FCC/IC TEST REPORT

Reference No. : **GPSR2104000061EG**
Applicant : **iRevo-ASSA ABLOY Korea**
Equipment Under Test (EUT) :
Product Name : Digital Door Lock
Model Name : NTT612-ACC
FCC Authorization Type : Certificate of Conformity
Applied Standards : **FCC Part 15 Subpart B,**
ICES-003 Issue 7: 2020,
ANSI C 63.4:2014

FCC ID : **2ABFG-NTT600PBACC**
IC Certification : **11626A-NTT600PBACC**

Date of Receipt : **2021-03-23**
Date of Test : **2021-04-27**
Date of Issue : **2021-05-26**
Test Results : **Complied**

Tested by :
Calix Kim

Reviewed by :
Paul Kang

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.

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Revision History

Revision	Report Number	Description
0	F690501-RF-EMG000554	Initial
1		
2		

1. General Information

1.1 Client Information

Applicant : iRevo-ASSA ABLOY Korea
- Address of Applicant : 10f of JEI PLATZ Bldg., 186, Gasandigital 1-ro, Geumcheon-gu, Seoul, 08502, Korea.

Manufacturer : iRevo-ASSA ABLOY Korea
- Address of Manufacturer : 10f of JEI PLATZ Bldg., 186, Gasandigital 1-ro, Geumcheon-gu, Seoul, 08502, Korea.

Factory 1 : SHANGHAI IREVO ELECTRONICS Co., LTD.
- Address of Factory1 : 2F, Xiangling Road # 1018, Songjiang Industrial District Shanghai, China.

Factory 2 : ASSA ABLOY SMART PRODUCT VIETNAM CO., LTD.
- Address of Factory 2 : Lot A10, Ba Thien 2 Industrial Park, Thien Ke Ward, Binh Xuyen District, Vinh Phuc Province, Vietnam.

1.2 Test Laboratory

Name and Address : SGS Korea Co., Ltd.
- Giheung 1 Laboratory : 35, Giheungdanji-ro 121beon-gil, Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea
- Giheung 2 Laboratory : 23, Giheungdanji-ro 24beon-gil, Giheung-gu,Yongin-si, Gyeonggi-do, Republic of Korea
- Gunpo Laboratory : 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, 15807, Republic of Korea.

FCC Registration No. : KR0150
IC Registration No. : 7837B

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e-mail : paul.kang@sgs.com

1.3 General Information of E.U.T.

Classification	Description
Product Name	Digital Door Lock
Model Name	NTT612-ACC
Serial No.	-
EMI Classification	Class B
Test Voltage	6 Vd.c.
Rated Voltage	6 Vd.c.
Internal Clock Frequency	NFC : 13.56 ㎒, Bluetooth : 2 402 ~ 2 480 ㎒
Function	This product is an electronic door lock.

1.4 Operating Modes and Conditions

Operating Mode	Operating Condition
1) Dial	Unlock to press a number.

1.5 Auxiliary Equipments

Description	Model	Serial No.	Manufacturer	FCC ID
Battery	-	-	-	-

1.6 Cable List

Start		END		Cable Spec.		Used core
Name	I/O Port	Name	I/O Port	Length	Shield	
EUT	-	-	-	-	-	-

1.7 System Configurations

Description	Model	Serial No.	Manufacturer	Note.
Main Board	A2PM-L440S-Y1 PV01U GX	SW1.5-2012-00241	-	-
Button Board	WGA11 BUTTON PV01	PC2B-L420S-E1	-	-
LCD Board	WGA11 BLE PB FRONT PV01 200626	PC4F-L421B-E1	-	-
Accentra Key BETA Board	-	PC2M-YZA00-E0	-	-
Speaker	-	-	-	-
Bluetooth LE Antenna	-	-	-	-
NFC Antenna	WGA11 BLE ANT PV01 200626	PC2A-L421B-F1HJ	-	-
Key Pad	-	PC2M-YZA00-E0	-	-

1.8 Test System Layout

1.9 Modifications

There was no modified item during the test.

1.10 Applicable Standards for Testing

Standards	Status	Deviation
FCC Part 15 Subpart B, ICES-003 Issue 7: 2020	Applicable	No Deviation

1.11 Summary of Test Results

Test Item	Standards	Results
Radiated Emission	FCC Part 15 Subpart B Section 15.109, ICES-003 Issue 7: 2020, ANSI C 63.4:2014	Complied

Note : Test methods of all test items are performed according to the basic standards in this table.

