

# FCC Test Report

**Report No.** : 1812C60407612501

**Applicant** : Hangzhou Licheng Electronic Machinery Co., Ltd.

**Address** : Room 2005, 2nd Floor, Building 2, No.128  
Zhiyi Road, Yuhang Subdistrict, Yuhang  
District, Hangzhou City, Zhejiang Province,  
China

**Product Name** : Ultrasonic Water Meter

**Report Date** : 2026-09-03

**Shenzhen Anbotek Compliance Laboratory Limited**



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## TEST REPORT

Applicant : Hangzhou Licheng Electronic Machinery Co., Ltd.  
Manufacturer : Hangzhou Licheng Electronic Machinery Co., Ltd.  
Product Name : Ultrasonic Water Meter  
Model No. : U-LY  
Trade Mark : LUYO, Licheng  
Rating(s) : Input: 3.6V=  
Output: 3.3V=  
(with DC 3.6V, 4000mAh or 8500mAh Battery inside)  
  
Test Standard(s) : 47 CFR Part 15.247  
Test Method(s) : ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024,  
KDB 558074 D01 15.247 Meas Guidance v05r02

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the 47 CFR Part 15.247 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt 2026-07-21

Date of Test 2026-07-21 to 2026-09-02

Prepared By

*Polly Mo*

( Polly Mo)

Approved & Authorized Signer

*Jules Guo*

(Jules Guo)

Revision History

| Report Version | Description     | Issued Date |
|----------------|-----------------|-------------|
| R00            | Original Issue. | 2026-09-03  |
|                |                 |             |
|                |                 |             |

# 1. General Information

## 1.1. Client Information

|              |   |                                                                                                                                   |
|--------------|---|-----------------------------------------------------------------------------------------------------------------------------------|
| Applicant    | : | Hangzhou Licheng Electronic Machinery Co., Ltd.                                                                                   |
| Address      | : | Room 2005, 2nd Floor, Building 2, No.128 Zhiyi Road, Yuhang Subdistrict, Yuhang District, Hangzhou City, Zhejiang Province, China |
| Manufacturer | : | Hangzhou Licheng Electronic Machinery Co., Ltd.                                                                                   |
| Address      | : | Room 2005, 2nd Floor, Building 2, No.128 Zhiyi Road, Yuhang Subdistrict, Yuhang District, Hangzhou City, Zhejiang Province, China |
| Factory      | : | Hangzhou Licheng Electronic Machinery Co., Ltd.                                                                                   |
| Address      | : | Room 2005, 2nd Floor, Building 2, No.128 Zhiyi Road, Yuhang Subdistrict, Yuhang District, Hangzhou City, Zhejiang Province, China |

## 1.2. Description of Device (EUT)

|                                                                                                                                                                                              |   |                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------|
| Product Name                                                                                                                                                                                 | : | Ultrasonic Water Meter                          |
| Model No.                                                                                                                                                                                    | : | U-LY                                            |
| Trade Mark                                                                                                                                                                                   | : | LUYO, Licheng                                   |
| Test Power Supply                                                                                                                                                                            | : | DC 3.6V battery inside                          |
| Test Sample No.                                                                                                                                                                              | : | 1-2-1(Normal Sample), 1-2-2(Engineering Sample) |
| Adapter                                                                                                                                                                                      | : | N.A.                                            |
| <b>RF Specification</b>                                                                                                                                                                      |   |                                                 |
| Operation Frequency                                                                                                                                                                          | : | 915.2-916.6MHz                                  |
| Number of Channel                                                                                                                                                                            | : | 8 Channels                                      |
| Modulation Type                                                                                                                                                                              | : | CSS                                             |
| Antenna Type                                                                                                                                                                                 | : | Spring Antenna                                  |
| Antenna Gain(Peak)                                                                                                                                                                           | : | -2.75dBi                                        |
| <b>Remark:</b> 1) All of the RF specification are provided by customer. 2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual. |   |                                                 |

### 1.3. Auxiliary Equipment Used During Test

| Title | Manufacturer | Model No. | Serial No. |
|-------|--------------|-----------|------------|
| /     | /            | /         | /          |

### 1.4. Description of Test Configuration

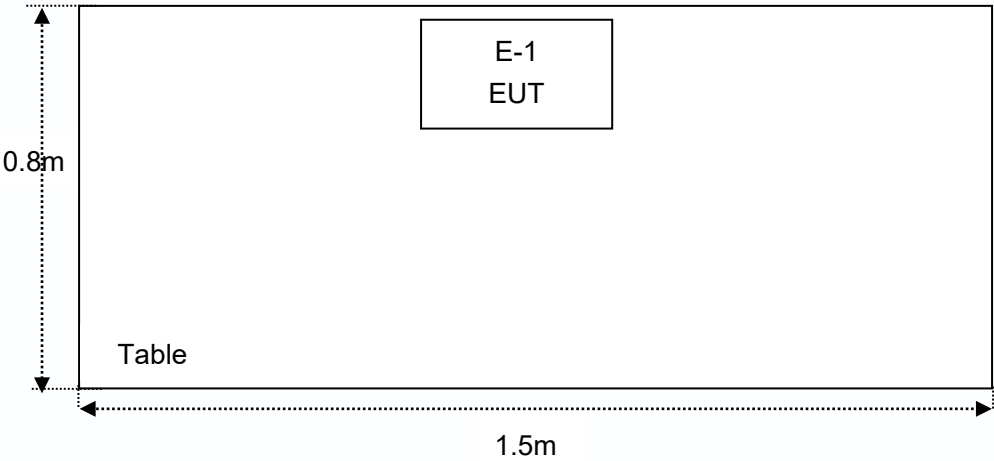
| Channel   | Freq. (MHz)  | Channel   | Freq. (MHz)  | Channel | Freq. (MHz) | Channel | Freq. (MHz) | Channel | Freq. (MHz) |
|-----------|--------------|-----------|--------------|---------|-------------|---------|-------------|---------|-------------|
| <b>01</b> | <b>915.2</b> | <b>05</b> | <b>916</b>   |         |             |         |             |         |             |
| 02        | 915.4        | 06        | 916.2        |         |             |         |             |         |             |
| 03        | 915.6        | 07        | 916.4        |         |             |         |             |         |             |
| 04        | 915.8        | <b>08</b> | <b>916.6</b> |         |             |         |             |         |             |

Note:

1. The engineering test program was provided and the EUT was programmed to be in continuously transmitting mode.
2. EUT was tested with Channel 01, 05 and 08.

1.5. Description Of Test Setup

RE



## 1.6. Test Equipment List

| Item | Equipment                                         | Manufacturer    | Model No.     | Last Cal.  | Cal. Interval |
|------|---------------------------------------------------|-----------------|---------------|------------|---------------|
| 1.   | L.I.S.N.<br>Artificial Mains<br>Network           | Rohde & Schwarz | ENV216        | 2026-06-08 | 1 Year        |
| 2.   | Three Phase V-type<br>Artificial Power<br>Network | CYBERTEK        | EM5040DT      | 2025-12-30 | 1 Year        |
| 3.   | EMI Test Receiver                                 | Rohde & Schwarz | ESCI          | 2025-12-30 | 1 Year        |
| 4.   | EMI Test Receiver                                 | Rohde & Schwarz | ESR26         | 2025-12-30 | 1 Year        |
| 5.   | MXA Spectrum<br>Analysis                          | Agilent         | N9020A        | 2026-06-08 | 3 Year        |
| 6.   | EMI Preamplifier                                  | SKET Electronic | LNPA-0118G-45 | 2025-12-30 | 1 Year        |
| 7.   | Double Ridged Horn<br>Antenna                     | SCHWARZBECK     | BBHA 9120D    | 2025-10-27 | 3 Year        |
| 8.   | Bilog Broadband<br>Antenna                        | Schwarzbeck     | VULB9163      | 2025-10-26 | 3 Year        |
| 9.   | Loop<br>Antenna(9K-30M)                           | Schwarzbeck     | FMZB1519B     | 2026-06-24 | 1 Year        |
| 10.  | Horn Antenna                                      | A-INFO          | LB-180400-KF  | 2024-01-22 | 3 Year        |
| 11.  | Pre-amplifier                                     | SONOMA          | 310N          | 2025-12-30 | 1 Year        |
| 12.  | EMI Test Software<br>EZ-EMC                       | SHURPLE         | N/A           | N/A        | N/A           |
| 13.  | MXA Spectrum<br>Analysis                          | KEYSIGHT        | N9020A        | 2026-06-08 | 1 Year        |
| 14.  | MXG RF Vector<br>Signal Generator                 | Agilent         | N5182A        | 2025-12-29 | 1 Year        |
| 15.  | Signal Generator                                  | Agilent         | E4421B        | 2025-12-29 | 1 Year        |
| 16.  | DC Power Supply                                   | IVYTECH         | IV3605        | 2026-06-08 | 1 Year        |
| 17.  | Constant<br>Temperature<br>Humidity Chamber       | ZHONGJIAN       | ZJ-HWHS80B    | 2026-06-08 | 1 Year        |
| 18.  | Spectrum Analyzer                                 | Rohde & Schwarz | FSV40-N       | 2025-12-29 | 1 Year        |

## 1.7. Measurement Uncertainty

| Parameter                                                                                                                                                                                                                               | Uncertainty                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Conducted emissions (AMN 150kHz~30MHz)                                                                                                                                                                                                  | 2.8dB                                                    |
| Occupied Bandwidth                                                                                                                                                                                                                      | 552Hz                                                    |
| Conducted Output Power                                                                                                                                                                                                                  | 0.84dB                                                   |
| Power Spectral Density                                                                                                                                                                                                                  | 0.84dB                                                   |
| Conducted Spurious Emission                                                                                                                                                                                                             | 1.24dB                                                   |
| Radiated spurious emissions (Below 30MHz)                                                                                                                                                                                               | 3.14dB                                                   |
| Radiated spurious emissions (30MHz~1GHz)                                                                                                                                                                                                | Horizontal: 3.94dB; Vertical: 4.34dB                     |
| Radiated spurious emissions (above 1GHz)                                                                                                                                                                                                | 1G-6GHz: 4.22dB<br>6G-18GHz: 4.14dB<br>18G-40GHz: 5.58dB |
| <p>The measurement uncertainty and decision risk evaluated according to AB/WI-RF-F-032.<br/>This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.</p> |                                                          |

## 1.8. Description of Test Facility

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

### FCC-Registration No.: 279531

Shenzhen Anbotek Compliance Laboratory Limited, 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 in our files. Registration No. 279531.

