



SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

SHEM-TRF-001 Rev. 02 Sep01, 2023

Report No.: SHCR240400066301

Page: 1 of 25

TEST REPORT

Application No.: SHCR2404000663LM
FCC ID: 2ACO2-GV-BIC
Applicant: Golden Vessel Electronic & Lighting, Inc
Address of Applicant: Industrial District, ZhongHan Town ChaoHu City, Anhui Province, China
Manufacturer: Golden Vessel Electronic & Lighting, Inc
Address of Manufacturer: Industrial District, ZhongHan Town ChaoHu City, Anhui Province, China
Factory:
1: Golden Vessel Electronic & Lighting, Inc
2: WINKSTAR ELECTRONIC AND LIGHTING CO., LTD.
Address of Factory:
1: Industrial District, ZhongHan Town ChaoHu City, Anhui Province, China
2: Kilometer number 69, National Road No. 2, Prey Prom Village, Roka Knong Commune, Daun keo City, Takeo Province, Cambodia.

Equipment Under Test (EUT):
EUT Name: BIC Remote Control
Model No.: GV24-RF-B
Standard(s) : 47 CFR Part 15, Subpart C 15.231
Date of Receipt: 2024-04-15
Date of Test: 2024-04-17 to 2024-04-25
Date of Issue: 2024-04-28

| | |
|---------------------|--------------|
| Test Result: | Pass* |
|---------------------|--------------|

* In the configuration tested, the EUT complied with the standards specified above.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.



SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

SHEM-TRF-001 Rev. 02 Sep01, 2023

Report No.: SHCR240400066301

Page: 2 of 25

| Revision Record | | | |
|-----------------|-------------|------------|--------|
| Version | Description | Date | Remark |
| 00 | Original | 2024-04-28 | / |
| | | | |
| | | | |

| | | | |
|--------------------------|--|--------------------------------------|--|
| Authorized for issue by: | | | |
| Tested By | | <i>Wade Zhang</i> | |
| | | _____ Wade Zhang/Project Engineer | |
| Approved By | | <i>Parlam Zhan</i> | |
| | | _____ Parlam Zhan / Reviewer | |

2 Test Summary

| Radio Spectrum Technical Requirement | | | | |
|---|----------------------------------|---------------|----------------------------------|---------------|
| Item | Standard | Method | Requirement | Result |
| Antenna Requirement | 47 CFR Part 15, Subpart C 15.231 | N/A | 47 CFR Part 15, Subpart C 15.203 | Pass |

| Radio Spectrum Matter Part | | | | |
|--|----------------------------------|------------------------------------|--|---------------|
| Item | Standard | Method | Requirement | Result |
| 20dB Bandwidth | 47 CFR Part 15, Subpart C 15.231 | ANSI C63.10 (2013) Section 6.9 | 47 CFR Part 15, Subpart C 15.231(c) | Pass |
| Radiated Emissions below 1GHz | | ANSI C63.10 (2013) Section 6.4&6.5 | 47 CFR Part 15C Section 15.231(b) and 15.209 | Pass |
| Dwell Time (15.231(a)) | | ANSI C63.10 (2013) Section 7.5 | 47 CFR Part 15, Subpart C 15.231(a) | Pass |
| Field Strength of the Fundamental Signal (15.231(b)) | | ANSI C63.10 (2013) Section 6.5 | 47 CFR Part 15, Subpart C 15.231(b) | Pass |
| Radiated Emissions above 1GHz | | ANSI C63.10 (2013) Section 6.6 | 47 CFR Part 15C Section 15.231(b) and 15.209 | Pass |

3 Contents

| | Page |
|---|-----------|
| 1 COVER PAGE | 1 |
| 2 TEST SUMMARY | 3 |
| 3 CONTENTS | 4 |
| 4 GENERAL INFORMATION | 6 |
| 4.1 DETAILS OF E.U.T. | 6 |
| 4.2 DESCRIPTION OF SUPPORT UNITS | 6 |
| 4.3 MEASUREMENT UNCERTAINTY | 6 |
| 4.4 TEST LOCATION..... | 7 |
| 4.5 TEST FACILITY..... | 7 |
| 4.6 DEVIATION FROM STANDARDS..... | 7 |
| 4.7 ABNORMALITIES FROM STANDARD CONDITIONS | 7 |
| 5 EQUIPMENT LIST | 8 |
| 6 RADIO SPECTRUM TECHNICAL REQUIREMENT | 9 |
| 6.1 ANTENNA REQUIREMENT | 9 |
| 6.1.1 <i>Test Requirement:</i> | 9 |
| 6.1.2 <i>Conclusion</i> | 9 |
| 7 RADIO SPECTRUM MATTER TEST RESULTS | 10 |
| 7.1 20DB BANDWIDTH | 10 |
| 7.1.1 <i>E.U.T. Operation</i> | 10 |
| 7.1.2 <i>Test Mode Description</i> | 10 |
| 7.1.3 <i>Test Setup Diagram</i> | 10 |
| 7.1.4 <i>Measurement Procedure and Data</i> | 10 |
| 7.2 RADIATED EMISSIONS BELOW 1GHZ..... | 11 |
| 7.2.1 <i>E.U.T. Operation</i> | 11 |
| 7.2.2 <i>Test Mode Description</i> | 11 |
| 7.2.3 <i>Test Setup Diagram</i> | 11 |
| 7.2.4 <i>Measurement Procedure and Data</i> | 12 |
| 7.3 DWELL TIME (15.231(A)) | 13 |
| 7.3.1 <i>E.U.T. Operation</i> | 13 |
| 7.3.2 <i>Test Mode Description</i> | 13 |
| 7.3.3 <i>Test Setup Diagram</i> | 13 |
| 7.3.4 <i>Measurement Procedure and Data</i> | 13 |
| 7.4 FIELD STRENGTH OF THE FUNDAMENTAL SIGNAL (15.231(B))..... | 14 |
| 7.4.1 <i>E.U.T. Operation</i> | 14 |
| 7.4.2 <i>Test Mode Description</i> | 14 |
| 7.4.3 <i>Test Setup Diagram</i> | 14 |
| 7.4.4 <i>Measurement Procedure and Data</i> | 15 |
| 7.5 RADIATED EMISSIONS ABOVE 1GHZ | 16 |
| 7.5.1 <i>E.U.T. Operation</i> | 17 |
| 7.5.2 <i>Test Mode Description</i> | 17 |
| 7.5.3 <i>Test Setup Diagram</i> | 17 |
| 7.5.4 <i>Measurement Procedure and Data</i> | 18 |
| 8 TEST SETUP PHOTO | 19 |
| 9 EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS) | 19 |



SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

SHEM-TRF-001 Rev. 02 Sep01, 2023

Report No.: SHCR240400066301

Page: 5 of 25

10 APPENDIX.....19

- 10.1 20dB BANDWIDTH19
- 10.2 DWELL TIME20
- 10.3 FIELD STRENGTH OF THE FUNDAMENTAL21
- 10.4 SPURIOUS EMISSIONS21
- 10.5 99% BANDWIDTH25

4 General Information

4.1 Details of E.U.T.

| | |
|---------------------|-----------------------|
| Power supply: | DC 3V (2*AAA Battery) |
| Test Voltage: | DC 3V |
| Operation Frequency | 433.92MHz |
| Channel Numbers: | 1 |
| Modulation Type: | ASK |
| Antenna type: | PCB Antenna |

4.2 Description of Support Units

| Description | Manufacturer | Model No. | Serial No. |
|-------------|--------------|-----------|------------|
| -- | -- | -- | -- |

The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty

| No. | Item | Measurement Uncertainty |
|-----|---------------------------------|-------------------------|
| 1 | Radio Frequency | 8.4×10^{-8} |
| 2 | Timeout | 2s |
| 3 | Duty cycle | 0.4% |
| 4 | Occupied Bandwidth | 3% |
| 5 | RF Radiated power | 5.2dB (Below 1GHz) |
| | | 5.9dB (Above 1GHz) |
| 6 | Radiated Spurious emission test | 4.2dB (Below 30MHz) |
| | | 4.5dB (30MHz-1GHz) |
| | | 5.1dB (1GHz-6GHz) |
| | | 5.4dB (6GHz-18GHz) |
| 7 | Temperature test | 1°C |
| 8 | Humidity test | 3% |
| 9 | Supply voltages | 1.5% |
| 10 | Time | 3% |

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab
588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Tel: +86 21 6191 5666 Fax: +86 21 6191 5678

No tests were sub-contracted.

Note:

1. SGS is not responsible for wrong test results due to incorrect information (e.g. max. clock frequency, highest internal frequency, antenna gain, cable loss, etc) is provided by the applicant. (if applicable).
2. SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (if applicable).
3. Sample source: sent by customer.

4.5 Test Facility

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

• **A2LA (Certificate No. 6332.01)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the American Association for Laboratory Accreditation(A2LA).

• **FCC (Designation Number: CN1301)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

• **ISED (CAB Identifier: CN0020)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.
Company Number: 8617A

• **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-13868, C-14336, T-12221, G-10830 respectively.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Equipment List

| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
|---------------------------|--------------|-----------------|-----------------------|------------|--------------|
| RF Radiated Test | | | | | |
| EMI test Receiver | R&S | ESU40 | SHEM051-1 | 2023-12-19 | 2024-12-18 |
| Spectrum Analyzer | R&S | FSP-30 | SHEM002-1 | 2023-12-19 | 2024-12-18 |
| Communication Tester | R&S | CMW500 | SHEM268-1 | 2023-06-01 | 2024-05-31 |
| Loop Antenna (9kHz-30MHz) | Schwarzbeck | FMZB1519 | SHEM135-1 | 2023-12-19 | 2024-12-18 |
| Antenna (25MHz-2GHz) | Schwarzbeck | VULB9168 | SHEM048-1 | 2023-09-03 | 2025-09-02 |
| Antenna (25MHz-2GHz) | Schwarzbeck | VULB9168 | SHEM202-1 | 2023-04-17 | 2025-04-16 |
| Horn Antenna (1-18GHz) | Schwarzbeck | HF906 | SHEM009-1 | 2022-08-11 | 2024-08-10 |
| Horn Antenna (1-18GHz) | Schwarzbeck | BBHA9120D | SHEM050-1 | 2023-09-03 | 2025-09-02 |
| Horn Antenna (14-40GHz) | Schwarzbeck | BBHA 9170 | SHEM049-1 | 2023-09-03 | 2025-09-02 |
| Pre-Amplifier | HP | 8447D | SHEM236-1 | 2023-12-19 | 2024-12-18 |
| High-amplifier (14-40GHz) | Schwarzbeck | 10001 | SHEM049-2 | 2023-12-19 | 2024-12-18 |
| Band Filter | LORCH | 9BRX-875/X150 | SHEM156-1 | / | / |
| Band Filter | LORCH | 13BRX-1950/X500 | SHEM083-2 | / | / |
| Band Filter | LORCH | 5BRX-2400/X200 | SHEM155-1 | / | / |
| Band Filter | LORCH | 5BRX-5500/X1000 | SHEM157-2 | / | / |
| High pass Filter | Wainwright | WHK3.0/18G | SHEM157-1 | / | / |
| High pass Filter | Wainwright | WHKS1700 | SHEM157-3 | / | / |
| Semi/Fully Anechoic | ST | 11*6*6M | SHEM078-2 | 2023-05-06 | 2026-05-05 |
| RE test Cable | / | PT18-NMNM-10M | SHEM217-2 | 2023-12-19 | 2024-12-18 |
| Test software | ESE | E3 | Version: 6.111221a | / | / |

