FCC 47 CFR MPE REPORT

TCL OVERSEAS MARKETING LTD

5.1.2 Channel Dolby Atmos Sound Bar with Wireless Subwoofer

Model Number: Q75H

Additional Model: Q70H, Q78H, Q79H, Q75HE, Q75HK, Q7*****, Q75H-S, Q70H-S, Q78H-S, Q79H-S, Q75H-J, Q70H-J, Q78H-J, Q79H-J, Q75H-CA, Q70H-CA, Q78H-CA, Q79H-CA, R50C, R55C, R58C, R50D, R55D, R58D, R5*** (*can be any numerica number"0~9" or alphebtical number "A~Z")

FCC ID: 2BEHEQ75H

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.o	30

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

1.2. MPE Calculation Method

E (V/m) = $\frac{\sqrt{30 \times P \times G}}{d}$ 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)	Antenna	Peak output power (dBm)	Peak output power (mW)
GFSK	2402	ant 1	7.7	5.888
	2441	ant 1	7.51	5.636
	2480	ant 1	7.52	5.649
π/4-DQPSK	2402	ant 1	9.98	9.954
	2441	ant 1	9.82	9.594
	2480	ant 1	9.77	9.484
8-DPSK	2402	ant 1	10.36	10.864
	2441	ant 1	10.29	10.691
	2480	ant 1	10.1	10.233
BLE 1M	2402	ant 1	2.75	1.884
	2440	ant 1	2.7	1.862
	2480	ant 1	2.69	1.858
BLE 2M	2402	ant 1	2.75	1.884
	2440	ant 1	2.5	1.778
	2480	ant 1	2.57	1.807
2.4G SRD-GFSK	2406	ant 1	7.02	5.035
	2442	ant 1	6.69	4.667
	2474	ant 1	6.2	4.169
IEEE 802.11b	2412	ant 1	15.69	37.068
		ant 2	15.69	37.068
	2437	ant 1	16.09	40.644
		ant 2	15.87	38.637
	2462	ant 1	15.82	38.194
		ant 2	15.63	36.559
IEEE 802.11g	2412	ant 1	19.21	83.368
		ant 2	19.01	79.616
	2437	ant 1	18.94	78.343
		ant 2	19.12	81.658
	2462	ant 1	19.07	80.724
		ant 2	19.15	82.224
IEEE 802.11n HT20	2412	ant 1	17.71	59.020
		ant 2	18.66	73.451
	2437	ant 1	17.57	57.148
		ant 2	18.49	70.632

	2462	ant 1	17.54	56.754
		ant 2	18.36	68.549
IEEE 802.11n HT40	2422	ant 1	18.57	71.945
		ant 2	19.15	82.224
	2437	ant 1	18.61	72.611
		ant 2	19.27	84.528
	2452	ant 1	18.59	72.277
		ant 2	18.97	78.886
IEEE 802.11a	5180	ant 1	12.13	16.331
		ant 2	11.94	15.631
	5200	ant 1	11.79	15.101
		ant 2	11.71	14.825
	5240	ant 1	11.96	15.704
		ant 2	11.57	14.355
	5260	ant 1	10.38	10.914
		ant 2	9.94	9.863
	5300	ant 1	10.29	10.691
		ant 2	10.09	10.209
	5320	ant 1	10.24	10.568
		ant 2	9.89	9.750
	5500	ant 1	10.14	10.328
		ant 2	9.9	9.772
	5580	ant 1	10.18	10.423
		ant 2	9.78	9.506
	5700	ant 1	10.61	11.508
		ant 2	10.38	10.914
	5745	ant 1	10.67	11.668
		ant 2	10.27	10.641
	5785	ant 1	9.82	9.594
		ant 2	10.14	10.328
	5825	ant 1	10.15	10.351
		ant 2	10.07	10.162
IEEE 802.11n20	5180	ant 1	10.3	10.715
		ant 2	10.29	10.691
	5200	ant 1	9.91	9.795
		ant 2	10.18	10.423
	5240	ant 1	9.9	9.772
		ant 2	10.1	10.233