EMISSION

2.1 Test Results

Test Items	Basic Standards	Test Results
Radiated Emission	FCC Part 15 Subpart B Section 15.109, ICES-003 Issue 7: 2020, ANSI C 63.4:2014	**Complied**

2.2 Test Method and Limits

2.2.1 Test Method

Test Items	Measuring Frequency Range	RBW	Measuring Distance
Radiated Emission	30 ㎒ ~ 1 ㎓	120 ㎑	10 ㎝ & 3 ㎝
	Above 1 ㎓	1 ㎒	3 ㎝

Note : 10 m method of radiated emission measurement is only applied to Class A equipment over the frequency range of 30 ㎒ ~ 1 ㎓. Except this, 3 m method is applied to Class B equipment over the frequency range of 30 ㎒ ~ 1 ㎓ and Class A and Class B equipment above 1 ㎓.

2.2.2 Test Limits

-Radiated Emission Limits below 1 ㎓

Frequency Range	Limits(㏈(㎶/㎝))	Class
	Quasi-peak	
30 ㎒ ~ 88 ㎒	39.1	**Class A (10m method)**
88 ㎒ ~ 216 ㎒	43.5	
216 ㎒ ~ 960 ㎒	46.4	
960 ㎒ ~ 1 ㎓	49.5	
30 ㎒ ~ 88 ㎒	40.0	**Class B (3m method)**
88 ㎒ ~ 216 ㎒	43.5	
216 ㎒ ~ 960 ㎒	46.0	
960 ㎒ ~ 1 ㎓	54.0	

-Radiated Emission Limits above 1 ㎓ (3㎝ method)

Frequency Range	Limits(㏈(㎶/㎝))		Class
	Average	Peak	
Above 1 ㎓	59.5	79.5	**Class A**
Above 1 ㎓	54.0	74.0	**Class B**

Note : The limits of class A equipment is extrapolated using an extrapolation factor of 20 ㏈/decade because it was measured at 3 m distance not 10 m distance.

2.3 Radiated Emission

The initial preliminary exploratory scans were performed at 3 m distance over the measuring frequency range(30 ㎒ to 13 ㎓) using a max hold mode incorporating a Peak detector and using the software of EP5RE(Version Ver5.3.70 from TOYO). The final test data was measured using a Quasi-Peak detector below 1 ㎓ at 3 m distance and a Peak and CISPR-Average detector above 1 ㎓ at 3 m distance. Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency.

2.3.1 Test Equipments

Description	Model No.	Manufacturer	S/N	Cal Due. Date
Horn Antenna	HF906	R & S	100326	2022-02-04
Signal Conditioning Unit	SCU 18	R & S	10117	2021-06-10
Test Receiver	ESU26	R & S	100109	2022-02-19
Bilog Antenna	VULB9163	SCHWARZBECK	01126	2022-12-22
Amplifier	8447F	HP	2944A03909	2021-08-06
3m SEMI-ANECHOIC CHAMBER	-	SY CORPORATION	-	-

Note : The Bilog Antenna calibration period is 2 years, but the other equipment calibration period are 1 year.

2.3.2 Test Site

3m SEMI-ANECHOIC CHAMBER Gunpo Laboratory (Below 1 ㎓, Above 1 ㎓)

2.3.3 Environment Conditions and data

Radiated Emission Test

- Below 1 ㎓

Temperature (Minimum 20.6, Maximum 21.6) ℃,
Humidity (Minimum 33.1, Maximum 34.1) % R.H.,
Atmospheric Pressure (Minimum 101.5, Maximum 101.5) ㎪

Test Date : 2021-04-27

- Above 1 ㎓

Temperature (Minimum 20.6, Maximum 21.6) ℃,
Humidity (Minimum 33.1, Maximum 34.1) % R.H.,
Atmospheric Pressure (Minimum 101.5, Maximum 101.5) ㎪

Test Date : 2021-04-27

Radiated Emission Test Data

- Below 1 ㎓ (3 m method)

