



TEST REPORT



Report No. : KES-EM253102

Page 1 / 50

KES Co., Ltd.

#3002, #3503, #3701, 40, Simin-daero365beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Republic of Korea
Tel : +82-31-425-6200, Fax : +82-31-341-3838

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-F2480HA
- 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. 11. ~ 2025. 09. 14.

4. Location of Test

- : Permanent Testing Lab
- Address : 473-21, Gayeo-ro, Yeoju-si, Gyeonggi-do, 12658, Republic of Korea

5. Test method used

: EN 55032:2015/A1:2020, EN 50130-4:2011/A1:2014,
: EN IEC 61000-3-2:2019, EN 61000-3-3:2013/A2:2021

6. Test result

: PASS

This test report is not related to KOLAS accreditation.

Affirmation	Tested by	Technical Manager by
	Name : SeonHo Choi	Name : SeongMin Choi

2025. 10. 13

KES Co., Ltd.

**REPORT REVISION HISTORY**

Date	Test Report No.	Revision History
2025. 10. 13	KES-EM253102	Issued

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd. This document may be altered or revised by KES Co., Ltd. personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by KES Co., Ltd. will constitute fraud and shall nullify the document.

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)



TABLE OF CONTENTS

1	Laboratory Information	3
1.1	Test Location	3
1.2	Laboratory Accreditations and Listings	3
2	Test Summary	4
2.1	Class and Voltage	4
2.2	Summary of Test Results	4
2.3	Remarks when standards applied	5
2.4	Variant Model Differences	5
2.5	Device Modifications	5
3	General Product Description	6
4	EUT Setup and Operation Mode	8
4.1	EUT Configuration	8
4.2	System Configuration	8
4.3	External I/O Cabling	8
4.4	EUT Operating Mode(s)	8
4.5	Test operating S/W	8
4.6	Configuration	9
5	General Performance Criteria	10
6	Test Item	12
6.1	Conducted Emissions at Mains Power Ports	12
6.2	Radiated Emissions(Below 1 GHz).....	15
6.3	Radiated Emissions(Above 1 GHz)	17
6.4	Harmonic Current Emissions.....	19
6.5	Voltage Fluctuations and Flicker.....	23
6.6	Electrostatic Discharge.....	25
6.7	Continuous RF electromagnetic field disturbances	28
6.8	Electrical Fast Transients/Bursts	31
6.9	Surge	33
6.10	Continuous Induced RF Disturbances	35
6.11	Voltage Dips and Interruptions	37
7	Test Setup Photos and EUT Photographs.....	39
7.1	Test Setup Photos	39
7.2	EUT Photographs.....	46
7.3	Label.....	49



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 230 V, 50 Hz

2.2 Summary of Test Results

Regulation
- EMC Directive 2014/30/EU - EMC Regulations SI 2016/1091

Test Item	Test Standard		Test Result	Remark
Conducted Emissions at Mains Power Ports	EN 55032:2015/A1:2020		PASS	-
Conducted Emissions at Telecommunication Ports			N/A	NOTE 1
Radiated Emissions(Below 1 GHz)			PASS	-
Radiated Emissions(Above 1 GHz)			PASS	-
Harmonic Current Emissions	EN IEC 61000-3-2:2019		PASS	-
Voltage Fluctuations and Flicker	EN 61000-3-3:2013/A2:2021		PASS	-
Electrostatic Discharge	EN 50130-4:2011/A1:2014	EN 61000-4-2:2009	PASS	-
Continuous RF electromagnetic field disturbances		EN IEC 61000-4-3:2020	PASS	-
Electrical Fast Transients/Bursts		EN 61000-4-4:2012	PASS	-
Surge		EN 61000-4-5 :2014/A1:2017	PASS	-
Continuous Induced RF Disturbances		EN IEC 61000-4-6:2023	PASS	-
Voltage Dips and Interruptions		EN IEC 61000-4-11:2020	PASS	-

* N/A: Not Applicable

(NOTE 1) The EUT is powered via the PoE connector, but does not provide data communication capabilities, so this does not apply.



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	PoE
	Test Power	AC 230 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.



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	-10°C~+55°C(-14°F~+131°F) / 0~95%RH(non-condensing)
Storage Temperature / Humidity	-50°C~+60°C(-58°F~+140°F) / 0~90% RH
Wind Load	None
EPA(Effective Projected Area)	None
Certification	None
Input Voltage	None
Power Consumption	None
Mechanical	
Color / Material	White / Aluminum
RAL Code	RAL9003
Product Dimensions / Weight	Housing: 48x955x44mm(1.89x37.61x1.73), 1043g(2.30lb) Cable: 8m(26.2ft), 350g(0.77lb)
Compatible Conduit hole / Gangbox	None



4 EUT Setup and Operation Mode

4.1 EUT Configuration

Product Name	Model Number	Serial Number	Manufacturer	Remarks
LENS MODULE	SLA-F2480HA	-	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	410NZXE015458	LG Electronics Inc.	-
Laptop Adaptor	ADP-90WH B	84ZW19F1747	DELTA ELECTRONICS(JIAN GSU) LTD.	-

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	8.1	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)

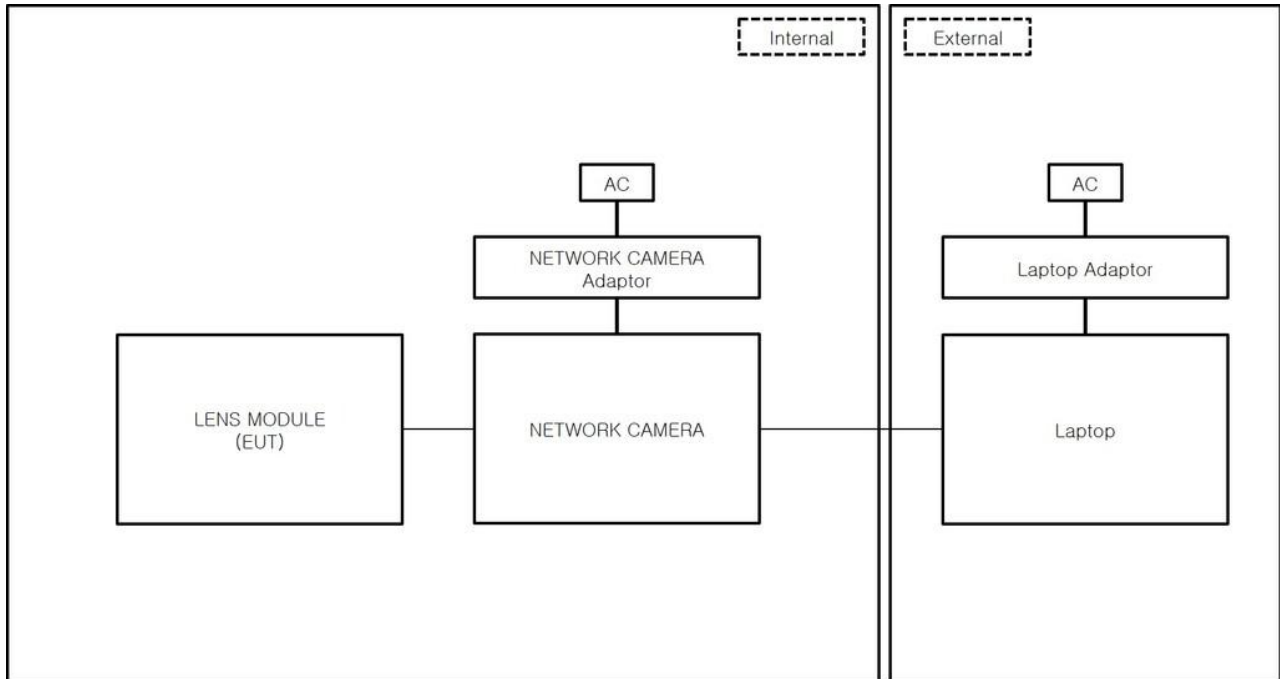
Category	Mode	Operating
Mode 1	Operation	- Check the network behavior of the EUT with the laptop's ping test. - View images of the camera through the Web Viewer.

