

TEST REPORT

Report No.: BCTC2207722853E

Applicant: Bulk Unlimited Corp

Product Name: Wireless Microphone

Model/Type reference: CR-2715

Tested Date: 2022-08-08 to 2022-08-19

Issued Date: 2022-08-23

Shenzhen BCTC Testing Co., Ltd.



FCC ID: 2AE67-CR2715

Product Name: Wireless Microphone
Trademark: CROOVE
Model/Type reference: CR-2715
EKS718B-2, EKS718-2, EKTW-001, EKTW-002, EKTW-001B, EKTW-001C
Prepared For: Bulk Unlimited Corp
Address: 801 Barton Springs Road, Austin, TX 78704, United States
Manufacturer: Bulk Unlimited Corp
Address: 801 Barton Springs Road, Austin, TX 78704, United States
Prepared By: Shenzhen BCTC Testing Co., Ltd.
Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date: 2022-07-26
Sample tested Date: 2022-08-08 to 2022-08-19
Issue Date: 2022-08-23
Report No.: BCTC2207722853E
Test Standards: FCC 47 CFR Part 74, Subpart H
Test Results: PASS
Remark: This is radio test report.

Tested by:

Eric Yang/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.

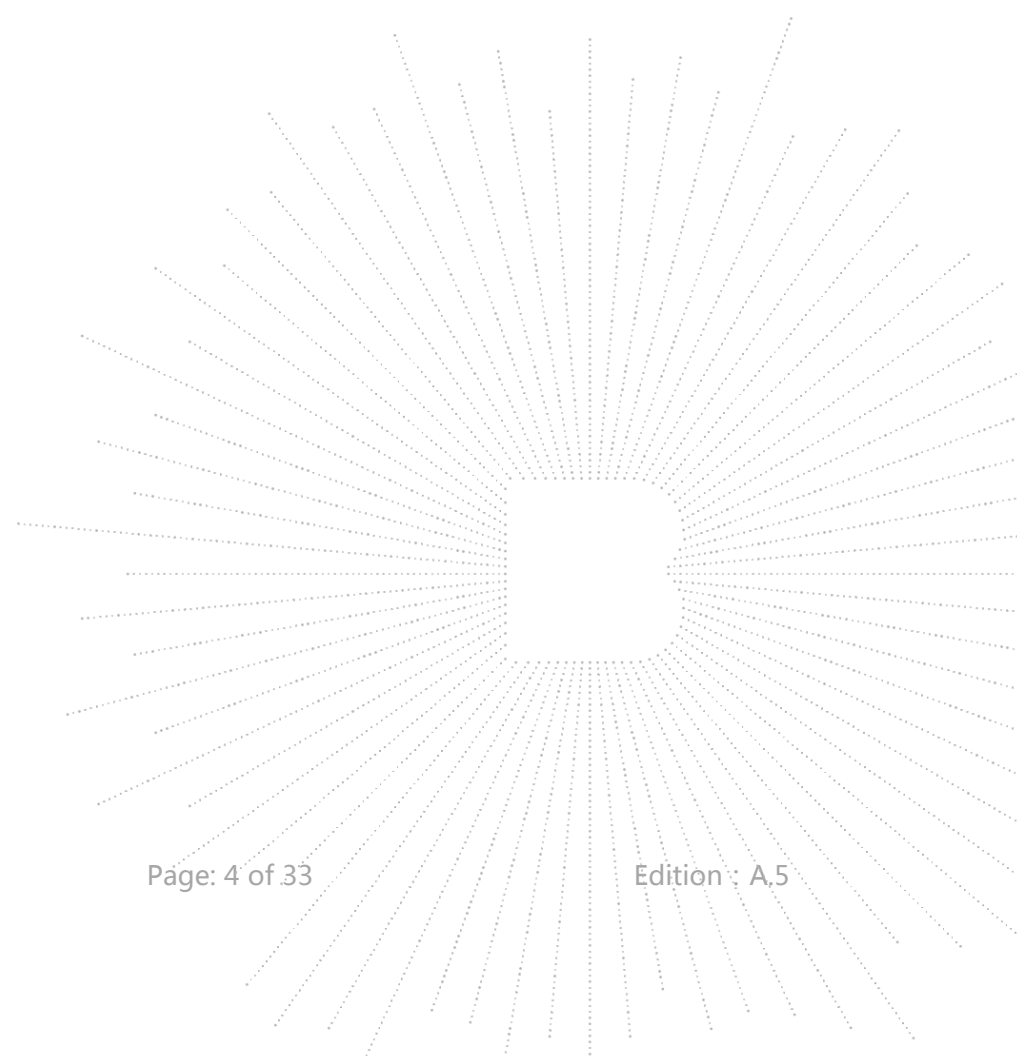
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(Note: N/A Means Not Applicable)

1. Version

| Report No. | Issue Date | Description | Approved |
|-------------------|-------------------|--------------------|-----------------|
| BCTC2207722853E | 2022-08-23 | 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(d)(1) | PASS |
| 3 | Occupied Bandwidth | §74.861(d)(4)(i) | PASS |
| | Unwanted Emissions | §74.861(e)(7), ETSI EN 300-422-1 s. 8.3.2 | PASS |
| 4 | Radiated Spurious Emission | §74.861(e)(6) (iii) | PASS |
| 5 | Spurious Emission at Antenna Port | §2.1051 | PASS |
| 6 | Frequency Stability | §74.861(e)(4) | PASS |

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(30MHz-1GHz) | U=4.3dB |
| 2 | 3m chamber Radiated spurious emission(9KHz-30MHz) | U=3.7dB |
| 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

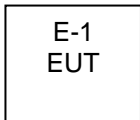
4.1 Product Information

| | |
|-----------------------|--|
| Model/Type reference: | CR-2715 EKS718B-2, EKS718-2, EKTW-001, EKTW-002, EKTW-001B, EKTW-001C |
| Model differences: | All the model are the same circuit and RF module, except model names. |
| Operation Frequency: | 943-948 MHz |
| Type of Modulation: | FM |
| Number Of Channel: | 2 CH |
| Antenna installation: | Internal antenna |
| Antenna Gain: | 1 dBi |
| Ratings: | DC 3V |

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



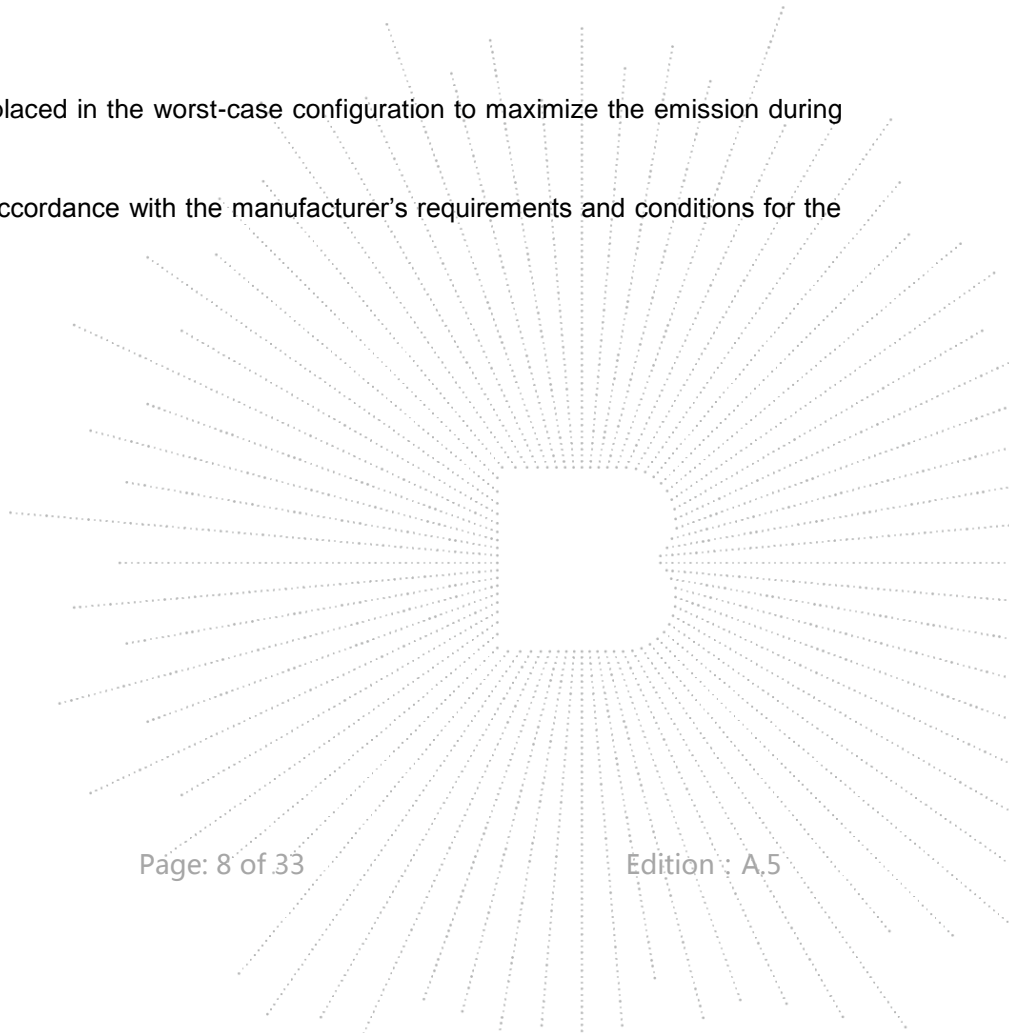
4.3 Support Equipment

| No. | Device Type | Brand | Model | Series No. | Note |
|-----|-------------|-------|-------|------------|------|
| | | | | | |
| | | | | | |

| Item | Shielded Type | Ferrite Core | Length | Note |
|------|---------------|--------------|--------|------|
| | | | | |

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.

