

TEST REPORT

This laboratory is accredited by National Radio Research Agency Laboratory and National Voluntary Laboratory Accreditation Program.

The tests reported herein have been performed in accordance with its terms of accreditation.

Test Report No. : LR500112311K
Issue Date : November 23, 2023
Applied Standard : FCC Part 15, Subpart B & ICES-003 (Issue.7)
Trade Name : Hanwha Vision Co., Ltd
Equipment Name : AI BOX
Model Name : AIB-800
Additional Model Name : -
Serial Number : Identification

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	31.10.2023	LR500112310I	Initial
1	23.11.2023	LR500112311K	Add gasket tape

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LTA Certification

Applicant

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)

Equipment Under Test (EUT)

Equipment Name : AI BOX
Model Name : AIB-800
Additional Model Name : -
Serial number : Identification
Intended environment : Residential area
Date of receipt : November 02, 2023
EUT condition : Pre-production, not damaged
Test Mode : Operating mode
Interface ports : DC IN, LAN, ALARM IN, ALARM OUT, GROUND
Power rating : AC 120 V, 60 Hz
Test Voltage : AC 120 V, 60 Hz

Model Description

- NONE

Model Specification

- The console port, USB port of the device to be tested is a port for administrators and is excluded from the test item.

*** To be continued next page ***

LTA Certification –cont.-

Test Performed

Test started & completed : November 15, 2023
Location : LTA Co., Ltd.

Test Specification

Purpose of the test : Compliance test to the following standard
Applied standard : FCC Part 15, Subpart B & ICES-003 (Issue.7)
Classification : Class A
Deviations from Standard Test Method : N/A

Test Results

Measurement	Results*	Test method
Conducted Emissions	Complies	ANSI C 63.4 ICES-003 (Issue.7)
Radiated Emissions	Complies	ANSI C 63.4 ICES-003 (Issue.7)

* : The compliance statement is based on nominal value only.

Modification performed by the lab.:

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

Laboratory's Certificate

Project number : 231102-0012
Issue date : November 23, 2023

This test report is issued under the authority of:

The test was supervised by:



Young Kyu Shin, Technical Manager



Min Su Han, Test Engineer

The results in this report apply only to the sample(s) tested.

It is not allowed to copy this report even partly without the allowance of the test laboratory.

General information's

Purpose

This document is based on the Electromagnetic Interference (EMI) tests performed on the “AIB-800”. The measurements were performed according to the measurement procedure described in ICES-003 and ANSI C 63.4. The tests were carried out in order to confirm whether the electromagnetic emissions from the EUT (Equipment Under Test), are within the Class A limits defined in ICES-003 and FCC Part 15.

Test Performed

Company name : **LTA Co., Ltd.**
 Address : 4, Songju-ro 236beon-gil, Yangji-myeon, Cheoin-gu, Yongin-si, Gyeonggi-do, 17159, Korea
 Telephone : +82-31-323-6008
 Facsimile : +82-31-323-6010

Measurement uncertainty

Conducted Emissions (0.15 to 30 MHz) : ±2.81 [dB] (k=2)
 Radiated Emissions (30 to 1,000 MHz) : H : ±4.62 [dB] (k=2) V : ±4.85 [dB] (k=2)
 (1 GHz to 6 GHz) : H : ±5.65 [dB] (k=2) V : ±5.68 [dB] (k=2)
 (6 GHz to 18 GHz) : H : ±5.90 [dB] (k=2) V : ±5.74 [dB] (k=2)

The coverage factor k=2 yields approx. a 95% level of confidence for near-normal distribution typical of most measurement results.

Accredited agencies

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

Agency	Country	Accreditation No.	Validity	Reference
	KOREA		-	
RRA	U.S.A	KR0049	2025-03-29	RRA accredited Lab.
	CANADA		2024-08-15	
		C-14948	2026-09-10	
VCCI	JAPAN	T-12416	2026-09-10	VCCI registration
		R-14483	2026-10-15	
		G-10847	2024-12-13	
KOLAS	KOREA	KT551	2025-10-12	KOLAS accredited Lab.

1- Brief Information

1-1 Test Summary

Parameter	Applied Standard	Status (note 1)
I. Emission		
Conducted Emissions	FCC Part 15.107 / ICES-003 Clause 3.2.1	C
Radiated Emissions	FCC Part 15.109 / ICES-003 Clause 3.2.2	C
Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable * The data in this test report are traceable to the national or international standards.		

Frequency range to be scanned:

0.15 MHz - 30 MHz as conducted measurement

30 MHz to 5th harmonic of the highest frequency or 40 GHz, whichever is lower as radiated measurement.

Bandwidth:

Measured by the CISPR quasi-peak function Bandwidth is 9 kHz in the frequency 0.15 MHz to 30 MHz and 120 kHz in the frequency 30 MHz to 1,000 MHz.

Measured by the Peak function Bandwidth is 1 MHz in the frequency 1 GHz to 40 GHz.

A sample calculation:

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

Emission Level= meter reading + COR.F

1-2 Test mode of the EUT

The tests have been conducted with the following operational mode(s) of the EUT.

Operating mode

1-3 Modification

- Supplementary area: gasket tape inside the device to be tested / Material: gasket tape (model name: N/A, manufacturer: N/A number: 1EA) / Use gasket tape directly to supplement noise suppression on the marked area of the picture.

1-4 List of EUT and ACCESSORY

EUT				
Equipment Name	Model Name	Serial No.	Manufacturer	Remarks
AI BOX	AIB-800	ZTZC70G WA0000JH	HANWHA VISION VIETNAM COMPANY LIMITED D-TECH CO.,LTD.	EUT
Adapter	KPL-048F-VI	N/A	Channel Well Technology(Guangzhou) Co.,Ltd.	EUT
ACCESSORY				
Equipment Name	Model Name	Serial No.	Manufacturer	Remarks
MONITOR	AM24MB	N/A	ATEC	-
Mouse	MOKJUO	34004812	Primax Electronics Ltd.	-
ALARM JIG #1	N/A	N/A	N/A	-
ALARM JIG #2	N/A	N/A	N/A	-
IP Camera	LND-6032R	ZNDJ6V4M 90000CM	HANWHA TECHWIN CO.,LTD.	-
NVR	XRN-1620S/TE	ZSV66V4T9 0002JB	HANWHA VISION VIETNAM COMPANY LIMITED D-TECH CO.,LTD.	-

