

# TEST REPORT

Report No.: BCTC2502087940-1E

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Applicant: Shenzhen Jiayz photo industrial.,Ltd

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Product Name: Dual-Channel Digital UHF Wireless Audio System  
for Filmmakers

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Test Model: K9 TX-US

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Tested Date: 2025-02-14 to 2025-03-31

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Issued Date: 2025-04-01

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**Shenzhen BCTC Testing Co., Ltd.**



**FCC ID: 2ARN3-022611TX**

Product Name: Dual-Channel Digital UHF Wireless Audio System for Filmmakers

Trademark: Saramonic

Model/Type Ref.: K9 TX-US,K9 TX

Prepared For: Shenzhen Jiayz photo industrial.,Ltd

Address: A16 Building,Intelligent Terminal,Industrial Park of Silicon Valley Power,Guanlan,  
Longhua District,Shenzhen,China

Manufacturer: Shenzhen Jiayz photo industrial.,Ltd

Address: A16 Building,Intelligent Terminal,Industrial Park of Silicon Valley Power,Guanlan,  
Longhua District,Shenzhen,China

Prepared By: Shenzhen BCTC Testing Co., Ltd.

Address: 1-2/F., Building SB, Pengzhou Industrial Park, No.158, Fuyuan 1st Road,  
Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

Sample Received Date: 2025-02-14

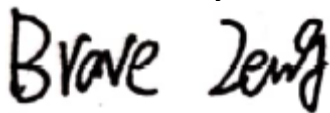
Sample tested Date: 2025-02-14 to 2025-03-31

Report No.: BCTC2502087940-1E

Test Standards: FCC Part74H  
ANSI C63.10-2013  
ANSI/TIA-603-E:2016

Test Results: PASS

Tested by:



Brave Zeng/ Project Handler

Approved by:



Zero Zhou/Reviewer

The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

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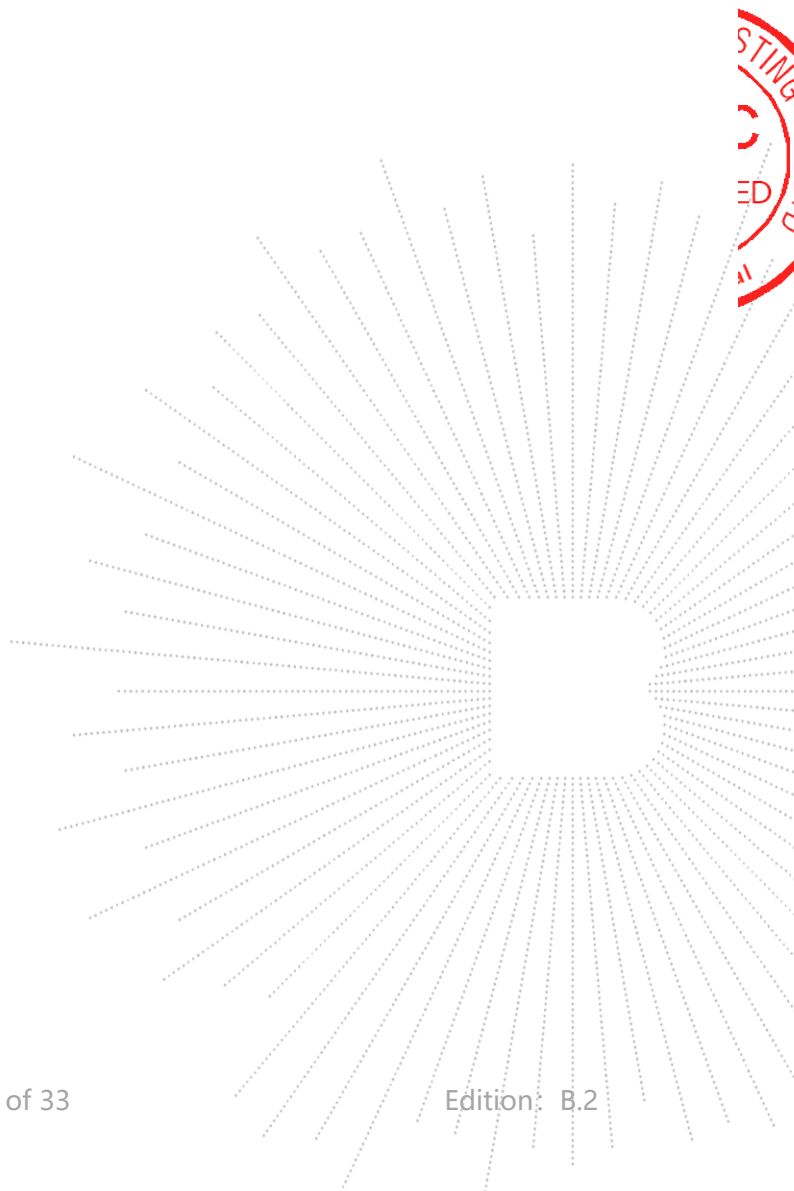
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**1. Version**

| Report No.        | Issue Date | Description | Approved |
|-------------------|------------|-------------|----------|
| BCTC2502087940-1E | 2025-04-01 | Original    | Valid    |
|                   |            |             |          |



## 2. Test Summary

The Product has been tested according to the following specifications:

| No.                         | Test Parameter                    | Clause No         | Results |
|-----------------------------|-----------------------------------|-------------------|---------|
| 1                           | Output Power Measurement          | §74.861(e)(1)(ii) | PASS    |
| 2                           | Modulation Characteristics        | §74.861(e)(3)     | N/A     |
| 3                           | Occupied Bandwidth Emission       | §74.861(e)(5)     | PASS    |
| 4                           | Radiated Spurious Emission        | §74.861(e)(6)     | PASS    |
| 5                           | Spurious Emission at Antenna Port | §2.1051           | PASS    |
| 6                           | Frequency Stability               | §74.861(e)(4)     | PASS    |
| NOTE1: N/A (Not Applicable) |                                   |                   |         |

### 3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

| No. | Item                                               | Uncertainty |
|-----|----------------------------------------------------|-------------|
| 1   | 3m chamber Radiated spurious emission(9kHz-30MHz)  | U=3.7dB     |
| 2   | 3m chamber Radiated spurious emission(30MHz-1GHz)  | U=4.3dB     |
| 3   | 3m chamber Radiated spurious emission(1GHz-18GHz)  | U=4.5dB     |
| 4   | 3m chamber Radiated spurious emission(18GHz-40GHz) | U=3.34dB    |
| 5   | Conducted Emission(150kHz-30MHz)                   | U=3.20dB    |
| 6   | Conducted Adjacent channel power                   | U=1.38dB    |
| 7   | Conducted output power uncertainty Above 1G        | U=1.576dB   |
| 8   | Conducted output power uncertainty below 1G        | U=1.28dB    |
| 9   | humidity uncertainty                               | U=5.3%      |
| 10  | Temperature uncertainty                            | U=0.59°C    |

## 4. Product Information and Test Setup

### 4.1 Product Information

|                       |                                                                                                                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model/Type Ref.:      | K9 TX-US,K9 TX                                                                                                                                                                             |
| Model differences:    | The following models of units we produce are identical in electrical, mechanical and physical structure; The difference is only in the model name, we finally have K9 TX-US as test model. |
| Hardware Version:     | N/A                                                                                                                                                                                        |
| Software Version:     | N/A                                                                                                                                                                                        |
| Operation Frequency:  | 550MHz - 608MHz                                                                                                                                                                            |
| Type of Modulation:   | GFSK                                                                                                                                                                                       |
| Number Of Channel     | 580 Channel                                                                                                                                                                                |
| Antenna installation: | External antenna                                                                                                                                                                           |
| Antenna Gain:         | 2dBi                                                                                                                                                                                       |
| Ratings:              | DC 3V by 2*AA battery<br>DC 5V from adapter                                                                                                                                                |

### 4.2 Test Setup Configuration

See test photographs attached in *EUT TEST SETUP PHOTOGRAPHS* for the actual connections between Product and support equipment.

Radiated Spurious Emission

|            |
|------------|
| E-1<br>EUT |
|------------|

### 4.3 Support Equipment

| No. | Device Type                                                   | Brand | Model    | Series No. | Note      |
|-----|---------------------------------------------------------------|-------|----------|------------|-----------|
| E-1 | Dual-Channel Digital UHF Wireless Audio System for Filmmakers | N/A   | K9 TX-US | N/A        | EUT       |
| E-2 | Adapter                                                       | N/A   | N/A      | N/A        | Auxiliary |

| Item | Shielded Type | Ferrite Core | Length | Note |
|------|---------------|--------------|--------|------|
| N/A  | N/A           | N/A          | N/A    | N/A  |

#### Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



#### 4.4 Channel List

| Lowest Frequency | Middle Frequency | Highest Frequency |
|------------------|------------------|-------------------|
| Frequency (MHz)  | Frequency (MHz)  | Frequency (MHz)   |
| 550.0            | 579.0            | 607.9             |

| Frequency (MHz) |       |       |       |       |       |
|-----------------|-------|-------|-------|-------|-------|
| 550.0           | 550.1 | 550.2 | 550.3 | 550.4 | 550.5 |
| 550.6           | 550.7 | 550.8 | 550.9 | 551   | 551.1 |
| ~               | ~     | ~     | ~     | ~     | ~     |
| 579.0           | 579.1 | 579.2 | 579.3 | 579.4 | 579.5 |
| 579.6           | 579.7 | 579.8 | 579.9 | 580   | 580.1 |
| ~               | ~     | ~     | ~     | ~     | ~     |
| 607.2           | 607.3 | 607.4 | 607.5 | 607.6 | 607.7 |
| 607.8           | 607.9 | 608.0 | /     | /     | /     |

Test Conditions :

|                  | Normal | LTLV | LTHV | HTHV | HTLV |
|------------------|--------|------|------|------|------|
| Temperature (°C) | 20     | -30  | -30  | 50   | 50   |
| Voltage (V)      | 3.0    | 2.6  | 3.4  | 2.6  | 3.4  |

#### 4.5 Test Mode

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

| Test Mode | Test mode              |
|-----------|------------------------|
| Mode 1    | Transmitting(550MHz)   |
| Mode 2    | Transmitting(579MHz)   |
| Mode 3    | Transmitting(607.9MHz) |

Note: The measurements are performed at the available channels.

