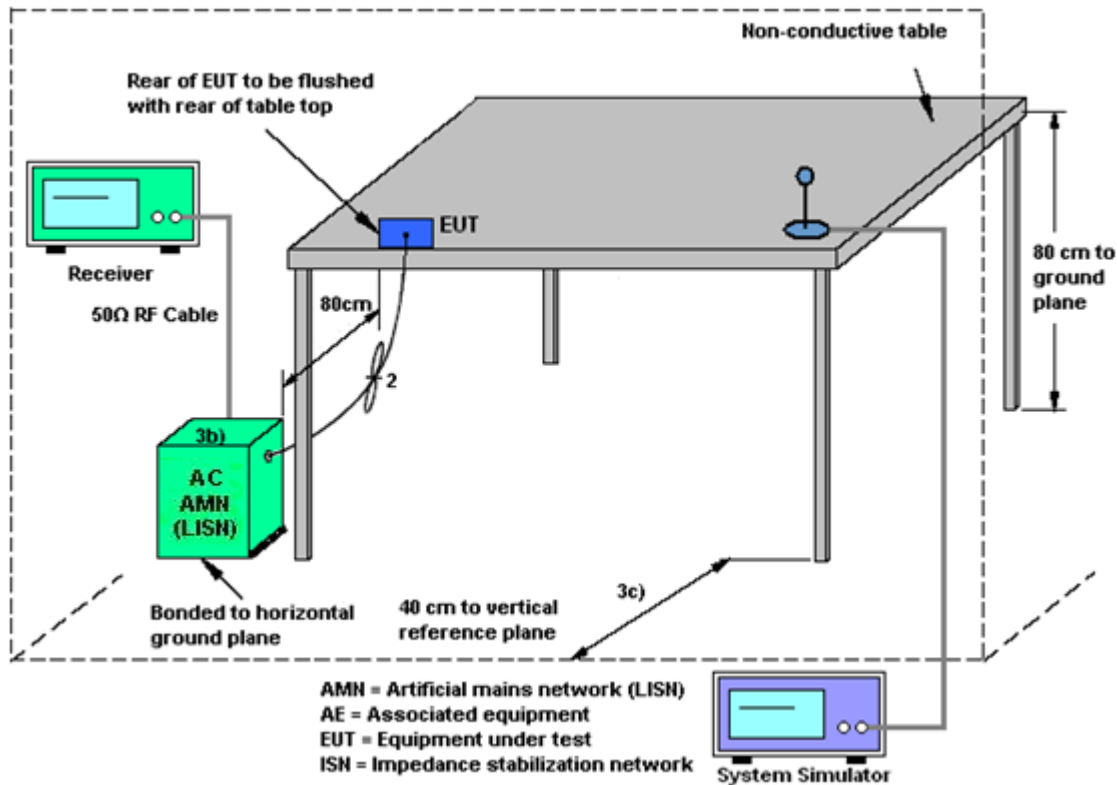
3.5.2 Measuring Instruments

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
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Aug. 08, 2017	Jul. 06, 2018	Aug. 07, 2018	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 18, 2018	Jul. 06, 2018	Jan. 17, 2019	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 18, 2018	Jul. 06, 2018	Jan. 17, 2019	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	-40~+150°C	Oct. 12, 2017	Jul. 06, 2018	Oct. 11, 2018	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Max 30dBm	Aug. 08, 2017	Jul. 06, 2018	Aug. 07, 2018	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150208	10Hz~44G,MAX 30dB	Apr. 17, 2018	Jul. 06, 2018	Apr. 16, 2019	Radiation (03CH02-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 22, 2017	Jul. 06, 2018	Oct. 21, 2018	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	23182	30MHz~2GHz	Jan. 29, 2018	Jul. 06, 2018	Jan. 28, 2019	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Oct. 21, 2017	Jul. 06, 2018	Oct. 20, 2018	Radiation (03CH02-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Feb. 07, 2018	Jul. 06, 2018	Feb. 06, 2019	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	187289	9KHz~1GHz	Aug. 07, 2017	Jul. 06, 2018	Aug. 06, 2018	Radiation (03CH02-KS)
high gain Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	2025788	100MHz~18GHz	Apr. 17, 2018	Jul. 06, 2018	Apr. 16, 2019	Radiation (03CH02-KS)
Amplifier	Agilent	8449B	3008A02384	1GHz~26.5GHz	Oct. 12, 2017	Jul. 06, 2018	Oct. 11, 2018	Radiation (03CH02-KS)
Amplifier	MITEQ	TTA1840-35-HG	1887435	18~40GHz	Oct. 12, 2017	Jul. 06, 2018	Oct. 11, 2018	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Jul. 06, 2018	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Jul. 06, 2018	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Jul. 06, 2018	NCR	Radiation (03CH02-KS)
EMI Receiver	R&S	ESCi7	100768	9kHz~7GHz;	Apr. 19, 2018	Jul. 11, 2018	Apr. 18, 2019	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 13, 2017	Jul. 11, 2018	Oct. 12, 2018	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 13, 2017	Jul. 11, 2018	Oct. 12, 2018	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 12, 2017	Jul. 11, 2018	Oct. 11, 2018	Conduction (CO01-KS)

NCR: No Calibration Required

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.9dB
---	-------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.2dB
---	-------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.2dB
---	-------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.7dB
---	-------



Appendix A. Conducted Test Results

Test Engineer:	Silent Hai	Temperature:	21~25	°C
Test Date:	2018/7/6	Relative Humidity:	51~55	%

TEST RESULTS DATA
26dB and 99% OBW

Band I										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)	IC 99% Bandwidth Power Limit (dBm)	IC 99% Bandwidth EIRP Limit (dBm)		
11a	6Mbps	1	36	5180	17.33	23.23	-	22.39		
11a	6Mbps	1	44	5220	17.48	23.98	-	22.43		
11a	6Mbps	1	48	5240	17.48	23.73	-	22.43		
HT20	MCS0	1	36	5180	18.63	24.98	-	22.70		
HT20	MCS0	1	44	5220	18.58	24.78	-	22.69		
HT20	MCS0	1	48	5240	18.63	24.88	-	22.70		
HT40	MCS0	1	38	5190	36.56	41.54	-	23.01		
HT40	MCS0	1	46	5230	36.46	41.72	-	23.01		
VHT80	MCS0	1	42	5210	75.76	83.12	-	23.01		

