FCC PART 95

MEASUREMENT AND TEST REPORT

For

Shenzhen Zhongnuoneng Technology Co., Ltd

Room 1618 Luqiao Building, 1122 Nigang East Road, Luohu District, Shenzhen, Guangdong, China

Tested Model: FTAN40A
FCC ID:2AS5R-FTAN40A

Report Type:	**Product Type:**
Original Report	Wireless Intercom

Report Number:	RSC190422002
Date of Report Issue:	2019-04-28
Reviewed By:	Sula Huang
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Chengdu) No.5040, Huilongwan Plaza, No. 1, Shawan Road, Jinniu District, Chengdu, Sichuan, China Tel: 028-65525123, Fax: 028-65525125 www.baclcorp.com

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

Applicant	Shenzhen Zhongnuoneng Technology Co., Ltd
Product	Wireless Intercom
Tested Model	FTAN40A
Multiple Model#	ZNN-FTAN40A,FTAN40B,ZNN-FTAN40B,FTAN40C,ZNN-FTAN40C
Voltage Range	DC 5V from adapter
Measure approximately	185 mm (L) x 110 mm (W) x 35 mm (H)
Frequency Range	462.6625-462.7125 MHz
Modulation Mode	FM
Channel Spacing	12.5 kHz
Emission Designator	11K0F3E
Sample serial number	190422002/01 (assigned by the BACL, Chengdu)
Received date	2019-04-22
Sample/EUT Status	Good condition
Adapter information	Manufacturer: ShenZhen KunXing Technology Co.,Ltd Model: CLV-15 Input: AC 100-240V~50/60Hz Output: DC 5V~1A

Note: EUT conformed to test requirements and all measurement and test data in this report was gathered from final production sample. It may have deviation from any other sample.

Objective

This report is prepared on behalf of ***Shenzhen Zhongnuoneng Technology Co., Ltd*** in accordance with Part 2 and Part 95, Subpart A & Subpart E of the Federal Communication Commissions rules.

Related Submittal(s)/Grant(s)

No related submittal(s).

Measurement Uncertainty

Item	Uncertainty
Occupied Bandwidth	±5 %
All emissions, radiated	±6.0dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±2%
Temperature	±1℃

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Methodology

All tests and measurements indicated in this document were performed in accordance with Part 95 Subpart E of the Federal Communication Commissions rules with TIA-603-D, Land Mobile FM or PM-Communications Equipment-Measurement and Performance Standards.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Chengdu). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Chengdu) to collect test data is located No.5040, Huilongwan Plaza, No. 1, Shawan Road, Jinniu District, Chengdu, Sichuan, China.

Bay Area Compliance Laboratories Corp. (Chengdu) lab is accredited to ISO/IEC 17025 by A2LA (Lab code: 4324.01) and the FCC designation No. CN1186 under the FCC KDB 974614 D01. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

The device is a GMRS device operated in the frequency range: 462.6625 MHz-462.7125 MHz.

The device uses 3 GMRS 462 MHz interstitial channels as below:

Channel No.	Frequency (MHz)
1	462.6625
2	462.6875
3	462.7125

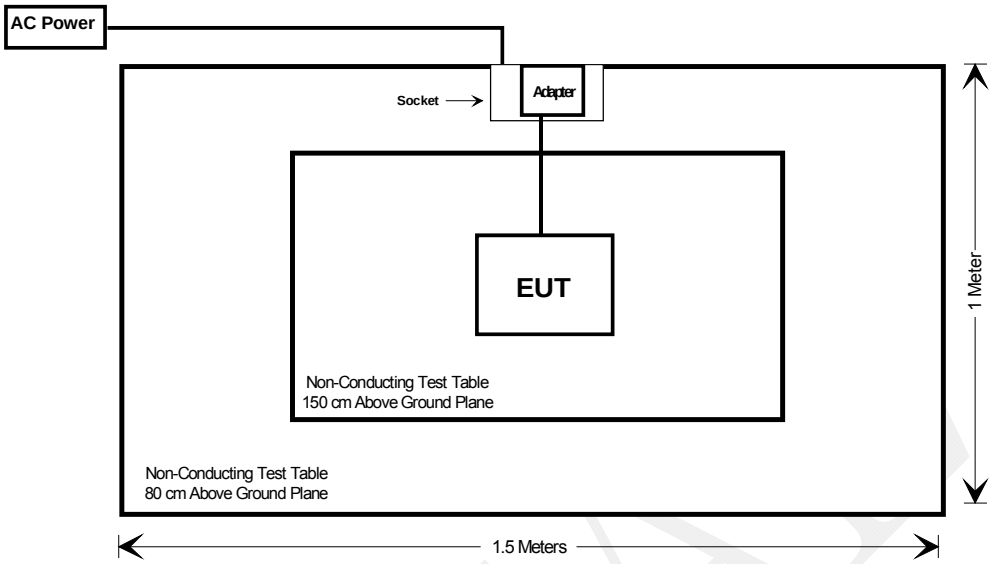
Equipment Modifications

No modification was made to the EUT tested.

External I/O Cable

Cable Description	Length (m)	From	To
USB Cable	1.8	Adapter	EUT

Block Diagram of Test Setup



Test Equipments List

Manufacturer	Description	Model Number	Serial Number	Calibration Date	Calibration Due Date
Radiated Emissions Test					
EMCT	Semi-Anechoic Chamber	966	001	2017-05-18	2020-05-17
SONOMA INSTRUMENT	Amplifier	310 N	186684	2018-08-24	2019-08-23
A.H. Systems, Inc	Amplifier	PAM-0118P	467	2018-10-19	2019-10-18
SUNOL SCIENCES	Broadband Antenna	JB3	A121808	2017-05-19	2020-05-18
INMET	Attenuator	18N-6dB	N/A	2018-11-27	2019-11-26
COM-POWER	Adjustable Dipole Antenna	AD-100	41000	NCR	NCR
EMCO	Horn Antenna	3115	2192	2017-05-19	2020-05-18
ETS	Horn Antenna	3115	003-6076	2017-05-19	2020-05-18
Rohde & Schwarz	EMI Test Receiver	ESR 3	102456	2018-06-22	2019-06-21
Rohde & Schwarz	Spectrum Analyzer	FSU26	200835	2019-04-15	2020-04-14
Agilent	MXG X-Series RF Vector Signal Generator	N5182B	MY51350391	2019-01-16	2020-01-15
Unknown	RF Cable (below 1GHz)	L-E005	000005	2018-11-27	2019-11-26
Unknown	RF Cable (below 1GHz)	T-E128	000128	2018-11-27	2019-11-26
Unknown	RF Cable (below 1GHz)	T-E129	000129	2018-11-27	2019-11-26
Unknown	RF Cable (above 1GHz)	T-E069	000069	2018-11-27	2019-11-26
Mini-Circuits	High Pass Filter	NHP-700+	RUU25401618	2018-12-25	2019-12-24
Mini-Circuits	High Pass Filter	VHF-1320+	31526	2018-12-25	2019-12-24

Manufacturer	Description	Model Number	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
HP	RF Communications Test Set	8920B	Unknown	2018-05-09	2020-05-08
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2018-05-09	2019-05-08
WEINSCHEL ENGINEERING	Attenuator	1A 10dB	AA4135	2018-11-10	2019-11-09
E-Microwave	DC Block	EMDCB-00036	OE01304225	2018-11-27	2019-11-26
Unknown	RF Coaxial Cable	T-E130	000130	2018-12-09	2019-12-08
Unknown	RF Coaxial Cable	LE-001-4	N/A	2018-12-09	2019-12-08
Frequency Stability Test					
Shenzhen BACL	High Temperature Test Chamber	BTH-150	30024	2019-04-15	2020-04-14
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2018-05-09	2019-05-08
WEINSCHEL ENGINEERING	Attenuator	1A 10dB	AA4135	2018-11-10	2019-11-09
FLUKE	Multimeter	114	28110416WS	2018-05-08	2019-05-07
Unknown	RF Coaxial Cable	T-E130	000130	2018-12-09	2019-12-08

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	Compliance
§2.1046, §95.1767	Transmitting Power Limits	Compliance
§2.1047 & §95.1775	Modulation Requirement	Compliance
§2.1049,§95.1773	Authorized Bandwidth & Emission Mask	Compliance
§2.1053 & §95.1779	Spurious Radiated Emissions	Compliance
§2.1055 (d), §95.1765	Frequency Accuracy	Compliance

FCC §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart §1.1310and subpart §2.1091, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f^2)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Per 447498 D01 General RF Exposure Guidance v06**,** simultaneous transmission MPE test exclusion applies when the sum of the MPE for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0.

