



EMC TEST REPORT For CE

Test Report No. : KES- E1-18T0155-R1

Date of Issue : Jun. 25, 2018

Product name : Network Camera

Model/Type No. : XNO-L6080R

Variant Model : -

Applicant : Hanwha Techwin Co., Ltd.

Applicant Address : 6, Pangyo-ro 319 Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, 13488, KOREA

Manufacturer : 1. HANWHA TECHWIN(TIANJIN) CO., LTD
2. HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.
3. D-TECH CO.,LTD.

Manufacturer Address : 1. No.11 Weiliu Rd, Micro-Electronic Industrial Park, TEDA, Tianjin,
300385, People's Republic of China
2. Lot O-2, Que Vo Industrial Zone extended area,
Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam
3. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do,
Korea (Suwon Industrial Complex)

Date of Receipt : Feb. 01, 2018

Test date : Feb. 03, 2018 ~ Feb. 06, 2018

Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Sung Min, Choi
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

This test report is not related to KOLAS.

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:

KES-E1-18T0155-R1

Page (2) of (60)

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Feb. 09, 2018	KES-E1-18T0155	Issued
Jun. 25, 2018	KES-E1-18T0155-R1	Re-issue due to manufacturer change

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

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



TABLE OF CONTENTS

1.0	General Product Description	4
1.1	Test Voltage & Frequency	7
1.2	Variant Model Differences.....	7
1.3	Device Modifications	7
1.4	Equipment Under Test.....	7
1.5	Support Equipments	7
1.6	External I/O Cabling	8
1.7	EUT Operating Mode(s)	8
1.8	Configuration.....	9
1.9	Remarks when standards applied	10
1.10	Calibration Details of Equipment Used for Measurement	10
1.11	Test Facility	10
1.12	Laboratory Accreditations and Listings	10
2.0	Test Regulations.....	10
2.1	Conducted Emissions at Mains Power Ports	13
2.2	Conducted Emissions at Telecommunication Ports	14
2.3	Radiated Electric Field Emissions(Below 1 GHz)	15
2.4	Radiated Electric Field Emissions(Above 1 GHz)	16
2.5	Harmonic Current Emissions	17
2.6	Voltage Fluctuations and Flicker	18
3.0	Criteria for compliance	19
3.1	Electrostatic Discharge.....	21
3.2	Radiated Electric Field Immunity	24
3.3	Electrical Fast Transients/Bursts	27
3.4	Surge Transients	29
3.5	Conducted Disturbance	32
3.6	Voltage Dips and Short Interruptions	34
APPENDIX A – TEST DATA.....		36
Conducted Emissions at Mains Power Ports.....		36
Conducted Emissions at Telecommunication Ports		38
Radiated Electric Field Emissions(Below 1 GHz)		40
Radiated Electric Field Emissions(Above 1 GHz).....		41
Harmonic Current Emissions and Voltage Fluctuations and Flicker		42
Test Setup Photos and Configuration		45
Conducted Voltage Emissions		45
Conducted Telecommunication Emissions		46
Radiated Electric Field Emissions(Below 1 GHz)		47
Radiated Electric Field Emissions(Above 1 GHz).....		48
Harmonic Current Emissions and Voltage Fluctuations and Flicker		49
Electrostatic Discharge		50
Radiated Electric Field Immunity		50
Electrical Fast Transients/Bursts		51
Surge Transients		51
Conducted Disturbance.....		52
Voltage Dips and Short Interruptions		52
EUT External Photographs		53
EUT Internal Photographs		54



1.0 General Product Description

Main Specifications of E.U.T are:

Video	
Imaging Device	1/2.8" 2M CMOS
Total Pixels	1945(H) x 1109(V) 2.16M
Effective Pixels	1945(H) x 1097(V) 2.13M
Scanning System	Progressive Scan
Min. Illumination	Color : 0.1lux B/W : 0 Lux (IR LED On)
S / N Ratio	50dB
Video Out	CVBS : 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P), for installation USB : Micro USB type B, 1280x720, for installation
Lens	
Focal Length (Zoom Ratio)	3.2~10mm(3.1x) motorized varifocal
Max. Aperture Ratio	1.6
Angular Field of View	H : 109.0°(Wide) ~ 33.2°(Tele) / V : 57.4°(Wide) ~ 18.7°(Tele) / D : 132.0°(Wide) ~ 38.0°(Tele)
Min. Object Distance	0.5m (1.64ft)
Focus Control	Simple focus(Motorized V/F) / Manual, Remote control via network (Manual, Simple focus)
Lens Type	DC Auto Iris
Mount Type	Board-in type
Operational	
IR Viewable Length	30m
Camera Title	Off / On (Displayed up to 85 characters) - WW : English/Numeric/Special Characters - China : English/Numeric/Special/Chinese Characters - Common : Multi-line (Max 5), Color (Grey/Green/Red/Blue/Black/White), Transparency, Auto Scale by Resolution
Day & Night	Auto (ICR) / Color / B/W / External / Schedule
Backlight Compensation	Off / BLC / HLC(Masking/Dimming), WDR
Wide Dynamic Range	120dB
Contrast Enhancement	SSDR (Off / On)
Digital Noise Reduction	SSNR5 (2D+3D Noise Filter) (Off / On)
Digital Image Stabilization	Off / On
Defog	Auto(input from fog detection) / Manual / Off
Motion Detection	Off/ On(8ea, 8point Polygonal zones), Handover
Privacy Masking	Off / On (32ea, polygonal zones) - Color : Grey/Green/Red/Blue/Black/White - Mosaic
Gain Control	Off / Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor((included Mercury & Sodium)
Contrast	level adjustment
LDC	On/Off (5 levels with Min/Max)
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:

KES-E1-18T0155-R1

Page (5) of (60)

Digital PTZ	24X, Digital PTZ(Preset, Group)
Flip / Mirror	Flip : On/Off Mirror : On/Off Hallway view : 90°/270°
Video & Audio Analytics	Tampering, Loitering, Directional Detection, Defocus Detection, Fog Detection, Virtual Line, Enter/Exit, (Dis)Appear, Face Detection, Motion Detection, Digital auto tracking
Alarm I/O	No
Alarm Triggers	Motion Detection, Video Analytics, , Network Disconnect
Alarm events	File upload via FTP, E-Mail Notification via E-Mail local storage(SD/SDHC/SDXC) or NAS recording at Event Triggers
Audio In	No
Audio out	No
Pixel Counter	Support
Network	
Ethernet	RJ-45 (10/100BASE-T)
Video Compression Format	H.265/H.264 (MPEG-4 Part 10/AVC) : Main/Baseline/High , Motion JPEG
Resolution	1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Max. Framerate	H.265/H.264 : Max. 60fps at all resolutions Motion JPEG : Max. 30fps
Smart Codec	Manual Mode (area-based : 5EA)
WiseStream II	Support
Video Quality Adjustment	H.264/H.265 : Target Bitrate Level Control MJPEG : Target Bitrate Level Control
Bitrate Control Method	H.264/H.265 : CBR or VBR MJPEG : VBR
Streaming Capability	Multiple Streaming (Up to 5 Profiles)
Audio Compression Format	No
Audio Communication	No
IP	IPv4, IPv6
Protocol	TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour
Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1X Authentication (EAP-TLS, EAP-LEAP)
Streaming Method	Unicast / Multicast
Max. User Access	20 users at Unicast Mode

