



TEST REPORT



Report No. : KES-E1-18T0132-R5
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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. : XNV-6012M
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 commune, Bac Ninh city, Bac Ninh province, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do,
Korea (Suwon Industrial Complex)

3. Date of Receipt : Jan. 24, 2018

4. Test date : Jan. 24, 2024

5. Date of Issue : Jan. 30, 2024

6. Test Results : In Compliance

Tested by

Reviewed by

Dae Soo, Kim
EMC Test Engineer

Dong Hun, Jang
EMC Technical Manager

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



REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Feb. 07, 2018	KES-E1-18T0132	Issued
Mar. 05, 2019	KES-E1-18T0132-R1	Reissue due to Radiated Electric Field Emissions(Above 1 GHz) retest. Modify the Model name, Manufacturer and address.
Apr. 22, 2020	KES-E1-18T0132-R2	Reissue due to missing Radiated Electric Field Immunity update.
Jun. 08, 2022	KES-E1-18T0132-R3	Factory deletion and Test Regulations update due to customer request.
Feb. 24, 2023	KES-E1-18T0132-R4	Change the Applicant and Manufacturer at the request of the customer
Jan. 30, 2024	KES-E1-18T0132-R5	Reissuance due to Test Regulations update.

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1.0 General Product Description

Main Specifications of EUT are:

1/2.8" 2M CMOS	Flip : On/Off Mirror : On/Off Hallway view : 90°/270°
1945(H) x 1109(V) 2.16M	Tampering, Loitering, Directional Detection, Defocus Delection, Fog Detection, Virtual Line, Enter/Exit, Appear / Disappear, Audio Detection, Face Detection, Motion Detection, Digital Auto Tracking, Sound Classification
1945(H) x 1097(V) 2.13M	-
Progressive Scan	Motion Detection, Video & Audio Analytics, Network Disconnect
Color : 0.055 Lux(F2.0, 1/30sec) (TBD)	File upload via FTP, E-Mail
B/W : 0.0055Lux	Notification via E-Mail
50dB	local storage(SD/SDHC/SDXC) or NAS recording at Event Triggers
USB : Micro USB type B, 1280x720, for installation	External output
2.4mm Fixed	DPTZ preset
F2.0	Selectable (Mic IN/Line IN), Built-in microphone
H 139° V 73° D167° (TBD)	Supply voltage: 2.5VDC(4mA), Input impedance: approx. 2K Ohm
0.4m(1.31ft)	Line out, Max output level: 1 Vrms
Manual	Off / On
Fixed	Support
Board-in type	M12 (10/100BASE-T)
±5°(0~87°)±90°	H.265/H.264 (MPEG-4 Part 10/AVC) : Main/Baseline/High, Motion JPEG
-	1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x575, 720x480, 640x480, 640x360, 320x240
Off / On (Displayed up to 85 characters)	H.265/H.264 : Max. 60fps at all resolutions
- WW : English/Numeric/Special Characters	Motion JPEG : Max. 30fps
- China : English/Numeric/Special/Chinese Characters	Manual Mode (area-based : 5EA)
- Common : Multi-line (Max 5), Color (Grey/Green/Red/Blue/Black/White), Transparency, Auto Scale by Resolution	Support
Auto (ICR) / Color / B/W / External / Schedule	H.264/H.265 : Target Bitrate Level Control
Off / BLC / HLC(Masking/Dimming), WDR	MJPEG : Target Bitrate Level Control
150dB	H.264/H.265 : CBR or VBR
SSDR (Off / On)	MJPEG : VBR
SSNR5 (2D+3D Noise Filter) (Off / On)	Multiple Streaming (Up to 10 Profiles)
Off / On	G.711 u-law / G.726 Selectable
Auto(input from fog detection) / Manual / Off	G.726 (ADPCM) 8KHz, G.711 8KHz
Off/On(8ea, 8point Polygonal zones), Handover	G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps
Off / On (32ea, polygonal zones)	AAC-LC : 48Kbps at 16KHz
- Color : Grey/Green/Red/Blue/Black/White	
- Mosaic	
Off / Low / Middle / High	
ATW / AWC / Manual / Indoor / Outdoor(included Mercury & Sodium)	
level adjustment	
On/Off (5 levels with Min/Max)	
Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)	
24X, *Digital PTZ(Preset, Group)	
Bi-directional (2-Way)	
IPv4, IPv6	
TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour	
HTTPS(SSL), Login Authentication	
Digest Login Authentication	
IP Address Filtering	
User access Log	
802.1X Authentication (EAP-TLS, EAP-LEAP)	
Unicast / Multicast	
20 users at Unicast Mode	
SD/SDHC/SDXC 1slot (up to 256 GB)	
- Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded.	
NAS(Network Attached Storage)	
Local PC for Instant Recording	
ONVIF Profile S/G	
SUNAPI(HTTP API)	
Open Platform	
English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek	
Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10, 10.11, 10.12	
Non-plugin Webviewer	
Supported Browser : Google Chrome 54, MS Edge 36, Mozilla Firefox 49(Window 64bit only), Apple Safari 9 (Mac OS X only)	
Plug-in Webviewer	
Supported Browser : MS Explore 11, Apple Safari 9 (Mac OS X only)	
SmartViewer, SSM	
-30°C ~ +55°C (-22°F ~ +131°F) / Less than 90% RH	
*Start up should be done at above -20°C	
-0°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH	
IP66	
EN55011:2009+A1:2010, EN50581:2012, EN50121-3-2:2015, EN61000-4-2:2009	
EN61000-4-3:2006+A2:2010, EN61000-4-4:2012, EN61000-4-5:2014	
EN61000-4-6:2009, EN50155:2007, NEMA 4X	
IC10, NEMA4X	
PoE(IEEE802.3af, Class3)	
TBD	
Ivory / Metal	
89 x 52 x 100	
256g(TBD)	