### Test Location

Shenzhen Anbotek Compliance Laboratory Limited.

Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China.

### 1.9.Disclaimer

1. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
2. The test report is invalid if there is any evidence and/or falsification.
3. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
4. This document may not be altered or revised in any way unless done so by Anbotek and all revisions are duly noted in the revisions section.
5. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
6. The authenticity of the information provided by the customer is the responsibility of the customer and the laboratory is not responsible for its authenticity.
7. The data in this report will be synchronized with the corresponding national market supervision and management departments and cross-border e-commerce platforms as required by regulatory agencies.
8. Unless otherwise specified, use the binary decision rule of simple acceptance ( $w=0$ ) for conformity determination with reference to ILAC-G8:09/2019.

## 2. Summary of Test Results

| Standard Section                                            | Test Item                                   | Result |
|-------------------------------------------------------------|---------------------------------------------|--------|
| 15.203/15.247(c)                                            | Antenna Requirement                         | PASS   |
| 15.207                                                      | Conducted Emission                          | N/A    |
| 15.205/15.209                                               | Spurious Emission                           | PASS   |
| 15.247(b)(3)                                                | Conducted Peak Output Power                 | PASS   |
| 15.247(a)(2)                                                | 6dB Emission Bandwidth                      | PASS   |
| 15.247(e)                                                   | Power Spectral Density                      | PASS   |
| 15.247(d)                                                   | Emissions in non-restricted frequency bands | PASS   |
| <b>Remark:</b> "N/A" is an abbreviation for Not Applicable. |                                             |        |

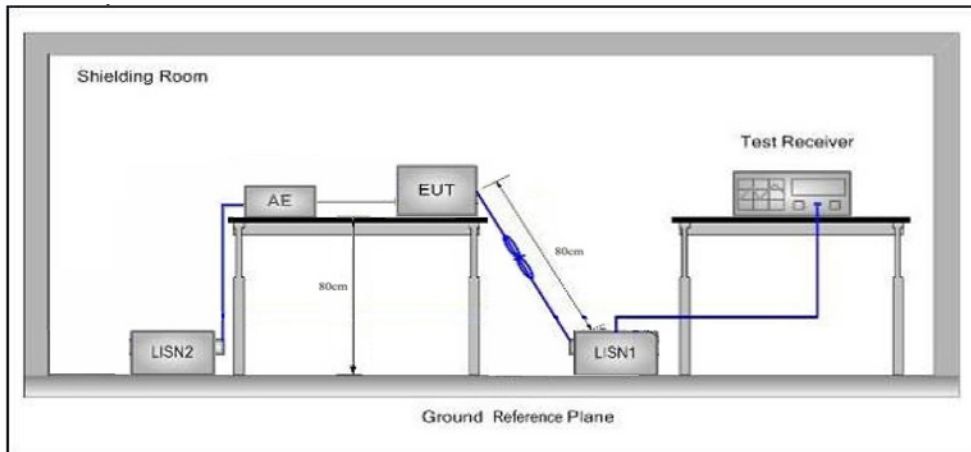
### 3. Conducted Emission Test

#### 3.1. Test Standard and Limit

| Test Standard | FCC Part15 Section 15.207 |                                |               |
|---------------|---------------------------|--------------------------------|---------------|
| Test Limit    | Frequency                 | Maximum RF Line Voltage (dBuV) |               |
|               |                           | Quasi-peak Level               | Average Level |
|               | 150kHz~500kHz             | 66 ~ 56 *                      | 56 ~ 46 *     |
|               | 500kHz~5MHz               | 56                             | 46            |
|               | 5MHz~30MHz                | 60                             | 50            |

**Remark:** (1) \*Decreasing linearly with logarithm of the frequency.  
(2) The lower limit shall apply at the transition frequency.

#### 3.2. Test Setup



#### 3.3. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

#### 3.4. Test Data

Not applicable for equipment operated with DC power supply.

## 4. Radiation Spurious Emission and Band Edge

### 4.1. Test Standard and Limit

| Test Standard | FCC Part15 C Section 15.209 and 15.205 |                                  |                |            |                          |
|---------------|----------------------------------------|----------------------------------|----------------|------------|--------------------------|
| Test Limit    | Frequency (MHz)                        | Field strength (microvolt/meter) | Limit (dBuV/m) | Remark     | Measurement distance (m) |
|               | 0.009MHz~0.490MHz                      | 2400/F(kHz)                      | -              | -          | 300                      |
|               | 0.490MHz~1.705MHz                      | 24000/F(kHz)                     | -              | -          | 30                       |
|               | 1.705MHz~30MHz                         | 30                               | -              | -          | 30                       |
|               | 30MHz~88MHz                            | 100                              | 40.0           | Quasi-peak | 3                        |
|               | 88MHz~216MHz                           | 150                              | 43.5           | Quasi-peak | 3                        |
|               | 216MHz~960MHz                          | 200                              | 46.0           | Quasi-peak | 3                        |
|               | 960MHz~1000MHz                         | 500                              | 54.0           | Quasi-peak | 3                        |
|               | Above 1000MHz                          | 500                              | 54.0           | Average    | 3                        |
|               |                                        | -                                | 74.0           | Peak       | 3                        |

**Remark:**

(1)The lower limit shall apply at the transition frequency.

