

# MPE REPORT

FCC ID:2AS5O-19572

Date of issue: July 17, 2020

Report number: MTi20060908-12E2

---

Sample description: Bluetooth speaker

---

Model(s): E-BS-19572

---

Applicant: China Etech Groups Ltd

---

Address: 16/F, Block C, 2nd Phase of Central Avenue, Haihong Industrial Area, Xixiang Road, Baoan District, Shenzhen, China

---

Date of test: June 17, 2020 to July 17, 2020

---

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>





## RF EXPOSURE EVALUATION

According to FCC 1.1310: 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)

Limits for Maximum Permissible Exposure (MPE)

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	*300/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

f = frequency in MHz \* = Plane-wave equivalent power density

### MPE Calculation Method

Friis transmission formula:  $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

$P_d$  = Power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

$\pi$  = 3.1415926

R = distance between observation point and center of the radiator in cm (20cm)

$P_d$  the limit of MPE, 1mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.



## Measurement Result

**BT:**

Operation Frequency: BT GFSK,  $\pi/4$ -DQPSK: 2402-2480MHz

Power density limited: 1mW/ cm<sup>2</sup>

Antenna Type: BT Antenna: PCB Antenna;

BT antenna gain: -0.68dBi

R=20cm

$mW=10^{(dBm/10)}$

antenna gain Numeric= $10^{(dBi/10)}=10^{(-0.68/10)}=0.86$

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
		(dBm)		tune-up power		Gain			
				(dBm)	(dBm)	(mW)	(dBi)	Numeric	
2402	GFSK	2.045	2±1	3	1.995	-0.68	0.86	0.0003	1
2441		1.763	2±1	3	1.995	-0.68	0.86	0.0003	1
2480		1.66	2±1	3	1.995	-0.68	0.86	0.0003	1
2402	$\pi/4$ -DQPSK	3.086	3±1	4	2.512	-0.68	0.86	0.0004	1
2441		2.646	3±1	4	2.512	-0.68	0.86	0.0004	1
2480		2.489	3±1	4	2.512	-0.68	0.86	0.0004	1

### Conclusion:

For the max result:  $0.0004 \leq 1.0$  for 1g SAR, No SAR is required.

----END OF REPORT----