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.

Voltage ☐ 230Vac ☐ 100 Vac ☐ 24 Vac ☐ 12 Vdc ☒ PoE

Frequency ☐ 50 Hz ☐ 60 Hz ☐ Hz

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	XNV-6012M	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE Injector	PD-9501GR/AC	-	CHANGZHOU WUJIN HONGGUANG RADIO CO., LTD.	-
Notebook	LG15N54	506NZGK000615	LG Electronics	-
Notebook Adapter	PA-1650-43(65W)	OF58U63849302Y609	LG Electronics	-
Speaker	BR10000A CUVE	-	BEIJING EDIFIER HI-TECH GROUP.	-
MIC	MP1000	-	-	-
Micro SD Card	-	-	SanDisk	16 GB



1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Network Camera (EUT)	RJ-45 (PoE)	PoE Injector	RJ-45 (PoE)	3.1	U
	AUDIO OUT	Speaker	AUDIO OUT	1.0	U
	AUDIO IN	MIC	AUDIO IN	2.0	U
	SLOT	Micro SD Card	SLOT	-	-
Notebook	RJ-45 (LAN)	PoE Injector	RJ-45 (LAN)	2.0	U
	DC Jack	Notebook Adapter	DC Jack	1.5	U

* Unshielded=U, Shielded=S

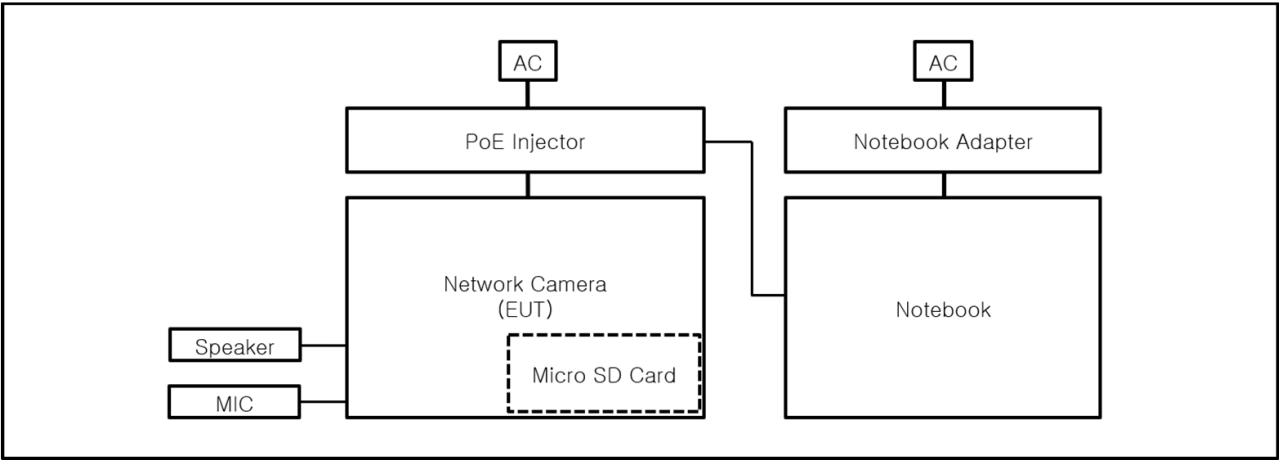
1.7 EUT Operating Mode(s)

Test mode	operating
Operation	RJ-45 : Monitoring EUT Using Web Viewer, Ping Test Micro SD Card : After testing, check if the recording is normally done on the Micro SD card

EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	-



1.8 Configuration





1.9 Remarks when standards applied

- In PoE mode, the LAN port is regarded as a wired communication network port and power-related ports are not 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 , 10 m Open Area 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, 10 m Open Area and 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	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz	 R-20056, C-20036, T-20040, G-20057
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 001633 0004



2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **EMC – Directive 2014/30/EU**

☒ EN 50121-3-2:2016:A1(2019)

☒ Group 1
☒ Class A

☐ Group 2
☐ Class B

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☒ **EMC – Regulations 2016**

☒ EN 50121-3-2:2016:A1(2019)

☒ Group 1
☒ Class A

☐ Group 2
☐ Class B

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013



2.1 Conducted Emissions at Mains Power Ports

Test Date

N/A

Test Location

Electro wave Shieldroom

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	101781	04, 27, 2018
☐	LISN	ENV216	R & S	101787	01, 05, 2019
☐	LISN	ESH2-Z5	R & S	100450	04, 27, 2018
☐	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 27, 2018

Test Conditions

Temperature:

°C

Relative Humidity:

% 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

RemarksN/A : Because the EUT power is PoE, limits are not specified.



