

Page 1 of 34

# APPLICATION CERTIFICATION FCC Part 15C On Behalf of China Industries Ltd T/A Wow! Stuff

Air Drone Model No.: TX-1016

FCC ID: YCR-TX-1016H

Prepared for : China Industries Ltd T/A Wow! Stuff

Address : Creative Industries Centre, Wolverhampton Science

Park, Wolverhampton, WV10 9TG UK

Prepared by : ACCURATE TECHNOLOGY CO., LTD

Address : F1, Bldg. A, Chan Yuan New Material Port, Keyuan

Rd. Science & Industry Park, Nan Shan, Shenzhen,

Guangdong P.R. China

Tel: (0755) 26503290 Fax: (0755) 26503396

Report Number : ATE20151289
Date of Test : Jun 15-27, 2015
Date of Report : Jun 29, 2015





#### TABLE OF CONTENTS

| Descr  | iption                                    | Page |
|--------|---|------|
| Test R | Report Certification                      |      |
| 1. G   | ENERAL INFORMATION                        | 4    |
| 1.1.   | Description of Device (EUT)               |      |
| 1.2.   | Special Accessory and Auxiliary Equipment |      |
| 1.3.   | Description of Test Facility              |      |
| 1.4.   | Measurement Uncertainty                   |      |
| 2. M   | IEASURING DEVICE AND TEST EQUIPMENT       | 6    |
|        | PERATION OF EUT DURING TESTING            |      |
| 3.1.   | Operating Mode                            |      |
| 3.2.   | Configuration and peripherals             |      |
| 4. T   | EST PROCEDURES AND RESULTS                |      |
|        | ODB BANDWIDTH MEASUREMENT                 |      |
| 5.1.   | Block Diagram of Test Setup               |      |
| 5.2.   | The Requirement For Section 15.215(c)     |      |
| 5.3.   | Operating Condition of EUT                |      |
| 5.4.   | Test Procedure                            |      |
| 5.5.   | Test Result                               | 10   |
| 6. B   | AND EDGE COMPLIANCE TEST                  | 12   |
| 6.1.   | Block Diagram of Test Setup               | 12   |
| 6.2.   | The Requirement For Section 15.249        |      |
| 6.3.   | EUT Configuration on Measurement          |      |
| 6.4.   | Operating Condition of EUT                |      |
| 6.5.   | Test Procedure                            |      |
| 6.6.   | Test Result                               |      |
| 7. R   | ADIATED SPURIOUS EMISSION TEST            | 18   |
| 7.1.   | Block Diagram of Test Setup               | 18   |
| 7.2.   | The Limit For Section 15.249              | 19   |

The Field Strength of Radiation Emission Measurement Results ......21

Antenna Construction .......34

ANTENNA REQUIREMENT......34

7.3.

7.4.

7.5.

7.6. 7.7.

8.1.

8.2.

8.



Page 3 of 34

### **Test Report Certification**

China Industries Ltd T/A Wow! Stuff **Applicant** 

Address Creative Industries Centre, Wolverhampton Science Park,

Wolverhampton, WV10 9TG UK

Manufacturer China Industries Ltd T/A Wow! Stuff

Creative Industries Centre, Wolverhampton Science Park, Address

Wolverhampton, WV10 9TG UK

Air Drone **Product** TX-1016 Model No.

Trade Name Wow! Stuff

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.249 ANSI C63.10: 2013

The EUT was tested according to FCC 47CFR 15.249 for compliance to FCC 47CFR 15.249 requirements

The device described above is tested by 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 15.249 limits. The measurement results are contained in this test report and 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 ACCURATE TECHNOLOGY CO. LTD.

| Date of Test :                  | Jun 15-27, 2015        |
|---------------------------------|------------------------|
| Date of Report:                 | Jun 29, 2015           |
| Prepared by :                   | Zzzhang                |
|                                 | (Eric Zhang, Engineer) |
| Approved & Authorized Signer :_ | Lemb                   |
|                                 | ( Sean Liu. Manager)   |



Page 4 of 34

## 1. GENERAL INFORMATION

#### 1.1. Description of Device (EUT)

EUT : Air Drone

Model Number : TX-1016

Power Supply : 6V DC (batteries  $4 \times$ )

Operate Frequency : 2407-2473MHz

Antenna Gain : 0dBi

Antenna type : Wire Antenna

Applicant : China Industries Ltd T/A Wow! Stuff

Address : Creative Industries Centre, Wolverhampton Science Park,

Wolverhampton, WV10 9TG UK

Manufacturer : China Industries Ltd T/A Wow! Stuff

Address : Creative Industries Centre, Wolverhampton Science Park,

Wolverhampton, WV10 9TG UK

Date of sample received: Jun 15, 2015

Date of Test : Jun 15-27, 2015

## 1.2. Special Accessory and Auxiliary Equipment

N/A



Page 5 of 34

#### 1.3.Description of Test Facility

EMC Lab : Accredited by TUV Rheinland Shenzhen

Listed by FCC

The Registration Number is 752051

Listed by Industry Canada

The Registration Number is 5077A-2

Accredited by China National Accreditation Committee

for Laboratories

The Certificate Registration Number is L3193

Name of Firm : ACCURATE TECHNOLOGY CO. LTD

Site Location : F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.

