



4, Songju-ro 236beon-gil, Yangji-myeon, Cheoin-gu, Yongin-si, Gyeonggi-do,
17159, Korea

Tel: +82-31-323-6008 Fax: +82-31-323-6010

<http://www.ltalab.com>

EMC TEST REPORT

Dates of Tests: July 01 – 05, 2022

Test Report S/N: LR500122302J

Test Site : LTA Co., Ltd.

Model No.

PRN-3210B2

APPLICANT

Hanwha Vision Co., Ltd

Equipment Name : NVR
 Manufacturer : Hanwha Vision Co., Ltd
 Model Name : PRN-3210B2
 Additional Model Name : PRN-1610B2, PRN-3200B2, PRN-3205B2,
 PRN-1600B2, PRN-1605B2
 Test Device Serial No.: Identification
 Directive : Electromagnetic Compatibility Directive 2014/30/EU,
 Regulations 2016/1091
 Rule Part(s) : EN 55032:2015/A11:2020
 EN 50130-4:2011/A1:2014
 EN 61000-3-2:2014
 EN 61000-3-3:2013
 Data of reissue : February 21, 2023

This test report is issued under the authority of:

The test was supervised by:

Young Kyu Shin, Technical Manager

Hyun Young Ahn, 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.

NVLAP[®]
 TESTING NVLAP LAB CODE 200723-0

Revision history

Revision	Date of issue	Test report No.	Description
0	11.01.2021	LR500122101G	Initial
1	26.05.2021	LR500122105X	Add Additional Models (PRN-3200B2, PRN-3205B2, PRN-1600B2, PRN-1605B2)
2	16.12.2021	LR500122112R	Change the PCB. (using with the PCB that has not changed)
3	11.07.2022	LR500122207G	change the PCB. (using with the PCB that has not changed)
4	21.02.2023	LR500122302J	Change company name and manufacturer name



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.....	19
3.2.3 Harmonic Current Emission	24
3.2.4 Voltage Fluctuations and Flicker	31
3.3 IMMUNITY	34
3.3.1 Electrostatic Discharge	34
3.3.2 RF Electromagnetic Field	38
3.3.3 Electrical Fast Transients.....	39
3.3.4 Surges.....	40
3.3.5 Conducted Disturbances, Induced by Radio-Frequency Fields.....	42
3.3.6 Voltage dips and Interruptions	43
3.3.7 Mains supply voltage variations	44
APPENDIX A TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS.....	45
APPENDIX B PERFORMANCE CRITERIA	49
APPENDIX C PHOTOGRAPHS	52

1. General information's

1-1 Test Performed

Company name : **LTA Co., Ltd**
 Address : 4, Songju-ro 236beon-gil, Yangji-myeon, Cheoin-gu, Yongin-si, Gyeonggi-do, 17159, Korea
 Web site : <http://www.ltalab.com>
 E-mail : chahn@ltalab.com
 Telephone : +82-31-323-6008
 Facsimile : +82-31-323-6010

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.
RRA	KOREA	KR0049	-	RRA accredited Lab.
	U.S.A		2023-04-08	
	CANADA		2022-10-18	
VCCI	JAPAN	C-14948	2023-09-10	VCCI registration
		T-12416	2023-09-10	
		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 Vision Co., Ltd
 Address : 6, Pangyo-ro 319 Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13488, KOREA
 Telephone / Facsimile : +82-70-7147-8753(http://hanhwa-security.com)

Factory #1

Company name : HANWHA VISION VIETNAM COMPANY LIMITED
 Address : Lot O-2, Que Vo Industrial Zone extended area ,Nam Son commune, Bac Ninh city,Bac Ninh province, Vietnam

Factory #2

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

2-2 Equipment Under Test (EUT)

Class : A
 Equipment Name : NVR
 Model name : PRN-3210B2
 Additional Model Name : PRN-1610B2, PRN-3200B2, PRN-3205B2, PRN-1600B2, PRN-1605B2
 Additional Models are different number of channels.
 Serial number : Identification
 Date of receipt : June 21, 2022
 EUT condition : Pre-production
 Interface ports : AC IN, USB #1 ~ #4, HDMI #1 ~ #2, AUDIO OUT, ALARM IN, ALARM OUT, NETWORK #1 ~ #3, GND
 Console Port is unused port.
 Power rating : AC 230 V, 50 Hz

2-3 Modification

- Insert Aluminum Tape at Internal Signal line.

2-4 Model Specification

- NONE

2-5 Test conditions

Temp. / Humid. / Pressure : (22 - 24) °C / (39 - 49) % R.H. / 100 kPa
 Tested Model : PRN-3210B2
 Test mode : Operating 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	PRN-3210B2	N/A	HANWHA VISION VIETNAM COMPANY LIMITED D-TECH CO.,LTD.	-
MOUSE	MOKJUO	N/A	Primax Electronics Ltd.	-
ACCESSORY				
Equipment Name	Model Name	Serial No.	Manufacturer	Remarks
KEY BOARD	Y-U0009	N/A	Logitech Co.,Ltd	-
NOTEBOOK	ELITEBOOK219	N/A	HP	-
POE INJECTOR	IpTIME PoE408	N/A	IpTIME	-
POE INJECTOR ADAPTER	ANY480A5C-NI	N/A	Wendent Any Electronics Co.,Ltd	-
USB MEMORY STICK	SDCZ50-016G	N/A	Sandisk	2 EA
HEAD PHONE	SHS-150V/W	N/A	SAMSUNG	-
NETWORK CAMERA #1	QND-6070RNC	N/A	HANHWA TECHWIN CO., LTD.	-
NETWORK CAMERA #2	LND-6032R	N/A	HANHWA TECHWIN CO., LTD.	-
ALARM ZIG #1	DS-360	N/A	Daemyung Electronics Co., Ltd	-
ALARM ZIG #2	N/A	N/A	N/A	-
MOBILE PHONE	SM930K	N/A	SAMSUNG	-
MONITOR #1	6230VP	73010478A2 20371	Lien Fong(Wujiang) Electronics Co.,Ltd	-
MONITOR #2	P2018H	N/A	DELL	-

2-7 Cable List

Cable List						
From		To		Length	Shielding	
Type	I/O Port	Type	I/O Port	(m)	Cable	backshell
EUT	AC IN	AC POWER SOURCE	3 PIN AC LINE	1.0	NO	Plastic
	NETWORK #1	NOTEBOOK	LAN	3.0	NO	Plastic
	NETWORK #2	POE INJECTOR	LAN #1	3.0	NO	Plastic
	NETWORK #3	POE INJECTOR	LAN #2	3.0	NO	Plastic
	AUDIO OUT	HEAD PHONE	AUDIO IN	1.0	NO	Plastic
	ALARM IN	ALARM ZIG #2	ALARM OUT	3.0	NO	Plastic
	ALARM OUT	ALARM ZIG #1	ALARM IN	3.0	NO	Plastic
	HDMI #1	MONITOR #1	HDMI	1.0	YES	Plastic
	HDMI #2	MONITOR #2	HDMI	1.0	YES	Plastic
	USB #1	MOUSE	USB	1.0	NO	Plastic
	USB #2	KEY BOARD	USB	1.0	NO	Plastic
	USB #3	USB MEMORY STICK #1	-	-	-	-
	USB #4	USB MEMORY STICK #2	-	-	-	-
	GND	GND	-	1.0	NO	Plastic
POE INJECTOR	DC IN	POE INJECTOR ADAPTER	DC OUT	1.0	NO	Plastic
	LAN #3	NETWORK CAMERA #1	LAN	3.0	NO	Plastic
	LAN #4	NETWORK CAMERA #2	LAN	3.0	NO	Plastic
POE INJECTOR ADAPTER	AC IN	AC POWER SOURCE	2 PIN AC LINE	0.8	NO	Plastic
MONITOR #1	AC IN	AC POWER SOURCE	3 PIN AC LINE	1.0	NO	Plastic
MONITOR #2	AC IN	AC POWER SOURCE	3 PIN AC LINE	1.0	NO	Plastic
MOBILE PHONE	-	-	-	-	-	-

3. Test Report

3.1 Summary of tests

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

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
Measurement RBW	: 9 kHz
Test Location	: Shielded Room
Test mode	: Operating 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)



4, Songjuro 236 Beon-gil, Yangji-myeon
Cheoin-gu, Youngin-si, Gyeonggi-do
449-822 Korea
Tel:+82-31-3236008,9
Fax:+82-31-3236010

EUT /Model No. : PRN-3210B2

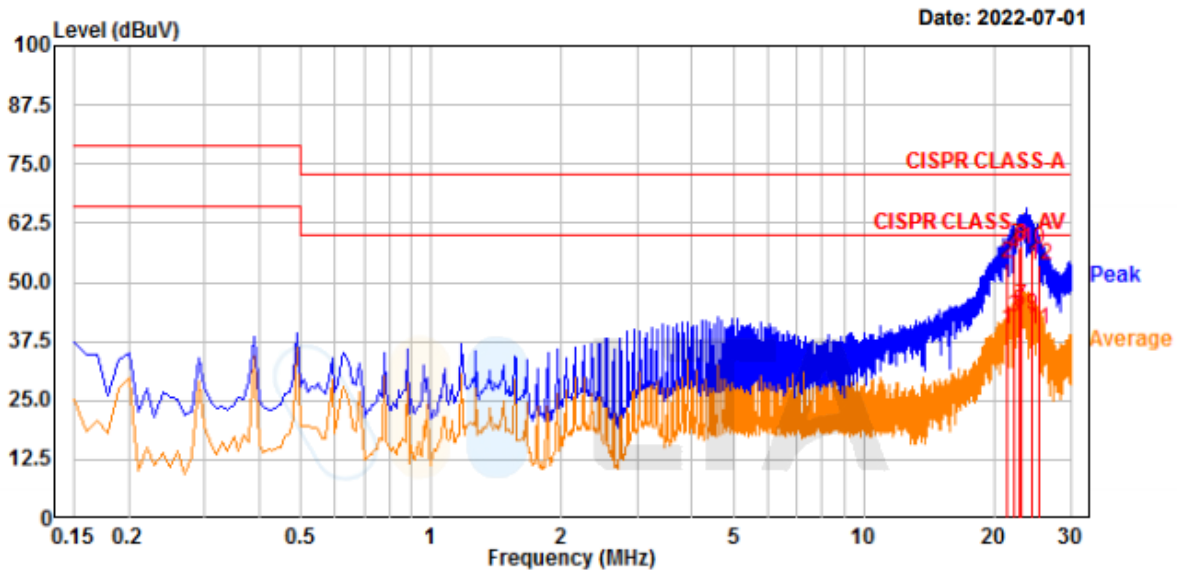
Phase : LINE

Test Mode : Operating mode

Test Power : 230 V / 50 Hz

Temp./ Humi. : 23 'C / 49 % R.H

Test Engineer : AHN H Y



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.	21.412	33.87	19.81	20.04	53.91	39.85	73.00	60.00	19.09	20.15	Line
4.	22.156	35.77	22.51	20.04	55.81	42.55	73.00	60.00	17.19	17.45	Line
6.	22.888	37.24	23.62	20.05	57.29	43.67	73.00	60.00	15.71	16.33	Line
8.	22.945	37.61	24.73	20.05	57.66	44.78	73.00	60.00	15.34	15.22	Line
10.	24.297	36.75	22.98	20.07	56.82	43.05	73.00	60.00	16.18	16.95	Line
12.	25.275	33.39	19.85	20.09	53.48	39.94	73.00	60.00	19.52	20.06	Line

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



Conducted Emissions (NEUTRAL)

4, Songjuro 236 Beon-gil, Yangji-myeon
Cheoin-gu, Youngin-si, Gyeonggi-do
449-822 Korea
Tel:+82-31-3236008,9
Fax:+82-31-3236010

