

## **CTC** Laboratories, Inc.

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| Т   | EST REPORT  |                         |  |  |
|---|---|-------------------------|--|--|
| Report No. ·····:   | CTC20231659E02  |                         |  |  |
| FCC ID  | 2APN5SNZB06P  |                         |  |  |
| IC:   | 29127-SNZB06P   |                         |  |  |
| Applicant:  | Shenzhen Sonoff Technologies Co.                                      | ,Ltd.                   |  |  |
| Address   | 3F & 6F, Bldg A, No. 663, Bulong Rd, China                            | Shenzhen, Guangdong,    |  |  |
| Manufacturer:   | Shenzhen Sonoff Technologies Co.,Ltd                                  | d.                      |  |  |
| Address   | 3F & 6F, Bldg A, No. 663, Bulong Rd, China                            | Shenzhen, Guangdong,    |  |  |
| Product Name:   | Zigbee Human Presence Sensor  |                         |  |  |
| Trade Mark······  | Sonoff  |                         |  |  |
| Model/Type reference······:   | SNZB-06P  |                         |  |  |
| Listed Model(s) ······  | /   |                         |  |  |
| Standard:   | FCC CFR Title 47 Part 15 Subpart C Section 15.249<br>RSS-210 Issue 10 |                         |  |  |
| Date of receipt of test sample:   | Aug. 2, 2023  |                         |  |  |
| Date of testing   | Aug. 2, 2023 to Aug. 15, 2023   |                         |  |  |
| Date of issue   | Aug. 16, 2023   |                         |  |  |
| Result:   | PASS  |                         |  |  |
| Compiled by:  |   | T: Jima                 |  |  |
| (Printed name+signature)  | Jim Jiang   | Jim Jiang<br>Zric zhang |  |  |
| Supervised by:  |   | Printer , shang         |  |  |
| (Printed name+signature)  | Eric Zhang  | BACZ                    |  |  |
|   |   | 1 0                     |  |  |
| Approved by:  |   | Jemas                   |  |  |
| (Printed name+signature)  | Totti Zhao  | /                       |  |  |
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should not use it to claim product endorsement by CTC. The test results in the report only apply to the tested sample. The test report shall be invalid without all the signatures of testing engineers, reviewer and approver. Any objections must be raised to CTC within 15 days since the date when the report is received. It will not be taken into consideration beyond this limit. The test report merely correspond to the test sample.



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# **1. TEST SUMMARY**

# 1.1. Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.249: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz.

RSS-210 Issue 10: Licence-Exempt Radio Apparatus: Category I Equipment

**RSS-Gen Issue 5:** General Requirements for Compliance of Radio Apparatus.

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

## **1.2. Report Version**

| Revised No. | Date of issue | Description |
|-------------|---------------|-------------|
| 01          | Aug. 16, 2023 | Original    |
|             |               |             |
|             |               |             |

## **1.3. Test Description**

| FCC Part 15 Subpart C (15.249) / RSS-210 Issue 10 |                  |               |        |           |  |
|---|------------------|---------------|--------|-----------|--|
| Test Item   | Standard Section |               | Result | Test      |  |
| rest nem  | FCC              | IC            | Result | Engineer  |  |
| Antenna Requirement                               | 15.203           | RSS-Gen 6.8   | Pass   | Jim Jiang |  |
| AC Power Line Conducted<br>Emissions              | 15.207           | RSS-Gen 8.8   | Pass   | Jim Jiang |  |
| Occupied Bandwidth                                | 15.215/15.249    | N/A           | Pass   | Jim Jiang |  |
| Spurious Emissions                                | 15.209/15.249(a) | RSS-210 F.1.e | Pass   | Jim Jiang |  |
| Band edge Emissions                               | 15.205/15.249(d) | N/A           | Pass   | Jim Jiang |  |

Note:

1. The measurement uncertainty is not included in the test result.

2. N/A: means this test item is not applicable for this device according to the technology characteristic of device.



## 1.4. Test Facility

## CTC Laboratories, Inc.

Add: 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

#### Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

#### A2LA-Lab Cert. No.: 4340.01

CTC Laboratories, Inc. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for r the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

#### Industry Canada (Registration No.: 9783A, CAB Identifier: CN0029)

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

#### FCC (Registration No.: 951311, Designation Number CN1208)

CTC Laboratories, Inc. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained inour files. Registration 951311, Aug 26, 2017.



