# TEST REPORT

| | |
|---|---|
| **Application No.:** | GZEM2004011804CR |
| **Applicant:** | LUCKYSTAR ELECTRONIC TECHNOLOGY CO.,LTD. |
| **Address of Applicant:** | 10# Fusheng Road, Hecheng street, Gaoming District, Foshan City, Guangdong, CHINA |
| **Manufacturer:** | The same as applicant. |
| **Address of Manufacturer:** | The same as applicant. |
| **Factory:** | The same as applicant. |
| **Address of Factory:** | The same as applicant. |
| **Equipment Under Test (EUT):** | |
| **FCC ID:** | 2AWAH-LS9A10 |
| **EUT Name:** | LED Strip Light |
| **Model No.:** | LS9A10-32FT, LS9A128-1-01 ¤ |
| ¤ | Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical. |
| **Trade Mark:** | LSL /LUCKYSTAR |
| **Standard(s):** | 47 CFR Part 15, Subpart C 15.231 |
| **Date of Receipt:** | 2020-07-14 |
| **Date of Test:** | 2020-07-27 to 2020-08-13 |
| **Date of Issue:** | 2020-08-27 |
| **Test Result:** | **Pass*** |

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

Kobe Jian
EMC Laboratory Manager

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| Revision Record | | | | |
|---|---|---|---|---|
| **Version** | **Chapter** | **Date** | **Modifier** | **Remark** |
| 01 | | 2020-08-27 | | Original |
| | | | | |
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|---|---|---|---|---|
| **Authorized for issue by:** | | | | |
| **Tested By** | | Lily Kuang<br>**Lily_Kuang /Project Engineer** | | 2020-07-27 to 2020-08-13<br>**Date** |
| **Checked By** | | Ricky Liu<br>**Ricky_Liu /Reviewer** | | 2020-08-27<br>**Date** |

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# 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 |

N/A: Not applicable

| 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 |
| Dwell Time (15.231(a)) | 47 CFR Part 15, Subpart C 15.231 | ANSI C63.10 (2013) Section 7.8.4 | 47 CFR Part 15, Subpart C 15.231(a) | Pass |
| Field Strength of the Fundamental Signal (15.231(b)) | 47 CFR Part 15, Subpart C 15.231 | ANSI C63.10 (2013) Section 6.5 | 47 CFR Part 15, Subpart C 15.231(b) | Pass |
| Radiated Emissions & Restricted bands | 47 CFR Part 15, Subpart C 15.231 & 15.209 | ANSI C63.10 (2013) Section 6.4&6.5&6.6 | 47 CFR Part 15, Subpart C 15.231(b) & 15.209 | Pass |

**¤ Declaration of EUT Family Grouping:**

**Model No.:** LS9A10-32FT, LS9A128-1-01

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, only their item no.'s and outer decoration are different.

Therefore only one model LS9A10-32FT was tested in this report.

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# 4 General Information

## 4.1 Details of E.U.T.

| | |
|---|---|
| Power Supply: | For Remote controller (LS9A10-32FT-1):<br>DC 3V for Tx（1*CR1632）<br>For Light:<br>The details of AC/DC adapter as below:<br>Model No.: XY50SA-240200VQ-UT<br>Input: 100-120V~50/60Hz 1.2A Max<br>Output: 24V=== 2.0A |
| Test Voltage: | DC 3V |
| Antenna Gain | 0 dBi declared by applicant |
| Antenna Type | Integral |
| Number of Channels | 1 |
| Operation Frequency | 433.92MHz |
| SN | A1 |
| Hardware | ZSJ-4410-03 |
| Software | SV01 |
| Power setting | Default |

## 4.2 Description of Support Units

The EUT has been tested as an independent unit.

## 4.3 Measurement Uncertainty

| No. | Item | Measurement Uncertainty |
|---|---|---|
| 1 | Radio Frequency | ±5.5 x $10^{-8}$ |
| 2 | Duty cycle | ±0.57% |
| 3 | Occupied Bandwidth | ±3% |
| 4 | RF Conducted power | ±0.68dB |
| 5 | RF Power Density | ±1.50dB |
| 6 | Conducted Spurious Emissions | ±1.04dB |
| 7 | RF Radiated Power | ±4.5dB (below 1GHz) |
| | | ±4.8dB (above 1GHz) |
| 8 | Radiated Spurious Emission Test | ±4.5dB (30MHz-1GHz) |
| | | ±4.8dB (1GHz-18GHz) |
| 9 | Temperature | ±0.4℃ |
| 10 | Humidity | ±1.3% |
| 11 | Supply Voltages | ±1.5% |
| 12 | Time | ±3% |

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## 4.4 Test Location

All tests were performed at:

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No tests were sub-contracted.

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## 4.5 Test Facility

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

- **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to

ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

- **FCC Recognized 2.948 Listed Test Firm(Registration No.: 282399)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399, May 31, 2002.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818, Jul 13, 2017.

- **Industry Canada (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

- **VCCI (Registration No.: R-12460, C-12584, G-10449 and T-11179)**

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- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

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## 4.6 Deviation from Standards

None

## 4.7 Abnormalities from Standard Conditions

None

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# 5 Equipment List

| 20dB Bandwidth | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No** | **Inventory No** | **Cal Date** | **Cal Due Date** |
| EXA Signal Analzer | AgilentTechnologies | N9010A | EMC2138 | 2019-11-18 | 2020-11-17 |
| 6dB Attenuator | HP | 8491A | EMC2062 | 2020-04-15 | 2022-04-14 |
| Test Software JS1120-3 | HangTianXing | V2.6 | GZE100-69 | N/A | N/A |
| MI CABLE | SGS-EMC | 0.8M | EMC2136 | 2019-11-02 | 2021-11-01 |
| MI CABLE | SGS-EMC | 0.8M | EMC2137 | 2019-11-02 | 2021-11-01 |

| Dwell Time (15.231(a)) | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No** | **Inventory No** | **Cal Date** | **Cal Due Date** |
| EXA Signal Analzer | AgilentTechnologies | N9010A | EMC2138 | 2019-11-18 | 2020-11-17 |
| 6dB Attenuator | HP | 8491A | EMC2062 | 2020-04-15 | 2022-04-14 |
| Test Software JS1120-3 | HangTianXing | V2.6 | GZE100-69 | N/A | N/A |
| MI CABLE | SGS-EMC | 0.8M | EMC2136 | 2019-11-02 | 2021-11-01 |
| MI CABLE | SGS-EMC | 0.8M | EMC2137 | 2019-11-02 | 2021-11-01 |

