REPORT No.: SZ19050394W03

# TEST REPORT

| | | |
|---|---|---|
| **APPLICANT** | : | JACS Solutions LLC |
| **PRODUCT NAME** | : | 8 INCH TABLET |
| **MODEL NAME** | : | TG0802 |
| **BRAND NAME** | : | JACS |
| **FCC ID** | : | 2AGCDJACSTG0802 |
| **STANDARD(S)** | : | 47 CFR Part 15 Subpart E |
| **RECEIPT DATE** | : | 2019-06-25 |
| **TEST DATE** | : | 2019-07-05 to 2019-07-31 |
| **ISSUE DATE** | : | 2019-08-08 |

Edited by: Zeng Xiaoying (Rapporteur)

Approved by: Peng Huarui ( Supervisor )



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# DIRECTORY

| Change History | | |
|---|---|---|
| **Version** | **Date** | **Reason for change** |
| 1.0 | 2019-08-08 | First edition |
| | | |

# 1. Technical Information

**Note:** Provide by applicant.

## 1.1. Applicant and Manufacturer Information

| | |
|---|---|
| **Applicant:** | JACS Solutions LLC |
| **Applicant Address:** | 8808 Centre Park Drive Suite 305 Columbia, Maryland 21045, USA |
| **Manufacturer:** | JACS Solutions LLC |
| **Manufacturer Address:** | 8808 Centre Park Drive Suite 305 Columbia, Maryland 21045, USA |

## 1.2. Equipment Under Test (EUT) Description

| | | |
|---|---|---|
| **Product Name:** | 8 INCH TABLET | |
| **Serial No:** | (N/A, marked #1 by test site) | |
| **Hardware Version:** | V1.0 | |
| **Software Version:** | V1.0 | |
| **Modulation Type:** | OFDM | |
| **Modulation Mode:** | 802.11a | |
| **Operating Frequency Range:** | 5.180 GHz- 5.240 GHz; 5.745GHz- 5.825GHz | |
| **Channel Number:** | Refer to 1.3 | |
| **Antenna Type:** | FPC Antenna | |
| **Antenna Gain:** | 2.16 dBi | |
| **Accessory Information:** | Battery | |
| | Brand Name: | VEKEN |
| | Model No.: | 72104114 |
| | Serial No.: | (N/A, marked #1 by test site) |
| | Capacity: | 8000mAh |
| | Rated Voltage: | 3.7V |
| | Charge Limit: | 5.0 V |

| | | |
|---|---|---|
| **Accessory Information:** | AC Adapter | |
| | Brand Name: | Jacs |
| | Model No.: | JML-0500200-LW |
| | Serial No.: | (N/A, marked #1 by test site) |
| | Rated Output: | 5V⎓2A |
| | Rated Input: | 100-240V ～ 50/60Hz 0.3A |

**Note 1:** WIFI hotspot does not support U-NII band.

**Note 2:** During test, the duty cycle of the EUT was setting to 100%.

**Note 3:** For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

## 1.3. The channel number and frequency of EUT

| **Frequency Range: 5180MHz-5240MHz** | | | | |
|---|---|---|---|---|
| Bandwidth | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 20MHz | **36** | **5180** | 40 | 5200 |
| | **44** | **5220** | **48** | **5240** |
| **Frequency Range: 5745-5825MHz** | | | | |
| Bandwidth | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 20MHz | **149** | **5745** | 153 | 5765 |
| | **157** | **5785** | 161 | 5805 |
| | **165** | **5825** | | |

**Note 1:** The black bold channels were selected for test.

## 1.4. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart E (U-NII band) for the EUT FCC ID Certification:

| No | Identity | Document Title |
|---|---|---|
| 1 | 47 CFR Part 15 (5-1-14 Edition) | Radio Frequency Devices |

Test detailed items/section required by FCC rules and results are as below:

| No. | Section | Description | Test Date | Test Engineer | Result |
|---|---|---|---|---|---|
| 1 | 15.203 | Antenna Requirement | N/A | N/A | **PASS** |
| 2 | ANSI C63.10 | Duty Cycle of the test signal | Jul 05, 2019 | Zhou Chuang | **PASS** |
| 3 | 15.407(a) | Maximum conducted output Power | Jul 05, 2019 | Zhou Chuang | **PASS** |
| 4 | 15.407(a) (e) | Emission Bandwidth | Jul 05, 2019 | Zhou Chuang | **PASS** |
| 5 | 15.407(a) | Peak Power spectral density | Jul 05, 2019 | Zhou Chuang | **PASS** |
| 6 | 15.407(g) | Frequency Stability | Jul 05, 2019 | Zhou Chuang | **PASS** |
| 7 | 15.207 | Conducted Emission | Jul 31, 2019 | Gao Jianrou | **PASS** |
| 8 | 15.407(b) | Restricted Frequency Bands | Jul 28, 2019 | Gao Jianrou | **PASS** |
| 9 | 15.407(b) | Radiated Emission | Jul 31, 2019 | Gao Jianrou | **PASS** |

**Note1:** The DFS test report was documented in a separate report (Report No.: SZ19050394W04).

**Note2:** The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.10 2013.

**Note3:** These RF tests were performed according to the method of measurements prescribed in KDB789033 D02 General UNII Test Procedures New Rules v01r03.

**Note4:** The path loss during the RF test is calibrated to correct the results by the offset setting in the test equipments. The ref offset 12dB contains two parts that cable loss 2.0dB and Attenuator 10dB.

## 1.5. Environmental Conditions

During the measurement, the environmental conditions were within the listed ranges:

| | |
|---|---|
| Temperature (°C): | 15 - 35 |
| Relative Humidity (%): | 30 -60 |
| Atmospheric Pressure (kPa): | 86-106 |

# 2. 47 CFR Part 15E Requirements

## 2.1. Antenna requirement

### 2.1.1. Applicable Standard

According to FCC 15.203, 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.

### 2.1.2. 2.1.2 Result: Compliant

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

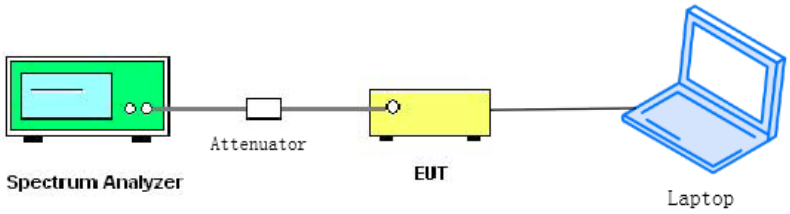
## 2.2. Duty Cycle of the test signal

### 2.2.1. Requirement

Preferably, all measurements of maximum conducted (average) output power will be performed with the EUT transmitting continuously (i.e., with a duty cycle of greater than or equal to 98%). When continuous operation cannot be realized, then the use of sweep triggering/signal gating techniques can be used to ensure that measurements are made only during transmissions at the maximum power control level. Such sweep triggering/signal gating techniques will require knowledge of the minimum transmission duration (T) over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation. Sweep triggering/signal gating techniques can then be used if the measurement/sweep time of the analyzer can be set such that it does not exceed T at any time that data are being acquired (i.e., no transmitter OFF-time is to be considered).
When continuous transmission cannot be achieved and sweep triggering/signal gating cannot be implemented, alternative procedures are provided that can be used to measure the average power; however, they will require an additional measurement of the transmitter duty cycle (D). Within this subclause, the duty cycle refers to the fraction of time over which the transmitter is ON and is transmitting at its maximum power control level. The duty cycle is considered to be constant if variations are less than ±2%; otherwise, the duty cycle is considered to be nonconstant.

### 2.2.2. Test Description

**A. Test Set:**




The EUT is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

**B. Test Procedure**

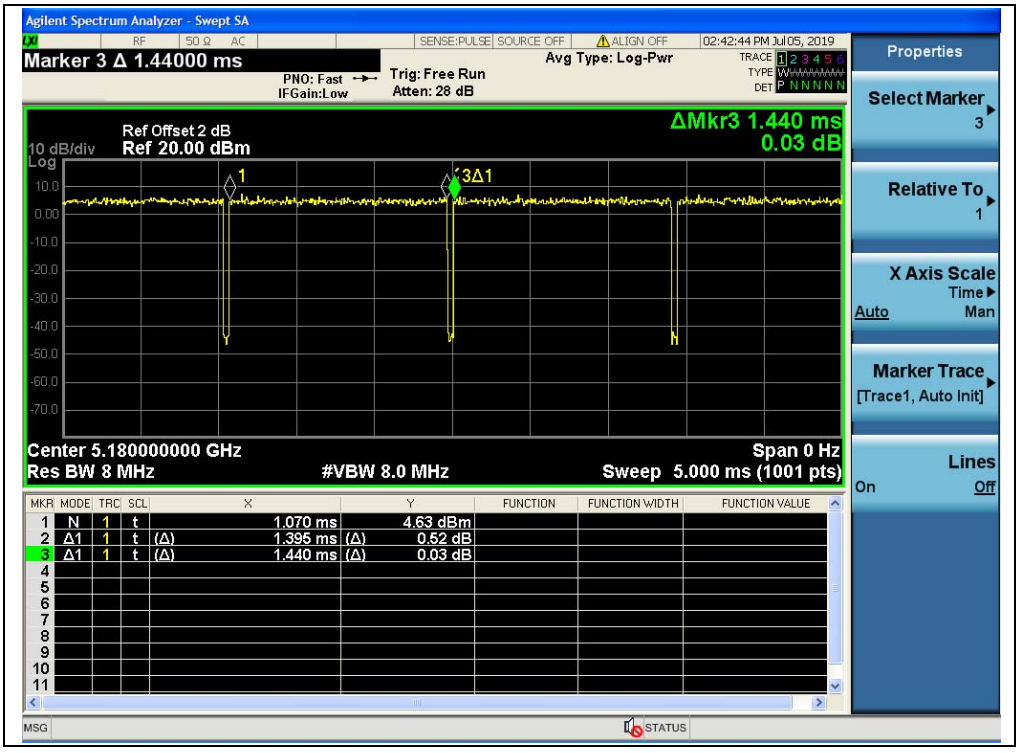
KDB 789033 Section B was used in order to prove compliance.

### 2.2.3. Test Result

## A. Test Verdict:

| Test Mode | Duty Cycle (%)<br>(D) | Duty Factor<br>(10*log[1/D]) |
|---|---|---|
| 802.11a | 96.88 | 0.14 |

## B. Test Plots




(CH36_5180MHz_802.11a)

# 2.3. Maximum conducted output power

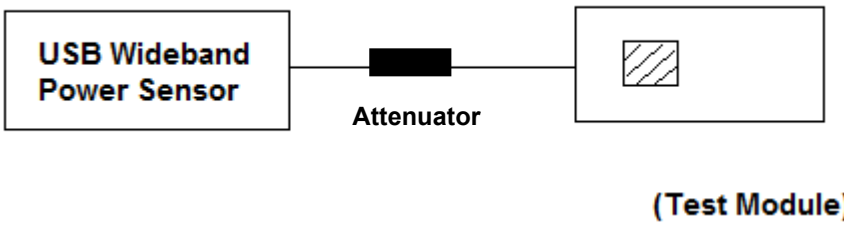
### 2.3.1. Requirement

(1) For 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 provided the maximum antenna gain does not exceed 6 dBi.
(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.
(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.
If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(4) According to KDB662911D01Measure-and-sum technique, the conducted emission level (e.g., transmit power or power in specified bandwidth) is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in units that are directly proportional to power.
(5) According to KDB 662911 D01, the directional gain = $G_{ANT}$ +10log($N_{ANT}$) dBi, where $G_{ANT}$ is the antenna gain in dBi, $N_{ANT}$ is the number of outputs.

### 2.3.2. Test Description

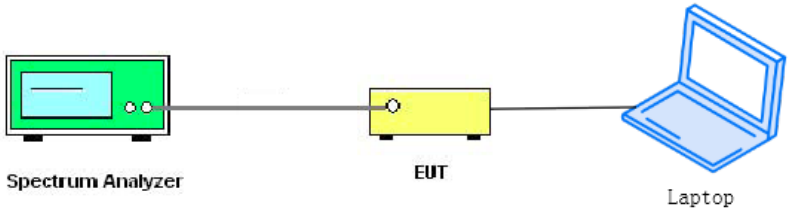
Section E) 3) of KDB 789033 defines a methodology using a USB Wideband Power Sensor.

