



# FCC RF Test Report

**APPLICANT** : Motorola Mobility LLC  
**EQUIPMENT** : Mobile Cellular Phone  
**BRAND NAME** : Motorola  
**MODEL NAME** : 9369, 9847  
**FCC ID** : IHDT56VF2  
**STANDARD** : FCC Part 15 Subpart E §15.407  
**CLASSIFICATION** : (NII) Unlicensed National Information Infrastructure

The product was received on Sep. 30, 2016 and testing was completed on Oct. 26, 2016. 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.

Prepared by: James Huang / Manager



Approved by: Jones Tsai / Manager

**SPORTON INTERNATIONAL (KUNSHAN) INC.**  
**No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. 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 Feature of Equipment Under Test ..... 5

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

    1.5 Specification of Accessory ..... 7

    1.6 Modification of EUT ..... 7

    1.7 Testing Location ..... 8

    1.8 Applicable Standards ..... 8

**2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST ..... 9**

    2.1 Carrier Frequency and Channel ..... 9

    2.2 Test Mode ..... 10

    2.3 Connection Diagram of Test System ..... 11

    2.4 Support Unit used in test configuration and system ..... 13

    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 ..... 18

    3.4 Unwanted Emissions Measurement ..... 21

    3.5 AC Conducted Emission Measurement ..... 26

    3.6 Frequency Stability Measurement ..... 30

    3.7 Automatically Discontinue Transmission ..... 31

    3.8 Antenna Requirements ..... 32

**4 LIST OF MEASURING EQUIPMENT ..... 33**

**5 UNCERTAINTY OF EVALUATION ..... 34**

**APPENDIX A. CONDUCTED TEST RESULTS**

**APPENDIX B. RADIATED SPURIOUS EMISSION**

**APPENDIX C. DUTY CYCLE PLOTS**

**APPENDIX D. 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	FCC ≤ 24 dBm (depend on band)	Pass	-
3.3	15.407(a)	Power Spectral Density	FCC ≤ 11 dBm/MHz (depend on band)	Pass	-
3.4	15.407(b)	Unwanted Emissions	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	Under limit 3.16 dB at 5470.000 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 9.28 dB at 0.552 MHz
3.6	15.407(g)	Frequency Stability	Within Operation Band	Pass	-
3.7	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.8	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-



# 1 General Description

## 1.1 Applicant

Motorola Mobility LLC  
222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

## 1.2 Manufacturer

Motorola Mobility LLC  
222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

## 1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	9369, 9847
FCC ID	IHDT56VF2
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/HSPA+(16QAM uplink is not supported)/DC-HSDPA/LTE WLAN2.4GHz 802.11b/g/n HT20 WLAN5GHz 802.11a/n HT20/HT40 Bluetooth v3.0 + EDR/Bluetooth v4.0 LE Bluetooth v4.2 LE
IMEI Code	Conducted: 351864080029279/351864080029287 Conduction: 351864080029238/351864080029246 Radiation: 351864080029311/351864080029329
HW Version	DVT2(V5.0)
SW Version	cedric-userdebug 7.0 NPP25.73 270 intcfg,test-keys
EUT Stage	Identical Prototype

**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 are only for SIM slot, sample 1(Model name: 9369) is dual SIM slot, sample 2(Model name: 9847) is single SIM slot. According to the difference, the sample 1 to perform full test.



### 1.4 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 ~ 5700 MHz
<b>Maximum Output Power to Antenna</b>	<p><b>&lt;5180 MHz ~ 5240 MHz&gt;</b> 802.11a : 12.96 dBm / 0.0198 W 802.11n HT20 : 12.74 dBm / 0.0188 W 802.11n HT40 : 7.26 dBm / 0.0053 W</p> <p><b>&lt;5260 MHz ~ 5320 MHz&gt;</b> 802.11a : 12.78 dBm / 0.0190 W 802.11n HT20 : 12.34 dBm / 0.0171 W 802.11n HT40 : 7.88 dBm / 0.0061 W</p> <p><b>&lt;5500 MHz ~ 5700 MHz &gt;</b> 802.11a : 15.35 dBm / 0.0343 W 802.11n HT20 : 14.65 dBm / 0.0292 W 802.11n HT40 : 9.90 dBm / 0.0098 W</p>
<b>99% Occupied Bandwidth</b>	<p><b>&lt;5180 MHz ~ 5240 MHz&gt;</b> 802.11a : 22.83 MHz 802.11n HT20 : 23.93 MHz 802.11n HT40 : 36.76 MHz</p> <p><b>&lt;5260 MHz ~ 5320 MHz&gt;</b> 802.11a : 21.93 MHz 802.11n HT20 : 22.33 MHz 802.11n HT40 : 36.66 MHz</p> <p><b>&lt;5500 MHz ~ 5700 MHz &gt;</b> 802.11a : 19.73 MHz 802.11n HT20 : 19.98 MHz 802.11n HT40 : 37.06 MHz</p>
<b>Antenna Type / Gain</b>	<p><b>&lt;5180 MHz ~ 5240 MHz&gt;</b> PIFA Antenna with gain -0.71 dBi</p> <p><b>&lt;5260 MHz ~ 5320 MHz&gt;</b> PIFA Antenna with gain 0.47 dBi</p> <p><b>&lt;5500 MHz ~ 5700 MHz &gt;</b> PIFA Antenna with gain 0.47 dBi</p>
<b>Type of Modulation</b>	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)



### 1.5 Specification of Accessory

Specification of Accessory				
AC Adapter	Brand Name	Motorola (Acbel)	Model Name	C-P35
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5.2Vdc, 2000mA		
Battery	Brand Name	Motorola (ATL)	Model Name	GK40
	Power Rating	3.8Vdc, 2685/2800mAh (Min/Typ)	Type	Li-ion
Earphone	Brand Name	Motorola	Model Name	SJYN1181B
	Signal Line Type	1.2 meter, non-shielded cable, without ferrite core		
USB Cable	Brand Name	Motorola (Liqi)	Model Name	L25W-051000100AL
	Signal Line Type	1.0 meter, non-shielded cable, without ferrite core		

### 1.6 Modification of EUT

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



### 1.7 Testing Location

<b>Test Site</b>	SPORTON INTERNATIONAL (KUNSHAN) INC.			
<b>Test Site Location</b>	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958			
<b>Test Site No.</b>	<b>Sporton Site No.</b>			<b>FCC Registration No.</b>
	TH01-KS	CO01-KS	03CH03-KS	306251

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

### 1.8 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 v01r03
- 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

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: conducted emission (150 kHz to 30 MHz) and radiated 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 were recorded in this report.

### 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
	-	-	-	-

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
	-	-	-	-

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
	-	-	134*	5670
	108	5540	136	5680
	110*	5550	140	5700

**Note:**

1. The above Frequency and Channel in "\*" were 802.11n HT40.



## 2.2 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates from the power table described in section 2.2.

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

Test Cases	
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter) + Earphone

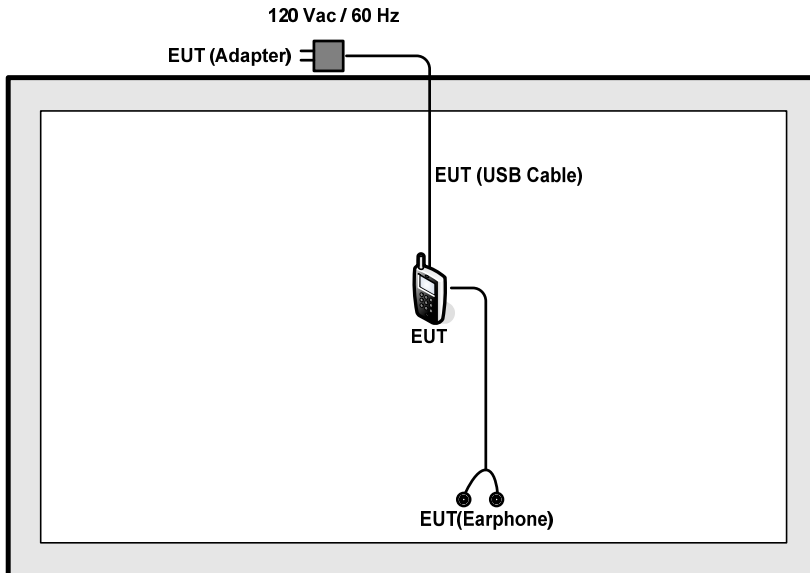
Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5720MHz
		802.11a	802.11a	802.11a
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	136
				140

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	136
				140

Ch. #		Band I : 5150-5250 MHz	Band II : 5250-5350 MHz	Band III : 5470-5725MHz
		802.11n HT40	802.11n HT40	802.11n HT40
L	Low	38	54	102
M	Middle	-	-	110
H	High	46	62	134

## 2.3 Connection Diagram of Test System

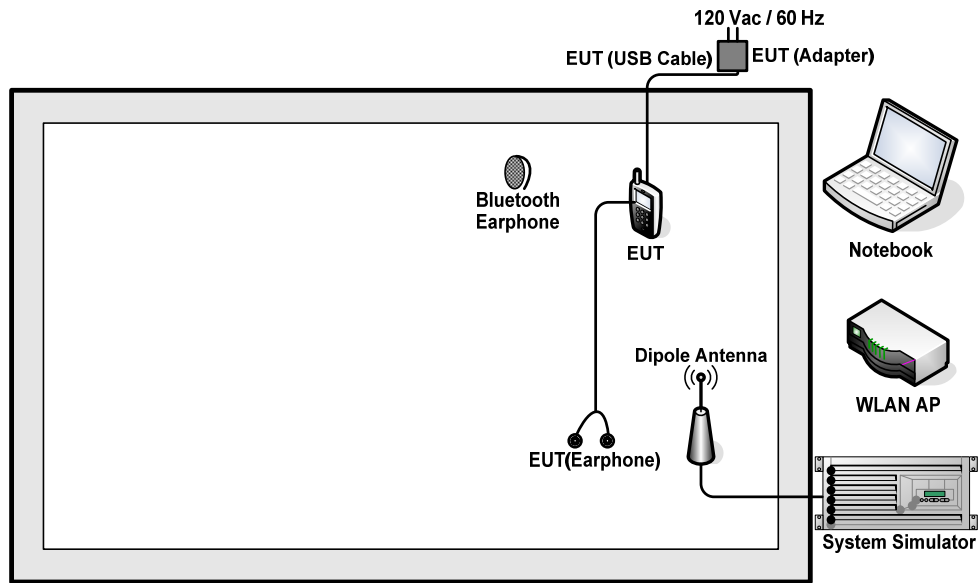
<WLAN Tx Mode for WLAN5GHz 802.11a/n HT40>



<WLAN Tx Mode for WLAN5GHz 802.11n HT20>



<AC Conducted Emission Mode>



## 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, 1.8 m
2.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
4.	Notebook	Lenovo	G480	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
5.	Bluetooth Earphone	Lenovo	LBH308	N/A	N/A	N/A

## 2.5 EUT Operation Test Setup

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

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

## 2.6 Measurement Results Explanation Example

**For all conducted test items:**

The offset level is set in the spectrum analyzer to compensate the RF cable loss 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 7.5dB.

