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Please note, Follow-Up Procedure Revisions or Report Revisions do not include Authorization Pages, Indices, Section General, and/or Appendices unless revisions were required or requested.

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Please find attached the related material

For your convenience, the below describes the related updates:

For revised/new documentation, please reference 2022-01-09 in the page headings.

If there are illegible images in this package, legible images may be found online via myUL Portal.

Certificate of Compliance format now separates US and Canada certified Products by specified scheme and category.

Section(s) A6114 were added.

E158873-volX13-Index
E158873-20220109-CertificateofCompliance
E158873-A6114-DescriptionUL
Figure-12-Total
E158873-A6114-TestRecordUL

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Times change, Trust Remains™

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Product Type	Model/Type Reference	Report Reference #	Status
NETWORK VIDEO RECORDER	XRN-6410B4, XRN-3210B4	E158873-A6027-UL	
NETWORK VIDEO RECORDER	PRN-6410B4, PRN-3210B4, XRP-4210B4, PRN-6400B4, PRN-3200B4	E158873-A6028-UL	
NETWORK VIDEO RECORDER	XRN-6410DB4	E158873-A6029-UL	
NETWORK VIDEO RECORDER	PRN-6410DB4, XRP-4310DB4, PRN-6400DB4	E158873-A6030-UL	
NETWORK CAMERA	PNM-9002VQ	E158873-A6031-UL	
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NETWORK CAMERA	PNM-9000QB	E158873-A6033-UL	
NETWORK CAMERA	XNP-9300RW, XNP-8300RW, XNP-6400RW	E158873-A6034-UL	
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OUTDOOR NETWORK CAMERA	PNM-8082VT	E158873-A6036-UL	
THERMAL CAMERA	TNM-3620TDY	E158873-A6037-UL	
DIGITAL VIDEO RECORDER	HRX-1621* (* is Blank or N or P : P=PAL, N=NTSC)	E158873-A6038-UL	
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PUBLIC VIEW MONITOR	SMT-2730PV	E158873-A6044-UL	
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NETWORK THERMAL CAMERA	TNO-3030T, TNO-3020T, TNO-3010T, TNO-3040T, TNO-3050T	E158873-A6067-UL	
NETWORK CAMERA	QNP-6320, QNP-6250, QNP-6251	E158873-A6068-UL	
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NETWORK CAMERA	LNV-6072R	E158873-A6104-UL	
NETWORK CAMERA	LND-6012R, LND-6022R, LND-6032R	E158873-A6105-UL	
NETWORK CAMERA	LND-6072R	E158873-A6106-UL	
NETWORK CAMERA	LNO-6012R, LNO-6022R, LNO-6032R, ANO-L6012R, ANO-L6022R	E158873-A6107-UL	
NETWORK CAMERA	ANO-L7022R, ANO-L7012R	E158873-A6108-UL	
NETWORK CAMERA	TNV-7010RC, TNV-7011RC	E158873-A6109-UL	
NETWORK CAMERA	XNZ-6320A	E158873-A6111-UL	
NETWORK CAMERA	QNP-6320HS	E158873-A6112-UL	
NETWORK VIDEO RECORDER	ARN-1610S	E158873-A6114-UL	

CERTIFICATE OF COMPLIANCE

Certificate Number UL-US-2201046-0
Report Reference E158873-20220109
Date 13-Jan-2022

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

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, 2nd Ed., Issue Date: 2014-12-01

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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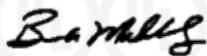


CERTIFICATE OF COMPLIANCE

Certificate Number UL-US-2201046-0
Report Reference E158873-20220109
Date 13-Jan-2022

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
ARN-1610S	NETWORK VIDEO RECORDER



Bruce Mahrenholz, Director North American Certification Program

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CERTIFICATE OF COMPLIANCE

Certificate Number UL-CA-2201020-0
Report Reference E158873-20220109
Date 13-Jan-2022

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

**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. 62368-1-14, 2nd Ed., Issue Date: 2014-12-01

Additional Information: See the UL Online Certifications Directory at
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Look for the UL Certification Mark on the product.



Bruce Mahrenholz, Director North American Certification Program

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CERTIFICATE OF COMPLIANCE

Certificate Number UL-CA-2201020-0
Report Reference E158873-20220109
Date 13-Jan-2022

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
ARN-1610S	NETWORK VIDEO RECORDER



Bruce Mahrenholz, Director North American Certification Program

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UL TEST REPORT AND PROCEDURE

Standard:	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)
Certification Type:	Listing
CCN:	AZOT, AZOT7 (Audio/video, Information and Communication Technology Equipment)
Complementary CCN:	N/A
Product:	NETWORK VIDEO RECORDER
Model:	ARN-1610S
Rating:	100-240 Vac, 50/60 Hz, 2.1 A
Applicant Name and Address:	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.

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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 VIDEO RECORDER.

This unit consist of R/C (QQJQ2/8) power supply, main board, maximum 2 hard disk-drives and numerous components mounted on PWB.

This unit connect CCTV camera using 16 PoE ports. (PoE 52 Vdc Each Max. 0.57 A, Total Max. 2.5 A)

Model Differences

N/A

Test Item Particulars

Classification of use by	Ordinary person Children likely to be present
Supply Connection	AC Mains
Supply % Tolerance	+10%/-10%
Supply Connection – Type	pluggable equipment type A - appliance coupler
Considered current rating of protective device as part of building or equipment installation	20 A; building;
Equipment mobility	movable rack-mounting
Over voltage category (OVC)	OVC II
Class of equipment	--
Access location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified maximum operating ambient (°C)	40
IP protection class	IPX0
Power Systems	TN
Altitude during operation (m)	2000 m or less
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	HDD Full Mounted (2 EA) : 4.1 kg

Technical Considerations

- ☐ The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of : 40 °C
- ☐ The product is intended for use on the following power systems : TN
- ☐ Considered current rating of protective device as part of the building installation (A) : 20
- ☐ Mains supply tolerance (%) or absolute mains supply values : +10%/-10%
- ☐ The equipment disconnect device is considered to be : Appliance inlet
- ☐ The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS) : All accessible connectors
- ☐ The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual

Additional Information

4790174647

- All tests were considered necessary for UL/CSA national deviation based upon previous evaluation under CB Scheme. The CB Scheme Test Certificate, Ref. Certi. No. DK-122503-UL and Report Ref. No. C21IA076-M0A0 were prepared by UL International Demko A/S, Borupvang 5A, DK-2750 Ballerup, Denmark.

