# FCC TEST REPORT

For

ShenZhen XUNWEIJIA Technology Development LTD

Wireless Microphone

Test Model: K031B

Additional Model No.: K037, K037B

| | | |
|---|---|---|
| Prepared for | : | ShenZhen XUNWEIJIA Technology Development LTD |
| Address | : | Room1103A, Jinhua building, Gaofeng road in Dalang, longhua new district, Baoan, Shenzhen, China |
| Prepared by | : | Shenzhen LCS Compliance Testing Laboratory Ltd. |
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| Web | : | www.LCS-cert.com |
| Mail | : | webmaster@LCS-cert.com |
| Date of receipt of test sample | : | February 14, 2022 |
| Number of tested samples | : | 1 |
| Sample No | : | 220210066A |
| Serial number | : | Prototype |
| Date of Test | : | February 14, 2022 ~ March 09, 2022 |
| Date of Report | : | March 11, 2022 |

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# FCC TEST REPORT
# FCC CFR 47 PART 74

| | | |
|---|---|---|
| **Report Reference No. .....** | **:** | **LCS220210066AEA** |
| Date of Issue ..... | : | March 11, 2022 |
| **Testing Laboratory Name ..... :** | | **Shenzhen LCS Compliance Testing Laboratory Ltd.** |
| Address ..... | : | 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China |
| Testing Location/ Procedure ..... | : | Full application of Harmonised standards ■<br>Partial application of Harmonised standards □<br>Other standard testing method □ |
| **Applicant's Name ..... :** | | **ShenZhen XUNWEIJIA Technology Development LTD** |
| Address ..... | : | Room1103A, Jinhua building, Gaofeng road in Dalang, longhua new district, Baoan, Shenzhen, China |
| **Test Specification** | | |
| Standard..... | : | FCC CFR 47 PART 74 |
| **Test Report Form No..... :** | | LCSEMC-1.0 |
| TRF Originator ..... | : | Shenzhen LCS Compliance Testing Laboratory Ltd. |
| Master TRF ..... | : | Dated 2011-03 |

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| | | |
|---|---|---|
| **EUT Description. ..... :** | | Wireless Microphone |
| Trade Mark..... | : | FIFINE |
| Test Model ..... | : | K031B |
| Ratings..... | : | Input: DC 5V<br>DC 3V by 2*AA Batteries |
| Result ..... | : | **Positive** |

| **Compiled by:** | **Supervised by:** | **Approved by:** |
|---|---|---|
| Ray Yang/ Administrator | Jin Wang/ Technique principal | Gavin Liang/ Manager |

# FCC -- TEST REPORT

| | |
|---|---|
| **Test Report No. :** **LCS220210066AEA** | March 11, 2022<br>Date of issue |

| | | |
|---|---|---|
| Test Model..... | : | K031B |
| EUT..... | : | Wireless Microphone |
| **Applicant.....** | **:** | **ShenZhen XUNWEIJIA Technology Development LTD** |
| Address..... | : | Room1103A, Jinhua building, Gaofeng road in Dalang, longhua new district, Baoan, Shenzhen, China |
| Telephone..... | : | / |
| Fax..... | : | / |
| **Manufacturer.....** | **:** | **ShenZhen XUNWEIJIA Technology Development LTD** |
| Address..... | : | Room1103A, Jinhua building, Gaofeng road in Dalang, longhua new district, Baoan, Shenzhen, China |
| Telephone..... | : | / |
| Fax..... | : | / |
| **Factory.....** | **:** | **ShenZhen XUNWEIJIA Technology Development LTD** |
| Address..... | : | Room1103A, Jinhua building, Gaofeng road in Dalang, longhua new district, Baoan, Shenzhen, China |
| Telephone..... | : | / |
| Fax..... | : | / |

| **Test Result** | **Positive** |
|---|---|

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

## Revision History

| Revision | Issue Date | Revision Content | Revised By |
|---|---|---|---|
| 000 | March 11, 2022 | Initial Issue | -- |
| | | | |
| | | | |

# TABLE OF CONTENTS

# 1. GENERAL INFORMATION

## 1.1. Description of Device (EUT)

| | |
|---|---|
| EUT | : Wireless Microphone |
| Test Model | : K031B |
| Additional Model No. | : K037, K037B |
| Model Declaration | : PCB board, structure and internal of these model(s) are the same, So no additional models were tested |
| Hardware Version | : V1.1.2.0 |
| Software Version | : REV1.3 |
| Power Supply | : Input: DC 5V<br>DC 3V by 2*AA Batteries |
| Frequency Range | : 565MHz - 584MHz |
| Channel Number | : 20 |
| Modulation Type | : π/4-DQPSK |
| Antenna Type | : External Antenna |
| Antenna Gain | : -3.0dBi |
| Extreme temp. Tolerance | : -10°C to +60°C |

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## 1.2. Host System Configuration List and Details

| Manufacturer | Description | Model | Serial Number | Certificate |
|---|---|---|---|---|
| -- | -- | -- | -- | -- |

## 1.3. External I/O Cable

| I/O Port Description | Quantity | Cable |
|---|---|---|
| -- | -- | -- |

## 1.4. Description of Test Facility

NVLAP Accreditation Code is 600167-0.
FCC Designation Number is CN5024.
Test Firm Registration Number: 254912
CAB identifier is CN0071.
CNAS Registration Number is L4595.
The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

## 1.5. Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

## 1.6. Measurement Uncertainty

| Test Item | | Frequency Range | Uncertainty | Note |
|---|---|---|---|---|
| Radiation Uncertainty | : | 9KHz~30MHz | ±3.10dB | (1) |
| | | 30MHz~200MHz | ±2.96dB | (1) |
| | | 200MHz~1000MHz | ±3.10dB | (1) |
| | | 1GHz~26.5GHz | ±3.80dB | (1) |
| | | 26.5GHz~40GHz | ±3.90dB | (1) |
| Conduction Uncertainty | : | 150kHz~30MHz | ±1.63dB | (1) |
| Power disturbance | : | 30MHz~300MHz | ±1.60dB | (1) |

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

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## 1.7. Description of Test Modes

The EUT has been tested under operating condition.

This test was performed with EUT in X, Y, Z position and the worst case was found when EUT in Y position.

The following operating modes were applied for the related test items. All test modes were tested, only the result of the worst case was recorded in the report.

| Modulation Type | Test Channel | Test Frequency (MHz) |
|---|---|---|
| Channel | 1 | 565 |
| | 11 | 575 |
| | 20 | 584 |

## 1.8. Frequency of Channels

Channel List:

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|---|---|
| 1 | 565 | 8 | 572 | 15 | 579 |
| 2 | 566 | 9 | 573 | 16 | 580 |
| 3 | 567 | 10 | 574 | 17 | 581 |
| 4 | 568 | 11 | 575 | 18 | 582 |
| 5 | 569 | 12 | 576 | 19 | 583 |
| 6 | 570 | 13 | 577 | 20 | 584 |
| 7 | 571 | 14 | 578 | -- | -- |

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# 2. TEST METHODOLOGY

All measurements contained in this report were conducted with ANSI C63.26-2015:American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

The radiated testing was performed at an antenna-to-EUT distance of 3 meters. All radiated and conducted emissions measurement was performed at Shenzhen LCS Compliance Testing Laboratory Ltd.