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:
KES-E1-18T0155-R1
Page (6) of (60)

Edge Storage	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
Application Programming Interface	ONVIF Profile S/G SUNAPI(HTTP API) Open Platform
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish,, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Web Viewer	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 38, Mozilla Firefox 49(Window 64bit only) , Apple Safari 9 (Mac OS X only)
Central Management Software	SmartViewer, SSM
Environmental	
Operating Temperature / Humidity	-40°C ~ +55°C (-40°F ~ +131°F) / Less than 90% RH
Storage Temperature / Humidity	-50°C ~ +60°C (-58°F ~ +140°F) / Less than 90% RH
Ingress Protection	IP66
Vandal Resistance	IK10
Electrical	
Input Voltage / Current	PoE
Power Consumption	Max 11W
Mechanical	
Color / Material	Dark gray / Aluminum
Dimension (WxHxD)	φ91 x L322.9mm
Weight	1,298g

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



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	XNO-L6080R	-	HANWHA TECHWIN (TIANJIN) CO., LTD	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Laptop	LG15N54	410NZET022292	LG electronics Inc.	-
Laptop Adaptor	DA-1900-08	9700591703	Dongguang Lite Power 2nd Plant	-
Micro SD Card	-	-	SanDisk	16 GB
Offsite PoE	-	-	-	-

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:

KES-E1-18T0155-R1

Page (8) of (60)

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)	Offsite PoE	RJ-45 (PoE)	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
Offsite PoE	RJ-45 (Data)	Laptop	RJ-45 (Data)	3.0	U

* Unshielded=U, Shielded=S

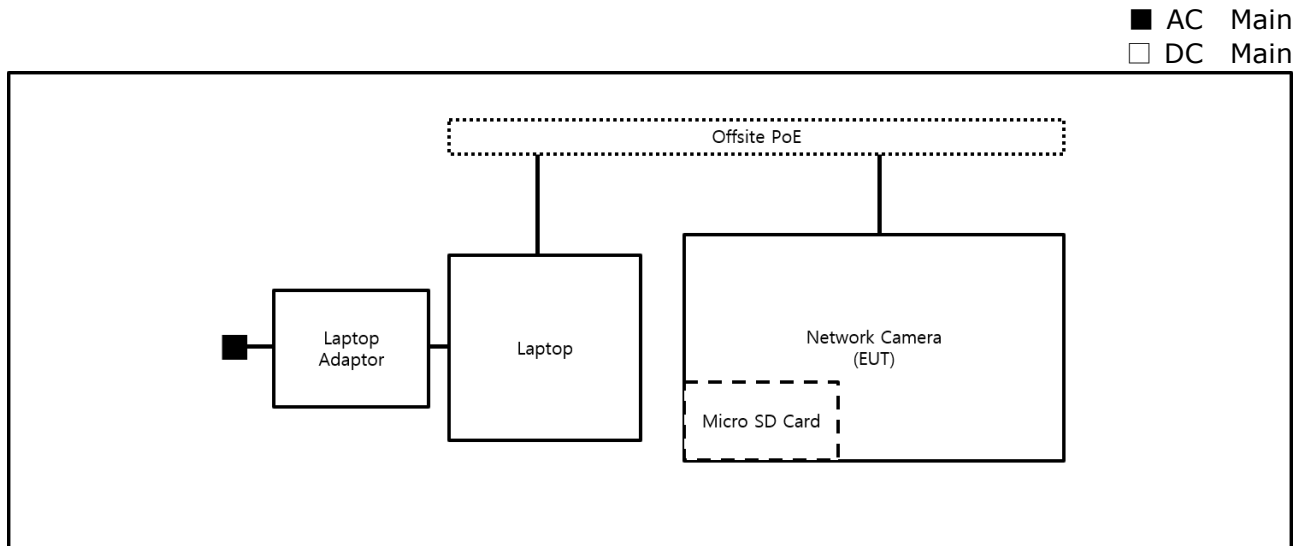
1.7 EUT Operating Mode(s)

Test Mode	operating
PoE	EUT Monitoring, Ping Test

EUT Test operating S/W		
Name	Version	Manufacture Company
Webviewer	-	Hanwha Techwin Co., Ltd.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

1.8 Configuration



1.9 Remarks when standards applied

N/A

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. The sites are constructed in conformance with the requirements of ANSI C63.4:2014 and CISPR 16-1-4:2012

1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Accreditation No
KOREA	RRA	EMI (3 m & 10 m Semi-Aechoic 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-Aechoic Chamber , and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Aechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Aechoic Chamber and Conducted test site	 23298-1
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-4308, C-4798, T-2311, G-914
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Aechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 17 07 01633 001



2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010

☐ Group 1

☐ Group 2

☐ Class A

☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 61547:2009

☒ EN 55032:2012/AC:2013

☒ Class A

☐ Class B

☐ EN 55024:2010 +A1:2015

☒ EN 50130-4:2011

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:
KES-E1-18T0155-R1
Page (12) of (60)

-
- | | | |
|---|----------------------------------|----------------------------------|
| ☐ VCCI V-3 / 2015.04 | ☐ Class A | ☐ Class B |
| ☐ AS/NZS CISPR22:2009 +A1:2010 | ☐ Class A | ☐ Class B |
| ☐ 47 CFR Part 15, Subpart B | | |
| ☐ CISPR 22:2009 +A1:2010 | ☐ Class A | ☐ Class B |
| ☐ ANSI C63.4-2009 | | |
| ☐ IC Regulation ICES-003 : 2016 | | |
| ☐ CAN/CSA CISPR 22-10 | ☐ Class A | ☐ Class B |
| ☐ ANSI C63.4-2014 | | |
| ☐ RE- Directive 2014/53/EU | | |
| ☐ EN 301 489-1 V1.9.2 | | |
| ☐ Equipment for fixed use | | |
| ☐ Equipment for vehicular use | | |
| ☐ Equipment for portable use | | |
| ☐ EN 301 489-3 V1.6.1 | | |
| ☐ EN 301 489-17 V2.2.1 | | |
| ☐ EN 60945:2002 | | |

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



2.1 Conducted Emissions at Mains Power Ports

Test Date

N/A

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	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
☐	LISN	NNBM8124	SCHWARZBECK	8124-1002	08, 07, 2018
☐	LISN	NNBM8124	SCHWARZBECK	8124-1003	08, 07, 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

Remarks

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



2.2 Conducted Emissions at Telecommunication Ports

Test Date

Feb. 05, 2018

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	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
☒	8-WIRE ISN CAT3,5	ENY81	R & S	100174	01, 07, 2019
☐	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	01, 07, 2019
☐	ISN	ISN S8	SCHWARZBECK	ISN-S8-0019	05, 12, 2018
☐	CDN	CDNS502A	TESEQ	40431	01, 05, 2019

Test Conditions

Temperature: 22,0 °C
Relative Humidity: 41,7 % 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

Remarks

See Appendix A for test data.



