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Please find attached the related material

For your convenience, the below describes the related updates:

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| E158873-20210702-CertificateofCompliance |
| E158873-A6077-DescriptionUL              |
| Figure-16-Total                          |
| E158873-A6077-TestRecordUL               |

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# CERTIFICATE OF COMPLIANCE

**Certificate Number** UL-US-2133014-0  
**Report Reference** E158873-20210702  
**Date** 6-Jul-2021

**Issued to:** Hanwha Techwin Co Ltd  
6, Pangyo-ro 319beon-gil, Bundang-gu Seongnam-si,  
Gyeonggi-do  
Republic of Korea 13488

**This is to certify that representative samples of** AZOT - Audio/Video, Information and Communication Technology Equipment  
See Addendum Page for Product Designation(s).

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

**Standard(s) for Safety:** UL 62368-1, 3rd Ed., Issue Date: 2019-12-13

**Additional Information:** See the UL Online Certifications Directory at <https://iq.ulprospector.com> for additional information

This Certificate of Compliance does not provide authorization to apply the UL Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

*B. Mahlen*

Bruce Mahrenholz, Director North American Certification Program

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# CERTIFICATE OF COMPLIANCE

Certificate Number UL-US-2133014-0  
Report Reference E158873-20210702  
Date 6-Jul-2021

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

| Model      | Category Description |
|------------|----------------------|
| PNM-9031RV | NETWORK CAMERA       |



Bruce Mahrenholz, Director North American Certification Program

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# CERTIFICATE OF COMPLIANCE

**Certificate Number** UL-CA-2127515-0  
**Report Reference** E158873-20210702  
**Date** 6-Jul-2021

**Issued to:** Hanwha Techwin Co Ltd  
6, Pangyo-ro 319beon-gil, Bundang-gu Seongnam-si,  
Gyeonggi-do  
Republic of Korea 13488

**This is to certify that** AZOT7 - Audio/Video, Information and Communication  
**representative samples of** Technology Equipment Certified for Canada  
See Addendum Page for Product Designation(s).

Have been investigated by UL in accordance with the  
Standard(s) indicated on this Certificate.

**Standard(s) for Safety:** CSA C22.2 NO. 62368-1, 3rd Ed., Issue Date: 2019-12-13

**Additional Information:** See the UL Online Certifications Directory at  
<https://iq.ulprospector.com> for additional information

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Bruce Mahrenholz, Director North American Certification Program

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# CERTIFICATE OF COMPLIANCE

Certificate Number UL-CA-2127515-0  
Report Reference E158873-20210702  
Date 6-Jul-2021

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

| Model      | Category Description |
|------------|----------------------|
| PNM-9031RV | NETWORK CAMERA       |



Bruce Mahrenholz, Director North American Certification Program

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## UL TEST REPORT AND PROCEDURE

|                                    |                                                                                                                                                                                                                                                                                                |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Standard:</b>                   | UL 62368-1, 3rd Ed, Issued: 2019-12-13 (Audio/video, information and communication technology equipment Part 1: Safety requirements)<br>CAN/CSA C22.2 No. 62368-1:19, 3rd Ed, Issued: 2019-12-13 (Audio/video, information and communication technology equipment Part 1: Safety requirements) |
| <b>Certification Type:</b>         | Listing                                                                                                                                                                                                                                                                                        |
| <b>CCN:</b>                        | AZOT, AZOT7 (Audio/video, Information and Communication Technology Equipment)                                                                                                                                                                                                                  |
| <b>Complementary CCN:</b>          | N/A                                                                                                                                                                                                                                                                                            |
| <b>Product:</b>                    | NETWORK CAMERA                                                                                                                                                                                                                                                                                 |
| <b>Model:</b>                      | PNM-9031RV                                                                                                                                                                                                                                                                                     |
| <b>Rating:</b>                     | 12 Vdc, 1.7 A or PoE (53 Vdc), 0.45 A                                                                                                                                                                                                                                                          |
| <b>Applicant Name and Address:</b> | HANWHA TECHWIN CO LTD<br>6, PANGYO-RO 319BEON-GIL, BUNDANG-GU<br>SEONGNAM-SI GYEONGGI-DO 13488 KOREA                                                                                                                                                                                           |

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.

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Prepared By: Lawrence Lee / Project Handler      Reviewed By: SeulKi Park / 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 has been designed for INDOOR use and integrated a bracket for wall or ceiling mount. It is a commercial equipment supplied from 12 Vdc or PoE (Power over Ethernet) and installed by service personnel.

### Model Differences

N/A

### Test Item Particulars

|                                                |                                  |
|------------------------------------------------|----------------------------------|
| Product group                                  | end product                      |
| Classification of use by                       | Instructed person                |
| Supply Connection                              | not mains connected:<br>ES1      |
| Supply tolerance                               | None                             |
| Supply connection – type                       | 12Vdc, PoE (Power over Ethernet) |
| Considered current rating of protective device | N/A                              |
| Equipment mobility                             | wall/ceiling-mounted             |
| Over voltage category (OVC)                    | OVC I                            |
| Class of equipment                             | Class III                        |
| Special installation location                  | N/A                              |
| Pollution degree (PD)                          | PD 2                             |
| Manufacturer's specified Tma (°C)              | 60                               |
| IP protection class                            | IPX0                             |
| Power systems                                  | not AC mains                     |
| Altitude during operation (m)                  | 2000 m or less                   |
| Altitude of test laboratory (m)                | 2000 m or less                   |
| Mass of equipment (kg)                         | 2.84                             |

### Technical Considerations

- ☐ The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : 60 °C
- ☐ The product is intended for use on the following power systems : No direct connection
- ☐ Considered current rating of protective device as part of the building installation (A) : N/A

- ☐ Mains supply tolerance (%) or absolute mains supply : No direct connection
- ☐ The Risk Group of a lamp or lamp system (including LEDs) is : Exempt
- ☐ The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual

**Additional Information**

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- Maximum Normal Load: Continuous operation with IR LED, Fan on and loaded USB port (micro-b type) 1 EA (5.0 V, 0.5 A).

**Additional Standards**

The product fulfills the requirements of: N/A

**Markings and Instructions**

| Clause Title                                                   | Marking or Instruction Details                                                                                                                                                                                                     |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Equipment identification marking – Manufacturer identification | Listee's or Recognized Company's name, Trade Name, Trademark or File Number                                                                                                                                                        |
| Equipment identification marking – model identification        | Model Number                                                                                                                                                                                                                       |
| Equipment rating marking – ratings                             | Input Ratings (voltage, frequency/dc, current/power) Output Ratings (voltage, frequency/dc, current/power)                                                                                                                         |
| Hard Copy                                                      | A. IMPORTANT<br>B. Please check 'Manuals' from our website, before connecting to the supply.<br>C. Company website URL ( <a href="https://www.~~">https://www.~~</a> )                                                             |
| Website Manual - 1                                             | This product is intended to be supplied by a Listed Power Supply Unit marked "Class 2" or "LPS" or "PS2" and rated from 12 Vdc, 1.7 A or PoE (53 Vdc), 0.45 A.                                                                     |
| Website Manual - 2                                             | The wired LAN hub providing power over the Ethernet (PoE) in accordance with IEEE 802.3.af shall be a UL Listed device with the output evaluated as a Limited Power Source as defined in UL60950-1 or PS2 as defined in UL62368-1. |

**Special Instructions to UL Representative**

N/A

|              |                                                                                                                                                                                        |                 |                     |            |           |              |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------|------------|-----------|--------------|
| <b>BD1.0</b> | <b>TABLE: Production-Line Testing Requirements</b>                                                                                                                                     |                 |                     |            |           |              |
| <b>BD1.1</b> | <b>Electric Strength Test Special Constructions – Refer to Generic Inspection Instructions, Part AC for further information.</b>                                                       |                 |                     |            |           |              |
| Model        | Component                                                                                                                                                                              | Removable parts | Test probe location | Test V rms | Test V dc | Test Time, s |
| N/A          | N/A                                                                                                                                                                                    | N/A             | N/A                 | N/A        | N/A       | N/A          |
| <b>BD1.2</b> | <b>Earthing Continuity Test Exemptions – This test is not required for the following models:</b>                                                                                       |                 |                     |            |           |              |
|              | All model                                                                                                                                                                              |                 |                     |            |           |              |
| <b>BD1.3</b> | <b>Electric Strength Test Exemptions – This test is not required for the following models:</b>                                                                                         |                 |                     |            |           |              |
|              | All model                                                                                                                                                                              |                 |                     |            |           |              |
| <b>BD1.4</b> | <b>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.</b> |                 |                     |            |           |              |
|              | All model                                                                                                                                                                              |                 |                     |            |           |              |

|              |                                                            |          |      |            |                |
|--------------|------------------------------------------------------------|----------|------|------------|----------------|
| <b>BE1.0</b> | <b>Sample and Test Specifics for Follow-Up Tests at UL</b> |          |      |            |                |
| Model        | Component                                                  | Material | Test | Sample (s) | Test Specifics |
| N/A          | N/A                                                        | N/A      | N/A  | N/A        | N/A            |

