

**Guangdong Meijiaxin Innovative Technology Co., Ltd.**

# **RF TEST REPORT**

**Report Type:**

FCC Part 15.407 RF report

**Model:**

B7

**REPORT NUMBER:**

200602834SHA-002

**ISSUE DATE:**

August 31, 2020

**DOCUMENT CONTROL NUMBER:**

TTRF15.407\_V1 © 2018 Intertek





Total Quality. Assured.

## TEST REPORT

Intertek Testing Services Shanghai  
Building No.86, 1198 Qinzhou Road (North)  
Caohejing Development Zone  
Shanghai 200233, China

Telephone: 86 21 6127 8200

[www.intertek.com](http://www.intertek.com)

Report no: 200602834SHA-002

**Applicant:** Guangdong Meijiaxin Innovative Technology Co., Ltd.

Xingye South Road, Laimei Industrial Park, Chenghai, Shantou,  
Guangdong, China

**Manufacturer:** Guangdong Meijiaxin Innovative Technology Co., Ltd.

Xingye South Road, Laimei Industrial Park, Chenghai, Shantou,  
Guangdong, China

**FCC ID:** 2AHV3KK21

### SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:

**47CFR Part 15 (2019):** Radio Frequency Devices (Subpart E)

**ANSI C63.10 (2013):** American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

**PREPARED BY:**

Project Engineer  
Wade Zhang

**REVIEWED BY:**

Reviewer  
Daniel Zhao

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

## Content

Revision History .....	4
Measurement result summary .....	5
1 GENERAL INFORMATION .....	6
1.1 <i>Description of Equipment Under Test (EUT)</i> .....	6
1.2 <i>Technical Specification</i> .....	6
1.3 <i>Description of Test Facility</i> .....	7
2 TEST SPECIFICATIONS .....	8
2.1 <i>Standards or specification</i> .....	8
2.2 <i>Mode of operation during the test</i> .....	8
2.3 <i>Test peripherals list</i> .....	9
2.4 <i>Test environment condition</i> :.....	9
2.5 <i>Instrument list</i> .....	10
2.6 <i>Measurement uncertainty</i> .....	11
3 26 dB Bandwidth.....	12
3.1 <i>Limit</i> .....	12
3.2 <i>Measurement Procedure</i> .....	12
3.3 <i>Test Configuration</i> .....	13
3.4 <i>The results of 26 dB Bandwidth</i> .....	13
4 Maximum conducted output power and e.i.r.p.....	15
4.1 <i>Limit</i> .....	15
4.2 <i>Measurement Procedure</i> .....	16
4.3 <i>Test Configuration</i> .....	16
4.4 <i>Test Results of Maximum conducted output power and e.i.r.p.</i> .....	16
5 Power spectrum density .....	19
5.1 <i>Limit</i> .....	19
5.2 <i>Measurement Procedure</i> .....	20
5.3 <i>Test Configuration</i> .....	21
5.4 <i>Test Results of Power spectrum density</i> .....	21
6 Radiated Emissions .....	23
6.1 <i>Limit</i> .....	23
6.2 <i>Measurement Procedure</i> .....	24
6.3 <i>Test Configuration</i> .....	25
6.4 <i>Test Results of Radiated Emissions</i> .....	26
7 Antenna requirement .....	32
Appendix I: Photograph of test setup .....	33
Appendix II: Photograph of equipment under test .....	33

## Revision History

Report No.	Version	Description	Issued Date
200602834SHA-002	Rev. 01	Initial issue of report	August 31, 2020

## Measurement result summary

TEST ITEM	FCC REFERANCE	RESULT
26 dB Bandwidth & 99% Occupied Bandwidth	15.407(a)	Pass
Minimum 6dB Bandwidth	15.407(e)	N/A(See note1)
Maximum Conducted Output Power	15.407(a)	Pass
Power spectral density	15.407(a)	Pass
Radiated emission	15.407(b) 15.205 15.209	Pass
Power line conducted emission	15.407(b) 15.207	NA (See note1,4)
Antenna requirement	15.203	Pass

*Notes:*

1: NA =Not Applicable

2. *Determination of the test conclusion is based on IEC Guide 115 in consideration of measurement uncertainty.*

3. *Additions, Deviations and Exclusions from Standards: None.*

4. The battery needs to be removed from the EUT when charging, so there is no transmitting when charging

## 1 GENERAL INFORMATION

### 1.1 Description of Equipment Under Test (EUT)

Product name:	Quadcopter
Type/Model:	B7
Trade Mark	
Add Model:	V1,V2,V3,V4,V5,V6,V7,V8,V9,V10, X103W,X104G,X105W,X106,X107,X108,X109,MEW4-1,MEW4-2,MEW4-3,MEW4-4 B2,B3,B3mini,B4W,B5W,B9,B10,B11,B12EIS,B16,B16Pro,B18,B18EIS. B19, B19EIS, B20EIS. B22pro, BX Pro,B21
Description of EUT:	The EUT is an aircraft with general 2.4G and 5G Wi-Fi (11a/11n) technology.
Rating:	DC 7.6V (Powered by a 7.6V Battery)
Sample received date:	May 14, 2020
Date of test:	May 15, 2020 ~ June 20, 2020

### 1.2 Technical Specification

Frequency Range:	5180MHz
Support Standards:	802.11a, 802.11n (HT20)
Type of Modulation:	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Channel Number:	For 5150MHz band: Channel 36

Antenna	Model	Antenna type	Antenna Gain	Note
1	/	Internal antenna	2.0 dBi	/
2	/	Internal antenna	2.0 dBi	/

Mode	Tx/Rx Function	Beamforming function	CDD function
802.11a	2Tx/2Rx	NO	NO
802.11n	2Tx/2Rx	NO	NO

### 1.3 Description of Test Facility

Name:	Intertek Testing Services Shanghai
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R.China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is recognized, certified, or accredited by these organizations:	CNAS Accreditation Lab Registration No. CNAS
	FCC Accredited Lab Designation Number:
	IC Registration Lab Registration code No.: 2042B-1
	VCCI Registration Lab Registration No.: R-4243, G-845, C-4723, T-2252
	A2LA Accreditation Lab Certificate Number:

Tests were sub-contracted.

Name:	Shenzhen UnionTrust Quality and Technology Co., Ltd.
Address:	16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China
Telephone:	+86 (0) 755 2823 0888
Telefax:	+86 (0) 755 2823 0886

The test facility is recognized, certified, or accredited by these organizations:	A2LA-Lab Certificate No.:4312.01
	Registration No. CNAS L9069

## 2 TEST SPECIFICATIONS

### 2.1 Standards or specification

47CFR Part 15 (2019)

ANSI C63.10 (2013)

KDB 789033 D02 v02r01

### 2.2 Mode of operation during the test

While testing transmitting mode of EUT, the continuously transmission was applied by following software.