## **1.5. Measurement Uncertainty**

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement characteristics; Part 2" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the CTC Laboratories, Inc. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device. Below is the best measurement capability for CTC Laboratories, Inc.

| Test Items                                      | Measurement Uncertainty                     | Notes |
|---|---|-------|
| DTS Bandwidth                                   | ±0.0196%                                    | (1)   |
| Maximum Conducted Output Power                  | ±0.686 dB                                   | (1)   |
| Maximum Power Spectral Density Level            | ±0.743 dB                                   | (1)   |
| Band-edge Compliance                            | ±1.328 dB                                   | (1)   |
| Unwanted Emissions In Non-restricted Freq Bands | 9kHz-1GHz: ±0.746dB<br>1GHz-26GHz: ±1.328dB | (1)   |
| Conducted Emissions 9kHz~30MHz                  | ±3.08 dB                                    | (1)   |
| Radiated Emissions 30~1000MHz                   | ±4.51 dB                                    | (1)   |
| Radiated Emissions 1~18GHz                      | ±5.84 dB                                    | (1)   |
| Radiated Emissions 18~40GHz                     | ±6.12 dB                                    | (1)   |

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

# **1.6. Environmental Conditions**

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

| Temperature:       | 15 °C to 35 °C |
|--------------------|----------------|
| Relative Humidity: | 20 % to 75 %   |
| Air Pressure:      | 101 kPa        |



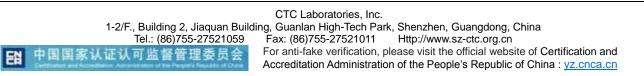
# 2. GENERAL INFORMATION

## 2.1. Client Information

| Applicant:    | Shenzhen Sonoff Technologies Co.,Ltd.                           |
|---------------|---|
| Address:      | 3F & 6F, Bldg A, No. 663, Bulong Rd, Shenzhen, Guangdong, China |
| Manufacturer: | Shenzhen Sonoff Technologies Co.,Ltd.                           |
| Address:      | 3F & 6F, Bldg A, No. 663, Bulong Rd, Shenzhen, Guangdong, China |

# 2.2. General Description of EUT

| Product Name:         | Zigbee Human Presence Sensor |
|-----------------------|------------------------------|
| Trade Mark:           | Sonoff                       |
| Model/Type reference: | SNZB-06P                     |
| Listed Model(s):      | 1                            |
| Model Difference:     | 1                            |
| Power Supply:         | DC5V 1A                      |
| Hardware Version:     | V1.6                         |
| Software Version:     | V1.0.0                       |
| 5.8GHz Specification  |                              |
| Modulation:           | FMCW                         |
| Operation Frequency:  | 5725-5875MHz                 |
| Channel Number:       | 1                            |
| Antenna Type:         | Patch Antenna                |
| Antenna Gain:         | 2.0dBi                       |





## 2.3. Accessory Equipment Information

| Equipment Information     |                   |              |              |  |  |
|---------------------------|-------------------|--------------|--------------|--|--|
| Name                      | Model             | S/N          | Manufacturer |  |  |
| Notebook                  | ThinkPad T460s    | /            | Lenovo       |  |  |
| Cable Information         | Cable Information |              |              |  |  |
| Name                      | Shielded Type     | Ferrite Core | Length       |  |  |
| USB Cable                 | Unshielded        | NO           | 150cm        |  |  |
| Test Software Information |                   |              |              |  |  |
| Name                      | Version           | /            | /            |  |  |
| /                         | /                 | 1            | /            |  |  |

# 2.4. Operation State

The EUT has been tested under test mode condition. The Applicant provides software to control the EUT for staying in continuous transmitting and receiving mode for testing.

Operation Frequency List:

| Channel | Frequency (MHz) |
|---------|-----------------|
| 1       | 5795            |

Note: The display in grey were the channel selected for testing.

#### Test Mode:

| For RF test items  |
|--|
| The engineering test program was provided and enabled to make EUT continuous transmit. (duty cycle>98%).   |
| For AC power line conducted emissions:   |
| The EUT was set to connect with large package sizes transmission.  |
| For Radiated spurious emissions test item:   |
| The engineering test program was provided and enabled to make EUT continuous transmit. The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report. |





## 2.5. Measurement Instruments List

| Tonsce | Tonscend RF Test System                |              |           |            |                  |  |
|--------|--|--------------|-----------|------------|------------------|--|
| Item   | Test Equipment                         | Manufacturer | Model No. | Serial No. | Calibrated Until |  |
| 1      | MXA Signal Analyzer                    | Keysight     | N9020A    | MY46471737 | Dec. 16, 2023    |  |
| 2      | Spectrum Analyzer                      | R&S          | FSU26     | 100105     | Dec. 16, 2023    |  |
| 3      | Spectrum Analyzer                      | R&S          | FSV40-N   | 101331     | Mar. 14, 2024    |  |
| 4      | MXG Vector<br>Signal Generator         | Agilent      | N5182A    | MY47420864 | Dec. 16, 2023    |  |
| 5      | PSG Analog Signal<br>Generator         | Agilent      | E8257D    | MY46521908 | Dec. 16, 2023    |  |
| 6      | Power Sensor                           | Keysight     | U2021XA   | MY55130004 | Mar. 14, 2024    |  |
| 7      | Power Sensor                           | Keysight     | U2021XA   | MY55130006 | Mar. 14, 2024    |  |
| 8      | Wideband Radio<br>Communication Tester | R&S          | CMW500    | 102414     | Dec. 16, 2023    |  |
| 9      | High and low temperature box           | ESPEC        | MT3035    | /          | Mar. 24, 2024    |  |
| 10     | JS1120 RF Test System                  | TONSCEND     | v2.6      | /          | /                |  |

