



The table below describes the files that were selected to be included as part of this package.

Supplements, such as Figures and Illustrations, will appear as X number of Figures, X number of Illustrations, etc., rather than naming each one.

E158873-A6212-DescriptionUL
Figure-13-Total

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UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 3rd Ed, 2021-10-22 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1:19, 3rd Ed, 2021-10-22 (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:	WRN-2010S
Rating:	100-240 Vac, 50/60 Hz, 1.8 A
Applicant Name and Address:	HANWHA VISION 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.

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Prepared By: Lawrence Lee / Project Handler Reviewed By: SeungTae Kim / 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 (QQGQ2/8) power supply, main board, maximum 2 hard disk-drives and numerous components mounted on PWB.

Model Differences

N/A

Test Item Particulars

Product group	end product
Classification of use by	Instructed person
Supply Connection	AC Mains
Supply tolerance	+10%/-10%
Supply connection – type	pluggable equipment type A - appliance coupler
Considered current rating of protective device	20 A; Location: building
Equipment mobility	movable stationary
Over voltage category (OVC)	OVC II
Class of equipment	Class I
Special installation location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified T _{ma} (°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)	Max. 4.02 kg (with HDD 2 EA)

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 : +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


4791208109

- 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. DK152120-UL and Report Ref. No. C24IA014-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 Company's name, Trade Name, Trademark or File Number
Equipment identification marking – model identification	Model Number
Equipment rating marking – ratings	"Input Ratings (voltage, frequency/dc, current)", "Output Ratings (voltage, dc, current)"
Battery replacement	<p>Provided (on equipment, in instruction manual)</p> <p>CAUTION - Risk of fire or explosion if the battery is replaced by an incorrect type. Dispose of Used Batteries According to the Instructions</p>
Class I equipment -Terminal for main protective earthing	<p>Provided adjacent to the main protective earthing terminal</p> <p></p> <p>(IEC 60417-5019)</p>

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	Rated Input: 100-240 V~/3.5 A, 47 Hz - 63 Hz, Output: DC +12 V / 5 A (MAX), +52 V / 2.5 A (MAX)	QQGQ2	UL (E131881)	
Power cord set	LONGWELL	LP-30B + SVT 18AWG 3C+ LS-13	Detachable, min 1.5 m, max. 2.4 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	WEIHAI HONG LIN ELECTRONIC CO LTD	HL-002S + SVT 18AWG X 3C + HL- 004	Detachable, min 1.5 m, max. 2.4 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.	ELBZ	UL (E254927)	
Power cord set - Alternate	KOREA KDK CO LTD	KKP-30 + SVT 3/18AWG + KKS- 16A	Detachable, Min. 1.5 m, Max. 2.4 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. 2.4 m long, rated 125 V, 10 A, 18/3 AWG, 105 °C, SVT type flexible cord. One end with NEMA 5-15P	ELBZ	UL (E205766)	

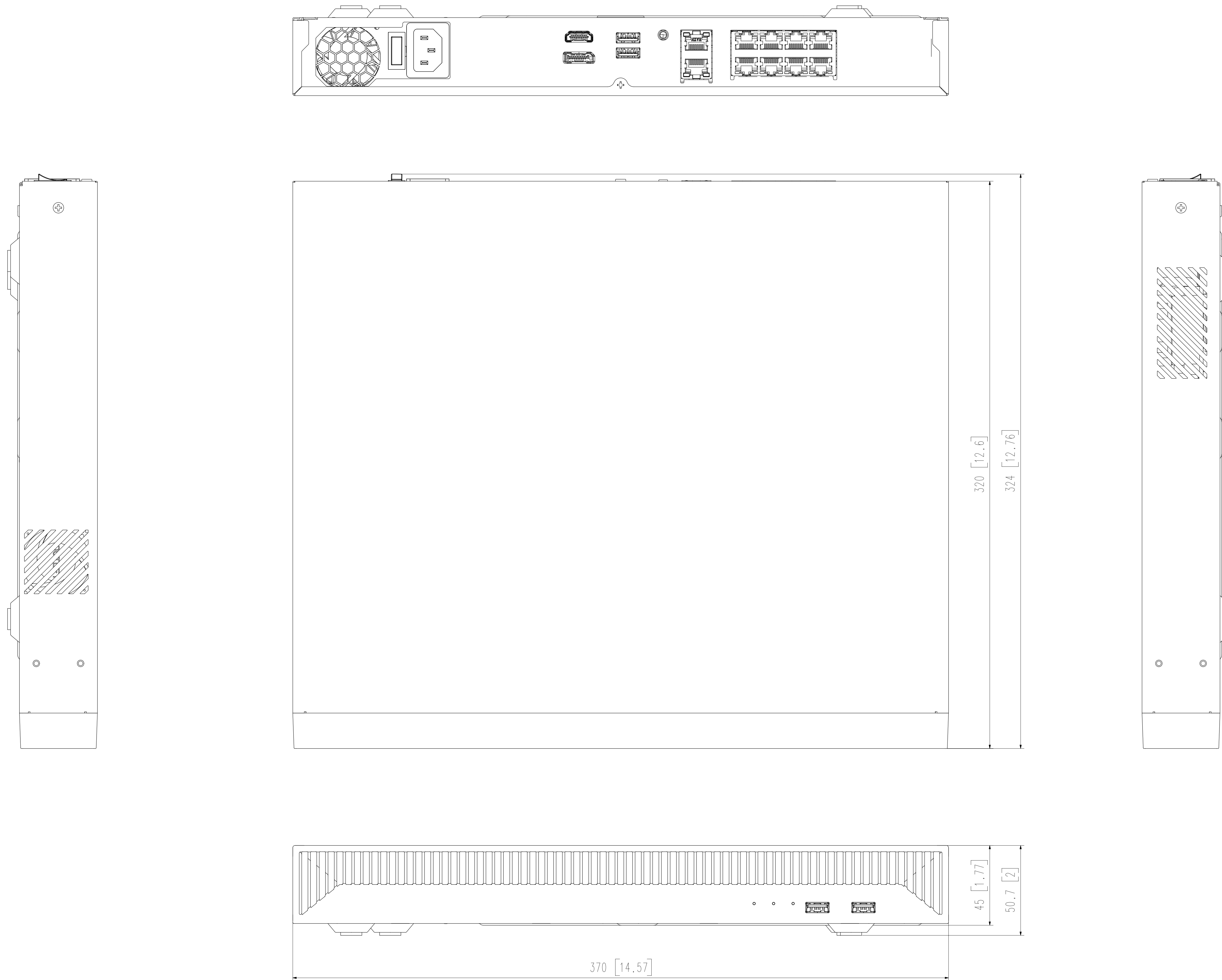
			other end with appliance coupler.			
Case-Top (Metal)	Interchangeable	Interchangeable	SECC, Min. 0.6 mm thickness, see enclosure for more dimension.	-	-	
Case-Bottom (Metal)	Interchangeable	Interchangeable	SECC, in. 0.8 mm thickness, see enclosure for more dimension.	-	-	
Front Cover (Plastic)	LOTTE CHEMICAL CORPORATION	HN-1068(+)(f1)	Min. 2.5 mm thickness, rated Min. V-0, 130 deg. C	QMFZ2	UL (E115797)	
USB Protection IC (USB 2.0: U18, U8 / USB 3.0: U20, U73)	DIODES INC	AP2182A (Type: AP2182ASG-13)	Rated 2.7-5.5 Vdc, 1.5 A	QVGS2	UL (E322375)	
DC Fan (Main board & near main board)	SUNONWEALTH ELECTRIC MACHINE INDUSTRY CO LTD	HA40101V4-1(Y) (Type: HA40101V4-1000U-A99)	Rated voltage: DC 12 V, Rated current: 0.037 A, speed: 5000±15 % RPM, (N/15000+K/2400 = 0.34829 < 1, N= 5000, K= 35.9148)	GPWV2	UL (E77551)	
Line filter (T9)	TNC CO.,LTD	CV650050SKA	5.0 mH, 120 deg. C	-	-	
Opto-coupler (LS1)	LITE-ON Technology Corporation	LTV-816	Isolation Voltage: 5 300. Max. Operation Temperature: 110 deg. C	FPQU2	UL (E113898)	
Lithium Battery (J2E1)	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)	
Reverse Current Protection Circuit for	Interchangeable	Interchangeable	Diode (D20, Max reverse voltage 80 V, Max reverse current 0.5	-	-	

