



# FCC RF Test Report

**APPLICANT** : Huawei Technologies Co., Ltd.  
**EQUIPMENT** : Smart Phone  
**BRAND NAME** : Honor  
**MODEL NAME** : YAL-L41  
**FCC ID** : QISYAL-L41  
**STANDARD** : FCC Part 15 Subpart E §15.407  
**CLASSIFICATION** : (NII) Unlicensed National Information Infrastructure

The product was received on May 10, 2019 and testing was completed on May 20, 2019. We, Sporton International (Shenzhen) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

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*Eric Shih*

Approved by: Eric Shih / Manager



**Sporton International (Shenzhen) Inc.**

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**People's Republic of China**



# TABLE OF CONTENTS

**REVISION HISTORY..... 3**

**SUMMARY OF TEST RESULT ..... 4**

**1 GENERAL DESCRIPTION ..... 5**

    1.1 Applicant ..... 5

    1.2 Product Feature of Equipment Under Test..... 5

    1.3 Product Specification of Equipment Under Test..... 6

    1.4 Modification of EUT ..... 7

    1.5 Testing Location ..... 7

    1.6 Applicable Standards..... 8

    1.7 Specification of Accessory..... 8

**2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST ..... 10**

    2.1 Carrier Frequency and Channel ..... 10

    2.2 Test Mode ..... 12

    2.3 Connection Diagram of Test System..... 14

    2.4 Support Unit used in test configuration and system ..... 14

    2.5 EUT Operation Test Setup ..... 15

    2.6 Measurement Results Explanation Example..... 15

**3 TEST RESULT..... 16**

    3.1 26dB & 99% Occupied Bandwidth Measurement ..... 16

    3.2 Maximum Conducted Output Power Measurement ..... 18

    3.3 Power Spectral Density Measurement ..... 20

    3.4 Unwanted Emissions Measurement ..... 23

    3.5 AC Conducted Emission Measurement..... 28

    3.6 Automatically Discontinue Transmission ..... 30

    3.7 Antenna Requirements ..... 31

**4 LIST OF MEASURING EQUIPMENT ..... 32**

**5 UNCERTAINTY OF EVALUATION ..... 33**

**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**





### 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 7.25 dB at 5406.400 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 14.11 dB at 0.540 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

Huawei Technologies Co., Ltd.

Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

## 1.2 Product Feature of Equipment Under Test

Product Feature	
Equipment	Smart Phone
Brand Name	Honor
Model Name	YAL-L41
FCC ID	QISYAL-L41
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/VHT160 Bluetooth BR/EDR/LE NFC and GNSS
IMEI Code	Conducted: 869436040038834/869436040043339 Conduction: 869436040038560/869436040043065 Radiation: 869436040037885/869436040042380
HW Version	HL2YALEM04
SW Version	9.1.0.119(C900E119R1P2)

**Remark:**

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. There are two types of EUT sample 1 and sample 2, the differences between two samples is for Battery which is different suppliers. We only choose sample 1 to perform full tests.



### 1.3 Product Specification of Equipment Under Test

Standards-related Product Specification	
<b>Tx/Rx Frequency Range</b>	5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz 5500 MHz ~ 5720 MHz
<b>Maximum Output Power to Antenna</b>	<p><b>&lt;5180 MHz ~ 5240 MHz&gt;</b>            802.11a : 15.91 dBm / 0.0390 W            802.11n HT20 : 14.84 dBm / 0.0305 W            802.11n HT40 : 15.22 dBm / 0.0333 W            802.11ac VHT20 : 14.82 dBm / 0.0303 W            802.11ac VHT40 : 15.16 dBm / 0.0328 W            802.11ac VHT80 : 9.47 dBm / 0.0089 W            802.11ac VHT160 : 9.15 dBm / 0.0082 W</p> <p><b>&lt;5260 MHz ~ 5320 MHz&gt;</b>            802.11a : 16.25 dBm / 0.0422 W            802.11n HT20 : 15.26 dBm / 0.0336 W            802.11n HT40 : 15.32 dBm / 0.0340 W            802.11ac VHT20 : 15.20 dBm / 0.0331 W            802.11ac VHT40 : 15.29 dBm / 0.0338 W            802.11ac VHT80 : 10.03 dBm / 0.0101 W</p> <p><b>&lt;5500 MHz ~ 5720 MHz &gt;</b>            802.11a : 16.28 dBm / 0.0425 W            802.11n HT20 : 15.20 dBm / 0.0331 W            802.11n HT40 : 14.79 dBm / 0.0301 W            802.11ac VHT20 : 15.16 dBm / 0.0328 W            802.11ac VHT40 : 14.74 dBm / 0.0298 W            802.11ac VHT80 : 13.89 dBm / 0.0245 W            802.11ac VHT160 : 8.00 dBm / 0.0063 W</p>
<b>99% Occupied Bandwidth</b>	<p><b>&lt;5180 MHz ~ 5240 MHz&gt;</b>            802.11a : 18.23 MHz            802.11n HT20 : 18.83 MHz            802.11n HT40 : 36.96 MHz            802.11ac VHT80 : 75.40 MHz            802.11ac VHT160 : 154.41 MHz</p> <p><b>&lt;5260 MHz ~ 5320 MHz&gt;</b>            802.11a : 18.53 MHz            802.11n HT20 : 18.73 MHz            802.11n HT40 : 36.96 MHz            802.11ac VHT80 : 75.40 MHz</p> <p><b>&lt;5500 MHz ~ 5700 MHz &gt;</b>            802.11a : 18.33 MHz            802.11n HT20 : 18.88 MHz            802.11n HT40 : 36.96 MHz            802.11ac VHT80 : 75.52 MHz            802.11ac VHT160 : 154.41 MHz</p>
<b>Antenna Type / Gain</b>	<p><b>&lt;5180 MHz ~ 5240 MHz &gt;</b>            Internal Antenna with gain 1.00 dBi</p> <p><b>&lt;5260 MHz ~ 5320 MHz &gt;</b>            Internal Antenna with gain 1.00 dBi</p> <p><b>&lt;5500 MHz ~ 5720 MHz &gt;</b>            Internal Antenna with gain 1.00 dBi</p>
<b>Type of Modulation</b>	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)



	802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
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**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.

### 1.4 Modification of EUT

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

### 1.5 Testing Location

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

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

<b>Test Firm</b>	Sporton International (Shenzhen) Inc.		
<b>Test Site Location</b>	No. 3 Bldg the third floor of south, Shahe River west, Fengzeyuan Warehouse, Nanshan Shenzhen, 518055 People's Republic of China TEL: +86-755-33202398		
<b>Test Site No.</b>	<b>Sporton Site No.</b>	<b>FCC Designation No.</b>	<b>FCC Test Firm Registration No.</b>
	03CH01-SZ	CN1256	421272

## 1.6 Applicable Standards

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

- ♦ 47 CFR Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- ♦ 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.

## 1.7 Specification of Accessory

AC Adapter 1	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050450U00
	Power Rating	I/P:100 - 240 Vac, 750mA, O/P: 5Vdc, 2A; 4.5Vdc, 5A; 5Vdc, 4.5A		
	Manufacturer	Salcomp		
AC Adapter 2	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050450U00
	Power Rating	I/P:100 - 240 Vac, 750mA, O/P: 5Vdc, 2A; 4.5Vdc, 5A; 5Vdc, 4.5A		
	Manufacturer	HUNTKEY		
AC Adapter 3	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050450U00
	Power Rating	I/P:100 - 240 Vac, 750mA, O/P: 5Vdc, 2A; 4.5Vdc, 5A; 5Vdc, 4.5A		
	Manufacturer	Huawei Technologies Co., Ltd.		
AC Adapter 4	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050450E01
	Power Rating	I/P:100 - 240 Vac, 750mA, O/P: 5Vdc, 2A; 4.5Vdc, 5A; 5Vdc, 4.5A		
	Manufacturer	Huawei Technologies Co., Ltd.		
AC Adapter 5	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050450A01
	Power Rating	I/P:100 - 240 Vac, 750mA, O/P: 5Vdc, 2A; 4.5Vdc, 5A; 5Vdc, 4.5A		
	Manufacturer	Huawei Technologies Co., Ltd.		
AC Adapter 6	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050450E00
	Power Rating	I/P:100 - 240 Vac, 750mA, O/P: 5Vdc, 2A; 4.5Vdc, 5A; 5Vdc, 4.5A		
	Manufacturer	Salcomp		
AC Adapter 7	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050450E00
	Power Rating	I/P:100 - 240 Vac, 750mA, O/P: 5Vdc, 2A; 4.5Vdc, 5A; 5Vdc, 4.5A		
	Manufacturer	HUNTKEY		
AC Adapter 8	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050450E00
	Power Rating	I/P:100 - 240 Vac, 750mA, O/P: 5Vdc, 2A; 4.5Vdc, 5A; 5Vdc, 4.5A		
	Manufacturer	Huawei Technologies Co., Ltd.		
AC Adapter 9	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050450A00
	Power Rating	I/P:100 - 240 Vac, 750mA, O/P: 5Vdc, 2A; 4.5Vdc, 5A; 5Vdc, 4.5A		





	Manufacturer	Salcomp		
AC Adapter 10	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050450A00
	Power Rating	I/P:100 - 240 Vac, 750mA, O/P: 5Vdc, 2A; 4.5Vdc, 5A; 5Vdc, 4.5A		
	Manufacturer	HUNTKEY	SN	
AC Adapter 11	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050450A00
	Power Rating	I/P:100 - 240 Vac, 750mA, O/P: 5Vdc, 2A; 4.5Vdc, 5A; 5Vdc, 4.5A		
	Manufacturer	Huawei Technologies Co., Ltd.		
AC Adapter 12	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050450B00
	Power Rating	I/P:100 - 240 Vac, 750mA, O/P: 5Vdc, 2A; 4.5Vdc, 5A; 5Vdc, 4.5A		
	Manufacturer	Salcomp		
AC Adapter 13	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050450B00
	Power Rating	I/P:100 - 240 Vac, 750mA, O/P: 5Vdc, 2A; 4.5Vdc, 5A; 5Vdc, 4.5A		
	Manufacturer	HUNTKEY		
AC Adapter 14	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050450B00
	Power Rating	I/P:100 - 240 Vac, 750mA, O/P: 5Vdc, 2A; 4.5Vdc, 5A; 5Vdc, 4.5A		
	Manufacturer	Huawei Technologies Co., Ltd.		
USB Cable 1	Brand Name	FOXCONN INTERCONNECT TECHNOLOGY LIMITED.	Model Name	CUDU01B-HC350-EH
	Signal Line	1 meter, shielded cable, with w/o ferrite core		
USB Cable 2	Brand Name	LUXSHARE Precision Industry Co., Ltd.	Model Name	L99UC117-CS-H
	Signal Line	1 meter, shielded cable, with w/o ferrite core		
USB Cable 3	Brand Name	NingBo Broad Telecommunication Co.,Ltd.	Model Name	WA0009
	Signal Line	1 meter, shielded cable, with w/o ferrite core		
USB Cable 4	Brand Name	HUIZHOU DEHONG TECHNOLOGY CO.,LTD.	Model Name	330-50465
	Signal Line	1 meter, shielded cable, with w/o ferrite core		
Earphone 1	Brand Name	Boluo County Quancheng Electronic Co., Ltd.	Model Name	1331-3301-6001-TC-296
	Signal Line	1.1 meter, non-shielded cable, with w/o ferrite core		
Earphone 2	Brand Name	Goertek Inc.	Model Name	Windy-C
	Signal Line	1.1 meter, non-shielded cable, with w/o ferrite core		
Earphone 3	Brand Name	Jiangxi Lianchuang Hongsheng Electronic Co., LTD.	Model Name	MEND1632B729000
	Signal Line	1.1 meter, non-shielded cable, with w/o ferrite core		
Earphone 4	Brand Name	Foster Electric Co.,(GuangZhou) LTD.	Model Name	618017
	Signal Line	1.1 meter, non-shielded cable, with w/o ferrite core		
Battery 1	Brand Name	Huizhou Desay Battcry Co., Ltd.	Model Name	HB436486ECW
	Power Rating	3.82 Vdc, 3900 mAh	Type	Li-ion, Yes
Battery 2	Brand Name	SUNWODA Electronic Co., Ltd.	Model Name	HB436486ECW
	Power Rating	3.82 Vdc, 3900 mAh	Type	Li-ion, Yes



## 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)
5500-5720 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)
TDWR Channel	118*	5590	124	5620
	120	5600	126*	5630
	122 <sup>#</sup>	5610	128	5640
	114**	5570		

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
Straddle Channel	138 <sup>#</sup>	5690	144	5720
	142*	5710	50**	5250

**Note:**

1. The above Frequency and Channel in "\*" were 802.11n HT40 and 802.11ac VHT40.
2. The above Frequency and Channel in "<sup>#</sup>" were 802.11ac VHT80.
3. The above Frequency and Channel in "\*\*" were 802.11ac VHT160.



