# RF EXPOSURE EVALUATION

KDB 447498 D01 Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies v06.

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency(RF) Radiation as specified in §1.1307(b)

## EUT Specification

| | |
|---|---|
| **FCC ID** | 2BL9C-G3 |
| **EUT** | Smart lock |
| **Frequency band (Operating)** | ☐ BT: 2.402GHz ~ 2.480GHz<br>☒ WLAN: 2.412GHz ~ 2.462GHz<br>☐ RLAN: 5.180GHz ~ 5.240GHz<br>☐ RLAN: 5.260GHz ~ 5.320GHz<br>☐ RLAN: 5.500GHz ~ 5.700GHz<br>☐ RLAN: 5.745GHz ~ 5.825GHz<br>☐ Others: |
| **Device category** | ☐ Portable (<20cm separation)<br>☒ Mobile (>20cm separation)<br>☐ Others ___ |
| **Exposure classification** | ☐ Occupational/Controlled exposure (S = 5mW/cm2)<br>☒ General Population/Uncontrolled exposure (S=1mW/cm2) |
| **Antenna diversity** | ☒ Single antenna<br>☐ Multiple antennas<br>☐ Tx diversity<br>☐ Rx diversity<br>☐ Tx/Rx diversity |
| **Antenna gain (Max)** | -1.52dBi |
| **Evaluation applied** | ☒ MPE Evaluation<br>☐ SAR Evaluation |

Limits for Maximum Permissible Exposure(MPE)

| Frequency Range(MHz) | Electric Field Strength(V/m) | Magnetic Field Strength(A/m) | Power Density($mW/cm^2$) | Average Time |
|---|---|---|---|---|
| (A) Limits for Occupational/Control Exposures | | | | |
| 300-1500 | -- | -- | F/300 | 6 |
| 1500-100000 | -- | -- | 5 | 6 |
| (B) Limits for General Population/Uncontrol Exposures | | | | |
| 300-1500 | -- | -- | F/1500 | 6 |
| 1500-100000 | -- | -- | 1 | 30 |

## Friis transmission formula: Pd=(Pout*G)\(4*pi*R2)

Where
Pd= Power density in $mW/cm^2$
Pout=output power to antenna in Mw
G= gain of antenna in linear scale
Pi=3.1416
R= distance between observation point and center of the radiator in cm
Pd the limit of MPE, 1mW/cm2. If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

## Max Measurement Result

| Operating Mode | Measured Power | Tune up tolerance | Max. Tune up Power | Antenna Gain | Power density at 20cm | Power density Limits (mW/cm2 ) |
|---|---|---|---|---|---|---|
| | (dBm) | (dBm) | (dBm) | (dBi) | (mW/ cm2 ) | |
| WiFi 2.4G | 15.23 | 15.23 ±1 | 16.23 | -1.52 | 0.0059 | 1 |

**Result:** No Standalone SAR test is required.