2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Feb. 03, 2018

Test Location

☐ OPEN AREA TEST SITE #2

☒ 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	04, 18, 2018
☒	AMPLIFIER	SCU 01	R & S	100603	11, 27, 2018
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	716	11, 28, 2018

Test Conditions

Temperature: 21,4 °C

Relative Humidity: 42,0 % 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

Remarks

See Appendix A for test data.



2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Feb. 03, 2018

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	04, 17, 2018
☒	PREAMPLIFIER	8449B	AGILENT	3008A01742	01, 11, 2019
☐	ATTENUATOR	8491A	HP	32173	03, 24, 2018
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 02, 2019

Test Conditions

Temperature: 21,4 °C
Relative Humidity: 42,0 % 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.

3.0 Criteria for compliance

Criteria for compliance was based on the following guidelines:

EN 50130-4:2011 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 61000-4-2:2009

Test Date

Feb. 06, 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	10, 11, 2018
☒	HCP	-	KES	-	-
☒	VCP	-	KES	-	-

Test Conditions

Temperature: 20,9 °C
Relative Humidity: 42,2 % R.H.
Atmospheric Pressure: 101,0 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

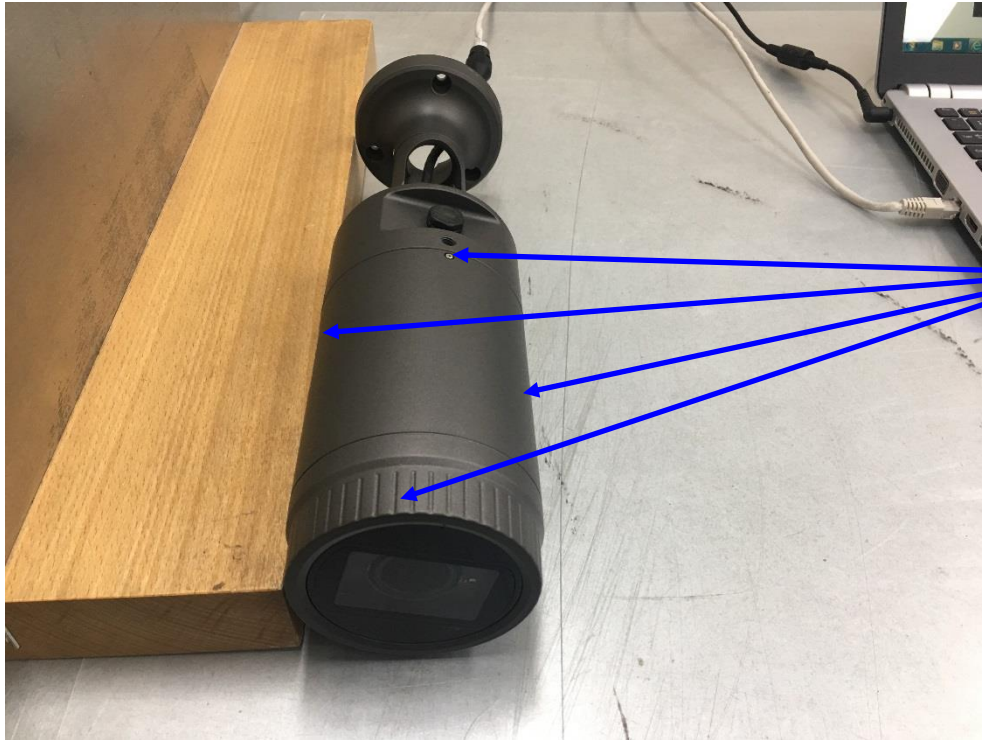
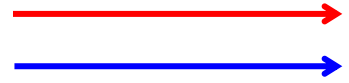
Notes: HCP: Horizontal coupling plane

VCP: Vertical coupling plane

Required Performance Criteria: ☒ Complied

Location of Discharge:

Air
Contact



1

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:

KES-E1-18T0155-R1

Page (23) of (60)

Test Data**Indirect Discharge**

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

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	Enclosure and screw	Contact Discharge	Complied	-

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

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

RemarksPASS Required Performance Criteria.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



3.2 Radiated Electric Field Immunity

Reference Standard

EN 61000-4-3:2006 +A2:2010

Test Date

Feb. 05, 2018

Test Location

EMS-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	R & S	177586	08, 07, 2018
☒	BROADBAND AMPLIFIER	BBA100	R & S	101239	08, 07, 2018
☒	BROADBAND AMPLIFIER	100S1G6M1	AR	579931	08, 07, 2018
☒	POWER METER	NRP2	R & S	103475	08, 07, 2018
☒	AVG POWER SENSOR	NRP-Z91	R & S	102526	08, 07, 2018
☒	AVG POWER SENSOR	NRP-Z91	R & S	102527	08, 07, 2018
☒	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
☒	DIRECTIONAL COUPLER	KYDC-D1070-DX40	KY TELECOM	KY150001	08, 07, 2018
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM, INC	781	05, 02, 2019

Test Conditions

Temperature: 21,0 °C
Relative Humidity: 43,0 % R.H.
Atmospheric Pressure: 101,5 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

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:

KES-E1-18T0155-R1

Page (26) of (60)

Test Data

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.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



3.3 Electrical Fast Transients/Bursts

Reference Standard

EN 61000-4-4:2012

Test Date

Feb. 06, 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: 20,9 °C
Relative Humidity: 42,2 % R.H.
Atmospheric Pressure: 101,1 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: ☒ Complied

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:

KES-E1-18T0155-R1

Page (28) of (60)

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	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.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



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: 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

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:

KES-E1-18T0155-R1

Page (31) of (60)

Test Data☐ Line to Earth – Common Mode

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

Signal Lines☐ Line to Earth – Common Mode

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

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results☐ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**N/A : Because the EUT power is PoE, limits are not specified.

3.5 Conducted Disturbance

Reference Standard

EN 61000-4-6:2014

Test Date

Feb. 06, 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: 20,9 °C
Relative Humidity: 42,2 % R.H.
Atmospheric Pressure: 101,1 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

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:

KES-E1-18T0155-R1

Page (33) of (60)

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	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 61000-4-11:2004

Test Date

N/A

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	5.4.7	-
☐	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 27, 2018
☐	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2018

Test Conditions

Temperature:

°C

Relative Humidity:

% R.H.