## 2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

## 2.2. EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section FCC Rules Part 74.

## 2.3. General Test Procedures

### 2.3.1 Power Line Conducted Emissions(N/A)

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2.1 of ANSI C63.4-2014 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

### 2.3.2 Radiated Emissions

Please refer to radiated spurious emission.

# 3. SYSTEM TEST CONFIGURATION

## 3.1. Justification

The system was configured for testing in a continuous transmits condition.

## 3.2. EUT Exercise Software

The system was configured for testing in a continuous transmits condition and transmission frequency by switch button control.

## 3.3. Special Accessories

N/A

## 3.4. Block Diagram/Schematics

Please refer to the related document

## 3.5. Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

## 3.6. Test Setup

Please refer to the test setup photo.

# 4. SUMMARY OF TEST RESULTS

| Applied Standard: FCC Part 74 | | |
|---|---|---|
| FCC Rules | Description of Test | Result |
| FCC Part 74.861(e)(1)(ii)<br>FCC Part 2.1046 | Maximum Conducted Output Power | Compliant |
| FCC Part 74.861 (e)(5)<br>FCC Part 2.1049 | Occupied Bandwidth | Compliant |
| FCC Part 74.861 (e)(4)<br>FCC Part 2.1055 | Frequency error | Compliant |
| FCC Part 74.861(e)(7)<br>2.1053 | Transmitter unwanted emissions(radiated or conducted) | Compliant |
| FCC Part 2.1049<br>FCC Part 2.1047 | Modulation characteristic | N/A |
| FCC Part 74.861 (e)(7)<br>FCC Part 2.1049 | Necessary bandwidth (BN) | Compliant |

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# 5. TEST RESULT

## 5.1. Transmitter output power

### 5.1.1. Description:

The power may not exceed the following values.

(i) 54-72, 76-88, and 174-216 MHz bands: 50 mW EIRP

(ii) 470-608 and 614-698: 250 mW conducted power

(iii) 600 MHz duplex gap: 20 mW EIRP

### 5.1.2. Measurement:

| Measurement parameter | |
|---|---|
| Detector: | Peak (worst case) / Average (RMS) |
| Sweep time: | Auto / 20s |
| Resolution bandwidth: | > emission bandwidth |
| Video bandwidth: | > resolution bandwidth |
| Span: | > 2 times emissions bandwidth |
| Trace mode: | Max. hold |
| EUT configuration: | Peak:<br>Unmodulated carrier<br><br>RMS:<br>Modulate the transmitter with a 2.5 kHz tone at a level 16 dB higher than that required to produce a frequency deviation of ± 75 kHz, or to produce 50% of the manufacturer's rated deviation, whichever is less. |

### 5.1.3. Limits:

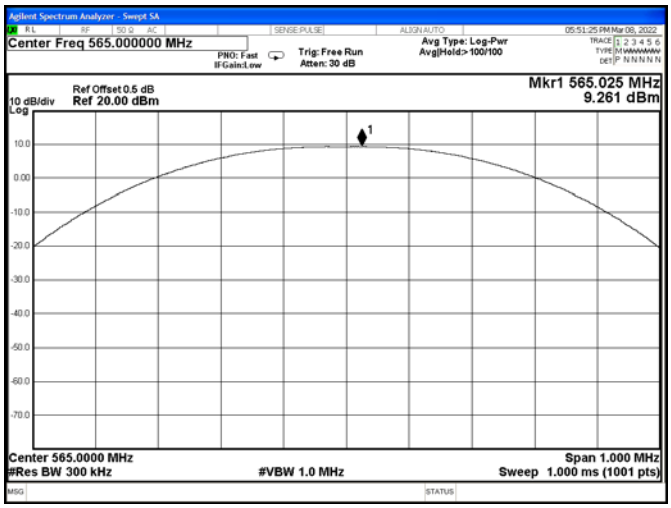
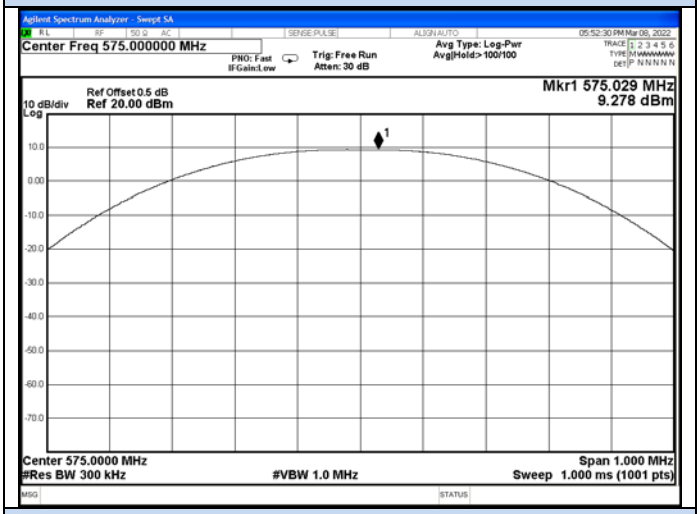
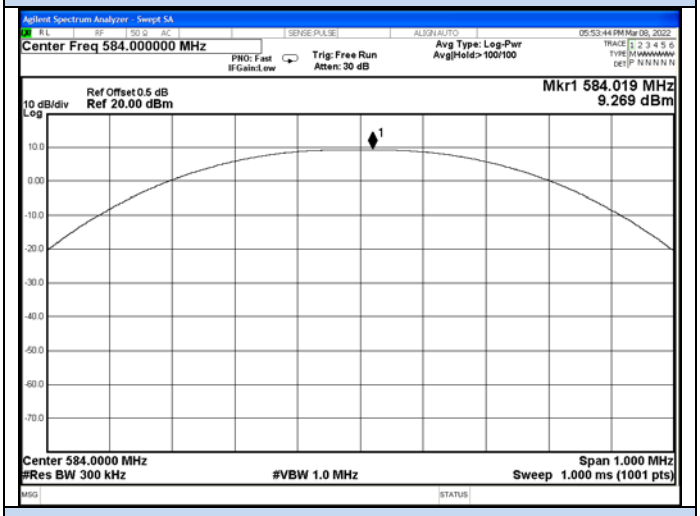
| FCC |
|---|
| 470 MHz to 608 MHz 250 mW (average) / 24 dBm (average) |

### 5.1.4. Test result:

The EUT was programmed to be in continuously transmitting mode.

