



TEST REPORT



Report No. : KES-EM253094

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KES Co., Ltd.

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1. Client

- Name : Hanwha Vision Co., Ltd.
- Address : 6, Pangyo-ro 319beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea

2. Sample Description

- Product item : LENS MODULE
- Model name : SLA-F2480WDA
- Variant model : -
- Manufacturer etc. : HANWHA VISION VIETNAM COMPANY LIMITED
- Manufacturer address : Lot O-2, Que Vo Industrial Zone Extended Area, Nam Son Ward, Bac Ninh Province, Vietnam
- Manufacturer etc. : D-TECH CO.,LTD.
- Manufacturer address : 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi-do, Korea (Suwon Industrial Complex)

3. Date of test : 2025. 09. 09. ~ 2025. 09. 10.

4. Location of Test : Permanent Testing Lab
○ Address : 473-21, Gayeo-ro, Yeoju-si, Gyeonggi-do, 12658, Republic of Korea

5. Test method used : AS/NZS CISPR 32:2015/AMD1:2020

6. Test result : PASS

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
This test report is not related to KOLAS accreditation.

Affirmation	Tested by	Technical Manager by
	Name : SeongMin Jang	Name : DongHun Jang

2025. 10. 17.

KES Co., Ltd.

**REPORT REVISION HISTORY**

Date	Test Report No.	Revision History
2025. 10. 17.	KES-EM253094	Issued

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Use of uncertainty of measurement for decisions on conformity (decision rule):

- ☒ No decision rule is specified by the standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").
- ☐ Other (to be specified, for example when required by the standard or client)



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1 Laboratory Information

1.1 Test Location

Category	Details
Address	473-21, Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Republic of Korea
Telephone Number	031-883-5092
Facsimile Number	031-883-5169

The measurement facility is located at 473-21, Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea, Republic of. The sites are constructed in conformance with the requirements of ANSI C63.4a-2017 and CISPR 16-1-4:2019

1.2 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Anechoic Chamber Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298
JAPAN	VCCI	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)	 C-20136, T-20137, R-20181, G-20176
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 001633 0008



2 Test Summary

2.1 Class and Voltage

Test Class	Test Voltage
Class A	AC 240 V, 50 Hz

2.2 Summary of Test Results

Test Item	Test Standard	Test Result	Remark
Conducted Emissions at Mains Power Ports	AS/NZS CISPR 32:2015/AMD1:2020	PASS	-
Conducted Emissions at Telecommunication Ports		N/A	NOTE 1
Radiated Emissions(Below 1 GHz)		PASS	-
Radiated Emissions(Above 1 GHz)		PASS	-
* N/A: Not Applicable (NOTE 1) No signal line ports.			

2.3 Remarks when standards applied

N/A

2.4 Variant Model Differences

N/A

2.5 Device Modifications

N/A



3 General Product Description

Division		Specificity
Internal maximum operating frequency		3 000 MHz
Power	Rated power supply	DC 5 V
	Test Power	AC 240 V, 50 Hz
I/O Ports	User port	RJ-45 1 EA
	Unused/Administrator Port	N/A
function	Product features	LENS MODULE
	Wireless function	N/A
Components		Main body 1 EA, Cable 1 EA
Others		Please refer to the specifications listed below.



	SLA-F2480WDA
Video	
Imaging Device	1/2.8" CMOS
Resolution	None
Max. Framerate	None
NETD	None
Pixel Size	None
Video Out	None
Video Transmission Distance	None
Lens	
Focal Length (Zoom Ratio)	2.45mm fixed focal
Optical Zoom	None
Max. Aperture Ratio	F2.0
Angular Field of View	H: 123°, V: 91°, D: 159°
Min. Object Distance	0.5m(1.64ft)
Focus Control	Fixed
Lens Type	None
Mount Type	RJ12 connected with main unit
Optional Lens	None
Environmental & Electrical	
Operating Temperature / Humidity	-30°C~+55°C(-22°F ~+131°F) / 0~95% RH * Start up should be done at above -30°C
Storage Temperature / Humidity	-50°C~+60°C(-58°F ~+140°F) / 0~95% RH
Wind Load	IP66, NEMA 4X, IK10
EPA(Effective Projected Area)	None
Certification	None
Input Voltage	None
Power Consumption	None
Mechanical	
Color / Material	White / Plastic
RAL Code	RAL9003
Product Dimensions / Weight	ø110.0x77.0mm(ø3.54x2.36"), 450g(0.99lb) Cable: 8m(26.2ft), 350g(0.77lb)
Compatible Conduit hole / Gang	None