1-5 Cable List

Cable List					
From		To		Length (m)	Shielding
Type	I/O Port	Type	I/O Port		
EUT	DC IN	Adapter	DC OUT	1.0	NO
	LAN	NVR	LAN #1	3.0	NO
	ALARM IN	ALARM ZIG #1	-	1.0	NO
	ALARM OUT	ALARM ZIG #2	-	1.0	NO
	GROUND	GROUND	GROUND	1.4	NO
Adapter	AC IN	AC POWER SOURCE	AC OUT	1.9	NO
NVR	AC IN	AC POWER SOURCE	AC OUT	2.0	NO
	LAN #2	IP Camera	LAN	3.0	NO
	HDMI	MONITOR	HDMI	1.4	YES
	USB	Mouse	-	1.0	NO
MONITOR	AC IN	AC POWER SOURCE	AC OUT	1.6	NO

2- Test Site Description

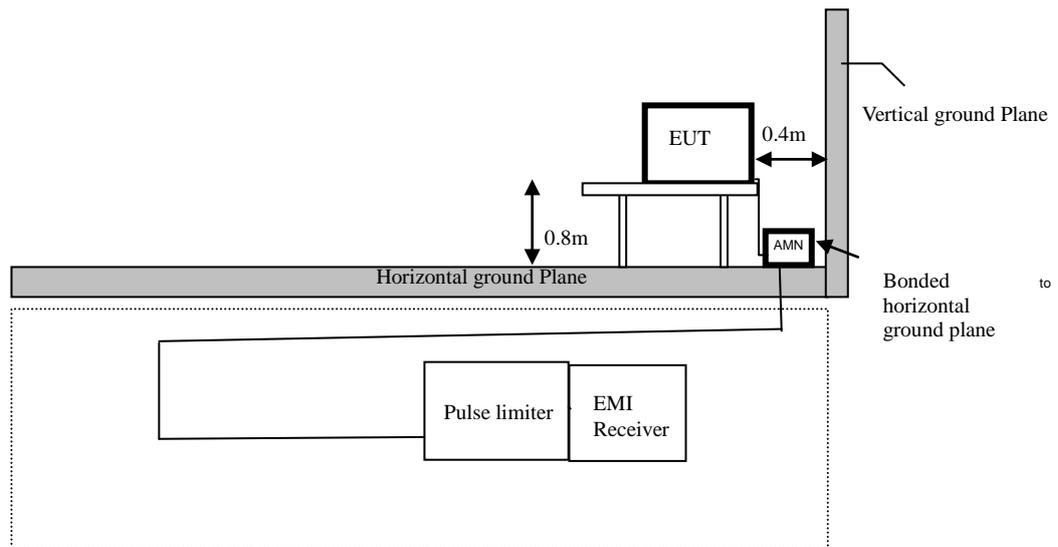
1-Facility

All the testing facilities are periodically serviced as a daily check for equipment and cables systems, an every 1 year facility check for the facilities and annual calibration for testing equipment according to ISO/IEC 17025. All the testing facilities are used as the same specifications shown below. There are descriptions both for radiated disturbance measurement and conducted disturbance measurement conformed by ANSI C 63.4.

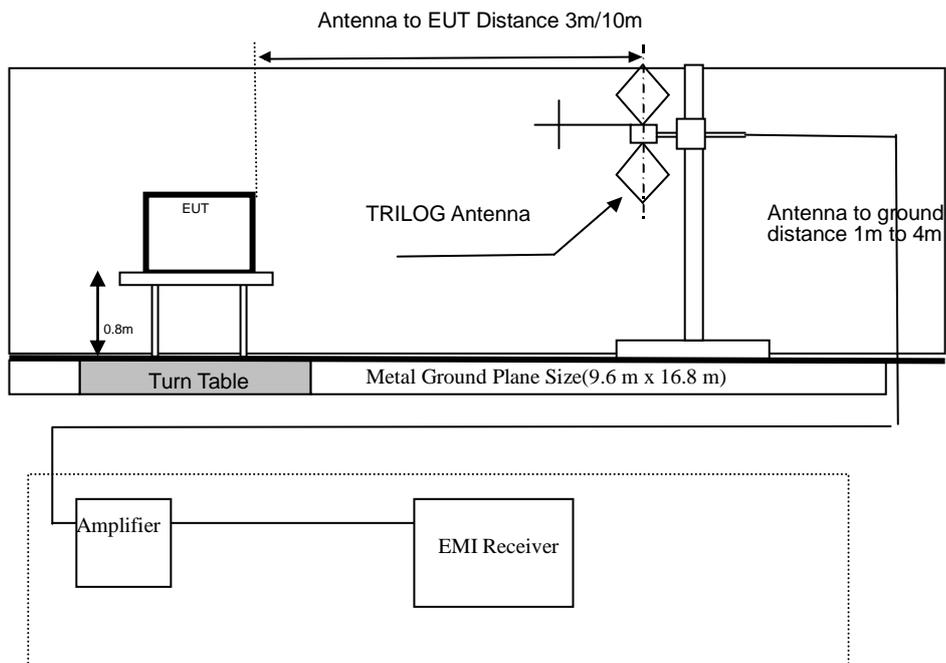
The NSA measurement of the 10 m chamber was performed on January 15, 2023 according to ANSI C 63.4.

The SVSWR measurement of the 10 m chamber was performed on October 16, 2023 according to ANSI C 63.4.