EUT /Model No. : PRN-3210B2

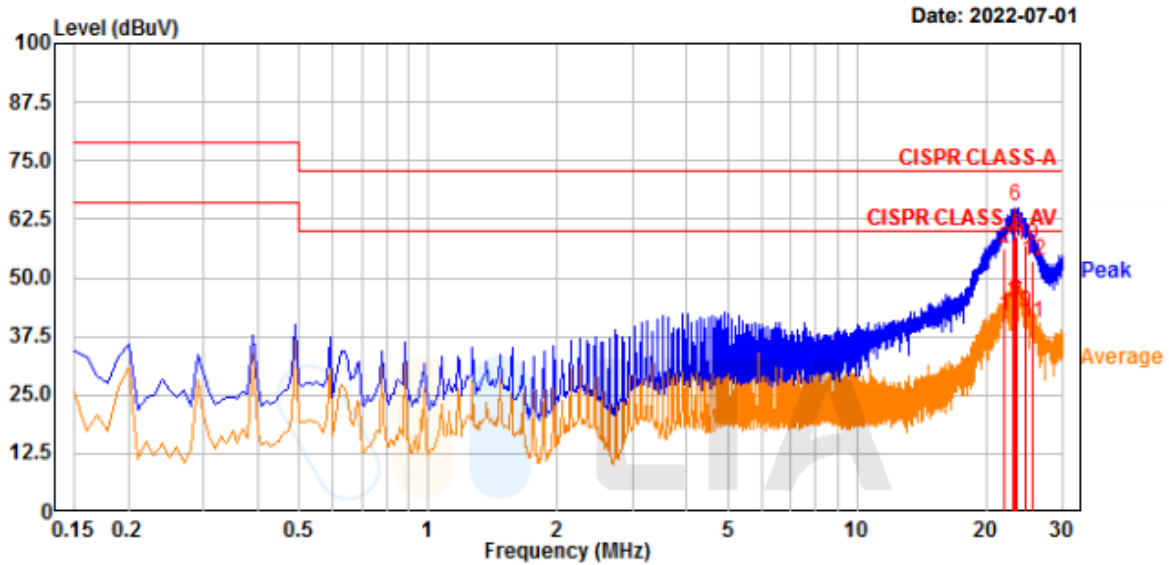
Phase : NEUTRAL

Test Mode : Operating mode

Test Power : 230 V / 50 Hz

Temp./ Humi. : 23 'C / 49 % R.H

Test Engineer : AHN H Y



No.	Freq MHz	RD QP dBμV	RD AV dBμV	C.F dB	Result QP dBμV	Result AV dBμV	Limit QP dBμV	Limit AV dBμV	Margin QP dB	Margin AV dB	Phase
2.	22.074	36.19	21.67	20.12	56.31	41.79	73.00	60.00	16.69	18.21	neutral
4.	23.018	37.88	24.52	20.14	58.02	44.66	73.00	60.00	14.98	15.34	neutral
6.	23.359	45.20	24.68	20.14	65.34	44.82	73.00	60.00	7.66	15.18	neutral
8.	23.486	38.79	24.34	20.15	58.94	44.49	73.00	60.00	14.06	15.51	neutral
10.	24.652	36.63	22.62	20.18	56.81	42.80	73.00	60.00	16.19	17.20	neutral
12.	25.555	33.22	20.03	20.19	53.41	40.22	73.00	60.00	19.59	19.78	neutral

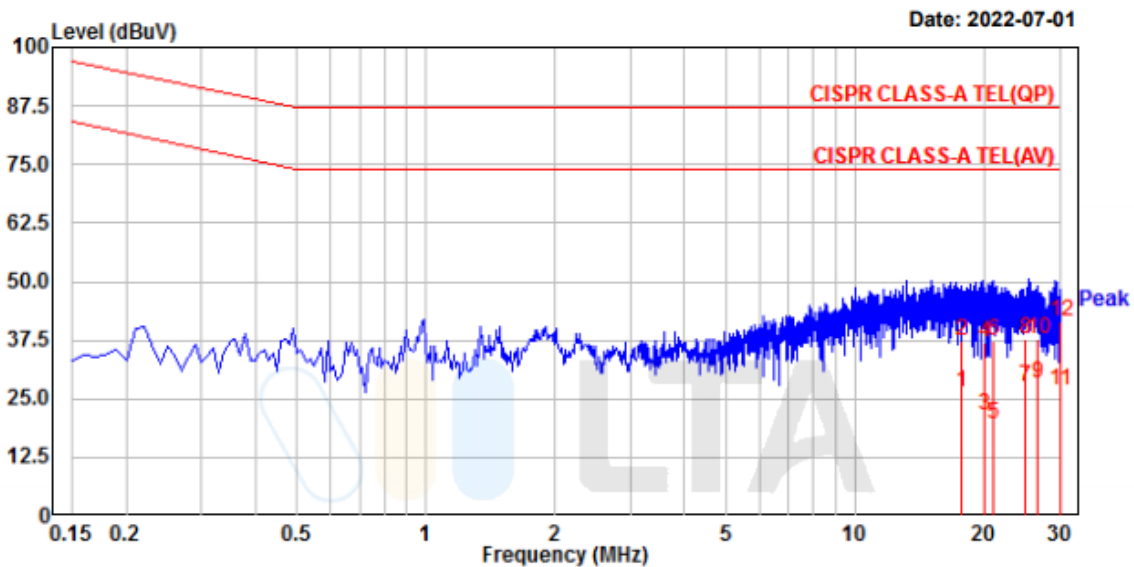
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions (TEL_10 M) / Operating mode (NETWORK #1)



4, Songjuro 236 Beon-gil, Yangji-myeon
Cheoin-gu, Youngin-si, Gyeonggi-do
449-822 Korea
Tel:+82-31-3236008,9
Fax:+82-31-3236010

EUT /Model No. : PRN-3210B2	Phase : TEL_10M (NETWORK #1)
Test Mode : Operating mode	Test Power : 230 V / 50 Hz
Temp./ Humi. : 23 'C / 49 % R.H	Test Engineer : AHN H Y



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.	17.701	17.53	6.57	19.89	37.42	26.46	87.00	74.00	49.58	47.54	Line
4.	19.912	17.00	1.69	19.97	36.97	21.66	87.00	74.00	50.03	52.34	Line
6.	20.956	17.41	-0.45	20.01	37.42	19.56	87.00	74.00	49.58	54.44	Line
8.	24.797	17.41	7.53	20.17	37.58	27.70	87.00	74.00	49.42	46.30	Line
10.	26.616	17.62	8.09	20.24	37.86	28.33	87.00	74.00	49.14	45.67	Line
12.	29.982	21.10	6.42	20.39	41.49	26.81	87.00	74.00	45.51	47.19	Line

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

Conducted Emissions (TEL_1000 M) / Operating mode (NETWORK #1)



4, Songjuro 236 Beon-gil, Yangji-myeon
Cheoin-gu, Youngin-si, Gyeonggi-do
449-822 Korea
Tel:+82-31-3236008,9
Fax:+82-31-3236010

EUT /Model No. : PRN-3210B2

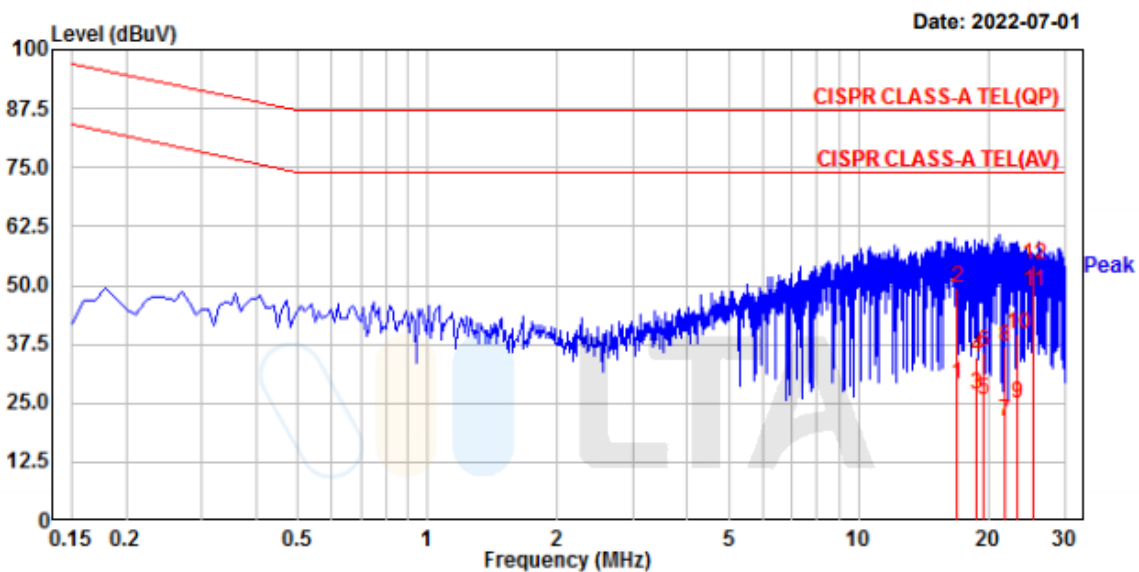
Phase : TEL_1000M (NETWORK #1)

Test Mode : Operating mode

Test Power : 230 V / 50 Hz

Temp./ Humi. : 23 'C / 49 % R.H

Test Engineer : AHN H Y



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.	16.929	29.70	9.49	19.57	49.27	29.06	87.00	74.00	37.73	44.94	Line
4.	18.746	15.14	7.30	19.61	34.75	26.91	87.00	74.00	52.25	47.09	Line
6.	19.359	16.28	6.02	19.62	35.90	25.64	87.00	74.00	51.10	48.36	Line
8.	21.861	17.18	1.34	19.67	36.85	21.01	87.00	74.00	50.15	52.99	Line
10.	23.326	19.99	5.09	19.69	39.68	24.78	87.00	74.00	47.32	49.22	Line
12.	25.342	34.58	28.82	19.73	54.31	48.55	87.00	74.00	32.69	25.45	Line

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

Conducted Emissions (TEL_10 M) / Operating mode (NETWORK #2)



4, Songjuro 236 Beon-gil, Yangji-myeon
Cheoin-gu, Youngin-si, Gyeonggi-do
449-822 Korea
Tel:+82-31-3236008,9
Fax:+82-31-3236010

EUT /Model No. : PRN-3210B2

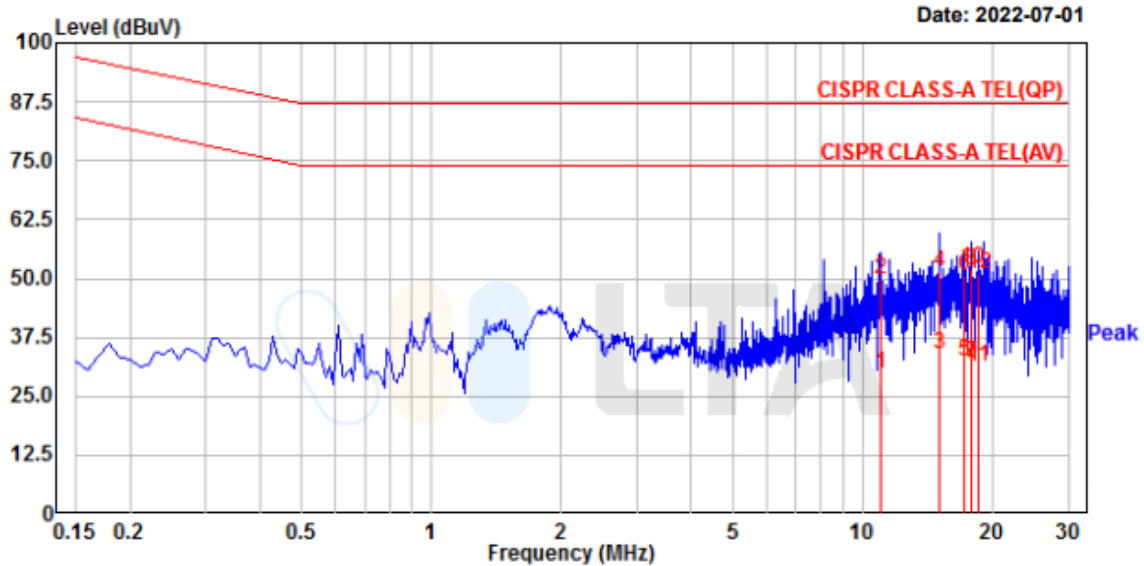
Phase : TEL_10M (NETWORK #2)

Test Mode : Operating mode

Test Power : 230 V / 50 Hz

Temp./ Humi. : 23 'C / 49 % R.H

Test Engineer : AHN H Y



No.	Freq MHz	RD QP dBμV	RD AV dBμV	C.F dB	Result QP dBμV	Result AV dBμV	Limit QP dBμV	Limit AV dBμV	Margin QP dB	Margin AV dB	Phase
2.	10.991	30.04	9.97	19.68	49.72	29.65	87.00	74.00	37.28	44.35	Line
4.	15.018	31.35	14.04	19.79	51.14	33.83	87.00	74.00	35.86	40.17	Line
6.	17.099	30.86	12.75	19.86	50.72	32.61	87.00	74.00	36.28	41.39	Line
8.	17.890	31.95	12.28	19.90	51.85	32.18	87.00	74.00	35.15	41.82	Line
10.	17.891	31.99	12.35	19.90	51.89	32.25	87.00	74.00	35.11	41.75	Line
12.	18.501	30.96	11.45	19.92	50.88	31.37	87.00	74.00	36.12	42.63	Line