## 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
802.11ac VHT160	MCS0

Test Cases	
<b>AC Conducted Emission</b>	Mode 1 : GSM 850 Idle + Bluetooth Link + WLAN Link(5G) + USB Cable 1(Charging from Adapter 1)
<b>Remark:</b>	
<ol style="list-style-type: none"> <li>For Radiated Test Cases, The tests were performance with Adapter 3 and USB Cable 3</li> <li>For accessories, pre-scanned tests were conducted to determine the final configuration from all possible combinations.</li> </ol>	

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



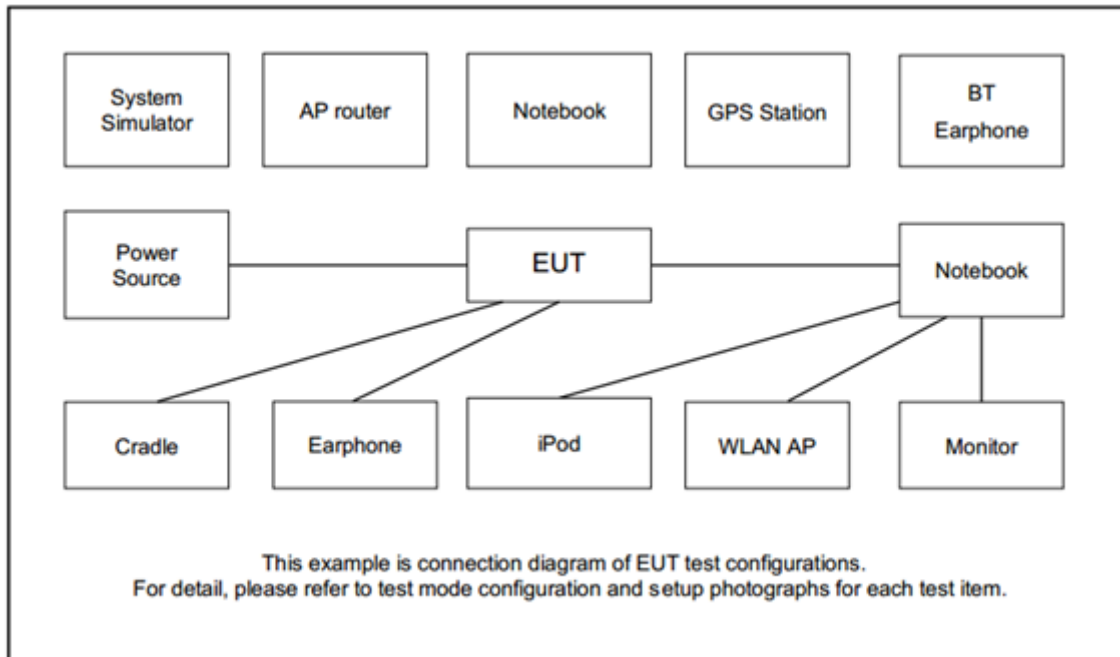
Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5720MHz
		802.11n HT40	802.11n HT40	802.11n HT40
L	Low	38	54	102
M	Middle	-	-	110
H	High	46	62	134
Straddle		-	-	142

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	-	-	106
M	Middle	42	58	-
H	High	-	-	122
Straddle		-	-	138

Ch. #	Band III : 5500-5720MHz	
	802.11ac VHT160	
-	114	

Ch. #	Band I+II : 5180-5320 MHz	
	802.11ac VHT160	
Straddle	50	

### 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.	WLAN AP	D-Link	DIR-820L	KA2IR820LA1	N/A	Unshielded,1.8m
3.	Bluetooth Earphone	Samsung	EO-MG900	N/A	N/A	N/A
4.	Notebook	Lenovo	E540	FCC DoC	N/A	AC I/P: Unshielded, 1.2m DC O/P: Shielded, 1.8 m



## 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 5.4 dB and 10dB attenuator.

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 5.4 + 10 = 15.4 \text{ (dB)} \end{aligned}$$

### 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.

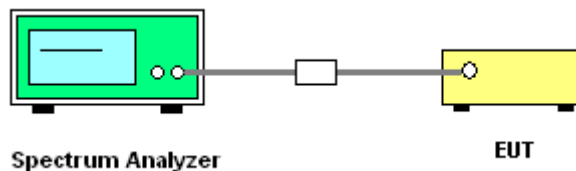
##### 3.1.2 Measuring Instruments

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.

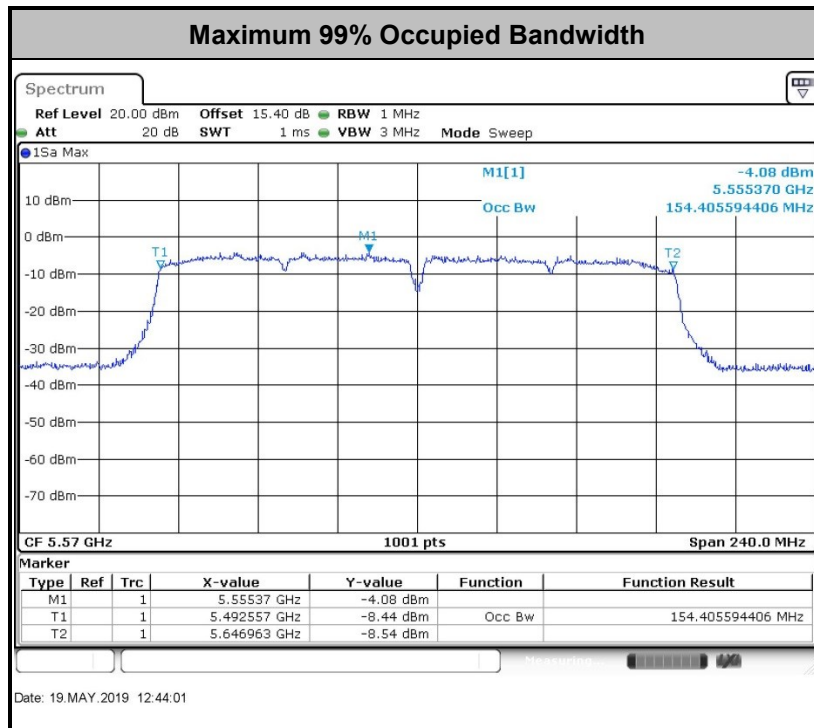
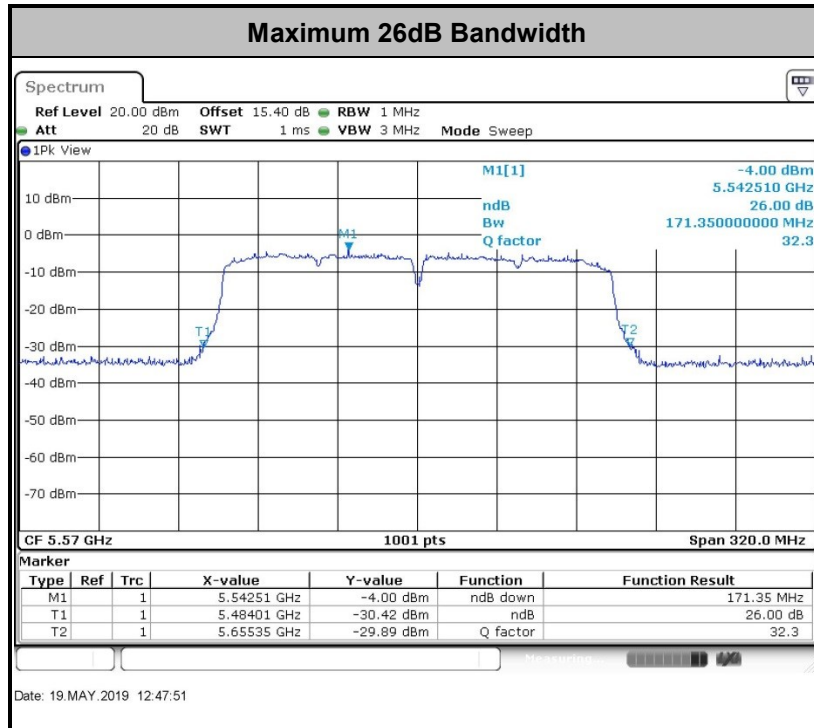
##### 3.1.4 Test Setup



##### 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 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

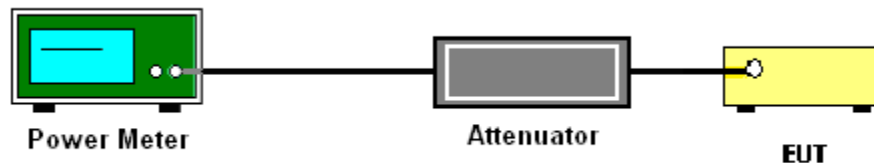
The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

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

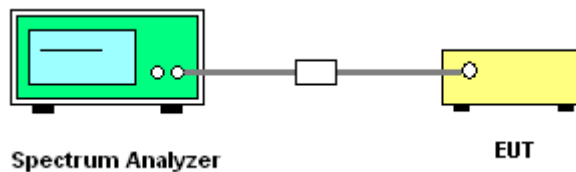
The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.  
Section F) Maximum power spectral density.

#### # Method SA-2 #

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

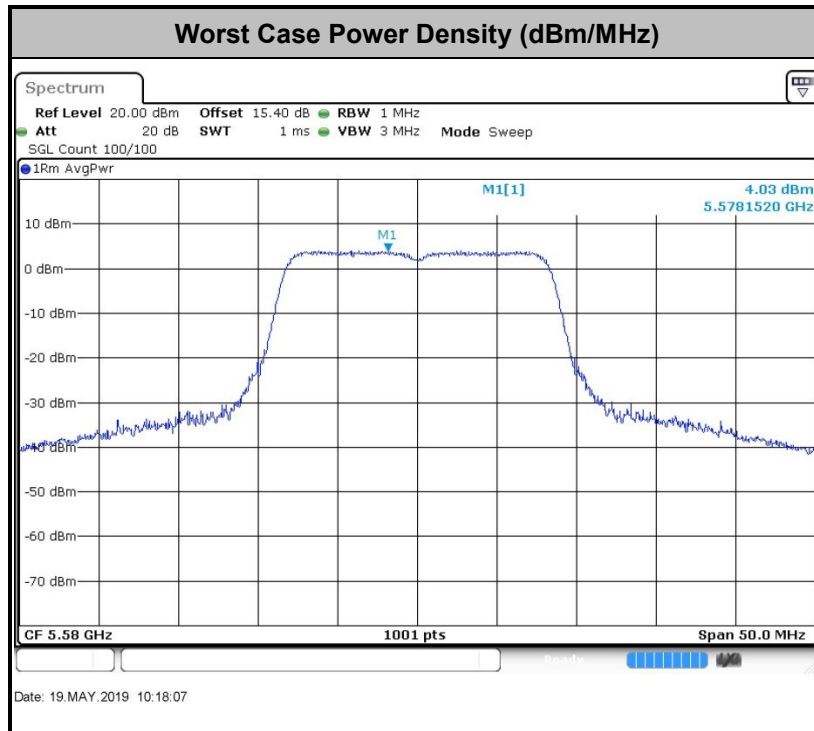
- Measure the duty cycle.
  - Set span to encompass the entire emission bandwidth (EBW) of the signal.
  - Set RBW = 1 MHz.
  - Set VBW  $\geq$  3 MHz.
  - Number of points in sweep  $\geq$  2 Span / RBW.
  - Sweep time = auto.
  - Detector = RMS
  - Trace average at least 100 traces in power averaging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





### 3.4 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

#### 3.4.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27dBm/MHz.

For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5600 MHz and 5650-5725MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

- (2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table,

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3



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

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

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

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.



