MEASUREMENT REPORT

FCC PART 95 Walkie Talkie

FCC ID:	V49CP229
APPLICANT:	CPS Telecom Limited

Application Type:	Certification
Product:	Walkie Talkie
Model No.:	CP229
Brand Name:	CPS
FCC Rule Part(s):	FCC Part 95 Subpart B
Test Procedure(s):	ANSI/TIA-603-E: 2016
Test Date:	May 02 ~ June 20, 2018

Reviewed By : (Kevin Guo)

Approved By : (Robin Wu)

ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.01

The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI/TIA-603-E:2016. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
1801RSU016-U1	Rev. 01	Initial report	07-02-2018	Valid

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§2.1033 General Information

Applicant:	CPS Telecom Limited
Applicant Address:	15B Floor, King Palace Plaza, 55 King Yip Street Kwun Tong, Kowloon, Hong Kong
Manufacturer:	CPS Telecom Limited
Manufacturer Address:	15B Floor, King Palace Plaza, 55 King Yip Street Kwun Tong, Kowloon, Hong Kong
Test Site:	MRT Technology (Suzhou) Co., Ltd
Test Site Address:	D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China
FCC Registration No.:	893164
FCC designation No.:	CN1166
Test Device Serial No.:	N/A ☐ Production ☒ Pre-Production ☐ Engineering

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- **MRT facility is a FCC registered (MRT Reg. No. 893164) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules.**
- **MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.**
- **MRT facility is a VCCI registered (R-20025, G-20034, C-20020, T-20020) test laboratory with the site description on file at VCCI Council.**
- **MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications and Radio testing for FCC, Industry Canada, EU and TELEC Rules.**

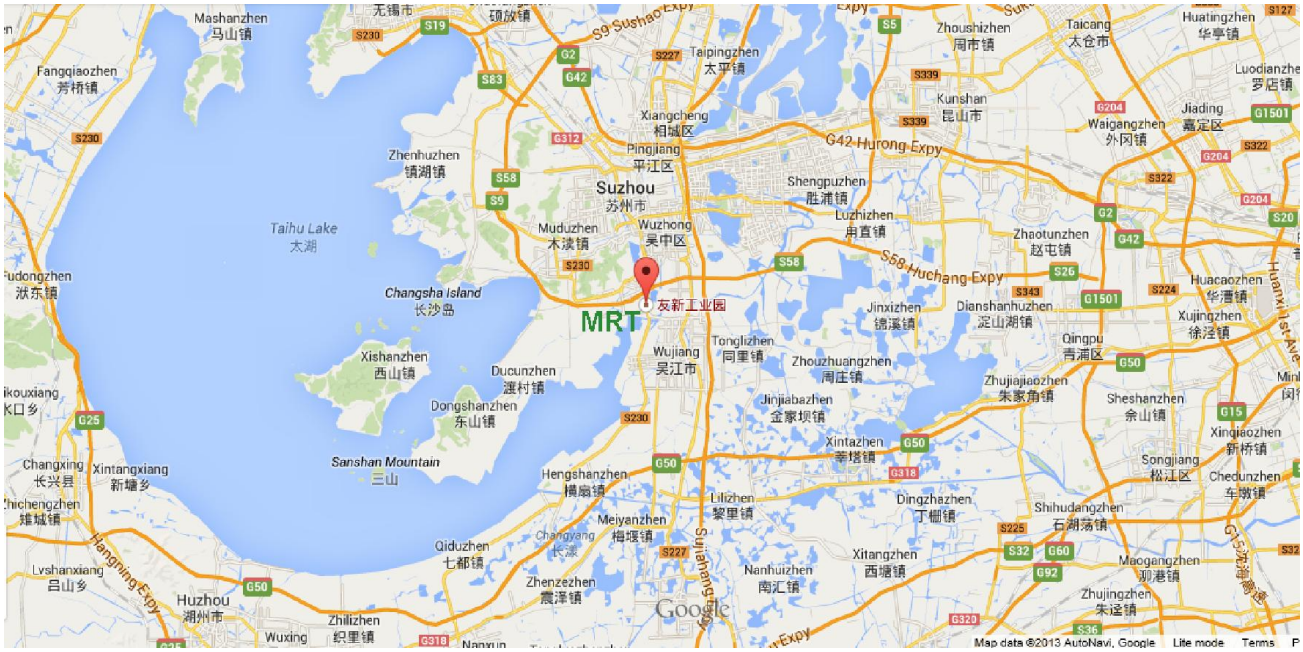
1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taihu Lake. These measurement tests were conducted at the MRT Technology (Suzhou) Co., Ltd. Facility located at D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2009 on September 30, 2013.



2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name	Walkie Talkie
Model No.	CP229
Frequency Range	462.5625~462.7125MHz (1~7 channel) 467.5625~467.7125MHz (8~14 channel) 462.5500~462.7250MHz (15~22 channel)
Maximum Radiated Output Power	18.038dBm
Type of Modulation	FM
Antenna Type	Fixed external

2.2. Frequency Operation / Channel List

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

2.3. Test Channels

Channel	Frequency
1	462.5625MHz
8	467.5625MHz
22	462.7250MHz

2.4. Applicable standards

The following report is prepared on behalf of the CPS Telecom Limited in accordance with FCC Part 95 Subpart A and Subpart B and FCC Part 2 of the Federal Communication Commission rules.
The objective is to determine compliance with FCC Part 95 Subpart A and Subpart B and FCC Part 2 of the Federal Communication Commission rules.
Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which results in lowering the emission, should be checked to ensure compliance has been maintained.

2.5. Test Methodology

All measurements contained in this report were conducted with TIA-603-E-2016 Land Mobile FM or PM Communications Equipment Measurement and Performance Standards and ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

3. Antenna Requirements

Excerpt from §95.587 of the FCC Rules/Regulations:

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.

- The antenna of the **device** is **permanently attached.**
- There are no provisions for connection to an external antenna.

Conclusion:

The **device** unit complies with the requirement of §15.203.

4. TEST EQUIPMENT CALIBRATION DATE

Conducted Test – TR3

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Power Meter	Agilent	U2021XA	MRTSUE06030	1 year	2018/12/06
Temperature Humidity Chamber	BAOYT	BYH-150CL	MRTSUE06051	1 year	2018/12/06
EXA Signal Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2019/04/20
Audio Analyzer	Agilent	U8903B	MRTSUE06143	1 year	2018/08/11
Modulation Analyzer	HP	8901A	MRTSUE06210	1 year	2018/07/08
Temperature/Humidity Meter	Testo	608-H1	MRTSUE06401	1 year	2018/08/14

Unwanted Radiated Spurious – AC1

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
PXA Signal Analyzer	Keysight	9030B	MRTSUE06395	1 year	2018/09/13
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2018/08/18
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2018/11/20
EXA Signal Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2019/04/20
Microwave System Amplifier	Agilent	83017A	MRTSUE06076	1 year	2018/11/17
Bilog Period Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2018/11/18
Broad Band Horn Antenna	Schwarzbeck	BBHA9120D	MRTSUE06023	1 year	2018/10/21
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06024	1 year	2018/12/14
Amplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2019/06/13
Hygrothermograph	Testo	608-H1	MRTSUE06403	1 year	2018/08/14
Anechoic Chamber	TDK	Chamber-AC1	MRTSUE06212	1 year	2019/05/02

5. MEASUREMENT UNCERTAINTY

Where relevant, the following test 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.

