
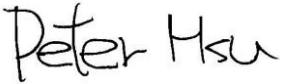
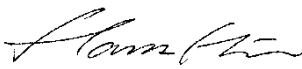




Test Report issued under the responsibility of:



<b>TEST REPORT</b> <b>IEC 62368-1</b> <b>Audio/video, information and communication technology equipment</b> <b>Part 1: Safety requirements</b>	
<b>Report Number</b> .....	SU0041-19017
<b>Date of issue</b> .....	2019-12-13
<b>Total number of pages</b> .....	59
<b>Applicant's name</b> .....	<b>VIVOTEK INC</b>
<b>Address</b> .....	6TH FL, 192 LIEN CHENG RD CHUNG HO DISTRICT NEW TAIPEI, 235 TAIWAN
<b>Test specification:</b>	
<b>Standard</b> .....	IEC 62368-1:2014 (Second Edition)
<b>Test procedure</b> .....	CB Scheme
<b>Non-standard test method</b> .....	N/A
<b>Test Report Form No.</b> .....	IEC62368_1B
<b>Test Report Form(s) Originator</b> .....	UL(US)
<b>Master TRF</b> .....	2014-03
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<b>General disclaimer:</b>	
The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.	

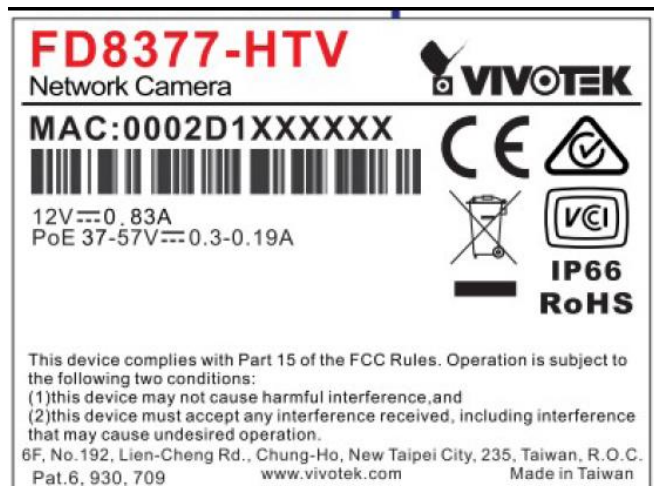
Test Item description .....	Network Camera	
Trade Mark .....		
Manufacturer .....	<b>VIVOTEK INC</b> 6TH FL, 192 LIEN CHENG RD CHUNG HO DISTRICT NEW TAIPEI, 235 TAIWAN	
Model/Type reference .....	FD8177-HT, FD8377-HTV, FD8377-EHTV	
Ratings .....	1) DC 37-57 V, 0.30-0.19 A (POE in) or DC 12 V, 0.83 A for Model FD8177-HT, FD8377-HTV 2) DC 42.5-57 V, 0.54-0.40 A (POE in) or DC 12 V, 1.7A for Model FD8377-EHTV	
Testing procedure and testing location:		
<input checked="" type="checkbox"/> CB Testing Laboratory:	Sporton International Inc.	
Testing location/ address .....	14 FI-2, No. 186, Jianyi Road Zhonghe District, New Taipei City CHINESE TAIPEI	
<input type="checkbox"/> Associated CB Testing Laboratory:		
Testing location/ address .....		
Tested by (name + signature) .....	Peter Hsu/ Project Handler	
Approved by (name + signature) .....	Hans Hsieh/ Reviewer	
Testing procedure: TMP/CTF Stage 1		
Testing location/ address .....		
Tested by (name + signature) .....		
Approved by (name + signature) .....		
Testing procedure: WMT/CTF Stage 2		
Testing location/ address .....		
Tested by (name + signature) .....		
Witnessed by (name + signature).....		
Approved by (name + signature) .....		
Testing procedure: SMT/CTF Stage 3 or 4		
Testing location/ address .....		
Tested by (name + signature) .....		

Approved by (name + signature) .....		
Supervised by (name + signature) .....		

<b>List of Attachments (including a total number of pages in each attachment):</b>		
Attachment No.	Description	Page(s)
1	National Differences	44
2	Photographs	18
3	Diagrams	05
4	Miscellaneous	32
4-01	Miscellaneous (IEC60950-22 Test report)	02-25
4-02	Miscellaneous (IR LED IEC62471 Test report)	26-32
<b>Summary of testing:</b>		
<b>Tests performed (name of test and test clause):</b>		<b>Testing location:</b>
<ul style="list-style-type: none"> <li>- Classification of electrical energy sources (5.2)</li> <li>- Temperature tests (5.4.1.4, 6.3.2, 9.0, B.2.6)</li> <li>- Wall and Ceiling mounted test (8.7, 8.7.2, T.8, 8.7.3)</li> <li>- Input test (B.2.5)</li> <li>- Fault condition tests-short circuit or disconnection of passive components (B.4, B.4.6)</li> <li>- Test for the permanence of markings (F.3.10)</li> <li>- Limited power source (Q1)</li> <li>- Mechanical strength test-Steady force test (T5)</li> <li>- Mechanical strength test-Enclosure impact test (T6)</li> <li>- Mechanical strength test-Stress relief test (T8)</li> </ul>		Sporton International Inc. / 14 FI-2, No. 186, Jianyi Road Zhonghe District, New Taipei City CHINESE TAIPEI
<b>Summary of compliance with National Differences:</b>		
<b>List of countries addressed</b>		
According to CB Bulletin, the National Differences include Australia (AU), Canada (CA), Denmark (DK), Italy (IT), Japan (JP), New Zealand (NZ), Sweden (SE) and United States of America (US). CENELEC Common Modifications (EU Group Differences) as listed in the European Standard are recorded in this Report		
<input checked="" type="checkbox"/> <b>The product fulfils the requirements of CAN/CSA C22.2 No. 62368-1-14.</b>		
<input checked="" type="checkbox"/> <b>The product fulfils the requirements of EN 62368-1:2014+A11:2017.</b>		
<input checked="" type="checkbox"/> <b>The product fulfils the requirements of UL 62368-1, Second Edition.</b>		

**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:	
Classification of use by .....	<input checked="" type="checkbox"/> Ordinary person <input type="checkbox"/> Instructed person <input type="checkbox"/> Skilled person <input checked="" type="checkbox"/> Children likely to be present
Supply Connection.....	<input type="checkbox"/> AC Mains <input type="checkbox"/> DC Mains <input checked="" type="checkbox"/> External Circuit - not Mains connected - <input type="checkbox"/> ES1 <input checked="" type="checkbox"/> ES2 <input type="checkbox"/> ES3
Supply % Tolerance .....	<input type="checkbox"/> +10%/-10% <input type="checkbox"/> +20%/-15% <input type="checkbox"/> +____%/ -____% <input checked="" type="checkbox"/> None
Supply Connection – Type .....	<input type="checkbox"/> pluggable equipment type A - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input type="checkbox"/> direct plug-in <input type="checkbox"/> mating connector <input type="checkbox"/> pluggable equipment type B - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input type="checkbox"/> permanent connection <input type="checkbox"/> mating connector <input checked="" type="checkbox"/> other: <u>Not directly connected to the mains</u>
Considered current rating of protective device as part of building or equipment installation .....	__A; Installation location: <input type="checkbox"/> building; <input type="checkbox"/> equipment
Equipment mobility .....	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in <input type="checkbox"/> rack-mounting <input checked="" type="checkbox"/> wall-mounted
Over voltage category (OVC) .....	<input type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input checked="" type="checkbox"/> other: <u>Not directly connected to the mains</u>
Class of equipment .....	<input type="checkbox"/> Class I <input type="checkbox"/> Class II <input checked="" type="checkbox"/> Class III
Access location .....	<input type="checkbox"/> restricted access location <input checked="" type="checkbox"/> N/A
Pollution degree (PD) .....	<input type="checkbox"/> PD 1 <input type="checkbox"/> PD 2 <input checked="" type="checkbox"/> PD 3
Manufacturer's specified maximum operating ambient:	-10 °C to +50 °C (Model: FD8177-HT) -20 °C to +50 °C (Model: FD8377-HTV) -50 °C to +50 °C (Model: FD8377-EHTV)
IP protection class .....	<input checked="" type="checkbox"/> IPX0 <input type="checkbox"/> IP
Power Systems .....	<input type="checkbox"/> TN <input type="checkbox"/> TT <input type="checkbox"/> IT - ____ V <sub>L-L</sub>
Altitude during operation (m) .....	<input checked="" type="checkbox"/> 2000 m or less <input type="checkbox"/> ____ m
Altitude of test laboratory (m) .....	<input checked="" type="checkbox"/> 2000 m or less <input type="checkbox"/> ____ m
Mass of equipment (kg) .....	<input checked="" type="checkbox"/> <u>0.89</u> kg (Model FD8377-HTV, FD8377-EHTV) <input checked="" type="checkbox"/> <u>0.63</u> kg (Model FD8177-HT)

<b>POSSIBLE TEST CASE VERDICTS:</b>																					
- 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)																				
<b>TESTING:</b>																					
Date of receipt of test item..... :	2018-04-10																				
Date (s) of performance of tests..... :	2018-04-10 to 2018-04-18																				
<b>GENERAL REMARKS:</b>																					
<p>"(See Enclosure #)" refers to additional information appended to the report.  "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p>																					
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:</b>																					
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 .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable																				
<b>When differences exist; they shall be identified in the General product information section.</b>																					
<b>Name and address of factory (ies) .....</b>	<b>VIVOTEK INC</b> 5TH FL, 168 LIEN CHENG RD CHUNG HO DISTRICT NEW TAIPEI, 235 TAIWAN																				
<b>GENERAL PRODUCT INFORMATION:</b>																					
<b>Product Description –</b>																					
<p>-The equipment is a Network Camera, intended for used with information technology equipment.</p> <p>-The unit is supplied by External Adaptor or POE device which compliance with Limited Power Source (Sub-clause Annex Q).</p> <p>-This equipment is to be connected to PoE networks or external ac adaptor without routing to the outdoor location.</p> <p>-The installation and maintenance of this camera should be carried out by qualified technicians.</p> <p>-The test sample was a pre-production sample without serial number.</p> <p>-The equipment was investigated to the following additional standards: (1) IEC60950-22 - Equipment to be Installed Outdoors.</p> <p>- Unless otherwise indicated, all tests were conducted on Model FD8177-HT, FD8377-EHTV</p> <p>-The official TRF used for this evaluation has not been updated to include CTF information. As a temporary solution the NCB included missing CTF page and informed IECEE Secretariat about the required TRF update.</p>																					
<b>Model Differences –</b>																					
	<table border="1"> <thead> <tr> <th>Model</th> <th>FD8177-HT</th> <th>FD8377-HTV</th> <th>FD8377-EHTV</th> </tr> </thead> <tbody> <tr> <td>Enclosure</td> <td>Indoor</td> <td>Outdoor</td> <td>Outdoor</td> </tr> <tr> <td>Heater</td> <td>No</td> <td>No</td> <td>Yes</td> </tr> <tr> <td>Rating</td> <td colspan="2">DC 37-57 V, 0.30-0.19 A (POE in) DC 12V, 0.83 A (Adaptor in)</td> <td>DC 42.5-57 V, 0.54-0.40 A (POE in) DC 12V, 1.7 A (Adaptor in)</td> </tr> <tr> <td>Ambient</td> <td>-10°C -50°C</td> <td>-20°C - 50°C</td> <td>-50°C - 50°C</td> </tr> </tbody> </table>	Model	FD8177-HT	FD8377-HTV	FD8377-EHTV	Enclosure	Indoor	Outdoor	Outdoor	Heater	No	No	Yes	Rating	DC 37-57 V, 0.30-0.19 A (POE in) DC 12V, 0.83 A (Adaptor in)		DC 42.5-57 V, 0.54-0.40 A (POE in) DC 12V, 1.7 A (Adaptor in)	Ambient	-10°C -50°C	-20°C - 50°C	-50°C - 50°C
Model	FD8177-HT	FD8377-HTV	FD8377-EHTV																		
Enclosure	Indoor	Outdoor	Outdoor																		
Heater	No	No	Yes																		
Rating	DC 37-57 V, 0.30-0.19 A (POE in) DC 12V, 0.83 A (Adaptor in)		DC 42.5-57 V, 0.54-0.40 A (POE in) DC 12V, 1.7 A (Adaptor in)																		
Ambient	-10°C -50°C	-20°C - 50°C	-50°C - 50°C																		

**Additional application considerations – (Considerations used to test a component or sub-assembly) –**

N/A

**ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:**

(Note 1: Identify the following six (6) energy source forms based on the origin of the energy.)

(Note 2: The identified classification e.g., ES2, TS1, should be with respect to its ability to cause pain or injury on the body or its ability to ignite a combustible material. Any energy source can be declared Class 3 as a worse case classification e.g. PS3, ES3.)

**Electrically-caused injury (Clause 5):**

(Note: Identify type of source, list sub-assembly or circuit designation and corresponding energy source classification)

Example: +5 V dc input

ES1

Source of electrical energy	Corresponding classification (ES)
Input (DC 42.5 V - 57 V or DC 12 V)	ES2 (model FD8377-EHTV)
All internal circuits circuit	ES2 (model FD8377-EHTV)
Input (DC 37 V - 57 V or DC 12 V)	ES1 (model FD8177-HT, FD8377-HTV)
All internal circuits circuit	ES1 (model FD8177-HT, FD8377-HTV)

**Electrically-caused fire (Clause 6):**

(Note: List sub-assembly or circuit designation and corresponding energy source classification)

Example: Battery pack (maximum 85 watts):

PS2

Source of power or PIS	Corresponding classification (PS)
Input (DC 37 V - 57 V or DC 42.5 - 57 V or DC 12 V)	PS2
All internal circuits	PS2

**Injury caused by hazardous substances (Clause 7)**

(Note: Specify hazardous chemicals, whether produces ozone or other chemical construction not addressed as part of the component evaluation.)

Example: Liquid in filled component

Glycol

Source of hazardous substances	Corresponding chemical
--	--

**Mechanically-caused injury (Clause 8)**

(Note: List moving part(s), fan, special installations, etc. &amp; corresponding MS classification based on Table 35.)

Example: Wall mount unit

MS2

Source of kinetic/mechanical energy	Corresponding classification (MS)
Edges and corners	MS1
Mass of equipment	MS1
Wall/ceiling mount	MS3

**Thermal burn injury (Clause 9)**

(Note: Identify the surface or support, and corresponding energy source classification based on type of part, location, operating temperature and contact time in Table 38.)

Example: Hand-held scanner – thermoplastic enclosure

TS1

Source of thermal energy	Corresponding classification (TS)
--------------------------	-----------------------------------

<b>ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:</b>	
External surface	TS1
Internal components	TS1
<b>Radiation (Clause 10)</b> (Note: List the types of radiation present in the product and the corresponding energy source classification.) Example: DVD – Class 1 Laser Product <span style="float: right;">RS1</span>	
<b>Type of radiation</b>	<b>Corresponding classification (RS)</b>
LED indicators	RS1
IR LED	RS1

<b>ENERGY SOURCE DIAGRAM</b>
Indicate which energy sources are included in the energy source diagram. Insert diagram below
<b>SEE ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE</b> <input checked="" type="checkbox"/> ES <input checked="" type="checkbox"/> PS <input checked="" type="checkbox"/> MS <input checked="" type="checkbox"/> TS <input checked="" type="checkbox"/> RS

<b>OVERVIEW OF EMPLOYED SAFEGUARDS</b>				
<b>Clause</b>	<b>Possible Hazard</b>			
5.1	Electrically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (ES3: Primary Filter circuit)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary	ES2: All internal circuit	Enclosure	--	--
6.1	Electrically-caused fire			
Material part (e.g. mouse enclosure)	Energy Source (PS2: 100 Watt circuit)	Safeguards		
		Basic	Supplementary	Reinforced
Enclosure	PS2	See 6.3	--	--
PWB	PS2	See 6.3	V-1 or better	--
Other internal circuits, materials, components	PS2	See 6.3	See 6.4.5	--
Internal wirings	PS2	--	--	See 6.5
External wirings	PS2	--	--	See 6.5
7.1	Injury caused by hazardous substances			
Body Part (e.g., skilled)	Energy Source (hazardous material)	Safeguards		
		Basic	Supplementary	Reinforced
--	--	--	--	--
8.1	Mechanically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (MS3:High Pressure Lamp)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Instructed, skilled	MS3: Wall/ceiling mount	--	--	See 8.7
9.1	Thermal Burn			
Body Part (e.g., Ordinary)	Energy Source (TS2)	Safeguards		
		Basic	Supplementary	Reinforced
--	--	--	--	--
10.1	Radiation			
Body Part (e.g., Ordinary)	Energy Source (Output from audio port)	Safeguards		
		Basic	Supplementary	Reinforced
--	--	--	--	--
Supplementary Information:				
(1) See attached energy source diagram for additional details.				
(2) "N" – Normal Condition; "A" – Abnormal Condition; "S" Single Fault				

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>4</b>	<b>GENERAL REQUIREMENTS</b>		<b>P</b>
4.1.1	Acceptance of materials, components and subassemblies	Requirements are specified in the relevant clauses and, where referenced in those clauses, in the relevant annexes.	P
4.1.2	Use of components	<p>Certified components are used in accordance with their ratings, certifications, and they comply with applicable parts of this standard.</p> <p>Components not certified are used in accordance with their ratings, and they comply with applicable parts of IEC 62368-1 and the relevant component standard.</p> <p>Components, for which no relevant IEC-standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 62368-1.</p>	P
4.1.3	Equipment design and construction		P
4.1.15	Markings and instructions .....	(See Annex F)	P
4.4.4	Safeguard robustness		P
4.4.4.2	Steady force tests .....	(See Annex T.5)	P
4.4.4.3	Drop tests .....		N/A
4.4.4.4	Impact tests .....	(See Annex T.6)	P
4.4.4.5	Internal accessible safeguard enclosure and barrier tests .....		N/A
4.4.4.6	Glass Impact tests .....		N/A
4.4.4.7	Thermoplastic material tests .....	(See Annex T.8)	P
4.4.4.8	Air comprising a safeguard .....		N/A
4.4.4.9	Accessibility and safeguard effectiveness		P
4.5	Explosion	No explosion occurs during normal and abnormal operating conditions.	P
4.6	Fixing of conductors		N/A
4.6.1	Fix conductors not to defeat a safeguard		N/A
4.6.2	10 N force test applied to .....		N/A
4.7	Equipment for direct insertion into mains socket - outlets		N/A
4.7.2	Mains plug part complies with the relevant standard .....		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.3	Torque (Nm) .....		—
4.8	Products containing coin/button cell batteries		N/A
4.8.2	Instructional safeguard		N/A
4.8.3	Battery Compartment Construction		N/A
	Means to reduce the possibility of children removing the battery .....		—
4.8.4	Battery Compartment Mechanical Tests .....		N/A
4.8.5	Battery Accessibility		N/A
4.9	Likelihood of fire or shock due to entry of conductive object .....	No openings.	P

<b>5</b>	<b>ELECTRICALLY-CAUSED INJURY</b>		<b>P</b>
5.2.1	Electrical energy source classifications .....	See <b>ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE</b>	P
5.2.2	ES1, ES2 and ES3 limits	ES2 (model FD8377-HTV, FD8377-EHTV) ES1 (model FD8177-HT)	P
5.2.2.2	Steady-state voltage and current .....	(See appended table 5.2)	P
5.2.2.3	Capacitance limits .....		N/A
5.2.2.4	Single pulse limits .....		N/A
5.2.2.5	Limits for repetitive pulses .....		N/A
5.2.2.6	Ringing signals .....		N/A
5.2.2.7	Audio signals .....		N/A
5.3	Protection against electrical energy sources		N/A
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons		N/A
5.3.2.1	Accessibility to electrical energy sources and safeguards		N/A
5.3.2.2	Contact requirements		N/A
	a) Test with test probe from Annex V .....		N/A
	b) Electric strength test potential (V) .....		N/A
	c) Air gap (mm) .....		N/A
5.3.2.4	Terminals for connecting stripped wire		N/A
5.4	Insulation materials and requirements		N/A
5.4.1.2	Properties of insulating material		N/A
5.4.1.3	Humidity conditioning .....		N/A
5.4.1.4	Maximum operating temperature for insulating materials .....		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.5	Pollution degree .....	3	—
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N/A
5.4.1.5.3	Thermal cycling		N/A
5.4.1.6	Insulation in transformers with varying dimensions		N/A
5.4.1.7	Insulation in circuits generating starting pulses		N/A
5.4.1.8	Determination of working voltage		N/A
5.4.1.9	Insulating surfaces		N/A
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		N/A
5.4.1.10.2	Vicat softening temperature .....		N/A
5.4.1.10.3	Ball pressure .....		N/A
5.4.2	Clearances	Only functional insulation	N/A
5.4.2.2	Determining clearance using peak working voltage		N/A
5.4.2.3	Determining clearance using required withstand voltage .....		N/A
	a) a.c. mains transient voltage .....		—
	b) d.c. mains transient voltage .....		—
	c) external circuit transient voltage .....		—
	d) transient voltage determined by measurement .....		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test		N/A
5.4.2.5	Multiplication factors for clearances and test voltages .....		N/A
5.4.3	Creepage distances .....	Only functional insulation	N/A
5.4.3.1	General		N/A
5.4.3.3	Material Group .....		—
5.4.4	Solid insulation		N/A
5.4.4.2	Minimum distance through insulation .....		N/A
5.4.4.3	Insulation compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices		N/A
5.4.4.5	Cemented joints		N/A
5.4.4.6	Thin sheet material		N/A
5.4.4.6.1	General requirements		N/A
5.4.4.6.2	Separable thin sheet material		N/A
	Number of layers (pcs) .....		N/A
5.4.4.6.3	Non-separable thin sheet material		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.4.6.4	Standard test procedure for non-separable thin sheet material .....		N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components		N/A
5.4.4.9	Solid insulation at frequencies >30 kHz .....		N/A
5.4.5	Antenna terminal insulation		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
	Insulation resistance (M $\Omega$ ).....		—
5.4.6	Insulation of internal wire as part of supplementary safeguard .....		N/A
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning		N/A
	Relative humidity (%).....		—
	Temperature (°C) .....		—
	Duration (h) .....		—
5.4.9	Electric strength test .....		N/A
5.4.9.1	Test procedure for a solid insulation type test		N/A
5.4.9.2	Test procedure for routine tests		N/A
5.4.10	Protection against transient voltages between external circuit		N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test .....		N/A
5.4.10.2.3	Steady-state test.....		N/A
5.4.11	Insulation between external circuits and earthed circuitry .....		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	Rated operating voltage $U_{op}$ (V).....		—
	Nominal voltage $U_{peak}$ (V).....		—
	Max increase due to variation $U_{sp}$ .....		—
	Max increase due to ageing $\Delta U_{sa}$ .....		—
	$U_{op} = U_{peak} + \Delta U_{sp} + \Delta U_{sa}$ .....		—
5.5	Components as safeguards		

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.5.1	General		N/A
5.5.2	Capacitors and RC units		N/A
5.5.2.1	General requirement		N/A
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector .....		N/A
5.5.3	Transformers		N/A
5.5.4	Optocouplers		N/A
5.5.5	Relays		N/A
5.5.6	Resistors		N/A
5.5.7	SPD's		N/A
5.5.7.1	Use of an SPD connected to reliable earthing		N/A
5.5.7.2	Use of an SPD between mains and protective earth		N/A
5.5.8	Insulation between the mains and external circuit consisting of a coaxial cable .....		N/A
5.6	Protective conductor		N/A
5.6.2	Requirement for protective conductors		N/A
5.6.2.1	General requirements		N/A
5.6.2.2	Colour of insulation		N/A
5.6.3	Requirement for protective earthing conductors		N/A
	Protective earthing conductor size (mm <sup>2</sup> ) .....		—
5.6.4	Requirement for protective bonding conductors		N/A
5.6.4.1	Protective bonding conductors		N/A
	Protective bonding conductor size (mm <sup>2</sup> ) .....		—
	Protective current rating (A) .....		—
5.6.4.3	Current limiting and overcurrent protective devices		N/A
5.6.5	Terminals for protective conductors		N/A
5.6.5.1	Requirement		N/A
	Conductor size (mm <sup>2</sup> ), nominal thread diameter (mm) .....		N/A
5.6.5.2	Corrosion		N/A
5.6.6	Resistance of the protective system		N/A
5.6.6.1	Requirements		N/A
5.6.6.2	Test Method Resistance ( $\Omega$ ) .....		N/A
5.6.7	Reliable earthing		N/A
5.7	Prospective touch voltage, touch current and protective conductor current		N/A
5.7.2	Measuring devices and networks		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.7.2.1	Measurement of touch current .....		N/A
5.7.2.2	Measurement of prospective touch voltage		N/A
5.7.3	Equipment set-up, supply connections and earth connections		N/A
	System of interconnected equipment (separate connections/single connection) .....		—
	Multiple connections to mains (one connection at a time/simultaneous connections) .....		—
5.7.4	Earthed conductive accessible parts .....		N/A
5.7.5	Protective conductor current		N/A
	Supply Voltage (V) .....		—
	Measured current (mA) .....		—
	Instructional Safeguard .....		N/A
5.7.6	Prospective touch voltage and touch current due to external circuits		N/A
5.7.6.1	Touch current from coaxial cables		N/A
5.7.6.2	Prospective touch voltage and touch current from external circuits		N/A
5.7.7	Summation of touch currents from external circuits		N/A
	a) Equipment with earthed external circuits Measured current (mA) .....		N/A
	b) Equipment whose external circuits are not referenced to earth. Measured current (mA) .....		N/A

<b>6</b>	<b>ELECTRICALLY- CAUSED FIRE</b>		<b>P</b>
6.2	Classification of power sources (PS) and potential ignition sources (PIS)		P
6.2.2	Power source circuit classifications	See <b>ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE.</b>	P
6.2.2.1	General		P
6.2.2.2	Power measurement for worst-case load fault ... :		N/A
6.2.2.3	Power measurement for worst-case power source fault .....		N/A
6.2.2.4	PS1 .....		N/A
6.2.2.5	PS2 .....	See 6.2.2.	P
6.2.2.6	PS3 .....		N/A
6.2.3	Classification of potential ignition sources	All conductors and devices are considered as PIS.	P
6.2.3.1	Arcing PIS .....		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.2.3.2	Resistive PIS .....	See 6.2.3.	P
6.3	Safeguards against fire under normal operating and abnormal operating conditions		P
6.3.1 (a)	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials .....	(See appended table 5.4.1.5, 6.3.2, 9.0, B.2.6)	P
6.3.1 (b)	Combustible materials outside fire enclosure		P
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard Method	Method by control of fire spread applied. See 6.4.5.	P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		N/A
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits		N/A
6.4.3.1	General		N/A
6.4.3.2	Supplementary Safeguards		N/A
	Special conditions if conductors on printed boards are opened or peeled		N/A
6.4.3.3	Single Fault Conditions .....		N/A
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits		N/A
6.4.5	Control of fire spread in PS2 circuits		P
6.4.5.2	Supplementary safeguards .....	<p>Compliance detailed as follows:</p> <ul style="list-style-type: none"> <li>- The unit power sources (external PoE adaptor or AC adaptor) are considered supplied by limited power sources.</li> <li>- Printed boards: rated min. V-1 class material.</li> <li>- UL recognized wire material used, wiring materials for VW-1 rating and considered to represent the IEC 60332-1-2, IEC 60332-1-3 and/or IEC 60332-2-2 flame tests.</li> <li>- All other components mounted on a printed boards min. rated V-1 class material.</li> </ul> <p>The fire enclosure is not required.</p>	P
6.4.6	Control of fire spread in PS3 circuit		N/A
6.4.7	Separation of combustible materials from a PIS		N/A
6.4.7.1	General.....		N/A
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.8.1	Fire enclosure and fire barrier material properties		N/A
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure		N/A
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		N/A
6.4.8.3.1	Fire enclosure and fire barrier openings		N/A
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top Openings in Fire Enclosure: dimensions (mm) .....		N/A
	Needle Flame test		N/A
6.4.8.3.4	Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm) .....		N/A
	Flammability tests for the bottom of a fire enclosure .....		N/A
6.4.8.3.5	Integrity of the fire enclosure, condition met: a), b) or c) .....		N/A
6.4.8.4	Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating .....		N/A
6.5	Internal and external wiring		P
6.5.1	Requirements		P
6.5.2	Cross-sectional area (mm <sup>2</sup> ) .....	Complied.	—
6.5.3	Requirements for interconnection to building wiring .....	Not connect to building wiring.	N/A
6.6	Safeguards against fire due to connection to additional equipment	No such port provide	N/A
	External port limited to PS2 or complies with Clause Q.1		N/A