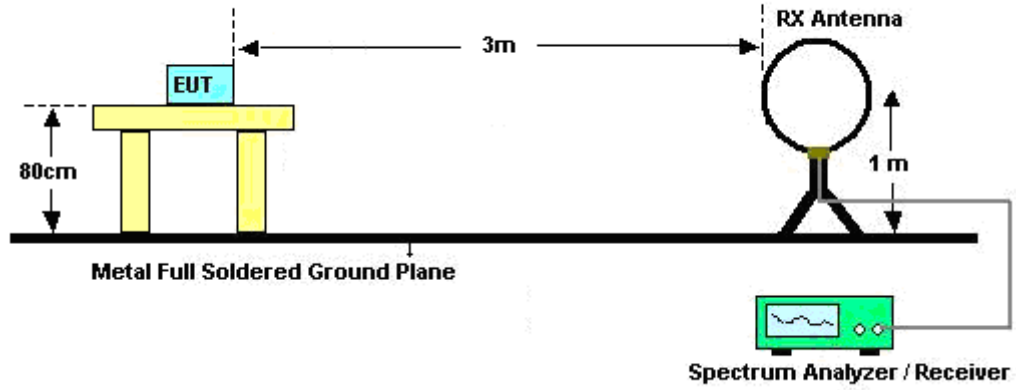


### 3.4.3 Test Procedures

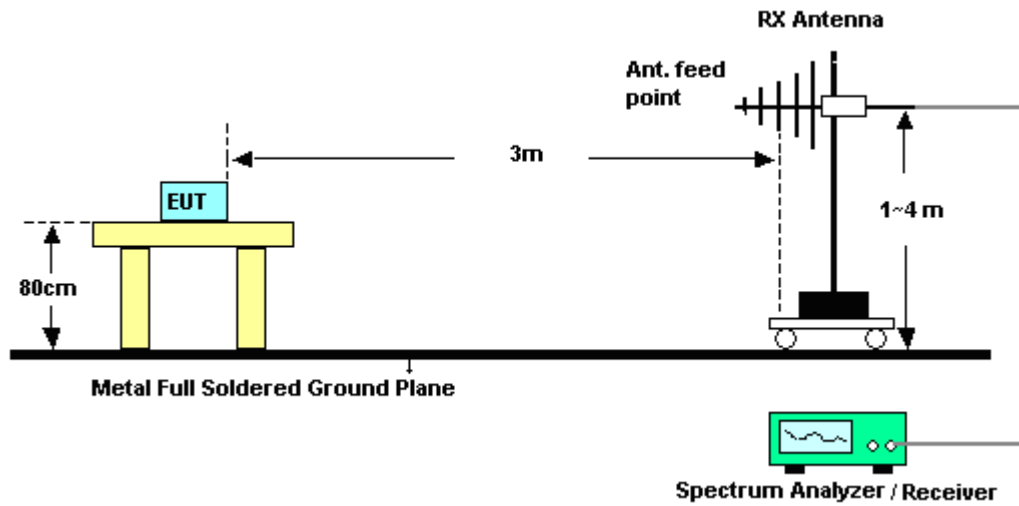
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section G) Unwanted emissions measurement.
  - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
    - RBW = 120 kHz
    - VBW = 300 kHz
    - Detector = Peak
    - Trace mode = max hold
  - (2) Procedure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

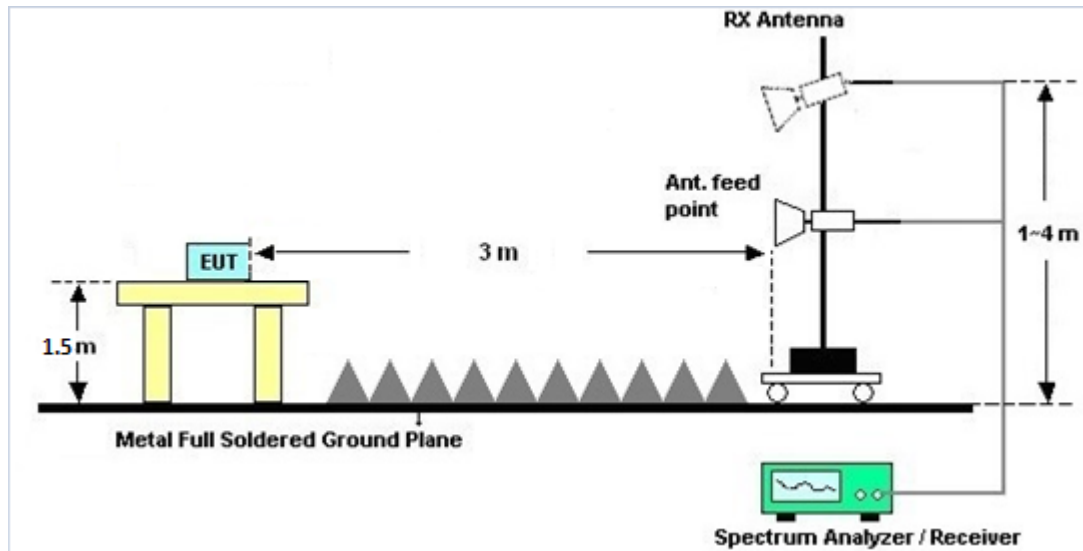
For radiated emissions below 30MHz



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 (dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency.

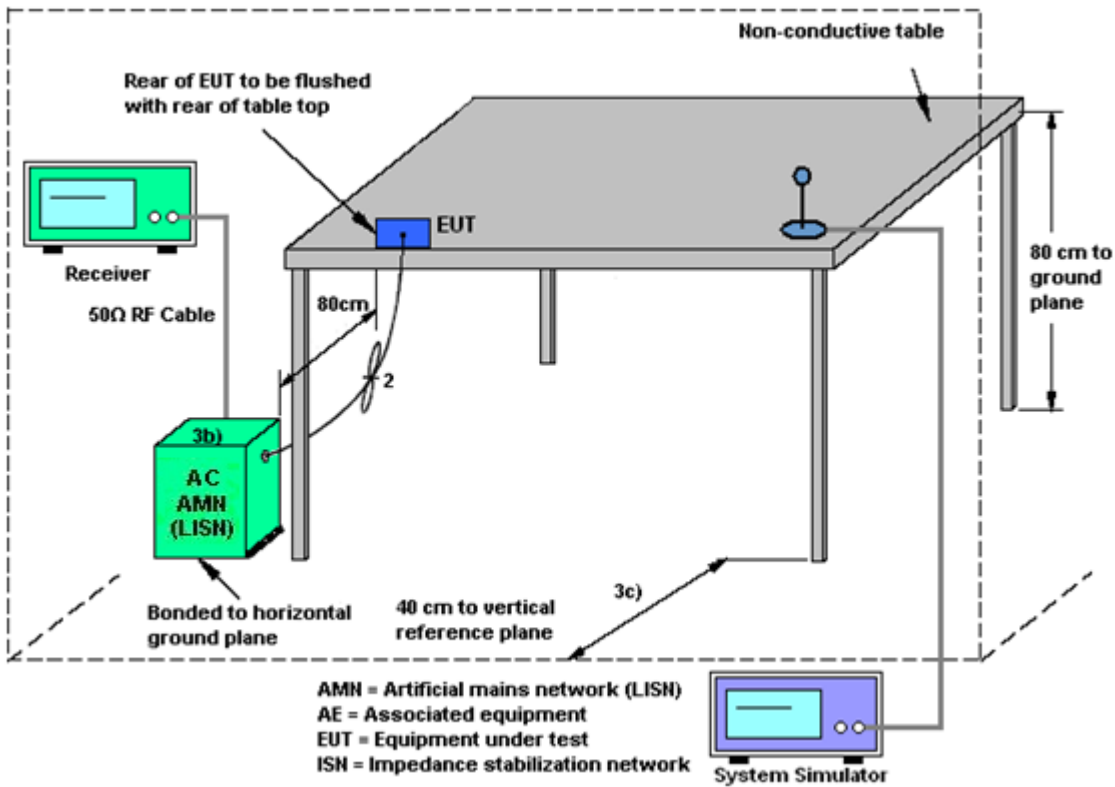
#### 3.5.2 Measuring Instruments

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

#### 3.5.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

### 3.5.4 Test Setup



### 3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



## **3.6 Automatically Discontinue Transmission**

### **3.6.1 Limit of Automatically Discontinue Transmission**

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

### **3.6.2 Measuring Instruments**

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

### **3.6.3 Test Result of Automatically Discontinue Transmission**

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.



## **3.7 Antenna Requirements**

### **3.7.1 Standard Applicable**

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### **3.7.2 Antenna Anti-Replacement Construction**

An embedded-in antenna design is used.

### **3.7.3 Antenna Gain**

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



## 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 18, 2019	May 19, 2019	Apr. 17, 2020	Conducted (TH01-SZ)
Pulse Power Sensor	Anritsu	MA2411B	1207253	30MHz~40GHz	Dec. 22, 2018	May 19, 2019	Dec. 21, 2019	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	50MHz Bandwidth	Dec. 22, 2018	May 19, 2019	Dec. 21, 2019	Conducted (TH01-SZ)
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Aug. 30, 2018	May 18, 2019~ May 20, 2019	Aug. 29, 2019	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 29, 2018	May 18, 2019~ May 20, 2019	May 29, 2019	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz-2GHz	Jun. 05, 2018	May 18, 2019~ May 20, 2019	Jun. 04, 2019	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	119436	1GHz~18GHz	Jun. 28, 2018	May 18, 2019~ May 20, 2019	Jun. 27, 2019	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18GHz-40GHz	Mar. 30, 2019	May 18, 2019~ May 20, 2019	Mar. 29, 2020	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 19, 2019	May 18, 2019~ May 20, 2019	Apr. 18, 2020	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P-R	1707137	1GHz~18GHz	Oct. 19, 2018	May 18, 2019~ May 20, 2019	Oct. 18, 2019	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270104	0.5GHz~26.5GHz	Dec. 22, 2018	May 18, 2019~ May 20, 2019	Dec. 21, 2019	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 17, 2018	May 18, 2019~ May 20, 2019	Jul. 16, 2019	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	May 18, 2019~ May 20, 2019	NCR	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	May 18, 2019~ May 20, 2019	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	May 18, 2019~ May 20, 2019	NCR	Radiation (03CH01-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Dec. 23, 2018	May 18, 2019	Dec. 22, 2019	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Oct. 18, 2018	May 18, 2019	Oct. 17, 2019	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Dec. 23, 2018	May 18, 2019	Dec. 22, 2019	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 18, 2018	May 18, 2019	Jul. 17, 2019	Conduction (CO01-SZ)

NCR: No Calibration Required





## 5 Uncertainty of Evaluation

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

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.6dB
---------------------------------------------------------------------	-------

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

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

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

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

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

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



## **Appendix A. Conducted Test Results**

**Appendix A. Test Result of Conducted Test Items**

Test Engineer:	Sam Zheng	Temperature:	24~26	°C
Test Date:	2019/5/19	Relative Humidity:	50~53	%

**TEST RESULTS DATA**  
**26dB and 99% OBW**

Band I													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26 dB Bandwidth (MHz)		IC 99% Bandwidth Power Limit (dBm)		IC 99% Bandwidth EIRP Limit (dBm)		Note
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	36	5180	18.03		21.98		-		22.56		
11a	6Mbps	1	44	5220	18.08		22.18		-		22.57		
11a	6Mbps	1	48	5240	18.23		22.03		-		22.61		
HT20	MCS0	1	36	5180	18.48		22.18		-		22.67		
HT20	MCS0	1	44	5220	18.68		22.43		-		22.71		
HT20	MCS0	1	48	5240	18.83		22.28		-		22.75		
HT40	MCS0	1	38	5190	36.76		42.89		-		23.01		
HT40	MCS0	1	46	5230	36.96		43.52		-		23.01		
VHT80	MCS0	1	42	5210	75.40		84.08		-		23.01		
VHT160	MCS0	1	50	5250	154.41		171.03		-		23.01		

**TEST RESULTS DATA**  
**Average Power Table**

FCC Band I														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	36	5180	0.04		8.61			24.00		1.00		Pass
11a	6Mbps	1	44	5220	0.04		15.82			24.00		1.00		Pass
11a	6Mbps	1	48	5240	0.04		15.91			24.00		1.00		Pass
HT20	MCS0	1	36	5180	0.04		8.51			24.00		1.00		Pass
HT20	MCS0	1	44	5220	0.04		14.83			24.00		1.00		Pass
HT20	MCS0	1	48	5240	0.04		14.84			24.00		1.00		Pass
HT40	MCS0	1	38	5190	0.08		9.39			24.00		1.00		Pass
HT40	MCS0	1	46	5230	0.08		15.22			24.00		1.00		Pass
VHT20	MCS0	1	36	5180	0.04		8.43			24.00		1.00		Pass
VHT20	MCS0	1	44	5220	0.04		14.72			24.00		1.00		Pass
VHT20	MCS0	1	48	5240	0.04		14.82			24.00		1.00		Pass
VHT40	MCS0	1	38	5190	0.08		9.23			24.00		1.00		Pass
VHT40	MCS0	1	46	5230	0.08		15.16			24.00		1.00		Pass
VHT80	MCS0	1	42	5210	0.12		9.47			24.00		1.00		Pass
VHT160	MCS0	1	50	5250	0.25		9.15			24.00		1.00		Pass

**TEST RESULTS DATA**  
**Power Spectral Density**

FCC Band I														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Power Density (dBm/MHz)			Average PSD Limit (dBm/MHz)		DG (dBi)		Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	36	5180	0.04		-3.40			11.00		1.00		Pass
11a	6Mbps	1	44	5220	0.04		3.73			11.00		1.00		Pass
11a	6Mbps	1	48	5240	0.04		3.62			11.00		1.00		Pass
HT20	MCS0	1	36	5180	0.04		-3.82			11.00		1.00		Pass
HT20	MCS0	1	44	5220	0.04		2.08			11.00		1.00		Pass
HT20	MCS0	1	48	5240	0.04		2.11			11.00		1.00		Pass
HT40	MCS0	1	38	5190	0.08		-6.26			11.00		1.00		Pass
HT40	MCS0	1	46	5230	0.08		-0.38			11.00		1.00		Pass
VHT80	MCS0	1	42	5210	0.12		-9.11			11.00		1.00		Pass
VHT160	MCS0	1	20	5250	0.25		-12.48			11.00		1.00		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	18.28		22.38		23.62		29.62		23.98		
11a	6Mbps	1	60	5300	18.53		22.38		23.68		29.68		23.98		
11a	6Mbps	1	64	5320	18.03		21.98		23.56		29.56		23.98		
HT20	MCS0	1	52	5260	18.73		22.28		23.73		29.73		23.98		
HT20	MCS0	1	60	5300	18.73		22.28		23.73		29.73		23.98		
HT20	MCS0	1	64	5320	18.63		22.33		23.70		29.70		23.98		
HT40	MCS0	1	54	5270	36.96		42.53		23.98		30.00		23.98		
HT40	MCS0	1	62	5310	36.66		42.80		23.98		30.00		23.98		
VHT80	MCS0	1	58	5290	75.40		83.92		23.98		30.00		23.98		

