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EMC TEST REPORT

Dates of Tests: November 12 – 26, 2021
Test Report S/N: LR500122111Y
Test Site : LTA Co., Ltd.

Model No.

XRP-4110B2

APPLICANT

Hanwha Techwin Co., Ltd

Equipment Name : NVR
Manufacturer : D-TECH CO.,LTD.
Model name : XRP-4110B2
Test Device Serial No.: Identification
Directive : Electromagnetic Compatibility Directive 2014/30/EU,
Regulations 2016/1091
Rule Part(s) : EN 55032:2015/A11:2020, BS EN 55032:2015/A11:2020
EN 50130-4:2011/A1:2014, BS EN 50130-4:2011/A1:2014
EN 61000-3-2:2014, BS EN 61000-3-2:2014
EN 61000-3-3:2013, BS EN 61000-3-3:2013
Data of reissue : November 29, 2021

This test report is issued under the authority of:

The test was supervised by:

Young Kyu Shin, Technical Manager

Joo Hyung Cho, Test Engineer

This test result only responds to the tested sample. It is not allowed to copy this report even partly without the allowance of the test laboratory. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

This test report is not related to KS Q ISO/IEC 17025 and KOLAS accreditation.



Revision history

Revision	Date of issue	Test report No.	Description
0	29.11.2021	LR500122111Y	Initial

TABLE OF CONTENTS

1. General information's.....	4
2. Information's about test item	5
3. Test Report.....	8
3.1 Summary of tests	8
3.2 EMISSION	9
3.2.1 Conducted Emissions	9
3.2.2 Radiated Emissions	16
3.2.3 Harmonic Current Emission.....	21
3.2.4 Voltage Fluctuations and Flicker	23
3.3 IMMUNITY	26
3.3.1 Electrostatic Discharge	26
3.3.2 RF Electromagnetic Field	28
3.3.3 Electrical Fast Transients	29
3.3.4 Surges	30
3.3.5 Conducted Disturbances, Induced by Radio-Frequency Fields	31
3.3.6 Voltage dips and Interruptions.....	32
3.3.7 Mains supply voltage variations.....	33
APPENDIX A TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS	34
APPENDIX B PERFORMANCE CRITERIA.....	38
APPENDIX C PHOTOGRAPHS	41

1. General information's

1-1 Test Performed

Company name : **LTA Co., Ltd**
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Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which “General requirements for the competents of calibration and testing laboratory”.

1-2 Accredited agencies

LTA Co., Ltd. is approved to perform EMC testing by the following agencies:

Agency	Country	Accreditation No.	Validity	Reference
NVLAP	U.S.A	200723-0	2022-09-30	ECT accredited Lab.
	KOREA		-	
RRA	U.S.A	KR0049	2023-04-08	RRA accredited Lab.
	CANADA		2022-10-18	
		C-14948	2023-09-10	
VCCI	JAPAN	T-12416	2023-09-10	VCCI registration
		R-14483	2023-10-15	
		G-10847	2024-12-13	
KOLAS	KOREA	KT551	2025-10-12	KOLAS accredited Lab.

2. Information's about test item

2-1 Client/ Manufacturer

Company name : Hanwha Techwin Co., Ltd
 Address : 6, Pangyo-ro 319beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do
 Telephone / Facsimile : +82-10-2667-4196 / +82-70-7147-8361

Factory #1

Company name : D-TECH CO.,LTD.
 Address : 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi-do, Korea (Suwon Industrial Complex)

Factory #2

Company name : HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.
 Address : Lot O-2, Que Vo Industrial Zone extended area ,Nam Son commune, Bac Ninh city,Bac Ninh province, Vietnam

2-2 Equipment Under Test (EUT)

Class : A
 Equipment Name : NVR
 Model name : XRP-4110B2
 Serial number : Identification
 Date of receipt : November 11, 2021
 EUT condition : Pre-production
 Interface Ports : AC IN, AUDIO OUT, HDMI #1, HDMI #2 USB #1, USB #2, USB #3, USB #4, LAN #1, LAN #2, LAN #3, GND
 Console port is management port.
 Power rating : AC 230 V, 50 Hz

2-3 Modification

- NONE

2-4 Model Specification

- NONE

2-5 Test conditions

Temp. / Humid. / Pressure : (20 - 24) °C / (39 - 43) % R.H. / (100) kPa
 Tested Model : XRP-4110B2
 Test mode : NVR mode
 Tested Voltage : AC 230 V, 50 Hz

2-6 List of EUT and ACCESSORY

EUT				
Equipment Name	Model Name	Serial No.	Manufacturer	Remarks
NVR	XRP-4110B2	N/A	Hanwha Techwin Co., Ltd D-TECH CO.,LTD. HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	-
Keyboard	PKB-650U	N/A	PLEOMAX	-
Mouse	MOKJUO	N/A	Primax Electronics Ltd.	-
ACCESSORY				
Equipment Name	Model Name	Serial No.	Manufacturer	Remarks
USB Memory Stick	N/A	N/A	Sandisk	8 GB, 2 EA
Monitor #1	24MA53D-PN	N/A	LG	-
Monitor #1 Adapter	A11-120P1A	N/A	Chicony	-
Monitor #2	22EA53VQ	N/A	LG	-
Monitor #2 Adapter	PA-1750-82	N/A	TOSHIBA	-
Headset	SHS-150V/W	N/A	SAMSUNG	-
Network Camera #1	QND-6083R	N/A	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	-
Network Camera #1 Adapter	KPL-060F-VI	N/A	CHANNEL WELL TECHNOLOGY	-
Network Camera #2	QND-6022R	N/A	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	-
Network Camera #2 Adapter	P24120200 EK	N/A	Something High Electric (Xiamen) Company Inc.	-
Network Camera #3	QND-6021	N/A	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	-
8 port 10/100Mbps Switch with PoE	FS108P	N/A	NETGEAR	-
8 port 10/100Mbps Switch with PoE Adapter	NU60-F480125- I1NN	N/A	NETGEAR	-

2-7 Cable List

Cable List						
From		To		Length (m)	Shielding	
Type	I/O Port	Type	I/O Port		Cable	backshell
EUT	AC IN	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
	AUDIO OUT	Headset	AUDIO IN	1.7	NO	Plastic
	HDMI #1	Monitor #1	HDMI	1.6	YES	Plastic
	HDMI #2	Monitor #2	HDMI	1.6	YES	Plastic
	USB #1	USB Memory Stick #1	USB	-	NO	Plastic
	USB #2	USB Memory Stick #2	USB	-	NO	Plastic
	USB #3	Keyboard	USB	1.3	NO	Plastic
	USB #4	Mouse	USB	1.2	NO	Plastic
	LAN #1	Network Camera #1	LAN	3.0	NO	Plastic
	LAN #2	Network Camera #2	LAN	3.0	NO	Plastic
	LAN #3	8 port 10/100Mbps Switch with PoE	LAN #1	3.0	NO	Plastic
	GND	GND	GND	1.6	NO	Plastic
Monitor #1	DC IN	Monitor #1 Adapter	DC OUT	1.2	NO	Plastic
Monitor #1 Adapter	AC IN	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
Monitor #2	DC IN	Monitor #2 Adapter	DC OUT	1.2	NO	Plastic
Monitor #2 Adapter	AC IN	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
Network Camera #1	DC IN	Network Camera #1 Adapter	DC OUT	1.1	NO	Plastic
Network Camera #1 Adapter	AC IN	AC Power Source	3 Pin AC Line	1.5	NO	Plastic
Network Camera #2	DC IN	Network Camera #1 Adapter	DC OUT	1.4	NO	Plastic
Network Camera #2 Adapter	AC IN	AC Power Source	2 Pin AC Line	-	NO	Plastic
8 port 10/100Mbps Switch with PoE	DC IN	8 port 10/100Mbps Switch with PoE Adapter	DC OUT	1.4	NO	Plastic
	LAN #2	Network Camera #3	LAN	3.0	NO	Plastic
8 port 10/100Mbps Switch with PoE Adapter	AC IN	AC Power Source	3 Pin AC Line	1.5	NO	Plastic

3. Test Report

3.1 Summary of tests

Reference	Parameter	Status (note)
I. Emission		
Conducted Emissions	EN 55032:2015/A11:2020, BS EN 55032:2015/A11:2020	C
Radiated Emissions	EN 55032:2015/A11:2020, BS EN 55032:2015/A11:2020	C
Harmonic Current Emission	EN 61000-3-2:2014, BS EN 61000-3-2:2014	NA ^{Note 3}
Voltage Fluctuations and Flicker	EN 61000-3-3:2013, BS EN 61000-3-3:2013	C
II. Immunity (EN 50130-4:2011/A1:2014, BS EN 50130-4:2011/A1:2014)		
Electrostatic Discharge	EN 61000-4-2:2009, BS EN 61000-4-2:2009	C
RF Electromagnetic Field	EN 61000-4-3:2006/A1:2008/A2:2010, BS EN 61000-4-3:2006/A1:2008/A2:2010	C
Electrical Fast Transients	EN 61000-4-4:2012, BS EN 61000-4-4:2012	C
Surges	EN 61000-4-5:2014/A1:2017, BS EN 61000-4-5:2014/A1:2017	C
Conducted Disturbances, Induced by Radio-Frequency Fields	EN 61000-4-6:2014/AC:2015, BS EN 61000-4-6:2014/AC:2015	C
Voltage dips and Interruptions	EN 61000-4-11:2004/A1:2017, BS EN 61000-4-11:2004/A1:2017	C
Main supply voltage variations	EN 50130-4:2011/A1:2014, BS EN 50130-4:2011/A1:2014	C

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: The data in this test report are traceable to the national or international standards.

Note 3: We did not test EN 61000-3-2, BS EN 61000-3-2 (Harmonic current emissions) for the XRP-4110B2 because equipment whose rated power is less or equal 75 W don't need to be tested.

3.2 EMISSION

3.2.1 Conducted Emissions

Definition:

The test assesses the ability of the EUT to limit its internal noise from being present on the AC mains Power In/Output ports.

We were performed the test according to LTA procedure LTA-QI-04.