| Radiated Emissions | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No** | **Inventory No** | **Cal Date** | **Cal Due Date** |
| EMI Test Receiver | Rohde & Schwarz | ESIB26 | EMC0522 | 2020-01-10 | 2021-01-09 |
| EMI Test Receiver | Rohde & Schwarz | ESCI | EMC0056 | 2020-01-10 | 2021-01-09 |
| Chamber cable | HangTianXing | N/A | EMC0542 | 2019-06-28 | 2021-06-27 |
| Trilog Broadband Antenna 25MHz-1GHz | SCHWARZBECKMESS-ELEKTRONIK | VULB 9168 | EMC2174 | 2018-09-06 | 2021-09-05 |
| Trilog Broadband Antenna 30MHz-1GHz | SCHWARZBECKMESS-ELEKTRONIK | VULB 9168 | SEM003-18 | 2019-02-22 | 2022-02-22 |
| Bi-log Type Antenna | Schaffner Chase | CBL6143 | EMC0519 | 2020-06-08 | 2023-06-07 |
| Horn Antenna 1GHz-18GHz | Rohde & Schwarz | HF906 | EMC0518 | 2018-09-02 | 2021-09-01 |
| 1GHz-26.5 GHz Pre-Amplifier | Agilent | 8449B | EMC0521 | 2020-01-10 | 2021-01-09 |
| Amplifier | HP | 8447F | EMC2065 | 2020-05-26 | 2021-05-25 |
| Pre-Amplifier MH648A | ANRITSU CORP | MH648A | EMC2086 | 2019-11-18 | 2020-11-17 |
| Active Loop Antenna | ETS-Lindgren | 6502 | EMC2190 | 2019-12-27 | 2021-12-26 |
| High Pass Filter | WAINWRIGHT INSTRUMENTS GMBH | WHKS650-10SS | EMC2092 | 2020-01-10 | 2021-01-09 |
| 2.4GHz Filter | Micro-Tronics | BRM 50702 | EMC2069 | 2020-01-10 | 2021-01-09 |
| 10m Semi-Anechoic Chamber | ETS | N/A | EMC0530 | 2019-10-20 | 2022-10-19 |

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| | | | | | |
|---|---|---|---|---|---|
| 966 Anechoic Chamber | C.R.T | 9m x 6m x 6m | EMC2142 | 2017-12-19 | 2020-12-18 |
| MXE EMI Receiver | Keysight | N9038A | EMC2139 | 2019-11-18 | 2020-11-17 |
| EXA Signal Analyzer | Keysight | N9010A | EMC2138 | 2019-11-18 | 2020-11-17 |
| Test Software E3 | Audix | Ver.6.120110a | GZE100-61 | N/A | N/A |

| General used equipment | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No** | **Inventory No** | **Cal Date** | **Cal Due Date** |
| DMM | Fluke | 73 | EMC0006 | 2020-07-16 | 2021-07-15 |
| DMM | Fluke | 73 | EMC0007 | 2020-07-16 | 2021-07-15 |

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# 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

Standard 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 antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of an 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 integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 0dBi.

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# 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 |

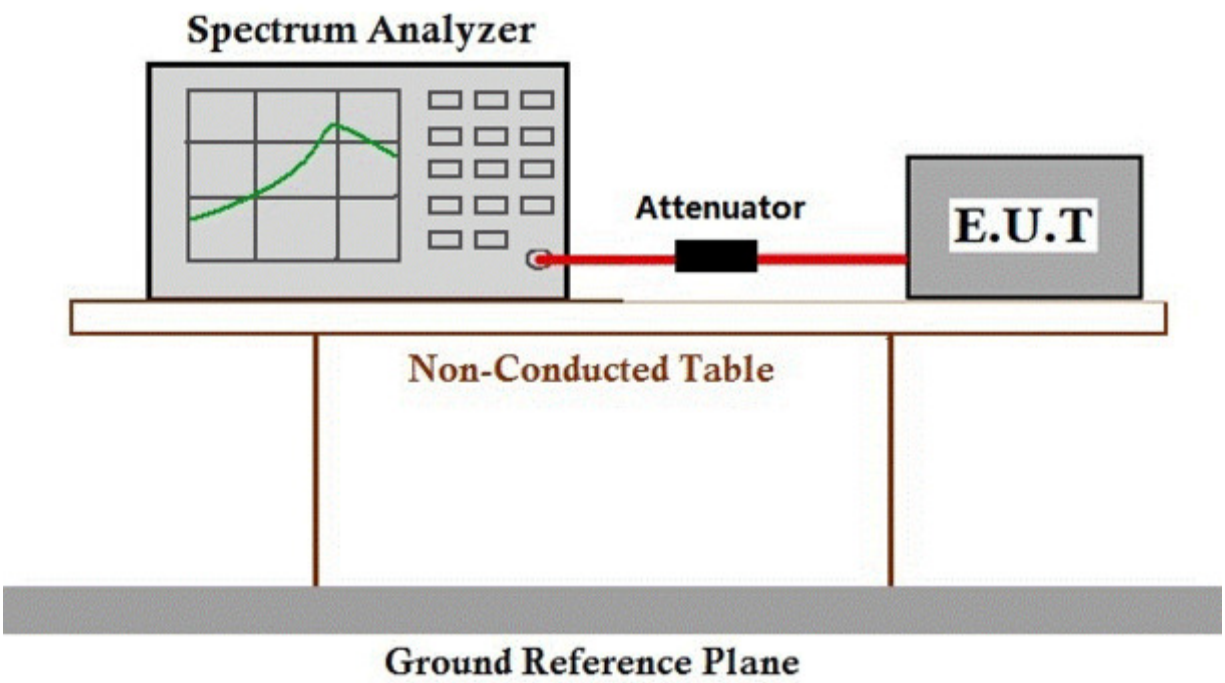
### 7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 26.6 °C Humidity: 58.8 % RH Atmospheric Pressure: 1020 mbar

Test mode a:TX mode_Keep the EUT in transmitting with modulation mode.

### 7.1.2 Test Setup Diagram

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### 7.1.3 Measurement Procedure and Data

Mode:a

Test Result:

| Test Channel | Bandwidth | Limit | Verdict |
|---|---|---|---|
| 433.92MHz | 581.7kHz | <1.08 MHz | PASS |

Test Plot:

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## 7.2 Dwell Time (15.231(a))

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

Test Method: ANSI C63.10 (2013) Section 7.8.4

Limit:

| Device type | Limit |
|---|---|
| Manually operated transmitter | The switch automatically deactivate the transmitter within not more than 5 seconds of being released |
| Automatically active 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 |

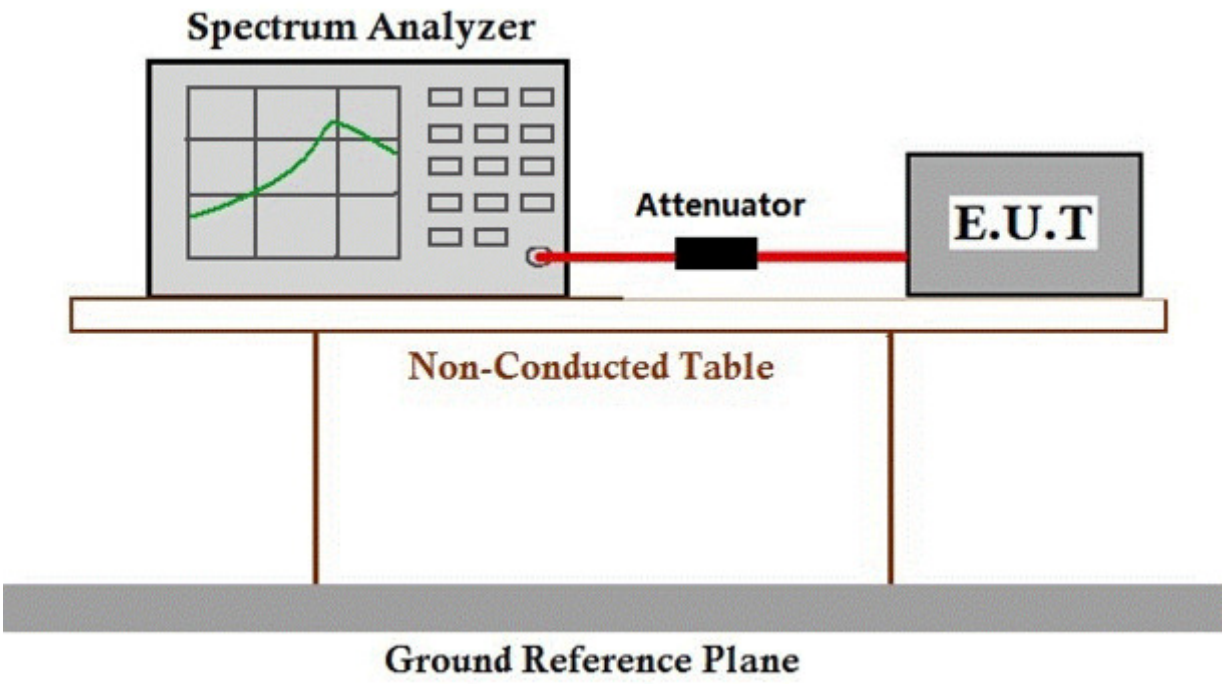
### 7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 26.6 °C Humidity: 58.8 % RH Atmospheric Pressure: 1020 mbar

Test mode a:TX mode_Keep the EUT in transmitting with modulation mode.