Lithium Coin Battery (J2E1)			uA) and resistor (R1R6, 1.0 kohm) in series.			
PWB	HANNSTAR BOARD CORP	MV-4	Min. V-0, 130 deg. C	ZPMV2	UL (E89382)	
PWB -Alternate	Interchangeable	Interchangeable	Min. V-0, 130 deg. C	ZPMV2	UL	
Hard Disk Driver (HDD) (2ea)	Interchangeable	Interchangeable	Max. 12 Vdc	-	-	
Heat sink (upper U5D1)	Interchangeable	Interchangeable	Aluminium, Approx. Overall size of 40 by 40 by 17.5 mm, Min. 0.5 mm thickness, See detail enclosure.	-	-	
Label	Interchangeable	Interchangeable	Suitable for use on each type of surface to which applied, rated for maximum and minimum surface temperature specified, or Min. 40 deg. C if 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	Front View
Photographs	03-04	Rear View
Photographs	03-05	Internal View
Photographs	03-06	Main board - Top
Photographs	03-07	Main Board - Bottom
Photographs	03-08	SMPS View
Photographs	03-09	DC Fan
Diagrams	04-01	Enclosure Dawing
Diagrams	04-02	Heatsink Dawing
Manuals	06-01	Manual
Miscellaneous	07-01	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	WRN-2010S	'24.02.16
No.	MODEL NAME	DATE
Unit:mm[inch]		SCALE:1/1
© Hanwha Vision		

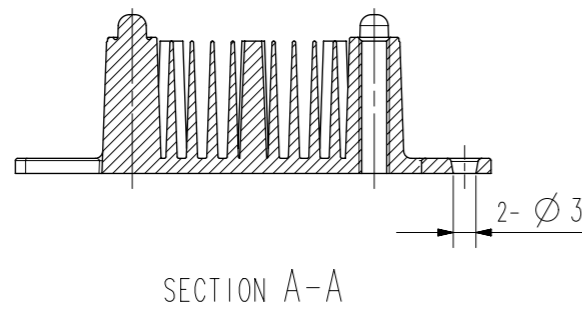
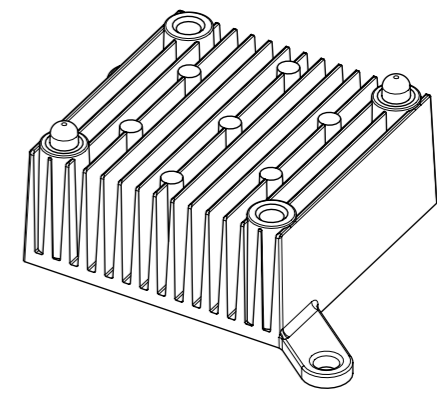
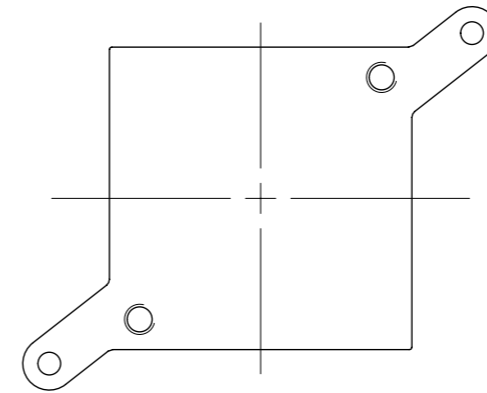
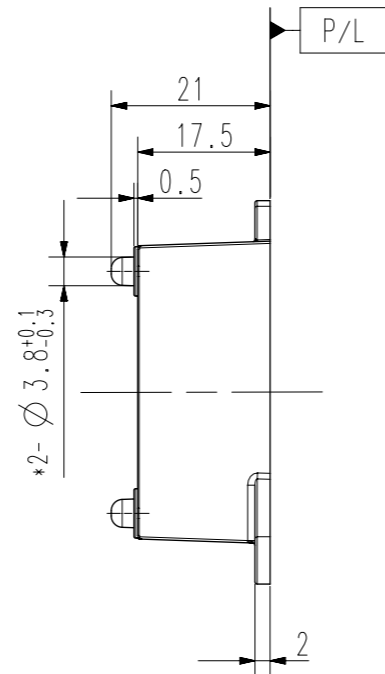
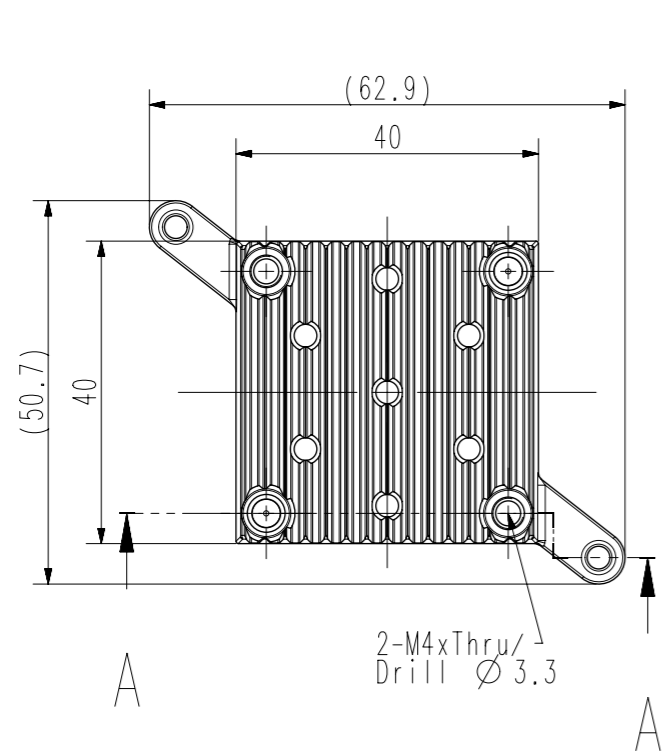
The following Page(s) are related to Diagrams-02. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

