



# RF TEST REPORT

Product Name: LoRaLink

Model Number: UL-01-N1

FCC ID: 2BVYH-UL01N1

Issued For : Nube iO

1/17 Cemetery Rd, Helensburgh, NSW 2508, Australia

Issued By : Shenzhen LGT Test Service Co., Ltd.

Room 205, Building 13, Zone B, Zhenxiong Industrial Park,  
No.177, Renmin West Road, Jinsha, Kengzi Street, Pingshan  
District, Shenzhen, Guangdong, China

Report Number: LGT25L403RF02

Sample Received Date: Dec. 22, 2025

Date of Test: Mar. 05, 2026 ~ Jul. 04, 2026

Date of Issue: Jul. 04, 2026

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## TEST REPORT CERTIFICATION

**Applicant:** Nube iO

**Address:** 1/17 Cemetery Rd, Helensburgh, NSW 2508, Australia

**Manufacturer:** Shenzhen Elecrow Co.,ltd

**Address:** 4-5th Floor, Building B,Nanchang Huafeng Industrial Park, Baoan District, Shenzhen, China 518126

**Product Name:** LoRaLink

**Trademark:** N/A

**Model Number:** UL-01-N1

**Sample Status:** Normal

| APPLICABLE STANDARDS                                                                                     |              |
|----------------------------------------------------------------------------------------------------------|--------------|
| STANDARD                                                                                                 | TEST RESULTS |
| FCC Part 15.249, Subpart C<br>ANSI C63.10-2020 + COR.<br>1-2023+C63.10A-2024 + ERRATA TO<br>C63.10A-2024 | PASS         |

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| <b>Table of Contents</b>                                   | <b>Page</b> |
|------------------------------------------------------------|-------------|
| <b>1. SUMMARY OF TEST RESULTS</b>                          | <b>5</b>    |
| 1.1 TEST LABORATORY                                        | 6           |
| 1.2 MEASUREMENT UNCERTAINTY                                | 6           |
| <b>2. GENERAL INFORMATION</b>                              | <b>7</b>    |
| 2.1 GENERAL DESCRIPTION OF THE EUT                         | 7           |
| 2.2 DESCRIPTION OF THE TEST MODES                          | 9           |
| 2.3 TEST SOFTWARE AND POWER LEVEL                          | 9           |
| 2.4 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS | 10          |
| 2.5 EQUIPMENTS LIST                                        | 11          |
| <b>3. EMC EMISSION TEST</b>                                | <b>13</b>   |
| 3.1 CONDUCTED EMISSION MEASUREMENT                         | 13          |
| 3.2 TEST PROCEDURE                                         | 14          |
| 3.3 TEST SETUP                                             | 14          |
| 3.4 EUT OPERATING CONDITIONS                               | 14          |
| 3.5 TEST RESULTS                                           | 15          |
| <b>4. RADIATED EMISSION MEASUREMENT</b>                    | <b>17</b>   |
| 4.1 RADIATED EMISSION LIMITS                               | 17          |
| 4.2 TEST PROCEDURE                                         | 18          |
| 4.3 TEST SETUP                                             | 19          |
| 4.4 EUT OPERATING CONDITIONS                               | 19          |
| 4.5 FIELD STRENGTH CALCULATION                             | 20          |
| 4.6 TEST RESULTS                                           | 21          |
| 4.7 TEST RESULTS (BAND EDGE REQUIREMENTS)                  | 25          |
| 4.8 TEST RESULTS (EIRP REQUIREMENTS)                       | 25          |
| <b>5. BANDWIDTH TEST</b>                                   | <b>26</b>   |
| 5.1 TEST PROCEDURE                                         | 26          |
| 5.2 TEST SETUP                                             | 26          |
| 5.3 EUT OPERATION CONDITIONS                               | 26          |
| 5.4 TEST RESULTS                                           | 26          |
| <b>6. ANTENNA REQUIREMENT</b>                              | <b>28</b>   |
| 6.1 STANDARD REQUIREMENT                                   | 28          |
| 6.2 EUT ANTENNA                                            | 28          |
| <b>APPENDIX I - MEASUREMENT PHOTOS</b>                     | <b>29</b>   |



### **Revision History**

| Rev. | Issue Date    | Contents      |
|------|---------------|---------------|
| 00   | Jul. 04, 2026 | Initial Issue |
|      |               |               |



## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

| FCC Part 15.249, Subpart C |                               |          |        |
|----------------------------|-------------------------------|----------|--------|
| Standard Section           | Test Item                     | Judgment | Remark |
| 15.207                     | Conducted Emission            | PASS     | --     |
| 15.249                     | Radiated Spurious Emission    | PASS     | --     |
| 15.205                     | Restricted Band Edge Emission | PASS     | --     |
| 15.249                     | 20dB Bandwidth                | Pass     | --     |
| 15.203                     | Antenna Requirement           | PASS     | --     |

### NOTE:

- (1) 'N/A' denotes test is not applicable in this Test Report.
- (2) All tests are according to ANSI C63.10-2020 + COR. 1-2023+C63.10A-2024 + ERRATA TO C63.10A-2024.



## 1.1 TEST LABORATORY

|                            |                                                                                                                                                          |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Company Name:              | Shenzhen LGT Test Service Co., Ltd.                                                                                                                      |
| Address:                   | Room 205, Building 13, Zone B, Zhenxiong Industrial Park, No.177, Renmin West Road, Jinsha, Kengzi Street, Pingshan District, Shenzhen, Guangdong, China |
| Accreditation Certificate: | FCC Registration No.: 746540                                                                                                                             |
|                            | CAB ID: CN0136                                                                                                                                           |

## 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately **95** %.

| No. | Item                                  | Uncertainty         |
|-----|---------------------------------------|---------------------|
| 1   | Occupied Channel Bandwidth            | $\pm 0.46\%$        |
| 2   | RF Output Power, Conducted            | $\pm 0.71\text{dB}$ |
| 3   | Power Spectral Density, Conducted     | $\pm 1.57\text{dB}$ |
| 4   | Unwanted Emission, Conducted          | $\pm 0.63\text{dB}$ |
| 5   | Conducted emission                    | $\pm 2.80\text{dB}$ |
| 6   | All Emissions, Radiated (0.009-30MHz) | $\pm 2.16\text{dB}$ |
| 7   | All Emissions, Radiated (30MHz-1GHz)  | $\pm 4.61\text{dB}$ |
| 8   | All Emissions, Radiated (1GHz-18GHz)  | $\pm 5.49\text{dB}$ |

Note: The measurement uncertainty is not included in the test result.



## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF THE EUT

|                         |                             |                  |
|-------------------------|-----------------------------|------------------|
| Product Name:           | LoRaLink                    |                  |
| Test Model Number:      | UL-01-N1                    |                  |
| Series Number:          | N/A                         |                  |
| Model Difference:       | N/A                         |                  |
| Product Description:    | Operation Frequency:        | 902.3-914.9 MHz  |
|                         | Modulation Type:            | LoRa             |
|                         | Antenna Type:               | Monopole Antenna |
|                         | Antenna Gain(dBi):          | 2 dBi            |
| Rating:                 | Input: 12VDC                |                  |
| Hardware Version:       | V1.0                        |                  |
| Software Version:       | V1.0.0                      |                  |
| Connecting I/O Port(s): | Please refer to the Note 1. |                  |

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.
2. The antenna information refers to the manufacturer provide report, applicable only to the tested sample identified in the report. Due to the incorrect antenna information, a series of problems such as the accuracy of the test results will be borne by the customer.