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)"
Symbols - On/Off switch	Switches to be marked with  symbol for "ON" (IEC 60417-5007) and  symbol for "OFF" (IEC 60417-5008)
Replaceable batteries	"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) Alternatively, symbol   (ISO 7000-0434 and/or ISO 7000-1641) on product where visible, with the above wording in the instruction manual.

Class I equipment -Terminal for main protective earthing	Provided adjacent to the main protective earthing terminal  (IEC 60417-5019)
Hard Copy	A. IMPORTANT B. Please check 'Manuals' from our website, before connecting to the supply. C. Company website URL (https://www.~~)
Special Instructions to UL Representative N/A	

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

BE1.0	Sample and Test Specifics for Follow-Up Tests at UL				
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
Power Supply	Delta Electronics, Inc.	DPS-200PB-185 C	Input: 100-240 Vac, 47 Hz - 63 Hz, 3.5 A, Output: DC +12 V / 5 A (MAX), +52 V / 2.5 A (MAX)	QQJQ2	UL (E131881)	
Power cord set	LONGWELL	LP-30B +SVT 18AWG X 3C+LS- 13	Detachable, Min. 1.5 m, Max. 4.5 m long, rated 125 V, 10 A, 18/3 AWG, 60 deg. C, SVT type flexible cord. One end with NEMA 5-15P the other end with appliance coupler.	ELBZ	UL (E55349)	
Power cord set - Alternate	KOREA KDK CO LTD	KKP-30 + SVT 3/18AWG + KKS- 16A	Detachable, Min. 1.5 m, Max. 4.5 m long, rated 125 V, 7 A, 18/3 AWG, 105 deg. C, SVT type flexible cord. One end with NEMA 1-15 other end with appliance coupler.	ELBZ	UL (E58075)	
Power cord set - Alternate	CHANGZHOU HONG CHANG ELECTRONICS CO LTD	DTII-3P-15+UL SVT 18AWG/3C +DTII- 3P-04	Detachable, Min. 1.5 m, Max. 4.5 m long, rated 125 V, 10 A, 18/3 AWG, 105 deg. C, SVT type flexible cord. One end with NEMA 5-15P the other end with appliance coupler.	ELBZ2	UL (E205766)	
Power cord set - Alternate	WEIHAI HONG LIN ELECTRONIC CO LTD	HL-002S + SVT 18AWG X 3C + HL- 004	Detachable, Min 1.5 m, Max. 4.5 m long, rated 125 V, 10 A, 18/3 AWG, 105 deg. C, SVT type flexible cord. One end with NEMA 5-15P	ELBZ2	UL (E254927)	