TEST RESULTS DATA
Average Power Table

FCC Band I										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)		Pass/Fail
11a	6Mbps	1	36	5180	0.22	15.98	24.00	-4.40		Pass
11a	6Mbps	1	44	5220	0.22	16.08	24.00	-4.40		Pass
11a	6Mbps	1	48	5240	0.22	16.25	24.00	-4.40		Pass
HT20	MCS0	1	36	5180	0.22	13.93	24.00	-4.40		Pass
HT20	MCS0	1	44	5220	0.22	13.96	24.00	-4.40		Pass
HT20	MCS0	1	48	5240	0.22	13.99	24.00	-4.40		Pass
HT40	MCS0	1	38	5190	0.41	13.69	24.00	-4.40		Pass
HT40	MCS0	1	46	5230	0.41	13.74	24.00	-4.40		Pass
VHT20	MCS0	1	36	5180	0.22	11.75	24.00	-4.40		Pass
VHT20	MCS0	1	44	5220	0.22	11.83	24.00	-4.40		Pass
VHT20	MCS0	1	48	5240	0.22	12.03	24.00	-4.40		Pass
VHT40	MCS0	1	38	5190	0.38	11.77	24.00	-4.40		Pass
VHT40	MCS0	1	46	5230	0.38	11.84	24.00	-4.40		Pass
VHT80	MCS0	1	42	5210	0.77	11.82	24.00	-4.40		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	0.22	5.75	11.00	-4.40		Pass
11a	6Mbps	1	44	5220	0.22	5.85	11.00	-4.40		Pass
11a	6Mbps	1	48	5240	0.22	5.97	11.00	-4.40		Pass
HT20	MCS0	1	36	5180	0.22	3.34	11.00	-4.40		Pass
HT20	MCS0	1	44	5220	0.22	3.27	11.00	-4.40		Pass
HT20	MCS0	1	48	5240	0.22	3.24	11.00	-4.40		Pass
HT40	MCS0	1	38	5190	0.41	-0.10	11.00	-4.40		Pass
HT40	MCS0	1	46	5230	0.41	0.11	11.00	-4.40		Pass
VHT80	MCS0	1	42	5210	0.77	-4.40	11.00	-4.40		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	17.43	23.98	23.41	29.41	23.98	
11a	6M bps	1	60	5300	17.38	23.78	23.40	29.40	23.98	
11a	6M bps	1	64	5320	17.43	23.88	23.41	29.41	23.98	
HT20	MCS 0	1	52	5260	18.68	24.93	23.71	29.71	23.98	
HT20	MCS 0	1	60	5300	18.58	24.88	23.69	29.69	23.98	
HT20	MCS 0	1	64	5320	18.63	24.73	23.70	29.70	23.98	
HT40	MCS 0	1	54	5270	36.46	41.72	23.98	30.00	23.98	
HT40	MCS 0	1	62	5310	36.56	41.81	23.98	30.00	23.98	
VHT80	MCS 0	1	58	5290	75.76	83.60	23.98	30.00	23.98	

TEST RESULTS DATA
Average Power Table

FCC Band II										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
11a	6M bps	1	52	5260	0.22	16.27	23.98	-3.40	26.99	Pass
11a	6M bps	1	60	5300	0.22	15.98	23.98	-3.40	26.99	Pass
11a	6M bps	1	64	5320	0.22	15.68	23.98	-3.40	26.99	Pass
HT20	MCS 0	1	52	5260	0.22	13.95	23.98	-3.40	26.99	Pass
HT20	MCS 0	1	60	5300	0.22	13.85	23.98	-3.40	26.99	Pass
HT20	MCS 0	1	64	5320	0.22	13.63	23.98	-3.40	26.99	Pass
HT40	MCS 0	1	54	5270	0.41	13.85	23.98	-3.40	26.99	Pass
HT40	MCS 0	1	62	5310	0.41	13.75	23.98	-3.40	26.99	Pass
VHT20	MCS 0	1	52	5260	0.22	11.98	23.98	-3.40	26.99	Pass
VHT20	MCS 0	1	60	5300	0.22	11.70	23.98	-3.40	26.99	Pass
VHT20	MCS 0	1	64	5320	0.22	11.54	23.98	-3.40	26.99	Pass
VHT40	MCS 0	1	54	5270	0.38	11.82	23.98	-3.40	26.99	Pass
VHT40	MCS 0	1	62	5310	0.38	11.64	23.98	-3.40	26.99	Pass
VHT80	MCS 0	1	58	5290	0.77	11.79	23.98	-3.40	26.99	Pass

TEST RESULTS DATA
Power Spectral Density

Band II										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm/MHz)	DG (dBi)		Pass/Fail
11a	6M bps	1	52	5260	0.22	5.84	11.00	-3.40		Pass
11a	6M bps	1	60	5300	0.22	5.86	11.00	-3.40		Pass
11a	6M bps	1	64	5320	0.22	5.57	11.00	-3.40		Pass
HT20	MCS 0	1	52	5260	0.22	3.72	11.00	-3.40		Pass
HT20	MCS 0	1	60	5300	0.22	3.25	11.00	-3.40		Pass
HT20	MCS 0	1	64	5320	0.22	3.32	11.00	-3.40		Pass
HT40	MCS 0	1	54	5270	0.41	0.13	11.00	-3.40		Pass
HT40	MCS 0	1	62	5310	0.41	-0.12	11.00	-3.40		Pass
VHT80	MCS 0	1	58	5290	0.77	-4.69	11.00	-3.40		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	17.43	24.08	23.41	29.41	23.98	
11a	6M bps	1	116	5580	17.43	23.58	23.41	29.41	23.98	
11a	6M bps	1	140	5700	17.43	23.73	23.41	29.41	23.98	
11a	6Mbps	1	144	5720	17.48	23.78	23.43	29.43	23.98	
HT20	MCS 0	1	100	5500	18.68	24.23	23.71	29.71	23.98	
HT20	MCS 0	1	116	5580	18.58	24.48	23.69	29.69	23.98	
HT20	MCS 0	1	140	5700	18.63	24.43	23.70	29.70	23.98	
HT20	MCS0	1	144	5720	18.73	24.88	23.73	29.73	23.98	
HT40	MCS 0	1	102	5510	36.56	41.90	23.98	30.00	23.98	
HT40	MCS 0	1	110	5550	36.56	41.72	23.98	30.00	23.98	
HT40	MCS 0	1	134	5670	36.56	41.90	23.98	30.00	23.98	
HT40	MCS0	1	142	5710	36.66	41.90	23.98	30.00	23.98	
VHT80	MCS 0	1	106	5530	75.64	83.92	23.98	30.00	23.98	
VHT80	MCS0	1	138	5690	75.76	84.08	23.98	30.00	23.98	

