

APPLICATION CERTIFICATION FCC Part 15C
On Behalf of

SWAGTEK

MINI Wi-Fi Plug

Model No.: MINI Wi-Fi Plug, LO-FP01, Mini Smart Socket

FCC ID: O55005017

Prepared for : SWAGTEK
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Report No. : ATE20172536
Date of Test : December 25, 2017-January 23, 2018
Date of Report : February 6, 2018

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Test Report Certification

Applicant : SWAGTEK
Manufacturer : SWAGTEK
Product : MINI Wi-Fi Plug
Model No. : MINI Wi-Fi Plug, LO-FP01, Mini Smart Socket
Trade name : LOGIC, iSWAG, UNONU

Measurement Procedure Used:

**FCC Rules and Regulations Part 15 Subpart C Section 15.247: 2017
ANSI C63.10: 2013**


The EUT was tested according to DTS test procedure of Apr 05, 2017 KDB558074 D01 DTS Meas Guidance v04 for compliance to FCC 47CFR 15.247 requirements

The device described above is tested by Shenzhen Accurate Technology Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and Shenzhen Accurate Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.


This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Accurate Technology Co., Ltd.

Date of Test : December 25, 2017-January 23, 2018
Date of Report : February 6, 2018

Prepared by :

Bob Wang

(Bob Wang, Engineer)

Approved & Authorized Signer :


(Sean Liu, Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

| | | |
|-------------------------|---|---|
| EUT | : | MINI Wi-Fi Plug |
| Model Number | : | MINI Wi-Fi Plug, LO-FP01, Mini Smart Socket (Note: We hereby state that these models are identical in interior structure, electrical circuits and components, Just Model name is different. Therefore only model MINI Wi-Fi Plug Plug is for tests.) |
| Frequency Range | : | 802.11b/g/n(20MHz): 2412-2462MHz |
| Number of Channels | : | 802.11b/g/n (20MHz):11 |
| Antenna Gain | : | 2dBi |
| Type of Antenna | : | Integral antenna |
| Power Supply | : | AC 120V; 60Hz |
| Data Rate | : | 802.11b: 11, 5.5, 2, 1 Mbps 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: 72.2~6.5Mbps |
| Modulation Type | : | DSSS, OFDM |
| Applicant | : | SWAGTEK |
| Address | : | 10205 NW 19th Street STE101, Miami, Florida 33172, United States |
| Manufacturer | : | SWAGTEK |
| Address | : | 10205 NW 19th Street STE101, Miami, Florida 33172, United States |
| Date of sample received | : | December 19, 2017 |
| Date of Test | : | December 25, 2017-January 23, 2018 |
| Sample number | : | 1702066 |

1.2.Carrier Frequency of Channels

802.11b, 802.11g, 802.11n (20MHz)

| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
|---------|----------------|---------|----------------|
| 01 | 2412 | 07 | 2442 |
| 02 | 2417 | 08 | 2447 |
| 03 | 2422 | 09 | 2452 |
| 04 | 2427 | 10 | 2457 |
| 05 | 2432 | 11 | 2462 |
| 06 | 2437 | --- | --- |

1.3.Accessory and Auxiliary Equipment

N/A

1.4. Description of Test Facility

| | | |
|---------------|---|---|
| EMC Lab | : | Recognition of accreditation by Federal Communications Commission (FCC) The Designation Number is CN1189 The Registration Number is 708358 Listed by Innovation, Science and Economic Development Canada (ISED) The Registration Number is 5077A-2 Accredited by China National Accreditation Service for Conformity Assessment (CNAS) The Registration Number is CNAS L3193 Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 4297.01 |
| Name of Firm | : | Shenzhen Accurate Technology Co., Ltd. |
| Site Location | : | 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China |

1.5. Measurement Uncertainty

| | | |
|---|---|-------------|
| Conducted Emission Expanded Uncertainty | = | 2.23dB, k=2 |
| Radiated emission expanded uncertainty (9kHz-30MHz) | = | 3.08dB, k=2 |
| Radiated emission expanded uncertainty (30MHz-1000MHz) | = | 4.42dB, k=2 |
| Radiated emission expanded uncertainty (Above 1GHz) | = | 4.06dB, k=2 |

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

| Kind of equipment | Manufacturer | Type | S/N | 2017 Calibrated dates | 2018 Calibrated dates | Calibrated until |
|---------------------------------|---------------------------|---|--------------------|-----------------------------|-----------------------------|---------------------|
| EMI Test Receiver | Rohde&Schwarz | ESCS30 | 100307 | Jan. 07, 2017 | Jan. 06, 2018 | 1 Year |
| EMI Test Receiver | Rohde&Schwarz | ESPI3 | 101526/003 | Jan. 07, 2017 | Jan. 06, 2018 | 1 Year |
| Spectrum Analyzer | Rohde&Schwarz | FSV-40 | 101495 | Jan. 07, 2017 | Jan. 06, 2018 | 1 Year |
| Spectrum Analyzer | Agilent | E7405A | MY45115511 | Jan. 07, 2017 | Jan. 06, 2018 | 1 Year |
| Pre-Amplifier | Rohde&Schwarz | CBLU118354 0-01 | 3791 | Jan. 07, 2017 | Jan. 06, 2018 | 1 Year |
| Loop Antenna | Schwarzbeck | FMZB1516 | 1516131 | Jan. 13, 2017 | Jan. 12, 2018 | 1 Year |
| Bilog Antenna | Schwarzbeck | VULB9163 | 9163-323 | Jan. 13, 2017 | Jan. 12, 2018 | 1 Year |
| Horn Antenna | Schwarzbeck | BBHA9120D | 9120D-655 | Jan. 13, 2017 | Jan. 12, 2018 | 1 Year |
| Horn Antenna | Schwarzbeck | BBHA9170 | 9170-359 | Jan. 13, 2017 | Jan. 12, 2018 | 1 Year |
| Open Switch and Control Unit | Rohde&Schwarz | OSP120 + OSP-B157 | 101244 + 100866 | Jan. 07, 2017 | Jan. 06, 2018 | 1 Year |
| LISN | Rohde&Schwarz | ESH3-Z5 | 100305 | Jan. 07, 2017 | Jan. 06, 2018 | 1 Year |
| LISN | Schwarzbeck | NSLK8126 | 8126431 | Jan. 07, 2017 | Jan. 06, 2018 | 1 Year |
| Highpass Filter | Wainwright Instruments | WHKX3.6/18 G-10SS | N/A | Jan. 07, 2017 | Jan. 06, 2018 | 1 Year |
| Band Reject Filter | Wainwright Instruments | WRCG2400/2 485-2375/2510 -60/11SS | N/A | Jan. 07, 2017 | Jan. 06, 2018 | 1 Year |

3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The mode is used: **1.802.11b Transmitting mode**

Low Channel: 2412MHz

Middle Channel: 2437MHz

High Channel: 2462MHz

2.802.11g Transmitting mode

Low Channel: 2412MHz

Middle Channel: 2437MHz

High Channel: 2462MHz

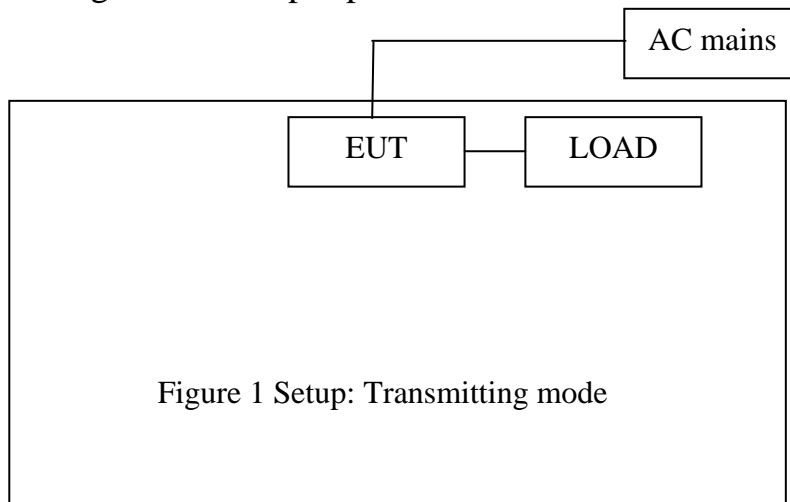
3.802.11n (20MHz) Transmitting mode

Low Channel: 2412MHz

Middle Channel: 2437MHz

High Channel: 2462MHz

3.2.Configuration and peripherals

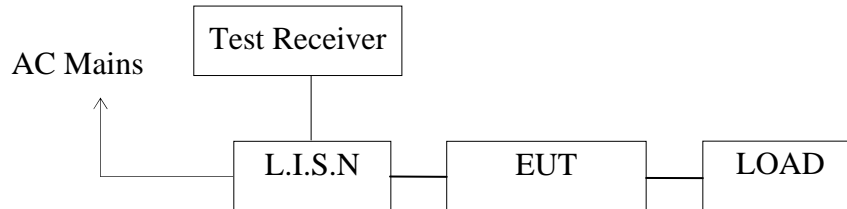


4. TEST PROCEDURES AND RESULTS

| FCC Rules | Description of Test | Result |
|-------------------------------------|-----------------------------------|-----------|
| Section 15.207 | Power Line Conducted Emission | Compliant |
| Section 15.247(a)(2) | 6dB Bandwidth Test | Compliant |
| KDB558074 D01 DTS Meas Guidance v04 | Duty cycle | Compliant |
| KDB558074 D01 DTS Meas Guidance v04 | 99% Occupied Bandwidth | Compliant |
| Section 15.247(e) | Power Spectral Density Test | Compliant |
| Section 15.247(b)(3) | Maximum average Output Power Test | Compliant |
| Section 15.247(d) | Band Edge Compliance Test | Compliant |
| Section 15.247(d) Section 15.209 | Radiated Spurious Emission Test | Compliant |
| Section 15.203 | Antenna Requirement | Compliant |

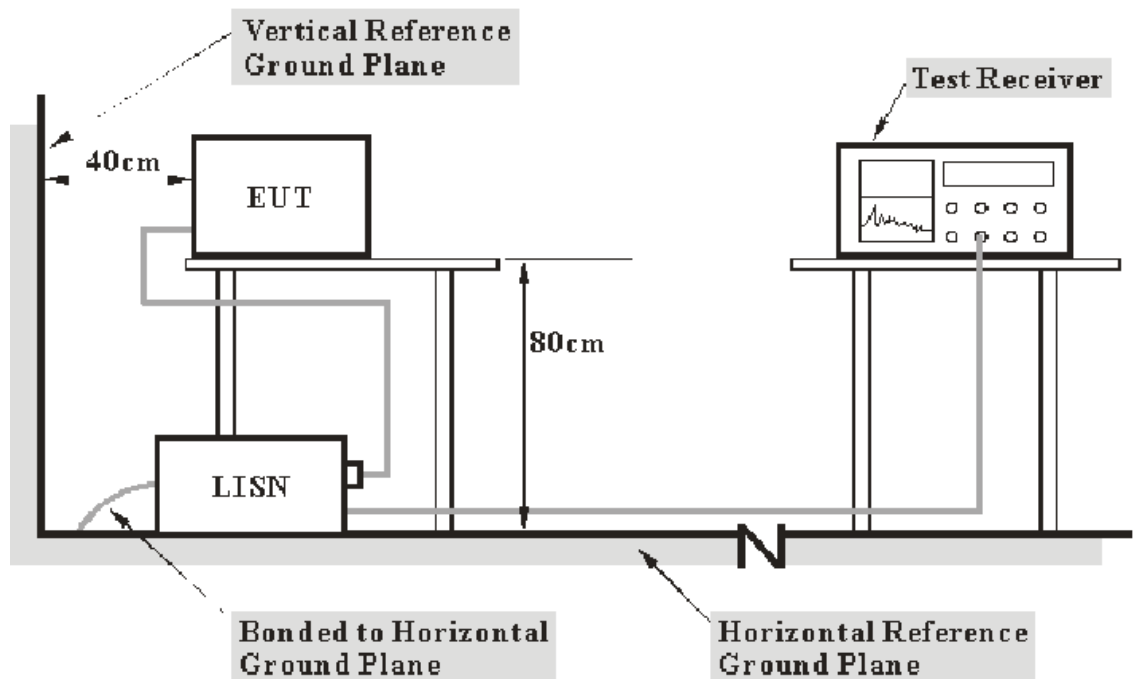
5. POWER LINE CONDUCTED MEASUREMENT

5.1. Block Diagram of Test Setup



(EUT: MINI Wi-Fi Plug)

5.1.1. Test System Setup



- Note:**
1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

5.2.Power Line Conducted Emission Measurement Limits

| Frequency (MHz) | Limit dB(μ V) | |
|---|--------------------|---------------|
| | Quasi-peak Level | Average Level |
| 0.15 - 0.50 | 66.0 – 56.0 * | 56.0 – 46.0 * |
| 0.50 - 5.00 | 56.0 | 46.0 |
| 5.00 - 30.00 | 60.0 | 50.0 |
| NOTE1: The lower limit shall apply at the transition frequencies. NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz. | | |

5.3.Configuration of EUT on Measurement

The equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

5.4.Operating Condition of EUT

5.4.1. Setup the EUT and simulator as shown as Section 5.1.

5.4.2. Turn on the power of all equipment.

5.4.3. Let the EUT work in test mode and measure it.

5.5.Test Procedure

The EUT is put on the plane 0.8 m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Measurement. The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

5.6.Data Sample

| Frequency (MHz) | Transducer value (dB) | QuasiPeak Level (dBμV) | Average Level (dBμV) | QuasiPeak Limit (dBμV) | Average Limit (dBμV) | QuasiPeak Margin (dB) | Average Margin (dB) | Remark (Pass/Fail) |
|-----------------|-----------------------|------------------------|----------------------|------------------------|----------------------|-----------------------|---------------------|--------------------|
| X.XX | 10.5 | 51.1 | 34.2 | 56.0 | 46.0 | 4.9 | 11.8 | Pass |

Frequency(MHz) = Emission frequency in MHz

Transducer value(dB) = Insertion loss of LISN + Cable Loss

Level(dBμV) = Quasi-peak Reading/Average Reading + Transducer value

Limit (dBμV) = Limit stated in standard

Margin = Limit (dBμV) - Level (dBμV)

Calculation Formula:

Margin = Limit (dBμV) - Level (dBμV)

5.7.Power Line Conducted Emission Measurement Results

PASS.

The frequency range from 150kHz to 30MHz is checked.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.
Emissions attenuated more than 20 dB below the permissible value are not reported.

All data was recorded in the Quasi-peak and average detection mode.

The spectral diagrams are attached as below.

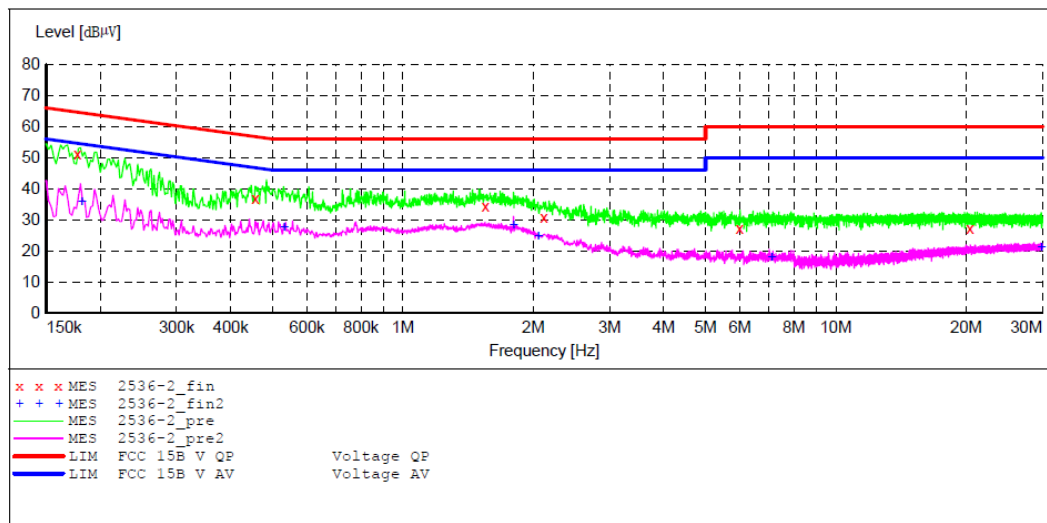
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: MINI Wi-Fi Plug M/N: MINI Wi-Fi Plug
Manufacturer: SWAGTEK
Operating Condition: ON
Test Site: 2#Shielding Room
Operator: Frank
Test Specification: N 120V/60Hz
Comment: Report NO.:ATE20172536
Start of Test: 2017-12-25 / 11:20:39

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
Start Stop Step Detector Meas. IF Transducer
Frequency Frequency Width Time Bandw.
150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
Average



MEASUREMENT RESULT: "2536-2_fin"

2017-12-25 11:23

| Frequency MHz | Level dBμV | Transd dB | Limit dBμV | Margin dB | Detector | Line | PE |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.177000 | 51.10 | 10.8 | 65 | 13.5 | QP | N | GND |
| 0.456000 | 36.80 | 11.0 | 57 | 20.0 | QP | N | GND |
| 1.549500 | 34.30 | 11.2 | 56 | 21.7 | QP | N | GND |
| 2.116500 | 30.80 | 11.3 | 56 | 25.2 | QP | N | GND |
| 5.991000 | 27.30 | 11.5 | 60 | 32.7 | QP | N | GND |
| 20.418000 | 27.30 | 11.7 | 60 | 32.7 | QP | N | GND |

MEASUREMENT RESULT: "2536-2_fin2"

2017-12-25 11:23

| Frequency MHz | Level dBμV | Transd dB | Limit dBμV | Margin dB | Detector | Line | PE |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.181500 | 35.80 | 10.8 | 54 | 18.6 | AV | N | GND |
| 0.532500 | 27.70 | 11.0 | 46 | 18.3 | AV | N | GND |
| 1.801500 | 28.50 | 11.2 | 46 | 17.5 | AV | N | GND |
| 2.058000 | 24.90 | 11.3 | 46 | 21.1 | AV | N | GND |
| 7.111500 | 18.10 | 11.5 | 50 | 31.9 | AV | N | GND |
| 29.827500 | 21.30 | 11.8 | 50 | 28.7 | AV | N | GND |

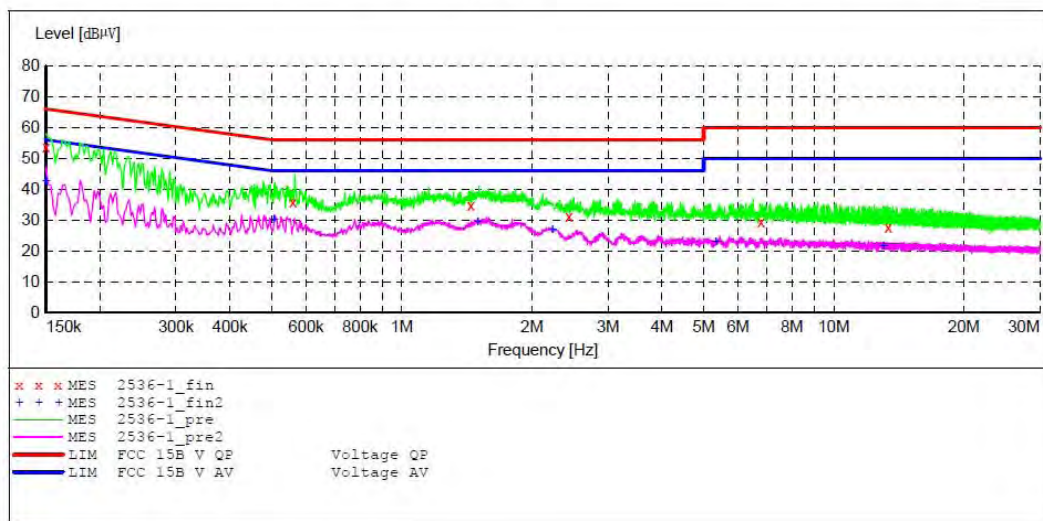
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: MINI Wi-Fi Plug M/N: MINI Wi-Fi Plug
Manufacturer: SWAGTEK
Operating Condition: ON
Test Site: 2#Shielding Room
Operator: Frank
Test Specification: L 120V/60Hz
Comment: Report NO.:ATE20172536
Start of Test: 2017-12-25 / 11:16:47

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
Start Stop Step Detector Meas. IF Transducer
Frequency Frequency Width Time Bandw.
150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
Average



MEASUREMENT RESULT: "2536-1_fin"

2017-12-25 11:19

| Frequency MHz | Level dBμV | Transd dB | Limit dBμV | Margin dB | Detector | Line | PE |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.150000 | 53.80 | 10.8 | 66 | 12.2 | QP | L1 | GND |
| 0.559500 | 35.80 | 11.0 | 56 | 20.2 | QP | L1 | GND |
| 1.446000 | 34.70 | 11.2 | 56 | 21.3 | QP | L1 | GND |
| 2.440500 | 31.20 | 11.3 | 56 | 24.8 | QP | L1 | GND |
| 6.787500 | 29.60 | 11.5 | 60 | 30.4 | QP | L1 | GND |
| 13.380000 | 27.70 | 11.6 | 60 | 32.3 | QP | L1 | GND |

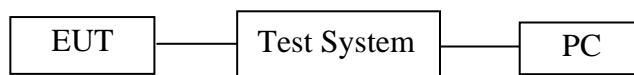
MEASUREMENT RESULT: "2536-1_fin2"

2017-12-25 11:19

| Frequency MHz | Level dBμV | Transd dB | Limit dBμV | Margin dB | Detector | Line | PE |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.150000 | 42.70 | 10.8 | 56 | 13.3 | AV | L1 | GND |
| 0.505500 | 30.00 | 11.0 | 46 | 16.0 | AV | L1 | GND |
| 1.500000 | 29.60 | 11.2 | 46 | 16.4 | AV | L1 | GND |
| 2.233500 | 26.90 | 11.3 | 46 | 19.1 | AV | L1 | GND |
| 5.338500 | 23.20 | 11.5 | 50 | 26.8 | AV | L1 | GND |
| 13.029000 | 21.70 | 11.6 | 50 | 28.3 | AV | L1 | GND |

6. 6DB BANDWIDTH MEASUREMENT

6.1. Block Diagram of Test Setup



6.2. The Requirement For Section 15.247(a)(2)

Section 15.247(a)(2): Systems using digital modulation techniques may operate in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

6.3. EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.4. Operating Condition of EUT

6.4.1. Setup the EUT and simulator as shown as Section 6.1.

6.4.2. Turn on the power of all equipment.

6.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 . We select 2412MHz, 2437MHz, 2462MHz TX frequency to transmit.

6.5. Test Procedure

1. Set resolution bandwidth (RBW) = 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.6. Test Result

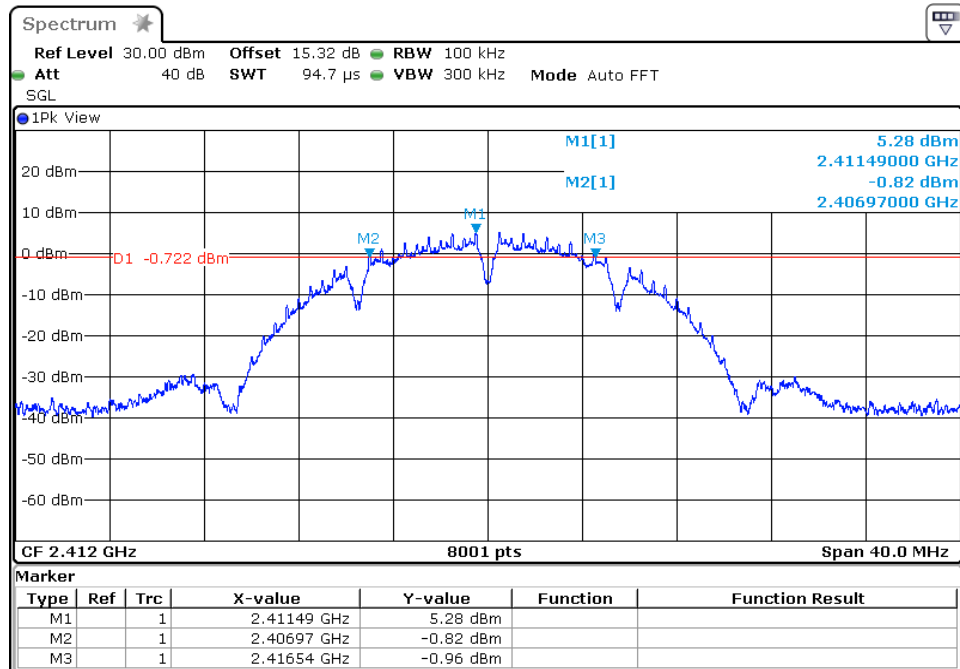
| The test was performed with 802.11b | | | |
|-------------------------------------|-----------------|---------------------|-------------|
| Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | Limit (MHz) |
| Low | 2412 | 9.570 | > 0.5MHz |
| Middle | 2437 | 9.585 | > 0.5MHz |
| High | 2462 | 9.095 | > 0.5MHz |

| The test was performed with 802.11g | | | |
|-------------------------------------|-----------------|---------------------|-------------|
| Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | Limit (MHz) |
| Low | 2412 | 16.335 | > 0.5MHz |
| Middle | 2437 | 16.340 | > 0.5MHz |
| High | 2462 | 16.340 | > 0.5MHz |

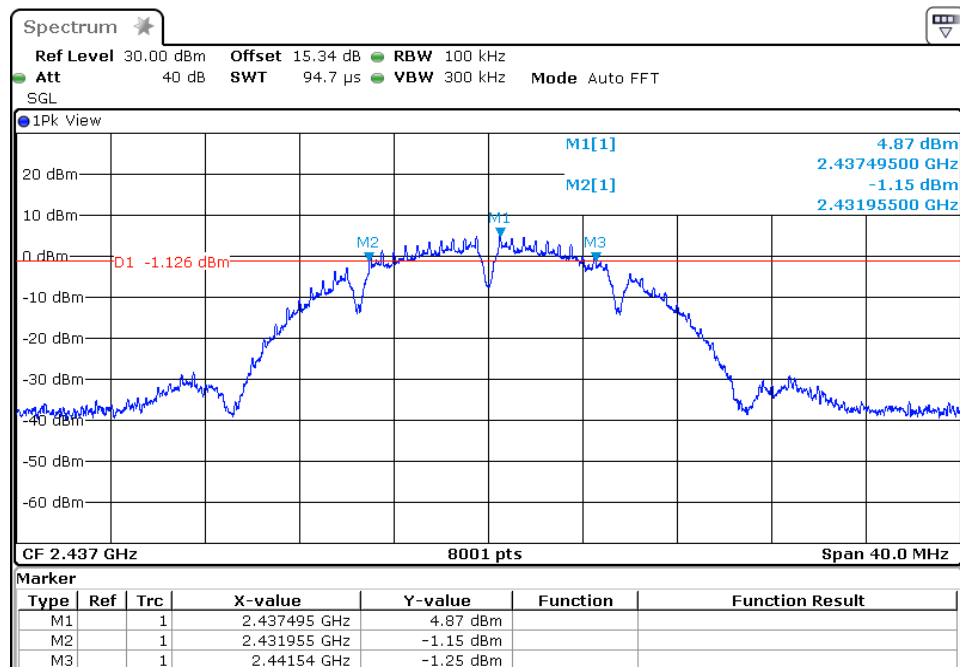
| The test was performed with 802.11n (Bandwidth: 20 MHz) | | | |
|---|-----------------|---------------------|-------------|
| Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | Limit (MHz) |
| Low | 2412 | 17.585 | > 0.5MHz |
| Middle | 2437 | 17.580 | > 0.5MHz |
| High | 2462 | 17.590 | > 0.5MHz |

The spectrum analyzer plots are attached as below.