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)}. \\ &= 7.5 \text{ (dB)} \end{aligned}$$

### 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.

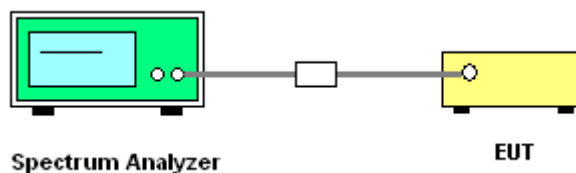
##### 3.1.2 Measuring Instruments

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 v01r03. 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.

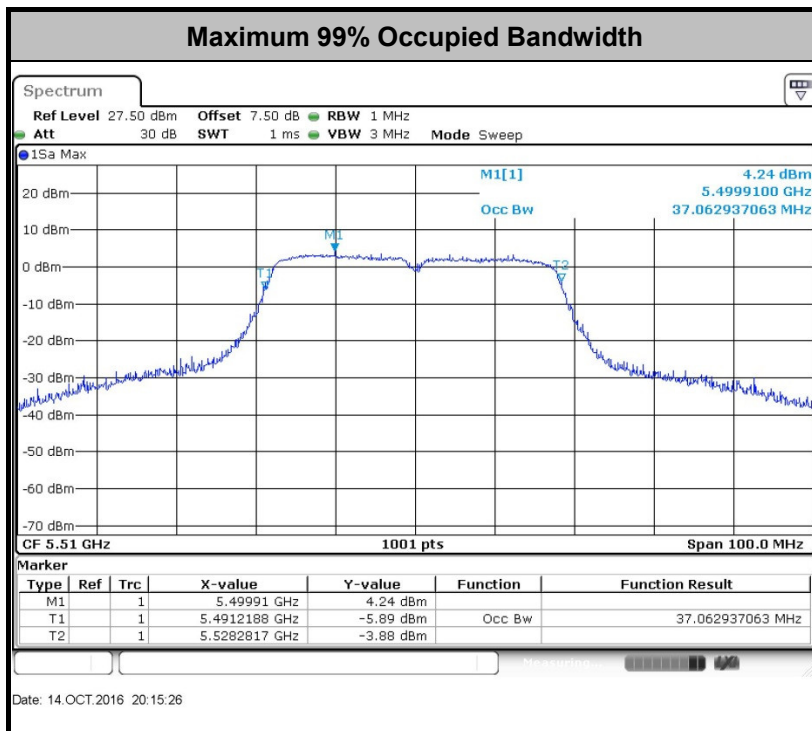
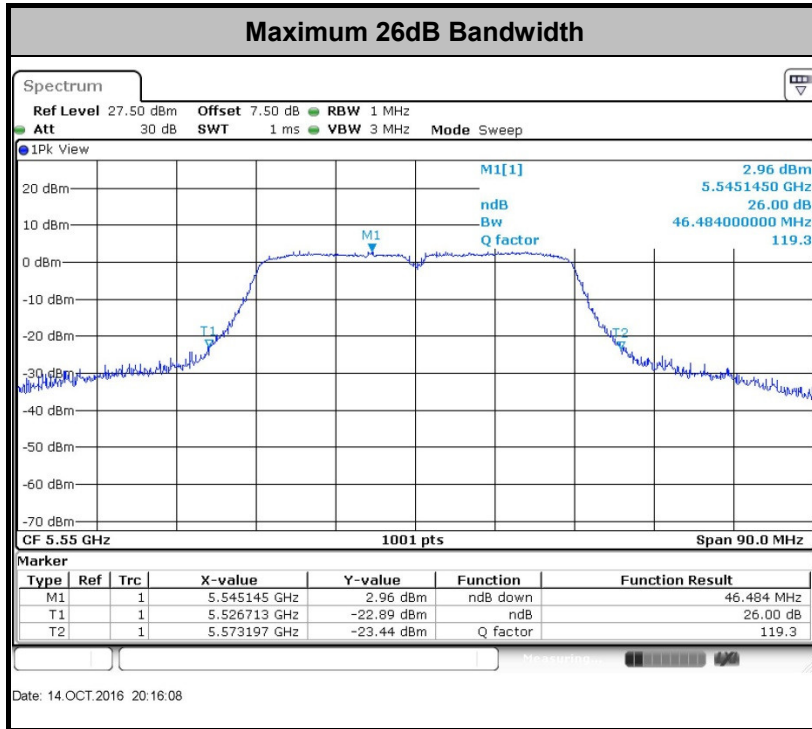
##### 3.1.4 Test Setup





### 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.

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

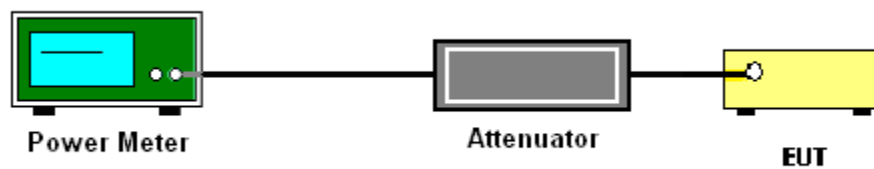
The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.

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.

### 3.2.4 Test Setup

For normal channel:



### 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.

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

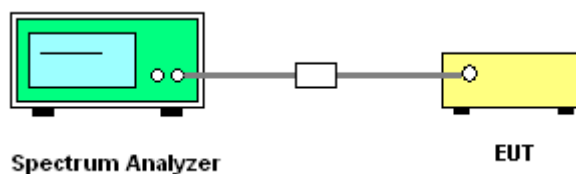
The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.  
Section F) Maximum power spectral density.

#### # Method SA-2 #

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

1. The testing follows Method SA-2 of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.
  - 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.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.

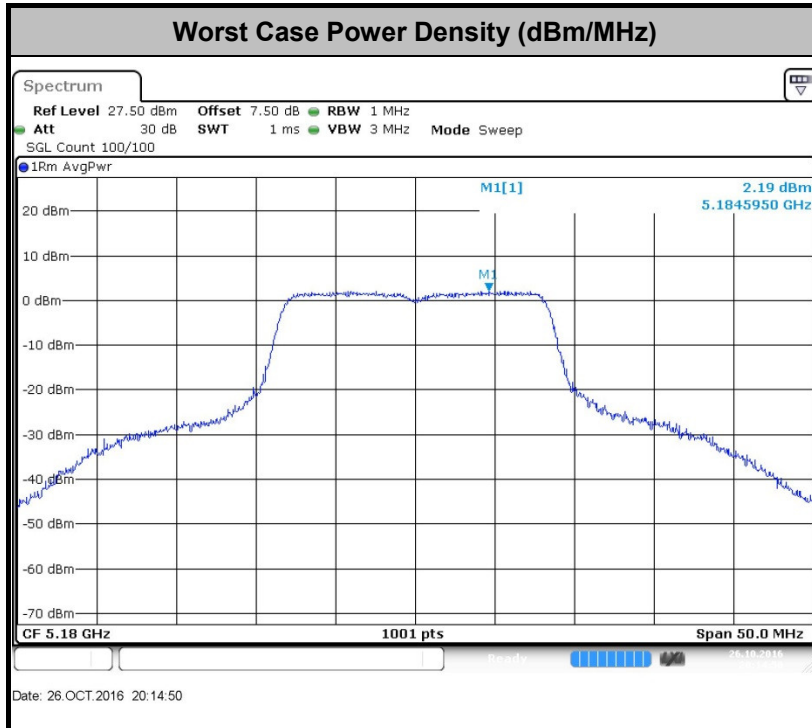
### 3.3.4 Test Setup





### 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 as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part15.205.

#### 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 5470-5725MHz 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 per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 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

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

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts)}$$



EIRP (dBm)	Field Strength at 3m (dBμV/m)
-17	78.3
- 27	68.3

(3) KDB789033 D02 v01r03 G)2)c) As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.

### 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 v01r03. 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 ≥ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

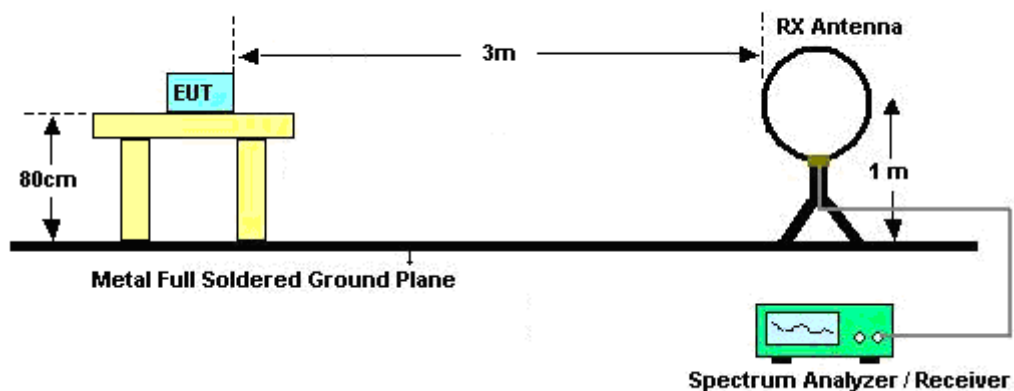
(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW ≥ 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.

