FCC 47 CFR MPE REPORT

ION Audio, LLC

Karaoke Amplified speaker with effects

Model Number: SINGING STAR

Project Code: iPK2

FCC ID: 2AB3E-IPK2

Prepared for : ION Audio, LLC

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Maximum Permissible Exposure

1、Applicable Standard

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.

(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/cm2)	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/cm2)	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.o	30

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

2、MPE Calculation Method

E (V/m) = $(30*P*G)^{0.5}/d$ Power Density: Pd (W/m2) = $E^2/377$

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

$Pd = (30*P*G) / (377*d^2)$

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

3、**Calculated Result and Limit**

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Target power (dBm)	Antenna gain (dBi)	Antenna gain (Linear)	Power Density (S) (mW /cm2)	Limited of Power Density (S) (mW /cm2)	Test Result
GFSK	2402	-4.484	0.356	-4±2	2.0	1.585	**0.00020**	1	Compiles
	2441	-4.337	0.368	-4±2	2.0	1.585	**0.00020**	1	Compiles
	2480	-4.479	0.357	-4±2	2.0	1.585	**0.00020**	1	Compiles
8-DPSK	2402	-5.997	0.251	-5±2	2.0	1.585	**0.00016**	1	Compiles
	2441	-5.670	0.271	-5±2	2.0	1.585	**0.00016**	1	Compiles
	2480	-5.561	0.278	-5±2	2.0	1.585	**0.00016**	1	Compiles