**A. Test Setup:**




The EUT (Equipment under the test) which is coupled to the USB Wideband Power Sensor; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading, all test result in USB Wideband Power Sensor.

**For ac (VHT80) mode power**




The EUT (Equipment under the test) is coupled to the Spectrum analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading, all test result in Spectrum analyzer.

### 2.3.3. Test Result

**802.11a Test mode**

| Channel | Frequency (MHz) | Measured Peak Power | | Limit (dBm) | | Verdict |
|---|---|---|---|---|---|---|
| | | dBm | W | dBm | W | |
| 36 | 5180 | 12.96 | 0.020 | 24 | 0.25 | PASS |
| 44 | 5220 | 12.43 | 0.017 | | | |
| 48 | 5240 | 12.44 | 0.018 | | | |
| 149 | 5745 | 13.47 | 0.022 | 30 | 1 | |
| 157 | 5785 | 12.17 | 0.016 | | | |
| 165 | 5825 | 11.38 | 0.014 | | | |

| Channel | Frequency (MHz) | Average Power (dBm) | | | Limit (dBm) | | Verdict |
|---|---|---|---|---|---|---|---|
| | | Measured | Duty factor Calculated | | | | |
| | | dBm | dBm | W | dBm | W | |
| 36 | 5180 | 3.36 | 3.50 | 0.002 | 24 | 0.25 | PASS |
| 44 | 5220 | 3.14 | 3.28 | 0.002 | | | |
| 48 | 5240 | 3.23 | 3.37 | 0.002 | | | |
| 149 | 5745 | 6.54 | 6.68 | 0.005 | 30 | 1 | |
| 157 | 5785 | 4.97 | 5.11 | 0.003 | | | |
| 165 | 5825 | 4.05 | 4.19 | 0.003 | | | |

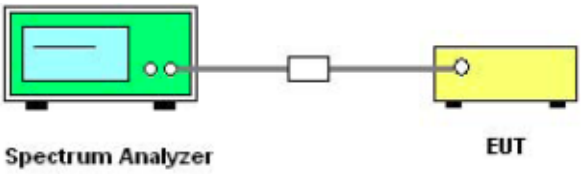
# 2.4. Emission Bandwidth

## 2.4.1. Requirement

For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement. Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

## 2.4.2. Test Description

**A. Test Set:**




The EUT is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

**B. Test Procedure**

1. KDB 789033 Section C) 1) Emission Bandwidth was used in order to prove compliance

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 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%.

2. KDB 789033 Section C) 2) minimum emission bandwidth for the band 5.725-5.85GHz was used in order to prove compliance.

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:

a) Set RBW = 100 kHz.

b) Set the video bandwidth (VBW) ≥ 3 × RBW.

c) Detector = Peak.

d) Trace mode = max hold.

e) Sweep = auto couple.

f) Allow the trace to stabilize.

g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

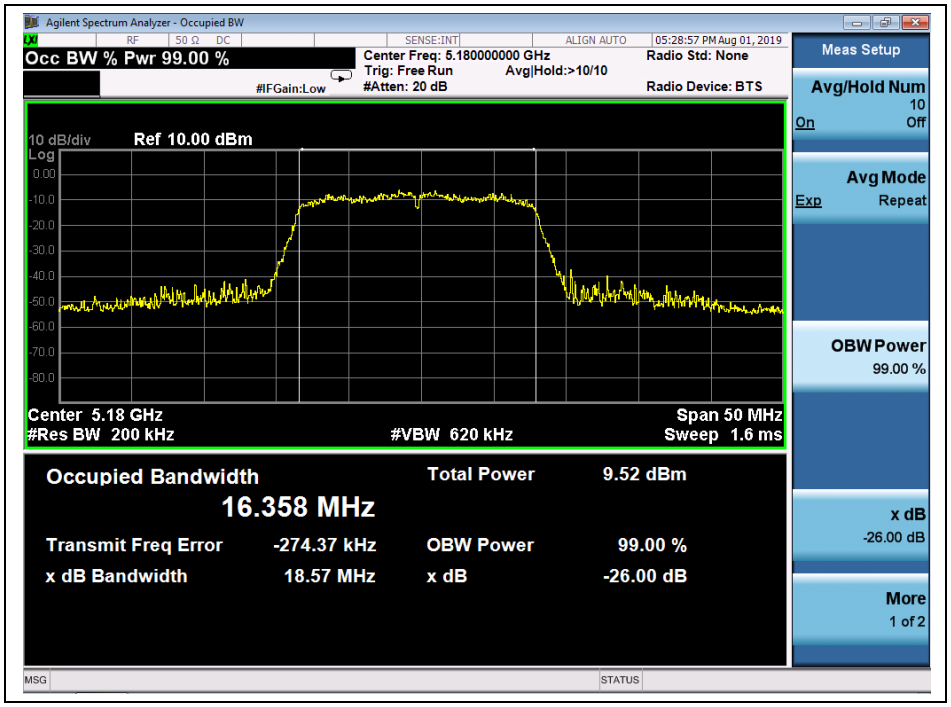
### 2.4.3. Test Result

**802.11a Test mode**

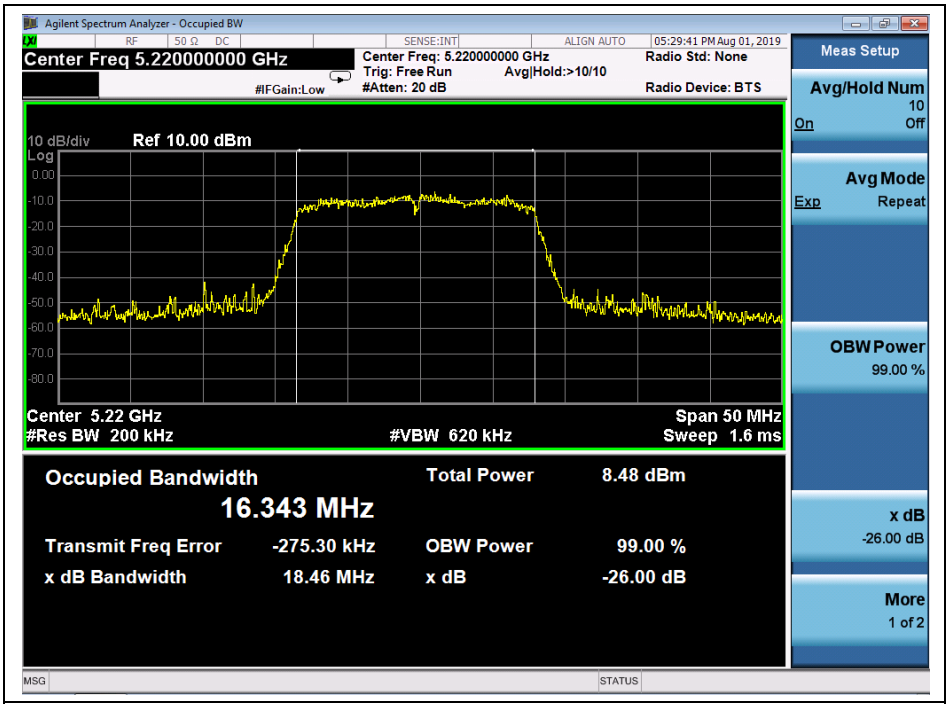
**A. Test Verdict:**

| Channel | Frequency (MHz) | 26 dB Bandwidth (MHz) |
|---|---|---|
| 36 | 5180 | 18.57 |
| 44 | 5220 | 18.46 |
| 48 | 5240 | $18.44_{Note}$ |
| **Channel** | **Frequency (MHz)** | **6dB Bandwidth (MHz)** |
| 149 | 5745 | 15.10 |
| 157 | 5785 | 14.49 |
| 165 | 5825 | 16.32 |
| **Note:** The high frequency of the -26dB is 5259.40MHz which is in the DFS frequency range, so DFS testing is required. Please refer to DFS report (Report No.: SZ19050394W04). | | |

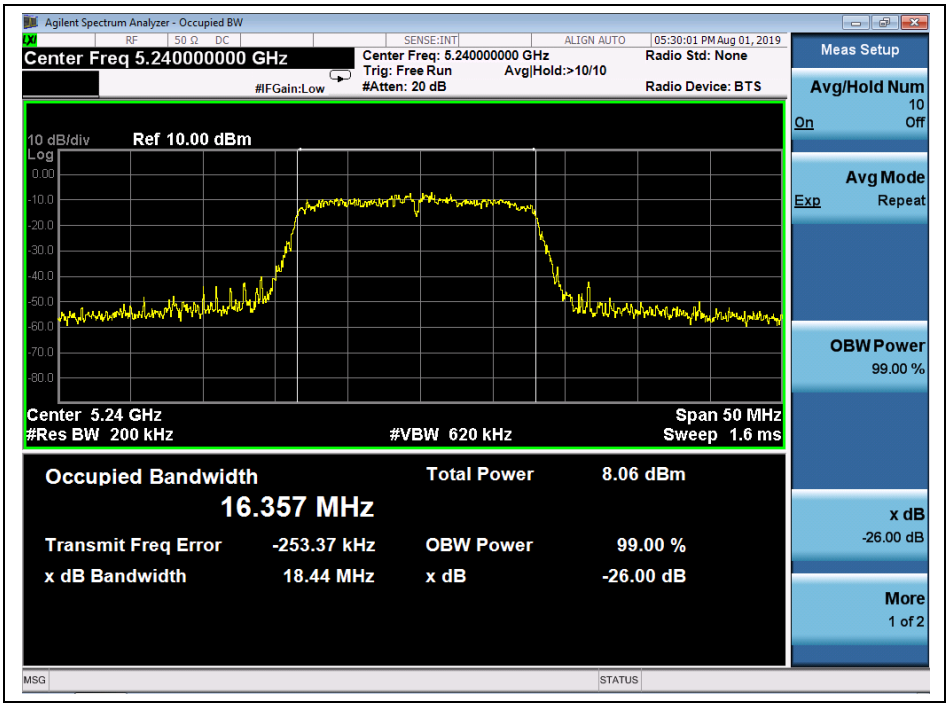
**B. Test Plots**




(Channel 36, 5180MHz, 802.11a,)

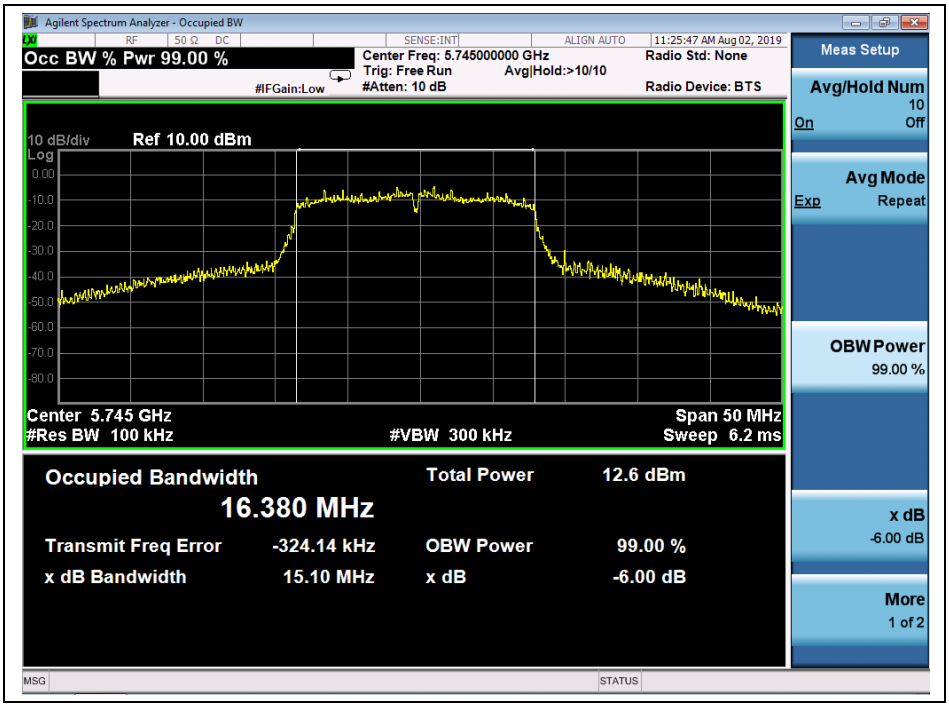



(Channel 44, 5220 MHz, 802.11a,)




(Channel 48, 5240MHz, 802.11a,)


(Channel 48, 5240MHz, fh of -26dB, 802.11a,)




(Channel 149, 5745MHz, 802.11a)


(Channel 157, 5785MHz, 802.11a)


(Channel 165, 5825MHz, 802.11a)

# 2.5. Peak Power spectral density

### 2.5.1. Requirement

(1) For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.
(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.
(3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500KHz band.
If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(4) According to KDB662911D01Measure-and-sum technique, the conducted emission level (e.g., transmit power or power in specified bandwidth) is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in units that are directly proportional to power.
(5) According to KDB 662911 D01, the directional gain = $G_{ANT}$ +10log($N_{ANT}$) dBi, where $G_{ANT}$ is the antenna gain in dBi, $N_{ANT}$ is the number of outputs.