### 5.1.5. Test result

| Test Mode | Channel | Frequency (MHz) | Measured Maximum Peak Power(dBm) | Measured Maximum Average Power(dBm) | Limits Average (dBm) | Verdict |
|---|---|---|---|---|---|---|
| π /4-DQPSK | 1 | 565 | 9.261 | / | 24 | PASS |
| | 11 | 575 | 9.278 | / | | |
| | 20 | 584 | 9.269 | / | | |

| Maximum Peak Output Power |
|---|
|  |
| Channel 01 / 565 MHz |
|  |
| Channel 11 / 575 MHz |
|  |
| Channel 20 / 584 MHz |







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## 5.2. Occupied bandwidth and Emission Mask

### 5.2.1. Description:

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 + 10log10 (mean output power in watts) dB.

### 5.2.2. Measurement:

| Measurement parameter | |
|---|---|
| Detector: | Peak |
| Sweep time: | Auto |
| Resolution bandwidth: | 1 % to 5 % of the occupied bandwidth |
| Video bandwidth: | 3 x resolution bandwidth |
| Span: | 2 x emission bandwidth |
| Trace mode: | Max. hold |
| Analyzer function: | 99% power occupied bandwidth function |
| EUT: | Modulated signal with max. frequency deviation |

### 5.2.3. Result:

| Test Mode | Channel | Frequency (MHz) | 99% Bandwidth (KHz) | Limits (KHz) | Verdict |
|---|---|---|---|---|---|
| π/4-DQPSK | 1 | 565 | 175.49 | 200 | PASS |
| | 11 | 575 | 175.65 | | |
| | 20 | 584 | 175.49 | | |

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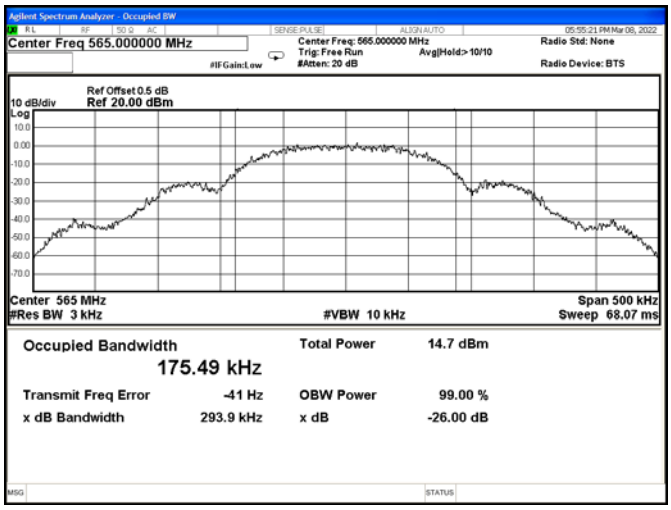
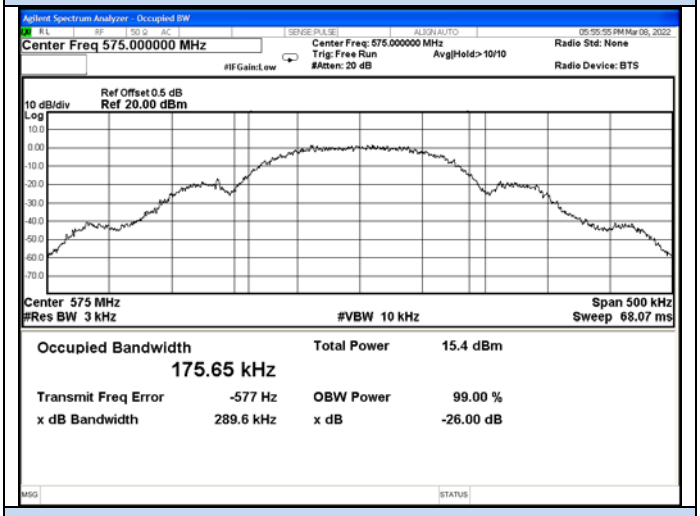
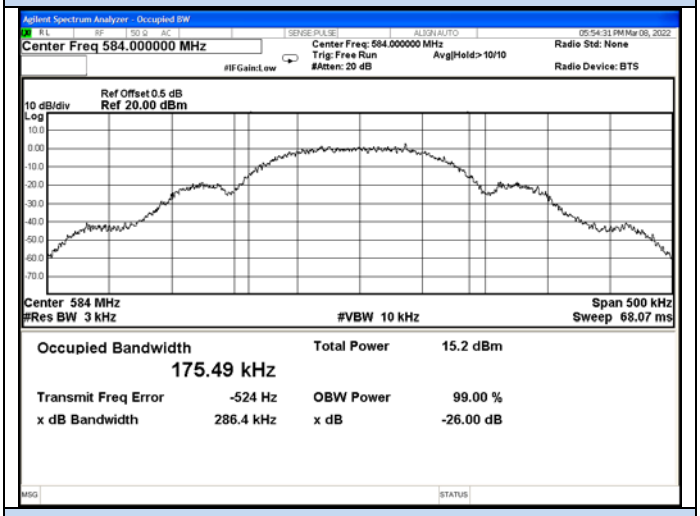
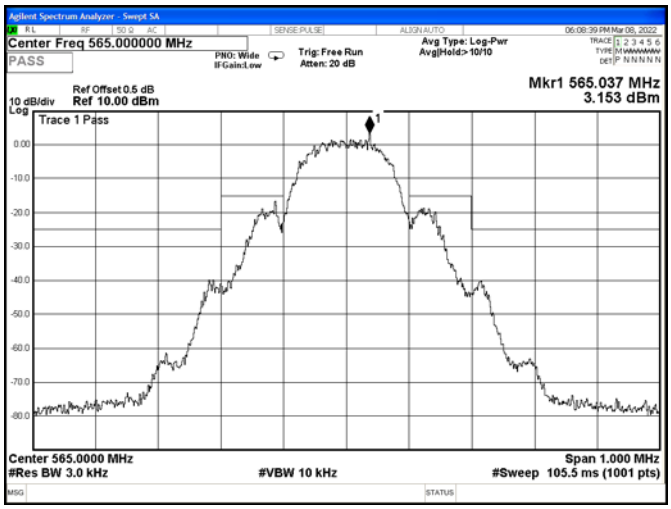
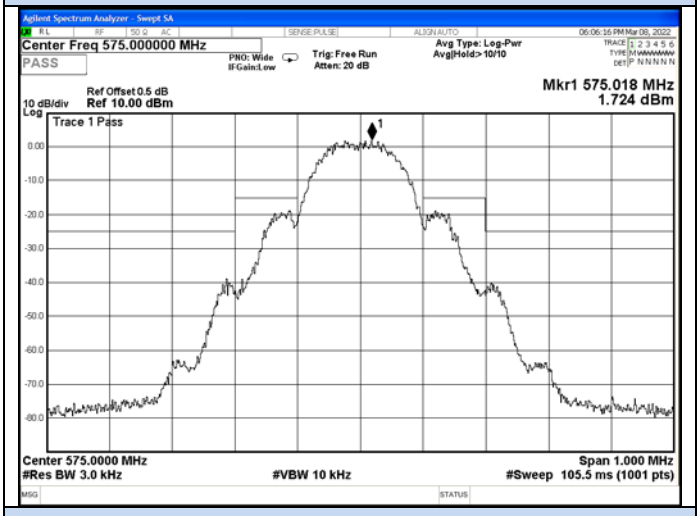
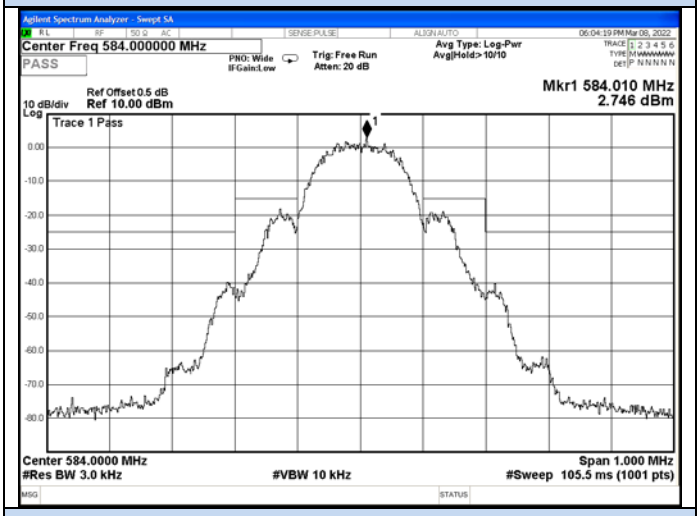
| 99% Bandwidth |
|---|
|  |
| Channel 01 / 565 MHz |
|  |
| Channel 11 / 575 MHz |
|  |
| Channel 20 / 584 MHz |