| 4.1.2                                          | TABLE: List of critical components                           |                                               |                                                                                          |                            |                          | Pass          |
|------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------------------------------------------|----------------------------|--------------------------|---------------|
| Object / part No.                              | Manufacturer/<br>trademark                                   | Type / model                                  | Technical data                                                                           | Product Category<br>CCN(s) | Mark(s) of<br>conformity | Supplement ID |
| External enclosure<br>(Metal)                  | Interchangeable                                              | Interchangeable                               | Aluminium, Min. 2.0 mm thickness, see enclosure for dimension.                           | -                          | Tested in equipment      |               |
| External dome cover<br>(Plastic)               | MITSUBISHI<br>ENGINEERING-<br>PLASTICS CORP                  | S-2000+(f1), S-<br>2001+(f1), S-<br>2003+(f1) | Min. 1.8 mm thickness,<br>rated Min. V-2, 115<br>deg. C, See enclosure<br>for dimension. | QMFZ2/8                    | UL (E41179)              |               |
| External enclosure<br>(plastic)                | LOTTE CHEMICAL<br>CORPORATION                                | QC-122(+)(f1)                                 | Min. 1.6 mm thickness,<br>rated Min. V-2, 125<br>deg. C, See enclosure<br>for dimension. | QMFZ2/8                    | UL (E115797)             |               |
| Internal Plastic Part<br>Materials             | LOTTE CHEMICAL<br>CORPORATION                                | HN-1068(+)(f1)                                | Min. 1.5 mm thickness,<br>rated, 130 deg. C                                              | QMFZ2/8                    | UL (E115797)             |               |
| Internal Plastic Part<br>Materials - Alternate | Interchangeable                                              | Interchangeable                               | Min. 1.5 mm thickness,<br>rated Min. HB, 80 deg.<br>C.                                   | QMFZ2/8                    | UL                       |               |
| Fuse (F1)                                      | LITTELFUSE INC                                               | 449*                                          | 125 V, 2.5 A                                                                             | JDYX2/8                    | UL (E10480)              |               |
| Transformer(T1)                                | SHENZHEN<br>GROUP-TEK<br>ELECTRONICS<br>TECHNOLOGY CO<br>LTD | PDT25125SR                                    | 130 deg. C, see<br>enclosure for more<br>detail.                                         | -                          | Tested in equipment      |               |
| Line filter (LF1)                              | TNC CO LTD                                                   | CV320070SB                                    | 7.0 mH, 130 deg. C,<br>see enclosure for more<br>detail.                                 | -                          | Tested in equipment      |               |
| Opto-coupler (LS1)                             | LITE-ON<br>TECHNOLOGY<br>CORP                                | LTV-816                                       | Isolation Voltage: 5<br>300. Max. Operation<br>Temperature: 110 deg.<br>C                | FPQU2/8                    | UL (E113898)             |               |
| Lithium Battery<br>(BAT1)                      | SEIKO<br>INSTRUMENTS                                         | ML414H                                        | Lithium (Coin),<br>Rechargeable, Max.<br>Charging Voltage: 3.4                           | BBCV2                      | UL (MH15628)             |               |

|                                                            |                            |                 |                                                              |                |              |  |
|------------------------------------------------------------|----------------------------|-----------------|--------------------------------------------------------------|----------------|--------------|--|
|                                                            | INC MICRO-ENERGY DIV       |                 | Vdc, Max. Charging Current: 300 mAh                          |                |              |  |
| DC FAN                                                     | HUI TONG ELECTRONIC CO LTD | HTD040D12M      | Rated 12 Vdc, 0.06 A                                         | GPWV2/8        | UL (E311396) |  |
| Internal wiring                                            | Interchangeable            | Interchangeable | Low voltage, rated minimum 80 deg. C, 30 V, marked VW-1      | AVLV2          | UL           |  |
| Thermal Pad                                                | KOMOTECH CO LTD            | KGP-1           | Min. 0.2 mm thickness, rated V-0, 150 deg. C                 | QMFZ2/8        | UL (E245303) |  |
| Thermal pad                                                | Interchangeable            | Interchangeable | Min HB, Min 100 deg. C                                       | QMFZ2          | UL           |  |
| Connectors and Receptacles (Secondary circuits)            | Interchangeable            | Interchangeable | -                                                            | ECBT2          | UL           |  |
| Connectors and Receptacles (Secondary circuits) -Alternate | Interchangeable            | Interchangeable | Copper alloy pins housed in bodies of plastic rated Min. V-2 | QMFZ2          | UL           |  |
| Internal Wiring (Secondary)                                | Interchangeable            | Interchangeable | Marked VW-1; Min. 30 V, 80 deg. C                            | AVLV2          | UL           |  |
| FPWB                                                       | Interchangeable            | Interchangeable | Min. V-0                                                     | ZPXK2          | UL           |  |
| PWB                                                        | EXPRESS ELECTRONICS LTD    | 14MV0           | V-0, 130 deg. C                                              | ZPMV2/8        | UL (E157925) |  |
| PWB - Alternate                                            | HANNSTER BOARD CORP        | MV-4            | V-0, 130 deg. C                                              | ZPMV2/8        | UL (E89382)  |  |
| PWB - Alternate                                            | KI JOO INDUSTRIAL CO LTD   | KJ4-V-0-2       | V-0, 130 deg. C                                              | ZPMV2          | UL (E111636) |  |
| PWB - Alternate                                            | APCB INC                   | 77-1            | V-0, 130 deg. C                                              | ZPMV2/8        | UL (E85792)  |  |
| PWB - Alternate                                            | Interchangeable            | Interchangeable | Min. V-0, 130 deg. C                                         | ZPMV2          | UL           |  |
| Label                                                      | Interchangeable            | Interchangeable | Suitable for use on each type of surface to                  | PGDQ2 or PGJI2 | UL           |  |



|               |       |          |                                                                                                |   |   |  |
|---------------|-------|----------|------------------------------------------------------------------------------------------------|---|---|--|
|               |       |          | which applied, rated for maximum surface temperature specified, or 60 deg. C if not specified. |   |   |  |
| IR LED (2 EA) | OSRAM | SFH4714A | Rated 4.5-5.5 Vdc, 0.5 A, Current limit: 1.01 A                                                | - | - |  |

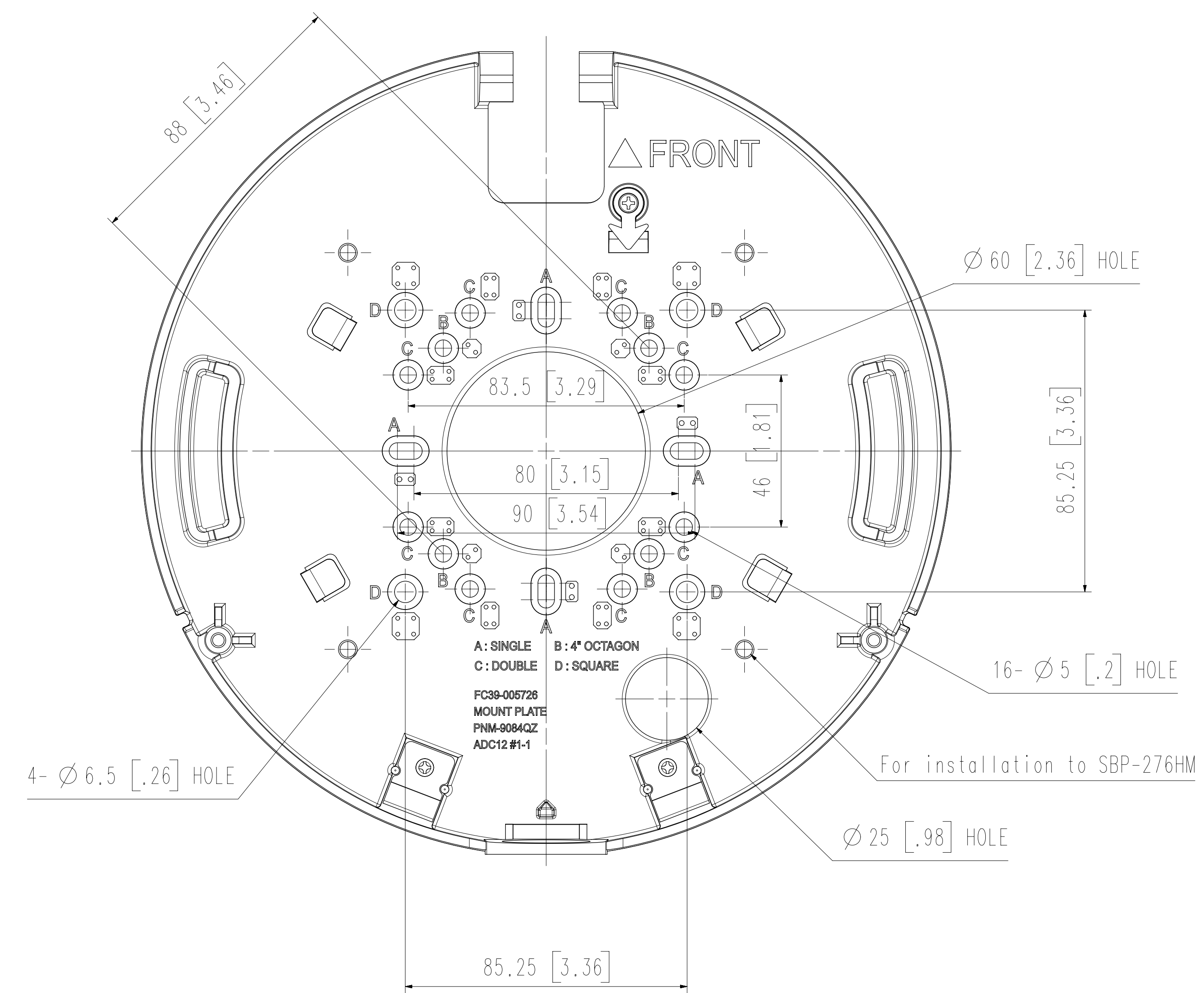
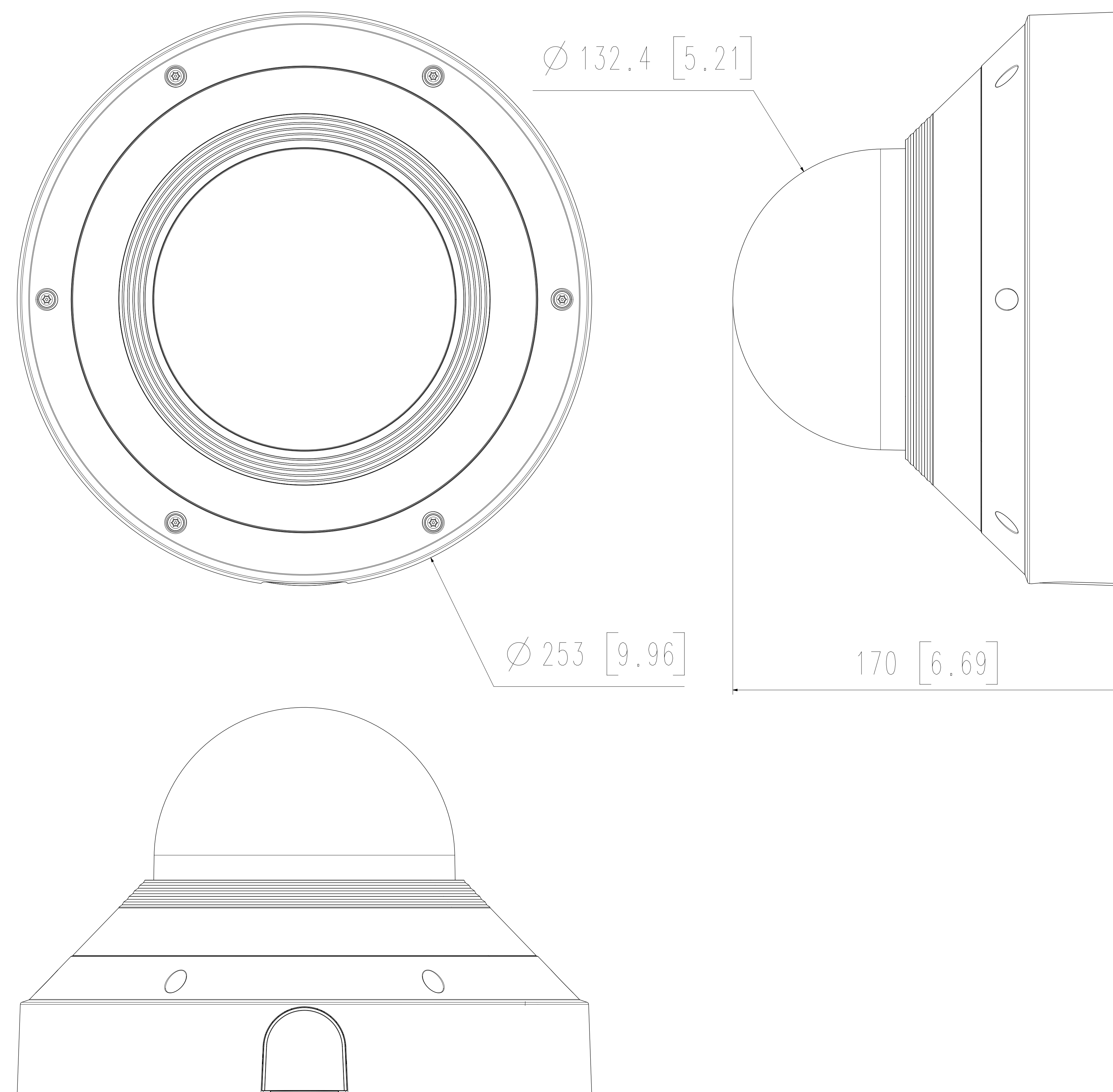
## Enclosures