4.5 Test operating S/W

Name	Version	Manufacture Company
Web Viewer	-	Hanwha Vision Co., Ltd.



4.6 Configuration



Mode 1



5 General Performance Criteria

Criteria for compliance was based on the following guidelines:

EN 50130-4 Alarm systems-Part 4: Electromagnetic compatibility Product family standard: Immunity requirements for components of fire, intruder and social alarm systems

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 is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

Radiated electromagnetic fields

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 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 picture is allowed at 10 V/m, providing.

- (a) there is no permanent damage or change to 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.

Fast transient burst / 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 discharge is permissible, providing

That there is no residual 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.

**Conducted RF immunity**

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 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 oeuvres at $U = 130 \text{ dB}\mu\text{V}$.

For component of CCTV systems, where the status is monitored by observing the TV picture,

then deterioration of the picture is allowed at $U = 140 \text{ dB}\mu\text{V}$, 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 $U = 130 \text{ dB}\mu\text{V}$, any deterioration of the picture is so minor that the system could still be used; and

(c) there in no observable deterioration of the picture at $U = 120 \text{ dB}\mu\text{V}$.

Voltage dip/interruption / Voltage variation

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, after the conditioning.

◆ Calculation**- Conducted Emissions**

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + 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)

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

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

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)

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

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

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	■
ARTIFICIAL MAINS NETWORK	ESH2-Z5	Rohde & Schwarz	100450	2024-11-06	2025-11-06	■
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
(25.7 ~ 25.8) °C	(57.0 ~ 57.3) % R.H.



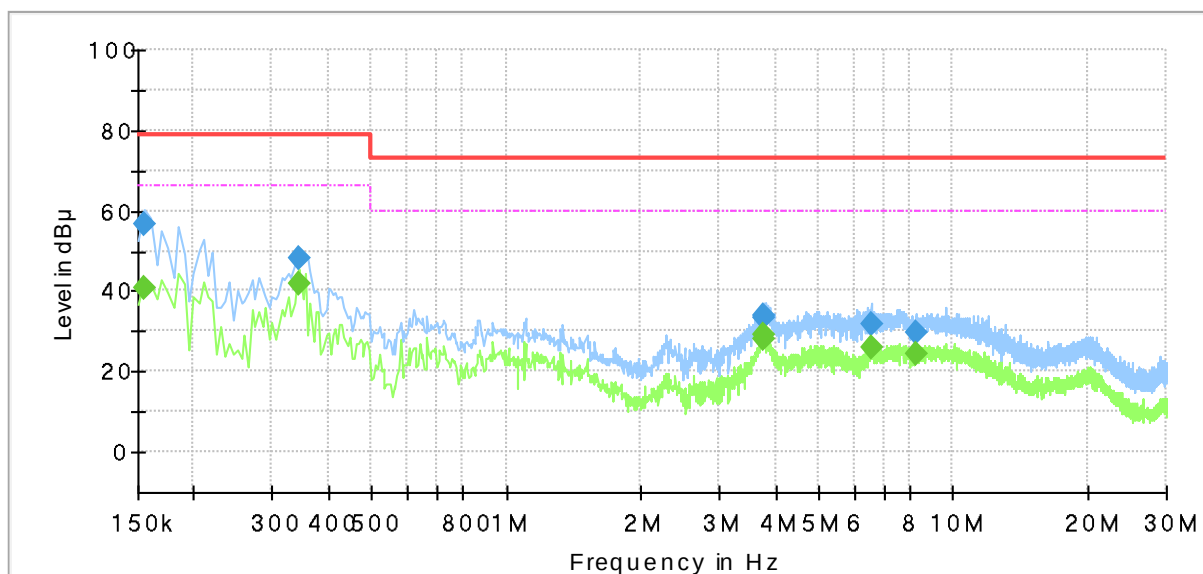
6.1.4 Test Result

- Test Date : 2025-09-11
- Test Mode : Mode 1

Test Report

1 / 1

Test Description: Conducted Emission
Job No.: KES-EM253102
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)
0.155000	—	40.82	66.00	25.18	1000.0	9.000	L1	19.5
0.155000	56.76	—	79.00	22.24	1000.0	9.000	L1	19.5
0.345000	—	41.74	66.00	24.26	1000.0	9.000	L1	19.6
0.345000	48.41	—	79.00	30.59	1000.0	9.000	L1	19.6
3.760000	—	28.14	60.00	31.86	1000.0	9.000	L1	19.8
3.760000	33.22	—	73.00	39.78	1000.0	9.000	L1	19.8
3.765000	—	29.19	60.00	30.81	1000.0	9.000	L1	19.8
3.765000	33.72	—	73.00	39.28	1000.0	9.000	L1	19.8
6.540000	—	25.76	60.00	34.24	1000.0	9.000	L1	20.0
6.540000	31.66	—	73.00	41.34	1000.0	9.000	L1	20.0
8.290000	—	24.38	60.00	35.62	1000.0	9.000	L1	20.0
8.290000	29.68	—	73.00	43.32	1000.0	9.000	L1	20.0