2.2 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Jan. 30, 2018

Test Location☐ OPEN AREA TEST SITE #2☒ SEMI ANECHOIC CHAMBER #4(10 m)**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	04, 18, 2018
☒	AMPLIFIER	SCU 01	R & S	100603	11, 27, 2018
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	716	11, 28, 2018

Test Conditions

Temperature: 23,0 °C

Relative Humidity: 41,4 % 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.



2.3 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Jan. 24, 2024

Test Location

SEMI ANECHOIC CHAMBER #5

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	ES10/RE	TOYO Corporation	2022.01.000	-
☒	EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100552	03, 21, 2024
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	11, 03, 2024
☐	PREAMPLIFIER	8449B	HP	3008A00538	05, 31, 2024
☒	ATTENUATOR	8491B	HP	23094	03, 21, 2024

Test Conditions

Temperature:

21,7 °C

Relative Humidity:

45,3 % 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

RemarksSee Appendix A for test data.





2.5 Voltage Fluctuations and Flicker

Test Date

N/A

Test Location

Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	EMI Test S/W	dpa.control	EM TEST	5.4.11.0	-
☐	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	08, 08, 2018
☐	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Relative Humidity:

°C
%**Test Results**

The requirements are:

- ☐ PASS
☐ NOT PASS
☒ NOT APPLICABLE

RemarksN/A : Because the EUT power is PoE, limits are not specified.



3.0 Criteria for compliance

Criteria for compliance was based on the following guidelines:

General performance criteria

The general principles (performance criteria) for the evaluation of the immunity test results are the following.

Performance criterion A

The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criterion B

The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criterion C

Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.



3.1 Electrostatic Discharge

Reference Standard

EN 61000-4-2:2009

Test Date

Jan. 30, 2018

Test Location

EMS-ESD: Electro wave Shieldroom#7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS01Z0454	-
☒	HCP	-	KES	-	10, 11, 2018
☒	VCP	-	KES	-	-

Test Conditions

Temperature: 23,5 °C
Relative Humidity: 42,1 % R.H.
Atmospheric Pressure: 101,4 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

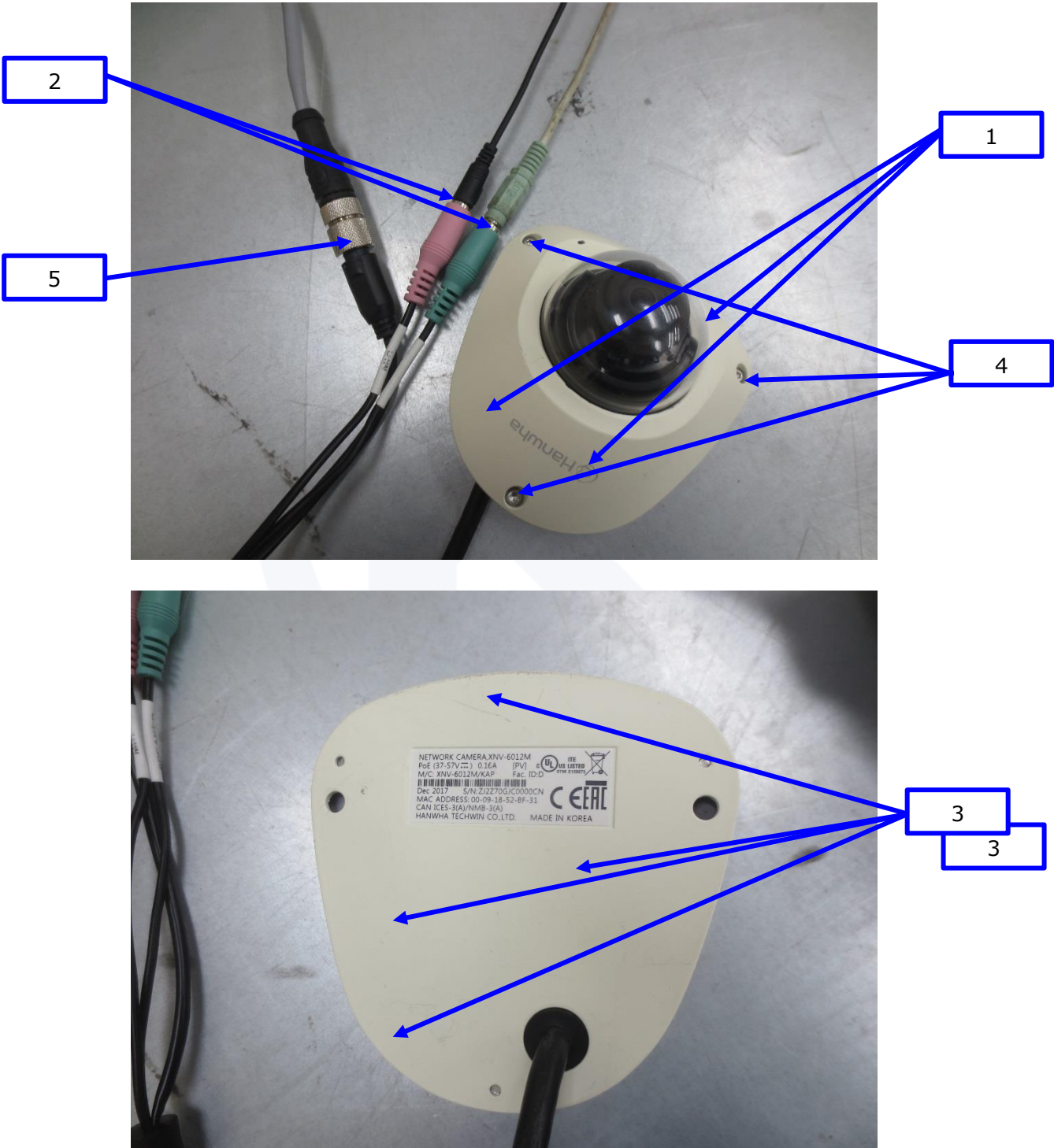
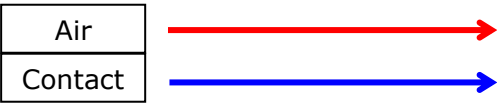
Notes: HCP: Horizontal coupling plane