Measurement Frequency range	: 150 kHz – 30 MHz
Test method	: EN 55032:2015/A11:2020, BS EN 55032:2015/A11:2020
Measurement RBW	: 9 kHz
Test Location	: Shielded Room
Test mode	: NVR mode
Result	: Complies

Measurement Data:

- Refer to the Next page (Maximum emission configuration)

A sample calculation:

COR. F (correction factor)= LISN Insertion loss + Cable loss + Pulse Limiter Factors

Emission Level= meter reading + COR.F

Limits for conducted disturbance at the mains ports of class A ITE

Frequency Range	Quasi-peak	Average
(0.15 – 0.5) MHz	79 dB μ V	66 dB μ V
(0.5 – 30) MHz	73 dB μ V	60 dB μ V

Note: The limits will decrease with the frequency logarithmically within 0.15 MHz to 0.5 MHz

Limits for conducted disturbance at the mains ports of class B ITE

Frequency Range	Quasi-peak	Average
(0.15 – 0.5) MHz	(66 – 56) dB μ V	(56 - 46) dB μ V
(0.5 – 5) MHz	56 dB μ V	46 dB μ V
(5 – 30) MHz	60 dB μ V	50 dB μ V

Note: The limits will decrease with the frequency logarithmically within 0.15 MHz to 0.5 MHz

Limits of conducted common mode (asymmetric mode) disturbance at telecommunication ports in the frequency range 0.15 MHz to 30 MHz for class A equipment

Frequency Range	Voltage limits		Current limits	
	Quasi-peak	Average	Quasi-peak	Average
(0.15 – 0.5) MHz	(97 – 87) dB μ V	(84 – 74) dB μ V	(53 – 43) dB μ V	(40 – 30) dB μ V
(0.5 – 30) MHz	87 dB μ V	74 dB μ V	43 dB μ V	30 dB μ V

Note 1: The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Note 2: The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150 Ω to the telecommunication port under test (conversion factor is $20 \log_{10} 150/I = 44$ dB)

Limits of conducted common mode (asymmetric mode) disturbance at telecommunication ports in the frequency range 0.15 MHz to 30 MHz for class B equipment

Frequency Range	Voltage limits		Current limits	
	Quasi-peak	Average	Quasi-peak	Average
(0.15 – 0.5) MHz	(84 – 74) dB μ V	(74 – 64) dB μ V	(40 – 30) dB μ V	(30 – 20) dB μ V
(0.5 – 30) MHz	74 dB μ V	64 dB μ V	30 dB μ V	20 dB μ V

Note 1: The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Note 2: The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150 Ω to the telecommunication port under test (conversion factor is $20 \log_{10} 150/I = 44$ dB)

Conducted Emissions (LINE)



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EUT /Model No. : XRP-4110B2

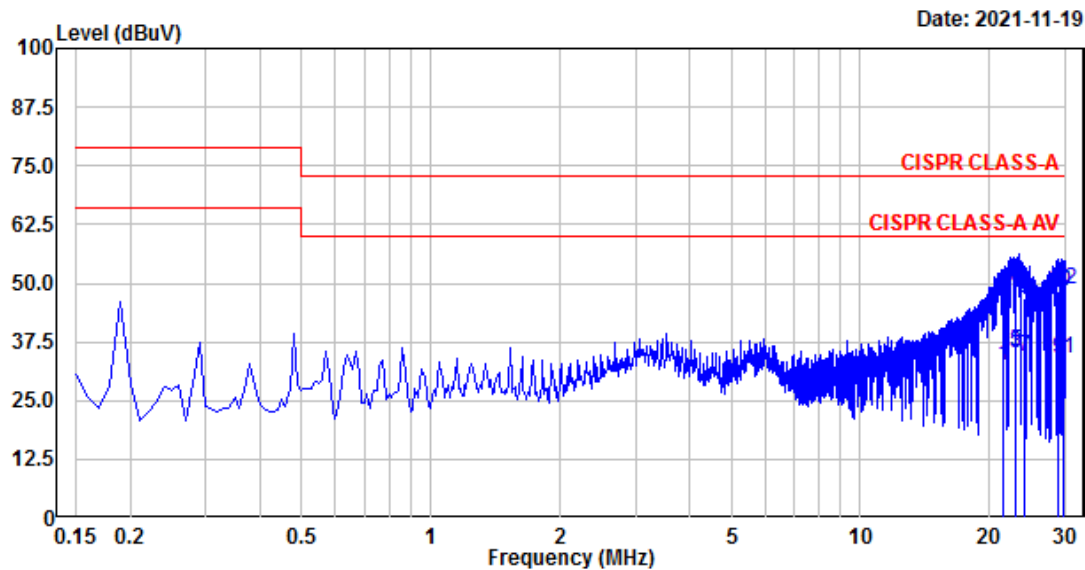
Phase : Line

Test Mode : NVR mode

Test Power : 230 V / 50 Hz

Temp./ Humi. : 21 'C / 41 % R.H.

Test Engineer : CHO J H



No.	Freq MHz	RD QP dBuV	RD AV dBuV	C.F dB	Result QP dBuV	Result AV dBuV	Limit QP dBuV	Limit AV dBuV	Margin QP dB	Margin AV dB	Phase
2.	21.590	27.29	12.54	20.04	47.33	32.58	73.00	60.00	25.67	27.42	Line
4.	22.971	30.14	15.18	20.06	50.20	35.24	73.00	60.00	22.80	24.76	Line
6.	23.150	29.12	15.51	20.06	49.18	35.57	73.00	60.00	23.82	24.43	Line
8.	24.194	26.70	14.17	20.08	46.78	34.25	73.00	60.00	26.22	25.75	Line
10.	29.044	28.18	13.94	20.15	48.33	34.09	73.00	60.00	24.67	25.91	Line
12.	29.705	28.54	13.64	20.17	48.71	33.81	73.00	60.00	24.29	26.19	Line

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions (NEUTRAL)



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EUT /Model No. : XRP-4110B2

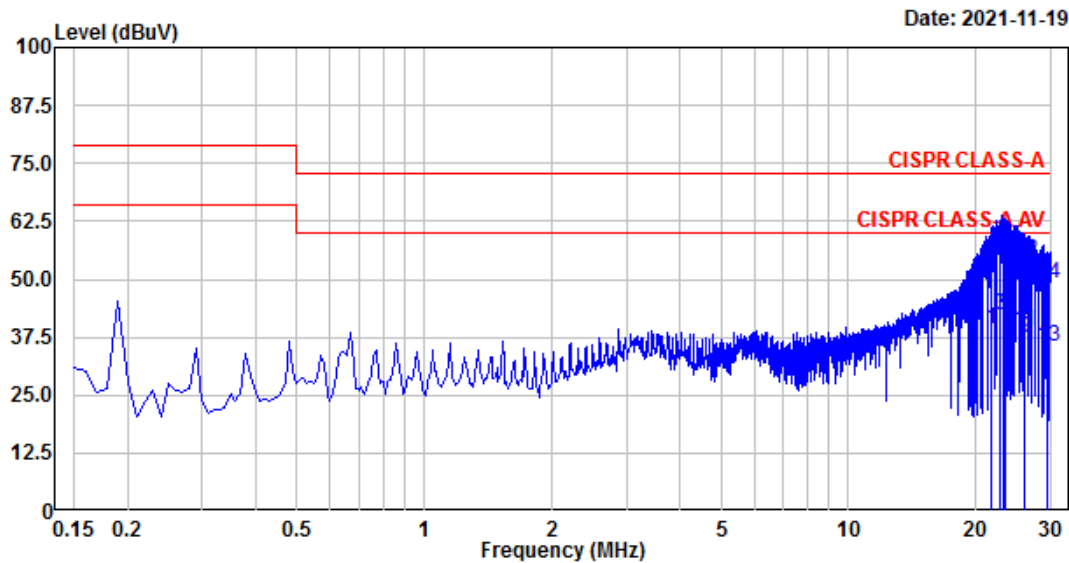
Phase : Neutral

Test Mode : NVR mode

Test Power : 230 V / 50 Hz

Temp./ Humi. : 21 °C / 41 % R.H.

Test Engineer : CHO J H



No.	Freq MHz	RD QP dBuV	RD AV dBuV	C.F dB	Result QP dBuV	Result AV dBuV	Limit QP dBuV	Limit AV dBuV	Margin QP dB	Margin AV dB	Phase
2.	21.726	34.17	19.12	20.12	54.29	39.24	73.00	60.00	18.71	20.76	neutral
4.	22.844	36.40	22.03	20.15	56.55	42.18	73.00	60.00	16.45	17.82	neutral
6.	23.203	36.80	22.15	20.15	56.95	42.30	73.00	60.00	16.05	17.70	neutral
8.	23.501	36.38	20.48	20.16	56.54	40.64	73.00	60.00	16.46	19.36	neutral
10.	25.994	32.60	17.28	20.22	52.82	37.50	73.00	60.00	20.18	22.50	neutral
12.	26.070	33.88	18.76	20.22	54.10	38.98	73.00	60.00	18.90	21.02	neutral
14.	29.387	28.76	15.20	20.29	49.05	35.49	73.00	60.00	23.95	24.51	neutral

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions (TEL_1000 M) / NVR mode (LAN #1)



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EUT /Model No. : XRP-4110B2

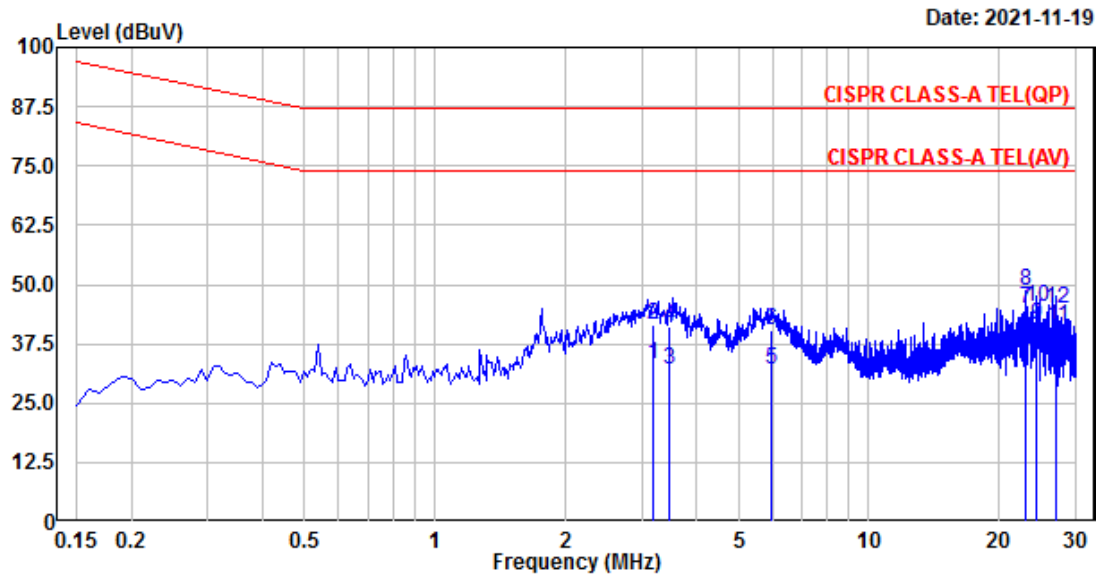
Phase : TEL_1000M

Test Mode : NVR mode (LAN #1)

Test Power : 230 V / 50 Hz

Temp./ Humi. : 21 'C / 41 % R.H.

Test Engineer : CHO J H



No.	Freq MHz	RD QP dBuV	RD AV dBuV	C.F dB	Result QP dBuV	Result AV dBuV	Limit QP dBuV	Limit AV dBuV	Margin QP dB	Margin AV dB	Phase
2.	3.162	22.21	13.93	19.30	41.51	33.23	87.00	74.00	45.49	40.77	Line
4.	3.461	21.69	12.96	19.29	40.98	32.25	87.00	74.00	46.02	41.75	Line
6.	5.955	20.95	12.87	19.33	40.28	32.20	87.00	74.00	46.72	41.80	Line
8.	23.129	28.97	25.24	19.70	48.67	44.94	87.00	74.00	38.33	29.06	Line
10.	24.349	25.70	21.80	19.73	45.43	41.53	87.00	74.00	41.57	32.47	Line
12.	27.158	25.26	21.45	19.78	45.04	41.23	87.00	74.00	41.96	32.77	Line

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions (TEL_1000 M) / NVR mode (LAN #2)



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EUT /Model No. : XRP-4110B2

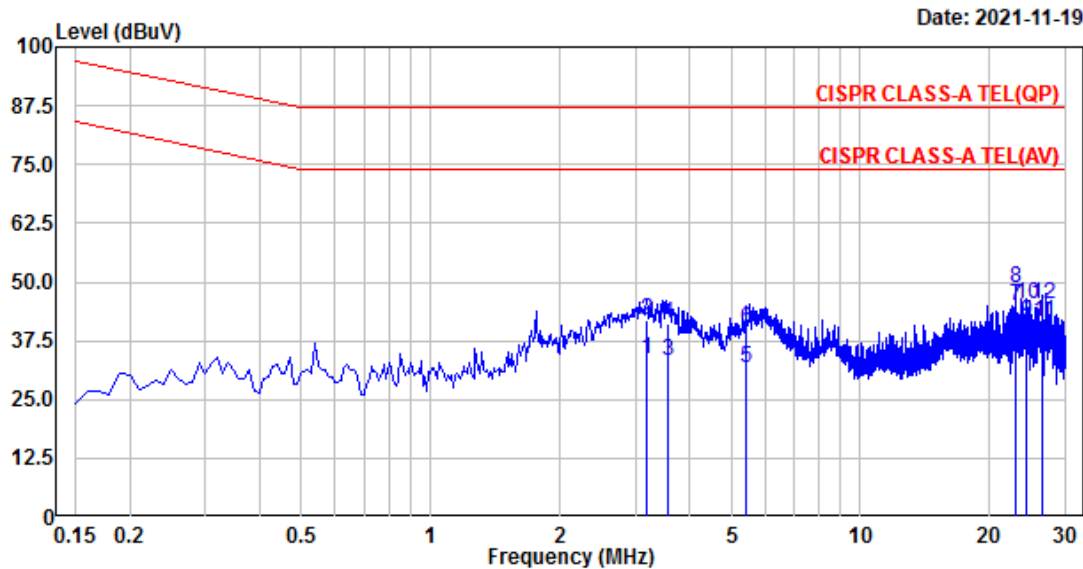
Phase : TEL_1000M

Test Mode : NVR mode (LAN #2)

Test Power : 230 V / 50 Hz

Temp./ Humi. : 21 °C / 41 % R.H.

