LTA

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: September 15 - 21, 2023
Project No: 230831-0146
Test Site : LTA Co., Ltd.

Model No. **XRN-3220B4**

APPLICANT **Hanwha Vision Co., Ltd**

Equipment Name	:	**Network Video Recorder**
Manufacturer	:	**Hanwha Vision Co., Ltd**
Model Name	:	**XRN-3220B4**
Additional Model Name	:	**-**
Test Device Serial No.:	:	**Identification**
Rule Part(s)	:	**VCCI-CISPR 32:2016**

Date of issue : **September 25, 2023**

This test report is issued under the authority of:

Young Kyu Shin, Technical Manager

The test was supervised by:

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.
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	31.07.2023	LR500172307BO	Initial
1	25.09.2023	LR500172309AC	Change hardware parts (PCBs and fan)

TABLE OF CONTENTS

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
RRA	KOREA	KR0049	-	RRA accredited Lab.
	U.S.A		2025-03-29	
	CANADA		2024-08-15	
VCCI	JAPAN	C-14948	2026-09-10	VCCI registration
		T-12416	2026-09-10	
		R-14483	2026-10-15	
		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	:	+82-10-2667-4196 / +82-70-7147-8361

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
Category	:	Network Video Recorder
Model Name	:	XRN-3220B4
Additional Model Name	:	-
Serial number	:	Identification
Date of receipt	:	July 17, 2023
EUT condition	:	Pre-production, not damaged
Interface ports	:	AC IN, HDMI #1, #2, ALARM IN, ALARM OUT, AUDIO OUT, USB #1 ~ #4, NETWORK #1 ~ #3, Console(Unused)
Power rating	:	AC 100 V, 50, 60 Hz

2-3 Modification

- Supplementary area: gasket tape inside the device / Material: gasket tape (model name: N/A, manufacturer: N/A number: 1 EA)

2-4 Test conditions

Temp. / Humid.	:	(21 ~ 23) ℃ / (55 ~ 56) % R.H.
Tested Model	:	XRN-3220B4
Test mode	:	Operating mode
Test Voltage	:	AC 100 V, 50, 60 Hz

2-5 List of EUT and ACCESSORY

EUT				
Equipment Name	**Model Name**	**Serial No.**	**Manufacturer**	**Remarks**
Network Video Recorder	**XRN-3220B4**	**N/A**	**HANWHA VISION VIETNAM COMPANY LIMITED D-TECH CO., LTD.**	**EUT**
Mouse	**MOKJUO**	**34O04812**	**Primax Electronics Ltd.**	**EUT**
ACCESSORY				
Equipment Name	**Model Name**	**Serial No.**	**Manufacturer**	**Remarks**
NOTEBOOK	ELITE BOOK	N/A	HP	-
MONITOR #1	6230VP	73010478A2 20371	Lien Fong(Wujiang) Electronics Co.,Ltd.	-
MONITOR #2	AM24MB	N/A	ATEC	-
Keyboard	K120	1547SC5034 U8	Logitech	-
POE Injector	ipTIMEPoE408	POE408 4BC00624	ipTIME	-
POE Injector adapter	ANY480A5C-NI	N/A	Wendeng Any Electronics Co.,Ltd	-
ALARM JIG #1	N/A	N/A	N/A	-
ALARM JIG #2	N/A	N/A	N/A	
Earphone	N/A	N/A	N/A	-
USB Memory Stick	Cruzer Blade 8GB	N/A	SanDisk	2 EA
IP Camera #1	LND-6032R	ZNDJ6V4M 90000CM	HANWHA TECHWIN CO.,LTD.	-
IP Camera #2	LND-6022R	ZNDE6V4M 90000EV	HANWHA TECHWIN CO.,LTD.	-

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

3. Test Report

3.1 Summary of tests

Parameter	Applied Standard	Status
I. Emission		
Conducted Emissions	VCCI-CISPR 32:2016	C
Conducted Emissions at telecommunication ports	VCCI-CISPR 32:2016	C
Radiated Emissions	VCCI-CISPR 32:2016	C
Radiated Emissions at above 1 GHz	VCCI-CISPR 32:2016	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.

4. EMISSION

4.1 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/Telecommunication ports.

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

Test method	:	VCCI-CISPR 32:2016
Measurement Frequency range	:	150 kHz - 30 MHz
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 Factor

Emission Level= meter reading + COR.F

Limits for Conducted Emissions at the mains ports of class A ITE

Frequency Range	Quasi-peak	Average
(0.15 - 0.5) MHz	79 dBµV	66 dBµV
(0.5 – 30) MHz	73 dBµV	60 dBµV
Note: The limits will decrease with the frequency logarithmically within 0.15MHz to 0.5MHz		

Limits for Conducted Emissions at the mains ports of class B ITE

Frequency Range	Quasi-peak	Average
(0.15 – 0.5) MHz	(66 – 56) dBµV	(56 - 46) dBµV
(0.5 – 5) MHz	56 dBµV	46 dBµV
(5 – 30) MHz	60 dBµV	50 dBµV
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) dBµV	(84 – 74) dBµV	(53 – 43) dBµV	(40 – 30) dBµV
(0.5 – 30) MHz	87 dBµV	74 dBµV	43 dBµV	30 dBµV

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) dBµV	(74 – 64) dBµV	(40 – 30) dBµV	(30 – 20) dBµV
(0.5 – 30) MHz	74 dBµV	64 dBµV	30 dBµV	20 dBµV

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) / 50 Hz

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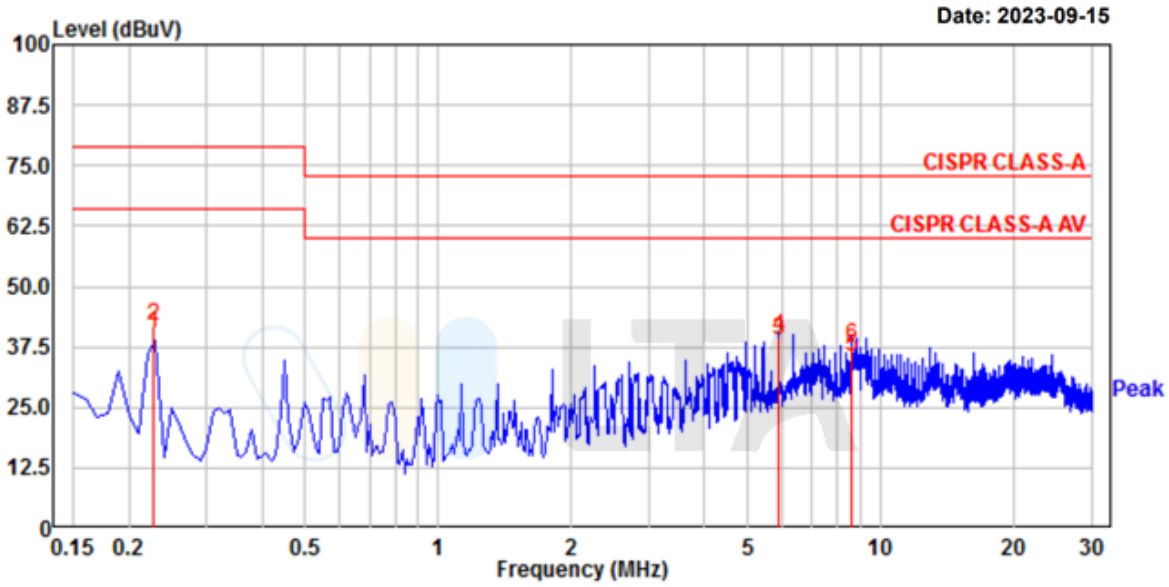
Project No.	: 230831-0146	Phase	: LINE
Test Mode	: Operating	Test Power	: AC 100 V / 50 Hz
Temp./ Humi.	: 23 'C / 59 % R.H.	Test Engineer	: AHN H Y



No.	Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	
2.	0.226	22.37	21.12	19.42	41.79	40.54	79.00	66.00	37.21	25.46	Line
4.	5.878	19.90	19.23	19.65	39.55	38.88	73.00	60.00	33.45	21.12	Line
6.	8.592	17.93	15.69	19.73	37.66	35.42	73.00	60.00	35.34	24.58	Line

