# TEST REPORT

| | |
|---|---|
| **Application No.**: | SZEM2012012843CR |
| **Applicant:** | Global Mei Chuang Co., Limited |
| **Address of Applicant:** | FLAT / RM A, 9 /F, SILVERCORP INTERNATIONAL TOWER, 707-713 NATHAN ROAD, MONGKOK, KL, HONGKONG, CHINA. |
| **Manufacturer:** | Huizhou LFY Technology Co., Ltd. |
| **Address of Manufacturer:** | Loujiao Xiaozu, Chayuan Village Committee, Qiuchang Street Office, Huiyang, Huizhou, Guangdong, China. |
| **Factory:** | Huizhou LFY Technology Co., Ltd. |
| **Address of Factory:** | Loujiao Xiaozu, Chayuan Village Committee, Qiuchang Street Office, Huiyang, Huizhou, Guangdong, China. |
| **Equipment Under Test (EUT):** | |
| **EUT Name:** | Walkie Talkie |
| **Model No.:** | T78, T388 ♣ |
| ♣ | Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical. |
| **FCC ID:** | 2AMEAT78388 |
| **Standard(s) :** | 47 CFR Part 95, Subpart B |
| **Date of Receipt:** | 2020-12-17 |
| **Date of Test:** | 2020-12-29 to 2021-01-05 |
| **Date of Issue:** | 2021-01-19 |
| **Test Result:** | Pass* |

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

Keny Xu
EMC Laboratory Manager



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| Revision Record | | | | |
|---|---|---|---|---|
| **Version** | **Chapter** | **Date** | **Modifier** | **Remark** |
| 01 | | 2021-01-19 | | Original |
| | | | | |
| | | | | |

| | | | | |
|---|---|---|---|---|
| **Authorized for issue by:** | | | | |
| | | Damon Su<br>**Damon Su/Project Engineer** | | |
| | | Eric Fu<br>**Eric Fu /Reviewer** | | |



SGS-CSTC Standards Technical Services Co.,Ltd. Shenzhen Branch
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# 2 Test Summary

| Radio Spectrum Technical Requirement | | | | |
|---|---|---|---|---|
| **Item** | **Standard** | **Method** | **Requirement** | **Result** |
| Antenna Requirement | 47 CFR Part 95, Subpart B | N/A | 47 CFR Part 95, Subpart B 95.587(b) | Pass |

| Radio Spectrum Matter Part | | | | |
|---|---|---|---|---|
| **Item** | **Standard** | **Method** | **Requirement** | **Result** |
| Frequency Stability | 47 CFR Part 95, Subpart B | ANSI/TIA-603-E:2016 | 47 CFR FCC Part95.565 & FCC Part2.1055; | Pass |
| Effective Radiated Power (ERP) | 47 CFR Part 95, Subpart B | ANSI/TIA-603-E:2016 | 47 CFR FCC Part95.567 & FCC Part2.1046; | Pass |
| Occupied Bandwidth | 47 CFR Part 95, Subpart B | ANSI/TIA-603-E:2016 | 47 CFR FCC Part 95.573 & FCC Part2.1049; | Pass |
| Modulation characteristics | 47 CFR Part 95, Subpart B | ANSI/TIA-603-E:2016 | 47 CFR FCC Part 95.575 & FCC Part2.1047; | Pass |
| Radiated Spurious Emissions | 47 CFR Part 95, Subpart B | ANSI/TIA-603-E:2016 | 47 CFR FCC Part 95.579 & FCC Part2.1053; | Pass |

**Declaration of EUT Family Grouping:**

Model No.: T78, T388

Only the model T78 was tested, since according to the declaration from the applicant, the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models, with only difference on model names and outlooks for the marketing requirement.

# 3 Contents





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# 4 General Information

## 4.1 Details of E.U.T.

| | |
|---|---|
| Power supply: | DC 6V by 4x1.5V “AAA” batteries |
| Frequency Range: | 462.55MHz~467.7125MHz |
| Modulation Type: | FM |
| Emission Type: | F3E |
| Antenna Type: | Integral |
| Antenna Gain: | 0dBi |

Channel List

| Ch. | Frequency | Ch. | Frequency | Ch. | Frequency | Ch. | Frequency |
|---|---|---|---|---|---|---|---|
| 1 | 462.5625 | 7 | 462.7125 | 13 | 467.6875 | 19 | 462.6500 |
| 2 | 462.5875 | 8 | 467.5625 | 14 | 467.7125 | 20 | 462.6750 |
| 3 | 462.6125 | 9 | 467.5875 | 15 | 462.5500 | 21 | 462.7000 |
| 4 | 462.6375 | 10 | 467.6125 | 16 | 462.5750 | 22 | 462.7250 |
| 5 | 462.6625 | 11 | 467.6375 | 17 | 462.6000 | | |
| 6 | 462.6875 | 12 | 467.6625 | 18 | 462.6250 | | |

## 4.2 Description of Support Units

The EUT has been tested independent unit.

## 4.3 Measurement Uncertainty

| No. | Item | Measurement Uncertainty |
|---|---|---|
| 1 | Radio Frequency | ± 7.25 x $10^{-8}$ |
| 2 | Duty cycle | ± 0.37% |
| 3 | Occupied Bandwidth | ± 3% |
| 4 | Conduction emission | ± 3.0dB (150kHz to 30MHz) |
| 5 | RF conducted power | ± 0.75dB |
| 6 | RF power density | ± 2.84dB |
| 7 | Conducted Spurious emissions | ± 0.75dB |
| 8 | RF Radiated power | ± 4.5dB (Below 1GHz) |
| | | ± 4.8dB (Above 1GHz) |
| 9 | Radiated Spurious emission test | ± 4.5dB (Below 1GHz) |
| | | ± 4.8dB (Above 1GHz) |
| 10 | Temperature test | ± 1℃ |
| 11 | Humidity test | ± 3% |
| 12 | Supply voltages | ± 1% |
| 13 | Time | ± 3% |



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## 4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

