

MPE Analysis Report

The Equipment Under Test (EUT) is Advanced IoT Bridge Interface, which connects between a computer (via USB or RS-232 serial port) and an AC power outlet. The EUT is an interface for data and commands to compatible receivers via Insteon power line and 915MHz RF wireless signals. The EUT is powered by 120VAC.

915MHz RF portion:

Modulation Type: FSK

Antenna Type: Integral, Internal

Frequency Range: 915MHz, single channel

Antenna gain: 0dBi

Nominal rated field strength: 87 dB μ V/m at 3m

Maximum allowed field strength of production tolerance: +/- 3dB

For Maximum Permissible Exposure (MPE) evaluation of the Advanced IoT Bridge Interface, the maximum power density at 20 cm from this mobile transmitter shall be less than the General Population / Uncontrolled MPE limit in OET Bulletin 65.

For 915MHz portion, maximum EIRP radiated power is 90 dB μ V/m at 3m (-5.2 dBm /0.3mW). The antenna gain is 0 dBi = 1 (num gain) and the maximum source-based time-averaging duty factor is 100%. From these data, the exposed power density at a distance (R) of 20cm from the center of radiation of the antenna can be calculated according to OET Bulletin 65 as follow:

$$\begin{aligned} &\text{The radiated (EIRP) source-based time-averaging output power} \\ &= (0.3 * 1) \text{ mW} \\ &= 0.3 \text{ mW} \end{aligned}$$

$$\begin{aligned} &\text{The power density at 20 cm from the antenna} \\ &= \text{EIRP} / 4\pi R^2 \\ &= 0.00006 \text{ mW cm}^{-2} \end{aligned}$$

In the frequency range of 1,500 - 100,000MHz, the MPE limit is 1.0 mWcm⁻² for general population and uncontrolled exposure. As the measured power density at 20cm from the transmitter is lower than the MPE limit, the compliance to the MPE limit can be ensured by indicating the minimum 20cm separation between the transmitter's radiating structures and body of the user or nearby persons.

The following RF exposure statement is proposed to be included in the user manual:

“ FCC RF Radiation Exposure Statement

Caution: To maintain compliance with the FCC’s RF exposure guidelines, place the product at least 20cm from nearby persons.”