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

Conducted Emissions (NEUTRAL) / 50 Hz

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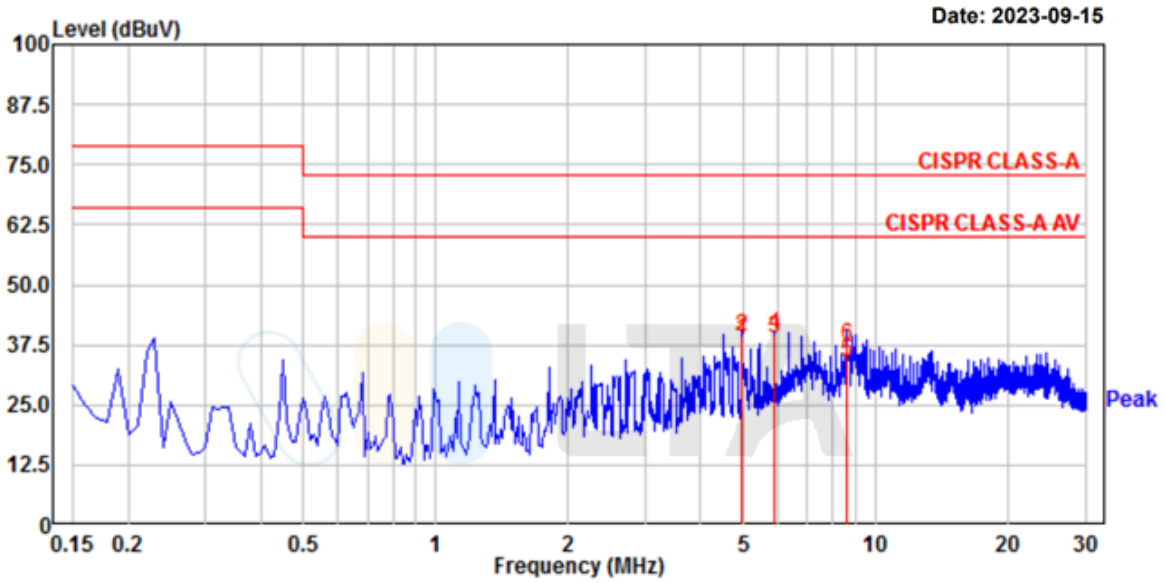
Project No.	: 230831-0146	Phase	: NEUTRAL
Test Mode	: Operating	Test Power	: AC 100 V / 50 Hz
Temp./ Humi.	: 23 'C / 59 % R.H.	Test Engineer	: AHN H Y



No.	Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	
2.	4.974	19.53	18.79	19.61	39.14	38.40	73.00	60.00	33.86	21.60	neutral
4.	5.879	20.04	19.22	19.65	39.69	38.87	73.00	60.00	33.31	21.13	neutral
6.	8.594	17.51	14.42	19.73	37.24	34.15	73.00	60.00	35.76	25.85	neutral

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

Conducted Emissions (LINE) / 60 Hz

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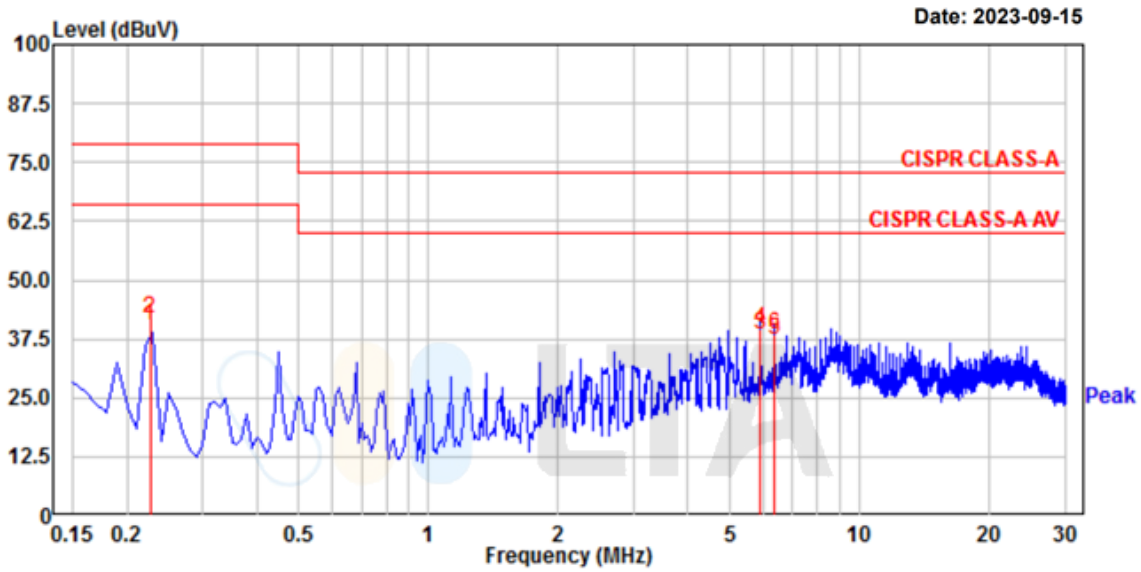
Project No.	: 230831-0146	Phase	: LINE
Test Mode	: Operating	Test Power	: AC 100 V / 60 Hz
Temp./ Humi.	: 23 'C / 59 % R.H.	Test Engineer	: AHN H Y



No.	Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	
2.	0.226	22.38	21.11	19.42	41.80	40.53	79.00	66.00	37.20	25.47	Line
4.	5.879	19.95	18.93	19.65	39.60	38.58	73.00	60.00	33.40	21.42	Line
6.	6.332	18.81	17.59	19.66	38.47	37.25	73.00	60.00	34.53	22.75	Line

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

Conducted Emissions (NEUTRAL) / 60 Hz

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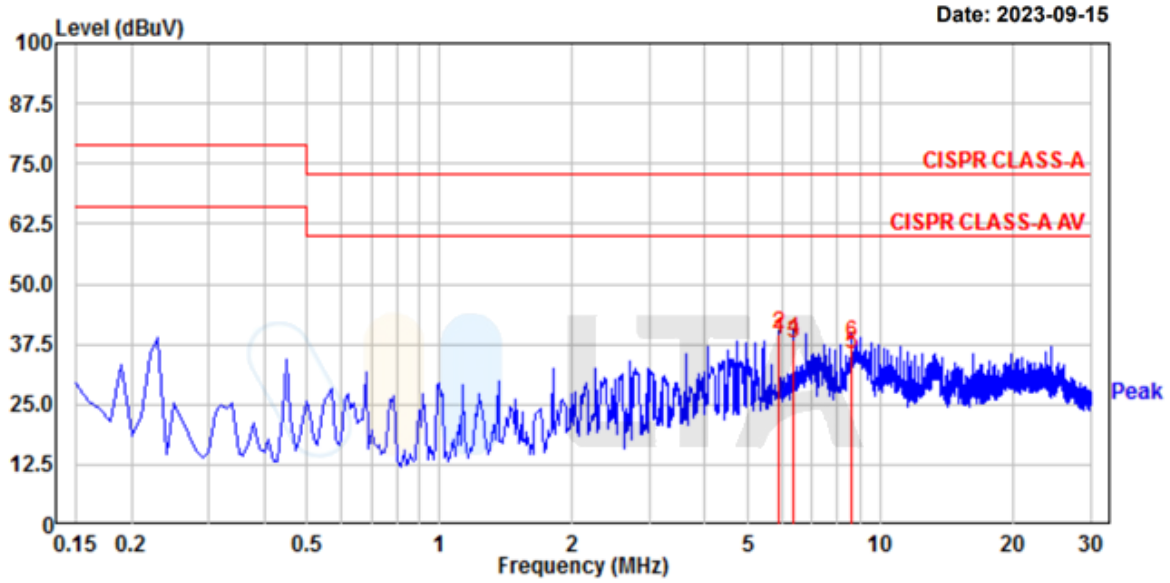
Fax:+82-31-3236010

Project No.	: 230831-0146	Phase	: NEUTRAL
Test Mode	: Operating	Test Power	: AC 100 V / 60 Hz
Temp./ Humi.	: 23 'C / 59 % R.H.	Test Engineer	: AHN H Y



No.	Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	
2.	5.879	19.90	18.96	19.65	39.55	38.61	73.00	60.00	33.45	21.39	neutral
4.	6.329	18.80	18.05	19.66	38.46	37.71	73.00	60.00	34.54	22.29	neutral
6.	8.592	18.11	15.69	19.73	37.84	35.42	73.00	60.00	35.16	24.58	neutral

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

Conducted Emissions (TEL_1000 M #1)

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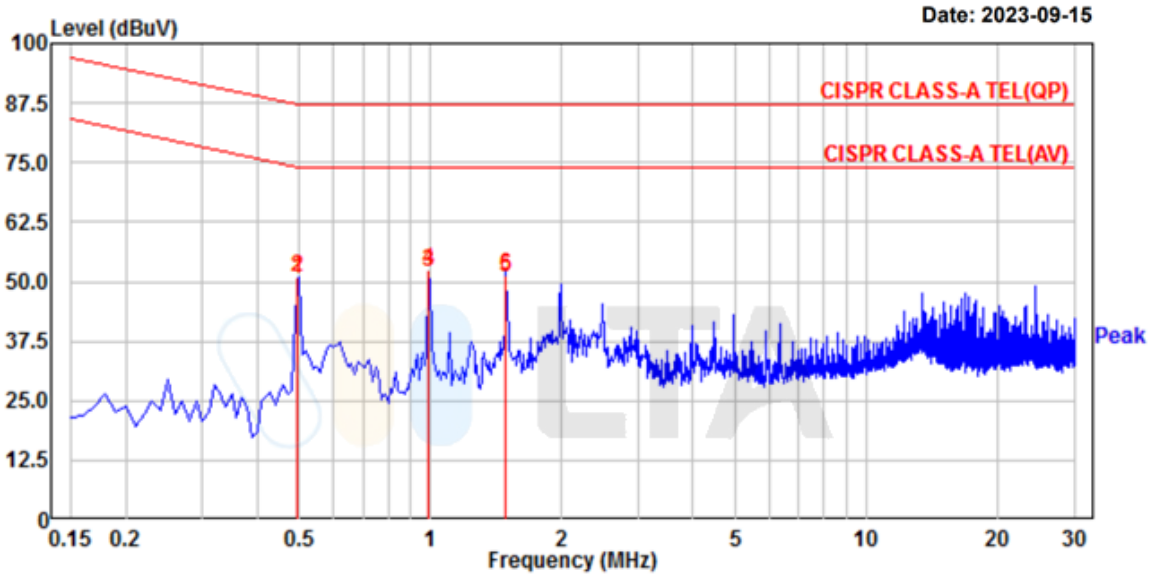
Tel:+82-31-3236008,9
Fax:+82-31-3236010