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = PG/4\pi R^2$$

Where:
S = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

Frequency Range (MHz)	ERP Tune-up Power	EIRP Tune-up Power		Evaluation Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
	(dBm)	(dBm)	(mW)			
462.6625-462.7125	25.0	27.15	518.80	20	0.103	0.308

Note: EIRP=ERP+2.15

Result: The device meets MPE at 20 cm distance.

FCC §2.1046, §95.1767 – TRANSMITTING POWER LIMITS

Applicable Standard

Acorrding to FCC §95.1767

This section contains transmitting power limits for GMRS stations. The maximum transmitting power depends on which channels are being used and the type of station.

(a) 462/467 MHz main channels. The limits in this paragraph apply to stations transmitting on any of the 462 MHz main channels or any of the 467 MHz main channels. Each GMRS transmitter type must be capable of operating within the allowable power range. GMRS licensees are responsible for ensuring that their GMRS stations operate in compliance with these limits.

(1) The transmitter output power of mobile, repeater and base stations must not exceed 50 Watts.

(2) The transmitter output power of fixed stations must not exceed 15 Watts.

(b) 462 MHz interstitial channels. The effective radiated power (ERP) of mobile, hand-held portable and base stations transmitting on the 462 MHz interstitial channels must not exceed 5 Watts.

(c) 467 MHz interstitial channels. The effective radiated power (ERP) of hand-held portable units transmitting on the 467 MHz interstitial channels must not exceed 0.5 Watt. Each GMRS transmitter type capable of transmitting on these channels must be designed such that the ERP does not exceed 0.5 Watt.

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT .The test was performed by placing the EUT on 3-orthogonal axis.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the emissions were measured by the substitution.

Test Data

Environmental Conditions

Temperature:	29 °C
Relative Humidity:	52 %
ATM Pressure:	95.2 kPa

The testing was performed by Tom Tang on 2019-04-26.

Test Mode: Transmitting

ERP:

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd)	Cable Loss (dB)			
Frequency: 462.6875 MHz								
462.6875	V	104.33	24.3	0.0	0.4	23.9	37.0	13.1
462.6875	H	106.54	24.0	0.0	0.4	23.6	37.0	13.4

Note:
1) Absolute Level = SG Level - Cable loss + Antenna Gain
2) Margin = Limit-Absolute Level
3) Measurement without pre-amplifier.

FCC §2.1047 & §95.1775 - MODULATION REQUIREMENT

Applicable Standard

Per FCC §2.1047 and §95.1775:

Each GMRS transmitter type must be designed to satisfy the modulation requirements in this section. Operation of GMRS stations must also be in compliance with these requirements.

(b) 462 MHz interstitial channels. The peak frequency deviation for emissions to be transmitted on the 462 MHz interstitial channels must not exceed ± 5 kHz.

(d) Overmodulation. Each GMRS transmitter type, except for a mobile station transmitter type with a transmitter power output of 2.5 W or less, must automatically prevent a higher than normal audio level from causing overmodulation.

(e) Audio filter. Each GMRS transmitter type must include audio frequency low pass filtering, unless it complies with the applicable paragraphs of §95.1779 (without filtering).

(1) The filter must be between the modulation limiter and the modulated stage of the transmitter.

(2) At any frequency (f in kHz) between 3 and 20 kHz, the filter must have an attenuation of at least 60 log (f/3) dB more than the attenuation at 1 kHz. Above 20 kHz, it must have an attenuation of at least 50 dB more than the attenuation at 1 kHz.