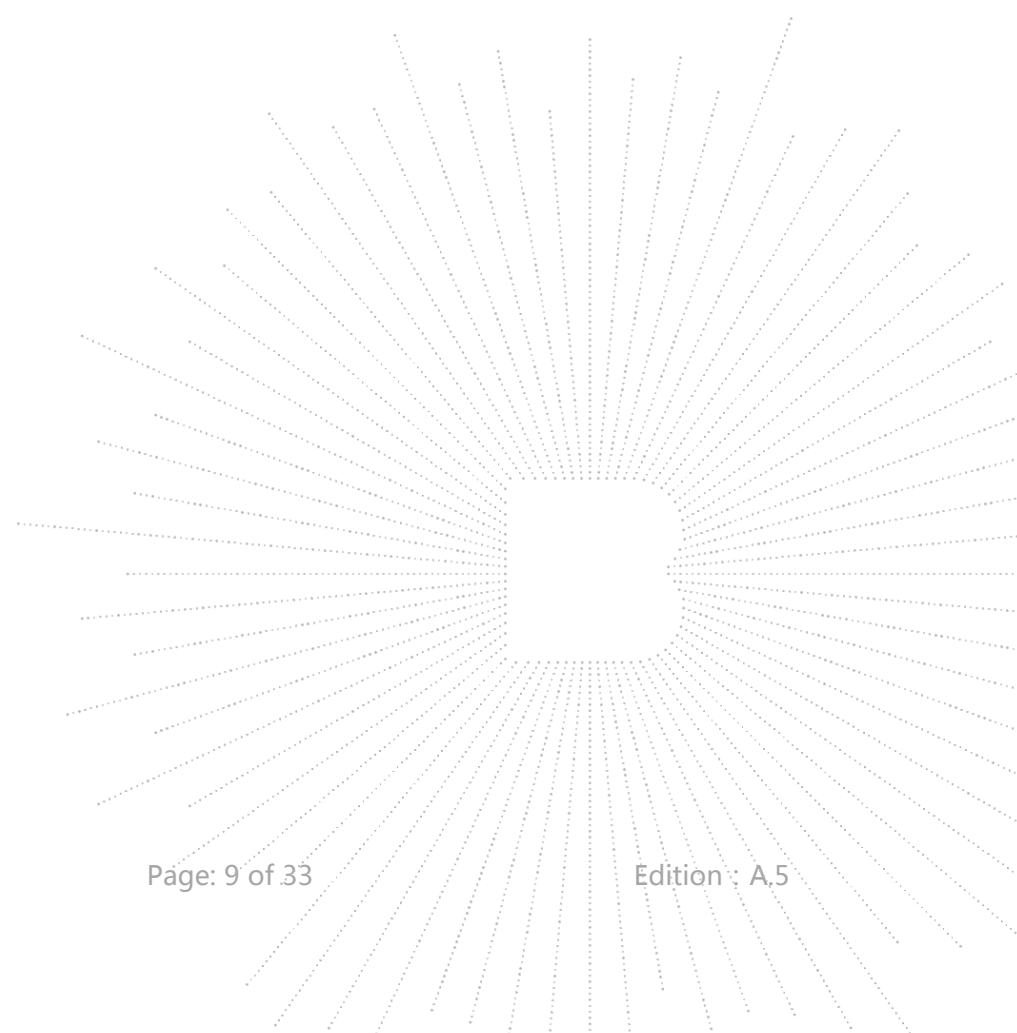


4.4 Test Frequency

| Channel 1 | Channel 2 |
|-----------------|-----------------|
| Frequency (MHz) | Frequency (MHz) |
| 943 | 948 |

4.5 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 |



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, Fuhai 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

IC Registered No.: 23583

5.2 Test Instrument Used

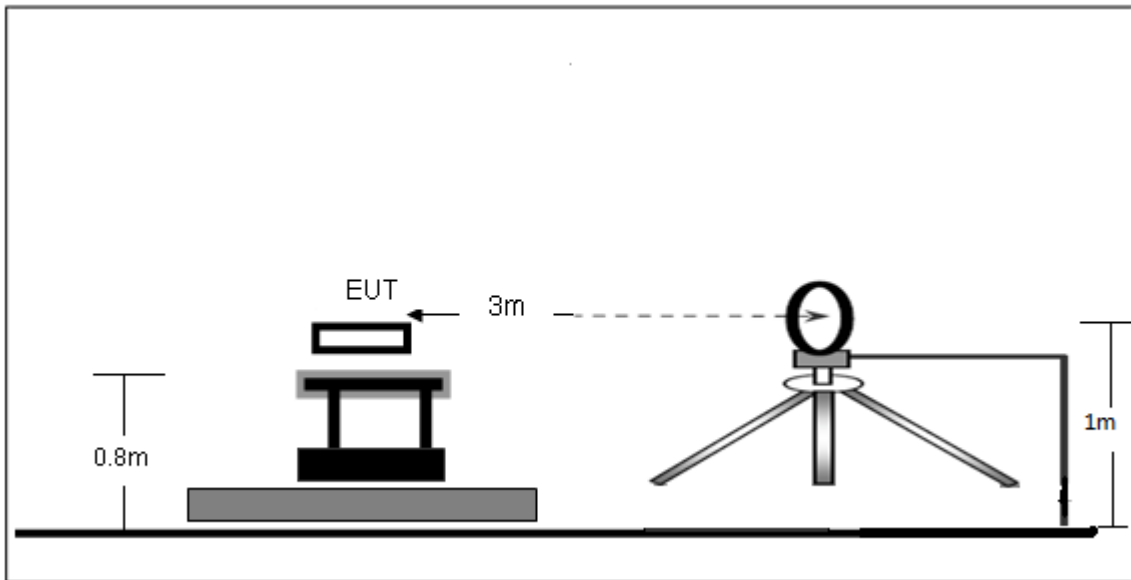
| RF Conducted Test | | | | | |
|-------------------------------|--------------|--------|------------|--------------|--------------|
| Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. |
| Power Metter | Keysight | E4419 | \ | May 24, 2022 | May 23, 2023 |
| Power Sensor (AV) | Keysight | E9300A | \ | May 24, 2022 | May 23, 2023 |
| Signal Analyzer 20kHz-26.5GHz | Keysight | N9020A | MY49100060 | May 24, 2022 | May 23, 2023 |
| Spectrum Analyzer 9kHz-40GHz | R&S | FSP 40 | \ | May 24, 2022 | May 23, 2023 |

| Radiated Emissions Test (966 Chamber) | | | | | |
|---------------------------------------|--------------|----------------------|-------------------|---------------|---------------|
| Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. |
| 966 chamber | ChengYu | 966 Room | 966 | Jun. 06. 2020 | Jun. 05, 2023 |
| Receiver | R&S | ESR3 | 102075 | May 24, 2022 | May 23, 2023 |
| Receiver | R&S | ESRP | 101154 | May 24, 2022 | May 23, 2023 |
| Amplifier | SKET | LAPA_01G18 G-45dB | \ | May 24, 2022 | May 23, 2023 |
| Amplifier | Schwarzbeck | BBV9744 | 9744-0037 | May 24, 2022 | May 23, 2023 |
| TRILOG Broadband Antenna | Schwarzbeck | VULB9163 | 942 | May 26, 2022 | May 25, 2023 |
| Horn Antenna | Schwarzbeck | BBHA9120D | 1541 | Jun. 06, 2022 | Jun. 05, 2023 |
| Horn Antenn (18GHz-40GHz) | Schwarzbeck | BBHA9170 | 00822 | Jun. 06, 2022 | Jun. 05, 2023 |
| Amplifier (18GHz-40GHz) | MITEQ | TTA1840-35- HG | 2034381 | May 26, 2022 | May 25, 2023 |
| Loop Antenna (9KHz-30MHz) | Schwarzbeck | FMZB1519B | 00014 | May 26, 2022 | May 25, 2023 |
| RF cables1 (9kHz-30MHz) | Huber+Suhnar | 9kHz-30MHz | B1702988-000 8 | May 26, 2022 | May 25, 2023 |
| RF cables2 (30MHz-1GHz) | Huber+Suhnar | 30MHz-1GHz | 1486150 | May 26, 2022 | May 25, 2023 |
| RF cables3 (1GHz-40GHz) | Huber+Suhnar | 1GHz-40GHz | 1607106 | May 26, 2022 | May 25, 2023 |
| Power Metter | Keysight | E4419 | \ | May 26, 2022 | May 25, 2023 |
| Power Sensor (AV) | Keysight | E9300A | \ | May 26, 2022 | May 25, 2023 |
| Signal Analyzer 20kHz-26.5GHz | Keysight | N9020A | MY49100060 | May 26, 2022 | May 25, 2023 |
| Spectrum Analyzer 9kHz-40GHz | R&S | FSP 40 | \ | May 26, 2022 | May 25, 2023 |
| Software | Frad | EZ-EMC | FA-03A2 RE | \ | \ |

