



Test Report issued under the responsibility of:



TEST REPORT
IEC 62368-1
Audio/video, information and communication technology equipment
Part 1: Safety requirements

Report Number..... : C23IA068-M1A0

Date of issue : 2024-03-20

Total number of pages..... : 13

Name of Testing Laboratory
preparing the Report..... : CTK Co., Ltd.

Applicant's name : Hanwha Vision Co., Ltd

Address : 6 Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do,
13488 KOREA

Test specification:

Standard..... : IEC 62368-1:2018

Test procedure..... : CB Scheme

Non-standard test method..... : N/A

TRF template used..... : IECEE OD-2020-F1:2021, Ed.1.4

Test Report Form No. : IEC62368_1E

Test Report Form(s) Originator.... : UL(US)

Master TRF..... : Dated 2022-04-14

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This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.

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Test item description :	Public View Monitor	
Trade Mark(s)	 Hanwha Vision	
Manufacturer :	OIC KOREA CO LTD 5F, 12 Annam-ro 369beon-gil Bupyeong-gu, INCHEON 21312, REPUBLIC OF KOREA	
Model/Type reference :	SMT-3231PV, SMT-3221PV	
Ratings :	INPUT: DC 24 V  , 2.10 A, HPoE(53 V  , 1.10 A	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒ CB Testing Laboratory:	CTK Co., Ltd.	
Testing location/ address :	(Ho-dong) 113, Yejik-ro, Cheoin-gu, Yongin-shi Gyeonggi-do KOREA, REPUBLIC OF	
Tested by (name, function, signature) :	ARa Jo, Project handler	
Approved by (name, function, signature) .. :	JungKyu Yang, Reviewer	
Testing procedure: CTF Stage 1:		
Testing location/ address :		
Tested by (name, function, signature) :		
Approved by (name, function, signature) .. :		
Testing procedure: CTF Stage 2:		
Testing location/ address :		
Tested by (name, function, signature) :		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) .. :		
Testing procedure: CTF Stage 3:		
Testing procedure: CTF Stage 4:		
Testing location/ address :		
Tested by (name, function, signature) :		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) .. :		
Supervised by (name, function, signature) :		

List of Attachments (including a total number of pages in each attachment): N/A	
Summary of testing:	
Tests performed (name of test and test clause): N/A	Testing location: N/A
Summary of compliance with National Differences (List of countries addressed): EU Group, Canada/USA, Singapore, Australia, New Zealand, Japan, China, Saudi Arabia and EU Special National Conditions: Denmark, Finland, Norway, Sweden, United Kingdom, France - Selected National Conditions are not applicable to the evaluated product as identified in the ND TRF. Singapore: No national difference declared. ☒ The product fulfils the requirements of EN IEC 62368-1:2020+A11:2020, CSA/UL 62368-1:2019, AS/NZS 62368.1:2022, J62368-1(2023), GB 4943.1-2022 and National standard SASO-IEC 62368-1:2020	
Use of uncertainty of measurement for decisions on conformity (decision rule) : ☒ No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method"). ☐ Other:... (to be specified, for example when required by the standard or client, or if national accreditation requirements apply) Information on uncertainty of measurement: Not required by applicant/manufacture.	
The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE. IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer. Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.	