### 2.5.2. Test Description

**A. Test Set:**


The EUT is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

**B. Test Procedure**

KDB 789033 Section F) Maximum Power Spectral Density (PSD) Method SA-1 was used in order to prove compliance

1) Set span to encompass the entire 26-dB emission bandwidth
2) Set RBW = 1 MHz. Set VBW ≥ 3 MHz.
3) Number of points in sweep ≥ 2 Span / RBW. Sweep time = auto.
4) Detector = Peak
5) Trace mode=Max hold
6) Record the max value

### 2.5.3. Test Result

**802.11a Test mode**

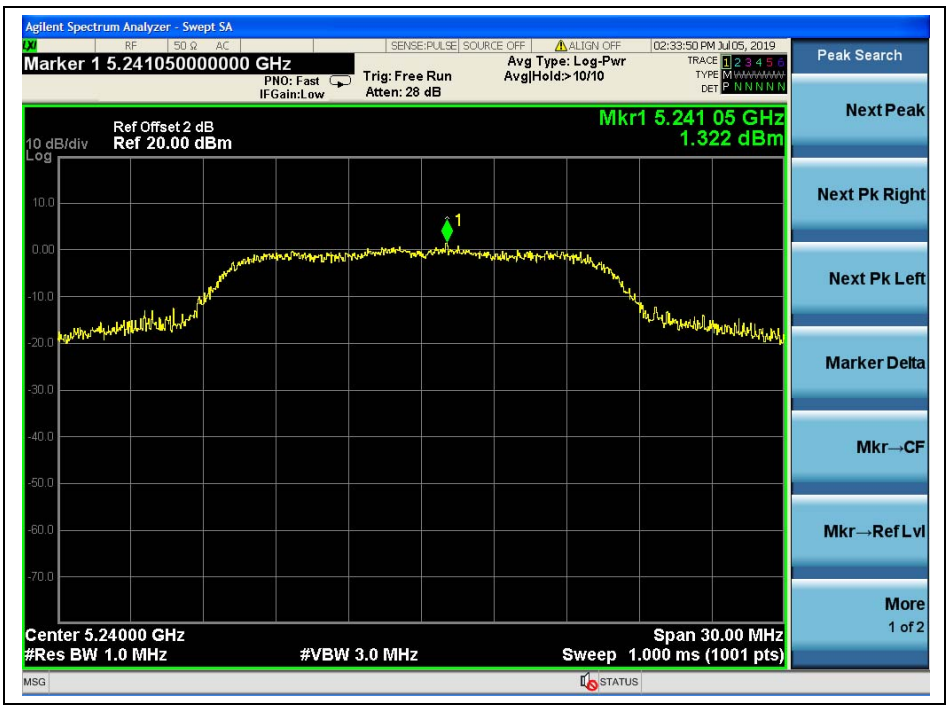
**A. Test Verdict:**

| Channel | Frequency (MHz) | Measured PPSD (dBm/MHz) | Limit (dBm/MHz) | Verdict |
|---|---|---|---|---|
| 36 | 5180 | -0.004 | 11 | PASS |
| 44 | 5220 | 1.11 | | |
| 48 | 5240 | 1.32 | | |
| Channel | Frequency (MHz) | Measured PPSD (dBm/500KHz) | Limit (dBm/500KHz) | Verdict |
| 149 | 5745 | -4.21 | 30 | PASS |
| 157 | 5785 | -5.06 | | |
| 165 | 5825 | -5.46 | | |

**B. Test Plots**

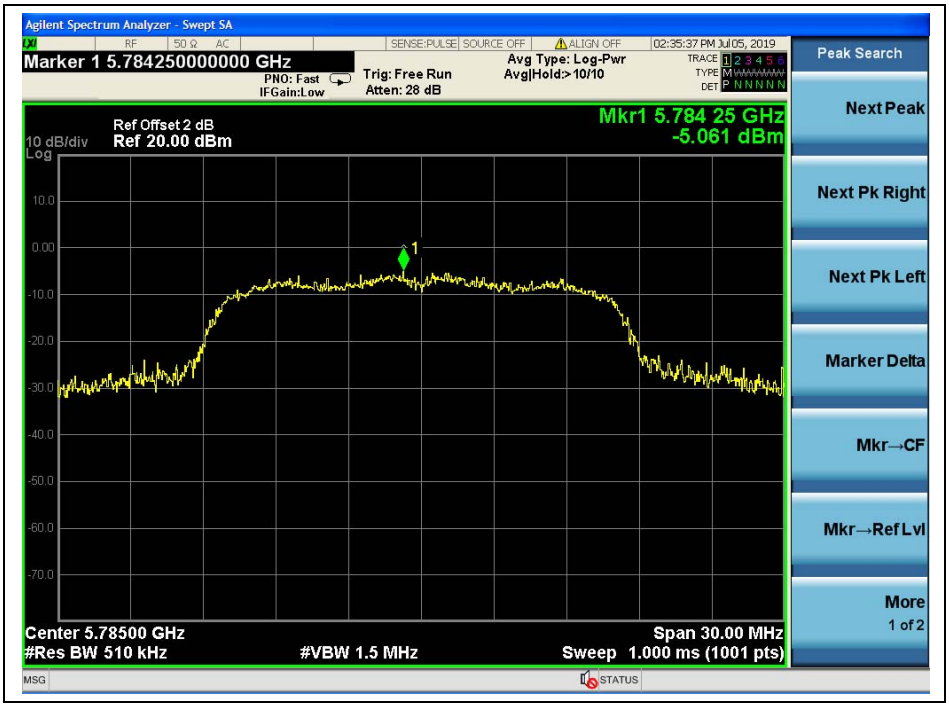

(Channel 36, 5180MHz, 802.11a,)


(Channel 44, 5220 MHz, 802.11a,)




(Channel 48, 5240MHz, 802.11a,)


(Channel 149, 5745MHz, 802.11a)




(Channel 157, 5785MHz, 802.11a)


(Channel 165, 5825MHz, 802.11a)

# 2.6. Frequency Stability

### 2.6.1. Requirement

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

### 2.6.2. Test Procedure

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between 5°C to 40°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

### 2.6.3. Test Result

| U-NII-1 (Ch. 36) 5180MHz | | | | |
|---|---|---|---|---|
| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | Freq Dev. (Hz) | Deviation (ppm) |
| 100% | 3.7 | +20(Ref) | 21 | 0.004 |
| 100% | | -30 | 54 | 0.010 |
| 100% | | -20 | 47 | 0.009 |
| 100% | | -10 | 37 | 0.007 |
| 100% | | 0 | 33 | 0.006 |
| 100% | | +10 | 26 | 0.005 |
| 100% | | +20 | 28 | 0.005 |
| 100% | | +30 | 35 | 0.007 |
| 100% | | +40 | 41 | 0.008 |
| 100% | | +50 | 49 | 0.009 |
| 85% | 3.15 | +20 | 52 | 0.010 |
| 115% | 4.26 | +20 | 42 | 0.008 |

| U-NII-3 (Ch. 149)<br>5745MHz | | | | |
|---|---|---|---|---|
| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | Freq Dev. (Hz) | Deviation (ppm) |
| 100% | 3.7 | +20(Ref) | 25 | 0.004 |
| 100% | | -30 | 51 | 0.009 |
| 100% | | -20 | 46 | 0.008 |
| 100% | | -10 | 39 | 0.007 |
| 100% | | 0 | 34 | 0.006 |
| 100% | | +10 | 24 | 0.004 |
| 100% | | +20 | 30 | 0.005 |
| 100% | | +30 | 26 | 0.005 |
| 100% | | +40 | 37 | 0.006 |
| 100% | | +50 | 42 | 0.007 |
| 85% | 3.15 | +20 | 48 | 0.008 |
| 115% | 4.26 | +20 | 35 | 0.006 |

# 2.7. Conducted Emission

## 2.7.1. Requirement

According to FCC section 15.207, for an intentional radiator 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 within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

| Frequency range (MHz) | Conducted Limit (dBμV) | |
|---|---|---|
| | Quai-peak | Average |
| 0.15 - 0.50 | 66 to 56 | 56 to 46 |
| 0.50 - 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

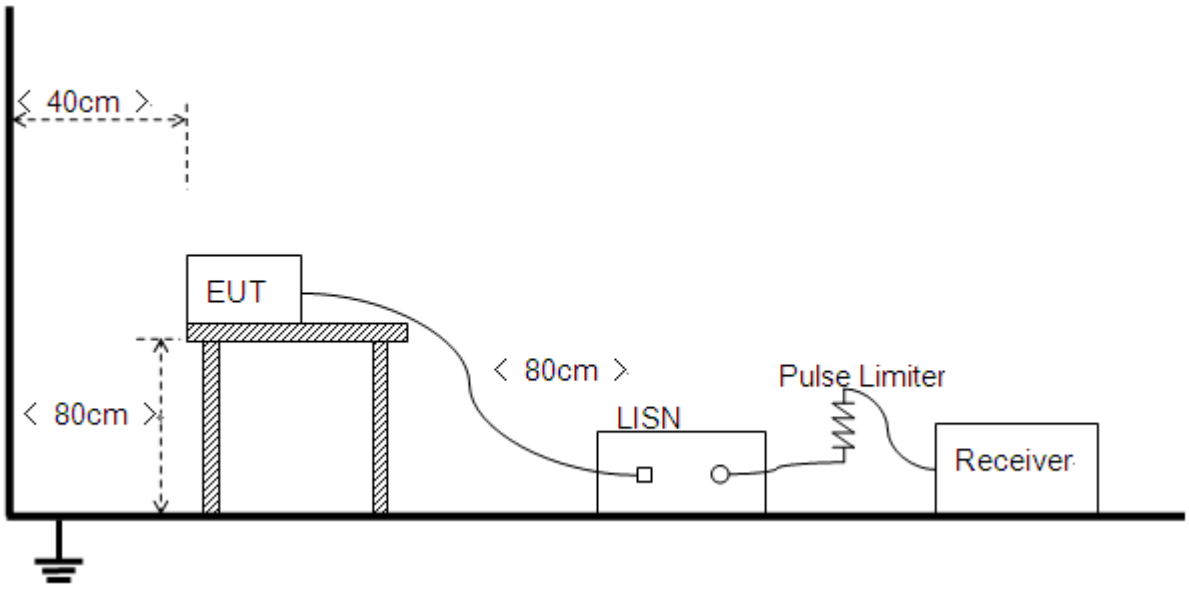
**NOTE:**

(a) The lower limit shall apply at the band edges.

(b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

## 2.7.2. Test Description

### A. Test Setup:




The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.10: 2013.

