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EMC TEST REPORT

Dates of Tests: September 15 - 21, 2023

Project No : 230831-0145

Test Site : LTA Co., Ltd.

Model No.

XRN-6420B4

APPLICANT

Hanwha Vision Co., Ltd

Equipment Name : Network Video Recorder
Manufacturer : Hanwha Vision Co., Ltd
Model name : XRN-6420B4
Additional Model Name : -
Test Device Serial No.: : Identification
Rule Part(s) : AS/NZS CISPR 32:2015
CISPR 32 Ed2.0

Date of issue : September 25, 2023

This test report is issued under the authority of:

The test was supervised by:

Young Kyu Shin, Technical Manager

Ahn Hyun Young, 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	09.08.2023	LR500122308H	Initial
1	25.09.2023	LR500122309O	Change hardware parts (PCBs and fan)

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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
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 E-mail : chahn@ltalab.com
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Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the “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		-	RRA accredited Lab.
	U.S.A	KR0049	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-6420B4
 Additional Model name : -
 Serial number : Identification
 Date of receipt : August 31, 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 240 V, 50 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) °C / (53 - 59) % R.H.
 Tested Model : XRN-6420B4
 Test mode : Operating mode
 Test Voltage : AC 240 V, 50 Hz

2-5 List of EUT and ACCESSORY

EUT				
Equipment Name	Model Name	Serial No.	Manufacturer	Remarks
Network Video Recorder	XRN-6420B4	N/A	HANWHA CISION 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	73010478A22037 1	Lien Fong(Wujiang) Electronics Co.,Ltd.	-
MONITOR #2	AM24MB	N/A	ATEC	-
Keyboard	K120	1547SC5034U8	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	ZNDJ6V4M9000 0CM	HANWHA TECHWIN CO.,LTD.	-
IP Camera #2	LND-6022R	ZNDE6V4M9000 0EV	HANWHA TECHWIN CO.,LTD.	-

2-6 Cable List

Cable List					
From		To		Length (m)	Shield
Type	I/O Port	Type	I/O Port		
EUT	AC IN	AC POWER SOURCE	3 PIN AC LINE	1.0	NO
	USB #1	MOUSE	-	1.0	NO
	USB #2	KEY BOARD	-	1.0	NO
	USB #3	USB MEMORY STICK #1	-	-	NO
	USB #3	USB MEMORY STICK #2	-	-	NO
	HDMI #1	MONITOR #1	HDMI	1.0	YES
	HDMI #2	MONITOR #2	HDMI	1.0	YES
	NETWORK #1	POE INJECTOR	LAN #1	3.0	NO
	NETWORK #2	NOTEBOOK	LAN	3.0	NO
	NETWORK #3	POE INJECTOR	LAN #2	3.0	NO
	AUDIO OUT	EAR PHONE	-	1.0	NO
	ALARM IN	ALARM ZIG #1	-	1.0	NO
	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	AS/NZS CISPR 32:2015	C
Radiated Emissions	AS/NZS CISPR 32:2015	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. Test Items

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	: AS/NZS CISPR 32:2015
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 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.

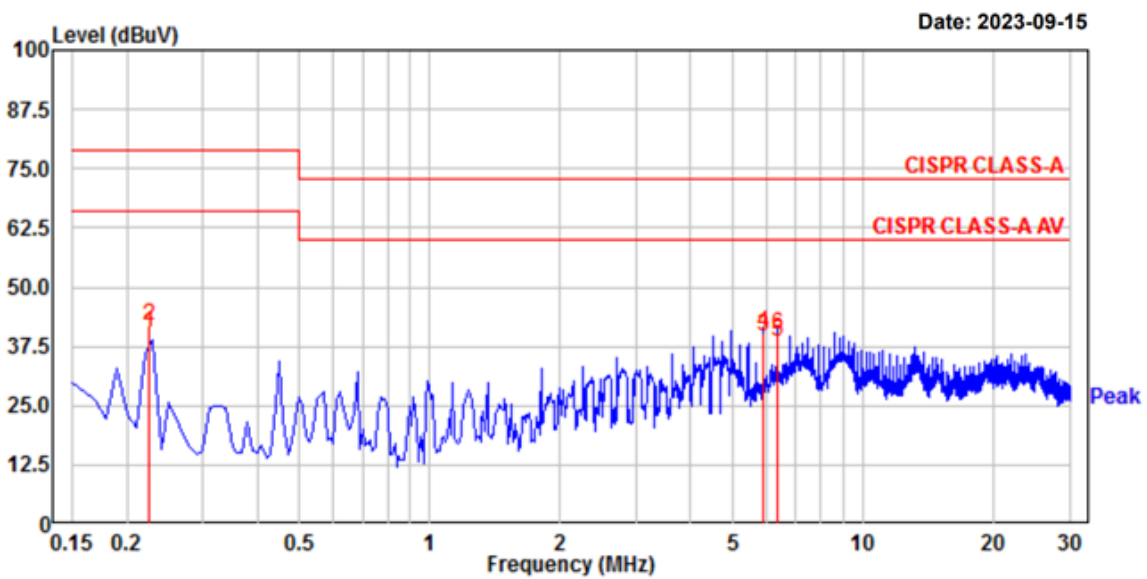
Note 2: The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150 Ω to the telecommunication port under test (conversion factor is $20 \log_{10} 150/I = 44$ dB)

Conducted Emissions (LINE)



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Project No.	: 230831-0145	Phase	: LINE
Test Mode	: Operating	Test Power	: AC 240 V / 50 Hz
Temp./ Humi.	: 23 'C / 59 % 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.	0.225	22.38	21.02	19.42	41.80	40.44	79.00	66.00	37.20	25.56	Line
4.	5.879	20.84	19.92	19.65	40.49	39.57	73.00	60.00	32.51	20.43	Line
6.	6.332	20.17	18.86	19.66	39.83	38.52	73.00	60.00	33.17	21.48	Line