3.

| Channel List   |                 |         |                 |         |                 |
|----------------|-----------------|---------|-----------------|---------|-----------------|
| Channel        | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 0              | 902.3           | 22      | 906.7           | 44      | 911.1           |
| 1              | 902.5           | 23      | 906.9           | 45      | 911.3           |
| 2              | 902.7           | 24      | 907.1           | 46      | 911.5           |
| 3              | 902.9           | 25      | 907.3           | 47      | 911.7           |
| 4              | 903.1           | 26      | 907.5           | 48      | 911.9           |
| 5              | 903.3           | 27      | 907.7           | 49      | 912.1           |
| 6              | 903.5           | 28      | 907.9           | 50      | 912.3           |
| 7              | 903.7           | 29      | 908.1           | 51      | 912.5           |
| 8              | 903.9           | 30      | 908.3           | 52      | 912.7           |
| 9              | 904.1           | 31      | 908.5           | 53      | 912.9           |
| 10             | 904.3           | 32      | 908.7           | 54      | 913.1           |
| 11             | 904.5           | 33      | 908.9           | 55      | 913.3           |
| 12             | 904.7           | 34      | 909.1           | 56      | 913.5           |
| 13             | 904.9           | 35      | 909.3           | 57      | 913.7           |
| 14             | 905.1           | 36      | 909.5           | 58      | 913.9           |
| 15             | 905.3           | 37      | 909.7           | 59      | 914.1           |
| 16             | 905.5           | 38      | 909.9           | 60      | 914.3           |
| 17             | 905.7           | 39      | 910.1           | 61      | 914.5           |
| 18             | 905.9           | 40      | 910.3           | 62      | 914.7           |
| 19             | 906.1           | 41      | 910.5           | 63      | 914.9           |
| 20             | 906.3           | 42      | 910.7           | /       | /               |
| 21             | 906.5           | 43      | 910.9           | /       | /               |
| Test Frequency |                 |         |                 |         |                 |
| Channel        | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 0              | 902.3           | 32      | 908.7           | 63      | 914.9           |



## 2.2 DESCRIPTION OF THE TEST MODES

For conducted test items and radiated spurious emissions

Each of these EUT operation mode(s) or test configuration mode(s) mentioned below was evaluated respectively.

| Worst Mode | Description | Modulation |
|------------|-------------|------------|
| Mode 1     | 902.3MHz    | LoRa       |
| Mode 2     | 908.7MHz    | LoRa       |
| Mode 3     | 914.9MHz    | LoRa       |

Note:

(1) All above mode has been measurement, only worst data was reported.

(2) We have be tested for all avaiable U.S. voltage and frequency (For 120V,50/60Hz and 240V, 50/60Hz) for which the device is capable of operation, and the worst case of 120V/60Hz is shown in the report.

For AC Conducted Emission

| Test Case             |                    |
|-----------------------|--------------------|
| AC Conducted Emission | Mode 4: Keeping TX |

## 2.3 TEST SOFTWARE AND POWER LEVEL

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level.

| Test software Version | Test program: LoRa      |               |
|-----------------------|-------------------------|---------------|
| Nube_iO_Toolkit-1.4.0 | Mode Or Modulation type | Power setting |
|                       | LoRa                    | Default       |



## 2.4 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

### Accessories Equipment

| Description | Manufacturer | Model | S/N | Rating |
|-------------|--------------|-------|-----|--------|
|             |              |       |     |        |
|             |              |       |     |        |
|             |              |       |     |        |

### Auxiliary Equipment

| Description | Manufacturer | Model  | S/N | Rating |
|-------------|--------------|--------|-----|--------|
| Laptop      | Lenovo       | HKF-16 | N/A | N/A    |
|             |              |        |     |        |
|             |              |        |     |        |

#### Note:

- (1) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (2) “YES” is means “with core”; “NO” is means “without core”.



## 2.5 EQUIPMENTS LIST

| Conducted Emission             |                      |                    |                 |            |            |
|--------------------------------|----------------------|--------------------|-----------------|------------|------------|
| Equipment                      | Manufacturer         | Model No.          | Serial No.      | Cal. Date  | Cal. Until |
| EMI Test Receiver              | R&S                  | ESU8               | 100372          | 2026-03-02 | 2027-03-01 |
| LISN                           | COM-POWER            | LI-115             | 02032           | 2026-03-03 | 2027-03-02 |
| LISN                           | SCHWARZBECK          | NNLK 8122          | 00160           | 2026-03-03 | 2027-03-02 |
| Transient Limiter              | CYBERTEK             | EM5010A            | E225010004<br>9 | 2026-03-03 | 2027-03-02 |
| Coaxial cables<br>(9kHz-30MHz) | Juncoax              | JMR600-N<br>MNM-2M | N.A             | 2026-03-03 | 2027-03-02 |
| Temperature & Humidity         | JINGCHUANG           | BT-3               | N.A             | 2026-03-05 | 2027-03-04 |
| Testing Software               | EMC-I_V1.5.0.16_SKET |                    |                 |            |            |

| Radiated Test equipment               |               |                            |                  |            |            |
|---------------------------------------|---------------|----------------------------|------------------|------------|------------|
| Equipment                             | Manufacturer  | Model No.                  | Serial No.       | Cal. Date  | Cal. Until |
| EMI Test Receiver                     | R&S           | ESU8                       | 100372           | 2026-03-02 | 2027-03-01 |
| Active loop Antenna                   | ETS           | 6502                       | 00049544         | 2025-03-11 | 2028-03-10 |
| Spectrum Analyzer                     | Keysight      | N9010B                     | MY60242508       | 2026-03-03 | 2027-03-02 |
| Trilog Broadband<br>Antenna (30M-1G)  | SCHWARZBECK   | VULB 9168                  | 2705             | 2024-05-17 | 2027-05-16 |
| Horn Antenna(1-18G)                   | SCHWARZBECK   | 3115                       | 10SL0060         | 2025-03-10 | 2028-03-09 |
| Horn Antenna(18-40G)                  | SCHWARZBECK   | BBHA 9170                  | 685              | 2023-10-23 | 2026-10-22 |
| Pre-amplifier(30M-1G)                 | EMtrace       | RP01A                      | 02019            | 2026-03-02 | 2027-03-01 |
| Pre-amplifier(1-26.5G)                | Agilent       | 8449B                      | 3008A4722        | 2026-03-02 | 2027-03-01 |
| Pre-amplifier(18-40G)                 | SCHWARZBECK   | BBV 9721                   | 9721-019         | 2025-10-20 | 2026-10-19 |
| Coaxial cables<br>(9kHz-1GHz)         | Juncoax       | JMR600-NM<br>NM-8M         | N.A              | 2026-03-03 | 2027-03-02 |
| Coaxial cables<br>(1GHz-18GHz)        | TaiHe         | UCD460B-N<br>MSM-1M9       | N.A              | 2026-03-03 | 2027-03-02 |
| Coaxial cables<br>(18GHz-40GHz)       | Junkosha Inc. | MWX241-05<br>000KMSKM<br>S | N.A              | 2026-03-03 | 2027-03-02 |
| Band 902M-9285M Filter                | SEKT          | ZBSF6-C902<br>-928-1823    | N.A              | 2026-03-03 | 2027-03-02 |
| Temperature& Humidity<br>test chamber | AISRY         | LX-1000L                   | 171200018        | 2025-07-30 | 2026-07-29 |
| Antenna Tower                         | SAEMC         | BK-4AT-BS-<br>D            | SK20210930<br>08 | N.A        | N.A        |



|                        |                      |      |     |            |            |
|------------------------|----------------------|------|-----|------------|------------|
| Temperature & Humidity | JINGCHUANG           | BT-3 | N.A | 2026-03-05 | 2027-03-04 |
| Testing Software       | EMC-I_V1.5.0.16_SKET |      |     |            |            |

