



TEST REPORT



Report No. : KES-EM253339

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KES Co., Ltd.

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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 : Analog Camera
- Model name : HCB-8000
- 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. 20. ~ 2025. 09. 20.

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

5. Test method used : VCCI-CISPR 32:2016

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 : EunGu Jeon	Name : DongHun Jang

2025. 09. 29.

KES Co., Ltd.

**REPORT REVISION HISTORY**

Date	Test Report No.	Revision History
2025. 09. 29.	KES-EM253339	Issued

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

■ No decision rule is specified by the 1 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 100 V, 60 Hz

2.2 Summary of Test Results

Test Item	Test Standard	Test Result	Remark
Conducted Emissions at Mains Power Ports	VCCI CISPR 32:2016	PASS	-
Conducted Emissions at Telecommunication Ports		N/A	NOTE 1
Radiated Emissions(Below 1 GHz)		PASS	-
Radiated Emissions(Above 1 GHz)		N/A	NOTE 2
* N/A: Not Applicable (NOTE 1) No signal line ports. (NOTE 2) The maximum operating frequency is below 108 MHz.			

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		74.25 MHz
Power	Rated power supply	AC 24 V, DC 12 V
	Test Power	AC 100 V, 60 Hz
I/O Ports	User port	RS485 1 EA, Alarm In 1 EA, Alarm Out 1 EA, Power(2 Pin) 1 EA, Grounding 1 EA, BNC 1 EA
	Administrator Port	N/A
function	Product features	Analog Camera
	Wireless function	N/A
Components		Main body 1 EA



4 EUT Setup and Operation Mode

4.1 EUT Configuration

Product Name	Model Number	Serial Number	Manufacturer	Remarks
Analog Camera	HCB-8000	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT
AC/DC Adaptor	2ACB022F	-	CHANNEL WELL TECHNOLOGY	-
AC/AC Adaptor	DRL-246000AC	-	Dream Electronics Co., Ltd	-
Monitor	S2722QC	-	Dell	-
DIGITAL VIDEO RECORDER	-	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
DIGITAL VIDEO RECORDER Adaptor	KPL-048F-VI	-	CHANNEL WELL TECHNOLOGY	-
Alarm	-	-	-	-
Button Alarm	-	-	-	-
Controller	SPC-1010	C50E67WG10100F	HANWHA VISION VIETNAM COMPANY LIMITED	-
Controller Adaptor	AP-12005A	-	A Power Co., Ltd	-

4.2 System Configuration

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



4.3 External I/O Cabling

Mode 1

Start		End		Cable Spec.	
Product Name	I/O Port	Product Name	I/O Port	Length(m)	Shield
Analog Camera (EUT)	POWER (2 Pin)	AC/DC Adaptor	Line	1.4	U
	BNC	DIGITAL VIDEO RECORDER	VIDEO IN (BNC)	2.8	S
	Alarm Out	Alarm	Alarm In	3.5	U
	Alarm In	Button Alarm	Alarm Out	3.5	U
	RS485	Controller	RS485	3.5	U
	Grounding	Grounding	Grounding	1.8	-
DIGITAL VIDEO RECORDER	DC IN	DIGITAL VIDEO RECORDER Adaptor	DC OUT	1.4	U
	HDMI	Monitor	HDMI	1.5	S
Controller	DC IN	Controller Adaptor	DC OUT	1.4	U

Mode 2

Start		End		Cable Spec.	
Product Name	I/O Port	Product Name	I/O Port	Length(m)	Shield
Analog Camera (EUT)	POWER (2 Pin)	AC/AC Adaptor	Line	1.2	U
	BNC	DIGITAL VIDEO RECORDER	VIDEO IN (BNC)	2.8	S
	Alarm Out	Alarm	Alarm In	3.5	U
	Alarm In	Button Alarm	Alarm Out	3.5	U
	RS485	Controller	RS485	3.5	U
	Grounding	Grounding	Grounding	1.8	-
DIGITAL VIDEO RECORDER	DC IN	DIGITAL VIDEO RECORDER Adaptor	DC OUT	1.4	U
	HDMI	Monitor	HDMI	1.5	S
Controller	DC IN	Controller Adaptor	DC OUT	1.4	U

* Unshielded=U, Shielded=S

**4.4 EUT Operating Mode(s)**

Category	Mode	Operating
Mode 1	DC	- Check whether the screen of the EUT is output through the monitor - Check the connection between the alarm, button alarm, and controller through the monitor
Mode 2	AC	

