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Please find attached the related material

For your convenience, the below describes the related updates:

Project : 4789673738, New Section: A6040

E158873-volX13-Index
E158873-20201124-CertificateofCompliance
E158873-A6040-DescriptionUL
Figure-29-Total
E158873-A6040-TestRecordUL

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THERMAL CAMERA	TNM-3620TDY	E158873-A6037-UL	
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# CERTIFICATE OF COMPLIANCE

**Certificate Number** UL-US-2007000-0  
**Report Reference** E158873-20201124  
**Date** 30-Nov-2020

**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.



Bruce Mahrenholz, Director North American Certification Program

UL LLC

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# CERTIFICATE OF COMPLIANCE

Certificate Number UL-US-2007000-0  
Report Reference E158873-20201124  
Date 30-Nov-2020

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-9322VQP	NETWORK CAMERA



Bruce Mahrenholz, Director North American Certification Program

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# CERTIFICATE OF COMPLIANCE

**Certificate Number** UL-CA-2005103-0  
**Report Reference** E158873-20201124  
**Date** 30-Nov-2020

**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** AZOT7 - Audio/Video, Information and Communication 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

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.

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# CERTIFICATE OF COMPLIANCE

Certificate Number UL-CA-2005103-0  
Report Reference E158873-20201124  
Date 30-Nov-2020

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-9322VQP	NETWORK CAMERA



Bruce Mahrenholz, Director North American Certification Program

UL LLC

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## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	UL 62368-1, 2nd Ed, 2014-12-01 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1-14, 2nd Ed, Issued: 2014-12-01 (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-9322VQP
<b>Rating:</b>	PoE (55 Vdc), 1.15 A
<b>Applicant Name and Address:</b>	HANWHA TECHWIN CO LTD 6, PANGYO-RO 319BEON-GIL, BUNDANG-GU 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.

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

Prepared By: Lawrencece 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 DC or PoE (Power over Ethernet) and installed by service personnel.

### Model Differences

N/A

### Test Item Particulars

Classification of use by	Instructed person
Supply Connection	External Circuit - not Mains connected ES1
Supply % Tolerance	None
Supply Connection – Type	PoE (Power over Ethernet)
Considered current rating of protective device as part of building or equipment installation	N/A
Equipment mobility	wall-mounted
Over voltage category (OVC)	OVC I
Class of equipment	Class III
Access location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified maximum operating ambient (°C)	60
IP protection class	IPX0
Power Systems	N/A
Altitude during operation (m)	2000 m or less
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	7.15

### Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (T<sub>ma</sub>) permitted by the manufacturer's specification of : 55
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual

**Additional Information**

4789673738

- Maximum Normal Load: Continuous operation with heater on and fan operating.

**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 companys 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)"
Replaceable batteries	<p>"CAUTION: Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions."/"ATTENTION: Risque d’explosion si la batterie est remplacée par un type incorrect. Mettre au rebus les batteries usagées selon les instructions." (Marking)</p> <p>Alternatively, symbol</p> <div style="text-align: center;"> </div> <p>(ISO 7000-0434 and/or ISO 7000-1641) on product where visible, with the above wording in the instruction manual.</p>
Hard Copy	<p>A. IMPORTANT</p> <p>B. Please check 'Manuals' from our website, before connecting to the supply.</p> <p>C. Company website URL (<a href="https://www.~~">https://www.~~</a>)</p>
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 PoE (55 Vdc), 1.15 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 models						
<b>BD1.3</b>						
<b>Electric Strength Test Exemptions – This test is not required for the following models:</b>						
All models						
<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 models						

<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/ trademark	Type / model	Technical data	Product Category CCN(s)	Mark(s) of conformity	Supplement ID
HPoE Injector	CREATIVE LIANJIE NETWORK TECHNOLOGYCO LTD	PT-PSE109GBRO- AH-S	Rated output 55 Vdc, 1.5A, marked "LPS" or "Class 2"	AZOT/7	UL (E487558)	
Camera lens module (Max: 4 provided)(optional)	Hanwha Techwin co. Ltd	SLA-2M1200P or SLA-2M2400P or SLA-2M2800P or SLA-2M3600P or SLA-2M6000P or SLA-5M3700P or SLA-5M4600P or SLA-5M7000P	4.0Vdc. 300mA	NWGQ2/8	UL (E158873)	
Transparent Cover- Dome (Plastic)	LG CHEM LTD	LUPOY UF1004C	Min. 1.5 mm thickness, rated Min. V-2, 80deg. C.	QMFZ2/8	UL (E67171)	
External Top Enclosure (Metal)	Interchangeable	Interchangeable	Aluminium, Min. 1.0 mm thickness.	-	-	
Transparent Side Cover- Dome(Plastic)	SABIC INNOVATIVE PLASTICS US L L C	HF1130R(f2)	Min. 2.0 mm thickness, rated Min. V-2, 130deg. C.	QMFZ2/8	UL (E121562)	
External Bottom Enclosure (Metal)	Interchangeable	Interchangeable	Aluminium, Min. 1.0 mm thickness.	-	-	
External BottomEnclosure (Plastic)	LOTTE CHEMICAL CORPORATION	HN-1068(+)(f1)	Min. 1.5 mm thickness, rated Min. V-0, 130deg. C.	QMFZ2/8	UL (E115797)	
Internal Plastic Part Materials	SAMYANG CORPORATION	3025G(y) (f2)	Min. 1.5 mm thickness, rated Min. V-0, 115deg. C.	QMFZ2/8	UL (E121254)	
Connectors and Receptacles (Secondary circuits)	Interchangeable	Interchangeable	Min. V-2	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	
Cable	Interchangeable	Interchangeable	Marked VW-1; Min. 30 V, 80 deg. C	AVLV2	UL	
FFC	Interchangeable	Interchangeable	Min. VW-1, 60 V, 105 deg. C	AVLV2	UL	
Label	Interchangeable	Interchangeable	Min.55 deg. C if max. surface temperature not specified.	PGDQ2 or PGJI2	UL	
Thermal Pad	KOMOTECH CO LTD	KGP-1(a)	Min. 0.2 mm thickness, rated V-0, 150 deg. C	QMFZ2/8	UL (E245303)	
Transformer(T1)	CLOVER Hi-Tech CO., LTD.	PN042HTCA-9080VVQ	130 deg. C, See enclosure for more detail.	-	-	
Transformer (T1) - Alternate	COREPLUS CO LTD	PN042HTCA-9080VQ	130 deg. C, See enclosure for more detail.	-	-	
Line filter (LF1)	TNC Co.Ltd	QV181610A	7.0 mH, 125 deg. C	-	-	
Line filter (LF2)	TNC Co.Ltd	CVA6011RNF2	11.0 uH, 150 deg. C	-	-	
Line filter (L1)	Trigon Components, Inc	ITP5015L2R5BU	7.0 mH, 125 deg. C	-	-	
Line filter (L1) - Alternate	CLOVER Hi-Tech CO., LTD.	PWI1904SM(A)	7.0 mH, 125 deg. C	-	-	
FAN Motor	DONGGUAN PROTECHNIC	MBA5112XB-O15	Operation Voltage DC 5.0V-13.2V, 210mA, speed: 6000±10 %RPM	GPWV2/8	UL (E187236)	

	ELECTRIC CO., LTD.					
Tilt Stepping Motor	DONGGUAN SHINANO MOTOR CO.,LTD.	STH-36C1056	Operation Voltage DC 4.6 V, Rated current 0.4A Max starting pulse rate 1950 pps	-	-	
Pan Stepping Motor	DONGGUAN SHINANO MOTOR CO.,LTD.	STH-36C1078	Operation Voltage DC 12V, Rated current 0.6A Max starting pulse rate 1800 pps	-	-	
Focus Stepping Motor	SHANGHAI TOKYO MICRO MOTOR CO., LTD.	8S-251L99	Operation Voltage DC 5.0V, Max 5.0mA Max. starting pulse rate 1500 pps	-	-	
Zoom SteppingMotor	NIDEC SANKYO CORPORATION	ASR-NP-27321-01	Operation Voltage DC 5.0V, Max 5.0mA Max. starting pulse rate 480 pps	-	-	
DN Stepping Motor	TOKYO MICRO VIETNAM CO.,LTD.	6S-234L99	Operation Voltage DC 5.0V, Max 5.0mA Max. starting pulse rate 1500 pps	-	-	
IRIS Stepping Motor	CANON ELECTRONICS INC.	V-12201-N2	Operation Voltage DC 4.2V	-	-	
Thermal Pad	KOMOTECH CO LTD	KGP-1(a)	Min. 0.2 mm thickness, rated V-0, 150 deg. C	QMFZ2/8	UL (E245303)	
Lithium Battery (PTZ main board – BAT1)	FDK CORPORATION	ML614R	Lithium (Coin), Rechargeable, Max. Charging Voltage: 5.0 Vdc, Max. Charging Current: 300 mA	BBCV2	UL (MH13421)	
Lithium Battery (Main board – BAT2, BAT3, BAT4, BAT5)	Seiko Instruments Inc	ML414H	Lithium (Coin), Rechargeable, Max. Charging Voltage: 3.4 Vdc, Max. Charging Current: 300mA	BBCV2	UL (MH15628)	

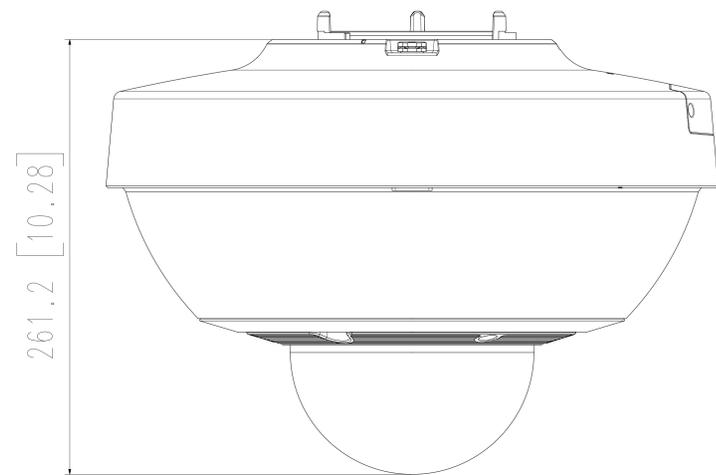
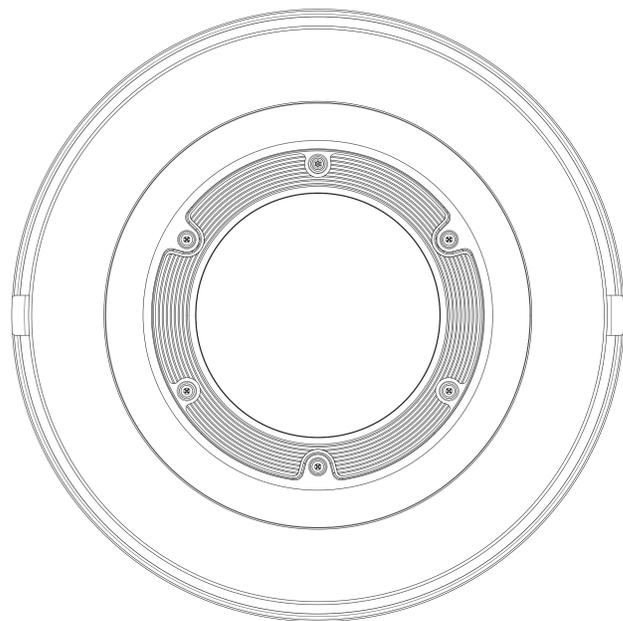
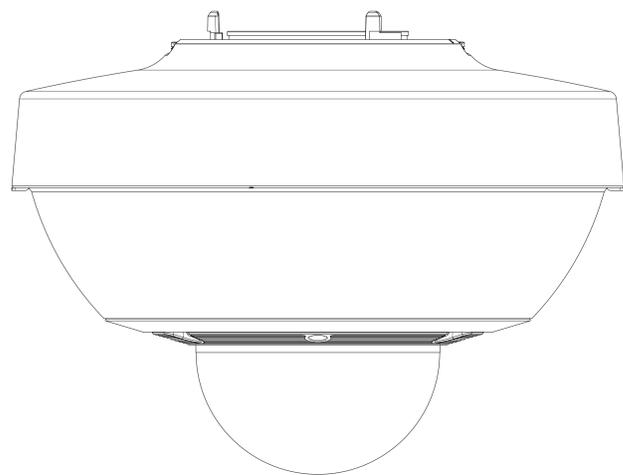
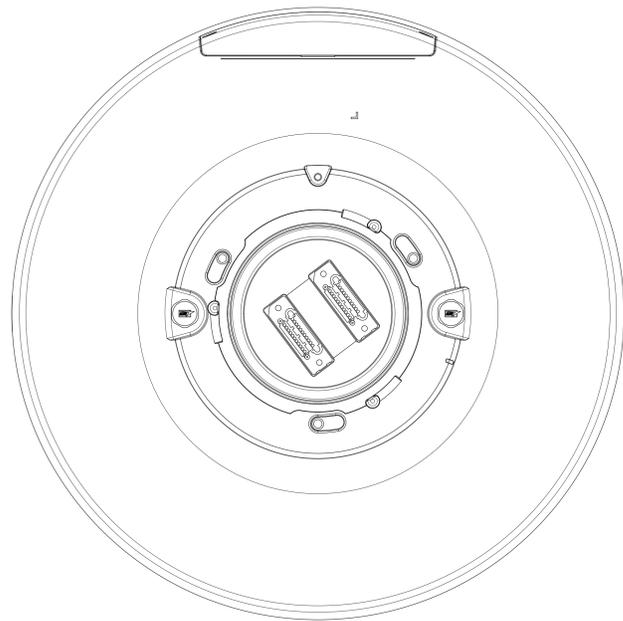
Lithium Battery (SUB board - BAT1)	Seiko Instruments Inc	ML414H	Lithium (Coin), Rechargeable, Max. Charging Voltage: 3.4 Vdc, Max. Charging Current: 300mA	BBCV2	UL (MH15628)	
Opto-coupler (PC1)	LITE-ON TECHNOLOGY CORP	LTV-100-G	Isolation Voltage: 5 000. Max. Operation Temperature: 110 deg. C	FPQU2/8	UL (E113898)	
Opto-coupler (PC1) - Alternate	CT Microelectronics Far East Ltd	CT1018	Isolation Voltage: 5 000. Max. Operation Temperature: 110 deg. C	FPQU2/8	UL (E364000)	
Heater	SMG	HK 11R803R8P 12V 20W	12.0Vdc, 20.0 W	-	-	

## Enclosures

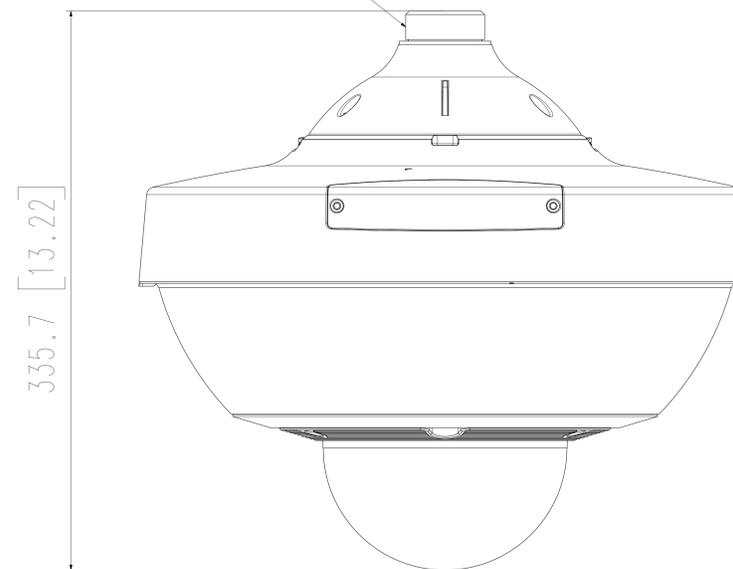
Type	Supplement Id	Description
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Photographs	03-06	Internal View-4
Photographs	03-07	Lens View-1
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Photographs	03-09	PTZ Main board Top
Photographs	03-10	PTZ Main board bottom
Photographs	03-11	Main board Top
Photographs	03-12	Main board Bottom
Photographs	03-13	Interface board Top
Photographs	03-14	Interface board bottom
Photographs	03-15	Power board Top
Photographs	03-16	Power board bottom
Photographs	03-17	Power board bottom
Photographs	03-18	Fan
Photographs	03-19	Stepping Motor
Diagrams	04-01	Enclosure Dimension
Manuals	06-01	Manual
Miscellaneous	07-01	PoE Transformer (T1) spec (CLOVER Hi-Tech Co., LTD.)
Miscellaneous	07-02	PoE Transformer (T1) spec (CORE Pluse)
Miscellaneous	07-03	Line Filter (L1) spec (CLOVER Hi-Tech Co., LTD.)
Miscellaneous	07-04	Line Filter (L1) spec (Trigon)
Miscellaneous	07-05	Line Filter (LF1) spec (TNC Co., LTD)
Miscellaneous	07-06	Line Filter (LF2) spec (TNC Co., LTD)
Miscellaneous	07-07	Dual language safety labeling CRD
Miscellaneous	07-08	Label



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



PF 1-1/2 inch TAP



3	파생 MODEL2	
2	파생 MODEL1	
1	BASIC MODEL	'20.10.22
No.	MODEL NAME	PNM-9322VQP
Unit:mm[inch]		SCALE:2/3
© 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 lightning 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 PoE, 1.5A. (PNM-9322VQP)
16. This Lens module has to be connected with equipment, which supplied by a power supply unit marked "Class 2" or "LPS". (SLA-2M2400P/2M2800P/2M3600P/2M6000P/2M1200P/5M3700P/5M4600P/5M7000P)
17. This product is intended to be supplied by isolation power.
18. 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.
19. 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.
20. 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.
21. 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.