Test Procedure

Test Method: TIA/EIA-603-D

Test Data

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	58 %
ATM Pressure:	95.3 kPa

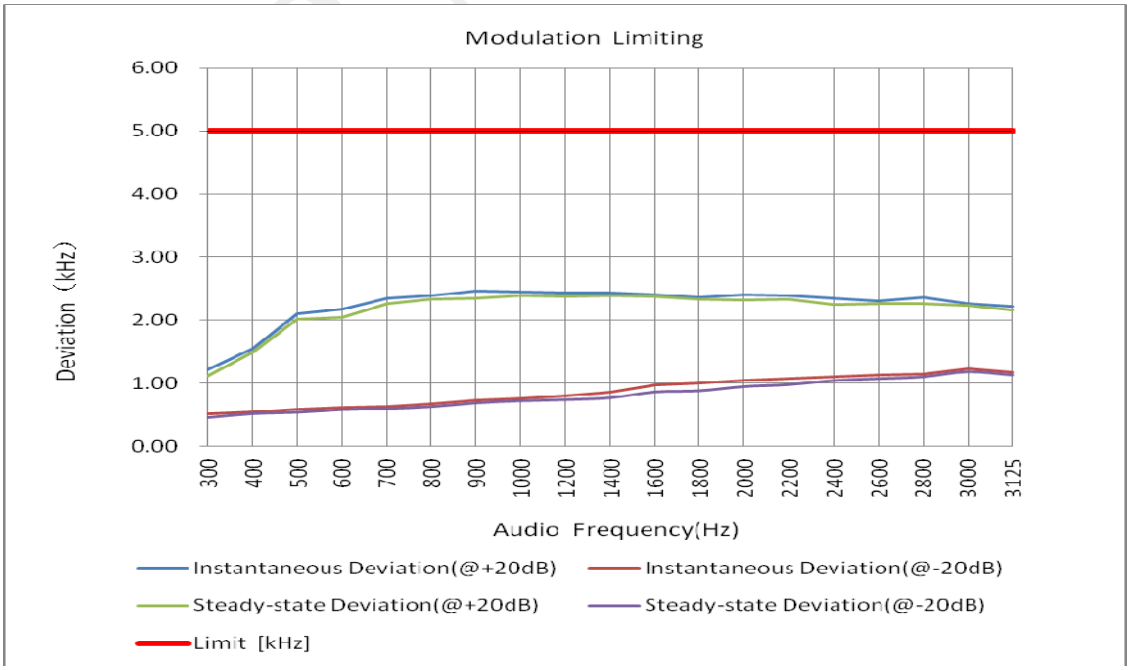
The testing was performed by Tom Tang on 2019-04-24.

Test Mode: Transmitting

Please refer to the following tables and plots.

