# Test Report

| | |
|---|---|
| **Report No.:** | MTi210427012-04E1 |
| **Date of issue:** | June 17, 2021 |
| **Applicant:** | Cherub Technology Co., Ltd |
| **Product name:** | 2.4GHz Wireless System for Saxophone |
| **Model(s):** | B-6 |
| **FCC ID:** | 2AOAA-B-6 |

Shenzhen Microtest Co., Ltd.
http://www.mtitest.com

Address: 101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao' an District, Shenzhen, Guangdong, China.
Tel: (86-755)88850135 Fax: (86-755) 88850136 Web:www.mtitest.com E-mail: mti@51mti.com

# Instructions

1. The report shall not be partially reproduced without the written consent of the laboratory;
2. The test results of this report are only responsible for the samples submitted;
3. This report is invalid without the seal and signature of the laboratory;
4. This report is invalid if transferred, altered or tampered with in any form without authorization;
5. Any objection to this report shall be submitted to the laboratory within 15 days from the date of receipt of the report.

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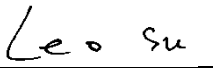
# TEST RESULT CERTIFICATION

| | |
|---|---|
| Applicant's name ..... : | Cherub Technology Co., Ltd |
| Address ..... : | Room507, Block 1, Nanhai E-Cool, No. 6 Xinghua Road, Shekou, Nanshan District, Shenzhen City, Guangdong Province, China, 518067 |
| Manufacturer's Name ..... : | Cherub Technology Co., Ltd |
| Address ..... : | Room507, Block 1, Nanhai E-Cool, No. 6 Xinghua Road, Shekou, Nanshan District, Shenzhen City, Guangdong Province, China, 518067 |
| Factory: | Cherub Technology Co., Ltd（Zhuhai High-tech Park） |
| Address: | No.10, Keji No.9Rd, Tangjiawan Town, Zhuhai National Hi-tech Industrial Development Zone, Zhuhai City, Guangdong Province, China, 519080 |
| **Product description** | |
| Product name ..... : | 2.4GHz Wireless System for Saxophone |
| Trademark ..... : | NUX |
| Model Name ..... : | B-6 |
| Serial Model ..... | N/A |
| Standards ..... : | FCC Part 15.249 |
| Test procedure ..... : | ANSI C63.10-2013 |
| **Date of Test** | |
| Date (s) of performance of tests ..... : | May 08, 2021 ~May 28, 2021 |
| Test Result ..... : | Pass |
| This device described above has been tested by Shenzhen Microtest Co., Ltd. and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report. | |

**Testing Engineer** : 

(Danny Xu)

**Technical Manager** : 

(Leo Su)

**Authorized Signatory** : 

(Tom Xue)

# 1 General description

## 1.1 Feature of equipment under test (EUT)

| | |
|---|---|
| Equipment: | 2.4GHz Wireless System for Saxophone |
| Trade Name: | NUX |
| Model Name: | B-6 |
| Serial Model: | N/A |
| Model Difference: | N/A |
| Operation Frequency: | 2404 - 2479 MHz |
| Modulation Type: | GFSK |
| Antenna Type: | PCB antenna |
| Antenna Gain: | 3.59dBi |
| Max. Field Strength: | 90.67dBuV/m |
| Power Source: | DC 3.7V from battery |
| Battery: | Charging box: DC 3.7V 3000mAh<br>Wireless product: DC 3.7V 500mAh |
| Hardware version: | V1 |
| Software version: | V1 |

## 1.2 Operation channel list

| Channel No. | Frequency (MHz) | Channel No. | Frequency (MHz) |
|---|---|---|---|
| 0 | 2404 | 11 | 2444 |
| 1 | 2408 | 12 | 2448 |
| 2 | 2412 | 13 | 2451 |
| 3 | 2416 | 14 | 2455 |
| 4 | 2420 | 15 | 2458 |
| 5 | 2424 | 16 | 2462 |
| 6 | 2428 | 17 | 2465 |
| 7 | 2431 | 18 | 2469 |
| 8 | 2434 | 19 | 2472 |
| 9 | 2437 | 20 | 2476 |
| 10 | 2441 | 21 | 2479 |

## 1.3 Test Frequency Channel

| Channel | Frequency(MHz) |
|---|---|
| Low | 2404 |
| Middle | 2441 |
| High | 2479 |

### 1.4 EUT operation mode

During testing, RF test program provided by the manufacture to control the Tx operation followed the test requirement.

### 1.5 Ancillary equipment list

| Equipment | Model | S/N | Manufacturer |
|---|---|---|---|
| / | / | / | / |

## 2 Summary of Test Result

Test procedures according to the technical standards:

| Item | FCC Part No. | Description of Test | Result |
|---|---|---|---|
| 1 | FCC Part15.203 | Antenna Requirement | Pass |
| 2 | FCC Part15.207 | AC power line conducted emission | N/A |
| 5 | FCC Part15.249(d) | Radiated spurious emission | Pass |
| 4 | FCC Part 15.215 | 20dB and 99% Bandwidth | Pass |

# 3 Test Facilities and Accreditations

## 3.1 Test laboratory

| | |
|---|---|
| Test Laboratory | Shenzhen Microtest Co., Ltd |
| Location | 101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao' an District, Shenzhen, Guangdong, China. |
| FCC Registration No. | 448573 |

## 3.2 Environmental conditions

| | |
|---|---|
| Temperature: | 15ºC~35ºC |
| Humidity | 20%~75% |
| Atmospheric pressure | 98kPa~101kPa |

## 3.3 Measurement uncertainty

The reported uncertainty of measurement y ± U，where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2，providing a level of confidence of approximately 95 %

| | |
|---|---|
| RF frequency | 1 x 10-7 |
| RF power, conducted | ± 1 dB |
| Conducted emission(150kHz~30MHz) | ± 2.5 dB |
| Radiated emission(30MHz~1GHz) | ± 4.2 dB |
| Radiated emission (above 1GHz) | ± 4.3 dB |
| Temperature | ±1 degree |
| Humidity | ± 5 % |

## 3.4 Test software

| Software Name | Manufacturer | Model | Version |
|---|---|---|---|
| Bluetooth and WiFi Test System | Shenzhen JS tonscend co,.ltd | JS1120-3 | 2.5.77.0418 |

## 4 List of test equipment

| Equipment No. | Equipment Name | Manufacturer | Model | Serial No. | Calibration date | Due date |
|---|---|---|---|---|---|---|
| MTI-E043 | EMI Test Receiver | Rohde&schwarz | ESCI7 | 101166 | 2020/06/04 | 2021/06/03 |
| MTI-E044 | TRILOG Broadband Antenna | schwarabeck | VULB 9163 | 9163-1338 | 2020/06/05 | 2021/06/04 |
| MTI-E047 | Amplifier | Hewlett-Packard | 8447F | 3113A06150 | 2020/06/04 | 2021/06/03 |
| MTI-E089 | ESG Vector Signal Generator | Agilent | N5182A | MY49060455 | 2020/06/03 | 2021/06/02 |
| MTI-E058 | ESG Series Analog Ssignal Generator | Agilent | E4421B | GB40051240 | 2020/07/03 | 2021/07/04 |
| MTI-E062 | PXA Signal Analyzer | Agilent | N9030A | MY51350296 | 2020/06/04 | 2021/06/03 |
| MTI-E066 | MXA Signal Analyzer | Agilent | N9020A | MY50143483 | 2020/06/04 | 2021/06/03 |
| MTI-E078 | Synthesized Sweeper | Agilent | 83752A | 3610A01957 | 2020/06/04 | 2021/06/03 |
| MTI-E079 | DC Power Supply | Agilent | E3632A | MY40027695 | 2020/06/04 | 2021/06/03 |
| MTI-E045 | Double Ridged Broadband Horn Antenna | schwarabeck | BBHA 9120D | 9120D-2278 | 2020/06/05 | 2021/06/04 |
| MTI-E021 | EMI Test Receiver | Rohde&schwarz | ESCS30 | 100210 | 2020/06/04 | 2021/06/03 |
| MTI-E022 | Pulse Limiter | Schwarzbeck | VSTD 9561-F | 00679 | 2020/06/03 | 2021/06/02 |
| MTI-E023 | Artificial mains network | Schwarzbeck | NSLK 8127 | NSLK 8127 #841 | 2020/06/04 | 2021/06/03 |
| MTI-E046 | Active Loop Antenna | Schwarzbeck | FMZB 1519 B | 00044 | 2020/06/05 | 2021/06/04 |
| MTI-E048 | Amplifier | Agilent | 8449B | 3008A02400 | 2020/07/03 | 2021/07/04 |
| MTI-E072 | Thermometer Clock Humidity Monitor | - | HTC-1 | / | 2020/06/07 | 2021/06/06 |

Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

# 5 Test Result

## 5.1 Antenna requirement

### 5.1.1 Standard requirement

FCC PART 15.203;

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

This requirement does not apply to carrier current devices or to devices operated under the provisions of §§15.211, 15.213, 15.217, 15.219, 15.221, or §15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

### 5.1.2 EUT Antenna

The antenna is a PCB antenna, which was permanently affixed to the device and un-replaced, complies with 15.203. In addition, the maximum antenna gain is 3.59dBi.

## 5.2 AC power line conducted emission

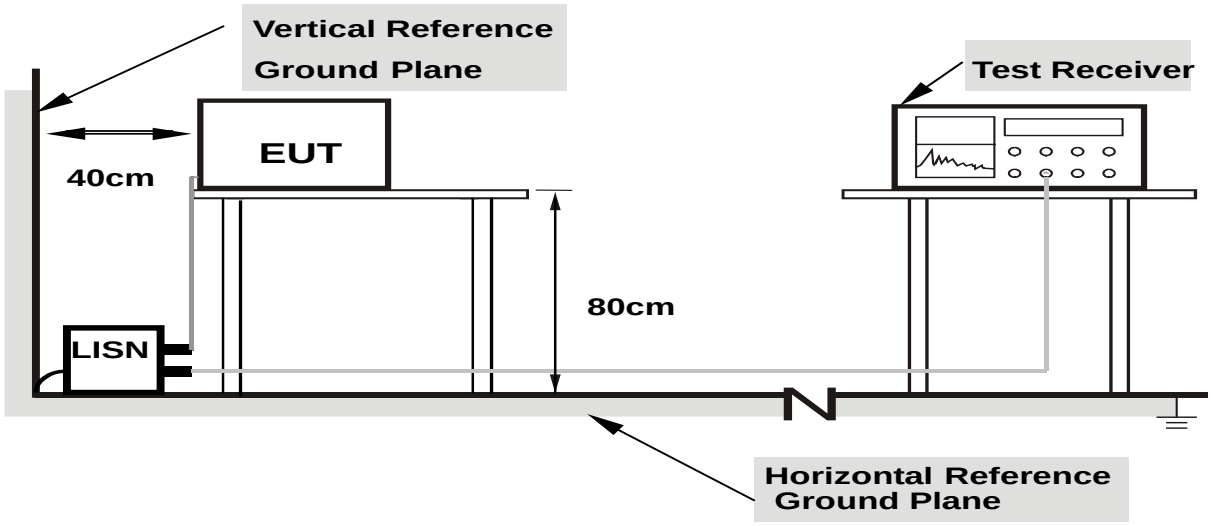
### 5.2.1 Limits

FCC §15.207;

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

| Frequency (MHz) | Quasi-peak | Average |
|---|---|---|
| 0.15 -0.5 | 66 - 56 note2 | 56 - 46 note2 |
| 0.50 -5.0 | 56.00 | 46.00 |
| 5.0 -30.0 | 60.00 | 50.00 |
| Note1: The tighter limit applies at the band edges.<br>Note2: The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range. | | |

### 5.2.2 Test setup




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

### 5.2.3 Test procedure

a. EUT Operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

b. The following table is the setting of the receiver

| Receiver Parameters | Setting |
|---|---|
| Attenuation | 10 dB |
| Start Frequency | 0.15 MHz |
| Stop Frequency | 30 MHz |
| IF Bandwidth | 9 kHz |

c. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment's powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

d. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

e. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

f. LISN at least 80 cm from nearest part of EUT chassis.

