

## FCC 47 CFR MPE REPORT

Hui Zhou Gaoshengda Technology Co.,LTD

WIFI+BT Module

Model Number: WXT26M2601B

FCC ID: 2AC23-WXT26

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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 <sup>2</sup> )	Averaging Times   E   <sup>2</sup> ,   H   <sup>2</sup> 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 <sup>2</sup> )	Averaging Times   E   <sup>2</sup> ,   H   <sup>2</sup> 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

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

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

### Bluetooth antenna

Mode	Peak output power (dBm)	Peak output power (mW)	Target power (dBm)	Antenna gain	
				(dBi)	(Linear)
GFSK	6.13	4.102	4±1	2	1.585
8-DPSK	9.12	8.166	8±1	2	1.585
BLE-1M	5.91	3.899	4±1	2	1.585
BLE-2M	5.84	3.837	4±1	2	1.585

### Antenna 1

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Target power (dBm)	Antenna gain	
					(dBi)	(Linear)
IEEE 802.11b	2412	14.89	30.8319	14±1	2	1.585
	2437	14.88	30.7610	14±1	2	1.585
	2462	14.81	30.2691	14±1	2	1.585
IEEE 802.11g	2412	21.16	130.6171	21±1	2	1.585
	2437	21.17	130.9182	21±1	2	1.585
	2462	21.07	127.9381	21±1	2	1.585
IEEE 802.11n HT20	2412	21.70	147.9108	21±1	2	1.585
	2437	21.73	148.9361	21±1	2	1.585
	2462	21.72	148.5936	21±1	2	1.585
IEEE 802.11ax HE20	2412	23.40	218.7762	23±1	2	1.585
	2437	23.42	219.7860	23±1	2	1.585
	2462	23.56	226.9865	23±1	2	1.585
IEEE 802.11n HT40	2422	21.91	155.2387	21±1	2	1.585
	2437	22.04	159.9558	22±1	2	1.585
	2452	22.05	160.3245	22±1	2	1.585
IEEE 802.11ax HE40	2422	23.78	238.7811	23±1	2	1.585
	2437	23.69	233.8837	23±1	2	1.585
	2452	23.87	243.7811	23±1	2	1.585
IEEE 802.11a	5180	16.12	40.9261	16±1	3	1.995
	5200	16.24	42.0727	16±1	3	1.995
	5240	15.81	38.1066	15±1	3	1.995
	5260	17.409	55.0681	17±1	3	1.995
	5300	17.944	62.2874	17±1	3	1.995

	5320	17.300	53.7032	17±1	3	1.995
	5500	17.220	52.7230	17±1	3	1.995
	5580	18.112	64.7441	18±1	3	1.995
	5700	17.924	62.0012	17±1	3	1.995
	5745	15.53	35.7273	15±1	3	1.995
	5785	16.13	41.0204	16±1	3	1.995
	5825	16.74	47.2063	16±1	3	1.995
IEEE 802.11n HT20	5180	16.28	42.4620	16±1	3	1.995
	5200	15.90	38.9045	15±1	3	1.995
	5240	15.81	38.1066	15±1	3	1.995
	5260	16.063	40.3924	16±1	3	1.995
	5300	16.762	47.4460	16±1	3	1.995
	5320	17.090	51.1682	17±1	3	1.995
	5500	17.052	50.7224	17±1	3	1.995
	5580	17.507	56.3248	17±1	3	1.995
	5700	16.903	49.0117	16±1	3	1.995
	5745	15.51	35.5631	15±1	3	1.995
	5785	15.99	39.7192	15±1	3	1.995
	5825	16.67	46.4515	16±1	3	1.995
IEEE 802.11ac VHT20	5180	16.07	40.4576	16±1	3	1.995
	5200	16.04	40.1791	16±1	3	1.995
	5240	15.63	36.5595	15±1	3	1.995
	5260	17.366	54.5255	17±1	3	1.995
	5300	17.290	53.5797	17±1	3	1.995
	5320	17.015	50.2921	17±1	3	1.995
	5500	16.932	49.3401	16±1	3	1.995
	5580	17.457	55.6801	17±1	3	1.995
	5700	16.958	49.6364	16±1	3	1.995
	5745	15.38	34.5144	15±1	3	1.995
	5785	15.98	39.6278	15±1	3	1.995
	5825	16.64	46.1318	16±1	3	1.995
IEEE 802.11ax HE20	5180	18.17	65.6145	18±1	3	1.995
	5200	17.64	58.0764	17±1	3	1.995
	5240	17.69	58.7489	17±1	3	1.995
	5260	17.104	51.3334	17±1	3	1.995
	5300	16.659	46.3340	16±1	3	1.995
	5320	17.499	56.2212	17±1	3	1.995
	5500	17.564	57.0690	17±1	3	1.995

