



# FCC RF Test Report

**APPLICANT** : Motorola Mobility LLC  
**EQUIPMENT** : Mobile Cellular Phone  
**BRAND NAME** : Motorola  
**MODEL NAME** : XT1941-5, XT1941-3  
**FCC ID** : IHDT56XK1  
**STANDARD** : FCC Part 15 Subpart E §15.407  
**CLASSIFICATION** : (NII) Unlicensed National Information Infrastructure

The product was received on Jun. 04, 2018 and testing was completed on Jun. 28, 2018. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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



Approved by: James Huang / Manager

**Sporton International (Kunshan) Inc.**

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### REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR860402E	Rev. 01	Initial issue of report	Jul. 12, 2018



### SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	2.1049 & 15.403(i)	26dB & 99% Bandwidth	-	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	≤ 24 dBm	Pass	-
3.3	15.407(a)	Power Spectral Density	≤ 11 dBm	Pass	-
3.4	15.407(b)	Unwanted Emissions	15.407(b) & 15.209(a)	Pass	Under limit 3.28 dB at 5466.480 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 5.38 dB at 0.167 MHz
3.6	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.7	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-



# 1 General Description

## 1.1. Applicant

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. Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT1941-5, XT1941-3
FCC ID	IHDT56XK1
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/DC-HSDPA/ HSPA+(16QAM uplink is not supported)/LTE/NFC WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a/n HT20/HT40 Bluetooth BR/EDR/LE
IMEI Code	Conducted: 355542090027733/355542090027741 Conduction: 355542090025752/355542090025760 Radiation: 355542090027873/355542090027881
HW Version	DVT1B
SW Version	fastboot_deen_oem_userdebug_8.1.0_OPK28.26_f325_intcfg -test-keys_oem
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, the sample 1(XT1941-3) is dual SIM slot, the sample 2(XT1941-5) is single SIM slot. We only choose dual SIM sample to perform full tests.



### 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 ~ 5720 MHz
<b>Maximum Output Power to Antenna</b>	<b>&lt;5180 MHz ~ 5240 MHz&gt;</b> 802.11a : 14.75 dBm / 0.0299 W 802.11n HT20 : 14.37 dBm / 0.0274 W 802.11n HT40 : 14.91 dBm / 0.0310 W <b>&lt;5260 MHz ~ 5320 MHz&gt;</b> 802.11a : 13.54 dBm / 0.0226 W 802.11n HT20 : 12.98 dBm / 0.0199 W 802.11n HT40 : 12.84 dBm / 0.0192 W <b>&lt;5500 MHz ~ 5720 MHz &gt;</b> 802.11a : 14.67 dBm / 0.0293 W 802.11n HT20 : 14.29 dBm / 0.0269 W 802.11n HT40 : 14.39 dBm / 0.0275 W
<b>99% Occupied Bandwidth</b>	<b>&lt;5180 MHz ~ 5240 MHz&gt;</b> 802.11a : 24.43 MHz 802.11n HT20 : 25.82 MHz 802.11n HT40 : 41.46 MHz <b>&lt;5260 MHz ~ 5320 MHz&gt;</b> 802.11a : 20.13 MHz 802.11n HT20 : 20.13 MHz 802.11n HT40 : 37.66 MHz <b>&lt;5500 MHz ~ 5720 MHz &gt;</b> 802.11a : 21.53 MHz 802.11n HT20 : 21.18 MHz 802.11n HT40 : 41.26 MHz
<b>Antenna Type / Gain</b>	<b>&lt;5180 MHz ~ 5240 MHz&gt;</b> IFA Antenna with gain -8.50 dBi <b>&lt;5260 MHz ~ 5320 MHz&gt;</b> IFA Antenna with gain -8.50 dBi <b>&lt;5500 MHz ~ 5720 MHz &gt;</b> IFA Antenna with gain -8.50 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				
AC Adapter 1(US)	Brand Name	Motorola(Salom)	Model Name	SC-51
	Power Rating	I/P: 100-240 Vac, 600mA, O/P: 5/9/12 Vdc, 3000/2000/1500 mA		
AC Adapter 1(EU)	Brand Name	Motorola(Salom)	Model Name	SC-52
	Power Rating	I/P: 100-240 Vac, 600mA, O/P: 5/9/12 Vdc, 3000/2000/1500 mA		
AC Adapter 1(UK)	Brand Name	Motorola(Salom)	Model Name	SC-53
	Power Rating	I/P: 100-240 Vac, 600mA, O/P: 5/9/12 Vdc, 3000/2000/1500 mA		
AC Adapter 1(India)	Brand Name	Motorola(Salom)	Model Name	SC-54
	Power Rating	I/P: 100-240 Vac, 600mA, O/P: 5/9/12 Vdc, 3000/2000/1500 mA		
AC Adapter 1(AU)	Brand Name	Motorola(Salom)	Model Name	SC-55
	Power Rating	I/P: 100-240 Vac, 600mA, O/P: 5/9/12 Vdc, 3000/2000/1500 mA		
AC Adapter 1(AR)	Brand Name	Motorola(Salom)	Model Name	SC-56
	Power Rating	I/P: 100-240 Vac, 600mA, O/P: 5/9/12 Vdc, 3000/2000/1500 mA		
AC Adapter 1(BR)	Brand Name	Motorola(Salom)	Model Name	SC-57
	Power Rating	I/P: 100-240 Vac, 600mA, O/P: 5/9/12 Vdc, 3000/2000/1500 mA		
AC Adapter 1(PRC)	Brand Name	Motorola(Salom)	Model Name	SC-58
	Power Rating	I/P: 100-240 Vac, 600mA, O/P: 5/9/12 Vdc, 3000/2000/1500 mA		
AC Adapter 1(Chile)	Brand Name	Motorola(Salom)	Model Name	SC-52
	Power Rating	I/P: 100-240 Vac, 600mA, O/P: 5/9/12 Vdc, 3000/2000/1500 mA		
AC Adapter 2(US)	Brand Name	Motorola(chenyang)	Model Name	SC-51
	Power Rating	I/P: 100-240 Vac, 600mA, O/P: 5/9/12 Vdc, 3000/2000/1500 mA		
AC Adapter 2(EU)	Brand Name	Motorola(chenyang)	Model Name	SC-52
	Power Rating	I/P: 100-240 Vac, 600mA, O/P: 5/9/12 Vdc, 3000/2000/1500 mA		
AC Adapter 2(UK)	Brand Name	Motorola(chenyang)	Model Name	SC-53
	Power Rating	I/P: 100-240 Vac, 600mA, O/P: 5/9/12 Vdc, 3000/2000/1500 mA		
AC Adapter 2(AU)	Brand Name	Motorola(chenyang)	Model Name	SC-55
	Power Rating	I/P: 100-240 Vac, 600mA, O/P: 5/9/12 Vdc, 3000/2000/1500 mA		
AC Adapter 2(AR)	Brand Name	Motorola(chenyang)	Model Name	SC-56
	Power Rating	I/P: 100-240 Vac, 600mA, O/P: 5/9/12 Vdc, 3000/2000/1500 mA		
AC Adapter 2(PRC)	Brand Name	Motorola(chenyang)	Model Name	SC-58
	Power Rating	I/P: 100-240 Vac, 600mA, O/P: 5/9/12 Vdc, 3000/2000/1500 mA		
AC Adapter 3(BR)	Brand Name	Motorola(Salom/Flex)	Model Name	SC-57
	Power Rating	I/P: 100-240 Vac, 600mA, O/P: 5/9/12 Vdc, 3000/2000/1500 mA		
AC Adapter 4(BR)	Brand Name	Motorola (Tenpao/Cliptech)	Model Name	SC-57
	Power Rating	I/P: 100-240 Vac, 600mA, O/P: 5/9/12 Vdc, 3000/2000/1500 mA		
Battery	Brand Name	Motorola	Model Name	JE40
	Power Rating	3.8Vdc,2820mAh	Type	Li-ion
Earphone 1	Brand Name	Motorola (New Leader)	Model Name	NLD-EM307E-09SF
	Signal Line Type	1.2 meter, non-shielded cable, without ferrite core		
Earphone 2	Brand Name	Motorola	Model Name	SH38C16618 (L20)
	Signal Line Type	1.2 meter, non-shielded cable, without ferrite core		



USB Cable 1	<b>Brand Name</b>	Motorola (Liqi)	<b>Model Name</b>	LQ-03500079
	<b>Signal Line Type</b>	1.0 meter, shielded cable, without ferrite core		
USB Cable 2	<b>Brand Name</b>	Motorola (Saibao)	<b>Model Name</b>	SLQ-A1111A
	<b>Signal Line Type</b>	1.0 meter, shielded cable, without ferrite core		
USB Cable 3	<b>Brand Name</b>	Motorola (I SHENG)	<b>Model Name</b>	SC18C28955
	<b>Signal Line Type</b>	1.0 meter, shielded cable, without ferrite core		

### 1.7. Testing Location

Sporton International (Kunshan) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600155-0) and the FCC designation No is CN5013.

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

**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 v02r01.
- ♦ ANSI C63.10-2013

**Remark:**

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.