Software name	Manufacturer	Version	Supplied by
CommAssistant	-	3.04	Client

The frequency was tested as representatives.

Frequency Band(MHz)	Mode	Frequency (MHz)	Power Setting
5150~5250	802.11a_MIMO	5180	12
	802.11n20_MIMO	5180	12

After this pre-scan with the RF power, the following data rate was chosen to do the test as the worst case.

Frequency (MHz)	Mode	Worst case data rate
5180	802.11a	6Mbps
	802.11n20	MCS0

There have the following test mode:

Radiated test mode:

Mode 1: EUT transmitted signal with internal antenna;

Conducted test mode:

Mode 2: EUT transmitted signal from PCBA RF port connected to SPA directly;

We have verified all test modes and choose the worst mode 1 for radiated test and mode 2 for conducted test as representative to list the results in this report

## 2.3 Test peripherals list

Item No.	Name	Band and Model	Description
1	NoteBook	Lenovo, E450	AC 120V 60Hz

Note: The NoteBook only used for control RF setting, not used during the test.

## 2.4 Test environment condition:

Test items	Temperature	Humidity
26 dB Bandwidth & 99% Occupied Bandwidth	24°C	54% RH
Minimum 6dB Bandwidth		
Maximum Conducted Output Power		
Power spectral density		
Radiated Emissions in restricted frequency	25°C	54% RH

## 2.5 Instrument list

Radiated Emission					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	3M Chamber & Accessory Equipment	ETS-LINDGREN	3M	N/A	Dec. 03, 2021
<input checked="" type="checkbox"/>	Receiver	R&S	ESIB26	UTTL-E026	Nov. 23, 2020
<input checked="" type="checkbox"/>	Loop Antenna	ETS-LINDGREN	6502	UTTL-E013	Nov. 15, 2020
<input checked="" type="checkbox"/>	Broadband Antenna	ETS-LINDGREN	3142E	UTTL-E014	Nov. 15, 2020
<input checked="" type="checkbox"/>	6dB Attenuator	Talent	RA6A5-N-18	UTTL-E057	Nov. 15, 2020
<input checked="" type="checkbox"/>	Preamplifier	HP	8447F	UTTL-E043	Nov. 23, 2020
<input checked="" type="checkbox"/>	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	UTTL-E016	May 17, 2021
<input checked="" type="checkbox"/>	Pre-amplifier	ETS-LINDGREN	118385	UTTL-E017	Jan. 10, 2021
<input checked="" type="checkbox"/>	Double-Ridged Waveguide Horn Antenna	ETS-LINDGREN	3116C-PA	UTTL-E019	Nov. 15, 2020
<input checked="" type="checkbox"/>	Pre-amplifier	ETS-LINDGREN	00118384		
<input checked="" type="checkbox"/>	Multi device Controller	ETS-LINDGREN	7006-001	N/A	N/A

Test software	Manufacturer	Version
e3	Audix	Software Version: 9.160323

RF test					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	EXA Spectrum Analyzer	KEYSIGHT	N9010A	UTTL-E032	Nov. 23, 2020
<input checked="" type="checkbox"/>	USB Wideband Power Sensor	KEYSIGHT	U2021XA	UTTL-E033	Nov. 23, 2020

## 2.6 Measurement uncertainty

The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Measurement uncertainty
Conducted emission 150KHz-30MHz	±2.7 dB
Radiated emission 9KHz-30MHz	±4.7 dB
Radiated emission 30MHz-1GHz	±4.7 dB
Radiated emission 1GHz-18GHz	±5.1 dB
Radiated emission 18GHz-26GHz	±5.2 dB
Radiated emission 26GHz-40GHz	±5.2 dB

### 3 26 dB Bandwidth

**Test result:** Pass

#### 3.1 Limit

None

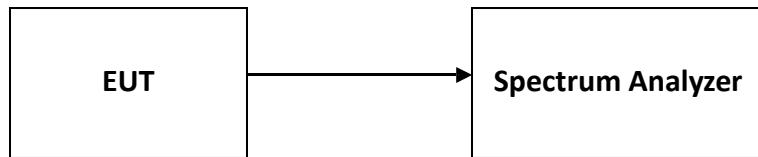
#### 3.2 Measurement Procedure

The EUT was tested according to test procedure of “KDB789033 D02 General UNII Test Procedures New Rules”

##### 26 dB Bandwidth

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the maximum 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%.