Modulation Limiting
462.6875 MHz

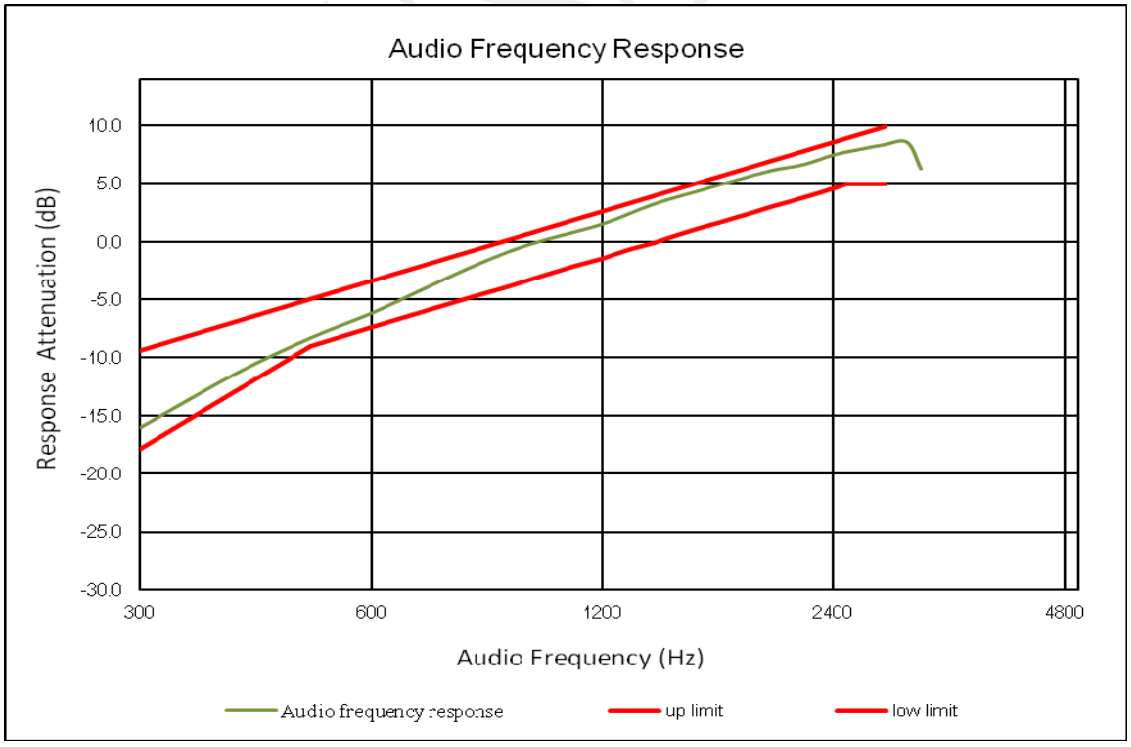
Audio Frequency (Hz)	Instantaneous		Steady-state		Limit (kHz)
	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)	
300	1.22	0.52	1.13	0.46	5.0
400	1.55	0.55	1.49	0.52	5.0
500	2.11	0.59	2.02	0.54	5.0
600	2.18	0.62	2.05	0.58	5.0
700	2.35	0.63	2.27	0.60	5.0
800	2.39	0.68	2.33	0.63	5.0
900	2.46	0.74	2.35	0.69	5.0
1000	2.45	0.76	2.40	0.72	5.0
1200	2.43	0.81	2.38	0.74	5.0
1400	2.44	0.86	2.39	0.77	5.0
1600	2.41	0.97	2.38	0.86	5.0
1800	2.37	1.01	2.34	0.88	5.0
2000	2.41	1.05	2.32	0.95	5.0
2200	2.39	1.08	2.33	0.98	5.0
2400	2.35	1.10	2.25	1.04	5.0
2600	2.31	1.13	2.26	1.07	5.0
2800	2.36	1.15	2.27	1.10	5.0
3000	2.27	1.23	2.23	1.18	5.0
3125	2.22	1.18	2.17	1.13	5.0



