



# FCC RF Test Report

APPLICANT : TCL Communication Ltd.  
EQUIPMENT : Tablet PC  
BRAND NAME : alcatel  
MODEL NAME : 9024W  
FCC ID : 2ACCJBT01  
STANDARD : FCC Part 15 Subpart E §15.407  
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Jan. 17, 2017 and testing was completed on Mar. 21, 2017. 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.

*Eric Shih*

Prepared by: Eric Shih / Manager

*Jones Tsai*

Approved by: Jones Tsai / Manager



**SPORTON International (ShenZhen) INC.**

**1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan District, Shenzhen City,  
Guangdong Province, China**



## TABLE OF CONTENTS

<b>REVISION HISTORY .....</b>	<b>3</b>
<b>SUMMARY OF TEST RESULT .....</b>	<b>4</b>
<b>1 GENERAL DESCRIPTION .....</b>	<b>5</b>
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. Modification of EUT .....	6
1.6. Specification of Accessory .....	6
1.7. Testing Location .....	7
1.8. Applicable Standards .....	7
<b>2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST .....</b>	<b>8</b>
2.1 Carrier Frequency and Channel .....	8
2.2 Test Mode .....	9
2.3 Connection Diagram of Test System .....	10
2.4 Support Unit used in test configuration and system .....	11
2.5 EUT Operation Test Setup .....	11
2.6 Measurement Results Explanation Example .....	11
<b>3 TEST RESULT .....</b>	<b>12</b>
3.1 26dB & 99% Occupied Bandwidth Measurement .....	12
3.2 Maximum Conducted Output Power Measurement .....	14
3.3 Power Spectral Density Measurement .....	16
3.4 Unwanted Emissions Measurement .....	19
3.5 AC Conducted Emission Measurement .....	24
3.6 Frequency Stability Measurement .....	28
3.7 Automatically Discontinue Transmission .....	29
3.8 Antenna Requirements .....	30
<b>4 LIST OF MEASURING EQUIPMENT .....</b>	<b>31</b>
<b>5 UNCERTAINTY OF EVALUATION .....</b>	<b>32</b>
<b>APPENDIX A. CONDUCTED TEST RESULTS</b>	
<b>APPENDIX B. RADIATED SPURIOUS EMISSION</b>	
<b>APPENDIX C. DUTY CYCLE PLOTS</b>	
<b>APPENDIX D. SETUP PHOTOGRAPHS</b>	



## REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR711703D	Rev. 01	Initial issue of report	Mar. 24, 2017

## 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 1.92 dB at 5150.000 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 13.96 dB at 10.290 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

**TCL Communication Ltd.**

5F, C-Tower, No. 232, Liang Jing Road, ZhangJiang High-Tech Park, Pudong Area, Shanghai, 201203,  
P.R.China

## 1.2. Manufacturer

**TCL Communication Ltd.**

5F, C-Tower, No. 232, Liang Jing Road, ZhangJiang High-Tech Park, Pudong Area, Shanghai, 201203,  
P.R.China

## 1.3. Feature of Equipment Under Test

Product Feature	
Equipment	Tablet PC
Brand Name	alcatel
Model Name	9024W
FCC ID	2ACCJBT01
EUT supports Radios application	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 Bluetooth v3.0 + EDR/Bluetooth v4.0 LE/ Bluetooth v4.1 LE
IMEI Code	Conducted: N/A Conduction: N/A Radiation: N/A
HW Version	02
SW Version	CE9UM91
EUT Stage	Production Unit

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

## 1.4. Product Specification of Equipment Under Test

Standards-related Product Specification	
<b>Tx/Rx Frequency Range</b>	5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz
<b>Maximum Output Power to Antenna</b>	<b>&lt;5180 MHz ~ 5240 MHz&gt;</b> 802.11a : 13.17 dBm / 0.0207 W 802.11n HT20 : 13.29 dBm / 0.0213 W 802.11n HT40 : 13.64 dBm / 0.0231 W <b>&lt;5260 MHz ~ 5320 MHz&gt;</b> 802.11a : 13.67 dBm / 0.0233 W 802.11n HT20 : 13.24 dBm / 0.0211 W 802.11n HT40 : 13.50 dBm / 0.0224 W
<b>99% Occupied Bandwidth</b>	<b>&lt;5180 MHz ~ 5240 MHz&gt;</b> 802.11a : 19.23 MHz 802.11n HT20 : 20.28 MHz 802.11n HT40 : 37.46 MHz <b>&lt;5260 MHz ~ 5320 MHz&gt;</b> 802.11a : 19.68 MHz 802.11n HT20 : 20.23 MHz 802.11n HT40 : 37.26 MHz
<b>Antenna Type / Gain</b>	<b>&lt;5180 MHz ~ 5240 MHz&gt;</b> PIFA Antenna with gain -2.00 dBi <b>&lt;5260 MHz ~ 5320 MHz&gt;</b> PIFA Antenna with gain -2.00 dBi
<b>Type of Modulation</b>	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

## 1.5. Modification of EUT

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

## 1.6. Specification of Accessory

Specification of Accessory				
<b>AC Adapter</b>	<b>Brand Name</b>	alcatel	<b>Model Name</b>	UC13US
	<b>Power Rating</b>	I/P: 100 - 240 Vac, 400mA, O/P: 5 Vdc, 2000 mA		
	<b>P/N</b>	CBA0059AGAC2		
<b>Battery</b>	<b>Brand Name</b>	alcatel	<b>Model Name</b>	TLp040J1
	<b>Power Rating</b>	3.85 Vdc, 4000 mAh	<b>Type</b>	Li-ion
	<b>S/N</b>	C4000006C10043469		
<b>USB Cable</b>	<b>Brand Name</b>	NA	<b>Model Name</b>	NA
	<b>Signal Line Type</b>	0.8meter, non-shielded cable, with w/o ferrite core		

## 1.7. Testing Location

<b>Test Site</b>	SPORTON International (ShenZhen) INC.	
<b>Test Site Location</b>	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan District, Shenzhen City, Guangdong Province, China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595	
<b>Test Site No.</b>	<b>Sporton Site No.</b>	
	TH01-SZ	CO01-SZ

<b>Test Site</b>	SPORTON International (ShenZhen) INC.	
<b>Test Site Location</b>	No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P. R. China TEL: +86-755- 3320-2398	
<b>Test Site No.</b>	<b>Sporton Site No.</b>	<b>FCC Registration No.</b>
	03CH03-SZ	565805

**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 (Z plane) 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
	-	-	-	-

**Note:** 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 : GPRS1900 Idle + Bluetooth Link + WLAN (5GHz) Link + USB Cable (Charging from Adapter) + Earphone

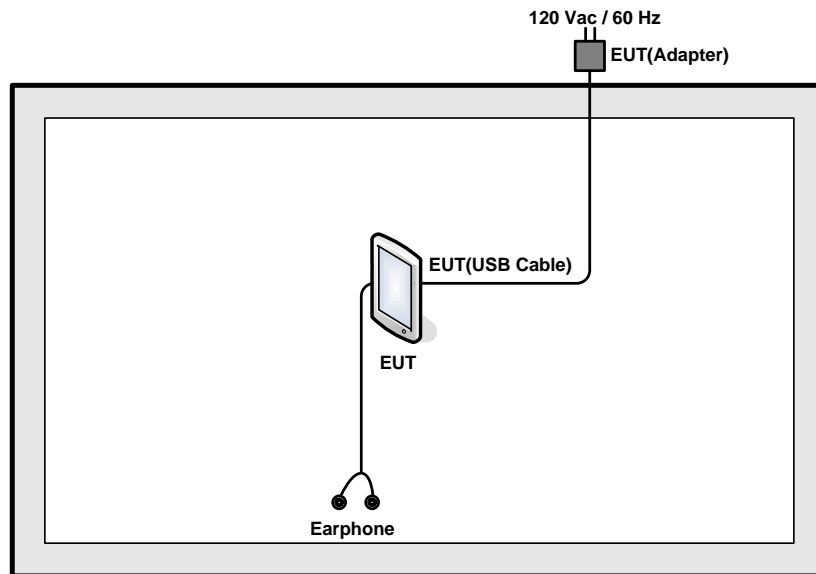
Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz
		802.11a	802.11a
L	Low	36	52
M	Middle	44	60
H	High	48	64

Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz
		802.11n HT20	802.11n HT20
L	Low	36	52
M	Middle	44	60
H	High	48	64

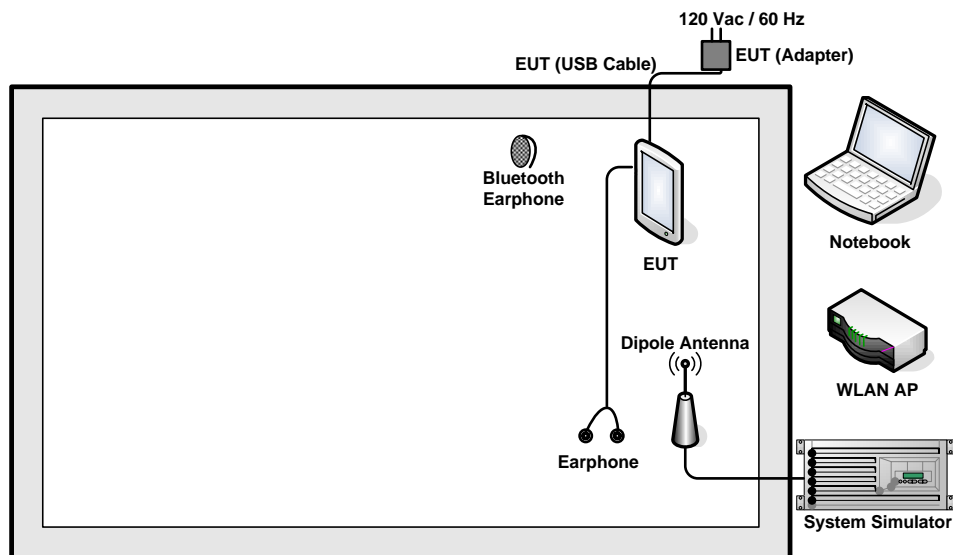
Ch. #		Band I : 5150-5250 MHz	Band II : 5250-5350 MHz
		802.11n HT40	802.11n HT40
L	Low	38	54
M	Middle	-	-
H	High	46	62