## 2 Test Configuration of Equipment Under Test

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane) were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

### 2.1. Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5180-5240 MHz Band 1 (U-NII-1)	36	5180	46*	5230
	38*	5190	48	5240
	40	5200		
	44	5220		

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5260-5320 MHz Band 2 (U-NII-2A)	52	5260	62*	5310
	54*	5270	64	5320
	56	5280		
	60	5300		

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5500-5720 MHz Band 3 (U-NII-2C)	100	5500	116	5580
	102*	5510	132	5660
	104	5520	134*	5670
	108	5540	136	5680
	110*	5550	140	5700
	112	5560		



Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
TDWR Channel	118*	5590	126*	5630
	120	5600	128	5640
	124	5620		

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
Straddle Channel	142*	5710	144	5720

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

## 2.2. Test Mode

Final test modes are considering the modulation and worse data rates as below table.

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

Test Cases	
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN Link(5GHz) + USB Cable 1(Charging from Adapter 4) + Earphone
Remark: For Radiated Test Cases, The tests were performed with Adapter, Earphone and USB Cable.	

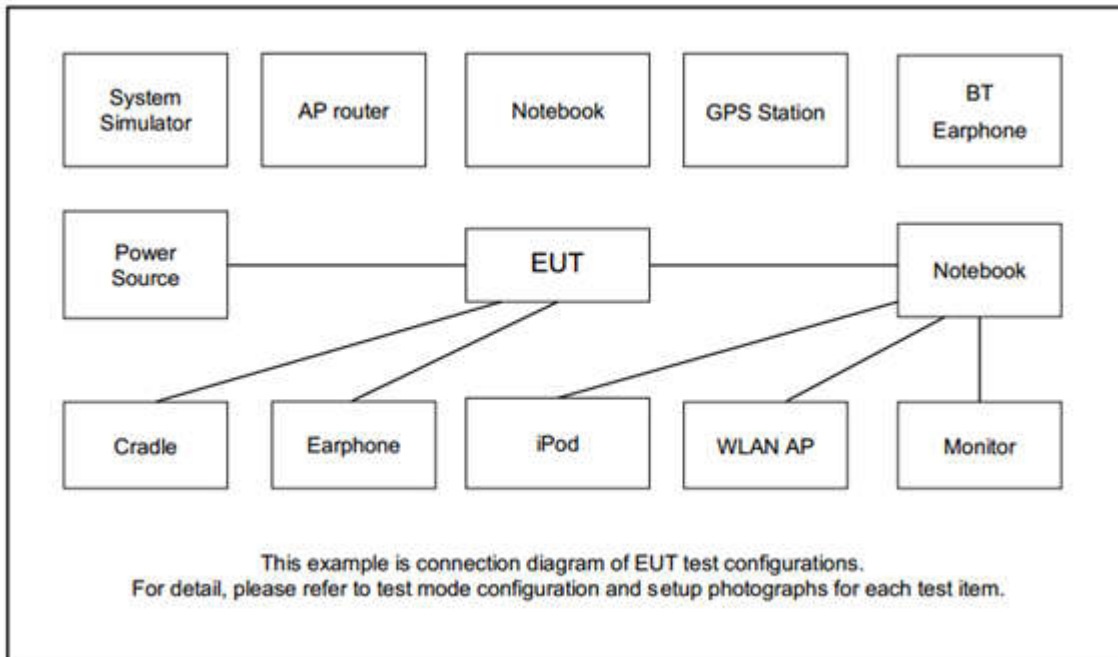


Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5720MHz
		802.11a	802.11a	802.11a
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140
Straddle		-	-	144

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

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

### 2.3. Connection Diagram of Test System



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

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
2.	Bluetooth Earphone	Lenovo	LBH308	N/A	N/A	N/A
3.	WLAN AP	D-link	DIR-855	KA2DIR855A2	N/A	Unshielded,1.8m
4.	Notebook	Lenovo	G480	PRC4	N/A	shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m
5.	SD Card	Kingston	8GB	N/A	N/A	N/A



## 2.5. EUT Operation Test Setup

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

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

## 2.6. Measurement Results Explanation Example

**For all conducted test items:**

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

Example :

The spectrum analyzer offset is derived from RF cable loss.

*Offset = RF cable loss.*

Following shows an offset computation example with cable loss 6.8 dB.

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} \\ &= 6.8 \text{ (dB)} \end{aligned}$$

### 3 Test Result

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

##### 3.1.1 Description of 26dB & 99% Occupied Bandwidth

This section is for reporting purpose only.

There is no restriction limits for bandwidth.

For Straddle Channel, According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, If the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

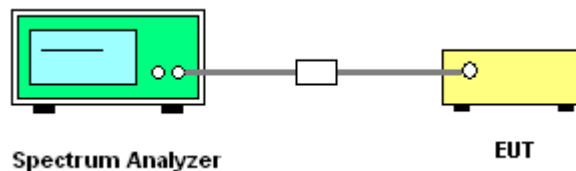
##### 3.1.2 Measuring Instruments

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

##### 3.1.3 Test Procedures

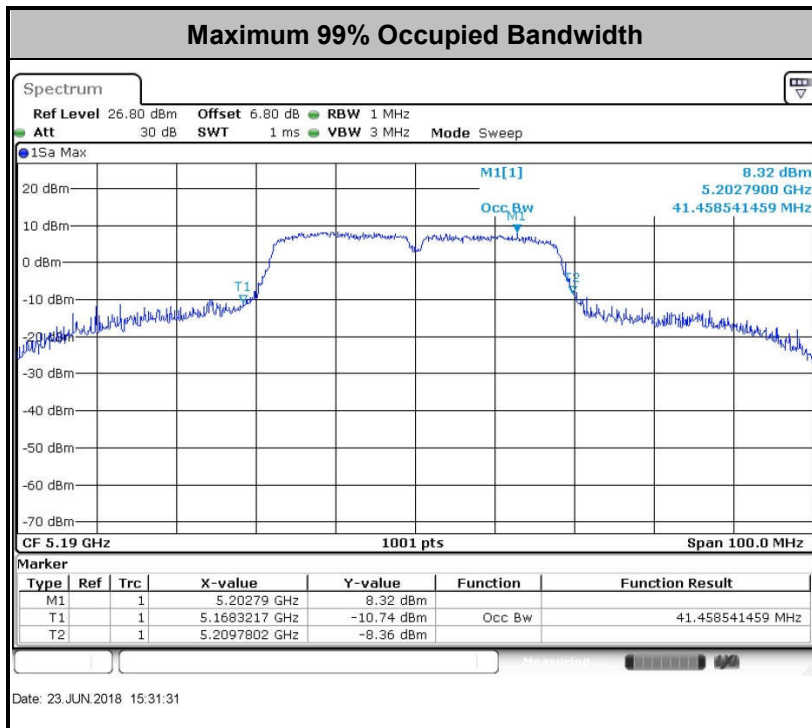
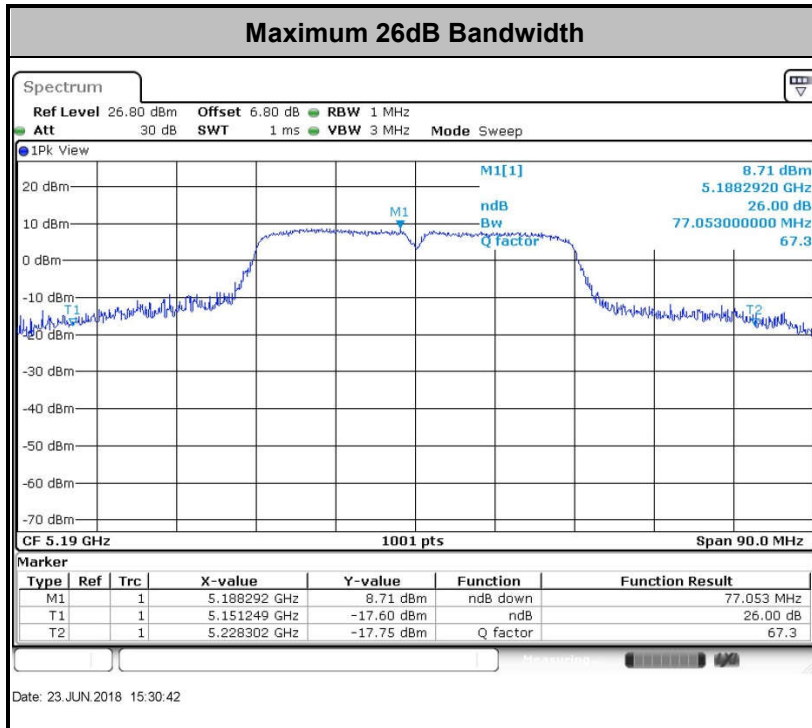
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section C) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB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

##### 3.1.4 Test Setup



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

Please refer to Appendix A.



