



# RF Test Report

## For

**Applicant Name:** ShenZhenShiTengBaoDianZiShangWuYouXianGongSi  
**Address:** B408, Comprehensive Building, No. 4088, Banxuegang Avenue,  
Xiangjiaotang Community, Bantian Street, Longgang District,  
Shenzhen, Guangdong, 518129 China  
**EUT Name:** Walkie Talkies  
**Brand Name:** N/A  
**Model Number:** DE-WK01  
**Series Model**  
**Number:** N/A  
**FCC ID:** 2BP83-DE-WK01

## Issued By

**Company name:** BTF Testing Lab (Shenzhen) Co., Ltd.  
**Address:** 101/201/301, Building 1, Block 2, Tantou Industrial Park, Tantou  
Community, Songgang Subdistrict, Bao'an District, Shenzhen, China

**Report number:** BTF250529R00601  
**Test standards:** FCC CFR Title 47 Part 95  
**Test conclusion:** Pass  
**Date of sample receipt:** 2025-05-29  
**Test date:** 2025-05-30 to 2025-07-23  
**Date of issue:** 2025-07-23

**Test by:** Sean He  
Sean He / Tester

**Prepared by:** Chris Liu

Chris Liu / Project engineer



Ryan.CJ / EMC manager

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Test Report Number: BTF250529R00601

Revision History		
Version	Issue Date	Revisions Content
R_V0	2025-07-23	Original
<i>Note: Once the revision has been made, then previous versions reports are invalid.</i>		

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## 1 Introduction

### 1.1 Laboratory Location

Test location:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	101/201/301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Subdistrict, Bao'an District, Shenzhen, China
Phone number:	+86-0755-23146130
Fax number:	+86-0755-23146130

### 1.2 Laboratory Facility

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

- **FCC - Designation No.: CN1409**

BTF Testing Lab (Shenzhen) Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The test firm Registration No. is 518915.

- **CNAS - Registration No.: CNAS L17568**

BTF Testing Lab (Shenzhen) Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L17568.

- **A2LA - Registration No.: 6660.01**

BTF Testing Lab (Shenzhen) Co., Ltd. is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories.

### 1.3 Announcement

- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) This document may not be altered or revised in any way unless done so by BTF and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

## 2 Product Information

### 2.1 Application Information

Company Name:	ShenZhenShiTengBaoDianZiShangWuYouXianGongSi
Address:	B408, Comprehensive Building, No. 4088, Banxuegang Avenue, Xiangjiaotang Community, Bantian Street, Longgang District, Shenzhen, Guangdong, 518129 China

### 2.2 Manufacturer Information

Company Name:	ShenZhenShiTengBaoDianZiShangWuYouXianGongSi
Address:	B408, Comprehensive Building, No. 4088, Banxuegang Avenue, Xiangjiaotang Community, Bantian Street, Longgang District, Shenzhen, Guangdong, 518129 China

### 2.3 Factory Information

Company Name:	ShenZhenShiTengBaoDianZiShangWuYouXianGongSi
Address:	B408, Comprehensive Building, No. 4088, Banxuegang Avenue, Xiangjiaotang Community, Bantian Street, Longgang District, Shenzhen, Guangdong, 518129 China

### 2.4 General Description of Equipment under Test (EUT)

EUT name	Walkie Talkies
Under test model name	DE-WK01
Series model name	N/A
Description of model name differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Rating:	Input:DC 5V Adapter: Model:GA-0502000 Input:AC 100-240V~50/60Hz 0.6A Output:5.0V===2000mA Battery:3.7V 5.55Wh 1500mAh

### 2.5 Technical Information

Operation frequency:	CH 1-7: 462.5625- 462.7125MHz CH 8-14: 467.5625- 467.7125 MHz CH15-22: 462.55- 462.725 MHz
Channel numbers:	22
Channel separation:	12.5kHz
Modulation technology:	FM
Max. ERP Power:	26.51 dBm (Declare power: 27dBm)
Antenna type:	Spring antenna
Antenna gain:	-2.0 dBi (declare by Applicant)
Antenna transmit mode:	SISO (1TX, 1RX)

## 2.6 Channel List

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

## 2.7 Test Channel

Channel	Frequency(MHz)	Description	Limit
CH <sub>4</sub>	462.6375	FRS	2W
CH <sub>14</sub>	467.7125	FRS	0.5W
CH <sub>22</sub>	462.725	FRS	2W

### 3 Summary of Test Results

#### 3.1 Test Standards

The tests were performed according to following standards:

**FCC Rules Part 95** :PERSONAL RADIO SERVICES.

**TIA/EIA-603-E-2016**: Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

**ANSI C63.26**: American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services.

**FCC Part 2** :Frequency allocations and radio treaty matters, general rules and regulations.

#### 3.2 Uncertainty of Test

Measurement	Value
Occupied Channel Bandwidth	±5 %
Supply voltages	±3 %
Time	±5 %
Conducted Emission for LISN (9kHz ~ 150kHz)	±2.97 dB
Conducted Emission for LISN (150kHz ~ 30MHz)	±2.45 dB
Radiated Emission (30MHz ~ 1000MHz)	±4.80 dB
Radiated Emission (1GHz ~ 18GHz)	±4.82 dB
Modulation Limiting	0.42 %
Audio level	±0.98dB
Audio Frequency Response	6.8 %

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

#### 3.3 Summary of Test Result

Item	Standard	Result
Maximum Transmitter Power	FCC Part 95.567	Pass
Modulation Limit	FCC Part 95.575	Pass
Emission Bandwidth	FCC Part 95.573	Pass
Emission Mask	FCC Part 95.579	Pass
Transmitter Radiated Spurious Emission	FCC Part 95.579	Pass
Spurious Emission On Antenna Port	FCC Part 95.579	N/A
Frequency Stability	FCC Part 95.565	Pass



## 4 Test Configuration

### 4.1 Test Equipment List

Radiated test method					
Test Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
EMI Receiver	Rohde & Schwarz	ESCI7	101032	2024/10/25	2025/10/24
Signal Analyzer	Rohde & Schwarz	FSQ40	100010	2024/10/25	2025/10/24
Log periodic antenna	Schwarzbeck	VULB 9168	01328	2024/10/28	2025/10/27
Preamplifier (30MHz ~ 1GHz)	Schwarzbeck	BBV9744	00246	2024/09/24	2025/09/23
Horn Antenna (1GHz ~ 18GHz)	Schwarzbeck	BBHA9120D	2597	2024/10/30	2025/10/29
Horn Antenna (15GHz ~ 40GHz)	SCHWARZBECK	BBHA9170	1157	2024/10/24	2025/10/23
Preamplifier (1GHz ~ 40GHz)	TST Pass	LNA10180G45	246	2024/09/24	2025/09/23
Test Software	Frad	EZ EMC	Version: FA-03A2 RE+		

Conducted test method					
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	Keysight	N9020A	MY50410020	2024/10/25	2025/10/24
ESG Vector Signal Generator	Agilent	E4438C	MY45094854	2024/10/25	2025/10/24
MXG Vector Signal Generator	Agilent	N5182A	MY46240163	2024/10/25	2025/10/24
Wideband Radio Communication Tester	Rohde&Schwarz	CMW500	161997	2024/10/25	2025/10/24
Temperature Humidity Chamber	ZZCKONG	ZZ-K02A	20210928007	2024/10/25	2025/10/24
Cell Site Test Set	HP	8921A	US35010158	2025/5/26	2026/05/25
Test Software	TST Pass	/	Version: 2.0		

### 4.2 Test Auxiliary Equipment

Eut can work independently.

