# FCC Part 95 Rules
# Test Report

Report No.: AGC07629170501FE10

| | | |
|---|---|---|
| **FCC ID** | : | 2AMEA-T38 |
| **BRAND NAME** | : | YYT |
| **MODEL NAME** | : | T38, T48, T899, T668, T98 |
| **CLIENT** | : | GLOBAL MEI CHUANG CO., LIMITED |
| **DATE OF ISSUE** | : | Jun, 01,2017 |
| **STANDARD(S)** | : | FCC Part 95 Rules |
| **REPORT VERSION** | : | V 1.0 |

***A***ttestation of ***G***lobal ***C***ompliance (Shenzhen) Co., Ltd

**Report Revise Record**

| Report Version | Revise Time | Issued Date | Valid Version | Notes |
|---|---|---|---|---|
| V1.0 | / | Jun, 01,2017 | Valid | Original Report |

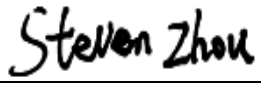
## VERIFICATION OF COMPLIANCE

| | |
|---|---|
| **Applicant:** | GLOBAL MEI CHUANG CO., LIMITED |
| | 2nd Floor, F Building, Yujie Industrial Park, Qiuchang, Huiyang, Huizhou, Guangdong, China |
| **Manufacturer:** | Huizhou Huiyang Qiuchang YYT Electronics Manufacturer |
| | 2nd Floor, F Building, Yujie Industrial Park, Qiuchang, Huiyang, Huizhou, Guangdong, China |
| **Product Designation:** | Walkie Talkie |
| **Brand Name:** | YYT |
| **Test Model** | T38 |
| **Series Model** | T48, T899, T668, T98 |
| **Difference description** | All the same except for the model name. |
| **Date of Test:** | May.25, 2017 to Jun, 01,2017 |

## WE HEREBY CERTIFY THAT:

The above equipment was tested by Dongguan Precise Testing Service Co., Ltd. The data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA/EIA 603. The sample tested as described in this report is in compliance with the FCC Rules Part 95 requirements

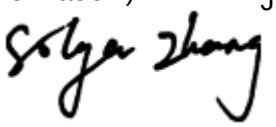
The test results of this report relate only to the tested sample identified in this report.

Tested by 

Steven Zhou(Zhou Pengyun) Jun, 01,2017

Reviewed by 

Bart Xie(Xie Xiaobin) Jun, 01,2017

Approved by 

Solger Zhang(Zhang Hongyi) Jun, 01,2017
Authorized Officer

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# 1. GENERAL INFORMATION

## 1.1 PRODUCT DESCRIPTION

The EUT is a **ANALOG RADIO** designed for voice communication. It is designed by way of utilizing the FM modulation achieves the system operating.

A major technical description of EUT is described as following:

| | |
|---|---|
| Hardware Version | PCB V03 |
| Software Version | VOXV4A |
| Modulation | FM |
| Channel Separation | 12.5KHz |
| Emission Type | 11K0F3E |
| Emission Bandwidth | 10.80KHz |
| Maximum Transmitter Power | 25.56 dBm |
| Output power Modification | 0.5W<br>(It was fixed by the manufacturer, any individual can't arbitrarily change it.) |
| Antenna Designation | Inseparable |
| Power Supply | DC 3*1.2V, 800mAh (by battery) |
| Limiting Voltage | DC 3.06 V-4.14 V |
| Operation Frequency Range and Channel | Frequency Range: 462 MHz |
| | GMRS/FRS: 462.5625MHz to 462.7125MHz<br>FRS: 467.5625MHz to 467.7125MHz<br>GMRS: 462.5500MHz to 462.7250MHz<br>Channel 1,2,3,4,5,6&7 are common channels for GMRS&FRS |
| Frequency Tolerance | 1.074ppm |

**Channel List:**

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

### 1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for FCC ID: 2AMEA-T38, filing to comply with the FCC Part 95 requirements.

### 1.3 TEST METHODOLOGY.

The radiated emission testing was performed according to the procedures of TIA/EIA 603.

### 1.4 TEST FACILITY

| | |
|---|---|
| **Site** | Dongguan Precise Testing Service Co., Ltd. |
| **Location** | Building D, Baoding Technology Park,Guangming Road2, Dongcheng District, Dongguan, Guangdong, China. |
| **Description** | The test site is constructed and calibrated to meet the FCC requirements in documents TIA/EIA 603 |
| **FCC Registration No.** | 371540 |

### 1.5 SPECIAL ACCESSORIES

Not available for this EUT intended for grant.

### 1.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

# 2. SYSTEM TEST CONFIGURATION

## 2.1 EUT CONFIGURATION

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

## 2.2 EUT EXERCISE

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

## 2.4 CONFIGURATION OF TESTED SYSTEM

Fig. 2-1 Configuration of Tested System


Table 2-1 Equipment Used in Tested System

| Item | Equipment | Model No. | Identifier | Note |
|---|---|---|---|---|
| 1 | Walkie Talkie | T38 | FCC ID: 2AMEA-T38 | EUT |

# 3. SUMMARY OF TEST RESULTS

| FCC Rules | Description Of Test | Result |
|---|---|---|
| § 95.639(a)(d) | Maximum Transmitter Power | Compliant |
| § FCC part 2.1047(a)<br>§ 95.637(a)(b) | Modulation Characteristics | Compliant |
| § FCC part 2.1049<br>§ 95.633(a)(c)<br>§ 95.635(b)(1)(3)(7) | Occupied Bandwidth and Emission Mask | Compliant |
| § FCC Part 2.1055<br>§ 95.621(b)<br>§ 95.626(b) | Frequency Stability | Compliant |
| § 95.635(b7) | Transmitter Radiated Spurious Emission | Compliant |

**LIST OF EQUIPMENTS USED**

| NAME OF EQUIPMENT | MANUFACTURER | MODEL | SERIAL NO. | Cal. Date | Cal. Due |
|---|---|---|---|---|---|
| CLIMATE CHAMBER | EXPERY | TN-400 | TN2007SR038 | 2016.07.02 | 2017.07.01 |
| ATTENUATOR | WEINSCHEL CORP | 58-30-33 | ML030 | 2016.07.02 | 2017.07.01 |
| DC POWER SUPPLY | ZHAOXIN | RXN-605D | N/A | 2016.07.02 | 2017.07.01 |
| MODULATION ANALYZER | HP | 8920B | 3104A03367 | 2016.07.02 | 2017.07.01 |
| SIGNAL GENERATOR | AGILENT | E4421B | 122501288 | 2016.07.03 | 2017.07.02 |
| SIGNAL GENERATOR | R&S | SMT03 | A0304261 | 2016.07.03 | 2017.07.02 |
| EMI Test Receiver | Rohde & Schwarz | ESCI | 101417 | 2016.07.03 | 2017.07.02 |
| Trilog Broadband Antenna | SCHWARZBECK | VULB9160 | 9160-3355 | 2016.07.03 | 2017.07.02 |
| Substitution Antenna | SCHWARZBECK | VULB9160 | 9168-494 | 2016.07.03 | 2017.07.02 |
| Signal Amplifier | SCHWARZBECK | BBV 9475 | 9745-0013 | 2016.07.03 | 2017.07.02 |
| RF Cable | SCHWARZBECK | AK9515E | 96221 | 2016.07.03 | 2017.07.02 |
| 3m Anechoic Chamber | CHENGYU | 966 | PTS-001 | 2016.06.03 | 2017.06.02 |
| MULTI-DEVICE Positioning Controller | Max-Full | MF-7802 | MF780208339 | N/A | N/A |
| Active loop antenna (9K-30MHz) | Schwarzbeck | FMZB1519 | 1519-038 | 2016.06.03 | 2017.06.02 |
| Spectrum analyzer | Agilent | E4407B | MY46185649 | 2016.06.03 | 2017.06.02 |
| Double-Ridged Waveguide Horn | ETS LINDGREN | 3117 | 00034609 | 2016.06.03 | 2017.06.02 |
| Substitution ANTENNA | EM | EM-AH-10180 | 67 | 2016.06.03 | 2017.06.02 |
| Modulation Domain Analyzer | HP | 53310A | 3121A02467 | 2016.06.03 | 2017.06.02 |
| EMI Test Receiver | Rohde & Schwarz | ESCI | 101417 | 2016.06.03 | 2017.06.02 |
| RF Cable | SCHWARZBECK | AK9515E | 96222 | 2016.06.03 | 2017.06.02 |
| Shielded Room | CHENGYU | 843 | PTS-002 | 2016.06.03 | 2017.06.02 |

Note: 8920B can generate audio modulation frequency.

4. DESCRIPTION OF TEST MODES

**RF TEST MODES**

The EUT (Walkie Talkie) has been tested under normal operating condition. (GMRS TX, FRS TX) are chosen for testing at each channel separation.

| No. | TEST MODES | CHANNEL SEPARATION |
|---|---|---|
| 1 | GMRS TX | 12.5 KHz |
| 2 | FRS TX | 12.5 KHz |

**Note:** Only the result of the worst case was recorded in the report.

# 5. FREQUENCY TOLERANCE

## 5.1 PROVISIONS APPLICABLE

Standard Applicable [Part 95.621(b), Part 95.626(b)] The carrier frequency stability is the ability of the transmitter to maintain an assigned carrier frequency.
FCC Part 95.621(b), Part 95.626(b)
GMRS: The carrier frequency tolerance shall be better than ±5 ppm.
FRS: The carrier frequency tolerance shall be better than ±2.5 ppm.

## 5.2 MEASUREMENT PROCEDURE

### 5.2.1 Frequency stability versus environmental temperature

1. Setup the configuration per figure 1 for frequencies measurement inside an environment chamber, Install new battery in the EUT.
2. Turn on EUT and set SA center frequency to the EUT radiated frequency. Set SA Resolution Bandwidth to 1KHz and Video Resolution Bandwidth to 1KHz and Frequency Span to 50KHz.Record this frequency as reference frequency.
3. Set the temperature of chamber to 50℃. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the chamber, turn the EUT on and measure the EUT operating frequency.
4. Repeat step 2 with a 10℃ decreased per stage until the lowest temperature -30℃ is measured, record all measured frequencies on each temperature step.

### 5.2.2 Frequency stability versus input voltage

1. Setup the configuration per figure 1 for frequencies measured at temperature if it is within 15℃ to 25℃. Otherwise, an environment chamber set for a temperature of 20℃ shall be used. The EUT shall be powered by DC 3.6V.
2. Set SA center frequency to the EUT radiated frequency. Set SA Resolution Bandwidth to 1 KHz and Video Resolution Bandwidth to 1KHz. Record this frequency as reference frequency.
3. Supply the EUT primary voltage at the operating end point which is specified by manufacturer and record the frequency.