| Spectrum mask |
| --- |
|  |
| Channel 01 / 565 MHz |
|  |
| Channel 11 / 575 MHz |
|  |
| Channel 20 / 584 MHz |







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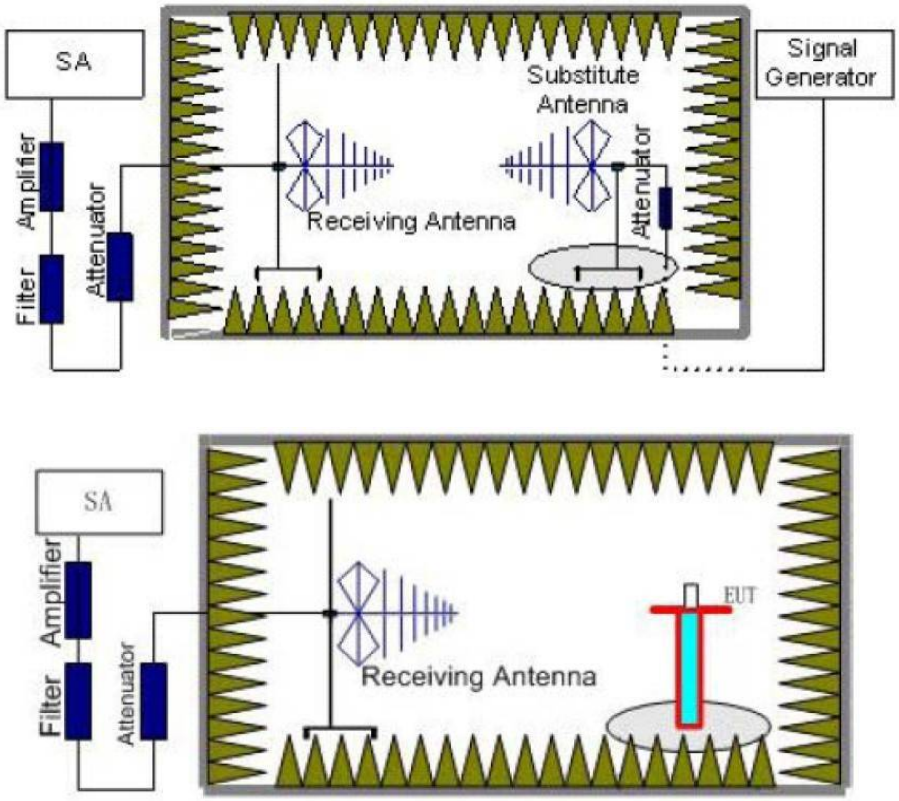
## 5.3. Transmitter unwanted emissions(radiated)

### 5.3.1. Measurement description:

TEST CONFIGURATION




**TEST PROCEDURE**

1. EUT was placed on a 1.50 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.50 m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz, And the maximum value of the receiver should be recorded as ($P_r$).
4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power ($P_{Mea}$) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded ($P_r$). The

power of signal source ($P_{Mea}$) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss ($P_{cl}$) ,the Substitution Antenna Gain ($G_a$) and the Amplifier Gain ($P_{Ag}$) should be recorded after test.
   The measurement results are obtained as described below:
   Power(EIRP)=$P_{Mea}$- $P_{Ag}$ - $P_{cl}$ + $G_a$
6. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
7. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi.
8. In order to make sure test results more clearly,we set frequency range and sweep time for difference frequency range as follows table:

**TEST LIMITS**

| FCC & IC (according to ETSI EN 300 422-1 V2.1.2 (2017-01)) | | | |
|---|---|---|---|
| **State** | **Max. spurious level** | | |
| | 47 MHz to 74 MHz<br>87.5 MHz to 118 MHz<br>174 MHz to 230 MHz | Other frequencies<br>≤ 1000 MHz | All frequencies<br>> 1000 MHz |
| Operating | 4.0 nW | 250 nW | 1.00 µW |
| Standby | 2.0 nW | 2.0 nW | 20.0 nW |

| FCC & IC | |
|---|---|
| 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 50 percent up to and including 100 percent of the | 25 dB |
| On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of | 35 dB |
| On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least | 43 + 10log10 (mean output power in watts) dB |

$$P = 10 \cdot \log_{10}\left(\frac{p}{p_0}\right) \qquad p_0 = 1\text{mW}$$

$$U = 20 \cdot \log_{10}\left(\frac{u}{u_0}\right) \qquad u_0 = 1\mu\text{V}$$

$$p = \frac{u^2}{Z_C} \qquad Z_C = 50$$

5.3.2. Results for Radiated Emissions

| Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Det. | Polarization |
|---|---|---|---|---|---|---|---|
| Channel 01 / 565MHz | | | | | | | |
| 62.0561 | -76.34 | -5.97 | -82.31 | -53.98 | -28.33 | PK | H |
| 133.5075 | -76.39 | -5.99 | -82.38 | -53.98 | -28.40 | PK | H |
| 320.9544 | -75.93 | -2.85 | -78.78 | -36.02 | -42.76 | PK | H |
| 405.2939 | -73.90 | -3.14 | -77.05 | -36.02 | -41.03 | PK | H |
| 479.7037 | -74.38 | -2.68 | -77.06 | -53.98 | -23.08 | PK | H |
| 876.5364 | -73.99 | -1.55 | -75.53 | -36.02 | -39.51 | PK | H |
| 1130.000 | -52.35 | -5.77 | -58.12 | -30.00 | -28.12 | PK | H |
| 1695.000 | -54.18 | -3.04 | -57.21 | -30.00 | -27.21 | PK | H |
| 3444.883 | -53.59 | -2.25 | -55.84 | -30.00 | -25.84 | PK | H |
| 3821.464 | -55.10 | -2.05 | -57.15 | -30.00 | -27.15 | PK | H |
| 4994.144 | -54.03 | -2.02 | -56.05 | -30.00 | -26.05 | PK | H |
| 6000.720 | -52.51 | -0.76 | -53.27 | -30.00 | -23.27 | PK | H |

| Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Det. | Polarization |
|---|---|---|---|---|---|---|---|
| Channel 01 / 565MHz | | | | | | | |
| 64.4670 | -78.16 | -6.08 | -84.25 | -53.98 | -30.27 | PK | V |
| 117.4698 | -75.74 | -6.00 | -81.75 | -53.98 | -27.77 | PK | V |
| 362.1813 | -74.13 | -2.90 | -77.03 | -36.02 | -41.01 | PK | V |
| 412.2484 | -74.86 | -3.05 | -77.91 | -36.02 | -41.89 | PK | V |
| 537.7766 | -72.57 | -2.59 | -75.16 | -53.98 | -21.18 | PK | V |
| 897.3999 | -74.30 | -1.53 | -75.83 | -36.02 | -39.81 | PK | V |
| 1130.000 | -51.99 | -5.72 | -57.71 | -30.00 | -27.71 | PK | V |
| 1695.000 | -54.98 | -3.02 | -58.00 | -30.00 | -28.00 | PK | V |
| 3102.772 | -53.93 | -2.25 | -56.18 | -30.00 | -26.18 | PK | V |
| 3900.448 | -53.40 | -2.09 | -55.49 | -30.00 | -25.49 | PK | V |
| 4493.384 | -52.71 | -2.08 | -54.78 | -30.00 | -24.78 | PK | V |
| 5552.478 | -52.71 | -0.76 | -53.47 | -30.00 | -23.47 | PK | V |

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| Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Det. | Polarization |
|---|---|---|---|---|---|---|---|
| Channel 11/ 575MHz | | | | | | | |
| 49.2407 | -77.82 | -5.80 | -83.62 | -53.98 | -29.64 | PK | H |
| 118.0390 | -76.94 | -5.83 | -82.77 | -53.98 | -28.79 | PK | H |
| 302.0915 | -75.05 | -2.89 | -77.95 | -36.02 | -41.93 | PK | H |
| 404.7402 | -74.40 | -3.29 | -77.69 | -36.02 | -41.67 | PK | H |
| 692.7651 | -72.34 | -2.52 | -74.86 | -53.98 | -20.88 | PK | H |
| 903.2953 | -74.43 | -1.64 | -76.07 | -36.02 | -40.05 | PK | H |
| 1150.000 | -52.16 | -5.72 | -57.88 | -30.00 | -27.88 | PK | H |
| 1725.000 | -54.35 | -3.08 | -57.42 | -30.00 | -27.42 | PK | H |
| 3070.604 | -53.60 | -2.24 | -55.84 | -30.00 | -25.84 | PK | H |
| 3925.586 | -53.89 | -2.10 | -55.98 | -30.00 | -25.98 | PK | H |
| 4536.598 | -52.79 | -2.08 | -54.87 | -30.00 | -24.87 | PK | H |
| 5878.321 | -54.10 | -0.85 | -54.95 | -30.00 | -24.95 | PK | H |

| Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Det. | Polarization |
|---|---|---|---|---|---|---|---|
| Channel 11/ 575MHz | | | | | | | |
| 64.7697 | -78.00 | -5.85 | -83.85 | -53.98 | -29.87 | PK | V |
| 109.1807 | -75.66 | -6.02 | -81.68 | -53.98 | -27.70 | PK | V |
| 291.7446 | -75.76 | -2.84 | -78.61 | -36.02 | -42.59 | PK | V |
| 407.5831 | -73.75 | -3.29 | -77.03 | -36.02 | -41.01 | PK | V |
| 611.9181 | -74.48 | -2.53 | -77.02 | -53.98 | -23.04 | PK | V |
| 935.3966 | -74.91 | -1.42 | -76.33 | -36.02 | -40.31 | PK | V |
| 1150.000 | -53.00 | -5.72 | -58.72 | -30.00 | -28.72 | PK | V |
| 1725.000 | -55.25 | -3.01 | -58.27 | -30.00 | -28.27 | PK | V |
| 2937.767 | -54.31 | -2.24 | -56.55 | -30.00 | -26.55 | PK | V |
| 3641.158 | -55.07 | -2.09 | -57.16 | -30.00 | -27.16 | PK | V |
| 4617.709 | -52.81 | -2.05 | -54.86 | -30.00 | -24.86 | PK | V |
| 5714.677 | -52.84 | -0.78 | -53.63 | -30.00 | -23.63 | PK | V |

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| Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Det. | Polarization |
|---|---|---|---|---|---|---|---|
| Channel 20 / 584MHz | | | | | | | |
| 54.7857 | -77.05 | -5.83 | -82.88 | -53.98 | -28.90 | PK | H |
| 106.7888 | -75.18 | -5.86 | -81.05 | -53.98 | -27.07 | PK | H |
| 323.0719 | -73.81 | -2.90 | -76.70 | -36.02 | -40.68 | PK | H |
| 380.0804 | -75.65 | -3.26 | -78.91 | -36.02 | -42.89 | PK | H |
| 577.0421 | -72.55 | -2.65 | -75.19 | -53.98 | -21.21 | PK | H |
| 878.9565 | -73.37 | -1.45 | -74.82 | -36.02 | -38.80 | PK | H |
| 1168.000 | -52.23 | -5.77 | -58.00 | -30.00 | -28.00 | PK | H |
| 1752.000 | -54.88 | -3.04 | -57.92 | -30.00 | -27.92 | PK | H |
| 3055.195 | -53.89 | -2.25 | -56.13 | -30.00 | -26.13 | PK | H |
| 3710.745 | -54.78 | -2.06 | -56.84 | -30.00 | -26.84 | PK | H |
| 4676.069 | -53.72 | -2.12 | -55.84 | -30.00 | -25.84 | PK | H |
| 5579.717 | -53.30 | -0.78 | -54.08 | -30.00 | -24.08 | PK | H |

| Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Det. | Polarization |
|---|---|---|---|---|---|---|---|
| Channel 20 / 584MHz | | | | | | | |
| 67.5206 | -76.53 | -6.01 | -82.54 | -53.98 | -28.56 | PK | V |
| 103.0999 | -75.07 | -6.02 | -81.08 | -53.98 | -27.10 | PK | V |
| 292.4430 | -74.48 | -2.81 | -77.29 | -36.02 | -41.27 | PK | V |
| 381.9626 | -75.74 | -3.14 | -78.88 | -36.02 | -42.86 | PK | V |
| 597.8182 | -73.79 | -2.56 | -76.35 | -53.98 | -22.37 | PK | V |
| 899.7454 | -73.13 | -1.50 | -74.63 | -36.02 | -38.61 | PK | V |
| 1168.000 | -50.98 | -5.71 | -56.70 | -30.00 | -26.70 | PK | V |
| 1752.000 | -54.34 | -3.05 | -57.38 | -30.00 | -27.38 | PK | V |
| 2815.315 | -53.62 | -2.25 | -55.87 | -30.00 | -25.87 | PK | V |
| 3988.895 | -53.72 | -2.05 | -55.77 | -30.00 | -25.77 | PK | V |
| 4894.993 | -52.87 | -2.05 | -54.92 | -30.00 | -24.92 | PK | V |
| 5512.376 | -53.61 | -0.84 | -54.45 | -30.00 | -24.45 | PK | V |

