



TEST REPORT



Report No. : KES-EM252076

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KES Co., Ltd.

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1. Client

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

2. Sample Description

Product name : NETWORK CAMERA
Model/Type No. : XNB-A6004
Variant Model : -
Manufacturer : 1. HANWHA VISION VIETNAM COMPANY LIMITED
2. D-TECH CO.,LTD.
Manufacturer Address : 1. Lot O-2, Que Vo Industrial Zone Extended Area, Nam Son Ward, Bac Ninh Province, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do, Korea (Suwon Industrial Complex)

3. Date of Receipt : Jun. 09, 2025

4. Test date : Jul. 07, 2025 ~ Jul. 12, 2025

5. Date of Issue : Aug. 19, 2025

6. Test Results : In Compliance

Tested by

[김준기] 2025/08/19

Jun Ki, Kim
EMC Test Engineer

Reviewed by

[최성민] 2025/08/19

Seong Min, Choi
EMC Technical Manager

This test report is not related to KS Q ISO/IEC 17025 and KOLAS.

KES-QP16-F01(00-23-01-01)

KES Co., Ltd.

The authenticity of this test report can be found on the verification page of our website (www.kes.co.kr).

**REPORT REVISION HISTORY**

Date	Test Report No.	Revision History
Aug. 19, 2025	KES-EM252076	Issued

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1.0 General Product Description

Main Specifications of EUT are:

XNB-A6004		
Video		
Imaging Device	Size	1/2.8"
	Type	CMOS
Resolution		1920x1080, 1280x960, 1280x720, 1024x768, 800x600, 640x480, 640x360, 320x240, 320x180
Max. Framerate	H.265/H.264	60fps/50fps(60Hz/50Hz)(WDR off) / 30fps/25fps(60Hz/50Hz)(WDR on)
	MJPEG	30fps
Video Out		USB: Micro USB Type C
Lens		
Focus Control		Simple focus
Lens Type		DC auto iris, P iris(IR corrected), Manual, I-CS
Mount Type		C mount, CS mount
Operational		
Day & Night		Auto(ICR)
Backlight Compensation		BLC, HLC, WDR, SDR
Wide Dynamic Range (dB)		150
Digital Noise Reduction		WiseNR II (Based on AI engine), SSNR V
Digital Image Stabilization		Support
Defog		Support
Motion Detection	Quantity	8ea
	Shape	8point Polygonal zones
Privacy Masking	Quantity	32ea
	Shape	8point Polygonal zones
	Color / Option	Gray, Green, Red, Blue, Black, White, Mosaic, Purple, Yellow
	Dynamic Privacy Masking: Color / Option	Gray, Green, Red, Blue, Black, White, Mosaic, Purple, Yellow
Gain Control		Off, Max gain, Manual
White Balance		ATW, NarrowATW, AWC, Manual, Indoor, Outdoor
LDC		Support(Fill/stretch mode)
Electronic Shutter	Mode	Minimum, Maximum, Anti flicker, Prefer shutter control(Based on AI engine)
	Speed Range	2~1/30,000sec
Video Rotation		Flip, Mirror, Hallway view(90°/270°)
Serial Interface		RS-485(Samsung-T, Pelco-D/P, Panasonic, Bosch, AD, GE, Vicon, Honeywell)
Alarm Interface	In/Out	2 configurable I/O ports
	Others	Support extra alarm I/O via optional I/O box
Alarm Triggers		Analytics, Network disconnect, Alarm input, Time schedule, MQTT subscription, Day/Night, Storage disruption
Alarm Events When Alarm Trigger Occurred		File upload(image): e-mail/FTP/SFTP, File upload(video clip): FTP/SFTP, Notification: e-mail, Recording: SD/SDHC/SDXC or NAS recording at event triggers, Alarm output, Handover: PTZ preset, send message by HTTP/HTTPS/TCP, Audio clip playback, MQTT: publication, SIP: call generation
Audio In		Selectable(mic in/line in), Built-in mic
Audio Out		Line out



Analytics		
Classified Object Type		Person, Face, Vehicle, License plate
Attributes	Person	Upper/Lower clothes color, Gender, Bag
	Vehicle	Type(car, bus, truck, motorcycle, bicycle), Color
	Face	Age, Gender, Face mask, Glasses
Re-ID		Person
Thumbnail		BestShot
Analytics Events	Based on AI Engine	Object detection, Virtual line(Crossing/Direction), Motion detection, Face mask detection, Social distancing detection, Slip & fall detection, Virtual area(Loitering/Intrusion/Enter/Exit/Appear/Disappear)
	Normal	Defocus detection, Tampering, Audio detection, Shock detection
Business Intelligence	Based on AI Engine	People counting, Queue management, Heatmap, Vehicle counting, Crowd counting
	Normal	None
Network		
Ethernet		Metal shielded RJ-45(10/100BASE-T)
Video Compression		H.265/H.264: Main/Baseline/High, MJPEG
Audio Compression		G.711(PCM): 8kHz(64kbps), G.726(ADPCM): 8kHz(16/24/32/40kbps), AAC-LC: 16kHz(48kbps), OPUS: 48kHz(64kbps)
Smart Codec		WiseStream(Based on AI engine)
Bitrate Control		H.265/H.264: CBR or VBR, MJPEG: VBR
Streaming	Unicast	Up to 20 users
	Multicast	Support
	Multiple Streaming	Up to 5 profiles, 3 virtual channel support
Protocol		IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SFTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, UPnP, Bonjour, LLDP, CDP, SRTP(TCP, UDP Unicast), MQTT, SMTP(StartTLS), SIP, Syslog
SIP support (VoIP, Peer-to-peer, SIP/PBX integration)		Tested with Cisco, Grandstream, Yealink VoIP phones and Asterisk PBX software
Application Programming Interface	ONVIF	S, G, T, M
	Others	SUNAPI(HTTP API), Hanwha Vision Open Platform
	OnCloud(미사용 항목)	OnCloud edge recording, compatible with Hanwha SD cards up to 1TB
Direct Cloud Connection		Support
Security		
OS / Firmware Protect		Encrypted firmware, Secure boot, Signed firmware
User authentication		Digest authentication, Prevent brute-force attack
Network authentication		IEEE 802.1X(EAP-TLS, EAP-LEAP, EAP-PEAP, MSCHAPv2)
Secure Communication		HTTPS, WSS(WebSocket Secure), SRTP, 802.1AE(MACsec)
Access Control		IP-based access control, MAC-based access control, Auto logout
Data Protect		Encryption credentials, Encrypt compress for live recording file export
Audit		Access / System / Event Log management
Device ID		Device certificate(Hanwha Vision Root CA)
Secure Storage		SDcard partition encrypt(AES-256), Secure element
Supply Chain Security		SBOM
Security Certificate		Secure element(RIPS 140-3 level3, CC EAL6+), ETSI EN 303 645, IEC 62443-4-1



General		
Memory	RAM	4GB
	Flash	8GB eMMC
Edge Storage	Micro SD/SDHC/SDXC	Max. 1TB x 2slot(Total 2TB)
	SSD	None
Environmental & Electrical		
Operating Condition	Temperature	-10°C~+55°C(+14°F~+131°F)
	Humidity	0~95% RH(non-condensing)
Storage Condition	Temperature	-50°C~+60°C(-58°F~+140°F)
	Humidity	0~90% RH(non-condensing)
Input Voltage		PoE(IEEE802.3af, Class3), 12VDC
Power Consumption	PoE	Max. 7.5W, typical 6.0W
	12VDC	Max. 6.9W, typical 5.6W
WisePower		Power monitoring, ECO mode
Power Redundance Failover		Support
Mechanical		
Color		Black
Material		Aluminum
Material Management	Declaration	RoHS(EU RoHS directive 2011/65/EU and IEC/EN 63000:2018), REACH(Regulation (EC) No. 1907/2006), Conflict mineral policy(Section 1502 of US Dodd Frank Act)
RAL Code		RAL9005
Product Dimensions		81(W)x67(H)x165(D)mm(3.19x2.64x6.48")
Product Weight		851g(1.88lb)
Certifications & Standards		
EMC		FCC 47 CFR 15 Subpart B Class A, ICES-3(A)/NMB-3(A), CE/UKCA - EN55032 Class A, EN 50130-4, EN 61000-3-2, EN 61000-3-3, VCCI CISPR 32 Class A, RCM AS-NZS CISPR 32 Class A, KS C 9832 Class A, KS C 9835
Safety		UL 62368-1, CAN/CSA C22.2 NO. 62368-1, IEC 62471
Environment		IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-6, IEC 60068-2-14, IEC 60068-2-27, IEC 60068-2-78



1.1 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

☒ AC 230 V, 50 Hz (AC/DC Adapter) ☒ AC 230 V, 50 Hz (PoE Injector Input Power)

1.2 Variant Model Differences

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	XNB-A6004	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
AC/DC Adapter	2ACB022F	-	ChAnnel Well Technology (Guangzhou) Co.,Ltd.	-
PoE Injector	POE 29U-1AT	-	PHIHONG	-
Laptop	NT500R5W	-	Samsung Electronics	-
Laptop Adapter	A13-040N2A	-	Chicony Power Technbology Co., Ltd.	-
Lens	-	-	-	-
Controller	SPC-1010	-	SamSung Techwin Co.,Ltd.	-
Controller Adapter	AP-12005A	-	A Power Co., Ltd	-
LED Alarm	PRO-SL	-	SENSOR PRO	-
Button Alarm	-	-	-	-
Headset	K550	-	Britz®	-
Micro SD Card	-	-	SanDisk	-



1.6 External I/O Cabling

■ mode 1

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	DC Input (2 Pin)	AC/DC Adapter	Line-Out (DC Jack)	1.0	U
	Audio IN (3.5 mm)	Laptop	Audio OUT (3.5 mm)	0.8	U
	RJ-45		RJ-45	3.5	U
	IRIS	Lens	IRIS	0.2	U
	RS-485	Controller	RS-485	3.1	U
	Alarm OUT	LED Alarm	Alarm IN	3.2	U
	Alarm IN	Button Alarm	Alarm OUT	3.1	U
	Audio OUT (3.5 mm)	Headset	Audio IN (3.5 mm)	1.7	U
	Micro SD Card Slot	Micro SD Card	Micro SD Card Slot	-	-
	GND	GND	GND	2.0	U
Laptop	DC Jack	Laptop Adapter	Line-Out (DC Jack)	1.6	U
Controller	DC Jack	Controller Adapter	Line-Out (DC Jack)	1.4	U

* Unshielded=U, Shielded=S



■ mode 2

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45 (PoE)	PoE Injector	RJ-45 (DATA)	3.5	U
	Audio IN (3.5 mm)	Laptop	Audio OUT (3.5 mm)	0.8	U
	IRIS	Lens	IRIS	0.2	U
	RS-485	Controller	RS-485	3.1	U
	Alarm OUT	LED Alarm	Alarm IN	3.2	U
	Alarm IN	Button Alarm	Alarm OUT	3.1	U
	Audio OUT (3.5 mm)	Headset	Audio IN (3.5 mm)	1.7	U
	Micro SD Card Slot	Micro SD Card	Micro SD Card Slot	-	-
	GND	GND	GND	2.0	U
PoE Injector	RJ-45 (DATA)	Laptop	RJ-45	1.5	U
Laptop	DC Jack	Laptop Adapter	Line-Out (DC Jack)	1.6	U
Controller	DC Jack	Controller Adapter	Line-Out (DC Jack)	1.4	U

