INTERTEK TESTING SERVICES

RF Exposure

The equipment under test (EUT) is a Wireless Controller for Nintendo Switch – GameCube Black with Bluetooth function operating at 2.4G Band. The EUT can be powered by DC 3.0V (2 x 1.5V AA batteries). 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: -11.0dBm (tolerance: +/- 3dB).
The normal conducted output power is -11.0dBm (tolerance: +/- 3dB).
Modulation Type: GFSK, π/4DQPSK, 8DPSK.

According to the KDB 447498:

The Maximum peak radiated emission for the EUT is 84.8dBµV/m at 3m in the frequency 2402MHz
The EIRP = [(FS*D) ^2 / 30] mW = -10.43dBm
which is within the production variation.

The Minimum peak radiated emission for the EUT is 82.6dBµV/m at 3m in the frequency 2480MHz
The EIRP = [(FS*D) ^2 / 30] mW = -12.63dBm
which is within the production variation.

The maximum conducted output power specified is -8dBm =0.16mW
The source- based time-averaging conducted output power
=0.16* Duty cycle mW <0.16 mW (Duty cycle <100%)<0.16 mW

The SAR Exclusion Threshold Level:
= 3.0 * (min. test separation distance, mm) / sqrt(freq. in GHz)
= 3.0 * 5 / sqrt (2.480) mW
= 9.53 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:

Based on the Bluetooth Specification Version EDR , and worst case AFH mode, transmitter ON time is independent of packet type (DH5) and packet length, the AFH mode Duty cycle connection factor as below:

Channel hop rate = 800 hops/second (AFH Mode)

Adjusted channel hop rate for DH5 mode = 133.33 hops/second

Time per channel hop = 1 / 133.33 hops/second = 7.5 ms

Time to cycle through all channels = 7.5 x 20 channels = 150 ms

Number of times transmitter hits on one channel = 100 ms / 150 ms = 1 time(s)

Worst case dwell time = 7.5 ms

Duty cycle connection factor = $20\log_{10}(7.5\text{ms} / 100\text{ms})$ = -22.5 dB

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