

TEST REPORT

of

FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID: 2ABFG-IESD300W

Equipment Under Test : Access Controller
Model Name : IES-D300W
Variant Model Name(s) : Refer to the page 3
Applicant : iRevo-ASSA ABLOY Korea
Manufacturer : iRevo-ASSA ABLOY Korea
Date of Receipt : 2021.01.06
Date of Test(s) : 2021.02.10 ~ 2021.03.10
Date of Issue : 2021.05.11

In the configuration tested, the EUT complied with the standards specified above. This test report does not assure KOLAS accreditation.

- 1) The results of this test report are effective only to the items tested.
- 2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.
- 3) This test report cannot be reproduced, except in full, without prior written permission of the Company.

Tested by:



Nancy Park

Technical
Manager:



Jinhyoung Cho

SGS Korea Co., Ltd. Gunpo Laboratory



INDEX

| <u>Table of Contents</u> | Page |
|---------------------------------|------|
| 1. General Information ----- | 3 |
| 2. RF Exposure Evaluation ----- | 5 |

1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

- 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- Designation number: KR0150

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>.

Telephone : +82 31 688 0901
 FAX : +82 31 688 0921

1.2. Details of Applicant

Applicant : iRevo-ASSA ABLOY Korea
 Address : 205-29, Gasan Digital 1-ro, Geumcheon-gu, Seoul, Korea, 08052
 Contact Person : Jang, Soo-kyung
 Phone No. : +82 2 2107 5741

1.3. Details of Manufacturer

Company : Same as applicant
 Address : Same as applicant

1.4. Description of EUT

| | |
|-----------------------------|--|
| Kind of Product | Access Controller |
| Model Name | IES-D300W |
| Variant Model | YRDC-1 |
| Power Supply | DC 12 V ~ 24 V |
| Frequency Range | 2 402 MHz ~ 2 480 MHz (Bluetooth Low Energy) |
| Modulation Technique | GFSK |
| Number of Channels | 40 channels (Bluetooth Low Energy) |
| Antenna Type | Chip Antenna |
| Antenna Gain | 0.66 dBi |
| H/W Version | 1.0 |
| S/W Version | 1.0 |

1.5. Test Report Revision

| Revision | Report Number | Date of Issue | Description |
|----------|----------------------|---------------|-------------|
| 0 | F690501-RF-RTL002083 | 2021.05.11 | Initial |

1.6. Information of Variant Model

| Model Name | Description |
|------------|---|
| IES-D300W | - Basic Model |
| YRDC-1 | - Same as basic model, but the difference in marketing purposes |

2. RF Exposure Evaluation

2.1. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

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/Controlled Exposure | | | | |
| 0.3-3.0 | 614 | 1.63 | *100 | 6 |
| 3.0-30 | 1842/f | 4.89/f | *900/f ² | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1 500 | - | - | f/300 | 6 |
| 1 500-100 000 | - | - | 5 | 6 |
| (B) Limits for General Population/Uncontrolled Exposure | | | | |
| 0.3-1.34 | 614 | 1.63 | *100 | 30 |
| 1.34-30 | 824/f | 2.19/f | *180/f ² | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1 500 | - | - | f/1500 | 30 |
| <u>1 500-100 000</u> | - | - | <u>1.0</u> | <u>30</u> |

2.1.1. Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

2.1.2. Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data
 Test Mode : Normal Operation

2.1.3. Output Power into Antenna & RF Exposure Evaluation Distance

Bluetooth Low Energy

- Maximum tune up tolerance

| Frequency Range (MHz) | Output Average Power to Antenna (dB m) | Antenna Gain (dB i) | Power Density at 20 cm (mW/cm ²) | Limits (mW/cm ²) |
|-----------------------|--|---------------------|--|------------------------------|
| 2 400 ~ 2 483.5 | 9 | 0.66 | 0.001 840 | 1 |

WLAN (2.4G)

- Maximum tune up tolerance

| Frequency Range (MHz) | Output Average Power to Antenna (dB m) | Antenna Gain (dB i) | Power Density at 20 cm (mW/cm ²) | Limits (mW/cm ²) |
|-----------------------|--|---------------------|--|------------------------------|
| 2 400 ~ 2 483.5 | 16 | 3.00 | 0.015 803 | 1 |

Note;

- The power density Pd (5th column) at a distance of 20 cm calculated from the friis transmission formula is far below the limit of 1 mW/cm².
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
- This equipment should be installed and operated with minimum 20 cm between the radiator and your body.
- The antenna gain of this transmitter is less than 6 dB i and must not be collocated or operating in conjunction with any other antenna or transmitter unless authorized to do so by the FCC.
- According to KDB 447498 D01 RF Exposure Guidance 4.1.

Simultaneous transmission of RF Exposure test exclusion for worst case configuration.

Bluetooth Low Energy: the ratio is 0.001 840 / 1

WLAN: the ratio is 0.015 803 / 1

Confirm the sum result of individual MPEs ratio is ≤ 1.0;

Bluetooth Low Energy + WLAN: (0.001 840 / 1) + (0.015 803 / 1) = 0.017 643 ≤ 1.0

- End of the Test Report -