Project No.	: 230831-0146	Phase	: TEL_1000M (LAN #1)
Test Mode	: Operating	Test Power	: AC 100 V / 60 Hz
Temp./ Humi.	: 23 'C / 59 % R.H.	Test Engineer	: AHN H Y



No.	Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	
2.	0.496	31.73	31.42	19.32	51.05	50.74	87.06	74.06	36.01	23.32	Line
4.	0.993	33.02	32.69	19.26	52.28	51.95	87.00	74.00	34.72	22.05	Line
6.	1.490	32.17	31.62	19.23	51.40	50.85	87.00	74.00	35.60	23.15	Line

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

Conducted Emissions (TEL_1000 M #2)

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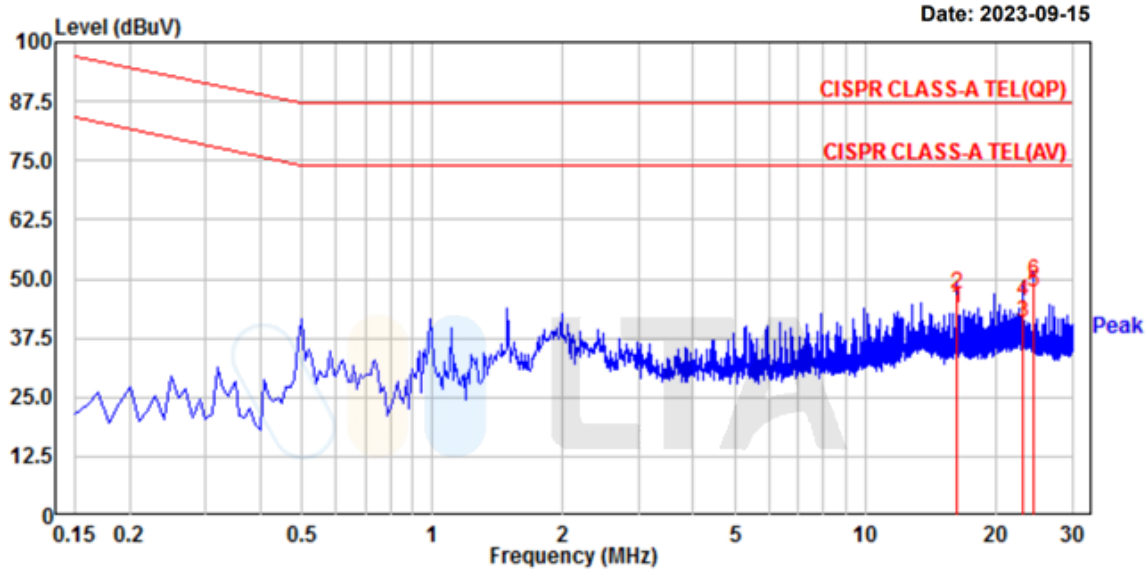
Cheoin-gu, Youngin-si, Gyeonggi-do
449-822 Korea
Tel:+82-31-3236008,9
Fax:+82-31-3236010

Project No.	: 230831-0146	Phase	: TEL_1000M (LAN #2)
Test Mode	: Operating	Test Power	: AC 100 V / 60 Hz
Temp./ Humi.	: 23 'C / 59 % R.H.	Test Engineer	: AHN H Y



No.	Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	
2.	16.228	27.23	24.35	19.54	46.77	43.89	87.00	74.00	40.23	30.11	Line
4.	23.127	25.45	21.02	19.66	45.11	40.68	87.00	74.00	41.89	33.32	Line
6.	24.349	29.58	27.45	19.69	49.27	47.14	87.00	74.00	37.73	26.86	Line

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

4.2 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	:	VCCI-CISPR 32:2016
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 only be made up to 6 GHz.

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 dBµV/m
(230 – 1 000) MHz	47 dBµV/m

CLASS B

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

Limit of 3m above 1 GHz

CLASS A

Frequency Range	Average Limit @ 3m (dBµV/m)	Peak limit @ 3m (dBµV/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 (dBµV/m)	Peak limit @ 3m (dBµV/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) / H / 50 Hz

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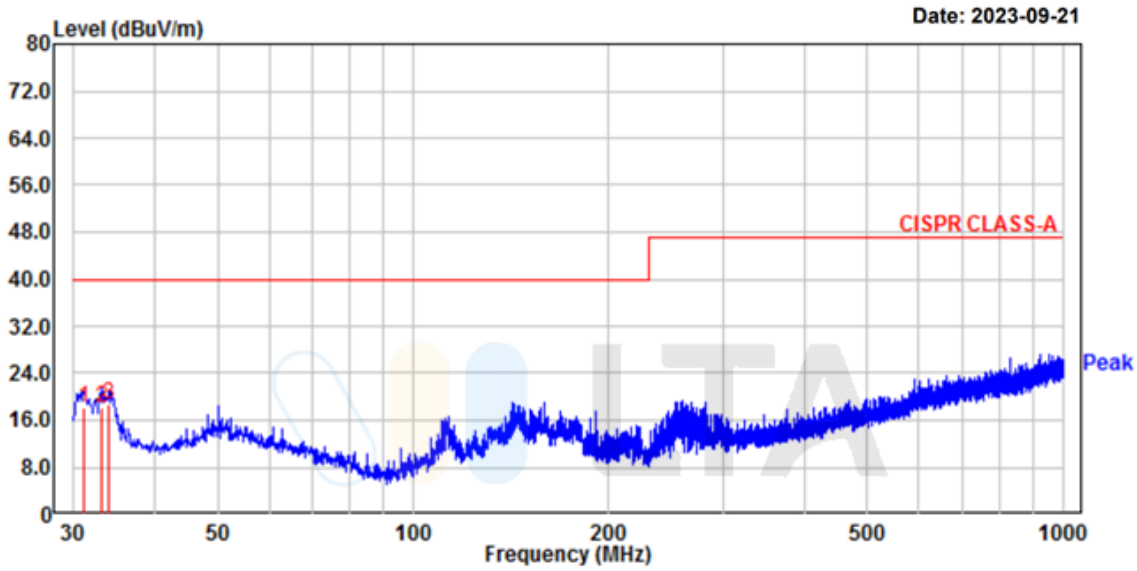
www.ltalab.com

Project No. : 230831-0146 Temp/Humi: 21 'C / 52 % R.H.

Test Mode : Operating Tested by: AHN H Y

Power : AC 100 V / 50 Hz



No.	Freq	Reading	C.F	Result QP	Limit	Margin	Height	Angle	Polarity
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	cm	deg	
1.	31.21	31.50	-13.30	18.20	40.00	21.80	120	30	horizontal
2.	33.15	31.40	-13.15	18.25	40.00	21.75	170	40	horizontal
3.	33.88	31.90	-13.21	18.69	40.00	21.31	222	8	horizontal

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

Radiated Emissions (Below 1 GHz) / V / 50 Hz

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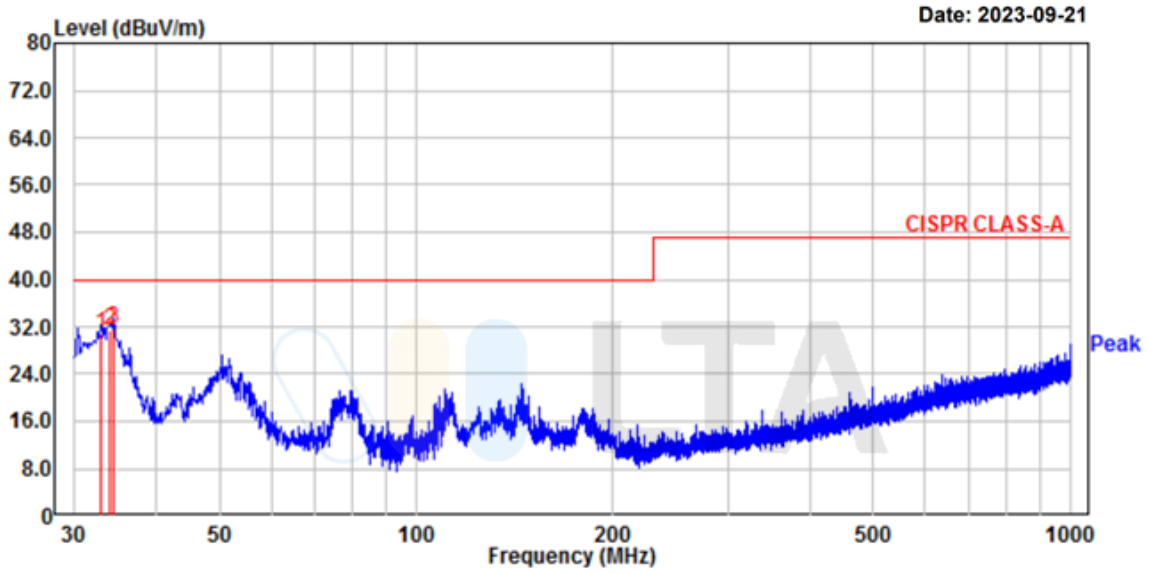
www.ltalab.com

Project No. : 230831-0146 Temp/Humi: 21 'C / 52 % R.H.