## 4.5 Test Facility

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

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

## 4.6 Deviation from Standards

None

## 4.7 Abnormalities from Standard Conditions

None

# 5 Equipment List

| ERP | | | | | |
|---|---|---|---|---|---|
| **Test Equipment** | **Manufacturer** | **Model No.** | **Inventory No.** | **Cal. Date** | **Cal. Due date** |
| 3m Semi-Anechoic Chamber | ETS-LINDGREN | N/A | SEM001-01 | 2020-07-19 | 2023-07-18 |
| MXE EMI Receiver (20Hz-8.4GHz) | Agilent Technologies | N9038A | SEM004-15 | 2020-11-01 | 2021-10-31 |
| BiConiLog Antenna (26-3000MHz) | ETS-LINDGREN | 3142C | SEM003-01 | 2020-06-25 | 2023-06-24 |
| Pre-amplifier (0.1-1300MHz) | Agilent Technologies | 8447D | SEM005-01 | 2020-04-30 | 2021-04-29 |
| Measurement Software | AUDIX | e3 V8.2014-6-27 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM025-01 | 2020-07-09 | 2021-07-08 |
| Audio Analyzer | Rohde & Schwarz | UPL | SEM008-02 | 2020-04-13 | 2021-04-12 |
| Substitution Antenna | ETS-Lindgren | 3142C | SEM003-01 | 2020-06-25 | 2023-06-24 |
| Signal Generator | R&S | SMA100A | 102174 | 2020-07-09 | 2021-07-08 |

| Modulation characteristics | | | | | |
|---|---|---|---|---|---|
| **Test Equipment** | **Manufacturer** | **Model No.** | **Inventory No.** | **Cal. Date (yyyy-mm-dd)** | **Cal. Due date (yyyy-mm-dd)** |
| Shielding Room | SAEMC | MSR733 | SEM001-09 | 2019-06-13 | 2022-06-12 |
| DC Power Supply | ZhaoXin | PS-3005D | SEM011-05 | 2020-09-22 | 2021-09-21 |
| Spectrum Analyzer (20Hz-43GHz) | Rohde & Schwarz | FSU43 | SEM004-08 | 2020-04-01 | 2021-03-31 |
| Signal Generator (9kHz-40GHz) | KEYSIGHT | N5173B | SEM006-05 | 2020-09-26 | 2021-09-25 |
| Measurement Software | JS Tonscend | JS1120-2 BT/WIFI V2.6 | N/A | N/A | N/A |
| Audio Analyzer | Rohde & Schwarz | UPL | SEM008-02 | 2020-04-13 | 2021-04-12 |
| Coaxial Cable | SGS | N/A | SEM031-01 | 2020-07-10 | 2021-07-09 |
| Attenuator | Huber+Suhner | 6620_SMA-50-1 | SEM021-09 | N/A | N/A |
| Programmable Temperature & Humidity Chamber | Votsch Industrietechnik GmbH | VT 4002 | SEM002-15 | 2020-03-25 | 2021-03-24 |


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**Frequency Stability**

| Test Equipment | Manufacturer | Model No. | Inventory No. | Cal. Date (yyyy-mm-dd) | Cal. Due date (yyyy-mm-dd) |
|---|---|---|---|---|---|
| Shielding Room | SAEMC | MSR733 | SEM001-09 | 2019-06-13 | 2022-06-12 |
| DC Power Supply | ZhaoXin | PS-3005D | SEM011-05 | 2020-09-22 | 2021-09-21 |
| Spectrum Analyzer (20Hz-43GHz) | Rohde & Schwarz | FSU43 | SEM004-08 | 2020-04-01 | 2021-03-31 |
| Signal Generator (9kHz-40GHz) | KEYSIGHT | N5173B | SEM006-05 | 2020-09-26 | 2021-09-25 |
| Measurement Software | JS Tonscend | JS1120-2 BT/WIFI V2.6 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM031-01 | 2020-04-13 | 2021-04-12 |
| Attenuator | Huber+Suhner | 6620_SMA-50-1 | SEM021-09 | 2020-07-10 | 2021-07-09 |
| Programmable Temperature & Humidity Chamber | Votsch Industrietechnik GmbH | VT 4002 | SEM002-15 | N/A | N/A |

**Occupied Bandwidth**

| Test Equipment | Manufacturer | Model No. | Inventory No. | Cal. Date (yyyy-mm-dd) | Cal. Due date (yyyy-mm-dd) |
|---|---|---|---|---|---|
| Shielding Room | SAEMC | MSR733 | SEM001-09 | 2019-06-13 | 2022-06-12 |
| DC Power Supply | ZhaoXin | PS-3005D | SEM011-05 | 2020-09-22 | 2021-09-21 |
| Spectrum Analyzer (20Hz-43GHz) | Rohde & Schwarz | FSU43 | SEM004-08 | 2020-04-01 | 2021-03-31 |
| Signal Generator (9kHz-40GHz) | KEYSIGHT | N5173B | SEM006-05 | 2020-09-26 | 2021-09-25 |
| Measurement Software | JS Tonscend | JS1120-2 BT/WIFI V2.6 | N/A | N/A | N/A |
| Audio Analyzer | Rohde & Schwarz | UPL | SEM008-02 | 2020-04-13 | 2021-04-12 |
| Coaxial Cable | SGS | N/A | SEM031-01 | 2020-07-10 | 2021-07-09 |
| Attenuator | Huber+Suhner | 6620_SMA-50-1 | SEM021-09 | N/A | N/A |
| Programmable Temperature & Humidity Chamber | Votsch Industrietechnik GmbH | VT 4002 | SEM002-15 | 2020-03-25 | 2021-03-24 |

| Radiated Emissions | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No** | **Inventory No** | **Cal Date** | **Cal Due Date** |
| 3m Semi-Anechoic Chamber | AUDIX | N/A | SEM001-02 | 2018-03-13 | 2021-03-12 |
| Measurement Software | AUDIX | e3 V8.2014-6-27 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM026-01 | 2020-07-10 | 2021-07-09 |
| EXA Spectrum Analyzer | AgilentTechnologies Inc | N9010A | SEM004-12 | 2020-04-09 | 2021-04-08 |
| Horn Antenna | Rohde & Schwarz | HF907 | SEM003-07 | 2018-04-13 | 2021-04-12 |
| Horn Antenna | Schwarzbeck | BBHA 9170 | SEM003-15 | 2017-10-17 | 2020-10-16 |
| | | | | 2020-10-16 | 2023-10-15 |
| Pre-Amplifier | Compliance Directions Systems Inc. | PAP-0126 | SEM004-11 | 2020-09-23 | 2021-09-22 |
| Pre-amplifier | Rohde & Schwarz | CH14-H052 | SEM005-17 | 2020-04-01 | 2021-03-31 |
| Pre-amplifier | Compliance Directions Systems Inc. | PAP-2640-50 | SEM005-08 | 2020-04-01 | 2021-03-31 |
| DC Power Supply | Zhao Xin | KXN-6020D | SEM011-08 | 2020-09-23 | 2021-09-22 |

| Radiated Emissions (30MHz-1GHz) | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No** | **Inventory No** | **Cal Date** | **Cal Due Date** |
| 3m Semi-Anechoic Chamber | ETS-LINDGREN | N/A | SEM001-01 | 2020-07-19 | 2023-07-18 |
| Measurement Software | AUDIX | e3 V8.2014-6-27 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM025-01 | 2020-07-10 | 2021-07-09 |
| MXE EMI receiver | KEYSIGHT | N9038A | SEM004-15 | 2019-11-03 | 2020-11-02 |
| | | | | 2020-11-01 | 2021-10-30 |
| BiConiLog Antenna | ETS-LINDGREN | 3142C | SEM003-02 | 2019-05-24 | 2022-05-23 |
| Pre-amplifier | Agilent Technologies | 8447D | SEM005-01 | 2020-04-01 | 2021-03-31 |