| Radiate | d Emission (3m chamber 2) | )            |            |            |                  |
|---------|---------------------------|--------------|------------|------------|------------------|
| Item    | Test Equipment            | Manufacturer | Model No.  | Serial No. | Calibrated Until |
| 1       | Trilog-Broadband Antenna  | Schwarzbeck  | VULB 9168  | 9168-1013  | Dec. 07, 2024    |
| 2       | Horn Antenna              | Schwarzbeck  | BBHA 9120D | 9120D-648  | Dec. 07, 2024    |
| 3       | Loop Antenna              | ETS          | 6507       | 1446       | Dec. 13, 2023    |
| 4       | Spectrum Analyzer         | R&S          | FSU26      | 100105     | Dec. 16, 2023    |
| 5       | Spectrum Analyzer         | R&S          | FSV40-N    | 101331     | Mar. 14, 2024    |
| 6       | Pre-Amplifier             | SONOMA       | 310        | 186194     | Dec. 16, 2023    |
| 7       | Low Noise Pre-Amplifier   | EMCI         | EMC051835  | 980075     | Dec. 16, 2023    |
| 8       | Test Receiver             | R&S          | ESCI7      | 100967     | Dec. 16, 2023    |
| 9       | 3m chamber 2              | Frankonia    | EE025      | /          | Oct. 23, 2024    |

| Conduc | ted Emission      |              |           |                |                  |
|--------|-------------------|--------------|-----------|----------------|------------------|
| Item   | Test Equipment    | Manufacturer | Model No. | Serial No.     | Calibrated Until |
| 1      | LISN              | R&S          | ENV216    | 101112         | Dec. 16, 2023    |
| 2      | LISN              | R&S          | ENV216    | 101113         | Dec. 16, 2023    |
| 3      | EMI Test Receiver | R&S          | ESCS30    | 100353         | Dec. 16, 2023    |
| 4      | ISN CAT6          | Schwarzbeck  | NTFM 8158 | CAT6-8158-0046 | Dec. 16, 2023    |
| 5      | ISN CAT5          | Schwarzbeck  | NTFM 8158 | CAT5-8158-0046 | Dec. 16, 2023    |

Note: 1. The Cal. Interval was one year.

2. The Cal. Interval was three years of the antenna.

3. The cable loss has been calculated in test result which connection between each test instruments.



# 3. TEST ITEM AND RESULTS

# 3.1. Conducted Emission

## <u>Limit</u>

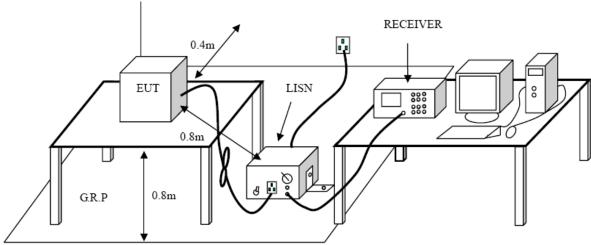
## FCC CFR Title 47 Part 15 Subpart C Section 15.207/ RSS - Gen 8.8

|                       | Limit (dBuV) |           |  |  |
|-----------------------|--------------|-----------|--|--|
| Frequency range (MHz) | Quasi-peak   | Average   |  |  |
| 0.15-0.5              | 66 to 56*    | 56 to 46* |  |  |
| 0.5-5                 | 56           | 46        |  |  |
| 5-30                  | 60           | 50        |  |  |

\* Decreases with the logarithm of the frequency.

## **Test Configuration**

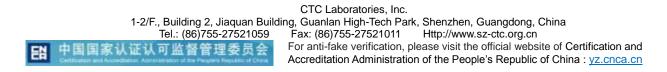
## Test Procedure



- 1. The EUT was setup according to ANSI C63.10:2013 requirements.
- 2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
- The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm / 50 μH coupling impedance for the measuring equipment.
- 4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
- 5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
- 6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
- 7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
- 8. During the above scans, the emissions were maximized by cable manipulation.

## Test Mode

Please refer to the clause 2.4.