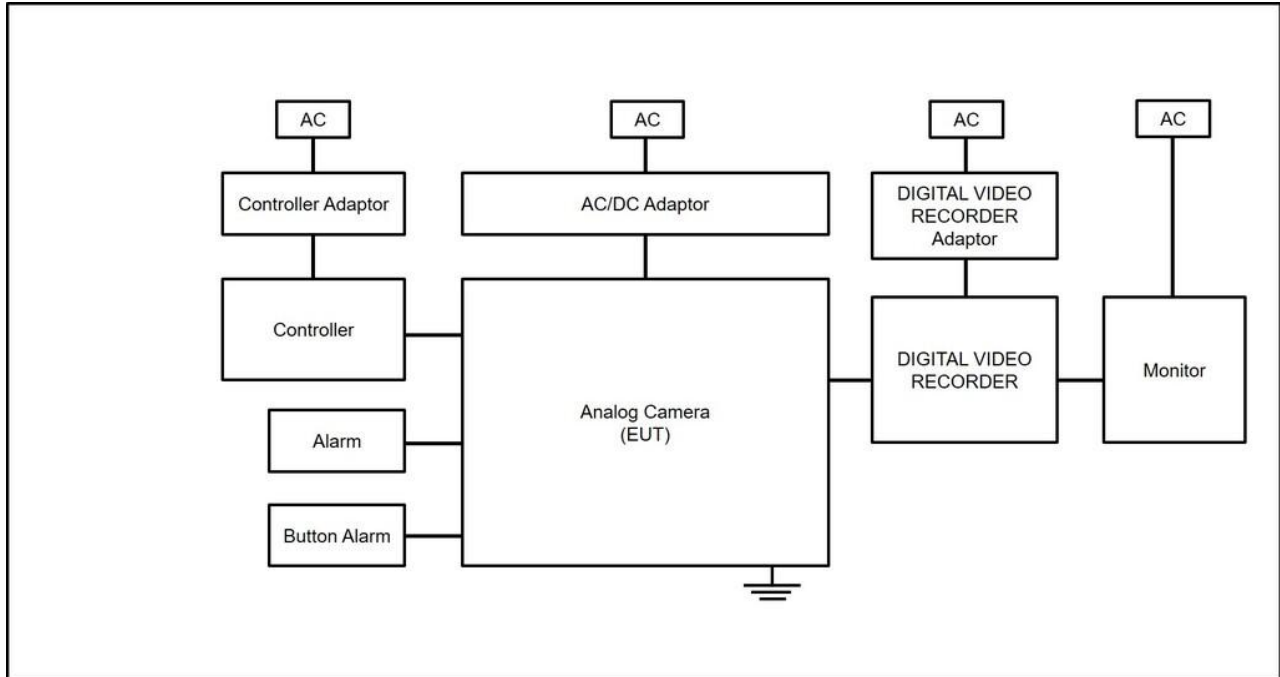
4.5 Test operating S/W

Name	Version	Manufacture Company
-	-	-

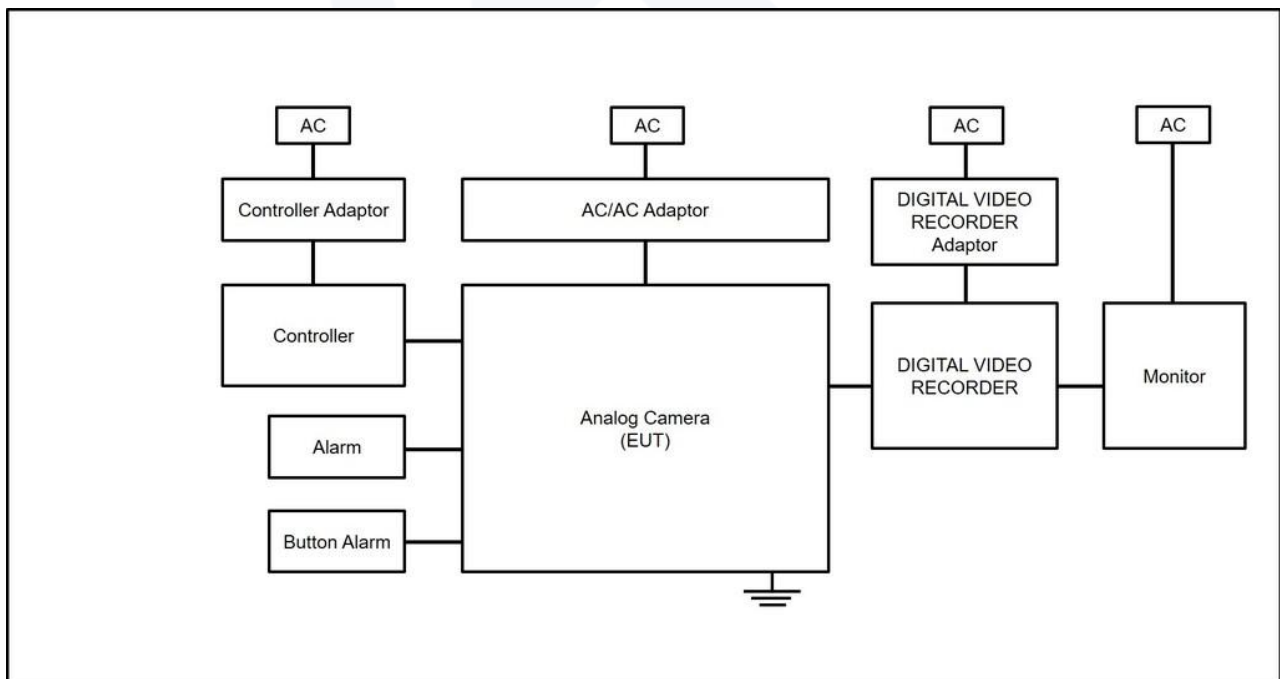




4.6 Configuration



Mode 1



Mode 2



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	■
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
(25.1 ~ 25.3) °C	(59.0 ~ 59.2) % R.H.