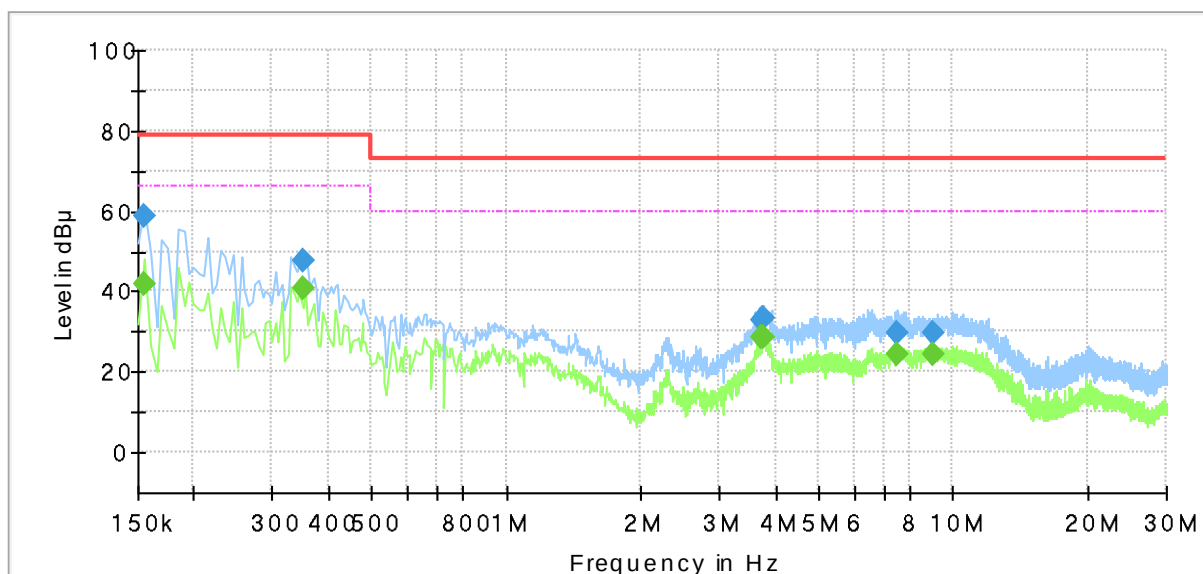


- Test Date : 2025-09-11
- Test Mode : Mode 1

Test Report

1 / 1

Test Description: Conducted Emission
Job No.: KES-EM253102
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)
0.155000	58.78	—	79.00	20.22	1000.0	9.000	N	19.5
0.155000	—	41.71	66.00	24.29	1000.0	9.000	N	19.5
0.350000	—	40.60	66.00	25.40	1000.0	9.000	N	19.5
0.350000	47.85	—	79.00	31.15	1000.0	9.000	N	19.5
3.725000	—	28.85	60.00	31.15	1000.0	9.000	N	19.8
3.725000	32.94	—	73.00	40.06	1000.0	9.000	N	19.8
3.770000	—	28.59	60.00	31.41	1000.0	9.000	N	19.8
3.770000	33.53	—	73.00	39.47	1000.0	9.000	N	19.8
7.530000	—	24.39	60.00	35.61	1000.0	9.000	N	20.0
7.530000	29.77	—	73.00	43.23	1000.0	9.000	N	20.0
9.035000	—	24.41	60.00	35.59	1000.0	9.000	N	20.0
9.035000	29.72	—	73.00	43.28	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

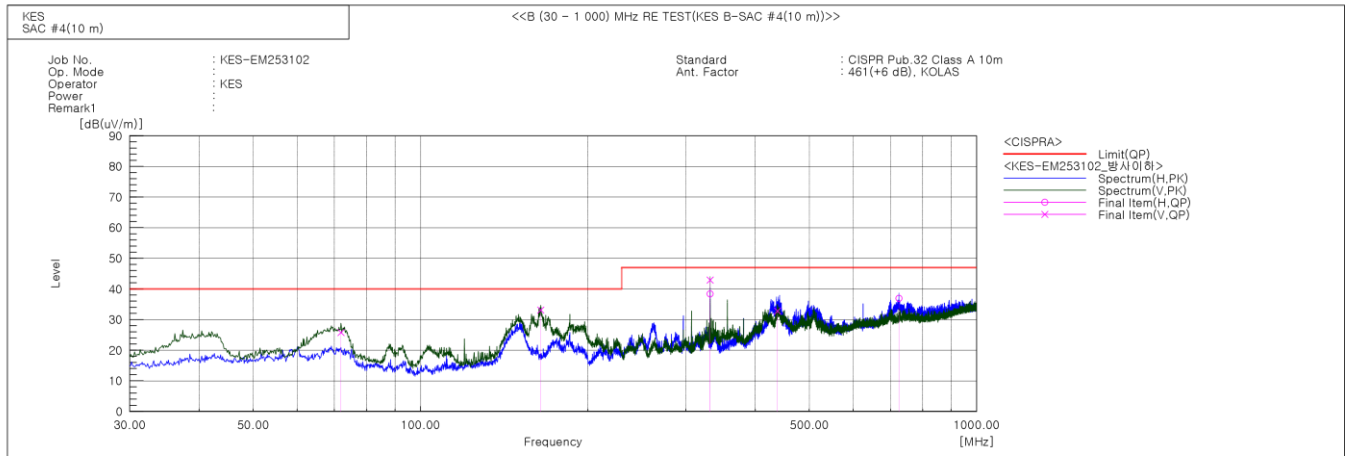
6.2.3 Test Conditions :

Temperature	Relative Humidity
(25.0 ~ 25.2) °C	(52.4 ~ 52.8) % R.H.



6.2.4 Test Result

- Test Date : 2025-09-11
- 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	71.953	V	49.1	-23.3	25.8	40.0	14.2	100.0	140.0	
2	164.466	V	52.8	-19.7	33.1	40.0	6.9	109.0	328.0	
3	331.791	V	58.9	-16.0	42.9	47.0	4.1	100.0	287.0	
4	331.791	H	54.4	-16.0	38.4	47.0	8.6	400.0	312.0	
5	438.491	V	44.8	-12.0	32.8	47.0	14.2	113.0	176.0	
6	725.005	H	41.1	-4.2	36.9	47.0	10.1	309.0	337.0	

※ 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 #3	-	DYMSTEC	-	-	-	■
EP5/RE Software	EP5/RE	TOYO	6.0.0	-	-	■
EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100517	2024-10-07	2025-10-07	■
PREAMPLIFIER	8449B	AGILENT	3008A01967	2025-03-05	2026-03-05	■
ATTENUATOR	8491A	HP	35496	2025-02-13	2026-02-13	■
DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H. SYSTEM,INC	781	2025-03-05	2026-03-05	■

6.3.2 Test Location : SEMI ANECHOIC CHAMBER #3

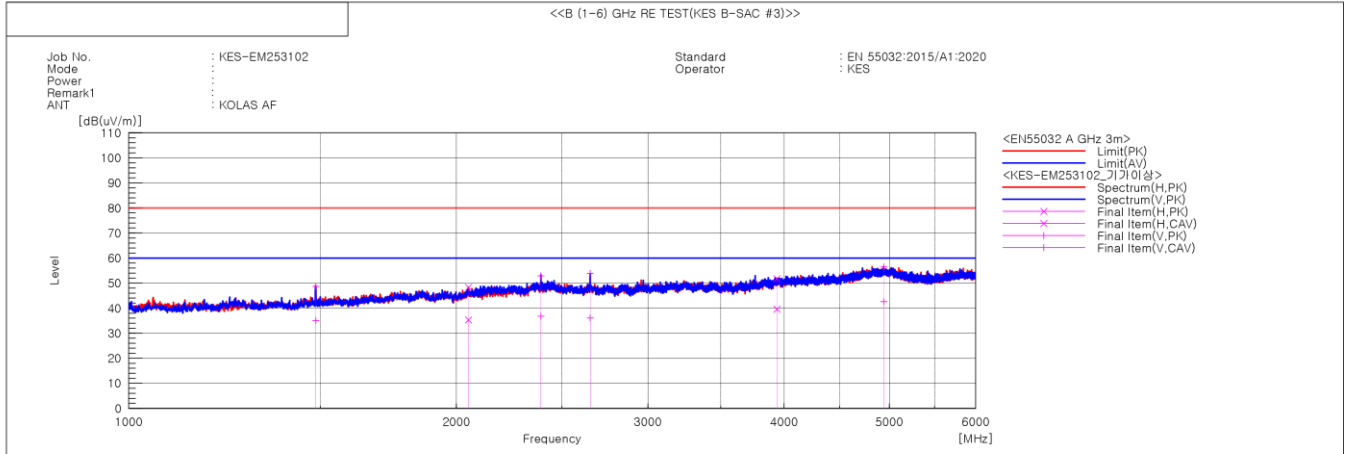
6.3.3 Test Conditions :

Temperature	Relative Humidity
(25.1 ~ 25.3) °C	(53.0 ~ 53.5) % R.H.