### 4.3 Test Modes

No.	Test Modes	Description
TM1	TX	Transmitting/FRS -- CH 1-7: 462.5625- 462.7125MHz CH 8-14: 467.5625- 467.7125 MHz CH15-22: 462.55- 462.725 MHz

## 5 TEST CONDITIONS AND RESULTS

### 5.1 Maximum Transmitter Power (Effective Radiated Power)

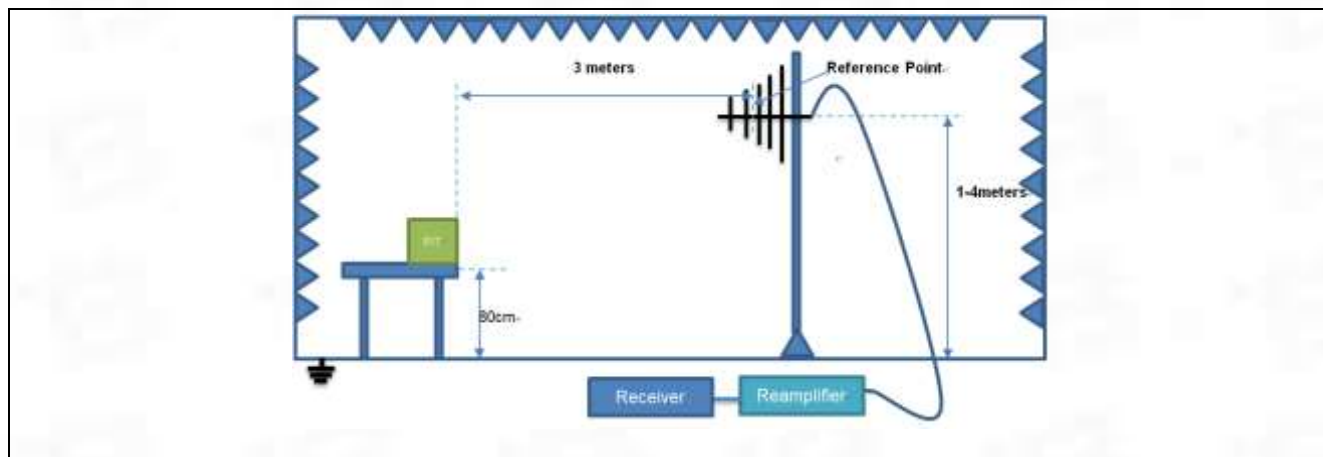
Test Requirement:	Applicants for licenses must request and use no more power than the actual power necessary for satisfactory operation.
Test Method:	FCC Part 95.567:
Test Limit:	Each FRS transmitter type must be designed such that the effective radiated power (ERP) on channels 8 through 14 does not exceed 0.5 Watts and the ERP on channels 1 through 7 and 15 through 22 does not exceed 2.0 Watts.
Procedure:	<p>1.EUT was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1. 0 m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in six channels were measured with peak detector.</p> <p>2.A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.</p> <p>3.The EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=100kHz,VBW=300kHz for 30MHz to 1GHz, And the maximum value of the receiver should be recorded as (Pr).</p> <p>4.The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.</p> <p>5.A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.</p> <p>The measurement results are obtained as described below:  <math>Power(EIRP)=PMea- PAg - Pcl - Ga</math>  We used SMF100A microwave signal generator which signal level can up to 33dBm,so we not used power Amplifier for substitution test; The measurement results are amend as described below: <math>Power(EIRP)=PMea- Pcl - Ga</math></p> <p>6.This value is EIRP since the measurement is calibrated using an antenna of known gain and known input power.</p> <p>7.ERP can be calculated from EIRP by subtracting the gain of the dipole, <math>ERP = EIRP-2.15dB_i</math>.</p>

#### 5.1.1 E.U.T. Operation:

Operating Environment:

Temperature:	23 °C
Humidity:	45.4 %
Atmospheric Pressure:	1010 mbar
Test Voltage:	

### 5.1.2 Test Setup Diagram:



### 5.1.3 Test Data:

Operation Mode	Test Channel	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	ERP(dBm)	Declare power (dBm)	Limit (dBm)	Result
TX	CH <sub>4</sub>	462.6375	35.22	-6.56	28.66	26.51	27.0	33	Pass
	CH <sub>14</sub>	467.7125	35.09	-6.98	28.11	25.96	27.0	27	
	CH <sub>22</sub>	462.725	34.84	-6.58	28.26	26.11	27.0	33	

Note:

Level=Reading+Factor = Reading +Antenna Factor + Cable loss – Pre-amplifier

ERP=Level-2.15

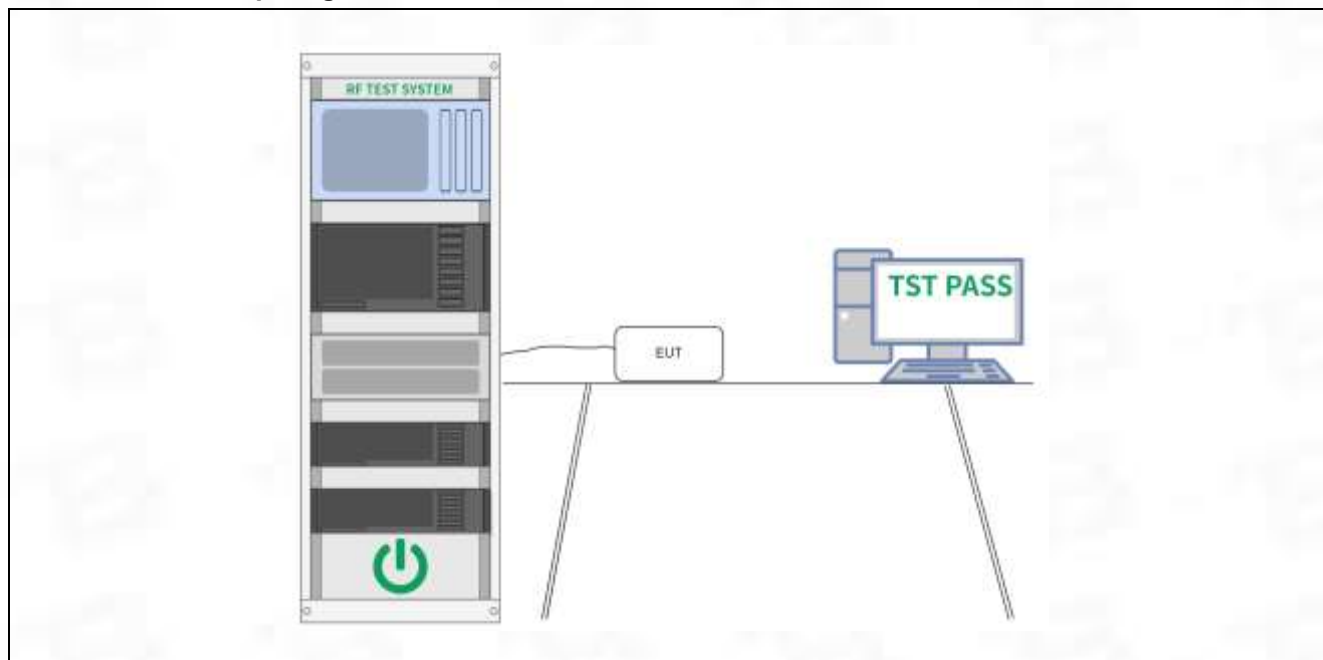
## 5.2 Emission Bandwidth

Test Requirement:	The Emission Bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits.
Test Method:	FCC Part 95.573:
Test Limit:	FRS: The authorized bandwidth for an FRS unit is 12.5 kHz.
Procedure:	1The EUT was modulated by 2.5kHz sine wave audio signal; the level of the audio signal employed is 16dB greater than that necessary to produce 50% of rated system deviation. Rated system deviation is 2.5kHz and 5kHz). 2Spectrum set as follow: Centre frequency = fundamental frequency,span=50kHz, RBW=100Hz, VBW=300Hz, Sweep = auto, Detector function = peak, Trace = max hold 3Set 99% Occupied Bandwidth and 26dB Occupied Bandwidth 4Measure and record the results in the test report.

### 5.2.1 E.U.T. Operation:

Operating Environment:	
Temperature:	22.9 °C
Humidity:	49.6 %
Atmospheric Pressure:	1010 mbar

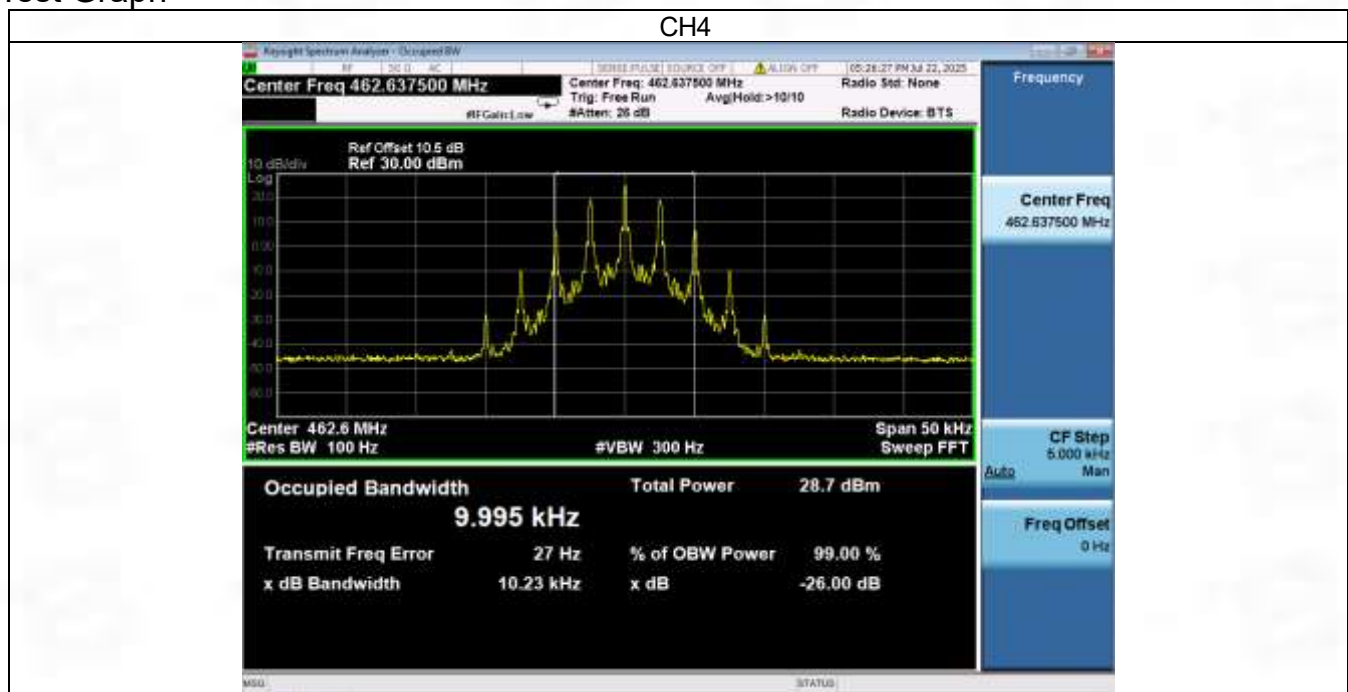
### 5.2.2 Test Setup Diagram:



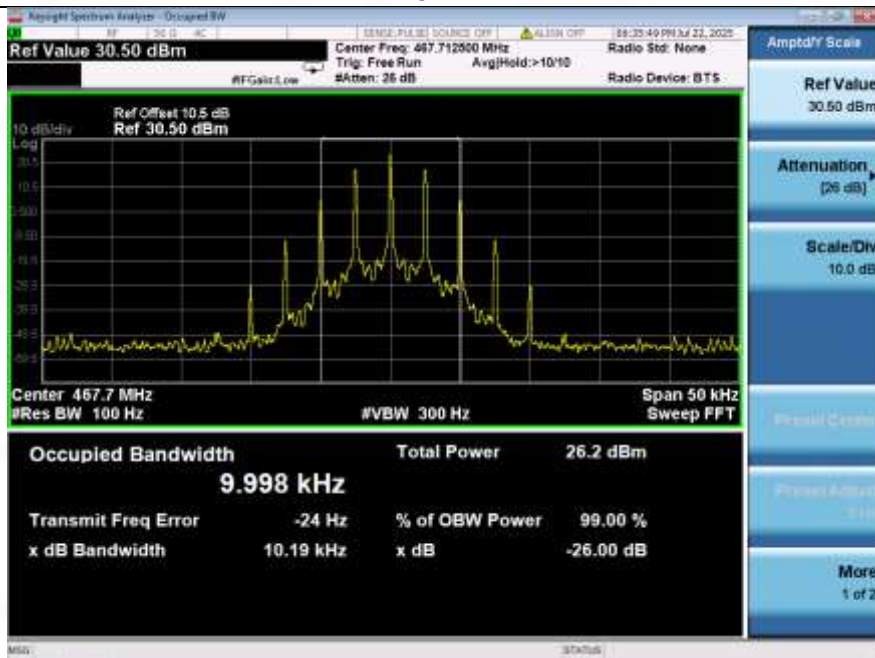
### 5.2.3 Test Data:

Operation Mode	Test Channel	Occupied Bandwidth		Limit(kHz)	Result
		99%(kHz)	26dB(kHz)		
TX	CH4	9.995	10.23	$\leq 12.5$	Pass
	CH14	9.998	10.19	$\leq 12.5$	
	CH22	9.998	10.19	$\leq 12.5$	