| RF Conducted Test equipment        |                     |             |                |            |            |
|------------------------------------|---------------------|-------------|----------------|------------|------------|
| Equipment                          | Manufacturer        | Model No.   | Serial No.     | Cal. Date  | Cal. Until |
| Signal Analyzer                    | Keysight            | N9010B      | MY60242508     | 2026-03-03 | 2027-03-02 |
| Signal Analyzer                    | Keysight            | N9020A      | MY50530994     | 2026-03-02 | 2027-03-01 |
| Power Sensor                       | R&S                 | NRP8S       | 104963         | 2026-03-02 | 2027-03-01 |
| RF Automatic Test system           | MW                  | MW100-RFC B | MW220324L G-33 | 2026-03-03 | 2027-03-02 |
| MXG Vector Signal Generator        | Keysight            | N5182B      | MY59100717     | 2026-03-03 | 2027-03-02 |
| Temperature& Humidity test chamber | AISRY               | LX-1000L    | 171200018      | 2025-07-30 | 2026-07-29 |
| Attenuator                         | eastsheep           | 90db        | N.A            | 2026-03-02 | 2027-03-01 |
| Temperature & Humidity             | JINGCHUANG          | BT-3        | N.A            | 2026-03-05 | 2027-03-04 |
| Digital multimeter                 | MASTECH             | MS8261      | MBGBC83053     | 2025-07-30 | 2026-07-29 |
| DC source                          | Keysight            | E3634A      | MY58036468     | 2026-03-05 | 2027-03-04 |
| Testing Software                   | MTS8310_V2.0.0.0_MW |             |                |            |            |



### 3. EMC EMISSION TEST

#### 3.1 CONDUCTED EMISSION MEASUREMENT

##### 3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

The radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table.

| FREQUENCY (MHz) | Conducted Emission limit (dBuV) |           |
|-----------------|---------------------------------|-----------|
|                 | Quasi-peak                      | Average   |
| 0.15 -0.5       | 66 - 56 *                       | 56 - 46 * |
| 0.50 -5.0       | 56.00                           | 46.00     |
| 5.0 -30.0       | 60.00                           | 50.00     |

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of “ \* ” marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

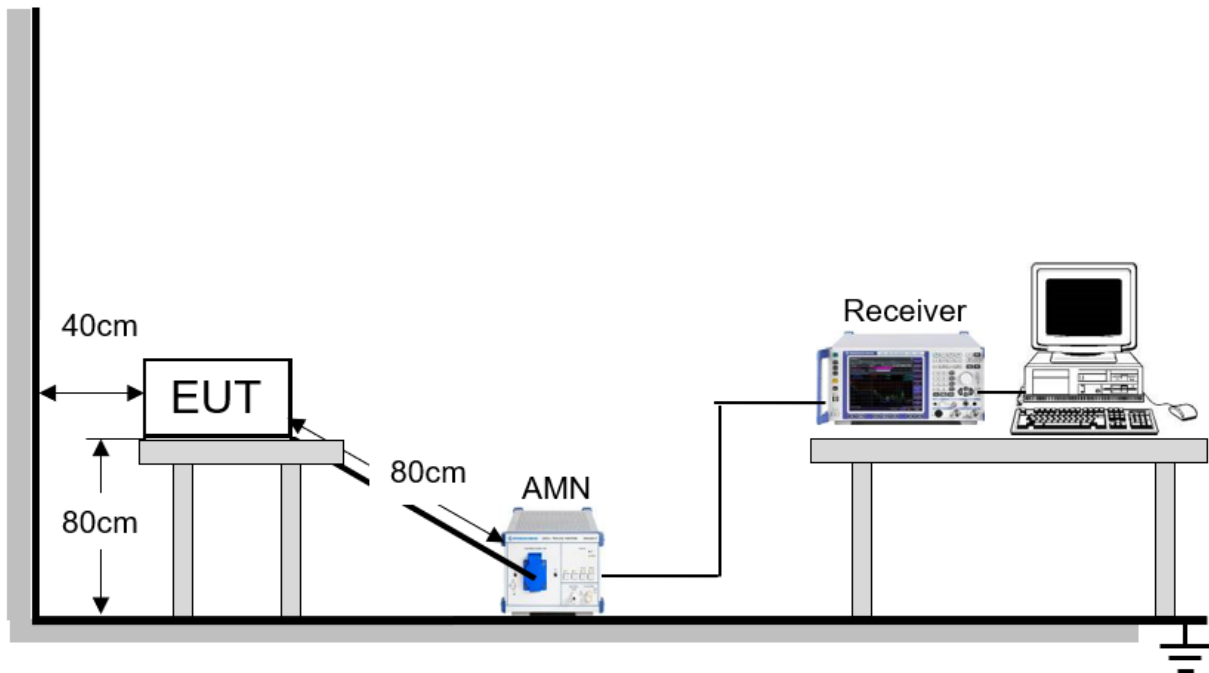
| Receiver Parameters | Setting  |
|---------------------|----------|
| Attenuation         | 10 dB    |
| Start Frequency     | 0.15 MHz |
| Stop Frequency      | 30 MHz   |
| IF Bandwidth        | 9 kHz    |



### 3.2 TEST PROCEDURE

- a. The EUT is 0.8 m from the horizontal ground plane and 0.4 m from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments are powered from additional LISN(s). The LISN provides 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN is at least 80 cm from the nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