VCP: Vertical coupling plane

Required Performance Criteria: ☒ B



Location of Discharge:



Test Data

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)

**Indirect Discharge**

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

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	Surface	Contact Discharge	A	-
2	3.5 Ø	Contact Discharge	A	-
3	Surface	Contact Discharge	A	-
4	screw	Contact Discharge	A	-
5	port	Contact Discharge	A	-

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 61000-4-3:2006 +A2:2010

Test Date

Feb. 26, 2019

Test LocationEMS-RS: ☒ SEMI ANECHOIC CHAMBER #3☐ SEMI ANECHOIC CHAMBER #4**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	R & S	177586	08, 06, 2019
☒	BROADBAND AMPLIFIER	BBA100	R & S	101239	08, 06, 2019
☒	BROADBAND AMPLIFIER	100S1G6M1	AR	579931	08, 06, 2019
☒	POWER METER	NRP2	R & S	103475	08, 06, 2019
☒	AVG POWER SENSOR	NRP-Z91	R & S	102526	08, 06, 2019
☒	AVG POWER SENSOR	NRP-Z91	R & S	102527	08, 06, 2019
☒	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
☒	DIRECTIONAL COUPLER	KYDC-D1070-DX40	KY TELECOM	KY150001	08, 06, 2019
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 02, 2019
☒	SIGNAL GENERATOR	SMB 100A	Rohde & Schwarz	108252	08, 06, 2019
☒	HIGH POWER DUAL AMP	SSA532	Seongsan	SSA532-001	05, 18, 2019
☒	POWER METER	E4419B	Agilent	GB40203000	05, 18, 2019
☒	CW POWER SENSOR	E4412A	Agilent	US38488240	05, 18, 2019
☒	CW POWER SENSOR	E4412A	Agilent	MY41501662	05, 18, 2019



Test Conditions

Temperature: 22,5 °C
Relative Humidity: 42,2 % R.H.
Atmospheric Pressure: 101,3 kPa

Test Specifications

Antenna Polarization: Horizontal & vertical unless indicated otherwise

Antenna Distance: ☒ 3 m

Frequency Range: ☒ 80 MHz to 800 MHz [20V/m]
[Field Strength] ☒ 800 MHz to 1 GHz [20 V/m]
☒ 1,4 GHz to 2,0 GHz [10 V/m]
☒ 2,0 GHz to 2,7 GHz [5 V/m]
☒ 5,1 GHz to 6,0 GHz [3 V/m]

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: ☒ A

**Test Data**

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

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 61000-4-4:2012

Test Date

Jan. 30, 2018

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	5.4.7	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 27, 2018
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2018
☒	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	P1633183115	11, 27, 2018

Test Conditions

Temperature: 23,5 °C
Relative Humidity: 42,1 % R.H.
Atmospheric Pressure: 101,4 kPa

Test Specifications

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

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

Burst Period: ☒ 300 ms ☐ 2 s

Repetition Rate: ☒ 5 kHz ☐ 100 kHz

Duration of Test Voltage: ☒ ≥ 1 min

Required Performance Criteria: ☒ A

**Test Data**☐ 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	A	A

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 61000-4-5:2014

Test Date

N/A

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	5.4.7	-
☐	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 27, 2018
☐	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2018
☐	CDN	CNV 508N1	EM TEST	P1610176296	11, 28, 2018
☐	CDN	CNV 504N7.3	EM TEST	P1744207079	12, 18, 2018

Test Conditions

Temperature:

°C

Relative Humidity:

% R.H.