### 7.2.2 Test Setup Diagram

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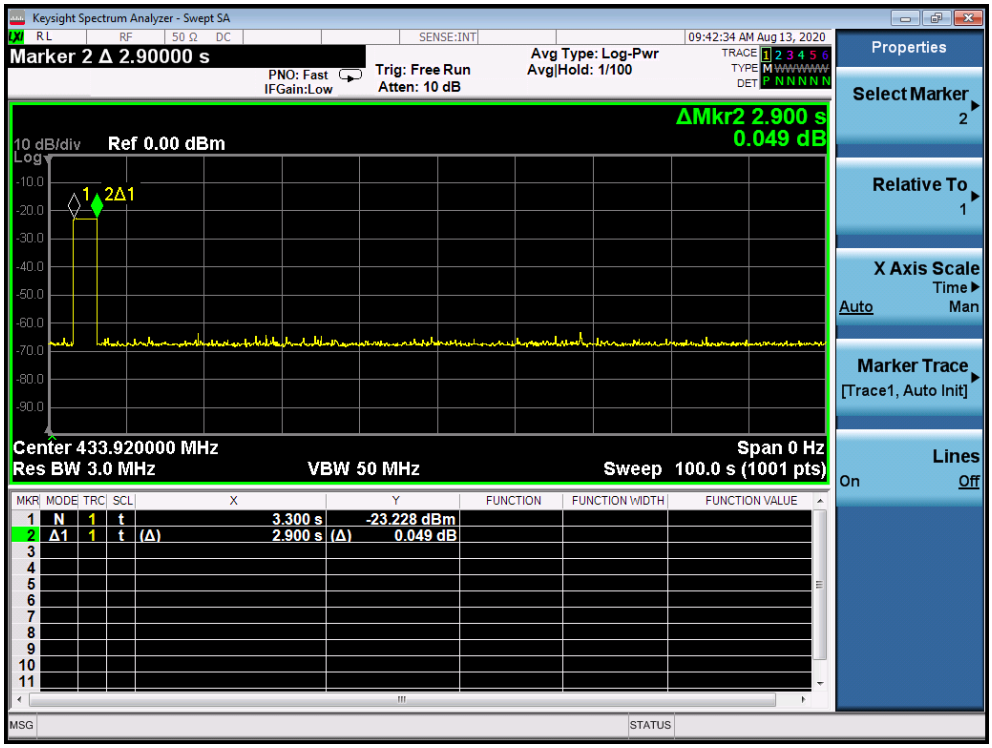
### 7.2.3 Measurement Procedure and Data

| Carrier Frequency | Shutdown Time | Limit | **Verdict** |
|---|---|---|---|
| 433.9MHz | 2.9s | ≤5s | PASS |

Mode:a

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## 7.3 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
Measurement Distance: 3m
Limit:

| Fundamental Frequency MHz | Field Strength of Fundamental (dBµV/m @ 3 m) | Field Strength of Harmonics 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<br>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.

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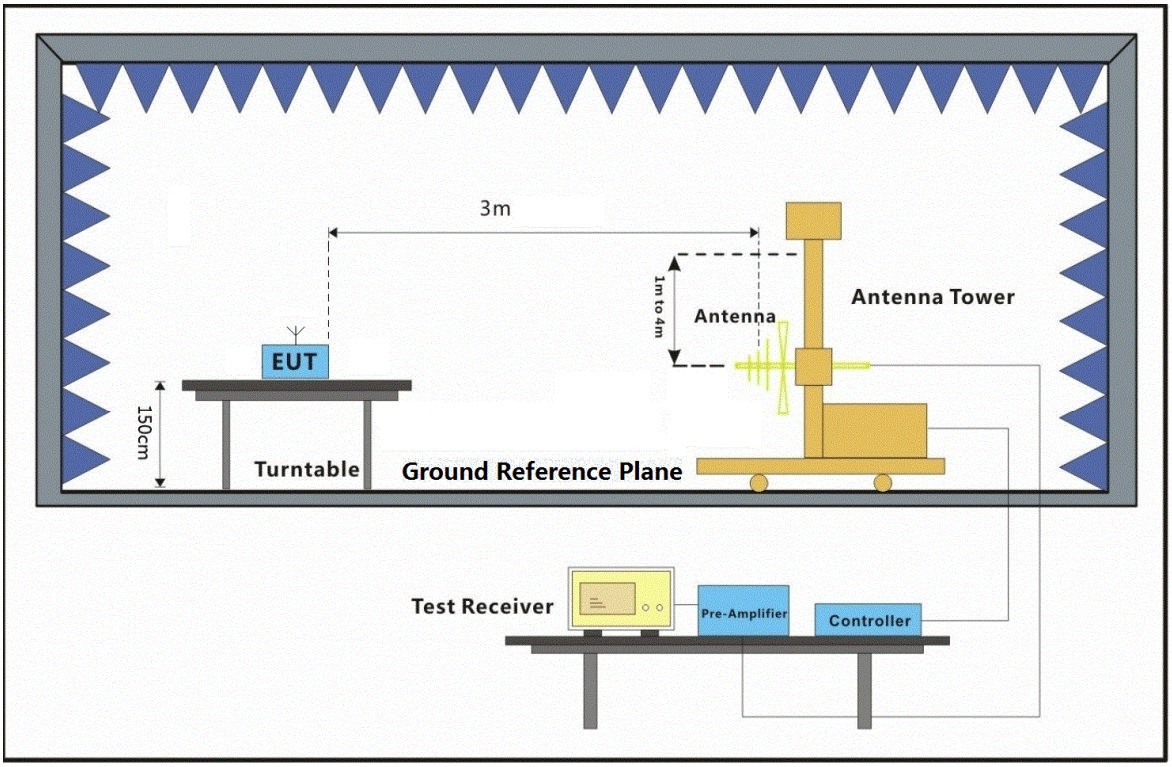
### 7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test mode a:TX mode_Keep the EUT in transmitting with modulation mode.

### 7.3.2 Test Setup Diagram

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### 7.3.3 Measurement Procedure and Data

And according 15.35(a)

15.35(a) On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a CISPR quasi-peak detector function and related measurement bandwidths, unless otherwise specified. The specifications for the measuring instrument using the CISPR quasi-peak detector can be found in Publication 16 of the International Special Committee on Radio Interference (CISPR) of the International Electrotechnical Commission. As an alternative to CISPR quasi-peak measurements, the responsible party, at its option, may demonstrate compliance with the emission limits using measuring equipment employing a peak detector function, properly adjusted for such factors as pulse desensitization, as long as the same bandwidths as indicated for CISPR quasi-peak measurements are employed.