Science & Industry Park, Nanshan, Shenzhen, Guangdong

P.R. China

#### 1.4. Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty = 3.08dB, k=2

(9kHz-30MHz)

Radiated emission expanded uncertainty = 4.42dB, k=2

(30MHz-1000MHz)

Radiated emission expanded uncertainty = 4.06dB, k=2

(Above 1GHz)



Report No.: ATE20151289 Page 6 of 34

## 2. MEASURING DEVICE AND TEST EQUIPMENT

**Table 1: List of Test and Measurement Equipment** 

| Kind of equipment  | Manufacturer              | Туре                                    | S/N        | Calibrated dates | Cal. Interval |
|--------------------|---------------------------|---|------------|------------------|---------------|
| EMI Test Receiver  | Rohde&Schwarz             | ESCS30                                  | 100307     | Jan. 11, 2015    | One Year      |
| EMI Test Receiver  | Rohde&Schwarz             | ESPI3                                   | 101526/003 | Jan. 11, 2015    | One Year      |
| Spectrum Analyzer  | Agilent                   | E7405A                                  | MY45115511 | Jan. 11, 2015    | One Year      |
| Pre-Amplifier      | Rohde&Schwarz             | CBLU118354<br>0-01                      | 3791       | Jan. 11, 2015    | One Year      |
| Loop Antenna       | Schwarzbeck               | FMZB1516                                | 1516131    | Jan. 15, 2015    | One Year      |
| Bilog Antenna      | Schwarzbeck               | VULB9163                                | 9163-323   | Jan. 15, 2015    | One Year      |
| Horn Antenna       | Schwarzbeck               | BBHA9120D                               | 9120D-655  | Jan. 15, 2015    | One Year      |
| Horn Antenna       | Schwarzbeck               | BBHA9120D                               | 9120D-1067 | Jan. 15, 2015    | One Year      |
| LISN               | Rohde&Schwarz             | ESH3-Z5                                 | 100305     | Jan. 11, 2015    | One Year      |
| LISN               | Schwarzbeck               | NSLK8126                                | 8126431    | Jan. 11, 2015    | One Year      |
| Highpass Filter    | Wainwright<br>Instruments | WHKX3.6/18<br>G-10SS                    | N/A        | Jan. 11, 2015    | One Year      |
| Band Reject Filter | Wainwright<br>Instruments | WRCG2400/2<br>485-2375/2510<br>-60/11SS | N/A        | Jan. 11, 2015    | One Year      |





Page 7 of 34

## 3. OPERATION OF EUT DURING TESTING

#### 3.1. Operating Mode

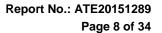
The mode is used: **Transmitting mode** 

Low Channel: 2407MHz Middle Channel: 2440MHz High Channel: 2473MHz

## 3.2. Configuration and peripherals

**EUT** 

Figure 1 Setup: Transmitting mode





## 4. TEST PROCEDURES AND RESULTS

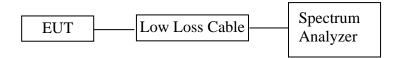
| FCC Rules  | Description of Test                   | Result    |  |  |
|--|---------------------------------------|-----------|--|--|
| Section 15.215(c)  | 20dB Bandwidth                        | Compliant |  |  |
| Section 15.249(d)  | Band Edge Compliance Test             | Compliant |  |  |
| Section 15.205(a),<br>Section 15.209(a),<br>Section 15.249,<br>Section 15.35 | Radiated Spurious Emission Test       | Compliant |  |  |
| Section 15.207   | AC Power Line Conducted Emission Test | N/A       |  |  |
| Section 15.203   | Antenna Requirement                   | Compliant |  |  |





5. 20DB BANDWIDTH MEASUREMENT

#### 5.1.Block Diagram of Test Setup



#### 5.2. The Requirement For Section 15.215(c)

The bandwidth of a frequency hopping channel is the 20 dB emission bandwidth, measured with the hopping stopped. The system RF bandwidth is equal to the channel bandwidth multiplied by the number of channels in the hopset. The hopset shall be such that the near-term distribution of frequencies appears random, with sequential hops randomly distributed in both direction and magnitude of change in the hopset while the long-term distribution appears evenly distributed.

#### 5.3. Operating Condition of EUT

- 5.3.1. Setup the EUT and simulator as shown as Section 5.1.
- 5.3.2. Turn on the power of all equipment.
- 5.3.3.Let the EUT work in TX modes measure it. The transmit frequency are 2402, 2433, 2475 MHz.

#### 5.4. Test Procedure

- 5.4.1. Place the EUT on the table and set it in transmitting mode.
- 5.4.2.Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 5.4.3.Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz, Detector function=peak, Trace=max hold, Sweep=auto.
- 5.4.4.Set the measured low, middle and high frequency and test 20dB bandwidth with spectrum analyzer.

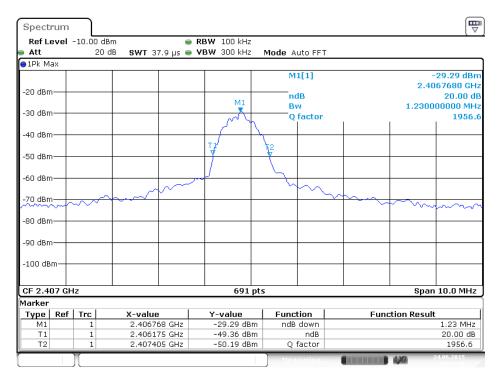


#### 5.5.Test Result

| Channel | Frequency(MHz) | 20 dB<br>Bandwidth(MHz) |
|---------|----------------|-------------------------|
| Low     | 2407           | 1.230                   |
| Middle  | 2440           | 1.664                   |
| High    | 2473           | 1.795                   |

The spectrum analyzer plots are attached as below.