**5.3 TEST SETUP BLOCK DIAGRAM**

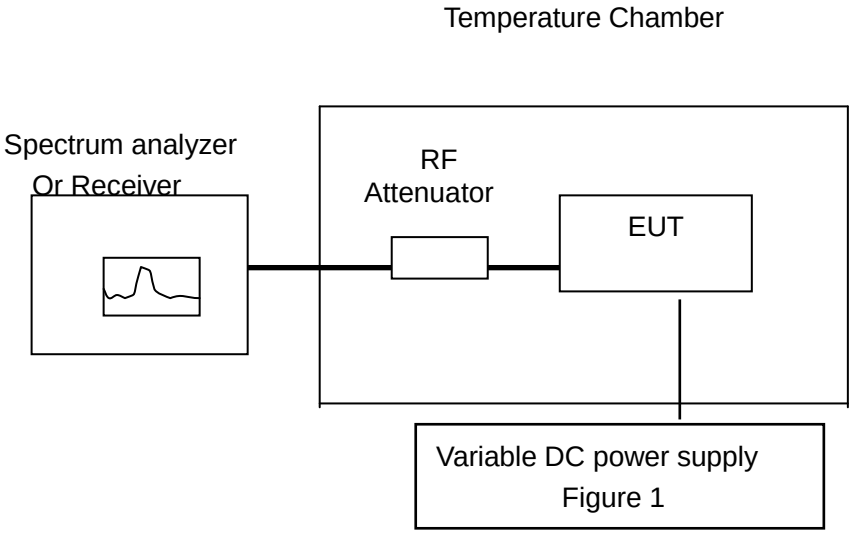



Figure 1

**5.4 TEST RESULT**

(1) Frequency stability versus input voltage (Supply nominal voltage is 3.60V)

| Environment | Power | Reference Frequency | | | Limit: |
|---|---|---|---|---|---|
| Temperature(℃) | (V) | 462.5625MHz | 467.6375MHz | 462.7250MHz | ppm |
| 50 | DC | 0.715 | 0.652 | 0.454 | ±5 for GMRS and ±2.5for FRS |
| 40 | DC | 0.686 | 0.649 | 0.879 | |
| 30 | DC | 0.529 | 0.536 | 0.723 | |
| 20 | DC | 0.851 | 0.575 | 0.662 | |
| 10 | DC | 0.763 | 0.449 | 0.715 | |
| 0 | DC | 0.727 | 0.586 | 0.796 | |
| -10 | DC | 0.826 | 0.726 | 0.515 | |
| -20 | DC | 0.886 | 0.861 | 0.781 | |
| -30 | DC | 0.692 | 0.575 | 0.563 | |
| Result | Pass | | | | |

(2) Frequency stability versus input voltage (Battery limiting voltage is 3.06V)

| Environment | Power | Reference Frequency | | | Limit: |
|---|---|---|---|---|---|
| Temperature(℃) | (V) | 462.5625MHz | 467.6375MHz | 462.7250MHz | ppm |
| 50 | DC 3.06 | 0.815 | 0.651 | 0.926 | ±5 for GMRS and ±2.5for FRS |
| 40 | DC 3.06 | 0.698 | 0.662 | 0.958 | |
| 30 | DC 3.06 | 0.886 | 1.074 | 0.962 | |
| 20 | DC 3.06 | 0.836 | 0.859 | 0.875 | |
| 10 | DC 3.06 | 0.778 | 0.874 | 0.816 | |
| 0 | DC 3.06 | 0.858 | 0.875 | 0.995 | |
| -10 | DC 3.06 | 0.874 | 0.685 | 1.048 | |
| -20 | DC 3.06 | 0.786 | 0.886 | 0.925 | |
| -30 | DC 3.06 | 0.419 | 0.952 | 0.856 | |
| Result | Pass | | | | |

(3) Frequency stability versus input voltage (Battery Fully Charged voltage is 4.14V)

| Environment | Power | Reference Frequency | | | Limit: |
|---|---|---|---|---|---|
| Temperature(℃) | (V) | 462.5625MHz | 467.6375MHz | 462.7250MHz | ppm |
| 50 | DC 4.14 | 0.875 | 0.762 | 0.625 | ±5 for GMRS and ±2.5for FRS |
| 40 | DC 4.14 | 0.784 | 0.884 | 0.732 | |
| 30 | DC 4.14 | 0.889 | 0.686 | 0.748 | |
| 20 | DC 4.14 | 0.655 | 0.819 | 0.825 | |
| 10 | DC 4.14 | 0.568 | 0.783 | 0.896 | |
| 0 | DC 4.14 | 0.579 | 0.651 | 0.915 | |
| -10 | DC 4.14 | 0.874 | 0.676 | 0.649 | |
| -20 | DC 4.14 | 0.758 | 0.884 | 0.516 | |
| -30 | DC 4.14 | 0.526 | 0.759 | 0.952 | |
| Result | Pass | | | | |

# 6. EMISSION BANDWIDTH

## 6.1 PROVISIONS APPLICABLE

95.633(a): GMRS: The authorized bandwidth for emission types H1D, J1D, R1D, H3E, J3E and R3E is 4 kHz; for emission typesA1D and A3E, it is 8 kHz; and for emission types F1D, G1D, F3E, G3E and F2D, it is 20 kHz.

FCC Part 95.633(c): FRS: The authorized bandwidth for an FRS unit is 12.5 kHz.
Occupied Bandwidth (Section 2.1049, 95.633(c)): The EUT was connected to the audio signal generator and the spectrum analyzer via the main RF connector, and through an appropriate attenuator. The EUT was controlled to transmit its maximum power. Then the bandwidth of 99% power can be measured by the spectrum analyzer.

## 6.2 MEASUREMENT PROCEDURE

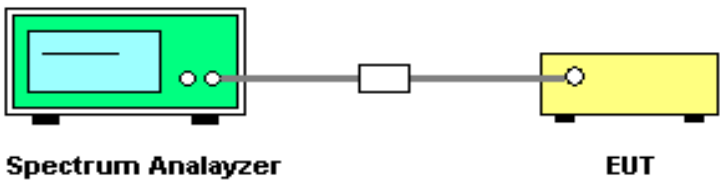
1). The EUT was placed on a turn table which is 0.8m above ground plane.

2). The EUT was modulated by 2.5 KHz Sine wave audio signal, The level of the audio signal employed is 16 dB greater than that necessary to produce 50% of rated system deviation. Rated system deviation is 2.5 kHz (12.5 kHz channel spacing).

3). Set SPA Center Frequency = fundamental frequency, RBW=100Hz.VBW= 300 Hz, Span =50 KHz.

4). Set SPA Max hold. Mark peak, -26 dB.

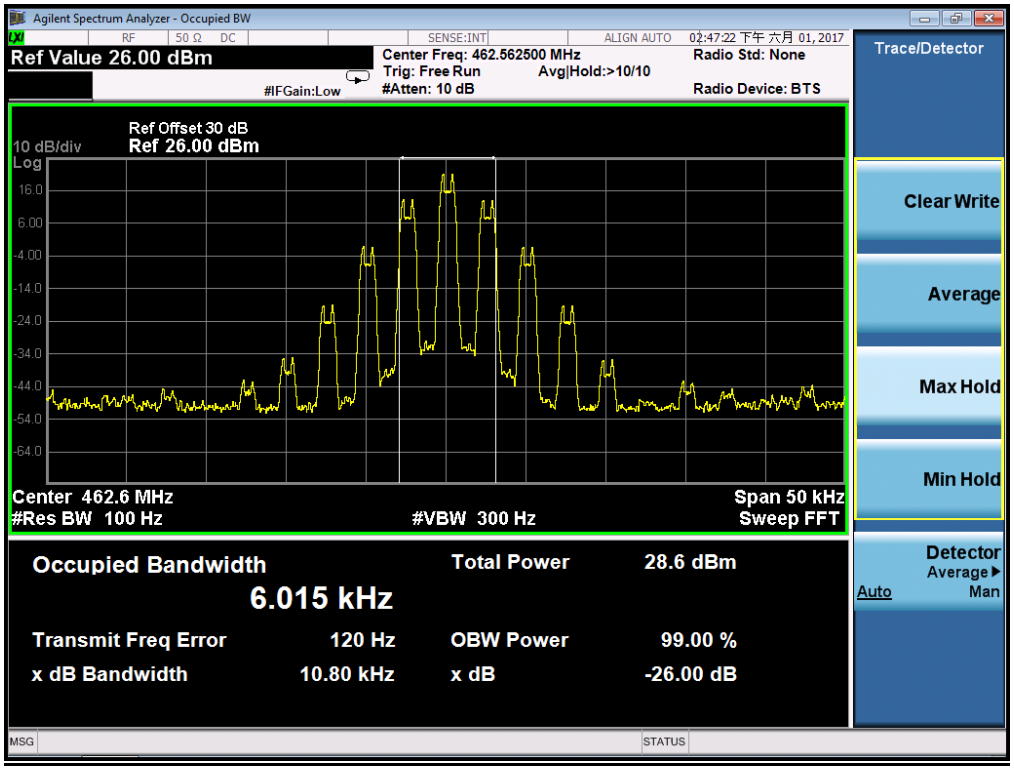
## 6.3 TEST SETUP BLOCK DIAGRAM



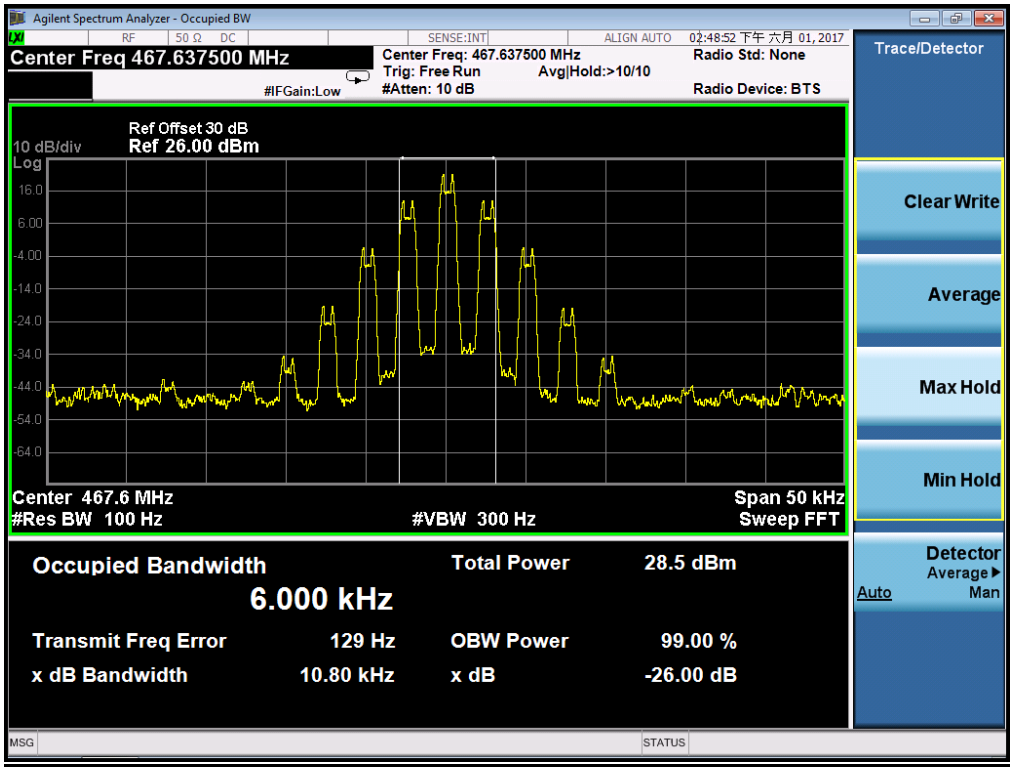
## 6.4 MEASUREMENT RESULT

| 26 dB Bandwidth Measurement Result | | | |
|---|---|---|---|
| Operating Frequency | 12.5 KHz Channel Separation | | |
| | Test Data | Limits | Result |
| 462.5625MHz | 10.80KHz | 20.00 KHz | Pass |
| 467.6375MHz | 10.80KHz | 11.25 KHz | Pass |
| 462.7250MHz | 10.79KHz | 20.00 KHz | Pass |