Test Engineer : CHO J H



No.	Freq MHz	RD QP dBuV	RD AV dBuV	C.F dB	Result QP dBuV	Result AV dBuV	Limit QP dBuV	Limit AV dBuV	Margin QP dB	Margin AV dB	Phase
2.	3.166	22.68	14.31	19.30	41.98	33.61	87.00	74.00	45.02	40.39	Line
4.	3.544	22.02	13.76	19.29	41.31	33.05	87.00	74.00	45.69	40.95	Line
6.	5.406	20.62	12.44	19.32	39.94	31.76	87.00	74.00	47.06	42.24	Line
8.	23.128	29.03	25.25	19.70	48.73	44.95	87.00	74.00	38.27	29.05	Line
10.	24.349	25.69	21.73	19.73	45.42	41.46	87.00	74.00	41.58	32.54	Line
12.	26.608	25.64	21.74	19.77	45.41	41.51	87.00	74.00	41.59	32.49	Line

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions (TEL_1000 M) / NVR mode (LAN #3)



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EUT /Model No. : XRP-4110B2

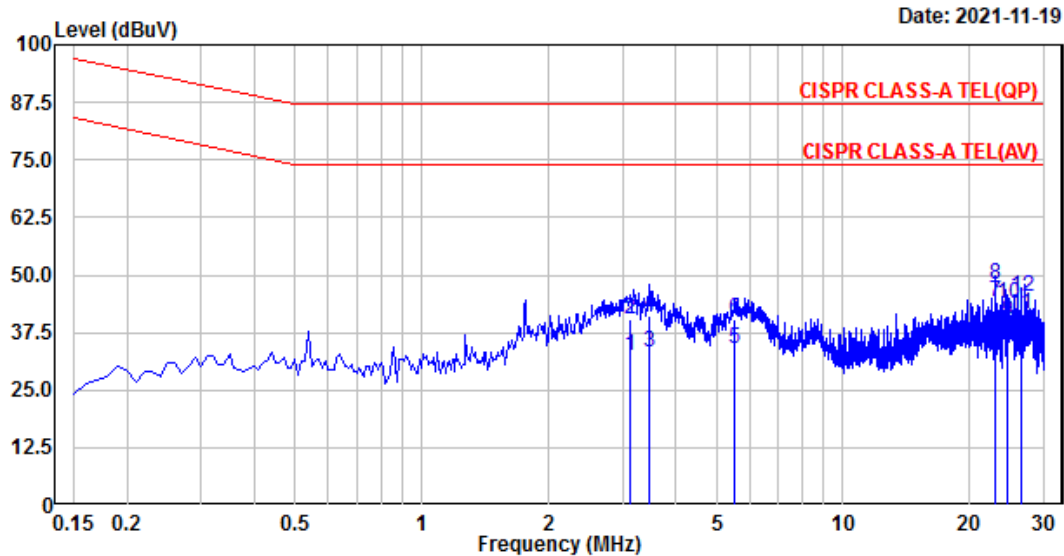
Phase : TEL_1000M

Test Mode : NVR mode (LAN #3)

Test Power : 230 V / 50 Hz

Temp./ Humi. : 21 'C / 41 % R.H.

Test Engineer : CHO J H



No.	Freq MHz	RD QP dBuV	RD AV dBuV	C.F dB	Result QP dBuV	Result AV dBuV	Limit QP dBuV	Limit AV dBuV	Margin QP dB	Margin AV dB	Phase
2.	3.109	21.26	13.31	19.30	40.56	32.61	87.00	74.00	46.44	41.39	Line
4.	3.453	22.01	13.78	19.29	41.30	33.07	87.00	74.00	45.70	40.93	Line
6.	5.503	21.07	14.50	19.32	40.39	33.82	87.00	74.00	46.61	40.18	Line
8.	23.130	28.36	24.61	19.70	48.06	44.31	87.00	74.00	38.94	29.69	Line
10.	24.531	24.14	20.10	19.74	43.88	39.84	87.00	74.00	43.12	34.16	Line
12.	26.487	25.59	21.70	19.77	45.36	41.47	87.00	74.00	41.64	32.53	Line

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

3.2.2 Radiated Emissions

Definition:

The test assesses the ability of ancillary equipment to limit their internal noise from being radiated from the enclosure.

We were performed the test according to LTA procedure LTA-QI-04.

Test method	: EN 55032:2015/A11:2020, BS EN 55032:2015/A11:2020
Measuring Distance	: 10 m below 1 GHz / 3 m above 1 GHz
Measurement Frequency range	: 30 MHz – 6 000 MHz
Measurement RBW	: 120 kHz @ 10 m / 1 MHz @ 3 m
Test Location	: 10 m Chamber
Test mode	: NVR mode
Result	: Complies

Measurement Data:

- Refer to the Next page (Maximum emission configuration)

- The highest internal source of an EUT is higher than 108 MHz, the measurement shall be made up to 6 GHz.

(The highest internal source of an EUT : higher than 108 MHz)

A sample calculation:

COR. F (correction factor)= Antenna factor + Cable loss- Amp.gain- Distance correction

Emission Level= meter reading + COR.F

Limit of 10 m below 1 GHz

CLASS A

Frequency Range	Quasi-peak
(30 – 230) MHz	40 dB μ V/m
(230 – 1 000) MHz	47 dB μ V/m

CLASS B

Frequency Range	Quasi-peak
(30 – 230) MHz	30 dB μ V/m
(230 – 1 000) MHz	37 dB μ V/m

Limit of 3m above 1 GHz

CLASS A

Frequency Range	Average Limit @ 3m (dB μ V/m)	Peak limit @ 3m (dB μ V/m)
(1 000 – 3 000) MHz	56	76
(3 000 – 6 000) MHz	60	80

NOTE: The lower limit applies at the transition frequency.

CLASS B

Frequency Range	Average Limit @ 3m (dB μ V/m)	Peak limit @ 3m (dB μ V/m)
(1 000 – 3 000) MHz	50	70
(3 000 – 6 000) MHz	54	74

NOTE: The lower limit applies at the transition frequency.

Radiated Emissions (Below 1 GHz) / V



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EUT/Model No.: XRP-4110B2

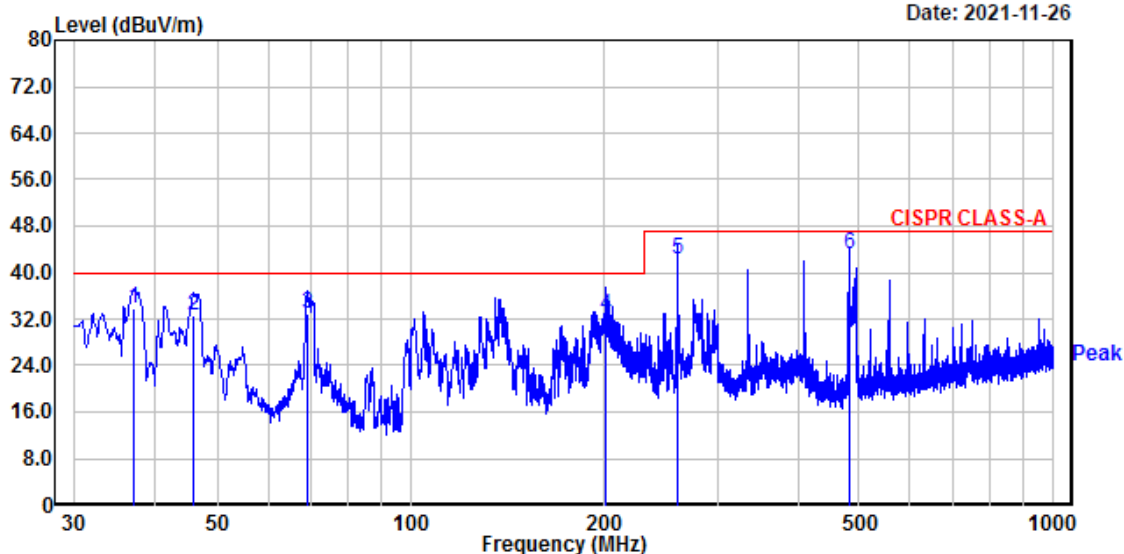
Temp/Humi: 20 'C / 40 % R.H.

Test Mode : NVR mode

Tested by: CHO J H

Power : 230 V / 50 Hz

Date: 2021-11-26



No.	Freq MHz	Reading dBμV	C.F dB	Result QP dBμV/m	Limit dBμV/m	Margin dB	Height cm	Angle deg	Polarity
1.	37.03	46.97	-13.02	33.95	40.00	6.05	135	110	vertical
2.	46.01	44.31	-11.85	32.46	40.00	7.54	127	110	vertical
3.	68.92	46.44	-13.48	32.96	40.00	7.04	114	156	vertical
4.	200.72	46.36	-13.81	32.55	40.00	7.45	103	158	vertical
5.	259.89	53.52	-11.39	42.13	47.00	4.87	102	16	vertical
6.	482.63	46.76	-3.70	43.06	47.00	3.94	103	16	vertical

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) / H



4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

EUT/Model No.: XRP-4110B2

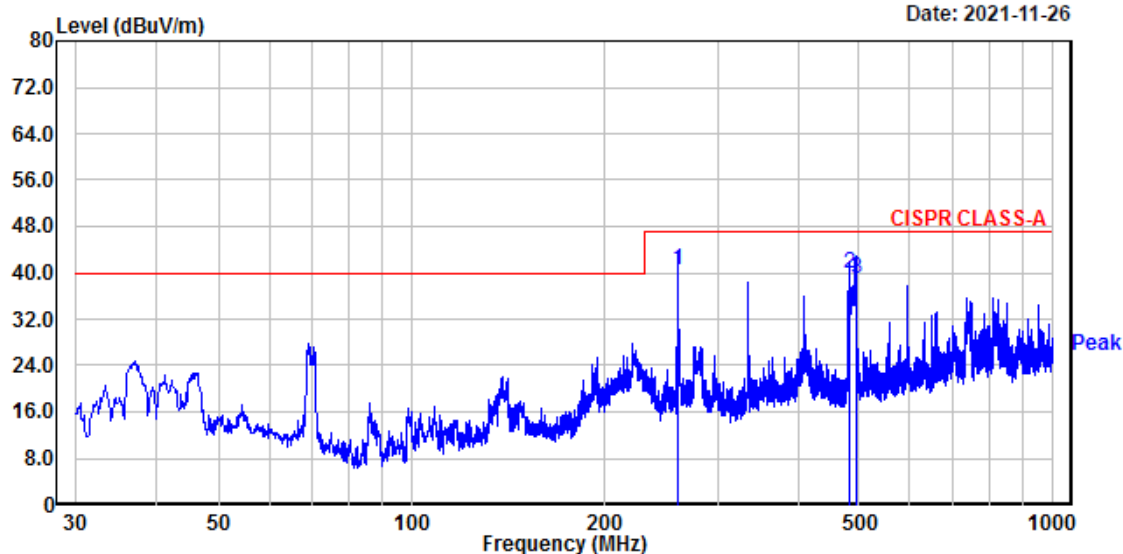
Temp/Humi: 20 'C / 40 % R.H.