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

6.1.2 Conclusion

15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:

The antenna is PCB antenna and no consideration of replacement.

Antenna location: Refer to Internal photos

7 Radio Spectrum Matter Test Results

7.1 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.231(c)
 Test Method: ANSI C63.10 (2013) Section 6.9

Limit:

| Frequency range(MHz) | Limit |
|----------------------|---|
| 70-900 | No wider than 0.25% of the center frequency |
| Above 900 | No wider than 0.5% of the center frequency |

7.1.1 E.U.T. Operation

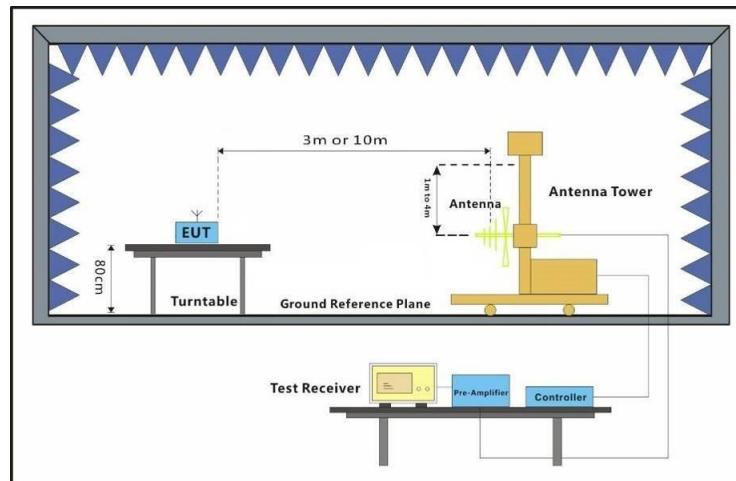
Operating Environment:

Temperature: 21.9 °C Humidity: 65.3 % RH Atmospheric Pressure: 1010 mbar

7.1.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|---|
| Final test | 00 | TX mode_Keep the EUT transmitting continuously. |

7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.2 Radiated Emissions below 1GHz

Test Requirement 47 CFR Part 15C Section 15.231(b) and 15.209

Test Method: ANSI C63.10 (2013) Section 6.4&6.5

Limit:

| Frequency(MHz) | Field strength(microvolts/meter) | Measurement distance(meters) |
|----------------|----------------------------------|------------------------------|
| 0.009-0.490 | 2400/F(kHz) | 300 |
| 0.490-1.705 | 24000/F(kHz) | 30 |
| 1.705-30.0 | 30 | 30 |
| 30-88 | 100 | 3 |
| 88-216 | 150 | 3 |
| 216-960 | 200 | 3 |
| Above 960 | 500 | 3 |

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 21.9 °C

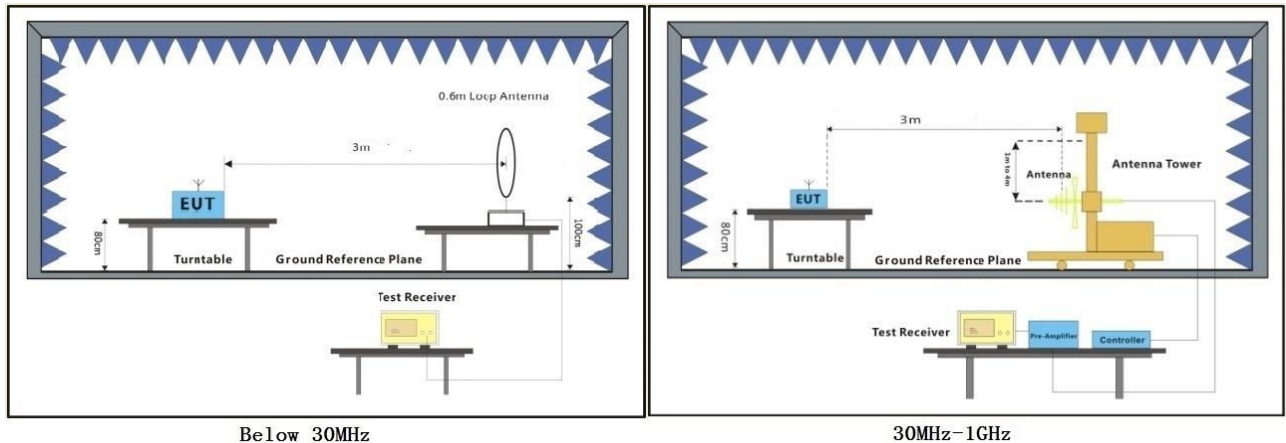
Humidity: 65.6 % RH

Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|---|
| Final test | 00 | TX mode_Keep the EUT transmitting continuously. |

7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- g. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.

