

MPE Analysis Report

The Equipment Under Test (EUT) is a Wifi Weather Station. The EUT is powered by an AC/DC adaptor (Input: 100-240V, 50/60Hz, 0.5A; Output 5.0V, 1.0A). The EUT contains a 915MHz receiver and a WIFI module. The 915 MHz receiver is for the weather information (from the 915MHz weather sensor). After finishing the setup between the EUT and the smart phone through WIFI, the weather information can be shown on the web page.

For the WiFi module:

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 (HT20 with 20MHz bandwidth) mode, it operates at frequency range of 2412.000MHz to 2462.000MHz with 11 channels.

WiFi Module

Antenna Type: Internal, Integral

Antenna Gain: 0dBi

Operating mode	Nominal Conducted Power	Production Tolerance
802.11b	17.71 dBm	+/- 3dB
802.11g	20.10 dBm	+/- 3dB
802.11n (HT20)	19.98 dBm	+/- 3dB

For Maximum Permissible Exposure (MPE) evaluation of the Wifi Weather Station, 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 23.10 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 = 23.10dBm (204.2mW)

The radiated (EIRP) source-based time-averaging output power (with antenna gain)
= $(204.2 * 1 * 1)$ mW
= 204.2 mW

The power density at 20 cm from the antenna
= $EIRP / 4\pi R^2$
= 0.04 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.”