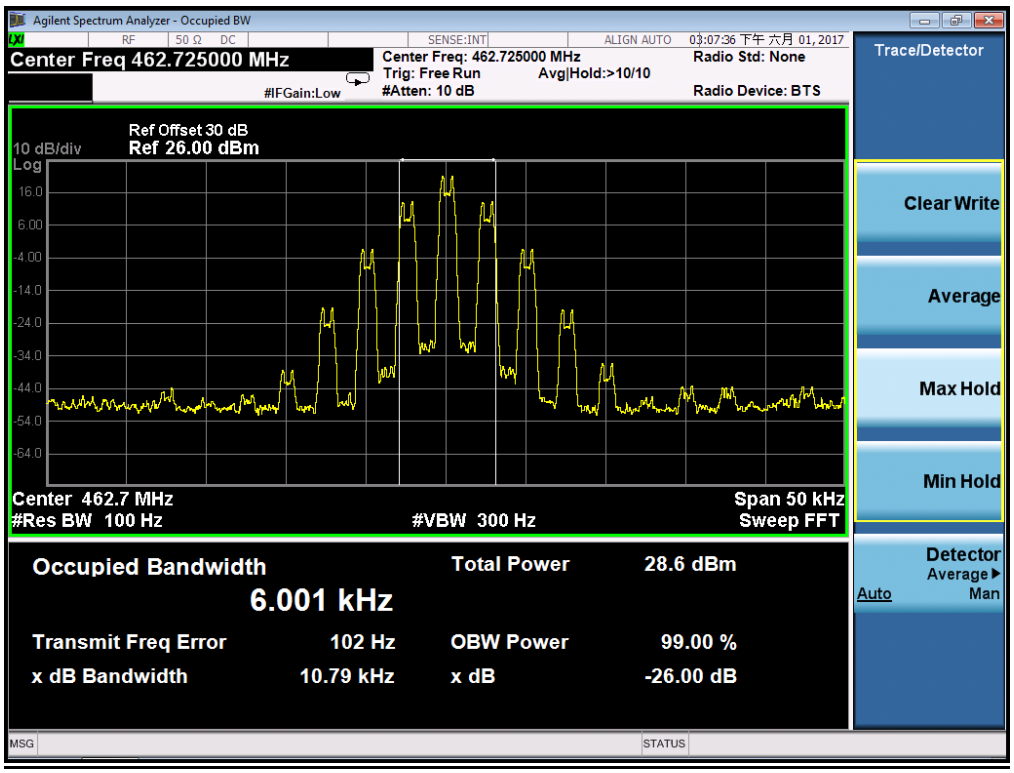
**Occupied bandwidth of Bottom Channel (Maximum)**



## Occupied bandwidth of Middle Channel (Maximum)




## Occupied bandwidth of Top Channel (Maximum)



# 7. UNWANTED RADIATION

## 7.1 PROVISIONS APPLICABLE

Standard Applicable [FCC Part 95.635(b7)]

According to FCC section 95.635(b7), the unwanted emission should be attenuated below TP by at least 43+10 log(Transmit Power) dB.

## 7.2 MEASUREMENT 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.

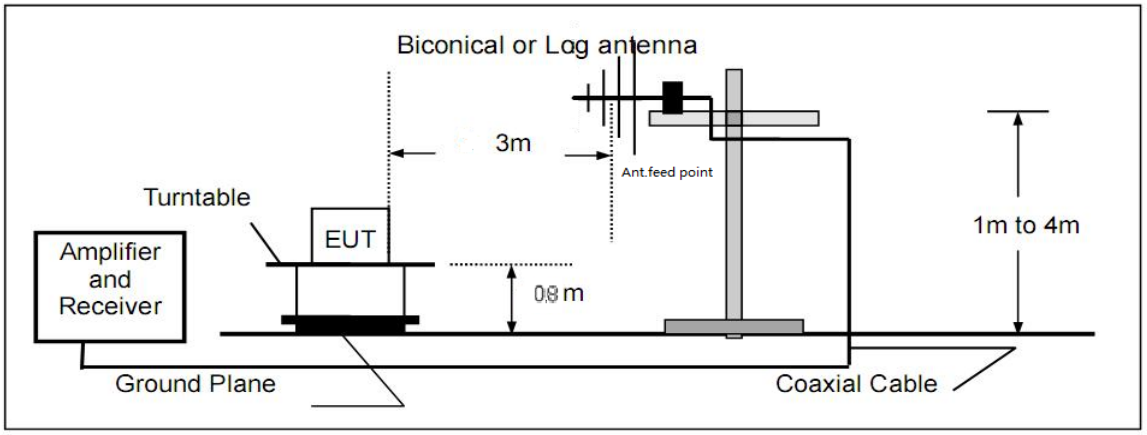
(16)The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.

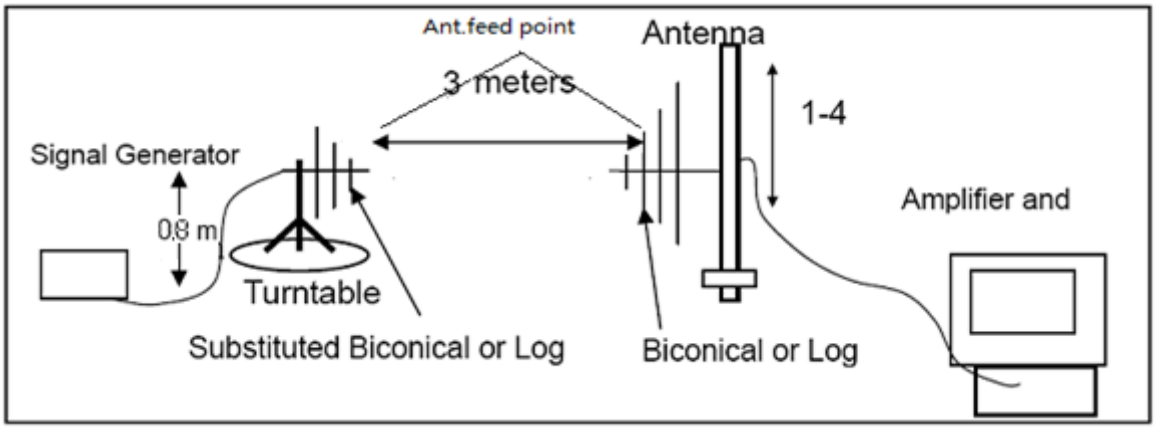
(17)The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

## 7.3 TEST SETUP BLOCK DIAGRAM

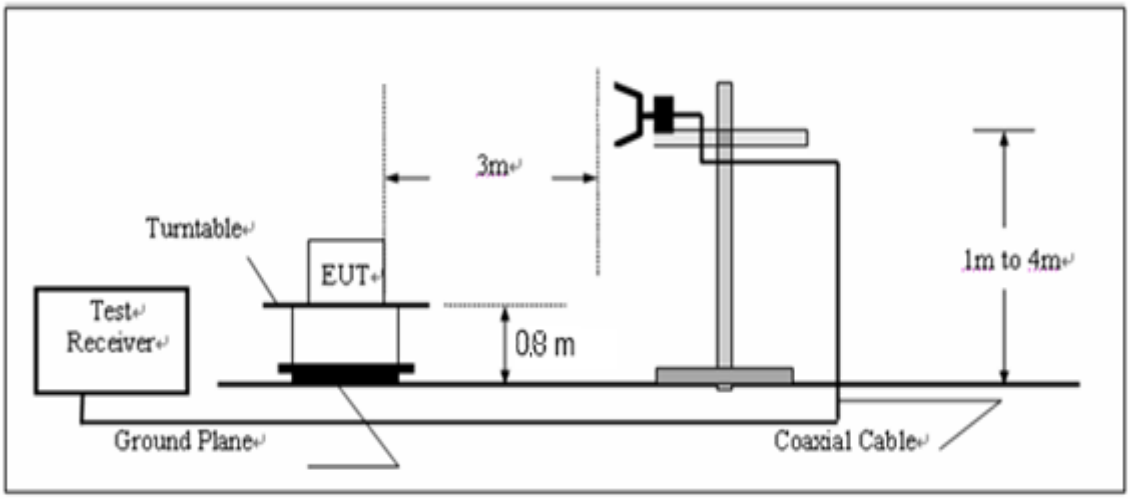
**SUBSTITUTION METHOD: (Radiated Emissions)**

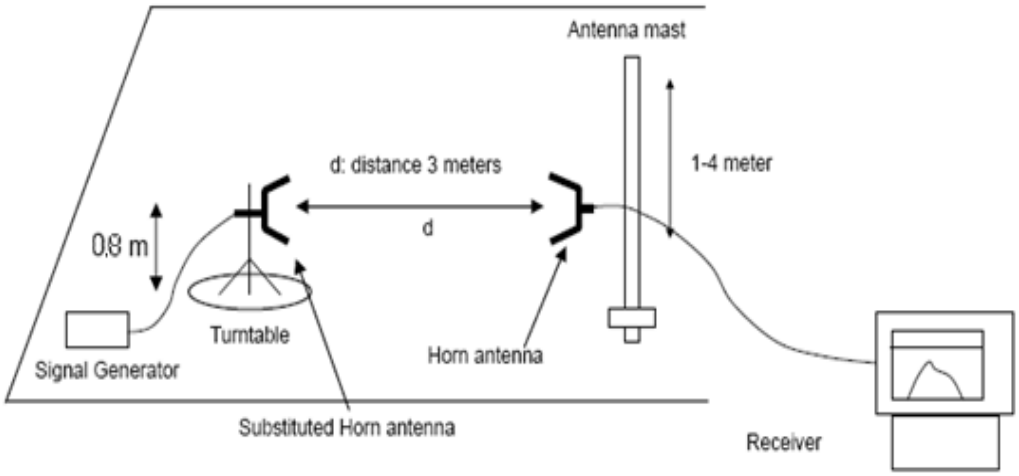
**Radiated Below1GHz**




**Radiated Above 1 GHz**




**7.4 MEASUREMENT RESULTS:**

the unwanted emission should be attenuated below TP by at least 43+10 log(Transmit Power) dB

