

FCC/IC TEST REPORT

Reference No. : GPRI2101000031EG
Applicant : iRevo-ASSA ABLOY Korea
Equipment Under Test (EUT) :
Product Name : Access Controller
Model Name : IES-D300W
Alt. Model Name : IES-D301W, BCT/A1, YRDC-1

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-IESD300W (Model : IES-D300W, YRDC-1)
2ABFG-IESD301W (Model : IES-D301W, BCT/A1)
IC Certification : 11626A-IESD300W (Model : IES-D300W, YRDC-1)
11626A-IESD301W (Model : IES-D301W, BCT/A1)

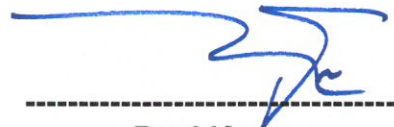
Date of Receipt : 2021-01-06
Date of Test : 2021-02-21 ~ 2021-02-22
Date of Issue : 2021-06-11
Test Results : Complied

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.

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Revision History

Revision	Report Number	Description
0	F690501-RF-EMG000468	Initial
1	F690501-RF-EMG000468-1	- Added information of Factory and Alt.Model - Modified Product Name, Basic Model Name and Alt. Model Name
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, Republic of Korea.

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

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

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
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e-mail : paul.kang@sgs.com

1.3 General Information of E.U.T.

Classification	Description
Product Name	Access Controller
Model Name	IES-D300W
Alt. Model Name	IES-D301W, BCT/A1, YRDC-1
Model Differences	- IES-D301W, BCT/A1 : The Wi-Fi module has been removed, the others are the same as the basic model. - YRDC-1 : Added variant model name due to vendor's request.
Serial No.	None
EMI Classification	Class B
Test Voltage	12 Vd.c., 24 Vd.c.
Rated Voltage	12-24 Vd.c.
Highest Internal Frequency	2 402 ~ 2 480 MHz
Function	Dry Contact Controller

1.4 Operating Modes and Conditions

Operating Mode	Operating Condition
1) 12V Operation	RS485 + COM+ DPS are operating with 12V voltage
2) 24V Operation	RS485 + COM+ DPS are operating with 24V voltage

1.5 Auxiliary Equipments

Description	Model	Serial No.	Manufacturer	FCC ID
Laptop	E5510	-	DELL	Laptop
Door Lock	-	-	-	Door Lock
Switch	-	-	-	Switch
Dongle	-	-	-	Dongle

1.6 Cable List

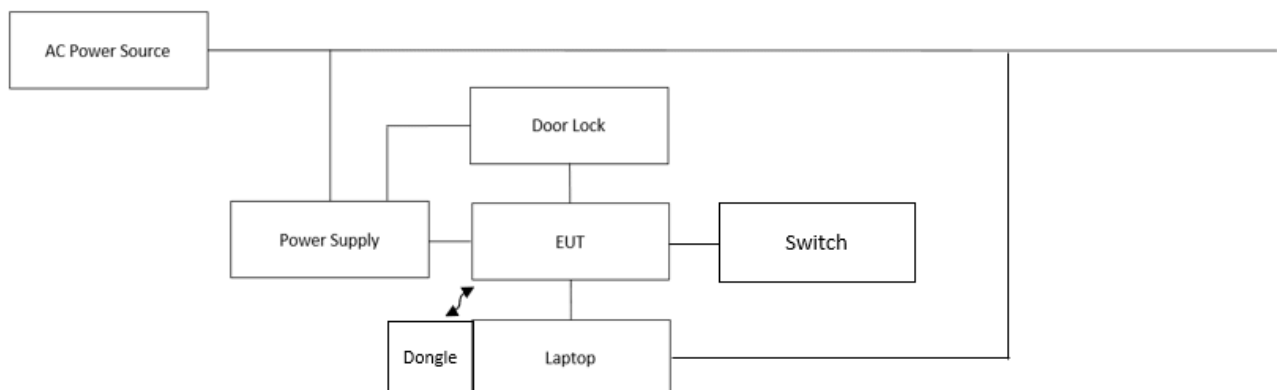
Start		END		Cable Spec.		Used core
Name	I/O Port	Name	I/O Port	Length	Shield	
AC Power Source	AC OUT	Power Supply	AC IN	-	-	-
AC Power Source	AC OUT	Laptop	AC IN	-	-	-
Power Supply	DC OUT	Door Lock	DC IN	4.0	Unshield	No.
Power Supply	DC OUT	EUT	DC IN	-	-	-
Laptop	-	Dongle	-	-	-	-
Laptop	USB Port	EUT	RS485	1.0	Unshield	No.
Door Lock	-	EUT	COM1	1.5	Unshield	No.
Switch	-	EUT	DPS2	1.0	Unshield	No.
Dongle	-	EUT	-	-	-	-

Note. REX port and DPS port are the same function.