(2) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

### 4.2. Test Setup

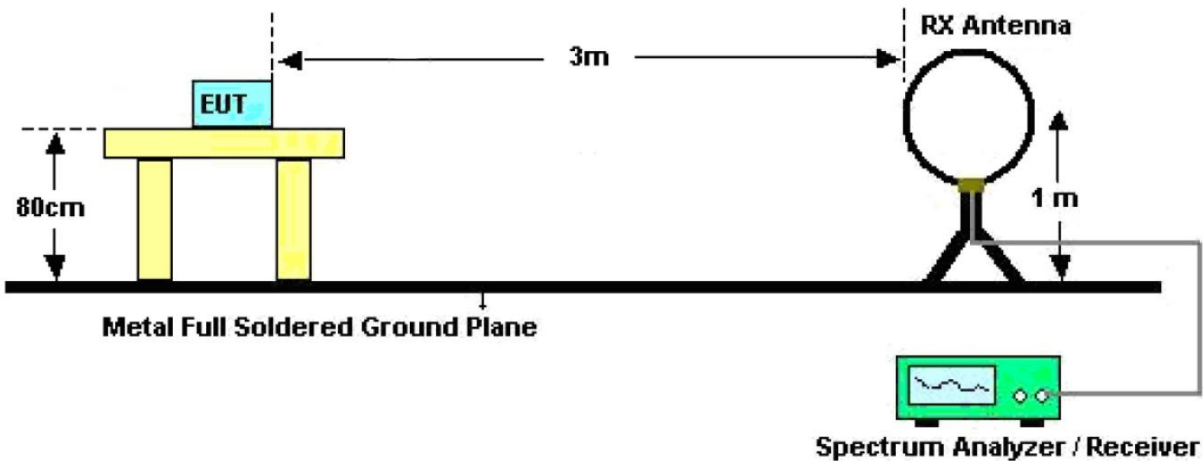


Figure 1. Below 30MHz

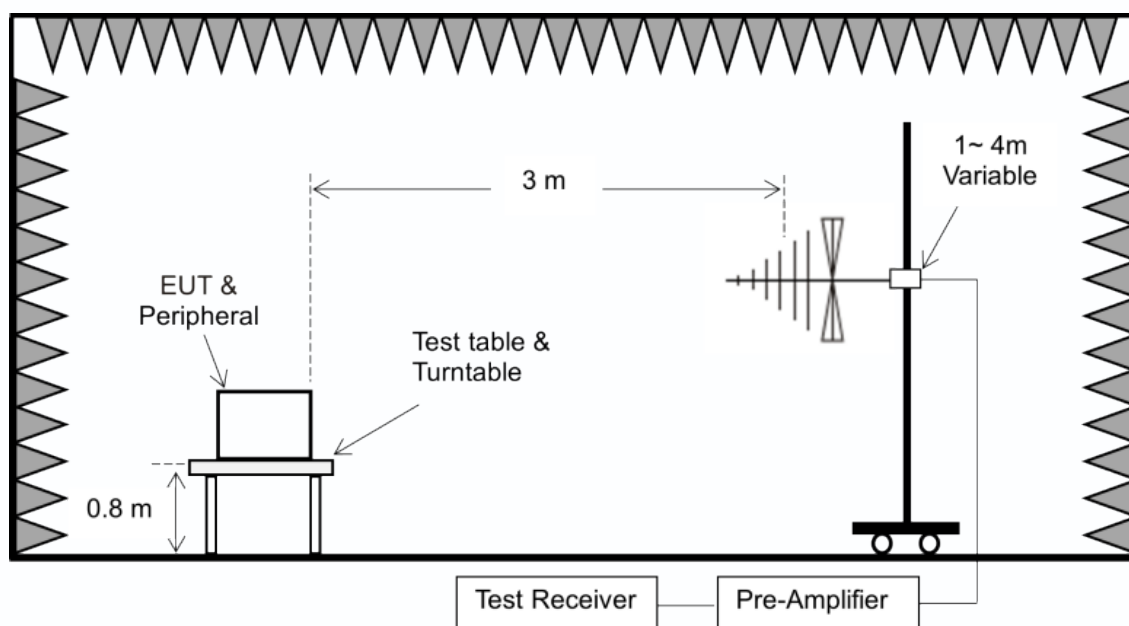


Figure 2. 30MHz to 1GHz

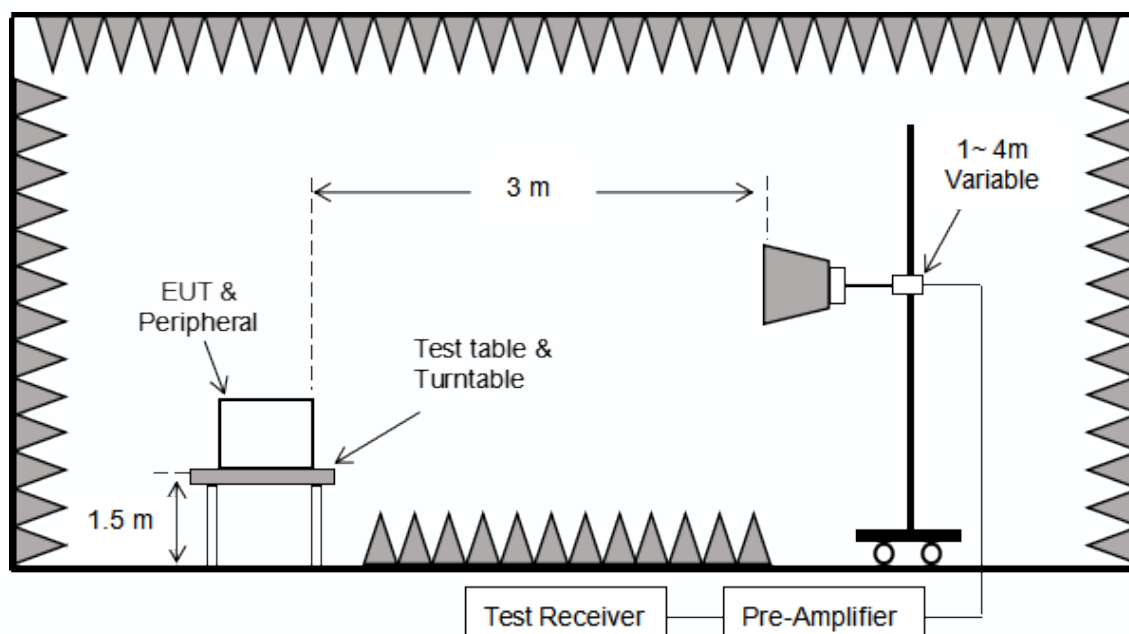


Figure 3. Above 1 GHz

### 4.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.

For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.

The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9\*6\*6 Chamber. The device is evaluated in xyz orientation.

For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

For 9kHz to 150kHz, Set the spectrum analyzer as:

RBW = 200Hz, VBW =1kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 150kHz to 30MHz, Set the spectrum analyzer as:

RBW = 9KHz, VBW =30kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 30MHz to 1000MHz, Set the spectrum analyzer as:

RBW = 100kHz, VBW =300kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For above 1GHz, Set the spectrum analyzer as:

RBW =1MHz, VBW =1MHz, Detector= Peak, Trace mode= Max hold, Sweep- auto couple.

RBW =1MHz, VBW =10Hz, Detector= Average, Trace mode= Max hold, Sweep- auto couple.

#### **4.4. Test Data**

##### **PASS**

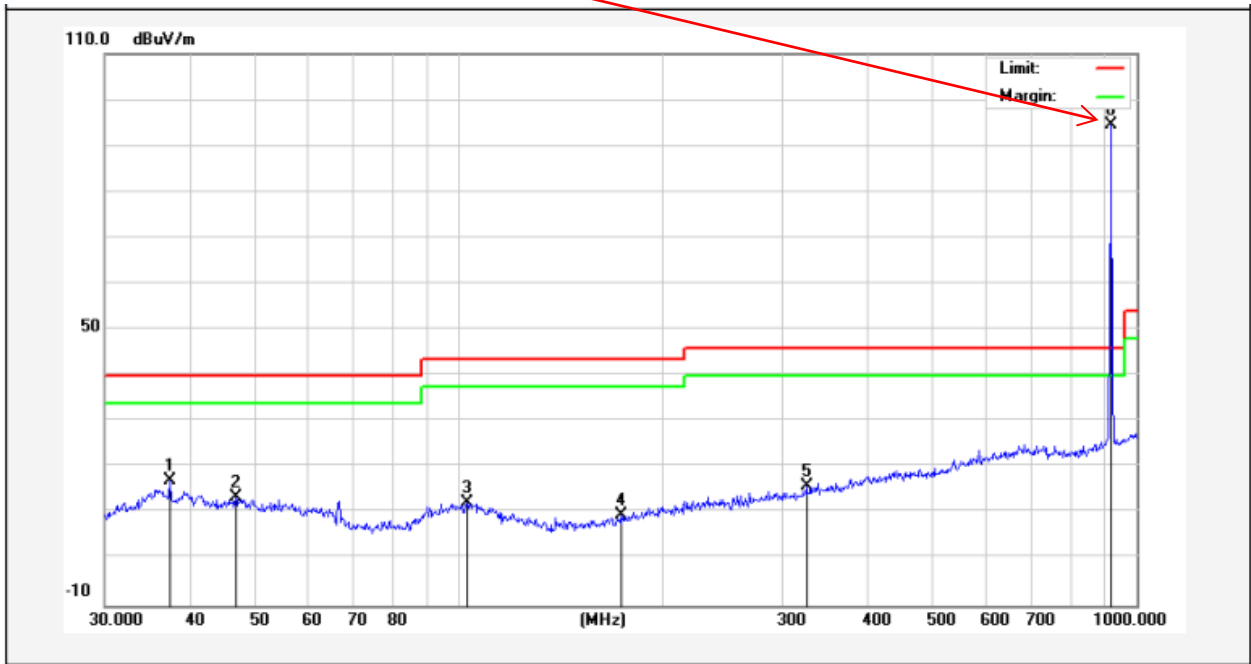
During the test, Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the X-axis is the worst case.

The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.

During the test, pre-scan all the modes, only the worst case is recorded in the report.

**Test Results (30~1000MHz)**

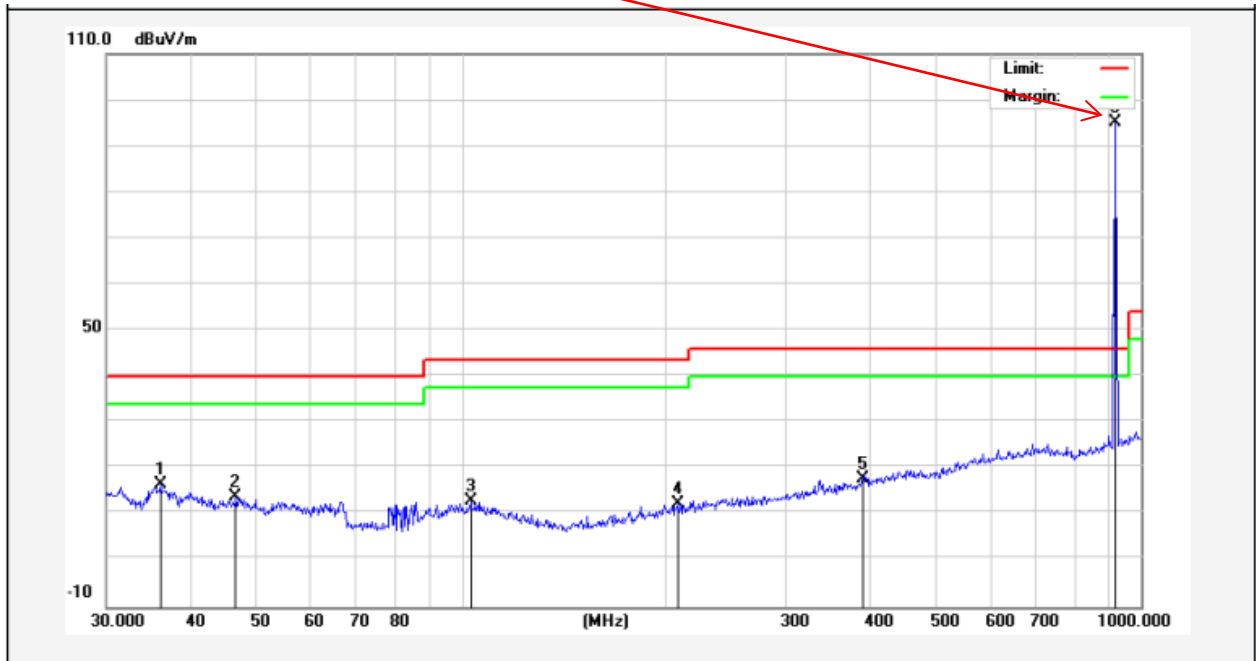
Test Mode: Middle CH (916.0MHz)  
Power Source: DC 3.6V battery inside  
Polarization: Horizontal  
Temp.(°C)/Hum.(%RH): 21.6°C/58%RH  
Fundamental