Atmospheric Pressure:

kPa



Test Specifications & Observations/Remarks

(Test Voltage : 230 V)

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

- Voltage variations

☐ Unom + 10 %	☐ 253.0 V (ac)	<u>N/A</u>
☐ Unom - 15 %	☐ 195.5 V (ac)	<u>N/A</u>

Observations:

Complied – No degradation of function

Test Results

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

Remarks

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



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:
KES-E1-18T0155-R1
Page (36) of (60)

APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

N/A

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:
KES-E1-18T0155-R1
Page (37) of (60)

[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))

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



Conducted Emissions at Telecommunication Ports

[10 Mbps]

Common Information

Test Description:

Telecommunication Emission

Model No.:

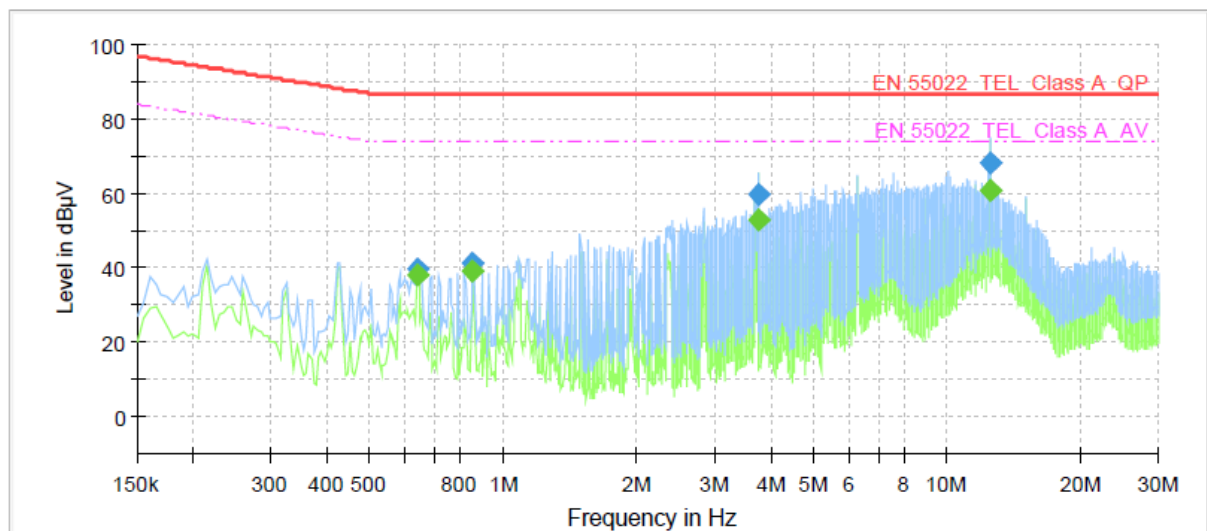
XNO-L6080R

Mode

PoE 10Mbps

Operator Name:

KES



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.640000	---	37.90	74.00	36.10	1000.0	9.000	Single Line	19.5
0.640000	39.59	---	87.00	47.41	1000.0	9.000	Single Line	19.5
0.855000	---	38.94	74.00	35.06	1000.0	9.000	Single Line	19.7
0.855000	41.46	---	87.00	45.54	1000.0	9.000	Single Line	19.7
3.750000	---	52.74	74.00	21.26	1000.0	9.000	Single Line	19.6
3.750000	59.85	---	87.00	27.15	1000.0	9.000	Single Line	19.6
12.500000	---	60.76	74.00	13.24	1000.0	9.000	Single Line	19.8
12.500000	68.13	---	87.00	18.87	1000.0	9.000	Single Line	19.8

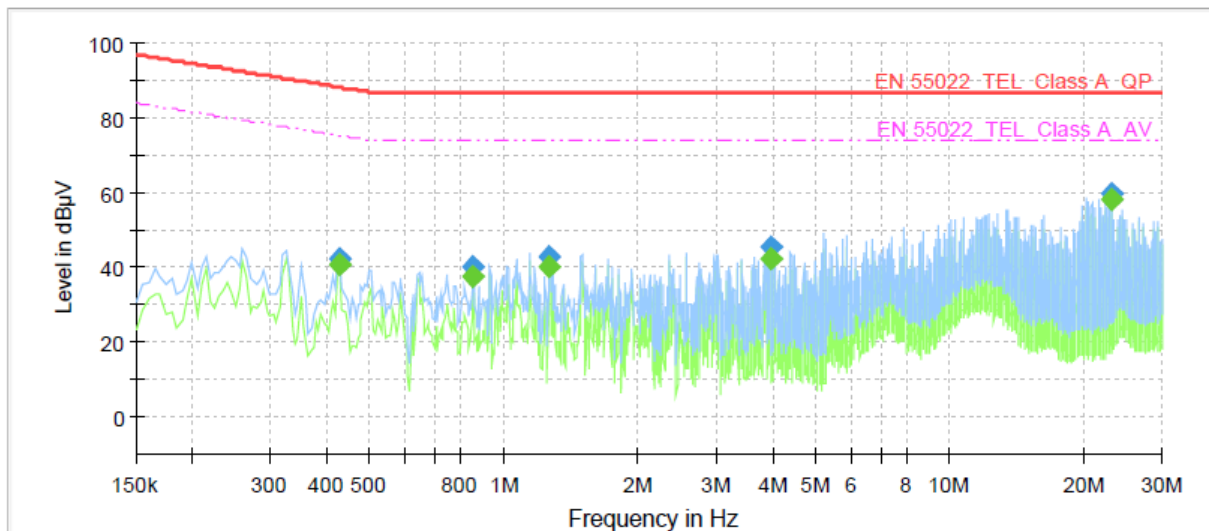
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

[100 Mbps]

Common Information

Test Description:
Model No.:
Mode
Operator Name:

Telecommunication Emission
XNO-L6080R
PoE 100Mbps
KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.430000	---	40.99	75.25	34.26	1000.0	9.000	Single Line	19.3
0.430000	42.11	---	88.25	46.14	1000.0	9.000	Single Line	19.3
0.855000	---	37.52	74.00	36.48	1000.0	9.000	Single Line	19.6
0.855000	40.39	---	87.00	46.61	1000.0	9.000	Single Line	19.6
1.265000	---	40.24	74.00	33.76	1000.0	9.000	Single Line	19.7
1.265000	42.75	---	87.00	44.25	1000.0	9.000	Single Line	19.7
3.955000	---	42.20	74.00	31.80	1000.0	9.000	Single Line	19.4
3.955000	45.33	---	87.00	41.67	1000.0	9.000	Single Line	19.4
23.130000	---	58.01	74.00	15.99	1000.0	9.000	Single Line	20.1
23.130000	59.70	---	87.00	27.30	1000.0	9.000	Single Line	20.1

◆ 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))



KES Co., Ltd.