Note: For pulse modulated devices with a pulse-repetition frequency of 20 Hz or less and for which CISPR quasi-peak measurements are specified, compliance with the regulations shall be demonstrated using measuring equipment employing a peak detector function, properly adjusted for such factors as pulse desensitization, using the same measurement bandwidths that are indicated for CISPR quasi-peak measurements.

According to 15.35 (b) Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz. When average radiated emission measurements are specified in this part, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. Unless otherwise specified, e.g., see §§ 15.250, 15.252, 15.255, and 15.509-15.519 of this part, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device, e.g., the total peak power level. Note that the use of a pulse desensitization correction factor may be needed to determine the total peak emission level. The instruction manual or application note for the measurement instrument should be consulted for determining pulse desensitization factors, as necessary.

The average correction factor is computed by analyzing the on time in 100ms over one complete pulse train. Analysis of the remote transmitter on time in one complete pulse train, therefore the average value of fundamental frequency is: Average = Peak value + 20log (Duty cycle), where the duty factor is calculated from following formula:

20log (Duty cycle) = 20log( $T_{pulse}$ /52.6) =20log(0.33)= -9.71dB

Here $T_{pulse}$ =(1*12+0.4*13)= 17.2 (ms)

Please refer to below plots for more details.

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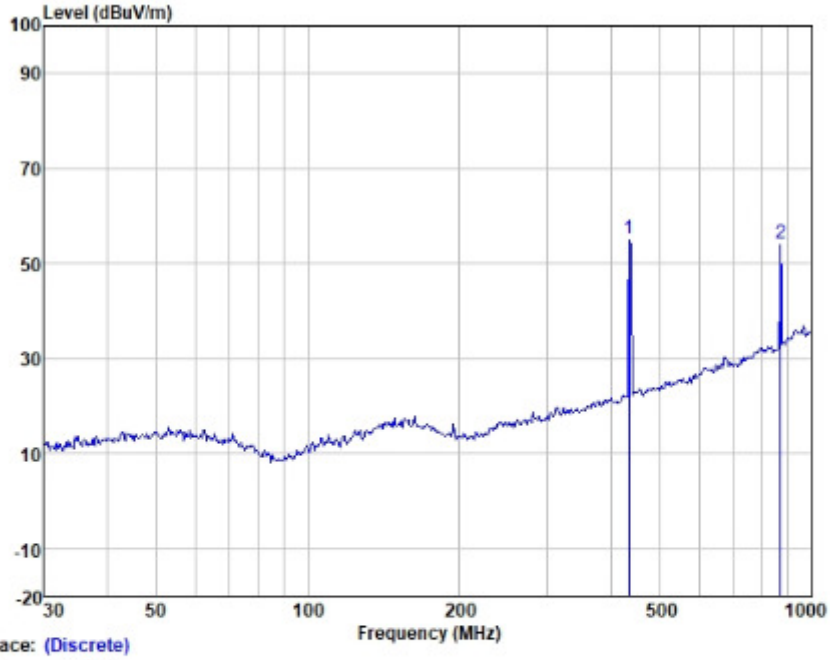
**1) Fundamental emission:**

**Antenna polarization: Horizontal**:

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Remark |
|---|---|---|---|---|---|---|---|---|
| 433.923 | 71.07 | 16.85 | 3.81 | 27.97 | 63.76 | 100.83 | -37.07 | Peak |
| 433.923 | N/A | N/A | N/A | N/A | 54.05 | 80.83 | -26.78 | Average |




Site : SGS
Condition: 3m VERTICAL
Job :
Power :
Test Mode:
Model :

| | Freq | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Level | Limit Line | Over Limit | Pol/Phase | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB/m | dB | dB | dBuV/m | dBuV/m | dB | | |
| 1 | 433.943 | 62.57 | 16.85 | 3.81 | 27.97 | 55.26 | ------ | ------ | VERTICAL | QP |
| 2 | 867.843 | 53.50 | 22.90 | 5.91 | 28.03 | 54.28 | ------ | ------ | VERTICAL | QP |

Remarks: 867.843MHz is the harmonics of Field Strength, so please reference the clause 7.4

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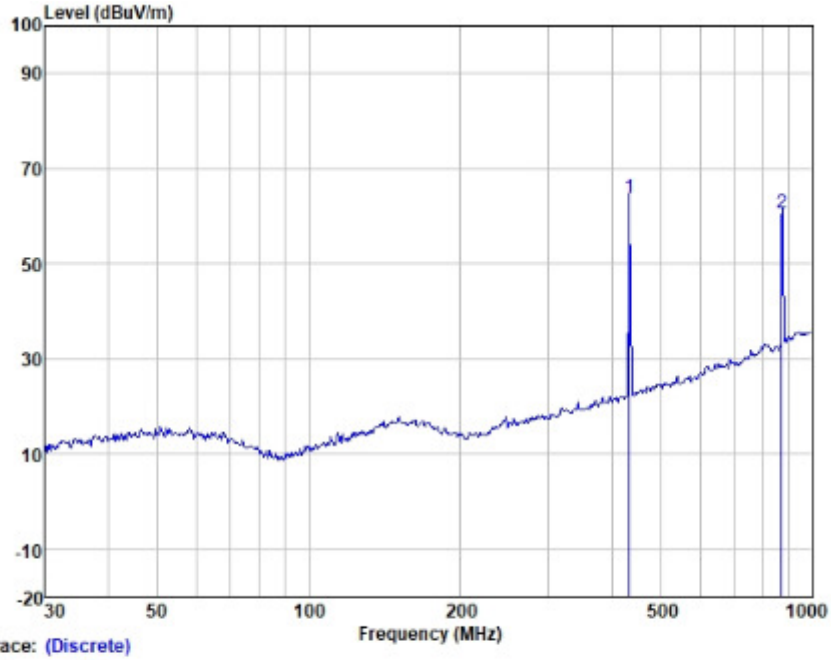
**Antenna polarization: Vertical**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Remark |
|---|---|---|---|---|---|---|---|---|
| 433.943 | 62.57 | 16.85 | 3.81 | 27.97 | 55.26 | 100.83 | -45.57 | Peak |
| 433.943 | N/A | N/A | N/A | N/A | 45.55 | 80.83 | -35.28 | Average |




Trace: (Discrete)
Site : SGS
Condition: 3m HORIZONTAL
Job :
Power :
Test Mode:
Model :

| | Freq | ReadLevel | Antenna Factor | Cable Loss | Preamp Factor | Level | Limit Line | Over Limit | Pol/Phase | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB/m | dB | dB | dBuV/m | dBuV/m | dB | | |
| 1 | 433.923 | 71.07 | 16.85 | 3.81 | 27.97 | 63.76 | ------ | ------ | HORIZONTAL | QP |
| 2 | 867.865 | 59.70 | 22.90 | 5.91 | 28.03 | 60.48 | ------ | ------ | HORIZONTAL | QP |

Remarks: 867.843MHz is the harmonics of Field Strength, so please reference the clause 7.4