**TEST RESULTS DATA**  
**Average Power Table**

FCC Band II															
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	52	5260	0.04		15.98			24.00		1.00		26.99	Pass
11a	6Mbps	1	60	5300	0.04		16.25			24.00		1.00		26.99	Pass
11a	6Mbps	1	64	5320	0.04		9.55			24.00		1.00		26.99	Pass
HT20	MCS0	1	52	5260	0.04		15.01			24.00		1.00		26.99	Pass
HT20	MCS0	1	60	5300	0.04		15.26			24.00		1.00		26.99	Pass
HT20	MCS0	1	64	5320	0.04		9.47			24.00		1.00		26.99	Pass
HT40	MCS0	1	54	5270	0.08		15.32			24.00		1.00		26.99	Pass
HT40	MCS0	1	62	5310	0.08		10.17			24.00		1.00		26.99	Pass
VHT20	MCS0	1	52	5260	0.04		14.91			24.00		1.00		26.99	Pass
VHT20	MCS0	1	60	5300	0.04		15.20			24.00		1.00		26.99	Pass
VHT20	MCS0	1	64	5320	0.04		9.44			24.00		1.00		26.99	Pass
VHT40	MCS0	1	54	5270	0.08		15.29			24.00		1.00		26.99	Pass
VHT40	MCS0	1	62	5310	0.08		10.15			24.00		1.00		26.99	Pass
VHT80	MCS0	1	58	5290	0.12		10.03			24.00		1.00		26.99	Pass



**TEST RESULTS DATA**  
**Power Spectral Density**

Band II														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Power Density (dBm/MHz)			Average PSD Limit (dBm/MHz)		DG (dBi)		Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	52	5260	0.04		3.93			11.00		1.00		Pass
11a	6Mbps	1	60	5300	0.04		4.00			11.00		1.00		Pass
11a	6Mbps	1	64	5320	0.04		-2.70			11.00		1.00		Pass
HT20	MCS0	1	52	5260	0.04		2.28			11.00		1.00		Pass
HT20	MCS0	1	60	5300	0.04		3.00			11.00		1.00		Pass
HT20	MCS0	1	64	5320	0.04		-3.01			11.00		1.00		Pass
HT40	MCS0	1	54	5270	0.08		-0.24			11.00		1.00		Pass
HT40	MCS0	1	62	5310	0.08		-5.40			11.00		1.00		Pass
VHT80	MCS0	1	58	5290	0.12		-8.28			11.00		1.00		Pass

**TEST RESULTS DATA**  
**26dB and 99% OBW**

Band III															
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26 dB Bandwidth (MHz)		IC 99% Bandwidth Power Limit (dBm)		IC 99% Bandwidth EIRP Limit (dBm)		FCC 26dB Bandwidth Power Limit (dBm)		Note
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	100	5500	18.03		22.08		23.56		29.56		23.98		
11a	6Mbps	1	116	5580	18.23		22.03		23.61		29.61		23.98		
11a	6Mbps	1	140	5700	17.98		22.03		23.55		29.55		23.98		
11a	6Mbps	1	144	5720	18.33		22.33		23.63		29.63		23.98		
HT20	MCS0	1	100	5500	18.58		22.38		23.69		29.69		23.98		
HT20	MCS0	1	116	5580	18.88		22.23		23.76		29.76		23.98		
HT20	MCS0	1	140	5700	18.58		22.28		23.69		29.69		23.98		
HT20	MCS0	1	144	5720	18.88		22.23		23.76		29.76		23.98		
HT40	MCS0	1	102	5510	36.86		43.07		23.98		30.00		23.98		
HT40	MCS0	1	110	5550	36.96		43.16		23.98		30.00		23.98		
HT40	MCS0	1	134	5670	36.86		43.07		23.98		30.00		23.98		
HT40	MCS0	1	142	5710	36.96		43.07		23.98		30.00		23.98		
VHT80	MCS0	1	106	5530	75.40		84.24		23.98		30.00		23.98		
VHT80	MCS0	1	122	5610	75.40		84.72		23.98		30.00		23.98		
VHT80	MCS0	1	138	5690	75.52		85.03		23.98		30.00		23.98		
VHT16Q	MCS0	1	114	5570	154.41		171.35		23.98		30.00		23.98		

**TEST RESULTS DATA**  
**Average Power Table**

FCC Band III															
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	100	5500	0.04		9.27			24.00		1.00		26.99	Pass
11a	6Mbps	1	116	5580	0.04		16.28			24.00		1.00		26.99	Pass
11a	6Mbps	1	140	5700	0.04		8.24			24.00		1.00		26.99	Pass
11a	6Mbps	1	144	5720	0.04		15.44			24.00		1.00		26.99	Pass
HT20	MCS0	1	100	5500	0.04		9.23			24.00		1.00		26.99	Pass
HT20	MCS0	1	116	5580	0.04		15.20			24.00		1.00		26.99	Pass
HT20	MCS0	1	140	5700	0.04		8.18			24.00		1.00		26.99	Pass
HT20	MCS0	1	144	5720	0.04		14.36			24.00		1.00		26.99	Pass
HT40	MCS0	1	102	5510	0.08		8.73			24.00		1.00		26.99	Pass
HT40	MCS0	1	110	5550	0.08		14.79			24.00		1.00		26.99	Pass
HT40	MCS0	1	134	5670	0.08		7.99			24.00		1.00		26.99	Pass
HT40	MCS0	1	142	5710	0.08		13.74			24.00		1.00		26.99	Pass
VHT20	MCS0	1	100	5500	0.04		9.19			24.00		1.00		26.99	Pass
VHT20	MCS0	1	116	5580	0.04		15.16			24.00		1.00		26.99	Pass
VHT20	MCS0	1	140	5700	0.04		8.12			24.00		1.00		26.99	Pass
VHT20	MCS0	1	144	5720	0.04		14.28			24.00		1.00		26.99	Pass
VHT40	MCS0	1	102	5510	0.08		8.71			24.00		1.00		26.99	Pass
VHT40	MCS0	1	110	5550	0.08		14.74			24.00		1.00		26.99	Pass
VHT40	MCS0	1	134	5670	0.08		7.97			24.00		1.00		26.99	Pass
VHT40	MCS0	1	142	5710	0.08		13.73			24.00		1.00		26.99	Pass
VHT80	MCS0	1	106	5530	0.12		8.73			24.00		1.00		26.99	Pass
VHT80	MCS0	1	122	5610	0.12		8.09			24.00		1.00		26.99	Pass
VHT80	MCS0	1	138	5690	0.12		13.89			23.98		1.00		26.99	Pass
VHT160	MCS0	1	114	5570	0.25		8.00			24.00		1.00		26.99	Pass

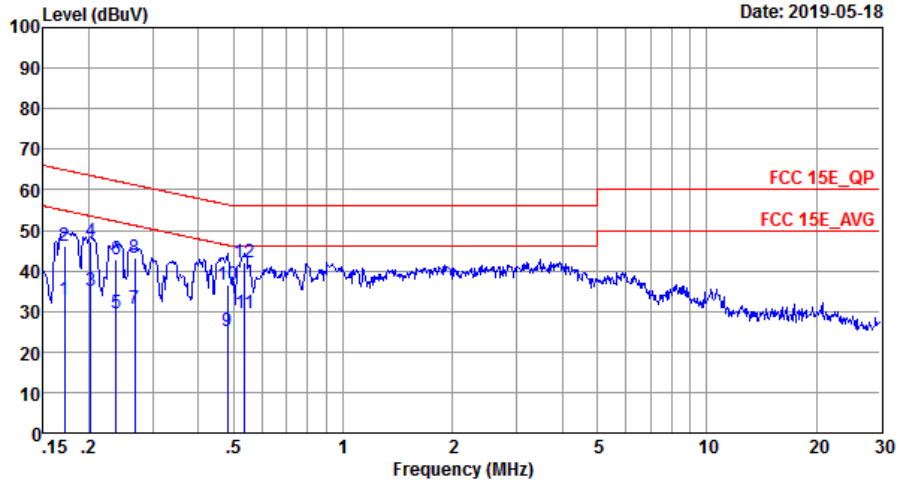
**TEST RESULTS DATA**  
**Power Spectral Density**

Band III														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Power Density (dBm/MHz)			Average PSD Limit (dBm/MHz)		DG (dBi)		Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	100	5500	0.04		-2.87			11.00		1.00		Pass
11a	6Mbps	1	116	5580	0.04		4.07			11.00		1.00		Pass
11a	6Mbps	1	140	5700	0.04		-4.11			11.00		1.00		Pass
11a	6Mbps	1	144	5720	0.04		3.20			11.00		1.00		Pass
HT20	MCS0	1	100	5500	0.04		-3.38			11.00		1.00		Pass
HT20	MCS0	1	116	5580	0.04		2.72			11.00		1.00		Pass
HT20	MCS0	1	140	5700	0.04		-4.41			11.00		1.00		Pass
HT20	MCS0	1	144	5720	0.04		1.68			11.00		1.00		Pass
HT40	MCS0	1	102	5510	0.08		-6.71			11.00		1.00		Pass
HT40	MCS0	1	110	5550	0.08		-0.41			11.00		1.00		Pass
HT40	MCS0	1	134	5670	0.08		-7.47			11.00		1.00		Pass
HT40	MCS0	1	142	5710	0.08		-1.87			11.00		1.00		Pass
VHT80	MCS0	1	106	5530	0.12		-9.39			11.00		1.00		Pass
VHT80	MCS0	1	122	5610	0.12		-10.10			11.00		1.00		Pass
VHT80	MCS0	1	138	5690	0.12		-4.46			11.00		1.00		Pass
VHT16Q	MCS0	1	114	5570	0.25		-13.35			11.00		1.00		Pass



## Appendix B. AC Conducted Emission Test Results

Test Engineer :	LiuDaLin	Temperature :	22~25°C
		Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	Phase :	Line

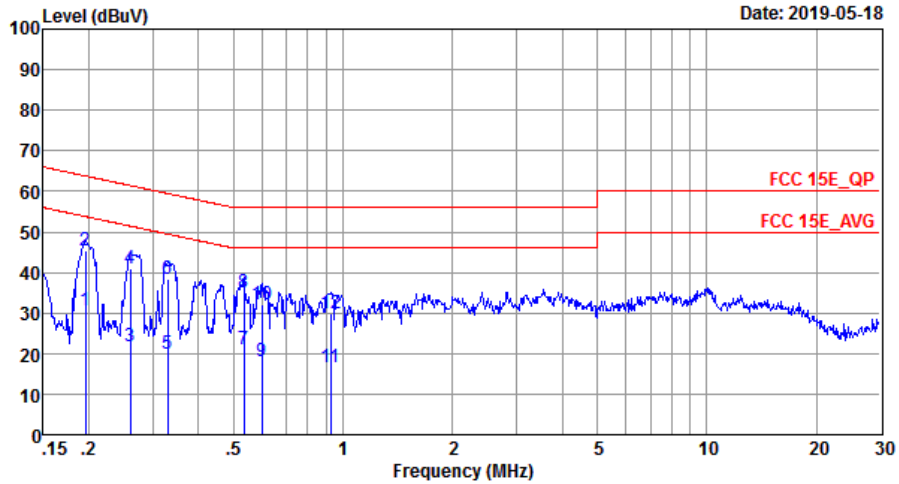


Site : CO01-SZ  
 Condition: FCC 15E\_QP LISN\_20180719\_L LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.17	32.69	-22.21	54.90	22.50	0.03	10.16	Average
2	0.17	45.99	-18.91	64.90	35.80	0.03	10.16	QP
3	0.20	34.99	-18.50	53.49	24.80	0.03	10.16	Average
4	0.20	47.09	-16.40	63.49	36.90	0.03	10.16	QP
5	0.24	29.69	-22.48	52.17	19.50	0.03	10.16	Average
6	0.24	42.79	-19.38	62.17	32.60	0.03	10.16	QP
7	0.27	30.80	-20.40	51.20	20.60	0.03	10.17	Average
8	0.27	43.20	-18.00	61.20	33.00	0.03	10.17	QP
9	0.48	25.00	-21.32	46.32	14.81	0.02	10.17	Average
10	0.48	36.40	-19.92	56.32	26.21	0.02	10.17	QP
11	0.54	29.69	-16.31	46.00	19.50	0.02	10.17	Average
12 *	0.54	41.89	-14.11	56.00	31.70	0.02	10.17	QP



