Thank you for giving UL the opportunity to partner with you.
Please note, Follow-Up Procedure Revisions or Report Revisions do not include Authorization Pages, Indices, Section General, and/or Appendices unless revisions were required or requested.

Should you have any questions, after reviewing the material, or need to report any inaccuracies, please reach out to your UL representative or find UL contact details for your local Customer Service Department at https://www.ul.com/about/locations.

Please find attached the related material on Project

For your convenience, the below describes the related updates:

E158873-A161-DescriptionUL
Figure-12-Total

This material is provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Times change, Trust Remains™

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2019-05-09 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Listing
CCN:	NWGQ, NWGQ7 (Information Technology Equipment Including Electrical Business Equipment)
Complementary CCN:	N/A
Product:	NETWORK CAMERA
Model:	XNV-8080R*, XNV-6080R*, XNV-6080*, XNV-6120R*, XNV-6120* (* is blank or N or P: N = NTSC, P=PAL) , XNV-8080RS, XNV-6080RS, XNV-6120RS, XNV-6120RSA, XNV-6080RSA, XNV-8080RSA
Rating:	For Models XNV-8080R*, XNV-6080R*, XNV-6120R*, XNV-8080RS, XNV-6080RS, XNV-6120RS, XNV-6120RSA, XNV-6080RSA, XNV-8080RSA: 24 Vac, 50/60 Hz, 1.1A or 37-57 Vdc(PoE), 0.35 A or 12 Vdc. 1.0A For Model XNV-6080*, XNV-6120*, : 24 Vac, 50/60 Hz, 0.67 A or 37-57 Vdc(PoE), 0.22 A or 12 Vdc. 0.65 A
Applicant Name and Address:	Hanwha Vision Co Ltd 6, Pangyo-ro 319beon-gil, Bundang-gu Seongnam-si Gyeonggi-do KR 13488

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared By: Lawrence Lee / Project Handler Reviewed By: ByeongUk Lee / Reviewer

Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

A. Authorization - The Authorization page may include additional Factory Identification Code markings.

B. Generic Inspection Instructions -

i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.

ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.

iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

NETWORK CAMERA employing LED circuit.

Model Differences

Basic model is XNV-8080R*. (* is blank or N or P: N = NTSC, P=PAL)

Model XNV-6080R*, XNV-6120R*, XNV-8080RS, XNV-6080RS, XNV-6120RS, XNV-6080*, XNV-6120*, XNV-6120RSA, XNV-6080RSA, XNV-8080RSA are identical to basic model XNV-8080R* except for below differences.

- XNV-8080R*: Resolution: 5 M, IR LED used, Aluminium enclosure.
- XNV-8080RS: Resolution: 5 M, IR LED used, Stainless steel enclosure.

- XNV-6080R*: Resolution: 2 M, IR LED used, Aluminium enclosure.
- XNV-6080RS: Resolution: 2 M, IR LED used, Stainless steel enclosure.

- XNV-6120R*: Resolution: 2 M, IR LED used, Aluminium enclosure.
- XNV-6120RS: Resolution: 2 M, IR LED used, Stainless steel enclosure.

- XNV-6080*: Resolution: 2 M, IR LED not used, Aluminium enclosure.
- XNV-6120: Resolution: 2 M, IR LED not used, Aluminium enclosure.

Test Item Particulars

Equipment mobility	stationary
Connection to the mains	No direct connection
Operating condition	continuous
Access location	operator accessible
Over voltage category (OVC)	OVC II
Mains supply tolerance (%) or absolute mains supply values	No direct connection
Tested for IT power systems	No
IT testing, phase-phase voltage (V)	N/A
Class of equipment	Class III (supplied by SELV)

Considered current rating of protective device as part of the building installation (A)	N/A
Pollution degree (PD)	N/A
IP protection class	IP X0
Altitude of operation (m)	Up to 2 000
Altitude of test laboratory (m)	Less than 2 000
Mass of equipment (kg)	1.12 or 2.61 for model XNV-8080RS

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : 55
- The product was investigated to the following additional standards : IEC 62471:2006(1st edition)
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual
- LEDs provided in the product are considered low power devices : Yes
- Marking Label is representatives of all models

Additional Information

4787709716
Unit is operated continuously with LED.

4787939920
Add model name; XNV-6120R*, XNV-6120*

Revision (4788315683)
- Update model name: XNV-8080RS, XNV-6080RS, XNV-6120RS.
- Alternate enclosure material (Stainless steel) for Model XNV-8080RS, XNV-6080RS, XNV-6120RS.

4789012312.5 (Revision)
1. Revise a model name : add a "Blank" on *.
2. Change an Applicant Address :
- Address : From '1204 CHANGWON-DAERO SEONGSAN-GU CHANGWON-SI GYEONGSANGNAM-DO 51542
KOREA' to '6, PANGYO-RO 319BEON-GIL, BUNDANG-GU, SEONGNAM-SI, GYEONGGI-DO, 13488, REPUBLIC OF KOREA'

4789551023
1. Add model name; XNV-6120RSA, XNV-6080RSA, XNV-8080RSA.

Revision: SR# 5808800.1466086
Update Applicant Name to Hanwha Vision Co Ltd

4791302296
- Delete CCL: Internal Wiring (Secondary), Cable, Connectors and Receptacles (Secondary circuits).

Additional Standards

The product fulfills the requirements of: N/A

Markings and Instructions

Clause Title	Marking or Instruction Details

Power rating - Ratings	
Power rating - Company identification	Listee’s or Recognized companys name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Replaceable batteries	"CAUTION: Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions."
Installation Manual - UL Listed PoE Source	The following statement or similar shall be included in the User Manual: The wired LAN hub providing power over the Ethernet (PoE) in accordance with IEEE 802-3af shall be a UL Listed device with the output evaluated as a Limited Power Source as defined in UL60950-1.
Installation Manual - Network Environment	The following statement or similar shall be included in the User Manual: Unit is intended for installation in a Network Environment 0 as defined in IEC TR 62102. As such, associated Ethernet wiring shall be limited to inside the building.
Special Instructions to UL Representative N/A	

BD1.0	TABLE: Production-Line Testing Requirements					
BD1.1	**Electric Strength Test Special Constructions – Refer to Generic Inspection Instructions, Part AC for further information.**					
Model	Component	Removable parts	Test probe location	Test V rms	Test V dc	Test Time, s
BD1.2	**Earthing Continuity Test Exemptions – This test is not required for the following models:**					
	All models					
BD1.3	**Electric Strength Test Exemptions – This test is not required for the following models:**					
	All models					
BD1.4	**Electric Strength Test Component Exemptions – The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test:**					

BE1.0	Sample and Test Specifics for Follow-Up Tests at UL				
Model	Component	Material	Test	Sample (s)	Test Specifics

1.5.1	TABLE: List of critical components					Pass
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Product Category CCN(s)	Mark(s) of conformity	Supplement ID
Power Supply (Optional)For model XNV-8080R*, XNV-6080R*	Interchangeable	Interchangeable	Rated output DC 12 V, Min. 1.0 A, marked "LPS" or "Class 2"	QQGQ or EPBU	UL	
Power Supply (Optional)For model XNV-8080R*, XNV-6080R*	Interchangeable	Interchangeable	Rated output AC 24 V, 50/60 Hz, Min. 1.1 A, marked "LPS" or "Class 2"	QQGQ or EPBU	UL	
Power Supply (Optional)For model XNV-6080*	Interchangeable	Interchangeable	Rated output DC 12 V, Min. 0.65 A, marked "LPS" or "Class 2"	QQGQ or EPBU	UL	
Power Supply (Optional)For model XNV-6080*	Interchangeable	Interchangeable	Rated output AC 24 V, 50/60 Hz, Min. 0.67 A, marked "LPS" or "Class 2"	QQGQ or EPBU	UL	
Label	Interchangeable	Interchangeable	Min.70 deg. C if max. surface temperature not specified.	PGDQ2 or PGJI2	USR	
Enclosure (Aluminium) for model XNV-8080R*, XNV-6080R*, XNV-6080*, XNV-6120R*, XNV-6120*	Interchangeable	Interchangeable	Aluminium, overall Approximately 160 by 118.5 mm. Min. 2.0 mm thickness.	-	-	
Enclosure (Stainless steel) for model XNV-8080RS, XNV-6080RS	Interchangeable	Interchangeable	Stainless steel, overall Approximately 160 by 118.5 mm. Min. 2.0 mm thickness.	-	-	
Enclosure (Stainless steel) for model XNV-6120RS	Interchangeable	Interchangeable	Stainless steel, overall Approximately 162 by 130.45 mm. Min. 2.0 mm thickness.	-	-	