| Type          | Supplement Id | Description                       |
|---------------|---------------|-----------------------------------|
| Photographs   | 03-01         | External View - 1                 |
| Photographs   | 03-02         | External View - 2                 |
| Photographs   | 03-03         | Internal View - 1                 |
| Photographs   | 03-04         | Internal View - 2                 |
| Photographs   | 03-05         | Main Board - Top                  |
| Photographs   | 03-06         | Main Board - Bottom               |
| Photographs   | 03-07         | Camera Module - Top               |
| Photographs   | 03-08         | Camera Module - Bottom            |
| Photographs   | 03-09         | LED Board                         |
| Photographs   | 03-10         | Fan                               |
| Diagrams      | 04-01         | Diagram                           |
| Manuals       | 06-01         | Manual                            |
| Miscellaneous | 07-01         | Dual language safety labeling CRD |
| Miscellaneous | 07-02         | Transformer (T1) Specification    |
| Miscellaneous | 07-03         | Linefilter (LF1) Specification    |
| Miscellaneous | 07-04         | Label                             |



The following Page(s) are related to Diagrams-01. The next supplement, if applicable, will be identified with a new Supplement Page Heading.





|                                                                                                      |            |           |
|------------------------------------------------------------------------------------------------------|------------|-----------|
| 3                                                                                                    |            |           |
| 2                                                                                                    |            |           |
| 1                                                                                                    | PNM-9031RV | 21.02.10  |
| No.                                                                                                  | MODEL NAME | DATE      |
| Unit:mm[inch]                                                                                        |            | SCALE:1/1 |
|  Hanwha Techwin |            |           |





The following Page(s) are related to Manuals-01. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

## 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" or "PS2" and rated from 12 Vdc, 1.7A / PoE (53 V), 0.45A.
16. This product is intended to be supplied by isolation power.
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.



22. Screen distortion could occur outside of the subject distance.
23. When accessing multi-channels (CH1 - 3), 1 or 2fps could drop from the set fps at 20fps.
24. While encoding, a real time fps fluctuation of  $\pm 1$ fps could occur.
25. This device has been verified using STP cable. The use of appropriate GND grounding and STP cable is recommended to effectively protect your product and property from transient voltage, thunderstroke, communication interruption.

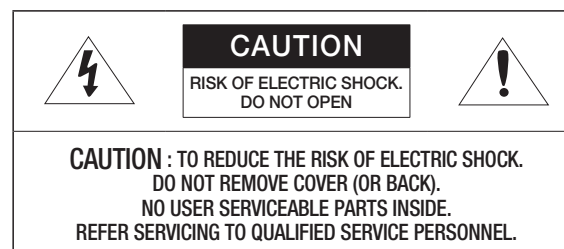
## WARNING

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 OPENINGS 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.

The battery cannot be replaced.

### 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.

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

Before connecting the Power Terminal Block, you need to unplug the power plug from the outlet first.

When a new product box is opened (or during the initial use of the product), moisture might build up on the glass of the camera. The built-up moisture disappears naturally within a few hours after powered on.

Do not arbitrarily loosen or tighten the gore valve.

**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 802.3at shall be a UL Listed device with the output evaluated as a Limited Power Source as defined in UL60950-1 or PS2 as defined in UL62368-1.**

**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.

- 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.

We do not guarantee the quality of third-party products (e.g. lenses, accessories) that you separately purchase.

In particular installation environments, there might be interference in radio communications. When interference of electromagnetic waves occurs between the product and radio communication device, it is recommended to keep a certain distance between the two or change the direction of the receiving antenna.



The following Page(s) are related to Miscellaneous-01. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

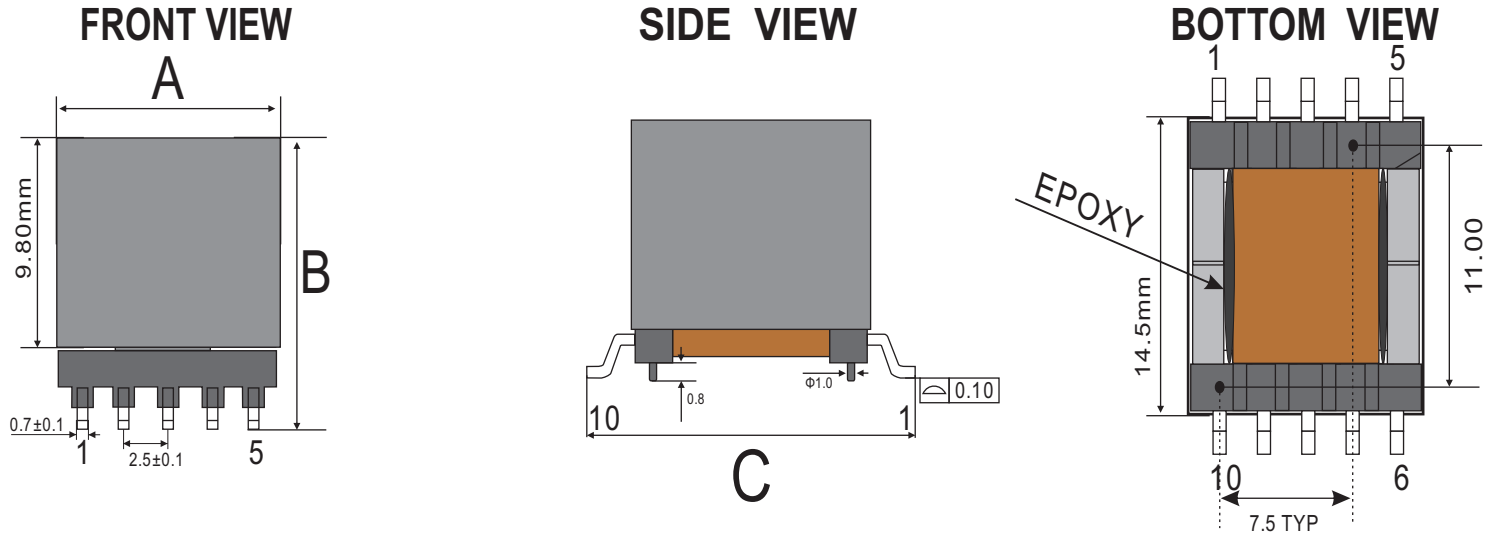
Standard SCC Requirements and Guidance - Product Certification Body Accreditation Program Edition/ Revision Date 2016-04-06

| Clause/Par. Reference and Construction Requirement                                                                                                                                                                                                                                                                                                            | Comply |    |     | Comments/Measurements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Inst. ID No. |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
|                                                                                                                                                                                                                                                                                                                                                               | Yes    | No | N/A |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |
| 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          |
| 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.                                                                                                                                                                                | N/A          |



The following Page(s) are related to Miscellaneous-02. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

## 2. Mechanical Dimensions:



Note:

- 1.Wrap 2Ts of 7mm kapton tape around the finished part.
- 2.Fixed the cores with glue,and fixed the case with glue.