## 2.3 Connection Diagram of Test System

### <WLAN Tx Mode>



### <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.	Notebook	Lenovo	E540	FCC DoC	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
2.	WLAN AP	D-Link	DIR-820L	KA2IR810LA1	N/A	Unshielded, 1.8 m
3.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
4.	Bluetooth Earphone	Nokia	BH-108	PYAHS-107W	N/A	N/A
5.	DC Power Supply	GW INSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
6.	iPod Earphone	Apple	MC690 ZP/A	FCC DoC	Shielded, 1.6 m	N/A

## 2.5 EUT Operation Test Setup

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

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

## 2.6 Measurement Results Explanation Example

**For all conducted test items:**

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

*Offset = RF cable loss + attenuator factor.*

Following shows an offset computation example with cable loss 6.3 dB and 10dB attenuator.

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\
 &= 6.3 + 10 = 16.3 \text{ (dB)}
 \end{aligned}$$

### 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.

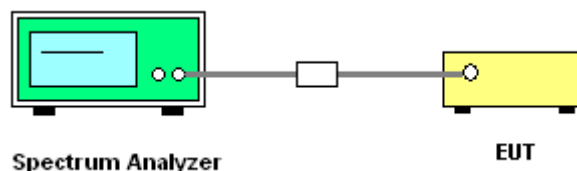
##### 3.1.2 Measuring Instruments

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

##### 3.1.3 Test Procedures

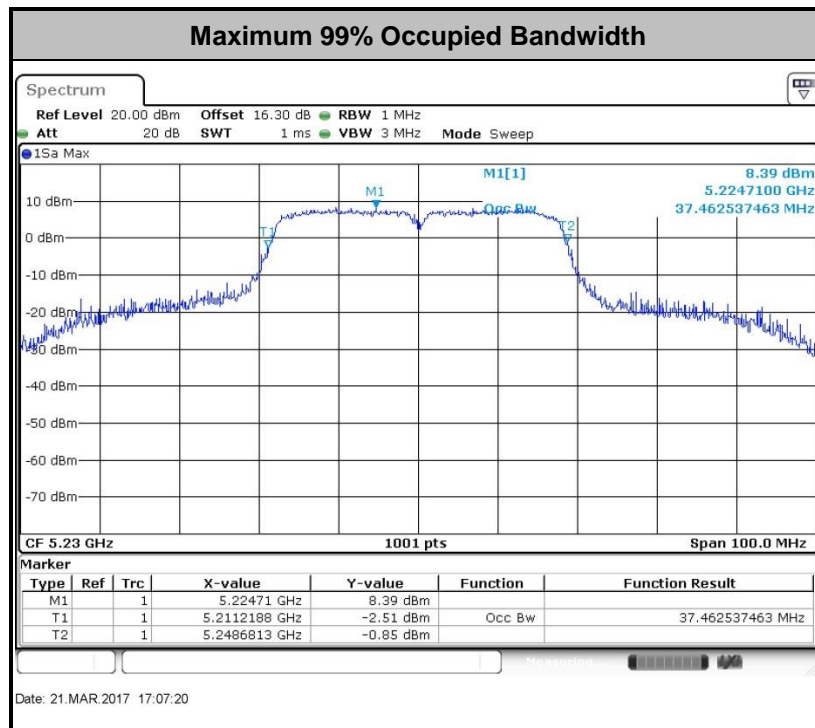
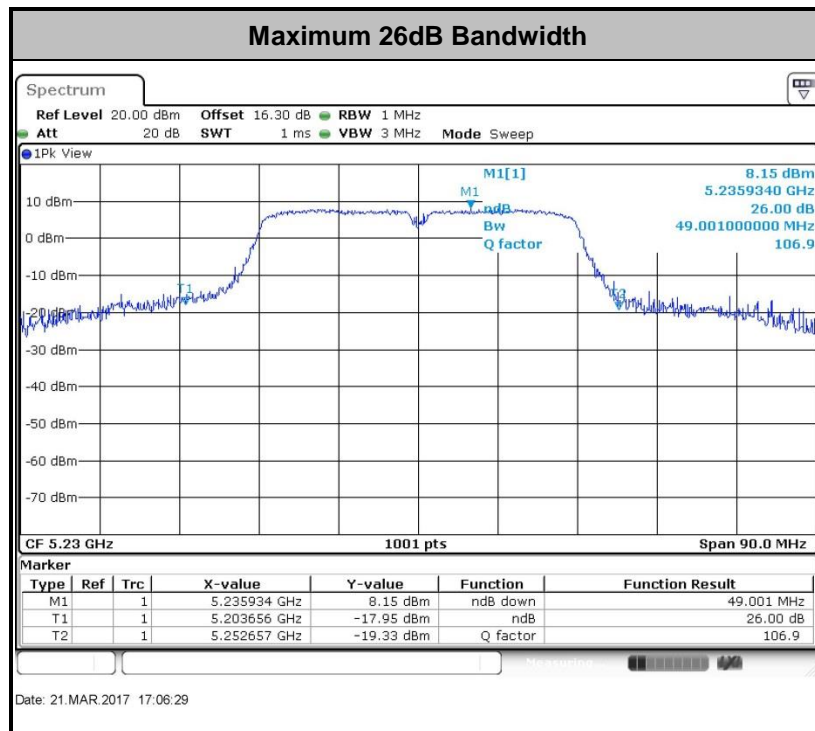
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.  
Section C) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 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)  $\geq 3 * \text{RBW}$ .
8. Measure and record the results in the test report.

##### 3.1.4 Test Setup



### 3.1.5 Test Result of 26dB & 99% Occupied Bandwidth

Please refer to Appendix A.



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

## 3.2 Maximum Conducted Output Power Measurement

### 3.2.1 Limit of Maximum Conducted Output Power

#### <FCC 14-30 CFR 15.407>

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

For the 5.25–5.35 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

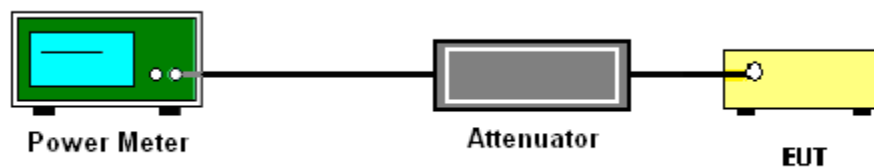
The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.

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 5.25–5.35 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.

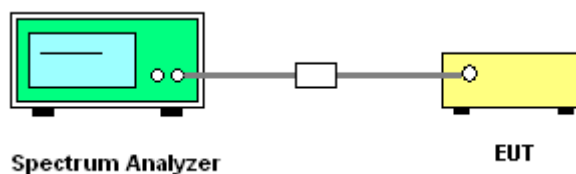
Section F) Maximum power spectral density.

#### # Method SA-2 #

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

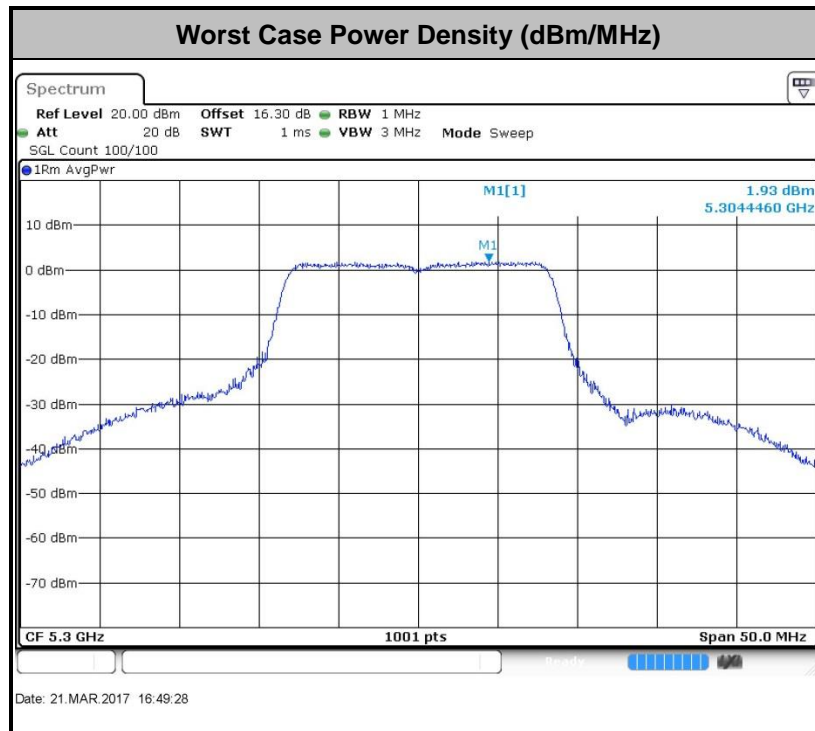
1. The testing follows Method SA-2 of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.
  - Measure the duty cycle.
  - Set span to encompass the entire emission bandwidth (EBW) of the signal.
  - Set RBW = 1 MHz.
  - Set VBW  $\geq$  3 MHz.
  - Number of points in sweep  $\geq$  2 Span / 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 Part 15.205.