* Unshielded=U, Shielded=S



1.7 EUT Operating Mode(s)

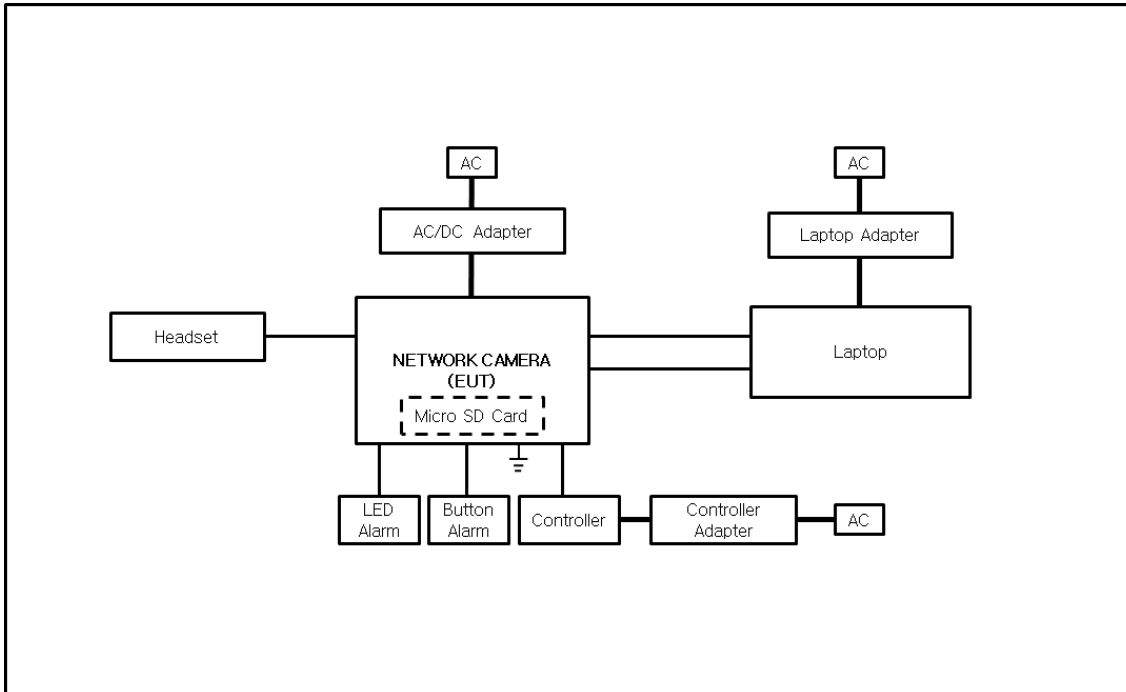
Test mode		Normal operating
Mode 1	DC 12 V	- IP from the test equipment to the laptop was tested by Ping Test on the laptop. - The test was conducted by checking whether the camera image was output normally in the Web Viewer. - After the test, I checked whether the video was recorded normally on the Micro SD Card.
Mode 2	PoE	

EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	HANWHA VISION VIETNAM COMPANY LIMITED

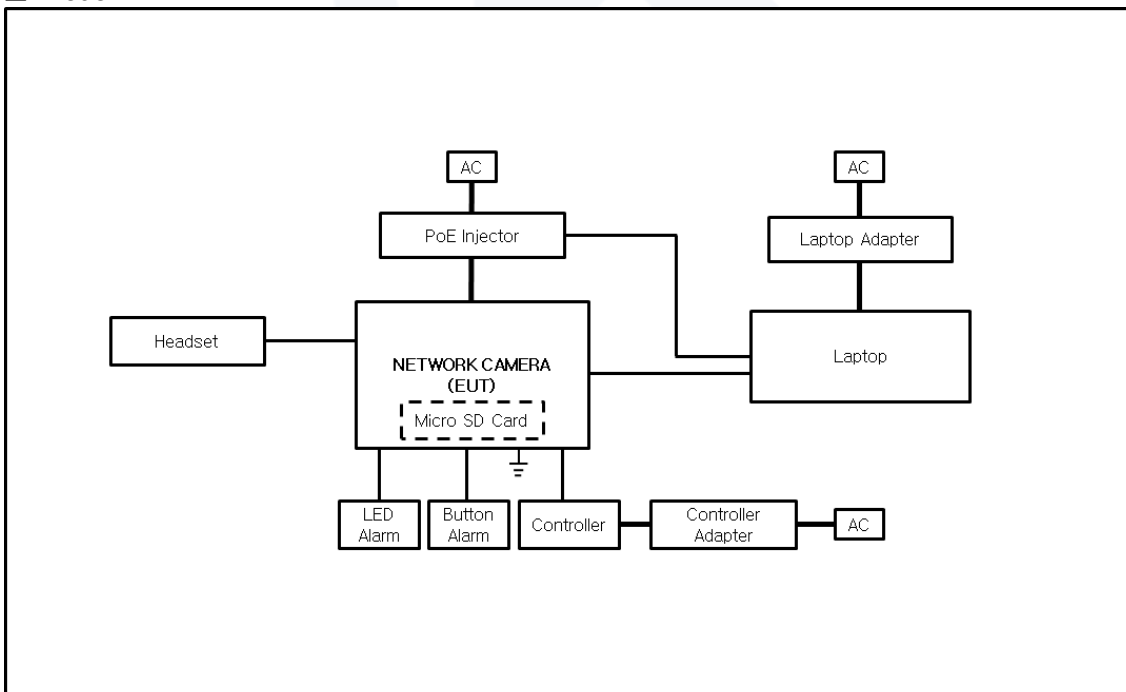


1.8 Configuration

■ mode 1



■ mode 2



**1.9 Remarks when standards applied**

USB Type-C ports are not used and have not been tested.

1.10 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less.

1.11 Test Facility

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

1.12 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



2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **EMC – Directive 2014/30/EU**

☒ EN 55032:2015/A1:2020

☒ Class A

☐ Class B

☒ EN 50130-4:2011/A1:2014

☒ EN IEC 61000-3-2:2019

☒ EN 61000-3-3:2013/A2:2021

☒ **EMC – Regulations 2016**

☒ EN 55032:2015/A1:2020

☒ Class A

☐ Class B

☒ EN 50130-4:2011/A1:2014

☒ EN IEC 61000-3-2:2019

☒ EN 61000-3-3:2013/A2:2021



2.1 Conducted Emissions at Mains Power Ports

Test Date

Jul. 08, 2025

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test SW	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	11, 06, 2025
☒	LISN	ENV216	R & S	101786	01, 09, 2026
☒	ARTIFICIAL MAINS NETWORK	ESH2-Z5	R & S	100450	11, 06, 2025
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 06, 2025

Test Conditions

Temperature: (23,1 ± 0,1) °C

Relative Humidity: (46,0 ± 0,1) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.2 Conducted Emissions at Telecommunication Ports

Test Date

Jul. 08, 2025

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	11, 06, 2025
☒	LISN	ENV216	R & S	101786	01, 09, 2026
☒	ARTIFICIAL MAINS NETWORK	ESH2-Z5	R & S	100450	11, 06, 2025
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 06, 2025
☒	8-WIRE ISN CAT3,5	ENY81	R & S	100174	11, 12, 2025

Test Conditions

Temperature: (23,1 ± 0,1) °C
Relative Humidity: (46,0 ± 0,1) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Jul. 08, 2025

Test Location☒ SEMI ANECHOIC CHAMBER #4(10m)**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	02, 13, 2026
☒	AMPLIFIER	SCU 01	R & S	100603	11, 06, 2025
☒	BILOG ANTENNA	VULB 9168	SCHWARZBECK	9168-461	05, 09, 2026
☒	ATTENUATOR	6806.17.A	HUBER+SUHNER	-	02, 13, 2026

Test Conditions

Temperature: (23,3 ± 0,2) °C

Relative Humidity: (46,1 ± 0,1) % R.H.

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Jul. 12, 2025

Test Location

SEMI ANECHOIC CHAMBER #5

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test SW	ES10/RE	TOYO Corporation	2022.01.000	-
☒	EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100552	02, 13, 2026
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	11, 04, 2025
☒	PREAMPLIFIER	8449B	HP	3008A00899	03, 05, 2026
☒	ATTENUATOR	8491B	HP	23094	02, 13, 2026

Test Conditions

Temperature: (23,2 ± 0,1) °C

Relative Humidity: (46,2 ± 0,1) % R.H.

Frequency Range of Measurement

1 GHz to 6 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

- See Appendix A for test data.
- The Average of the test data is the cispr average result.



2.5 Harmonic Current Emissions

Test Date

Jul. 12, 2025

Test Location

Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test SW	net.control	EM TEST	2.1.4	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	03, 31, 2026
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: (23,3 ± 0,2) °C

Relative Humidity: (46,2 ± 0,1) % R.H.

Classification of Equipment for Harmonic Current Emissions

- ☒ Class A
☐ Class B
☐ Class C(Below 25 W)
☐ Class C(Above 25 W)
☐ Class D

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.6 Voltage Fluctuations and Flicker

Test Date

Jul. 12, 2025

Test Location

Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test SW	net.control	EM TEST	2.1.4	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	03, 31, 2026
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: (23,3 ± 0,2) °C

Relative Humidity: (46,2 ± 0,1) % R.H.

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



3.0 Criteria for compliance

Criteria for compliance was based on the following guidelines:

EN 50130-4:2011/A1 :2014 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.



3.1 Electrostatic Discharge

Reference Standard

EN 61000-4-2

Test Date

Jul. 12, 2025

Test Location

EMS-ESD: Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS01Z0454	01, 21, 2026
☒	HCP	-	KES	-	-
☒	VCP	-	Noise Ken	-	-

Test Conditions

Temperature: (23,4 ± 0,1) °C
Relative Humidity: (46,3 ± 0,1) % R.H.
Atmospheric Pressure: (100,0 ± 0,0) kPa

Test Specifications

Discharge Factor: ≥ 1 s
Discharge Impedance: 330 ohm / 150 pF
Kind of Discharge: Air, Contact (direct and indirect)
Polarity: Positive and Negative
Number of Discharge: 10 at all locations for Air discharge
10 at all locations for Contact discharge

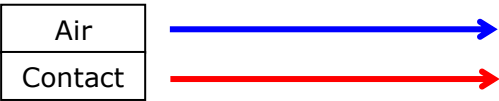
Discharge Voltage:	Contact	Air	HCP	VCP
	☐ 2 kV	☒ 2 kV	☐ 2 kV	☐ 2 kV
	☐ 4 kV	☒ 4 kV	☐ 4 kV	☐ 4 kV
	☒ 6 kV	☐ 6 kV	☒ 6 kV	☒ 6 kV
	☐ 8 kV	☒ 8 kV	☐ 8 kV	☐ 8 kV
	☐ 15 kV	☐ 15 kV	☐ 15 kV	☐ 15 kV

Notes: HCP: Horizontal coupling plane
VCP: Vertical coupling plane

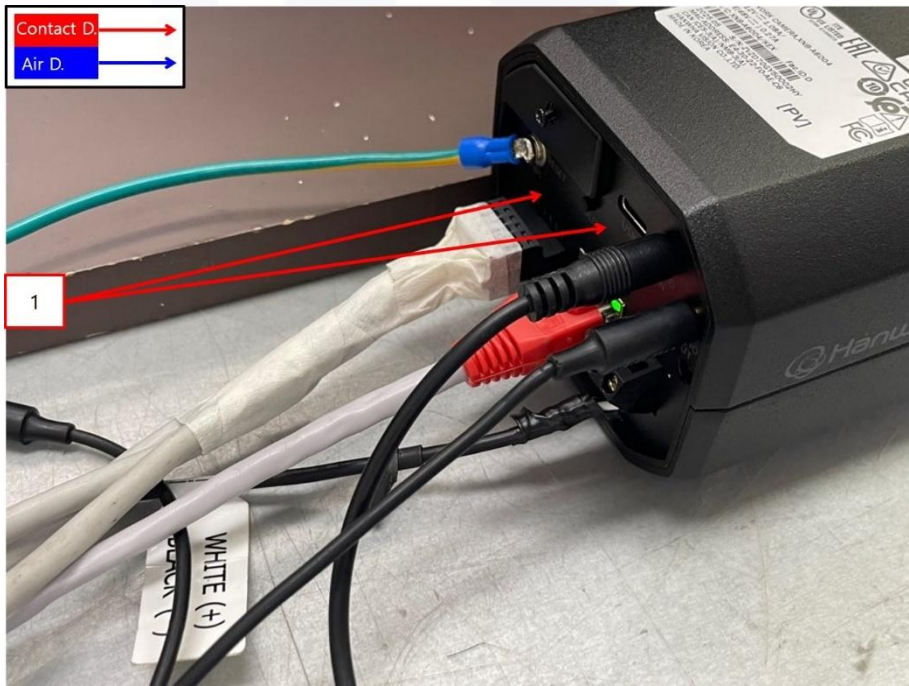
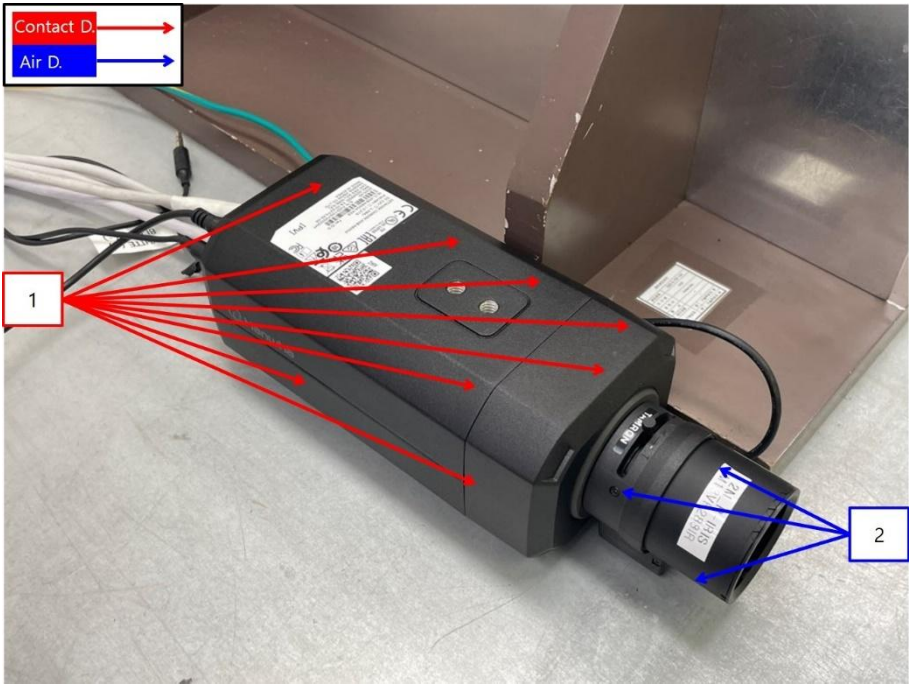
Required Performance Criteria: ☒ Complied