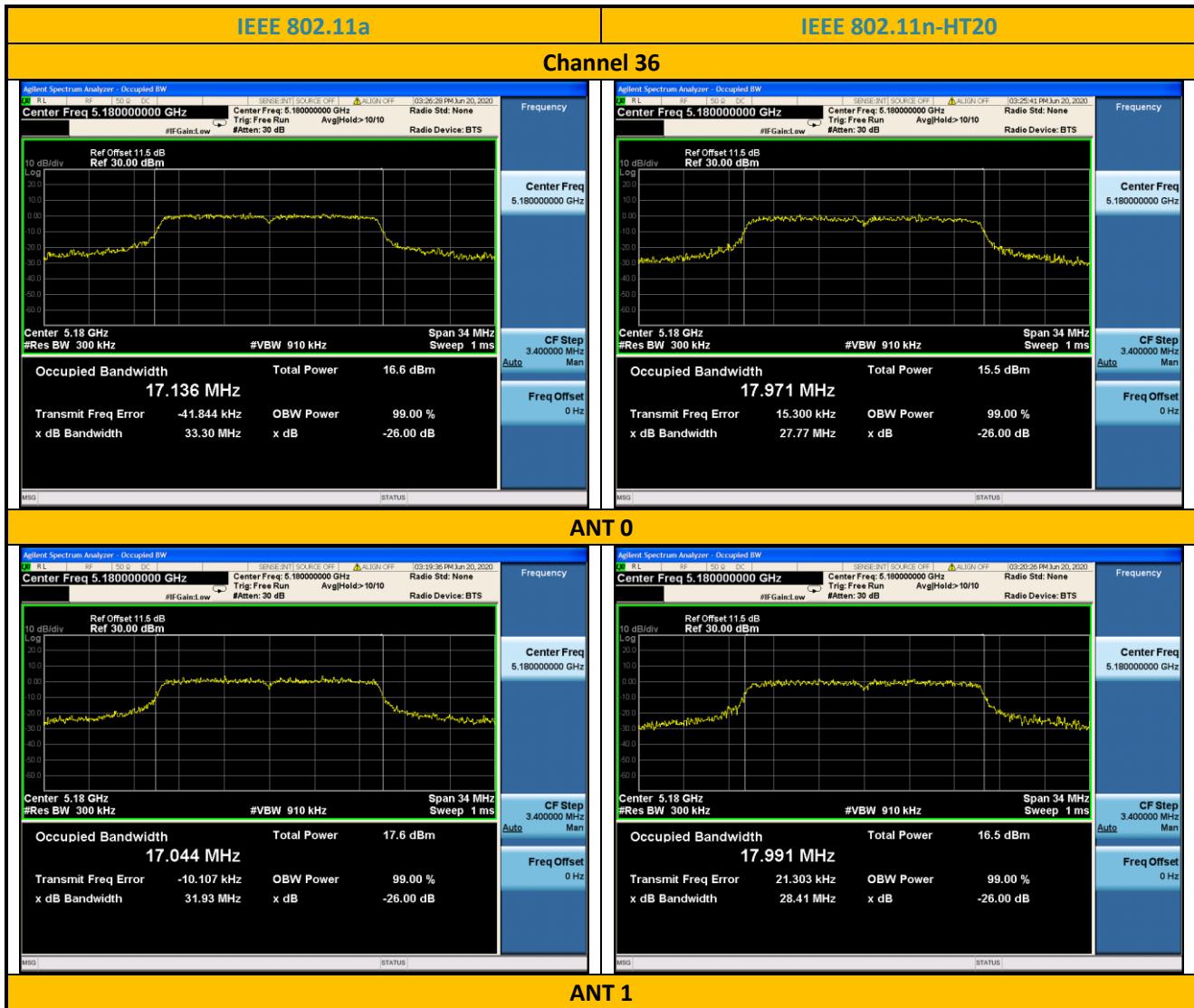
### 3.3 Test Configuration



### 3.4 The results of 26 dB Bandwidth

Test Data

Mode	Channel	26 dB Bandwidth (MHz)	
		ANT 0	ANT 1
IEEE 802.11a	36 (5180)	17.136	17.044
IEEE 802.11n-HT20	36 (5180)	17.971	17.991

**Test Plot**


## 4 Maximum conducted output power and e.i.r.p.

**Test result:** Pass

### 4.1 Limit

- For an outdoor access point operating in the band 5.15-5.25GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1W provided the maximum antenna gain does not exceed 6dBi.  
The maximum e.i.r.p. at any elevation angle above 30 degrees from the horizon must not exceed 125mW (21 dBm).
- For an indoor access point operating in the band 5.15-5.25GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6dBi.
- For fixed point-to-point access points operating in the band 5.15-5.25GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1W.
- For client devices in the 5.15-5.25GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250mW provided the maximum antenna gain does not exceed 6dBi.
- For the 5.25-5.35GHz and 5.47-5.725GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250mW or  $11\text{dBm} + 10\log B$ , where B is the 26dB emission bandwidth in megahertz.
- For the band 5.725-5.85GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1W.

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

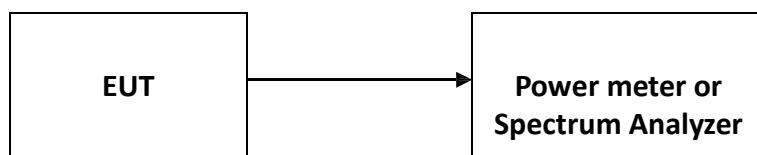
## 4.2 Measurement Procedure

The EUT was tested according to test procedure of “KDB789033 D02 General UNII Test Procedures New Rules”

### For 802.11a and 802.11n (HT20) mode:

- (i) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied.  
The EUT is configured to transmit continuously or to transmit with a constant dutycycle.  
At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.  
The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
- (ii) If the transmitter does not transmit continuously, measure the duty cycle,  $x$ , of the transmitter output signal as described in II.B.
- (iii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
- (iv) Adjust the measurement in dBm by adding  $10 \log (1/x)$  where  $x$  is the duty cycle (e.g.,  $10 \log (1/0.25)$  if the duty cycle is 25%).

