

FCC 47 CFR MPE REPORT

TCL OVERSEAS MARKETING LTD

3.1.2ch Ultra-slim Wireless Soundbar

Model Number: Q60H

FCC ID: 2BEHEQ60H

Applicant:	TCL OVERSEAS MARKETING LTD
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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 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

1.2. MPE Calculation Method

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

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, $d=0.2\text{m}$, as well as the gain of the used antenna, the RF power density can be obtained

2. Conducted Power Result

Mode	Frequency (MHz)	Antenna	Peak output power (dBm)	Peak output power (mW)
GFSK	2402	ant 1	6.04	4.018
	2441	ant 1	4.07	2.553
	2480	ant 1	3.19	2.084
$\pi/4$ -DQPSK	2402	ant 1	8.25	6.683
	2441	ant 1	6.22	4.188
	2480	ant 1	5.33	3.412
8-DPSK	2402	ant 1	8.69	7.396
	2441	ant 1	6.68	4.656
	2480	ant 1	5.94	3.926
Mode	Frequency (MHz)	Antena	Peak output power (dBm)	Peak output power (mW)
5.2G GFSK	5155	ant 1	2.01	1.589
		ant 2	2.07	1.611
	5195	ant 1	3.67	2.328
		ant 2	3.3	2.138
	5245	ant 1	4.26	2.667
		ant 2	4.25	2.661
5.8G GFSK	5730	ant 1	5.25	3.350
		ant 2	5.05	3.199
	5790	ant 1	3.6	2.291
		ant 2	3.66	2.323
	5848	ant 1	-6.75	0.211
		ant 2	-6.73	0.212

3. Calculated Result and Limit

1.SISO

The Worst Mode	Antenna	Peak output power (dBm)	Target power (dBm)	MAX 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									
GFSK	ant 1	6.04	6±1	7	1.19	1.315	0.0013	1	Complies
π/4-DQ PSK	ant 1	8.25	8 ±1	9	1.19	1.315	0.0021	1	Complies
8-DPSK	ant 1	8.69	8±1	9	1.19	1.315	0.0021	1	Complies
5G Band									
5.2G GFSK	ant 1	4.26	4 ±1	5	1.23	1.3274	0.0008	1	Complies
	ant 2	4.25	4 ±1	5	1.96	1.5704	0.0010	1	Complies
5.8G GFSK	ant 1	5.25	5 ±1	6	1.93	1.5596	0.0012	1	Complies
	ant 2	5.05	5 ±1	6	1.92	1.5560	0.0012	1	Complies

BT+5G

MAX Power Density (S) (mW/cm ²) Bluetooth	MAX Power Density (S) (mW/cm ²) WiFi	Total Ratio	Limit Ratio	Test Result
0.0021	0.0012	0.0033	1	Complies

End of Test Report