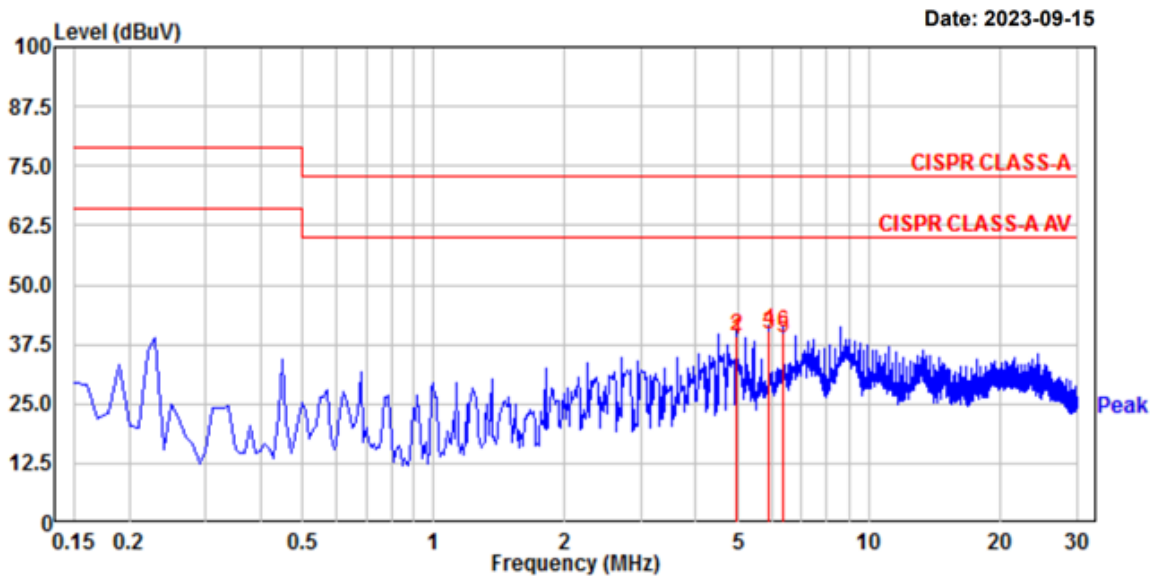
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions (NEUTRAL)



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Project No.	: 230831-0145	Phase	: NEUTRAL
Test Mode	: Operating	Test Power	: AC 240 V / 50 Hz
Temp./ Humi.	: 23 'C / 59 % 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.	4.972	19.69	18.86	19.61	39.30	38.47	73.00	60.00	33.70	21.53	neutral
4.	5.878	20.82	19.92	19.65	40.47	39.57	73.00	60.00	32.53	20.43	neutral
6.	6.330	20.39	19.37	19.66	40.05	39.03	73.00	60.00	32.95	20.97	neutral

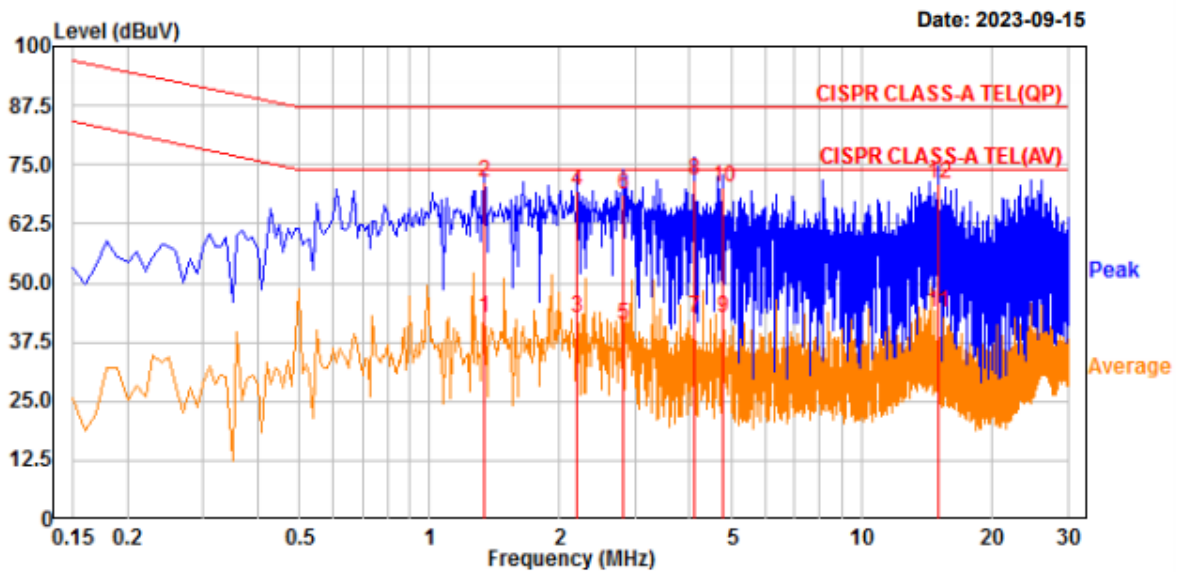
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions (TEL_1000 M) / #1



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Project No.	: 230831-0145	Phase	: TEL_1000M (LAN #1)
Test Mode	: Operating	Test Power	: AC 240 V / 50 Hz
Temp./ Humi.	: 23 'C / 59 % 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.	1.343	52.18	23.48	19.24	71.42	42.72	87.00	74.00	15.58	31.28	Line
4.	2.198	50.08	23.39	19.22	69.30	42.61	87.00	74.00	17.70	31.39	Line
6.	2.809	49.41	21.83	19.23	68.64	41.06	87.00	74.00	18.36	32.94	Line
8.	4.091	52.28	23.22	19.25	71.53	42.47	87.00	74.00	15.47	31.53	Line
10.	4.763	51.07	23.57	19.26	70.33	42.83	87.00	74.00	16.67	31.17	Line
12.	15.020	51.40	24.21	19.51	70.91	43.72	87.00	74.00	16.09	30.28	Line

