

## **LVD Report**

**ON BEHALF OF**

**Zhangzhou Irep Software Technology Co., Ltd.**

**Intelligent monitoring management unit**

**Model: IMMU**

**Prepared For : Zhangzhou Irep Software Technology Co., Ltd.  
No. 704, Yipin 1 Building, Hancheng 1 Building,  
south of the middle section of University West Road  
and west of Planning Boxue Road, Xiancheng  
District, Zhangzhou City, Fujian Province**

**Prepared By : OCT TECHNOLOGY TESTING CO., LTD.  
10B4F, 16th Street, Qifu Xinwu C District, Panyu  
District, Guangzhou City, Guangdong Province**

**Date Of Test : 2019,8.29-9.4**

**Date Of Issue : 2019,9.4**

**LVD Report**
**EN 60950-1**
**Information technology equipment – Safety –  
Part 1: General requirements**

Testing laboratory .....	Oct Technology Testing Co., Ltd.
Address .....	10B4F, 16th Street, Qifu Xinwu C District, Panyu District, Guangzhou City, Guangdong Province
Report body.....	Oct Technology Testing Co., Ltd.
Address .....	10B4F, 16th Street, Qifu Xinwu C District, Panyu District, Guangzhou City, Guangdong Province
Applicant .....	Zhangzhou Irep Software Technology Co., Ltd..
Address .....	No. 704, Yipin 1 Building, Hancheng 1 Building, south of the middle section of University West Road and west of Planning Boxue Road, Xiancheng District, Zhangzhou City, Fujian Province
Standard .....	EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013
Test Result .....	Compliance with EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013
Procedure deviation .....	N.A.
Non-standard test method .....	N.A.
Type of test object .....	Intelligent monitoring management unit
Model/type reference .....	IMMU
Rating .....	AC220-240V, 50Hz, 60W,0.5A
Manufacturer .....	Zhangzhou Irep Software Technology Co., Ltd.
Address .....	No. 704, Yipin 1 Building, Hancheng 1 Building, south of the middle section of University West Road and west of Planning Boxue Road, Xiancheng District, Zhangzhou City, Fujian Province

## **General remarks**

This report shall not be reproduced except in full without the written approval of the testing laboratory.

The test results presented in this report relate only to the item(s) tested.

"(see appended table)" refers to a table appended to the report.

"(see remark #)" refers to a remark appended to the report.

"(see Annex #)" refers to an annex appended to the report.

Throughout this report a comma (point) is used as the decimal separator.

### **Remark:**

#### **Photos view:**

(See appendix 1)

#### **Copy of marking plate:**

(See appendix 2)

<b>Possible test case verdicts :</b>	
test case does not apply to the test object ..... :	N (.A.)
test object does meet the requirement ..... :	P(ass)
test object does not meet the requirement ..... :	F(ail)

**Name and address of the testing laboratory:** Oct Technology Testing Co., Ltd.

10B4F, 16th Street, Qifu Xinwu C District, Panyu District,  
Guangzhou City, Guangdong Province

**Reported by :**

*[Signature]*

Signature

2019,9.4

Date \_\_\_\_\_

**Approved by :**

Free Technology

Signature

2019,9.4

Date \_\_\_\_\_



EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
<b>1</b>	<b>GENERAL</b>		<b>P</b>
1.5	Components		P
1.5.1	General		P
	Comply with IEC 60950 or relevant component standard		P
1.5.2	Evaluation and testing of components	Components which are certified to IEC and/or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment.	P
1.5.3	Thermal controls	No such ones	N
1.5.4	Transformers	The internal transformer meets the requirements of this standard including the Annex C.	P
1.5.5	Interconnecting cables	Output wire only carrying SELV voltage on an energy level below 240VA.	P
1.5.6	Capacitors in primary circuits .....	Between primary and secondary: CY1 capacitor according to IEC 60384-14: 1993 with 21 days damp heat test was used.	P
1.5.7	Resistors bridging insulation	No such resistors	N
1.5.7.1	Resistors bridging functional insulation, basic insulation or supplementary insulation	No such resistors	N
1.5.7.2	Resistors bridging double insulation or reinforced insulation between the a.c. mains supply and other circuits	No such resistors	N
1.5.7.3	Resistors bridging double insulation or reinforced insulation between the a.c. mains supply and circuits connected to an antenna or coaxial cable	No such resistors	N
1.5.8	Components in equipment for IT power systems	No such equipment	N
1.5.9	Surge suppressors		N
1.5.9.1	General		N
1.5.9.2	Protection of VDRs		N
1.5.9.3	Bridging of functional insulation by a VDR		N

