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 > λ /2 π , 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/cm^2
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 mW/cm²

The Power Density Limit is 0.55 mW/cm^2

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

Calculation of Far Field Distance

The far field is calculated as > λ /2 π , 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/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 mW/cm²

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 > λ /2 π , 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^2
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 mW/cm²

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 > λ /2 π , 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^2
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 mW/cm²

The Power Density Limit is $1.0mW/cm^2$