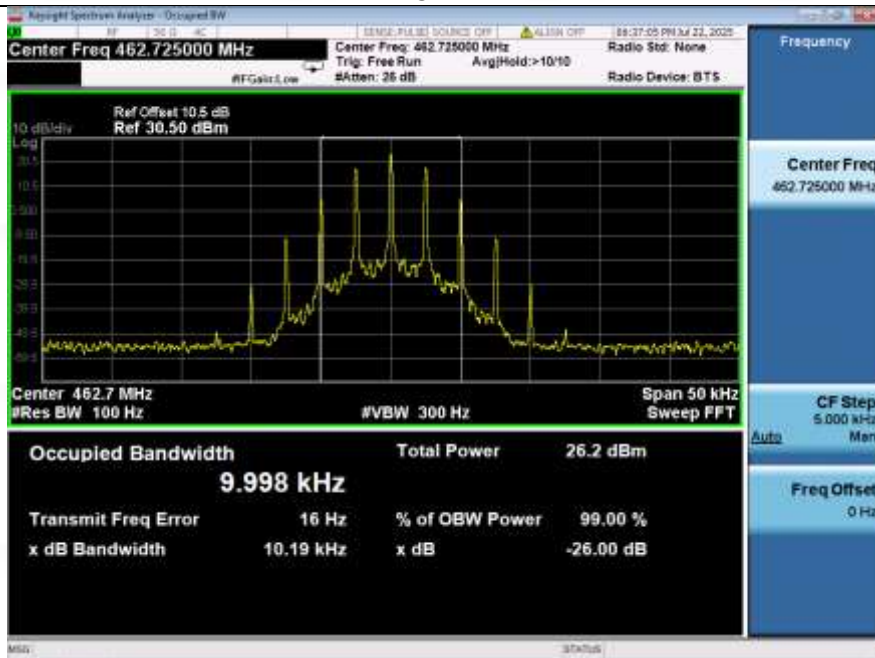
### Test Graph



## CH14



## CH22



Test Result: PASS



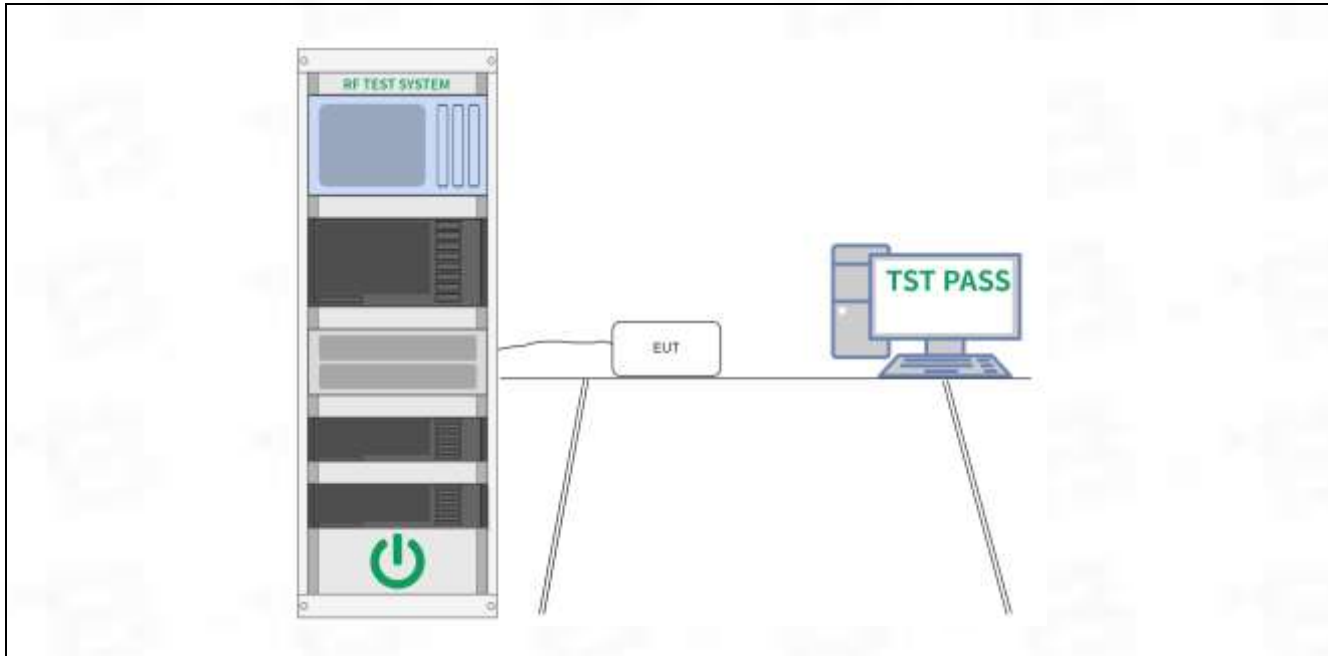
### 5.3 Emission Mask

Test Requirement:	Transmitters used in the radio services governed by this part must comply with the emission masks outlined in this section.
Test Method:	FCC Part 95.579:
Test Limit:	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.
Procedure:	1Connect the equipment as illustrated. 2Spectrum set as follow: Centre frequency = fundamental frequency, span=125kHz for 12.5kHz channel spacing, RBW=300Hz, VBW=1000Hz, Sweep = auto, Detector function = peak, Trace = max hold 3Key the transmitter, and set the level of the unmodulated carrier to a full scale reference line. This is the 0dB reference for the measurement. 4Modulate the transmitter with a 2500 Hz sine wave at an input level 16 dB greater than that necessary to produce 50% of rated system deviation(Rated system deviation is 2.5 kHz for 12.5kHz channel spacing). The input level shall be established at the frequency of maximum response of the audio modulating circuit. Transmitters employing digital modulation techniques that bypass the limiter and the audio low-pass filter shall be modulated as specified by the manufacturer 5Measure and record the results in the test report.

#### 5.3.1 E.U.T. Operation:

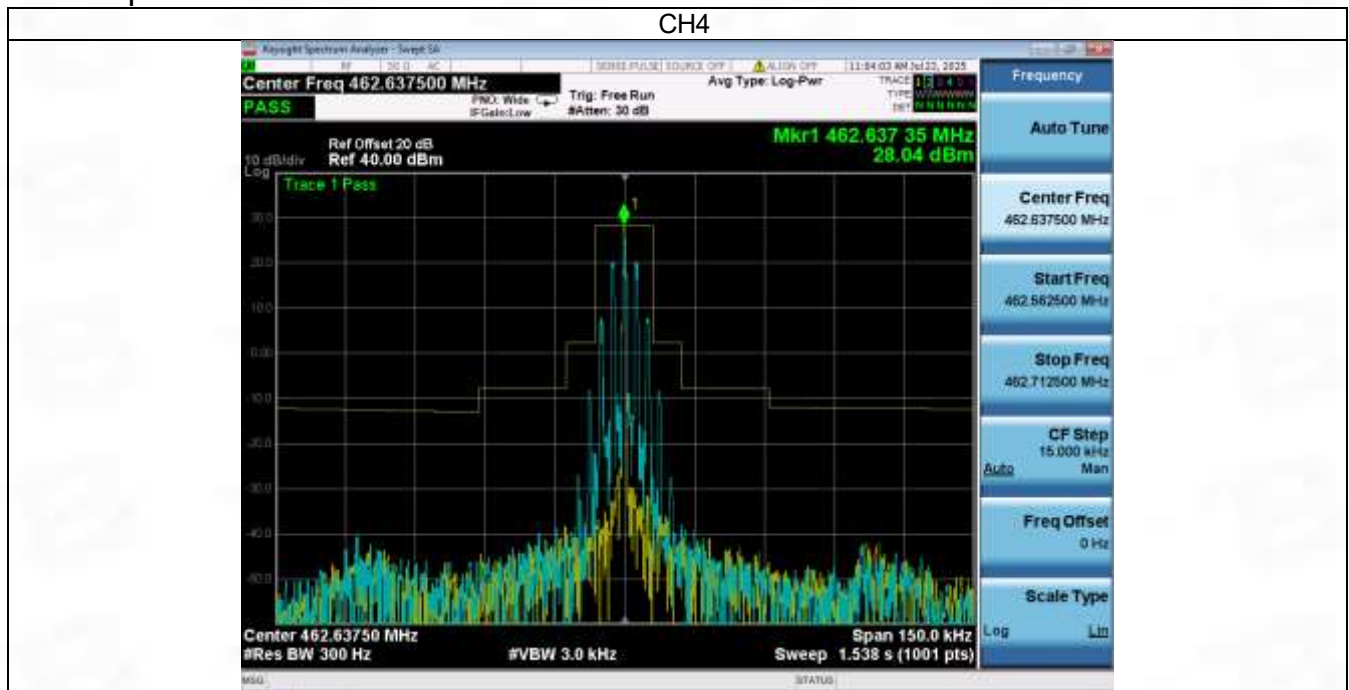
Operating Environment:	
Temperature:	22.9 °C
Humidity:	49.6 %
Atmospheric Pressure:	1010 mbar