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EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
1.5.9.4	Bridging of basic insulation by a VDR		N
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N
1.6	Power interface		P
1.6.1	AC power distribution systems	TN power system	P
1.6.2	Input current	(see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	No hand-held equipment	N
1.6.4	Neutral conductor	Neutral conductor was insulated from body throughout the equipment as if it was a line conductor.	P
1.7	Marking and instructions		P
1.7.1	Power rating	See as follows	P
	Rated voltage(s) or voltage range(s) (V) .....		P
	Symbol for nature of supply, for d.c. only.....	AC supply	N
	Rated frequency or rated frequency range (Hz) :		P
	Rated current (mA or A) .....		P
	Manufacturer's name or trademark or identification mark .....		P
	Type/model or type reference.....		P
	Symbol of Class II equipment only .....		P
	Other symbols .....	Additional symbol or marking does not give rise to misunderstanding.	P
	Certification marks .....	See marking plate on page 2	P
1.7.2	Safety instructions and marking		N
1.7.2.1	General		N
1.7.2.2	Disconnect devices	No such disconnect devices	N
1.7.2.3	Overcurrent protective devices	No such devices	N
1.7.2.4	IT power distribution systems	TN power system	N
1.7.2.5	Operator access with a tool	No such access	N
1.7.2.6	Ozone	No produce ozone	N
1.7.3	Short duty cycles	For continuous operation	N
1.7.4	Supply voltage adjustment .....	Single input voltage range without adjustment.	N

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Clause	Requirement – Test	Result - Remark	Verdict
1.7.5	Power outlets on the equipment .....	No standard socket-outlet.	N
1.7.6	Fuse identification .....		P
1.7.7	Wiring terminals		N
1.7.7.1	Protective earthing and bonding terminals .....	Class II equipment.	N
1.7.7.2	Terminal for a.c. mains supply conductors	plug used.	N
1.7.7.3	Terminals for d.c. mains supply conductors	No such parts.	N
1.7.8	Controls and indicators		N
1.7.8.1	Identification, location and marking .....		N
1.7.8.2	Colours .....		N
1.7.8.3	Symbols according to IEC 60417 .....		N
1.7.8.4	Markings using figures .....		N
1.7.9	Isolation of multiple power sources .....	Not for multiple power sources	N
1.7.10	Thermostats and other regulating devices	No such devices	N
	IT power distribution systems	Not for connection to IT power systems	N
1.7.11	Durability	The label was subjected to the durability of marking test. The label was rubbed with cloth soaked with water for 15 sec and then again for 15 sec with the cloth soaked with petroleum spirit.  After this test there was no damage to the label. The marking on the label did not fade. There was no curling nor lifting of the label edge.	P
1.7.12	Removable parts		N
1.7.13	Replaceable batteries		P
	Language .....	Markings and user manual in English	P
1.7.14	Equipment for restricted access locations		N
<b>2</b>	<b>PROTECTION FROM HAZARDS</b>		<b>P</b>
2.1	Protection from electric shock and energy hazards		P

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
2.1.1	Protection in operator access areas	Protection provided by enclosure without any opening	P
2.1.1.1	Access to energized parts	No access with test finger and test pin to any hazardous parts.	P
	Test by inspection .....		P
	Test with test finger .....		P
	Test with test pin .....		P
	Test with test probe .....		P
2.1.1.2	Battery compartments .....	There are no battery compartments	N
2.1.1.3	Access to ELV wiring	There are no accessible ELV wiring	N
	Working voltage (V); minimum distance (mm) through insulation		—
2.1.1.4	Access to hazardous voltage circuit wiring	There is no access to hazardous voltage circuits	N
2.1.1.5	Energy hazards .....	There are no hazards from stored energy	P
2.1.1.6	Manual controls	There are no manual controls	N
2.1.1.7	Discharge of capacitors in equipment		N
	Time-constant (s); measured voltage (V) .....		—
2.1.1.8	Energy hazards - d.c. mains supplies	AC mains	N
2.1.1.9	Audio amplifiers in information technology equipment	No audio amplifiers	N
2.1.2	Protection in service access areas	There are no service access areas	N
2.1.3	Protection in restricted access locations	Not for such areas	N
2.2	SELV circuits		P
2.2.1	General requirements		P
2.2.2	Voltages under normal conditions (V).....		P



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Clause	Requirement – Test	Result - Remark	Verdict
2.2.3	Voltages under fault conditions (V) .....	Single fault did not cause excessive voltage in accessible SELV circuits. Limits of 71V peak and 120Vd.c. were not exceeded within 0.2 sec. and limits 42.4V peak and 60V d.c. were not exceeded for longer than 0.2sec.,	P
2.2.3.1	Separation by double insulation or reinforced insulation (method 1)	Separation by double and reinforced insulation	P
2.2.3.2	Separation by earthed screen (method 2)	Not used	N
2.2.3.3	Protection by earthing of the SELV circuit (method 3)	Not used	N
2.2.4	Connection of SELV circuits to other circuits .....	SELV circuit separated from primary by double insulation or reinforced insulation within the equipment.	P
2.3	TNV circuits		N
2.3.1	Limits		N
	Type of TNV circuits .....		—
2.3.2	Separation from other circuits and from accessible parts		N
	Insulation employed .....		—
2.3.2.1	General requirements		N
2.3.2.2	Protection by basic insulation		N
2.3.2.3	Protection by earthing		N
2.3.2.4	Protection by other constructions		N
2.3.3	Separation from hazardous voltages		N
	Insulation employed .....		—
2.3.4	Connection of TNV circuits to other circuits		N
	Insulation employed .....		—
2.3.5	Test for operating voltages generated externally		N
2.4	Limited current circuits		P