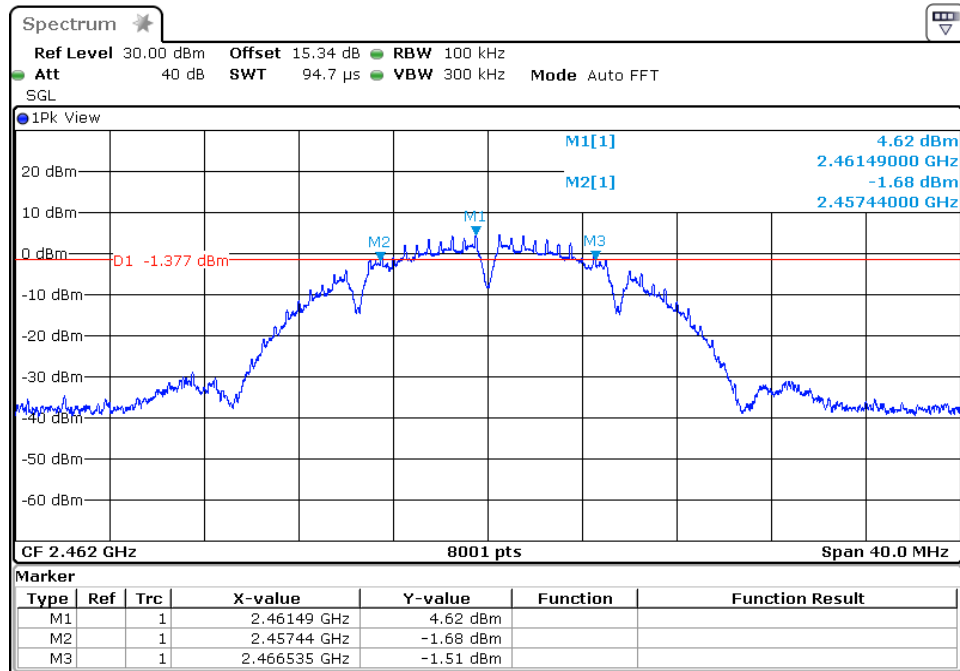
802.11b Channel Low 2412MHz



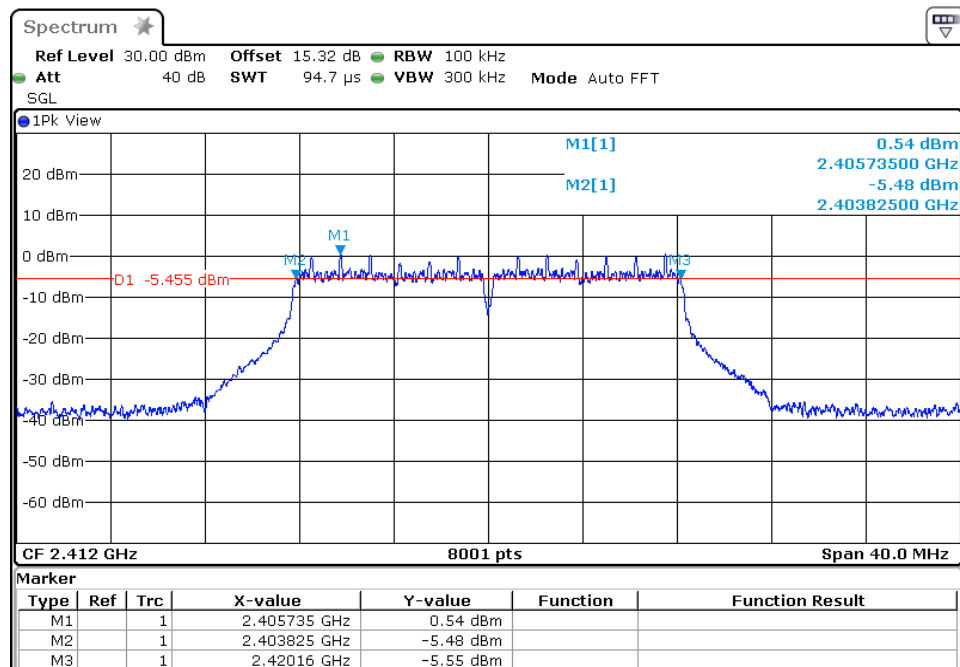
802.11b Channel Middle 2437MHz



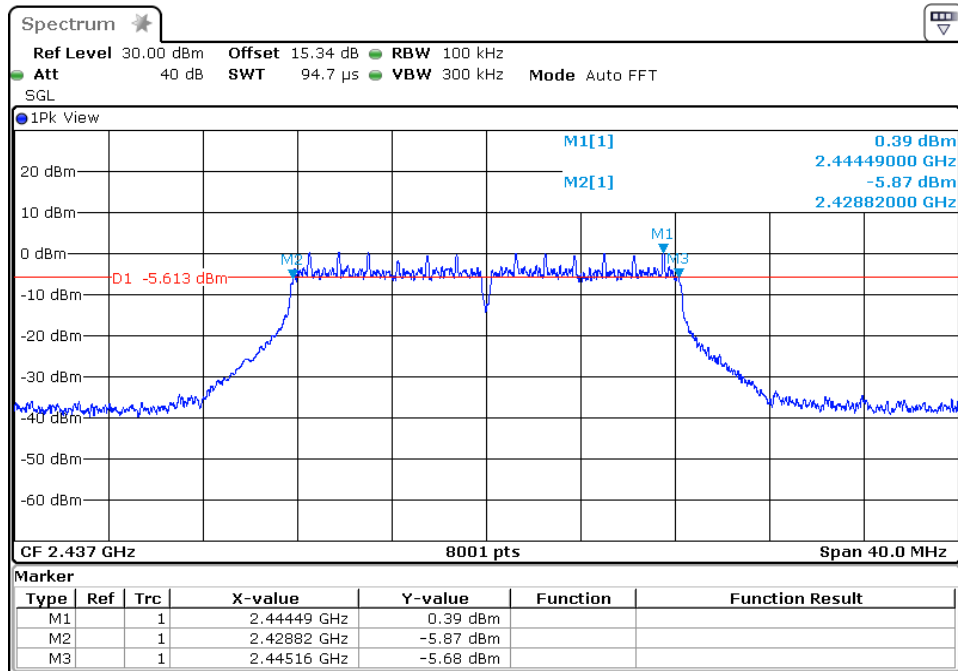
802.11b Channel High 2462MHz



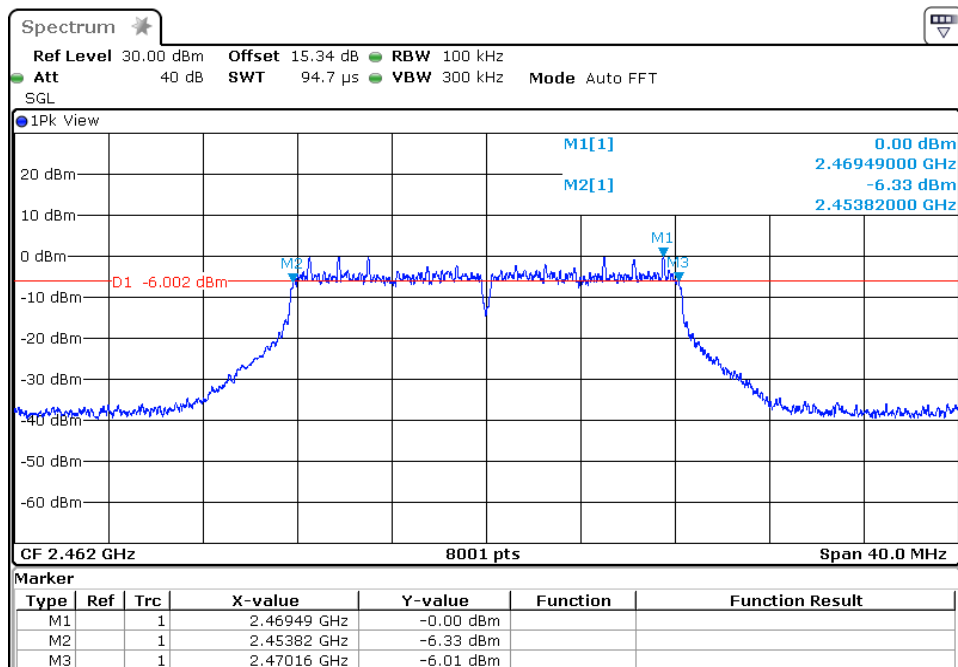
802.11g Channel Low 2412MHz



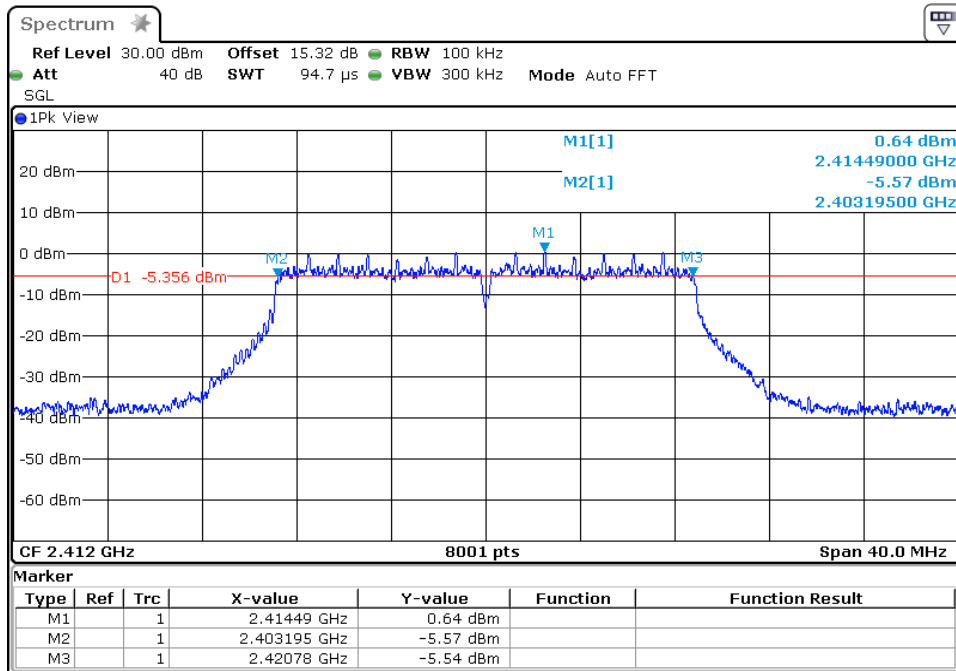
802.11g Channel Middle 2437MHz



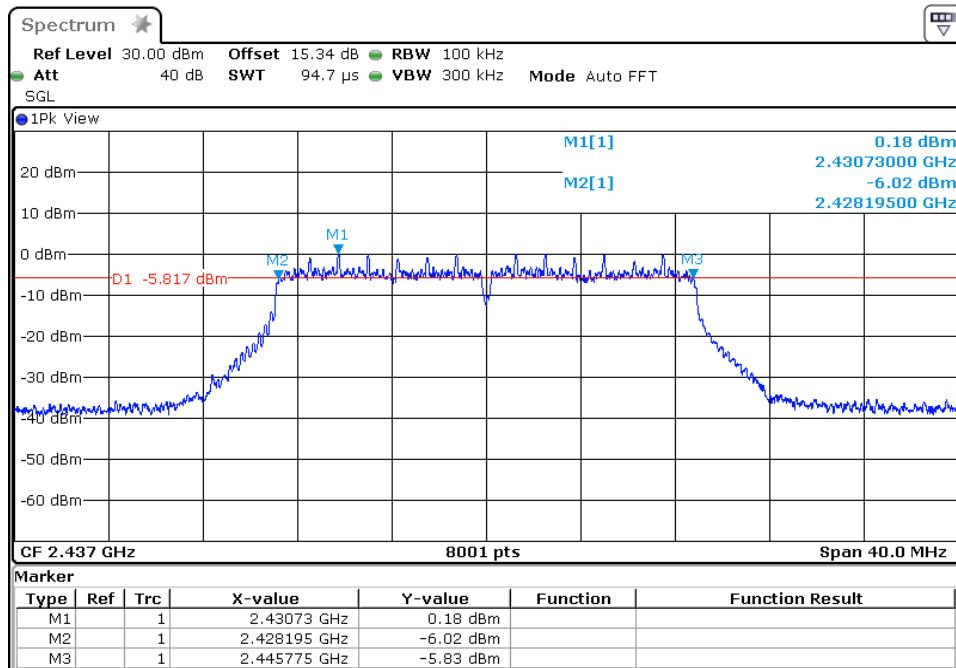
802.11g Channel High 2462MHz



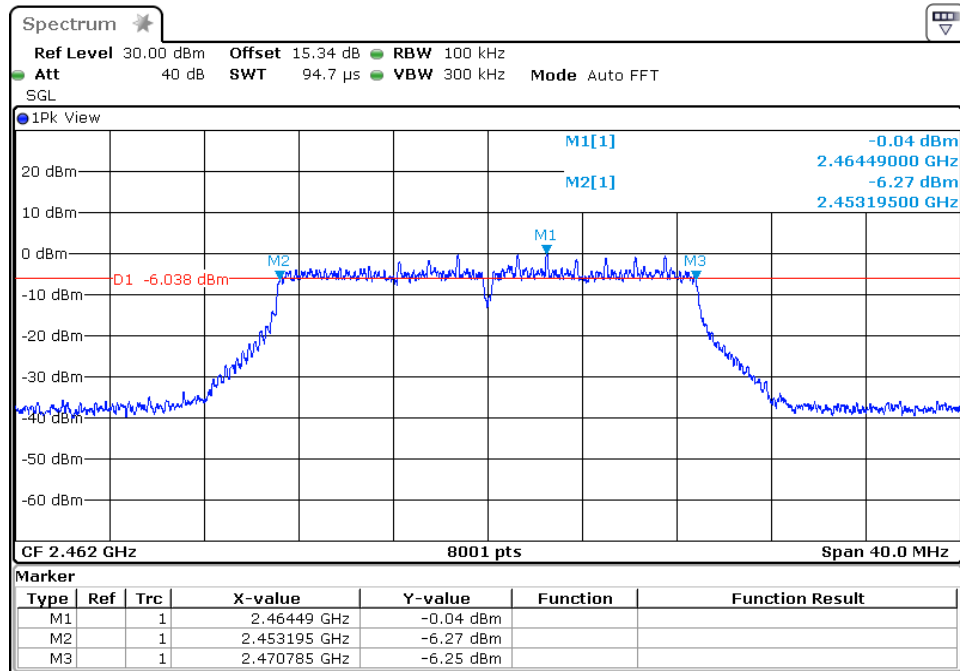
802.11n Channel Low 2412MHz (20MHz)



802.11n Channel Middle 2437MHz(20MHz)

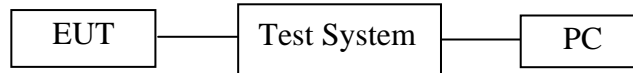


802.11n Channel High 2462MHz(20MHz)



7. DUTY CYCLE MEASUREMENT

7.1. Block Diagram of Test Setup



7.2. EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

7.3. Operating Condition of EUT

7.3.1. Setup the EUT and simulator as shown as Section 7.1.

7.3.2. Turn on the power of all equipment.

7.3.3. Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 . We select 2412MHz, 2437MHz, 2462MHz TX frequency to transmit.

7.4. Test Procedure

Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:

1. A diode detector and an oscilloscope that together have sufficiently short response time to permit accurate measurements of the on- and off-times of the transmitted signal.
2. The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on- and off-times of the transmitted signal
 - a. Set the center frequency of the instrument to the centre frequency of the transmission
 - b. Set $RBW \geq OBW$ if possible; otherwise, set RBW to the largest available value(10MHz).
 - c. Set detector = Peak or average.
 - d. The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$ and the number of sweep points across duration T exceeds 100.
(For example, if VBW and/or RBW are limited to 3MHz, then the zero-span method of measuring duty cycle shall not be used if $T \leq 16.7$ microseconds.)

7.5. Test Result

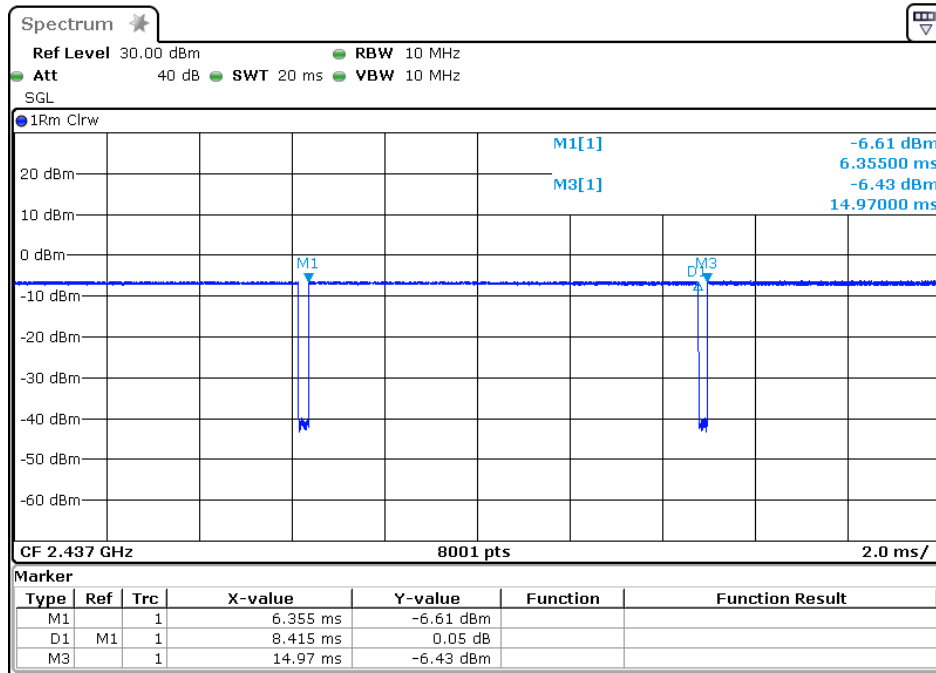
| The test was performed with 802.11b | | | |
|-------------------------------------|-----------------|---------------|------------|
| Channel | Frequency (MHz) | duty cycle(x) | 10log(1/x) |
| Middle | 2437 | 97.68% | 0.10 |

| The test was performed with 802.11g | | | |
|-------------------------------------|-----------------|---------------|------------|
| Channel | Frequency (MHz) | duty cycle(x) | 10log(1/x) |
| Middle | 2437 | 97.20% | 0.12 |

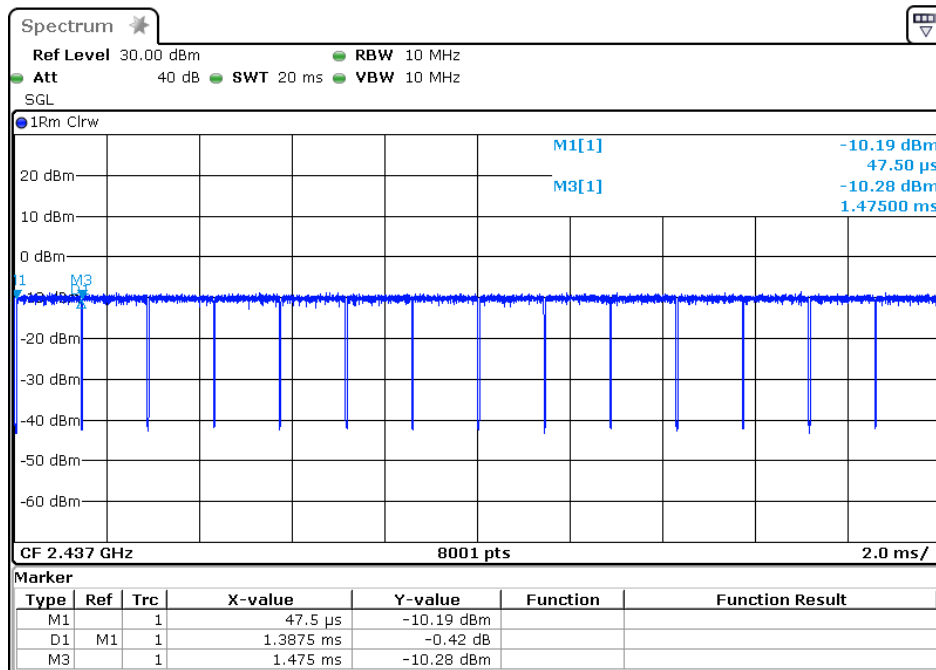
| The test was performed with 802.11n (Bandwidth: 20 MHz) | | | |
|---|-----------------|---------------|------------|
| Channel | Frequency (MHz) | duty cycle(x) | 10log(1/x) |
| Middle | 2437 | 97.00% | 0.13 |

The spectrum analyzer plots are attached as below.

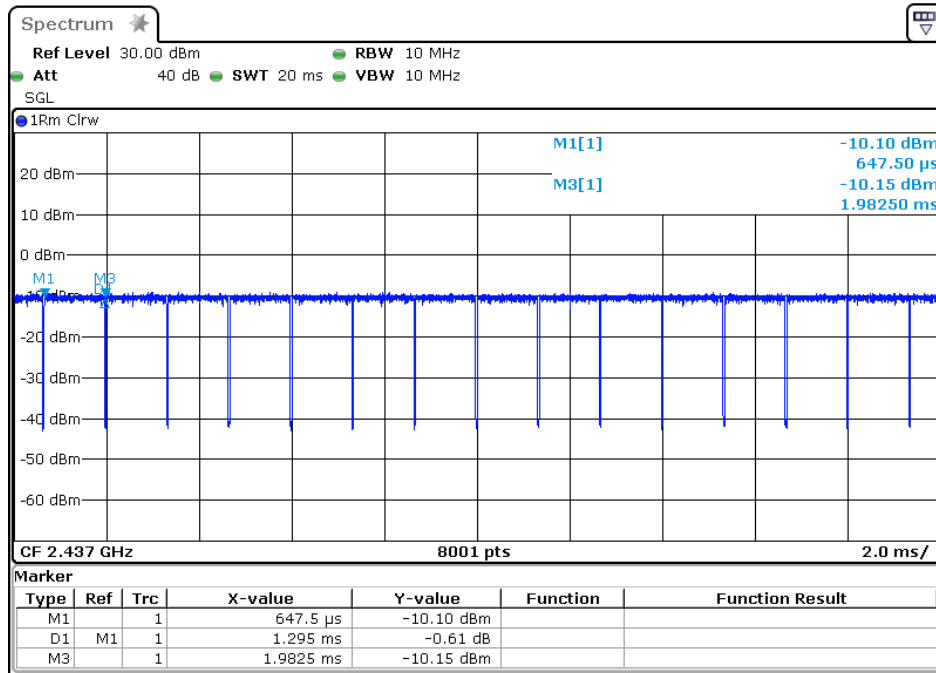
802.11b Channel Middle 2437MHz



802.11g Channel Middle 2437MHz

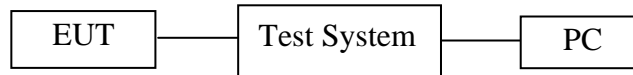


802.11n Channel Middle 2437MHz(20MHz)



8. MAXIMUM CONDUCTED (AVERAGE) OUTPUT POWER

8.1. Block Diagram of Test Setup



8.2. The Requirement For Section 15.247(b)(3)

Section 15.247(b)(3): For systems using digital modulation in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands: 1 Watt.

8.3. EUT Configuration on Measurement

The equipment is installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

8.4. Operating Condition of EUT

8.4.1. Setup the EUT and simulator as shown as Section 8.1.

8.4.2. Turn on the power of all equipment.

8.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 . We select 2412MHz, 2437MHz, 2462MHz TX frequency to transmit.

8.5. Test Procedure

8.5.1. The EUT was tested according to DTS test procedure of Apr 05, 2017 KDB558 074 D01 DTS Meas Guidance v04 for compliance to FCC 47CFR 15.247 requirements.

8.5.2. The transmitter output was connected to the spectrum analyzer through a low loss cable.

8.5.3. Set RBW = 1-5% of the OBW, not to exceed 1 MHz, VBW $\geq 3 \times$ RBW, Sweep time = auto, Set span to at least 1.5 times the OBW, Detector = RMS.

8.5.4. Measurement the Maximum conducted (average) output power.

8.6.Test Result

Final power= Ave output power+10log(1/ duty cycle)

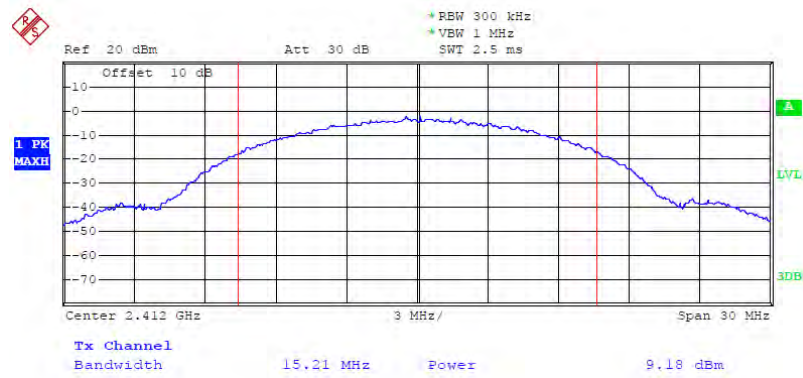
| The test was performed with 802.11b | | | | | | |
|-------------------------------------|-----------------|------------------------|----------------------|-------------------|------------------|----------------|
| Channel | Frequency (MHz) | Ave output power (dBm) | 10log(1/ duty cycle) | Final power (dBm) | Final power (mW) | Limits dBm / W |
| Low | 2412 | 9.18 | 0.10 | 9.28 | 8.47 | 30 dBm / 1 W |
| Middle | 2437 | 9.30 | 0.10 | 9.40 | 8.71 | 30 dBm / 1 W |
| High | 2462 | 9.24 | 0.10 | 9.34 | 8.59 | 30 dBm / 1 W |

| The test was performed with 802.11g | | | | | | |
|-------------------------------------|-----------------|------------------------|----------------------|-------------------|------------------|----------------|
| Channel | Frequency (MHz) | Ave output power (dBm) | 10log(1/ duty cycle) | Final power (dBm) | Final power (mW) | Limits dBm / W |
| Low | 2412 | 8.39 | 0.12 | 8.51 | 7.10 | 30 dBm / 1 W |
| Middle | 2437 | 8.74 | 0.12 | 8.86 | 7.69 | 30 dBm / 1 W |
| High | 2462 | 8.85 | 0.12 | 8.97 | 7.89 | 30 dBm / 1 W |

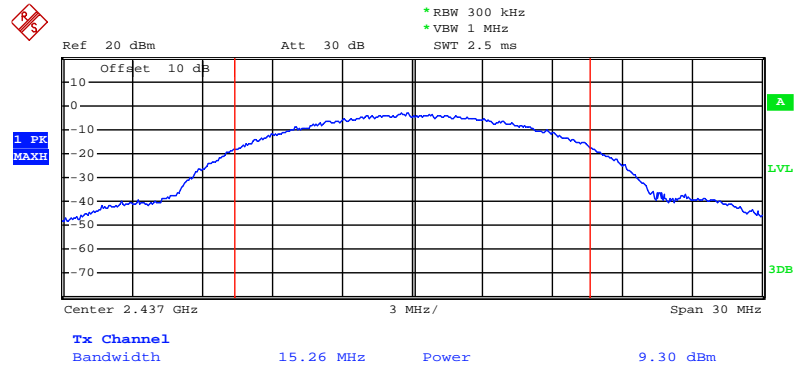
| The test was performed with 802.11n (20MHz) | | | | | | |
|---|-----------------|------------------------|----------------------|-------------------|------------------|----------------|
| Channel | Frequency (MHz) | Ave output power (dBm) | 10log(1/ duty cycle) | Final power (dBm) | Final power (mW) | Limits dBm / W |
| Low | 2412 | 8.86 | 0.13 | 8.99 | 7.93 | 30 dBm / 1 W |
| Middle | 2437 | 8.73 | 0.13 | 8.86 | 7.69 | 30 dBm / 1 W |
| High | 2462 | 8.42 | 0.13 | 8.55 | 7.16 | 30 dBm / 1 W |

The spectrum analyzer plots are attached as below.

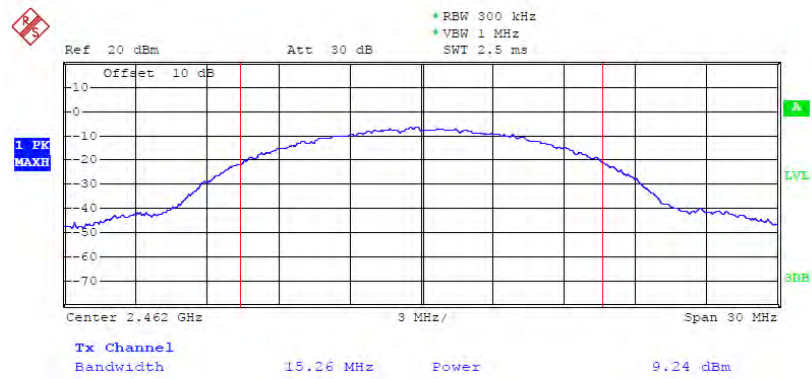
802.11b Channel Low 2412MHz



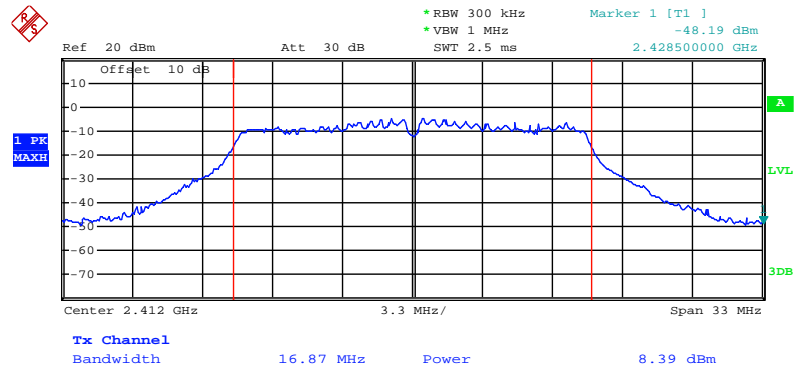
802.11b Channel Middle 2437MHz



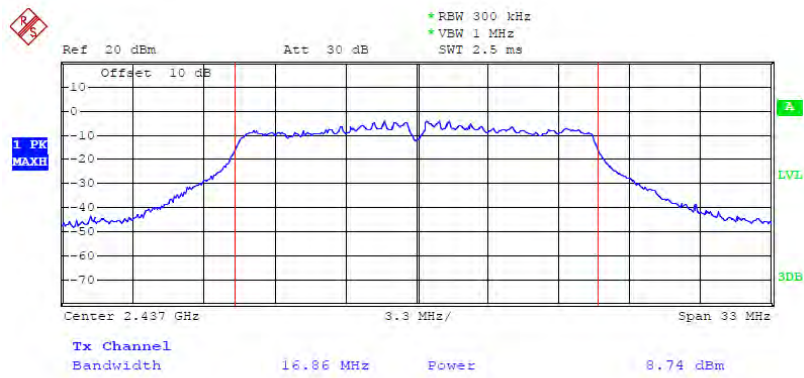
802.11b Channel High 2462MHz



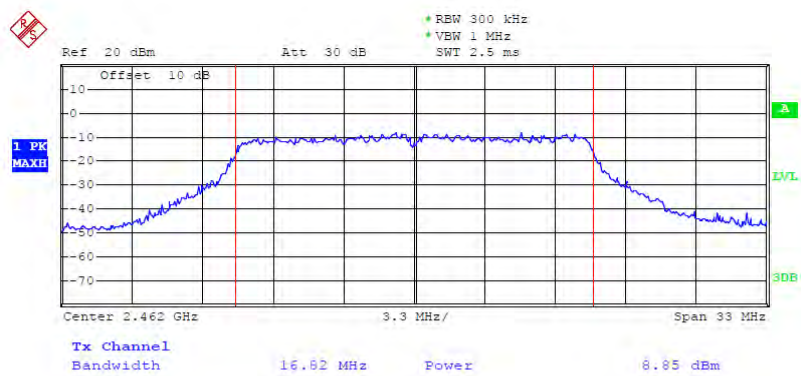
802.11g Channel Low 2412MHz



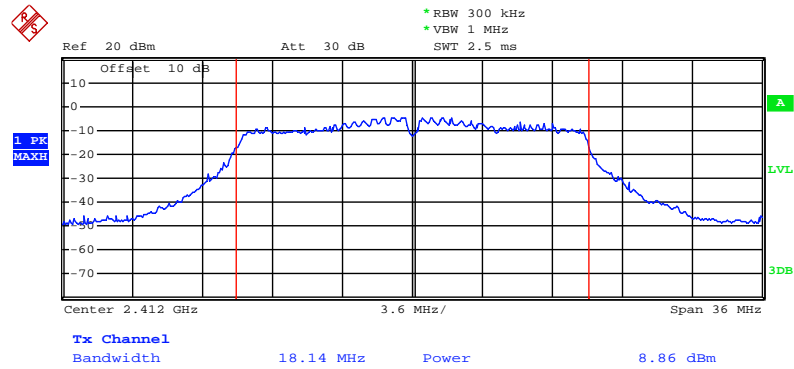
802.11g Channel Middle 2437MHz



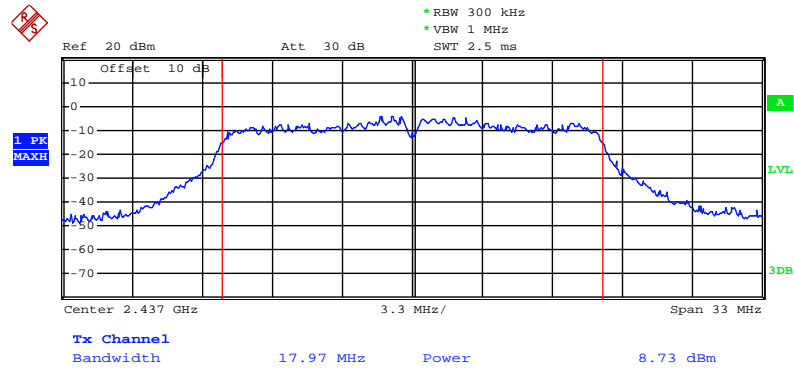
802.11g Channel High 2462MHz



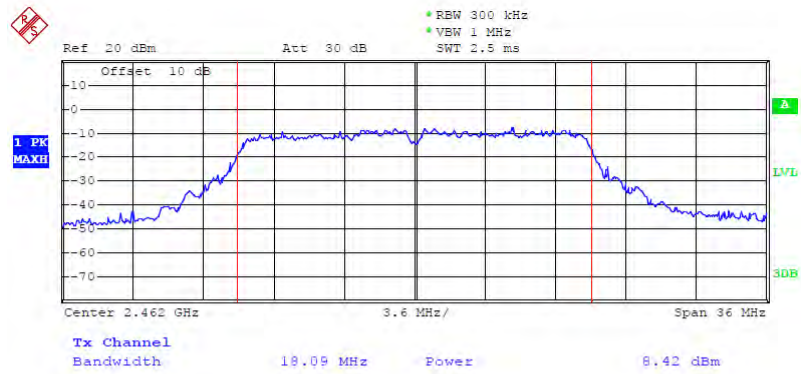
802.11n Channel Low 2412MHz (20MHz)



802.11n Channel Middle 2437MHz (20MHz)

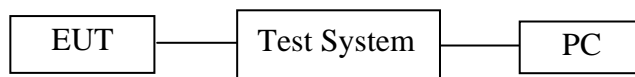


802.11n Channel High 2462MHz (20MHz)



9. POWER SPECTRAL DENSITY MEASUREMENT

9.1. Block Diagram of Test Setup



9.2. The Requirement For Section 15.247(e)

Section 15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

9.3. EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

9.4. Operating Condition of EUT

9.4.1. Setup the EUT and simulator as shown as Section 9.1.

9.4.2. Turn on the power of all equipment.

9.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 . We select 2412MHz, 2437MHz, 2462MHz TX frequency to transmit.