### 5.3.2 Test Setup Diagram:

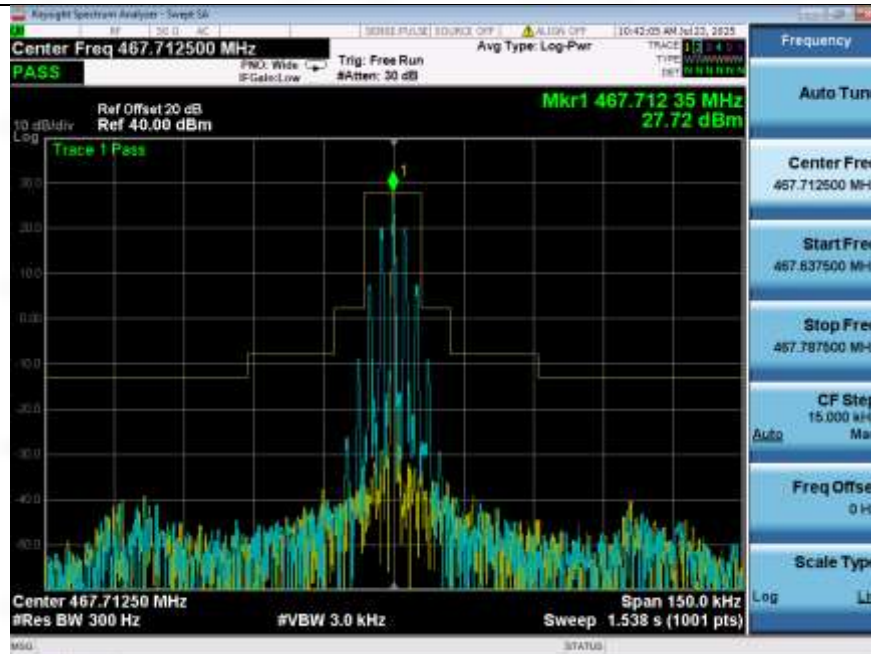


### 5.3.3 Test Data:

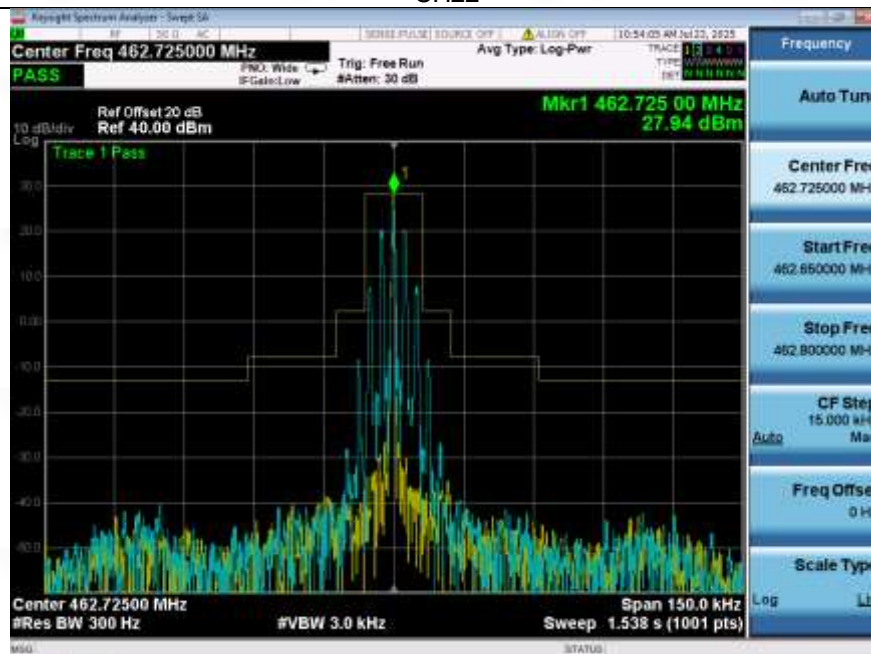
#### Test Graph



### CH14



### CH22



Test Result: PASS

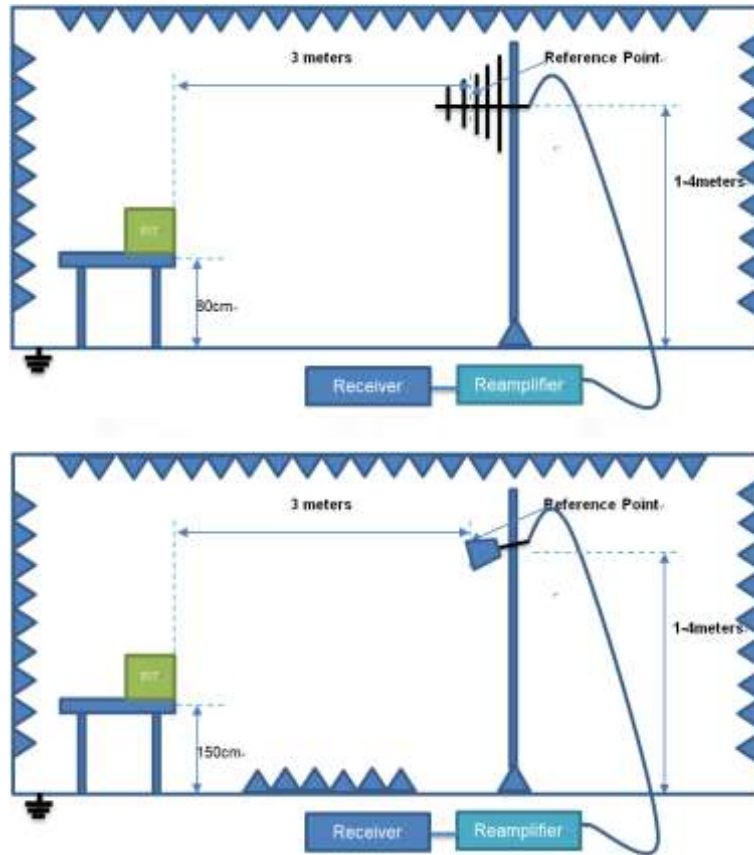
## 5.4 Transmitter Radiated Spurious Emission