<b>7</b>	<b>INJURY CAUSED BY HAZARDOUS SUBSTANCES</b>		<b>N/A</b>
7.2	Reduction of exposure to hazardous substances		N/A
7.3	Ozone exposure		N/A
7.4	Use of personal safeguards (PPE)		N/A
	Personal safeguards and instructions .....		—
7.5	Use of instructional safeguards and instructions		N/A
	Instructional safeguard (ISO 7010) .....		—
7.6	Batteries.....		N/A

<b>8</b>	<b>MECHANICALLY-CAUSED INJURY</b>		<b>P</b>
8.1	General	See below.	P

<b>IEC 62368-1</b>			
Clause	Requirement + Test	Result - Remark	Verdict
8.2	Mechanical energy source classifications	See <b>ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE.</b>	P
8.3	Safeguards against mechanical energy sources		P
8.4	Safeguards against parts with sharp edges and corners		P
8.4.1	Safeguards		N/A
8.5	Safeguards against moving parts		N/A
8.5.1	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
8.5.2	Instructional Safeguard..... :		—
8.5.4	Special categories of equipment comprising moving parts		N/A
8.5.4.1	Large data storage equipment		N/A
8.5.4.2	Equipment having electromechanical device for destruction of media		N/A
8.5.4.2.1	Safeguards and Safety Interlocks .....		N/A
8.5.4.2.2	Instructional safeguards against moving parts		N/A
	Instructional Safeguard.....:		—
8.5.4.2.3	Disconnection from the supply		N/A
8.5.4.2.4	Probe type and force (N) .....		N/A
8.5.5	High Pressure Lamps		N/A
8.5.5.1	Energy Source Classification		N/A
8.5.5.2	High Pressure Lamp Explosion Test.....:		N/A
8.6	Stability		N/A
8.6.1	Product classification		N/A
	Instructional Safeguard.....:		—
8.6.2	Static stability		N/A
8.6.2.2	Static stability test		N/A
	Applied Force .....		—
8.6.2.3	Downward Force Test		N/A
8.6.3	Relocation stability test		N/A
	Unit configuration during 10° tilt.....:		—
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test (Applied Force).....:		N/A
	Position of feet or movable parts.....:		—
8.7	Equipment mounted to wall or ceiling		P

<b>IEC 62368-1</b>			
Clause	Requirement + Test	Result - Remark	Verdict
8.7.1	Mounting Means (Length of screws (mm) and mounting surface) .....	(See attached manual mounting instructions.)	P
8.7.2	Direction and applied force .....	Weight of the equipment: 0.89 kg. Force applied downward: 5.11 kg, which was 3 times the weight of the equipment.	P
8.8	Handles strength	No handle.	N/A
8.8.1	Classification		N/A
8.8.2	Applied Force .....		N/A
8.9	Wheels or casters attachment requirements		N/A
8.9.1	Classification		N/A
8.9.2	Applied force .....		—
8.10	Carts, stands and similar carriers		N/A
8.10.1	General		N/A
8.10.2	Marking and instructions		N/A
	Instructional Safeguard .....		—
8.10.3	Cart, stand or carrier loading test and compliance		N/A
	Applied force .....		—
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Applied horizontal force (N) .....		—
8.10.6	Thermoplastic temperature stability (°C) .....		N/A
8.11	Mounting means for rack mounted equipment		N/A
8.11.1	General		N/A
8.11.2	Product Classification		N/A
8.11.3	Mechanical strength test, variable <i>N</i> .....		N/A
8.11.4	Mechanical strength test 250N, including end stops		N/A
8.12	Telescoping or rod antennas .....		N/A
	Button/Ball diameter (mm) .....		—


<b>9</b>	<b>THERMAL BURN INJURY</b>		<b>P</b>
9.2	Thermal energy source classifications	See <b>ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE.</b>	P
9.3	Safeguard against thermal energy sources		P
9.4	Requirements for safeguards		P
9.4.1	Equipment safeguard		P
9.4.2	Instructional safeguard .....		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>10</b>	<b>RADIATION</b>		<b>P</b>
10.2	Radiation energy source classification	See below.	P
10.2.1	General classification	RS1: LED indicators, IR LED.	P
10.3	Protection against laser radiation		N/A
	Laser radiation that exists equipment:		—
	Normal, abnormal, single-fault..... :		N/A
	Instructional safeguard ..... :		—
	Tool..... :		—
10.4	Protection against visible, infrared, and UV radiation	See below.	P
10.4.1	General	See below.	P
10.4.1.a)	RS3 for Ordinary and instructed persons ..... :		N/A
10.4.1.b)	RS3 accessible to a skilled person..... :		N/A
	Personal safeguard (PPE) instructional safeguard..... :		—
10.4.1.c)	Equipment visible, IR, UV does not exceed RS1 . :	The equipment has been tested and complied with the requirement of Exempt Group according to standard IEC 62471:2006 and EN 62471:2008. (See attached IEC62471 test report)	P
10.4.1.d)	Normal, abnormal, single-fault conditions ..... :	See above.	P
10.4.1.e)	Enclosure material employed as safeguard is opaque..... :		N/A
10.4.1.f)	UV attenuation ..... :		N/A
10.4.1.g)	Materials resistant to degradation UV ..... :		N/A
10.4.1.h)	Enclosure containment of optical radiation..... :		N/A
10.4.1.i)	Exempt Group under normal operating conditions..... :		N/A
10.4.2	Instructional safeguard ..... :		N/A
10.5	Protection against x-radiation		N/A
10.5.1	X- radiation energy source that exists equipment :		N/A
	Normal, abnormal, single fault conditions		N/A
	Equipment safeguards..... :		N/A
	Instructional safeguard for skilled person..... :		N/A
10.5.3	Most unfavourable supply voltage to give maximum radiation ..... :		—
	Abnormal and single-fault condition ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Maximum radiation (pA/kg)..... :		N/A
10.6	Protection against acoustic energy sources		N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output, dB(A)..... :		N/A
	Output voltage, unweighted r.m.s..... :		N/A
10.6.4	Protection of persons		N/A
	Instructional safeguards ..... :		N/A
	Equipment safeguard prevent ordinary person to RS2..... :		—
	Means to actively inform user of increase sound pressure..... :		—
	Equipment safeguard prevent ordinary person to RS2..... :		—
10.6.5	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.5.1	Corded passive listening devices with analog input		N/A
	Input voltage with 94 dB(A) $L_{Aeq}$ acoustic pressure output..... :		—
10.6.5.2	Corded listening devices with digital input		N/A
	Maximum dB(A)..... :		—
10.6.5.3	Cordless listening device		N/A
	Maximum dB(A)..... :		—

<b>B</b>	<b>NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS</b>		<b>P</b>
B.2	Normal Operating Conditions		P
B.2.1	General requirements..... :	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers ..... :	No such construction.	N/A
B.2.3	Supply voltage and tolerances	See page 2	P
B.2.5	Input test..... :	(See appended table B.2.5)	P
B.3	Simulated abnormal operating conditions		N/A
B.3.1	General requirements..... :		N/A
B.3.2	Covering of ventilation openings		N/A
B.3.3	D.C. mains polarity test		N/A
B.3.4	Setting of voltage selector ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
B.3.5	Maximum load at output terminals .....		N/A
B.3.6	Reverse battery polarity		N/A
B.3.7	Abnormal operating conditions as specified in Clause E.2.		N/A
B.3.8	Safeguards functional during and after abnormal operating conditions		N/A
B.4	Simulated single fault conditions		P
B.4.2	Temperature controlling device open or short-circuited .....		N/A
B.4.3	Motor tests		N/A
B.4.3.1	Motor blocked or rotor locked increasing the internal ambient temperature .....		N/A
B.4.4	Short circuit of functional insulation	See below.	P
B.4.4.1	Short circuit of clearances for functional insulation		P
B.4.4.2	Short circuit of creepage distances for functional insulation		P
B.4.4.3	Short circuit of functional insulation on coated printed boards		N/A
B.4.5	Short circuit and interruption of electrodes in tubes and semiconductors		N/A
B.4.6	Short circuit or disconnect of passive components	(See appended table B.4)	P
B.4.7	Continuous operation of components		N/A
B.4.8	Class 1 and Class 2 energy sources within limits during and after single fault conditions	During and after a single fault condition, no exceed the relevant energy class as specified. No fire or ignited occurred during and after test.	P
B.4.9	Battery charging under single fault conditions ... :		—
<b>C</b>	<b>UV RADIATION</b>		<b>N/A</b>
C.1	Protection of materials in equipment from UV radiation		N/A
C.1.2	Requirements		N/A
C.1.3	Test method		N/A
C.2	UV light conditioning test		N/A
C.2.1	Test apparatus		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure apparatus		N/A
C.2.4	Xenon-arc light exposure apparatus		N/A
<b>D</b>	<b>TEST GENERATORS</b>		<b>N/A</b>
D.1	Impulse test generators		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
D.2	Antenna interface test generator		N/A
D.3	Electronic pulse generator		N/A
<b>E</b>	<b>TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS</b>		<b>N/A</b>
E.1	Audio amplifier normal operating conditions		N/A
	Audio signal voltage (V) .....		—
	Rated load impedance ( $\Omega$ ) .....		—
E.2	Audio amplifier abnormal operating conditions		N/A
<b>F</b>	<b>EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS</b>		<b>P</b>
F.1	General requirements	See below.	P
	Instructions – Language .....	Safety related equipment marking, instructions and instructional safeguards provided the English version. Other languages will be provided when submitted for national approval.	—
F.2	Letter symbols and graphical symbols		P
F.2.1	Letter symbols according to IEC60027-1		N/A
F.2.2	Graphic symbols IEC, ISO or manufacturer specific		P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	Equipment marking is located on the equipment surface and is easily visible.	P
F.3.2	Equipment identification markings		P
F.3.2.1	Manufacturer identification .....		—
F.3.2.2	Model identification .....	FD8177-HT, FD8377-HTV, FD8377-EHTV	—
F.3.3	Equipment rating markings	See below.	P
F.3.3.1	Equipment with direct connection to mains		N/A
F.3.3.2	Equipment without direct connection to mains		P
F.3.3.3	Nature of supply voltage.....		—
F.3.3.4	Rated voltage .....	1) DC 37 V - 57 V (Model: FD8177-HT, FD8377-HTV) 2) DC 12 V (Model: FD8177-HT, FD8377-HTV) 3) DC 42.5 - 57 V (Model: FD8377-EHTV) 4) DC 12 V (Model: FD8377-EHTV)	—

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.3.4	Rated frequency .....		—
F.3.3.6	Rated current or rated power .....	1) 0.30 - 0.19 A (Model: FD8177-HT, FD8377-HTV) 2) 0.83 A (Model: FD8177-HT, FD8377-HTV) 3) 0.54 - 0.40 A (Model: FD8377-EHTV) 4) 1.7 A (Model: FD8377-EHTV)	—
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device		N/A
F.3.5	Terminals and operating devices		N/A
F.3.5.1	Mains appliance outlet and socket-outlet markings .....		N/A
F.3.5.2	Switch position identification marking .....		N/A
F.3.5.3	Replacement fuse identification and rating markings .....		N/A
F.3.5.4	Replacement battery identification marking .....		N/A
F.3.5.5	Terminal marking location		N/A
F.3.6	Equipment markings related to equipment classification		N/A
F.3.6.1	Class I Equipment		N/A
F.3.6.1.1	Protective earthing conductor terminal		N/A
F.3.6.1.2	Neutral conductor terminal		N/A
F.3.6.1.3	Protective bonding conductor terminals		N/A
F.3.6.2	Class II equipment (IEC60417-5172)		N/A
F.3.6.2.1	Class II equipment with or without functional earth		N/A
F.3.6.2.2	Class II equipment with functional earth terminal marking		N/A
F.3.7	Equipment IP rating marking .....		—
F.3.8	External power supply output marking		N/A
F.3.9	Durability, legibility and permanence of marking		P
F.3.10	Test for permanence of markings	Complied.	P
F.4	Instructions		P
	a) Equipment for use in locations where children not likely to be present - marking		N/A
	b) Instructions given for installation or initial use	Instructions guide have state that correct and safe installation.	P
	c) Equipment intended to be fastened in place	Instructions guide have explained how to securely fasten the equipment.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	d) Equipment intended for use only in restricted access area		N/A
	e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1		N/A
	f) Protective earthing employed as safeguard		N/A
	g) Protective earthing conductor current exceeding ES 2 limits		N/A
	h) Symbols used on equipment		N/A
	i) Permanently connected equipment not provided with all-pole mains switch		N/A
j)	j) Replaceable components or modules providing safeguard function		N/A
F.5	Instructional safeguards		N/A
	Where "instructional safeguard" is referenced in the test report it specifies the required elements, location of marking and/or instruction		N/A
<b>G</b>	<b>COMPONENTS</b>		<b>P</b>
<b>G.1</b>	<b>Switches</b>		N/A
G.1.1	General requirements		N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
<b>G.2</b>	<b>Relays</b>		N/A
G.2.1	General requirements		N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supply power		N/A
G.2.4	Mains relay, modified as stated in G.2		N/A
<b>G.3</b>	<b>Protection Devices</b>		<b>P</b>
G.3.1	Thermal cut-offs		N/A
G.3.1.1a) &b)	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
G.3.1.1c)	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Thermal cut-off connections maintained and secure		N/A
G.3.2	Thermal links		N/A
G.3.2.1a)	Thermal links separately tested with IEC 60691		N/A
G.3.2.1b)	Thermal links tested as part of the equipment		N/A
	Aging hours (H) .....		—
	Single Fault Condition .....		—
	Test Voltage (V) and Insulation Resistance (Ω) . :		—

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Clause	Requirement + Test	Result - Remark	Verdict
G.3.3	PTC Thermistors		P
G.3.4	Overcurrent protection devices		N/A
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.5		N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions.....:		N/A
<b>G.4</b>	<b>Connectors</b>		P
G.4.1	Spacings		N/A
G.4.2	Mains connector configuration .....		N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		P
<b>G.5</b>	<b>Wound Components</b>		N/A
G.5.1	Wire insulation in wound components.....		N/A
G.5.1.2 a)	Two wires in contact inside wound component, angle between 45° and 90°		N/A
G.5.1.2 b)	Construction subject to routine testing		N/A
G.5.2	Endurance test on wound components		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Time (s) .....		—
	Temperature (°C) .....		—
G.5.2.3	Wound Components supplied by mains		N/A
<b>G.5.3</b>	<b>Transformers</b>		N/A
G.5.3.1	Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1).....:		N/A
	Position.....:		—
	Method of protection .....		—
G.5.3.2	Insulation		N/A
	Protection from displacement of windings.....:		—
G.5.3.3	Overload test .....		N/A
G.5.3.3.1	Test conditions		N/A
G.5.3.3.2	Winding Temperatures testing in the unit		N/A
G.5.3.3.3	Winding Temperatures - Alternative test method		N/A
<b>G.5.4</b>	<b>Motors</b>		N/A
G.5.4.1	General requirements		N/A
	Position .....		—
G.5.4.2	Test conditions		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.4.3	Running overload test		N/A
G.5.4.4	Locked-rotor overload test		N/A
	Test duration (days) .....		—
G.5.4.5	Running overload test for d.c. motors in secondary circuits		N/A
G.5.4.5.2	Tested in the unit		N/A
	Electric strength test (V) .....		—
G.5.4.5.3	Tested on the Bench - Alternative test method; test time (h) .....		N/A
	Electric strength test (V) .....		—
G.5.4.6	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature .....		N/A
	Electric strength test (V) .....		N/A
G.5.4.6.3	Tested on the bench - Alternative test method; test time (h) .....		N/A
	Electric strength test (V) .....		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage .....		—
<b>G.6</b>	<b>Wire Insulation</b>		N/A
G.6.1	General		N/A
G.6.2	Solvent-based enamel wiring insulation		N/A
<b>G.7</b>	<b>Mains supply cords</b>		N/A
G.7.1	General requirements		N/A
	Type.....		—
	Rated current (A) .....		—
	Cross-sectional area (mm <sup>2</sup> ), (AWG).....		—
G.7.2	Compliance and test method		N/A
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N) .....		—
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm)....		—

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Clause	Requirement + Test	Result - Remark	Verdict
G.7.3.2.4	Strain relief comprised of polymeric material		N/A
G.7.4	Cord Entry .....		—
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Mass (g) .....		—
	Diameter (m) .....		—
	Temperature (°C) .....		—
G.7.6	Supply wiring space		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Test with 8 mm strand		N/A
<b>G.8</b>	<b>Varistors</b>		N/A
G.8.1	General requirements		N/A
G.8.2	Safeguard against shock		N/A
G.8.3	Safeguard against fire		N/A
G.8.3.2	Varistor overload test .....		N/A
G.8.3.3	Temporary overvoltage .....		N/A
<b>G.9</b>	<b>Integrated Circuit (IC) Current Limiters</b>		N/A
G.9.1 a)	Manufacturer defines limit at max. 5A.		N/A
G.9.1 b)	Limiters do not have manual operator or reset		N/A
G.9.1 c)	Supply source does not exceed 250 VA .....		—
G.9.1 d)	IC limiter output current (max. 5A) .....		—
G.9.1 e)	Manufacturers' defined drift .....		—
G.9.2	Test Program 1		N/A
G.9.3	Test Program 2		N/A
G.9.4	Test Program 3		N/A
<b>G.10</b>	<b>Resistors</b>		N/A
G.10.1	General requirements		N/A
G.10.2	Resistor test		N/A
G.10.3	Test for resistors serving as safeguards between the mains and an external circuit consisting of a coaxial cable		N/A
G.10.3.1	General requirements		N/A
G.10.3.2	Voltage surge test		N/A
G.10.3.3	Impulse test		N/A
<b>G.11</b>	<b>Capacitor and RC units</b>		N/A
G.11.1	General requirements		N/A
G.11.2	Conditioning of capacitors and RC units		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.11.3	Rules for selecting capacitors		N/A
<b>G.12</b>	<b>Optocouplers</b>		N/A
	Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results) .....		N/A
	Type test voltage Vini .....		—
	Routine test voltage, Vini,b .....		—
<b>G.13</b>	<b>Printed boards</b>		<b>P</b>
G.13.1	General requirements		P
G.13.2	Uncoated printed boards		P
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
	Compliance with cemented joint requirements (Specify construction) .....		—
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation .....		—
	Number of insulation layers (pcs) .....		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2a)	Thermal conditioning		N/A
G.13.6.2b)	Electric strength test		N/A
G.13.6.2c)	Abrasion resistance test		N/A
<b>G.14</b>	<b>Coating on components terminals</b>		N/A
G.14.1	Requirements .....		—
<b>G.15</b>	<b>Liquid filled components</b>		N/A
G.15.1	General requirements		N/A
G.15.2	Requirements		N/A
G.15.3	Compliance and test methods		N/A
G.15.3.1	Hydrostatic pressure test		N/A
G.15.3.2	Creep resistance test		N/A
G.15.3.3	Tubing and fittings compatibility test		N/A
G.15.3.4	Vibration test		N/A
G.15.3.5	Thermal cycling test		N/A
G.15.3.6	Force test		N/A
G.15.4	Compliance		N/A
<b>G.16</b>	<b>IC including capacitor discharge function (ICX)</b>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
a)	Humidity treatment in accordance with sc5.4.8 – 120 hours		N/A
b)	Impulse test using circuit 2 with $U_c =$ to transient voltage .....		—
C1)	Application of ac voltage at 110% of rated voltage for 2.5 minutes		N/A
C2)	Test voltage .....		—
D1)	10,000 cycles on and off using capacitor with smallest capacitance resistor with largest resistance specified by manufacturer		N/A
D2)	Capacitance .....		—
D3)	Resistance .....		—
<b>H</b>	<b>CRITERIA FOR TELEPHONE RINGING SIGNALS</b>		N/A
H.1	General		N/A
H.2	Method A		N/A
H.3	Method B		N/A
H.3.1	Ringling signal		N/A
H.3.1.1	Frequency (Hz) .....		—
H.3.1.2	Voltage (V) .....		—
H.3.1.3	Cadence; time (s) and voltage (V) .....		—
H.3.1.4	Single fault current (mA):.....		—
H.3.2	Tripping device and monitoring voltage .....		—
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage complied with		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V) .....		—
<b>J</b>	<b>INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION</b>		N/A
	General requirements		N/A
<b>K</b>	<b>SAFETY INTERLOCKS</b>		N/A
K.1	General requirements		N/A
K.2	Components of safety interlock safeguard mechanism .....		—
K.3	Inadvertent change of operating mode		N/A
K.4	Interlock safeguard override		N/A
K.5	Fail-safe		N/A
	Compliance .....		—
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
K.6.2	Compliance and Test method .....		—
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements (type and circuit location) .....		—
K.7.2	Overload test, Current (A) .....		—
K.7.3	Endurance test		N/A
K.7.4	Electric strength test .....		—
<b>L</b>	<b>DISCONNECT DEVICES</b>		N/A
L.1	General requirements		N/A
L.2	Permanently connected equipment		N/A
L.3	Parts that remain energized		N/A
L.4	Single phase equipment		N/A
L.5	Three-phase equipment		N/A
L.6	Switches as disconnect devices		N/A
L.7	Plugs as disconnect devices		N/A
L.8	Multiple power sources		N/A
<b>M</b>	<b>EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS</b>		N/A
M.1	General requirements		N/A
M.2	Safety of batteries and their cells		N/A
M.2.1	Requirements		N/A
M.2.2	Compliance and test method (identify method) .. :		—
M.3	Protection circuits		N/A
M.3.1	Requirements		N/A
M.3.2	Tests		N/A
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery		N/A
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A
M.3.3	Compliance .....		—
M.4	Additional safeguards for equipment containing secondary lithium battery		N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Charging operating limits		N/A
M.4.2.2a)	Charging voltage, current and temperature .....		—
M.4.2.2 b)	Single faults in charging circuitry .....		—

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Clause	Requirement + Test	Result - Remark	Verdict
M.4.3	Fire Enclosure		N/A
M.4.4	Endurance of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation		N/A
M.4.4.3	Drop and charge/discharge function tests		N/A
	Drop		N/A
	Charge		N/A
	Discharge		N/A
M.4.4.4	Charge-discharge cycle test		N/A
M.4.4.5	Result of charge-discharge cycle test		N/A
M.5	Risk of burn due to short circuit during carrying		N/A
M.5.1	Requirement		N/A
M.5.2	Compliance and Test Method (Test of P.2.3)		N/A
M.6	Prevention of short circuits and protection from other effects of electric current		N/A
M.6.1	Short circuits		N/A
M.6.1.1	General requirements		N/A
M.6.1.2	Test method to simulate an internal fault		N/A
M.6.1.3	Compliance (Specify M.6.1.2 or alternative method) .....		—
M.6.2	Leakage current (mA) .....		—
M.7	Risk of explosion from lead acid and NiCd batteries		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
M.7.2	Compliance and test method		N/A
M.8	Protection against internal ignition from external spark sources of lead acid batteries		N/A
M.8.1	General requirements		N/A
M.8.2	Test method		N/A
M.8.2.1	General requirements		N/A
M.8.2.2	Estimation of hypothetical volume $V_z$ (m <sup>3</sup> /s).....		—
M.8.2.3	Correction factors.....		—
M.8.2.4	Calculation of distance $d$ (mm) .....		—
M.9	Preventing electrolyte spillage		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
M.10	Instructions to prevent reasonably foreseeable misuse (Determination of compliance: inspection, data review; or abnormal testing) .....		—
<b>N</b>	<b>ELECTROCHEMICAL POTENTIALS</b>		N/A
	Metal(s) used .....	Pollution degree considered	—
<b>O</b>	<b>MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES</b>		N/A
	Figures O.1 to O.20 of this Annex applied .....		—
<b>P</b>	<b>SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS</b>		P
P.1	General requirements		P
P.2.2	Safeguards against entry of foreign object		P
	Location and Dimensions (mm) .....	No opening.	—
P.2.3	Safeguard against the consequences of entry of foreign object		N/A
P.2.3.1	Safeguards against the entry of a foreign object		N/A
	Openings in transportable equipment		N/A
	Transportable equipment with metalized plastic parts .....		—
P.2.3.2	Openings in transportable equipment in relation to metallized parts of a barrier or enclosure (identification of supplementary safeguard) .....		—
P.3	Safeguards against spillage of internal liquids		N/A
P.3.1	General requirements		N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Safeguards effectiveness		N/A
P.4	Metallized coatings and adhesive securing parts		N/A
P.4.2 a)	Conditioning testing		N/A
	Tc (°C) .....		—
	Tr (°C) .....		—
	Ta (°C) .....		—
P.4.2 b)	Abrasion testing .....		—
P.4.2 c)	Mechanical strength testing .....		—
<b>Q</b>	<b>CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING</b>		P
Q.1	Limited power sources	(See appended Table Annex Q.1)	P
Q.1.1 a)	Inherently limited output	LAN Port and Data Port (J9)	P
Q.1.1 b)	Impedance limited output		N/A
	- Regulating network limited output under normal operating and simulated single fault condition		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Q.1.1 c)	Overcurrent protective device limited output		N/A
Q.1.1 d)	IC current limiter complying with G.9		N/A
Q.1.2	Compliance and test method		P
Q.2	Test for external circuits – paired conductor cable		N/A
	Maximum output current (A) .....		—
	Current limiting method .....		—
<b>R</b>	<b>LIMITED SHORT CIRCUIT TEST</b>		N/A
R.1	General requirements		N/A
R.2	Determination of the overcurrent protective device and circuit		N/A
R.3	Test method Supply voltage (V) and short-circuit current (A). .....		—
<b>S</b>	<b>TESTS FOR RESISTANCE TO HEAT AND FIRE</b>		N/A
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A
	Samples, material .....		—
	Wall thickness (mm) .....		—
	Conditioning (°C) .....		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	Flammability test for fire enclosure and fire barrier integrity		N/A
	Samples, material .....		—
	Wall thickness (mm) .....		—
	Conditioning (°C) .....		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	Test specimen does not show any additional hole		N/A
S.3	Flammability test for the bottom of a fire enclosure		N/A
	Samples, material .....		—
	Wall thickness (mm) .....		—
	Cheesecloth did not ignite		N/A
S.4	Flammability classification of materials		N/A

<b>IEC 62368-1</b>			
Clause	Requirement + Test	Result - Remark	Verdict
S.5	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A
	Samples, material .....		—
	Wall thickness (mm) .....		—
	Conditioning (test condition), (°C) .....		—
	Test flame according to IEC 60695-11-20 with conditions as set out		N/A
	After every test specimen was not consumed completely		N/A
	After fifth flame application, flame extinguished within 1 min		N/A
<b>T</b>	<b>MECHANICAL STRENGTH TESTS</b>		<b>P</b>
T.1	General requirements	See below.	P
T.2	Steady force test, 10 N .....		N/A
T.3	Steady force test, 30 N .....		N/A
T.4	Steady force test, 100 N .....		N/A
T.5	Steady force test, 250 N .....	(See appended table T5)	P
T.6	Enclosure impact test	See below.	P
	Fall test	(See appended table T6)	P
	Swing test		N/A
T.7	Drop test .....		N/A
T.8	Stress relief test .....	Considered of Lens cover, after 7 h at 90 °C and cooling down to room temperature, no shrinkage, distortion or loosing of enclosure parts.	P
T.9	Impact Test (glass)		N/A
T.9.1	General requirements		N/A
T.9.2	Impact test and compliance		N/A
	Impact energy (J) .....		—
	Height (m) .....		—
T.10	Glass fragmentation test .....		—
T.11	Test for telescoping or rod antennas		N/A
	Torque value (Nm) .....		—
<b>U</b>	<b>MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION</b>		<b>N/A</b>
U.1	General requirements		N/A

