



FCC 47 CFR MPE REPORT

ION Audio, LLC

All-Weather Stereo Speaker

Model Number: GLOW TONE™

Addition Model: Glow Tone™, iPA176, GLOW TONE*****,

Glow Tone*****, iPA176*****

("*" can be "a-z", "A-Z", "0-9", blank, "-", "+" or any character, symbol, alphanumeric)

FCC ID: 2AB3E-IPA176

Applicant:	ION Audio, LLC
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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	4.56	2.858
	2441	3.47	2.223
	2480	1.68	1.472
$\pi/4$ -DQPSK	2402	4.36	2.729
	2441	3.33	2.153
	2480	1.55	1.429
8-DPSK	2402	4.37	2.735
	2441	3.29	2.133
	2480	1.61	1.449
BLE 1M	2402	4.32	2.704
	2440	3.03	2.009
	2480	1.18	1.312

3. Calculated Result and Limit

Mode	Peak output power (dBm)	Target power (dBm)	MAX Target power (dBm)	Antenna gain		Power Density (S) (mW /cm2)	Limite d of Power Densit y (S) (mW /cm2)	Test Result
				(dBi)	(Linear)			
2.4G Band								
GFSK	4.56	4±1	5	5	3.162	0.00199	1	Complies
π/4-DQPSK	4.36	4±1	5	5	3.162	0.00199	1	Complies
8-DPSK	4.37	4±1	5	5	3.162	0.00199	1	Complies
BLE 1M	4.32	4±1	5	5	3.162	0.00199	1	Complies

End of Test Report