Test Engineer :	LiuDaLin	Temperature :	22~25°C
		Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Site : CO01-SZ  
 Condition: FCC 15E QP LISN 20180719 N NEUTRAL

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.20	30.69	-23.11	53.80	20.50	0.03	10.16	Average
2 *	0.20	45.49	-18.31	63.80	35.30	0.03	10.16	QP
3	0.26	21.90	-29.52	51.42	11.70	0.03	10.17	Average
4	0.26	41.10	-20.32	61.42	30.90	0.03	10.17	QP
5	0.33	20.00	-29.44	49.44	9.80	0.03	10.17	Average
6	0.33	38.40	-21.04	59.44	28.20	0.03	10.17	QP
7	0.53	21.19	-24.81	46.00	11.00	0.02	10.17	Average
8	0.53	34.89	-21.11	56.00	24.70	0.02	10.17	QP
9	0.60	18.00	-28.00	46.00	7.80	0.02	10.18	Average
10	0.60	32.20	-23.80	56.00	22.00	0.02	10.18	QP
11	0.92	16.52	-29.48	46.00	6.30	0.04	10.18	Average
12	0.92	29.82	-26.18	56.00	19.60	0.04	10.18	QP



## Appendix C. Radiated Spurious Emission

Test Engineer :	Fuquan wu	Temperature :	24~25°C
		Relative Humidity :	48~49%



**Band 1 - 5150~5250MHz**  
**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)
<b>802.11a</b> <b>CH 36</b> <b>5180MHz</b>		5080.6	53.21	-20.79	74	38.92	33.79	13.6	33.1	166	308	P	H
		5150	44.7	-9.3	54	30.25	33.87	13.68	33.1	166	308	A	H
	*	5180	98.32	-	-	83.73	33.92	13.77	33.1	166	308	P	H
		5180	91.4	-	-	76.81	33.92	13.77	33.1	166	308	A	H
		5041.6	53.33	-20.67	74	39.18	33.74	13.51	33.1	324	258	P	V
		5143	44.18	-9.82	54	29.73	33.87	13.68	33.1	324	258	A	V
	*	5180	97.03	-	-	82.44	33.92	13.77	33.1	324	258	P	V
		5180	90.7	-	-	76.11	33.92	13.77	33.1	324	258	A	V
<b>802.11a</b> <b>CH 44</b> <b>5220MHz</b>		5021.84	53.76	-20.24	74	39.72	33.72	13.42	33.1	148	311	P	H
		5067.6	45.07	-8.93	54	30.9	33.76	13.51	33.1	148	311	A	H
	*	5220	106.3	-	-	91.58	33.96	13.86	33.1	148	311	P	H
		5220	99.95	-	-	85.23	33.96	13.86	33.1	148	311	A	H
		5438.16	52.66	-21.34	74	37.25	34.24	14.27	33.1	148	311	P	H
		5372.4	44.45	-9.55	54	29.3	34.15	14.1	33.1	148	311	A	H
		5063.44	53.38	-20.62	74	39.21	33.76	13.51	33.1	317	259	P	V
		5067.6	44.41	-9.59	54	30.24	33.76	13.51	33.1	317	259	A	V
	*	5220	105.6	-	-	90.88	33.96	13.86	33.1	317	259	P	V
		5220	98.98	-	-	84.26	33.96	13.86	33.1	317	259	A	V
		5447.04	54.75	-19.25	74	39.32	34.26	14.27	33.1	317	259	P	V
		5372.4	44.35	-9.65	54	29.2	34.15	14.1	33.1	317	259	A	V





<b>802.11a</b> <b>CH 48</b> <b>5240MHz</b>		5148.98	54.66	-19.34	74	40.21	33.87	13.68	33.1	160	307	P	H
		5087.88	44.85	-9.15	54	30.56	33.79	13.6	33.1	160	307	P	H
	*	5240	106.29	-	-	91.49	33.98	13.92	33.1	160	307	P	H
		5240	99.69	-	-	84.89	33.98	13.92	33.1	160	307	A	H
		5451.12	52.6	-21.4	74	37.17	34.26	14.27	33.1	160	307	A	H
		5392.8	44.09	-9.91	54	28.85	34.18	14.16	33.1	160	307	P	H
		5099.84	53.32	-20.68	74	39.01	33.81	13.6	33.1	314	261	P	V
		5087.62	44.33	-9.67	54	30.04	33.79	13.6	33.1	314	261	P	V
	*	5240	105.46	-	-	90.66	33.98	13.92	33.1	314	261	P	V
		5240	98.93	-	-	84.13	33.98	13.92	33.1	314	261	A	V
		5436.48	53.19	-20.81	74	37.78	34.24	14.27	33.1	314	261	A	V
		5392.32	44.22	-9.78	54	28.98	34.18	14.16	33.1	314	261	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11a CH 36 5180MHz		10360	45.55	-22.65	68.2	47.87	37.02	19.65	58.99	152	260	P	H
		15540	47.99	-26.01	74	43.79	40.78	22.35	58.93	189	238	P	H
		10360	45.01	-23.19	68.2	47.33	37.02	19.65	58.99	241	260	P	V
		15540	46.68	-27.32	74	42.48	40.78	22.35	58.93	189	184	P	V
802.11a CH 44 5220MHz		10440	46.91	-21.29	68.2	49.08	37.06	19.69	58.92	185	230	P	H
		15660	46.6	-27.4	74	42.17	41.07	22.42	59.06	160	59	P	H
		10440	45.67	-22.53	68.2	47.84	37.06	19.69	58.92	150	230	P	V
		15660	47.8	-26.2	74	43.37	41.07	22.42	59.06	160	225	P	V
802.11a CH 48 5240MHz		10480	48.11	-20.09	68.2	50.17	37.09	19.71	58.86	126	238	P	H
		15720	47.86	-26.14	74	43.29	41.24	22.45	59.12	186	329	P	H
		10480	46.02	-22.18	68.2	48.08	37.09	19.71	58.86	150	289	P	V
		15720	47.51	-26.49	74	42.94	41.24	22.45	59.12	150	291	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11n HT20 CH 36 5180MHz		5117	53.69	-20.31	74	39.28	33.83	13.68	33.1	173	307	P	H
		5146.38	44.69	-9.31	54	30.24	33.87	13.68	33.1	173	307	A	H
	*	5180	99.58	-	-	84.99	33.92	13.77	33.1	173	307	P	H
		5180	93.16	-	-	78.57	33.92	13.77	33.1	173	307	A	H
		5062.4	53.8	-20.2	74	39.63	33.76	13.51	33.1	357	262	P	V
		5149.5	43.97	-10.03	54	29.52	33.87	13.68	33.1	357	262	A	V
	*	5180	97.74	-	-	83.15	33.92	13.77	33.1	357	262	P	V
	5180	90.45	-	-	75.86	33.92	13.77	33.1	357	262	A	V	
802.11n HT20 CH 44 5220MHz		5146.12	54.32	-19.68	74	39.87	33.87	13.68	33.1	140	306	P	H
		5148.98	44.64	-9.36	54	30.19	33.87	13.68	33.1	140	306	A	H
	*	5220	106.45	-	-	91.73	33.96	13.86	33.1	140	306	P	H
		5220	100.09	-	-	85.37	33.96	13.86	33.1	140	306	A	H
		5384.16	53.56	-20.44	74	38.38	34.18	14.1	33.1	140	306	P	H
		5372.4	44.67	-9.33	54	29.52	34.15	14.1	33.1	140	306	A	H
		5114.14	53.18	-20.82	74	38.85	33.83	13.6	33.1	330	262	P	V
		5068.12	44.06	-9.94	54	29.89	33.76	13.51	33.1	330	262	A	V
	*	5220	104.16	-	-	89.44	33.96	13.86	33.1	330	262	P	V
		5220	97.37	-	-	82.65	33.96	13.86	33.1	330	262	A	V
	5414.16	52.67	-21.33	74	37.39	34.22	14.16	33.1	330	262	P	V	
	5372.16	43.75	-10.25	54	28.6	34.15	14.1	33.1	330	262	A	V	



<b>802.11n HT20 CH 48 5240MHz</b>		5059.28	53.17	-20.83	74	39	33.76	13.51	33.1	172	307	P	H
		5088.14	44.76	-9.24	54	30.47	33.79	13.6	33.1	172	307	A	H
	*	5240	106.41	-	-	91.61	33.98	13.92	33.1	172	307	P	H
		5240	99.93	-	-	85.13	33.98	13.92	33.1	172	307	A	H
		5407.68	52.65	-21.35	74	37.39	34.2	14.16	33.1	172	307	P	H
		5392.32	44.4	-9.6	54	29.16	34.18	14.16	33.1	172	307	A	H
		5056.16	53.28	-20.72	74	39.11	33.76	13.51	33.1	348	259	P	V
		5088.4	44.12	-9.88	54	29.83	33.79	13.6	33.1	348	259	A	V
	*	5240	104.22	-	-	89.42	33.98	13.92	33.1	348	259	P	V
		5240	97.73	-	-	82.93	33.98	13.92	33.1	348	259	A	V
		5407.68	52.3	-21.7	74	37.04	34.2	14.16	33.1	348	259	P	V
		5392.08	43.79	-10.21	54	28.55	34.18	14.16	33.1	348	259	A	V
<b>Remark</b>	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	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		10360	46.89	-21.31	68.2	49.21	37.02	19.65	58.99	152	260	P	H
HT20		15540	47.96	-26.04	74	43.76	40.78	22.35	58.93	189	238	P	H
CH 36		10360	45.56	-22.64	68.2	47.88	37.02	19.65	58.99	241	260	P	V
5180MHz		15540	46.55	-27.45	74	42.35	40.78	22.35	58.93	189	184	P	V
802.11n		10440	46.72	-21.48	68.2	48.89	37.06	19.69	58.92	150	230	P	H
HT20		15660	45.87	-28.13	74	41.44	41.07	22.42	59.06	160	225	P	H
CH 44		10440	45.81	-22.39	68.2	47.98	37.06	19.69	58.92	185	230	P	V
5220MHz		15660	47.89	-26.11	74	43.46	41.07	22.42	59.06	160	59	P	V
802.11n		10480	46.78	-21.42	68.2	48.84	37.09	19.71	58.86	150	289	P	H
HT20		15720	46.5	-27.5	74	41.93	41.24	22.45	59.12	161	0	P	H
CH 48		10480	46.38	-21.82	68.2	48.44	37.09	19.71	58.86	126	238	P	V
5240MHz		15720	46.94	-27.06	74	42.37	41.24	22.45	59.12	186	329	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	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 CH 38 5190MHz		5113.62	54.01	-19.99	74	39.68	33.83	13.6	33.1	128	309	P	H
		5150	45.14	-8.86	54	30.69	33.87	13.68	33.1	128	309	A	H
	*	5190	97.78	-	-	83.19	33.92	13.77	33.1	128	309	P	H
		5190	91.45	-	-	76.86	33.92	13.77	33.1	128	309	A	H
		5438.16	52.85	-21.15	74	37.44	34.24	14.27	33.1	128	309	P	H
		5365.64	43.55	-10.45	54	28.4	34.15	14.1	33.1	128	309	A	H
		5046.8	54.28	-19.72	74	40.13	33.74	13.51	33.1	340	249	P	V
		5046.54	44.67	-9.33	54	30.52	33.74	13.51	33.1	340	249	A	V
	*	5190	94.21	-	-	79.62	33.92	13.77	33.1	340	249	P	V
		5190	87.74	-	-	73.15	33.92	13.77	33.1	340	249	A	V
		5451.88	53.05	-20.95	74	37.62	34.26	14.27	33.1	340	249	P	V
		5458.32	43.4	-10.6	54	27.97	34.26	14.27	33.1	340	249	A	V
802.11n HT40 CH 46 5230MHz		5087.1	54.35	-19.65	74	40.06	33.79	13.6	33.1	171	309	P	H
		5086.06	45.88	-8.12	54	31.59	33.79	13.6	33.1	171	309	A	H
	*	5230	104.46	-	-	89.72	33.98	13.86	33.1	171	309	P	H
		5230	98.27	-	-	83.53	33.98	13.86	33.1	171	309	A	H
		5372.64	53.02	-20.98	74	37.87	34.15	14.1	33.1	171	309	P	H
		5373.84	46.04	-7.96	54	30.89	34.15	14.1	33.1	171	309	A	H
		5083.46	53.52	-20.48	74	39.23	33.79	13.6	33.1	327	259	P	V
		5086.06	44.85	-9.15	54	30.56	33.79	13.6	33.1	327	259	A	V
	*	5230	101.04	-	-	86.3	33.98	13.86	33.1	327	259	P	V
		5230	94.72	-	-	79.98	33.98	13.86	33.1	327	259	A	V
		5373.6	52.87	-21.13	74	37.72	34.15	14.1	33.1	327	259	P	V
		5374.08	44.87	-9.13	54	29.72	34.15	14.1	33.1	327	259	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)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test results for various channels (802.11n, HT40, CH 38, CH 46) and a Remark section.