<b>IEC 62368-1</b>			
Clause	Requirement + Test	Result - Remark	Verdict
U.2	Compliance and test method for non-intrinsically protected CRTs		N/A
U.3	Protective Screen.....:		—
<b>V</b>	<b>DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES)</b>		<b>P</b>
V.1	Accessible parts of equipment		P
V.2	Accessible part criterion		P

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

4.1.2	TABLE: List of critical components					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1</sup>	
POE adaptor (Optional)(for Model FD8377-EHTV use)	Interchangeable	Interchangeable	O/P: DC 42.5 -57 V, 0.54-0.40 A min., 50 °C min., LPS.	IEC60950-1: 2005+A1+A2 EN60950-1: 2006+A11+A1+A 12+A2	CB or equivalent	
POE adaptor (Optional)(for Model FD8377-HTV, FD8177-HT use)	Interchangeable	Interchangeable	O/P: DC 37 -57 V, 0.30-0.19 A min., 50 °C min., LPS.	IEC60950-1: 2005+A1+A2 EN60950-1: 2006+A11+A1+A 12+A2	CB or equivalent	
AC adaptor (Optional)(for FD8377-EHTV use)	Interchangeable	Interchangeable	O/P: DC 12 V, 1.7 A min., 50 °C min., LPS.	IEC60950-1: 2005+A1+A2 EN60950-1: 2006+A11+A1+A 12+A2	CB or equivalent	
AC adaptor (Optional)(for FD8377-HTV, FD8177-HT use)	Interchangeable	Interchangeable	O/P: DC 12 V, 0.83 A min., 50 °C min., LPS.	IEC60950-1: 2005+A1+A2 EN60950-1: 2006+A11+A1+A 12+A2	CB or equivalent	
Metal enclosure (for Model FD8377- EHTV, FD8377- HTV)	Interchangeable	Interchangeable	Aluminum, 3.0 mm thickness min.	--	--	
Plastic enclosure (Model FD8177-HT)	Sabic Japan L L C	943A(f1)	V-0, 2.5 mm thickness min., 120 °C	UL94, UL746C	UL	
Lens cover (All model)	Teijin Limited Resin And Plastic	L-1225Z (#1)(f1)	HB, 2.5 mm thickness min., 115 °C	UL94, UL746C	UL	
Electric double layer capacitor (BT1)	ELNA Co. LTD.	DX Series	Rated 5.5 Vdc, 0.33 F.	--	--	
O-ring (Between plastic lens cover and metal enclosure)( for model FD8377- EHTV, FD8377- HTV)	Momentive Performance Materials Japan L L C	TSE2186U(aq)	Silicone rubber. Overall see Enclosure/Diagram s ID 3-01 for details.	UL94, UL746C	Test by UL	

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
O-ring (Between top enclosure and bottom enclosure)( for model FD8377-EHTV, FD8377-HTV)	Momentive Performance Materials Japan L L C	TSE2186U(aq)	Silicone rubber. Overall see Enclosure/Diagrams ID 3-02 for details.	UL94, UL746C	Test by UL
Gasket for Cable Glands(Hole of LAN cable)( for model FD8377-EHTV, FD8377-HTV)	AVC Industrial Corp.	E12P(AVC)	Silicone rubber. Overall see Enclosure/Diagrams ID 3-03 for details.	UL157	UL
Hole plug (for Hole of General I/O terminal block) (for models FD8377-HTV, FD8377-EHTV)	Momentive Performance Materials Japan L L C	TSE2186U(aq)	Silicone rubber. Overall see Enclosure/Diagrams ID 3-04 for details.	UL94	UL
POE Transformer (T3)	AUDIX	STD20-12L	105 °C	--	--
IR LED	Lextar	PR88F03	VF=1.7 V IF=0.7A 850 nm., 180 mW/sr Exempt Group	IEC62471:2006	Test by TUV/SUD
(Alternate)	Lextar	PR35F0A	VF=1.6 V IF=0.7 A 850 nm., 210 mW/sr Exempt Group	IEC62471:2006	Test by TUV/SUD
PWB	Interchangeable	Interchangeable	Min. V-1, 105°C	UL796	UL
Supplementary information:					
1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					
2) Description line content is optional. Main line description needs to clearly detail the component used for testing					

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.8.4, 4.8.5	<b>TABLE: Lithium coin/button cell batteries mechanical tests</b>		N/A
<b>(The following mechanical tests are conducted in the sequence noted.)</b>			
4.8.4.2	<b>TABLE: Stress Relief test</b>		—
<b>Part</b>	<b>Material</b>	<b>Oven Temperature (°C)</b>	<b>Comments</b>
4.8.4.3	<b>TABLE: Battery replacement test</b>		—
Battery part no. ....:			—
Battery Installation/withdrawal		Battery Installation/Removal Cycle	Comments
		1	
		2	
		3	
		4	
		5	
		6	
		8	
		9	
		10	
4.8.4.4	<b>TABLE: Drop test</b>		—
<b>Impact Area</b>	<b>Drop Distance</b>	<b>Drop No.</b>	<b>Observations</b>
		1	
		2	
		3	
4.8.4.5	<b>TABLE: Impact</b>		—
<b>Impacts per surface</b>	<b>Surface tested</b>	<b>Impact energy (Nm)</b>	<b>Comments</b>
4.8.4.6	<b>TABLE: Crush test</b>		—
<b>Test position</b>	<b>Surface tested</b>	<b>Crushing Force (N)</b>	<b>Duration force applied (s)</b>
Supplementary information:			

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

4.8.5	TABLE: Lithium coin/button cell batteries mechanical test result			N/A
Test position	Surface tested	Force (N)	Duration force applied (s)	
Supplementary information:				

5.2	Table: Classification of electrical energy sources					P	
5.2.2.2 – Steady State Voltage and Current conditions							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				U (Vrms or Vpk)	I (A <sub>pk</sub> or A <sub>rms</sub> )	Hz	
1	DC 57 V	Metal enclosure to RTN	Normal	--	0.15 mApk	250k	ES1
			Abnormal	--	--	--	
			Single fault – T3 Pin 1, 2 to metal enclosure	--	0.23 mApk	225k	
			Single fault – T3 Pin 3, 4 to metal enclosure	--	0.19 mApk	274k	
			Single fault – T3 Pin 6 to metal enclosure	--	0.20 mApk	258k	

5.2.2.3 - Capacitance Limits						
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters		ES Class
				Capacitance, nF	Upk (V)	
			Normal			
			Abnormal			
			Single fault – SC/OC			

5.2.2.4 - Single Pulses							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Duration (ms)	Upk (V)	Ipk (mA)	
			Normal				
			Abnormal				
			Single fault – SC/OC				

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

## 5.2.2.5 - Repetitive Pulses

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Off time (ms)	Upk (V)	Ipk (mA)	
			Normal				
			Abnormal				
			Single fault – SC/OC				

Test Conditions:

Normal –

Abnormal -

Supplementary information: SC=Short Circuit, OC=Short Circuit

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
<b>5.4.1.4, 6.3.2, 9.0, B.2.6</b>	<b>TABLE: Temperature measurements</b>					<b>P</b>
	Supply voltage (V) .....	DC 42.5 V	Adjust to T <sub>ma</sub>	DC 57 V	Adjust to T <sub>ma</sub>	—
	Ambient T <sub>min</sub> (°C) .....	--	--	--	--	—
	Ambient T <sub>max</sub> (°C) .....	--	--	--	--	—
	T <sub>ma</sub> (°C) .....	--	--	--	--	—
Maximum measured temperature T of part/at:		T (°C)				Allowed T <sub>max</sub> (°C)
<b>Model: FD8377-EHTV</b>						
Test Condition		Ceiling Mount		Ceiling Mount		--
Ambient		24.9	25.0	24.9	25.0	--
PWB near U11 (Main board)		48.7	48.8	49.4	49.5	94
PWB near U21 (Main board)		50.0	50.1	50.6	50.7	94
T3 body (Main board)		53.3	53.4	54.0	54.1	70
BT1 body (Main board)		43.5	43.6	44.3	44.4	70
C37 body (Main board)		49.8	49.9	50.2	50.3	70
PWB near U2 (IR board)		41.2	41.3	45.5	45.6	94
Lens cover enclosure inside near U2		37.5	37.6	37.6	37.7	94
Lens cover enclosure outside near U2		33.4	33.5	33.2	33.3	94
Metal enclosure outside near T3		39.9	40.0	40.5	40.6	70
Supply voltage (V) .....		DC 42.5 V	Adjust to T <sub>ma</sub>	DC 57 V	Adjust to T <sub>ma</sub>	--
Test Condition		Wall Mount		Wall Mount		--
Ambient		24.4	50.0	24.0	50.0	--
PWB near U11 (Main board)		24.7	25.0	24.3	25.0	94
PWB near U21 (Main board)		48.0	48.3	48.5	49.2	94
T3 body (Main board)		48.3	48.6	48.7	49.4	70
BT1 body (Main board)		51.9	52.2	52.6	53.3	70
C37 body (Main board)		43.4	43.7	43.8	44.5	70
PWB near U2 (IR board)		49.6	49.9	49.9	50.6	94
Lens cover enclosure inside near U2		30.3	30.6	30.2	30.9	94
Lens cover enclosure outside near U2		37.3	37.6	37.8	38.5	94
Metal enclosure outside near T3		32.0	32.3	32.5	33.2	70

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Supply voltage (V) .....	DC 12 V	Adjust to Tma	--	--	--
Test Condition	Ceiling Mount		--		--
Ambient	23.5	25.0	--	--	--
PWB near U11 (Main board)	41.2	42.7	--	--	94
PWB near U21 (Main board)	42.8	44.3	--	--	94
T3 body (Main board)	38.5	40.0	--	--	70
BT1 body (Main board)	37.7	39.2	--	--	70
C37 body (Main board)	38.4	39.9	--	--	70
PWB near U2 (IR board)	29.9	31.4	--	--	94
Lens cover enclosure inside near U2	32.9	34.4	--	--	94
Lens cover enclosure outside near U2	29.6	31.1	--	--	94
Metal enclosure outside near T3	33.9	35.4	--	--	70

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
<b>Model: FD8177-HT</b>					
Supply voltage (V) .....	DC 42.5 V	Adjust to Tma	DC 57 V	Adjust to Tma	--
Test Condition	Ceiling Mount		Ceiling Mount		
Ambient	24.2	25.0	24.3	25.0	--
PWB near U11 (Main board)	59.1	59.9	59.9	60.6	94
PWB near U21 (Main board)	54.5	55.3	55.4	56.1	94
T3 body (Main board)	59.3	60.1	60.2	60.9	70
BT1 body (Main board)	54.8	55.6	55.7	56.4	70
C37 body (Main board)	59.1	59.9	59.9	60.6	70
PWB near U2 (IR board)	45.9	46.7	46.7	47.4	94
Lens cover enclosure inside near U2	36.3	37.1	37.8	38.5	94
Lens cover enclosure outside near U2	32.6	33.4	34.1	34.8	94
Plastic enclosure inside near T3	53.6	54.4	54.2	54.9	94
Plastic enclosure outside near T3	52.4	53.2	52.9	53.6	94
Supply voltage (V) .....	DC 42.5 V	Adjust to Tma	DC 57 V	Adjust to Tma	--
Test Condition	Wall Mount		Wall Mount		--
Ambient	23.9	25.0	23.3	25.0	--
PWB near U11 (Main board)	56.0	57.1	55.9	57.6	94
PWB near U21 (Main board)	55.0	56.1	55.0	56.7	94
T3 body (Main board)	56.4	57.5	56.7	58.4	70
BT1 body (Main board)	44.6	45.7	44.4	46.1	70
C37 body (Main board)	55.9	57.0	55.8	57.5	70
PWB near U2 (IR board)	46.0	47.1	45.7	47.4	94
Lens cover enclosure inside near U2	34.3	35.4	33.7	35.4	94
Lens cover enclosure outside near U2	33.2	34.3	32.6	34.3	94
Plastic enclosure inside near T3	48.6	49.7	48.7	50.4	94
Plastic enclosure outside near T3	46.6	47.7	46.7	48.4	94
Supply voltage (V) .....	DC 12 V	Adjust to Tma	--	--	--
Test Condition	Ceiling Mount		--		--
Ambient	22.9	25.0	--	--	--
PWB near U11 (Main board)	44.6	46.7	--	--	94
PWB near U21 (Main board)	46.3	48.4	--	--	94

IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
T3 body (Main board)	38.6	40.7	--	--	70		
BT1 body (Main board)	43.2	45.3	--	--	70		
C37 body (Main board)	40.6	42.7	--	--	70		
PWB near U2 (IR board)	41.0	43.1	--	--	94		
Lens cover enclosure inside near U2	32.0	34.1	--	--	94		
Lens cover enclosure outside near U2	30.7	32.8	--	--	94		
Plastic enclosure inside near T3	36.9	39.0	--	--	94		
Plastic enclosure outside near T3	36.1	38.2	--	--	94		
Supplementary information:							
Temperature T of winding:	t <sub>1</sub> (°C)	R <sub>1</sub> (Ω)	t <sub>2</sub> (°C)	R <sub>2</sub> (Ω)	T (°C)	Allowed T <sub>max</sub> (°C)	Insulation class
Supplementary information:							
Note 1: T <sub>ma</sub> should be considered as directed by applicable requirement							
Note 2: T <sub>ma</sub> is not included in assessment of Touch Temperatures (Clause 9)							
<b>- Max. Normal Load: The equipment transferred video signal and communicated with PC by WiFi or LAN port (RJ-45), turning on heater of equipment at the same time, and operating continuously.</b>							

5.4.1.10.2	TABLE: Vicat softening temperature of thermoplastics			N/A
Penetration (mm)..... :				—
Object/ Part No./Material	Manufacturer/t rademark	T softening (°C)		
supplementary information:				

5.4.1.10.3	TABLE: Ball pressure test of thermoplastics			N/A
Allowed impression diameter (mm) .....	≤ 2 mm			—
Object/Part No./Material	Manufacturer/trademark	Test temperature (°C)	Impression diameter (mm)	
Supplementary information:				

5.4.2.2, 5.4.2.4 and 5.4.3	TABLE: Minimum Clearances/Creepage distance	N/A

IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
Clearance (cl) and creepage distance (cr) at/of/between:	Up (V)	U r.m.s. (V)	Frequency (kHz) <sup>1</sup>	Required cl (mm)	cl (mm) <sup>2</sup>	Required <sup>3</sup> cr (mm)	cr (mm)
Supplementary information: Note 1: Only for frequency above 30 kHz Note 2: See table 5.4.2.4 if this is based on electric strength test Note 3: Provide Material Group							

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

<b>5.4.2.3</b>	<b>TABLE: Minimum Clearances distances using required withstand voltage</b>			N/A
	<b>Overvoltage Category (OV):</b>			
	<b>Pollution Degree:</b>			
Clearance distanced between:	Required withstand voltage	Required cl (mm)	Measured cl (mm)	
Supplementary information:				

<b>5.4.2.4</b>	<b>TABLE: Clearances based on electric strength test</b>			N/A
Test voltage applied between:	Required cl (mm)	Test voltage (kV) peak/ r.m.s. / d.c.	Breakdown Yes / No	
Supplementary information:				

<b>5.4.4.2, 5.4.4.5 c) 5.4.4.9</b>	<b>TABLE: Distance through insulation measurements</b>					N/A
Distance through insulation di at/of:	Peak voltage (V)	Frequency (kHz)	Material	Required DTI (mm)	DTI (mm)	
Supplementary information:						

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

5.4.9	TABLE: Electric strength tests			N/A
Test voltage applied between:	Voltage shape (AC, DC)	Test voltage (V)	Breakdown Yes / No	
Functional:				
Basic/supplementary:				
Reinforced:				
Routine Tests:				
Supplementary information:				

5.5.2.2	TABLE: Stored discharge on capacitors					N/A
Supply Voltage (V), Hz	Test Location	Operating Condition (N, S)	Switch position On or off	Measured Voltage (after 2 seconds)	ES Classification	
Supplementary information:						
X-capacitors installed for testing are:						
<input type="checkbox"/> bleeding resistor rating:						
<input type="checkbox"/> ICX:						
Notes:						
A. Test Location:						
Phase to Neutral; Phase to Phase; Phase to Earth; and/or Neutral to Earth						
B. Operating condition abbreviations:						
N – Normal operating condition (e.g., normal operation, or open fuse); S –Single fault condition						

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

5.6.6.2	TABLE: Resistance of protective conductors and terminations				N/A
Accessible part	Test current (A)	Duration (min)	Voltage drop (V)	Resistance ( $\Omega$ )	
Supplementary information:					

5.7.2.2, 5.7.4	TABLE: Earthed accessible conductive part		N/A
Supply voltage .....			—
Location	Test conditions specified in 6.1 of IEC 60990 or Fault Condition No in IEC 60990 clause 6.2.2.1 through 6.2.2.8, except for 6.2.2.7		Touch current (mA)
	1		.
	2*		
	3		
	4		
	5		
	6		
	8		

Supplementary Information:

Notes:

[1] Supply voltage is the anticipated maximum Touch Voltage

[2] Earthed neutral conductor [Voltage differences less than 1% or more]

[3] Specify method used for measurement as described in IEC 60990 sub-clause 4.3

[4] IEC60990, sub-clause 6.2.2.7, Fault 7 not applicable.

[5] (\*) IEC60990, sub-clause 6.2.2.2 is not applicable if switch or disconnect device (e.g., appliance coupler) provided.

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

6.2.2	Table: Electrical power sources (PS) measurements for classification					P
Source	Description	Measurement	Max Power after 3 s	Max Power after 5 s <sup>*)</sup>	PS Classification	
A	All internal circuit (Input: DC 37-57 V or DC 42.5 – 57 V or DC 12 V, supplied by LPS power adaptor)	Power (W) :	--	--	2	
		V <sub>A</sub> (V) :	--	--		
		I <sub>A</sub> (A) :	--	--		
Supplementary Information: (* ) Measurement taken only when limits at 3 seconds exceed PS1 limits						

6.2.3.1	Table: Determination of Potential Ignition Sources (Arcing PIS)				N/A
Location	Open circuit voltage After 3 s (V <sub>p</sub> )	Measured r.m.s current (I <sub>rms</sub> )	Calculated value (V <sub>p</sub> x I <sub>rms</sub> )	Arcing PIS? Yes / No	
Supplementary information: An Arcing PIS requires a minimum of 50 V (peak) a.c. or d.c. An Arcing PIS is established when the product of the open circuit voltage (V <sub>p</sub> ) and normal operating condition rms current (I <sub>rms</sub> ) is greater than 15.					

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

6.2.3.2	Table: Determination of Potential Ignition Sources (Resistive PIS)					N/A
Circuit Location (x-y)	Operating Condition (Normal / Describe Single Fault)	Measured wattage or VA During first 30 s (W / VA)	Measured wattage or VA After 30 s (W / VA)	Protective Circuit, Regulator, or PTC Operated? Yes / No (Comment)	Resistive PIS? Yes/No	
--	--	--	--	--	--	
Supplementary Information:						
<p>A combination of voltmeter, VA and ammeter IA may be used instead of a wattmeter.</p> <p>If a separate voltmeter and ammeter are used, the product of (VA x IA) is used to determine Resistive PIS classification.</p> <p>A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, <u>or</u> (b) under single fault conditions has either a power exceeding 100 W measured immediately after the introduction of the fault if electronic circuits, regulators or PTC devices are used, or has an available power exceeding 15 W measured 30 s after introduction of the fault.</p> <p>- The EUT is considered existing R-PIS.</p>						

8.5.5	TABLE: High Pressure Lamp		N/A
Description	Values	Energy Source Classification	
Lamp type .....		—	
Manufacturer .....		—	
Cat no. ....		—	
Pressure (cold) (MPa).....		MS_	
Pressure (operating) (MPa).....		MS_	
Operating time (minutes) .....		—	
Explosion method .....		—	
Max particle length escaping enclosure (mm) .:		MS_	
Max particle length beyond 1 m (mm).....		MS_	
Overall result .....			
Supplementary information:			

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

B.2.5	TABLE: Input test							P
U (V)	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status	
<b>Model: FD8377-EHTV</b>								
DC 42.5 V	0.42	0.54	17.85	--	--	--	Maximum normal load. <b>Condition A</b>	
DC 57 V	0.31	0.40	17.67	--	--	--	Maximum normal load. <b>Condition A</b>	
DC 12 V	1.18	1.7	14.16	--	--	--	Maximum normal load. <b>Condition A</b>	
<b>Model: FD8377-HTV</b>								
DC 37 V	0.14	0.30	5.18	--	--	--	Maximum normal load. <b>Condition B</b>	
DC 57 V	0.09	0.19	5.13	--	--	--	Maximum normal load. <b>Condition B</b>	
DC 12 V	0.35	0.83	4.2	--	--	--	Maximum normal load. <b>Condition B</b>	
<b>Model: FD8177-HT</b>								
DC 37 V	0.14	0.30	5.18	--	--	--	Maximum normal load. <b>Condition B</b>	
DC 57 V	0.09	0.19	5.13	--	--	--	Maximum normal load. <b>Condition B</b>	
DC 12 V	0.35	0.83	4.2	--	--	--	Maximum normal load. <b>Condition B</b>	
Supplementary information: <b>Max. Normal load:</b>								
<b>Condition A</b> : The equipment transferred video signal and communicated with PC by LAN port (RJ-45), turning on heater of equipment at the same time, and operating continuously.								
<b>Condition B</b> : The equipment transferred video signal and communicated with PC by LAN port (RJ-45) then operated continuously.								

B.3	TABLE: Abnormal operating condition tests							N/A
Ambient temperature (°C) .....							—	
Power source for EUT: Manufacturer, model/type, output rating ..							—	
Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation

IEC 62368-1								
Clause	Requirement + Test				Result - Remark			Verdict
<b>B.3</b>	<b>TABLE: Abnormal operating condition tests</b>							N/A
Ambient temperature (°C) .....							—	
Power source for EUT: Manufacturer, model/type, output rating .:							—	
Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
Supplementary information: Test table is provided to record abnormal and fault conditions for all applicable energy sources including Thermal burn injury. Column “Abnormal/Fault.” Specify if test condition by indicating “Abnormal” then the condition for a Clause B.3 test or “Single Fault” then the condition for Clause B.4.								

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

B.4	TABLE: Fault condition tests							P
Ambient temperature (°C) .....						See below.	—	
Power source for EUT: Manufacturer, model/type, output rating .:						See table 4.1.2.	—	
Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
<b>Model FD8377-EHTV</b>								
BT1	+ to - Short	DC 57 V	7 hrs	--	--	--	Max Temp. Ambient: 24.9 °C T3 body: 52.6 °C	Unit normal operation, no hazards, no damaged, NC, NT
BT1	R146 Short	DC 57 V	7 hrs	--	--	--	Max Temp. Ambient: 24.1 °C T3 body: 51.6 °C	Unit normal operation, no hazards, no damaged, NC, NT
Main board Heater on	Q13 Pin D-S short	DC 57 V	7 hrs	--	--	--	Max Temp. Ambient: 24.6 °C PWB near U6: 91.4 °C	Unit normal operation, no hazards, no damaged, NC, NT
Sensor board Heater on	Q3 Pin D-S short	DC 57 V	7 hrs	--	--	--	Max Temp. Ambient: 23.3 °C PWB near U2: 80.9 °C	Unit normal operation, no hazards, no damaged, NC, NT
Supplementary information: NC - Cheesecloth remained intact NT - Tissue paper remained intact								

IEC 62368-1										
Clause	Requirement + Test			Result - Remark				Verdict		
<b>Annex M</b>	<b>TABLE: Batteries</b>								N/A	
The tests of Annex M are applicable only when appropriate battery data is not available										
Is it possible to install the battery in a reverse polarity position?..... :										
	Non-rechargeable batteries			Rechargeable batteries						
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging		
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	
Max. current during normal condition										
Max. current during fault condition										
Test results:										
- Chemical leaks										
- Explosion of the battery										
- Emission of flame or expulsion of molten metal										
- Electric strength tests of equipment after completion of tests										
Supplementary information:										

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

Annex M.4		Table: Additional safeguards for equipment containing secondary lithium batteries			N/A
Battery/Cell No.	Test conditions	Measurements			Observation
		U	I (A)	Temp (C)	
	Normal				
	Abnormal				
	Single fault –SC/OC				
	Normal				
	Abnormal				
	Single fault – SC/OC				
Supplementary Information:					
Battery identification	Charging at $T_{\text{lowest}}$ (°C)	Observation	Charging at $T_{\text{highest}}$ (°C)	Observation	
Supplementary Information:					

Annex Q.1		TABLE: Circuits intended for interconnection with building wiring (LPS)				P
Note: Measured UOC (V) with all load circuits disconnected:						
Output Circuit	Components	U <sub>oc</sub> (V)	I <sub>sc</sub> (A)		S (VA)	
			Meas.	Limit	Meas.	Limit
<b>Model FD8377-EHTV</b>						
<b>Supply by DC 57 V</b>						
Circuit output tested: <b>Data Port (J9)</b>						
Pin 1-10 to RTN	Normal	0	0	8	0	100
<b>Supply by DC 12 V</b>						
Circuit output tested: <b>LAN Port</b>						
Pin 1-8 to RTN	Normal	0	0	8	0	100
Supplementary Information: SC=Short circuit, OC=Open circuit						

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Clause	Requirement + Test	Result - Remark	Verdict

T.2, T.3, T.4, T.5	TABLE: Steady force test					P
Part/Location	Material	Thickness (mm)	Force (N)	Test Duration (sec)	Observation	
<b>Model FD8377-EHTV</b>						
Top side near T3	Lens cover(Plastic)	2.5	250N	5	No cracking , Intact	
Right side near T3	Metal	3.0	250N	5	No cracking , Intact	
Bottom side near T3	Metal	3.0	250N	5	No cracking , Intact	
<b>Model FD8177-HT</b>						
Top side near T3	Lens cover(Plastic)	2.5	250N	5	No cracking , Intact	
Right side near T3	Plastic	2.5	250N	5	No cracking , Intact	
Bottom side near T3	Plastic	2.5	250N	5	No cracking , Intact	
Supplementary information:						

T.6, T.9	TABLE: Impact tests				P
Part/Location	Material	Thickness (mm)	Vertical distance (mm)	Observation	
<b>Model FD8377-EHTV</b>					
Top side near T3	Lens cover(Plastic)	2.5	1300	No exposing of live port	
Right side near T3	Metal	3.0	1300	No exposing of live port	
Bottom side near T3	Metal	3.0	1300	No exposing of live port	
<b>Model FD8177-HT</b>					
Top side near T3	Lens cover(Plastic)	2.5	1300	No exposing of live port	
Right side near T3	Plastic	2.5	1300	No exposing of live port	
Bottom side near T3	Plastic	2.5	1300	No exposing of live port	
Supplementary information:					

T.7	TABLE: Drop tests				N/A
Part/Location	Material	Thickness (mm)	Drop Height (mm)	Observation	
Supplementary information:					

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
<b>T.8</b>	<b>TABLE: Stress relief test</b>				<b>P</b>
Part/Location	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation
<b>Model FD8377-EHTV and Model FD8177-HT</b>					
Complete equipment	All plastic	2.5	90	7	Remain Intact
Supplementary information:					