#### 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.

- (2) Unwanted spurious emissions fallen in restricted bands per FCC Part 15.205 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.

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

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.

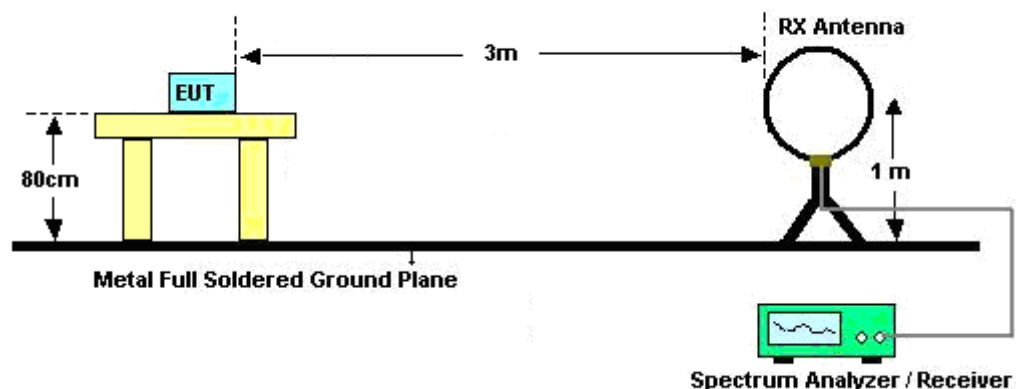
### 3.4.3 Test Procedures

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.
    - $VBW \geq 1/T$ , 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.

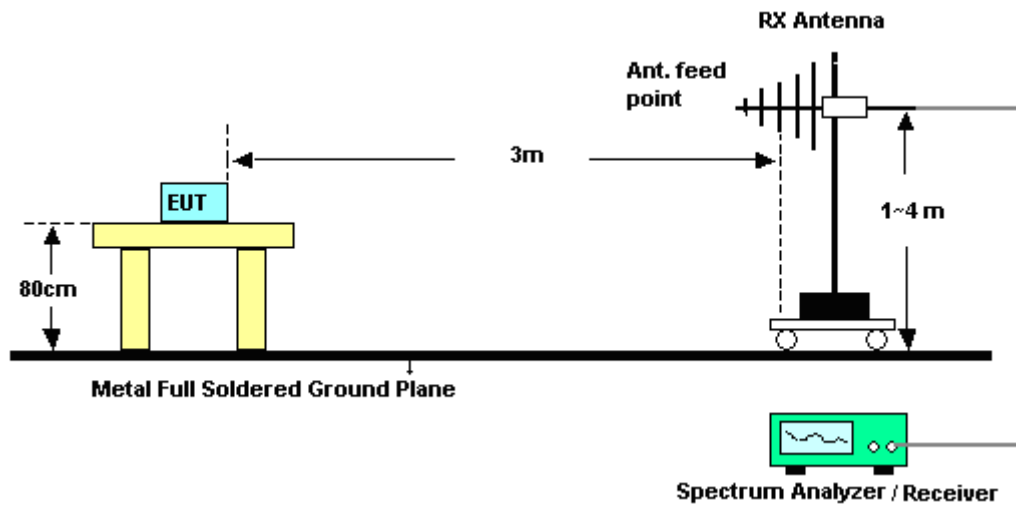
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband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

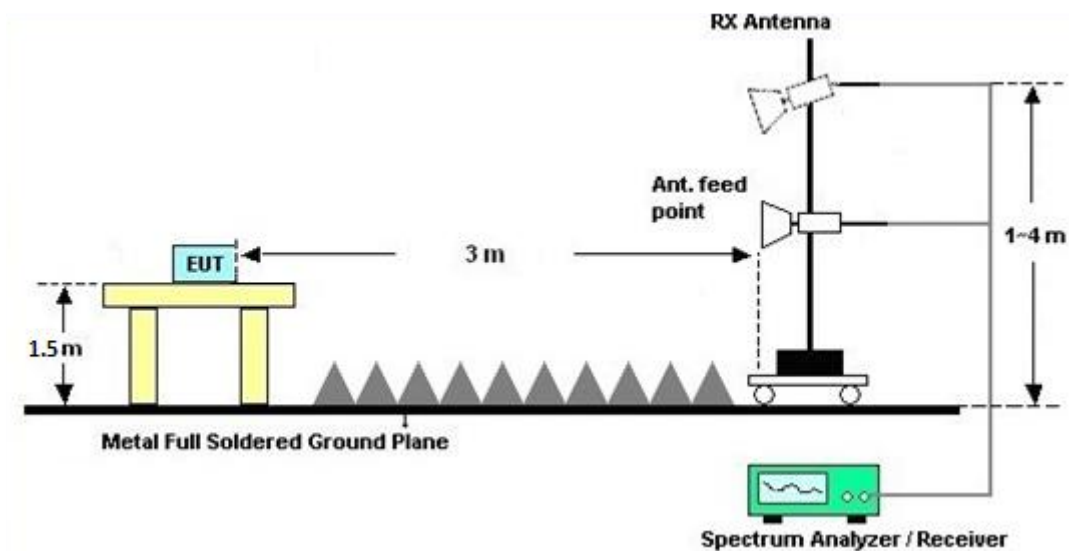
**For radiated emissions below 30MHz**



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 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

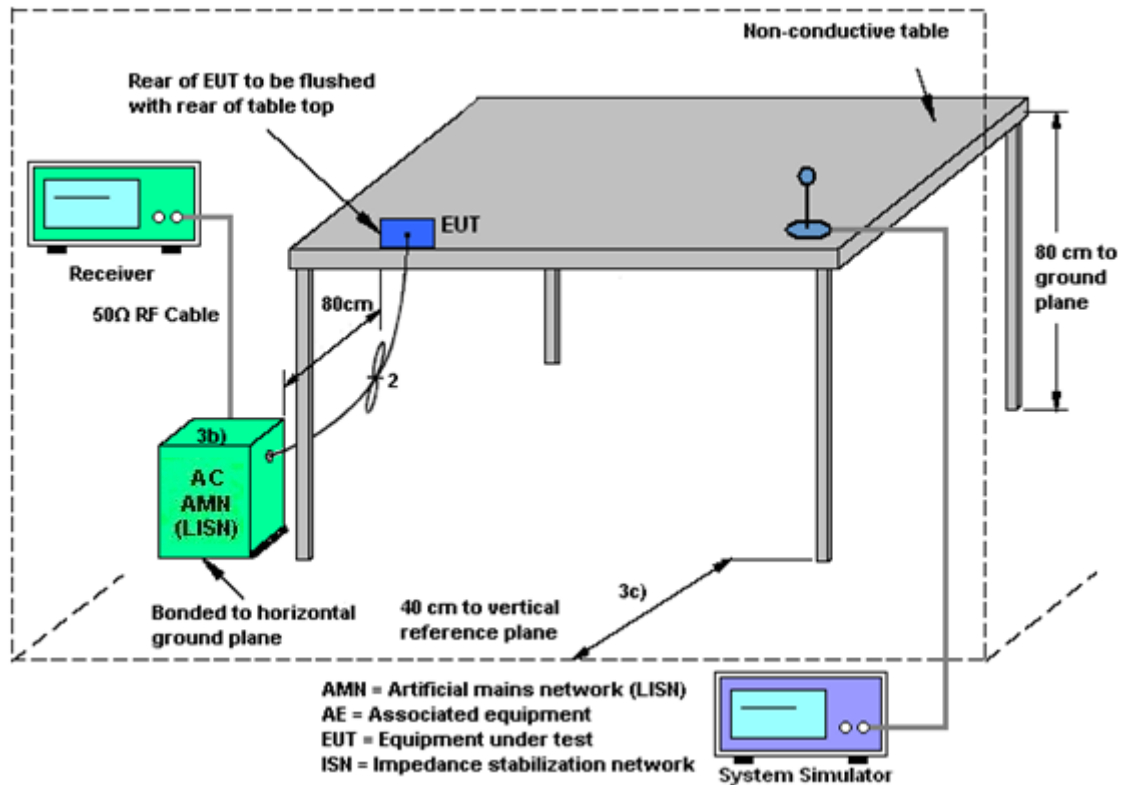
The measuring equipment is listed in the section 4 of this test report.