6.1.4 Test Result

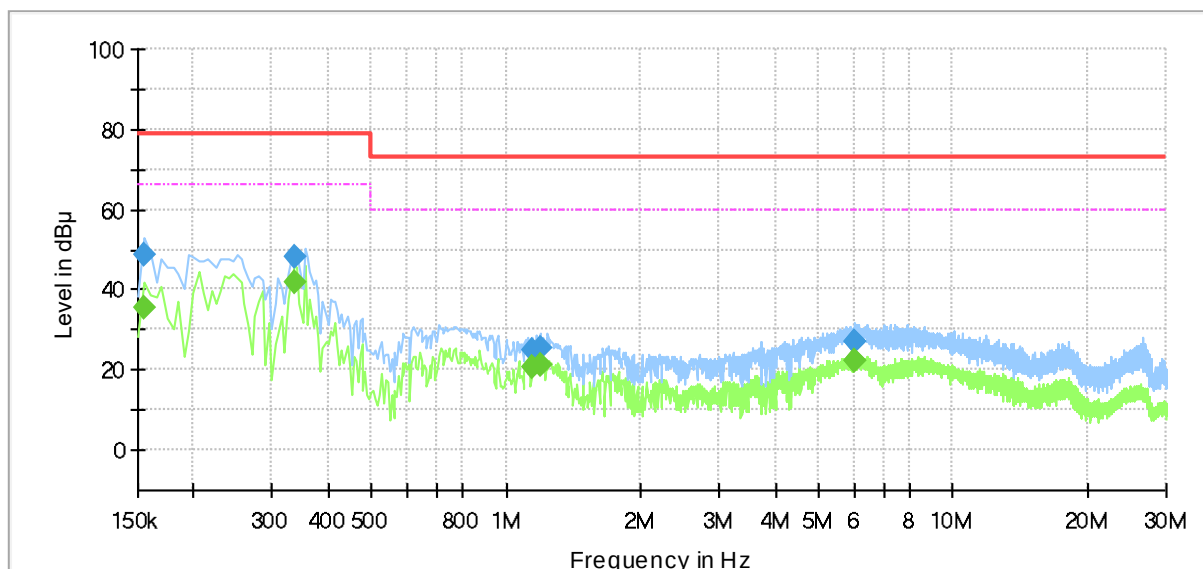
○ Test Date : 2025-09-20

● Test Mode : Mode 1

Test Report

Common Information

Test Description: Conducted Emission
Job No.: KES-EM253339
Phase: L
Mode: Mode 1
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	—	35.41	66.00	30.59	1000.0	9.000	L1	19.5
0.155000	48.47	—	79.00	30.53	1000.0	9.000	L1	19.5
0.335000	—	42.04	66.00	23.96	1000.0	9.000	L1	19.6
0.335000	47.92	—	79.00	31.08	1000.0	9.000	L1	19.6
1.150000	—	20.68	60.00	39.32	1000.0	9.000	L1	19.6
1.150000	24.98	—	73.00	48.02	1000.0	9.000	L1	19.6
1.190000	—	21.15	60.00	38.85	1000.0	9.000	L1	19.6
1.190000	25.52	—	73.00	47.48	1000.0	9.000	L1	19.6
6.025000	—	22.34	60.00	37.66	1000.0	9.000	L1	20.0
6.025000	27.22	—	73.00	45.78	1000.0	9.000	L1	20.0
6.050000	—	22.25	60.00	37.75	1000.0	9.000	L1	20.0
6.050000	27.18	—	73.00	45.82	1000.0	9.000	L1	20.0