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Clause	Requirement – Test	Result - Remark	Verdict
2.4.1	General requirements	The pins of output connector are accessible to the user and connected to primary circuit by one capacitor CY1, therefore the output pins must comply as limited current circuit	P
2.4.2	Limit values	See appended table 2.4.2	P
	Frequency (Hz) .....		—
	Measured current (mA) .....		—
	Measured voltage (V) .....		—
	Measured capacitance (μF) .....		—
2.4.3	Connection of limited current circuits to other circuits		P
2.5	Limited power sources		P
	Inherently limited output		P
	Impedance limited output		P
	Overcurrent protective device limited output		P
	Regulating network limited output under normal operating and single fault condition		P
	Regulating network limited output under normal operating conditions and overcurrent protective device limited output under single fault condition		P
	Output voltage (V), output current (A), apparent power (VA) .....		P
	Current rating of overcurrent protective device (A)		P
2.6	Provisions for earthing and bonding		N
2.6.1	Protective earthing		N
2.6.2	Functional earthing		N
2.6.3	Protective earthing and protective bonding conductors		N
2.6.3.1	General		N
2.6.3.2	Size of protective earthing conductors		N
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG.....		—
2.6.3.3	Size of protective bonding conductors		N

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Clause	Requirement – Test	Result - Remark	Verdict
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG.....:		—
2.6.3.4	Resistance ( $\Omega$ ) of earthing conductors and their terminations, test current (A) .....		N
2.6.3.5	Colour of insulation.....:		N
2.6.4	Terminals		N
2.6.4.1	General		N
2.6.4.2	Protective earthing and bonding terminals		N
	Rated current (A), type and nominal thread diameter (mm).....:		—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		N
2.6.5	Integrity of protective earthing		N
2.6.5.1	Interconnection of equipment		N
2.6.5.2	Components in protective earthing conductors and protective bonding conductors		N
2.6.5.3	Disconnection of protective earth		N
2.6.5.4	Parts that can be removed by an operator		N
2.6.5.5	Parts removed during servicing		N
2.6.5.6	Corrosion resistance		N
2.6.5.7	Screws for protective bonding		N
2.6.5.8	Reliance on telecommunication network or cable distribution system		N
2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements		P
	Instructions when protection relies on building installation		N
2.7.2	Faults not covered in 5.3		N
2.7.3	Short-circuit backup protection		P
2.7.4	Number and location of protective devices .....	The fuse is right after the plug	P
2.7.5	Protection by several devices	Only one line protected	N
2.7.6	Warning to service personnel .....		N
2.8	Safety interlocks		N
2.8.1	General principles		N

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Clause	Requirement – Test	Result - Remark	Verdict
2.8.2	Protection requirements		N
2.8.3	Inadvertent reactivation		N
2.8.4	Fail-safe operation		N
2.8.5	Moving parts		N
2.8.6	Overriding		N
2.8.7	Switches and relays		N
2.8.7.1	Contact gaps (mm) .....		N
2.8.7.2	Overload test		N
2.8.7.3	Endurance test		N
2.8.7.4	Electric strength test	(see appended table 5.2)	P
2.8.8	Mechanical actuators		N
2.9	Electrical insulation		P
2.9.1	Properties of insulating materials	Natural rubber, asbestos or hygroscopic material is not used.	P
2.9.2	Humidity conditioning		P
	Humidity (%) .....	95%	—
	Temperature (°C) .....	28°C	—
2.9.3	Grade of insulation		P
2.9.4	Separation from hazardous voltages	Both parameters were considered.	P
2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General	See 2.10.3, 2.10.4, 2.10.5	P
2.10.1.1	Frequency	Considered.	P
2.10.1.2	Pollution degrees	Considered.	P
2.10.1.3	Reduced values for functional insulation	Considered.	P
2.10.1.4	Intervening unconnected conductive parts	Considered.	P
2.10.1.5	Insulation with varying dimensions	Considered.	P
2.10.1.6	Special separation requirements	Considered.	P
2.10.1.7	Insulation in circuits generating starting pulses	Considered.	P
2.10.2	Determination of working voltage	Voltage measured under the condition of short circuit between neutral and secondary ground.	P