1.7 System Configurations

Description	Model	Serial No.	Manufacturer
Main Board	Sahar aWIFI ALPHA 201106	-	-

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.

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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(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 C-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 19.6, Maximum 20.4) °C,
Humidity (Minimum 27.0, Maximum 29.0) % R.H.,
Atmospheric Pressure (Minimum 101.8, Maximum 101.8) kPa

Test Date : 2021-02-21

- Above 1 GHz

Temperature (Minimum 19.9, Maximum 20.7) °C,
Humidity (Minimum 28.0, Maximum 30.0) % R.H.,
Atmospheric Pressure (Minimum 101.6, Maximum 101.6) kPa

Test Date : 2021-02-22

Radiated Emission Test Data

- Below 1 GHz (3 m method)

- Test Mode : 12V Operation

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)
31.17	39.80	V	114	100	16.29	0.73	28.10	28.72	40.00	11.28
31.90	39.70	V	114	100	16.43	0.73	28.10	28.76	40.00	11.24
35.30	38.40	V	114	100	17.12	0.76	28.10	28.18	40.00	11.82
45.12	32.10	V	259	100	19.88	0.83	28.10	24.71	40.00	15.29
149.03	37.00	V	232	100	13.97	1.60	27.80	24.77	43.50	18.73
222.79	36.10	V	252	100	17.81	1.92	27.45	28.38	46.00	17.62

- Test Mode : 24V Operation

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)
31.21	39.40	V	1	100	16.30	0.73	28.10	28.33	40.00	11.67
32.47	39.50	V	60	100	16.53	0.74	28.10	28.67	40.00	11.33
35.30	39.30	V	60	100	17.12	0.76	28.10	29.08	40.00	10.92
44.55	32.90	V	60	100	19.78	0.83	28.10	25.41	40.00	14.59
156.10	37.30	V	267	100	14.12	1.65	27.76	25.31	43.50	18.19
301.92	36.50	V	274	100	19.31	2.28	27.31	30.78	46.00	15.22

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)

- Test Mode : 12V Operation

Freq. (MHz)	Level (dBμV)		Pol. (H/V)	A (°)	H (cm)	AF (dB)	CL (dB)	Amp. (dB)	CF (dB)	F/S (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Peak	C-AV										
1442.00	61.30	-	H	48	100	25.55	5.08	45.38	0.00	46.55	74.00	27.45
1442.00	-	38.30	H	48	100	25.55	5.08	45.38	0.00	23.55	54.00	30.45
1594.29	75.60	-	V	171	100	25.21	5.19	45.30	0.00	60.70	74.00	13.30
1594.29	-	48.50	V	171	100	25.21	5.19	45.30	0.00	33.60	54.00	20.40
16744.12	41.70	-	H	108	200	41.59	18.41	45.30	0.00	56.40	74.00	17.60
16744.12	-	27.70	H	108	200	41.59	18.41	45.30	0.00	42.40	54.00	11.60
17188.96	41.50	-	V	179	100	42.16	18.78	45.48	0.00	56.96	74.00	17.04
17188.96	-	27.90	V	179	100	42.16	18.78	45.48	0.00	43.36	54.00	10.64
17464.50	42.20	-	H	177	100	43.09	19.09	45.59	0.00	58.79	74.00	15.21
17464.50	-	27.90	H	177	100	43.09	19.09	45.59	0.00	44.49	54.00	9.51
17767.66	41.50	-	V	328	200	43.97	19.03	45.71	0.00	58.79	74.00	15.21
17767.66	-	27.90	V	328	200	43.97	19.03	45.71	0.00	45.19	54.00	8.81

