


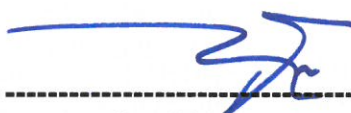
FCC/IC TEST REPORT

Reference No. : GPSR2102000019EG
Applicant : iRevo-ASSA ABLOY Korea
Equipment Under Test (EUT) :
 Product Name : Digital Door Lock
 Model Name : NTB612-ACC
 Alt.Model Name : NTB632-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-NTB600PBACC
IC Certification : 11626A-NTB600PBACC

Date of Receipt : February 2, 2021
Date of Test : March 23, 2021 ~ March 26, 2021
Date of Issue : April 9, 2021
Test Results : Complied

Tested by	:		 ----- Kevin Jo
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.

Remarks :

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Revision History

Revision	Report Number	Description
0	F690501-RF-EMG000504	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 ELECTRONIS., Co., LTD.
 - Address of Factory 1 : 2F, Xiangling Road # 1018, Songjiang Industrial Distric 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

Phone : + 82 31 428 5700
 Fax : + 82 31 427 2370
 e-mail : paul.kang@sgs.com

1.3 General Information of E.U.T.

Classification	Description
Product Name	Digital Door Lock
Model Name	NTB612-ACC
Atl.Model Names	NTB632-ACC
Model Differences	The variation model has only difference from Main model which is no key cylinder on handles. No any other difference related to RF function.
Serial No.	None
EMI Classification	Class B
Test Voltage	6 Vd.c.
Rated Voltage	6 Vd.c.
Highest Internal Frequency	13.56 MHz, 2 402 ~ 2 480 MHz
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	WGA11 BLE MAIN PV02 200901	PC4M-L420B-E2	-	-
Button Board	WGA11 BUTTON PV01	PC2B L420S-E1	-	-
LCD Board	WGA11 BLE PB FRONT PV01 200626	PC4F-L421B-E1	-	-
Speaker	-	-	-	-
Bluetooth LE Antenna	-	-	-	-
NFC Antenna	WGA11 BLE TENKEY-ANT PV01 200626	PC2K-L420B-F1HJ	-	-

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 MHz ~ 1 GHz	120 kHz	10 m & 3 m
	Above 1 GHz	1 MHz	3 m

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

2.2.2 Test Limits

-Radiated Emission Limits below 1 GHz

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

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

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

Note : The limits of class A equipment is extrapolated using an extrapolation factor of 20 dB/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 MHz to 18 GHz) 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 GHz at 3 m distance and a Peak and CISPR-Average detector above 1 GHz 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 GHz, Above 1 GHz)

2.3.3 Environment Conditions and data

Radiated Emission Test

- Below 1 GHz

Temperature (Minimum 18.9, Maximum 19.9) °C,
 Humidity (Minimum 26.0, Maximum 27.0) % R.H.,
 Atmospheric Pressure (Minimum 101.5, Maximum 101.5) kPa

Test Date : March 23, 2021

- Above 1 GHz

Temperature (Minimum 20.0, Maximum 21.0) °C,
 Humidity (Minimum 29.0, Maximum 30.0) % R.H.,
 Atmospheric Pressure (Minimum 101.8, Maximum 101.8) kPa

Test Date : March 26, 2021

Radiated Emission Test Data

- Below 1 GHz (3 m method)

Freq. (MHz)	Reading (dB μ V)	Pol. (H/V)	A (°)	H (cm)	AF (dB/m)	CL (dB)	Amp. (dB)	F/S (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
82.78	27.80	H	66	195	13.39	1.17	28.03	14.33	40.00	25.67
248.25	26.70	V	307	189	18.55	2.01	27.40	19.86	46.00	26.14
344.73	46.20	H	273	115	20.31	2.41	27.57	41.35	46.00	4.65
346.22	37.70	V	166	200	20.35	2.41	27.58	32.88	46.00	13.12
482.95	36.20	V	21	104	22.95	2.86	28.70	33.31	46.00	12.69
622.39	25.10	H	246	190	25.26	3.36	29.03	24.69	46.00	21.31

Measurement Uncertainty (Horizontal) : 4.90 dB (The confidential level is about 95%, k=2)