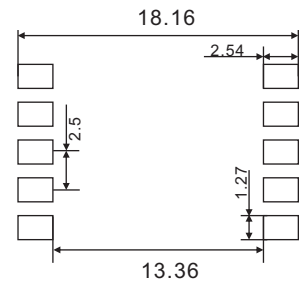
Unit: mm

| A<br>MAX | B<br>MAX | C<br>MAX |
|----------|----------|----------|
| 15.2     | 14.8     | 17.8     |

Laser Marking information



Suggested PCB Paad Layout

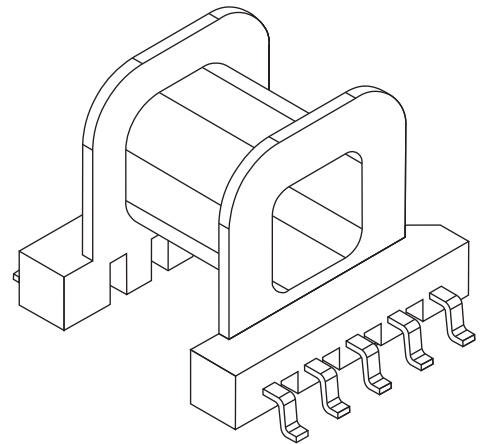
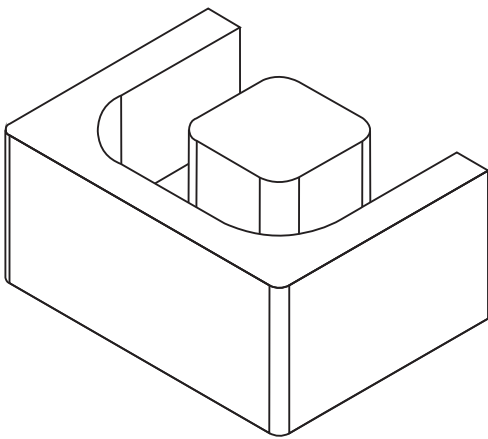


### 5.Winding Information:

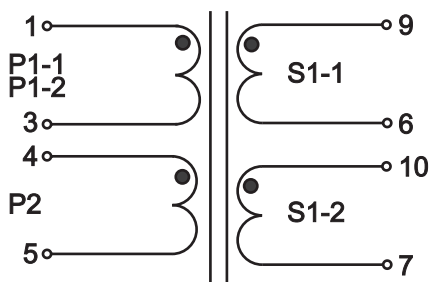
| WINDING SEQ. | ST-FN | WIRE/FOIL               | TURNS | WRAP INSUL.             | MARGIN TAPE | SLEEVE | NOTE |
|--------------|-------|-------------------------|-------|-------------------------|-------------|--------|------|
| P1-1         | 1--3  | 4*0.21mm 2UEW           | 16    | 1T w8.0mm (kapton tape) | N/A         | N/A    | 1    |
| S1-1         | 9--6  | 4*0.27mm 2UEW (Red)     | 6     | 1T w8.0mm (kapton tape) | N/A         | N/A    | 1    |
| P1-2         | 1--3  | 2*0.21mm 2UEW (Natural) | 16    | 1T w8.0mm (kapton tape) | N/A         | N/A    | 1    |
| S1-2         | 10--7 | 4*0.27mm 2UEW           | 6     | 1T w8.0mm (kapton tape) | N/A         | N/A    | 1    |
| P2           | 4--5  | 3*0.17mm 2UEW           | 6     | 2T w8.0mm (kapton tape) | N/A         | N/A    | 1    |

#### NOTE :

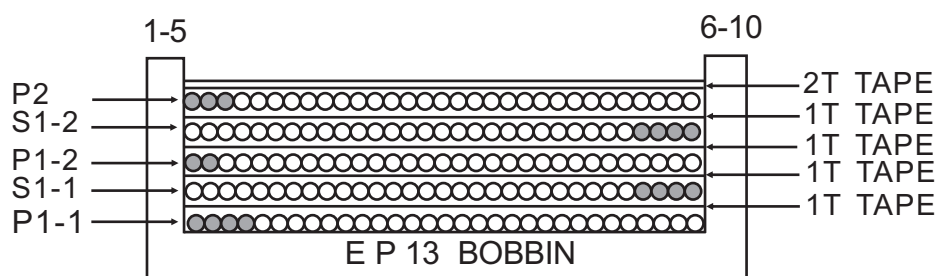
1. -Place the bobbin pin 1 left side of operator.