For the actual test configuration, please refer to the related Item –EUT Test Photos.

### 5.2.4 Test results

Note: The device can not TX when it charging status.

## 5.3 Radiated spurious emission

### 5.3.1 Limit

FCC PART 15.249(a);

Except as provided in paragraph (a) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

| Frequency (MHz) | Field Strength of Fundamental (mV/m) | Field Strength of Harmonics (μV/m) |
|---|---|---|
| 902-928 | 50 | 500 |
| 2400-2483.5 | 50 | 500 |
| 5725-5875 | 50 | 500 |

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

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

### 5.3.2 Test method

a) The EUT is placed on a turntable, which is 0.8m above ground plane for test frequency range blew 1GHz, and 1.5m above ground plane for test frequency range above 1GHz.

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

c) Use the following spectrum analyser settings:

1) Span = wide enough to fully capture the emission being measured

2) RBW = 1 MHz for f ≥ 1GHz, 100 kHz for f < 1 GHz

3) VBW ≥ RBW, Sweep = auto

4) Detector function = peak

5) Trace = max hold

d) Follow the guidelines in ANSI C63.4-2014 with respect to maximizing the emission by rotating the EUT, adjusting the measurement antenna height and polarization, etc. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, submit this data. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

e) The peak level, once corrected, must comply with the limit specified in Section 15.209. Set the RBW = 1MHz, VBW = 10Hz, Detector = PK for AV value, while maintaining all of the other instrument settings.

### 5.3.3 Test Result

Below 30MHz

| | | | |
|---|---|---|---|
| EUT： | 2.4GHz Wireless System for Saxophone | Model name. ： | B-6 |
| Pressure： | 1010 hPa | Test voltage： | DC 3.7V from battery |
| Test mode： | TX | Polarization : | -- |

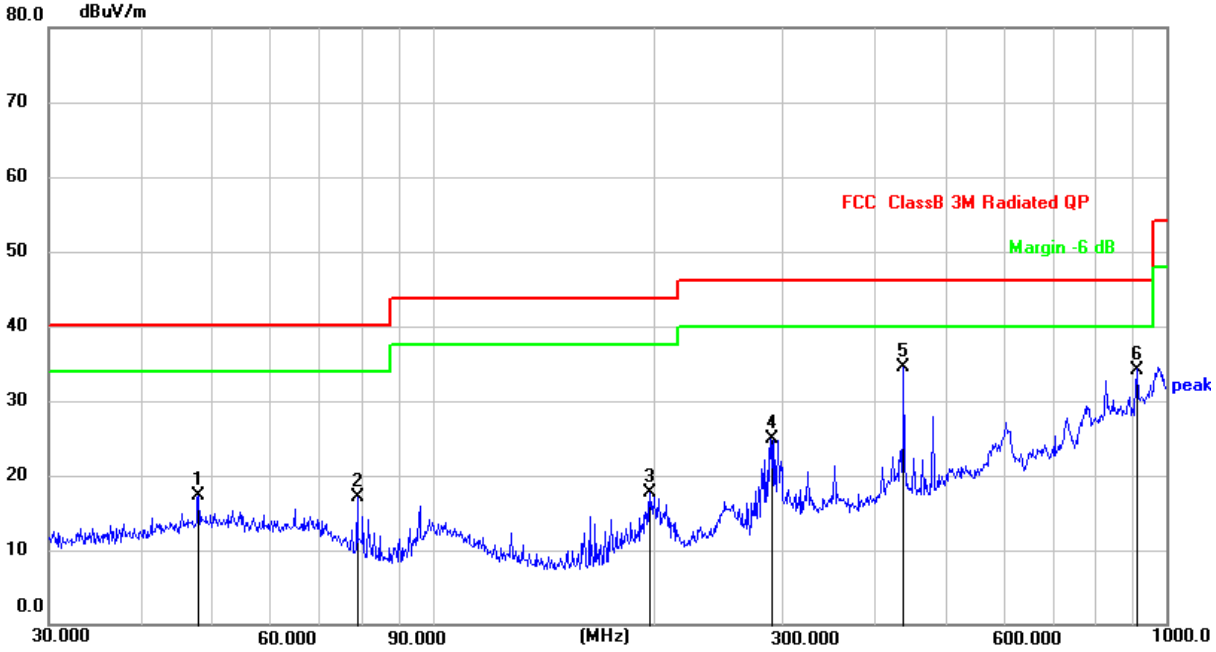
| Freq. | Reading | Limit | Margin | State |
|---|---|---|---|---|
| (MHz) | (dBuV/m) | (dBuV/m) | (dB) | P/F |
| -- | -- | -- | -- | Pass |
| -- | -- | -- | -- | Pass |

Note:

1. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
2. Distance extrapolation factor =40 log (specific distance/test distance)(dB);
3. Limit line = specific limits (dBuV) + distance extrapolation factor.

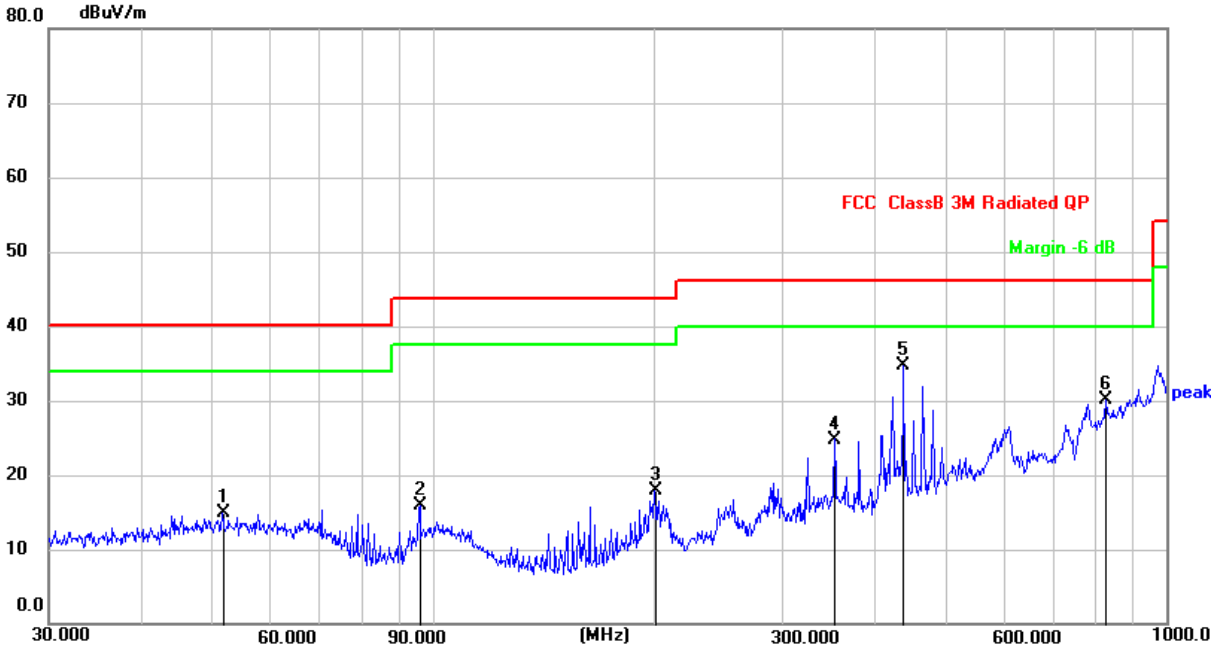
30MHz-1GHz

| | | | |
|---|---|---|---|
| EUT: | 2.4GHz Wireless System for Saxophone | Model Name: | B-6 |
| Pressure: | 101kPa | Polarization: | Horizontal |
| Test voltage: | DC 3.7V from battery | Test Mode: | TX-2404MHz |



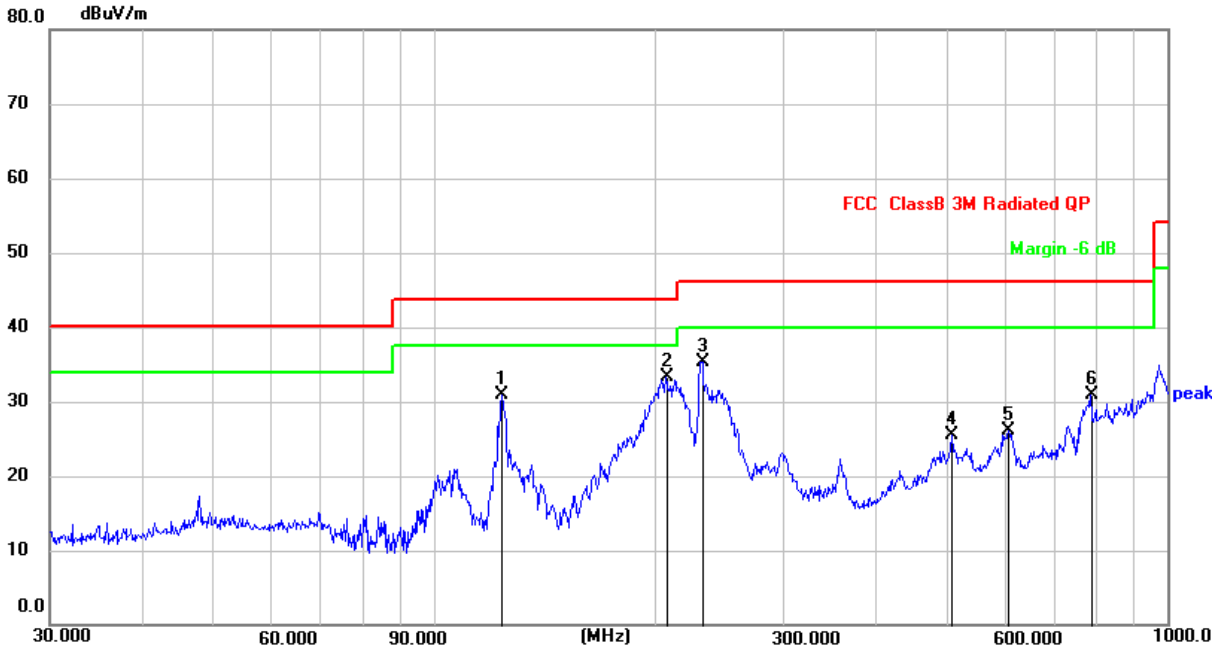

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 47.9940 | 34.33 | -17.10 | 17.23 | 40.00 | -22.77 | QP |
| 2 | 78.9652 | 35.10 | -17.92 | 17.18 | 40.00 | -22.82 | QP |
| 3 | 197.8928 | 30.77 | -13.14 | 17.63 | 43.50 | -25.87 | QP |
| 4 | 289.0021 | 35.97 | -10.99 | 24.98 | 46.00 | -21.02 | QP |
| 5 * | 438.6554 | 41.18 | -6.59 | 34.59 | 46.00 | -11.41 | QP |
| 6 | 912.8620 | 31.71 | 2.49 | 34.20 | 46.00 | -11.80 | QP |