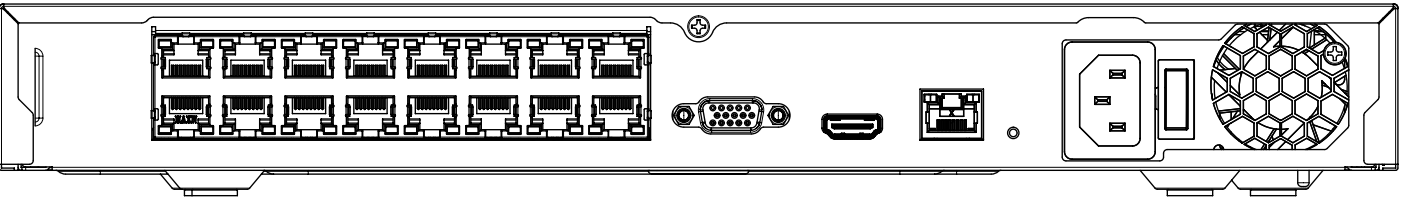
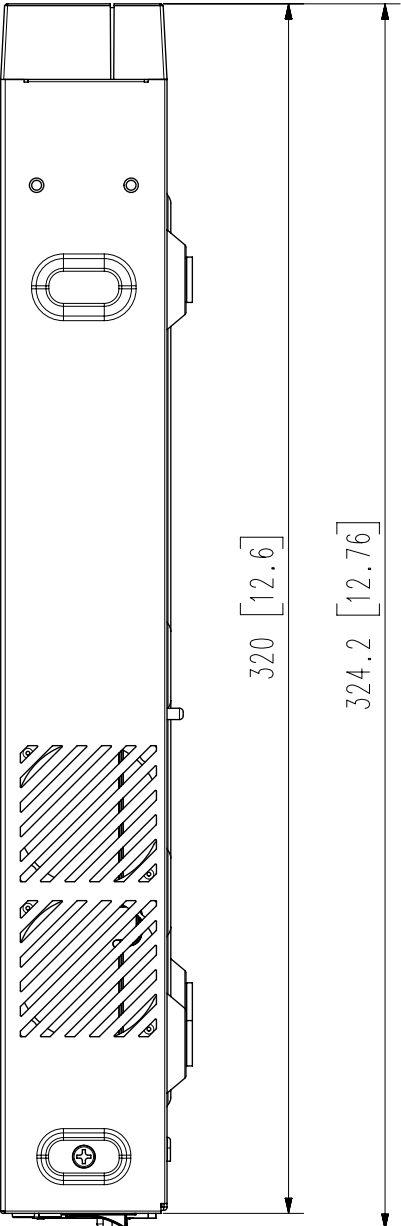
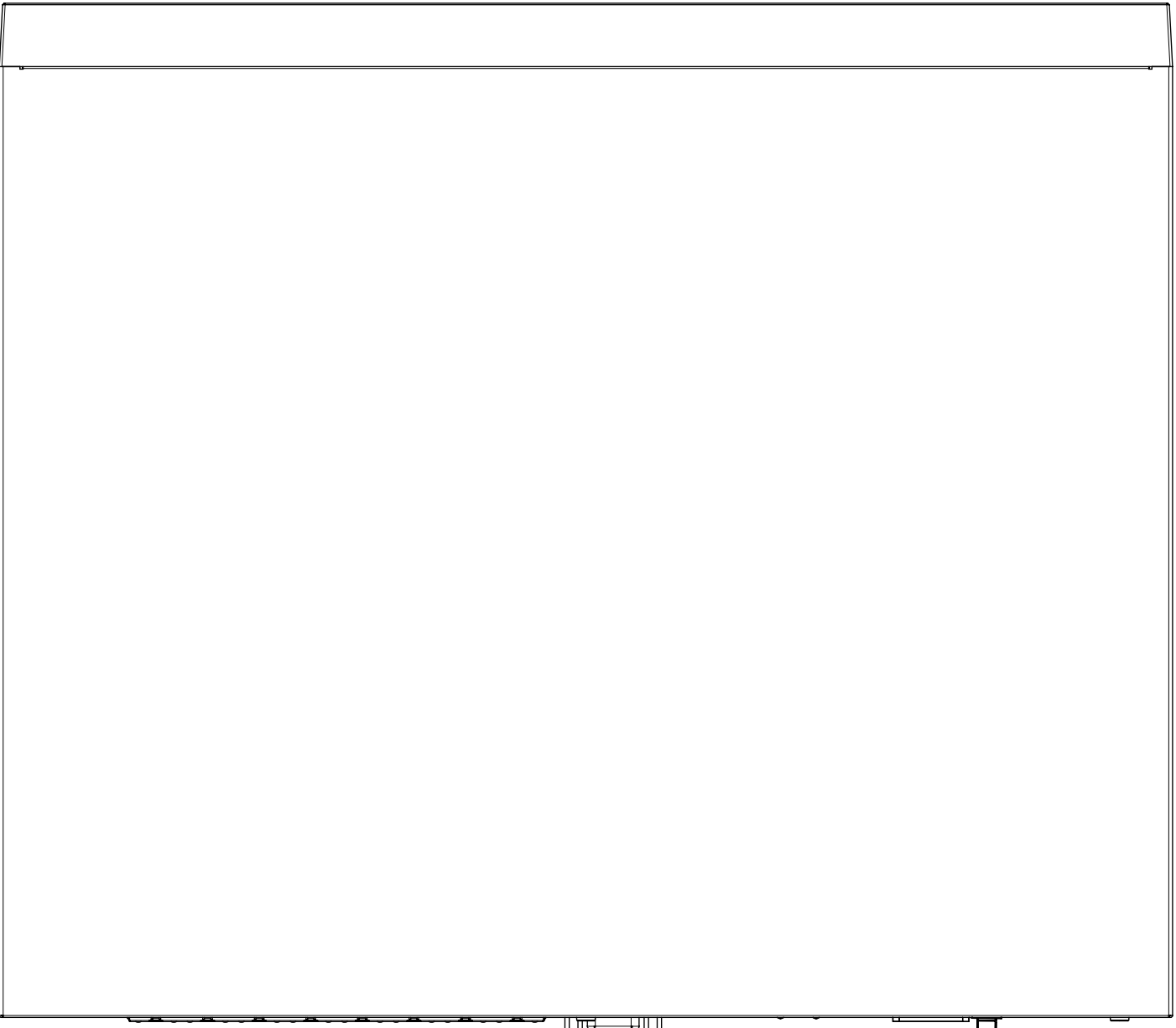
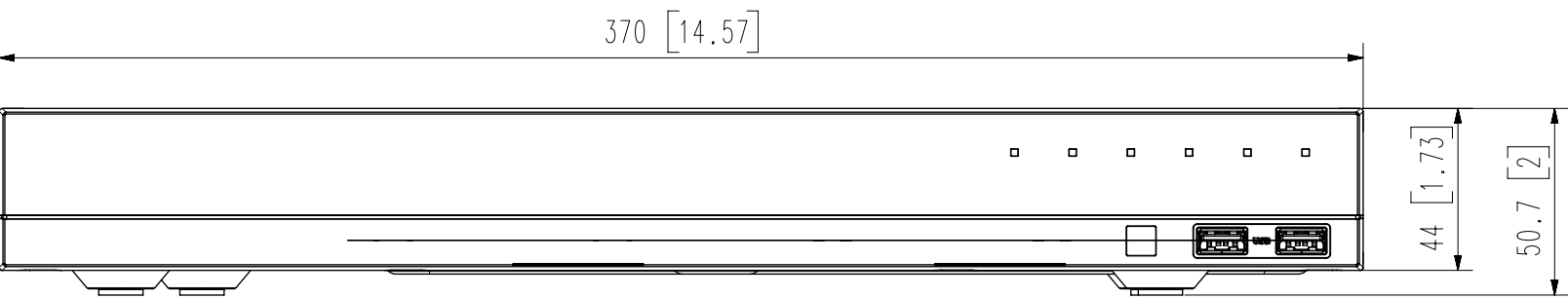
			the other end with appliance coupler.			
Enclosure Top (Metal) (Metal) (Fire / Mech / Elec)	Interchangeable	Interchangeable	SECC, approximately 370.0 by 320.0 by 44.0 mm, Min. 1.0 mm thickness, See enclosure for more detail.	-	-	
Enclosure Bottom (Metal) (Metal) (Fire / Mech / Elec)	Interchangeable	Interchangeable	SECC, approximately 370.0 by 320.7 by 44.0 mm, Min. 1.0 mm thickness, See enclosure for more detail.	-	-	
Case-Front (Plastic)	LOTTE ADVANCED MATERIALS CO LTD	NH-1017SG(+)	Min. 1.5 mm thickness, rated Min. V-0, 60 deg. C	QMFZ2	UL (E115797)	
Internal Plastic Part Materials	Interchangeable	Interchangeable	Rated Min. V-2	QMFZ2	UL	
Hard Disk Drive (Max 2ea)	Interchangeable	Interchangeable	Rated 5 Vdc or 12 Vdc	NWGQ2 or AZOT2	UL	
Lithium Battery (CN1)	WUHAN LIXING (TORCH) POWER SOURCE CO LTD	CR2032	Lithium/manganese dioxide (Coin), Max Abnormal Charging Current: 10 mA, Max Abnormal Charging Voltage: 5 Vdc	BBCV2	UL (MH26236)	
Lithium Battery (CN1) - Alternate	SHENZHEN GAONENGDA BATTERY CO LTD	CR2032	Lithium/manganese dioxide (Coin), Max Abnormal Charging Current: 10 mA, Max Abnormal Charging Voltage: 3.5 Vdc	BBCV2	UL (MH30114)	
Reverse Current Protection Circuit for Lithium Coin Battery (CN1)	Interchangeable	Interchangeable	Diode (D5, 30 V, 1 A) and resistor (R17, 1 kohm) in series.	-	-	