Test Requirement:	diated spurious emissions are emissions from the equipment when transmitting into a nonradiating load on a frequency or frequencies that are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communications desired.
Test Method:	FCC Part 95.579:
Test Limit:	Calculation: Limit (dBm) =EL-43-10log10 (TP) Notes: EL is the emission level of the Output Power expressed in dBm, In this application, the EL is P( dBm). Limit (dBm) = P( dBm)-43-10 log (Pwatts) = -13 dBm
Procedure:	<p>1.EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.0 m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in six channels were measured with peak detector.</p> <p>2.A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.</p> <p>3.The EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz for above 1GHz and RBW=100kHz,VBW=300kHz for 30MHz to 1GHz, And the maximum value of the receiver should be recorded as (Pr).</p> <p>4.The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.</p> <p>5.A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl),the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAG) should be recorded after test.</p> <p>The measurement results are obtained as described below: Power(EIRP)=PMea- PAG - Pcl - Ga We used SMF100A microwave signal generator which signal level can up to 33dBm,so we not used power Amplifier for substitution test; The measurement results are amend as described below: Power(EIRP)=PMea- Pcl - Ga</p> <p>6.This value is EIRP since the measurement is calibrated using an antenna of known gain and known input power.</p> <p>7.ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.</p>

### 5.4.1 E.U.T. Operation:

Operating Environment:	
Temperature:	22.9 °C
Humidity:	49.6 %
Atmospheric Pressure:	1010 mbar

#### 5.4.2 Test Setup Diagram:



### 5.4.3 Test Data:

CH4						
Frequency (MHz)	Read Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
269.69	-10.06	-22.02	-32.08	-13	-19.08	Vertical
362.58	-10.66	-22.03	-32.69	-13	-19.69	Horizontal
925.275	-12.24	-16.06	-28.3	-13	-15.3	Vertical
925.275	-14.01	-16.09	-30.1	-13	-17.1	Horizontal
1387.913	-23.19	-31.9	-55.09	-13	-42.09	Vertical
1387.913	-22.12	-31.88	-54	-13	-41	Horizontal
1850.3	-24.3	-31.84	-56.14	-13	-43.14	Vertical
1850.3	-22.67	-31.83	-54.5	-13	-41.5	Horizontal
CH14						
Frequency (MHz)	Read Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
546.36	-9.67	-22	-31.67	-13	-18.67	Vertical
602.36	-10.5	-21.98	-32.48	-13	-19.48	Horizontal
935.425	-11.47	-17.54	-29.01	-13	-16.01	Vertical
935.425	-10.19	-17.55	-27.74	-13	-14.74	Horizontal
1403.138	-23.19	-31.78	-54.97	-13	-41.97	Vertical
1403.138	-22.12	-31.78	-53.9	-13	-40.9	Horizontal
1870.85	-24.3	-31.47	-55.77	-13	-42.77	Vertical
1870.85	-22.72	-31.47	-54.19	-13	-41.19	Horizontal
CH22						
Frequency (MHz)	Read Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
762.36	-9.74	-22	-31.74	-13	-18.74	Vertical
802.36	-10.63	-21.98	-32.61	-13	-19.61	Horizontal
925.45	-11.82	-16.12	-27.94	-13	-14.94	Vertical
925.45	-23.51	-16.12	-39.63	-13	-26.63	Horizontal
1388.175	-23.19	-31.92	-55.11	-13	-42.11	Vertical
1388.175	-22.12	-31.92	-54.04	-13	-41.04	Horizontal
1850.9	-23.76	-31.87	-55.63	-13	-42.63	Vertical
1850.9	-22.83	-31.87	-54.7	-13	-41.7	Horizontal

Note:  
Level=Reading+Factor = Reading +Antenna Factor + Cable loss – Pre-amplifier  
Margining=Level-Limit



## 5.5. Spurious Emission on Antenna Port

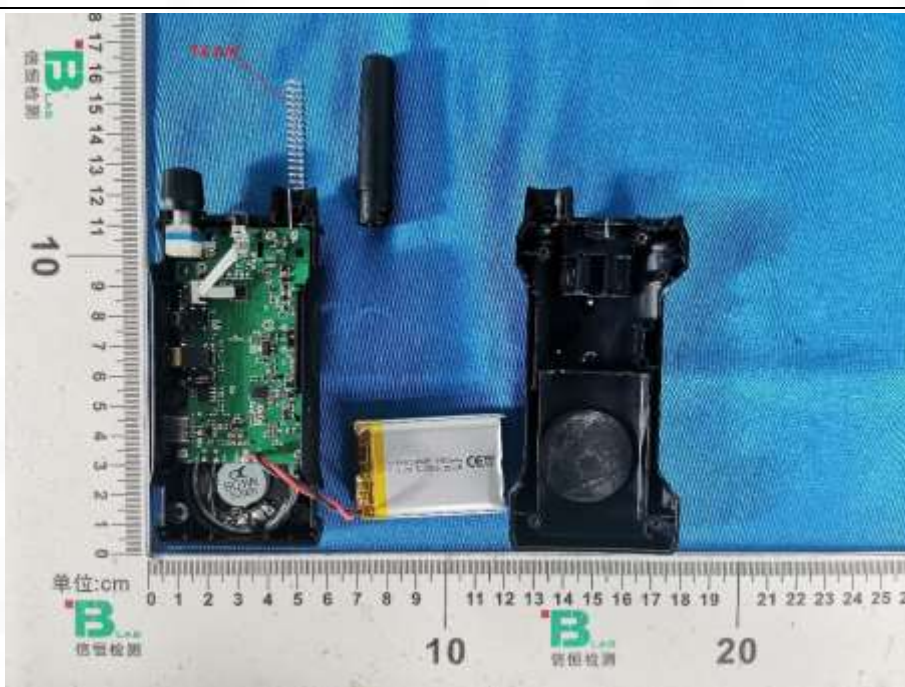
Test Requirement:	Conducted spurious emissions are emissions at the antenna terminals on a frequency or frequencies that are outside a band sufficient to ensure transmission of information of required quality for the class of communication desired
Test Method:	FCC Part 95.579 :
Test Limit:	$43 + 10 \log (P_{\text{watts}})$ Calculation: Limit (dBm) = EL-43-10log10 (TP) Notes: EL is the emission level of the Output Power expressed in dBm, In this application, the EL is P( dBm). Limit (dBm) = P( dBm)-43-10 log (Pwatts) = -13 dBm
Procedure:	1.The RF output of the EUT was connected to a spectrum analyzer through appropriate attenuation. 2. The resolution bandwidth of the spectrum analyzer was set to 100 kHz. Sufficient scans were taken to show any out of band emission up to 10th. Harmonic for the lower and the highest frequency range. Set RBW 100 kHz, VBW 300 kHz in the frequency band 30MHz to 1GHz,while set RBW=1MHz.VBW=3MHz from the 1GHz to 10th Harmonic. 3.The audio input was set to 0 to get the unmodulated carrier, the resulting picture is print out for each channel separation.

### 5.5.1 E.U.T. Operation:

Operating Environment:	
Temperature:	22.9 °C
Humidity:	49.6 %
Atmospheric Pressure:	1010 mbar

### 5.5.2 Test Data:

This equipment is integral antenna.