Test Mode : NVR mode

Tested by: CHO J H

Power : 230 V / 50 Hz

Date: 2021-11-26



No.	Freq MHz	Reading dBuV	C.F dB	Result QP dBuV/m	Limit dBuV/m	Margin dB	Height cm	Angle deg	Polarity
1.	259.89	51.96	-11.39	40.57	47.00	6.43	135	84	horizontal
2.	482.63	43.42	-3.70	39.72	47.00	7.28	102	177	horizontal
3.	494.27	42.31	-3.37	38.94	47.00	8.06	138	165	horizontal

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions

(Above 1 GHz) / V

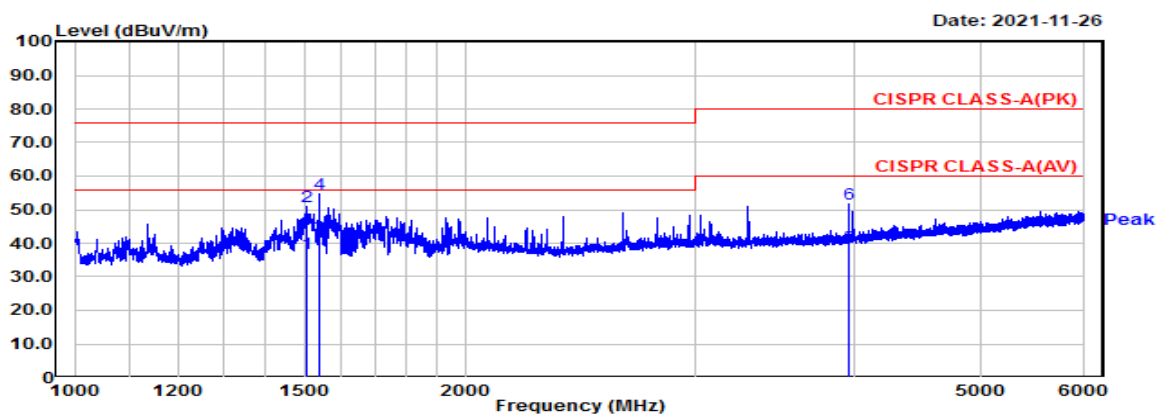
EUT/Model No.: XRP-4110B2

Temp/Humi: 20 °C / 40 % R.H.

Test Mode : NVR mode

Tested by: CHO J H

Power : 230 V / 50 Hz



(Above 1 GHz) / H

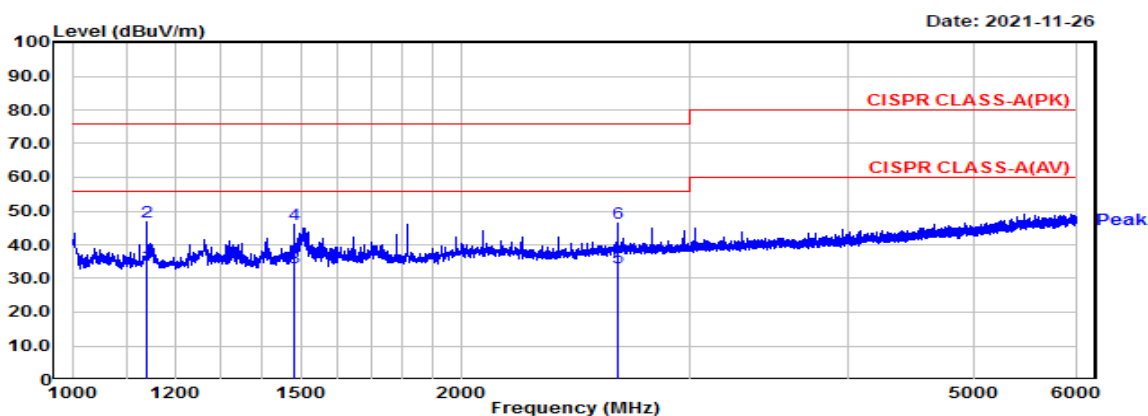
EUT/Model No.: XRP-4110B2

Temp/Humi: 20 °C / 40 % R.H.

Test Mode : NVR mode

Tested by: CHO J H

Power : 230 V / 50 Hz



Manufacture : D-TECH CO.,LTD.

Test Date

Temp.:

Humidity

Distance

Model : XRP-4110B2

2021-11-26

[°C]

: [%]

(m)

TEST mode : NVR mode

Frequency	Reading(PK)	Reading(AV)	C.F	Result(PK)	Result(AV)	Limit(PK)	Limit(AV)	Margin(PK)	Margin(AV)	Height	Angle	Polarity
MHz	dBuV	dBuV	dB	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dB	dB	cm	deg	H/V
1139.38	55.68	42.68	-7.18	48.50	35.50	76.00	56.00	27.50	20.50	100	347	H
1483.13	51.90	38.90	-4.27	47.63	34.63	76.00	56.00	28.37	21.37	100	45	H
2640.63	45.66	32.66	2.30	47.96	34.96	76.00	56.00	28.04	21.04	100	83	H
1505.00	56.64	42.64	-4.13	52.51	38.51	76.00	56.00	23.49	17.49	100	254	V
1539.38	60.52	47.52	-4.18	56.34	43.34	76.00	56.00	19.66	12.66	100	296	V
3960.63	45.85	32.85	7.44	53.29	40.29	80.00	60.00	26.71	19.71	100	162	V

3.2.3 Harmonic Current Emission

Definition:

This part deals with the Limitation of harmonic currents injected into the public supply system.

We were performed the test according to LTA procedure LTA-QI-04.

Test method	: EN 61000-3-2:2014, BS EN 61000-3-2:2014
Test Location	: Shielded Room
Test mode	: NVR mode
Rated power	: 43.794 W
Result	: Not Applicable

Measurement Data:

- We did not test EN61000-3-2 (Harmonic Current Emission) for the XRP-4110B2 because equipment whose rated power is less or equal 75 W don't need to be tested.

Harmonic Current Emission

20th November 2021 - 09:27:38		Page 1/1	IECSoft v2.6
		IEC61000-3-2:2014 Fluctuating Harmonics	
Instrument Details			
Instrument Model	PPA5511		
Serial Number	162-04957		
Firmware Version	2.179		
N4L Calibration Date	18th September 2017		
Instrument Version	Standard		
Test Settings			
Class	Class A		
Mode	NVR		
Equipment Under Test			
Brand	Hanwha Techwin Co., Ltd		
Model	XRP-4110B2		
Serial	N/A		
Impedance Network ID	N/A		
Test Conditions			
	User Entered	Measured	
Rated Voltage	N/A	229.925V	
Rated Current	N/A	402.985mA	
Rated Frequency	N/A	50.000Hz	
Rated Power	N/A	43.794W	
Additional Test Information			
Measured Power Factor	0.4726		
Max Current THD	128.90%		
Average THC	273.158mA		
Max Power	47.835W		
Max F.Current	234.214mA		
Average F.Current	219.495mA		
Minimum Current	100A		
Test Duration	2.5 minutes		
Additional Test Details			
Operator	CHO J H		
Lab Name	N/A		
Location	N/A		
Notes	23 °C, 41 % R.H.		
Signature			
Results	Test - N/A. Invalid DUT		

Test not applicable

With the exception of lighting equipment section 7 of the IEC61000-3-2:2014 standard declares that no Harmonic current limits are specified for equipment with a rated power of 75W or less.

3.2.4 Voltage Fluctuations and Flicker

Definition:

This section is concerned with the limitation of voltage fluctuations and flicker impressed on the public low-voltage system.

We were performed the test according to LTA procedure LTA-QI-04.

Test method	: EN 61000-3-3:2013, BS EN 61000-3-3:2013
Test Location	: Shielded Room
Test mode	: NVR mode
Result	: Complies

Measurement Data:

- Refer to the Next page

Voltage Fluctuations and Flicker

20th November 2021 - 09:43:03		Page 1/2	IECSoft v2_6
		IEC61000-3-3:2013 Ed.3.0 Flickermeter	
Instrument Details			
Instrument Model	PPA5511		
Serial Number	162-04957		
Firmware Version	2.179		
N4L Calibration Date	18th September 2017		
Instrument Version	Standard		
Test Settings			
Class	Voltage		
Mode	NVR (4.0%)		
Minimum Current	10A		
PST	10 minutes		
PLT	12 PSTs		
Equipment Under Test			
Brand	Hanwha Techwin Co., Ltd		
Model	XRP-4110B2		
Serial	N/A		
Impedance Network ID	N/A		
Test Conditions			
	User Entered	Measured	
Rated Voltage	N/A	229.933V	
Rated Current	N/A	N/A	
Rated Frequency	N/A	50.000Hz	
Rated Power	N/A	N/A	
D max	0.1401% (Limit: 4.0%)		
T max	0.0000 s (Limit: 0.5 s)		
DC max	0.0019% (Limit: 3.3%)		
Additional Test Details			
Operator	CHO J H		
Lab Name	N/A		
Location	N/A		
Notes	23 °C, 41 % R.H.		
Signature			
Results	Phase1: PASS		

20th November 2021 - 09:43:03			Ph:1 Page 2/2			IECSoft v2_6		
IEC61000-3-3:2013 Ed.3.0 Flickermeter								
Instrument Details								
Instrument Model		PPA5511						
Instrument Serial		162-04957						
Instrument Firmware		2.179						
Equipment Under Test								
Brand		Hanwha Techwin Co., Ltd						
Model		XRP-4110B2						
Serial		N/A						
Flicker Test Results								
PST no.	Status	DC (%)	Dmax (%)	Tmax (s)	PST	PST Lim	PLT	PLT Lim
1	Phase1: PASS	0.00190	0.12093	0.00000	0.10087	1.00000	0.10087	N/A
2	Phase1: PASS	0.00190	0.12434	0.00000	0.09635	1.00000	0.09866	N/A
3	Phase1: PASS	0.00190	0.12936	0.00000	0.09901	1.00000	0.09878	N/A
4	Phase1: PASS	0.00190	0.12936	0.00000	0.09753	1.00000	0.09847	N/A
5	Phase1: PASS	0.00190	0.12936	0.00000	0.09715	1.00000	0.09821	N/A
6	Phase1: PASS	0.00190	0.13899	0.00000	0.10234	1.00000	0.09892	N/A
7	Phase1: PASS	0.00190	0.13899	0.00000	0.10003	1.00000	0.09908	N/A
8	Phase1: PASS	0.00190	0.13899	0.00000	0.09463	1.00000	0.09855	N/A
9	Phase1: PASS	0.00190	0.13899	0.00000	0.08751	1.00000	0.09744	N/A
10	Phase1: PASS	0.00190	0.14008	0.00000	0.09072	1.00000	0.09681	N/A
11	Phase1: PASS	0.00190	0.14008	0.00000	0.09181	1.00000	0.09638	N/A
12	Phase1: PASS	0.00190	0.14008	0.00000	0.08617	1.00000	0.09561	0.65000

3.3 IMMUNITY

3.3.1 Electrostatic Discharge

Definition:

The test assesses the ability of the EUT to operate as intended in the event of an electrostatic discharge.