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



## 3.2. Maximum Conducted Output Power Measurement

### 3.2.1 Limit of Maximum Conducted Output Power

<FCC 14-30 CFR 15.407>

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

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

For Straddle Channel, According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, If the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note that U-NII-2 band, devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

### 3.2.2 Measuring Instruments

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





### **3.2.3 Test Procedures**

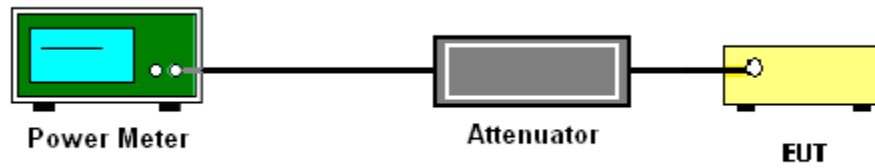
The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor,  $10 \log(1/x)$ , where x is the duty cycle.

For Straddle Channel, According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, If the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

### 3.2.4 Test Setup



### 3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.



### 3.3. Power Spectral Density Measurement

#### 3.3.1 Limit of Power Spectral Density

<FCC 14-30 CFR 15.407>

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band.

For the 5.25–5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### 3.3.2 Measuring Instruments

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

### 3.3.3 Test Procedures

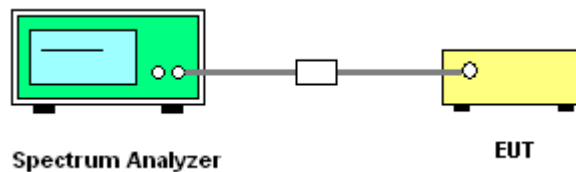
The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.  
Section F) Maximum power spectral density.

#### # Method SA-2 #

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

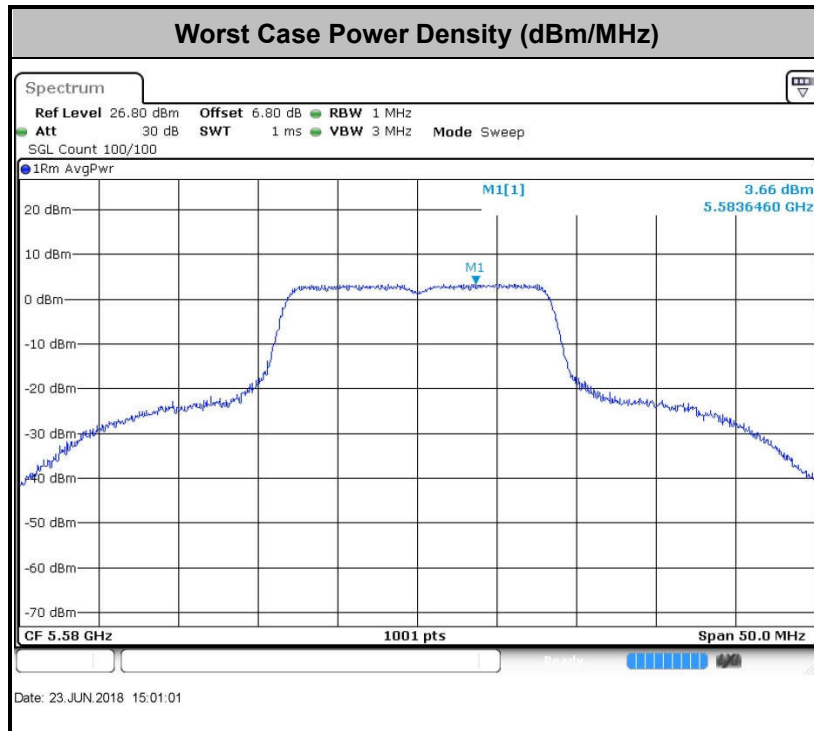
- Measure the duty cycle.
  - Set span to encompass the entire emission bandwidth (EBW) of the signal.
  - Set RBW = 1 MHz.
  - Set VBW  $\geq$  3 MHz.
  - Number of points in sweep  $\geq$  2 Span / RBW.
  - Sweep time = auto.
  - Detector = RMS
  - Trace average at least 100 traces in power averaging mode.
  - Add  $10 \log(1/x)$ , where  $x$  is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add  $10 \log(1/0.25) = 6$  dB if the duty cycle is 25 percent.
1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
  2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.

### 3.3.4 Test Setup



### 3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.



**Note:** Average Power Density (dB) = Measured value+ Duty Factor



### 3.4. Unwanted Emissions Measurement

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

#### 3.4.1 Limit of Unwanted Emissions

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

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

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

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

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



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

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

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

where

EIRP is the equivalent isotropically radiated power, in dBm

$E_{Meas}$  is the field strength of the emission at the measurement distance, in dBμV/m

$d_{Meas}$  is the measurement distance, in m

### 3.4.2 Measuring Instruments

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



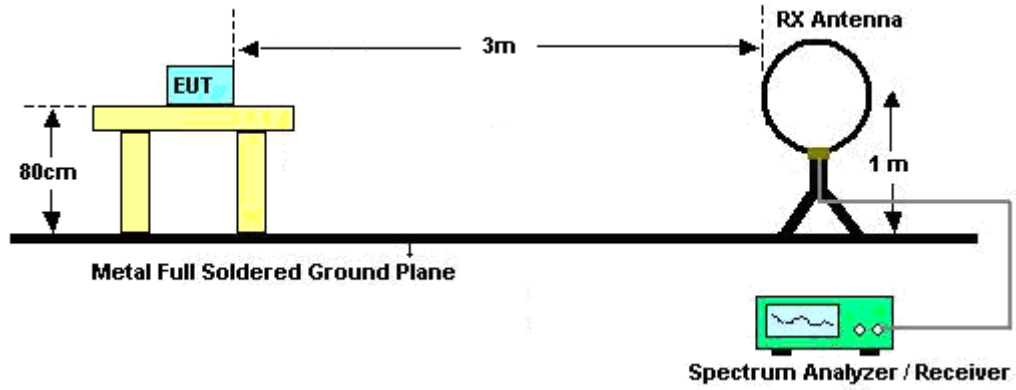
### 3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section G) Unwanted emissions measurement.
  - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
    - RBW = 120 kHz
    - VBW = 300 kHz
    - Detector = Peak
    - Trace mode = max hold
  - (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
    - RBW = 1 MHz
    - VBW  $\geq$  3 MHz
    - Detector = Peak
    - Sweep time = auto
    - Trace mode = max hold
  - (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz
    - RBW = 1 MHz
    - VBW = 10 Hz, when duty cycle is no less than 98 percent.
    - VBW  $\geq$  1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

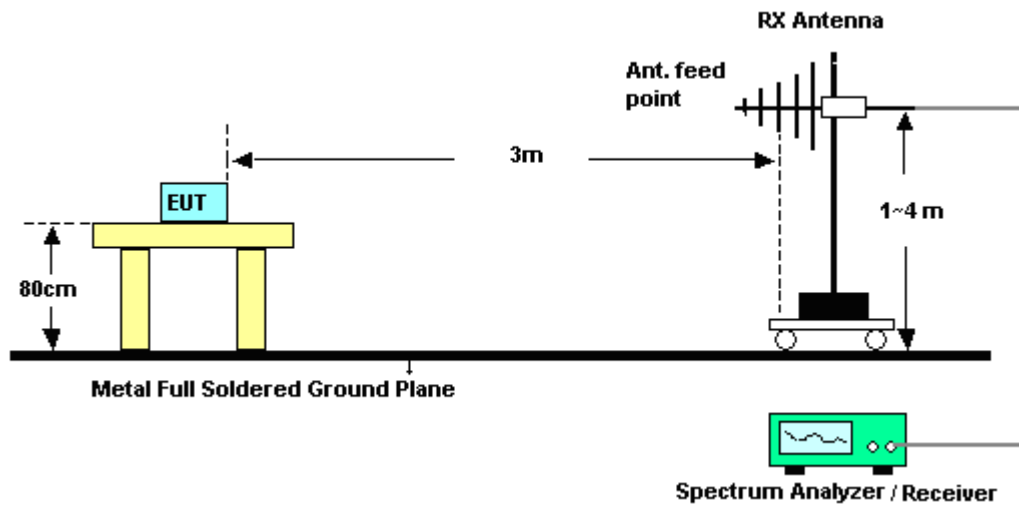


### 3.4.4 Test Setup

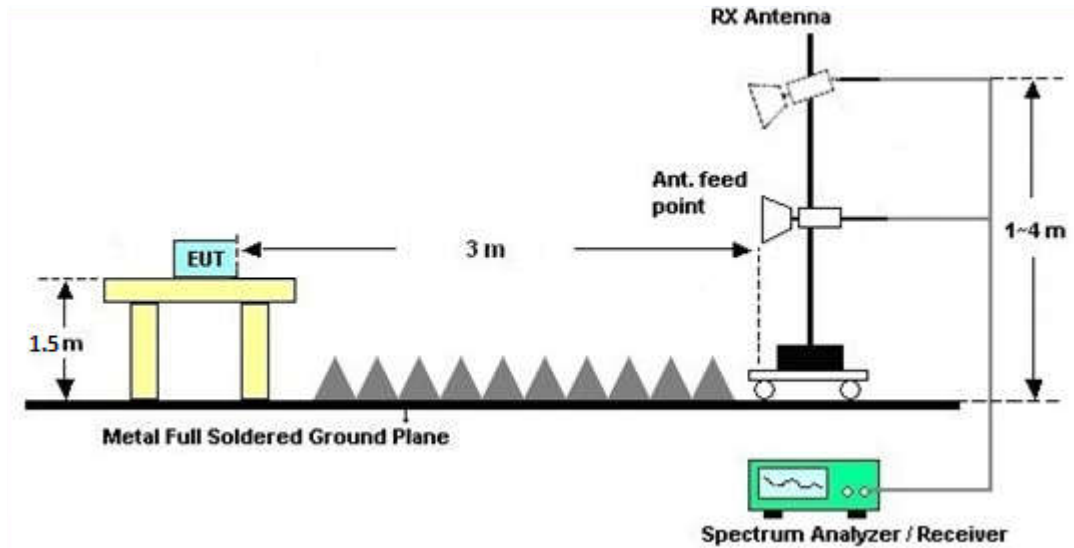
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



### 3.4.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

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

Please refer to Appendix C.