Dome Enclosure (Plastic)	SABIC JAPAN L L C	HF1130R(f2)	Min. 1.5 mm thickness, rated V-2, 130 deg. C	QMFZ2	USR (E207780)	
Internal Plastic Part Materials	LOTTE ADVANCED MATERIALS CO LTD	NH-1035(+)	Min. 1.5 mm thickness, rated Min. V-0, 80 deg. C.	QMFZ2	USR (E115797)	
Fuse (F101)	LITTELFUSE INC	449*	125 V, 2 A	JDYX2	USR (E10480)	
Transformer(T203)	SHENZHENGROUP-TEK ELECTRONICS TECHNOLOGY CO., LTD	EE1936R	130 deg. C	-	-	
Optocoupler (LS201)	LITE-ON TECHNOLOGY CORP	LTV-816	Isolation Voltage: 5300 Vrms, Max. Operation Temperature 110 deg. C	FPQU2	USR (E113898)	
DC Fan	MINEBEA CO LTD	1204KL-04W-B39	Rated 12 V d.c, 0.09 A, m: 0.009, r: 15, N:7500 K=68.347500/15000+68.34/2400= 0.53 < 1	GPWV2	USR (E89936)	
Choke (FL201)	SHENZHENGROUP-TEK ELECTRONICS TECHNOLOGY CO., LTD	PCM10021R	Rated Min. 18.0 mH, Base: V-0, RTI 130 deg. C	-	-	
Choke (U201)	SHENZHENGROUP-TEK ELECTRONICS TECHNOLOGY CO., LTD	PCM10020R	Rated Min. 3.0 mH, Base: V-0, RTI 130 deg. C	-	-	
Elec-capacitor (C204, C205)	Interchangeable	Interchangeable	Rated 50 V, 470 uF, 105 deg. C	-	-	
Relay (RLY201)	FUJITSU COMPONENT LIMITED	FTR-B3 Series	Open type Rated 12 V d.c., 140 mW	NRNT2	USR(E63615)	

Lithium Battery (BAT691)	SEIKO INSTRUMENTS INC MICRO-ENERGY DIV	ML414H	Lithium (Coin), Rechargeable, Max. 3.4 Vdc, Max. 300 mA	BBCV2	USR (MH15628)	
FPWB	Interchangeable	Interchangeable	Min. V-0 80 deg. C.	QMFZ2 or QMTS2	USR	
LED	OSRAM Opto Semiconductors GmbH	SFH4715A	VF =Max. 2.5 Vd.c., IF=Max. 2.0 A	-	-	
PWB	Interchangeable	Interchangeable	Min. V-1, 105 deg. C.	ZPMV2	USR	

Enclosures

Type	Supplement Id	Description
Photographs	03-01	Overall View
Photographs	03-02	Internal View
Photographs	03-03	PowerBoard Top View
Photographs	03-04	PowerBoard Bottom View
Photographs	03-05	Overall view for model XNV-8080RS, XNV-6080RS, XNV-6120RS
Photographs	03-06	Rear view for model XNV-8080RS, XNV-6080RS, XNV-6120RS.
Manuals	06-01	Manual
Manuals	06-02	Manual for model XNV-8080RS, XNV-6080RS, XNV-6120RS.
Miscellaneous	07-01	T203 specification
Miscellaneous	07-02	Label
Miscellaneous	07-03	LED test report
Miscellaneous	07-04	Dual language safety labeling CRD

WISENET

NETWORK CAMERA

User Manual

XND-6080/6080V/6080R/6080RV/8080R/8080RV
XNV-6080/6080R/8080R

CE

Network Camera
User Manual

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Disclaimer

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✧ **Design and specifications are subject to change without prior notice.**

✧ **The initial administrator ID is "admin" and the password should be set when logging in for the first time.**
Please change your password every three months to safely protect personal information and to prevent the damage of the information theft.
Please, take note that it's a user's responsibility for the security and any other problems caused by mismanaging a password.

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean the contaminated area on the product surface with a soft, dry cloth or a damp cloth.
   (Do not use a detergent or cosmetic products that contain alcohol, solvents or surfactants or oil constituents as they may deform or cause damage to the product.)
7. Do not block any ventilation openings, Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/ accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over.



13. Unplug this apparatus during lighting storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. This product is intended to be supplied by a Listed Power Supply Unit marked "Class 2" or "LPS" and rated from 12 Vdc, min.0.56 A. (XND-6080/6080V/6080R/6080RV/8080R/8080RV)
16. This product is intended to be supplied by a Listed Power Supply Unit marked "Class 2" or "LPS" and rated from 24 Vac (50/60 Hz) min.0.67 A or 12 Vdc, min.0.65 A. (XNV-6080/6080R/8080R)
17. If you use excessive force when installing the product, the camera may be damaged and malfunction.
    If you forcibly install the product using non-compliant tools, the product may be damaged.
18. Do not install the product in a place where chemical substances or oil mist exists or may be generated. As edible oils such as soybean oil may damage or warp the product, do not install the product in the kitchen or near the kitchen table.
    This may cause damage to the product.
19. When installing the product, be careful not to allow the surface of the product to be stained with chemical substance.
    Some chemical solvents such as cleaner or adhesives may cause serious damage to the product's surface.
20. If you install/disassemble the product in a manner that has not been recommended, the production functions/ performance may not be guaranteed.
    Install the product by referring to "Installation & connection" in the user manual.
21. Installing or using the product in water can cause serious damage to the product.

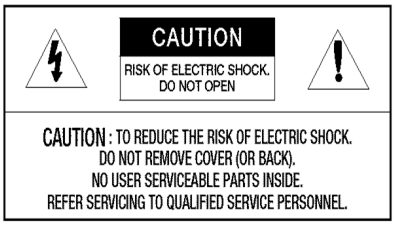
WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. DO NOT INSERT ANY METALLIC OBJECT THROUGH THE VENTILATION GRILLS OR OTHER OPENNINGS ON THE EQUIPMENT.

Apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.

To prevent injury, this apparatus must be securely attached to the Wall/ceiling in accordance with the installation instructions.

CAUTION



EXPLANATION OF GRAPHICAL SYMBOLS



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

Class I construction

An apparatus with CLASS I construction shall be connected to a MAINS socket outlet with a protective earthing connection.

Battery

Batteries(battery pack or batteries installed) shall not be exposed to excessive heat such as sunshine, fire or the like.

Disconnection Device

Disconnect the main plug from the apparatus, if it's defected. And please call a repair man in your location.

When used outside of the U.S., it may be used HAR code with fittings of an approved agency is employed.

CAUTION

Risk of explosion if battery is replaced by an incorrect type.
Dispose of used batteries according to the instructions.

These servicing instructions are for use by qualified service personnel only.
To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

The CVBS out terminal of the product is provided for easier installation, and is not recommended for monitoring purposes.

Please use the input power with just one camera and other devices must not be connected.

The ITE is to be connected only to PoE networks without routing to the outside plant.

Please read the following recommended safety precautions carefully.

- Do not place this apparatus on an uneven surface.
- Do not install on a surface where it is exposed to direct sunlight, near heating equipment or heavy cold area.
- Do not place this apparatus near conductive material.
- Do not attempt to service this apparatus yourself.
- Do not place a glass of water on the product.
- Do not install near any magnetic sources.
- Do not block any ventilation openings.
- Do not place heavy items on the product.
- Please wear protective gloves when installing/removing the camera.
  The high temperature of the product surface may cause a burn.