Location of Discharge:



■ mode 1, mode 2



**Test Data**

■ mode 1

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	Enclosure, Ports	Contact Discharge	Complied	-
2	Lens	Air Discharge	Complied	-

■ mode 2

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	Enclosure, Ports	Contact Discharge	Complied	-
2	Lens	Air Discharge	Complied	-

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks- PASS Required Performance Criteria



3.2 Radiated Electric Field Immunity

Reference Standard

EN IEC 61000-4-3

Test Date

Jul. 10, 2025

Test LocationEMS-RS: ☐ SEMI ANECHOIC CHAMBER #2☒ SEMI ANECHOIC CHAMBER #3**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	EMC32	R & S	10.10.02	-
☒	SIGNAL GENERATOR	SMB 100A	Rohde & Schwarz	108252	07, 29, 2025
☒	HIGH POWER DUAL AMP	SSA532	SUNGSAN	SSA532-001	-
☒	POWER METER	E4419B	Agilent	GB40203000	02, 13, 2026
☒	AVERAGE POWER SENSOR	E9301A	Agilent	MY52170007	02, 13, 2026
☒	AVERAGE POWER SENSOR	E9301A	Agilent	MY41498669	02, 13, 2026
☒	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 05, 2026

Test Conditions

Temperature: (24,0 ± 0,2) °C
Relative Humidity: (46,1 ± 0,3) % R.H.
Atmospheric Pressure: (99,9 ± 0,0) kPa



Test Specifications

Antenna Polarization: Horizontal & vertical unless indicated otherwise

Antenna Distance: ☒ 3 m

Field Strength: ☐ 1 V/m ☐ 3 V/m
☒ 10 V/m

Frequency Range: ☐ 80 MHz to 1 GHz ☐ 1,4 GHz to 2,7 GHz
☒ 80 MHz to 2,7 GHz

Modulation: ☒ AM, 80 %, 1 kHz sine wave
☒ PM, 1 Hz (0,5 s ON : 0,5 s OFF)

Frequency step: ☒ 1 % step

Dwell Time: ☐ 1 s ☒ 3 s

of Sides Radiated: ☒ 4

Required Performance Criteria: ☒ Complied

**Test Data**

■ mode 1

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

■ mode 2

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

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria



3.3 Electrical Fast Transients/Bursts

Reference Standard

EN 61000-4-4

Test Date

Jul. 11, 2025

Test Location

EMS-EFT: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 06, 2025
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 07, 2025
☒	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	P1633183115	11, 06, 2025

Test Conditions

Temperature: (23,5 ± 0,2) °C
Relative Humidity: (46,3 ± 0,2) % R.H.
Atmospheric Pressure: (100,0 ± 0,0) kPa

Test Specifications

Pulse Amplitude & Polarity: ☐ ± 1.0 kV ☒ ± 2.0 kV
(AC Power Lines) ☐ ± 4.0 kV

Pulse Amplitude & Polarity: ☐ ± 0.5 kV ☒ ± 1.0 kV
(Other supply / Signal Lines) ☐ ± 2.0 kV

Burst Period: ☒ 300 ms ☐ 2 s

Repetition Rate: ☐ 5 klz ☒ 100 klz

Duration of Test Voltage: ☒ ≥ 1 min

Required Performance Criteria: ☒ Complied

**Test Data**

■ mode 1

☒ Input a.c. power ports – Coupling/Decoupling Network used

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

☐ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
RJ-45	Complied	Complied
Alarm IN	Complied	Complied
Alarm OUT	Complied	Complied
RS-485	Complied	Complied

☒ mode 2☐ Input a.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☐ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
RJ-45 (PoE)	Complied	Complied
Alarm IN	Complied	Complied
Alarm OUT	Complied	Complied
RS-485	Complied	Complied

Note: “Blank” = Not performed

Observations:

Complied – No degradation of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**PASS Required Performance Criteria



3.4 Surge Transients

Reference Standard

EN 61000-4-5

Test Date

Jul. 11, 2025

Test Location

EMS-Surge: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 07, 2025
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 07, 2025
☒	CDN	CNV 508N1	EM TEST	P1610176296	11, 08, 2025

Test Conditions

Temperature: (23,5 ± 0,2) °C
Relative Humidity: (46,3 ± 0,2) % R.H.
Atmospheric Pressure: (100,0 ± 0,0) kPa



Test Specifications

AC Power Lines

Source Impedance: 12 ohm for common Mode and 2 ohm for differential Mode

Surge Amplitude :
Common Mode
☐ (0,5 / 1,0 / 2,0) kV
Differential Mode
☒ (0,5 / 1,0) kV

Number of Surges: ☒ 5 surges per angle

Angle: ☒ 0°, 90°, 180°, 270° (input a.c. power port)

Polarity: ☒ Positive & Negative

Repetition Rate: ☐ 1 surge per min ☒ 1 surge per 30 sec.

Required Performance Criteria: ☒ Complied

Other supply / Signal Lines

Source Impedance: 42 ohm for common Mode

Surge Amplitude:
Common Mode
☒ (0,5 / 1,0) kV

Number of Surges: ☒ 5 Surges

Polarity: ☒ Positive & Negative

Repetition Rate: ☐ 1 surge per min ☒ 1 surge per 30 sec.

Required Performance Criteria: ☒ Complied

**Test Data**

■ mode 1

☒ Line to Line – Differential Mode

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

☐ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
-	-	-

Signal Lines☒ Line to Earth – Common Mode

Mode of Application	Coupling Method	Observations	
		(+) Surge (kV)	(-) Surge (kV)
RJ-45	CDN	Complied	Complied
	LINE	Complied	Complied



■ mode 2

☒ Line to Line – Differential Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
-	-	-

☐ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
-	-	-

Signal Lines☒ Line to Earth – Common Mode

Mode of Application	Coupling Method	Observations	
		(+) Surge (kV)	(-) Surge (kV)
RJ-45 (PoE)	CDN	Complied	Complied
	LINE	Complied	Complied

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**PASS Required Performance Criteria



3.5 Conducted Disturbance

Reference Standard

EN 61000-4-6

Test Date

Jul. 07, 2025

Test Location

EMS-CS: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	icd.control	EM TEST	8.0.0	-
☒	TEST SYSTEM FOR CONDUCTED AND RADIATED	NSG4070	TESEQ	65585	11, 18, 2025
☒	ATTENUATOR	ATT 6/80	EM TEST	P1614178148	11, 06, 2025
☒	CDN	CDN M016	TESEQ	43694	11, 07, 2025
☒	CDN	CDN M016	TESEQ	43697	11, 07, 2025
☒	CDN	CDN T8RJ45	EM TEST	0909-09	07, 29, 2025
☒	EM CLAMP	KEMZ 801A	TESEQ	44099	11, 08, 2025

Test Conditions

Temperature: (23,1 ± 0,1) °C
Relative Humidity: (46,3 ± 0,2) % R.H.
Atmospheric Pressure: (100,0 ± 0,0) kPa

Test Specifications

Frequency range: ☒ 150 kHz to 100 MHz ☐ 150 kHz to 80 MHz

Voltage Level: ☐ 1 Vrms ☐ 3 Vrms
☒ 10 Vrms

Modulation: ☒ AM, 80 %, 1 kHz sine wave
☒ PM, 1 Hz (0,5 s ON : 0,5 s OFF)

Frequency step: ☒ 1 % step

Dwell Time: ☐ 1 s ☒ 3 s

Required Performance Criteria: ☒ Complied

**Test Data**

■ 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
-	-	-

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45	CDN	Complied
Alarm IN	Clamp	Complied
Alarm OUT	Clamp	Complied
RS-485	Clamp	Complied

☒ mode 2☐ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	-	-

☐ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	-	-

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45 (PoE)	CDN	Complied
Alarm IN	Clamp	Complied
Alarm OUT	Clamp	Complied
RS-485	Clamp	Complied

Notes: CDN = Coupling Decoupling Network
"blank" = Not performed

Observations:

Complied – No degradation of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**

PASS Required Performance Criteria



3.6 Voltage Dips and Short Interruptions

Reference Standard

EN IEC 61000-4-11

Test Date

Jul. 11, 2025

Test Location

EMS-Voltage dip: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 07, 2025
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 07, 2025

Test Conditions

Temperature: (23,5 ± 0,2) °C
Relative Humidity: (46,3 ± 0,2) % R.H.
Atmospheric Pressure: (100,0 ± 0,1) kPa

**Test Specifications & Observations/Remarks**

■ mode 1

- Voltage Dips and Short Interruptions

<u>Test Level</u>	<u>Duration [in period/ms (50 Hz)]</u>	<u>Results</u>
☒ 20 % dip	☒ 250 / 5 000	<u>Complied</u>
☒ 30 % dip	☒ 25 / 500	<u>Complied</u>
☒ 60 % dip	☒ 10 / 200	<u>Complied</u>
☒ 100 % dip	☒ 250 / 5 000	<u>Degradation</u>

- Voltage variations

☒ Unom + 10 %	☒ 253.0 V (ac)	<u>Complied</u>
☒ Unom - 15 %	☒ 195.5 V (ac)	<u>Complied</u>

Observations:

Complied – No degradation of function

Degradation - See "Remarks "

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria
☐ NOT APPLICABLE

RemarksPASS Required Performance Criteria* During the test(100%, 250cycle), EUT was turned off but after the test, it was recovered without operator's intervention.



APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

■ mode 1

[HOT]

Test Description:

Conducted Emission

Job No.:

KES-EM252076

Phase:

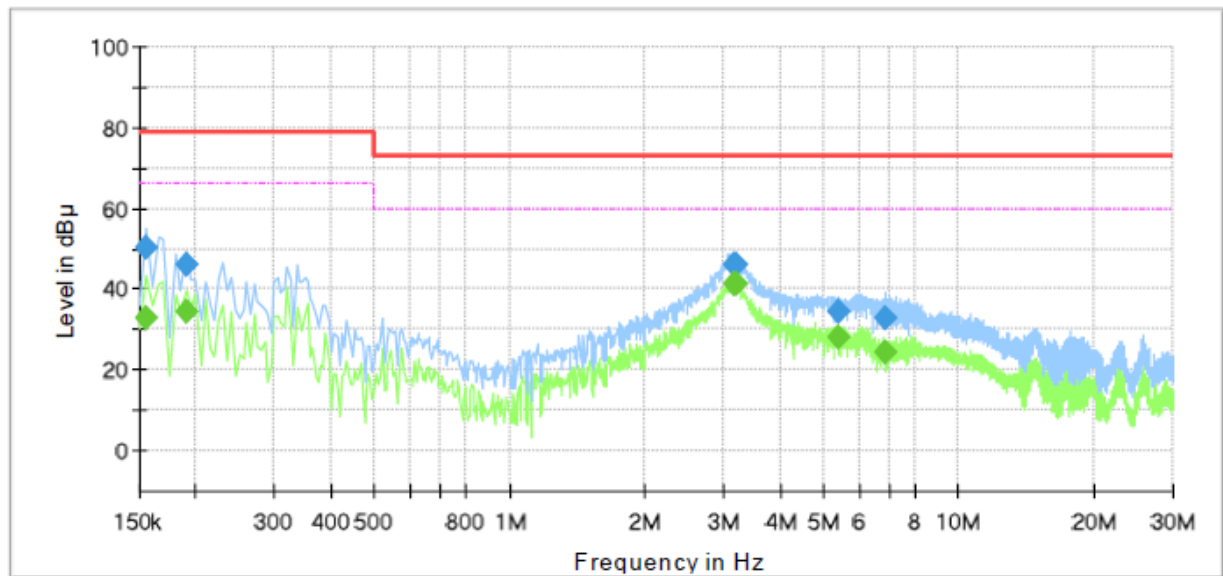
L

Mode:

Mode 1

Operator Name:

KES

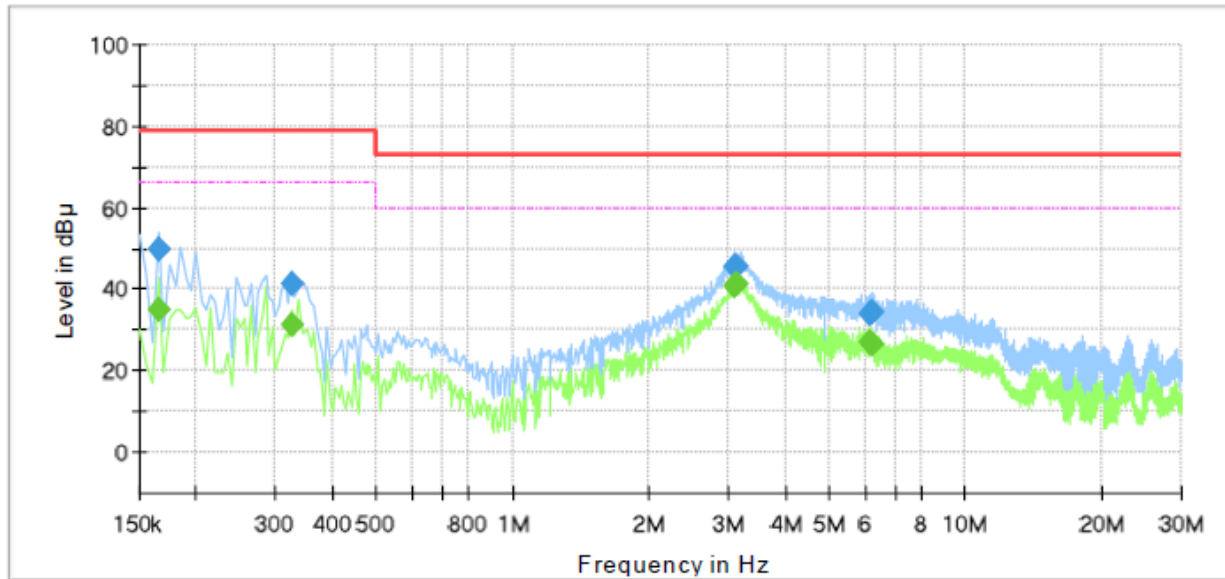


Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	33.01	66.00	32.99	1000.0	9.000	L1	19.5
0.155000	50.47	---	79.00	28.53	1000.0	9.000	L1	19.5
0.190000	---	34.35	66.00	31.65	1000.0	9.000	L1	19.5
0.190000	46.01	---	79.00	32.99	1000.0	9.000	L1	19.5
3.175000	---	41.16	60.00	18.84	1000.0	9.000	L1	19.8
3.175000	45.87	---	73.00	27.13	1000.0	9.000	L1	19.8
3.180000	---	41.14	60.00	18.86	1000.0	9.000	L1	19.8
3.180000	45.89	---	73.00	27.11	1000.0	9.000	L1	19.8
5.370000	---	28.18	60.00	31.82	1000.0	9.000	L1	19.9
5.370000	34.54	---	73.00	38.46	1000.0	9.000	L1	19.9
6.895000	---	24.27	60.00	35.73	1000.0	9.000	L1	20.0
6.895000	32.72	---	73.00	40.28	1000.0	9.000	L1	20.0

**[NEUTRAL]**

Test Description: Conducted Emission
Job No.: KES-EM252076
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)
0.165000	---	34.85	66.00	31.15	1000.0	9.000	N	19.5
0.165000	49.72	---	79.00	29.28	1000.0	9.000	N	19.5
0.325000	---	31.07	66.00	34.93	1000.0	9.000	N	19.5
0.325000	41.06	---	79.00	37.94	1000.0	9.000	N	19.5
3.100000	---	40.96	60.00	19.04	1000.0	9.000	N	19.7
3.100000	45.54	---	73.00	27.46	1000.0	9.000	N	19.7
3.120000	---	41.11	60.00	18.89	1000.0	9.000	N	19.7
3.120000	45.79	---	73.00	27.21	1000.0	9.000	N	19.7
6.185000	---	26.79	60.00	33.21	1000.0	9.000	N	19.9
6.185000	34.12	---	73.00	38.88	1000.0	9.000	N	19.9
6.230000	---	26.61	60.00	33.39	1000.0	9.000	N	19.9
6.230000	34.20	---	73.00	38.80	1000.0	9.000	N	19.9

◆ Calculation

QuasiPeak[dBμV] / CAverage [dBμV] = Reading Value[dBμV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

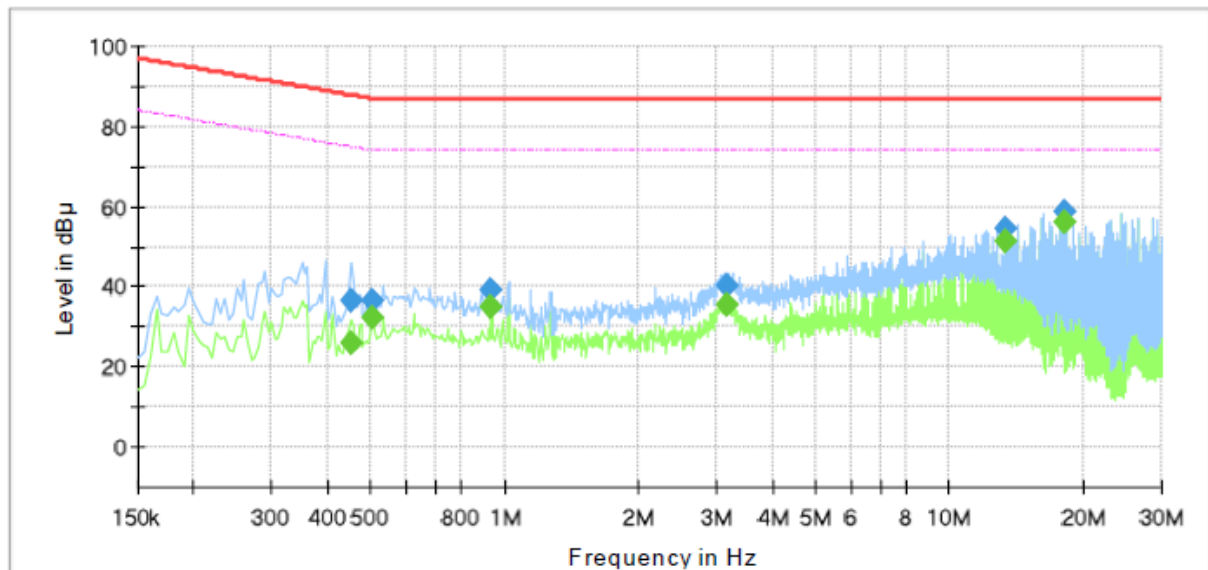
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

**Conducted Emissions at Telecommunication Ports**

■ mode 1

[100 Mbps]

Test Description: Telecommunication Emission
Job No.: KES-EM252076
Mode : Mode 1
Speed : 100 Mbps
Operator Name: KES

**Final_Result**

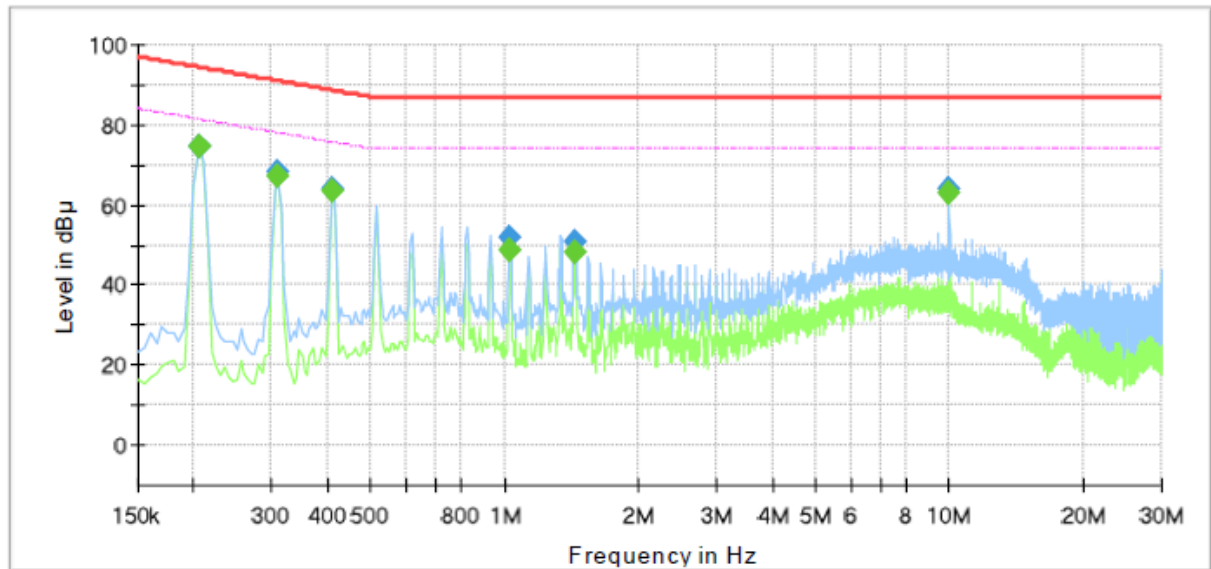
Frequency (MHz)	QuasiPeak (dB μ V)	CAverage (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.450000	---	25.73	74.88	49.15	1000.0	9.000	Single Line	19.5
0.450000	36.60	---	87.88	51.28	1000.0	9.000	Single Line	19.5
0.505000	---	32.21	74.00	41.79	1000.0	9.000	Single Line	19.5
0.505000	36.75	---	87.00	50.25	1000.0	9.000	Single Line	19.5
0.930000	---	35.05	74.00	38.95	1000.0	9.000	Single Line	19.4
0.930000	39.17	---	87.00	47.83	1000.0	9.000	Single Line	19.4
3.170000	---	35.24	74.00	38.76	1000.0	9.000	Single Line	19.4
3.170000	40.11	---	87.00	46.89	1000.0	9.000	Single Line	19.4
13.420000	---	51.61	74.00	22.39	1000.0	9.000	Single Line	19.7
13.420000	54.34	---	87.00	32.66	1000.0	9.000	Single Line	19.7
18.245000	---	56.08	74.00	17.92	1000.0	9.000	Single Line	19.8
18.245000	58.82	---	87.00	28.18	1000.0	9.000	Single Line	19.8



■ mode 2

[100 Mbps]

Test Description: Telecommunication Emission
Job No.: KES-EM252076
Mode : Mode 2
Speed : 100 Mbps
Operator Name: KES



Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.205000	---	74.40	81.41	7.01	1000.0	9.000	Single Line	19.7
0.205000	74.46	---	94.41	19.95	1000.0	9.000	Single Line	19.7
0.310000	---	67.34	77.97	10.63	1000.0	9.000	Single Line	19.6
0.310000	68.05	---	90.97	22.92	1000.0	9.000	Single Line	19.6
0.410000	---	63.50	75.65	12.15	1000.0	9.000	Single Line	19.5
0.410000	64.21	---	88.65	24.44	1000.0	9.000	Single Line	19.5
1.030000	---	48.63	74.00	25.37	1000.0	9.000	Single Line	19.4
1.030000	51.78	---	87.00	35.22	1000.0	9.000	Single Line	19.4
1.445000	---	48.39	74.00	25.61	1000.0	9.000	Single Line	19.4
1.445000	51.06	---	87.00	35.94	1000.0	9.000	Single Line	19.4
10.000000	---	62.97	74.00	11.03	1000.0	9.000	Single Line	19.6
10.000000	64.30	---	87.00	22.70	1000.0	9.000	Single Line	19.6

◆ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

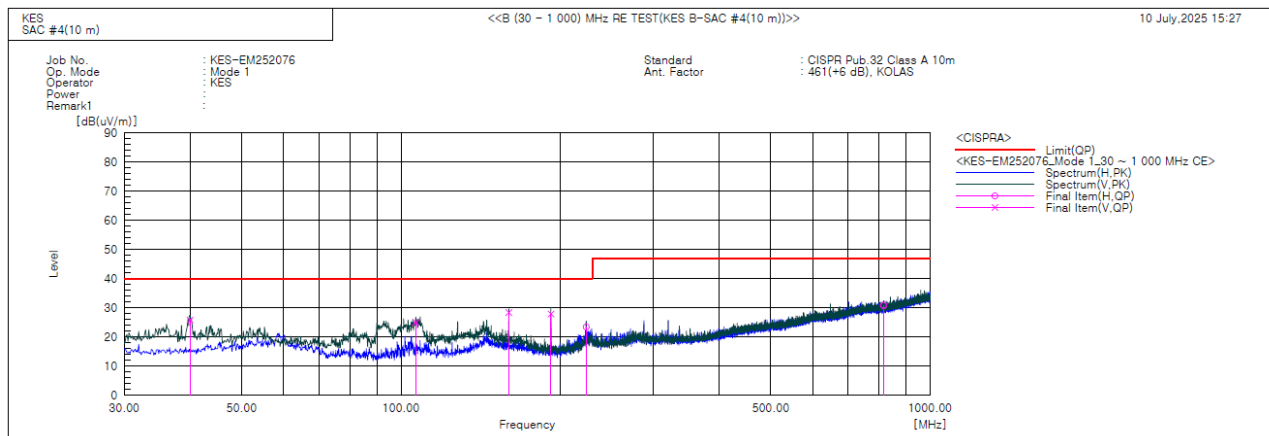
QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

**Radiated Electric Field Emissions(Below 1 GHz)**

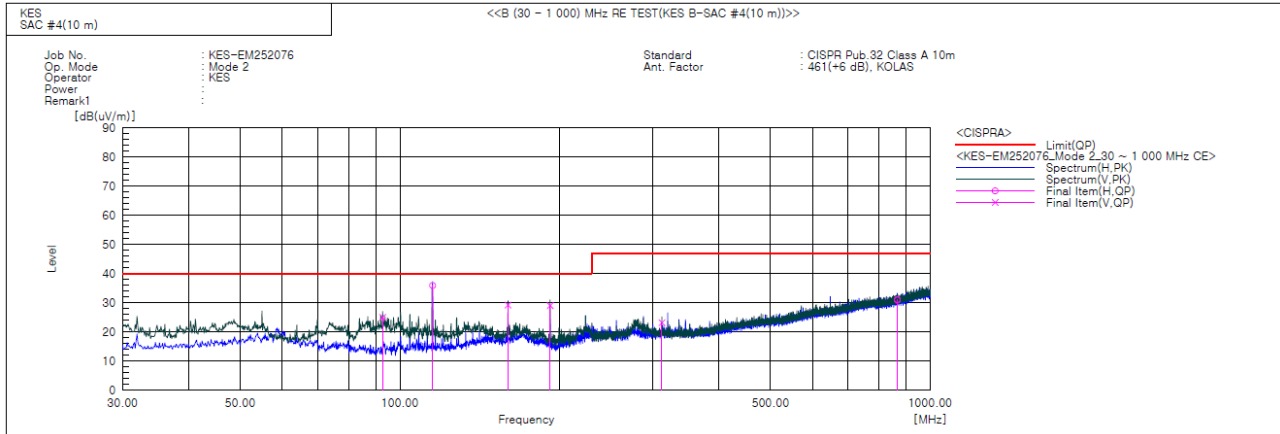
■ mode 1

**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	39.943	V	47.6	-21.8	25.8	40.0	14.2	140.0	333.0	
2	106.630	V	48.9	-23.9	25.0	40.0	15.0	100.0	269.0	
3	159.980	V	47.8	-19.4	28.4	40.0	11.6	164.0	258.0	
4	191.990	V	49.6	-21.7	27.9	40.0	12.1	115.0	165.0	
5	224.000	H	44.4	-21.0	23.4	40.0	16.6	364.0	42.0	
6	817.034	H	34.2	-3.4	30.8	47.0	16.2	385.0	83.0	



■ mode 2



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	92.808	V	50.9	-25.9	25.0	40.0	15.0	146.0	125.0	
2	115.239	H	58.8	-22.9	35.9	40.0	4.1	386.0	210.0	
3	159.980	V	48.6	-19.4	29.2	40.0	10.8	100.0	244.0	
4	191.990	V	50.7	-21.7	29.0	40.0	11.0	162.0	184.0	
5	312.028	V	39.8	-16.6	23.2	47.0	23.8	100.0	191.0	
6	867.110	H	33.4	-2.4	31.0	47.0	16.0	400.0	161.0	

◆ Calculation

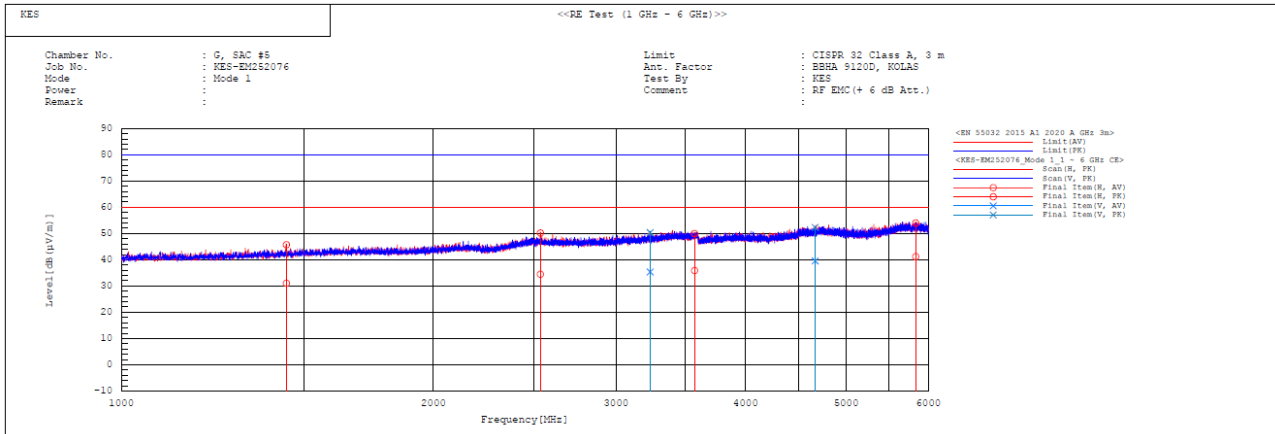
$$\text{Result(QP)} [\text{dB}(\mu\text{V/m})] = (\text{Reading(QP)} [\text{dB}(\mu\text{V})] + \text{c.f} [\text{dB}(1/\text{m})])$$
$$\text{Margin(QP)} [\text{dB}] = \text{Limit} [\text{dB}(\mu\text{V/m})] - \text{Result(QP)} [\text{dB}(\mu\text{V/m})]$$

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 Electric Field Emissions(Above 1 GHz)**

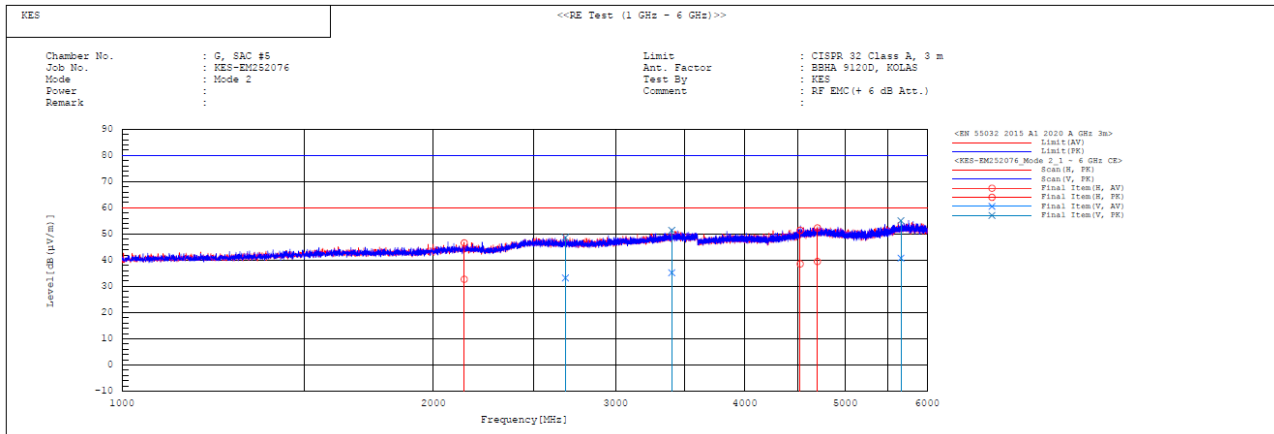
■ mode 1

**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]	Remark
1	1442.918	H	30.3	44.9	0.8	31.1	45.7	60.0	80.0	28.9	34.3	100.0	243.3	
2	2535.957	H	29.4	45.1	5.1	34.5	50.2	60.0	80.0	25.5	29.8	100.0	250.6	
3	3236.476	V	28.5	43.5	6.8	35.3	50.3	60.0	80.0	24.7	29.7	100.0	31.1	
4	3571.765	H	28.5	42.6	7.4	35.9	50.0	60.0	80.0	24.1	30.0	100.0	149.8	
5	4668.394	V	28.2	40.9	11.4	39.6	52.3	60.0	80.0	20.4	27.7	100.0	49.6	
6	5836.165	H	27.0	39.8	14.2	41.2	54.0	60.0	80.0	18.8	26.0	100.0	0.2	



mode 2



◆ Calculation

Result(PK/CAV) [dB(μV/m)] = (Reading(PK/CAV)[dB(μV)] + c.f[dB(1/m)])

Margin(PK/CAV)[dB] = Limit[dB(μV/m)] - 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

**Harmonic Current Emissions and Voltage Fluctuations and Flicker**

■ mode 1

Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.030			
2	0.002	0.201	1.080	n/a
3	0.023	0.984	2.300	PASS
4	0.003	0.638	0.430	n/a
5	0.024	2.063	1.140	PASS
6	0.002	0.804	0.300	n/a
7	0.023	3.049	0.770	PASS
8	0.002	1.082	0.230	n/a
9	0.022	5.487	0.400	PASS
10	0.003	1.413	0.184	n/a
11	0.021	6.441	0.330	PASS
12	0.002	1.610	0.153	n/a
13	0.021	9.769	0.210	PASS
14	0.003	1.934	0.131	n/a
15	0.019	12.890	0.150	PASS
16	0.002	2.132	0.115	n/a
17	0.018	13.932	0.132	PASS
18	0.002	2.355	0.102	n/a
19	0.017	14.646	0.118	PASS
20	0.002	2.610	0.092	n/a
21	0.016	9.993	0.161	PASS
22	0.002	2.775	0.084	n/a
23	0.015	10.143	0.147	PASS
24	0.002	2.988	0.077	n/a
25	0.014	10.125	0.135	PASS
26	0.002	3.049	0.071	n/a
27	0.013	10.037	0.125	PASS
28	0.002	3.215	0.066	n/a
29	0.011	9.524	0.116	PASS
30	0.002	3.239	0.061	n/a
31	0.010	9.143	0.109	PASS
32	0.002	3.247	0.058	n/a
33	0.009	8.681	0.102	PASS
34	0.002	3.409	0.054	n/a
35	0.007	7.708	0.096	PASS
36	0.002	3.282	0.051	n/a
37	0.007	7.189	0.091	PASS
38	0.002	3.386	0.048	n/a
39	0.005	6.295	0.087	PASS
40	0.002	3.343	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.