22. Installing or using the product in water can cause serious damage to the product.
23. 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

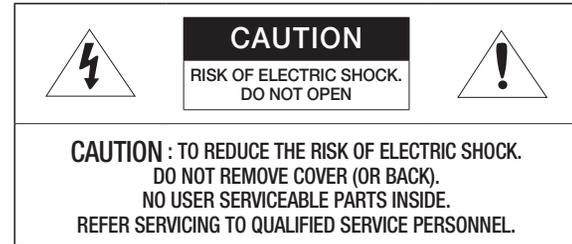
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. DO NOT INSERT ANY METALLIC OBJECT THROUGH THE VENTILATION GRILLS OR OTHER OPENINGS ON THE EQUIPMENT.

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.

**Pan/Tilt/Zoom motors and slip ring are warranted for one year under continuous operation.**

## 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.

The Test Monitor Out port 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.

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 802.3bt 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.

- The product has a damp-proof component attached to it. Due to the nature of the product, dew may be formed after energizing the product, but they will disappear in two to three hours.
- Since this product is equipped with a water-proof ventilation system, avoid installing it in a place that exhibits a sudden artificial change in temperature.
- 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.
- When connecting the HPoE injector to the external Internet, use either one of network cable port (LAN) or fiber optic port (SFP) but not both.

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

The meaning of the symbols are shown below.

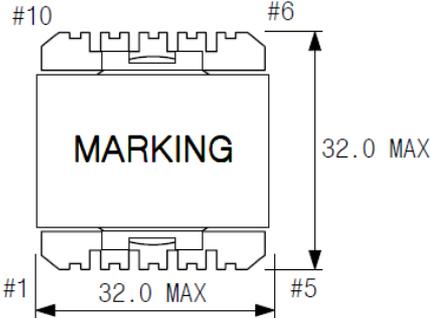
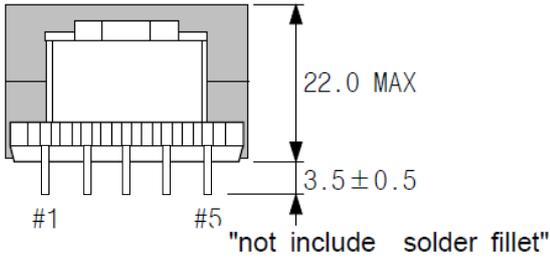
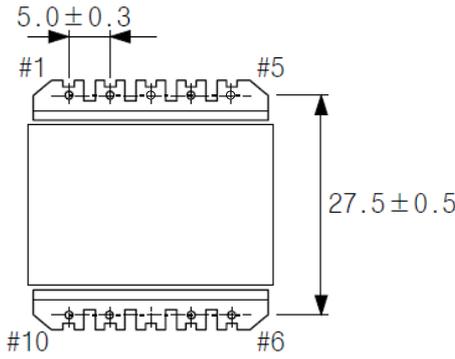
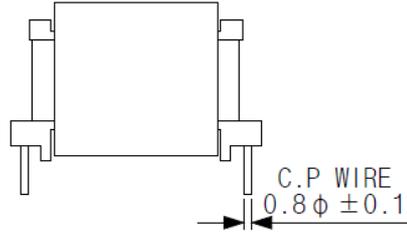
- Reference : In case of providing information for helping of product's usages
  - Notice : If there's any possibility to occur any damages for the goods and human caused by not following the instruction
- ※ Please read this manual for the safety before using of goods and keep it in the safe place.

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



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

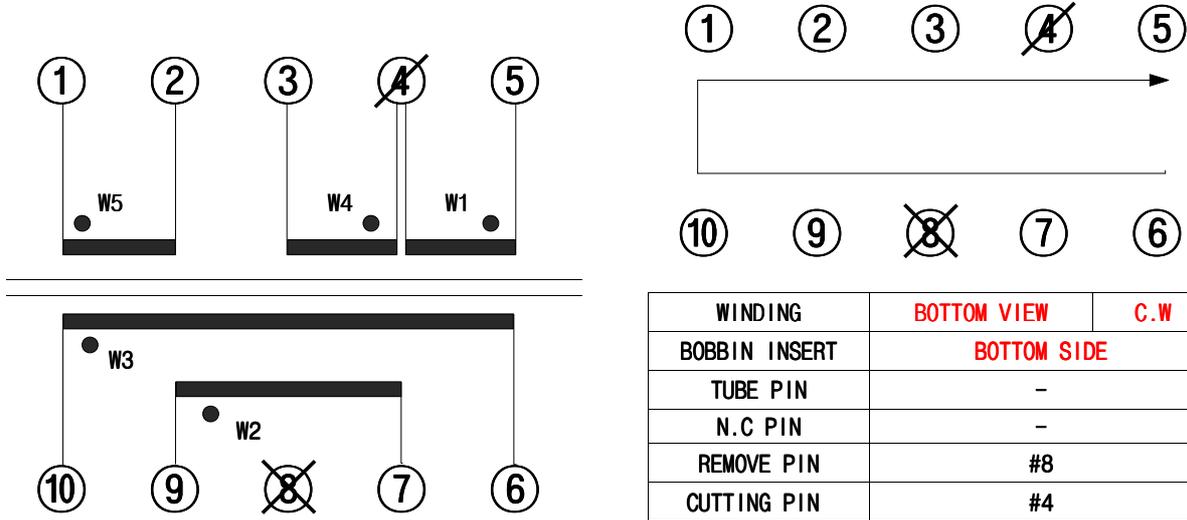
CUSTOMER : POWERNET TECHNOLOGIES.

SPECIFICATIONS		DATE	2017.03.13																	
PART NAME	TRANS-POWER S/W	PART NO	1400651																	
<p>6. DIMENSION (UNIT:mm)</p>  <p>◆TOP VIEW◆</p>  <p>◆FRONT VIEW◆</p>  <p>◆BOTTOM VIEW◆</p>		<p><b>*MARKING(BLACK)*</b></p> <p>1400651 -- PART NO.</p> <p>SC-05B SC-AABBCCDE-- LOT NO.</p> <p>MAKER( TRADENAME)</p> <p>INSULATION SYSTEM DESIGN NO(CLASS-B)</p> <p><b>LOT NO</b></p> <table border="1"> <thead> <tr> <th>YEAR(AA)</th> <th>MONTH(BB)</th> <th>DAY(CC)</th> </tr> </thead> <tbody> <tr> <td>2016Y→16</td> <td>JAN→01</td> <td>1st DAY→01</td> </tr> <tr> <td>2017Y→17</td> <td>FEB→02</td> <td>2nd DAY→02</td> </tr> <tr> <td>2018Y→18</td> <td>DEC→12</td> <td>31thDAY→31</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>PRODUCT CODE(D)</th> <th>MANUFACTURER OF CORE(E)</th> </tr> </thead> <tbody> <tr> <td>A:KOREA PRODUCT C:CHINA(WENDENG) D:CHINA(DONGGUAN) E:CHINA(ZAOZHUANG)</td> <td>K:DONGYANGGUANG N:JISHUN S:SAMHWA</td> </tr> </tbody> </table>  <p>◆SIDE VIEW◆</p>			YEAR(AA)	MONTH(BB)	DAY(CC)	2016Y→16	JAN→01	1st DAY→01	2017Y→17	FEB→02	2nd DAY→02	2018Y→18	DEC→12	31thDAY→31	PRODUCT CODE(D)	MANUFACTURER OF CORE(E)	A:KOREA PRODUCT C:CHINA(WENDENG) D:CHINA(DONGGUAN) E:CHINA(ZAOZHUANG)	K:DONGYANGGUANG N:JISHUN S:SAMHWA
YEAR(AA)	MONTH(BB)	DAY(CC)																		
2016Y→16	JAN→01	1st DAY→01																		
2017Y→17	FEB→02	2nd DAY→02																		
2018Y→18	DEC→12	31thDAY→31																		
PRODUCT CODE(D)	MANUFACTURER OF CORE(E)																			
A:KOREA PRODUCT C:CHINA(WENDENG) D:CHINA(DONGGUAN) E:CHINA(ZAOZHUANG)	K:DONGYANGGUANG N:JISHUN S:SAMHWA																			
		<p>* REMOVE PIN : #8</p> <p>* CUTTING PIN : #4</p> <p>* GAP CORE : TOP</p> <p>* CENTER BOND : SW-860HF</p>																		
CLOVER Hi-Tech CO., LTD.		DESIGN	CHECK	APPROVAL	PAGE															
		Y.H CHA	K.T KIM	D.K PARK	2/19															

CUSTOMER : POWERNET TECHNOLOGIES.

SPECIFICATIONS		DATE	2017.03.13
PART NAME	TRANS-POWER S/W	PART NO	1400651

7. SCHEMATIC DIAGRAM



8. WINDING SPECIFICATION

NO	NAME	TERMINAL NO.		WINDING		
		START	FINISH	WIRE	TURNS	WINDING METHOD
1	W1	5	4	1UEW 0.50 φ ×2	7	SOLENOID
2	W2	9	7	1UEW 0.50 φ ×2	7	SOLENOID
3	W3	10	6	1UEW 0.50 φ ×2	7	SOLENOID
4	W4	4	3	1UEW 0.50 φ ×2	7	SOLENOID
5	W5	1	2	1UEW 0.40 φ	12	SOLENOID
WIRE SPECIFICATION				CONDUCTOR		
				WIRE	DIAMETER[mm]	TOLERANCE OF DIAMETER[mm]
				1UEW	0.40	±0.004
				1UEW	0.50	±0.005

\* REGARDING ABOVE TABLE STANDARD, THICKNESS OF WIRE MUST BE OVER SPECIFICATION.

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CUSTOMER : POWERNET TECHNOLOGIES.

SPECIFICATIONS		DATE	2017.03.13
PART NAME	TRANS-POWER S/W	PART NO	1400651

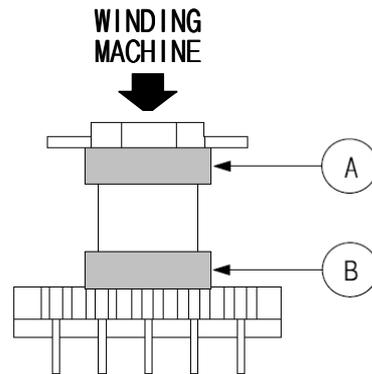
9. BARRIER INSULATION

NO	COIL	MATERIALS	LAYERS	THICKNESS (mm) x WIDTH (mm)
1	W1	PNW TAPE	B PART : 1T	B : 0.45T x 2.0mm
2	W2	PNW TAPE	B PART : 1T	B : 0.45T x 2.0mm
3	W3	PNW TAPE	B PART : 1T	B : 0.45T x 2.0mm
4	W4	PNW TAPE	B PART : 1T	B : 0.45T x 2.0mm
5	W5	PNW TAPE	B PART : 1T	B : 0.45T x 2.0mm

\* REGARDING ABOVE TABLE STANDARD, WIDTH, THICKNESS, TURNS OF TAPE MUST BE OVER SPECIFICATION RANGE. SPECIFICATION RANGE.

\* BARRIER TAPE TOLERANCE

①  $2.0 \pm 0.2\text{mm}$



※ Winding wire should not be over barrier(margin) tape as shown below.



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	Y.H CHA	K.T KIM	D.K PARK	4/19

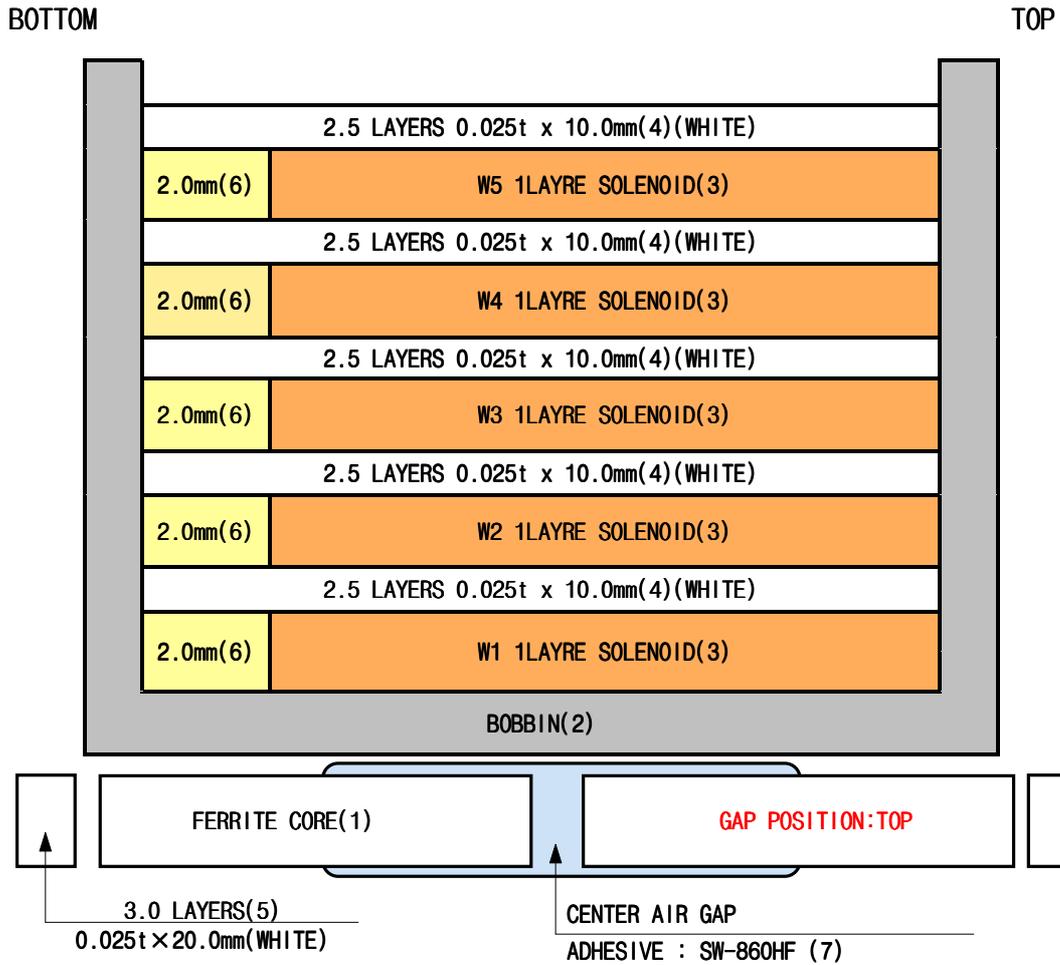
CUSTOMER : POWERNET TECHNOLOGIES.