Test result: Not Applicable

This equipment is Spring antenna.



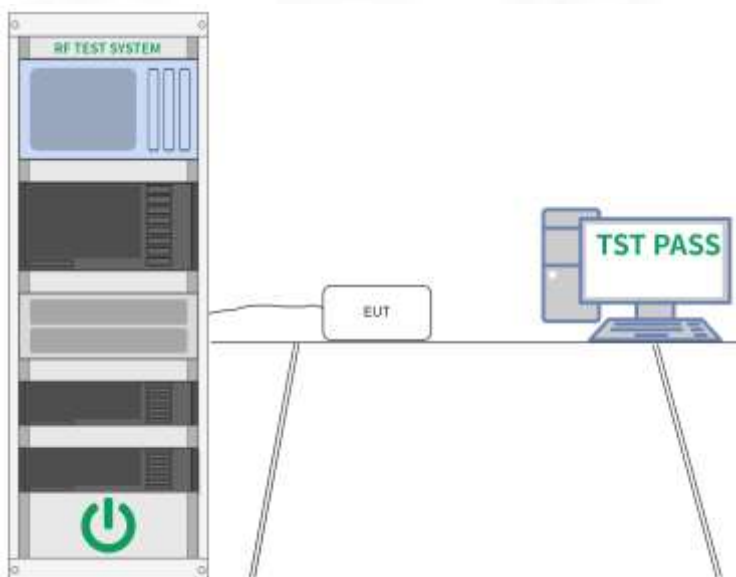
## 5.6.Modulation Limit

Test Requirement:	Modulation limiting is the transmitter circuit's ability to limit the transmitter from producing deviations in excess of a rated system deviation.
Test Method:	FCC Part 95.575, FCC Part 2.1047(b)
Test Limit:	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.
Procedure:	<p>Modulation Limit test procedure:</p> <ol style="list-style-type: none"> <li>1)Connect the equipment as illustrated.</li> <li>2)Adjust the transmitter per the manufacturer's procedure for full rated system deviation.</li> <li>3)Set the test receiver to measure peak positive deviation. Set the audio bandwidth for <math>\leq 0.25</math> Hz to <math>\geq 15,000</math> Hz. Turn the de-emphasis function off.</li> <li>4)Apply a 1000 Hz modulating signal to the transmitter from the audio frequency generator, and adjust the level to obtain 60% of full rated system deviation, this level is as a reference (0dB) and vary the input level from -20 to +20dB.</li> <li>5)Measure both the instantaneous and steady-state deviation at and after the time of increasing the audio input level</li> <li>6)Repeat step 4-5 with input frequency changing to 300Hz, 1000Hz, 1500Hz and 2500Hz in sequence.</li> </ol> <p>Audio Frequency Response:</p> <ol style="list-style-type: none"> <li>1)Connect the equipment as illustrated.</li> <li>2)Adjust the audio input for 20% of rated system deviation at 1kHz using this level as a reference.</li> <li>3)Vary the Audio frequency from 100Hz to 5 kHz and record the frequency deviation.</li> <li>4)Audio Frequency Response <math>= 20 \log_{10} (V_{FREQ}/V_{REF})</math>.</li> </ol>

### 5.6.1 E.U.T. Operation:

Operating Environment:	
Temperature:	22.9 °C
Humidity:	49.6 %
Atmospheric Pressure:	1010 mbar

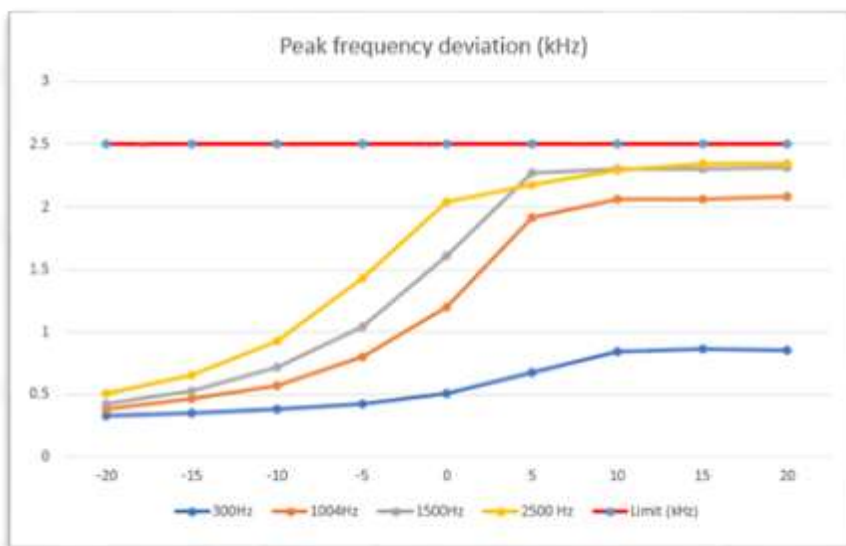
### 5.6.2 Test Setup Diagram:



### 5.6.3 Test Data:

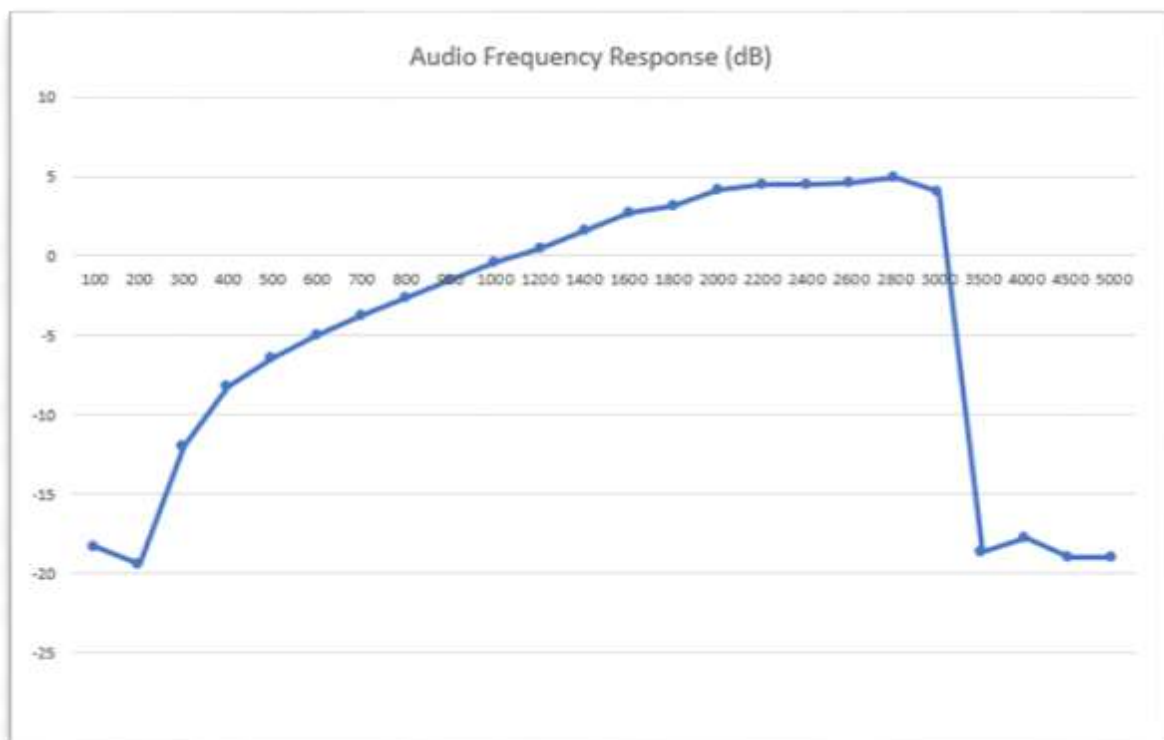
Note: have pre-tested all test frequency, record the worst case mode CH<sub>M</sub> on the report.