Remark:

- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor
- 2) Scan from 9kHz to 1GHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

Please Refer to Appendix for Details

7.3 Dwell Time (15.231(a))

Test Requirement 47 CFR Part 15, Subpart C 15.231(a)

Test Method: ANSI C63.10 (2013) Section 7.5

Limit:

| Device type | Limit |
|--|--|
| Manually operated transmitter | The switch automatically deactivate the transmitter within not more than 5 seconds of being released |
| Automatically activated transmitter | Cease transmission within 5 seconds after activation |
| Periodic transmissions to determine system integrity of transmitters used in security or safety applications | The total transmission time does not exceed 2 seconds per hour |

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 21.9 °C

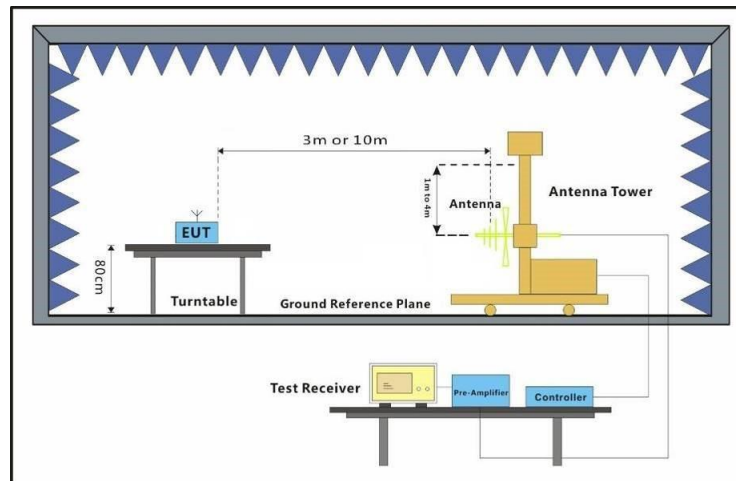
Humidity: 65.5 % RH

Atmospheric Pressure: 1010 mbar

7.3.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|---|
| Final test | 00 | TX mode_Keep the EUT transmitting continuously. |

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.4 Field Strength of the Fundamental Signal (15.231(b))

Test Requirement 47 CFR Part 15, Subpart C 15.231(b)

Test Method: ANSI C63.10 (2013) Section 6.5

Limit:

| Fundamental frequency(MHz) | Field strength of fundamental(microvolts/meter) | Field strength of spurious emissions(microvolts/meter) |
|----------------------------|---|--|
| 40.66-40.70 | 2250 | 225 |
| 70-130 | 1250 | 125 |
| 130-174 | 1250 to 3750 | 125 to 375 |
| 174-260 | 3750 | 375 |
| 260-470 | 3750 to 12500 | 375 to 1250 |
| Above 470 | 12500 | 1250 |

Remark: the emission limit is based on measurement instrumentation employing an average detector at a distance of 3 meters. The frequencies above 1000MHz are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 21.9 °C

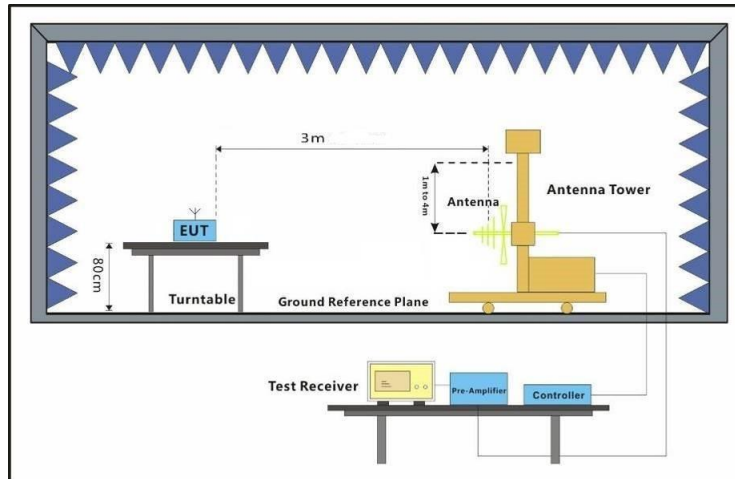
Humidity: 65.5 % RH

Atmospheric Pressure: 1010 mbar

7.4.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|---|
| Final test | 00 | TX mode_Keep the EUT transmitting continuously. |

7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.

