

FCC/IC TEST REPORT

Reference No. : GPWL2007001334EG
Applicant : iRevo-ASSA ABLOY Korea
Equipment Under Test (EUT) :

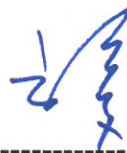
Product Name : Digital Door Lock
Model Name : YRD622-ACC-619
Alt.Model Name : Refer to Page 4.

FCC Authorization Type : Certificate of Conformity
Applied Standards : FCC Part 15 Subpart B, Class B,
ICES-003 Issue 6: 2019,
ANSI C 63.4:2014

FCC ID : 2ABFG-YRD622BLEV1
IC Certification : 11626A-YRD622BLEV1

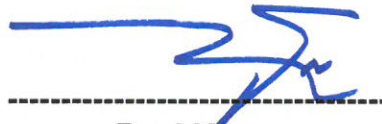
Date of Receipt : June 15, 2020
Date of Test : July 29, 2020 ~ September 17, 2020
Date of Issue : September 17, 2020
Test Results : Complied

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-EMG000282	Initial
1	F690501-RF-EMG000282-1	Added Radiated Emission test Results.
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.

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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1.3 General Information of E.U.T.

Classification	Description
Product Name	Digital Door Lock
Model Name	YRD622-ACC-619
Atl.Model Names	YRD622-ACC-605, YRD622-ACC-OBP, YRD622-ACC-OBE, YRD622-ACC-BSP, YRD622-ICK-15X, YRD622-ICK-3XX, YRD622-ICK-1BP, YRD622-ICK-1BE, YRD622-ICK-BSP
Model Differences	Refer to Note1.
Serial No.	None
EMI Classification	Class B
Test Voltage	6 Vd.c.
Rated Voltage	6 Vd.c.
Highest Internal Frequency	13.56 MHz, 2402~2480 MHz

Note1. Model Differences

Model Name		Color	Lever
Basic Model	YRD622-ACC-619	SILVER	X
Alt. Models	YRD622-ACC-605	GOLD	X
	YRD622-ACC-OBP	Oil Rubbed Bronze	X
	YRD622-ACC-OBE	Equivalent Bronze	X
	YRD622-ACC-BSP	BLACK	X
	YRD622-ICK-15X	SILVER	O
	YRD622-ICK-3XX	GOLD	O
	YRD622-ICK-1BP	Oil Rubbed Bronze	O
	YRD622-ICK-1BE	Equivalent Bronze	O
	YRD622-ICK-BSP	BLACK	O

1.4 Operating Modes and Conditions

Operating Mode	Operating Condition
1) Operation	Unlock to press a number

1.5 Auxiliary Equipments

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

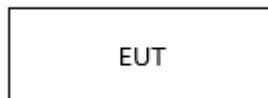
1.6 Cable List

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
Front Board	WGA18 BLE MAN PV02 00701	-	-
Rear Board	FRONT PV01 200513	-	-

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 6: 2019	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 6: 2019, 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 6: 2019, 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(μ V/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(μ V/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 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
YRD622-ACC-619 (Basic Model)				
Horn Antenna	HF906	R & S	100326	2021.02.14
Signal Conditioning Unit	SCU 18	R & S	10117	2021.06.10
Test Receiver	ESU26	R & S	100109	2021.02.18
Bilog Antenna	VULB9163	SCHWARZBECK	396	2021.03.21
Amplifier	8447F	HP	2944A03909	2020.08.07
3m SEMI-ANECHOIC CHAMBER	-	SY CORPORATION	-	-
YRD622-ICK-15X (Alt.Model)				
Horn Antenna	HF906	R & S	100326	2021.02.14
Signal Conditioning Unit	SCU 18	R & S	10117	2021.06.10
Test Receiver	ESU26	R & S	100109	2021.02.18
Bilog Antenna	VULB9163	SCHWARZBECK	396	2021.03.21
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

- Below 1 GHz

- Test Model : YRD622-ACC-619 (Basic Model)

Temperature (Minimum 21.5, Maximum 22.6) °C,
Humidity (Minimum 43.0, Maximum 45.0) % R.H.,
Atmospheric Pressure (Minimum 100.1, Maximum 100.1) kPa
Test Date : July 29, 2020