TEST RESULTS DATA
Average Power Table

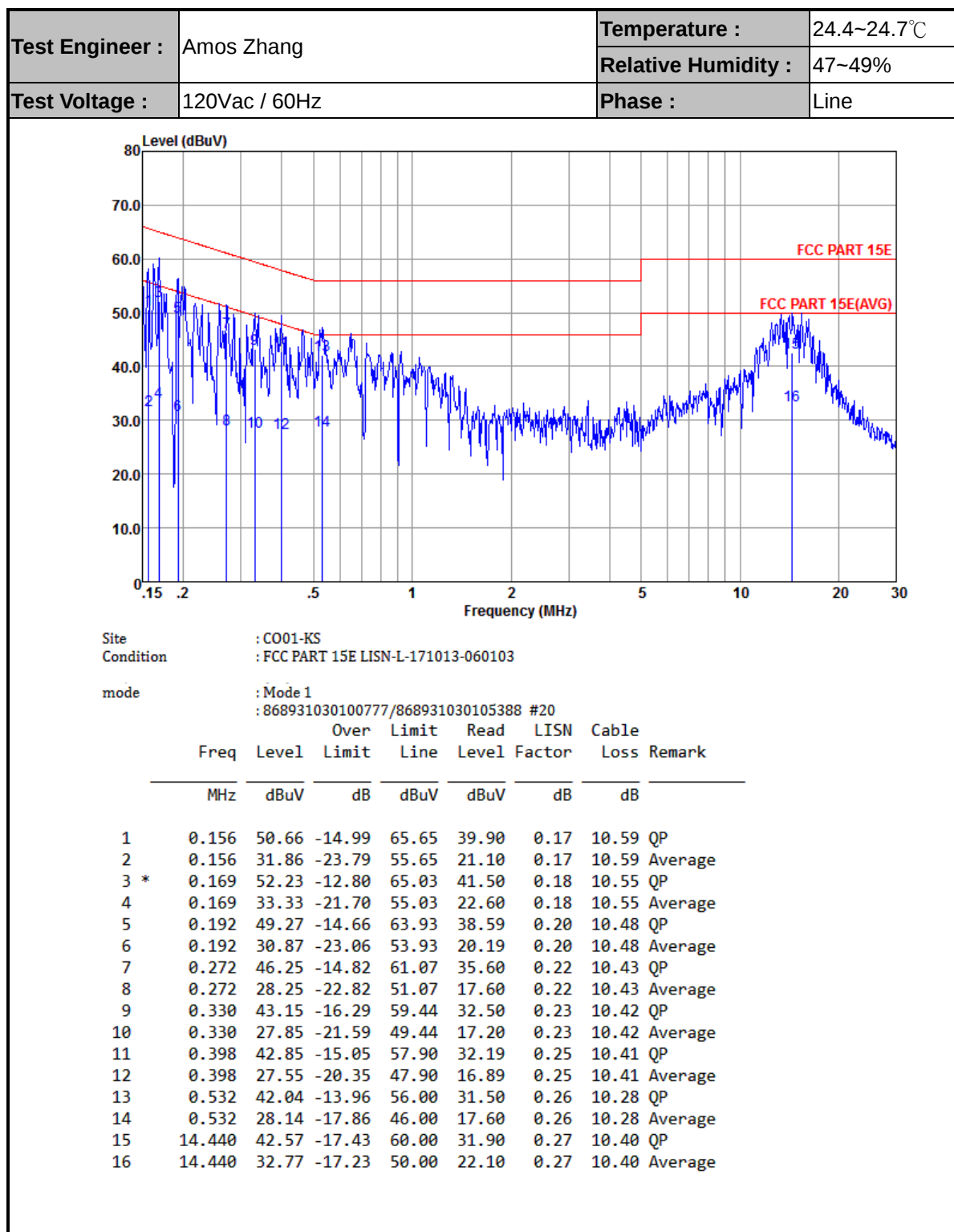
FCC Band III										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
11a	6M bps	1	100	5500	0.22	15.88	23.98	-3.90	26.99	Pass
11a	6M bps	1	116	5580	0.22	15.55	23.98	-3.90	26.99	Pass
11a	6M bps	1	140	5700	0.22	15.77	23.98	-3.90	26.99	Pass
11a	6Mbps	1	144	5720	0.22	15.91	23.98	-3.90	26.99	Pass
HT20	MCS 0	1	100	5500	0.22	13.97	23.98	-3.90	26.99	Pass
HT20	MCS 0	1	116	5580	0.22	13.48	23.98	-3.90	26.99	Pass
HT20	MCS 0	1	140	5700	0.22	13.65	23.98	-3.90	26.99	Pass
HT20	MCS0	1	144	5720	0.22	13.94	23.98	-3.90	26.99	Pass
HT40	MCS 0	1	102	5510	0.41	13.84	23.98	-3.90	26.99	Pass
HT40	MCS 0	1	110	5550	0.41	13.62	23.98	-3.90	26.99	Pass
HT40	MCS 0	1	134	5670	0.41	13.76	23.98	-3.90	26.99	Pass
HT40	MCS0	1	142	5710	0.41	13.64	23.98	-3.90	26.99	Pass
VHT20	MCS 0	1	100	5500	0.22	11.90	23.98	-3.90	26.99	Pass
VHT20	MCS 0	1	116	5580	0.22	11.38	23.98	-3.90	26.99	Pass
VHT20	MCS 0	1	140	5700	0.22	11.57	23.98	-3.90	26.99	Pass
VHT20	MCS0	1	144	5720	0.22	11.87	23.98	-3.90	26.99	Pass
VHT40	MCS 0	1	102	5510	0.38	11.80	23.98	-3.90	26.99	Pass
VHT40	MCS 0	1	110	5550	0.38	11.36	23.98	-3.90	26.99	Pass
VHT40	MCS 0	1	134	5670	0.38	11.44	23.98	-3.90	26.99	Pass
VHT40	MCS0	1	140	5710	0.38	11.66	23.98	-3.90	26.99	Pass
VHT80	MCS 0	1	106	5530	0.77	11.71	23.98	-3.90	26.99	Pass
VHT80	MCS 0	1	138	5690	0.77	11.65	23.98	-3.90	26.99	Pass