User's Manual is a guidance book for how to use the products.

The meaning of the symbols are shown below.

- Reference : In case of providing information for helping of product's usages
- Notice : If there's any possibility to occur any damages for the goods and human caused by not following the instruction

※ Please read this manual for the safety before using of goods and keep it in the safe place.

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
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10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/ accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over.



13. Unplug this apparatus during lighting storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. This product is intended to be supplied by a Listed Power Supply Unit marked "Class 2" or "LPS" and rated from 24 Vac (50/60 Hz) 1.1 A or 12 Vdc, 1.0 A. (XNV-6080RS/XNV-8080RS/XNV-6120RS)
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    Some chemical solvents such as cleaner or adhesives may cause serious damage to the product's surface.
19. If you install/disassemble the product in a manner that has not been recommended, the production functions/ performance may not be guaranteed.
    Install the product by referring to "Installation & connection" in the user manual.
20. Installing or using the product in water can cause serious damage to the product.

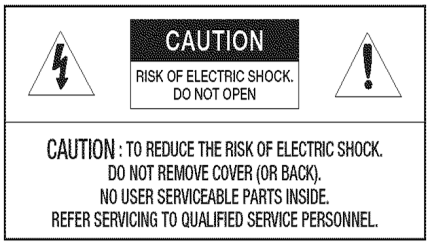
WARNING

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An apparatus with CLASS I construction shall be connected to a MAINS socket outlet with a protective earthing connection.

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Batteries(battery pack or batteries installed) shall not be exposed to excessive heat such as sunshine, fire or the like.

Disconnection Device

Disconnect the main plug from the apparatus, if it's defected. And please call a repair man in your location.

When used outside of the U.S., it may be used HAR code with fittings of an approved agency is employed.

CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

ATTENTION

IL Y A RISQUE D'EXPLOSION SI LA BATTERIE EST REMPLACÉE PAR UNE BATTERIE DE TYPE INCORRECT.
METTRE AU REBUT LES BATTERIES USAGÉES CONFORMÉMENT AUX INSTRUCTIONS.

These servicing instructions are for use by qualified service personnel only.
To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

The CVBS out terminal of the product is provided for easier installation, and is not recommended for monitoring purposes.

Please use the input power with just one camera and other devices must not be connected.

The ITE is to be connected only to PoE networks without routing to the outside plant.

The wired LAN hub providing power over the Ethernet (PoE) in accordance with IEEE 802-3af shall be a UL Listed device with the output evaluated as a Limited Power Source as defined in UL60950-1.

Unit is intended for installation in a Network Environment 0 as defined in IEC TR 62102. As such, associated Ethernet wiring shall be limited to inside the building.

Please read the following recommended safety precautions carefully.

- Do not place this apparatus on an uneven surface.
- Do not install on a surface where it is exposed to direct sunlight, near heating equipment or heavy cold area.
- Do not place this apparatus near conductive material.
- Do not attempt to service this apparatus yourself.
- Do not place a glass of water on the product.
- Do not install near any magnetic sources.
- Do not block any ventilation openings.
- Do not place heavy items on the product.
- Please wear protective gloves when installing/removing the camera.
  The high temperature of the product surface may cause a burn.

User's Manual is a guidance book for how to use the products.

The meaning of the symbols are shown below.

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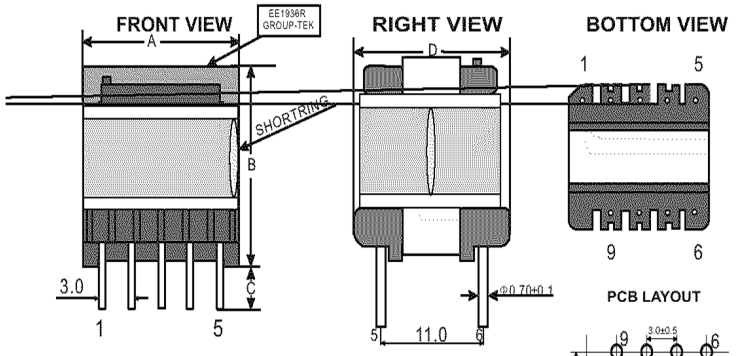
※ Please read this manual for the safety before using of goods and keep it in the safe place.

GROUP-TEK®

A Leading Supplier of Magnetic Components

EE1936R

2. Mechanical Dimensions:

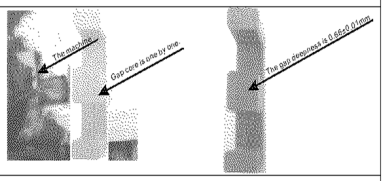


Note:
1.Removed the pin 10.
2.Vaccue varnish for the parts.
3.Wrap 2Ts of 6.0mm tape around the finished part.
4.Wrap the copper shield for the finished part.
5.Place the marking information on the top of core: EE1936R.

Unit: mm

A Max	B Max	C +/-0.5	D Max
20.5	20.0	3.5	16.5

4.Overhauling List.

NO.	ITEM	SPECIFICATION
1	Tape turns	2T
2	Shield copper	0.025mm*7mm
3	Winding turns	N1:50T N2:30T N3:50T N4:32T
4	Pins order/Pin connection .	1T
5	Marking Information	EE1936R GROUP-TEK
6	Gap the center leg	
7	Solder Temperature	

GROUP-TEK®
A Leading Supplier of Magnetic Components

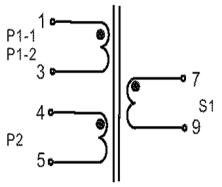
EE1936R

4.Winding Information:

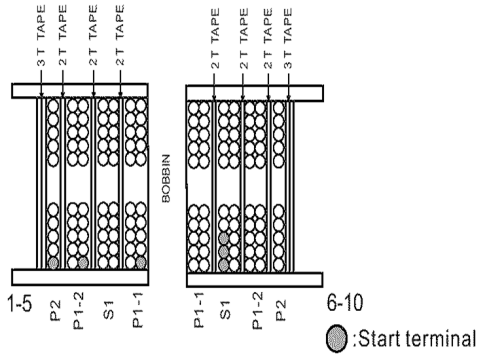
WINDING SEQ.	ST-FN	WIRE/FOIL	TURNS	TURNS/LAYER (REF)	WRAP INSUL.	SLEEVE	NOTE
P1-1	1--3	0.30mm 2UEW	50	50	2T w9.3mm	N/A	1,2.
S1	7--9	3*0.32mm 2UEW	30	30	2T w9.3mm	N/A	1,2.
P1-2	1--3	0.30mm 2UEW	50	50	2T w9.3mm	N/A	1,2.
P2	4--5	0.20mm 2UEW	32	32	3T w9.3mm	N/A	1,2.

Note:
1.Place the bobbin pins left side of operator.
2.Clockwise and close winding.

5.Schematic:



6.Winding construction

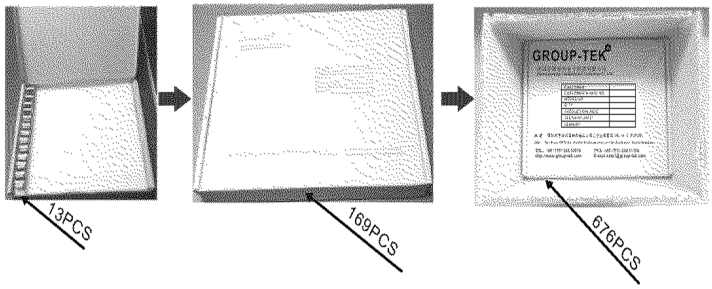


7.Material List

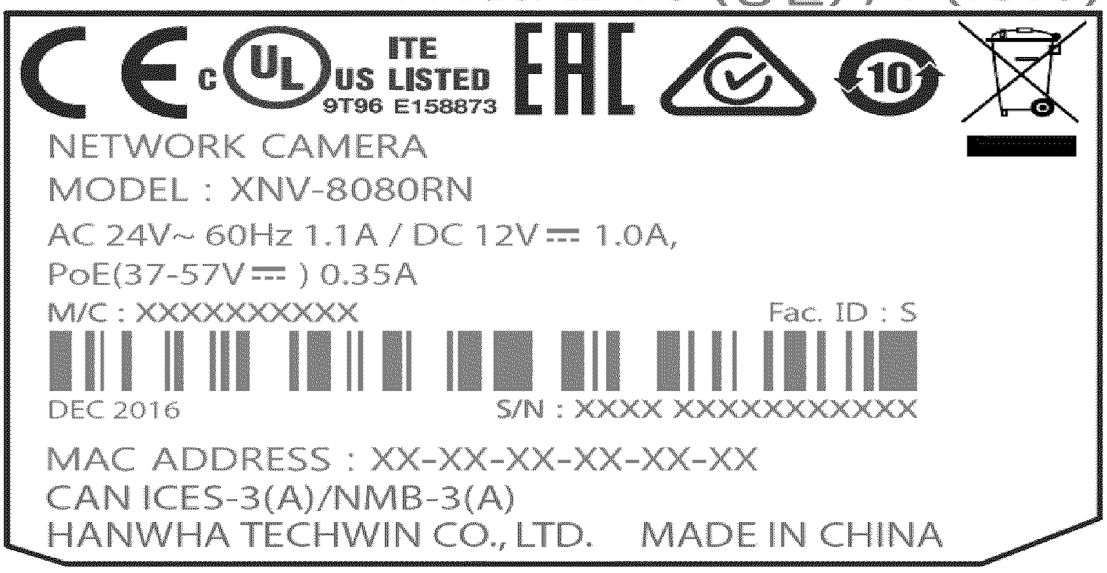
NO.	ITEM.	MATERIALS	SUPPLIERS/MANUFAXTURES	UL FILE NO.
1	BOBBIN	PHENOLIC T375J UL RATING: 94V-0	CHANG CHUN PLASTICS CO LTD.	QMFZ2.E59481
2	CORE	EE 19 PG 232	High-tech Electronics Co.,Ltd	N/A
3	WIRE	POLYURETHANE ENAMELED TYPE NO: 2UEW THERMAL RATING:180°C	ZHU HAI SUNTEK WIRE COLTD	OBMW2.E234867
4	TAPE	ADHESIVE POLYESTER TAPE TYPE NO.:W-001 THERMAL RATING:130°C	Shen zhen XinHuaHui Packing material Co.,Ltd	E328315
5	SOLDER	SN/CU: 99.3/0.7	Gao Xin stannum industry Co.,Ltd	N/A
6	Varnish	HF 1053	Shen Zhen Eastlight Chemi Cals Co.,Ltd	OBOR2.E335404

8.Packing Information:

DESCRIPTION	QTY
PIECES PER CELL	1
PIECES PER TRAY	169
PIECES PER BOX	676
GROSS WEIGHT PER BOX(KG)	7.85
NET WEIGHT PER BOX(KG)	9.25



※ Fac. ID : S (창원) , T (TSTO)

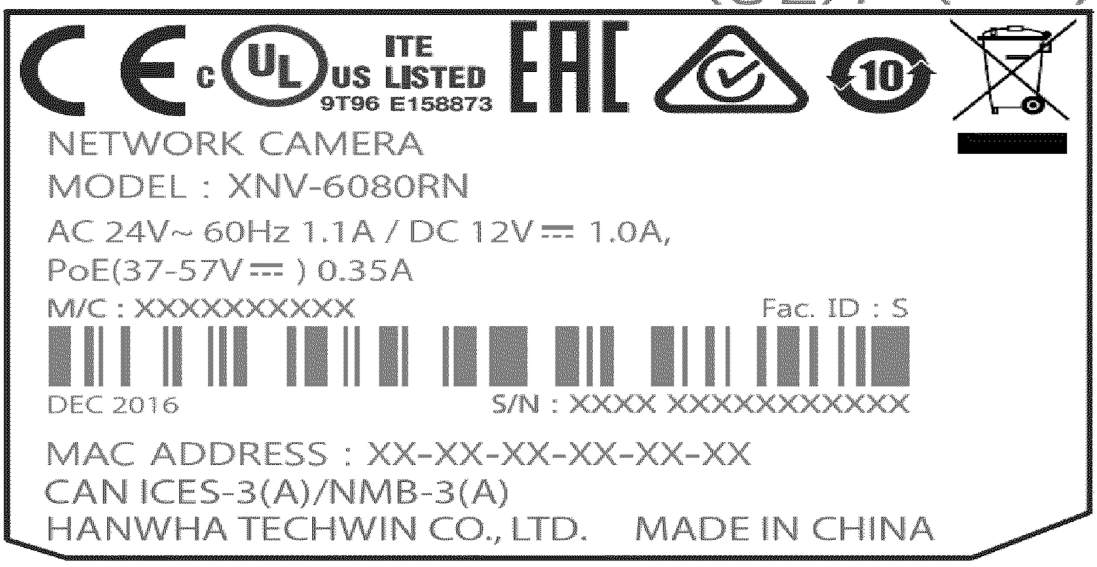


※ 원산지 표기 기준

TSTO : MADE IN CHINA

창 원 : MADE IN KOREA

※ Fac. ID : S (창원) , T (TSTO)

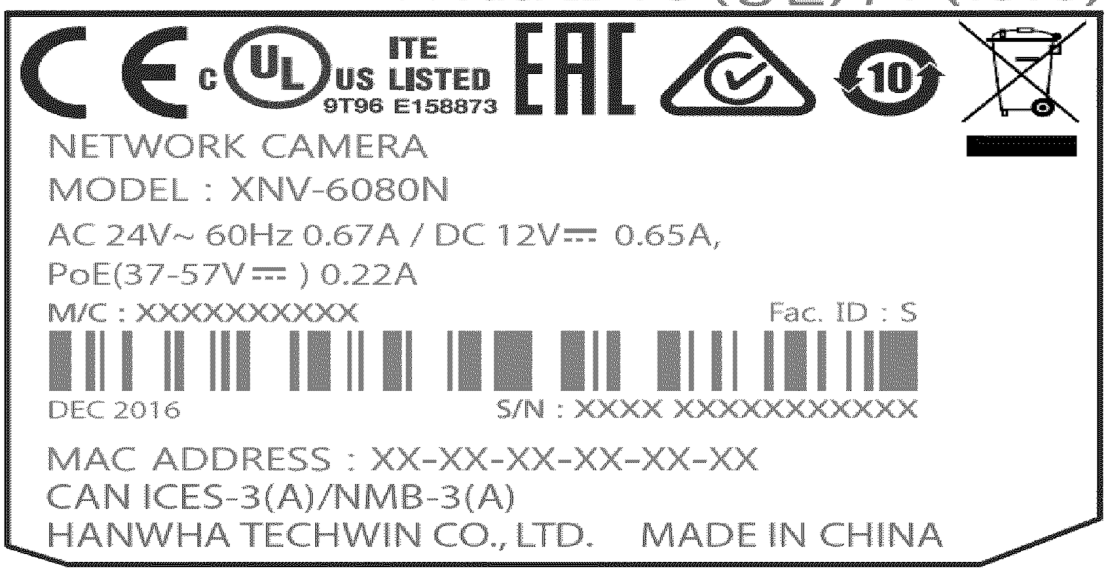


※ 원산지 표기 기준

TSTO : MADE IN CHINA

창 원 : MADE IN KOREA

※ Fac. ID : S (창원) , T (TSTO)



※ 원산지 표기 기준

TSTO : MADE IN CHINA

창 원 : MADE IN KOREA

SGS

TEST REPORT
IEC 62471 and/or EN 62471
Photobiological safety of lamps and lamp systems