Atmospheric Pressure:

kPa



Test Specifications

AC Power Lines

Source Impedance: 42 ohm for common mode

Surge Amplitude : Common Mode
☐ 2 kV
Differential Mode
☐ 1 kV

Number of Surges: ☐ 5 surges per angle

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

Polarity: ☐ Positive & Negative

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

Required Performance Criteria: ☐ B

Other supply

Source Impedance: 42 ohm for common mode

Surge Amplitude: Common Mode
☐ 2 kV
Differential Mode
☐ 1 kV

Number of Surges: ☐ 5 Surges

Polarity: ☐ Positive & Negative

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

Required Performance Criteria: ☐ B

**Test Data**☐ Line to Earth – Differential Mode

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

☐ Line to Ground – Common Mode

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

Note: “Blank” = Not performed

Observations: N/A

Test Results

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

RemarksN/A : Because the EUT power is PoE, limits are not specified.



3.5 Conducted Disturbance

Reference Standard

EN 61000-4-6:2014

Test Date

Jan. 31, 2018

Test Location

EMS-CS: Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	icd.control	EM TEST	5.3.11	-
☒	CONTINUOUS WAVE SIMULATOR	CWS 500N1.4	EM TEST	P1602169880	11, 27, 2018
☒	ATTENUATOR	ATT 6/80	EM TEST	P1614178148	11, 27, 2018
☒	CDN	CDN M016	TESEQ	43694	11, 27, 2018
☐	CDN	CDN M016	TESEQ	43697	11, 27, 2018
☒	CDN	CDN T800	TESEQ	42800	11, 27, 2018
☐	EM CLAMP	KEMZ 801A	TESEQ	44099	11, 28, 2018

Test Conditions

Temperature: 23,5 °C
Relative Humidity: 42,2 % R.H.
Atmospheric Pressure: 101,5 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

Frequency step: ☒ 1 % step

Dwell Time: ☒ 1 s ☐ 3 s

Required Performance Criteria: ☒ A

Test Data

☐ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	CDN (☐ M2, ☐ M3)	-

☐ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	CDN (☐ M2, ☐ M3)	-

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45	CDN T800	A

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.



APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]





[NEUTRAL]

N/A

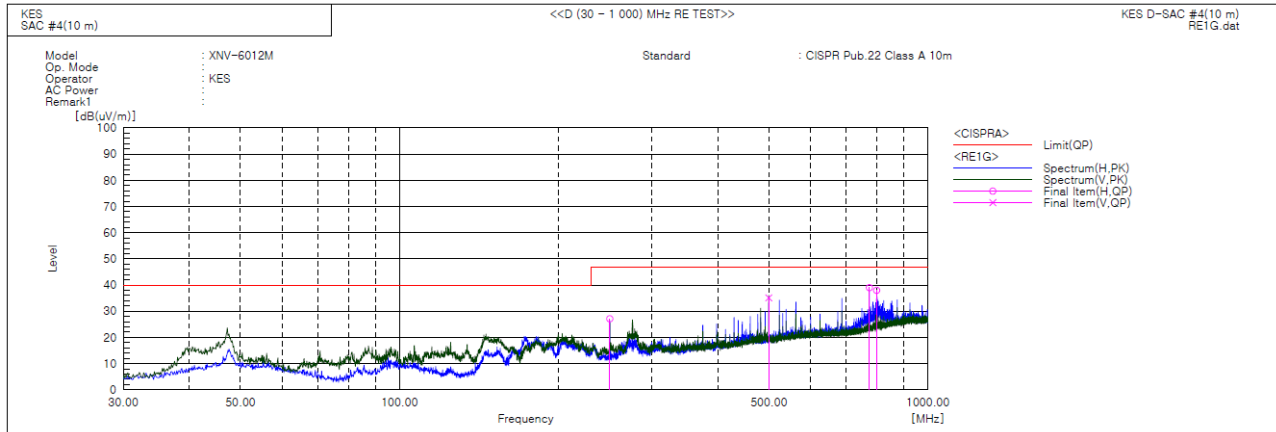
◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

**Radiated Electric Field Emissions(Below 1 GHz)****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	250.014	H	53.3	-26.2	27.1	47.0	19.9	350.0	19.0	
2	500.009	V	53.9	-18.8	35.1	47.0	11.9	100.0	196.0	
3	774.997	H	53.3	-14.3	39.0	47.0	8.0	114.0	185.0	
4	800.005	H	52.0	-14.0	38.0	47.0	9.0	128.0	62.0	