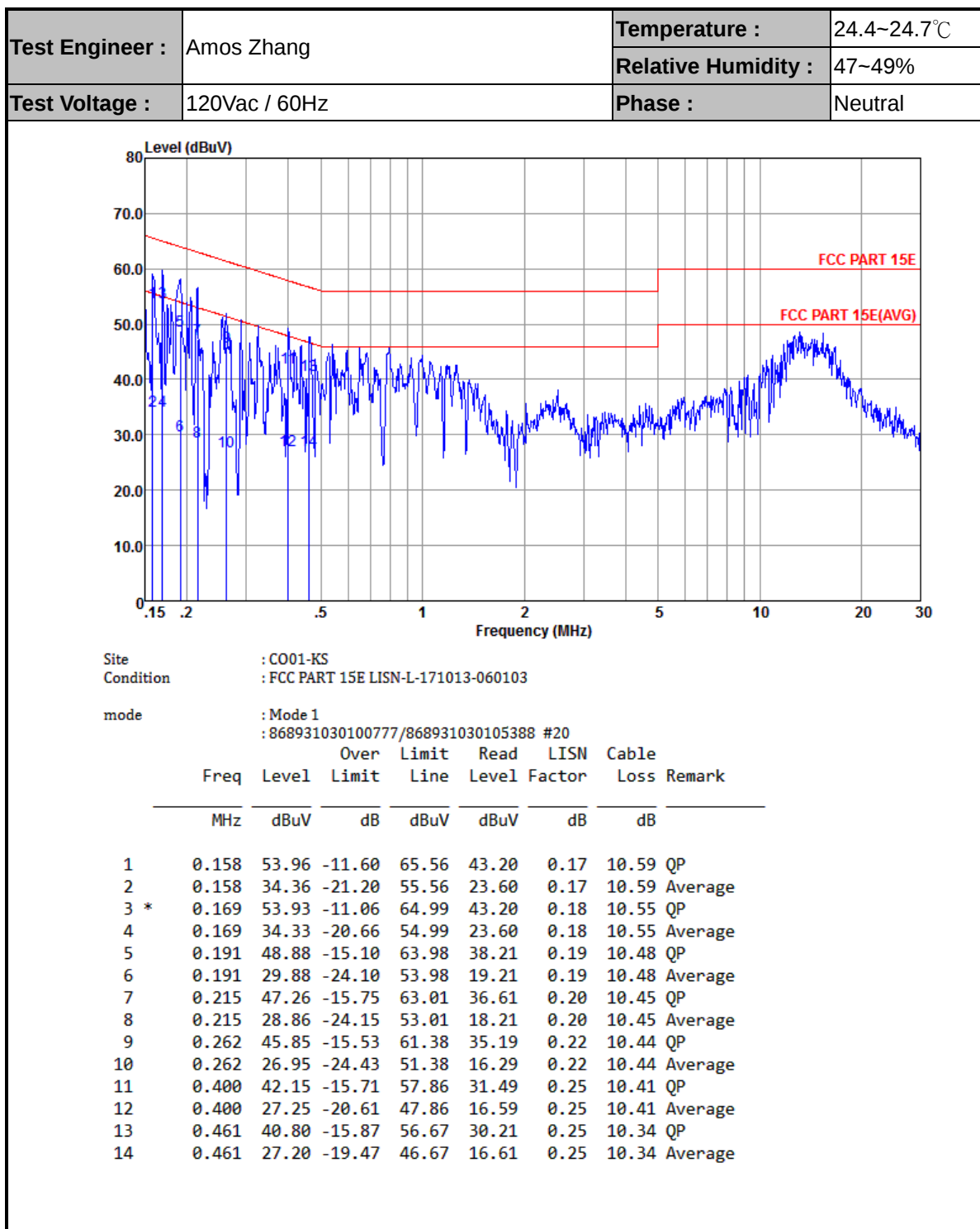
TEST RESULTS DATA
Power Spectral Density