Test Data - Harmonics (continued)

Maximum harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.030			
2	0.003	0.155	1.620	n/a
3	0.023	0.680	3.450	PASS
4	0.003	0.496	0.645	n/a
5	0.024	1.392	1.710	PASS
6	0.003	0.619	0.450	n/a
7	0.024	2.064	1.155	PASS
8	0.003	0.840	0.345	n/a
9	0.022	3.713	0.600	PASS
10	0.003	1.075	0.276	n/a
11	0.021	4.343	0.495	PASS
12	0.003	1.264	0.230	n/a
13	0.021	6.590	0.315	PASS
14	0.003	1.532	0.197	n/a
15	0.020	8.685	0.225	PASS
16	0.003	1.657	0.173	n/a
17	0.019	9.389	0.199	PASS
18	0.003	1.834	0.153	n/a
19	0.018	9.879	0.178	PASS
20	0.003	2.101	0.138	n/a
21	0.016	10.112	0.161	PASS
22	0.003	2.198	0.125	n/a
23	0.015	10.247	0.147	PASS
24	0.003	2.351	0.115	n/a
25	0.014	10.272	0.135	PASS
26	0.003	2.454	0.106	n/a
27	0.013	10.161	0.125	PASS
28	0.003	2.571	0.099	n/a
29	0.011	9.666	0.116	PASS
30	0.002	2.608	0.092	n/a
31	0.010	9.274	0.109	PASS
32	0.002	2.538	0.086	n/a
33	0.009	8.829	0.102	PASS
34	0.002	2.669	0.081	n/a
35	0.008	7.874	0.096	PASS
36	0.002	2.606	0.077	n/a
37	0.007	7.316	0.091	PASS
38	0.002	2.720	0.073	n/a
39	0.006	6.453	0.087	PASS
40	0.002	2.627	0.069	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.



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Test Data - Voltage Fluctuations

■ mode 1

Maximum Flicker results

Flicker Measurements					
	Plt	Max Pst	Max Dc	Max Dmax	Max Tmax
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





Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

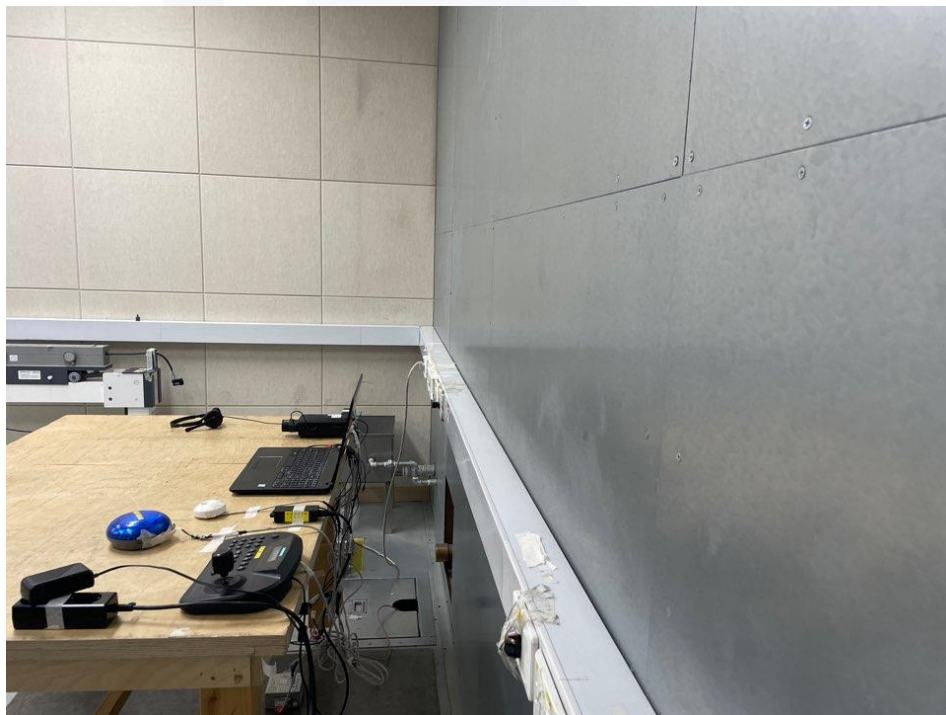
■ mode 1





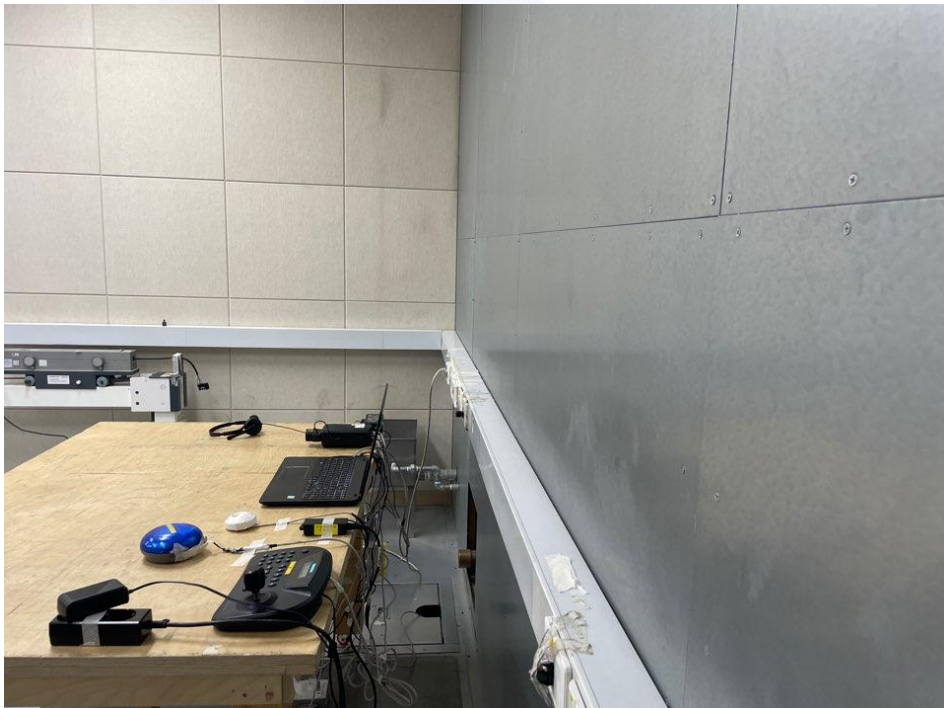
Conducted Emissions at Telecommunication Ports

■ mode 1





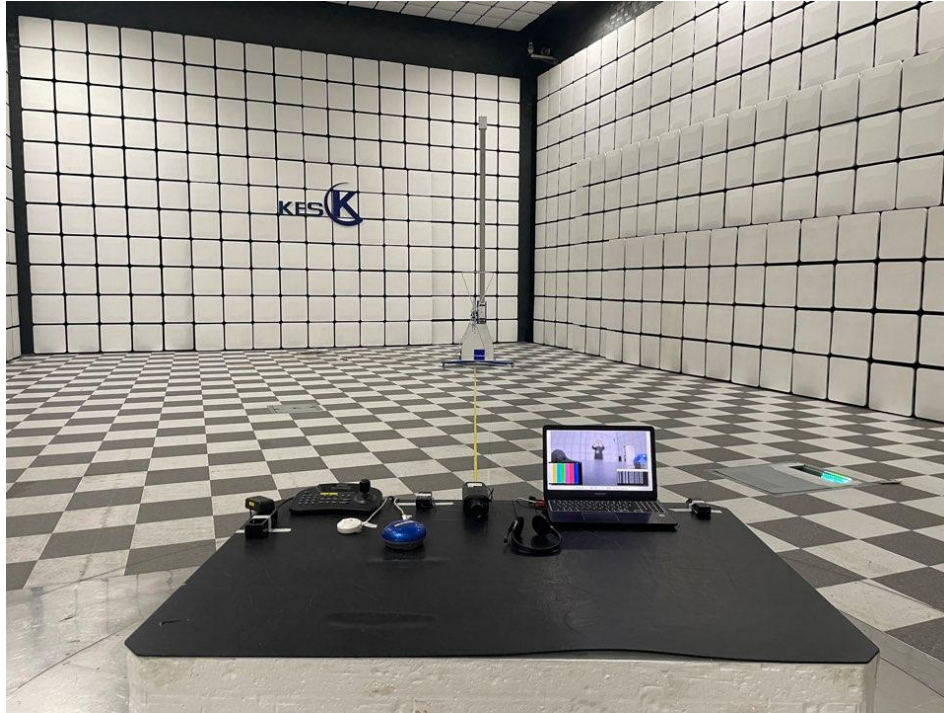
■ mode 2





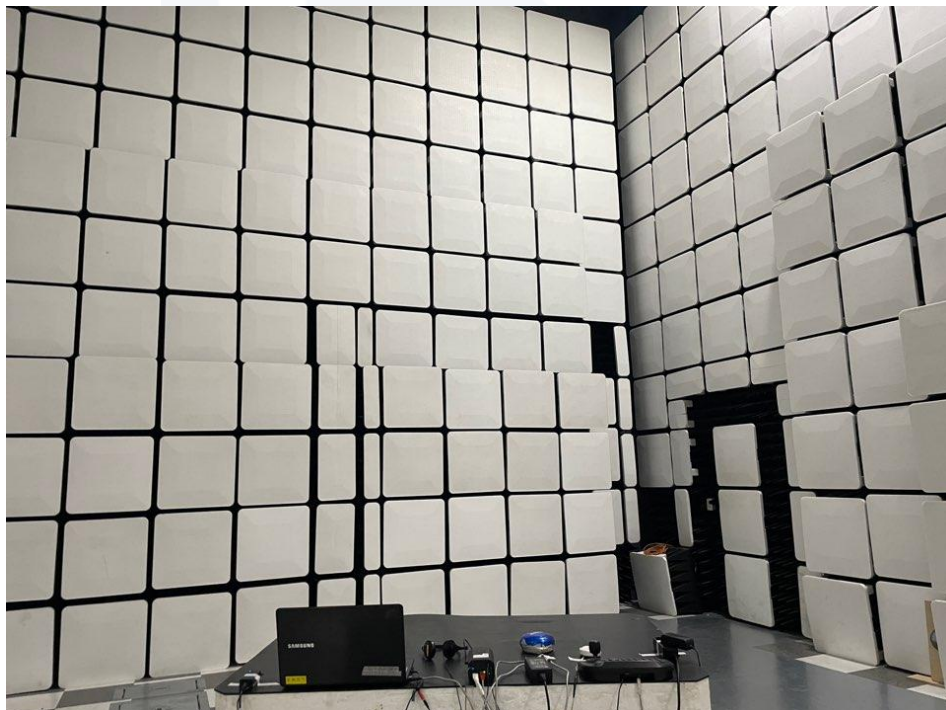
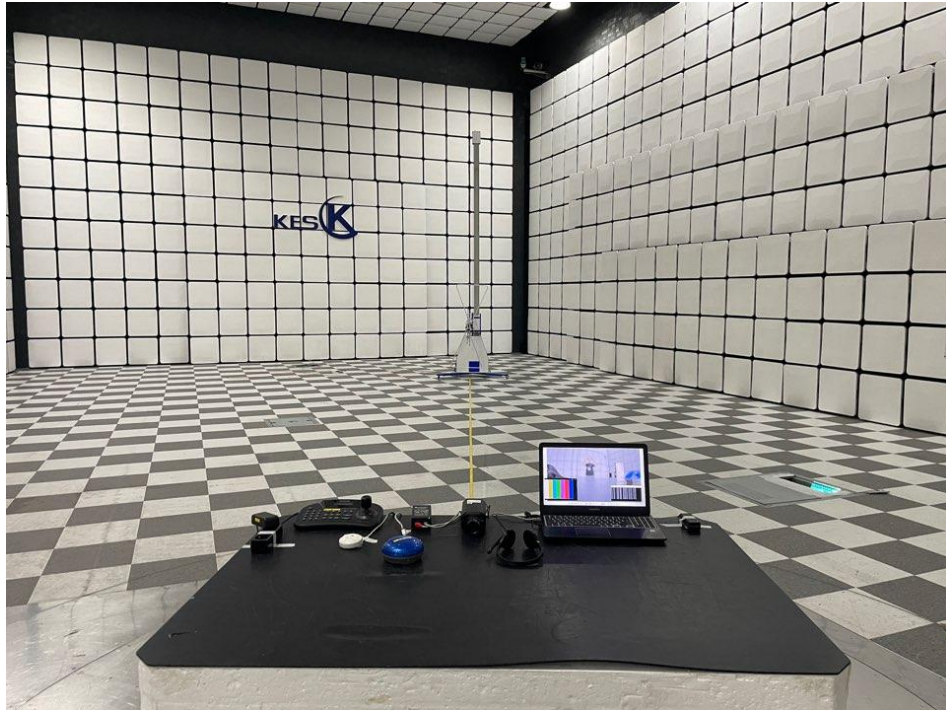
Radiated Electric Field Emissions(Below 1 GHz)