Audio Frequency Response

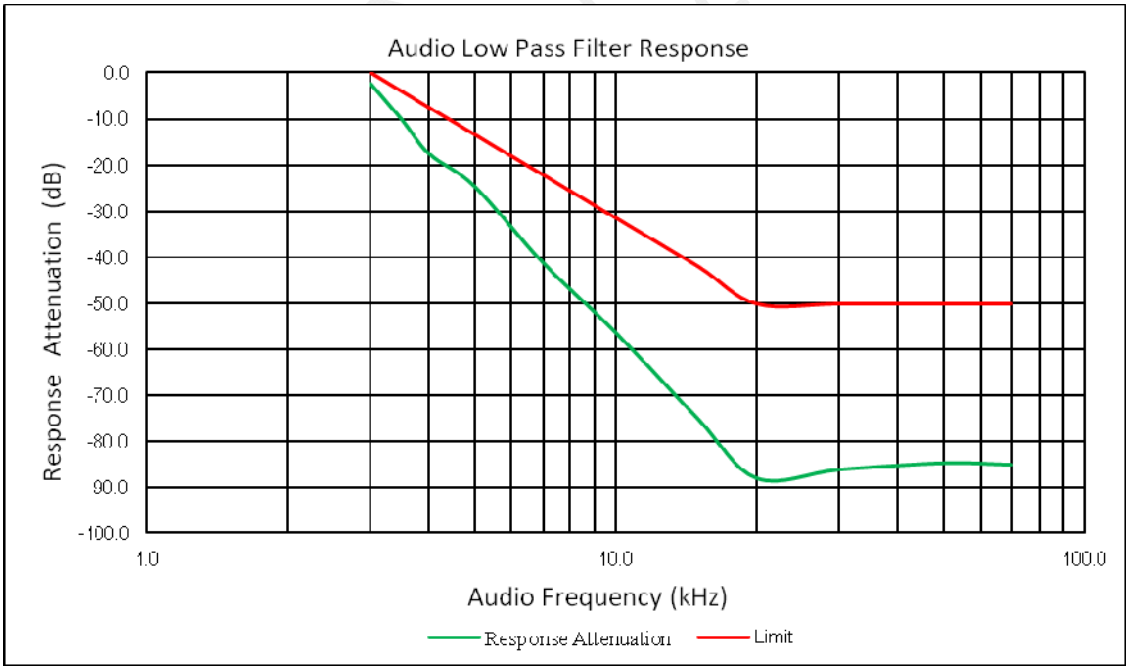
462.6875 MHz

Audio Frequency (Hz)	Response Attenuation (dB)
300	-15.98
400	-11.32
500	-8.27
600	-6.17
700	-4.11
800	-2.33
900	-0.93
1000	0.07
1200	1.50
1400	3.20
1600	4.33
1800	5.32
2000	6.14
2200	6.64
2400	7.45
2600	7.94
2800	8.34
3000	8.55
3125	6.29



Audio Low Pass Filter Response

Audio Frequency (kHz)	Response Attenuation (dB)	Limit (dB)
3.0	-2.39	0.0
3.5	-10.23	-4.0
4.0	-17.61	-7.5
5.0	-24.66	-13.3
7.0	-41.24	-22.1
10.0	-56.36	-31.4
15.0	-75.15	-41.9
20.0	-87.94	-50.0
30.0	-86.08	-50.0
50.0	-84.71	-50.0
70.0	-85.02	-50.0



FCC §2.1049,§95.1773, §95.1779 - AUTHOURIZED BANDWIDTH AND EMISSION MASK

Applicable Standard

According to §95.1773

Each GMRS transmitter type must be designed such that the occupied bandwidth does not exceed the authorized bandwidth for the channels used. Operation of GMRS stations must also be in compliance with these requirements.

(b) Interstitial channels. The authorized bandwidth is 20 kHz for GMRS transmitters operating on any of the 462 MHz interstitial channels (see §95.1763(b)) and is 12.5 kHz for GMRS transmitters operating on any of the 467 MHz interstitial channels (see §95.1763(d)).

According to §95.1779

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

(a) Emission masks. Emission masks applicable to transmitting equipment in the GMRS are defined by the requirements in the following table. The numbers in the attenuation requirements column refer to rule paragraph numbers under paragraph (b) of this section.

Emission types filter	Attenuation requirements
A1D, A3E, F1D, G1D, F2D, F3E, G3E with audio filter	(1), (2), (7)
A1D, A3E, F1D, G1D, F3E, G3E without audio filter	(3), (4), (7)
H1D, J1D, R1D, H3E, J3E, R2E	(5), (6), (7)

(1) Filtering noted for GMRS transmitters refers to the requirement in §95.1775(e).

(2) Unwanted emission power may be measured as either mean power or peak envelope power, provided that the transmitter output power is measured the same way.

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

(1) 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) 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) 83 log (fd ÷ 5) dB on any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 5 kHz up to and including 10 kHz.

(4) 116 log (fd ÷ 6.1) dB or 50 + 10 log (P) dB, whichever is the lesser attenuation, on any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz), of more than 10 kHz up to and including 250% of the authorized bandwidth.

(5) 25 dB on any frequency removed from the center of the authorized bandwidth by more than 50% up to and including 150% of the authorized bandwidth.

(6) 35 dB on any frequency removed from the center of the authorized bandwidth by more than 150% up to and including 250% of the authorized bandwidth.

(7) 43 + 10 log (P) dB on any frequency removed from the center of the authorized bandwidth by more than 250%.

(c) Measurement bandwidths. The power of unwanted emissions in the frequency bands specified in paragraphs (b)(1) through (4) of this section is measured with a reference bandwidth of 300 Hz. The power of unwanted emissions in the frequency range specified in paragraph (b)(5) of this section is measured with a reference bandwidth of at least 30 kHz.

Test Procedure

TIA-603-D, section 2.2.11

Test Data

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	58 %
ATM Pressure:	95.3 kPa

The testing was performed by Tom Tang on 2019-04-24.

Test Mode: Transmitting

Modulation Mode	fc	99% Occupied Bandwidth	20 dB Bandwidth	Authorized Bandwidth
	MHz	kHz	kHz	kHz
FM	462.6875	6.212	6.613	20

Note: Emission designator is base on calculation instead of measurement.