### 3.4.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix C.



### 3.5. AC Conducted Emission Measurement

#### 3.5.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency.

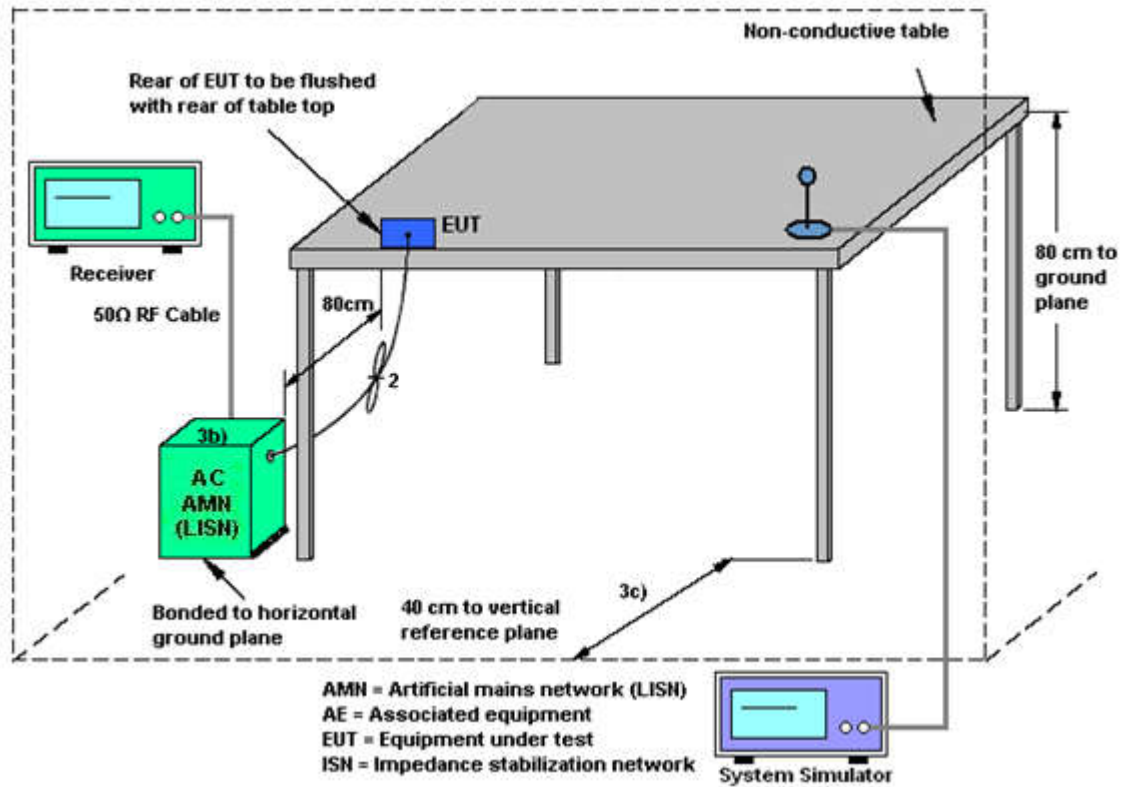
#### 3.5.2 Measuring Instruments

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

#### 3.5.3 Test Procedures

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

### 3.5.4 Test Setup



### 3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



## **3.6. Automatically Discontinue Transmission**

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

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

### **3.6.2 Measuring Instruments**

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

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

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



## **3.7. Antenna Requirements**

### **3.7.1 Standard Applicable**

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

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

An embedded-in antenna design is used.

### **3.7.3 Antenna Gain**

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



## 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Aug. 08, 2017	Jun. 23, 2018	Aug. 07, 2018	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 18, 2018	Jun. 23, 2018	Jan. 17, 2019	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 18, 2018	Jun. 23, 2018	Jan. 17, 2019	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	-40~+150°C	Oct. 12, 2017	Jun. 23, 2018	Oct. 11, 2018	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz; Max 30dBm	Aug. 08, 2017	Jun. 23, 2018~ Jun. 24, 2018	Aug. 07, 2018	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150208	10Hz-44G, MAX 30dB	Apr.17, 2018	Jun. 23, 2018~ Jun. 24, 2018	Apr. 16, 2019	Radiation (03CH02-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 22, 2017	Jun. 23, 2018~ Jun. 24, 2018	Oct.21, 2018	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	23182	30MHz-2GHz	Jan. 29, 2018	Jun. 23, 2018~ Jun. 24, 2018	Jan. 28, 2019	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Oct. 21, 2017	Jun. 23, 2018~ Jun. 24, 2018	Oct. 20, 2018	Radiation (03CH02-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Feb. 07, 2018	Jun. 23, 2018~ Jun. 24, 2018	Feb. 06, 2019	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Aug. 07, 2017	Jun. 23, 2018~ Jun. 24, 2018	Aug. 06, 2018	Radiation (03CH02-KS)
high gain Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	2025788	100MHz-18GHz	Apr.17, 2018	Jun. 23, 2018~ Jun. 24, 2018	Apr.16, 2019	Radiation (03CH02-KS)
Amplifier	Agilent	8449B	3008A02384	1GHz~26.5GHz	Oct. 12, 2017	Jun. 23, 2018~ Jun. 24, 2018	Oct. 11, 2018	Radiation (03CH02-KS)
Amplifier	MITEQ	TTA1840-35-HG	1887435	18~40GHz	Oct. 12, 2017	Jun. 23, 2018~ Jun. 24, 2018	Oct. 11, 2018	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Jun. 23, 2018~ Jun. 24, 2018	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Jun. 23, 2018~ Jun. 24, 2018	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Jun. 23, 2018~ Jun. 24, 2018	NCR	Radiation (03CH02-KS)
EMI Receiver	R&S	ESC17	100768	9kHz~7GHz;	Apr. 19, 2018	Jun. 28, 2018	Apr. 18, 2019	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 13, 2017	Jun. 28, 2018	Oct. 12, 2018	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 13, 2017	Jun. 28, 2018	Oct. 12, 2018	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000811	AC 0V~300V, 45Hz~1000Hz	Oct. 12, 2017	Jun. 28, 2018	Oct. 11, 2018	Conduction (CO01-KS)

NCR: No Calibration Required



## 5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.9dB
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.2dB
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### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.2dB
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### Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.7dB
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## **Appendix A. Conducted Test Results**

Test Engineer:	Silent Hai	Temperature:	21~25	°C
Test Date:	2018/6/23	Relative Humidity:	51~55	%

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

Band I										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)	IC 99% Bandwidth Power Limit (dBm)	IC 99% Bandwidth EIRP Limit (dBm)		
11a	6Mbps	1	36	5180	23.58	39.96	-	23.01		
11a	6Mbps	1	44	5220	24.43	40.11	-	23.01		
11a	6Mbps	1	48	5240	18.98	39.26	-	23.01		
HT20	MCS0	1	36	5180	25.82	42.31	-	23.01		
HT20	MCS0	1	44	5220	22.78	42.01	-	23.01		
HT20	MCS0	1	48	5240	19.68	39.21	-	23.01		
HT40	MCS0	1	38	5190	41.46	77.05	-	23.01		
HT40	MCS0	1	46	5230	40.56	60.96	-	23.01		

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

FCC Band I										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)		Pass/Fail
11a	6Mbps	1	36	5180	0.60	14.38	24.00	-8.50		Pass
11a	6Mbps	1	44	5220	0.60	14.75	24.00	-8.50		Pass
11a	6Mbps	1	48	5240	0.60	13.37	24.00	-8.50		Pass
HT20	MCS0	1	36	5180	0.62	14.37	24.00	-8.50		Pass
HT20	MCS0	1	44	5220	0.62	14.30	24.00	-8.50		Pass
HT20	MCS0	1	48	5240	0.62	12.98	24.00	-8.50		Pass
HT40	MCS0	1	38	5190	0.67	10.72	24.00	-8.50		Pass
HT40	MCS0	1	46	5230	0.67	14.91	24.00	-8.50		Pass