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Clause	Requirement – Test	Result - Remark	Verdict
2.10.2.1	General	Considered.	P
2.10.2.2	RMS working voltage	Considered.	P
2.10.2.3	Peak working voltage	Considered.	P
2.10.3	Clearances	See below.	P
2.10.3.1	General	Considered.	P
2.10.3.2	Clearances in primary circuit	(see appended table 2.10.3 and 2.10.4)	P
2.10.3.3	Clearances in secondary circuits	(see appended table 2.10.3 and 2.10.4)	P
2.10.3.4	Measurement of transient voltage levels	Equipment is not subject to transient voltages	N
2.10.3.5	Clearances in circuits having starting pulses	Considered.	P
2.10.3.6	Transients from an a.c. mains supply	Considered.	P
2.10.3.7	Transients from a d.c. mains supply	Considered.	P
2.10.3.8	Transients from telecommunication networks and cable distribution systems		N
2.10.3.9	Measurement of transient voltages		N
2.10.4	Creepage distances	(see appended table 2.10.3 and 2.10.4)	P
	CTI tests .....	Material group IIIb was assumed	—
2.10.4.1	General		—
2.10.4.2	Material group and comparative tracking index		—
2.10.4.3	Minimum creepage distances		—
2.10.5	Solid insulation	See below	P
2.10.5.1	Minimum distance through insulation	(see appended table 2.10.5)	P
2.10.5.2	Thin sheet material	Used on heat sinks and in transformer	P
	Number of layers (pcs) .....	3 layers for reinforced insulation	—
	Electric strength test	(see appended table 5.2)	—
2.10.5.3	Printed boards		P
	Distance through insulation		P
	Electric strength test for thin sheet insulating material	(see appended table 5.2)	—

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Clause	Requirement – Test	Result - Remark	Verdict
	Number of layers (pcs) .....		N
2.10.5.4	Wound components	No wound components	N
	Number of layers (pcs) .....		N
	Two wires in contact inside wound component; angle between 45° and 90° .....		N
2.10.5.5	Cemented joints		N
2.10.5.6	Thin sheet material - General		P
2.10.5.7	Separable thin sheet material		P
2.10.5.8	Non-separable thin sheet material		P
2.10.5.9	Thin sheet material - standard test procedure		N
2.10.5.10	Thin sheet material - alternative test procedure		N
2.10.5.11	Insulation in wound components		N
2.10.5.12	Wire in wound components		N
2.10.5.13	Wire with solvent-based enamel in wound components		N
2.10.5.14	Additional insulation in wound components		N
2.10.6	Construction of printed boards		P
2.10.6.1	Uncoated printed boards		P
2.10.6.2	Coated printed boards		P
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		P
2.10.6.4	Insulation between conductors on different surfaces of a printed board		N
2.10.7	Component external terminations	No hermetically sealed componen	N
2.10.8	Tests on coated printed boards and coated components		N
2.10.8.1	Sample preparation and preliminary inspection		N
2.10.8.2	Thermal conditioning		N
2.10.8.3	Electric strength test		N
2.10.8.4	Abrasion resistance test		N
	Electric strength test		—
2.10.9	Thermal cycling		N

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Clause	Requirement – Test	Result - Remark	Verdict
2.10.10	Test for Pollution Degree 1 environment and for insulating compound	Insulation kept homogenous.	N
2.10.11	Tests for semiconductor devices and for cemented joints		N
2.10.12	Enclosed and sealed parts		N
<b>3</b>	<b>WIRING, CONNECTIONS AND SUPPLY</b>		<b>P</b>
3.1	General		P
3.1.1	Current rating and overcurrent protection		P
3.1.2	Protection against mechanical damage		P
3.1.3	Securing of internal wiring		P
3.1.4	Insulation of conductors	The insulation of each individual conductors suitable for the application and the working voltage. For the insulation material see 3.1.1. (See appended table 5.2)	P
3.1.5	Beads and ceramic insulators	No beads and ceramic insulators	N
3.1.6	Screws for electrical contact pressure	No screws for electrical contact pressure	N
3.1.7	Insulating materials in electrical connections	Contact pressure is not transmitted through insulating material.	N
3.1.8	Self-tapping and spaced thread screws	No self-tapping screws are used.	N
3.1.9	Termination of conductors	All conductors are reliable secured.	P
	10 N pull test		P
3.1.10	Sleeving on wiring	There are no sleeves used as supplementary insulation	P
3.2	Connection to an a.c. mains supply or a d.c. mains supply		P
3.2.1	Means of connection .....		P
3.2.1.1	Connection to an a.c. mains supply		P
3.2.1.2	Connection to a d.c. mains supply		N
3.2.2	Multiple supply connections	No multiple connection	N
3.2.3	Permanently connected equipment	No permanently connected equipment	N

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Clause	Requirement – Test	Result - Remark	Verdict
	Number of conductors, diameter (mm) of cable and conduits .....		—
3.2.4	Appliance inlets	(See 3.2.1)	P
3.2.5	Power supply cords		N
3.2.5.1	AC power supply cords		N
	Type.....		—
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG.....		—
3.2.5.2	DC power supply cords		N
3.2.6	Cord anchorages and strain relief		N
	Mass of equipment (kg), pull (N) .....		—
	Longitudinal displacement (mm) .....		—
3.2.7	Protection against mechanical damage		N
3.2.8	Cord guards		N
	D (mm); test mass (g) .....		—
	Radius of curvature of cord (mm).....		—
3.2.9	Supply wiring space		N
3.3	Wiring terminals for connection of external conductors		N
3.3.1	Wiring terminals		N
3.3.2	Connection of non-detachable power supply cords		N
3.3.3	Screw terminals		N
3.3.4	Conductor sizes to be connected		N
	Rated current (A), cord/cable type, cross-sectional area (mm <sup>2</sup> ) .....		—
3.3.5	Wiring terminal sizes		N
	Rated current (A), type and nominal thread diameter (mm) .....		—
3.3.6	Wiring terminals design		N
3.3.7	Grouping of wiring terminals		N
3.3.8	Stranded wire	Might only applicable for the SEC wiring in this case.	—
3.4	Disconnection from the mains supply		P
3.4.1	General requirement		P



EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
3.4.2	Disconnect devices	Plug used as disconnect device.	P
3.4.3	Permanently connected equipment	Not permanently connected equipment.	N
3.4.4	Parts which remain energized		N
3.4.5	Switches in flexible cords	None	N
3.4.6	Single-phase equipment and d.c. equipment	The appliance coupler disconnects both poles simultaneously.	P
3.4.7	Three-phase equipment	Single phase.	N
3.4.8	Switches as disconnect devices	See sub-clause 3.4.2.	N
3.4.9	Plugs as disconnect devices		P
3.4.10	Interconnected equipment	No interconnected equipment.	N
3.4.11	Multiple power sources	Only one supply connection provided.	N
3.5	Interconnection of equipment		N
3.5.1	General requirements	It must be connected to other equipment for working	N
3.5.2	Types of interconnection circuits..... :	Conform to the requirements of 2.2 for SELV circuit.	N
3.5.3	ELV circuits as interconnection circuits		N
<b>4</b>	<b>PHYSICAL REQUIREMENTS</b>		<b>P</b>
4.1	Stability		N
	Angle of 10°	No overturn	N
	Test: force (N) ..... :	By inspection	N
4.2	Mechanical strength		P
4.2.1	General		P
4.2.2	Steady force test, 10 N		P
4.2.3	Steady force test, 30 N		P
4.2.4	Steady force test, 250 N	The test is performed at all sides of enclosure	P

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Clause	Requirement – Test	Result - Remark	Verdict
4.2.5	Impact test	500g steel ball falls freely from 1.3m on top, back and bottom of plastic enclosure, no access to hazardous parts.	P
	Fall test		N
	Swing test		N
4.2.6	Drop test	3 times drop from 1000mm height	P
4.2.7	Stress relief test	7h in 70°C oven Tested at 72°C, no shrinkage or distortion.	P
4.2.8	Cathode ray tubes	No such tubes	N
	Picture tube separately certified .....	(see separate test report or attached certificate)	N
4.2.9	High pressure lamps	No such bulbs	N
4.2.10	Wall or ceiling mounted equipment; force (N) ....	No such mountable equipment	N
4.3	Design and construction		P
4.3.1	Edges and corners	Corners and edges are rounded	P
4.3.2	Handles and manual controls; force (N) .....	No handles and controls	N
4.3.3	Adjustable controls	No controls	N
4.3.4	Securing of parts		N
4.3.5	Connection of plugs and sockets	Mismatch of connectors either not possible or does not result in any hazard.	P
4.3.6	Direct plug-in equipment		P
	Dimensions (mm) of mains plug for direct plug-in .....	8mm	P
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N) .....	0.25N·M	P
4.3.7	Heating elements in earthed equipment	No heating elements	N
4.3.8	Batteries	No batteries	N
4.3.9	Oil and grease	No oil or grease	N

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EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
4.3.10	Dust, powders, liquids and gases	No dust, powder, fluids or liquids Equipment in intended use not considered to be exposed to these.	N
4.3.11	Containers for liquids or gases	No containers	N
4.3.12	Flammable liquids .....	No liquids	N
	Quantity of liquid (l) .....		N
	Flash point (°C) .....		N
4.3.13	Radiation; type of radiation .....	No radiation	N
4.3.13.1	General		N
4.3.13.2	Ionizing radiation		N
	Measured radiation (pA/kg) .....		—
	Measured high-voltage (kV) .....		—
	Measured focus voltage (kV) .....		—
	CRT markings .....		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials	No equipment operated with UV radiating lamps	N
	Part, property, retention after test, flammability classification .....		N
4.3.13.4	Human exposure to ultraviolet (UV) radiation .....		N
4.3.13.5	Laser (including LEDs)		N
	Laser class .....		—
4.3.13.6	Other types .....		N
4.4	Protection against hazardous moving parts		N
4.4.1	General	No moving parts	N
4.4.2	Protection in operator access areas		N
4.4.3	Protection in restricted access locations		N
4.4.4	Protection in service access areas		N
4.5	Thermal requirements		P
4.5.1	General		P
4.5.2	Temperature tests	See appended table 4.5	P
4.5.3	Temperature limits for materials		P

