FCC 47 CFR MPE REPORT

Soundlab Technology Company Limited

Soundbar

Model Number: Klipsch Cinema 600 Sound Bar

FCC ID: 2ATKO-BAR600

Prepared for:	Soundlab Technology Company Limited
	No.101,202,Building 1, Microlab Industrial Park, No.2 Baozi South Road,
	Kengzi, Pingshan District, ShenZhen, China
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China
Tel: 86-769-83081888-808	

Report Number:	ESTE-R2005004
Date of Test:	Mar. 19~Apr. 28, 2020
Date of Report:	May. 06, 2020

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.o	30

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

1.2. MPE Calculation Method

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

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)	Target power（dBm）	Antenna gain	
					(dBi)	(Linear)
GFSK	2402	-0.21	0.953	-1±1	0	1.000
	2441	-1.06	0.783	-2±1	0	1.000
	2480	-1.87	0.650	-2±1	0	1.000
8-DPSK	2402	-0.04	0.991	-1±1	0	1.000
	2441	-0.84	0.824	-1±1	0	1.000
	2480	-1.67	0.681	-2±1	0	1.000
BLE(1M)	2402	-0.62	0.867	-1±1	0	1.000
	2440	-1.45	0.716	-2±1	0	1.000
	2480	-2.30	0.589	-3±1	0	1.000
BLE(2M)	2402	-0.63	0.865	-1±1	0	1.000
	2440	-1.44	0.718	-2±1	0	1.000
	2480	-2.30	0.589	-3±1	0	1.000

3. Calculated Result and Limit

Mode	Target power (dBm)	Antenna gain		Power Density (S) (mW/cm^2)	Limited of Power Density (S) (mW/cm^2)	Test Result
		(dBi)	(Linear)			
GFSK	0	0	1.000	0.00020	1	Compiles
8-DPSK	0	0	1.000	0.00020	1	Compiles
BLE(1M)	0	0	1.000	0.00020	1	Compiles
BLE(2M)	0	0	1.000	0.00020	1	Compiles

For 2.4G SRD

Ant gain=1.34dBi

Ant numeric gain= 1.361

Field strength = 70.09 dBuV/m@3m

$P=\{ [10^{(70.09/20)} /10^6 *3]^2/ (30*1.361) \}*1000mW =0.002mW$

Pd= (30*0.002*1.361) / (377*20^2)=0.000001< 1

So,2.4G SRD and BT/BLE simultaneous transmission=0.000001+0.00020=0.000201< 1

End of Test Report