| No. | Freq. (MHz) | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Remark |
|-----|-------------|----------------|---------------|-----------------|----------------|-----------------|----------|--------|
| 1   | 37.4164     | 34.52          | -17.22        | 17.30           | 40.00          | -22.70          | QP       |        |
| 2   | 46.8303     | 30.46          | -16.86        | 13.60           | 40.00          | -26.40          | QP       |        |
| 3   | 102.7192    | 31.14          | -18.71        | 12.43           | 43.50          | -31.07          | QP       |        |
| 4   | 173.2050    | 31.40          | -21.62        | 9.78            | 43.50          | -33.72          | QP       |        |
| 5   | 325.5957    | 32.05          | -16.06        | 15.99           | 46.00          | -30.01          | QP       |        |
| 6   | 916.0687    | 101.16         | -6.49         | 94.67           | /              | /               | peak     |        |

**Test Results (30~1000MHz)**

Test Mode: Middle CH (916.0MHz)  
Power Source: DC 3.6V battery inside  
Polarization: Vertical  
Temp.(°C)/Hum.(%RH): 21.6°C/58%RH  
Fundamental



| No. | Freq. (MHz) | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Remark |
|-----|-------------|----------------|---------------|-----------------|----------------|-----------------|----------|--------|
| 1   | 36.0007     | 34.39          | -17.89        | 16.50           | 40.00          | -23.50          | QP       |        |
| 2   | 46.5030     | 30.82          | -16.82        | 14.00           | 40.00          | -26.00          | QP       |        |
| 3   | 103.0798    | 31.58          | -18.73        | 12.85           | 43.50          | -30.65          | QP       |        |
| 4   | 207.8497    | 32.25          | -19.79        | 12.46           | 43.50          | -31.04          | QP       |        |
| 5   | 389.3548    | 31.55          | -13.87        | 17.68           | 46.00          | -28.32          | QP       |        |
| 6   | 916.0687    | 101.63         | -6.49         | 95.14           | /              | /               | peak     |        |

**Test Results (1GHz-9.2GHz)**

| Test channel: Lowest  |                |               |                 |                     |                 |              |
|-----------------------|----------------|---------------|-----------------|---------------------|-----------------|--------------|
| <b>Peak value:</b>    |                |               |                 |                     |                 |              |
| Frequency (MHz)       | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 1830.40               | 47.18          | 7.53          | 54.71           | 74.00               | -19.29          | Vertical     |
| 2475.60               | 47.49          | 10.85         | 58.34           | 74.00               | -15.66          | Vertical     |
| 3660.80               | 44.77          | 12.49         | 57.26           | 74.00               | -16.74          | Vertical     |
| 4576.00               | *              |               |                 | 74.00               |                 | Vertical     |
| 5491.20               | *              |               |                 | 74.00               |                 | Vertical     |
| 1830.40               | 47.24          | 7.53          | 54.77           | 74.00               | -19.23          | Horizontal   |
| 2475.60               | 47.82          | 10.85         | 58.67           | 74.00               | -15.33          | Horizontal   |
| 3660.80               | 35.91          | 12.49         | 48.40           | 74.00               | -25.60          | Horizontal   |
| 4576.00               | *              |               |                 | 74.00               |                 | Horizontal   |
| 5491.20               | *              |               |                 | 74.00               |                 | Horizontal   |
| <b>Average value:</b> |                |               |                 |                     |                 |              |
| Frequency (MHz)       | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m)      | Over Limit (dB) | polarization |
| 1830.40               | 26.07          | 7.53          | 33.60           | 54.00               | -20.40          | Vertical     |
| 2475.60               | 26.93          | 10.85         | 37.78           | 54.00               | -16.22          | Vertical     |
| 3660.80               | 27.81          | 12.49         | 40.30           | 54.00               | -13.70          | Vertical     |
| 4576.00               | *              |               |                 | 54.00               |                 | Vertical     |
| 5491.20               | *              |               |                 | 54.00               |                 | Vertical     |
| 1830.40               | 25.84          | 7.53          | 33.37           | 54.00               | -20.63          | Horizontal   |
| 2475.60               | 27.24          | 10.85         | 38.09           | 54.00               | -15.91          | Horizontal   |
| 3660.80               | 26.99          | 12.49         | 39.48           | 54.00               | -14.52          | Horizontal   |
| 4576.00               | *              |               |                 | 54.00               |                 | Horizontal   |
| 5491.20               | *              |               |                 | 54.00               |                 | Horizontal   |

**Test Results (1GHz-9.2GHz)**

| Test channel: Middle  |                |               |                 |                     |                 |              |
|-----------------------|----------------|---------------|-----------------|---------------------|-----------------|--------------|
| <b>Peak value:</b>    |                |               |                 |                     |                 |              |
| Frequency (MHz)       | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 1832.00               | 48.05          | 7.53          | 55.58           | 74.00               | -18.42          | Vertical     |
| 2748.00               | 48.21          | 10.85         | 59.06           | 74.00               | -14.94          | Vertical     |
| 3664.00               | 45.79          | 12.49         | 58.28           | 74.00               | -15.72          | Vertical     |
| 4580.00               | *              |               |                 | 74.00               |                 | Vertical     |
| 5496.00               | *              |               |                 | 74.00               |                 | Vertical     |
| 1832.00               | 48.04          | 7.53          | 55.57           | 74.00               | -18.43          | Horizontal   |
| 2748.00               | 48.86          | 10.85         | 59.71           | 74.00               | -14.29          | Horizontal   |
| 3664.00               | 36.28          | 12.49         | 48.77           | 74.00               | -25.23          | Horizontal   |
| 4580.00               | *              |               |                 | 74.00               |                 | Horizontal   |
| 5496.00               | *              |               |                 | 74.00               |                 | Horizontal   |
| <b>Average value:</b> |                |               |                 |                     |                 |              |
| Frequency (MHz)       | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m)      | Over Limit (dB) |              |
| 1832.00               | 26.94          | 7.53          | 34.47           | 54.00               | -19.53          | polarization |
| 2748.00               | 27.65          | 10.85         | 38.50           | 54.00               | -15.50          | Vertical     |
| 3664.00               | 28.83          | 12.49         | 41.32           | 54.00               | -12.68          | Vertical     |
| 4580.00               | *              |               |                 | 54.00               |                 | Vertical     |
| 5496.00               | *              |               |                 | 54.00               |                 | Vertical     |
| 1832.00               | 26.64          | 7.53          | 34.17           | 54.00               | -19.83          | Vertical     |
| 2748.00               | 28.28          | 10.85         | 39.13           | 54.00               | -14.87          | Horizontal   |
| 3664.00               | 27.36          | 12.49         | 39.85           | 54.00               | -14.15          | Horizontal   |
| 4580.00               | *              |               |                 | 54.00               |                 | Horizontal   |
| 5496.00               | *              |               |                 | 54.00               |                 | Horizontal   |