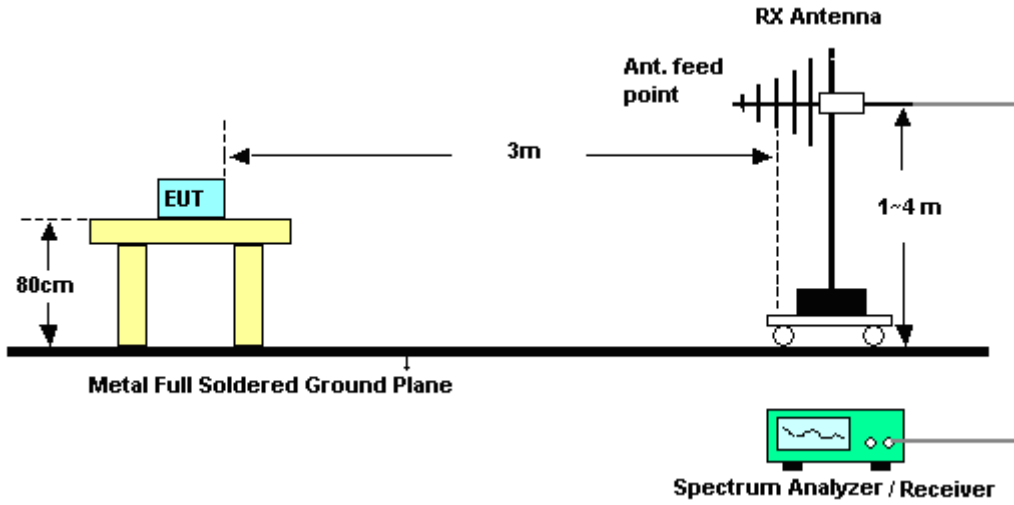
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband 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

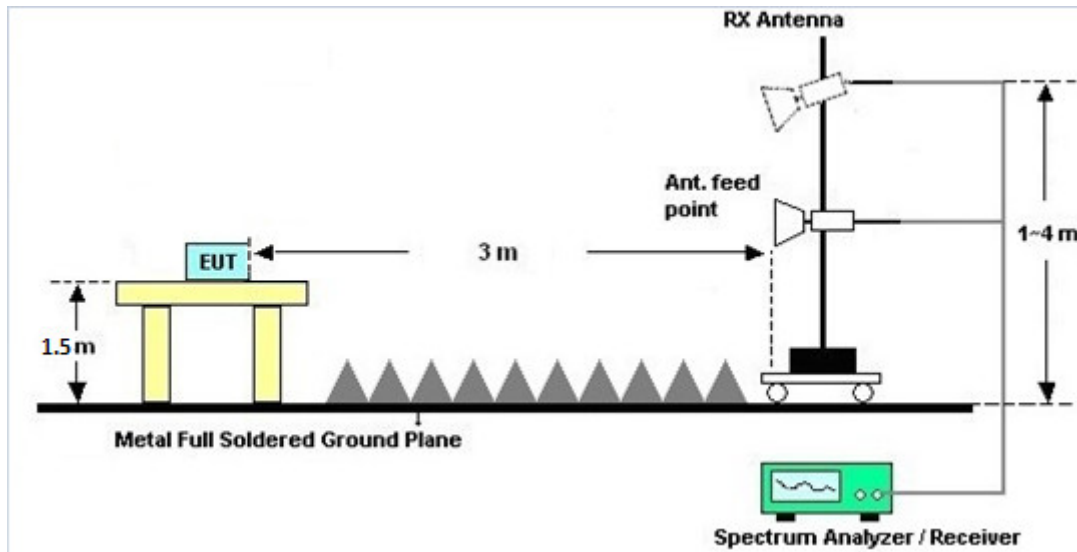
For radiated emissions below 30MHz



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 per 15.31(o) was not reported.

**3.4.6 Test Result of Radiated Spurious at Band Edges**

Please refer to Appendix B.

**3.4.7 Duty Cycle**

Please refer to Appendix C.

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

Please refer to Appendix B.



### 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 $\mu$ 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.

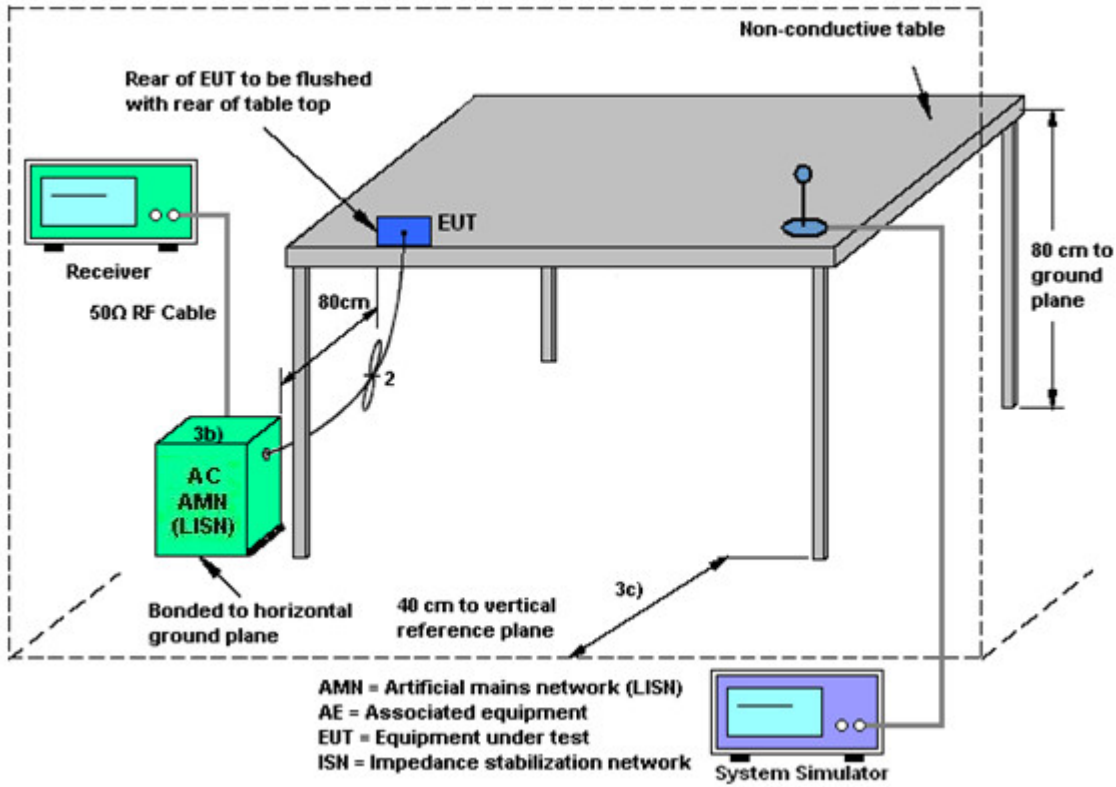
#### 3.5.2 Measuring Instruments

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.

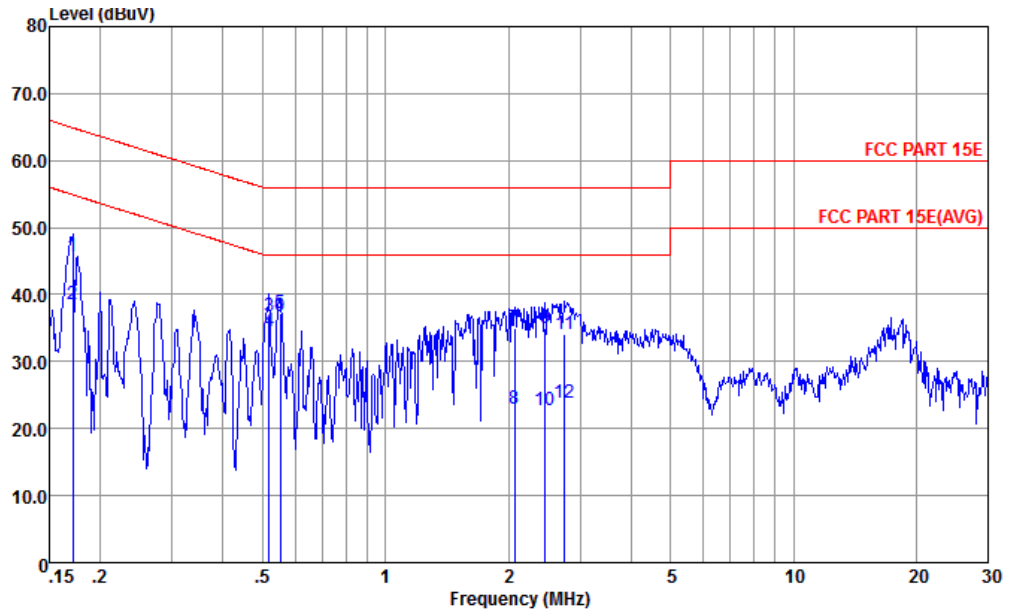
### 3.5.4 Test Setup





3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	22~24°C
Test Engineer :	Amos Zhang	Relative Humidity :	43~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter) + Earphone		



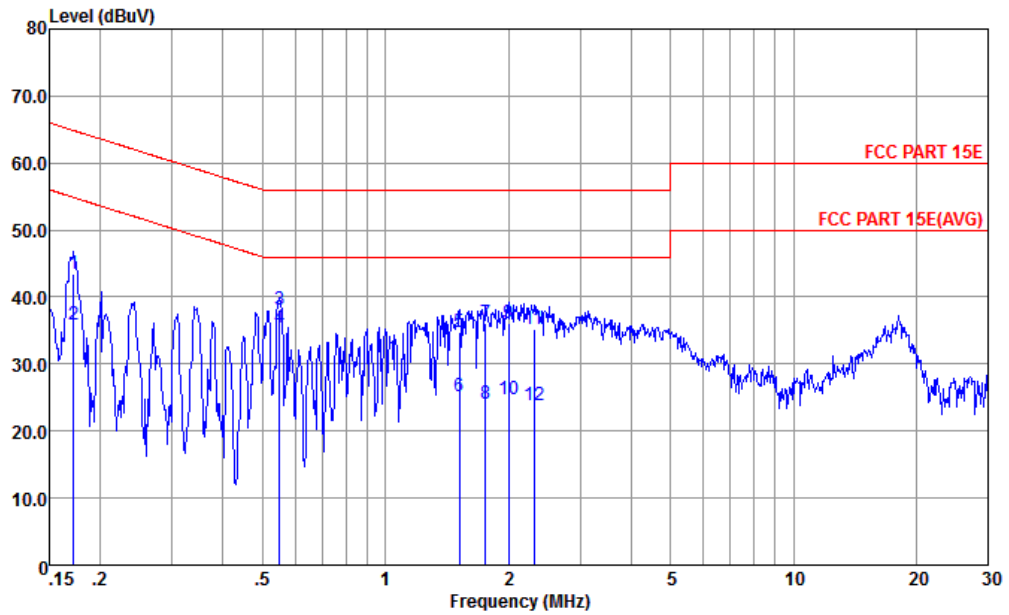
Site : CO01-KS  
 Condition : FCC PART 15E LISN-L-20151024 LINE

mode : Mode 1  
 : 351864080029238/351864080029246 #4

	Over	Limit	Read	LISN	Cable		
Freq	Level	Limit	Line	Level	Factor	Loss	Remark
MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.171	45.65	-19.25	64.90	34.89	0.39	10.37 QP
2	0.171	38.55	-16.35	54.90	27.79	0.39	10.37 Average
3	0.518	36.72	-19.28	56.00	26.30	0.23	10.19 QP
4	0.518	34.62	-11.38	46.00	24.20	0.23	10.19 Average
5	0.552	37.32	-18.68	56.00	26.91	0.23	10.18 QP
6 *	0.552	36.72	-9.28	46.00	26.31	0.23	10.18 Average
7	2.077	34.97	-21.03	56.00	24.60	0.18	10.19 QP
8	2.077	22.87	-23.13	46.00	12.50	0.18	10.19 Average
9	2.461	34.99	-21.01	56.00	24.61	0.18	10.20 QP
10	2.461	22.69	-23.31	46.00	12.31	0.18	10.20 Average
11	2.750	33.99	-22.01	56.00	23.60	0.18	10.21 QP
12	2.750	23.89	-22.11	46.00	13.50	0.18	10.21 Average