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| General used equipment | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No** | **Inventory No** | **Cal Date** | **Cal Due Date** |
| Humidity/ Temperature Indicator | Shanghai Meteorological Industry Factory | ZJ1-2B | SEM002-04 | 2020-09-15 | 2021-09-14 |
| Humidity/ Temperature Indicator | Mingle | N/A | SEM002-08 | 2020-09-15 | 2021-09-14 |
| Barometer | Changchun Meteorological Industry Factory | DYM3 | SEM002-01 | 2020-04-07 | 2021-04-06 |

# 6 Radio Spectrum Technical Requirement

## 6.1 Antenna Requirement

### 6.1.1 Test Requirement:

47 CFR Part 95, Subpart B 95.587(b)

### 6.1.2 Conclusion

95.587(b) Requirement:

The antenna of each FRS transmitter type must meet the following requirements.

(1) The antenna must be a non-removable integral part of the FRS transmitter type.

(2) The gain of the antenna must not exceed that of a half-wave dipole antenna.

(3) The antenna must be designed such that the electric field of the emitted waves is vertically polarized when the unit is operated in the normal orientation.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The antenna gain is 0dBi (as compared to a half-wave dipole) and with vertically polarized.

# 7 Radio Spectrum Matter Test Results

## 7.1 Frequency Stability

Test Requirement 47 CFR FCC Part 95.565

Test Method: ANSI/TIA-603-E:2016

Limit: For FCC Part 95.565:

Each FRS transmitter type must be designed such that the carrier frequencies remain within ±2.5 parts-per-million of the channel center frequencies

specified in §95.563 during normal operating conditions.

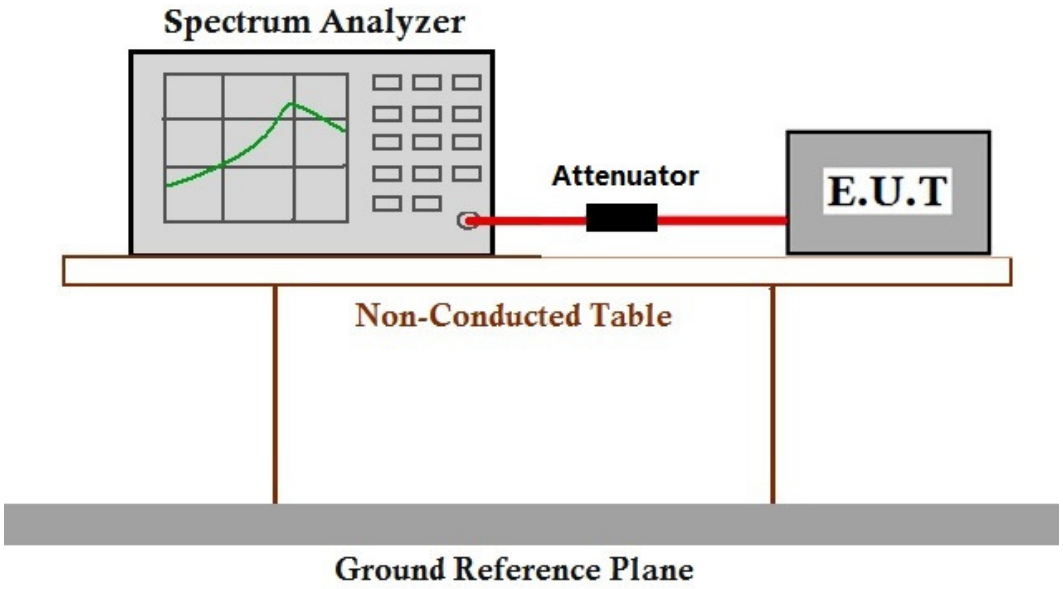
### 7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24.8 °C Humidity: 49.2 % RH Atmospheric Pressure: 1020 mbar

Test mode: a: Tx mode, Keep the EUT in transmitting mode.

### 7.1.2 Test Setup Diagram




### 7.1.3 Measurement Procedure and Data

| Assigned Frequency:462.5625MHz | | | | | | |
|---|---|---|---|---|---|---|
| Voltage(V) | Temperature (℃) | Measured Frequency(MHz) | Frequency Deviation(ppm) | FCC Limit (ppm) | IC Limit (ppm) | Result |
| 6.0 | -30 | 462.5631 | 1.30 | ±2.5 | ±5 | Pass |
| | -20 | 462.5631 | 1.30 | | | |
| | -10 | 462.5630 | 1.08 | | | |
| | 0 | 462.5630 | 1.08 | | | |
| | 10 | 462.5629 | 0.86 | | | |
| | 20 | 462.5629 | 0.86 | | | |
| | 30 | 462.5629 | 0.86 | | | |
| | 40 | 462.5631 | 1.30 | | | |
| | 50 | 462.5631 | 1.30 | | | |
| 6.9 | 20 | 462.5629 | 0.86 | | | |
| 5.1 | 20 | 462.5630 | 1.08 | | | |

| Assigned Frequency:467.7125MHz | | | | | | |
|---|---|---|---|---|---|---|
| Voltage(V) | Temperature (℃) | Measured Frequency(MHz) | Frequency Deviation(ppm) | FCC Limit (ppm) | IC Limit (ppm) | Result |
| 6.0 | -30 | 467.7124 | 0.21 | ±2.5 | ±5 | Pass |
| | -20 | 467.7121 | 0.86 | | | |
| | -10 | 467.7121 | 0.86 | | | |
| | 0 | 467.7122 | 0.64 | | | |
| | 10 | 467.7124 | 0.21 | | | |
| | 20 | 467.7123 | 0.43 | | | |
| | 30 | 467.7121 | 0.86 | | | |
| | 40 | 467.7121 | 0.86 | | | |
| | 50 | 467.7122 | 0.64 | | | |
| 6.9 | 20 | 467.7126 | -0.21 | | | |
| 5.1 | 20 | 467.7127 | -0.43 | | | |

## 7.2 Effective Radiated Power (ERP)

Test Requirement 47 CFR FCC Part95.567 & FCC Part2.1046;

Test Method: ANSI/TIA-603-E:2016

Measurement Distance: 3m

Test instrumentation resolution bandwidth 100 kHz (30 MHz - 1000 MHz)

Limit:

For FCC Part 95.567:

Each FRS transmitter type must be designed such that the effective radiated power (ERP) on channels 8 through 14 does not exceed 0.5 Watts and the ERP on channels 1 through 7 and 15 through 22 does not exceed 2.0 Watts.