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
11a	6M bps	1	100	5500	0.22	5.80	11.00	-3.90		Pass
11a	6M bps	1	116	5580	0.22	5.08	11.00	-3.90		Pass
11a	6M bps	1	140	5700	0.22	5.61	11.00	-3.90		Pass
11a	6Mbps	1	144	5720	0.22	5.50	11.00	-3.90		Pass
HT20	MCS 0	1	100	5500	0.22	3.36	11.00	-3.90		Pass
HT20	MCS 0	1	116	5580	0.22	2.64	11.00	-3.90		Pass
HT20	MCS 0	1	140	5700	0.22	2.91	11.00	-3.90		Pass
HT20	MCS0	1	144	5720	0.22	3.78	11.00	-3.90		Pass
HT40	MCS 0	1	102	5510	0.41	-0.39	11.00	-3.90		Pass
HT40	MCS 0	1	110	5550	0.41	-0.31	11.00	-3.90		Pass
HT40	MCS 0	1	134	5670	0.41	0.31	11.00	-3.90		Pass
HT40	MCS0	1	142	5710	0.41	-0.17	11.00	-3.90		Pass
VHT80	MCS 0	1	106	5530	0.77	-5.14	11.00	-3.90		Pass
VHT80	MCS0	1	138	5690	0.77	-4.85	11.00	-3.90		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		5148	60.15	-13.85	74	50.02	35.39	7.99	33.25	313	60	P	H
		5149.92	44.97	-9.03	54	34.84	35.39	7.99	33.25	313	60	A	H
	*	5182	103.46	-	-	93.36	35.36	7.99	33.25	313	60	P	H
	*	5182	95.36	-	-	85.26	35.36	7.99	33.25	313	60	A	H
		5135.36	60.63	-13.37	74	50.49	35.41	7.99	33.26	119	299	P	V
		5149.92	47.04	-6.96	54	36.91	35.39	7.99	33.25	119	299	A	V
	*	5182	104.82	-	-	94.72	35.36	7.99	33.25	119	299	P	V
	*	5182	97.8	-	-	87.7	35.36	7.99	33.25	119	299	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	44.32	-23.98	68.3	60.06	38.47	11.94	66.15	100	360	P	H
		10360	45.6	-22.7	68.3	61.34	38.47	11.94	66.15	100	360	P	V
802.11a CH 44 5220MHz		10440	44.63	-23.67	68.3	60.12	38.52	12.09	66.1	100	360	P	H
		10440	45.49	-22.81	68.3	60.98	38.52	12.09	66.1	100	360	P	V
802.11a CH 48 5240MHz		10480	44.84	-23.46	68.3	60.14	38.56	12.21	66.07	100	360	P	H
		10480	46.24	-22.06	68.3	61.54	38.56	12.21	66.07	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		5127.52	58.66	-15.34	74	48.52	35.41	7.99	33.26	286	360	P	H
		5128.64	43.5	-10.5	54	33.36	35.41	7.99	33.26	286	360	A	H
	*	5178	97.76	-	-	87.66	35.36	7.99	33.25	286	360	P	H
	*	5178	90.5	-	-	80.4	35.36	7.99	33.25	286	360	A	H
		5144.16	59.73	-14.27	74	49.6	35.39	7.99	33.25	306	60	P	V
		5139.52	43.6	-10.4	54	33.47	35.39	7.99	33.25	306	60	A	V
	*	5178	97.19	-	-	87.09	35.36	7.99	33.25	306	60	P	V
	*	5178	89.89	-	-	79.79	35.36	7.99	33.25	306	60	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 36 5180MHz		10360	43.81	-24.49	68.3	59.55	38.47	11.94	66.15	100	360	P	H
		10360	44.07	-24.23	68.3	59.81	38.47	11.94	66.15	100	360	P	V
802.11n HT20 CH 44 5220MHz		10440	45.26	-23.04	68.3	60.75	38.52	12.09	66.1	100	360	P	H
		10440	43.84	-24.46	68.3	59.33	38.52	12.09	66.1	100	360	P	V
802.11n HT20 CH 48 5240MHz		10480	44.56	-23.74	68.3	59.86	38.56	12.21	66.07	100	360	P	H
		10480	45.22	-23.08	68.3	60.52	38.56	12.21	66.07	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		5148.32	58.68	-15.32	74	48.55	35.39	7.99	33.25	338	59	P	H
		5149.76	45.13	-8.87	54	35	35.39	7.99	33.25	338	59	A	H
	*	5196	96.27	-	-	86.18	35.35	7.99	33.25	338	59	P	H
	*	5196	89.37	-	-	79.28	35.35	7.99	33.25	338	59	A	H
		5373.9	52.23	-21.77	74	41.98	35.22	8.25	33.22	338	59	P	H
		5398.92	42.03	-11.97	54	31.75	35.19	8.3	33.21	338	59	A	H
		5141.92	65.1	-8.9	74	54.97	35.39	7.99	33.25	100	303	P	V
		5149.76	48.23	-5.77	54	38.1	35.39	7.99	33.25	100	303	A	V
	*	5192	100.26	-	-	90.17	35.35	7.99	33.25	100	303	P	V
	*	5192	92.47	-	-	82.38	35.35	7.99	33.25	100	303	A	V
		5369.58	51.47	-22.53	74	41.22	35.22	8.25	33.22	100	303	P	V
		5374.8	42	-12	54	31.75	35.22	8.25	33.22	100	303	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	44.01	-24.29	68.3	59.69	38.48	11.98	66.14	100	360	P	H
		10380	44.14	-24.16	68.3	59.82	38.48	11.98	66.14	100	360	P	V
802.11n HT40 CH 46 5230MHz		10460	45.29	-23.01	68.3	60.72	38.53	12.13	66.09	100	360	P	H
		10460	44.91	-23.39	68.3	60.34	38.53	12.13	66.09	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		5149.6	55.16	-18.84	74	45.03	35.39	7.99	33.25	335	58	P	H
		5147.52	44.45	-9.55	54	34.32	35.39	7.99	33.25	335	58	A	H
	*	5202	91.6	-	-	81.51	35.35	7.99	33.25	335	58	P	H
	*	5202	83.88	-	-	73.79	35.35	7.99	33.25	335	58	A	H
		5397.84	51.41	-22.59	74	41.13	35.19	8.3	33.21	335	58	P	H
		5393.16	42.39	-11.61	54	32.12	35.2	8.28	33.21	335	58	A	H
		5148.8	59.91	-14.09	74	49.78	35.39	7.99	33.25	100	298	P	V
		5145.44	46.47	-7.53	54	36.34	35.39	7.99	33.25	100	298	A	V
	*	5208	95.49	-	-	85.38	35.34	8.01	33.24	100	298	P	V
	*	5208	88.23	-	-	78.12	35.34	8.01	33.24	100	298	A	V
		5392.44	51.34	-22.66	74	41.07	35.2	8.28	33.21	100	298	P	V
		5389.74	42.52	-11.48	54	32.25	35.2	8.28	33.21	100	298	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	43.81	-24.49	68.3	59.36	38.51	12.06	66.12	100	360	P	H
CH 42 5210MHz		10420	44.59	-23.71	68.3	60.14	38.51	12.06	66.12	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	*	5320	101.9	-	-	91.7	35.26	8.17	33.23	278	56	P	H
	*	5320	94.46	-	-	84.26	35.26	8.17	33.23	278	56	A	H
		5360.2	58.51	-15.49	74	48.28	35.23	8.22	33.22	278	56	P	H
		5350.3	43.95	-10.05	54	33.72	35.23	8.22	33.22	278	56	A	H
	*	5318	102.56	-	-	92.36	35.26	8.17	33.23	100	299	P	V
	*	5318	94.66	-	-	84.46	35.26	8.17	33.23	100	299	A	V
		5355.9	56.93	-17.07	74	46.7	35.23	8.22	33.22	100	299	P	V
		5352.3	43.67	-10.33	54	33.44	35.23	8.22	33.22	100	299	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	45.17	-23.13	68.3	60.35	38.58	12.28	66.04	100	360	P	H
		10520	44.92	-23.38	68.3	60.1	38.58	12.28	66.04	100	360	P	V
802.11a CH 60 5300MHz		10600	44.1	-29.9	74	58.97	38.64	12.47	65.98	100	360	P	H
		10600	44.38	-29.62	74	59.25	38.64	12.47	65.98	100	360	P	V
802.11a CH 64 5320MHz		10640	45.19	-28.81	74	59.93	38.67	12.55	65.96	100	360	P	H
		10640	44.43	-29.57	74	59.17	38.67	12.55	65.96	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	*	5318	97.92	-	-	87.72	35.26	8.17	33.23	300	53	P	H