## 5. Test Facility and Test Instrument Used

### 5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuha i Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

FCC Test Firm Registration Number: 712850

A2LA certificate registration number is: CN1212

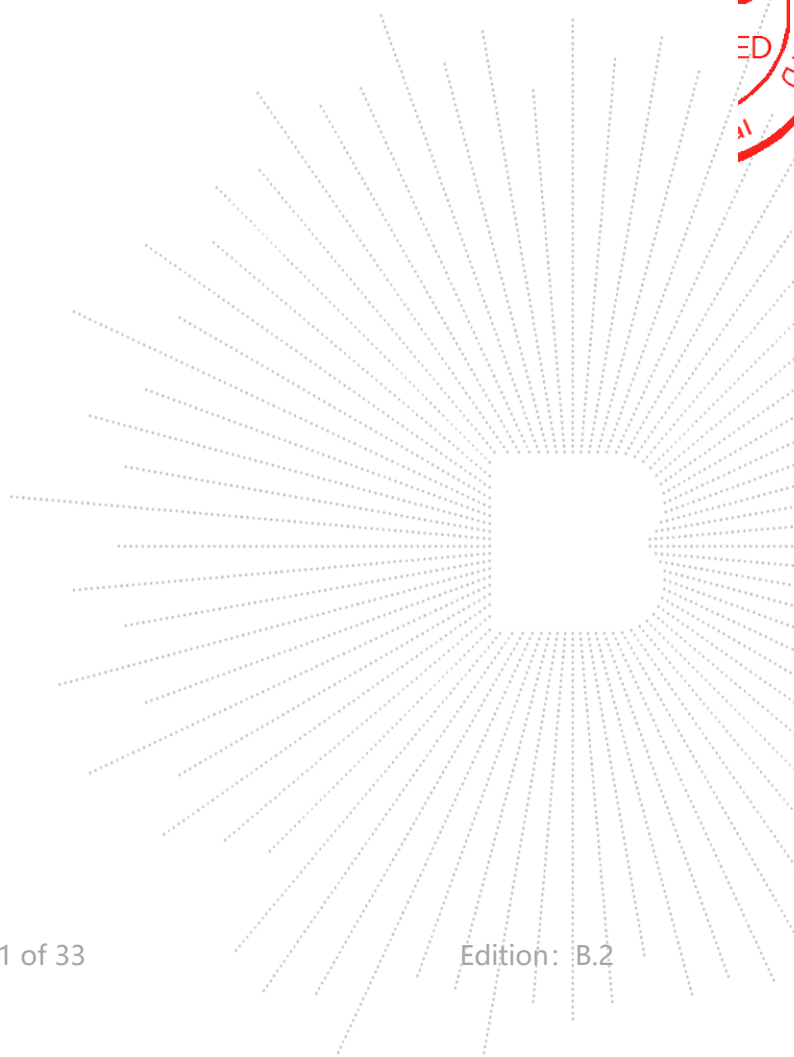
ISED Registered No.: 23583

ISED CAB identifier: CN0017

### 5.2 Test Instrument Used

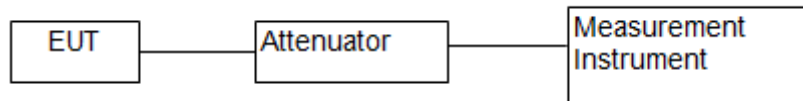
| Radiated Emissions Test (966 Chamber02) |              |                      |                  |               |               |
|-----------------------------------------|--------------|----------------------|------------------|---------------|---------------|
| Equipment                               | Manufacturer | Model#               | Serial#          | Last Cal.     | Next Cal.     |
| 966 chamber                             | SKET         | 966 Room             | 966              | Oct. 31. 2024 | Oct. 30. 2027 |
| Receiver                                | R&S          | ESR3                 | 102075           | May 16, 2024  | May 15, 2025  |
| Receiver                                | R&S          | ESRI7                | 100010           | Oct. 31. 2024 | Oct. 30. 2025 |
| Amplifier                               | SKET         | LNPA-30M01<br>G-30   | SK2021082004     | Oct. 31. 2024 | Oct. 30. 2025 |
| TRILOG<br>Broadband<br>Antenna          | Schwarzbeck  | VULB9168             | 1323             | May 21, 2024  | May 20, 2025  |
| Loop<br>Antenna(9KHz<br>-30MHz)         | Schwarzbeck  | FMZB1519B            | 00014            | May 21, 2024  | May 20, 2025  |
| Amplifier                               | SKET         | LAPA_01G1<br>8G-45dB | SK202104090<br>1 | May 16, 2024  | May 15, 2025  |
| Horn Antenna                            | Schwarzbeck  | BBHA9120D            | 1541             | May 21, 2024  | May 20, 2025  |
| Amplifier(18G<br>Hz-40GHz)              | MITEQ        | TTA1840-35-<br>HG    | 2034381          | May 16, 2024  | May 15, 2025  |
| Horn<br>Antenn(18GH<br>z-40GHz)         | Schwarzbeck  | BBHA9170             | 00822            | May 21, 2024  | May 20, 2025  |
| Spectrum<br>Analyzer9kHz-<br>40GHz      | R&S          | FSP40                | 100363           | May 16, 2024  | May 15, 2025  |
| Software                                | Frad         | EZ-EMC               | FA-03A2 RE       | \             | \             |

| RF Conducted Test            |              |             |            |              |              |
|------------------------------|--------------|-------------|------------|--------------|--------------|
| Equipment                    | Manufacturer | Model#      | Serial#    | Last Cal.    | Next Cal.    |
| Power Metter                 | Keysight     | E4419       | \          | May 16, 2024 | May 15, 2025 |
| Power Sensor (AV)            | Keysight     | E9300A      | \          | May 16, 2024 | May 15, 2025 |
| Signal Analyzer20kHz-26.5GHz | Keysight     | N9020A      | MY49100060 | May 16, 2024 | May 15, 2025 |
| Spectrum Analyzer9kHz-40GHz  | R&S          | FSP40       | 100363     | May 16, 2024 | May 15, 2025 |
| Radio frequency control box  | MAIWEI       | MW100-RFC B | \          | \            | \            |
| Software                     | MAIWEI       | MTS 8310    | \          | \            | \            |



## 6. RF OUTPUT POWER

### 6.1 Block Diagram Of Test Setup



### 6.2 Limit

According to FCC 74.861(e)(1)(ii)

For low power auxiliary station operating in the 470-608, and 614-698 MHz bands, the power of the measured unmodulated carrier power and the output of the transmitter power amplifier (antenna input power) may not exceed 250mW.

### 6.3 Test Procedure

1. The maximum peak output power was measured with a Spectrum Analyzer connected to the antenna terminal while EUT was operating in unmodulated situation.
2. Power was supplied to the battery input connector a power supply. The power supply was set for +3.0VDC. The Spectrum Analyzer was connected at antenna terminal to measure RF power of the carrier.
3. A Multimeter was connected in series with final RF Stage to measure the current; A Multimeter was used to measure final RF Stage supply voltage. Then the voltage v.s. current of the final RF Stage can be showed.

Measure and record the results in the test report.

### 6.4 EUT Operating Conditions

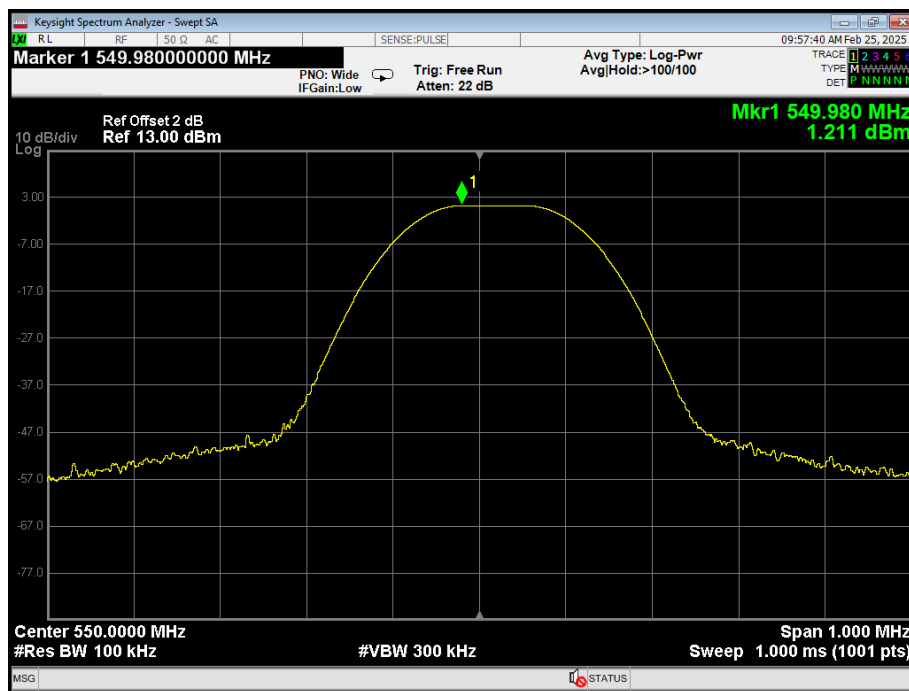
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