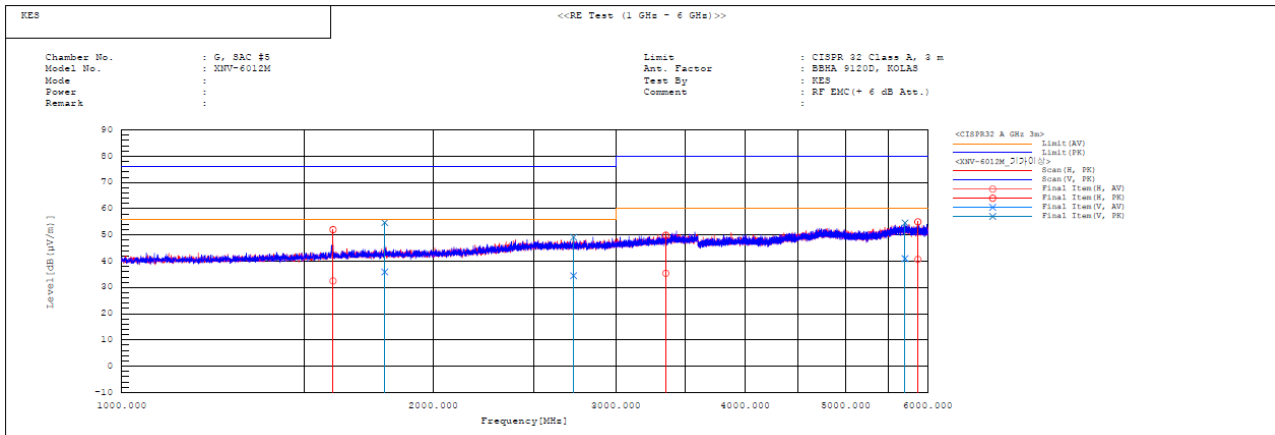
◆ Calculation – SAC #4(10 m)

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

Margin(QP)[dB] = Limit[dB(μV/m)] - 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 Electric Field Emissions(Above 1 GHz)****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	1599.500	H	31.5	51.0	1.0	32.5	52.0	56.0	76.0	23.5	24.0	100.0	22.5	
2	1794.500	V	34.1	52.9	1.8	35.9	54.7	56.0	76.0	20.1	21.3	100.0	176.9	
3	2730.500	V	29.1	43.7	5.4	34.5	49.1	56.0	76.0	21.5	26.9	100.0	213.2	
4	3351.500	H	28.6	43.1	6.8	35.4	49.9	60.0	80.0	24.6	30.1	100.0	0.2	
5	5704.500	V	27.4	41.0	13.6	41.0	54.6	60.0	80.0	19.0	25.4	100.0	38.1	
6	5869.500	H	26.9	41.2	13.8	40.7	55.0	60.0	80.0	19.3	25.0	100.0	304.4	

◆ Calculation

Over Limit [dB] = (Read Level [dB μ V] + Ant Factor [dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line [dB μ V]

Over Limit : Margin, Read Level : Reading value, Ant Factor : ANT Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor



Test Data - Voltage Fluctuations

Maximum Flicker results

	EUT values	Limit	Result
Pst	N/A		
Plt			
dc [%]			
dmax [%]			
Tmax [s]			