9.5. Test Procedure

9.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

9.5.2. Measurement Procedure AVGPSD-2:

This procedure is applicable when the EUT cannot be configured to transmit continuously (i.e., duty cycle < 98%), and when sweep triggering/signal gating cannot be used to measure only when the EUT is transmitting at its maximum power control level, and when the transmission duty is constant (i.e., duty cycle variations are less than $\pm 2\%$):

Measure the duty cycle(x) of the transmitter output signal as described in Section 6.0.

Set instrument center frequency to DTS channel center frequency.
Set span to at least $1.5 \times \text{OBW}$.
Set RBW to: $3\text{kHz} \leq \text{RBW} \leq 100\text{kHz}$.
Set $\text{VBW} \geq 3 \times \text{RBW}$
Detector=power averaging(RMS) or sample detector(when RMS not available).
Ensure that the number of measurement points in sweep $\geq 2 \times \text{span} / \text{RBW}$.
Sweep time=auto couple.
Do not use sweep triggering. Allow sweep to “free run”.
Employ trace averaging(RMS) mode over a minimum of 100 traces.
Use the peak maker function to determine the maximum amplitude level.
Add $10\log(1/x)$, where x is the duty cycle measured in step(a, to the measured PSD to compute the average PSD during the actual transmission time.
If resultant value exceeds the limit, then reduce RBW(no less than 3kHz) and repeat(note that this may require zooming in on the emission of interest and reducing the span in order to meet the minimum measurement point requirement as the RBW is reduced).

9.6.Test Result

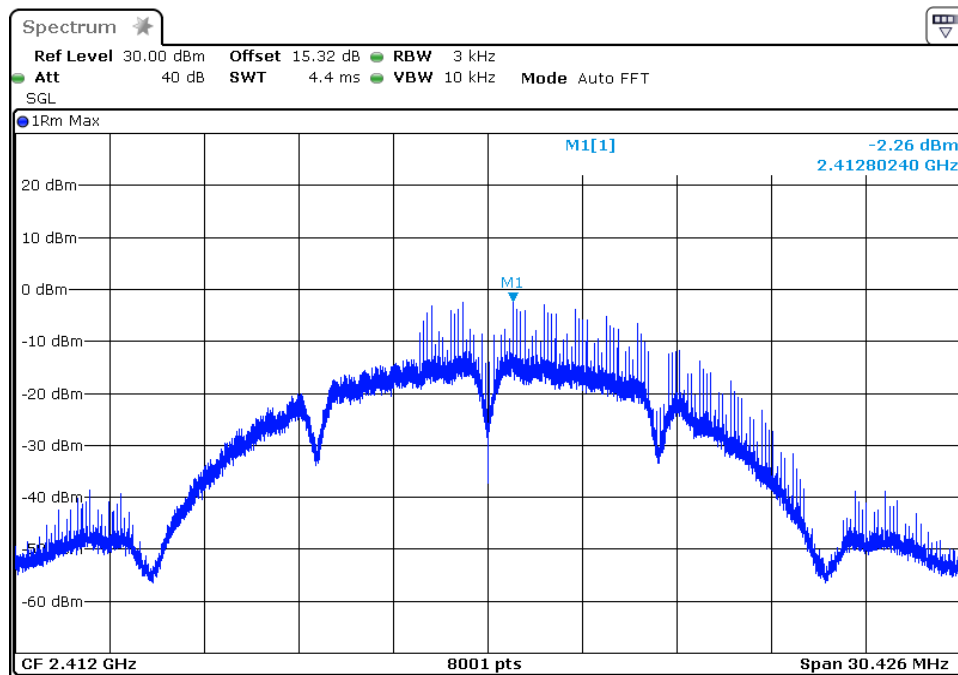
| The test was performed with 802.11b | | | | | |
|-------------------------------------|-----------------|----------------------------------|-------------------------------|------------------------------------|--------------|
| Channel | Frequency (MHz) | AVG Power Spectral Density (dBm) | $10\log(1/\text{duty cycle})$ | Final Power Spectral Density (dBm) | Limits (dBm) |
| Low | 2412 | -2.26 | 0.10 | -2.16 | 8 dBm |
| Middle | 2437 | -3.89 | 0.10 | -3.79 | 8 dBm |
| High | 2462 | -4.03 | 0.10 | -3.93 | 8 dBm |

| The test was performed with 802.11g | | | | | |
|-------------------------------------|-----------------|----------------------------------|-------------------------------|------------------------------------|--------------|
| Channel | Frequency (MHz) | AVG Power Spectral Density (dBm) | $10\log(1/\text{duty cycle})$ | Final Power Spectral Density (dBm) | Limits (dBm) |
| Low | 2412 | -16.01 | 0.12 | -15.89 | 8 dBm |
| Middle | 2437 | -17.33 | 0.12 | -17.21 | 8 dBm |
| High | 2462 | -16.86 | 0.12 | -16.74 | 8 dBm |

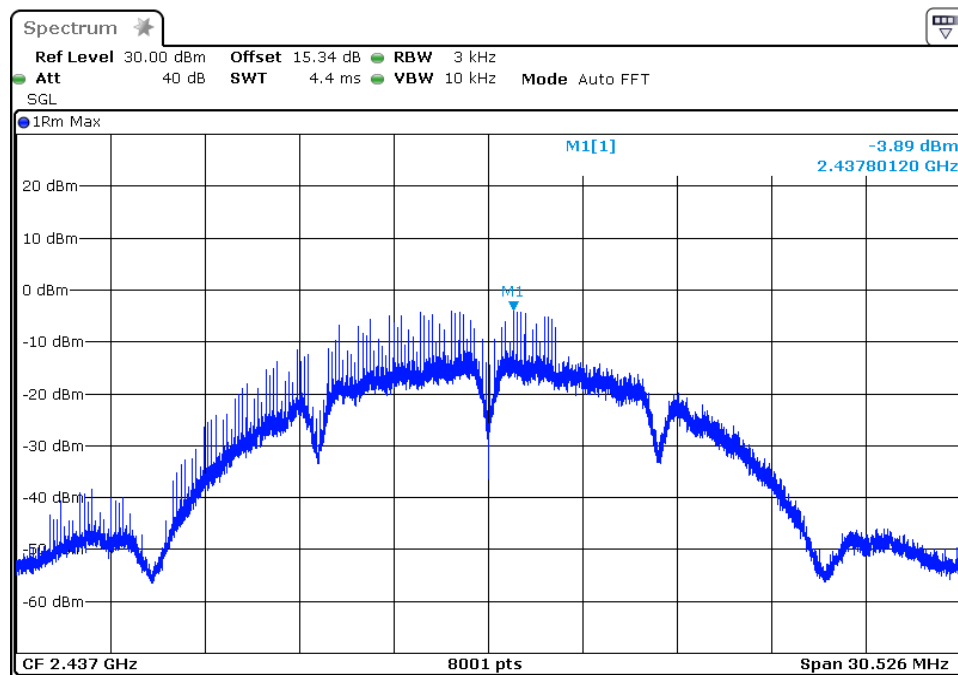
| The test was performed with 802.11n (20MHz) | | | | | |
|---|-----------------|----------------------------------|-------------------------------|------------------------------------|--------------|
| Channel | Frequency (MHz) | AVG Power Spectral Density (dBm) | $10\log(1/\text{duty cycle})$ | Final Power Spectral Density (dBm) | Limits (dBm) |
| Low | 2412 | -16.43 | 0.13 | -16.30 | 8 dBm |
| Middle | 2437 | -16.29 | 0.13 | -16.16 | 8 dBm |
| High | 2462 | -16.86 | 0.13 | -16.73 | 8 dBm |

The spectrum analyzer plots are attached as below.

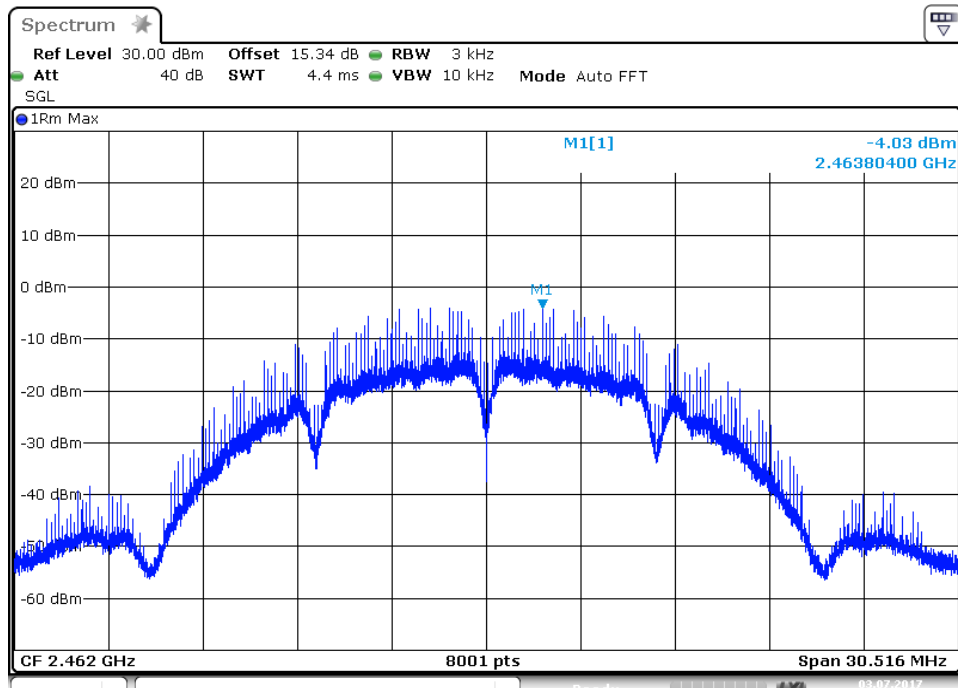
802.11b Channel Low 2412MHz



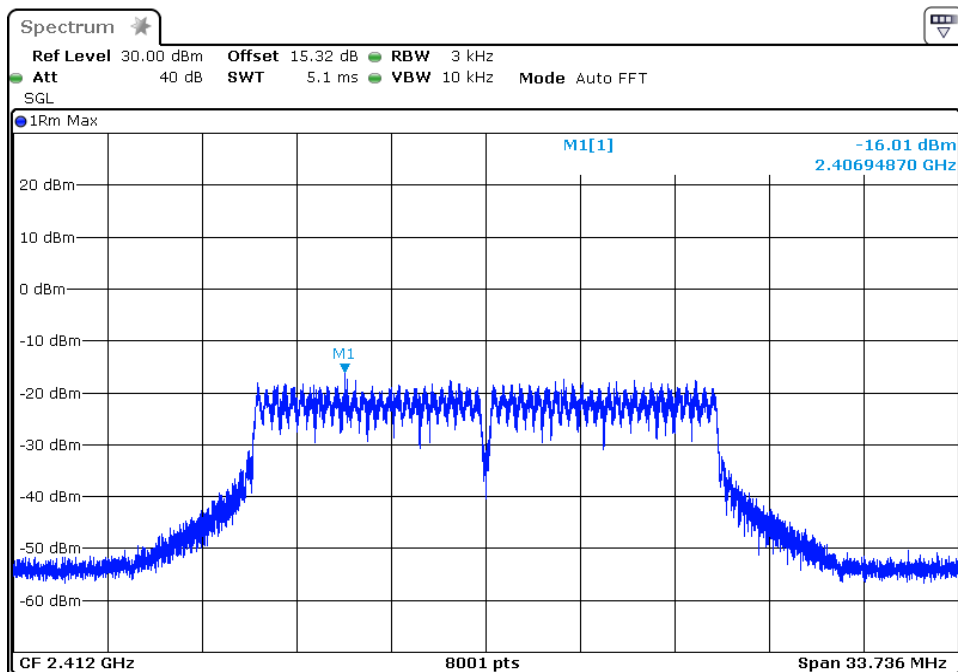
802.11b Channel Middle 2437MHz



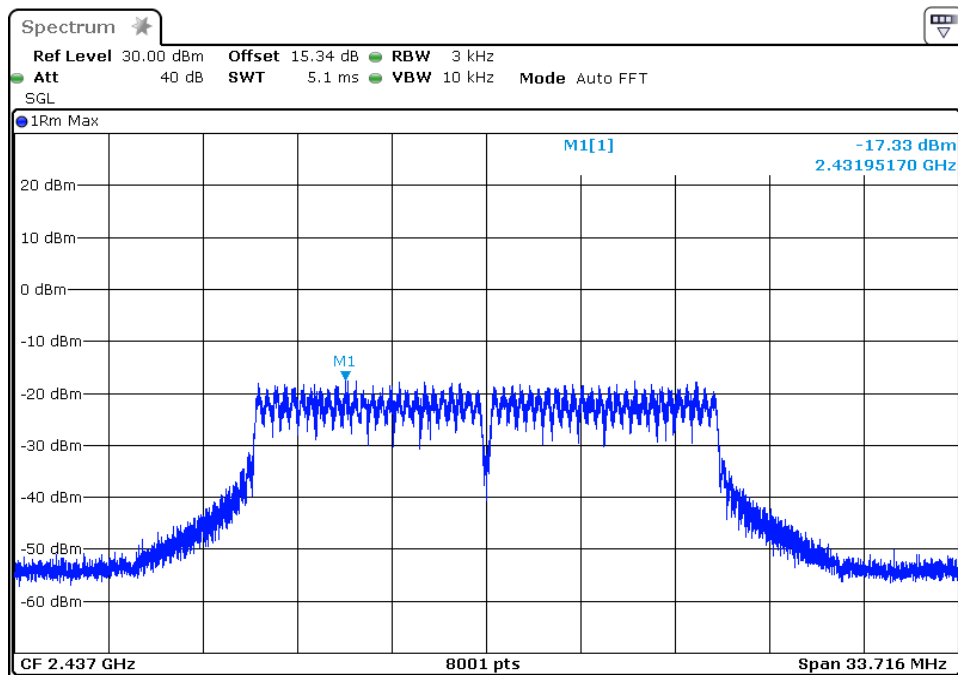
802.11b Channel High 2462MHz



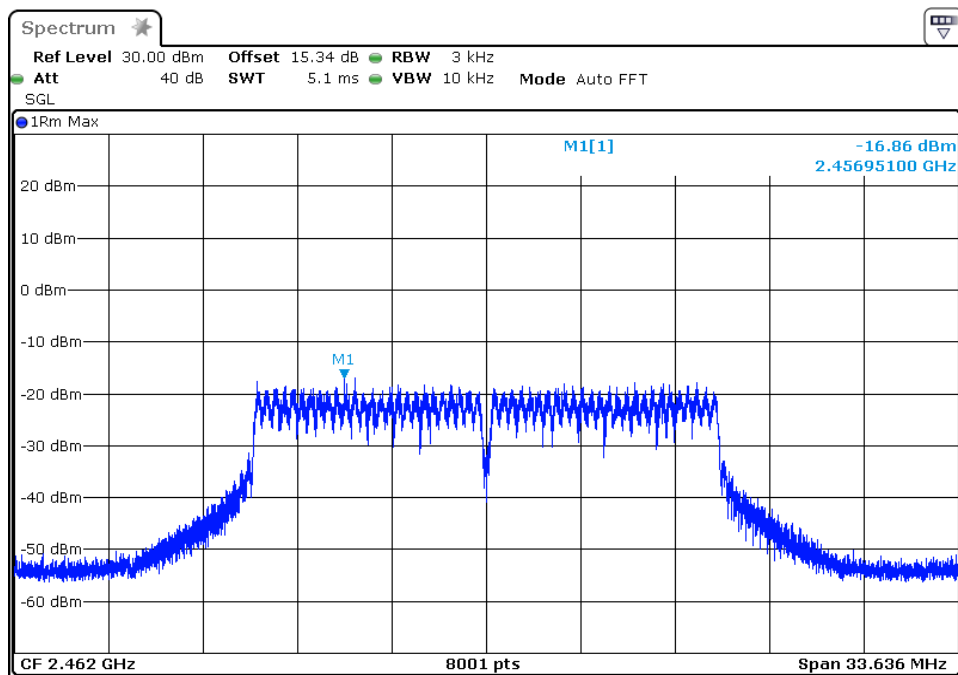
802.11g Channel Low 2412MHz



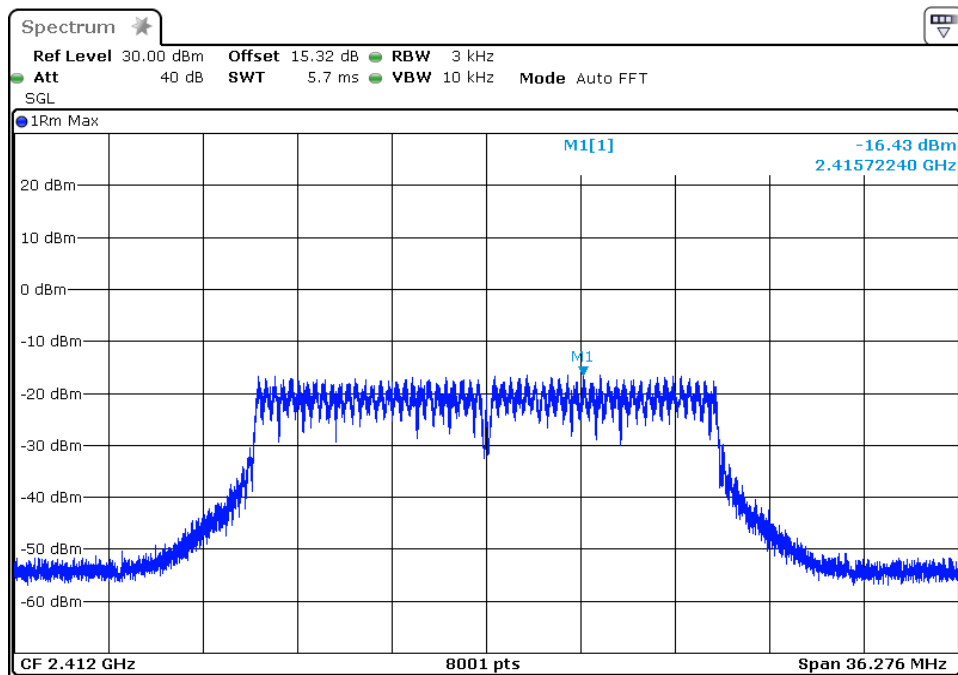
802.11g Channel Middle 2437MHz



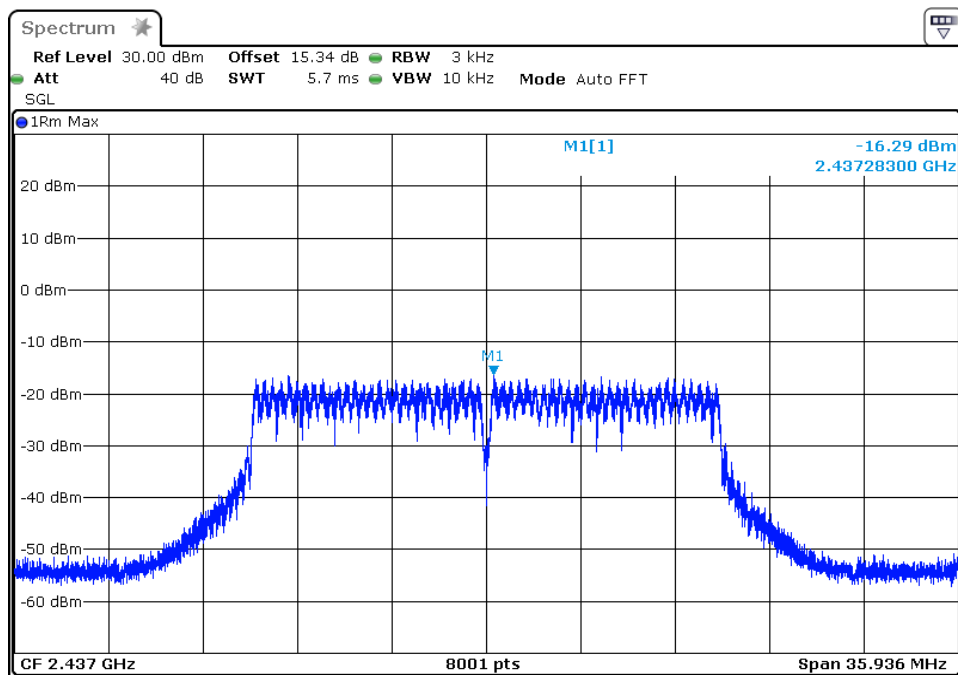
802.11g Channel High 2462MHz



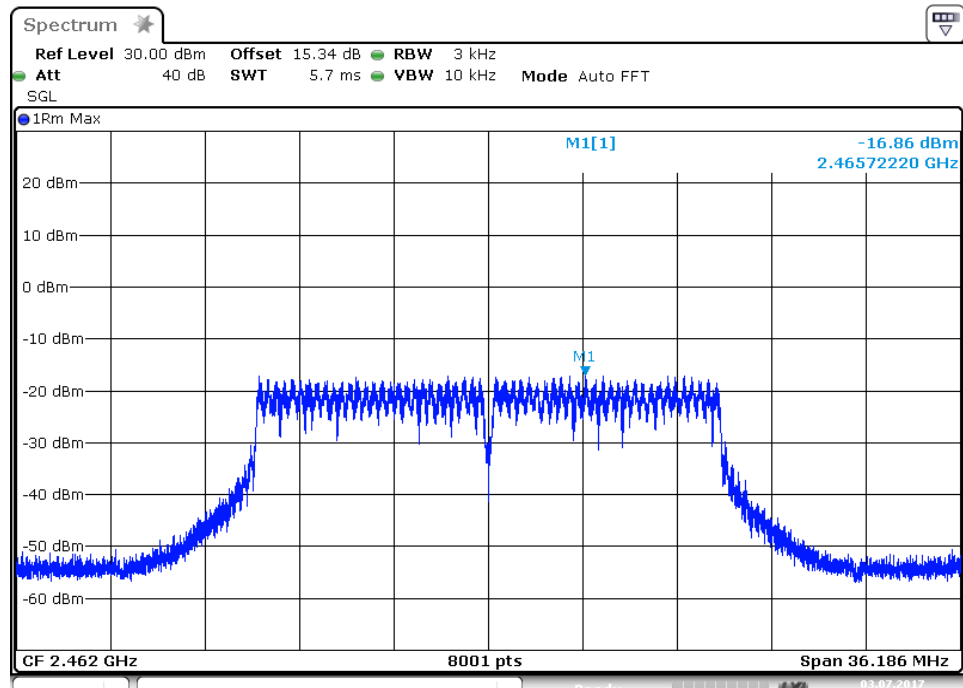
802.11n Channel Low 2412MHz (20MHz)



802.11n Channel Middle 2437MHz (20MHz)

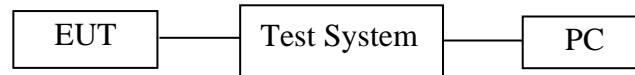


802.11n Channel High 2462MHz(20MHz)



10.BAND EDGE COMPLIANCE TEST

10.1.Block Diagram of Test Setup



10.2.The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

10.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

10.4.Operating Condition of EUT

10.4.1.Setup the EUT and simulator as shown as Section 9.1.

10.4.2.Turn on the power of all equipment.

10.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 MHz. We select 2412MHz, 2462MHz TX frequency to transmit.

10.5.Test Procedure

Conducted Band Edge:

10.5.1.The transmitter output was connected to the spectrum analyzer via a low loss cable.

10.5.2. Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz.

Radiate Band Edge:

10.5.3. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.

10.5.4. The turntable was rotated for 360 degrees to determine the position of maximum emission level.

10.5.5. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.

10.5.6. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

10.5.7. RBW=100kHz, VBW=300kHz

10.5.8. The band edges were measured and recorded.

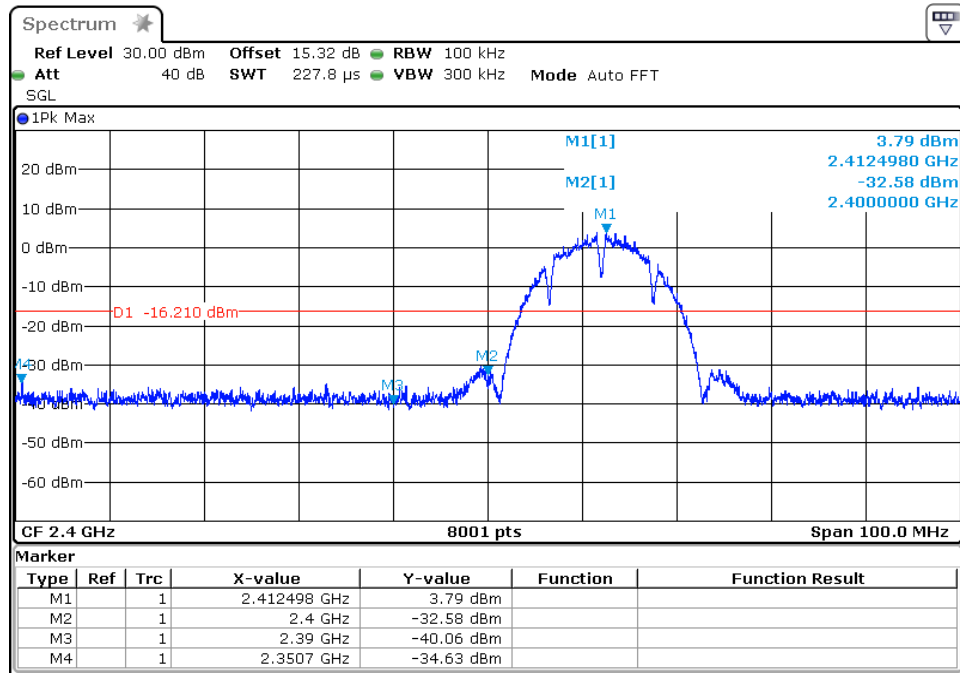
10.6. Test Result

| The test was performed with 802.11b | | |
|-------------------------------------|---------------------------|--------------------------|
| Frequency (MHz) | Result of Band Edge (dBc) | Limit of Band Edge (dBc) |
| 2400 | 36.37 | > 30dBc |
| 2483.5 | 43.34 | > 30dBc |

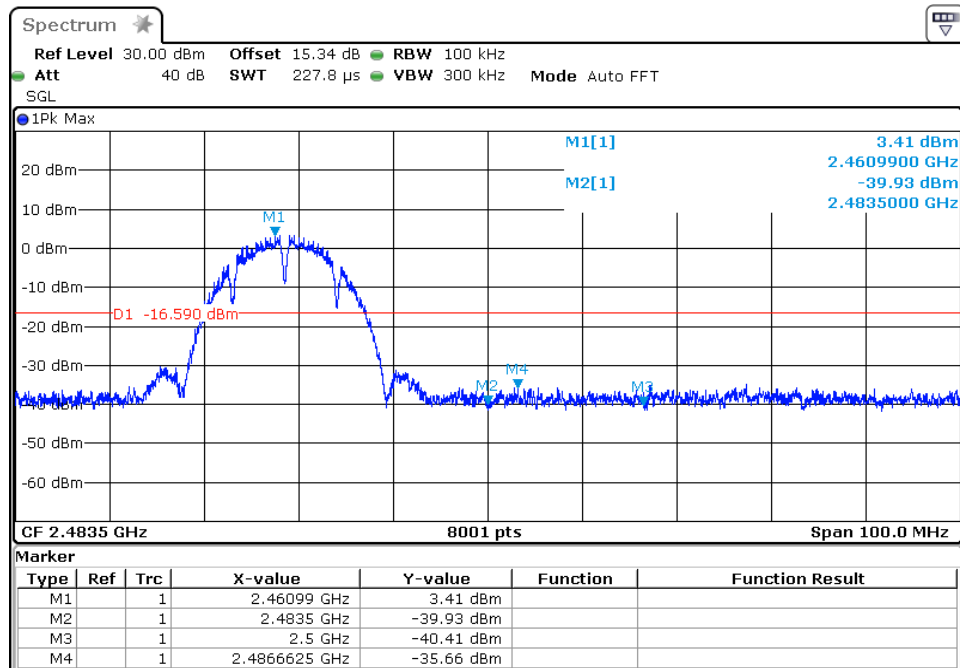
| The test was performed with 802.11g | | |
|-------------------------------------|---------------------------|--------------------------|
| Frequency (MHz) | Result of Band Edge (dBc) | Limit of Band Edge (dBc) |
| 2400 | 38.00 | > 30dBc |
| 2483.5 | 36.75 | > 30dBc |

| The test was performed with 802.11n (20MHz) | | |
|---|---------------------------|--------------------------|
| Frequency (MHz) | Result of Band Edge (dBc) | Limit of Band Edge (dBc) |
| 2400 | 37.19 | > 30dBc |
| 2483.5 | 38.84 | > 30dBc |