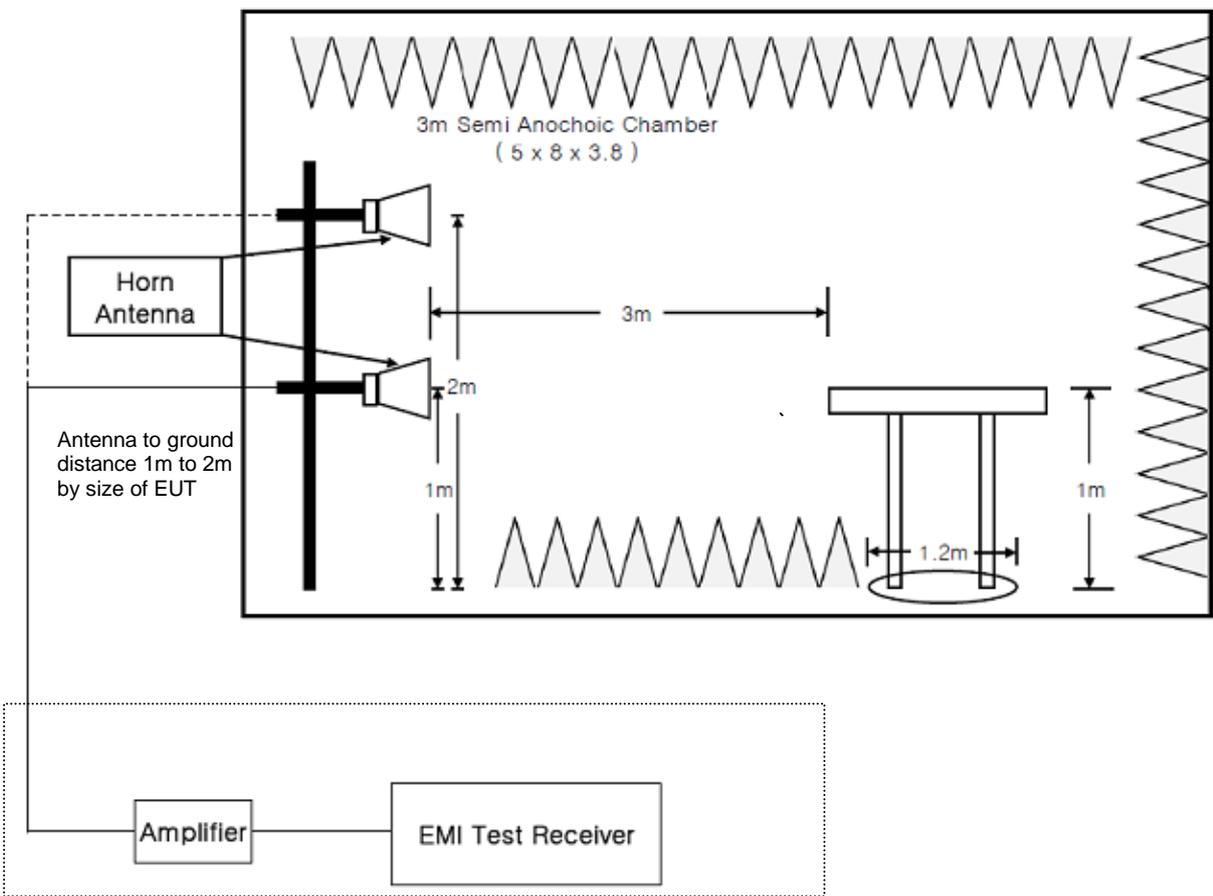
2-1 Conducted Emissions



2-2 Radiated Emissions – Below 1 GHz



2-3 Radiated Emissions – Above 1 GHz



3- Test Procedure

3-1 Conducted Emissions

- The measurement is carried out on an open site with horizontal and metallic ground plane.
- An AMN(Artificial Mains Network) with a nominal impedance ($50 \Omega / 50 \mu\text{H}$) as defined in ANSI C 63.4, shall be utilized.
- The AMN is grounded on a horizontal metal ground plane.
- Measurement is carried out using an EMI receiver with quasi-peak detectors and average detector.
(Refer to the List of test equipment used for the test.)
- The shortest distance between the EUT and the AMN is 0.8 m.
- The EUT is placed on the non-conducting table with 0.8 m height.
- Refer to "Brief Information"(page 7-9) about details of the EUT and configuration of the cables.
- Measurement is carried out as manual operation.
 - searching the maximum frequency point of the disturbance wave in each frequency range.
 - reading the disturbance level of quasi-peak, average and Line (L) and Neutral (N) in 9 kHz bandwidth by the EMI receiver.
 - calculating the measurement result with the following formula or equation.
(Result = Reading + Cor.F.(LISN Factor + Cable Loss + Pulse Limiter)
(ex) = $13.23 \text{ dB}\mu\text{V} + (9.63 \text{ dB} + 0.01 \text{ dB} + 9.86 \text{ dB})$
= $32.73 \text{ dB}\mu\text{V}$

3-2 Radiated Emissions – Below 1 GHz

- Test site is met the requirements of ANSI C 63.4 and the distance between the EUT and the antenna is adjusted 3 m or 10 m.
 - The turntable can be rotated 360 degrees.
 - The antenna can be adjusted between 1 m and 4 m in height above the ground.
 - The EUT is placed on the non-conducting table with 0.8 m height on the turntable.
 - Measurements are carried out using an EMI receiver with quasi-peak detectors (120 kHz bandwidth).
 - Refer to the list of test equipment used for the test.
 - The TRILOG antenna are used as wideband antenna.
 - The TRILOG antenna is used in the frequency range of 30 MHz to 1 000 MHz.
 - A variable attenuator is used for verifying amplifier's linearity.
 - Rotating the turntable and adjusting the height of the antenna are carried out by control buttons on the console.
 - Refer to "Brief Information"(page 7-9) about details of the EUT and configuration of the cables.
 - Measurement is carried out by a LTA operator as manual operation.
- searching the worst direction with the maximum level of the disturbance wave in rotating the turntable 360 degrees at each searched frequency point.
- setting the height of the antenna with the maximum level of the disturbance wave from 1 m to 4 m.
- reading the disturbance level by the EMI receiver with quasi-peak detectors (120 kHz bandwidth) according to ANSI C 63.4.
- measuring to vertical and horizontal polarization.
- calculating the measurement result with the following formula or equation:
(Result = Reading + Cor.F (antenna factor + cable loss – PreAmp Gain)
- (ex) = 50.6 dB μ V/m + (11.08 dB(1/m) + 1.31 dB - 27.32 dB)
= 35.67 dB μ V/m

3-3 Radiated Emissions – Above 1 GHz

- Test site is met the requirements of ANSI C 63.4 and the distance between the EUT and the antenna is adjusted 3 m.
- The turntable can be rotated 360 degrees.
- The antenna can be adjusted between 1 m and 4 m in height above the ground.
- The EUT is placed on the non-conducting table with 1 m height on the turntable.
- Measurements are carried out using an EMI receiver with peak and average detectors(1 MHz bandwidth).
- Refer to the list of test equipment used for the test.
- The HORN antenna are used as wideband antenna.
- The HORN antenna is used in the frequency range of 1 GHz to 18 GHz.
- A variable attenuator is used for verifying amplifier's linearity.
- Rotating the turntable and adjusting the height of the antenna are carried out by control buttons on the console.
- Refer to "Brief Information"(page 7-9) about details of the EUT and configuration of the cables.
- Measurement is carried out by a LTA operator as manual operation.
 - searching the worst direction with the maximum level of the disturbance wave in rotating the turntable 360 degrees at each searched frequency point.
 - setting the height of the antenna with the maximum level of the disturbance wave from 1 m to 4 m
 - reading the disturbance level by the EMI receiver with peak and average detectors (1 MHz bandwidth) according to ANSI C 63.4.
 - measuring to vertical and horizontal polarization.
 - calculating the measurement result with the following formula or equation:
(Result = Reading + Cor.F (antenna factor + cable loss – PreAmp Gain)
(ex) = 35.9 dB μ V/m + (23.92 dB(1/m) + 7.01 dB - 38.33 dB)
= 28.5 dB μ V/m