## 6.5 Test Result

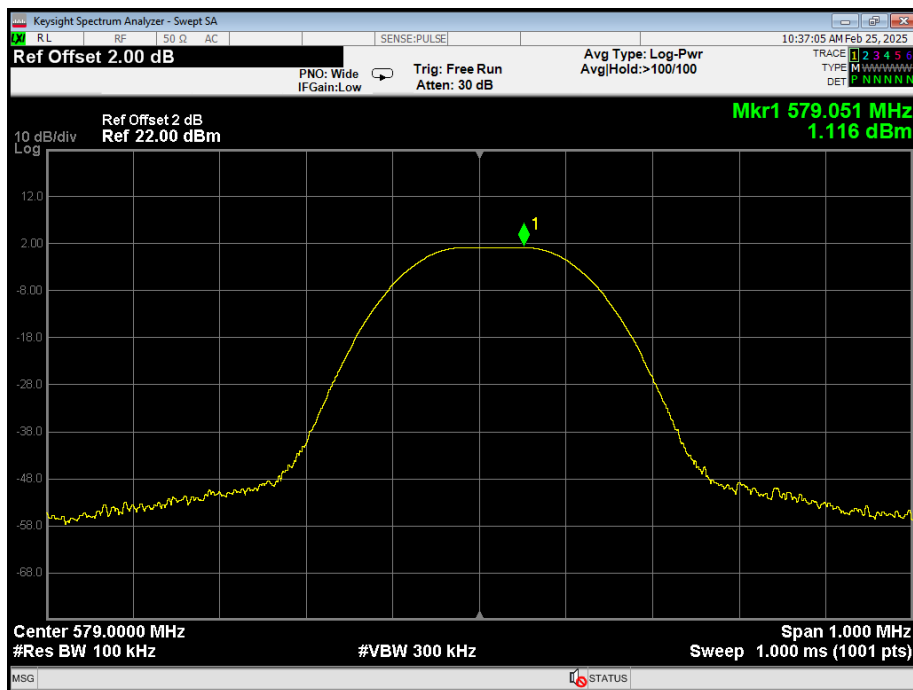
|                |       |                     |     |
|----------------|-------|---------------------|-----|
| Temperature :  | 26℃   | Relative Humidity : | 54% |
| Test Voltage : | DC 3V | Remark              | N/A |

| Channel | Frequency (MHz) | RF Stage Voltage (Vdc) | Collected Current (mA) | Output Power (dBm) | Limit (dBm) |
|---------|-----------------|------------------------|------------------------|--------------------|-------------|
| Low     | 550.0           | 3.00                   | 0.35                   | 1.211              | 24          |
| Middle  | 579.0           | 3.00                   | 0.35                   | 1.116              | 24          |
| High    | 607.9           | 3.00                   | 0.35                   | 0.140              | 24          |

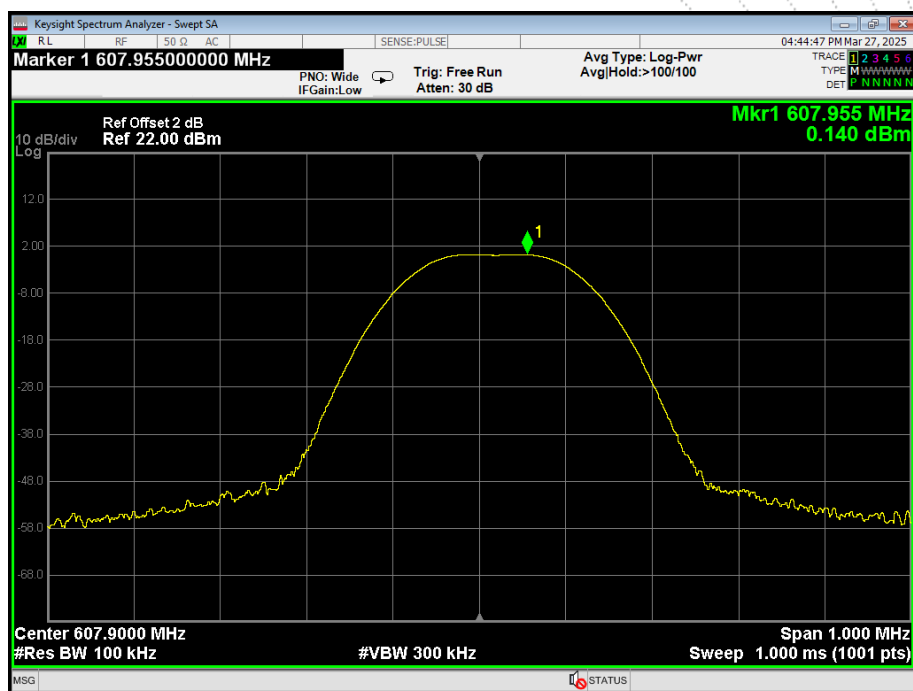
### Low Channel (550.0MHz)



### Middle Channel (579.0MHz)



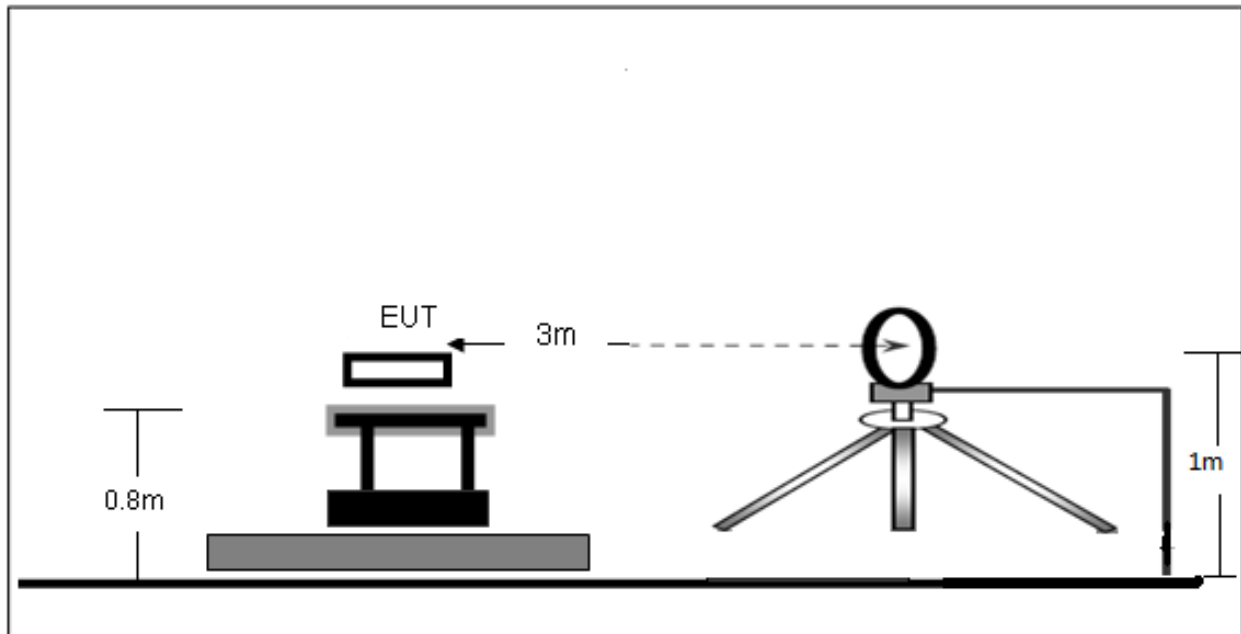
### High Channel (607.9MHz)