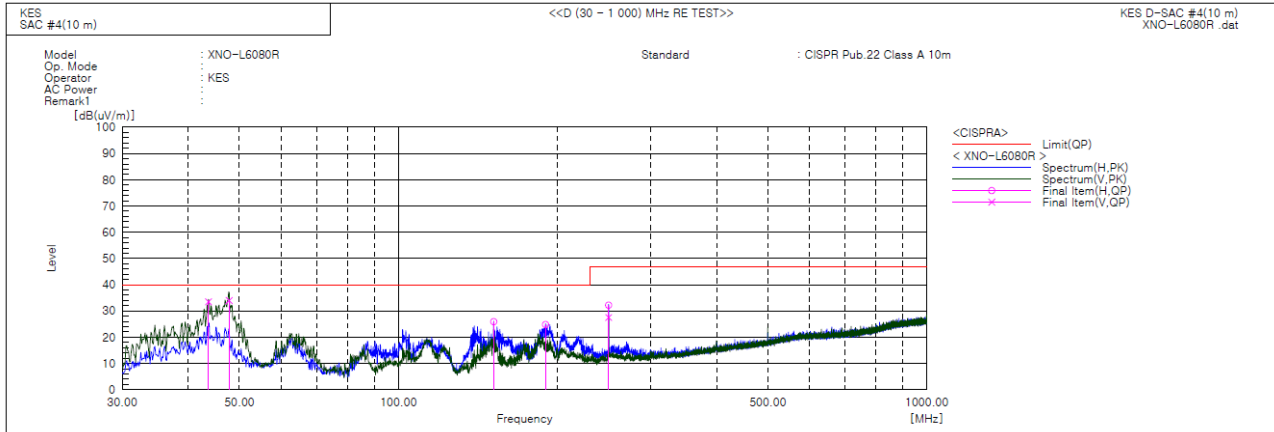
3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:

KES-E1-18T0155-R1

Page (40) of (60)

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	43.701	V	62.0	-28.5	33.5	40.0	6.5	100.0	65.0	
2	47.804	V	62.3	-28.3	34.0	40.0	6.0	213.0	185.0	
3	151.493	H	57.9	-32.0	25.9	40.0	14.1	400.0	210.0	
4	189.808	H	53.4	-28.6	24.8	40.0	15.2	400.0	221.0	
5	249.948	H	58.4	-26.2	32.2	47.0	14.8	400.0	244.0	
6	249.948	V	53.7	-26.2	27.5	47.0	19.5	100.0	152.0	

◆ Calculation – SEMI ANECHOIC CHAMBER #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



KES Co., Ltd.

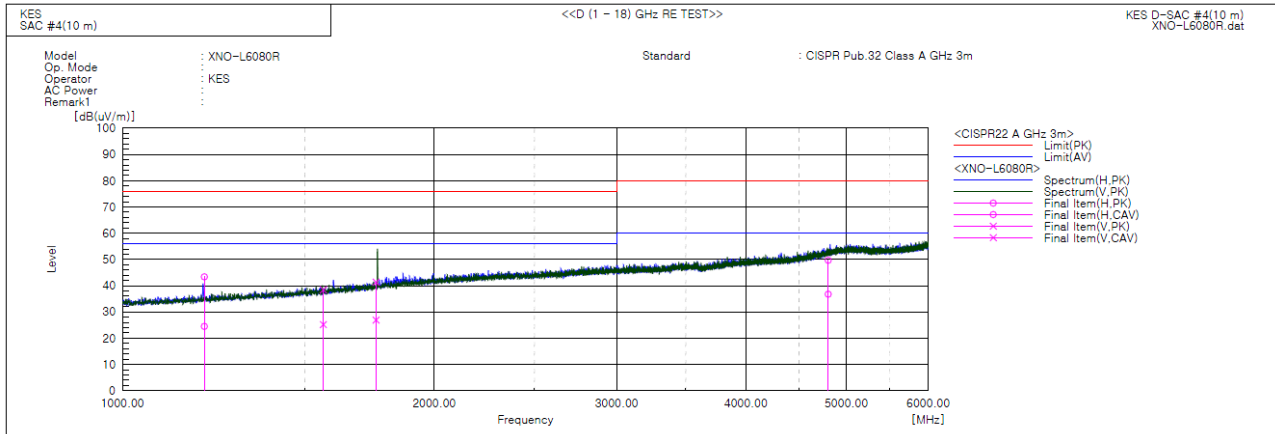
3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:

KES-E1-18T0155-R1

Page (41) of (60)

Radiated Electric Field Emissions(Above 1 GHz)



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1200.025	H	50.4	31.5	-7.0	43.4	24.5	76.0	56.0	32.6	31.5	208.0	168.0	
2	1563.213	V	41.7	28.5	-3.3	38.4	25.2	76.0	56.0	37.6	30.8	213.0	5.0	
3	1757.763	V	42.5	28.0	-1.1	41.4	26.9	76.0	56.0	34.6	29.1	316.0	88.0	
4	4803.063	H	36.0	23.0	13.7	49.7	36.7	80.0	60.0	30.3	23.3	352.0	316.0	

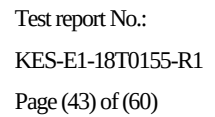
◆ Calculation

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

Margin(PK/CAV)[dB] = Limit[dB(μ V/m)] - Result(PK/CAV) [dB(μ V/m)]

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

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



**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:
KES-E1-18T0155-R1
Page (44) of (60)

Test Data - Voltage Fluctuations**Maximum Flicker results**

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

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:
KES-E1-18T0155-R1
Page (45) of (60)

Test Setup Photos and Configuration

Conducted Voltage Emissions

N/A

N/A

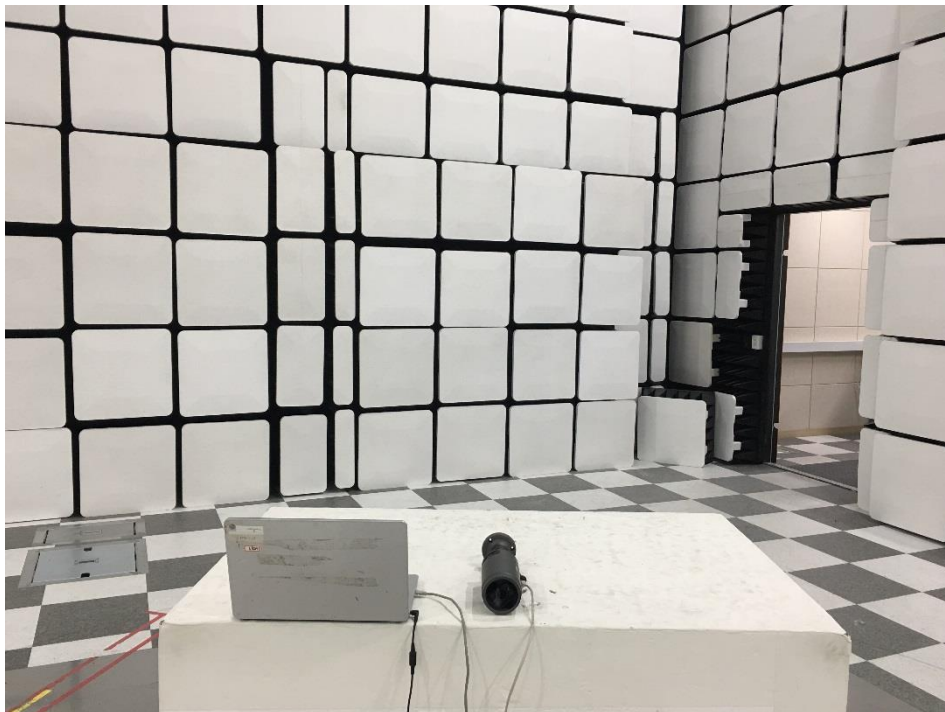
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

