



## MPE Calculations

Systems operating under the provision of 47 CFR 1.1307(b)(1) shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the FCC guidelines.

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the user or nearby persons and can therefore be considered a mobile transmitter per 47 CFR 2.1091(b). The MPE calculation for this exposure is shown below.

### Using the Antennas with highest output power:

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

Antenna	Frequency (GHz)	Power input to the antenna (P) (dBm)	Power gain of the antenna (G) (dBi)	EIRP (P+G) (dBm)	EIRP $\text{Log}^{-1}(\text{dBm}/10)$ (mW)
Wistron NeWeb Corp.	2.4	24.71	4.96	29.67	926.83
Wistron NeWeb Corp.	5	19.80	4.87	24.67	293.09

$EIRP = P + G$

Where

P = Power input to the antenna (mW).

G = Power gain of the antenna (dBi)

The numeric gain (G) of the antenna with a gain specified in dB is determined by:

Antenna	Frequency (GHz)	Antenna Gain (G) (dBi)	Numeric Antenna Gain $\text{Log}^{-1}(\text{dBm}/10)$ (dB)
Wistron NeWeb Corp.	2.4	4.96	3.13
Wistron NeWeb Corp.	5	4.87	3.07

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

Power density at the specific separation:

Antenna	Frequency (GHz)	Power input to the antenna (P) (mW)	Numeric Power Gain of the Antenna (G) (dB)	Maximum Power Spectral Density $S=PG/(4R^2\pi)$ (mW/cm <sup>2</sup> )	Maximum Power Spectral Density Limit (mW/cm <sup>2</sup> )
Wistron NeWeb Corp.	2.4	295.80	3.13	0.184	1.00
Wistron NeWeb Corp.	5	95.50	3.07	0.058	1.00

$S = PG/(4R^2\pi)$

Where

S = Maximum power density (mW/cm<sup>2</sup>)

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 (20cm = limit for MPE)

The maximum permissible exposure (MPE) for the general population is 1mW/cm<sup>2</sup>.

The power density at 20cm does not exceed the 1mW/cm<sup>2</sup> limit. Therefore, the exposure condition is compliant with FCC rules.