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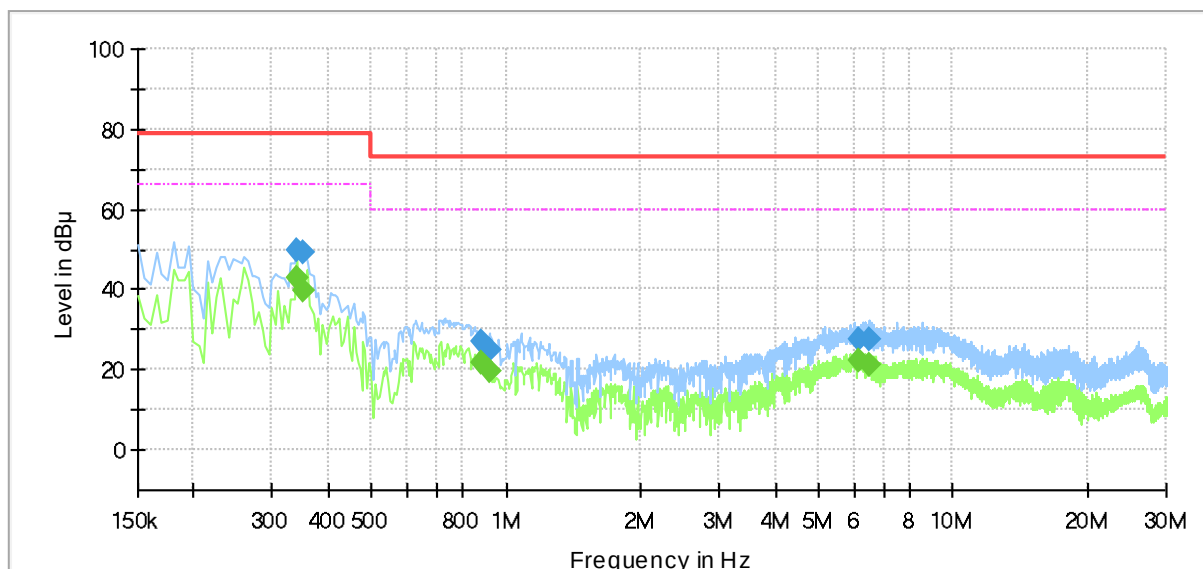
○ Test Date : 2025-09-20

● Test Mode : Mode 1

Test Report

Common Information

Test Description: Conducted Emission
Job No.: KES-EM253339
Phase: N
Mode: Mode 1
Operator Name: KES



Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.340000	—	42.73	66.00	23.27	1000.0	9.000	N	19.5
0.340000	49.61	—	79.00	29.39	1000.0	9.000	N	19.5
0.350000	—	39.53	66.00	26.47	1000.0	9.000	N	19.5
0.350000	49.41	—	79.00	29.59	1000.0	9.000	N	19.5
0.880000	—	21.78	60.00	38.22	1000.0	9.000	N	19.6
0.880000	26.76	—	73.00	46.24	1000.0	9.000	N	19.6
0.915000	—	19.58	60.00	40.42	1000.0	9.000	N	19.6
0.915000	25.10	—	73.00	47.90	1000.0	9.000	N	19.6
6.130000	—	22.36	60.00	37.64	1000.0	9.000	N	19.9
6.130000	27.53	—	73.00	45.47	1000.0	9.000	N	19.9
6.470000	—	21.46	60.00	38.54	1000.0	9.000	N	19.9
6.470000	27.60	—	73.00	45.40	1000.0	9.000	N	19.9



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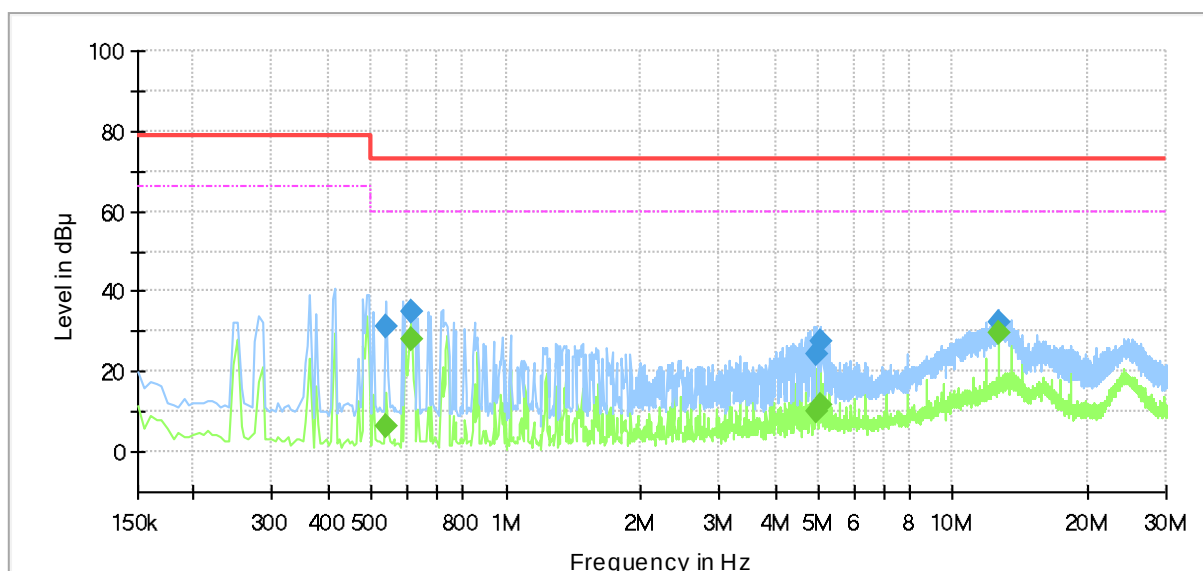
○ Test Date : 2025-09-20

