

Dates of Tests: July 9, 2024  
Test Report S/N: LR500112407H  
Test Site : LTA CO., LTD.

## CERTIFICATION OF COMPLIANCE

FCC ID.

**2AQAV-FX300WR**

APPLICANT

**SMARTeLock CO., LTD.**

|                           |   |                                                                                                         |
|---------------------------|---|---------------------------------------------------------------------------------------------------------|
| Equipment Class           | : | Digital Transmission System (DTS)                                                                       |
| Manufacturing Description | : | LOCKER LOCK                                                                                             |
| Manufacturer              | : | SMARTeLock CO., LTD.                                                                                    |
| Model name                | : | FX400TWR                                                                                                |
| Variant Model name        | : | SL200TWR, SL200, SL200WR, SL200TW,<br>SL200M, FX400, FX400WR, FX400TW,<br>SL400, SL400A, SL400B, SL400C |
| Test Device Serial No.:   | : | Identical prototype                                                                                     |
| Rule Part(s)              | : | FCC Part 15.247 Subpart C ; ANSI C63.10 - 2013                                                          |
| Frequency Range           | : | 2402 ~ 2480 MHz - BLE<br>2405 ~ 2480 MHz - Zigbee                                                       |
| Max. Output Power         | : | Max -4.43 dBm - Conducted                                                                               |
| Data of issue             | : | July 9, 2024                                                                                            |

This test report is issued under the authority of:



Ja-Beom Koo, Manager

The test was supervised by:



Jae-hum Yun, Test Engineer

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1. General information

1-1 Test Performed

Company name : LTA Co., Ltd.  
Address : 243, Jubug-ri, Yangji-Myeon, Youngin-Si, Kyunggi-Do, Korea. 449-822  
Web site : <http://www.ltalab.com>  
E-mail : [chahn@ltalab.com](mailto:chahn@ltalab.com)  
Telephone : +82-31-323-6008  
Facsimile : +82-31-323-6010

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the “General requirements for the competents of calibration and testing laboratory”.

1-2 Accredited agencies

LTA Co., Ltd. is approved to perform EMC testing by the following agencies:

| Agency | Country | Accreditation No. | Validity   | Reference             |
|--------|---------|-------------------|------------|-----------------------|
| RRA    | KOREA   |                   | -          | RRA accredited Lab.   |
|        | U.S.A   | KR0049            | 2025-03-29 |                       |
|        | CANADA  |                   | 2024-08-15 |                       |
| VCCI   | JAPAN   | C-14948           | 2026-09-10 | VCCI registration     |
|        |         | T-12416           | 2026-09-10 |                       |
|        |         | R-14483           | 2026-10-15 |                       |
|        |         | G-10847           | 2024-12-13 |                       |
| KOLAS  | KOREA   | KT551             | 2025-10-12 | KOLAS accredited Lab. |

## 2. Information about test item

### 2-1 Client & Manufacturer

Client Company name : SMARTeLock CO., LTD.

Address : B402, Geumgang Penterium IT Tower, 215, Galmachiro, Jungwon gu,  
Seongnam-si, Gyeonggi-do South Korea 13217

Tel / Fax : TEL No : +82-010-3673-7884/ FAX No : +82-031-743-7276

Manufacturer : SMARTeLock CO., LTD.

Address : B402, Geumgang Penterium IT Tower, 215, Galmachiro, Jungwon gu,  
Seongnam-si, Gyeonggi-do South Korea 13217

Tel / Fax : TEL No : +82-010-3673-7884/ FAX No : +82-031-743-7276

### 2-2 Equipment Under Test (EUT)

Model name : FX300WR

Serial number : Identical prototype

Date of receipt : June 13, 2024

EUT condition : Pre-production, not damaged

Antenna type : Chip Antenna (Gain : 3.5 dBi)

Frequency Range : 2402 ~ 2480 MHz - BLE  
2405 ~ 2480 MHz – Zigbee

RF output power : Max -4.43 dBm – BLE, Conducted  
Max -4.56 dBm –Zigbee, Conducted

Type of Modulation : GFSK, O-QPSK

Power Source : DC 6 V

### 2-3 Tested frequency

|                        | LOW  | MID  | HIGH |
|------------------------|------|------|------|
| Frequency (MHz) BLE    | 2402 | 2440 | 2480 |
| Frequency (MHz) Zigbee | 2405 | 2440 | 2480 |

### 2-4 Ancillary Equipment

| Equipment | Model No. | Serial No. | Manufacturer |
|-----------|-----------|------------|--------------|
| Notebook  | -         | MS-1736    | MSI          |

3. Test Report

3.1 Summary of tests

| FCC Part<br>Section(s)  | Parameter             | Limit | Test<br>Condition | Status<br>(note 1) |
|-------------------------|-----------------------|-------|-------------------|--------------------|
| § 1.1310 and<br>§2.1091 | RF EXPOSURE EVULATION | -     | -                 | C                  |

Note 1: C=Complies    NC=Not Complies    NT=Not Tested    NA=Not Applicable

-

## 3.2 RF EXPOSURE EVULATION

### 1.1 Limit

According to §1.1310 and §2.1091 RF exposure is calculated.