	5580	17.435	55.3988	17±1	3	1.995
	5700	17.591	57.4249	17±1	3	1.995
	5745	19.67	92.6830	19±1	3	1.995
	5785	20.20	104.7129	20±1	3	1.995
	5825	21.01	126.1828	21±1	3	1.995
IEEE 802.11n HT40	5190	18.14	65.1628	18±1	3	1.995
	5230	17.94	62.2300	17±1	3	1.995
	5270	16.548	45.1648	16±1	3	1.995
	5310	17.192	52.3842	17±1	3	1.995
	5510	17.840	60.8135	17±1	3	1.995
	5590	17.560	57.0164	17±1	3	1.995
	5670	17.335	54.1377	17±1	3	1.995
	5755	17.57	57.1479	17±1	3	1.995
	5795	18.16	65.4636	18±1	3	1.995
IEEE 802.11ac VHT40	5190	18.04	63.6796	18±1	3	1.995
	5230	17.38	54.7016	17±1	3	1.995
	5270	17.001	50.1303	17±1	3	1.995
	5310	17.072	50.9565	17±1	3	1.995
	5510	16.521	44.8849	16±1	3	1.995
	5590	17.568	57.1216	17±1	3	1.995
	5670	16.793	47.7859	16±1	3	1.995
	5755	17.57	57.1479	17±1	3	1.995
	5795	18.11	64.7143	18±1	3	1.995
IEEE 802.11ax HE40	5190	17.22	52.7230	17±1	3	1.995
	5230	17.23	52.8445	17±1	3	1.995
	5270	16.101	40.7474	16±1	3	1.995
	5310	17.208	52.5775	17±1	3	1.995
	5510	17.198	52.4566	17±1	3	1.995
	5590	17.114	51.4517	17±1	3	1.995
	5670	17.524	56.5458	17±1	3	1.995
	5755	19.46	88.3080	19±1	3	1.995
	5795	20.25	105.9254	20±1	3	1.995
IEEE 802.11ac VHT80	5210	17.41	55.0808	17±1	3	1.995
	5290	17.100	51.2861	17±1	3	1.995
	5530	16.540	45.0817	16±1	3	1.995
	5610	17.542	56.7806	17±1	3	1.995
	5775	17.69	58.7489	17±1	3	1.995
IEEE	5210	17.13	51.6416	17±1	3	1.995

802.11ax HE80	5290	16.732	47.1194	16±1	3	1.995
	5530	17.554	56.9377	17±1	3	1.995
	5610	17.341	54.2126	17±1	3	1.995
	5775	19.95	98.8553	19±1	3	1.995