### 3.3 TEST SETUP



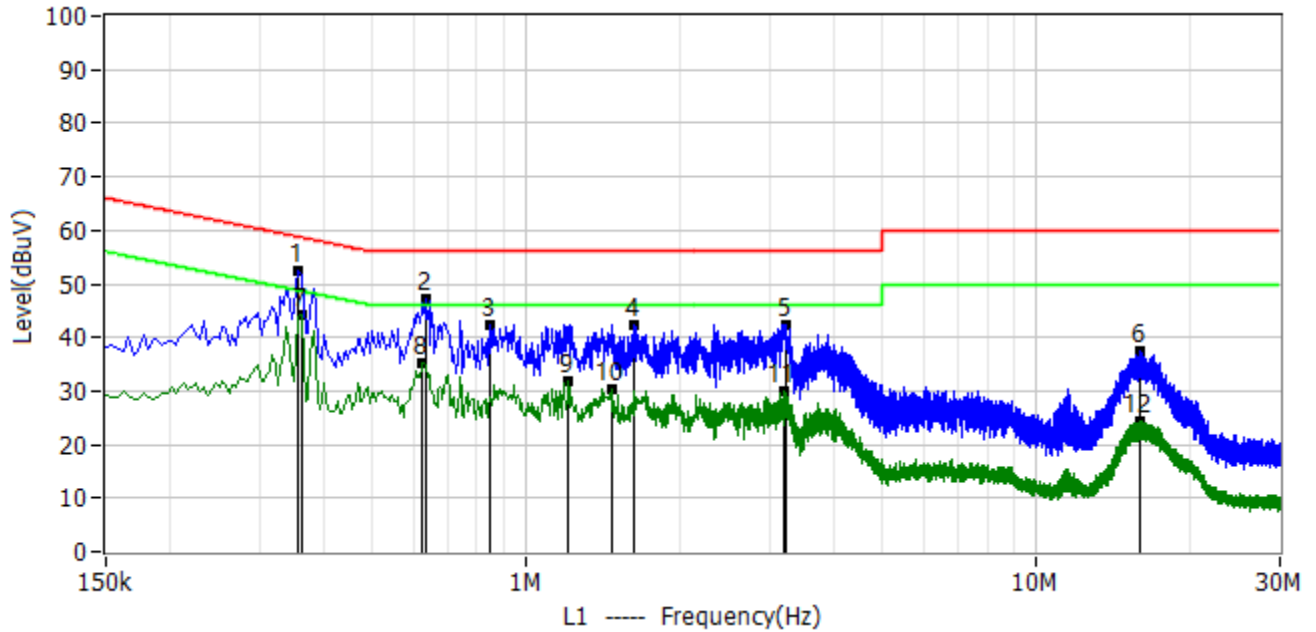
### 3.4 EUT OPERATING CONDITIONS

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



### 3.5 TEST RESULTS

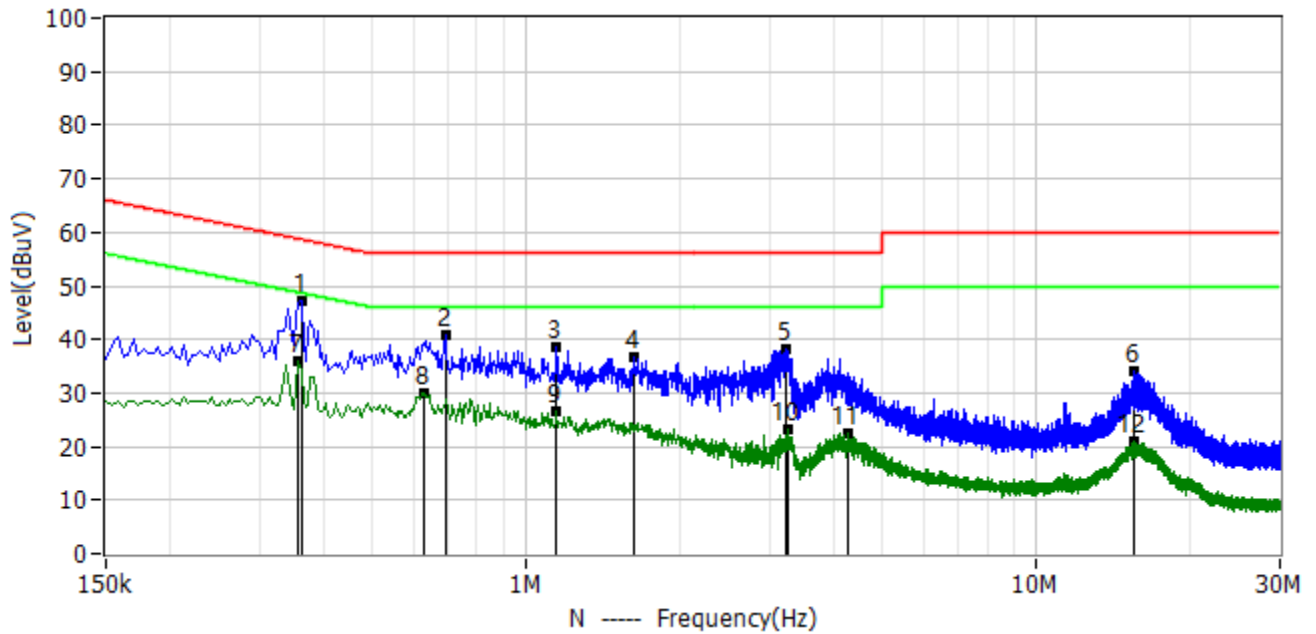
|                            |                       |
|----------------------------|-----------------------|
| Project: LGT25L403         | Test Engineer: LiuH   |
| EUT: LoRaLink              | Temperature: 19°C     |
| M/N: UL-01-N1              | Humidity: 60%RH       |
| Test Voltage: AC 120V/60Hz | Test Data: 2026-03-11 |
| Test Mode: TX              |                       |
| Note:                      |                       |



| No. | Frequency MHz | Reading dBuV | Factor dB | Result dBuV | Limit dBuV | Margin dB | Detector | Polar |
|-----|---------------|--------------|-----------|-------------|------------|-----------|----------|-------|
| 1*  | 0.358         | 41.43        | 10.91     | 52.34       | 58.77      | -6.43     | QP       | L1    |
| 2*  | 0.634         | 36.35        | 10.91     | 47.26       | 56.00      | -8.74     | QP       | L1    |
| 3*  | 0.850         | 31.60        | 10.88     | 42.48       | 56.00      | -13.52    | QP       | L1    |
| 4*  | 1.626         | 31.37        | 11.13     | 42.50       | 56.00      | -13.50    | QP       | L1    |
| 5*  | 3.238         | 31.05        | 11.31     | 42.36       | 56.00      | -13.64    | QP       | L1    |
| 6*  | 16.014        | 25.66        | 11.74     | 37.40       | 60.00      | -22.60    | QP       | L1    |
| 7*  | 0.362         | 33.26        | 10.90     | 44.16       | 48.68      | -4.52     | AV       | L1    |
| 8*  | 0.626         | 24.44        | 10.92     | 35.36       | 46.00      | -10.64    | AV       | L1    |
| 9*  | 1.206         | 20.71        | 11.01     | 31.72       | 46.00      | -14.28    | AV       | L1    |
| 10* | 1.466         | 19.34        | 11.13     | 30.47       | 46.00      | -15.53    | AV       | L1    |
| 11* | 3.190         | 18.55        | 11.32     | 29.87       | 46.00      | -16.13    | AV       | L1    |
| 12* | 15.902        | 12.54        | 11.74     | 24.28       | 50.00      | -25.72    | AV       | L1    |



|                            |                       |
|----------------------------|-----------------------|
| Project: LGT25L403         | Test Engineer: LiuH   |
| EUT: LoRaLink              | Temperature: 19°C     |
| M/N: UL-01-N1              | Humidity: 60%RH       |
| Test Voltage: AC 120V/60Hz | Test Data: 2026-03-11 |
| Test Mode: TX              |                       |
| Note:                      |                       |



| No. | Frequency MHz | Reading dBuV | Factor dB | Result dBuV | Limit dBuV | Margin dB | Detector | Polar |
|-----|---------------|--------------|-----------|-------------|------------|-----------|----------|-------|
| 1*  | 0.362         | 36.23        | 10.82     | 47.05       | 58.68      | -11.63    | QP       | N     |
| 2*  | 0.694         | 30.13        | 10.85     | 40.98       | 56.00      | -15.02    | QP       | N     |
| 3*  | 1.146         | 27.56        | 10.91     | 38.47       | 56.00      | -17.53    | QP       | N     |
| 4*  | 1.622         | 25.41        | 11.11     | 36.52       | 56.00      | -19.48    | QP       | N     |
| 5*  | 3.222         | 27.06        | 11.24     | 38.30       | 56.00      | -17.70    | QP       | N     |
| 6*  | 15.574        | 22.52        | 11.67     | 34.19       | 60.00      | -25.81    | QP       | N     |
| 7*  | 0.358         | 25.05        | 10.82     | 35.87       | 48.77      | -12.90    | AV       | N     |
| 8*  | 0.630         | 19.16        | 10.86     | 30.02       | 46.00      | -15.98    | AV       | N     |
| 9*  | 1.146         | 15.55        | 10.91     | 26.46       | 46.00      | -19.54    | AV       | N     |
| 10* | 3.270         | 11.99        | 11.25     | 23.24       | 46.00      | -22.76    | AV       | N     |
| 11* | 4.266         | 11.10        | 11.28     | 22.38       | 46.00      | -23.62    | AV       | N     |
| 12* | 15.482        | 9.20         | 11.66     | 20.86       | 50.00      | -29.14    | AV       | N     |



## 4. RADIATED EMISSION MEASUREMENT

### 4.1 RADIATED EMISSION LIMITS

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on Part 15.249, Part 15.209(a) limit in the table below has to be followed.

