Test Report issued under the responsibility of:

TEST REPORT
IEC 60335-1
Safety of household and similar electrical appliances

Report Number. .....:	**T211-0912/19**
Date of issue .....:	**2019-10-23**
Total number of pages.....:	**237**
Name of Testing Laboratory preparing the Report.....:	**SIQ Ljubljana** SIQ Ljubljana is accredited by Slovenian Accreditation with accreditation number LP-009 in the field of testing
Applicant's name.....:	**GlobTek, Inc.**
Address .....:	**186 Veterans Drive, Northvale, NJ-07647, New Jersey, USA**
Test specification:	
Standard .....:	IEC 60335-1:2010/COR1:2010/COR2:2010 /AMD1:2013/COR1:2014/AMD2:2016/COR1:2016
Test procedure.....:	CB Scheme
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC60335_1X
Test Report Form(s) Originator.....:	Nemko AS
Master TRF .....:	Dated 2016-10

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.

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

General disclaimer:

The test results presented in this report relate only to the object tested.
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 ..... :	Power supply
Trade Mark ..... :	GlobTek
Manufacturer ..... :	GlobTek, Inc., 186 Veterans Drive, Northvale, NJ-07647, New Jersey, USA

Model/Type reference ..... :	GTM or - 91120-WWVV-X.X-AB series
	M or – are for market identification
	91120- series of power supply
	WW is the rated output wattage designation, with a maximum value of "30";
	VV is the standard rated output voltage designation, with a maximum value of "36";
	-X.X denotes the optional deviation, subtracted or added from standard output voltage in 0,1 volt increments or blank to indicate the no voltage different;
	A:T is External/Desktop or direct plug-in model, F is Open Frame, P is Encapsulated;
	when A=T, B can be 2 or 3 A, 2 presents Class II, 3 A presents Class I;
	when A=F, B can be Blank or W, W means class II equipment, Blank means class I;
	when A=P, B can be 2 or 3, 2 means class II equipment, 3 means class I equipment.
	GTM91128LI1CEL, GTM91128LI2CEL and GTM91128LI3CEL are external/desktop or direct plug-in power supplies.

Ratings ..... :	Input: 100-240 V~; 50-60 Hz; 0,7-0,3 A (or 1,5 A) Output: See below representative models:

Model name	Output voltage [DC]	Output current	Max. output power
GT(M or -)91120-WW07.5-2.5-AB	5 V	4,0 A	20 W
GT(M or -)91120-WW07.5-X.X-AB	5,1-7,5 V	0-4,0 A	22,5 W
GT(M or -)91120-WW10.5-X.X-AB	7,6-9 V	0-3,3 A	25 W
GT(M or -)91120-WW10.5-X.X-AB	9,1-10,5 V	0-3,3 A	30 W
GT(M or -)91120-WW14.5-X.X-AB	10,6-14,5V	0-2,83 A	30 W
GT(M or -)91120-WW19.5-X.X-AB	14,6-19,5 V	0-2,0 A	30 W
GT(M or -)91120-WW24-X.X-AB	19,6-24 V	0-1,6 A	30 W

	GT(M or -)91120-WW36-X.X-AB	24,1-36 V	0-1,25 A	30 W
	GTM91128LI1CEL	4,2 V	1,0 A	--
	GTM91128LI2CEL	8,4 V	1,0 A	--
	GTM91128LI3CEL	12,6 V	1,0 A	--

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒ **CB Testing Laboratory:**	SIQ Ljubljana SIQ Ljubljana is accredited by Slovenian Accreditation with accreditation number LP-009 in the field of testing	
Testing location/ address ..... :	Tržaška cesta 2, SI-1000 Ljubljana, Slovenia	
Tested by (name, function, signature) ..... :	Boštjan Grum	
Approved by (name, function, signature) .. :	Andrej Perko	
☐ **Testing procedure: CTF Stage 1:**		
Testing location/ address ..... :		
Tested by (name, function, signature) ..... :		
Approved by (name, function, signature) .. :		
☐ **Testing procedure: CTF Stage 2:**		
Testing location/ address ..... :		
Tested by (name + signature)..... :		
Witnessed by (name, function, signature). :		
Approved by (name, function, signature) .. :		
☐ **Testing procedure: CTF Stage 3:**		
☐ **Testing procedure: CTF Stage 4:**		
Testing location/ address ..... :		
Tested by (name, function, signature) ..... :		
Witnessed by (name, function, signature). :		
Approved by (name, function, signature) .. :		
Supervised by (name, function, signature) :		