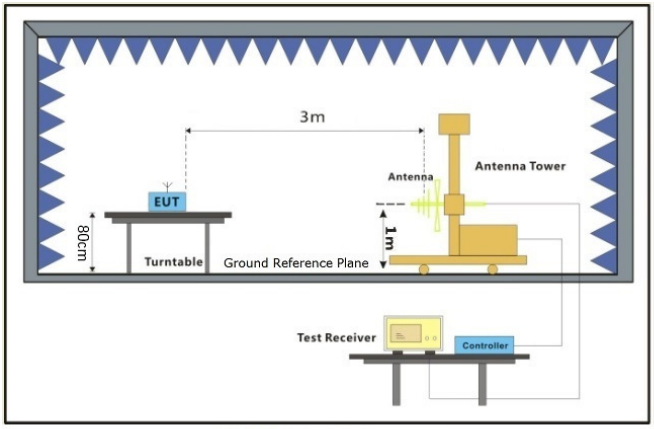
### 7.2.1 E.U.T. Operation

Operating Environment:

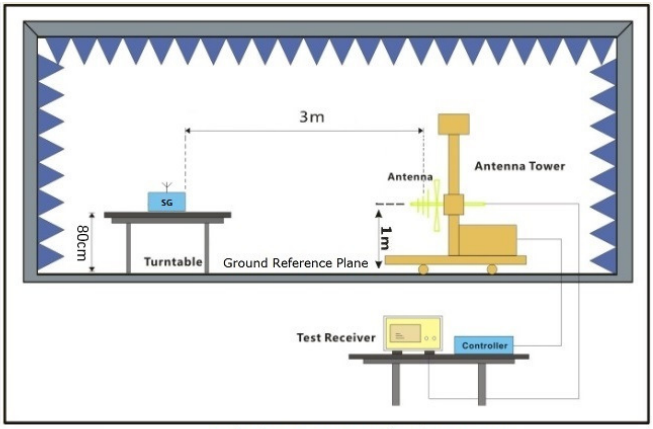
Temperature: 24.8 °C Humidity: 49.3 % RH Atmospheric Pressure: 1020 mbar

Test mode: a: Tx mode, Keep the EUT in transmitting mode.

### 7.2.2 Test Setup Diagram




EUT




Substiute Antenna+Signal Generator

### 7.2.3 Measurement Procedure and Data

The technique used to find the output power of the transmitter was the antenna substitution method. The following test procedure was followed:

1). The EUT was powered ON and placed on a 0.8m high table in the chamber. The antenna of the transmitter was extended to its maximum length.

2). The disturbance of the transmitter was maximized on the test receiver display by lowering 1m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.

3). Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.

4). The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.

5). A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 2) is obtained for this set of conditions.

6). The output power into the substitution antenna was then measured.

7). Steps 5) and 6) were repeated with both antennas polarized.

8). Calculate power in dBm by the following formula:

ERP (dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd)

Where:

Pg is the generator output power into the substitution antenna.

**Test result:**

**Effective Radiated Power of Transmitter (ERP)**

| Freq. (MHz) | SGP (dBm) | Substitution Gain(dBd) | Cable Loss (dB) | Substitution Level(ERP) / dBm | Substitution Level(ERP) / W | FCC Limit (W) | Result |
|---|---|---|---|---|---|---|---|
| 462.5625 | 28.6 | -4.9 | 0.6 | 23.1 | 0.204 | 2.0 | Pass |
| 467.7125 | 28.0 | -4.9 | 0.6 | 22.5 | 0.178 | 0.5 | Pass |

Note:

a: For getting the ERP (Efficient Radiated Power) in substitution method, the following formula should be taken to calculate it:

ERP [dBm] = SGP [dBm] – Cable Loss [dB] + Gain [dBd]

b: SGP=Signal Generator Level

c: RBW > emission bandwidth, VBW > 3 x RBW, Detector: RMS

d: Per FCC part95.563 FRS channel 1 is 462.5625MHz, channel 14 is 467.7125MHz.

## 7.3 Occupied Bandwidth

Test Requirement 47 CFR FCC Part 95.573 & FCC Part2.1049;

Test Method: ANSI/TIA-603-E:2016

Limit: For FCC Part 95.567:

Each FRS transmitter type must be designed such that the occupied bandwidth does not exceed 12.5 kHz.

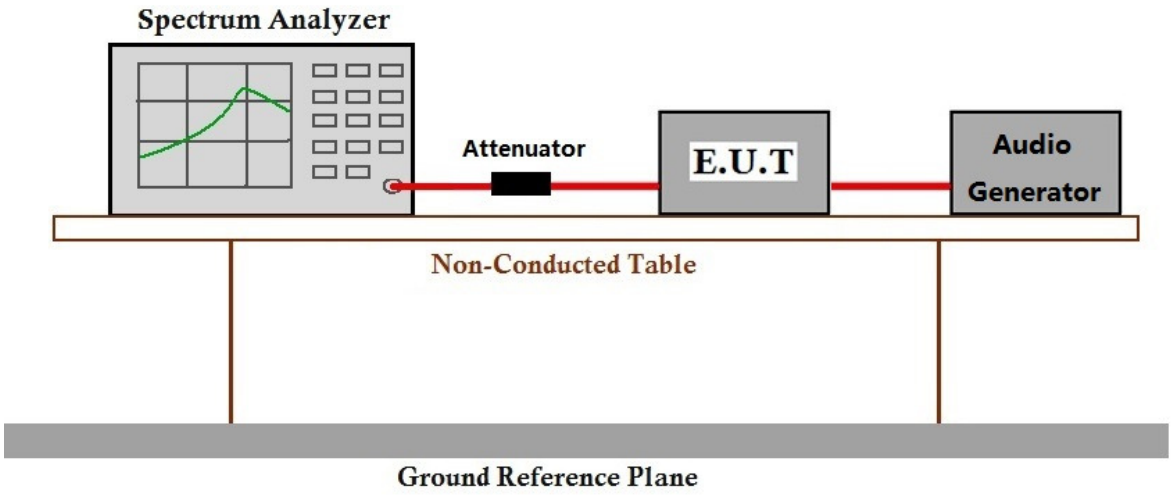
### 7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 24.8 °C Humidity: 49.2 % RH Atmospheric Pressure: 1020 mbar

Test mode: a: Tx mode, Keep the EUT in transmitting mode.