6.3.4 Test Result

- Test Date : 2025-09-11
- Test Mode : Mode 1



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1485.559	V	48.7	35.1	0.0	48.7	35.1	80.0	60.0	31.3	24.9	100.0	355.3	
2	2051.497	H	43.4	30.4	4.9	48.3	35.3	80.0	60.0	31.7	24.7	100.0	265.4	
3	2391.830	V	45.4	29.3	7.5	52.9	36.8	80.0	60.0	27.1	23.2	100.0	178.8	
4	2654.177	V	46.2	28.4	7.7	53.9	36.1	80.0	60.0	26.1	23.9	100.0	238.3	
5	3940.113	H	40.3	28.2	11.4	51.7	39.6	80.0	60.0	28.3	20.4	100.0	2.5	
6	4940.269	V	39.9	26.0	16.6	56.5	42.6	80.0	60.0	23.5	17.4	100.0	83.8	

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

6.3.5 Remark

Complies with the test requirements.



6.4 Harmonic Current Emissions

6.4.1 Test Equipment

Equipment Name	Model Number	Manufacturer	Serial No.	Cal. Date	Next Cal. Date	Used
SHIELD ROOM #7	-	DYMSTEC	-	-	-	■
net.control Software	net.control	EM TEST	2.1.4	-	-	■
DIGITAL POWER ANALYZER (Harmonic)	DPA 500N	EM TEST	V1024106759	2025-03-31	2026-03-31	■
POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-	-	■

6.4.2 Test Location : SHIELD ROOM #7

6.4.3 Test Conditions :

Temperature	Relative Humidity
(24.2 ~ 24.3) °C	(54.3 ~ 54.6) % R.H.

6.4.4 Classification of Equipment for Harmonic Current Emissions

- Limits for Class A equipment
- Limits for Class B equipment
- Limits for Class C equipment(Rated Power > 25 W)
- Limits for Class C equipment(Rated Power ≥ 5 W and ≤ 25 W)
- Limits for Class D equipment



6.4.5 Test Result

- Test Date : 2025-09-14
- Test Mode : Mode 1

Maximum harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.051			
2	0.003	0.164	1.620	n/a
3	0.047	1.354	3.450	PASS
4	0.002	0.330	0.645	n/a
5	0.047	2.740	1.710	PASS
6	0.002	0.477	0.450	n/a
7	0.045	3.904	1.155	PASS
8	0.002	0.612	0.345	n/a
9	0.042	7.017	0.600	PASS
10	0.002	0.766	0.276	n/a
11	0.040	8.061	0.495	PASS
12	0.002	0.874	0.230	n/a
13	0.037	11.842	0.315	PASS
14	0.002	1.061	0.197	n/a
15	0.034	15.155	0.225	PASS
16	0.002	1.189	0.173	n/a
17	0.031	15.699	0.199	PASS
18	0.002	1.306	0.153	n/a
19	0.028	15.797	0.178	PASS
20	0.002	1.393	0.138	n/a
21	0.025	15.612	0.161	PASS
22	0.002	1.569	0.125	n/a
23	0.022	14.889	0.147	PASS
24	0.002	1.725	0.115	n/a
25	0.019	14.035	0.135	PASS
26	0.002	1.769	0.106	n/a
27	0.017	13.213	0.125	PASS
28	0.002	1.887	0.099	n/a
29	0.014	11.810	0.116	PASS
30	0.002	1.944	0.092	n/a
31	0.012	10.884	0.109	PASS
32	0.002	2.050	0.086	n/a
33	0.010	9.932	0.102	PASS
34	0.002	2.074	0.081	n/a
35	0.009	9.245	0.096	PASS
36	0.002	2.173	0.077	n/a
37	0.008	8.794	0.091	PASS
38	0.002	2.236	0.073	n/a
39	0.007	8.470	0.087	PASS
40	0.002	2.208	0.069	n/a

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.



Test Data - Harmonics (continued)

Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.051			
2	0.002	0.178	1.080	n/a
3	0.046	1.983	2.300	PASS
4	0.002	0.445	0.430	n/a
5	0.046	4.077	1.140	PASS
6	0.002	0.637	0.300	n/a
7	0.045	5.813	0.770	PASS
8	0.002	0.815	0.230	n/a
9	0.042	10.410	0.400	PASS
10	0.002	1.033	0.184	n/a
11	0.040	12.023	0.330	PASS
12	0.002	1.196	0.153	n/a
13	0.037	17.648	0.210	PASS
14	0.002	1.444	0.131	n/a
15	0.034	22.601	0.150	PASS
16	0.002	1.567	0.115	n/a
17	0.031	23.449	0.132	PASS
18	0.002	1.750	0.102	n/a
19	0.028	23.600	0.118	PASS
20	0.002	1.895	0.092	n/a
21	0.025	15.528	0.161	PASS
22	0.002	2.109	0.084	n/a
23	0.022	14.797	0.147	PASS
24	0.002	2.312	0.077	n/a
25	0.019	13.952	0.135	PASS
26	0.002	2.382	0.071	n/a
27	0.016	13.126	0.125	PASS
28	0.002	2.551	0.066	n/a
29	0.014	11.719	0.116	PASS
30	0.002	2.639	0.061	n/a
31	0.012	10.793	0.109	PASS
32	0.002	2.804	0.058	n/a
33	0.010	9.782	0.102	PASS
34	0.002	2.854	0.054	n/a
35	0.009	9.133	0.096	PASS
36	0.002	2.962	0.051	n/a
37	0.008	8.669	0.091	PASS
38	0.001	3.092	0.048	n/a
39	0.007	8.307	0.087	PASS
40	0.001	3.019	0.046	n/a

Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

* Application of limits for average is 100% except for odd harmonics from 21 to 39, where 150% applies.



6.4.6 Remark

Complies with the test requirements.





6.5 Voltage Fluctuations and Flicker

6.5.1 Test Equipment

Equipment Name	Model Number	Manufacturer	Serial No.	Cal. Date	Next Cal. Date	Used
SHIELD ROOM #7	-	DYMSTEC	-	-	-	■
net.control Software	net.control	EM TEST	2.1.4	-	-	■
DIGITAL POWER ANALYZER (Flicker)	DPA 500N	EM TEST	V1024106759	2025-04-01	2026-04-01	■
POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-	-	■

6.5.2 Test Location : SHIELD ROOM #7

6.5.3 Test Conditions :

Temperature	Relative Humidity
(24.3 ~ 24.6) °C	(54.3 ~ 54.9) % R.H.