- Test Mode : 24V Operation

Freq. (MHz)	Level (dBμV)		Pol. (H/V)	A (°)	H (cm)	AF (dB)	CL (dB)	Amp. (dB)	CF (dB)	F/S (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Peak	C-AV										
1592.88	75.30	-	H	25	100	25.21	5.20	45.30	0.00	60.41	74.00	13.59
1592.88	-	43.80	H	25	100	25.21	5.20	45.30	0.00	28.91	54.00	25.09
1597.13	74.60	-	V	162	100	25.21	5.19	45.30	0.00	59.70	74.00	14.30
1597.13	-	46.30	V	162	100	25.21	5.19	45.30	0.00	31.40	54.00	22.60
17247.04	44.50	-	H	71	100	42.19	18.82	45.50	0.00	60.01	74.00	13.99
17247.04	-	28.10	H	71	100	42.19	18.82	45.50	0.00	43.61	54.00	10.39
17574.29	41.50	-	V	213	200	43.30	18.92	45.63	0.00	58.09	74.00	15.91
17574.29	-	27.80	V	213	200	43.30	18.92	45.63	0.00	44.39	54.00	9.61
17728.71	41.30	-	V	174	200	43.76	18.97	45.69	0.00	58.34	74.00	15.66
17728.71	-	27.80	V	174	200	43.76	18.97	45.69	0.00	44.84	54.00	9.16
17791.04	41.70	-	H	3	100	44.06	19.03	45.72	0.00	59.07	74.00	14.93
17791.04	-	28.00	H	3	100	44.06	19.03	45.72	0.00	45.37	54.00	8.63

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

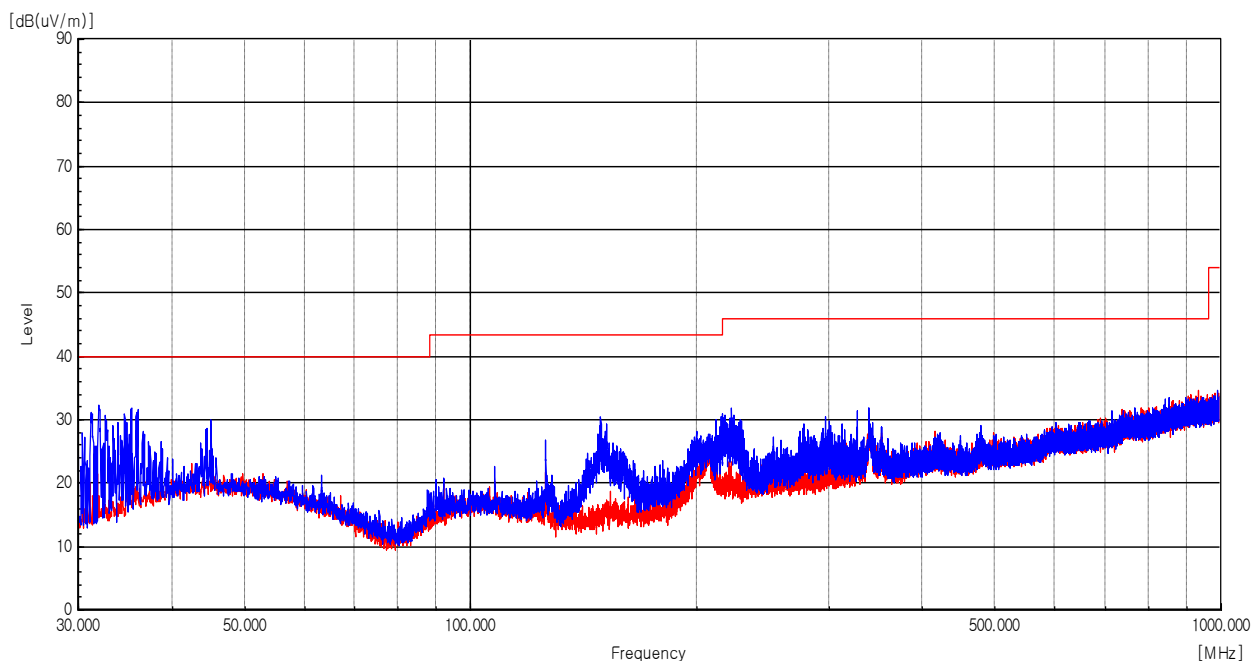
• Amp. = Amplifier Gain

See Appendix A (Radiated Emission)