## Antenna 2

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Target power (dBm)	Antenna gain	
					(dBi)	(Linear)
IEEE 802.11b	2412	15.10	32.3594	15±1	2	1.585
	2437	15.05	31.9890	15±1	2	1.585
	2462	14.94	31.1889	14±1	2	1.585
IEEE 802.11g	2412	20.54	113.2400	20±1	2	1.585
	2437	22.00	158.4893	22±1	2	1.585
	2462	20.48	111.6863	20±1	2	1.585
IEEE 802.11n HT20	2412	21.33	135.8313	21±1	2	1.585
	2437	22.83	191.8669	22±1	2	1.585
	2462	21.30	134.8963	21±1	2	1.585
IEEE 802.11ax HE20	2412	23.40	218.7762	23±1	2	1.585
	2437	23.52	224.9055	23±1	2	1.585
	2462	23.58	228.0342	23±1	2	1.585
IEEE 802.11n HT40	2422	21.59	144.2115	21±1	2	1.585
	2437	22.21	166.3413	22±1	2	1.585
	2452	21.68	147.2313	21±1	2	1.585
IEEE 802.11ax HE40	2422	23.67	232.8091	23±1	2	1.585
	2437	23.62	230.1442	23±1	2	1.585
	2452	23.64	231.2065	23±1	2	1.585
IEEE 802.11a	5180	17.15	51.8800	17±1	3	1.995
	5200	16.81	47.9733	16±1	3	1.995
	5240	16.85	48.4172	16±1	3	1.995
	5260	17.520	56.4937	17±1	3	1.995
	5300	17.040	50.5825	17±1	3	1.995
	5320	17.289	53.5673	17±1	3	1.995
	5500	17.304	53.7527	17±1	3	1.995
	5580	17.322	53.9759	17±1	3	1.995
	5700	17.577	57.2400	17±1	3	1.995
	5745	16.71	46.8813	16±1	3	1.995
	5785	17.03	50.4661	17±1	3	1.995
	5825	17.78	59.9791	17±1	3	1.995

IEEE 802.11n HT20	5180	16.61	45.8142	16±1	3	1.995
	5200	16.48	44.4631	16±1	3	1.995
	5240	16.47	44.3609	16±1	3	1.995
	5260	16.684	46.6015	16±1	3	1.995
	5300	16.756	47.3805	16±1	3	1.995
	5320	16.865	48.5848	16±1	3	1.995
	5500	16.100	40.7380	16±1	3	1.995
	5580	16.108	40.8131	16±1	3	1.995
	5700	16.462	44.2792	16±1	3	1.995
	5745	16.22	41.8794	16±1	3	1.995
	5785	16.62	45.9198	16±1	3	1.995
	5825	17.24	52.9663	17±1	3	1.995
IEEE 802.11ac VHT20	5180	16.40	43.6516	16±1	3	1.995
	5200	16.38	43.4510	16±1	3	1.995
	5240	16.38	43.4510	16±1	3	1.995
	5260	16.329	42.9438	16±1	3	1.995
	5300	16.655	46.2914	16±1	3	1.995
	5320	16.545	45.1336	16±1	3	1.995
	5500	15.962	39.4639	15±1	3	1.995
	5580	15.806	38.0715	15±1	3	1.995
	5700	15.614	36.4250	15±1	3	1.995
	5745	16.15	41.2098	16±1	3	1.995
	5785	16.53	44.9780	16±1	3	1.995
	5825	17.15	51.8800	17±1	3	1.995
IEEE 802.11ax HE20	5180	17.91	61.8016	17±1	3	1.995
	5200	18.03	63.5331	18±1	3	1.995
	5240	17.93	62.0869	17±1	3	1.995
	5260	16.361	43.2613	16±1	3	1.995
	5300	16.537	45.0505	16±1	3	1.995
	5320	16.152	41.2287	16±1	3	1.995
	5500	16.009	39.8933	16±1	3	1.995
	5580	15.668	36.8808	15±1	3	1.995
	5700	15.373	34.4588	15±1	3	1.995
	5745	20.27	106.4143	20±1	3	1.995
	5785	20.73	118.3042	20±1	3	1.995
	5825	21.02	126.4736	21±1	3	1.995
IEEE 802.11n	5190	18.70	74.1310	18±1	3	1.995
	5230	18.63	72.9458	18±1	3	1.995