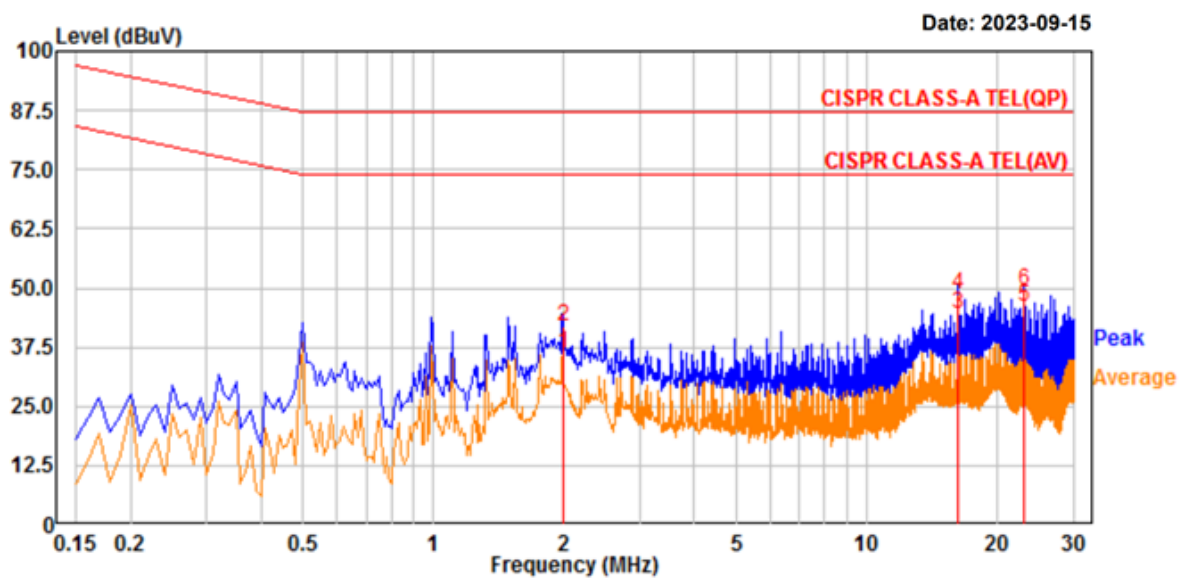
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions (TEL_1000 M) / #2



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Project No.	: 230831-0145	Phase	: TEL_1000M (LAN #2)
Test Mode	: Operating	Test Power	: AC 240 V / 50 Hz
Temp./ Humi.	: 23 'C / 59 % R.H.	Test Engineer	: AHN H Y



No.	Freq MHz	RD QP dB μ V	RD AV dB μ V	C.F dB	Result QP dB μ V	Result AV dB μ V	Limit QP dB μ V	Limit AV dB μ V	Margin QP dB	Margin AV dB	Phase
2.	1.994	22.59	17.11	19.23	41.82	36.34	87.00	74.00	45.18	37.66	Line
4.	16.229	29.02	25.02	19.54	48.56	44.56	87.00	74.00	38.44	29.44	Line
6.	23.129	29.95	26.50	19.66	49.61	46.16	87.00	74.00	37.39	27.84	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	: AS/NZS CISPR 32:2015
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:

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

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

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) / H



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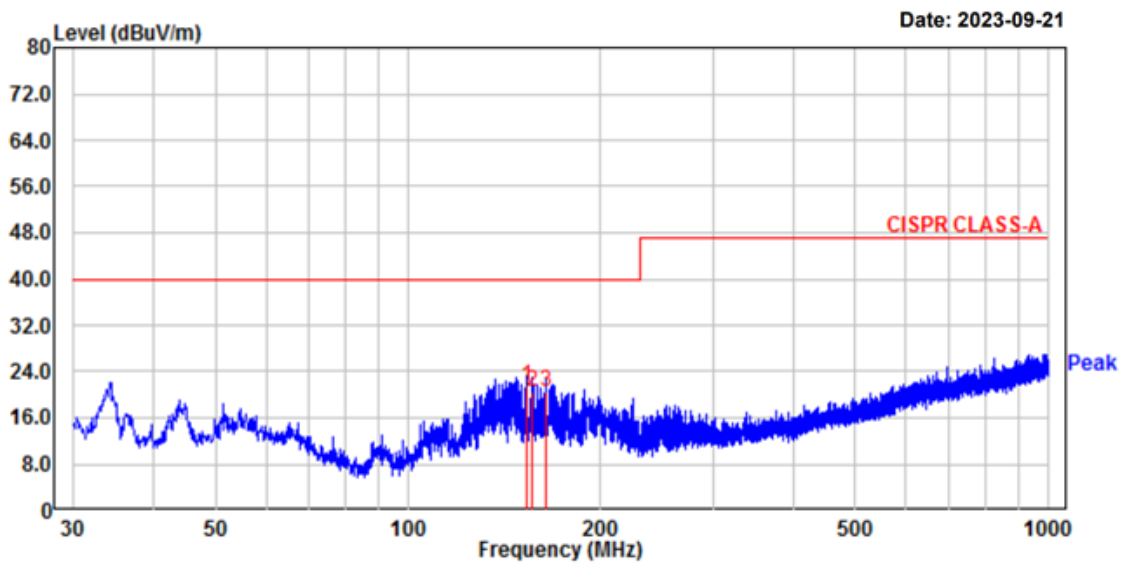
Project No. : 230831-0145

Temp/Humi: 21 'C / 53 % R.H.

Test Mode : Operating

Tested by: AHN H Y

Power : AC 240 V / 50 Hz



No.	Freq MHz	Reading dB μ V	C.F dB	Result QP dB μ V/m	Limit dB μ V/m	Margin dB	Height cm	Angle deg	Polarity
1.	152.95	32.19	-10.87	21.32	40.00	18.68	400	360	horizontal
2.	156.46	31.40	-10.95	20.45	40.00	19.55	250	10	horizontal
3.	164.35	31.60	-10.99	20.61	40.00	19.39	300	80	horizontal

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

Radiated Emissions (Below 1 GHz) / V



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Project No. : 230831-0145

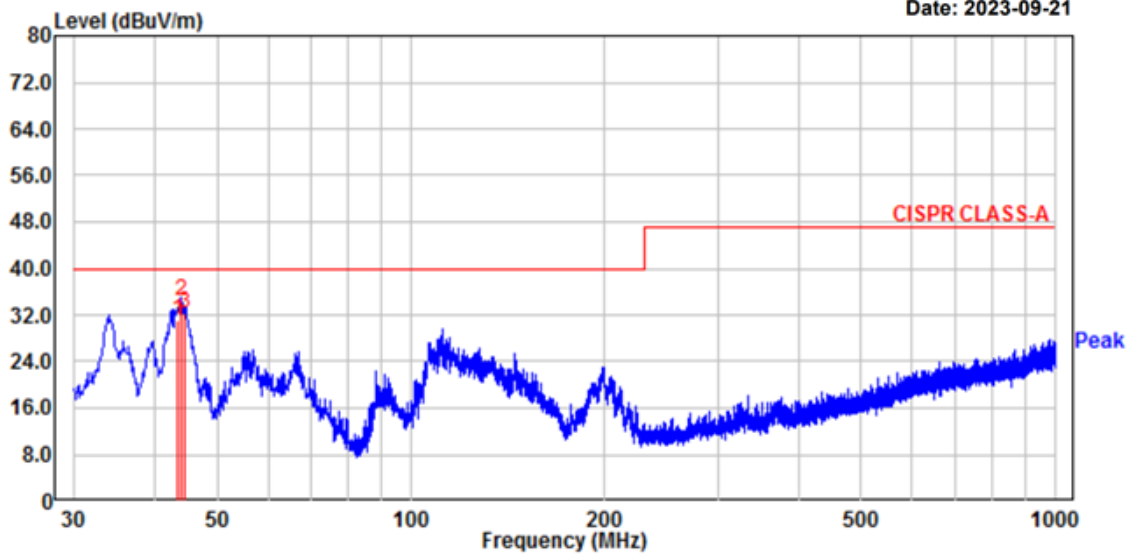
Temp/Humi: 21 'C / 53 % R.H.