### 2.7.3. Test Result

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

**Note:** Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

**A. Test setup:**

Test Mode: EUT+ ADAPTOR + WIFI TX

Test Voltage: AC 120V/60Hz

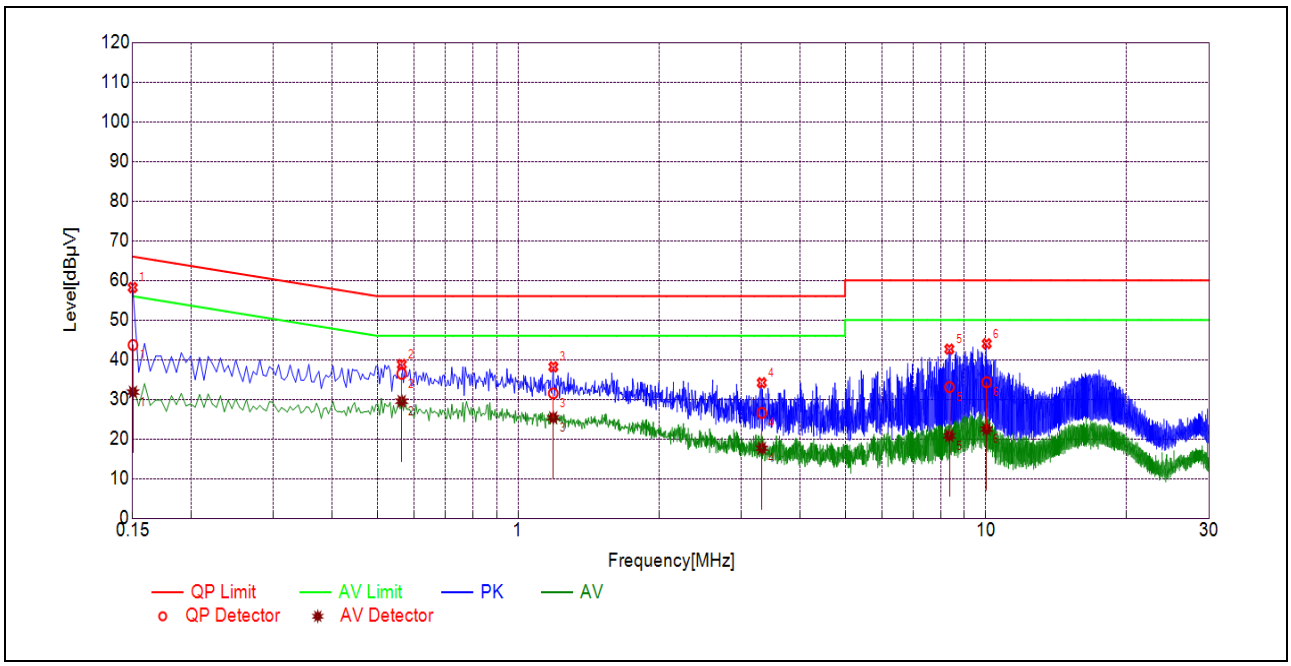
The measurement results are obtained as below:

$E\ [dB\mu V] = U_R + L_{Cable\ loss}\ [dB] + A_{Factor}$

$U_R$: Receiver Reading

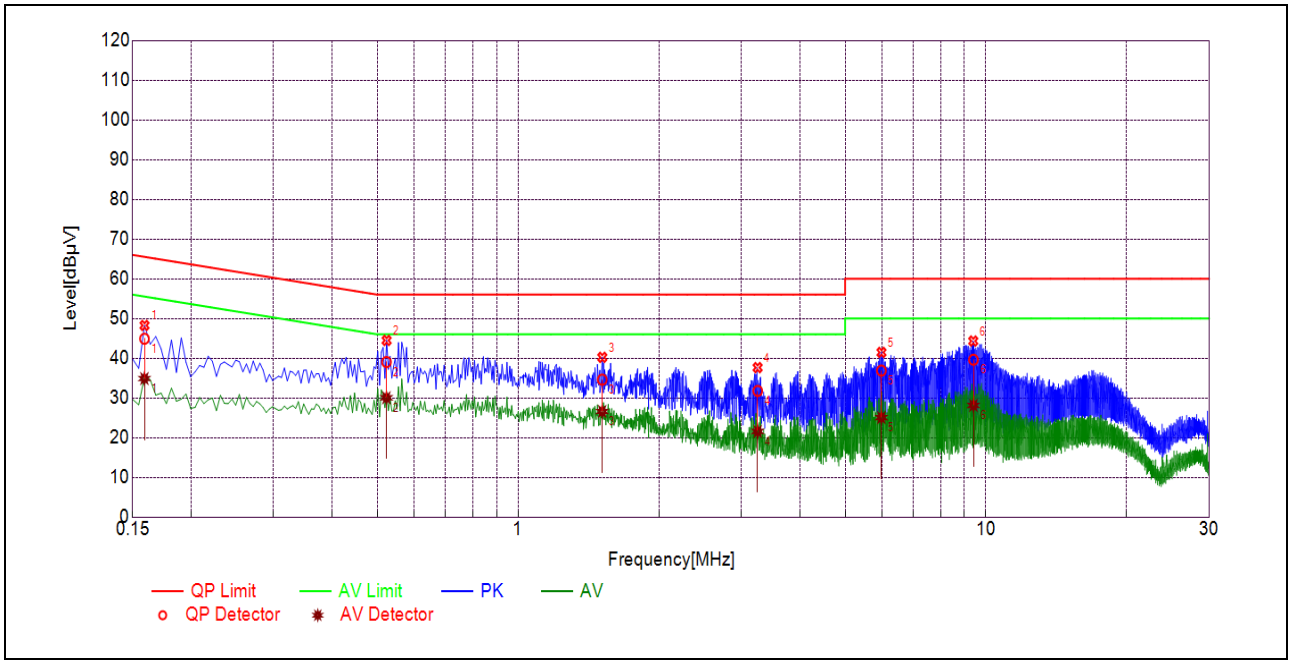
$A_{Factor}$: Voltage division factor of LISN

## B. Test Plots:




(L Phase)

| NO. | Fre. (MHz) | Emission Level (dBµV) | | Limit (dBµV) | | Power-line | Verdict |
|---|---|---|---|---|---|---|---|
| | | Quai-peak | Average | Quai-peak | Average | | |
| 1 | 0.1502 | 43.69 | 31.83 | 65.99 | 55.99 | Line | PASS |
| 2 | 0.5638 | 36.45 | 29.52 | 56.00 | 46.00 | | PASS |
| 3 | 1.1885 | 31.50 | 25.37 | 56.00 | 46.00 | | PASS |
| 4 | 3.3197 | 26.55 | 17.68 | 56.00 | 46.00 | | PASS |
| 5 | 8.3544 | 33.07 | 20.81 | 60.00 | 50.00 | | PASS |
| 6 | 10.0326 | 34.33 | 22.48 | 60.00 | 50.00 | | PASS |




(N Phase)

| NO. | Fre. (MHz) | Emission Level (dBµV) | | Limit (dBµV) | | Power-line | Verdict |
|---|---|---|---|---|---|---|---|
| | | Quai-peak | Average | Quai-peak | Average | | |
| 1 | 0.1589 | 44.90 | 34.87 | 65.52 | 55.52 | Neutral | PASS |
| 2 | 0.5230 | 39.04 | 30.04 | 56.00 | 46.00 | | PASS |
| 3 | 1.5125 | 34.60 | 26.59 | 56.00 | 46.00 | | PASS |
| 4 | 3.2522 | 31.77 | 21.57 | 56.00 | 46.00 | | PASS |
| 5 | 5.9781 | 36.88 | 25.04 | 60.00 | 50.00 | | PASS |
| 6 | 9.4050 | 39.61 | 28.12 | 60.00 | 50.00 | | PASS |

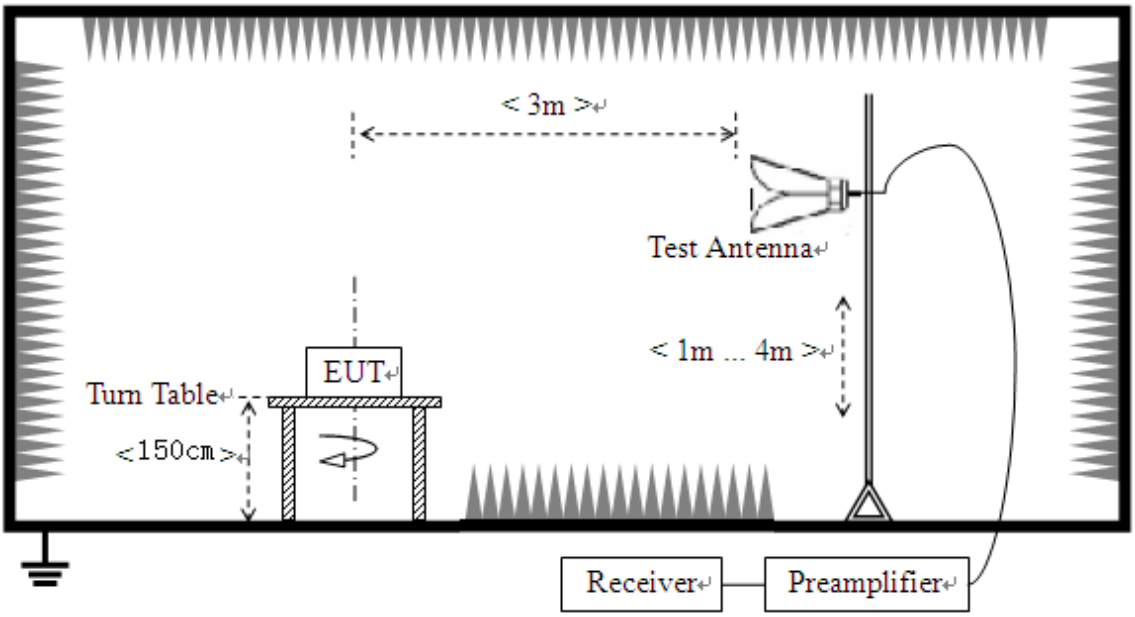
# 2.8. Restricted Frequency Bands

### 2.8.1. Requirement

According to FCC section 15.407(b)(7), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in 15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

### 2.8.2. Test Description

**A. Test Setup**




The Module is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.
KDB 789033 Section H) 3)5)6(d)) was used in order to prove compliance
For the Test Antenna:
Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

### 2.8.3. Test Result

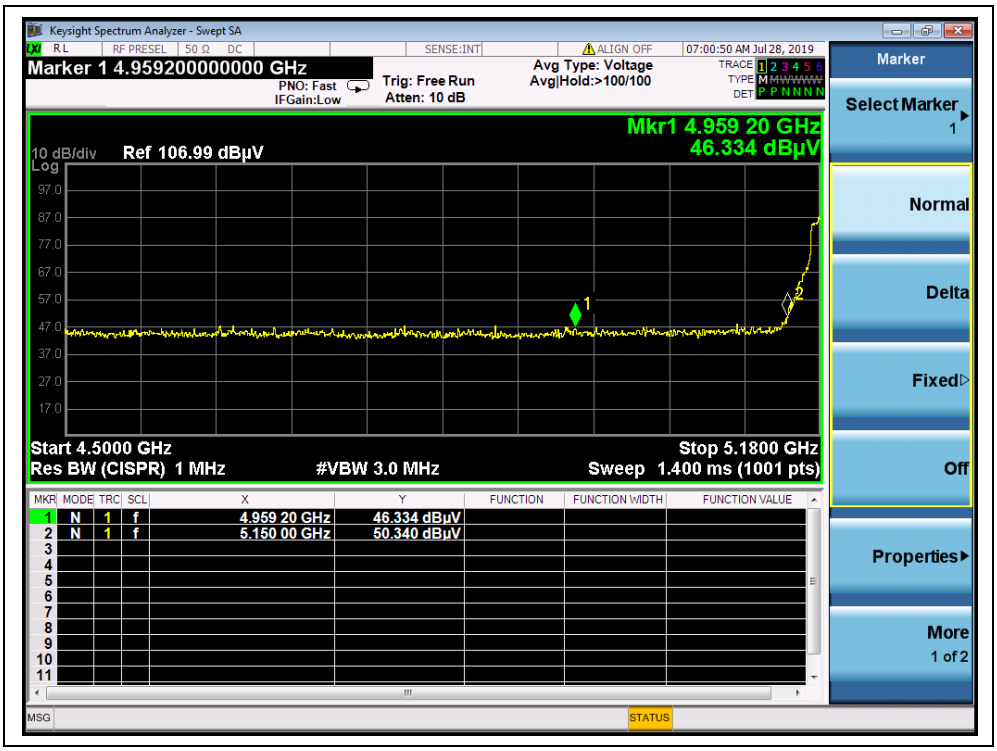
The lowest and highest channels are tested to verify Restricted Frequency Bands.
The measurement results are obtained as below:
E [dBμV/m] =$U_R$ + $A_T$ + $A_{Factor}$ [dB]; $A_T$ =$L_{Cable\ loss}$ [dB]-$G_{preamp}$ [dB]
$A_T$: Total correction Factor except Antenna; $U_R$: Receiver Reading
$G_{preamp}$: Preamplifier Gain; $A_{Factor}$: Antenna Factor at 3m
**Note:** Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (vertical) was recorded in this test report.