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

Conducted Emissions (TEL_1000 M) / Operating mode (NETWORK #2)



4, Songjuro 236 Beon-gil, Yangji-myeon
Cheoin-gu, Youngin-si, Gyeonggi-do
449-822 Korea
Tel:+82-31-3236008,9
Fax:+82-31-3236010

EUT /Model No. : PRN-3210B2

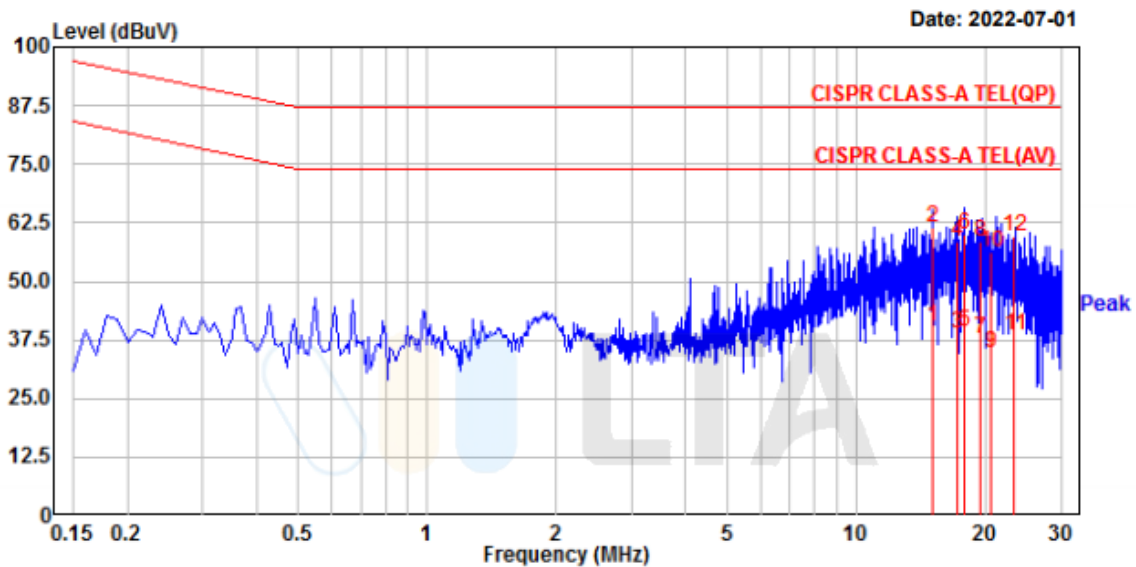
Phase : TEL_1000M (NETWORK #2)

Test Mode : Operating mode

Test Power : 230 V / 50 Hz

Temp./ Humi. : 23 'C / 49 % R.H

Test Engineer : AHN H Y



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.	15.022	41.95	21.02	19.54	61.49	40.56	87.00	74.00	25.51	33.44	Line
4.	17.099	38.84	19.28	19.57	58.41	38.85	87.00	74.00	28.59	35.15	Line
6.	17.891	40.45	19.72	19.59	60.04	39.31	87.00	74.00	26.96	34.69	Line
8.	19.355	38.78	18.15	19.62	58.40	37.77	87.00	74.00	28.60	36.23	Line
10.	20.641	36.51	15.19	19.64	56.15	34.83	87.00	74.00	30.85	39.17	Line
12.	23.325	39.79	18.83	19.69	59.48	38.52	87.00	74.00	27.52	35.48	Line

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

Conducted Emissions (TEL_10 M) / Operating mode (NETWORK #3)



4, Songjuro 236 Beon-gil, Yangji-myeon
Cheoin-gu, Youngin-si, Gyeonggi-do
449-822 Korea
Tel:+82-31-3236008,9
Fax:+82-31-3236010

EUT /Model No. : PRN-3210B2

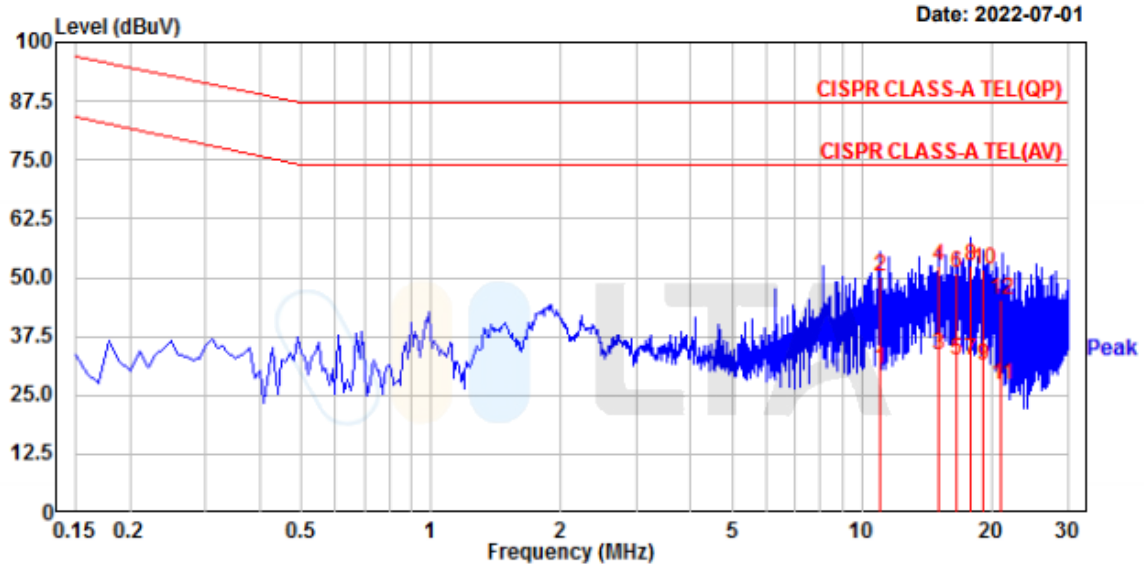
Phase : TEL_10M (NETWORK #3)

Test Mode : Operating mode

Test Power : 230 V / 50 Hz

Temp./ Humi. : 23 'C / 49 % R.H

Test Engineer : AHN H Y



No.	Freq MHz	RD QP dBμV	RD AV dBμV	C.F dB	Result QP dBμV	Result AV dBμV	Limit QP dBμV	Limit AV dBμV	Margin QP dB	Margin AV dB	Phase
2.	10.991	30.38	10.78	19.68	50.06	30.46	87.00	74.00	36.94	43.54	Line
4.	15.082	32.70	13.84	19.79	52.49	33.63	87.00	74.00	34.51	40.37	Line
6.	16.549	31.02	12.52	19.84	50.86	32.36	87.00	74.00	36.14	41.64	Line
8.	17.831	32.63	12.58	19.90	52.53	32.48	87.00	74.00	34.47	41.52	Line
10.	19.051	31.64	11.51	19.93	51.57	31.44	87.00	74.00	35.43	42.56	Line
12.	21.002	25.44	7.29	20.01	45.45	27.30	87.00	74.00	41.55	46.70	Line

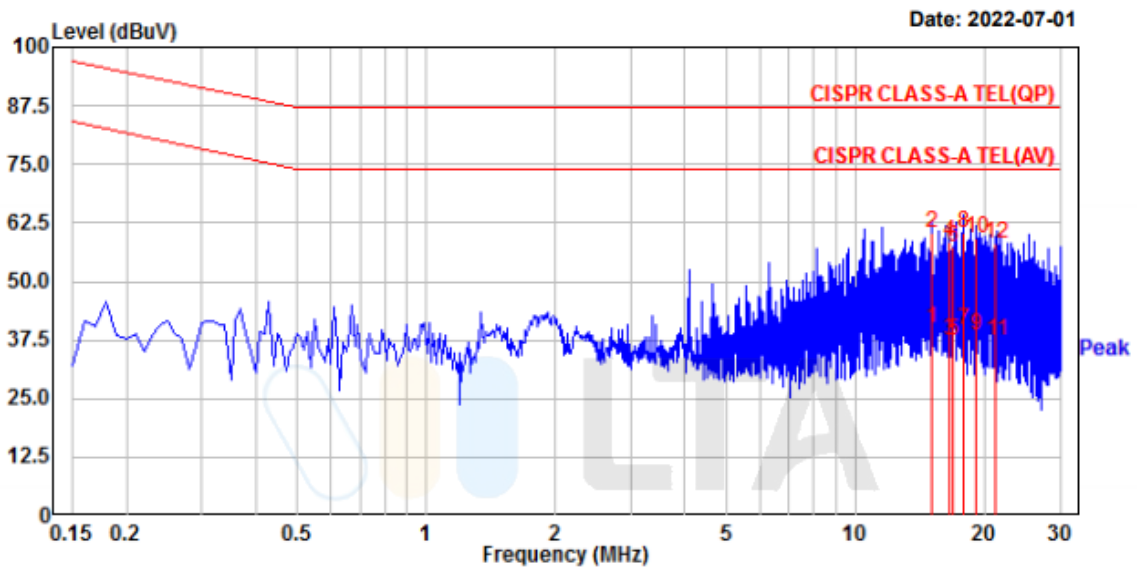
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions (TEL_1000 M) / Operating mode (NETWORK #3)



4, Songjuro 236 Beon-gil, Yangji-myeon
Cheoin-gu, Youngin-si, Gyeonggi-do
449-822 Korea
Tel:+82-31-3236008,9
Fax:+82-31-3236010

EUT /Model No. : PRN-3210B2	Phase : TEL_1000M (NETWORK #3)
Test Mode : Operating mode	Test Power : 230 V / 50 Hz
Temp./ Humi. : 23 'C / 49 % R.H	Test Engineer : AHN H Y



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.	15.083	40.72	20.39	19.54	60.26	39.93	87.00	74.00	26.74	34.07	Line
4.	16.550	39.02	17.91	19.56	58.58	37.47	87.00	74.00	28.42	36.53	Line
6.	16.913	37.97	17.88	19.57	57.54	37.45	87.00	74.00	29.46	36.55	Line
8.	17.830	40.89	20.08	19.59	60.48	39.67	87.00	74.00	26.52	34.33	Line
10.	19.053	39.72	18.74	19.61	59.33	38.35	87.00	74.00	27.67	35.65	Line
12.	21.187	38.43	17.85	19.66	58.09	37.51	87.00	74.00	28.91	36.49	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
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	: Operating 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 : 4.1 GHz)

A sample calculation:

$\text{COR. F (correction factor)} = \text{Antenna factor} + \text{Cable loss} - \text{Amp. gain} - \text{Distance correction}$

$\text{Emission Level} = \text{meter reading} + \text{COR.F}$

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



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.: PRN-3210B2

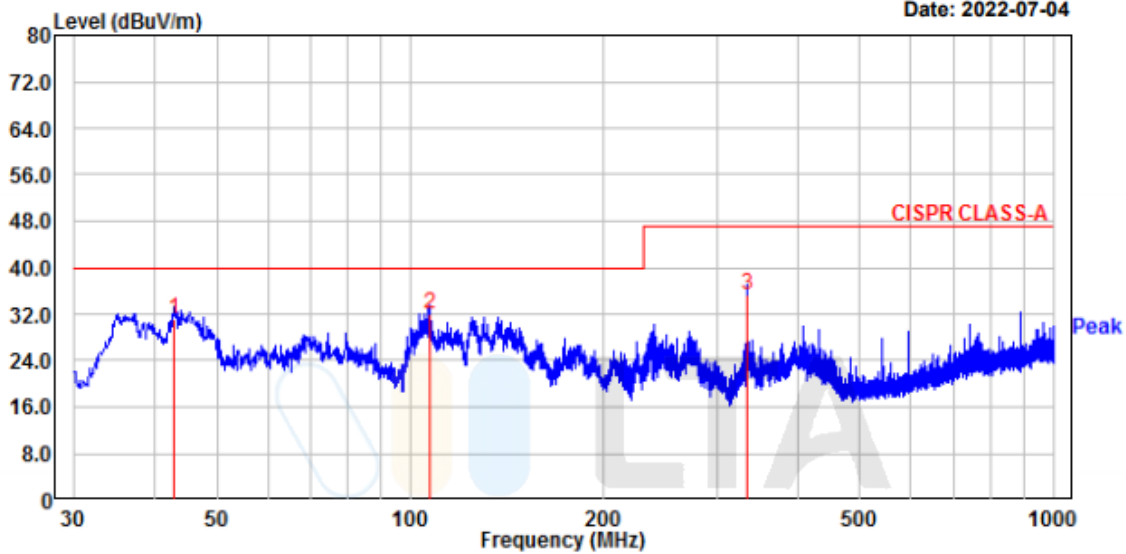
Temp/Humi: 22 'C / 47 % R.H.