*Note: 1, All detected emissions are more than 20 dB below the limit,In addition to main frequency.*
*2, Factor = Antenna Factor + Cable Loss + Amplifier Factor*
*3, Emission Level = Reading level + Factor Margin = Emission Level - Limit*

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### 5.5.Frequency Stability

Test Requirement:FCC CFR 47 Part 74.e) 4)

Test Method:FCC CFR 47 Part 2.1055

Requirements:+/-50 ppm

(e) For low power auxiliary stations operating in the bands allocated for TV broadcasting, the following technical requirements apply:

(4) The frequency tolerance of the transmitter shall be 0.005 percent.

Test Procedure:

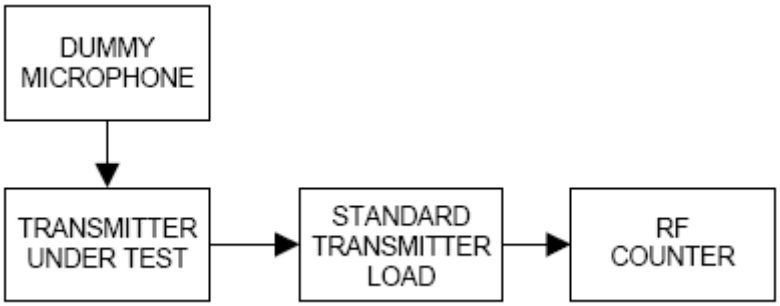
Frequency stability versus Environmental Temperature

The equipment under test was connected to an external DC power supply and the RF output was connected to a frequency counter via feed through attenuators.

The EUT was placed inside the temperature chamber. After the temperature stabilized for approximately 20 minutes, the frequency of the output signal was recorded from the counter.

Frequency Stability versus Input Voltage

At room temperature (25 ± 5°C), an external variable DC power supply was connected to the EUT. The frequency of the transmitter was measured for 115%, 100% and 85% of the nominal operating input voltage. For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



Test Result:

| Assigned Frequency: 565 MHz, | | |
|---|---|---|
| Environment Temperature (°C) | Power Supplied (Vdc) | Frequency Measure with Time Elapsed Total emission within +/- 28.25kHz (KHz) |
| 60 | 3.0 | +2.64 |
| 50 | 3.0 | +2.93 |
| 40 | 3.0 | +2.14 |
| 30 | 3.0 | +2.57 |
| 20 | 3.0 | +2.54 |
| 10 | 3.0 | +2.33 |
| 0 | 3.0 | +2.52 |
| -10 | 3.0 | +2.97 |
| Environment Temperature (°C) | Power Supplied (Vdc) | Frequency Measure with Time Elapsed Total emission within Max +/- 28.25 kHz (KHz) |
| 25 | 3.0 | +2.06 |
| 25 | 2.7 | +2.23 |
| 25 | 3.3 | +2.46 |

| Assigned Frequency: 575 MHz, | | |
|---|---|---|
| Environment Temperature (°C) | Power Supplied (Vdc) | Frequency Measure with Time Elapsed Total emission within +/- 28.75 kHz (KHz) |
| 60 | 3.0 | +2.45 |
| 50 | 3.0 | +2.33 |
| 40 | 3.0 | +2.15 |
| 30 | 3.0 | +2.65 |
| 20 | 3.0 | +2.86 |
| 10 | 3.0 | +2.73 |
| 0 | 3.0 | +2.06 |
| -10 | 3.0 | +2.27 |
| Environment Temperature (°C) | Power Supplied (Vdc) | Frequency Measure with Time Elapsed Total emission within Max +/- 28.75 kHz (KHz) |
| 25 | 3.0 | +2.05 |
| 25 | 2.7 | +2.14 |
| 25 | 3.3 | +2.27 |

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| Assigned Frequency: 584 MHz | | |
|---|---|---|
| Environment Temperature (°C) | Power Supplied (Vdc) | Frequency Measure with Time Elapsed Total emission within +/- 29.20 kHz (KHz) |
| 60 | 3.0 | +2.74 |
| 50 | 3.0 | +2.64 |
| 40 | 3.0 | +2.15 |
| 30 | 3.0 | +2.55 |
| 20 | 3.0 | +2.79 |
| 10 | 3.0 | +2.33 |
| 0 | 3.0 | +2.92 |
| -10 | 3.0 | +2.18 |
| Environment Temperature (°C) | Power Supplied (Vdc) | Frequency Measure with Time Elapsed Total emission within Max +/- 29.20 kHz (KHz) |
| 25 | 3.0 | +2.42 |
| 25 | 2.7 | +2.74 |
| 25 | 3.3 | +2.07 |

Battery end point: 3.0 Vdc

The results: The unit does meet the FCC requirements.

5.6.Modulation Characteristics

Test Requirement:FCC CFR 47 Part 74.e) 3)

Test Method:FCC CFR 47 Part 2.1047 & TIA/EIA 603 E 2016:Land Mobile π/4-DQPSK or PM Communications Equipment Measurement and Performance Standards

Requirements:

(e) For low power auxiliary stations operating in the bands allocated for TV broadcasting, the following technical requirements apply:

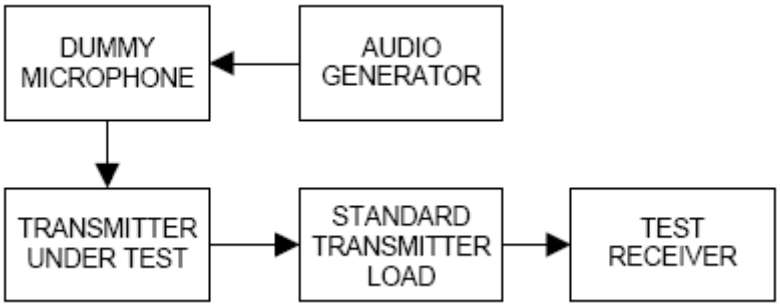
(3) Any form of modulation may be used. A maximum deviation of ±75 kHz is permitted when frequency modulation is employed.