● Test Mode : Mode 2

Test Report

Common Information

Test Description: Conducted Emission
Job No.: KES-EM253339
Phase: L
Mode: Mode 2
Operator Name: KES



Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.540000	—	6.21	60.00	53.79	1000.0	9.000	L1	19.6
0.540000	30.99	—	73.00	42.01	1000.0	9.000	L1	19.6
0.615000	—	27.98	60.00	32.02	1000.0	9.000	L1	19.6
0.615000	34.97	—	73.00	38.03	1000.0	9.000	L1	19.6
4.960000	—	10.03	60.00	49.97	1000.0	9.000	L1	19.9
4.960000	24.38	—	73.00	48.62	1000.0	9.000	L1	19.9
5.060000	—	11.75	60.00	48.25	1000.0	9.000	L1	19.9
5.060000	27.68	—	73.00	45.32	1000.0	9.000	L1	19.9
12.665000	—	29.41	60.00	30.59	1000.0	9.000	L1	20.2
12.665000	32.46	—	73.00	40.54	1000.0	9.000	L1	20.2



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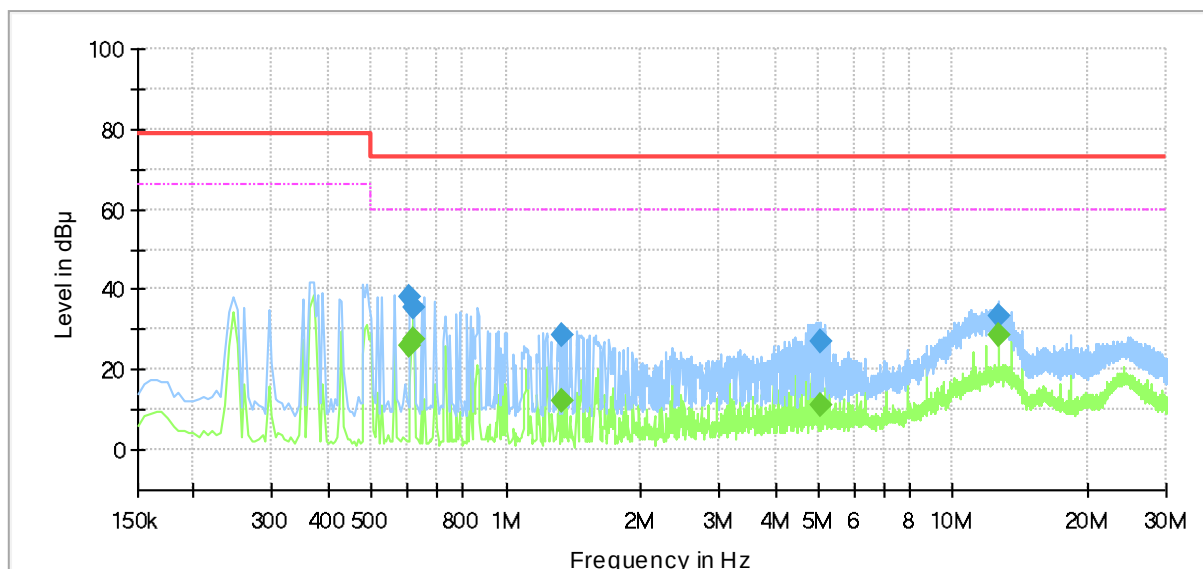
○ Test Date : 2025-09-20

● Test Mode : Mode 2

Test Report

Common Information

Test Description: Conducted Emission
Job No.: KES-EM253339
Phase: N
Mode: Mode 2
Operator Name: KES



Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.610000	—	26.22	60.00	33.78	1000.0	9.000	N	19.6
0.610000	37.94	—	73.00	35.06	1000.0	9.000	N	19.6
0.620000	—	27.77	60.00	32.23	1000.0	9.000	N	19.6
0.620000	35.72	—	73.00	37.28	1000.0	9.000	N	19.6
1.340000	—	12.47	60.00	47.53	1000.0	9.000	N	19.6
1.340000	28.38	—	73.00	44.62	1000.0	9.000	N	19.6
5.030000	—	10.93	60.00	49.07	1000.0	9.000	N	19.9
5.030000	26.92	—	73.00	46.08	1000.0	9.000	N	19.9
12.665000	—	28.78	60.00	31.22	1000.0	9.000	N	20.1
12.665000	33.19	—	73.00	39.81	1000.0	9.000	N	20.1