	*	5318	90.19	-	-	79.99	35.26	8.17	33.23	300	53	A	H
		5351.8	55.71	-18.29	74	45.48	35.23	8.22	33.22	300	53	P	H
		5354.5	42.49	-11.51	54	32.26	35.23	8.22	33.22	300	53	A	H
	*	5320	100.94	-	-	90.74	35.26	8.17	33.23	100	307	P	V
	*	5320	93.31	-	-	83.11	35.26	8.17	33.23	100	307	A	V
		5357.1	57.88	-16.12	74	47.65	35.23	8.22	33.22	100	307	P	V
		5353.6	43.4	-10.6	54	33.17	35.23	8.22	33.22	100	307	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		10520	45.58	-22.72	68.3	60.76	38.58	12.28	66.04	100	360	P	H
CH 52 5260MHz		10520	44.45	-23.85	68.3	59.63	38.58	12.28	66.04	100	360	P	V
802.11n HT20		10600	43.83	-30.17	74	58.7	38.64	12.47	65.98	100	360	P	H
CH 60 5300MHz		10600	43.33	-30.67	74	58.2	38.64	12.47	65.98	100	360	P	V
802.11n HT20		10640	44.77	-29.23	74	59.51	38.67	12.55	65.96	100	360	P	H
CH 64 5320MHz		10640	44.91	-29.09	74	59.65	38.67	12.55	65.96	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		5109.12	53.91	-20.09	74	43.76	35.42	7.99	33.26	304	20	P	H
		5132.48	43.44	-10.56	54	33.3	35.41	7.99	33.26	304	20	A	H
	*	5312	95.53	-	-	85.33	35.26	8.17	33.23	304	20	P	H
	*	5312	87.78	-	-	77.58	35.26	8.17	33.23	304	20	A	H
		5350	58.87	-15.13	74	48.64	35.23	8.22	33.22	304	20	P	H
		5350.6	44.7	-9.3	54	34.47	35.23	8.22	33.22	304	20	A	H
		5144.48	53.06	-20.94	74	42.93	35.39	7.99	33.25	100	306	P	V
		5118.56	43.69	-10.31	54	33.54	35.42	7.99	33.26	100	306	A	V
	*	5306	98.79	-	-	88.6	35.27	8.15	33.23	100	306	P	V
	*	5306	90.67	-	-	80.48	35.27	8.15	33.23	100	306	A	V
		5358.3	60.68	-13.32	74	50.45	35.23	8.22	33.22	100	306	P	V
		5350.2	46.06	-7.94	54	35.83	35.23	8.22	33.22	100	306	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	45.74	-22.56	68.3	60.85	38.6	12.32	66.03	100	360	P	H
		10540	45.17	-23.13	68.3	60.28	38.6	12.32	66.03	100	360	P	V
802.11n HT40 CH 62 5310MHz		10620	44.66	-29.34	74	59.46	38.66	12.51	65.97	100	360	P	H
		10620	45.05	-28.95	74	59.85	38.66	12.51	65.97	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		5148	53.62	-20.38	74	43.49	35.39	7.99	33.25	261	21	P	H
		5102.08	43.89	-10.11	54	33.73	35.43	7.99	33.26	261	21	A	H
	*	5272	91.15	-	-	80.99	35.3	8.09	33.23	261	21	P	H
	*	5272	83.53	-	-	73.37	35.3	8.09	33.23	261	21	A	H
		5355.8	54.54	-19.46	74	44.31	35.23	8.22	33.22	261	21	P	H
		5352.9	44.01	-9.99	54	33.78	35.23	8.22	33.22	261	21	A	H
		5141.6	53.08	-20.92	74	42.95	35.39	7.99	33.25	100	307	P	V
		5132.96	44	-10	54	33.86	35.41	7.99	33.26	100	307	A	V
	*	5280	94.17	-	-	84	35.28	8.12	33.23	100	307	P	V
	*	5280	86.48	-	-	76.31	35.28	8.12	33.23	100	307	A	V
		5351	57.31	-16.69	74	47.08	35.23	8.22	33.22	100	307	P	V
		5351.1	45.65	-8.35	54	35.42	35.23	8.22	33.22	100	307	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	43.9	-24.4	68.3	58.84	38.63	12.43	66	100	360	P	H
CH 58 5290MHz		10580	44.86	-23.44	68.3	59.8	38.63	12.43	66	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		5455.44	57.71	-16.29	74	47.39	35.15	8.37	33.2	282	59	P	H
		5461.68	58.01	-10.29	68.3	47.69	35.15	8.37	33.2	282	59	P	H
		5459.92	43.48	-10.52	54	33.16	35.15	8.37	33.2	282	59	A	H
	*	5498	101.91	-	-	91.57	35.11	8.43	33.2	282	59	P	H
	*	5498	94.83	-	-	84.49	35.11	8.43	33.2	282	59	A	H
		5458.16	57.04	-16.96	74	46.72	35.15	8.37	33.2	106	322	P	V
		5464.56	57.76	-10.54	68.3	47.43	35.14	8.39	33.2	106	322	P	V
		5458.64	43.54	-10.46	54	33.22	35.15	8.37	33.2	106	322	A	V
	*	5498	101.62	-	-	91.28	35.11	8.43	33.2	106	322	P	V
	*	5498	94.45	-	-	84.11	35.11	8.43	33.2	106	322	A	V
802.11a CH 140 5700MHz	*	5702	104.19	-	-	93.84	34.94	8.58	33.17	272	325	P	H
	*	5702	96.01	-	-	85.66	34.94	8.58	33.17	272	325	A	H
		5726.76	61.02	-7.28	68.3	50.69	34.92	8.58	33.17	272	325	P	H
	*	5702	103.02	-	-	92.67	34.94	8.58	33.17	100	326	P	V
	*	5702	94.99	-	-	84.64	34.94	8.58	33.17	100	326	A	V
		5734.92	58.59	-9.71	68.3	48.26	34.91	8.59	33.17	100	326	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	46.43	-27.57	74	59.86	38.93	13.34	65.7	100	360	P	H
		11000	45.13	-28.87	74	58.56	38.93	13.34	65.7	100	360	P	V
802.11a CH 116 5580MHz		11160	47.6	-26.4	74	60.94	39.05	13.19	65.58	100	360	P	H
		11160	47.02	-26.98	74	60.36	39.05	13.19	65.58	100	360	P	V
802.11a CH 140 5700MHz		11400	45.37	-28.63	74	58.56	39.23	12.99	65.41	100	360	P	H
		11400	45.82	-28.18	74	59.01	39.23	12.99	65.41	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		5454.8	55.01	-18.99	74	44.69	35.15	8.37	33.2	300	53	P	H
		5465.04	56.48	-11.82	68.3	46.15	35.14	8.39	33.2	300	53	P	H
		5456.72	43.66	-10.34	54	33.34	35.15	8.37	33.2	300	53	A	H
	*	5500	97.98	-	-	87.64	35.11	8.43	33.2	300	53	P	H
	*	5500	91.09	-	-	80.75	35.11	8.43	33.2	300	53	A	H
		5449.52	57.79	-16.21	74	47.47	35.15	8.37	33.2	100	307	P	V
		5466	55.02	-13.28	68.3	44.69	35.14	8.39	33.2	100	307	P	V
		5459.6	44	-10	54	33.68	35.15	8.37	33.2	100	307	A	V
	*	5498	100.31	-	-	89.97	35.11	8.43	33.2	100	307	P	V
	*	5498	92.31	-	-	81.97	35.11	8.43	33.2	100	307	A	V
802.11n HT20 CH 140 5700MHz	*	5700	100.61	-	-	90.26	34.95	8.57	33.17	300	51	P	H
	*	5700	92.54	-	-	82.19	34.95	8.57	33.17	300	51	A	H
		5728.6	61.25	-7.05	68.3	50.92	34.92	8.58	33.17	300	51	P	H
	*	5698	100.65	-	-	90.3	34.95	8.57	33.17	100	288	P	V
	*	5698	92.87	-	-	82.52	34.95	8.57	33.17	100	288	A	V
		5737.32	61.74	-6.56	68.3	51.41	34.91	8.59	33.17	100	288	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 HT20 CH 100 5500MHz		11000	46.23	-27.77	74	59.66	38.93	13.34	65.7	100	360	P	H
		11000	44.74	-29.26	74	58.17	38.93	13.34	65.7	100	360	P	V
802.11n HT20 CH 116 5580MHz		11160	46.32	-27.68	74	59.66	39.05	13.19	65.58	100	360	P	H
		11160	47.12	-26.88	74	60.46	39.05	13.19	65.58	100	360	P	V