Test Setup Photos and Configuration

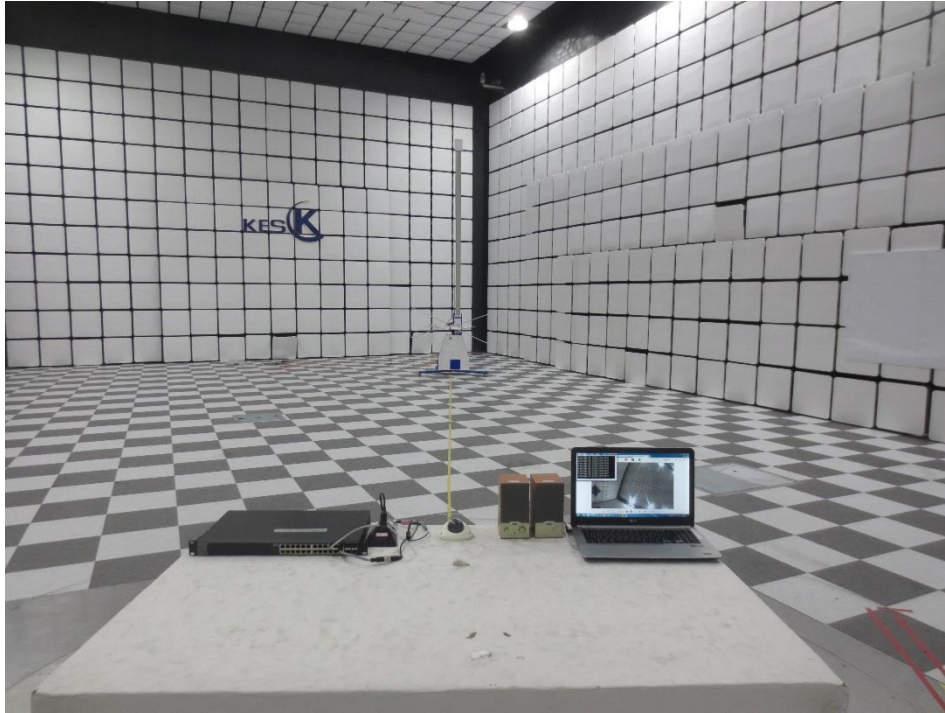
Conducted Voltage Emissions

N/A

N/A

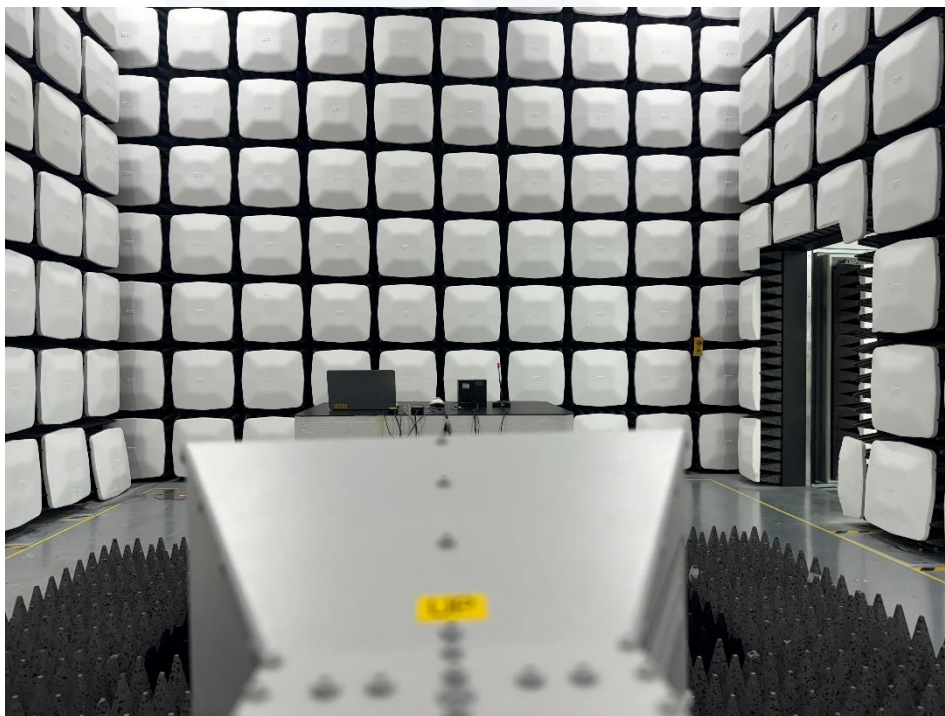
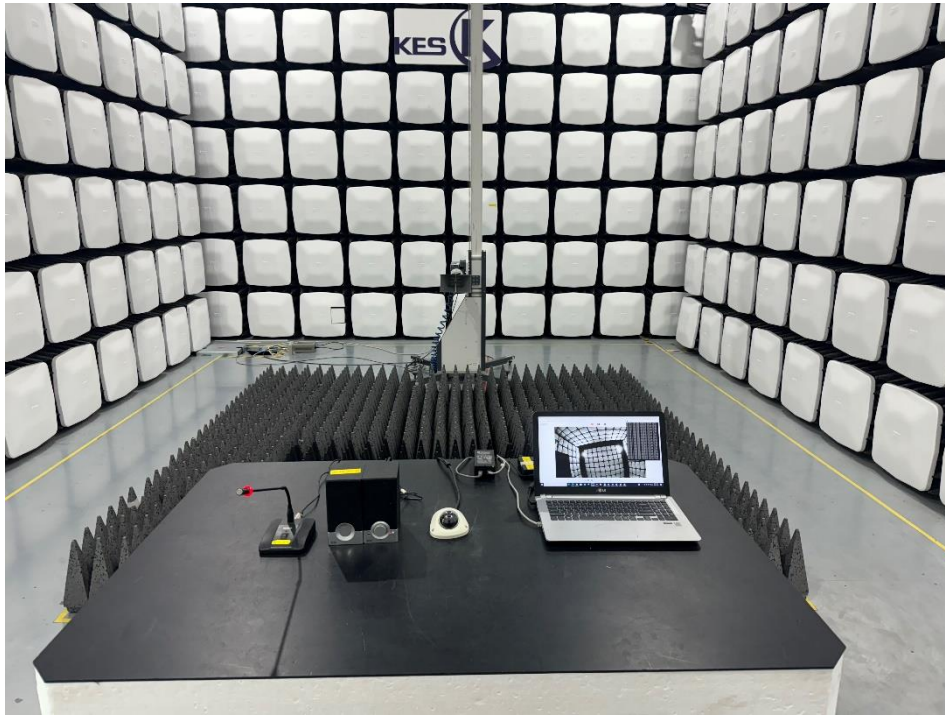


Radiated Electric Field Emissions(Below 1 GHz)





Radiated Electric Field Emissions(Above 1 GHz)





