

RF EXPOSURE EVALUATION

1. TEST RESULT CERTIFICATION

Applicant	Qixiang Electron Science & Technology Co., Ltd.
Address	Qixiang Building, Tangxi Industrial Zone, Luojiang District, Quanzhou, Fujian, China
manufacturer	Qixiang Electron Science & Technology Co., Ltd.
Address	Qixiang Building, Tangxi Industrial Zone, Luojiang District, Quanzhou, Fujian, China
Factory	Qixiang Electron Science & Technology Co., Ltd.
Address	Qixiang Building, Tangxi Industrial Zone, Luojiang District, Quanzhou, Fujian, China
Product Designation:	DMR DIGITAL AND ANALOG MOBILE RADIO
Brand Name:	AnyTone
Test Model:	AT-D578UVIII PLUS V2
Series Model	AT-D578UV PLUS, AT-D578III PLUS V2, AT-D578UV PLUS V2, AT-D578UVIII V2, AT-D578UVIII PLUS
Declaration of Difference	All the same except for the model name
FCC ID:	T4K-D578UV2
Date of Test:	May 24, 2021~Jul. 09, 2021

2. TECHNICAL INFORMATION

A major technical description of EUT is described as following:

Operation Frequency	BT: 2.402 GHz to 2.480GHz VHF: 144MHz to 148MHz;From 222MHz to 225MHz UHF: 420MHz to 450MHz
Modulation(BT)	BR <input checked="" type="checkbox"/> GFSK, EDR <input checked="" type="checkbox"/> π /4-DQPSK, <input checked="" type="checkbox"/> 8DPSK BLE <input checked="" type="checkbox"/> GFSK 1Mbps
Modulation(PMR)	FM
Antenna type	BT: PCB Antenna PMR: External Antenna
Output power	BT: 2.324dBm PMR:VHF: 47.10dBm, UHF:45.96dBm, 222MHz to 225MHz: 37.27dBm
Antenna gain	BT:1.5dBi PMR:0dBi (Typical), 3dBi (Max)
Power Supply	DC 13.8V

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 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 142.9cm away from the body of the user. Warning statement to the user for keeping at least 142.9cm 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.

3.5 TEST RESULTS

Note: report the worst result in this part

Antenna Gain=1.5dBi (Numeric 1.41), $\pi=3.141$

Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Power Density (mW/cm ²)	Power Density Limit (mW/cm ²)	Result (Pass/Fail)
2480	2.324	1.71	0.00000938484	1.0	Pass

Note:

1.The output power is refer to **AGC0128410505FE02**.

Antenna Gain=3.0dBi (Numeric 2.0), $\pi=3.141$, Duty cycle=50%

Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Correct Power (mW)	Power Density (mW/cm ²)	Power Density Limit (mW/cm ²)	Result (Pass/Fail)
146.025	47.10	51286.14	25643.07	0.19990	0.2	Pass

Note:

1.The output power is refer to **AGC01284210505FE10**.

2.Correct Power=Output Power*Duty cycle.

3.According to the user manual, the minimum separate distance which used for MPE calculate is 142.9cm.

4.The BT and PMR can transmit simultaneously: $0.00000938484/1.0+0.19990/0.2=0.99949747769 < 1$