- Test Model : YRD622-ICK-15X (Alt.Model)

Temperature (Minimum 23.9, Maximum 24.5) °C,
Humidity (Minimum 52.0, Maximum 55.0) % R.H.,
Atmospheric Pressure (Minimum 100.1, Maximum 100.1) kPa
Test Date : September 17, 2020

- Above 1 GHz

- Test Model : YRD622-ACC-619 (Basic Model)

Temperature (Minimum 21.5, Maximum 22.6) °C,
Humidity (Minimum 43.0, Maximum 45.0) % R.H.,
Atmospheric Pressure (Minimum 100.1, Maximum 100.1) kPa
Test Date : July 29, 2020

- Test Model : YRD622-ICK-15X (Alt.Model)

Temperature (Minimum 23.9, Maximum 24.5) °C,
Humidity (Minimum 52.0, Maximum 55.0) % R.H.,
Atmospheric Pressure (Minimum 100.1, Maximum 100.1) kPa
Test Date : September 17, 2020

Radiated Emission Test Data

- Below 1 GHz (3 m method)

- Test Model : YRD622-ACC-619 (Basic Model)

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)
296.39	27.50	H	303	100	19.21	1.84	27.31	21.24	46.00	24.76
313.93	27.80	H	303	100	19.59	2.03	27.38	22.04	46.00	23.96
327.31	21.90	H	303	200	19.90	2.02	27.46	16.36	46.00	29.64
345.01	22.40	H	303	100	20.32	2.06	27.57	17.21	46.00	28.79
514.72	22.30	V	163	100	23.51	2.55	28.83	19.53	46.00	26.47
958.74	23.30	V	61	100	28.71	3.84	28.08	27.77	46.00	18.23

- Test Model : YRD622-ICK-15X (Alt.Model)

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)
89.09	33.40	V	202	100	15.76	1.74	28.02	22.88	43.50	20.62
91.92	41.90	V	1	100	16.45	1.77	28.02	32.10	43.50	11.40
97.29	42.10	V	1	200	17.45	1.82	28.01	33.36	43.50	10.14
101.90	32.70	H	13	100	17.69	1.87	27.99	24.27	43.50	19.23
357.42	22.40	H	109	100	20.61	3.58	27.67	18.92	46.00	27.08
474.58	23.30	V	41	100	22.82	4.14	28.65	21.61	46.00	24.39
888.94	24.50	H	205	100	28.20	5.78	28.30	30.18	46.00	15.82

Measurement Uncertainty (Horizontal) : 5.01 dB (The confidential level is about 95%, $k=2$)

Measurement Uncertainty (Vertical) : 5.38 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)

- Test Model : YRD622-ACC-619 (Basic Model)

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										
2164.50	45.90	-	H	154	100	27.47	9.17	45.42	0.00	37.12	74.00	36.88
2164.50	-	33.20	H	154	100	27.47	9.17	45.42	0.00	24.42	54.00	29.58
4245.58	43.00	-	H	32	100	32.00	8.69	45.32	0.00	38.37	74.00	35.63
4245.58	-	32.40	H	32	100	32.00	8.69	45.32	0.00	27.77	54.00	26.23
4376.63	44.10	-	V	258	100	32.15	8.79	45.39	0.00	39.65	74.00	34.35
4376.63	-	32.70	V	258	100	32.15	8.79	45.39	0.00	28.25	54.00	25.75
14614.87	36.10	-	V	313	100	41.10	15.25	44.22	0.00	48.23	74.00	25.77
14614.87	-	30.20	V	313	100	41.10	15.25	44.22	0.00	42.33	54.00	11.67
14920.87	35.00	-	H	84	100	40.66	15.98	44.12	0.00	47.52	74.00	26.48
14920.87	-	31.60	H	84	100	40.66	15.98	44.12	0.00	44.12	54.00	9.88
17729.42	34.00	-	V	175	100	43.76	18.80	45.69	0.00	50.87	74.00	23.13
17729.42	-	29.90	V	175	100	43.76	18.80	45.69	0.00	46.77	54.00	7.23