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

FCC Band I										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm/MHz)	DG (dBi)	-	Pass/Fail
11a	6Mbps	1	36	5180	0.60	4.11	11.00	-8.50		Pass
11a	6Mbps	1	44	5220	0.60	3.49	11.00	-8.50		Pass
11a	6Mbps	1	48	5240	0.60	3.67	11.00	-8.50		Pass
HT20	MCS0	1	36	5180	0.62	3.45	11.00	-8.50		Pass
HT20	MCS0	1	44	5220	0.62	2.87	11.00	-8.50		Pass
HT20	MCS0	1	48	5240	0.62	3.12	11.00	-8.50		Pass
HT40	MCS0	1	38	5190	0.67	0.31	11.00	-8.50		Pass
HT40	MCS0	1	46	5230	0.67	0.41	11.00	-8.50		Pass

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

Band II										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)	IC 99% Bandwidth Power Limit (dBm)	IC 99% Bandwidth EIRP Limit (dBm)	FCC 26dB Bandwidth Power Limit (dBm)	Note
11a	6M bps	1	52	5260	19.63	30.87	23.93	29.93	23.98	
11a	6M bps	1	60	5300	20.13	29.12	23.98	30.00	23.98	
11a	6M bps	1	64	5320	19.58	28.92	23.92	29.92	23.98	
HT20	MCS 0	1	52	5260	19.98	27.72	23.98	30.00	23.98	
HT20	MCS 0	1	60	5300	20.13	28.27	23.98	30.00	23.98	
HT20	MCS 0	1	64	5320	19.93	26.97	23.98	30.00	23.98	
HT40	MCS 0	1	54	5270	37.16	49.27	23.98	30.00	23.98	
HT40	MCS 0	1	62	5310	37.66	50.17	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	0.60	13.36	23.98	-8.50	26.99	Pass
11a	6M bps	1	60	5300	0.60	13.26	23.98	-8.50	26.99	Pass
11a	6M bps	1	64	5320	0.60	13.54	23.98	-8.50	26.99	Pass
HT20	MCS 0	1	52	5260	0.62	12.96	23.98	-8.50	26.99	Pass
HT20	MCS 0	1	60	5300	0.62	12.75	23.98	-8.50	26.99	Pass
HT20	MCS 0	1	64	5320	0.62	12.98	23.98	-8.50	26.99	Pass
HT40	MCS 0	1	54	5270	0.67	12.84	23.98	-8.50	26.99	Pass
HT40	MCS 0	1	62	5310	0.67	10.08	23.98	-8.50	26.99	Pass

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

Band II										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm/MHz)	DG (dBi)		Pass/Fail
11a	6M bps	1	52	5260	0.60	2.38	11.00	-8.50		Pass
11a	6M bps	1	60	5300	0.60	1.81	11.00	-8.50		Pass
11a	6M bps	1	64	5320	0.60	2.38	11.00	-8.50		Pass
HT20	MCS 0	1	52	5260	0.62	1.38	11.00	-8.50		Pass
HT20	MCS 0	1	60	5300	0.62	1.18	11.00	-8.50		Pass
HT20	MCS 0	1	64	5320	0.62	1.50	11.00	-8.50		Pass
HT40	MCS 0	1	54	5270	0.67	-1.66	11.00	-8.50		Pass
HT40	MCS 0	1	62	5310	0.67	-1.08	11.00	-8.50		Pass



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

Band III										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)	IC 99% Bandwidth Power Limit (dBm)	IC 99% Bandwidth EIRP Limit (dBm)	FCC 26dB Bandwidth Power Limit (dBm)	Note
11a	6M bps	1	100	5500	21.33	36.61	23.98	30.00	23.98	
11a	6M bps	1	116	5580	21.53	36.96	23.98	30.00	23.98	
11a	6M bps	1	140	5700	20.13	31.92	23.98	30.00	23.98	
11a	6M bps	1	144	5720	20.03	33.12	23.98	30.00	23.98	
HT20	MCS 0	1	100	5500	21.18	38.41	23.98	30.00	23.98	
HT20	MCS 0	1	116	5580	21.03	40.76	23.98	30.00	23.98	
HT20	MCS 0	1	140	5700	20.18	29.22	23.98	30.00	23.98	
HT20	MCS 0	1	144	5720	20.08	30.17	23.98	30.00	23.98	
HT40	MCS 0	1	102	5510	37.76	50.98	23.98	30.00	23.98	
HT40	MCS 0	1	110	5550	38.26	48.28	23.98	30.00	23.98	
HT40	MCS 0	1	134	5670	41.26	75.61	23.98	30.00	23.98	
HT40	MCS 0	1	142	5710	37.76	62.04	23.98	30.00	23.98	

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

FCC Band III										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
11a	6M bps	1	100	5500	0.60	13.96	23.98	-8.50	26.99	Pass
11a	6M bps	1	116	5580	0.60	14.67	23.98	-8.50	26.99	Pass
11a	6M bps	1	140	5700	0.60	13.11	23.98	-8.50	26.99	Pass
11a	6Mbps	1	144	5720	0.60	12.86	23.98	-8.50	26.99	Pass
HT20	MCS 0	1	100	5500	0.62	13.47	23.98	-8.50	26.99	Pass
HT20	MCS 0	1	116	5580	0.62	14.29	23.98	-8.50	26.99	Pass
HT20	MCS 0	1	140	5700	0.62	12.66	23.98	-8.50	26.99	Pass
HT20	MCS 0	1	144	5720	0.62	12.36	23.98	-8.50	26.99	Pass
HT40	MCS 0	1	102	5510	0.67	9.72	23.98	-8.50	26.99	Pass
HT40	MCS 0	1	110	5550	0.67	13.13	23.98	-8.50	26.99	Pass
HT40	MCS 0	1	134	5670	0.67	14.33	23.98	-8.50	26.99	Pass
HT40	MCS 0	1	142	5710	0.67	14.39	23.98	-8.50	26.99	Pass

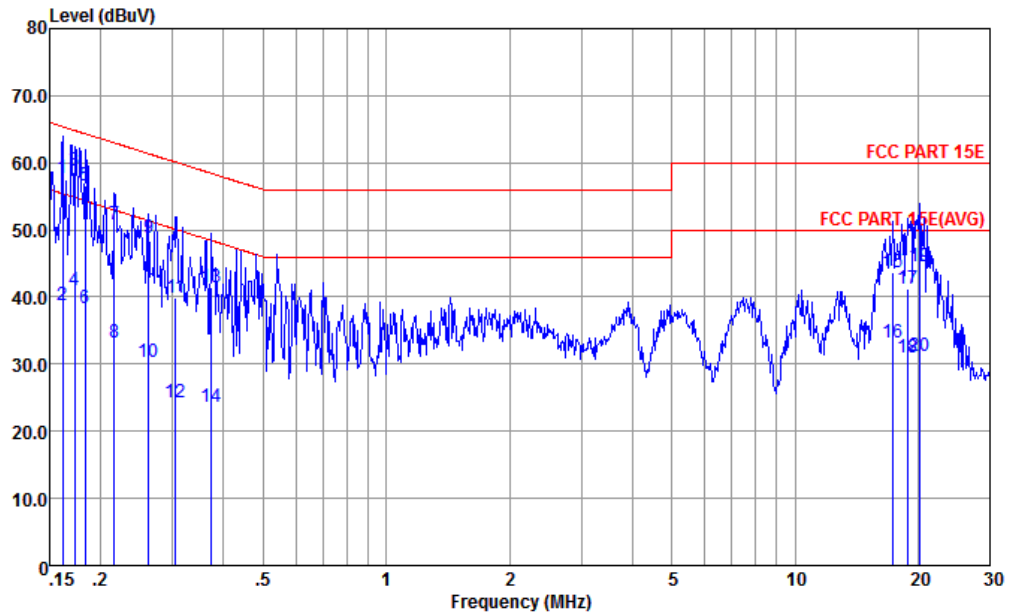
**TEST RESULTS DATA**  
**Power Spectral Density**

Band III										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm/MHz)	DG (dBi)		Pass/Fail
11a	6M bps	1	100	5500	0.60	3.29	11.00	-8.50		Pass
11a	6M bps	1	116	5580	0.60	4.26	11.00	-8.50		Pass
11a	6M bps	1	140	5700	0.60	2.57	11.00	-8.50		Pass
11a	6M bps	1	144	5720	0.60	3.07	11.00	-8.50		Pass
HT20	MCS 0	1	100	5500	0.62	2.38	11.00	-8.50		Pass
HT20	MCS 0	1	116	5580	0.62	3.44	11.00	-8.50		Pass
HT20	MCS 0	1	140	5700	0.62	1.94	11.00	-8.50		Pass
HT20	MCS 0	1	144	5720	0.62	2.05	11.00	-8.50		Pass
HT40	MCS 0	1	102	5510	0.67	-0.95	11.00	-8.50		Pass
HT40	MCS 0	1	110	5550	0.67	-0.21	11.00	-8.50		Pass
HT40	MCS 0	1	134	5670	0.67	0.20	11.00	-8.50		Pass
HT40	MCS 0	1	142	5710	0.67	0.27	11.00	-8.50		Pass



