

FCC 47 CFR MPE REPORT

INMUSIC BRANDS INC

BATTERY-POWERED PERFORMANCE PA WITH DIGITAL EFFECTS

Model Number: ÜBER FX2

Additional Model: Über FX MKII, Uber FX MKII, Uber FX2, Über FX2, TXP12, Uber FX******, Über FX******, ÜBER FX******, TXP***** ("*" can be "a-z", "A-Z", "0-9", blank, "-", "+" or any character, symbol, alphanumeric)

FCC ID: Y4O-TXP12

Applicant:	INMUSIC BRANDS INC
Address:	200 SCENIC VIEW DRIVE, SUITE 201, CUMBERLAND,
	Rhode Island 02864, United States
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China
	Tel: 86-769-83081888-808

Report Number:	ESTE-R2307237
Date of Test:	Jul. 04~24, 2023
Date of Report:	Jul. 26, 2023

Maximum Permissible Exposure

1. Applicable Standards

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 limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

1.1. Limits for Maximum Permissible Exposure (MPE)

(a) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-10000			5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times 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)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-10000			1.0	30

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

1.2. MPE Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric Field (V/m)

P = Peak RF output Power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

2. Conducted Power Result

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)
GFSK	2402	4.82	3.034
	2441	3.53	2.254
	2480	2.56	1.803
$\pi/4$ -DQPSK	2402	4.74	2.979
	2441	3.41	2.193
	2480	2.62	1.828
8-DPSK	2402	4.81	3.027
	2441	3.44	2.208
	2480	2.54	1.795
BLE	2402	4.13	2.588
	2440	2.93	1.963
	2480	1.94	1.563

3. Calculated Result and Limit

Mode	Peak output power (dBm)	Target power (dBm)	MAX Target power (dBm)	Antenna gain		Power Density (S) (mW/cm ²)	Limited of Power Density (S) (mW/cm ²)	Test Result
				(dBi)	(Linear)			
2.4G Band								
GFSK	4.82	4±1	5	2.81	1.910	0.00120	1	Complies
$\pi/4$ -DQPSK	4.74	4±1	5	2.81	1.910	0.00120	1	Complies
8-DPSK	4.81	4±1	5	2.81	1.910	0.00120	1	Complies
BLE 1M	4.13	4±1	5	2.81	1.910	0.00120	1	Complies

End of Test Report