### 6.Schematic:



### 7.Winding construction



● :Start terminal

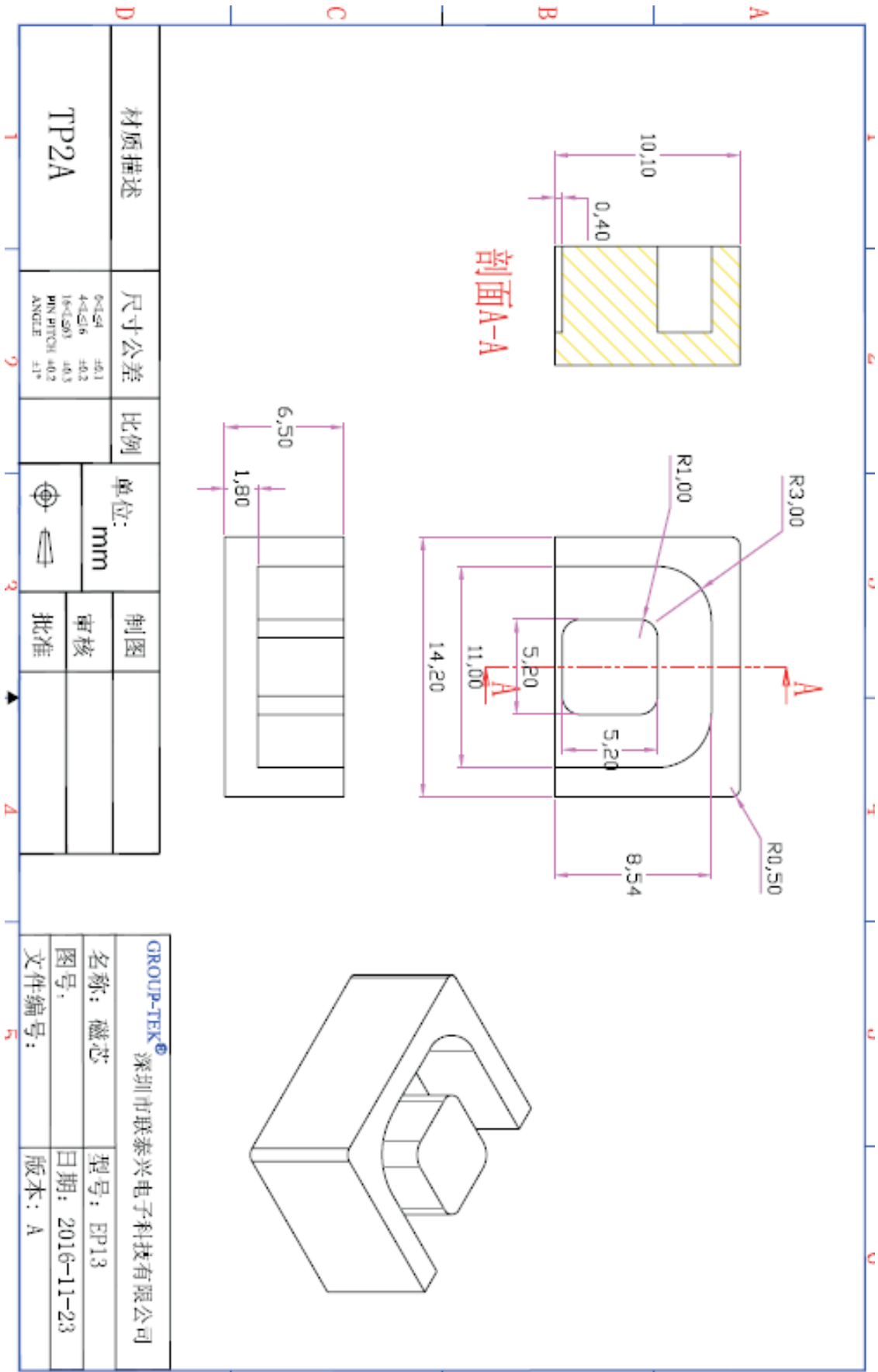


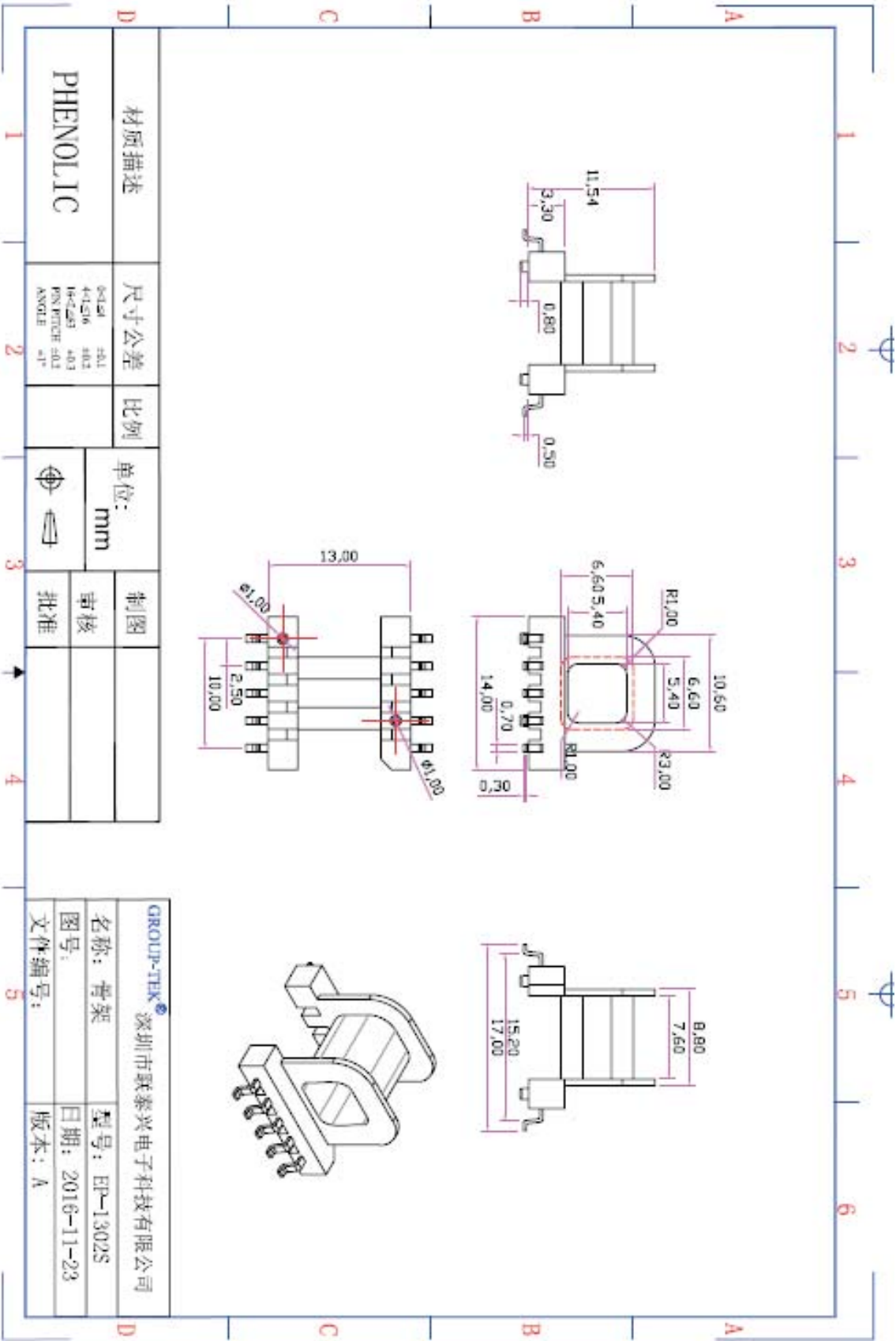
### 8.Material List:

| NO. | ITEM.  | MATERIALS                                                                                              | SUPPLIERS/MANUFAXTURES                           | UL FILE NO.   |
|-----|--------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------|---------------|
| 1   | BOBBIN | PHENOLIC T375J<br>UL RATING: 94V-0<br>THERMAL RATING:150°C                                             | CHANG CHUN PLASTIC CO LTD.                       | QMFZ2.E59481  |
| 2   | CORE   | Tp2A                                                                                                   | TTS Technology Co.,Ltd.                          | N/A           |
| 3   | WIRE   | POLYURETHANE ENAMELED<br>TYPE NO: 2UEW<br>THERMAL RATING:180°C                                         | ZHU HAI SUNTEK WIRE COLTD                        | OBMW2.E234867 |
| 4   | TAPE   | ADHESIVE POLYESTER TAPE<br>TYPE NO.:CT*(c)(g)<br>THERMAL RATING:130°C<br>yellow tape : for inner coils | JingJiang yahua pressure sensitive glue Co.,Ltd  | .E165111      |
| 5   | SOLDER | SN/CU: 99.3/0.7                                                                                        | Gao Xin stannum industry Co., Ltd                | N/A           |
| 6   | Glue   | E-500(xx)                                                                                              | Dong Guan city eatto electronic material Co.,Ltd | E218090       |
| 7   | CASE   | PHENOLIC T375J<br>UL RATING: 94V-0<br>THERMAL RATING:150°C                                             | CHANG CHUN PLASTIC CO LTD.                       | QMFZ2.E59481  |

### 9.PACKING INFORMATION:

| DESCRIPTION              | QTY |
|--------------------------|-----|
| PIECES PER REEL          | 150 |
| PIECES PER POCKET        | 1   |
| PIECES PER BOX           | 450 |
| REEL PER BOX             | 3   |
| GROSS WEIGHT PER BOX(KG) | TBD |
| NET WEIGHT PER BOX(KG)   | TBD |







The following Page(s) are related to Miscellaneous-03. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

|                |             |             |     |
|----------------|-------------|-------------|-----|
| SPECIFICATIONS | ITEM        | LINE FILTER | Rev |
|                | TNC SPEC NO | CV320070SB  | 0   |

## 2. ELECTRICAL CHARACTERISTIC

| NO | ITEM                 | TERMINAL         | SPECIFICATION       |       |           | REMARKS                              |
|----|----------------------|------------------|---------------------|-------|-----------|--------------------------------------|
| 1  | RATED VOLTAGE        | LINE TO LINE     | AC 300V             |       |           |                                      |
| 2  | RATED CURRENT        | START-FINISH     | 2.0A                |       |           |                                      |
| 3  | INDUCTANCE           | START-FINISH     | 16KHz               | 7.0mH | + 50%-30% | HP-4194A<br>1V (25℃±2℃)              |
| 4  | TEMPERATURE RISE     | AT RATED CURRENT | 55℃ MAX             |       |           |                                      |
| 5  | DC RESISTANCE        | START-FINISH     | 130.0 mΩ MAX        |       |           | HIOKI 3540<br>(25℃±2℃)               |
| 6  | WITHSTANDING VOLTAGE | LINE TO LINE     | AC 1,500V 1 MINUTE. |       |           | TOS-5101<br>CUT OFF CURRENT<br>(5mA) |

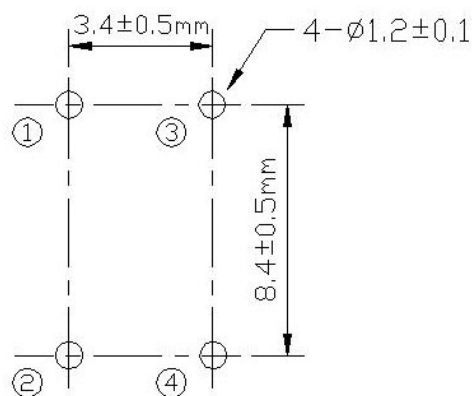
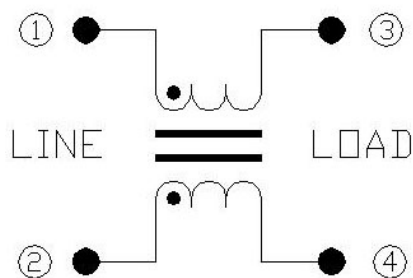
## 3. OPERATING TEMPERATURE RANGE

-40℃ TO +105℃ INCLUDING TEMPERATURE RISE.

## 4. KEEP TEMPERATURE RANGE

-40℃ ~ +105℃.

## 5. CIRCUIT DIAGRAM



Minimum PCB Piercing HOLE

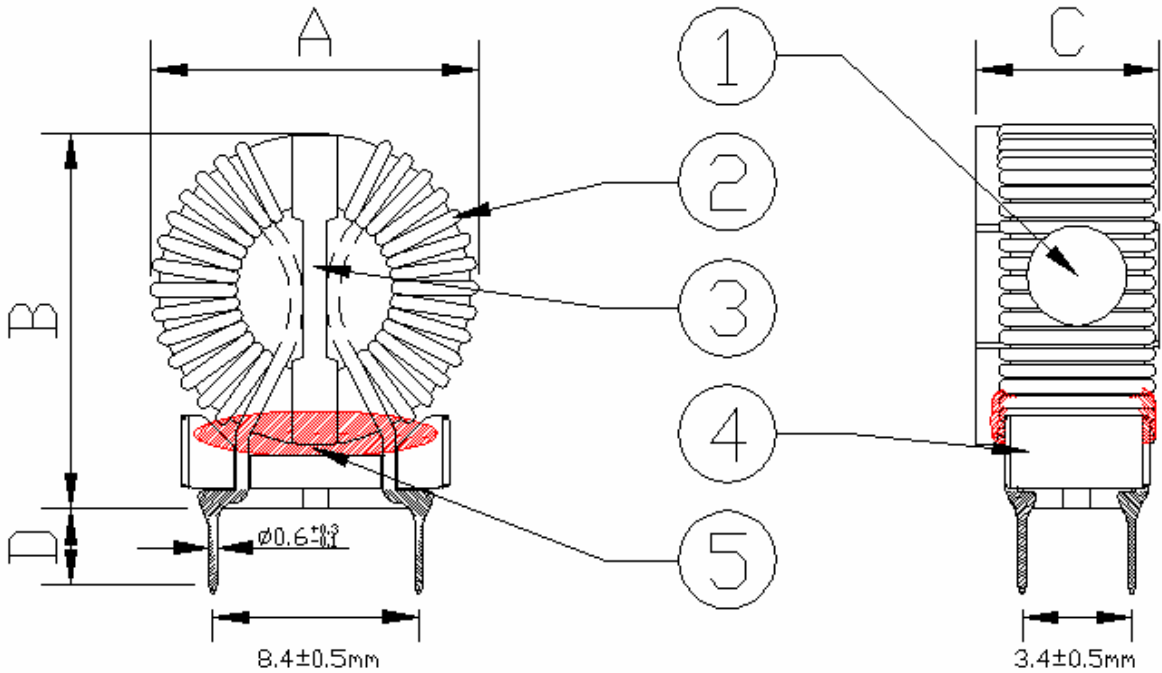
|                                                                                                 |                                                                                          |                                                                                           |                                                                                           |      |
|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------|
|  TNC CO.,LTD | DESIGN                                                                                   | CHECK                                                                                     | APPROVAL                                                                                  | PAGE |
|                                                                                                 |  R&D |  R&D |  R&D | 3/14 |

|                |             |             |     |
|----------------|-------------|-------------|-----|
| SPECIFICATIONS | ITEM        | LINE FILTER | Rev |
|                | TNC SPEC NO | CV320070SB  | 0   |