| EUT: | 2.4GHz Wireless System for Saxophone | Model Name: | B-6 |
|---|---|---|---|
| Pressure: | 101kPa | Polarization: | Vertical |
| Test voltage: | DC 3.7V from battery | Test Mode: | TX-2404MHz |



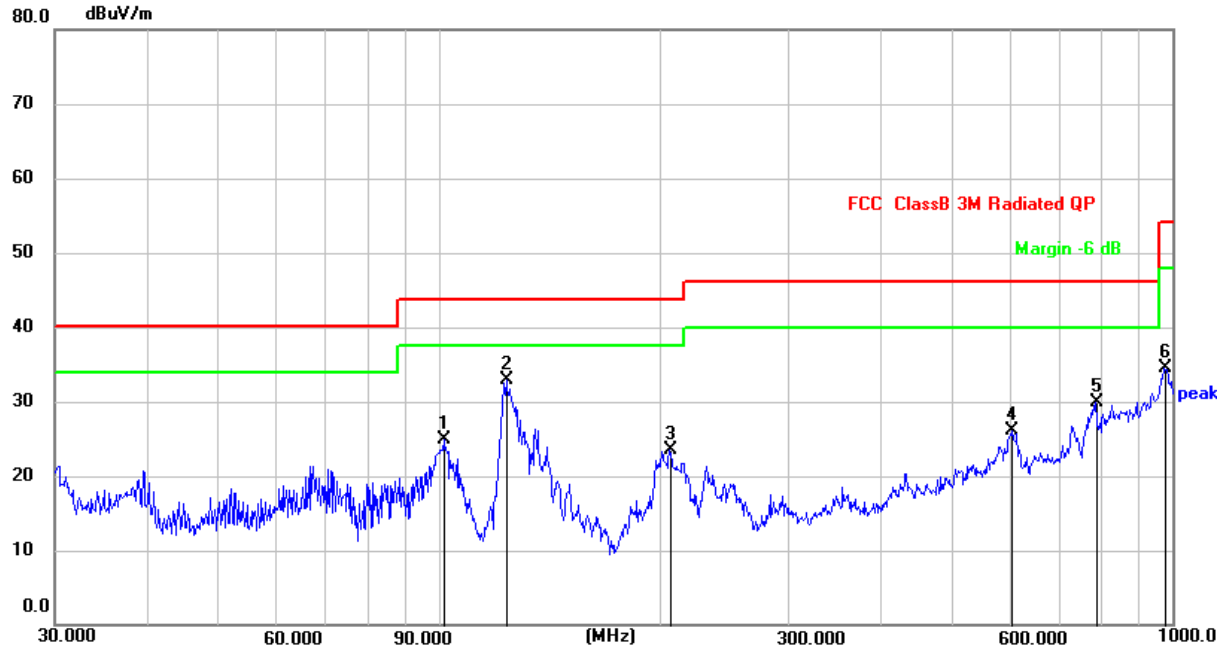

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 51.6616 | 26.78 | -11.81 | 14.97 | 40.00 | -25.03 | QP |
| 2 | 96.0986 | 30.05 | -14.09 | 15.96 | 43.50 | -27.54 | QP |
| 3 | 200.6881 | 28.16 | -10.22 | 17.94 | 43.50 | -25.56 | QP |
| 4 | 352.9433 | 32.69 | -7.89 | 24.80 | 46.00 | -21.20 | QP |
| 5 * | 438.6554 | 41.74 | -7.01 | 34.73 | 46.00 | -11.27 | QP |
| 6 | 827.4934 | 26.05 | 3.97 | 30.02 | 46.00 | -15.98 | QP |

| EUT: | 2.4GHz Wireless System for Saxophone | Model Name: | B-6 |
|---|---|---|---|
| Pressure: | 101kPa | Polarization: | Horizontal |
| Test voltage: | DC 3.7V from battery | Test Mode: | TX-2441MHz |



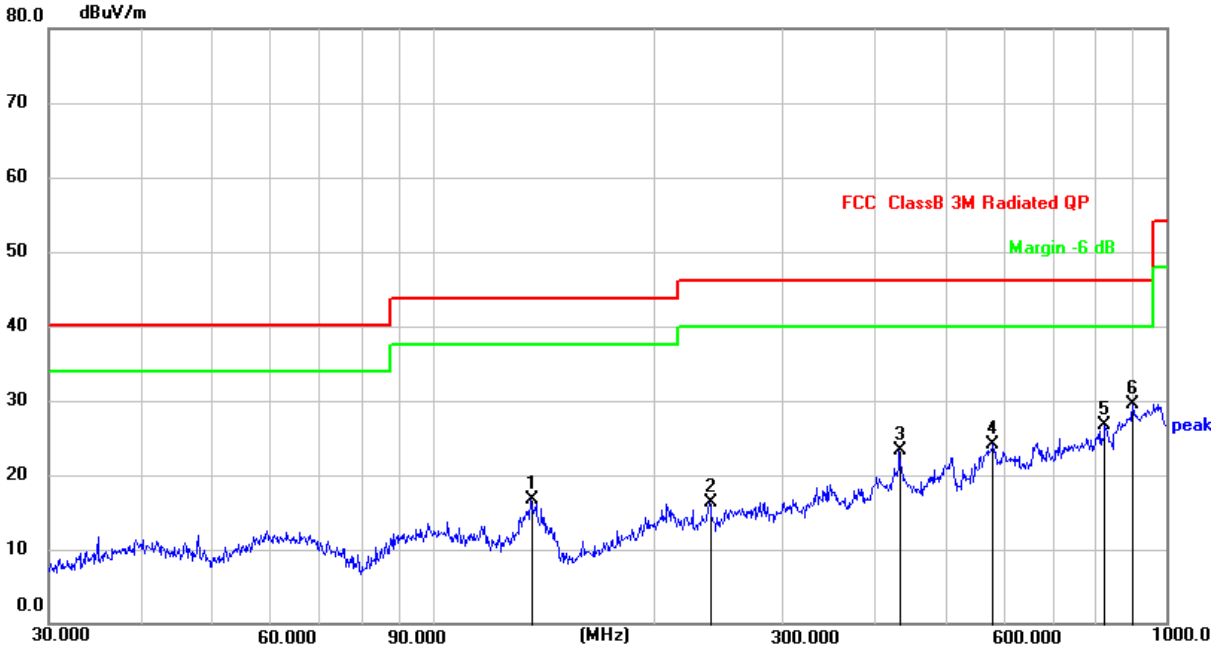

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 123.6985 | 46.53 | -15.67 | 30.86 | 43.50 | -12.64 | QP |
| 2 * | 207.1226 | 45.95 | -12.57 | 33.38 | 43.50 | -10.12 | QP |
| 3 | 232.5318 | 48.00 | -12.60 | 35.40 | 46.00 | -10.60 | QP |
| 4 | 508.2582 | 30.25 | -4.73 | 25.52 | 46.00 | -20.48 | QP |
| 5 | 607.7867 | 30.28 | -4.10 | 26.18 | 46.00 | -19.82 | QP |
| 6 | 785.0935 | 32.63 | -1.81 | 30.82 | 46.00 | -15.18 | QP |

| | | | |
|---|---|---|---|
| EUT: | 2.4GHz Wireless System for Saxophone | Model Name: | B-6 |
| Pressure: | 101kPa | Polarization: | Vertical |
| Test voltage: | DC 3.7V from battery | Test Mode: | TX-2441MHz |



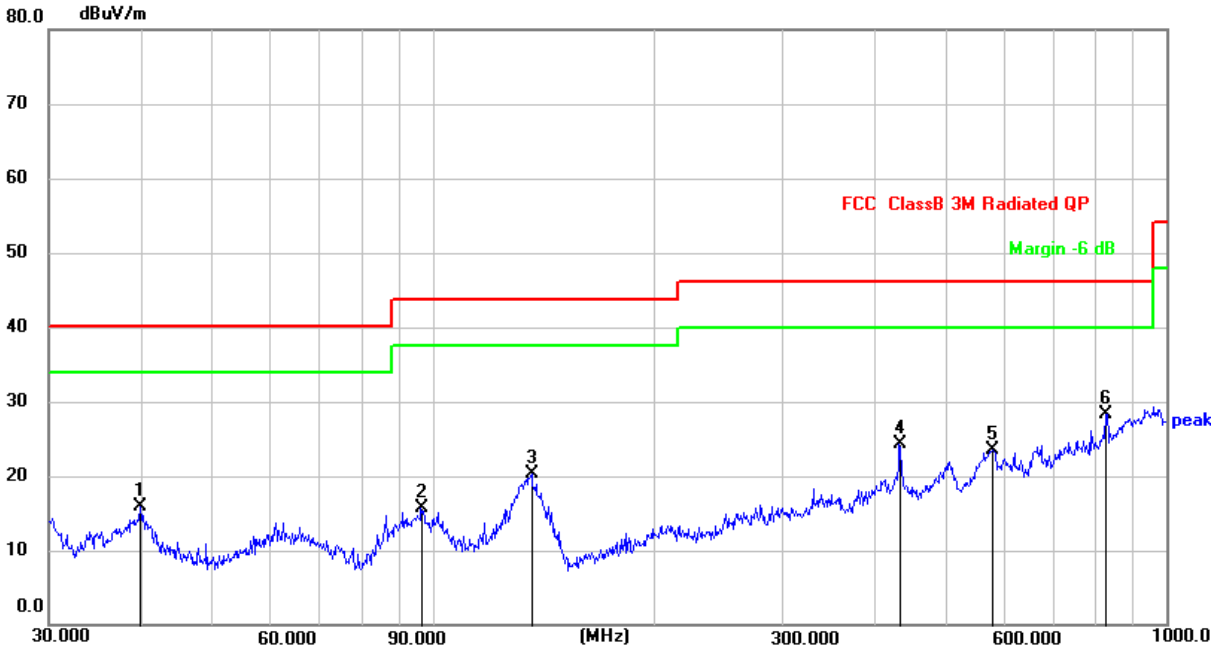

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 101.6443 | 37.71 | -12.72 | 24.99 | 43.50 | -18.51 | QP |
| 2 * | 123.6985 | 49.31 | -16.33 | 32.98 | 43.50 | -10.52 | QP |
| 3 | 206.3976 | 34.95 | -11.45 | 23.50 | 43.50 | -20.00 | QP |
| 4 | 605.6592 | 26.19 | -0.01 | 26.18 | 46.00 | -19.82 | QP |
| 5 | 785.0935 | 26.62 | 3.22 | 29.84 | 46.00 | -16.16 | QP |
| 6 | 975.7529 | 24.53 | 9.94 | 34.47 | 54.00 | -19.53 | QP |

