



Certificate #5376.01



**EUROFINS ELECTRICAL TESTING SERVICE (SHENZHEN) CO., LTD.**

# **RADIO TEST - REPORT**

**FCC Compliance Test Report for**

**Product name: wireless live streaming camera**

**Model name: Q03ZW**

**FCC ID: 2A3YW-Q03ZW**

**Test Report Number: EFGX24060480-IE-03-E01**



Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.  
1st Floor, Building 2, Chungu, Meisheng Huigu Science and Technology Park,  
No. 83 Dabao Road, Bao'an District, Shenzhen. P.R.China

Phone: +86-0755-829118671  
Fax: +86-0755-82910749

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## 1 General Information

### 1.1 Notes

The results of this test report relate exclusively to the item tested as specified in chapter “Description of test item” and are not transferable to any other test items.

Eurofins Electrical Testing Service (Shenzhen) Co., Ltd. is not responsible for any generalisations and conclusions drawn from this report. Any modification of the test item can lead to invalidity of test results and this test report may therefore be not applicable to the modified test item.

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#### Operator

2024-10-14

Bruce Zheng / Project Engineer



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| Date | Eurofins-Lab. | Name / Title | Signature |
|------|---------------|--------------|-----------|
|------|---------------|--------------|-----------|

#### Technical responsibility for area of testing:

2024-10-14

Albert Xu / Lab Manager



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| Date | Eurofins-Lab. | Name / Title | Signature |
|------|---------------|--------------|-----------|
|------|---------------|--------------|-----------|

## 1.2 Testing laboratory

Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.

1st Floor, Building 2, Chungu, Meisheng Huigu Science and Technology Park, No. 83 Dabao Road, Bao'an District, Shenzhen. P.R.China.

Telephone : +86-755-82911867

Fax : +86-755-82910749

The Laboratory has passed the Accreditation by the American Association for Laboratory Accreditation (A2LA). The Accreditation number is 5376.01

The Laboratory has been listed by industry Canada to perform electromagnetic emission measurements, The CAB identifier is CN0088

## 1.3 Details of applicant

Name : Hangzhou Chingan Tech Co., Ltd.  
Address : 4F, BLDG. 4, 16# XIYUAN YI ROAD HANGZHOU,  
ZHEJIANG, CHINA 310030  
Telephone : ./.  
Fax : ./.

## 1.4 Details of manufacturer

Name : Hangzhou Chingan Tech Co., Ltd.  
Address : 4F, BLDG. 4, 16# XIYUAN YI ROAD HANGZHOU,  
ZHEJIANG, CHINA 310030  
Telephone : ./.  
Fax : ./.

## 1.5 Application details

Date of receipt of application : 2024-06-28  
 Date of receipt of test item : 2024-06-28  
 Date of test : 2024-06-28 to 2024-10-14  
 Date of issue : 2024-10-14

## 1.6 Test item

Product type : wireless live streaming camera  
 Test Model : Q03ZW  
 Sample ID : 240807-04-001  
 Model name : Q03ZW  
 Brand name : ./.  
 Serial number : ./.  
 Hardware Version : 1.0.1  
 Software / Firmware Version : 1.0.45  
 Ratings : DC 5V input by USB port; Battery: DC 3.7V  
 Test voltage : DC 3.7V  
 FCC ID : 2A3YW-Q03ZW  
 PMN : wireless live streaming camera

### RadioTechnical data

Radio Tech. : WLAN 2.4G  
 Modulation : 802.11b(DSSS):CCK,DQPSK,DBPSK  
                   802.11g(OFDM):BPSK,QPSK,16-QAM,64-QAM  
                   802.11n(OFDM):BPSK,QPSK,16-QAM,64-QAM  
                   802.11ac(OFDM):BPSK,QPSK,16-QAM,64-QAM  
                   802.11ax(OFDMA):BPSK,QPSK,16-QAM,64-QAM,256QAM  
 Antenna type : Internal antenna  
 Maximum antenna gain : Ant1: 4.08 dBi  
                               Ant2: 4.08 dBi  
 Additional information :

1. The RF module(FCC ID: 2AATL-6252B-SR) had been certificated and the final product replaces the antenna, so we only test radiated emission for compliance

The above sample(s) and sample information was/were submitted and identified on behalf of the applicant.  
 Eurofins assures objectivity and impartiality of the test, and fulfills the obligation of confidentiality for applicant's commercial information and technical documents.