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<b>ATTACHMENT TO TEST REPORT</b> <b>IEC 62368-1</b> <b>EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES</b> (Audio/video, information and communication technology equipment Part 1: Safety requirements)			
<b>Differences according to</b> .....: EN 62368-1:2014+A11:2017			
<b>Attachment Form No.</b> .....: EU_GD_IEC62368_1B_II			
<b>Attachment Originator</b> .....: Nemko AS			
<b>Master Attachment</b> .....: Date 2017-09-22			
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	CENELEC COMMON MODIFICATIONS (EN)					P
	Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2014 are prefixed "Z".					P
CONTENTS	<b>Add</b> the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations Annex ZD (informative) IEC and CENELEC code designations for flexible cords					P
	<b>Delete</b> all the "country" notes in the reference document (IEC 62368-1:2014) according to the following list:					P
	0.2.1	Note	1	Note 3	4.1.15	Note
	4.7.3	Note 1 and 2	5.2.2.2	Note	5.4.2.3.2.2 Table 13	Note c
	5.4.2.3.2.4	Note 1 and 3	5.4.2.5	Note 2	5.4.5.1	Note
	5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3
	5.7.5	Note	5.7.6.1	Note 1 and 2	10.2.1 Table 39	Note 2, 3 and 4
	10.5.3	Note 2	10.6.2.1	Note 3	F.3.3.6	Note 3
	For special national conditions, see Annex ZB.					P
1	<b>Add</b> the following note: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU.			Added.		P

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
4.Z1	<p><b>Add</b> the following new subclause after 4.9:</p> <p>To protect against excessive current, short-circuits and earth faults in circuits connected to an a.c. <b>mains</b>, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of B.3.1 and B.4 shall be included as parts of the equipment;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p> <p>c) it is permitted for <b>pluggable equipment type B</b> or <b>permanently connected equipment</b>, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for <b>pluggable equipment type A</b> the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>		N/A
5.4.2.3.2.4	<p><b>Add</b> the following to the end of this subclause:</p> <p>The requirement for interconnection with <b>external circuit</b> is in addition given in EN 50491-3:2009.</p>		N/A
10.2.1	<p>Add the following to <sup>c)</sup> and <sup>d)</sup> in table 39:</p> <p>For additional requirements, see 10.5.1.</p>		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
10.5.1	<p><b>Add</b> the following after the first paragraph:</p> <p><i>For RS 1 compliance is checked by measurement under the following conditions:</i></p> <p><i>In addition to the normal operating conditions, all controls adjustable from the outside by hand, by any object such as a tool or a coin, and those internal adjustments or presets which are not locked in a reliable manner, are adjusted so as to give maximum radiation whilst maintaining an intelligible picture for 1 h, at the end of which the measurement is made.</i></p> <p>NOTE Z1 Soldered joints and paint lockings are examples of adequate locking.</p> <p><i>The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm<sup>2</sup>, at any point 10 cm from the outer surface of the apparatus.</i></p> <p><i>Moreover, the measurement shall be made under fault conditions causing an increase of the high-voltage, provided an intelligible picture is maintained for 1 h, at the end of which the measurement is made.</i></p> <p><i>For RS1, the dose-rate shall not exceed 1 μSv/h taking account of the background level.</i></p> <p>NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.</p>		N/A
10.6.1	<p><b>Add</b> the following paragraph to the end of the subclause:</p> <p>EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.</p>		N/A
10.Z1	<p><b>Add</b> the following new subclause after 10.6.5.</p> <p><b>10.Z1 Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz</b></p> <p>The amount of non-ionizing radiation is regulated by European Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz).</p> <p>For intentional radiators, ICNIRP guidelines should be taken into account for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz). For hand-held and body-mounted devices, attention is drawn to EN 50360 and EN 50566</p>		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
G.7.1	<b>Add</b> the following note: NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.		N/A
Bibliography	<b>Add</b> the following standards: <b>Add</b> the following notes for the standards indicated: IEC 60130-9 NOTE Harmonized as EN 60130-9. IEC 60269-2 NOTE Harmonized as HD 60269-2. IEC 60309-1 NOTE Harmonized as EN 60309-1. IEC 60364 NOTE some parts harmonized in HD 384/HD 60364 series. IEC 60601-2-4 NOTE Harmonized as EN 60601-2-4. IEC 60664-5 NOTE Harmonized as EN 60664-5. IEC 61032:1997 NOTE Harmonized as EN 61032:1998 (not modified). IEC 61508-1 NOTE Harmonized as EN 61508-1. IEC 61558-2-1 NOTE Harmonized as EN 61558-2-1. IEC 61558-2-4 NOTE Harmonized as EN 61558-2-4. IEC 61558-2-6 NOTE Harmonized as EN 61558-2-6. IEC 61643-1 NOTE Harmonized as EN 61643-1. IEC 61643-21 NOTE Harmonized as EN 61643-21. IEC 61643-311 NOTE Harmonized as EN 61643-311. IEC 61643-321 NOTE Harmonized as EN 61643-321. IEC 61643-331 NOTE Harmonized as EN 61643-331.		N/A
<b>ZB</b>	<b>ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)</b>		N/A
4.1.15	<b>Denmark, Finland, Norway and Sweden</b> To the end of the subclause the following is added: <b>Class I pluggable equipment type A</b> intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and <b>accessible</b> parts, have a marking stating that the equipment shall be connected to an earthed <b>mains</b> socket-outlet. The marking text in the applicable countries shall be as follows: In <b>Denmark</b> : "Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord." In <b>Finland</b> : "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In <b>Norway</b> : "Apparatet må tilkoples jordet stikkontakt" In <b>Sweden</b> : "Apparaten skall anslutas till jordat uttag"		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.3	<p><b>United Kingdom</b></p> <p>To the end of the subclause the following is added:            The torque test is performed using a socket-outlet complying with BS 1363, and the plug part shall be assessed to the relevant clauses of BS 1363. Also see Annex G.4.2 of this annex</p>		N/A
5.2.2.2	<p><b>Denmark</b></p> <p>After the 2nd paragraph add the following:            A warning (marking <b>safeguard</b>) for high <b>touch current</b> is required if the <b>touch current</b> exceeds the limits of 3,5 mA a.c. or 10 mA d.c.</p>		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.11.1 and Annex G	<p><b>Finland and Sweden</b></p> <p>To the end of the subclause the following is added:</p> <p>For separation of the telecommunication network from earth the following is applicable:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> <li>• two layers of thin sheet material, each of which shall pass the electric strength test below, or</li> <li>• one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below.</li> </ul> <p>If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> <li>• passes the tests and inspection criteria of 5.4.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 5.4.9 shall be performed using 1,5 kV), and</li> <li>• is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5kV.</li> </ul> <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> <li>• the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in 5.4.11;</li> <li>• the additional testing shall be performed on all the test specimens as described in EN 60384-14; the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.</li> </ul>		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.5.2.1	<p><b>Norway</b></p> <p>After the 3rd paragraph the following is added: Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).</p>		N/A
5.5.6	<p><b>Finland, Norway and Sweden</b></p> <p>To the end of the subclause the following is added: Resistors used as <b>basic safeguard</b> or bridging <b>basic insulation in class I pluggable equipment type A</b> shall comply with G.10.1 and the test of G.10.2.</p>		N/A
5.6.1	<p><b>Denmark</b></p> <p><b>Add</b> to the end of the subclause Due to many existing installations where the socket-outlets can be protected with fuses with higher rating than the rating of the socket-outlets the protection for pluggable equipment type A shall be an integral part of the equipment. <i>Justification:</i> In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.</p>		N/A
5.6.4.2.1	<p><b>Ireland and United Kingdom</b></p> <p>After the indent for <b>pluggable equipment type A</b>, the following is added: – the <b>protective current rating</b> is taken to be 13 A, this being the largest rating of fuse used in the <b>mains</b> plug.</p>		N/A
5.6.5.1	<p>To the second paragraph the following is added: The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is: 1,25 mm<sup>2</sup> to 1,5 mm<sup>2</sup> in cross-sectional area.</p>		N/A
5.7.5	<p><b>Denmark</b></p> <p>To the end of the subclause the following is added: The installation instruction shall be affixed to the equipment if the <b>protective conductor current</b> exceeds the limits of 3,5 mA a.c. or 10 mA d.c.</p>		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.7.6.1	<p><b>Norway and Sweden</b></p> <p>To the end of the subclause the following is added:            The screen of the television distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation needs to be isolated from the screen of a cable distribution system.</p> <p>It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by a retailer, for example.</p> <p>The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in:            “Apparatus connected to the protective earthing of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a television distribution system therefore has to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)”</p> <p>NOTE In Norway, due to regulation for CATV-installations, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p>		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>“Apparater som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplede utstyr – og er tilkoplede et koaksialbasert kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av apparater til kabel-TV nett installeres en galvanisk isolator mellom apparatet og kabel-TV nettet.”</p> <p>Translation to Swedish:</p> <p>”Apparater som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet.”.</p>		
5.7.6.2	<p><b>Denmark</b></p> <p>To the end of the subclause the following is added: The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA .</p>		N/A
B.3.1 and B.4	<p><b>Ireland and United Kingdom</b></p> <p>The following is applicable: To protect against excessive currents and short-circuits in the primary circuit of <b>direct plug-in equipment</b>, tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the <b>direct plug-in equipment</b>, until the requirements of Annexes B.3.1 and B.4 are met</p>		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
G.4.2	<p><b>Denmark</b></p> <p>To the end of the subclause the following is added: Supply cords of single phase appliances having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1:2011.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2.</p> <p>Mains socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance DS 60884-2-D1:2011 standard sheet DKA 1-4a.</p> <p>Other current rating socket outlets shall be in compliance with Standard Sheet DKA 1-3a or DKA 1-1c.</p> <p>Mains socket-outlets with earth shall be in compliance with DS 60884-2-D1:2011 Standard Sheet DK 1-3a, DK 1-1c, DK1-1d, DK 1-5a or DK 1-7a</p> <p><i>Justification:</i> Heavy Current Regulations, Section 6c</p>		N/A
G.4.2	<p><b>United Kingdom</b></p> <p>To the end of the subclause the following is added: The plug part of direct plug-in equipment shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16, and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.</p>		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
G.7.1	<p><b>United Kingdom</b></p> <p>To the first paragraph the following is added: Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations.</p> <p>NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p>		N/A
G.7.1	<p><b>Ireland</b></p> <p>To the first paragraph the following is added: Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard</p>		N/A
G.7.2	<p><b>Ireland and United Kingdom</b></p> <p>To the first paragraph the following is added: A power supply cord with a conductor of 1,25 mm<sup>2</sup> is allowed for equipment which is rated over 10 A and up to and including 13 A.</p>		N/A
ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		N/A
10.5.2	<p><b>Germany</b></p> <p>The following requirement applies: For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking.</p> <p><i>Justification:</i> German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM.</p> <p><b>NOTE</b> Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int +49-531-592-6320, Internet: <a href="http://www.ptb.de">http://www.ptb.de</a></p>		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<b>ATTACHMENT TO TEST REPORT IEC 62368-1</b> <b>AUSTRALIA / NEW ZEALAND NATIONAL DIFFERENCES</b> Audio/video, information and communication technology equipment			
<b>Differences according to.....:</b>		AS/NZS 62368.1:2018	
<b>Attachment Form No. ....:</b>		AU_NZ_ND_IEC62368_1B	
<b>Attachment Originator .....</b>		JAS-ANZ	
<b>Master Attachment.....:</b>		2019-02-04	
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	National Differences		--
<b>Appendix ZZ</b>	Variations to IEC 62368-1:2014 (ED. 2.0) for Australia and New Zealand		--
<b>ZZ1 Scope</b>	This Appendix lists the normative variations to IEC 62368-1:2014 (ED. 2.0)		--
<b>ZZ2 Variations</b>	The following modifications are required for Australian/New Zealand conditions:		N/A
<b>2</b>	Add the following to the list of normative references: The following normative documents are referenced in Appendix ZZ: -AS/NZS 3112, <i>Approval and test specification—Plugs and socket-outlets</i> -AS/NZS 3123, <i>Approval and test specification—Plugs, socket-outlets and couplers for general industrial application</i> -AS/NZS 3191, <i>Electric flexible cords</i> -AS/NZS 60065, <i>Audio, video and similar electronic apparatus—Safety requirements (IEC 60065:2015 (ED.8.0) MOD)</i> -AS/NZS 60320.1, <i>Appliance couplers for household and similar general purposes, Part 1: General requirements (IEC 60320-1, Ed.2.1 (2007) MOD)</i> -AS/NZS 60320.2.2, <i>Appliance couplers for household and similar general purposes Part 2.2: Interconnection couplers for household and similar equipment (IEC 60320-2-2, Ed.2.0 (1998) MOD)</i>	Added.	P

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>-AS/NZS 60695.2.11, <i>Fire hazard testing, Part 2.11: Glowing/hot wire based test methods—Glow-wire flammability test method for end-products</i></p> <p>-AS/NZS 60695.11.5, <i>Fire hazard testing, Part 11.5: Test flames—Needle-flame test method—Apparatus, confirmatory test arrangement and guidance</i></p> <p>-AS/NZS 60695.11.10, <i>Fire hazard testing, Part 11.10: Test flames—50 W horizontal and vertical flame test methods</i></p> <p>-AS/NZS 60884.1, <i>Plugs and socket-outlets for household and similar purposes, Part 1: General requirements</i></p> <p>-AS/NZS 60950.1:2015, <i>Information technology equipment—Safety, Part 1: General requirements (IEC 60950-1, Ed.2.2 (2013), MOD)</i></p> <p>IEC 61032:1997, <i>Protection of persons and equipment by enclosures—Probes for verification</i></p> <p>-AS/NZS 61558.1:2008 (including Amendment 2:2015), <i>Safety of Power Transformers, Power Supplies, Reactors and Similar Products, Part 1: General requirements and tests (IEC 61558-1 Ed 2.1, MOD)</i></p> <p>-AS/NZS 61558.2.16, <i>Safety of transformers, reactors, power supply units and similar products for voltages up to 1 100 V, Part 2.16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units.</i></p>		P
4.1.1	<p><b>Application of requirements and acceptance of materials, components and subassemblies</b></p> <p>1. <i>Replace the text ‘IEC 60950-1’ with ‘AS/NZS 60950.1:2015’.</i></p> <p>2. <i>Replace the text ‘IEC 60065’ with ‘AS/NZS 60065’.</i></p>		P
4.7	<b>Equipment for direct insertion into mains socket-outlets</b>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.7.2	<p><b>Requirements</b></p> <p><i>Delete</i> the text of the second paragraph and <i>replace</i> with the following:</p> <p>Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet complying with AS/NZS 3112 shall comply with the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets.</p>	No such components.	N/A
4.7.3	<p><b>Compliance Criteria</b></p> <p><i>Delete</i> the first paragraph and Note 1 and Note 2 and <i>replace</i> with the following:</p> <p><i>Compliance is checked by inspection and, if necessary, by the tests in AS/NZS 3112.</i></p>		N/A
4.8	<p><i>Delete</i> existing clause title and <i>replace</i> with the following:</p> <p><b>4.8 Products containing coin/button cell batteries</b></p>		N/A
4.8.1	<p><b>General</b></p> <p>1. Second dashed point, <i>delete</i> the text and <i>replace</i> with the following:</p> <p>– include coin/button cell batteries with a diameter of 32 mm or less.</p> <p>2. After the second dashed point, <i>insert</i> the following Note:</p> <p>NOTE 1: Batteries are specified in IEC 60086-2.</p> <p>3. After the third dashed point, <i>renumber</i> the existing Note as 'NOTE 2'.</p> <p>4. Fifth dashed point, <i>delete</i> the word 'lithium'.</p>		N/A
4.8.2	<p><b>Instructional Safeguard</b></p> <p>First line, <i>delete</i> the word 'lithium'.</p>		N/A
4.8.3	<p><b>Construction</b></p> <p>First line, after the word 'Equipment' <i>insert</i> the words 'containing one or more coin/button batteries and'</p>		N/A
4.8.5	<p><b>Compliance criteria</b></p> <p><i>Delete</i> the first paragraph and <i>replace</i> with the following:</p> <p><i>Compliance is checked by applying a force of 30 N +/- 1 N for 10 s to the battery compartment door/cover by a rigid test finger according to test probe 11 of IEC 61032:1997 at the most unfavourable place and in the most unfavourable direction. The force shall be applied in one direction at a time.</i></p>		N/A
5.4.10.2	<p><b>Test methods</b></p>		N/A

IEC62368_1B - ATTACHMENT																							
Clause	Requirement + Test	Result - Remark		Verdict																			
<b>5.4.10.2.1</b>	<p><b>General</b></p> <p>Delete the first paragraph and <i>replace</i> with the following:</p> <p>In Australia only, the separation is checked by the test of both Clause 5.4.10.2.2 and Clause 5.4.10.2.3. In New Zealand, the separation is checked by the test of either Clause 5.4.10.2.2 or Clause 5.4.10.2.3.</p>			N/A																			
<b>Table 29</b>	Replace the table with the following:			N/A																			
<table border="1"> <thead> <tr> <th rowspan="2">Parts</th> <th colspan="2">Impulse test</th> <th colspan="2">Steady state test</th> </tr> <tr> <th>New Zealand</th> <th>Australia</th> <th>New Zealand</th> <th>Australia</th> </tr> </thead> <tbody> <tr> <td>Parts indicated in Clause 5.4.10.1 a) <sup>a</sup></td> <td>2.5 kV 10/700 μs</td> <td>7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment. 10/700 μs</td> <td>1.5 kV</td> <td>3 kV</td> </tr> <tr> <td>Parts indicated in Clause 5.4.10.1 b) and c) <sup>b</sup></td> <td colspan="2">1.5 kV 10/700 μs <sup>c</sup></td> <td>1.0 kV</td> <td>1.5 kV</td> </tr> </tbody> </table> <p><sup>a</sup> Surge suppressors shall not be removed.</p> <p><sup>b</sup> Surge suppressors may be removed, provided that such devices pass the impulse test of Clause 5.4.10.2.2 when tested as components outside the equipment.</p> <p><sup>c</sup> During this test, it is allowed for a surge suppressor to operate and for a sparkover to occur in a GDT.</p>					Parts	Impulse test		Steady state test		New Zealand	Australia	New Zealand	Australia	Parts indicated in Clause 5.4.10.1 a) <sup>a</sup>	2.5 kV 10/700 μs	7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment. 10/700 μs	1.5 kV	3 kV	Parts indicated in Clause 5.4.10.1 b) and c) <sup>b</sup>	1.5 kV 10/700 μs <sup>c</sup>		1.0 kV	1.5 kV
Parts	Impulse test		Steady state test																				
	New Zealand	Australia	New Zealand	Australia																			
Parts indicated in Clause 5.4.10.1 a) <sup>a</sup>	2.5 kV 10/700 μs	7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment. 10/700 μs	1.5 kV	3 kV																			
Parts indicated in Clause 5.4.10.1 b) and c) <sup>b</sup>	1.5 kV 10/700 μs <sup>c</sup>		1.0 kV	1.5 kV																			
<b>5.4.10.2.2</b>	<p>After the first paragraph, <i>insert</i> new Notes 201 and 202 as follows:</p> <p>NOTE 201 For Australia, the 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines.</p> <p>NOTE 202 For Australia, the value of 2.5 kV for Clause 5.4.10.1 a) was chosen to ensure the adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.</p>			N/A																			
<b>5.4.10.2.3</b>	<p>After the first paragraph, <i>insert</i> new Notes 201 and 202 as follows:</p> <p>NOTE 201 For Australia, where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used.</p> <p>NOTE 202 The 3 kV and 1.5 kV values for Australia have been determined considering the low frequency induced voltages from the power supply distribution system.</p>			N/A																			
<b>6</b>	<b>Electrically-caused fire</b>			N/A																			

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
<b>6.1</b>	<b>General</b> After the first paragraph, <i>insert</i> the following new paragraph: Alternatively, the requirements of Clauses 6.2 to 6.5.2 are considered to be fulfilled if the equipment complies with the requirements of Clause 6.202		N/A
<b>6.6</b>	After Clause 6.6, <i>add</i> the new Clauses 6.201 and 6.202 as follows: <b>6.201 External power supplies, docking stations and other similar devices</b> and <b>6.202 Resistance to fire—Alternative tests</b> (see special national conditions)		N/A
<b>8.5.4</b>	<b>Special categories of equipment comprising moving parts</b>		N/A
<b>8.5.4.1</b>	<b>Large data storage equipment</b> In the first dashed row and the second dashed rows <i>replace</i> 'IEC 60950-1:2005' with 'AS/NZS 60950.1:2015'.		N/A
<b>8.6</b>	<b>Stability of equipment</b>		N/A
<b>8.6.1 and Table 36</b>	<b>Requirements</b> 1. Table 36, <i>insert</i> Footnote c at the end of the 'Glass slide' heading, and <i>add</i> a new Footnote c after the text of Footnote b in the last row of Table 36 as follows: c The glass slide test is not applicable to floor standing equipment, even though the equipment may have controls or a display. 2. Table 36, fifth row, <i>insert</i> <sup>201</sup> at the end of 'No stability requirements' 3. Table 36, ninth row, <i>insert</i> <sup>201</sup> at the end of 'No stability requirements' 4. Table 36, <i>add</i> the following new footnote: <sup>201</sup> MS2 and MS3 television sets and display devices, designed only for fixing to a wall, ceiling or equipment rack, are not subjected to stability requirements only if the instructional safeguard of Clause 8.6.1.201 is provided. Otherwise, the glass slide requirements of Clause 8.6.4 and horizontal force requirements of Clause 8.6.5 apply. 5. Second paragraph beneath Table 36, <i>delete</i> the words 'MS2 and MS3 television sets' and <i>replace</i> with 'MS2 and MS3 television sets and display devices'		N/A
<b>8.6.1</b>	After Clause 8.6.1 <i>add</i> the following new clauses: <b>8.6.1.201 Instructional safeguard for fixed-mount television sets</b> (see special national conditions)		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
<b>Annex F Paragraph F.3.5.1</b>	<b>Mains appliance outlet and socket-outlet markings</b> <i>Replace</i> 'IEC 60320-2-2' with 'AS/NZS 60320.2.2'.		N/A
<b>Annex G Paragraph G.4.2</b>	<b>Mains connectors</b> 1. In the second line <i>insert</i> 'or AS/NZS 3123' after 'IEC 60906-1'. 2. In the second line <i>insert</i> 'or AS/NZS 60320 series' after 'IEC 60320 series' 3. <i>Add</i> the following new paragraph: 10 A or 15 A 250 V flat pin plugs for the connection of equipment to mains-powered socket-outlets for household or similar general use shall comply with AS/NZS 3112 or AS/NZS 60884.1.		N/A
<b>Paragraph G.5.3.1</b>	<b>Transformers, General</b> 1. In the third dashed point <i>replace</i> 'IEC 61558-1 and the relevant parts of IEC 61558-2' with 'AS/NZS 61558-1 and the relevant parts of AS/NZS 61558.2' 2. In the fourth dashed point <i>replace</i> 'IEC 61558-2-16' with 'AS/NZS 61558.2.16'.		N/A
<b>Paragraph G.7.1</b>	<b>Mains supply cords, General</b> In the fourth dashed paragraph, <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1'		N/A
<b>Table G.5</b>	<b>Sizes of conductors</b> 1. In the second row, first column, <i>delete</i> '6' and <i>replace</i> with '7.5' 2. In the second row, second column, <i>delete</i> '0,75' and <i>replace</i> with '0.75 <sup>b</sup> 3. <i>Delete</i> Note 1. 4. <i>Replace</i> 'NOTE 2' with 'NOTE:'. 5. <i>Delete</i> the text of 'Footnote b' and <i>replace</i> with the following: <sup>b</sup> This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0.5 mm <sup>2</sup> three-core supply flexible cords are not permitted; see AS/NZS 3191). 6. In Footnote c <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1' 7. In Footnote d <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1'		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
<b>Annex M Paragraph M.3.2</b>	<p><b>Protection circuits for batteries provided within the equipment, Test method</b></p> <p>After the first dashed point <i>add</i> the following Note:</p> <p>NOTE 201: In cases where the voltage source is provided by power from an unassociated power source, consideration should be given to the effects of possible single fault conditions in the unassociated equipment. If the power source is unknown then it should be assumed that the maximum limit of SELV may be applied to the source input under assumed single fault conditions in the source when assessing the charging circuit in the equipment under test.</p>		N/A
	<b>Special national conditions (if any)</b>	Refer to below.	N/A
<b>6.201</b>	<p><b>External power supplies, docking stations and other similar devices</b></p> <p>For external power supplies, docking stations and other similar devices, during and after abnormal operating conditions and during single fault conditions the output voltage—</p> <ul style="list-style-type: none"> <li>– at all ES1 outlets or connectors shall not increase by more than 10% of its rated output voltage under normal operating condition; and</li> <li>– of a USB outlet or connector shall not increase by more than 3 V or 10% of its rated output voltage under normal operating conditions, whichever is higher.</li> </ul> <p>For equipment with multiple rated output voltages, the requirements apply with the equipment configured for each rated output voltage in turn.</p> <p>NOTE: This is intended to reduce the possibility of battery fire or explosion in attached equipment or accessories when charging secondary lithium batteries.</p> <p><i>Compliance shall be checked by measurement, taking into account the abnormal operating conditions of Annex B.3 and the simulated single-fault conditions of Annex B.4</i></p>	Not such devices.	N/A
<b>6.202</b>	<b>Resistance to fire—Alternative tests</b>	No fire enclosure required.	N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
6.202.1	<p><b>General</b></p> <p>Parts of non-metallic material shall be resistant to ignition and spread of fire.</p> <p>This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames from inside the equipment, or the following:</p> <p>a) Components that are contained in an enclosure having a flammability category of V-0 according to AS/NZS 60695.11.10 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1 mm in width regardless of length.</p> <p>b) The following parts which would contribute negligible fuel to a fire:</p> <ul style="list-style-type: none"> <li>– small mechanical parts, the mass of which does not exceed 4 g, such as mounting parts, gears, cams, belts and bearings;</li> <li>– small electrical components, such as capacitors with a volume not exceeding 1 750 mm<sup>3</sup>, integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category V-1, or better, according to AS/NZS 60695.11.10.</li> </ul> <p>NOTE: In considering how to minimize propagation of fire and what 'small parts' are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating the fire from one part to another.</p>		N/A
	<p><i>Compliance shall be checked by the tests of Clauses 6.202.2, 6.202.3 and 6.202.4.</i></p> <p>For the base material of printed boards, compliance shall be checked by the test of Clause 6.202.5.</p> <p>The tests shall be carried out on parts of non-metallic material which have been removed from the equipment. When the glow-wire test is carried out, the parts shall be placed in the same orientation as they would be in normal use.</p> <p>These tests are not carried out on internal wiring.</p>		N/A

IEC62368_1B - ATTACHMENT							
Clause	Requirement + Test	Result - Remark	Verdict				
<b>6.202.2</b>	<p><b>Testing of non-metallic materials</b></p> <p>Parts of non-metallic material shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 550°C.</p> <p>Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test shall be not carried out on parts of material classified at least FH-3 according to ISO 9772 provided that the relevant part is not thinner than the sample tested.</p>		N/A				
<b>6.202.3</b>	<p><b>Testing of insulating materials</b></p> <p>Parts of insulating material supporting Potential Ignition Sources shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 750°C.</p> <p>The test shall be also carried out on other parts of insulating material which are within a distance of 3 mm of the connection.</p> <p>NOTE: Contacts in components such as switch contacts are considered to be connections</p>		N/A				
	<p>For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test.</p> <p>However, parts shielded by a barrier which meets the needle-flame test need not be tested</p>		N/A				
	<p>The needle-flame test shall be made in accordance with AS/NZS 60695.11.5 with the following modifications:</p> <table border="1" data-bbox="416 1509 1019 1711"> <tr> <td><b>Clause of AS/NZS 60695.11.5</b></td> <td>Change</td> </tr> <tr> <td><b>9 Test procedure</b></td> <td></td> </tr> </table>	<b>Clause of AS/NZS 60695.11.5</b>	Change	<b>9 Test procedure</b>			N/A
<b>Clause of AS/NZS 60695.11.5</b>	Change						
<b>9 Test procedure</b>							

