

## Prediction of MPE at a given distance

### 1. Limits

The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposure</b>				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
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
300-1,500			f/1500	30
1,500-100,000			1.0	30

### 2. Test Procedure

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{P \times G}{4 \times \pi \times R^2}$$

Where:

S = power density

P = power input to the antenna

G = numeric 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. Test Facility

Shenzhen Alpha Product Testing Co., Ltd  
Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103,  
Shenzhen, Guangdong, China

June 21, 2018 File on Federal Communication Commission  
Registration Number: 293961

### 4. Information of the device

Description : Wireless Data Transceiver Module

Model Number : TRM230

DIFF. : N/A

Test Voltage : Input: DC 3.6V

#### UHF

Operation frequency : 410MHz-470MHz

Conducted Power : 2W( $33.01\pm1$ dBm)  
GMSK: 12.5KHz, 25KHz

Channel spacing : 4FSK: 6.25KHz, 12.5KHz, 25KHz

Modulation type : GMSK, 4FSK  
Rod Antenna, Maximum Gain is 4dBi.

Antenna Type : (Antenna information is provided by applicant.)

Software version : G002.00.03

Hardware version : V1.0

Intend use environment : Residential, commercial and light industrial environment

## 5. Result

Mode	Frequency (MHz)	Prediction distance (cm)	Peak RF power output		MPE (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	MPE Test Exclusion
			dBm	mW			
UHF	410-470	60	33.457	2216.6647	0.12308	0.2933	Yes

UHF Antenna Gain:

Rod antenna, max gain 4dBi, 2.51(numeric)

Meet MPE requirements, complies with the exemption requirements.