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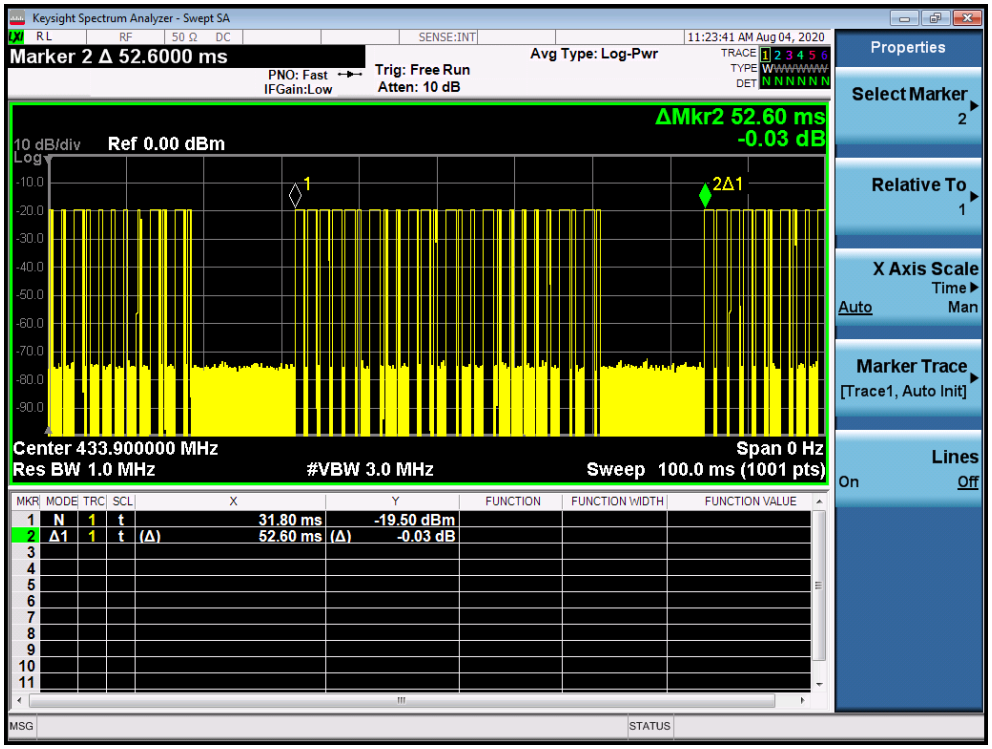
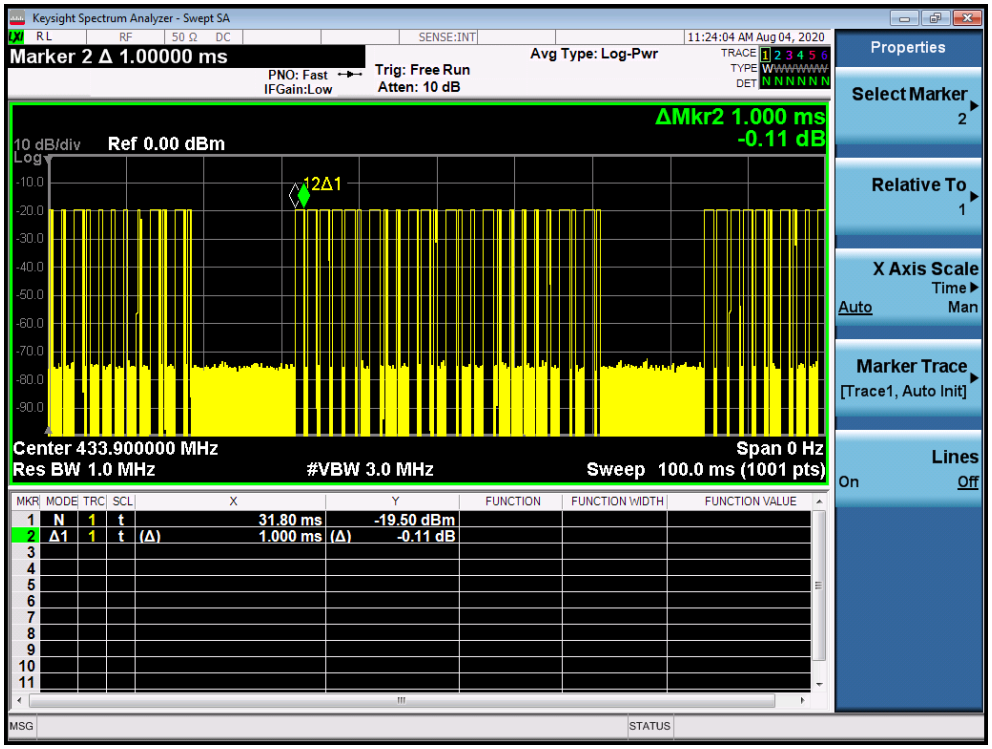
Test plot

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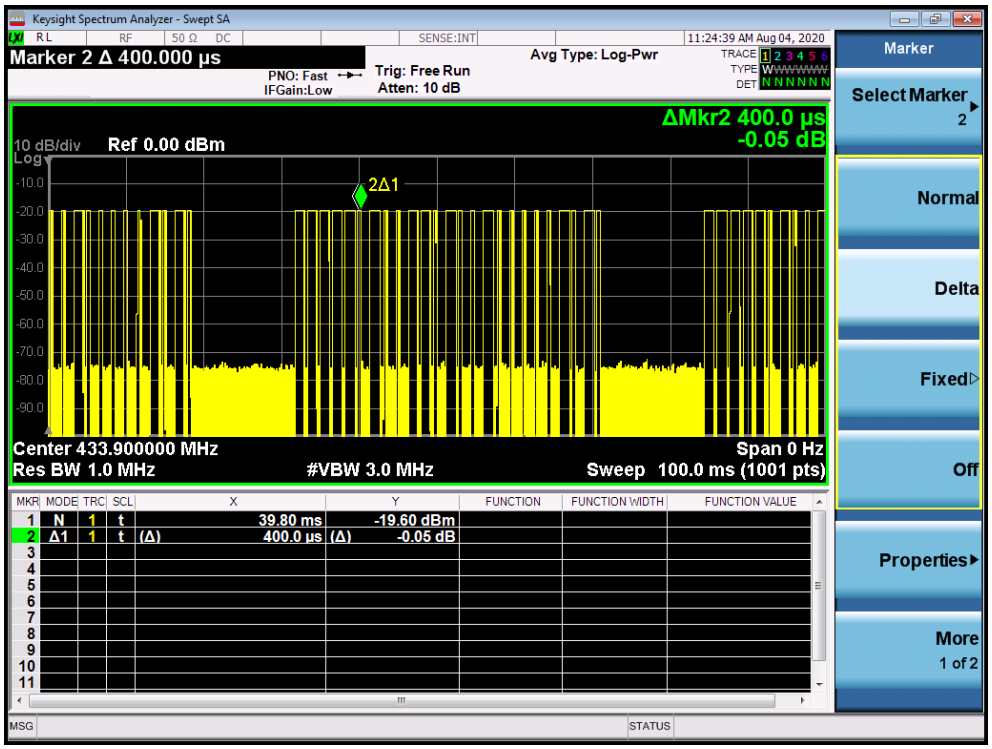


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## 7.4 Radiated Emissions & Restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.231(b) & 15.209
Test Method: ANSI C63.10 (2013) Section 6.4&6.5&6.6
Measurement Distance: 3m
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 Harmonics 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<br>Peak for Above 1 GHz: 1 MHz resolution bandwidth | |

### 7.4.1 E.U.T. Operation

Operating Environment:
Temperature: 23.5 °C Humidity: 56.5 % RH Atmospheric Pressure: 1020 mbar
Test mode a:TX mode_Keep the EUT in transmitting with modulation mode.