Freq. (㎒)	Reading (dB㎶)	Pol. (H/V)	A (°)	H (cm)	AF (dB/m)	CL (dB)	Amp. (dB)	F/S (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
47.14	29.00	H	77	195	20.10	0.84	28.10	21.84	40.00	18.16
57.36	29.40	V	121	100	18.83	0.92	28.09	21.06	40.00	18.94
200.40	30.00	H	92	100	16.57	1.80	27.50	20.87	43.50	22.63
205.37	29.90	V	358	203	16.21	1.84	27.49	20.46	43.50	23.04
380.53	30.50	V	179	203	20.72	2.55	27.91	25.86	46.00	20.14
465.61	31.50	H	99	297	22.11	2.79	28.59	27.81	46.00	18.19

Measurement Uncertainty (Horizontal) : 4.90 ㏈ (The confidential level is about 95%, *k*=2)
Measurement Uncertainty (Vertical) : 4.82 ㏈ (The confidential level is about 95%, *k*=2)
Note: • AF = Antenna Factor • CL = Cable Loss • F/S = Field Strength
• Pol.(H) = Horizontal • Pol.(V) = Vertical • Amp. = Amplifier Gain
• Margin = Limit – F/S • F/S = Level + AF + CL – Amp.
• A : Angle • H : Height

- Above 1 ㎓ (3 m method)

(Measurement Distance : 3.7 m)

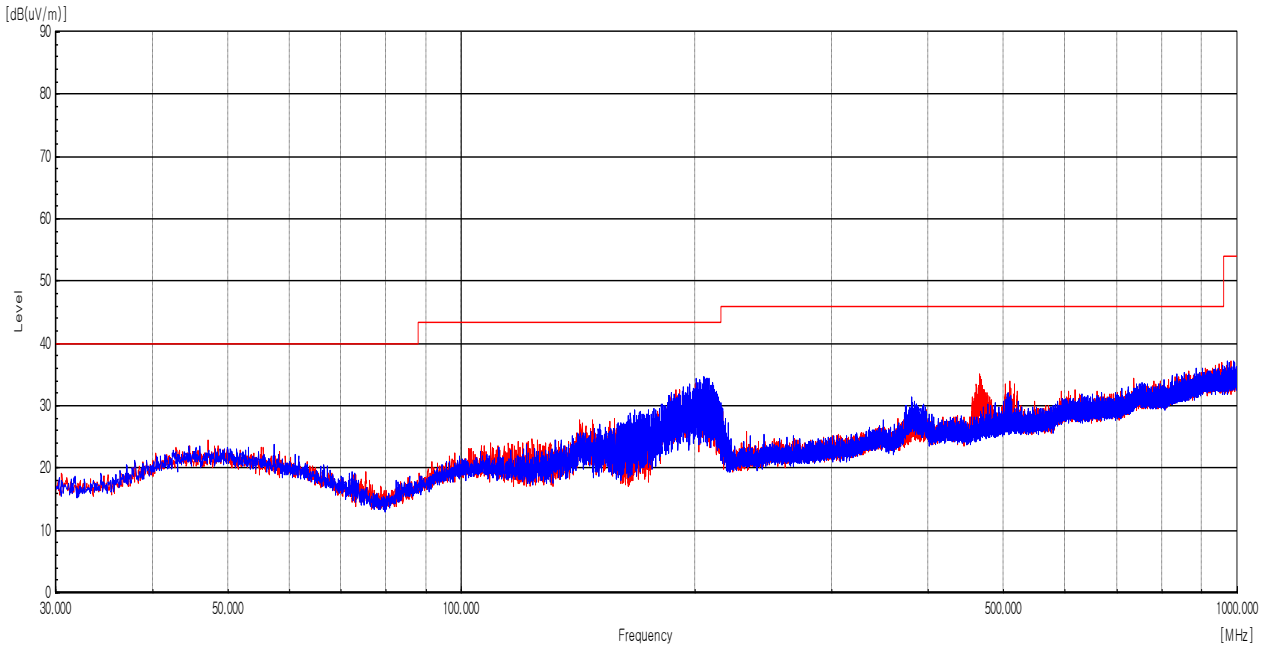
Freq. (㎒)	Level (dB㎶)		Pol. (H/V)	A (°)	H (cm)	AF (dB)	CL (dB)	Amp. (dB)	CF (dB)	F/S (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
	Peak	C-AV										
2501.50	32.40	-	V	8	105	28.30	6.70	45.25	1.82	23.97	74.00	50.03
2501.50	-	27.50	V	8	105	28.30	6.70	45.25	1.82	19.07	54.00	34.93
3497.50	33.40	-	H	108	121	30.90	8.10	45.50	1.82	28.72	74.00	45.28
3497.50	-	28.40	H	108	121	30.90	8.10	45.50	1.82	23.72	54.00	30.28
5479.00	33.00	-	V	136	111	34.00	10.33	45.31	1.82	33.84	74.00	40.16
5479.00	-	28.90	V	136	111	34.00	10.33	45.31	1.82	29.74	54.00	24.26
7203.00	33.90	-	H	358	200	35.91	11.87	45.52	1.82	37.98	74.00	36.02
7203.00	-	29.10	H	358	200	35.91	11.87	45.52	1.82	33.18	54.00	20.82
12027.50	34.10	-	V	237	189	38.50	15.67	44.98	1.82	45.11	74.00	28.89
12027.50	-	30.90	V	237	189	38.50	15.67	44.98	1.82	41.91	54.00	12.09
12088.50	34.80	-	H	231	100	38.50	15.82	44.94	1.82	46.00	74.00	28.00
12088.50	-	31.40	H	231	100	38.50	15.82	44.94	1.82	42.60	54.00	11.40