Test Mode : Operating Tested by: AHN H Y

Power : AC 100 V / 50 Hz



No.	Freq	Reading	C.F	Result QP	Limit	Margin	Height	Angle	Polarity
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	cm	deg	
1.	32.91	44.11	-13.17	30.94	40.00	9.06	250	80	vertical
2.	34.00	44.60	-13.22	31.38	40.00	8.62	300	10	vertical
3.	34.49	44.90	-13.12	31.78	40.00	8.22	210	70	vertical

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

Radiated Emissions (Below 1 GHz) / H / 60 Hz

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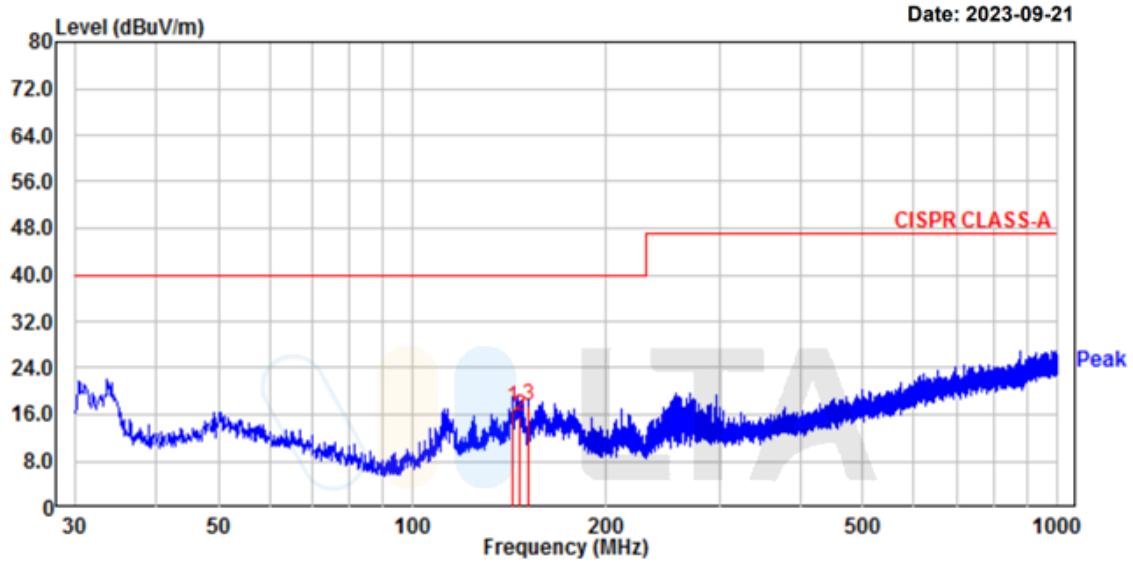
Project No. : 230831-0146 Temp/Humi: 21 'C / 52 % R.H.

Test Mode : Operating Tested by: AHN H Y

Power : AC 100 V / 60 Hz



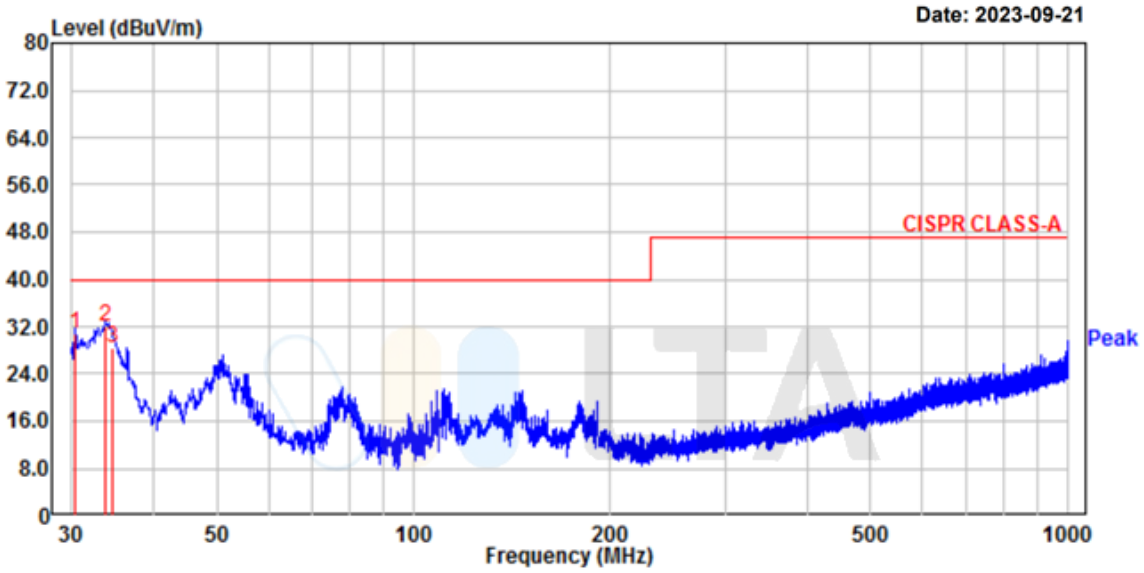
No.	Freq	Reading	C.F	Result QP	Limit	Margin	Height	Angle	Polarity
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	cm	deg	
1.	143.13	28.50	-11.16	17.34	40.00	22.66	400	285	horizontal
2.	146.64	26.71	-10.95	15.76	40.00	24.24	130	50	horizontal
3.	151.61	28.41	-10.80	17.61	40.00	22.39	170	40	horizontal

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

Radiated Emissions (Below 1 GHz) / V / 60 Hz

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

Project No. : 230831-0146
Temp/Humi: 21 'C / 52 % R.H.
Test Mode : Operating
Tested by: AHN H Y
Power : AC 100 V / 60 Hz



No.	Freq	Reading	C.F	Result QP	Limit	Margin	Height	Angle	Polarity
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	cm	deg	
1.	30.36	44.10	-13.33	30.77	40.00	9.23	100	289	vertical
2.	33.76	45.10	-13.20	31.90	40.00	8.10	250	20	vertical
3.	34.61	41.60	-13.09	28.51	40.00	11.49	280	60	vertical

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

Radiated Emissions (Above 1 GHz) / H / 50 Hz

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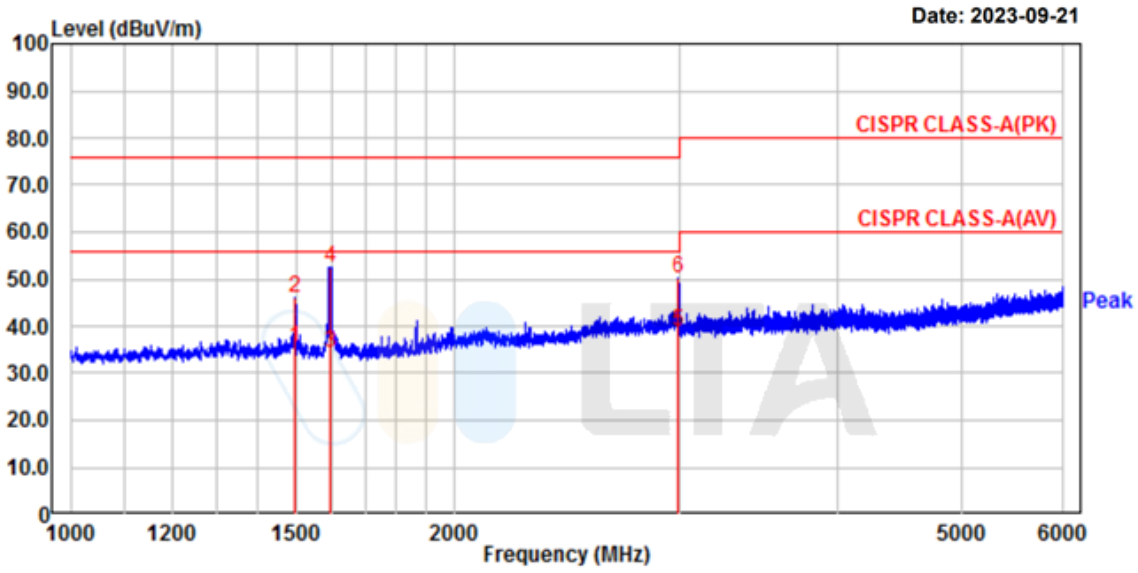
Fax : +82-31-3236010
www.ltalab.com

Project No.	: 230831-0146	Temp/Humi: 21 'C / 53 % R.H.	
Test Mode	: Operating	Tested by: AHN H Y	
Power	: AC 100 V / 50 Hz	Measure distance : 3.8 m	



No.	Freq	RD PK	RD AV	C.F	Result PK	Result AV	Limit PK	Limit AV	Margin PK	Margin AV	Height	Angle	Polarity
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	cm	deg	
2.	1496.25	49.00	38.56	-2.98	46.02	35.58	76.00	56.00	29.98	20.42	100	281	horizontal
4.	1597.50	55.53	37.14	-2.92	52.61	34.22	76.00	56.00	23.39	21.78	100	243	horizontal
6.	2997.50	43.95	32.50	6.40	50.35	38.90	76.00	56.00	25.65	17.10	100	258	horizontal