## 4.3 Test Configuration

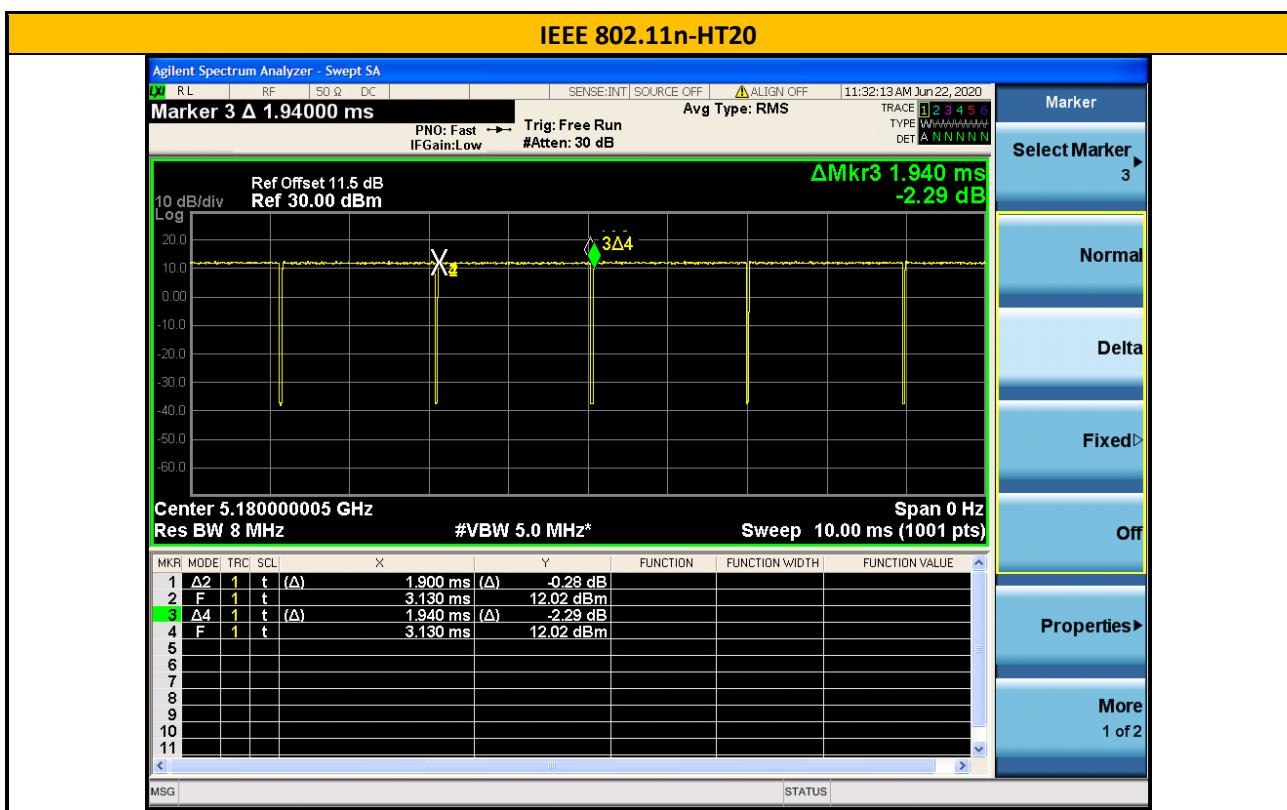
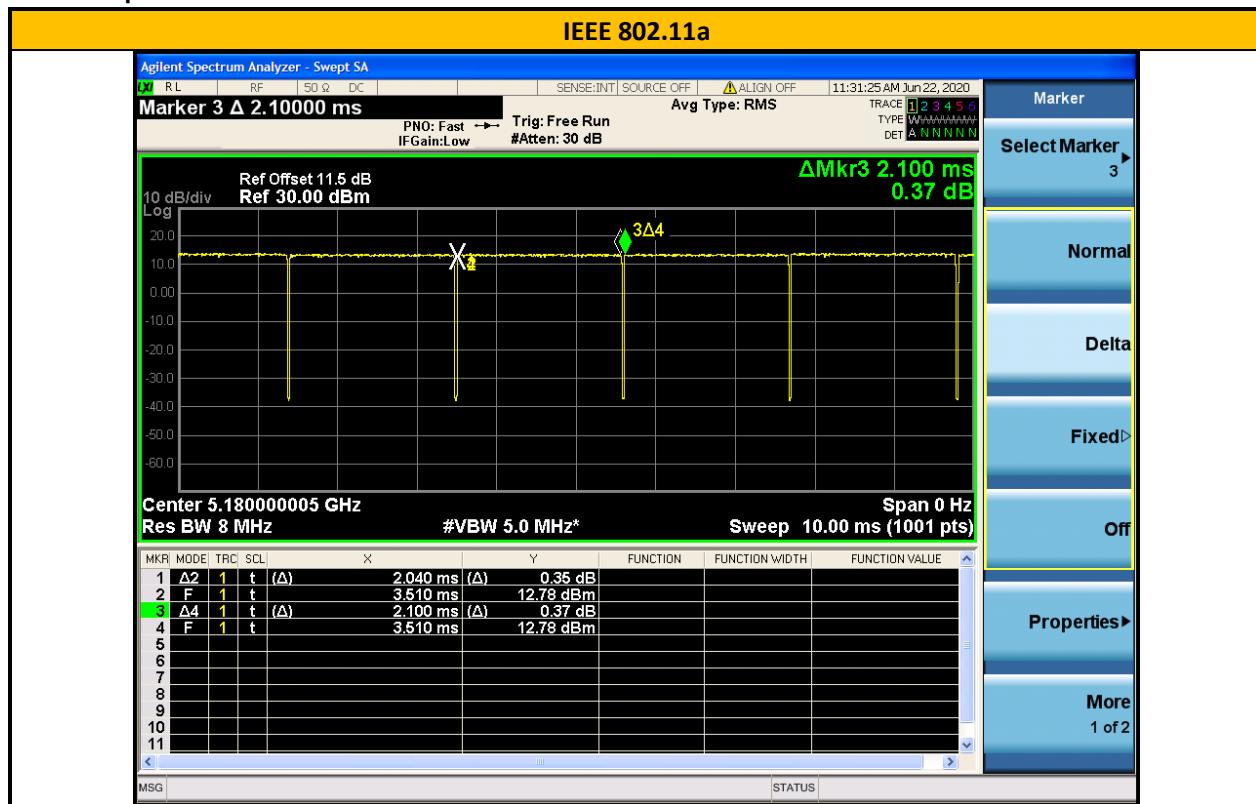


## 4.4 Test Results of Maximum conducted output power and e.i.r.p.

### 5.4.1 Duty cycle

Mode	Data rates (Mbps)	On Time (msec)	Period (msec)	Duty Cycle (linear)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/ T Minimum VBW (kHz)	Average Factor (dB)
IEEE 802.11a	6	2.040	2.100	0.97	97.14	0.13	0.49	-0.25
IEEE 802.11n-HT20	MCS0	1.900	1.940	0.98	97.94	0.09	0.53	-0.18

The test plots as follows



## 5.4.2 Conducted Output Power

Mode	Channel/ Frequency (MHz)	Maximum Conducted Output Power (dBm)									
		MIMO				Total Power MIMO_ Chain 0+1	Limits (dBm)	Pass / Fail			
		Chain 0		Chain 1							
		Meas Power	Corr'd Power	Meas Power	Corr'd Power						
IEEE 802.11a	36 (5180)	8.58	10.05	12.38	13.9	15.40	24	Pass			
IEEE 802.11n-HT20	36 (5180)	7.61	9.08	12.06	13.58	14.90	24	Pass			

Remark:

1. Corr'd Power = Meas Power + Duty Cycle Factor
2. Total (Chain 0+1) =  $10 \cdot \log [(10 \cdot \text{Chain 0}/10) + (10 \cdot \text{Chain 1}/10)]$

## 5 Power spectrum density

**Test result:** **Pass**

### 5.1 Limit

- For an outdoor access point operating in the band 5.15-5.25GHz, the maximum power spectral density shall not exceed 17dBm in any 1 megahertz band.
- For an indoor access point operating in the band 5.15-5.25GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.
- For client devices in the 5.15-5.25GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.
- For the 5.25-5.35 GHz and 5.47-5.725GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.
- For the band 5.725-5.85GHz, the maximum power spectral density shall not exceed 30dBm in any 500kHz band.

If the transmitting antenna of directional gain greater than 6dBi is used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. If there have a beam forming type, the limit should be the less of original and original + (6 - antenna gain - beamforming gain).