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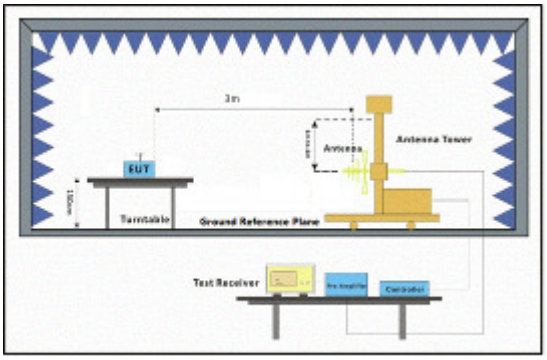
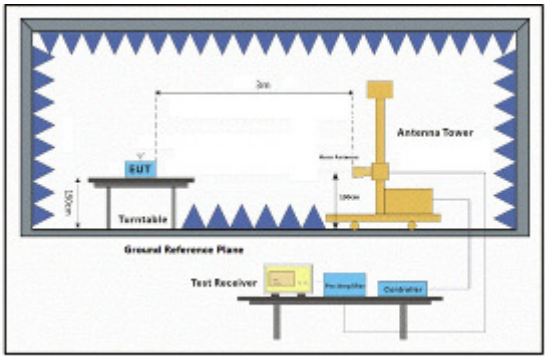
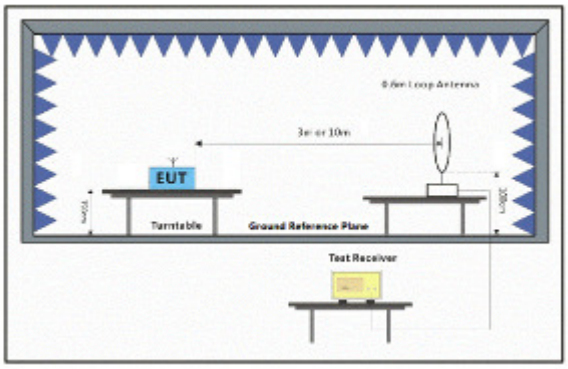
### 7.4.2 Test Setup Diagram




### 7.4.3 Measurement Procedure and Data

For testing performed with the loop antenna, the center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane. Only the worst position of vertical was shown in the report.

Measured Level l=Read Level + Antenna Factor + Cable Loss - Preamp Factor

**Radiated emission below 30MHz**

The measurements with active loop antenna were greater than 20dB below the limit, so the test data were not recorded in the test report.

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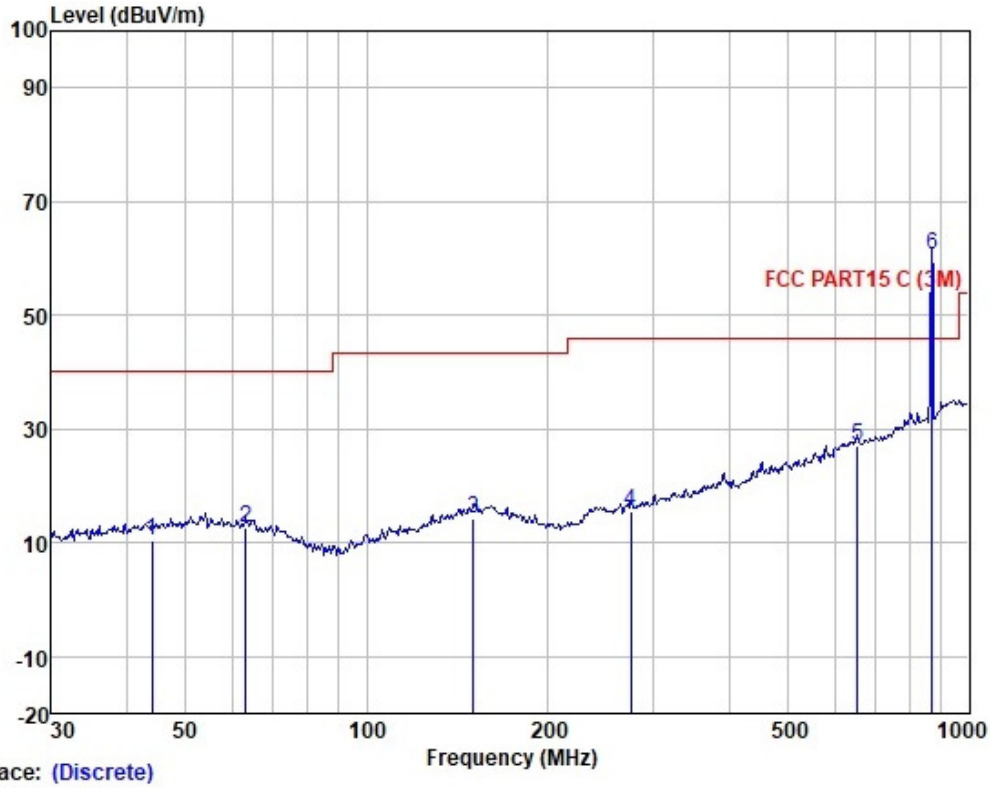
**30MHz- 1G:** Field Strength of Unwanted Emissions. Quasi-Peak Measurement




Trace: (Discrete)

Site : SGS
Condition: FCC PART15 C (3M) 3m HORIZONTAL
Job :
Power :
Test Mode:
Model :

| | Freq | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Level | Pol/Phase | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB/m | dB | dB | dBuV/m | | |
| 1 | 44.120 | 22.63 | 13.81 | 1.17 | 27.17 | 10.44 | HORIZONTAL | QP |
| 2 | 63.092 | 25.52 | 13.00 | 1.31 | 27.16 | 12.67 | HORIZONTAL | QP |
| 3 | 150.538 | 25.37 | 13.80 | 2.06 | 26.88 | 14.35 | HORIZONTAL | QP |
| 4 | 274.194 | 26.72 | 12.93 | 2.76 | 27.04 | 15.37 | HORIZONTAL | QP |
| 5 | 651.942 | 29.77 | 20.52 | 4.92 | 28.10 | 27.11 | HORIZONTAL | QP |
| 6 * | 867.865 | 59.70 | 22.90 | 5.91 | 28.03 | 60.48 | HORIZONTAL | QP |

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Remark |
|---|---|---|---|---|---|---|---|---|
| 44.120 | 22.63 | 13.81 | 1.17 | 27.17 | 10.44 | 40.0 | -29.56 | QP |
| 63.092 | 25.52 | 13.00 | 1.31 | 27.16 | 12.67 | 40.0 | -27.33 | QP |
| 150.538 | 25.37 | 13.80 | 2.06 | 26.88 | 14.35 | 43.5 | -29.15 | QP |
| 274.194 | 26.72 | 12.93 | 2.76 | 27.04 | 15.37 | 46.0 | -30.63 | QP |
| 651.942 | 29.77 | 20.52 | 4.92 | 28.10 | 27.11 | 46.0 | -18.89 | QP |
| *867.865 | 59.70 | 22.90 | 5.91 | 28.03 | 60.48 | 60.83 | -0.35 | QP |