Test Procedure:

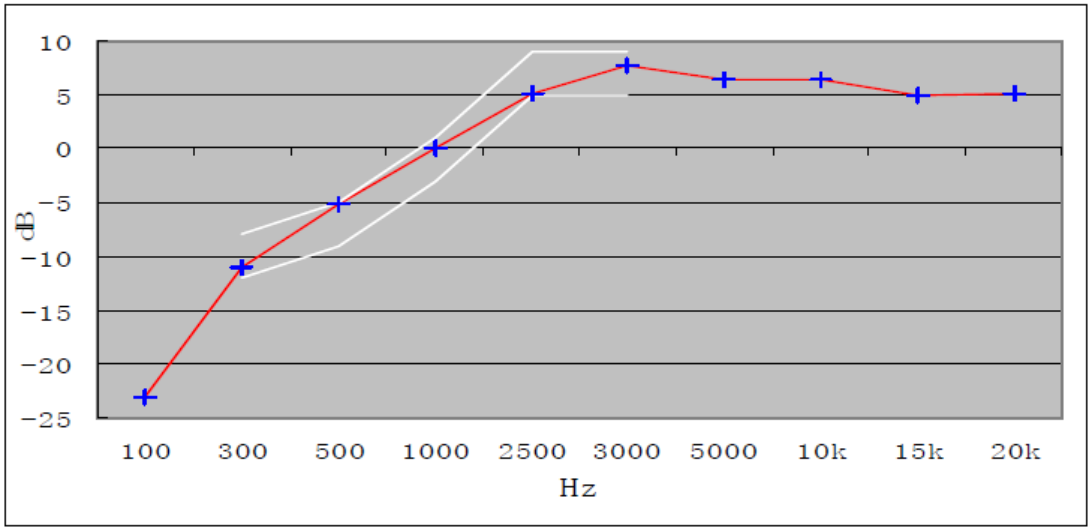
**Audio Frequency Response**

The RF output of the transceiver was connected to the input of FSP 30 with FM deviation module through sufficient attenuation so as not to overload the meter or distort the reading. An audio signal generator was connected to the audio input of microphone.

The audio signal input level was adjusted to obtain 20% of the maximum rated system deviation at 1 kHz, and recorded as DEV REF . With the audio signal generator level unchanged, set the generator frequency between 100 to 5000 Hz. The transmitter deviations (DEV FREQ ) were measured and the audio frequency response was calculated as 20log10 [DEV FREQ / DEV REF ]




The plot(s) of Audio Frequency Response is presented hereinafter as reference.

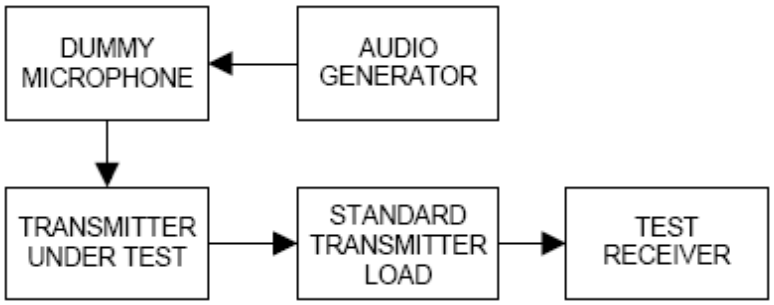



0dB=10mV at 1kHz (20% of the maximum rated systemdeviation).

**Modulation Limiting**

a) Adjust the transmitter per the manufacturer's procedure for full rated system deviation.
b) Set the test receiver to measure peak positive deviation. Set the audio bandwidth for ≤0.25 Hz to ≥15,000 Hz. Turn the de-emphasis function off.
c) Apply a **1000 Hz** modulating signal to the transmitter from the audio frequency generator, and adjust the level to obtain **60% of full rated system deviation**.
d) Increase the level from the audio frequency generator by 20 dB in one step (rise time between the 10% and 90% points shall be 0.1 second maximum).
e) Measure both the instantaneous and steady-state deviation at and after the time of increasing the audio input level.

With the level from the audio frequency generator held constant at the level obtained in step e), slowly vary the audio frequency from 100 to 15k Hz and observe the steady-state deviation. Record the maximum deviation.




The plot(s) of Audio Frequency Response is presented hereinafter as reference.

Test Result:

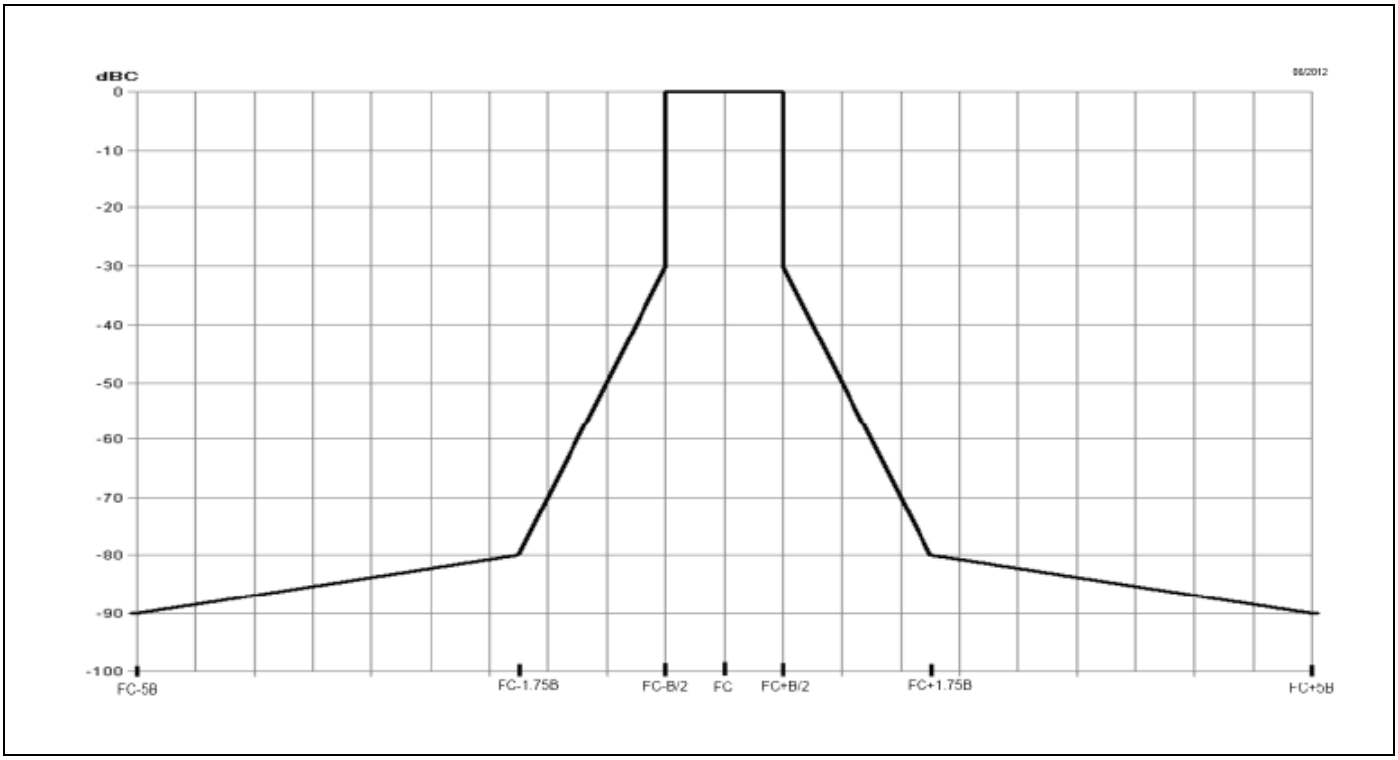
Not Applicable. The EUT is a digital modulation wireless microphone.