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

	<p><b>9.2 Application of needle-flame</b></p>	<p><i>Delete</i> the first and second paragraphs and <i>replace</i> with the following: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1. If possible the flame shall be applied at least 10 mm from a corner. The duration of application of the test flame shall be 30 s ± 1 s.</p>		
	<p><b>9.3 Number of test specimens</b></p>	<p><i>Replace</i> with the following: The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.</p>		
	<p><b>11 Evaluation of test results</b></p>	<p><i>Replace</i> with the following: The duration of burning (tb) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.</p>		

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to AS/NZS 60695.11.10, provided that the relevant part is not thinner than the sample tested.		
<b>6.202.4</b>	<p><b>Testing in the event of non-extinguishing material</b></p> <p>If parts, other than enclosures, do not withstand the glow wire tests of Clause 6.202.3, by failure to extinguish within 30 s after the removal of the glowwire tip, the needle-flame test detailed in Clause 6.202.3 shall be made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during the tests of Clause 6.202.3. Parts shielded by a separate barrier which meets the needle-flame test need not be tested.</p> <p>NOTE 1: If the enclosure does not withstand the glow-wire test the equipment is considered to have failed to meet the requirements of Clause 6.202 without the need for consequential testing.</p> <p>NOTE 2: If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burning or glowing particles can fall onto an external surface underneath the equipment, the equipment is considered to have failed to meet the requirements of Clause 6.202 without the need for consequential testing.</p> <p>NOTE 3: Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting, in contact with, or in close proximity to, connections.</p>		N/A
<b>6.202.5</b>	<p><b>Testing of printed boards</b></p> <p>The base material of printed boards shall be subjected to the needle-flame test of Clause 6.202.3. The flame shall be applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use. The flame shall not be applied to an edge, consisting of broken perforations, unless the edge is less than 3 mm from a potential ignition source.</p>	Printed boards provided min V-1 class material.	N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>The test is not carried out if—</p> <ul style="list-style-type: none"> <li>– the printed board does not carry any potential ignition source;</li> <li>– the base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category V-1 or better according to AS/NZS 60695.11.10, or the printed boards are protected by an enclosure meeting the flammability category V-0 according to AS/NZS 60695.11.10, or made of metal, having openings only for connecting wires which fill the openings completely; or</li> <li>– the base material of printed boards, on which the available equipment power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category V-0 according to AS/NZS 60695.11.10 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely.</li> </ul> <p><i>Conformance shall be determined using the smallest thickness of the material.</i></p> <p>NOTE: Available apparent power is the maximum apparent power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximize the apparent power for more than 2 min when the circuit supplied is disconnected.</p>		
<b>6.202.6</b>	<p><b>For open circuit voltages greater than 4 kV</b></p> <p>Potential ignition sources with open circuit voltages exceeding 4 kV (peak) a.c. or d.c. under normal operating conditions shall be contained in a FIRE ENCLOSURE which shall comply with flammability category V-1 or better according to AS/NZS 60695.11.10.</p>		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
<b>8.6.1.201</b>	<p><b>8.6.1.201 Instructional safeguard for fixed-mount television sets</b></p> <p>MS2 and MS3 television sets and display devices designed only for fixed mounting to a wall of ceiling or equipment rack shall, where required in Table 36, footnote 201, have an instructional safeguard in accordance with Clause F.5 which may be on the equipment or included in the installation instructions or equivalent document accompanying the equipment.</p> <p>The elements of the instructional safeguard shall be as follows:</p> <ul style="list-style-type: none"> <li>– element 1a: not available;</li> <li>– element 2: ‘Stability Hazard’ or equivalent wording;</li> <li>– element 3: ‘The television set may fall, causing serious personal injury or death’ or equivalent text;</li> <li>– element 4: the following or equivalent text: To prevent injury, this television set must be securely attached to the floor/wall in accordance with the installation instructions</li> </ul>	This equipment is not a television sets and display devices.	N/A
<b>8.6.1.202</b>	<p><b>Restraining device</b></p> <p>MS2 and MS3 television sets and display devices that are not solely fixed-mounted should be provided with a restraining device such as a fixing point to facilitate restraining the equipment from toppling forward. The restraining device shall be capable of withstanding a pull of 100 N in all directions without damage.</p> <p>Where a restraining device is provided, instructions shall be provided in the instructions for installation or instructions for use to ensure correct and safe installation.</p>	This equipment is not a television sets and display devices.	N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<p><b>ATTACHMENT TO TEST REPORT IEC 62368-1 2<sup>th</sup> Ed.</b>  <b>U.S.A NATIONAL DIFFERENCES</b>                  Audio/video, information and communication technology equipment                  - Part 1: Safety requirements</p>			
<b>Differences according to.....:</b>		CSA/UL 62368-1:2014	
<b>Attachment Form No. ....:</b>		US&CA_ND_IEC623681B	
<b>Attachment Originator.....:</b>		UL(US)	
<b>Master Attachment.....:</b>		Date 2015-06	
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<p><b>IEC 62368-1 - US and Canadian National Differences</b>  <b>Special National Conditions based on Regulations and Other National Differences</b></p>			
1.1	All equipment is to be designed to allow installation according to the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part I, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2.  Also, for such equipment marked or otherwise identified, installation is allowed per the Standard for the Protection of Information Technology Equipment, ANSI/NFPA 75.		P
1.4	Additional requirements apply to some forms of power distribution equipment, including sub-assemblies.	Not applicable.	N/A
4.1.17	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the NEC.	Not provided power cord.	N/A
	For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the NEC generally are required to have special construction features and identification markings.		N/A
4.8	Lithium coin / button cell batteries have modified special construction and performance requirements.		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.6.3	Protective earthing conductors comply with the minimum conductor sizes in Table G.5, except as required by Table G.7ADV.1 for cord connected equipment, or Annex DVH for permanently connected equipment	Class III equipment.	N/A
5.7.7	Equipment intended to receive telecommunication ringing signals complies with a special touch current measurement tests.		N/A
6.5.1	PS3 wiring outside a fire enclosure complies with single fault testing in B.4, or be current limited per one of the permitted methods.		N/A
Annex F (F.3.3.8)	Output terminals provided for supply of other equipment, except mains supply are marked with a maximum rating or references to which equipment it is permitted to be connected.	No such output terminals.	N/A
Annex G (G.7.1)	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.	Not provided power cord.	N/A
Annex G (G.7.3)	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.	Not provided power cord.	N/A
	Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.	Not provided power cord.	N/A
Annex G (G.7.5)	Minimum cord length is required to be 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement. Power supply cords are required to be no longer than 4.5 m in length if used in ITE Rooms.	Not provided power cord.	N/A
Annex H.2	Continuous ringing signals under normal operating conditions up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.		N/A
Annex H.4	For circuits with other than ringing signals and with voltages exceeding 42.4 V <sub>peak</sub> or 60 V d.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex M	Battery packs for stationary applications comply with special component requirements.		N/A
Annex DVA (1)	Equipment intended for use in spaces used for environmental air are subjected to special flammability requirements for heat and visible smoke release.		N/A
	For ITE room applications, automated information storage systems with combustible media greater than 0.76 m <sup>3</sup> (27 cu ft) have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.		N/A
	Consumer products designed or intended primarily for children 12 years of age or younger are subject to additional requirements in accordance with U.S. & Canadian Regulations.		N/A
	Baby monitors additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors.		N/A
Annex DVA (5.6.3)	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20 A.		N/A
Annex DVA (6.3)	The maximum quantity of flammable liquid stored in equipment complies with NFPA 30.		N/A
Annex DVA (6.4.8)	For ITE room applications, enclosures with combustible material measuring greater than 0.9 m <sup>2</sup> (10 sq ft) or a single dimension greater than 1.8 m (6 ft) have a flame spread rating of 50 or less. For equipment with the same dimensions for other applications, an external surface that is not a fire enclosure requires a min. flammability classification of V-1.		N/A
Annex DVA (10.3.1)	Equipment with lasers meets the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
Annex DVA (10.5.1)	Equipment that produces ionizing radiation complies with the U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVA (F.3.3.3)	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. Additional considerations apply for voltage ratings that exceed the attachment cap rating or are lower than the "Normal Operating Condition" in Table 2 of CAN/CSA C22.2 No. 235."		N/A
Annex DVA (F.3.3.5)	Equipment identified for ITE (computer) room installation is marked with the rated current		N/A
Annex DVA (G.1)	Vertically-mounted disconnect switches and circuit breakers have the "on" position indicated by the handle in the up position		N/A
Annex DVA (G.3.4)	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable.		N/A
Annex DVA (G.4.2)	Equipment with isolated ground (earthing) receptacles complies with NEC 250.146(D) and CEC 10-112 and 10-906(8).		N/A
Annex DVA (G.4.3)	Where a fuse is used to provide Class 2 or Class 3 current limiting, it is not operator-accessible unless it is non- interchangeable.		N/A
Annex DVA (G.5.3)	Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.		N/A
Annex DVA (G.5.4)	Motor control devices are required for cord-connected equipment with a mains-connected motor if the equipment is rated more than 12 A, or if the equipment has a nominal voltage rating greater than 120 V, or if the motor is rated more than 1/3 hp (locked rotor current over 43 A).		N/A
Annex DVA (Annex M)	For ITE room applications, equipment with battery systems capable of supplying 750 VA for five minutes have a battery disconnect means that may be connected to the ITE room remote power-off circuit.		N/A
Annex DVA (Q)	Wiring terminals intended to supply Class 2 outputs according to the NEC or CEC Part 1 are marked with the voltage rating and "Class 2" or equivalent; marking is located adjacent to the terminals and visible during wiring.		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVB (1)	Additional requirements apply for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities.		N/A
Annex DVC (1)	Additional requirements apply for equipment intended for mounting under kitchen cabinets.		N/A
Annex DVE (4.1.1)	Some equipment, components, sub-assemblies and materials associated with the risk of fire, electric shock, or personal injury have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. Components required to comply include: appliance couplers, attachment plugs, battery back-up systems, battery packs, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), power supply cords, direct plug-in equipment, electrochemical capacitor modules (energy storage modules with ultra-capacitors), enclosures (outdoor), flexible cords and cables, fuses (branch circuit), ground-fault current interrupters, interconnecting cables, data storage equipment, printed wiring, protectors for communications circuits, receptacles, surge protective devices, vehicle battery adapters, wire connectors, and wire and cables.	See appended Table 4.1.2.	P
Annex DVH	Equipment for permanent connection to the mains supply is subjected to additional requirements.		N/A
Annex DVH (DVH.1)	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains are in accordance with the NEC/CEC.		N/A
Annex DVH (DVH.3.2)	Terminals for permanent wiring, including protective earthing terminals, are suitable for U.S./Canadian wire gauge sizes, rated 125 percent of the equipment rating, and are specially marked when specified.		N/A
Annex DVH (DVH.3.2)	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm <sup>2</sup> ).		N/A
Annex DVH (DVH.4)	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVH (DVH 5.5)	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, complies with special earthing, wiring, marking and installation instruction requirements.		N/A
Annex DVI (6.7)	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses.		N/A
Annex DVJ (10.6.1)	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<p><b>ATTACHMENT TO TEST REPORT IEC 62368-1</b>  <b>DENMARK NATIONAL DIFFERENCES</b>                  Audio/video, information and communication technology equipment –                  Part 1: Safety requirements</p>	
<b>Differences according to</b> .....	DS/EN 62368-1:2014
<b>Attachment Form No.</b> .....	DK_ND_IEC62368_1B
<b>Attachment Originator</b> .....	UL (Demko)
<b>Master Attachment</b> .....	2014-10
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	National Differences		N/A
4.1.15	<p>To the end of the subclause the following is added:</p> <p>Class I pluggable equipment type A intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment shall be connected to an earthed mains socket-outlet.</p> <p>The marking text in the applicable countries shall be as follows:                      “Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord.”</p>	Class III equipment.	N/A
5.2.2.2	<p>After the 2nd paragraph add the following:                      A warning (marking safeguard) for high touch current is required if the touch current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.</p>	Class III equipment.	N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.6.1	<p>Add to the end of the subclause:</p> <p>Due to many existing installations where the socket-outlets can be protected with fuses with higher rating than the rating of the socket-outlets the protection for pluggable equipment type A shall be an integral part of the equipment.</p> <p>Justification: In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.</p>	No socket-outlets.	N/A
5.7.5	<p>To the end of the subclause the following is added:</p> <p>The installation instruction shall be affixed to the equipment if the protective conductor current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.</p>	Class III equipment.	N/A
5.7.6.2	<p>To the end of the subclause the following is added:</p> <p>The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA.</p>	Class III equipment.	N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
G.4.2	<p>To the end of the subclause the following is added:</p> <p>Supply cords of single phase appliances having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1:2011.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2.</p> <p>Mains socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance DS 60884-2-D1:2011 standard sheet DKA 1-4a.</p> <p>Other current rating socket outlets shall be in compliance with Standard Sheet DKA 1-3a or DKA 1-1c.</p> <p>Mains socket-outlets with earth shall be in compliance with DS 60884-2-D1:2011 Standard Sheet DK 1-3a, DK 1-1c, DK1-1d, DK 1-5a or DK 1-7a</p> <p>Justification: Heavy Current Regulations, Section 6c</p>	Class III equipment.	N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<p><b>ATTACHMENT TO TEST REPORT IEC 62368-1</b>  <b>ITALY NATIONAL DIFFERENCES</b>                  Audio/video, information and communication technology equipment –                  Part 1: Safety requirements</p> <p><b>Differences according to.....: CEI EN 62368-1:2016</b></p>
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	National Differences		N/A
<b>F.1</b>	<p>The following requirements shall be fulfilled:</p> <ul style="list-style-type: none"> <li>• The power consumption in Watts (W) shall be indicated on TV receivers and in their instruction for use (Measurement according to EN 60555-2). <i>Note/Nota EN 60555-2 has since been replaced by IEC 60107-1:1997.</i></li> <li>• TV receivers shall be provided with an instruction for use, schematic diagrams and adjustments procedure in Italian language.</li> <li>• Marking for controls and terminals shall be in Italian language. Abbreviation and international symbols are allowed provided that they are explained in the instruction for use.</li> <li>• The ECC manufacturers are bound to issue a conformity declaration according to the above requirements in the instruction manual. The correct statement for conformity to be written in the instruction manual, shall be: <i>Questo apparecchio è fabbricato nella CEE nel rispetto delle disposizioni del D.M. marzo 1992 ed è in particolare conforme alle prescrizioni dell'art. 1 dello stesso D.M.</i></li> </ul>	No such components.	N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>• The first importers of TV receivers manufactured outside EEC are bound to submit the TV receivers for previous conformity certification to the Italian Post Ministry (PP.TT). The TV receivers shall have on the backcover the certification number in the following form: D.M. 26/03/1992 xxxxx/xxxxx/S or T or pT S for stereo T for Teletext pT for retrofitable teletext</p> <p><i>Justification:</i> Ministerial Decree of 26 March 1992 : National rules for television receivers trade.</p> <p>NOTE/NOTA: <i>Ministerial decree above contains additional, but not safety relevant requirements</i></p>		

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<p><b>ATTACHMENT TO TEST REPORT IEC 62368-1</b>  <b>SWEDEN NATIONAL DIFFERENCES</b>                  Audio/video, information and communication technology equipment –                  Part 1: Safety requirements</p>
<p><b>Differences according to</b> ..... : SS-EN 62368-1:2014</p>

	National Differences		N/A
4.1.15	<p><b>Denmark, Finland, Norway and Sweden</b></p> <p>To the end of the subclause the following is added:</p> <p><b>Class I pluggable equipment type A</b> intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and <b>accessible</b> parts, have a marking stating that the equipment shall be connected to an earthed <b>mains</b> socket-outlet.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In <b>Denmark</b>: "Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord."</p> <p>In <b>Finland</b>: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"</p> <p>In <b>Norway</b>: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In <b>Sweden</b>: "Apparaten skall anslutas till jordat uttag"</p>	Class III equipment.	N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.11.1 And Annex G	<p><b>Finland and Sweden</b></p> <p>To the end of the subclause the following is added:</p> <p>For separation of the telecommunication network from earth the following is applicable:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> <li>• two layers of thin sheet material, each of which shall pass the electric strength test below, or</li> <li>• one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below.</li> </ul> <p>If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> <li>• passes the tests and inspection criteria of 5.4.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 5.4.9 shall be performed using 1,5 kV), and</li> <li>• is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5 kV.</li> </ul> <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2.</p>	Class III equipment.	N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> <li>• the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in 5.4.11;</li> <li>• the additional testing shall be performed on all the test specimens as described in EN 60384-14;</li> </ul> <p>the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.</p>		
5.5.6	<p><b>Finland, Norway and Sweden</b></p> <p>To the end of the subclause the following is added:</p> <p>Resistors used as <b>basic safeguard</b> or bridging <b>basic insulation</b> in <b>class I pluggable equipment type A</b> shall comply with G.10.1 and the test of G.10.2.</p>	Class III equipment.	N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.7.6.1	<p><b>Norway and Sweden</b></p> <p>To the end of the subclause the following is added:</p> <p>The screen of the television distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation needs to be isolated from the screen of a cable distribution system.</p> <p>It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by a retailer, for example.</p> <p>The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in:</p> <p>“Apparatus connected to the protective earthing of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a television distribution system therefore has to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)”</p> <p>NOTE In Norway, due to regulation for CATV-installations, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p>	Class III equipment.	N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>“Apparater som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et koaksialbasert kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av apparater til kabel-TV nett installeres en galvanisk isolator mellom apparatet og kabel-TV nettet.”</p> <p>Translation to Swedish:</p> <p>”Apparater som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet.”</p>		

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<b>ATTACHMENT TO TEST REPORT IEC 62368-1</b> <b>Japan NATIONAL DIFFERENCES</b> Audio/video, information and communication technology equipment – Part 1: Safety requirements	
<b>Differences according to.....:</b>	J62368-1 (H30)
<b>Attachment Form No. ....:</b>	JP_ND_IEC62368_1B
<b>Attachment Originator.....:</b>	UL (JP)
<b>Master Attachment.....:</b>	Date 2018-11-22
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	<b>National Differences</b>		—
4.1.2	Where the component, or a characteristic of a component, is a safeguard or a part of a safeguard, components shall comply with the requirements of this standard or, where specified in a requirements clause, with the safety aspects of the relevant JIS component standards or IEC component standards, or components shall have properties equivalent to or better than these.	See appended Table 4.1.2.	P
5.6.1	Mains socket-outlet and appliance outlet shall comply with Clause G.4.2A if they are incorporated as part of the equipment.		N/A
5.6.2.1	Mains connection of class 0I equipment: Instructional safeguard in accordance with Clause F.3.6.1A; Mains plug having a lead wire for protective earthing connection of class 0I equipment; Independent main protective earthing terminal installed by ordinary person.		N/A
5.6.2.2	This requirement does not apply to internal conductor of the cord set that is covered by the sheath of mains cord and is formed together with mains plug and appliance connector.		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.6.3	In case of class 0I equipment using power supply cord having two conductors (no earthing conductor), the conductor of protective earthing lead wire shall comply with either of the following: – use of annealed copper wire with 1.6 mm diameter or corrosion-inhibiting metal wire having size and strength that are equivalent to or more than the above copper wire – single core cord or single core cable with 1.25 mm <sup>2</sup> or more cross-sectional area		N/A
5.7.3	For class 0I equipment that is provided with mains socket-outlet in the configuration as specified in JIS C 8282 series or JIS C 8303, or otherwise being considered to comply with relevant regulations, or that is provided with mains appliance outlet as specified in JIS C 8283-2-2 for the purpose of interconnection, the measurement is conducted on the system of the interconnected equipment having a single connection to the mains.		N/A
5.7.4	In case of class 0I equipment, touch current shall not exceed 1.41 mA peak or for sinusoidal wave, 1.0 mA r.m.s. when measured using the network specified in Figure 4 of IEC 60990.		N/A
6.4.3.3	A fuse complying with JIS C 6575 series or a fuse having equivalent characteristics shall open within 1 s. For Class A fuse of JIS C 6575, replace “2.1 times” by “1.35 times” and in case of Class B fuse of JIS C 6575, replace “2.1 times” by “1.6 times”. A fuse not complying with JIS C 6575 series shall be tested with the breaking capacity taken into account.		N/A
8.5.4.2.1	Only three-phase stationary equipment rated more than 200 V ac can be considered as being for use in locations where children are not likely to be present, when complying with Clause F.4.		N/A
8.5.4.2.2	For equipment installed where children may be present, an instructional safeguard shall be provided by easily understandable wording in accordance with Clause F.5, except that element 3 is optional.		N/A
8.5.4.2.4	The media destruction device is tested according to Clause V.1.2 with applicable jointed test probes to the opening. And then the wedge probe per Figure V.4 shall not contact any moving part.		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
8.5.4.2.5	The wedge probe of Figure V.4 and applicable jointed test probes specified in Clause V.1.2 shall not contact any moving part. Instructional safeguard shall not be used instead of equipment safeguard for preventing access to hazardous moving parts.		N/A
9.2.6, Table 38	Handles, Knobs, grips, etc. and external surfaces either held, touched or worn against the body in normal use (> 1 min) <sup>b,c</sup>	Considered.	P
F.3.5.1	Instructional safeguard of class 0I equipment in accordance with Clause F.5 when a mains socket-outlet as specified in JIS C 8282 series, JIS C 8303 or relevant regulation to which class I equipment can be connected is provided in accordance with Clause G.4.2A except for the cases where the socket-outlet is accessible only to skilled persons.		N/A
F.3.5.3	If the fuse is necessary for the safeguard function, the symbols indicating pre-arcing time-current characteristic.		N/A
F.3.6.1A	Marking for class 0I equipment The requirements of Clauses F.3.6.1.1 and F.3.6.1.3 shall be applied to class 0I equipment. For class 0I equipment, a marking of instructions and instructional safeguard shall be provided regarding the earthing connection.		N/A
F.3.6.2.1	Symbols, IEC 60417-5172 (2003-02) or IEC 60417-6092 (2011-10), shall not be used for class I equipment or class 0I equipment.		N/A
F.4	Instruction for audio equipment with terminals classified as ES3 in accordance with Table E.1, and for other equipment with terminals marked in accordance with F.3.6.1 and F.3.6.1A. Installation instruction for the protective earthing connection for class 0I equipment provided with independent main protective earthing terminal, where the cord for the protective earthing connection is not provided within the package for the equipment.		N/A
G.3.2.1	The thermal link when tested as a separate component, shall comply with the requirements of JIS C 6691 or have properties equivalent to or better than that.		N/A

IEC62368_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
G.3.4	<p>Except for devices covered by Clause G.3.5, overcurrent protective devices used as a safeguard shall comply with the relevant part of JIS C 6575 (corresponding to IEC60127) or shall have equivalent characteristics.</p> <p>If there are no applicable IEC standards, overcurrent protective devices used as a safeguard shall comply with their applicable IEC standards.</p>		N/A
G.4.1	This requirement is not applicable to Clauses G.4.2 and G.4.2A.		N/A
G.4.2	<p>Mains connector shall comply with JIS C 8282 series, JIS C 8283 series, JIS C 8285, JIS C 8303 or IEC 60309 series.</p> <p>Mains plugs and socket-outlets shall comply with JIS C 8282 series, JIS C 8303, IEC 60309 series, or have equivalent or better performance.</p> <p>A power supply cord set provided with appliance connector that can fit appliance inlet complying with JIS C 8283-1 shall comply with JIS C 8286.</p> <p>Construction preventing mechanical stress not to transmit to the soldering part of inlet terminal.</p> <p>Consideration for an equipment rated not more than 125 V provided with Type C14 and C18 appliance coupler complying with JIS C 8283 series.</p>		N/A
G.4.2A	Mains socket-outlet and interconnection coupler provided with the class II, class I and class 0I equipment respectively.		N/A
G.7.1	A mains supply cord need not include the protective earthing conductor for class 0I equipment provided with independent protective earthing conductor.		N/A
G.8.3.3	Withstand $1,71 \times 1.1 \times U_0$ for 5 s.		N/A

## Attachments

### Photographs

Supplement ID	Description
2-01	Overall View-1 for Model FD8377-EHTV, FD8377-HTV
2-02	Overall View-2 for Model FD8377-EHTV, FD8377-HTV
2-03	Internal View-1 for Model FD8377-EHTV, FD8377-HTV
2-04	Internal View-2 for Model FD8377-EHTV
2-05	Internal View-3 for Model FD8377-EHTV
2-06	Internal View-4 for Model FD8377-HTV
2-07	Internal View-5 for Model FD8377-HTV
2-08	Main board View-1 for Model FD8377-EHTV
2-09	Main board View-2 for Model FD8377-HTV
2-10	Main board View-3 for Model FD8377-EHTV, FD8377-HTV
2-11	Overall View-1 for Model FD8177-HT
2-12	Overall View-2 for Model FD8177-HT
2-13	Internal View-1 for Model FD8177-HT
2-14	Internal View-2 for Model FD8177-HT
2-15	Internal View-3 for Model FD8177-HT
2-16	Main board View-1 for Model FD8177-HT
2-17	Main board View-2 for Model FD8177-HT