4 EUT Setup and Operation Mode

4.1 EUT Configuration

Product Name	Model Number	Serial Number	Manufacturer	Remarks
LENS MODULE	SLA-F2480WDA	-	HANWHA VISION VIETNAM CO MPANY LIMITED	EUT
NETWORK CAMERA Adaptor	2ACB022F	-	Channel Well Technology (Guangzhou) Co., Ltd.	-
NETWORK CAMERA	PNM-C20000QB	-	HANWHA VISION VIETNAM CO MPANY LIMITED	-
Laptop	LG15N54	506NZGK000615	LG	-
Laptop Adaptor	PA-1650-43(65W)	OF58U63849302Y609	LG	-

4.2 System Configuration

Product Name	Model Number	Serial Number	Manufacturer	Remarks
-	-	-	-	-



4.3 External I/O Cabling

Start		End		Cable Spec.	
Product Name	I/O Port	Product Name	I/O Port	Length(m)	Shield
LENS MODULE (EUT)	RJ-45	NETWORK CAMERA	RJ-12	8.3	S
NETWORK CAMERA Adaptor	DC Jack		DC Jack	0.8	U
Laptop	RJ-45		RJ-45	2.9	U
	DC Jack	Laptop Adaptor	DC Jack	1.6	U

* Unshielded=U, Shielded=S

4.4 EUT Operating Mode(s)

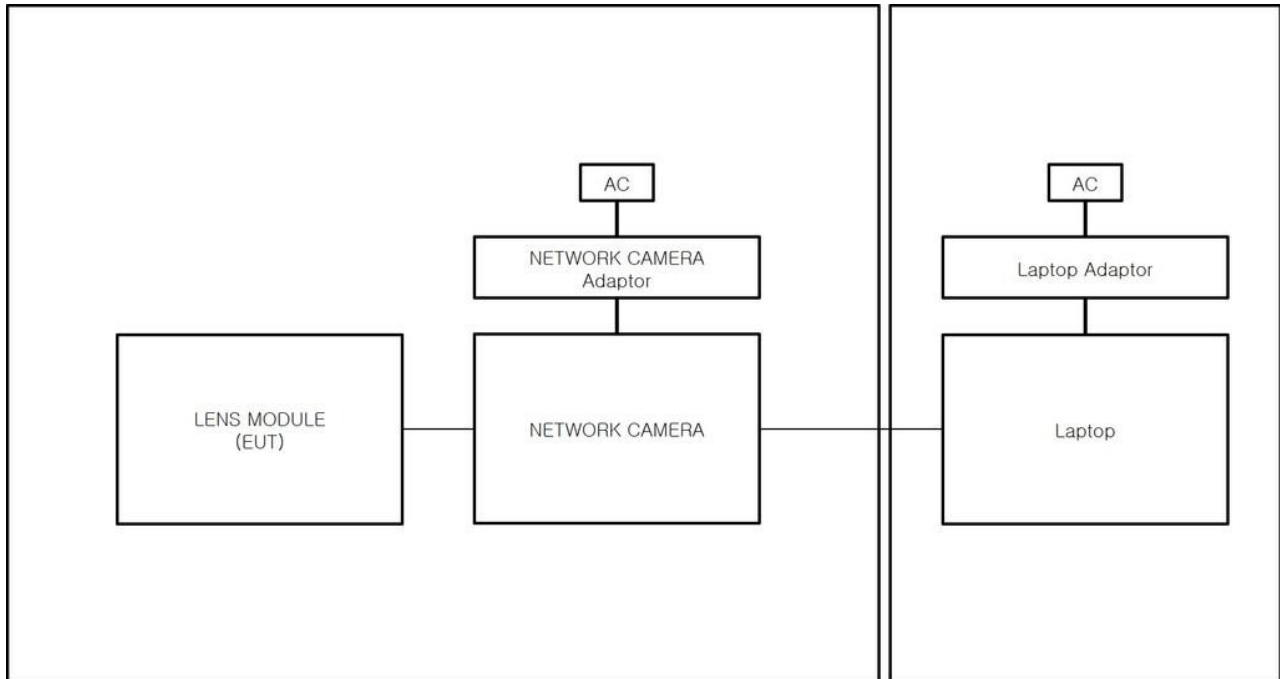
Category	Mode	Operating
Mode 1	Operation	- Check the network behavior of the EUT with the laptop's ping test. - View images of the camera through the Web Viewer.

4.5 Test operating S/W

Name	Version	Manufacture Company
Web Viewer	-	HANWHA VISION VIETNAM CO MPANY LIMITED



4.6 Configuration



Mode 1



5 Measurement Procedure

- Conducted Emissions

The conducted emission levels were measured on each current-carrying line with the spectrum analyzer operating in the CISPR quasi-peak mode (or peak mode if applicable). The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. If the conducted emission exceed the average limit with the instrument set to the quasi-peak mode, the measurements are made in the average mode. The emission spectrum was scanned from 150 kHz to 30 MHz. The highest emission amplitudes relative to the appropriate limits were measured and have been recorded. Quasi-peak readings are distinguished with a "QP".