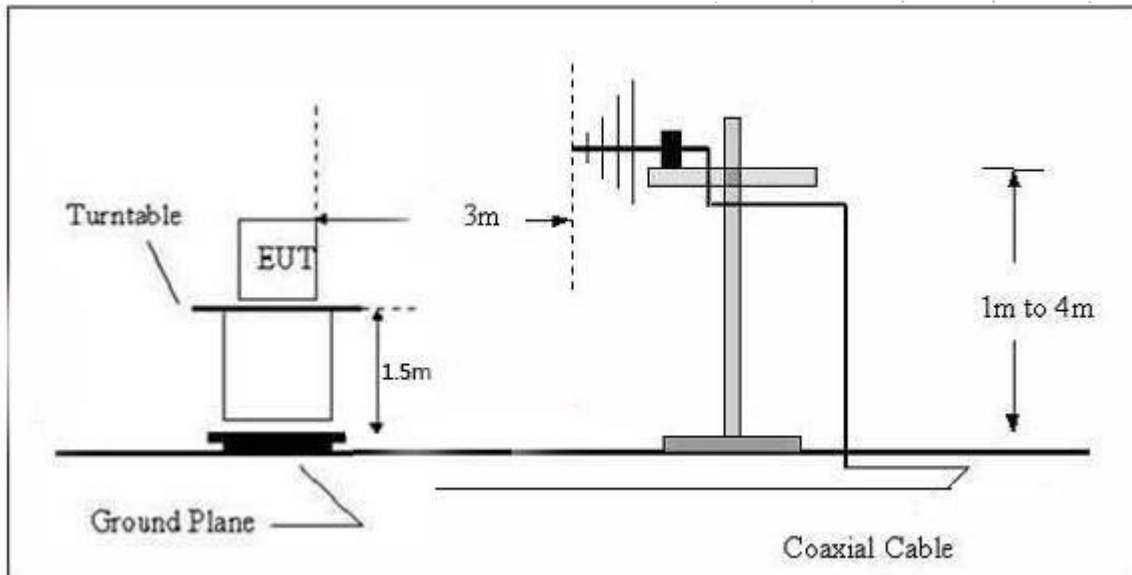
6. Radiated Spurious Emission

6.1 Block Diagram Of Test Setup

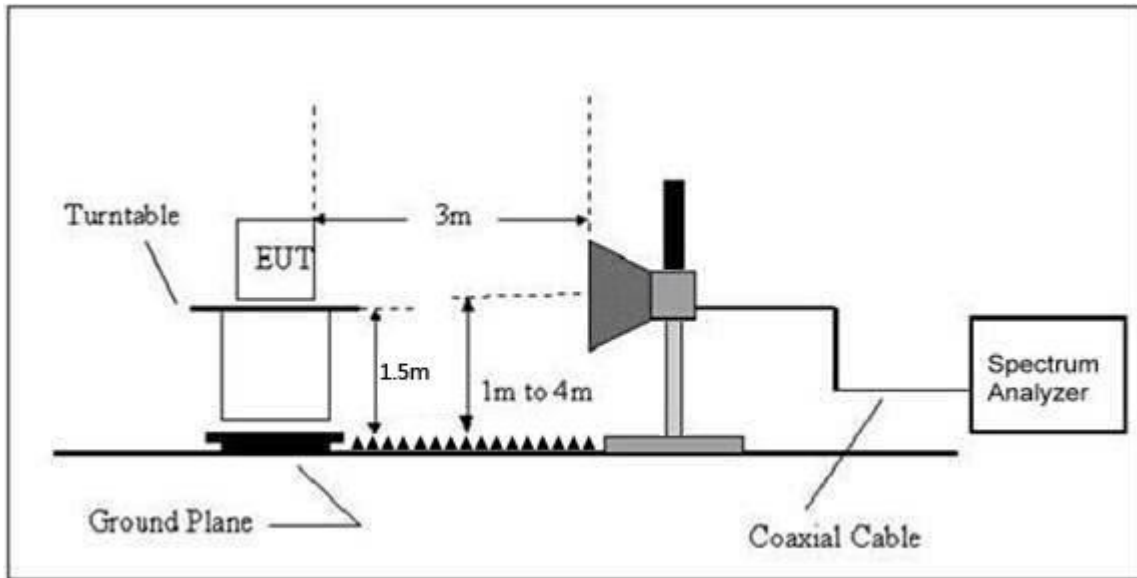
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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



6.2 Limit

According to FCC 74.861(4)(ii), Emission within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the ETSI EN 300 422-1 V1.4.2(2011-08).

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

6.3 Test procedure

The setup of EUT is according with per TIA/EIA Standard 603 and ANSI C63.26 measurement procedure. 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 = $43 + 10 \text{ Log}_{10} (\text{power in Watts})$

6.4 Test Result

Below 30MHz

| | | | |
|--------------|--------|--------------------|-------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Test Voltage: | DC 3V |

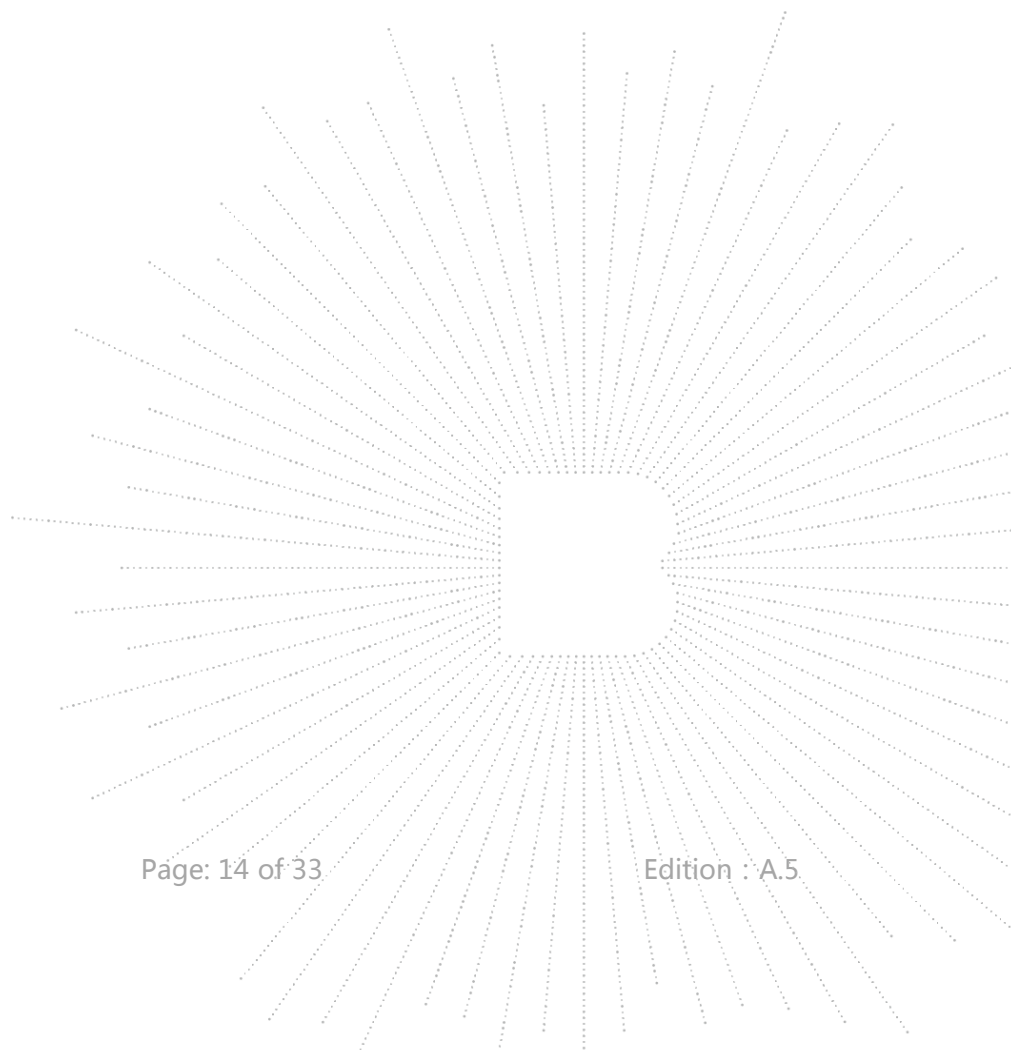
| Freq. | Reading | Limit | Margin | State |
|--------------|----------------|--------------|---------------|--------------|
| (MHz) | (dBuV/m) | (dBuV/m) | (dB) | P/F |
| -- | -- | -- | -- | PASS |
| -- | -- | -- | -- | PASS |

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

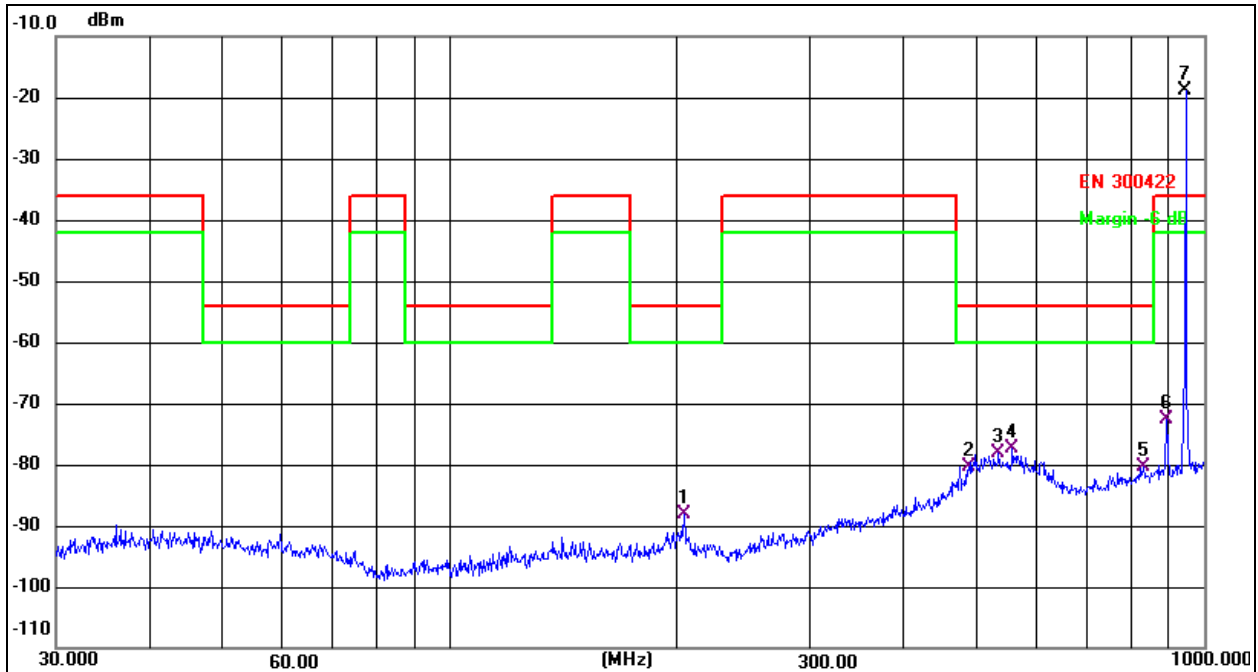
Distance extrapolation factor = $40 \log (\text{specific distance}/\text{test distance})(\text{dB})$;

Limit line = specific limits(dBuv) + distance extrapolation factor.