USB Protection IC (U7, U25)	Texas Instruments Inc	TPS2062	2.7–5.5 Vdc, Continuous current: 1 A, Protection current: 5 A	QVGS2	UL (E169910)	
Line filter(T3) in main board	TNC CO.,LTD	CV650050SKA	Rated 5.0 mH, 130 deg. C	-	-	
Internal Wiring (Secondary)	Interchangeable	Interchangeable	Marked VW-1; Min. 30 V, 80 deg. C	AVLV2	UL	
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	
PWB	EXPRESS ELECTRONICS LTD	14MV0	Min. V-0, 130 deg. C	ZPMV2	UL (E157925)	
PWB - Alternate	Interchangeable	Interchangeable	Min. V-0, 130 deg. C	ZPMV2	UL	
Label	Interchangeable	Interchangeable	Min.40 deg. C if max. surface temperature not specified.	PGDQ2 or PGJI2	UL	

Enclosures

Type	Supplement Id	Description
Photographs	03-01	External View - 1
Photographs	03-02	External View - 2
Photographs	03-03	Port Front View
Photographs	03-04	Port Rear View
Photographs	03-05	Internal View
Photographs	03-06	SMPS View
Photographs	03-07	Main Board - Top
Photographs	03-08	Main Board - Bottom
Diagrams	04-01	Enclosure Dawing
Manuals	06-01	Manual
Miscellaneous	07-01	Line Filter (L3) Specifiation
Miscellaneous	07-02	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	ARN-1610S	'21.11.12
No.	MODEL NAME	DATE
Unit:mm[inch] SCALE:1/2		© 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

- Read these operating instructions carefully before using the unit.
- Follow all the safety instructions listed below.
- Keep these operating instructions handy for future reference.
- 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.

Standards Approvals



- ! Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
-  This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
 - This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
 - Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/TV technician for help.

PRODUCT USER MANUAL DESCRIPTION

- This document is a user manual for Recorder product. Before using this product, please read this document carefully in order to use it properly.
- This user manual explains how to use the product based on the defaults and default screens of this product.
 - The content of this manual is subject to change depending on the product software updates and the company policies. It is subject to partial changes without prior notification to users.

TARGET AUDIENCE

This user manual contains contents for Recorder users.

HOW TO USE THE PRODUCT

- Users of this product can perform the following:
- Monitor cameras registered to Recorder in real time
 - Search for or play videos saved in Recorder
 - Monitor text data being transmitted to the POS device connected to Recorder in real time
 - Search for text data from the POS device connected to Recorder
 - Monitor real time events that occur in Recorder, sensors, and cameras or search through logs

Before using this product, check if the latest version of this software is installed. Go to Hanwha Techwin's website (<http://www.hanwha-security.com>) to check the software version and download necessary files.

CAUTION

- RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.
- Do not ingest battery, Chemical Burn Hazard.
- This product contains a coin / button cell battery. If the coin / button cell battery is swallowed, it can cause severe internal burns in just 2 hours and can lead to death.
- Keep new and used batteries away from children. If the battery compartment does not close securely, stop using the product and keep it away from children.
If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention.

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.
- Ne pas ingérer la pile, risque de brûlure chimique.
- Ce produit contient une pile de type bouton/pièce de monnaie. Si la pile de type bouton/pièce de monnaie est avalée, elle peut causer de graves brûlures internes en seulement 2 heures et peut entraîner la mort.
- Gardez les piles neuves et usagées hors de portée des enfants. Si le compartiment de la pile ne se ferme pas correctement, cessez d'utiliser le produit et gardez-le d'atteinte des enfants.
Si vous suspectez que des piles ont été avalées ou insérées dans une partie du corps, consultez un médecin sans tarder.

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

SPECIFICATIONS	ITEM	LINE FILTER	Rev
	TNC SPEC NO	CV650050SKA	0

2. ELECTRICAL CHARACTERISTIC

NO	ITEM	TERMINAL	SPECIFICATION			REMARKS
1	RATED VOLTAGE	LINE TO LINE	AC 300V			
2	RATED CURRENT	START-FINISH	5.0A			
3	INDUCTANCE	START-FINISH	16KHz	5.0mH	+ 50%, -30%	HP-4194A 1V (25℃±2℃)
4	TEMPERATURE RISE	AT RATED CURRENT	55℃ MAX			
5	DC RESISTANCE	START-FINISH	48.0 mΩ MAX			HIOKI 3540 (25℃±2℃)
6	WITHSTANDING VOLTAGE	LINE TO LINE	AC 1,500V 1 MINUTE.			TOS-5101 CUT OFF CURRENT (5mA)
7	INSULATION RESISTANCE	LINE TO COVER	DC 500V, 300MΩ MIN.			TOS-8850

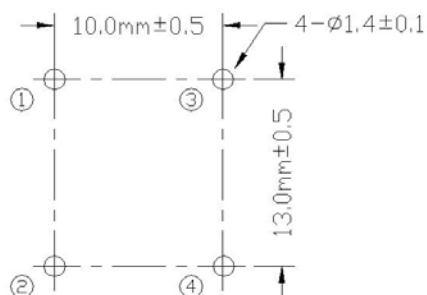
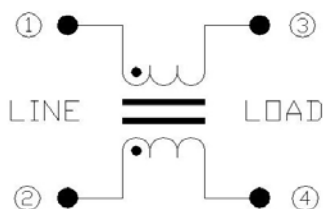
3. OPERATING TEMPERATURE RANGE

-40℃ TO +120℃ INCLUDING TEMPERATURE RISE.