Radiated Emission Measurement
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 9kHz ~ 1GHz: ± 4.2dB 1GHz ~ 40GHz: ± 4.8dB

6. TEST RESULT

6.1. Summary

Product Name: **Walkie Talkie**
FCC ID: **V49CP229**
Number of Channels: **22**

FCC Part Section(s)	Test Description	Test Result	Reference
§2.1055, §95.565	Frequency Stability	Pass	Section 6.2
§2.1046, §95.567	Radiated Output Power (ERP)	Pass	Section 6.3
§2.1049, §95.573	Authorized Bandwidth	Pass	Section 6.4
§2.1049, §95.579	Emission Mask	Pass	Section 6.5
§2.1047, §95.575	Modulation Characteristics	Pass	Section 6.6
§2.1053, §95.579	Radiated Spurious Emissions	Pass	Section 6.7

Notes:

(1) All modes of operation were investigated. The test results shown in the following sections represent the worst case emissions.

(2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.

(3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.

6.2. Frequency Stability

6.2.1. Provisions Applicable

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.

6.2.2. Test Procedure

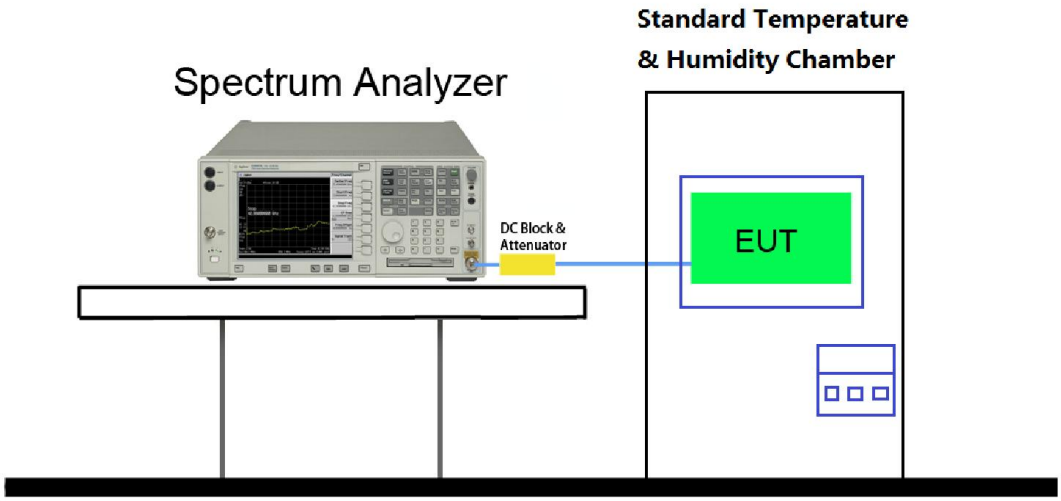
6.2.2.1. Frequency stability versus environmental temperature

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 1 KHz and Video Resolution Bandwidth to 1 KHz and Frequency Span to 50KHz. Record this frequency as reference frequency.
3. Set the temperature of chamber to 50°C. 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°C decreased per stage until the lowest temperature -30°C is measured, Record all measured frequencies on each temperature step.

6.2.2.2. Frequency stability versus input voltage

1. Setup the configuration per figure 1 for frequencies measured at temperature if it is within15°C to 25°C. Otherwise, an environment chamber set for a temperature of 20°C shall be used. The EUT shall be powered by DC 3.7 V.
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.

6.2.3. Test Setup



6.2.4. Test Result

Product	Walkie Talkie	Temperature	25°C
Test Engineer	Lewis Huang	Relative Humidity	54%
Test Site	TR3	Test Date	2018/05/02

Assigned Frequency (MHz)	Test Voltage (V)	Test Temperature (°C)	Measured Frequency (MHz)	Frequency Deviation (%)	Limit (%)
Channel 1 462.5625	3.7	-30	462.562573	0.0000158	0.00025
		-20	462.562574	0.0000160	0.00025
		-10	462.562574	0.0000160	0.00025
		0	462.562575	0.0000162	0.00025
		10	462.562572	0.0000156	0.00025
		20	462.562569	0.0000149	0.00025
		30	462.562570	0.0000151	0.00025
		40	462.562572	0.0000156	0.00025
		50	462.562575	0.0000162	0.00025
	3.3	25	462.562574	0.0000160	0.00025
	4.0	25	462.562576	0.0000164	0.00025
Channel 8 467.5625	3.7	-30	467.562568	0.0000145	0.00025
		-20	467.562559	0.0000126	0.00025
		-10	467.562560	0.0000128	0.00025
		0	467.562561	0.0000130	0.00025
		10	467.562565	0.0000139	0.00025
		20	467.562558	0.0000124	0.00025
		30	467.562561	0.0000130	0.00025
		40	467.562570	0.0000150	0.00025
		50	467.562562	0.0000133	0.00025
	3.3	25	467.562562	0.0000133	0.00025
	4.0	25	467.562561	0.0000130	0.00025

Note: Frequency Deviation= (Measured Frequency–Declared Frequency)/ Declared Frequency*100.

Assigned Frequency (MHz)	Test Voltage (V)	Test Temperature (°C)	Measured Frequency (MHz)	Frequency Deviation (%)	Limit (%)
Channel 22 462.7250	3.7	-30	462.725071	0.0000153	0.00025
		-20	462.725069	0.0000149	0.00025
		-10	462.725070	0.0000151	0.00025
		0	462.725071	0.0000153	0.00025
		10	462.725074	0.0000160	0.00025
		20	462.725068	0.0000147	0.00025
		30	462.725069	0.0000149	0.00025
		40	462.725068	0.0000147	0.00025
		50	462.725073	0.0000158	0.00025
	3.3	25	462.725072	0.0000156	0.00025
	4.0	25	462.725071	0.0000153	0.00025

Note: Frequency Deviation= (Measured Frequency–Declared Frequency)/ Declared Frequency*100.

6.3. RF Output Power

6.3.1. Provisions Applicable

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.

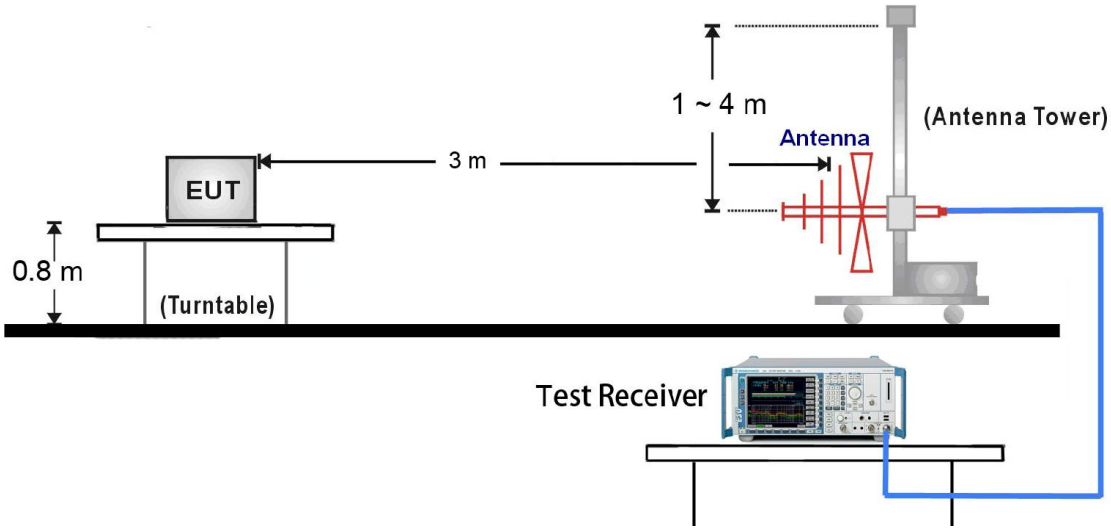
6.3.2. Test Procedure

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.