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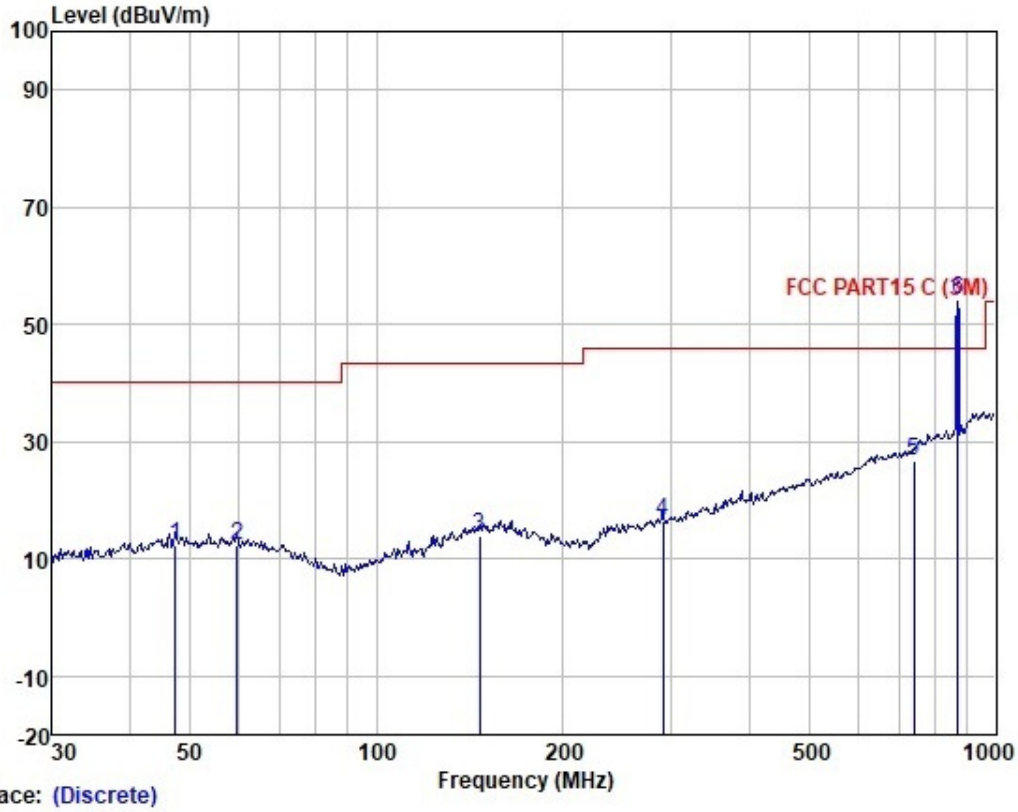


Trace: (Discrete)

Site : SGS
Condition: FCC PART15 C (3M) 3m VERTICAL
Job :
Power :
Test Mode:
Model :

| | Freq | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Level | Pol/Phase | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB/m | dB | dB | dBuV/m | | |
| 1 | 47.326 | 24.45 | 13.97 | 1.19 | 27.17 | 12.44 | VERTICAL | QP |
| 2 | 59.649 | 24.57 | 13.44 | 1.32 | 27.16 | 12.17 | VERTICAL | QP |
| 3 | 146.888 | 24.97 | 13.70 | 2.03 | 26.90 | 13.80 | VERTICAL | QP |
| 4 | 290.017 | 27.40 | 13.40 | 2.88 | 27.13 | 16.55 | VERTICAL | QP |
| 5 | 737.071 | 27.66 | 21.95 | 5.24 | 28.11 | 26.74 | VERTICAL | QP |
| 6 * | 867.843 | 53.50 | 22.90 | 5.91 | 28.03 | 54.28 | VERTICAL | QP |

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Remark |
|---|---|---|---|---|---|---|---|---|
| 47.326 | 24.45 | 13.97 | 1.19 | 27.17 | 12.44 | 40.00 | -27.56 | QP |
| 59.649 | 24.57 | 13.44 | 1.32 | 27.16 | 12.17 | 40.00 | -27.83 | QP |
| 146.888 | 24.97 | 13.70 | 2.03 | 26.90 | 13.80 | 43.50 | -29.70 | QP |
| 290.017 | 27.40 | 13.40 | 2.88 | 27.13 | 16.55 | 46.00 | -29.45 | QP |
| 737.071 | 27.66 | 21.95 | 5.24 | 28.11 | 26.74 | 46.00 | -19.26 | QP |
| *867.843 | 53.50 | 22.90 | 5.91 | 28.03 | 54.28 | 60.83 | -6.55 | QP |

*Remarks: the limit of this point not falling in Restricted bands for the spurious emission is 60.83 dBuV/m.

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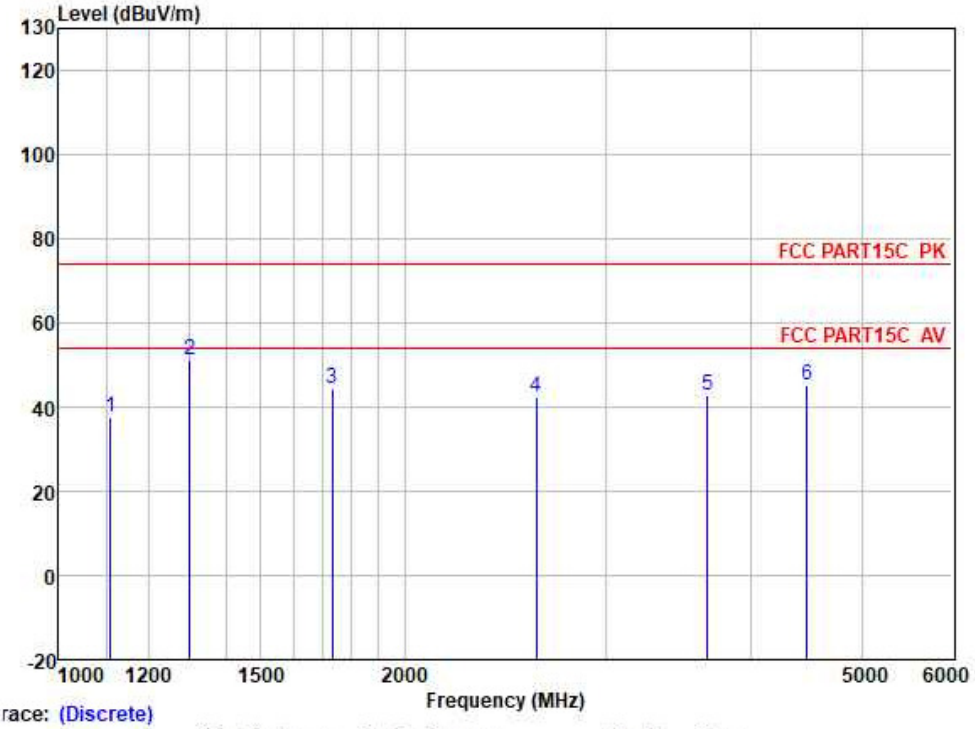
**1GHz~5 GHz** Field Strength of Unwanted Emissions Measurement




race: (Discrete)

| | Freq | ReadLevel | Antenna Factor | Cable Loss | Preamp Factor | Level | Limit Line | Over Limit | Pol/Phase | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB/m | dB | dB | dBuV/m | dBuV/m | dB | | |
| 1 | 1109.514 | 48.39 | 24.39 | 2.27 | 37.37 | 37.68 | 74.00 | -36.32 | HORIZONTAL | Peak |
| 2 | 1301.332 | 60.62 | 25.20 | 2.60 | 37.30 | 51.12 | 74.00 | -22.88 | HORIZONTAL | Peak |
| 3 | 1730.272 | 52.60 | 25.80 | 2.85 | 37.04 | 44.21 | 74.00 | -29.79 | HORIZONTAL | Peak |
| 4 | 2603.351 | 48.11 | 27.63 | 3.50 | 36.85 | 42.39 | 74.00 | -31.61 | HORIZONTAL | Peak |
| 5 | 3672.297 | 45.39 | 29.17 | 4.54 | 36.43 | 42.67 | 74.00 | -31.33 | HORIZONTAL | Peak |
| 6 | 4480.357 | 45.99 | 30.78 | 4.99 | 36.43 | 45.33 | 74.00 | -28.67 | HORIZONTAL | Peak |