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Clause	Requirement – Test	Result - Remark	Verdict
4.5.4	Touch temperature limits		P
4.5.5	Resistance to abnormal heat		P
4.6	Openings in enclosures		N
4.6.1	Top and side openings	No openings	N
4.6.2	Bottoms of fire enclosures		N
4.6.3	Doors or covers in fire enclosures		N
4.6.4	Openings in transportable equipment		N
4.6.4.1	Constructional design measures		N
4.6.4.2	Evaluation measures for larger openings		N
4.6.4.3	Use of metallized parts	Plastic parts only	N
4.6.5	Adhesives for constructional purposes		N
	Conditioning temperature (°C)/time (weeks) .....		—
4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame	Method 1 was used, since not all failures were tested and pls see the note	P
	Method 1, selection and application of components wiring and materials		P
	Method 2, application of all of simulated fault condition tests		N
4.7.2	Conditions for a fire enclosure	Applying of method 2 of clause 4.7.1	P
4.7.2.1	Parts requiring a fire enclosure		P
4.7.2.2	Parts not requiring a fire enclosure		N
4.7.3	Materials		P
4.7.3.1	General		P
4.7.3.2	Materials for fire enclosures	Fire enclosure with flammability of V-0.	P
4.7.3.3	Materials for components and other parts outside fire enclosures	PVC insulated output cord and connector.	P
4.7.3.4	Materials for components and other parts inside fire enclosures	Internal components except small parts are V-2, HF-2 or better.	P
4.7.3.5	Materials for air filter assemblies	No air filter.	N

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Clause	Requirement – Test	Result - Remark	Verdict
4.7.3.6	Materials used in high-voltage components	No high voltage component.	N
<b>5</b>	<b>ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS</b>		<b>P</b>
5.1	Touch current and protective conductor current		P
5.1.1	General	See sub-clauses 5.1.2 to 5.1.6.	P
5.1.2	Equipment under test (EUT)	There is only one equipment	P
5.1.2.1	Single connection to an a.c. mains supply		P
5.1.2.2	Redundant multiple connections to an a.c. mains supply		N
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N
5.1.3	Test circuit	TN power system	P
5.1.4	Application of measuring instrument	Measuring circuit according to circuit D.1	P
5.1.5	Test procedure	Test performed with between lines and housing, SEC contacts in all polarities	P
5.1.6	Test measurements		P
	Test voltage (V) .....	See appended table 5.1.6.	—
	Measured touch current (mA) .....	See appended table 5.1.6.	—
	Max. allowed touch current (mA) .....	See appended table 5.1.6.	—
	Measured protective conductor current (mA) .....	See appended table 5.1.6.	—
	Max. allowed protective conductor current (mA):	See appended table 5.1.6.	—
5.1.7	Equipment with touch current exceeding 3.5 mA .....		N
5.1.7.1	General		N
5.1.7.2	Simultaneous multiple connections to the supply		N
5.1.8	Touch currents to and from telecommunication networks and cable distribution systems and from telecommunication networks	There is no Telecommunication network	N
5.1.8.1	Limitation of the touch current to a telecommunication network and a cable distribution system		N

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Clause	Requirement – Test	Result - Remark	Verdict
	Test voltage (V) .....		—
	Measured touch current (mA) .....		—
	Max. allowed touch current (mA) .....		—
5.1.8.2	Summation of touch currents from telecommunication networks .....		N
5.2	Electric strength		P
5.2.1	General	(see appended table 5.2)	P
5.2.2	Test procedure	(see appended table 5.2)	P
5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation		P
5.3.2	Motors	(see appended Annex B)	N
5.3.3	Transformers	(see appended Annex C)	P
5.3.4	Functional insulation .....	By short-circuited or open-circuited.	P
5.3.5	Electromechanical components	No such components	N
5.3.6	Audio amplifiers in information technology equipment		P
5.3.7	Simulation of faults		P
5.3.8	Unattended equipment		N
5.3.9	Compliance criteria for abnormal operating and fault conditions		P
5.3.9.1	During the tests	No fire or molten metal occurred and no deformation of enclosure during the tests.	P
5.3.9.2	After the tests	No reduction of clearance and creepage distance. Electric strength test is made on basic, supplementary and reinforced insulation after test.	P
<b>6</b>	<b>CONNECTION TO TELECOMMUNICATION NETWORKS</b>		<b>N</b>
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		N
6.1.1	Protection from hazardous voltages		N

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Clause	Requirement – Test	Result - Remark	Verdict
6.1.2	Separation of the telecommunication network from earth		N
6.1.2.1	Requirements		N
	Test voltage (V) .....		—
	Current in the test circuit (mA) .....		—
6.1.2.2	Exclusions .....		N
6.2	Protection of equipment users from overvoltages on telecommunication networks		N
6.2.1	Separation requirements		N
6.2.2	Electric strength test procedure		N
6.2.2.1	Impulse test		N
6.2.2.2	Steady-state test		N
6.2.2.3	Compliance criteria		N