This parts should not contain any substances which are specified in AH60-0033K

NO	PART NAME	CODE NO.	MATERIAL	Q'TY	REMARK
1	HEAT-SINK	EP07-002018A	ADC12	1	-

Coating Specification

Process	Casting→Cutting→Sanding→Machining/Tapping→Degrease →Chromate
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NOTE:Die-Casting

1. Material and Basic wall thickness : ADC, t2.0

- Gate, P/L, Ejector Pin location must be handled with HVC designer.
- Ejector pin stain must be less than 0.3 depth (凹), no flash is allowed.
- Undescribed edge round must be less than R0.5, undescribed corners must be less than R0.3.
- No Deformation, Air bubble, Shrinkage is allowed.
- Every Flash on P/L must be less than 0.1.
- Undescribed draft angles must be less than 0.5°.
- * marks (Key dimensions) must be carefully handled.
- Surface cutting level of Gate and Over-Flow must be equivalent with other surface cutting level.
- Part Name, Code Number, Mold Number, Material, Model Name must be carved on the inner side of the part.
 - Location and Specs. must be handled with HVC designer.
- External look and printing specification must follow separately distributed Design Specification data.
 - Including Surface cutting, Chromate, Sanding, Spray, Silk Print specifications.
- Reliability must satisfy HVC standards.
- Delivery packing specifications must be discussed separately.
- All other issues must be handled with HVC designer.

STANDARD TOLERANCE

DIV	Lvl 1	Lvl 2	Lvl 3	Lvl 4	Lvl 5
0-16	±0.05	±0.1	±0.1	±0.2	±0.3
16-63	±0.05	±0.1	±0.2	±0.3	±0.4
63-250	±0.1	±0.2	±0.3	±0.4	±0.4
250-1000	±0.2	±0.3	±0.4	±0.5	±0.6

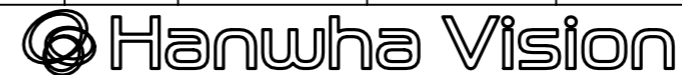


A3

CHANGE

Update dimensions
(24.03.18 CHB.LEE)

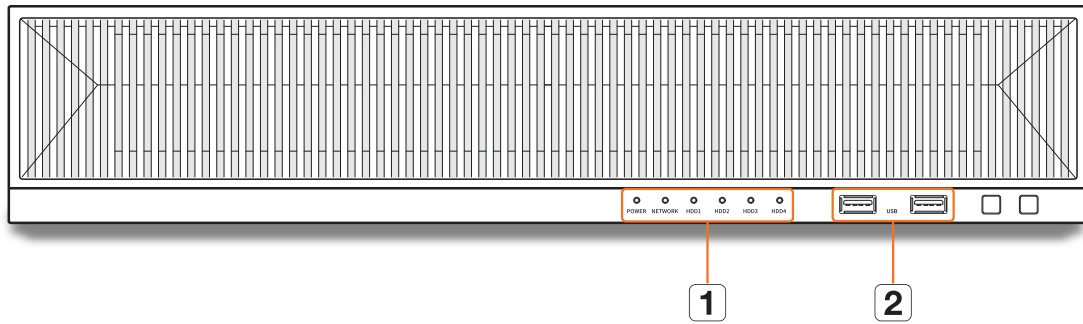
UNIT	mm	DESIGN	CHECK	APPROVAL	PART NAME	HEAT-SINK
SCALE	1 / 1	CHB.LEE		MH.PARK	MODEL NAME	WRN-2010S
		24.03.11		24.03.11	CODE NO.	EP07-002018A



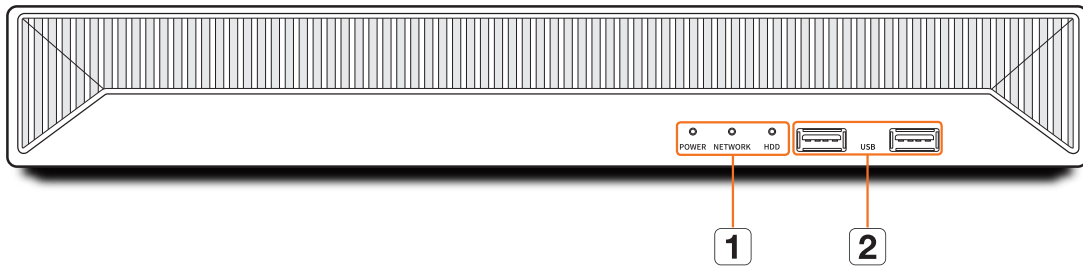
The following Page(s) are related to Manuals-01. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

Part Names and Functions (Front)