Between 30MHz – 1GHz

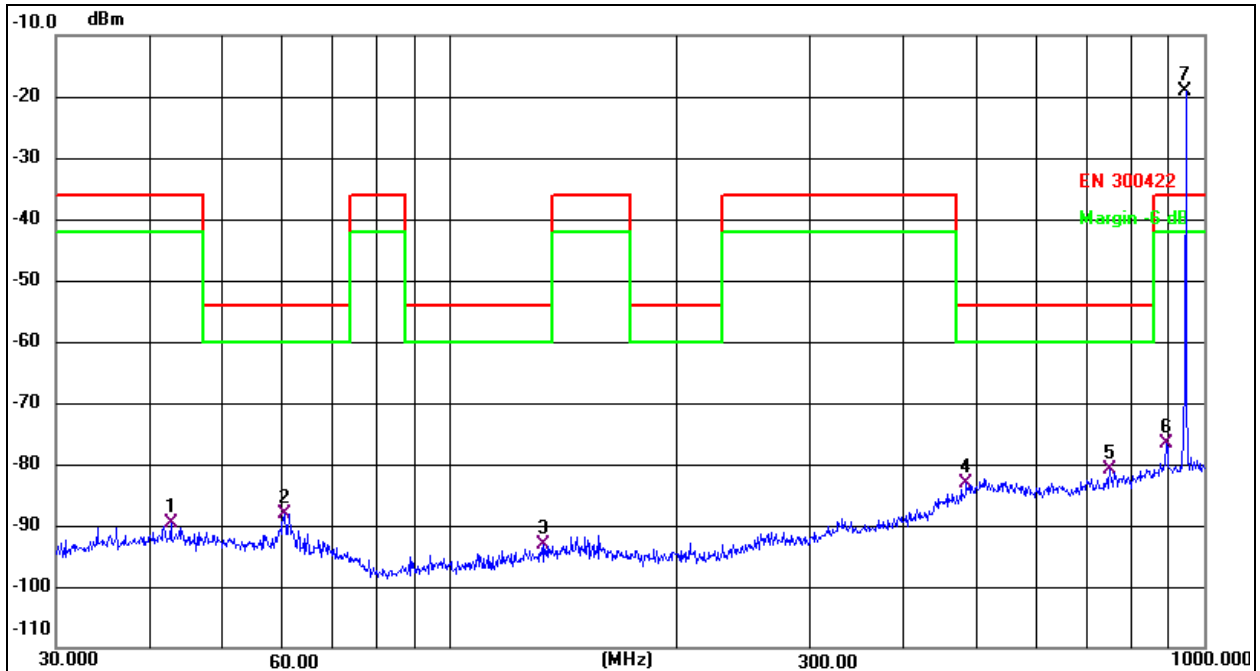
| | | | |
|---------------|------------|--------------------|--------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Test Voltage | DC 3V |
| Polarization: | Horizontal | Frequency | 943MHz |


Remark:

- Factor = Antenna Factor + Cable Loss – Pre-amplifier.
- Measurement = Reading Level + Correct Factor
- Over = Measurement - Limit

| No. | Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Detector |
|-----|-----------------|---------------|-------------|-------------|-------------|-------------|----------|
| 1 | 204.2377 | -74.10 | -14.01 | -88.11 | -54.00 | -34.11 | QP |
| 2 | 487.3150 | -76.66 | -3.73 | -80.39 | -54.00 | -26.39 | QP |
| 3 | 533.8321 | -75.03 | -3.07 | -78.10 | -54.00 | -24.10 | QP |
| 4 | 556.7743 | -74.43 | -3.01 | -77.44 | -54.00 | -23.44 | QP |
| 5 | 830.4001 | -80.70 | 0.25 | -80.45 | -54.00 | -26.45 | QP |
| 6 | 890.7277 | -73.91 | 1.17 | -72.74 | -36.00 | -36.74 | QP |
| 7 * | 945.4399 | | | | | | |

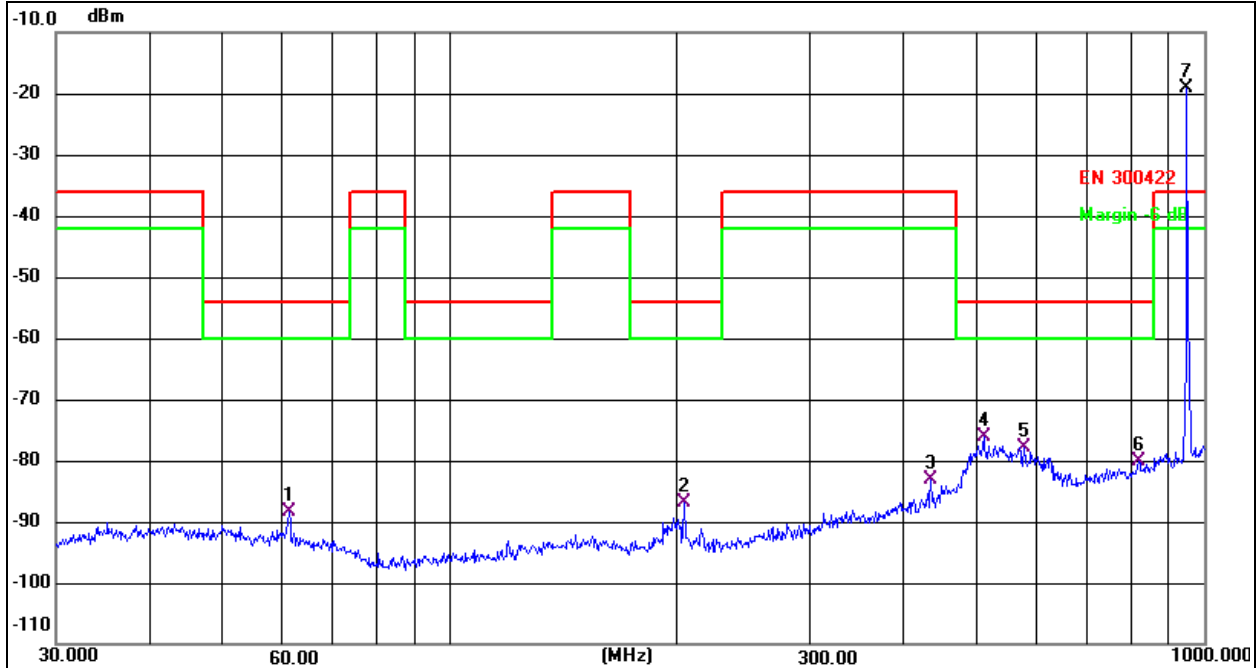
| | | | |
|---------------|----------|--------------------|--------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Test Voltage: | DC 3V |
| Polarization: | Vertical | Frequency | 943MHz |


Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

| No. | Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Detector |
|-----|-----------------|---------------|-------------|-------------|-------------|-------------|----------|
| 1 | 42.6000 | -78.56 | -11.02 | -89.58 | -36.00 | -53.58 | QP |
| 2 | 60.2801 | -75.56 | -12.48 | -88.04 | -54.00 | -34.04 | QP |
| 3 | 133.1510 | -79.68 | -13.56 | -93.24 | -54.00 | -39.24 | QP |
| 4 | 483.9094 | -79.22 | -3.89 | -83.11 | -54.00 | -29.11 | QP |
| 5 | 750.1082 | -79.78 | -0.98 | -80.76 | -54.00 | -26.76 | QP |
| 6 | 890.7277 | -77.83 | 1.17 | -76.66 | -36.00 | -40.66 | QP |
| 7 * | 945.4399 | | | | | | |

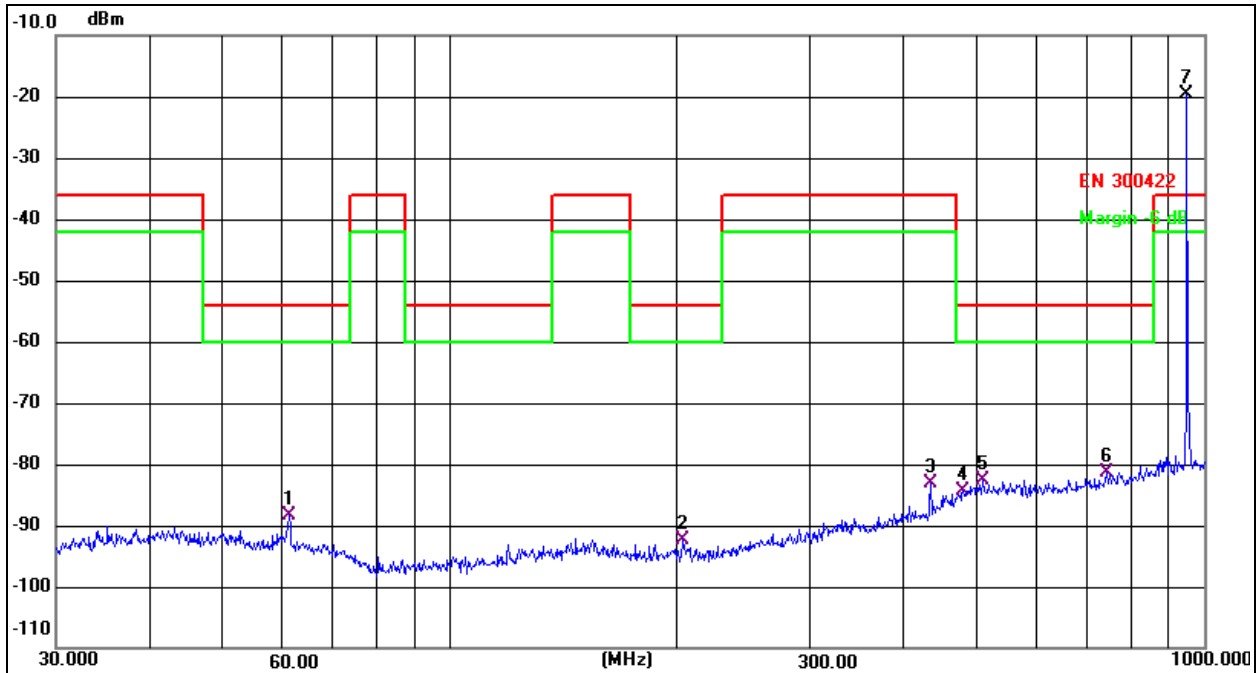
| | | | |
|---------------|------------|--------------------|--------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Test Voltage | DC 3V |
| Polarization: | Horizontal | Frequency | 948MHz |


Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

| No. | Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Detector |
|-----|-----------------|---------------|-------------|-------------|-------------|-------------|----------|
| 1 | 61.1315 | -75.93 | -12.56 | -88.49 | -54.00 | -34.49 | QP |
| 2 | 204.2377 | -72.93 | -14.01 | -86.94 | -54.00 | -32.94 | QP |
| 3 | 434.0650 | -76.98 | -6.19 | -83.17 | -36.00 | -47.17 | QP |
| 4 | 510.0435 | -72.90 | -3.12 | -76.02 | -54.00 | -22.02 | QP |
| 5 | 576.6443 | -74.79 | -2.96 | -77.75 | -54.00 | -23.75 | QP |
| 6 | 818.8340 | -80.19 | 0.07 | -80.12 | -54.00 | -26.12 | QP |
| 7 * | 948.7610 | | | | | | |

| | | | |
|---------------|----------|--------------------|--------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Test Voltage: | DC 3V |
| Polarization: | Vertical | Frequency | 948MHz |


Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

| No. | Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Detector |
|-----|-----------------|---------------|-------------|-------------|-------------|-------------|----------|
| 1 | 61.1315 | -75.93 | -12.56 | -88.49 | -54.00 | -34.49 | QP |
| 2 | 203.5227 | -78.43 | -14.03 | -92.46 | -54.00 | -38.46 | QP |
| 3 | 434.0650 | -76.98 | -6.19 | -83.17 | -36.00 | -47.17 | QP |
| 4 | 478.8455 | -80.22 | -4.13 | -84.35 | -54.00 | -30.35 | QP |
| 5 | 508.2582 | -79.38 | -3.13 | -82.51 | -54.00 | -28.51 | QP |
| 6 | 742.2587 | -80.27 | -1.10 | -81.37 | -54.00 | -27.37 | QP |
| 7 * | 948.7610 | | | | | | |

Spurious Emission Above 1GHz

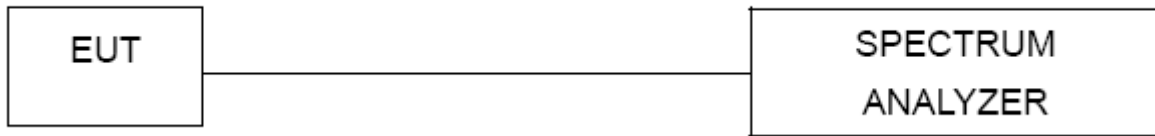
| Polar (H/V) | Frequency | Reading Level | Correct Factor | Measure- ment | Limits | Margin | Detector Type |
|--------------------------|-----------|------------------|-------------------|------------------|--------------|--------|------------------|
| | (MHz) | (dBuV/m) | (dB) | (dBuV/m) | (dBuV/ m) | (dB) | |
| Channel 1(943MHz) | | | | | | | |
| H | 1886.00 | -48.69 | 3.39 | -45.3 | -30 | 15.30 | PK |
| H | 2829.00 | -46.32 | 4.45 | -41.87 | -30 | 11.87 | PK |
| H | 3772.00 | -45.47 | 5.36 | -40.11 | -30 | 10.11 | PK |
| H | 4715.00 | -43.58 | 6.45 | -37.13 | -30 | 7.13 | PK |
| H | 5658.00 | -46.53 | 7.83 | -38.7 | -30 | 8.70 | PK |
| H | 6601.00 | -41.29 | 8.35 | -32.94 | -30 | 2.94 | PK |
| V | 1886.00 | -57.36 | 3.39 | -53.97 | -30 | 23.97 | PK |
| V | 2829.00 | -49.57 | 4.45 | -45.12 | -30 | 15.12 | PK |
| V | 3772.00 | -48.64 | 5.36 | -43.28 | -30 | 13.28 | PK |
| V | 4715.00 | -47.39 | 6.45 | -40.94 | -30 | 10.94 | PK |
| V | 5658.00 | -50.39 | 7.83 | -42.56 | -30 | 12.56 | PK |
| V | 6601.00 | -52.36 | 8.35 | -44.01 | -30 | 14.01 | PK |
| Channel 2(948MHz) | | | | | | | |
| H | 1896.00 | -48.36 | 3.39 | -44.97 | -30 | 14.97 | PK |
| H | 2844.00 | -38.52 | 4.45 | -34.07 | -30 | 4.07 | PK |
| H | 3792.00 | -40.07 | 5.36 | -34.71 | -30 | 4.71 | PK |
| H | 4740.00 | -48.61 | 6.45 | -42.16 | -30 | 12.16 | PK |
| H | 5688.00 | -52.32 | 7.83 | -44.49 | -30 | 14.49 | PK |
| H | 6636.00 | -43.31 | 8.35 | -34.96 | -30 | 4.96 | PK |
| V | 1896.00 | -44.73 | 3.39 | -41.34 | -30 | 11.34 | PK |
| V | 2844.00 | -49.97 | 4.45 | -45.52 | -30 | 15.52 | PK |
| V | 3792.00 | -49.35 | 5.36 | -43.99 | -30 | 13.99 | PK |
| V | 4740.00 | -42.85 | 6.45 | -36.4 | -30 | 6.40 | PK |
| V | 5688.00 | -49.26 | 7.83 | -41.43 | -30 | 11.43 | PK |
| V | 6636.00 | -53.99 | 8.35 | -45.64 | -30 | 15.64 | PK |

Remark:

1. Emission Level = Meter Reading + Factor, Factor = Antenna Factor + Cable Loss – Pre-amplifier. Over= Emission Level - Limit
2. In restricted bands of operation, The spurious emissions below the permissible value more than 20dB
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

7. BANDWIDTH TEST & EMISSION MASK

7.1 Block Diagram Of Test Setup



7.2 Limit

According to §74.861(e)(5), the operating bandwidth shall not exceed 200 kHz.

According to §74.861(e)(7) Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in Section 8.3.1.2 of ETSI EN 300 422-1 V1.4.2 (2011-08).

7.3 Test procedure

According to TIA-603 for additional Test Set-Up procedures, the occupied bandwidth of emission was measured with a Spectrum Analyzer connected to the antenna terminal while EUT was operating in 2.5 kHz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation. Then mark the 99% Bandwidth and record it.

Emission Mask test procedure:

Necessary Bandwidth (BN) for Analogue Systems

Method of Measurement

The arrangement of test equipment as shown in figure B.1 shall be used. Note that the noise meter conforms to (quasi peak) without weighting filter (flat).

With the Low Frequency (LF) audio signal generator set to 500 Hz, the audio input level to the EUT shall be adjusted to 8 dB below the limiting threshold (-8 dB (lim)) as declared by the manufacturer.

The corresponding audio output level from the demodulator shall be measured and recorded.

The input impedance of the noise meter shall be sufficiently high to avoid more than 0,1 dB change in input level when the meter is switched between input and output. The audio input level shall be increased by 20 dB, i.e. to +12 dB (lim), and the corresponding change in output level shall be measured.

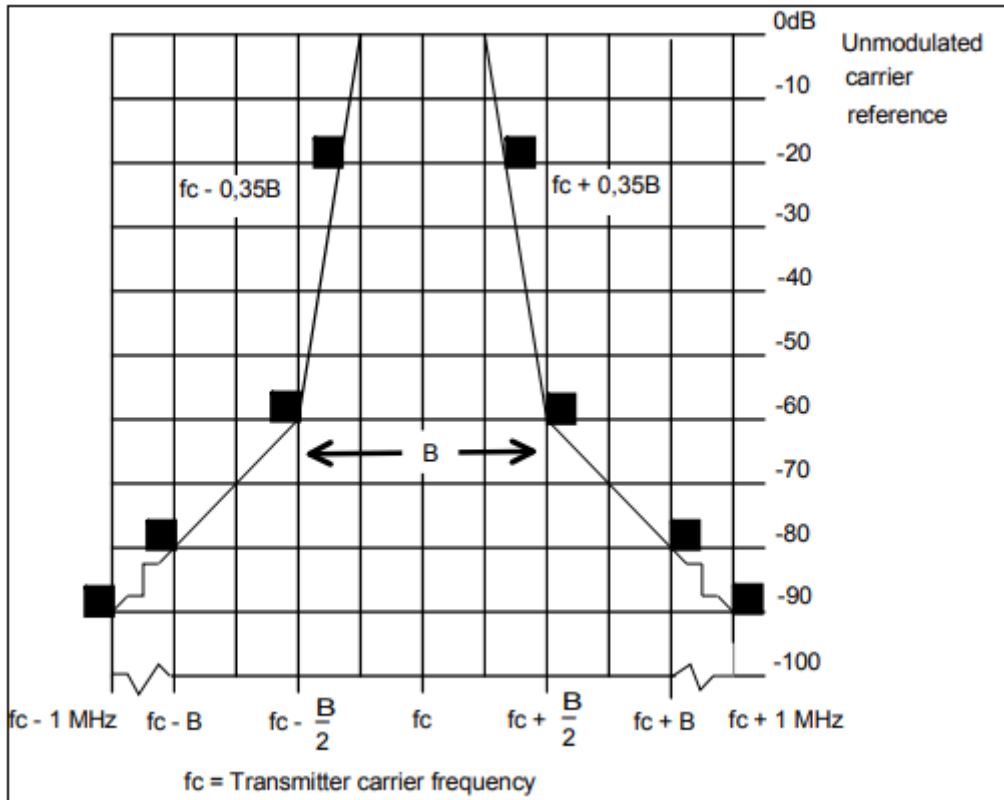
It shall be checked that the audio output level has increased by ≤ 10 dB.