Photographs ID 2-01



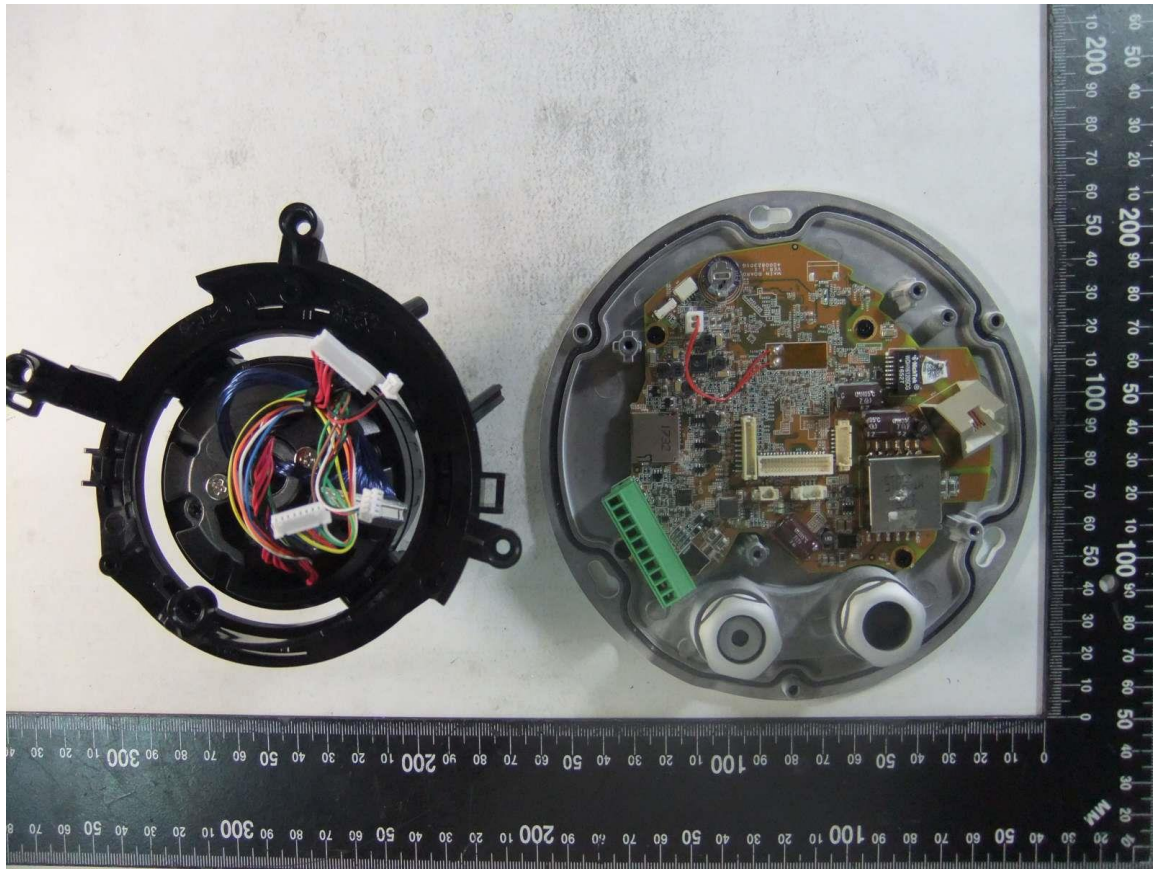
Photographs ID 2-02



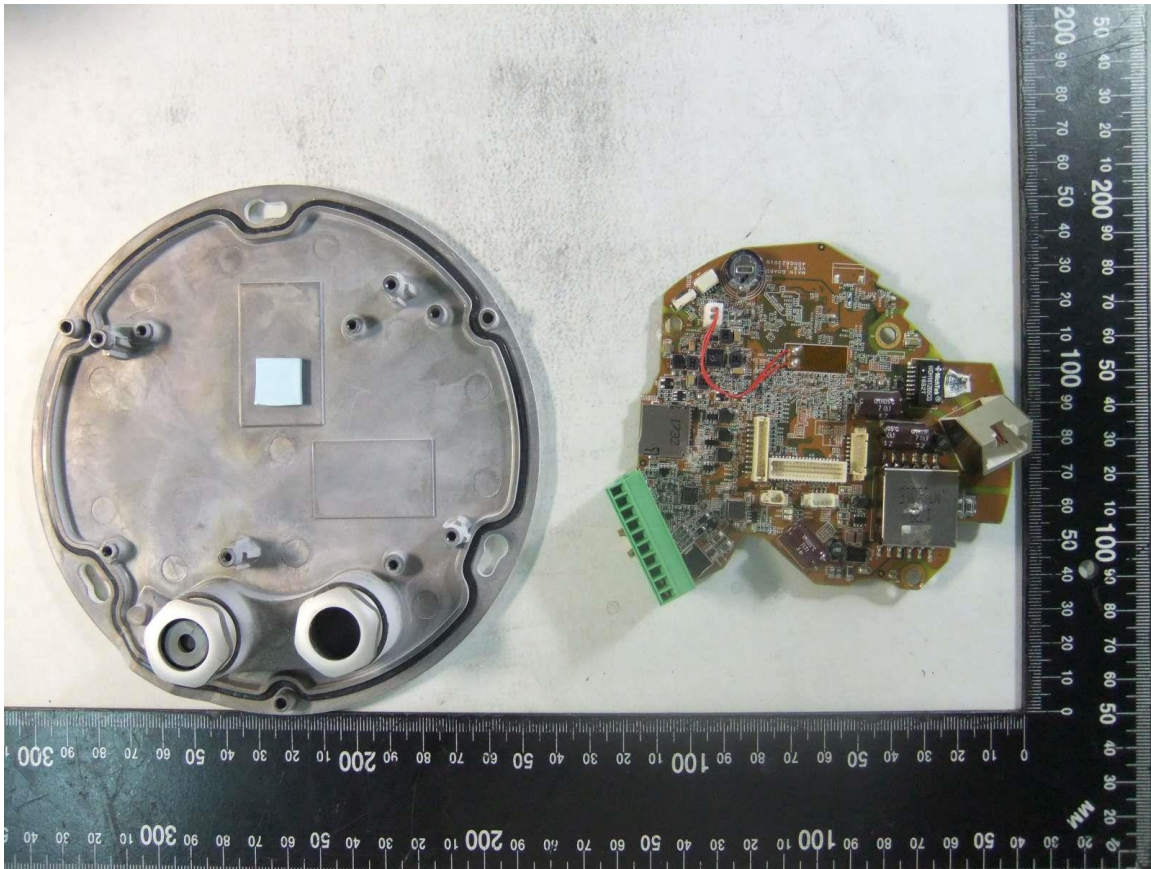
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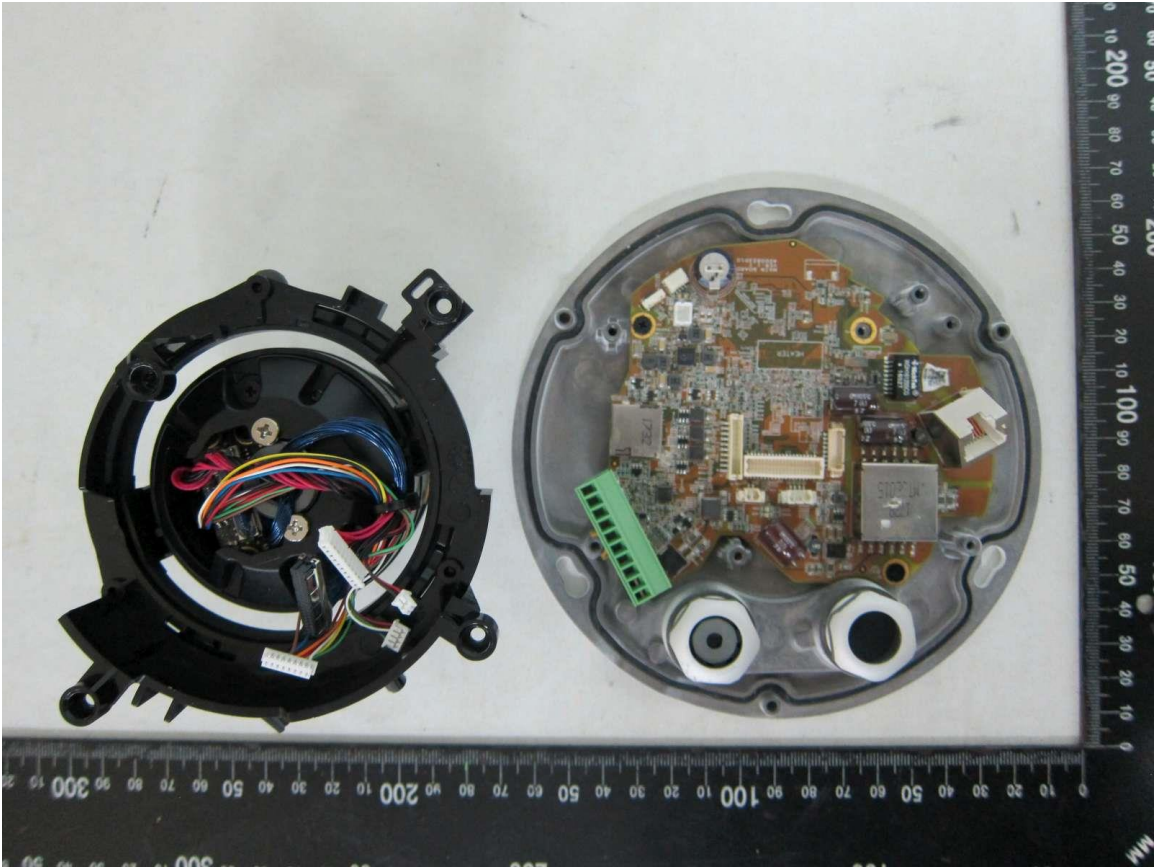
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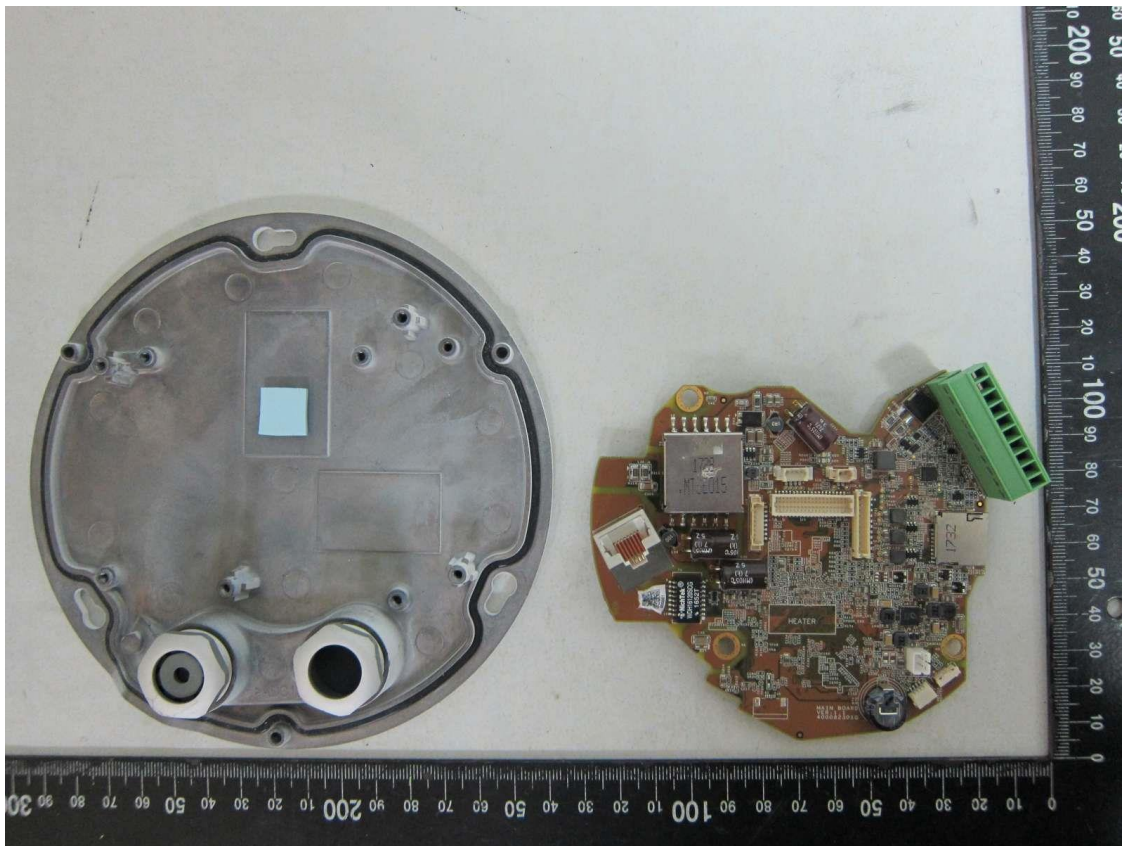
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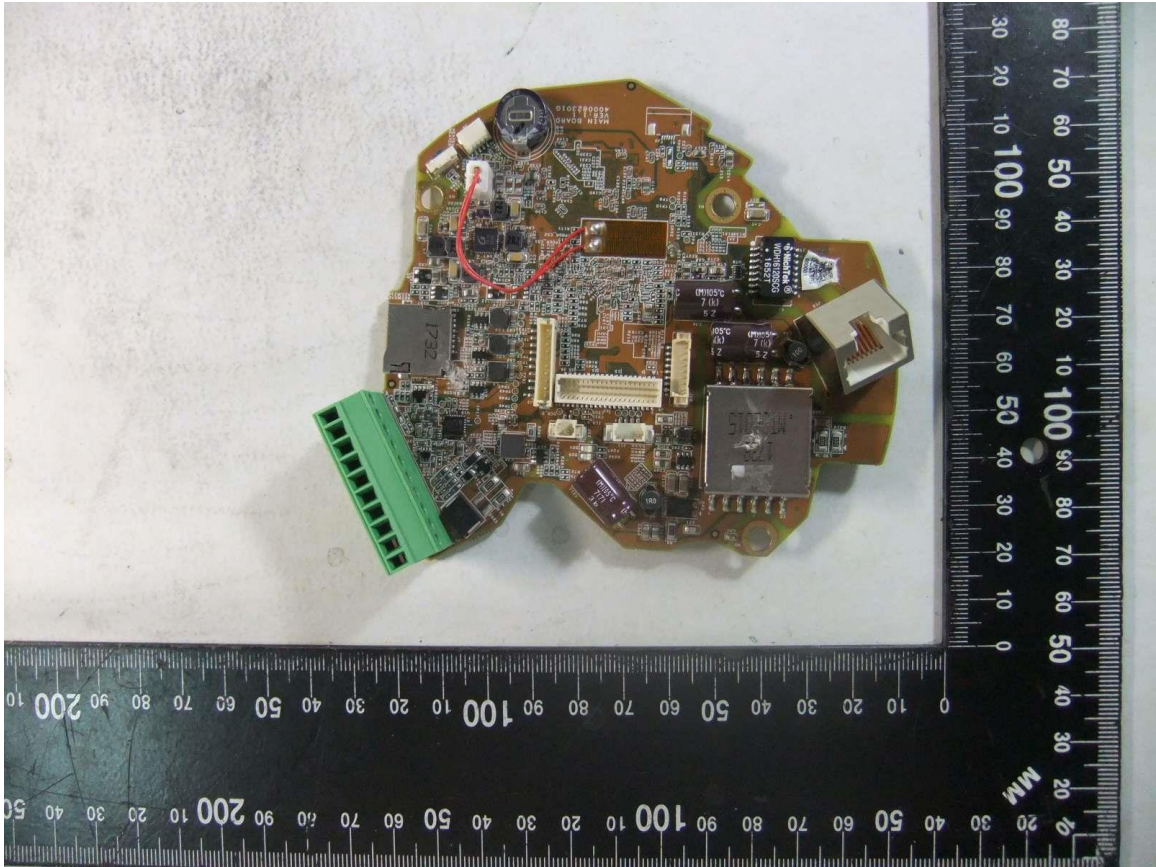
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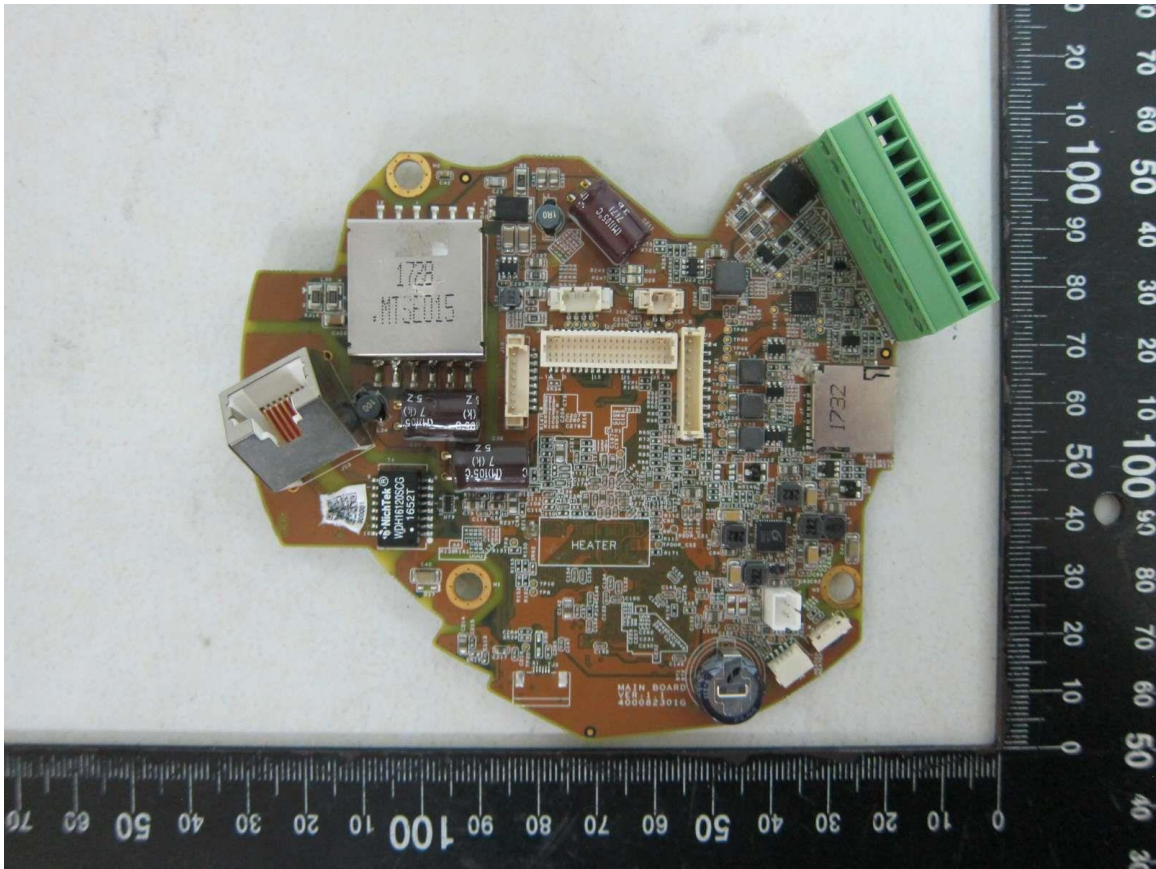
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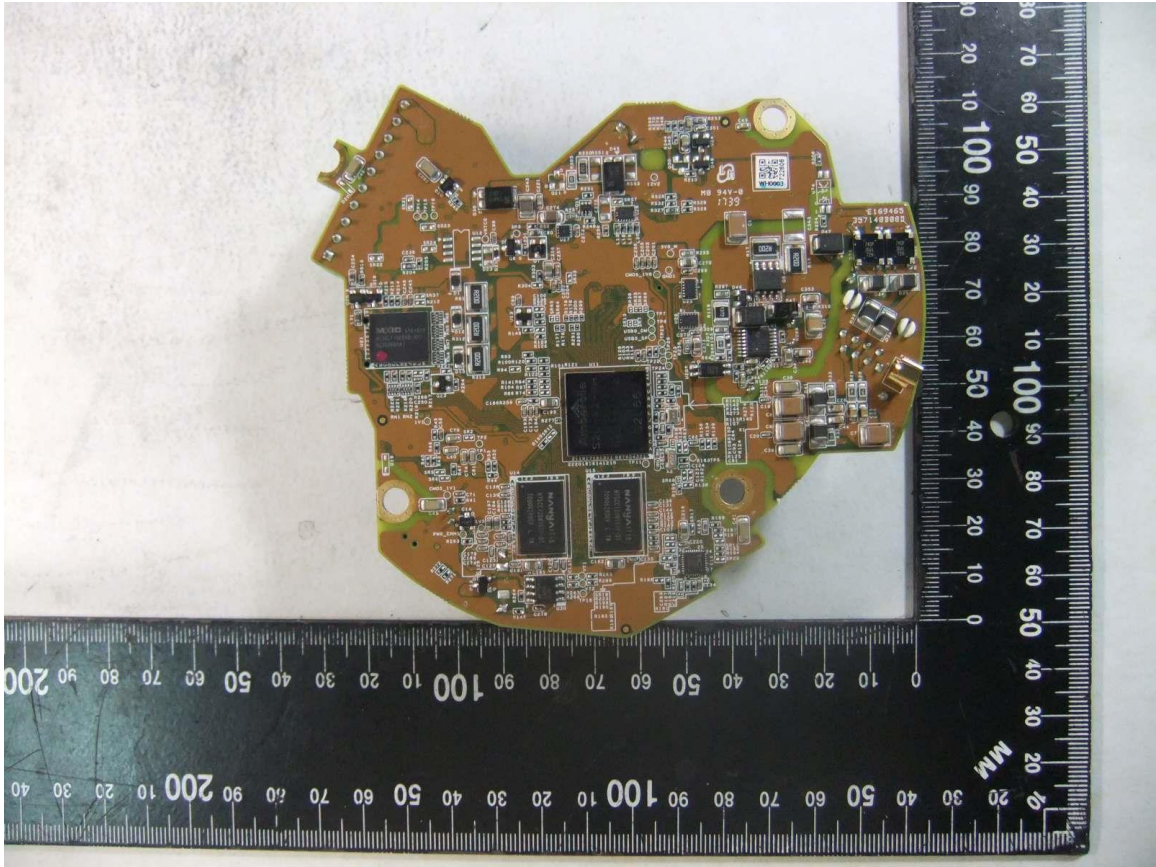
Photographs ID 2-08