■ mode 1





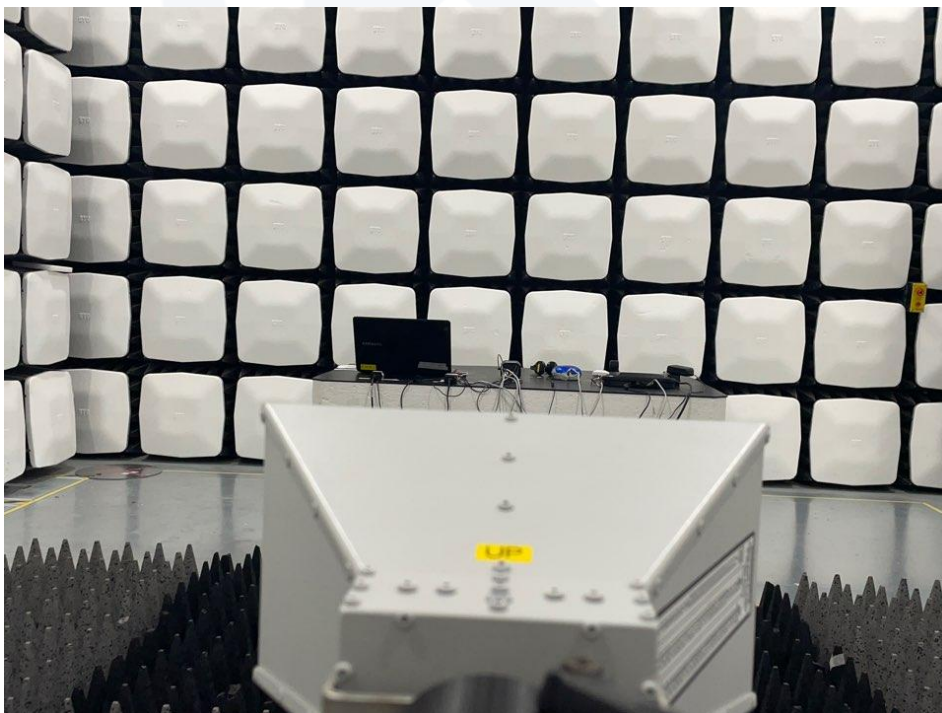
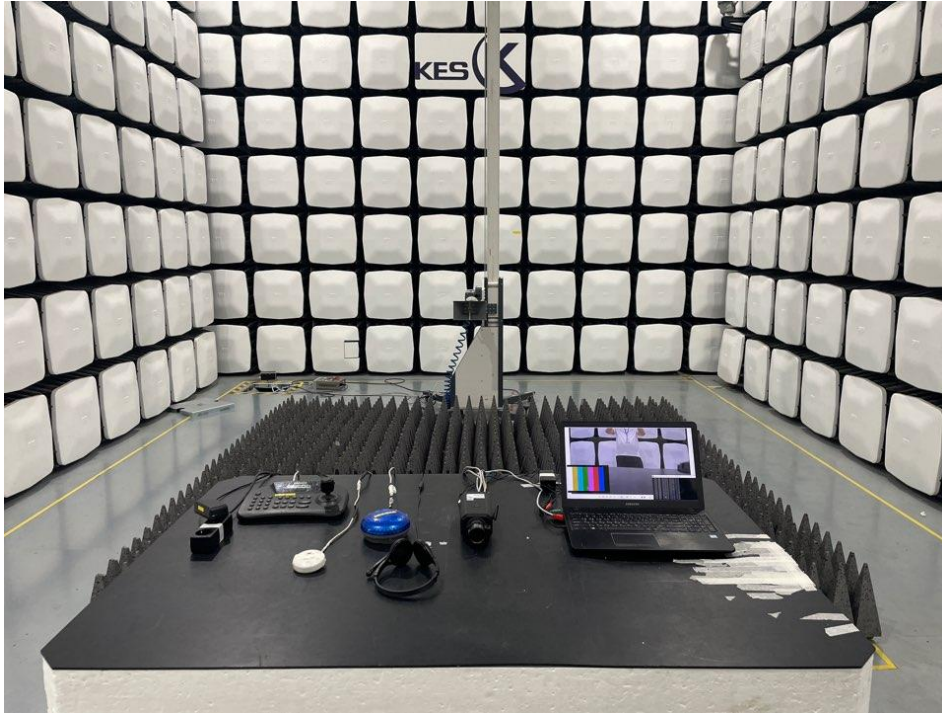
■ mode 2





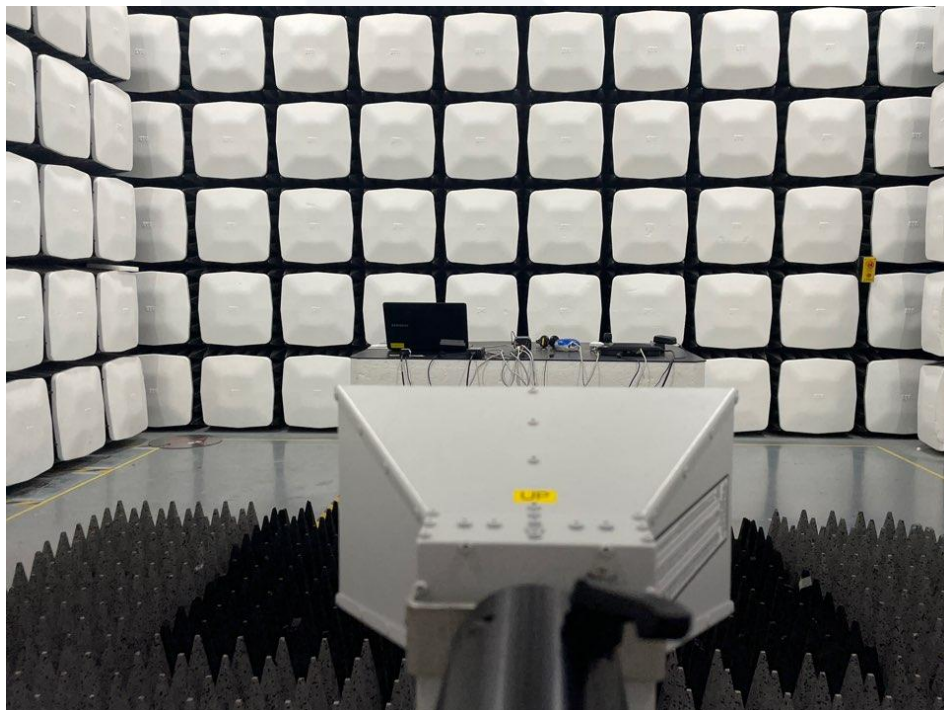
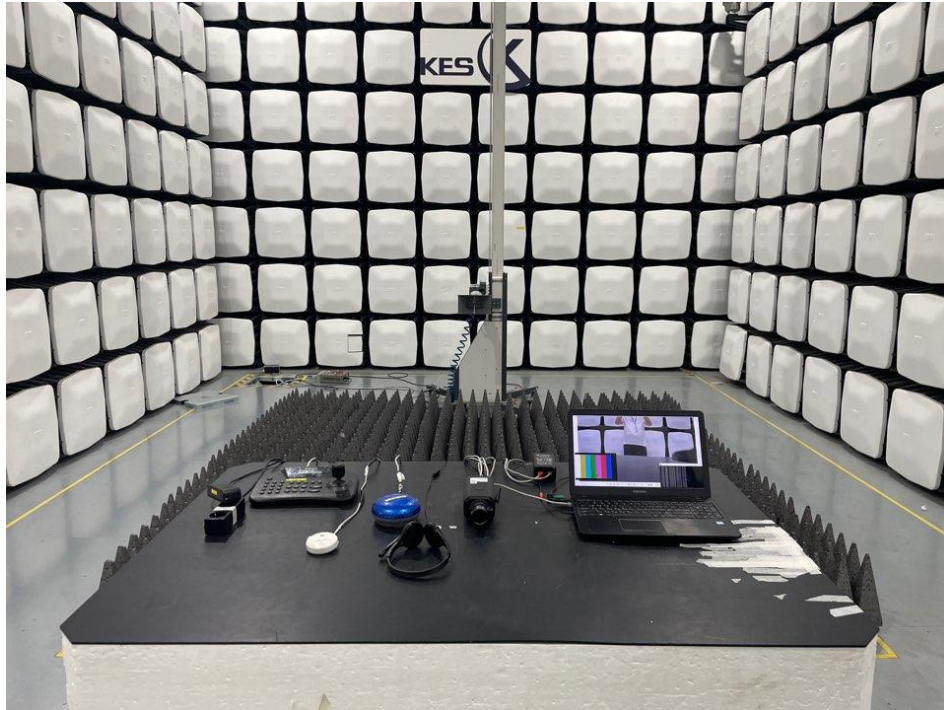
Radiated Electric Field Emissions(Above 1 GHz)

■ mode 1





■ mode 2





Harmonic Current Emissions and Voltage Fluctuations and Flicker

■ mode 1





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Electrostatic Discharge

■ mode 1



■ mode 2



KES-QP16-F01(00-23-01-01)

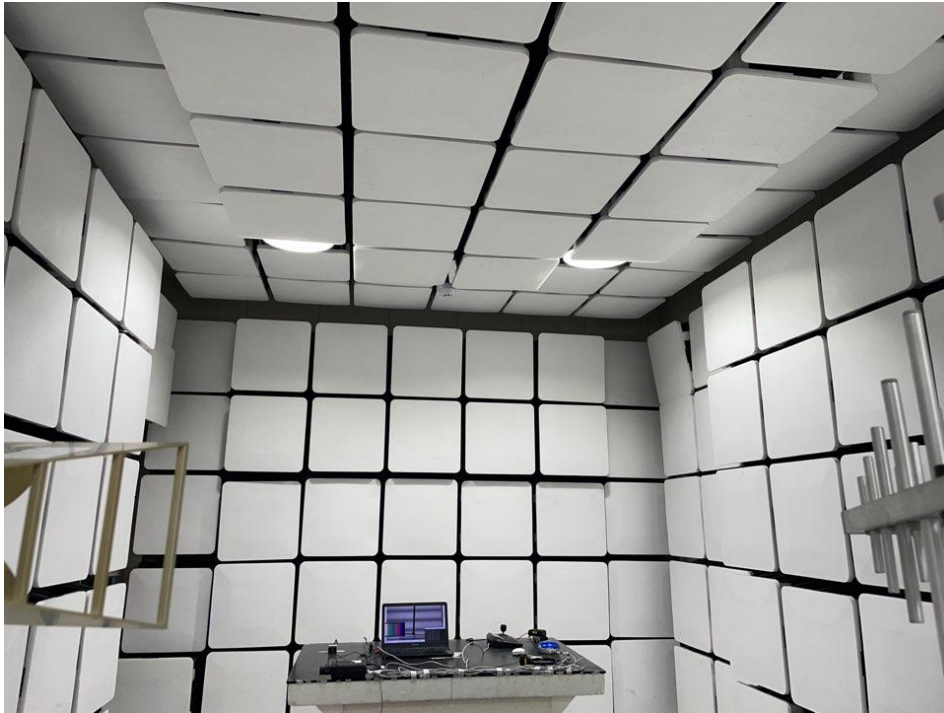
KES Co., Ltd.