**802.11a Test mode**

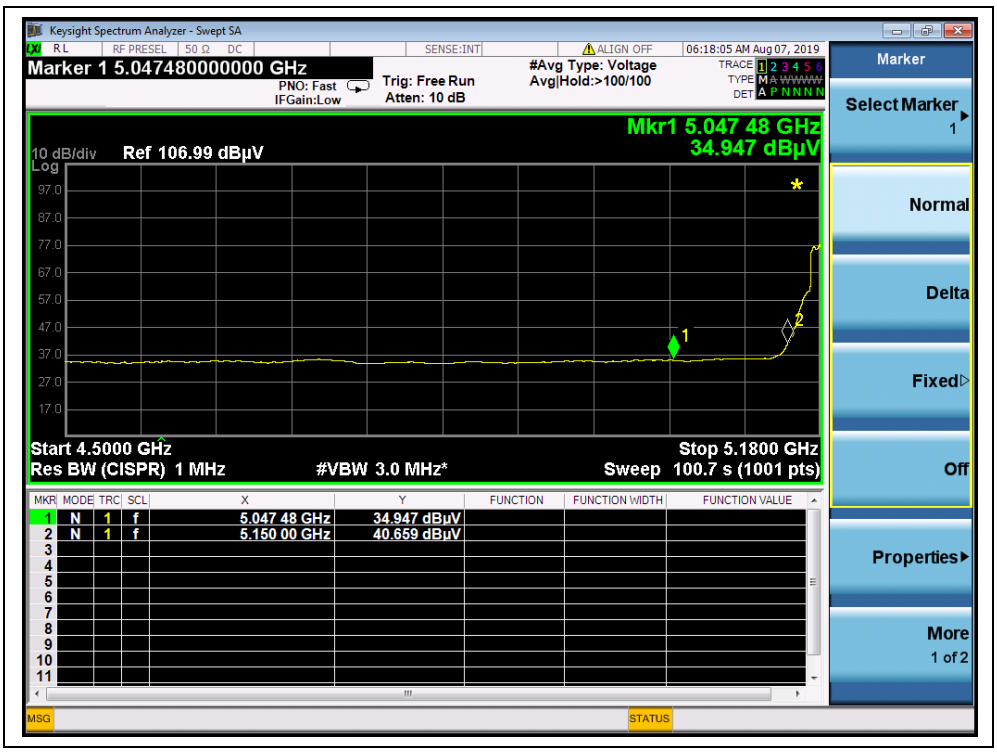
**A. Test Verdict:**

| Channel | Frequency (MHz) | Detector | Receiver Reading $U_R$ (dBuV) | $A_T$ (dB) | $A_{Factor}$ (dB@3m) | Max. Emission E (dBμV/m) | Limit (dBμV/m) | Verdict |
|---|---|---|---|---|---|---|---|---|
| | | PK/ AV | | | | | | |
| 36 | 5150.00 | PK | 50.34 | -26.92 | 32.20 | 55.62 | 74 | PASS |
| 36 | 5150.00 | AV | 40.66 | -26.92 | 32.20 | 45.94 | 54 | PASS |
| 48 | 5377.12 | PK | 45.88 | -26.92 | 32.20 | 51.16 | 74 | PASS |
| 48 | 5350.00 | AV | 33.36 | -26.92 | 32.20 | 38.64 | 54 | PASS |
| 149 | 5720.00 | PK | 35.40 | -26.23 | 32.20 | 41.37 | 110.83 | PASS |
| 149 | 5720.00 | AV | 34.84 | -26.23 | 32.20 | 40.81 | 54 | PASS |
| 165 | 5855.00 | PK | 37.43 | -26.23 | 32.20 | 43.40 | 110.83 | PASS |
| 165 | 5855.00 | AV | 36.97 | -26.23 | 32.20 | 42.94 | 54 | PASS |

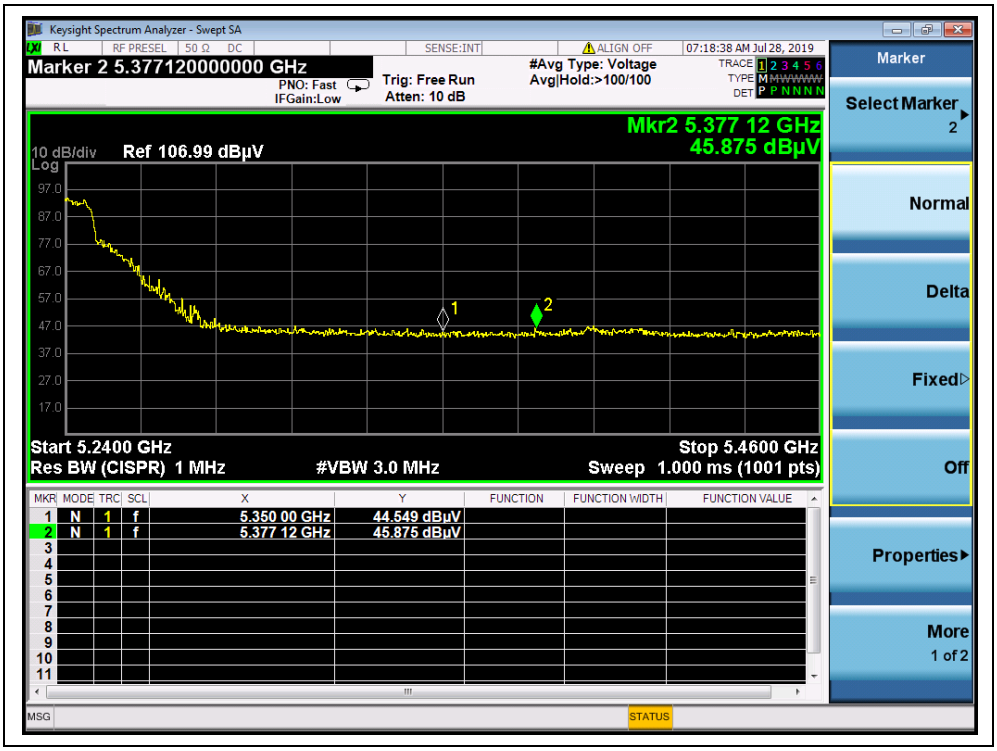
## B. Test Plots:



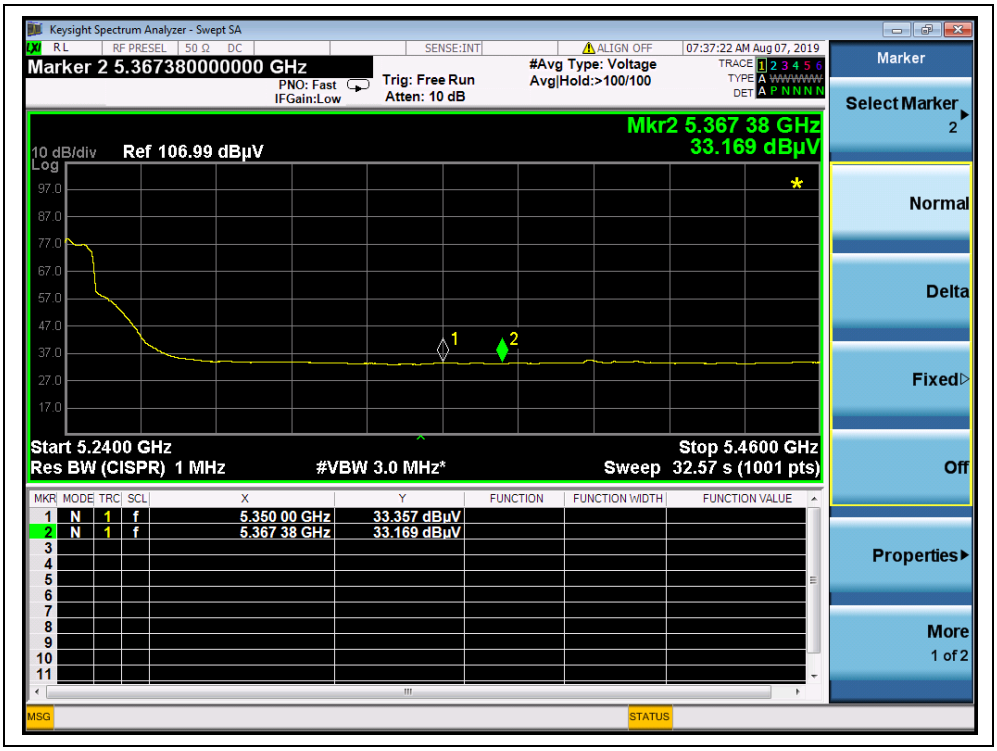

(Channel 36, PEAK, 802.11a)



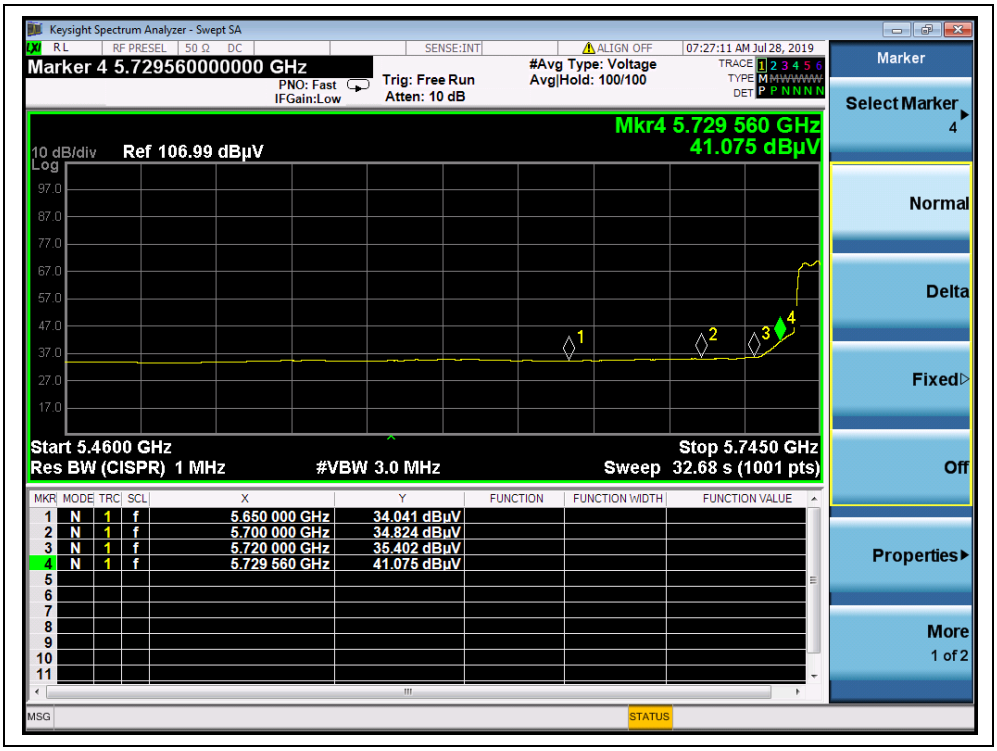

(Channel 36, AVG, 802.11a)



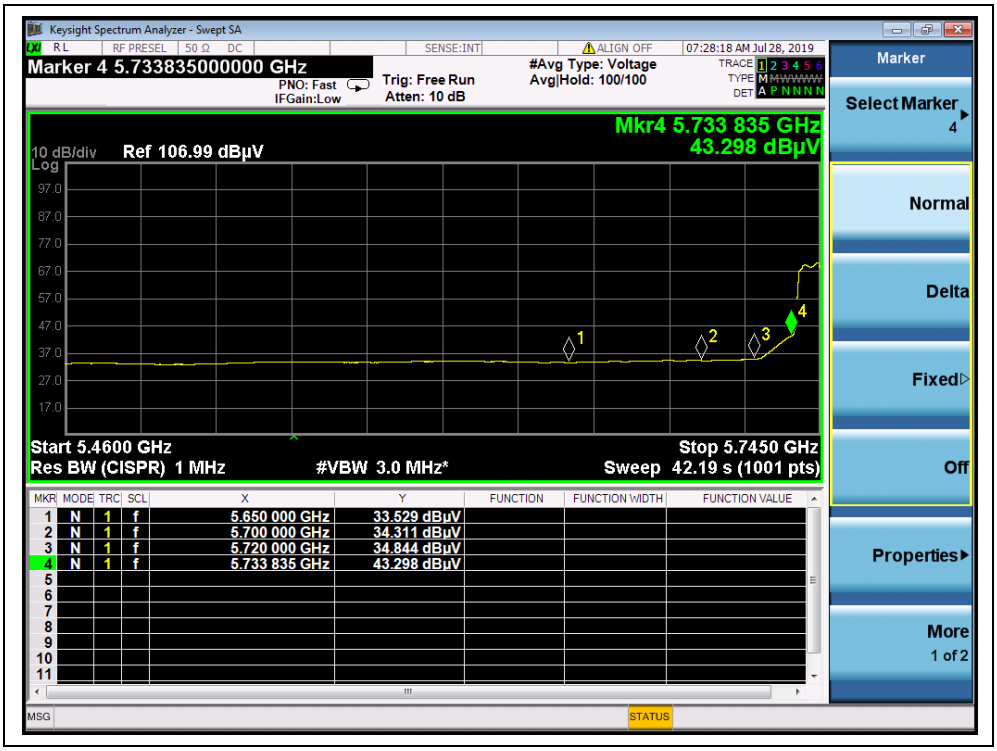

(Channel 48, PEAK, 802.11a)