Photographs ID 2-09



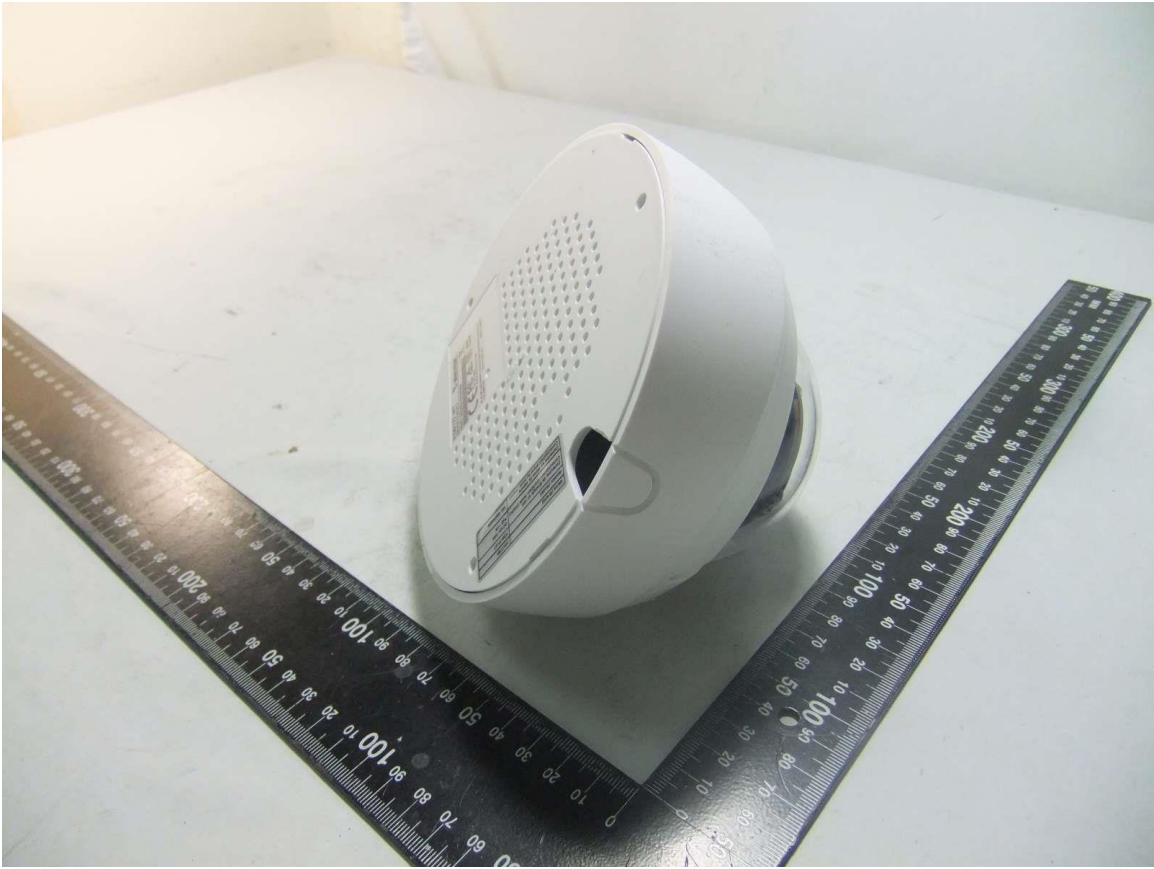
Photographs ID 2-10



Photographs ID 2-11



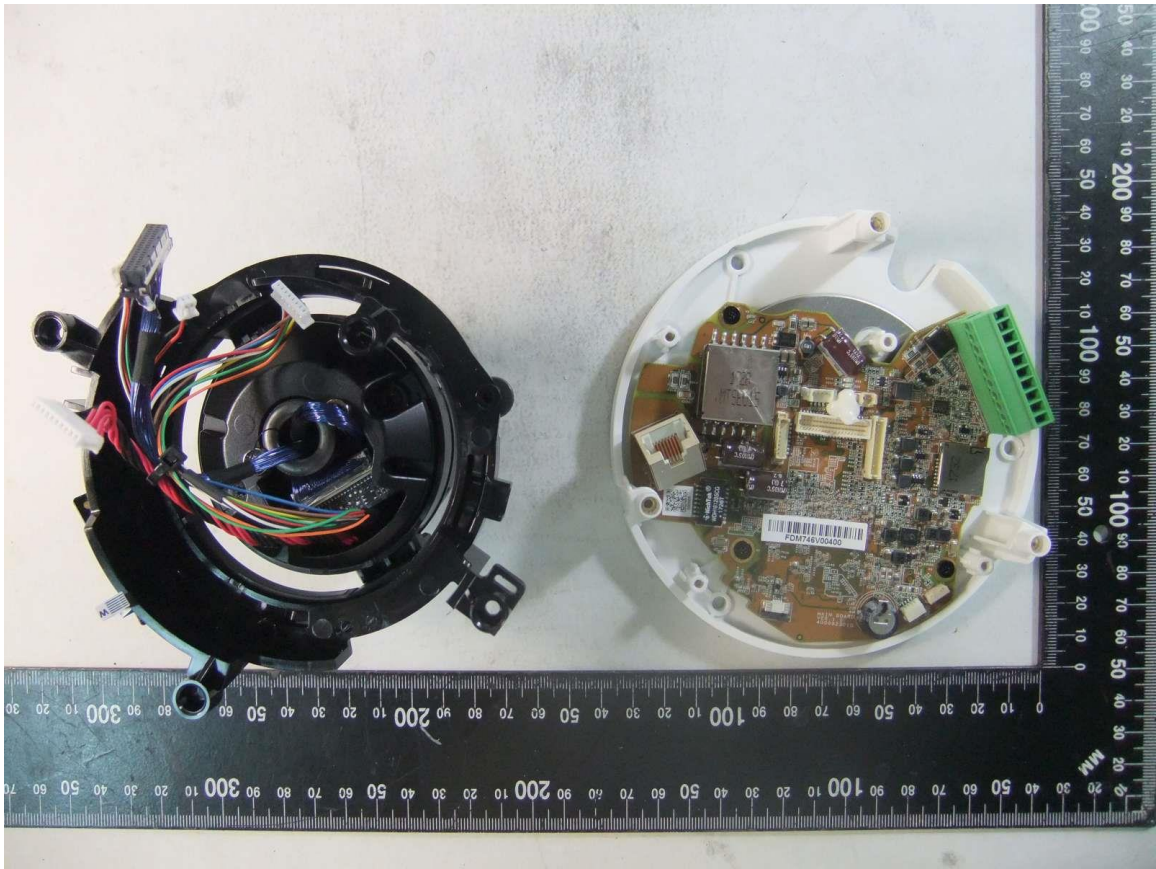
Photographs ID 2-12



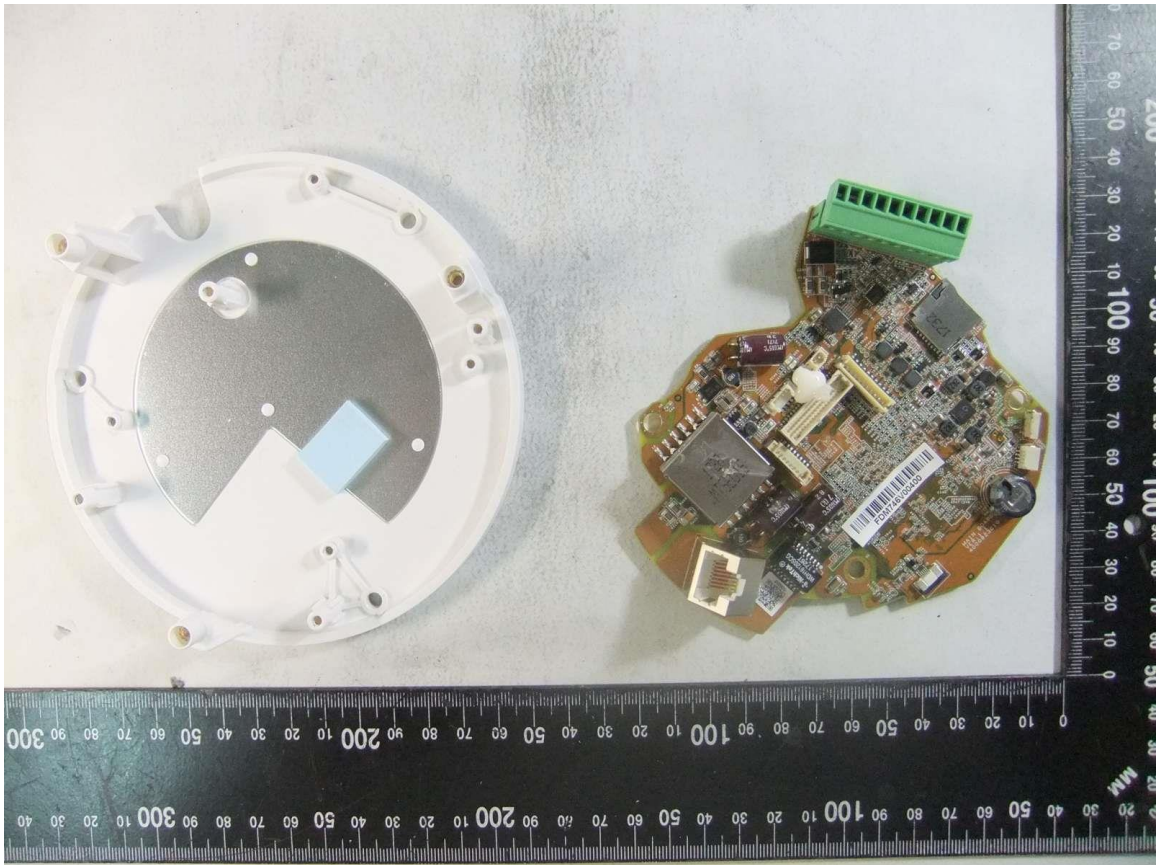
Photographs ID 2-13



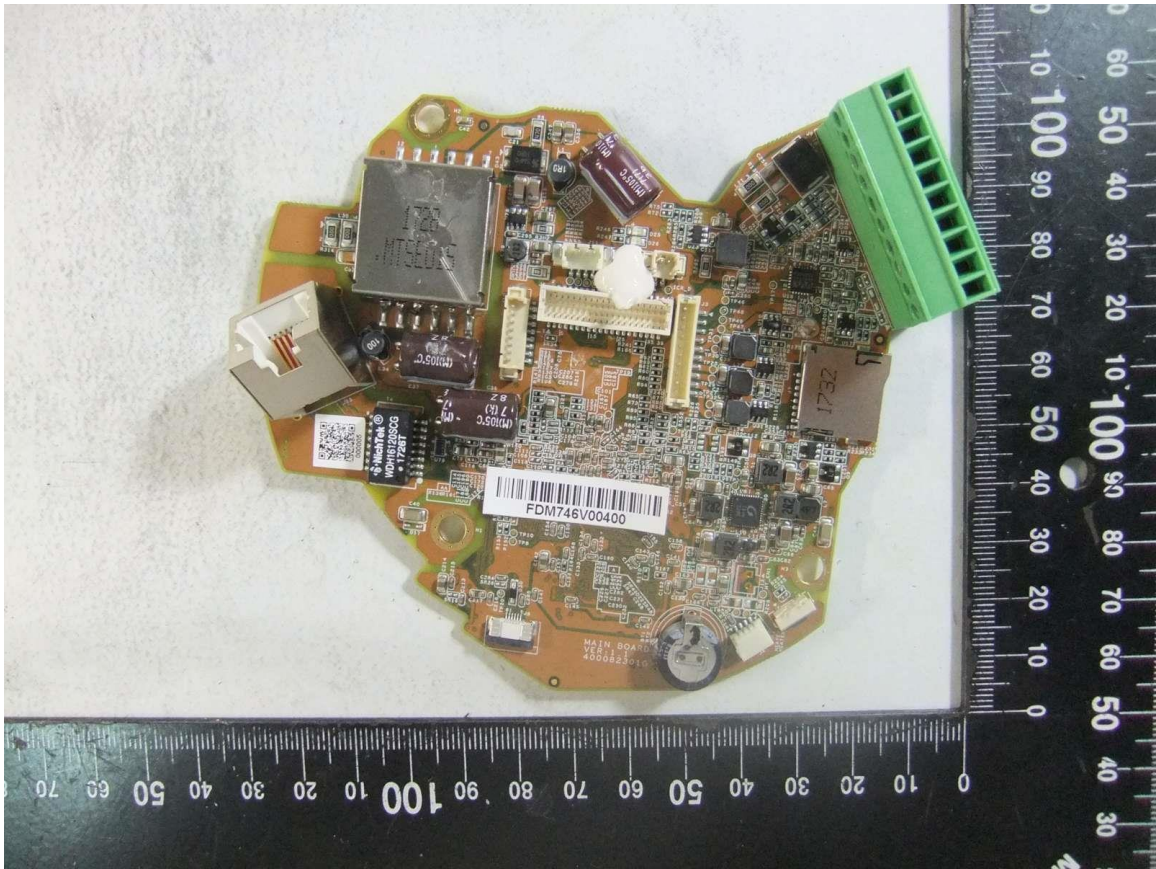
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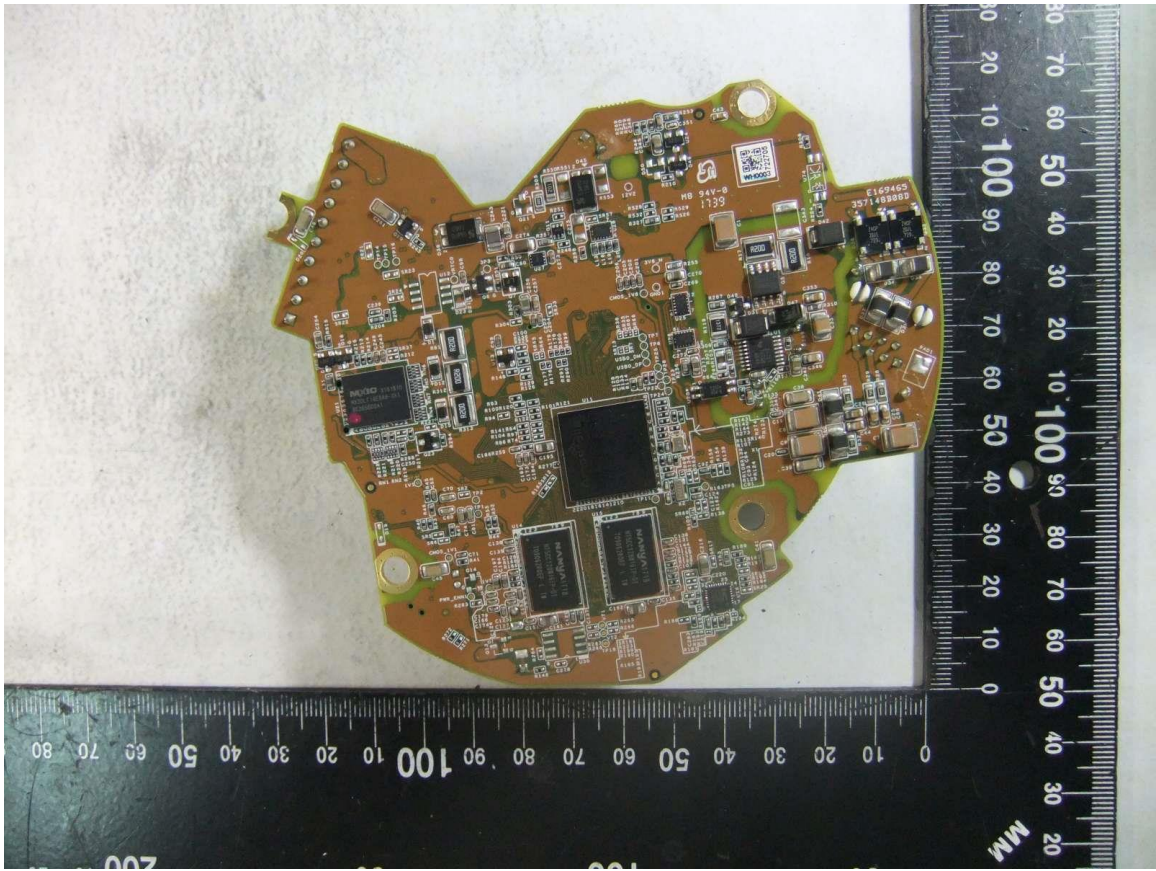
Photographs ID 2-15



Photographs ID 2-16



Photographs ID 2-17

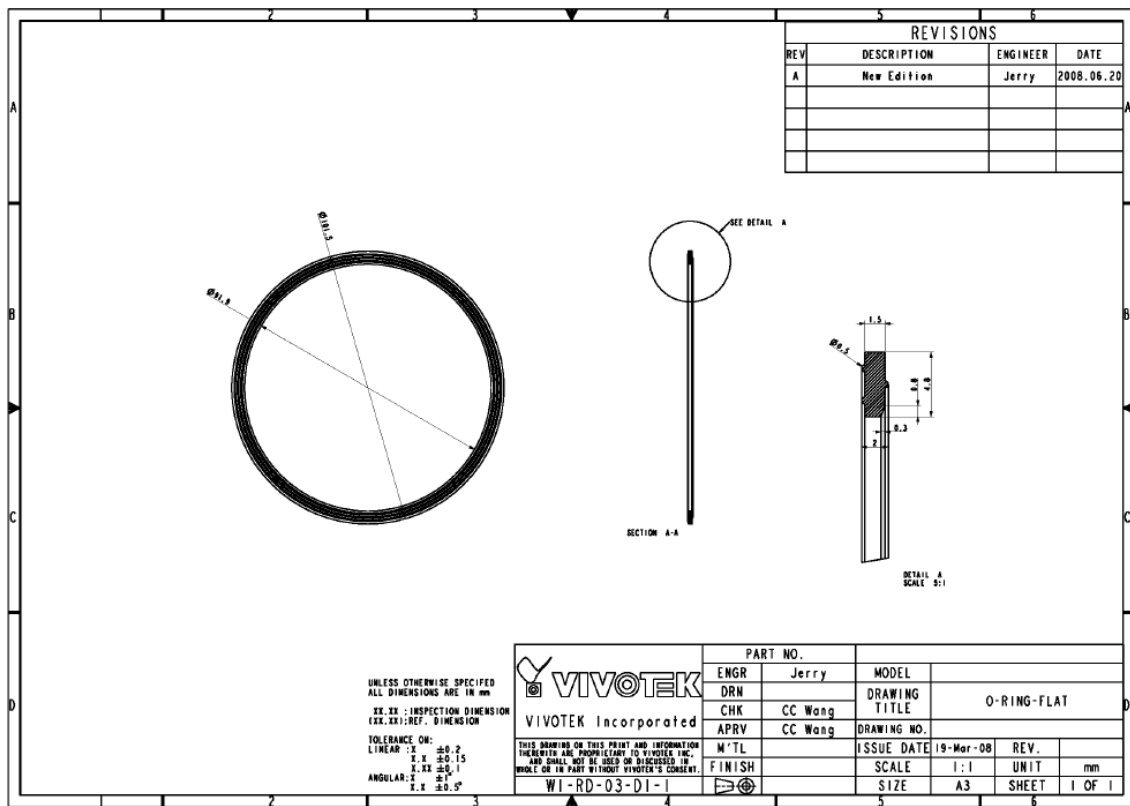


## Attachments

### Diagrams

Supplement ID	Description
3-01	O-ring drawing (Between plastic lens cover and metal enclosure)
3-02	O-ring drawing (Between top enclosure and bottom enclosure)
3-03	Gasket for Cable Glands(Hole of LAN cable)
3-04	Hole plug (for Hole of General I/O terminal block)

Diagrams ID 3-01



REVISIONS			
REV	DESCRIPTION	ENGINEER	DATE
A	New Edition	Jerry	2008.06.20

UNLESS OTHERWISE SPECIFIED  
ALL DIMENSIONS ARE IN MM  
XX.XX : INSPECTION DIMENSION  
(XX.XX):REF. DIMENSION  
TOLERANCE ON:  
LINEAR : X ±0.2  
          S X ±0.15  
          Z, XX ±0.1  
ANGULAR : ±1°  
          Z, X ±0.5°

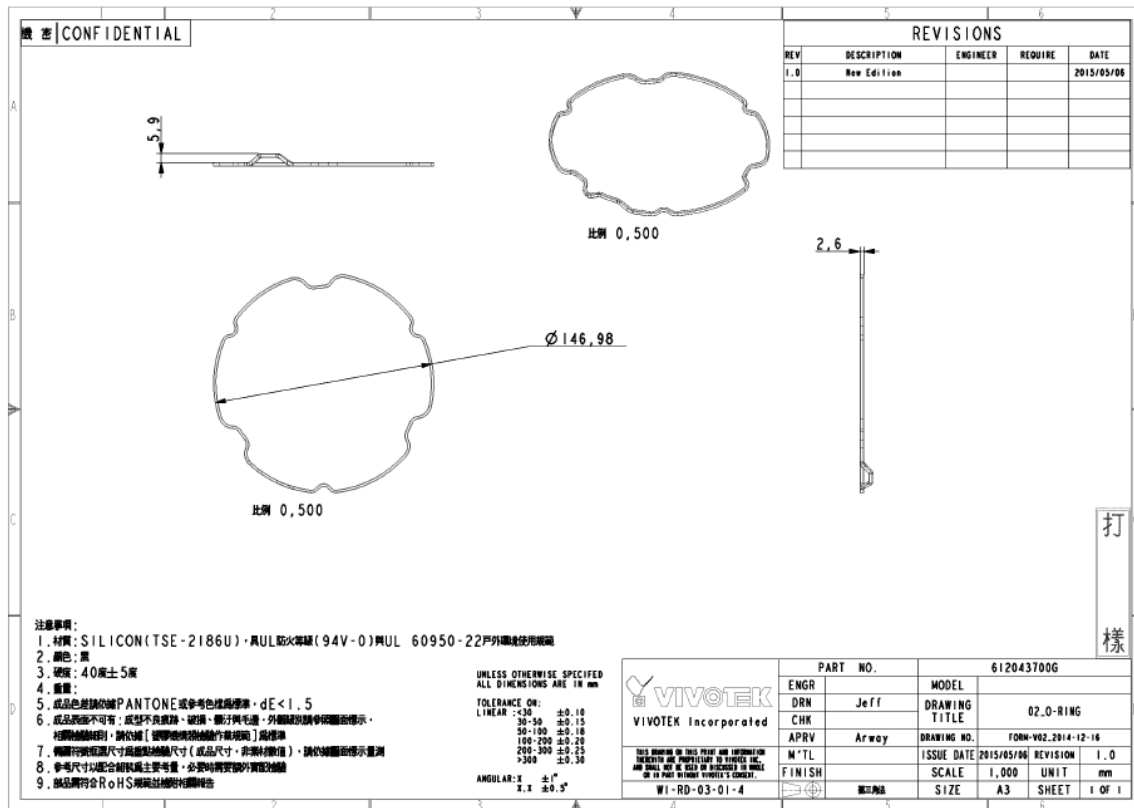
**VIVOTEK**  
VIVOTEK Incorporated

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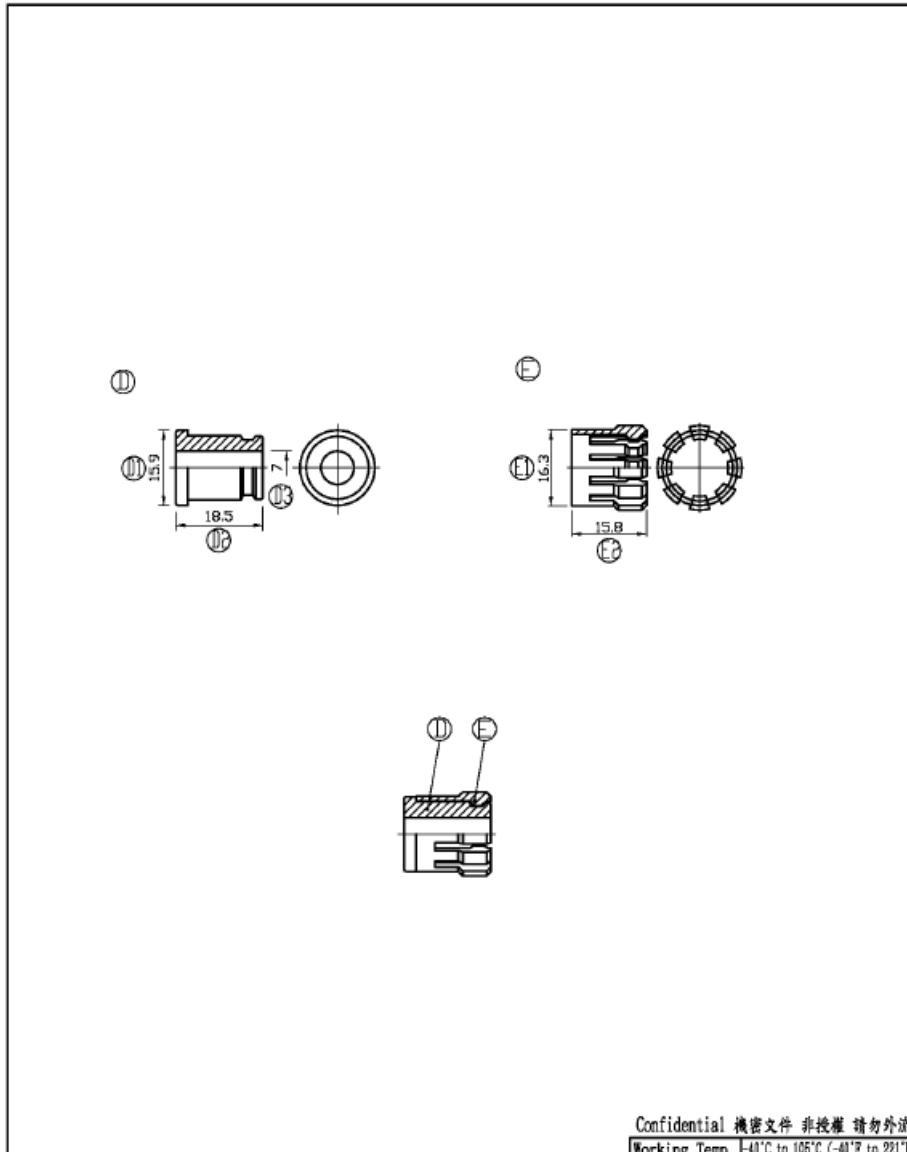
WI-RD-03-D1-1

PART NO.		MODEL	DRAWING TITLE	
ENGR	Jerry		O-RING-FLAT	
DRN				
CHK	CC Wang			
APRV	CC Wang			
M'TL		ISSUE DATE	19-Mar-08	REV.
FINISH		SCALE	1:1	UNIT
		SIZE	A3	SHEET
				1 OF 1

Diagrams ID 3-02

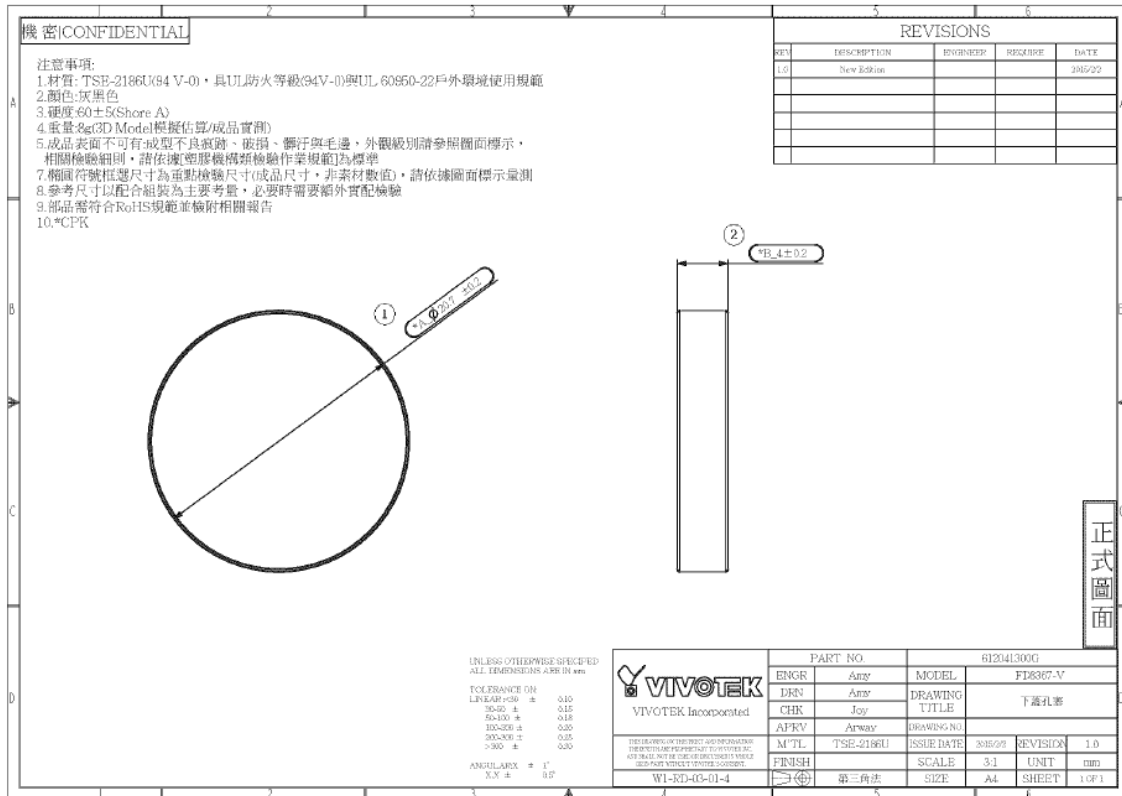


Diagrams ID 3-03



全冠企業有限公司 AVC Industrial Corp.			INSPECTED BY YAWEN 2014.09.19	2014.09.19	Confidential 機密文件 非授權 請勿外流 Working Temp. -40°C to 105°C (-41°F to 221°F)
PRODUCT: NYLON CABLE GLANDS			DRAWN BY LING GHIOU 2014.09.19	2014.09.19	PATENTED TOLERANCE: 8 ±0.2 18.1-30±0.5 6.1-9±0.3 30.1-50±0.6 9.1-18±0.4 50.1-80±0.8
PART NO.: MG16A-06B-ST-XABCF			MATERIAL D PART:BLACK EPDM E PART:BLACK PA66 UL94V-2	REMARKS: All rights reserved ( )Inside reference value	
SCALE: 1:1	UNIT: mm	REV. 7.1		RoHS	

Diagrams ID 3-04



**Attachments****Miscellaneous**

Supplement ID	Description
4-01	IEC60950-22 Test report
4-02	IR LED IEC62471 Test report

## Miscellaneous ID 4-01



Test Report issued under the responsibility of:



<b>TEST REPORT</b> <b>IEC 60950-22</b> <b>Information technology equipment</b> <b>Safety – Part 22: Equipment to be installed outdoors</b>	
<b>Report Reference No.</b> .....	E324690-4788439071-1 Original
Date of issue .....	2018-04-24
Total number of pages .....	24
<b>CB Testing Laboratory</b> .....	UNDERWRITERS LABORATORIES TAIWAN CO LTD
Address .....	1ST FL, 260 DA-YEH RD, PEI TOU DISTRICT, TAIPEI CITY, TAIWAN 112
<b>Applicant's name</b> .....	VIVOTEK INC
Address .....	6TH FL, 192 LIEN CHENG RD CHUNG HO DISTRICT NEW TAIPEI 235 TAIWAN
<b>Test specification:</b>	
Standard .....	IEC 60 950-22 : 2005 (1 <sup>st</sup> Edition)
Test procedure .....	CB / CCA
Non-standard test method .....	N/A
<b>Test Report Form No.</b> .....	IEC60950_22A
Test Report Form(s) Originator .....	The Standards Institution of Israel Ltd.
Master TRF .....	Dated 2007-03
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If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.	
<b>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.</b>	

Miscellaneous ID 4-01

<b>Test item description..... :</b>	Network Camera
Trade Mark .....	See main test report
Manufacturer..... :	VIVOTEK INC 6TH FL, 192 LIEN CHENG RD CHUNG HO DISTRICT NEW TAIPEI 235 TAIWAN
Model/Type reference..... :	FD8377-HTV, FD8377-EHTV
Ratings..... :	For Model FD8377-HTV: For Terminal block: (1) 12 Vdc, 0.83 A For PoE: (2) 37-57 Vdc, 0.30 A-0.19 A  For Model FD8377-EHTV: For Terminal block: (1) 12 Vdc, 1.7 A For PoE: (2) 42.5-57 Vdc, 0.54 A-0.40 A

Miscellaneous ID 4-01

<b>Testing procedure and testing location:</b>	
<input checked="" type="checkbox"/> <b>CB Testing Laboratory:</b>	UNDERWRITERS LABORATORIES TAIWAN CO LTD
Testing location/ address.....:	1ST Fl, 260 DA-YEH RD, PEI TOU DISTRICT, TAIPEI CITY, TAIWAN 112
<input type="checkbox"/> <b>Associated CB Test Laboratory:</b>	
Testing location/ address.....:	
Tested by (name + signature).....:	Nate Hsu/ Project Handler <i>Nate Hsu</i>
Approved by (+ signature) .....	Stanley Tsai / Reviewer <i>Stanley Tsai</i>
<input type="checkbox"/> Testing procedure: TMP	
Tested by (name + signature).....:	
Approved by (+ signature) .....	
Testing location/ address.....:	
<input type="checkbox"/> Testing procedure: WMT	
Tested by (name + signature).....:	
Witnessed by (+ signature).....:	
Approved by (+ signature) .....	
Testing location/ address.....:	
<input type="checkbox"/> Testing procedure: SMT	
Tested by (name + signature).....:	
Approved by (+ signature) .....	
Supervised by (+ signature).....:	
Testing location/ address.....:	
<input type="checkbox"/> Testing procedure: RMT	
Tested by (name + signature).....:	
Approved by (+ signature) .....	
Supervised by (+ signature).....:	
Testing location/ address.....:	

## Miscellaneous ID 4-01

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<b>Summary of testing:</b>	
<b>Tests performed (name of test and test clause):</b> 4.2.5, 4.2.1, PART 22 10.2 – IMPACT TEST PART 22, 9.1, ANNEX B – WATER SPRAY TEST Part 22 8.5, ANNEX D.2 – TENSILE STRENGTH AND ELONGATION	<b>Testing location:</b> UNDERWRITERS LABORATORIES TAIWAN CO LTD 1ST FL, 260 DA-YEH RD, PEI TOU DISTRICT, TAIPEI CITY, TAIWAN 112
<b>Summary of compliance with National Differences:</b> N/A	
<b>Copy of marking plate</b> See main test report.	

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<b>Test item particulars</b> .....	
Temperature range.....	-50 degree C to 50 degree C (for Model FD8377-EHTV), -20 degree C to 50 degree C (for Model FD8377-HTV)
Overvoltage category.....	<input type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV
IP protection class .....	IPX0
<b>Possible test case verdicts:</b>	
- 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)
<b>Testing</b> .....	
Date of receipt of test item .....	2018-04-11
Date (s) of performance of tests .....	2018-04-16 to 2018-04-17
<b>General remarks:</b>	
The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. "(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.	
<b>This Test Report Form is intended for the investigation of safety of equipment to be installed outdoors in accordance with IEC 60950-22. It can only be used together with the IEC 60950-1 requirements.</b>	
<b>General product information:</b>	
- The official TRF used for this evaluation has not been updated to include CTF Stage 3 / 4 Witnessed by entry. UL will inform IECEE Secretariat about the required TRF CTF update. - UL CBTL utilized currently published TRF from the IECEE TRF site to create this CBTR, which contains old MTL programs on Page 2 and we have informed the IECEE secretariat through our NCB Manager about this particular TRF that needs an update to the current template including new CTF program page.	
<b>Report Summary</b>	
All applicable tests according to the referenced standard(s) have been carried out.	
<b>Product Description</b>	
The equipment is a Class III Network Camera, consists of electronic components mounted on PWB and is equipped with a progressive scan CMOS sensor then housed within plastic/metal enclosure, also provides RJ45, and Terminal block, which is used to connect external input/output devices. The EUT installs to the wall or ceiling. The power source can choose to use POE or external power adapter.	