We were performed the test according to LTA procedure LTA-QI-04.

Test date	: 2021. 11. 12.
Test method	: EN 61000-4-2:2009, BS EN 61000-4-2:2009
Temperature / Humidity / Pressure	: 23 °C / 39 % R.H. / 100 kPa
Discharge Impedance	: $(330 \pm 10 \%) \Omega$ / $(150 \pm 10 \%) \text{ pF}$
Type of Discharge (air discharge)	: $\pm 2 \text{ kV}$, $\pm 4 \text{ kV}$, $\pm 8 \text{ kV}$
Type of Discharge (contact discharge)	: $\pm 6 \text{ kV}$
Number of discharges at each point	: 10 of each polarity
Discharge Repetition on Rate	: 1 / sec
Test Location	: Shielded Room
Test mode	: NVR mode
Result	: Complies

Measurement Data:
ESD Test Point and Result
1-1. Indirect Discharge

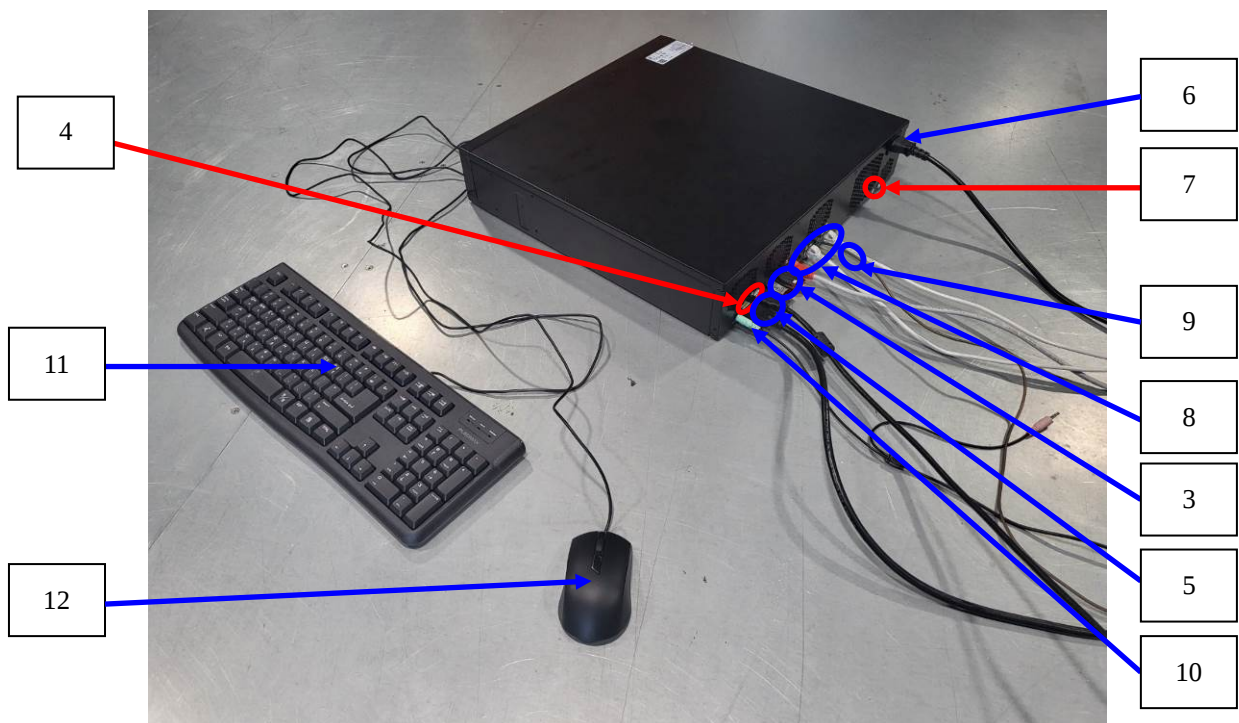
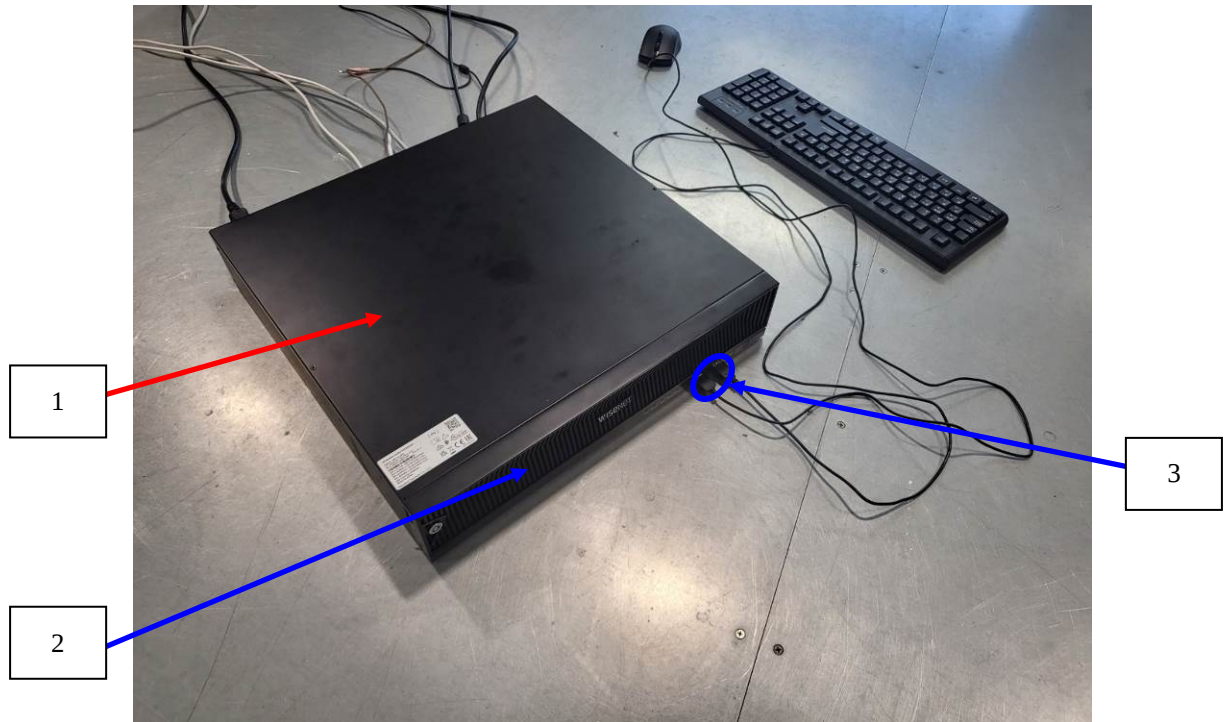
No.	Position	Kind of Discharge	Results	Remarks
1	HCP	Contact	Complies	No reaction recognized
2	VCP	Contact	Complies	No reaction recognized

1-2. Direct Discharge

No.	Position	Kind of Discharge	Result	Remarks
1	Enclosure #1	Contact	Complies	No reaction recognized
2	Enclosure #2	Air	Complies	No reaction recognized
3	USB	Air	Complies	No reaction recognized
4	HDMI #1	Contact	Complies	No reaction recognized
5	HDMI #2	Air	Complies	No reaction recognized
6	AC IN	Air	Complies	No reaction recognized
7	Screw	Contact	Complies	No reaction recognized
8	LAN	Air	Complies	No reaction recognized
9	GND	Air	Complies	No reaction recognized
10	AUDIO OUT	Air	Complies	No reaction recognized
11	Keyboard	Air	Complies	No reaction recognized
12	Mouse	Air	Complies	No reaction recognized

ESD TEST POINT

[Air discharge]
[Contact discharge]



3.3.2 RF Electromagnetic Field

Definition:

The test assesses the ability of the EUT to operate as intended in the presence of a radio frequency electromagnetic field disturbance.

We were performed the test according to LTA procedure LTA-QI-04.

Test date	: 2021. 11. 23.
Test method	: EN 61000-4-3:2006/A1:2008/A2:2010, BS EN 61000-4-3:2006/A1:2008/A2:2010
Temperature / Humidity / Pressure	: 24 °C / 42 % R.H. / 100 kPa
Frequency range	: 80 MHz to 2,700 MHz
Test level	: 10 V/m (measured unmodulated)
Amplitude Modulation	: AM, 80 %, 1 kHz Sinusoidal PM, 1 Hz (0.5s ON : 0.5s OFF)
Step size	: 1 % of fundamental
Dwell Time	: 3 s
Test Location	: 3 m Chamber
Test mode	: NVR mode
Result	: Complies

Measurement Data:

Port	Side	Result	Remarks
Horizontal	Front	Complies	No reaction recognized
	Left	Complies	No reaction recognized
	Rear	Complies	No reaction recognized
	Right	Complies	No reaction recognized
Vertical	Front	Complies	No reaction recognized
	Left	Complies	No reaction recognized
	Rear	Complies	No reaction recognized
	Right	Complies	No reaction recognized

3.3.3 Electrical Fast Transients

Definition:

The test assesses the ability of the EUT to operate as intended in the event of fast transients presence on one of the input/output ports.

We were performed the test according to LTA procedure LTA-QI-04.

Test date	: 2021. 11. 24.
Test method	: EN 61000-4-4:2012, BS EN 61000-4-4:2012
Temperature / Humidity / Pressure	: 23 °C / 41 % R.H. / 100 kPa
Cable length	: > 3 m
Test level	: 2.0 kV (AC power input port) 1.0 kV (Signal port)
Polarity	: Negative/ positive
Repetition frequency	: 100 kHz
Test Location	: Shielded Room
Test mode	: NVR mode
Result	: Complies

Measurement Data:

Power Line	Test level	Result	Remarks
L – N – PE	±2 kV	Complies	No reaction recognized

Signal Line	Test level	Result	Remarks
LAN #1	±1 kV	Complies	No reaction recognized
LAN #2	±1 kV	Complies	No reaction recognized
LAN #3	±1 kV	Complies	No reaction recognized

3.3.4 Surges

Definition:

The test assesses the ability of the EUT to operate as intended in the event of surge presence on the AC main power input ports.

We were performed the test according to LTA procedure LTA-QI-04.

Test date	: 2021. 11. 17.
Test method	: EN 61000-4-5:2014/A1:2017, BS EN 61000-4-5:2014/A1:2017
Temperature / Humidity / Pressure	: 22 °C / 40 % R.H. / 100 kPa
Test level	: ± 0.5 kV, ± 1 kV (line to line) ± 0.5 kV, ± 1 kV, ± 2 kV (line to ground), ± 0.5 kV, ± 1 kV (signal line)
Polarity	: Negative/ positive
Wave shape	: 1.2/ 50 μ s pulse
Number of surges	: 5 (at each phase)
Test Location	: Shielded Room
Test mode	: NVR mode
Result	: Complies

Measurement Data:

Phase	Line	level	Result	Remark
0°	Line(L) to Line(N)	$\pm(0.5, 1.0)$ kV	Complies	No reaction recognized
	Line(L) to ground(PE)	$\pm(0.5, 1.0, 2.0)$ kV	Complies	No reaction recognized
	Line(N) to ground(PE)	$\pm(0.5, 1.0, 2.0)$ kV	Complies	No reaction recognized
90°	Line(L) to Line(N)	$\pm(0.5, 1.0)$ kV	Complies	No reaction recognized
	Line(L) to ground(PE)	$\pm(0.5, 1.0, 2.0)$ kV	Complies	No reaction recognized
	Line(N) to ground(PE)	$\pm(0.5, 1.0, 2.0)$ kV	Complies	No reaction recognized
180°	Line(L) to Line(N)	$\pm(0.5, 1.0)$ kV	Complies	No reaction recognized
	Line(L) to ground(PE)	$\pm(0.5, 1.0, 2.0)$ kV	Complies	No reaction recognized
	Line(N) to ground(PE)	$\pm(0.5, 1.0, 2.0)$ kV	Complies	No reaction recognized
270°	Line(L) to Line(N)	$\pm(0.5, 1.0)$ kV	Complies	No reaction recognized
	Line(L) to ground(PE)	$\pm(0.5, 1.0, 2.0)$ kV	Complies	No reaction recognized
	Line(N) to ground(PE)	$\pm(0.5, 1.0, 2.0)$ kV	Complies	No reaction recognized

Signal Line	level	Result	Remark
LAN #1	$\pm(0.5, 1.0)$ kV	Complies	No reaction recognized
LAN #2	$\pm(0.5, 1.0)$ kV	Complies	No reaction recognized
LAN #3	$\pm(0.5, 1.0)$ kV	Complies	No reaction recognized

3.3.5 Conducted Disturbances, Induced by Radio-Frequency Fields

Definition:

The test assesses the ability of the EUT to operate as intended in the presence of a radio frequency electromagnetic disturbance on the input/output ports.

