

## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	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)
<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>	FD9383-HV, FD833-HV
<b>Rating:</b>	(Optionally provided on marking plate) PoE 42-57 Vdc , 0.25-0.2 A
<b>Applicant Name and Address:</b>	VIVOTEK INC 6TH FL, 192 LIEN CHENG RD CHUNG HO DISTRICT NEW TAIPEI 235 TAIWAN

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.

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Prepared By: Jong Lee / Project Handler

Reviewed By: Chris Kao / 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**

The equipment, models FD9383-HV, FD833-HV, is a Network Camera which is intended to use within audio/video, information and communication technology equipment.

The equipment consists of electronic components are mounted on PCB and housed by plastic/metal enclosures is fixed by screw. Unit must be mounted on a wall and ceiling mount.

The equipment is power supplied from the external power adaptor or Power-over-Ethernet (PoE) device which is complied with the requirement of Limited Power Source (LPS) or Power source class 2 (PS2). Otherwise, the adaptor which is intended to be used with this equipment in the regional market should be stated in the specified types in the instruction by suitable regional languages.

**Model Differences**

All models are identical to each other except model name for marketing purpose only.

**Test Item Particulars**

Product group	end product
Classification of use by	Ordinary person Children likely to be present
Supply Connection	not mains connected: ES1
Supply tolerance	None
Supply connection – type	not directly connect to the mains
Considered current rating of protective device	N/A
Equipment mobility	stationary wall/ceiling-mounted
Over voltage category (OVC)	not directly connect to the mains
Class of equipment	Class III
Special installation location	Outdoor location
Pollution degree (PD)	PD 3

Manufacturer's specified Tma (°C)	55 Outdoor: minimum -30
IP protection class	IPX0
Power systems	not AC mains
Altitude during operation (m)	5000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	Max. 560 g

#### Technical Considerations

- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual
- Based on product design and declaration from Manufacturer, the equipment is power supplied from external power source which is complied with the requirement of PS2/Limited Power Source, ES1 and separated from mains/hazardous voltage by double/reinforced insulation.
- The equipment may be power supplied from the optional approved external DC or Power-over-Ethernet (PoE) device evaluated according to UL/IEC 62368-1(ed.2), UL/IEC 62368-1(ed.3) or UL/IEC 60950-1:2005+A1+A2, and relevant safety information for the optional DC or Power-over-Ethernet (PoE) device shall be "Rated output: 42-57 Vdc, 0.25-0.2 A.", "Tma: 55 °C min.", "Altitude during operation 5000 m min." and "LPS or PS2".
- LEDs provided in the product are considered low power devices: Yes
- PoE circuits are considered as ES1 or SELV circuits, the function of the ITE being investigated to IEC TR 62102 is considered not connection to an Ethernet Network with outside plant routing, including campus environment; and the installation instruction clearly states that the ITE is to be connected only to PoE networks without routing to the outside plant.
- The product was investigated to the following additional standards: IEC 62471: 2006 for LED light bar and comply with Exempt Group.
- The equipment must be installed by skilled person.
- The equipment is intended to install under the eaves of building, and it also shall be avoided to exposure under sunlight and rain directly.
- No any ordinary person accessible area is located inside the equipment.

#### Additional Information

N/A

#### Additional Standards

The product fulfills the requirements of: N/A

#### Markings and Instructions

Clause Title	Marking or Instruction Details
Inter-connecting cables - External detachable	Responsible company's name and Part number (Marking or Instruction)
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	(Optional) Input Ratings (voltage, frequency/dc, current/power)