| | | | |
|---|---|---|---|
| EUT： | 2.4GHz Wireless System for Saxophone | Model Name. ： | B-6 |
| Pressure: | 101kPa | Polarization: | Horizontal |
| Test voltage: | DC 3.7V from battery | Test Mode ： | TX-2479MHz |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 135.9822 | 31.99 | -15.28 | 16.71 | 43.50 | -26.79 | QP |
| 2 | 238.3102 | 28.73 | -12.41 | 16.32 | 46.00 | -29.68 | QP |
| 3 | 432.5457 | 28.61 | -5.29 | 23.32 | 46.00 | -22.68 | QP |
| 4 | 580.7026 | 26.43 | -2.35 | 24.08 | 46.00 | -21.92 | QP |
| 5 | 824.5968 | 26.98 | -0.23 | 26.75 | 46.00 | -19.25 | QP |
| 6 * | 900.1474 | 27.18 | 2.34 | 29.52 | 46.00 | -16.48 | QP |

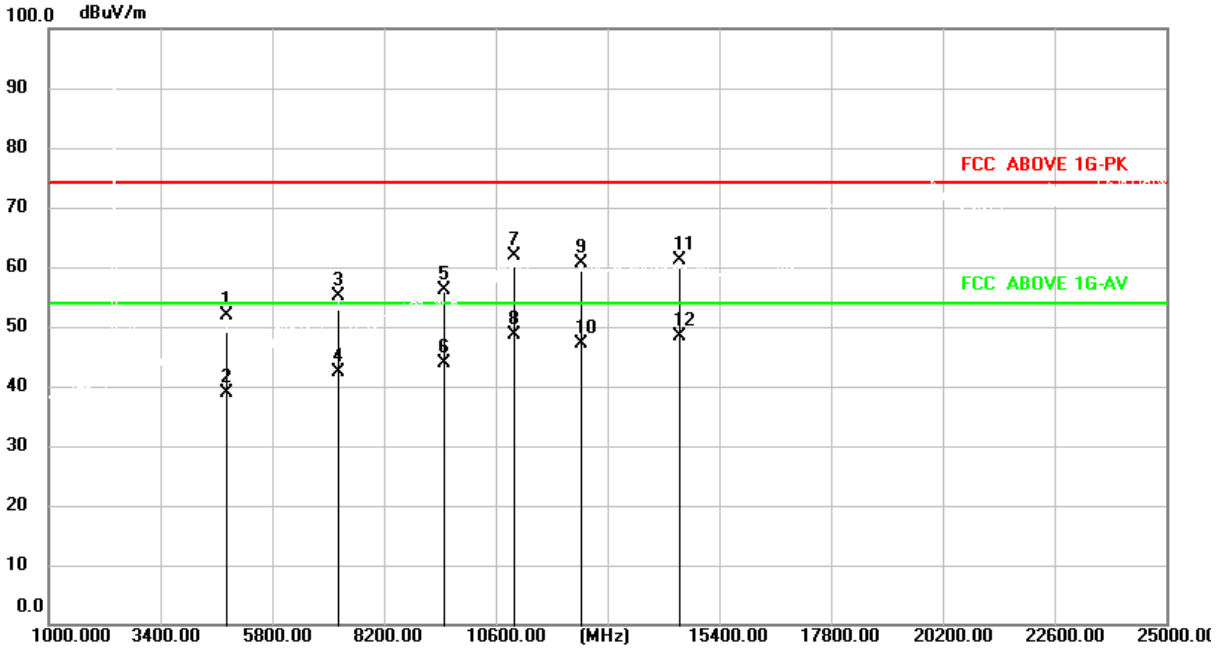
| | | | |
|---|---|---|---|
| EUT: | 2.4GHz Wireless System for Saxophone | Model Name: | B-6 |
| Pressure: | 101kPa | Polarization: | Vertical |
| Test voltage: | DC 3.7V from battery | Test Mode: | TX-2479MHz |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 39.9942 | 29.17 | -13.35 | 15.82 | 40.00 | -24.18 | QP |
| 2 | 96.4362 | 29.71 | -13.95 | 15.76 | 43.50 | -27.74 | QP |
| 3 | 136.4598 | 37.67 | -17.27 | 20.40 | 43.50 | -23.10 | QP |
| 4 | 432.5457 | 30.51 | -6.27 | 24.24 | 46.00 | -21.76 | QP |
| 5 | 578.6699 | 25.40 | -1.82 | 23.58 | 46.00 | -22.42 | QP |
| 6 * | 827.4934 | 24.36 | 3.97 | 28.33 | 46.00 | -17.67 | QP |

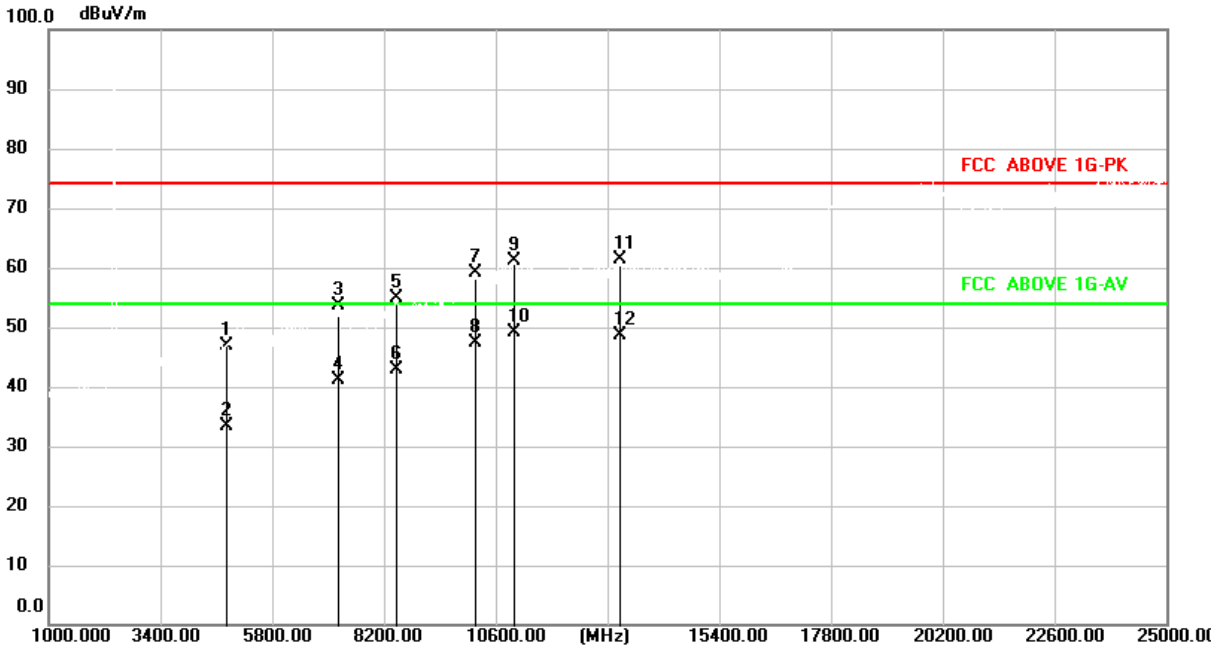
1GHz-26.5GHz:

| | | | |
|---|---|---|---|
| EUT： | 2.4GHz Wireless System for Saxophone | Model Name. ： | B-6 |
| Pressure: | 101kPa | Polarization: | Horizontal |
| Test voltage: | DC 3.7V from battery | Test Mode ： | TX-2404MHz |