Standard FCC 15.209

| Frequencies (MHz) | Field Strength (micovolts/meter)                      | Measurement Distance (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                             |
| Above 1000        | Other:74.0 dB(μV)/m (Peak)<br>54.0 dB(μV)/m (Average) | 3                             |

Standard FCC 15.249

| Frequency of Emission (MHz) | Field Strength of fundamental (millivolts /meter) | Field Strength of Harmonics (microvolts/meter) |
|-----------------------------|---------------------------------------------------|------------------------------------------------|
| 900~928                     | 50                                                | 500                                            |
| 2400~2483.5                 | 50                                                | 500                                            |
| 5725~5875                   | 50                                                | 500                                            |
| 24000~242500                | 250                                               | 2500                                           |

Notes:

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

| Spectrum Parameter               | Setting               |
|----------------------------------|-----------------------|
| Detector                         | Peak/AV               |
| Attenuation                      | Auto                  |
| Start Frequency                  | 1000 MHz              |
| Stop Frequency                   | 10th carrier harmonic |
| RB (emission in restricted band) | >20BW                 |
| VB (emission in restricted band) | =3xRB                 |



| Receiver Parameter     | Setting                              |
|------------------------|--------------------------------------|
| Attenuation            | Auto                                 |
| Start ~ Stop Frequency | 9kHz~90kHz / RB 200Hz for PK & AV    |
|                        | 90kHz~110kHz / RB 200Hz for QP       |
|                        | 110kHz~490kHz / RB 200Hz for PK & AV |
|                        | 490kHz~30MHz / RB 9kHz for QP        |
|                        | 30MHz~1000MHz / RB 120kHz for QP     |

#### 4.2 TEST PROCEDURE

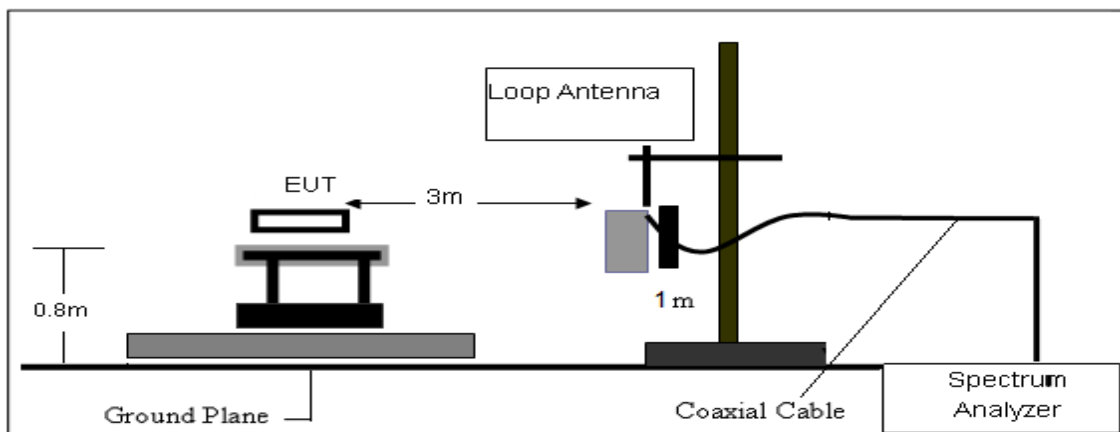
- The measuring distance at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz.
- The EUT was placed on the top of a rotating table 0.8 m (above 1GHz is 1.5 m) above the ground at a 3 m anechoic chamber test site. The table was rotated 360 degree to determine the position of the highest radiation.
- The height of the equipment shall be 0.8 m(above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. Horizontal and vertical polarization of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and QuasiPeak detector mode will be re-measured.
- If the Peak Mode measured value is compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and no additional QP Mode measurement was performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

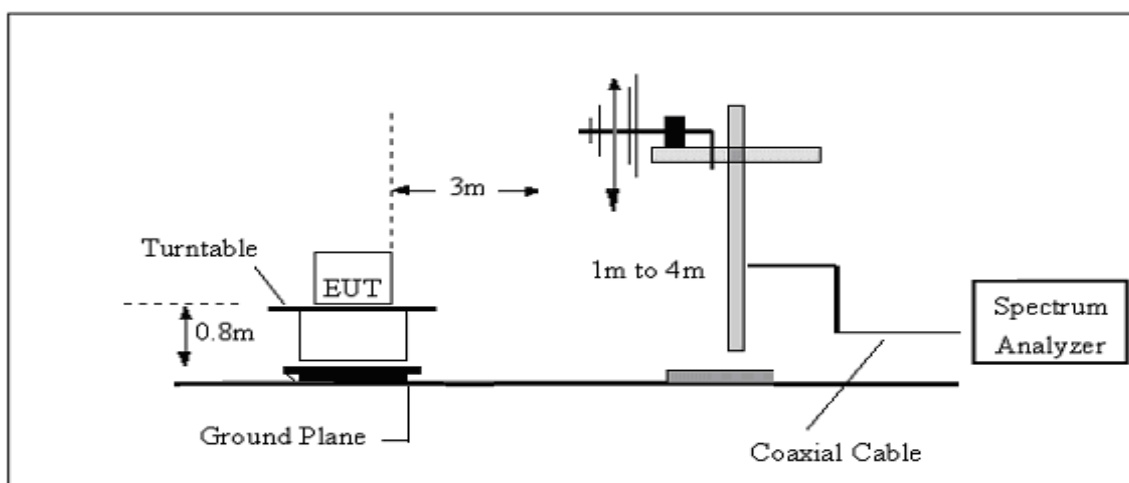
Both horizontal and vertical antenna polarities were tested with a band-stop filter and performed pretest to three orthogonal axis. The worst-case emissions were reported.

#### 4.3 TEST SETUP

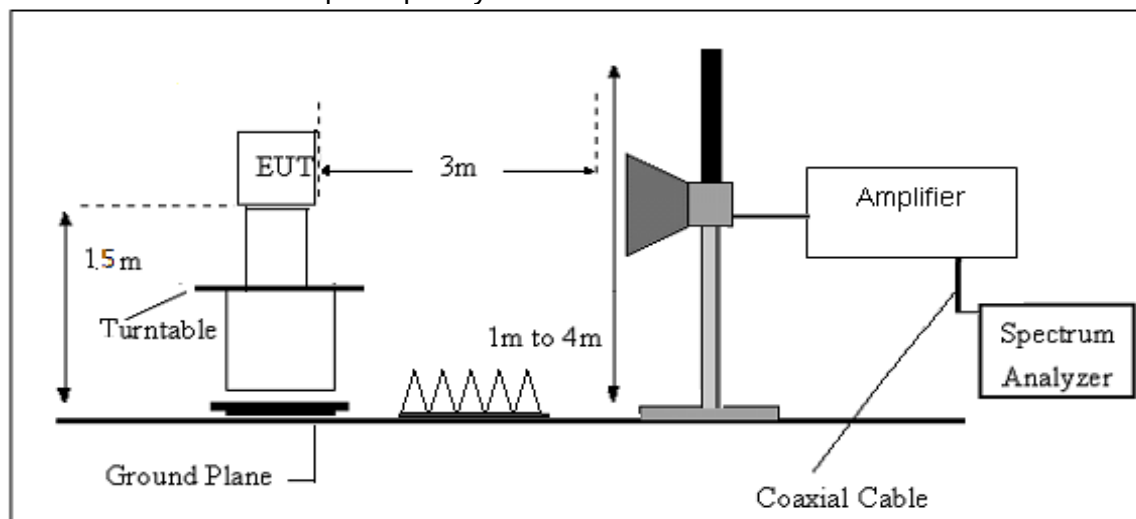
##### (A) Radiated Emission Test-Up Frequency Below 30MHz



##### (B) Radiated Emission Test-Up Frequency 30MHz~1GHz



##### (C) Radiated Emission Test-Up Frequency Above 1GHz



#### 4.4 EUT OPERATING CONDITIONS

Please refer to section 3.4 of this report.