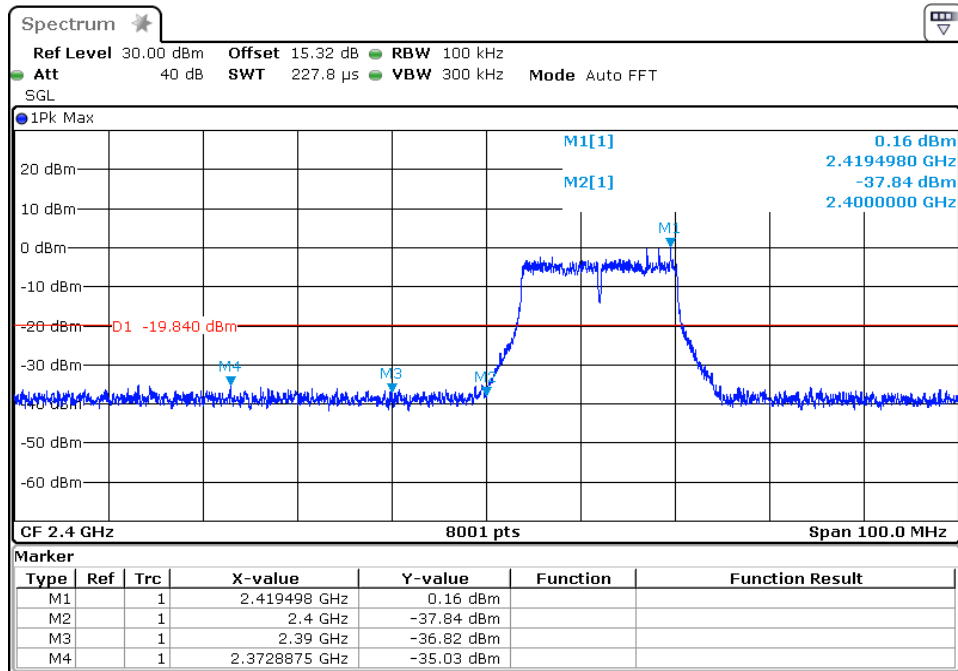
802.11b Channel Low 2412MHz



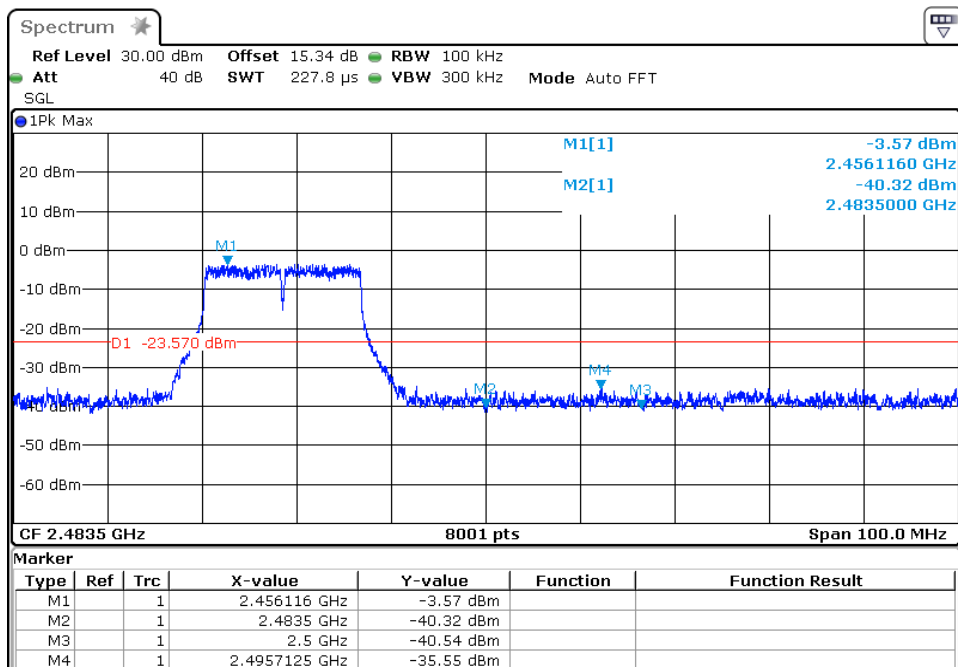
802.11b Channel High 2462MHz



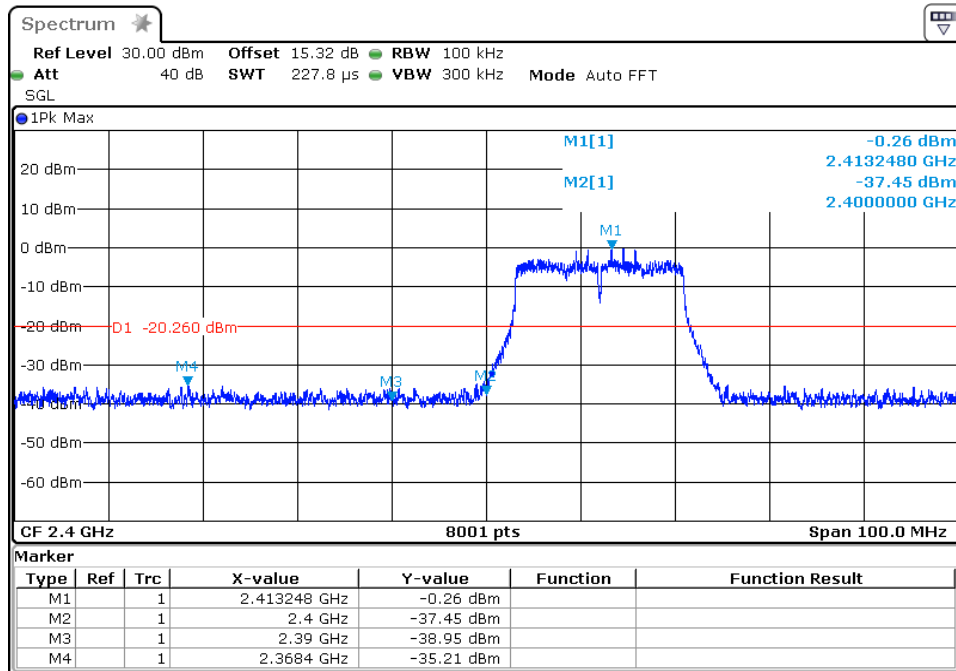
802.11g Channel Low 2412MHz



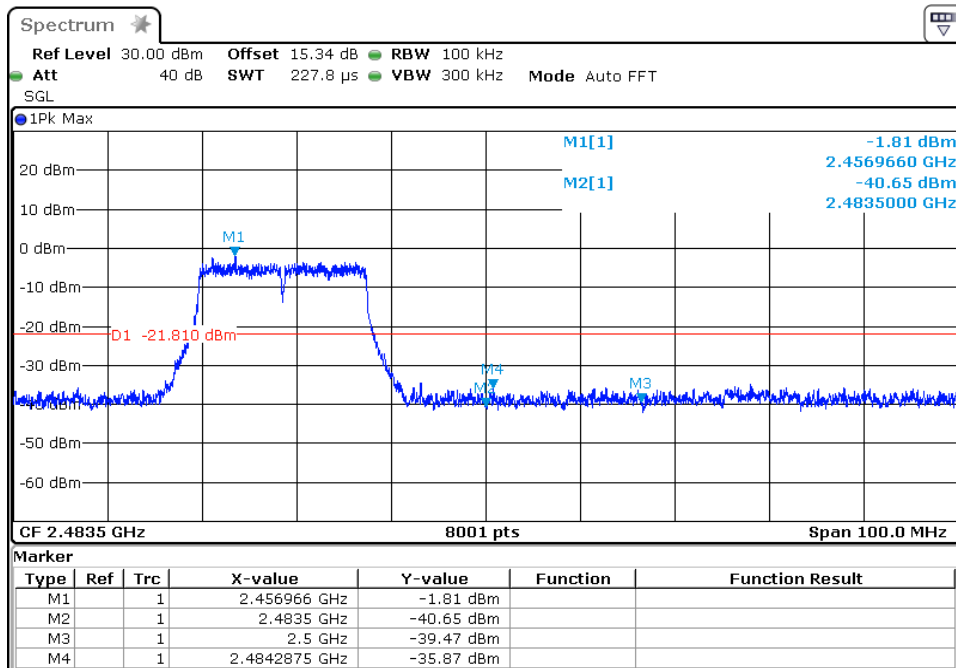
802.11g Channel High 2462MHz



802.11n Channel Low 2412MHz (20MHz)



802.11n Channel High 2462MHz (20MHz)



Radiated Band Edge Result

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:
Result = Reading + Corrected Factor
3. Display the measurement of peak values.

Test Procedure:

The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

Let the EUT work in TX modes then measure it.

We select 2412MHz, 2462MHz TX frequency to transmit(802.11b/g/n20 mode).

During the radiated emission test, the spectrum analyzer was set with the following configurations:

- 1.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
- 2.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
- 3.All modes of operation were investigated and the worst-case emissions are reported.



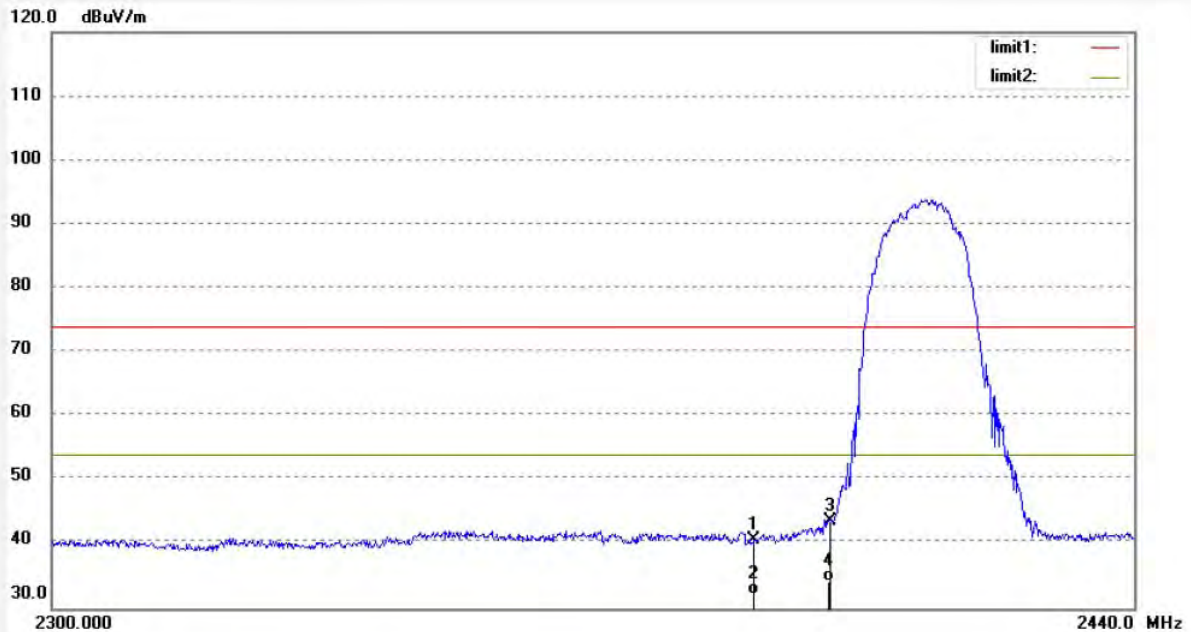
ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Frank2017 #2178
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 1(802.11B)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/02/05/
Time: 09/12/14
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536

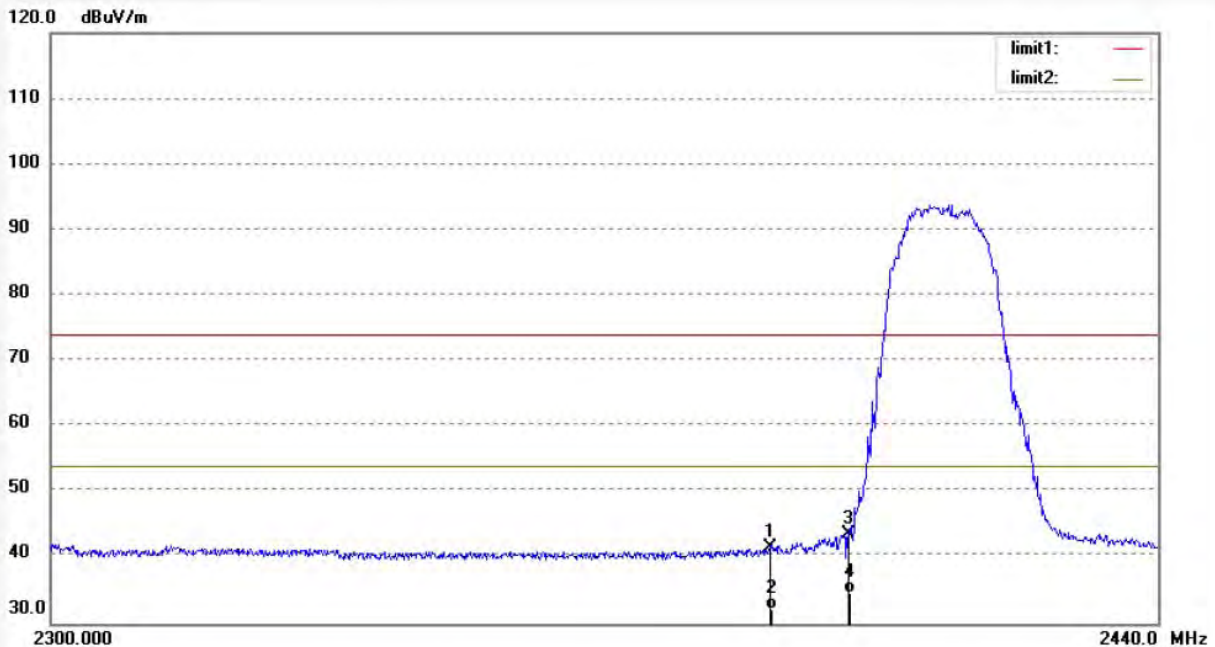


| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2390.000 | 45.00 | -4.32 | 40.68 | 74.00 | -33.32 | peak | 250 | 56 | |
| 2 | 2390.000 | 36.46 | -4.32 | 32.14 | 54.00 | -21.86 | AVG | 250 | 72 | |
| 3 | 2400.000 | 47.93 | -4.27 | 43.66 | 74.00 | -30.34 | peak | 250 | 108 | |
| 4 | 2400.000 | 38.49 | -4.27 | 34.22 | 54.00 | -19.78 | AVG | 250 | 102 | |

Job No.: Frank2017 #2179
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 1(802.11B)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/02/05/
Time: 09/20/32
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2390.000 | 45.87 | -4.32 | 41.55 | 74.00 | -32.45 | peak | 250 | 301 | |
| 2 | 2390.000 | 36.48 | -4.32 | 32.16 | 54.00 | -21.84 | AVG | 200 | 251 | |
| 3 | 2400.000 | 47.90 | -4.27 | 43.63 | 74.00 | -30.37 | peak | 200 | 91 | |
| 4 | 2400.000 | 38.94 | -4.27 | 34.67 | 54.00 | -19.33 | AVG | 200 | 102 | |



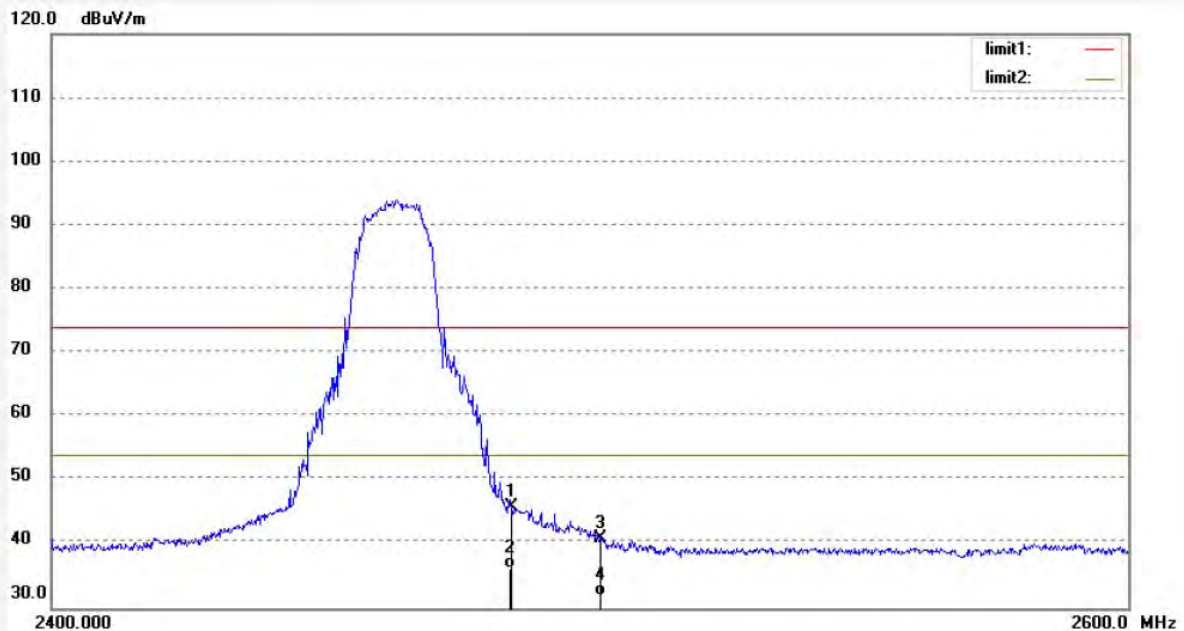
ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Frank2017 #2188
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 11(802.11B)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/02/05/
Time: 10/30/15
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2483.500 | 49.71 | -3.89 | 45.82 | 74.00 | -28.18 | peak | 250 | 101 | |
| 2 | 2483.500 | 39.98 | -3.89 | 36.09 | 54.00 | -17.91 | AVG | 150 | 321 | |
| 3 | 2500.000 | 44.68 | -3.81 | 40.87 | 74.00 | -33.13 | peak | 250 | 205 | |
| 4 | 2500.000 | 35.61 | -3.81 | 31.80 | 54.00 | -22.20 | AVG | 150 | 95 | |



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Site: 1# Chamber

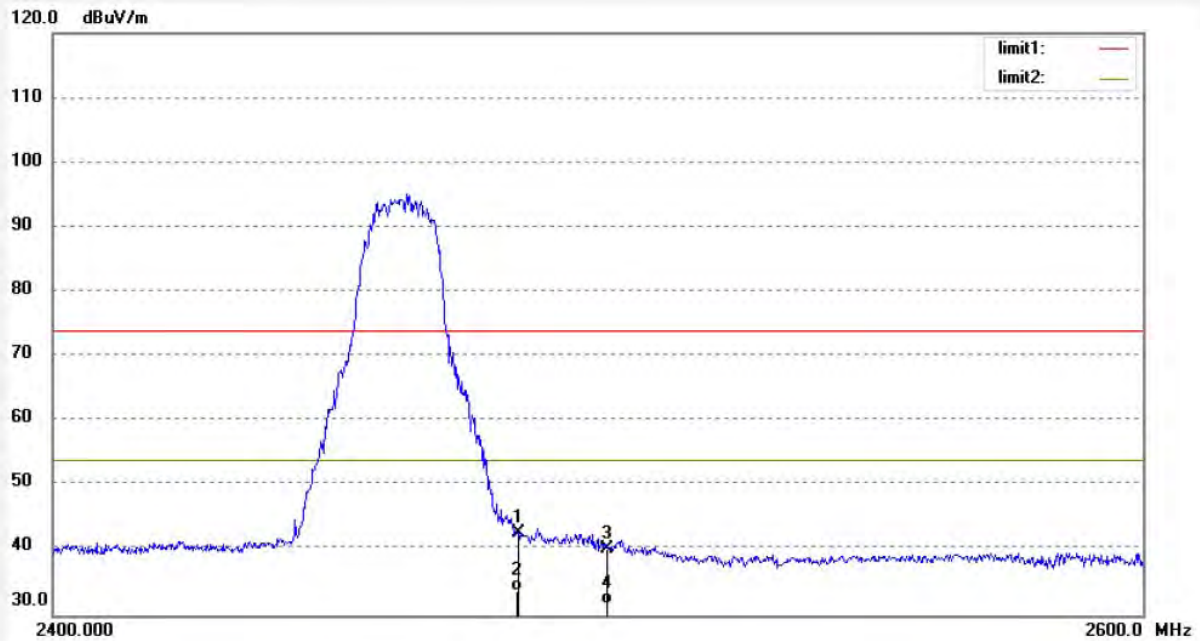
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Frank2017 #2189
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 11(802.11B)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/02/05/
Time: 10/47/25
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2483.500 | 46.52 | -3.89 | 42.63 | 74.00 | -31.37 | peak | 300 | 120 | |
| 2 | 2483.500 | 37.64 | -3.89 | 33.75 | 54.00 | -20.25 | AVG | 250 | 93 | |
| 3 | 2500.000 | 44.07 | -3.81 | 40.26 | 74.00 | -33.74 | peak | 250 | 156 | |
| 4 | 2500.000 | 35.46 | -3.81 | 31.65 | 54.00 | -22.35 | AVG | 250 | 194 | |



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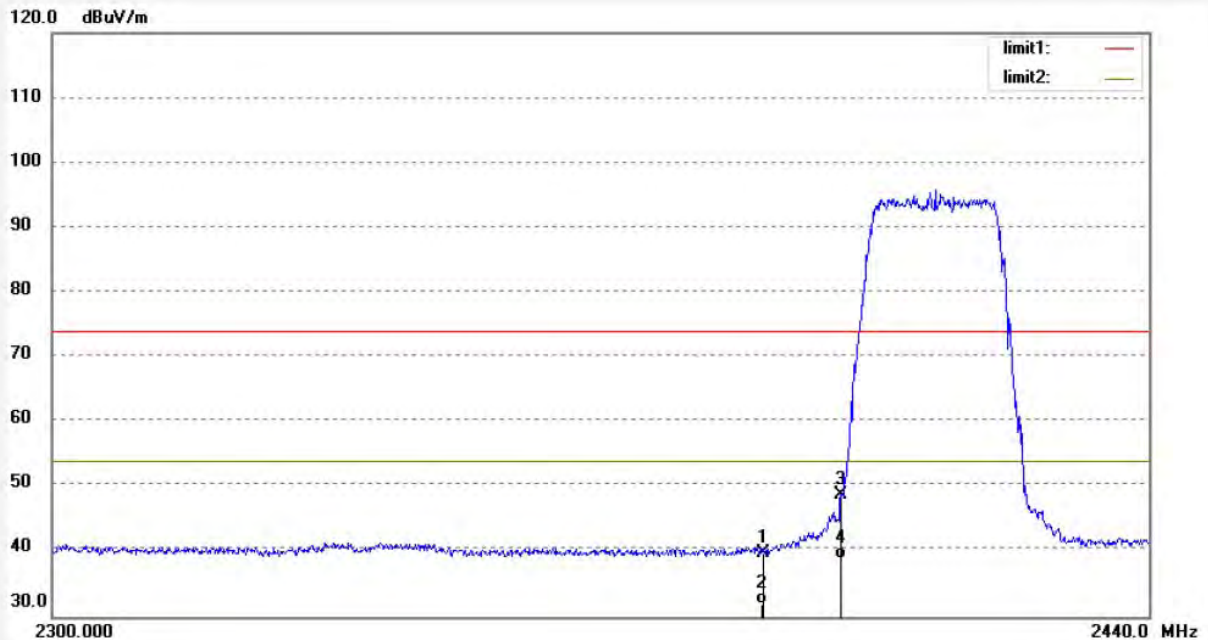
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Frank2017 #2180
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 1(802.11G)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/02/05/
Time: 09/30/52
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536

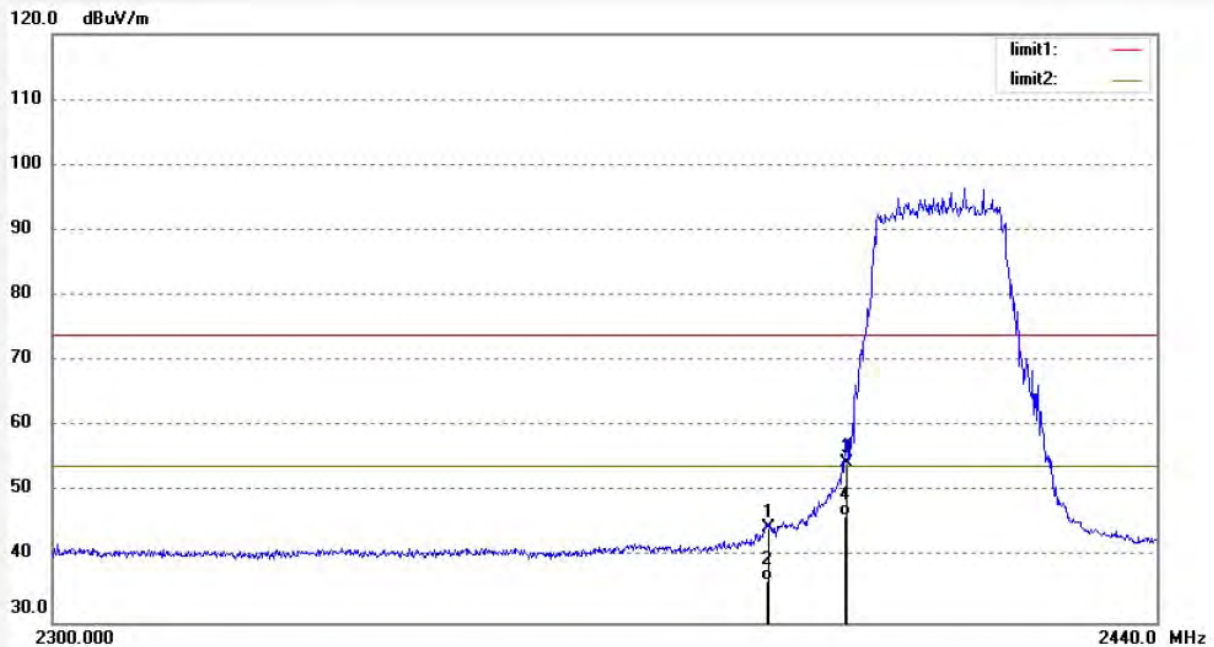


| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2390.000 | 44.12 | -4.32 | 39.80 | 74.00 | -34.20 | peak | 250 | 65 | |
| 2 | 2390.000 | 36.15 | -4.32 | 31.83 | 54.00 | -22.17 | AVG | 200 | 30 | |
| 3 | 2400.000 | 53.11 | -4.27 | 48.84 | 74.00 | -25.16 | peak | 250 | 185 | |
| 4 | 2400.000 | 43.19 | -4.27 | 38.92 | 54.00 | -15.08 | AVG | 250 | 109 | |

Job No.: Frank2017 #2181
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 1(802.11G)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/02/05/
Time: 09/40/32
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2390.000 | 48.81 | -4.32 | 44.49 | 74.00 | -29.51 | peak | 250 | 193 | |
| 2 | 2390.000 | 40.69 | -4.32 | 36.37 | 54.00 | -17.63 | AVG | 250 | 198 | |
| 3 | 2400.000 | 58.70 | -4.27 | 54.43 | 74.00 | -19.57 | peak | 250 | 102 | |
| 4 | 2400.000 | 50.64 | -4.27 | 46.37 | 54.00 | -7.63 | AVG | 250 | 97 | |



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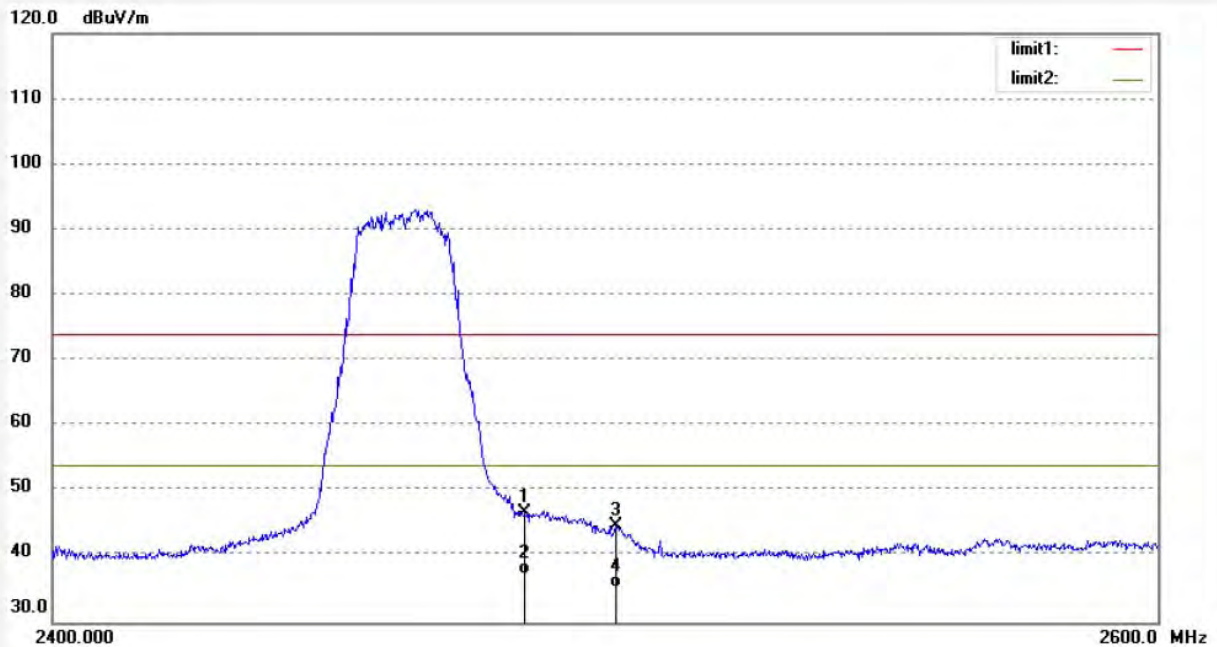
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Frank2017 #2186
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 11(802.11G)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/02/05/
Time: 10/18/26
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2483.500 | 50.73 | -3.89 | 46.84 | 74.00 | -27.16 | peak | 250 | 201 | |
| 2 | 2483.500 | 41.31 | -3.89 | 37.42 | 54.00 | -16.58 | AVG | 250 | 309 | |
| 3 | 2500.000 | 48.44 | -3.81 | 44.63 | 74.00 | -29.37 | peak | 250 | 164 | |
| 4 | 2500.000 | 39.18 | -3.81 | 35.37 | 54.00 | -18.63 | AVG | 250 | 247 | |



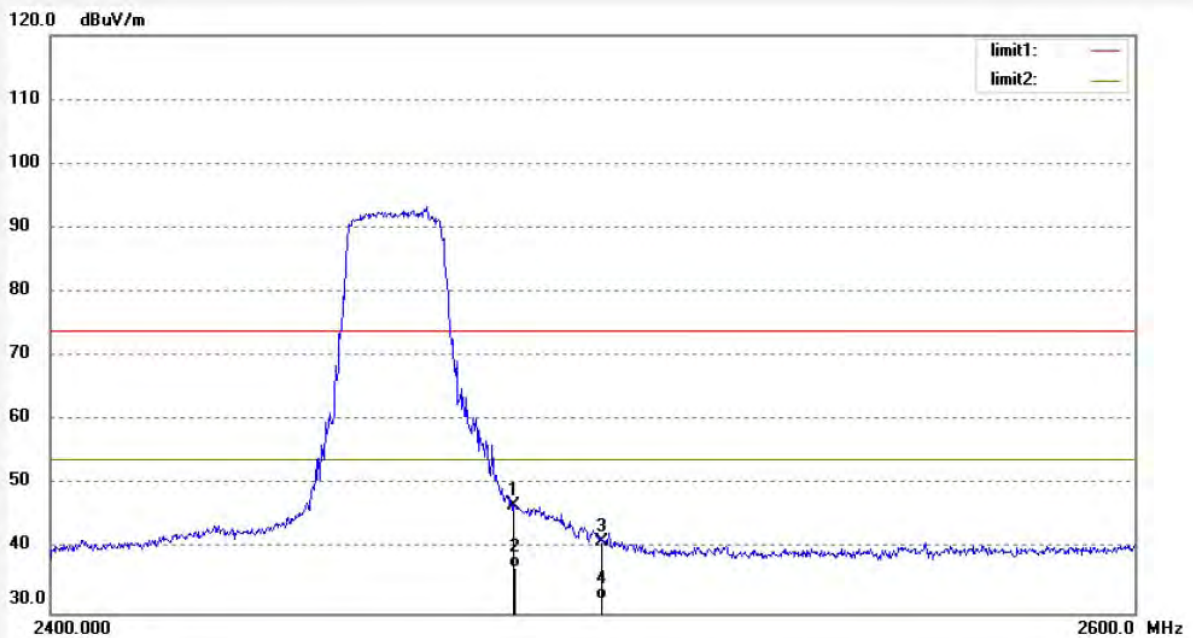
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Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Frank2017 #2187
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 11(802.11G)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/02/05/
Time: 10/23/27
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2483.500 | 50.61 | -3.89 | 46.72 | 74.00 | -27.28 | peak | 200 | 101 | |
| 2 | 2483.500 | 40.94 | -3.89 | 37.05 | 54.00 | -16.95 | AVG | 150 | 93 | |
| 3 | 2500.000 | 44.95 | -3.81 | 41.14 | 74.00 | -32.86 | peak | 250 | 108 | |
| 4 | 2500.000 | 35.94 | -3.81 | 32.13 | 54.00 | -21.87 | AVG | 150 | 342 | |