Test Mode :	Mode 1	Temperature :	22~24°C
Test Engineer :	Amos Zhang	Relative Humidity :	43~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter) + Earphone		



Site : CO01-KS  
 Condition : FCC PART 15E LISN-N-20151024 NEUTRAL

mode : Mode 1  
 : 351864080029238/351864080029246 #4

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.172	43.47	-21.39	64.86	32.81	0.30	10.36	QP
2	0.172	35.97	-18.89	54.86	25.31	0.30	10.36	Average
3	0.549	38.11	-17.89	56.00	27.60	0.33	10.18	QP
4 *	0.549	35.41	-10.59	46.00	24.90	0.33	10.18	Average
5	1.519	34.86	-21.14	56.00	24.29	0.38	10.19	QP
6	1.519	25.16	-20.84	46.00	14.59	0.38	10.19	Average
7	1.762	36.07	-19.93	56.00	25.50	0.38	10.19	QP
8	1.762	24.17	-21.83	46.00	13.60	0.38	10.19	Average
9	2.001	36.17	-19.83	56.00	25.60	0.38	10.19	QP
10	2.001	24.77	-21.23	46.00	14.20	0.38	10.19	Average
11	2.309	35.17	-20.83	56.00	24.59	0.38	10.20	QP
12	2.309	23.87	-22.13	46.00	13.29	0.38	10.20	Average

### 3.6 Frequency Stability Measurement

#### 3.6.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

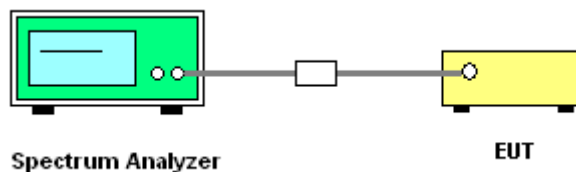
#### 3.6.2 Measuring Instruments

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

#### 3.6.3 Test Procedures

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

#### 3.6.4 Test Setup



#### 3.6.5 Test Result of Frequency Stability

Please refer to Appendix A.



## **3.7 Automatically Discontinue Transmission**

### **3.7.1 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.

### **3.7.2 Measuring Instruments**

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

### **3.7.3 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.



## **3.8 Antenna Requirements**

### **3.8.1 Standard Applicable**

According to FCC 47 CFR Section 15.407(a)(1)(2) ,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.

### **3.8.2 Antenna Anti-Replacement Construction**

An embedded-in antenna design is used.

### **3.8.3 Antenna Gain**

The antenna gain 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. 09, 2016	Oct. 09, 2016~ Oct. 26, 2016	Aug. 08, 2017	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 20, 2016	Oct. 09, 2016~ Oct. 26, 2016	Jan. 19, 2017	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 20, 2016	Oct. 09, 2016~ Oct. 26, 2016	Jan. 19, 2017	Conducted (TH01-KS)
EMI Receiver	R&S	ESC17	100768	9kHz~7GHz;	Apr. 29, 2016	Oct. 11, 2016	Apr. 28, 2017	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 24, 2015	Oct. 11, 2016	Oct. 23, 2016	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 24, 2015	Oct. 11, 2016	Oct. 23, 2016	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP0000008 11	AC 0V~300V, 45Hz~1000Hz	Oct. 24, 2015	Oct. 11, 2016	Oct. 23, 2016	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz; Max 30dBm	Aug. 09, 2016	Oct. 09, 2016~ Oct. 17, 2016	Aug. 08, 2017	Radiation (03CH03-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz~44GHz	Apr. 22, 2016	Oct. 09, 2016~ Oct. 17, 2016	Apr. 21, 2017	Radiation (03CH03-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 07, 2015	Oct. 09, 2016~ Oct. 17, 2016	Nov. 06, 2016	Radiation (03CH03-KS)
Bilog Antenna	TeseQ	CBL6112D	35406	25MHz~2GHz	Apr. 16, 2016	Oct. 09, 2016~ Oct. 17, 2016	Apr. 15, 2017	Radiation (03CH03-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1356	1GHz~18GHz	Apr. 16, 2016	Oct. 09, 2016~ Oct. 17, 2016	Apr. 15, 2017	Radiation (03CH03-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz ~40GHz	Mar. 03, 2016	Oct. 09, 2016~ Oct. 17, 2016	Mar. 02, 2017	Radiation (03CH03-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Aug. 09, 2016	Oct. 09, 2016~ Oct. 17, 2016	Aug. 08, 2017	Radiation (03CH03-KS)
Amplifier	MITEQ	TTA1840-35-H G	1887435	18GHz~40GHz	Jan. 20, 2016	Oct. 09, 2016~ Oct. 17, 2016	Jan. 19, 2017	Radiation (03CH03-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Oct. 24, 2015	Oct. 09, 2016~ Oct. 17, 2016	Oct. 23, 2016	Radiation (03CH03-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Oct. 09, 2016~ Oct. 17, 2016	NCR	Radiation (03CH03-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Oct. 09, 2016~ Oct. 17, 2016	NCR	Radiation (03CH03-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Oct. 09, 2016~ Oct. 17, 2016	NCR	Radiation (03CH03-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% ( $U = 2Uc(y)$ )	2.3 dB
---	--------

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.5dB
---	-------

### Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.5dB
---	-------

### Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.6dB
---	-------



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

Test Engineer:	Ivan Zhang	Temperature:	24~25	°C
Test Date:	2016/10/9~2016/10/26	Relative Humidity:	54~55	%

**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	18.98	28.42	-	22.78		
11a	6Mbps	1	44	5220	22.33	39.01	-	23.01		
11a	6Mbps	1	48	5240	22.83	37.51	-	23.01		
HT20	MCS0	1	36	5180	19.53	27.12	-	22.91		
HT20	MCS0	1	44	5220	23.93	39.51	-	23.01		
HT20	MCS0	1	48	5240	21.88	39.61	-	23.01		
HT40	MCS0	1	38	5190	36.56	43.61	-	23.01		
HT40	MCS0	1	46	5230	36.76	45.23	-	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	87.04	12.96	24.00	-0.71		Pass
11a	6Mbps	1	44	5220	87.04	12.86	24.00	-0.71		Pass
11a	6Mbps	1	48	5240	87.04	12.56	24.00	-0.71		Pass
HT20	MCS0	1	36	5180	86.52	12.72	24.00	-0.71		Pass
HT20	MCS0	1	44	5220	86.52	12.37	24.00	-0.71		Pass
HT20	MCS0	1	48	5240	86.52	12.74	24.00	-0.71		Pass
HT40	MCS0	1	38	5190	0.66	7.26	24.00	-0.71		Pass
HT40	MCS0	1	46	5230	0.66	7.18	24.00	-0.71		Pass

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

FCC Band I										
Mod.	Data Rate	N <sub>TX</sub>	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	0.60	2.79	11.00	-0.71		Pass
11a	6Mbps	1	44	5220	0.60	2.37	11.00	-0.71		Pass
11a	6Mbps	1	48	5240	0.60	1.79	11.00	-0.71		Pass
HT20	MCS0	1	36	5180	0.63	2.07	11.00	-0.71		Pass
HT20	MCS0	1	44	5220	0.63	1.97	11.00	-0.71		Pass
HT20	MCS0	1	48	5240	0.63	1.66	11.00	-0.71		Pass
HT40	MCS0	1	38	5190	0.66	-6.10	11.00	-0.71		Pass
HT40	MCS0	1	46	5230	0.66	-7.26	11.00	-0.71		Pass

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

Band II										
Mod.	Data Rate	N <sub>TX</sub>	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	21.53	36.56	23.98	30.00	23.98	
11a	6M bps	1	60	5300	20.33	35.32	23.98	30.00	23.98	
11a	6M bps	1	64	5320	21.93	38.36	23.98	30.00	23.98	
HT20	MCS 0	1	52	5260	21.38	37.16	23.98	30.00	23.98	
HT20	MCS 0	1	60	5300	19.98	31.37	23.98	30.00	23.98	
HT20	MCS 0	1	64	5320	22.33	39.31	23.98	30.00	23.98	
HT40	MCS 0	1	54	5270	36.56	43.88	23.98	30.00	23.98	
HT40	MCS 0	1	62	5310	36.66	45.41	23.98	30.00	23.98	

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

FCC Band II										
Mod.	Data Rate	N <sub>TX</sub>	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	87.04	12.63	23.98	0.47	26.99	Pass
11a	6M bps	1	60	5300	87.04	12.72	23.98	0.47	26.99	Pass
11a	6M bps	1	64	5320	87.04	12.78	23.98	0.47	26.99	Pass
HT20	MCS 0	1	52	5260	86.52	12.34	23.98	0.47	26.99	Pass
HT20	MCS 0	1	60	5300	86.52	12.05	23.98	0.47	26.99	Pass
HT20	MCS 0	1	64	5320	86.52	12.19	23.98	0.47	26.99	Pass
HT40	MCS 0	1	54	5270	0.66	7.88	23.98	0.47	26.99	Pass
HT40	MCS 0	1	62	5310	0.66	7.27	23.98	0.47	26.99	Pass