### Test Results (1GHz-9.2GHz)

| Test channel: Highest |                |               |                 |                     |                 |              |
|-----------------------|----------------|---------------|-----------------|---------------------|-----------------|--------------|
| <b>Peak value:</b>    |                |               |                 |                     |                 |              |
| Frequency (MHz)       | Reading (dBUV) | Factor (dB/m) | Result (dBUV/m) | Limit Line (dBUV/m) | Over Limit (dB) | polarization |
| 1833.20               | 47.07          | 7.53          | 54.60           | 74.00               | -19.40          | Vertical     |
| 2749.80               | 47.40          | 10.85         | 58.25           | 74.00               | -15.75          | Vertical     |
| 3666.40               | 44.65          | 12.49         | 57.14           | 74.00               | -16.86          | Vertical     |
| 4583.00               | *              |               |                 | 74.00               |                 | Vertical     |
| 5499.60               | *              |               |                 | 74.00               |                 | Vertical     |
| 1833.20               | 47.15          | 7.53          | 54.68           | 74.00               | -19.32          | Horizontal   |
| 2749.80               | 47.69          | 10.85         | 58.54           | 74.00               | -15.46          | Horizontal   |
| 3666.40               | 35.86          | 12.49         | 48.35           | 74.00               | -25.65          | Horizontal   |
| 4583.00               | *              |               |                 | 74.00               |                 | Horizontal   |
| 5499.60               | *              |               |                 | 74.00               |                 | Horizontal   |
| <b>Average value:</b> |                |               |                 |                     |                 |              |
| Frequency (MHz)       | Reading (dBUV) | Factor (dB/m) | Result (dBUV/m) | Limit (dBUV/m)      | Over Limit (dB) | polarization |
| 1833.20               | 25.96          | 7.53          | 33.49           | 54.00               | -20.51          | Vertical     |
| 2749.80               | 26.84          | 10.85         | 37.69           | 54.00               | -16.31          | Vertical     |
| 3666.40               | 27.69          | 12.49         | 40.18           | 54.00               | -13.82          | Vertical     |
| 4583.00               | *              |               |                 | 54.00               |                 | Vertical     |
| 5499.60               | *              |               |                 | 54.00               |                 | Vertical     |
| 1833.20               | 25.75          | 7.53          | 33.28           | 54.00               | -20.72          | Horizontal   |
| 2749.80               | 27.11          | 10.85         | 37.96           | 54.00               | -16.04          | Horizontal   |
| 3666.40               | 26.94          | 12.49         | 39.43           | 54.00               | -14.57          | Horizontal   |
| 4583.00               | *              |               |                 | 54.00               |                 | Horizontal   |
| 5499.60               | *              |               |                 | 54.00               |                 | Horizontal   |

Remark:

1.Result =Reading + Factor

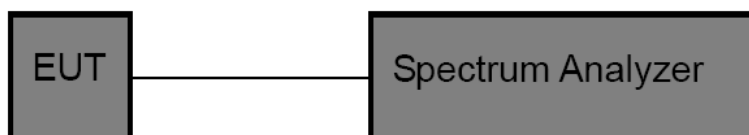
2. Test frequency are from 1GHz to 25GHz, "\*"means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.

## 5. Maximum Peak Output Power Test

### 5.1. Test Standard and Limit

|               |                                    |
|---------------|------------------------------------|
| Test Standard | FCC Part15 C Section 15.247 (b)(3) |
| Test Limit    | 1W (30dBm)                         |

### 5.2. Test Setup



### 5.3. Test Procedure

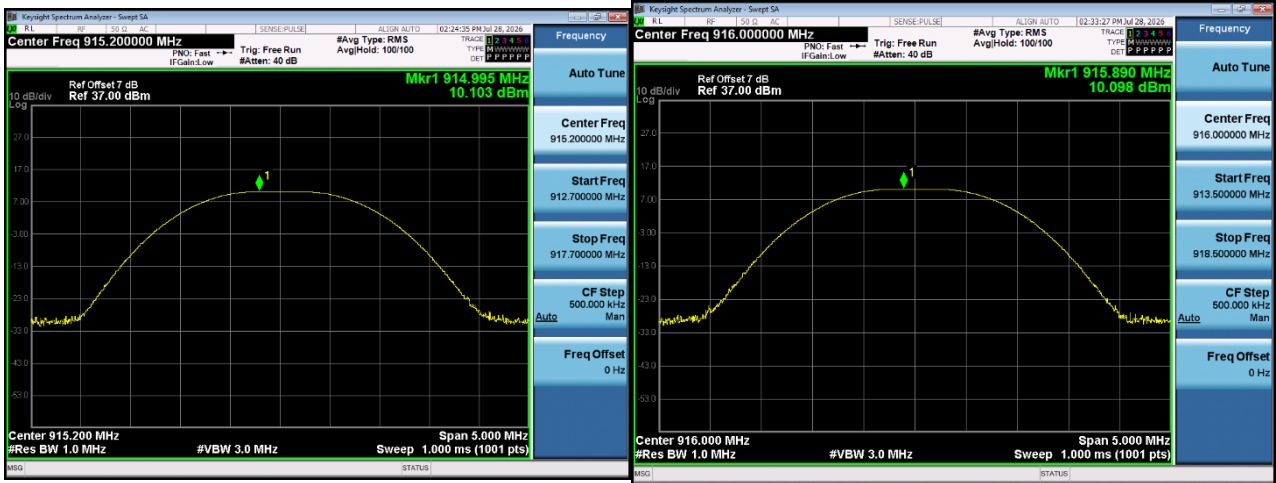
This procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.

1. Set the RBW  $\geq$  DTS bandwidth.
2. Set the VBW  $\geq 3 \times$  RBW.
3. Set the span  $\geq 3 \times$  RBW.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use peak marker function to determine the peak amplitude level.

### 5.4. Test Data

|              |         |           |      |                       |         |
|--------------|---------|-----------|------|-----------------------|---------|
| Temperature: | 25.3 °C | Humidity: | 48 % | Atmospheric Pressure: | 101 kPa |
|--------------|---------|-----------|------|-----------------------|---------|

| Test Channel | Peak Power output (dBm) | Limit (dBm) | Results |
|--------------|-------------------------|-------------|---------|
| Low          | 10.103                  | 30          | PASS    |
| Middle       | 10.098                  | 30          | PASS    |
| High         | 10.102                  | 30          | PASS    |



Low Channel

Mid Channel



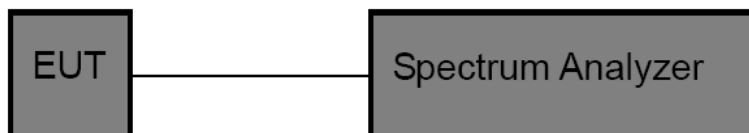
High Channel

## 6. 6dB Emission Bandwidth Test

### 6.1. Test Standard and Limit

|               |                                    |
|---------------|------------------------------------|
| Test Standard | FCC Part15 C Section 15.247 (a)(2) |
| Test Limit    | >500kHz                            |

### 6.2. Test Setup



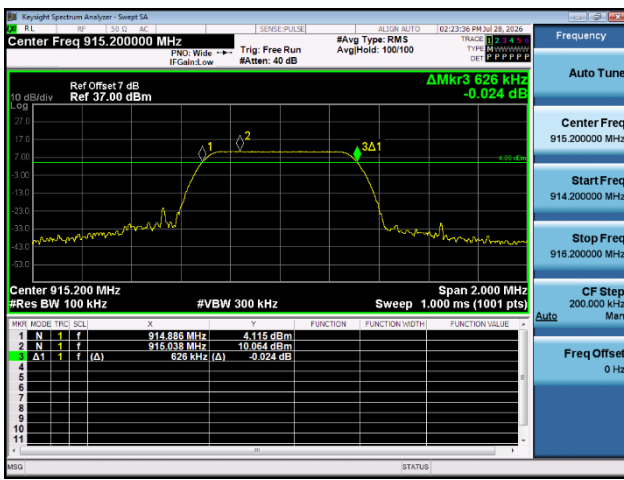
### 6.3. Test Procedure

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as:  
6dB Bandwidth:
  - a) Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
  - b) Set the VBW  $\geq [3 \times \text{RBW}]$ .
  - c) Detector = peak.
  - d) Trace mode = max-hold.
  - e) Sweep = No faster than coupled (auto) time.
  - f) Allow the trace to stabilize.
  - g) Measure the maximum width of the emission by placing two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “-6 dB down amplitude”. If a marker is below this “-6 dB down amplitude” value, then it shall be as close as possible to this value.

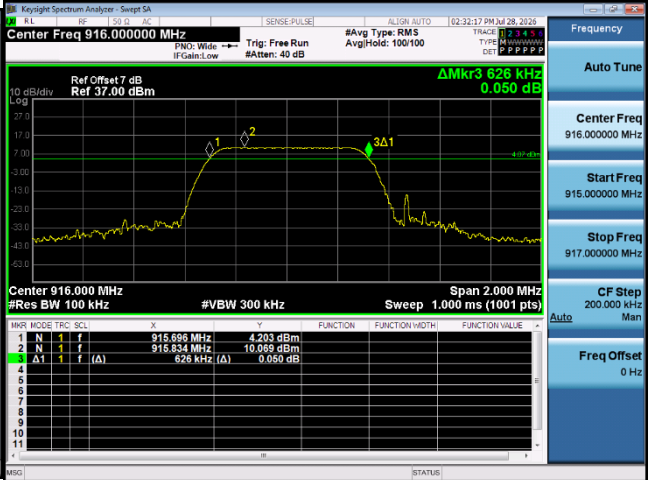
### 6.4. Test Data

|              |         |           |      |                       |         |
|--------------|---------|-----------|------|-----------------------|---------|
| Temperature: | 25.3 °C | Humidity: | 48 % | Atmospheric Pressure: | 101 kPa |
|--------------|---------|-----------|------|-----------------------|---------|