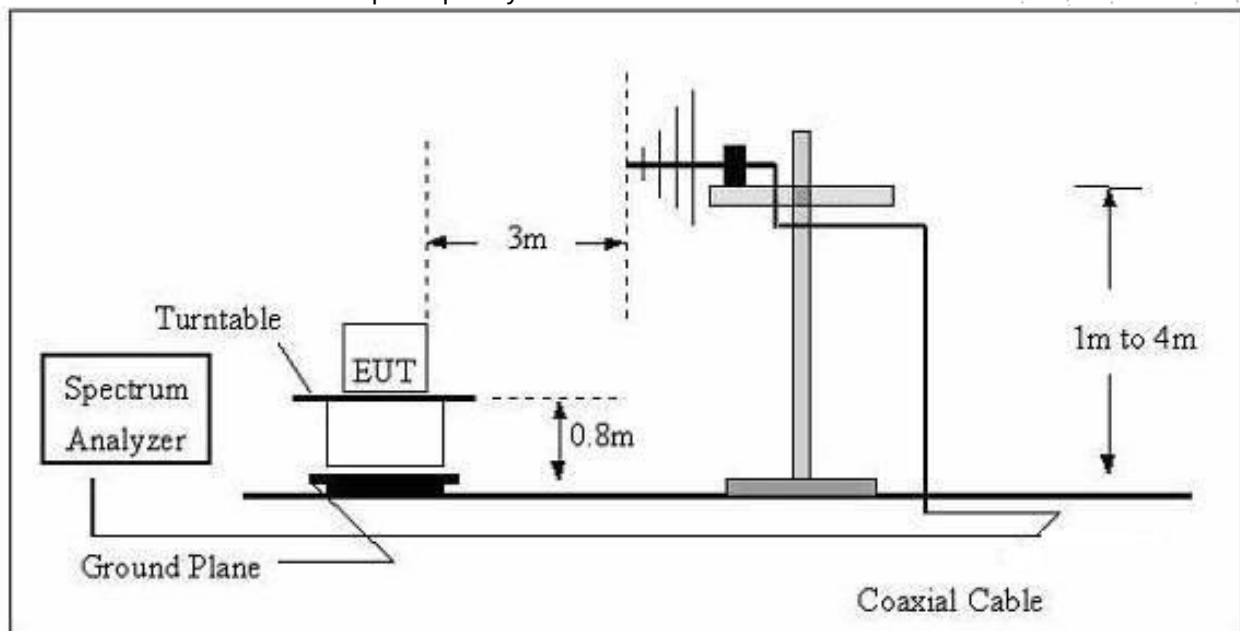
## 7. Radiated Emissions

### 7.1 Block Diagram Of Test Setup

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

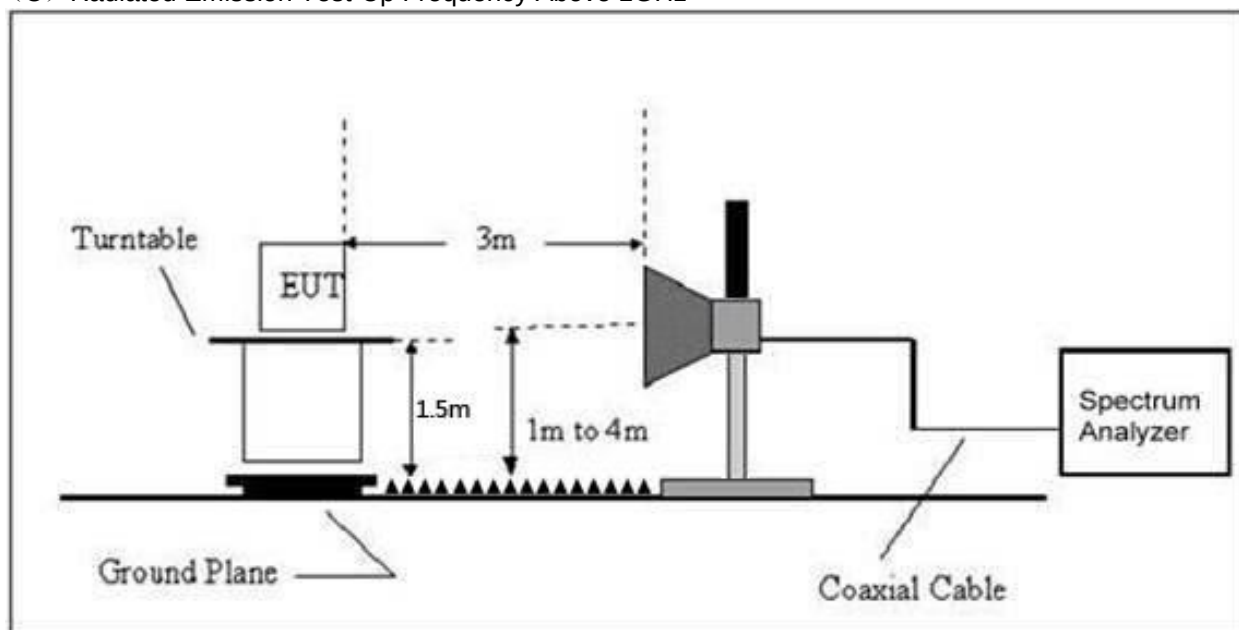


(B) Radiated Emission Test-Up Frequency 30MHz~1GHz





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



## 7.2 Limit

According to FCC74.861 (e)(6) and FCC 2.1053

According to FCC 2.1053, measurements shall be made to detect spurious emission that may be radiated directly from the cabinet, control circuits, power leads, or intermediated circuit elements under normal condition of installation and operation. Information submitted shall include the relative radiated power of spurious emission with reference to the rated power output of the transmitter, assuming all emissions are radiated from a halfwave dipole antenna.

According to FCC74.861 (e)(6), the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

- 1 On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB.
- 2 On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB.
- 3 On any frequency removed from the operating frequency by more than 250 percent up to and the authorized bandwidth shall be attenuated below the un-modulated carrier by at least 43 plus 10 Log (output power in watts) dB

## 7.3 Test Procedure

The setup of EUT is according with per TIA/EIA Standard 603 and ANSI C63.4-2014 measurement procedure.

a) Place the EUT in the center of the turntable. The EUT shall be configured to transmit into the standard non-radiating load (for measuring radiated spurious emissions), connected with cables of minimal length unless specified otherwise. If the EUT uses an adjustable antenna, the antenna shall be positioned to the length that produces the worst case emission at the fundamental operating frequency.

b) Each emission under consideration shall be evaluated:

- 1) Raise and lower the measurement antenna in accordance 5.5.2, as necessary to enable detection of the maximum emission amplitude relative to measurement antenna height.
- 2) Rotate the EUT through 360° to determine the maximum emission level relative to the axial position.
- 3) Return the turntable to the azimuth where the highest emission amplitude level was observed.



4) Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude.

5) Record the measured emission amplitude level and frequency using the appropriate RBW.

c) Repeat step b) for each emission frequency with the measurement antenna oriented in both the horizontal and vertical polarizations to determine the orientation that gives the maximum emissions amplitude.

d) Set-up the substitution measurement with the reference point of the substitution antenna located as far as possible to where the center of the EUT radiating element was located during the initial EUT measurement.

e) Maintain the previous measurement instrument settings and test set-up, with the exception that the EUT is removed and replaced by the substitution antenna.

f) Connect a signal generator to the substitution antenna; locate the signal generator so as to minimize any potential influences on the measurement results. Set the signal generator to the frequency here emissions are detected, and set an output power level such that the radiated signal can be detected by the measurement instrument, with sufficient dynamic range relative to the noise floor.

g) For each emission that was detected and measured in the initial test [i.e., in step b) and step c)]:

1) Vary the measurement antenna height between 1 m to 4 m to maximize the received (measured) signal amplitude.

2) Adjust the signal generator output power level until the amplitude detected by the measurement instrument equals the amplitude level of the emission previously measured directly in step b) and step c).

3) Record the output power level of the signal generator when equivalence is achieved in step 2).

h) Repeat step e) through step g) with the measurement antenna oriented in the opposite polarization.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious attenuation limit in dB =  $43 + 10 \log_{10}(\text{power in Watts})$

## 7.4 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.

## 7.5 Test Result

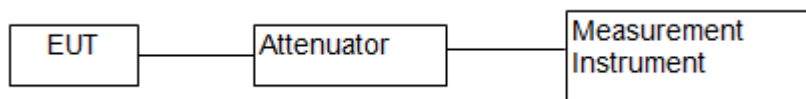
|                |       |                     |     |
|----------------|-------|---------------------|-----|
| Temperature :  | 26°C  | Relative Humidity : | 54% |
| Test Voltage : | DC 3V | Remark              | N/A |

| Frequency<br>(MHz)        | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Polar<br>H/V |
|---------------------------|------------------|---------------|-----------------|----------------|----------------|--------------|
| Low Channel (550.0MHz)    |                  |               |                 |                |                |              |
| 80.56                     | -42.27           | -30.25        | -72.52          | -13            | -59.52         | H            |
| 1604.2                    | -19.45           | -27.29        | -46.74          | -13            | -33.74         | H            |
| 2485.3                    | -23.56           | -22.57        | -46.13          | -13            | -33.13         | H            |
| 83.86                     | -41.73           | -30.57        | -72.3           | -13            | -59.30         | V            |
| 1697.6                    | -20.08           | -27.27        | -47.35          | -13            | -34.35         | V            |
| 2546.4                    | -24.21           | -24.96        | -49.17          | -13            | -36.17         | V            |
| Middle Channel (579.0MHz) |                  |               |                 |                |                |              |
| 104.27                    | -43.17           | -30.07        | -73.24          | -13            | -60.24         | H            |
| 1844.9                    | -20.59           | -28.14        | -48.73          | -13            | -35.73         | H            |
| 2717.5                    | -24.22           | -24.33        | -48.55          | -13            | -35.55         | H            |
| 104.27                    | -43.68           | -30.07        | -73.75          | -13            | -60.75         | V            |
| 1844.9                    | -22.17           | -28.14        | -50.31          | -13            | -37.31         | V            |
| 2717.5                    | -24.85           | -24.33        | -49.18          | -13            | -36.18         | V            |
| High Channel (607.9MHz)   |                  |               |                 |                |                |              |
| 92.51                     | -44.36           | -30.14        | -74.5           | -13            | -61.50         | H            |
| 1729.6                    | -24.07           | -27.55        | -51.62          | -13            | -38.62         | H            |
| 2686.54                   | -23.35           | -25.76        | -49.11          | -13            | -36.11         | H            |
| 92.51                     | -41.82           | -30.57        | -72.39          | -13            | -59.39         | V            |
| 1729.6                    | -19.66           | -27.27        | -46.93          | -13            | -33.93         | V            |
| 2686.54                   | -24.15           | -24.96        | -49.11          | -13            | -36.11         | V            |

CO. LTD.

## 8. OCCUPIED BANDWIDTH

### 8.1 Block Diagram Of Test Setup



### 8.2 Limit

The operating bandwidth shall not exceed 200 kHz.

The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

- (i) On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB;
- (ii) On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB;
- (iii) On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least  $43 + 10\log_{10}$  (mean output power in watts) dB.

Digital systems. Emissions within the band from  $2.5 \times B$  below to  $2.5 \times B$  above the carrier frequency, where B is the channel bandwidth, shall comply with the emission mask in Figure 2 of section 4.2.4.2.2 of ETSI EN 300 422-1 V2.2.1 (2021-11) (incorporated by reference, see § 74.35).

### 8.3 Test Procedure

Connect a modulated EUT to a spectrum analyzer to measure the bandwidth occupied by transmission. Then mark the -26dB bandwidth and record it.

### 8.4 EUT Operation Conditions

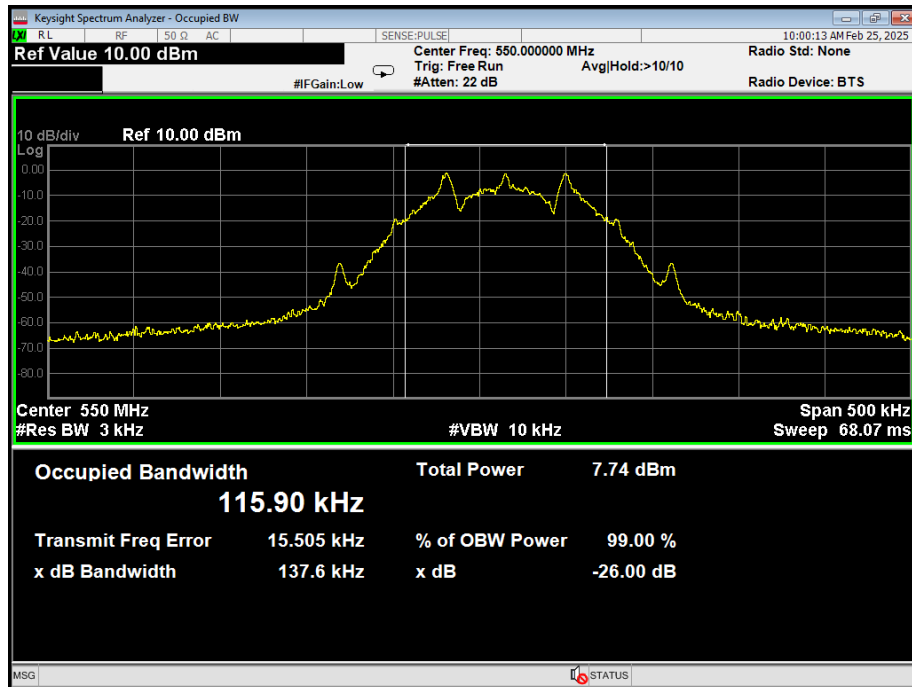
The EUT tested system was configured as the statements of 2.4 unless otherwise a special operating condition is specified in the follows during the testing.