6.5.4 Test Result

- Test Date : 2025-09-14
- Test Mode : Mode 1

Flicker Measurements					
	P _{lt}	Max P _{st}	Max D _c	Max D _{max}	Max T _{max}
Line 1:	0.028	0.028	0	< 0.2	0
Limits:	0.65	1	3.3	4	0.5
Results:	PASS	PASS	PASS	PASS	PASS

6.5.5 Remark

Complies with the test requirements.



6.6 Electrostatic Discharge

6.6.1 Test Equipment

Equipment Name	Model Number	Manufacturer	Serial No.	Cal. Date	Next Cal. Date	Used
SHIELD ROOM #6	-	DYMSTEC	-	-	-	■
ESD SIMULATOR	ESS-2000	NoiseKen	ESS01Z0454	2025-01-21	2026-01-21	■
HCP	-	KES	-	-	-	■
VCP	-	Noise Ken	-	-	-	■

6.6.2 Test Location : SHIELD ROOM #6

6.6.3 Test Conditions :

Temperature	Relative Humidity
Temperature(15 ~ 35) °C	(25.6 ~ 25.7) °C
Relative Humidity(30 ~ 60) % R.H.	(58.1 ~ 58.4) % R.H.
Atmospheric Pressure(86 ~ 106) kPa	(99.8 ~ 99.8) kPa

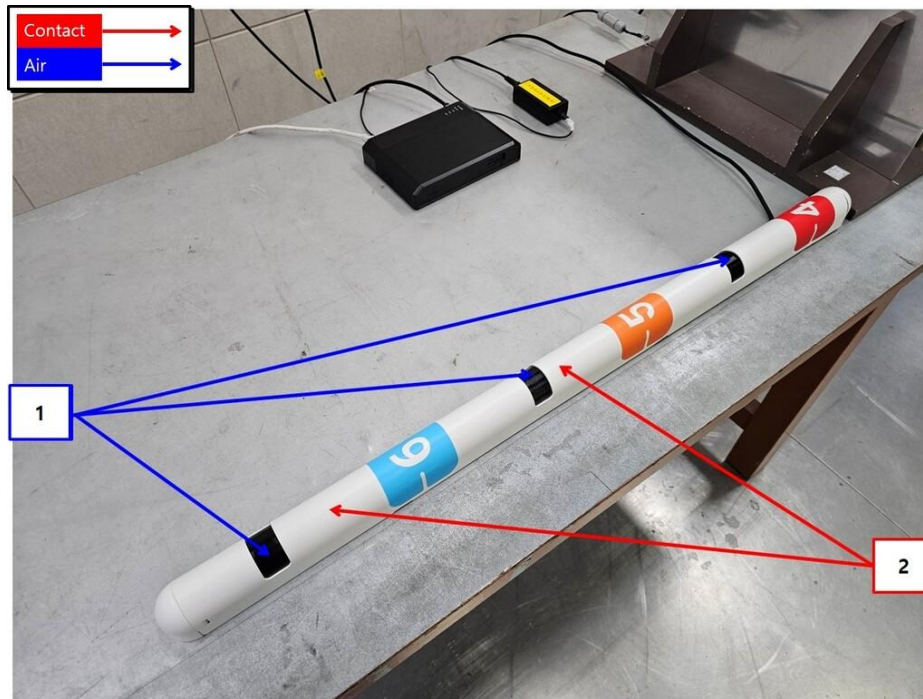
6.6.4 Test Specifications :

Discharge Factor	: 1 s
Discharge Impedance	: 330 Ω / 150 pF
Kind of Discharge	: Direct Discharge - Contact Discharge, Air Discharge Indirect Discharge - HCP, VCP
Polarity	: Positive and Negative
Number of Discharge	: 10 at all locations for Contact Discharge, 10 at all locations for Air Discharge
Performance Criteria	: Complied
Discharge Voltage	:

Type	Direct Discharge		Indirect Discharge	
	Contact Discharge	Air Discharge	Horizontal Coupling Plane	Vertical Coupling Plane
Test Voltage	-	± 2 kV	-	-
	± 6 kV	± 4 kV	± 6 kV	± 6 kV
	-	± 8 kV	-	-



6.6.5 Location of Discharge



<Location of Discharge-1>



6.6.6 Test Result

- Test Date : 2025-09-11
- Test Mode : Mode 1

○ Indirect Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

○ Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	Lens	Air Discharge	Complied	-
2	Enclosure	Contact Discharge	Complied	-

6.6.7 Remark

No loss of performance of function.



6.7 Continuous RF electromagnetic field disturbances

6.7.1 Test Equipment

Equipment Name	Model Number	Manufacturer	Serial No.	Cal. Date	Next Cal. Date	Used
SEMI ANECHOIC CHAMBER #3	-	DYMSTEC	-	-	-	■
EMC32 Measurement Software	EMC32	R&S	10.10.02	-	-	■
SIGNAL GENERATOR	SMB 100A	Rohde & Schwarz	108252	2025-07-28	2026-07-28	■
HIGH POWER DUAL AMP	SSA532	SUNGSAN	SSA532-001	-	-	■
POWER METER	E4419B	Agilent	GB40203000	2025-02-13	2026-02-13	■
DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H. SYSTEM,INC	781	2025-03-05	2026-03-05	■
AVERAGE POWER SENSOR	E9301A	Agilent	MY52170007	2025-02-13	2026-02-13	■
AVERAGE POWER SENSOR	E9301A	Agilent	MY41498669	2025-02-13	2026-02-13	■
STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	SCHWARZBEC K	9128ES-121	-	-	■

6.7.2 Test Location : SEMI ANECHOIC CHAMBER #3

6.7.3 Test Conditions :

Temperature	Relative Humidity
(25.3 ~ 25.7) °C	(59.2 ~ 59.7) % R.H.



6.7.4 Test Specifications :

Antenna Polarization	:	Horizontal & Vertical unless indicated otherwise
Antenna Distance	:	3 m
Field Strength	:	10 V/m (rms)
Frequency Range	:	80 MHz ~ 2.7 GHz
Modulation	:	AM 80 %, 1 kHz, Sine wave PM 1 Hz (0.5 s ON : 0.5 s OFF)
Dwell Time	:	3 s
Frequency Step	:	1 %
Application method	:	4
Performance Criteria	:	Complied



6.7.5 Test Result

- Test Date : 2025-09-12
- Test Mode : Mode 1
- Enclosure Port

Side Exposed	Observations	
	Horizontal	Vertical
Front	Complied	Complied
Rear	Complied	Complied
Right	Complied	Complied
Left	Complied	Complied

6.7.6 Remark

No loss of performance of function.



6.8 Electrical Fast Transients/Bursts

6.8.1 Test Equipment

Equipment Name	Model Number	Manufacturer	Serial No.	Cal. Date	Next Cal. Date	Used
SHIELD ROOM #7	-	DYMSTEC	-	-	-	■
iec.control Software	iec.control	EM TEST	5.4.8	-	-	■
ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	2024-11-06	2025-11-06	■
MOTOR VARIAC	MV 2616	EM TEST	P1552169719	2024-11-07	2025-11-07	■
CAPACITIVE COUPLING CLAMP	HFK	EM TEST	P1633183115	2024-11-06	2025-11-06	■

6.8.2 Test Location : SHIELD ROOM #7

6.8.3 Test Conditions :

Temperature	Relative Humidity
(24.2 ~ 24.4) °C	(54.9 ~ 55.3) % R.H.