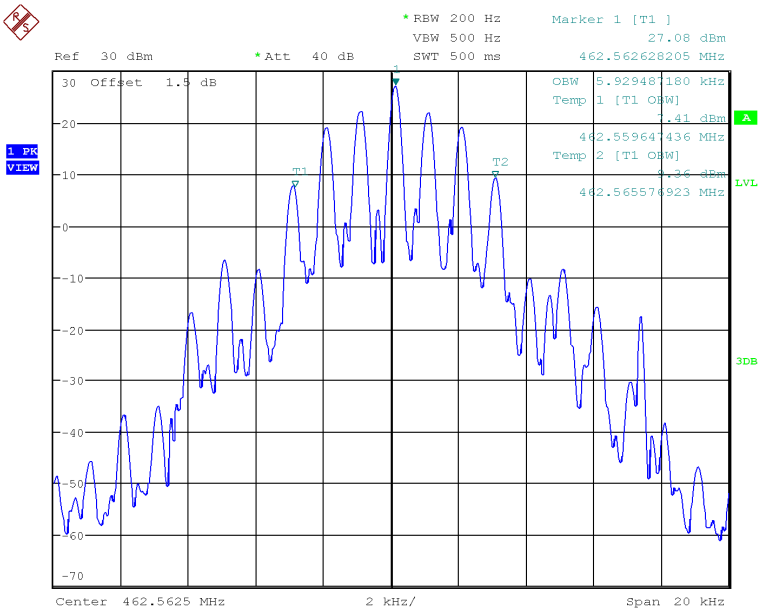
### 7.3.2 Test Setup Diagram



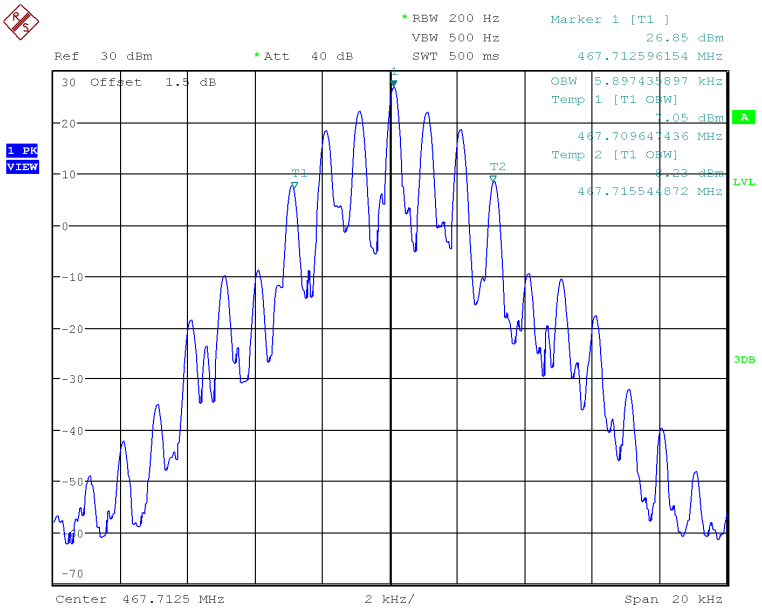

### 7.3.3 Measurement Procedure and Data

**Test result:**

The occupied Bandwidth is measured to be 5.93 kHz for channel1




The occupied Bandwidth is measured to be 5.90 kHz for channel14



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## 7.4 Modulation characteristics

Test Requirement 47 CFR FCC Part 95.575 & FCC Part2.1047;

Test Method: ANSI/TIA-603-E:2016

Limit: For FCC Part 95.575:

Each FRS transmitter type must be designed such that the peak frequency deviation does not exceed 2.5 kHz, and the highest audio frequency contributing substantially to modulation must not exceed 3.125 kHz.

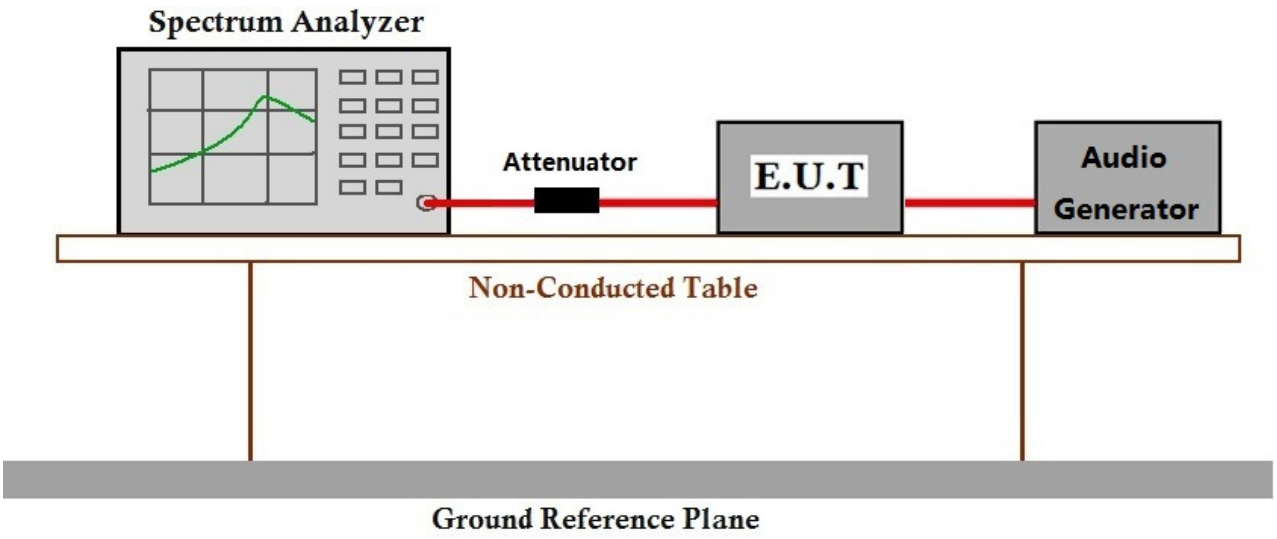
### 7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 24.8 °C Humidity: 49.2 % RH Atmospheric Pressure: 1020 mbar

Test mode: a: Tx mode, Keep the EUT in transmitting mode.

### 7.4.2 Test Setup Diagram




### 7.4.3 Measurement Procedure and Data

**Test result:**

**Frequency deviation**

Channel 1 For FRS

| Channel 1: 462.5625MHz FRS | | | | | |
|---|---|---|---|---|---|
| Modulation Input(dB) | Peak Frequency Deviation(KHz) at 300Hz | Peak Frequency Deviation(KHz) at 1000Hz | Peak Frequency Deviation(KHz) at 2500Hz | Peak Frequency Deviation(KHz) at 3000Hz | Limit (KHz) |
| -20 | 0.43 | 0.35 | 0.52 | 0.43 | 2.50 |
| -15 | 0.47 | 0.56 | 0.59 | 0.2 | 2.50 |
| -10 | 0.6 | 0.79 | 0.73 | 0.44 | 2.50 |
| -5 | 0.97 | 0.82 | 0.41 | 0.55 | 2.50 |
| 0 | 1.01 | 0.8 | 0.81 | 0.58 | 2.50 |
| 5 | 0.93 | 1.3 | 0.41 | 0.52 | 2.50 |
| 10 | 1.36 | 1.39 | 0.55 | 0.71 | 2.50 |
| 15 | 1.45 | 0.95 | 0.67 | 0.62 | 2.50 |
| 20 | 1.31 | 1.63 | 0.45 | 0.44 | 2.50 |