#### 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.

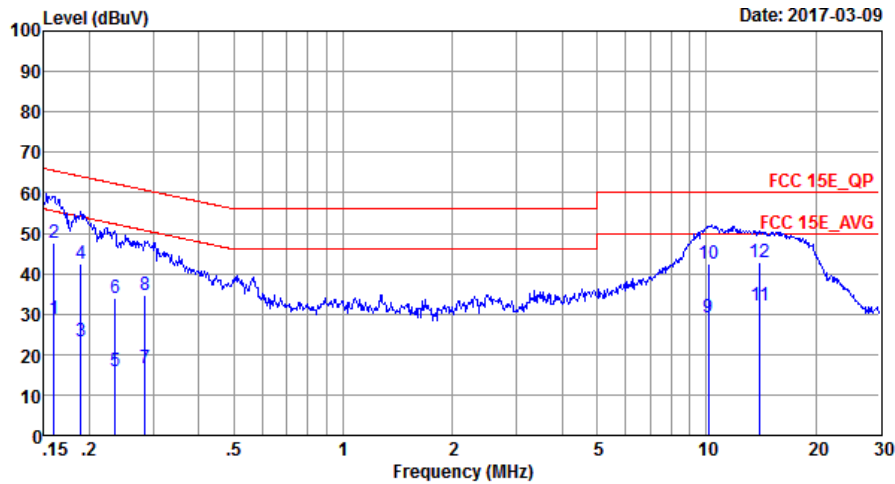


### 3.5.4 Test Setup



### 3.5.5 Test Result of AC Conducted Emission

<b>Test Mode :</b>	Mode 1	<b>Temperature :</b>	21~23℃
<b>Test Engineer :</b>	Joker Chen	<b>Relative Humidity :</b>	41~42%
<b>Test Voltage :</b>	120Vac / 60Hz	<b>Phase :</b>	Line
<b>Function Type :</b>	GPRS1900 Idle + Bluetooth Link + WLAN (5GHz) Link + USB Cable (Charging from Adapter) + Earphone		



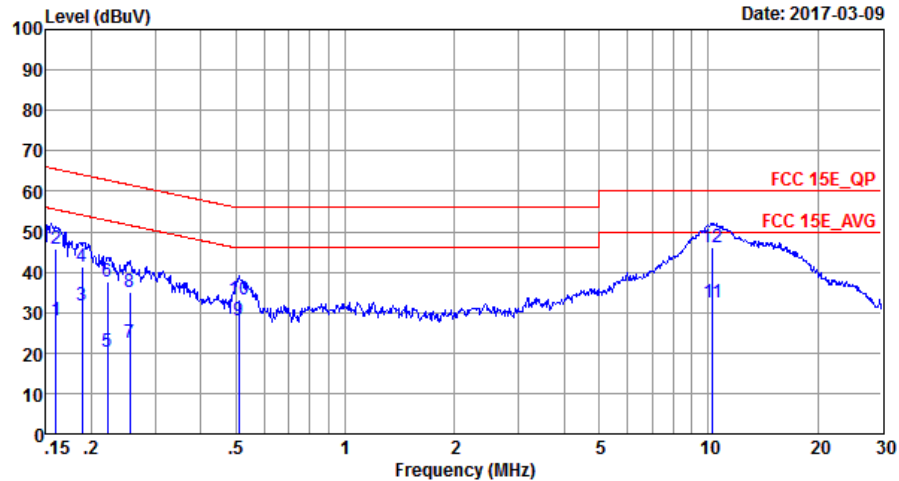
Site : CO01-SZ  
Condition: FCC 15E\_QP LISN\_20170301\_L LINE

Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.16	28.80	-26.67	55.47	18.40	0.03	10.37	Average
2	0.16	47.60	-17.87	65.47	37.20	0.03	10.37	QP
3	0.19	23.39	-30.67	54.06	13.10	0.03	10.26	Average
4	0.19	42.39	-21.67	64.06	32.10	0.03	10.26	QP
5	0.24	16.05	-36.21	52.26	5.80	0.03	10.22	Average
6	0.24	33.95	-28.31	62.26	23.70	0.03	10.22	QP
7	0.28	16.75	-33.93	50.68	6.50	0.03	10.22	Average
8	0.28	34.85	-25.83	60.68	24.60	0.03	10.22	QP
9	10.13	29.03	-20.97	50.00	18.30	0.36	10.37	Average
10	10.13	42.53	-17.47	60.00	31.80	0.36	10.37	QP
11	14.06	32.11	-17.89	50.00	21.30	0.49	10.32	Average
12 *	14.06	42.81	-17.19	60.00	32.00	0.49	10.32	QP



Test Mode :	Mode 1	Temperature :	21~23℃
Test Engineer :	Joker Chen	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GPRS1900 Idle + Bluetooth Link + WLAN (5GHz) Link + USB Cable (Charging from Adapter) + Earphone		



Site : C001-SZ  
Condition: FCC 15E\_QP LISN\_20170301\_N NEUTRAL

Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.16	28.10	-27.37	55.47	17.70	0.03	10.37	Average
2	0.16	45.80	-19.67	65.47	35.40	0.03	10.37	QP
3	0.19	31.69	-22.42	54.11	21.40	0.03	10.26	Average
4	0.19	41.19	-22.92	64.11	30.90	0.03	10.26	QP
5	0.22	20.45	-32.29	52.74	10.20	0.03	10.22	Average
6	0.22	37.65	-25.09	62.74	27.40	0.03	10.22	QP
7	0.25	22.55	-29.05	51.60	12.30	0.03	10.22	Average
8	0.25	34.95	-26.65	61.60	24.70	0.03	10.22	QP
9	0.51	27.90	-18.10	46.00	17.70	0.02	10.18	Average
10	0.51	33.20	-22.80	56.00	23.00	0.02	10.18	QP
11	10.29	32.64	-17.36	50.00	22.10	0.17	10.37	Average
12 *	10.29	46.04	-13.96	60.00	35.50	0.17	10.37	QP

### 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.

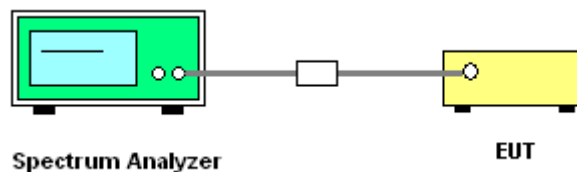
#### 3.6.2 Measuring Instruments

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	101078	9kHz~40GHz	May 07, 2016	Mar. 08, 2017~ Mar. 21, 2017	May 06, 2017	Conducted (TH01-SZ)
Pulse Power Sensor	Anritsu	MA2411B	1207253	30MHz~40GHz	Jan. 06, 2017	Mar. 08, 2017~ Mar. 21, 2017	Jan. 05, 2018	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	50MHz Bandwidth	Jan. 06, 2017	Mar. 08, 2017~ Mar. 21, 2017	Jan. 05, 2018	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhonggroup	LP-150U	H2014081803	-40~+150°C	Jul. 16, 2016	Mar. 08, 2017~ Mar. 21, 2017	Jul. 15, 2017	Conducted (TH01-SZ)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	May 07, 2016	Mar. 06, 2017~ Mar. 08, 2017	May 06, 2017	Radiation (03CH03-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz	May 07, 2016	Mar. 06, 2017~ Mar. 08, 2017	May 06, 2017	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 07, 2016	Mar. 06, 2017~ Mar. 08, 2017	May 06, 2017	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz~2GHz	May 21, 2016	Mar. 06, 2017~ Mar. 08, 2017	May 20, 2017	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	May 07, 2016	Mar. 06, 2017~ Mar. 08, 2017	May 06, 2017	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18GHz~40GHz	Aug. 10, 2016	Mar. 06, 2017~ Mar. 08, 2017	Aug. 09, 2017	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102210	0.01Hz~3000MHz	Oct. 11, 2016	Mar. 06, 2017~ Mar. 08, 2017	Oct. 10, 2017	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	AMF-7D-00101800-30-10P-R	1943528	1GHz~18GHz	Oct. 11, 2016	Mar. 06, 2017~ Mar. 08, 2017	Oct. 10, 2017	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Jan. 06, 2017	Mar. 06, 2017~ Mar. 08, 2017	Jan. 05, 2018	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 16, 2016	Mar. 06, 2017~ Mar. 08, 2017	Jul. 15, 2017	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Mar. 06, 2017~ Mar. 08, 2017	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Mar. 06, 2017~ Mar. 08, 2017	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Mar. 06, 2017~ Mar. 08, 2017	NCR	Radiation (03CH03-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Jan. 06, 2017	Mar. 18, 2017	Jan. 05, 2018	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103892	9kHz~30MHz	Jan. 05, 2017	Mar. 18, 2017	Jan. 04, 2018	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	MessTec	3816/2SH	00103912	9kHz~30MHz	Jan. 05, 2017	Mar. 18, 2017	Jan. 04, 2018	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 16, 2016	Mar. 18, 2017	Jul. 15, 2017	Conduction (CO01-SZ)

NCR: No Calibration Required

## 5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	2.5 dB
---	--------

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	3.0dB
---	-------

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	3.6dB
---	-------

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	3.8dB
---	-------





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

Test Engineer:	Sam Zheng	Temperature:	24~26	°C
Test Date:	2017/3/08~2017/3/21	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)		
11a	6Mbps	1	36	5180	18.73	23.68	-	22.73		
11a	6Mbps	1	44	5220	19.13	24.58	-	22.82		
11a	6Mbps	1	48	5240	19.23	24.83	-	22.84		
HT20	MCS0	1	36	5180	19.58	23.93	-	22.92		
HT20	MCS0	1	44	5220	20.23	27.37	-	23.01		
HT20	MCS0	1	48	5240	20.28	24.28	-	23.01		
HT40	MCS0	1	38	5190	36.86	44.96	-	23.01		
HT40	MCS0	1	46	5230	37.46	49.00	-	23.01		