Report Reference No. ..... :	F690501/RF-SAF008771
Order No.	G-44-2017-00068
Tested by (name + signature)..... :	Ethan Kim
Approved by (name + signature) ..... :	ChangMin Yi
Date of issue ..... :	January 06, 2017
Total number of pages ..... :	16
Testing Laboratory ..... :	SGS Korea Co., Ltd. Gunpo Laboratory
Address ..... :	14, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, 15807, Republic of Korea
Applicant's name ..... :	Hanwha Techwin Co., Ltd.
Address ..... :	Hanwha Techwin R&D center, 6 Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13488 KOREA
Test specification:	
Standard ..... :	☒ IEC 62471: 2006 (First Edition) ☐ EN 62471: 2008
Test procedure ..... :	Test report
Non-standard test method..... :	N/A
Test Report Form No. ..... :	IECEN62471A
TRF Originator ..... :	VDE Testing and Certification Institute
Master TRF ..... :	Dated 2009-05
TRF Modified by..... :	SGS Korea Co., Ltd. Gunpo Laboratory
Modified TRF Form No. ..... :	TRF No. SAF5102-IEC62471A(2015/11/11)(0)
Test item description..... :	Network camera
Trade Mark..... :	-
Manufacturer ..... :	HANWHA TECHWIN (TIANJIN) CO.,LTD. No.11 Weiliu Rd,Micro-Electronic Industrial Park,TEDA,Tianjin, 300385,People's Republic of China
Model/Type reference ..... :	XNO-8080R
Ratings ..... :	AC 24 V~; 50/60 Hz;1,05A or DC 12 V; 1,16A or PoE(37 – 57 Vdc); 0,35 A

Miscellaneous-03 Page-2

Summary of testing:

The test was performed with DC power supply (12 Vd.c.)

Hazard	Risk Group
Actinic UV	**Exempt**
Near UV	**Exempt**
Blue Light	**Exempt**
Retinal Thermal	**Exempt**
Infrared	**Exempt**
Thermal Skin	**Pass**

Tests performed (name of test and test clause):	**Testing location:**
4.3.1 Actinic UV hazard exposure limit for the skin and eye 4.3.2 Near-UV hazard exposure limit for eye 4.3.3 Retinal blue light hazard exposure limit 4.3.5 Retinal thermal hazard exposure limit 4.3.7 Infrared radiation hazard exposure limits for the eye 4.3.8 Thermal hazard exposure limit for the skin	Refer to page 1.

Summary of compliance with National Differences: None

Copy of marking plate:

-

Miscellaneous-03 Page-3

Test item particulars	:	—			
Tested lamp	:	☒ continuous wave lamps	☐ pulsed lamps		
Tested lamp system	:	—			
IEC 62471 Lamp classification group	:	☒ exempt	☐ risk 1	☐ risk 2	☐ risk 3
EN 62471 Lamp classification group	:	☐ exempt	☐ risk 1	☐ risk 2	☐ risk 3
Lamp cap	:	—			
Bulb	:	—			
Rated of the lamp	:	—			
Furthermore marking on the lamp	:	—			
Seasoning of lamps according IEC standard	:	—			
Used measurement instrument	:	Bentham IDR300-PSL			
Temperature by measurement	:	25 ± 5 °C			
Information for safety use	:	—			

Possible test case verdicts:

– test case does not apply to the test object : N/A

– test object does meet the requirement : P (Pass)

– test object does not meet the requirement : F (Fail)

Testing:

Date of receipt of test item : January 04, 2017

Date (s) of performance of tests : January 05, 2016

General remarks:

Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.
Throughout this report a comma is used as the decimal separator.

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

Miscellaneous-03 Page-4

General product information:

- The product can emit IR(non visible infrared light) when powered

- LED 4 EA (Manufacture: OSRAM Opto Semiconductors GmbH; Model: SFH4715A);
  V_F = Max. 2,5 Vd.c.; I_F = 2 000 mA; Angle = ± 45 ° (Half angle)

- Factory: Same as manufacturer

IEC / EN 62471			
Clause	Requirement + Test	Result – Remark	Verdict
4	**EXPOSURE LIMITS**		—
4.1	General		P
	The exposure limits in this standard is not less than 0,01 ms and not more than any 8-hour period and should be used as guides in the control of exposure		P
	Detailed spectral data of a light source are generally required only if the luminance of the source exceeds 10^4 cd·m^{-2}		P
4.3	Hazard exposure limits		P
4.3.1	Actinic UV hazard exposure limit for the skin and eye		P
	The exposure limit for effective radiant exposure is 30 J·m^{-2} within any 8-hour period		P
	To protect against injury of the eye or skin from ultraviolet radiation exposure produced by a broad-band source, the effective integrated spectral irradiance , E_S, of the light source shall not exceed the levels defined by:		P
	$E_s \cdot t = \sum_{200}^{400} \sum_{t} E_\lambda(\lambda,t) \cdot S_{UV}(\lambda) \cdot \Delta t \cdot \Delta\lambda \le 30$ J·m^{-2}		P
	The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye or skin shall be computed by:		P
	$t_{max} = \frac{30}{E_S}$ s		P
4.3.2	Near-UV hazard exposure limit for eye		P
	For the spectral region 315 nm to 400 nm (UV-A) the total radiant exposure to the eye shall not exceed 10000 J·m^{-2} for exposure times less than 1000 s. For exposure times greater than 1000 s (approximately 16 minutes) the UV-A irradiance for the unprotected eye, E_{UVA}, shall not exceed 10 W·m^{-2}.		P
	The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye for time less than 1000 s, shall be computed by:		P
	$t_{max} \le \frac{10\,000}{E_{UVA}}$ s		P
4.3.3	Retinal blue light hazard exposure limit		P
	To protect against retinal photochemical injury from chronic blue-light exposure, the integrated spectral radiance of the light source weighted against the blue-light hazard function, B(λ), i.e., the blue-light weighted radiance , L_B, shall not exceed the levels defined by:		P

IEC / EN 62471			
Clause	Requirement + Test	Result – Remark	Verdict
	$L_B \cdot t = \sum_{300}^{700} \sum_{t} L_\lambda(\lambda,t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta\lambda \le 10^6$ J · m^{-2} · sr^{-1}		P
	$L_B = \sum_{300}^{700} L_\lambda \cdot B(\lambda) \cdot \Delta\lambda \le 100$ W · m^{-2} · sr^{-1}		P
4.3.4	Retinal blue light hazard exposure limit - small source		N/A
	Thus the spectral irradiance at the eye E_λ, weighted against the blue-light hazard function B(λ) shall not exceed the levels defined by:		N/A
	$E_B \cdot t = \sum_{300}^{700} \sum_{t} E_\lambda(\lambda,t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta\lambda \le 100$ J · m^{-2}		N/A
	$E_B = \sum_{300}^{700} E_\lambda \cdot B(\lambda) \cdot \Delta\lambda \le 1$ W · m^{-2}		N/A
4.3.5	Retinal thermal hazard exposure limit		P
	To protect against retinal thermal injury, the integrated spectral radiance of the light source, L_λ, weighted by the burn hazard weighting function $R(\lambda)$ (from Figure 4.2 and Table 4.2), i.e., the burn hazard weighted radiance, shall not exceed the levels defined by:		P
	$L_R = \sum_{380}^{1400} L_\lambda \cdot R(\lambda) \cdot \Delta\lambda \le \frac{50\,000}{\alpha \cdot t^{0,25}}$ W · m^{-2} · sr^{-1}		P
4.3.6	Retinal thermal hazard exposure limit – weak visual stimulus		N/A
	For an infrared heat lamp or any near-infrared source where a weak visual stimulus is inadequate to activate the aversion response, the near infrared (780 nm to 1400 nm) radiance, L_{IR}, as viewed by the eye for exposure times greater than 10 s shall be limited to:		N/A
	$L_{IR} = \sum_{780}^{1400} L_\lambda \cdot R(\lambda) \cdot \Delta\lambda \le \frac{6\,000}{\alpha}$ W · m^{-2} · sr^{-1}		N/A
4.3.7	Infrared radiation hazard exposure limits for the eye		P
	The avoid thermal injury of the cornea and possible delayed effects upon the lens of the eye (cataractogenesis), ocular exposure to infrared radiation, E_{IR}, over the wavelength range 780 nm to 3000 nm, for times less than 1000 s, shall not exceed:		P
	$E_{IR} = \sum_{780}^{3\,000} E_\lambda \cdot \Delta\lambda \le 18\,000 \cdot t^{-0,75}$ W · m^{-2}		P
	For times greater than 1000 s the limit becomes:		P