## Appendix B. AC Conducted Emission Test Results

Test Engineer :	Amos Zhang	Temperature :	24.7~24.9°C
		Relative Humidity :	44~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line

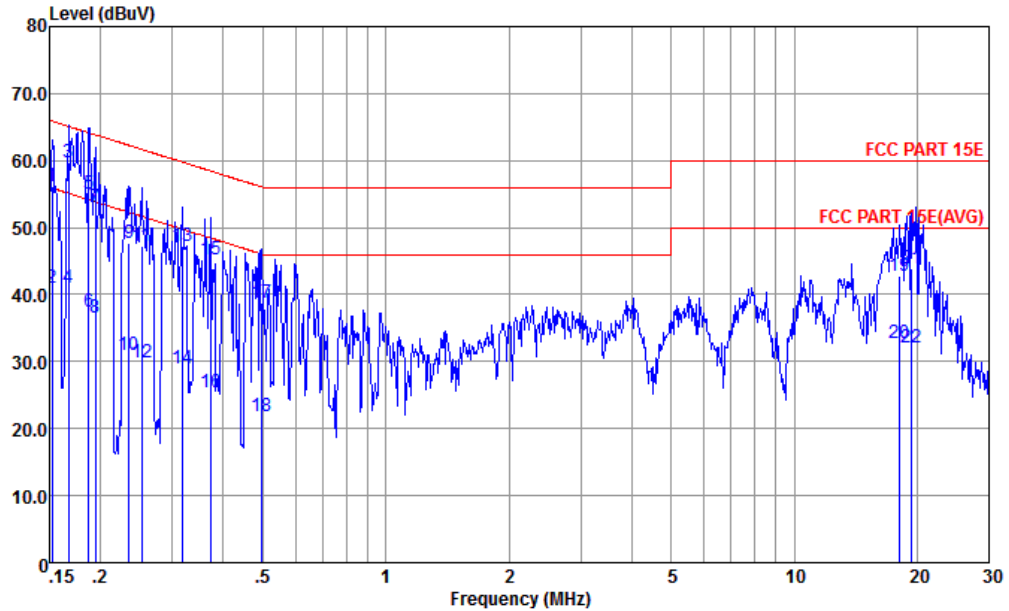


Site : CO01-KS  
 Condition : FCC PART 15E LISN-L-171013-060103 LINE  
 Project : (FR) 860402  
 mode : Mode 1  
 : 355542090025752/355542090025760 #13

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.162	57.65	-7.73	65.38	46.90	0.17	10.58	QP
2	0.162	38.85	-16.53	55.38	28.10	0.17	10.58	Average
3 *	0.173	58.92	-5.89	64.81	48.20	0.18	10.54	QP
4	0.173	41.02	-13.79	54.81	30.30	0.18	10.54	Average
5	0.183	56.50	-7.83	64.33	45.80	0.19	10.51	QP
6	0.183	38.30	-16.03	54.33	27.60	0.19	10.51	Average
7	0.216	50.86	-12.10	62.96	40.20	0.21	10.45	QP
8	0.216	33.26	-19.70	52.96	22.60	0.21	10.45	Average
9	0.262	48.75	-12.63	61.38	38.09	0.22	10.44	QP
10	0.262	30.25	-21.13	51.38	19.59	0.22	10.44	Average
11	0.305	39.95	-20.15	60.10	29.29	0.23	10.43	QP
12	0.305	24.25	-25.85	50.10	13.59	0.23	10.43	Average
13	0.373	41.55	-16.88	58.43	30.90	0.24	10.41	QP
14	0.373	23.55	-24.88	48.43	12.90	0.24	10.41	Average
15	17.291	43.57	-16.43	60.00	32.91	0.22	10.44	QP
16	17.291	33.27	-16.73	50.00	22.61	0.22	10.44	Average
17	18.920	41.26	-18.74	60.00	30.59	0.20	10.47	QP
18	18.920	30.96	-19.04	50.00	20.29	0.20	10.47	Average
19	20.162	44.57	-15.43	60.00	33.90	0.19	10.48	QP
20	20.162	31.27	-18.73	50.00	20.60	0.19	10.48	Average



Test Engineer :	Amos Zhang	Temperature :	24.7~24.9°C
		Relative Humidity :	44~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Site : CO01-KS  
 Condition : FCC PART 15E LISN-N-171013-060103 NEUTRAL  
 Project : (FR) 860402  
 mode : Mode 1  
 : 355542090025752/355542090025760 #13

	Freq	Level	Over Limit	Limit	Read	LISN	Cable	
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	Remark
1	0.152	56.09	-9.78	65.87	45.20	0.28	10.61	QP
2	0.152	41.09	-14.78	55.87	30.20	0.28	10.61	Average
3 *	0.167	59.74	-5.38	65.12	48.90	0.28	10.56	QP
4	0.167	41.04	-14.08	55.12	30.20	0.28	10.56	Average
5	0.187	54.97	-9.18	64.15	44.20	0.28	10.49	QP
6	0.187	37.37	-16.78	54.15	26.60	0.28	10.49	Average
7	0.194	52.95	-10.89	63.84	42.20	0.28	10.47	QP
8	0.194	36.65	-17.19	53.84	25.90	0.28	10.47	Average
9	0.235	47.63	-14.63	62.26	36.91	0.28	10.44	QP
10	0.235	30.93	-21.33	52.26	20.21	0.28	10.44	Average
11	0.252	47.32	-14.37	61.69	36.60	0.28	10.44	QP
12	0.252	29.92	-21.77	51.69	19.20	0.28	10.44	Average
13	0.317	47.31	-12.49	59.80	36.60	0.29	10.42	QP
14	0.317	28.91	-20.89	49.80	18.20	0.29	10.42	Average
15	0.373	45.20	-13.23	58.43	34.50	0.29	10.41	QP
16	0.373	25.30	-23.13	48.43	14.60	0.29	10.41	Average
17	0.494	38.80	-17.30	56.10	28.20	0.29	10.31	QP
18	0.494	21.80	-24.30	46.10	11.20	0.29	10.31	Average
19	18.135	42.80	-17.20	60.00	32.20	0.14	10.46	QP
20	18.135	32.70	-17.30	50.00	22.10	0.14	10.46	Average
21	19.326	43.79	-16.21	60.00	33.20	0.12	10.47	QP
22	19.326	32.19	-17.81	50.00	21.60	0.12	10.47	Average



# Appendix C. Radiated Spurious Emission

## Band 1 - 5150~5250MHz

### 5150.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 36 5180MHz		5108.8	53.57	-20.43	74	43.42	35.42	7.99	33.26	105	74	P	H
		5149.92	43.75	-10.25	54	33.62	35.39	7.99	33.25	105	74	A	H
	*	5184	96.87	-	-	86.77	35.36	7.99	33.25	105	74	P	H
		5184	88.33	-	-	78.23	35.36	7.99	33.25	105	74	A	H
		5147.36	63.65	-10.35	74	53.52	35.39	7.99	33.25	315	357	P	V
	!	5149.92	50.72	-3.28	54	40.59	35.39	7.99	33.25	315	357	A	V
	*	5186	101.59	-	-	91.49	35.36	7.99	33.25	315	357	P	V
		5186	94.94	-	-	84.84	35.36	7.99	33.25	315	357	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		10360	44.65	-23.65	68.3	60.39	38.47	11.94	66.15	100	360	P	H
CH 36		10360	44.81	-23.49	68.3	60.55	38.47	11.94	66.15	100	360	P	V
5180MHz													
802.11a		10440	45.18	-23.12	68.3	60.67	38.52	12.09	66.1	100	360	P	H
CH 44		10440	46.21	-22.09	68.3	61.7	38.52	12.09	66.1	100	360	P	V
5220MHz													
802.11a		10480	46.08	-22.22	68.3	61.38	38.56	12.21	66.07	100	360	P	H
CH 48		10480	45.38	-22.92	68.3	60.68	38.56	12.21	66.07	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		5148	61.29	-12.71	74	51.16	35.39	7.99	33.25	395	63	P	H
	!	5149.92	49.64	-4.36	54	39.51	35.39	7.99	33.25	395	63	A	H
	*	5174	100.67	-	-	90.57	35.36	7.99	33.25	395	63	P	H
		5174	93.25	-	-	83.15	35.36	7.99	33.25	395	63	A	H
		5149.6	63.41	-10.59	74	53.28	35.39	7.99	33.25	313	347	P	V
	!	5149.76	49.49	-4.51	54	39.36	35.39	7.99	33.25	313	347	A	V
	*	5182	101.13	-	-	91.03	35.36	7.99	33.25	313	347	P	V
		5182	94.14	-	-	84.04	35.36	7.99	33.25	313	347	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)

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 channels 36, 44, and 48 at various frequencies (10360, 10440, 10480 MHz).