	5260	ant 1	7.72	5.916
		ant 2	7.86	6.109
	5300	ant 1	7.81	6.039
		ant 2	7.83	6.067
	5320	ant 1	7.67	5.848
		ant 2	7.6	5.754
	5500	ant 1	7.81	6.039
		ant 2	7.71	5.902
	5580	ant 1	7.85	6.095
		ant 2	8.01	6.324
	5700	ant 1	8.02	6.339
		ant 2	8.47	7.031
	5745	ant 1	7.98	6.281
		ant 2	8.57	7.194
	5785	ant 1	7.71	5.902
		ant 2	8.43	6.966
	5825	ant 1	7.73	5.929
		ant 2	8.61	7.261
IEEE 802.11ac VHT20	5180	ant 1	9.91	9.795
		ant 2	9.8	9.550
	5200	ant 1	9.52	8.954
		ant 2	9.84	9.638
	5240	ant 1	9.6	9.120
		ant 2	9.9	9.772
	5260	ant 1	7.57	5.715
		ant 2	7.53	5.662
	5300	ant 1	7.58	5.728
		ant 2	7.58	5.728
	5320	ant 1	7.38	5.470
		ant 2	7.31	5.383
	5500	ant 1	7.65	5.821
		ant 2	7.81	6.039
	5580	ant 1	7.53	5.662
		ant 2	7.93	6.209
	5700	ant 1	7.92	6.194
		ant 2	8.54	7.145
	5745	ant 1	8.35	6.839
		ant 2	8.57	7.194

	5785	ant 1	7.79	6.012
		ant 2	8.25	6.683
	5825	ant 1	7.83	6.067
		ant 2	8.43	6.966
IEEE 802.11n HT40	5190	ant 1	12.03	15.959
		ant 2	12.19	16.558
	5230	ant 1	12.04	15.996
		ant 2	11.93	15.596
	5270	ant 1	9.86	9.683
		ant 2	9.76	9.462
	5310	ant 1	9.64	9.204
		ant 2	9.66	9.247
	5510	ant 1	9.7	9.333
		ant 2	9.53	8.974
	5550	ant 1	9.59	9.099
		ant 2	9.54	8.995
	5670	ant 1	9.69	9.311
		ant 2	9.93	9.840
	5755	ant 1	9.87	9.705
		ant 2	9.98	9.954
	5795	ant 1	9.54	8.995
		ant 2	9.9	9.772
IEEE 802.11ac VHT40	5190	ant 1	12.19	16.558
		ant 2	12.17	16.482
	5230	ant 1	12.18	16.520
		ant 2	11.98	15.776
	5270	ant 1	9.59	9.099
		ant 2	9.44	8.790
	5310	ant 1	9.21	8.337
		ant 2	9.21	8.337
	5510	ant 1	9.55	9.016
		ant 2	9.47	8.851
	5590	ant 1	9.51	8.933
		ant 2	9.61	9.141
	5670	ant 1	9.86	9.683
		ant 2	10.21	10.495
	5755	ant 1	10.12	10.280
		ant 2	10.39	10.940

	5795	ant 1	9.75	9.441
		ant 2	10.22	10.520
IEEE 802.11ac VHT80	5210	ant 1	11.79	15.101
		ant 2	11.53	14.223
	5290	ant 1	11.24	13.305
		ant 2	11.37	13.709
	5530	ant 1	11.63	14.555
		ant 2	11.51	14.158
	5610	ant 1	11.2	13.183
		ant 2	11.2	13.183
	5775	ant 1	11.76	14.997
		ant 2	11.58	14.388