Remark: $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{Antenna Factor} - \text{Preamp Factor}$

Please Refer to Appendix for Details

7.5 Radiated Emissions above 1GHz

Test Requirement 47 CFR Part 15C Section 15.231(b) and 15.209

Test Method: ANSI C63.10 (2013) Section 6.6

Limit:

For Restricted bands

| Frequency(MHz) | Field strength(microvolts/meter) | Measurement distance(meters) |
|----------------|----------------------------------|------------------------------|
| 0.009-0.490 | 2400/F(kHz) | 300 |
| 0.490-1.705 | 24000/F(kHz) | 30 |
| 1.705-30.0 | 30 | 30 |
| 30-88 | 100 | 3 |
| 88-216 | 150 | 3 |
| 216-960 | 200 | 3 |
| Above 960 | 500 | 3 |

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

For Other bands

| Fundamental Frequency MHz | Field Strength of Fundamental (dBµV/m @ 3 m) | Field Strength of Hasrmonics and Spurious Emissions (dBµV/m @ 3 m) |
|---------------------------|--|--|
| 40.66 to 40.70 | 67.04 | 47.04 |
| 70 to 130 | 61.94 | 41.94 |
| 130 to 174 | **61.94 to 71.48 | 41.94 to 51.48 |
| 174 to 260 | 71.48 | 51.48 |
| 260 to 470 | **71.48 to 81.94 | 51.48 to 61.94 |
| Above 470 | 81.94 | 61.94 |
| Detector: | Peak for pre-scan | |
| | QP for 30MHz to1000 MHz:120 kHz resolution bandwidth | |
| | Peak for Above 1 GHz: 1 MHz resolution bandwidth | |

** linear interpolations

[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows:

for the band 130-174 MHz, uV/m at 3 meters = 56.81818(F) - 6136.3636;

for the band 260-470 MHz, uV/m at 3 meters = 41.6667(F) - 7083.3333.

The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

The fundamental frequency of the EUT is 433.92 MHz

The limit for average or QP field strength dBuV/m for the fundamental emission= 80.83 dBµV/m

No fundamental is allowed in the restricted bands.

The limit for average field strength dBuV/m for the spurious emission=60.83 dBuV/m. Spurious in the restricted bands must be less than 60.83 dBuV/m or 15.209, whichever limit permits a higher field strength.

7.5.1 E.U.T. Operation

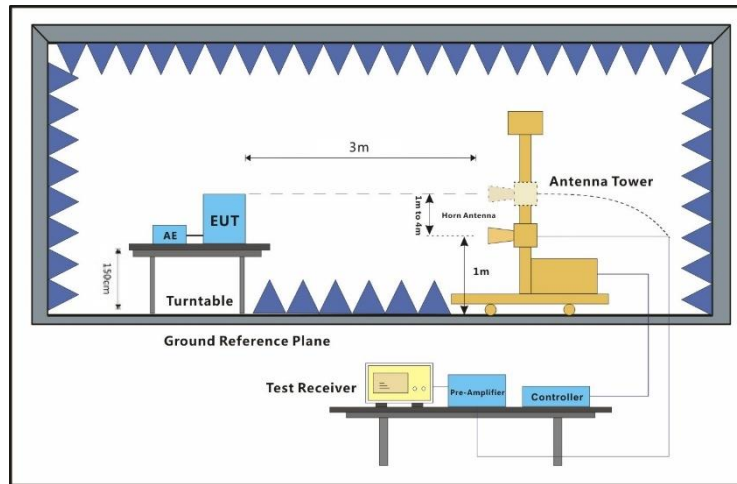
Operating Environment:

Temperature: 21.9 °C Humidity: 65.4 % RH Atmospheric Pressure: 1010 mbar

7.5.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|---|
| Final test | 00 | TX mode_Keep the EUT transmitting continuously. |

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- g. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.

Remark:

- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor
- 2) For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

Please Refer to Appendix for Details

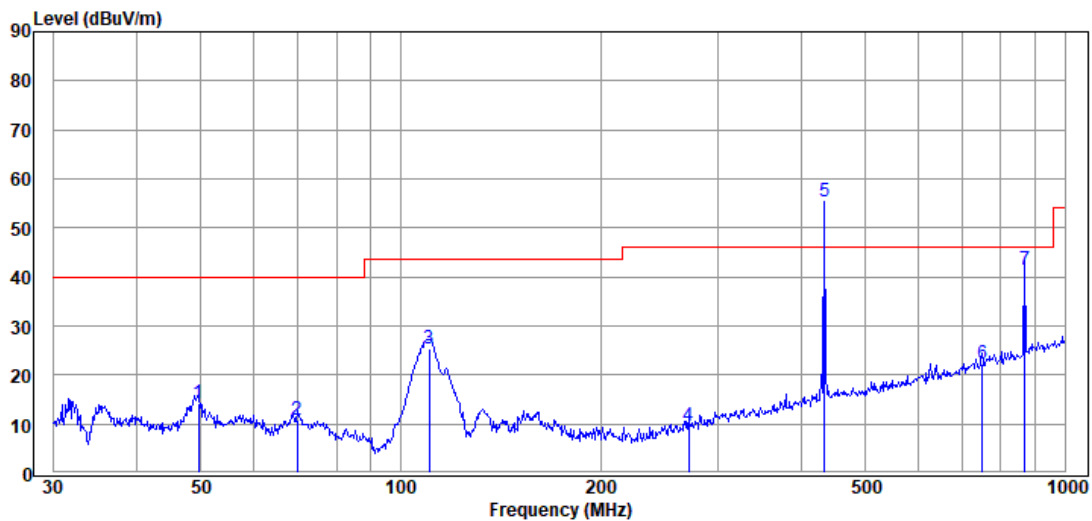
10.3 Field Strength of the Fundamental

| Test channel | Freq. (MHz) | Result Level (dB μ V/m) | Limit Line (dB μ V/m) | Over Limit (dB) | Detector | Polarization |
|--------------|-------------|-----------------------------|---------------------------|-----------------|----------|--------------|
| Channel 1 | 433.92 | 55.30 | 80.83 | -25.53 | Peak | Vertical |
| | | 80.39 | 80.83 | -0.44 | Peak | Horizontal |