6.3.3. Test Setup



6.3.4. Test Result

Product	Walkie Talkie	Temperature	26°C
Test Engineer	Lewis Huang	Relative Humidity	54%
Test Site	TR3 & AC1	Test Date	2018/05/02

Transmitter Output Power

Channel	Channel Description	Frequency	Output Power	
		MHz	dBm	W
1	FRS	462.5625	27.276	0.5341
2		462.5875	27.194	0.5241
3		462.6125	27.238	0.5294
4		462.6375	27.220	0.5272
5		462.6625	27.202	0.5250
6		462.6875	27.161	0.5201
7		462.7125	27.228	0.5282
8	FRS	467.5625	26.947	0.4951
9		467.5875	26.902	0.4900
10		467.6125	26.891	0.4888
11		467.6375	26.890	0.4887
12		467.6625	26.846	0.4837
13		467.6875	26.858	0.4851
14		467.7125	26.852	0.4844
15	FRS	462.5500	27.196	0.5243
16		462.5750	27.178	0.5222
17		462.6000	27.158	0.5198
18		462.6250	27.175	0.5218
19		462.6500	27.150	0.5188
20		462.6750	27.148	0.5186
21		462.7000	27.161	0.5201
22		462.7250	27.129	0.5163

Effective Radiated Power (e.r.p)

Channel	Channel Description	Frequency	SG Reading	Cable Loss	Substitute Antenna Gain	Effective Radiated Power (e.r.p)	
		MHz	dBm	dB	dBd	dBm	W
1	FRS	462.5625	10.907	0.44	7.76	18.227	0.0665
4		462.6375	10.718	0.44	7.76	18.038	0.0637
7		462.7125	10.411	0.44	7.76	17.731	0.0593
8	FRS	467.5625	9.420	0.44	7.76	16.740	0.0472
11		467.6375	9.372	0.44	7.76	16.692	0.0467
14		467.7125	9.315	0.44	7.76	16.635	0.0461
15	FRS	462.5500	10.517	0.44	7.76	17.837	0.0608
19		462.6500	10.512	0.44	7.76	17.832	0.0607
22		462.7250	10.424	0.44	7.76	17.744	0.0595

Note: ERP (dBm) = SG Reading (dBm) - Cable Loss (dB) + Substitute Antenna Gain (dBd)

6.4. Authorized Bandwidth

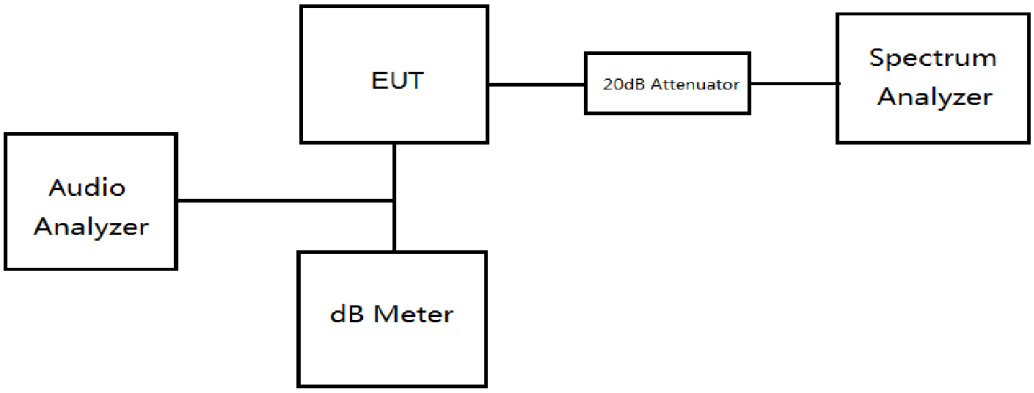
6.4.1. Provisions Applicable

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

6.4.2. Test Procedure

1. The set-up test equipment in the following configuration:
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. Setting the SPA Center Frequency = fundamental frequency, RBW=300 Hz, VBW≥ 3*RBW, Span=20 KHz.
4. Setting SPA to Max hold. Mark peak -20dB.

6.4.3. Test Setup



6.4.4. Test Result

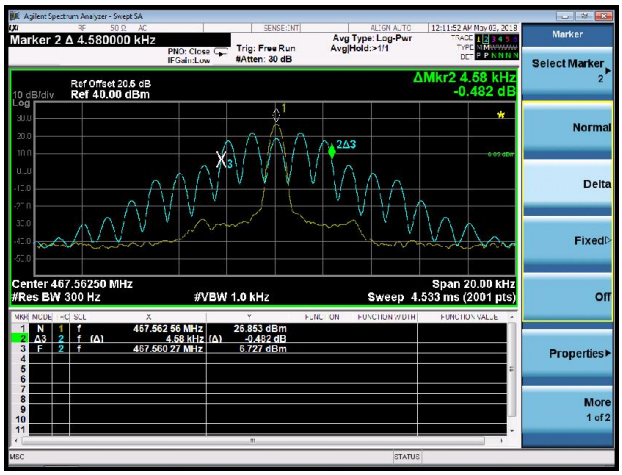
Product	Walkie Talkie	Temperature	26°C
Test Engineer	Lewis Huang	Relative Humidity	54%
Test Site	TR3	Test Date	2018/05/02

Test Mode	Channel No.	Frequency (MHz)	Authorized Bandwidth (KHz)	Limit (KHz)	Result
FRS	01	462.5625	4.60	≤12.5	Pass
	08	467.5625	4.58	≤12.5	Pass
	22	462.7250	4.58	≤12.5	Pass

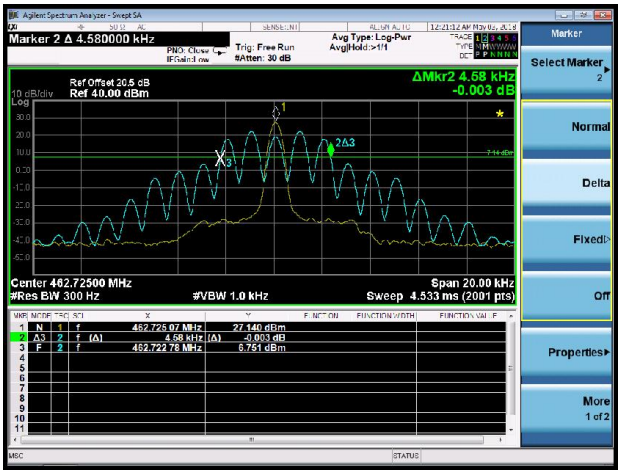
Authorized Bandwidth

Channel 01 (462.5625MHz)

Channel 08 (462.5625MHz)



Channel 22 (462.7250MHz)



6.5. Unwanted Emissions Mask

6.5.1. Provisions Applicable

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.