## 1.7 Test standards

| Test Standards        |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| FCC Part 15 Subpart C | PART 15 - RADIO FREQUENCY DEVICES<br>Subpart C - Intentional Radiators |

### Test Method

- 1: ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
- 2: ANSI C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices.
- 3: KDB558074 D01 15.247 Meas Guidance v05r02

## 2 Technical test

### 2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed.



or

The deviations as specified were ascertained in the course of the tests performed.



### 2.2 Test environment

Ac line conducted

| Environment Parameter | Temperature °C | Relative Humidity |
|-----------------------|----------------|-------------------|
| 101.4 kPa             | 23.7           | 51.9%             |

RF Conducted

| Environment Parameter | Temperature °C | Relative Humidity |
|-----------------------|----------------|-------------------|
| 101.4 kPa             | 24.6           | 62.9%             |

Radiated

| Environment Parameter | Temperature °C | Relative Humidity |
|-----------------------|----------------|-------------------|
| 101.4 kPa             | 24.7           | 53.7%             |

### 2.3 Measurement uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

| System Measurement Uncertainty                               |                                                                                       |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Test Items                                                   | Extended Uncertainty                                                                  |
| Uncertainty in conducted measurements                        | 1.96dB                                                                                |
| Uncertainty for Conducted RF test                            | RF Power Conducted: 1.16dB<br>Frequency test involved:<br>1.05×10 <sup>-7</sup> or 1% |
| Uncertainty for Radiated Emission 9KHz-30MHz                 | 4.56dB                                                                                |
| Uncertainty for Radiated Spurious Emission 30MHz-3000MHz     | Horizontal: 4.46dB;<br>Vertical: 4.54dB;                                              |
| Uncertainty for Radiated Spurious Emission 3000MHz-18000MHz  | Horizontal: 4.42dB;<br>Vertical: 4.41dB;                                              |
| Uncertainty for Radiated Spurious Emission 18000MHz-40000MHz | Horizontal: 4.63dB;<br>Vertical: 4.62dB;                                              |

## 2.4 Test mode

| Operation Frequency each of channel(802.11b/g/n HT 20/ac VHT20/ax HE20) |           |         |           |         |           |         |           |
|-------------------------------------------------------------------------|-----------|---------|-----------|---------|-----------|---------|-----------|
| Channel                                                                 | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 1                                                                       | 2412MHz   | 4       | 2427MHz   | 7       | 2442MHz   | 10      | 2457MHz   |
| 2                                                                       | 2417MHz   | 5       | 2432MHz   | 8       | 2447MHz   | 11      | 2462MHz   |
| 3                                                                       | 2422MHz   | 6       | 2437MHz   | 9       | 2452MHz   |         |           |

| Operation Frequency each of channel(802.11n HT 40/ac VHT40/ax HE40) |           |         |           |         |           |         |           |
|---------------------------------------------------------------------|-----------|---------|-----------|---------|-----------|---------|-----------|
| Channel                                                             | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| --                                                                  | --        | 4       | 2427MHz   | 7       | 2442MHz   | --      | --        |
| --                                                                  | --        | 5       | 2432MHz   | 8       | 2447MHz   | --      | --        |
| 3                                                                   | 2422MHz   | 6       | 2437MHz   | 9       | 2452MHz   | --      | --        |

For 802.11b/g n(HT20) /ac VHT20/ax HE20 (2.4GHz band), the lowest, middle, highest channel numbers of the EUT used and tested in this report are separately 1 (2412MHz), 6 (2437MHz) and 11 (2462MHz).