SPECIFICATIONS		DATE	2017.03.13			
PART NAME	TRANS-POWER S/W		PART NO	1400651		
10. INSULATION TAPE						
NO	COIL	MATERIALS	WRAPS(T)	THICKNESS (mm) x WIDTH (mm)		
1	W1 TO W2	POLYESTER FILM TAPE	2.5 Ts	0.025T x 10.0W (WHITE COLOR)		
2	W2 TO W3	POLYESTER FILM TAPE	2.5 Ts	0.025T x 10.0W (WHITE COLOR)		
3	W3 TO W4	POLYESTER FILM TAPE	2.5 Ts	0.025T x 10.0W (WHITE COLOR)		
4	W4 TO W5	POLYESTER FILM TAPE	2.5 Ts	0.025T x 10.0W (WHITE COLOR)		
5	W5 TO CORE	POLYESTER FILM TAPE	2.5 Ts	0.025T x 10.0W (WHITE COLOR)		
CORE FIXING TAPE		POLYESTER FILM TAPE	3.0 Ts	0.025T x 20.0W (WHITE COLOR)		
<p>* POLYESTER FILM TAPE TOLERANCE</p> <p>① 10.0mm ± 0.5mm</p> <p>② 20.0mm ± 0.5mm</p>						
CLOVER Hi-Tech CO., LTD.			DESIGN	CHECK	APPROVAL	PAGE
			Y.H CHA	K.T KIM	D.K PARK	5/19

CUSTOMER : POWERNET TECHNOLOGIES.

SPECIFICATIONS		DATE	2017.03.13
PART NAME	TRANS-POWER S/W	PART NO	1400651

11. CONSTRUCTION



- WINDING :
- PS TAPE :
- BARRIER :

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	Y.H CHA	K.T KIM	D.K PARK	6/19

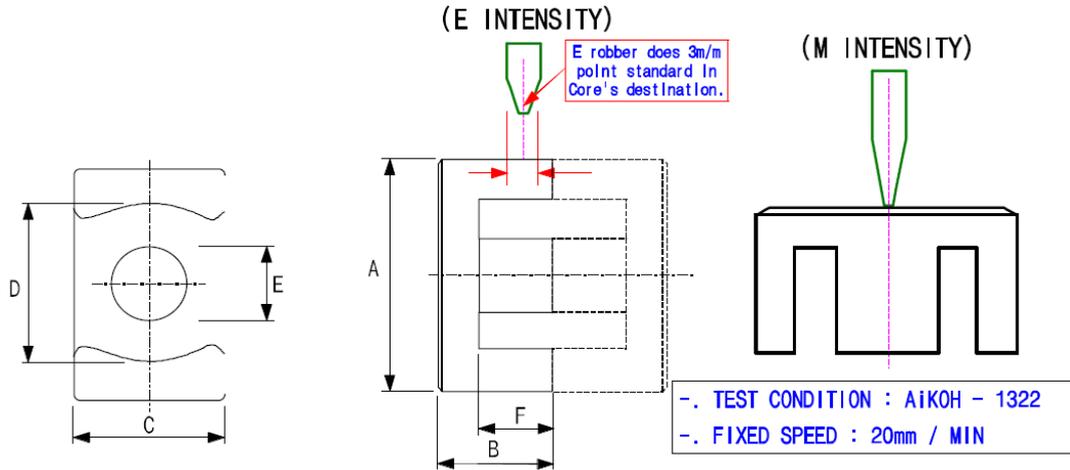
CUSTOMER : POWERNET TECHNOLOGIES.

SPECIFICATIONS		DATE	2017.03.13			
PART NAME	TRANS-POWER S/W		PART NO	1400651		
16. LIST OF MATERIAL						
NO	COMPONENT	NAME OF MATERIAL	MANUFACTURER OF MATERIAL	UL FILE NO		
1	CORE	HE4 EER 3019 (EC30-4R)	RUYUAN DONGYANGGUANG MAGNETICS MATERIALS CO.,LTD.			
		PC40 EER 3019	SHANGHAI JISHUN MAGNETIC MATERIAL CO.,LTD.			
		PL-7 EER 3019S	SAMWHA ELECTORNICS CO., LTD.			
2	BOBBIN	PHENOLIC 94V-0 EER3019 V"TYPE 10PIN(5+5)	SUMITOMO BAKELITE CO.,LTD.(PM-9820)	E41429		
3	WIRE	1UEW 0.40 φ 1UEW 0.50 φ	CNI ELECTRONICS CO.,LTD. (ANSI TYPE(RATED 130℃)=MW28, MW75)	E210918		
			SHANONG PENGTAI STOCK CO.,LTD.	E166187		
4	INSULATION TAPE	POLYESTER TAPE 0.025T×10.0mm(W)	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO.,LTD. (CT*(b)(g))	E165111		
5	CORE FIXING TAPE	POLYESTER TAPE 0.025T×20.0mm(W)				
6	BARRIER	PNW(BUSIKPO) TAPE 0.45T×2.0mm	TAE HWA INDUSTRIAL CO.,LTD.(H-5673*) JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO.,LTD.(WF)	E92677 E165111		
7	ADHESIVE	EPOXY RESIN SW-860HF	SUNGWOO CHEMICAL CO.,LTD.			
8	SOLDER	BAR, WIRE	ALPHA METALS CO.,LTD.			
	FLUX	JS-7000S-2	KOKI SANEI KOREA CO.,LTD.			
9	VARNISH	DVB-2085(+)	NOROO PAINT & COATINGS CO.,LTD.	E93947		
10	MARKING	INK(Black)	HITACHI CHEMICAL CO.,LTD.			
CLOVER Hi-Tech CO., LTD.			DESIGN	CHECK	APPROVAL	PAGE
			Y.H CHA	K.T KIM	D.K PARK	13/19

CUSTOMER : POWERNET TECHNOLOGIES.

SPECIFICATIONS		DATE	2017.03.13
PART NAME	TRANS-POWER S/W	PART NO	1400651

※ CORE DIMENSION ※



TYPE	DIMENSION(mm)						EFFECTIVE PARAMETER			INTENSITY (Kgf MIN.)		RE MARKS
	A	B	C	D	E	F	Le(mm)	Ae(mm <sup>2</sup> )	Ve(cm <sup>3</sup> )	M	E	
EER3019 (EC30-4R)	30.00 ±0.40	9.40 ±0.15	20.30 ±0.30	25.70 ±0.40	13.30 ±0.20	6.60 ±0.20	47.7	132.0	6298	9.5	16.5	DONGYANG GUANG
EER3019	30.00 ±0.40	9.40 ±0.15	20.30 ±0.30	25.70 ±0.40	13.30 ±0.20	6.60 ±0.20	47.7	132.0	6298	9.5	16.5	JISHUN
EER3019S	30.00 ±0.40	9.40 ±0.15	20.30 ±0.30	25.70 ±0.40	13.30 ±0.20	6.60 ±0.20	47.7	132.0	6298	9.5	16.5	SAMHWA

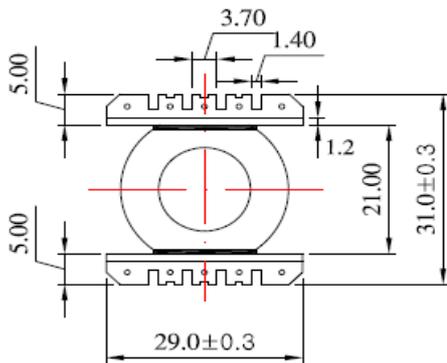
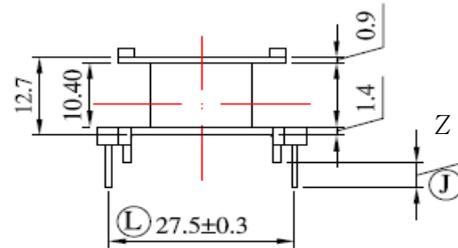
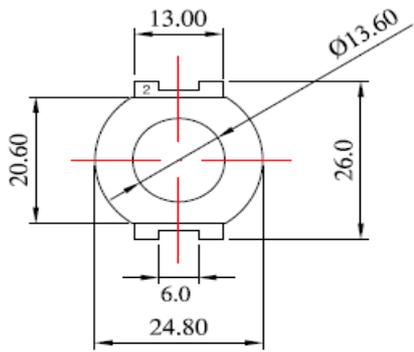
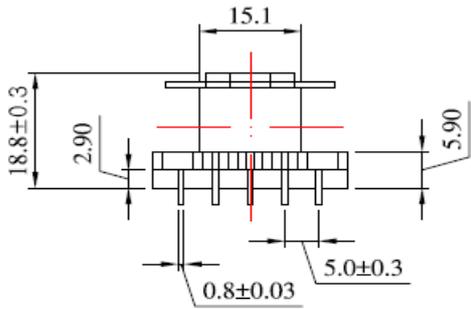
	A	B	C	D	E	F
1	30.69	9.46	20.30	25.73	13.38	6.60
2	30.72	9.47	20.38	25.71	13.38	6.65
3	30.73	9.40	20.37	25.78	13.41	6.63
4	30.72	9.46	20.33	25.77	13.39	6.65
5	30.68	9.45	20.35	25.72	13.36	6.68

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	Y.H CHA	K.T KIM	D.K PARK	14/19

CUSTOMER : POWERNET TECHNOLOGIES.

SPECIFICATIONS		DATE	2017.03.13
PART NAME	TRANS-POWER S/W	PART NO	1400651

※ BOBBIN DIMENSION ※



CLOVER Hi-Tech CO., LTD.	DESIGN	CHECK	APPROVAL	PAGE
	Y.H CHA	K.T KIM	D.K PARK	18/19

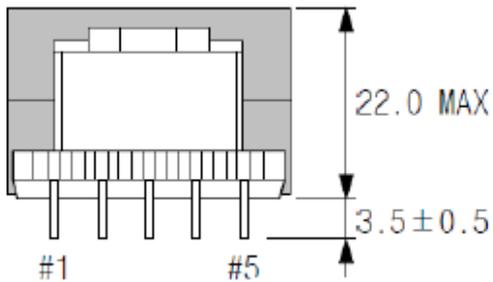
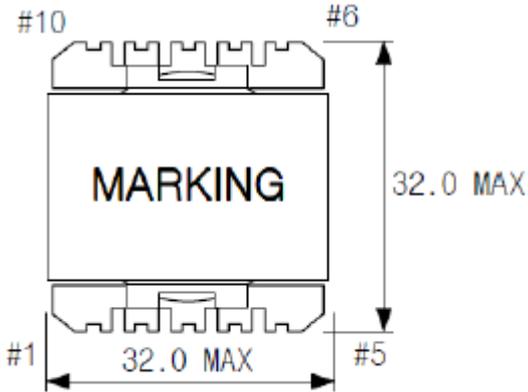


The following Page(s) are related to Miscellaneous-02. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

<h1>SPECIFICATIONS</h1>		SHEET NO.	2 OF 21
		DATE	2017. 03. 13.
PART NAME	S/W TRANS	MODEL NAME	PN042HTCA-9080VQ
PART NO.	1400651	TYPE	EER3019

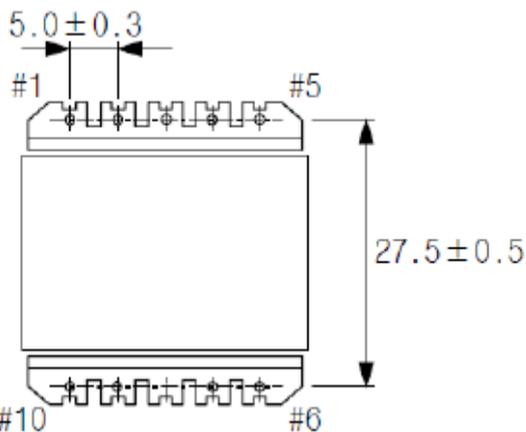
**6. DIMENSIONS (UNIT: m/m)**

**TOP VIEW**



**FRONT VIEW**

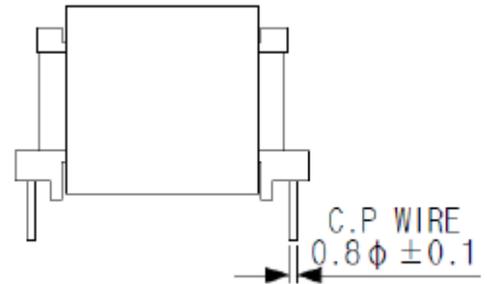
"not include solder fillet"



**BOTTOM VIEW**

**MARKING**

PART NO.	1400651
TRADE NAME	CP(COREPLUS)
CHINA FACTORY	LY(LIAOYANG)
CP-130	COREPLUS 'CLASS B' SYSTEM
Year	2016 → 16 2017 → 17...
Week	First Week → 1 Second Week → 2...
Product Area	A: KOREA C: CHINA I :INDONESIA
MANUFACTURE R OF CORE	S: SMAWHA T: TDG N: NANTONG
1400651 CP LY CP-130 1612CT	

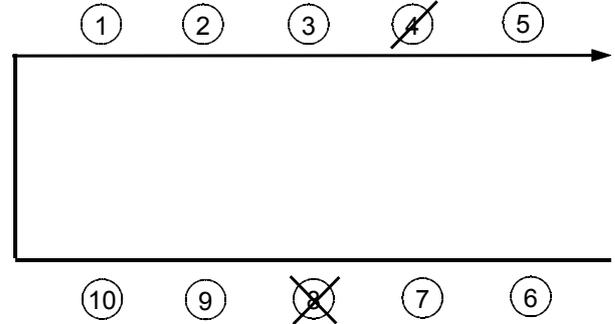
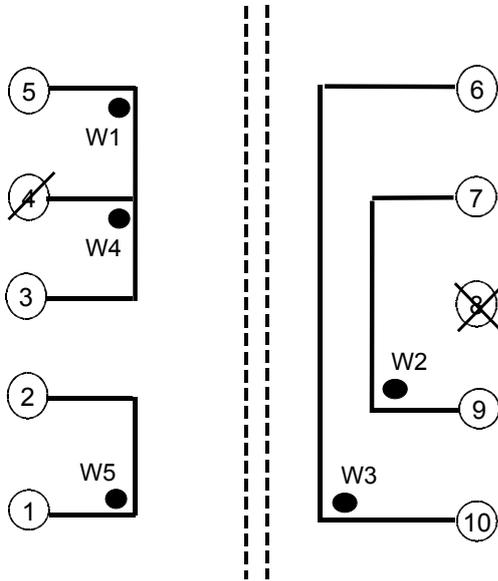


**SIDE VIEW**

<b>CUSTOMER CHECK</b>		DESIGN	CHECK	CONFIRM	APPROVAL

<h1>SPECIFICATIONS</h1>		SHEET NO.	3 OF 21
		DATE	2017. 03. 13.
PART NAME	S/W TRANS	MODEL NAME	PN042HTCA-9080VQ
PART NO.	1400651	TYPE	EER3019

**7. SCHEMATIC DIAGRAM**



WINDING	<b>BOTTOM VIEW</b>	<b>C.W</b>
BOBBIN INSERT	<b>BOTTOM</b>	
REMOVE PIN	#8	
N.C PIN	NONE	
CUT PIN	#4	
TEFLON TUBE	NONE	

**8. WINDING SPECIFICATION**

WINDING ORDER	TERMINAL NO		WIRE	TURNS	WINDING METHOD	REMARKS
	S	F				
W1	5	4	1UEW 0.50Ø * 2P	7	SOLENOID	1 LAYERS
W2	9	7	1UEW 0.50Ø * 2P	7	SOLENOID	1 LAYERS
W3	10	6	1UEW 0.50Ø * 2P	7	SOLENOID	1 LAYERS
W4	4	3	1UEW 0.50Ø * 2P	7	SOLENOID	1 LAYERS
W5	1	2	1UEW 0.40Ø	12	SOLENOID	1 LAYERS

\* REGARDING ABOVE TABLE STANDARD, THICKNESS OF WIRE MUST BE OVER SPECIFICATION RANGE.

<b>CUSTOMER CHECK</b>		DESIGN	CHECK	CONFIRM	APPROVAL

<h1>SPECIFICATIONS</h1>		SHEET NO.	4 OF 21
		DATE	2017. 03. 13.
PART NAME	S/W TRANS	MODEL NAME	PN042HTCA-9080VQ
PART NO.	1400651	TYPE	EER3019

**9. BARRIER INSULATION**

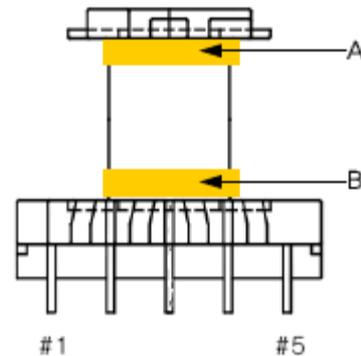
NO	COIL	MATERIALS	LAYERS	THICKNESS(mm) × WIDTH(mm)
1	W1	P.N.W TAPE	B PART : 1Ts	B : 0.45T x 2.0mm
2	W2	P.N.W TAPE	B PART : 1Ts	B : 0.45T x 2.0mm
3	W3	P.N.W TAPE	B PART : 1Ts	B : 0.45T x 2.0mm
4	W4	P.N.W TAPE	B PART : 1Ts	B : 0.45T x 2.0mm
5	W5	P.N.W TAPE	B PART : 1Ts	B : 0.45T x 2.0mm

\* CONCERNING ABOVE TABLE STANDARD, WIDTH, THICKNESS, TURNS OF TAPE MUST BE OVER SPECIFICATION RANGE.