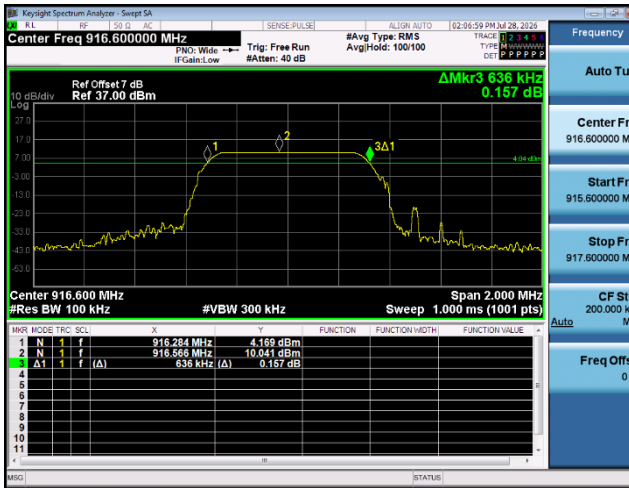
| Channel | Bandwidth (kHz) | Limit (kHz) | Results |
|---------|-----------------|-------------|---------|
| Low     | 626             | >500        | PASS    |
| Middle  | 626             | >500        | PASS    |
| High    | 636             | >500        | PASS    |



Low Channel



Mid Channel



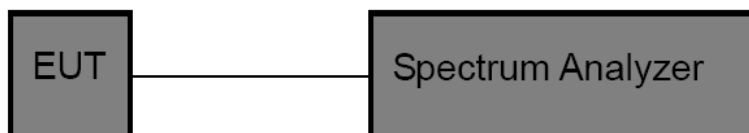
High Channel

## 7. Power Spectral Density Test

### 7.1. Test Standard and Limit

|               |                                 |
|---------------|---------------------------------|
| Test Standard | FCC Part15 C Section 15.247 (e) |
| Test Limit    | 8dBm/3KHz                       |

### 7.2. Test Setup



### 7.3. Test Procedure

1. Place the EUT on the table and set it in transmitting mode. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 1.5xDTS BW
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed.

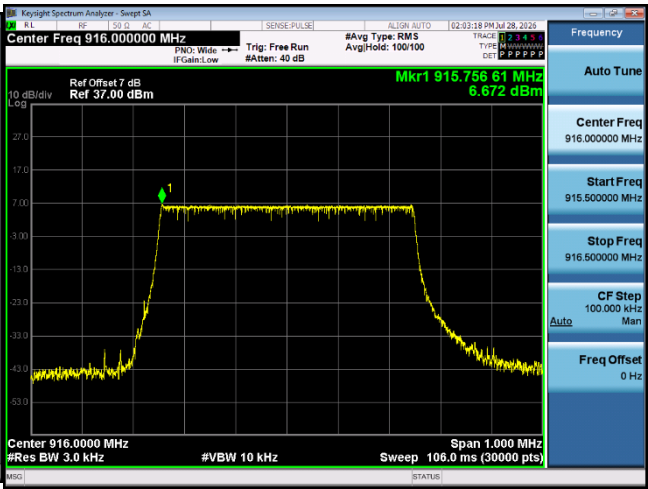
### 7.4. Test Data

|              |         |           |      |                       |         |
|--------------|---------|-----------|------|-----------------------|---------|
| Temperature: | 25.3 °C | Humidity: | 48 % | Atmospheric Pressure: | 101 kPa |
|--------------|---------|-----------|------|-----------------------|---------|

| Channel | PSD<br>(dBm/3KHz) | Limit<br>(dBm/3KHz) | Results |
|---------|-------------------|---------------------|---------|
| Low     | 6.719             | 8.00                | PASS    |
| Middle  | 6.672             | 8.00                | PASS    |
| High    | 6.695             | 8.00                | PASS    |



Low Channel



Mid Channel



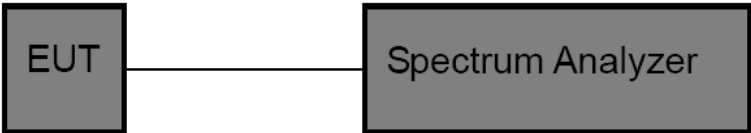
High Channel

8. Emissions in non-restricted frequency bands

8.1. Test Standard and Limit

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Standard | FCC Part15 C Section 15.247 (d)                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Test Limit    | in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in15.209(a). |

8.2. Test Setup



8.3. Test Procedure

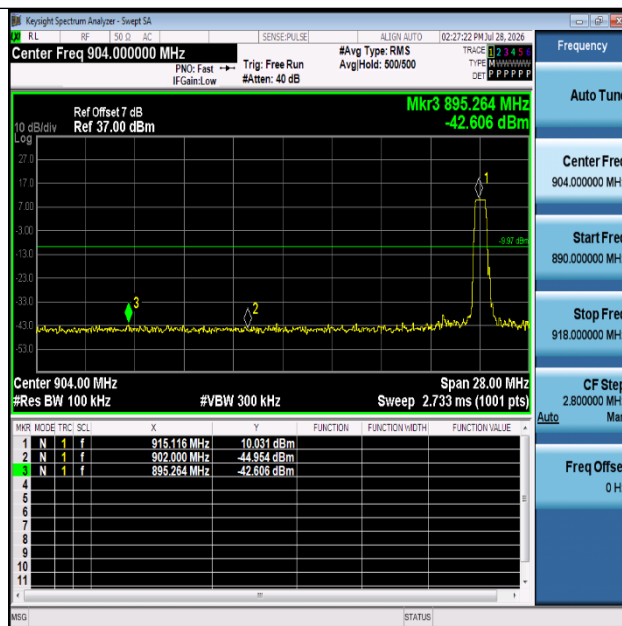
Using the following spectrum analyzer setting:

- 1. Set the RBW = 100KHz.
- 2. Set the VBW = 300KHz.
- 3. Sweep time = auto couple.
- 4. Detector function = peak.
- 5. Trace mode = max hold.
- 6. Allow trace to fully stabilize.

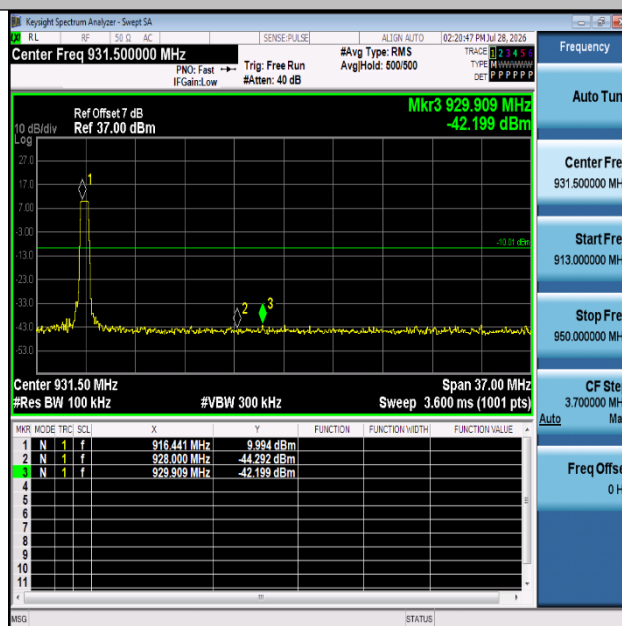
## 8.4. Test Data

|              |         |           |      |                       |         |
|--------------|---------|-----------|------|-----------------------|---------|
| Temperature: | 25.3 °C | Humidity: | 48 % | Atmospheric Pressure: | 101 kPa |
|--------------|---------|-----------|------|-----------------------|---------|

| ChName | Frequency [MHz] | RefLevel [dBm] | Result [dBm] | Limit [dBm] | Verdict |
|--------|-----------------|----------------|--------------|-------------|---------|
| Low    | 915.2           | 10.031         | -44.95       | ≤-9.97      | PASS    |
| High   | 916.6           | 9.994          | -44.29       | ≤-10.01     | PASS    |