#### 4.5 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where

FS = Field Strength

CL = Cable Attenuation Factor (Cable Loss)

RA = Reading Amplitude

AG = Amplifier Gain

AF = Antenna Factor

For example

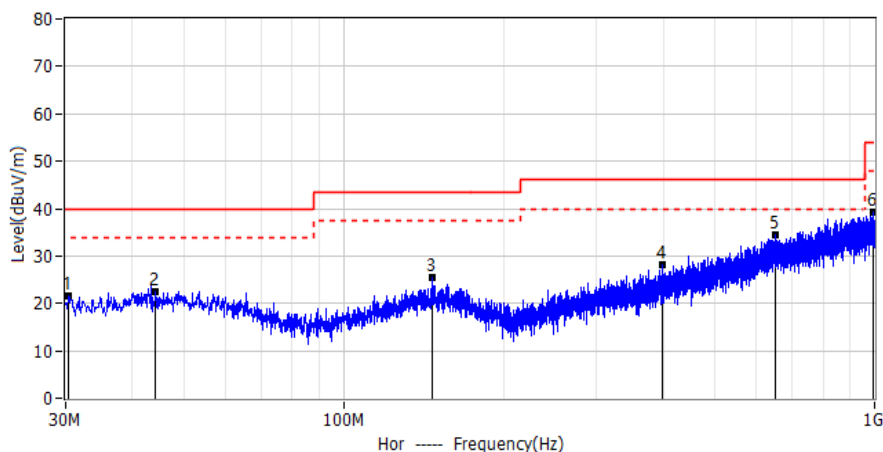
| Frequency | FS       | RA       | AF   | CL   | AG   | Factor |
|-----------|----------|----------|------|------|------|--------|
| (MHz)     | (dBμV/m) | (dBμV/m) | (dB) | (dB) | (dB) | (dB)   |
| 300       | 40       | 58.1     | 12.2 | 1.6  | 31.9 | -18.1  |

$$\text{Factor} = \text{AF} + \text{CL} - \text{AG}$$

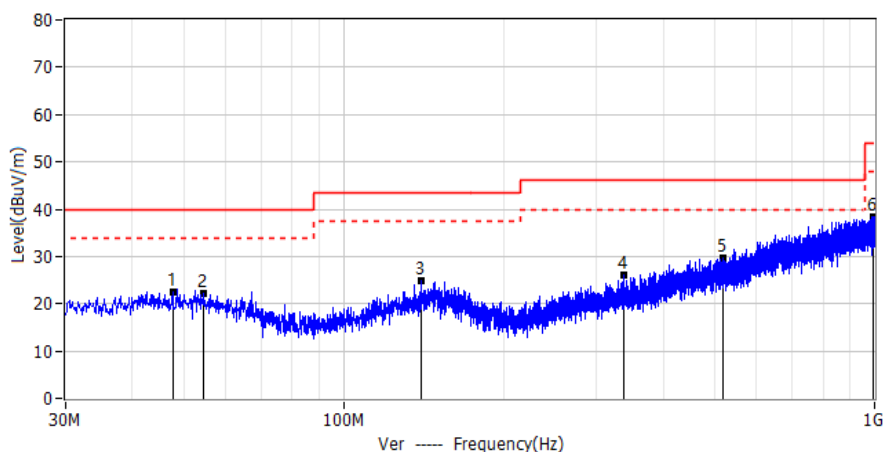


## 4.6 TEST RESULTS

|                      |                       |
|----------------------|-----------------------|
| Project: LGT25L403   | Test Engineer: LiuH   |
| EUT: LoRaLink        | Temperature: 19°C     |
| M/N: UL-01-N1        | Humidity: 60%RH       |
| Test Voltage: DC 12V | Test Data: 2026-03-11 |
| Test Mode: TX        |                       |
| Note:                |                       |



| No. | Frequency MHz | Reading dBuV | Factor dB/m | Result dBuV/m | Limit dBuV/m | Margin dB | Detector | Polar |
|-----|---------------|--------------|-------------|---------------|--------------|-----------|----------|-------|
| 1*  | 30.364        | 1.87         | 19.57       | 21.44         | 40.00        | -18.56    | QP       | Hor   |
| 2*  | 44.308        | 1.67         | 20.90       | 22.57         | 40.00        | -17.43    | QP       | Hor   |
| 3*  | 147.370       | 3.50         | 21.97       | 25.47         | 43.50        | -18.03    | QP       | Hor   |
| 4*  | 398.236       | 2.95         | 25.15       | 28.10         | 46.00        | -17.90    | QP       | Hor   |
| 5*  | 648.860       | 4.20         | 30.26       | 34.46         | 46.00        | -11.54    | QP       | Hor   |
| 6*  | 995.029       | 4.16         | 35.05       | 39.21         | 54.00        | -14.79    | QP       | Hor   |



| No. | Frequency MHz | Reading dBuV | Factor dB/m | Result dBuV/m | Limit dBuV/m | Margin dB | Detector | Polar |
|-----|---------------|--------------|-------------|---------------|--------------|-----------|----------|-------|
| 1*  | 47.703        | 1.83         | 20.58       | 22.41         | 40.00        | -17.59    | QP       | Ver   |
| 2*  | 54.371        | 1.75         | 20.51       | 22.26         | 40.00        | -17.74    | QP       | Ver   |
| 3*  | 140.216       | 3.36         | 21.47       | 24.83         | 43.50        | -18.67    | QP       | Ver   |
| 4*  | 337.248       | 2.53         | 23.46       | 25.99         | 46.00        | -20.01    | QP       | Ver   |
| 5*  | 519.123       | 1.83         | 27.76       | 29.59         | 46.00        | -16.41    | QP       | Ver   |
| 6*  | 994.423       | 3.29         | 35.04       | 38.33         | 54.00        | -15.67    | QP       | Ver   |