- Radiated Electric Field Emissions

The test was done at a SEMI ANECHOIC CHAMBER with quasi-peak detector. The final test data was measured using a Quasi-Peak detector below 1 GHz at 10 m or 3 m distance and a Peak and Average detector above 1 GHz at 3 m distance. Test was proceeded worst case test mode and cable configuration. Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m (Radiated Emissions(Below 1 GHz)) and 1 m (Radiated Emissions(Above 1 GHz)) and the EUT was rotated 360° to find the maximum emitting point for each frequency.

Measurement procedures was In accordance with ANSI C63.4 or CISPR 32.

◆ Calculation

- Conducted Emissions

$\text{QuasiPeak[dBuV]} / \text{CAverage[dBuV]} = \text{Reading Value[dBuV]} + \text{Corr. [dB]}$

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

- Radiated Emissions(Below 1 GHz)

$\text{Result(QP) [dB(μV/m)]} = (\text{Reading(QP)[dB(μV)]} + \text{c.f[dB(1/m)]})$

$\text{Margin(QP)[dB]} = \text{Limit[dB(μV/m)]} - \text{Result(QP) [dB(μV/m)]}$

Reading(QP) : Reading value, Result(QP) : Reading value + Factor value

Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value

- Radiated Emissions(Above 1 GHz)

$\text{Result(PK/CAV) [dB(μV/m)]} = (\text{Reading(PK/CAV)[dB(μV)]} + \text{c.f[dB(1/m)]})$

$\text{Margin(PK/CAV)[dB]} = \text{Limit[dB(μV/m)]} - \text{Result(PK/CAV) [dB(μV/m)]}$

Reading(PK/CAV) : Reading value, Result(PK/CAV) : Reading value + Factor value

Limit(PK/CAV) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value



6 Test Item

6.1 Conducted Emissions at Mains Power Ports

6.1.1 Test Equipment

Equipment Name	Model Number	Manufacturer	Serial No.	Cal. Date	Next Cal. Date	Used
SHIELD ROOM #6	-	DYMSTEC	-	-	-	■
EMC32 Measurement Software	EMC32	R&S	9.12.00	-	-	■
EMI TEST RECEIVER	ESR3	Rohde & Schwarz	101783	2024-11-06	2025-11-06	■
LISN	ENV216	Rohde & Schwarz	101786	2025-01-09	2026-01-09	■
PULSE LIMITER	ESH3-Z2	Rohde & Schwarz	101915	2024-11-06	2025-11-06	■

6.1.2 Test Location : SHIELD ROOM #6

6.1.3 Test Conditions :

Temperature	Relative Humidity
(26.2 ~ 26.3) °C	(58.9 ~ 59.0) % R.H.