- Test Model : YRD622-ICK-15X (Alt.Model)

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										
1733.33	44.70	-	V	176	100	26.87	8.84	45.37	0.00	35.04	74.00	38.96
1733.33	-	31.00	V	176	100	26.87	8.84	45.37	0.00	21.34	54.00	32.66
1855.00	43.50	-	H	304	100	27.54	9.17	45.43	0.00	34.78	74.00	39.22
1855.00	-	29.90	H	304	100	27.54	9.17	45.43	0.00	21.18	54.00	32.82
3278.75	42.20	-	V	195	200	30.69	12.16	45.54	0.00	39.51	74.00	34.49
3278.75	-	28.40	V	195	200	30.69	12.16	45.54	0.00	25.71	54.00	28.29
3506.46	42.10	-	H	9	200	31.19	12.67	45.49	0.00	40.47	74.00	33.53
3506.46	-	28.30	H	9	200	31.19	12.67	45.49	0.00	26.67	54.00	27.33
5259.17	41.60	-	H	15	100	33.72	15.83	45.44	0.00	45.71	74.00	28.29
5259.17	-	28.30	H	15	100	33.72	15.83	45.44	0.00	32.41	54.00	21.59
5548.75	41.00	-	V	344	100	34.00	16.16	45.33	0.00	45.83	74.00	28.17
5548.75	-	28.00	V	344	100	34.00	16.16	45.33	0.00	32.83	54.00	21.17

Measurement Uncertainty (Horizontal) : 5.33 dB (The confidential level is about 95%, $k=2$)

Measurement Uncertainty (Vertical) : 5.35 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

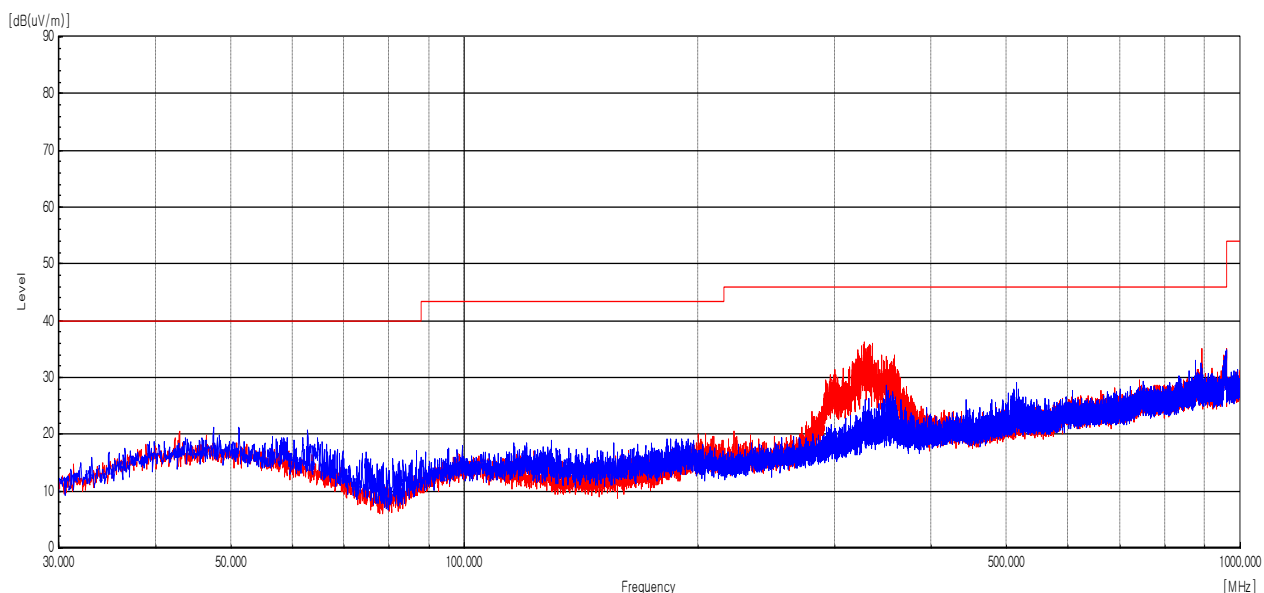
• Amp. = Amplifier Gain

See Appendix A (Radiated Emission)