Remark: If the Peak value below the AV Limit, the AV test doesn't perform for this submission.

10.4 Spurious Emissions

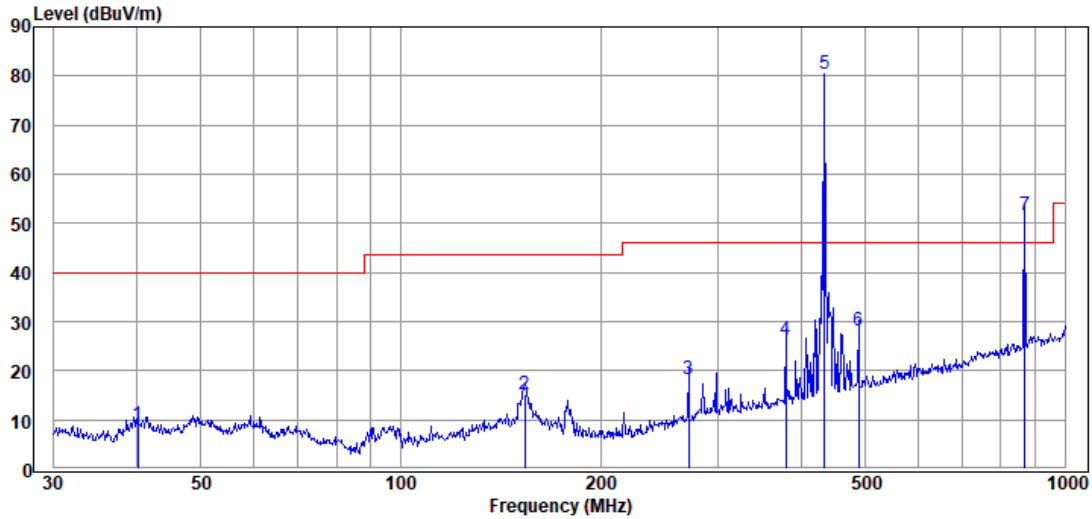
Vertical:



| Item (Mark) | Freq. (MHz) | Read Level (dB μ V) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Result Level (dB μ V/m) | Limit Line (dB μ V/m) | Over Limit (dB) | Detector | Polarization |
|-------------|-------------|-------------------------|-----------------------|--------------------|-----------------|-----------------------------|---------------------------|-----------------|----------|--------------|
| 1 | 49.533 | 32.12 | 13.95 | 33.20 | 1.36 | 14.23 | 40.00 | -25.77 | QP | VERTICAL |
| 2 | 69.845 | 30.67 | 11.50 | 33.20 | 1.74 | 10.71 | 40.00 | -29.29 | QP | VERTICAL |
| 3 | 110.182 | 45.80 | 10.50 | 33.15 | 2.22 | 25.37 | 43.50 | -18.13 | QP | VERTICAL |
| 4 | 271.325 | 26.49 | 12.35 | 32.80 | 3.60 | 9.64 | 46.00 | -36.36 | QP | VERTICAL |
| 5 | 434.065 | 66.63 | 16.83 | 32.73 | 4.57 | 55.30 | Fundamental Signal | | | |
| 6 | 750.108 | 26.46 | 22.40 | 32.70 | 6.21 | 22.37 | 46.00 | -23.63 | QP | VERTICAL |
| 7 | 869.130 | 43.25 | 23.30 | 31.89 | 6.77 | 41.43 | 60.83 | -19.40 | QP | VERTICAL |

Remark: Result Level= Read Level + Antenna Factor + Cable Loss- Preamp Factor

Horizontal:

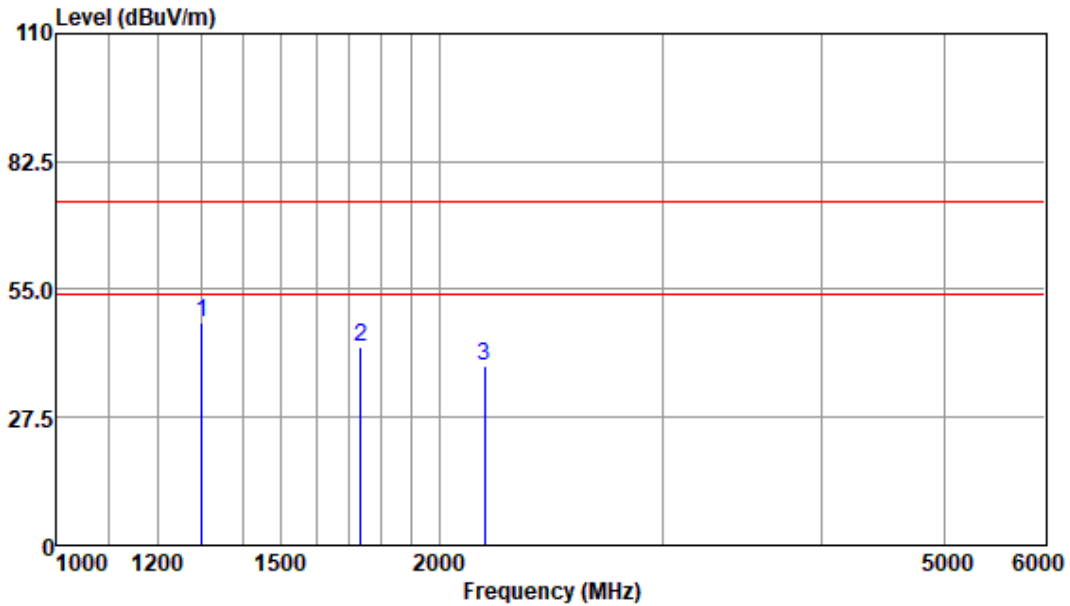


| Item (Mark) | Freq. (MHz) | Read Level (dBμV) | Antenna Factor (dB/m) | Pream p Factor (dB) | Cabl e Loss (dB) | Result Level (dBμV/ m) | Limit Line (dBμV/ m) | Over Limit (dB) | Detector | Polarization |
|----------------|----------------|-------------------------|-----------------------------|------------------------------|---------------------------|---------------------------------|-------------------------------|-----------------------|----------|--------------|
| 1 | 40.135 | 27.33 | 13.43 | 33.20 | 1.35 | 8.91 | 40.00 | -31.09 | QP | HORIZONTAL |
| 2 | 153.739 | 31.83 | 13.80 | 33.00 | 2.61 | 15.24 | 43.50 | -28.26 | QP | HORIZONTAL |
| 3 | 271.325 | 35.23 | 12.35 | 32.80 | 3.60 | 18.38 | 46.00 | -27.62 | QP | HORIZONTAL |
| 4 | 379.914 | 39.66 | 15.30 | 32.76 | 4.14 | 26.34 | 46.00 | -19.66 | QP | HORIZONTAL |
| 5 | 434.065 | 91.72 | 16.83 | 32.73 | 4.57 | 80.39 | Fundamental Signal | | | |
| 6 | 489.027 | 38.27 | 17.75 | 32.70 | 4.89 | 28.21 | 46.00 | -17.79 | QP | HORIZONTAL |
| 7 | 869.130 | 53.46 | 23.30 | 31.89 | 6.77 | 51.64 | 60.83 | -9.19 | QP | HORIZONTAL |

Remark: Result Level= Read Level + Antenna Factor + Cable Loss- Preamp Factor

Above 1GHz

Horizontal



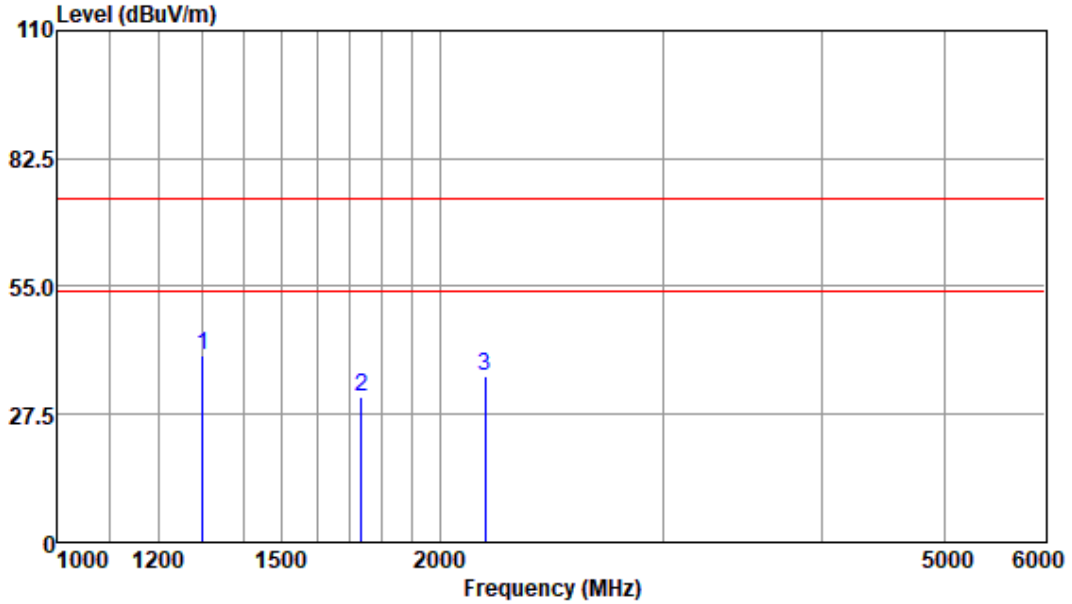
Antenna Polarity :HORIZONTAL

EUT/Project :0663LM

| Read Freq | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Emission Level | Limit Line | Over Limit | Remark |
|-----------|------------|----------------|------------|---------------|----------------|------------|------------|--------|
| MHz | dBuV | dB/m | dB | dB | dBuV/m | dBuV/m | dB | |
| 1301.33 | 55.21 | 24.99 | 2.43 | 34.78 | 47.85 | 74.00 | -26.15 | Peak |
| 1735.48 | 47.69 | 26.86 | 2.87 | 34.77 | 42.65 | 74.00 | -31.35 | Peak |
| 2169.51 | 42.64 | 27.79 | 3.13 | 34.99 | 38.57 | 74.00 | -35.43 | Peak |