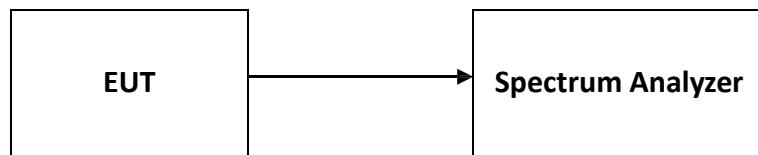
## 5.2 Measurement Procedure

The EUT was tested according to test procedure of “KDB789033 D02 General UNII Test Procedures New Rules”

1. Create an average power spectrum for the EUT operating mode being tested by following the instructions in II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, “Compute power....” (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)
2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
3. Make the following adjustments to the peak value of the spectrum, if applicable:
  - a) If Method SA-2 or SA-2 Alternative was used, add  $10 \log (1/x)$ , where x is the duty cycle, to the peak of the spectrum.
  - b) If Method SA-3 Alternative was used and the linear mode was used in step II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
4. The result is the Maximum PSD over 1 MHz reference bandwidth.
5. For devices operating in the bands 5.15 – 5.25 GHz, 5.25 – 5.35 GHz, and 5.47 – 5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in Section 15.407(a)(5). For devices operating in the band 5.725 – 5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:
  - a) Set  $RBW \geq 1/T$ , where  $T$  is defined in II.B.1.a).
  - b) Set  $VBW \geq 3 RBW$ .
  - c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add  $10 \log (500 \text{ kHz}/RBW)$  to the measured result, whereas RBW (<500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
  - d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add  $10 \log (1\text{MHz}/RBW)$  to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
  - e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for steps 5.c) and 5.d) above, since RBW=100 KHZ is available on nearly all spectrum analyzers.

### 5.3 Test Configuration



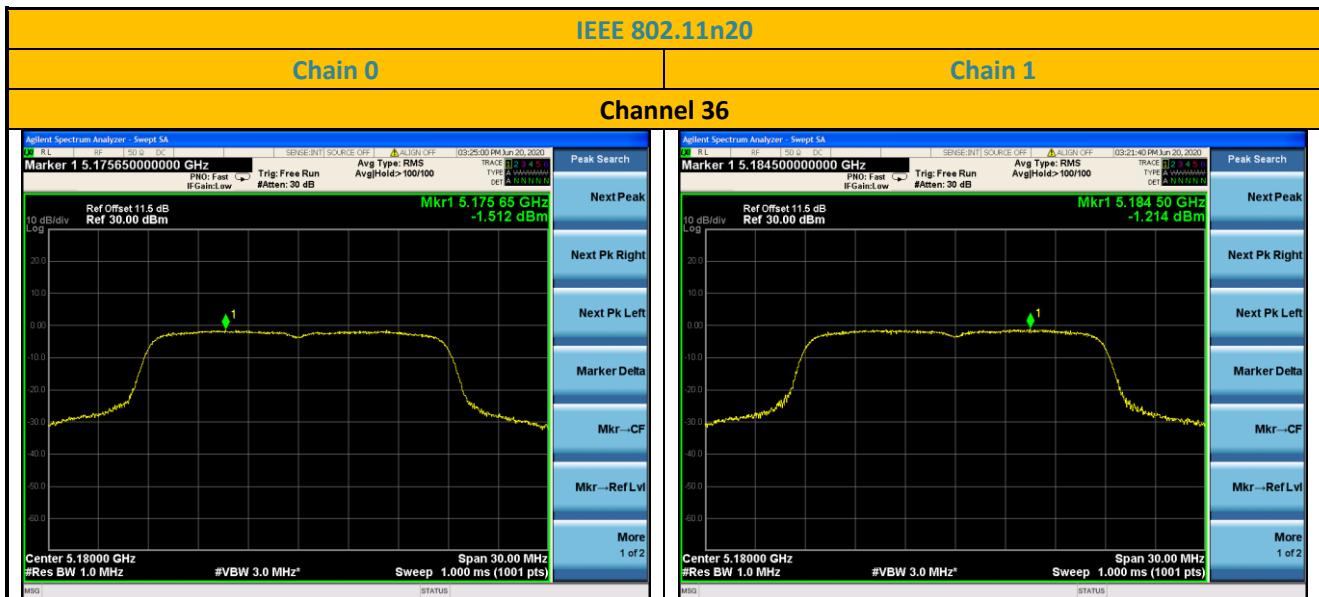
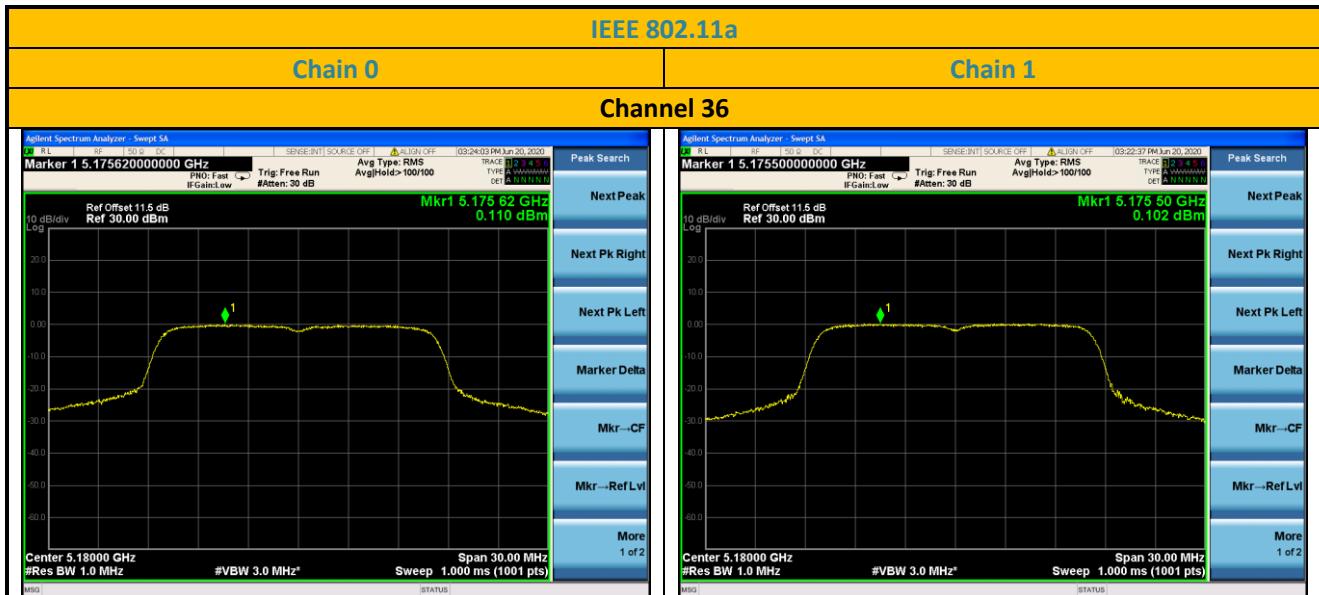
### 5.4 Test Results of Power spectrum density

Mode	Channel/ Frequency (MHz)	MIMO				Total Power MIMO_ Chain 0+1	Limits (dBm)	Pass / Fail			
		Chain 0		Chain 1							
		Meas Power	Corr'd Power	Meas Power	Corr'd Power						
IEEE 802.11a	36 (5180)	0.11	1.58	0.102	1.632	4.62	11	Pass			
IEEE 802.11n-HT20	36 (5180)	-1.512	-0.042	-1.214	0.316	3.15	11	Pass			