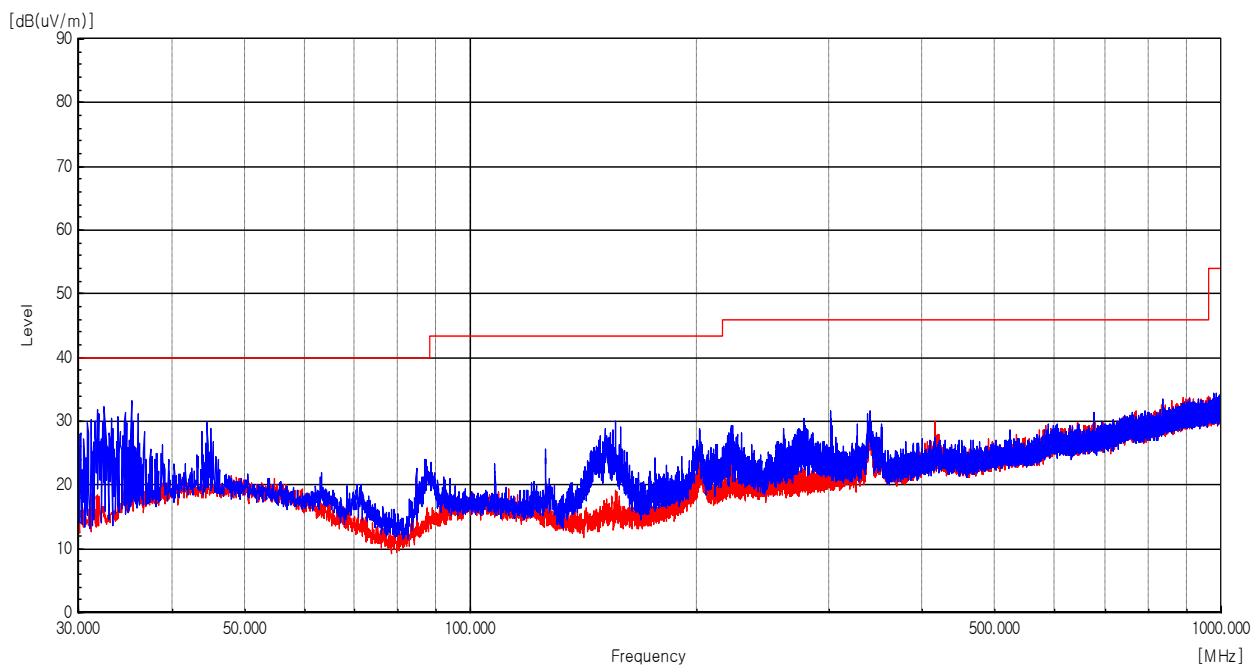
Appendix A : Radiated Emission

Below 1 GHz

- Test Mode : 12V Operation

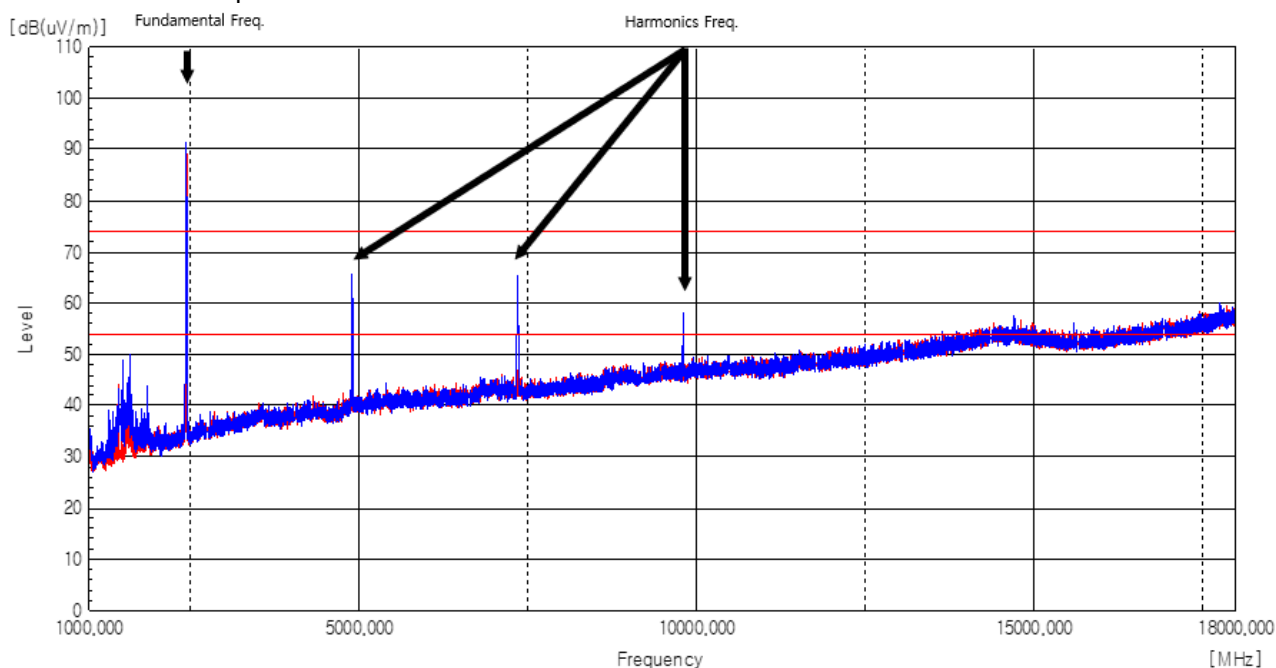