HT40	5270	16.590	45.6037	16±1	3	1.995
	5310	16.714	46.9245	16±1	3	1.995
	5510	15.418	34.8177	15±1	3	1.995
	5590	15.550	35.8922	15±1	3	1.995
	5670	16.311	42.7661	16±1	3	1.995
	5755	18.47	70.3072	18±1	3	1.995
	5795	19.00	79.4328	19±1	3	1.995
IEEE 802.11ac VHT40	5190	18.77	75.3356	18±1	3	1.995
	5230	18.15	65.3131	18±1	3	1.995
	5270	16.448	44.1367	16±1	3	1.995
	5310	16.058	40.3460	16±1	3	1.995
	5510	16.125	40.9732	16±1	3	1.995
	5590	15.568	36.0413	15±1	3	1.995
	5670	16.516	44.8332	16±1	3	1.995
	5755	18.46	70.1455	18±1	3	1.995
IEEE 802.11ax HE40	5795	18.93	78.1628	18±1	3	1.995
	5190	17.88	61.3762	17±1	3	1.995
	5230	17.55	56.8853	17±1	3	1.995
	5270	16.595	45.6562	16±1	3	1.995
	5310	16.068	40.4390	16±1	3	1.995
	5510	16.210	41.7830	16±1	3	1.995
	5590	16.345	43.1023	16±1	3	1.995
	5670	15.141	32.6663	15±1	3	1.995
IEEE 802.11ac VHT80	5755	20.10	102.3293	20±1	3	1.995
	5795	20.68	116.9499	20±1	3	1.995
	5210	18.26	66.9885	18±1	3	1.995
	5290	16.001	39.8199	16±1	3	1.995
	5530	16.109	40.8225	16±1	3	1.995
IEEE 802.11ax HE80	5610	16.014	39.9393	16±1	3	1.995
	5775	18.41	69.3426	18±1	3	1.995
	5210	17.39	54.8277	17±1	3	1.995
	5290	16.915	49.1473	16±1	3	1.995
	5530	16.091	40.6537	16±1	3	1.995
IEEE 802.11ax HE80	5610	16.366	43.3112	16±1	3	1.995
	5775	20.68	116.9499	20±1	3	1.995

### 3. Calculated Result and Limit

#### WLAN 2.4G SISO

Antenna	MODE	Channel	MAX Target power (dBm)	Antenna gain		Power Density (S) (mW/cm <sup>2</sup> )	Limited of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
				(dBi)	(Linear)			
1	IEEE 802.11g	2437	23	2	1.585	0.0629	1	Complies

#### WLAN 2.4G MIMO

Worst case	Channel	Target power (dBm)	Target power (dBm)	Power Density (S) (mW/cm <sup>2</sup> )	Power Density (S) (mW/cm <sup>2</sup> )	Total (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Test Result
		Antenna 1	Antenna 2	Antenna 0	Antenna 1			
IEEE 802.11ax HE40	2452	24	24	0.0792	0.0792	0.1584	1	Complies

#### WLAN 5G SISO

Antenna	Channel	MAX Target power (dBm)	Antenna gain		Power Density (S) (mW/cm <sup>2</sup> )	Limited of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
			(dBi)	(Linear)			
0	5580	19	3	1.995	0.0315	1	Complies

**WLAN 5G MIMO**

Worst case	Channel	Target power (dBm) Antenna 1	Target power (dBm) Antenna 2	Power Density (S) (mW/cm <sup>2</sup> ) Antenna 1	Power Density (S) (mW/cm <sup>2</sup> ) Antenna2	Total (mW/c m <sup>2</sup> )	Limit (mW/ cm <sup>2</sup> )	Test Result
IEEE802.11ax HE 20	5825	22	22	0.0629	0.0629	0.1258	1	Complies

Note: 2.4 and 5GHz bands are share an antenna, Can't both the 2.4 and 5 GHz bands operate simultaneously.

**End of Test Report**