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

FCC Band I										
Mod.	Data Rate	N <sub>TX</sub>	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)		Pass/Fail
11a	6Mbps	1	36	5180	0.58	12.65	24.00	-2.00		Pass
11a	6Mbps	1	44	5220	0.58	13.17	24.00	-2.00		Pass
11a	6Mbps	1	48	5240	0.58	13.04	24.00	-2.00		Pass
HT20	MCS0	1	36	5180	0.62	13.29	24.00	-2.00		Pass
HT20	MCS0	1	44	5220	0.62	13.23	24.00	-2.00		Pass
HT20	MCS0	1	48	5240	0.62	13.07	24.00	-2.00		Pass
HT40	MCS0	1	38	5190	1.19	7.96	24.00	-2.00		Pass
HT40	MCS0	1	46	5230	1.19	13.64	24.00	-2.00		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
11a	6Mbps	1	36	5180	0.58	0.30	11.00	-2.00		Pass
11a	6Mbps	1	44	5220	0.58	2.02	11.00	-2.00		Pass
11a	6Mbps	1	48	5240	0.58	1.83	11.00	-2.00		Pass
HT20	MCS0	1	36	5180	0.62	1.50	11.00	-2.00		Pass
HT20	MCS0	1	44	5220	0.62	2.23	11.00	-2.00		Pass
HT20	MCS0	1	48	5240	0.62	2.36	11.00	-2.00		Pass
HT40	MCS0	1	38	5190	1.19	-5.92	11.00	-2.00		Pass
HT40	MCS0	1	46	5230	1.19	-0.11	11.00	-2.00		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
11a	6M bps	1	52	5260	19.18	24.63	23.83	29.83	23.98	
11a	6M bps	1	60	5300	19.68	27.57	23.94	29.94	23.98	
11a	6M bps	1	64	5320	18.83	23.63	23.75	29.75	23.98	
HT20	MCS 0	1	52	5260	20.23	28.67	23.98	30.00	23.98	
HT20	MCS 0	1	60	5300	20.13	26.37	23.98	30.00	23.98	
HT20	MCS 0	1	64	5320	19.68	24.08	23.94	29.94	23.98	
HT40	MCS 0	1	54	5270	37.26	45.76	23.98	30.00	23.98	
HT40	MCS 0	1	62	5310	36.76	44.87	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
11a	6M bps	1	52	5260	0.58	13.06	23.98	-2.00	26.99	Pass
11a	6M bps	1	60	5300	0.58	13.67	23.98	-2.00	26.99	Pass
11a	6M bps	1	64	5320	0.58	12.12	23.98	-2.00	26.99	Pass
HT20	MCS 0	1	52	5260	0.62	13.10	23.98	-2.00	26.99	Pass
HT20	MCS 0	1	60	5300	0.62	13.24	23.98	-2.00	26.99	Pass
HT20	MCS 0	1	64	5320	0.62	12.71	23.98	-2.00	26.99	Pass
HT40	MCS 0	1	54	5270	1.19	13.50	23.98	-2.00	26.99	Pass
HT40	MCS 0	1	62	5310	1.19	9.53	23.98	-2.00	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
11a	6M bps	1	52	5260	0.58	2.17	11.00	-2.00		Pass
11a	6M bps	1	60	5300	0.58	2.51	11.00	-2.00		Pass
11a	6M bps	1	64	5320	0.58	-0.10	11.00	-2.00		Pass
HT20	MCS 0	1	52	5260	0.62	2.13	11.00	-2.00		Pass
HT20	MCS 0	1	60	5300	0.62	2.29	11.00	-2.00		Pass
HT20	MCS 0	1	64	5320	0.62	0.67	11.00	-2.00		Pass
HT40	MCS 0	1	54	5270	1.19	-0.50	11.00	-2.00		Pass
HT40	MCS 0	1	62	5310	1.19	-4.63	11.00	-2.00		Pass



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

Band I										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stablility (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	50	3.9	
11a	6Mbps	1	36	5180	5180.025	0.025	4.83	-30	3.9	
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	20	4.2	
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	20	3.6	
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	20	3.9	

Band II										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stablility (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6Mbps	1	64	5320	5320.000	0.000	0.00	50	3.9	
11a	6Mbps	1	64	5320	5320.000	0.000	0.00	-30	3.9	
11a	6Mbps	1	64	5320	5320.000	0.000	0.00	20	4.2	
11a	6Mbps	1	64	5320	5320.000	0.000	0.00	20	3.6	
11a	6Mbps	1	64	5320	5320.000	0.000	0.00	20	3.9	



## 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		5149.76	52.39	-21.61	74	42.42	32.93	9.12	32.08	200	110	P	H
		5150	44.72	-9.28	54	34.75	32.93	9.12	32.08	200	110	A	H
	*	5180	108.05	-	-	97.97	32.94	9.24	32.1	200	110	P	H
	*	5180	99.92	-	-	89.84	32.94	9.24	32.1	200	110	A	H
		5148.2	63.81	-10.19	74	53.84	32.93	9.12	32.08	215	89	P	V
		5150	51.81	-2.19	54	41.84	32.93	9.12	32.08	215	89	A	V
	*	5180	109.5	-	-	99.42	32.94	9.24	32.1	215	89	P	V
	*	5180	100.27	-	-	90.19	32.94	9.24	32.1	215	89	A	V
802.11a CH 44 5220MHz		5029.9	52.35	-21.65	74	42.7	32.91	8.74	32	156	71	P	H
		5031.72	42.98	-11.02	54	33.33	32.91	8.74	32	156	71	A	H
	*	5220	108.61	-	-	98.41	32.94	9.37	32.11	156	71	P	H
	*	5220	100.41	-	-	90.21	32.94	9.37	32.11	156	71	A	H
		5388.96	50.29	-23.71	74	40.05	32.98	9.49	32.23	156	71	P	H
		5407.2	41.6	-12.4	54	31.38	32.98	9.49	32.25	156	71	A	H
		5035.1	52.42	-21.58	74	42.77	32.91	8.74	32	250	91	P	V
		5033.54	43.55	-10.45	54	33.9	32.91	8.74	32	250	91	A	V
	*	5220	109.58	-	-	99.38	32.94	9.37	32.11	250	91	P	V
	*	5220	101.21	-	-	91.01	32.94	9.37	32.11	250	91	A	V
		5452.56	50.59	-23.41	74	40.46	32.99	9.42	32.28	250	91	P	V
		5406.24	42.26	-11.74	54	32.04	32.98	9.49	32.25	250	91	A	V



<b>802.11a CH 48 5240MHz</b>		5043.94	51.93	-22.07	74	42.16	32.91	8.87	32.01	150	71	P	H
		5053.56	42.88	-11.12	54	33.11	32.91	8.87	32.01	150	71	A	H
	*	5240	108.63	-	-	98.42	32.95	9.39	32.13	150	71	P	H
	*	5240	100.32	-	-	90.11	32.95	9.39	32.13	150	71	A	H
		5445.36	50.52	-23.48	74	40.38	32.99	9.42	32.27	150	71	P	H
		5432.88	41.7	-12.3	54	31.56	32.99	9.42	32.27	150	71	A	H
		5053.04	51.81	-22.19	74	42.04	32.91	8.87	32.01	224	93	P	V
		5050.96	43.35	-10.65	54	33.58	32.91	8.87	32.01	224	93	A	V
	*	5240	109.34	-	-	99.13	32.95	9.39	32.13	224	93	P	V
	*	5240	100.45	-	-	90.24	32.95	9.39	32.13	224	93	A	V
		5451.36	50.96	-23.04	74	40.83	32.99	9.42	32.28	224	93	P	V
		5435.04	42.46	-11.54	54	32.32	32.99	9.42	32.27	224	93	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



## Band 1 5150~5250MHz

## WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
802.11a CH 36 5180MHz		10360	52.72	-21.28	74	61.11	39.71	12.75	60.85	152	260	P	H
		10360	41.46	-12.54	54	49.85	39.71	12.75	60.85	152	260	A	H
		15540	49.42	-24.58	74	58.39	37.97	15.21	62.15	189	238	P	H
		10360	51.97	-22.03	74	60.36	39.71	12.75	60.85	152	260	P	V
		10360	41.12	-12.88	54	49.51	39.71	12.75	60.85	152	260	A	V
		15540	49.34	-24.66	74	58.31	37.97	15.21	62.15	189	238	P	V
802.11a CH 44 5220MHz		10440	52.16	-21.84	74	60.32	39.85	12.79	60.8	165	230	P	H
		10440	41.86	-12.14	54	50.02	39.85	12.79	60.8	165	230	A	H
		15660	50.78	-23.22	74	59.8	37.88	15.3	62.2	178	230	P	H
		10440	52.31	-21.69	74	60.47	39.85	12.79	60.8	200	230	P	V
		10440	41.7	-12.3	54	49.86	39.85	12.79	60.8	200	230	A	V
		15660	50.84	-23.16	74	59.86	37.88	15.3	62.2	172	230	P	V
802.11a CH 48 5240MHz		10480	51.6	-22.4	74	59.58	39.96	12.82	60.76	159	289	P	H
		10480	41.27	-12.73	54	49.25	39.96	12.82	60.76	159	289	A	H
		15720	50.34	-23.66	74	59.43	37.82	15.33	62.24	169	291	P	H
		10480	51.44	-22.56	74	59.42	39.96	12.82	60.76	155	289	P	V
		10480	41	-13	54	48.98	39.96	12.82	60.76	155	289	A	V
		15720	50.16	-23.84	74	59.25	37.82	15.33	62.24	156	291	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



## Band 1 5150~5250MHz

## WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
802.11n HT20 CH 36 5180MHz		5149.76	63.27	-10.73	74	53.3	32.93	9.12	32.08	202	109	P	H
		5150	52.08	-1.92	54	42.11	32.93	9.12	32.08	202	109	A	H
	*	5180	108.61	-	-	98.53	32.94	9.24	32.1	202	109	P	H
	*	5180	100.29	-	-	90.21	32.94	9.24	32.1	202	109	A	H
		5149.5	61.78	-12.22	74	51.81	32.93	9.12	32.08	213	81	P	V
		5150	51.79	-2.21	54	41.82	32.93	9.12	32.08	213	81	A	V
	*	5180	107.66	-	-	97.58	32.94	9.24	32.1	213	81	P	V
	*	5180	99.11	-	-	89.03	32.94	9.24	32.1	213	81	A	V
802.11n HT20 CH 44 5220MHz		5036.14	52.13	-21.87	74	42.48	32.91	8.74	32	150	69	P	H
		5129.74	42.89	-11.11	54	32.9	32.93	9.12	32.06	150	69	A	H
	*	5220	108.22	-	-	98.02	32.94	9.37	32.11	150	69	P	H
	*	5220	99.46	-	-	89.26	32.94	9.37	32.11	150	69	A	H
		5378.64	50.27	-23.73	74	40.05	32.98	9.47	32.23	150	69	P	H
		5403.84	41.53	-12.47	54	31.31	32.98	9.49	32.25	150	69	A	H
		5027.82	51.77	-22.23	74	42.12	32.91	8.74	32	250	92	P	V
		5036.14	43.33	-10.67	54	33.68	32.91	8.74	32	250	92	A	V
	*	5220	108.61	-	-	98.41	32.94	9.37	32.11	250	92	P	V
	*	5220	100.15	-	-	89.95	32.94	9.37	32.11	250	92	A	V
		5417.28	51.87	-22.13	74	41.65	32.98	9.49	32.25	250	92	P	V
		5417.28	42.2	-11.8	54	31.98	32.98	9.49	32.25	250	92	A	V