We were performed the test according to LTA procedure LTA-QI-04.

Test date	: 2021. 11. 12.
Test method	: EN 61000-4-6:2014/AC:2015, BS EN 61000-4-6:2014/AC:2015
Temperature / Humidity / Pressure	: 24 °C / 41 % R.H. / 100 kPa
Frequency range	: 0.15 MHz – 100 MHz
Test level	: 10 Vrms unmodulated
Amplitude Modulation	: AM, 80 %, 1 kHz Sinusoidal PM, 1 Hz (0.5s ON : 0.5s OFF)
Step size	: 1 % of fundamental.
Test Location	: Shielded Room
Test mode	: NVR mode
Result	: Complies

Measurement Data:

Power Port	Result	Remarks
Power	Complies	No reaction recognized

Signal Port	Result	Remarks
LAN #1	Complies	No reaction recognized
LAN #2	Complies	No reaction recognized
LAN #3	Complies	No reaction recognized

3.3.6 Voltage dips and Interruptions

Definition:

The test assesses the ability of the EUT to operate as intended in the event of voltage dips and interruptions present on the AC mains power input ports.

We were performed the test according to LTA procedure LTA-QI-04.

Test date	: 2021. 11. 24.
Test method	: EN 61000-4-11:2004/A1:2017, BS EN 61000-4-11:2004/A1:2017
Temperature / Humidity / Pressure	: 24 °C / 43 % R.H. / 100 kPa
Ut	: 230 Vac
Test Location	: Shielded Room
Test mode	: NVR mode
Result	: Complies

Measurement Data:

Test Level %Ut	Voltage droop and interruptions %Ut	Duration of Reduction (period)	Result	Remarks
80	20	250	Complies	No reaction recognized
70	30	25	Complies	No reaction recognized
40	60	10	Complies	No reaction recognized
0	100	250	Complies	EUT was turned off during the test. Re-operation by user's control. After the test, EUT was normally operated.

3.3.7 Mains supply voltage variations

Definition:

The test assesses the ability of the EUT to operate as intended in the event of voltage variations present on the AC mains power input ports.

We were performed the test according to LTA procedure LTA-QI-04.

Test date	: 2021. 11. 24.
Test method	: EN 61000-4-11:2004/A1:2017, BS EN 61000-4-11:2004/A1:2017
Temperature / Humidity / Pressure	: 24 °C / 43 % R.H. / 100 kPa
Supply Voltage maximum	: $U_{nom} + 10 \%$
Supply Voltage minimum	: $U_{nom} - 15 \%$
Ut	: 230 Vac
Test Location	: Shielded Room
Test mode	: NVR mode
Result	: Complies

Measurement Data:

U_{nom} = Nominal mains voltage. Where provision is made to adapt the equipment to suit a number of nominal supply voltages (e.g. by transformer tap changing), the above conditioning severity shall be applied for each nominal voltage, with the equipment suitably adapted. For equipment which is claimed to be suitable for a range of nominal mains voltages (e.g. 220/240 V) without adaptation, $U_{max} = (\text{Maximum } U_{nom}) + 10 \%$, and $U_{min} = (\text{Minimum } U_{nom}) - 15 \%$. In any case the range of U_{nom} must include the European nominal mains voltage of 230 V.

Mains supply voltage variations

Test LevelCondition		Test Level (V)	Result	Remarks
U_{nom}	+10%	253	Complies	No reaction recognized
U_{nom}	-15%	195.5	Complies	No reaction recognized

APPENDIX A

TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment are identified by the Test Laboratory.

Conducted Emissions

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	EMI TEST Receiver	ESR	Rohde & Schwarz	101499	2022.06.10	1 year
☒	Pulse Limiter	ESH3-Z2	Rohde & Schwarz	100710	2022.03.15	1 year
☐	ISN	ISN T800	TESEQ	27109	2022.09.06	1 year
☒	ISN	ENY81-CA6	Rohde & Schwarz	101565	2022.09.06	1 year
☐	ISN	ISN S8	Schwarzbeck	79	2022.09.02	1 year
☐	CURRENT PROBE	EZ-17	Rohde & Schwarz	100508	2022.09.02	1 year
☐	CDN	TSCDN-C1-BNC-75	F.C.C	07004	2022.03.31	1 year
☐	LISN	ESH3-Z6	Rohde & Schwarz	100378	2022.09.02	1 year
☐	LISN	ESH3-Z6	Rohde & Schwarz	101468	2022.09.02	1 year
☒	LISN(main)	ENV216	Rohde & Schwarz	100408	2022.09.02	1 year
☒	LISN(sub)	LT32C/10	AFJ	32031518210	2022.09.02	1 year
☒	TEST PROGRAM	e3_ce 20181212a (V9)	AUDIX	-	-	-

Radiated Emissions – Below 1 GHz

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	EMI TEST Receiver	ESU	Rohde & Schwarz	100092	2022.09.02	1 year
☒	Amplifier	8447D	HP	2949A02670	2022.11.18	1 year
☒	BILOG Antenna	VULB 9168	SCHWARZBECK	775	2023.03.22	2 year
☒	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

Radiated Emissions – Above 1 GHz

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	EMI TEST Receiver	ESU	Rohde & Schwarz	100092	2022.09.02	1 year
☒	Amplifier	8449B	Agilent	3008A02126	2022.03.15	1 year
☐	Amplifier	PAM-840A	COM-POWER	461314	2022.03.16	1 year
☐	HORN ANTENNA	3116B	ETS	133350	2022.05.12	1 year
☐	HORN ANTENNA	3116B	ETS	81109	2022.05.12	1 year
☒	HORN ANTENNA	3115	ETS	114105	2023.05.12	2 year
☒	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

Harmonic Current Emission / Voltage Fluctuations and Flicker

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	Precision Power Analyzer	PPA5511	Newtons4th Ltd	162-04957	2022.09.06	1 year
☒	Reference Impedance Network	ES4152	NF Corp.	9074424	2022.09.14	1 year

Electrostatic Discharge

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	ESD Simulator	ESS-2000	NOISEKEN	8000C03241	2022.09.09	1 year
☒	ESD GUN	TC-815R	NOISEKEN	ESS0382069	2022.09.09	1 year

RF Electromagnetic Field

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	Signal Generator	E4432B	Agilent	MY41310673	2022.09.02	1 year
☒	Power Meter	E4419B	Agilent	GB38410133	2022.03.16	1 year
☒	Power Sensor	E9300A	Agilent	MY41497992	2022.03.16	1 year
☒	Power Sensor	E9300A	Agilent	MY41497618	2022.03.16	1 year
☒	WIDE BAND HIGH POWER AMPLIFIER	ITA0300KL-500	INFINITECH	0300KL 20 09 001	-	-
☒	RF POWER AMPLIFIER	ITA2000KL-120	INFINITECH	200KL 1507 001	-	-
☒	RF POWER AMPLIFIER	ITA4500KL-70	INFINITECH	4500KL 1507 001	-	-
☒	RF POWER AMPLIFIER	ITA0750KL-300	INFINITECH	0750KL 1507 001	-	-
☒	Log.-Per.Antenna (80 MHz ~ 3 GHz)	K9128	RAPA	NONE	-	-

Electrical Fast Transients

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	Compact Generator	Compact NX	EMTEST	P1725200196	2022.09.02	1 year
☒	AC Power Source	Variac NX	EMTEST	P1745207276	2022.09.02	1 year
☒	Capacitive Coupling Clamp	CCI	EMTEST	P1744207071	2022.09.02	1 year

Surges

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	Compact Generator	Compact NX	EMTEST	P1725200196	2022.09.02	1 year
☒	AC Power Source	Variac NX	EMTEST	P1745207276	2022.09.02	1 year
☒	CDN	CNV 508T5	EMTEST	P1742204978	2022.09.03	1 year
☐	CDN	CNV 508N1	EMTEST	P1742204940	2022.09.03	1 year

Conducted Disturbances, Induced by Radio-Frequency Fields

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	Signal generator	SML03	R&S	103026/0013	2022.03.16	1 year
☒	POWER METER	NRVD	R&S	101689	2022.03.16	1 year
☒	POWER Sensor	URV5-Z2	R&S	100755	2022.03.16	1 year
☒	POWER Sensor	URV5-Z2	R&S	100756	2022.03.16	1 year
☒	RF Power Amplifier	FLL75A	FRANKONIA	1033	-	-
☒	EM INJECTION CLAMP	TSIC-23	F.C.C	529	2022.03.16	1 year
☒	CDN (M1)	TSCDN-M1-16A	F.C.C	07004	2022.09.02	1 year
☐	CDN (M2)	TSCDN-M2-16A	F.C.C	07008	2022.09.02	1 year
☐	CDN (M2)	TSCDN-M2-16A	F.C.C	07009	2022.03.15	1 year
☒	CDN (M3)	TSCDN-M3-16A	F.C.C	07016	2022.03.15	1 year
☒	CDN (M3)	TSCDN-M3-16A	F.C.C	07017	2022.09.02	1 year

Voltage dips and Interruptions

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	Compact Generator	Compact NX	EMTEST	P1725200196	2022.09.02	1 year
☒	AC Power Source	Variac NX	EMTEST	P1745207276	2022.09.02	1 year

Mains supply voltage variations

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	Compact Generator	Compact NX	EMTEST	P1725200196	2022.09.02	1 year
☒	AC Power Source	Variac NX	EMTEST	P1745207276	2022.09.02	1 year

APPENDIX B

PERFORMANCE CRITERIA

Performance criteria

The variety and the diversity of the apparatus within the scope of this document makes it difficult to define precise criteria for the evaluation of the immunity test results.

If as a result of the application of the tests defined in this standard, the apparatus becomes dangerous or unsafe then the apparatus shall be deemed to have failed the test.

A functional description and a definition of performance by the manufacture and noted in the test report, based on the following criteria:

Electrostatic discharge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test (see Clause 6), after the conditioning.

Radiated electromagnetic fields

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change, and no such flickering of indicators occurs at a field strength of 3 V/m.

For components of CCTV systems, where the status is monitored by observing the TV picture, then deterioration of the picture is allowed at 10 V/m, providing.

(a) there is no permanent damage or change to the EUT

(e.g. no corruption of memory or changes to programmable setting etc.)

(b) at 3 V/m, any deterioration of the picture is so minor that the system could still be used; and

(c) there is no observable deterioration of the picture at 1 V/m.

The EUT shall meet the acceptance criteria for the functional test(see Clause 6), after the conditioning.

Fast transient burst

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of the bursts is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test (see Clause 6), after the conditioning.

Slow high energy voltage surge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of the surges is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test (see Clause 6), after the conditioning.

Conducted RF immunity

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change, and no such flickering of indicators occurs at $U_0 = 130 \text{ dB}\mu\text{V}$.