802.11n HT20 CH 140 5700MHz		11400	45.51	-28.49	74	58.7	39.23	12.99	65.41	100	360	P	H
		11400	45.78	-28.22	74	58.97	39.23	12.99	65.41	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		5453.68	58.83	-15.17	74	48.51	35.15	8.37	33.2	304	19	P	H
		5461.2	59.95	-8.35	68.3	49.63	35.15	8.37	33.2	304	19	P	H
		5459.76	43.96	-10.04	54	33.64	35.15	8.37	33.2	304	19	A	H
	*	5512	93.43	-	-	83.09	35.11	8.43	33.2	304	19	P	H
	*	5512	85.97	-	-	75.63	35.11	8.43	33.2	304	19	A	H
		5745.16	52.53	-15.77	68.3	42.2	34.91	8.59	33.17	304	19	P	H
		5448.24	59.13	-14.87	74	48.81	35.15	8.37	33.2	100	242	P	V
		5469.04	60.84	-7.46	68.3	50.51	35.14	8.39	33.2	100	242	P	V
		5459.92	44.57	-9.43	54	34.25	35.15	8.37	33.2	100	242	A	V
	*	5506	96.59	-	-	86.25	35.11	8.43	33.2	100	242	P	V
	*	5506	89.11	-	-	78.77	35.11	8.43	33.2	100	242	A	V
		5759.24	52.68	-15.62	68.3	42.37	34.89	8.59	33.17	100	242	P	V
802.11n HT40 CH 134 5670MHz		5459.92	52.43	-21.57	74	42.11	35.15	8.37	33.2	300	295	P	H
		5464.08	51.37	-16.93	68.3	41.04	35.14	8.39	33.2	300	295	P	H
		5454	42.31	-11.69	54	31.99	35.15	8.37	33.2	300	295	A	H
	*	5676	97.59	-	-	87.22	34.97	8.57	33.17	300	295	P	H
	*	5676	89.83	-	-	79.46	34.97	8.57	33.17	300	295	A	H
		5725.64	60.96	-7.34	68.3	50.63	34.92	8.58	33.17	300	295	P	H
		5422.8	52.8	-21.2	74	42.51	35.18	8.32	33.21	100	229	P	V
		5469.84	50.98	-17.32	68.3	40.65	35.14	8.39	33.2	100	229	P	V
		5456.08	42.31	-11.69	54	31.99	35.15	8.37	33.2	100	229	A	V
	*	5672	98.1	-	-	87.73	34.97	8.57	33.17	100	229	P	V
	*	5672	89.56	-	-	79.19	34.97	8.57	33.17	100	229	A	V
		5726.44	61.31	-6.99	68.3	50.98	34.92	8.58	33.17	100	229	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	46.66	-27.34	74	60.09	38.94	13.32	65.69	100	360	P	H
		11020	45.43	-28.57	74	58.86	38.94	13.32	65.69	100	360	P	V
802.11n HT40 CH 110 5550MHz		11100	46.29	-27.71	74	59.67	39	13.25	65.63	100	360	P	H
		11100	46.63	-27.37	74	60.01	39	13.25	65.63	100	360	P	V
802.11n HT40 CH 134 5670MHz		11340	45.43	-28.57	74	58.67	39.18	13.04	65.46	100	360	P	H
		11340	45.34	-28.66	74	58.58	39.18	13.04	65.46	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		5449.04	54.76	-19.24	74	44.44	35.15	8.37	33.2	300	56	P	H
		5466.48	56.08	-12.22	68.3	45.75	35.14	8.39	33.2	300	56	P	H
		5459.92	43.89	-10.11	54	33.57	35.15	8.37	33.2	300	56	A	H
	*	5536	90.56	-	-	80.2	35.08	8.47	33.19	300	56	P	H
	*	5536	83.11	-	-	72.75	35.08	8.47	33.19	300	56	A	H
		5737.32	52.48	-15.82	68.3	42.15	34.91	8.59	33.17	300	56	P	H
		5456.4	57.25	-16.75	74	46.93	35.15	8.37	33.2	100	307	P	V
		5468.24	58.37	-9.93	68.3	48.04	35.14	8.39	33.2	100	307	P	V
		5458.32	44.55	-9.45	54	34.23	35.15	8.37	33.2	100	307	A	V
	*	5528	91.62	-	-	81.27	35.09	8.45	33.19	100	307	P	V
	*	5528	83.89	-	-	73.54	35.09	8.45	33.19	100	307	A	V
		5732.04	51.81	-16.49	68.3	41.48	34.92	8.58	33.17	100	307	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		11060	45.4	-28.6	74	58.8	38.98	13.28	65.66	100	360	P	H
CH 106 5530MHz		11060	45.42	-28.58	74	58.82	38.98	13.28	65.66	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	*	5718	103.76	-	-	93.43	34.92	8.58	33.17	295	293	P	H
	*	5718	95.73	-	-	85.4	34.92	8.58	33.17	295	293	A	H
	*	5720	99.67	-	-	89.34	34.92	8.58	33.17	301	314	P	V
	*	5720	91.92	-	-	81.59	34.92	8.58	33.17	301	314	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	47.2	-26.8	74	60.38	39.25	12.96	65.39	100	360	P	H
CH 144 5720MHz		11440	47.01	-26.99	74	60.19	39.25	12.96	65.39	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 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	*	5724	100.15	-	-	89.82	34.92	8.58	33.17	300	290	P	H
HT20	*	5724	92.47	-	-	82.14	34.92	8.58	33.17	300	290	A	H
CH 144	*	5722	98.4	-	-	88.07	34.92	8.58	33.17	338	313	P	V
5720MHz	*	5722	90.17	-	-	79.84	34.92	8.58	33.17	338	313	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	45.59	-28.41	74	58.77	39.25	12.96	65.39	100	360	P	H
CH 144 5720MHz		11440	45.62	-28.38	74	58.8	39.25	12.96	65.39	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	*	5708	99.11	-	-	88.76	34.94	8.58	33.17	292	294	P	H
HT40	*	5708	90.15	-	-	79.8	34.94	8.58	33.17	292	294	A	H
CH 142	*	5704	97.85	-	-	87.5	34.94	8.58	33.17	300	313	P	V
5710MHz	*	5704	89.56	-	-	79.21	34.94	8.58	33.17	300	313	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	45.71	-28.29	74	58.9	39.24	12.97	65.4	100	360	P	H
CH 142 5710MHz		11420	45.36	-28.64	74	58.55	39.24	12.97	65.4	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	*	5684	93.57	-	-	83.22	34.95	8.57	33.17	312	291	P	H
VHT80	*	5684	85.5	-	-	75.15	34.95	8.57	33.17	312	291	A	H
CH 138	*	5684	93.2	-	-	82.85	34.95	8.57	33.17	274	314	P	V
5690MHz	*	5684	85.04	-	-	74.69	34.95	8.57	33.17	274	314	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	45.49	-28.51	74	58.7	39.21	13	65.42	100	360	P	H
CH 138 5690MHz		11380	45.23	-28.77	74	58.44	39.21	13	65.42	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 802.11n HT40 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT40 LF		33.88	21.93	-18.07	40	29.33	23	0.62	31.02	100	231	P	H
		413.15	23.83	-22.17	46	31.23	21.9	2.23	31.53	-	-	P	H
		639.16	23.49	-22.51	46	25.52	25.91	2.85	30.79	-	-	P	H
		696.39	26.27	-19.73	46	27.84	26.37	2.94	30.88	-	-	P	H
		875.84	27.25	-18.75	46	26.22	28.83	3.35	31.15	-	-	P	H
		958.29	27.58	-18.42	46	25.79	29.64	3.48	31.33	-	-	P	H
		45.52	29.41	-10.59	40	43.45	16.65	0.73	31.42	100	213	P	V
		407.33	24.11	-21.89	46	31.65	21.77	2.21	31.52	-	-	P	V
		595.51	23.35	-22.65	46	26.64	25.51	2.7	31.5	-	-	P	V
		746.83	26.1	-19.9	46	26.58	27.29	3.04	30.81	-	-	P	V
		825.4	26.24	-19.76	46	25.5	28.48	3.21	30.95	-	-	P	V
		954.41	29.01	-16.99	46	27.26	29.6	3.47	31.32	-	-	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”.