Test Mode : Operating

Tested by: AHN H Y

Power : AC 240 V / 50 Hz

Date: 2023-09-21



No.	Freq MHz	Reading dB μ V	C.F dB	Result QP dB μ V/m	Limit dB μ V/m	Margin dB	Height cm	Angle deg	Polarity
1.	43.34	43.10	-12.03	31.07	40.00	8.93	400	360	vertical
2.	43.94	46.50	-11.96	34.54	40.00	5.46	250	80	vertical
3.	44.55	44.10	-11.94	32.16	40.00	7.84	170	40	vertical

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

Radiated Emissions (Above 1 GHz) / H



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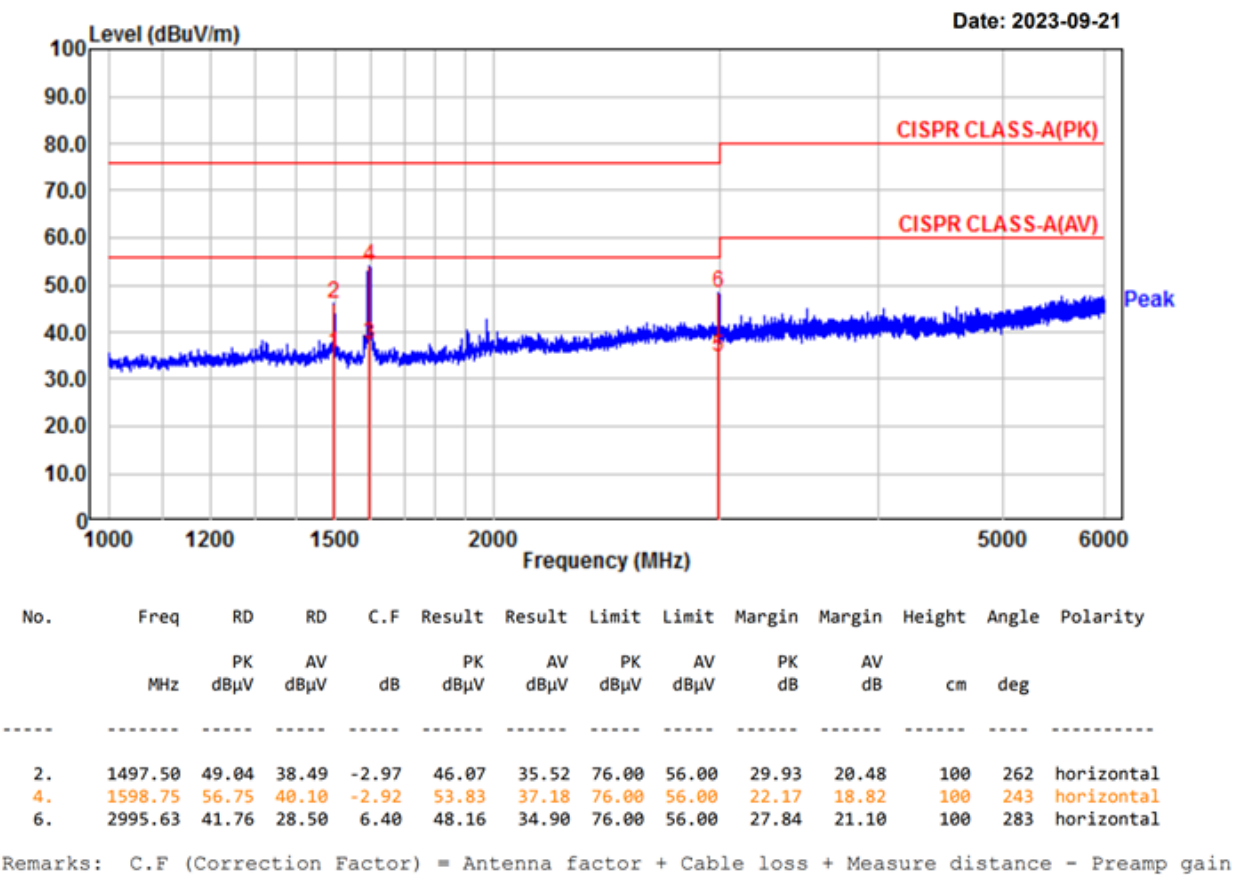
Temp/Humi: 21 'C / 53 % R.H.