Conducted Telecommunication Emissions



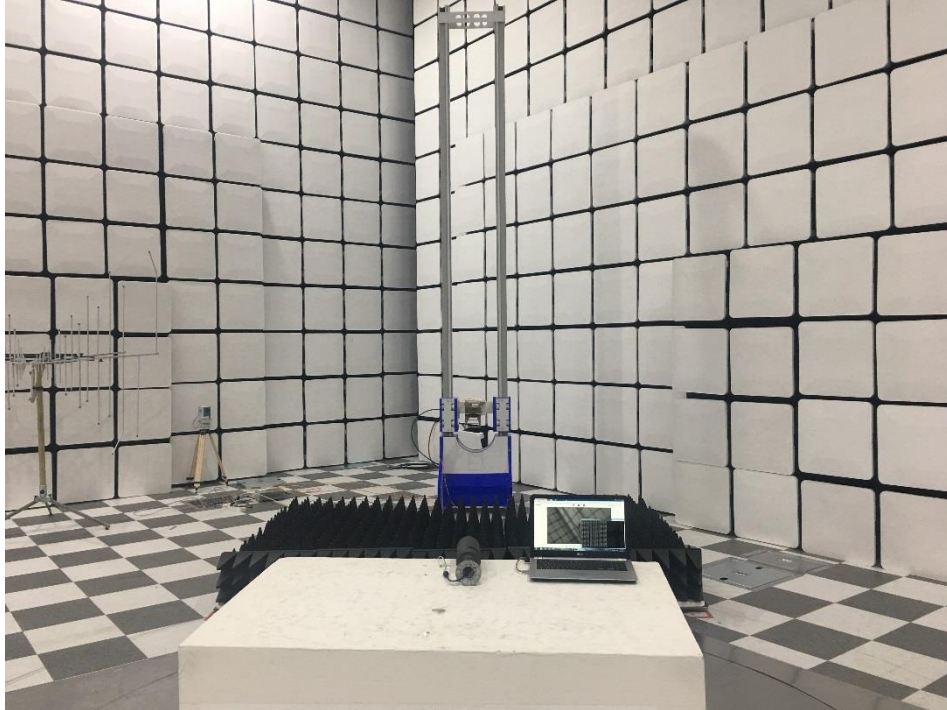
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

Radiated Electric Field Emissions(Below 1 GHz)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

Radiated Electric Field Emissions(Above 1 GHz)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:
KES-E1-18T0155-R1
Page (49) of (60)

Harmonic Current Emissions and Voltage Fluctuations and Flicker

N/A

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

Electrostatic Discharge



Radiated Electric Field Immunity



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

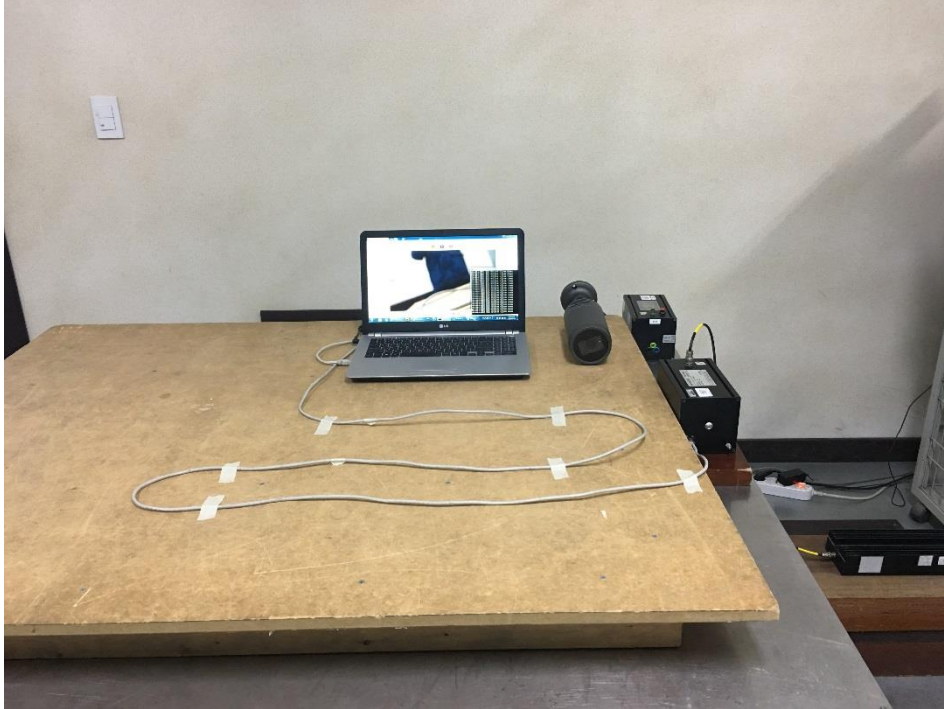
Electrical Fast Transients/Bursts



Surge Transients

N/A

Conducted Disturbance



Voltage Dips and Short Interruptions

N/A

EUT External Photographs

(Top)



(Bottom)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

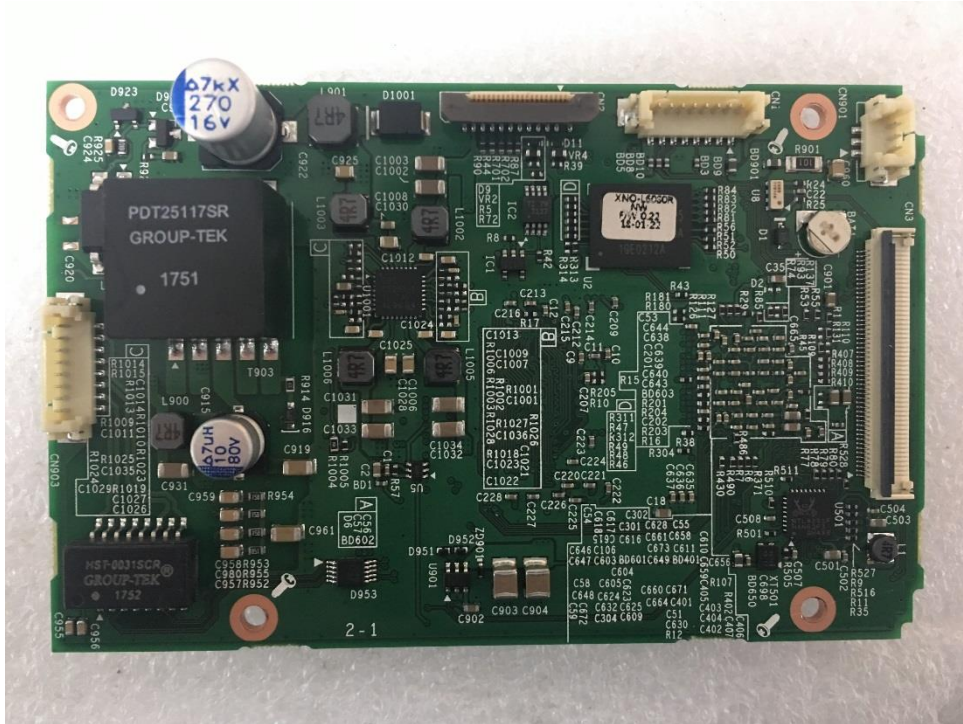
EUT Internal Photographs

(Internal View)