### 8.5 Test Result

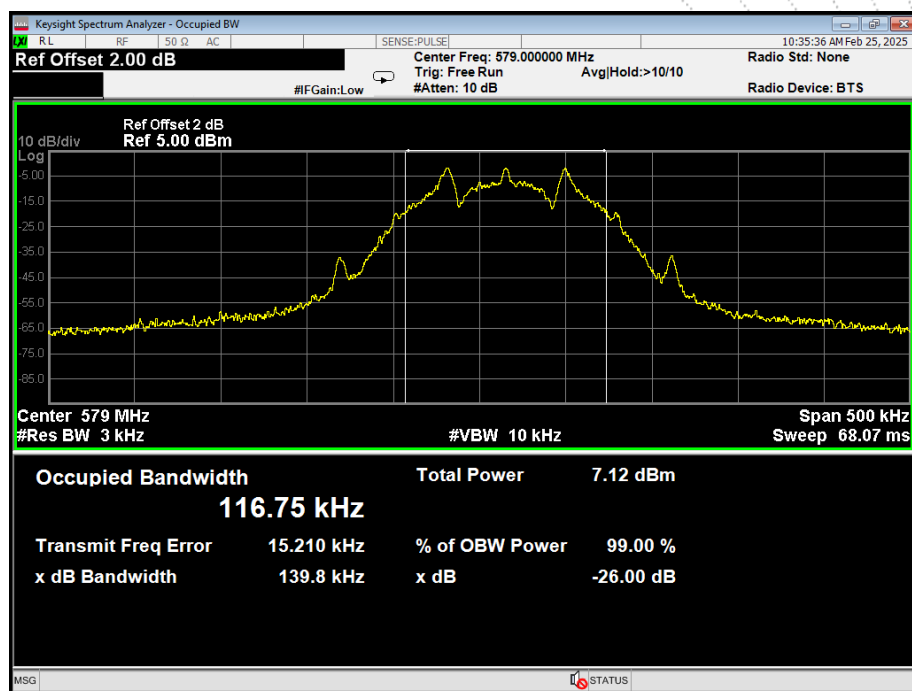
|                |       |                     |     |
|----------------|-------|---------------------|-----|
| Temperature :  | 26°C  | Relative Humidity : | 54% |
| Test Voltage : | DC 3V | Remark              | N/A |

| Test Channel | Frequency (MHz) | -26dB Bandwidth (kHz) | 99% Bandwidth (kHz) | Limit (kHz) |
|--------------|-----------------|-----------------------|---------------------|-------------|
| Low          | 550.0           | 137.6                 | 115.90              | 200         |
| Middle       | 579.0           | 139.8                 | 116.75              | 200         |
| High         | 607.9           | 136.9                 | 115.62              | 200         |

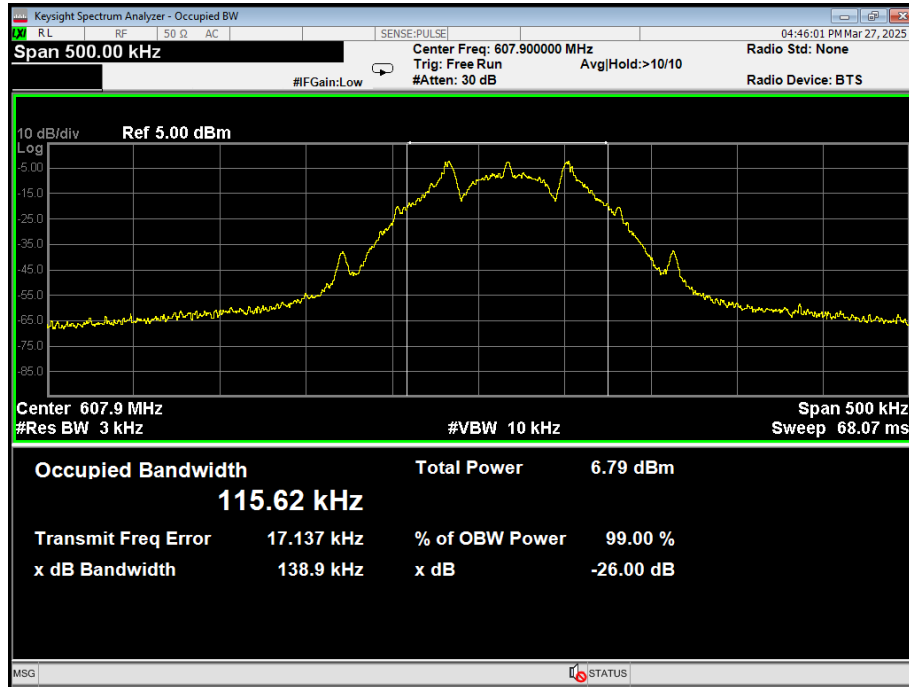
### Low Channel (550.0MHz)



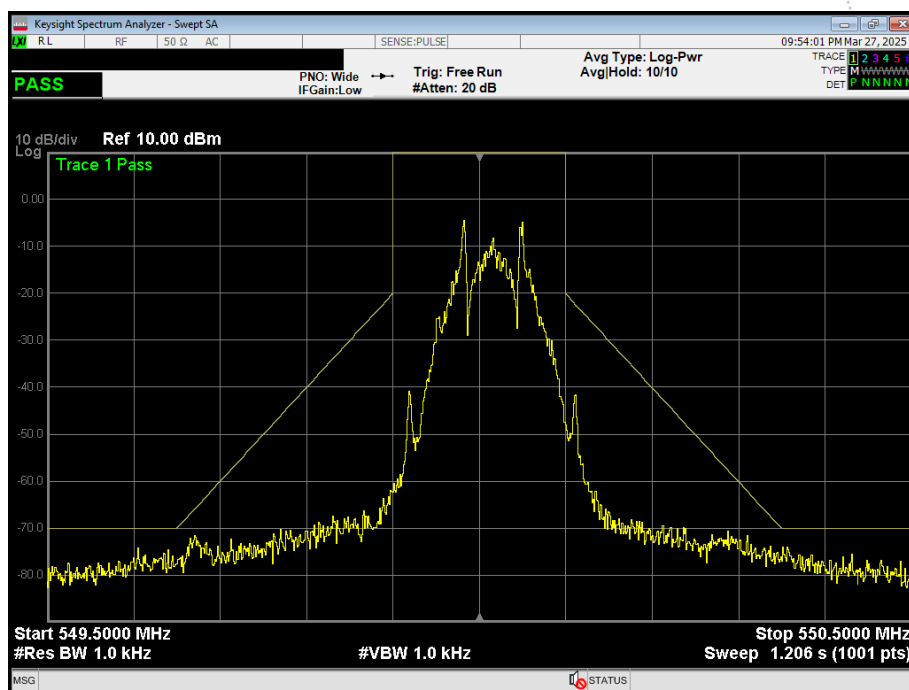
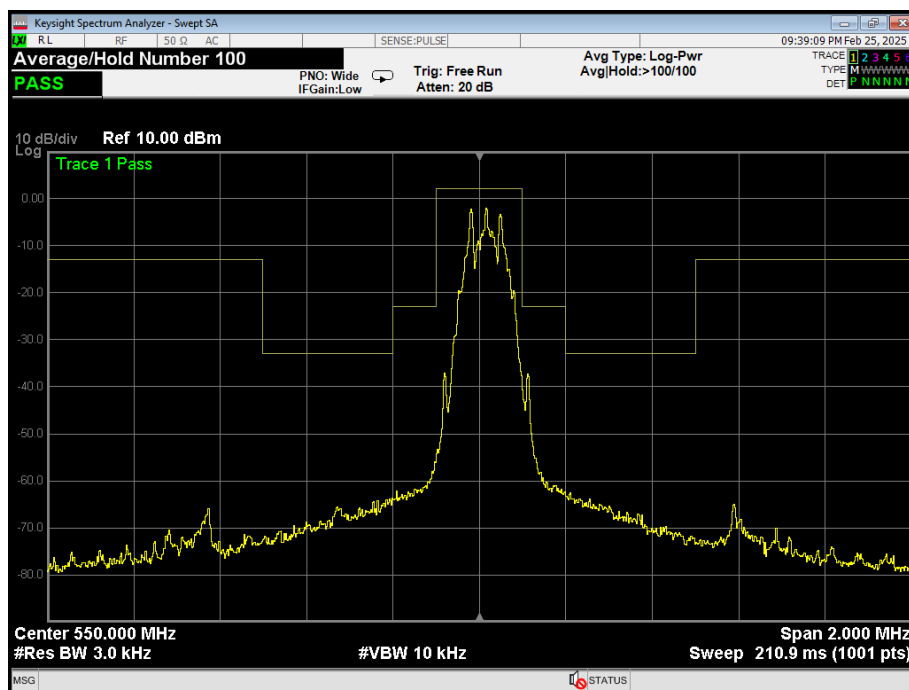
### Middle Channel (579.0MHz)