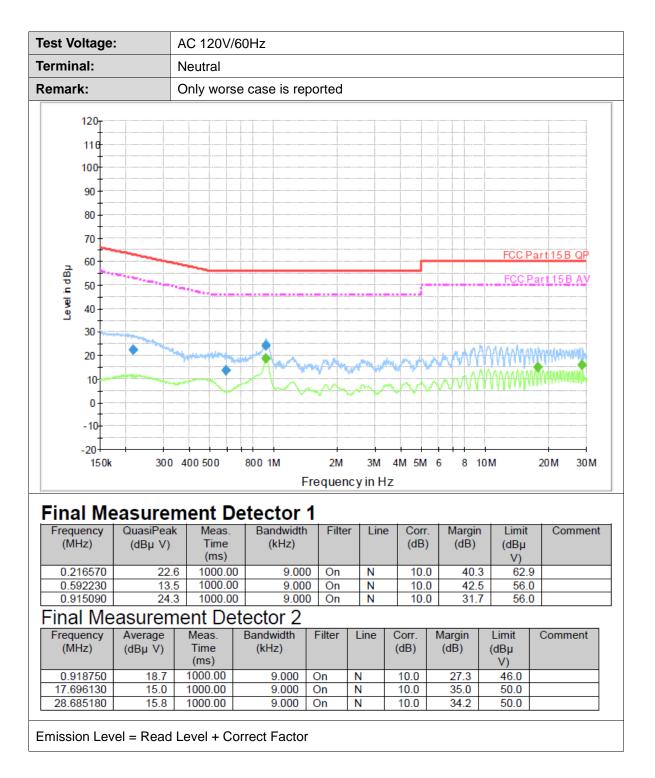




| lest vo      | oltage           | :  | AC 120V/                    | 60Hz                 |          |               |                                       |              |              |             |
|--------------|------------------|--|-----------------------------|----------------------|----------|---------------|---------------------------------------|--------------|--------------|-------------|
| Termin       | al:              |  | Line                        |                      |          |               |                                       |              |              |             |
| Remar        | k:               |  | Only worse case is reported |                      |          |               |                                       |              |              |             |
|              | 120 <del>.</del> |  |                             |                      |          |               |                                       |              |              |             |
|              | 120              |  |                             |                      |          |               |                                       |              |              |             |
|              | 110              |  |                             |                      |          |               |                                       |              |              |             |
|              | 100              |  |                             |                      |          |               |                                       |              |              |             |
|              | 90               |  |                             |                      | İ        | i             | İİ                                    |              |              |             |
|              | 80               |  |                             |                      |          |               |                                       |              |              |             |
|              | 70               |  |                             |                      |          |               |                                       |              |              |             |
|              | 60               |  |                             |                      |          |               |                                       |              | FCC F        | art15B QP   |
| Level in dBµ | -                |  |                             |                      |          |               |                                       |              | FCC F        | Part 15 BAV |
| Ľ.           | 50               |  | ·                           |                      |          |               |                                       |              |              |             |
| Lew          | 40               |  |                             |                      |          |               |                                       |              | _            |             |
|              | 30               | and the second s |                             |                      |          |               |                                       |              |              |             |
|              | 20               | <b>**</b>  | -                           |                      |          |               |                                       |              | WANNAN       | www.white   |
|              | 10               |  |                             | Marrie Marrie Marrie | www.hwim | with the post |                                       |              |              |             |
|              | +                |  |                             |                      | ~~~~     |               | $\rightarrow \rightarrow \rightarrow$ | ~~~vv        | WWWWW        | VALATION    |
|              | 0                |  |                             |                      |          |               |                                       |              | _            |             |
|              | -10              |  |                             |                      |          |               |                                       |              |              |             |
|              | -20-             |  | 400 500                     | 800 1M               | 2M       |               | 4M 5M                                 | 6 8 1        |              | 20M 30M     |
|              | ISUK             | 300  | 400 500                     |                      |          | ncy in H      |                                       | 0 0          |              | 20101 30101 |
| Fina         | l Me             | asure  | ment D                      | etector              |          |               |                                       |              |              |             |
| Frequ        | iency            | QuasiPeal  |                             | Bandwidth            |          | er Lin        | e Corr                                | . Margir     | n Limit      | Comment     |
| (MI          | Hz)              | (dBµ V)  | Time<br>(ms)                | (kHz)                |          |               | (dB)                                  | ) (dB)       | (dBµ<br>V)   |             |
| 0.2          | 18300            | 22.  |                             | 0 9.00               | 0 On     | L1            | 9.                                    | 7 40.        |              | 9           |
|              | 43150            | 21.  |                             |                      |          | L1            | 9.                                    |              |              |             |
| 0.9          | 11440            | 20.  | 1 1000.0                    | ul 9.00              | 0 On     | L1            | 9.                                    | 1 35.        | 9 56.        | וי          |
| Fina         | I Me             | asuren   | nent De                     | etector 2            |          |               |                                       |              |              |             |
|              |                  | Average  | Meas.                       | Bandwidth            | Filter   | Line          | Corr.                                 | Margin       | Limit        | Comment     |
| (MI          | 12)              | (dBµ V)  | Time<br>(ms)                | (kHz)                |          |               | (dB)                                  | (dB)         | (dBµ<br>V)   |             |
|              | 18750            | 14.6   | 1000.00                     | 9.000                | On       | L1            | 9.7                                   | 31.4         | 46.0         |             |
| 10.2         | 82370<br>17920   | 11.1<br>12.2   | 1000.00<br>1000.00          | 9.000<br>9.000       | On       | L1            | 9.8<br>10.0                           | 38.9<br>37.8 | 50.0<br>50.0 |             |