6.1.4 Test Result

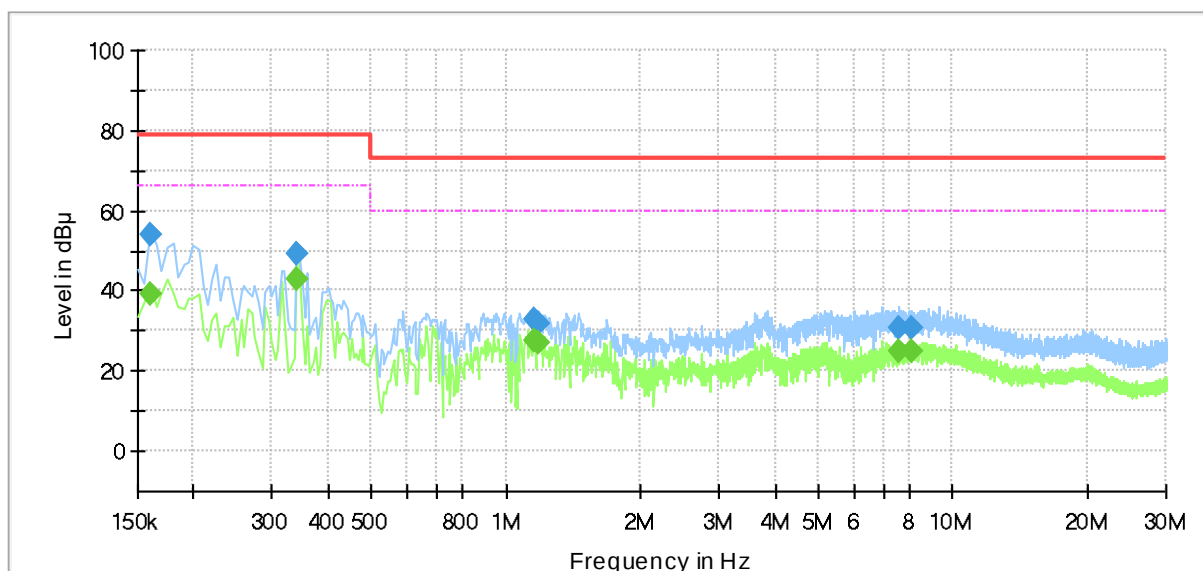
○ Test Date : 2025-09-09

● Test Mode : Mode 1

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Test Description: Conducted Emission
Job No.: KES-EM253094
Phase: L
Mode:
Operator Name: KES



Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	—	39.30	66.00	26.70	1000.0	9.000	L1	19.5
0.160000	54.23	—	79.00	24.77	1000.0	9.000	L1	19.5
0.340000	—	42.77	66.00	23.23	1000.0	9.000	L1	19.6
0.340000	49.36	—	79.00	29.64	1000.0	9.000	L1	19.6
1.160000	—	27.43	60.00	32.57	1000.0	9.000	L1	19.6
1.160000	32.59	—	73.00	40.41	1000.0	9.000	L1	19.6
1.185000	—	26.86	60.00	33.14	1000.0	9.000	L1	19.6
1.185000	31.97	—	73.00	41.03	1000.0	9.000	L1	19.6
7.560000	—	24.86	60.00	35.14	1000.0	9.000	L1	20.0
7.560000	30.56	—	73.00	42.44	1000.0	9.000	L1	20.0
8.090000	—	24.99	60.00	35.01	1000.0	9.000	L1	20.0
8.090000	30.75	—	73.00	42.25	1000.0	9.000	L1	20.0



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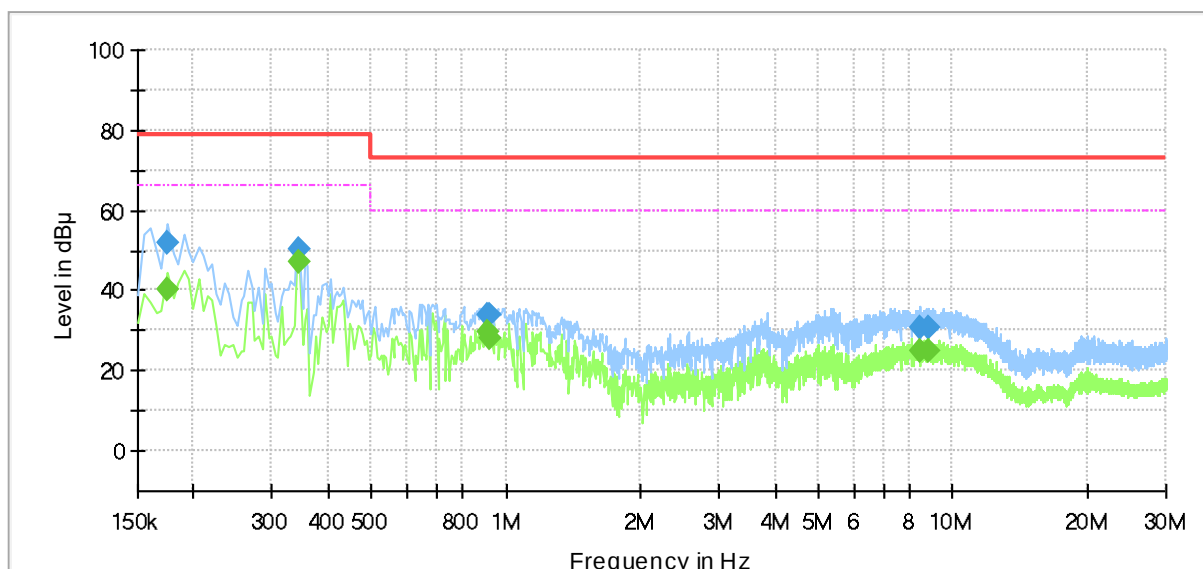
○ Test Date : 2025-09-09

● Test Mode : Mode 1

Test Report

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Test Description: Conducted Emission
Job No.: KES-EM253094
Phase: N
Mode:
Operator Name: KES