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

Radiated Emissions (Above 1 GHz) / V / 50 Hz

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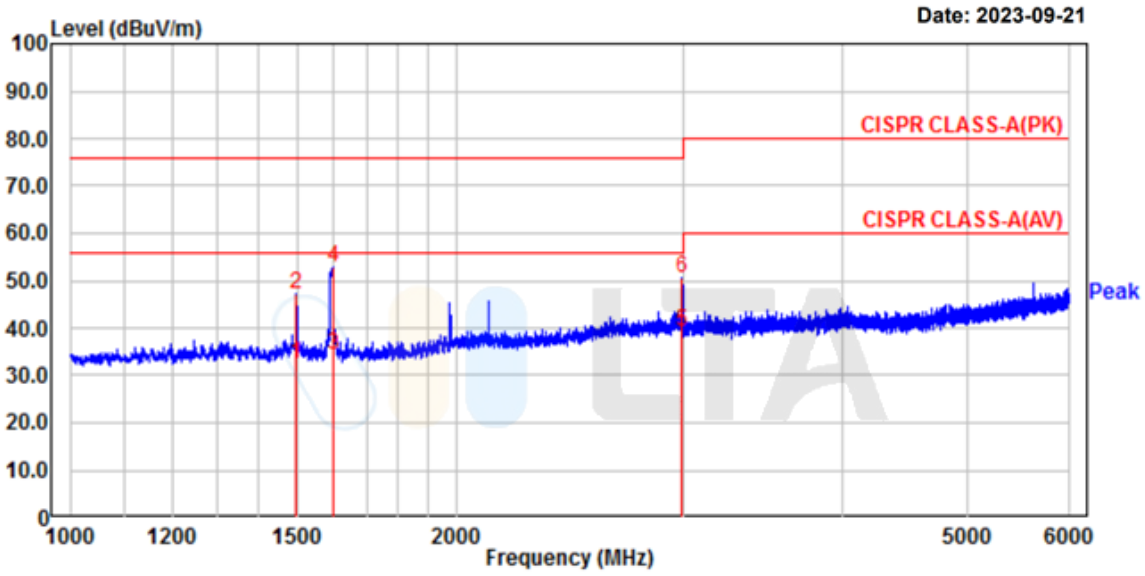
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

Project No. : 230831-0146 Temp/Humi: 21 'C / 53 % R.H.

Test Mode : Operating Tested by: AHN H Y

Power : AC 100 V / 50 Hz Measure distance : 3.8 m



No.	Freq	RD PK	RD AV	C.F	Result PK	Result AV	Limit PK	Limit AV	Margin PK	Margin AV	Height	Angle	Polarity
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	cm	deg	
2.	1498.75	50.19	35.50	-2.97	47.22	32.53	76.00	56.00	28.78	23.47	100	288	vertical
4.	1599.38	55.67	37.40	-2.92	52.75	34.48	76.00	56.00	23.25	21.52	100	312	vertical
6.	2994.38	44.16	32.89	6.40	50.56	39.29	76.00	56.00	25.44	16.71	100	272	vertical

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

Radiated Emissions (Above 1 GHz) / H / 60 Hz

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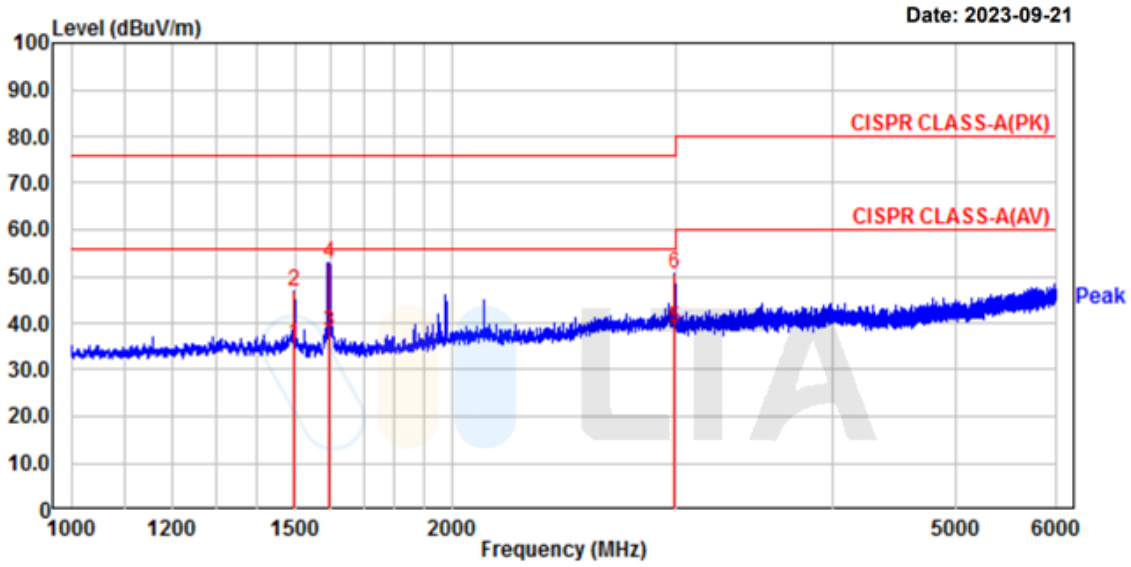
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

Project No. : 230831-0146 Temp/Humi: 21 'C / 52 % R.H.

Test Mode : Operating Tested by: AHN H Y

Power : AC 100 V / 60 Hz Measure distance : 3.8 m



No.	Freq	RD PK	RD AV	C.F	Result PK	Result AV	Limit PK	Limit AV	Margin PK	Margin AV	Height	Angle	Polarity
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	cm	deg	
2.	1498.75	49.92	38.50	-2.97	46.95	35.53	76.00	56.00	29.05	20.47	100	278	horizontal
4.	1596.88	55.78	40.91	-2.93	52.85	37.98	76.00	56.00	23.15	18.02	100	237	horizontal
6.	2997.50	44.27	32.50	6.40	50.67	38.90	76.00	56.00	25.33	17.10	100	257	horizontal

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

Radiated Emissions (Above 1 GHz) / V / 60 Hz

4, Songjuro 236Beon-gil, yanggi-myeon,
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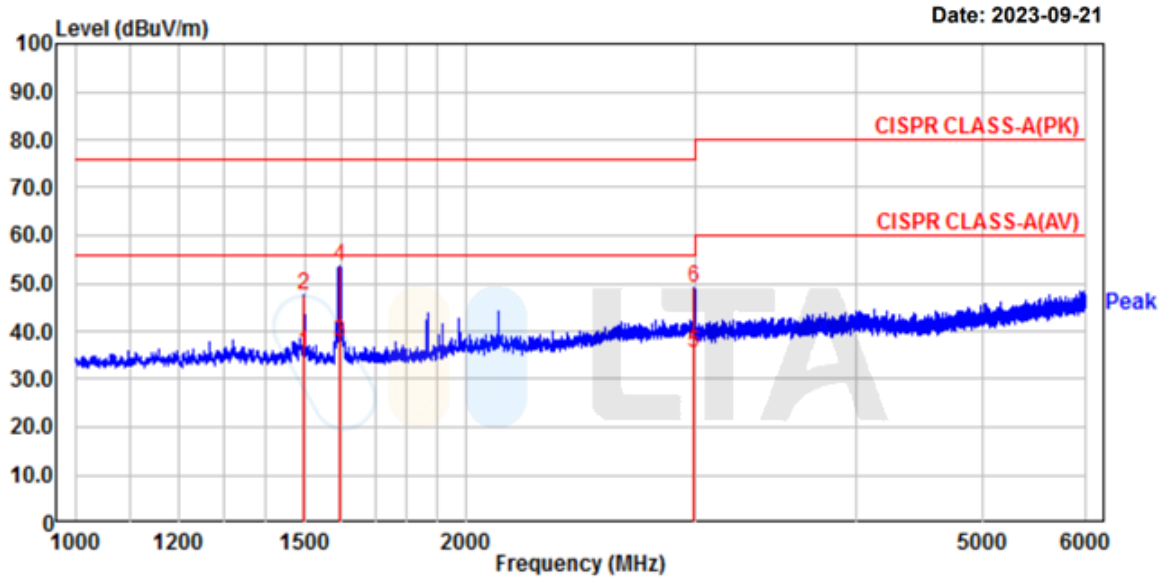
Project No. : 230831-0146 Temp/Humi: 21 'C / 52 % R.H.