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Clause	Requirement – Test	Result - Remark	Verdict
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6.3	Protection of the telecommunication wiring system from overheating		N
	Max. output current (A) ..... :		—
	Current limiting method ..... :		—
<b>7</b>	<b>CONNECTION TO CABLE DISTRIBUTION SYSTEMS</b>		<b>N</b>
7.1	General		N
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N
7.3	Protection of equipment users from overvoltages on the cable distribution system		N
7.4	Insulation between primary circuits and cable distribution systems		N
7.4.1	General		N
7.4.2	Voltage surge test		N
7.4.3	Impulse test		N



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Clause	Requirement – Test	Result - Remark	Verdict
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<b>A</b>	<b>ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE</b>		<b>N</b>
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)		N
A.1.1	Samples .....		—
	Wall thickness (mm) .....		—
A.1.2	Conditioning of samples; temperature (°C).....		N
A.1.3	Mounting of samples.....		N
A.1.4	Test flame		N
A.1.5	Test procedure		N
A.1.6	Compliance criteria		N
	Sample 1 burning time (s).....		—
	Sample 2 burning time (s).....		—
	Sample 3 burning time (s).....		—
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)		N
A.2.1	Samples, material .....		—
	Wall thickness (mm) .....		—
A.2.2	Conditioning of samples		N
A.2.3	Mounting of samples		N
A.2.4	Test flame		N
A.2.5	Test procedure		N
A.2.6	Compliance criteria		N
	Sample 1 burning time (s).....		—
	Sample 2 burning time (s).....		—
	Sample 3 burning time (s).....		—
A.2.7	Alternative test acc. to IEC 60695-2-2, cl. 4, 8		N
	Sample 1 burning time (s).....		—
	Sample 2 burning time (s).....		—
	Sample 3 burning time (s).....		—
A.3	Hot flaming oil test (see 4.6.2)		N

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Clause	Requirement – Test	Result - Remark	Verdict
A.3.1	Mounting of samples		N
A.3.2	Test procedure		N
A.3.3	Compliance criterion		N
<b>B</b>	<b>ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)</b>		<b>N</b>
B.1	General requirements		N
	Position .....		—
	Manufacturer .....		—
	Type .....		—
	Rated values .....		—
B.2	Test conditions		N
B.3	Maximum temperatures		N
B.4	Running overload test		N
B.5	Locked-rotor overload test		N
	Test duration (days) .....		—
	Electric strength test: test voltage (V) .....		—
B.6	Running overload test for d.c. motors in secondary circuits		N
B.6.1	General		N
B.6.2	Test procedure		N
B.6.3	Alternative test procedure		N
B.6.4	Electric strength test		N
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N
B.7.1	General		N
B.7.2	Test procedure		N
B.7.3	Alternative test procedure		N
B.7.4	Electric strength test		N
B.8	Test for motors with capacitors		N
B.9	Test for three-phase motors		N
B.10	Test for series motors		N
	Operating voltage (V) .....		—

Clause	Requirement – Test	Result - Remark	Verdict
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<b>C</b>	<b>ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)</b>	<b>P</b>
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	Position .....	Transformer which is marked as T1 on the PCB	—
	Manufacturer .....		—
	Type .....		—
	Rated values .....		—
	Method of protection .....	External to transformer (electronic protections) short-circuit protection	—
C.1	Overload test		P
C.2	Insulation	See appended table C.2	P
	Protection from displacement of windings .....	Bobbin	P
<b>D</b>	<b>ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS</b>		<b>P</b>
D.1	Measuring instrument	Was used for testing according to clause 5.1.6	P
D.2	Alternative measuring instrument		N
<b>E</b>	<b>ANNEX E, TEMPERATURE RISE OF A WINDING</b>		<b>P</b>
<b>F</b>	<b>ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10)</b>		<b>P</b>
<b>G</b>	<b>ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES</b>		<b>N</b>
G.1	Clearances	This method was not used	N
G.1.1	General		N
G.1.1	Summary of the procedure for determining minimum clearances		N
G.2	Determination of mains transient voltage (V) .....		N
G.2.1	AC mains supply		N
G.2.2	DC mains supply		N
G.2.3	Unearthed d.c. mains supplies		N
G.2.4	Battery operation		N
G.3	Determination of telecommunication network transient voltage (V) .....		N
G.4	Determination of required withstand voltage (V).:		N

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Clause	Requirement – Test	Result - Remark	Verdict
G.4.1	Mains transients and internal repetitive peaks		N
G.4.2	Transients from telecommunication networks		N
G.4.3	Combination of transients		N
G.4.4	Transients from cable distribution systems		N
G.5	Measurement of transient levels (V) ..... :		N
G.6	Determination of minimum clearances..... :		N
<b>H</b>	<b>ANNEX H, IONIZING RADIATION (see 4.3.13)</b>		<b>N</b>
<b>J</b>	<b>ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)</b>		<b>N</b>
	Metal used ..... :		—
<b>K</b>	<b>ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.7)</b>		<b>N</b>
K.1	Making and breaking capacity		N
K.2	Thermostat reliability; operating voltage (V) ..... :		N
K.3	Thermostat endurance test; operating voltage (V) ..... :		N
K.4	Temperature limiter endurance; operating voltage (V) ..... :		N
K.5	Thermal cut-out reliability		N
K.6	Stability of operation		N
<b>L</b>	<b>ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.1)</b>		<b>N</b>
L.1	Typewriters		N
L.2	Adding machines and cash registers		N
L.3	Erasers		N
L.4	Pencil sharpeners		N
L.5	Duplicators and copy machines		N
L.6	Motor-operated files		N
L.7	Other business equipment		N
<b>M</b>	<b>ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)</b>		<b>N</b>
M.1	Introduction		N
M.2	Method A		N
M.3	Method B		N
M.3.1	Ringing signal		N
M.3.1.1	Frequency (Hz) ..... :		—