※ Barrier tape tolerance

① 2.0 mm ±0.2mm

※ Winding wire should not be over barrier(margin) tapes as shown below.



GOOD



( ○ )

NO GOOD

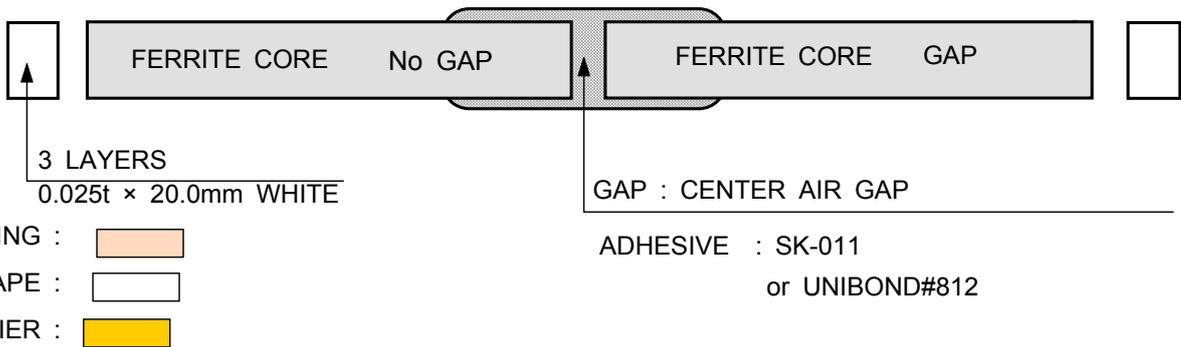
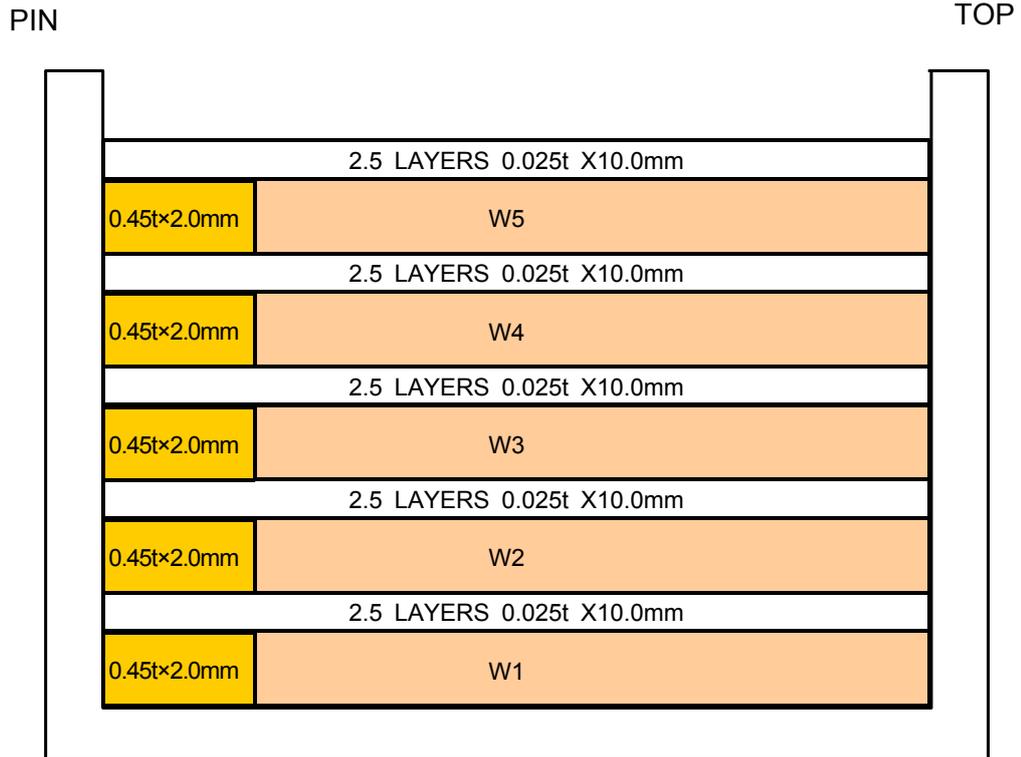


( × )

<b>CUSTOMER CHECK</b>		DESIGN	CHECK	CONFIRM	APPROVAL
		( ○ ) PARK.J.S	( ○ ) YANG.S.J	( ○ ) JANG.C.H	( ○ ) LEE.Y.G

<h1>SPECIFICATIONS</h1>		SHEET NO.	6 OF 21
		DATE	2017. 03. 13.
PART NAME	S/W TRANS	MODEL NAME	PN042HTCA-9080VQ
PART NO.	1400651	TYPE	EER3019

**11. INTERNAL CONSTRUCTION**

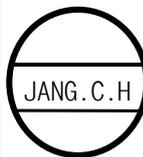


<b>CUSTOMER CHECK</b>		DESIGN	CHECK	CONFIRM	APPROVAL

<h1>SPECIFICATIONS</h1>		SHEET NO.	12 OF 21
		DATE	2017. 03. 13.
PART NAME	S/W TRANS	MODEL NAME	PN042HTCA-9080VQ
PART NO.	1400651	TYPE	EER3019

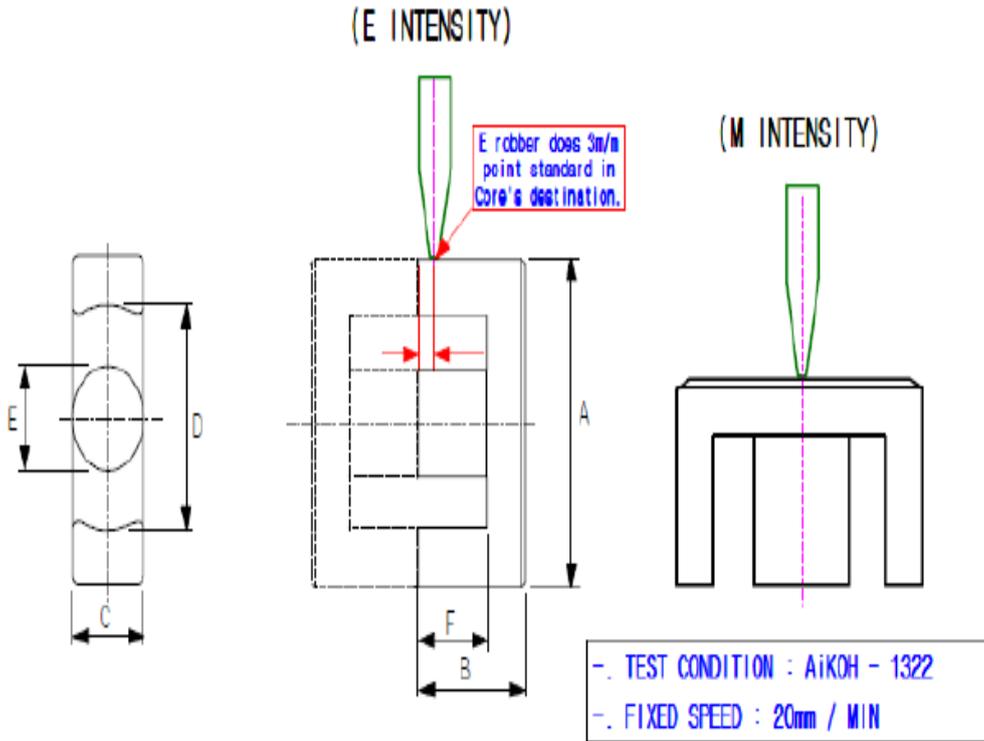
**19. MATERIAL LIST**

No	COMPONENT	NAME OF MATERIAL	MANUFACTURER OF MATERIAL	UL FILE No
1	CORE	EER3019 PL-7	SAM WHA ELECTRONICS CO., LTD	
		EER3019 TP-4	TDG HOLDING CO.,LTD	
		EER3019 ZP40	NANTONG ZHONGXING MAGNETIC INDUSTRIAL CO., LTD	
2	BOBBIN	"V"TYPE , PHENOLIC (PM 9820) EER3019 "V" 5+5PIN	SUMITOMO BAKELITE CO., LTD	E41429
3	WIRE	POLYURETHANE 1UEW 0.40Ø 1UEW 0.50Ø	CNI ELECTRONICS CO LTD	E210918
			LIAONING WANXINGDA SPECIAL ENAMELLED WIRE(GROUP) CO.LTD	E220501
4	INSULATION TAPE	POLYESTER FILM TAPE 0.025t X 10.0mm (WHITE)	JINGJIANG JINGYI ADHESIVE PRODUCT CO., LTD	E246950
5	CORE FIXING TAPE	POLYESTER FILM TAPE 0.025t X 20.0mm (WHITE)	JINGJIANG YAHUA PRESSURESENSITIVE GLUE CO., LTD(CT*)	E165111
6	ADHESIVE	SK-011	SE KYE CHEMICAL CO.,LTD	
		UNI-BOND #812	GREEN STAR CO., LTD.	
7	BARRIER TAPE	P.N.W TAPE 0.45t x 2.0mm	JINGJIANG JINGYI ADHESIVE PRODUCT CO., LTD	E246950
			JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO., LTD(WF)	E165111
8	VARNISH	SR-337A,B	SE KYE CHEMICAL CO.,	E257443
9	SOLDER	LEAD FREE	TIANJIN HENKO TECHNOLOGY CO., LTD.	
10	FLUX	319-5F	JIANGYIN CITY DENG FENG ELECTRICAL MATERAIL CO.,LTD	
11	MARKING	INK	BON MARQUE.	

<b>CUSTOMER CHECK</b>		DESIGN	CHECK	CONFIRM	APPROVAL
					

<h1>SPECIFICATIONS</h1>		SHEET NO.	20 OF 21
		DATE	2017. 03. 13.
PART NAME	S/W TRANS	MODEL NAME	PN042HTCA-9080VQ
PART NO.	1400651	TYPE	EER3019

**21. CORE DIMENSION**

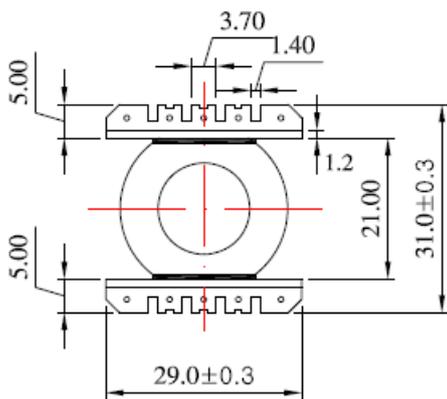
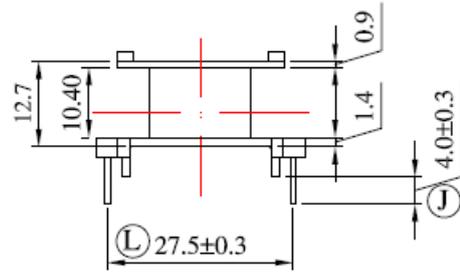
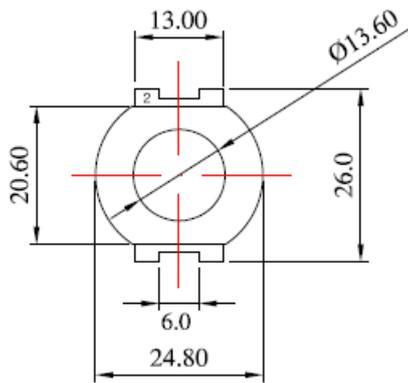
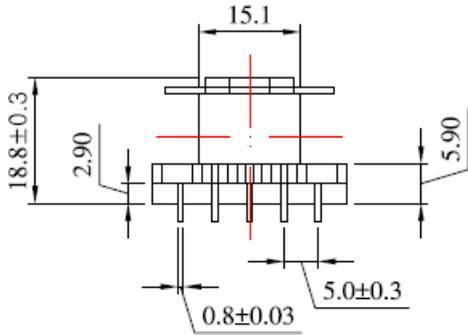


TYPE	DIMENSION(mm)						EFFECTIVE PARAMETERS			INTENSITY (Kgf MIN)		REMARKS
	A	B	C	D	E	F	Le(mm)	Ae(mm <sup>2</sup> )	Ve(mm <sup>3</sup> )	M	E	
EER3124N	30.00 ±0.5	9.40 ±0.15	20.30 ±0.30	25.70 ±0.40	13.30 ±0.20	6.60 ±0.20	47.7	132.0	6298	9.5	16.5	SAMWHA
EER3124	30.00 ±0.5	9.40 ±0.15	20.30 ±0.30	25.70 ±0.40	13.30 ±0.20	6.60 ±0.20	47.7	132.0	6298	9.5	16.5	TDG
EER3124	30.00 ±0.5	9.40 ±0.15	20.30 ±0.30	25.70 ±0.40	13.30 ±0.20	6.60 ±0.20	47.7	132.0	6298	9.5	16.5	NANTONG

<b>CUSTOMER CHECK</b>		DESIGN	CHECK	CONFIRM	APPROVAL

<h1>SPECIFICATIONS</h1>		SHEET NO.	22 OF 21
		DATE	2017. 03. 13.
PART NAME	S/W TRANS	MODEL NAME	PN042HTCA-9080VQ
PART NO.	1400651	TYPE	EER3019

**23. BOBBIN DIMENSION**



<b>CUSTOMER CHECK</b>		DESIGN	CHECK	CONFIRM	APPROVAL

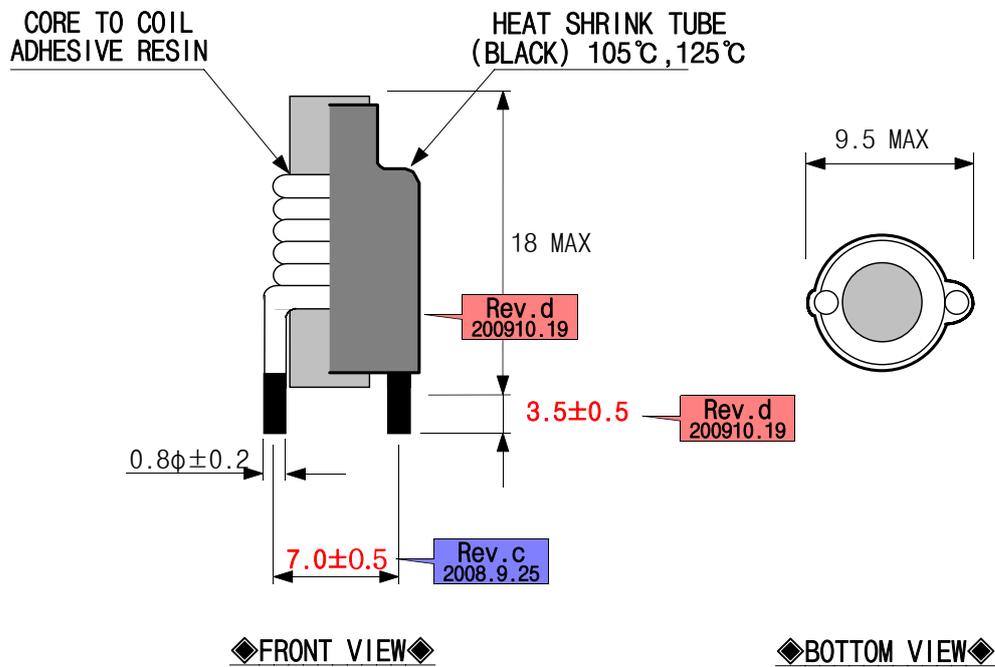


The following Page(s) are related to Miscellaneous-03. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

CUSTOMER : POWERNET TECHNOLOGIES.

SPECIFICATIONS		DATE	2005. 3. 7
PART NAME	COIL-CHOKE	PART NO	1420401

4. DIMENSION (UNIT:mm)

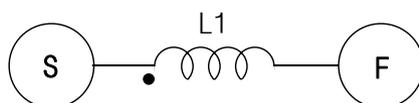


CLOVER Hi-Tech CO., LTD.	DESIGN	CHECK	APPROVAL	PAGE
	李元珠 05.03.07 技術部	朴鍾奎 05.03.07 技術部	朴東國 05.03.07 技術部	2/12

CUSTOMER : POWERNET TECHNOLOGIES.