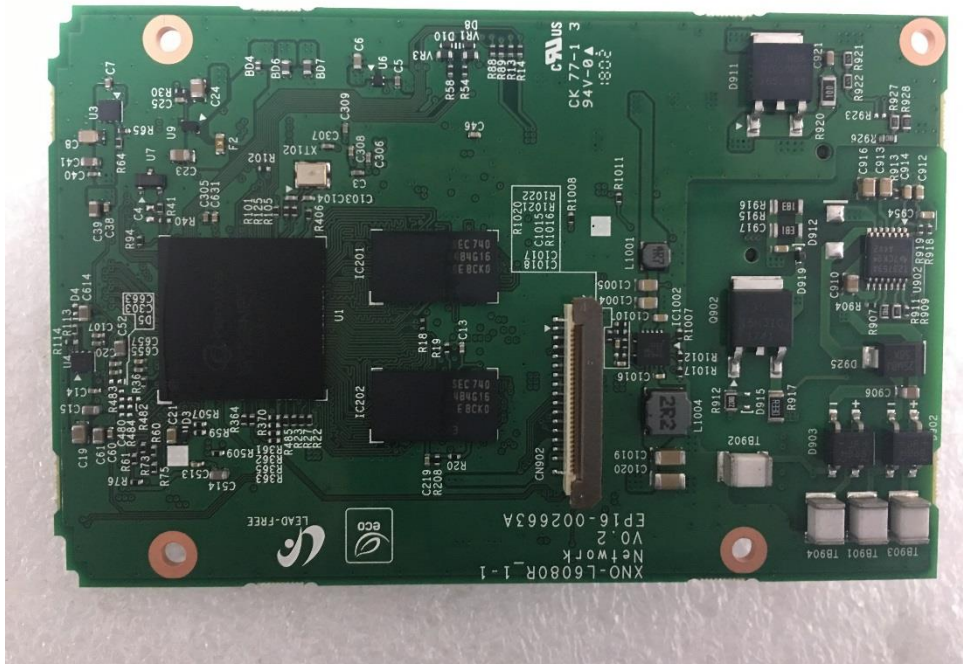


EUT Internal View – board 1

(Top)



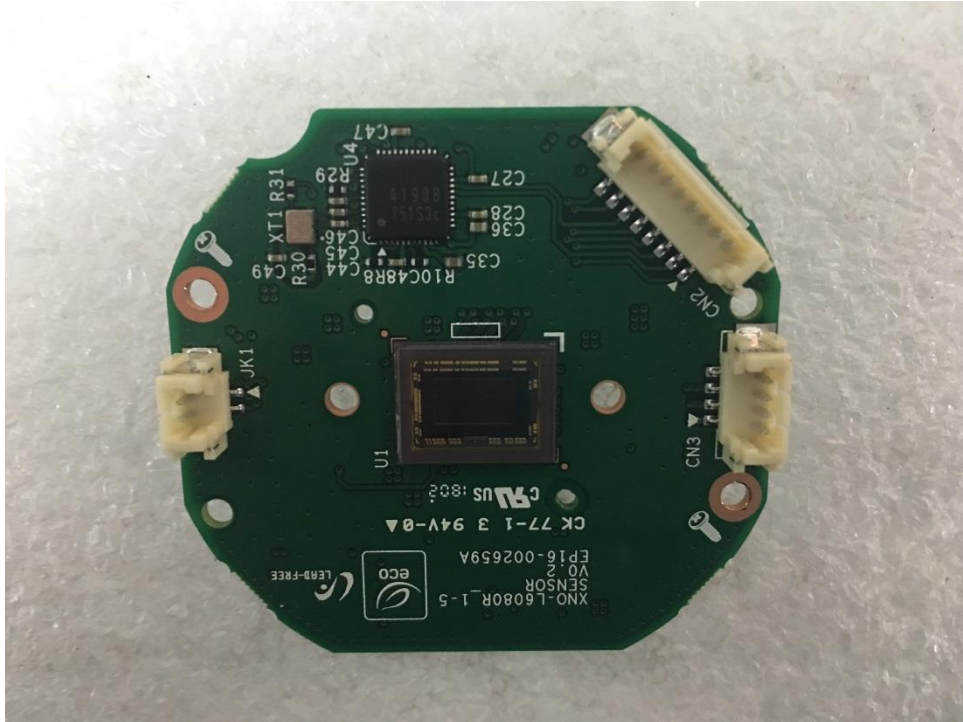
(Bottom)



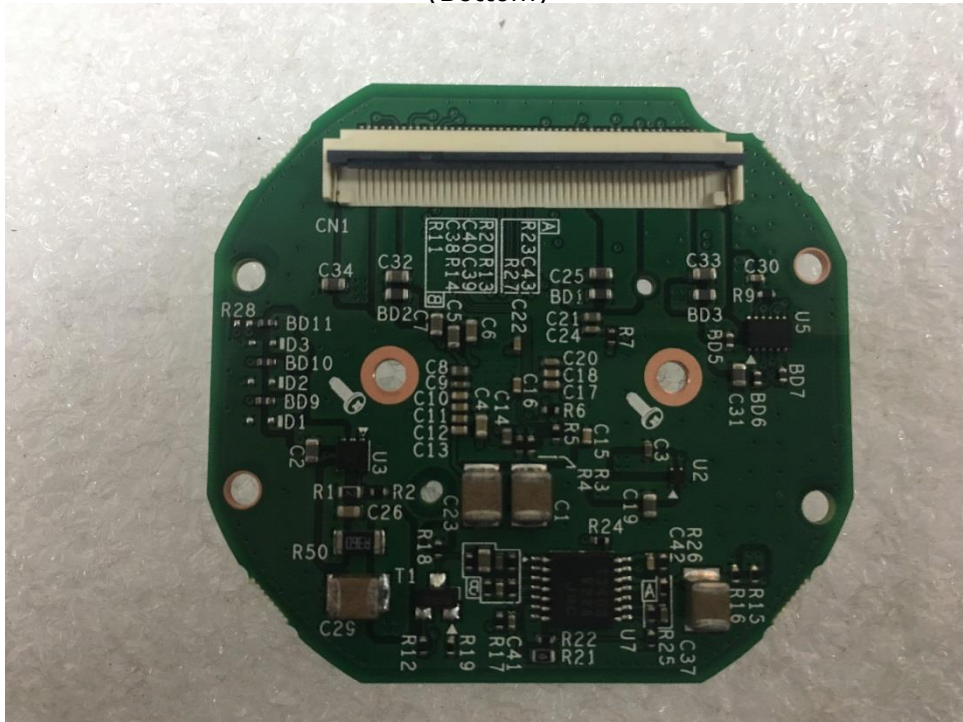
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

EUT Internal View – board 2

(Top)



(Bottom)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

EUT Internal View – board 3

(Top)



(Bottom)