If this condition is not met, the initial audio input level shall be increased from -8 dB (lim) in 1 dB steps until the above condition is fulfilled, and the input level recorded in the test report. This level replaces the value derived from the manufacturer's declaration and is defined as -8 dB (lim).

If the transmitter incorporates more than one audio input, e.g. stereo systems, the second and subsequent channels shall be simultaneously driven from the same noise source, attenuated to a level of -6 dB (lim).

The transmitter RF output spectrum shall be measured, using a spectrum analyser with the following settings:

| | |
|-----------------------------|---|
| centre frequency: | fc: Transmitter (Tx) nominal frequency; |
| dispersion (Span): | fc - 1 MHz to fc + 1 MHz; |
| Resolution BandWidth (RBW): | 1 kHz; |
| Video BandWidth (VBW): | 1 kHz; |
| detector: | Peak hold. |

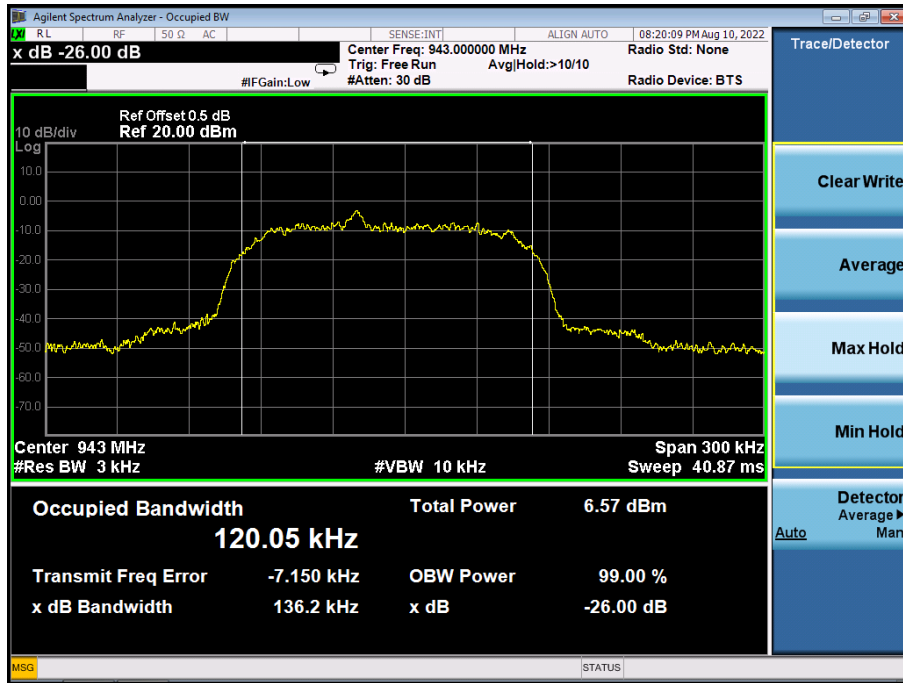


7.4 Test Result

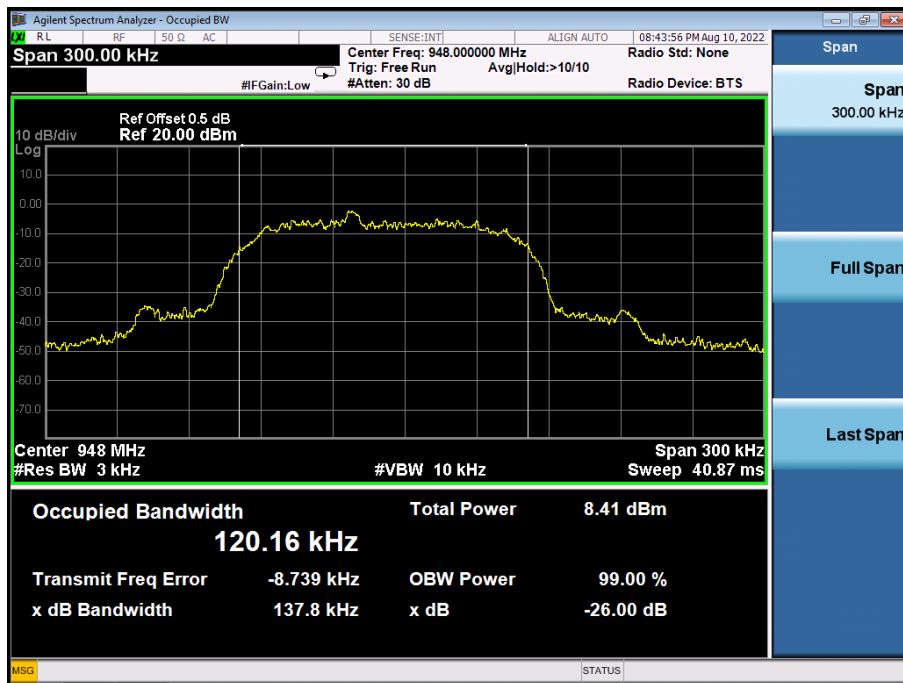
| | | | |
|--------------|--------|--------------------|-------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Test Voltage: | DC 3V |

| Test Channel | Frequency (MHz) | 99% Bandwidth (kHz) | Limit (kHz) |
|--------------|-----------------|---------------------|-------------|
| 1 | 943.0 | 136.2 | 200 |
| 2 | 948.0 | 137.8 | 200 |

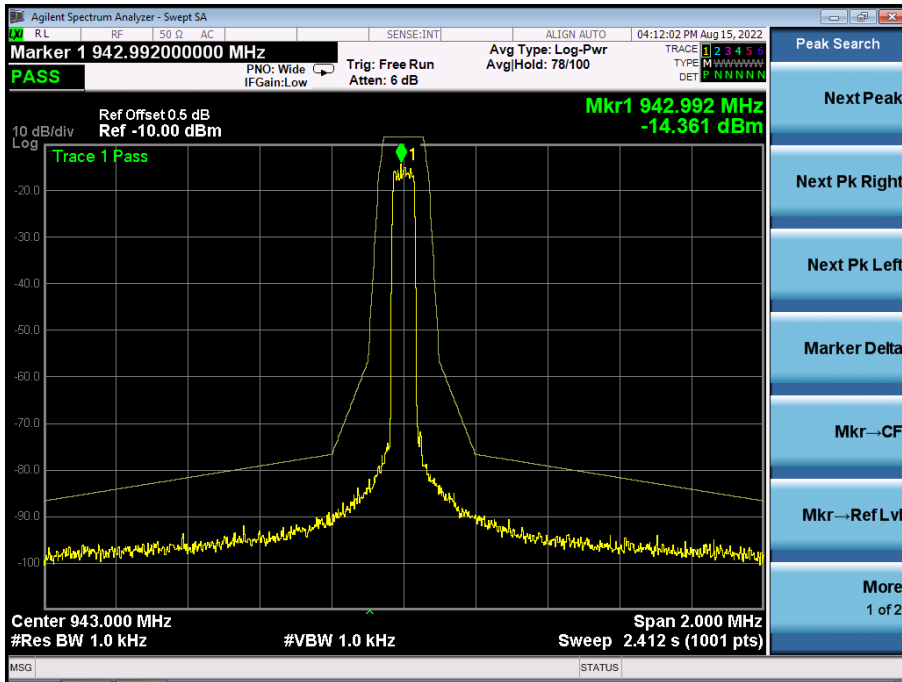
Channel 1



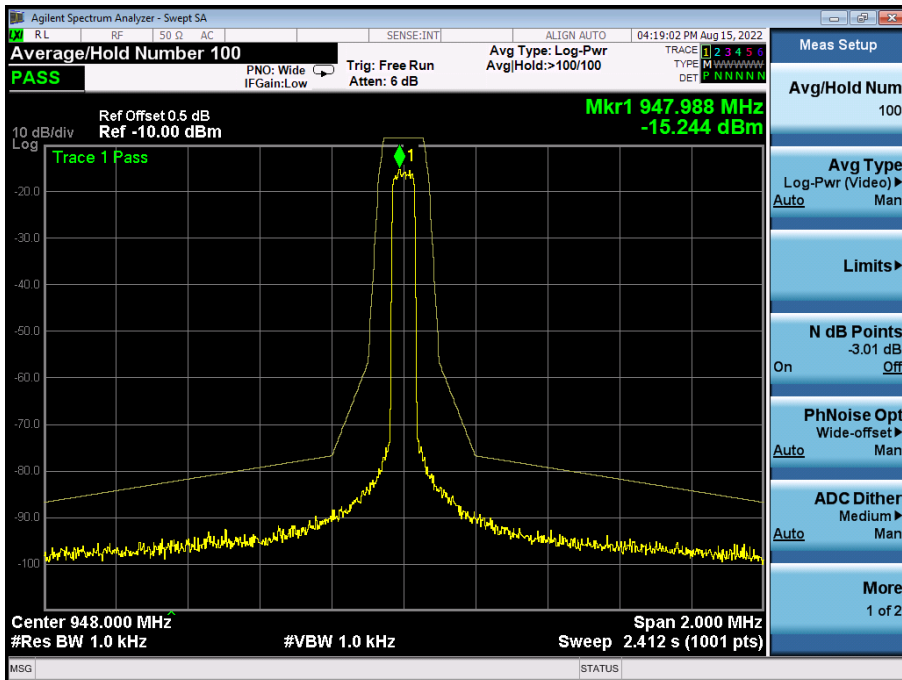
Channel 2



Mask Channel 1

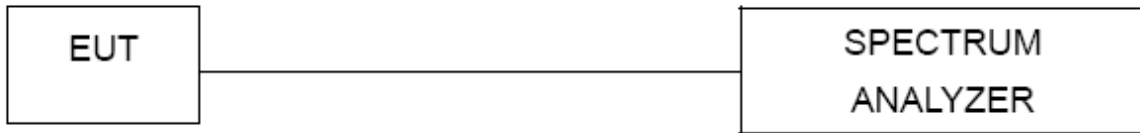


Mask Channel 2



8. RF Output Power

8.1 Block Diagram Of Test Setup



8.2 Limit

According to §FCC 74.861(d)(1) For all bands except the 1435-1525 MHz band, the maximum transmitter power which will be authorized is 1 watt. In the 1435-1525 MHz band, the maximum transmitter power which will be authorized is 250 milliwatts. Licensees may accept the manufacturer's power rating; however, it is the licensee's responsibility to observe specified power limits.