SPECIFICATIONS		DATE	2005. 3. 7
PART NAME	COIL-CHOKE	PART NO	1420401

5. SCHEMATIC DIAGRAM



6. WINDING SPECIFICATION

NO	TERMINAL NO.		WINDING		
			WIRE	TURNS	WINDING METHOD
L1	S	F	1UEW 0.8φ	10.5 Ts	1 LAYER SOLENOID

\* REGARDING ABOVE TABLE STANDARD, THICKNESS OF WIRE MUST BE OVER SPECIFICATION.

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	 李元珠 05.03.07 技術部	 朴鍾奎 05.03.07 技術部	 朴東國 05.03.07 技術部	3/12

CUSTOMER : POWERNET TECHNOLOGIES.

SPECIFICATIONS		DATE	2005. 3. 7
PART NAME	COIL-CHOKE	PART NO	1420401

7. ELECTRICAL CHARACTERISTIC

NO	ITEM	TERMINAL	SPECIFICATION	REMARKS
1	INDUCTANCE	S - F	2.50 uH ± 15%	LCR METER HP-4284A at 1KHz, 1V
			2.35 uH ± 15%	LCR METER HP-4284A at 100KHz, 1V
2	DC RESISTANCE	S - F	0.012 Ω MAX.	MILLI OHM METER VP-2941A
3	DC CURRENT OVERLAP	S - F	MORE THAN 90% OF INITIAL INDUCTANCE	at 1 kHz, 1V. with 5.0Adc
4	WITHSTANDING VOLTAGE	COIL - CORE	AC1.5kVrms, 1 MINUTE.	TOS-8850 CUT OFF CURRENT (3mA) 60Hz
5	INSULATION RESISTANCE	COIL - CORE	DC 500V, 100MΩ MIN.	PUNCTURE TESTER TOS-8850
6	LAYER SHORT	AC 1.5KV, 60Hz		NO BREAK DOWN

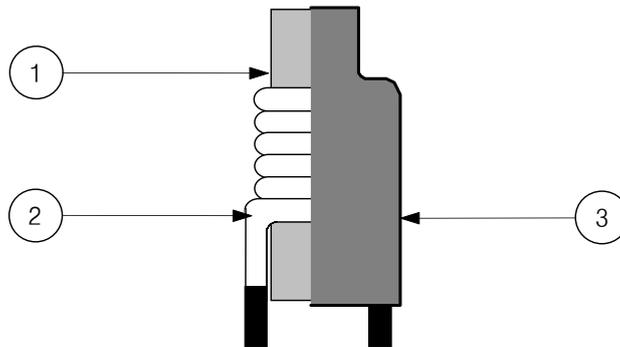
\* TEST CONDITION : TEMPERATURE 20°C ± 5°C, HUMIDITY 65% ± 20%

CLOVER Hi-Tech CO., LTD.	DESIGN	CHECK	APPROVAL	PAGE
	 李元珠 05.03.07 技術部	 朴鍾奎 05.03.07 技術部	 朴東國 05.03.07 技術部	4/12

CUSTOMER : POWERNET TECHNOLOGIES.

SPECIFICATIONS		DATE	2005. 3. 7
PART NAME	COIL-CHOKE	PART NO	1420401

8. CONSTRUCTION



9. LIST OF MATERIAL

NO	COMPONENT	NAME OF MATERIAL	MANUFACTURER OF MATERIAL	UL FILE NO
1	CORE	L-82 AR 5x15 YL-82 AR 5x15	SAMWHA ELECTRONICS CO., LTD. YOUNGHWHA FERRITE CO., LTD.	
2	WIRE	1UEW 0.8φ	DONGYANG ELECTRONICS CO.,LTD. CNI CABLE CO.,LTD. (ANSI TYPE(RATED 130℃)=MW28, MW75)	E102761(S) E210918
3	TUBE	HEAT SHRINK TUBE 105℃, 125℃ (BLACK)	HAN KYUNG COMPONENT TRADING CO.,LTD. SHENZHEN CHANGYUAN ELECTRONIC MATERIAL CO., LTD.	E222852(S) E180908
4	ADHESIVE RESIN	THREE BOND 1401 SK-1000	THREE BOND CO., LTD. SEKYE CHEMICAL CO., LTD.	
5	FLUX	JS-7000S2	KOKI SANEI KOREA CO., LTD.	
6	SOLDER	Sn100% BAR, WIRE	SAMHWA NON-FERROUS METAL IND.CO.,LTD.	

Rev. b  
2007.12.22

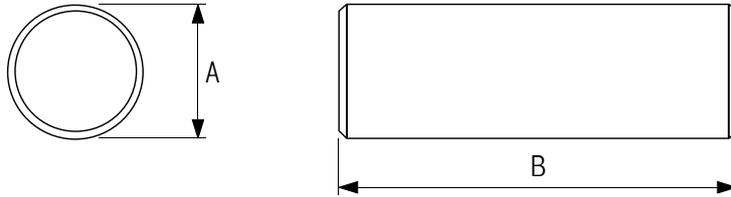
Rev. b  
2007.12.22

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CUSTOMER : POWERNET TECHNOLOGIES.

SPECIFICATIONS		DATE	2005. 3. 7
PART NAME	COIL-CHOKE	PART NO	1420401

※ CORE DIMENSION ※



TYPE	DIMENSION (mm)		REMARK
	A	B	
AR5x15	5.00 ±0.2	15.00 ±0.25	SAMWHA
AR5x15	5.00 +0 -0.3	15.00 ±0.5	YOUNGHWHA

MATERIALS	SYMBOL	UNIT	L-81	YL-82
INITIAL PERMEABILITY	$\mu$ iac		350 ± 25%	350 ± 25%
SATURATION FLUX DENSITY	Bs	mT	330	330
REMANENCE	Br	mT	80	80
COERCIVITY	Hc	A/m	48	48
CURIE TEMPERATURE	Tc	°C	> 170	> 150
DENSITY	$\delta$	kg/m <sup>3</sup>	5.0x10 <sup>3</sup>	5.0x10 <sup>3</sup>
RESISTIVITY	$\rho$	M $\Omega$ /m	2.0	2.0

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The following Page(s) are related to Miscellaneous-04. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

# SPECIFICATION FOR APPROVAL

CUSTOMER NAME: POWERNET CUSTOMER PT/NO: 1420401

TRG PT/NO: ITP5015L2R5BU SAMPLE SUBMIT NO: \_\_\_\_\_ DATE: 2012.11.2

## 2. Electrical Characteristic

1. INDUCTANCE: AT: 1KHz, 1.0V  
L(S-F) = 2.5uH ±15%  
(CHROMA TELECOM TRANSFORMER TEST SYSTEM MODEL3312 )

2. DC RESISTANCE: AT: 25°C  
R(S-F) = 12mΩ MAX  
(CHROMA16502 OHM METER)

3. INSULATION RESISTANCE: 100MΩ @500VDC

4. IDC: 5.0A MAX |L0A-L5.0A|\*100%/L0A ≤ 10%

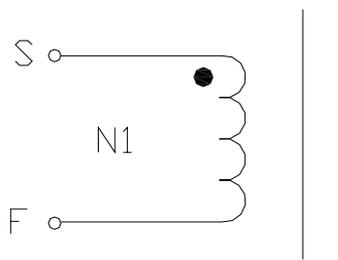
## 3. Operating Temperature Range

-25°C to +85°C Including Temperature Rise

## 4. Keep Temperature Range

-25°C to +85°C

## 5. Circuit Diagram



"●": START

# SPECIFICATION FOR APPROVAL

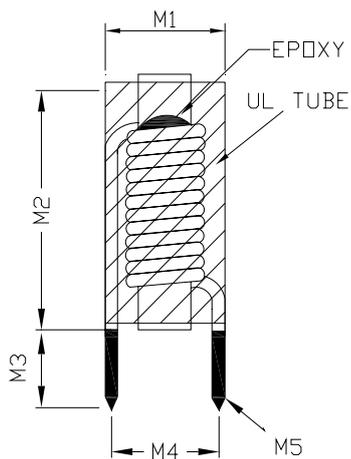
CUSTOMER NAME: POWERNET CUSTOMER PT/NO: 1420401

TRG PT/NO: ITP5015L2R5BU SAMPLE SUBMIT NO: \_\_\_\_\_ DATE: 2012.11.2

## 6. Winding Specification

NO	Terminal		Wire	Turns	Winding Method
	Start	Finish			
L	S	F	1UEW 0.8	10.5Ts REF.	Handmade

## 7. Shape and Dimension



UNIT:mm

	DIML	TOL.
M1	10.5	Max
M2	18.0	Max
M3	3.5	±0.5
M4	7.0	±0.5
M5	0.8 $\phi$	±0.1

# SPECIFICATION FOR APPROVAL

CUSTOMER NAME: POWERNET CUSTOMER PT/NO: 1420401

TRG PT/NO: ITP5015L2R5BU SAMPLE SUBMIT NO: \_\_\_\_\_ DATE: 2012.11.2

## 8. Material List

NO.	Object/Part no.	Manufacturer/Trademark.	Type/Model NO.	UL NO.
1	CORE	FENGYI MAGNETOELECTRICITY CO., LTD	R 5*15	N/A
		TONGLI ELECTRONIC CO., LTD OR EQUAL	R 5*15	N/A
2	WIRE	SHANDONG SAINT ELECTRONIC MATERIAL CO.,LTD	1UEW	E194410
		SHANGHAI ASAI PACIFIC ELECTRIC CO.,LTD EQUAL	1UEW	E214423
3	UL TUBE	HAMBURG INDUSTRIES CO LTD EQUAL	HEAT-SHRINKABLE	E255394
4	SOLDER	DYFENCO ELECTRONIC CHEMICAL CORP. EQUAL	D9930/SN100	N/A
5	EPOXY	WELLS ELECTRONIC MATERIAL CO.,LTD EQUAL	6020H	E213437

# SPECIFICATION FOR APPROVAL

CUSTOMER NAME: POWERNET CUSTOMER PT/NO: 1420401

TRG PT/NO: ITP5015L2R5BU SAMPLE SUBMIT NO: \_\_\_\_\_ DATE: 2012.11.2

## 10. Reliability Test

No	Item (项目)	Reference (判定标准)	Test Condition (测试条件)	Test Result
1	端面焊锡性 Solderability Test	Preheat: 150°C, 60sec Solder: Sn-Ag3.0-Cu0.5 Solder temperature: 280°C Flux for lead free: rosin Dip time: 2sec	More than 90% of the terminal electrode should be covered with solder	PASS
2	恒温恒湿试验: Humidity life test:	Temperature: 40°C ± 2°C Humidity: 95% Duration: 96hrs Measured at room temperature after placing for 2 to 3 hrs	1. Parts shall not have any visual cracks or damage 2. Electric function up to standard requirement	PASS
3	高低温实验 High / Low Temperature Life Test	Temperature: 105°C Duration: 96hrs Measured at room temperature after placing for 2 to 3 hrs  Temperature: -25°C Duration: 96hrs Measured at room temperature after placing for 2 to 3 hrs	1. Parts shall not have any visual cracks or damage 2. Electric function up to standard requirement	PASS
4	冷热冲击试验 Thermal shock test	-40 °C ( 60min ) ~85 °C (60min)~ 10cycle	1. Parts shall not have any visual cracks or damage 2. Electric function up to standard requirement	PASS

## 11. Endurance Test

ITEM	TEST CONDITION	SPEC
SOLDERING ADHESION	SOLDER POT °C: 245 +0, -5°C SOLDERING HR : 3 ± 0.5 SEC	More than 95%
SOLDERING HEAT RESISTANCE	SOLDER °C: 260 +5, -0°C SOLDERING HR : 10 ± 0.5 SEC	L: Initial Value ± 20%

# SPECIFICATION FOR APPROVAL

CUSTOMER NAME: POWERNET CUSTOMER PT/NO: 1420401

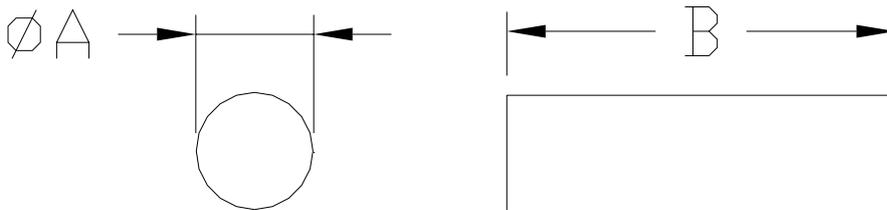
TRG PT/NO: ITP5015L2R5BU SAMPLE SUBMIT NO: \_\_\_\_\_ DATE: 2012.11.2

## 12. Power Core Specification:

### Characteristics

Symbol	Unit	E2F
uiac		400±25%
BS		2700
T.C	°C	> 150
d	g/cm <sup>3</sup>	4.8
tan δ /uiac	10 <sup>-6</sup>	< 60
a ur	10 <sup>-6</sup> /°C	30-150

### Core Dimension(mm):



$\phi A: 5.0 \pm 0.2$

$B: 15.0 \pm 0.5$



The following Page(s) are related to Miscellaneous-05. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

SPECIFICATIONS	ITEM	LINE FILTER	Rev
	TNC SPEC NO	QV181610A	1

## 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	MIN.	HP-4194A 1V (25°C±2°C)
4	TEMPERATURE RISE	AT RATED CURRENT	55°C MAX			
5	DC RESISTANCE	START-FINISH	156.0 mΩ MAX			HIOKI 3540 (25°C±2°C)
6	WITHSTANDING VOLTAGE	LINE TO LINE	AC 1,500V 1 MINUTE.			TOS-5101 CUT OFF CURRENT (5mA)

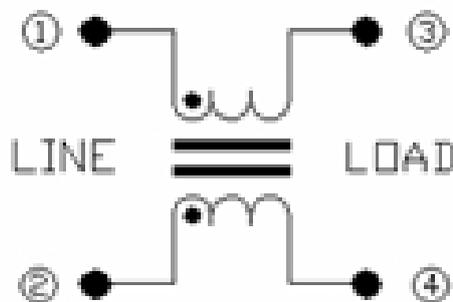
## 3. OPERATING TEMPERATURE RANGE

-30°C TO +120°C INCLUDING TEMPERATURE RISE.

## 4. KEEP TEMPERATURE RANGE

-30°C ~ +60°C.