WRN-2110SB1/WRN-2110B1



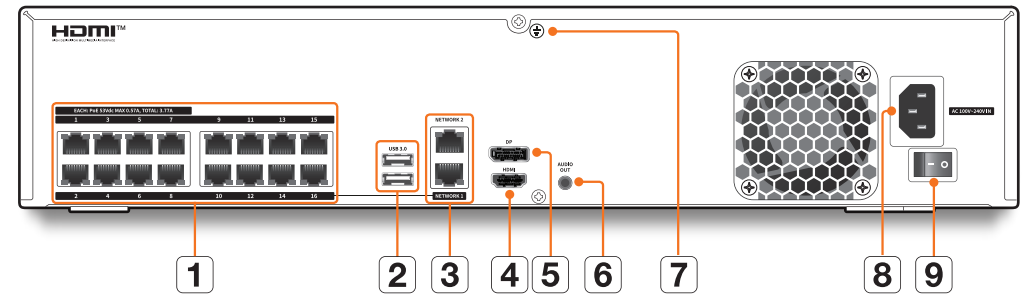
WRN-2010S



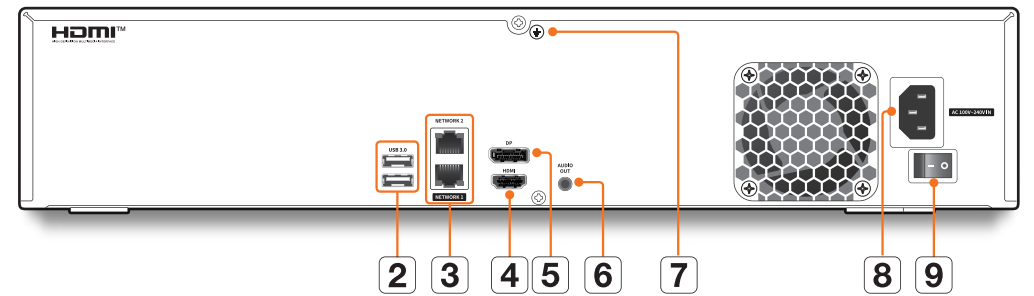
Name	Functions
1 LED Indicator	POWER : Shows the power ON/OFF status.
	NETWORK : Displays both network connection and data transfer status.
	HDD: Displays the connection status of the HDD. When the HDD is connected normally, the LED lights up.
2 USB	Connects the USB devices. (USB 2.0 supported)

Part Names and Functions (Rear)

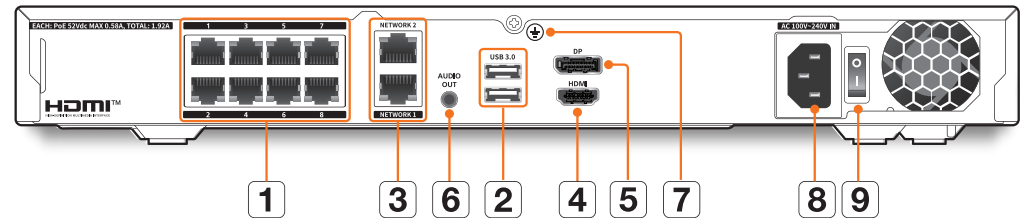
WRN-2110SB1



WRN-2110B1



WRN-2010S



Name	Functions	
1 PoE	Supply power to the camera.	
2 USB 3.0	Terminal that connects a USB type device.	
3	NETWORK 1	Terminal used to connect a camera and receive video signals from the camera.
	NETWORK 2	Terminal that is recommended for network connection and access to the Web Viewer.
4 DP	DP connector port.	
5 HDMI	HDMI connector port.	
6 AUDIO OUT	Audio output port.	
7 Ground Connection	Port for connecting a separate ground cable. For safe handling of the device, please add a ground wire.	
8 Power	Terminal to connect power to.	
9 Power Switch	Power on/off switch.	

- When connecting the AC power cord or turning on the power switch, there may be a luminous (light) phenomenon inside the SMPS. This phenomenon is the normal operation of the SMPS protection element.

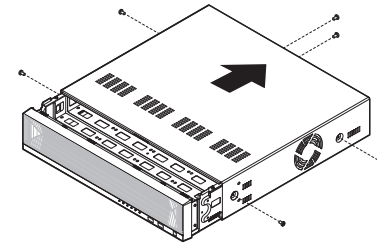
Installing the HDD

- If you are adding a new or previously used HDD to this product in addition to the HDD(s) originally installed, format the new HDD manually in the product before use.
- For replacement or installation of an additional HDD, you must contact your dealer or our customer center.

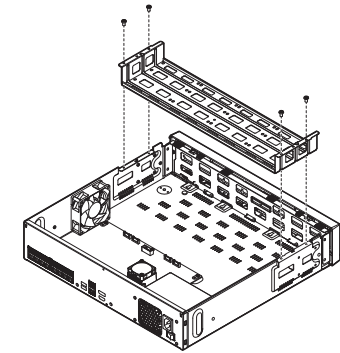
WRN-2110SB1/WRN-2110B1

- It is an example of the WRN-2110SB1 model.

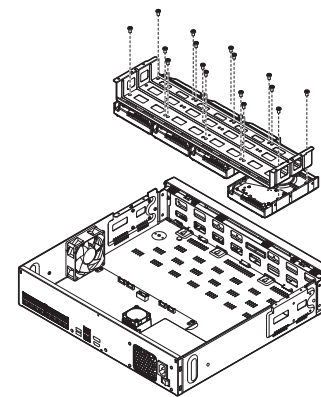
- Remove the screws from the left/right sides and back side, and push the cover back to release it.



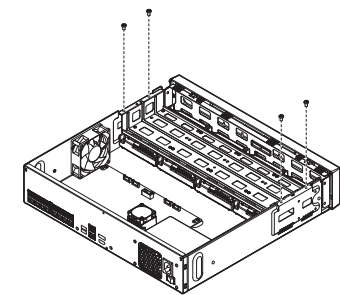
- Remove the screws from the left/right sides and release the bracket.



- Mount an HDD into the bracket, and fix it using screws.

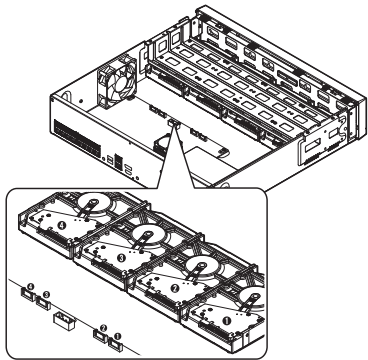


- Fix the HDD-mounted bracket to the recorder using screws.