Test Mode : Operating

Tested by: AHN H Y

Power : AC 240 V / 50 Hz

Measure distance : 3.8 m



Radiated Emissions (Above 1 GHz) / V



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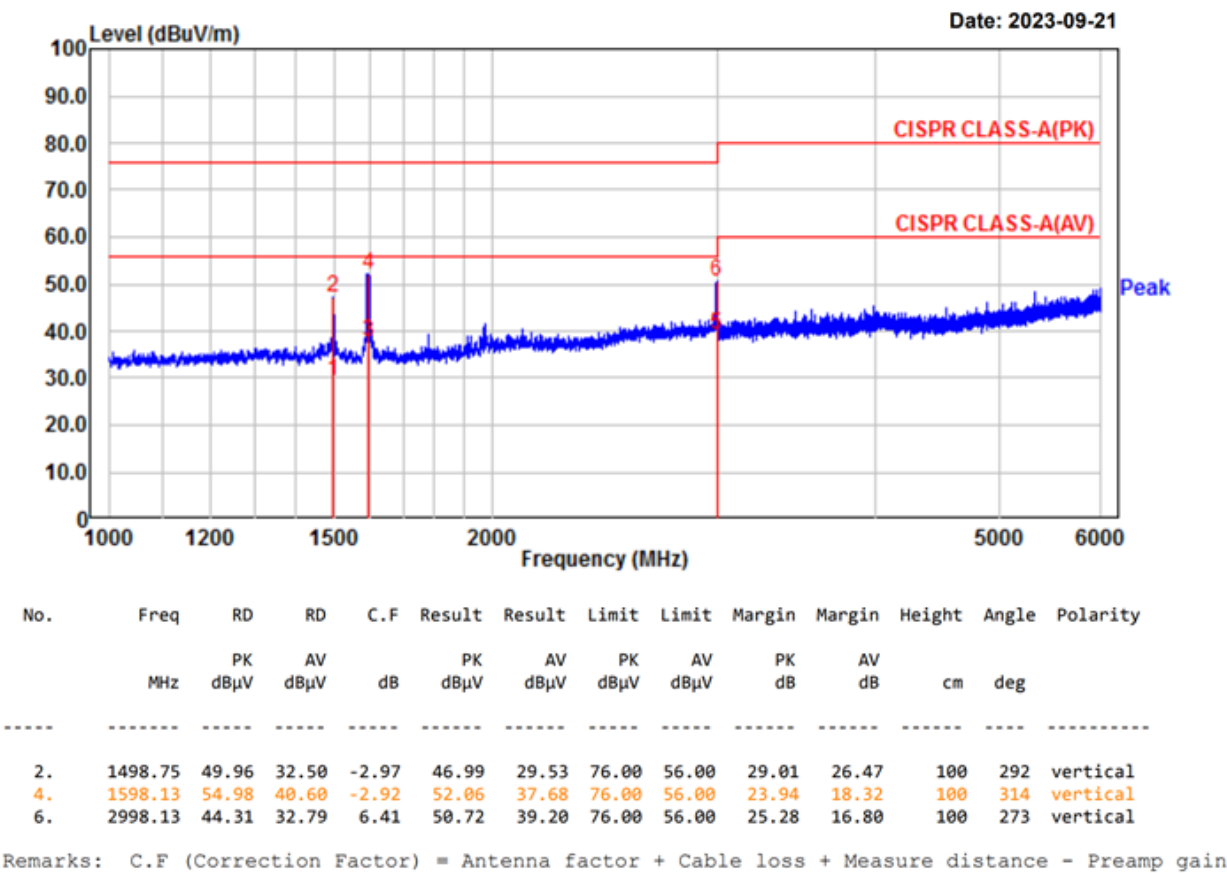
Temp/Humi: 21 'C / 53 % R.H.

Test Mode : Operating

Tested by: AHN H Y

Power : AC 240 V / 50 Hz

Measure distance : 3.8 m



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	-	-	-

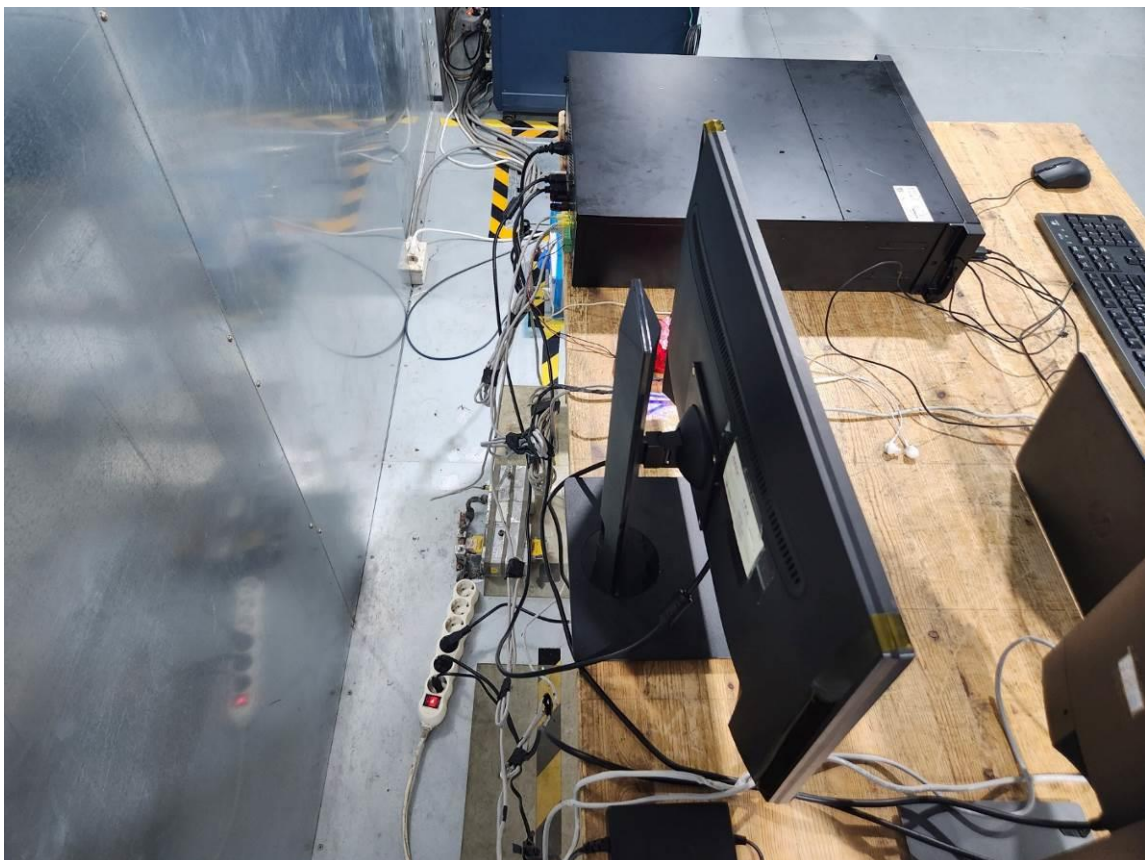
Radiated Emissions – Above 1 GHz

	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	2 year
☐	HORN ANTENNA	3116B	ETS	81109	2024.04.25	2 year
☒	HORN ANTENNA	3115	ETS	114105	2024.04.20	1 year
☒	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