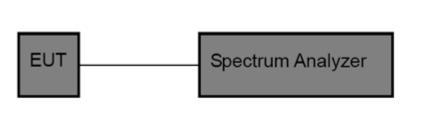


## 3.2. Occupied Bandwidth

<u>Limit</u>

Operation frequency range 5725~5875MHz.

## **Test Configuration**



#### Test Procedure

- 1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT transmit continuously
- 3. Use the following spectrum analyzer settings:
  - Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a test channel
    - RBW  $\geq$  1% of the 20 dB bandwidth, VBW  $\geq$  RBW
  - Sweep = auto, Detector function = peak, Trace = max hold
- 4. Measure and record the results in the test report.

## Test Mode

Please refer to the clause 2.4

#### Test Results

| Channel | 20dB Bandwidth<br>(MHz) | Occupied Bandwidth<br>(MHz) | Result |
|---------|-------------------------|-----------------------------|--------|
| 1       | 124.438                 | 121.664                     | Pass   |





EN

| Spectrum               |                       |   |   |                          |  |
|------------------------|-----------------------|---|---|--------------------------|--|
| Ref Level<br>Att       | 20.00 dB<br>30 d      |   |   | Iode Auto FFT            | х<br>  |
| 10 dBm                 | T1<br>M1<br>D1 -25.19 | 0 dBm   | ······································          | M2[1]<br>Occ Bw<br>M1[1] | -6.19 dBn<br>5.7636530 GH<br>121.663833617 MH<br>-25.90 dBn<br>T2<br>5.7296660 GH<br>01<br>4 |
| Start 5.7 G            | Hz                    |   | 10001 pt  | s                        | Stop 5.89 GHz  |
| Marker                 |                       |   |   |                          |  |
| Type Ref               | Trc 1                 | X-value<br>5.729666 GHz                                       | Y-value<br>-25.90 dBm                           | Function                 | Function Result  |
| T1<br>T2<br>D1 M<br>M2 | 1<br>1<br>1 1<br>1    | 5.7311474 GHz<br>5.8528112 GHz<br>124.438 MHz<br>5.763653 GHz | -6.76 dBm<br>-6.30 dBm<br>-0.22 dB<br>-6.19 dBm | Occ Bw                   | 121.663833617 MHz  |
| <u> </u>               | 1                     |   |   | Measuring                | 08.09.2023   |



# 3.3. Radiated Spurious Emissions and Band Edge Emission

<u>Limit</u>

#### FCC CFR Title 47 Part 15 Subpart C Section 15.209&15.249(a)/ RSS - 210 F.1.e

| Frequency   | Field Strength     | Measurement Distance |
|-------------|--------------------|----------------------|
| (MHz)       | (microvolts/meter) | (meters)             |
| 0.009~0.490 | 2400/F (kHz)       | 300                  |
| 0.490~1.705 | 24000/F (kHz)      | 30                   |
| 1.705~30.0  | 30                 | 30                   |
| 30~88       | 100                | 3                    |
| 88~216      | 150                | 3                    |
| 216~960     | 200                | 3                    |
| 960~1000    | 500                | 3                    |

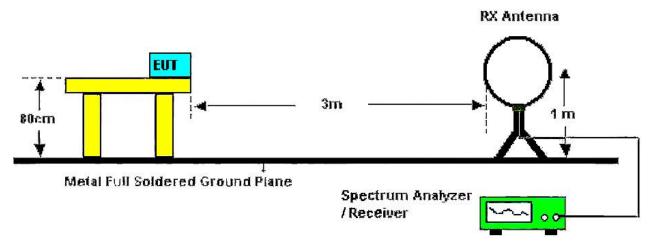
|                       | dBµV/m | (at 3 meters) |
|-----------------------|--------|---------------|
| Frequency Range (MHz) | Peak   | Average       |
| Above 1000            | 74     | 54            |

#### Note:

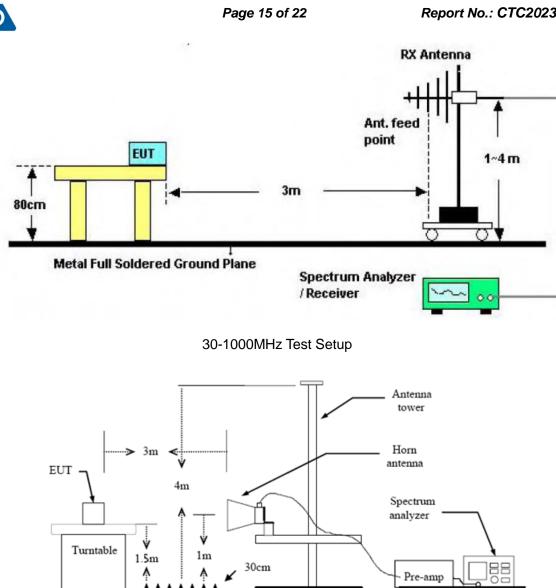
(1) The tighter limit applies at the band edges.

