| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Model: | E4S | | Test Number: | 200915 | | | |
| MPE Calculator | RF Exposure uses EIRP for calculation. EIRP is based on TX power added to the antenna gain in dBi. | | | | | | | |
| | dBi = dB gain compared to an isotropic radiator. | | | | | | | |
| | S = power density in mW/cm^2 | | | | | | | |
| | | Transmitter Output power (mW) | 2004.5 | | | | | |
| | | Transmitter Output power (W) | 2.004 | | | | | |
| Output Power for % duty Cycle operation (Watts) | | 100 | 2.004 | | | Antenna Gain (dBi) | 8 | |
| | Output Power for 100% duty Cycle operation (Watts) | | 2.004 | | | Antenna Gain (Numeric) | 6.31 | |
| Tx Frequency (MHz) | 910 | Calcualtion power (Watts) | 2.004 | | dBd + 2.17 = dBi | dBi to dBd | 2.2 | |
| | | | | | | Antenna Gain (dBd) | 5.83 | |
| Cable Loss (dB) | 0.0 | Adjusted Power (dBm) | 33.02 | | | Antenna minus cable (dBi) | 8.00 | |
| | | | | | | Antenna Gain (Numeric) | 6.31 | |
| | Calculated ERP (mw) | 7673.615 | | | | EIRP = Po(dBM) + Gain (dB) | | |
| | Calculated EIRP (mw) | 12647.363 | | | | Radiated (EIRP) dBm | 41.020 | |
| | | | | | | ERP = EIRP - 2.17 dB | | |
| | | | | | | Radiated (ERP) dBm | 38.850 | |

Power density (S) $mW/cm^2$ = EIRP / (4 p r^2)

r (cm) EIRP (mW)

| | | | | |
|---|---|---|---|---|
| | **Occupational Limit** | FCC radio frequency radiation exposure limits per 1.1310 | | |
| 3.033333333 | $mW/cm^2$ | Frequency (MHz) | Occupational Limit ($mW/cm^2$) | Public Limit ($mW/cm^2$) |
| 30 | $W/m^2$ | 30-300 | 1 | 0.2 |
| | **General Public Limit** | 300-1,500 | f/300 | f/1500 |
| 0.606666667 | $mW/cm^2$ | 1,500-10,000 | 5 | 1 |
| 6 | $W/m^2$ | | | |

| | | | | |
|---|---|---|---|---|
| | **Occupational Limit** | | | |
| $0.6455f^{0.5}$ | $W/m^2$ | IC radio frequency radiation exposure limits per RSS-102 | | |
| 24.2 | $W/m^2$ | Frequency (MHz) | Occupational Limit ($W/m^2$) | Public Limit ($W/m^2$) |
| | **General Public Limit** | 100-6,000 | $0.6455f^{0.5}$ | |
| $0.02619f^{0.6834}$ | $W/m^2$ | 6,000-15,000 | 50 | |
| 8.7 | $W/m^2$ | 48-300 | | 1.291 |
| | | 300-6,000 | | $0.02619f^{0.6834}$ |
| | | 6,000-15,000 | 50 | 10 |

| | | | |
|---|---|---|---|
| f = Transmit Frequecny (MHz) | | f (MHz) = | 910 MHz |
| $P_T$ = Power Input to Antenna (mW) | | $P_T$ (mW) = | 2,004.4720 mW |
| Duty cycle (percentage of operation) | | % = | 100 % |
| $P_A$ = Adjusted Power due to Duty cycle or Cable Loss (mW) | | $P_A$ (mW) = | 2,004.47 mW |
| $G_N$ = Numeric Gain of the Antenna | | GN (numeric) = | 6.31 numeric |
| $S_{20}$ = Power Density of device at 20cm ($mW/m^2$) | $S_{20}=(P_AG_N)/(4\pi R_{20})^2$ | $S_{20}$ ($mW/m^2$) = | 2.52 $mW/m^2$ |
| $S_{20}$ = Power Density of device at 20cm ($W/m^2$) | $S_{20}=(P_AG_N)/(4\pi R_{20})^2$ | $S_{20}$ ($W/m^2$) = | 25.16 $W/m^2$ |
| $S_L$ = Power Density Limit ($W/m^2$) | | $S_L$ ($W/m^2$)= | 8.733 $W/m^2$ |
| $R_C$ = Minimum distance to the Radiating Element for Compliance (cm) | $R_C=\sqrt{(P_AG_N/4\pi S_L)}$ | $R_C$ (cm) = | 33.9 cm |
| $S_C$ = Power Density of the device at the Compliance Distance $R_C$ ($W/m^2$) | $S_C=(P_AG_N)/(4\pi R_C)^2$ | $S_C$ ($W/m^2$) = | 8.73 $W/m^2$ |
| $R_{20}$ = 20cm | | R20= | 20 cm |

| | | |
|---|---|---|
| For Complaince with Canada General Population Limits, User Manual must indicate a minimum seperation distance of | 33.9 | cm |
| Or in Meters for Complaince with Canada General Population Limits, a minimum seperation distance of | 0.34 | Meters |

Summary: Standalone MPE Calculations and Summary

| Band (MHZ) | Tx Duty Cycle (%) | Tx Frequeny (MHz) | Power Total (mW) | Antenna Gain (numeric) | $S_L$ ($W/m^2$) | $S_{20}$ ($W/m^2$) | $R_C$ (cm) | $S_C$ ($W/m^2$) |
|---|---|---|---|---|---|---|---|---|
| 902-928 | 100 | 910 | 2,004 | 6.31 | 8.733 | 25.16 | 33.9 | 8.73 |