

***Novatel Wireless Expedite EU730 module MPE Calculations
Calculated at 23cm distance***

850 GPRS – Bottom Channel – 824MHz, Top Channel – 849MHz

Calculation of Far Field Distance

The far field is calculated as $> \lambda / 2 \pi$, where λ is the wavelength at the transmission frequency.

at	824MHz the far field is beyond a distance from the antenna	5.80cm.
	849MHz the far field is beyond a distance from the antenna	5.63cm

Calculation of power density at 23cm:

The RF power density at an operational distance R from the antenna is calculated by the following expression

$$S = (P.G)/4\pi.R^2$$

where S = power density in mW/cm²
P = power output in mW = 1549mW (31.90dBm)
G = antenna gain (numeric gain value) = 2 (3dB)
R = operating distance from antenna in cm. (23)

$$S = \frac{1549 \times 2}{4\pi \times 529}$$

$$S = 0.466 \text{ mW/cm}^2$$

The Power Density Limit is 0.55 mW/cm²

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Calculation of Far Field Distance

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	849MHz the far field is beyond a distance from the antenna	5.63cm

Calculation of power density at 23cm:

The RF power density at an operational distance R from the antenna is calculated by the following expression

$$S = (P.G)/4\pi.R^2$$

where S = power density in mW/cm^2
P = power output in mW = 1175mW (30.70dBm)
G = antenna gain (numeric gain value) = 2 (3dB)
R = operating distance from antenna in cm. (23)

$$S = \frac{1175 \times 2}{4\pi \times 529}$$

$$S = 0.354 \text{ mW/cm}^2$$

The Power Density Limit is 0.55 mW/cm^2

1900 GPRS – Bottom Channel – 1850MHz, Top Channel – 1910MHz

Calculation of Far Field Distance

The far field is calculated as $> \lambda / 2 \pi$, where λ is the wavelength at the transmission frequency.

at	1850MHz the far field is beyond a distance from the antenna	2.58cm.
	1910MHz the far field is beyond a distance from the antenna	2.50cm

Calculation of power density at 23cm:

The RF power density at an operational distance R from the antenna is calculated by the following expression

$$S = (P.G)/4\pi.R^2$$

where S = power density in mW/cm

P = power output in mW = 792mW (28.99dBm)

G = antenna gain (numeric gain value) = 2 (3dB)

R = operating distance from antenna in cm. (23)

$$S = \frac{792 \times 2}{4\pi \times 529}$$

$$S = 0.238 \text{ mW/cm}^2$$

The Power Density Limit is 1.0mW/cm^2

1900 EDGE – Bottom Channel – 1850MHz, Top Channel – 1910MHz

Calculation of Far Field Distance

The far field is calculated as $> \lambda / 2 \pi$, where λ is the wavelength at the transmission frequency.

at 1850MHz the far field is beyond a distance from the antenna 2.58cm.
 1910MHz the far field is beyond a distance from the antenna 2.50cm

Calculation of power density at 23cm:

The RF power density at an operational distance R from the antenna is calculated by the following expression

$$S = (P \cdot G) / 4\pi \cdot R^2$$

where S = power density in mW/cm²

P = power output in mW = 826mW (29.17dBm)

G = antenna gain (numeric gain value) = 2 (3dB)

R = operating distance from antenna in cm. (23)

$$S = \frac{826 \times 2}{4\pi \times 529}$$

$$S = 0.249 \text{ mW/cm}^2$$

The Power Density Limit is 1.0mW/cm²