## 5. CIRCUIT DIAGRAM



**TNC** TNC CO.,LTD

DESIGN

RYU.H.E  
R&D

CHECK

KANG.S.W  
R&D

APPROVAL

KOO.J.H  
R&D

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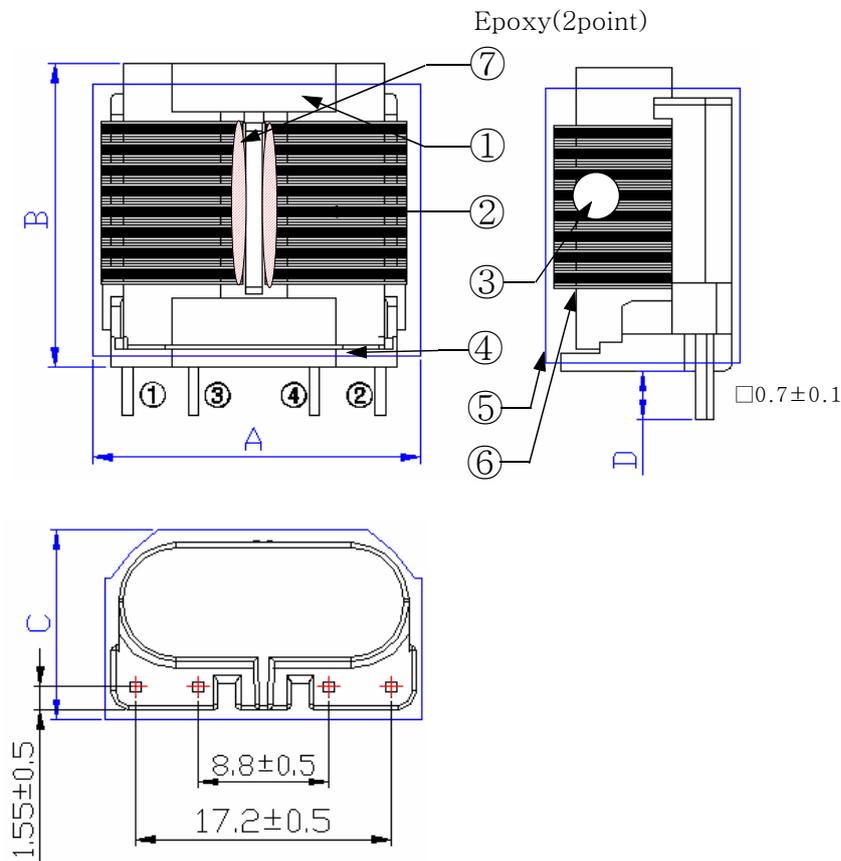
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SPECIFICATIONS	ITEM	LINE FILTER	Rev
	TNC SPEC NO	QV181610A	1

## 6. WINDING SPECIFICATION

NO	TERMINAL		WIRE	TURNS	WINDING METHOD	UNBALANCE SPECIFICATION
	START	FINISH				
L1	1	3	UEW 0.20X1.0mm	44Ts Ref	AUTO WINDING	BETWEEN L1 AND L2 (0.23mH MAX)
L2	2	4				

## 7. SHAPE AND DIMENSION



DIMENSION	A	B	C	D
	25.0mm MAX	19.5mm MAX	16.0mm MAX	Not include solder fillet $2.8 \pm 0.5$ mm

**TNC** TNC CO.,LTD

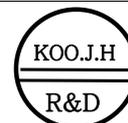
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SPECIFICATIONS	ITEM	LINE FILTER	Rev
	TNC SPEC NO	QV181610A	1

## 8. MATERIAL LIST

No.	NAME	SPECIFICATION		MANUFACTURER	COLOR	UL No.
1	Core Cover	LCP GA130(r)		POLYPLASTICS CO LTD	BLACK	E106764
2	Rectangular Copper Wire	UEW 0.20X1.0mm / 44Ts Ref	SFT- UEWH	WELL ASCENT ELECTRONIC CO LTD	YELLOW	E318511
			1UEWF /180	SHANDONG PENGTAI STOCK CO LTD	YELLOW	E166187
3	Ferrite Core	R12KF SQ1816 HL12 1816SQ		LAIWU CHAINWELL ELECTRONIC&MATERIAL.CO.,Ltd RUYUAN DONGYANGGUANG MAGNETIC MATERIAS CO.,LTD	BLACK	
4	Coil Base	Phenolic (PF 2736(a)(b)) UL 94 V-0 Class		Hexion GmbH	BLACK	E61040
		Phenolic (T375HF) UL 94 V-0 Class		CHANG CHUN Plastics Co.,Ltd	BLACK	E59481
5	Insulation tube	Heat Shrink Tube HKCT2(HF)		HAN KYUNG COMPONENT	BLACK	E222852
6	Impregnant	DVB-2177(M)		NOROO PAINT & COATING CO.,LTD	Transparent	E93947
7	Epoxy	EPOXY RESIN	NA-010	ND Chemical	WHITE BLACK	
			EA610A / EA610B	Chem Tech	WHITE	
A	Marking	Bon Mar Que		T&K Toka	SILVER	
		IR-254WTSPB/MC-254WT		DOMINO	WHITE	

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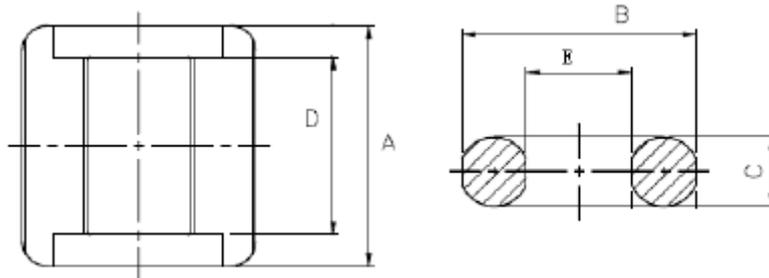
SPECIFICATIONS	ITEM	LINE FILTER	Rev
	TNC SPEC NO	QV181610A	1

## 15. FERRITE CORE SPECIFICATION

### - Characteristics

Symbol	Unit	R12KF SQ1816	HL12 1816SQ
$\mu_i$	-	12,000±30%	12,000±30%
B <sub>ms</sub>	mT	380	360
H <sub>cms</sub>	A/m	6.0	4.5
B <sub>rms</sub>	mT	100	100
T <sub>c</sub>	°C	>110	>110
TANδ / $\mu_{iac}$	*10 <sup>-6</sup>	<9.0	<7.0
$\alpha_{\mu r}$	*10 <sup>-6</sup> /°C	0~1.5	-0.5~3.0
$\rho$	Ω.m	0.1	0.15
d	g/cm <sup>3</sup>	4.9	4.95

### - Dimension



**A: 17.8 ±0.30**      **B: 16.2 ±0.30**      **C: 5.5 ±0.20**  
**D: 13.0 ±0.20**      **E: 6.0 ±0.20**

**TNC** TNC CO.,LTD

DESIGN



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APPROVAL



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The following Page(s) are related to Miscellaneous-06. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

SPECIFICATIONS	ITEM	COMMON FILTER	Rev
	TNC SPEC NO	CVA6011RNF2	0

## 2. ELECTRICAL CHARACTERISTIC

NO	ITEM	TERMINAL	SPECIFICATION			REMARKS
1	RATED VOLTAGE	LINE TO LINE	DC 50V			
2	RATED CURRENT	START-FINISH	6.0A			
3	INDUCTANCE	START-FINISH	160KHz	11.0uH	+50%,-30%	HP-4194A 1V (25°C±2°C)
4	TEMPERATURE RISE	AT RATED CURRENT	55°C MAX			
5	DC RESISTANCE	START-FINISH	16.0 mΩ MAX			HIOKI 3540 (25°C±2°C)
6	WITHSTANDING VOLTAGE	LINE TO LINE	AC 100V 1 MINUNE.			TOS-5101 CUN OFF CURRENT (5mA)

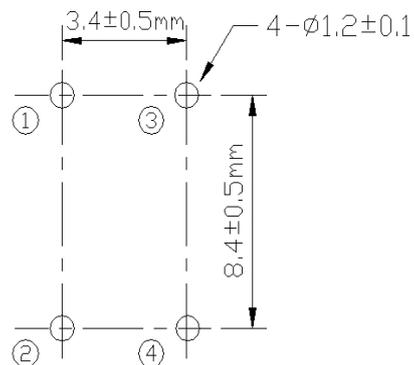
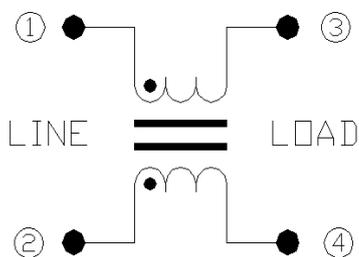
## 3. OPERATING TEMPERATURE RANGE

-30°C TO +105°C INCLUDING TEMPERATURE RISE.

## 4. KEEP TEMPERATURE RANGE

-30°C ~ +60°C.

## 5. CIRCUIT DIAGRAM



Minimum PCB Piercing HOLE

**TNC** TNC CO.,LTD

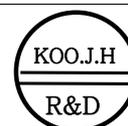
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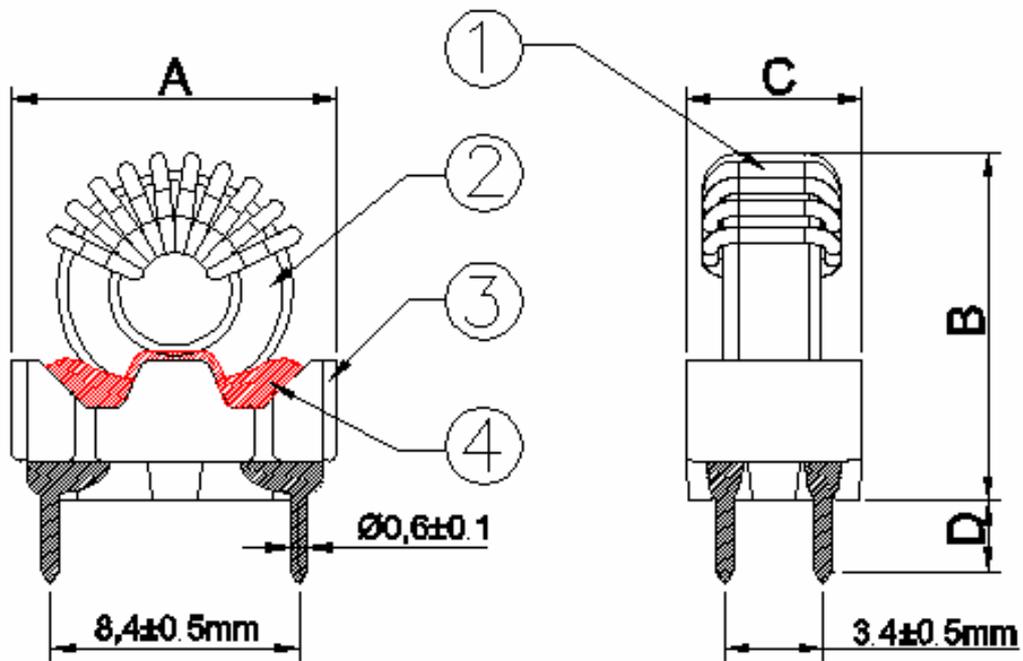
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SPECIFICATIONS	ITEM	COMMON FILTER	Rev
	TNC SPEC NO	CVA6011RNF2	0

## 6. WINDING SPECIFICATION

NO	TERMINAL		WIRE	TURNS	WINDING METHOD	UNBALANCE SPECIFICATION
	START	FINISH				
L1	1	3	UEW 0.55Φ (RED)	6 ±1Ts	HANDMADE	BETWEEN L1 AND L2 (1.99uH MAX)
L2	2	4	UEW 0.55Φ (NATURAL)			

## 7. SHAPE AND DIMENSION



DIMENSION	A	B	C	D
	11.5mm MAX	13.0mm MAX	6.5mm MAX	Not include solder fillet 2.8 ± 0.5mm

**TNC** TNC CO.,LTD

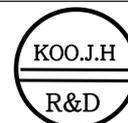
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APPROVAL



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SPECIFICATIONS	ITEM	COMMON FILTER	Rev
	TNC SPEC NO	CVA6011RNF2	0

## 8. MATERIAL LIST

No.	NAME	SPECIFICATION		MANUFACTURER	COLOR	UL No.
1	Enamel Wire	UEW	UEW	Hwa Il Electronics Co.,Ltd	YELLOW RED	E140246
		0.55Φ / 6±1Ts	UEW	SHANDONG PENGTAI STOCK CO LTD	YELLOW RED	E166187
2	Ferrite Core	L7H T 8x3x4-K K081 T 8X4X3UC		Korea TDK Co., Ltd ACME Electronics Corporation	WHITE	
3	Coil Base	Phenolic (PF 2736(a)(b)) UL 94 V-0 Class		Hexion GmbH	BLACK	E61040
		Phenolic (T375HF) UL 94 V-0 Class		CHANG CHUN Plastics Co.,Ltd	BLACK	E59481
4	Epoxy	EPOXY RESIN	NA-010	ND Chemical	WHITE	
			EA610A / EA610B	Chem Tech	Transparent	

 <b>TNC CO.,LTD</b>	DESIGN	CHECK	APPROVAL	PAGE
				5/12

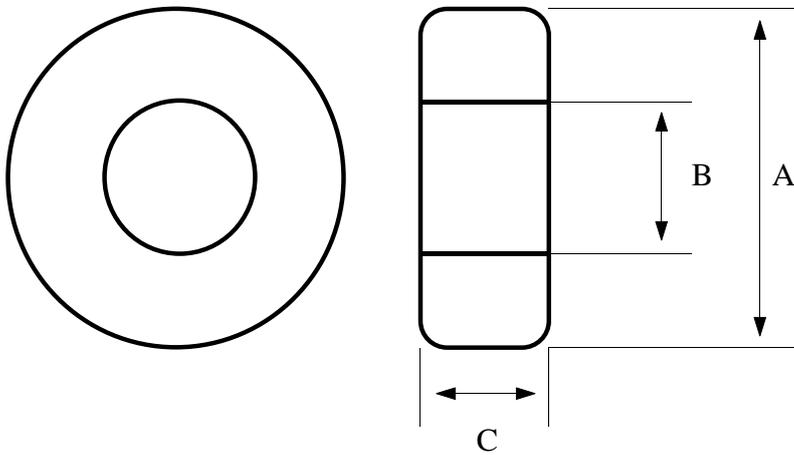
SPECIFICATIONS	ITEM	COMMON FILTER	Rev
	TNC SPEC NO	CVA6011RNF2	0

## 14. FERRITE CORE SPECIFICATION

### - Characteristics

Symbol	Unit	L7H T 8/3/4 - K	K081 T8*4*3UC
$\mu_i$	-	800±25%	800±25%
Bms	mT	390	410
Hcms	A/m	16	27
Brms	mT	220	272
Tc	°C	>180	>190
TAN $\delta$ / $\mu\text{iac}$	$\times 10^{-6}$	<80	<80
$\alpha\mu_r$	$\times 10^{-6} / ^\circ\text{C}$	7~15	7~15
$\rho$	$\Omega\cdot\text{m}$	$10^5$	$10^6$
d	g/cm <sup>3</sup>	5.1	5.1

### - Dimension (Before Coating)



**A: 8.0 ±0.4      B: 4.0 ±0.2      C: 3.0 ±0.3**



The following Page(s) are related to Miscellaneous-07. 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

Compliance

Review

Conducted by: \_\_\_\_\_

Date \_\_\_\_\_

Printed Name

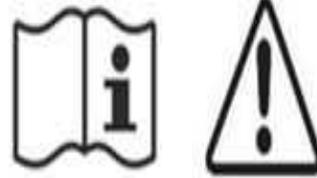
Signature

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			<p>Evaluation staff are to only verify that the manufacturer has a method to control distribution.</p> <p>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.</p> <p>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.</p>	N/A

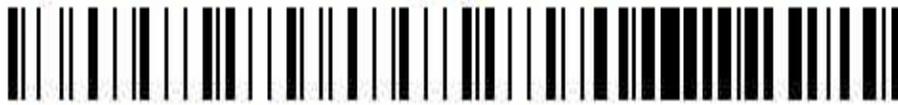




**NETWORK CAMERA**  
**MODEL: PNM-9322VQP**  
**PoE(55V  $\overline{\text{---}}$  ) 1.15A**



**M/C: PNM-9322VQP/KUS Fac. ID: D**



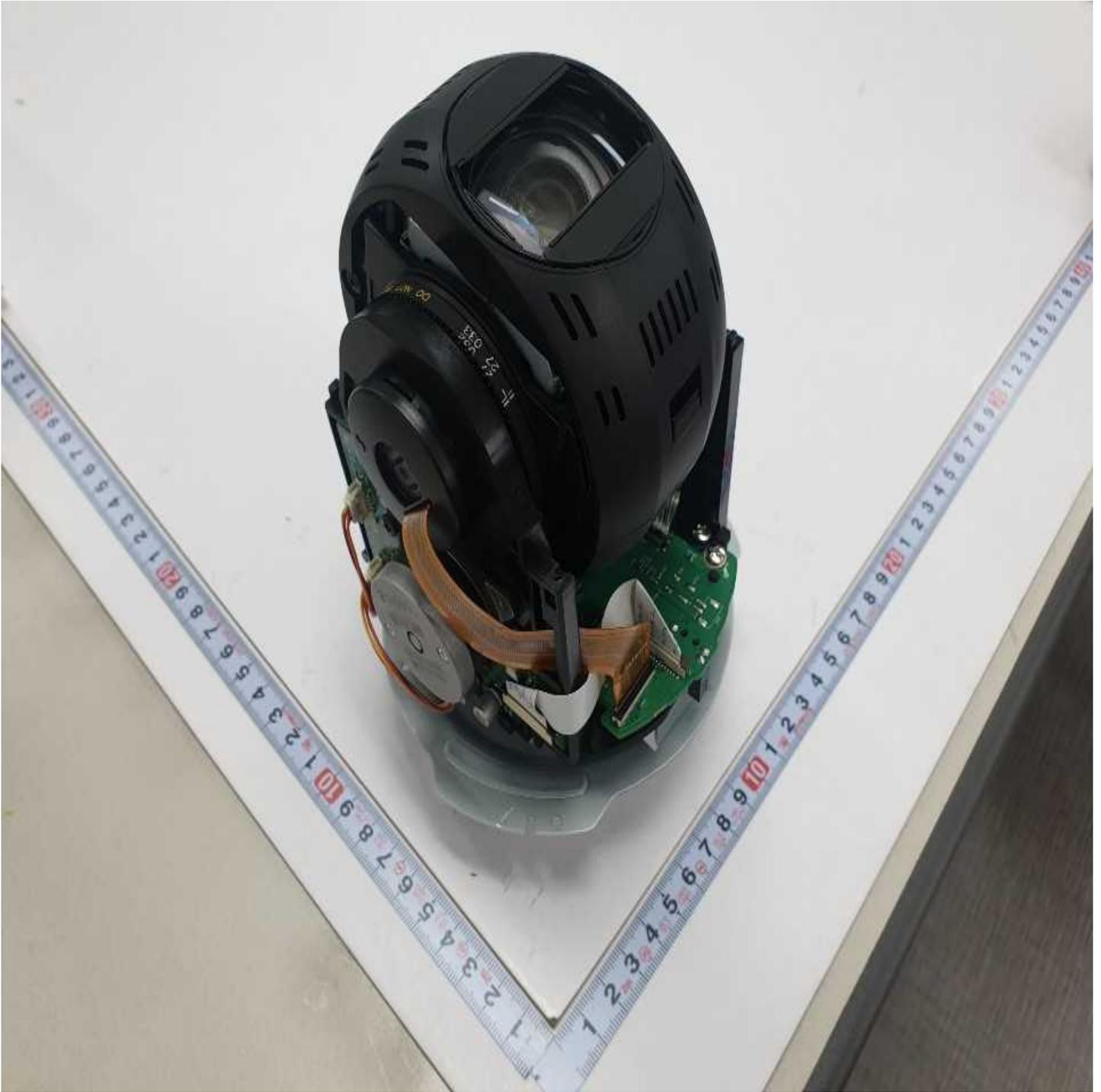
**2020.11 S/N: Serial No.**  
**MAC ADDRESS: XX-XX-XX-XX-XX-XX**  
**CAN ICES-3(A)/NMB-3(A)**  
**HANWHA TECHWIN CO.,LTD.**  
**MADE IN KOREA**