Measurement Uncertainty (Vertical) : 4.82 dB (The confidential level is about 95%, k=2)

- Note:
- AF = Antenna Factor
 - Pol.(H) = Horizontal
 - Margin = Limit – F/S
 - A : Angle
 - CL = Cable Loss
 - Pol.(V) = Vertical
 - F/S = Level + AF + CL – Amp.
 - H : Height
 - F/S = Field Strength
 - Amp. = Amplifier Gain

- Above 1 GHz (3 m method)

Freq. (MHz)	Level (dB μ V)		Pol. (H/V)	A (°)	H (cm)	AF (dB)	CL (dB)	Amp. (dB)	CF (dB)	F/S (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
	Peak	C-AV										
1758.50	34.20	-	V	97	100	26.90	5.52	45.38	1.82	23.06	74.00	50.94
1758.50	-	31.20	V	97	100	26.90	5.52	45.38	1.82	20.06	54.00	33.94
2134.00	34.10	-	H	145	100	27.29	6.32	45.43	1.82	24.10	74.00	49.90
2134.00	-	31.10	H	145	100	27.29	6.32	45.43	1.82	21.10	54.00	32.90
3196.50	35.10	-	V	172	100	30.49	7.98	45.49	1.82	29.90	74.00	44.10
3196.50	-	32.10	V	172	100	30.49	7.98	45.49	1.82	26.90	54.00	27.10
5614.20	40.20	-	H	316	100	34.00	10.61	45.37	1.82	41.26	74.00	32.74
5614.20	-	31.00	H	316	100	34.00	10.61	45.37	1.82	32.06	54.00	21.94
7542.50	41.20	-	H	316	100	36.10	11.95	45.99	1.82	45.08	74.00	28.92
7542.50	-	30.80	H	316	100	36.10	11.95	45.99	1.82	34.68	54.00	19.32
12381.40	43.70	-	V	339	100	38.56	15.57	44.73	1.82	54.92	74.00	19.08
12381.40	-	29.50	V	339	100	38.56	15.57	44.73	1.82	40.72	54.00	13.28

Measurement Uncertainty (Horizontal) : 3.62 dB (The confidential level is about 95%, k=2)

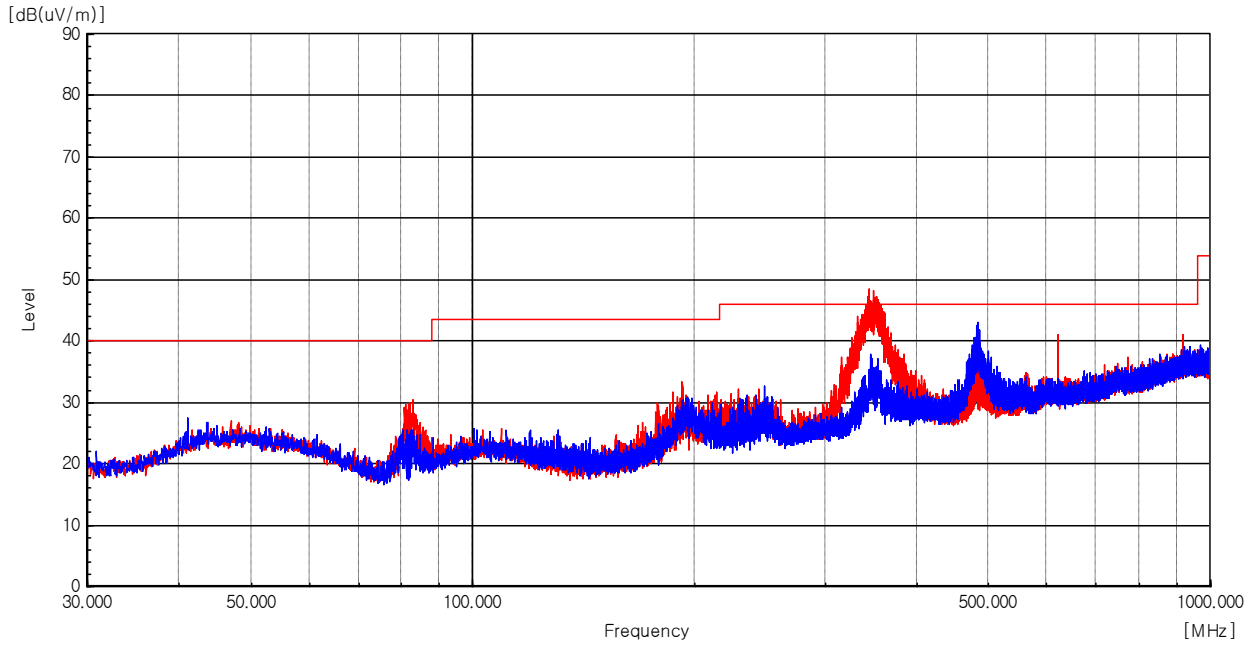
Measurement Uncertainty (Vertical) : 3.64 dB (The confidential level is about 95%, k=2)

