

INTERTEK TESTING SERVICES

Analysis Report

The equipment under test (EUT) is a MID. The EUT was powered by a 3.7 VDC Li-ion rechargeable battery which can be charged by a charging dock with DC 5V output and the charging dock is intended to be powered by an AC/DC adapter with AC 120V, 60Hz input during the test. For more detail information pls. refer to the user manual.

For Wifi function and operating frequency is 2412-2462MHz:

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

Antenna Type: Integral antenna

Antenna Gain: 1dBi

The nominal conducted output power is 6.0dBm (Tolerance: +/- 2dB)

According to the KDB 447498:

The maximum peak conducted output power for the EUT is 7.43dBm in the frequency 2412MHz (802.11g) which is within the product variation.

The minimum peak conducted output power for the EUT is 5.13dBm in the frequency 2412MHz (802.11b) which is within the production variation.

The maximum conducted output power specified is 8dBm = 6.31mW

The source-based time-averaging conducted output power
= 6.31 * Duty cycle mW = 6.31 mW

The SAR Exclusion Threshold Level:

= $3.0 * (\text{min. test separation distance, mm}) / \sqrt{\text{freq. in GHz}}$

= $3.0 * 5 / \sqrt{2.462}$ mW

= 9.6 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 EUT transmit continuously during the test, the duty cycle is 100%.

This requirement is according to KDB 865664 D02

For BT 4.0 function and operating frequency is 2402-2480MHz

Modulation Type: GFSK

Antenna Type: Integral antenna

Antenna Gain: 2.5dBi

The Peak nominal radiated emission power (e.i.r.p) specified: 2.5dBm (Tolerance: +/- 2dB)

The Peak nominal conducted output power specified: 0dBm (Tolerance: +/- 2dB)

According to the KDB 447498:

The maximum radiated emission for the EUT is 99.3dBμV/m at 3m in the frequency 2402MHz

$$= [(FS \cdot D)^2 / 30] \text{ mW}$$

= 4.07dBm which is within the production variation.

The minimum radiated emission for the EUT is 97.7dBμV/m at 3m in the frequency 2440Hz

$$= [(FS \cdot D)^2 / 30] \text{ mW}$$

= 2.47dBm which is within the production variation.

The maximum conducted output power specified is 2dBm = 1.58mW

The source-based time-averaging conducted output power

$$= 1.58 \cdot \text{Duty cycle mW} = 1.58 \text{ mW}$$

The SAR Exclusion Threshold Level:

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

$$= 3.0 \cdot 5 / \sqrt{2.480} \text{ mW}$$

$$= 9.5 \text{ mW}$$

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 EUT transmit continuously during the test, the duty cycle is 100%.

This requirement is according to KDB 865664 D02

For both WIFI and BT 4.0 are simultaneous transmissions estimated

According to the KDB 447498:

When both WIFI and BT 4.0 are simultaneous transmissions, the maximum peak conducted output power for WIFI is 8.0dBm.

In the simultaneous transmissions, WIFI's estimated SAR values:
= (max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm) * [sqrt(freq. in GHz)/7.5] W/kg
= 6.31 / 5*[sqrt (2.462) / 7.5] W/kg
= 0.264 W/kg

When both WIFI and BT 4.0 are simultaneous transmissions, the maximum conducted output power for BT 2.0 is 2dBm.

In the simultaneous transmissions, BT 4.0's estimated SAR values:
= (max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm) * [sqrt(freq. in GHz)/7.5] W/kg
= 1.58 / 5*[sqrt (2.480) / 7.5]
= 0.066 W/kg

Sum of 1-g SAR of all simultaneously transmitting antennas in an operating mode:

WIFI's estimated SAR values + RFID's estimated SAR values
= 0.264 + 0.066 W/kg
= 0.330 W/kg

The simultaneous transmissions SAR Evaluation: ≤ 0.4 W/kg

This requirement is according to KDB 865664 D02