Test Mode : Operating Tested by: AHN H Y

Power : AC 100 V / 60 Hz Measure distance : 3.8 m



No.	Freq	RD PK	RD AV	C.F	Result PK	Result AV	Limit PK	Limit AV	Margin PK	Margin AV	Height	Angle	Polarity
	MHz	dBµV	dBµV	dB	dBµV	dBµV	dBµV	dBµV	dB	dB	cm	deg	
2.	1498.75	50.49	38.50	-2.97	47.52	35.53	76.00	56.00	28.48	20.47	100	297	vertical
4.	1598.13	56.40	40.60	-2.92	53.48	37.68	76.00	56.00	22.52	18.32	100	257	vertical
6.	2996.25	42.71	28.90	6.40	49.11	35.30	76.00	56.00	26.89	20.70	100	276	vertical

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

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	2024.03.13	1 year
☒	Pulse Limiter	ESH3-Z2	Rohde & Schwarz	100710	2024.03.13	1 year
☐	ISN	ISN T800	TESEQ	27109	2024.08.17	1 year
☒	ISN	ENY81-CA6	Rohde & Schwarz	101565	2024.08.17	1 year
☐	ISN	ISN S8	Schwarzbeck	79	2024.08.17	1 year
☐	CURRENT PROBE	EZ-17	Rohde & Schwarz	100508	2024.08.23	1 year
☐	CDN	TSCDN-C1-BNC-75	F.C.C	07004	2024.03.13	1 year
☐	LISN	ESH3-Z6	Rohde & Schwarz	100378	2024.08.22	1 year
☐	LISN	ESH3-Z6	Rohde & Schwarz	101468	2024.08.22	1 year
☒	LISN(main)	ENV216	Rohde & Schwarz	102872	2024.09.07	1 year
☒	LISN(sub)	LT32C/10	AFJ	32031518210	2024.08.22	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	2024.08.22	1 year
☒	Amplifier	8447D	HP	1937A03453	2024.08.22	1 year
☒	BILOG Antenna	VULB 9168	SCHWARZBECK	749	2025.03.29	2 year
☒	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

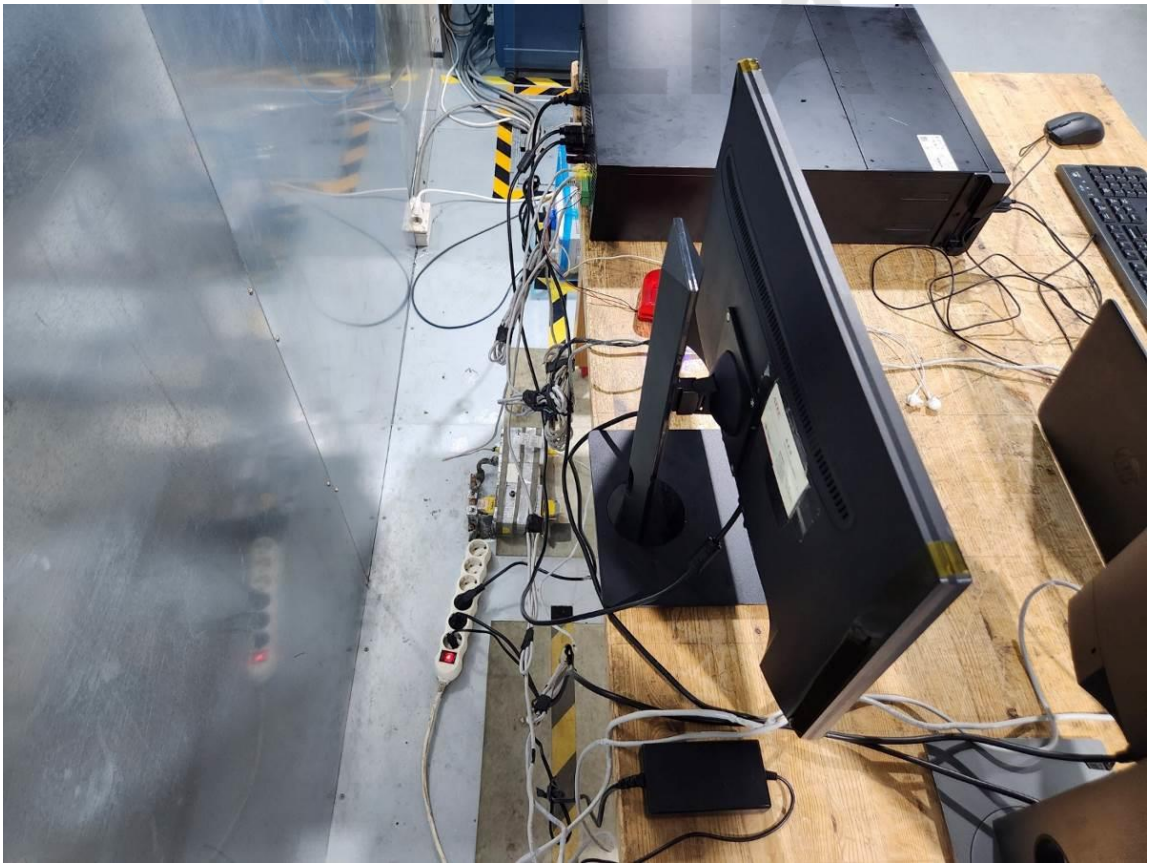
Radiated Emissions – Above 1 GHz

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	EMI TEST Receiver	ESCI7	Rohde & Schwarz	100772	2024.08.22	1 year
☐	EMI TEST Receiver	ESU	Rohde & Schwarz	100092	2024.08.22	1 year
☒	Amplifier	8449B	Agilent	3008A02126	2024.03.14	1 year
☐	Amplifier	PAM-840A	COM-POWER	461314	2024.03.15	1 year
☐	HORN ANTENNA	3116B	ETS	133350	2024.03.22	1 year
☐	HORN ANTENNA	3116B	ETS	81109	2024.04.25	1 year
☒	HORN ANTENNA	3115	ETS	114105	2024.04.20	1 year
☒	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