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

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test data for 802.11ac VHT80 CH 42 5210MHz and a Remark section.





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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11ac		10420	46.47	-21.73	68.2	48.66	37.05	19.69	58.93	144	223	P	H
VHT80		15630	47.19	-26.81	74	42.8	41.03	22.4	59.04	174	269	P	H
CH 42		10420	46.5	-21.7	68.2	48.69	37.05	19.69	58.93	150	230	P	V
5210MHz		15630	47.1	-26.9	74	42.71	41.03	22.4	59.04	160	225	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**Band 1-Band 2 5150~5350MHz  
WIFI 802.11ac VHT160 (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)
<b>802.11ac VHT160 CH 50 5250MHz</b>		5114.4	53.35	-20.65	74	39.02	33.83	13.6	33.1	385	298	P	H
		5149.76	46.45	-7.55	54	32	33.87	13.68	33.1	385	298	A	H
	*	5250	86.48	-	-	71.66	34	13.92	33.1	385	298	P	H
		5250	79.94	-	-	65.12	34	13.92	33.1	385	298	A	H
		5439.84	53.72	-20.28	74	38.31	34.24	14.27	33.1	385	298	P	H
		5365.44	46.08	-7.92	54	30.93	34.15	14.1	33.1	385	298	A	H
		5120.64	53.56	-20.44	74	39.15	33.83	13.68	33.1	371	269	P	V
		5122.98	46.2	-7.8	54	31.77	33.85	13.68	33.1	371	269	A	V
	*	5250	87.88	-	-	73.06	34	13.92	33.1	371	269	P	V
		5250	81.14	-	-	66.32	34	13.92	33.1	371	269	A	V
		5368.08	52.69	-21.31	74	37.54	34.15	14.1	33.1	371	269	P	V
		5385.6	46.01	-7.99	54	30.83	34.18	14.1	33.1	371	269	A	V
<b>Remark</b>	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												



Band 1-Band 2 5150~5350MHz
WIFI 802.11ac VHT160 (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test results for 802.11ac VHT160 CH 50 at 5250MHz and a Remark section.



**Band 2 - 5250~5350MHz**  
**WIFI 802.11a (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11a CH 52 5260MHz		5107.9	53.65	-20.35	74	39.32	33.83	13.6	33.1	175	311	P	H
		5107.38	44.64	-9.36	54	30.31	33.83	13.6	33.1	175	311	A	H
	*	5260	106.85	-	-	92.01	34.02	13.92	33.1	175	311	P	H
		5260	100.6	-	-	85.76	34.02	13.92	33.1	175	311	A	H
		5418.48	52.8	-21.2	74	37.52	34.22	14.16	33.1	175	311	P	H
		5412.48	44.68	-9.32	54	29.4	34.22	14.16	33.1	175	311	A	H
		5038.74	53.33	-20.67	74	39.18	33.74	13.51	33.1	313	260	P	V
		5107.38	44.16	-9.84	54	29.83	33.83	13.6	33.1	313	260	A	V
	*	5260	104.5	-	-	89.66	34.02	13.92	33.1	313	260	P	V
		5260	98.05	-	-	83.21	34.02	13.92	33.1	313	260	A	V
		5414.4	55.35	-18.65	74	40.07	34.22	14.16	33.1	313	260	P	V
		5412.48	44.49	-9.51	54	29.21	34.22	14.16	33.1	313	260	A	V
802.11a CH 60 5300MHz		5037.45	53.12	-20.88	74	38.99	33.72	13.51	33.1	152	315	P	H
		5147.7	44.31	-9.69	54	29.86	33.87	13.68	33.1	152	315	A	H
	*	5300	106	-	-	91.05	34.07	13.98	33.1	152	315	P	H
		5300	109.43	-	-	94.48	34.07	13.98	33.1	152	315	A	H
		5350.32	54.32	-19.68	74	39.19	34.13	14.1	33.1	152	315	P	H
		5452.32	44.43	-9.57	54	29	34.26	14.27	33.1	152	315	A	H
		5033.6	53	-21	74	38.96	33.72	13.42	33.1	294	257	P	V
		5147.35	44.33	-9.67	54	29.88	33.87	13.68	33.1	294	257	A	V
	*	5300	104.64	-	-	89.69	34.07	13.98	33.1	294	257	P	V
		5300	98.24	-	-	83.29	34.07	13.98	33.1	294	257	A	V
		5368.8	53	-21	74	37.85	34.15	14.1	33.1	294	257	P	V
		5452.56	44.36	-9.64	54	28.93	34.26	14.27	33.1	294	257	A	V



802.11a CH 64 5320MHz	*	5320	99.99	-	-	84.96	34.09	14.04	33.1	160	309	P	H
		5320	93.56	-	-	78.53	34.09	14.04	33.1	160	309	A	H
		5356.64	53.34	-20.66	74	38.21	34.13	14.1	33.1	160	309	P	H
		5350.08	44.2	-9.8	54	29.07	34.13	14.1	33.1	160	309	A	H
	*	5320	97.73	-	-	82.7	34.09	14.04	33.1	309	260	P	V
		5320	93.16	-	-	78.13	34.09	14.04	33.1	309	260	A	V
		5448	53.88	-20.12	74	38.45	34.26	14.27	33.1	309	260	P	V
		5350.08	43.83	-10.17	54	28.7	34.13	14.1	33.1	309	260	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	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11a CH 52 5260MHz		10520	44.49	-23.71	68.2	46.48	37.11	19.72	58.82	129	266	P	H
		15780	47.69	-26.31	74	43.01	41.36	22.5	59.18	146	275	P	H
		10520	44.22	-23.98	68.2	46.21	37.11	19.72	58.82	150	220	P	V
		15780	46.47	-27.53	74	41.79	41.36	22.5	59.18	159	345	P	V
802.11a CH 60 5300MHz		10600	46.77	-27.23	74	48.58	37.16	19.76	58.73	189	235	P	H
		15900	47.47	-26.53	74	42.55	41.65	22.57	59.3	136	145	P	H
		10600	45.82	-28.18	74	47.63	37.16	19.76	58.73	185	215	P	V
		15900	46.74	-27.26	74	41.82	41.65	22.57	59.3	196	190	P	V
802.11a CH 64 5320MHz		10640	46.45	-27.55	74	48.18	37.18	19.78	58.69	196	153	P	H
		15960	47.55	-26.45	74	42.48	41.82	22.62	59.37	157	269	P	H
		10640	45.16	-28.84	74	46.89	37.18	19.78	58.69	152	135	P	V
		15960	45.74	-28.26	74	40.67	41.82	22.62	59.37	173	245	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**Band 2 5250~5350MHz**  
**WIFI 802.11n HT20 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11n HT20 CH 52 5260MHz		5026.78	54.21	-19.79	74	40.17	33.72	13.42	33.1	184	305	P	H
		5107.64	44.34	-9.66	54	30.01	33.83	13.6	33.1	184	305	A	H
	*	5260	105.88	-	-	91.04	34.02	13.92	33.1	184	305	P	H
		5260	99.6	-	-	84.76	34.02	13.92	33.1	184	305	A	H
		5412.96	54.95	-19.05	74	39.67	34.22	14.16	33.1	184	305	P	H
		5412.24	44.66	-9.34	54	29.38	34.22	14.16	33.1	184	305	A	H
		5041.6	53.91	-20.09	74	39.76	33.74	13.51	33.1	310	255	P	V
		5108.16	44.08	-9.92	54	29.75	33.83	13.6	33.1	310	255	A	V
	*	5260	104.04	-	-	89.2	34.02	13.92	33.1	310	255	P	V
		5260	97.6	-	-	82.76	34.02	13.92	33.1	310	255	A	V
		5414.16	53.73	-20.27	74	38.45	34.22	14.16	33.1	310	255	P	V
		5412.24	44.03	-9.97	54	28.75	34.22	14.16	33.1	310	255	A	V
802.11n HT20 CH 60 5300MHz		5120.05	53	-21	74	38.59	33.83	13.68	33.1	159	306	P	H
		5147.7	44.64	-9.36	54	30.19	33.87	13.68	33.1	159	306	A	H
	*	5300	106.08	-	-	91.13	34.07	13.98	33.1	159	306	P	H
		5300	99.99	-	-	85.04	34.07	13.98	33.1	159	306	A	H
		5366.88	53.08	-20.92	74	37.93	34.15	14.1	33.1	159	306	P	H
		5452.32	44.59	-9.41	54	29.16	34.26	14.27	33.1	159	306	A	H
		5043.4	53.8	-20.2	74	39.65	33.74	13.51	33.1	325	258	P	V
		5147.7	44.22	-9.78	54	29.77	33.87	13.68	33.1	325	258	A	V
	*	5300	104.74	-	-	89.79	34.07	13.98	33.1	325	258	P	V
		5300	98.27	-	-	83.32	34.07	13.98	33.1	325	258	A	V
		5450.16	53.1	-20.9	74	37.67	34.26	14.27	33.1	325	258	P	V
		5451.84	44.02	-9.98	54	28.59	34.26	14.27	33.1	325	258	A	V



<b>802.11n</b> <b>HT20</b> <b>CH 64</b> <b>5320MHz</b>	*	5320	100.3	-	-	85.27	34.09	14.04	33.1	157	308	P	H
		5320	93.35	-	-	78.32	34.09	14.04	33.1	157	308	A	H
		5356.48	52.87	-21.13	74	37.74	34.13	14.1	33.1	157	308	P	H
		5350.24	44.37	-9.63	54	29.24	34.13	14.1	33.1	157	308	A	H
	*	5320	98.19	-	-	83.16	34.09	14.04	33.1	323	247	P	V
		5320	90.94	-	-	75.91	34.09	14.04	33.1	323	247	A	V
		5365.28	52.75	-21.25	74	37.6	34.15	14.1	33.1	323	247	P	V
	5350.72	43.74	-10.26	54	28.61	34.13	14.1	33.1	323	247	A	V	
<b>Remark</b>	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	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		10520	46.6	-21.6	68.2	48.59	37.11	19.72	58.82	150	220	P	H
HT20		15780	46.82	-27.18	74	42.14	41.36	22.5	59.18	159	345	P	H
CH 52		10520	45.86	-22.34	68.2	47.85	37.11	19.72	58.82	129	85	P	V
5260MHz		15780	46.59	-27.41	74	41.91	41.36	22.5	59.18	146	275	P	V
802.11n		10600	46.88	-27.12	74	48.69	37.16	19.76	58.73	185	215	P	H
HT20		15900	46.68	-27.32	74	41.76	41.65	22.57	59.3	196	190	P	H
CH 60		10600	46.26	-27.74	74	48.07	37.16	19.76	58.73	189	235	P	V
5300MHz		15900	46.96	-27.04	74	42.04	41.65	22.57	59.3	136	145	P	V
802.11n		10640	46.5	-27.5	74	48.23	37.18	19.78	58.69	152	135	P	H
HT20		15960	47.09	-26.91	74	42.02	41.82	22.62	59.37	173	245	P	H
CH 64		10640	45.4	-28.6	74	47.13	37.18	19.78	58.69	196	153	P	V
5320MHz		15960	45.87	-28.13	74	40.8	41.82	22.62	59.37	157	269	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	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 CH 54 5270MHz		5124.28	53.19	-20.81	74	38.76	33.85	13.68	33.1	181	307	P	H
		5127.14	45.64	-8.36	54	31.21	33.85	13.68	33.1	181	307	A	H
	*	5270	104.06	-	-	89.22	34.02	13.92	33.1	181	307	P	H
		5270	97.97	-	-	83.13	34.02	13.92	33.1	181	307	A	H
		5417.28	53.41	-20.59	74	38.13	34.22	14.16	33.1	181	307	P	H
		5413.68	46.2	-7.8	54	30.92	34.22	14.16	33.1	181	307	A	H
		5011.18	53.92	-20.08	74	39.9	33.7	13.42	33.1	388	263	P	V
		5126.62	44.61	-9.39	54	30.18	33.85	13.68	33.1	388	263	A	V
	*	5270	101.55	-	-	86.71	34.02	13.92	33.1	388	263	P	V
		5270	94.99	-	-	80.15	34.02	13.92	33.1	388	263	A	V
		5414.16	53.13	-20.87	74	37.85	34.22	14.16	33.1	388	263	P	V
		5413.68	44.93	-9.07	54	29.65	34.22	14.16	33.1	388	263	A	V
802.11n HT40 CH 62 5310MHz		5143.15	53.08	-20.92	74	38.63	33.87	13.68	33.1	143	309	P	H
		5136.5	44.2	-9.8	54	29.77	33.85	13.68	33.1	143	309	A	H
	*	5310	98.94	-	-	83.91	34.09	14.04	33.1	143	309	P	H
		5310	92.49	-	-	77.46	34.09	14.04	33.1	143	309	A	H
		5458.08	53.67	-20.33	74	38.24	34.26	14.27	33.1	143	309	P	H
		5454.48	45.4	-8.6	54	29.97	34.26	14.27	33.1	143	309	A	H
		5057.05	53.88	-20.12	74	39.71	33.76	13.51	33.1	360	261	P	V
		5134.75	43.94	-10.06	54	29.51	33.85	13.68	33.1	360	261	A	V
	*	5310	95.08	-	-	80.05	34.09	14.04	33.1	360	261	P	V
		5310	88.7	-	-	73.67	34.09	14.04	33.1	360	261	A	V
		5436.48	52.76	-21.24	74	37.35	34.24	14.27	33.1	360	261	P	V
		5453.76	44.5	-9.5	54	29.07	34.26	14.27	33.1	360	261	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)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test results for various channels (802.11n, HT40, CH 54, CH 62) and a Remark section.