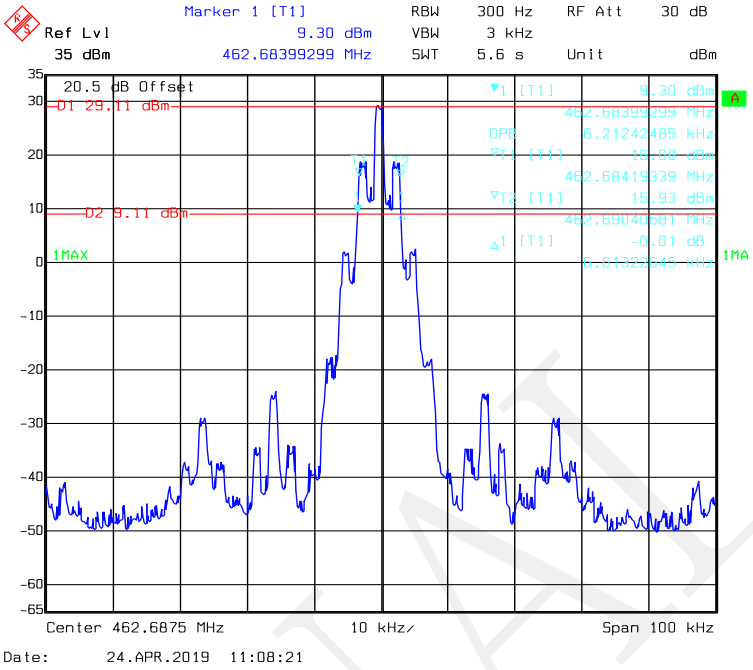
Emission Designator Per CFR 47 §2.201& §2.202&, Bn = 2M + 2D

For FM Mode (Channel Spacing: 12.5 kHz)

Emission Designator 11K0F3E In this case, the maximum modulating frequency is 3.0 kHz with a 2.5 kHz deviation. BW = 2(M+D) = 2(3.0 kHz + 2.5 kHz) = 11 kHz → 11K0 F3E portion of the designator represents an FM voice transmission. Therefore, the entire designator for 12.5 kHz channel spacing FM mode is 11K0F3E.*

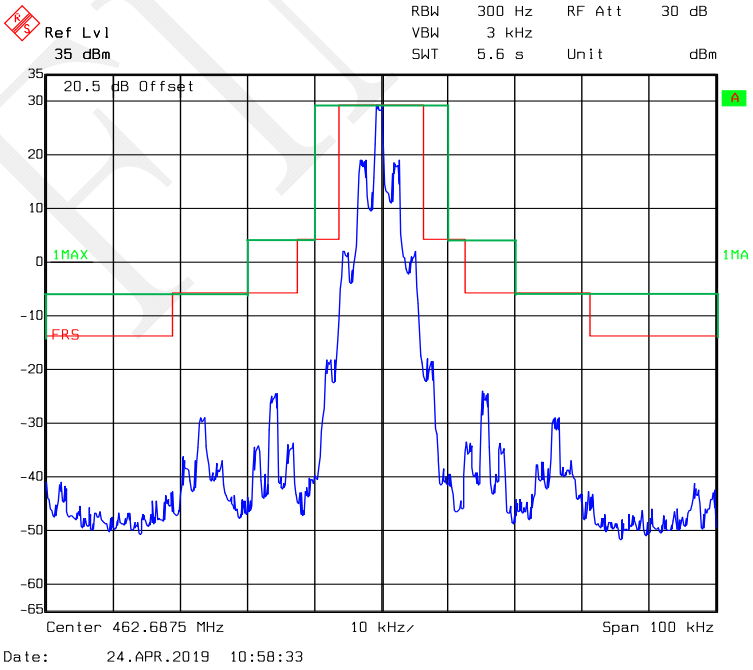
20dB Bandwidth&99 Occupied Bandwidth

462.6875 MHz



EMISSION MASK

462.6875 MHz



Note: It also meets the strict emission mask.

FCC §2.1053 & §95.1779 - RADIATED SPURIOUS EMISSION

Applicable Standard

FCC §2.1053 and §95.1779

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT .The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB =10 1g (TXpwr in Watts/0.001)-the absolute level
Spurious attenuation limit in dB = 43+10 Log_{10} (power out in Watts)

Test Data

Environmental Conditions

Temperature:	29 °C
Relative Humidity:	52 %
ATM Pressure:	95.3 kPa

The testing was performed by Tom Tang on 2019-04-26.

