

INTERTEK TESTING SERVICES

RF Exposure

The Equipment under Test (EUT) is a Control unit for Lionchief Plus Rio Grande RS-3 Powered Unit model: LC&LC+RX operating at 2.4GHz band. It is powered by a AC/DC adapter (Model: YF1802000K3-UL, Input: 100~240V, 50/60Hz, 0.85A, Output: DC 18V, 2000mA), For more detail information pls. refer to the user manual.

Antenna Type: Integral antenna.

Antenna Gain: 0dBi.

The normal radiated output power (e.i.r.p) is: 2.0dBm (tolerance: +/- 3dB).

The normal conducted output power is 2.0dBm (tolerance: +/- 3dB).

Modulation Type: GFSK.

According to the KDB 447498:

The Maximum peak radiated emission for the EUT is 97.1 dB μ V/m at 3m in the frequency 2439MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = 1.9dBm
which is within the production variation.

The Minimum peak radiated emission for the EUT is 95.5dB μ V/m at 3m in the frequency 2479MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = 0.3dBm
which is within the production variation.

The maximum conducted output power specified is 5.0dBm = 3.16mW

The source- based time-averaging conducted output power
= $3.16 \cdot \text{Duty Cycle}$ mW < 3.16 mW (Duty Cycle < 100%)

The SAR Exclusion Threshold Level:

= $3.0 \cdot (\text{min. test separation distance, mm}) / \text{sqrt}(\text{freq. in GHz})$
= $3.0 \cdot 5 / \text{sqrt}(2.479)$ mW
= 9.5 mW

Since the source-based time-averaging conducted output power is well below the SAR low threshold level, so the EUT is considered to comply with SAR requirement without testing.

The duty cycle is simply the on-time divided by the period:

The duration of one cycle = 12.5652 ms

Effective period of the cycle = $130.4 \mu\text{s} \times 4 = 0.5216 \text{ ms}$

$\text{DC} = 0.5216 \text{ ms} / 12.5652 \text{ ms} = 0.0415$ or 4.15%

Therefore, the averaging factor is found by $20 \log_{10} 0.0415 = -27.6 \text{ dB}$