Test Mode : Operating mode

Tested by: AHN H Y

Power : 230 V / 50 Hz

Date: 2022-07-04



No.	Freq MHz	Reading dBμV	C.F dB	Result QP dBμV/m	Limit dBμV/m	Margin dB	Height cm	Angle deg	Polarity
1.	42.97	42.80	-11.62	31.18	40.00	8.82	120	50	vertical
2.	107.24	45.90	-13.80	32.10	40.00	7.90	300	20	vertical
3.	334.10	43.10	-7.75	35.35	47.00	11.65	210	336	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

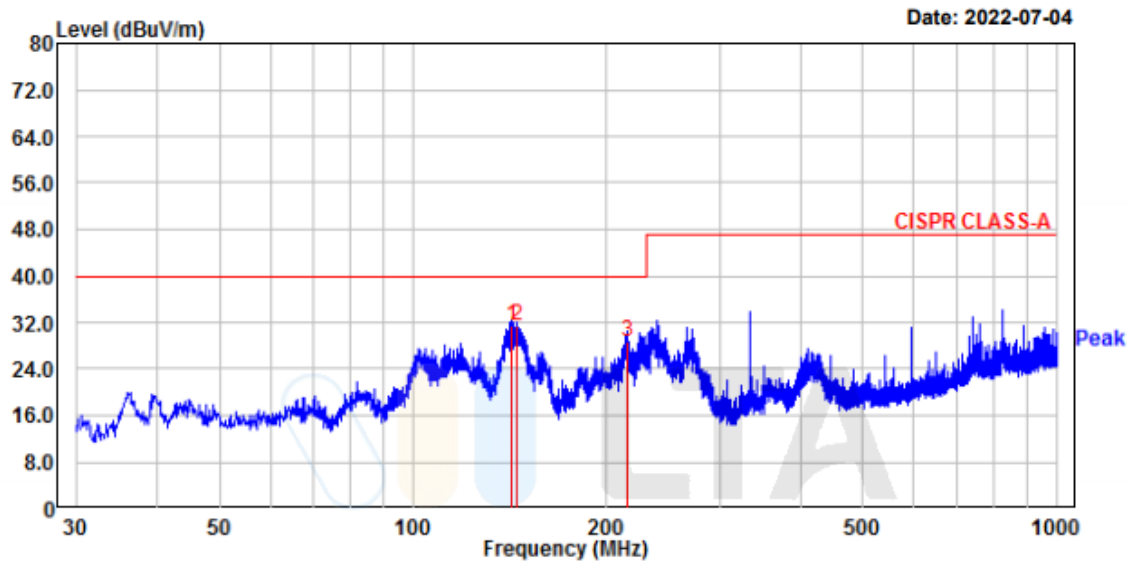
EUT/Model No.: PRN-3210B2

Temp/Humi: 22 'C / 47 % R.H.

Test Mode : Operating mode

Tested by: AHN H Y

Power : 230 V / 50 Hz



No.	Freq MHz	Reading dBuV	C.F dB	Result QP dBuV/m	Limit dBuV/m	Margin dB	Height cm	Angle deg	Polarity
1.	141.79	42.10	-10.55	31.55	40.00	8.45	400	122	horizontal
2.	144.70	41.79	-10.37	31.42	40.00	8.58	150	60	horizontal
3.	215.27	41.71	-13.13	28.58	40.00	11.42	220	10	horizontal

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

Radiated Emissions

(Above 1 GHz) / V

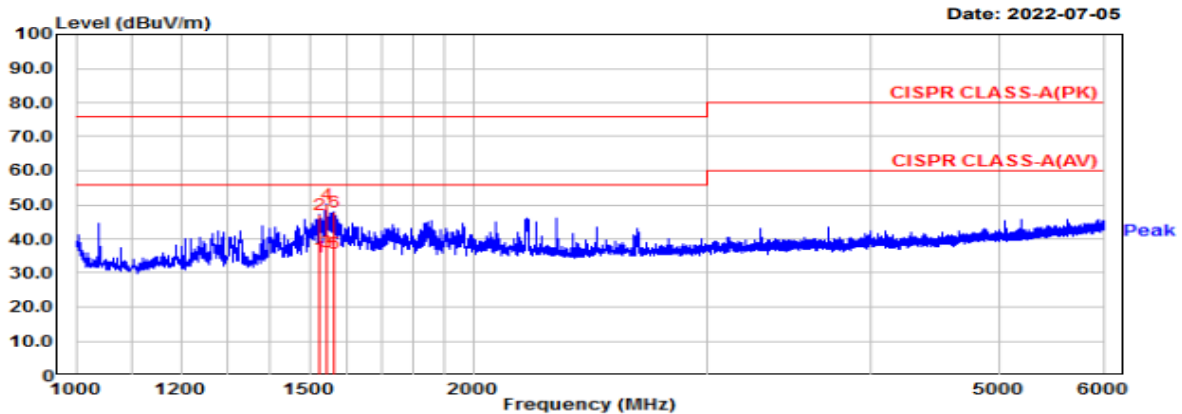
EUT/Model No.: PRN-3210B2

Temp/Humi: 22 °C / 47 % R.H.

Test Mode : Operating mode

Tested by: AHN H Y

Power : 230 V / 50 Hz



(Above 1 GHz) / H

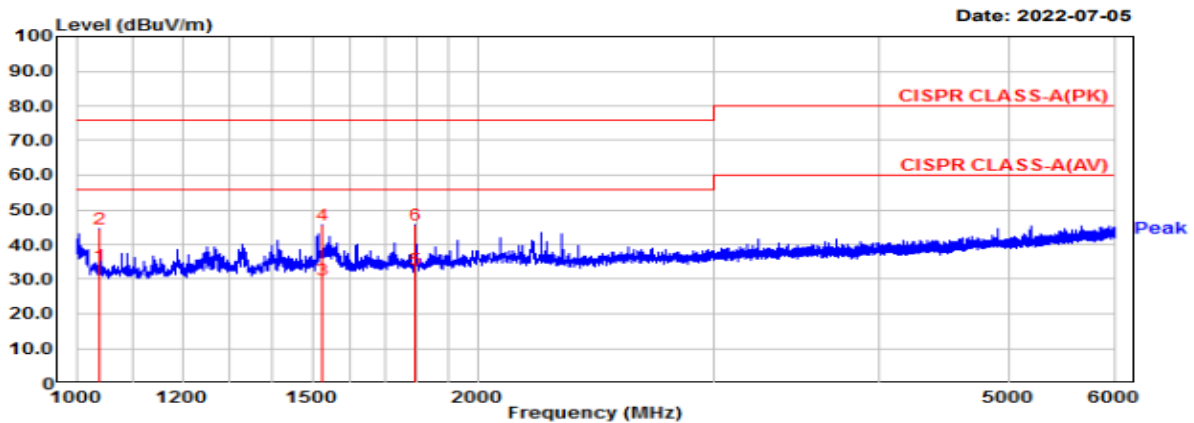
EUT/Model No.: PRN-3210B2

Temp/Humi: 22 °C / 47 % R.H.

Test Mode : Operating mode

Tested by: AHN H Y

Power : 230 V / 50 Hz



Manufacture : HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.

Test Date

Temp.: [°C]

Humidity: [%]

Distance (m)

Model : PRN-3210B2

2022.07.05

22.00

47.00

3.6

TEST mode : Operating mode

Frequency MHz	Reading(PK) dBuV	Reading(AV) dBuV	C.F dB	Result(PK) dBuV/m	Result(AV) dBuV/m	Limit(PK) dBuV/m	Limit(AV) dBuV/m	Margin(PK) dB	Margin(AV) dB	Height cm	Angle deg	Polarity H/V
1039.38	53.87	43.37	-7.87	46.00	35.50	76.00	56.00	30.00	20.50	100	117	H
1525.00	51.11	35.37	-3.91	47.20	31.46	76.00	56.00	28.80	24.54	100	0	H
1794.38	50.22	37.45	-2.88	47.34	34.57	76.00	56.00	28.66	21.43	100	244	H
1524.38	52.54	40.19	-3.92	48.62	36.27	76.00	56.00	27.38	19.73	100	273	V
1543.75	55.67	41.69	-3.95	51.72	37.74	76.00	56.00	24.28	18.26	100	283	V
1566.25	53.42	41.18	-3.93	49.49	37.25	76.00	56.00	26.51	18.75	100	273	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
Test Location	: Shielded Room
Test mode	: Operating mode
Rated power	: 77.556 W
Result	: Complies

Measurement Data:

- Refer to the Next page



Harmonic Current Emission

01st July 2022 - 17:21:33		Ph:1 Page 1/6		IECSoft v2.7	
		BS EN61000-3-2:2014			
Fluctuating Harmonics					
Instrument Details					
Instrument Model	PPA5511				
Serial Number	162-04957				
Firmware Version	2.185				
N4L Calibration Date	18th September 2017				
Instrument Version	Standard				
Test Settings					
Class	Class A				
Mode	Operating				
Equipment Under Test					
Brand	Hanhwa Techwin Co., Ltd				
Model	PRN-3210B2				
Serial	N/A				
Impedance Network ID	N/A				
Test Conditions					
	User Entered		Measured		
Rated Voltage	N/A		230.054V		
Rated Current	N/A		433.861mA		
Rated Frequency	N/A		50.000Hz		
Rated Power	N/A		77.556W		
Additional Test Information					
Measured Power Factor	0.777				
Max Current THD	21.40%				
Average THC	80.948mA				
Max Power	79.483W				
Max F.Current	424.590mA				
Average F.Current	417.428mA				
Minimum Current	100A				
Test Duration	2.5 minutes				
Additional Test Details					
Operator	AHN H Y				
Lab Name	N/A				
Location	N/A				
Notes	24 °C 44 % R.H.				
Signature					
Results	Phase 1: PASS				

01st July 2022 - 17:21:33			Ph:1 Page 2/6			IECSoft v2.7	
BSEN61000-3-2:2014 Fluctuating Harmonics							
Instrument Details							
Instrument Model		PPA5511					
Instrument Serial		162-04957					
Instrument Firmware		2.185					
Equipment Under Test							
Brand		Hanhwa Techwin Co., Ltd					
Model		PRN-3210B2					
Serial		N/A					
Harmonic Difference							
Harmonic	Lowest		Highest		Limit		Status
	Average (A)	Test #	Average (A)	Test #	Allowance (A)	Difference (A)	
2	7.189m	2	7.205m	1	0.054	0.000016	PASS
3	61.591m	2	61.823m	1	0.115	0.000232	PASS
4	5.759m	2	5.771m	1	0.0215	0.000012	PASS
5	31.761m	2	31.836m	1	0.057	0.000075	PASS
6	5.739m	2	5.805m	1	0.015	0.000066	PASS
7	18.052m	2	18.177m	1	0.0385	0.000125	PASS
8	5.536m	2	5.624m	1	0.0115	0.000087	PASS
9	11.492m	2	11.614m	1	0.02	0.000122	PASS
10	5.405m	2	5.415m	1	0.0092	0.00001	PASS
11	9.585m	2	9.647m	1	0.0165	0.000062	PASS
12	5.261m	2	5.281m	1	0.007667	0.00002	PASS
13	8.280m	2	8.302m	1	0.0105	0.000022	PASS
14	5.130m	2	5.271m	1	0.006571	0.000141	PASS
15	7.463m	2	7.473m	1	0.0075	0.00001	PASS
16	5.211m	2	5.217m	1	0.00575	0.000005	PASS
17	7.034m	2	7.038m	1	0.006618	0.000005	PASS
18	5.183m	2	5.220m	1	0.005111	0.000037	PASS
19	6.385m	2	6.500m	1	0.005921	0.000114	PASS
20	5.234m	1	5.245m	2	0.0046	0.000011	PASS
21	6.545m	1	6.578m	2	0.005357	0.000033	PASS
22	5.265m	2	5.275m	1	0.004182	0.00001	PASS
23	6.461m	2	6.507m	1	0.004891	0.000045	PASS
24	5.214m	2	5.279m	1	0.003833	0.000064	PASS
25	6.179m	2	6.240m	1	0.0045	0.000061	PASS
26	5.283m	2	5.318m	1	0.003538	0.000035	PASS
27	6.078m	1	6.103m	2	0.004167	0.000025	PASS
28	5.322m	2	5.353m	1	0.003286	0.000031	PASS
29	6.012m	2	6.056m	1	0.003879	0.000045	PASS
30	5.338m	1	5.340m	2	0.003067	0.000002	PASS
31	6.272m	2	6.318m	1	0.003629	0.000045	PASS
32	5.279m	2	5.288m	1	0.002875	0.000009	PASS
33	6.189m	2	6.222m	1	0.003409	0.000032	PASS
34	5.206m	2	5.319m	1	0.002706	0.000113	PASS
35	5.998m	1	6.001m	2	0.003214	0.000003	PASS
36	5.230m	2	5.322m	1	0.002556	0.000091	PASS
37	5.688m	2	5.724m	1	0.003041	0.000036	PASS
38	5.230m	2	5.304m	1	0.002421	0.000074	PASS
39	5.789m	1	5.789m	2	0.002885	0	PASS
40	5.247m	2	5.289m	1	0.0023	0.000043	PASS
Key:							
5.000m*	For values lower than the min limit (5mA or 0.6% of the Input Current), min limit is used						
Ignored	Since both values are less than 5mA or 0.6% of the Input Current this harmonic is ignored						
Good	The difference is less than 50% of the allowance						
OK	The difference is between 50% of the allowance and 75% of the allowance						
Poor	The difference is between 75% of the allowance and 100% of the allowance						
Fail	The difference has exceeded the allowance						