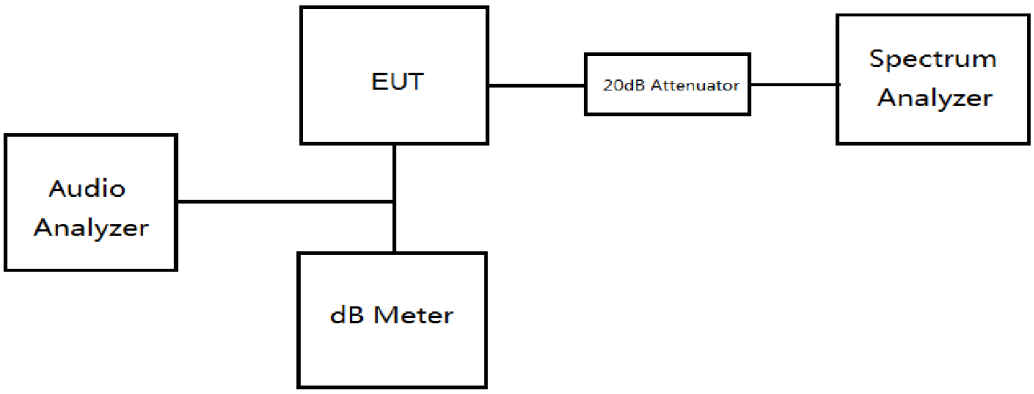
(3) 43 + 10 log (P) dB in any frequency band removed from the channel center frequency by more than 31.25 kHz

6.5.2. Test Procedure

1. Connect a signal generator to the input of the EUT.
2. Configure the signal generator to transmit the applicable radio service signal.
3. Configure the signal level to be just below the AGC threshold.
4. Connect a spectrum analyzer to the output of the EUT using appropriate attenuation.
5. Set the spectrum analyzer center frequency to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between 2 × OBW and 5 × OBW.
6. The nominal RBW shall be 300 Hz for 16K0F3E and 100 Hz for all other emissions types.
7. Set the reference level of the spectrum analyzer to level as f0.
8. Set spectrum analyzer detection mode to peak, and the trace mode to max hold.
9. Confirm the signal is within the appropriate emissions mask.
10. Capture the emissions mask plot for inclusion in the test report.
11. Repeat step d) to step j) with input signal amplitude set at 3 dB above the AGC threshold
12. Repeat step b) to step k) for all operational bands and emissions types.

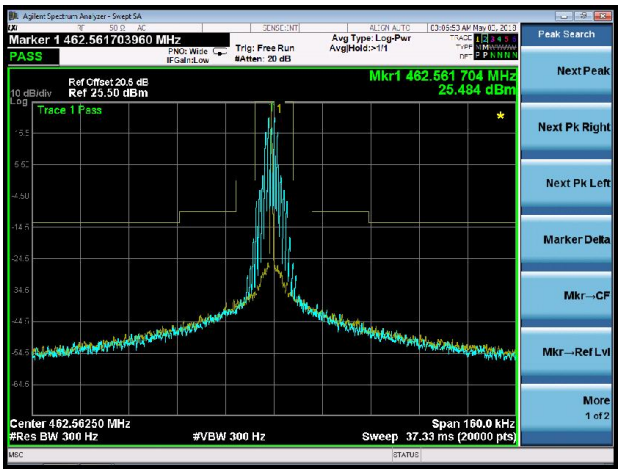
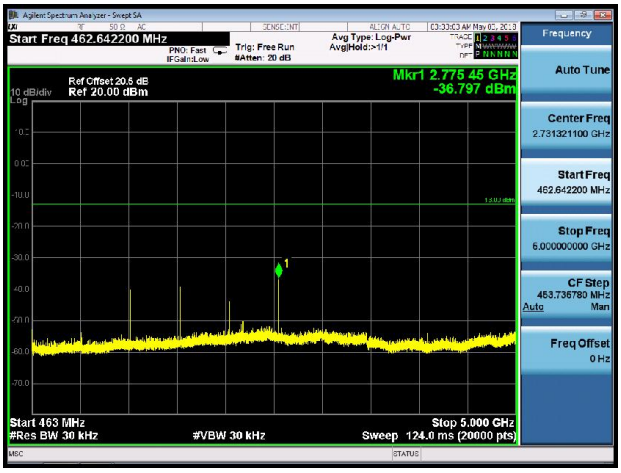
13. Measure the input signal for all operational bands and emission types and include results in the test report.

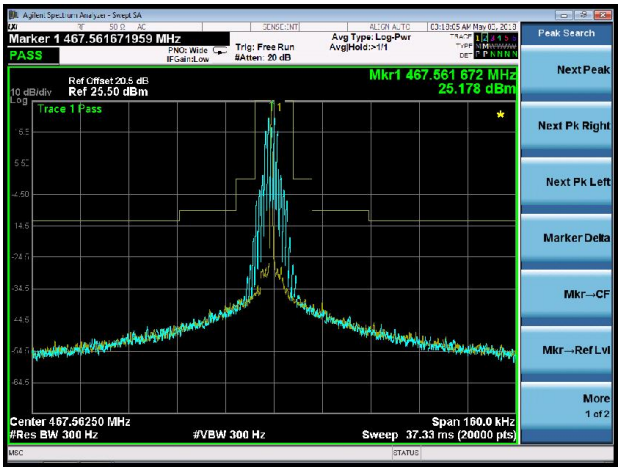
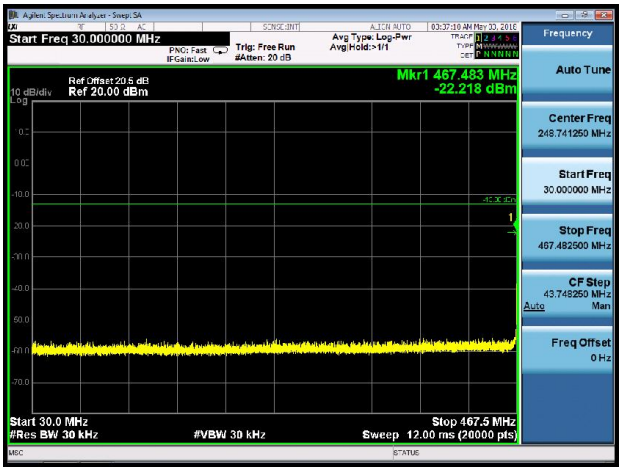
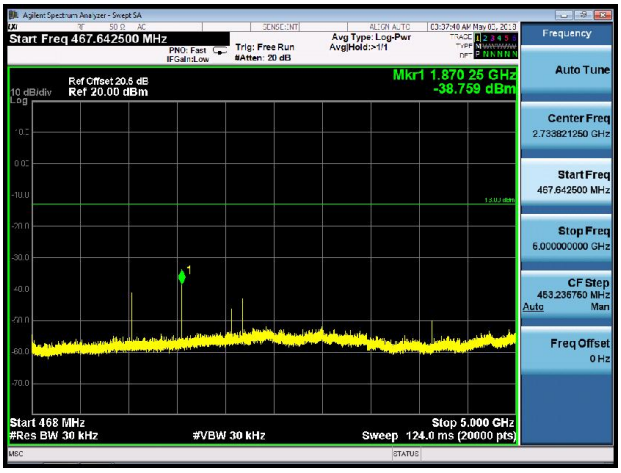
6.5.3. Test Setup