List of Attachments (including a total number of pages in each attachment):

Attachment No. 1: National deviation (14 pages)

Attachment No. 2: Technical documentation (65 pages),

Attachment No. 3: Photos (12 pages),

Attachment No. 4: Annex BB extract from IEC 61558-2-16:2009 + A1:2013 (31 pages).

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
All applicable clauses – see test report for details.	SIQ Ljubljana, Tržaška cesta 2, SI-1000 Ljubljana, Slovenia Rev.no.1: SIQ Ljubljana, Mašera-Spasićeva ulica 10, SI-1000 Ljubljana, Slovenia

Summary of compliance with National Differences (List of countries addressed):

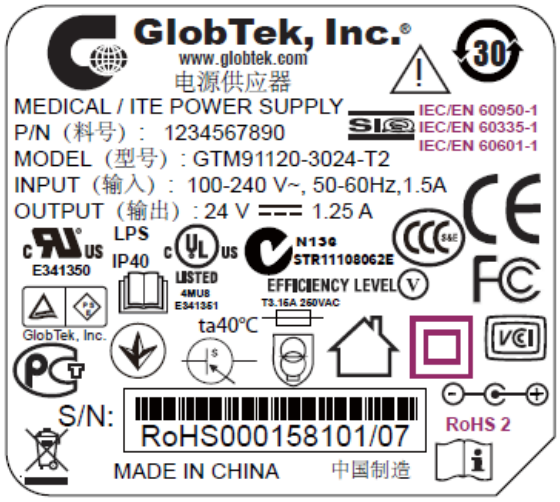
CENELEC countries, Australia and New Zealand

☒ **The product fulfils the requirements of IEC 60335-1:2010 (5th Edition) + A1:2013 + A2:2016**

☒ **The product fulfils the requirements of EN 60335-1:2012 + A11:2014 + A13:2017**

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.....:	Power supply
Classification of installation and use.....:	Desk top / direct plug-in power supply unit (Class I or Class II) Open-frame power supply unit, encapsulated power supply unit: Not defined, end product consideration
Supply Connection.....:	Appliance inlet or plug (Desk top / direct plug-in construction) Input connector (Open frame construction) End product consideration (Encapsulated construction)
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)
Testing ..... :	
Date of receipt of test item ..... :	2012-10-29; 2019-07-23
Date (s) of performance of tests ..... :	2013-10-29 to 2013-04-12 2019-09-20 to 2019-10-15

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided .....:	☒ **Yes** ☐ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) ..... :	1) GlobTek, Inc. 186 Veterans Drive, Northvale, NJ-07647, New Jersey, USA 2) GlobTek (Suzhou) Co., Ltd. Building 4, No. 76, Jinling East Road, Suzhou Industrial Park, Jiangsu CN-215021, China

General product information:

Power supply units are not end product. Review of instructions for use and EMF testing shall be performed on end product. Appliances were tested as unattended appliance according to the manufacturer specifications. During testing output ratings were applied (normal load - loaded to rated output). Power supplies are desk-top, direct plug-in, open frame or encapsulated. Power supplies are equipped with two fuses in line and in neutral. Secondary output circuit is separated from mains by reinforced insulation and rated SELV. The equipment has been evaluated for use in a Pollution Degree 2 and overvoltage category II. For the open frame and encapsulated power supply units a suitable Electrical and Fire enclosure shall be provided in the end equipment. For the desktop / direct plug-in power supply unit is provided with plastic enclosure made by non-flammable material UL94V-1. See also list of safety critical components. The product was evaluated for a maximum ambient of 40°C.

Model Differences:

Desktop / direct plug-in power supplies are provided with suitable external enclosure. The top and bottom parts of the enclosure are ultrasonic welded. Open frame and encapsulated power supplies are without external enclosure. The external enclosure has to be provided within the end product. The desktop / direct plug-in power supply is rated class I or class II. The open frame and encapsulated power supply are rated class I or class II.

