

INTERTEK TESTING SERVICES

Analysis Report

The equipment under test (EUT) is a portable transmitter for a TORNADO TUMBLER operating at 27.145 MHz. The EUT is powered by one 9.0V 6F22 size battery. For more detail information pls. refer to the user manual.

Antenna Type: Integral antenna

Antenna Gain: 0dBi

The nominal conducted output power specified: -16.0dBm (+/- 3dB)

The nominal radiated output power (e.r.p) specified: -18.15dBm (+/- 3dB)

Modulation Type: Pulse modulation

According to the KDB 447498:

The worst-case peak radiated emission for the EUT is 78.5dBμV/m at 3m in the frequency 27.145MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = -16.73dBm

The ERP = EIRP – 2.15 = -18.88 dBm

which is within the production variation.

The maximum conducted output power specified is -13dBm = 0.05mW

The source- based time-averaging conducted output power
= $0.05 \cdot \text{Duty Cycle}$ mW < 0.1mW (Duty Cycle < 100%)

The SAR Exclusion Threshold Level for 27.145MHz when the minimum test separation distance is < 50mm:

= $474 \cdot [1 + \log(100/f(\text{MHz}))]/2$

= 371.2 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.

Transmitter Duty Cycle Calculation

The duration of one cycle = 17.7391ms

Effective period of the cycle = $478.3\mu\text{s} \times 10 + 1.4783\text{ms} \times 4 = 10.6962\text{ms}$

DC = $10.6962\text{ms} / 17.7391\text{ms} = 0.6029$ or 60.29%

Therefore, the averaging factor is found by $20 \log_{10} 0.6029 = -4.4 \text{ dB}$