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Vertical



Antenna Polarity :VERTICAL

EUT/Project :0663LM

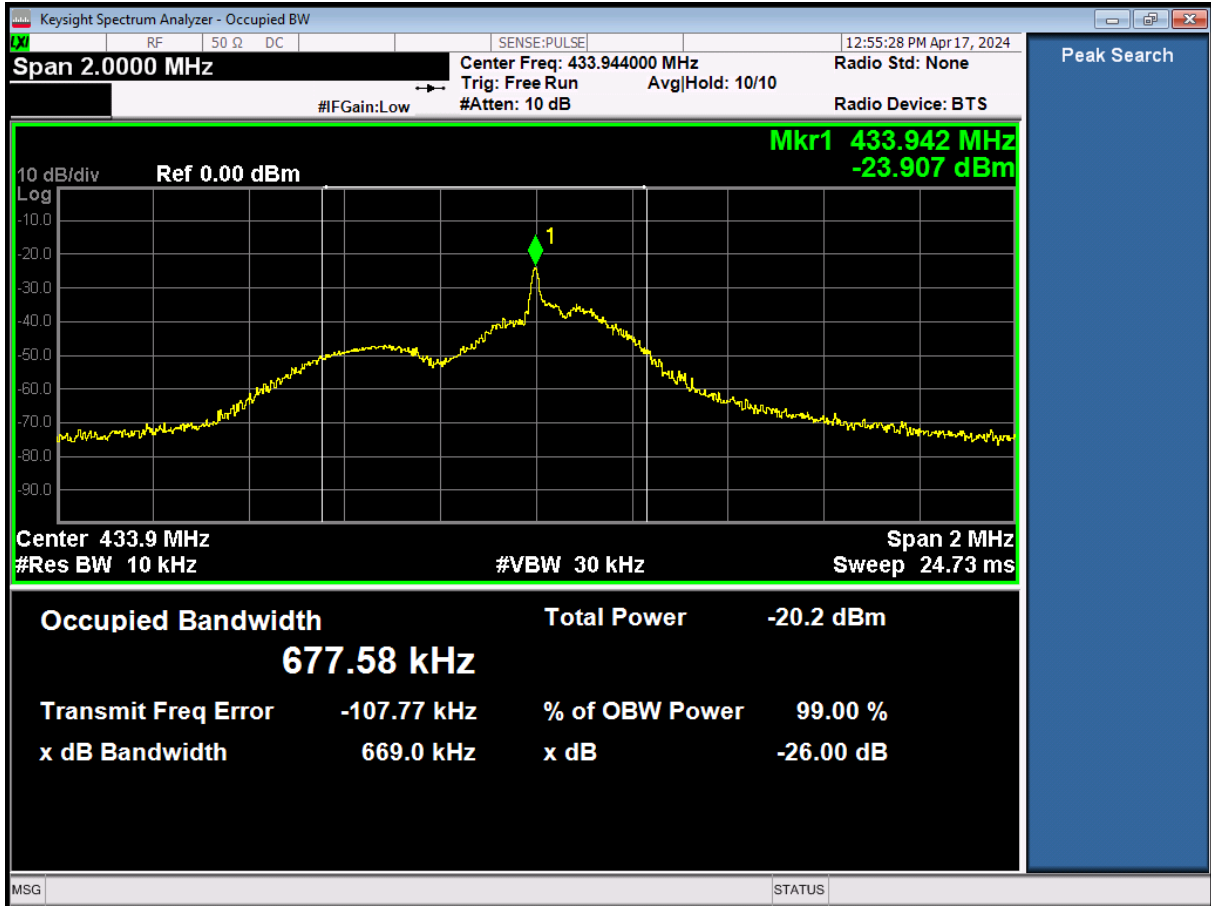
| Freq | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Emission Level | Limit Line | Over Limit | Remark |
|---------|------------|----------------|------------|---------------|----------------|------------|------------|--------|
| MHz | dBuV | dB/m | dB | dB | dBuV/m | dBuV/m | dB | |
| 1301.33 | 47.46 | 24.99 | 2.43 | 34.78 | 40.10 | 74.00 | -33.90 | Peak |
| 1735.48 | 36.47 | 26.86 | 2.87 | 34.77 | 31.43 | 74.00 | -42.57 | Peak |
| 2169.51 | 39.67 | 27.79 | 3.13 | 34.99 | 35.60 | 74.00 | -38.40 | Peak |

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

10.5 99% Bandwidth

| Frequency (MHz) | 99% Bandwidth (MHz) | Limit(MHz) | Result |
|-----------------|---------------------|------------|--------|
| 433.92 | 0.677 | -- | PASS |

Test plot as follows:



End of the Report -