3. Calculated Result and Limit

SISO

The Worst Mode	Antenna	Peak output power (dBm)	Target power (dBm)	MAX Target power (dBm)	Antenna gain		Power Density (S) (mW /cm2)	Limited of Power Density (S) (mW /cm^2)	Test Result
					(dBi)	(Linear)			
2.4G Band									
GFSK	ant 1	7.70	7±1	8	2.4	1.738	0.0022	1	Complies
π/4-DQPSK	ant 1	9.98	9±1	10	2.4	1.738	0.0035	1	Complies
8-DPSK	ant 1	10.36	10±1	11	2.4	1.738	0.0044	1	Complies
BLE	ant 1	2.75	2±1	3	2.4	1.738	0.0007	1	Complies
2.4G SRD	ant 1	7.02	7±1	8	1.11	1.291	0.0016	1	Complies
IEEE 802.11b	ant 1	16.09	16±1	17	2.4	1.738	0.0173	1	Complies
	ant 2	15.87	15±1	16	2.3	1.698	0.0135	1	Complies
IEEE 802.11g	ant 1	19.21	19±1	20	2.4	1.738	0.0346	1	Complies
	ant 2	19.15	19±1	20	2.3	1.698	0.0338	1	Complies
IEEE 802.11n HT20	ant 1	17.71	17±1	18	2.4	1.738	0.0218	1	Complies
	ant 2	18.66	18±1	19	2.3	1.698	0.0268	1	Complies
IEEE 802.11n HT40	ant 1	18.61	18±1	19	2.4	1.738	0.0275	1	Complies
	ant 2	19.27	19±1	20	2.3	1.698	0.0338	1	Complies
5G Band									
IEEE 802.11a	ant 1	12.13	12±1	13	4.4	2.754	0.0109	1	Complies
	ant 2	11.94	11±1	12	4.1	2.570	0.0081	1	Complies
IEEE 802.11n HT20	ant 1	10.3	10±1	11	4.4	2.754	0.0069	1	Complies
	ant 2	10.29	10±1	11	4.1	2.570	0.0064	1	Complies
IEEE802.11ac VHT20	ant 1	9.91	9±1	10	4.4	2.754	0.0055	1	Complies
	ant 2	9.9	9±1	10	4.1	2.570	0.0051	1	Complies
IEEE 802.11n HT40	ant 1	12.04	12±1	13	4.4	2.754	0.0109	1	Complies
	ant 2	12.19	12±1	13	4.1	2.570	0.0102	1	Complies
IEEE 802.11ac VHT40	ant 1	12.19	12±1	13	4.4	2.754	0.0109	1	Complies
	ant 2	12.17	12±1	13	4.1	2.570	0.0102	1	Complies
IEEE 802.11ac VHT80	ant 1	11.79	11±1	12	4.4	2.754	0.0087	1	Complies
	ant 2	11.58	11±1	12	4.1	2.570	0.0081	1	Complies

MIMO

Mode	Power Density (S) (mW /cm^2) Antenna 0	Power Density (S) (mW /cm^2) Antenna 1	Power Density (S) (mW /cm^2) Total	Limited of Power Density (S) (mW /cm^2)	Test Result
2.4G Band					
IEEE 802.11n HT20	0.0218	0.0268	0.0487	1	Complies
IEEE 802.11n HT40	0.0275	0.0338	0.0612	1	Complies
5G Band					
IEEE 802.11n HT20	0.0069	0.0064	0.0133	1	Complies
IEEE 802.11ac VHT20	0.0055	0.0051	0.0106	1	Complies
IEEE 802.11n HT40	0.0109	0.0102	0.0211	1	Complies
IEEE 802.11ac VHT40	0.0109	0.0102	0.0211	1	Complies
IEEE 802.11ac VHT80	0.0087	0.0081	0.0168	1	Complies

2.4G SRD+BT+WIFI

MAX Power Density (S) (mW/cm^2) 2.4G SRD	MAX Power Density (S) (mW/cm^2) Bluetooth	MAX Power Density (S) (mW/cm^2) WiFi	Total Ratio	Limit Ratio	Test Result
0.0016	0.0044	0.0612	0.0672	1	Complies

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

End of Test Report