**Limit: At least 43+10 log (P) =43+10log (0.5) =40 (dB)**

**Measurement Result for 12.5 KHz Channel Separation @ 462.5625MHz**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result Below carrier(dBc) | Limit below carrier(dBc) | Result(P/F) |
|---|---|---|---|---|
| 462.563 | H | 0 | | pass |
| 925.125 | H | 68.56 | 40 | pass |
| 1387.69 | H | 69.32 | 40 | pass |
| 1850.250 | H | 71.96 | 40 | pass |
| 2312.813 | H | 72.15 | 40 | pass |
| 2775.375 | H | 73.25 | 40 | pass |
| 3237.938 | H | 74.78 | 40 | pass |
| 3700.500 | H | 80.31 | 40 | pass |
| 4163.063 | H | 81.58 | 40 | pass |
| 4625.625 | H | 82.69 | 40 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/H) | Measurement Result Below carrier(dBc) | Limit below carrier(dBc) | Result(P/F) |
|---|---|---|---|---|
| 462.563 | V | 0 | | pass |
| 925.125 | V | 69.16 | 40 | pass |
| 1387.69 | V | 70.32 | 40 | pass |
| 1850.250 | V | 72.69 | 40 | pass |
| 2312.813 | V | 70.52 | 40 | pass |
| 2775.375 | V | 73.86 | 40 | pass |
| 3237.938 | V | 75.15 | 40 | pass |
| 3700.500 | V | 77.36 | 40 | pass |
| 4163.063 | V | 78.68 | 40 | pass |
| 4625.625 | V | 80.26 | 40 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 467.6375MHz**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result Below carrier(dBc) | Limit below carrier(dBc) | Result(P/F) |
|---|---|---|---|---|
| 467.638 | H | 0 | | pass |
| 935.275 | H | 69.26 | 40 | pass |
| 1402.913 | H | 70.19 | 40 | pass |
| 1870.550 | H | 72.26 | 40 | pass |
| 2338.188 | H | 73.85 | 40 | pass |
| 2805.825 | H | 75.47 | 40 | pass |
| 3273.463 | H | 77.36 | 40 | pass |
| 3741.100 | H | 79.15 | 40 | pass |
| 4208.738 | H | 82.67 | 40 | pass |
| 4676.375 | H | 80.26 | 40 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/H) | Measurement Result Below carrier(dBc) | Limit below carrier(dBc) | Result(P/F) |
|---|---|---|---|---|
| 467.638 | V | 0 | | pass |
| 935.275 | V | 67.29 | 40 | pass |
| 1402.913 | V | 69.35 | 40 | pass |
| 1870.550 | V | 70.65 | 40 | pass |
| 2338.188 | V | 74.81 | 40 | pass |
| 2805.825 | V | 75.62 | 40 | pass |
| 3273.463 | V | 77.92 | 40 | pass |
| 3741.100 | V | 78.62 | 40 | pass |
| 4208.738 | V | 80.15 | 40 | pass |
| 4676.375 | V | 80.95 | 40 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 462.7250MHz**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result Below carrier(dBc) | Limit below carrier(dBc) | Result(P/F) |
|---|---|---|---|---|
| 462.725 | H | 0 | | pass |
| 925.450 | H | 70.15 | 40 | pass |
| 1388.175 | H | 70.39 | 40 | pass |
| 1850.900 | H | 72.52 | 40 | pass |
| 2313.625 | H | 75.57 | 40 | pass |
| 2776.350 | H | 75.36 | 40 | pass |
| 3239.075 | H | 78.85 | 40 | pass |
| 3701.800 | H | 78.49 | 40 | pass |
| 4164.525 | H | 79.53 | 40 | pass |
| 4627.250 | H | 82.75 | 40 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result Below carrier(dBc) | Limit below carrier(dBc) | Result(P/F) |
|---|---|---|---|---|
| 462.725 | V | 0 | | pass |
| 925.450 | V | 71.29 | 40 | pass |
| 1388.175 | V | 70.51 | 40 | pass |
| 1850.900 | V | 73.93 | 40 | pass |
| 2313.625 | V | 74.25 | 40 | pass |
| 2776.350 | V | 75.75 | 40 | pass |
| 3239.075 | V | 77.48 | 40 | pass |
| 3701.800 | V | 78.36 | 40 | pass |
| 4164.525 | V | 79.74 | 40 | pass |
| 4627.250 | V | 81.29 | 40 | pass |

## 7.5 EMISSION MASK PLOT

Standard Applicable [FCC Part 95.635(b)(1)(3)(7)]GMRS&FRS: Unwanted emissions shall be attenuated below the unmodulated carrier power in accordance with the following:

(1) At least 25 dB (decibels) on any frequency removed from the center of the authorized bandwidth by more than 50 %up to and including 100% of the authorized bandwidth.

(2) At least 35 dB on any frequency removed from the center of the authorized bandwidth by more than 100 % up to and including 250 % of the authorized bandwidth.

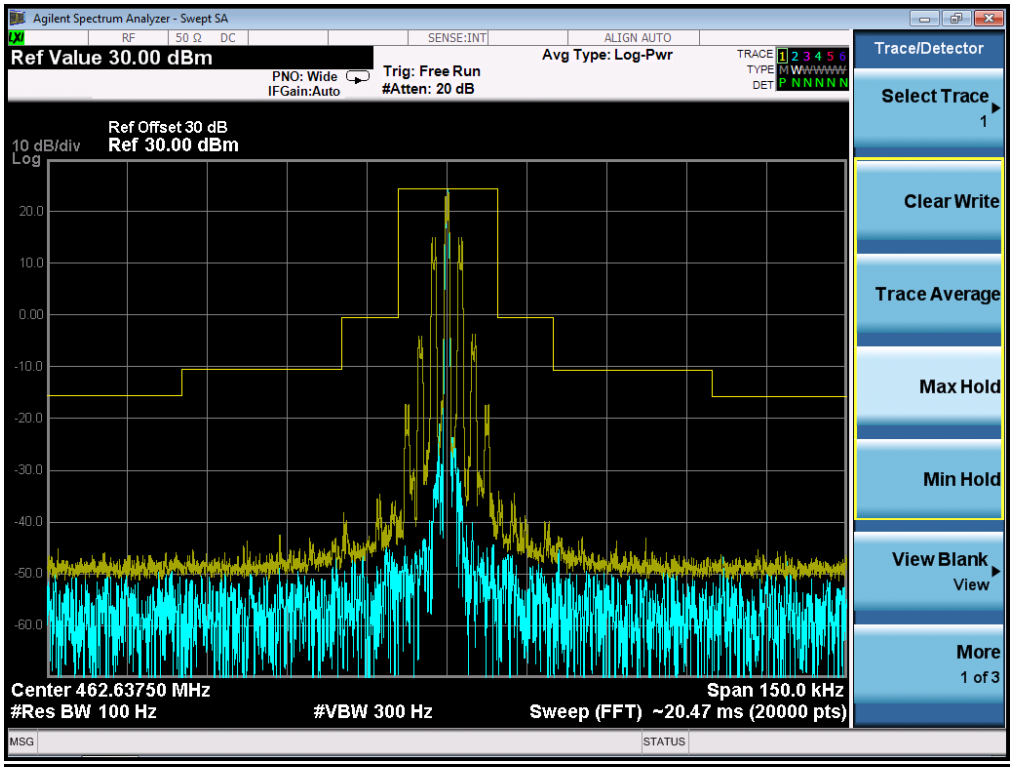
(3) At least 43 + 10 log10 (T) dB on any frequency removed from the center of the authorized bandwidth by more than250 %.

The detailed procedure employed for Emission Mask measurements are specified as following:

- The transmitter shall be modulated by a 2.5 kHz audio signal,
- The level of the audio signal employed is 16 dB greater than that necessary to produce 50% of rated system deviation. Rated system deviation is 2.5 kHz.

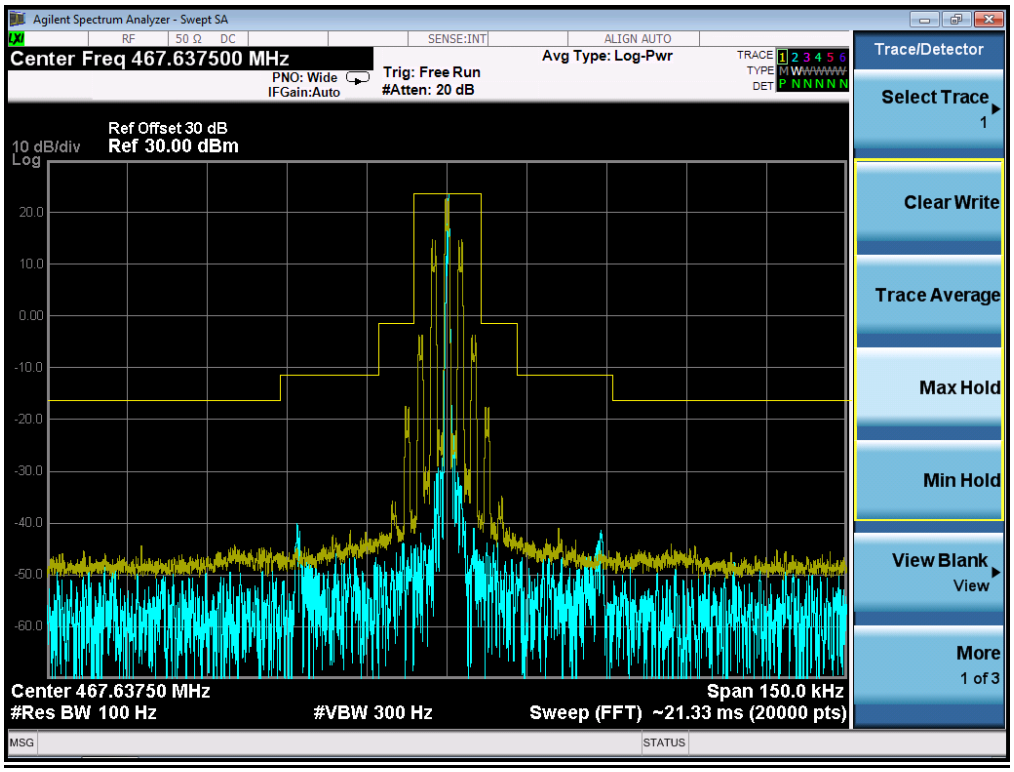
**CHANNEL 4:**

**The Worst Emission Mask for channel 4**



**CHANNEL 11:**

**The Worst Emission Mask for channel 11**



# 8. MAXIMUMN TRANSMITTER POWER

## 8.1 PROVISIONS APPLICABLE

Per FCC §2.1046 and §95.639(h): Maximum ERP is dependent upon the station's antenna HAAT and required service area.

FCC Part 95.639(a) A GMRS transmitter may transmit with a maximum power of 5.0 W e.r.p.

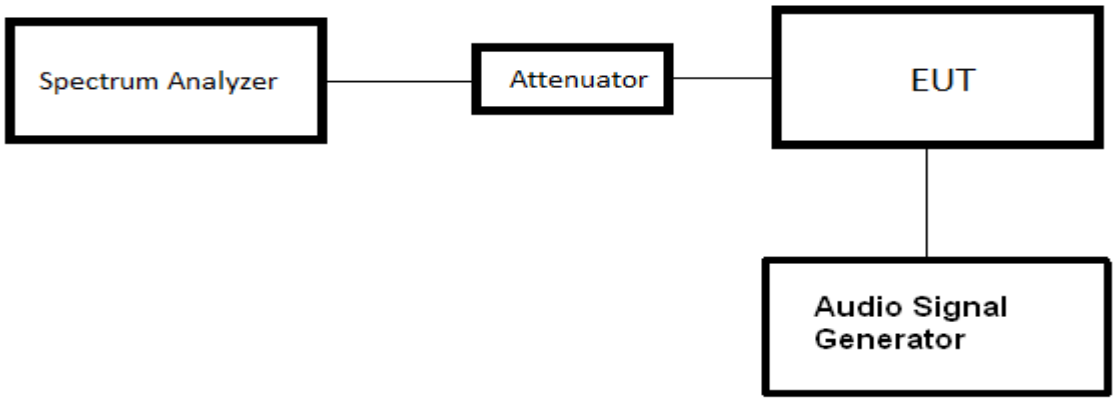
FCC Part 95.639(d) For FRS, the maximum permissible transmitter output power under any operating conditions is 0.5W effective radiated power (e.r.p.).

## 8.2 TEST PROCEDURE

The RF output of Two-way Radio was conducted to a spectrum analyzer through an appropriate attenuator.