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

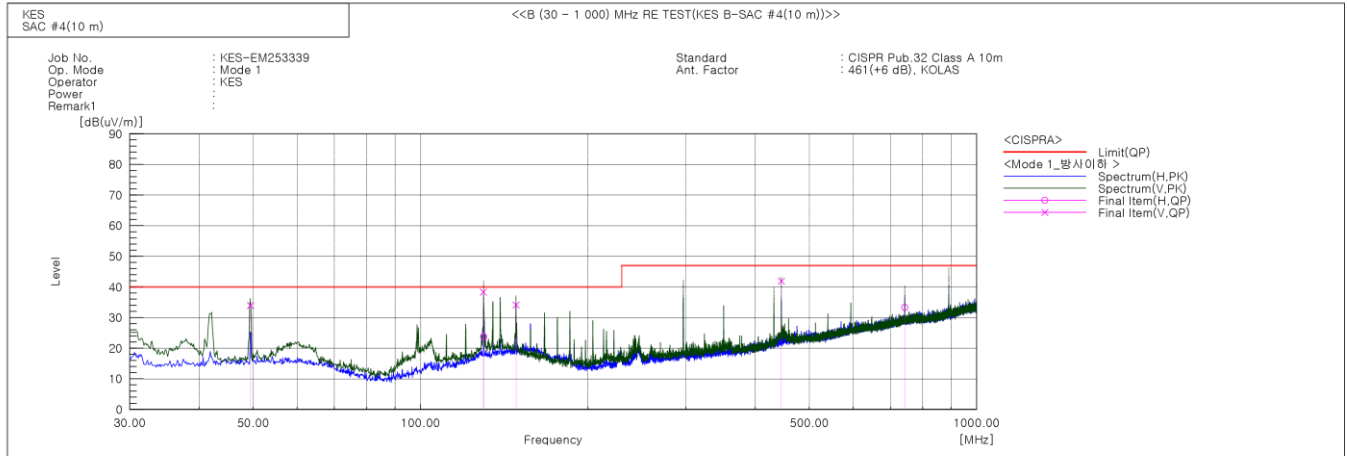
6.2.3 Test Conditions :

Temperature	Relative Humidity
(24.1 ~ 24.3) °C	(55.6 ~ 55.8) % R.H.



6.2.4 Test Result

- Test Date : 2025-09-20
- Test Mode : Mode 1



Final Result

No.	Frequency [MHz]	(P)	Reading [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	49.451	V	54.9	-21.0	33.9	40.0	6.1	155.0	114.0	
2	129.644	V	59.6	-21.3	38.3	40.0	1.7	142.0	276.0	
3	129.910	H	45.1	-21.3	23.8	40.0	16.2	398.0	118.0	
4	148.461	V	53.5	-19.4	34.1	40.0	5.9	113.0	231.0	
5	445.524	V	53.6	-11.7	41.9	47.0	5.1	132.0	337.0	
6	742.465	H	37.2	-3.9	33.3	47.0	13.7	333.0	220.0	

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

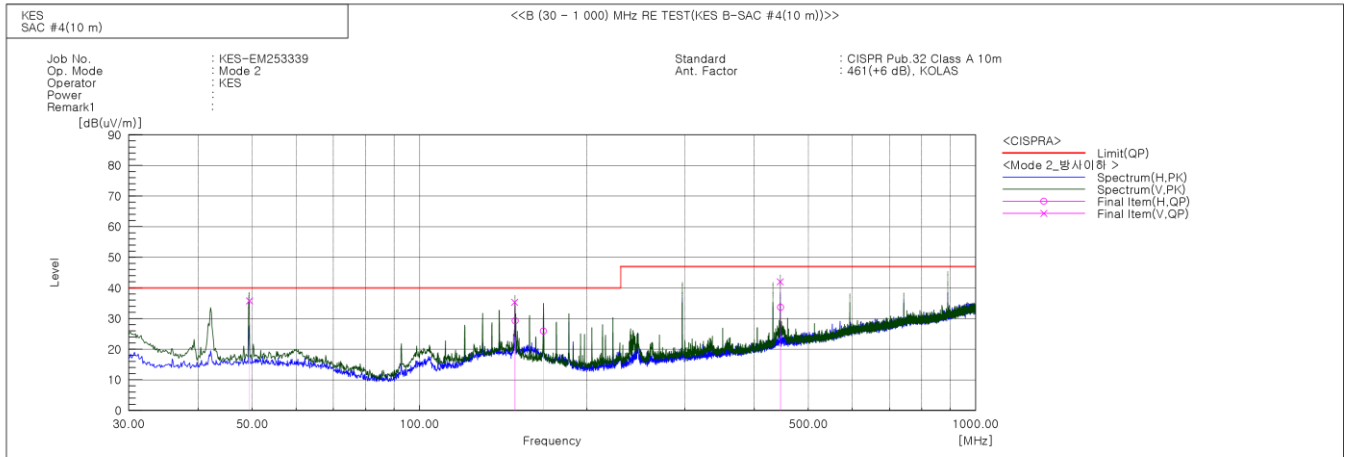


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○ Test Date : 2025-09-20

● Test Mode : Mode 1



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	49.442	V	56.8	-21.0	35.8	40.0	4.2	121.0	81.0	
2	148.281	V	54.7	-19.4	35.3	40.0	4.7	152.0	329.0	
3	148.622	H	48.7	-19.4	29.3	40.0	10.7	331.0	270.0	
4	167.013	H	45.8	-19.9	25.9	40.0	14.1	297.0	210.0	
5	445.284	V	53.7	-11.7	42.0	47.0	5.0	111.0	340.0	
6	445.824	H	45.4	-11.7	33.7	47.0	13.3	361.0	358.0	

※ 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.