4- List of Equipment Used For the Tests

Conducted Emissions

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	EMI TEST Receiver	ESR	Rohde & Schwarz	101499	2024.03.13	1 year
<input checked="" type="checkbox"/>	Pulse Limiter	ESH3-Z2	Rohde & Schwarz	100710	2024.03.13	1 year
<input type="checkbox"/>	LISN	ESH3-Z6	Rohde & Schwarz	100378	2024.08.22	1 year
<input type="checkbox"/>	LISN	ESH3-Z6	Rohde & Schwarz	101468	2024.08.22	1 year
<input checked="" type="checkbox"/>	LISN(main)	ENV216	Rohde & Schwarz	102872	2024.09.07	1 year
<input checked="" type="checkbox"/>	LISN(sub)	LT32C/10	AFJ	32031518210	2024.08.22	1 year
<input checked="" type="checkbox"/>	TEST PROGRAM	e3_ce 20181212a (V9)	AUDIX	-	-	-

Radiated Emissions – Below 1 GHz

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	EMI TEST Receiver	ESCI7	Rohde & Schwarz	100772	2024.08.22	1 year
<input checked="" type="checkbox"/>	Amplifier	8447D	HP	1937A03453	2024.08.22	1 year
<input checked="" type="checkbox"/>	BILOG Antenna	VULB 9168	SCHWARZBECK	749	2025.03.29	2 year
<input checked="" type="checkbox"/>	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

Radiated Emissions – Above 1 GHz

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

5- EMISSION

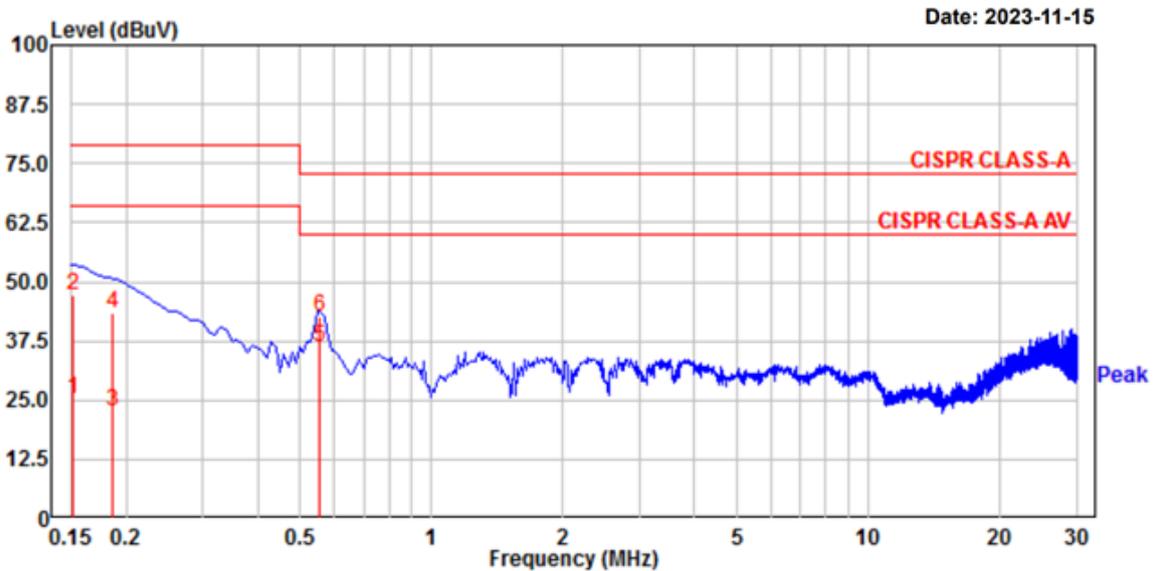
5-1 Conducted Emissions

(LINE)



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Fax:+82-31-3236010

Project No.	: 231102-0012	Phase	: Line
Test Mode	: Operating	Test Power	: AC 120 V / 60 Hz
Temp./ Humi.	: 20 'C / 40 % R.H.	Test Engineer	: HAN M S



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.	0.151	27.78	5.74	19.41	47.19	25.15	79.00	66.00	31.81	40.85	Line
4.	0.186	23.81	3.38	19.41	43.22	22.79	79.00	66.00	35.78	43.21	Line
6.	0.555	23.37	16.90	19.44	42.81	36.34	73.00	60.00	30.19	23.66	Line

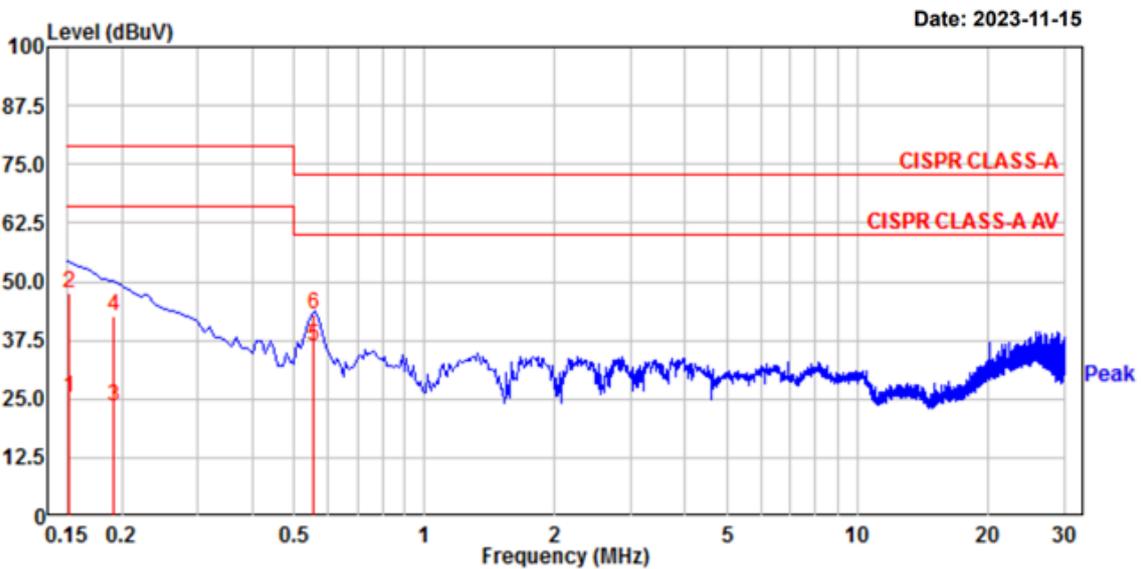
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

(NEUTRAL)



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Project No. : 231102-0012	Phase : Neutral
Test Mode : Operating	Test Power : AC 120 V / 60 Hz
Temp./ Humi. : 20 'C / 40 % R.H.	Test Engineer : HAN M S