- Note:
- AF = Antenna Factor
 - Pol.(H) = Horizontal
 - Margin = Limit – F/S
 - A : Angle
 - CL = Cable Loss
 - Pol.(V) = Vertical
 - F/S = Level + AF + CL – Amp.
 - H : Height
 - F/S = Field Strength
 - Amp. = Amplifier Gain

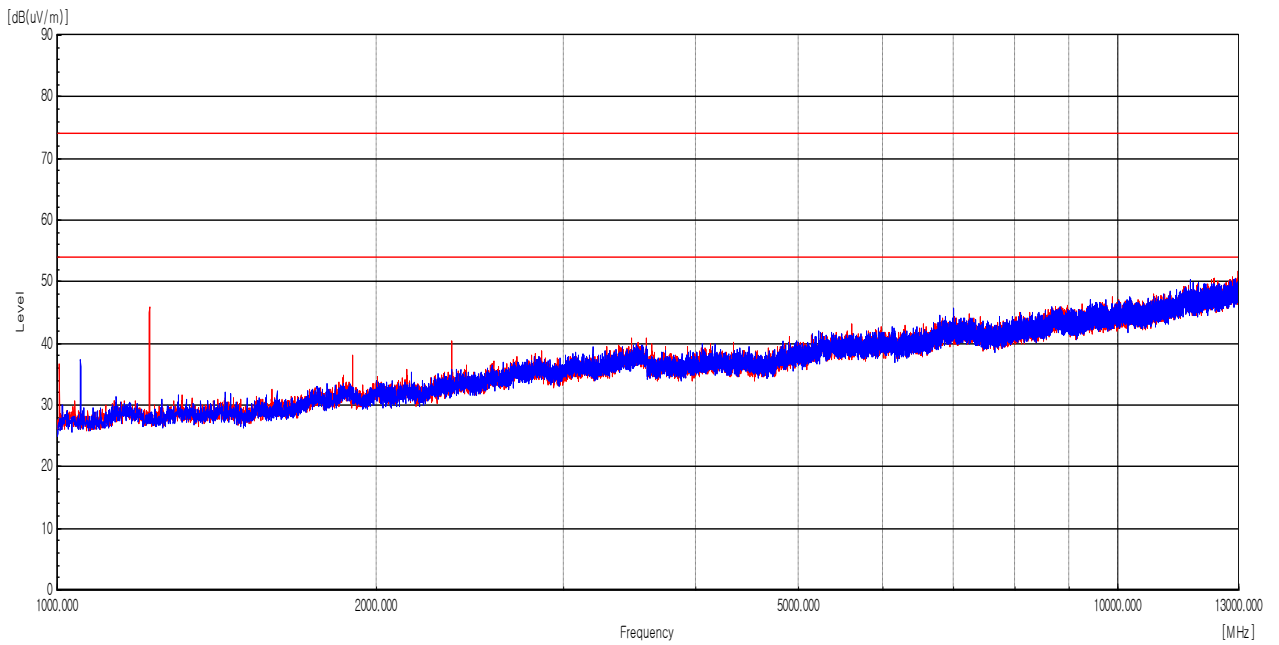
See Appendix A (Radiated Emission)

Appendix A : Radiated Emission

Below 1 GHz



Above 1 GHz



- End of the Report -