



CTK Co., Ltd.
The First Leader of Global Regulatory Compliance

CTK Co., Ltd.

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RF EXPOSURE EVALUATION

Applicant : KAONMEDIA Co., Ltd.

Applicant Address : KAONMEDIA Building, 884-3 Seongnam-daero,
Bundang-gu, Seongnam-si, Gyeonggi-do, Korea

Kind of Product : Entertainment Hub

**Equipment
model name** : HDRX4

FCC ID : WQT-HDRX4

Antenna type : PCB Antenna

Antenna Gain : 1.9 dBi@2.4GHz
2.0 dBi@5GHz



**** MPE Calculations ****

The EUT will only be used with a separation of 50 centimeters or greater between the antenna and the body of the user. The MPE calculation for this exposure is shown below.

The peak radiated output power (EIRP) is calculated as follows:

$EIRP = P + G$	Where, P = Power input to the antenna (mW) G = Power gain of the antenna (dBi)
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The numeric gain(G) of the antenna with a gain specified in dB is determined by:

$$G = \text{Log}^{-1} (\text{dB antenna gain} / 10)$$

Power density at the specific separation:

$S = PG / (4R^2\pi)$	Where, S = Maximum power density (mW/cm ²) P = Power input to the antenna (mW) G = Numeric power gain of the antenna R = Distance to the center of the radiation of the antenna (50cm = limit for MPE)
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The Maximum permissible exposure (MPE) for the general population is 1 mW/cm² .
The power density at 50cm does not exceed the 1 mW/cm² limit.

Estimated safe separation:

$R = \sqrt{(PG / 4\pi)}$	Where, P = Power input to the antenna (mW) G = Numeric power gain of the antenna R = Distance to the center of the radiation of the antenna (50cm = limit for MPE)
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ANT : Single Streams (2.4 GHz)

Mode	P (dBm)	P (mW)	G (dBi)	S (mW/cm ²)	R (cm)
802.11b	12.55	17.99	1.90	0.0055	1.49
802.11g	8.91	7.78		0.0024	0.98
802.11n HT20	8.19	6.59		0.0020	0.90
802.11n HT40	4.26	2.67		0.0008	0.57

ANT : 2 Spatial Streams (2.4 GHz)

Mode	P (dBm)	P (mW)	G (dBi)	S (mW/cm ²)	R (cm)
802.11g	10.07	10.16	4.91	0.0063	1.58
802.11n HT20	9.25	8.41		0.0052	1.44
802.11n HT40	4.61	2.89		0.0018	0.84

ANT : Single Streams (5 GHz)

Mode	P (dBm)	P (mW)	G (dBi)	S (mW/cm ²)	R (cm)
802.11a	12.28	16.90	2.00	0.0053	1.46
802.11n_HT20	12.28	16.90		0.0053	1.46
802.11n HT40	12.86	19.32		0.0061	1.56
802.11ac_VHT20	11.68	14.72		0.0046	1.36
802.11ac VHT40	12.34	17.14		0.0054	1.47
802.11ac VHT80	12.30	16.98		0.0054	1.46

ANT : 2 Spatial Streams (5 GHz)

Mode	P (dBm)	P (mW)	G (dBi)	S (mW/cm ²)	R (cm)
802.11a	15.52	35.65	5.01	0.0225	3.00
802.11n_HT20	15.40	34.67		0.0219	2.96
802.11n HT40	16.61	45.81		0.0289	3.40
802.11ac_VHT20	14.85	30.55		0.0193	2.78
802.11ac VHT40	16.33	42.95		0.0271	3.29
802.11ac VHT80	16.79	47.75		0.0301	3.47



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Multiple chain transmitters (2.4 GHz + 5 GHz)

Mode	P (dBm)	P (mW)	G (dBi)	EIRP (mW)	S (mW/cm ²)	R (cm)
2.4 GHz	12.55	17.99	1.90	27.86		
5 GHz	16.79	47.75	5.01	151.36		
Combined				179.22	0.1682	8.20