Channel 14 For FRS

| Channel 14: 467.7125MHz FRS | | | | | |
|---|---|---|---|---|---|
| Modulation Input(dB) | Peak Frequency Deviation(KHz) at 300Hz | Peak Frequency Deviation(KHz) at 1000Hz | Peak Frequency Deviation(KHz) at 2500Hz | Peak Frequency Deviation(KHz) at 3000Hz | Limit (KHz) |
| -20 | 0.57 | 0.50 | 0.57 | 0.54 | 2.50 |
| -15 | 0.51 | 0.58 | 0.73 | 0.13 | 2.50 |
| -10 | 0.49 | 1.04 | 0.64 | 0.60 | 2.50 |
| -5 | 1.12 | 0.88 | 0.46 | 0.56 | 2.50 |
| 0 | 1.11 | 0.87 | 1.05 | 0.77 | 2.50 |
| 5 | 1.07 | 1.46 | 0.35 | 0.77 | 2.50 |
| 10 | 1.29 | 1.41 | 0.58 | 0.73 | 2.50 |
| 15 | 1.56 | 0.95 | 0.65 | 0.84 | 2.50 |
| 20 | 1.22 | 1.82 | 0.39 | 0.53 | 2.50 |

**Audio Frequency Response**

Channel 1 For FRS

| Modulation Frequency(Hz) | Peak Modulation Deviation(KHz) | Limit (KHz) |
|---|---|---|
| 100 | 0.38 | 3.125 |
| 200 | 0.94 | 3.125 |
| 300 | 0.93 | 3.125 |
| 400 | 1.09 | 3.125 |
| 500 | 1.24 | 3.125 |
| 600 | 1.61 | 3.125 |
| 700 | 1.43 | 3.125 |
| 800 | 1.5 | 3.125 |
| 900 | 1.44 | 3.125 |
| 1000 | 1.46 | 3.125 |
| 1250 | 1.44 | 3.125 |
| 1500 | 1.54 | 3.125 |
| 1750 | 1.33 | 3.125 |
| 2000 | 1.4 | 3.125 |
| 2250 | 1.32 | 3.125 |
| 2500 | 1.5 | 3.125 |
| 2750 | 1.51 | 3.125 |
| 3000 | 1.21 | 3.125 |
| 3125 | 1.14 | 3.125 |
| 3250 | 0.62 | 3.125 |
| 3500 | 0.46 | 3.125 |
| 4000 | 0.58 | 3.125 |
| 5000 | 0.42 | 3.125 |

Channel 14 For FRS

| Modulation Frequency(Hz) | Peak Modulation Deviation(KHz) | Limit (KHz) |
|---|---|---|
| 100 | 0.57 | 3.125 |
| 200 | 0.94 | 3.125 |
| 300 | 1.03 | 3.125 |
| 400 | 1.05 | 3.125 |
| 500 | 1.14 | 3.125 |
| 600 | 1.71 | 3.125 |
| 700 | 1.37 | 3.125 |
| 800 | 1.52 | 3.125 |
| 900 | 1.69 | 3.125 |
| 1000 | 1.43 | 3.125 |
| 1250 | 1.38 | 3.125 |
| 1500 | 1.49 | 3.125 |
| 1750 | 1.33 | 3.125 |
| 2000 | 1.32 | 3.125 |
| 2250 | 1.49 | 3.125 |
| 2500 | 1.41 | 3.125 |
| 2750 | 1.50 | 3.125 |
| 3000 | 1.12 | 3.125 |
| 3125 | 1.37 | 3.125 |
| 3250 | 0.68 | 3.125 |
| 3500 | 0.54 | 3.125 |
| 4000 | 0.53 | 3.125 |
| 5000 | 0.40 | 3.125 |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**Audio Low Pass Filter Frequency Response**

Channel 1 for FRS

| Frequency(KHz) | Response (dB) | Limit (KHz) |
|---|---|---|
| 1 | 0.00 | 0.00 |
| 2 | 0.00 | 0.00 |
| 3 | -5.15 | 0.00 |
| 4 | -10.61 | -8.52 |
| 5 | -15.86 | -13.64 |
| 6 | -19.48 | -18.75 |
| 7 | -24.39 | -22.16 |
| 8 | -28.61 | -25.57 |
| 9 | -31.08 | -28.98 |
| 10 | -34.25 | -32.29 |
| 20 | -54.91 | -49.43 |
| 30 | -55.21 | -50.00 |
| 40 | -55.08 | -50.00 |
| 50 | -54.9 | -50.00 |
| 60 | -55.3 | -50.00 |
| 70 | -55.18 | -50.00 |
| 80 | -55.31 | -50.00 |
| 90 | -54.95 | -50.00 |
| 100 | -55.15 | -50.00 |



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Channel 14 for FRS

| Frequency(KHz) | Response (dB) | Limit (KHz) |
|---|---|---|
| 1 | 0.00 | 0.00 |
| 2 | 0.00 | 0.00 |
| 3 | -5.07 | 0.00 |
| 4 | -10.69 | -8.52 |
| 5 | -15.97 | -13.64 |
| 6 | -19.34 | -18.75 |
| 7 | -24.35 | -22.16 |
| 8 | -28.43 | -25.57 |
| 9 | -31.19 | -28.98 |
| 10 | -34.26 | -32.29 |
| 20 | -54.69 | -49.43 |
| 30 | -55.26 | -50.00 |
| 40 | -55.18 | -50.00 |
| 50 | -54.92 | -50.00 |
| 60 | -55.05 | -50.00 |
| 70 | -55.24 | -50.00 |
| 80 | -55.18 | -50.00 |
| 90 | -54.99 | -50.00 |
| 100 | -55.04 | -50.00 |