Final_Result

Frequency (MHz)	QuasiPeak (dB μV)	CAverage (dB μV)	Limit (dB μV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.175000	—	40.01	66.00	25.99	1000.0	9.000	N	19.5
0.175000	51.82	—	79.00	27.18	1000.0	9.000	N	19.5
0.345000	—	47.12	66.00	18.88	1000.0	9.000	N	19.5
0.345000	50.18	—	79.00	28.82	1000.0	9.000	N	19.5
0.905000	—	29.76	60.00	30.24	1000.0	9.000	N	19.6
0.905000	34.15	—	73.00	38.85	1000.0	9.000	N	19.6
0.920000	—	28.01	60.00	31.99	1000.0	9.000	N	19.6
0.920000	33.77	—	73.00	39.23	1000.0	9.000	N	19.6
8.410000	—	24.80	60.00	35.20	1000.0	9.000	N	20.0
8.410000	30.60	—	73.00	42.40	1000.0	9.000	N	20.0
8.820000	—	24.67	60.00	35.33	1000.0	9.000	N	20.0
8.820000	30.78	—	73.00	42.22	1000.0	9.000	N	20.0

6.1.5 Remark

Complies with the test requirements.



6.2 Radiated Emissions(Below 1 GHz)

6.2.1 Test Equipment

Equipment Name	Model Number	Manufacturer	Serial No.	Cal. Date	Next Cal. Date	Used
SEMI ANECHOIC CHAMBER #4(10 m)	-	DYMSTEC	-	-	-	■
EP5/RE Software	EP5/RE	TOYO	6.0.0	-	-	■
EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100551	2025-02-13	2026-02-13	■
AMPLIFIER	SCU 01	Rohde & Schwarz	100603	2024-11-06	2025-11-06	■
BILOG ANTENNA	VULB 9168	SCHWARZBEC K	9168-461	2024-05-09	2026-05-09	■
ATTENUATOR	6806.17.A	HUBER+SUHNE R	-	2025-02-13	2026-02-13	■

6.2.2 Test Location : SEMI ANECHOIC CHAMBER #4(10 m) Measurement Distance : □ 3 m, ■ 10 m

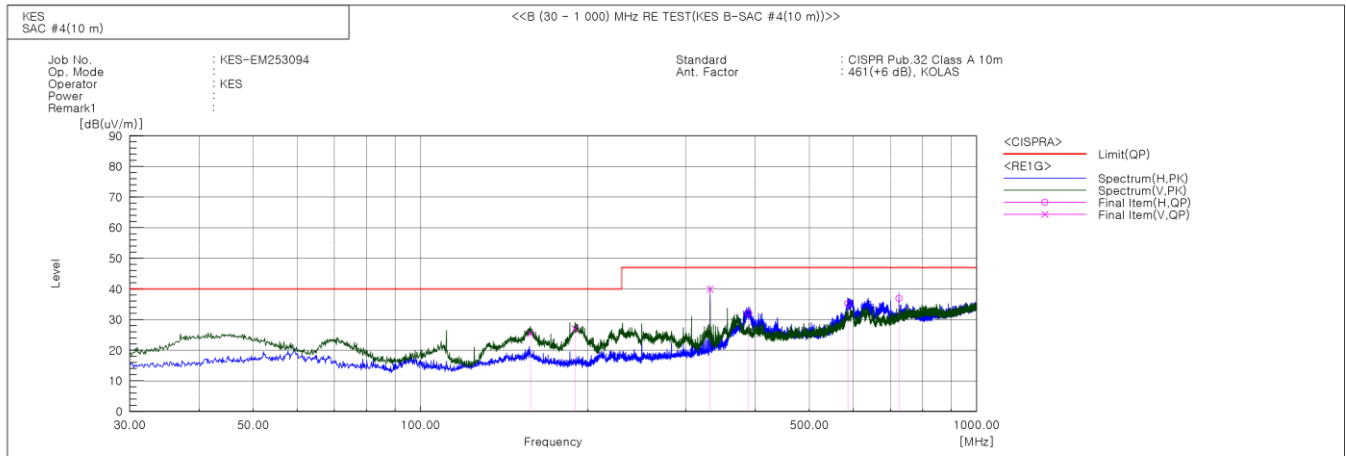
6.2.3 Test Conditions :

Temperature	Relative Humidity
(25.4 ~ 25.6) °C	(57.8 ~ 57.9) % R.H.



6.2.4 Test Result

- Test Date : 2025-09-10
- Test Mode : Mode 1



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	157.676	V	44.8	-19.4	25.4	40.0	14.6	102.0	278.0	
2	189.565	V	48.6	-21.6	27.0	40.0	13.0	100.0	206.0	
3	331.791	V	55.9	-16.0	39.9	47.0	7.1	100.0	332.0	
4	389.021	H	46.3	-14.1	32.2	47.0	14.8	193.0	94.0	
5	586.295	H	42.7	-7.5	35.2	47.0	11.8	198.0	295.0	
6	725.005	H	41.1	-4.2	36.9	47.0	10.1	395.0	323.0	

※ The data is the result measured by the detector in Quasi-Peak mode on the Peak graph.