IEC / EN 62471			
Clause	Requirement + Test	Result – Remark	Verdict
	$E_{IR} = \sum_{780}^{3000} E_\lambda \cdot \Delta\lambda \le 100 \quad W \cdot m^{-2}$		P
4.3.8	Thermal hazard exposure limit for the skin		P
	Visible and infrared radiant exposure (380 nm to 3000 nm) of the skin shall be limited to:		P
	$E_{H} \cdot t = \sum_{380}^{3000} \sum_{t} E_\lambda(\lambda, t) \cdot \Delta t \cdot \Delta\lambda \le 20\,000 \cdot t^{0,25} \quad J \cdot m^{-2}$		P
5	**MEASUREMENT OF LAMPS AND LAMP SYSTEMS**		—
5.1	Measurement conditions		P
	Measurement conditions shall be reported as part of the evaluation against the exposure limits and the assignment of risk classification.		P
5.1.1	Lamp ageing (seasoning)		N/A
	Seasoning of lamps shall be done as stated in the appropriate IEC lamp standard.		N/A
5.1.2	Test environment		P
	For specific test conditions, see the appropriate IEC lamp standard or in absence of such standards, the appropriate national standards or manufacturer's recommendations.		P
5.1.3	Extraneous radiation		P
	Careful checks should be made to ensure that extraneous sources of radiation and reflections do not add significantly to the measurement results.		P
5.1.4	Lamp operation		P
	Operation of the test lamp shall be provided in accordance with:		P
	– the appropriate IEC lamp standard, or		N/A
	– the manufacturer' s recommendation		P
5.1.5	Lamp system operation		N/A
	The power source for operation of the test lamp shall be provided in accordance with:		N/A
	– the appropriate IEC standard, or		N/A
	– the manufacturer' s recommendation		N/A
5.2	Measurement procedure		P
5.2.1	Irradiance measurements		P
	Minimum aperture diameter 7mm.		P

IEC / EN 62471			
Clause	Requirement + Test	Result – Remark	Verdict
	Maximum aperture diameter 50 mm.		P
	The measurement shall be made in that position of the beam giving the maximum reading.		P
	The measurement instrument is adequate calibrated.		P
5.2.2	Radiance measurements		P
5.2.2.1	Standard method		P
	The measurements made with an optical system.		P
	The instrument shall be calibrated to read in absolute radiant power per unit receiving area and per unit solid angle to acceptance averaged over the field of view of the instrument.		P
5.2.2.2	Alternative method		N/A
	Alternatively to an imaging radiance set-up, an irradiance measurement set-up with a circular field stop placed at the source can be used to perform radiance measurements.		N/A
5.2.3	Measurement of source size		P
	The determination of α, the angle subtended by a source, requires the determination of the 50% emission points of the source.		P
5.2.4	Pulse width measurement for pulsed sources		N/A
	The determination of Δt, the nominal pulse duration of a source, requires the determination of the time during which the emission is > 50% of its peak value.		N/A
5.3	Analysis methods		P
5.3.1	Weighting curve interpolations		P
	To standardize interpolated values, use linear interpolation on the log of given values to obtain intermediate points at the wavelength intervals desired.		P
5.3.2	Calculations		P
	The calculation of source hazard values shall be performed by weighting the spectral scan by the appropriate function and calculating the total weighted energy.		P
5.3.3	Measurement uncertainty		P
	The quality of all measurement results must be quantified by an analysis of the uncertainty.		P
6	**LAMP CLASSIFICATION**		—

IEC / EN 62471			
Clause	Requirement + Test	Result – Remark	Verdict
	For the purposes of this standard it was decided that the values shall be reported as follows:		P
	– for lamps intended for general lighting service, the hazard values shall be reported as either ir-radiance or radiance values at a distance which produces an illuminance of 500 lux, but not at a distance less than 200 mm		N/A
	– for all other light sources, including pulsed lamp sources, the hazard values shall be reported at a distance of 200 mm		P
6.1	Continuous wave lamps		P
6.1.1	Exempt Group		P
	In the exempt group are lamps, which do not pose any photobiological hazard. The requirement is met by any lamp that does not pose:		P
	– an actinic ultraviolet hazard (E_S) within 8-hours exposure (30000 s), nor		P
	– a near-UV hazard (E_{UVA}) within 1000 s, (about 16 min), nor		P
	– a retinal blue-light hazard (L_B) within 10000 s (about 2,8 h), nor		P
	– a retinal thermal hazard (L_R) within 10 s, nor		P
	– an infrared radiation hazard for the eye (E_{IR}) within 1000 s		P
6.1.2	Risk Group 1 (Low-Risk)		N/A
	In this group are lamps, which exceeds the limits for the exempt group but that does not pose:		N/A
	– an actinic ultraviolet hazard (E_S) within 10000 s, nor		N/A
	– a near ultraviolet hazard (E_{UVA}) within 300 s, nor		N/A
	– a retinal blue-light hazard (L_B) within 100 s, nor		N/A
	– a retinal thermal hazard (L_R) within 10 s, nor		N/A
	– an infrared radiation hazard for the eye (E_{IR}) within 100 s		N/A
	Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard (L_{IR}), within 100 s are in Risk Group 1.		N/A
6.1.3	Risk Group 2 (Moderate-Risk)		N/A
	This requirement is met by any lamp that exceeds the limits for Risk Group 1, but that does not pose:		N/A
	– an actinic ultraviolet hazard (E_S) within 1000 s exposure, nor		N/A

IEC / EN 62471			
Clause	Requirement + Test	Result – Remark	Verdict
	– a near ultraviolet hazard (E_{UVA}) within 100 s, nor		N/A
	– a retinal blue-light hazard (L_B) within 0,25 s (aversion response), nor		N/A
	– a retinal thermal hazard (L_R) within 0,25 s (aversion response), nor		N/A
	– an infrared radiation hazard for the eye (E_{IR}) within 10 s		N/A
	Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard (L_{IR}), within 10 s are in Risk Group 2.		N/A
6.1.4	Risk Group 3 (High-Risk)		N/A
	Lamps which exceed the limits for Risk Group 2 are in Group 3.		N/A
6.2	Pulsed lamps		N/A

EN 62471			
Clause	Requirement + Test	Result - Remark	Verdict
	CENELEC COMMON MODIFICATIONS (EN)		—
4	**EXPOSURE LIMITS**		—
	Contents of the whole Clause 4 of IEC 62471:2006 moved into a new informative Annex ZB		—
	Clause 4 replaced by the following:		N/A
	Limits of the Artificial Optical Radiation Directive (2006/25/EC) have been applied instead of those fixed in IEC 62471:2006		N/A
4.1	General		N/A
	First paragraph deleted		—

IEC 62471			
Clause	Requirement + Test	Result – Remark	Verdict

Table 6.1 Emission limits for risk groups of continuous wave lamps — P

Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	$S_{UV}(\lambda)$	E_s	$W \cdot m^{-2}$	0,001	**8,69E-05**	0,003	—	0,03	—
Near UV	—	E_{UVA}	$W \cdot m^{-2}$	10	**4,92E-05**	33	—	100	—
Blue light	$B(\lambda)$	L_B	$W \cdot m^{-2} \cdot sr^{-1}$	100	**8,53E-04**	10000	—	4000000	—
Blue light, small source	$B(\lambda)$	E_B	$W \cdot m^{-2}$	1,0*	**0E+00**	1,0	**0E+00**	400	—
Retinal thermal	$R(\lambda)$	L_R	$W \cdot m^{-2} \cdot sr^{-1}$	28000/α	**2,44E+04**	28000/α	**2,44E+04**	71000/α	—
Retinal thermal, weak visual stimulus**	$R(\lambda)$	L_{IR}	$W \cdot m^{-2} \cdot sr^{-1}$	6000/α	—	6000/α	—	6000/α	—
IR radiation, eye	—	E_{IR}	$W \cdot m^{-2}$	100	**19,4624**	570	**19,4624**	3200	**19,4624**