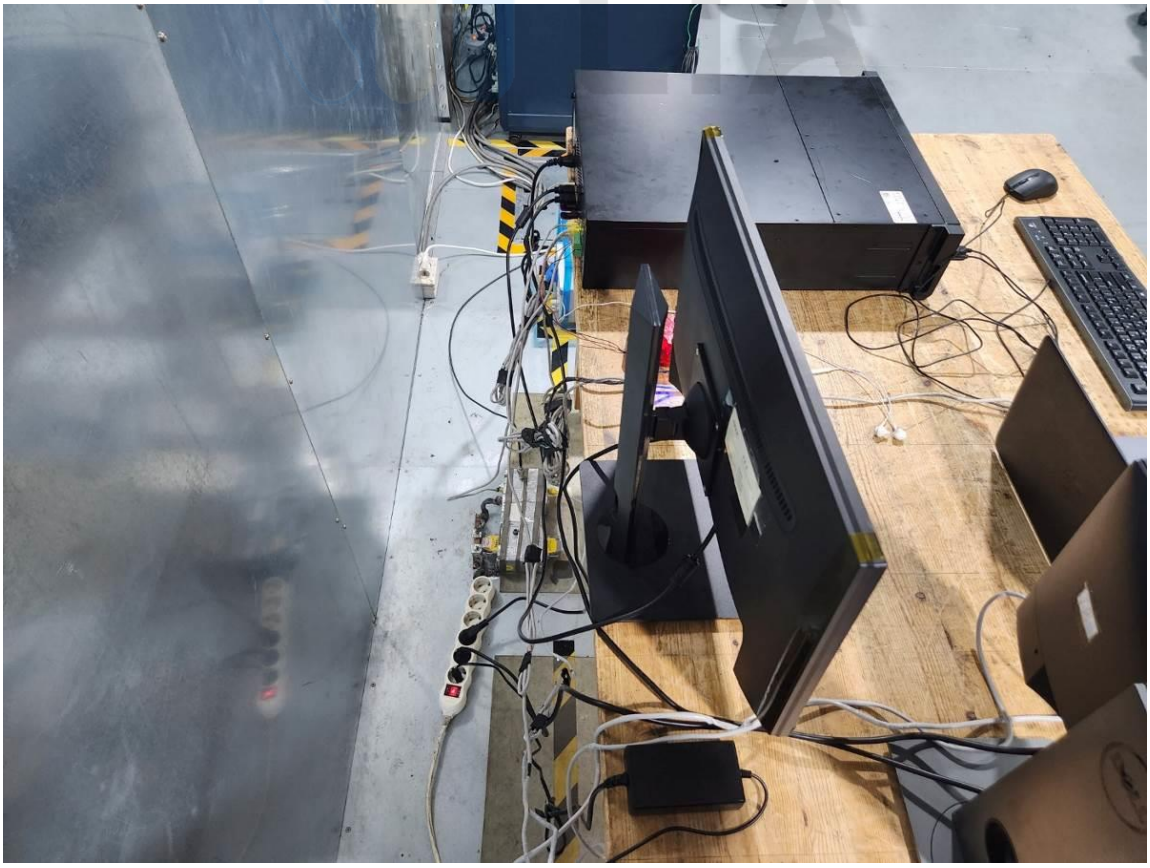
APPENDIX B

PHOTOGRAPHS

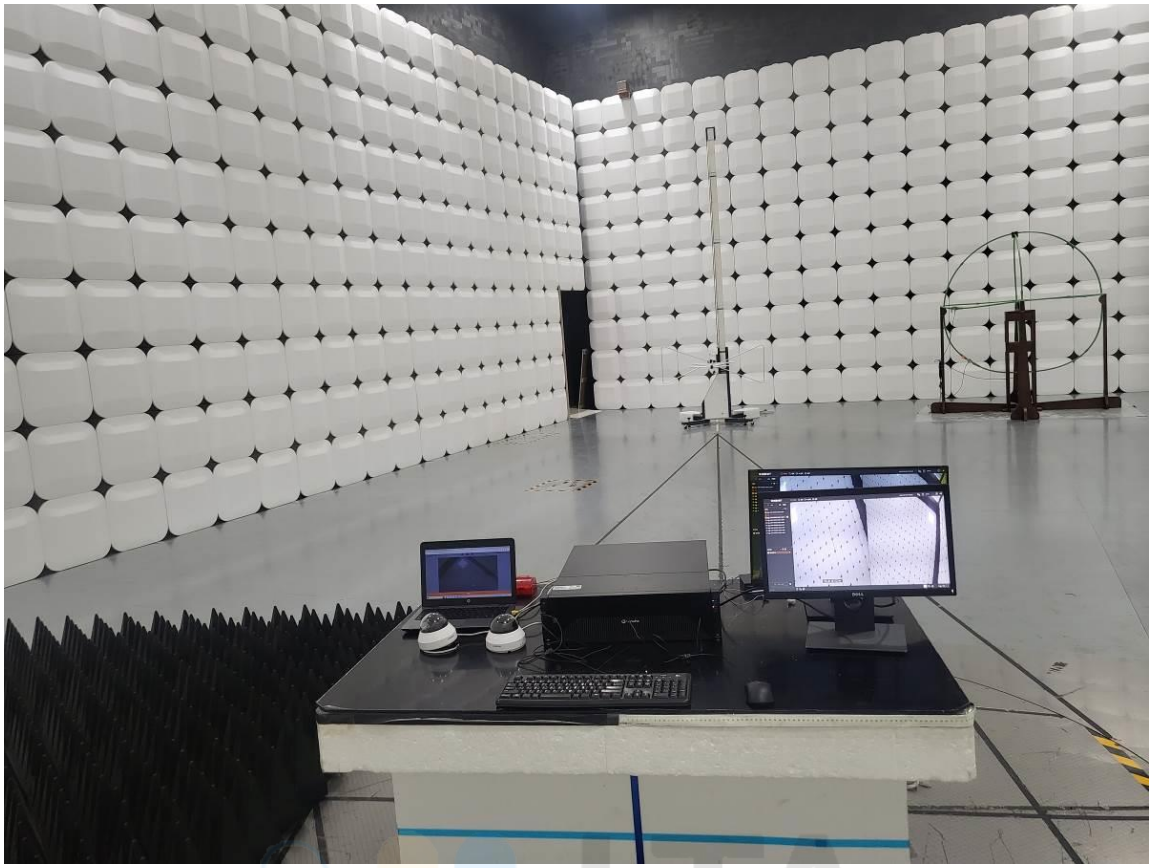
Conducted Emissions

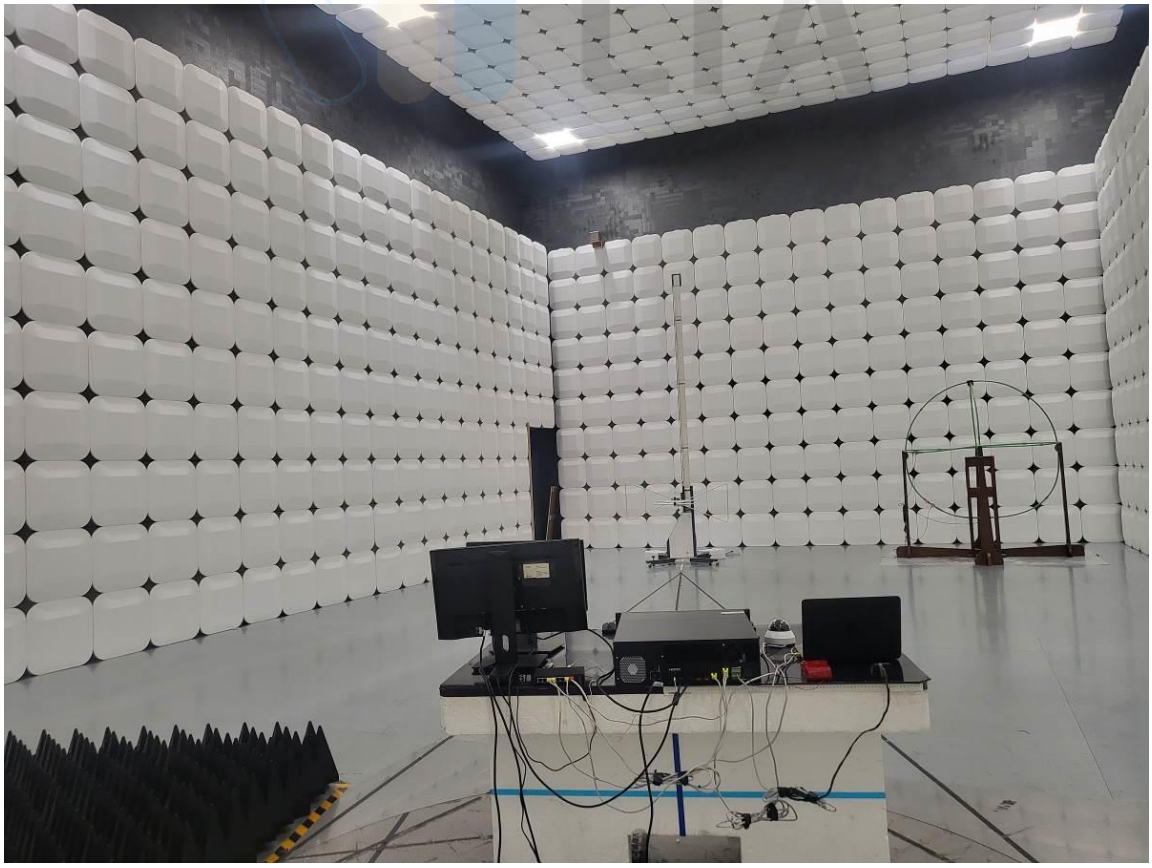


Conducted Emissions (TEL)