Test Mode: Transmitting

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Frequency: 462.6875 MHz								
925.3750	H	74.31	-30.0	0.0	0.7	-30.7	-13.0	17.7
925.3750	V	69.07	-30.7	0.0	0.7	-31.4	-13.0	18.4
1388.0625	H	84.23	-32.6	7.9	1.2	-25.9	-13.0	12.9
1388.0625	V	79.06	-37.3	7.9	1.2	-30.6	-13.0	17.6
1850.750	H	80.96	-33.9	9.0	1.4	-26.3	-13.0	13.3
1850.750	V	71.39	-42.3	9.0	1.4	-34.7	-13.0	21.7
2313.438	H	69.56	-44.8	9.3	1.6	-37.1	-13.0	24.1
2313.438	V	67.12	-46.8	9.3	1.6	-39.1	-13.0	26.1
2776.125	H	69.25	-43.8	9.5	2.0	-36.3	-13.0	23.3
2776.125	V	71.63	-42.3	9.5	2.0	-34.8	-13.0	21.8
3238.813	H	70.16	-40.7	9.6	2.2	-33.3	-13.0	20.3
3238.813	V	70.94	-40.5	9.6	2.2	-33.1	-13.0	20.1
3701.500	H	68.53	-41.4	9.8	2.3	-33.9	-13.0	20.9
3701.500	V	73.72	-36.0	9.8	2.3	-28.5	-13.0	15.5
4164.188	H	67.52	-42.6	10.0	2.6	-35.2	-13.0	22.2
4164.188	V	67.31	-43.5	10.0	2.6	-36.1	-13.0	23.1
4626.875	H	59.47	-49.9	10.4	2.8	-42.3	-13.0	29.3
4626.875	V	61.13	-48.7	10.4	2.8	-41.1	-13.0	28.1

Note:
1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
2) Absolute Level = SG Level - Cable loss + Antenna Gain
3) Margin = Limit-Absolute Level
4) The unit of antenna gain is dBd for frequency below 1GHz and dBi for frequency above 1GHz.

FCC§2.1055 (d), §95.1765- FREQUENCY ACCUARY

Applicable Standard

According to FCC §2.1055(a) (1),

The frequency stability shall be measured with variation of ambient temperature from –30 ºC to +50 ºC, and according to FCC 2.1055(d) (2), the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point which is specified by the manufacturer.

According to FCC §95.1765

Each GMRS transmitter type must be designed to comply with the frequency accuracy requirements in this section under normal operating conditions. Operators of GMRS stations must also ensure compliance with these requirements.

(a) The carrier frequency of each GMRS transmitter transmitting an emission with an occupied bandwidth greater than 12.5 kHz must remain within 5 parts-per-million (ppm) of the channel center frequencies listed in §95.1763 under normal operating conditions.

(b) The carrier frequency of each GMRS transmitter transmitting an emission with an occupied bandwidth of 12.5 kHz or less must remain within 2.5 ppm of the channel center frequencies listed in §95.1763 under normal operating conditions.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external power supply and the RF output was connected to a Frequency Counter via feed-through attenuators. The EUT was placed inside the temperature chamber. The power leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the Frequency Counter.

Frequency Stability vs. Voltage:

1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.

The output frequency was recorded for each voltage.

Test Data

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	58 %
ATM Pressure:	95.3 kPa

The testing was performed by Tom Tang on 2019-04-24.

Test Mode: Transmitting

Reference Frequency:462.6875MHz				
Temerature	**Voltage**	**Reading**	**Frequency Error**	**Limit**
℃	**Vac**	**MHz**	**ppm**	**ppm**
-30	120	462.6871353	-0.79	±2.5
-20		462.6871850	-0.68	
-10		462.6871234	-0.81	
0		462.6871746	-0.70	
10		462.6871358	-0.79	
20		462.6870420	-0.99	
30		462.6871089	-0.85	
40		462.6871286	-0.80	
50		462.6871557	-0.74	
20	102	462.6871630	-0.73	
20	138	462.6871703	-0.71	

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