

# RF EXPOSURE EVALUATION

## 1. TEST RESULT CERTIFICATION

<b>Applicant:</b>	BTECH (BaoFeng Tech)
	702 N Industrial Ave Arlington South Dakota United States 57212
<b>Manufacturer:</b>	BTECH (BaoFeng Tech)
	702 N Industrial Ave Arlington South Dakota United States 57212
<b>Product Designation:</b>	Mobile radio
<b>Brand Name:</b>	BTECH
<b>Test Model:</b>	GMRS-50X1
<b>FCC ID:</b>	2AGND50X1G
<b>Date of Test:</b>	Jan. 14, 2019

## 2. TECHNICAL INFORMATION

A major technical description of EUT is described as following:

<b>Operation Frequency</b>	GMRS: 462.5625MHz -462.7125MHz(5W) 462.5500MHz -462.7250MHz(5W/50W) 467.5500MHz -467.7250MHz(5W/50W)
<b>Modulation</b>	FM
<b>Antenna Designation</b>	Detachable Antenna
<b>Output power</b>	5W/50W
<b>Antenna type</b>	External antenna
<b>Antenna gain</b>	0dBi
<b>Power Supply</b>	DC 13.8V by DC Source

### Channel List:

CH. No	CH. Freq	Power	CH. No	CH. Freq	Power
1	462.5625	5W	13	462.6750	5W/50W
2	462.5875		14	462.7000	
3	462.6125		15	462.7250	
4	462.6375		16	467.5500	5W/50W
5	462.6625		17	467.5750	
6	462.6875		18	467.6000	
7	462.7125		19	467.6250	
8	462.5500	5W/50W	20	467.6500	
9	462.5750		21	467.6750	
10	462.6000		22	467.7000	
11	462.6250		23	467.7250	
12	462.6500				

## 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.

### 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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (Minutes)
0.3 -- 1.34	614	1.63	(100)*	30
1.34 -- 30	824/f	2.19/f	(180/f <sup>2</sup> )*	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.

**4. CLASSIFICATION OF THE ASSESSMENT METHODS**

According to user manual, The antenna of the product, under normal use condition is at least 104.7 cm away from the body of the user. Warning statement to the user for keeping at least 104.7 cm 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.

$$S = \frac{PG}{4\pi R^2}$$

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

**5. EUT OPERATION CONDITION**

Make the EUT to transmit at channel 4 , channel 11 and channel 19 individually.

**6. TEST RESULTS**

Note: report the worst result in this part

Antenna Gain=0dBi (Numeric 1.0),  $\pi=3.141$ , Duty cycle=50%

Frequency	Output Power	Output Power	Correct Power	Power Density	Power Density Limit	Result
MHz	dBm	mW	mW	mW/cm <sup>2</sup>	mW/cm <sup>2</sup>	Pass/Fail
467.6250	46.33	42950	21475	0.3118	0.312	Pass

Note:

- 1.The output power is refer to **HK1901140093E**.
- 2.Correct Power=Output Power\*Duty cycle.
- 3.According to the user manual, the minimum separate distance which used for MPE calculate is 104.7cm.