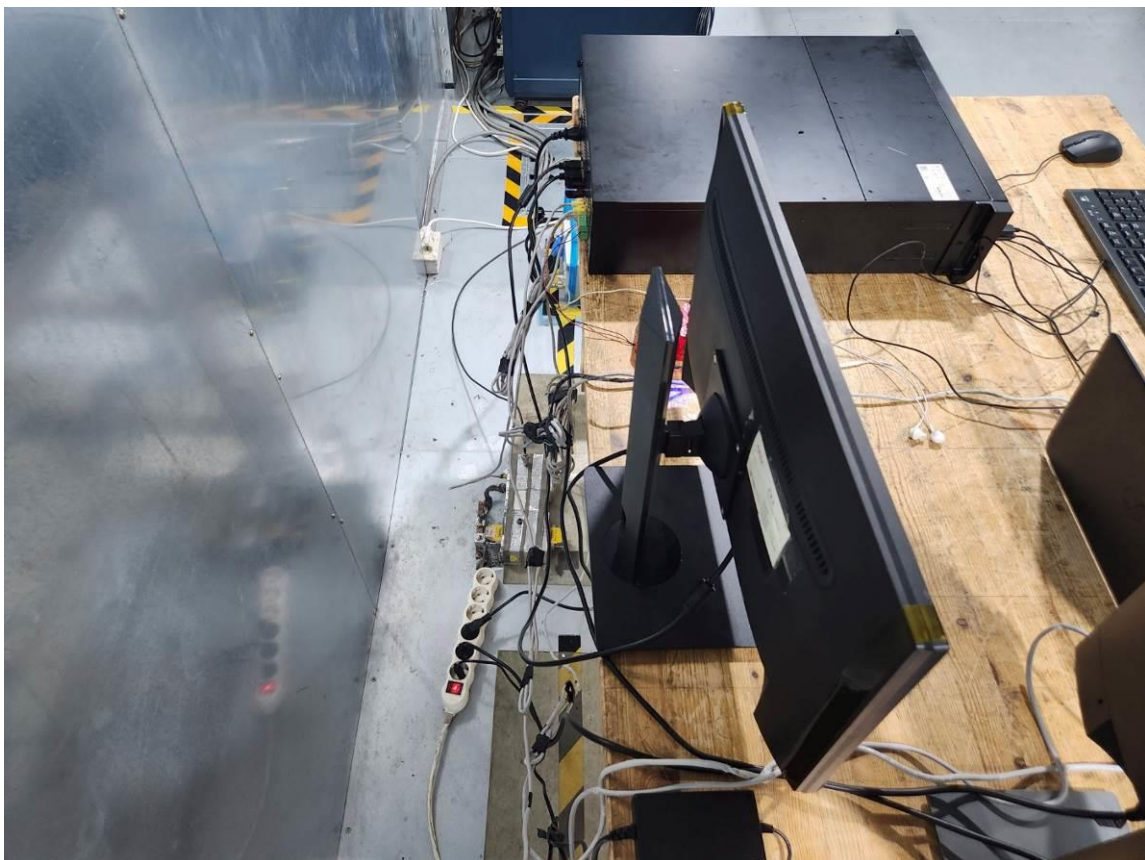
APPENDIX B

PHOTOGRAPHS

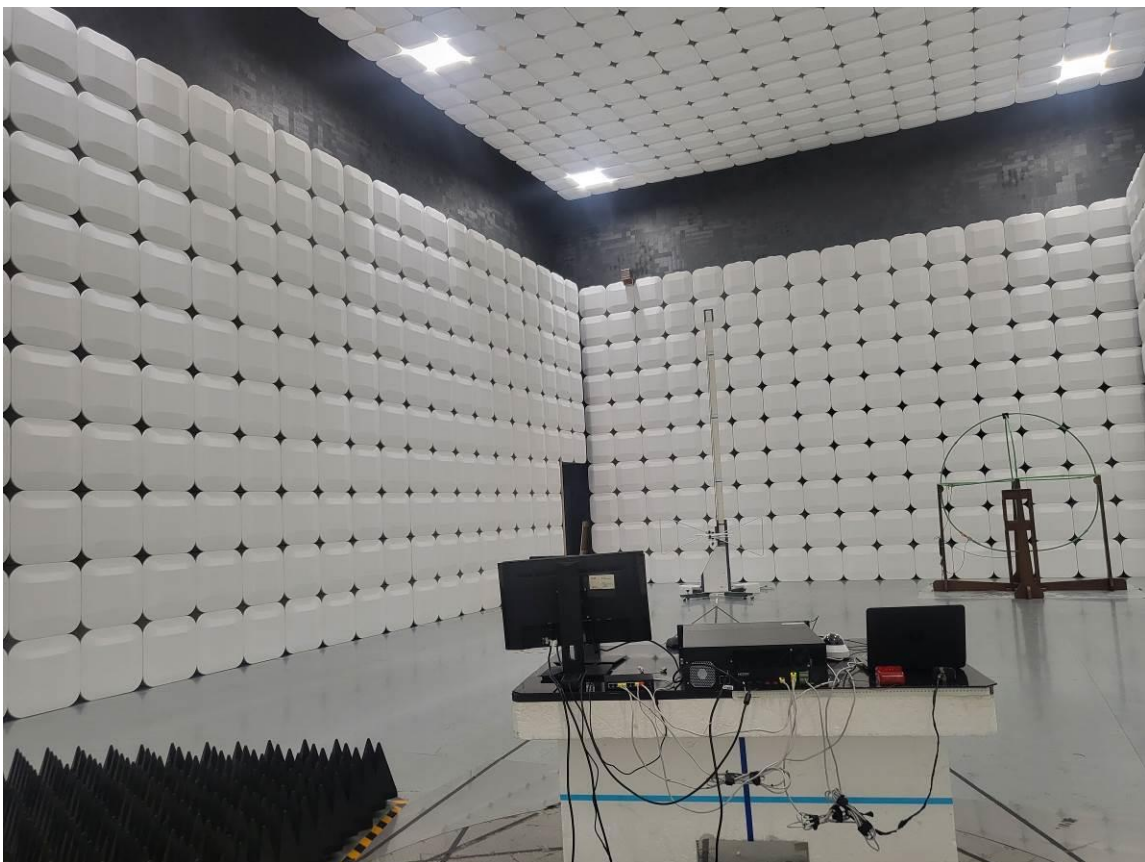
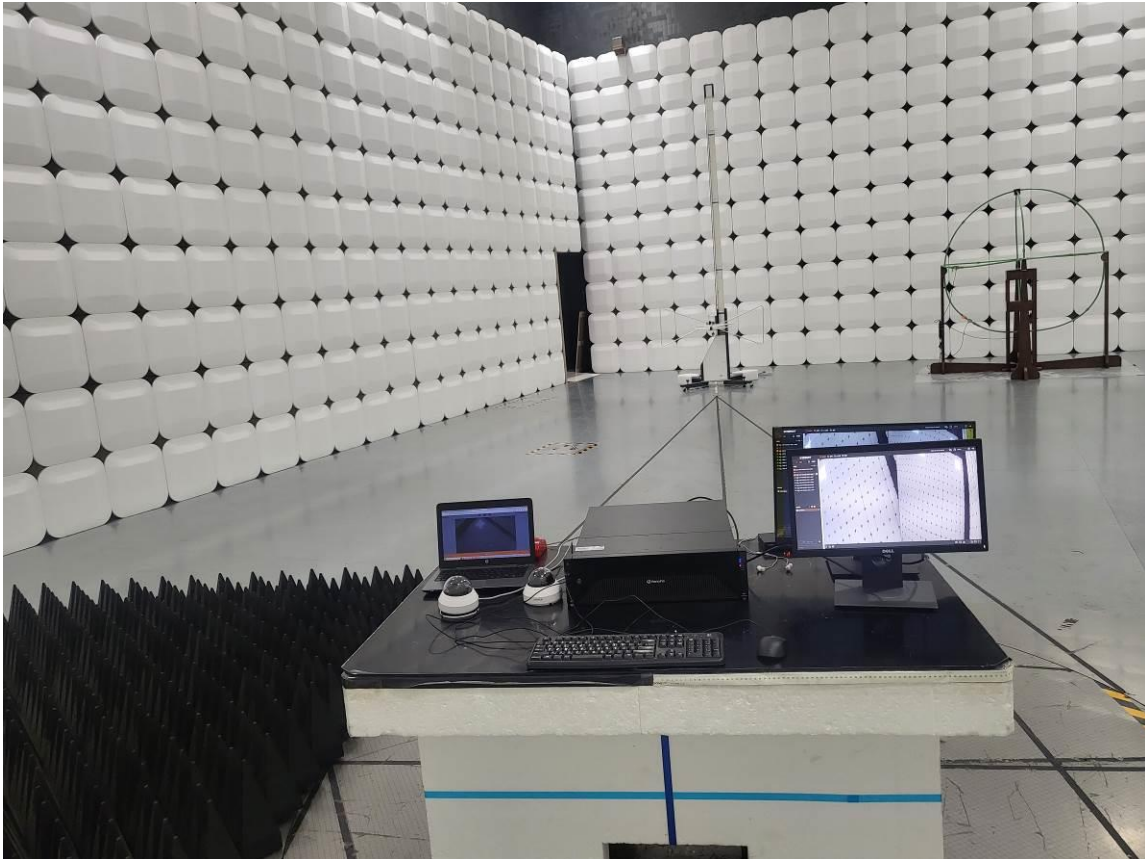
Conducted Emissions