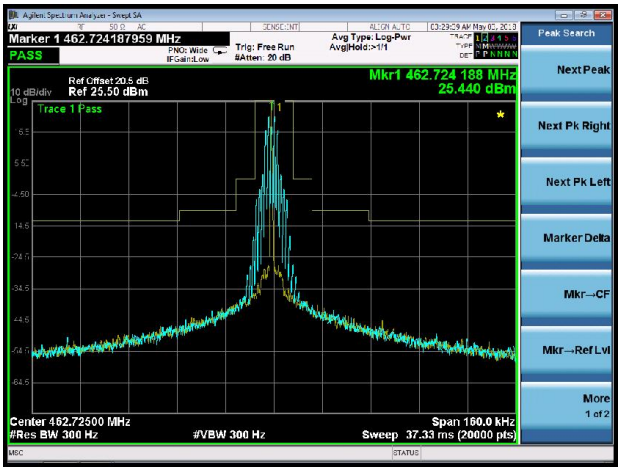
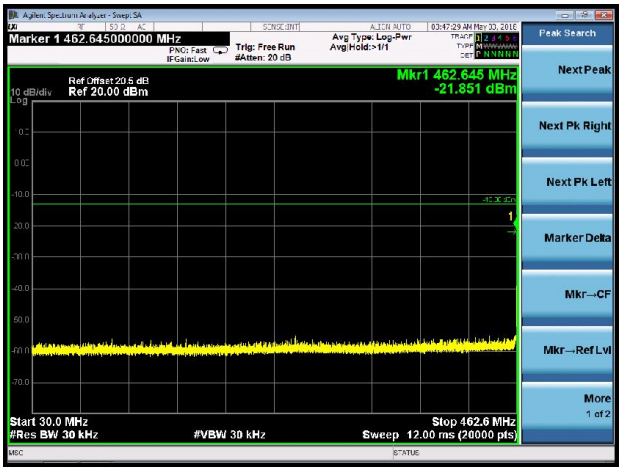
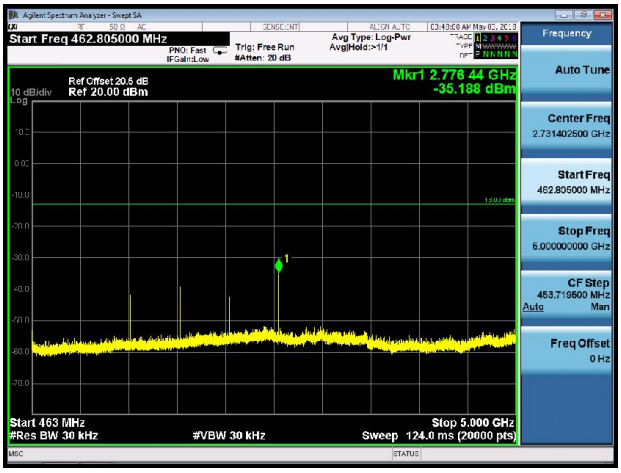


6.5.4. Test Result

Product	Walkie Talkie	Temperature	26°C
Test Engineer	Lewis Huang	Relative Humidity	54%
Test Site	TR3	Test Date	2018/05/02

Channel 01 (462.5625MHz)	
Mask	Spurious Emission
	
Spurious Emission	
	

Channel 08 (467.5625MHz)	
Mask	Spurious Emission
	
Spurious Emission	
	

Channel 22 (462.7250MHz)	
Mask	Spurious Emission
	
Spurious Emission	
	

6.6. Modulation Characteristics

6.6.1. Provisions Applicable

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.

6.6.2. Test Procedure

6.6.2.1. Frequency deviation

1. Configure the EUT as shown in figure 1, adjust the audio input for 60% of rated system deviation at 1 KHz 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 500, 1000, 2500 and 3125Hz in sequence.

6.6.2.2. Modulation Frequency Response

1. Configure the EUT as shown in figure 1.
2. Adjust the audio signal generator frequency to the sound pressure level 107dBSPL at the microphone of the EUT.
3. Vary the Audio frequency from 100 Hz to 5 KHz and record the frequency deviation.
4. The peak frequency deviation must not exceed 2.5 KHz.

6.6.2.3. Audio Frequency Response

1. Connect the equipment in figure 2.
2. Connect the audio frequency generator as close as possible the input of the post limiter low pass filter within the transmitter under test.
3. Connect the audio spectrum analyzer to the output of the post limiter low pass filter within the transmitter under test.
4. Apply a 1000 Hz tone from the audio frequency generator and adjust the level per manufacturer's specifications.
5. Record the dB level of the 1000 Hz spectral line on the audio spectrum analyzer as LEV1.
6. Set the audio frequency generator to the desired test frequency between 3000 Hz and the upper low pass filter limit.

7. Record audio spectrum analyzer levels, at the test frequency in step (6).
8. Record the dB level on the audio spectrum analyzer as LEV2. Method of Measurement for transmitters.

6.6.3. Test Setup

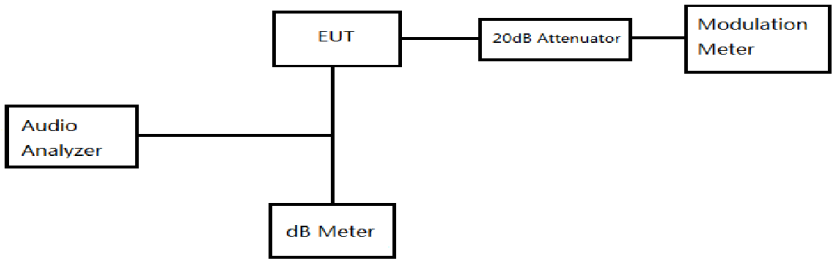


Figure 1

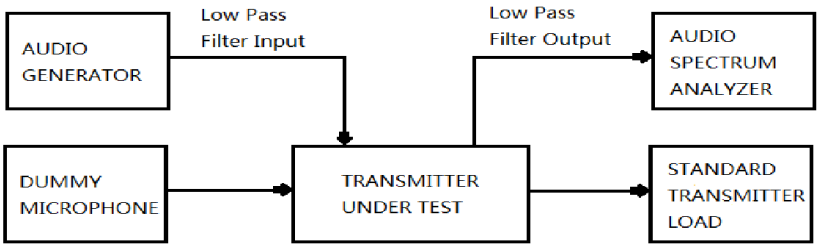
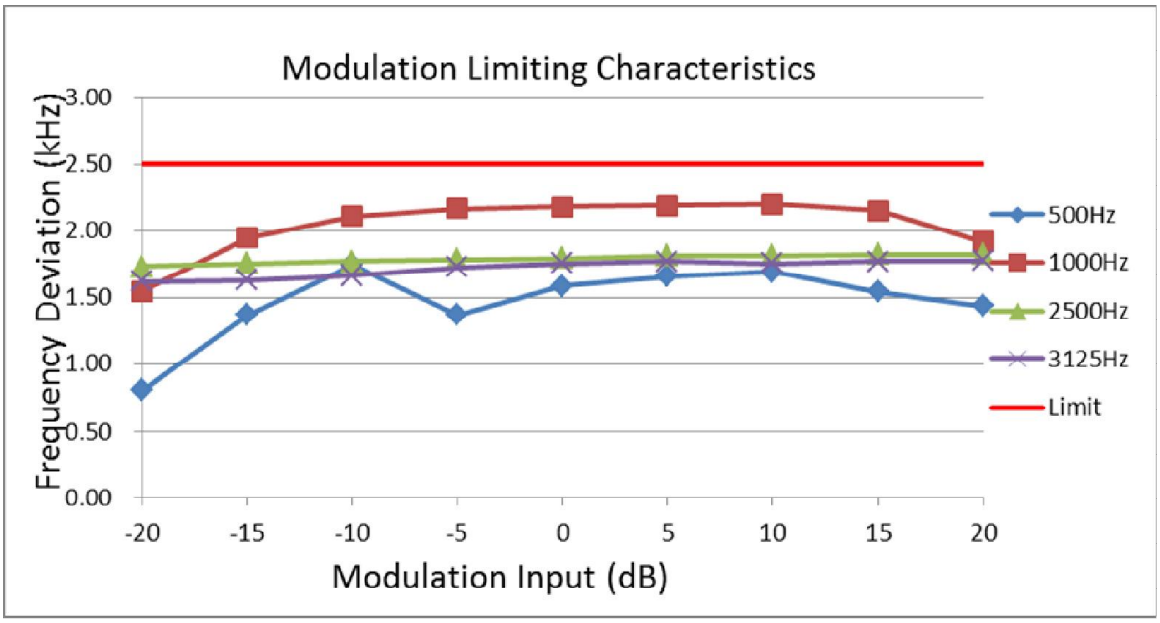