01st July 2022 - 17:21:33		Ph:1 Page 3/6		IECSoft v2.7			
BS EN 61000-3-2:2014 Fluctuating Harmonics							
Instrument Details							
Instrument Model	PPA5511						
Instrument Serial	162-04957						
Instrument Firmware	2.185						
Equipment Under Test							
Brand	Hanhwa Techwin Co., Ltd						
Model	PRN-3210B2						
Serial	N/A						
Extra Test Information							
Current THDG	19.30%						
	Average	Peak	Limit				
THC	81.187mA	89.945mA	N/A				
POHC	19.471mA	26.211mA	251.375mA				
Voltage Crest Factor	1.42	1.857	N/A				
Current Crest Factor	1.96	16.644	N/A				
Harmonics Results 1/2							
Harmonic	Status	Avg (A)	Avg L(A)	Avg %ofL	Peak (A)	Peak L(A)	Peak %ofL
1	PASS	0.41818	No Limit	N/A	0.42365	No Limit	N/A
2	PASS	0.0072	1.08	0.667087	0.00936	1.62	0.577653
3	PASS	0.06182	2.3	2.68794	0.06401	3.45	1.85539
4	PASS	0.00577	0.43	1.34214	0.00814	0.645	1.26152
5	PASS	0.03184	1.14	2.79265	0.03324	1.71	1.94372
6	PASS	0.0058	0.3	1.93499	0.00828	0.45	1.83937
7	PASS	0.01818	0.77	2.36065	0.02034	1.155	1.76129
8	PASS	0.00562	0.23	2.44501	0.00756	0.345	2.1917
9	PASS	0.01161	0.4	2.90361	0.01368	0.6	2.28058
10	PASS	0.00541	0.184	2.94282	0.00787	0.276	2.85079
11	PASS	0.00965	0.33	2.92319	0.01166	0.495	2.35563
12	PASS	0.00528	0.15333	3.44422	0.00783	0.23	3.4029
13	PASS	0.0083	0.21	3.95332	0.01051	0.315	3.33547
14	PASS	0.00527	0.13143	4.01048	0.00787	0.19714	3.9905
15	PASS	0.00747	0.15	4.98202	0.00966	0.225	4.29285
16	PASS	0.00522	0.115	4.53619	0.00763	0.1725	4.4225
17	PASS	0.00704	0.13235	5.31767	0.00913	0.19853	4.59999
18	PASS	0.00522	0.10222	5.10661	0.00769	0.15333	5.01469
19	PASS	0.0065	0.11842	5.4886	0.00889	0.17763	5.00491
20	PASS	0.00523	0.092	5.68936	0.00757	0.138	5.48561
21	PASS	0.00655	0.10714	6.10873	0.00888	0.16071	5.52334
22	PASS	0.00527	0.08364	6.30692	0.00742	0.12546	5.91414
23	PASS	0.00651	0.09783	6.65131	0.00841	0.14674	5.73317
24	PASS	0.00528	0.07667	6.88524	0.00787	0.115	6.83949
25	PASS	0.00624	0.09	6.9329	0.00813	0.135	6.02574
26	PASS	0.00532	0.07077	7.51478	0.00786	0.10615	7.4006
27	PASS	0.00608	0.08333	7.2937	0.00846	0.125	6.76663
28	PASS	0.00535	0.06571	8.14571	0.00753	0.09857	7.63566
29	PASS	0.00606	0.07759	7.80602	0.00811	0.11638	6.96923
30	PASS	0.00534	0.06133	8.70245	0.00752	0.092	8.17493
31	PASS	0.00632	0.07258	8.70431	0.00859	0.10887	7.88709
32	PASS	0.00529	0.0575	9.19689	0.00774	0.08625	8.96976
33	PASS	0.00622	0.06818	9.12526	0.0083	0.10227	8.11789
34	PASS	0.00532	0.05412	9.82813	0.00773	0.08118	9.52688
35	PASS	0.006	0.06429	9.33004	0.00801	0.09643	8.3041
36	PASS	0.00532	0.05111	10.4121	0.00755	0.07667	9.84605
37	PASS	0.00572	0.06081	9.41226	0.00802	0.09122	8.79234
38	PASS	0.0053	0.04842	10.9549	0.00764	0.07263	10.5141
39	PASS	0.00579	0.05769	10.0346	0.00793	0.08654	9.16136
40	PASS	0.00529	0.046	11.4985	0.00828	0.069	11.9985

01st July 2022 - 17:21:33		Ph:1 Page 4/6		IECSoft v2_7			
BS EN 61000-3-2:2014 Fluctuating Harmonics							
Instrument Details							
Instrument Model	PPA5511						
Instrument Serial	162-04957						
Instrument Firmware	2.185						
Equipment Under Test							
Brand	Hanhwa Techwin Co. Ltd						
Model	PRN-3210B2						
Serial	N/A						
Extra Test Information							
Current THDG	19.43%						
	Average	Peak	Limit				
THC	80.840mA	82.885mA	N/A				
POHC	19.407mA	19.962mA	251.375mA				
Voltage Crest Factor	1.415	1.543	N/A				
Current Crest Factor	1.878	16.166	N/A				
Harmonics Results 2/2							
Harmonic	Status	Avg (A)	Avg L(A)	Avg %ofL	Peak (A)	Peak L(A)	Peak %ofL
1	PASS	0.41668	No Limit	N/A	0.42459	No Limit	N/A
2	PASS	0.00719	1.08	0.665626	0.00805	1.62	0.496852
3	PASS	0.06159	2.3	2.67785	0.06401	3.45	1.85545
4	PASS	0.00576	0.43	1.33929	0.00656	0.645	1.0165
5	PASS	0.03176	1.14	2.78609	0.03266	1.71	1.91007
6	PASS	0.00574	0.3	1.91296	0.00643	0.45	1.42917
7	PASS	0.01805	0.77	2.34441	0.01917	1.155	1.66001
8	PASS	0.00554	0.23	2.4071	0.00612	0.345	1.77485
9	PASS	0.01149	0.4	2.87301	0.01237	0.6	2.06166
10	PASS	0.0054	0.184	2.93732	0.0061	0.276	2.20933
11	PASS	0.00958	0.33	2.90446	0.01036	0.495	2.09278
12	PASS	0.00526	0.15333	3.43086	0.00586	0.23	2.54689
13	PASS	0.00828	0.21	3.9427	0.00902	0.315	2.86264
14	PASS	0.00513	0.13143	3.90326	0.00586	0.19714	2.9714
15	PASS	0.00746	0.15	4.9753	0.00821	0.225	3.65083
16	PASS	0.00521	0.115	4.53159	0.00577	0.1725	3.34662
17	PASS	0.00703	0.13235	5.31425	0.00787	0.19853	3.96194
18	PASS	0.00518	0.10222	5.07016	0.00598	0.15333	3.89844
19	PASS	0.00639	0.11842	5.39211	0.0071	0.17763	3.99865
20	PASS	0.00525	0.092	5.70148	0.00587	0.138	4.25154
21	PASS	0.00658	0.10714	6.13942	0.00751	0.16071	4.67405
22	PASS	0.00527	0.08364	6.29512	0.00585	0.12546	4.65981
23	PASS	0.00646	0.09783	6.60488	0.00707	0.14674	4.81728
24	PASS	0.00521	0.07667	6.80144	0.00577	0.115	5.02128
25	PASS	0.00618	0.09	6.86537	0.00696	0.135	5.15191
26	PASS	0.00528	0.07077	7.46579	0.00601	0.10615	5.65911
27	PASS	0.0061	0.08333	7.32382	0.00675	0.125	5.40268
28	PASS	0.00532	0.06571	8.09899	0.00579	0.09857	5.87609
29	PASS	0.00601	0.07759	7.74825	0.00663	0.11638	5.69355
30	PASS	0.00534	0.06133	8.70602	0.00592	0.092	6.43703
31	PASS	0.00627	0.07258	8.64208	0.00713	0.10887	6.54548
32	PASS	0.00528	0.0575	9.18071	0.00598	0.08625	6.93808
33	PASS	0.00619	0.06818	9.07766	0.00684	0.10227	6.68382
34	PASS	0.00521	0.05412	9.61914	0.00582	0.08118	7.17138
35	PASS	0.006	0.06429	9.33454	0.00667	0.09643	6.91588
36	PASS	0.00523	0.05111	10.2334	0.00588	0.07667	7.66736
37	PASS	0.00569	0.06081	9.35366	0.00634	0.09122	6.95211
38	PASS	0.00523	0.04842	10.8014	0.00595	0.07263	8.18769
39	PASS	0.00579	0.05769	10.0351	0.00667	0.08654	7.70827
40	PASS	0.00525	0.046	11.4056	0.00583	0.069	8.44908

01st July 2022 - 17:21:33		Ph:1 Page 5/6		IECSoft v2.7
BS EN 61000-3-2:2014 Fluctuating Harmonics				
Instrument Details				
Instrument Model	PPA5511			
Instrument Serial	162-04957			
Instrument Firmware	2.185			
Equipment Under Test				
Brand	Hanhwa Techwin Co., Ltd			
Model	PRN-3210B2			
Serial	N/A			
Extra Test Information				
Voltage THDS	0.09%			
Source Results 1/2				
Harmonic	Status	Peak (V)	Average (V)	Limit (V)
1	PASS	230.03	230.02	No Limit
2	PASS	0.14133	0.12537	0.460108
3	PASS	0.060178	0.042655	2.070487
4	PASS	0.043271	0.024559	0.460108
5	PASS	0.038538	0.02494	0.920217
6	PASS	0.039875	0.022793	0.460108
7	PASS	0.037556	0.023295	0.690162
8	PASS	0.036959	0.023204	0.460108
9	PASS	0.037028	0.022872	0.460108
10	PASS	0.038484	0.022402	0.460108
11	PASS	0.035844	0.02274	0.230054
12	PASS	0.038701	0.023298	0.230054
13	PASS	0.039288	0.023781	0.230054
14	PASS	0.037629	0.023166	0.230054
15	PASS	0.041573	0.024602	0.230054
16	PASS	0.038722	0.023153	0.230054
17	PASS	0.040258	0.024096	0.230054
18	PASS	0.036326	0.023375	0.230054
19	PASS	0.039197	0.025009	0.230054
20	PASS	0.036353	0.022553	0.230054
21	PASS	0.041098	0.022617	0.230054
22	PASS	0.037434	0.022839	0.230054
23	PASS	0.038903	0.024421	0.230054
24	PASS	0.035959	0.022637	0.230054
25	PASS	0.041249	0.022964	0.230054
26	PASS	0.03624	0.023473	0.230054
27	PASS	0.040563	0.023628	0.230054
28	PASS	0.042415	0.022948	0.230054
29	PASS	0.038262	0.022555	0.230054
30	PASS	0.038316	0.022854	0.230054
31	PASS	0.034609	0.023607	0.230054
32	PASS	0.035182	0.023011	0.230054
33	PASS	0.035611	0.022415	0.230054
34	PASS	0.036169	0.022877	0.230054
35	PASS	0.039048	0.023158	0.230054
36	PASS	0.033284	0.02344	0.230054
37	PASS	0.041379	0.023962	0.230054
38	PASS	0.036764	0.022831	0.230054
39	PASS	0.034862	0.023084	0.230054
40	PASS	0.040379	0.02325	0.230054