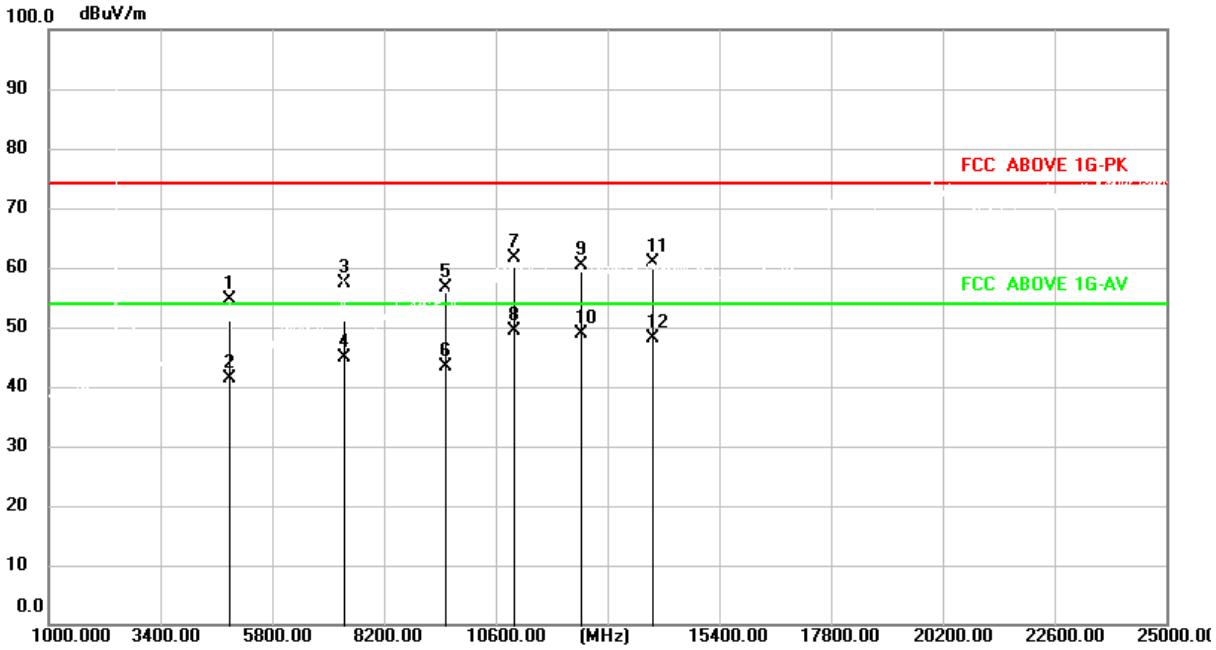

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 4808.000 | 47.92 | 3.94 | 51.86 | 74.00 | -22.14 | peak |
| 2 | 4808.000 | 34.86 | 3.94 | 38.80 | 54.00 | -15.20 | AVG |
| 3 | 7212.000 | 45.79 | 9.35 | 55.14 | 74.00 | -18.86 | peak |
| 4 | 7212.000 | 33.05 | 9.35 | 42.40 | 54.00 | -11.60 | AVG |
| 5 | 9496.000 | 41.66 | 14.40 | 56.06 | 74.00 | -17.94 | peak |
| 6 | 9496.000 | 29.40 | 14.40 | 43.80 | 54.00 | -10.20 | AVG |
| 7 | 11008.000 | 41.95 | 19.82 | 61.77 | 74.00 | -12.23 | peak |
| 8 * | 11008.000 | 28.78 | 19.82 | 48.60 | 54.00 | -5.40 | AVG |
| 9 | 12424.000 | 43.55 | 17.20 | 60.75 | 74.00 | -13.25 | peak |
| 10 | 12424.000 | 30.00 | 17.20 | 47.20 | 54.00 | -6.80 | AVG |
| 11 | 14536.000 | 42.34 | 18.91 | 61.25 | 74.00 | -12.75 | peak |
| 12 | 14536.000 | 29.59 | 18.91 | 48.50 | 54.00 | -5.50 | AVG |

| EUT: | 2.4GHz Wireless System for Saxophone | Model Name: | B-6 |
|---|---|---|---|
| Pressure: | 101kPa | Polarization: | Vertical |
| Test voltage: | DC 3.7V from battery | Test Mode: | TX-2404MHz |



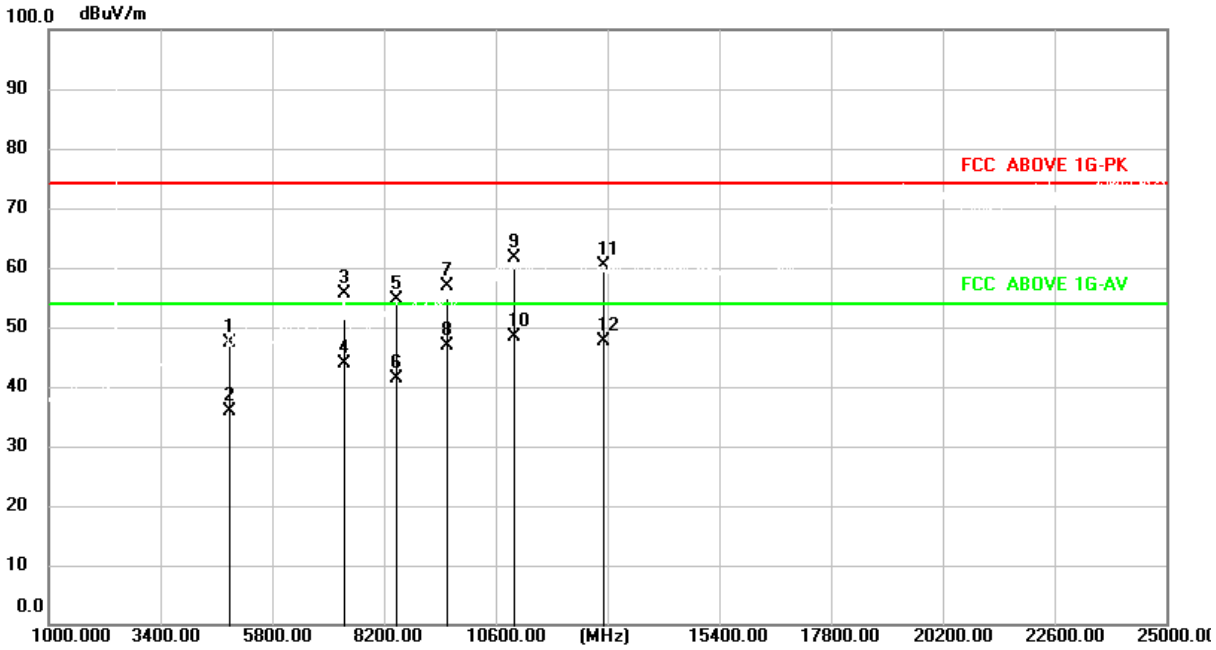

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 4804.000 | 43.07 | 3.90 | 46.97 | 74.00 | -27.03 | peak |
| 2 | 4804.000 | 29.60 | 3.90 | 33.50 | 54.00 | -20.50 | AVG |
| 3 | 7206.000 | 44.33 | 9.35 | 53.68 | 74.00 | -20.32 | peak |
| 4 | 7206.000 | 31.85 | 9.35 | 41.20 | 54.00 | -12.80 | AVG |
| 5 | 8464.000 | 44.40 | 10.47 | 54.87 | 74.00 | -19.13 | peak |
| 6 | 8464.000 | 32.33 | 10.47 | 42.80 | 54.00 | -11.20 | AVG |
| 7 | 10168.000 | 43.19 | 15.99 | 59.18 | 74.00 | -14.82 | peak |
| 8 | 10168.000 | 31.41 | 15.99 | 47.40 | 54.00 | -6.60 | AVG |
| 9 | 11008.000 | 41.21 | 19.82 | 61.03 | 74.00 | -12.97 | peak |
| 10 * | 11008.000 | 29.38 | 19.82 | 49.20 | 54.00 | -4.80 | AVG |
| 11 | 13264.000 | 43.21 | 18.06 | 61.27 | 74.00 | -12.73 | peak |
| 12 | 13264.000 | 30.64 | 18.06 | 48.70 | 54.00 | -5.30 | AVG |

| EUT: | 2.4GHz Wireless System for Saxophone | Model Name: | B-6 |
|---|---|---|---|
| Pressure: | 101kPa | Polarization: | Horizontal |
| Test voltage: | DC 3.7V from battery | Test Mode: | TX-2441MHz |



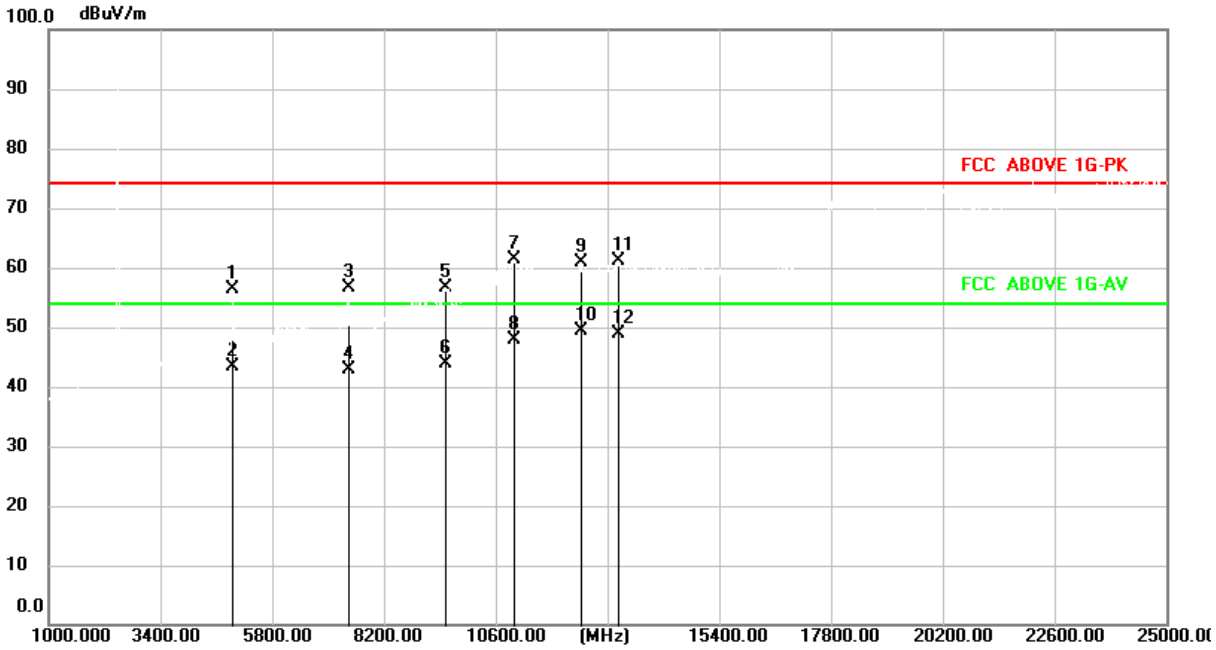

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 4880.000 | 49.97 | 4.69 | 54.66 | 74.00 | -19.34 | peak |
| 2 | 4880.000 | 36.81 | 4.69 | 41.50 | 54.00 | -12.50 | AVG |
| 3 | 7320.000 | 48.22 | 9.20 | 57.42 | 74.00 | -16.58 | peak |
| 4 | 7320.000 | 35.60 | 9.20 | 44.80 | 54.00 | -9.20 | AVG |
| 5 | 9520.000 | 42.14 | 14.46 | 56.60 | 74.00 | -17.40 | peak |
| 6 | 9520.000 | 29.04 | 14.46 | 43.50 | 54.00 | -10.50 | AVG |
| 7 | 11008.000 | 41.69 | 19.82 | 61.51 | 74.00 | -12.49 | peak |
| 8 * | 11008.000 | 29.48 | 19.82 | 49.30 | 54.00 | -4.70 | AVG |
| 9 | 12448.000 | 43.17 | 17.19 | 60.36 | 74.00 | -13.64 | peak |
| 10 | 12448.000 | 31.61 | 17.19 | 48.80 | 54.00 | -5.20 | AVG |
| 11 | 13960.000 | 42.03 | 18.76 | 60.79 | 74.00 | -13.21 | peak |
| 12 | 13960.000 | 29.44 | 18.76 | 48.20 | 54.00 | -5.80 | AVG |

| EUT: | 2.4GHz Wireless System for Saxophone | Model Name: | B-6 |
|---|---|---|---|
| Pressure: | 101kPa | Polarization: | Vertical |
| Test voltage: | DC 3.7V from battery | Test Mode: | TX-2441MHz |