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

Band II										
Mod.	Data Rate	N <sub>TX</sub>	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	0.60	2.52	11.00	0.47		Pass
11a	6M bps	1	60	5300	0.60	2.15	11.00	0.47		Pass
11a	6M bps	1	64	5320	0.60	2.01	11.00	0.47		Pass
HT20	MCS 0	1	52	5260	0.63	1.90	11.00	0.47		Pass
HT20	MCS 0	1	60	5300	0.63	1.02	11.00	0.47		Pass
HT20	MCS 0	1	64	5320	0.63	1.00	11.00	0.47		Pass
HT40	MCS 0	1	54	5270	0.66	-5.61	11.00	0.47		Pass
HT40	MCS 0	1	62	5310	0.66	-6.57	11.00	0.47		Pass

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

Band III										
Mod.	Data Rate	N <sub>TX</sub>	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	18.78	24.28	23.74	29.74	23.98	
11a	6M bps	1	116	5580	19.53	29.32	23.91	29.91	23.98	
11a	6Mbps	1	136	5680	19.73	31.32	23.95	29.95	23.98	
11a	6M bps	1	140	5700	18.53	23.78	23.68	29.68	23.98	
HT20	MCS 0	1	100	5500	19.98	30.92	23.98	30.00	23.98	
HT20	MCS 0	1	116	5580	19.78	28.07	23.96	29.96	23.98	
HT20	MCS0	1	136	5680	19.88	30.62	23.98	29.98	23.98	
HT20	MCS 0	1	140	5700	19.38	23.93	23.87	29.87	23.98	
HT40	MCS 0	1	102	5510	37.06	45.50	23.98	30.00	23.98	
HT40	MCS 0	1	110	5550	36.96	46.48	23.98	30.00	23.98	
HT40	MCS 0	1	134	5670	36.76	45.23	23.98	30.00	23.98	

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

FCC Band III										
Mod.	Data Rate	N <sub>TX</sub>	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	87.04	13.22	23.98	0.47	26.99	Pass
11a	6M bps	1	116	5580	87.04	15.35	23.98	0.47	26.99	Pass
11a	6Mbps	1	136	5680	87.04	14.77	23.98	0.47	26.99	Pass
11a	6M bps	1	140	5700	87.04	8.69	23.98	0.47	26.99	Pass
HT20	MCS 0	1	100	5500	86.52	14.61	23.98	0.47	26.99	Pass
HT20	MCS 0	1	116	5580	86.52	14.65	23.98	0.47	26.99	Pass
HT20	MCS0	1	136	5680	86.52	14.49	23.98	0.47	26.99	Pass
HT20	MCS 0	1	140	5700	86.52	8.77	23.98	0.47	26.99	Pass
HT40	MCS 0	1	102	5510	0.66	9.90	23.98	0.47	26.99	Pass
HT40	MCS 0	1	110	5550	0.66	9.49	23.98	0.47	26.99	Pass
HT40	MCS 0	1	134	5670	0.66	9.69	23.98	0.47	26.99	Pass

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

Band III										
Mod.	Data Rate	N <sub>TX</sub>	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	0.60	0.25	11.00	0.47		Pass
11a	6M bps	1	116	5580	0.60	2.56	11.00	0.47		Pass
11a	6Mbps	1	136	5680	0.60	2.31	11.00	0.47		Pass
11a	6M bps	1	140	5700	0.60	-4.53	11.00	0.47		Pass
HT20	MCS 0	1	100	5500	0.63	1.64	11.00	0.47		Pass
HT20	MCS 0	1	116	5580	0.63	1.75	11.00	0.47		Pass
HT20	MCS0	1	136	5680	0.63	1.30	11.00	0.47		Pass
HT20	MCS 0	1	140	5700	0.63	-4.49	11.00	0.47		Pass
HT40	MCS 0	1	102	5510	0.66	-5.68	11.00	0.47		Pass
HT40	MCS 0	1	110	5550	0.66	-7.06	11.00	0.47		Pass
HT40	MCS 0	1	134	5670	0.66	-6.38	11.00	0.47		Pass

**TEST RESULTS DATA**  
**Frequency Stability**

Band I										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	50	3.8	
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	-30	3.8	
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	20	4.35	
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	20	3.4	
11a	6Mbps	1	36	5180	5179.960	-0.040	-7.72	20	3.8	

Band II										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6Mbps	1	64	5320	5319.950	-0.050	-9.40	50	3.8	
11a	6Mbps	1	64	5320	5320.000	0.000	0.00	-30	3.8	
11a	6Mbps	1	64	5320	5319.975	-0.025	-4.70	20	4.35	
11a	6Mbps	1	64	5320	5319.975	-0.025	-4.70	20	3.4	
11a	6Mbps	1	64	5320	5319.975	-0.025	-4.70	20	3.8	

Band III										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6Mbps	1	100	5500	5499.975	-0.025	-4.55	50	3.8	
11a	6Mbps	1	100	5500	5500.000	0.000	0.00	-30	3.8	
11a	6Mbps	1	100	5500	5500.000	0.000	0.00	20	4.35	
11a	6Mbps	1	100	5500	5500.000	0.000	0.00	20	3.4	
11a	6Mbps	1	100	5500	5500.000	0.000	0.00	20	3.8	



# Appendix B. 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		5149.6	54.9	-19.1	74	51.67	31.84	7.92	36.53	279	298	P	H
		5127.68	42.74	-11.26	54	39.53	31.84	7.91	36.54	279	298	A	H
	*	5176	102.42	-	-	99.14	31.85	7.94	36.51	299	273	P	H
	*	5176	94.96	-	-	91.68	31.85	7.94	36.51	299	273	A	H
		5149.12	51.87	-22.13	74	48.64	31.84	7.92	36.53	100	290	P	V
		5150	40.47	-13.53	54	37.24	31.84	7.92	36.53	100	290	A	V
	*	5176	97.28	-	-	94	31.85	7.94	36.51	103	277	P	V
	*	5176	90.84	-	-	87.56	31.85	7.94	36.51	103	277	A	V
802.11a CH 44 5220MHz		5121.45	46.84	-27.16	74	43.65	31.83	7.91	36.55	290	298	P	H
		5124.6	37.4	-16.6	54	34.19	31.84	7.91	36.54	290	298	A	H
	*	5224	102.81	-	-	99.46	31.86	7.99	36.5	135	277	P	H
	*	5224	96.07	-	-	92.72	31.86	7.99	36.5	135	277	A	H
		5361.4	46.08	-27.92	74	42.28	31.91	8.39	36.5	290	298	P	H
		5362.6	36.74	-17.26	54	32.94	31.91	8.39	36.5	290	298	A	H
		5133.4	46.56	-27.44	74	43.35	31.84	7.91	36.54	100	286	P	V
		5116.7	36.81	-17.19	54	33.62	31.83	7.91	36.55	100	286	A	V
	*	5214	94.05	-	-	90.7	31.86	7.99	36.5	104	278	P	V
	*	5214	86.75	-	-	83.4	31.86	7.99	36.5	104	278	A	V
		5393.6	45.43	-28.57	74	41.58	31.92	8.43	36.5	100	286	P	V
		5384.55	36.38	-17.62	54	32.53	31.92	8.43	36.5	100	286	A	V



802.11a CH 48 5240MHz		5370.12	45.64	-28.36	74	41.84	31.91	8.39	36.5	346	299	P	H
		5381.82	36.79	-17.21	54	32.94	31.92	8.43	36.5	346	299	A	H
	*	5246	99.65	-	-	96.19	31.88	8.08	36.5	115	241	P	H
	*	5246	92.58	-	-	89.12	31.88	8.08	36.5	115	241	A	H
		5351.4	44.9	-29.1	74	41.15	31.91	8.34	36.5	100	285	P	V
		5387.76	36.49	-17.51	54	32.64	31.92	8.43	36.5	100	285	A	V
	*	5234	94.64	-	-	91.23	31.87	8.04	36.5	301	46	P	V
	*	5234	87.24	-	-	83.83	31.87	8.04	36.5	301	46	A	V
Remark	<ol style="list-style-type: none"> <li>No other spurious found.</li> <li>All results are PASS against Peak and Average limit line.</li> </ol>												



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		10360	45.23	-28.77	74	52.62	38.02	11.84	57.25	100	360	P	H
CH 36		10360	44.37	-29.63	74	51.76	38.02	11.84	57.25	100	360	P	V
5180MHz													
802.11a		10440	45.61	-28.39	74	52.78	38.06	11.89	57.12	100	360	P	H
CH 44		10440	46.75	-27.25	74	53.92	38.06	11.89	57.12	100	360	P	V
5220MHz													
802.11a		10480	45.35	-28.65	74	52.36	38.09	11.92	57.02	100	360	P	H
CH 48		10480	46.02	-27.98	74	53.03	38.09	11.92	57.02	100	360	P	V
5240MHz													
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
802.11n HT20 CH 36 5180MHz		5149.92	53.86	-20.14	74	50.63	31.84	7.92	36.53	106	252	P	H
		5150	44.21	-9.79	54	40.98	31.84	7.92	36.53	106	252	A	H
	*	5172	101.17	-	-	97.91	31.85	7.93	36.52	112	279	P	H
	*	5172	93.94	-	-	90.68	31.85	7.93	36.52	112	279	A	H
		5149.12	50.25	-23.75	74	47.02	31.84	7.92	36.53	319	333	P	V
		5150	40.51	-13.49	54	37.28	31.84	7.92	36.53	319	333	A	V
	*	5176	95.51	-	-	92.23	31.85	7.94	36.51	287	228	P	V
	5176	87.88	-	-	84.6	31.85	7.94	36.51	287	228	A	V	
802.11n HT20 CH 44 5220MHz		5120.55	47.17	-26.83	74	43.98	31.83	7.91	36.55	100	249	P	H
		5116.05	36.74	-17.26	54	33.55	31.83	7.91	36.55	100	249	A	H
	*	5222	98.83	-	-	95.48	31.86	7.99	36.5	128	285	P	H
	*	5222	91.33	-	-	87.98	31.86	7.99	36.5	128	285	A	H
		5388.85	44.86	-29.14	74	41.01	31.92	8.43	36.5	100	249	P	H
		5372	36.08	-17.92	54	32.28	31.91	8.39	36.5	100	249	A	H
		5132.2	45.52	-28.48	74	42.31	31.84	7.91	36.54	100	38	P	V
		5129.3	36.51	-17.49	54	33.3	31.84	7.91	36.54	100	38	A	V
	*	5214	92.77	-	-	89.42	31.86	7.99	36.5	100	204	P	V
	*	5214	85.41	-	-	82.06	31.86	7.99	36.5	100	204	A	V
		5388.9	44.73	-29.27	74	40.88	31.92	8.43	36.5	100	38	P	V
	5398.2	35.92	-18.08	54	32.02	31.92	8.48	36.5	100	38	A	V	