Remark:

1. Corr'd Power = Meas Power + Duty Cycle Factor
2. Total (Chain 0+1) =  $10 \times \log[(10 \times \text{Chain 0}/10) + (10 \times \text{Chain 1}/10)]$

The test plots as follows:



## 6 Radiated Emissions

**Test result: Pass**

### 6.1 Limit

The radiated emissions which fall in the restricted bands, and the radiated emissions below 1GHz, must comply with the radiated emission limits specified showed as below:

Frequencies (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

The radiated emissions which fall outside the restrict bands, should comply with the EIRP limit as

below: For transmitters operating in the 5.15 - 5.25 / 5.25 - 5.35 / 5.47 - 5.725GHz band:

Frequency (MHz)	EIRP Limit (dBm)	Equivalent Field Strength (3m) (dB $\mu$ V/m)
<5150		
>5350		
<5470	-27	68.20
>5725		

For transmitters operating in the 5.725 - 5.85GHz band:

Frequency (MHz)	EIRP Limit (dBm/MHz)	Equivalent Field Strength (3m) (dB $\mu$ V/m)
<5650	-27	68.20
5650 ~ 5700	-27 ~ 10	68.20 ~ 105.20
5700 ~ 5720	10 ~ 15.6	105.20 ~ 110.80
5720 ~ 5725	15.6 ~ 27	110.80 ~ 122.20
5850 ~ 5855	27 ~ 15.6	122.20 ~ 110.80
5855 ~ 5875	15.6 ~ 10	110.80 ~ 105.20
5875 ~ 5925	10 ~ -27	105.20 ~ 68.20
>5925	-27	68.20

## 6.2 Measurement Procedure

### For Radiated emission below 30MHz:

- a) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c) Both X and Y axes of the antenna are set to make the measurement.
- d) For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e) The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

#### NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

### For Radiated emission above 30MHz:

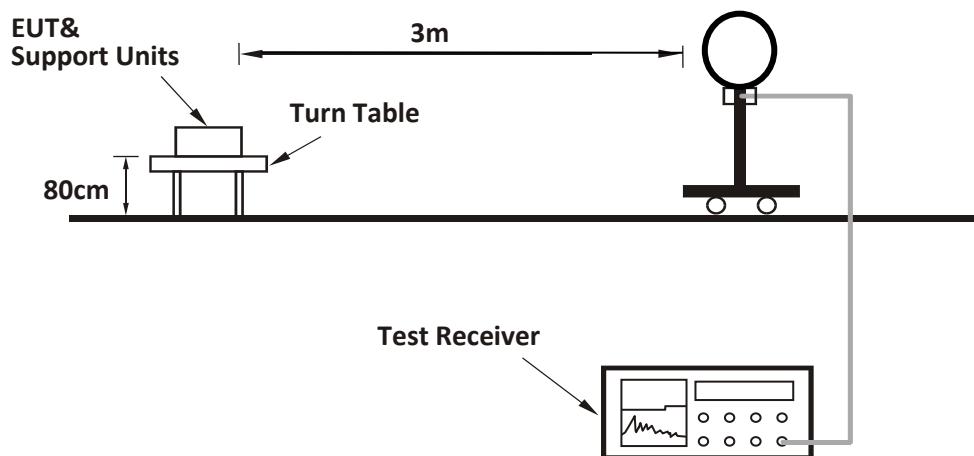
- a) The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c) The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e) The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f) The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

#### Note:

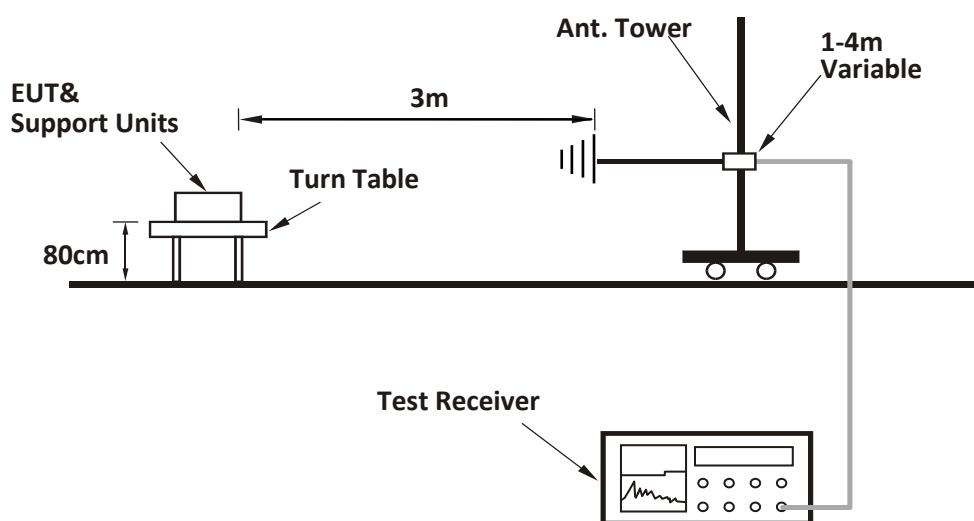
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle  $< 98\%$ ) or  $3 \times RBW$  (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported

### 6.3 Test Configuration

**For Radiated emission below 30MHz:**



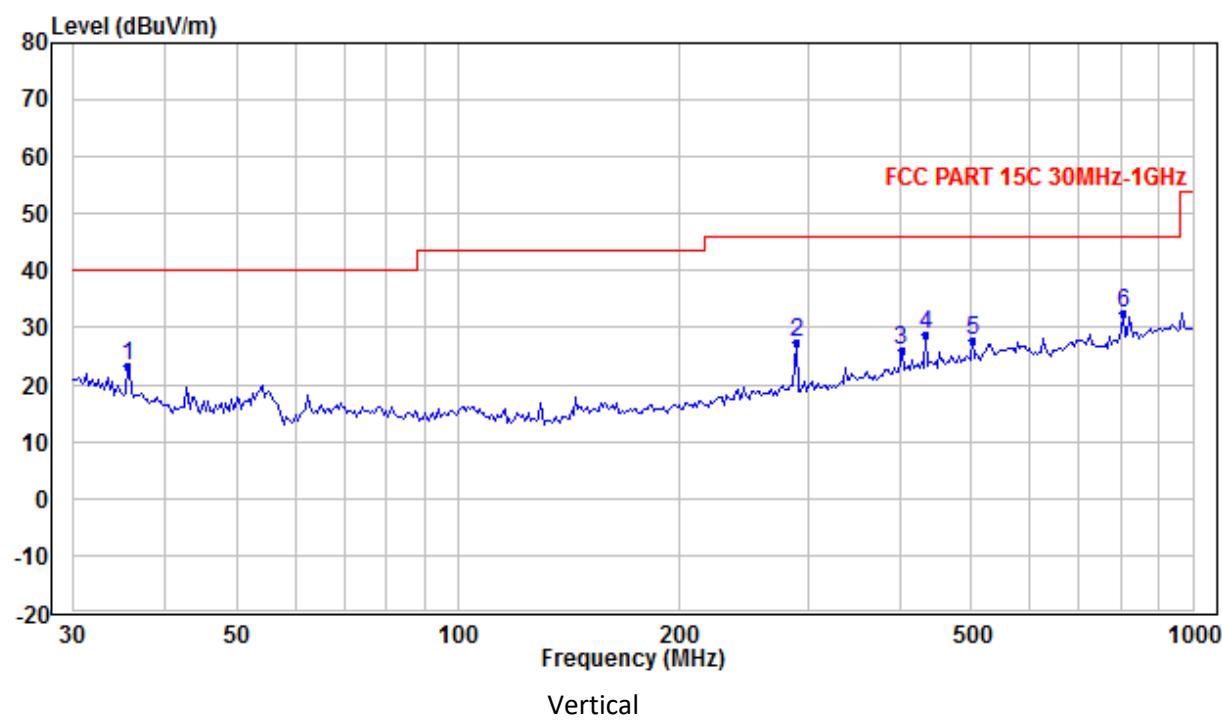
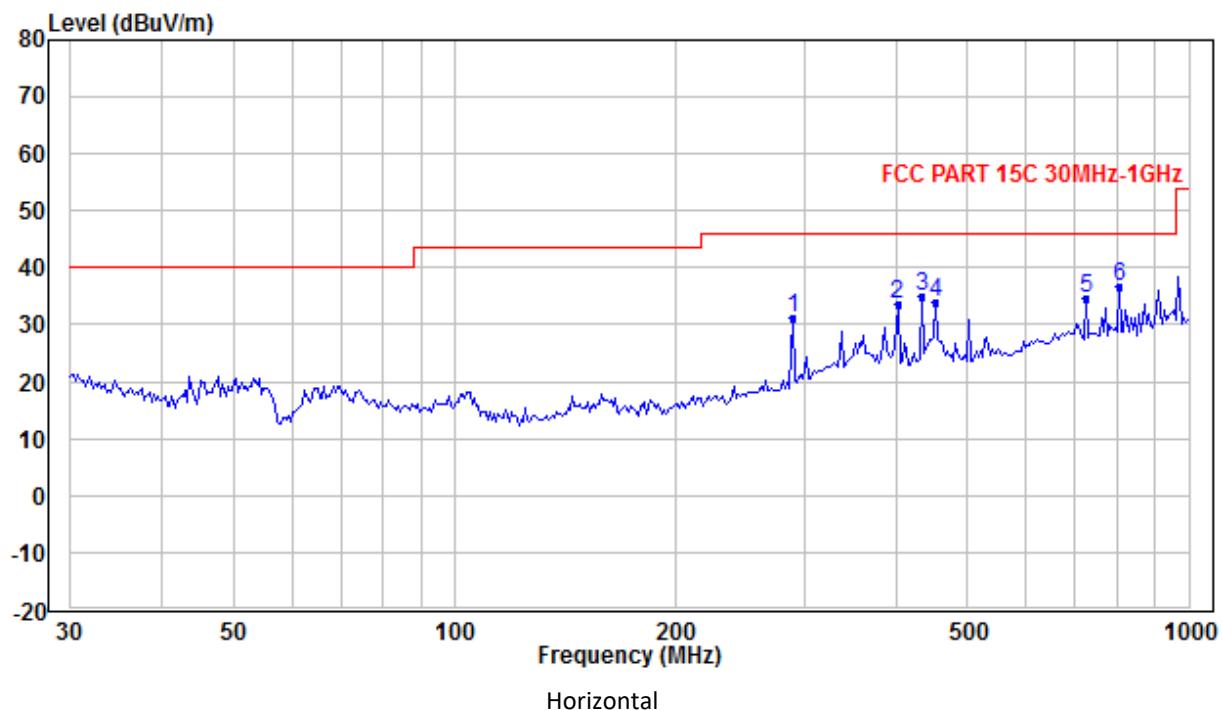
**For Radiated emission 30MHz to 1GHz:**



## 6.4 Test Results of Radiated Emissions

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.

The worst waveform from 30MHz to 1000MHz is listed as below:



**Test data below 1GHz**

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	288.284	31.14	-6.41	46.00	14.86	QP
H	401.105	33.73	-2.72	46.00	12.27	QP
H	433.340	35.11	-2.92	46.00	10.89	QP
H	452.001	34.11	-2.74	46.00	11.89	QP
H	723.793	34.72	2.34	46.00	11.28	QP
H	804.252	36.73	3.48	46.00	9.27	QP
V	35.511	23.15	-8.72	40.00	16.85	QP
V	288.284	27.5	-6.41	46.00	18.5	QP
V	401.105	26.2	-3.46	46.00	19.8	QP
V	433.340	28.66	-2.59	46.00	17.34	QP
V	502.247	27.75	-1.44	46.00	18.25	QP
V	804.252	32.47	2.80	46.00	13.53	QP

**Test result above 1GHz:**

MIMO_Chain 0+1_IEEE 802.11a_Channel 36						
Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	10360.000	64.77	9.42	74.00	9.23	PK
H	10360.000	45.78	9.42	54.00	8.22	AV
H	15540.000	50.2	11.85	74.00	23.80	PK
H	15540.000	38.34	11.85	54.00	15.57	AV
V	10360.000	69.67	9.25	74.00	4.33	PK
V	10360.000	49.67	9.25	54.00	4.33	AV
V	15540.000	57.6	11.69	74.00	16.40	PK
V	15540.000	39.50	11.69	54.00	14.50	AV

MIMO_Chain 0+1_IEEE 802.11n-HT20_Channel 36						
Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	10360.000	51.85	9.42	74.00	22.15	PK
H	10360.000	38.95	9.42	54.00	15.05	AV
H	15540.000	51.04	11.85	74.00	22.96	PK
H	15540.000	39.34	11.85	54.00	14.66	AV
V	10360.000	55.99	9.25	74.00	18.01	PK
V	10360.000	40.80	9.25	54.00	13.20	AV
V	15540.000	52.28	11.69	74.00	21.72	PK
V	15540.000	39.44	11.69	54.00	14.56	AV

Remark:

1. Correct Factor = Antenna Factor + Cable Loss (+ Amplifier, for higher than 1GHz),  
the value was added to Original Receiver Reading by the software automatically.
2. Corrected Reading = Original Receiver Reading + Correct Factor
3. Margin = Limit - Corrected Reading
4. If the PK Corrected Reading is lower than AV limit, the AV test can be elided.