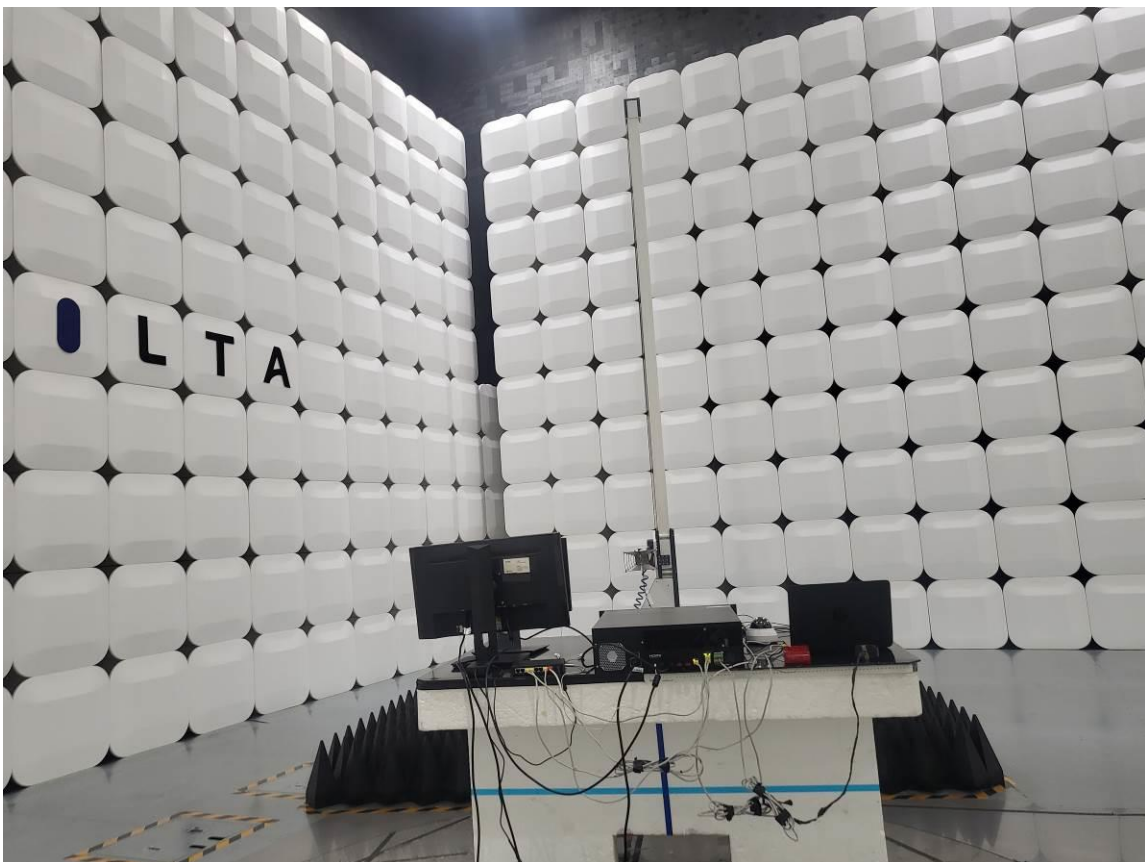
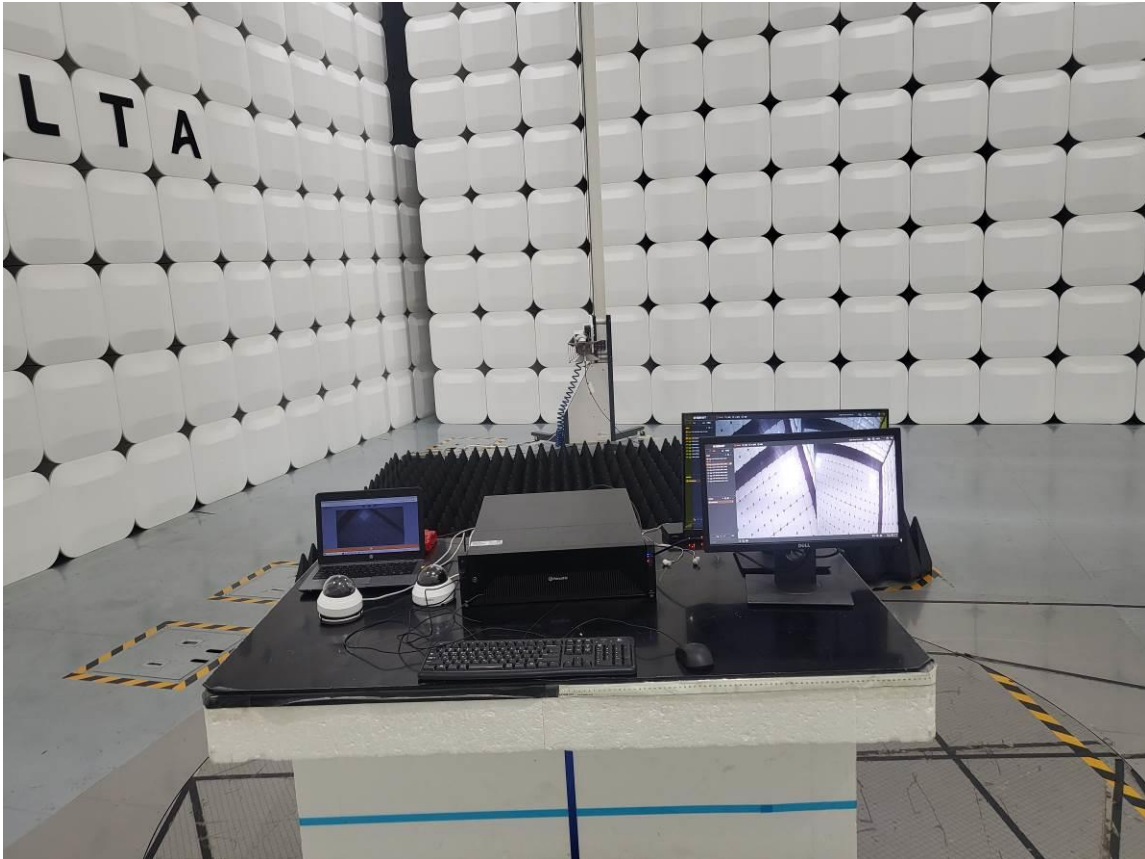
Conducted Emissions (TEL)