6.2.5 Remark

Complies with the test requirements.



6.3 Radiated Emissions(Above 1 GHz)

6.3.1 Test Equipment

Equipment Name	Model Number	Manufacturer	Serial No.	Cal. Date	Next Cal. Date	Used
SEMI ANECHOIC CHAMBER #5	-	SY Corporation	-	-	-	■
ES10/RE Software	ES10/RE	TOYO	2022.01.000	-	-	■
EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100552	2025-02-13	2026-02-13	■
PREAMPLIFIER	8449B	HP	3008A00538	2025-04-30	2026-04-30	■
ATTENUATOR	8491B	HP	23094	2025-02-13	2026-02-13	■
HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	2024-11-04	2025-11-04	■

6.3.2 Test Location : SEMI ANECHOIC CHAMBER #5

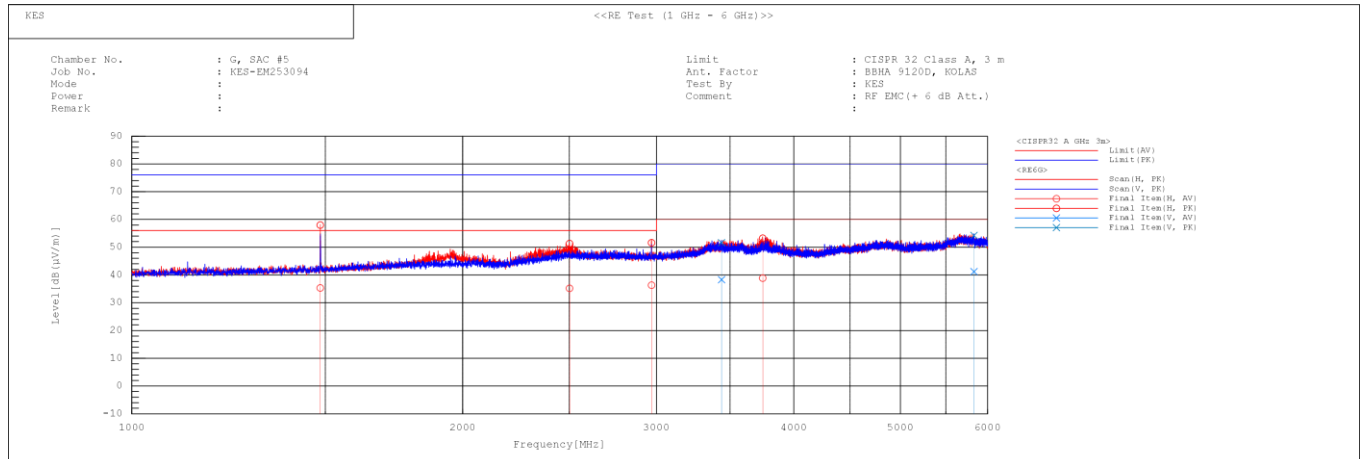
6.3.3 Test Conditions :

Temperature	Relative Humidity
(24.7 ~ 24.8) °C	(58.3 ~ 58.3) % R.H.



6.3.4 Test Result

- Test Date : 2025-09-10
- Test Mode : Mode 1



Final Result

No.	Frequency [MHz]	Pol	Reading AV [dB (μV)]	Reading PK [dB (μV)]	c.f [dB (1/m)]	Result AV [dB (μV/m)]	Result PK [dB (μV/m)]	Limit AV [dB (μV/m)]	Limit PK [dB (μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]
1	1484.111	H	34.2	56.9	1.1	35.3	58.0	56.0	76.0	20.7	18.0	100.0	26.2
2	2500.752	H	30.0	46.1	5.2	35.2	51.3	56.0	76.0	20.8	24.7	100.0	12.9
3	2969.506	H	29.8	45.1	6.5	36.3	51.6	56.0	76.0	19.7	24.4	100.0	33.5
4	3438.045	V	30.9	44.2	7.4	38.3	51.6	60.0	80.0	21.7	28.4	100.0	174.1
5	3747.033	H	30.8	45.1	8.1	38.9	53.2	60.0	80.0	21.1	26.8	100.0	221.0
6	5832.963	V	26.9	39.9	14.3	41.2	54.2	60.0	80.0	18.8	25.8	100.0	66.3

- ※ The data is the result of measured by the detector in PK and CISPR Average on the Peak graph.
- ※ The Average of the test data is the cispr average result.

6.3.5 Remark

Complies with the test requirements.