6.8.4 Test Specifications :

Pulse Amplitude & Polarity	: Input a.c power ports ± 2.0 kV Other supply and Signal ports ± 1 kV
Repetition Rate	: 100 kHz
Impulse Rise Time	: 5 ns ± 30 %
Impulse Period	: 50 ns ± 30 %
Burst Duration	: 15 ms ± 20 %
Burst Period	: 300 ms ± 20 %
Duration of Test Voltage	: 1 min
Application Method	: a.c / d.c power ports (Coupling / Decoupling Network) Other than a.c / d.c power poerts (Capacitive Coupling Clamp)
Performance Criteria	: Complied



6.8.5 Test Result

- Test Date : 2025-09-13
- Test Mode : Mode 1

- Input a.c power ports

Mode of Application	Observations	
	(+) Burst	(-) Burst
L	Complied	Complied
N	Complied	Complied
L-N	Complied	Complied

- Input d.c power ports

Mode of Application	Observations	
	(+) Burst	(-) Burst
N/A	-	-

- Signal ports and telecommunication ports

Mode of Application	Observations	
	(+) Burst	(-) Burst
RJ-45	Complied	Complied

6.8.6 Remark

No loss of performance of function.



6.9 Surge

6.9.1 Test Equipment

Equipment Name	Model Number	Manufacturer	Serial No.	Cal. Date	Next Cal. Date	Used
SHIELD ROOM #7	-	DYMSTEC	-	-	-	■
iec.control Software	iec.control	EM TEST	5.4.8	-	-	■
ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	2024-11-07	2025-11-07	■
MOTOR VARIAC	MV 2616	EM TEST	P1552169719	2024-11-07	2025-11-07	■

6.9.2 Test Location : SHIELD ROOM #7

6.9.3 Test Conditions :

Temperature	Relative Humidity
(24.3 ~ 24.5) °C	(55.0 ~ 55.4) % R.H.

6.9.4 Test Specifications :

Surge	: Input a.c power ports	Line to Line ± 0.5 kV, ± 1.0 kV Line to Ground ± 0.5 kV, ± 1.0 kV, ± 2.0 kV
	Other supply / Signal lines	Line to Ground ± 0.5 kV, ± 1.0 kV
Input a.c / Other supply / Signal lines		
Open-Circuit Voltage Waveform	: 1.2/50 μ s	
Short-Circuit Current Waveform	: 8/20 μ s	
Number of Applications	: Apply 5 surges for each polarity	
Phase Angle	: 0° ~ 270° (input a.c. power port)	
Polarity	: Positive and Negative	
Repetition Rate	: 1 surge per 30 s	
Performance Criteria	: Complied	



6.9.5 Test Result

- Test Date : 2025-09-13
- Test Mode : Mode 1

- Input a.c power ports

Mode of Application	Observations	
	(+) Surge	(-) Surge
L-N	Complied	Complied

- Signal ports and telecommunication ports

Mode of Application	Coupling Method	Observations	
		(+) Surge	(-) Surge
N/A	CDN	-	-
N/A	LINE	-	-

6.9.6 Remark

No loss of performance of function.



6.10 Continuous Induced RF Disturbances

6.10.1 Test Equipment

Equipment Name	Model Number	Manufacturer	Serial No.	Cal. Date	Next Cal. Date	Used
SHIELD ROOM #7	-	DYMSTEC	-	-	-	■
icd.control Software	icd.control	EM TEST	8.0.0	-	-	■
TEST SYSTEM FOR CONDUCTED AND RADIATED	NSG4070	TESEQ	65585	2024-11-18	2025-11-18	■
ATTENUATOR	ATT 6/80	EM TEST	P1614178148	2024-11-06	2025-11-06	■
CDN	CDN M016	TESEQ	43694	2024-11-07	2025-11-07	■
CDN	CDN M016	TESEQ	43697	2024-11-07	2025-11-07	■
EM CLAMP	KEMZ 801A	TESEQ	44099	2024-11-08	2025-11-08	■

6.10.2 Test Location : SHIELD ROOM #7

6.10.3 Test Conditions :

Temperature	Relative Humidity
(24.5 ~ 24.8)°C	(55.7 ~ 56.2) % R.H.

6.10.4 Test Specifications

Frequency range and Voltage Level	: 0.15 MHz ~ 100 MHz : 10 V(r.m.s)
Modulation	: AM 80 %, 1 kHz, Sine wave PM 1 Hz (0.5 s ON : 0.5 s OFF)
Dwell Time	: 3 s
Frequency Step	: 1 %
Performance Criteria	: Complied

**6.10.5 Test Result**

- Test Date : 2025-09-13
- Test Mode : Mode 1
- Input a.c power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
L-N	CDN	Complied

- Input d.c power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
N/A	-	-

- Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45	CDN	Complied

6.10.6 Remark

No loss of performance of function.



6.11 Voltage Dips and Interruptions

6.11.1 Test Equipment

Equipment Name	Model Number	Manufacturer	Serial No.	Cal. Date	Next Cal. Date	Used
SHIELD ROOM #7	-	DYMSTEC	-	-	-	■
iec.control Software	iec.control	EM TEST	5.4.8	-	-	■
ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	2024-11-07	2025-11-07	■
MOTOR VARIAC	MV 2616	EM TEST	P1552169719	2024-11-07	2025-11-07	■

6.11.2 Test Location : SHIELD ROOM #7

6.11.3 Test Conditions :

Temperature	Relative Humidity
(24.5 ~ 24.6) °C	(55.0 ~ 55.4) % R.H.

6.11.4 Test Specifications

Instantaneous peak overshoot/undershoot of the actual voltage	: Less than 5 %
Voltage Rise Time, Voltage Fall Time	: Between 1 μs and 5 μs
Test Voltage Frequency Deviation for Voltage Dips	: with in ± 2 %
EUT Voltage	: AC 230 V, 50 Hz
Number of Applications	: 3 cycles
Test Interval	: 10 s
Performance Criteria	: Complied

Voltage Dips and Interruptions	Duration [in period]
20 % Voltage reduction	250 T
30 % Voltage reduction	25 T
60 % Voltage reduction	10 T
100 % Voltage reduction	250 T

Voltage Variations	Supply Voltage
Supply Voltage max (Umax)	Unom a + 10 %
Supply Voltage min (Umin)	Unom a - 15 %



6.11.5 Test Result

- Test Date: 2025-09-13
- Test Mode: Mode 1

○ Voltage Dips and Short Interruptions

Depth	Duration [in period]	Observations
20 % Voltage reduction	250 T	Complied
30 % Voltage reduction	25 T	Complied
60 % Voltage reduction	10 T	Complied
100 % Voltage reduction	250 T	Degradation

○ Voltage variations

Voltage Variations	Supply Voltage	Observations
Supply voltage max ($U_{\max} = U_{\text{nom}} + 10\%$)	253 V	Complied
Supply voltage min ($U_{\min} = U_{\text{nom}} - 15\%$)	195.5	Complied

U_{nom} = Nominal mains voltage, $U_{\max}$ = (Maximum U_{nom}) + 10 %, $U_{\min}$ = (Minimum U_{nom}) – 15 %.