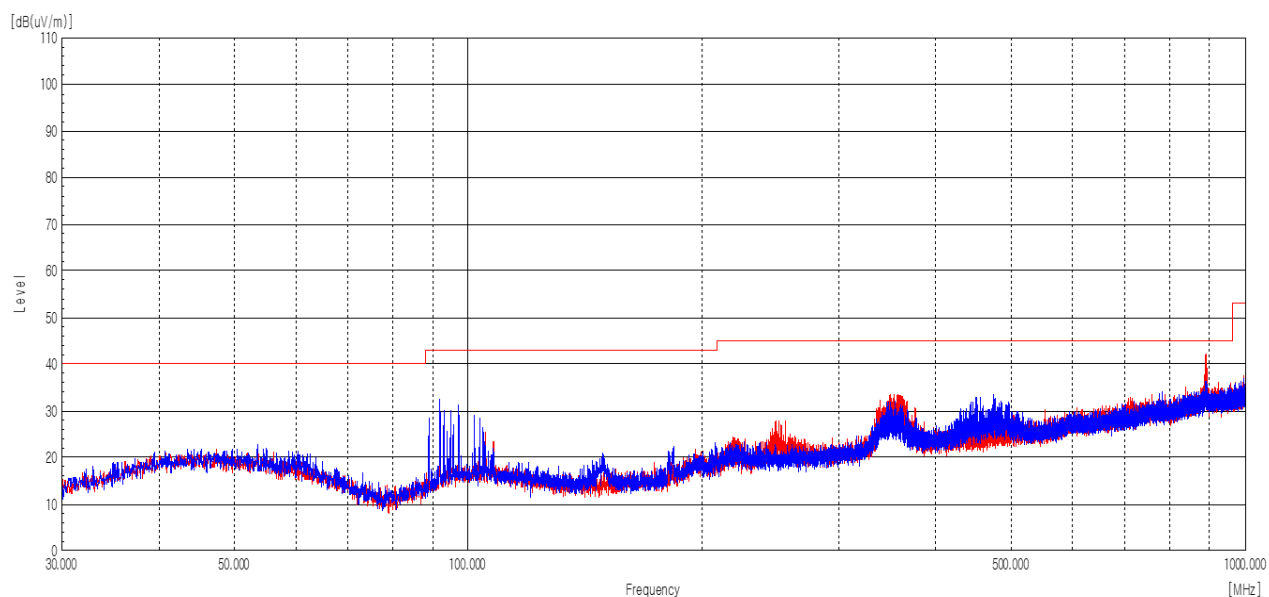
Appendix A : Radiated Emission

Below 1 GHz

- Test Model : YRD622-ACC-619 (Basic Model)