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.	0.151	28.02	5.85	19.40	47.42	25.25	79.00	66.00	31.58	40.75	neutral
4.	0.192	23.20	4.01	19.40	42.60	23.41	79.00	66.00	36.40	42.59	neutral
6.	0.557	23.42	16.78	19.43	42.85	36.21	73.00	60.00	30.15	23.79	neutral

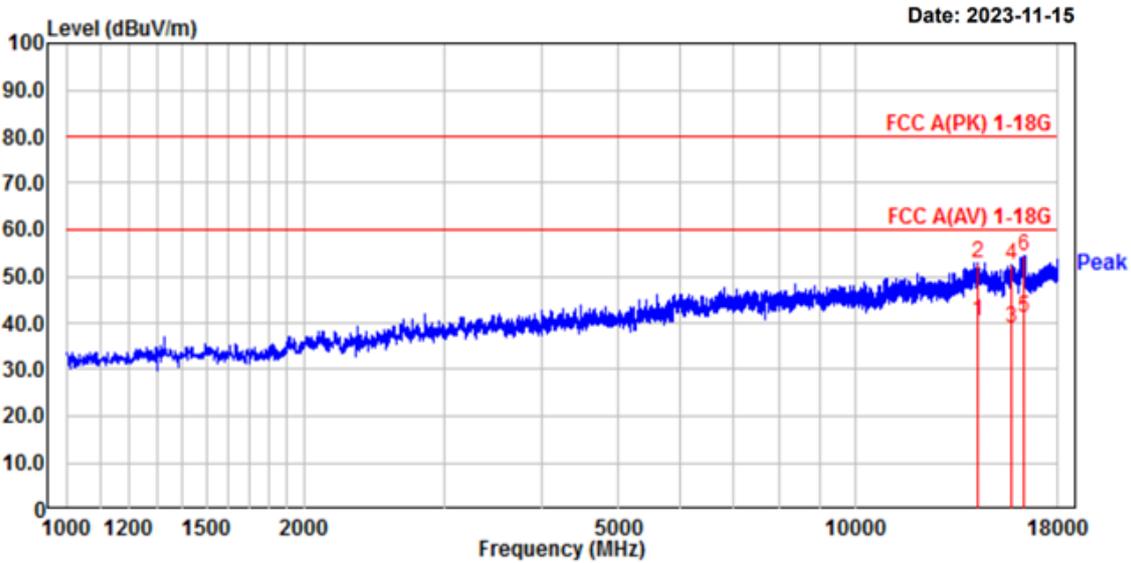
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Radiated Emissions (FCC / IC)
(Above 1 GHz) / H



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Project No. : 231012-0047	Temp/Humi: 21 'C / 45 % R.H.
Test Mode : Operating	Tested by: HAN M S
Power : AC 120 V / 60 Hz	Measure distance : 4.3 m



No.	Freq MHz	RD PK dBμV	RD AV dBμV	C.F dB	Result PK dBμV	Result AV dBμV	Limit PK dBμV	Limit AV dBμV	Margin PK dB	Margin AV dB	Height cm	Angle deg	Polarity
2.	14289.75	38.01	25.31	14.97	52.98	40.28	80.00	60.00	27.02	19.72	100	105	horizontal
4.	15781.50	40.30	26.70	12.23	52.53	38.93	80.00	60.00	27.47	21.07	100	144	horizontal
6.	16357.38	40.21	27.01	14.15	54.36	41.16	80.00	60.00	25.64	18.84	100	130	horizontal

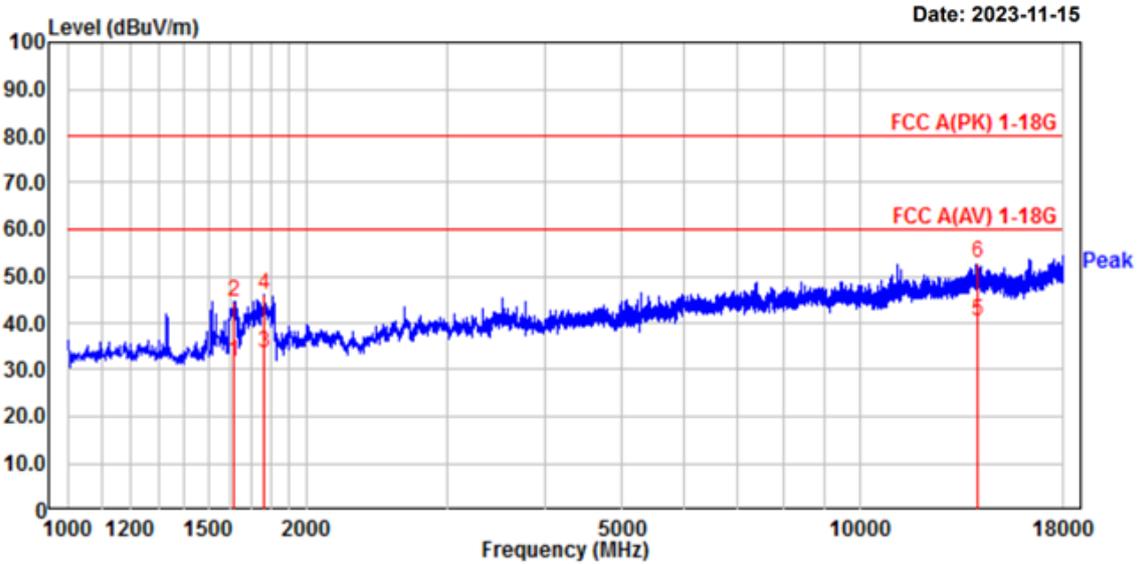
Remarks: C.F (Correction Factor) = Antenna factor + Cable loss + Measure distance - Preamp gain

(Above 1 GHz) / V



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Project No. : 231012-0047	Temp/Humi: 21 'C / 45 % R.H.
Test Mode : Operating	Tested by: HAN M S
Power : AC 120 V / 60 Hz	Measure distance : 4.3 m



No.	Freq MHz	RD PK dBμV	RD AV dBμV	C.F dB	Result PK dBμV	Result AV dBμV	Limit PK dBμV	Limit AV dBμV	Margin PK dB	Margin AV dB	Height cm	Angle deg	Polarity
2.	1618.38	52.00	39.20	-7.40	44.60	31.80	80.00	60.00	35.40	28.20	100	302	vertical
4.	1762.88	53.00	40.50	-7.05	45.95	33.45	80.00	60.00	34.05	26.55	100	25	vertical
6.	14062.38	37.19	24.89	15.45	52.64	40.34	80.00	60.00	27.36	19.66	100	264	vertical

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

Conclusions

Product models "**AIB-800**" meets all of the Class A requirements of the FCC Part 15, Subpart B. Limits of radio disturbance characteristics of ITE).