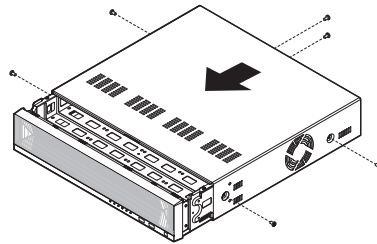
5 Connect the SATA/power cable of the HDD to the connector of the main board.

- Refer to the figure below for the HDD location number and connector number.



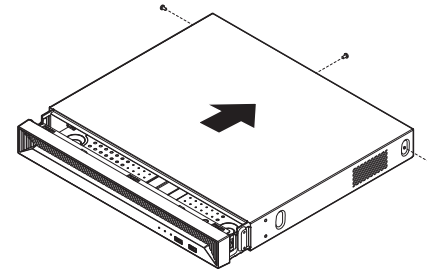
6 Make sure that there is no problem in the connection port and routing inside the recorder, and then fix it using screws after closing the cover.

- When closing the cover, be careful not to damage the cable.



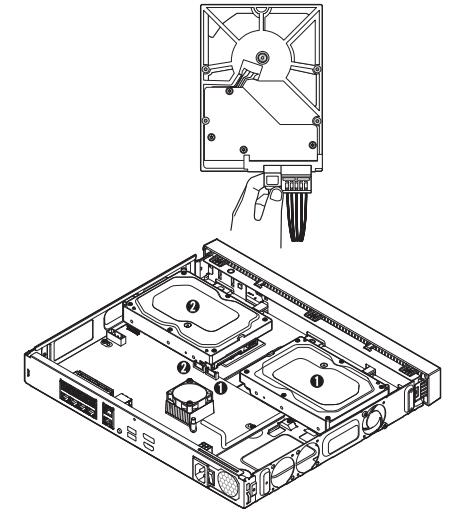
WRN-2010S

1 Remove the screws from the left/right sides and back side, and push the cover back to release it.



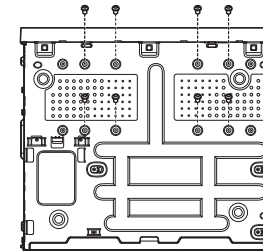
2 Connect the SATA/power cable of the HDD to the connector of the main board.

- Refer to the figure below for the HDD location number and connector number.



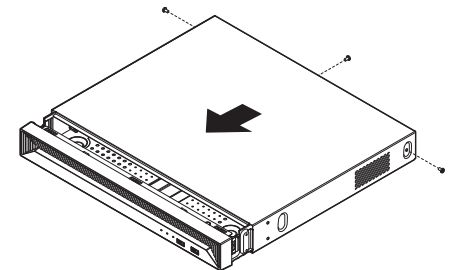
- ! ■ Gently press the connector before removing the HDD. Do not force to pull the cable.

3 Use the screws to fix the HDD to the bottom of the recorder.



4 Make sure that there is no problem in the connection port and routing inside the recorder, and then fix it using screws after closing the cover.

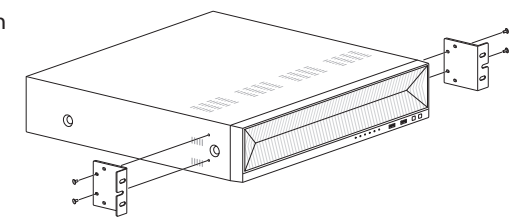
- When closing the cover, be careful not to damage the cable.



Installing the Rack

Install the Bracket-Rack as shown in the figure, and then fasten the screws on both sides.

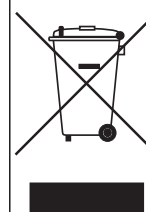
- Fix the T screw not to be loosened by vibrations.



e.g. WRN-2110SB1



Hanwha Vision cares for the environment at all product manufacturing stages, and is taking measures to provide customers with more environmentally friendly products. The Eco mark represents Hanwha Vision's devotion to creating environmentally friendly products, and indicates that the product satisfies the EU RoHS Directive.



Correct Disposal of This Product (Waste Electrical & Electronic Equipment)

(Applicable in the European Union and other European countries with separate collection systems)

This marking on the product, accessories or literature indicates that the product and its electronic accessories (e.g. charger, headset, USB cable) should not be disposed of with other household waste at the end of their working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take these items for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product and its electronic accessories should not be mixed with other commercial wastes for disposal.



Correct disposal of batteries in this product

(Applicable in the European Union and other European countries with separate battery return systems.)

This marking on the battery, manual or packaging indicates that the batteries in this product should not be disposed of with other household waste at the end of their working life. Where marked, the chemical symbols Hg, Cd or Pb indicate that the battery contains mercury, cadmium or lead above the reference levels in EC Directive 2006/66. If batteries are not properly disposed of, these substances can cause harm to human health or the environment.

To protect natural resources and to promote material reuse, please separate batteries from other types of waste and recycle them through your local, free battery return system.

NETWORK VIDEO RECORDER

MODEL: WRN-2010S

AC 100-240V~ 50/60Hz 1.8A

M/C: WRN-2010S/KEU 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

MAC ADDRESS 3: XX-XX-XX-XX-XX-03

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

MADE IN KOREA

Hanwha Vision Co., Ltd.



I.T.E.