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>
Instruction/Installation/Safety	<ul style="list-style-type: none"><li>- Instruction/Installation/Safety manual might be provided by (1) Hardcopy, or (2) website. If the manual supplied by website, a hard copy notice is provided alerting the user/installer of the need to access the company website which includes the URL, and this hard copy notice must include the signal word "IMPORTANT" and a statement "See Installation Instructions Before Connecting the Supply" or similar.</li><li>- "The camera is only to be connected to PoE networks without routing to outside plants." or equivalent .</li><li>- "Please contact VIVOTEK's certified dealers for power adapters." or equivalent.</li><li>- "Maintenance and repair work must always be carried out by qualified technical personnel." or equivalent.</li><li>- Wall Mount Installation: see user manual for details.</li></ul>
Protective earthing is used as a safeguard	<p>"If powered by a power adapter, the adapter should be properly grounded." or equivalent.</p>
<b>Special Instructions to UL Representative</b> 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
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<b>BD1.2</b>	<b>Earthing Continuity Test Exemptions – This test is not required for the following models:</b>					
	All models in this report					
<b>BD1.3</b>	<b>Electric Strength Test Exemptions – This test is not required for the following models:</b>					
	All models in this report					
<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>					
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<b>BE1.0</b>	<b>Sample and Test Specifics for Follow-Up Tests at UL</b>				
Model	Component	Material	Test	Sample (s)	Test Specifics
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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
01. External Power Adaptor or Power- over-Ethernet (PoE) device (Optional)	Interchangeable	Interchangeable	O/P: 42-57 Vdc, 0.25- 0.2 A, 55 degree C minimum, LPS or PS2, 5000 m	NWGG/7, QGGQ/7, AZOT/7, QQJQ/7	UL	
02. Enclosure	--	--	See below	--	--	
02-1. Top plastic lens/IR LED cover	MITSUBISHI ENGINEERING- PLASTICS CORP	S-3000(&6)(f1), S- 3001(&6)(f1), S- 3003(&6)(f1)	HB minimum, 1.7 mm thickness minimum, 115 degree C minimum. See Enclosure ID 04-01 for details.	QMFZ2/8	UL	
02-2. Top metal enclosure	--	--	Aluminium alloy, 3.0 mm thick min., See Enclosure ID 04-02 for details.	--	--	
02-3. Bottom metal enclosure	--	--	Aluminium alloy, 3.0 mm thick min., See Enclosure ID 04-03 for details.	--	--	
02-4. Bottom screw	--	--	Stainless steel, M3 x 4 mm.	--	--	
03. Adhesive (Between bottom metal enclosure and cable)	ITW Engineered Polymers	116FR	--	--	--	
04. Gasket, O-Ring, Rubber	--	--	See below	--	--	
04-1. O-ring (Between top plastic lens IR/LED cover and top metal enclosure)	MOMENTIVE PERFORMANCE MATERIALS JAPAN L L C	TSE2186U(aq)	HB minimum, Silicone rubber. See Enclosure ID 04-04 for details.	QMFZ2/8	UL	

04-2. O-ring (Between top metal enclosure and bottom metal enclosure)	MOMENTIVE PERFORMANCE MATERIALS JAPAN L L C	TSE2186U(aq)	HB minimum, Silicone rubber. See Enclosure ID 04-05 for details.	QMFZ2/8	UL	
04-3. O-ring (On the bottom screw)	MOMENTIVE PERFORMANCE MATERIALS JAPAN L L C	TSE2186U(aq)	HB minimum, Silicone rubber. See Enclosure ID 04-06 for details.	QMFZ2/8	UL	
05. Lithium rechargeable coin battery (BT1)(On the MB board)	SEIKO INSTRUMENTS INC MICRO-ENERGY DIV	MS621T	Maximum Charge Voltage: 3.4 Vdc, Max Charging Current: 300 mA. Protect by R2931 (1k ohm)	BBCV2	UL	
06. PoE transformer (T1) (On the MB board)	Semitel International Ltd.	EFD15	105 degree C min. See Enclosure ID 04-08 for details.	--	--	
07. IR LED (LD1, LD2)(On the IR LED board)	Lextar Electronics Corporation	PR35V21 V0-130D	Exempt Group, 850 nm, 290 mW/sr (complied with IEC 62471:2006)	--	--	
08. Thermal pad (Between MB board and internal metal part)	Interchangeable	Interchangeable	Flammability level is ignored, when small parts (less than 4 g or less than 1750 mm <sup>3</sup> ), See Enclosure ID 04-07 for details.	--	--	
08a. Thermal pad (Between MB board and internal metal part) (Alternate)	Interchangeable	Interchangeable	V-2 min. or HF-2 min., See Enclosure ID 04-07 for details.	QMFZ2	UL	
09. Internal plastic parts/material	Interchangeable	Interchangeable	V-2 min., VTM-2, HF-2 (except mounted on V-1 class material)	QMFZ2	UL	
09a. Internal Plastic Part Materials	Interchangeable	Interchangeable	Flammability level is ignored, when one or more layers of thin	--	--	