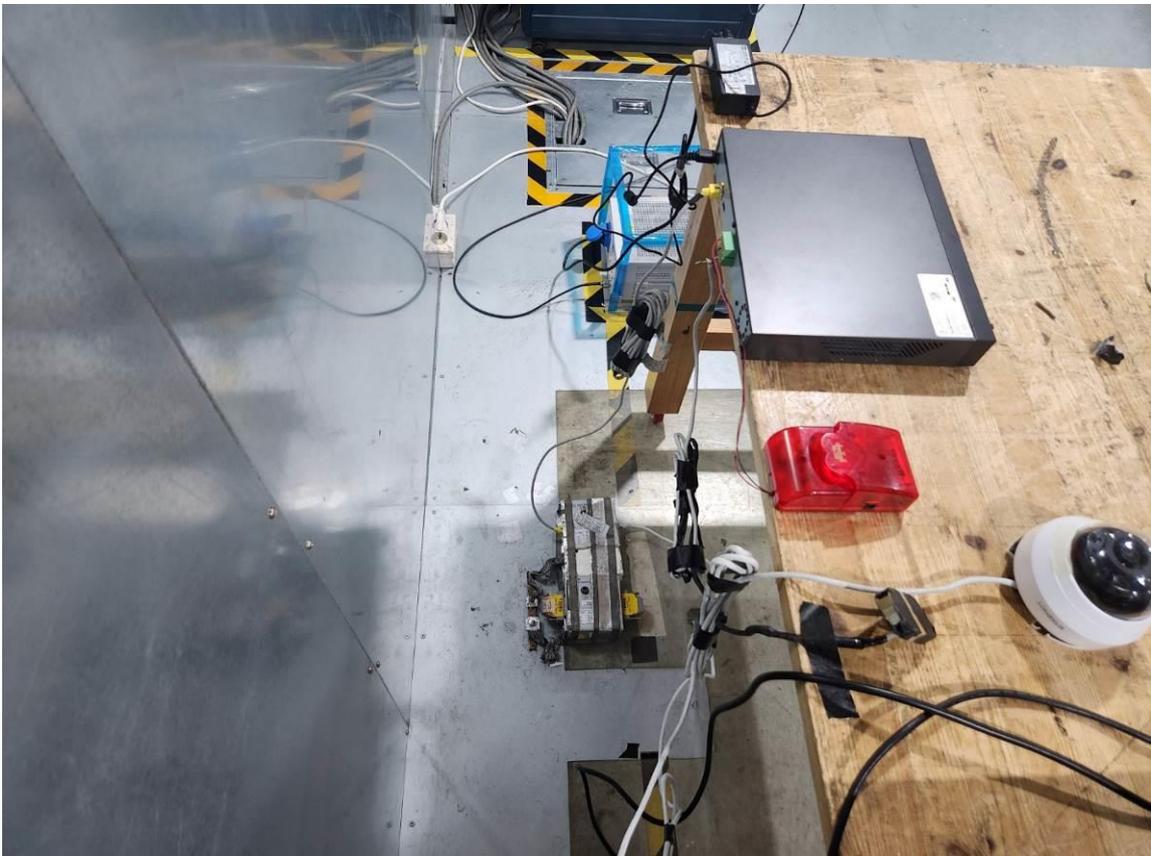
(Refer to Test Specification and Test Results in the "LTA certification", page 4 and 5)

- The highest internal source of an EUT is higher than 108 MHz, the measurement shall be made up to 18 GHz.