Example: Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,  
Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10.00dBuV,

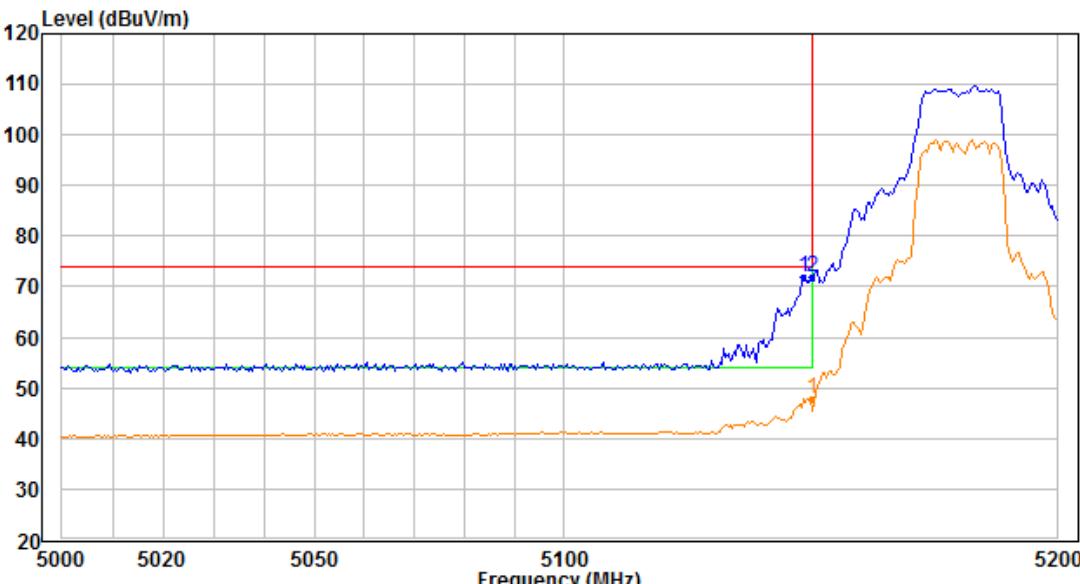
Limit = 40.00dBuV/m.

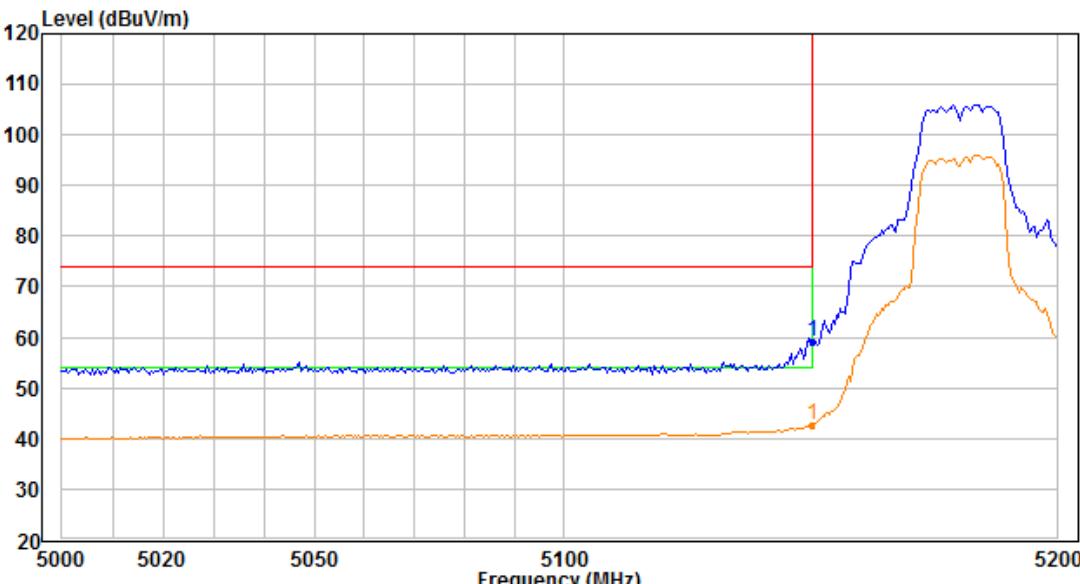
Then Correct Factor =  $30.20 + 2.00 - 32.00 = 0.20\text{dB}/\text{m}$ ;

Corrected Reading =  $10\text{dBuV} + 0.20\text{dB}/\text{m} = 10.20\text{dBuV}/\text{m}$ ;

Margin =  $40.00\text{dBuV}/\text{m} - 10.20\text{dBuV}/\text{m} = 29.80\text{dB}$ .

**Band Edge Measurements (Radiated)**
**MIMO\_ IEEE 802.11a**

Test Channel:	Channel 36	Ant. Polar. :	Horizontal		
					
Frequency (MHz)	Peak level (dBuV/m)	Peak Limit (dBuV/m)	AV level (dBuV/m)	AV Limit (dBuV/m)	Conclusion
5150.0000	72.01	74.00	47.79	54.00	Pass

Test Channel:	Channel 36	Ant. Polar. :	Vertical		
					
Frequency (MHz)	Peak level (dBuV/m)	Peak Limit (dBuV/m)	AV level (dBuV/m)	AV Limit (dBuV/m)	Conclusion
5150.0000	59.31	74.00	42.55	54.00	Pass

**MIMO\_IEEE 802.11n-HT20**

Test Channel:	Channel 36	Ant. Polar. :	Horizontal		
Level (dBuV/m)					
5000 5020 5050 5100 5200	Frequency (MHz)				
120 110 100 90 80 70 60 50 40 30 20					
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5150.0000	71.03	74.00	50.38	54.00	Pass

Test Channel:	Channel 36	Ant. Polar. :	Vertical		
Level (dBuV/m)					
5000 5020 5050 5100 5200	Frequency (MHz)				
120 110 100 90 80 70 60 50 40 30 20					
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5145.89	64.18	74.00	46.11	54.00	Pass

## 7 Antenna requirement

**Requirement:**

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

**Result:**

EUT uses used a permanently attached antenna to the intentional radiator, so it can comply with the provisions of this section.

## **Appendix I: Photograph of test setup**

Refer to Appendix for Photograph of test setup

## **Appendix II: Photograph of equipment under test**

Refer to Appendix for EUT external and internal photographs.

\*\*\*\*\* END \*\*\*\*\*