For 802.11n(HT40) /ac VHT40/ax HE40 (2.4GHz band), the lowest, middle, highest channel numbers of the EUT used and tested in this report are separately 3 (2412MHz), 6 (2437MHz) and 9 (2452MHz).

## 2.5 Test equipment utilized

| EQUIPMENT ID | EQUIPMENT NAME               | MODEL NO.         | CAL. DUE DATE |
|--------------|------------------------------|-------------------|---------------|
| 23-2-13-05   | EMI Test Receiver            | ESR3              | 2025-03-25    |
| 23-2-13-06   | LISN                         | NNLK 8127 RC      | 2025-03-25    |
| 23-2-10-16   | Attenuator                   | VTSD 9561-F       | 2025-03-25    |
| 23-2-10-63   | Temperature & Humidity Meter | COS-03            | 2025-03-25    |
| 23-2-10-65   | Barometer                    | Baro              | 2025-03-25    |
| 23-2-13-12   | Signal Analyzer              | N9010B-544        | 2025-03-25    |
| 23-2-13-13   | BT/WLAN Tester               | CMW270            | 2025-03-25    |
| 23-2-13-14   | Signal Generator             | N5183B-520        | 2025-03-25    |
| 23-2-13-15   | Vector Signal Generator      | N5182B-506        | 2025-03-25    |
| 23-2-10-43   | Switch and Control Unit      | ERIT-E-JS0806-2   | 2025-03-25    |
| 23-2-10-44   | DC power supply              | E3642A            | 2025-03-25    |
| 23-2-10-45   | Temperature test chamber     | SG-80-CC-2        | 2025-03-25    |
| 23-2-10-50   | Temperature & Humidity Meter | COS-03            | 2025-03-25    |
| 23-2-10-66   | Barometer                    | Baro              | 2025-03-25    |
| 23-2-13-01   | EMI Test Receiver            | ESR7              | 2025-03-25    |
| 23-2-13-02   | Signal Analyzer              | N9020B-544        | 2025-03-25    |
| 23-2-12-01   | Active Loop Antenna          | FMZB 1519B        | 2025-06-03    |
| 23-2-12-02   | TRILOG Broadband Antenna     | VULB9168          | 2025-06-03    |
| 23-2-12-03   | Horn Antenna                 | 3117              | 2025-06-03    |
| 23-2-12-04   | Horn Antenna                 | BBHA 9170         | 2025-06-03    |
| 23-2-10-01   | Preamplifier                 | BBV9745           | 2025-03-25    |
| 23-2-10-02   | Preamplifier                 | TAP01018048       | 2025-03-25    |
| 23-2-10-03   | Preamplifier                 | TAP18040048       | 2025-03-25    |
| 23-2-10-62   | Temperature & Humidity Meter | COS-03            | 2025-03-25    |
| 23-2-10-64   | Barometer                    | Baro              | 2025-03-25    |
| 23-2-10-14   | Switch and Control Unit      | ERIT-E-JS0806-SF1 | N/A           |
| 23-2-13-03   | EMI Test Receiver            | ESR7              | 2025-03-25    |
| 23-2-13-04   | Signal Analyzer              | N9020B-526        | 2025-03-25    |
| 23-2-10-46   | Preamplifier                 | BBV9745           | 2025-03-25    |
| 23-2-10-47   | Preamplifier                 | TAP01018048       | 2025-03-25    |
| 23-2-10-61   | Temperature & Humidity Meter | COS-03            | 2025-03-25    |
| 23-2-10-52   | Barometer                    | Baro              | 2025-03-25    |
| 23-2-10-15   | Switch and Control Unit      | ERIT-E-JS0806-SF1 | N/A           |



