

MPE Analysis Report

The Equipment Under Test (EUT) 71901A (71901A) is a Light Strip. The EUT can operate while connected and controlled by a Zigbee Remote (Provided by Applicant) via Zigbee radio link. The EUT can only support Zigbee. The Zigbee portion occupies frequency range of 2405MHz to 2475MHz (14 channels with channel spacing of 5MHz). The EUT is powered by 120VAC 60Hz.

The EUT has one antenna.

Antenna Type: internal and un-detachable.

2.4GHz portion

Antenna Gain: 6.5dBi

2405MHz to 2475MHz

Operating mode	Nominal Conducted Power	Production Tolerance	Modulation Type
Zigbee 802.15.4	4.0 dBm	+/- 2dB	DSSS

For Maximum Permissible Exposure (MPE) evaluation of the 71901A, 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 the Zigbee 802.15.4, maximum conducted power measured within its production tolerance was 6.0 dBm (maximum). The antenna gain is 6.5 dBi 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:

The conducted power = 6.0 dBm (3.98 mW)

The radiated (EIRP) source-based time-averaging output power
= (3.98 * 1.0) mW
= 3.98 mW

The power density at 20 cm from the antenna
= $EIRP / 4\pi R^2$
= 0.0035 mW cm⁻²

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.”