**Modulation Limiting**

Channel 1 for FRS

| Audio Frequency(Hz) | Instantaneous | | Steady-state | | Limit (KHz) |
|---|---|---|---|---|---|
| | Deviation (+20dB) (KHz) | Deviation (-20dB) (KHz) | Deviation (+20dB) (KHz) | Deviation (-20dB) (KHz) | |
| 300 | 0.812 | 0.342 | 0.572 | 0.372 | 2.5 |
| 400 | 0.912 | 0.204 | 0.945 | 0.274 | 2.5 |
| 500 | 0.915 | 0.155 | 0.419 | 0.262 | 2.5 |
| 600 | 0.648 | 0.163 | 0.614 | 0.302 | 2.5 |
| 700 | 0.873 | 0.112 | 1.018 | 0.024 | 2.5 |
| 800 | 0.857 | 0.212 | 1.104 | 0.189 | 2.5 |
| 900 | 0.886 | 0.203 | 1.015 | 0.583 | 2.5 |
| 1000 | 1.386 | 0.215 | 0.952 | 0.126 | 2.5 |
| 1200 | 0.936 | 0.179 | 1.352 | 0.186 | 2.5 |
| 1400 | 1.366 | 0.243 | 1.594 | 0.232 | 2.5 |
| 1600 | 0.899 | 0.129 | 1.61 | 0.299 | 2.5 |
| 1800 | 0.288 | 0.318 | 0.677 | 0.068 | 2.5 |
| 2000 | 1.088 | 0.449 | 1.629 | 0.252 | 2.5 |
| 2200 | 1.858 | 0.269 | 1.713 | 0.443 | 2.5 |
| 2200 | 1.565 | 0.114 | 2.094 | 0.136 | 2.5 |
| 2300 | 1.649 | 0.239 | 1.469 | 0.36 | 2.5 |
| 2400 | 1.391 | 0.057 | 2.009 | 0.556 | 2.5 |
| 2500 | 1.056 | 0.233 | 1.483 | 0.29 | 2.5 |
| 2600 | 1.921 | 0.469 | 1.852 | 0.441 | 2.5 |
| 2700 | 1.069 | 0.343 | 1.645 | 0.175 | 2.5 |
| 2800 | 1.404 | 0.158 | 1.592 | 0.142 | 2.5 |
| 2900 | 1.355 | 0.085 | 1.612 | 0.055 | 2.5 |
| 3000 | 1.662 | 0.248 | 0.944 | 0.095 | 2.5 |

Channel 14 for FRS

| Audio Frequency(Hz) | Instantaneous | | Steady-state | | Limit (KHz) |
|---|---|---|---|---|---|
| | Deviation (+20dB) (KHz) | Deviation (-20dB) (KHz) | Deviation (+20dB) (KHz) | Deviation (-20dB) (KHz) | |
| 300 | 1.076 | 0.596 | 0.608 | 0.510 | 2.5 |
| 400 | 1.042 | 0.169 | 1.043 | 0.310 | 2.5 |
| 500 | 1.095 | 0.281 | 0.521 | 0.172 | 2.5 |
| 600 | 0.643 | 0.308 | 0.541 | 0.485 | 2.5 |
| 700 | 0.860 | 0.031 | 1.235 | 0.060 | 2.5 |
| 800 | 1.031 | 0.240 | 1.330 | 0.388 | 2.5 |
| 900 | 0.802 | 0.144 | 1.168 | 0.644 | 2.5 |
| 1000 | 1.287 | 0.197 | 0.897 | 0.169 | 2.5 |
| 1200 | 0.991 | 0.270 | 1.358 | 0.168 | 2.5 |
| 1400 | 1.366 | 0.228 | 1.730 | 0.496 | 2.5 |
| 1600 | 0.992 | 0.243 | 1.641 | 0.212 | 2.5 |
| 1800 | 0.428 | 0.426 | 0.868 | 0.107 | 2.5 |
| 2000 | 1.203 | 0.635 | 1.806 | 0.477 | 2.5 |
| 2200 | 1.990 | 0.440 | 1.843 | 0.608 | 2.5 |
| 2200 | 1.746 | 0.274 | 1.992 | 0.355 | 2.5 |
| 2300 | 1.614 | 0.316 | 1.533 | 0.254 | 2.5 |
| 2400 | 1.642 | 0.157 | 2.041 | 0.632 | 2.5 |
| 2500 | 0.950 | 0.403 | 1.397 | 0.552 | 2.5 |
| 2600 | 1.962 | 0.496 | 1.772 | 0.656 | 2.5 |
| 2700 | 1.034 | 0.596 | 1.605 | 0.164 | 2.5 |
| 2800 | 1.392 | 0.296 | 1.505 | 0.118 | 2.5 |
| 2900 | 1.457 | 0.247 | 1.670 | 0.111 | 2.5 |
| 3000 | 1.779 | 0.455 | 1.068 | 0.180 | 2.5 |



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## 7.5 Radiated Unwanted Emissions

Test Requirement 47 CFR FCC Part 95.579 & FCC Part2.1053;

Test Method: ANSI/TIA-603-E:2016

Measurement Distance: 3m

Resolution bandwidth =10 kHz for spurious emissions below 1 GHz, and 1 MHz for spurious emissions above 1GHz.

Video Bandwidth = 300 kHz for spurious emissions below 1 GHz, and 3 MHz for spurious emissions above 1 GHz.

Limit:

For FCC Part 95.579

Each FRS transmitter type must be designed to satisfy the applicable unwanted emissions limits in this paragraph.

(a) Attenuation requirements. The power of unwanted emissions must be attenuated below the carrier power output in Watts (P) by at least:

(1) 25 dB (decibels) in the frequency band 6.25 kHz to 12.5 kHz removed from the channel center frequency.

(2) 35 dB in the frequency band 12.5 kHz to 31.25 kHz removed from the channel center frequency.

(3) 43 + 10 log (P) dB in any frequency band removed from the channel center frequency by more than 31.25 kHz.

(b) Measurement bandwidths. The power of unwanted emissions in the frequency bands specified in paragraphs (a)(1) and (2) of this section is measured with a reference bandwidth of 300 Hz. The power of unwanted emissions in the frequency range specified in paragraph (a)(3) is measured with a reference bandwidth of at least 30 kHz.

(c) Measurement conditions. The requirements in this section apply to each FRS transmitter type both with and without the connection of permitted attachments, such as an external speaker, microphone and/or power cord.

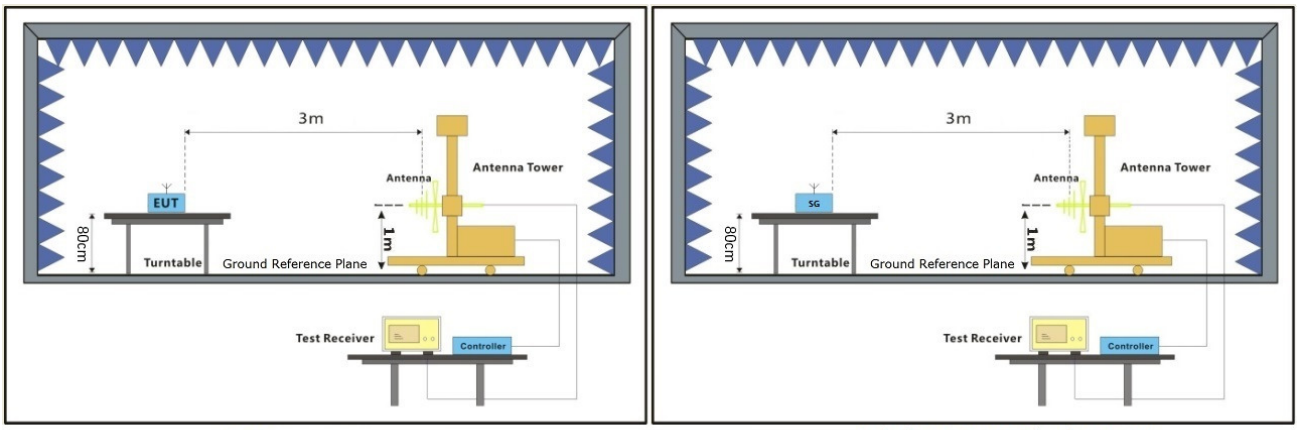
### 7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23.1 °C Humidity: 48 % RH Atmospheric Pressure: 1020 mbar

Test mode: a: Tx mode, Keep the EUT in transmitting mode.