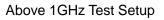
(2) Emission Level (dBuV/m)=20log Emission Level (uV/m).

## Test Configuration



Below 30MHz Test Setup





## **Test Procedure**

1. The EUT was setup and tested according to ANSI C63.10:2013

2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level. 3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.

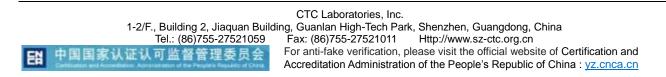
For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower 4. (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.

- 5. Set to the maximum power setting and enable the EUT transmit continuously.
- Use the following spectrum analyzer settings 6.
- Span shall wide enough to fully capture the emission being measured;
- (2) 9k 150kHz:

RBW=300 Hz, VBW=1 kHz, Sweep=auto, Detector function=peak, Trace=max hold (3) 0.15M – 30MHz:

RBW=10 kHz, VBW=30 kHz, Sweep=auto, Detector function=peak, Trace=max hold (4) 30M - 1 GHz:

RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold; If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the





quasi-peak detector and reported.
(5) From 1 GHz to 10<sup>th</sup> harmonic:
RBW=1MHz, VBW=3MHz Peak detector for Peak value.
RBW=1MHz, VBW=10Hz with Peak Detector for Average Value.

## Test Mode

Please refer to the clause 2.4.

## Test Result

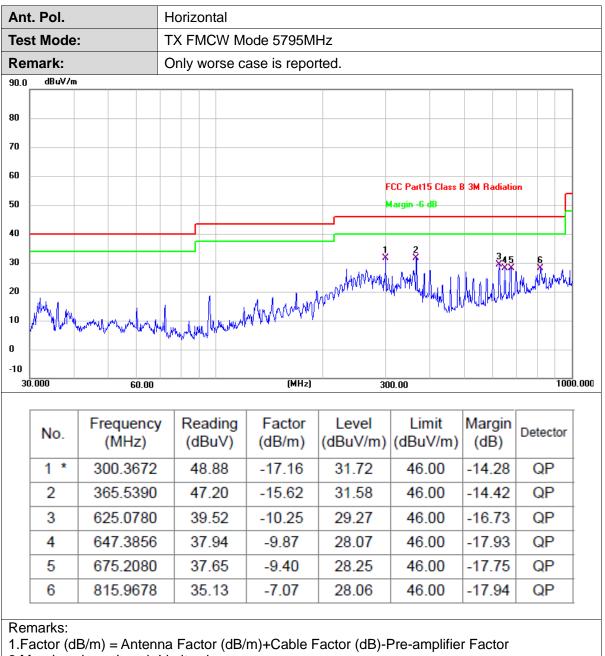
#### 9 KHz~30 MHz

From 9 KHz to 30 MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

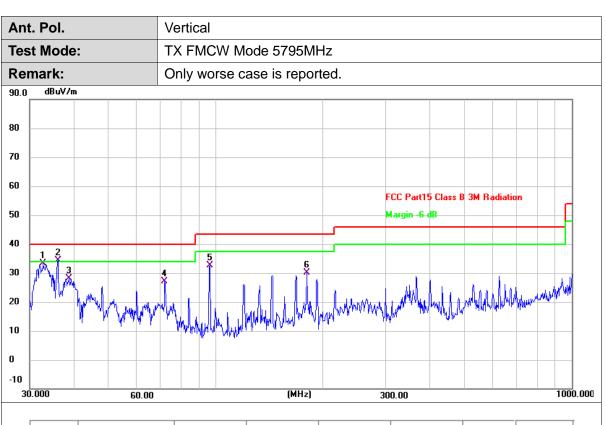


## 30MHz-1GHz



2.Margin value = Level -Limit value





| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Factor<br>(dB/m) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector |
|-----|--------------------|-------------------|------------------|-------------------|-------------------|----------------|----------|
| 1   | 32.7486            | 51.51             | -18.14           | 33.37             | 40.00             | -6.63          | QP       |
| 2 * | 36.0007            | 52.18             | -17.91           | 34.27             | 40.00             | -5.73          | QP       |
| 3   | 38.7517            | 45.61             | -17.53           | 28.08             | 40.00             | -11.92         | QP       |
| 4   | 71.8320            | 47.93             | -20.77           | 27.16             | 40.00             | -12.84         | QP       |
| 5   | 96.0985            | 53.84             | -21.27           | 32.57             | 43.50             | -10.93         | QP       |
| 6   | 180.0164           | 48.99             | -18.77           | 30.22             | 43.50             | -13.28         | QP       |