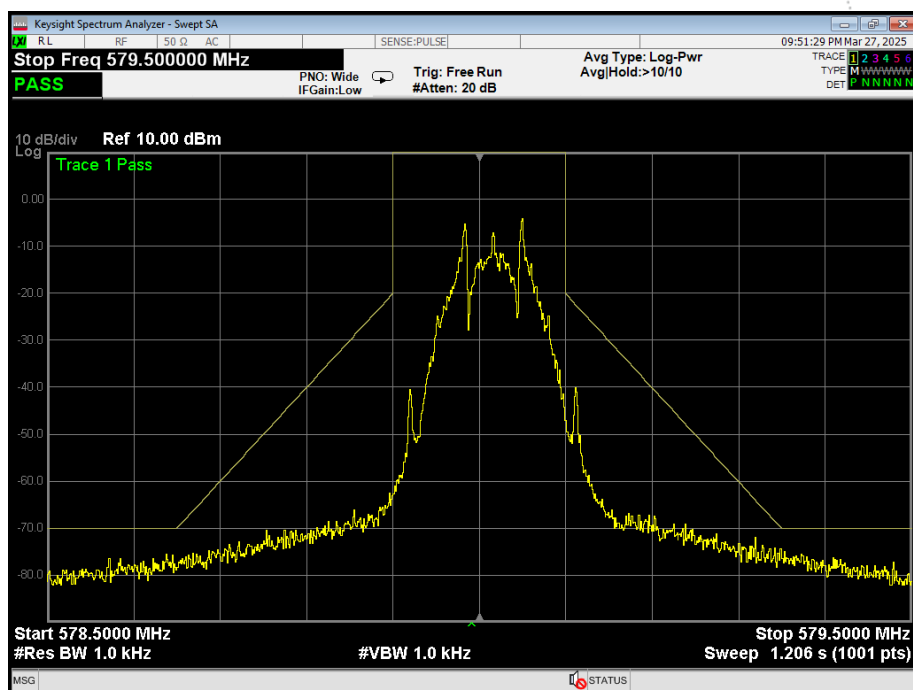
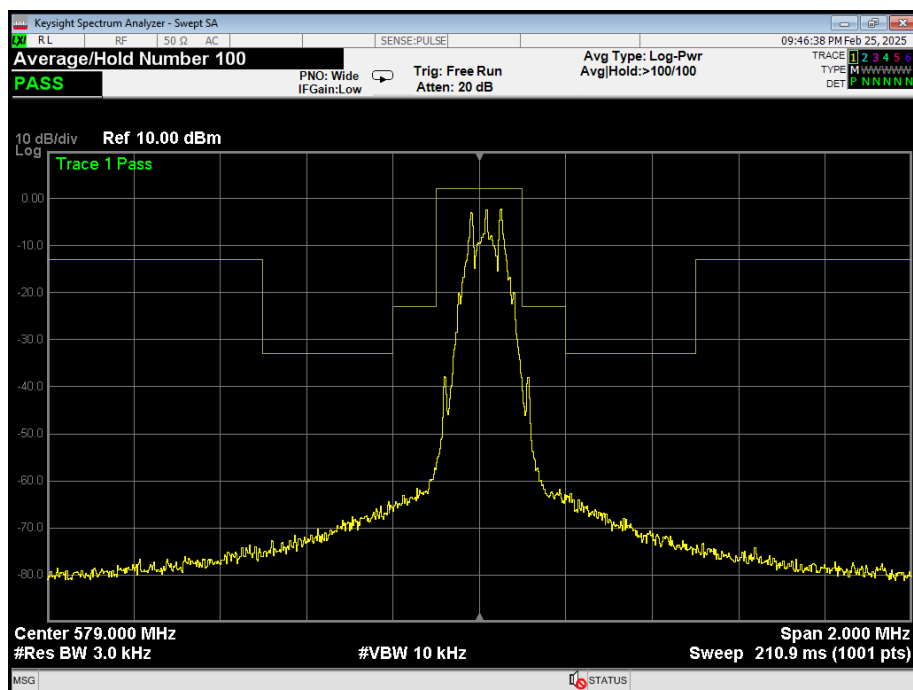
## High Channel 3 (607.9MHz)



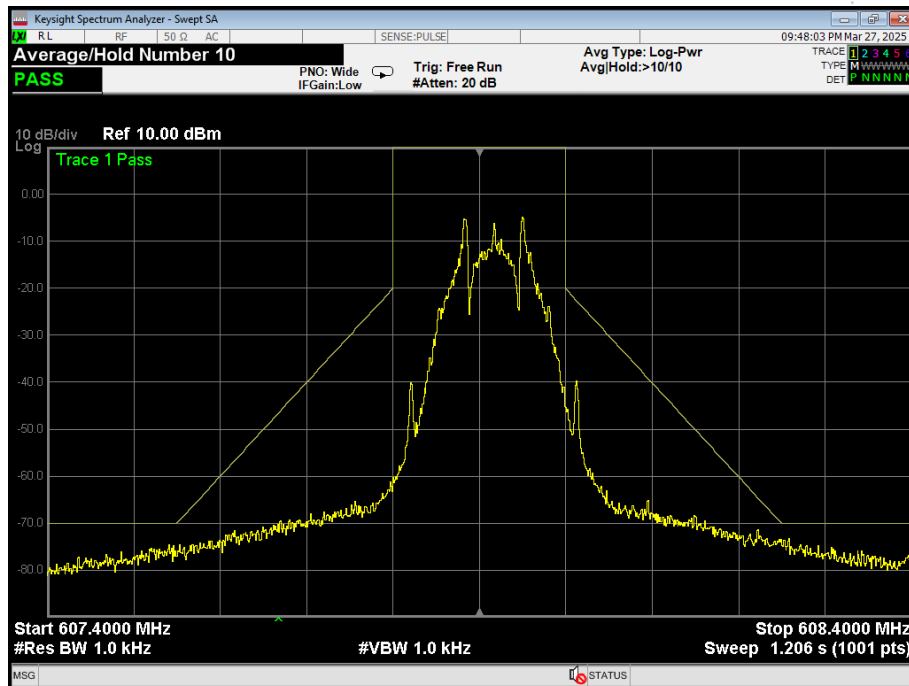
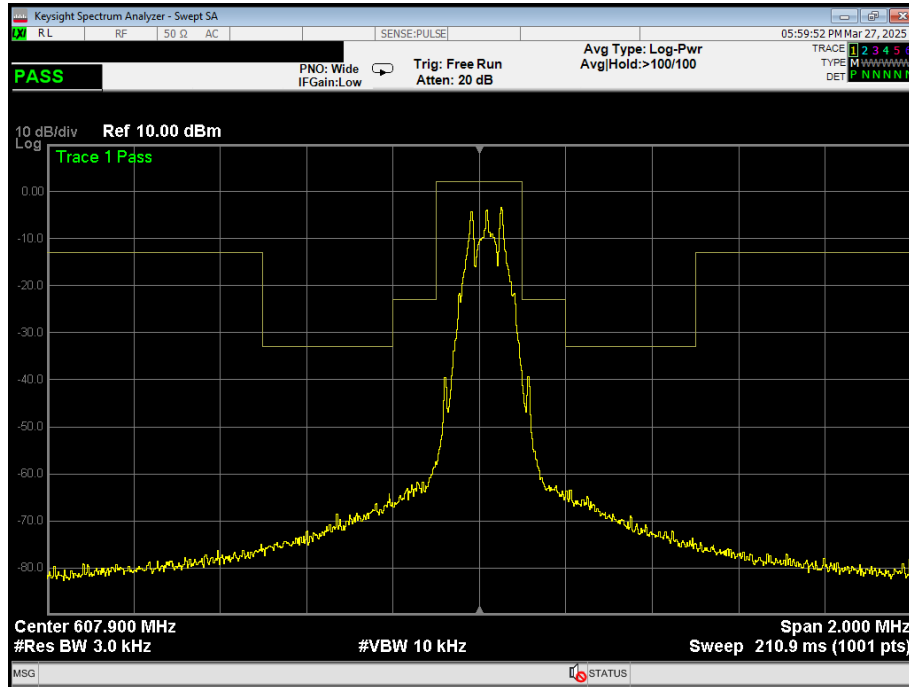
## Emission Mask (550.0MHz)



## Emission Mask (579.0MHz)



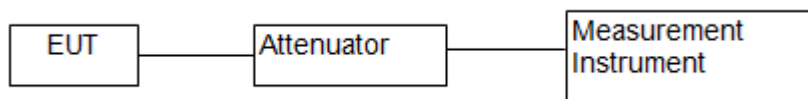
## Emission Mask (607.9MHz)





## 9. SPURIOUS EMISSION AT ANTENNA TERMINAL

### 9.1 Block Diagram Of Test Setup



### 9.2 Limit

According to FCC74.861 (e)(6)

According to §2.1051, the radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in §2.1049 as appropriate.

According to FCC74.861 (e)(6), the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

On any frequency removed from the operating frequency by more than 250 percent up to and the authorized bandwidth shall be attenuated below the un-modulated carrier by at least 43 plus 10 Log (output power in watts) dB.

### 9.3 Test Procedure

The transmitter output (antenna port) was connected to the spectrum analyzer

Reference level measurement

Establish a reference level by using the following procedure:

Set instrument center frequency to EUT center frequency.

Set Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel.

Set the RBW = 100 kHz. Set the VBW  $\geq 3 \times$  RBW.

Set Detector = peak. Set Sweep time = auto couple.

Set Trace mode = max hold. Allow trace to fully stabilize.

Use the peak marker function to determine the maximum Maximum conducted level.

Note that the channel found to contain the maximum conducted level can be used to establish the reference level.

Conducted Spurious RF Conducted Emission

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. (30MHz to 25GHz).

Set RBW = 100 kHz (above 1GHz Set RBW = 1 MHz) Set VBW  $\geq$  RBW

Set Sweep = auto Set Detector function = peak Set Trace = max hold

Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this Section.

