

MPE Analysis Report

The Equipment Under Test (EUT) is a wireless door receiver. The EUT is powered by 120 VAC, 60Hz. The EUT contains a 915MHz receiver and a WIFI module. The doorbell will be activated when the receiver receives the proper signal from the transmitter. When a smartphone connects the EUT through the WIFI, you can control the doorbell system by the Apps in the smartphone.

For 802.11b mode, it operates at frequency range of 2412.000MHz to 2462.000MHz with 11 channels. It transmits via Direct-sequence spread spectrum (DSSS) modulation. Maximum bit rate can be up to 11Mbps.

For 802.11g mode, it operates at frequency range of 2412.000MHz to 2462.000MHz with 11 channels. It transmits via Orthogonal Frequency Division Multiplexing (OFDM) modulation. Maximum bit rate can be up to 54Mbps.

For 802.11n (with 20MHz bandwidth) mode, it operates at frequency range of 2412.000MHz to 2462.000MHz with 11 channels. It transmits via Orthogonal Frequency Division Multiplexing (OFDM) modulation. Maximum bit rate can support up to 65Mbps.

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WiFi Module

Antenna Type: Internal, Integral

Antenna Gain: 0dBi

Operating mode	Nominal Conducted Power	Production Tolerance
802.11b	11.82 dBm	+/- 3dB
802.11g	14.03 dBm	+/- 3dB
802.11n (HT20)	13.98 dBm	+/- 3dB

For Maximum Permissible Exposure (MPE) evaluation of the wireless door receiver, 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.

1) For the WLAN (WiFi), maximum conducted power measured within its production tolerance was 17.03 dBm (maximum). 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:

The conducted power = 17.03dBm (50.5mW)

The radiated (EIRP) source-based time-averaging output power (with antenna gain)
= $(50.5 * 1 * 1)$ mW
= 50.5 mW

The power density at 20 cm from the antenna
= $EIRP / 4\pi R^2$
= 0.001 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.”