### 7.5.2 Test Setup Diagram




EUT

Substiute Antenna+Signal Generator

### 7.5.3 Measurement Procedure and Data

**Test Procedure:**

(1)On a test site, the EUT shall be placed on a turntable and in the position closest to the normal use as declared by the user.
(2)The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.
(3)The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
(4)The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
(5)The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.
(6)The transmitter shall than be rotated through 360°in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
(7)The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.
(8)The maximum signal level detected by the measuring receiver shall be noted.
(9)The measurement shall be repeated with the test antenna set to horizontal polarization.
(10) Replace the antenna with a proper Antenna (substitution antenna).
(11)The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.
(12)The substitution antenna shall be connected to a calibrated signal generator.
(13)If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
(14)The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
(15)The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
(16)The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
(17)The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.



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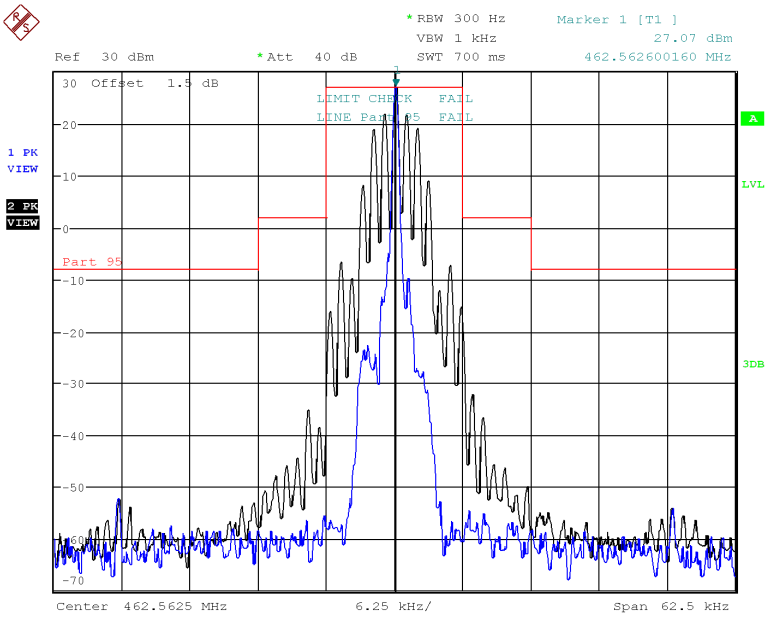
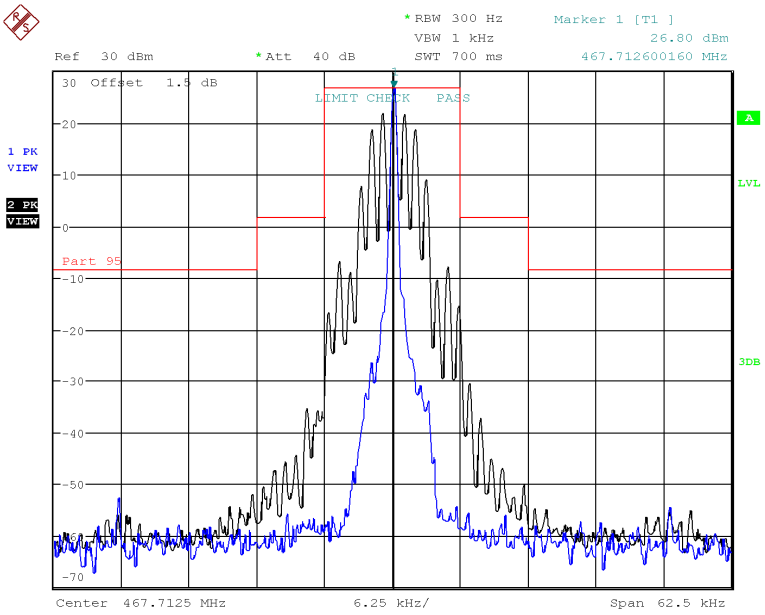
Test plot for channel1:462.5625MHz.




Test plot for channel14:467.7125MHz.



| Frequency MHz | Polarity H/V | Emission Level dBm | Limit dBm | Margin dBm |
|---|---|---|---|---|
| 924.924 | V | -17.15 | -13.00 | -4.15 |
| 1387.235 | V | -22.46 | -13.00 | -9.46 |
| 1850.113 | V | -24.49 | -13.00 | -11.49 |
| 2312.291 | V | -26.95 | -13.00 | -13.95 |
| 2775.33 | V | -25.81 | -13.00 | -12.81 |
| 925.256 | H | -29.38 | -13.00 | -16.38 |
| 1387.264 | H | -31.06 | -13.00 | -18.06 |
| 1850.345 | H | -29.27 | -13.00 | -16.27 |
| 2312.242 | H | -28.29 | -13.00 | -15.29 |
| 2775.471 | H | -27.45 | -13.00 | -14.45 |

| Frequency MHz | Polarity H/V | Emission Level dBm | Limit dBm | Margin dBm |
|---|---|---|---|---|
| 924.707 | V | -17.35 | -13.00 | -4.35 |
| 1387.054 | V | -22.64 | -13.00 | -9.64 |
| 1849.912 | V | -24.72 | -13.00 | -11.72 |
| 2312.103 | V | -27.18 | -13.00 | -14.18 |
| 2775.151 | V | -26.01 | -13.00 | -13.01 |
| 925.062 | H | -29.61 | -13.00 | -16.61 |
| 1387.096 | H | -31.27 | -13.00 | -18.27 |
| 1850.135 | H | -29.46 | -13.00 | -16.46 |
| 2312.021 | H | -28.47 | -13.00 | -15.47 |
| 2775.308 | H | -27.65 | -13.00 | -14.65 |

Note: Margin = Emission level – Limit.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# 8 Photographs

## 8.1 Test Setup

Refer to test setup photos.

## 8.2 EUT Constructional Details

Refer to external and internal photos.

- End of the Report -



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