



RF EXPOSURE EVALUATION

1. TEST RESULT CERTIFICATION

Applicant	Rugged Radios
Address	509 Traffic Way, Arroyo Grande, California 93420, United States
manufacturer	Rugged Radios
Address	509 Traffic Way, Arroyo Grande, California 93420, United States
Factory	Rugged Radios
Address	509 Traffic Way, Arroyo Grande, California 93420, United States
Product Designation:	GMRS TRANSCEIVER
Brand Name:	Rugged Radios
Test Model:	G1
FCC ID:	2AWYH-G1
Date of receipt of test item	Dec. 26, 2022
Date of Test	Dec. 26, 2022~Jan. 15, 2023

2. TECHNICAL INFORMATION

A major technical description of EUT is described as following:

Operation Frequency	462.5500MHz-462.7250MHz (GMRS 462 MHz main channels) 462.5625MHz-462.7125MHz (GMRS 462 MHz interstitial channels) 467.5500MHz-467.7250MHz (GMRS 467 MHz main channels)
Modulation	FM
Antenna Designation	Detachable Antenna
Output power	5W/25W/45W
Antenna gain	0dBi (Typical), 5dBi (Max)
Power Supply	DC 13.8V

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Channel list:

Channel. No	CH. Freq	Rated Power	CH. No	CH. Freq	Rated Power
1	462.5625	5W	15	462.5500	45W/25W/5W
2	462.5875		16	462.5750	
3	462.6125		17	462.6000	
4	462.6375		18	462.6250	
5	462.6625		19	462.6500	
6	462.6875		20	462.6750	
7	462.7125		21	462.7000	
8	-	-	22	462.7250	45W/25W/5W
9	-		23	467.5500	
10	-		24	467.5750	
11	-		25	467.6000	
12	-		26	467.6250	
13	-		27	467.6500	
14	-		28	467.6750	
	--		29	467.7000	
			30	467.7250	

3.RF EXPOSURE MEASUREMENT

3.1 INTRODUCTION

Human exposure to RF emissions from mobile devices (47 CFR §2.1091) may be evaluated based on the MPE limits adopted by the FCC for electric and magnetic field strength and/or power density, as appropriate, since exposures are assumed to occur at distances of 20 cm or more from persons.

The 1992 ANSI/IEEE standard (See Listed limit table) specifies a minimum separation distance of 20 cm for performing reliable field measurements to determine adherence to MPE limits.

If the minimum separation distance between a transmitter and nearby persons is more than 20 cm under normal operating conditions, compliance with MPE limits may be determined at such distance from the transmitter. When applicable, operation instructions and prominent warning labels may be used to alert the exposed persons to maintain a specified distance from the transmitter or to limit their exposure durations and usage conditions to ensure compliance.

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3.2 FCC LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE

Frequency Range (MHz)	E-field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (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

*Note:

1. f= Frequency in MHz * Plane-wave Equivalent Power Density
2. The averaging time for General Population/Uncontrolled exposure to fixed transmitters is not applicable for mobile and portable transmitters. See 47 CFR §§2.1091 and 2.1093 on source-based time-averaging requirement for mobile and portable transmitters.

3.3 CLASSIFICATION OF THE ASSESSMENT METHODS

According to user manual, The antenna of the product, under normal use condition is at least 191.6cm away from the body of the user. Warning statement to the user for keeping at least 191.6cm separation distance and the prohibition of operating to a person has been printed on the user's manual. So, this product under normal use is located on electromagnetic far field between the human body.

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

Where:

S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator R=distance to the center of radiation of the antenna

3.4 EUT OPERATION CONDITION

Make the EUT to transmit at Bottom channel, Middle channel and Top channel individually.

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Note: report the worst result in this part

Antenna Gain=5dBi (Numeric 3.16), $\pi=3.141$

TEST Frequency (MHz)	Tune-up Tolerance (dBm)	Max tune-up (dBm)	Max tune-up (mW)	Power Density (mW/cm ²)	Power Density Limit (mW/cm ²)	Result (Pass/Fail)
462.6500	45.78 ± 0.75	46.53	44977.98549	0.308154238	0.3084	Pass
467.6500	45.78 ± 0.75	46.53	44977.98549	0.308154238	0.3118	Pass

Note:

1. The output power is refer to **AGC02931221204FE10**.
2. According to the user manual, the minimum separate distance which used for MPE calculate is 191.6cm.

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