4. KEEP TEMPERATURE RANGE

-40℃ ~ +120℃.

5. CIRCUIT DIAGRAM



PCB layout requirements

※PCB LAYOUT is strictly required..

TNC TNC CO.,LTD

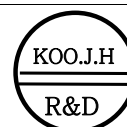
DESIGN



CHECK



APPROVAL



PAGE

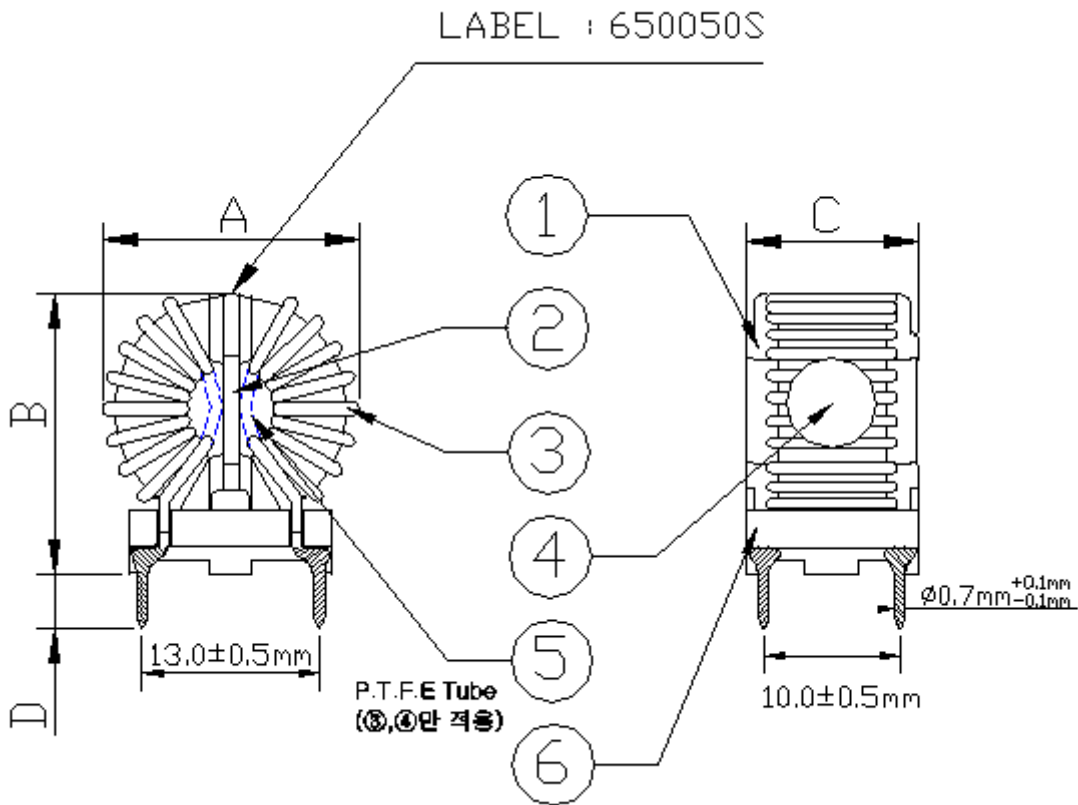
3/16

SPECIFICATIONS	ITEM	LINE FILTER	Rev
	TNC SPEC NO	CV650050SKA	0

6. WINDING SPECIFICATION

NO	TERMINAL		WIRE	TURNS	WINDING METHOD	UNBALANCE SPECIFICATION
	START	FINISH				
L1	1	3	UEW 0.7Φ	27 ±2Ts	HANDMADE	BETWEEN L1 AND L2 (0.2mH MAX)
L2	2	4				

7. SHAPE AND DIMENSION



DIMENSION	A	B	C	D
	21.0mm MAX	23.0mm MAX	15.0mm MAX	Not include solder fillet 4.0±1.0mm

TNC TNC CO.,LTD	DESIGN	CHECK	APPROVAL	PAGE
	CHOI.J.K R&D	KANG.S.W R&D	KOO.J.H R&D	4/16

SPECIFICATIONS	ITEM	LINE FILTER	Rev
	TNC SPEC NO	CV650050SKA	0

8. MATERIAL LIST

No.	NAME	SPECIFICATION		MANUFACTURER	UL No.
1 / 2	Core Cover Coil Separator	PBT LUPOX GP-2156F(#)		LG CHEM LTD	E67171
		PBT 4130		CHANG CHUN PLASTICS CO LTD	E59481
3	Enamel Wire	UEW 0.7Φ / 27±2Ts	UEW	Hwa Il Electronics Co.,Ltd	E140246
			UEW	YANTAI ROME ELECTRONIC CO LTD	E166187
			UEW	SIAM PACIFIC ELECTRIC WIRE & CABLE CO.,LTD	E142108
			UEW	LIAONING DONGGANG MAGNET WIRE CO LTD	E229247
4	Ferrite Core	MA100 R-16-10-7 A10 T16X10X7 M10K T16X10X7		JFE Ferrite Corp ACME Electronics Corporation SUZHOU TIANMING MAGNETIC INDUSTRY CO.,LTD	
5	Insulation tube	P.T.F.E Tube (Teflon Tube) NOT HEAT-SHRINKABLE PTFE TUBING		SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO.,LTD	E203950
6	Coil Base	Phenolic (PF 2736(a)(b)) UL 94 V-0 Class		Hexion GmbH	E61040
		Phenolic (T375HF) UL 94 V-0 Class		CHANG CHUN PLASTICS CO LTD	E59481