8.3 Test Procedure

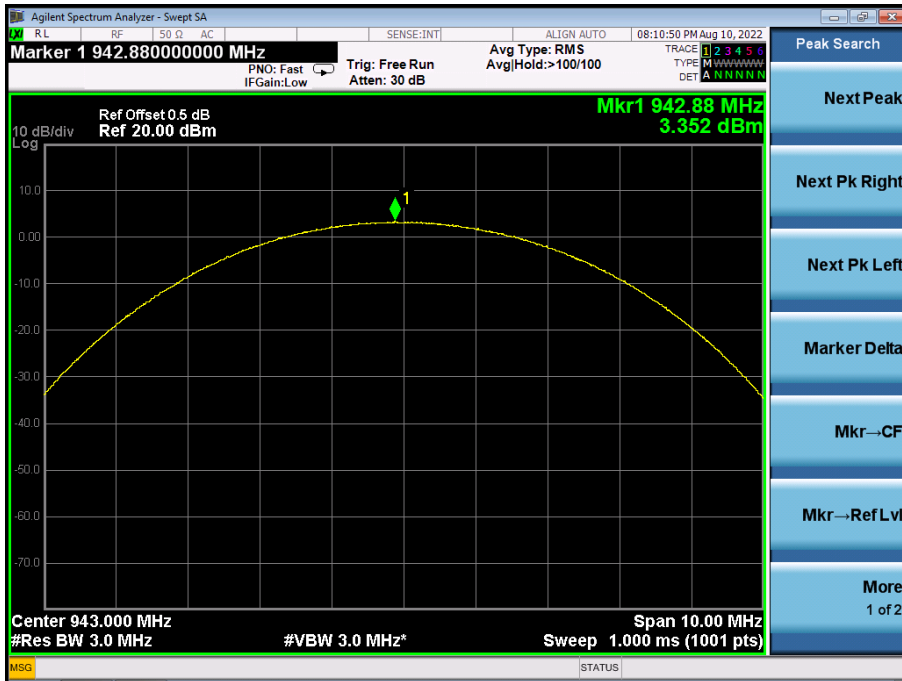
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 3MHz. VBW = 3MHz. Sweep = auto; Detector Function = Peak.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

8.4 Test Result

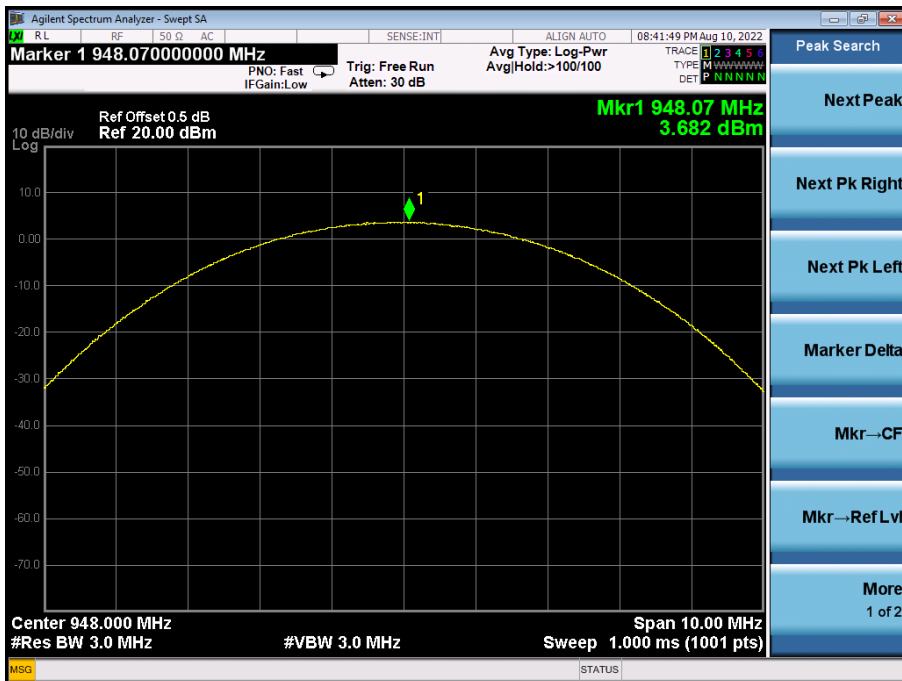
| | | | |
|--------------|--------|--------------------|-------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Test Voltage: | DC 3V |

| Channel | Frequency (MHz) | Output Power (dBm) | Output Power (W) | Limit (W) |
|---------|-----------------|--------------------|------------------|-----------|
| 1 | 943.0 | 3.352 | 0.001 | 1 |
| 2 | 948.0 | 3.682 | 0.002 | 1 |

Channel 1

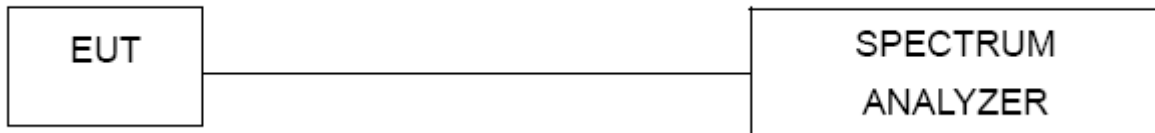


Channel 2



9. Spurious Emission At Antenna Terminal

9.1 Block Diagram Of Test Setup



9.2 Limit

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 x 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).

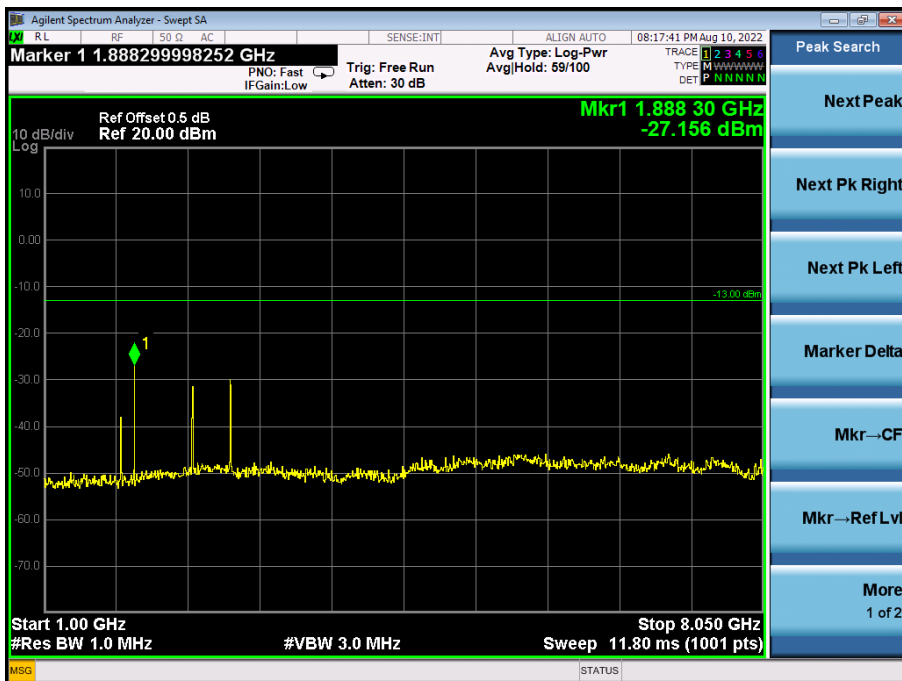
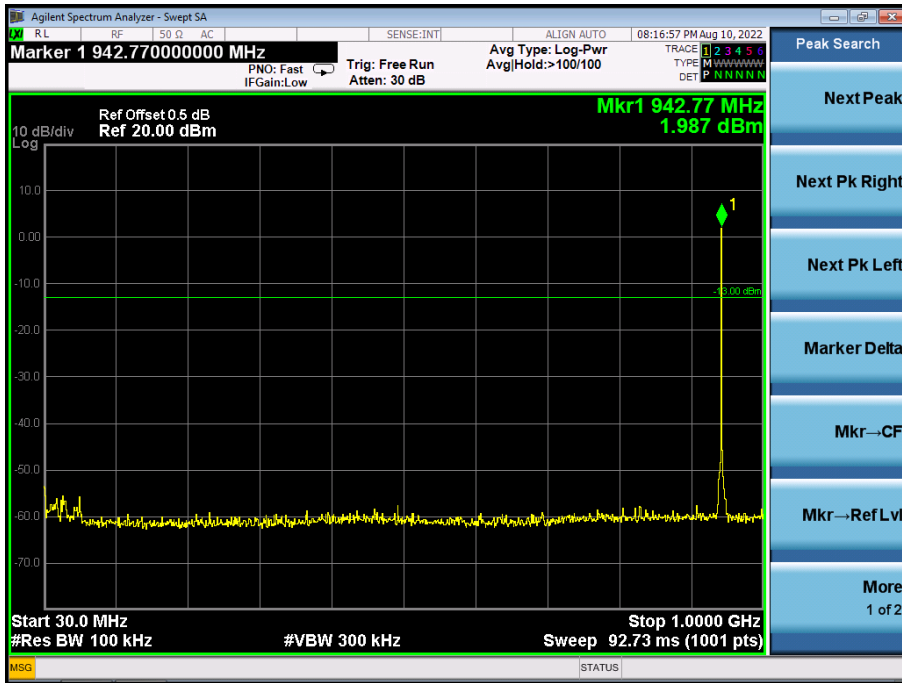
Set RBW = 100 kHz (above 1GHz Set RBW = 1 MHz) Set VBW \geq RBW