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

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 38 5190MHz		5149.92	61.83	-12.17	74	51.7	35.39	7.99	33.25	394	66	P	H
	!	5149.92	48.85	-5.15	54	38.72	35.39	7.99	33.25	394	66	A	H
	*	5180	94.42	-	-	84.32	35.36	7.99	33.25	394	66	P	H
		5180	87.29	-	-	77.19	35.36	7.99	33.25	394	66	A	H
		5388.12	52.79	-21.21	74	42.52	35.2	8.28	33.21	394	66	P	H
		5352.66	41.72	-12.28	54	31.49	35.23	8.22	33.22	394	66	A	H
		5148.48	64.41	-9.59	74	54.28	35.39	7.99	33.25	316	344	P	V
	!	5150	50.58	-3.42	54	40.45	35.39	7.99	33.25	316	344	A	V
	*	5202	95.37	-	-	85.28	35.35	7.99	33.25	316	344	P	V
		5202	88.15	-	-	78.06	35.35	7.99	33.25	316	344	A	V
		5381.82	51.64	-22.36	74	41.37	35.2	8.28	33.21	316	344	P	V
		5373.54	41.72	-12.28	54	31.47	35.22	8.25	33.22	316	344	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 test results for 10380MHz and 10460MHz channels.



Band 2 - 5250~5350MHz
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 test data for 802.11a CH 64 at 5320MHz and a Remark section.



Band 2 5250~5350MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 52 5260MHz		10520	45.64	-22.66	68.3	60.82	38.58	12.28	66.04	100	360	P	H
		10520	45.44	-22.86	68.3	60.62	38.58	12.28	66.04	100	360	P	V
802.11a CH 60 5300MHz		10600	45.34	-28.66	74	60.21	38.64	12.47	65.98	100	360	P	H
		10600	44.93	-29.07	74	59.8	38.64	12.47	65.98	100	360	P	V
802.11a CH 64 5320MHz		10640	45.89	-28.11	74	60.63	38.67	12.55	65.96	100	360	P	H
		10640	46.17	-27.83	74	60.91	38.67	12.55	65.96	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

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 HT20 CH 64 5320MHz and a Remark section.



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

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20		10520	45.1	-23.2	68.3	60.28	38.58	12.28	66.04	100	360	P	H
CH 52		10520	45.91	-22.39	68.3	61.09	38.58	12.28	66.04	100	360	P	V
5260MHz													
802.11n HT20		10600	44.6	-29.40	74	59.47	38.64	12.47	65.98	100	360	P	H
CH 60		10600	45.38	-28.62	74	60.25	38.64	12.47	65.98	100	360	P	V
5300MHz													
802.11n HT20		10640	45.08	-28.92	74	59.82	38.67	12.55	65.96	100	360	P	H
CH 64		10640	44.83	-29.17	74	59.57	38.67	12.55	65.96	100	360	P	V
5320MHz													
<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 62 5310MHz		5102.08	53.51	-20.49	74	43.35	35.43	7.99	33.26	100	66	P	H
		5101.92	43.37	-10.63	54	33.21	35.43	7.99	33.26	100	66	A	H
	*	5306	93.83	-	-	83.64	35.27	8.15	33.23	100	66	P	H
		5306	86.51	-	-	76.32	35.27	8.15	33.23	100	66	A	H
		5351.6	62.5	-11.5	74	52.27	35.23	8.22	33.22	100	66	P	H
	!	5350.2	48.37	-5.63	54	38.14	35.23	8.22	33.22	100	66	A	H
		5130.72	52.98	-21.02	74	42.84	35.41	7.99	33.26	337	25	P	V
		5104.16	43.23	-10.77	54	33.07	35.43	7.99	33.26	337	25	A	V
	*	5320	94.24	-	-	84.04	35.26	8.17	33.23	337	25	P	V
		5320	87.13	-	-	76.93	35.26	8.17	33.23	337	25	A	V
		5350.8	62.27	-11.73	74	52.04	35.23	8.22	33.22	337	25	P	V
	!	5350.2	49.54	-4.46	54	39.31	35.23	8.22	33.22	337	25	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)**

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		10540	45.84	-22.46	68.3	60.95	38.6	12.32	66.03	100	360	P	H
CH 54 5270MHz		10540	46.47	-21.83	68.3	61.58	38.6	12.32	66.03	100	360	P	V
802.11n HT40		10620	46.05	-27.95	74	60.85	38.66	12.51	65.97	100	360	P	H
CH 62 5310MHz		10620	45.01	-28.99	74	59.81	38.66	12.51	65.97	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 802.11a (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11a CH 100 5500MHz		5448.88	52.49	-21.51	74	42.17	35.15	8.37	33.2	387	36	P	H
		5462.48	51.44	-16.86	68.3	41.12	35.15	8.37	33.2	387	36	P	H
		5438.64	42.42	-11.58	54	32.13	35.16	8.34	33.21	387	36	A	H
	*	5506	93.36	-	-	83.02	35.11	8.43	33.2	387	36	P	H
		5506	85.76	-	-	75.42	35.11	8.43	33.2	387	36	A	H
		5444.88	51.74	-22.26	74	41.45	35.16	8.34	33.21	348	32	P	V
		5467.92	51.85	-16.45	68.3	41.52	35.14	8.39	33.2	348	32	P	V
		5447.6	42.62	-11.38	54	32.3	35.15	8.37	33.2	348	32	A	V
	*	5506	94.91	-	-	84.57	35.11	8.43	33.2	348	32	P	V
	5506	87.23	-	-	76.89	35.11	8.43	33.2	348	32	A	V	
802.11a CH 140 5700MHz	*	5708	89.75	-	-	79.4	34.94	8.58	33.17	345	26	P	H
		5708	82.2	-	-	71.85	34.94	8.58	33.17	345	26	A	H
		5742.04	53.35	-14.95	68.3	43.02	34.91	8.59	33.17	345	26	P	H
	*	5698	93.6	-	-	83.25	34.95	8.57	33.17	121	8	P	V
		5698	85.15	-	-	74.8	34.95	8.57	33.17	121	8	A	V
	5726.92	54.18	-14.12	68.3	43.85	34.92	8.58	33.17	121	8	P	V	
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**Band 3 - 5470~5725MHz**  
**WIFI 802.11a (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 100		11000	45.65	-28.35	74	59.08	38.93	13.34	65.7	100	360	P	H
5500MHz		11000	46.12	-27.88	74	59.55	38.93	13.34	65.7	100	360	P	V
802.11a CH 116		11160	47.82	-26.18	74	61.16	39.05	13.19	65.58	100	360	P	H
5580MHz		11160	47.44	-26.56	74	60.78	39.05	13.19	65.58	100	360	P	V
802.11a CH 140		11400	45.82	-28.18	74	59.01	39.23	12.99	65.41	100	360	P	H
5700MHz		11400	46.84	-27.16	74	60.03	39.23	12.99	65.41	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 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		5458.48	55.48	-18.52	74	45.16	35.15	8.37	33.2	394	16	P	H
		5467.12	61.94	-6.36	68.3	51.61	35.14	8.39	33.2	394	16	P	H
		5459.92	44.9	-9.1	54	34.58	35.15	8.37	33.2	394	16	A	H
	*	5496	98.25	-	-	87.92	35.12	8.41	33.2	394	16	P	H
		5496	90.75	-	-	80.42	35.12	8.41	33.2	394	16	A	H
		5458.96	54.35	-19.65	74	44.03	35.15	8.37	33.2	388	359	P	V
	!	5469.84	63.76	-4.54	68.3	53.43	35.14	8.39	33.2	388	359	P	V
		5459.44	44.84	-9.16	54	34.52	35.15	8.37	33.2	388	359	A	V
	*	5496	98.14	-	-	87.81	35.12	8.41	33.2	388	359	P	V
	5496	90.62	-	-	80.29	35.12	8.41	33.2	388	359	A	V	
802.11n HT20 CH 140 5700MHz	*	5692	93.63	-	-	83.28	34.95	8.57	33.17	324	51	P	H
		5692	85.46	-	-	75.11	34.95	8.57	33.17	324	51	A	H
		5725.16	56.27	-12.03	68.3	45.94	34.92	8.58	33.17	324	51	P	H
	*	5694	96.84	-	-	86.49	34.95	8.57	33.17	107	360	P	V
		5694	88.89	-	-	78.54	34.95	8.57	33.17	107	360	A	V
	5725.64	60.53	-7.77	68.3	50.2	34.92	8.58	33.17	107	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 HT20 (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20		11000	47.34	-26.66	74	60.77	38.93	13.34	65.7	100	360	P	H
CH 100		11000	46.12	-27.88	74	59.55	38.93	13.34	65.7	100	360	P	V
5500MHz													
802.11n HT20		11160	48.44	-25.56	74	61.78	39.05	13.19	65.58	100	360	P	H
CH 116		11160	48.63	-25.37	74	61.97	39.05	13.19	65.58	100	360	P	V
5580MHz													
802.11n HT20		11400	47.62	-26.38	74	60.81	39.23	12.99	65.41	100	360	P	H
CH 140		11400	47.56	-26.44	74	60.75	39.23	12.99	65.41	100	360	P	V
5700MHz													
<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		5456.24	55.27	-18.73	74	44.95	35.15	8.37	33.2	242	19	P	H
		5469.2	61.78	-6.52	68.3	51.45	35.14	8.39	33.2	242	19	P	H
		5460	43.75	-10.25	54	33.43	35.15	8.37	33.2	242	19	A	H
	*	5498	92.36	-	-	82.02	35.11	8.43	33.2	242	19	P	H
		5498	85.54	-	-	75.2	35.11	8.43	33.2	242	19	A	H
		5728.28	52.29	-16.01	68.3	41.96	34.92	8.58	33.17	242	19	P	H
	!	5459.12	55.26	-18.74	74	44.94	35.15	8.37	33.2	395	14	P	V
		5466.48	65.02	-3.28	68.3	54.69	35.14	8.39	33.2	395	14	P	V
	*	5459.6	44.01	-9.99	54	33.69	35.15	8.37	33.2	395	14	A	V
		5496	92.8	-	-	82.47	35.12	8.41	33.2	395	14	P	V
		5496	85.59	-	-	75.26	35.12	8.41	33.2	395	14	A	V
		5763.88	52.4	-15.9	68.3	42.09	34.89	8.59	33.17	395	14	P	V
802.11n HT40 CH 134 5670MHz		5364.56	52.31	-21.69	74	42.06	35.22	8.25	33.22	302	16	P	H
		5467.44	51.33	-16.97	68.3	41	35.14	8.39	33.2	302	16	P	H
		5453.36	42	-12	54	31.68	35.15	8.37	33.2	302	16	A	H
	*	5660	92.94	-	-	82.56	34.98	8.57	33.17	302	16	P	H
		5660	85.48	-	-	75.1	34.98	8.57	33.17	302	16	A	H
		5726.44	56.28	-12.02	68.3	45.95	34.92	8.58	33.17	302	16	P	H
		5458.32	52.64	-21.36	74	42.32	35.15	8.37	33.2	333	5	P	V
		5465.2	51.87	-16.43	68.3	41.54	35.14	8.39	33.2	333	5	P	V
		5457.52	42.03	-11.97	54	31.71	35.15	8.37	33.2	333	5	A	V
	*	5676	94.53	-	-	84.16	34.97	8.57	33.17	333	5	P	V
	5676	87.11	-	-	76.74	34.97	8.57	33.17	333	5	A	V	
	5725.32	58.57	-9.73	68.3	48.24	34.92	8.58	33.17	333	5	P	V	
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**Band 3 - 5470~5725MHz**  
**WIFI 802.11n HT40 (Harmonic @ 3m)**