Radiated Emissions - Below 1 GHz



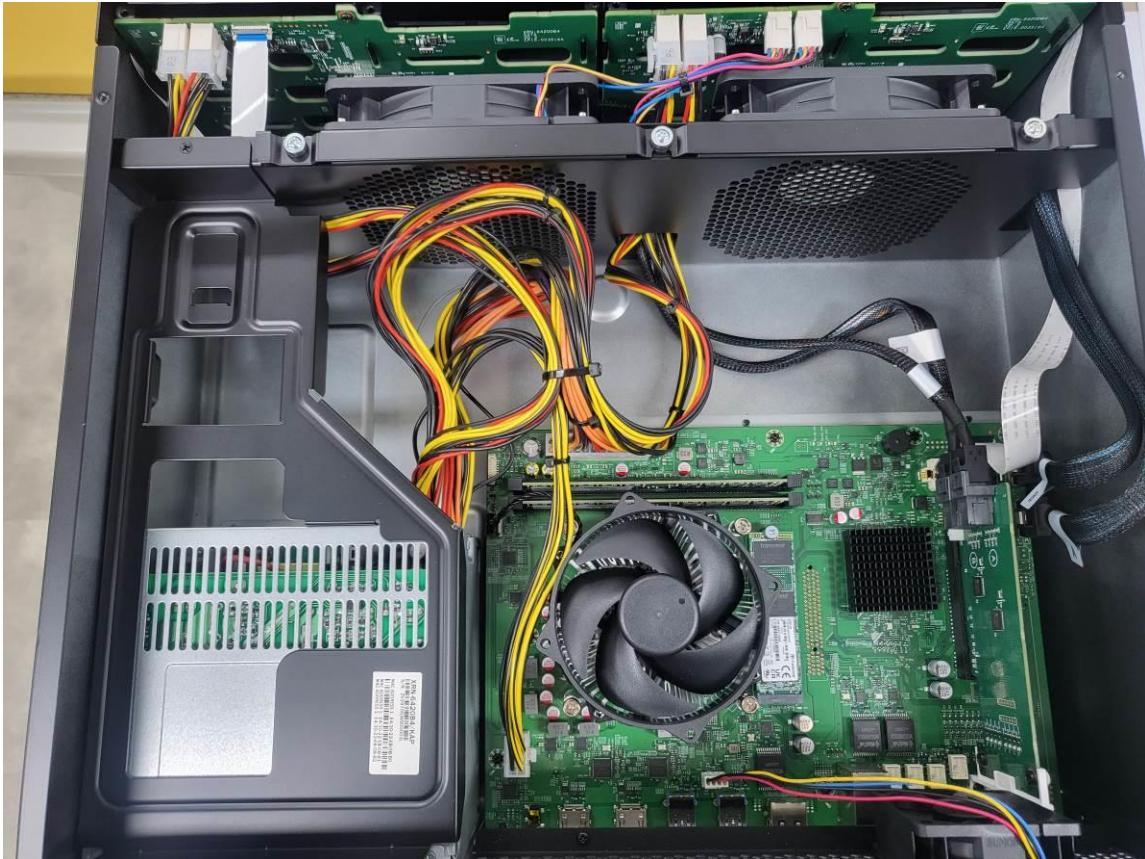
Radiated Emissions - Above 1 GHz



EUT



EUT



Modification