(Optional) (Alternate)			insulating material, used directly on any surface of V-2 class material within the fire enclosure			
09b. Internal Plastic Part Materials (Optional) (Alternate)	Interchangeable	Interchangeable	Flammability level is ignored, when small parts (1750 mm <sup>3</sup> maximum) are mounted on V-1 class material	--	--	
09c. Internal Plastic Part Materials (Optional) (Alternate)	Interchangeable	Interchangeable	Flammability level is ignored, when small parts (4 g maximum or 1750 mm <sup>3</sup> max.) are separated from electrical parts (other than insulated wires and cables) by at least 13 mm of air or by a solid barrier of V-0 class material.	--	--	
10. PWB (For except IR LED board)	Interchangeable	Interchangeable	V-1 minimum, 105 degree C minimum.	ZPMV2	UL	
11. PWB (For IR LED board)	Interchangeable	Interchangeable	V-1 minimum, 130 degree C minimum.	ZPMV2	UL	
12. Label	Interchangeable	Interchangeable	70 degree C if maximum surface temperature not specified.	PGDQ2, PGJ12	UL	
12a. Permanency of Marking (Alternate)	--	--	Engraved laser marking.	--	--	
12b. Permanency of Marking (Alternate)	--	--	Permanently ink- stamped, silk-screened, molded in, or in self- adhesive labels.	--	--	



13. I/O cable	Interchangeable	Interchangeable	VW-1 or FT-1, minimum 80 degree C, maximum 3.05 m long.	AVLV2	UL	
14. Interconnecting Cable (Optional)	Interchangeable	Interchangeable	Minimum 60 degree C, minimum 30 V, maximum 3.05 m long, jacketed, VW-1 or FT-1	AVLV2, ZPFW2, DVPJ	UL	
14a. Interconnecting Cable (Optional) (Alternate)	Interchangeable	Interchangeable	Type CMP, CMR, CMG, CM, CMX, CMUC, or CMH.	DUZX	UL	
14b. Interconnecting Cable (Optional) (Alternate)	Interchangeable	Interchangeable	Maximum 3.05 m long, jacketed	DUXR/2	UL	
15. Wiring, internal ES1 circuits	Interchangeable	Interchangeable	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; min 30 V, 80 degree C.	AVLV2	UL	
16. Connectors and Receptacles (ES1 circuits)	Interchangeable	Interchangeable	Copper alloy pins housed in bodies of plastic rated V-2 minimum	QMFZ2	UL	
16a. Connectors and Receptacles (ES1 circuits) (alternate)	Interchangeable	Interchangeable	--	ECBT2	UL	
17b. Connectors and Receptacles (ES1 circuits) (alternate)	Interchangeable	Interchangeable	--	DUXR2	UL	
18. Plastic Material of Flexible Printed Wiring (Optional)	Interchangeable	Interchangeable	HB min. or HBF min. when no components mounted on surface.	QMFZ2 or QMTS2	UL	
18a. Plastic Material of Flexible Printed Wiring (Alternate) (Optional)	Interchangeable	Interchangeable	HB min. or HBF min. when no components mounted on surface.	ZPMV2 or ZPKX2	UL	

18b. Plastic Material of Flexible Printed Wiring (Alternate) (Optional)	Interchangeable	Interchangeable	V-1 min. or VTM-1 min. when components mounted on surface existed.	ZPMV2 or ZPXK2	UL	
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## Enclosures

Type	Supplement Id	Description
Photographs	03-01	External view-1
Photographs	03-02	External view-2
Photographs	03-03	Internal view-1
Photographs	03-04	Internal view-2
Photographs	03-05	Internal view-3
Photographs	03-06	Internal view-4
Photographs	03-07	Internal view-5
Photographs	03-08	MB board-1
Photographs	03-09	MB board-2
Photographs	03-10	SB board-1
Photographs	03-11	SB board-2
Photographs	03-12	IR LED board-1
Photographs	03-13	IR LED board-2
Diagrams	04-01	Top plastic lens IR LED cover
Diagrams	04-02	Top metal enclosure
Diagrams	04-03	Bottom metal enclosure
Diagrams	04-04	O-ring (Between top plastic lens IR LED cover and top metal enclosure)
Diagrams	04-05	O-ring (Between top metal enclosure and bottom metal enclosure)
Diagrams	04-06	O-ring (On the bottom screw)
Diagrams	04-07	Thermal pad (Between MB board and internal metal part)
Diagrams	04-08	PoE Transformer (T3)
Manuals	06-01	User Manuals