(Channel 48, AVG, 802.11a)




(Channel 149, PEAK, 802.11a)




(Channel 149, AVG, 802.11a)


(Channel 165, PEAK, 802.11a)


(Channel 165, AVG, 802.11a)

# 2.9. Radiated Emission

### 2.9.1. Requirement

The peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:
(1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.
(2) For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.
(3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of -27dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.
The following formula is used to convert the equipment isotropic radiated power(eirp) to field strength (dBμV/m);

$$E = 1000000 \times \sqrt{30P} / 3 \ \mu V/m$$

where P is the EIRP in Watts

Therefore: -27 dBm/MHz = 68.23 dBuV/m

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

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

**Note:**

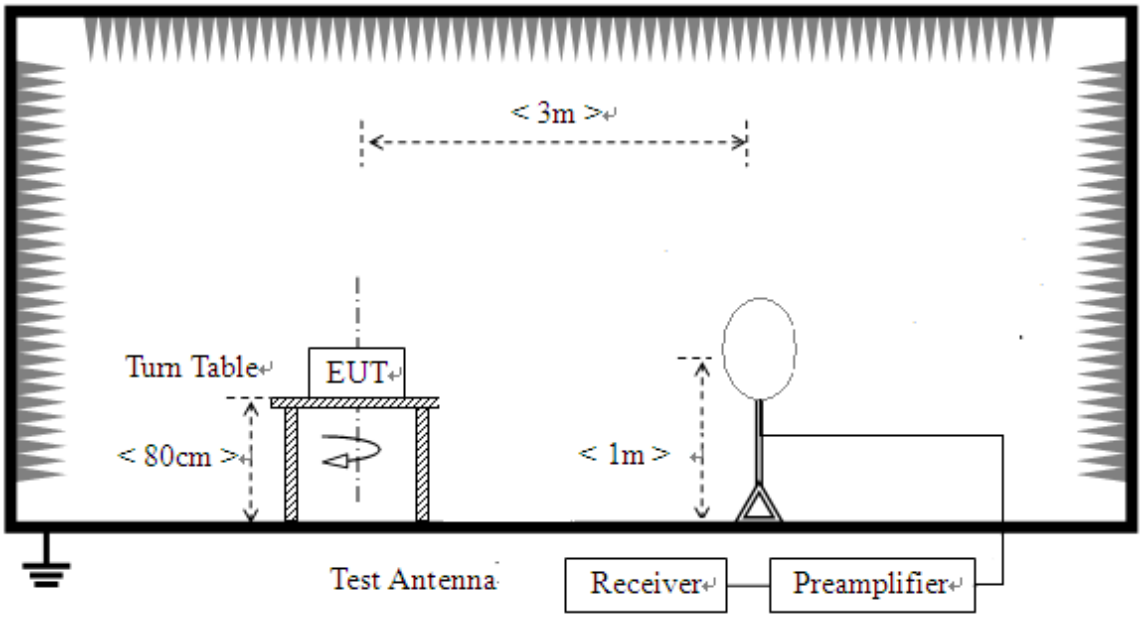
For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table)

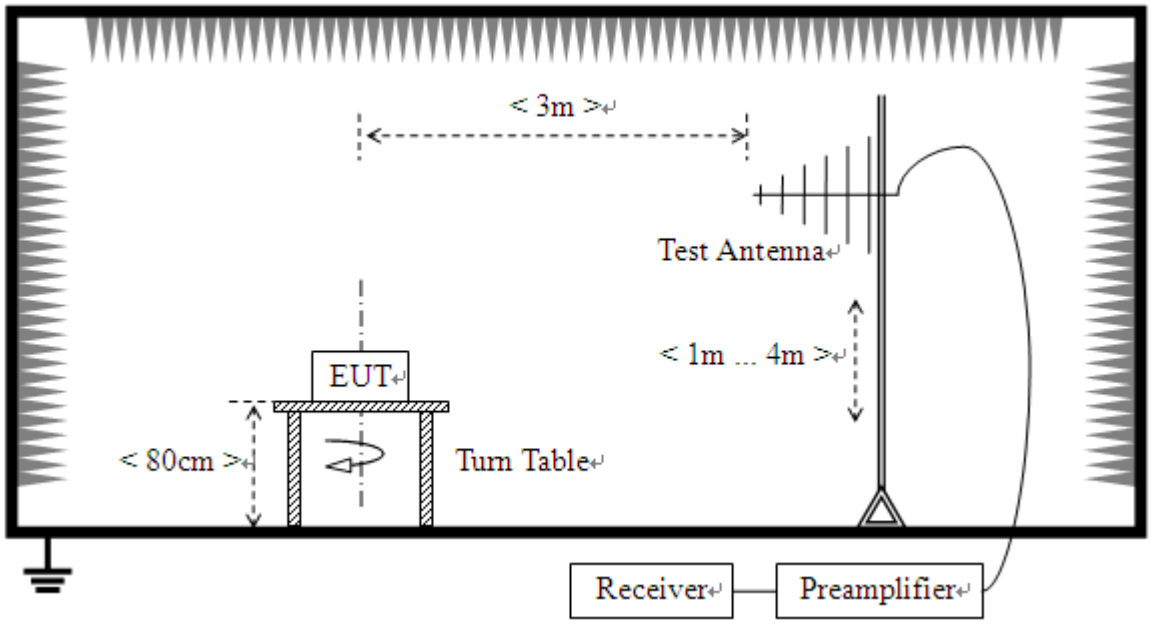
### 2.9.2. Test Description

**A. Test Setup:**

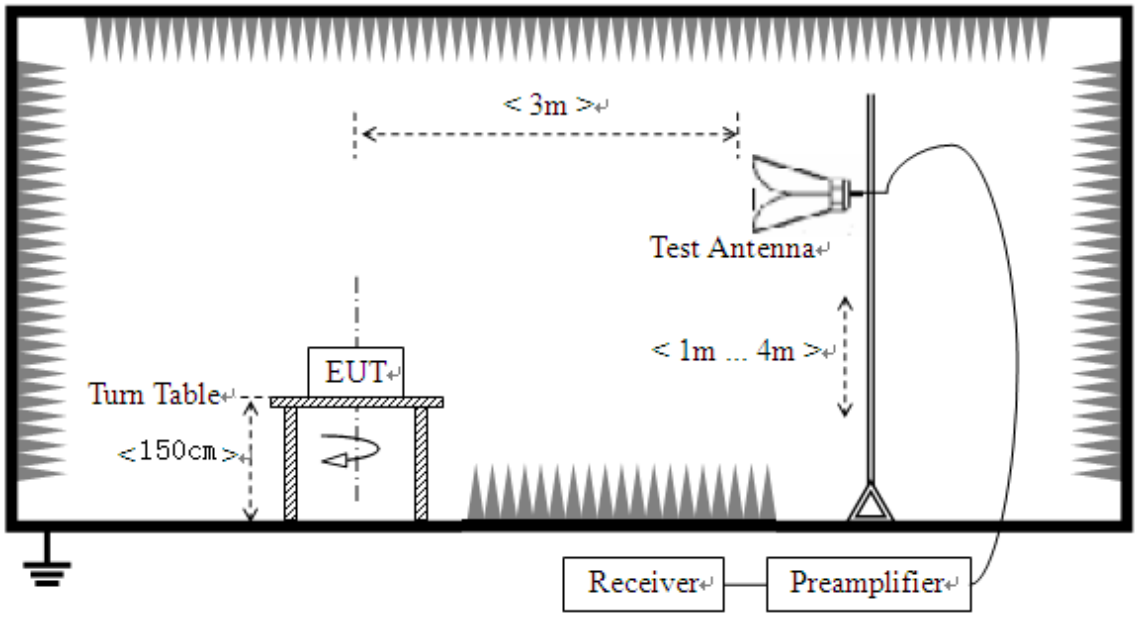
1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz




3) For radiated emissions above 1GHz




The RF absorbing material used on the reference ground plane and on the turntable have a maximum height (thickness) of 30 cm (12 in) and have a minimum-rated attenuation of 20 dB at all frequencies from 1 GHz to 18 GHz.

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.10 (2013). For radiated emissions below or equal to 1GHz, The EUT was set-up on insulator 80cm above the Ground Plane, For radiated emissions above 1GHz, The EUT

was set-up on insulator 150cm above the Ground Plane. The set-up and test methods were according to ANSI C63.10

For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading

For the Test Antenna:

(a) In the frequency range of 9kHz to 30MHz, magnetic field is measured with Loop Test Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.
(b) In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Place the test antenna at 3m away from area of the EUT, while keeping the test antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The test antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final test antenna elevation shall be that which maximizes the emissions. The test antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. The emission levels at both horizontal and vertical polarizations should be tested.

### 2.9.3. Test Result

According to ANSI C63.4 selection 4.2.2, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak limit, it is unnecessary to perform an quasi-peak measurement.

The measurement results are obtained as below:

$E\ [dB\mu V/m] = U_R + A_T + A_{Factor}\ [dB]$; $A_T = L_{Cable\ loss}\ [dB] - G_{preamp}\ [dB]$

$A_T$: Total correction Factor except Antenna

$U_R$: Receiver Reading

$G_{preamp}$: Preamplifier Gain

$A_{Factor}$: Antenna Factor at 3m

During the test, the total correction Factor $A_T$ and $A_{Factor}$ were built in test software.

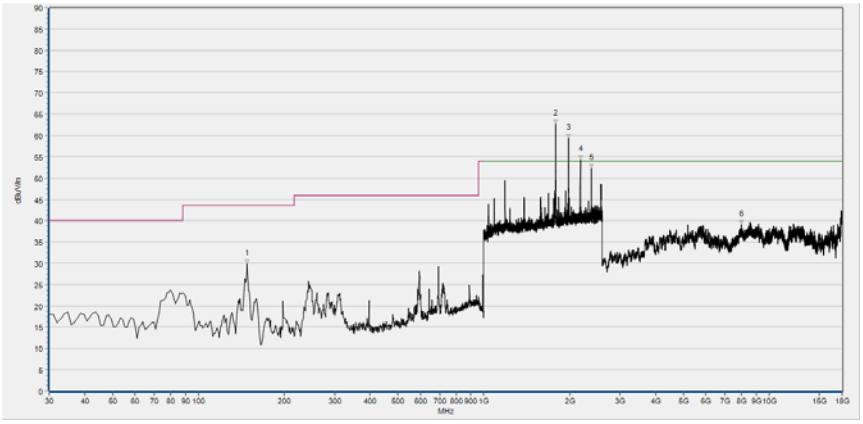
**Note1:** All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

**Note2:** For the frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

**Note3:** For the frequency, which started from 25GHz to 40GHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

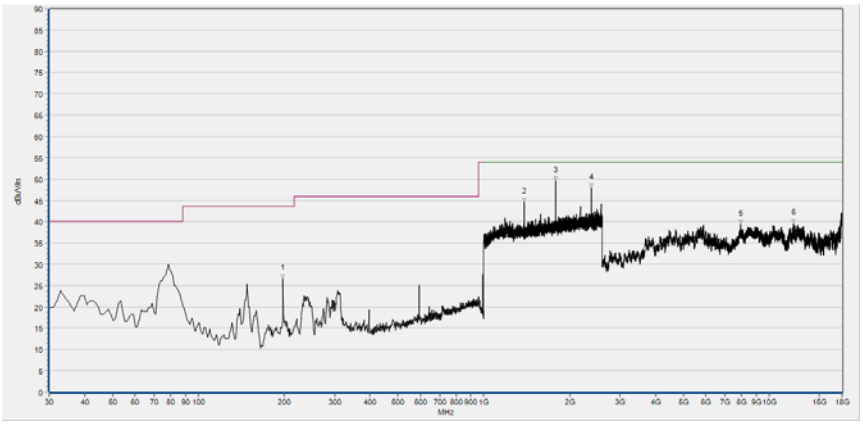
**802.11a Test mode**

Plots for Channel = 36



| Fre. (MHz) | Pk (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 148.458 | 29.86 | N/A | N/A | N/A | 43.50 | N/A | Horizontal | PASS |
| 1781.400 | 62.35 | N/A | 39.74 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 1976.800 | 58.93 | N/A | 42.08 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 2178.000 | 54.58 | N/A | 32.23 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 2372.000 | 52.60 | N/A | 32.52 | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 7997.239 | 39.03 | N/A | N/A | 68.23 | N/A | 54.00 | Horizontal | PASS |