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

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test data for 802.11ac VHT80 CH 58 5290MHz and a Remark section.



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

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test data for 802.11ac VHT80 CH 58 at 5290MHz and a Remark section.



**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		5450.96	52.98	-21.02	74	37.55	34.26	14.27	33.1	155	309	P	H
		5468.08	51.93	-16.27	68.2	36.38	34.28	14.37	33.1	155	309	P	H
		5460	43.97	-10.03	54	28.54	34.26	14.27	33.1	155	309	A	H
	*	5500	99.07	-	-	83.47	34.33	14.37	33.1	155	309	P	H
		5500	93.36	-	-	77.76	34.33	14.37	33.1	155	309	A	H
		5388.88	53.01	-20.99	74	37.77	34.18	14.16	33.1	338	260	P	V
		5466.48	53.04	-15.16	68.2	37.49	34.28	14.37	33.1	338	260	P	V
		5460	43.84	-10.16	54	28.41	34.26	14.27	33.1	338	260	A	V
	*	5500	97.14	-	-	81.54	34.33	14.37	33.1	338	260	P	V
		5500	90.73	-	-	75.13	34.33	14.37	33.1	338	260	A	V
802.11a CH 116 5580MHz		5440.72	52.18	-21.82	74	36.77	34.24	14.27	33.1	161	311	P	H
		5462.8	51.25	-16.95	68.2	35.8	34.28	14.27	33.1	161	311	P	H
		5427.28	44.61	-9.39	54	29.22	34.22	14.27	33.1	161	311	A	H
	*	5580	105.92	-	-	90.03	34.41	14.58	33.1	161	311	P	H
		5580	99.62	-	-	83.73	34.41	14.58	33.1	161	311	A	H
		5730.665	54.46	-13.74	68.2	38.13	34.46	14.97	33.1	161	311	P	H
		5357.2	52.62	-21.38	74	37.49	34.13	14.1	33.1	347	260	P	V
		5469.76	51.24	-16.96	68.2	35.69	34.28	14.37	33.1	347	260	P	V
		5427.28	44.23	-9.77	54	28.84	34.22	14.27	33.1	347	260	A	V
	*	5578	103.54	-	-	87.65	34.41	14.58	33.1	347	260	P	V
		5578	97.18	-	-	81.29	34.41	14.58	33.1	347	260	A	V
	5740.115	53.18	-15.02	68.2	36.77	34.45	15.06	33.1	347	260	P	V	



<b>802.11a CH 140 5700MHz</b>	*	5700	99.19	-	-	82.84	34.48	14.97	33.1	193	311	P	H
		5700	92.48	-	-	76.13	34.48	14.97	33.1	193	311	A	H
		5733.4	54.45	-13.75	68.2	38.12	34.46	14.97	33.1	193	311	P	H
	*	5700	98.14	-	-	81.79	34.48	14.97	33.1	333	262	P	V
		5700	91.43	-	-	75.08	34.48	14.97	33.1	333	262	A	V
		5740.04	54.4	-13.8	68.2	37.99	34.45	15.06	33.1	333	262	P	V
<b>Remark</b>	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	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		11000	47.31	-26.69	74	48.25	37.4	19.96	58.3	148	219	P	H
		16500	46.99	-21.21	68.2	39.61	43.27	22.95	58.84	148	232	P	H
		11000	45.95	-28.05	74	46.89	37.4	19.96	58.3	163	230	P	V
		16500	47.06	-21.14	68.2	39.68	43.27	22.95	58.84	178	296	P	V
802.11a CH 116 5580MHz		11160	47.8	-26.2	74	48.35	37.5	20.06	58.11	148	232	P	H
		16740	48.16	-20.04	68.2	39.71	43.91	23.12	58.58	136	342	P	H
		11160	46.79	-27.21	74	47.34	37.5	20.06	58.11	170	200	P	V
		16740	46.71	-21.49	68.2	38.26	43.91	23.12	58.58	156	350	P	V
802.11a CH 140 5700MHz		11400	47.11	-26.89	74	47.14	37.64	20.18	57.85	136	246	P	H
		17100	49.54	-18.66	68.2	40.07	44.29	23.34	58.16	155	196	P	H
		11400	45.29	-28.71	74	45.32	37.64	20.18	57.85	161	360	P	V
		17100	47.96	-20.24	68.2	38.49	44.29	23.34	58.16	165	246	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												





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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11n HT20 CH 100 5500MHz		5448.72	53.24	-20.76	74	37.81	34.26	14.27	33.1	135	306	P	H
		5464.88	52.4	-15.8	68.2	36.95	34.28	14.27	33.1	135	306	P	H
		5460	44.17	-9.83	54	28.74	34.26	14.27	33.1	135	306	A	H
	*	5500	98.73	-	-	83.13	34.33	14.37	33.1	135	306	P	H
		5500	92.42	-	-	76.82	34.33	14.37	33.1	135	306	A	H
		5365.36	52.6	-21.4	74	37.45	34.15	14.1	33.1	323	248	P	V
		5466.8	51.66	-16.54	68.2	36.11	34.28	14.37	33.1	323	248	P	V
		5459.76	43.75	-10.25	54	28.32	34.26	14.27	33.1	323	248	A	V
802.11n HT20 CH 116 5580MHz	*	5500	96.31	-	-	80.71	34.33	14.37	33.1	323	248	P	V
		5500	89.28	-	-	73.68	34.33	14.37	33.1	323	248	A	V
		5423.2	52.52	-21.48	74	37.24	34.22	14.16	33.1	165	305	P	H
		5462.08	51.21	-16.99	68.2	35.78	34.26	14.27	33.1	165	305	P	H
		5427.76	44.24	-9.76	54	28.85	34.22	14.27	33.1	165	305	A	H
	*	5580	105.01	-	-	89.12	34.41	14.58	33.1	165	305	P	H
		5580	98.69	-	-	82.8	34.41	14.58	33.1	165	305	A	H
		5757.125	54.03	-14.17	68.2	37.62	34.45	15.06	33.1	165	305	P	H
		5423.2	52.94	-21.06	74	37.66	34.22	14.16	33.1	349	241	P	V
		5467.36	51.08	-17.12	68.2	35.53	34.28	14.37	33.1	349	241	P	V
		5428	43.8	-10.2	54	28.41	34.22	14.27	33.1	349	241	A	V
	*	5580	103.76	-	-	87.87	34.41	14.58	33.1	349	241	P	V
		5580	97.22	-	-	81.33	34.41	14.58	33.1	349	241	A	V
		5728.145	54.08	-14.12	68.2	37.75	34.46	14.97	33.1	349	241	P	V



<b>802.11n HT20 CH 140 5700MHz</b>	*	5700	98.39	-	-	82.04	34.48	14.97	33.1	132	305	P	H
		5700	91.97	-	-	75.62	34.48	14.97	33.1	132	305	A	H
		5743.64	55.02	-13.18	68.2	38.61	34.45	15.06	33.1	132	305	P	H
	*	5700	97.43	-	-	81.08	34.48	14.97	33.1	335	244	P	V
		5700	90.96	-	-	74.61	34.48	14.97	33.1	335	244	A	V
		5753.24	54.08	-14.12	68.2	37.67	34.45	15.06	33.1	335	244	P	V
<b>Remark</b>	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	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		11000	47.92	-26.08	74	48.86	37.4	19.96	58.3	163	230	P	H
HT20		16500	46.16	-22.04	68.2	38.78	43.27	22.95	58.84	178	296	P	H
CH 100		11000	46.25	-27.75	74	47.19	37.4	19.96	58.3	148	219	P	V
5500MHz		16500	48.37	-19.83	68.2	40.99	43.27	22.95	58.84	148	232	P	V
802.11n		11160	47.94	-26.06	74	48.49	37.5	20.06	58.11	170	200	P	H
HT20		16740	47.45	-20.75	68.2	39	43.91	23.12	58.58	156	350	P	H
CH 116		11160	46.79	-27.21	74	47.34	37.5	20.06	58.11	148	232	P	V
5580MHz		16740	47.41	-20.79	68.2	38.96	43.91	23.12	58.58	136	342	P	V
802.11n		11400	47.11	-26.89	74	47.14	37.64	20.18	57.85	157	285	P	H
HT20		17100	49.49	-18.71	68.2	40.02	44.29	23.34	58.16	165	246	P	H
CH 140		11400	46.14	-27.86	74	46.17	37.64	20.18	57.85	136	246	P	V
5700MHz		17100	48.72	-19.48	68.2	39.25	44.29	23.34	58.16	155	196	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)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains two main sections of data for 802.11n HT40 channels 102 and 110.



<b>802.11n</b> <b>HT40</b> <b>CH 134</b> <b>5670MHz</b>		5401.45	52.29	-21.71	74	37.03	34.2	14.16	33.1	148	306	P	H
		5464.8	52.5	-15.7	68.2	37.05	34.28	14.27	33.1	148	306	P	H
		5460	43.62	-10.38	54	28.19	34.26	14.27	33.1	148	306	A	H
	*	5670	95.55	-	-	79.3	34.48	14.87	33.1	148	306	P	H
		5670	89.29	-	-	73.04	34.48	14.87	33.1	148	306	A	H
		5755.725	53.89	-14.31	68.2	37.48	34.45	15.06	33.1	148	306	P	H
		5371.7	52.9	-21.1	74	37.75	34.15	14.1	33.1	359	234	P	V
		5465.85	51.72	-16.48	68.2	36.17	34.28	14.37	33.1	359	234	P	V
		5460	43.57	-10.43	54	28.14	34.26	14.27	33.1	359	234	A	V
	*	5670	94.56	-	-	78.31	34.48	14.87	33.1	359	234	P	V
		5670	88.29	-	-	72.04	34.48	14.87	33.1	359	234	A	V
	5748.375	53.97	-14.23	68.2	37.56	34.45	15.06	33.1	359	234	P	V	
<b>Remark</b>	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)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains multiple rows of test data for various channels and frequencies, including 802.11n HT40, CH 102, CH 110, and CH 134.



**Band 3 5470~5725MHz**  
**WIFI 802.11ac VHT80 (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)
802.11ac VHT80 CH 106 5530MHz		5433.04	53.35	-20.65	74	37.94	34.24	14.27	33.1	124	302	P	H
		5468.08	54.04	-14.16	68.2	38.49	34.28	14.37	33.1	124	302	P	H
		5457.28	45.28	-8.72	54	29.85	34.26	14.27	33.1	124	302	A	H
	*	5530	92.45	-	-	76.72	34.35	14.48	33.1	124	302	P	H
		5530	85.85	-	-	70.12	34.35	14.48	33.1	124	302	A	H
		5730.035	53.3	-14.9	68.2	36.97	34.46	14.97	33.1	124	302	P	H
		5422.96	52.9	-21.1	74	37.62	34.22	14.16	33.1	353	240	P	V
		5468.56	53.14	-15.06	68.2	37.59	34.28	14.37	33.1	353	240	P	V
		5443.6	44.33	-9.67	54	28.92	34.24	14.27	33.1	353	240	A	V
	*	5530	89.19	-	-	73.46	34.35	14.48	33.1	353	240	P	V
		5530	84.48	-	-	68.75	34.35	14.48	33.1	353	240	A	V
	5724.995	53.54	-14.66	68.2	37.21	34.46	14.97	33.1	353	240	P	V	
802.11ac VHT80 CH 122 5610MHz		5377.36	52.48	-21.52	74	37.33	34.15	14.1	33.1	128	300	P	H
		5464.72	51.8	-16.4	68.2	36.35	34.28	14.27	33.1	128	300	P	H
		5453.44	44.59	-9.41	54	29.16	34.26	14.27	33.1	128	300	A	H
	*	5610	92.39	-	-	76.34	34.46	14.69	33.1	128	300	P	H
		5610	87.06	-	-	71.01	34.46	14.69	33.1	128	300	A	H
		5725.975	53.62	-14.58	68.2	37.29	34.46	14.97	33.1	128	300	P	H
		5395.36	51.99	-22.01	74	36.73	34.2	14.16	33.1	131	115	P	V
		5469.76	51.96	-16.24	68.2	36.41	34.28	14.37	33.1	131	115	P	V
		5457.76	44.25	-9.75	54	28.82	34.26	14.27	33.1	131	115	A	V
	*	5610	87.6	-	-	71.55	34.46	14.69	33.1	131	115	P	V
		5610	83.16	-	-	67.11	34.46	14.69	33.1	131	115	A	V
	5739.625	53.87	-14.33	68.2	37.46	34.45	15.06	33.1	131	115	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	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		11060	46.85	-27.15	74	47.64	37.44	20	58.23	125	263	P	H
VHT80		16590	47.94	-20.26	68.2	40.17	43.5	23.02	58.75	174	328	P	H
CH 106		11060	46.86	-27.14	74	47.65	37.44	20	58.23	150	200	P	V
5530MHz		16590	45.84	-22.36	68.2	38.07	43.5	23.02	58.75	180	350	P	V
802.11ac		11220	46.36	-27.64	74	46.81	37.53	20.08	58.06	200	360	P	H
VHT80		16830	47.35	-20.85	68.2	38.53	44.14	23.17	58.49	200	360	P	H
CH 122		11220	47.68	-26.32	74	48.13	37.53	20.08	58.06	125	278	P	V
5610MHz		16830	47.3	-20.9	68.2	38.48	44.14	23.17	58.49	162	278	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 VHT160 (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)
<b>802.11ac</b> <b>VHT160</b> <b>CH 114</b> <b>5570MHz</b>		5454.4	53.76	-20.24	74	38.33	34.26	14.27	33.1	399	294	P	H
		5465.92	52.73	-15.47	68.2	37.18	34.28	14.37	33.1	399	294	P	H
		5417.2	45.99	-8.01	54	30.71	34.22	14.16	33.1	399	294	A	H
	*	5570	84.15	-	-	68.26	34.41	14.58	33.1	399	294	P	H
		5570	77.43	-	-	61.54	34.41	14.58	33.1	399	294	A	H
		5744.35	53.66	-14.54	68.2	37.25	34.45	15.06	33.1	399	294	P	H
		5459.68	52.77	-21.23	74	37.34	34.26	14.27	33.1	346	245	P	V
		5461.36	53.6	-14.6	68.2	38.17	34.26	14.27	33.1	346	245	P	V
		5459.44	46.03	-7.97	54	30.6	34.26	14.27	33.1	346	245	A	V
	*	5570	85.4	-	-	69.51	34.41	14.58	33.1	346	245	P	V
		5570	78.35	-	-	62.46	34.41	14.58	33.1	346	245	A	V
		5757.3	54.98	-13.22	68.2	38.57	34.45	15.06	33.1	346	245	P	V
<b>Remark</b>	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												



