

MPE Calculation / RF Exposure

Applicant: eSSys Co., Ltd

Product: eSSys WAVE RSE

Model: EWR1

FCC ID: 2ADQJ-EWR1

The FCC requires that the calculated MPE be equal to or less than a given limit dependent on frequency at a distance of 20 cm from the device to the body of the user. The equation for the calculation is given in 47 CFR FCC Part 2 Subpart J, section 2.1091 as,

$$S = EIRP/4 \pi R^2$$

Where S = Power density

 EIRP = Effective Isotropically Radiated Power

R = distance to the centre of radiation of the antenna

Values $S = 1.0 \text{ mW/cm}^2$ for General population uncontrolled exposure (FCC Part 1.1310 Radiofrequency radiation exposure limits)

$$S = 1.0 \text{ mW/cm}^2$$

PT = 20.58 dBm (114.29 mW) : measured maximum peak output power

G = Antenna gain = 12 dBi (15.85 in linear terms)

$$EIRP = PT \times G$$

$$R = 20 \text{ cm}$$

Calculation $EIRP = 114.29 \times 15.85 = 1811.50 \text{ mW}$

$$S = 1811.50/12.56 \times (20)^2$$

$$S = 1811.50/5024$$

$$S = 0.36 \text{ mW/cm}^2$$

Conclusion This confirms compliance to the required FCC Part 1.1310 Radiofrequency radiation exposure limit of 1.0 mW/cm^2 at 20 cm operation.