

INTERTEK TESTING SERVICES

RF Exposure

The Equipment under Test (EUT) is a wireless camera of Baby Monitor model: PNMC01. It is powered by DC 5V from AC/DC adapter. For more detail information please refer to the user manual.

RF module

The J2.4GM20S3 module is designed for 2.4GHz ISM band;

Frequency Band: 2410.875MHz to 2471.625MHz;

19 channels with 3.375MHz channel spacing;

Modulation: GFSK;

Antenna Type: Integral antenna.

Antenna Gain: 2.5dBi;

The nominal conducted output power specified: 14.5dBm (Tolerance: +/- 3dB)

The maximum conducted output power for the EUT is 14.70dBm in the frequency 2471.625MHz which is within the production variation.

The minimum conducted output power for the EUT is 14.10dBm in the frequency 2410.875MHz which is within the production variation.

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

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.

The maximum EIRP= 14.5+3+2.5=20.0dBm=100mW

The source-based time averaged maximum radiated power = 100 mW x Duty Cycle = 6.1mW

From above 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 65 as follow:

$$= PG/4\pi R^2$$

$$= EIRP/4\pi R^2 = 6.1/ 4\pi R^2$$

$$= 0.001 \text{ mW/cm}^2$$

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The MPE limit is 1.0 mW/cm² 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 duty cycle is simply the on-time divided by the period:

The duration of one cycle = 74.710ms

Effective period of the cycle = 4.565 ms x 1 = 4.565 ms

DC = 4.565 ms / 74.710ms = 0.0611 or 6.11%

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.”