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value



| Ant     | t. Pol. |                    | Horizontal                      |                  |                   |                   |                |          |
|---------|---------|--------------------|---------------------------------|------------------|-------------------|-------------------|----------------|----------|
| Tes     | st Mode | :                  | TX FMCW Mode 5795MHz            |                  |                   |                   |                |          |
| Remark: |         |                    | No report for<br>prescribed lin |                  | n which mo        | re than 20 d      | B below        | the      |
|         | No.     | Frequency<br>(MHz) | (dBuV)                          | Factor<br>(dB/m) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector |
|         | 1       | 1992.833           | 46.26                           | -5.48            | 40.78             | 74.00             | -33.22         | peak     |
|         | 2       | 4419.333           | 41.75                           | 1.36             | 43.11             | 74.00             | -30.89         | peak     |
|         | 3       | 5607.667           | 40.51                           | 4.15             | 44.66             | 74.00             | -29.34         | peak     |
|         | 4       | 6608.167           | 38.94                           | 7.67             | 46.61             | 74.00             | -27.39         | peak     |
|         | 5       | 8026.500           | 38.57                           | 10.86            | 49.43             | 74.00             | -24.57         | peak     |
|         | 6 *     | 10828.667          | 38.50                           | 14.58            | 53.08             | 74.00             | -20.92         | peak     |

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

| Ant.                            | nt. Pol. |                    | Vertical                     |                  |                   |                   |                |          |
|---------------------------------|----------|--------------------|------------------------------|------------------|-------------------|-------------------|----------------|----------|
| Test Mode: TX FMCW Mode 5795MHz |          |                    |                              |                  |                   |                   |                |          |
| Remark:                         |          |                    | No report for prescribed lin |                  | on which mo       | re than 20 d      | B below        | the      |
|                                 | No.      | Frequency<br>(MHz) | Reading<br>(dBuV)            | Factor<br>(dB/m) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector |
|                                 | 1        | 1329.667           | 46.53                        | -7.19            | 39.34             | 74.00             | -34.66         | peak     |
| F                               | 2        | 1992.833           | 54.43                        | -5.48            | 48.95             | 74.00             | -25.05         | peak     |
|                                 | 3        | 5143.833           | 40.41                        | 2.92             | 43.33             | 74.00             | -30.67         | peak     |
|                                 | 4        | 8908.167           | 38.86                        | 11.11            | 49.97             | 74.00             | -24.03         | peak     |
|                                 | 5        | 10054.333          | 38.94                        | 13.08            | 52.02             | 74.00             | -21.98         | peak     |
|                                 | 6 *      | 10790.333          | 38.42                        | 14.50            | 52.92             | 74.00             | -21.08         | peak     |

## emarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



|                                       |                  | Horizor  | ntal        |                  |             |      |              |                |                |                         |
|---------------------------------------|------------------|--|-------------|------------------|-------------|------|--------------|----------------|----------------|-------------------------|
| est Mode                              | •                |  |             | de 5795N         |             |      |              |                |                |                         |
| emark:                                |                  | No report for the emission which more than 20 dB below the prescribed limit. |             |                  |             |      |              | the            |                |                         |
| 0.0 dBuV/m                            |                  | 1 1  |             |                  |             |      |              |                |                |                         |
| o                                     |                  |  |             |                  |             |      |              |                |                |                         |
|                                       |                  |  |             |                  |             |      |              |                |                |                         |
| 0                                     |                  |  |             |                  |             |      |              |                |                |                         |
| · · · · · · · · · · · · · · · · · · · | 2                | ~~~ _~~  | ۹ <b>۳</b>  |                  |             |      |              |                |                |                         |
|                                       |                  |  | ليحسكم      | l                | γγ          |      | FCC Pa       | ™<br>at 15C 3I | M Above-1G     | Peak                    |
|                                       |                  |  |             |                  |             |      |              |                |                |                         |
|                                       |                  |  |             |                  |             |      |              | $\rightarrow$  |                |                         |
|                                       | 1<br>            |  |             |                  |             |      | FCC Pa       | rt 150 3       | M Above-1G     | AV                      |
| the proprieties                       | www              |  |             |                  |             |      |              | Nee            | 3              | mpanyanth the frankaine |
|                                       |                  |  |             |                  |             |      |              |                |                |                         |
|                                       |                  |  |             |                  |             |      |              |                |                |                         |
|                                       |                  |  |             |                  |             |      |              |                |                |                         |
| ·                                     |                  |  |             |                  |             |      |              |                |                |                         |
| .0<br>5700.000 57                     | 720.00 5740.     | 00 5760.00   | ) 5780      | ).00 (MHz        | 500         | 0.00 | 5840.00      |                | 60.00 58       | 80.00 5900              |
|                                       |                  |  |             |                  |             |      |              |                |                |                         |
| No.                                   | Frequen<br>(MHz) | -  | ding<br>uV) | Factor<br>(dB/m) | Lev<br>(dBu |      | Lin<br>(dBu\ |                | Margin<br>(dB) | Detector                |
| 1                                     | 5725.00          | 0 48   | .34         | 0.39             | 48.         | 73   | 74.          | 00             | -25.27         | peak                    |
| 2 *                                   | 5731.52          | 0 85   | .91         | 0.40             | 86.         | 31   | 74.          | 00             | 12.31          | peak                    |
|                                       | 5875.00          | 0 46   | .75         | 0.78             | 47.         | 53   | 74.          | 00             | -26.47         | peak                    |

