

INTERTEK TESTING SERVICES

RF Exposure

The Equipment Under Test (EUT) is a HIGH DEFINITION DIGITAL OTT BOX with internal WiFi function operating at 2412-2462MHz for 802.11b/g/n-HT20, 11 channels with 5MHz channel spacing and 2422-2452MHz for 802.11n-HT40, 7 channels with 5MHz channel spacing. The EUT can be powered by Adapter with Model: RJ-AS120200U105-B; input: AC 100-240V, 50/60Hz, Max 1.0A; output: DC 12V, 2A.. For more detailed features description, please refer to the user's manual.

Antenna Type: integral Antenna.

Antenna Gain: 2.0dBi

Modulation Type: BPSK, QPSK, 16QAM, 64QAM, CCK.

The nominal conducted output power specified: 17dBm +/-3dB.

According to the KDB 447498:

The maximum peak conducted output power for the EUT is 19.46dBm in the frequency 2412MHz (802.11g) which is within the product variation.

The minimum peak conducted output power for the EUT is 14.34dBm in the frequency 2462MHz (802.11 b) 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, According to the KDB 447498 and OET 65, the simple calculation as below:

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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 OET Bulletin 65.

The maximum output power = The maximum conducted output power (including the tune up tolerance)+ Antenna Gain = 22.0dBm = 158.5mW

The source - based time averaged maximum output power (including the tune up tolerance) = $158.5 * \text{Duty cycle mW} = 158.5\text{mW}$

From above data, the exposed power density at a distance (R) of 20cm from the center of radiation of the antenna can be calculated according to OET Bulletin 65 as follow: $=158.5\text{mW} / 4\pi R^2 = 0.032 \text{ mW/cm}^2$

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

The following RF exposure statement 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.”