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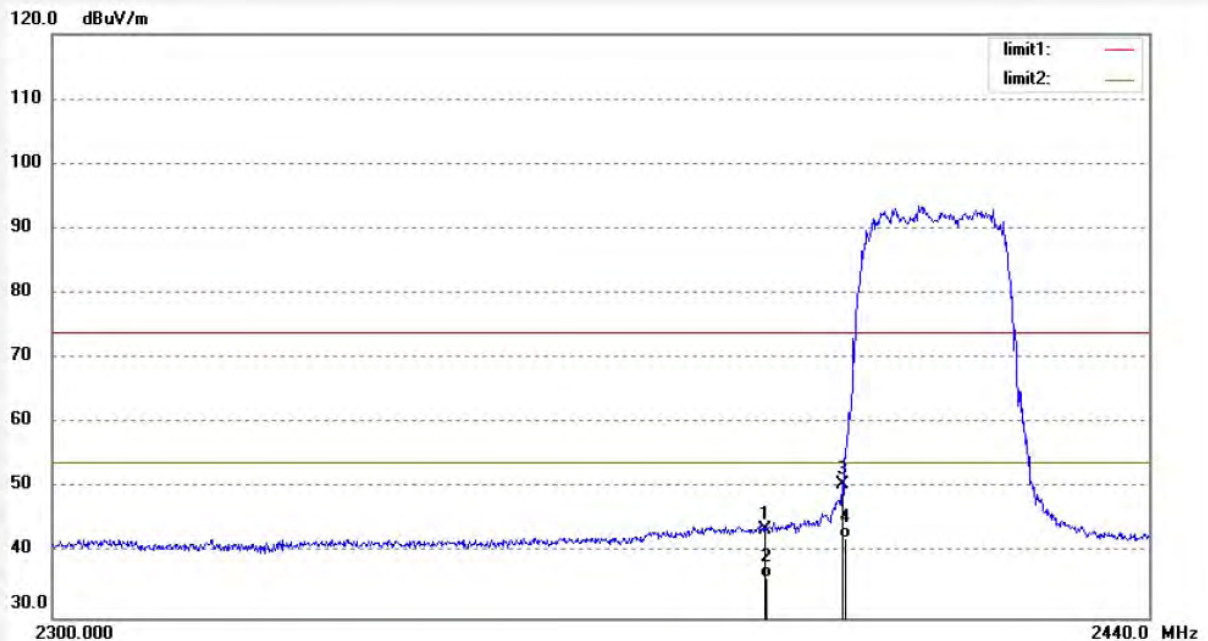
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Frank2017 #2182
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 1(802.11N20)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/02/05/
Time: 09/50/18
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2390.000 | 47.94 | -4.32 | 43.62 | 74.00 | -30.38 | peak | 250 | 191 | |
| 2 | 2390.000 | 40.62 | -4.32 | 36.30 | 54.00 | -17.70 | AVG | 250 | 103 | |
| 3 | 2400.000 | 54.86 | -4.27 | 50.59 | 74.00 | -23.41 | peak | 250 | 169 | |
| 4 | 2400.000 | 46.59 | -4.27 | 42.32 | 54.00 | -11.68 | AVG | 250 | 108 | |



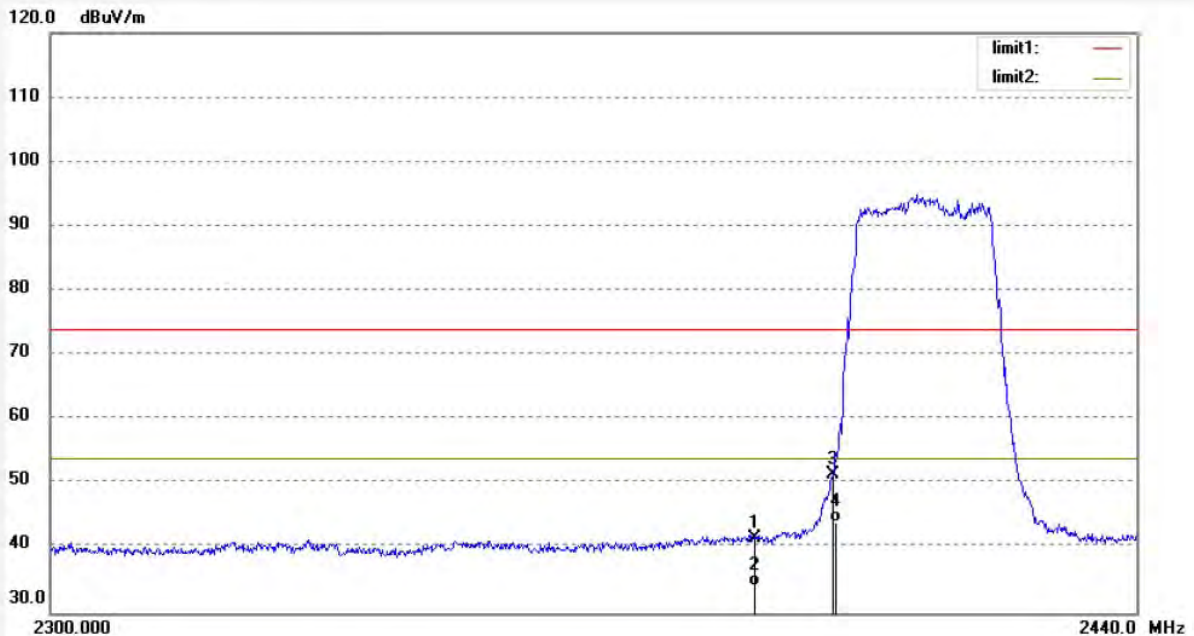
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Fax:+86-0755-26503396

Job No.: Frank2017 #2183
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 1(802.11N20)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/02/05/
Time: 10/03/32
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2390.000 | 45.91 | -4.32 | 41.59 | 74.00 | -32.41 | peak | 250 | 106 | |
| 2 | 2390.000 | 38.46 | -4.32 | 34.14 | 54.00 | -19.86 | AVG | 150 | 184 | |
| 3 | 2400.000 | 55.79 | -4.27 | 51.52 | 74.00 | -22.48 | peak | 300 | 309 | |
| 4 | 2400.000 | 48.37 | -4.27 | 44.10 | 54.00 | -9.90 | AVG | 150 | 207 | |

Job No.: Frank2017 #2184

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: MINI Wi-Fi Plug

Mode: TX Channel 11(802.11N20)

Model: MINI Wi-Fi Plug

Manufacturer: SHENZHEN AVATAR CONTROLS CO.,LTD

Polarization: Vertical

Power Source: AC 120V/60Hz

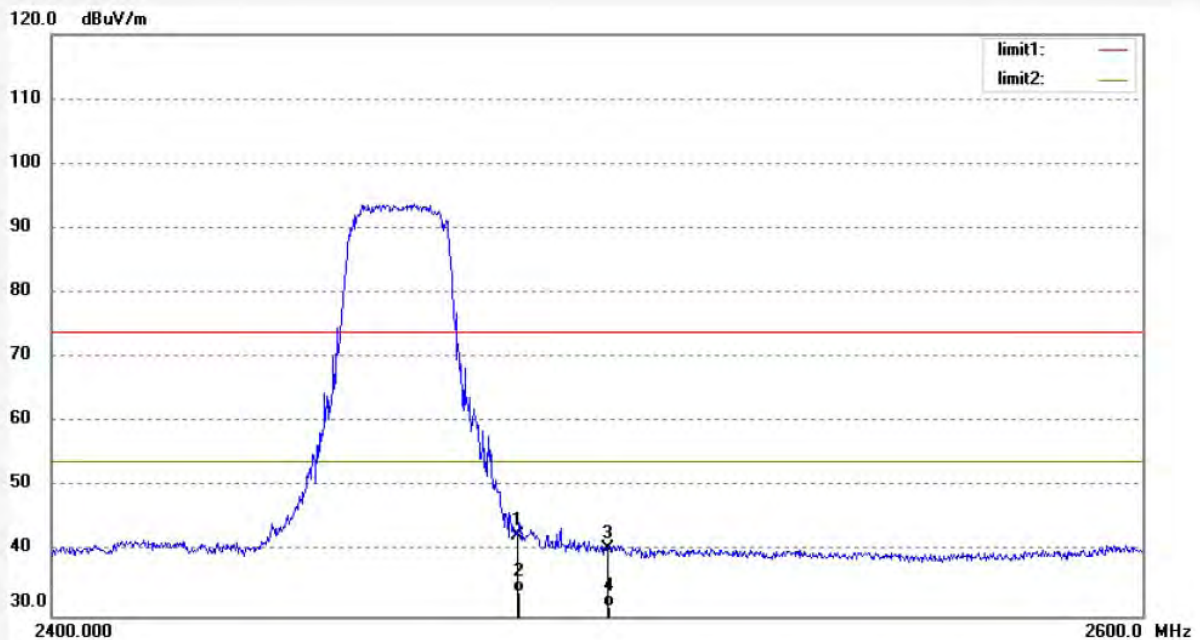
Date: 18/02/05/

Time: 10/13/32

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2483.500 | 46.47 | -3.89 | 42.58 | 74.00 | -31.42 | peak | 250 | 34 | |
| 2 | 2483.500 | 37.61 | -3.89 | 33.72 | 54.00 | -20.28 | AVG | 150 | 52 | |
| 3 | 2500.000 | 44.37 | -3.81 | 40.56 | 74.00 | -33.44 | peak | 200 | 198 | |
| 4 | 2500.000 | 35.17 | -3.81 | 31.36 | 54.00 | -22.64 | AVG | 150 | 101 | |



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Fax:+86-0755-26503396

Job No.: Frank2017 #2185

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: MINI Wi-Fi Plug

Mode: TX Channel 11(802.11N20)

Model: MINI Wi-Fi Plug

Manufacturer: SHENZHEN AVATAR CONTROLS CO.,LTD

Polarization: Horizontal

Power Source: AC 120V/60Hz

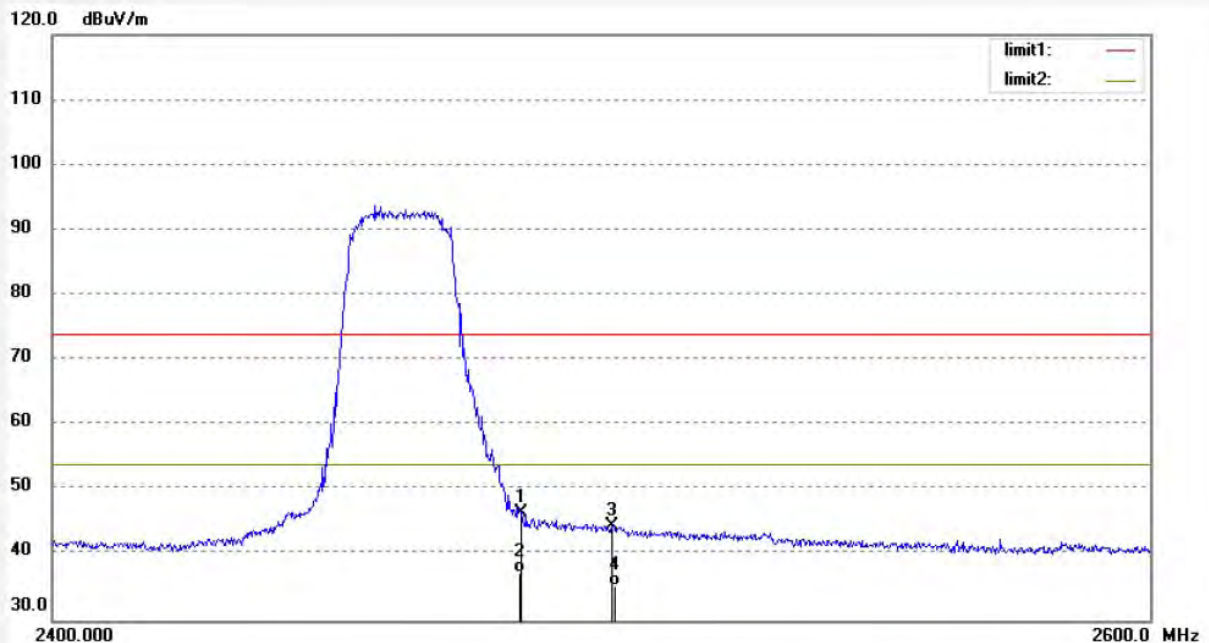
Date: 18/02/05/

Time: 10/15/22

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172536

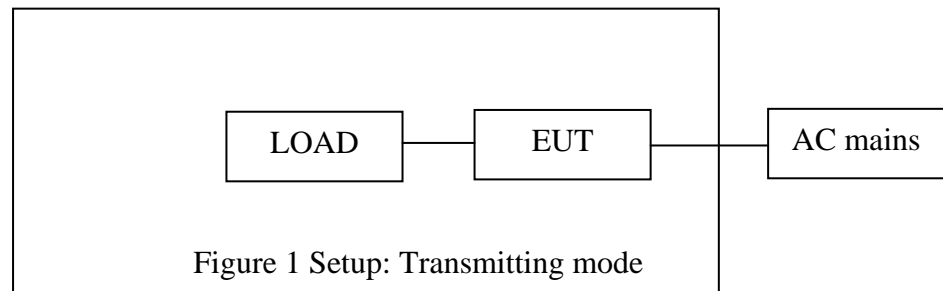


| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2483.500 | 50.53 | -3.89 | 46.64 | 74.00 | -27.36 | peak | 250 | 102 | |
| 2 | 2483.500 | 41.25 | -3.89 | 37.36 | 54.00 | -16.64 | AVG | 250 | 197 | |
| 3 | 2500.000 | 48.26 | -3.81 | 44.45 | 74.00 | -29.55 | peak | 250 | 248 | |
| 4 | 2500.000 | 39.15 | -3.81 | 35.34 | 54.00 | -18.66 | AVG | 250 | 321 | |

11.RADIATED SPURIOUS EMISSION TEST

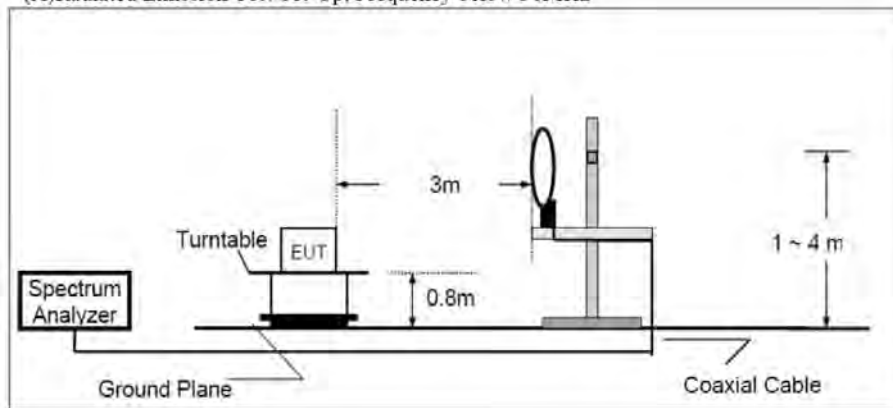
11.1.Block Diagram of Test Setup

11.1.1.Block diagram of connection between the EUT and peripherals

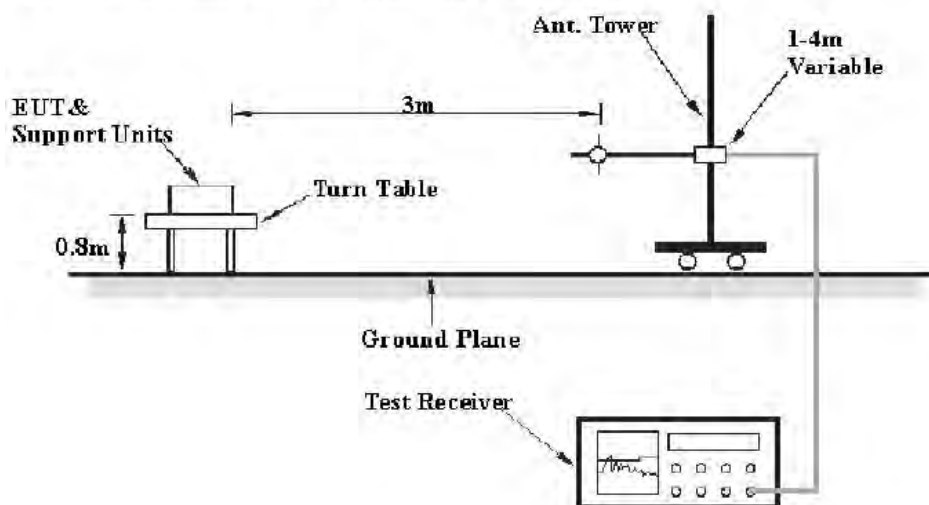


11.1.2.Semi-Anechoic Chamber Test Setup Diagram

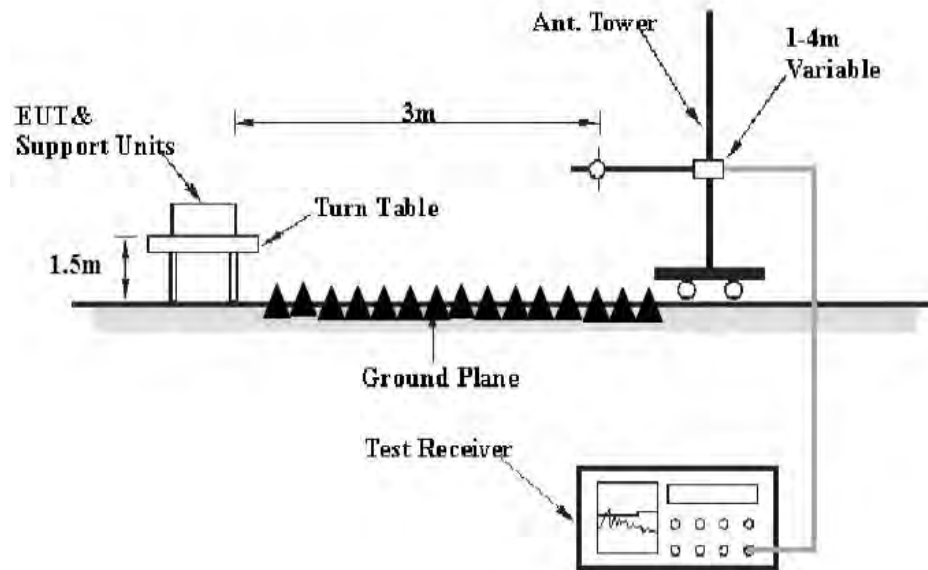
(A) Radiated Emission Test Set-Up, Frequency below 30MHz



(B) Radiated Emission Test Set-Up, Frequency 30MHz-1GHz



(C) Radiated Emission Test Set-Up, Frequency above 1GHz



11.2.The Limit For Section 15.247(d)

Section 15.247(d): In any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

11.3.Restricted bands of operation

11.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|--------------------------|---------------------|---------------|------------------|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| ¹ 0.495-0.505 | 16.69475-16.69525 | 608-614 | 5.35-5.46 |
| 2.1735-2.1905 | 16.80425-16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.17725-4.17775 | 37.5-38.25 | 1435-1626.5 | 9.0-9.2 |
| 4.20725-4.20775 | 73-74.6 | 1645.5-1646.5 | 9.3-9.5 |
| 6.215-6.218 | 74.8-75.2 | 1660-1710 | 10.6-12.7 |
| 6.26775-6.26825 | 108-121.94 | 1718.8-1722.2 | 13.25-13.4 |
| 6.31175-6.31225 | 123-138 | 2200-2300 | 14.47-14.5 |
| 8.291-8.294 | 149.9-150.05 | 2310-2390 | 15.35-16.2 |
| 8.362-8.366 | 156.52475-156.52525 | 2483.5-2500 | 17.7-21.4 |
| 8.37625-8.38675 | 156.7-156.9 | 2690-2900 | 22.01-23.12 |
| 8.41425-8.41475 | 162.0125-167.17 | 3260-3267 | 23.6-24.0 |
| 12.29-12.293 | 167.72-173.2 | 3332-3339 | 31.2-31.8 |
| 12.51975-12.52025 | 240-285 | 3345.8-3358 | 36.43-36.5 |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | (²) |
| 13.36-13.41 | | | |

¹Until February 1, 1999, this restricted band shall be 0.490-0.510

²Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

11.4.Configuration of EUT on Measurement

The equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

11.5. Operating Condition of EUT

11.5.1. Setup the EUT and simulator as shown as Section 11.1.

11.5.2. Turn on the power of all equipment.

11.5.3. Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 . We select 2412MHz, 2437MHz, 2462MHz TX frequency to transmit.

11.6. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground(Below 1GHz). The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The worst-case data rate for this channel to be 1Mbps for 802.11b mode and 6Mbps for 802.11g mode and 150Mbps for 802.11n mode, based on previous with 802.11 WLAN product design architectures.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

11.7.Data Sample

| Frequency (MHz) | Reading (dB μ v) | Factor (dB/m) | Result (dB μ v/m) | Limit (dB μ v/m) | Margin (dB) | Remark |
|--------------------|-------------------------|------------------|--------------------------|-------------------------|----------------|--------|
| X.XX | 48.69 | -13.35 | 35.34 | 46 | -10.66 | QP |

Frequency(MHz) = Emission frequency in MHz

Reading(dB μ v) = Uncorrected Analyzer/Receiver reading

Factor (dB/m) = Antenna factor + Cable Loss – Amplifier gain

Result(dB μ v/m) = Reading(dB μ v) + Factor(dB/m)

Limit (dB μ v/m) = Limit stated in standard

Margin (dB) = Result(dB μ v/m) - Limit (dB μ v/m)

QP = Quasi-peak Reading

Calculation Formula:

Margin(dB) = Result (dB μ V/m)–Limit(dB μ V/m)

Result(dB μ V/m)= Reading(dB μ V)+ Factor(dB/m)

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit.

11.8.The Field Strength of Radiation Emission Measurement Results

PASS.

- Note:
1. Emissions attenuated more than 20 dB below the permissible value are not reported.
 2. *: Denotes restricted band of operation.
 3. The EUT is tested radiation emission at each test mode (802.11 b/g/n) in three axes. The worst emissions are reported in all test mode and channels.
 4. The radiation emissions from 18-25GHz and 9KHz-30MHz are not reported, because the test values lower than the limits of 20dB.
 5. We tested 802.11b,g,n mode and recorded the worst case data(802.11b) for radiated emission test below 1GHz.

Below 1G



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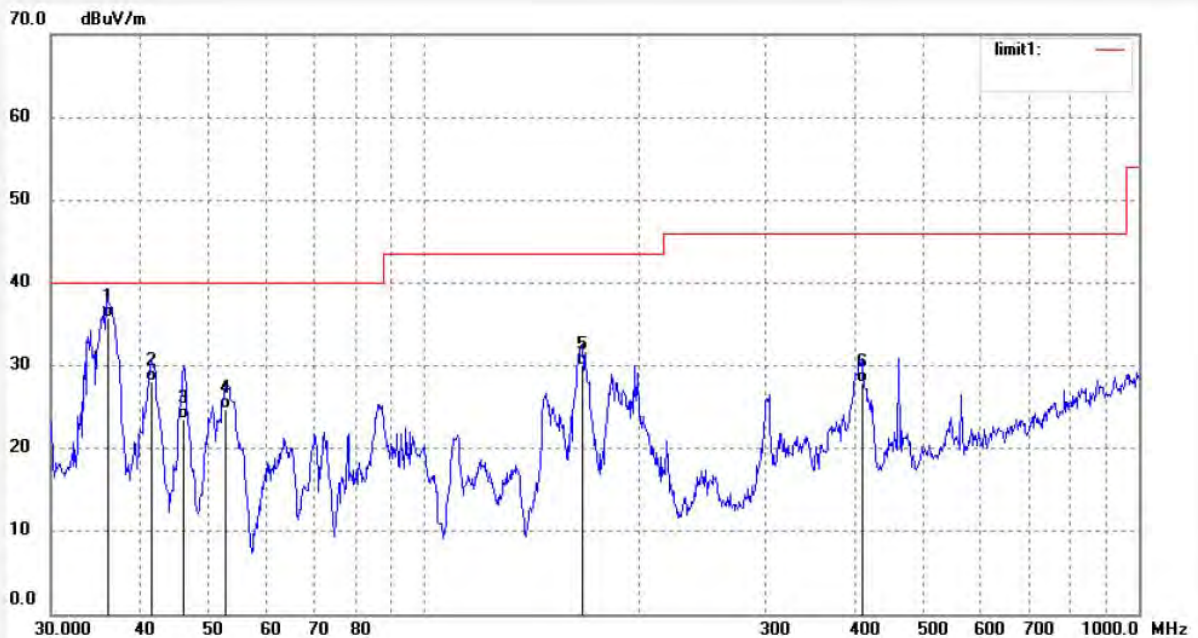
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: frank2018 #89
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 1(802.11b)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018/01/23
Time: 17:05:34
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 36.0138 | 57.65 | -21.88 | 35.77 | 40.00 | -4.23 | QP | 100 | 79 | |
| 2 | 41.4483 | 51.89 | -23.84 | 28.05 | 40.00 | -11.95 | QP | 100 | 354 | |
| 3 | 46.0557 | 48.37 | -24.80 | 23.57 | 40.00 | -16.43 | QP | 100 | 256 | |
| 4 | 52.6345 | 51.38 | -26.63 | 24.75 | 40.00 | -15.25 | QP | 100 | 164 | |
| 5 | 166.6384 | 56.35 | -26.36 | 29.99 | 43.50 | -13.51 | QP | 100 | 259 | |
| 6 | 409.6505 | 46.12 | -18.12 | 28.00 | 46.00 | -18.00 | QP | 100 | 198 | |



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

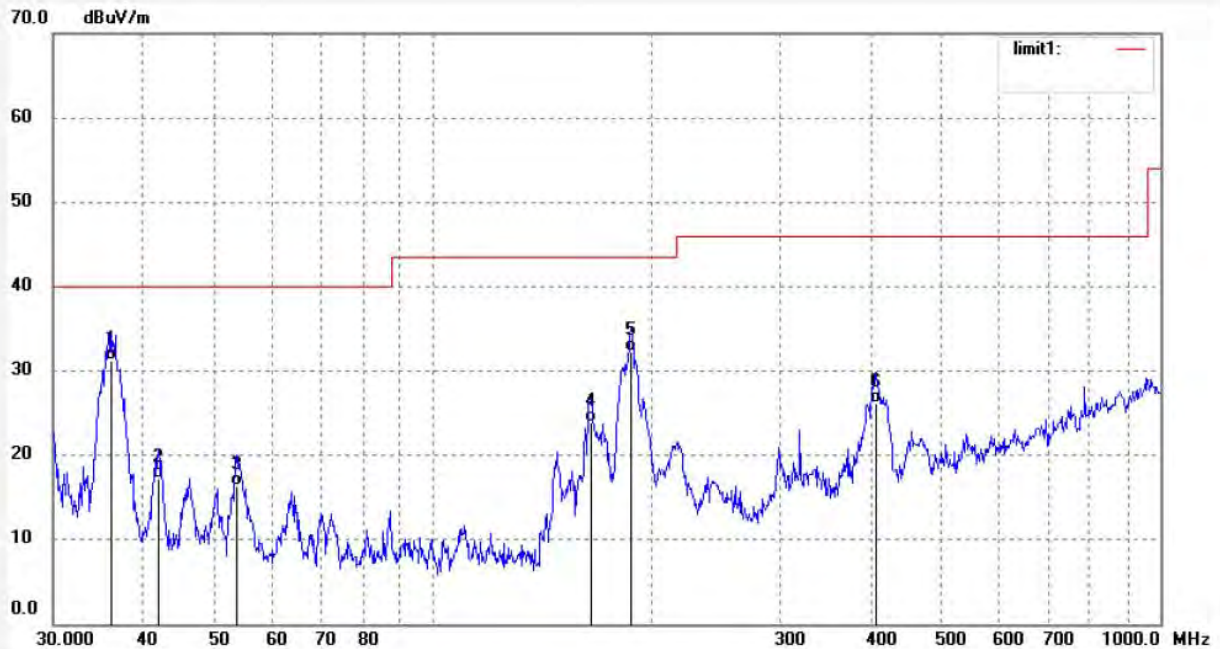
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: frank2018 #90
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 1(802.11b)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018/01/23
Time: 17:06:32
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 36.0138 | 53.17 | -21.88 | 31.29 | 40.00 | -8.71 | QP | 200 | 167 | |
| 2 | 41.8875 | 41.13 | -23.91 | 17.22 | 40.00 | -22.78 | QP | 200 | 183 | |
| 3 | 53.7558 | 43.25 | -26.81 | 16.44 | 40.00 | -23.56 | QP | 200 | 325 | |
| 4 | 164.8911 | 50.38 | -26.55 | 23.83 | 43.50 | -19.67 | QP | 200 | 187 | |
| 5 | 187.1246 | 57.68 | -25.35 | 32.33 | 43.50 | -11.17 | QP | 200 | 254 | |
| 6 | 406.7819 | 44.38 | -18.19 | 26.19 | 46.00 | -19.81 | QP | 200 | 90 | |



ACCURATE TECHNOLOGY CO., LTD.

