

MPE CALCULATION

FCC ID: S9GHR730

RF Exposure Requirements:

47 CFR §1.1307(b)

RF Radiation Exposure Limits:

47 CFR §1.1310

RF Radiation Exposure Guidelines:

FCC OST/OET Bulletin Number 65

EUT Frequency Band: 2.4GHz

2412-2462 MHz

EUT Frequency Band: 5 GHz

5180- 5320MHz, 5500-5720MHz, 5745-5825MHz

5210-5290MHz, 5530-5610MHz, 5690-5775MHz

Limits for General Population/Uncontrolled Exposure in the band of:

1500 - 100,000 MHz

Power Density Limit:

1 mW / cm²

Equation: $S = PG / 4\pi R^2$ or $R = \sqrt{PG / 4\pi S}$

Where, S = Power Density

P = Power Input to Antenna

G = Antenna Gain

R = distance to the center of radiated antenna

EUT: R730 Access Point, Model No.: R730

(2.4GHz BLE): Power = 18.65 dBm, Directional Gain = 0.55 dBi, Power density = 0.013 mW/ cm²

(2.4GHz Zigbee): Power = 20.93 dBm, Directional Gain = 0.55 dBi, Power density = 0.018 mW/ cm²

(2.4GHz WLAN): Power = 28.54 dBm, Directional Gain = 4.77 dBi, Power density = 0.343 mW/ cm²

(5 GHz Band) 8X8 Mode: Power = 26.64 dBm, Directional Gain = 9.28 dBi, Power density = 0.628 mW/ cm²

(5 GHz Band) 4x4 Mode: Power = 28.24 dBm, Directional Gain = 6.27 dBi, Power density = 0.453 mW/ cm²

Type	CH Freq (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Directional Gain (dBi)	Tune-Up Tolerance	Tolerance Max Power (dBm)	Measurement Distance (cm)	Calculated MPE (mW/cm ²)	MPE Limit (mW/cm ²)	Pass/Fail
BLE	2402	18.65	0.55	0.55	±1dB	19.65	25	0.013	1	Pass
Zigbee	2405	20.93	0.55	0.55	±1dB	21.93	25	0.018	1	Pass
2.4G WLAN	2462	28.54	0	4.77	±1dB	29.54	25	0.343	1	Pass
5 GHz WLAN 8x8 mode	5240	26.69	1.5	9.28	±1dB	27.64	25	0.628	1	Pass
5 GHz WLAN 4x4 mode	5230	29.05	1.5	6.27	±1dB	29.24	25	0.453	1	Pass

4x4 mode co-location with Zigbee:

Total MPE= $0.018 + 0.343 + 0.453 = 0.814 \text{ mW/cm}^2$

8x8 mode co-location with Zigbee:

Total MPE= $0.018 + 0.343 + 0.628 = 0.989 \text{ mW/cm}^2$

The Above Result had shown that the Device complied with MPE requirement.



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