* Small source defined as one with α < 0,011 radian. Averaging field of view at 10000 s is 0,1 radian.
** Involves evaluation of non-GLS source

EN 62471			
Clause	Requirement + Test	Result – Remark	Verdict

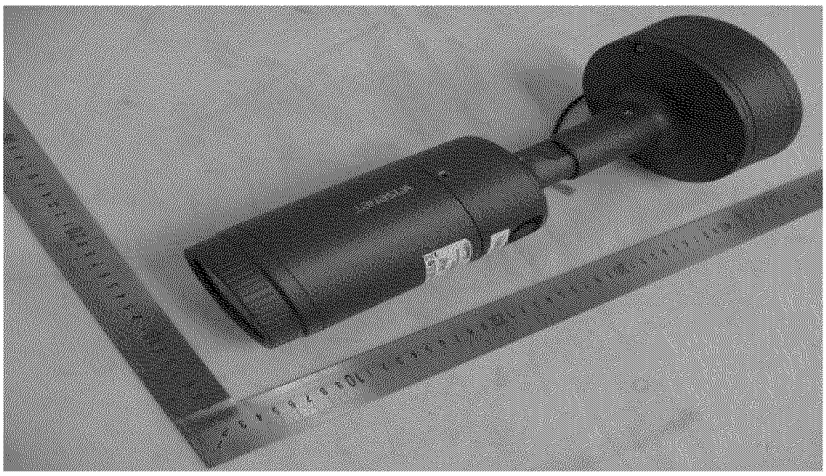
Table 6.1 Emission limits for risk groups of continuous wave lamps (based on EU Directive 2006/25/EC) — N/A

Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	$S_{UV}(\lambda)$	E_s	$W \cdot m^{-2}$	0,001	—	—	—	—	—
Near UV	—	E_{UVA}	$W \cdot m^{-2}$	0,33	—	—	—	—	—
Blue light	$B(\lambda)$	L_B	$W \cdot m^{-2} \cdot sr^{-1}$	100	—	10000	—	4000000	—
Blue light, small source	$B(\lambda)$	E_B	$W \cdot m^{-2}$	0,01*	—	1,0	—	400	—
Retinal thermal	$R(\lambda)$	L_R	$W \cdot m^{-2} \cdot sr^{-1}$	28000/α	—	28000/α	—	71000/α	—
Retinal thermal, weak visual stimulus**	$R(\lambda)$	L_{IR}	$W \cdot m^{-2} \cdot sr^{-1}$	545000 0,0017≤ α ≤ 0,011	—				
				6000/α 0,011≤ α ≤ 0,1	—				
IR radiation, eye	—	E_{IR}	$W \cdot m^{-2}$	100	—	570	—	3200	—

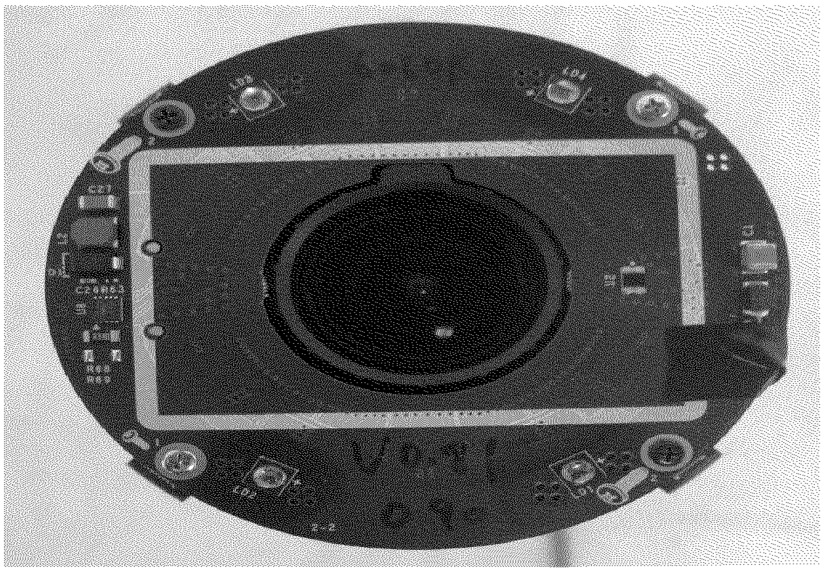
* Small source defined as one with α < 0,011 radian. Averaging field of view at 10000 s is 0,1 radian.
** Involves evaluation of non-GLS source

Photo documentation

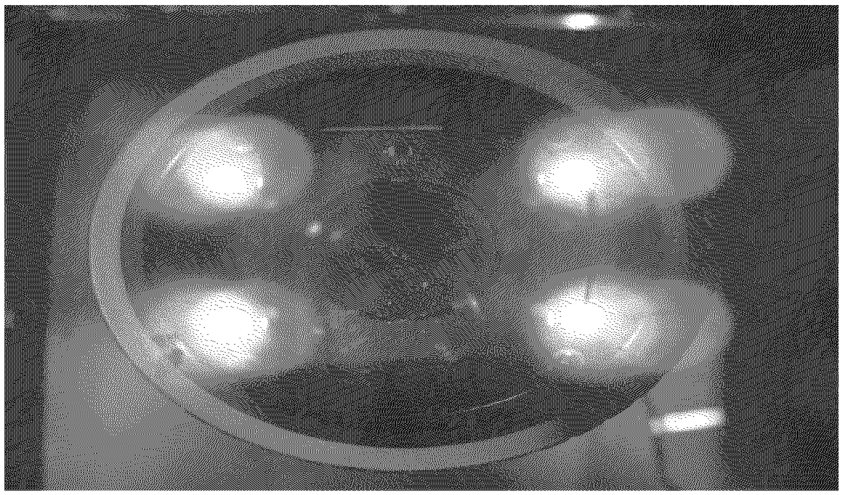
* External View (1 of 1)



* LED board View (1 of 1)



* LED Power On View (1 of 1)



Furthermore remarks

* Resulting IEC 62471 Classification and Labelling

Hazard	Risk Group
Actinic UV	Exempt
Near UV	Exempt
Blue Light	Exempt
Retinal Thermal	Exempt
Infrared	Exempt
Thermal Skin	Pass

Exempt
No Labelling Required
Product tested against IEC 62471

- END OF TEST REPORT -

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Compliance Review Conducted by: _____ Date _____

Printed Name Signature

Standard SCC Requirements and Guidance – Product Certification Body Accreditation Program Edition/Revision Date 2016-04-06

Clause/Par. Reference and Construction Requirement	Comply Yes	Comply No	Comply N/A	Comments/Measurements	Inst. ID No.
9.2.3 CBs shall include dual language safety labeling within their product certification requirements, if so required by the standard or by the authority having jurisdiction.					
The manufacturer has confirmed they have the ability to include English and French safety labeling exactly as specified in the product standard; or, if NOT specified in the product standard, the ability to include English and French safety labelling consisting of markings associated with the signal words DANGER, WARNING, and CAUTION when required.	X			The ability of the manufacturer to include these markings was verified by either (1) visual inspection of the markings on the actual product or (2) draft of labels that will be applied to the product or (3) written confirmation from the customer of the markings that will appear on the product. If the product standard provides the exact translation, the evidence must match the exact translation. If the product standard does NOT provide the exact translation, the evidence must simply include both the English and French text (no verification of translation is required).	N/A

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Printed Name Signature

Clause/Par. Reference and Construction Requirement	Comply			Comments/Measurements	Inst. ID No.
	Yes	No	N/A		
Manufacturer has a method to manage distribution of products, IF all products with the Canadian certification mark are NOT going to include the dual language.	X			Evaluation staff are to only verify that the manufacturer has a method to control distribution. Evaluation staff do not have to record the method of control nor are the evaluation staff expected to verify the effectiveness of the method of control. This requirement to verify that a method exists will be noted in the FUS Procedure. The UL Field Engineer will verify the method during surveillance. If the manufacturer is going to include the dual language on all products with the Canadian certification mark, then this item is N/A; no further action required.	N/A