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**Model Differences**

Model	FD8377-EHTV	FD8377-HTV
set up to	Outdoor	Outdoor
Heater	Yes	No
I/P:	42.5 - 57 Vdc, 0.54 - 0.40 A (power by PoE) 12 Vdc, 1.7 A (power by DC IN)	37 - 57 Vdc, 0.30 - 0.19 A (power by PoE) 12 Vdc, 0.83 A (power by DC IN)
Working Temperature	-50°C ~ 50°C	-20°C ~ 50°C
Weight	0.89 Kg	0.89 Kg

**Name and address of factory:**

See main test report.

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IEC 60950-22			
Clause	Requirement + Test	Result - Remark	Verdict
4	CONDITIONS FOR OUTDOOR EQUIPMENT		P
4.1	Ambient air temperature		P
	Suitability for use at any temperature in the range specified by the manufacturer. If not specified by the manufacturer, the range is taken as -33°C to +40°C	-50 degree C to 50 degree C (for Model FD8377-EHTV), -20 degree C to 50 degree C (for Model FD8377-HTV)	P
4.2	AC mains supply		N/A
	Suitability for the highest Overvoltage Category expected in the installation location	Class III Equipment.	N/A
	Components used to reduce the Overvoltage Category comply with IEC 61643-series		N/A
	Reference to installation instructions .....		N/A
4.3	Rise of earth potential		
	Special earthing conditions	Class III Equipment.	N/A
	Reference to installation instructions .....		N/A
5	MARKING AND INSTRUCTIONS		P
	Special installation features for protection from conditions in the OUTDOOR LOCATION (see 1.7.2 of UL 60950-1)	Precautions in the installation instruction.	P
	OUTDOOR ENCLOSURE classification according to IEC 60529 (IP Code)	The unit is considered as outdoor equipment	N/A
6	PROTECTION FROM ELECTRICAL SHOCK IN AN OUTDOOR LOCATION		P
6.1	Voltage limits of user-accessible parts in OUTDOOR LOCATIONS (2.2.2 and 2.2.3 of UL 60950-1 with voltage limits of UL60950-22)		P
	Voltages under normal conditions (V).....	Accessible parts are less than 21.2 Vp or 30Vdc and are classified as SELV.	P
	Voltages under fault conditions (V) .....	Single fault did not cause excessive voltage in accessible SELV circuits. Limits of 15 V a.c., 21,2 V peak, or 30 V d.c. for longer than 0,2 s under single fault conditions.	P
6.2	Limited current circuits in outdoor locations		N/A
	The requirements of 2.4 of UL60950-1 apply without change		N/A

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IEC 60950-22			
Clause	Requirement + Test	Result - Remark	Verdict
7	WIRING TERMINALS FOR CONNECTION OF EXTERNAL CONDUCTORS		N/A
	The mains supply terminations powered via the normal building installation wiring are as specified in 3.3 of UL 60950-1	Not directly connected to mains.	N/A
	The mains supply terminations powered directly from the mains distribution system are as specified in IEC 60364	Not directly connected to mains.	N/A
8	CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES		P
8.1	General		P
	Protection against corrosion by use of suitable materials or by application of a protective coating	Metallic enclosure was made of aluminium.	P
	Parts serving as a functional part of an OUTDOOR ENCLOSURE (e.g., dials, connectors, etc.) comply with the same environmental protection requirements as for the OUTDOOR ENCLOSURE	All relevant parts comply with applicable requirements.	P
	Use of OUTDOOR ENCLOSURE to carry current during normal operation	Outdoor enclosure does not carry current during normal operation.	P
	Connection of a conductive part of an OUTDOOR ENCLOSURE to protective earth for carrying fault currents (see 2.6 of UL 60950-1 and 8.3 of this standard)		N/A
8.2	Resistance to ultra-violet radiation		P
	Resistance of non-metallic parts of an OUTDOOR ENCLOSURE to degradation by ultra-violet (UV) radiation	The materials of enclosure are Aluminum and plastic. Plastic is UL approved component, which complied with UL 746C, Sections 25 (UV Exposure Test) and 57 (UV Light Exposure Test) and sufficiently resistant to degradation by ultra-violet (UV) radiation.	P
	Parts providing mechanical support:		N/A
	Tensile strength test (ISO 527)		N/A
	Flexural strength test (ISO 178)		N/A
	Parts providing impact resistance:		N/A
	Charpy impact test (ISO 179)		N/A
	Izod impact test (ISO 180)		N/A
	Tensile impact test (ISO 8256)		N/A
	All parts:		N/A

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IEC 60950-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Flammability classification (1.2.12 and annex A of UL 60950-1)		N/A
8.3	Resistance to corrosion		P
8.3.1	General	Metallic enclosure was made of aluminium alloy and after evaluated/reviewed the data provided from manufacturer, the construction complied with requirements.	P
	Resistance of metallic parts of an OUTDOOR ENCLOSURE to the effects of water-borne contaminants		N/A
	Alternate method for 8.3.2-8.3.4 (IEC 61587-1)		N/A
8.3.2	Test apparatus		N/A
	Salt-spray test (IEC 60068-2-11)		N/A
	Test in a water-saturated sulphur dioxide atmosphere (water-saturated sulphur dioxide atmosphere as described in Annex A; chamber as described in ISO 3231)		N/A
8.3.3	Test procedure		N/A
8.3.4	Compliance criteria		N/A
8.4	Bottoms of FIRE ENCLOSURES		N/A
	Comply with 4.6.2 of UL 60950-1	No bottom opening.	N/A
	Bottom of FIRE ENCLOSURE of OUTDOOR EQUIPMENT mounted directly and permanently on a non-combustible surface (e.g., concrete or metal)		N/A
8.5	Gaskets		P
	If gaskets are used as the method for protection against the ingress of potential contaminants, requirements of 8.5.1 through 8.5.3 apply	Tested to Annex D.2	P
8.5.1	General		P
8.5.2	Oil resistance		N/A
8.5.3	Securing means		P
9	PROTECTION OF EQUIPMENT WITHIN AN OUTDOOR ENCLOSURE		P
9.1	Protection from moisture (see Table 2)	Annex B applied	P
9.2	Protection from plants and vermin		N/A
9.3	Protection from excessive dust	Annex B applied	P

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IEC 60950-22			
Clause	Requirement + Test	Result - Remark	Verdict

10	MECHANICAL STRENGTH OF ENCLOSURES		P
10.1	General	The materials of enclosure are Aluminium and plastic.	P
10.2	Impact test (4.2.5 of UL 60950-1)	Prior to the test, the unit was conditioned in a chamber adjusted at temperature of -50°C at least for 3 hours. The impact was applied immediately after removal from the chamber.	P
	Compliance criteria:		P
	- after test the level of protection remains in accordance with 9.1 of this standard	Complied	P
	- after test the requirements of 4.2.1 of UL 60950-1 are met	Complied	P

11	OUTDOOR EQUIPMENT CONTAINING VENTED BATTERIES		N/A
	Adequate ventilation in the compartment housing a vented battery, where gassing is possible during normal usage or over-charging	No such battery was provided.	N/A
	Protection against the risk of ignition of local concentrations of hydrogen and oxygen in a compartment containing both a battery and electrical components		N/A
	Hydrogen gas concentration measurement test		N/A
	Measured hydrogen gas concentration (% by volume) .....		—
	Max. allowed gas concentration for the mixture location in proximity to an ignition source (% by volume) .....		—
	Max. allowed gas concentration for the mixture location not in proximity to an ignition source (% by volume) .....		—
	Overcharging of rechargeable battery (see 4.3.8 of UL 60950-1)		N/A

A	ANNEX A, WATER-SATURATED SULPHUR DIOXIDE ATMOSPHERE (see 8.3.2 and 8.3.3)		N/A
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B	ANNEX B, WATER SPRAY TEST (see 9.1)		P
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C	ANNEX C, ULTRAVIOLET LIGHT CONDITIONING TEST (see 8.2)		N/A
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IEC 60950-22			
Clause	Requirement + Test	Result - Remark	Verdict
C.1	Test apparatus.....		N/A
C.2	Mounting of test samples .....		N/A
C.3	Carbon-arc light-exposure apparatus .....		N/A
C.4	Xenon-arc light-exposure apparatus.....		N/A
D	ANNEX D, GASKET TESTS (see 8.5)		P
D.1	Gasket tests		P
D.2	Tensile strength and elongation tests (for gaskets that can stretch)		P
	Tensile strength (%) .....	Not less than 75%	P
	Elongation (%) .....	Not less than 60%	P
	Visible deterioration, deformation, melting, cracking or hardening of the material .....	There was no visible cracking or other adverse effect of the conditioned material.	P
D.3	Compression test (for gaskets with closed cell construction)	Not closed cell construction.	N/A
	Initial thickness of the specimen (mm) .....		N/A
	Thickness of the specimen after test a) (mm), compression set after test a) (%) .....		N/A
	Thickness of the specimen after test b) (mm), compression set after test b) (%) .....		N/A
	Thickness of the specimen after test c) (mm), compression set after test c) (%) .....		N/A
	Visible cracks or deterioration .....		N/A
D.4	Oil immersion test		N/A
	Swelling (%).....		N/A
	Shrinking (%).....		N/A
E	ANNEX E, RATIONALE		—
E.1	General		—
E.2	Electric shock		—
E.3	Energy related hazards		—
E.4	Fire		—
E.5	Mechanical hazards		—
E.6	Heat related hazards		—
E.7	Radiation		—

TRF No. IEC60950\_22A

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IEC 60950-22

Clause	Requirement + Test	Result - Remark	Verdict
E.8	Chemical hazards		—
E.9	Biological hazards		—
E.10	Explosion hazards		—

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IEC 60950-22			
Clause	Requirement + Test	Result - Remark	Verdict

IEC 60950-22:2005 – COMMON MODIFICATIONS			
Contents	Add the following annexes:		
	Annex ZA (normative)	Normative references to international publications with their corresponding European publications	
	Annex ZB (normative)	Special national conditions	
General	Delete all the "country" notes in the reference document according to the following list:		
	4.1	Note 3	
	4.3	Note	
	8.5	Note	
	10.2	Note	
	D.3	Note	
	D.4	Note	

ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS	—
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ZB	SPECIAL NATIONAL CONDITIONS		
4.1	In <b>Finland, Norway</b> and <b>Sweden</b> , the temperature in winter may be extremely low. For OUTDOOR EQUIPMENT this will demand special design so that the equipment can withstand transport, erection and operation/service at temperatures down to -50°C	This National Condition has been removed in EN 60950-22:2006 + A11:2008.	N/A
10.2	In <b>Finland, Norway</b> and <b>Sweden</b> there are additional requirements for the minimum ambient temperature. See 4.1 of this annex.	This National Condition has been removed in EN 60950-22:2006 + A11:2008.	N/A
D.3	In <b>Finland, Norway</b> and <b>Sweden</b> there are additional requirements for the minimum ambient temperature. See 4.1 of this annex.	This National Condition has been removed in EN 60950-22:2006 + A11:2008.	N/A









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IEC 60950-22

Clause	Requirement + Test	Result - Remark	Verdict
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8.2	TABLE: Resistance to ultra-violet radiation		
8.2e)	Izod impact test (ISO 180) - unnotched		N/A
Material identification (manufacturer, type designation) .....			—
Shape and dimensions of test samples .....			—
Conditioning for Set 1 of samples .....			—
Conditioning for Set 2 of samples (including Annex C) .....			—
Test method (according to Table 1 of ISO 180) .....			—
Test conditions (T °C, RH %) .....			—
	Set 1 (without Annex C conditioning)	Set 2 (after Annex C conditioning)	
Test sample #	Izod impact strength (kJ/m <sup>2</sup> )	Test sample #	Izod impact strength (kJ/m <sup>2</sup> )
Arithmetic mean for Set 1 (kJ/m <sup>2</sup> ) .....			
Arithmetic mean for Set 2 (kJ/m <sup>2</sup> ) .....			
Retention (%) .....			
Supplementary information:			









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IEC 60950-22			
Clause	Requirement + Test	Result - Remark	Verdict

**ATTACHMENT**

US - UL60950-22, First Edition - SPECIAL NATIONAL CONDITIONS			
4	Applicable parts of Chapter 8 of the NEC may be applicable to ITE installed outdoors with connections to communication systems		P
4.2	Power supply cords are to be suitable outdoor use type as required by Section 400-4 of the NEC, i.e., marked "water resistant," "outdoor," "W" or "W-A."		N
4.2	Surge Arrestors and Transient Voltage Surge Suppressors installed external to the ITE are required to comply with the appropriate NEC requirements.		N
5	Outdoor Enclosures are required to be classified and marked in accordance with UL 50		N
7	Applicable parts of the NEC, NFPA 70; and the National Electrical Safety Code, ANSI/IEEE C2, are required, as appropriate.		N
7	Wiring terminals intended to supply Class 2 outputs are required per Article 725 of the NEC to be marked.		N
11	Requires stationary installations of storage batteries external to the ITE to comply with Article 480 of the NEC		N
OTHER DIFFERENCES			
1.2	For protection of ITE against direct lightning strikes, reference is made to NFPA 780 for additional requirements.		P
2	All references to IEC 60950-1 in this standard are replaced by the equivalent UL 60950-1 Standards. All relevant Standards referenced in the Part 1 Standard (Annex P, including P.1 and P.2) also apply to this Part 22 Standard and are not listed below. All references to clauses and subclauses in IEC 60950-1 are to the second edition.		P

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IEC 60950-22			
Clause	Requirement + Test	Result - Remark	Verdict

CA - CAN/CSA-C22.2 No. 60950-22-07 - SPECIAL NATIONAL CONDITIONS			
4	Applicable parts of Rules 54 and 60 of the CEC, may be applicable to ITE installed outdoors with connections to communication systems.		P
4.2	Power supply cords are to be suitable outdoor use type as required by Rule 4-012 of the CEC, i.e., marked "water resistant," "outdoor," "W" or "W-A."		N/A
4.2	Surge Arrestors and Transient Voltage Surge Suppressors installed external to the ITE are required to comply with the appropriate CEC requirements.		N/A
5	Outdoor Enclosures are required to be classified and marked in accordance with CAN/CSA C22.2 No. 94.		N/A
7	Applicable parts of the Canadian Electrical Code, Part I, CSA C22.1; Canadian Electrical Code, Part III, CSA C22.3, are required, as appropriate.		N/A
7	Wiring terminals intended to supply Class 2 outputs are required per Rule 16 of the CEC to be marked.		N/A
11	Requires stationary installations of storage batteries external to the ITE to comply with Rule 26-540 of the CEC.		N/A
OTHER DIFFERENCES			
1.2	For protection of ITE against direct lightning strikes, reference is made to CAN/CSA-B72-M87 (R2003) for additional requirements.		P
2	All references to IEC 60950-1 in this standard are replaced by the equivalent CSA 60950-1 Standard. All relevant Standards referenced in the Part 1 Standard (Annex P, including P.1 and P.2) also apply to this Part -22 Standard and are not listed below.		P

Miscellaneous ID 4-02

<b>TÜV SÜD Asia Ltd.</b> <b>Taiwan Branch</b>	<b>Technical Report</b>	 1/7
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Laboratory Measurements			
Test Engineer	Dony Wang	Client	VIVOTEK INC.
Subject	Network Camera	Address	6F, No.192, Lien-Cheng Rd., Chung-Ho, New Taipei City, 235, Taiwan, R.O.C.
Application Date	2018-04-20	Model No.	FD8177-HT, FD8377-HTV, FD8377-EHTV
Issue Date	2018-04-20	Rating	1) DC 12V, 0.83A for FD8177-HT, FD8377-HTV 2) DC 12V, 1.7A for FD8377-EHTV 3) DC 37V-57V, 0.30A-0.19A for FD8177-HT, FD8377-HTV 4) DC 42.5V-57V, 0.54A-0.40A for FD8377-EHTV
Full-test	<input checked="" type="checkbox"/>	Sample No.	Engineering Sample
Re-test/ Modification	<input type="checkbox"/>	Standard	IEC 62471:2006, EN 62471:2008
Add Test after review	<input type="checkbox"/>	Project No.	611061810601

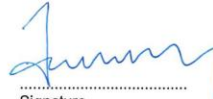
*	Clause(s)	Test(s)	Result
✓		Hazard of total irradiance	P
✓		Hazard of spectral radiance of the source	P

\* Select the test(s) to be done.

**Remark:** 1 pcs of each color temperature for each model, carry out the tests after aging. Aging time for LED lamp is 1 hours, for halogen lamp is 24 hours.



.....  
 Signature  
 Testing Engineer



.....  
 Signature  
 Approved by

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**General product information:**

Equipment manufacturer information (Data Sheet) about the containing LED component	
Manufacturer	Lextar
LED Part No.	PR35F0A
Emitted Wavelength	850 nm

Equipment manufacturer information (Data Sheet) about the containing LED component	
Manufacturer	Lextar
LED Part No.	PR88F03
Emitted Wavelength	850 nm

1. Tested on FD8377-HTV were considered as the representative of models listed in this report
2. The difference between models:

Model	FD8177-HT	FD8377-HTV	FD8377-EHTV
Enclosure	Indoor (Plastic)	Outdoor (Metal)	Outdoor (Metal)
Heater	No	No	Yes
V/P rating	PoE 37~57V, 0.30~0.19A DC12V, 0.83A	PoE 37~57V, 0.30~0.19A DC12V, 0.83A	PoE 42.5~57V, 0.54~0.40A DC12V, 1.7A
Ambient	-10°C ~ 50°C	-20°C ~ 50°C	-50°C ~ 50°C
IR LED Board	The same		

3. All tests were performed according to IEC/EN 62471
4. The LED output power was measured under normal conditions noted in details of measurement procedure and measurement results
5. The product was complied with the requirements of Exempt group LED product according to IEC/EN 62471

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## Hazard of total irradiance (IEC 62471)

Hazard name: irradiance based values	Limit for Exempt level/ low risk/ mod risk	FD8377-HTV
<b>E<sub>UVA</sub>: Eye UV-A: 315-400nm (Near-UV hazard for eye) (W/ m<sup>2</sup>)</b>	10/ 33/ 100	<b>1.7 x 10<sup>-5</sup></b>
<b>E<sub>act</sub>: Actinic UV skin &amp; eye: 200-400nm (Actinic UV hazard for skin and eye) (W/ m<sup>2</sup>)</b>	0.001/ 0.003/ 0.03	<b>2.1 x 10<sup>-5</sup></b>
<b>E<sub>s</sub> : Blue-light small source: 300-700nm (Retinal blue light hazard) (W/ m<sup>2</sup>)</b>	1/ 1/ 400	<b>7.6 x 10<sup>-6</sup></b>
<b>E<sub>R</sub>: Retinal thermal hazard (W/ m<sup>2</sup>)</b>	100/ 570/ 3200	<b>3.2</b>
<b>Measurement distance(cm)</b>	-	<b>20</b>
<b>Voltage (Vdc)</b>	-	<b>55</b>
<b>Angular subtense (rad)</b>	α	<b>0.007</b>

## Hazard of spectral radiance of the source (IEC 62471)

Hazard name: radiance based values	Limit for Exempt level/ low risk/ mod risk	FD8377-HTV
<b>L<sub>B</sub>: Retinal blue light hazard: 300-700nm (W.m<sup>2</sup>.sr<sup>-1</sup>)</b>	100/ 10000/ 4000000	<b>N/A</b>
<b>L<sub>R</sub>: Retinal thermal : 380-1400nm (W.m<sup>2</sup>.sr<sup>-1</sup>)</b>	(28000/α) / (28000/α) / (71000/α)	<b>8.7 x 10<sup>4</sup></b>
<b>L<sub>R</sub>: Retinal thermal(weak visual stimulus) : 780-1400nm (W.m<sup>2</sup>.sr<sup>-1</sup>)</b>	6000/α	<b>1.9 x 10<sup>5</sup> (L<sub>v</sub> = 5196.9 cd/m<sup>2</sup>)</b>
<b>Measurement distance(cm)</b>	-	<b>20</b>
<b>Voltage (Vdc)</b>	-	<b>55</b>
<b>Angular subtense (rad)</b>	α	<b>0.007</b>

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## Hazard of total irradiance (IEC 62471)

Hazard name: irradiance based values	Limit for Exempt level/ low risk/ mod risk	FD8377-HTV (Fault condition: C178 short)
<b>E<sub>UVA</sub>: Eye UV-A: 315-400nm (Near-UV hazard for eye) (W/ m<sup>2</sup>)</b>	10/ 33/ 100	<b>9.6 x 10<sup>-6</sup></b>
<b>E<sub>act</sub>: Actinic UV skin &amp; eye: 200-400nm (Actinic UV hazard for skin and eye) (W/ m<sup>2</sup>)</b>	0.001/ 0.003/ 0.03	<b>5.0 x 10<sup>-6</sup></b>
<b>E<sub>B</sub> : Blue-light small source: 300-700nm (Retinal blue light hazard) (W/ m<sup>2</sup>)</b>	1/ 1/ 400	<b>8.0 x 10<sup>-6</sup></b>
<b>E<sub>R</sub>: Retinal thermal hazard (W/ m<sup>2</sup>)</b>	100/ 570/ 3200	<b>3.2</b>
<b>Measurement distance(cm)</b>	-	<b>20</b>
<b>Voltage (Vdc)</b>	-	<b>55</b>
<b>Angular subtense (rad)</b>	α	<b>0.007</b>

## Hazard of spectral radiance of the source (IEC 62471)

Hazard name: radiance based values	Limit for Exempt level/ low risk/ mod risk	FD8377-HTV (Fault condition: C178 short)
<b>L<sub>B</sub>: Retinal blue light hazard: 300-700nm (W.m<sup>2</sup>.sr<sup>-1</sup>)</b>	100/ 10000/ 4000000	<b>N/A</b>
<b>L<sub>R</sub>: Retinal thermal : 380-1400nm (W.m<sup>2</sup>.sr<sup>-1</sup>)</b>	$(28000/\alpha) / (28000/\alpha) / (71000/\alpha)$	<b>9.1 x 10<sup>4</sup></b>
<b>L<sub>IR</sub>: Retinal thermal(weak visual stimulus) : 780-1400nm (W.m<sup>2</sup>.sr<sup>-1</sup>)</b>	6000/α	<b>1.9 x 10<sup>5</sup> (L<sub>v</sub> = 5196.9 cd/m<sup>2</sup>)</b>
<b>Measurement distance(cm)</b>	-	<b>20</b>
<b>Voltage (Vdc)</b>	-	<b>55</b>
<b>Angular subtense (rad)</b>	α	<b>0.007</b>

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## Hazard of total irradiance (EN 62471)

Hazard name: irradiance based values	Limit for Exempt level/ low risk/ mod risk	FD8377-HTV
<b>E<sub>UVA</sub>: Eye UV-A: 315-400nm (Near-UV hazard for eye) (W/ m<sup>2</sup>)</b>	0.33	<b>1.7 x 10<sup>-5</sup></b>
<b>E<sub>eff</sub>: Actinic UV skin &amp; eye: 180-400nm (Actinic UV hazard for skin and eye) (W/ m<sup>2</sup>)</b>	0.001	<b>2.1 x 10<sup>-5</sup></b>
<b>E<sub>B</sub>: Blue-light small source: 300-700nm (Retinal blue light hazard) (W/ m<sup>2</sup>)</b>	0.01/ 1/ 400	<b>7.6 x 10<sup>-6</sup></b>
<b>E<sub>R</sub>: Retinal thermal hazard (W/ m<sup>2</sup>)</b>	100/ 570/ 3200	<b>3.2</b>
<b>Measurement distance(cm)</b>	-	<b>20</b>
<b>Voltage (Vdc)</b>	-	<b>55</b>
<b>Angular subtense (rad)</b>	α	<b>0.007</b>

## Hazard of spectral radiance of the source (EN 62471)

Hazard name: radiance based values	Limit for Exempt level/ low risk/ mod risk	FD8377-HTV
<b>L<sub>B</sub>: Retinal blue light hazard: 300-700nm (W.m<sup>2</sup>.sr<sup>-1</sup>)</b>	100/ 10000/ 4000000	<b>N/A</b>
<b>L<sub>R</sub>: Retinal thermal : 380-1400nm (W.m<sup>2</sup>.sr<sup>-1</sup>)</b>	(28000/α) / (28000/α) / (71000/α)	<b>8.7 x 10<sup>4</sup></b>
<b>L<sub>R</sub>: Retinal thermal(weak visual stimulus) : 780-1400nm (W.m<sup>2</sup>.sr<sup>-1</sup>)</b>	6000/α	<b>1.9 x 10<sup>5</sup></b> <b>(L<sub>v</sub> = 5196.9 cd/m<sup>2</sup>)</b>
<b>Measurement distance(cm)</b>	-	<b>20</b>
<b>Voltage (Vdc)</b>	-	<b>55</b>
<b>Angular subtense (rad)</b>	α	<b>0.007</b>

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## Hazard of total irradiance (EN 62471)

Hazard name: irradiance based values	Limit for Exempt level/ low risk/ mod risk	FD8377-HTV (Fault condition: C178 short)
<b>E<sub>UVA</sub>: Eye UV-A: 315-400nm (Near-UV hazard for eye) (W/ m<sup>2</sup>)</b>	0.33	<b>9.6 x 10<sup>-6</sup></b>
<b>E<sub>act</sub>: Actinic UV skin &amp; eye: 180-400nm (Actinic UV hazard for skin and eye) (W/ m<sup>2</sup>)</b>	0.001	<b>5.0 x 10<sup>-6</sup></b>
<b>E<sub>B</sub> : Blue-light small source: 300-700nm (Retinal blue light hazard) (W/ m<sup>2</sup>)</b>	0.01/ 1/ 400	<b>8.0 x 10<sup>-6</sup></b>
<b>E<sub>R</sub>: Retinal thermal hazard (W/ m<sup>2</sup>)</b>	100/ 570/ 3200	<b>3.2</b>
<b>Measurement distance(cm)</b>	-	<b>20</b>
<b>Voltage (Vdc)</b>	-	<b>55</b>
<b>Angular subtense (rad)</b>	α	<b>0.007</b>

## Hazard of spectral radiance of the source (EN 62471)

Hazard name: radiance based values	Limit for Exempt level/ low risk/ mod risk	FD8377-HTV (Fault condition: C178 short)
<b>L<sub>B</sub>: Retinal blue light hazard: 300-700nm (W.m<sup>-2</sup>.sr<sup>-1</sup>)</b>	100/ 10000/ 4000000	<b>N/A</b>
<b>L<sub>R</sub>: Retinal thermal : 380-1400nm (W.m<sup>-2</sup>.sr<sup>-1</sup>)</b>	(28000/α) / (28000/α) / (71000/α)	<b>9.1 x 10<sup>4</sup></b>
<b>L<sub>IR</sub>: Retinal thermal(weak visual stimulus) : 780-1400nm (W.m<sup>-2</sup>.sr<sup>-1</sup>)</b>	6000/α	<b>1.9 x 10<sup>5</sup></b> <b>(L<sub>v</sub> = 5196.9 cd/m<sup>2</sup>)</b>
<b>Measurement distance(cm)</b>	-	<b>20</b>
<b>Voltage (Vdc)</b>	-	<b>55</b>
<b>Angular subtense (rad)</b>	α	<b>0.007</b>

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Photo:

FD8377-HTV