For components of CCTV systems, where the status is monitored by observing the TV picture, then deterioration of the picture is allowed at $U_0 = 140 \text{ dB}\mu\text{V}$, providing

(a) there is no permanent damage or change to the EUT

(e.g. no corruption of memory or changes to programmable settings, etc.)

(b) at $U_0 = 130 \text{ dB}\mu\text{V}$, any deterioration of the picture is so minor that the system could still be used, and

(c) there is no observable deterioration of the picture at $U_0 = 120 \text{ dB}\mu\text{V}$.

The EUT shall meet the acceptance criteria for the functional test(see Clause 6), after the conditioning.

Voltage dip/interruption

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test(see Clause 6), after the conditioning.

It is permitted to use ancillary equipment (e.g. A UPS) to meet the requirements of this clause. This shall be detailed in the test report and the manufacturer's installation manual.

Signaling a mains fault during the 100 % voltage reduction test is permitted.

Mains supply voltage variations

There shall be no damage, malfunction or change of status due to the different supply voltage conditions. The EUT shall meet the acceptance criteria for the functional test(see Clause 6), during the conditioning.

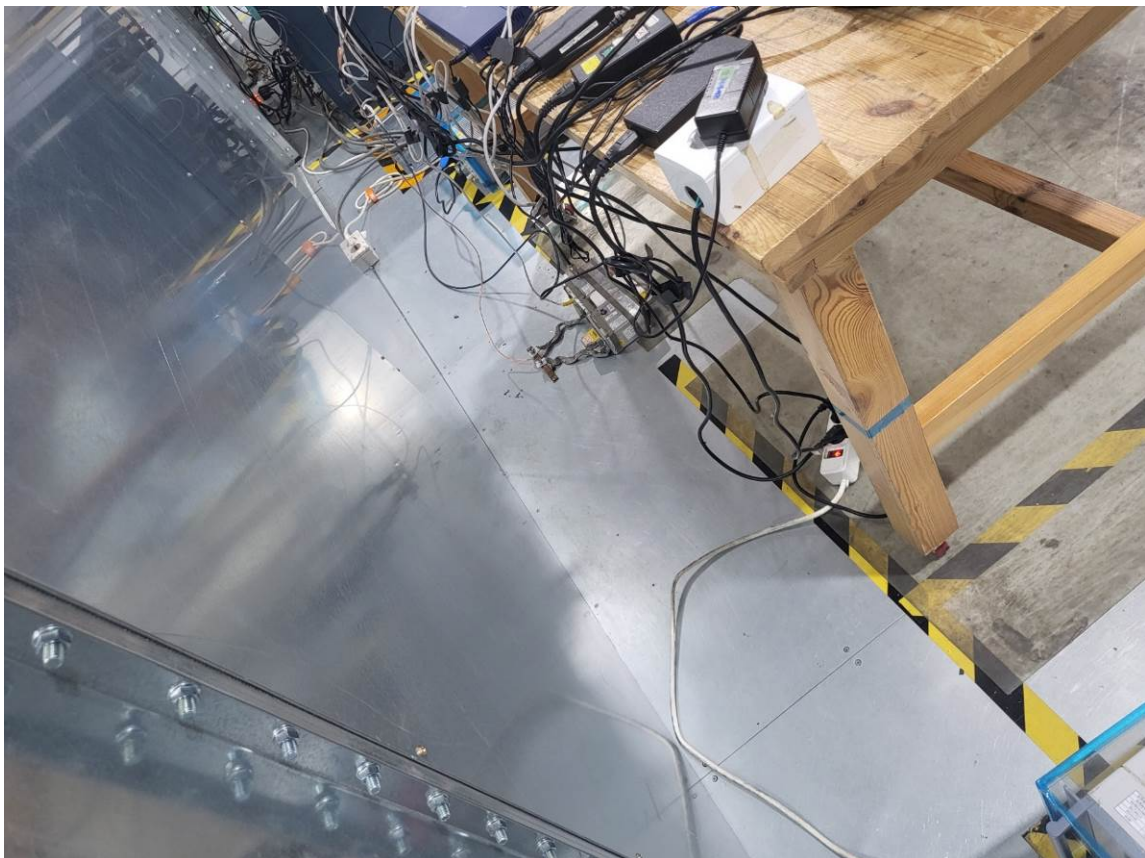
APPENDIX C

PHOTOGRAPHS

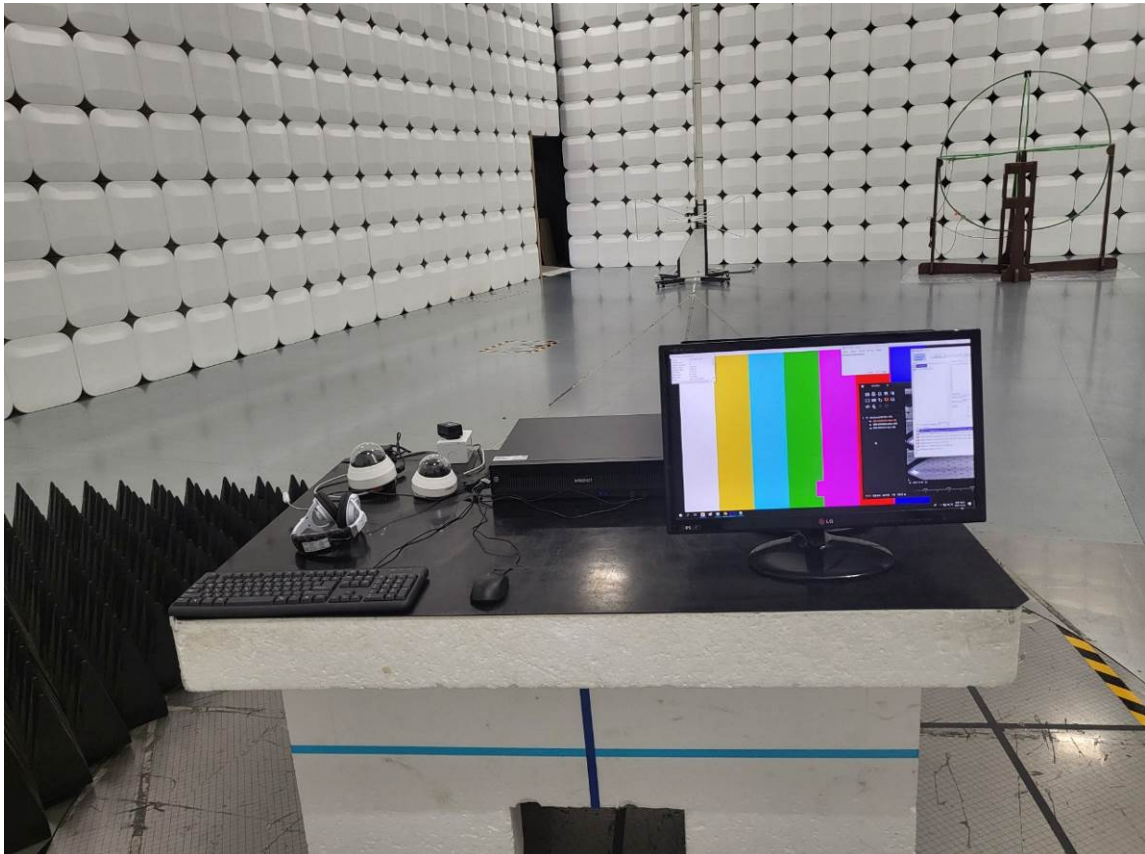
Conducted Emissions



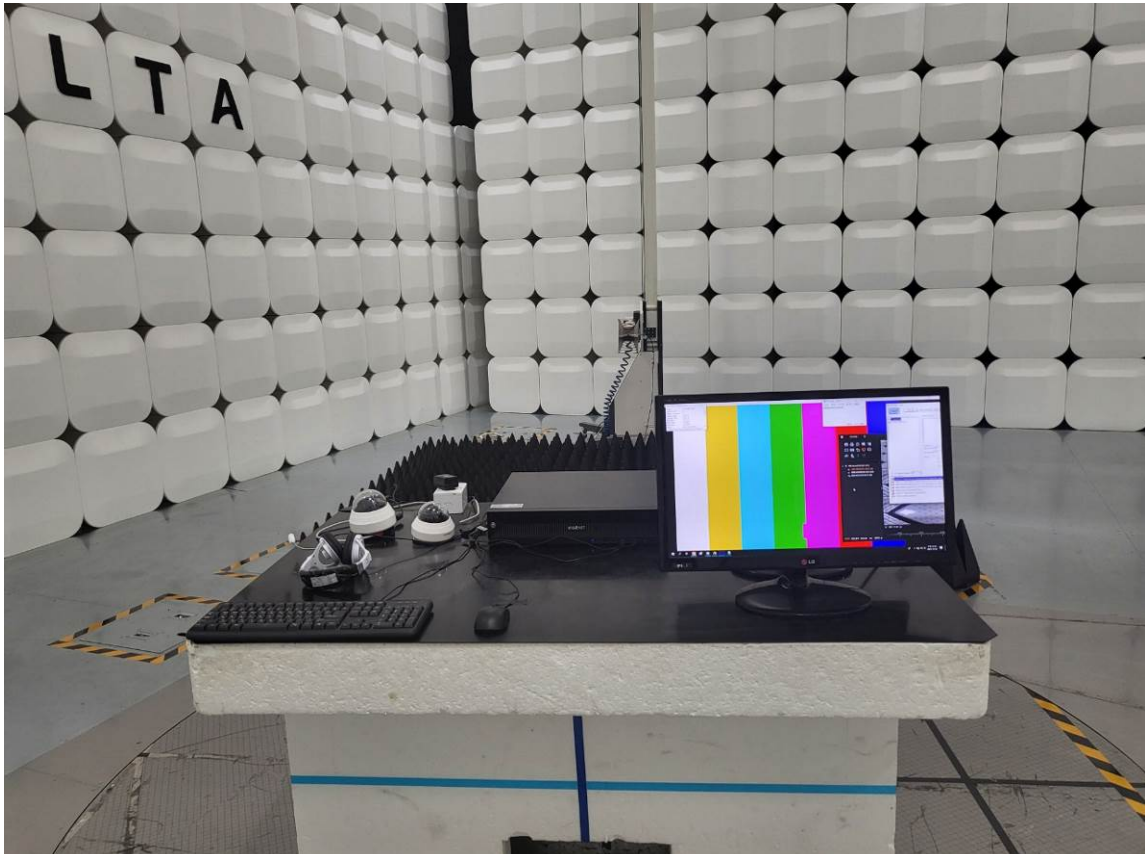
Conducted Emissions (TEL)