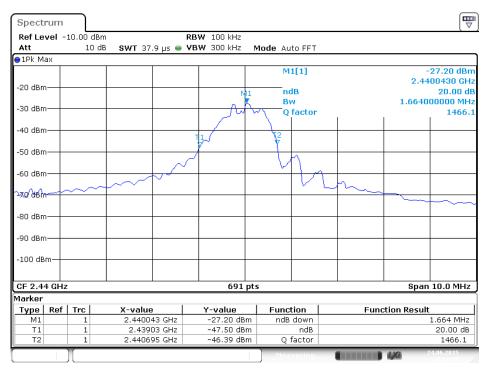
#### Low channel



Date: 24.JUN.2015 10:34:49

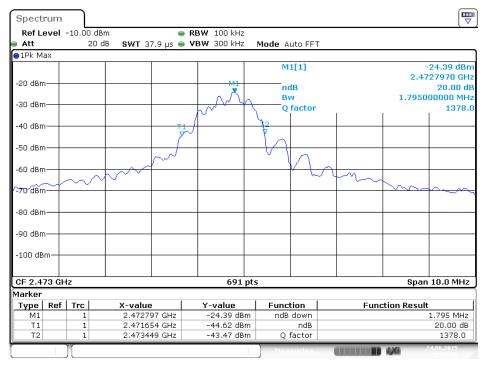


#### Middle channel



Date: 24.JUN.2015 10:21:58

#### High channel



Date: 24.JUN.2015 10:45:00

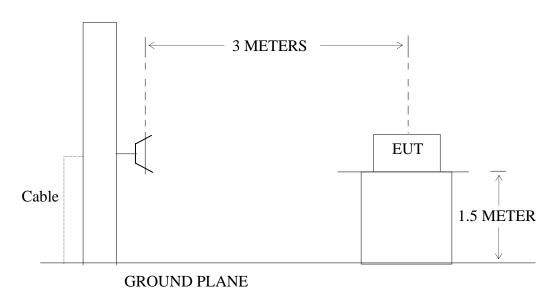
Page 12 of 34



6. BAND EDGE COMPLIANCE TEST

#### 6.1.Block Diagram of Test Setup

#### ANTENNA ELEVATION VARIES FROM 1 TO 4 METERS



#### 6.2. The Requirement For Section 15.249

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 A8.4(4), the attenuation required 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).

#### 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.



Page 13 of 34

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 2402, 2475 MHz..

#### 6.5. Test Procedure

Radiate Band Edge:

- 6.5.1. The EUT is placed on a turntable, which is 1.5m above the ground plane and worked at highest radiated power.
- 6.5.2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
- 6.5.3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 6.5.4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

RBW=1MHz, VBW=1MHz

6.5.5. The band edges was measured and recorded.

#### 6.6.Test Result





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

Report No.: ATE20151289

Page 14 of 34

Job No.: STAR2015 #1042 Polarization: Horizontal Standard: FCC PK Power Source: DC 6V

Test item: Radiation Test

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

Description: Power Source: DC 6

Date: 15/06/27/

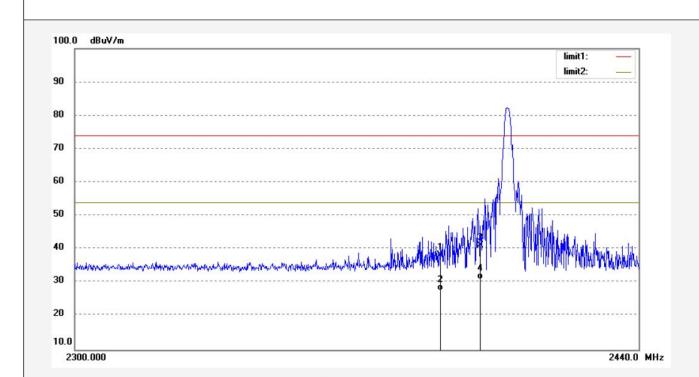
Time: 8/55/06

EUT: Ai Drone Engineer Signature:

Mode: TX 2407MHz Distance: 3m

Model: TX-1016

Manufacturer: Industries



| No. | Freq.<br>(MHz) | Reading (dBuV/m) | Factor<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height (cm) | Degree<br>(deg.) | Remark |
|-----|----------------|------------------|----------------|--------------------|-------------------|----------------|----------|-------------|------------------|--------|
| 1   | 2390.000       | 46.31            | -8.00          | 38.31              | 74.00             | -35.69         | peak     |             |                  |        |
| 2   | 2390.000       | 35.67            | -8.00          | 27.67              | 54.00             | -26.33         | AVG      |             |                  |        |
| 3   | 2400.000       | 49.23            | -7.97          | 41.26              | 74.00             | -32.74         | peak     |             |                  |        |
| 4   | 2400.000       | 38.90            | -7.97          | 30.93              | 54.00             | -23.07         | AVG      |             |                  |        |





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

Report No.: ATE20151289

Page 15 of 34

Job No.: STAR2015 #1041 Polarization: Vertical Standard: FCC PK Power Source: DC 6V

 Test item:
 Radiation Test
 Date: 15/06/27/

 Temp.( C)/Hum.(%) 25 C / 55 %
 Time: 8/53/27

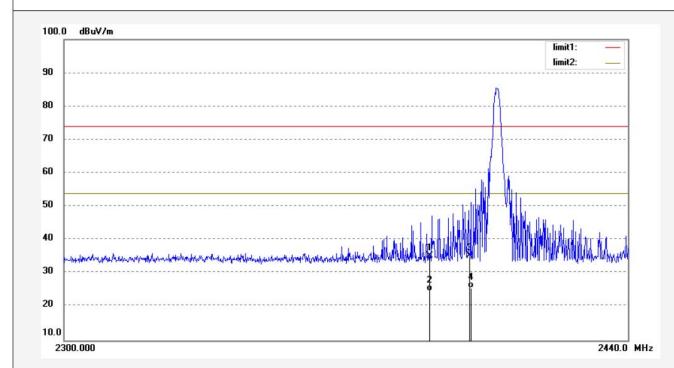
 EUT:
 Ai Drone
 Engineer Signature:

EUT: Ai Drone Engineer Signa

Mode: TX 2407MHz Distance: 3m

Model: TX-1016

Manufacturer: Industries



| No. | Freq.<br>(MHz) | Reading (dBuV/m) | Factor (dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height (cm) | Degree<br>(deg.) | Remark |
|-----|----------------|------------------|-------------|--------------------|-------------------|----------------|----------|-------------|------------------|--------|
| 1   | 2390.000       | 43.24            | -8.00       | 35.24              | 74.00             | -38.76         | peak     |             |                  |        |
| 2   | 2390.000       | 32.70            | -8.00       | 24.70              | 54.00             | -29.30         | AVG      |             |                  |        |
| 3   | 2400.000       | 43.34            | -7.97       | 35.37              | 74.00             | -38.63         | peak     |             |                  |        |
| 4   | 2400.000       | 33.61            | -7.97       | 25.64              | 54.00             | -28.36         | AVG      |             |                  |        |





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

Report No.: ATE20151289

Page 16 of 34

Job No.: STAR2015 #1040 Polarization: Vertical Standard: FCC PK Power Source: DC 6V

 Test item:
 Radiation Test
 Date: 15/06/27/

 Temp.( C)/Hum.(%) 25 C / 55 %
 Time: 8/52/02

 EUT:
 Ai Drone
 Engineer Signature:

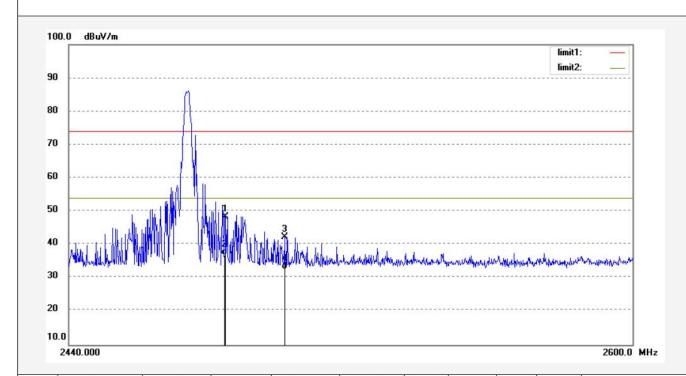
EUT: Ai Drone Engineer Signature

Mode: TX 2473MHz Distance: 3m

Model: TX-1016

Note: Report No.:ATE20151289

Manufacturer: Industries



| No. | Freq.<br>(MHz) | Reading (dBuV/m) | Factor<br>(dB) | Result (dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height (cm) | Degree<br>(deg.) | Remark |
|-----|----------------|------------------|----------------|-----------------|-------------------|----------------|----------|-------------|------------------|--------|
| 1   | 2483.500       | 56.10            | -7.76          | 48.34           | 74.00             | -25.66         | peak     |             |                  |        |
| 2   | 2483.500       | 44.70            | -7.76          | 36.94           | 54.00             | -17.06         | AVG      |             |                  |        |
| 3   | 2500.000       | 50.00            | -7.71          | 42.29           | 74.00             | -31.71         | peak     |             |                  |        |
| 4   | 2500.000       | 40.36            | -7.71          | 32.65           | 54.00             | -21.35         | AVG      |             |                  |        |



**ATC**®

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

Report No.: ATE20151289

Page 17 of 34

Job No.: STAR2015 #1039

Standard: FCC PK

Test item: Radiation Test

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

EUT: Ai Drone

Mode: TX 2473MHz

Model: TX-1016

Manufacturer: Industries

Note: Report No.:ATE20151289

Polarization: Horizontal

Power Source: DC 6V

Date: 15/06/27/ Time: 8/48/25

Engineer Signature:

Distance: 3m

|          |  |                    |                 |  |  |                                   |                        |                        | limit1:                                   | : <u>-</u> ]                                   |
|----------|--|--------------------|-----------------|--|--|-----------------------------------|------------------------|------------------------|---|--|
| 90       |  |                    |                 |  |  |                                   |                        |                        | limit2:                                   |  |
| 50       |  |                    |                 |  |  |                                   |                        |                        |   |  |
| 80       |  |                    |                 |  |  |                                   |                        |                        |   |  |
| 70       |  |                    |                 |  |  |                                   |                        |                        |   |  |
| 60       |  |                    |                 |  |  |                                   |                        |                        |   |  |
| 50       |  |                    |                 |  |  |                                   |                        |                        |   |  |
| 40       | THE STATE OF THE S | (#1140             |                 | <del>3</del>   |  |                                   |                        |                        |   |  |
|          | IN VIVE PRODUCTION   | עיון)) איז איז איז | ULTURY HERVAN   | THE PROPERTY OF THE PARTY OF TH | where whether histories where  | Alexander and a                   | Att bear house to      | Mary L. L. as H        | to other death, day and                   | When he had been                               |
| 30       | Kadroki)Afrika JAM, Indi   | 'עי ן עייווען      | ALAMAL HIMANIA  | Ministration of the second   | n delpertensibilitation des  | on Albertaller of the             | en/lectocologicalentes | er/haddi,vilydgwyniad  | (/m///p//p///p//                          | of the San |
| 30<br>20 | KANTANA MATANA   | יעי ן עייותן.      | 41 # JAIA HIMMI |  | y fallowed in the land of the  | world have been some only to      | a/lectocopy/baytorius  | */whytynhydrynh        | Againta Anailtean                         | of Mary Aproposation of the                    |
|          | KARNINTAL MALIN JULI<br>   | עי ועייוון.        | 3               | III A A A A A A A A A A A A A A A A A A  | y fallostroetadadistroppede  | no takan ortak prografik          | es/lectoropyclosign    | enden verden be        | kystrajikokalkulariya                     | of Mary States were the N                      |
| 20       | 2440.000   | יי ן עייוען        | # #\TY 41**#\\  |  | y dia Novelon di Amerika di Ameri | on the hards the confusion of the | a/lettedpolendelm      | MANA CANAGE CONTRACTOR | h <sub>a</sub> nn <sub>in</sub> h Ashburh | 2600.0 MH:                                     |

#### Note:

2483.500

2500.000

2500.000

1

3

4

1. Emissions attenuated more than 20 dB below the permissible value are not reported.

23.01

40.34

28.26

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:

54.00

74.00

54.00

-30.99

-33.66

-25.74

**AVG** 

peak

AVG

Result = Reading + Corrected Factor

30.77

48.05

35.97

-7.76

-7.71

-7.71

- 3. Display the measurement of peak values.
- 4. The average measurement was not performed when peak measured data under the limit of average detection.



#### 7. RADIATED SPURIOUS EMISSION TEST

#### 7.1.Block Diagram of Test Setup

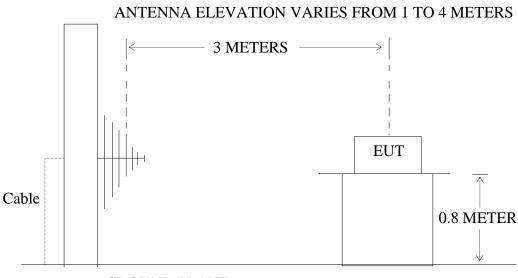
7.1.1.Block diagram of connection between the EUT and peripherals



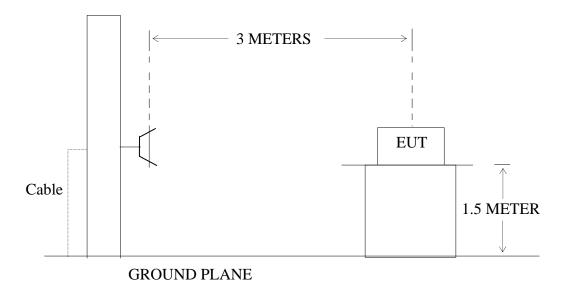
Setup: Transmitting mode

(EUT: TX-1016)

#### 7.1.2.Semi-Anechoic Chamber Test Setup Diagram



**GROUND PLANE** 





Report No.: ATE20151289 Page 19 of 34

#### 7.2. The Limit For Section 15.249

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 A8.4(4), 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).