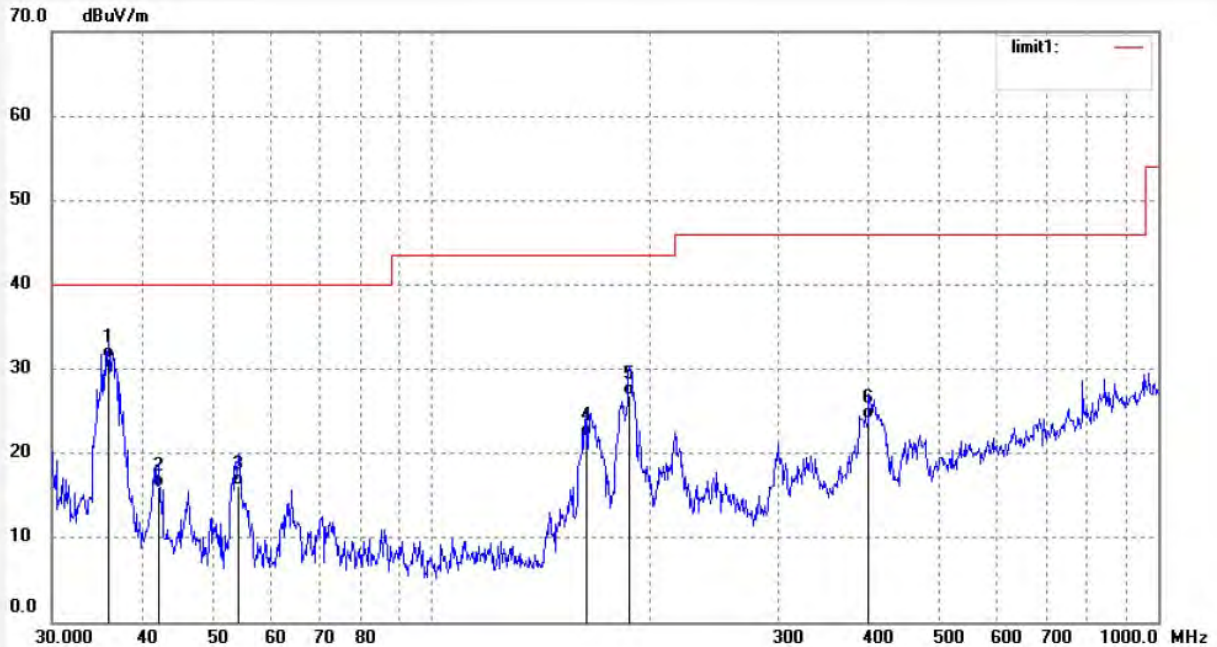
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: frank2018 #91
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 6(802.11b)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018/01/23
Time: 17:07:04
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20172536

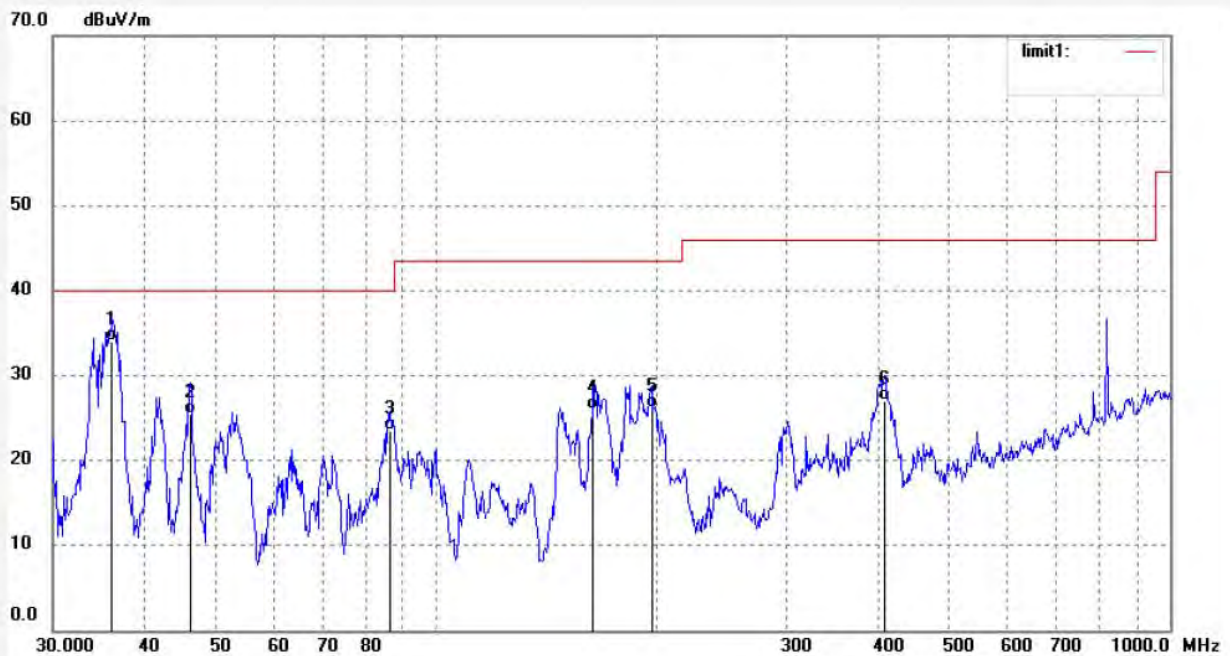


| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 35.8875 | 53.12 | -21.83 | 31.29 | 40.00 | -8.71 | QP | 200 | 133 | |
| 2 | 42.0349 | 39.98 | -23.93 | 16.05 | 40.00 | -23.95 | QP | 200 | 92 | |
| 3 | 54.1349 | 43.12 | -26.88 | 16.24 | 40.00 | -23.76 | QP | 200 | 360 | |
| 4 | 163.7366 | 48.65 | -26.68 | 21.97 | 43.50 | -21.53 | QP | 200 | 189 | |
| 5 | 187.1246 | 52.18 | -25.35 | 26.83 | 43.50 | -16.67 | QP | 200 | 263 | |
| 6 | 399.6981 | 42.38 | -18.31 | 24.07 | 46.00 | -21.93 | QP | 200 | 147 | |

Job No.: frank2018 #92
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 6(802.11b)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018/01/23
Time: 17:07:59
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20172536

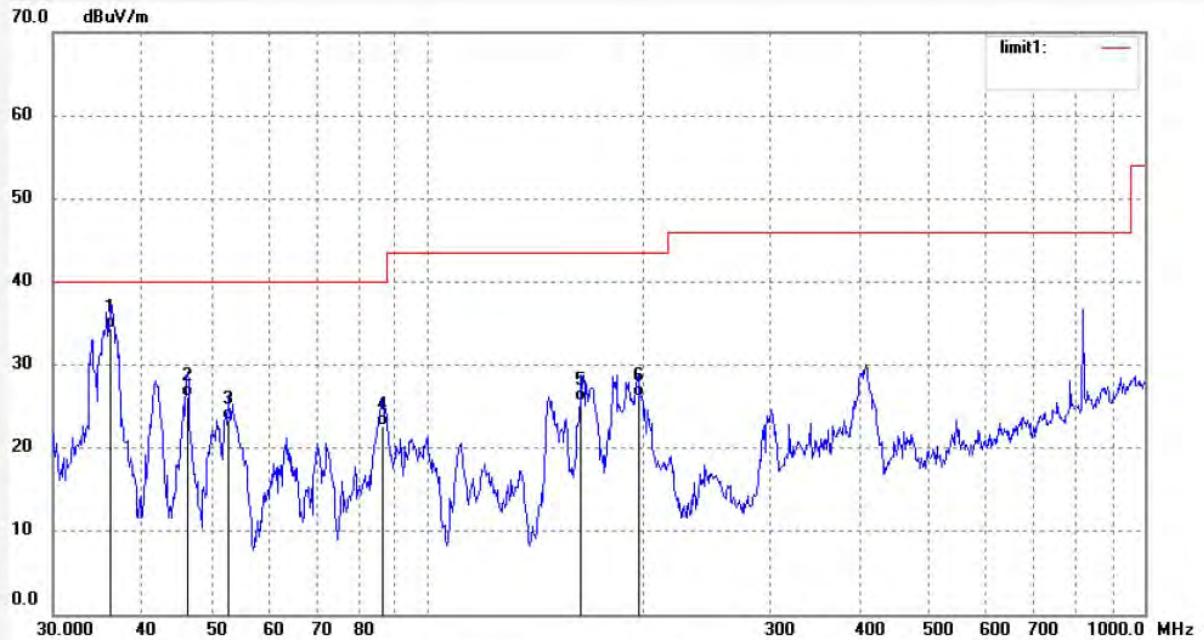


| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|----------------|---------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1 | 36.1405 | 56.02 | -21.95 | 34.07 | 40.00 | -5.93 | QP | 100 | 49 | |
| 2 | 46.2180 | 50.39 | -24.85 | 25.54 | 40.00 | -14.46 | QP | 100 | 158 | |
| 3 | 86.3825 | 50.99 | -27.45 | 23.54 | 40.00 | -16.46 | QP | 100 | 198 | |
| 4 | 163.7366 | 52.61 | -26.68 | 25.93 | 43.50 | -17.57 | QP | 100 | 320 | |
| 5 | 196.5595 | 50.68 | -24.56 | 26.12 | 43.50 | -17.38 | QP | 100 | 312 | |
| 6 | 408.2137 | 45.21 | -18.16 | 27.05 | 46.00 | -18.95 | QP | 100 | 102 | |

Job No.: frank2018 #93
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 11(802.11b)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018/01/23
Time: 17:08:11
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|----------------|---------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1 | 36.1405 | 56.33 | -21.95 | 34.38 | 40.00 | -5.62 | QP | 100 | 197 | |
| 2 | 46.2180 | 50.98 | -24.85 | 26.13 | 40.00 | -13.87 | QP | 100 | 215 | |
| 3 | 52.8196 | 50.11 | -26.66 | 23.45 | 40.00 | -16.55 | QP | 100 | 324 | |
| 4 | 86.6867 | 50.12 | -27.45 | 22.67 | 40.00 | -17.33 | QP | 100 | 268 | |
| 5 | 163.7366 | 52.39 | -26.68 | 25.71 | 43.50 | -17.79 | QP | 100 | 102 | |
| 6 | 196.5595 | 50.65 | -24.56 | 26.09 | 43.50 | -17.41 | QP | 100 | 198 | |



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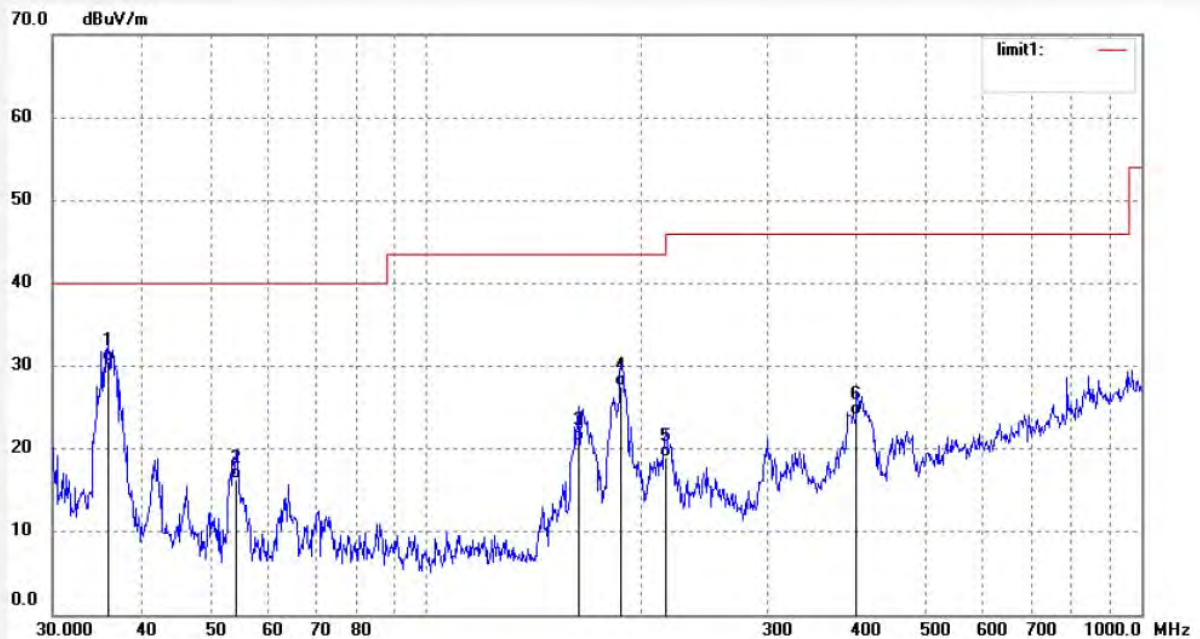
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: frank2018 #94
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 11(802.11b)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018/01/23
Time: 17:07:04
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 35.8875 | 52.37 | -21.83 | 30.54 | 40.00 | -9.46 | QP | 200 | 197 | |
| 2 | 54.1349 | 43.22 | -26.88 | 16.34 | 40.00 | -23.66 | QP | 200 | 254 | |
| 3 | 163.7366 | 47.67 | -26.68 | 20.99 | 43.50 | -22.51 | QP | 200 | 103 | |
| 4 | 187.1245 | 52.99 | -25.35 | 27.64 | 43.50 | -15.86 | QP | 200 | 156 | |
| 5 | 216.1195 | 43.12 | -24.05 | 19.07 | 46.00 | -26.93 | QP | 200 | 98 | |
| 6 | 399.6981 | 42.35 | -18.31 | 24.04 | 46.00 | -21.96 | QP | 200 | 104 | |

Above 1G



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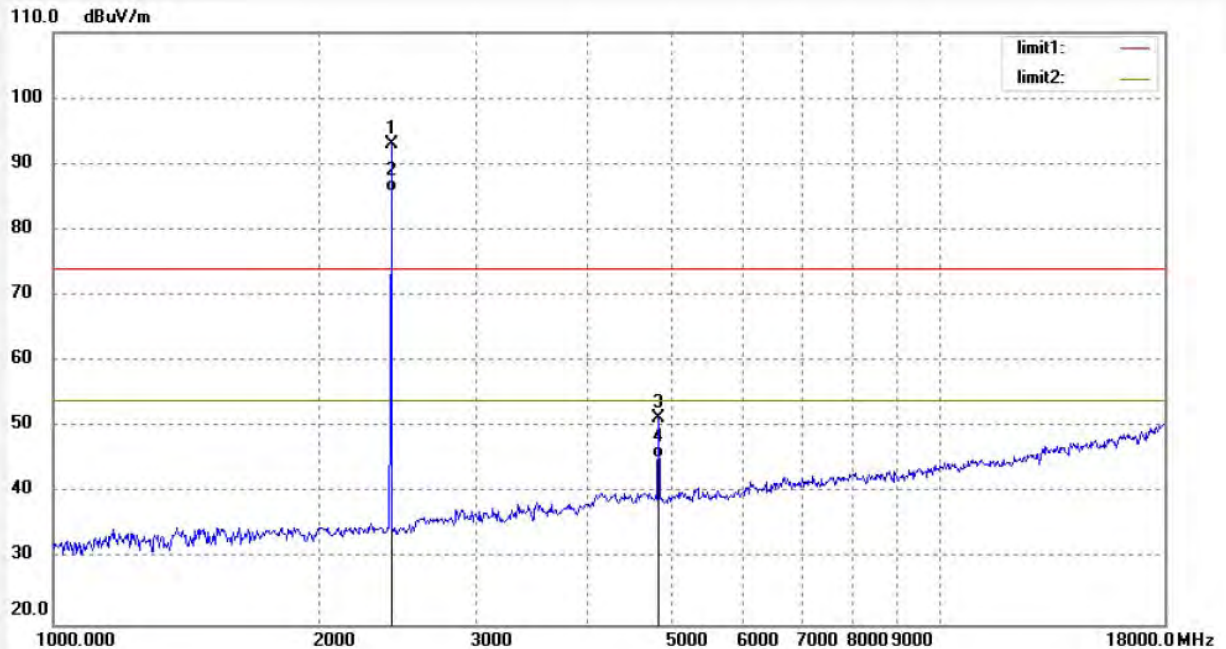
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Frank2017 #2160
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 1(802.11b)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/02/02/
Time: 9/22/43
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2412.000 | 97.31 | -4.24 | 93.07 | 74.00 | 19.07 | peak | 200 | 123 | |
| 2 | 2412.000 | 90.00 | -4.24 | 85.76 | 54.00 | 31.76 | AVG | 150 | 52 | |
| 3 | 4824.000 | 48.28 | 3.13 | 51.41 | 74.00 | -22.59 | peak | 200 | 348 | |
| 4 | 4824.000 | 42.15 | 3.13 | 45.28 | 54.00 | -8.72 | AVG | 150 | 254 | |



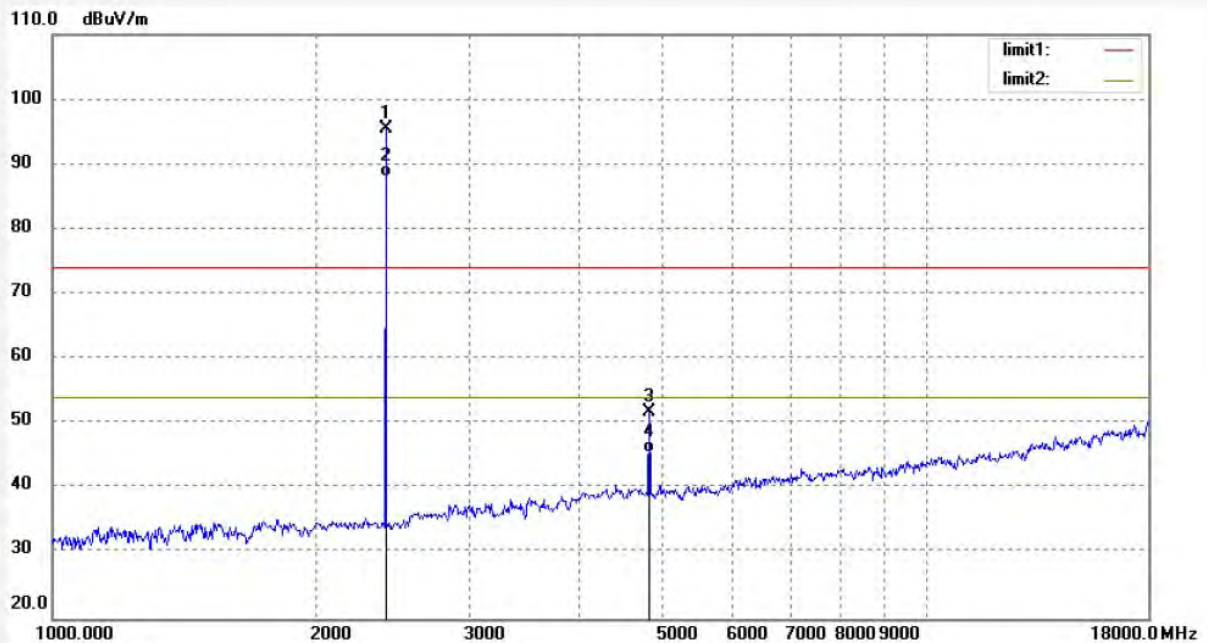
ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Frank2017 #2161
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 1(802.11b)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/02/02/
Time: 9/22/43
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2412.000 | 99.81 | -4.24 | 95.57 | 74.00 | 21.57 | peak | 250 | 321 | |
| 2 | 2412.000 | 92.34 | -4.24 | 88.10 | 54.00 | 34.10 | AVG | 250 | 124 | |
| 3 | 4824.000 | 48.78 | 3.13 | 51.91 | 74.00 | -22.09 | peak | 250 | 248 | |
| 4 | 4824.000 | 42.45 | 3.13 | 45.58 | 54.00 | -8.42 | AVG | 250 | 132 | |



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F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
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Site: 2# Chamber

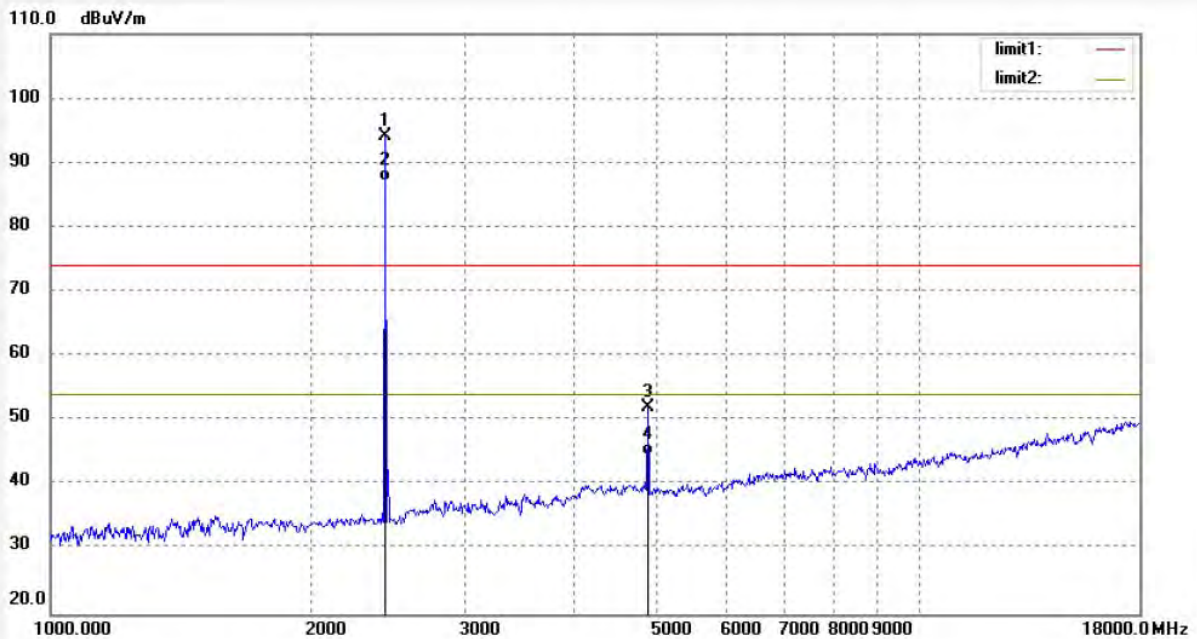
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Frank2017 #2162
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 6(802.11b)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/02/02/
Time: 9/22/43
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|----------------|---------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1 | 2437.000 | 98.28 | -4.14 | 94.14 | 74.00 | 20.14 | peak | 250 | 101 | |
| 2 | 2437.000 | 91.31 | -4.14 | 87.17 | 54.00 | 33.17 | AVG | 250 | 120 | |
| 3 | 4874.000 | 48.62 | 3.36 | 51.98 | 74.00 | -22.02 | peak | 250 | 352 | |
| 4 | 4874.000 | 41.34 | 3.36 | 44.70 | 54.00 | -9.30 | AVG | 250 | 95 | |



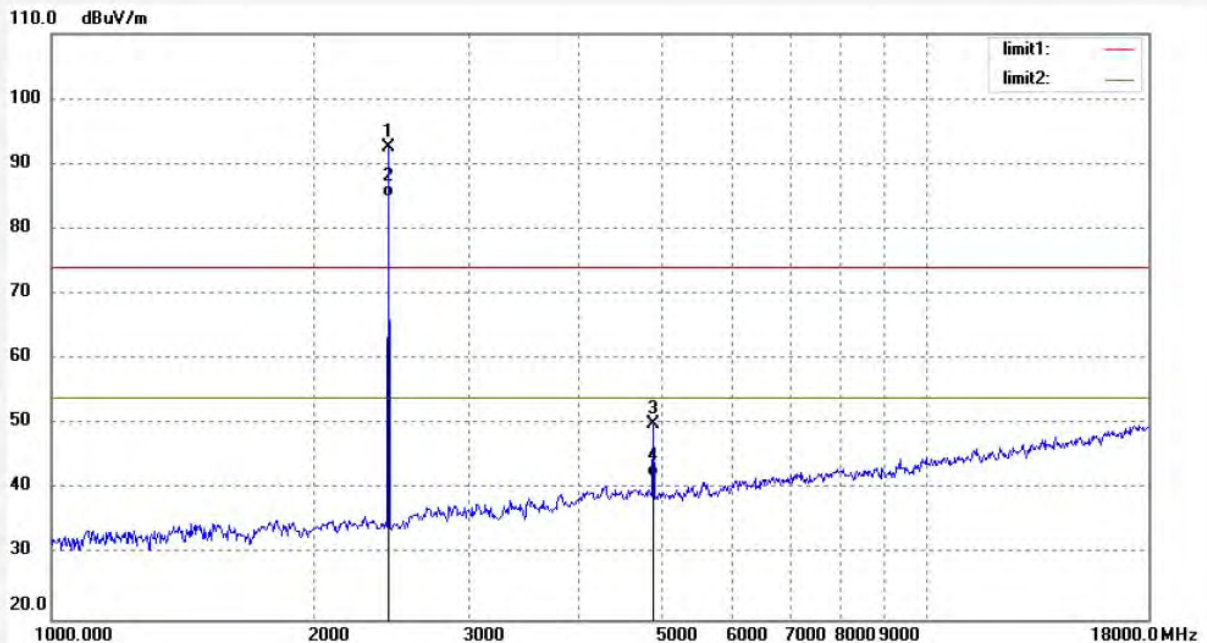
ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Frank2017 #2163
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 6(802.11b)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/02/02/
Time: 9/22/43
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536

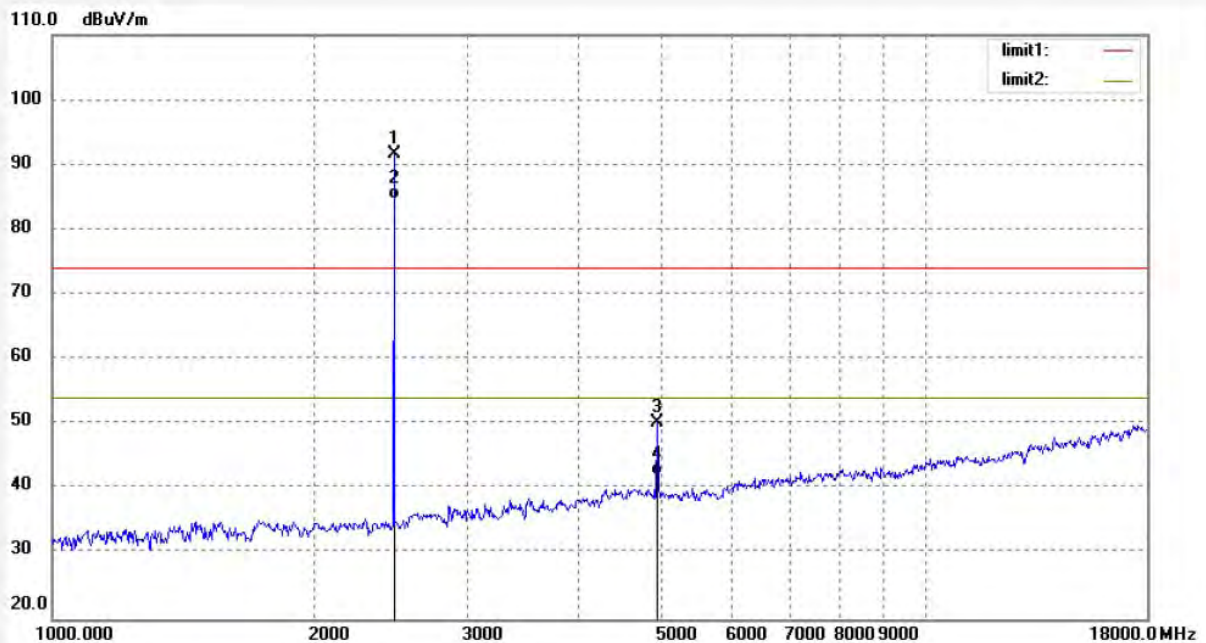


| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2437.000 | 96.78 | -4.14 | 92.64 | 74.00 | 18.64 | peak | 200 | 192 | |
| 2 | 2437.000 | 89.15 | -4.14 | 85.01 | 54.00 | 31.01 | AVG | 150 | 214 | |
| 3 | 4874.000 | 46.62 | 3.36 | 49.98 | 74.00 | -24.02 | peak | 200 | 233 | |
| 4 | 4874.000 | 38.61 | 3.36 | 41.97 | 54.00 | -12.03 | AVG | 150 | 120 | |

Job No.: Frank2017 #2164
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 11(802.11b)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/02/02/
Time: 9/22/43
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2462.000 | 95.61 | -3.97 | 91.64 | 74.00 | 17.64 | peak | 200 | 163 | |
| 2 | 2462.000 | 88.61 | -3.97 | 84.64 | 54.00 | 30.64 | AVG | 150 | 66 | |
| 3 | 4924.000 | 46.54 | 3.62 | 50.16 | 74.00 | -23.84 | peak | 200 | 192 | |
| 4 | 4924.000 | 38.56 | 3.62 | 42.18 | 54.00 | -11.82 | AVG | 150 | 103 | |



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F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Frank2017 #2165

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: MINI Wi-Fi Plug

Mode: TX Channel 11(802.11b)

Model: MINI Wi-Fi Plug

Manufacturer: SWAGTEK

Polarization: Horizontal

Power Source: AC 120V/60Hz

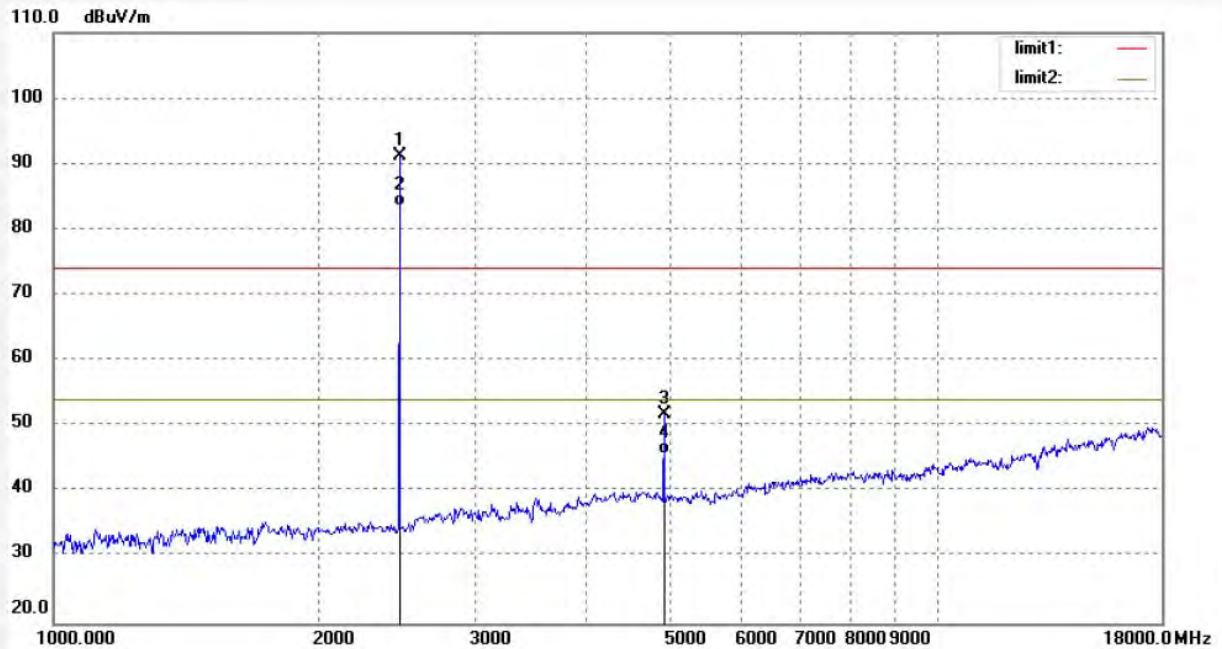
Date: 18/02/02/

Time: 9/22/43

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2462.000 | 95.11 | -3.97 | 91.14 | 74.00 | 17.14 | peak | 250 | 193 | |
| 2 | 2462.000 | 87.64 | -3.97 | 83.67 | 54.00 | 29.67 | AVG | 250 | 269 | |
| 3 | 4924.000 | 48.24 | 3.50 | 51.74 | 74.00 | -22.26 | peak | 250 | 194 | |
| 4 | 4924.000 | 42.31 | 3.50 | 45.81 | 54.00 | -8.19 | AVG | 250 | 34 | |



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F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Frank2017 #2166

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: MINI Wi-Fi Plug

Mode: TX Channel 1(802.11G)