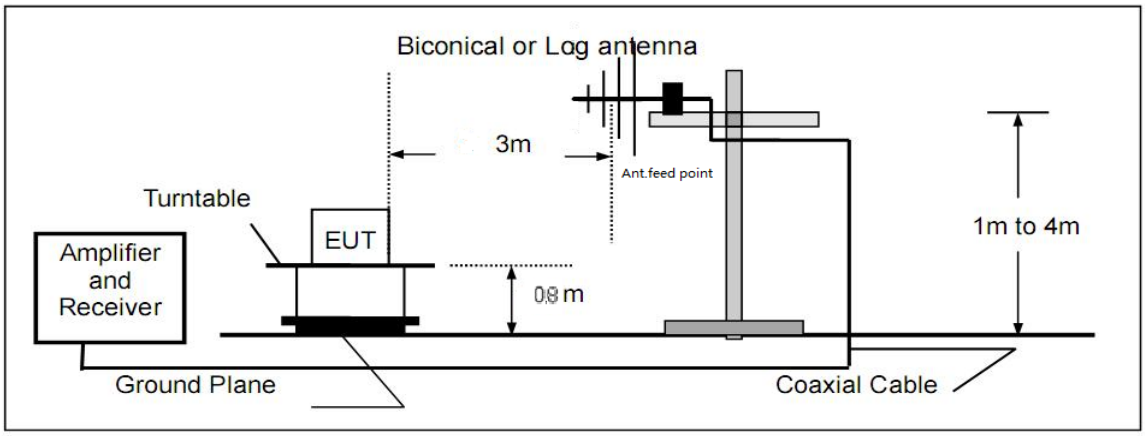
## 8.3 TEST CONFIGURATION

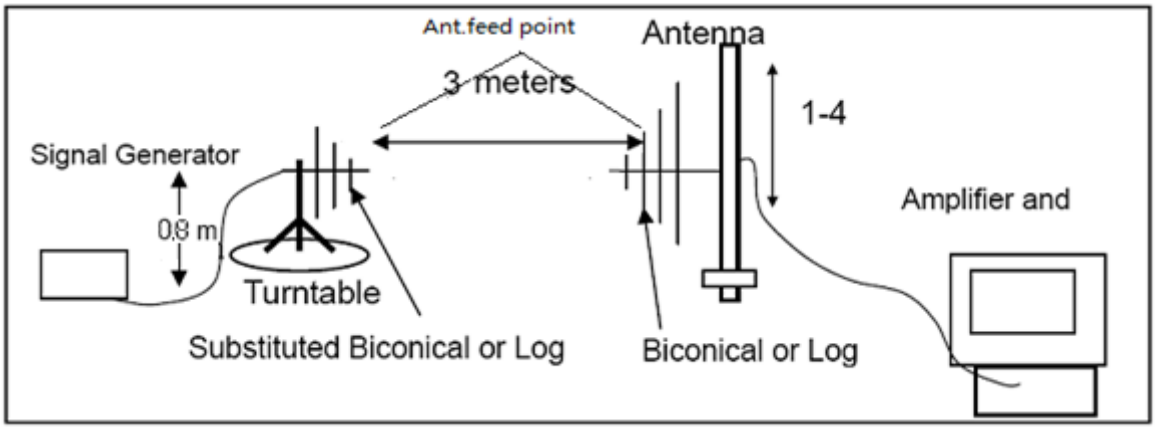
**Conducted Output Power:**



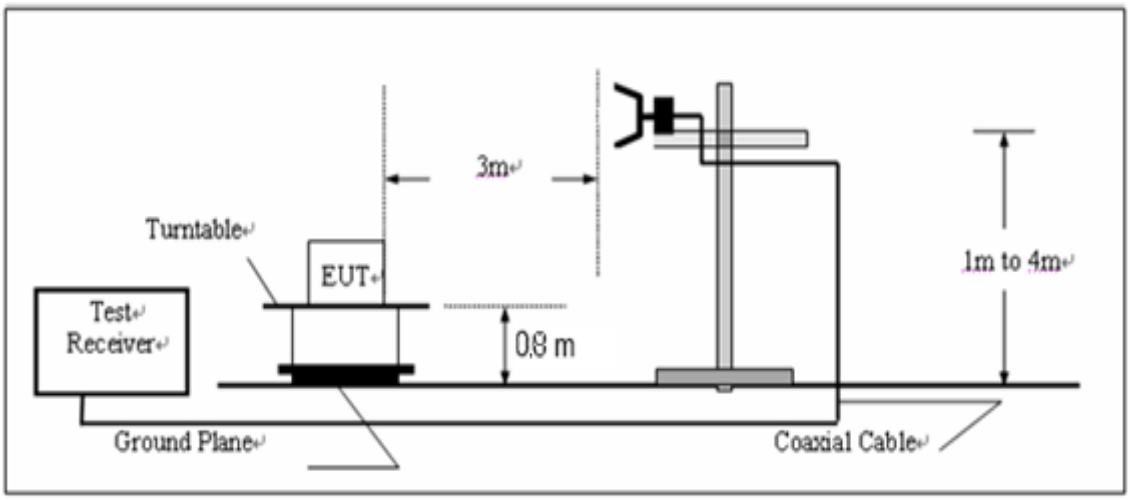

**Effective Radiated Power**

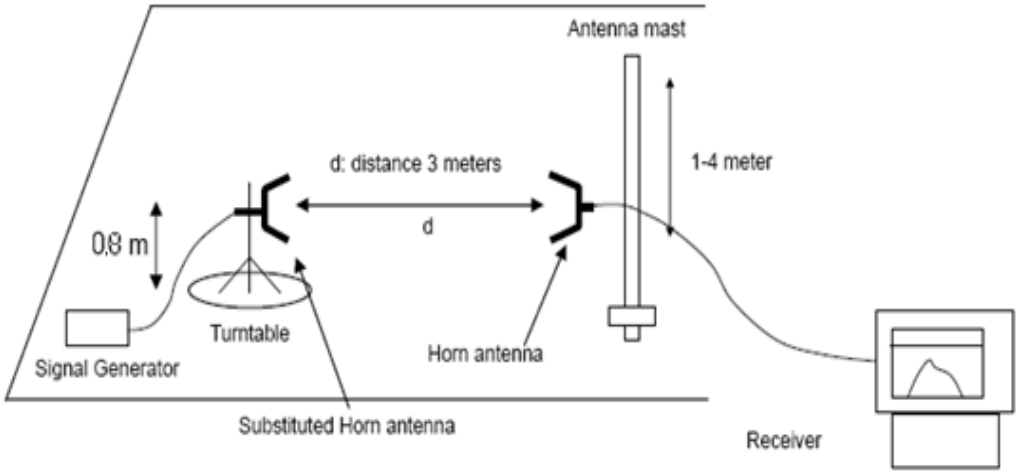
**Radiated Below1GHz**






**Radiated Above 1 GHz**



**8.4 TEST RESULT**

The maximum Conducted Power (CP) for UHF is

Analog: 0.5W for 12.5 KHz Channel Separation

Calculation Formula: CP = R + A + L

***** Note:

CP: The final Conducted Power

R : The reading value from spectrum analyzer

A : The attenuation value of the used attenuator

L : The loss of all connection cables

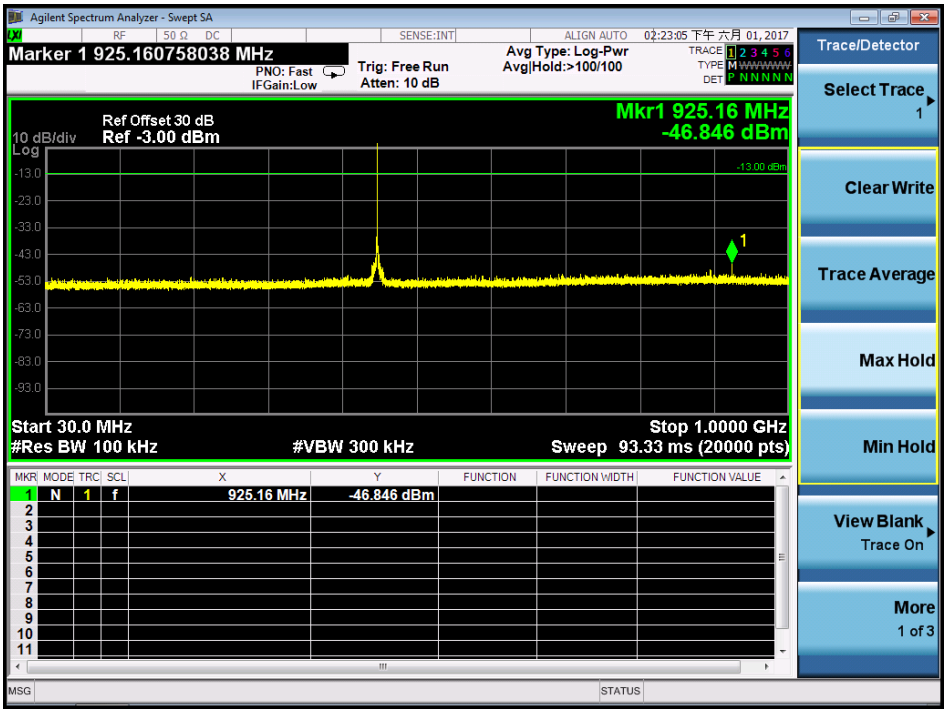
| Conducted Power Measurement Results | | |
|---|---|---|
| **Channel Separation** | **Channel** | **Measurement Result (dBm)** |
| | | **For 26.99dBm(0.5W)** |
| 12.5 KHz | Bottom(462.5625MHz ) | 25.36 |
| | Middle(467.6375MHz ) | 25.56 |
| | Top (462.7250MHz ) | 25.46 |

| Radiated Power Measurement Results | | |
|---|---|---|
| **Channel Separation** | **Channel** | **Measurement Result (dBm)** |
| | | **For 26.99dBm(0.5W)** |
| 12.5 KHz | Bottom(462.5625MHz ) | 25.41 |
| | Middle(467.6375MHz ) | 25.36 |
| | Top (462.7250MHz ) | 25.19 |

## 8.5 CONDUCT SPURIOUS PLOT

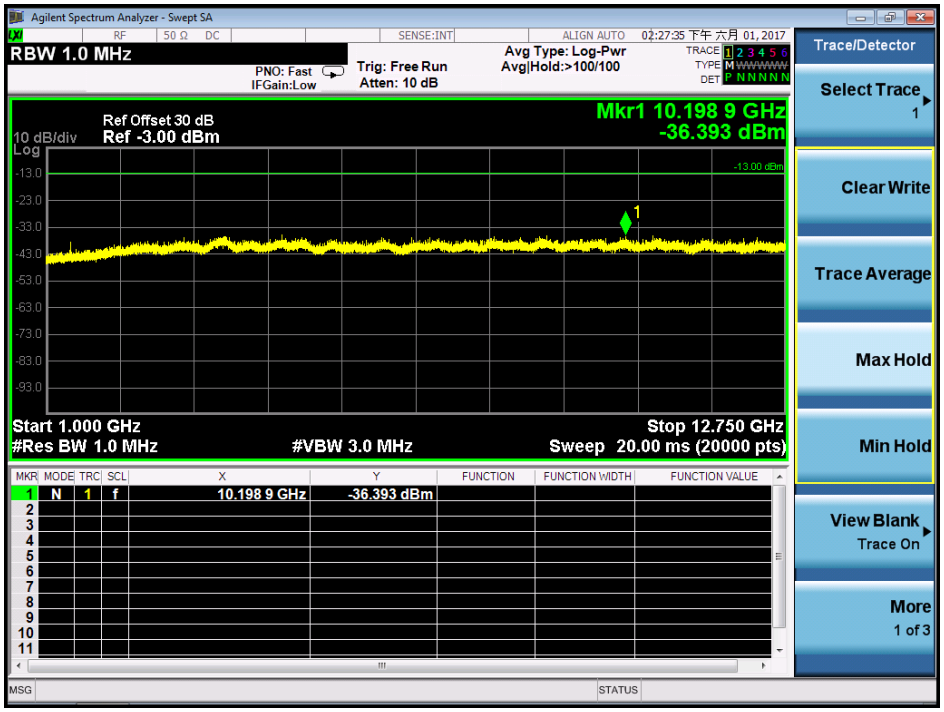
**Conducted Spurious Emission (worst) @462.5625MHz With 12.5 KHz Channel Separation-5W**

