



RF Exposure Evaluation (Simultaneous Transmission)

Model : CamLock, PlungerLock

Product Type : SmartLock

Applicant : Mobile Technologies Inc.

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Test Result : nPositive

Total pages including Appendices : 4



1. Product information

Product:	SmartLock
Model no.:	CamLock, PlungerLock
FCC ID:	2AA2X-15000333
Rating:	3.0V DC (CR2477 battery)
Frequency:	2405MHz-2480MHz (Zigbee) 125 kHz (RFID)
Antenna gain:	3.5 dBi (Zigbee) 0 dBi (RFID)
Antenna Type:	Chip Antenna for 2.4GHz Zigbee Integrated coil antenna for 125kHz RFID
Number of operated channel:	16 (Zigbee) 1 (RFID)
Modulation:	O-QPSK (Zigbee) AM (RFID)

2. General SAR Test Exclusion Guidance

Simultaneous transmission SAR test exclusion considerations:

According to KDB 447498 D01v06 section 4.3.2b, for frequencies between 100 MHz to 6GHz and test separation distances ≤ 50 mm, the Numeric threshold is determined as:

1. $[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})]^* \cdot \sqrt{f(\text{GHz}) / x} \text{ W/kg} \leq 0.4 \text{ W/kg}$ for 1-g SAR
where $x = 7.5$ for 1-g SAR and $x = 18.75$ for 10-g SAR.

2. 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the *test separation distance* is > 50 mm.

For 2405 – 2480MHz and 125kHz Transmission

Step a)

- >> The fundamental frequency of the EUT is 2405-2480MHz and 125kHz
the test separation distance is ≤ 50 mm.
(Manufacturer specified the separation distance is: 20mm)
(5mm is the worst case according to the KDB)

Step b)

- >> Numeric threshold (2405MHz), $\text{mW} / 5\text{mm} * (\sqrt{2.405\text{GHz}} / 7.5) \leq 0.4$
Numeric threshold (2405MHz) $\leq 3.532\text{mW}$

- >> Numeric threshold (2440MHz), $\text{mW} / 5\text{mm} * (\sqrt{2.440\text{GHz}} / 7.5) \leq 0.4$
Numeric threshold (2440MHz) $\leq 3.506\text{mW}$

- >> Numeric threshold (2480MHz), $\text{mW} / 5\text{mm} * (\sqrt{2.480\text{GHz}} / 7.5) \leq 0.4$
Numeric threshold (2480MHz) $\leq 3.478\text{mW}$

- >> Numeric threshold (125kHz), $\text{mW} / 5\text{mm} * (\sqrt{0.1\text{GHz}} / 7.5) \leq 0.4$
Numeric threshold (125kHz) $\leq 17.32\text{mW}$

3. Conclusion for the Simultaneous Transmission

The Power according to the RF Report No: 60.790.23.007.01R and 60.790.23.007.02R as below:

>> The power (measured + tune up tolerance) of EUT at 2405MHz is: 3.48 dBm = 2.23mW

The power (measured + tune up tolerance) of EUT at 2440MHz is: 3.06 dBm = 2.02mW

The power (measured + tune up tolerance) of EUT at 2480MHz is: 3.79 dBm = 2.40mW

The power (measured + tune up tolerance) of EUT at 125kHz is: -45.23 dBm = 0.0003mW

Which is smaller than the Numeric threshold.

Therefore, the device is exempt from simultaneous transmission SAR test requirements.