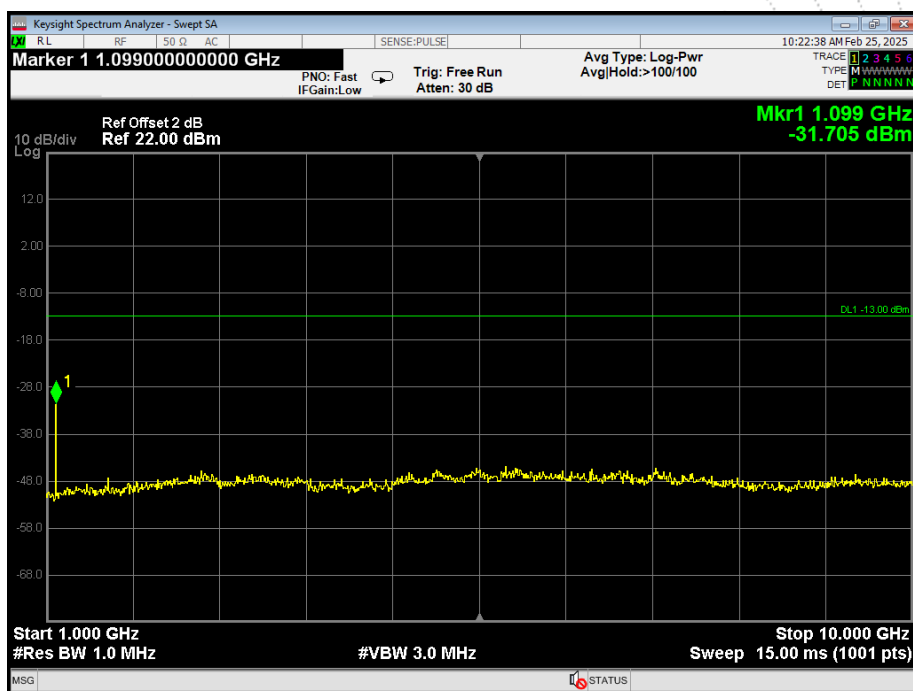
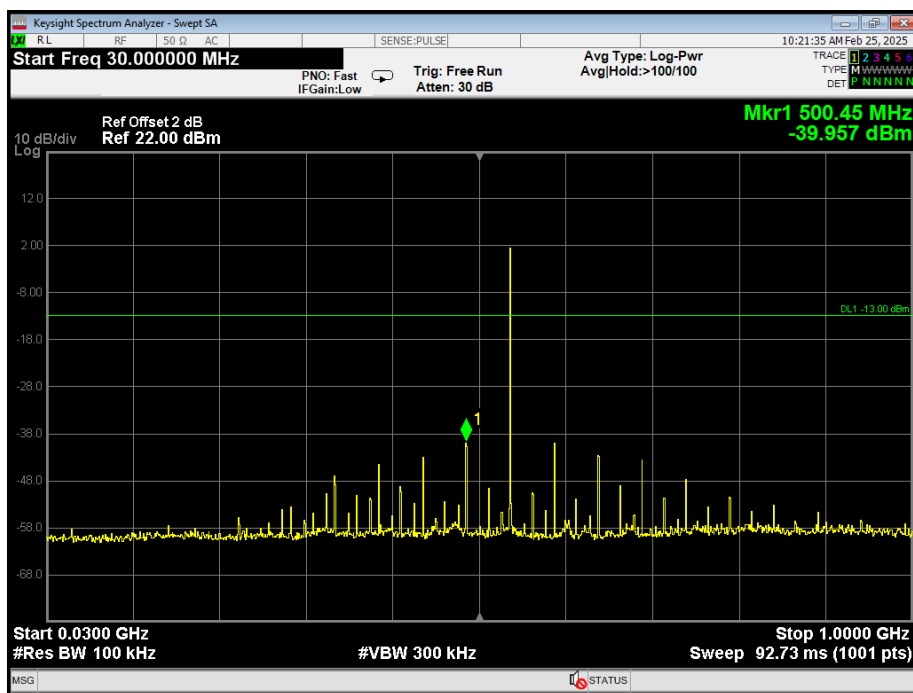
### 9.4 EUT Operation Conditions

The EUT tested system was configured as the statements of 2.4 unless otherwise a special operating condition is specified in the follows during the testing.

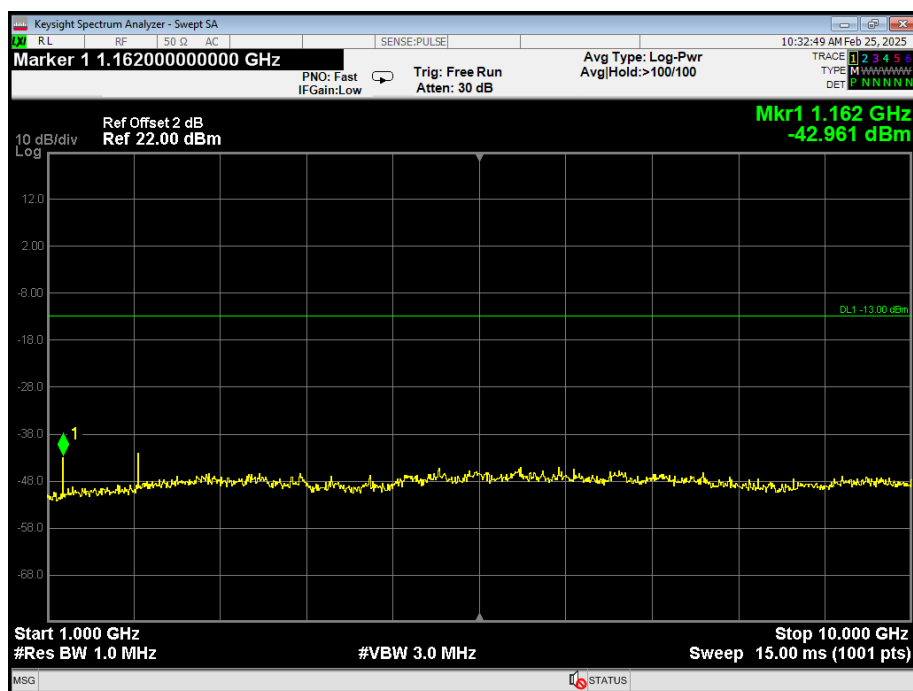
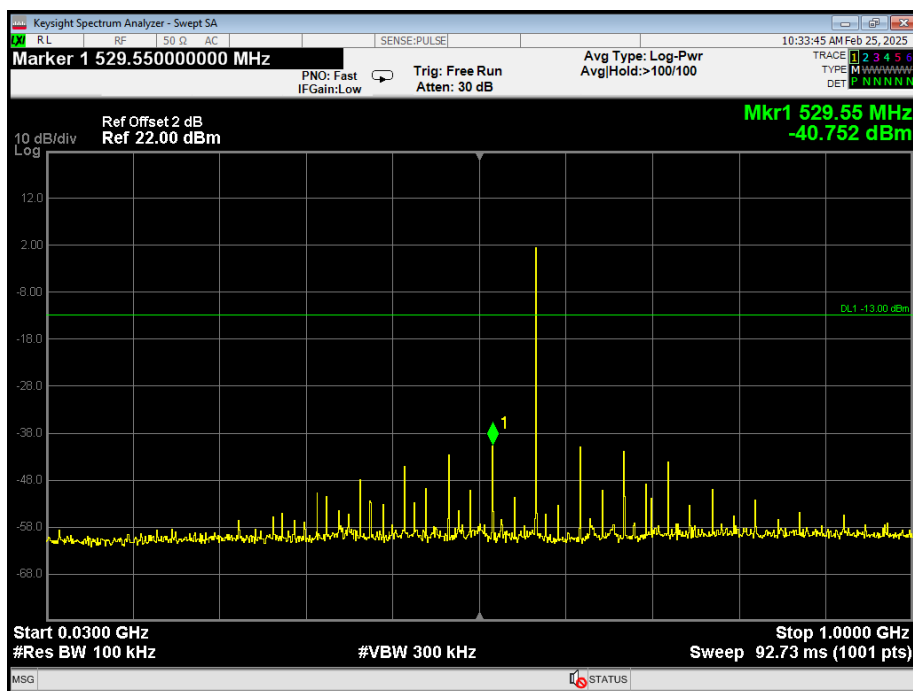
## 9.5 Test Result

|                |       |                     |     |
|----------------|-------|---------------------|-----|
| Temperature :  | 26°C  | Relative Humidity : | 54% |
| Test Voltage : | DC 3V | Remark              | N/A |

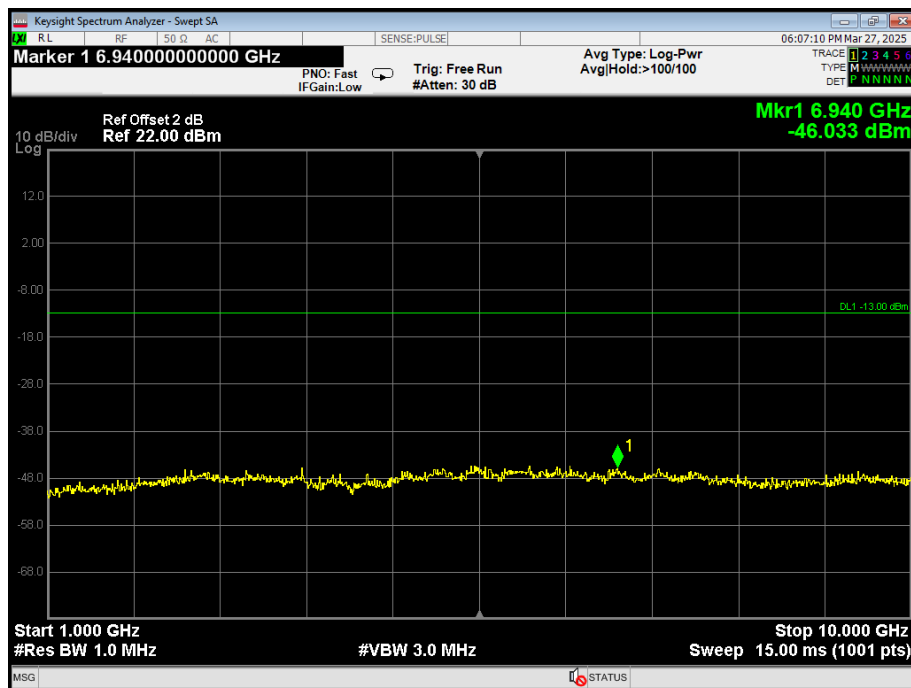
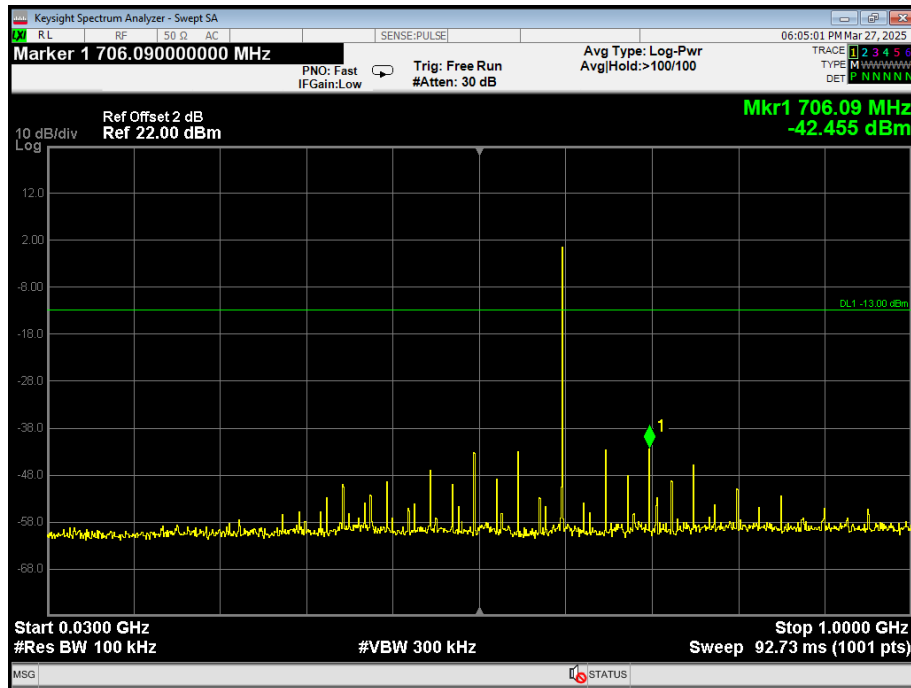
### Low Channel