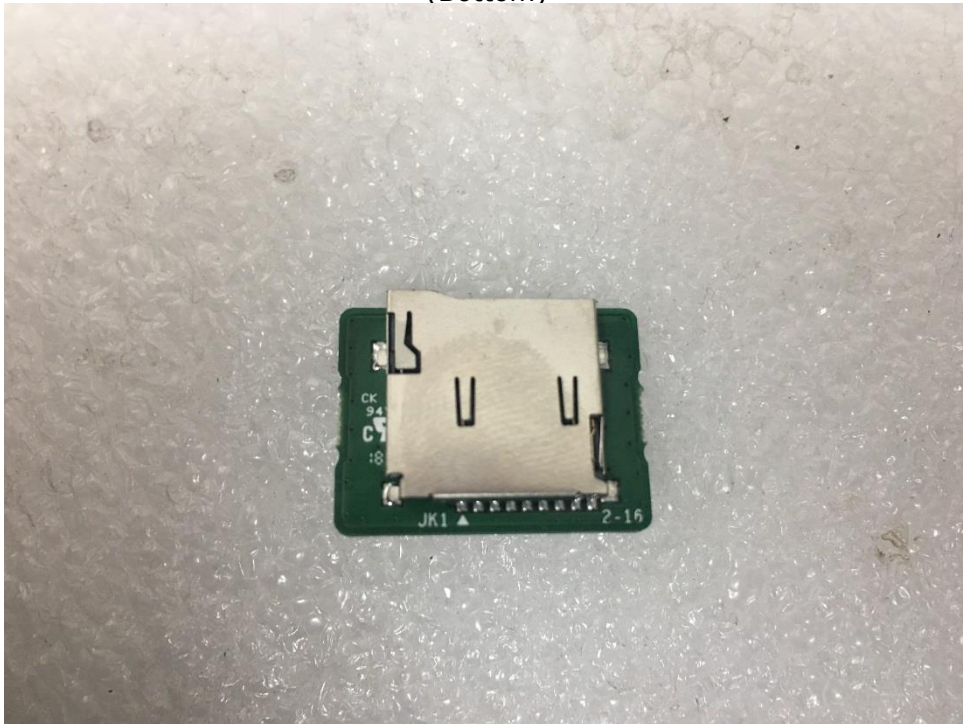
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

EUT Internal View – board 4

(Top)



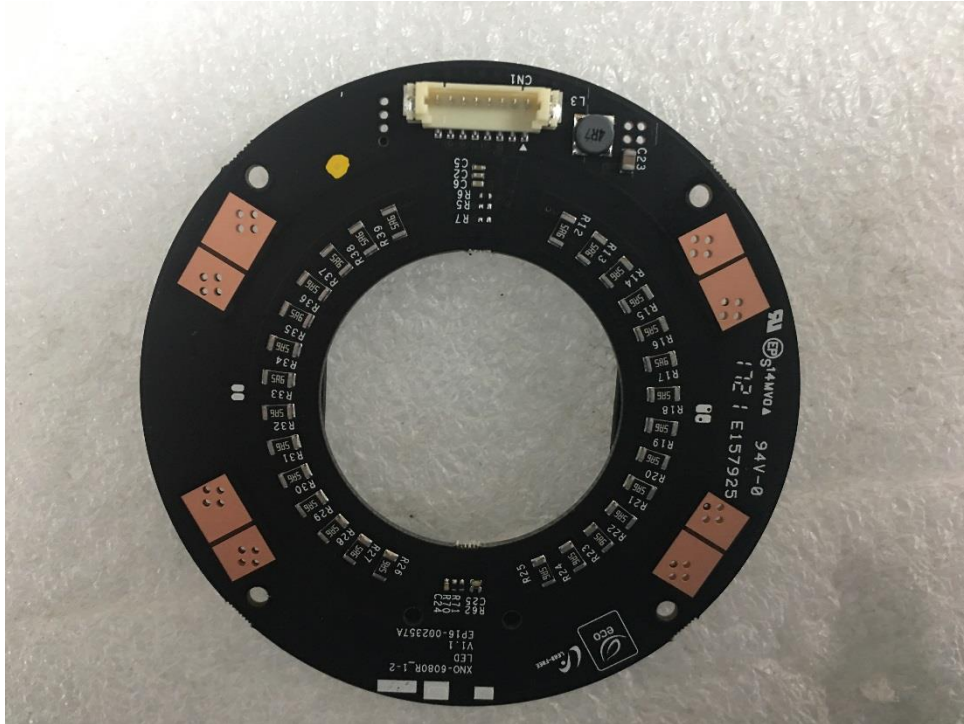
(Bottom)



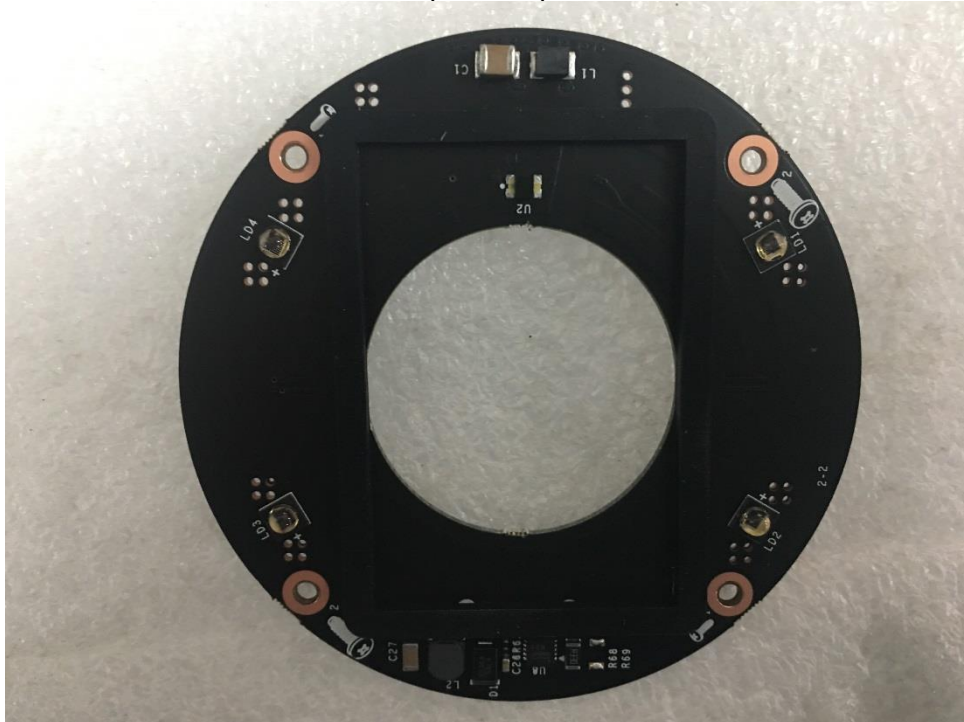
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

EUT Internal View – board 5

(Top)



(Bottom)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

Label and Location



Network Camera

Model No : XNO-L6080R

Manufacturer : HANWHA TECHWIN(TIANJIN)CO., LTD

Made in China

