INTERTEK TESTING SERVICES

Analysis Report

The equipment under test (EUT) is a RFID data collector. The EUT was powered by a 3.7 VDC fully charged Li-ion rechargeable battery which is charged by USB power 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: 2.18dBi
The nominal conducted output power is 5.0dBm (Tolerance: +/- 3dB)

According to the KDB 447498:

The maximum peak conducted output power for the EUT is 7.69dBm in the frequency 2412MHz (802.11n-HT20) which is within the product variation.

The minimum peak conducted output power for the EUT is 5.90dBm in the frequency 2462MHz (802.11b) which is within the production variation.

The maximun 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 * (min. test separation distance, mm) / sqrt(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 1.

This requirement is according to KDB 865664 D02

FCC ID: 2AA7KDORADOWF

For RF ID function and operating frequency is 902.75-927.25MHz
Modulation Type: DSB-ASK
Antenna Type: Integral antenna
Antenna Gain: 1.2dBi
The Peak nominal radiated emission power (e.r.p) specified: -17.0dBm (Tolerance: +/- 3dB)

The Peak nominal conducted output power specified: -16.05dBm (Tolerance: +/- 3dB)

According to the KDB 447498:

The maximun radiated emission for the EUT is 78.5dBµV/m at 3m in the frequency 914.75MHz
= [(FS*D) ^2 / 30] mW-2.15
= -18.88dBm which is within the production variation.

The minimum radiated emission for the EUT is 77.8dBµV/m at 3m in the frequency 902.75Hz
= [(FS*D) ^2 / 30] mW-2.15
= -19.58dBm which is within the production variation.

The maximun conducted output power specified is -13.05dBm = 0.05mW
The source- based time-averaging conducted output power
= 0.05 * Duty cycle mW= 0.05 mW

The SAR Exclusion Threshold Level:
= 3.0 * (min. test separation distance, mm) / sqrt(freq. in GHz)
= 3.0 * 5 / sqrt (0.92725) mW
= 15.6 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 1.
This requirement is according to KDB 865664 D02

For both WIFI and RFID are simultaneous transmissions estimated

According to the KDB 447498:

When both WIFI and RFID 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 RFID are simultaneous transmissions, the maximun conducted output power for RFID is -13.05dBm.

In the simultaneous transmissions, RFID'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
= 0.05 / 5*[sqrt (0.92725) / 7.5]
= 0.001 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 + 0.001 W/kg
= 0.265 W/kg

The simultaneous transmissions SAR Evaluation: $\leqslant$ 0.4 W/kg

This requirement is according to KDB 865664 D02