Harmonic Current Emissions and Voltage Fluctuations and Flicker

N/A





Electrostatic Discharge



Radiated Electric Field Immunity





Electrical Fast Transients/Bursts

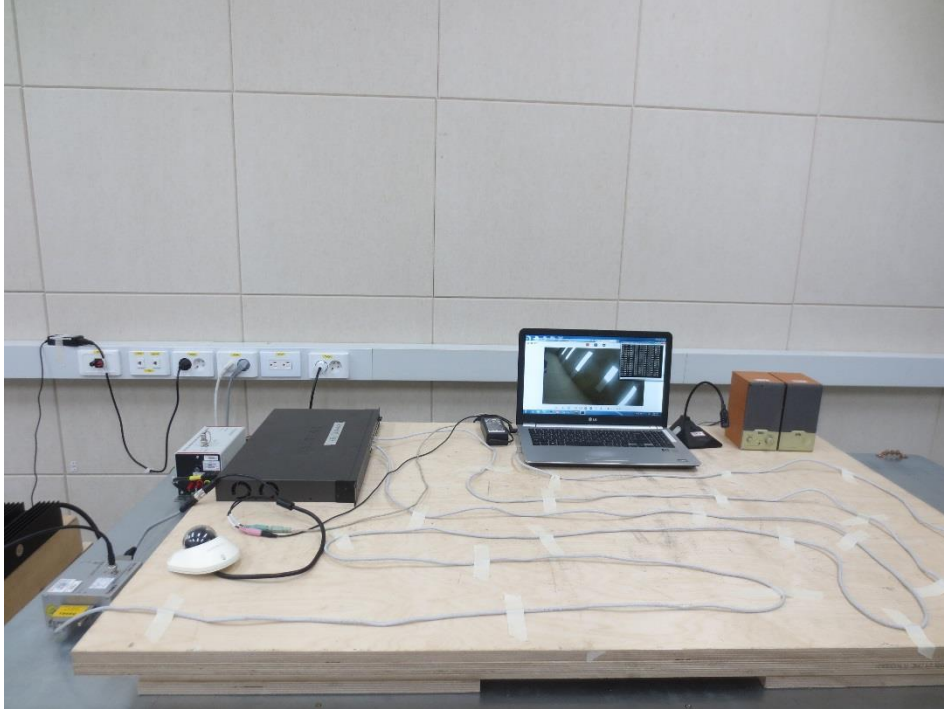


Surge Transients

N/A



Conducted Disturbance





EUT External Photographs

(Top)



(Bottom)





EUT Internal Photographs

(Internal View)





EUT Internal View – Main board

(Top)



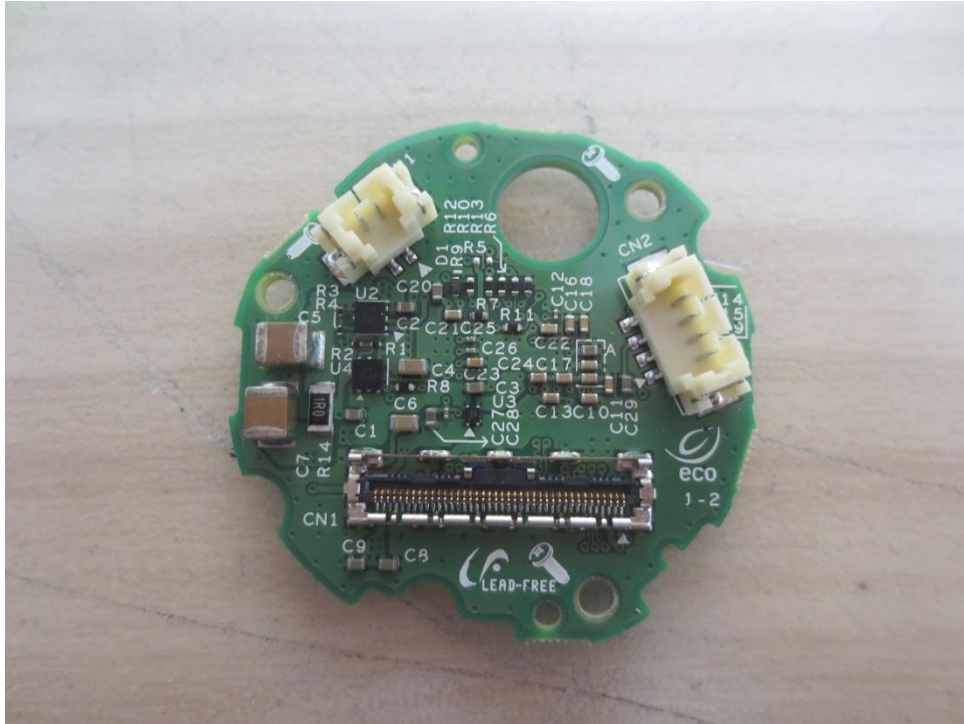
(Bottom)





EUT Internal View – Serve board

(Top)



(Bottom)





Label and Location



Network Camera

Model No : XNV-6012M

Manufacturer : HANWHA VISION VIETNAM COMPANY LIMITED

Made in Vietnam