802.11n HT20 CH 48 5240MHz		5128.96	51.89	-22.11	74	41.9	32.93	9.12	32.06	150	72	P	H
		5044.2	42.75	-11.25	54	32.98	32.91	8.87	32.01	150	72	A	H
	*	5240	108.49	-	-	98.28	32.95	9.39	32.13	150	72	P	H
	*	5240	100.16	-	-	89.95	32.95	9.39	32.13	150	72	A	H
		5379.6	50.56	-23.44	74	40.34	32.98	9.47	32.23	150	72	P	H
		5424.48	41.66	-12.34	54	31.46	32.98	9.49	32.27	150	72	A	H
		5048.88	52.4	-21.6	74	42.63	32.91	8.87	32.01	203	95	P	V
		5042.12	43.2	-10.8	54	33.43	32.91	8.87	32.01	203	95	A	V
	*	5240	109.1	-	-	98.89	32.95	9.39	32.13	203	95	P	V
	*	5240	100.33	-	-	90.12	32.95	9.39	32.13	203	95	A	V
		5434.56	51.08	-22.92	74	40.94	32.99	9.42	32.27	203	95	P	V
		5436.24	42.03	-11.97	54	31.89	32.99	9.42	32.27	203	95	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 36 5180MHz		10360	52.35	-21.65	74	60.74	39.71	12.75	60.85	152	260	P	H
		10360	44.23	-9.77	54	52.62	39.71	12.75	60.85	152	260	A	H
		15540	48.51	-25.49	74	57.48	37.97	15.21	62.15	189	238	P	H
		10360	52.2	-21.8	74	60.59	39.71	12.75	60.85	152	260	P	V
		10360	45.81	-8.19	54	54.2	39.71	12.75	60.85	152	260	A	V
		15540	49.08	-24.92	74	58.05	37.97	15.21	62.15	189	238	P	V
802.11n HT20 CH 44 5220MHz		10440	53.97	-20.03	74	62.13	39.85	12.79	60.8	163	230	P	H
		10440	44.7	-9.3	54	52.86	39.85	12.79	60.8	163	230	A	H
		15660	48.91	-25.09	74	57.93	37.88	15.3	62.2	166	230	P	H
		10440	54.3	-19.7	74	62.46	39.85	12.79	60.8	170	230	P	V
		10440	44.48	-9.52	54	52.64	39.85	12.79	60.8	170	230	A	V
		15660	49.91	-24.09	74	58.93	37.88	15.3	62.2	155	230	P	V
802.11n HT20 CH 48 5240MHz		10480	52.77	-21.23	74	60.75	39.96	12.82	60.76	156	289	P	H
		10480	42.28	-11.72	54	50.26	39.96	12.82	60.76	156	289	A	H
		15720	49.34	-24.66	74	58.43	37.82	15.33	62.24	170	291	P	H
		10480	52.17	-21.83	74	60.15	39.96	12.82	60.76	153	289	P	V
		10480	42.64	-11.36	54	50.62	39.96	12.82	60.76	153	289	A	V
		15720	50.1	-23.9	74	59.19	37.82	15.33	62.24	181	291	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



## Band 1 5150~5250MHz

## WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
802.11n HT40 CH 38 5190MHz		5146.38	56.8	-17.2	74	46.83	32.93	9.12	32.08	185	110	P	H
		5150	50.12	-3.88	54	40.15	32.93	9.12	32.08	185	110	A	H
	*	5190	101.08	-	-	91	32.94	9.24	32.1	185	110	P	H
	*	5190	91.34	-	-	81.26	32.94	9.24	32.1	185	110	A	H
		5446.8	50.12	-23.88	74	39.98	32.99	9.42	32.27	185	110	P	H
		5374.32	41.49	-12.51	54	31.28	32.97	9.47	32.23	185	110	A	H
		5149.5	67.75	-6.25	74	57.78	32.93	9.12	32.08	217	89	P	V
		5150	51.05	-2.95	54	41.08	32.93	9.12	32.08	217	89	A	V
	*	5190	101.51	-	-	91.43	32.94	9.24	32.1	217	89	P	V
	*	5190	92.33	-	-	82.25	32.94	9.24	32.1	217	89	A	V
		5434.32	49.84	-24.16	74	39.7	32.99	9.42	32.27	217	89	P	V
		5386.08	41.9	-12.1	54	31.68	32.98	9.47	32.23	217	89	A	V
802.11n HT40 CH 46 5230MHz		5146.64	58.29	-15.71	74	48.32	32.93	9.12	32.08	150	71	P	H
		5148.72	47.08	-6.92	54	37.11	32.93	9.12	32.08	150	71	A	H
	*	5230	105.37	-	-	95.18	32.95	9.37	32.13	150	71	P	H
	*	5230	97.06	-	-	86.87	32.95	9.37	32.13	150	71	A	H
		5413.44	51.11	-22.89	74	40.89	32.98	9.49	32.25	150	71	P	H
		5354.16	42.42	-11.58	54	32.2	32.97	9.47	32.22	150	71	A	H
		5148.72	55.51	-18.49	74	45.54	32.93	9.12	32.08	250	93	P	V
		5150	47.37	-6.63	54	37.4	32.93	9.12	32.08	250	93	A	V
	*	5230	105.86	-	-	95.67	32.95	9.37	32.13	250	93	P	V
	*	5230	97.41	-	-	87.22	32.95	9.37	32.13	250	93	A	V
		5369.28	50.62	-23.38	74	40.4	32.97	9.47	32.22	250	93	P	V
		5353.44	42.67	-11.33	54	32.45	32.97	9.47	32.22	250	93	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												





**Band 1 5150~5250MHz**  
**WIFI 802.11n HT40 (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 38 5190MHz		10380	50.5	-23.5	74	58.83	39.74	12.77	60.84	250	0	P	H
		15570	49.12	-24.88	74	58.1	37.94	15.24	62.16	155	360	P	H
		10380	50.37	-23.63	74	58.7	39.74	12.77	60.84	250	0	P	V
		15570	49.06	-24.94	74	58.04	37.94	15.24	62.16	160	360	P	V
802.11n HT40 CH 46 5230MHz		10460	51.19	-22.81	74	59.27	39.89	12.82	60.79	155	360	P	H
		10460	41.13	-12.87	54	49.21	39.89	12.82	60.79	155	360	A	H
		15690	50.11	-23.89	74	59.15	37.85	15.33	62.22	155	225	P	H
		10460	51.31	-22.69	74	59.39	39.89	12.82	60.79	180	360	P	V
		10460	41.44	-12.56	54	49.52	39.89	12.82	60.79	180	360	A	V
		15690	49.91	-24.09	74	58.95	37.85	15.33	62.22	180	225	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



## Band 2 - 5250~5350MHz

## WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11a CH 52 5260MHz		5126.88	52.04	-21.96	74	42.05	32.93	9.12	32.06	150	72	P	H
		5073.06	42.88	-11.12	54	33.12	32.92	8.87	32.03	150	72	A	H
	*	5260	108.24	-	-	98.05	32.95	9.39	32.15	150	72	P	H
	*	5260	99.95	-	-	89.76	32.95	9.39	32.15	150	72	A	H
		5362.32	50.82	-23.18	74	40.6	32.97	9.47	32.22	150	72	P	H
		5350.32	42.04	-11.96	54	31.82	32.97	9.47	32.22	150	72	A	H
		5026.52	52.01	-21.99	74	42.36	32.91	8.74	32	245	93	P	V
		5073.84	43.43	-10.57	54	33.67	32.92	8.87	32.03	245	93	A	V
	*	5260	109.23	-	-	99.04	32.95	9.39	32.15	245	93	P	V
	*	5260	101.04	-	-	90.85	32.95	9.39	32.15	245	93	A	V
		5452.08	50.31	-23.69	74	40.18	32.99	9.42	32.28	245	93	P	V
		5455.92	42.29	-11.71	54	32.16	32.99	9.42	32.28	245	93	A	V
802.11a CH 60 5300MHz		5102.7	52.22	-21.78	74	42.36	32.92	8.99	32.05	150	72	P	H
		5115.18	43.03	-10.97	54	33.04	32.92	9.12	32.05	150	72	A	H
	*	5300	108.92	-	-	98.72	32.96	9.42	32.18	150	72	P	H
	*	5300	100.32	-	-	90.12	32.96	9.42	32.18	150	72	A	H
		5353.2	57	-17	74	46.78	32.97	9.47	32.22	150	72	P	H
		5352.48	48.57	-5.43	54	38.35	32.97	9.47	32.22	150	72	A	H
		5119.34	51.81	-22.19	74	41.83	32.92	9.12	32.06	232	87	P	V
		5112.06	43.42	-10.58	54	33.56	32.92	8.99	32.05	232	87	A	V
	*	5300	109.38	-	-	99.18	32.96	9.42	32.18	232	87	P	V
	*	5300	101.05	-	-	90.85	32.96	9.42	32.18	232	87	A	V
		5352	56.56	-17.44	74	46.34	32.97	9.47	32.22	232	87	P	V
		5352.48	49.43	-4.57	54	39.21	32.97	9.47	32.22	232	87	A	V