7 Test Setup Photos and EUT Photographs

7.1 Test Setup Photos



<Conducted Emissions at Mains Power Ports - Front> Mode 1



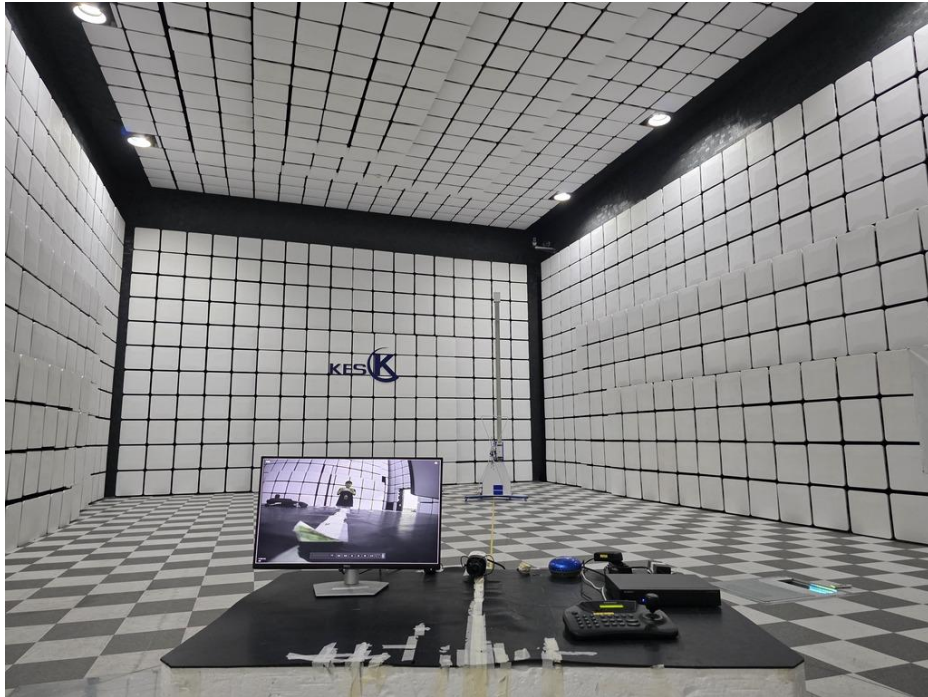
<Conducted Emissions at Mains Power Ports - Rear> Mode 1



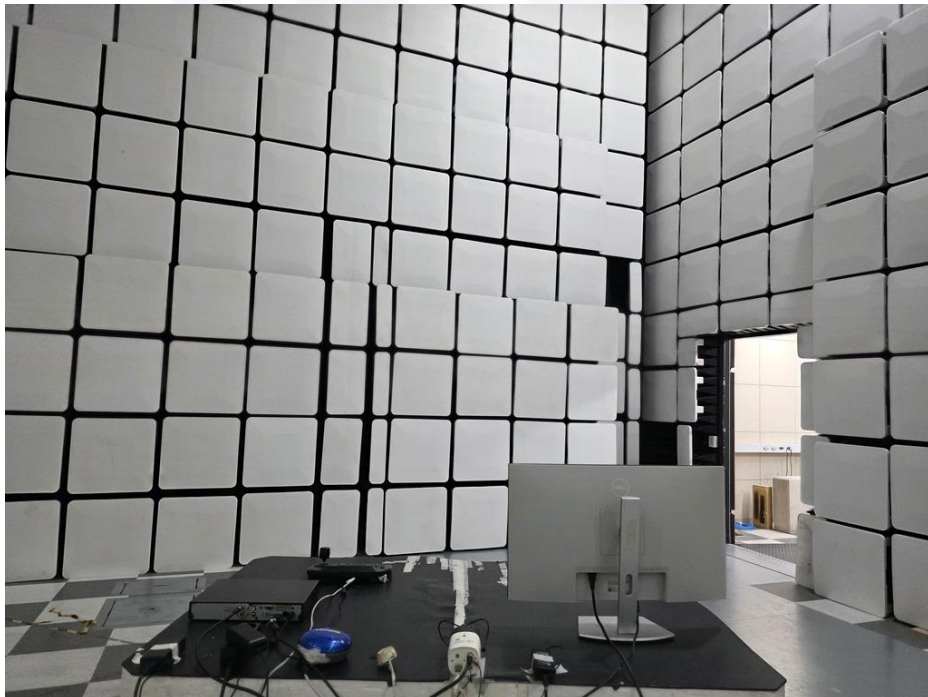
<Conducted Emissions at Mains Power Ports - Front> Mode 2