9. MARKING

MODEL	LABEL	COLOR
CV650050SKA	650050S	black letters on Transparent

 TNC CO.,LTD	DESIGN	CHECK	APPROVAL	PAGE
				5/16

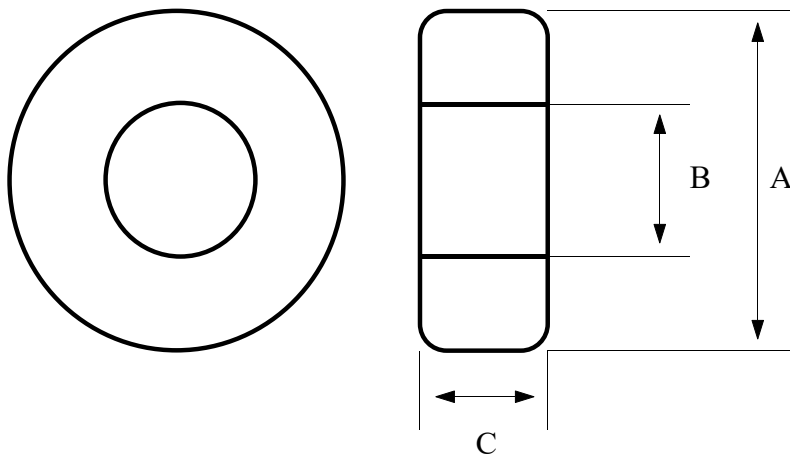
SPECIFICATIONS	ITEM	LINE FILTER	Rev
	TNC SPEC NO	CV650050SKA	0

15. FERRITE CORE SPECIFICATION

- Characteristics

Symbol	Unit	MA100 R-16/10/7	A10 T16X10X7	M10K T16X10X7
μ_i	-	10,000±30%	10,000±30%	10,000±30%
B _{ms}	mT	415	410	380
H _{cms}	A/m	3.0	7.0	6.0
B _{rms}	mT	76	140	120
T _c	℃	>115	>130	>120
TAN δ / μ iac	*10 ⁻⁶	<1.9	<10.0	<20.0
$\alpha_{\mu r}$	*10 ⁻⁶ /℃	-0.5~2.0	0~1.5	-0.5~1.5
ρ	Ω .m	0.1	0.15	0.2
d	g/cm ³	5.0	4.9	4.9

- Dimension



A: 16.0 ±0.35

B: 10.0 ±0.3

C: 7.0 ±0.3

NETWORK VIDEO RECORDER

MODEL : ARN-1610S

AC 100~240V ~ 50/60Hz. 2.1A

M/C : Model Code

Fac.ID:D



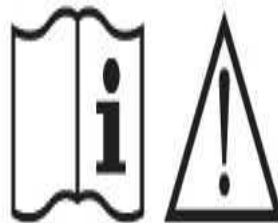
DATE S/N : Serial No.

MAC ADDRESS 1, : XX-XX-XX-XX-XX-01

MAC ADDRESS 2, : XX-XX-XX-XX-XX-02

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

Country



Hanwha Techwin Co., Ltd.