## 2.6 Auxiliary equipment used during test

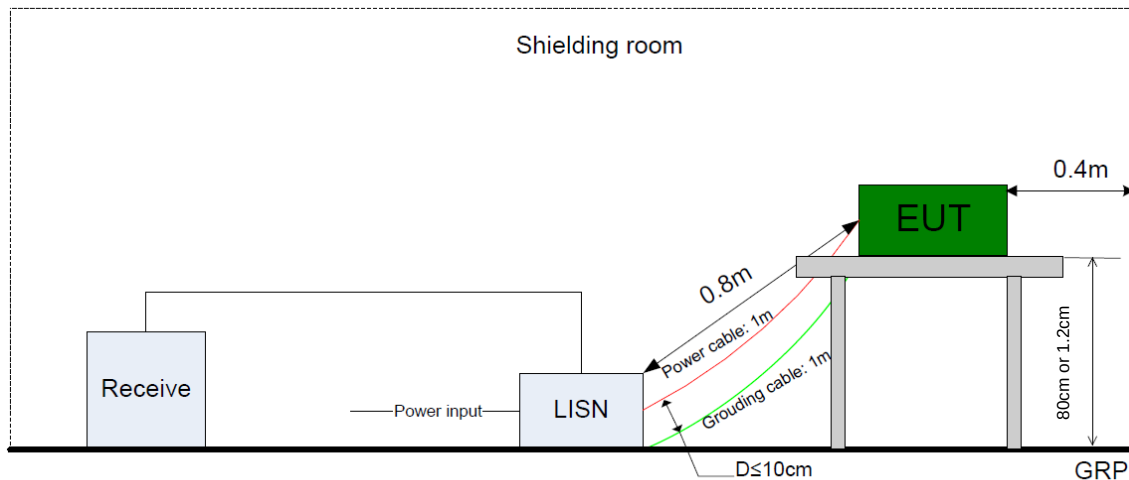
| DESCRIPTION | MANUFACTURER | MODEL NO. | S/N       |
|-------------|--------------|-----------|-----------|
| Laptop      | LENOVO       | TP00096A  | PF-1QH0LV |

## 2.7 Test software information

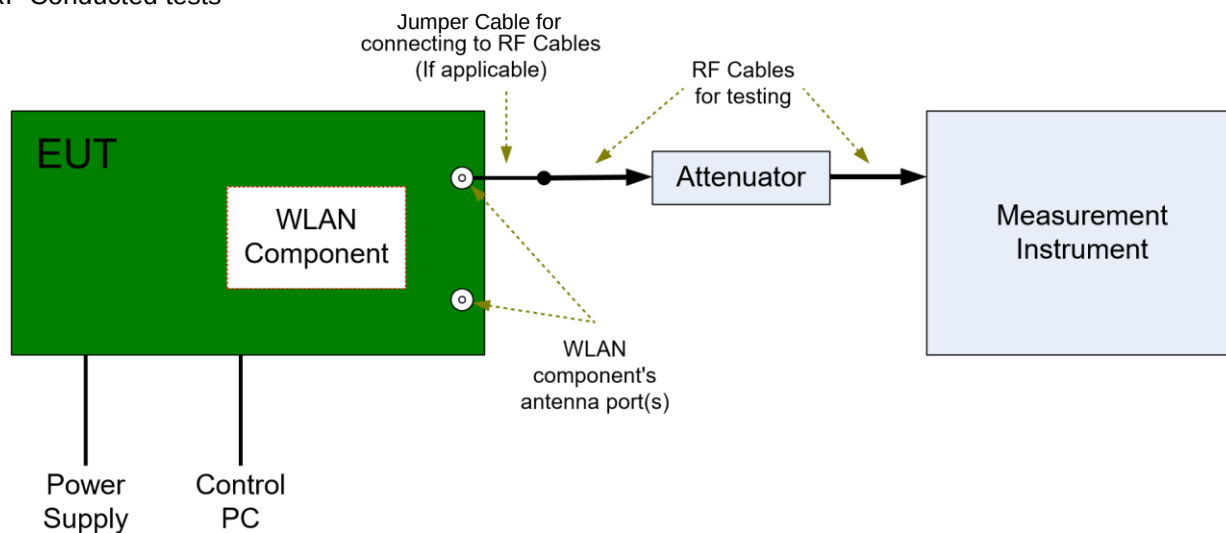
| Test Software&Version             | CMD           |     |      |
|-----------------------------------|---------------|-----|------|
| Mode                              | Power setting |     |      |
| 802.11b                           | CH1           | CH6 | CH11 |
|                                   | DEF           | DEF | DEF  |
| 802.11g                           | CH1           | CH6 | CH11 |
|                                   | DEF           | DEF | DEF  |
| 802.11n HT20 / ac VHT20 / ax HE20 | CH1           | CH6 | CH11 |
|                                   | DEF           | DEF | DEF  |
| 802.11n HT40/ ac VHT40 / ax HE40  | CH3           | CH6 | CH9  |
|                                   | DEF           | DEF | DEF  |