Model: MINI Wi-Fi Plug

Manufacturer: SWAGTEK

Polarization: Horizontal

Power Source: AC 120V/60Hz

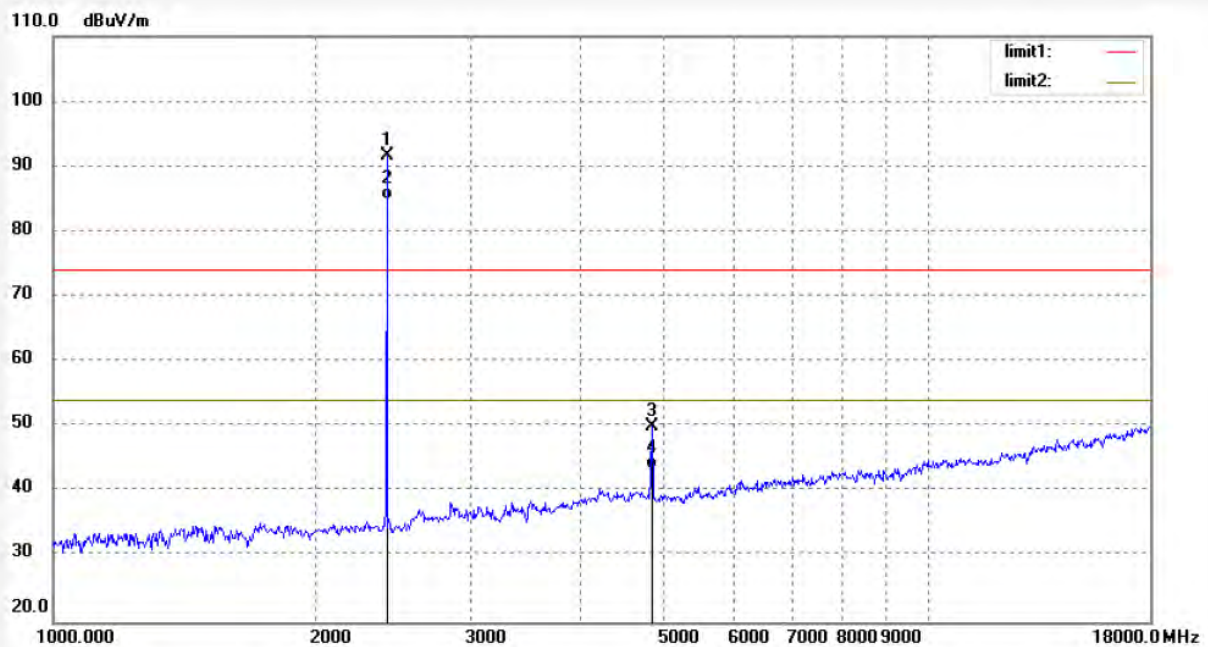
Date: 18/02/02/

Time: 9/22/43

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|----------------|---------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1 | 2412.000 | 95.81 | -4.24 | 91.57 | 74.00 | 17.57 | peak | 250 | 183 | |
| 2 | 2412.000 | 89.16 | -4.24 | 84.92 | 54.00 | 30.92 | AVG | 250 | 133 | |
| 3 | 4824.000 | 46.75 | 3.19 | 49.94 | 74.00 | -24.06 | peak | 250 | 210 | |
| 4 | 4824.000 | 40.31 | 3.19 | 43.50 | 54.00 | -10.50 | AVG | 250 | 85 | |



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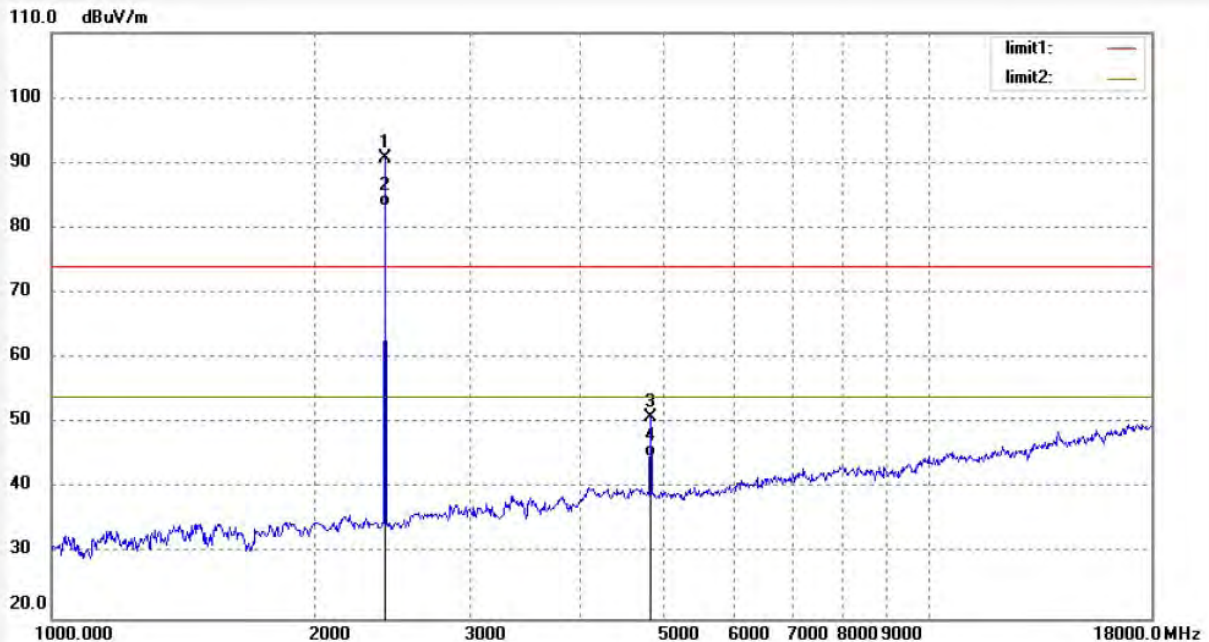
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Frank2017 #2167
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 1(802.11G)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/02/02/
Time: 9/22/43
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2412.000 | 94.94 | -4.27 | 90.67 | 74.00 | 16.67 | peak | 200 | 198 | |
| 2 | 2412.000 | 87.65 | -4.27 | 83.38 | 54.00 | 29.38 | AVG | 150 | 63 | |
| 3 | 4824.000 | 47.78 | 3.13 | 50.91 | 74.00 | -23.09 | peak | 200 | 126 | |
| 4 | 4824.000 | 41.64 | 3.13 | 44.77 | 54.00 | -9.23 | AVG | 150 | 168 | |



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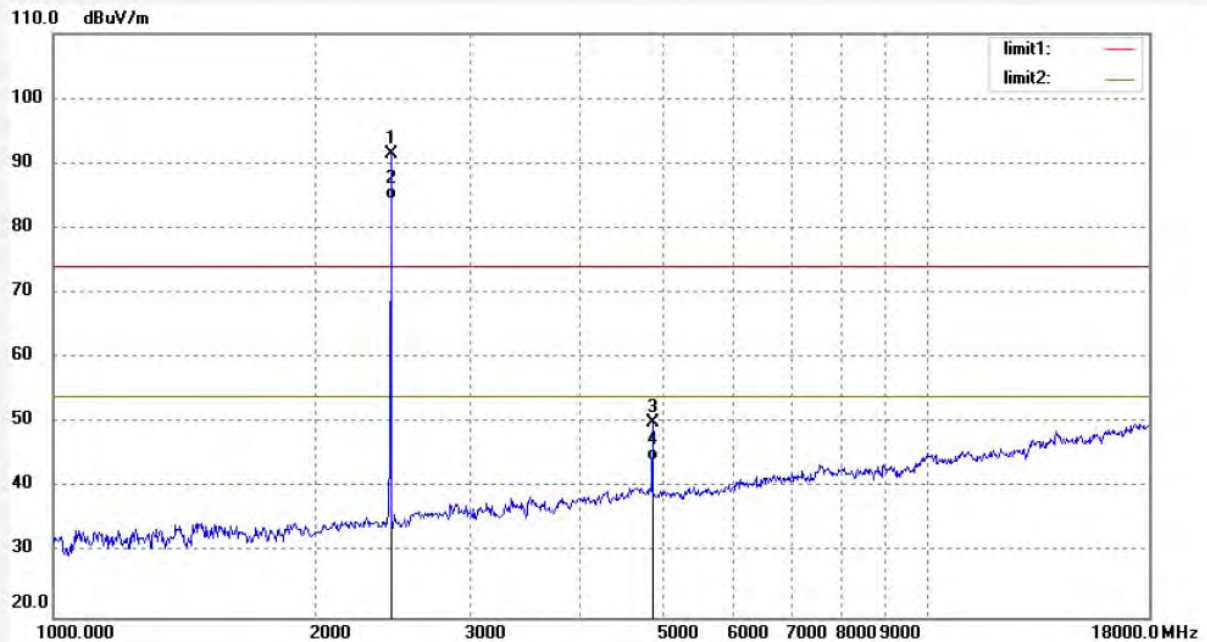
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Frank2017 #2168
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 6(802.11G)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/02/02/
Time: 9/22/43
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2437.000 | 95.54 | -4.10 | 91.44 | 74.00 | 17.44 | peak | 200 | 136 | |
| 2 | 2437.000 | 88.61 | -4.10 | 84.51 | 54.00 | 30.51 | AVG | 150 | 235 | |
| 3 | 4874.000 | 46.76 | 3.25 | 50.01 | 74.00 | -23.99 | peak | 200 | 195 | |
| 4 | 4874.000 | 40.92 | 3.25 | 44.17 | 54.00 | -9.83 | AVG | 150 | 202 | |



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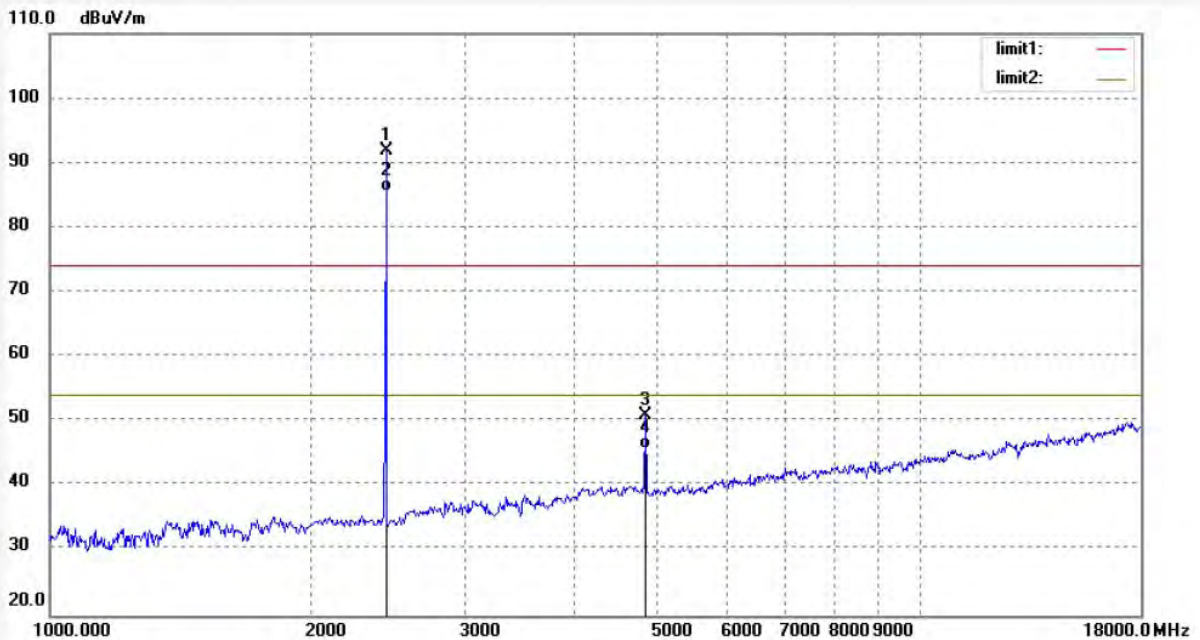
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Frank2017 #2169
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 6(802.11G)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/02/02/
Time: 9/22/43
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2437.000 | 96.04 | -4.10 | 91.94 | 74.00 | 17.94 | peak | 250 | 196 | |
| 2 | 2437.000 | 89.61 | -4.10 | 85.51 | 54.00 | 31.51 | AVG | 200 | 301 | |
| 3 | 4874.000 | 47.75 | 3.19 | 50.94 | 74.00 | -23.06 | peak | 250 | 51 | |
| 4 | 4874.000 | 42.64 | 3.19 | 45.83 | 54.00 | -8.17 | AVG | 200 | 102 | |



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Site: 2# Chamber

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Fax:+86-0755-26503396

Job No.: Frank2017 #2170

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: MINI Wi-Fi Plug

Mode: TX Channel 11(802.11G)

Model: MINI Wi-Fi Plug

Manufacturer: SWAGTEK

Polarization: Horizontal

Power Source: AC 120V/60Hz

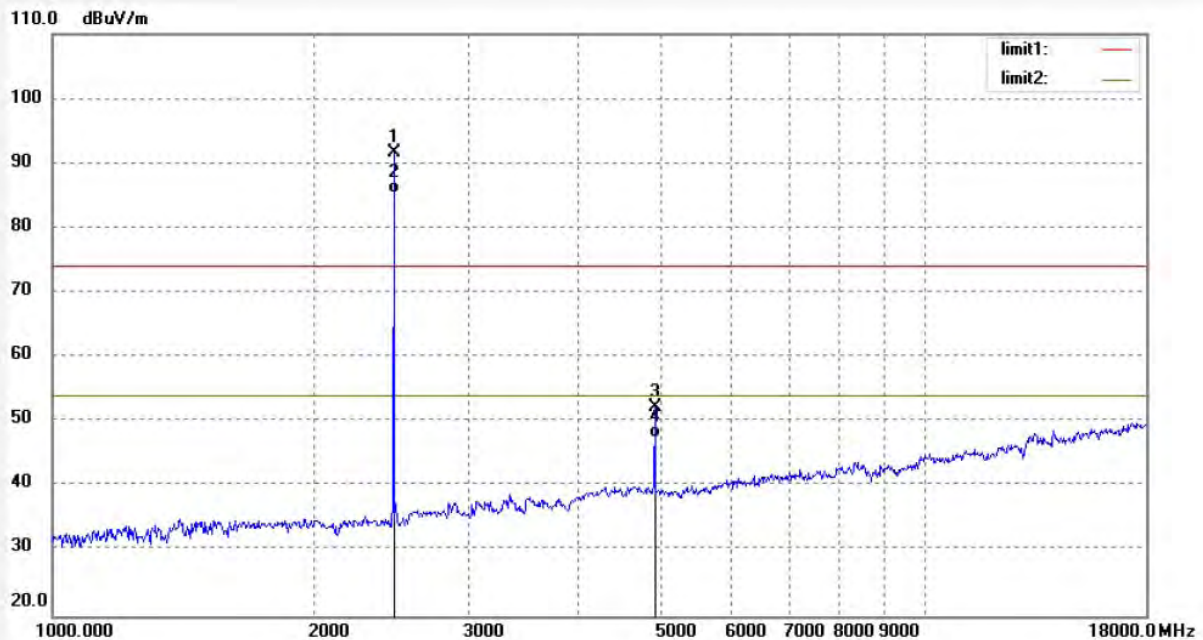
Date: 18/02/02/

Time: 9/22/43

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2462.000 | 95.61 | -3.97 | 91.64 | 74.00 | 17.64 | peak | 250 | 193 | |
| 2 | 2462.000 | 89.34 | -3.97 | 85.37 | 54.00 | 31.37 | AVG | 250 | 265 | |
| 3 | 4924.000 | 48.74 | 3.50 | 52.24 | 74.00 | -21.76 | peak | 250 | 162 | |
| 4 | 4924.000 | 43.95 | 3.50 | 47.45 | 54.00 | -6.55 | AVG | 250 | 101 | |

Job No.: Frank2017 #2171

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: MINI Wi-Fi Plug

Mode: TX Channel 11(802.11G)

Model: MINI Wi-Fi Plug

Manufacturer: SWAGTEK

Polarization: Vertical

Power Source: AC 120V/60Hz

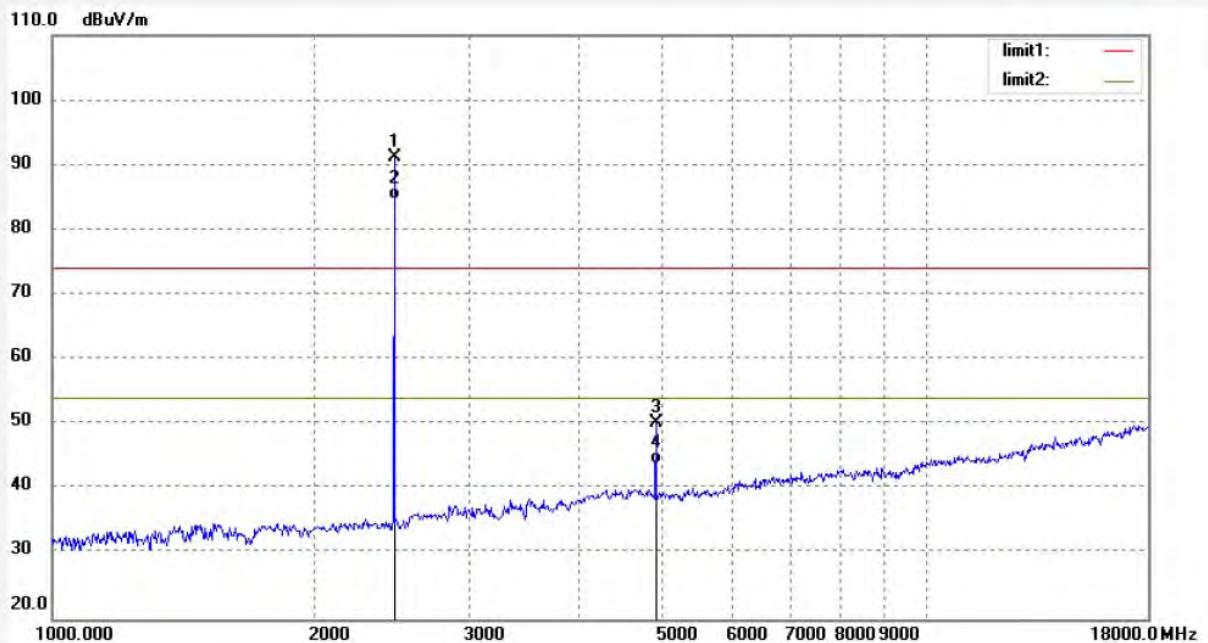
Date: 18/02/02/

Time: 9/22/43

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|----------------|---------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1 | 2462.000 | 95.11 | -3.97 | 91.14 | 74.00 | 17.14 | peak | 200 | 96 | |
| 2 | 2462.000 | 88.62 | -3.97 | 84.65 | 54.00 | 30.65 | AVG | 150 | 233 | |
| 3 | 4924.000 | 46.74 | 3.50 | 50.24 | 74.00 | -23.76 | peak | 250 | 100 | |
| 4 | 4924.000 | 40.38 | 3.50 | 43.88 | 54.00 | -10.12 | AVG | 150 | 201 | |



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Job No.: Frank2017 #2176

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: MINI Wi-Fi Plug

Mode: TX Channel 1(802.11N20)

Model: MINI Wi-Fi Plug

Manufacturer: SWAGTEK

Polarization: Vertical

Power Source: AC 120V/60Hz

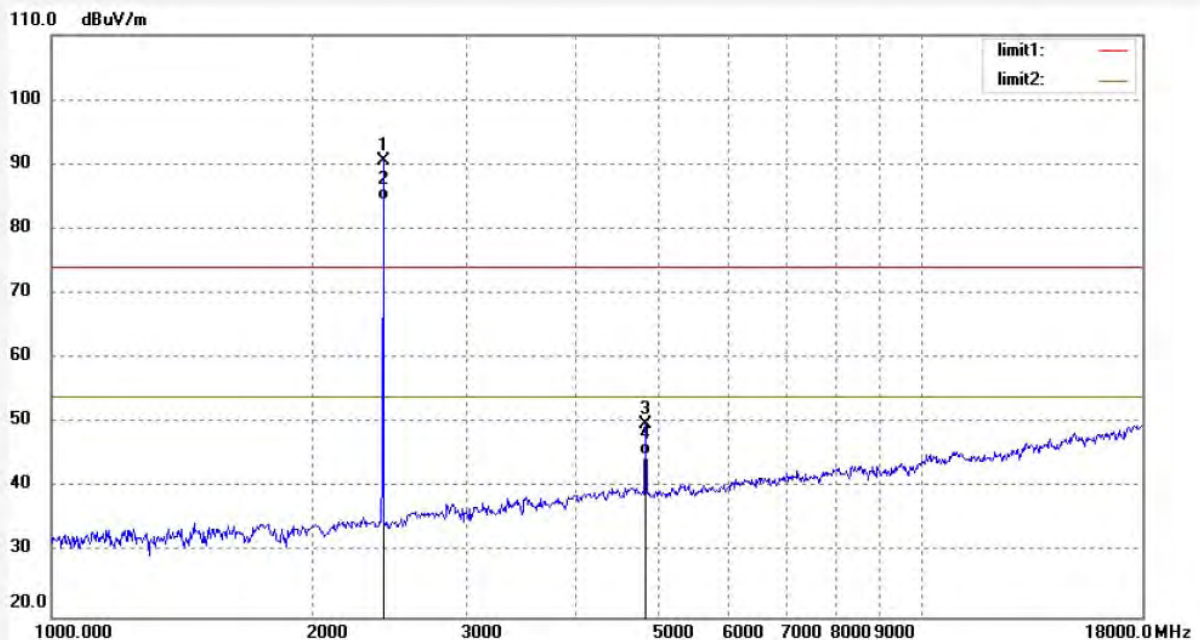
Date: 18/02/02/

Time: 9/22/43

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2412.000 | 94.81 | -4.24 | 90.57 | 74.00 | 16.57 | peak | 200 | 112 | |
| 2 | 2412.000 | 88.64 | -4.24 | 84.40 | 54.00 | 30.40 | AVG | 150 | 320 | |
| 3 | 4824.000 | 46.78 | 3.13 | 49.91 | 74.00 | -24.09 | peak | 200 | 210 | |
| 4 | 4824.000 | 41.92 | 3.13 | 45.05 | 54.00 | -8.95 | AVG | 150 | 49 | |



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Fax:+86-0755-26503396

Job No.: Frank2017 #2177

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: MINI Wi-Fi Plug

Mode: TX Channel 1(802.11N20)

Model: MINI Wi-Fi Plug

Manufacturer: SWAGTEK

Polarization: Horizontal

Power Source: AC 120V/60Hz

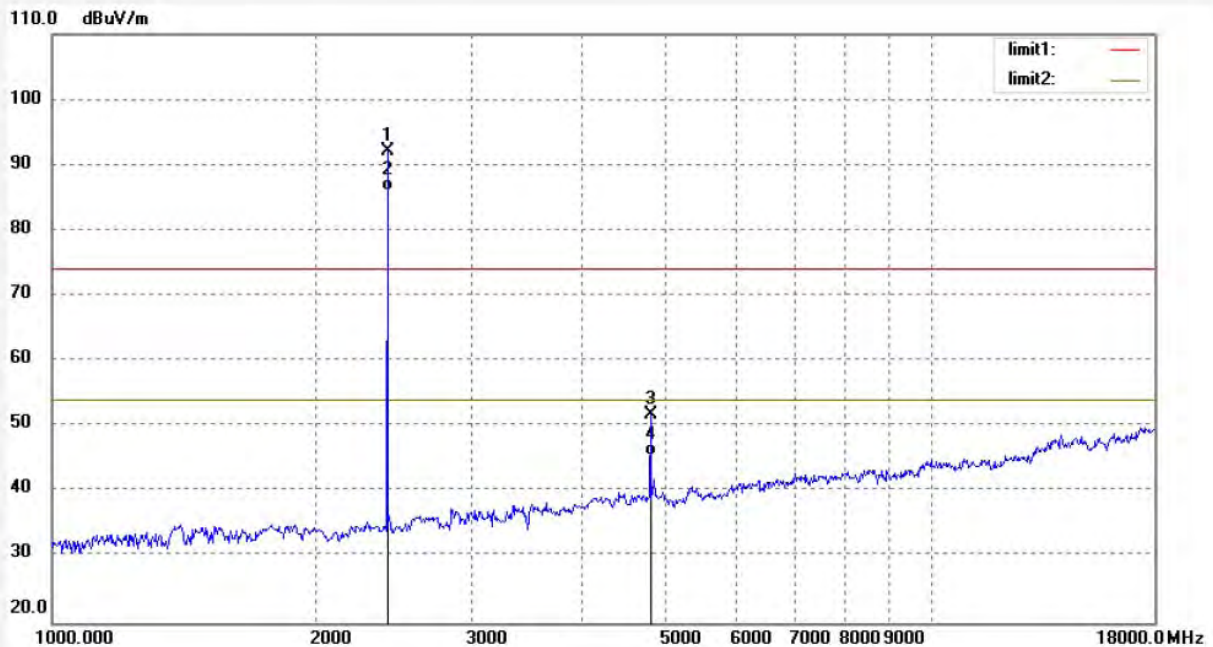
Date: 18/02/02/

Time: 9/22/43

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2412.000 | 96.31 | -4.24 | 92.07 | 74.00 | 18.07 | peak | 250 | 120 | |
| 2 | 2412.000 | 90.32 | -4.24 | 86.08 | 54.00 | 32.08 | AVG | 250 | 201 | |
| 3 | 4824.000 | 48.79 | 3.00 | 51.79 | 74.00 | -22.21 | peak | 250 | 93 | |
| 4 | 4824.000 | 42.64 | 3.00 | 45.64 | 54.00 | -8.36 | AVG | 250 | 264 | |



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Fax:+86-0755-26503396

Job No.: Frank2017 #2174

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: MINI Wi-Fi Plug

Mode: TX Channel 6(802.11N20)

Model: MINI Wi-Fi Plug

Manufacturer: SWAGTEK

Polarization: Horizontal

Power Source: AC 120V/60Hz

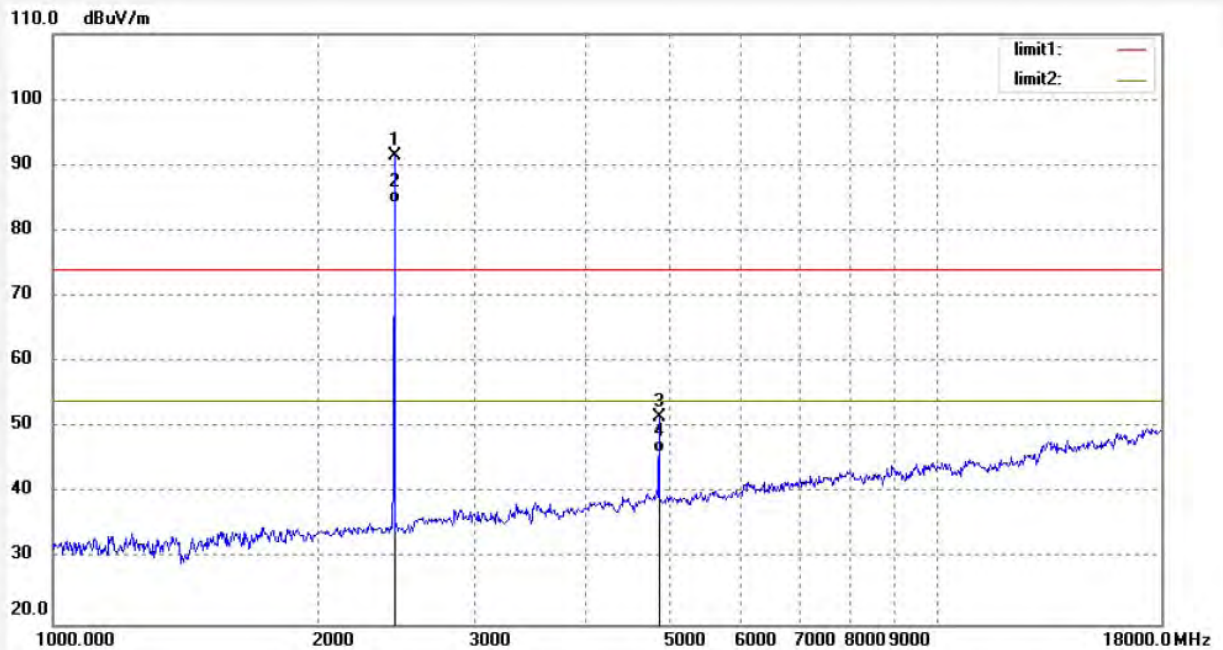
Date: 18/02/02/

Time: 9/22/43

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2437.000 | 95.54 | -4.10 | 91.44 | 74.00 | 17.44 | peak | 250 | 182 | |
| 2 | 2437.000 | 88.31 | -4.10 | 84.21 | 54.00 | 30.21 | AVG | 250 | 102 | |
| 3 | 4874.000 | 48.26 | 3.25 | 51.51 | 74.00 | -22.49 | peak | 250 | 98 | |
| 4 | 4874.000 | 42.94 | 3.25 | 46.19 | 54.00 | -7.81 | AVG | 250 | 57 | |



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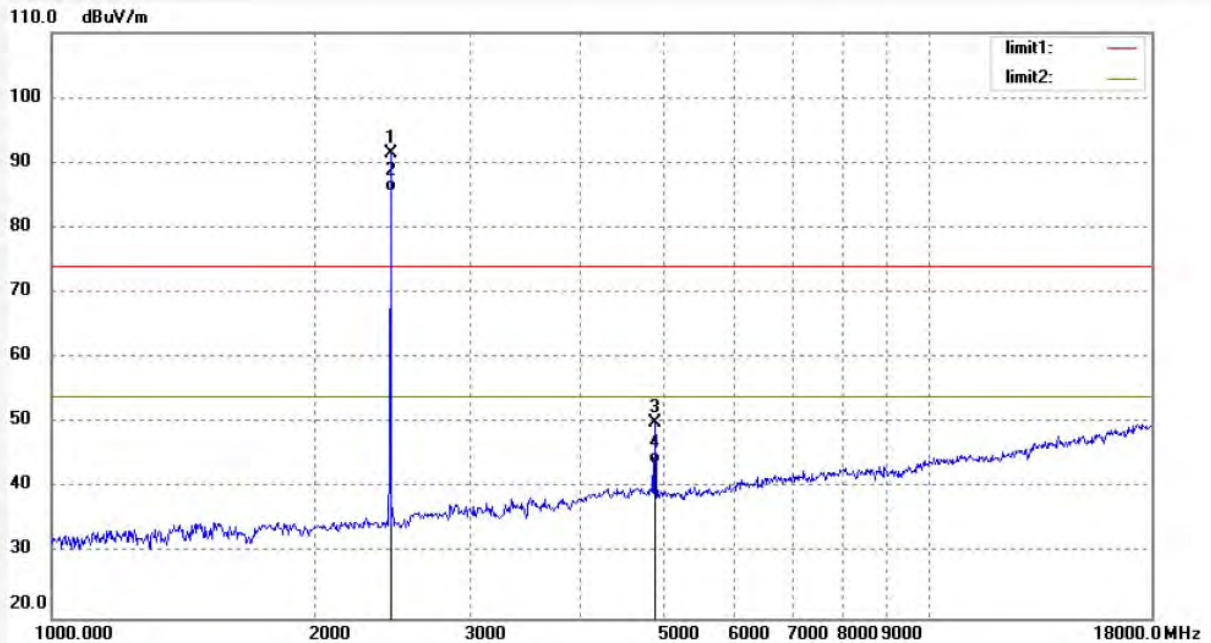
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Frank2017 #2175
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 6(802.11N20)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/02/02/
Time: 9/22/43
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2437.000 | 95.54 | -4.10 | 91.44 | 74.00 | 17.44 | peak | 200 | 196 | |
| 2 | 2437.000 | 89.65 | -4.10 | 85.55 | 54.00 | 31.55 | AVG | 150 | 328 | |
| 3 | 4874.000 | 46.62 | 3.36 | 49.98 | 74.00 | -24.02 | peak | 200 | 45 | |
| 4 | 4874.000 | 40.38 | 3.36 | 43.74 | 54.00 | -10.26 | AVG | 150 | 329 | |