## Middle Channel

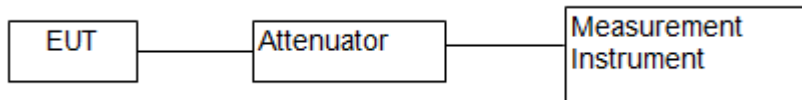


## High Channel



## 10. FREQUENCY STABILITY

### 10.1 Block Diagram Of Test Setup



### 10.2 Limit

According to FCC 74.861

According to FCC 2.1055(a)(1), the frequency stability shall be measure with variation of ambient temperature from  $-30^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ , and according to FCC 2.1055(d)(2), the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point which is specified by the manufacturer.

According to FCC 74.861, the frequency tolerance of the transmitter shall be 0.005 percent.

### 10.3 Test Procedure

1 Setup the configuration of the ambient temperature form  $-30^{\circ}\text{C}$  to  $50^{\circ}\text{C}$  with sufficient time. And measure the different power of the EUT with an artificial power from highest to end point voltage.

2 Set frequency counter center frequency to the right frequency needs to be measured.

### 10.4 EUT Operation Conditions

The EUT tested system was configured as the statements of 2.4 unless otherwise a special operating condition is specified in the follows during the testing.

## 10.5 Test Result

| Test conditions            |                         | Frequency Error |           |           |
|----------------------------|-------------------------|-----------------|-----------|-----------|
|                            |                         | 550.0 MHz       | 579.0 MHz | 607.9 MHz |
| T <sub>min</sub> (-30°C)   | V <sub>min</sub> (2.6V) | 550.0053        | 579.0052  | 607.9052  |
|                            | V <sub>max</sub> (3.4V) | 550.0051        | 579.0050  | 607.9047  |
| T(-20°C)                   | V <sub>nom</sub> (3.0V) | 550.0054        | 579.0054  | 607.9054  |
| T(-10°C)                   | V <sub>nom</sub> (3.0V) | 550.0049        | 579.0047  | 607.9049  |
| T(0°C)                     | V <sub>nom</sub> (3.0V) | 550.0051        | 579.0049  | 607.9053  |
| T(10°C)                    | V <sub>nom</sub> (3.0V) | 550.0056        | 579.0055  | 607.9048  |
| T <sub>nom</sub> (20°C)    | V <sub>nom</sub> (3.0V) | 550.0057        | 579.0051  | 607.9052  |
| T(30°C)                    | V <sub>nom</sub> (3.0V) | 550.0054        | 579.0051  | 607.9052  |
| T(40°C)                    | V <sub>nom</sub> (3.0V) | 550.0056        | 579.0050  | 607.9051  |
| T <sub>max</sub> (50°C)    | V <sub>min</sub> (2.6V) | 550.0050        | 579.0049  | 607.9050  |
|                            | V <sub>max</sub> (3.4V) | 550.0055        | 579.0052  | 607.9049  |
| Max. frequency error (ppm) |                         | 10.36           | 9.50      | 8.88      |
| Limit (ppm)                |                         | ±50ppm          |           |           |
| End Point                  |                         | DC 3V           |           |           |

## 11. Antenna Requirement

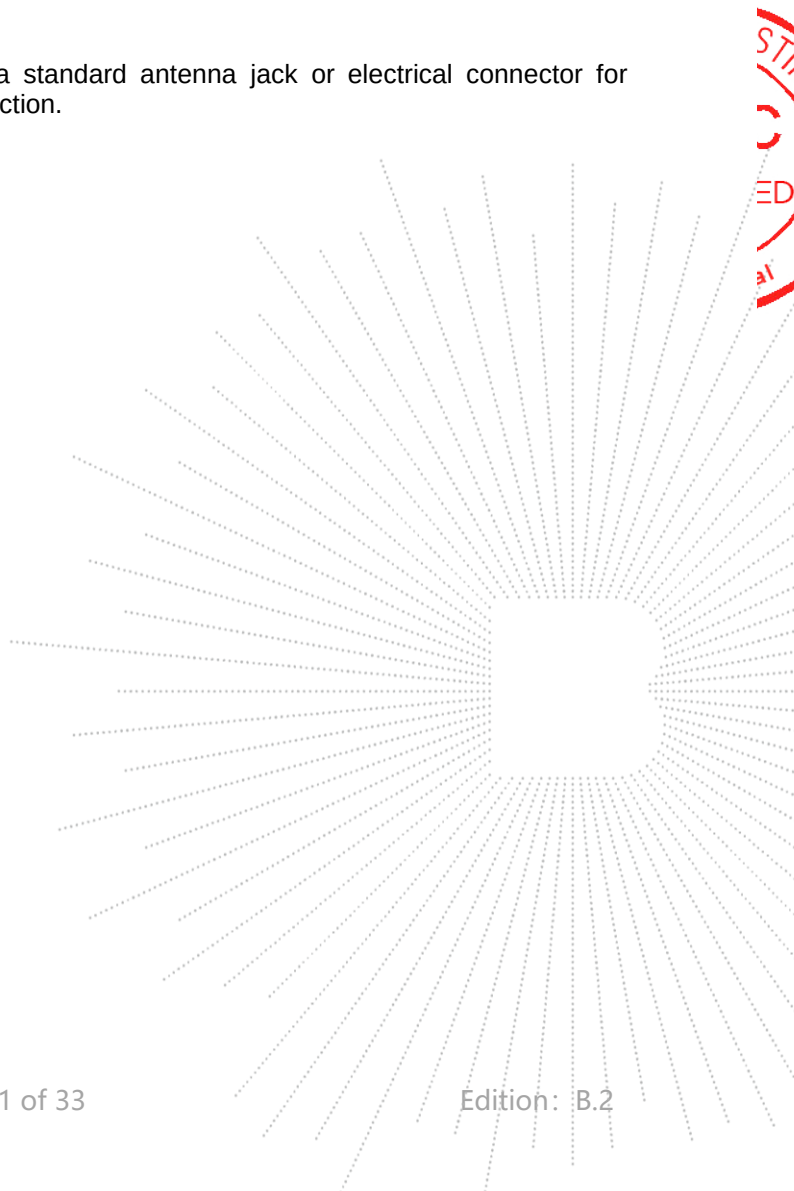
### 12.1 Limit

15.203 requirements:

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 shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

### 12.2 Test Result

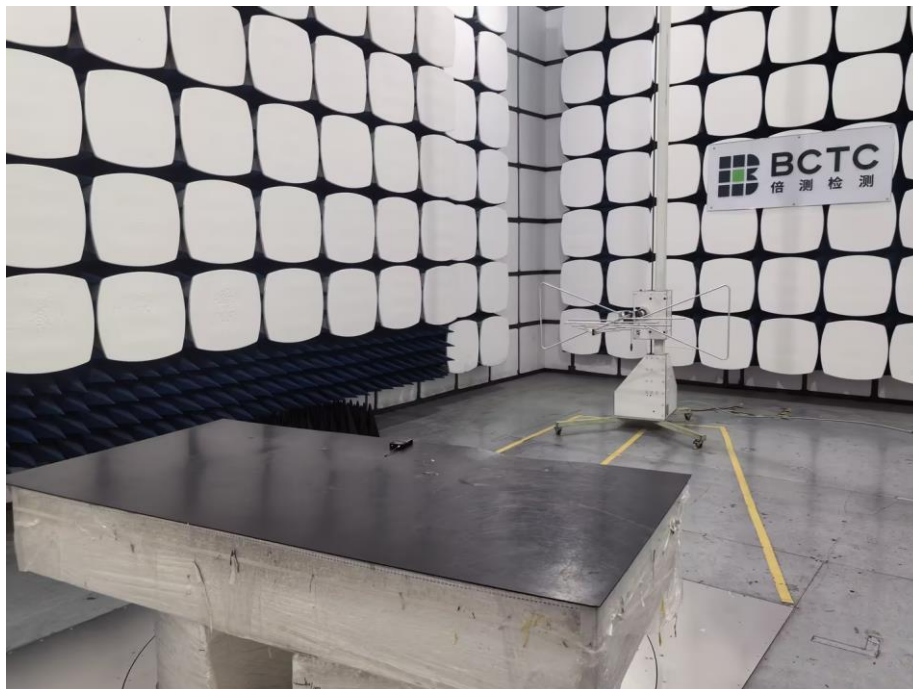
The EUT antenna is external antenna, not using a standard antenna jack or electrical connector for antenna replacement, fulfill the requirement of this section.





## 12. EUT Test Setup Photographs

### Radiated Measurement Photos





## STATEMENT

1. The equipment lists are traceable to the national reference standards.
2. The test report can not be partially copied unless prior written approval is issued from our lab.
3. The test report is invalid without the "special seal for inspection and testing".
4. The test report is invalid without the signature of the approver.
5. The test process and test result is only related to the Unit Under Test.
6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.
7. The quality system of our laboratory is in accordance with ISO/IEC17025.
8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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\*\*\*\*\* END \*\*\*\*\*

2017