

FCC 47 CFR MPE REPORT

Shenyang Tongfang Multimedia Technology Co., Limited

LED TV

Model Number: WE50UL4100

Additional Model: WE50UB4417

FCC ID: 2ACWIWE50UB441

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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/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			1.0	30

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

2、MPE Calculation Method

$$E \text{ (V/m)} = (30 \cdot P \cdot G)^{0.5} / d \qquad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = E^2 / 377$$

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

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

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、Conducted Power Result

3.1 Antenna a

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Target power (dBm)	Antenna gain	
					(dBi)	(Linear)
IEEE 802.11b	2412	17.22	52.723	17±2	1.21	1.321
	2437	16.78	47.643	16±2	1.21	1.321
	2462	14.58	28.708	14±2	1.21	1.321
IEEE 802.11g	2412	11.93	15.596	11±2	1.21	1.321
	2437	13.00	19.953	13±2	1.21	1.321
	2462	9.57	9.057	9±2	1.21	1.321
IEEE 802.11n HT20	2412	12.63	18.323	12±2	1.21	1.321
	2437	11.94	15.631	11±2	1.21	1.321
	2462	10.19	10.447	10±2	1.21	1.321
IEEE 802.11n HT40	2422	10.09	10.209	10±2	1.21	1.321
	2437	10.50	11.220	10±2	1.21	1.321
	2452	10.08	10.186	10±2	1.21	1.321

3.2 Antenna b

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Target power (dBm)	Antenna gain	
					(dBi)	(Linear)
IEEE 802.11b	2412	16.58	45.499	16±2	1.21	1.321
	2437	16.34	43.053	16±2	1.21	1.321
	2462	14.75	29.854	14±2	1.21	1.321
IEEE 802.11g	2412	13.45	22.131	13±2	1.21	1.321
	2437	12.30	16.982	12±2	1.21	1.321
	2462	11.16	13.062	11±2	1.21	1.321
IEEE 802.11n HT20	2412	12.99	19.907	12±2	1.21	1.321
	2437	12.96	19.770	12±2	1.21	1.321
	2462	11.16	13.062	11±2	1.21	1.321
IEEE 802.11n HT40	2422	10.74	11.858	10±2	1.21	1.321
	2437	10.91	12.331	10±2	1.21	1.321
	2452	11.01	12.618	11±2	1.21	1.321

4、 Calculated Result and Limit

4.1 Antenna a

Mode	Target power (dBm)	Antenna gain		Power Density (S) (mW/cm ²)	Limited of Power Density (S) (mW/cm ²)	Test Result
		(dBi)	(Linear)			
2.4G Band						
IEEE 802.11b	19	1.21	1.321	0.02088	1	Compiles
IEEE 802.11g	15	1.21	1.321	0.00831	1	Compiles
IEEE 802.11n HT20	14	1.21	1.321	0.00660	1	Compiles
IEEE 802.11n HT40	12	1.21	1.321	0.00417	1	Compiles

4.2 Antenna b

Mode	Target power (dBm)	Antenna gain		Power Density (S) (mW/cm ²)	Limited of Power Density (S) (mW/cm ²)	Test Result
		(dBi)	(Linear)			
2.4G Band						
IEEE 802.11b	18	1.21	1.321	0.01659	1	Compiles
IEEE 802.11g	18	1.21	1.321	0.00831	1	Compiles
IEEE 802.11n HT20	14	1.21	1.321	0.00660	1	Compiles
IEEE 802.11n HT40	13	1.21	1.321	0.00524	1	Compiles

4.3 Antenna a+b

Mode	Power Density (S) (mW /cm2) Antenna 0	Power Density (S) (mW /cm2) Antenna 1	Power Density (S) (mW /cm2) Total	Limited of Power Density (S) (mW /cm2)	Test Result
2.4G Band					
IEEE 802.11n HT20	0.00660	0.00660	0.01320	1	Compiles
IEEE 802.11n HT40	0.00417	0.00524	0.00941	1	Compiles