## 2.8 Test setup

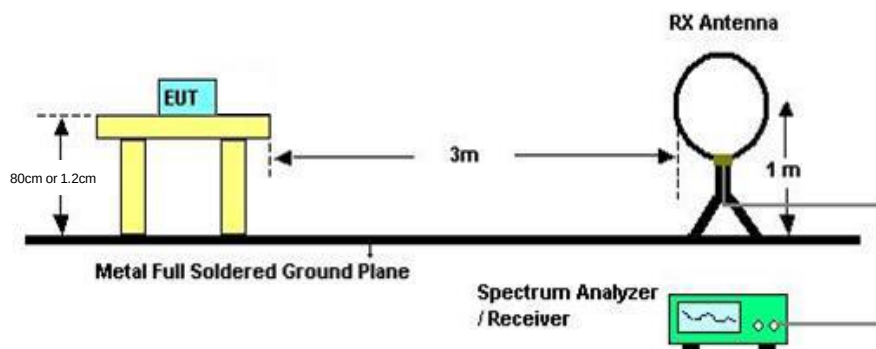
Ac line conducted



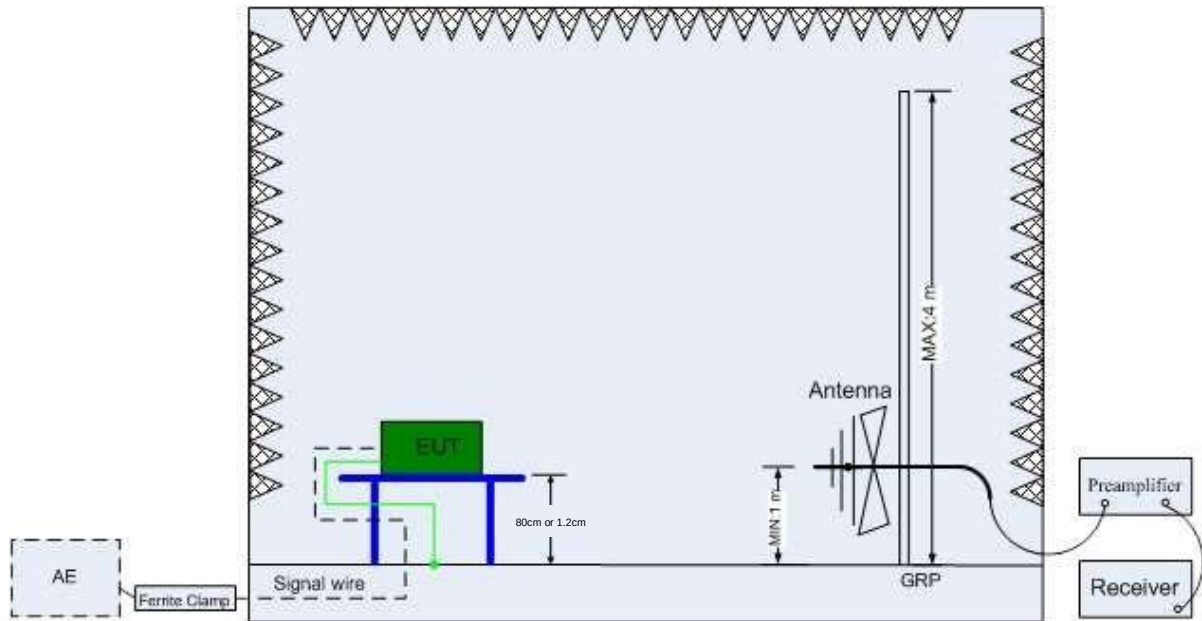
RF Conducted tests



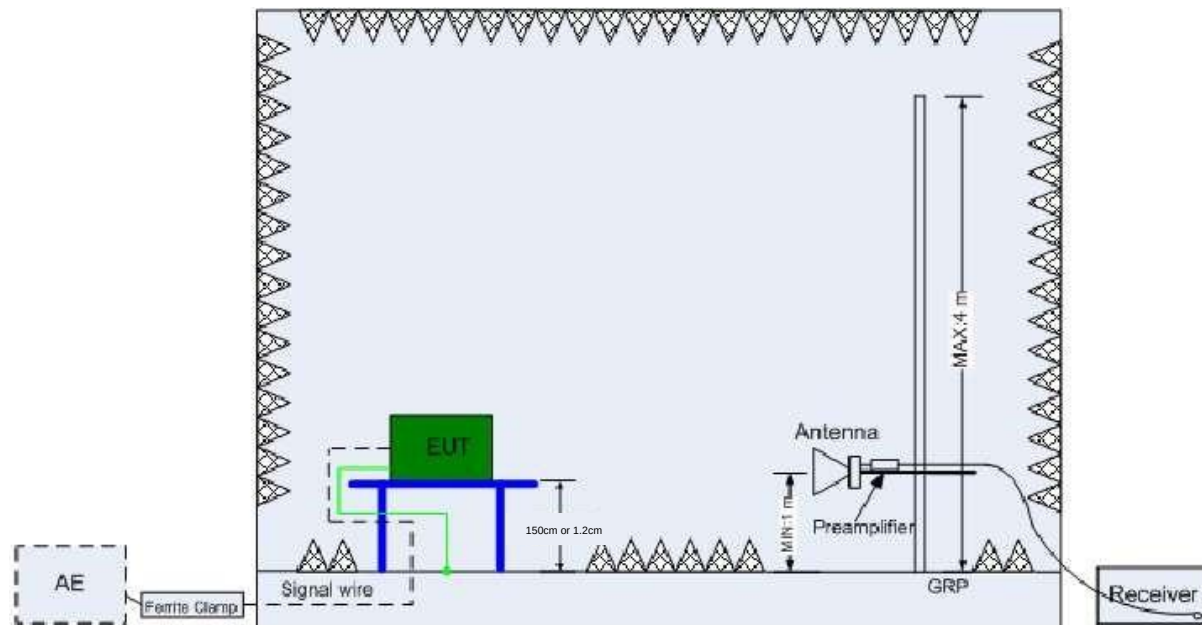
Radiated tests below 30MHz



## Radiated tests below 1GHz



## Radiated tests above 1GHz



## 2.9 Test results

☒ 1<sup>st</sup> test

☐ test after modification

☐ production test

| Technical Requirements |                                                  |                          |         |           |
|------------------------|--------------------------------------------------|--------------------------|---------|-----------|
| FCC Part 15 Subpart C  |                                                  |                          |         |           |
| Test Condition         |                                                  | Test Result              | Verdict | Test Site |
| §15.207                | Conducted emission AC power port                 | Appendix A               | Pass    | Site 1    |
| §15.209 & §15.205      | Spurious emissions , Band edge & Restricted Band | Appendix B<br>Appendix C | Pass    | Site 1    |
| §15.203                | Antenna requirement                              | See note 1               | Pass    | --        |

Remark 1: N/A – Not Applicable.

Note 1: The EUT uses a internal antenna. According to §15.203, it is considered sufficiently to comply with the provisions of this section.