7 Test Setup Photos and EUT Photographs

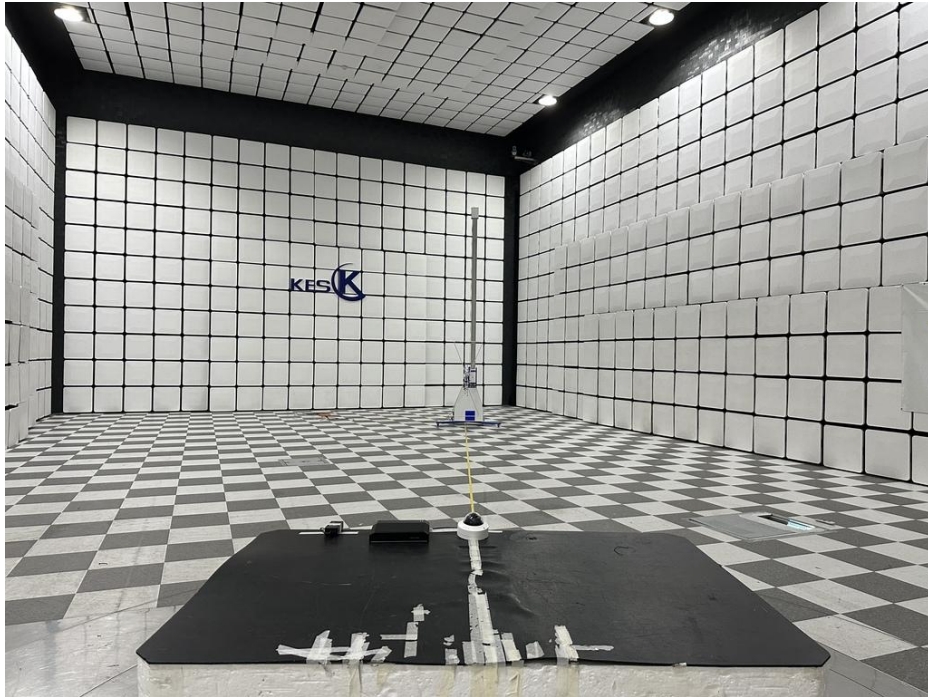
7.1 Test Setup Photos



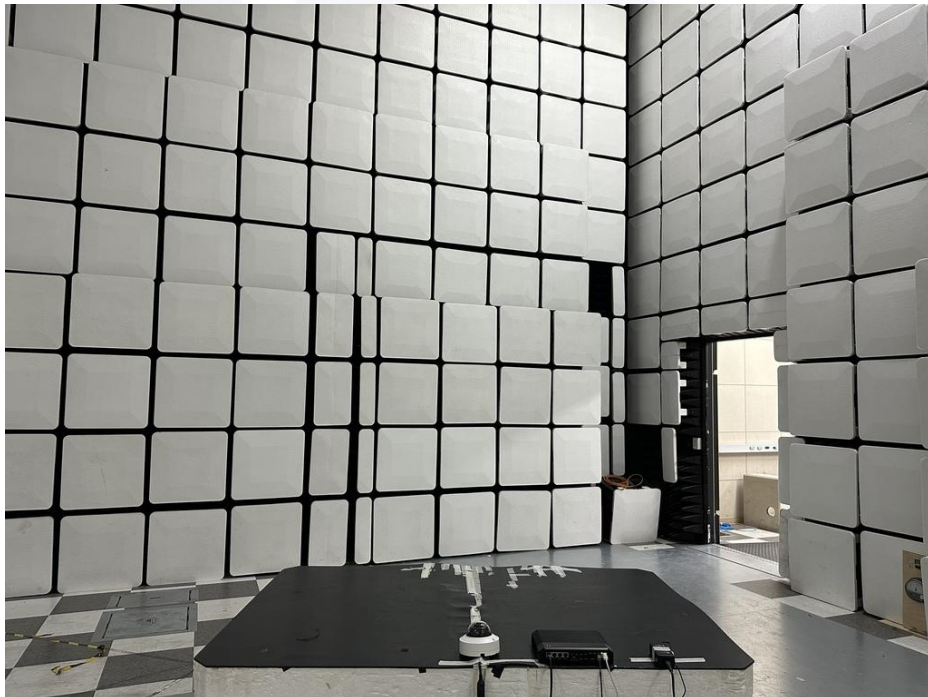
<Conducted Emissions at Mains Power Ports - Front>