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



Test item particulars:			
Product group	☒ end product	☐ built-in component	
Classification of use by	☒ Ordinary person	☒ Children likely present	
	☐ Instructed person		
	☐ Skilled person		
Supply connection	☐ AC mains	☐ DC mains	
	☒ not mains connected:		
	☒ ES1	☐ ES2	☐ ES3
Supply tolerance	☐ +10%/-10%		
	☐ +20%/-15%		
	☐ + %/ - %		
	☒ None		
Supply connection – type	☐ pluggable equipment type A -		
	☐ non-detachable supply cord		
	☐ appliance coupler		
	☐ direct plug-in		
	☐ pluggable equipment type B -		
	☐ non-detachable supply cord		
	☐ appliance coupler		
	☐ permanent connection		
	☐ mating connector ☒ other: Not directly connected to the mains		
Considered current rating of protective device	☐ A;		
	Location:	☐ building	☐ equipment
	☒ N/A		
Equipment mobility	☐ movable	☐ hand-held	☐ transportable
	☐ direct plug-in	☒ stationary	☐ for building-in
	☐ wall/ceiling-mounted	☐ SRME/rack-mounted	
	☐ other:		
Overvoltage category (OVC)	☒ OVC I	☐ OVC II	☐ OVC III
	☐ OVC IV	☐ other:	
Class of equipment	☐ Class I	☐ Class II	☒ Class III
	☐ Not classified	☐	
Special installation location	☒ N/A	☐ restricted access area	
	☐ outdoor location ☐		
Pollution degree (PD)	☐ PD 1	☒ PD 2	☐ PD 3
Manufacturer's specified T_{ma}	40 °C	☐ Outdoor: minimum	°C
IP protection class	☒ IPX0	☐ IP__	
Power systems	☐ TN	☐ TT	☐ IT - V _{L-L}
	☒ not AC mains		
Altitude during operation (m)	☒ 2000 m or less	☐	m
Altitude of test laboratory (m)	☒ 2000 m or less	☐	m
Mass of equipment (kg)	12.05		

Possible test case verdicts: - test case does not apply to the test object ... : N/A - test object does meet the requirement : P (Pass) - test object does not meet the requirement ... : F (Fail)	
Testing: Date of receipt of test item : N/A Date (s) of performance of tests..... : N/A	
General remarks: "(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a ☐ comma / ☒ point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC60068-2-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided :	☐ Yes ☒ Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) 1. OIC KOREA CO LTD 5F, 12 Annam-ro 369beon-gil Bupyeong-gu, INCHEON 21312, REPUBLIC OF KOREA	

General product information and other remarks:

1. This product is Public View Monitor
2. The equipment is intended to be supplied from ES1
3. Test samples are pre-production without serial number.
4. Maximum Specified ambient temperature is 40 °C.
5. Max. Normal Load: Full White Screen, Max. Brightness, 1/8 Pmax for speaker, Contrast, Resolution 1 920 x 1 080.
6. This product is intended to be supplied by a UL Listed Power Supply Unit marked "Class 2" or "LPS" or "PS2"

Model difference:

Basic model: SMT-3231PV

The model SMT-3231PV is similar as model, SMT-3221PV except for model designation, software.

Amendment 1 Report:

The Original test Report Ref. No. C23IA068-M0A0, dated 2023-10-26 was modified on 2024-03-20 to include the following changes and/or additions, which were considered technical amendments:

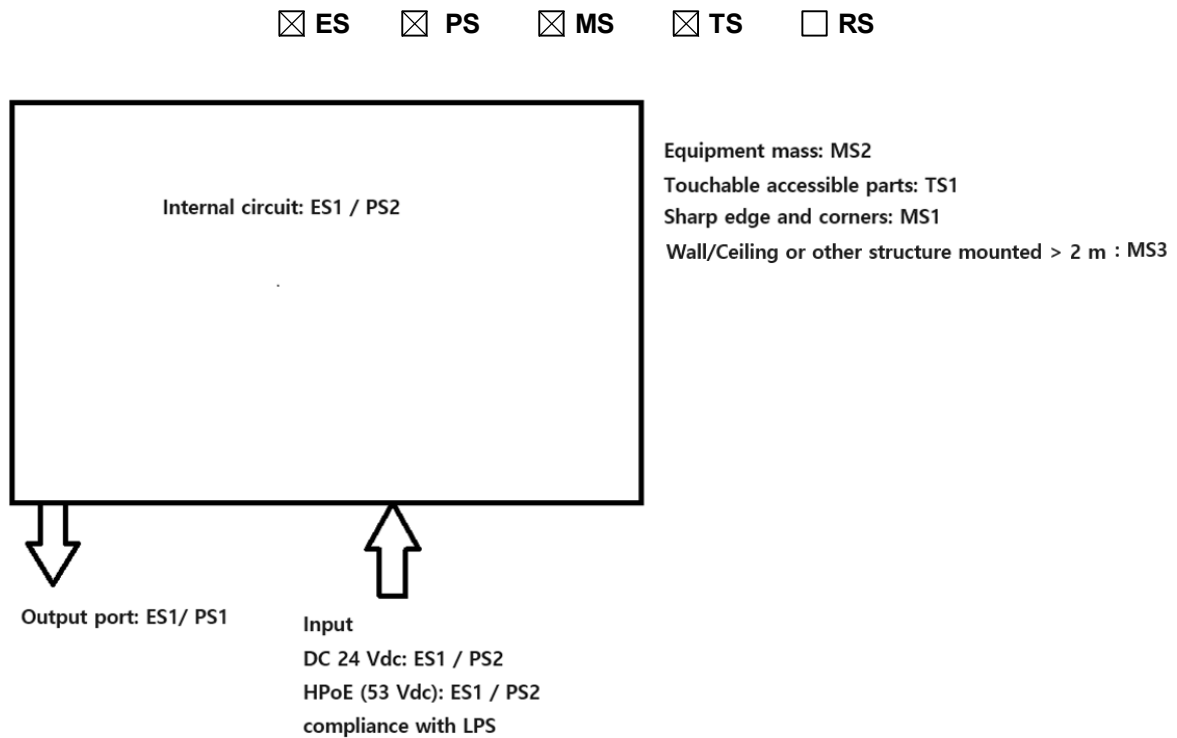
1. Delete of Singapore national difference due to delete in IECCE homepage.
2. Addition of derivative model (SMT-3221PV).
3. Addition of Copy of marking plate for SMT-3221PV model.
4. Addition of Model difference.

OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	Possible Hazard			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES1: Input circuit (DC 24 V)	Ordinary person	N/A	N/A	N/A
ES1: Input circuit (HPoE 53 V)	Ordinary person	N/A	N/A	N/A
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	1 st S	2 nd S
PS2: Internal circuit	All other components	Comply with 6.3.1	Comply with 6.4.5 and 6.4.6	N/A
PS2: Internal circuit	Conductor and device (PWB)	Comply with 6.3.1	Comply with 6.4.5 and 6.4.6	N/A
PS1: Secondary output port	Printed wiring board	N/A	N/A	N/A
7	Injury caused by hazardous substances			
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
Lithium Battery (BAT1)	Ordinary person	N/A	N/A	See Annex M
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
MS3: Wall/Ceiling or other structure mounted > 2 m	Ordinary person	N/A	N/A	(See 8.7)
MS2: Equipment Mass	Ordinary person	N/A	(See 8.6)	N/A
MS1: Sharp edge and corners	Ordinary person	N/A	N/A	N/A
9	Thermal burn			
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
TS1	Ordinary person	N/A	N/A	N/A
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
N/A	N/A	N/A	N/A	N/A
Supplementary Information:				
“B” – Basic Safeguard; “S” – Supplementary Safeguard; “R” – Reinforced Safeguard				

ENERGY SOURCE DIAGRAM

Optional. Manufacturers are to provide the energy sources diagram identify declared energy sources and identifying the demarcations are between power sources. Recommend diagram be provided included in power supply and multipart systems.

Insert diagram below. Example diagram designs are; Block diagrams; image(s) with layered data; mechanical drawings



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	GENERAL REQUIREMENTS		P
4.1.1	Acceptance of materials, components and subassemblies	(See appended table 4.1.2).	P
4.1.2	Use of components	(See appended table 4.1.2).	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