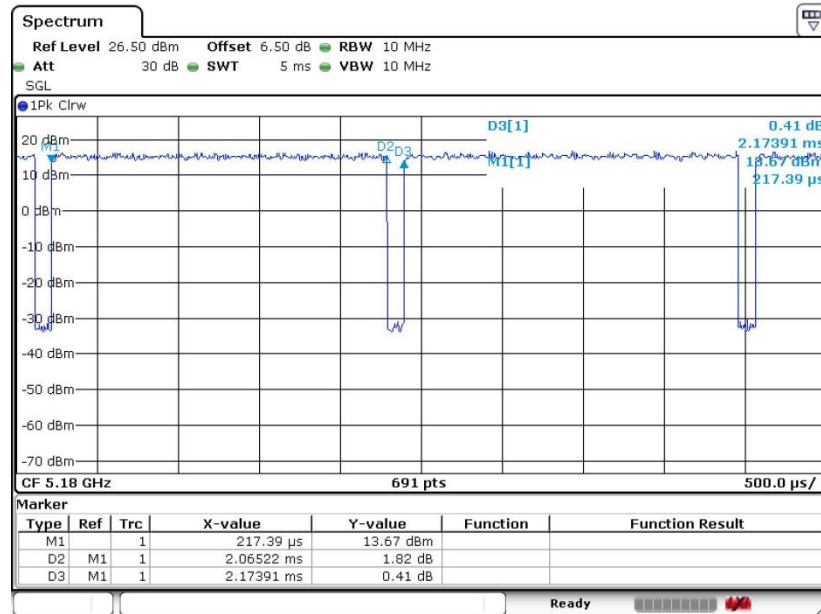


Appendix D. Duty Cycle Plots

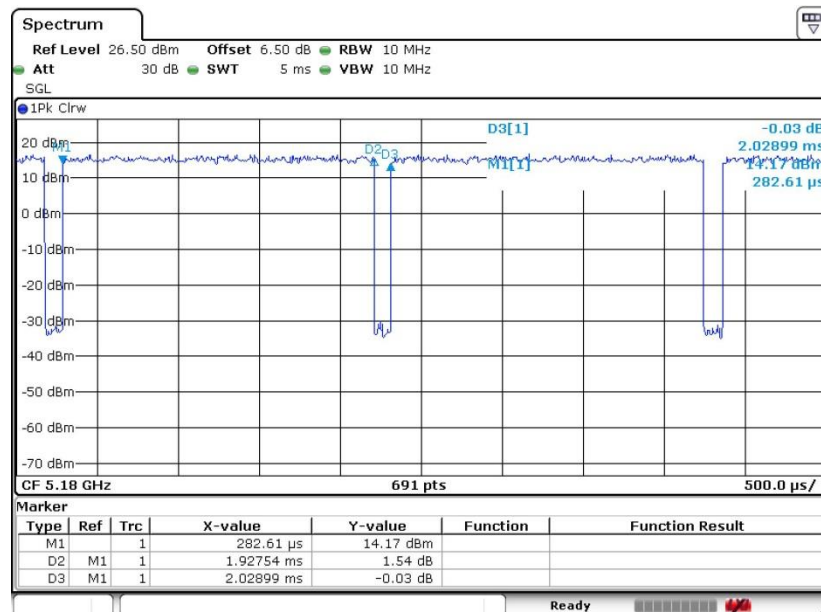
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	95.00	2.065	0.484	0.51KHz
802.11n HT20	95.00	1.928	0.519	0.56KHz
802.11n HT40	90.97	0.949	1.054	1.10KHz
802.11ac VHT80	83.77	0.464	2.160	2.20KHz



802.11a

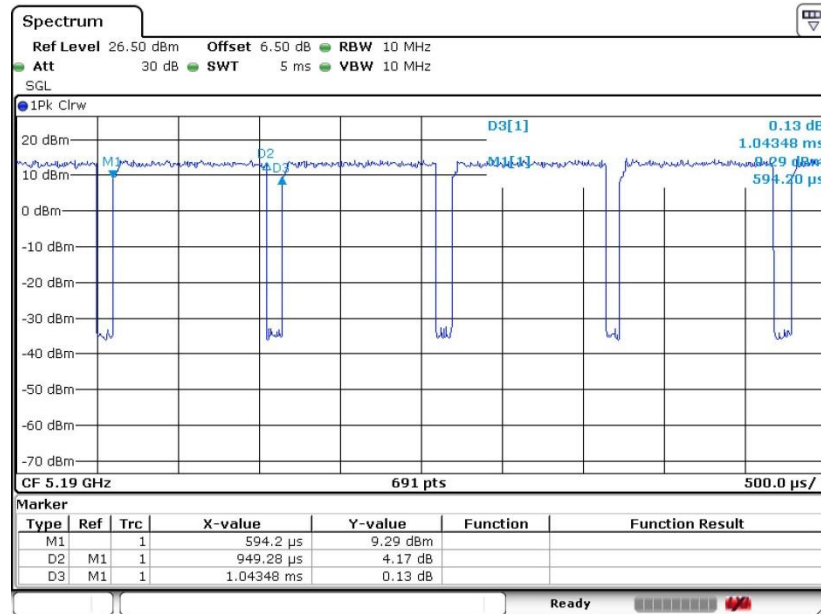


802.11n HT20





802.11n HT40



802.11ac VHT80