TX: CH14						
Modulation Level (dB)	Peak frequency deviation (kHz)				Limit (kHz)	Result
	300Hz	1000Hz	1500Hz	2500 Hz		
-20	0.325	0.383	0.420	0.502	2.5	Pass
-15	0.344	0.461	0.531	0.655		
-10	0.376	0.571	0.716	0.927		
-5	0.425	0.799	1.039	1.431		
0	0.509	1.196	1.611	2.037		
5	0.676	1.911	2.270	2.184		
10	0.846	2.063	2.305	2.299		
15	0.867	2.066	2.301	2.343		
20	0.856	2.084	2.314	2.344		



#### Audio Frequency Response:

TX: CH14			
Audio Frequency (Hz)	Audio Frequency Response (dB)	Audio Frequency (Hz)	Audio Frequency Response (dB)
100	-18.29	2200	4.5
200	-19.44	2400	4.47
300	-12.01	2600	4.61
400	-8.16	2800	4.95
500	-6.43	3000	4.08
600	-4.95	3500	-18.71
700	-3.78	4000	-17.82
800	-2.61	4500	-18.99
900	-1.49	5000	-19.02
1000	-0.42	-	-
1200	0.46	-	-
1400	1.66	-	-
1600	2.77	-	-
1800	3.13	-	-
2000	4.18	-	-



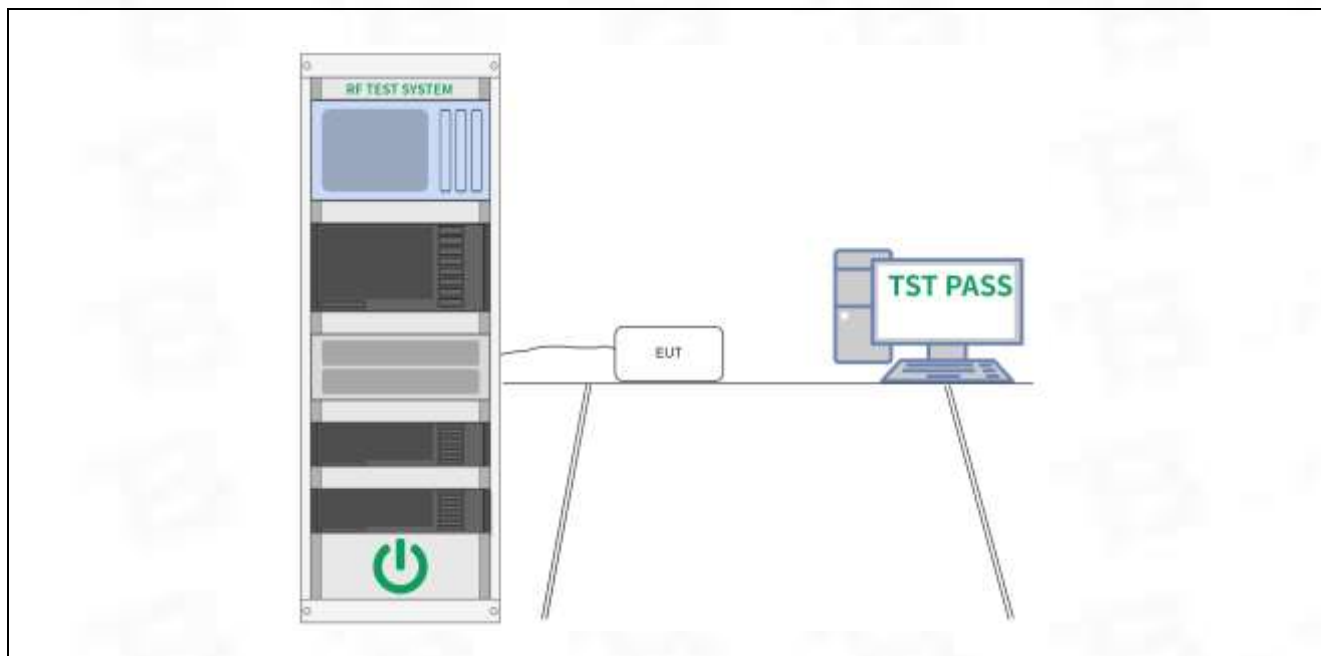
## 5.7. Frequency Stability

Test Requirement:	The carrier frequency stability is the ability of the transmitter to maintain an assigned carrier frequency.
Test Method:	FCC Part 95.565:
Test Limit:	The carrier frequency tolerance shall be better than $\pm 2.5$ ppm.
Procedure:	<p>1. According to FCC Part 2 Section 2.1055 (a)(1), the frequency stability shall be measured with variation of ambient temperature from <math>-30^{\circ}\text{C}</math> to <math>+50^{\circ}\text{C}</math> centigrade.</p> <p>2. According to FCC Part 2 Section 2.1055 (d) (2), for battery powered equipment, the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point, which is specified by the manufacture.</p> <p>3. Vary primary supply voltage from 3.6V to 4.5V.</p> <p>4. The EUT was set in the climate chamber and connected to an external DC power supply. The RF output was directly connected to Spectrum Analyzer. The coupling loss of the additional cables was recorded and taken in account for all the measurements. After temperature stabilization (approx. 20 min for each stage), the frequency for the lower, the middle and the highest frequency range was recorded. For Frequency stability Vs. Voltage the EUT was connected to a DC power supply and the voltage was adjusted in the required ranges. The result was recorded.</p>

### 5.7.1 E.U.T. Operation:

Operating Environment:	
Temperature:	22.9 $^{\circ}\text{C}$
Humidity:	49.6 %
Atmospheric Pressure:	1010 mbar

### 5.7.2 Test Setup Diagram:



#### 5.4.1 Test Data:

TX						
Test conditions		Frequency error (ppm)			Limit (ppm)	Result
Voltage(V)	Temp(°C)	CH4	CH <sub>14</sub>	CH <sub>22</sub>		
3.7	-30	0.69	0.82	0.84	±2.5	Pass
	-20	0.81	0.81	0.83		
	-10	0.85	0.89	0.88		
	0	0.83	0.81	0.83		
	10	0.86	0.86	0.88		
	20	0.83	0.85	0.88		
	30	0.83	0.84	0.84		
	40	0.8	0.88	0.88		
	50	0.89	0.84	0.82		
3.73	20	0.81	0.81	0.83	±2.5	Pass
3.66	20	0.8	0.82	0.92		

## 6 Test Setup Photos

Please refer to the Appendix I Test Setup Photos

## 7 EUT Constructional Details (EUT Photos)

Please refer to the Appendix II External Photos & Appendix III External Photos



Test Report Number: BTF240716R00401



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**-- END OF REPORT --**