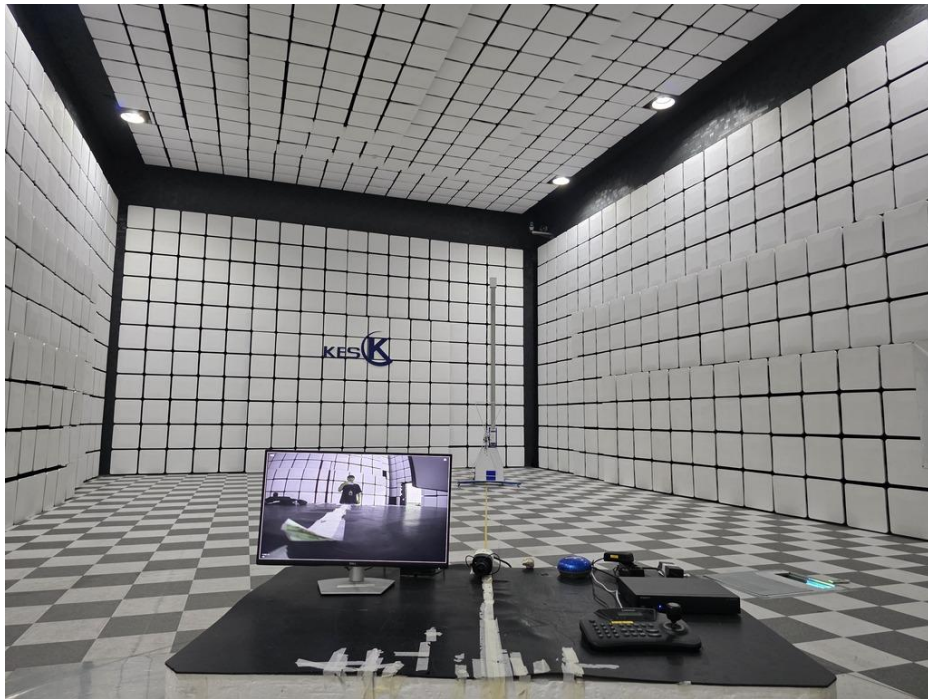
<Conducted Emissions at Mains Power Ports - Rear> Mode 2



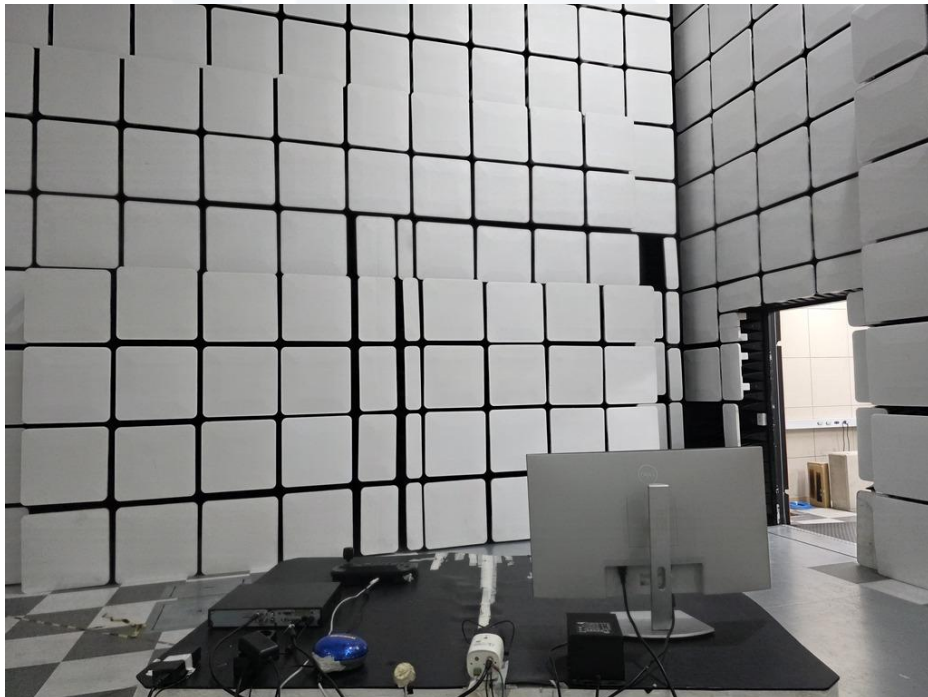
<Radiated Emissions(Below 1 GHz) - Front> Mode 1



<Radiated Emissions(Below 1 GHz) - Rear> Mode 1



<Radiated Emissions(Below 1 GHz) - Front> Mode 2



<Radiated Emissions(Below 1 GHz) - Rear> Mode 2



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 : Analog Camera Model name : HCB-8000
この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。	VCCI-A

The End.