FCC 47 CFR MPE REPORT

Dongguan Nanhao Technology Co.,Ltd.

ebemate monitor U1

Model Number: Bella U1

Additional Model: U1, BM-U1

FCC ID: 2AU3XBM-U1

Prepared for:	Dongguan Nanhao Technology Co.,Ltd.
	Room 2104, Building 6, No.1 Huangjin Road, Nancheng District,
	Dongguan City, Guangdong Province, China
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China
Tel: 86-769-83081888-808	

Report Number:	ESTE-R1912044
Date of Test:	Nov. 04~Dec. 11, 2019
Date of Report:	Dec. 12, 2019

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)
BLE	2402	0.99	1.256	0±1	3.6	2.291
	2440	1.24	1.330	1±1	3.6	2.291
	2480	1.14	1.300	1±1	3.6	2.291
IEEE 802.11b	2412	16.11	40.832	16±1	3.6	2.291
	2437	16.11	40.832	16±1	3.6	2.291
	2462	16.24	42.073	16±1	3.6	2.291
IEEE 802.11g	2412	14.82	30.339	14±1	3.6	2.291
	2437	15.12	32.509	15±1	3.6	2.291
	2462	15.34	34.198	15±1	3.6	2.291
IEEE 802.11n HT20	2412	14.83	30.409	14±1	3.6	2.291
	2437	15.10	32.359	15±1	3.6	2.291
	2462	15.33	34.119	15±1	3.6	2.291
IEEE 802.11n HT40	2422	13.54	22.594	13±1	3.6	2.291
	2437	13.55	22.646	13±1	3.6	2.291
	2452	13.69	23.388	13±1	3.6	2.291

3. Calculated Result and Limit

Mode	Target power（dBm）	Antenna gain		Power Density (S) (mW /cm2)	Limited of Power Density (S) (mW /cm2)	Test Result
		(dBi)	(Linear)			
BLE	2	3.6	2.291	**0.00072**	1	Compiles
IEEE 802.11b	17	3.6	2.291	**0.02284**	1	Compiles
IEEE 802.11g	16	3.6	2.291	**0.01814**	1	Compiles
IEEE 802.11n HT20	16	3.6	2.291	**0.01814**	1	Compiles
IEEE 802.11n HT40	14	3.6	2.291	**0.01145**	1	Compiles

End of Test Report