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Clause	Requirement – Test	Result - Remark	Verdict
M.3.1.2	Voltage (V) ..... :		—
M.3.1.3	Cadence; time (s), voltage (V) ..... :		—
M.3.1.4	Single fault current (mA) ..... :		—
M.3.2	Tripping device and monitoring voltage ..... :		N
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N
M.3.2.2	Tripping device		N
M.3.2.3	Monitoring voltage (V) ..... :		N

<b>N</b>	<b>ANNEX N, IMPULSE TEST GENERATORS (see 2.10.3.4, 6.2.2.1, 7.3.2 and clause G.5)</b>		<b>N</b>
N.1	ITU-T impulse test generators		N
N.2	IEC 60065 impulse test generator		N
<b>P</b>	<b>ANNEX P, NORMATIVE REFERENCES</b>		<b>N</b>
<b>Q</b>	<b>ANNEX Q, VOLTAGE DEPENDENT RESISTORS(VDRs)</b>		<b>N</b>
<b>R</b>	<b>ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES</b>		<b>N</b>
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6)		N
R.2	Reduced clearances (see 2.10.3)		N
<b>S</b>	<b>ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)</b>		<b>N</b>
S.1	Test equipment		N
S.2	Test procedure		N
S.3	Examples of waveforms during impulse testing		N
<b>T</b>	<b>ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)</b>		<b>N</b>
<b>U</b>	<b>ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)</b>		<b>N</b>
U.1	Wire construction		N
U.2	Type tests		N
U.2.1	Electric strength		N
U.2.2	Flexibility and adherence		N
U.2.3	Heat shock		N
U.2.4	Retention of electric strength after bending		N

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Clause	Requirement – Test	Result - Remark	Verdict
U.3	Tests during manufacture		N
U.3.1	Routine testing		N
U.3.2	Sampling tests		N
<b>V</b>	<b>Annex V AC power distribution systems</b>		<b>P</b>
V.1	Introduction		P
V.2	TN power distribution systems		P
V.3	TT power distribution systems		N
V.4	IT power distribution systems		N
<b>W</b>	<b>Annex W Summation of touch currents</b>		<b>N</b>
W.1	Touch current from electronic circuits		N
W.1.1	Floating circuits		N
W.1.2	Earthed circuits		N
W.2	Interconnection of several equipments		N
W.2.1	Isolation		N
W.2.2	Common return, isolated from earth		N
W.2.3	Common return, connected to protective earth		N
<b>X</b>	<b>Annex X Maximum heating effect in transformer tests</b>		<b>N</b>
X.1	Determination of maximum input current		N
X.2	Overload test procedure		N
Y	Annex Y Ultraviolet light conditioning test		N
Y.1	Test apparatus		N
Y.2	Mounting of test samples		N
Y.3	Carbon-arc light-exposure apparatus		N
Y.4	Xenon-arc light-exposure apparatus		N
Z	Annex Z Overvoltage categories		N
AA	Annex AA Mandrel test		N
BB	Annex BB Changes in the second edition		N
BB.1	Numbering changes table		N

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Clause	Requirement – Test	Result - Remark	Verdict
BB.2	Changes to this edition		N

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Clause	Requirement – Test	Result - Remark	Verdict
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<b>4.5</b>	<b>TABLE: maximum temperatures</b>						<b>P</b>
	test voltage (V) .....	198V~ 60Hz	265V~ 50Hz	-	-	-	—
	Output voltage (V) .....	--	--	-	-	-	—
maximum temperature T of part/at::		Measures T (°C)					Allowed T (°C)
Enclosure		74.3	71.2	--	--	--	Ref
PCB near T1		80.6	78.4	--	--	--	130
E-cap(C1)		68.1	62.2	--	--	--	105
Y-Cap		75.3	69.8				125
Note: 1. The temperature were measured under worst case normal mode defined in 1.2.2.1 and as described in sub-clause 1.6.2 and at voltages as described above. 2. With a rated maximum ambient temperature of 40°C, the max temperature are calculated as follows:  Winding components providing safety isolation: Class B $T_{max} = (120 - 10)^\circ\text{C} = 110^\circ\text{C}$ (by thermal coupler method)							

4.5.2	TABLE: ball pressure test of thermoplastic parts			P
	allowed impression diameter (mm) ..... :		≤ 2 mm	—
Part		test temperature (°C)	impression diameter (mm)	
Enclosure		125	0.9	
Note(s):				



## Appendix 1

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