5.7.Necessary bandwidth (BN)

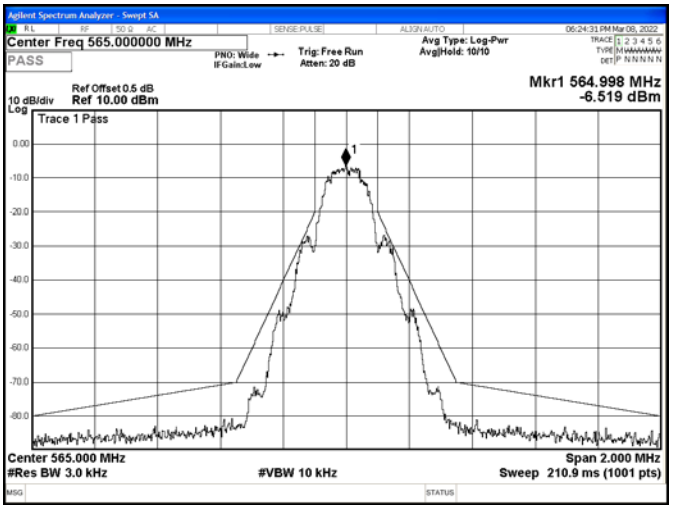
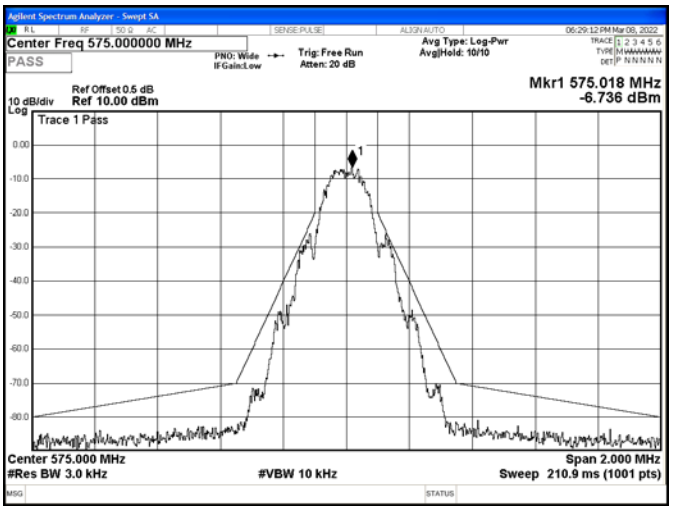
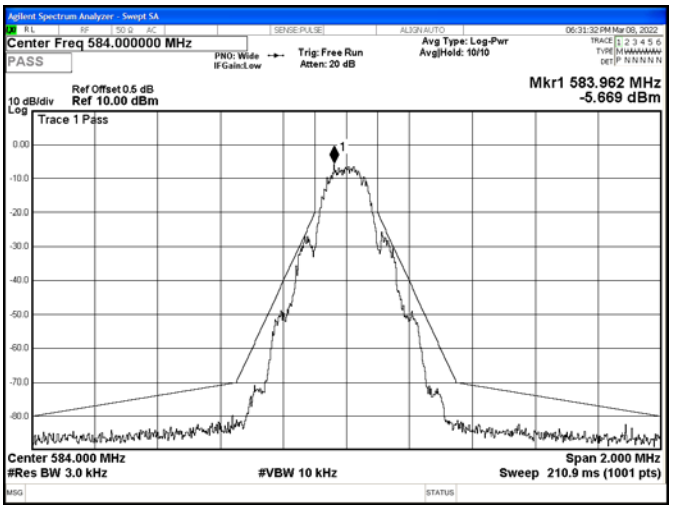
5.7.1.Measurement:

| Measurement parameter | |
|---|---|
| Detector: | Peak - Quasi Peak / Average |
| Sweep time: | Auto |
| Resolution bandwidth: | 1 kHz |
| Video bandwidth: | 1 kHz |
| Span: | Fc-1MHz to fc+1MHz(2MHz) |
| Trace mode: | Max Hold |

5.7.2.Limits:



5.7.3. Results:

| Necessary bandwidth |
|---|
|  |
| *Channel 01 / 565 MHz* |
|  |
| *Channel 11/ 575 MHz* |
|  |
| *Channel 20/ 584 MHz* |

# 6. LIST OF MEASURING EQUIPMENTS

| Item | Equipment | Manufacturer | Model No. | Serial No. | Cal Date | Due Date |
|---|---|---|---|---|---|---|
| 1 | MXA Signal Analyzer | Agilent | N9020A | MY49100060 | 2021-11-16 | 2022-11-15 |
| 2 | DC Power Supply | Agilent | E3642A | N/A | 2021-11-25 | 2022-11-24 |
| 3 | Temperature & Humidity Chamber | GUANGZHOU GOGNWEN | GDS-100 | 70932 | 2021-10-07 | 2022-10-06 |
| 4 | EMI Test Software | AUDIX | E3 | / | N/A | N/A |
| 5 | 3m Semi Anechoic Chamber | SIDT FRANKONIA | SAC-3M | 03CH03-HY | 2021-06-21 | 2022-06-20 |
| 6 | Positioning Controller | MF | MF7082 | MF78020803 | 2021-06-21 | 2022-06-20 |
| 7 | Active Loop Antenna | SCHWARZBECK | FMZB 1519B | 00005 | 2021-07-25 | 2024-07-24 |
| 8 | By-log Antenna | SCHWARZBECK | VULB9163 | 9163-470 | 2021-07-25 | 2024-07-24 |
| 9 | Horn Antenna | SCHWARZBECK | BBHA 9120D | 9120D-1925 | 2021-07-01 | 2024-06-30 |
| 10 | EMI Test Receiver | R&S | ESR 7 | 101181 | 2021-06-21 | 2022-06-20 |
| 11 | RS SPECTRUM ANALYZER | R&S | FSP40 | 100503 | 2021-11-16 | 2022-11-15 |
| 12 | Broadband Preamplifier | / | BP-01M18G | P190501 | 2021-06-21 | 2022-06-20 |
| 13 | EMI Test Receiver | R&S | ESPI | 101840 | 2021-06-21 | 2022-06-20 |
| 14 | Artificial Mains | R&S | ENV216 | 101288 | 2021-06-21 | 2022-06-20 |
| 15 | 10dB Attenuator | SCHWARZBECK | MTS-IMP-136 | 261115-001-0032 | 2021-06-21 | 2022-06-20 |
| 16 | EMI Test Software | Farad | EZ | / | N/A | N/A |

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# 7. TEST SETUP PHOTOGRAPHS OF EUT

Please refer to separated files for Test Setup Photos of the EUT.

# 8. EXTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for External Photos of the EUT.

# 9. INTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for Internal Photos of the EUT.

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