6. WINDING SPECIFICATION

| NO | TERMINAL |        | WIRE      | TURNS  | WINDING METHOD | UNBALANCE SPECIFICATION       |
|----|----------|--------|-----------|--------|----------------|-------------------------------|
|    | START    | FINISH |           |        |                |                               |
| L1 | 1        | 3      | UEW 0.40Φ | 35±2Ts | HANDMADE       | BETWEEN L1 AND L2 (0.2mH MAX) |
| L2 | 2        | 4      |           |        |                |                               |

7. SHAPE AND DIMENSION



| DIMENSION | A          | B          | C         | D                                        |
|-----------|------------|------------|-----------|------------------------------------------|
|           | 15.5mm MAX | 18.5mm MAX | 9.5mm MAX | Not include solder fillet<br>2.6 ± 0.5mm |

|                                       |                                       |                                       |                                        |      |
|---------------------------------------|---------------------------------------|---------------------------------------|----------------------------------------|------|
| <div>TNC</div> <div>TNC CO.,LTD</div> | DESIGN                                | CHECK                                 | APPROVAL                               | PAGE |
|                                       | <div>RYU.H.E</div> <div>R&amp;D</div> | <div>KIM.J.S</div> <div>R&amp;D</div> | <div>PARK.J.W</div> <div>R&amp;D</div> | 4/14 |

|                |             |             |     |
|----------------|-------------|-------------|-----|
| SPECIFICATIONS | ITEM        | LINE FILTER | Rev |
|                | TNC SPEC NO | CV320070SB  | 0   |

## 8. MATERIAL LIST

| No. | NAME           | SPECIFICATION                               |                    | MANUFACTURER                                                          | COLOR       | UL No.  |
|-----|----------------|---------------------------------------------|--------------------|-----------------------------------------------------------------------|-------------|---------|
| 1   | Ferrite Core   | MA100 R-13/7/5<br>R10KF TR13X7X5C           |                    | JFE Ferrite Corp<br>LAIWU CHAINWELL<br>ELECTRONIC&MATERIAL<br>CO.,LTD | GRAY        |         |
| 2   | Enamel Wire    | UEW 0.40Φ<br>/ 35±2Ts                       | UEW                | HWA IL ELECTRONICS CO.,LTD                                            | YELLOW      | E140246 |
|     |                |                                             | UEW                | SHANDONG PENGTAI STOCK CO LTD                                         | YELLOW      | E166187 |
|     |                |                                             | UEW                | SIAM PACIFIC ELECTRIC WIRE & CABLE CO.,LTD                            | YELLOW      | E142108 |
| 3   | Coil Separator | LCP<br>L304T40                              |                    | TORAY INDUSTRIES INC                                                  | BLACK       | E41797  |
|     |                | NYLON<br>A 50H1(r3)(f2)                     |                    | SOLVAY ENGINEERING<br>PLASTICS GBU                                    | BLACK       | E44716  |
| 4   | Coil Base      | Phenolic (PF 2736(a)(b))<br>UL 94 V-0 Class |                    | Hexion GmbH                                                           | BLACK       | E61040  |
|     |                | Phenolic (T375HF)<br>UL 94 V-0 Class        |                    | CHANG CHUN PLASTICS CO LTD                                            | BLACK       | E59481  |
| 5   | Epoxy          | EPOXY<br>RESIN                              | NA-010             | ND Chemical                                                           | WHITE       |         |
|     |                |                                             | EA610A /<br>EA610B | Chemtech Co.,Ltd                                                      | Transparent |         |

|                                                                                                 |                                                                                      |                                                                                       |                                                                                       |      |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------|
|  TNC CO.,LTD | DESIGN                                                                               | CHECK                                                                                 | APPROVAL                                                                              | PAGE |
|                                                                                                 |  |  |  | 5/14 |



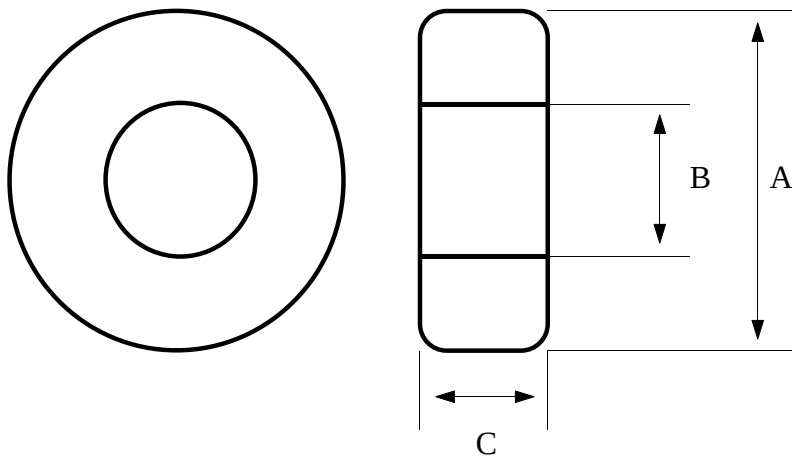
|                |             |             |     |
|----------------|-------------|-------------|-----|
| SPECIFICATIONS | ITEM        | LINE FILTER | Rev |
|                | TNC SPEC NO | CV320070SB  | 0   |

## 14. FERRITE CORE SPECIFICATION

### - Characteristics

| Symbol           | Unit                  | MA100 R-13/7/5 | R10KF TR13X7X5C |
|------------------|-----------------------|----------------|-----------------|
| $\mu_i$          | -                     | 10,000±30%     | 10,000±30%      |
| B <sub>ms</sub>  | mT                    | 415            | 390             |
| H <sub>cms</sub> | A/m                   | 3.0            | 7.0             |
| B <sub>rms</sub> | mT                    | 76             | 100             |
| T <sub>c</sub>   | °C                    | >115           | >120            |
| TANδ /μiac       | *10 <sup>-6</sup>     | <1.9           | <7.0            |
| α <sub>μr</sub>  | *10 <sup>-6</sup> /°C | -0.5~2.0       | 0~1.5           |
| ρ                | Ω.m                   | 0.1            | 0.15            |
| d                | g/cm <sup>3</sup>     | 5.0            | 4.8             |

### - Dimension (Before Coating)



A: 13.0 ±0.35      B: 7.0 ±0.3      C: 5.0 ±0.3





NETWORK CAMERA  
MODEL:PNM-9031RV

DC 12V  1.7A /

PoE(53V  ) 0.45A

M/C:PNM-9031RV/KUS Fac. ID: D



2021.06 S/N:Serial No.

MAC ADDRESS: XX-XX-XX-XX-XX-XX

CAN ICES-3(A)/NMB-3(A)

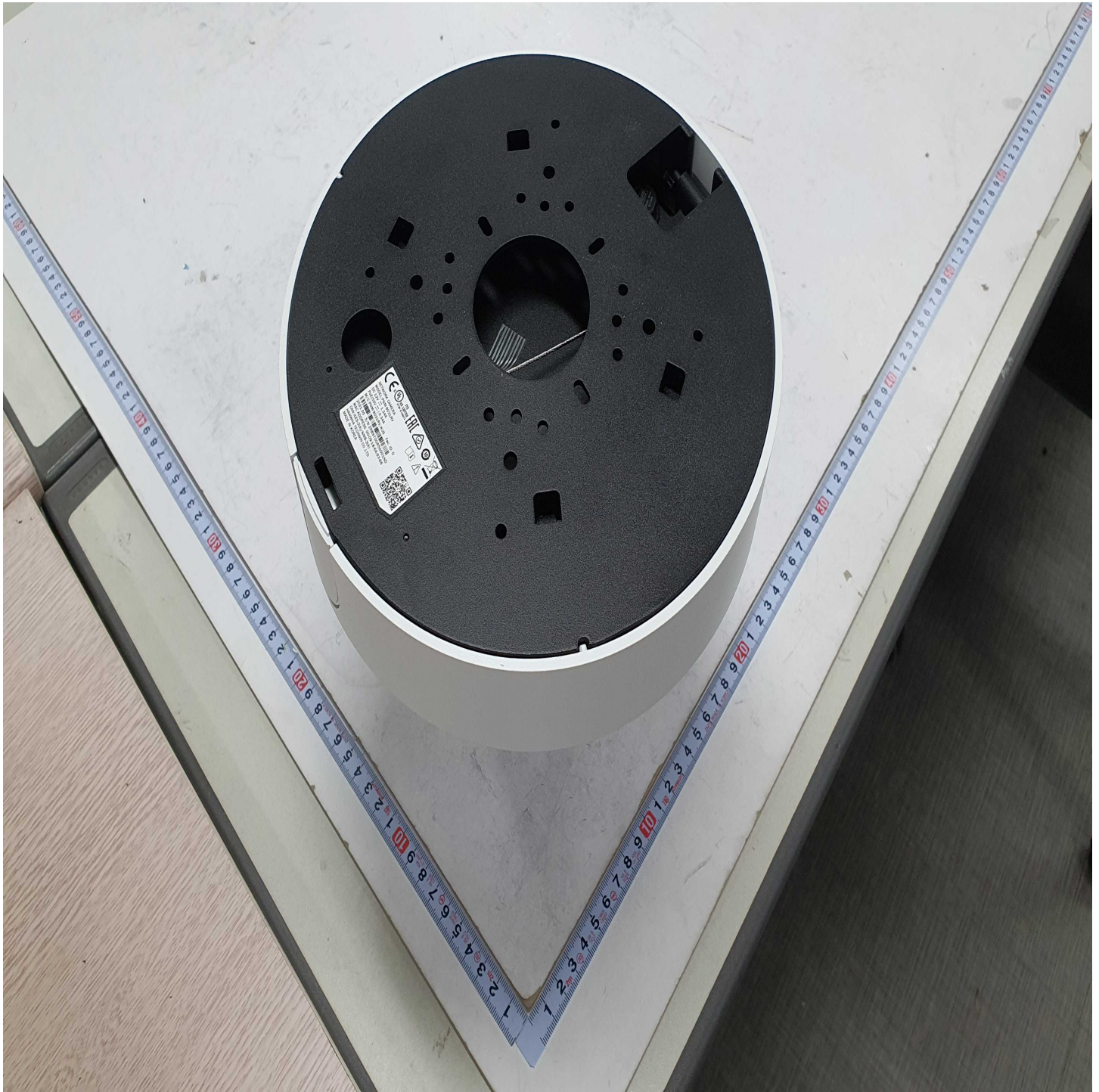
HANWHA TECHWIN CO.,LTD.