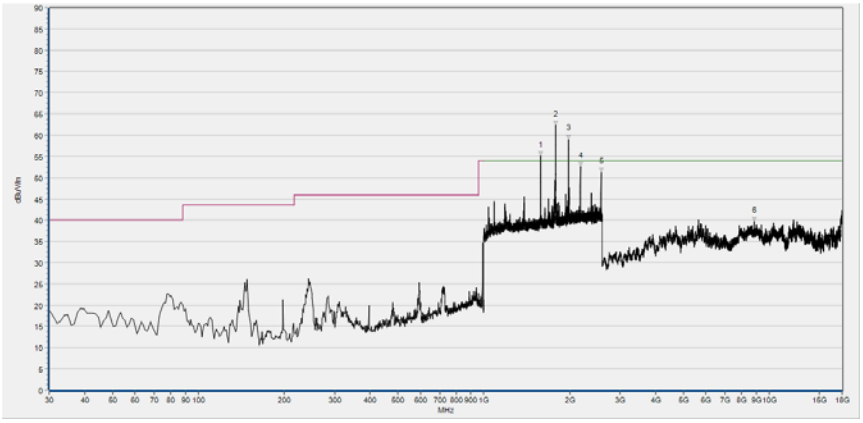
(Antenna Horizontal, 30MHz to 25GHz)



| Fre. (MHz) | Pk (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 197.978 | 26.66 | N/A | N/A | N/A | 43.50 | N/A | Vertical | PASS |
| 1385.729 | 44.63 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 1782.127 | 49.67 | N/A | N/A | 68.23 | N/A | 54.00 | Vertical | PASS |
| 2375.925 | 48.00 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 7926.385 | 39.31 | N/A | N/A | 68.23 | N/A | 54.00 | Vertical | PASS |
| 12156.071 | 39.60 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |

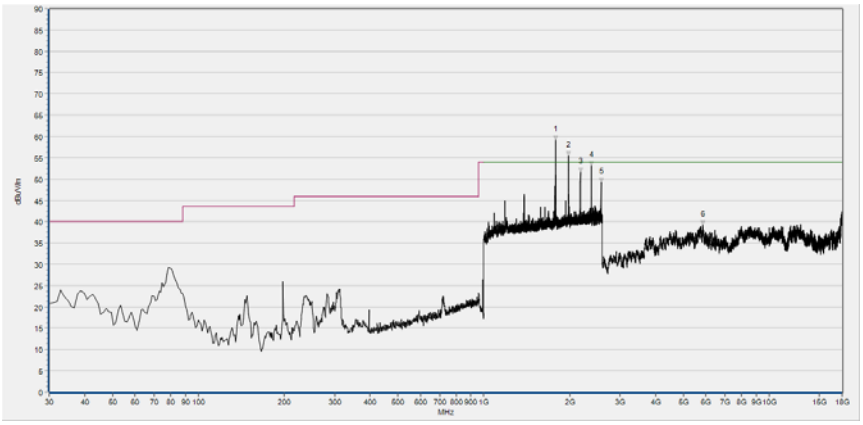
(Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 44



| Fre. (MHz) | Pk (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1584.000 | 55.27 | N/A | 38.89 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 1782.000 | 62.24 | N/A | 49.65 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 1980.300 | 58.60 | N/A | 45.40 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 2178.200 | 53.67 | N/A | 37.09 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 2574.000 | 52.31 | N/A | 39.07 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 8875.215 | 39.78 | N/A | N/A | 68.23 | N/A | 54.00 | Horizontal | PASS |

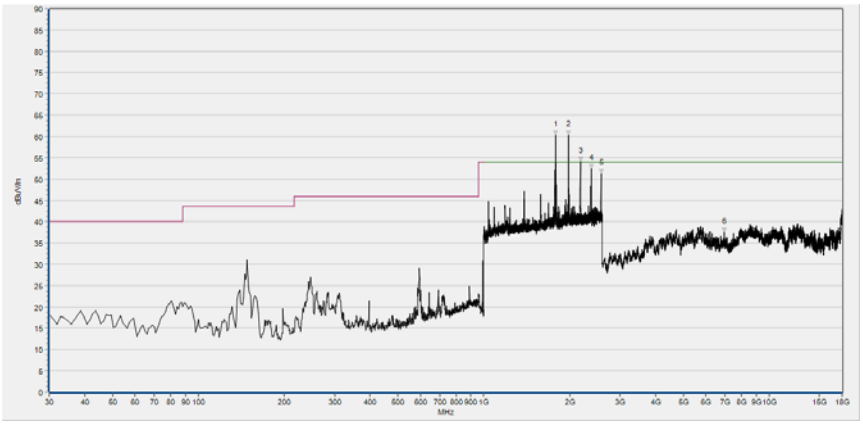
(Antenna Horizontal, 30MHz to 25GHz)



| Fre. (MHz) | Pk (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1782.000 | 58.93 | N/A | 43.38 | 68.23 | N/A | 54.00 | Vertical | PASS |
| 1980.200 | 55.88 | N/A | 40.53 | 68.23 | N/A | 54.00 | Vertical | PASS |
| 2178.200 | 52.86 | N/A | 35.43 | 68.23 | N/A | 54.00 | Vertical | PASS |
| 2376.200 | 53.46 | N/A | 37.36 | 74.00 | N/A | 54.00 | Vertical | PASS |
| 2574.391 | 49.28 | N/A | N/A | 68.23 | N/A | 54.00 | Vertical | PASS |
| 5859.292 | 39.20 | N/A | N/A | 68.23 | N/A | 54.00 | Vertical | PASS |

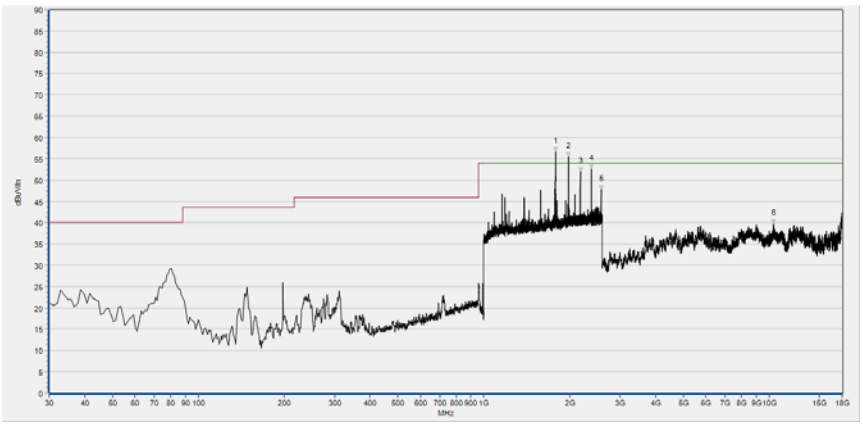
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 48



| Fre. (MHz) | Pk (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1782.200 | 60.92 | N/A | 49.11 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 1980.200 | 60.89 | N/A | 45.26 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 2178.400 | 54.59 | N/A | 38.06 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 2376.300 | 53.48 | N/A | 36.54 | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 2574.000 | 52.74 | N/A | 38.88 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 6952.911 | 37.50 | N/A | N/A | 68.23 | N/A | 54.00 | Horizontal | PASS |

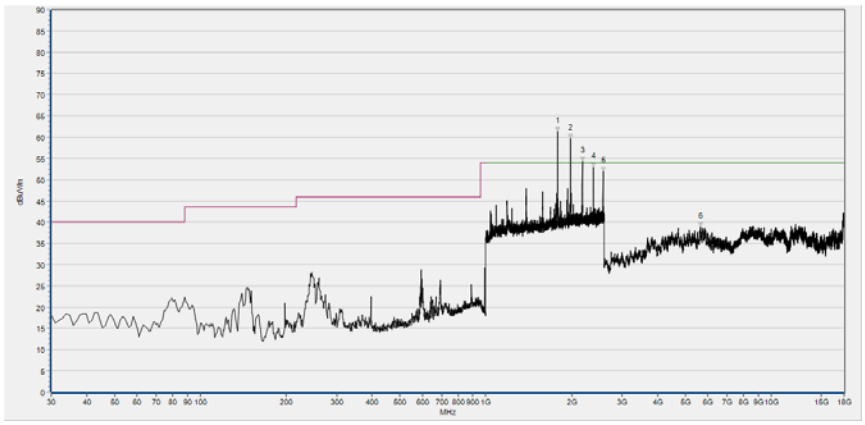
(Antenna Horizontal, 30MHz to 25GHz)



| Fre. (MHz) | Pk (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1782.100 | 57.92 | N/A | 43.12 | 68.23 | N/A | 54.00 | Vertical | PASS |
| 1980.100 | 56.19 | N/A | 39.17 | 68.23 | N/A | 54.00 | Vertical | PASS |
| 2178.200 | 52.08 | N/A | 38.21 | 68.23 | N/A | 54.00 | Vertical | PASS |
| 2376.200 | 52.35 | N/A | 35.32 | 74.00 | N/A | 54.00 | Vertical | PASS |
| 2574.391 | 47.74 | N/A | N/A | 68.23 | N/A | 54.00 | Vertical | PASS |
| 10347.750 | 39.78 | N/A | N/A | 68.23 | N/A | 54.00 | Vertical | PASS |

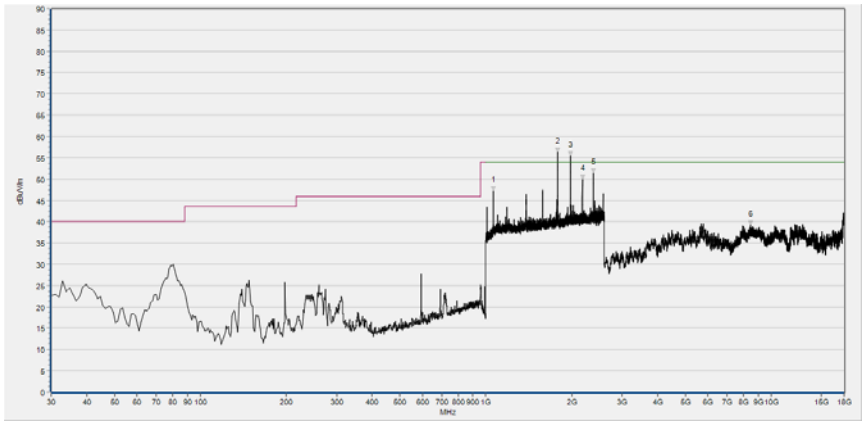
(Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 149



| Fre. (MHz) | Pk (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1782.100 | 62.15 | N/A | 49.59 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 1980.300 | 59.73 | N/A | 43.07 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 2178.300 | 54.89 | N/A | 37.78 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 2376.200 | 53.36 | N/A | 38.17 | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 2574.100 | 53.16 | N/A | 37.62 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 5649.810 | 38.85 | N/A | N/A | 68.23 | N/A | 54.00 | Horizontal | PASS |