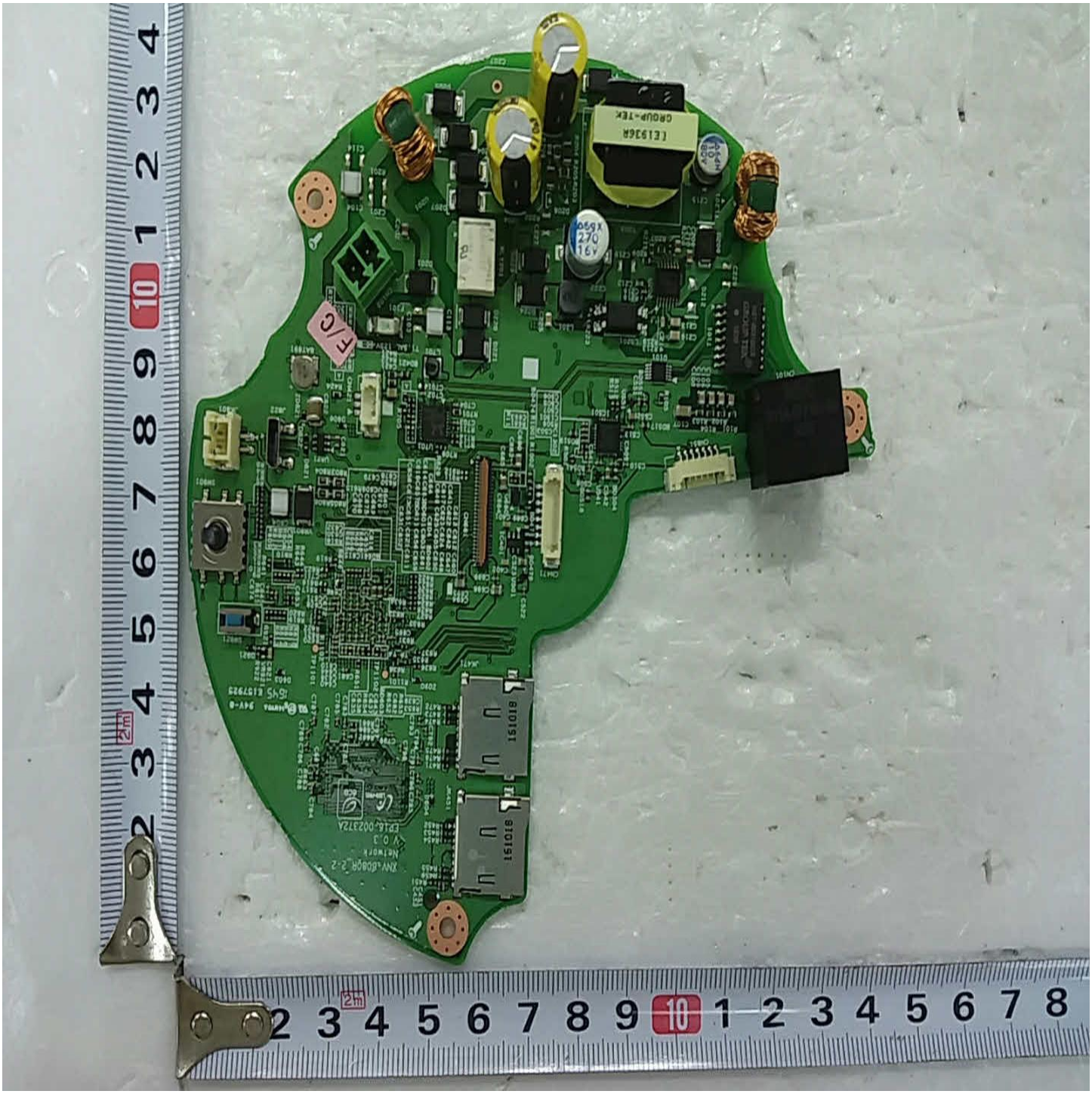
Photographs-01 Page-1



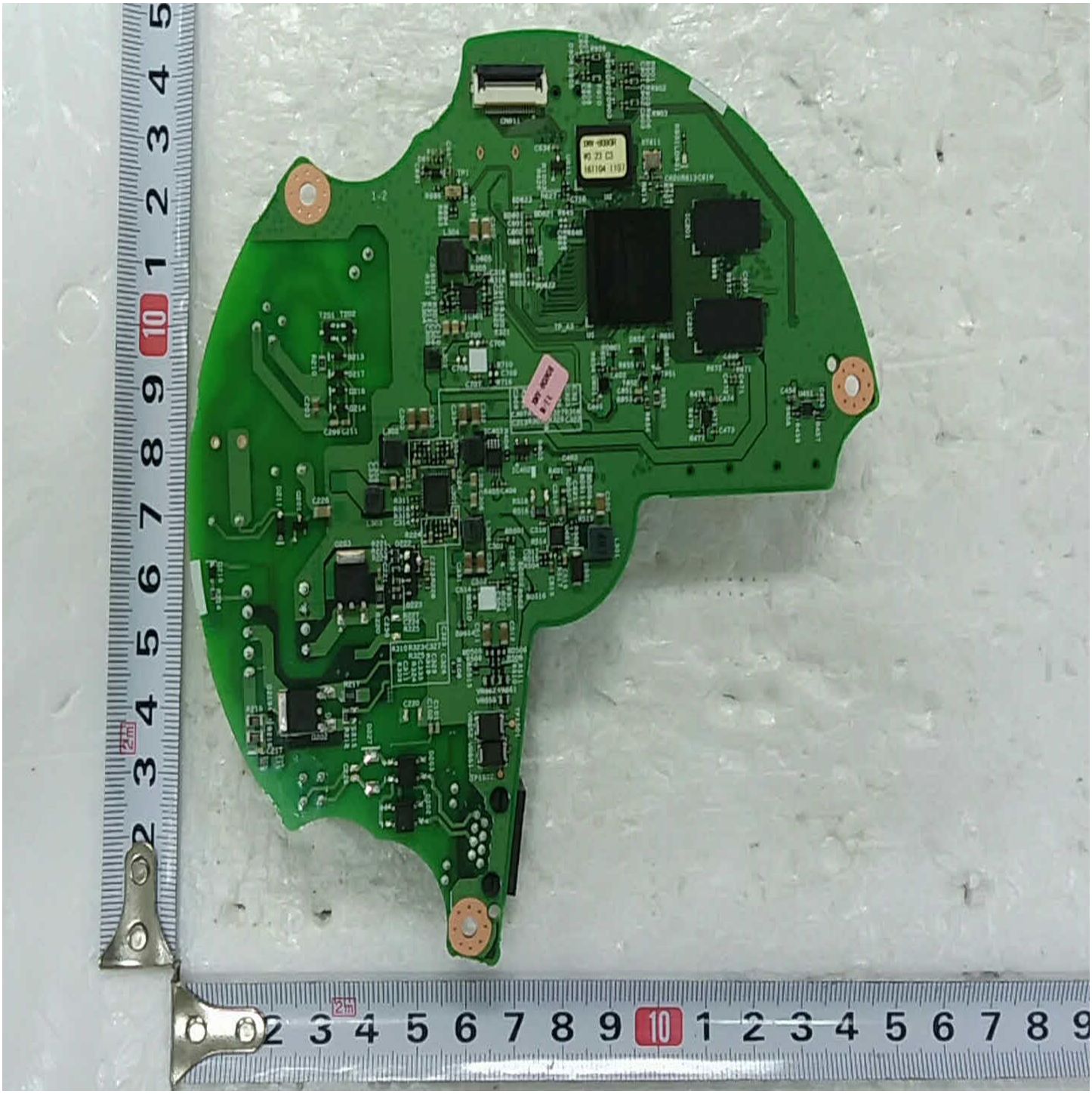
Photographs-02 Page-1



Photographs-03 Page-1



Photographs-04 Page-1



Photographs-05 Page-1



Photographs-06 Page-1