(B) Limits for General Population/Uncontrolled Exposures

| Frequency range (MHz) | Electric field Strength | Magnetic field Strength | Power density (mW/cm <sup>2</sup> ) | Averaging time |
|-----------------------|-------------------------|-------------------------|-------------------------------------|----------------|
| 1.34 - 30.....        | 824/f                   | 2.19/f                  | *(180/ f <sup>2</sup> )             | 30             |
| 30 - 300.....         | 27.5                    | 0.073                   | 0.2                                 | 30             |
| 300 - 1500.....       | .....                   | .....                   | <b>f/1500</b>                       | 30             |
| 1500 - 100.000.....   | .....                   | .....                   | 1.0                                 | 30             |

F = frequency in MHz

\* = Plane-wave equivalent power density

### 1.2 MAXIMUM PERMISSIBLE EXPOSURE Prediction

Prediction of MPE limit at a given distance

**Power density at the specific separation:**

|                                                                                                     |                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $S = PG/(4R^2\pi)$<br><br>$S = (0.36 * 2.24) / (4 * 20^2 * \pi)$<br><br>$S = 0.002 \text{ mW/cm}^2$ | Where,<br>$S$ = Maximum power density (mW/cm <sup>2</sup> )<br>$P$ = Power input to the antenna (mW)<br>$G$ = Numeric power gain of the antenna<br>$R$ = Distance to the center of the radiation of the antenna<br>(20 cm = limit for MPE) |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 1.3 MAXIMUM PERMISSIBLE EXPOSURE Prediction

- Calculated under the worst-case conditions of each mode.

(Measured power 3 dBm  $\pm$  0.5dB)

#### 2.4GHz Mode

|                                                 |       |     |
|-------------------------------------------------|-------|-----|
| Max Peak output Power at antenna input terminal | -4.43 | dBm |
| Max Peak output Power at antenna input terminal | 0.36  | mW  |
| Prediction distance                             | 0.5   | cm  |
| Prediction frequency                            | 2440  | MHz |
| Antenna Gain(typical)                           | 3.5   | dBi |
| Antenna Gain(numeric)                           | 2.24  | -   |

SAR Test exclusion thresholds for 100MHz to 6GHz at test separation distance  $\leq$  50 mm = **Used**

$[(\text{max.power of channel, including tune-up torelance, mW})/(\text{min. test separation distance, mm})] * [\sqrt{f}(\text{GHz})]$

$= [0.36 / 5] * [\sqrt{2.440}] = 0.1 \leq 3.0$ , for 1g SAR

**Thus, SAR for this device is not required.**

|                                                 |       |     |
|-------------------------------------------------|-------|-----|
| Max Peak output Power at antenna input terminal | -4.56 | dBm |
| Max Peak output Power at antenna input terminal | 0.35  | mW  |
| Prediction distance                             | 0.5   | cm  |
| Prediction frequency                            | 2440  | MHz |
| Antenna Gain(typical)                           | 3.5   | dBi |
| Antenna Gain(numeric)                           | 2.24  | -   |

SAR Test exclusion thresholds for 100MHz to 6GHz at test separation distance  $\leq$  50 mm = **Used**

$[(\text{max.power of channel, including tune-up torelance, mW})/(\text{min. test separation distance, mm})] * [\sqrt{f}(\text{GHz})]$

$= [0.35 / 5] * [\sqrt{2.440}] = 0.1 \leq 3.0$ , for 1g SAR

**Thus, SAR for this device is not required.**

**RFID Mode**

According to the calculation formula of power

$$E.I.R.P [dBm] = E[dBuV/m] + 20\log(d[m]) - 104.77$$

E is electric field strength in dBuV/m;

d is measurement distance in meters (m);

E.I.R.P.[dBm] is the equivalent isotropically radiated power in dBm(above 1GHz);

| Modulation | Channel Freq.<br>(MHz) | Maximum<br>Field strenath @3m<br>(dBuv/m) | Calculated<br>E.I.R.P.<br>(dBm) | Maximum Output<br>power<br>(mW) |
|------------|------------------------|-------------------------------------------|---------------------------------|---------------------------------|
| FSK        | 13.56                  | 53.11                                     | -42.11                          | 0.00006                         |

ss

Number of concurrent transfers

2.4 GHz + RFID

Conditions for Simultaneous Transmission

$$2.4GHz + RFID = 0.1 + 0.1 + 0.01 = 0.21 \leq 3.0, \text{ for } 1g \text{ SAR}$$