30MHz-1GHz



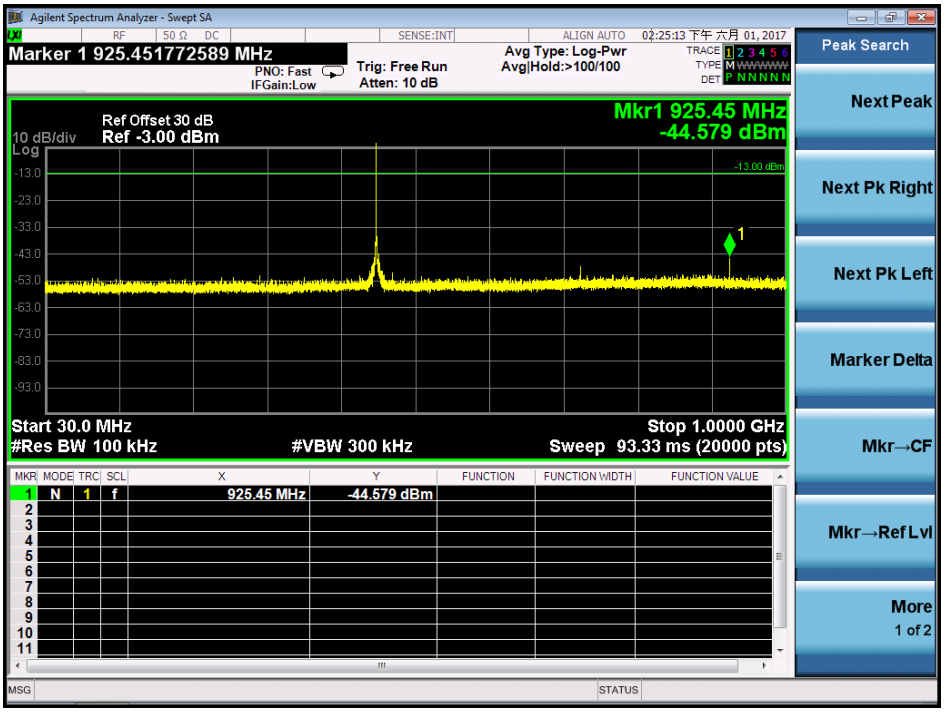

**Conduct Spurious Emission (worst) @ 462.5625MHz With 12.5 KHz Channel Separation-**

1GHz-12.75GHz



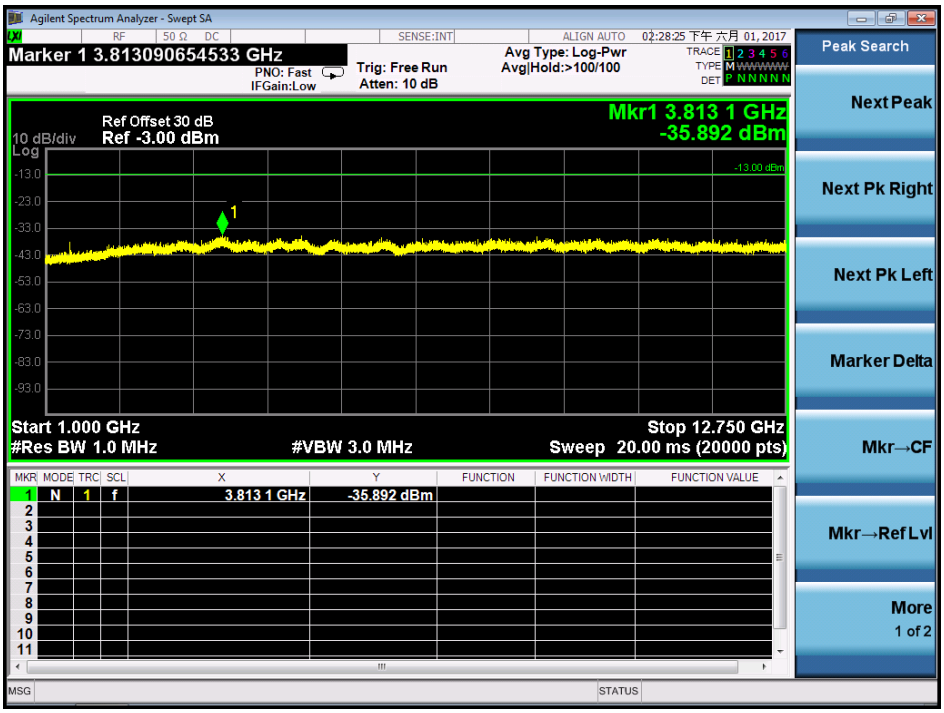
**Conducted Spurious Emission (worst) @ 467.6375MHz With 12.5 KHz Channel Separation**

30MHz-1GHz



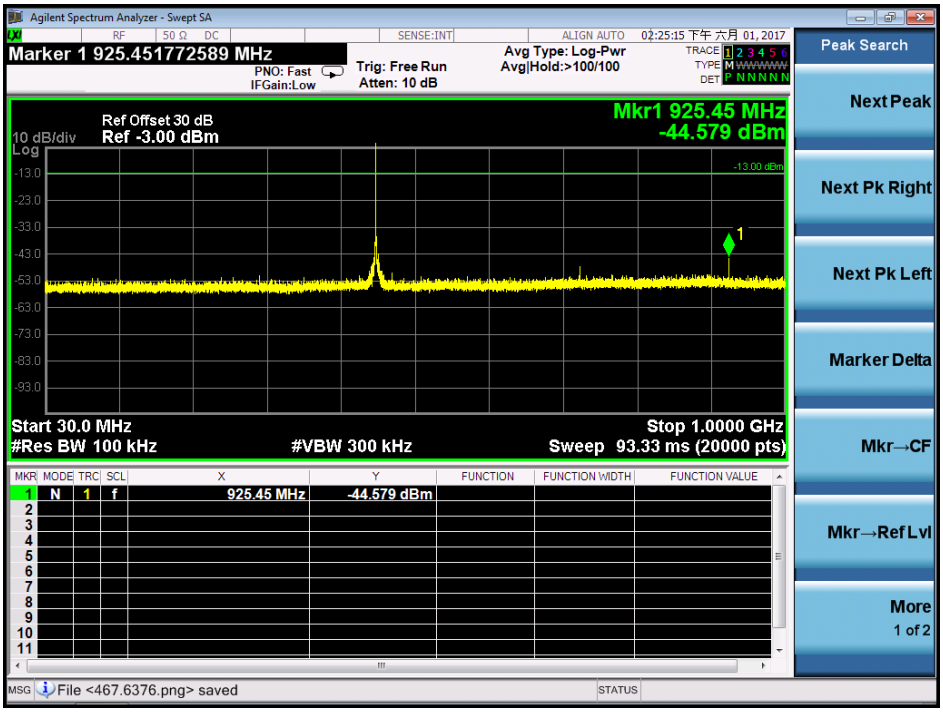

**Conduct Spurious Emission (worst) @ 467.6375MHz With 12.5 KHz Channel Separation**

1GHz-12.75GHz



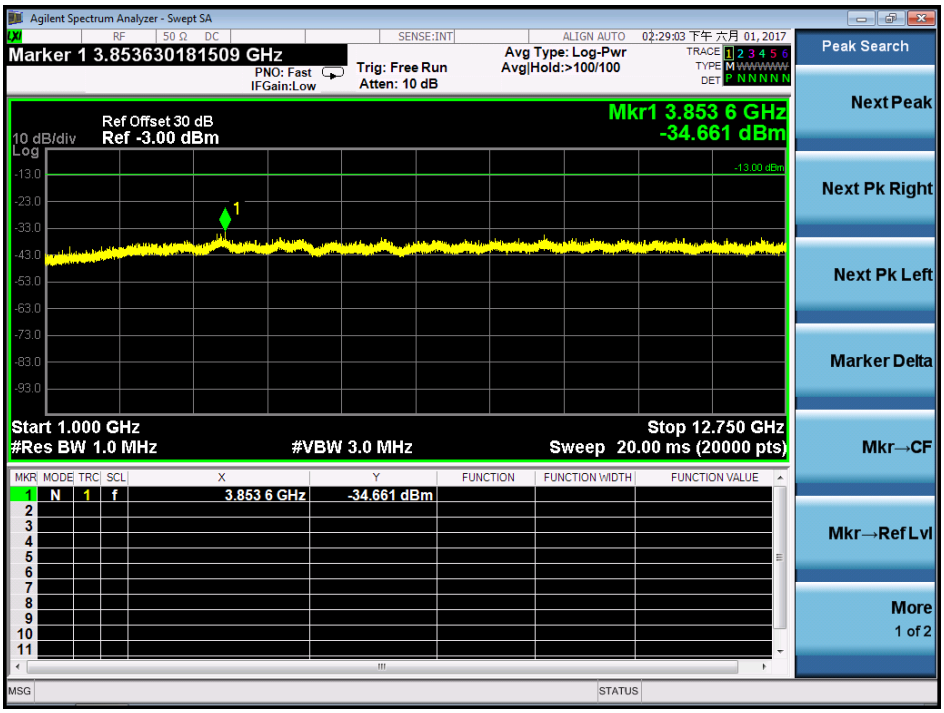
**Conducted Spurious Emission (worst) @462.7250MHz With 12.5 KHz Channel Separation**

30MHz-1GHz




**Conduct Spurious Emission (worst) @ 462.7250MHz With 12.5 KHz Channel Separation**

1GHz-12.75GHz



# 9. MODULATION CHARACTERISTICS

## 9.1 PROVISIONS APPLICABLE

According to [FCC Part 95.637(a)(b), Part 2.1047(a)], for Voice Modulation Communication Equipment, the frequency response of the audio modulation circuit over a range of 100 to 5000Hz shall be measured.

Part 95.637(a) A GMRS transmitter that transmits emission type F3E must not exceed a peak frequency deviation of plus or minus 5 kHz. A FRS unit that transmits emission type F3E must not exceed a peak frequency deviation of plus orminus 2.5 kHz, and the audio frequency response must not exceed 3.125 kHz.