The authenticity of this test report can be found on the verification page of our website (www.kes.co.kr).

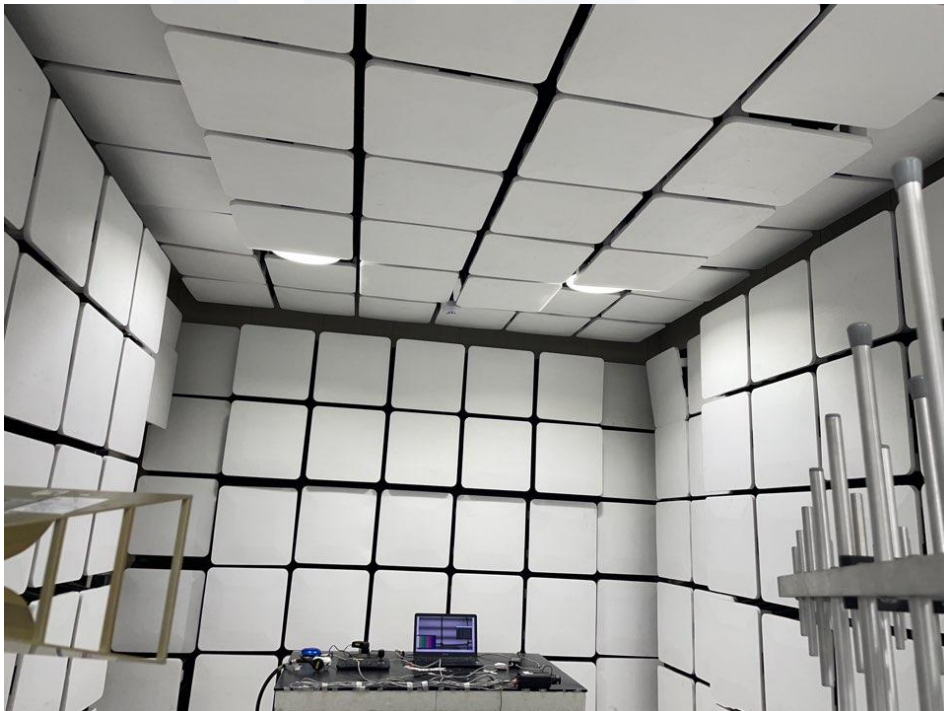


Radiated Electric Field Immunity

■ mode 1



■ mode 2





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Electrical Fast Transients/Bursts

■ mode 1



■ mode 2





Surge Transients

■ mode 1



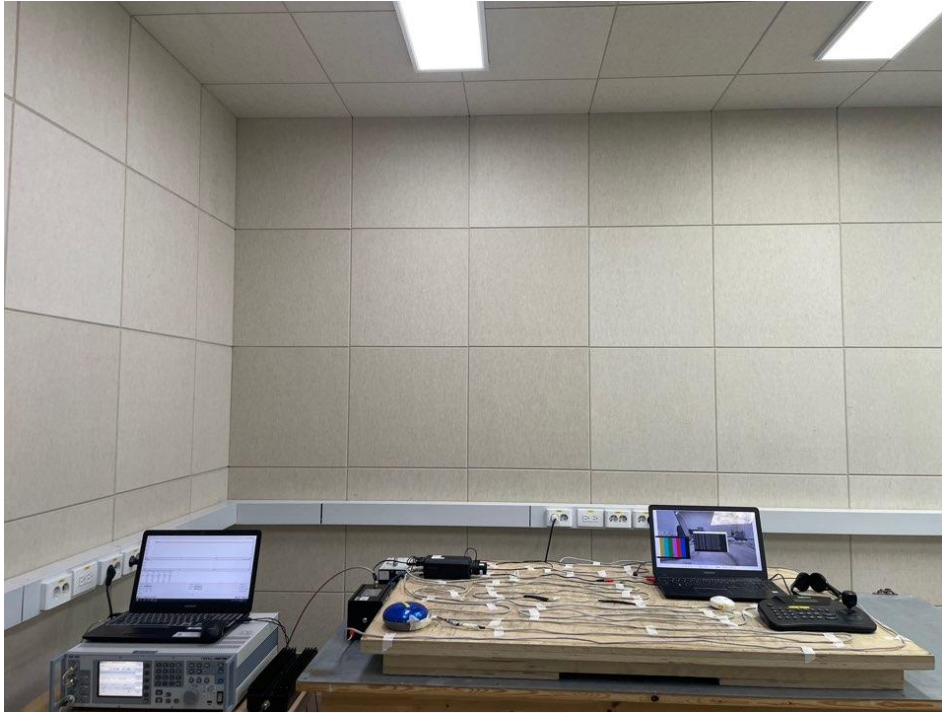
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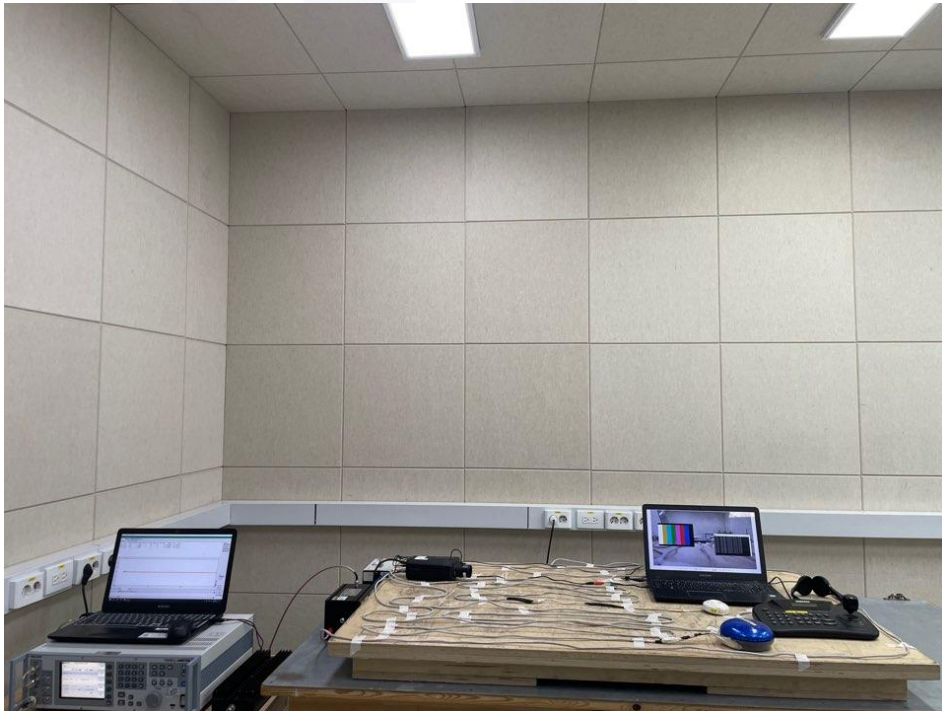


Conducted Disturbance

■ mode 1



■ mode 2





Voltage Dips and Short Interruptions

■ mode 1





EUT External Photographs

(Top)



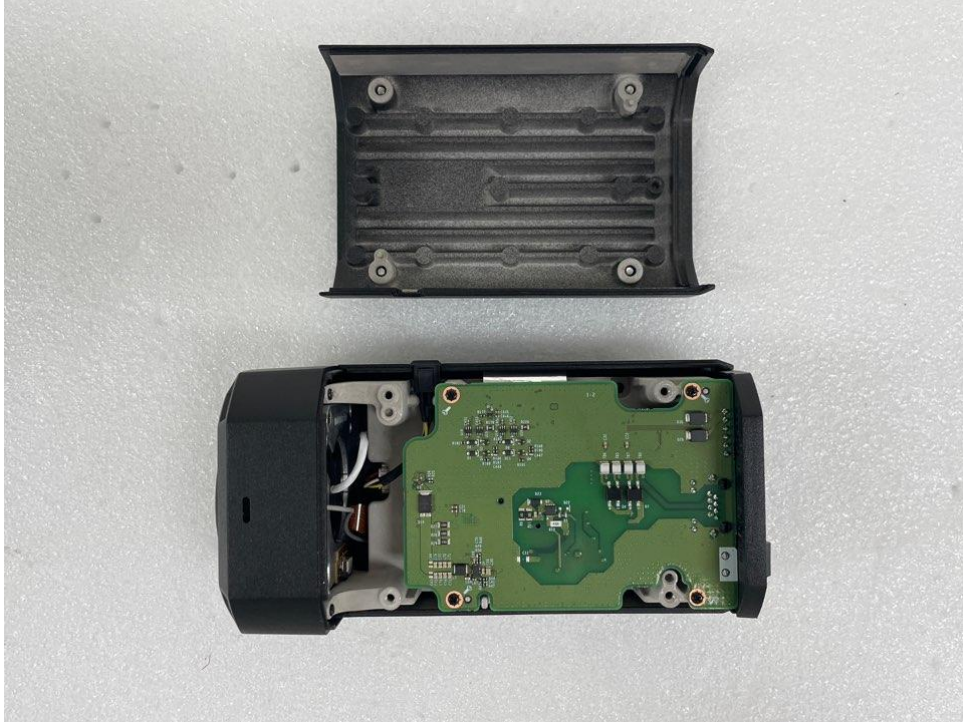
(Bottom)





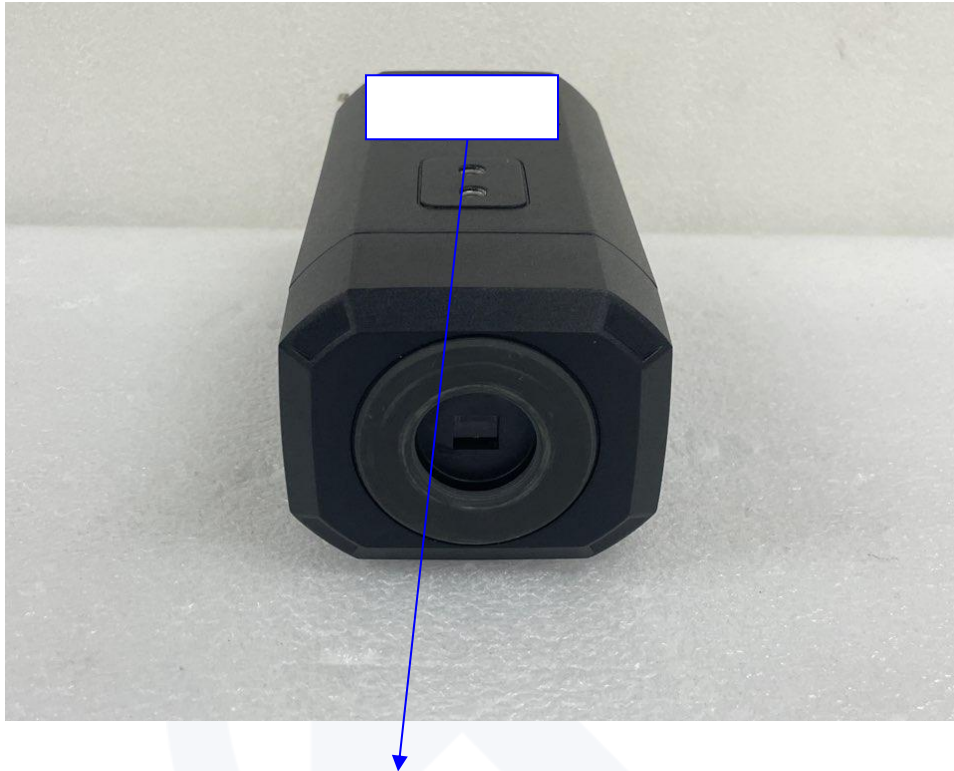
EUT Internal Photographs

(Internal View)





Label and Location



NETWORK CAMERA

Model No : XNB-A6004

Manufacturer : HANWHA VISION VIETNAM COMPANY LIMITED

Made in Vietnam



The End.