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		11020	47.71	-26.29	74	61.14	38.94	13.32	65.69	100	360	P	H
5510MHz		11020	46.7	-27.3	74	60.13	38.94	13.32	65.69	100	360	P	V
802.11n HT40 CH 110		11100	47.25	-26.75	74	60.63	39	13.25	65.63	100	360	P	H
5550MHz		11100	47.95	-26.05	74	61.33	39	13.25	65.63	100	360	P	V
802.11n HT40 CH 134		11340	46.62	-27.38	74	59.86	39.18	13.04	65.46	100	360	P	H
5670MHz		11340	46.89	-27.11	74	60.13	39.18	13.04	65.46	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 - Straddle Channel
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 test data for 802.11a CH 144 and a Remark section.





Band 3 - Straddle Channel
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 data for 802.11a and CH 144 5720MHz, and a Remark section.



Band 3 - Straddle Channel
WIFI 802.11n HT20 (Band Edge @ 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 802.11n HT20, CH 144, and 5720MHz. A Remark section follows with two points: 'No other spurious found' and 'All results are PASS against Peak and Average limit line.'



Band 3 - Straddle Channel
WIFI 802.11n HT20 (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 data for 802.11n HT20 CH 144 and a Remark section.



Band 3 - Straddle Channel
WIFI 802.11n HT40 (Band Edge @ 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 802.11n HT40 and CH 142 5710MHz, and a Remark section.



Band 3 - Straddle Channel
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). It contains two rows of test data and a Remark section.



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	30.38	-9.62	40	35.71	25.2	0.57	31.1	100	269	P	H
		101.78	23.4	-20.1	43.5	36.92	16.1	1.09	30.71			P	H
		161.92	25.02	-18.48	43.5	38.4	16.18	1.39	30.95			P	H
		626.55	28.75	-17.25	46	31.16	25.81	2.8	31.02			P	H
		801.15	30.96	-15.04	46	30.2	28.31	3.16	30.71			P	H
		901.06	31.28	-14.72	46	29.94	29.01	3.43	31.1			P	H
		32.91	35.59	-4.41	40	42.47	23.55	0.61	31.04	200	136	P	V
		101.78	20.58	-22.92	43.5	34.1	16.1	1.09	30.71			P	V
		163.86	22.16	-21.34	43.5	35.67	16.05	1.39	30.95			P	V
		209.45	21.32	-22.18	43.5	35.79	15.1	1.55	31.12			P	V
		255.04	20.71	-25.29	46	30.82	19.38	1.74	31.23			P	V
		586.78	26.65	-19.35	46	30.11	25.36	2.68	31.5			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>not under limit 6dB</b> .
P/A	<b>Peak</b> or <b>Average</b>
H/V	<b>Horizontal</b> or <b>Vertical</b>



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

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

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

**For Peak Limit @ 2390MHz:**

- Level(dBμV/m)  
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)  
= 55.45 (dBμV/m)
- Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 55.45(dBμV/m) – 74(dBμV/m)  
= -18.55(dB)

**For Average Limit @ 2390MHz:**

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

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

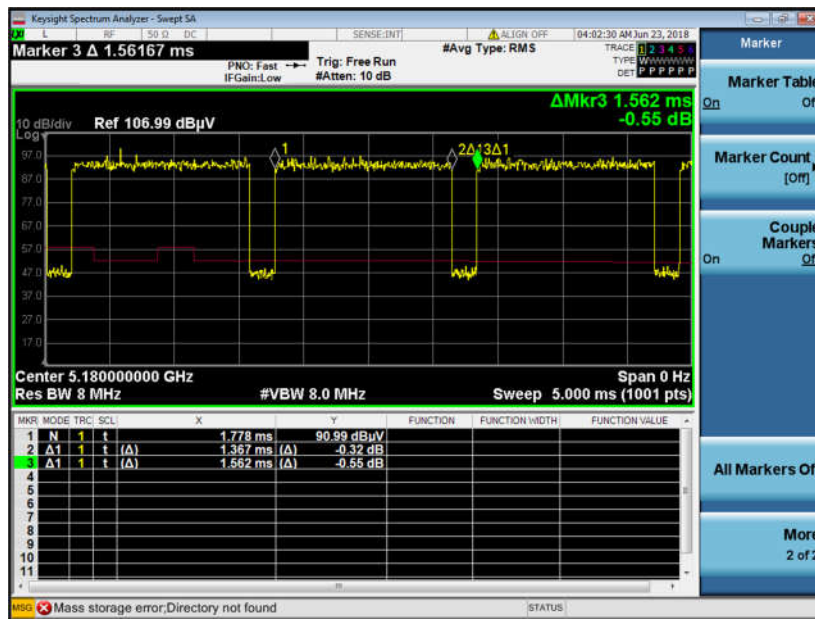




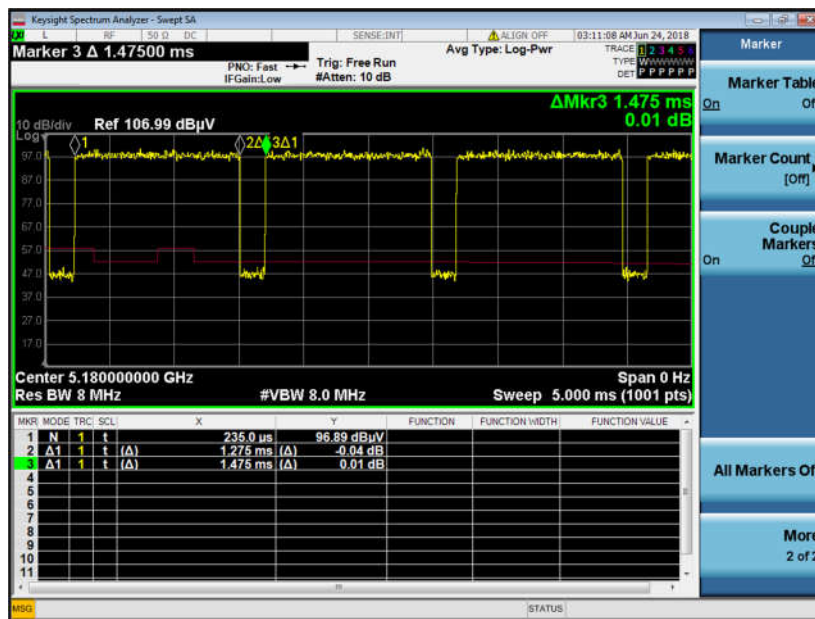
## Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	87.52	1.367	0.732	0.75kHz
802.11n HT20	86.44	1.275	0.784	0.82kHz
802.11n HT40	85.66	1.225	0.816	0.82kHz

802.11a



802.11n HT20





802.11n HT40