- Test Mode : 24V Operation

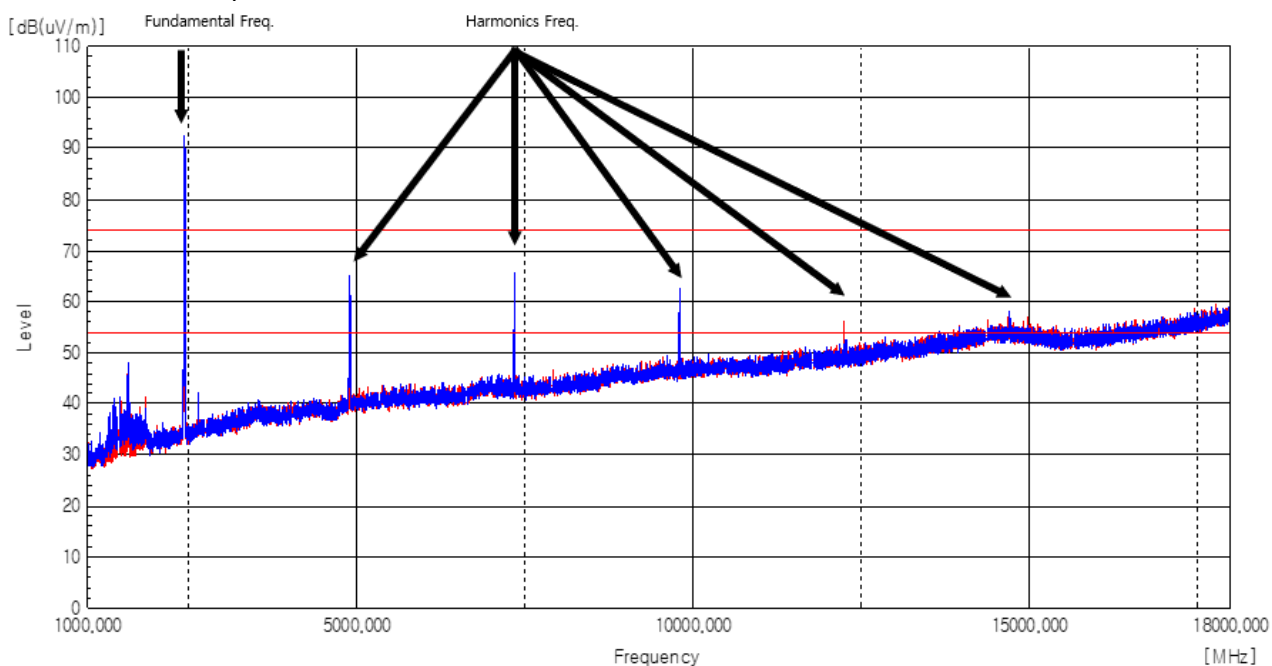


Above 1 GHz

- Test Mode : 12V Operation



- Test Mode : 24V Operation



- End of the Report -