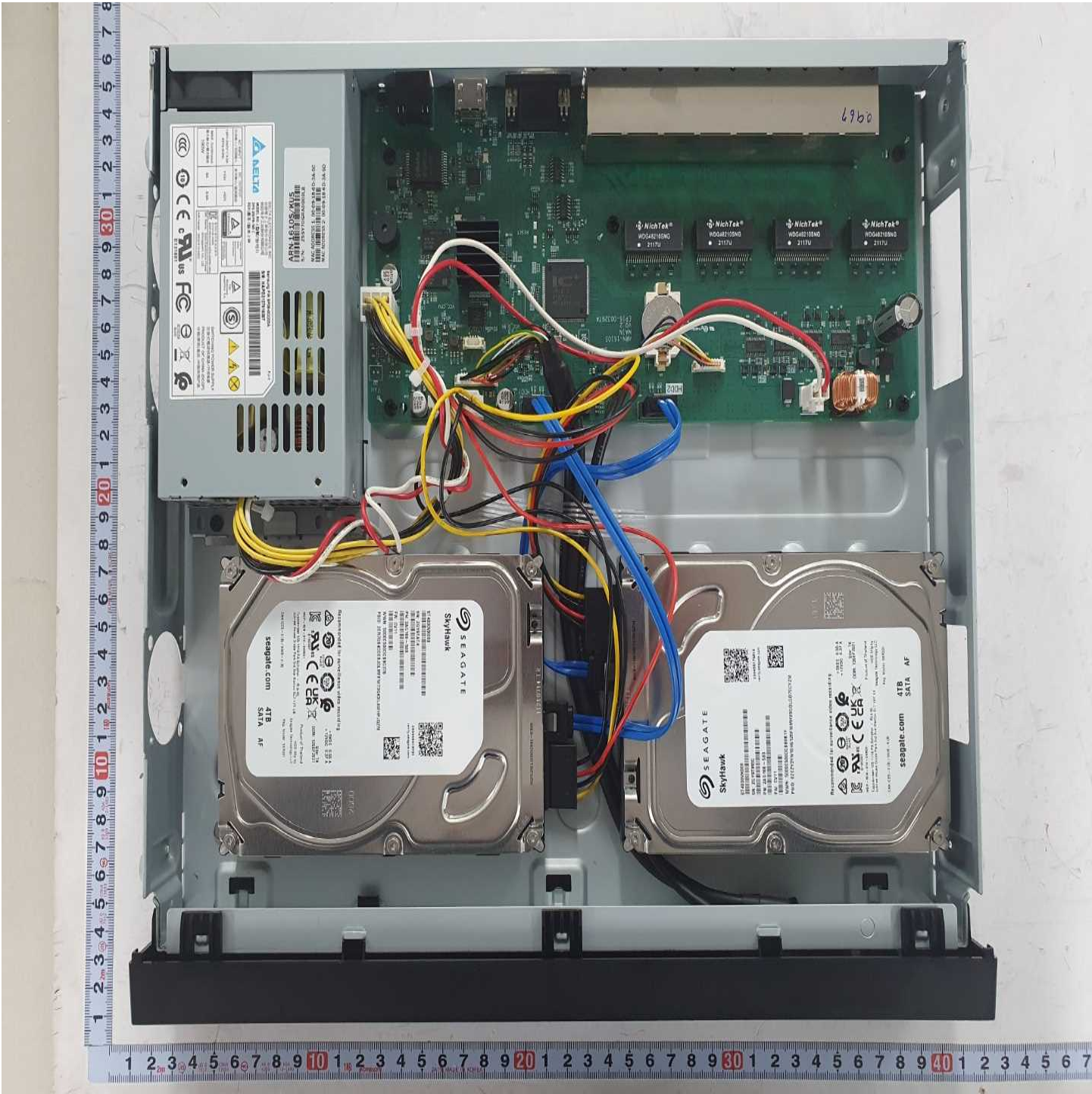
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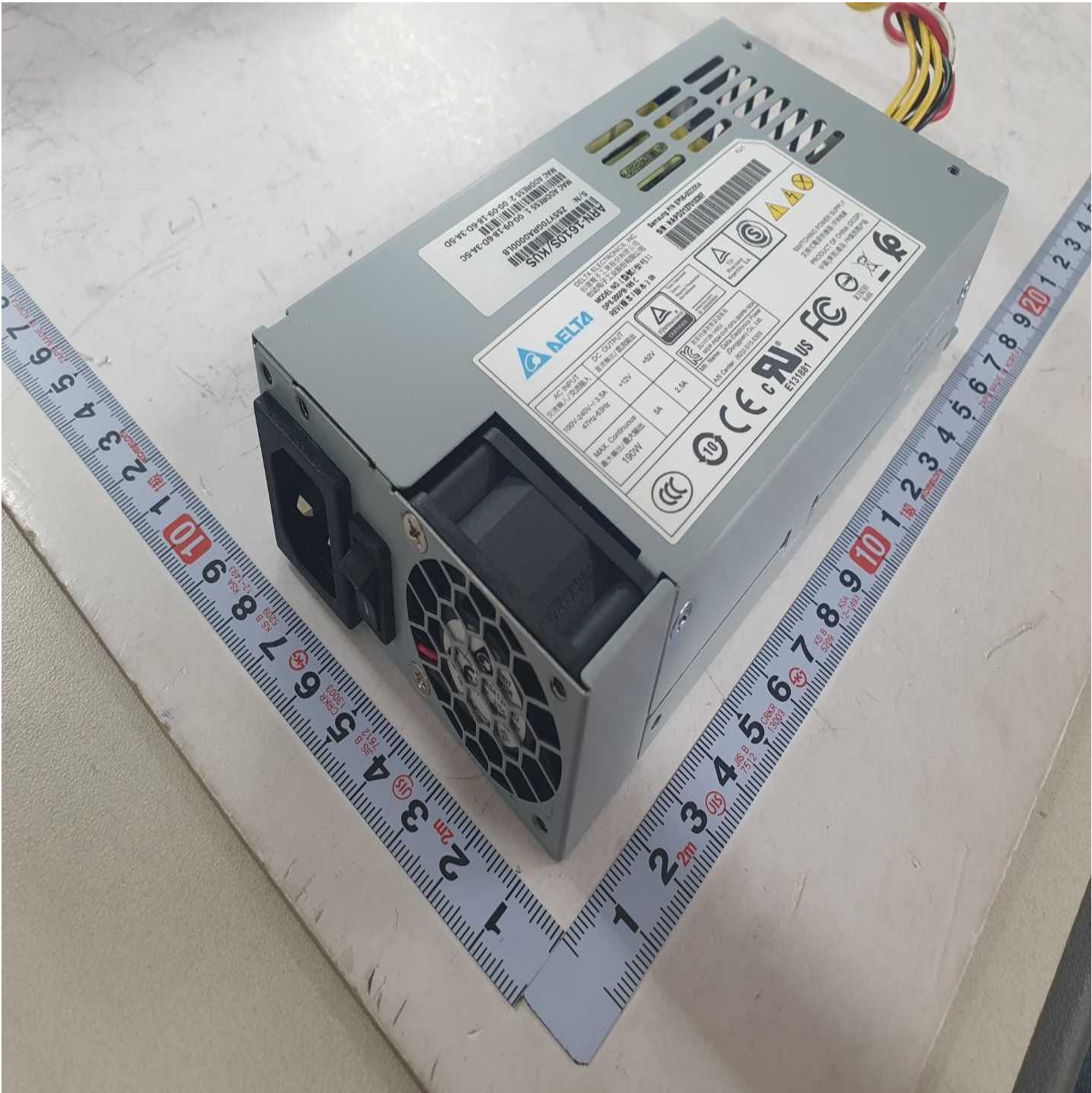


