

FCC ID: X2U-ORCA-PCIE01

Maximum Permissible Exposure

as specified in Table 1B of 47 CFR 1.1310 – Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure

Frequency range (MHz)	Power density (mW/cm ²)
300 – 1,500	f/1500
1,500 – 100,000	1.0

Calculations 800 MHz band (824.7 – 848.31 MHz)

Maximum peak output power at antenna input terminal: 24.13 (~0.25882W)

Predicted distance **R**: 20 cm

Predicted frequency: 824,7 MHz

MPE limit **S**: 0.5498 mW/cm²

Equation OET bulletin 65, page 18, edition 97-01: $S = P * G / (4\pi R^2)$

S = power density

P = power input to the antenna

G = numeric gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the centre of radiation of the antenna

Maximum allowable antenna gain for mobile/portable stations: **8.87dBi**

Maximum allowable antenna gain for other stations: **10.28 dBi**

Prediction

The maximum allowable MPE value of 0,5498 mW/cm² will be reached in a distance of 20 cm in case that an antenna with an antenna gain of **10.28 dBi** will be used. This means that the power density levels in a distance of 20 cm are in accordance with the FCC regulations as long as the used antenna has a gain below **10.28 dBi**. For mobile and portable stations the EIRP is restricted to 2.0 Watts, (§24.232 (c)). Therefore the maximum antenna gain is **8.87 dBi**.

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Frequency range (MHz)	Power density (mW/cm ²)
300 – 1,500	f/1500
1,500 – 100,000	1.0

Calculations 1900 MHz band (1851.25 – 1908.75 MHz)

Maximum peak output power at antenna input terminal: 23.41 dBm (~0.21928W)

Prediction distance **R**: 20 cm

Prediction frequency: 1880 MHz

MPE limit **S**: 1 mW/cm²

Equation OET bulletin 65, page 18, edition 97-01: $S = P \cdot G / (4\pi R^2)$

S = power density

P = power input to the antenna

G = numeric gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the centre of radiation of the antenna

Maximum allowable antenna gain for mobile/portable stations: **9.59dBi**

Maximum allowable antenna gain for other stations: **13.60 dBi**

Prediction

The maximum allowable MPE value of 1 mW/cm² will be reached in a distance of 20 cm in case that an antenna with an antenna gain of **13.60 dBi** will be used. This means that the power density levels in a distance of 20 cm are in accordance with the FCC regulations as long as the used antenna has a gain below **13.60 dBi**. For mobile and portable stations the EIRP is restricted to 2.0 Watts, (§24.232 (c)). Therefore the maximum antenna gain is **9.59 dBi**.