

INTERTEK TESTING SERVICES

RF Exposure report

Astro Box contains a WLAN 802.11 b/g/n USB module, which fully supports the features and functional compliance of IEEE 802.11b/g/n standards. It supports up to 150Mbps high-speed wireless network connections.

For more detailed features description, please refer to the user's manual.

Antenna Type: Integral Antenna.

Maximum Antenna Gain: 1.0dBi.

For 802.11b, the nominal conducted output power specified: 11.0dBm (Tolerance: +/-3dB).
For 802.11g/n, the nominal conducted output power specified: 5.0dBm (Tolerance: +/-3dB).

All the tested conducted output power are within the specified power above.

According to FCC Part 2.1091, this unlicensed transmitting devices is categorically excluded from routine environmental evaluation for RF exposure prior to equipment authorization.

For Maximum Permissible Exposure (MPE) evaluation of the product, the maximum power density at 20 cm from this transmitter shall be less than the General Population / Uncontrolled MPE limit in FCC Part 1.1310.

According to the KDB 447498 and OET 65, the simple calculation as below:

The maximum E.I.R.P= $11+3+1=15.0\text{dBm}=31.6\text{mW}$

The source-based time averaged maximum radiated power = $31.6 \times \text{Duty Cycle} = 31.6\text{mW}$

From above data, the exposed power density at a distance (R) of 20cm from the center of radiation of the antenna can be calculated as follow:

$$= 31.6 / 4\pi R^2 = 0.006\text{mW/cm}^2$$

The MPE limit is 1.0mW/cm^2 for general population and uncontrolled exposure in the WiFi frequency range according to FCC Part 1.1310. 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 structure and body of the user or nearby persons.

Transmitter Duty Cycle Calculation

The EUT transmit continuously during the test, the duty cycle is 1.

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

“FCC RF Radiation Exposure Statement Caution: This Transmitter must be installed to provide a separation distance of at least 20 cm from all persons.”