Part 95.637(b) Each GMRS transmitter, except a mobile station transmitter with a power output of 2.5 W or less, mustautomatically prevent a greater than normal audio level from causing over-modulation. The transmitter also must includeaudio frequency low pass filtering, unless it complies with the applicable paragraphs of § 95.631 (without filtering.) Thefilter must be between the modulation limiter and the modulated stage of the transmitter. At any frequency (f in kHz)between 3 and 20 kHz, the filter must have an attenuation of at least 60 log10 (f/3) dB greater than the attenuation at 1kHz. Above 20 kHz, it must have an attenuation of at least 50 dB greater than the attenuation at 1 kHz.

Part 2.1047(a) A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of100 to 5000 Hz shall be submitted. For equipment required to have an audio low-pass filter, a curve showing thefrequency response of the filter, or of all circuitry installed between the modulation limiter and the modulated stage shallbe submitted.

## 9.2 MEASUREMENT METHOD

### 9.2.1 Modulation Limit

(1). Configure the EUT as shown in figure 1, adjust the audio input for 60% of rated system deviation at 1KHz using this level as a reference (0dB) and vary the input level from –20 to +20dB. Record the frequency deviation obtained as a function of the input level.

(2). Repeat step 1 with input frequency changing to 300, 1000, 1500 and 3000Hz in sequence.

### 9.2.2 Audio Frequency Response

(1). Configure the EUT as shown in figure 1.

(2). Adjust the audio input for 20% of rated system deviation at 1 KHz using this level as a reference (0 dB).

(3). Vary the Audio frequency from 100 Hz to 10 KHz and record the frequency deviation.

(4). Audio Frequency Response = 20log10 (Deviation of test frequency/Deviation of 1 KHz reference).

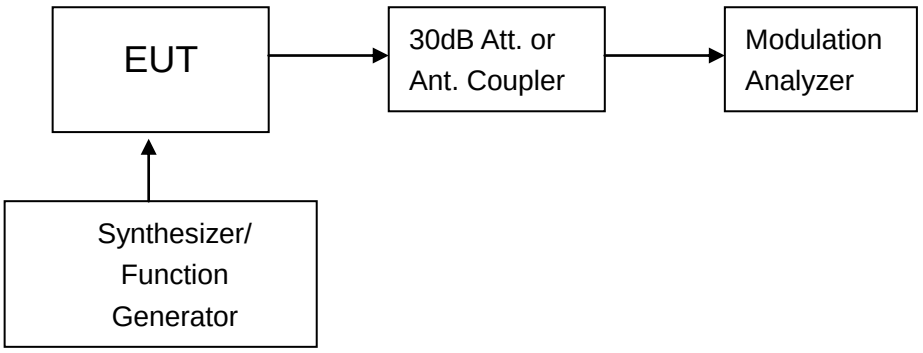



**Figure 1: Modulation characteristic measurement configuration**

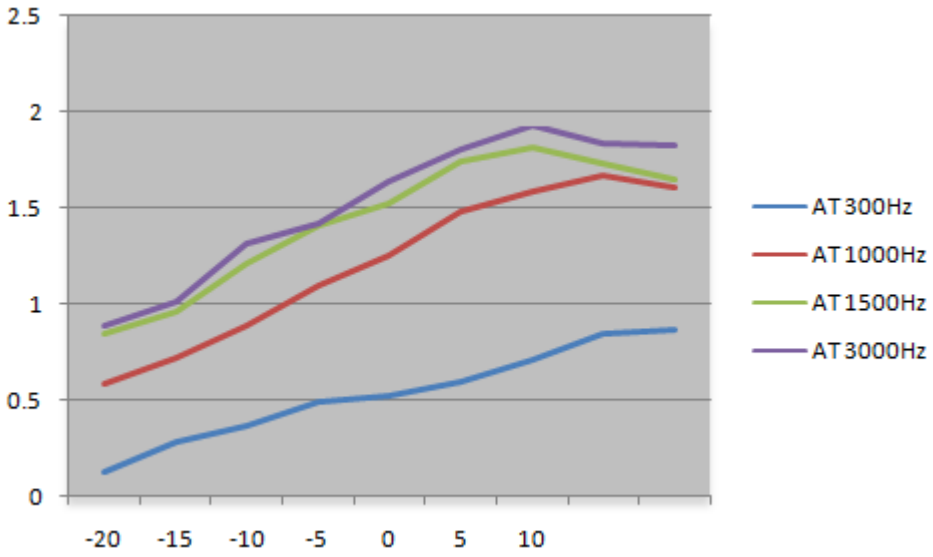
**9.3 MEASUREMENT RESULT**

**TEST CHANNEL: 4**

**(A). MODULATION LIMIT:**

**Bottom Channel @ 12.5 KHz Channel Separations**

| Modulation Level (dB) | Peak Freq. Deviation At 300 Hz | Peak Freq. Deviation At 1000 Hz | Peak Freq. Deviation At 1500 Hz | Peak Freq. Deviation At 3000 Hz |
|---|---|---|---|---|
| -20 | 0.12 | 0.58 | 0.84 | 0.89 |
| -15 | 0.28 | 0.72 | 0.96 | 1.02 |
| -10 | 0.36 | 0.88 | 1.21 | 1.32 |
| -5 | 0.49 | 1.09 | 1.41 | 1.42 |
| 0 | 0.52 | 1.25 | 1.52 | 1.64 |
| +5 | 0.60 | 1.48 | 1.75 | 1.81 |
| +10 | 0.71 | 1.59 | 1.82 | 1.93 |
| +15 | 0.85 | 1.67 | 1.74 | 1.84 |
| +20 | 0.87 | 1.61 | 1.65 | 1.83 |



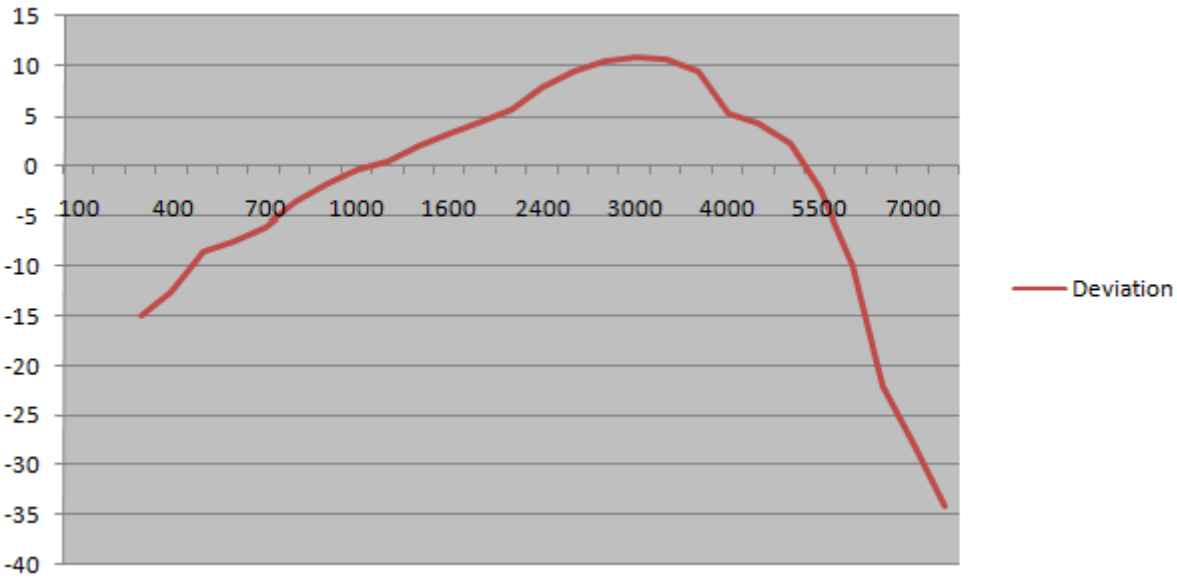

Note: All the modes had been tested, but only the worst data recorded in the report.

**(B). AUDIO FREQUENCY RESPONSE:**

**Bottom Channel @ 12.5 KHz Channel Separations**

| Frequency (Hz) | Deviation (KHz) | Audio Frequency Response(dB) |
|---|---|---|
| 100 | -- | -- |
| 200 | -- | -- |
| 300 | 0.09 | -14.89 |
| 400 | 0.12 | -12.40 |
| 500 | 0.19 | -8.40 |
| 600 | 0.21 | -7.54 |
| 700 | 0.25 | -6.02 |
| 800 | 0.33 | -3.61 |
| 900 | 0.41 | -1.72 |
| 1000 | 0.48 | -0.35 |
| 1200 | 0.52 | 0.34 |
| 1400 | 0.63 | 2.01 |
| 1600 | 0.73 | 3.29 |
| 1800 | 0.83 | 4.40 |
| 2000 | 0.95 | 5.58 |
| 2400 | 1.24 | 7.89 |
| 2500 | 1.48 | 9.43 |
| 2800 | 1.66 | 10.42 |
| 3000 | 1.74 | 10.83 |
| 3200 | 1.72 | 10.73 |
| 3600 | 1.48 | 9.43 |
| 4000 | 0.92 | 5.30 |
| 4500 | 0.81 | 4.19 |
| 5000 | 0.64 | 2.14 |
| 5500 | 0.38 | -2.38 |
| 6000 | 0.16 | -9.90 |
| 6500 | 0.04 | -21.94 |
| 7000 | 0.02 | -27.96 |
| 7500 | 0.01 | -14.89 |
| 9000 | -- | -- |
| 10000 | -- | -- |
| 14000 | -- | -- |
| 18000 | -- | -- |
| 20000 | -- | -- |
| 30000 | -- | -- |

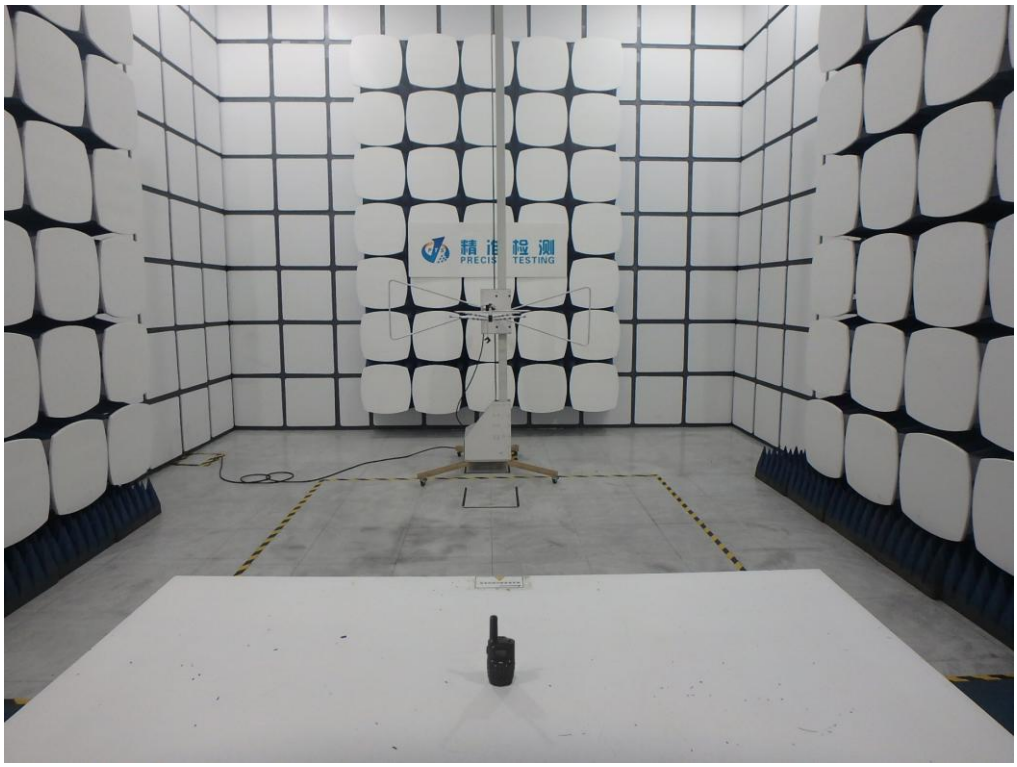
**Frequency Response of Bottom Channel**