## Above 1G Radiation Spurious

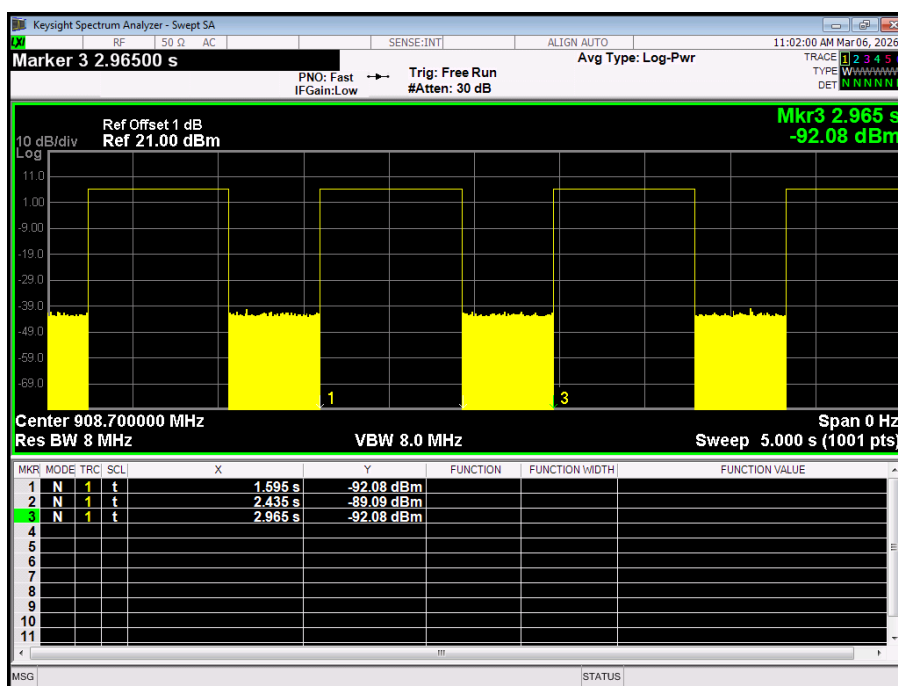
| Above 1000 MHz             |                |                       |                 |                 |             |          |            |
|----------------------------|----------------|-----------------------|-----------------|-----------------|-------------|----------|------------|
| Frequency (MHz)            | Reading (dBμV) | Corrected Factor (dB) | Result (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector | Polarity   |
| Low Channel (902.3 MHz)    |                |                       |                 |                 |             |          |            |
| 1804.36                    | 55.30          | -12.59                | 42.71           | 74.00           | -31.29      | PK       | Vertical   |
| 1804.36                    | 45.67          | -12.59                | 33.08           | 54.00           | -20.92      | AV       | Vertical   |
| 1804.11                    | 56.21          | -12.59                | 43.62           | 74.00           | -30.38      | PK       | Horizontal |
| 1804.11                    | 46.97          | -12.59                | 34.38           | 54.00           | -19.62      | AV       | Horizontal |
| 2706.59                    | 54.25          | -10.65                | 43.60           | 74.00           | -30.40      | PK       | Vertical   |
| 2706.59                    | 44.39          | -10.65                | 33.74           | 54.00           | -20.26      | AV       | Vertical   |
| 2706.70                    | 54.96          | -10.65                | 44.31           | 74.00           | -29.69      | PK       | Horizontal |
| 2706.70                    | 45.17          | -10.65                | 34.52           | 54.00           | -19.48      | AV       | Horizontal |
| 3608.81                    | 56.84          | -8.73                 | 48.11           | 74.00           | -25.89      | PK       | Vertical   |
| 3608.81                    | 48.22          | -8.73                 | 39.49           | 54.00           | -14.51      | AV       | Vertical   |
| 3608.82                    | 56.62          | -8.73                 | 47.89           | 74.00           | -26.11      | PK       | Horizontal |
| 3608.82                    | 48.17          | -8.73                 | 39.44           | 54.00           | -14.56      | AV       | Horizontal |
| 4511.15                    | 60.95          | -7.82                 | 53.13           | 74.00           | -20.87      | PK       | Vertical   |
| 4511.15                    | 49.56          | -7.82                 | 41.74           | 54.00           | -12.26      | AV       | Vertical   |
| 4511.03                    | 60.50          | -7.82                 | 52.68           | 74.00           | -21.32      | PK       | Horizontal |
| 4511.03                    | 49.73          | -7.82                 | 41.91           | 54.00           | -12.09      | AV       | Horizontal |
| Middle Channel (908.7 MHz) |                |                       |                 |                 |             |          |            |
| 1817.11                    | 56.36          | -12.59                | 43.77           | 74.00           | -30.23      | PK       | Vertical   |
| 1817.11                    | 46.06          | -12.59                | 33.47           | 54.00           | -20.53      | AV       | Vertical   |
| 1817.20                    | 55.50          | -12.59                | 42.91           | 74.00           | -31.09      | PK       | Horizontal |
| 1817.20                    | 46.40          | -12.59                | 33.81           | 54.00           | -20.19      | AV       | Horizontal |
| 2725.79                    | 55.22          | -10.65                | 44.57           | 74.00           | -29.43      | PK       | Vertical   |
| 2725.79                    | 44.88          | -10.65                | 34.23           | 54.00           | -19.77      | AV       | Vertical   |
| 2725.61                    | 54.53          | -10.65                | 43.88           | 74.00           | -30.12      | PK       | Horizontal |
| 2725.61                    | 44.68          | -10.65                | 34.03           | 54.00           | -19.97      | AV       | Horizontal |
| 3634.58                    | 57.71          | -8.73                 | 48.98           | 74.00           | -25.02      | PK       | Vertical   |
| 3634.58                    | 46.94          | -8.73                 | 38.21           | 54.00           | -15.79      | AV       | Vertical   |
| 3634.55                    | 57.30          | -8.73                 | 48.57           | 74.00           | -25.43      | PK       | Horizontal |
| 3634.55                    | 48.14          | -8.73                 | 39.41           | 54.00           | -14.59      | AV       | Horizontal |
| 4543.10                    | 60.66          | -7.82                 | 52.84           | 74.00           | -21.16      | PK       | Vertical   |
| 4543.10                    | 50.50          | -7.82                 | 42.68           | 54.00           | -11.32      | AV       | Vertical   |
| 4543.29                    | 59.65          | -7.82                 | 51.83           | 74.00           | -22.17      | PK       | Horizontal |
| 4543.29                    | 49.89          | -7.82                 | 42.07           | 54.00           | -11.93      | AV       | Horizontal |



| High Channel (914.9 MHz) |       |        |       |       |        |    |            |
|--------------------------|-------|--------|-------|-------|--------|----|------------|
| 1829.60                  | 56.18 | -12.59 | 43.59 | 74.00 | -30.41 | PK | Vertical   |
| 1829.60                  | 45.53 | -12.59 | 32.94 | 54.00 | -21.06 | AV | Vertical   |
| 1829.34                  | 56.40 | -12.59 | 43.81 | 74.00 | -30.19 | PK | Horizontal |
| 1829.34                  | 46.55 | -12.59 | 33.96 | 54.00 | -20.04 | AV | Horizontal |
| 2744.42                  | 54.07 | -10.65 | 43.42 | 74.00 | -30.58 | PK | Vertical   |
| 2744.42                  | 44.23 | -10.65 | 33.58 | 54.00 | -20.42 | AV | Vertical   |
| 2744.31                  | 54.50 | -10.65 | 43.85 | 74.00 | -30.15 | PK | Horizontal |
| 2744.31                  | 44.20 | -10.65 | 33.55 | 54.00 | -20.45 | AV | Horizontal |
| 3659.23                  | 56.79 | -8.73  | 48.06 | 74.00 | -25.94 | PK | Vertical   |
| 3659.23                  | 48.25 | -8.73  | 39.52 | 54.00 | -14.48 | AV | Vertical   |
| 3659.19                  | 57.41 | -8.73  | 48.68 | 74.00 | -25.32 | PK | Horizontal |
| 3659.19                  | 48.38 | -8.73  | 39.65 | 54.00 | -14.35 | AV | Horizontal |
| 4574.03                  | 59.90 | -7.82  | 52.08 | 74.00 | -21.92 | PK | Vertical   |
| 4574.03                  | 50.19 | -7.82  | 42.37 | 54.00 | -11.63 | AV | Vertical   |
| 4574.28                  | 59.67 | -7.82  | 51.85 | 74.00 | -22.15 | PK | Horizontal |
| 4574.28                  | 49.75 | -7.82  | 41.93 | 54.00 | -12.07 | AV | Horizontal |



## Duty cycle



|           |                 |         |
|-----------|-----------------|---------|
| Condition | Frequency (MHz) | Ton (s) |
| NVNT      | 908.7           | 0.84s   |

Remark: FCC part15.35(c) required that a complete pulse train is more than 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

|                   |      |
|-------------------|------|
| On time (ms)      | 100  |
| Pulse period (ms) | 100  |
| Duty Cycle (%)    | 100% |
| Duty cycle Factor | 0    |

Note: Duty cycle Factor= $20 \cdot \text{LOG}(\text{Ton}/\text{Tp})$



#### 4.7 TEST RESULTS (BAND EDGE REQUIREMENTS)

| Frequency (MHz) | Reading (dBμV) | Corrected Factor (dB) | Result (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector | Polarity   |
|-----------------|----------------|-----------------------|-----------------|-----------------|-------------|----------|------------|
| 902.00          | 4.99           | 32.65                 | 37.64           | 74.00           | -36.36      | PK       | Vertical   |
| 902.00          | 5.06           | 32.65                 | 37.71           | 74.00           | -36.29      | PK       | Horizontal |
| 928.00          | 6.27           | 33.29                 | 39.56           | 74.00           | -34.44      | PK       | Vertical   |
| 928.00          | 5.11           | 33.29                 | 38.40           | 74.00           | -35.60      | PK       | Horizontal |

#### 4.8 TEST RESULTS (EIRP REQUIREMENTS)

| Frequency (MHz) | Meter Reading (dBμV/m) | Detector | Corrected Factor (dB) | Corrected Amplitude (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Polar |
|-----------------|------------------------|----------|-----------------------|------------------------------|----------------|-------------|-------|
| 902.30          | 55.56                  | PK       | 32.75                 | 88.31                        | 94.00          | -5.69       | H     |
| 902.30          | 56.21                  | PK       | 32.75                 | 88.96                        | 94.00          | -5.04       | V     |
| 908.70          | 56.73                  | PK       | 32.86                 | 89.59                        | 94.00          | -4.41       | H     |
| 908.70          | 56.71                  | PK       | 32.86                 | 89.57                        | 94.00          | -4.43       | V     |
| 914.90          | 56.18                  | PK       | 33.12                 | 89.30                        | 94.00          | -4.70       | H     |
| 914.90          | 57.18                  | PK       | 33.12                 | 90.30                        | 94.00          | -3.70       | V     |



## 5. BANDWIDTH TEST

### 5.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Spectrum Setting : RBW= 30KHz, VBW $\geq$ RBW, Sweep time = Auto.