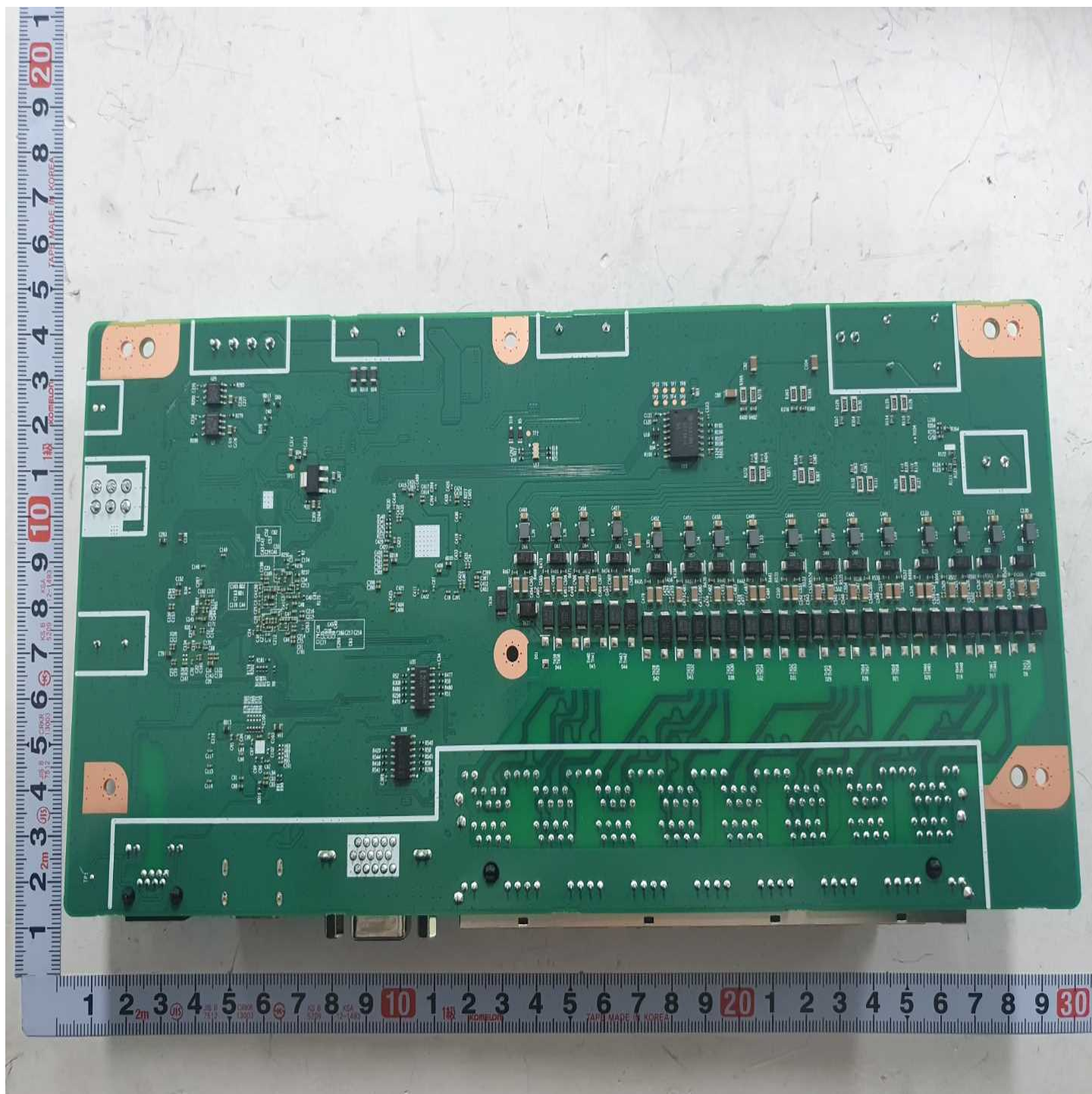












Test Record No. 1

All tests were considered necessary for UL/CSA national deviation based upon previous evaluation under CB Scheme. The CB Scheme Test Certificate, Ref. Certi. No. DK-122503-UL and Report Ref. No. C21IA076-M0A0 were prepared by UL International Demko A/S, Borupvang 5A, DK-2750 Ballerup, Denmark.

The following tests were conducted:

Tests performed (name of test and test clause):	Testing location: CTK Co., Ltd., 386-1 Ho-dong Yongin-shi, Kyungki-do, 449-100, Korea
The following tests were waived:	Rationale for Waiving
STEADY FORCE TEST, 250 N (4.4.4.2, T.5)	Evaluated in CB Report. See CBTR (C21IA076-M0A0) test result for details.
IMPACT TEST (4.4.4.4, T.6)	Evaluated in CB Report. See CBTR (C21IA076-M0A0) test result for details.
CLASSIFICATION OF ELECTRICAL ENERGY SOURCES (5.2.2.1-5.2.2.6)	Evaluated in CB Report. See CBTR (C21IA076-M0A0) test result for details.
HUMIDITY CONDITIONING (5.4.8)	Evaluated in CB Report. See CBTR (C21IA076-M0A0) test result for details.
ELECTRIC STRENGTH TEST – TYPE TESTING OF SOLID INSULATION (5.4.9.1)	Evaluated in CB Report. See CBTR (C21IA076-M0A0) test result for details.
SAFEGUARDS AGAINST CAPACITOR DISCHARGE AFTER DISCONNECTION OF A CAPACITOR (5.5.2.2)	Evaluated in CB Report. See CBTR (C21IA076-M0A0) test result for details.
RESISTANCE OF THE PROTECTIVE BONDING SYSTEM (5.6.6.2)	Evaluated in CB Report. See CBTR (C21IA076-M0A0) test result for details.
TOUCH CURRENT MEASUREMENT – EARTHED ACCESSIBLE CONDUCTIVE PARTS – SINGLE-PHASE EQUIPMENT ON TN OR TT SYSTEM (5.7.4)	Evaluated in CB Report. See CBTR (C21IA076-M0A0) test result for details.
PROTECTIVE CONDUCTOR CURRENT (5.7.5)	Evaluated in CB Report. See CBTR (C21IA076-M0A0) test result for details.
POWER MEASUREMENTS (6.2.2.2, 6.2.2.3)	Evaluated in CB Report. See CBTR (C21IA076-M0A0) test result for details.
INPUT TEST: SINGLE PHASE (B.2.5)	Evaluated in CB Report. See CBTR (C21IA076-M0A0) test result for details.
NORMAL OPERATING CONDITIONS TEMPERATURE MEASUREMENT (B.2.6, 5.4.1.4, 6.3, 9.2)	Evaluated in CB Report. See CBTR (C21IA076-M0A0) test result for details.
SIMULATED ABNORMAL OPERATING CONDITIONS (B.3)	Evaluated in CB Report. See CBTR (C21IA076-M0A0) test result for details.
SIMULATED SINGLE FAULT CONDITIONS (B.4)	Evaluated in CB Report. See CBTR (C21IA076-M0A0) test result for details.
PROTECTION CIRCUITS FOR BATTERIES (M.3.2)	Evaluated in CB Report. See CBTR (C21IA076-M0A0) test result for details.
LIMITED POWER SOURCE (ANNEX Q.1)	Evaluated in CB Report. See CBTR (C21IA076-M0A0) test result for details.

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
Attachment	02-01	CRD for Dual Language Requirement
Attachment	02-02	Measurement Insutrument Information