US LISTED
9T96 E158873

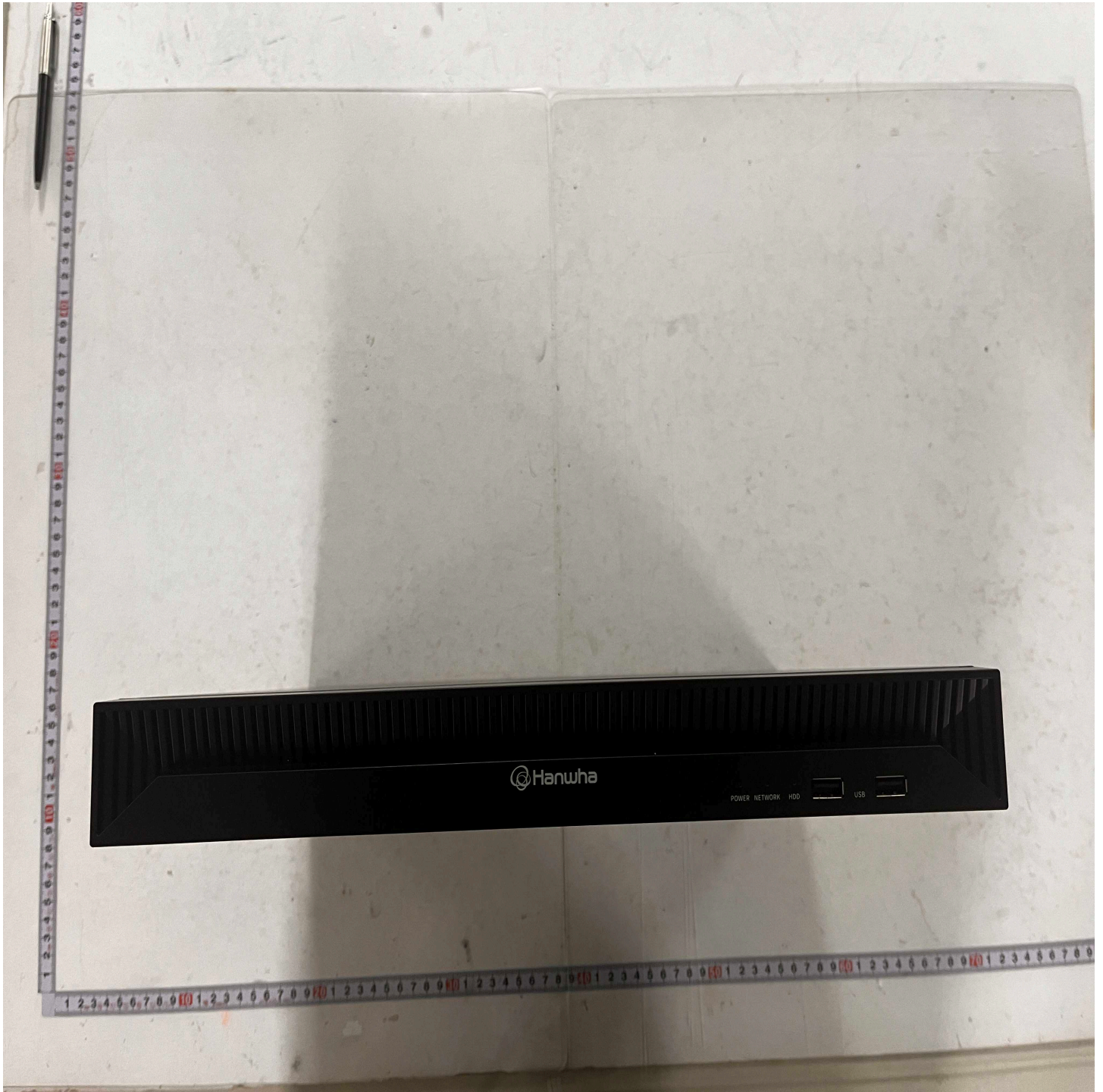
UK
CA

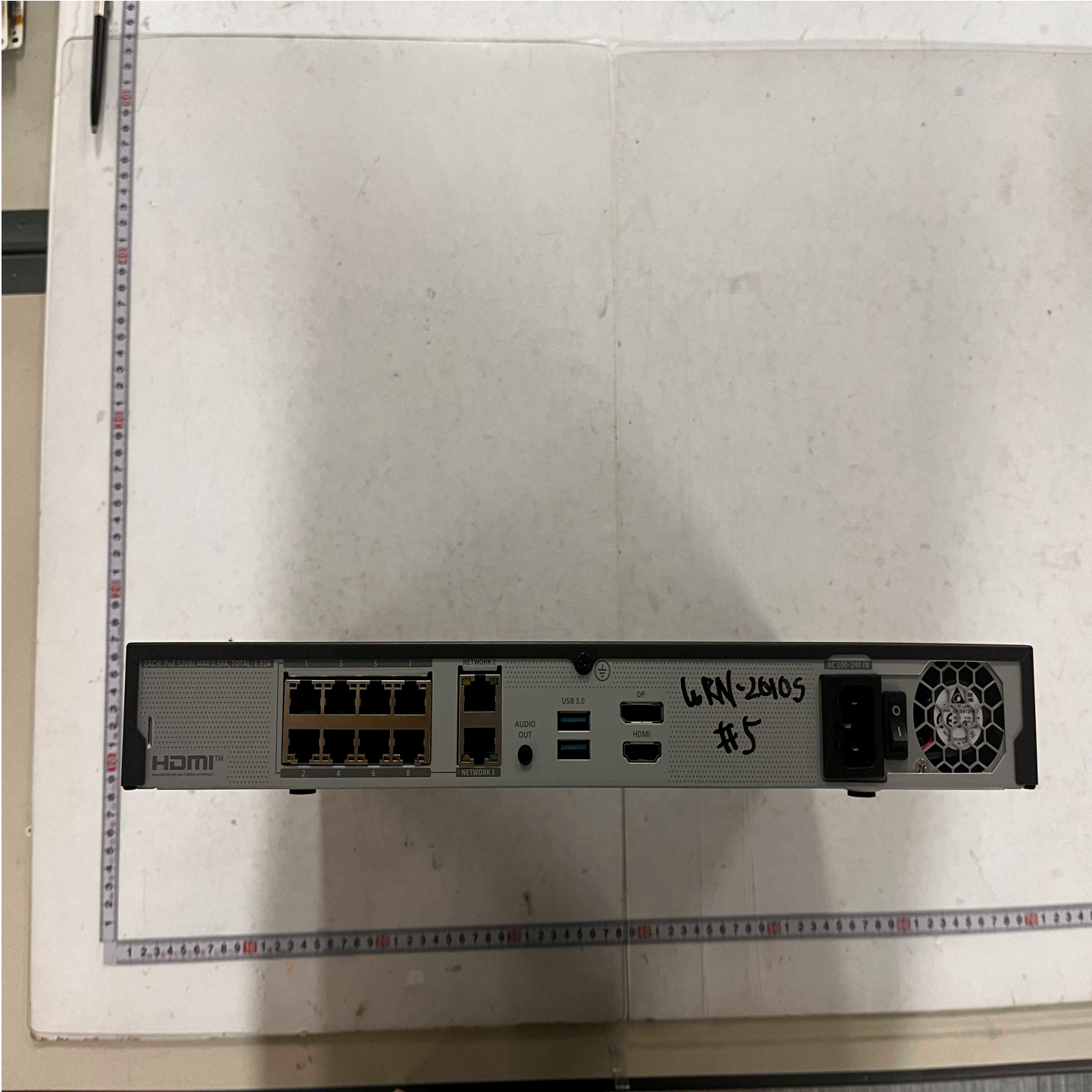


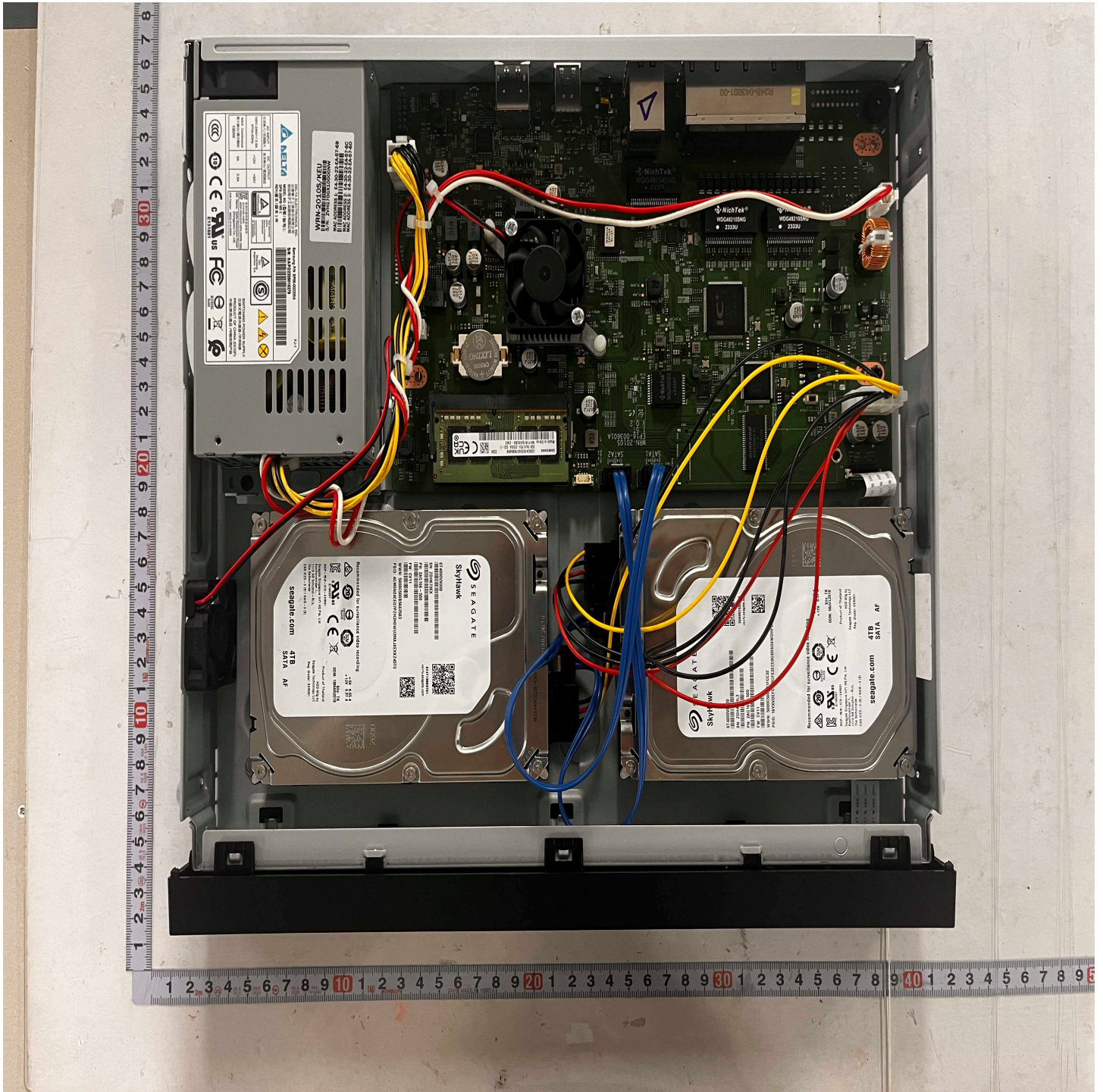
PT03-002663T

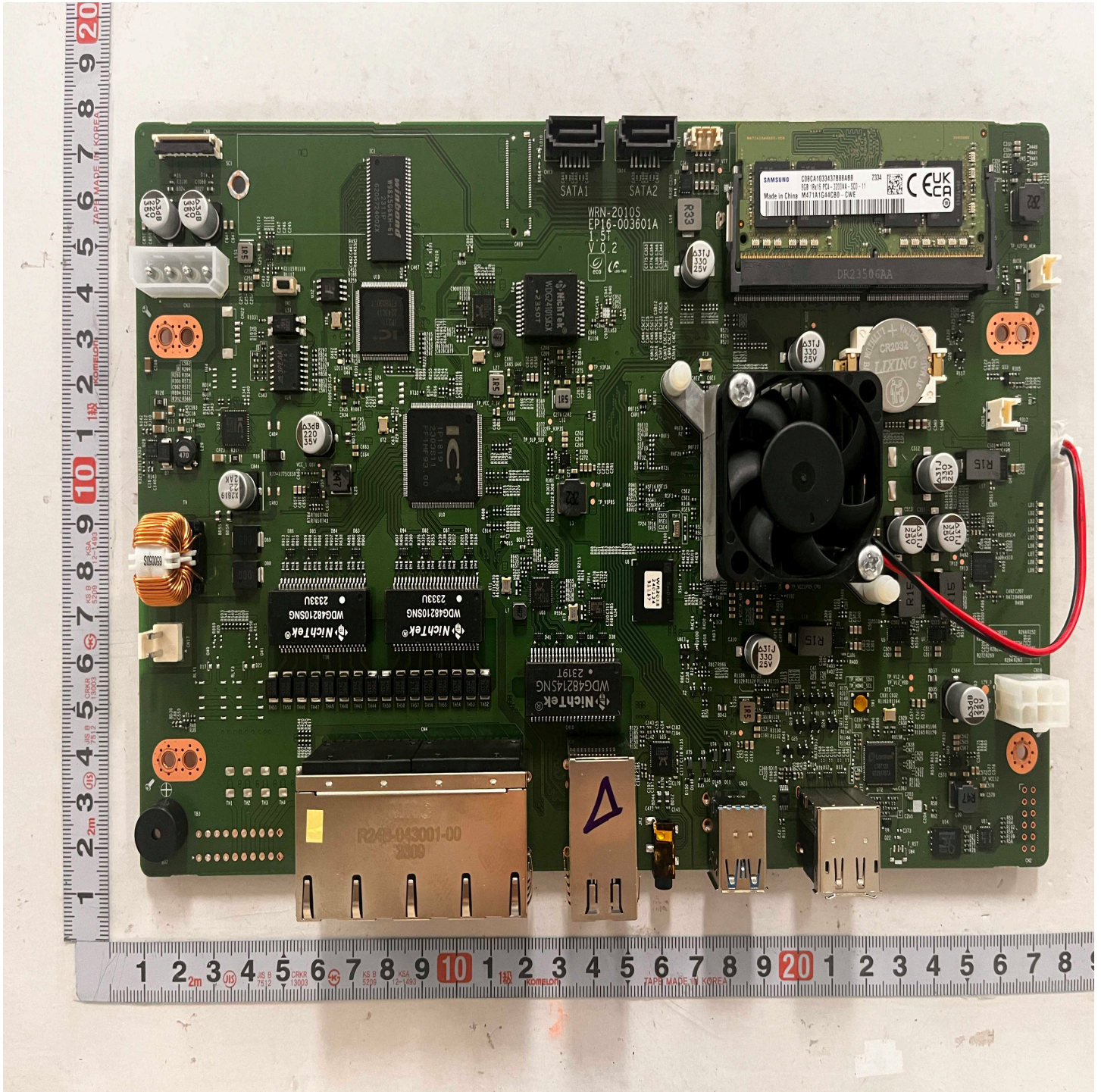


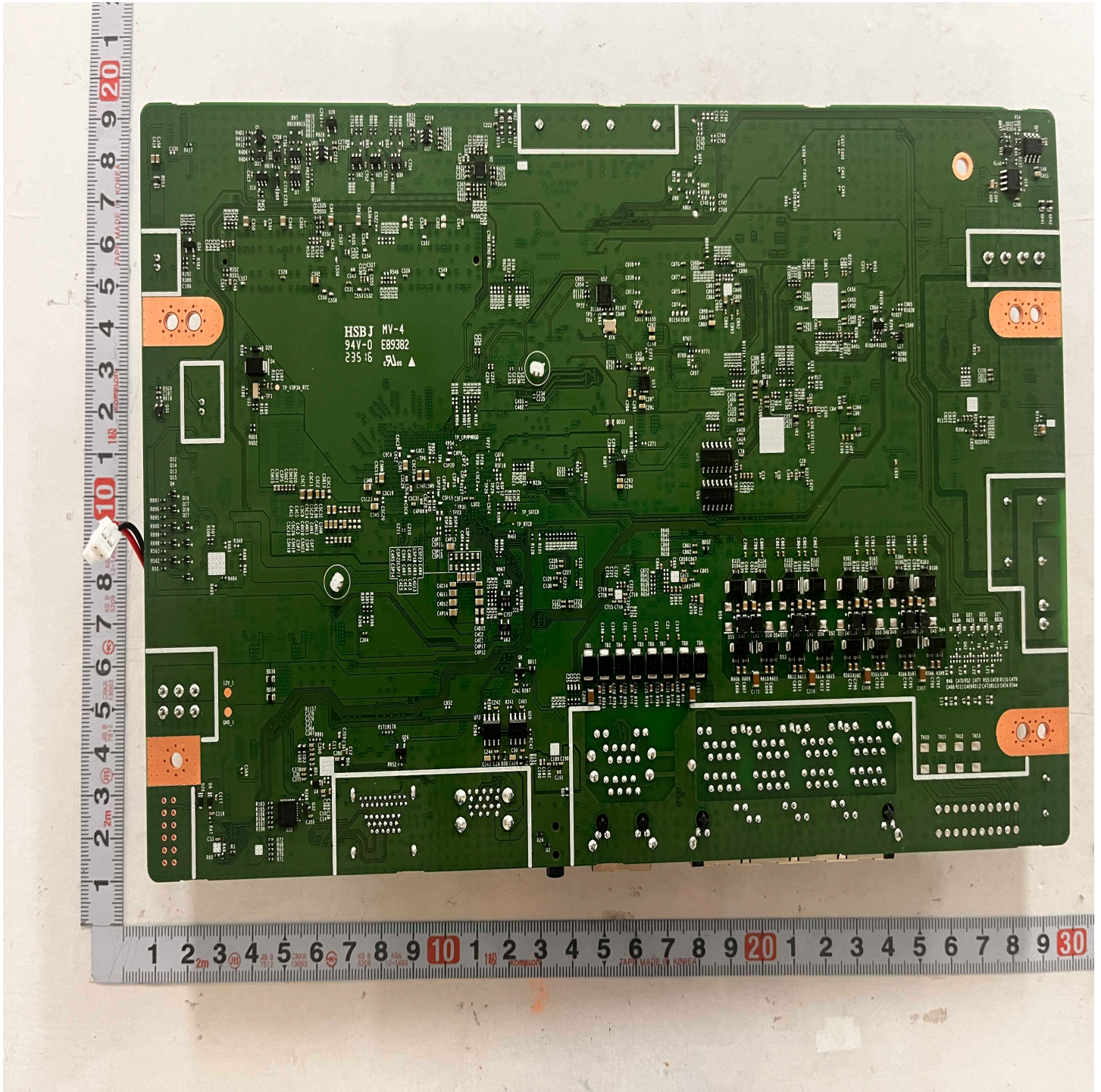














MAC ADDRESS 1: E4-30-22-EA-67-6B
 MAC ADDRESS 2: E4-30-22-EA-67-6C
 MAC ADDRESS 3: E4-30-22-EA-67-6D
 S/N: ZVHG70GK10000NMW
 WRN-2010S/KEU

		DELTA ELECTRONICS, INC. 台達電子工業股份有限公司 台达电子工业股份有限公司		Samsung P/N EP06-002205A S/N: HAPD2325018279		FJ-1	
AC INPUT 交流輸入 / 交流輸入 100V-240V~ / 3.5A 47Hz-63Hz		DC OUTPUT 直流輸出 / 直流輸出 +12V +52V		Type Approved Safety Regular Production Surveillance www.tuv.com ID: 200000000			
MAX. Continuous 最大輸出 / 最大輸出 190W		5A 2.5A		컴퓨터용 전원공급장치 ZU10129-14053 MSP-REM-DVP-DPS-200PB-185A Mfr. Name: Delta Electronics Power (Dongguan) Co., Ltd. A/S Center: (82)2-515-5303		SWITCHING POWER SUPPLY 交換式電源供應器 / 开关电源 PRODUCT OF CHINA (DCGP) 中國(東莞)產品 / 中國(東莞)產品	
				E131881			