#### 7.3. Restricted bands of operation

#### 7.3.1.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:

| 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      |  |  |  |  |  |  |  |
| <sup>1</sup> 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     | $\binom{2}{}$ |  |  |  |  |  |  |  |
| 13.36-13.41   |                     |               |               |  |  |  |  |  |  |  |

<sup>&</sup>lt;sup>1</sup>Until February 1, 1999, this restricted band shall be 0.490-0.510

(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 Section15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section

<sup>&</sup>lt;sup>2</sup>Above 38.6



15.35 apply to these measurements.

Report No.: ATE20151289 Page 20 of 34

#### 7.4. 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.

#### 7.5. Operating Condition of EUT

- 7.5.1. Setup the EUT and simulator as shown as Section 7.1.
- 7.5.2. Turn on the power of all equipment.
- 7.5.3.Let the EUT work in TX modes measure it. The transmit frequency are 2402, 2433, 2475MHz.

#### 7.6.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter(Below 1GHz) and 1.5m(above 1GHz) high above ground. 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 bilog 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 interface cables must be manipulated according to ANSI C63.10: 2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The bandwidth of test receiver is set at 9 kHz in below 30MHz. and set at 120 kHz in 30-1000MHz, and 1MHz in above 1000MHz.

The frequency range from 9 kHz to 25GHz is checked.

The final measurement in band 9-90 kHz, 110-490 kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

RBW (120 kHz), VBW (300 kHz) for QP detector below 1GHz

Peak detector above 1GHz

RBW (1 MHz), VBW (3MHz) for Peak measurement

RBW (1 MHz), VBW (10Hz) for AV measurement

The field strength is calculated by adding the antenna factor, and cable loss, and subtracting the amplifier gain from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain



Page 21 of 34

## 7.7. The Field Strength of Radiation Emission Measurement Results **PASS.**

#### **Fundamental Radiated Emissions**

| Frequency | Reading(dBµV/m) |       | Factor(dB) | Result(dBµV/m) |       | Limit(dBµV/m) |        | Margin(dB) |        | Polarization |
|-----------|-----------------|-------|------------|----------------|-------|---------------|--------|------------|--------|--------------|
| (MHz)     | AV              | PEAK  | Corr.      | AV             | PEAK  | AV            | PEAK   | AV         | PEAK   |              |
| 2407.00   | 78.69           | 86.62 | -7.96      | 70.73          | 78.66 | 94.00         | 114.00 | -23.27     | -35.34 | Vertical     |
| 2407.00   | 80.11           | 87.16 | -7.96      | 72.15          | 79.20 | 94.00         | 114.00 | -21.85     | -34.80 | Horizontal   |
| 2440.00   | 82.62           | 90.06 | -7.87      | 74.75          | 82.19 | 94.00         | 114.00 | -19.25     | -31.81 | Vertical     |
| 2440.00   | 81.37           | 89.87 | -7.87      | 73.50          | 82.00 | 94.00         | 114.00 | -20.50     | -32.00 | Horizontal   |
| 2473.00   | 78.66           | 86.73 | -7.78      | 70.88          | 78.95 | 94.00         | 114.00 | -23.12     | -35.05 | Vertical     |
| 2473.00   | 81.22           | 88.17 | -7.78      | 73.44          | 80.39 | 94.00         | 114.00 | -20.56     | -33.61 | Horizontal   |

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 in three axes. The worst emissions are reported in all channels.
- 4. The radiation emissions from 18-25GHz are not reported, because the test values lower than the limits of 20dB.
- 5. The average measurement was not performed when peak measured data under the limit of average detection.
- 6. The 18-25GHz emissions are not reported, because the levels are too low against the limit





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

Report No.: ATE20151289

Page 22 of 34

Polarization: Vertical Power Source: DC 6V

Date: 2015/06/24 Time: 20:17:47 Engineer Signature:

Distance: 3m

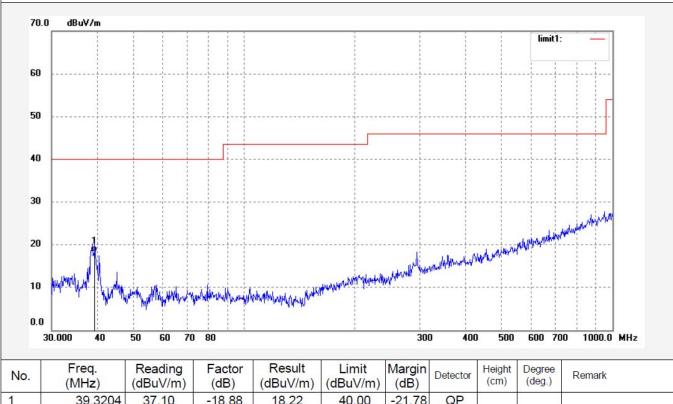
Job No.: STAR2015 #953

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Ai Drone Mode: TX 2407MHz Model: TX-1016 Manufacturer: Industries



| No. | Freq.<br>(MHz) | Reading (dBuV/m) | Factor (dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height (cm) | Degree<br>(deg.) | Remark |
|-----|----------------|------------------|-------------|--------------------|-------------------|----------------|----------|-------------|------------------|--------|
| 1   | 39.3204        | 37.10            | -18.88      | 18.22              | 40.00             | -21.78         | QP       |             |                  |        |