### 3 Technical Requirement

#### 3.1 Conducted emission AC power port

**Test Method:**

The test method was referred to the subclause 6.2 of ANSI C63.10-2013.

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both Neutral and Live lines.

**Limit:**

FCC §15.207 (a)

| Frequency   | QP Limit   | AV Limit   |
|-------------|------------|------------|
| MHz         | dB $\mu$ V | dB $\mu$ V |
| 0.150-0.500 | 66-56*     | 56-46*     |
| 0.500-5     | 56         | 46         |
| 5-30        | 60         | 50         |

Decreasing linear.

## 3.2 Spurious emissions & Restricted Band

### Test Method:

The test method was referred to the subclause 11.12 of ANSI C63.10-2013.

Radiated emission measurements setup:

- 1: The EUT was placed on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- 2: The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
- 3: The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 4: For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

Antenna-port conducted measurements:

Antenna-port conducted measurements may also be used as an alternative to radiated measurements for determining compliance in the restricted frequency bands requirements. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case emissions is required.

Use the following spectrum analyzer settings According to C63.10:

For Above 1GHz

Span = wide enough to capture the peak level of the in-band emission and all spurious  
RBW = 1MHz, VBW ≥ RBW for peak measurement, Sweep = auto, Detector function = peak,  
Trace = max hold.

For Below 1GHz

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious  
RBW = 100 KHz, VBW ≥ RBW for peak measurement, Sweep = auto, Detector function = peak,  
Trace = max hold.

For Below 30MHz

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious  
RBW = 200 Hz, VBW ≥ RBW from 9KHz to 0.15MHz, RBW 9KHz VBW ≥ RBW from 0.15MHz to 30MHz for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

### Note:

- 1: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Quasi-peak detection (QP) at frequency below 1GHz.
- 2: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for peak detection (PK) at frequency above 1GHz.
- 3: If the EUT can be configured or modified to transmit continuously ( $D \geq 98\%$ ), The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average detection (AV) at frequency above 1GHz.
- 4: If continuous transmission of the EUT ( $D \geq 98\%$ ) cannot be achieved and the duty cycle is constant (duty cycle variations are less than  $\pm 2\%$ ), The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ( $10\log(1/\text{duty cycle})$ ).
- 5: If continuous transmission of the EUT ( $D \geq 98\%$ ) cannot be achieved and the duty cycle is not constant (duty cycle variations exceed  $\pm 2\%$ ), The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $VBW \geq 1/T$ , the T is transmission duration (T).

**Limit:**

FCC §15.209

| Frequency Range<br>(MHz) | Field Strength Limit<br>(uV/m) at 3 m | Field Strength Limit<br>(dBuV/m) at 3 m |
|--------------------------|---------------------------------------|-----------------------------------------|
| 0.009-0.490              | 2400/F(kHz) @ 300 m                   | -                                       |
| 0.490-1.705              | 24000/F(kHz) @ 30 m                   | -                                       |
| 1.705 - 30               | 30 @ 30m                              | -                                       |
| 30 - 88                  | 100                                   | 40                                      |
| 88 - 216                 | 150                                   | 43.5                                    |
| 216 - 960                | 200                                   | 46                                      |
| Above 960                | 500                                   | 54                                      |

§15.205 Restricted bands of operation

| MHz               | MHz                 | MHz           | GHz         |
|-------------------|---------------------|---------------|-------------|
| 0.090-0.110       | 16.42-16.423        | 399.9-410     | 4.5-5.15    |
| 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     |             |
| 13.36-13.41       |                     |               |             |

## **4 Test Setup Photos**

Ref "EFGX24060480-IE-03-E01\_Setup\_Photos.pdf"

## **5 External Photos**

Ref "EFGX24060480-IE-03-E01\_External\_Photos.pdf"

## **6 Internal Photos**

Ref "EFGX24060480-IE-03-E01\_Internal\_Photos.pdf"

## **7 Appendix**

Ref "EFGX24060480-IE-03-E01\_appendix.pdf"

**-End of report-**