Radiated Emissions - Below 1 GHz



Radiated Emissions - Above 1GHz



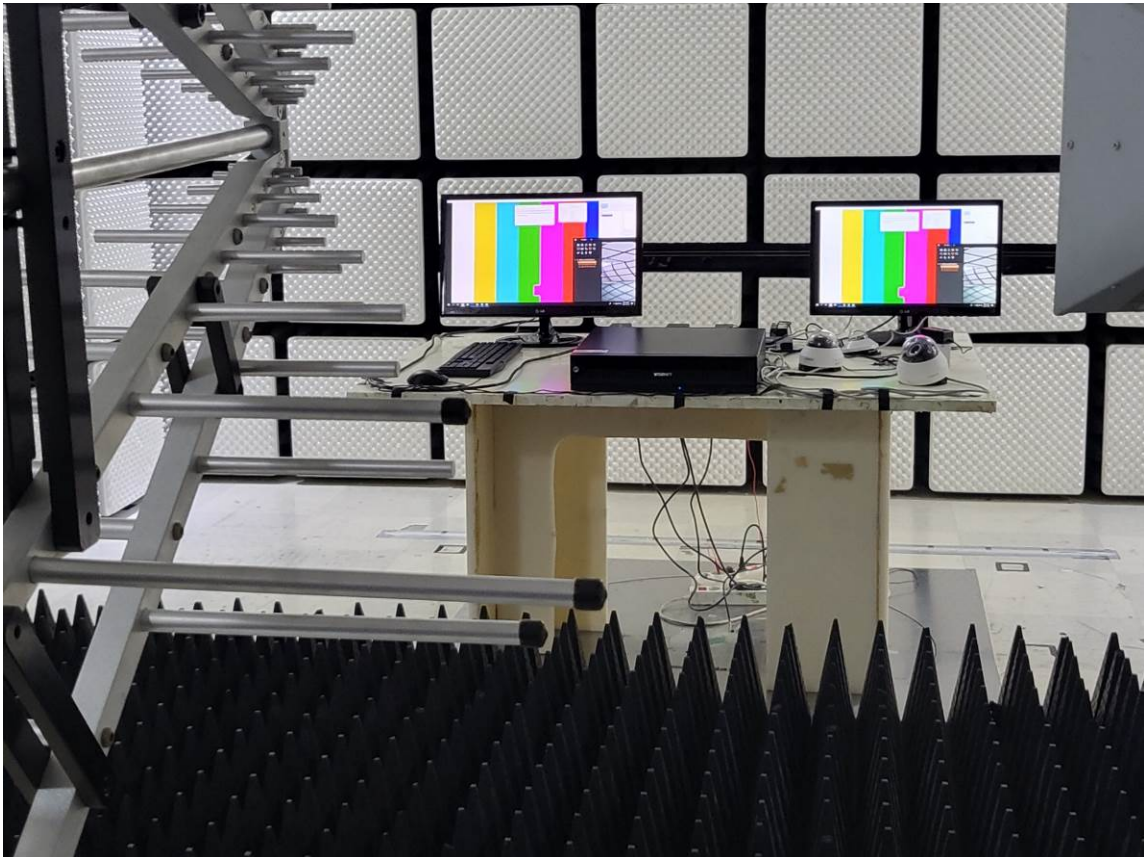
Harmonic Current Emission / Voltage Fluctuations and Flicker



Electrostatic Discharge



RF Electromagnetic Field



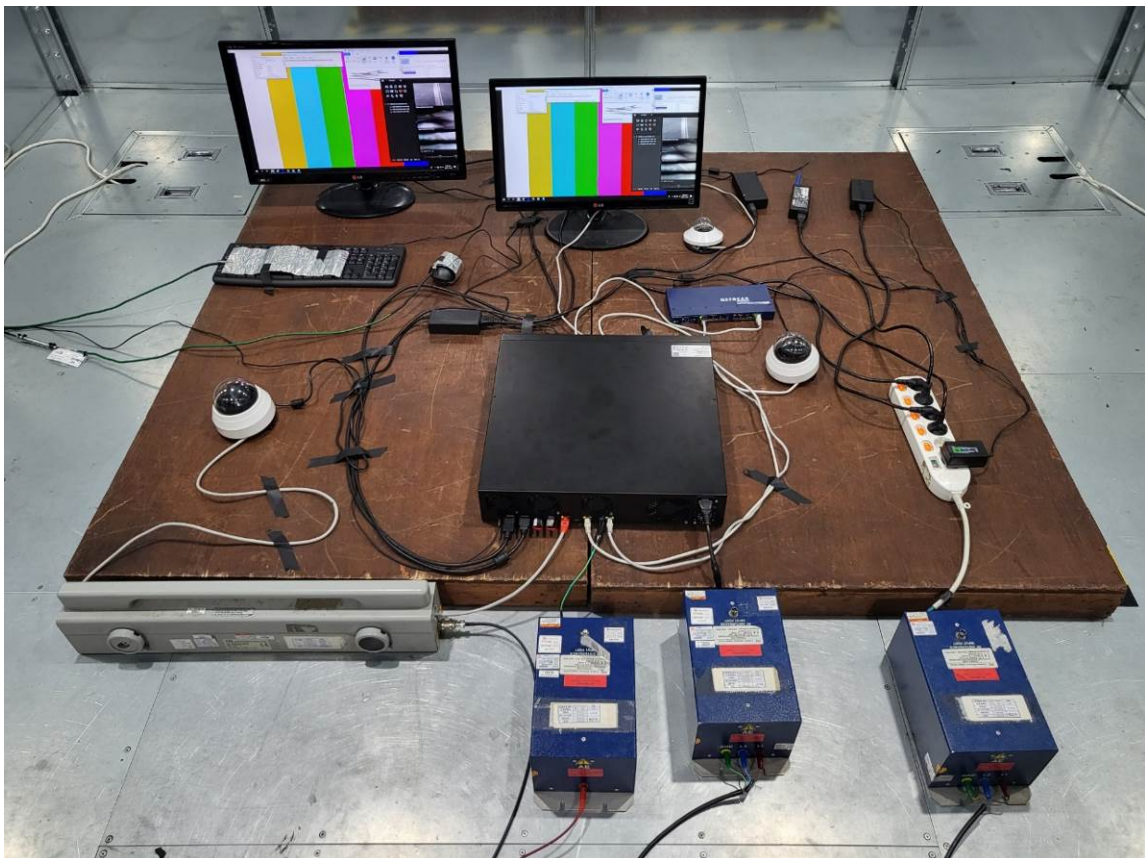
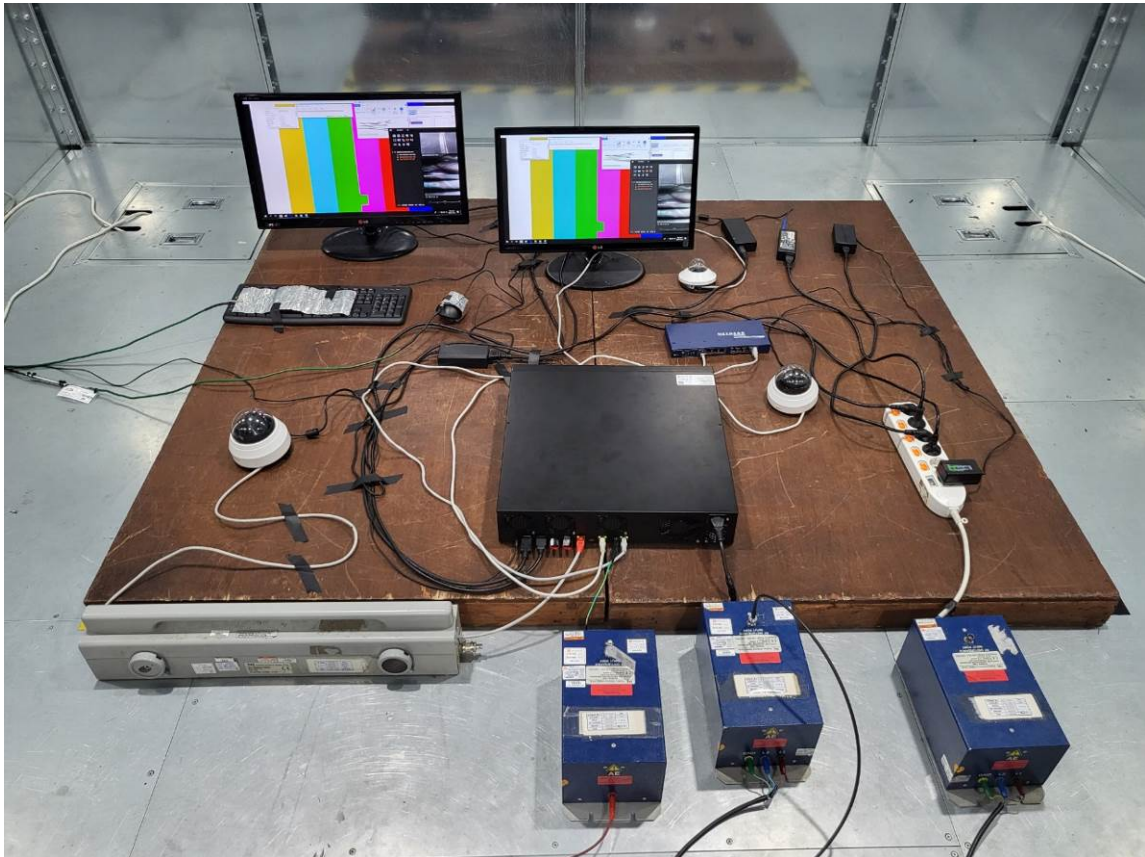
Electrical Fast Transients



Surges



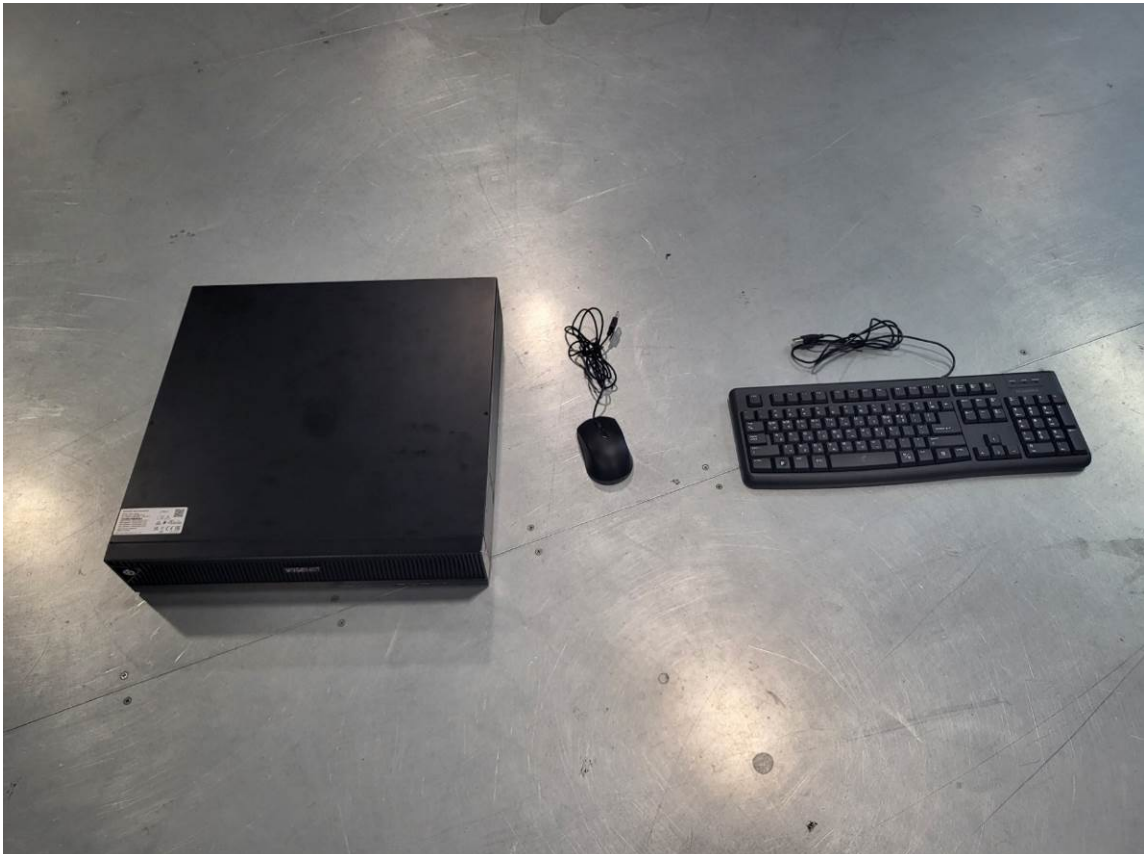
Conducted Disturbances, Induced by Radio-Frequency Fields



Main supply voltage (dips, variations) short interruptions



EUT



EUT