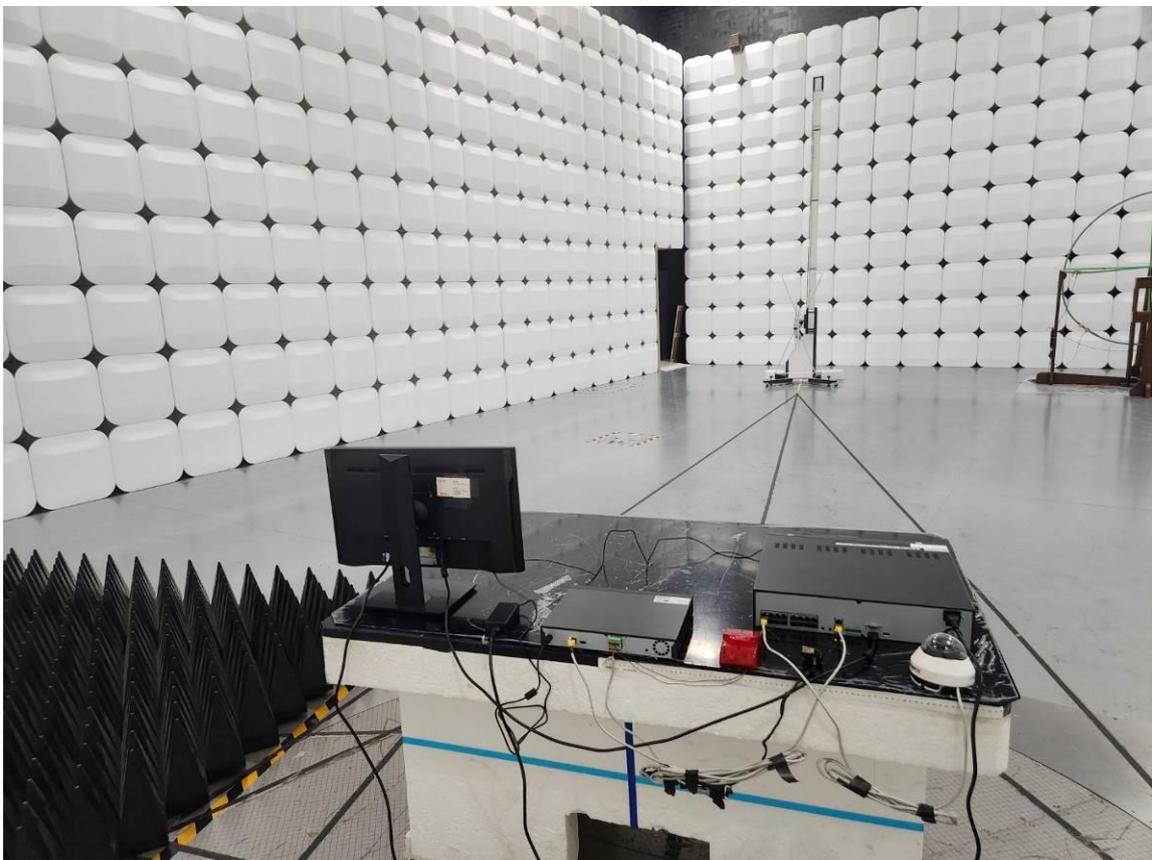
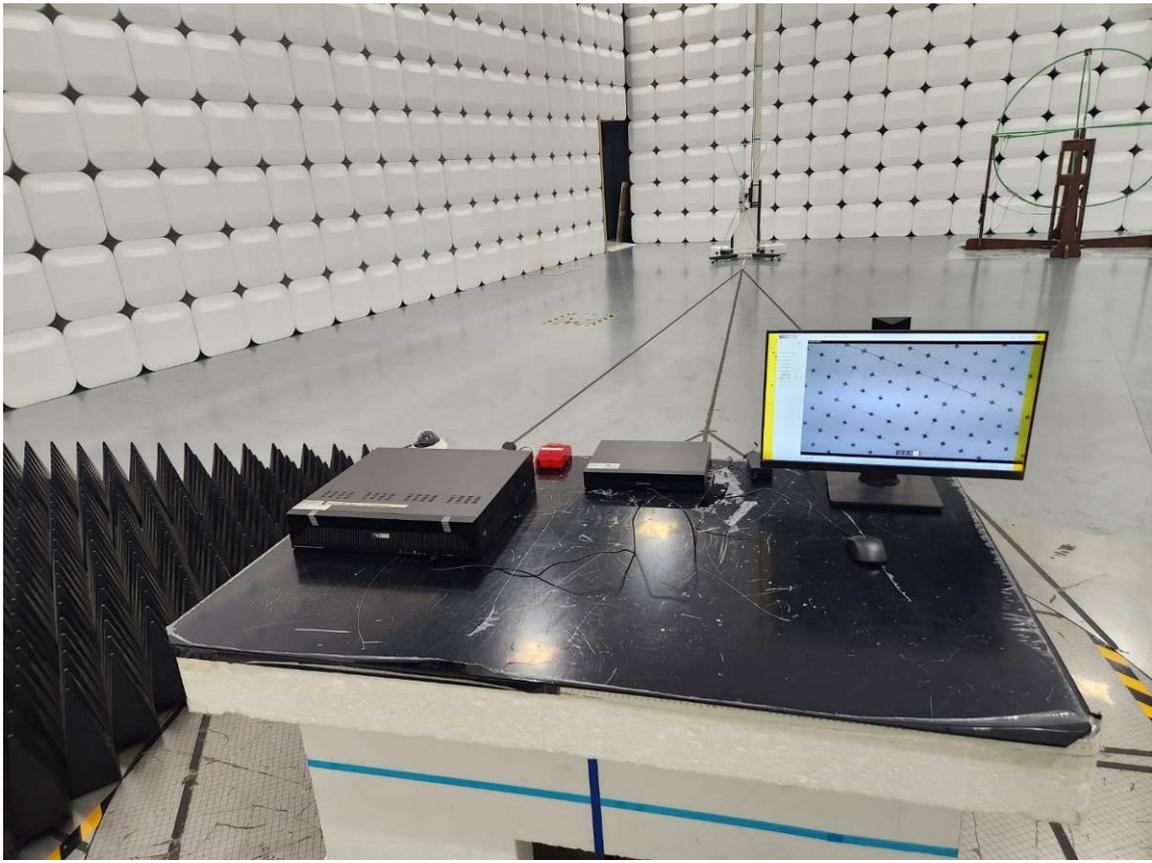
(The highest internal source of an EUT : 3.0 GHz)