01st July 2022 - 17:21:33		Ph:1 Page 6/6		IECSoft v2.7	
BS EN 61000-3-2:2014 Fluctuating Harmonics					
Instrument Details					
Instrument Model		PPA5511			
Instrument Serial		162-04957			
Instrument Firmware		2.185			
Equipment Under Test					
Brand		Hanhwa Techwin Co., Ltd			
Model		PRN-3210B2			
Serial		N/A			
Extra Test Information					
Voltage THDS		0.09%			
Source Results 2/2					
Harmonic	Status	Peak (V)	Average (V)	Limit (V)	
1	PASS	230.03	230.02	No Limit	
2	PASS	0.133	0.1255	0.460108	
3	PASS	0.049119	0.043177	2.070485	
4	PASS	0.028941	0.023894	0.460108	
5	PASS	0.029946	0.024523	0.920216	
6	PASS	0.027453	0.023056	0.460108	
7	PASS	0.028937	0.023164	0.690162	
8	PASS	0.026747	0.022748	0.460108	
9	PASS	0.028024	0.023062	0.460108	
10	PASS	0.028354	0.022488	0.460108	
11	PASS	0.029523	0.022708	0.230054	
12	PASS	0.028114	0.023082	0.230054	
13	PASS	0.028977	0.023224	0.230054	
14	PASS	0.027039	0.022645	0.230054	
15	PASS	0.028817	0.024214	0.230054	
16	PASS	0.029591	0.023085	0.230054	
17	PASS	0.028837	0.02407	0.230054	
18	PASS	0.028066	0.022754	0.230054	
19	PASS	0.029393	0.0249	0.230054	
20	PASS	0.028147	0.023026	0.230054	
21	PASS	0.027435	0.022704	0.230054	
22	PASS	0.02862	0.02294	0.230054	
23	PASS	0.031068	0.024465	0.230054	
24	PASS	0.028182	0.022991	0.230054	
25	PASS	0.028643	0.022748	0.230054	
26	PASS	0.027523	0.022493	0.230054	
27	PASS	0.028658	0.023126	0.230054	
28	PASS	0.029151	0.022878	0.230054	
29	PASS	0.027976	0.022977	0.230054	
30	PASS	0.027588	0.022267	0.230054	
31	PASS	0.028879	0.023632	0.230054	
32	PASS	0.02917	0.022952	0.230054	
33	PASS	0.027211	0.022797	0.230054	
34	PASS	0.027155	0.022598	0.230054	
35	PASS	0.028602	0.022664	0.230054	
36	PASS	0.027574	0.023142	0.230054	
37	PASS	0.028476	0.023572	0.230054	
38	PASS	0.027044	0.022513	0.230054	
39	PASS	0.028254	0.023017	0.230054	
40	PASS	0.029489	0.02329	0.230054	

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
Test Location	: Shielded Room
Test mode	: Operating mode
Result	: Complies

Measurement Data:

- Refer to the Next page



Voltage Fluctuations and Flicker

01st July 2022 - 17:50:00		Ph:1 Page 1/2		IECSoft v2_7	
		BS EN 61000-3-3:2013			
		Flickermeter			
Instrument Details					
Instrument Model	PPA5511				
Serial Number	162-04957				
Firmware Version	2.185				
N4L Calibration Date	18th September 2017				
Instrument Version	Standard				
Test Settings					
Class	Voltage				
Mode	Operating (4.0%)				
Minimum Current	10A				
PST	10 minutes				
PLT	12 PSTs				
Equipment Under Test					
Brand	Hanhwa Techwin Co., Ltd				
Model	PRN-3210B2				
Serial	N/A				
Impedance Network ID	N/A				
Test Conditions					
	User Entered		Measured		
Rated Voltage	N/A		230.066V		
Rated Current	N/A		N/A		
Rated Frequency	N/A		50.000Hz		
Rated Power	N/A		N/A		
D max	0.1617% (Limit: 4.0%)				
T max	0.0000 s (Limit: 0.5 s)				
DC max	0.0516% (Limit: 3.3%)				
Additional Test Details					
Operator	AHN H Y				
Lab Name	N/A				
Location	N/A				
Notes	24 °C 44 % R.H.				
Signature					
Results	Phase1: PASS				

01st July 2022 - 17:50:00				Ph:1 Page 2/2		IECSoft v2.7		
BS EN 61000-3-3:2013 Flickermeter								
Instrument Details								
Instrument Model		PPA5511						
Instrument Serial		162-04957						
Instrument Firmware		2.185						
Equipment Under Test								
Brand		Hanhwa Techwin Co., Ltd						
Model		PRN-3210B2						
Serial		N/A						
Flicker Test Results								
PST no.	Status	DC (%)	Dmax (%)	Tmax (s)	PST	PST Lim	PLT	PLT Lim
1	Phase1: PASS	0.05155	0.12278	0.00000	0.08226	1.00000	0.08226	N/A
2	Phase1: PASS	0.05155	0.12838	0.00000	0.08252	1.00000	0.08252	N/A
3	Phase1: PASS	0.05155	0.16171	0.00000	0.08451	1.00000	0.08451	N/A
4	Phase1: PASS	0.05155	0.16171	0.00000	0.08426	1.00000	0.08426	N/A
5	Phase1: PASS	0.05155	0.16171	0.00000	0.08436	1.00000	0.08436	N/A
6	Phase1: PASS	0.05155	0.16171	0.00000	0.08460	1.00000	0.08460	N/A
7	Phase1: PASS	0.05155	0.16171	0.00000	0.08480	1.00000	0.08480	N/A
8	Phase1: PASS	0.05155	0.16171	0.00000	0.08474	1.00000	0.08474	N/A
9	Phase1: PASS	0.05155	0.16171	0.00000	0.08502	1.00000	0.08502	N/A
10	Phase1: PASS	0.05155	0.16171	0.00000	0.08517	1.00000	0.08517	N/A
11	Phase1: PASS	0.05155	0.16171	0.00000	0.08523	1.00000	0.08523	N/A
12	Phase1: PASS	0.05155	0.16171	0.00000	0.08530	1.00000	0.08530	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	: 2022. 07. 01.
Test method	: 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	: Operating mode
Result	: Complies

Measurement Data:

- Refer to the Next page

ESD Test Point and Result**1-1. Indirect Discharge**

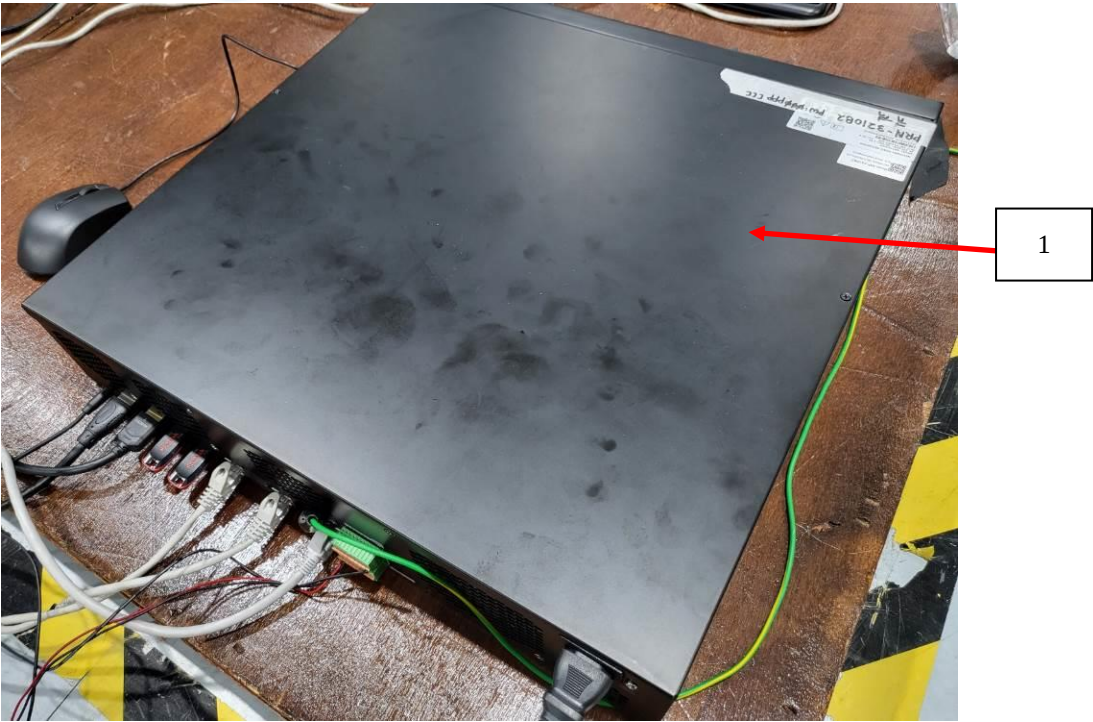
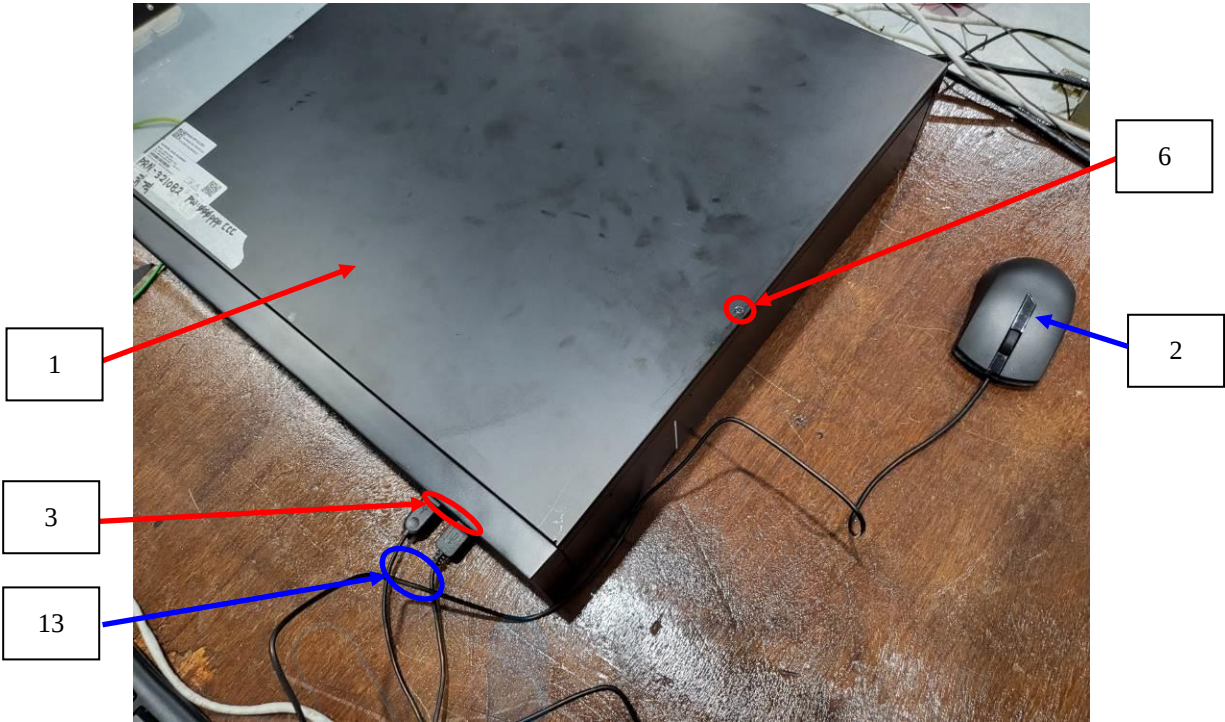
No.	Position	Kind of Discharge	Results	Remarks
1	HCP	Contact	Complies	No reaction recognized
2	VCP	Contact	Complies	No reaction recognized

1-2. Direct Discharge

No.	Position	Kind of Discharge	Result	Remarks
1	ENCLOSURE	Contact	Complies	No reaction recognized
2	MOUSE	Air	Complies	No reaction recognized
3	USB Port	Contact	Complies	No reaction recognized
4	AC IN	Air	Complies	No reaction recognized
5	AUDIO OUT	Air	Complies	No reaction recognized
6	SCREW	Contact	Complies	No reaction recognized
7	ALARM IN,OUT	Air	Complies	No reaction recognized
8	NETWORK	Air	Complies	No reaction recognized
9	USB MEMORY STICK	Air	Complies	No reaction recognized
10	HDMI	Air	Complies	No reaction recognized
11	HDMI PORT	Contact	Complies	No reaction recognized
12	GND	Contact	Complies	No reaction recognized
13	USB Cable	Air	Complies	No reaction recognized