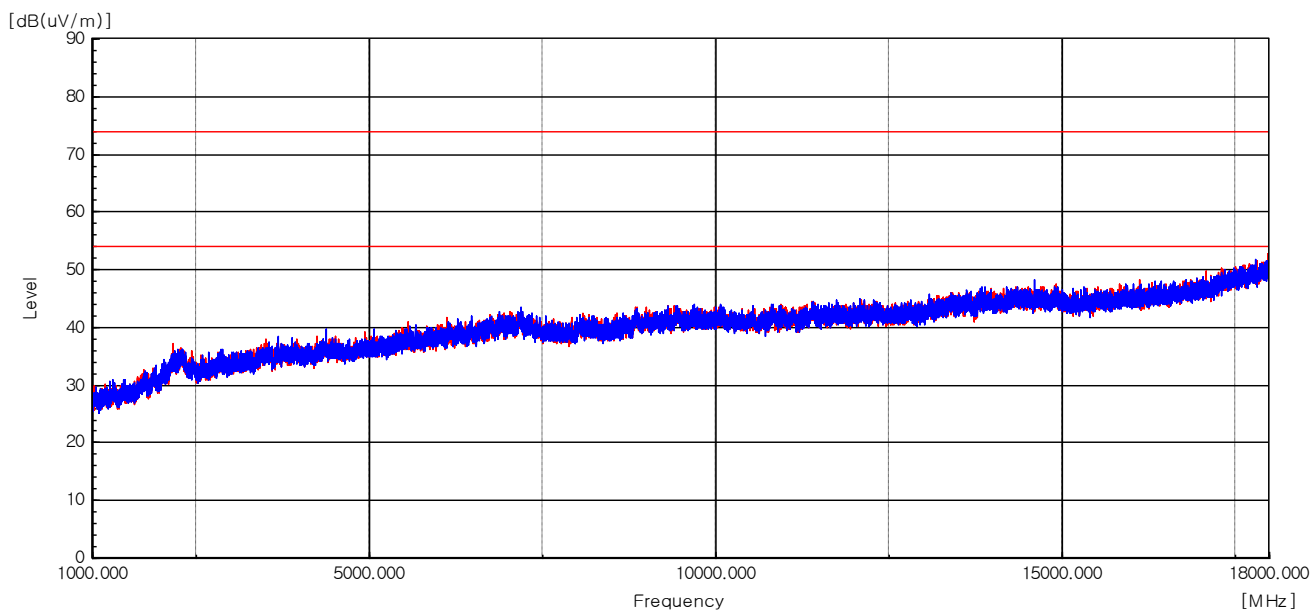


- Test Model : YRD622-ICK-15X (Alt.Model)

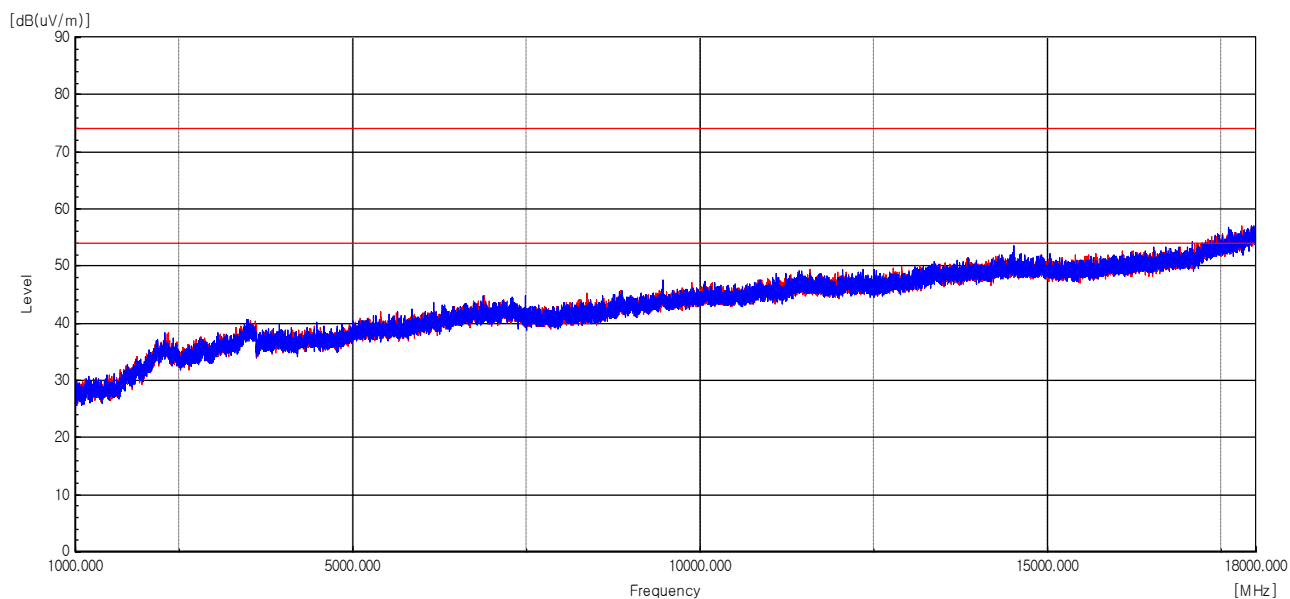


Above 1 GHz

- Test Model : YRD622-ACC-619 (Basic Model)



- Test Model : YRD622-ICK-15X (Alt.Model)



- End of the Report -