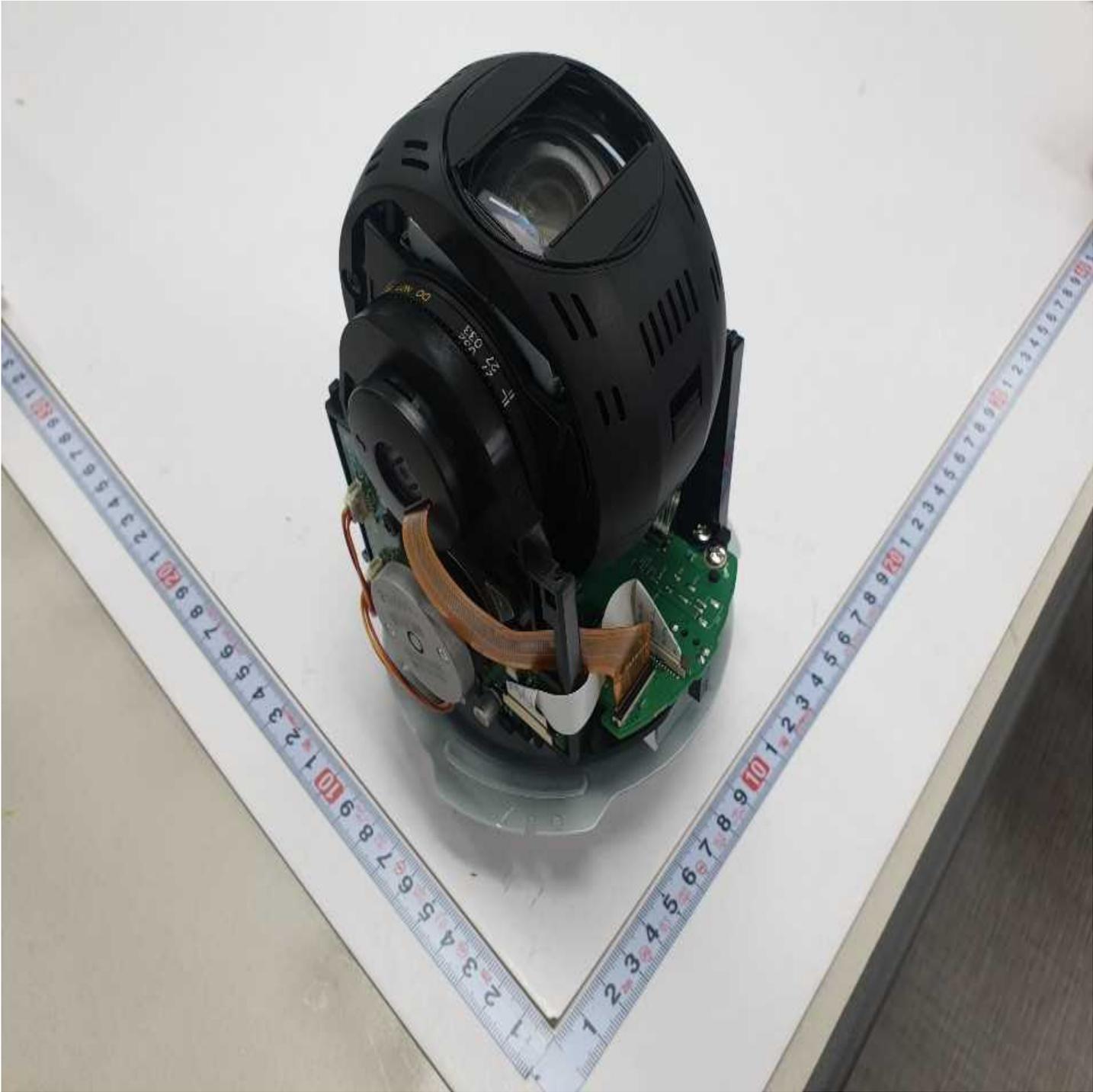






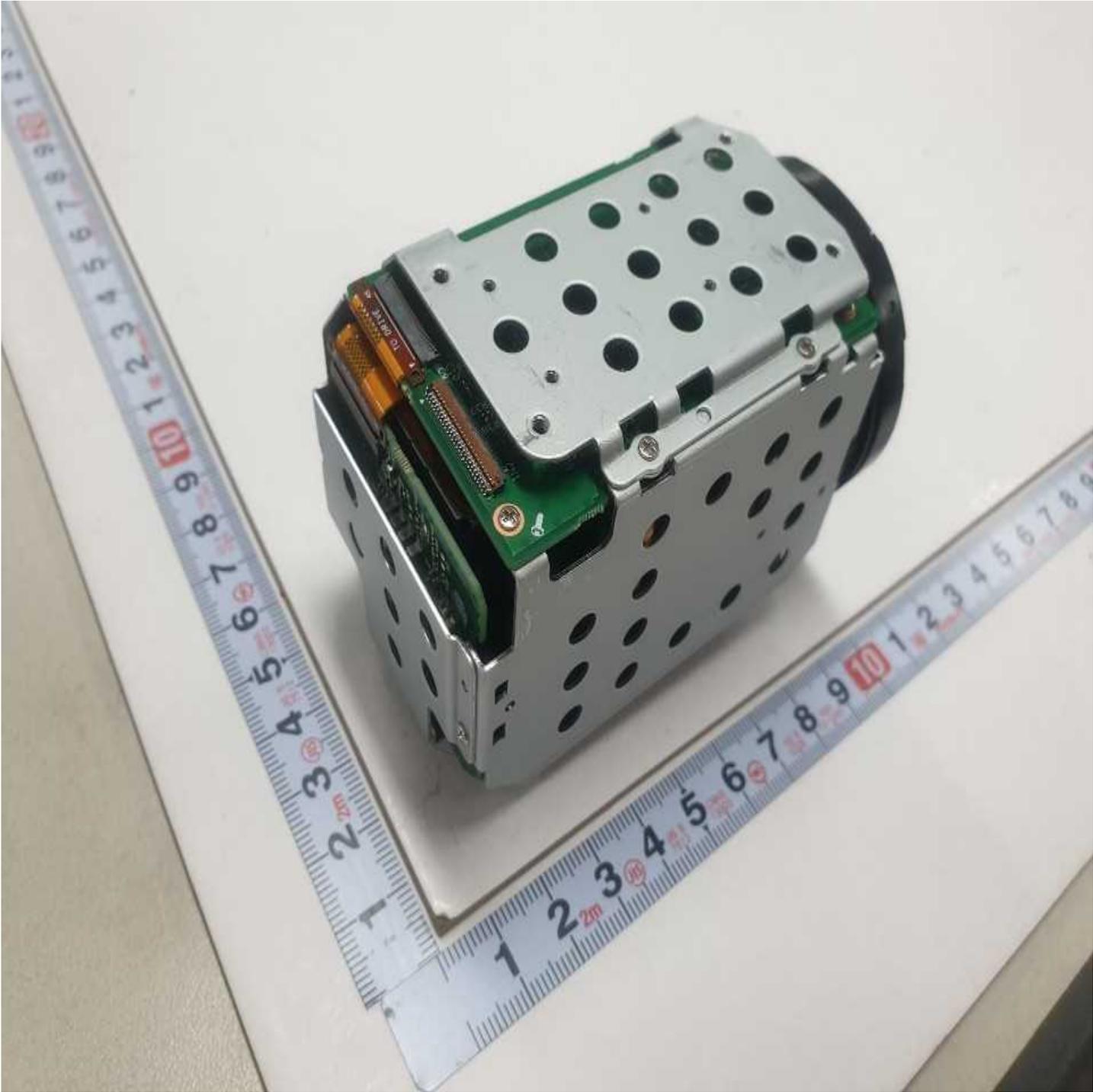




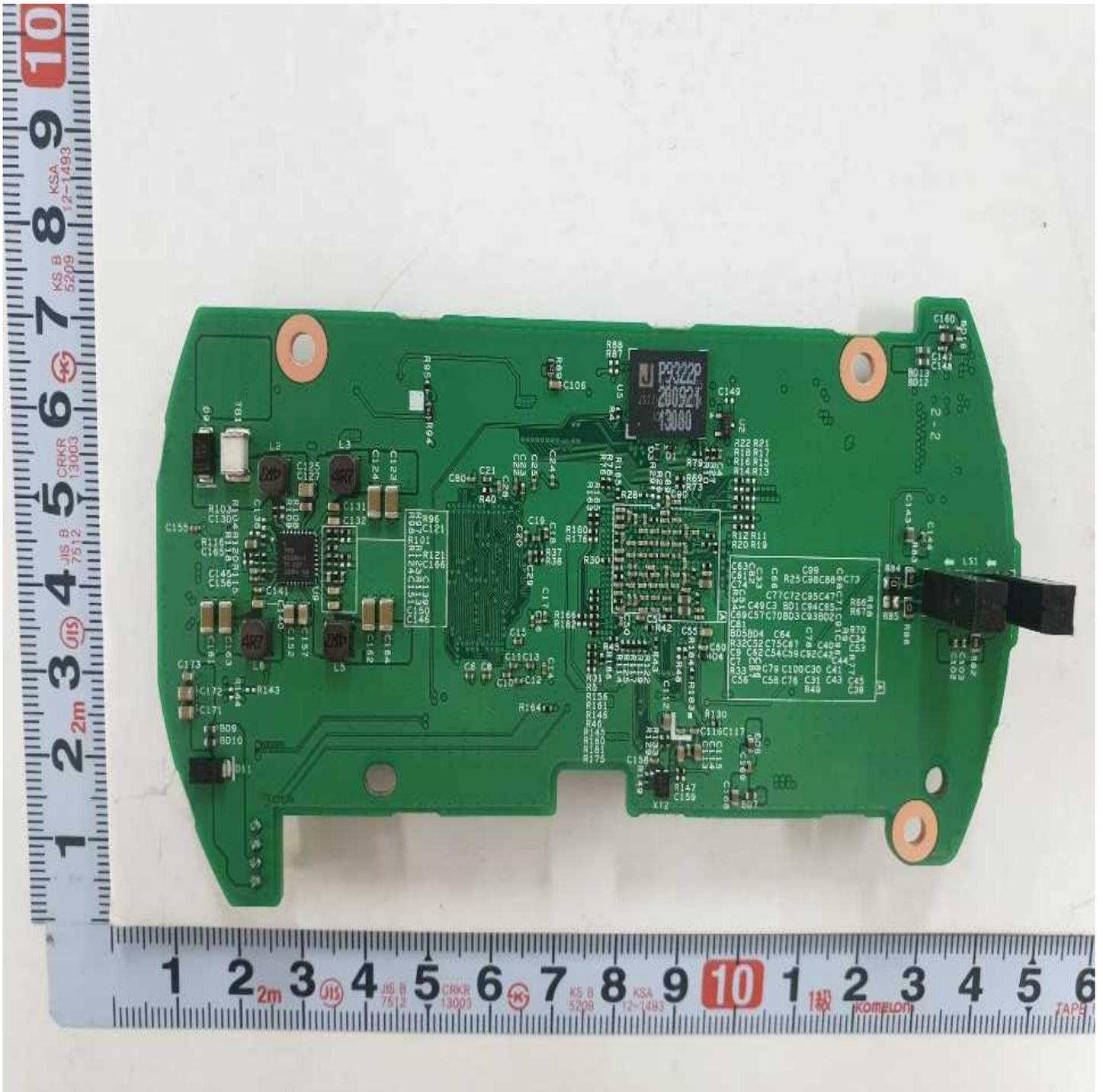


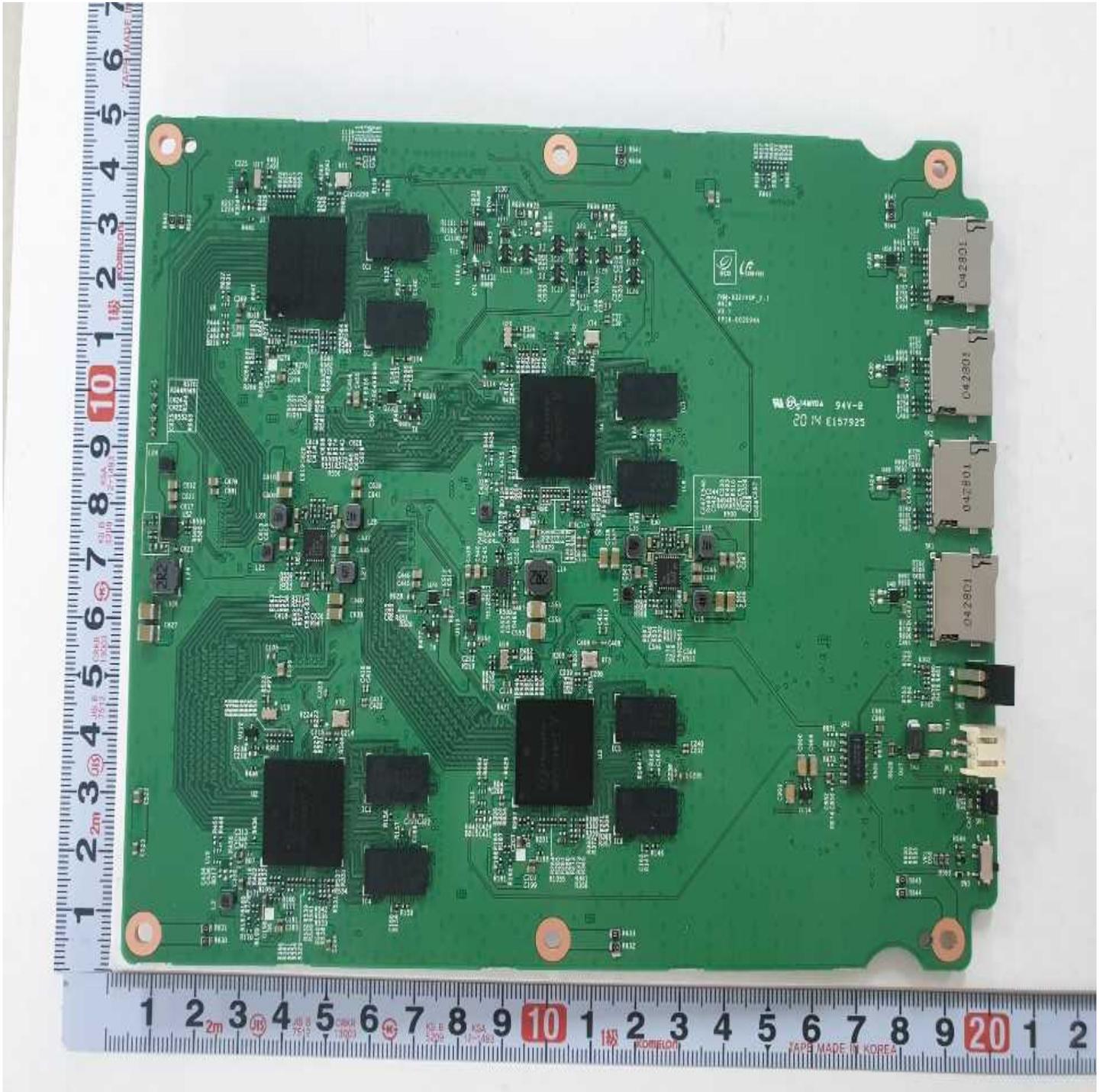


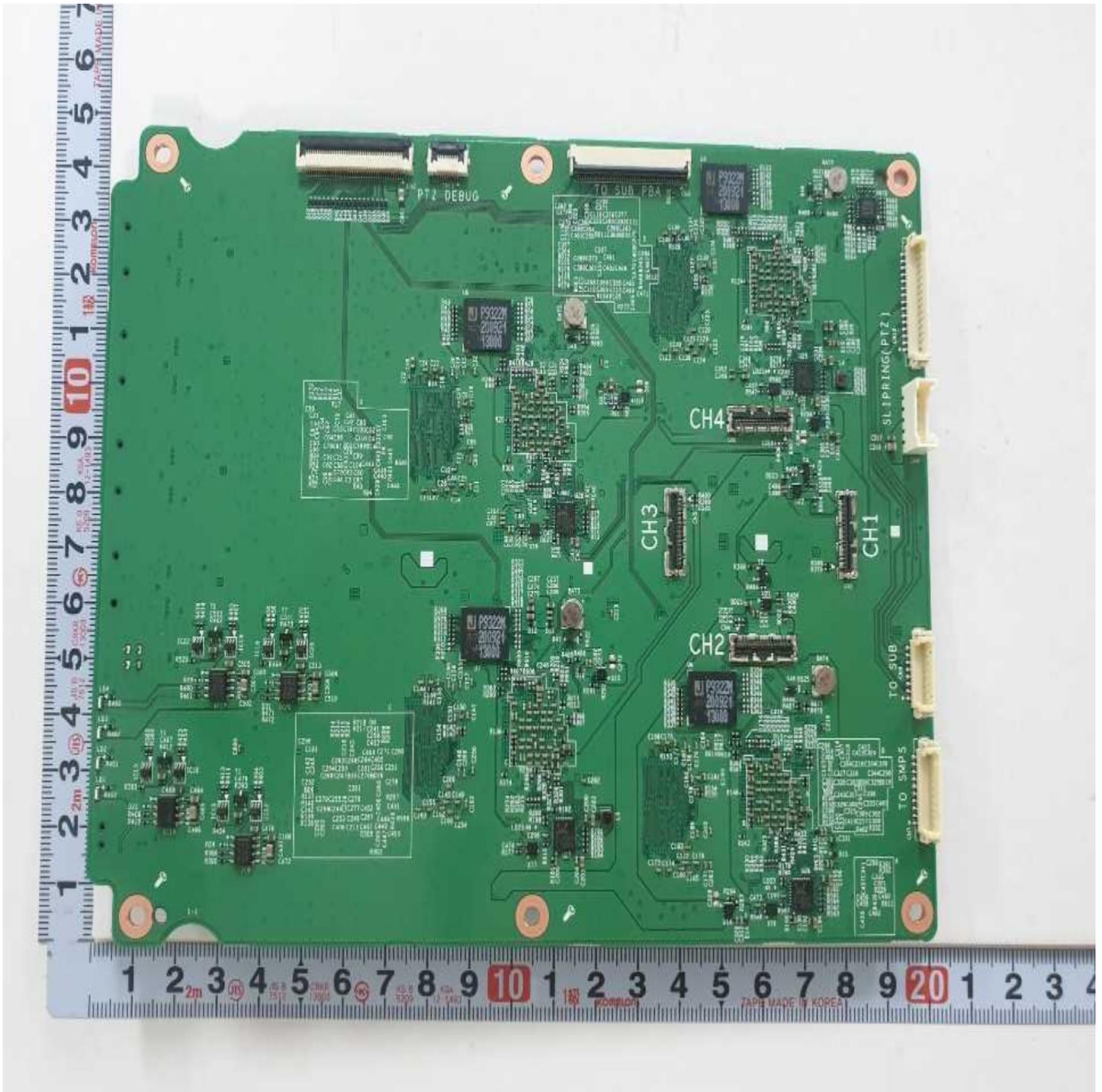


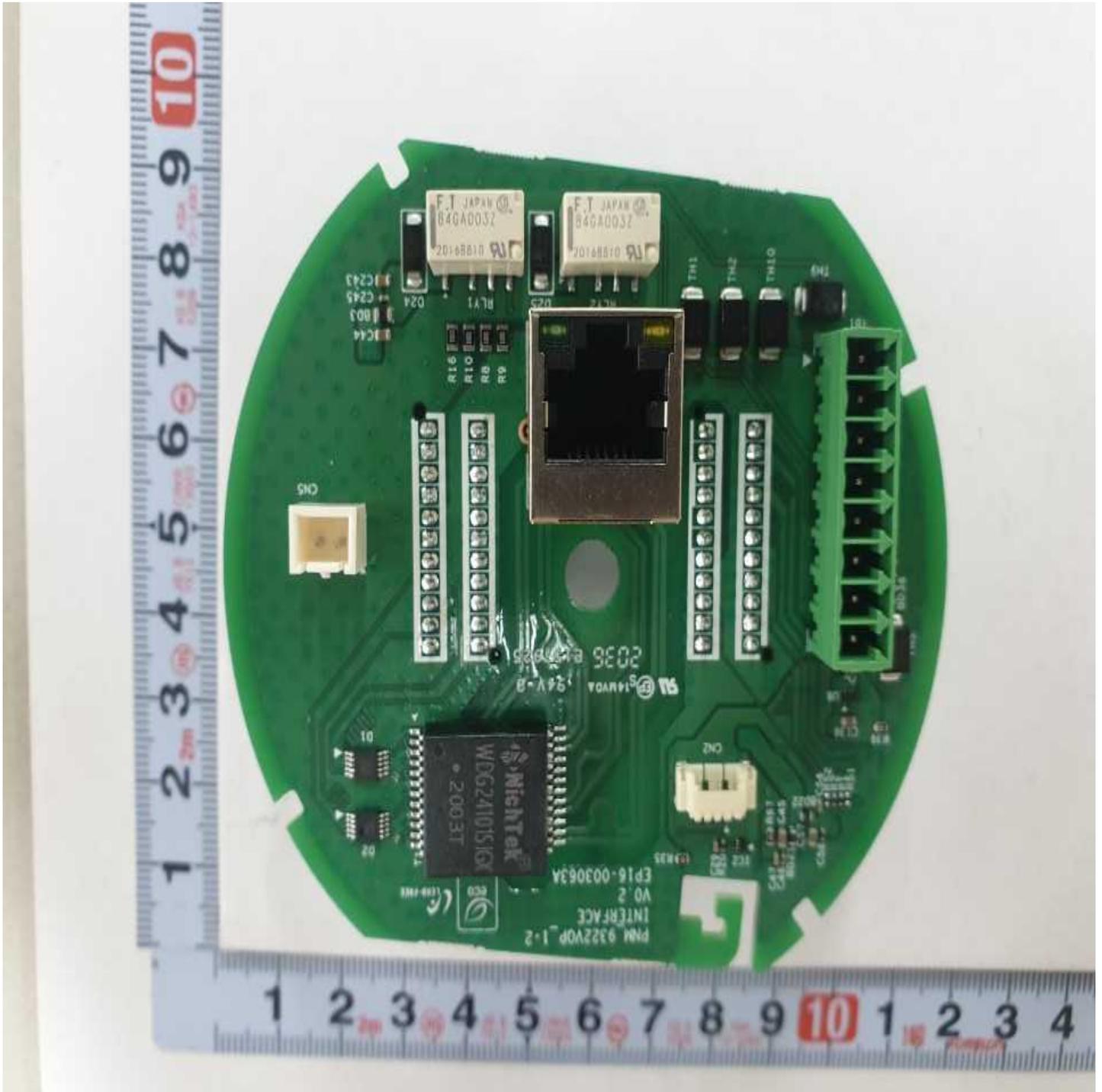


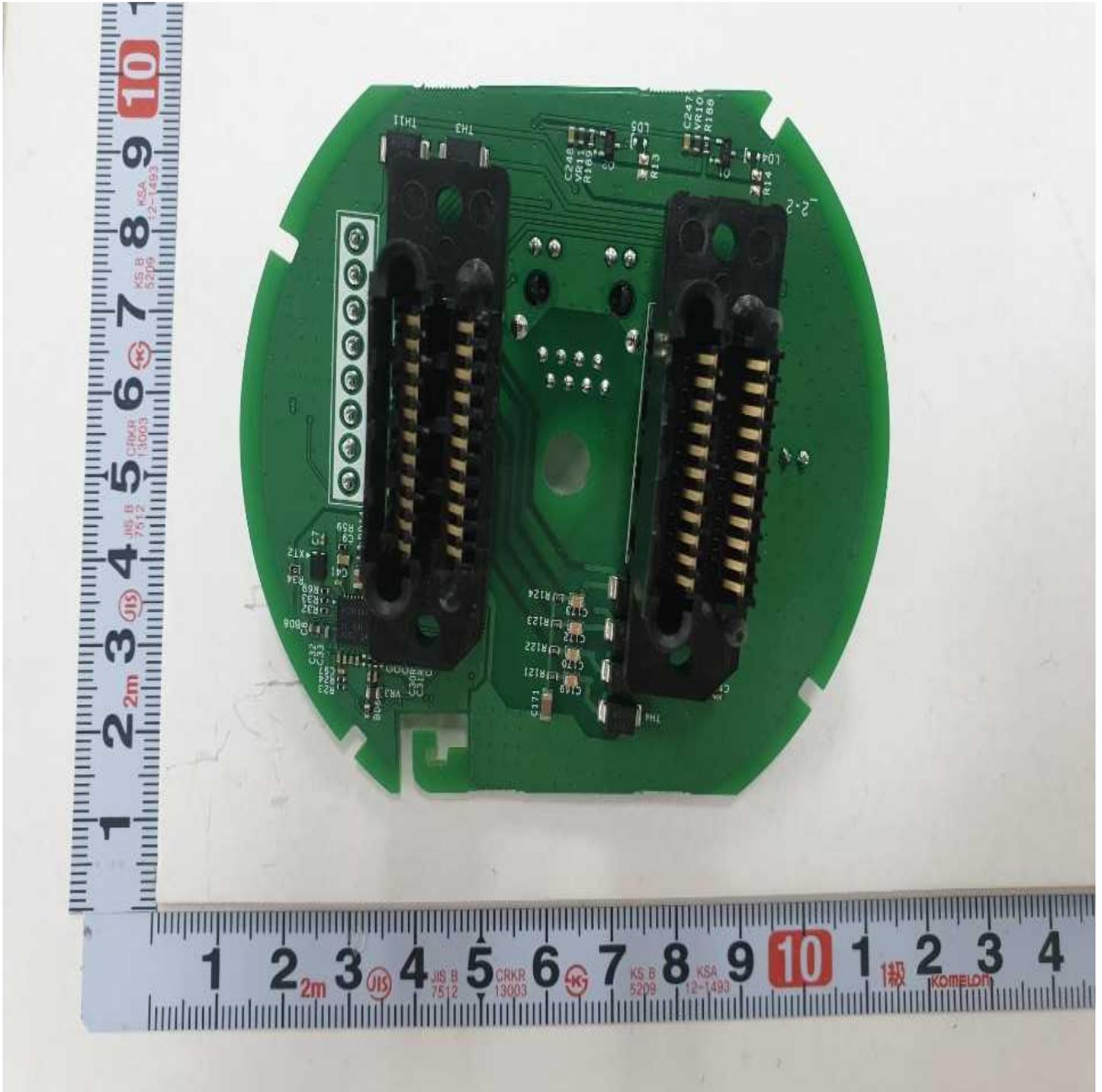






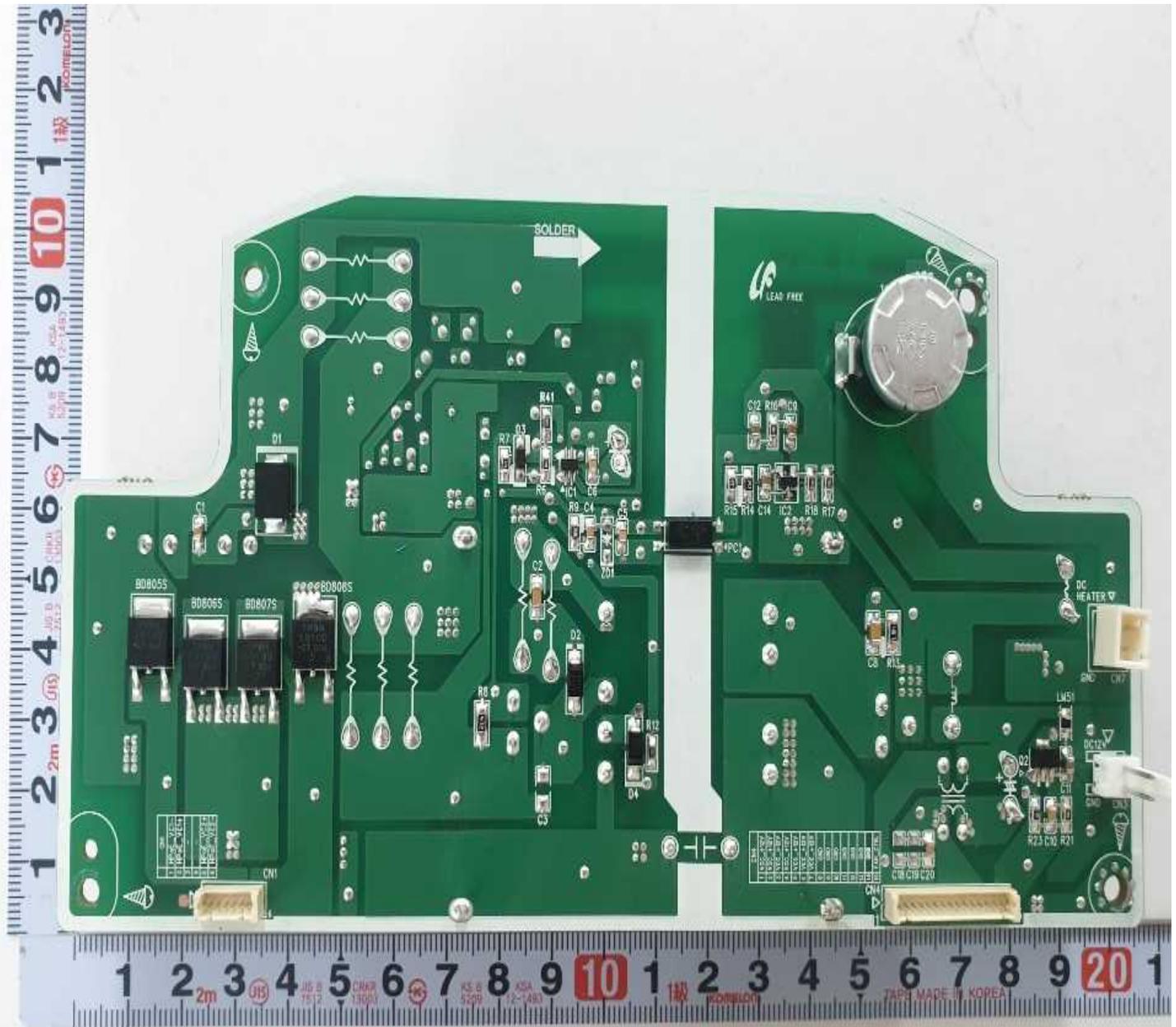
















**Test Record No. 1**

1. Test result relate only to the items tested.
2. The manufacturer submitted representative production samples of NETWORK CAMERA, PNM-9322VQP.
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> CTK Co., Ltd., 386-1 Ho-dong Yongin-shi, Kyungki-do, 449-100, Korea
MAXIMUM OPERATING TEMPERATURE FOR MATERIALS, COMPONENTS AND SYSTEMS (5.4.1.4, 6.2, 9.2.5 ANNEX B.2)	
DETERMINATION OF WORKING VOLTAGE (5.4.1.8)	
WALL OR CEILING MOUNTING TESTS (8.7)	
INPUT TEST: POLYPHASE (B.2.5)	
SIMULATED ABNORMAL OPERATING CONDITIONS (B.3)	
SIMULATED SINGLE FAULT CONDITIONS (B.4)	
PROTECTION CIRCUITS FOR BATTERIES (ANNEX M.3.2)	
<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