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

Report No.: ATE20151289

Page 23 of 34

Job No.: STAR2015 #954 Polarization: Standard: FCC Class B 3M Radiated

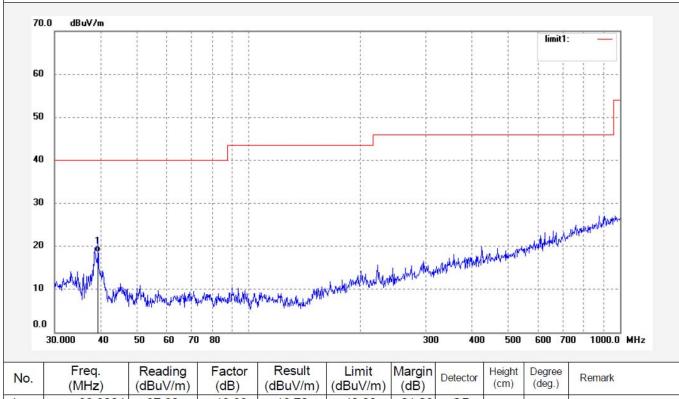
Test item: Radiation Test

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

EUT: Ai Drone Mode: TX 2407MHz Model: TX-1016 Manufacturer: Industries Horizontal

Power Source: DC 6V

Date: 2015/06/24 Time: 20:18:10 Engineer Signature: Distance: 3m





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

Page 24 of 34 Site: 1# Chamber Tel:+86-0755-26503290

Fax:+86-0755-26503396

Report No.: ATE20151289

Polarization: Horizontal Power Source: DC 6V

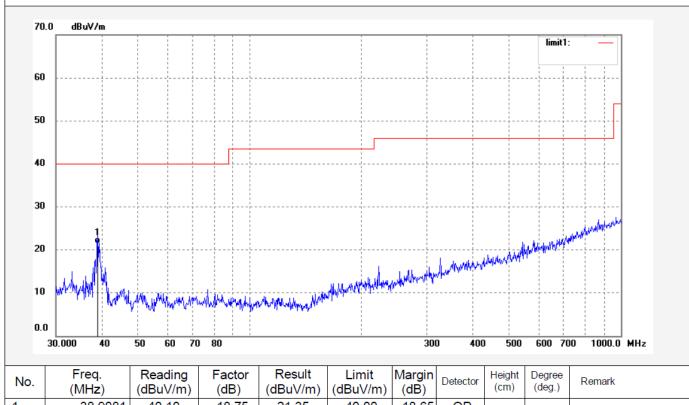
> Date: 2015/06/24 Time: 20:18:34 Engineer Signature: Distance: 3m

Standard: FCC Class B 3M Radiated Test item: Radiation Test

Job No.: STAR2015 #955

Temp.( C)/Hum.(%) 25 C / 55 % EUT: Ai Drone Mode: TX 2440MHz

Model: TX-1016 Manufacturer: Industries





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

Report No.: ATE20151289

Page 25 of 34

Job No.: STAR2015 #956

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Ai Drone

Mode: TX 2440MHz

Model: TX-1016

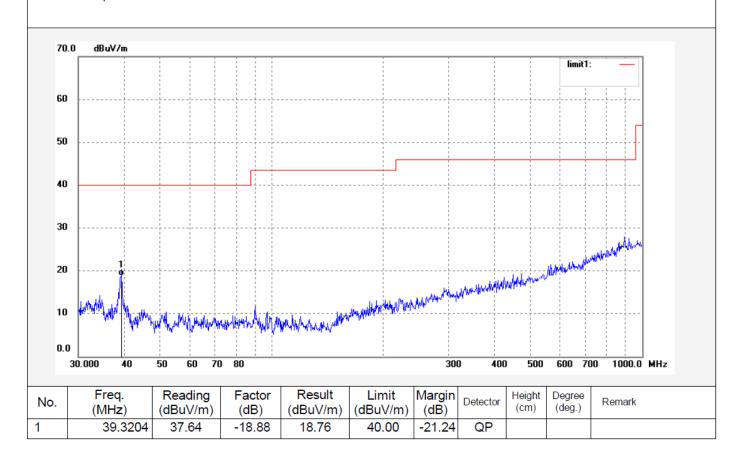
Manufacturer: Industries

Note:

Report No.:ATE20151289

Polarization: Vertical
Power Source: DC 6V
Date: 2015/06/24
Time: 20:19:00
Engineer Signature:

Distance: 3m





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

Page 26 of 34 Site: 1# Chamber

Report No.: ATE20151289

Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: STAR2015 #957 Polarization: Standard: FCC Class B 3M Radiated

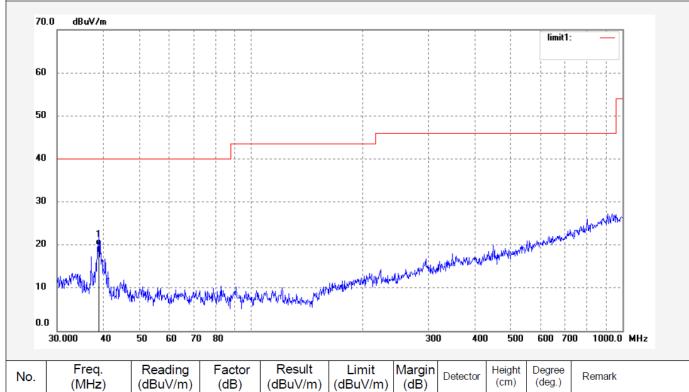
Test item: Radiation Test

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

EUT: Ai Drone Mode: TX 2473MHz Model: TX-1016 Manufacturer: Industries

Vertical Power Source: DC 6V

Date: 2015/06/24 Time: 20:19:26 Engineer Signature: Distance: 3m







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

Report No.: ATE20151289

Page 27 of 34

Job No.: STAR2015 #958

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

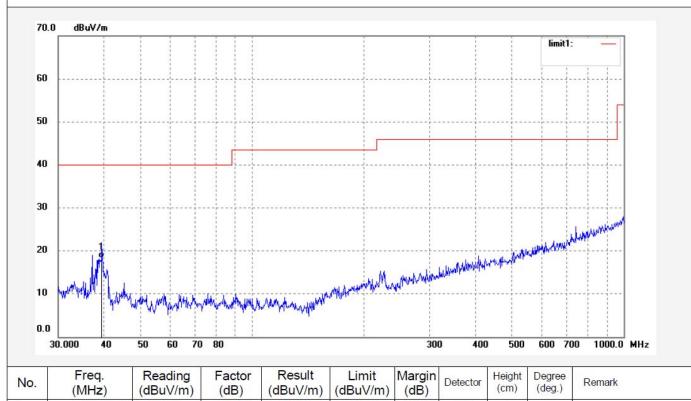
Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Ai Drone Mode: TX 2473MHz Model: TX-1016 Manufacturer: Industries Polarization: Horizontal