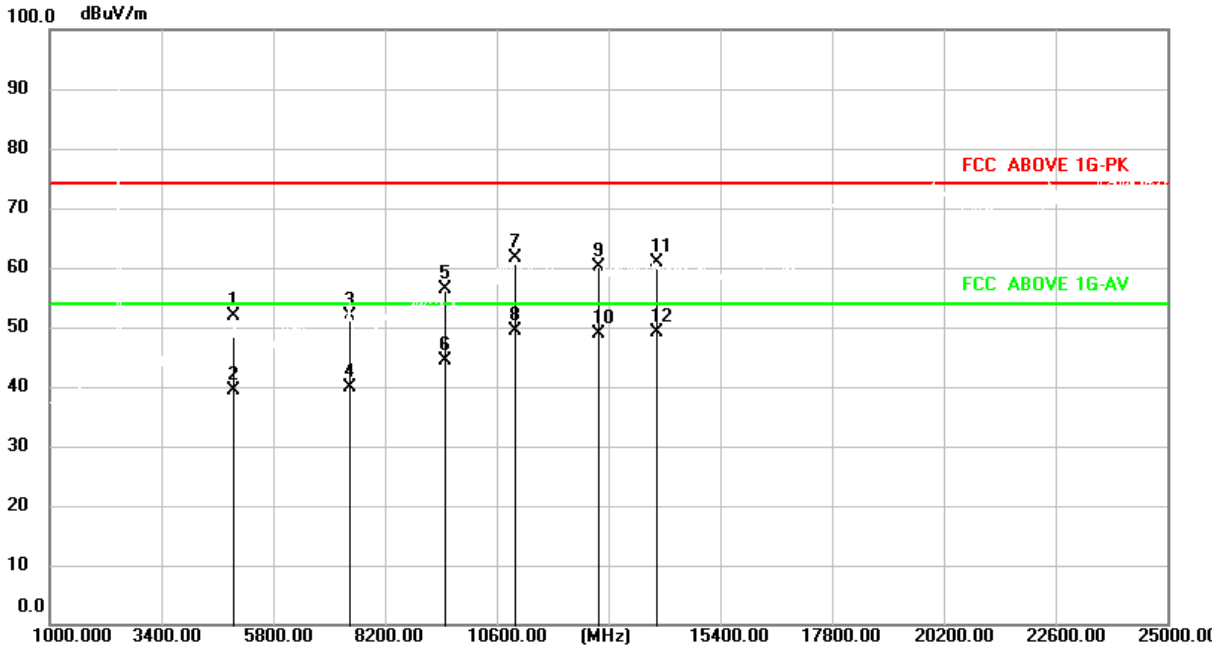

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 4880.000 | 42.77 | 4.69 | 47.46 | 74.00 | -26.54 | peak |
| 2 | 4880.000 | 31.11 | 4.69 | 35.80 | 54.00 | -18.20 | AVG |
| 3 | 7320.000 | 46.42 | 9.20 | 55.62 | 74.00 | -18.38 | peak |
| 4 | 7320.000 | 34.60 | 9.20 | 43.80 | 54.00 | -10.20 | AVG |
| 5 | 8464.000 | 44.17 | 10.47 | 54.64 | 74.00 | -19.36 | peak |
| 6 | 8464.000 | 31.03 | 10.47 | 41.50 | 54.00 | -12.50 | AVG |
| 7 | 9544.000 | 42.49 | 14.51 | 57.00 | 74.00 | -17.00 | peak |
| 8 | 9544.000 | 32.29 | 14.51 | 46.80 | 54.00 | -7.20 | AVG |
| 9 | 11008.000 | 41.79 | 19.82 | 61.61 | 74.00 | -12.39 | peak |
| 10 * | 11008.000 | 28.68 | 19.82 | 48.50 | 54.00 | -5.50 | AVG |
| 11 | 12928.000 | 42.66 | 17.74 | 60.40 | 74.00 | -13.60 | peak |
| 12 | 12928.000 | 29.86 | 17.74 | 47.60 | 54.00 | -6.40 | AVG |

| | | | |
|---|---|---|---|
| EUT: | 2.4GHz Wireless System for Saxophone | Model Nam: | B-6 |
| Pressure: | 101kPa | Polarization: | Horizontal |
| Test voltage: | DC 3.7V from battery | Test Mode: | TX-2479MHz |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 4960.000 | 50.86 | 5.62 | 56.48 | 74.00 | -17.52 | peak |
| 2 | 4960.000 | 37.78 | 5.62 | 43.40 | 54.00 | -10.60 | AVG |
| 3 | 7440.000 | 47.65 | 9.04 | 56.69 | 74.00 | -17.31 | peak |
| 4 | 7440.000 | 33.76 | 9.04 | 42.80 | 54.00 | -11.20 | AVG |
| 5 | 9520.000 | 42.14 | 14.46 | 56.60 | 74.00 | -17.40 | peak |
| 6 | 9520.000 | 29.34 | 14.46 | 43.80 | 54.00 | -10.20 | AVG |
| 7 | 11008.000 | 41.48 | 19.82 | 61.30 | 74.00 | -12.70 | peak |
| 8 | 11008.000 | 27.98 | 19.82 | 47.80 | 54.00 | -6.20 | AVG |
| 9 | 12424.000 | 43.71 | 17.20 | 60.91 | 74.00 | -13.09 | peak |
| 10 * | 12424.000 | 32.30 | 17.20 | 49.50 | 54.00 | -4.50 | AVG |
| 11 | 13240.000 | 42.98 | 18.04 | 61.02 | 74.00 | -12.98 | peak |
| 12 | 13240.000 | 30.76 | 18.04 | 48.80 | 54.00 | -5.20 | AVG |

| | | | |
|---|---|---|---|
| EUT： | 2.4GHz Wireless System for Saxophone | Model Name： | B-6 |
| Pressure: | 101kPa | Polarization: | Vertical |
| Test voltage: | DC 3.7V from battery | Test Mode： | TX-2479MHz |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 4960.000 | 46.33 | 5.62 | 51.95 | 74.00 | -22.05 | peak |
| 2 | 4960.000 | 33.88 | 5.62 | 39.50 | 54.00 | -14.50 | AVG |
| 3 | 7440.000 | 42.86 | 9.04 | 51.90 | 74.00 | -22.10 | peak |
| 4 | 7440.000 | 30.76 | 9.04 | 39.80 | 54.00 | -14.20 | AVG |
| 5 | 9496.000 | 41.93 | 14.40 | 56.33 | 74.00 | -17.67 | peak |
| 6 | 9496.000 | 30.00 | 14.40 | 44.40 | 54.00 | -9.60 | AVG |
| 7 | 10984.000 | 41.99 | 19.75 | 61.74 | 74.00 | -12.26 | peak |
| 8 | 10984.000 | 29.75 | 19.75 | 49.50 | 74.00 | -24.50 | peak |
| 9 | 12784.000 | 42.59 | 17.54 | 60.13 | 74.00 | -13.87 | peak |
| 10 | 12784.000 | 31.26 | 17.54 | 48.80 | 54.00 | -5.20 | AVG |
| 11 | 14032.000 | 42.03 | 18.81 | 60.84 | 74.00 | -13.16 | peak |
| 12 * | 14032.000 | 30.39 | 18.81 | 49.20 | 54.00 | -4.80 | AVG |

### 5.3.4 Band edge–Field strength of fundamental

| Frequency | Ant. Polarization | Emission level | Limits | Detector | Result |
|---|---|---|---|---|---|
| (MHz) | H / V | dBμV/m | dBμV/m | | |
| 2404 | H | 90.61 | 114 | PK | PASS |
| 2404 | H | 81.50 | 94 | AV | PASS |
| 2404 | V | 90.59 | 114 | PK | PASS |
| 2404 | V | 82.60 | 94 | AV | PASS |

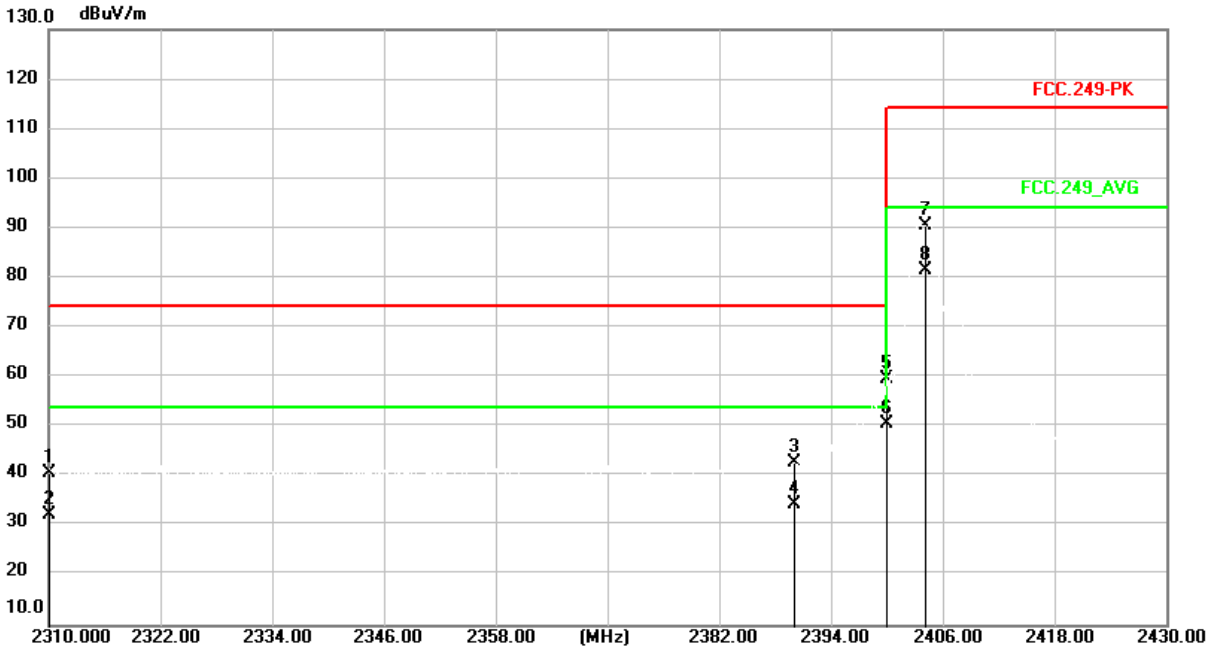
| Frequency | Ant. Polarization | Emission level | Limits | Detector | Result |
|---|---|---|---|---|---|
| (MHz) | H / V | dBμV/m | dBμV/m | | |
| 2441 | H | 90.25 | 114 | PK | PASS |
| 2441 | H | 82.26 | 94 | AV | PASS |
| 2441 | V | 90.13 | 114 | PK | PASS |
| 2441 | V | 82.37 | 94 | AV | PASS |

| Frequency | Ant. Polarization | Emission level | Limits | Detector | Result |
|---|---|---|---|---|---|
| (MHz) | H / V | dBμV/m | dBμV/m | | |
| 2479 | H | 90.67 | 114 | PK | PASS |
| 2479 | H | 83.50 | 94 | AV | PASS |
| 2479 | V | 90.67 | 114 | PK | PASS |
| 2479 | V | 82.40 | 94 | AV | PASS |