<b>802.11a CH 64 5320MHz</b>		5129.22	52.03	-21.97	74	42.04	32.93	9.12	32.06	170	111	P	H
		5126.36	43.76	-10.24	54	33.77	32.93	9.12	32.06	170	111	A	H
	*	5320	106.08	-	-	95.86	32.96	9.44	32.18	170	111	P	H
	*	5320	97.48	-	-	87.26	32.96	9.44	32.18	170	111	A	H
		5354.4	51.59	-22.41	74	41.37	32.97	9.47	32.22	170	111	P	H
		5376.96	43.14	-10.86	54	32.93	32.97	9.47	32.23	170	111	A	H
		5132.6	52.11	-21.89	74	42.12	32.93	9.12	32.06	245	86	P	V
		5132.86	43.04	-10.96	54	33.05	32.93	9.12	32.06	245	86	A	V
	*	5320	109.65	-	-	99.43	32.96	9.44	32.18	245	86	P	V
	*	5320	100.32	-	-	90.1	32.96	9.44	32.18	245	86	A	V
		5354.4	61.14	-12.86	74	50.92	32.97	9.47	32.22	245	86	P	V
		5350.32	51.38	-2.62	54	41.16	32.97	9.47	32.22	245	86	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 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
802.11a CH 52 5260MHz		10520	51.85	-22.15	74	59.73	39.99	12.84	60.71	160	220	P	H
		10520	41.37	-12.63	54	49.25	39.99	12.84	60.71	160	220	A	H
		15780	50.7	-23.3	74	59.79	37.78	15.39	62.26	189	345	P	H
		10520	51.62	-22.38	74	59.5	39.99	12.84	60.71	173	220	P	V
		10520	41.14	-12.86	54	49.02	39.99	12.84	60.71	173	220	A	V
		15780	50.19	-23.81	74	59.28	37.78	15.39	62.26	163	345	P	V
802.11a CH 60 5300MHz		10600	52.39	-21.61	74	60.07	39.96	12.88	60.52	185	215	P	H
		10600	41.9	-12.1	54	49.58	39.96	12.88	60.52	185	215	A	H
		15900	50.75	-23.25	74	59.91	37.68	15.48	62.32	196	190	P	H
		10600	52.15	-21.85	74	59.83	39.96	12.88	60.52	185	215	P	V
		10600	41.57	-12.43	54	49.25	39.96	12.88	60.52	185	215	A	V
		15900	50.8	-23.2	74	59.96	37.68	15.48	62.32	196	190	P	V
802.11a CH 64 5320MHz		10640	52.65	-21.35	74	60.25	39.94	12.91	60.45	152	135	P	H
		10640	42.31	-11.69	54	49.91	39.94	12.91	60.45	152	135	A	H
		15960	50.7	-23.3	74	59.88	37.63	15.54	62.35	173	245	P	H
		10640	53.04	-20.96	74	60.64	39.94	12.91	60.45	152	135	P	V
		10640	43.27	-10.73	54	50.87	39.94	12.91	60.45	152	135	A	V
		15960	49.92	-24.08	74	59.1	37.63	15.54	62.35	173	245	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



## Band 2 5250~5350MHz

## WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
802.11n HT20 CH 52 5260MHz		5036.14	51.88	-22.12	74	42.23	32.91	8.74	32	152	73	P	H
		5066.56	42.81	-11.19	54	33.04	32.91	8.87	32.01	152	73	A	H
	*	5260	107.81	-	-	97.62	32.95	9.39	32.15	152	73	P	H
	*	5260	100.07	-	-	89.88	32.95	9.39	32.15	152	73	A	H
		5414.88	50.83	-23.17	74	40.61	32.98	9.49	32.25	152	73	P	H
		5355.12	41.85	-12.15	54	31.63	32.97	9.47	32.22	152	73	A	H
		5147.94	51.96	-22.04	74	41.99	32.93	9.12	32.08	150	93	P	V
		5074.88	43.26	-10.74	54	33.5	32.92	8.87	32.03	150	93	A	V
	*	5260	108.41	-	-	98.22	32.95	9.39	32.15	150	93	P	V
	*	5260	100.55	-	-	90.36	32.95	9.39	32.15	150	93	A	V
		5455.92	50.53	-23.47	74	40.4	32.99	9.42	32.28	150	93	P	V
		5351.28	41.87	-12.13	54	31.65	32.97	9.47	32.22	150	93	A	V
802.11n HT20 CH 60 5300MHz		5069.94	51.92	-22.08	74	42.17	32.91	8.87	32.03	150	72	P	H
		5105.82	42.82	-11.18	54	32.96	32.92	8.99	32.05	150	72	A	H
	*	5300	108.27	-	-	98.07	32.96	9.42	32.18	150	72	P	H
	*	5300	100.41	-	-	90.21	32.96	9.42	32.18	150	72	A	H
		5351.28	54.28	-19.72	74	44.06	32.97	9.47	32.22	150	72	P	H
		5352	48.89	-5.11	54	38.67	32.97	9.47	32.22	150	72	A	H
		5109.46	52.02	-21.98	74	42.16	32.92	8.99	32.05	235	81	P	V
		5102.44	43.28	-10.72	54	33.42	32.92	8.99	32.05	235	81	A	V
	*	5300	109.97	-	-	99.77	32.96	9.42	32.18	235	81	P	V
	*	5300	101.23	-	-	91.03	32.96	9.42	32.18	235	81	A	V
		5351.28	57.66	-16.34	74	47.44	32.97	9.47	32.22	235	81	P	V
		5351.76	51.11	-2.89	54	40.89	32.97	9.47	32.22	235	81	A	V



<b>802.11n</b>  <b>HT20</b>  <b>CH 64</b>  <b>5320MHz</b>	*	5320	106.46	-	-	96.24	32.96	9.44	32.18	171	111	P	H
	*	5320	96.97	-	-	86.75	32.96	9.44	32.18	171	111	A	H
		5354.4	59.36	-14.64	74	49.14	32.97	9.47	32.22	171	111	P	H
		5350.08	48.82	-5.18	54	38.6	32.97	9.47	32.22	171	111	A	H
	*	5320	108.08	-	-	97.86	32.96	9.44	32.18	232	86	P	V
	*	5320	99.46	-	-	89.24	32.96	9.44	32.18	232	86	A	V
		5352.64	61.65	-12.35	74	51.43	32.97	9.47	32.22	232	86	P	V
		5350.56	51.46	-2.54	54	41.24	32.97	9.47	32.22	232	86	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	52.18	-21.82	74	60.06	39.99	12.84	60.71	172	220	P	H
		10520	42.65	-11.35	54	50.53	39.99	12.84	60.71	172	220	A	H
		15780	49.17	-24.83	74	58.26	37.78	15.39	62.26	152	345	P	H
		10520	52.3	-21.7	74	60.18	39.99	12.84	60.71	195	220	P	V
		10520	42.74	-11.26	54	50.62	39.99	12.84	60.71	195	220	A	V
		15780	49.9	-24.1	74	58.99	37.78	15.39	62.26	200	345	P	V
802.11n HT20 CH 60 5300MHz		10600	50.8	-23.2	74	58.48	39.96	12.88	60.52	185	215	P	H
		15900	48.58	-25.42	74	57.74	37.68	15.48	62.32	196	190	P	H
		10600	50.51	-23.49	74	58.19	39.96	12.88	60.52	185	215	P	V
		15900	48.64	-25.36	74	57.8	37.68	15.48	62.32	196	190	P	V
802.11n HT20 CH 64 5320MHz		10640	50.46	-23.54	74	58.06	39.94	12.91	60.45	152	135	P	H
		15960	47.8	-26.2	74	56.98	37.63	15.54	62.35	173	245	P	H
		10640	50.99	-23.01	74	58.59	39.94	12.91	60.45	152	135	P	V
		15960	48.68	-25.32	74	57.86	37.63	15.54	62.35	173	245	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



## Band 2 5250~5350MHz

## WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
802.11n HT40 CH 54 5270MHz		5087.88	51.95	-22.05	74	42.07	32.92	8.99	32.03	151	70	P	H
		5138.84	43.17	-10.83	54	33.18	32.93	9.12	32.06	151	70	A	H
	*	5270	104.4	-	-	94.21	32.95	9.39	32.15	151	70	P	H
	*	5270	96.24	-	-	86.05	32.95	9.39	32.15	151	70	A	H
		5354.16	55.68	-18.32	74	45.46	32.97	9.47	32.22	151	70	P	H
		5351.76	46.59	-7.41	54	36.37	32.97	9.47	32.22	151	70	A	H
		5143.78	52.1	-21.9	74	42.13	32.93	9.12	32.08	231	92	P	V
		5093.6	43.5	-10.5	54	33.64	32.92	8.99	32.05	231	92	A	V
	*	5270	105.28	-	-	95.09	32.95	9.39	32.15	231	92	P	V
	*	5270	97.41	-	-	87.22	32.95	9.39	32.15	231	92	A	V
		5357.52	56.92	-17.08	74	46.7	32.97	9.47	32.22	231	92	P	V
		5351.04	47.82	-6.18	54	37.6	32.97	9.47	32.22	231	92	A	V
802.11n HT40 CH 62 5310MHz		5069.16	50.48	-23.52	74	40.73	32.91	8.87	32.03	183	111	P	H
		5131.56	42.98	-11.02	54	32.99	32.93	9.12	32.06	183	111	A	H
	*	5310	100.5	-	-	90.28	32.96	9.44	32.18	183	111	P	H
	*	5310	91.44	-	-	81.22	32.96	9.44	32.18	183	111	A	H
		5350.32	57.89	-16.11	74	47.67	32.97	9.47	32.22	183	111	P	H
		5350.32	50.18	-3.82	54	39.96	32.97	9.47	32.22	183	111	A	H
		5037.7	51.84	-22.16	74	42.06	32.91	8.87	32	209	85	P	V
		5074.1	42.98	-11.02	54	33.22	32.92	8.87	32.03	209	85	A	V
	*	5310	100.49	-	-	90.27	32.96	9.44	32.18	209	85	P	V
	*	5310	93.34	-	-	83.12	32.96	9.44	32.18	209	85	A	V
		5352.72	59.07	-14.93	74	48.85	32.97	9.47	32.22	209	85	P	V
		5350.08	51.02	-2.98	54	40.8	32.97	9.47	32.22	209	85	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												