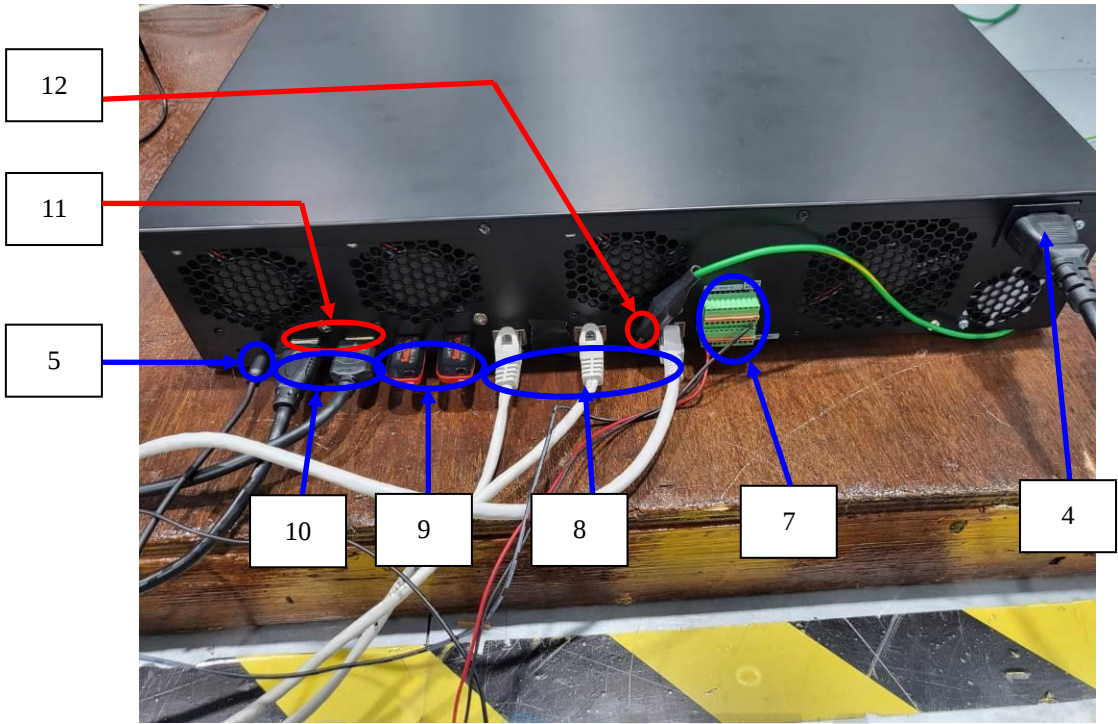
ESD TEST POINT

[Air discharge]
[Contact discharge]



[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	: 2022. 07. 05.
Test method	: EN 61000-4-3:2006/A1:2008/A2:2010
Temperature / Humidity / Pressure	: 24 °C / 46 % 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	: Operating 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 : 2022. 07. 04.
 Test method : EN 61000-4-4:2012
 Temperature / Humidity / Pressure : 22 °C / 49 % 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 : Operating 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
NETWORK #1	±1 kV	Complies	No reaction recognized
NETWORK #2	±1 kV	Complies	No reaction recognized
NETWORK #3	±1 kV	Complies	No reaction recognized
ALARM IN	±1 kV	Complies	No reaction recognized
ALARM OUT	±1 kV	Complies	No reaction recognized
AUDIO OUT	±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	: 2022. 07. 04.
Test method	: EN 61000-4-5:2014/A1:2017
Temperature / Humidity / Pressure	: 23 °C / 46 % 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	: Operating 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
NETWORK #1	$\pm(0.5, 1.0)$ kV	Complies	No reaction recognized
NETWORK #2	$\pm(0.5, 1.0)$ kV	Complies	No reaction recognized
NETWORK #3	$\pm(0.5, 1.0)$ kV	Complies	No reaction recognized
ALARM IN	$\pm(0.5, 1.0)$ kV	Complies	No reaction recognized
ALARM OUT	$\pm(0.5, 1.0)$ kV	Complies	No reaction recognized
AUDIO OUT	$\pm(0.5, 1.0)$ 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 : 2022. 07. 05.
 Test method : EN 61000-4-6:2014/AC:2015
 Temperature / Humidity / Pressure : 24 °C / 46 % 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 : Operating mode
 Result : **Complies**

Measurement Data:

Power Port	Result	Remarks
Power	Complies	No reaction recognized
GND	Complies	No reaction recognized

Signal Port	Result	Remarks
NETWORK #1	Complies	No reaction recognized
NETWORK #2	Complies	No reaction recognized
NETWORK #3	Complies	No reaction recognized
ALARM IN	Complies	No reaction recognized
ALARM OUT	Complies	No reaction recognized
AUDIO OUT	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 : 2022. 07. 04.
 Test method : EN 61000-4-11:2004/A1:2017
 Temperature / Humidity / Pressure : 24 °C / 40 % R.H. / 100 kPa
 Ut : 230 Vac
 Test Location : Shielded Room
 Test mode : Operating 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	: 2022. 07. 04.
Test method	: EN 50130-4:2011/A1:2014
Temperature / Humidity / Pressure	: 24 °C / 40 % 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	: Operating 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	2023.03.14	1 year
☒	Pulse Limiter	ESH3-Z2	Rohde & Schwarz	100710	2023.03.14	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	2023.03.14	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	ESCI7	Rohde & Schwarz	100772	2022.09.02	1 year
☒	Amplifier	8447D	HP	1937A03453	2022.11.30	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	ESCI7	Rohde & Schwarz	100772	2022.09.02	1 year
☐	EMI TEST Receiver	ESU	Rohde & Schwarz	100092	2022.09.02	1 year
☒	Amplifier	8449B	Agilent	3008A02126	2023.03.14	1 year
☐	Amplifier	PAM-840A	COM-POWER	461314	2023.03.17	1 year
☐	HORN ANTENNA	3116B	ETS	133350	2024.03.22	2 year
☐	HORN ANTENNA	3116B	ETS	81109	2024.04.25	2 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	2023.03.15	1 year
☒	Power Sensor	E9300A	Agilent	MY41497992	2023.03.15	1 year
☒	Power Sensor	E9300A	Agilent	MY41497618	2023.03.15	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	2023.03.15	1 year
☒	POWER METER	NRVD	R&S	101689	2023.03.15	1 year
☒	POWER Sensor	URV5-Z2	R&S	100755	2023.03.15	1 year
☒	POWER Sensor	URV5-Z2	R&S	100756	2023.03.15	1 year
☒	RF Power Amplifier	FLL75A	FRANKONIA	1033	-	-
☒	EM INJECTION CLAMP	TSIC-23	F.C.C	529	2023.03.17	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	2023.03.14	1 year
☒	CDN (M3)	TSCDN-M3-16A	F.C.C	07016	2023.03.14	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



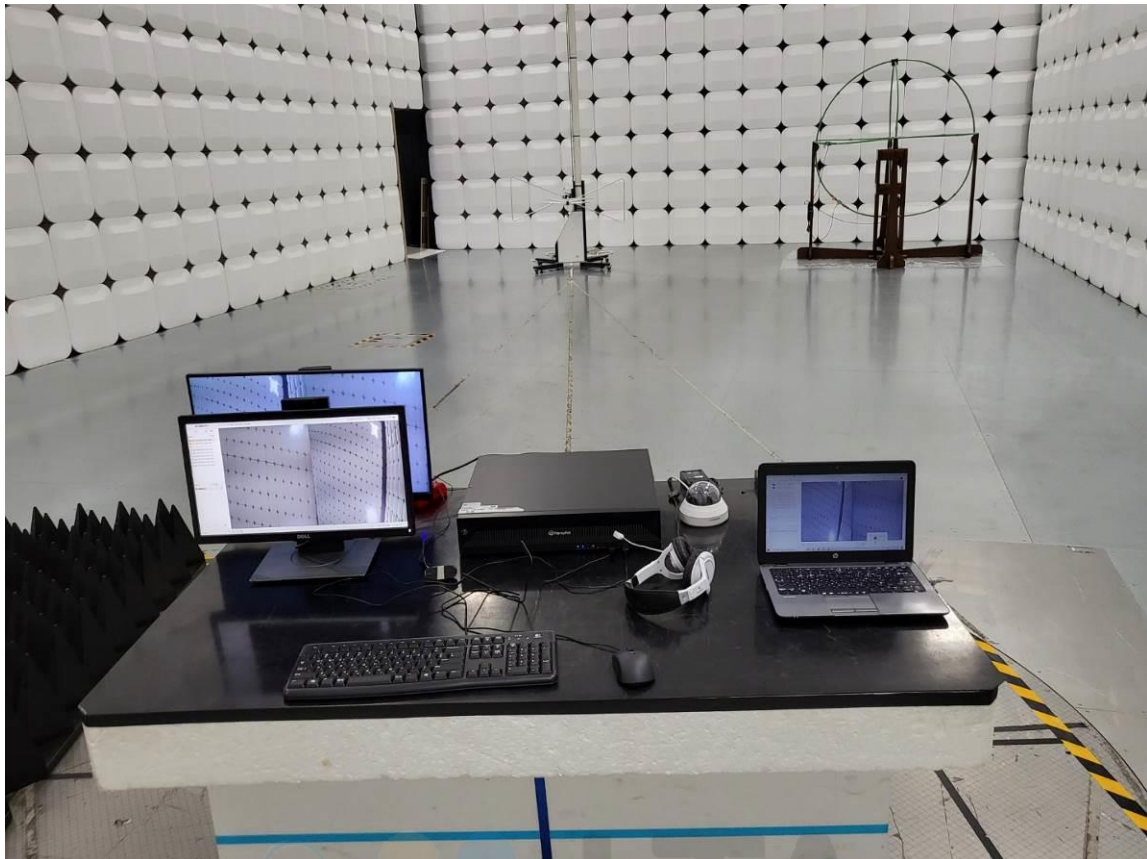
Conducted Emissions



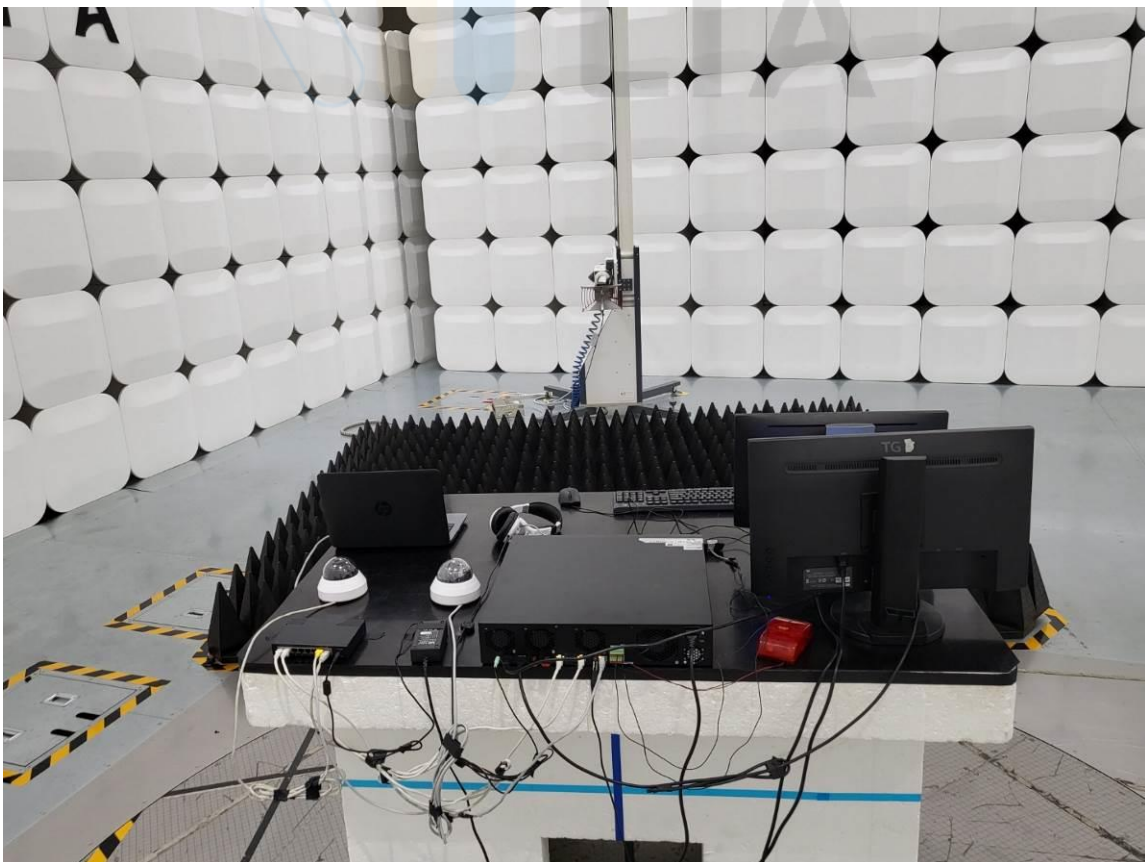
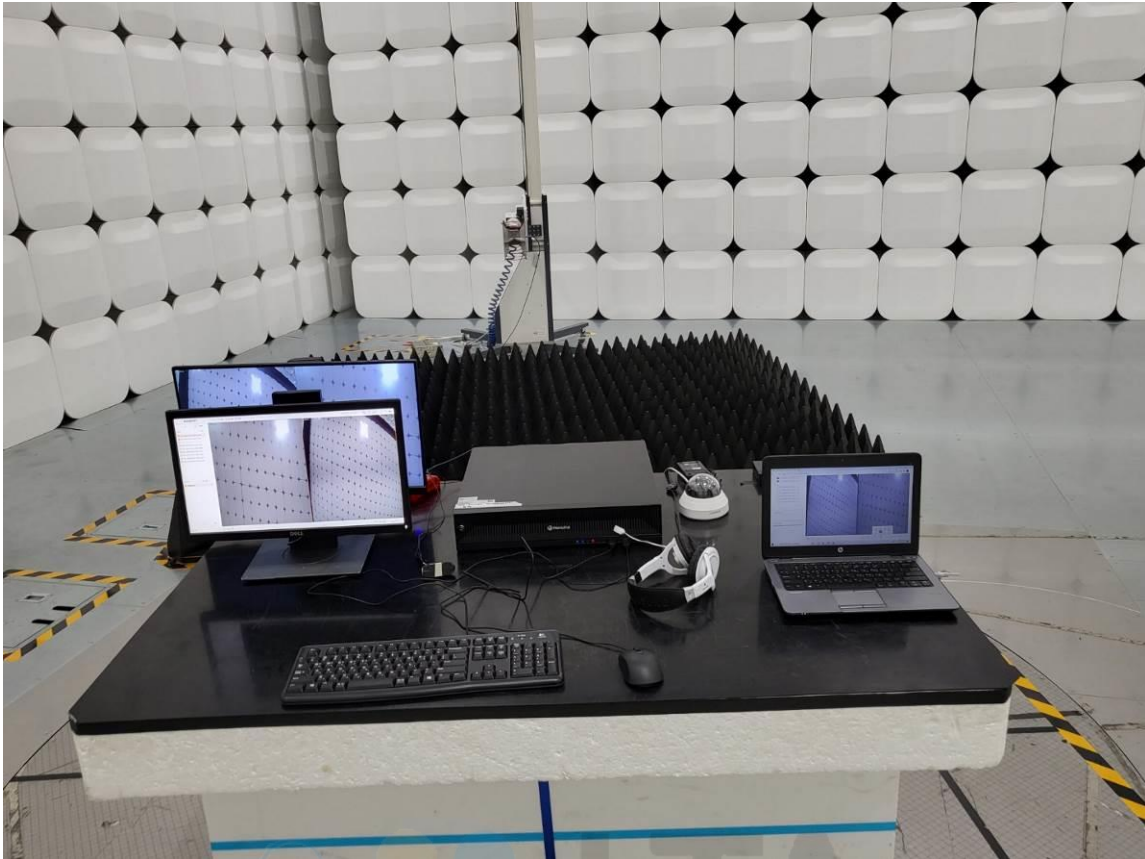
Conducted Emissions (TEL)