Measurement Uncertainty (Horizontal) : 3.62 ㏈ (The confidential level is about 95%, *k*=2)
Measurement Uncertainty (Vertical) : 3.64 ㏈ (The confidential level is about 95%, *k*=2)
Note: • AF = Antenna Factor • CL = Cable Loss • F/S = Field Strength
• Pol.(H) = Horizontal • Pol.(V) = Vertical • Amp. = Amplifier Gain
• Margin = Limit – F/S • F/S = Level + AF + CL – Amp.
• A : Angle • H : Height

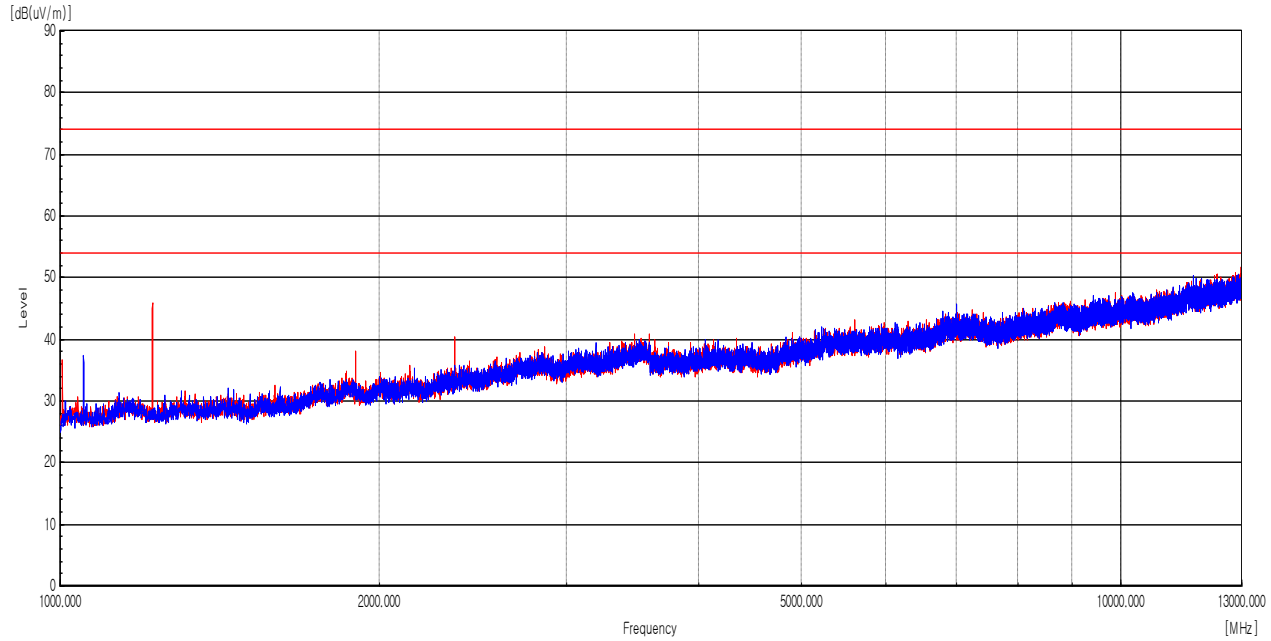
See Appendix A (Radiated Emission)

Appendix A : Radiated Emission

Below 1 ㎓



Above 1 ㎓



- End of the Report -