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Remark |
|---|---|---|---|---|---|---|---|---|
| 1109.514 | 48.39 | 24.39 | 2.27 | 37.37 | 37.68 | 74.00 | -36.32 | Peak |
| 1109.514 | N/A | N/A | N/A | N/A | 27.97 | 54.00 | -26.03 | Averge |
| 1301.332 | 60.62 | 25.20 | 2.60 | 37.30 | 51.12 | 74.00 | -22.88 | Peak |
| 1301.332 | N/A | N/A | N/A | N/A | 41.41 | 54.00 | -12.59 | Averge |
| 1730.272 | 52.60 | 25.80 | 2.85 | 37.04 | 44.21 | 80.83 | -36.62 | Peak |
| 1730.272 | N/A | N/A | N/A | N/A | 34.50 | 60.83 | -26.33 | Averge |
| 2603.351 | 48.11 | 27.63 | 3.50 | 36.85 | 42.39 | 80.83 | -38.44 | Peak |
| 2603.351 | N/A | N/A | N/A | N/A | 32.68 | 60.83 | -28.15 | Averge |
| 3672.297 | 45.39 | 29.17 | 4.54 | 36.43 | 42.67 | 74.00 | -31.33 | Peak |
| 3672.297 | N/A | N/A | N/A | N/A | 32.96 | 54.00 | -21.04 | Averge |
| 4480.357 | 45.99 | 30.78 | 4.99 | 36.43 | 45.33 | 80.83 | -35.5 | Peak |
| 4480.357 | N/A | N/A | N/A | N/A | 35.62 | 60.83 | -25.21 | Averge |

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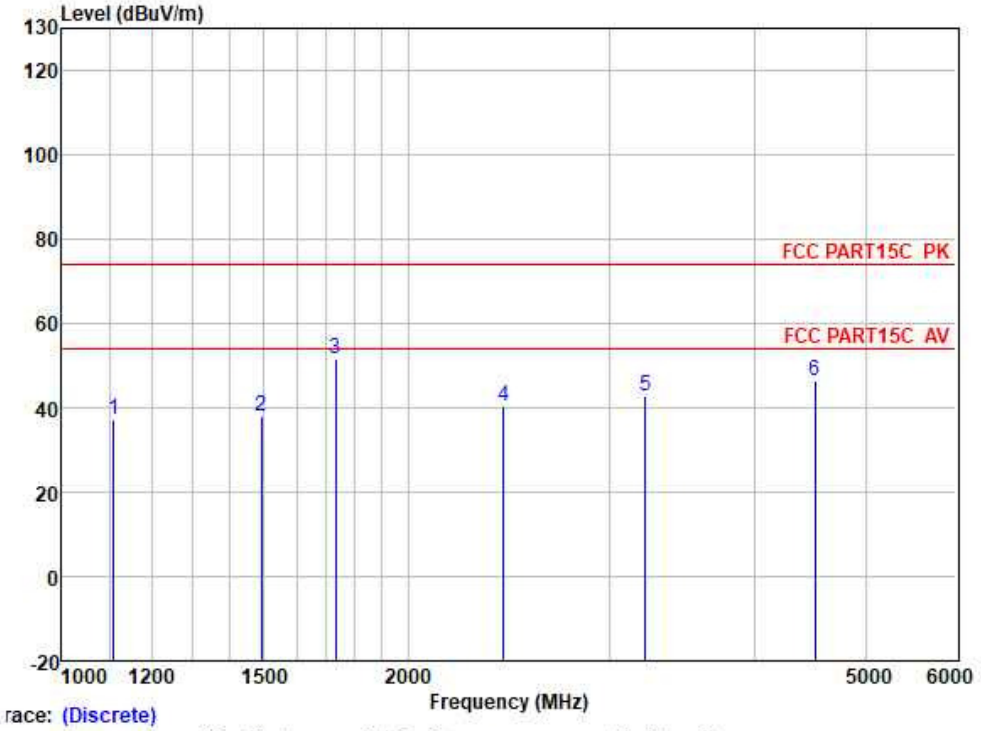


race: (Discrete)

| | Freq | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Level | Limit Line | Over Limit | Pol/Phase | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB/m | dB | dB | dBuV/m | dBuV/m | dB | | |
| 1 | 1109.514 | 47.85 | 24.39 | 2.27 | 37.37 | 37.14 | 74.00 | -36.86 | VERTICAL | Peak |
| 2 | 1491.172 | 46.86 | 25.49 | 2.79 | 37.12 | 38.02 | 74.00 | -35.98 | VERTICAL | Peak |
| 3 | 1730.272 | 59.87 | 25.80 | 2.85 | 37.04 | 51.48 | 74.00 | -22.52 | VERTICAL | Peak |
| 4 | 2423.297 | 46.32 | 27.39 | 3.45 | 36.91 | 40.25 | 74.00 | -33.75 | VERTICAL | Peak |
| 5 | 3216.286 | 46.54 | 28.61 | 4.01 | 36.50 | 42.66 | 74.00 | -31.34 | VERTICAL | Peak |
| 6 | 4520.676 | 46.73 | 30.83 | 5.16 | 36.44 | 46.28 | 74.00 | -27.72 | VERTICAL | Peak |

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Remark |
|---|---|---|---|---|---|---|---|---|
| 1109.514 | 47.85 | 24.39 | 2.27 | 37.37 | 37.14 | 74.00 | -36.86 | Peak |
| 1109.514 | N/A | N/A | N/A | N/A | 27.43 | 54.00 | -26.57 | Averge |
| 1491.172 | 46.86 | 25.49 | 2.79 | 37.12 | 38.02 | 74.00 | -35.98 | Peak |
| 1491.172 | N/A | N/A | N/A | N/A | 28.31 | 54.00 | -25.69 | Averge |
| 1730.272 | 59.87 | 25.80 | 2.85 | 37.04 | 51.48 | 80.83 | -29.35 | Peak |
| 1730.272 | N/A | N/A | N/A | N/A | 41.77 | 60.83 | -19.06 | Averge |
| 2423.297 | 46.32 | 27.39 | 3.45 | 36.91 | 40.25 | 80.83 | -40.58 | Peak |
| 2423.297 | N/A | N/A | N/A | N/A | 30.54 | 60.83 | -30.29 | Averge |
| 3216.286 | 46.54 | 28.61 | 4.01 | 36.50 | 42.66 | 80.83 | -38.17 | Peak |
| 3216.286 | N/A | N/A | N/A | N/A | 32.95 | 60.83 | -27.88 | Averge |
| 4520.676 | 46.73 | 30.83 | 5.16 | 36.44 | 46.28 | 74.00 | -27.72 | Peak |
| 4520.676 | N/A | N/A | N/A | N/A | 36.57 | 54.00 | -17.43 | Averge |

Remark: The convert factor of Peak to Average please refer to section 7.3.

**--End of Report--**

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