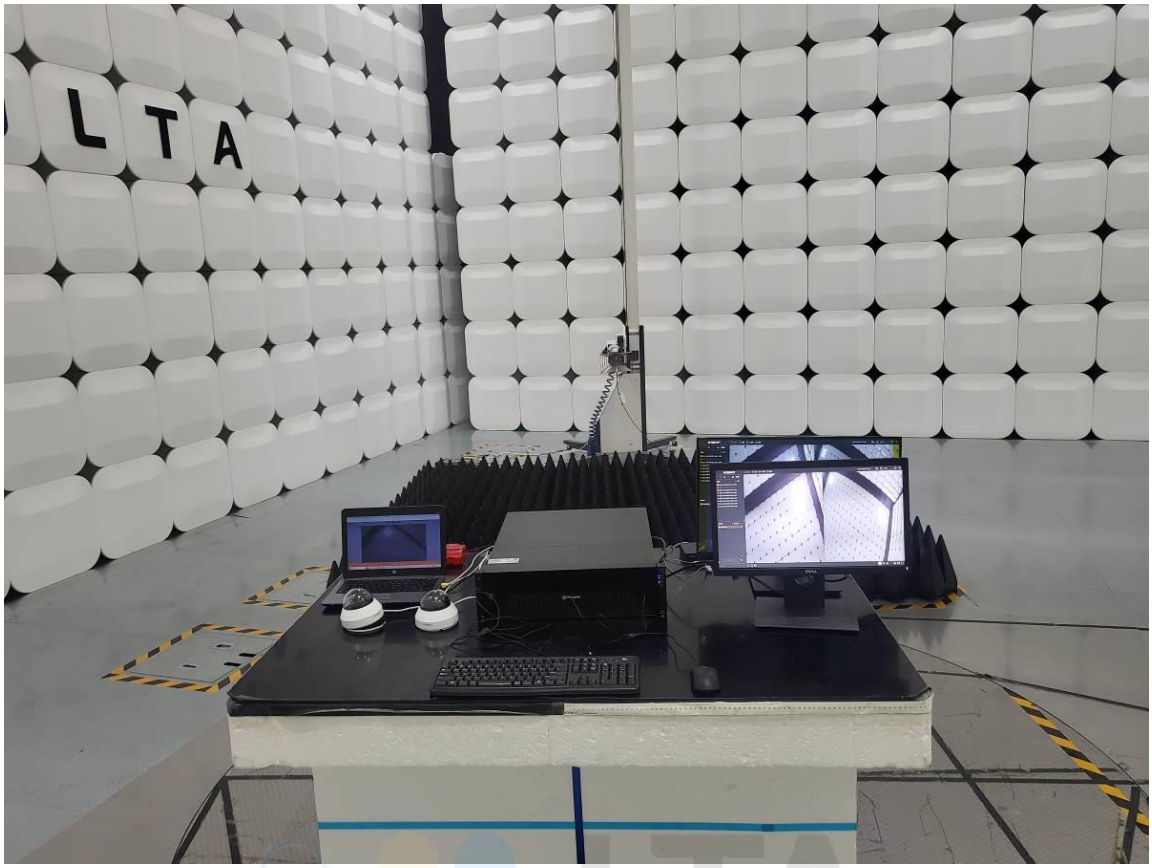


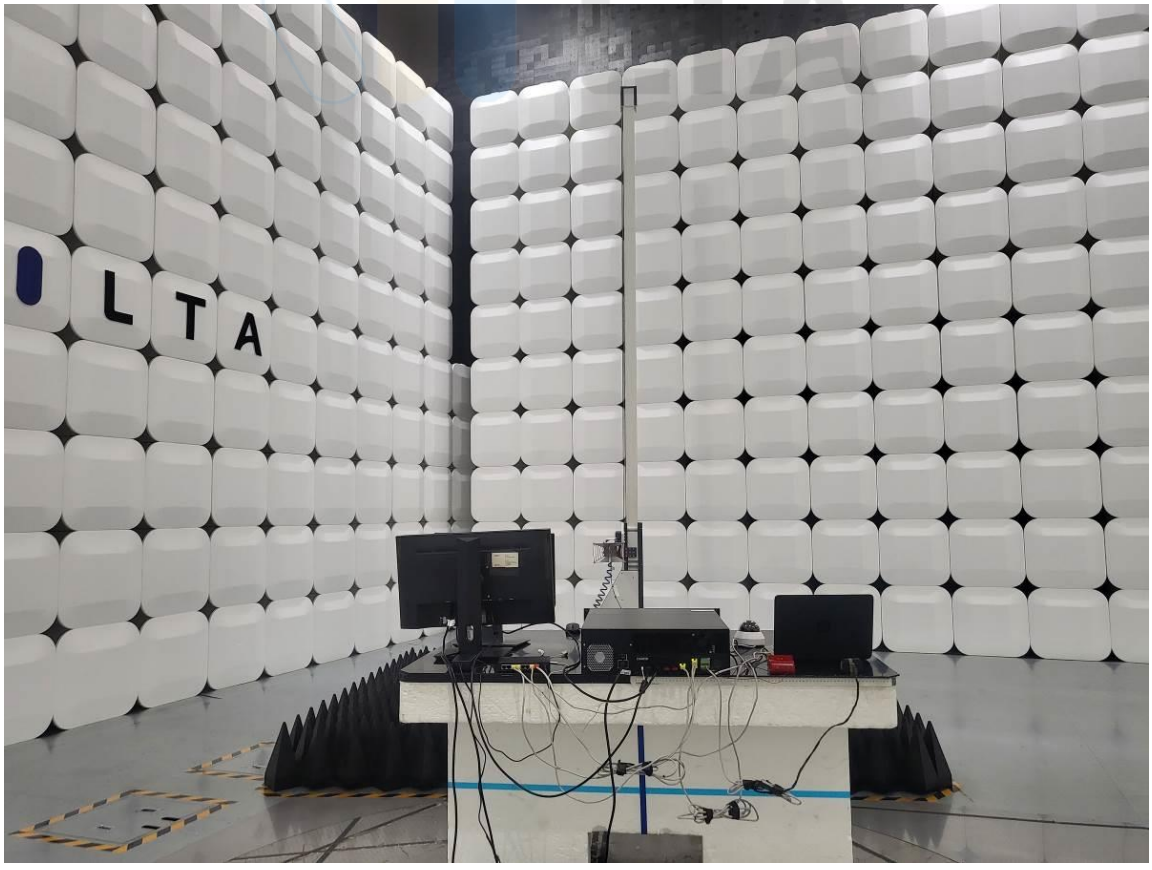
Radiated Emissions - Below 1 GHz





Radiated Emissions - Above 1 GHz





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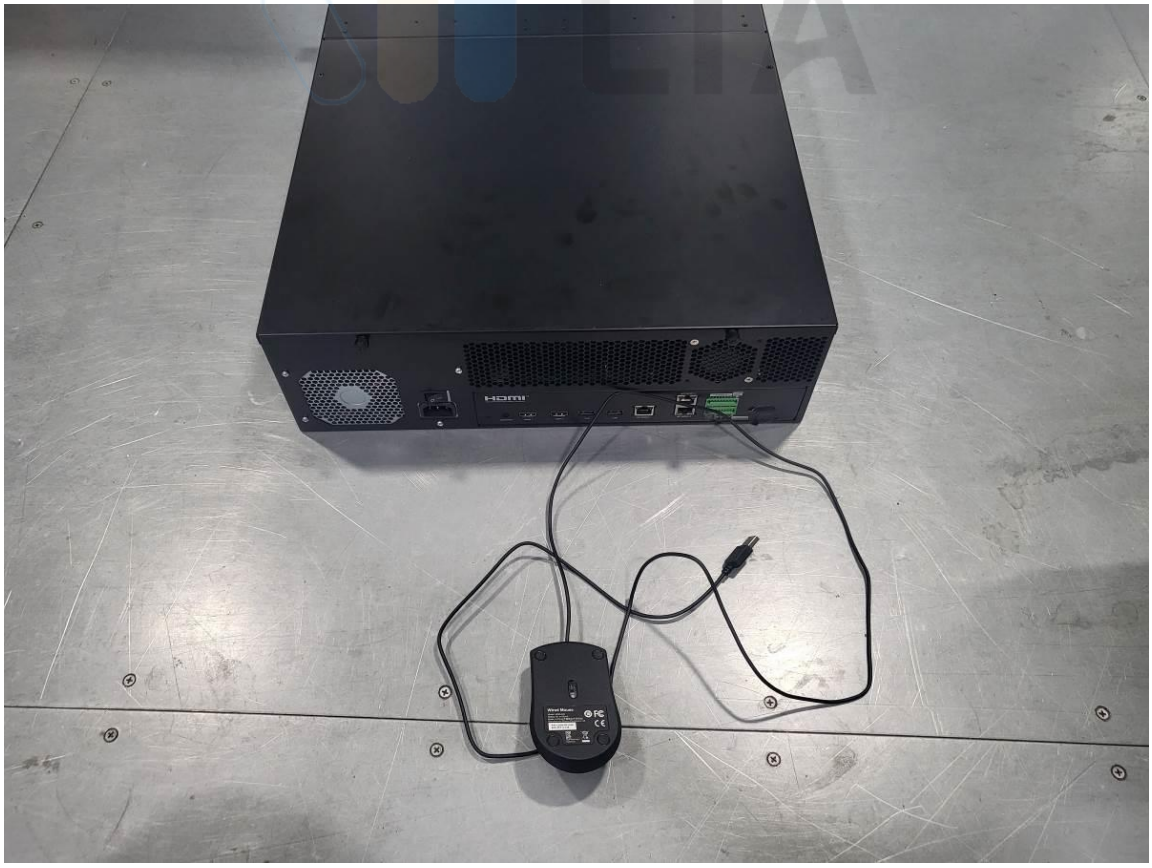

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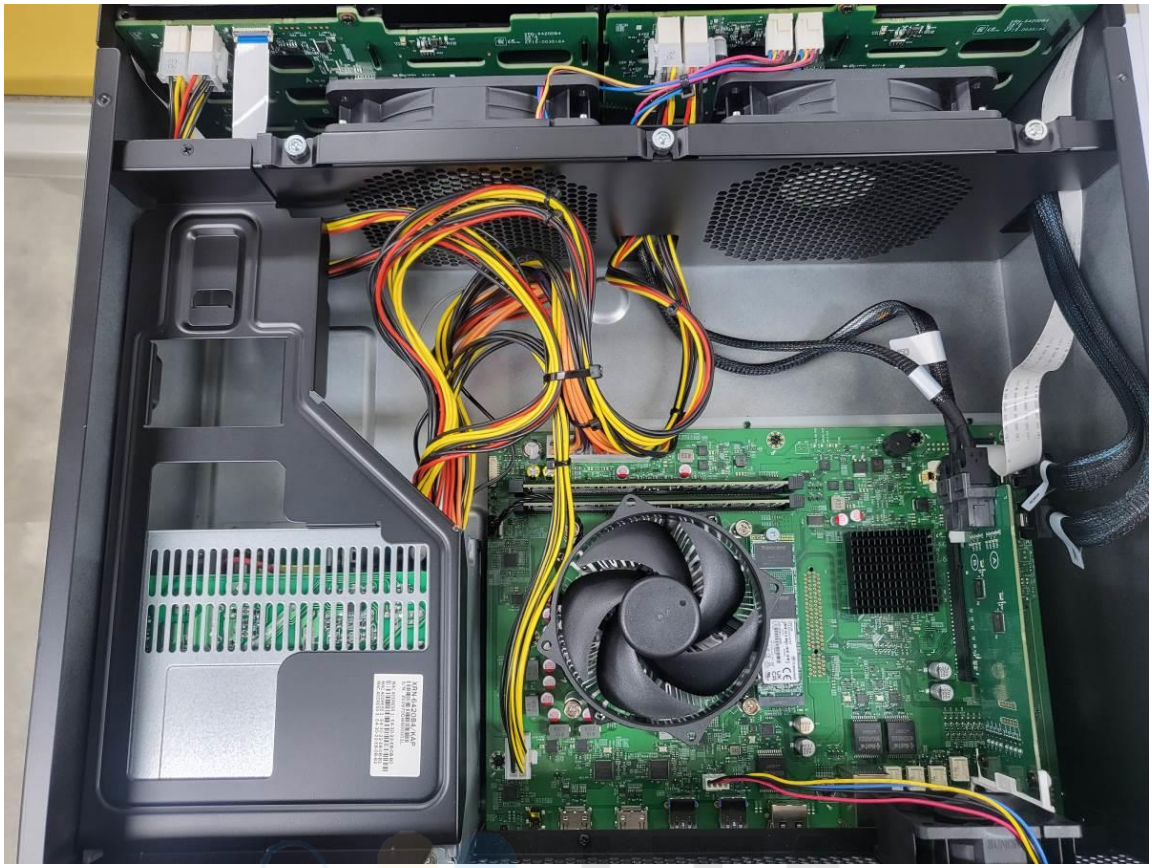

Modification