<b>802.11n</b> <b>HT20</b> <b>CH 48</b> <b>5240MHz</b>		5377.86	46.37	-27.63	74	42.52	31.92	8.43	36.5	100	246	P	H
		5379.48	36.23	-17.77	54	32.38	31.92	8.43	36.5	100	246	A	H
	*	5246	98.44	-	-	94.98	31.88	8.08	36.5	100	284	P	H
	*	5246	90.72	-	-	87.26	31.88	8.08	36.5	100	284	A	H
		5384.7	44.89	-29.11	74	41.04	31.92	8.43	36.5	394	64	P	V
		5386.14	36.13	-17.87	54	32.28	31.92	8.43	36.5	394	64	A	V
	*	5248	95	-	-	91.54	31.88	8.08	36.5	304	52	P	V
	*	5248	87.31	-	-	83.85	31.88	8.08	36.5	304	52	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 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	45.55	-28.45	74	52.94	38.02	11.84	57.25	100	360	P	H
		10360	45.95	-28.05	74	53.34	38.02	11.84	57.25	100	360	P	V
802.11n HT20 CH 44 5220MHz		10440	45.71	-28.29	74	52.88	38.06	11.89	57.12	100	360	P	H
		10440	46.03	-27.97	74	53.2	38.06	11.89	57.12	100	360	P	V
802.11n HT20 CH 48 5240MHz		10480	45.61	-28.39	74	52.62	38.09	11.92	57.02	100	360	P	H
		10480	45.46	-28.54	74	52.47	38.09	11.92	57.02	100	360	P	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 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		5148.25	49.58	-24.42	74	46.35	31.84	7.92	36.53	315	308	P	H	
		5149.7	39.85	-14.15	54	36.62	31.84	7.92	36.53	315	308	A	H	
	*	5178	86.59	-	-	83.31	31.85	7.94	36.51	286	313	P	H	
	*	5178	79.09	-	-	75.81	31.85	7.94	36.51	286	313	A	H	
		5381.4	44.73	-29.27	74	40.88	31.92	8.43	36.5	315	308	P	H	
		5361.9	36.1	-17.9	54	32.3	31.91	8.39	36.5	315	308	A	H	
		5147.5	52.02	-21.98	74	48.79	31.84	7.92	36.53	252	269	P	V	
		5149.55	43.42	-10.58	54	40.19	31.84	7.92	36.53	252	269	A	V	
	*	5196	91.66	-	-	88.35	31.86	7.95	36.5	304	199	P	V	
	*	5196	84.17	-	-	80.86	31.86	7.95	36.5	304	199	A	V	
		5351.5	44.98	-29.02	74	41.23	31.91	8.34	36.5	252	269	P	V	
		5394.1	36.36	-17.64	54	32.51	31.92	8.43	36.5	252	269	A	V	
	802.11n HT40 CH 46 5230MHz		5129.05	46.22	-27.78	74	43.01	31.84	7.91	36.54	347	299	P	H
			5116.2	36.56	-17.44	54	33.37	31.83	7.91	36.55	347	299	A	H
*		5244	86.69	-	-	83.23	31.88	8.08	36.5	295	315	P	H	
*		5244	79.21	-	-	75.75	31.88	8.08	36.5	295	315	A	H	
		5386.85	45.24	-28.76	74	41.39	31.92	8.43	36.5	347	299	P	H	
		5398.95	36.06	-17.94	54	32.16	31.92	8.48	36.5	347	299	A	H	
		5103.25	45.9	-28.1	74	42.73	31.83	7.9	36.56	300	265	P	V	
		5127.6	37.26	-16.74	54	34.05	31.84	7.91	36.54	300	265	A	V	
*		5216	90.7	-	-	87.35	31.86	7.99	36.5	290	219	P	V	
*		5216	83.21	-	-	79.86	31.86	7.99	36.5	290	219	A	V	
	5392.55	45.05	-28.95	74	41.2	31.92	8.43	36.5	300	265	P	V		
	5389.8	36.4	-17.6	54	32.55	31.92	8.43	36.5	300	265	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 HT40 (Harmonic @ 3m)

Table with 14 columns: 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). Rows include data for 802.11n HT40 CH 38 (5190MHz) and 802.11n HT40 CH 46 (5230MHz). A Remark section at the bottom states: '1. No other spurious found. 2. All results are PASS against Peak and Average limit line.'



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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11a CH 52 5260MHz		5111.68	47.03	-26.97	74	43.84	31.83	7.91	36.55	100	281	P	H
		5109.6	37.42	-16.58	54	34.23	31.83	7.91	36.55	100	281	A	H
	*	5264	101.55	-	-	98.05	31.88	8.12	36.5	101	242	P	H
	*	5264	94.21	-	-	90.71	31.88	8.12	36.5	101	242	A	H
		5112	46.38	-27.62	74	43.19	31.83	7.91	36.55	361	262	P	V
		5114.72	36.7	-17.3	54	33.51	31.83	7.91	36.55	361	262	A	V
	*	5264	96.66	-	-	93.16	31.88	8.12	36.5	369	345	P	V
	*	5264	89.29	-	-	85.79	31.88	8.12	36.5	369	345	A	V
802.11a CH 60 5300MHz		5112.05	46.95	-27.05	74	43.76	31.83	7.91	36.55	100	285	P	H
		5111.1	38.22	-15.78	54	35.03	31.83	7.91	36.55	100	285	A	H
	*	5308	101.69	-	-	98.09	31.89	8.21	36.5	100	242	P	H
	*	5308	94.39	-	-	90.79	31.89	8.21	36.5	100	242	A	H
		5352.05	49.83	-24.17	74	46.08	31.91	8.34	36.5	100	285	P	H
		5352.3	42.92	-11.08	54	39.17	31.91	8.34	36.5	100	285	A	H
		5102.7	46.2	-27.8	74	43.03	31.83	7.9	36.56	396	13	P	V
		5105.25	36.54	-17.46	54	33.37	31.83	7.9	36.56	396	13	A	V
	*	5296	95.01	-	-	91.41	31.89	8.21	36.5	365	18	P	V
	*	5296	87.23	-	-	83.63	31.89	8.21	36.5	365	18	A	V
		5352.7	47.02	-26.98	74	43.27	31.91	8.34	36.5	396	13	P	V
		5352.35	38.64	-15.36	54	34.89	31.91	8.34	36.5	396	13	A	V



802.11a CH 64 5320MHz		5353.4	56.74	-17.26	74	52.99	31.91	8.34	36.5	100	285	P	H
		5350	45.93	-8.07	54	42.18	31.91	8.34	36.5	100	285	A	H
	*	5314	102.53	-	-	98.87	31.9	8.26	36.5	100	274	P	H
	*	5314	95.18	-	-	91.52	31.9	8.26	36.5	100	274	A	H
		5350.1	52.4	-21.6	74	48.65	31.91	8.34	36.5	395	16	P	V
		5350	41.45	-12.55	54	37.7	31.91	8.34	36.5	395	16	A	V
	*	5318	96.94	-	-	93.28	31.9	8.26	36.5	304	224	P	V
	*	5318	89.88	-	-	86.22	31.9	8.26	36.5	304	224	A	V
Remark	<ol style="list-style-type: none"> <li>No other spurious found.</li> <li>All results are PASS against Peak and Average limit line.</li> </ol>												



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		10520	45.37	-28.63	74	52.27	38.11	11.94	56.95	100	360	P	H
CH 52 5260MHz		10520	45.81	-28.19	74	52.71	38.11	11.94	56.95	100	360	P	V
802.11a		10600	44.77	-29.23	74	51.39	38.16	12	56.78	100	360	P	H
CH 60 5300MHz		10600	45.68	-28.32	74	52.3	38.16	12	56.78	100	360	P	V
802.11a		10640	44.55	-29.45	74	51.06	38.18	12.02	56.71	100	360	P	H
CH 64 5320MHz		10640	45.23	-28.77	74	51.74	38.18	12.02	56.71	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 52 5260MHz		5128.32	46.62	-27.38	74	43.41	31.84	7.91	36.54	100	292	P	H
		5112	37	-17	54	33.81	31.83	7.91	36.55	100	292	A	H
	*	5252	97.04	-	-	93.58	31.88	8.08	36.5	106	287	P	H
	*	5252	89.45	-	-	85.99	31.88	8.08	36.5	106	287	A	H
		5139.68	46.01	-27.99	74	42.78	31.84	7.92	36.53	379	331	P	V
		5110.08	36.58	-17.42	54	33.39	31.83	7.91	36.55	379	331	A	V
	*	5262	89.99	-	-	86.49	31.88	8.12	36.5	388	326	P	V
	5262	82.25	-	-	78.75	31.88	8.12	36.5	388	326	A	V	
802.11n HT20 CH 60 5300MHz		5102.3	46.17	-27.83	74	43	31.83	7.9	36.56	100	292	P	H
		5111.9	37.32	-16.68	54	34.13	31.83	7.91	36.55	100	292	A	H
	*	5304	97.59	-	-	93.99	31.89	8.21	36.5	100	283	P	H
	*	5304	89.91	-	-	86.31	31.89	8.21	36.5	100	283	A	H
		5353.05	49	-25	74	45.25	31.91	8.34	36.5	100	292	P	H
		5351.5	41.64	-12.36	54	37.89	31.91	8.34	36.5	100	292	A	H
		5110.25	46.37	-27.63	74	43.18	31.83	7.91	36.55	378	331	P	V
		5102.2	36.76	-17.24	54	33.59	31.83	7.9	36.56	378	331	A	V
	*	5296	92.62	-	-	89.02	31.89	8.21	36.5	302	52	P	V
	*	5296	85.06	-	-	81.46	31.89	8.21	36.5	302	52	A	V
		5351.45	46.93	-27.07	74	43.18	31.91	8.34	36.5	378	331	P	V
	5351.6	37.96	-16.04	54	34.21	31.91	8.34	36.5	378	331	A	V	