Photograph of the measurements

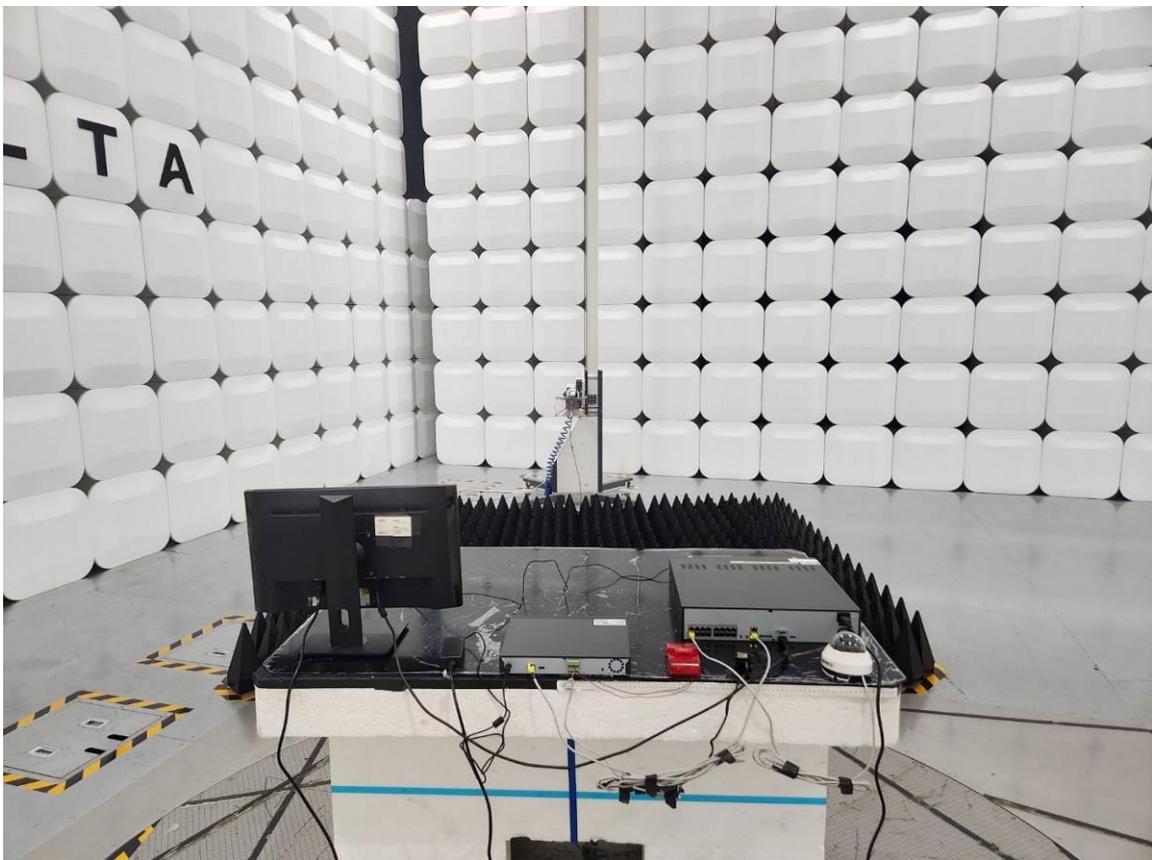
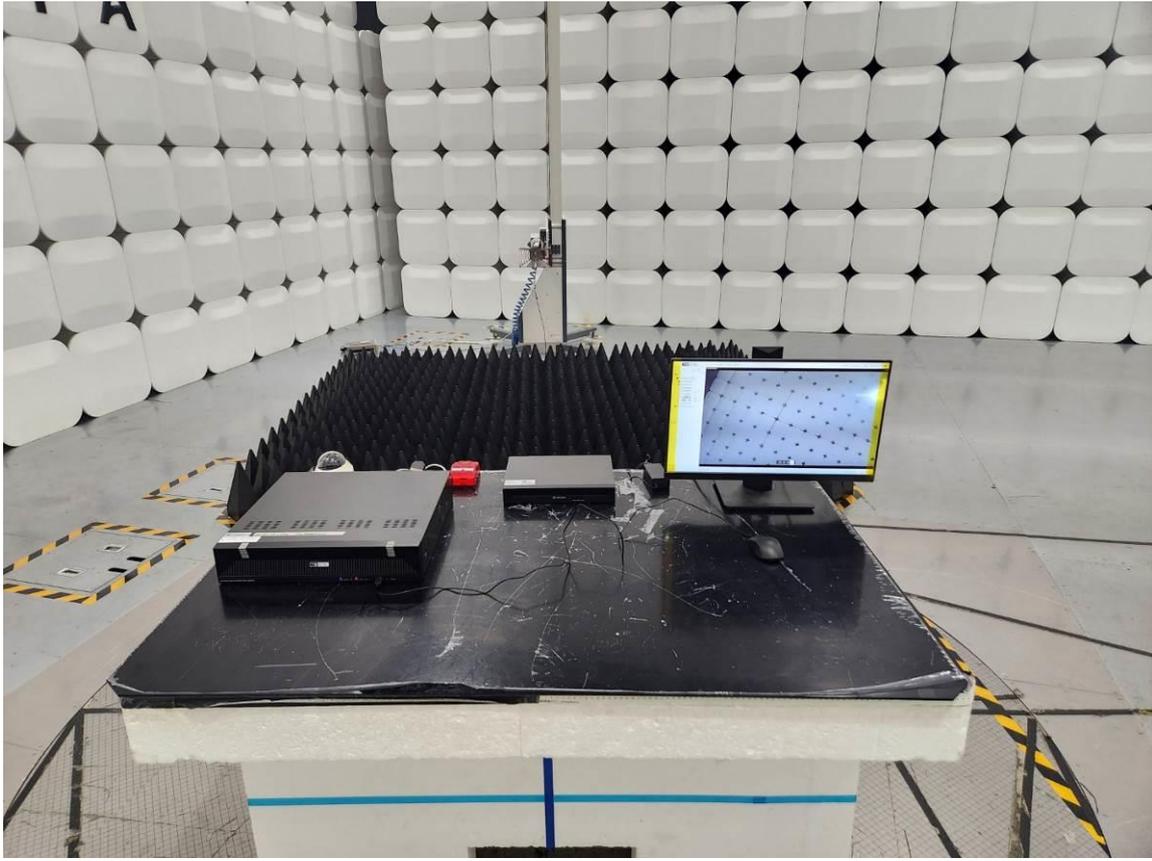
Conducted Emissions



Radiated Emissions - Below 1 GHz



Radiated Emissions - Above 1 GHz

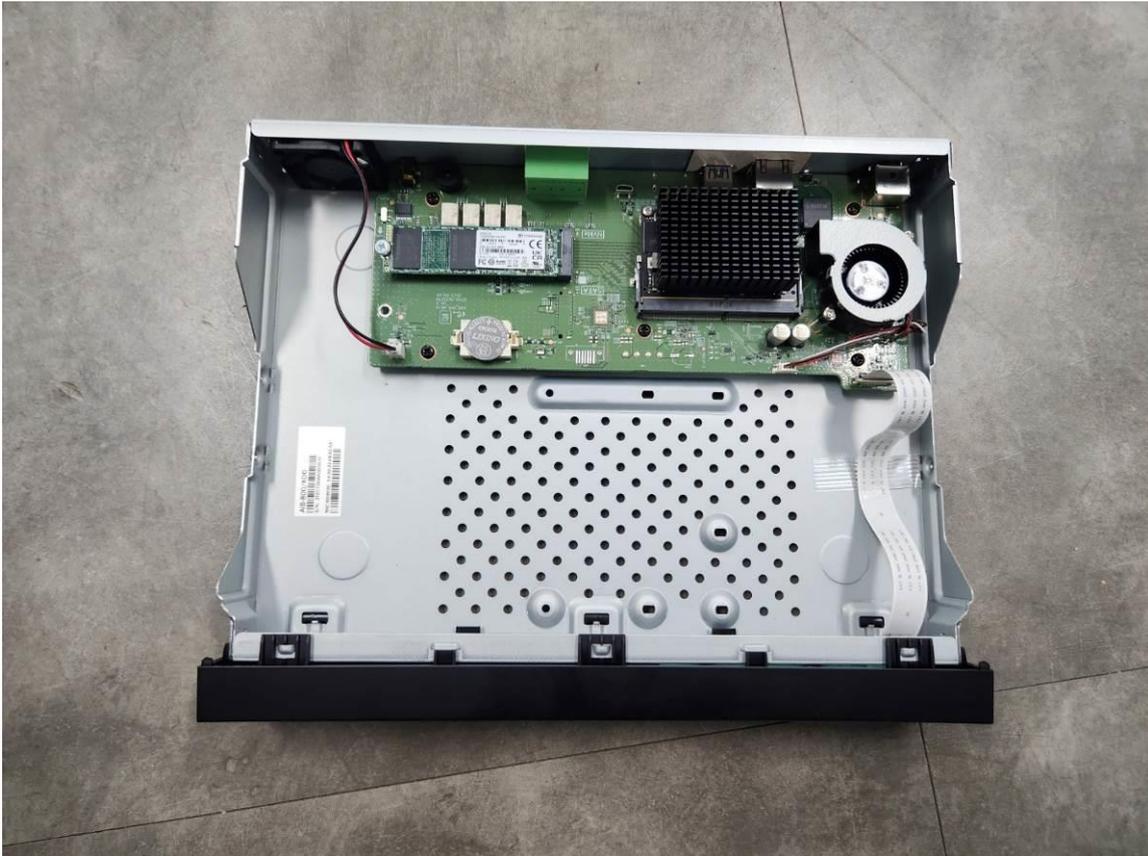


Photograph of the EUT

EUT



EUT



Modification