Figure 2

6.6.4. Test Result

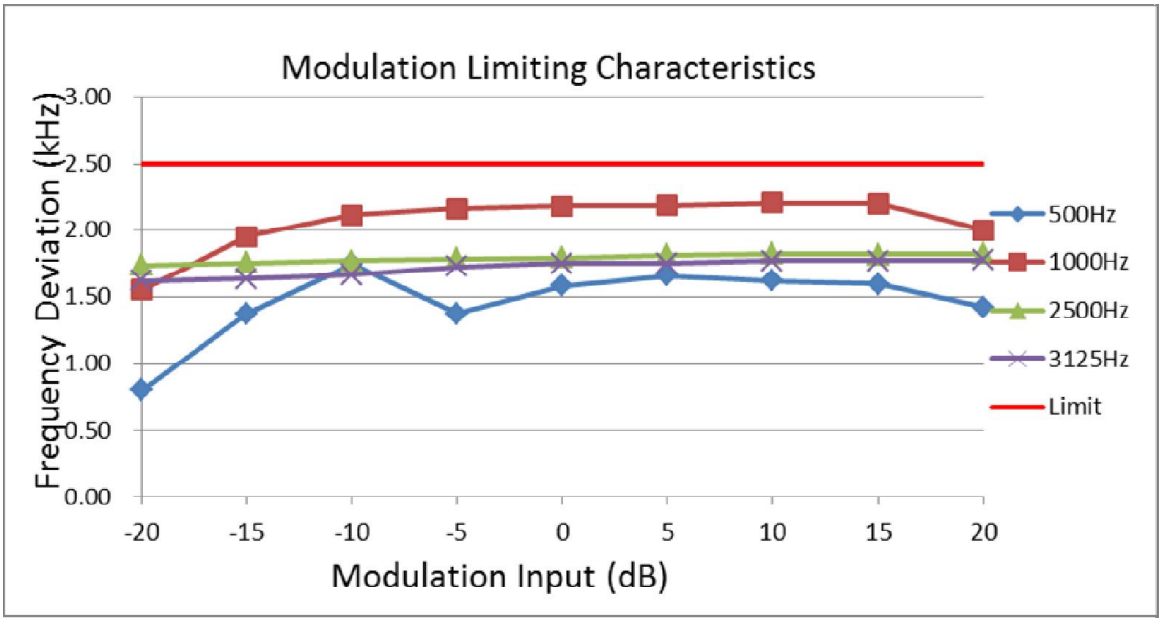
Product	Walkie Talkie	Temperature	26°C
Test Engineer	Jone Zhang	Relative Humidity	54%
Test Item	Frequency Deviation	Date of Test	2018/05/02

Channel 01: 462.5625MHz FRS					
Modulation Input (dB)	Peak Frequency Deviation (kHz) at 500Hz	Peak Frequency Deviation (kHz) at 1000Hz	Peak Frequency Deviation (kHz) at 2500Hz	Peak Frequency Deviation (kHz) at 3125Hz	Limit (kHz)
-20.00	0.81	1.55	1.73	1.62	2.5
-15.00	1.37	1.95	1.75	1.63	2.5
-10.00	1.75	2.11	1.77	1.66	2.5
-5.00	1.37	2.17	1.78	1.73	2.5
0.00	1.59	2.18	1.79	1.75	2.5
5.00	1.66	2.19	1.81	1.77	2.5
10.00	1.69	2.20	1.82	1.76	2.5
15.00	1.54	2.16	1.82	1.77	2.5
20.00	1.44	1.92	1.82	1.78	2.5



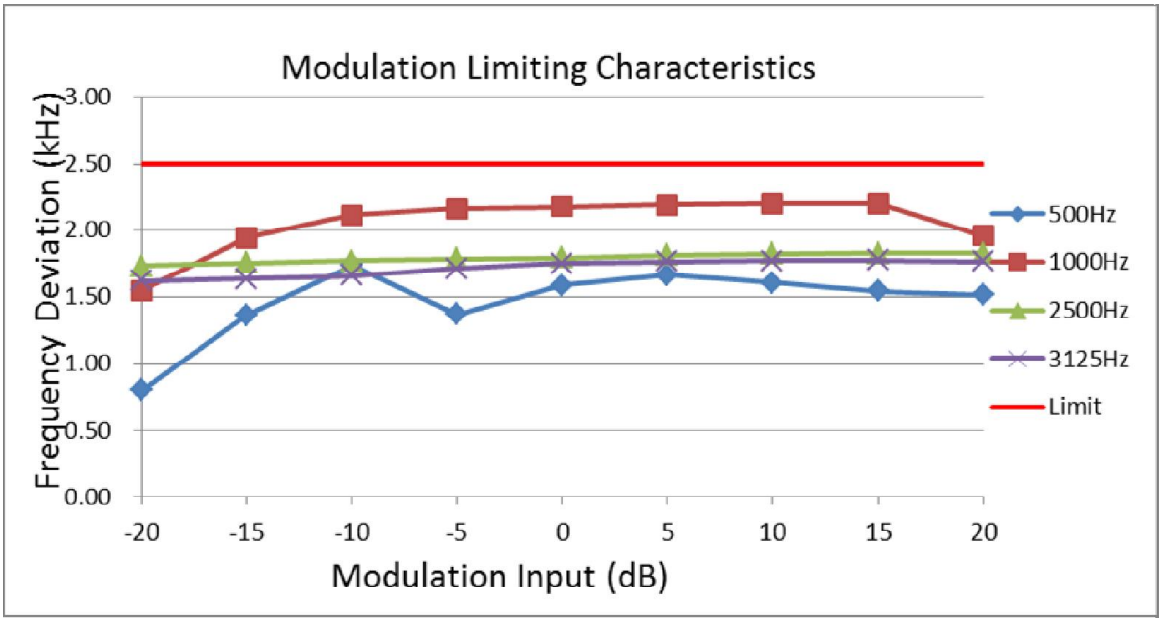
Product	Walkie Talkie	Temperature	26°C
Test Engineer	Jone Zhang	Relative Humidity	54%
Test Item	Frequency Deviation	Date of Test	2018/05/02

Channel 08: 467.5625MHz FRS					
Modulation Input (dB)	Peak Frequency Deviation (kHz) at 500Hz	Peak Frequency Deviation (kHz) at 1000Hz	Peak Frequency Deviation (kHz) at 2500Hz	Peak Frequency Deviation (kHz) at 3125Hz	Limit (kHz)
-20.00	0.80	1.55	1.74	1.62	2.50
-15.00	1.37	1.95	1.75	1.63	2.50
-10.00	1.75	2.12	1.77	1.66	2.50
-5.00	1.38	2.16	1.78	1.73	2.50
0.00	1.58	2.18	1.80	1.75	2.50
5.00	1.66	2.19	1.81	1.75	2.50
10.00	1.62	2.21	1.82	1.77	2.50
15.00	1.60	2.20	1.82	1.77	2.50
20.00	1.42	2.00	1.82	1.77	2.50



Product	Walkie Talkie	Temperature	26°C
Test Engineer	Jone Zhang	Relative Humidity	54%
Test Item	Frequency Deviation	Date of Test	2018/05/02

