



FCC 47 CFR MPE REPORT

KONKA GROUP CO., LTD.

32" HD SMART TV

Model Number: 32RR683TC

Additional Model: TC-LE32K-AN2401

FCC ID: 2AQX732RR683UN00

Applicant:	KONKA GROUP CO., 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	5.6	3.631
	2441	ant 1	6.19	4.159
	2480	ant 1	6.23	4.198
$\pi/4$ -DQPSK	2402	ant 1	8.67	7.362
	2441	ant 1	8.65	7.328
	2480	ant 1	8.67	7.362
8-DPSK	2402	ant 1	9.21	8.337
	2441	ant 1	9.14	8.204
	2480	ant 1	9.27	8.453
BLE 1M	2402	ant 1	5.45	3.508
	2440	ant 1	5.45	3.508
	2480	ant 1	5.56	3.597
BLE 2M	2402	ant 1	5.58	3.614
	2440	ant 1	5.66	3.681
	2480	ant 1	5.74	3.750
IEEE 802.11b	2412	ant 1	13.29	21.330
		ant 2	11.6	14.454
	2437	ant 1	12.48	17.701
		ant 2	10.53	11.298
	2462	ant 1	11.82	15.205
		ant 2	10.81	12.050
IEEE 802.11g	2412	ant 1	15.84	38.371
		ant 2	15.05	31.989
	2437	ant 1	14.91	30.974
		ant 2	14.36	27.290
	2462	ant 1	14.44	27.797
		ant 2	13.72	23.550
IEEE 802.11n HT20	2412	ant 1	15.21	33.189
		ant 2	13.75	23.714
	2437	ant 1	13.99	25.061
		ant 2	12.74	18.793
	2462	ant 1	13.32	21.478
		ant 2	13.02	20.045

IEEE 802.11n HT40	2422	ant 1	15.04	31.915
		ant 2	14.11	25.763
	2437	ant 1	14.42	27.669
		ant 2	13.33	21.528
	2452	ant 1	14.01	25.177
		ant 2	13.14	20.606
IEEE 802.11a	5180	ant 1	13.32	21.478
		ant 2	13.77	23.823
	5200	ant 1	13.77	23.823
		ant 2	13.59	22.856
	5240	ant 1	14.37	27.353
		ant 2	14.43	27.733
	5260	ant 1	14.52	28.314
		ant 2	14.27	26.730
	5300	ant 1	15.54	35.810
		ant 2	14.69	29.444
	5320	ant 1	15.3	33.884
		ant 2	14.79	30.130
	5500	ant 1	14.16	26.062
		ant 2	13.5	22.387
	5580	ant 1	16.51	44.771
		ant 2	14.5	28.184
	5700	ant 1	14.57	28.642
		ant 2	17.28	53.456
	5745	ant 1	14.36	27.290
		ant 2	16.24	42.073
	5785	ant 1	14.63	29.040
		ant 2	15	31.623
	5825	ant 1	16.05	40.272
		ant 2	13.96	24.889
IEEE 802.11n20	5180	ant 1	11.03	12.677
		ant 2	11.19	13.152
	5200	ant 1	10.7	11.749
		ant 2	11.22	13.243
	5240	ant 1	11.54	14.256
		ant 2	11.27	13.397
	5260	ant 1	11.9	15.488
		ant 2	11.22	13.243

		5300	ant 1	12.78	18.967
			ant 2	11.94	15.631
		5320	ant 1	12.75	18.836
			ant 2	12.13	16.331
		5500	ant 1	11.28	13.428
			ant 2	10.79	11.995
		5580	ant 1	14.02	25.235
			ant 2	11.71	14.825
		5700	ant 1	11.84	15.276
			ant 2	14.16	26.062
		5745	ant 1	11.79	15.101
			ant 2	13.21	20.941
		5785	ant 1	12.41	17.418
			ant 2	12.17	16.482
		5825	ant 1	12.97	19.815
			ant 2	11.53	14.223
	IEEE 802.11ac VHT20	5180	ant 1	11.32	13.552
			ant 2	11.49	14.093
		5200	ant 1	11.28	13.428
			ant 2	11.32	13.552
		5240	ant 1	11.85	15.311
			ant 2	12.26	16.827
		5260	ant 1	13.79	23.933
			ant 2	10.84	12.134
		5300	ant 1	13.84	24.210
			ant 2	11.31	13.521
		5320	ant 1	13.67	23.281
			ant 2	11.81	15.171
		5500	ant 1	12.33	17.100
			ant 2	9.75	9.441
		5580	ant 1	14.17	26.122
			ant 2	12.76	18.880
		5700	ant 1	15.14	32.659
			ant 2	11.14	13.002
		5745	ant 1	14.31	26.977
			ant 2	10.57	11.402
		5785	ant 1	13.31	21.429
			ant 2	10.49	11.194