<b>802.11n</b> <b>HT20</b> <b>CH 64</b> <b>5320MHz</b>		5350.2	58.99	-15.01	74	55.24	31.91	8.34	36.5	100	292	P	H
		5350.3	44.34	-9.66	54	40.59	31.91	8.34	36.5	100	292	A	H
	*	5328	98.83	-	-	95.13	31.9	8.3	36.5	100	286	P	H
	*	5328	91	-	-	87.3	31.9	8.3	36.5	100	286	A	H
		5350.6	49.67	-24.33	74	45.92	31.91	8.34	36.5	334	333	P	V
		5350.3	39.6	-14.4	54	35.85	31.91	8.34	36.5	334	333	A	V
	*	5326	93.74	-	-	90.08	31.9	8.26	36.5	284	52	P	V
	*	5326	86.26	-	-	82.6	31.9	8.26	36.5	284	52	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 Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 52 5260MHz		10520	45.41	-28.59	74	52.31	38.11	11.94	56.95	100	360	P	H
		10520	45.52	-28.48	74	52.42	38.11	11.94	56.95	100	360	P	V
802.11n HT20 CH 60 5300MHz		10600	45.16	-28.84	74	51.78	38.16	12	56.78	100	360	P	H
		10600	46.68	-27.32	74	53.3	38.16	12	56.78	100	360	P	V
802.11n HT20 CH 64 5320MHz		10640	45.04	-28.96	74	51.55	38.18	12.02	56.71	100	360	P	H
		10640	46.23	-27.77	74	52.74	38.18	12.02	56.71	100	360	P	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 HT40 (Band Edge @ 3m)**

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
802.11n HT40 CH 54 5270MHz		5103.25	46.57	-27.43	74	43.4	31.83	7.9	36.56	274	310	P	H
		5103.9	36.45	-17.55	54	33.28	31.83	7.9	36.56	274	310	A	H
	*	5264	87.18	-	-	83.68	31.88	8.12	36.5	313	313	P	H
	*	5264	79.17	-	-	75.67	31.88	8.12	36.5	313	313	A	H
		5394.65	45.27	-28.73	74	41.37	31.92	8.48	36.5	274	310	P	H
		5365.1	36.13	-17.87	54	32.33	31.91	8.39	36.5	274	310	A	H
		5108.45	46.43	-27.57	74	43.24	31.83	7.91	36.55	236	265	P	V
		5117.3	36.68	-17.32	54	33.49	31.83	7.91	36.55	236	265	A	V
	*	5282	91.22	-	-	87.66	31.89	8.17	36.5	300	212	P	V
	*	5282	83.95	-	-	80.39	31.89	8.17	36.5	300	212	A	V
		5353.05	45.92	-28.08	74	42.17	31.91	8.34	36.5	236	265	P	V
		5372.7	37.07	-16.93	54	33.27	31.91	8.39	36.5	236	265	A	V
802.11n HT40 CH 62 5310MHz		5148.32	47.57	-26.43	74	44.34	31.84	7.92	36.53	300	308	P	H
		5121.12	36.74	-17.26	54	33.55	31.83	7.91	36.55	300	308	A	H
	*	5322	87.31	-	-	83.65	31.9	8.26	36.5	300	318	P	H
	*	5322	79.72	-	-	76.06	31.9	8.26	36.5	300	318	A	H
		5351.22	47.89	-26.11	74	44.14	31.91	8.34	36.5	300	308	P	H
		5350.14	38.97	-15.03	54	35.22	31.91	8.34	36.5	300	308	A	H
		5118.56	46.19	-27.81	74	43	31.83	7.91	36.55	302	266	P	V
		5120.48	36.74	-17.26	54	33.55	31.83	7.91	36.55	302	266	A	V
	*	5320	90.11	-	-	86.45	31.9	8.26	36.5	100	213	P	V
	*	5320	79.99	-	-	76.33	31.9	8.26	36.5	100	213	A	V
	5350.86	51.45	-22.55	74	47.7	31.91	8.34	36.5	302	266	P	V	
	5350.5	41.5	-12.5	54	37.75	31.91	8.34	36.5	302	266	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 HT40 (Harmonic @ 3m)

Table with 14 columns: 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). Rows include test results for 802.11n HT40 CH 54 and CH 62 at 10540MHz and 10620MHz.



Band 3 - 5470~5725MHz
WIFI 802.11a (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 802.11a channels 100 and 116.



<b>802.11a</b> <b>CH 136</b> <b>5680MHz</b>		5725.08	60.5	-13.5	74	56.43	32.04	8.31	36.28	100	324	P	H
		5726.36	48.59	-5.41	54	44.52	32.04	8.31	36.28	100	324	A	H
	*	5676	107.66	-	-	103.66	32.02	8.22	36.24	100	324	P	H
	*	5676	100.4	-	-	96.4	32.02	8.22	36.24	100	324	A	H
		5728.76	58.79	-15.21	74	54.72	32.04	8.31	36.28	355	38	P	V
		5726.04	44.87	-9.13	54	40.8	32.04	8.31	36.28	355	38	A	V
	*	5688	105.65	-	-	101.63	32.02	8.25	36.25	355	38	P	V
	*	5688	98.01	-	-	93.99	32.02	8.25	36.25	355	38	A	V
<b>802.11a</b> <b>CH 140</b> <b>5700MHz</b>		5725.72	62.88	-11.12	74	58.81	32.04	8.31	36.28	100	323	P	H
		5725.08	50.79	-3.21	54	46.72	32.04	8.31	36.28	100	323	A	H
	*	5696	104	-	-	99.98	32.02	8.25	36.25	100	323	P	H
	*	5696	96.44	-	-	92.42	32.02	8.25	36.25	100	323	A	H
		5726.92	57.1	-16.9	74	53.03	32.04	8.31	36.28	283	46	P	V
		5725.16	47.5	-6.5	54	43.43	32.04	8.31	36.28	283	46	A	V
	*	5706	101.39	-	-	97.35	32.03	8.28	36.27	283	46	P	V
	*	5706	93.97	-	-	89.93	32.03	8.28	36.27	283	46	A	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)

Table with 14 columns: 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). Rows include channels 100, 116, 136, and 140 with their respective test results.



**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		5469.04	61.77	-12.23	74	57.87	31.95	8.35	36.4	100	297	P	H
		5470	50.54	-3.46	54	46.64	31.95	8.35	36.4	100	297	A	H
	*	5506	101.59	-	-	97.69	31.96	8.29	36.35	100	297	P	H
	*	5506	94.92	-	-	91.02	31.96	8.29	36.35	100	297	A	H
		5469.68	57.01	-16.99	74	53.11	31.95	8.35	36.4	100	232	P	V
		5469.84	43.65	-10.35	54	39.75	31.95	8.35	36.4	100	232	A	V
	*	5506	97	-	-	93.1	31.96	8.29	36.35	100	232	P	V
	5506	89.89	-	-	85.99	31.96	8.29	36.35	100	232	A	V	
802.11n HT20 CH 116 5580MHz		5381.84	46.95	-27.05	74	43.1	31.92	8.43	36.5	100	240	P	H
		5394.64	37.36	-16.64	54	33.46	31.92	8.48	36.5	100	240	A	H
	*	5586	103.26	-	-	99.38	31.98	8.13	36.23	100	240	P	H
	*	5586	95.02	-	-	91.14	31.98	8.13	36.23	100	240	A	H
		5753.56	45.32	-28.68	74	41.2	32.05	8.37	36.3	100	240	P	H
		5764.36	36.82	-17.18	54	32.7	32.05	8.37	36.3	100	240	A	H
		5446.48	45.21	-28.79	74	41.31	31.94	8.38	36.42	100	232	P	V
		5467.12	36.36	-17.64	54	32.46	31.95	8.35	36.4	100	232	A	V
	*	5580	97.99	-	-	94.1	31.98	8.16	36.25	100	232	P	V
	*	5580	91.39	-	-	87.5	31.98	8.16	36.25	100	232	A	V
		5762.68	44.73	-29.27	74	40.61	32.05	8.37	36.3	100	232	P	V
	5764.04	36.62	-17.38	54	32.5	32.05	8.37	36.3	100	232	A	V	



<b>802.11n</b> <b>HT20</b> <b>CH 136</b> <b>5680MHz</b>		5725.08	59.89	-14.11	74	55.82	32.04	8.31	36.28	100	231	P	H
		5725.4	45.94	-8.06	54	41.87	32.04	8.31	36.28	100	231	A	H
	*	5678	101.96	-	-	97.96	32.02	8.22	36.24	100	231	P	H
	*	5678	94.71	-	-	90.71	32.02	8.22	36.24	100	231	A	H
		5728.2	58.13	-15.87	74	54.06	32.04	8.31	36.28	100	226	P	V
		5725.08	44.21	-9.79	54	40.14	32.04	8.31	36.28	100	226	A	V
	*	5676	99.38	-	-	95.38	32.02	8.22	36.24	100	226	P	V
	*	5676	92.26	-	-	88.26	32.02	8.22	36.24	100	226	A	V
<b>802.11n</b> <b>HT20</b> <b>CH 140</b> <b>5700MHz</b>		5725	61.55	-12.45	74	57.48	32.04	8.31	36.28	100	229	P	H
		5725.08	50.82	-3.18	54	46.75	32.04	8.31	36.28	100	229	A	H
	*	5702	98.97	-	-	94.93	32.03	8.28	36.27	100	229	P	H
	*	5702	91.65	-	-	87.61	32.03	8.28	36.27	100	229	A	H
		5725.32	60.69	-13.31	74	56.62	32.04	8.31	36.28	344	58	P	V
		5725.08	49.34	-4.66	54	45.27	32.04	8.31	36.28	344	58	A	V
	*	5698	97.02	-	-	93	32.02	8.25	36.25	344	58	P	V
	*	5698	89.79	-	-	85.77	32.02	8.25	36.25	344	58	A	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 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	45.52	-28.48	74	50.87	38.4	12.25	56	100	360	P	H
		11000	47.22	-26.78	74	52.57	38.4	12.25	56	100	360	P	V
802.11n HT20 CH 116 5580MHz		11160	44.88	-29.12	74	50.39	38.47	12.36	56.34	100	360	P	H
		11160	47.83	-26.17	74	53.34	38.47	12.36	56.34	100	360	P	V
802.11n HT20 CH 136 5680MHz		11360	45.59	-28.41	74	51.28	38.54	12.48	56.71	100	360	P	H
		11360	47.33	-26.67	74	53.02	38.54	12.48	56.71	100	360	P	V
802.11n HT20 CH 140 5700MHz		11400	45.64	-28.36	74	51.37	38.56	12.52	56.81	100	360	P	H
		11400	46.47	-27.53	74	52.2	38.56	12.52	56.81	100	360	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 (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		5469.04	54.98	-19.02	74	51.08	31.95	8.35	36.4	100	64	P	H
		5470	45.14	-8.86	54	41.24	31.95	8.35	36.4	100	64	A	H
	*	5522	93.8	-	-	89.91	31.96	8.26	36.33	100	64	P	H
	*	5522	87.41	-	-	83.52	31.96	8.26	36.33	100	64	A	H
		5745.16	45.51	-28.49	74	41.41	32.05	8.34	36.29	100	64	P	H
		5747.56	36.61	-17.39	54	32.51	32.05	8.34	36.29	100	64	A	H
		5467.76	59.95	-14.05	74	56.05	31.95	8.35	36.4	314	220	P	V
		5470	49.49	-4.51	54	45.59	31.95	8.35	36.4	314	220	A	V
	*	5524	97.13	-	-	93.24	31.96	8.26	36.33	314	220	P	V
	*	5524	90.56	-	-	86.67	31.96	8.26	36.33	314	220	A	V
		5738.68	45.76	-28.24	74	41.66	32.05	8.34	36.29	314	220	P	V
		5757.48	36.39	-17.61	54	32.27	32.05	8.37	36.3	314	220	A	V
802.11n HT40 CH 110 5550MHz		5442.48	45.83	-28.17	74	41.93	31.94	8.41	36.45	100	64	P	H
		5444.56	36.65	-17.35	54	32.75	31.94	8.41	36.45	100	64	A	H
	*	5562	94.17	-	-	90.28	31.97	8.2	36.28	100	64	P	H
	*	5562	87.03	-	-	83.14	31.97	8.2	36.28	100	64	A	H
		5746.92	46.44	-27.56	74	42.34	32.05	8.34	36.29	100	64	P	H
		5751.64	36.76	-17.24	54	32.64	32.05	8.37	36.3	100	64	A	H
		5443.12	45.91	-28.09	74	42.01	31.94	8.41	36.45	345	221	P	V
		5447.28	38.53	-15.47	54	34.63	31.94	8.38	36.42	345	221	A	V
	*	5540	98.8	-	-	94.9	31.97	8.23	36.3	345	221	P	V
	*	5540	91.49	-	-	87.59	31.97	8.23	36.3	345	221	A	V
	5762.76	45.65	-28.35	74	41.53	32.05	8.37	36.3	345	221	P	V	
	5733.08	36.64	-17.36	54	32.57	32.04	8.31	36.28	345	221	A	V	