6.11.6 Remark

Degradation : During the test(100%, 250cycle), EUT was turned off but after the test, it was recovered without operator's intervention



7 Test Setup Photos and EUT Photographs

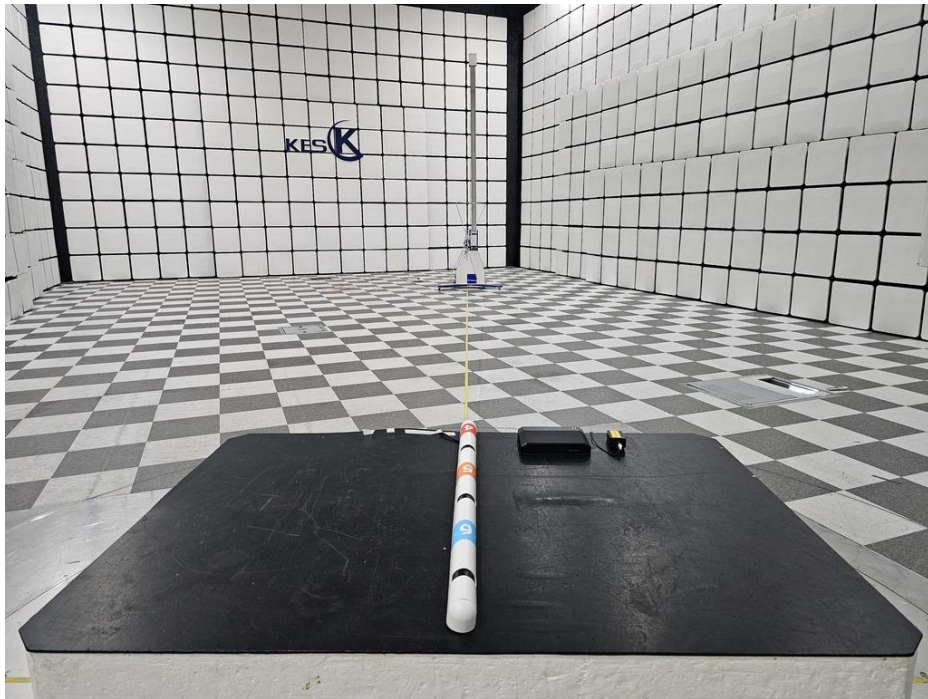
7.1 Test Setup Photos



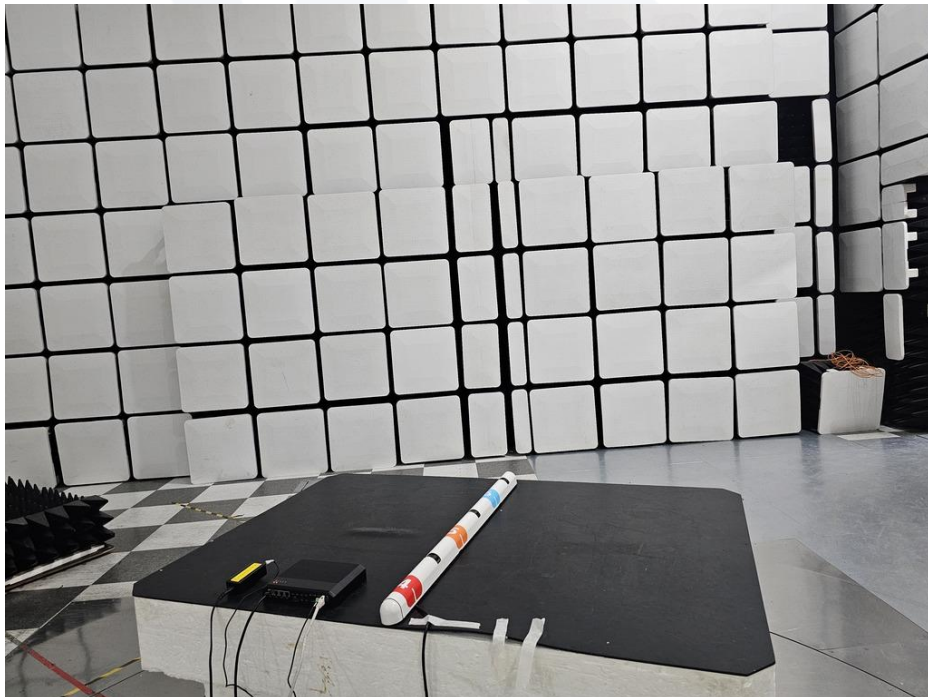
<Conducted Emissions at Mains Power Ports - Front>



<Conducted Emissions at Mains Power Ports - Rear>



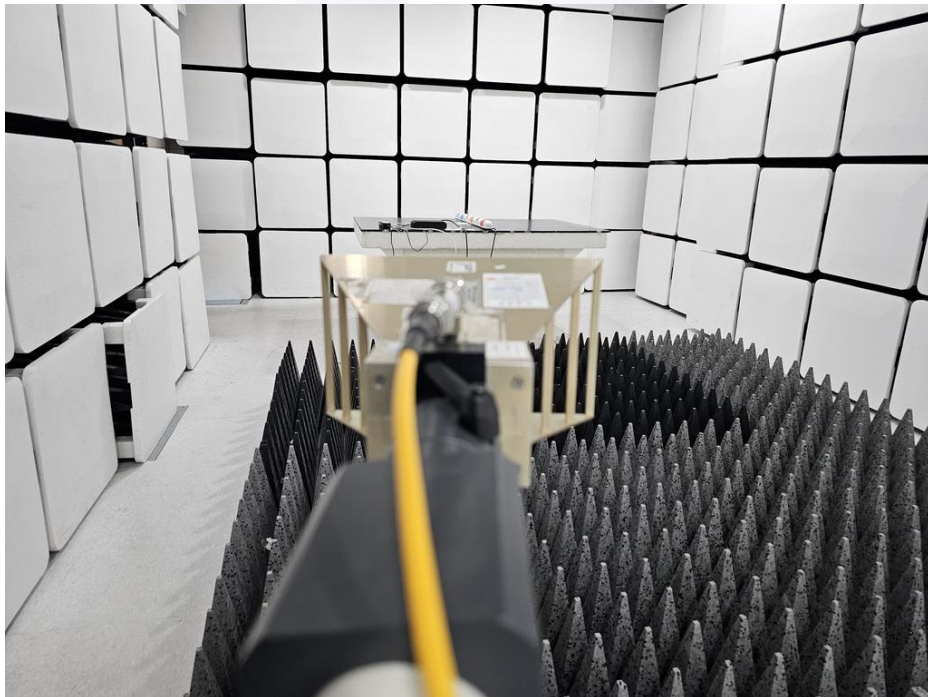
<Radiated Emissions(Below 1 GHz) - Front>