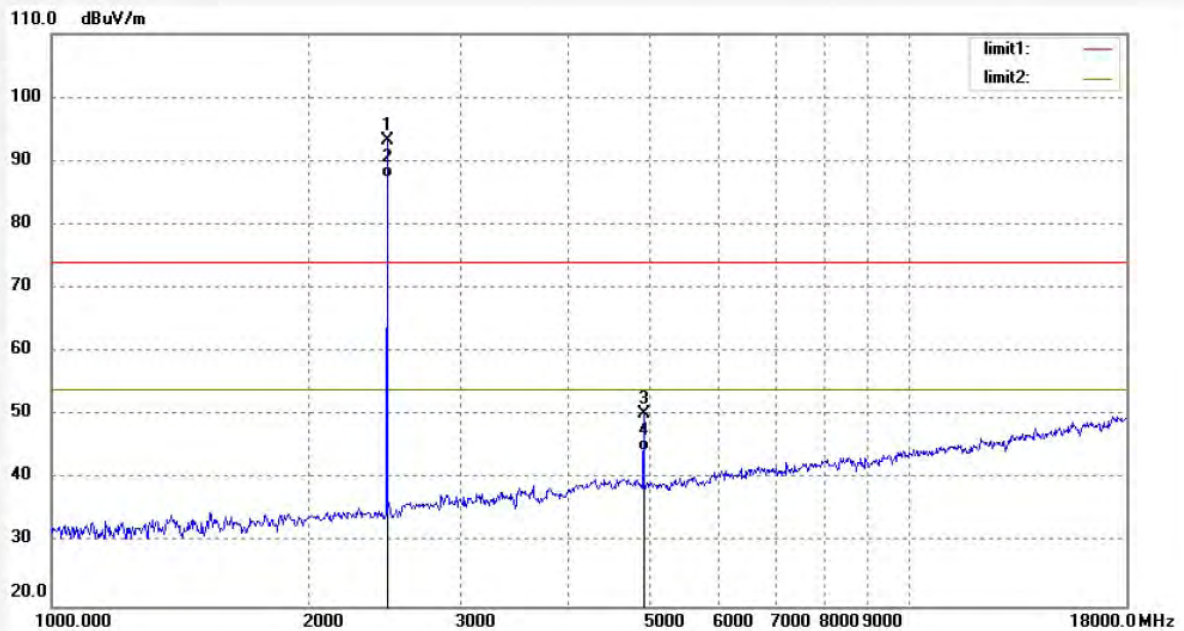
ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Frank2017 #2172
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: MINI Wi-Fi Plug
Mode: TX Channel 11(802.11N20)
Model: MINI Wi-Fi Plug
Manufacturer: SWAGTEK

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/02/02/
Time: 9/22/43
Engineer Signature: Frank
Distance: 3m

Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2462.000 | 97.11 | -3.97 | 93.14 | 74.00 | 19.14 | peak | 200 | 102 | |
| 2 | 2462.000 | 91.34 | -3.97 | 87.37 | 54.00 | 33.37 | AVG | 150 | 194 | |
| 3 | 4924.000 | 46.74 | 3.50 | 50.24 | 74.00 | -23.76 | peak | 200 | 321 | |
| 4 | 4924.000 | 40.91 | 3.50 | 44.41 | 54.00 | -9.59 | AVG | 150 | 51 | |



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Fax:+86-0755-26503396

Job No.: Frank2017 #2173

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: MINI Wi-Fi Plug

Mode: TX Channel 11(802.11N20)

Model: MINI Wi-Fi Plug

Manufacturer: SWAGTEK

Polarization: Horizontal

Power Source: AC 120V/60Hz

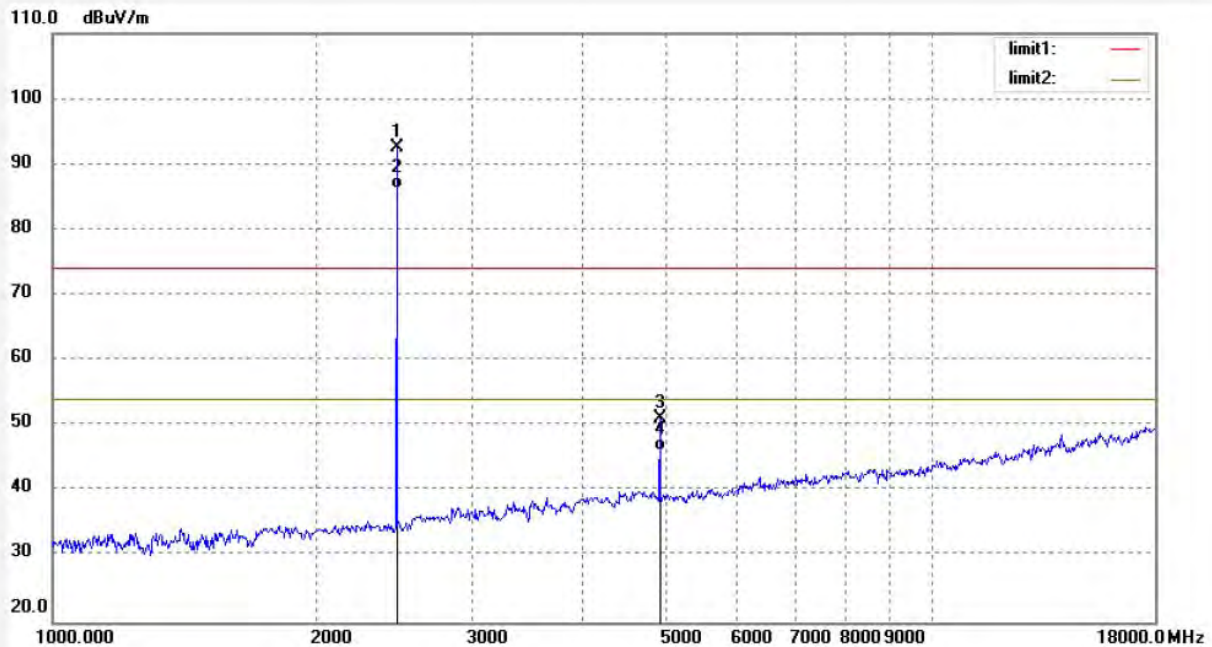
Date: 18/02/02/

Time: 9/22/43

Engineer Signature: Frank

Distance: 3m

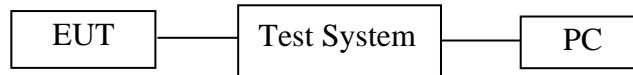
Note: Report NO.:ATE20172536



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1 | 2462.000 | 96.61 | -3.97 | 92.64 | 74.00 | 18.64 | peak | 250 | 192 | |
| 2 | 2462.000 | 90.31 | -3.97 | 86.34 | 54.00 | 32.34 | AVG | 200 | 345 | |
| 3 | 4924.000 | 47.74 | 3.50 | 51.24 | 74.00 | -22.76 | peak | 250 | 102 | |
| 4 | 4924.000 | 42.61 | 3.50 | 46.11 | 54.00 | -7.89 | AVG | 250 | 356 | |

12.99% OCCUPIED BANDWIDTH

12.1. Block Diagram of Test Setup



12.2. EUT Configuration on Measurement

The following equipment is installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

12.3. Operating Condition of EUT

12.3.1. Setup the EUT and simulator as shown as Section 12.1.

12.3.2. Turn on the power of all equipment.

12.3.3. Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 . We select 2412MHz, 2437MHz, 2462MHz TX frequency to transmit.

12.4. Test Procedure

12.4.1. The transmitter output was connected to the spectrum analyzer through a low loss cable. The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

12.4.2. The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

12.4.3. A peak, or peak hold, may be used in place of the sampling detector as this may produce a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold may be necessary to determine the occupied bandwidth if the device is not transmitting continuously.

12.4.4. Set SPA “Meas” function, Select “Occupied Bandwidth” function, Select “99% Power Bandwidth”. The frequency of the upper and lower markers indicating the edges of the transmitters “99% Power” emission bandwidth shall be recorded to automate by SPA.

12.5.Measurement Result

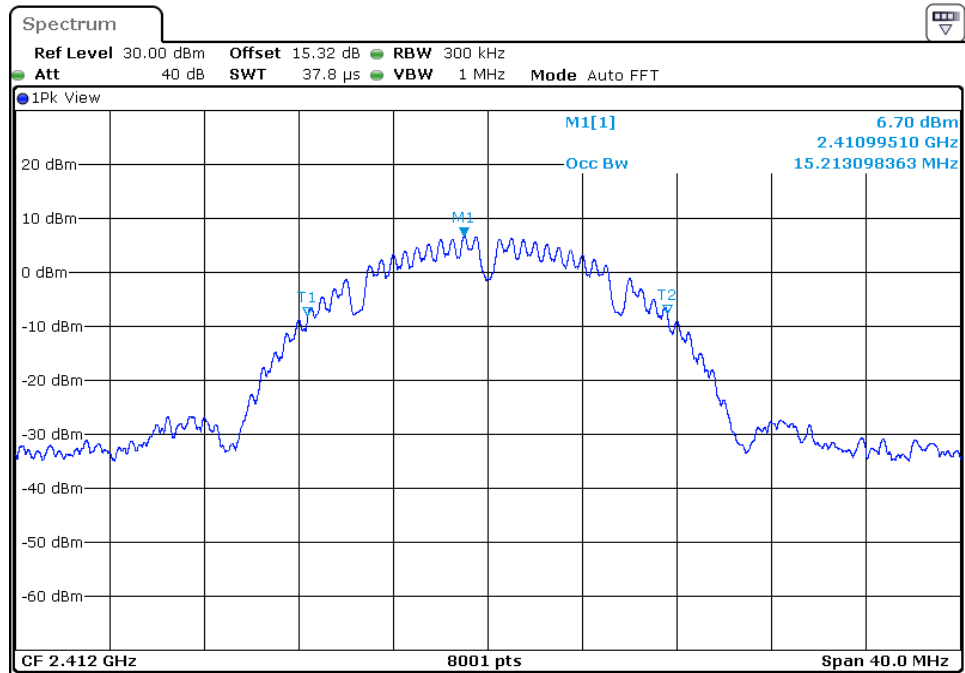
| The test was performed with 802.11b | | |
|-------------------------------------|-----------------|------------------------------|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |
| Low | 2412 | 15.213 |
| Middle | 2437 | 15.263 |
| High | 2462 | 15.258 |

| The test was performed with 802.11g | | |
|-------------------------------------|-----------------|------------------------------|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |
| Low | 2412 | 16.868 |
| Middle | 2437 | 16.858 |
| High | 2462 | 16.818 |

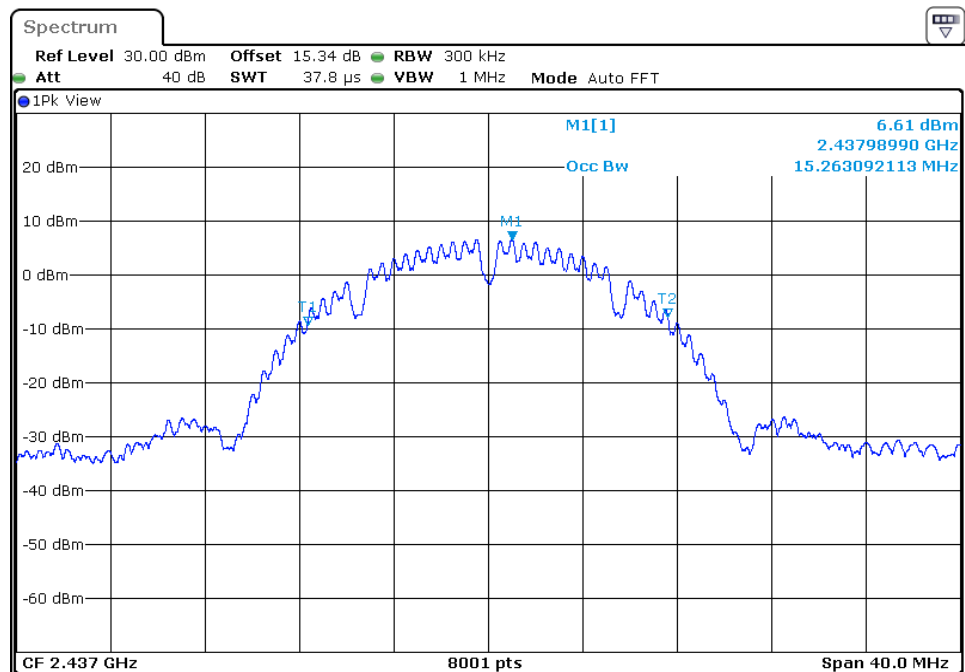
| The test was performed with 802.11n (Bandwidth: 20 MHz) | | |
|---|-----------------|------------------------------|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |
| Low | 2412 | 18.138 |
| Middle | 2437 | 17.968 |
| High | 2462 | 18.093 |

The spectrum analyzer plots are attached as below.

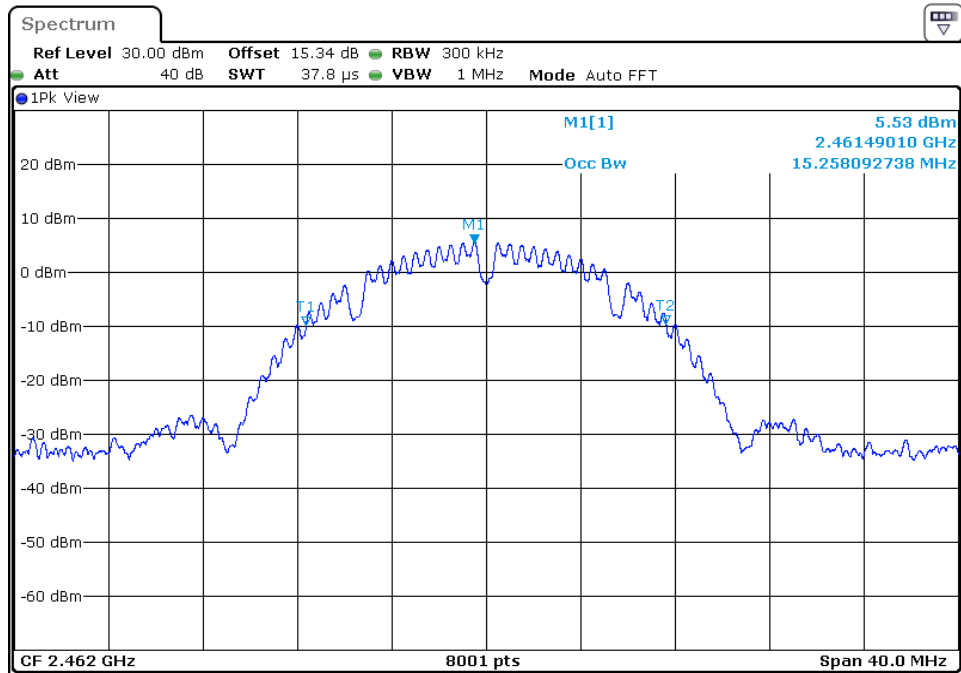
802.11b Channel Low 2412MHz



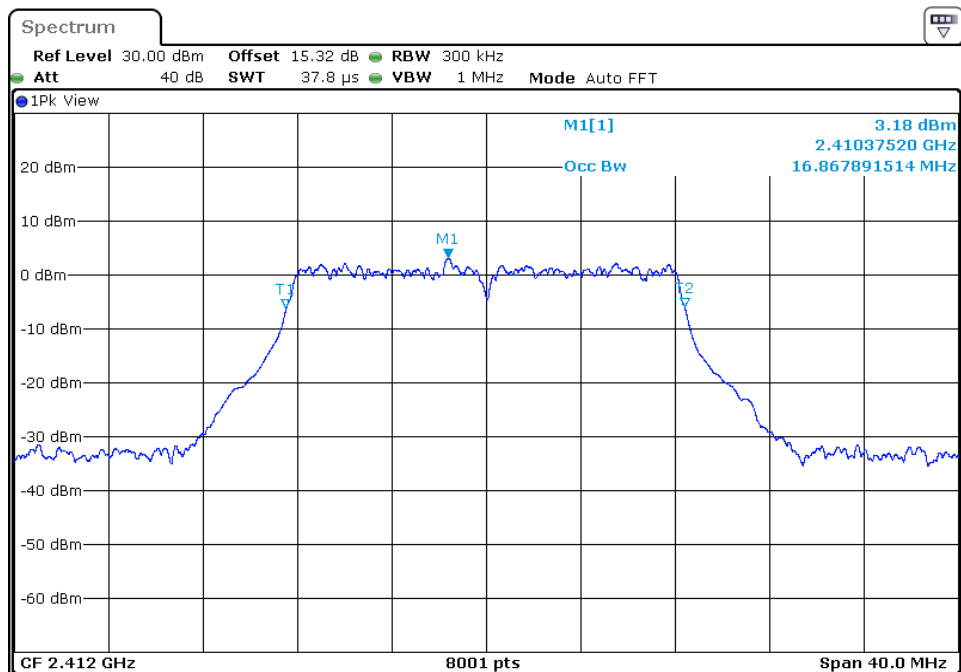
802.11b Channel Middle 2437MHz



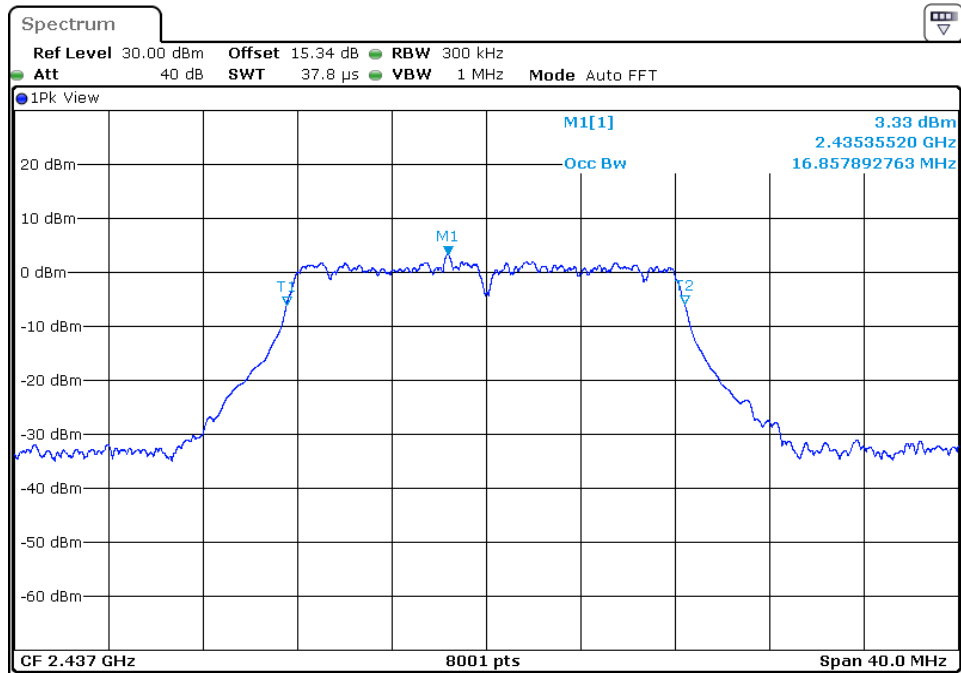
802.11b Channel High 2462MHz



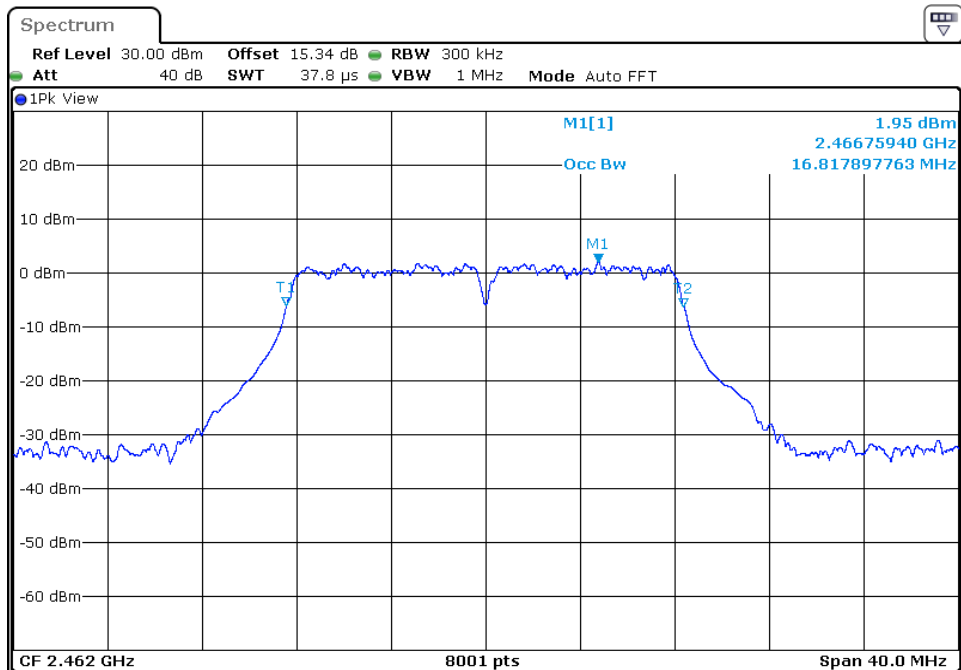
802.11g Channel Low 2412MHz



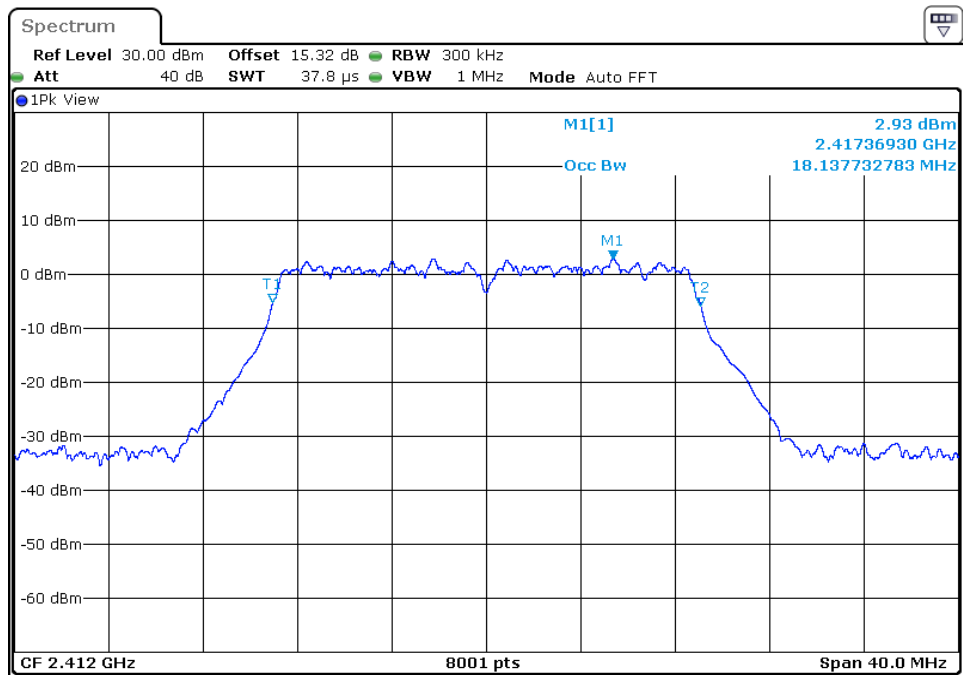
802.11g Channel Middle 2437MHz



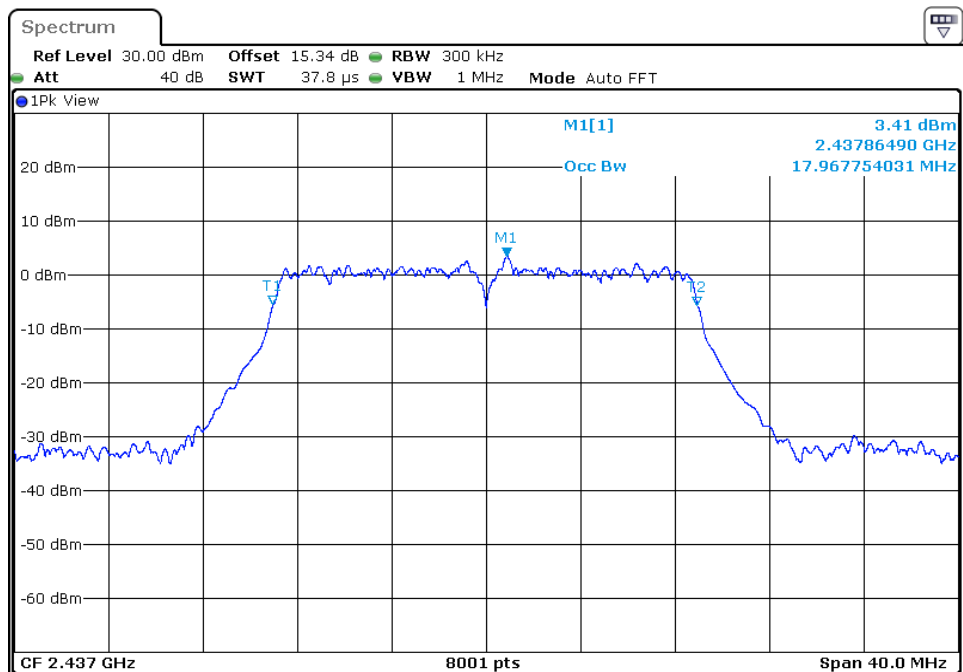
802.11g Channel High 2462MHz



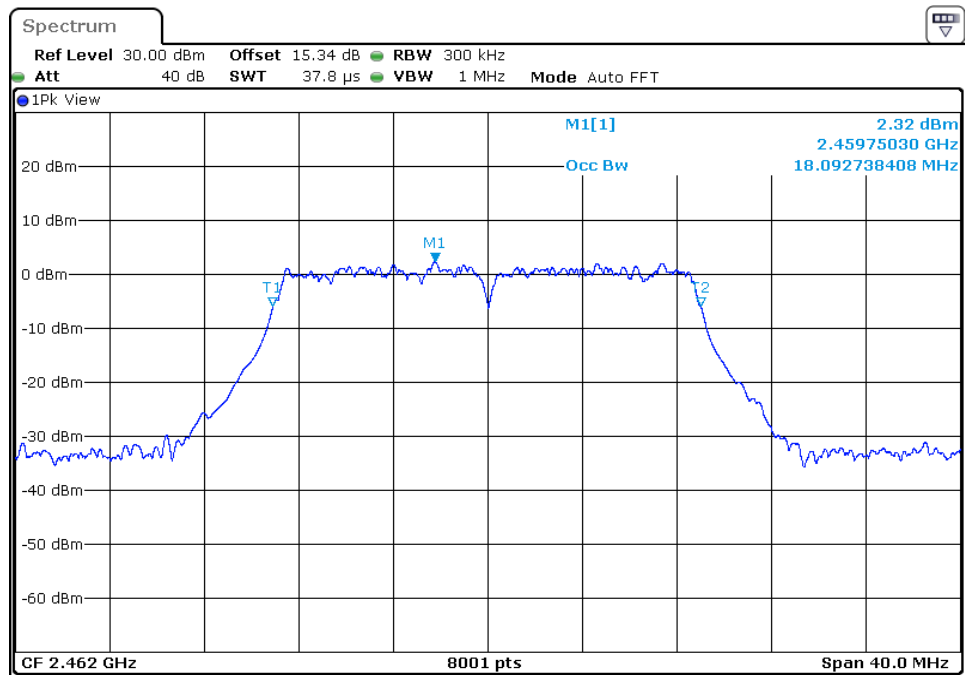
802.11n Channel Low 2412MHz (20MHz)



802.11n Channel Middle 2437MHz(20MHz)



802.11n Channel High 2462MHz(20MHz)



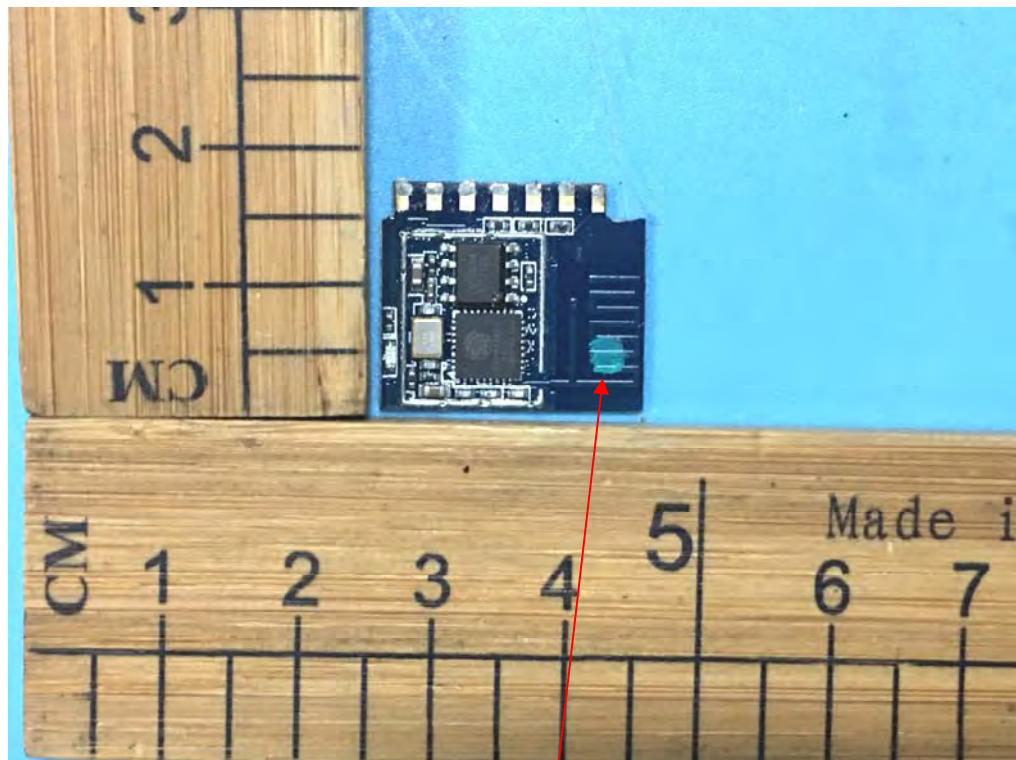
13.ANTENNA REQUIREMENT

13.1.The Requirement

According to Section 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.

13.2.Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Antenna gain of EUT is 2dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



Antenna

***** End of Test Report *****