Power Source: DC 6V

Date: 2015/06/24 Time: 20:19:54 Engineer Signature:

Distance: 3m





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

Report No.: ATE20151289

Page 28 of 34

Job No.: STAR2015 #959 Polarization: Horizontal Standard: FCC Class B 3M Radiated Power Source: DC 6V

Test item: Radiation Test Date: 2015/06/24

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

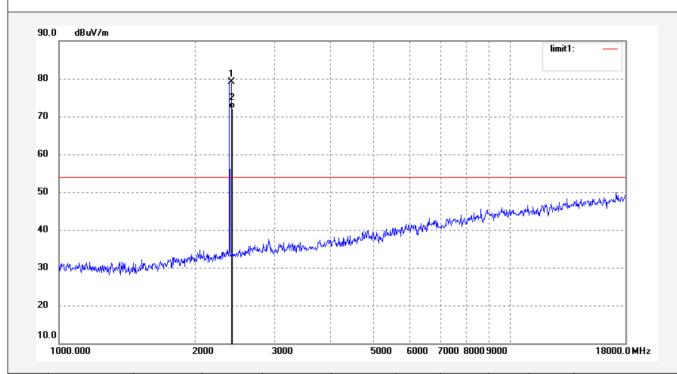
EUT: Ai Drone Engineer Signature:

Mode: TX 2407MHz Distance: 3m

Mode: TX 2407MHz

Model: TX-1016

Manufacturer: Industries



| No. | Freq.<br>(MHz) | Reading (dBuV/m) | Factor<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height (cm) | Degree<br>(deg.) | Remark |
|-----|----------------|------------------|----------------|--------------------|-------------------|----------------|----------|-------------|------------------|--------|
| 1   | 2407.000       | 87.16            | -7.96          | 79.20              | 114.00            | 34.80          | peak     |             |                  |        |
| 2   | 2407.000       | 80.11            | -7.96          | 72.15              | 94.00             | 21.85          | AVG      |             |                  |        |



Report No.: ATE20151289
Page 29 of 34
Site: 1# Chamber

F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: STAR2015 #960

Standard: FCC Class B 3M Radiated
Test item: Radiation Test

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

EUT: Ai Drone

Mode: TX 2407MHz

Model: TX-1016

Manufacturer: Industries

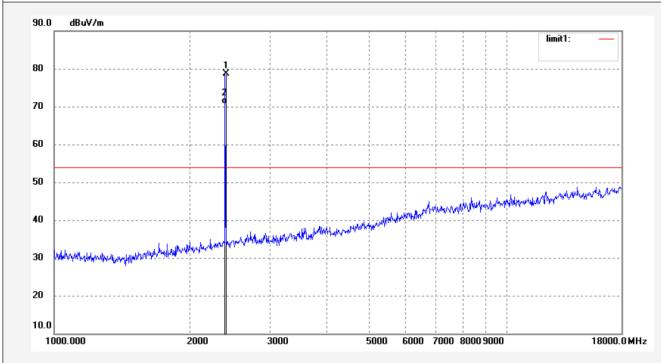
TX 2407MHz

nutacturer: industries

Note: Report No.:ATE20151289

Polarization: Vertical Power Source: DC 6V Date: 2015/06/24

Time: 20:25:57
Engineer Signature:
Distance: 3m



| No. | Freq.<br>(MHz) | Reading (dBuV/m) | Factor<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|----------------|------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1   | 2407.000       | 86.62            | -7.96          | 78.66              | 114.00            | 35.34          | peak     |                |                  |        |
| 2   | 2407.000       | 78.69            | -7.96          | 70.73              | 94.00             | 23.27          | AVG      |                |                  |        |



Job No.: STAR2015 #961

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

Report No.: ATE20151289

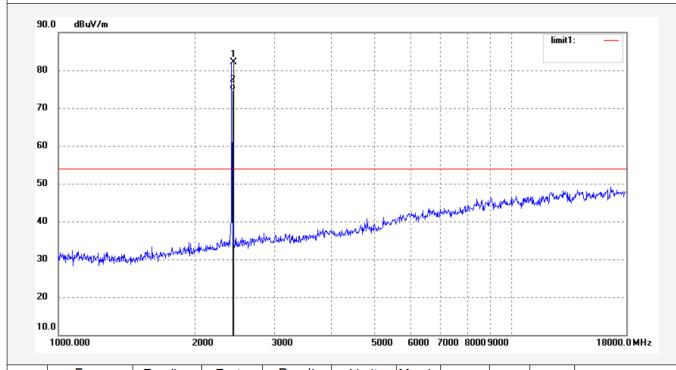
Page 30 of 34

Fax:+86-0755-26503396 Polarization: Vertical

Standard: FCC Class B 3M Radiated Power Source: DC 6V Test item: Radiation Test Date: 2015/06/24 Temp.( C)/Hum.(%) 25 C / 55 % Time: 20:27:47 EUT: Ai Drone Engineer Signature: Distance: 3m

Mode: TX 2440MHz Model: TX-1016 Manufacturer: Industries

Report No.:ATE20151289 Note:



| No. | Freq.<br>(MHz) | Reading (dBuV/m) | Factor<br>(dB) | (dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|----------------|------------------|----------------|----------|-------------------|----------------|----------|----------------|------------------|--------|
| 1   | 2440.000       | 90.06            | -7.87          | 82.19    | 114.00            | 31.81          | peak     |                |                  |        |
| 2   | 2440.000       | 82.62            | -7.87          | 74.75    | 94.00             | 19.25          | AVG      |                |                  |        |