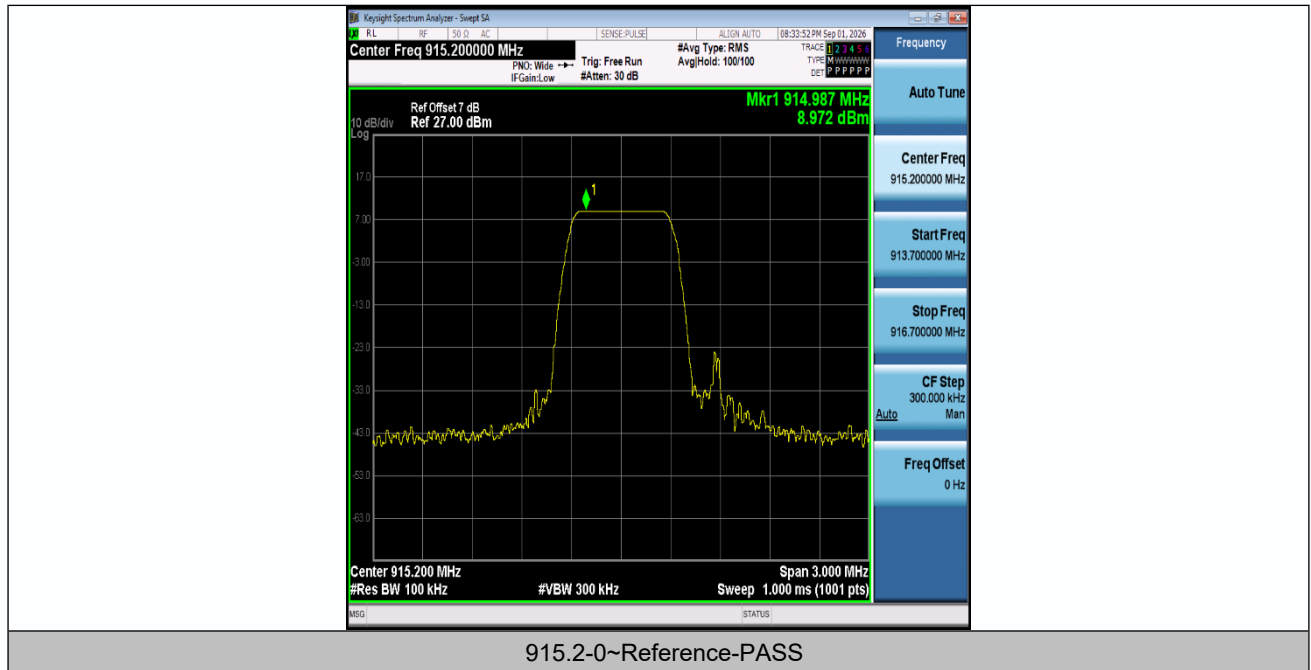


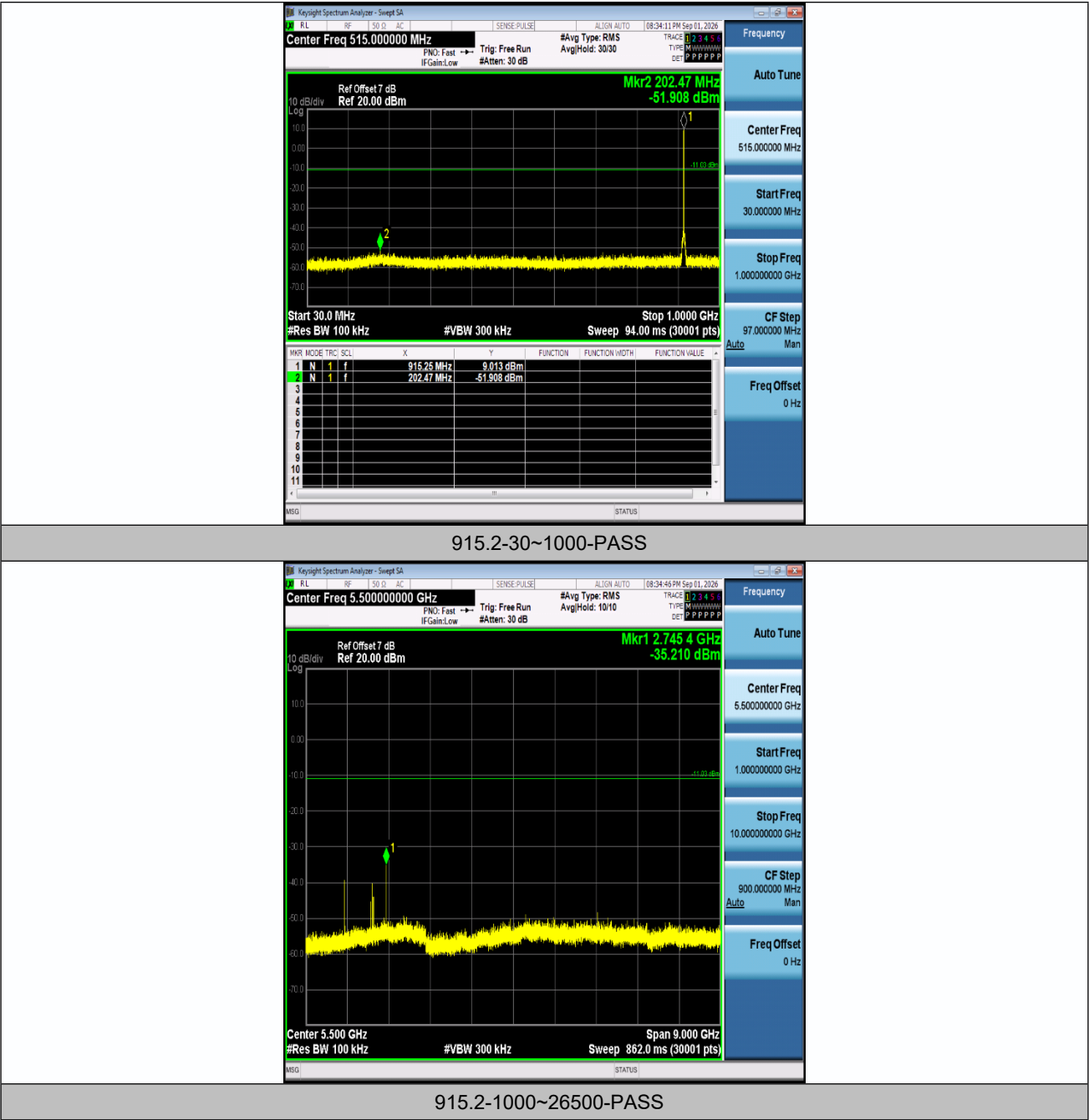
Low-PASS

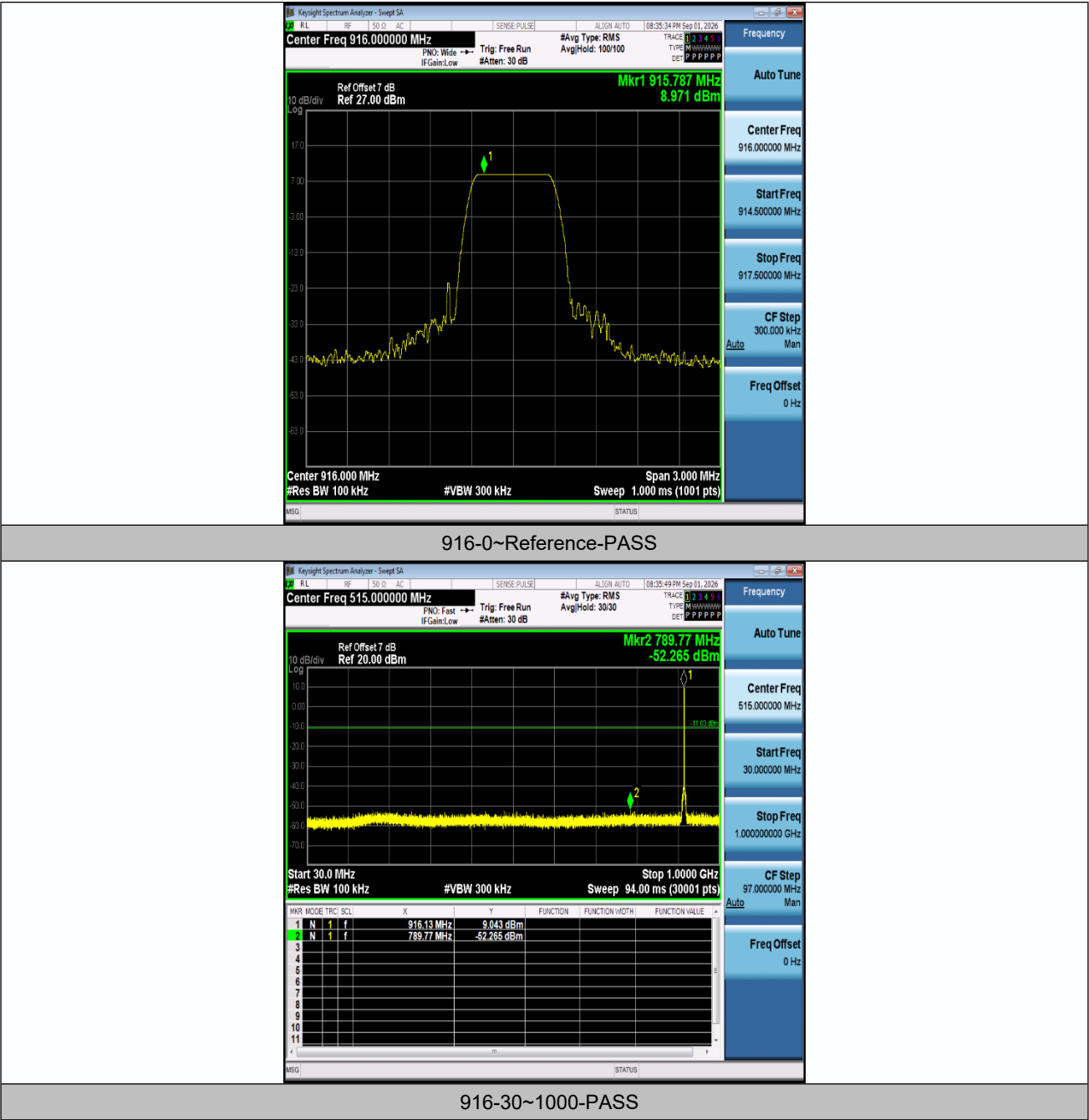


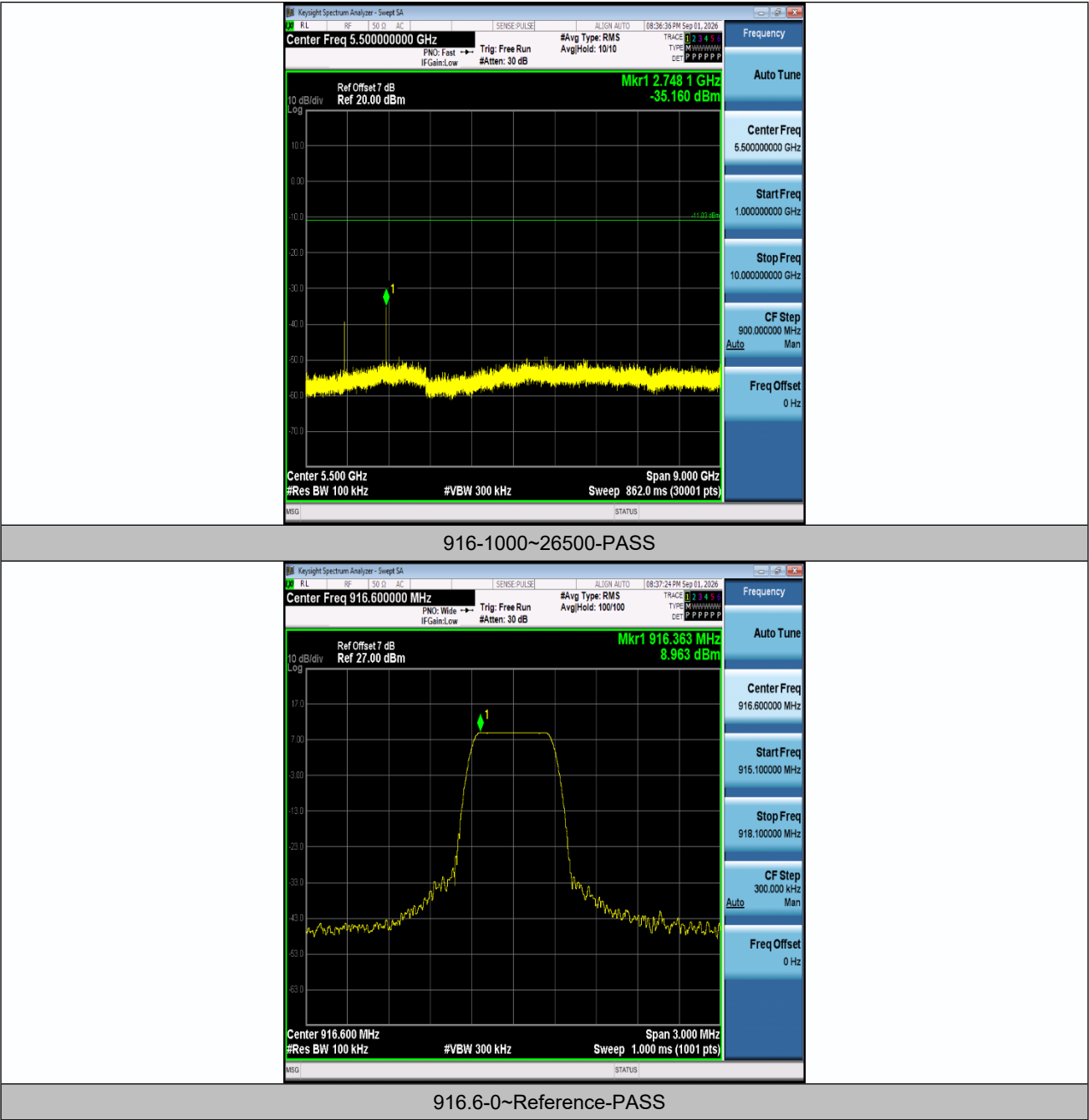
High-PASS

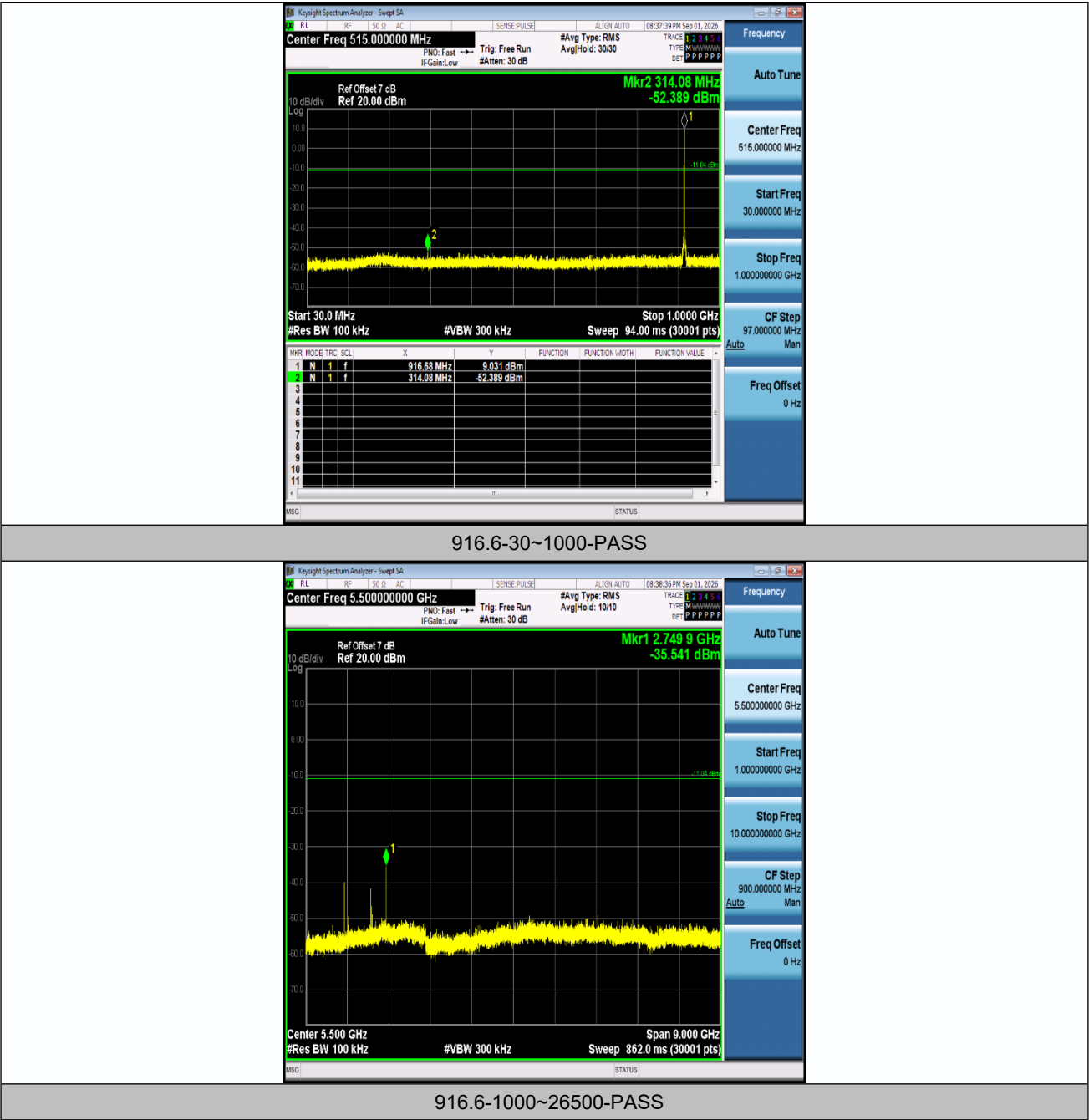
| Frequency [MHz] | Freq. Range [MHz] | Ref. Level [dBm] | Result [dBm] | Limit [dBm]   | Verdict |
|-----------------|-------------------|------------------|--------------|---------------|---------|
| 915.2           | 0~Reference       | 8.97             | 8.97         | ---           | PASS    |
| 915.2           | 30~1000           | 8.97             | -51.91       | $\leq -11.03$ | PASS    |
| 915.2           | 1000~10000        | 8.97             | -35.21       | $\leq -11.03$ | PASS    |
| 916             | 0~Reference       | 8.97             | 8.97         | ---           | PASS    |
| 916             | 30~1000           | 8.97             | -52.27       | $\leq -11.03$ | PASS    |
| 916             | 1000~10000        | 8.97             | -35.16       | $\leq -11.03$ | PASS    |
| 916.6           | 0~Reference       | 8.96             | 8.96         | ---           | PASS    |
| 916.6           | 30~1000           | 8.96             | -52.39       | $\leq -11.04$ | PASS    |
| 916.6           | 1000~10000        | 8.96             | -35.54       | $\leq -11.04$ | PASS    |











## 9. Antenna Requirement

### 9.1. Test Standard and Requirement

| Test Standard | FCC Part15 Section 15.203 /247(c)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Requirement   | <p>1) 15.203 requirement:<br/>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, 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.</p> <p>2) 15.247(c) (1)(i) requirement:<br/>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 6 dBi.</p> |

### 9.2. Antenna Connected Construction

The antenna is a Spring Antenna which permanently attached, and the best case gain of the antenna is -2.75dBi. It complies with the standard requirement.

## **APPENDIX I -- TEST SETUP PHOTOGRAPH**

Please refer to separated files Appendix I -- Test Setup Photograph\_RF

## **APPENDIX II -- EXTERNAL PHOTOGRAPH**

Please refer to separated files Appendix II -- External Photograph

## **APPENDIX III -- INTERNAL PHOTOGRAPH**

Please refer to separated files Appendix III -- Internal Photograph

----- End of Report -----