Radiated Emissions - Below 1 GHz



Radiated Emissions - Above 1GHz



Harmonic Current Emission / Voltage Fluctuations and Flicker



Electrostatic Discharge



RF Electromagnetic Field

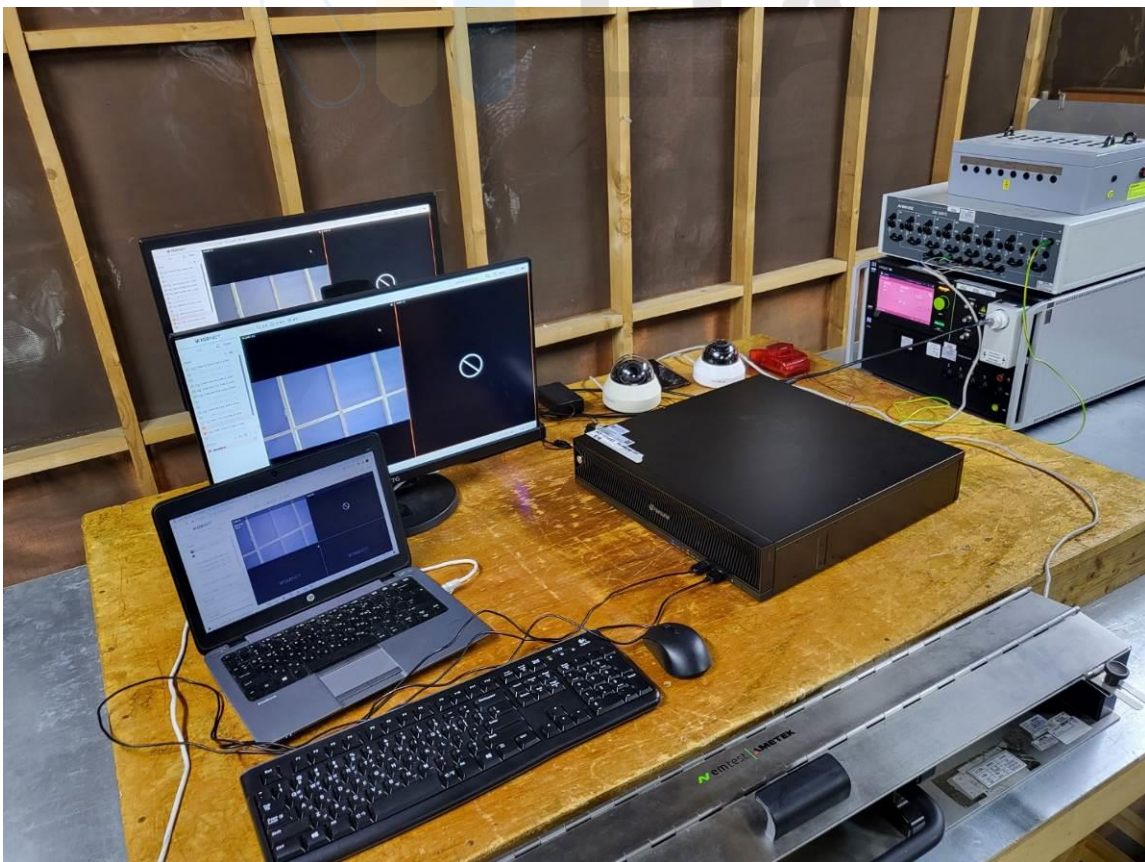


LTA

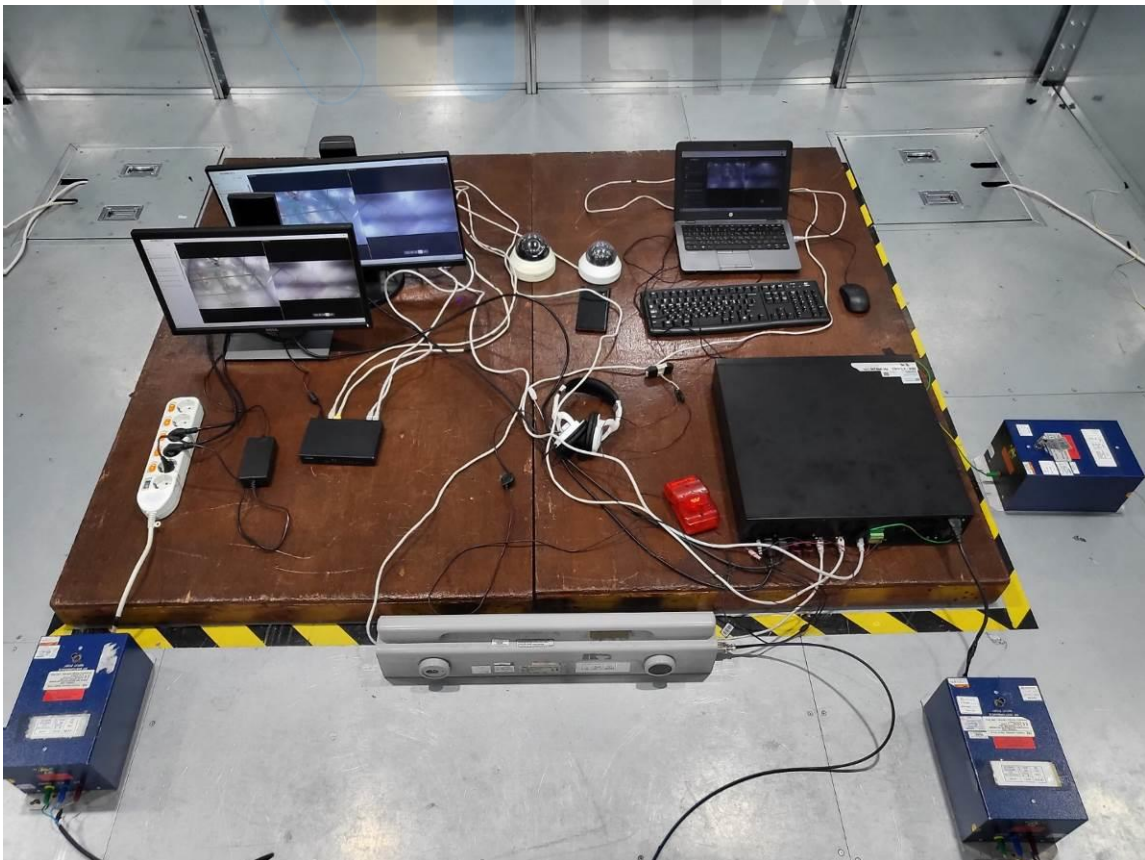
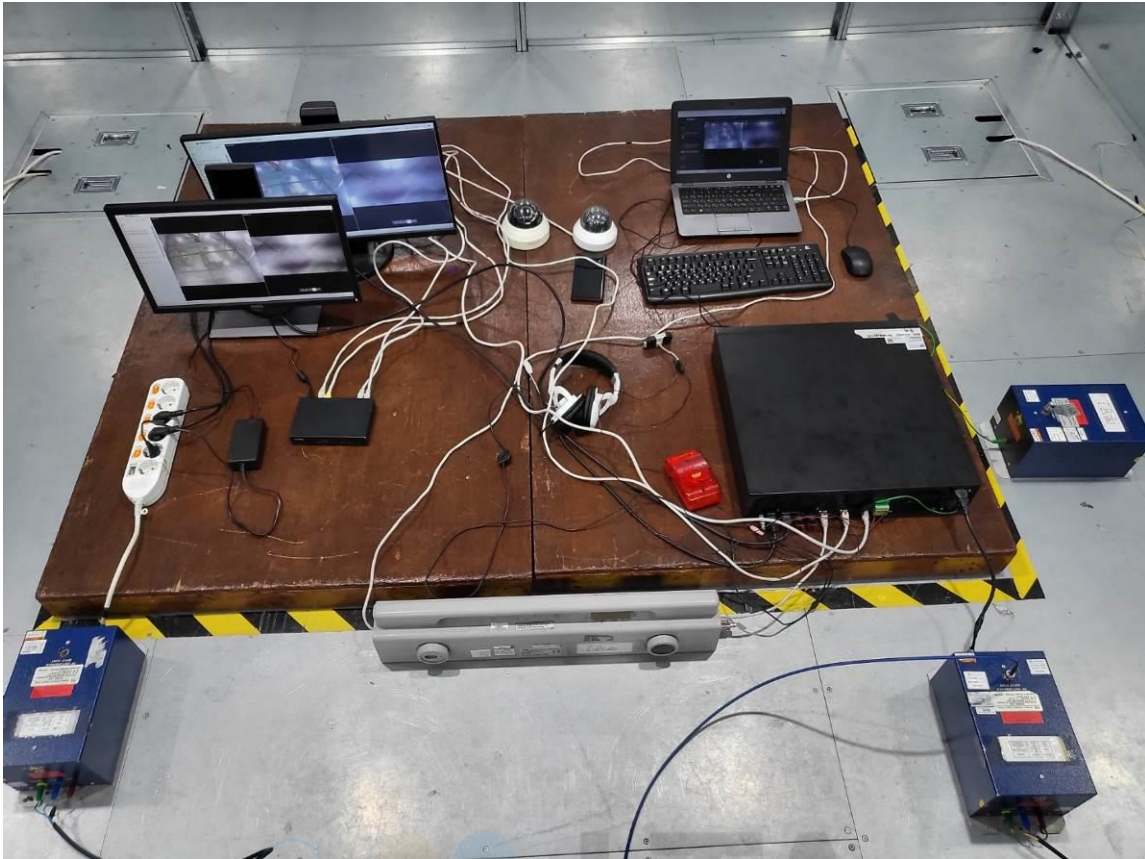
Electrical Fast Transients



Surges



Conducted Disturbances, Induced by Radio-Frequency Fields



Main supply voltage (dips, variations) short interruptions



EUT



EUT



EUT _ Modification



LTA