<b>802.11n</b>  <b>HT40</b>  <b>CH 134</b>  <b>5670MHz</b>		5460.72	45.88	-28.12	74	41.98	31.94	8.38	36.42	100	64	P	H
		5467.92	36.48	-17.52	54	32.58	31.95	8.35	36.4	100	64	A	H
	*	5666	96.02	-	-	92.05	32.01	8.19	36.23	100	64	P	H
	*	5666	88.9	-	-	84.93	32.01	8.19	36.23	100	64	A	H
		5725.08	53.86	-20.14	74	49.79	32.04	8.31	36.28	100	64	P	H
		5725.16	41.48	-12.52	54	37.41	32.04	8.31	36.28	100	64	A	H
		5420.88	46.4	-27.6	74	42.5	31.93	8.44	36.47	354	193	P	V
		5465.84	36.94	-17.06	54	33.04	31.95	8.35	36.4	354	193	A	V
	*	5656	99.41	-	-	95.44	32.01	8.19	36.23	354	193	P	V
	*	5656	92	-	-	88.03	32.01	8.19	36.23	354	193	A	V
		5729.88	54.09	-19.91	74	50.02	32.04	8.31	36.28	354	193	P	V
		5725.96	43.51	-10.49	54	39.44	32.04	8.31	36.28	354	193	A	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 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). Rows include channels 102, 110, and 134 at various frequencies.



Emission below 1GHz

WIFI 802.11a (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11a LF		30.97	26.15	-13.85	40	29.92	26.86	0.66	31.29	-	-	P	H
		44.55	26.82	-13.18	40	37.96	19.45	0.83	31.42	-	-	P	H
		65.89	23.06	-16.94	40	40.19	13.38	0.98	31.49	-	-	P	H
		80.44	27.99	-12.01	40	42.72	15.67	1.09	31.49	100	26	P	H
		323.91	23.83	-22.17	46	32.79	20.13	2.21	31.3	-	-	P	H
		939.86	30.5	-15.5	46	28	29.29	3.95	30.74	-	-	P	H
		44.55	35.42	-4.58	40	46.56	19.45	0.83	31.42	100	269	P	V
		65.89	35.21	-4.79	40	52.34	13.38	0.98	31.49	-	-	P	V
		73.65	34.9	-5.1	40	50.72	14.66	1.04	31.52	-	-	P	V
		81.41	29.67	-10.33	40	44.15	15.93	1.1	31.51	-	-	P	V
		476.2	25.55	-20.45	46	29.73	24.34	2.73	31.25	-	-	P	V
		836.07	29.08	-16.92	46	27.62	28.7	3.68	30.92	-	-	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)

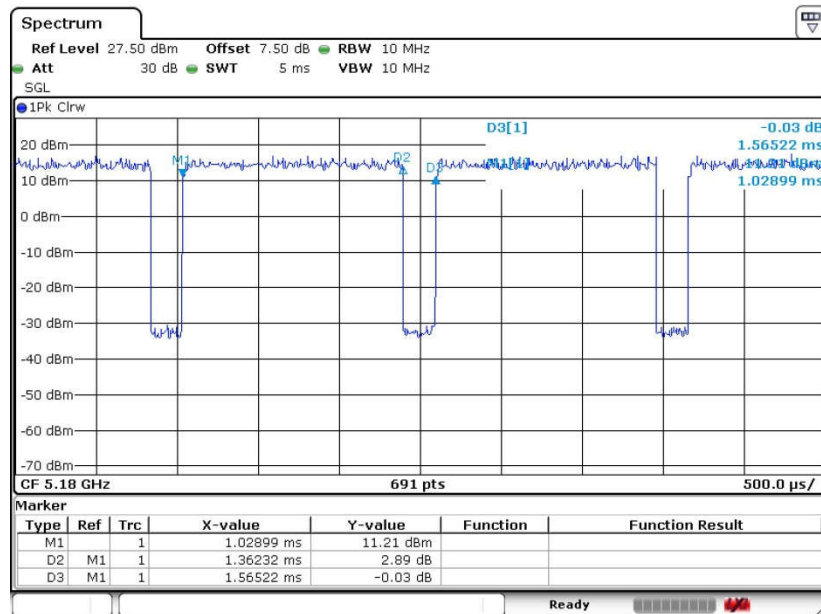
Both peak and average measured complies with the limit line, so test result is “PASS”.



### Appendix C. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	87.04	1.36	0.73	1KHz
802.11n HT20	86.52	1.27	0.78	1KHz
802.11n HT40	85.93	1.22	0.82	1KHz

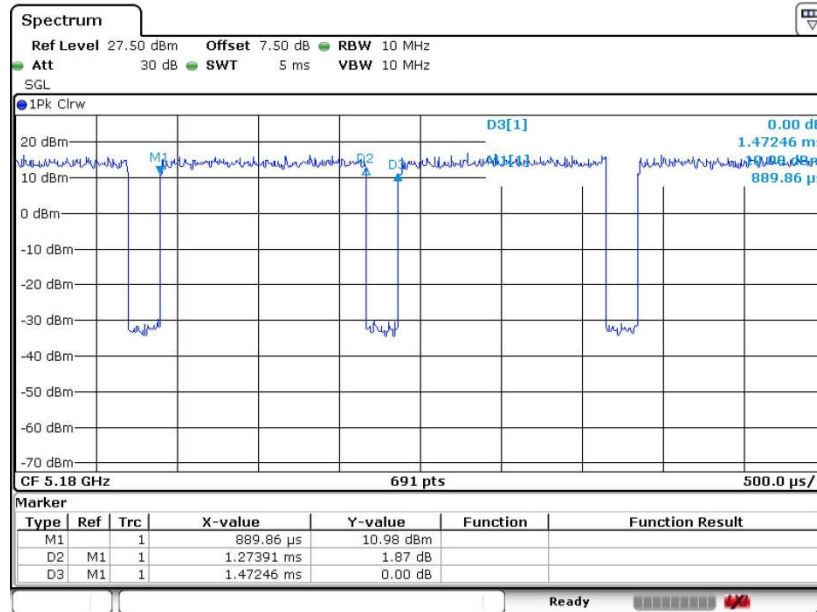
#### 802.11a



Date: 9.OCT.2016 15:04:43

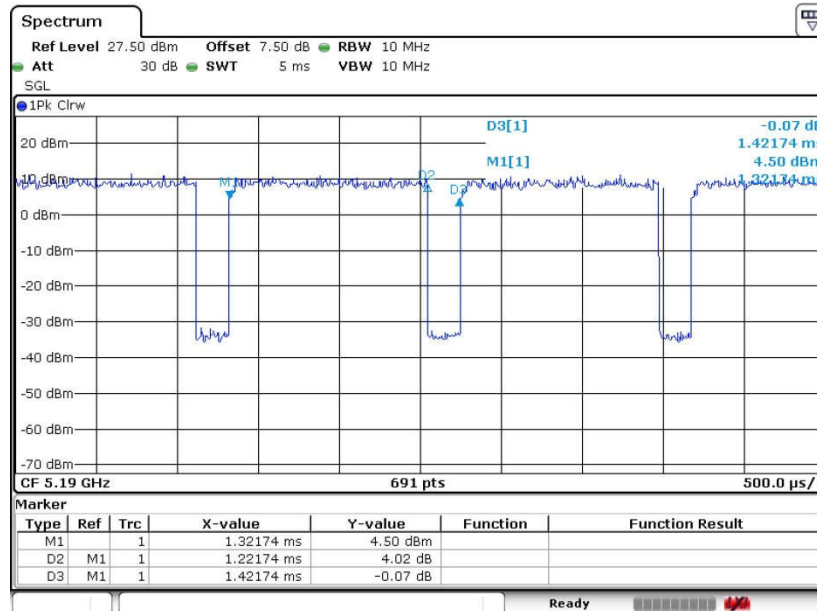


802.11n HT20



Date: 9.OCT.2016 16:16:53

802.11n HT40



Date: 9.OCT.2016 16:49:58