Band 3 5470~5725MHz

WIFI 802.11ac VHT160 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11ac		11140	43.42	-30.58	74	44.05	37.48	20.04	58.15	159	178	P	H
VHT160		16710	48.04	-20.16	68.2	39.75	43.82	23.09	58.62	159	0	P	H
CH 114		11140	45.52	-28.48	74	46.15	37.48	20.04	58.15	178	56	P	V
5570MHz		16710	44.84	-23.36	68.2	36.55	43.82	23.09	58.62	159	171	P	V
Remark	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												



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

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test data for 802.11a CH 144 and a Remark section.



**Band 3 - Straddle Channel**  
**WIFI 802.11n HT20 (Harmonic @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11n		11440	46.52	-27.48	74	46.48	37.66	20.2	57.82	157	285	P	H
HT20		17160	47.88	-20.32	68.2	38.48	44.09	23.37	58.06	142	263	P	H
CH 144		11440	47.23	-26.77	74	47.19	37.66	20.2	57.82	168	242	P	V
5720MHz		17160	47.39	-20.81	68.2	37.99	44.09	23.37	58.06	112	296	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI	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		11420	46.54	-27.46	74	46.54	37.65	20.18	57.83	157	285	P	H
HT40		17130	47.88	-20.32	68.2	38.43	44.19	23.37	58.11	165	246	P	H
CH 142		11420	46.78	-27.22	74	46.78	37.65	20.18	57.83	144	223	P	V
5710MHz		17130	46.54	-21.66	68.2	37.09	44.19	23.37	58.11	175	289	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI	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		11380	47.41	-26.59	74	47.49	37.63	20.16	57.87	129	236	P	H
VHT80		17070	46.79	-21.41	68.2	37.28	44.4	23.32	58.21	184	227	P	H
CH 138		11380	47.03	-26.97	74	47.11	37.63	20.16	57.87	126	248	P	V
5690MHz		17070	47.63	-20.57	68.2	38.12	44.4	23.32	58.21	145	238	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		30	25.37	-14.63	40	31.31	24.4	0.96	31.3	-	-	P	H
		88.2	30.71	-12.79	43.5	46.2	14.34	1.67	31.5	100	175	P	H
		581.93	27.23	-18.77	46	30.12	24.3	4.3	31.49	-	-	P	H
		751.68	29.53	-16.47	46	30.18	25.57	4.89	31.11	-	-	P	H
		806	30.47	-15.53	46	30.49	26.22	5.07	31.31	-	-	P	H
		980.6	32.26	-21.74	54	30.68	27.23	5.59	31.24	-	-	P	H
		30	23.82	-16.18	40	29.76	24.4	0.96	31.3	-	-	P	V
		88.2	24.71	-18.79	43.5	40.2	14.34	1.67	31.5	-	-	P	V
		196.84	20.24	-23.26	43.5	33.51	15.54	2.5	31.31	-	-	P	V
		578.05	30.57	-15.43	46	33.52	24.25	4.28	31.48	-	-	P	V
		806.97	32.13	-13.87	46	32.16	26.22	5.07	31.32	100	173	P	V
		996.12	32.19	-21.81	54	30.39	27.37	5.64	31.21	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



**Note symbol**

*	<b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is <b>over limit</b> line.
P/A	<b>Peak</b> or <b>Average</b>
H/V	<b>Horizontal</b> or <b>Vertical</b>





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

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

**For Peak Limit @ 2390MHz:**

- 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)
- Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 55.45(dBμV/m) – 74(dBμV/m)  
= -18.55(dB)

**For Average Limit @ 2390MHz:**

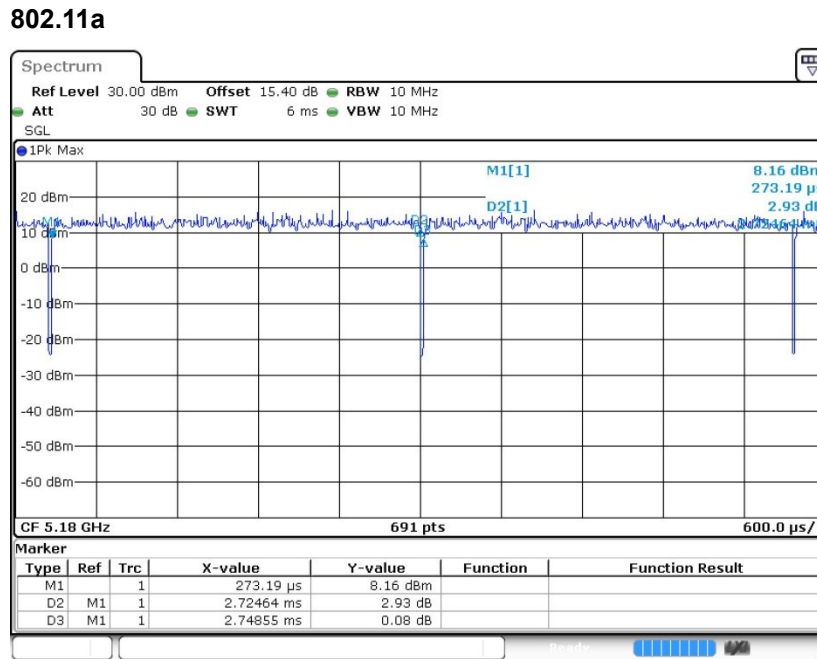
- Level(dBμV/m)  
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)  
= 43.54 (dBμV/m)
- Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 43.54(dBμV/m) – 54(dBμV/m)  
= -10.46(dB)

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



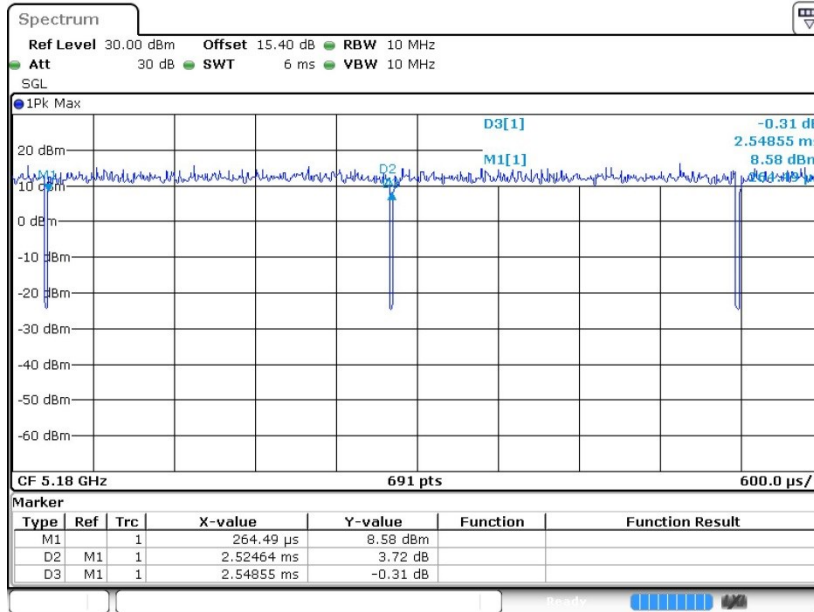
### Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	99.13	-	-	10Hz
802.11an HT 20	99.06	-	-	10Hz
802.11an HT 40	98.11	-	-	10Hz
802.11ac VHT80	97.19	0.601	1.665	3KHz
802.11ac VHT160	94.43	0.3196	3.1289	10KHZ

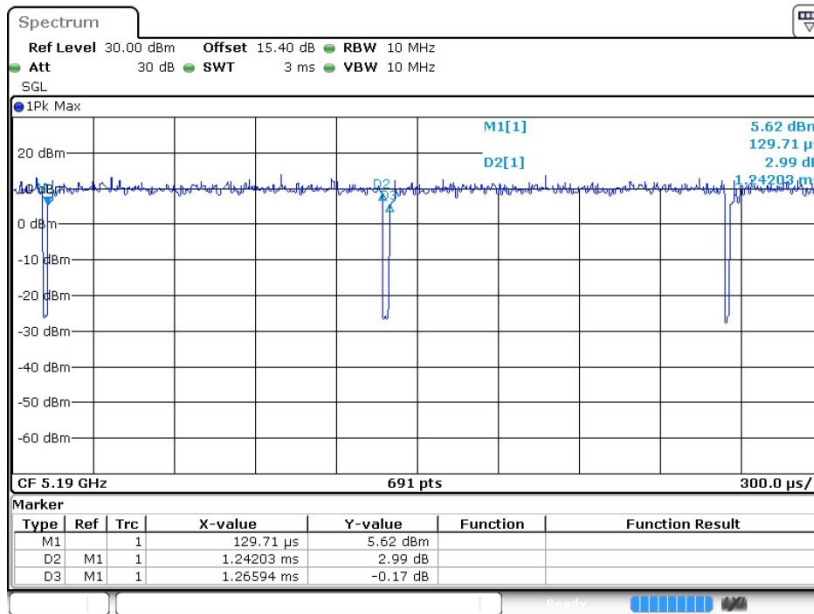




802.11an HT20

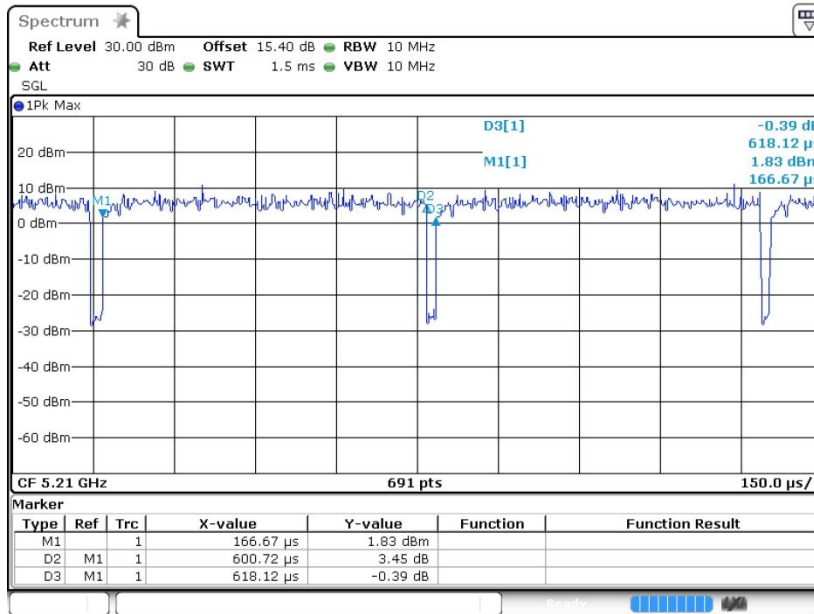


802.11an HT40





802.11ac VHT80



802.11ac VHT160