### 5.3.5 Band edge-radiated

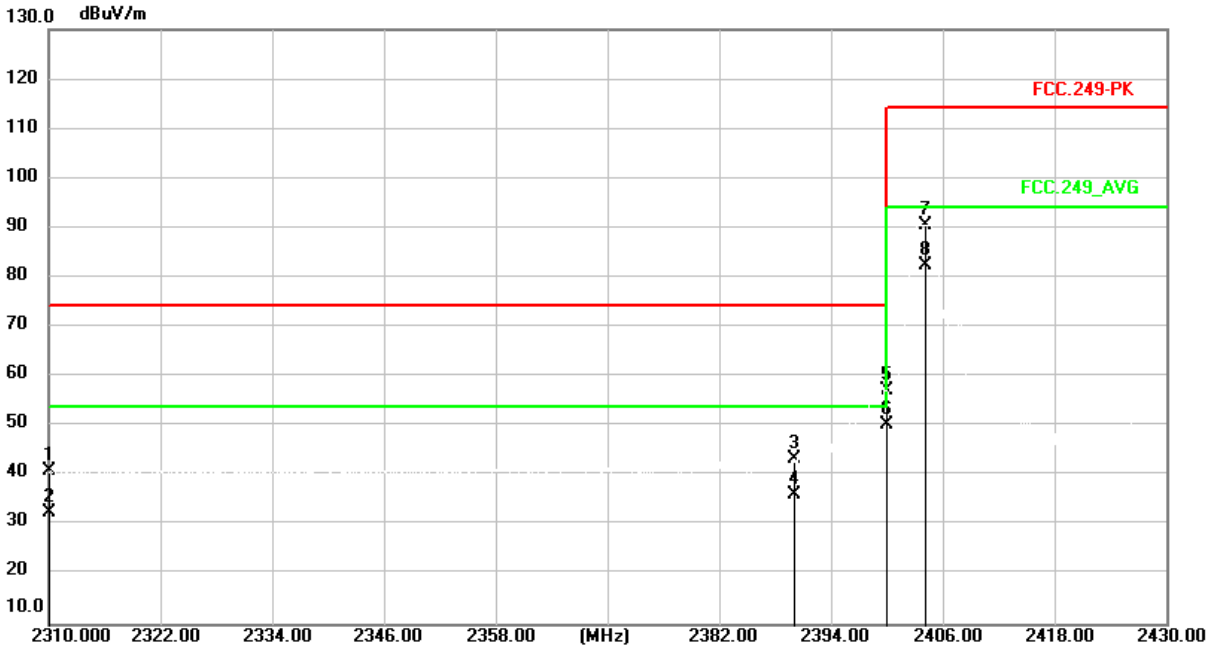
All the modulation modes have been tested, and the worst result was report as below:

| EUT: | 2.4GHz Wireless System for Saxophone | Model Name: | B-6 |
|---|---|---|---|
| Pressure: | 101kPa | Polarization: | Horizontal |
| Test voltage: | DC 3.7V from battery | Test Mode: | TX-2404MHz |



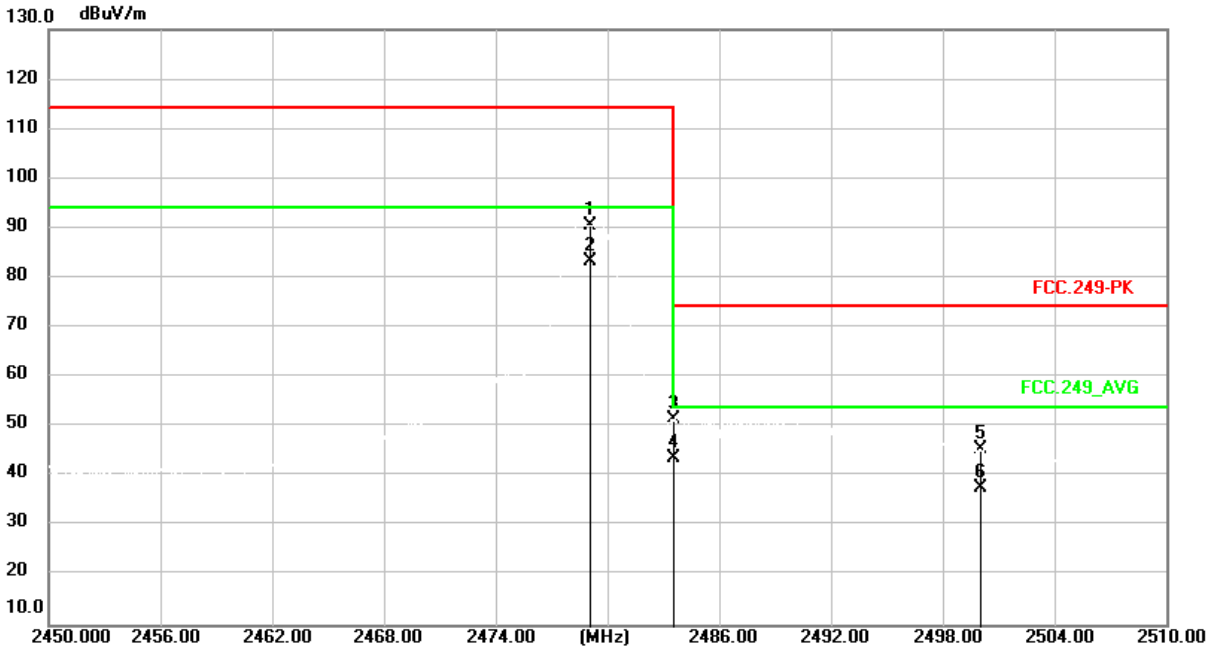

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 2310.000 | 44.50 | -3.61 | 40.89 | 74.00 | -33.11 | peak |
| 2 | 2310.000 | 36.11 | -3.61 | 32.50 | 54.00 | -21.50 | AVG |
| 3 | 2390.000 | 45.85 | -2.93 | 42.92 | 74.00 | -31.08 | peak |
| 4 | 2390.000 | 37.33 | -2.93 | 34.40 | 54.00 | -19.60 | AVG |
| 5 | 2400.000 | 62.37 | -2.84 | 59.53 | 74.00 | -14.47 | peak |
| 6 * | 2400.000 | 53.64 | -2.84 | 50.80 | 54.00 | -3.20 | AVG |
| 7 | 2404.000 | 93.46 | -2.85 | 90.61 | 114.00 | -23.39 | peak |
| 8 | 2404.000 | 84.35 | -2.85 | 81.50 | 94.00 | -12.50 | AVG |

| EUT: | 2.4GHz Wireless System for Saxophone | Model Name: | B-6 |
|---|---|---|---|
| Pressure: | 101kPa | Polarization: | Vertical |
| Test voltage: | DC 3.7V from battery | Test Mode: | TX-2404MHz |



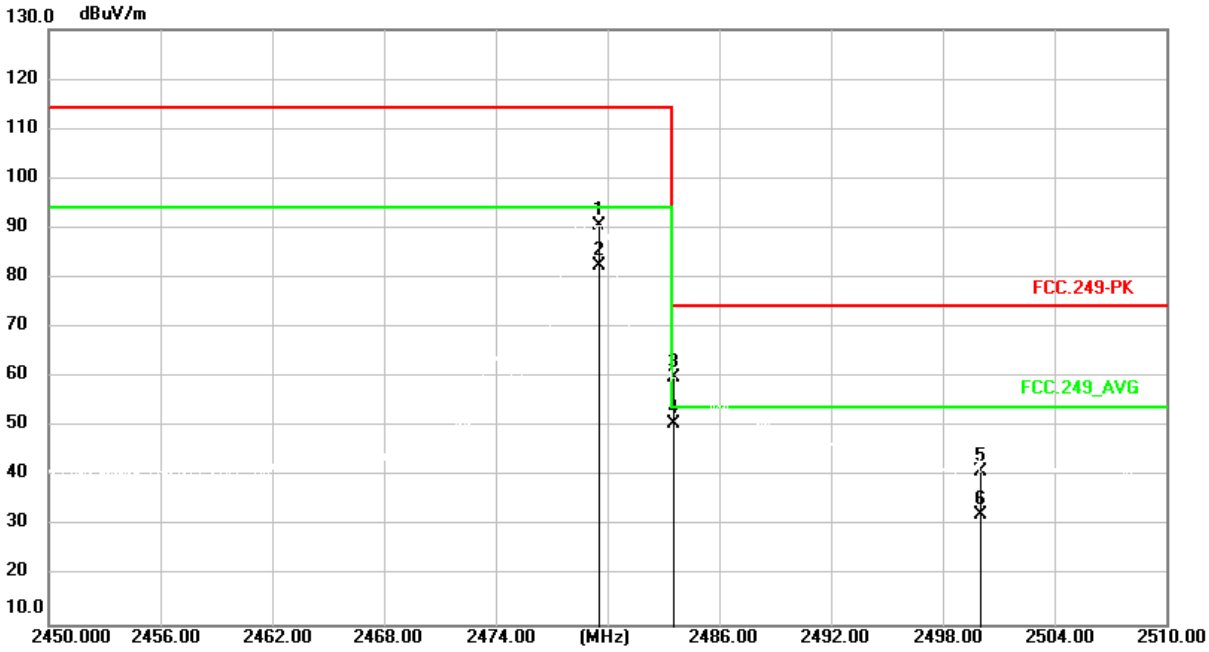

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 2310.000 | 44.77 | -3.61 | 41.16 | 74.00 | -32.84 | peak |
| 2 | 2310.000 | 36.41 | -3.61 | 32.80 | 54.00 | -21.20 | AVG |
| 3 | 2390.000 | 46.38 | -2.93 | 43.45 | 74.00 | -30.55 | peak |
| 4 | 2390.000 | 39.33 | -2.93 | 36.40 | 54.00 | -17.60 | AVG |
| 5 | 2400.000 | 60.21 | -2.84 | 57.37 | 74.00 | -16.63 | peak |
| 6 * | 2400.000 | 53.04 | -2.84 | 50.20 | 54.00 | -3.80 | AVG |
| 7 | 2404.000 | 93.44 | -2.85 | 90.59 | 114.00 | -23.41 | peak |
| 8 | 2404.000 | 85.45 | -2.85 | 82.60 | 94.00 | -11.40 | AVG |