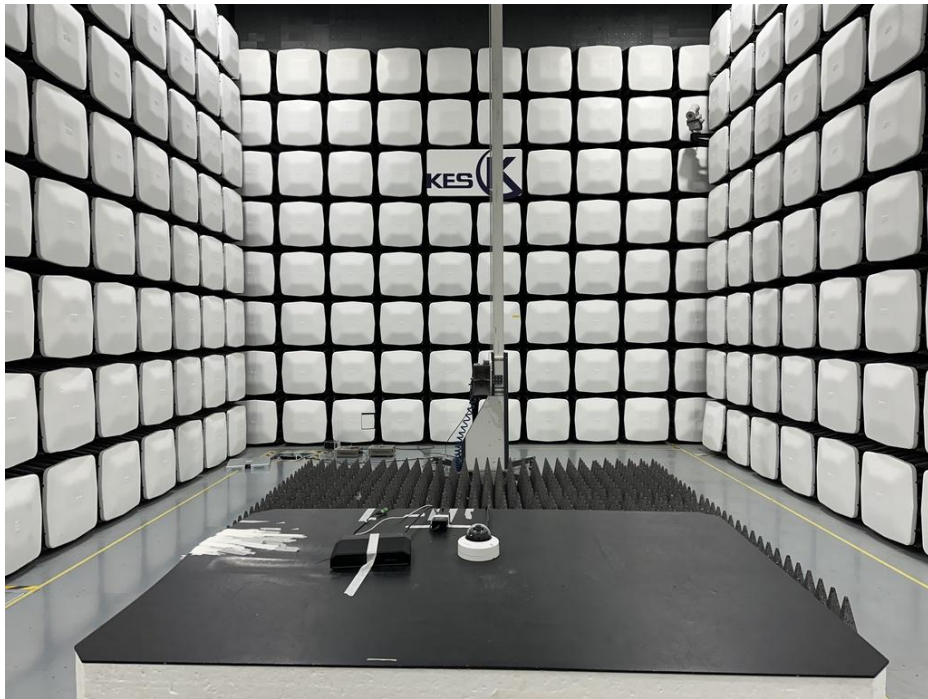
<Conducted Emissions at Mains Power Ports - Rear>



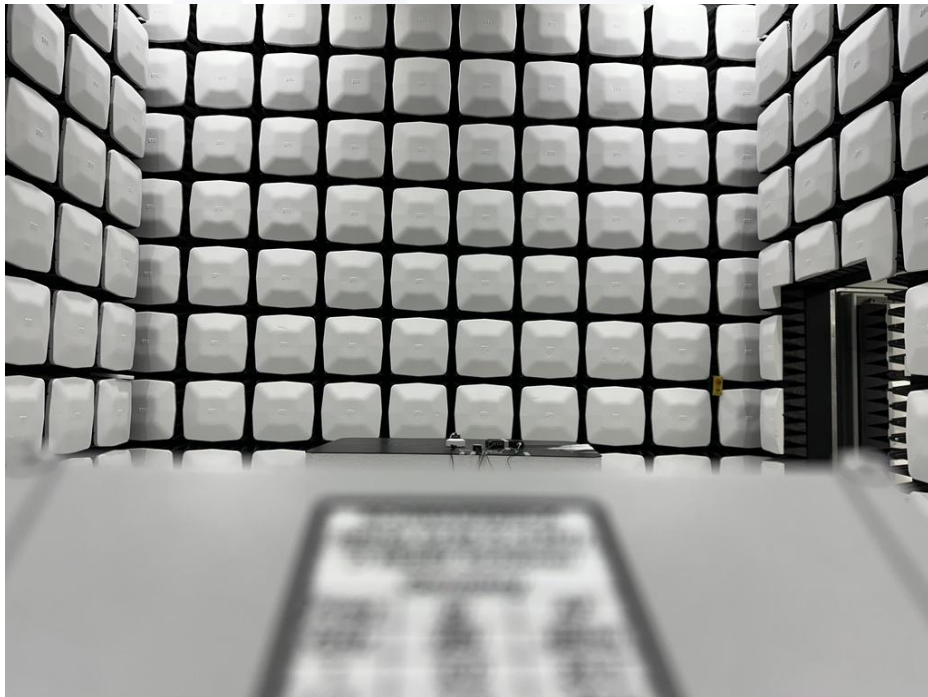
<Radiated Emissions(Below 1 GHz) - Front>



<Radiated Emissions(Below 1 GHz) - Rear>



<Radiated Emissions(Above 1 GHz) - Front>



<Radiated Emissions(Above 1 GHz) - Rear>



7.2 EUT Photographs



<EUT External Photographs - Top>



<EUT External Photographs - Bottom>



<Components>



<Port-1>



<EUT Internal Photographs>



7.3 Label



Name : Hanwha Vision Co., Ltd.
Product item : LENS MODULE
Model name : SLA-F2480WDA

The End.