### 5.2 TEST SETUP

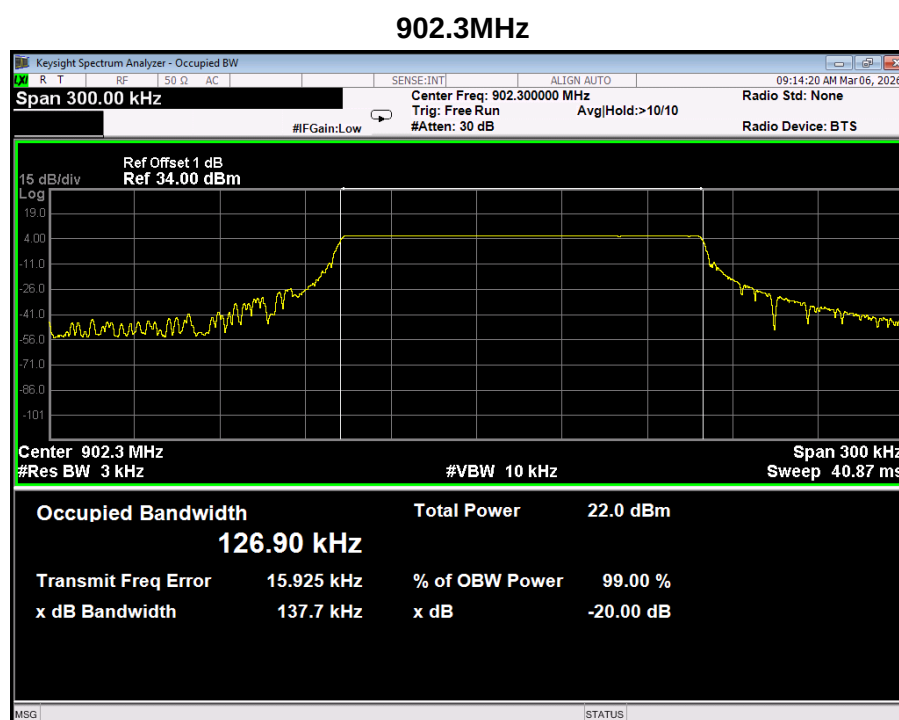


### 5.3 EUT OPERATION CONDITIONS

TX mode.

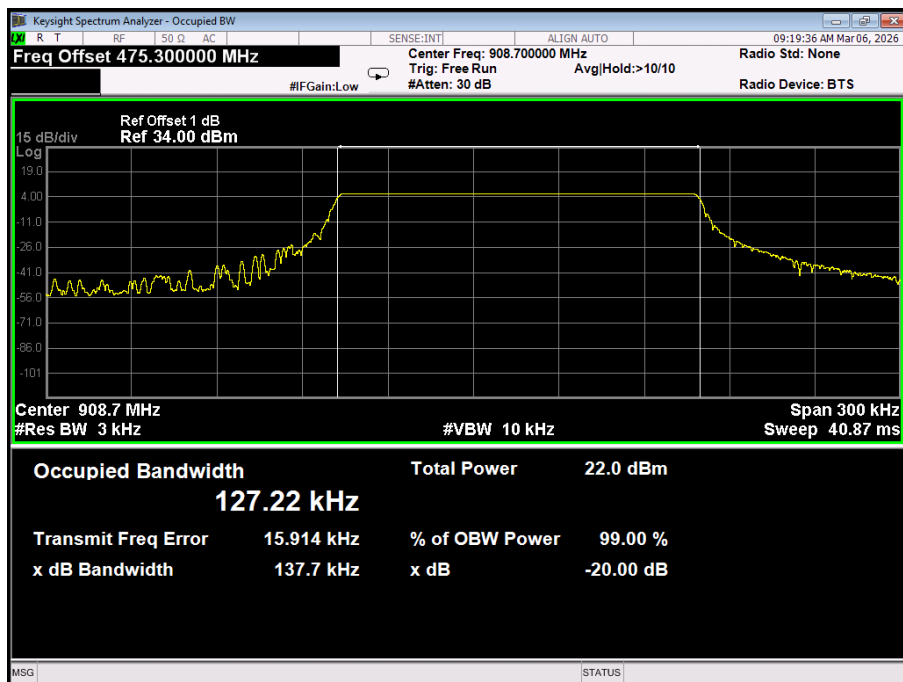
### 5.4 TEST RESULTS

| Condition | Frequency (MHz) | -20dB Bandwidth (KHz) | 99% Bandwidth (KHz) |
|-----------|-----------------|-----------------------|---------------------|
| NVNT      | 902.3           | 126.90                | 137.7               |
| NVNT      | 908.7           | 127.22                | 137.7               |
| NVNT      | 914.9           | 127.36                | 137.5               |

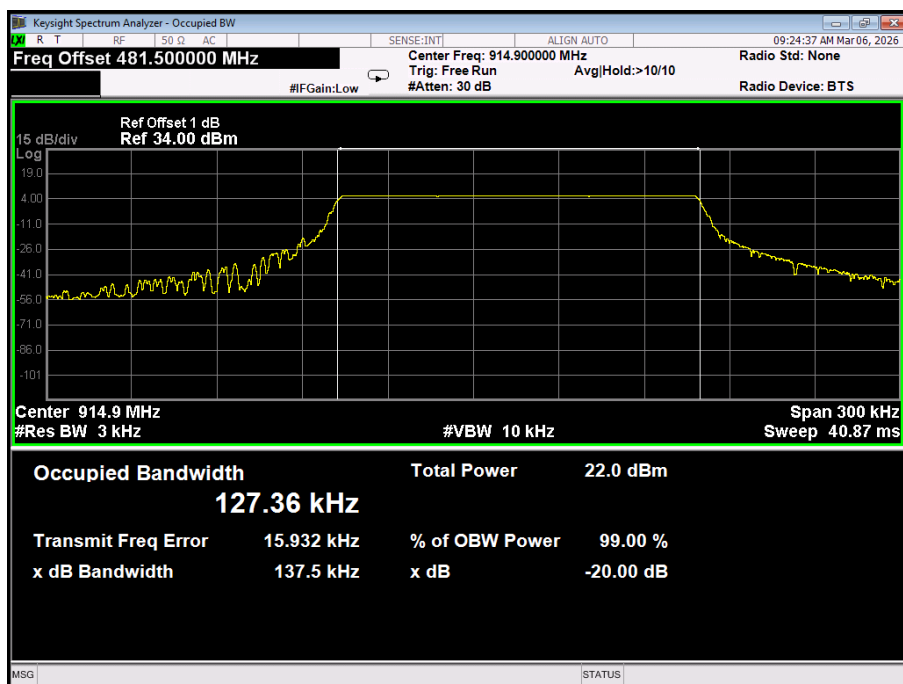




## 908.7MHz



## 914.9MHz





## 6. ANTENNA REQUIREMENT

### 6.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 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.

### 6.2 EUT ANTENNA

The EUT antenna is Monopole Antenna. It comply with the standard requirement.



## **APPENDIX I - MEASUREMENT PHOTOS**

Note: Please see the attached RF\_Test Setup photos for FCC ID.

※※※※※END OF THE REPORT※※※※※