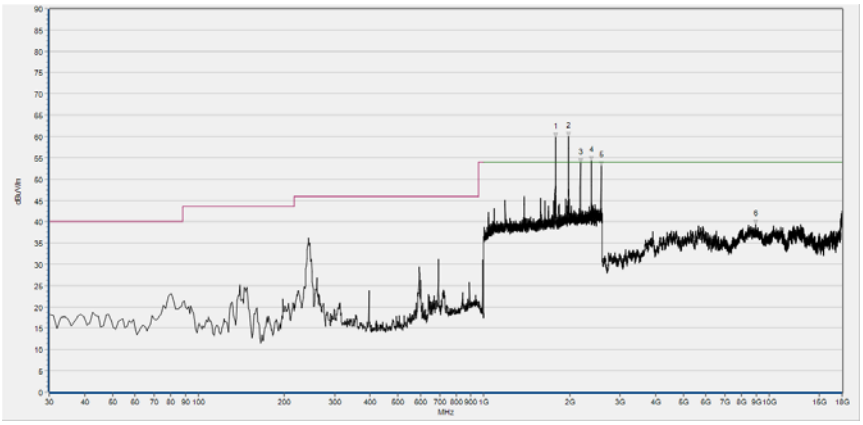
(Antenna Horizontal, 30MHz to 25GHz)



| Fre. (MHz) | Pk (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1064.021 | 47.34 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 1782.100 | 55.93 | N/A | 43.80 | 68.23 | N/A | 54.00 | Vertical | PASS |
| 1980.200 | 55.76 | N/A | 41.98 | 68.23 | N/A | 54.00 | Vertical | PASS |
| 2177.993 | 49.96 | N/A | N/A | 68.23 | N/A | 54.00 | Vertical | PASS |
| 2376.200 | 51.37 | N/A | 34.71 | 74.00 | N/A | 54.00 | Vertical | PASS |
| 8450.090 | 39.17 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |

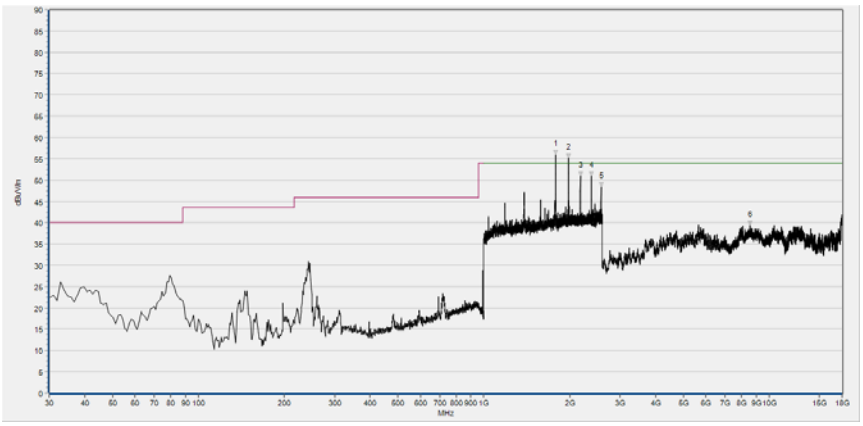
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 157



| Fre. (MHz) | Pk (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1782.200 | 59.79 | N/A | 48.01 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 1980.200 | 59.72 | N/A | 44.35 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 2178.100 | 53.98 | N/A | 38.09 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 2376.100 | 54.05 | N/A | 41.27 | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 2574.300 | 53.16 | N/A | 39.49 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 8967.634 | 39.32 | N/A | N/A | 68.23 | N/A | 54.00 | Horizontal | PASS |

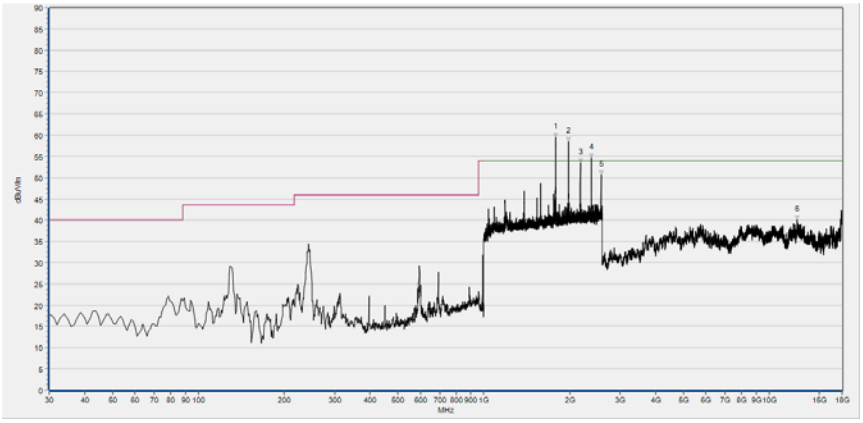
(Antenna Horizontal, 30MHz to 25GHz)



| Fre. (MHz) | Pk (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1782.400 | 55.65 | N/A | 43.40 | 68.23 | N/A | 54.00 | Vertical | PASS |
| 1980.200 | 55.11 | N/A | 38.88 | 68.23 | N/A | 54.00 | Vertical | PASS |
| 2177.993 | 50.92 | N/A | N/A | 68.23 | N/A | 54.00 | Vertical | PASS |
| 2375.925 | 50.95 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 2573.858 | 48.49 | N/A | N/A | 68.23 | N/A | 54.00 | Vertical | PASS |
| 8573.315 | 39.34 | N/A | N/A | 68.23 | N/A | 54.00 | Vertical | PASS |

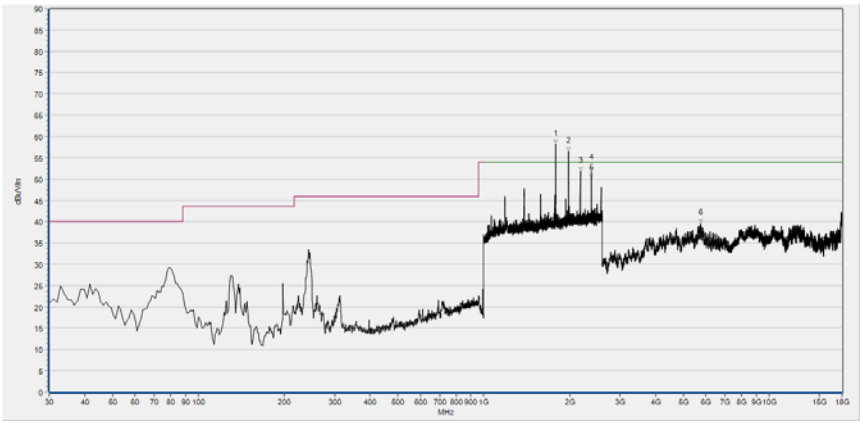
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 165



| Fre. (MHz) | Pk (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1782.100 | 59.74 | N/A | 48.05 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 1980.100 | 58.68 | N/A | 41.63 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 2178.100 | 53.69 | N/A | 39.84 | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 2376.200 | 55.69 | N/A | 42.76 | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 2573.858 | 50.78 | N/A | N/A | 68.23 | N/A | 54.00 | Horizontal | PASS |
| 12519.584 | 40.11 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |

(Antenna Horizontal, 30MHz to 25GHz)



| Fre. (MHz) | Pk (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1782.200 | 57.81 | N/A | 42.43 | 68.23 | N/A | 54.00 | Vertical | PASS |
| 1980.100 | 57.23 | N/A | 42.22 | 68.23 | N/A | 54.00 | Vertical | PASS |
| 2178.200 | 53.21 | N/A | 36.65 | 68.23 | N/A | 54.00 | Vertical | PASS |
| 2376.200 | 53.17 | N/A | 36.74 | 74.00 | N/A | 54.00 | Vertical | PASS |
| 2375.925 | 50.43 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 5751.470 | 39.54 | N/A | N/A | 68.23 | N/A | 54.00 | Vertical | PASS |

(Antenna Vertical, 30MHz to 25GHz)

# Annex A Test Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for test performed on the EUT as specified in CISPR 16-1-2:

| Test items | Uncertainty |
|---|---|
| Peak Output Power | ±2.22dB |
| Power spectral density (PSD) | ±2.22dB |
| Bandwidth | ±5% |
| Restricted Frequency Bands | ±5% |
| Radiated Emission | ±2.95dB |
| Conducted Emission | ±2.44dB |

This uncertainty represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2

# Annex B Testing Laboratory Information

### 1. Identification of the Responsible Testing Laboratory

| | |
|---|---|
| **Laboratory Name:** | Shenzhen Morlab Communications Technology Co., Ltd.<br>Morlab Laboratory |
| **Laboratory Address:** | FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China |
| **Telephone:** | +86 755 36698555 |
| **Facsimile:** | +86 755 36698525 |

### 2. Identification of the Responsible Testing Location

| | |
|---|---|
| **Name:** | Shenzhen Morlab Communications Technology Co., Ltd.<br>Morlab Laboratory |
| **Address:** | FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China |

### 3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013 and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.

## 4. Test Equipments Utilized

### 4.1 Conducted Test Equipments

| Equipment | Serial No. | Type | Manufacturer | Cal. Date | Cal. Due |
|---|---|---|---|---|---|
| Attenuator 1 | (N/A) | 10dB | Resnet | N/A | N/A |
| EXA Signal Analzyer | MY53470836 | N9010A | Agilent | 2019.04.09 | 2020.04.08 |
| USB Wideband Power Sensor | MY54210011 | U2021XA | Agilent | 2019.04.16 | 2020.04.15 |
| RF cable (30MHz-26GHz) | CB01 | RF01 | Morlab | N/A | N/A |
| Coaxial cable | CB02 | RF02 | Morlab | N/A | N/A |
| SMA connector | CN01 | RF03 | HUBER-SUHNER | N/A | N/A |
| Temperature Chamber | YOMA | (N/A) | (N/A) | 2019.01.22 | 2020.01.21 |
| Computer | T430i | Think Pad | Lenovo | N/A | N/A |

### 4.2 Conducted Emission Test Equipments

| Equipment Name | Serial No. | Type | Manufacturer | Cal. Date | Cal. Due |
|---|---|---|---|---|---|
| Receiver | MY56400093 | N9038A | KEYSIGHT | 2019.05.08 | 2020.05.09 |
| LISN | 812744 | NSLK 8127 | Schwarzbeck | 2019.05.08 | 2020.05.09 |
| Pulse Limiter (20dB) | 9391 | VTSD 9561-D | Schwarzbeck | 2019.05.08 | 2020.05.09 |
| Coaxial cable(BNC) | CB01 | EMC01 | Morlab | N/A | N/A |

### 4.3 List of Software Used

| Description | Manufacturer | Software Version |
|---|---|---|
| Test system | Tonscend | V2.6 |
| Power Panel | Agilent | V3.8 |
| MORLAB EMCR V1.2 | MORLAB | V 1.0 |

### 4.4 Radiated Test Equipments

| Equipment Name | Serial No. | Type | Manufacturer | Cal. Date | Cal. Due |
|---|---|---|---|---|---|
| Receiver | MY54130016 | N9038A | Agilent | 2018.08.04 | 2019.08.03 |
| Test Antenna - Bi-Log | 9163-519 | VULB 9163 | Schwarzbeck | 2019.05.08 | 2020.05.09 |
| Test Antenna - Horn | 9170C-531 | BBHA9170 | Schwarzbeck | 2019.02.15 | 2020.02.14 |
| Test Antenna - Loop | 1519-022 | FMZB1519 | Schwarzbeck | 2018.08.06 | 2019.08.05 |
| Test Antenna - Horn | 01774 | BBHA 9120D | Schwarzbeck | 2018.08.02 | 2019.08.01 |
| Coaxial cable (N male) (9KHz-30MHz) | CB04 | EMC04 | Morlab | N/A | N/A |
| Coaxial cable (N male) (30MHz-26GHz) | CB02 | EMC02 | Morlab | N/A | N/A |
| Coaxial cable (N male) (30MHz-26GHz) | CB03 | EMC03 | Morlab | N/A | N/A |
| Coaxial cable (N male) (30MHz-40GHz) | CB05 | EMC05 | Morlab | N/A | N/A |
| 1-18GHz pre-Amplifier | MA02 | TS-PR18 | Rohde& Schwarz | 2019.05.08 | 2020.05.09 |
| 18-26.5GHz pre-Amplifier | MA03 | TS-PR18 | Rohde& Schwarz | 2019.05.08 | 2020.05.09 |
| 26GHz -40GHz pre-Amplifier | MA05 | BBV9721 | Rohde& Schwarz | 2019.05.08 | 2020.05.09 |
| Notch Filter | N/A | WRCG-5150-5350 | Wainwright | 2018.12.01 | 2019.11.30 |
| Notch Filter | N/A | WRCG-5725-5850 | Wainwright | 2018.12.01 | 2019.11.30 |
| Anechoic Chamber | N/A | 9m*6m*6m | CRT | 2017.11.19 | 2020.11.18 |

END OF REPORT