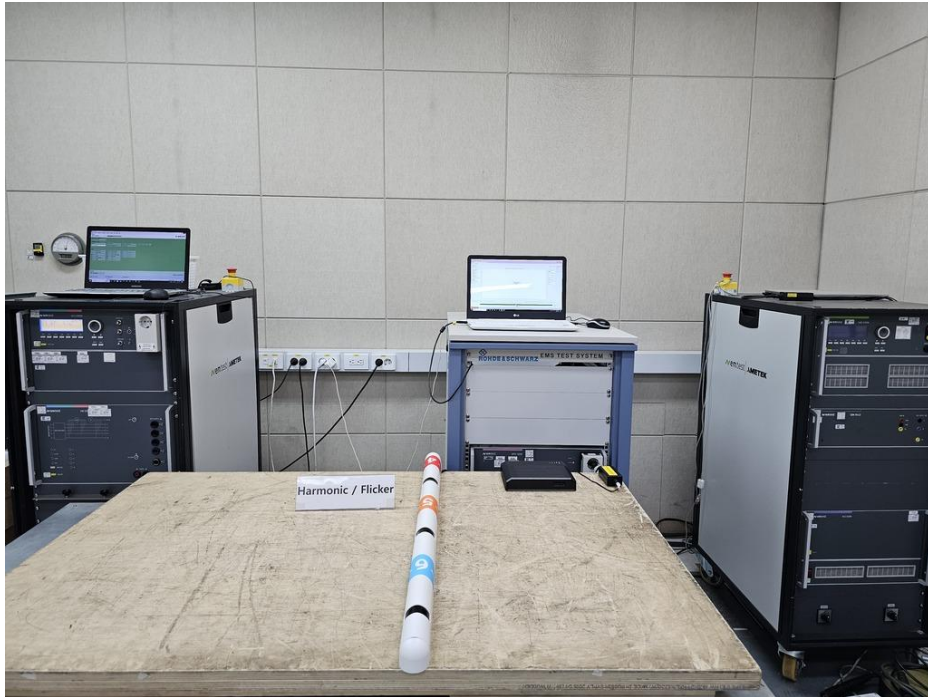
<Radiated Emissions(Below 1 GHz) - Rear>



<Radiated Emissions(Above 1 GHz) - Front>



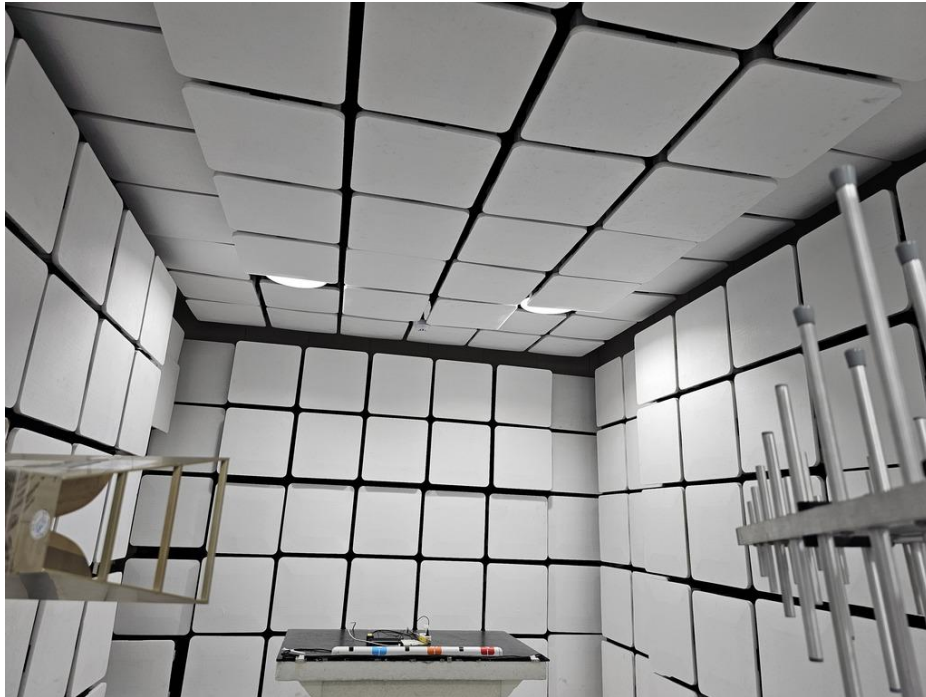
<Radiated Emissions(Above 1 GHz) - Rear>



<Harmonic Current Emissions and Voltage Fluctuations and Flicker>



<Electrostatic Discharge>



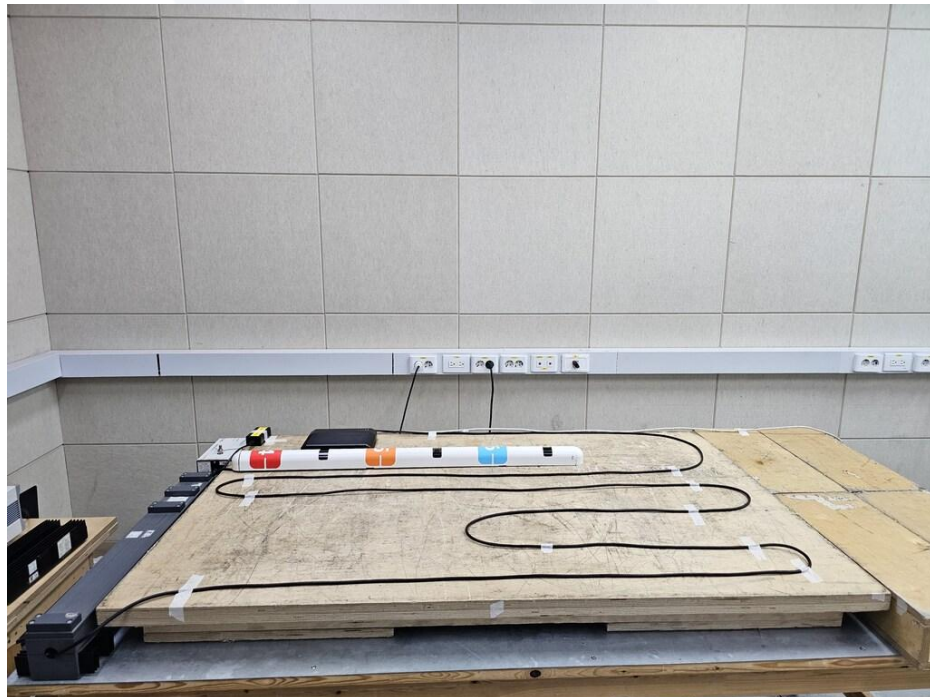
<Continuous RF electromagnetic field disturbances>



<Electrical Fast Transients/Bursts>



<Surge>



<Continuous Induced RF Disturbances>



<Voltage Dips and Interruptions>



7.2 EUT Photographs



<EUT External Photographs - Top>



<EUT External Photographs - Bottom>



<Port>



<EUT Internal Photographs>



7.3 Label



Name : Hanwha Vision Co., Ltd.
Product item : LENS MODULE
Model name : SLA-F2480HA

The End.