		5825	ant 1	12.78	18.967
			ant 2	11.64	14.588
IEEE 802.11n HT40	5190		ant 1	11.19	13.152
			ant 2	11.62	14.521
	5230		ant 1	11.71	14.825
			ant 2	11.89	15.453
	5270		ant 1	12.97	19.815
			ant 2	13.18	20.797
	5310		ant 1	13.45	22.131
			ant 2	12.6	18.197
	5510		ant 1	12.45	17.579
			ant 2	12.04	15.996
	5550		ant 1	14.58	28.708
			ant 2	12.38	17.298
	5670		ant 1	13.04	20.137
			ant 2	14.69	29.444
	5755		ant 1	12.81	19.099
			ant 2	14.15	26.002
	5795		ant 1	13.45	22.131
			ant 2	12.94	19.679
IEEE 802.11ac VHT40	5190		ant 1	12.54	17.947
			ant 2	10.97	12.503
	5230		ant 1	13.32	21.478
			ant 2	10.83	12.106
	5270		ant 1	13.62	23.014
			ant 2	10.77	11.940
	5310		ant 1	14.13	25.882
			ant 2	11.79	15.101
	5510		ant 1	12.81	19.099
			ant 2	10.49	11.194
	5590		ant 1	14.72	29.648
			ant 2	13.4	21.878
	5670		ant 1	15.68	36.983
			ant 2	13.03	20.091
	5755		ant 1	13.97	24.946
			ant 2	10.53	11.298
	5795		ant 1	13.61	22.961
			ant 2	11.09	12.853

		ant 2	12.54	17.947
IEEE 802.11ac VHT80	5210	ant 1	13.17	20.749
		ant 2	11.41	13.836
	5290	ant 1	14.92	31.046
		ant 2	12.12	16.293
	5530	ant 1	14.52	28.314
		ant 2	12.02	15.922
	5610	ant 1	15.02	31.769
		ant 2	13.34	21.577
	5775	ant 1	14.91	30.974
		ant 2	12	15.849

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 /cm ²)	Limited of Power Density (S) (mW /cm ²)	Test Result
					(dBi)	(Linear)			
2.4G Band									
GFSK	ant 1	6.23	6±1	7	3.21	2.094	0.0021	1	Complies
π/4-DQPSK	ant 1	8.67	8 ±1	9	3.21	2.094	0.0033	1	Complies
8-DPSK	ant 1	9.27	9±1	10	3.21	2.094	0.0042	1	Complies
BLE1M	ant 1	5.56	5 ±1	6	3.21	2.094	0.0017	1	Complies
BLE2M	ant 1	5.74	5 ±1	6	3.21	2.094	0.0017	1	Complies
IEEE 802.11b	ant 1	13.29	13 ±1	14	3.89	2.449	0.0122	1	Complies
	ant 2	11.6	11 ±1	12	3.89	2.449	0.0077	1	Complies
IEEE 802.11g	ant 1	15.84	15 ±1	16	3.89	2.449	0.0194	1	Complies
	ant 2	15.05	15 ±1	16	3.89	2.449	0.0194	1	Complies
IEEE 802.11n HT20	ant 1	15.21	15 ±1	16	3.89	2.449	0.0194	1	Complies
	ant 2	13.75	13±1	14	3.89	2.449	0.0122	1	Complies
IEEE 802.11n HT40	ant 1	15.04	15 ±1	16	3.89	2.449	0.0194	1	Complies
	ant 2	14.11	14 ±1	15	3.89	2.449	0.0154	1	Complies
5G Band									
IEEE 802.11a	ant 1	16.51	16 ±1	17	3.39	2.1827	0.0218	1	Complies
	ant 2	17.28	17 ±1	18	3.39	2.1827	0.0274	1	Complies
IEEE 802.11n HT20	ant 1	14.02	14 ±1	15	3.39	2.1827	0.0137	1	Complies
	ant 2	14.16	14±1	15	3.39	2.1827	0.0137	1	Complies
IEEE802.11ac VHT20	ant 1	15.14	15 ±1	16	3.39	2.1827	0.0173	1	Complies
	ant 2	12.76	12 ±1	13	3.39	2.1827	0.0087	1	Complies
IEEE 802.11n HT40	ant 1	14.58	14 ±1	15	3.39	2.1827	0.0137	1	Complies
	ant 2	14.69	14 ±1	15	3.39	2.1827	0.0137	1	Complies
IEEE 802.11ac VHT40	ant 1	15.68	15 ±1	16	3.39	2.1827	0.0173	1	Complies
	ant 2	13.4	13 ±1	14	3.39	2.1827	0.0109	1	Complies
IEEE 802.11ac VHT80	ant 1	15.02	15 ±1	16	3.39	2.1827	0.0173	1	Complies
	ant 2	13.34	13 ±1	14	3.39	2.1827	0.0109	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	0.0194	0.0122	0.0316	1	Complies
IEEE 802.11n HT40	0.0194	0.0154	0.0348	1	Complies
5G Band					
IEEE 802.11n HT20	0.0137	0.0137	0.0275	1	Complies
IEEE 802.11ac VHT20	0.0173	0.0087	0.0260	1	Complies
IEEE 802.11n HT40	0.0137	0.0137	0.0275	1	Complies
IEEE 802.11ac VHT40	0.0173	0.0109	0.0282	1	Complies
IEEE 802.11ac VHT80	0.0173	0.0109	0.0282	1	Complies

BT+Wi-Fi

MAX Power Density (S) (mW/cm ²) Bluetooth	MAX Power Density (S) (mW/cm ²) WiFi	Total Ratio	Limit Ratio	Test Result
0.0042	0.0348	0.0390	1	Complies

End of Test Report