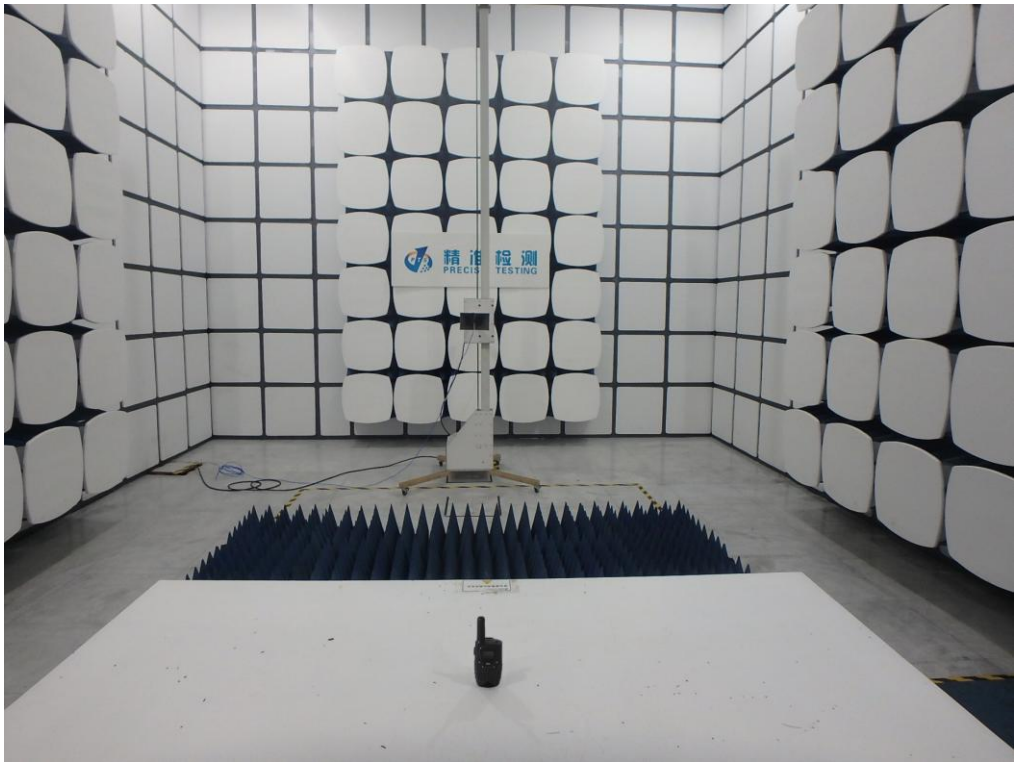



Note: All the modes had been tested, but only the worst data recorded in the report.

# APPENDIX I: PHOTOGRAPHS OF SETUP

RADIATED EMISSION TEST SETUP





# APPENDIX II: EXTERNAL VIEW OF EUT

TOTAL VIEW OF EUT


TOP VIEW OF EUT

BOTTOM VIEW OF EUT


FRONT VIEW OF EUT

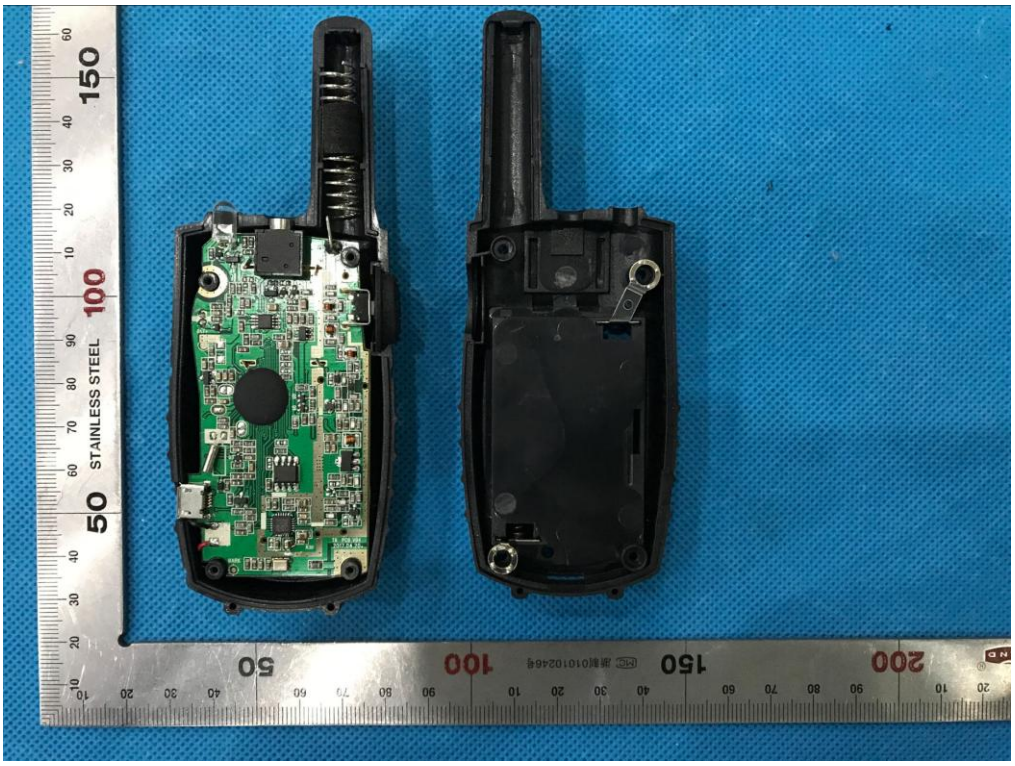
BACK VIEW OF EUT


LEFT VIEW OF EUT

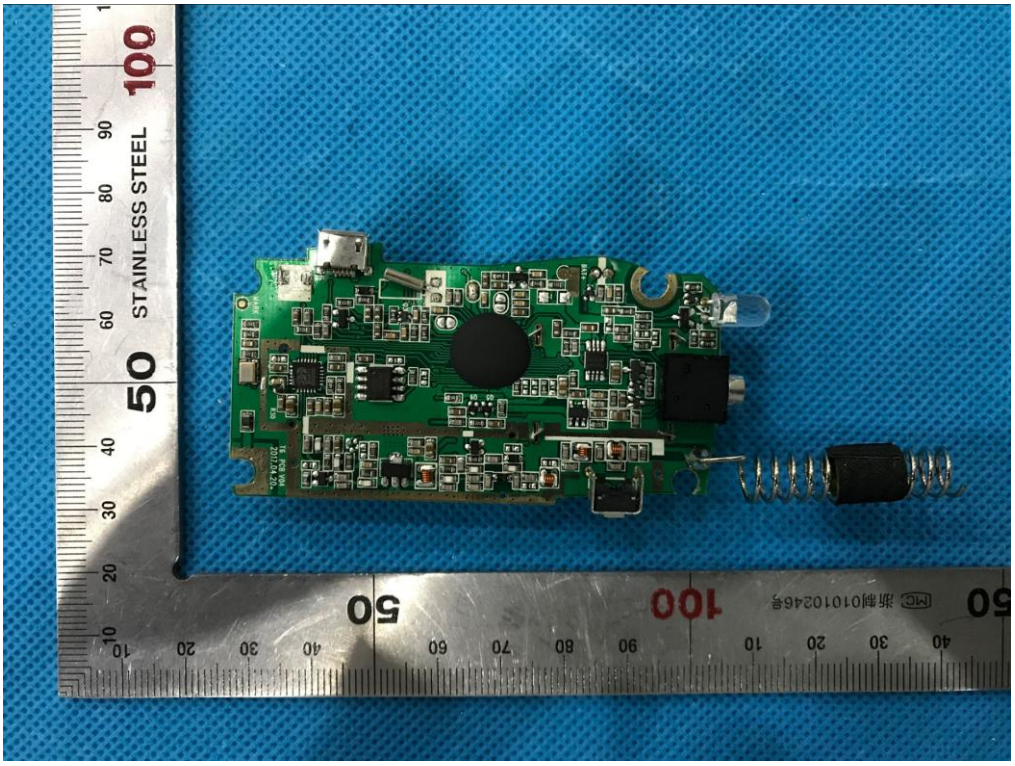
RIGHT VIEW OF EUT


OPEN VIEW-1 OF EUT

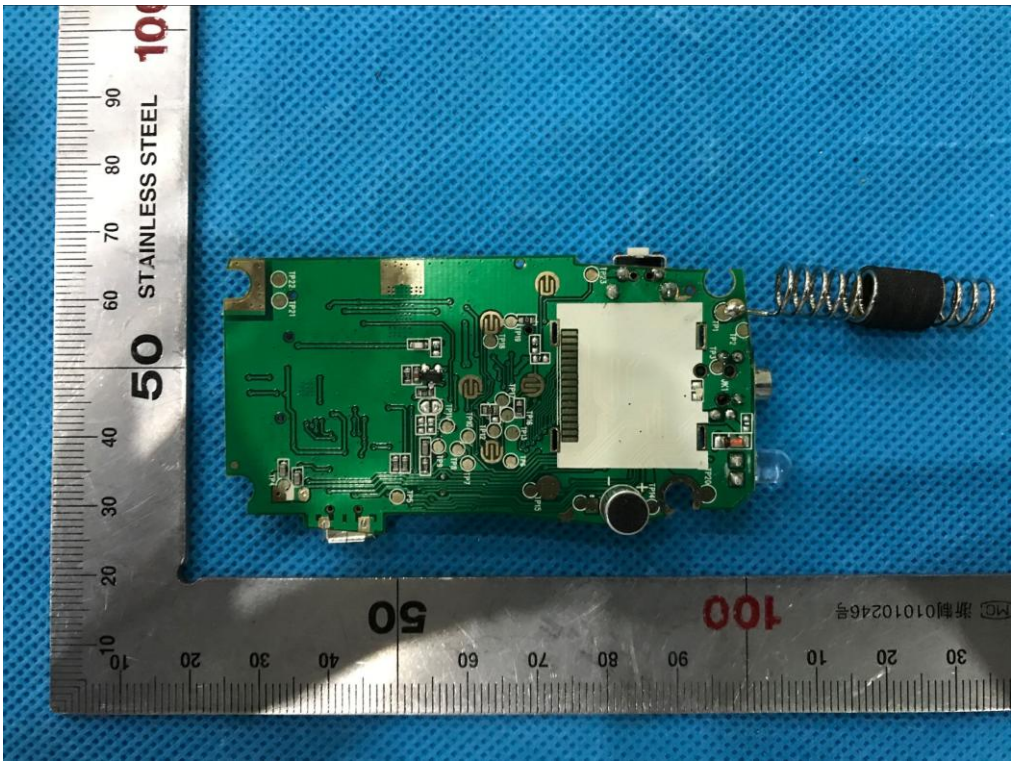
OPEN VIEW-2 OF EUT




INTERNAL VIEW-1 OF EUT



INTERNAL VIEW-2 OF EUT




**----END OF REPORT----**