| | | | |
|---|---|---|---|
| EUT: | 2.4GHz Wireless System for Saxophone | Model Name: | B-6 |
| Pressure: | 101kPa | Polarization: | Horizontal |
| Test voltage: | DC 3.7V from battery | Test Mode : | TX-2479MHz |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 2479.000 | 93.59 | -2.92 | 90.67 | 114.00 | -23.33 | peak |
| 2 | 2479.000 | 86.42 | -2.92 | 83.50 | 94.00 | -10.50 | AVG |
| 3 | 2483.500 | 54.39 | -2.93 | 51.46 | 74.00 | -22.54 | peak |
| 4 * | 2483.500 | 46.53 | -2.93 | 43.60 | 54.00 | -10.40 | AVG |
| 5 | 2500.000 | 48.56 | -2.94 | 45.62 | 74.00 | -28.38 | peak |
| 6 | 2500.000 | 40.54 | -2.94 | 37.60 | 54.00 | -16.40 | AVG |

| EUT: | 2.4GHz Wireless System for Saxophone | Model Name: | B-6 |
|---|---|---|---|
| Pressure: | 101kPa | Polarization: | Vertical |
| Test voltage: | DC 3.7V from battery | Test Mode: | TX-2479MHz |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 2479.580 | 93.59 | -2.92 | 90.67 | 114.00 | -23.33 | peak |
| 2 | 2479.580 | 85.32 | -2.92 | 82.40 | 94.00 | -11.60 | AVG |
| 3 | 2483.500 | 62.80 | -2.93 | 59.87 | 74.00 | -14.13 | peak |
| 4 * | 2483.500 | 53.53 | -2.93 | 50.60 | 54.00 | -3.40 | AVG |
| 5 | 2500.000 | 43.97 | -2.94 | 41.03 | 74.00 | -32.97 | peak |
| 6 | 2500.000 | 35.34 | -2.94 | 32.40 | 54.00 | -21.60 | AVG |

Note:

1. All Readings are Peak Value (VBW=3MHz) and AV Value (VBW=10Hz).
2. Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor.
3. All other emissions more than 20dB below the limit.

## 5.4 20dB and 99% bandwidth

### 5.4.1 Limits

FCC §15.215(c)

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

### 5.4.2 Test method

Use the following spectrum analyzer settings:

For 20 dB bandwidth

Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel

RBW ≥1% of the 20 dB bandwidth

VBW ≥RBW

Sweep = auto

Detector function = peak

Trace = max hold

The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth and 99% occupied bandwidth of the emission

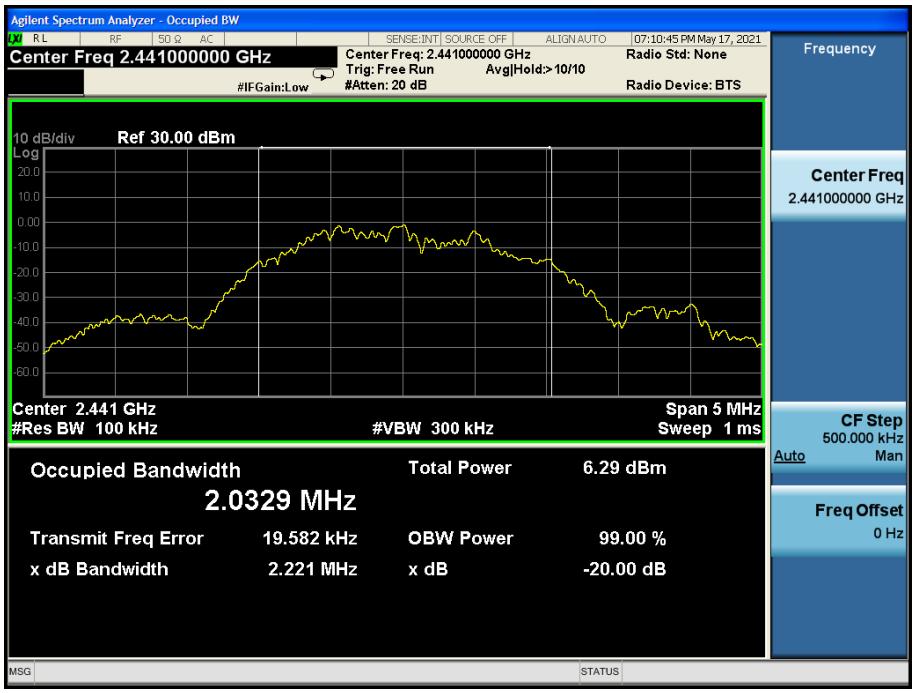
### 5.4.3 Test result

| Frequency (MHz) | 20dB bandwidth (MHz) |
|---|---|
| 2404 | 2.136 |
| 2441 | 2.221 |
| 2479 | 2.296 |

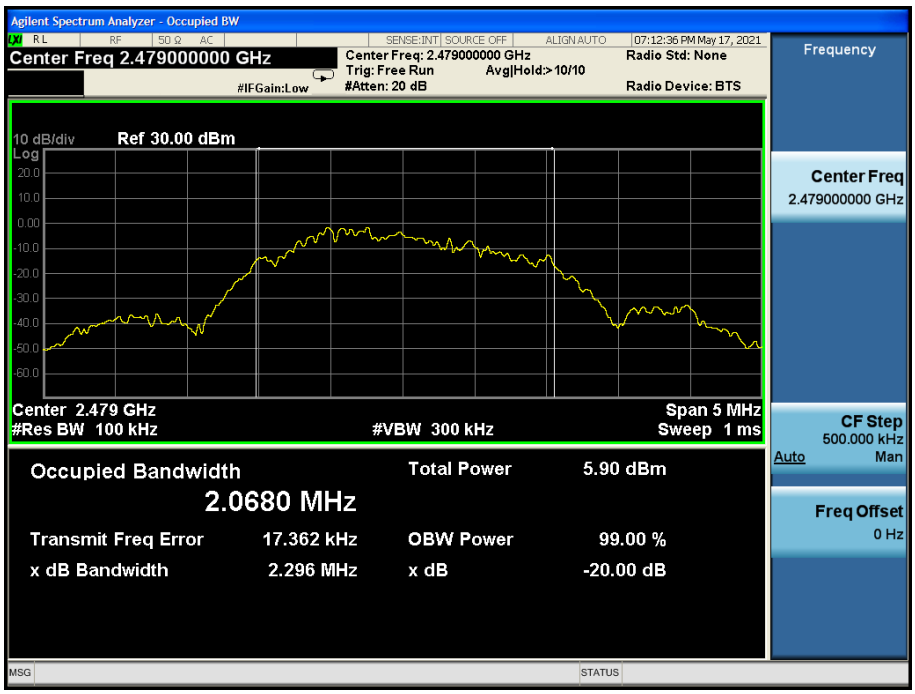
Test plots

2404MHz

2441MHz

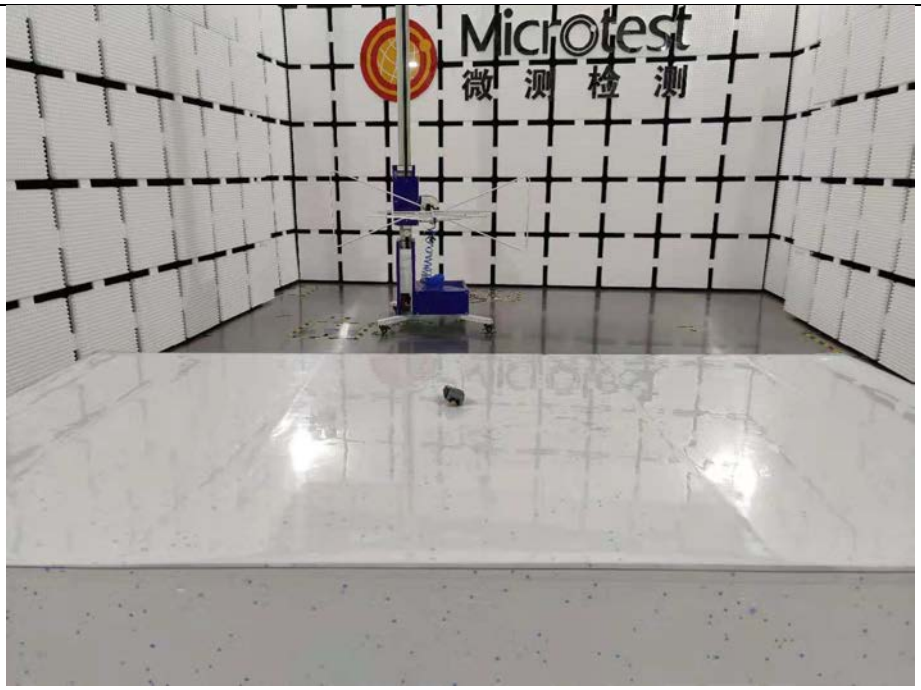



2479MHz

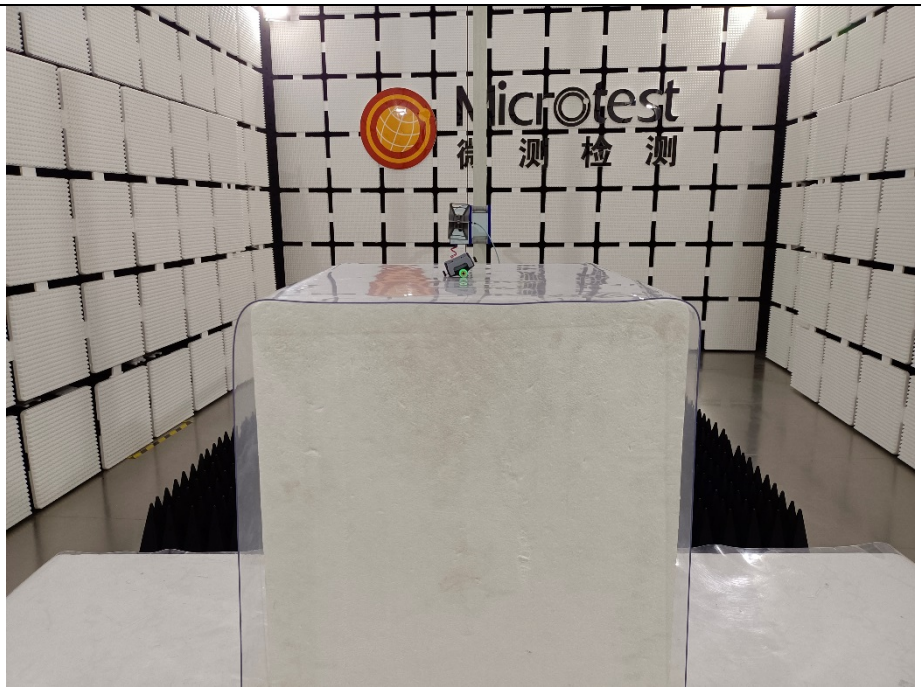


# Photographs of the Test Setup

Radiated emission – below 1GHz




Radiated emission – above 1GHz



## Photographs of the EUT

See the APPENDIX 1- EUT PHOTO.

**----END OF REPORT----**