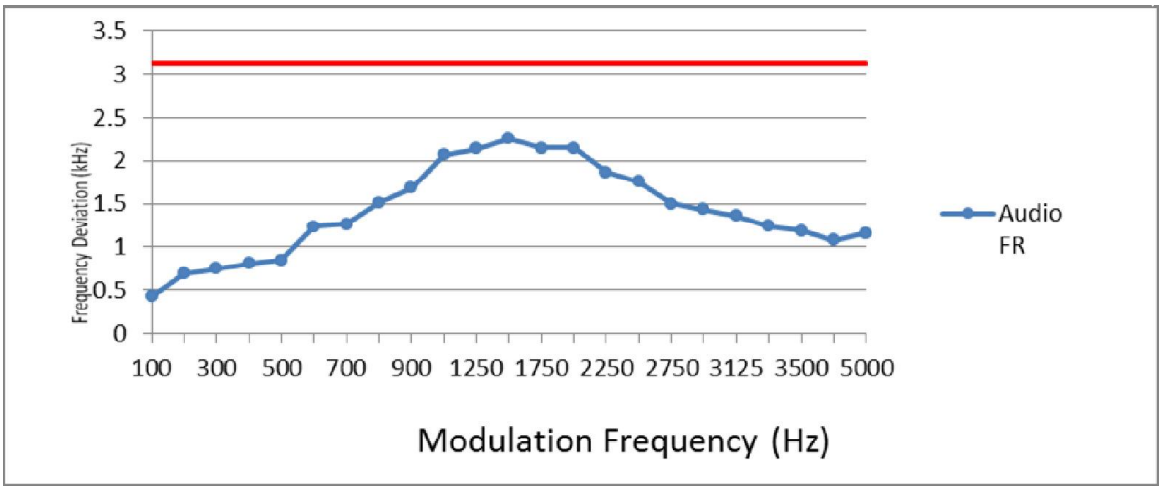
Channel 22: 462.7250MHz FRS					
Modulation Input (dB)	Peak Frequency Deviation (kHz) at 500Hz	Peak Frequency Deviation (kHz) at 1000Hz	Peak Frequency Deviation (kHz) at 2500Hz	Peak Frequency Deviation (kHz) at 3125Hz	Limit (kHz)
-20.00	0.81	1.55	1.73	1.62	2.50
-15.00	1.37	1.94	1.75	1.64	2.50
-10.00	1.74	2.12	1.77	1.66	2.50
-5.00	1.37	2.16	1.78	1.71	2.50
0.00	1.59	2.18	1.80	1.75	2.50
5.00	1.66	2.20	1.81	1.77	2.50
10.00	1.61	2.20	1.82	1.77	2.50
15.00	1.54	2.20	1.83	1.77	2.50
20.00	1.51	1.96	1.83	1.77	2.50



Product	Walkie Talkie	Temperature	26°C
Test Engineer	Jone Zhang	Relative Humidity	54%
Test Item	Audio Frequency Response	Date of Test	2018/05/02

Channel 01: 462.5625MHz FRS		
Modulation Frequency (Hz)	Peak Modulation Deviation (kHz)	Limit (kHz)
100	0.43	3.125
200	0.69	3.125
300	0.75	3.125
400	0.81	3.125
500	0.85	3.125
600	1.23	3.125
700	1.26	3.125
800	1.51	3.125
900	1.68	3.125
1000	2.07	3.125
1250	2.14	3.125
1500	2.26	3.125
1750	2.15	3.125
2000	2.15	3.125
2250	1.87	3.125
2500	1.76	3.125
2750	1.5	3.125
3000	1.43	3.125
3125	1.36	3.125
3250	1.24	3.125
3500	1.19	3.125
4000	1.08	3.125
5000	1.16	3.125

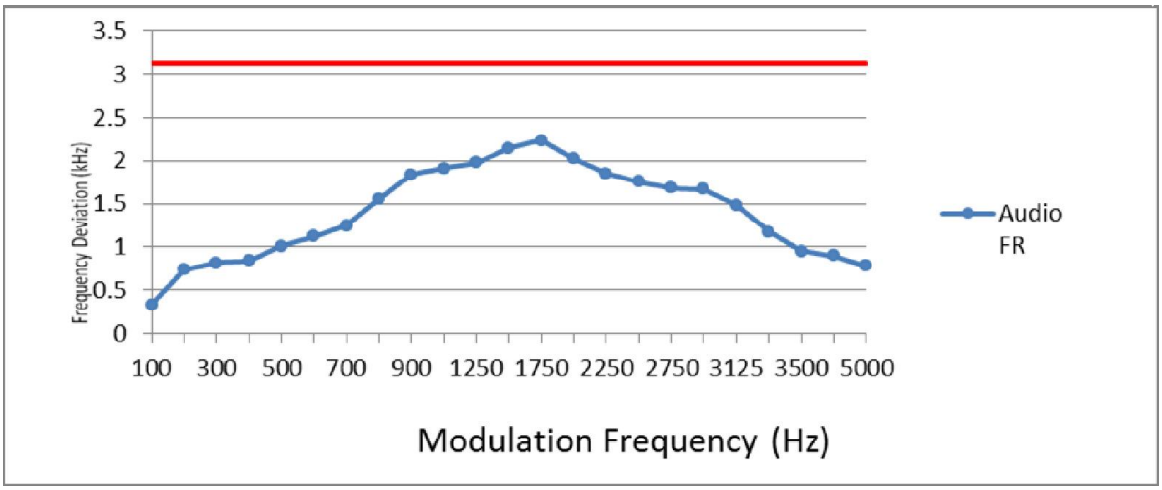
Audio Frequency Response



Product	Walkie Talkie	Temperature	26°C
Test Engineer	Jone Zhang	Relative Humidity	54%
Test Item	Audio Frequency Response	Date of Test	2018/05/02

Channel 08: 467.5625MHz FRS		
Modulation Frequency (Hz)	Peak Modulation Deviation (kHz)	Limit (kHz)
100	0.33	3.125
200	0.74	3.125
300	0.82	3.125
400	0.84	3.125
500	1.01	3.125
600	1.12	3.125
700	1.25	3.125
800	1.56	3.125
900	1.84	3.125
1000	1.91	3.125
1250	1.98	3.125
1500	2.15	3.125
1750	2.24	3.125
2000	2.02	3.125
2250	1.85	3.125
2500	1.76	3.125
2750	1.68	3.125
3000	1.67	3.125
3125	1.48	3.125
3250	1.17	3.125
3500	0.95	3.125
4000	0.90	3.125
5000	0.78	3.125