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

Report No.: ATE20151289

Page 31 of 34

Job No.: STAR2015 #962

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Ai Drone

Mode: TX 2440MHz

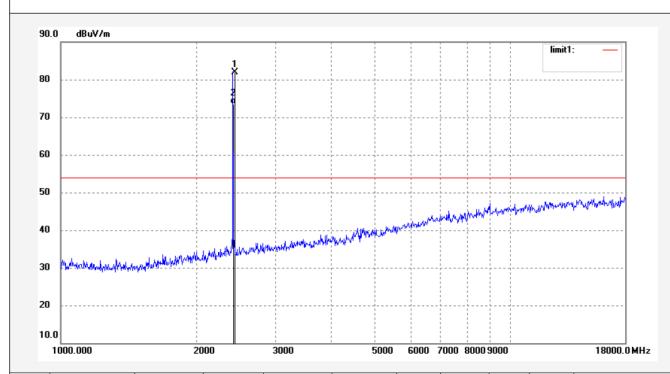
Model: TX-1016

Manufacturer: Industries

Note: Report No.:ATE20151289

Polarization: Horizontal Power Source: DC 6V

Date: 2015/06/24
Time: 20:29:17
Engineer Signature:
Distance: 3m



| No. | Freq.<br>(MHz) | Reading<br>(dBuV/m) | Factor<br>(dB) | Result<br>(dBuV/m) |        | Margin<br>(dB) | Detector | Height (cm) | Degree<br>(deg.) | Remark |  |
|-----|----------------|---------------------|----------------|--------------------|--------|----------------|----------|-------------|------------------|--------|--|
| 1   | 2440.000       | 89.87               | -7.87          | 82.00              | 114.00 | 32.00          | peak     |             |                  |        |  |
| 2   | 2440.000       | 81.37               | -7.87          | 73.50              | 94.00  | 20.50          | AVG      |             |                  |        |  |



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Page 32 of 34

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Report No.: ATE20151289

Polarization: Horizontal
Power Source: DC 6V

Date: 2015/06/24
Time: 20:30:46
Engineer Signature:
Distance: 3m

Temp.( C)/Hum.(%) 25 C / 55 % EUT: Ai Drone Mode: TX 2473MHz

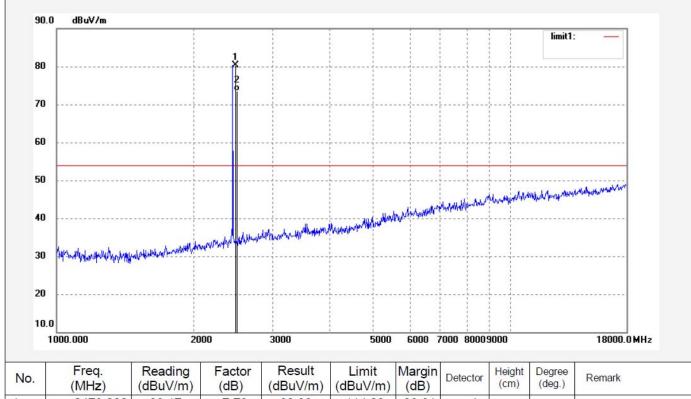
Job No.: STAR2015 #963

Test item: Radiation Test

Standard: FCC Class B 3M Radiated

Model: TX-1016

Manufacturer: Industries



| No. | Freq.<br>(MHz) | Reading (dBuV/m) | Factor<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height (cm) | Degree<br>(deg.) | Remark |
|-----|----------------|------------------|----------------|--------------------|-------------------|----------------|----------|-------------|------------------|--------|
| 1   | 2473.000       | 88.17            | -7.78          | 80.39              | 114.00            | 33.61          | peak     | 2           |                  |        |
| 2   | 2473.000       | 81.22            | -7.78          | 73.44              | 94.00             | 20.56          | AVG      | 0           |                  |        |





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

Report No.: ATE20151289

Page 33 of 34

Job No.: STAR2015 #964 Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Ai Drone Mode: TX 2473MHz Model: TX-1016

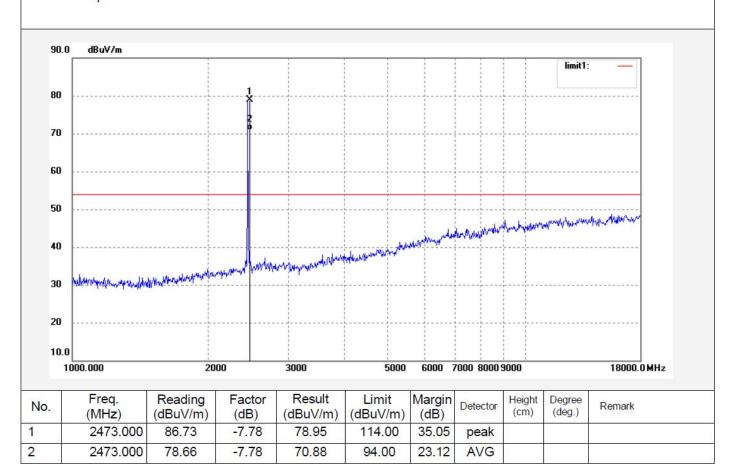
Manufacturer: Industries

Report No.:ATE20151289 Note:

Polarization: Vertical

Power Source: DC 6V Date: 2015/06/24 Time: 20:32:20

Engineer Signature: Distance: 3m





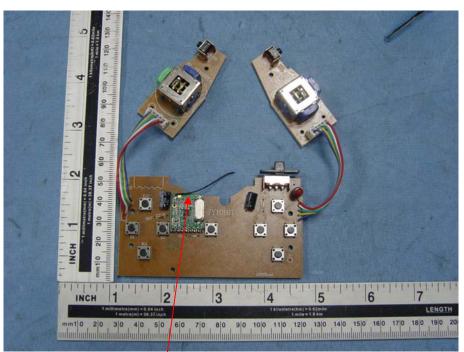
## 8. ANTENNA REQUIREMENT

#### 8.1. 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.

#### 8.2. Antenna Construction

Device is equipped with unique antenna, which isn't displaced by other antenna. Therefore, the equipment complies with the antenna requirement of Section 15.203.



Antenna