RF Exposure Evaluation Result

1. Requirement

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

Limits for General Population/Uncontrolled Exposure

(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 Time $\|E\|^2$,$\|H\|^2$ 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
1500-100,000			1.0	30

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

2. Calculation Method

$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } S(mW/cm^2) = \frac{E^2}{377}$$

E = Electric field (V/m)
P = Peak RF output power (mW)
G = EUT Antenna numeric gain (numeric)=
d = Separation distance between radiator and human body (m)
The formula can be changed to

We can change the formula to:

$$S = \frac{30 \times P \times G}{377 \times d^2} \quad \text{or, } d = \sqrt{\frac{30 \times P \times G}{377 \times S}}$$

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. Estimation Result

Mode	CH	Frequency (MHz)	PK Output power (dBm)	Output power (mW)	Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm^2)
IEEE 802.11b	1	2412	19.07	80.72	4.5	2.82	0.0453
	6	2437	19.28	84.72	4.5	2.82	0.0475
	11	2462	19.93	98.40	4.5	2.82	0.0552
IEEE 802.11g	1	2412	18.94	78.34	4.5	2.82	0.0439
	6	2437	19.01	79.62	4.5	2.82	0.0447
	11	2462	19.72	93.76	4.5	2.82	0.0526
IEEE 802.11n HT20	1	2412	18.03	63.53	4.5	2.82	0.0356
	6	2437	18.20	66.07	4.5	2.82	0.0371
	11	2462	18.58	72.11	4.5	2.82	0.0405
IEEE 802.11n HT40	3	2422	18.06	63.97	4.5	2.82	0.0359
	6	2437	18.58	72.11	4.5	2.82	0.0405
	9	2452	18.60	72.44	4.5	2.82	0.0406

Conclusion: PASS

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Confirmed:

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