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2.Margin value = Level -Limit value



| nt. Pol.                               |                 | `         | Vertical   |               |         |               |     |                     |                   |     |                |      |             |                 |                |  |
|--|-----------------|-----------|--|---------------|---------|---------------|-----|---------------------|-------------------|-----|----------------|------|-------------|-----------------|----------------|--|
| est Mode:                              |                 |           | TX FMCW Mode 5795MHz   |               |         |               |     |                     |                   |     |                |      |             |                 |                |  |
| emark:                                 |                 |           | No report for the emission which more than 20 dB below the prescribed limit. |               |         |               |     |                     |                   |     |                |      |             |                 |                |  |
| .0 dBuV/m                              | 1               |           |  |               |         |               |     |                     |                   |     |                |      |             |                 |                |  |
|  |                 |           |  |               |         |               |     |                     |                   |     |                |      |             |                 |                |  |
|  |                 |           |  |               |         |               |     |                     |                   |     |                |      |             |                 |                |  |
|  | 2               |           |  |               |         |               |     |                     |                   |     |                |      |             |                 |                |  |
|  |                 |           | holmude.   |               | h       |               | v   |                     | J.                |     | ليسله          |      |             |                 |                |  |
|  |                 |           |  |               |         |               |     |                     |                   | FC  | C Part 15      | C 31 | M Above     | e-16 I          | Peak           |  |
|  |                 |           |  |               |         |               |     |                     |                   |     |                | 1    |             |                 |                |  |
|  |                 |           |  |               |         |               |     |                     |                   | FC  | C Part 15      |      | M Above     | -167            | ۵V             |  |
| and an information of the state of the | 1               |           |  |               |         |               |     |                     |                   |     |                | h    | . Austa     |                 | manunalanteran |  |
|  |                 |           |  |               |         |               |     |                     |                   |     |                |      |             |                 |                |  |
|  |                 |           |  |               |         |               |     |                     |                   |     |                |      |             |                 |                |  |
|  |                 |           |  |               |         |               |     |                     |                   |     |                |      |             |                 |                |  |
|  |                 |           |  |               |         |               |     |                     |                   |     |                |      |             |                 |                |  |
|  |                 |           |  |               |         |               |     |                     |                   |     |                |      |             |                 |                |  |
| )                                      |                 |           |  |               |         |               |     |                     |                   |     |                |      |             |                 |                |  |
|  | 720.00 574      | 0.00      | 5760.  | 00 5          | 5780.00 | ) (MI         | lz) | 582                 | D.00              | 584 | 0.00           | 586  | 50.00       | 58              | 80.00 59       |  |
|  | Frequer<br>(MHz | ncy       | Re   | ading<br>BuV) |         | Facto         | r   | 582<br>Lev<br>(dBu) | vel               |     | Limit          |      | Març        | gin             | 80.00 59       |  |
| 5700.000 5                             | Freque          | ncy<br>ː) | Re<br>(d   | ading         | (       | Facto         | r   | Lev                 | //m)              | (dl | Limit          |      | Març        | gin<br>3)       |                |  |
| No.                                    | Freque<br>(MHz  | ncy<br>ː) | Re<br>(d   | ading<br>BuV) | <br>((  | Facto<br>dB/m | r   | Lev<br>(dBu\        | vel<br>//m)<br>39 | (dl | Limit<br>3uV/n |      | Març<br>(dB | gin<br>3)<br>61 | Detector       |  |

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1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



## 3.4. Antenna Requirement

#### **Requirement**

#### FCC CFR Title 47 Part 15 Subpart C 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. The use of a permanently attached antenna or of antenna that uses a unique coupling to the intentional radiator, 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.

#### FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i):

(i) Systems operating in the 2400~2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

#### Test Result

The directional gain of the antenna less than 6dBi, please refer to the EUT internal photographs antenna photo.