4.1.2	TABLE: Critical components information					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾	
- Description:						
Metal enclosure	Interchangeable	Interchangeable	Steel, approximately 737.6 mm by 480.9 mm by 52.0 mm, Min. 1.0 mm thickness	IEC 62368-1: 2018 EN IEC 62368-1: 2020+A11:2020 UL 62368-1	Tested in equipment	
LCD Panel	LG Display Co., Ltd.	LD320EUN	32.0 inch LCD, LED backlight: 24 Vdc, 1.33 A max. LCD Logic: 12 Vdc, 0.492 A max	IEC 62368-1: 2018 EN IEC 62368-1: 2020+A11:2020 UL 62368-1	Tested in equipment	
Network Camera	HANWHA VISION CO LTD	TNB-C6005	Input: 24 Vdc, 0.21 A	IEC 62368-1: 2018 EN IEC 62368-1: 2020+A11:2020 UL 62368-1	Tested in equipment	
Fuse (F1) for Network board	LITTELFUSE INC	454*	125 Vac, 1.5 A	IEC 62368-1: 2018 EN IEC 62368-1: 2020+A11:2020 UL 248-1, UL 248-14	Tested in equipment	UL (E10480)
(Alternate)	SEMITELE ELECTRONICS CO LTD	S6125S	125 Vac, 1.5 A	IEC 62368-1: 2018 EN IEC 62368-1: 2020+A11:2020 UL 248-1, UL 248-14	Tested in equipment	UL (E338954)
(Alternate)	LITTELFUSE INC	449*	125 Vac, 1.5 A	IEC 62368-1: 2018 EN IEC 62368-1: 2020+A11:2020 UL 248-1, UL 248-14	Tested in equipment	UL (E10480)
Transformer (T1)	KYUNGWON ELECTRONICS CO., LTD.	TWC7030BT	130 °C	IEC 62368-1: 2018 EN IEC 62368-1: 2020+A11:2020 UL 62368-1	Tested in equipment	UL

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
(Alternate)	WEIHAI YILIAN ELECTRICS CO., LTD.	7030BT	130 °C	IEC 62368-1: 2018 EN IEC 62368-1: 2020+A11:2020 UL 62368-1	Tested in equipment UL
Opto-coupler (PC1)	EVERLIGHT ELECTRONICS CO LTD	EL3H7 (blank;F1) V EL3H7	Isolation Voltage: 3 750. Max. Operation Temperature: 110 °C	IEC 60747-5-5:2020 UL 1577	VDE (132249) UL (E214129)
(Alternate)	COSMO ELECTRONICS CORP	KPS2801	Isolation Voltage: 3 750. Max. Operation Temperature: 100 °C	IEC 60747-5-5:2020 UL 1577	VDE (40010469) UL (E169586)
Lithium Battery (BAT1)	SEIKO INSTRUMENTS INC MICRO-ENERGY DIV	ML414H	Lithium (Coin), Rechargeable, Max. Charging Voltage: 3.4 Vdc, Max. Charging Current: 300 mAh	IEC 62368-1: 2018 EN IEC 62368-1: 2020+A11:2020 UL 1642	Tested in equipment UL (MH15628)
Reverse Current Protection Circuit for Lithium Coin Battery (BAT1)	Interchangeable	Interchangeable	Diode (D2, 80 V, 300 mA) and resistor (R79, 3.3 kohm) in series.	IEC 62368-1: 2018 EN IEC 62368-1: 2020+A11:2020 UL 62368-1	Tested in equipment UL
Thermal pad	KOMOTECH CO LTD	KGP-1(a)	V-0, 150 °C, Min. 5.0 mm	IEC 62368-1: 2018 EN IEC 62368-1: 2020+A11:2020 UL 746, UL 94	Tested in equipment UL (E245303)
FFC cable	Interchangeable	Interchangeable	Marked VW-1; Min. 60 V, 105 °C	IEC 62368-1: 2018 EN IEC 62368-1: 2020+A11:2020 UL 758	Tested in equipment UL
PWB	HANNSTAR BOARD CORP	MV-4	Min. V-0, 130 °C	IEC 62368-1: 2018 EN IEC 62368-1: 2020+A11:2020 UL 796	Tested in equipment UL (E89382)
Supplementary information:					
1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

List of test equipment used:

A completed list of used test equipment shall be provided in the Test Reports when a Customer's Testing Facility according to CTF stage 1 or CTF stage 2 procedure has been used.

Note: This page may be removed when CTF stage 1 or CTF stage 2 are not used. See also clause 4.8 in OD 2020 for more details.

Clause	Measurement / testing	Testing / measuring equipment / material used, (Equipment ID)	Range used	Last Calibration date	Calibration due date
N/A	N/A	N/A	N/A	N/A	N/A