**Band 2 5250~5350MHz**  
**WIFI 802.11n HT40 (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
<b>802.11n HT40 CH 54 5270MHz</b>		10540	51.05	-22.95	74	58.87	39.99	12.86	60.67	165	220	P	H
		10540	45.06	-8.94	54	52.88	39.99	12.86	60.67	165	220	A	H
		15810	49.71	-24.29	74	58.82	37.75	15.42	62.28	150	345	P	H
		10540	51.6	-22.4	74	59.42	39.99	12.86	60.67	180	220	P	V
		10540	45.43	-8.57	54	53.25	39.99	12.86	60.67	180	220	A	V
		15810	49.93	-24.07	74	59.04	37.75	15.42	62.28	172	345	P	V
<b>802.11n HT40 CH 62 5310MHz</b>		10620	51.05	-22.95	74	58.68	39.95	12.91	60.49	155	220	P	H
		10620	41	-13	54	48.63	39.95	12.91	60.49	155	220	A	H
		15930	49.09	-24.91	74	58.26	37.66	15.51	62.34	160	100	P	H
		10620	51.68	-22.32	74	59.31	39.95	12.91	60.49	157	220	P	V
		10620	41.89	-12.11	54	49.52	39.95	12.91	60.49	157	220	A	V
		15930	49.56	-24.44	74	58.73	37.66	15.51	62.34	180	100	P	V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



## Emission below 1GHz

## WIFI 802.11n HT20 (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 HT20 LF		30.97	28.11	-11.89	40	33.49	26.28	0.34	32	120	50	P	H
		93.05	30.59	-12.91	43.5	43.5	18.1	0.76	31.77	-	-	P	H
		170.65	29.59	-13.91	43.5	43.03	16.89	1.11	31.44	-	-	P	H
		213.33	29.52	-13.98	43.5	43.32	16.25	1.3	31.35	-	-	P	H
		344.28	28.57	-17.43	46	37.84	20.25	1.76	31.28	-	-	P	H
		993.21	33.2	-20.8	54	30.98	30.27	3.18	31.23	-	-	P	H
		36.79	34.78	-5.22	40	42.63	23.76	0.4	32.01	-	-	P	V
		47.46	35.98	-4.02	40	49.56	17.9	0.49	31.97	110	40	P	V
		92.08	30.71	-12.79	43.5	43.73	18	0.75	31.77	-	-	P	V
		180.35	31.91	-11.59	43.5	45.73	16.46	1.12	31.4	-	-	P	V
		411.21	27.72	-18.28	46	31.23	25.75	1.97	31.23	-	-	P	V
		935.98	33.34	-12.66	46	32.33	29.15	3.05	31.19	-	-	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>P</b> eak or <b>A</b> verage
H/V	<b>H</b> orizontal or <b>V</b> ertical



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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

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

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

**For Peak Limit @ 2390MHz:**

1. Level(dBμV/m)

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

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

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

**For Average Limit @ 2390MHz:**

1. Level(dBμV/m)

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

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

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

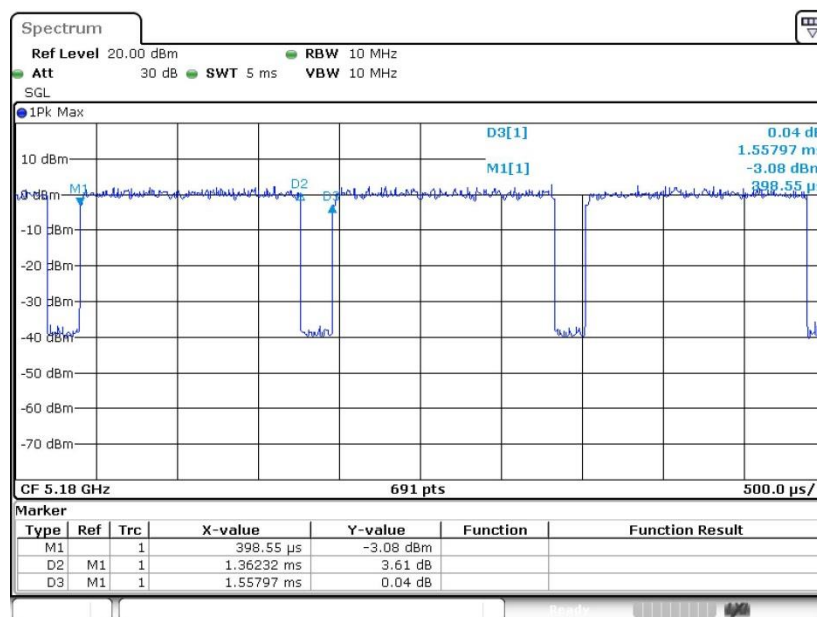
= -10.46(dB)

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

## Appendix C. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	87.44	1.362	0.734	1kHz
802.11n HT20	86.70	1.275	0.784	1kHz
802.11n HT40	76.08	0.636	1.572	3kHz

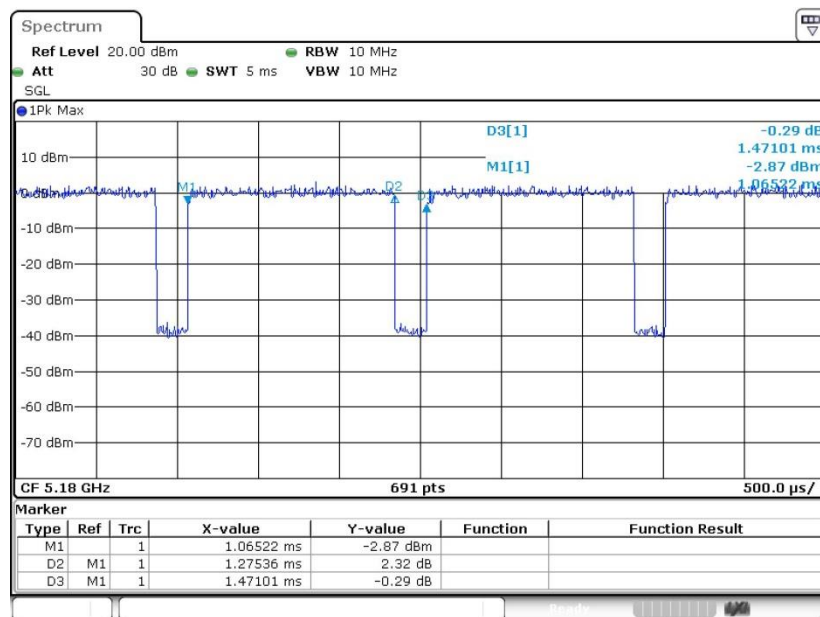
### 802.11a



Date: 8.MAR.2017 10:27:14

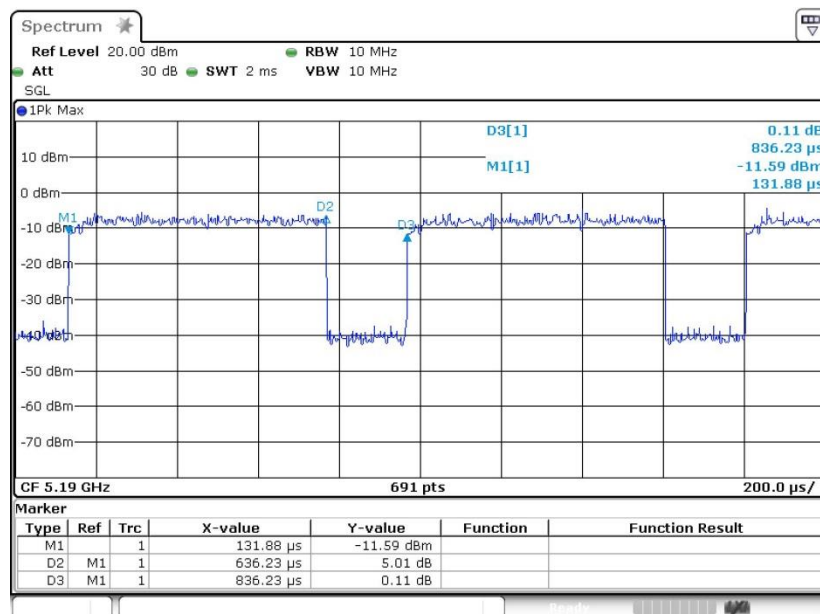


## 802.11n HT20



Date: 8.MAR.2017 10:34:32

## 802.11n HT40



Date: 8.MAR.2017 11:04:56