MADE IN KOREA



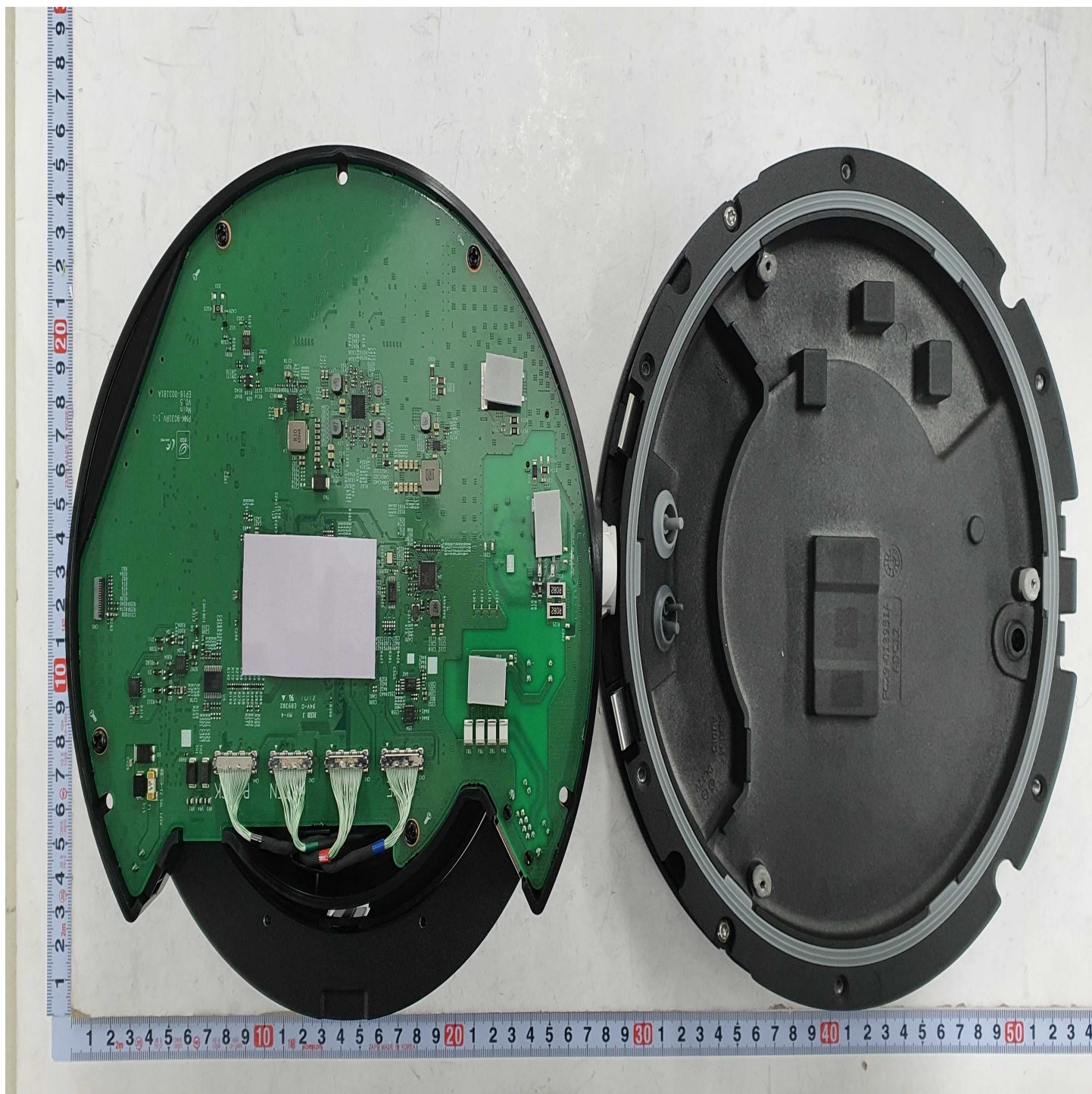




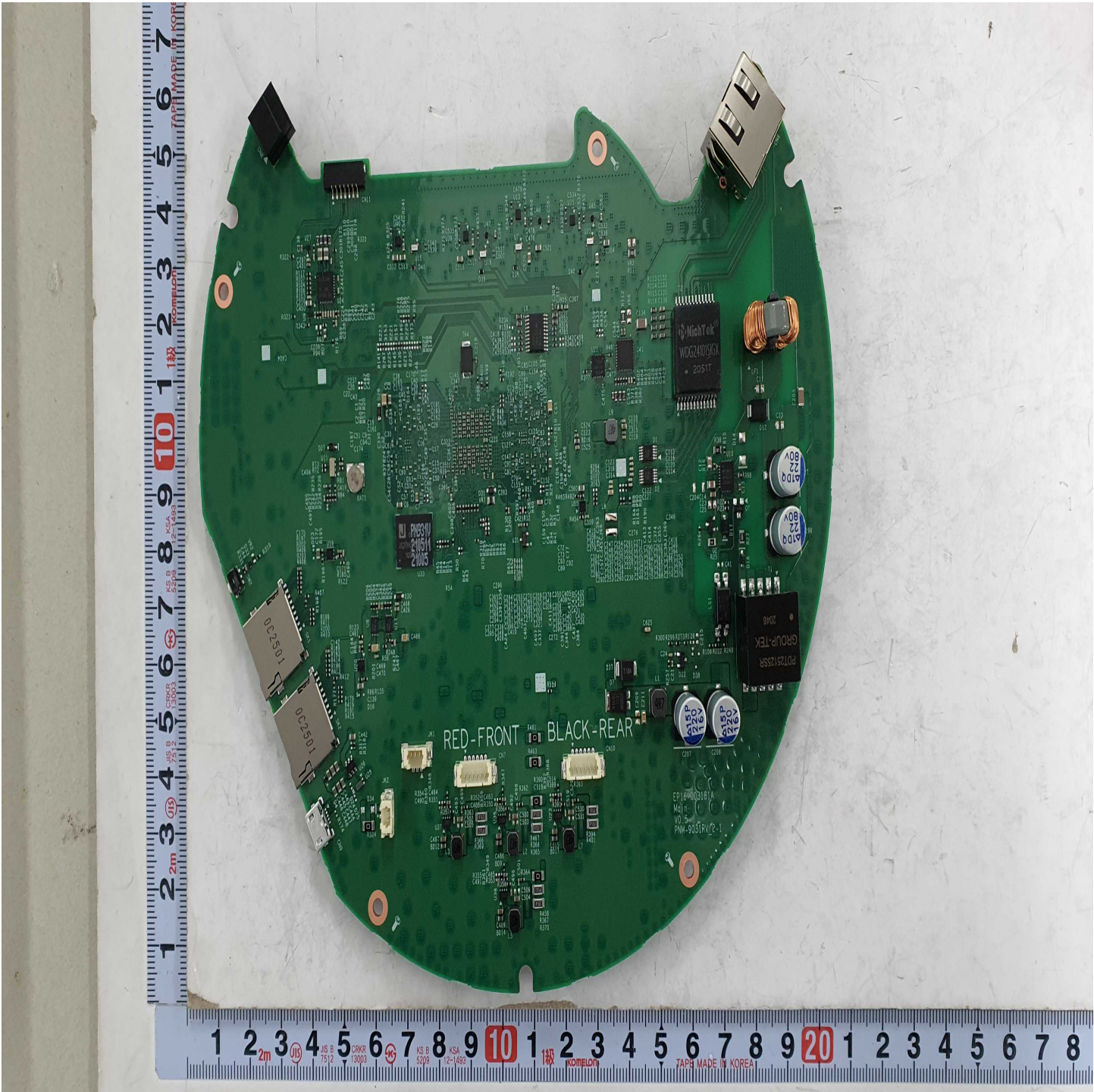




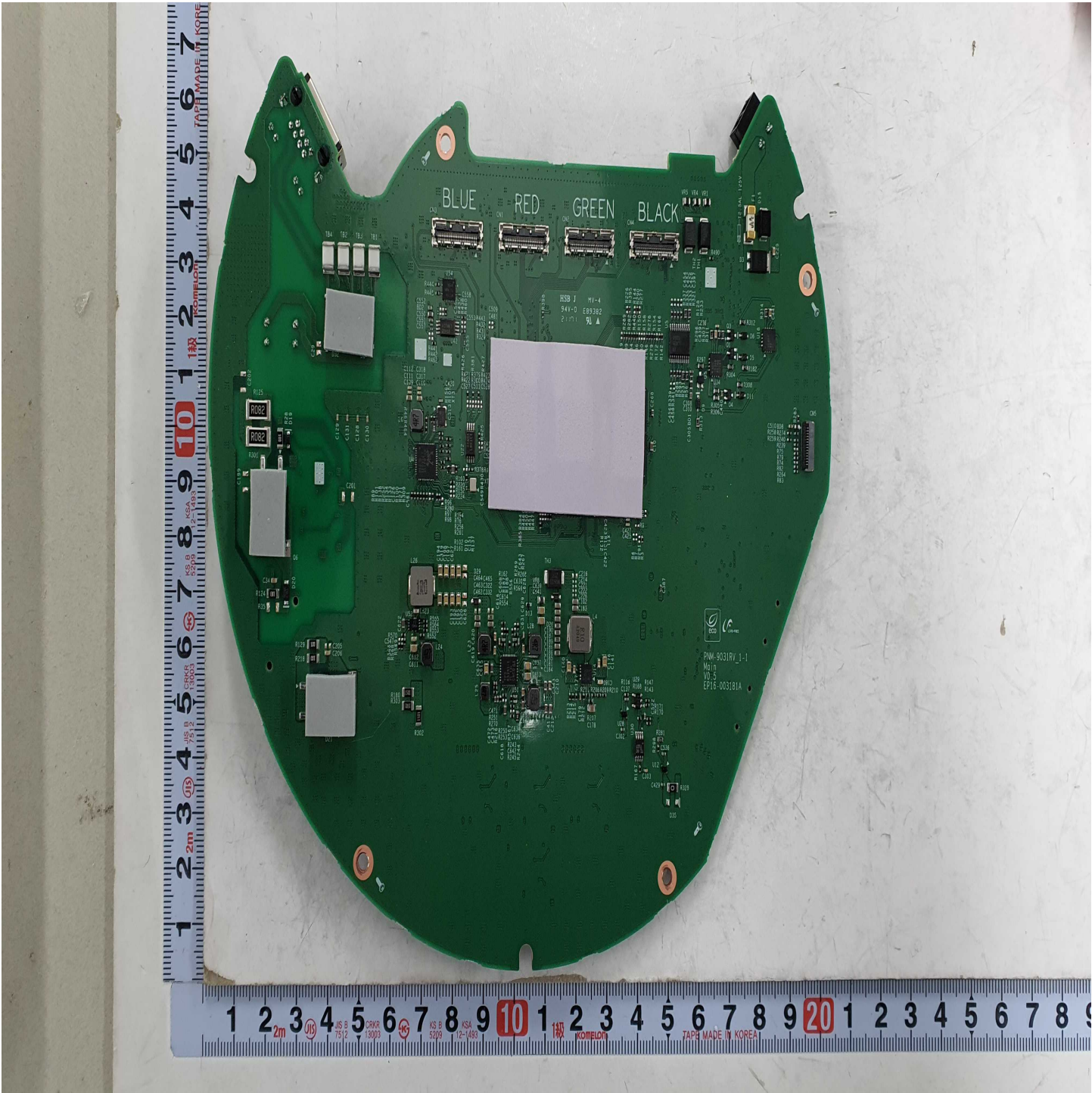


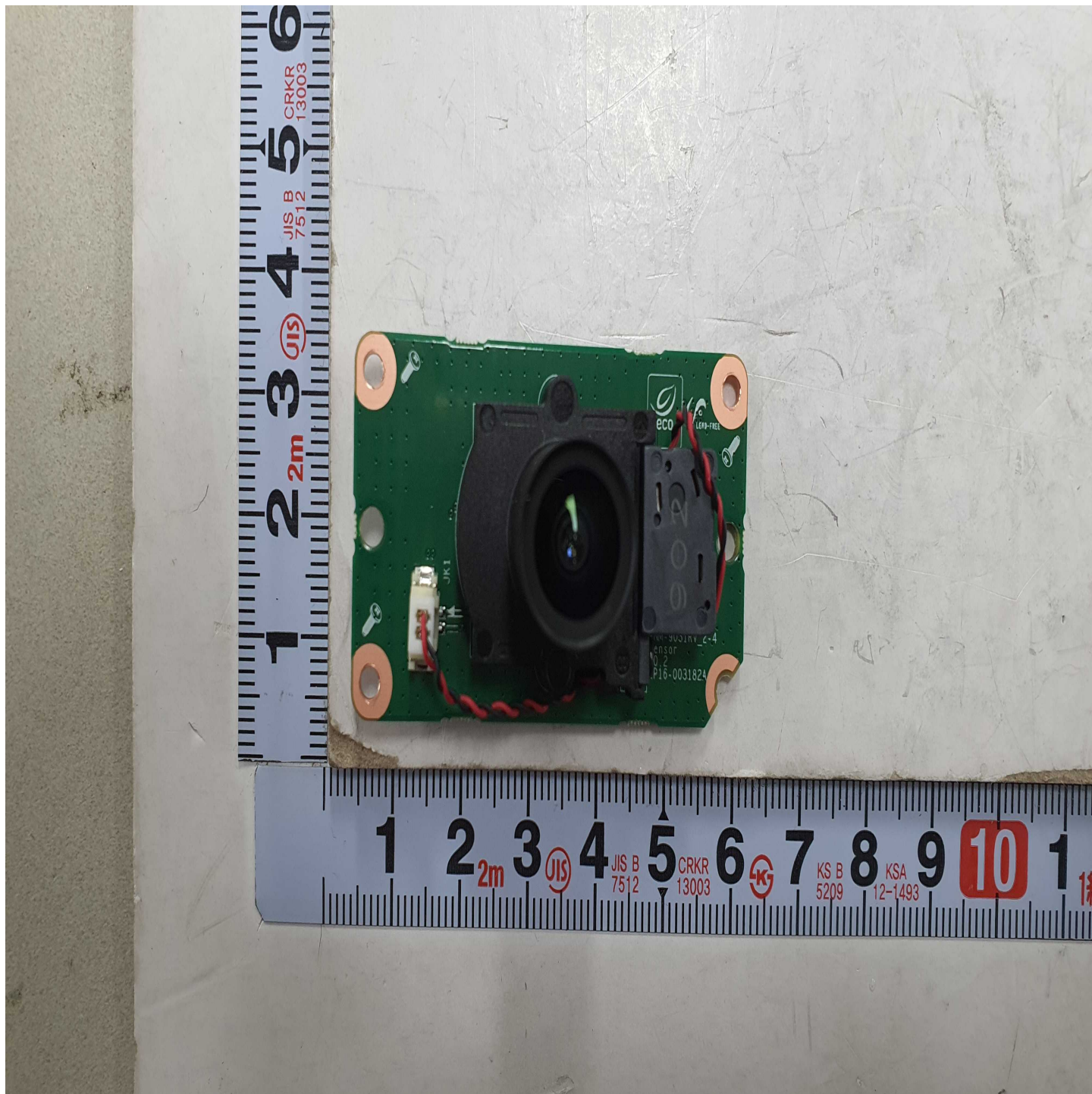






















**Test Record No. 1**

1. Test result relate only to the items tested.
2. The manufacturer submitted representative production samples of NETWORK CAMERA, PNM-9031RV.
3. Only the test listed were considered necessary.

The following tests were conducted:

|                                                                                       |                                                                                                 |
|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| <b>Tests performed (name of test and test clause):</b>                                | <b>Testing location:</b><br>CTK Co., Ltd., 386-1 Ho-dong Yongin-shi, Kyungki-do, 449-100, Korea |
| 5.4.1.8 – DETERMINATION OF WORKING VOLTAGE                                            |                                                                                                 |
| 8.7 – WALL OR CEILING MOUNTING TESTS                                                  |                                                                                                 |
| B.2.5 – INPUT TEST: POLYPHASE                                                         |                                                                                                 |
| B.1.5, B.2.6, 5.4.1.4, 6.3, 9.3 – NORMAL OPERATING CONDITIONS TEMPERATURE MEASUREMENT |                                                                                                 |
| B.3 – SIMULATED ABNORMAL OPERATING CONDITIONS                                         |                                                                                                 |
| B.4 – SIMULATED SINGLE FAULT CONDITIONS                                               |                                                                                                 |
| ANNEX M.3.2 – PROTECTION CIRCUITS FOR BATTERIES                                       |                                                                                                 |
| ANNEX Q.1 – LIMITED POWER SOURCE                                                      |                                                                                                 |
| <b>The following tests were waived:</b>                                               | <b>Rationale for Waiving</b>                                                                    |
|                                                                                       |                                                                                                 |
|                                                                                       |                                                                                                 |

Test results are valid only for the tested equipment. These tests are considered representative of the products covered by this Test Report. The test methods and results of the above tests have been reviewed and found to be in accordance with the requirements in the Standard(s) referenced at the beginning of this Test Report.

The following supplements are provided as part of this Test Record. NOTE: These supplements are only available to the Applicant via the myUL™ Client Portal.

| Type      | Supplement Id | Description |
|-----------|---------------|-------------|
| Datasheet | 02-01         | Datasheet   |