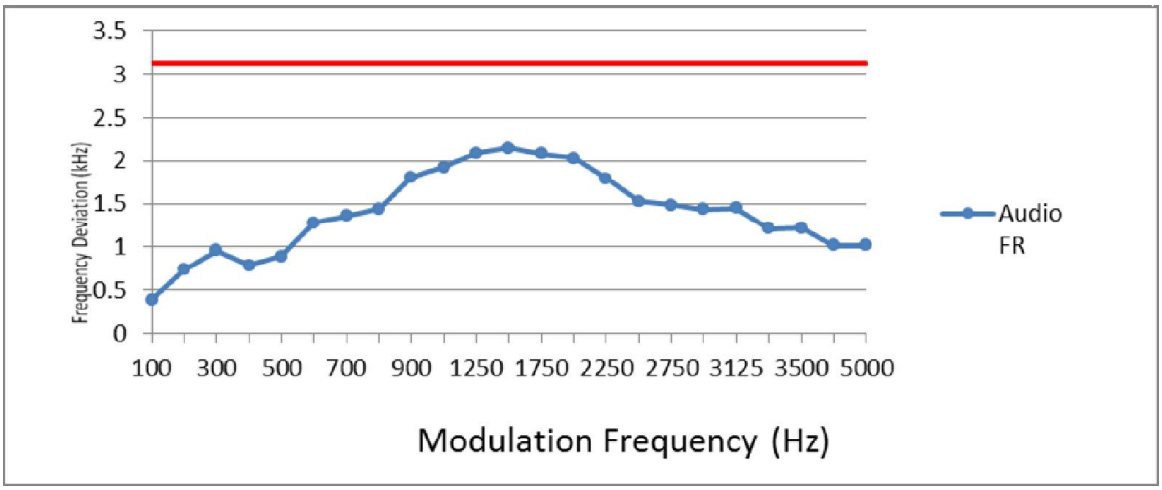
Audio Frequency Response



Product	Walkie Talkie	Temperature	26°C
Test Engineer	Jone Zhang	Relative Humidity	54%
Test Item	Audio Frequency Response	Date of Test	2018/05/02

Channel 22: 462.7250MHz FRS		
Modulation Frequency (Hz)	Peak Modulation Deviation (kHz)	Limit (kHz)
100	0.39	3.125
200	0.74	3.125
300	0.96	3.125
400	0.79	3.125
500	0.89	3.125
600	1.28	3.125
700	1.36	3.125
800	1.44	3.125
900	1.81	3.125
1000	1.93	3.125
1250	2.09	3.125
1500	2.15	3.125
1750	2.08	3.125
2000	2.03	3.125
2250	1.79	3.125
2500	1.53	3.125
2750	1.48	3.125
3000	1.43	3.125
3125	1.45	3.125
3250	1.21	3.125
3500	1.22	3.125
4000	1.02	3.125
5000	1.02	3.125

Audio Frequency Response



6.7. Unwanted Emissions Radiated

6.7.1. Provisions Applicable

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

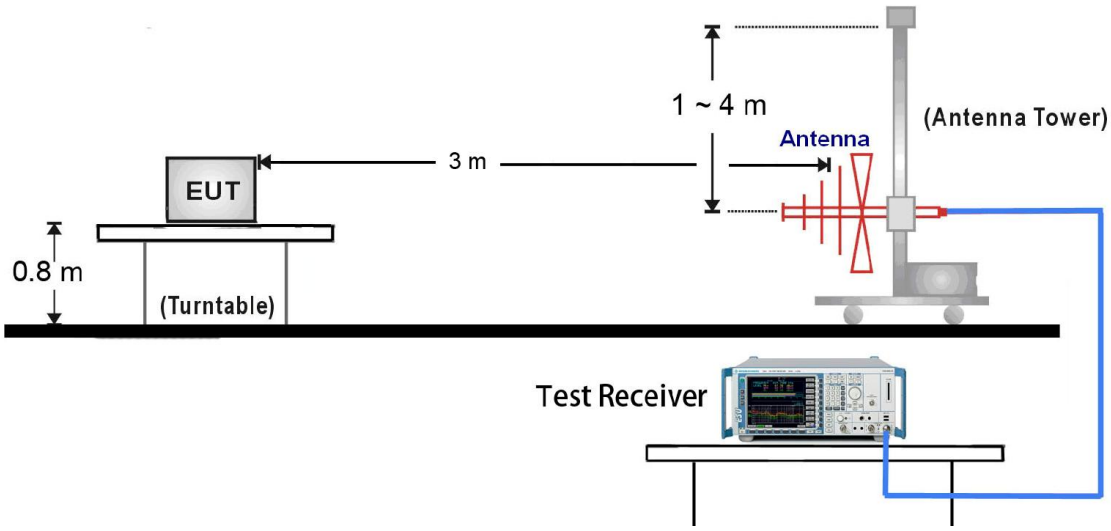
6.7.2. Test Procedure

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.

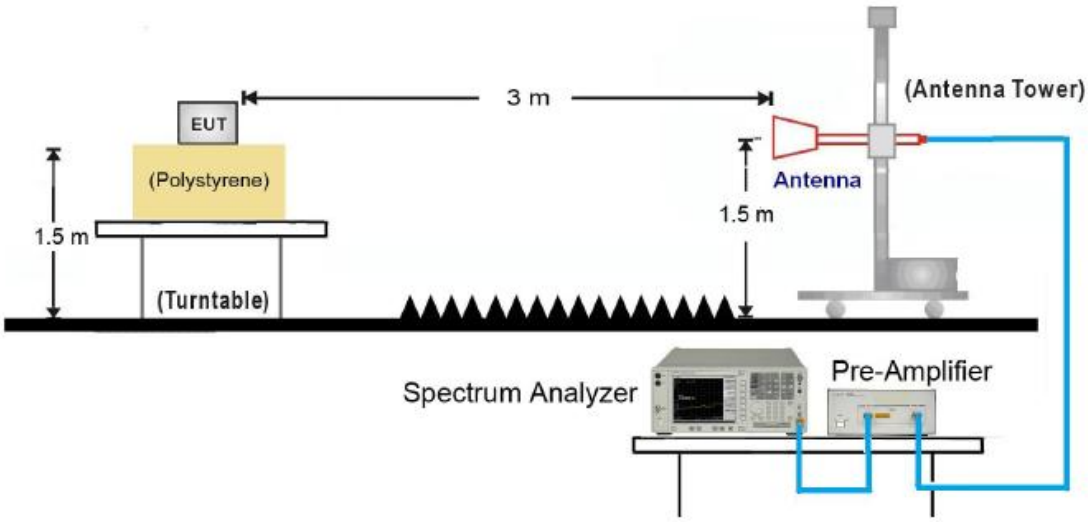
13. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
14. The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
15. The 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.

6.7.3. Test Setup

30MHz ~ 1GHz Test Setup:



Above 1GHz Test Setup:



6.7.4. Test Result

Product	Walkie Talkie	Temperature	26°C
Test Engineer	Danny Li	Relative Humidity	54%
Test Site	AC1	Test Date	2018/06/12
Test Mode	Channel 01/08/22		

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Substitute Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Channel 01 (462.5625MHz)							
3235.50	H	-57.64	1.26	12.35	-46.55	-13.00	-33.55
4162.00	H	-58.89	1.49	12.67	-47.71	-13.00	-34.71
2309.00	V	-54.88	1.25	9.70	-46.43	-13.00	-33.43
3703.00	V	-57.37	1.45	12.69	-46.13	-13.00	-33.13
Channel 08 (467.5625MHz)							
2334.50	H	-63.72	0.99	9.84	-54.87	-13.00	-41.87
4204.50	H	-61.29	1.27	12.70	-49.86	-13.00	-36.86
2334.50	V	-58.04	1.27	9.84	-49.47	-13.00	-36.47
5139.50	V	-58.80	1.40	12.80	-47.40	-13.00	-34.40
Channel 22 (462.7250MHz)							
2317.50	H	-55.11	1.29	9.75	-46.65	-13.00	-33.65
4162.00	H	-59.71	1.46	12.67	-48.50	-13.00	-35.50
2317.50	V	-59.96	1.00	9.75	-51.21	-13.00	-38.21
3703.00	V	-61.55	1.29	12.69	-50.15	-13.00	-37.15

Notes:

1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line.
2. ERP (dBm) = SG Reading (dBm) - Cable Loss (dB) + Substitute Antenna Gain (dBd)

7. CONCLUSION

The data collected relate only the item(s) tested and show that the device is in compliance with Part 95 of the FCC Rules.

The End