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

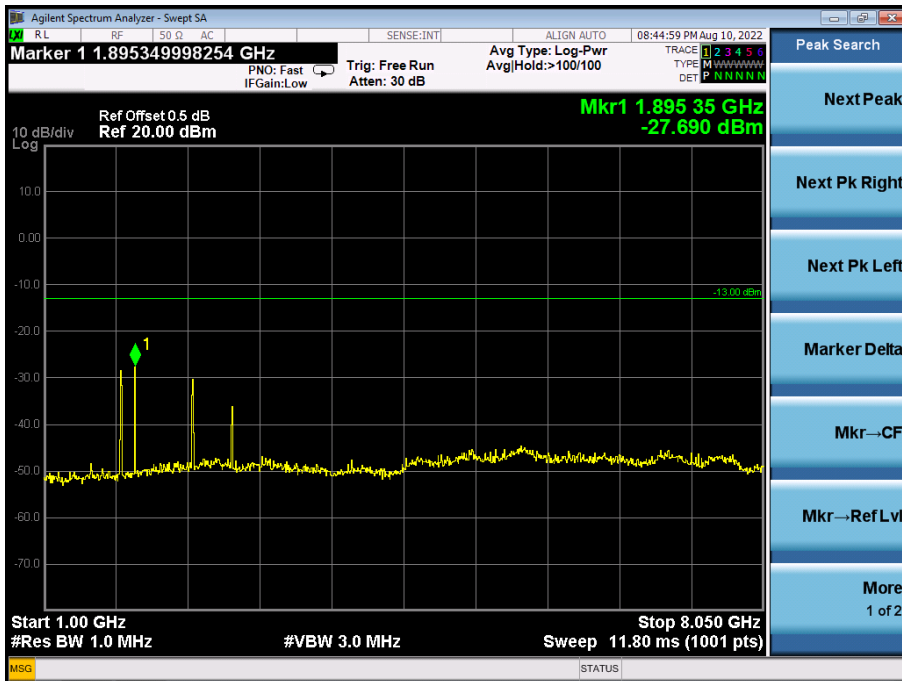
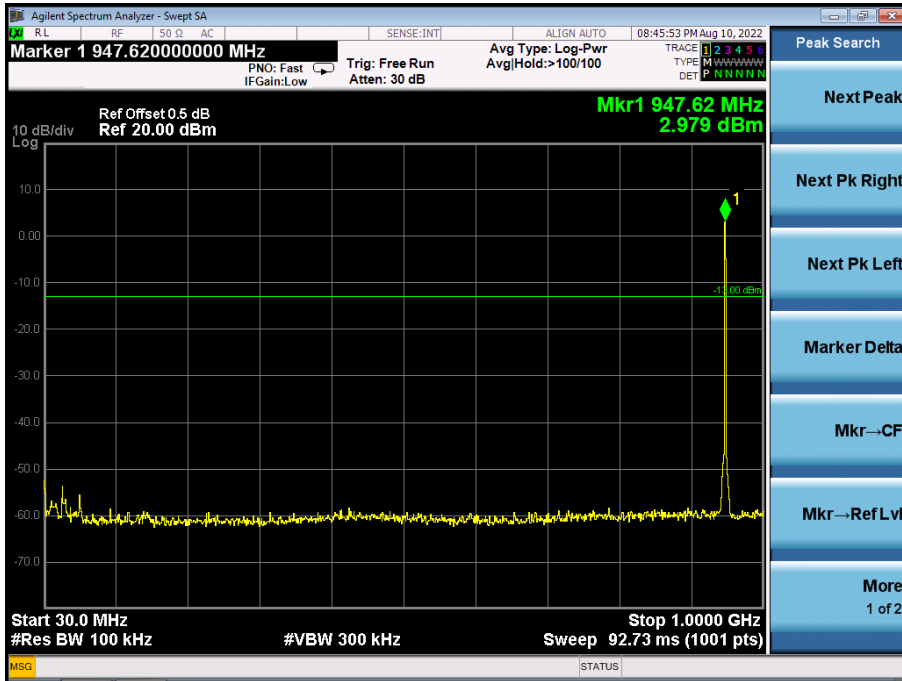
Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this Section.

9.4 Test Result

Channel 1



Channel 2



10. Frequency Stability Measurement

10.1 Block Diagram Of Test Setup



10.2 Limit

According to FCC 2.1055(a)(1), the frequency stability shall be measure with variation of ambient temperature from -30°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°C to 50°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 Test Result

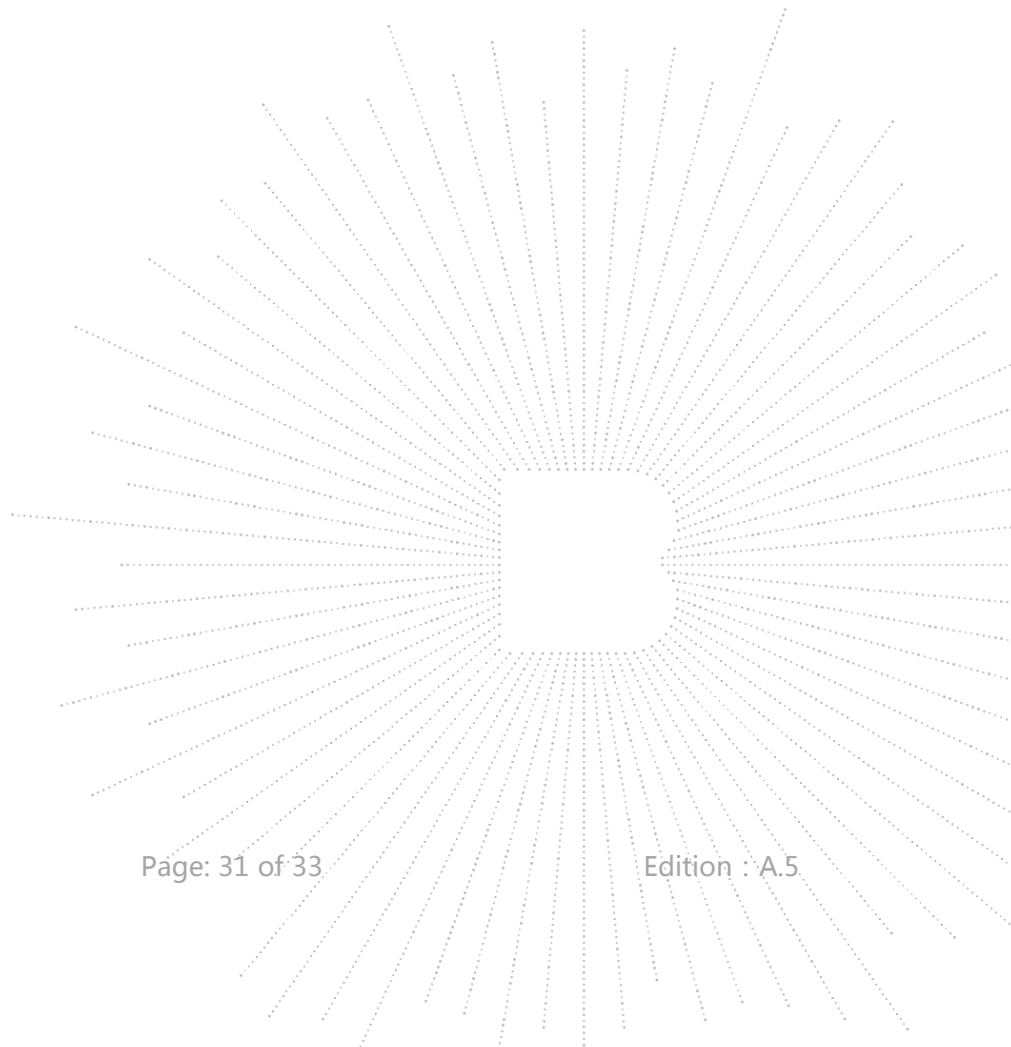
| | | | |
|--------------|--------|--------------------|-------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Test Voltage: | DC 3V |

| Test conditions | | Frequency Error | |
|----------------------------|-------------------------|-----------------|-----------|
| | | 943.0 MHz | 948.0 MHz |
| T _{min} (-30°C) | V _{min} (2.6V) | 943.0171 | 948.0182 |
| | V _{max} (3.4V) | 943.0116 | 948.0181 |
| T(-20°C) | V _{nom} (3.0V) | 943.0127 | 948.0183 |
| T(-10°C) | V _{nom} (3.0V) | 943.0131 | 948.0179 |
| T(0°C) | V _{nom} (3.0V) | 943.0106 | 948.0185 |
| T(10°C) | V _{nom} (3.0V) | 943.0157 | 948.0180 |
| T _{nom} (20°C) | V _{nom} (3.0V) | 943.0138 | 948.0173 |
| T(30°C) | V _{nom} (3.0V) | 943.0167 | 948.0178 |
| T(40°C) | V _{nom} (3.0V) | 943.0125 | 948.0182 |
| T _{max} (50°C) | V _{min} (2.6V) | 943.0109 | 948.0168 |
| | V _{max} (3.4V) | 943.0115 | 948.0181 |
| Max. frequency error (ppm) | | 18.13 | 19.51 |
| Limit (ppm) | | ±50ppm | |

11. EUT Photographs



NOTE: Appendix-Photographs Of EUT Constructional Details



12. EUT Test Setup Photographs



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 test report without CMA mark is only used for scientific research, teaching, enterprise product development and internal quality control purposes.
8. The quality system of our laboratory is in accordance with ISO/IEC17025.
9. 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 *****