History sheet

Report No.	Date	Change	Revision No.
T211-0180/13	2013-04-12	Initial Test Report issued	—
T211-0193/13	2013-05-06	This test report supersedes previously issued test report T211-00180/13. Additionally models GT(M or -)91120-3024-X.X-AB and GT(M or -)91120-3036-X.X-AB are added.	0.1
T211-0912/19	2019-10-23	Updated to latest standard edition.	1.0

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
5	**GENERAL CONDITIONS FOR THE TESTS**		**P**
	Tests performed according to clause 5, e.g. nature of supply, sequence of testing, etc.		P
6	**CLASSIFICATION**		**P**
6.1	Protection against electric shock: Class 0, 0I, I, II, III ....:	The desktop / direct plug-in power supply is rated class I or class II. The open frame and encapsulated power supply are rated class I or class II	P
	For a class III construction with a detachable power supply part the appliance is classified according to the detachable power supply part		P
6.2	Protection against harmful ingress of water	IP40 (IP00 for building-in version)	N/A
7	**MARKING AND INSTRUCTIONS**		
7.1	Rated voltage or voltage range (V) ....:	100-240 V	P
	Symbol for nature of supply, or ....:	~	P
	Rated frequency (Hz) ....:	50-60 Hz	P
	Rated power input (W), or ....:		N/A
	Rated current (A) ....:	0,7-0,3 A (or 1,5 A)	P
	Manufacturer's or responsible vendor's name, trademark or identification mark ....:	GlobTek, Inc.	P
	Model or type reference ....:	GTM or - 91120-WWVV-X.X-AB series; (see Model/Type reference)	P
	Symbol IEC 60417-5172, for class II appliances	For models with rated class II	P
	IP number, other than IPX0 ....:	IP40 (IP00 for building-in version)	P
	Symbol IEC 60417-5180, for class III appliances, unless		N/A
	the appliance is operated by batteries only, or		N/A
	for appliances powered by rechargeable batteries recharged in the appliance		N/A
	Symbol IEC 60417-5018, for class II and class III appliances incorporating a functional earth		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Symbol IEC 60417-5036, for the enclosure of electrically-operated water valves in external hose-sets for connection of an appliance to the water mains, if the working voltage exceeds extra-low voltage		N/A
7.2	Warning for stationary appliances for multiple supply		N/A
	Warning placed in vicinity of terminal cover		N/A
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen	100-240 V; 0,7-0,3 A	P
	Different rated values marked with the values separated by an oblique stroke		P
7.4	Appliances adjustable for different rated voltages or rated frequencies, the voltage or the frequency setting is clearly discernible		N/A
	Requirement met if frequent changes are not required and the rated voltage or rated frequency to which the appliance is to be adjusted is determined from a wiring diagram		N/A
7.5	Appliances with more than one rated voltage or one or more rated voltage ranges, marked with rated input or rated current for each rated voltage or range, unless		N/A
	the power input or current are related to the arithmetic mean value of the rated voltage range		N/A
	Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear		N/A
7.6	Correct symbols used		P
	Symbol for nature of supply placed next to rated voltage		P
	Symbol for class II appliances placed unlikely to be confused with other marking	For models with rated class II	P
	Units of physical quantities and their symbols according to international standardized system		P
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply, unless		N/A
	correct mode of connection is obvious		P
7.8	Except for type Z attachment, terminals for connection to the supply mains indicated as follows:		-
	- marking of terminals exclusively for the neutral conductor (letter N)		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- marking of protective earthing terminals (symbol IEC 60417-5019)		N/A
	- marking of functional earthing terminals (symbol IEC 60417-5018)		N/A
	- marking not placed on removable parts		N/A
7.9	Marking or placing of switches which may cause a hazard		N/A
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means..... .....:		N/A
	This applies also to switches which are part of a control		N/A
	If figures are used, the off position indicated by the figure 0		N/A
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		N/A
7.11	Indication for direction of adjustment of controls		N/A
7.12	Instructions for safe use provided	Review of instructions for use shall be performed within final application	N/A
	Details concerning precautions during user maintenance		N/A
	The instructions state that:		-
	- the appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction		N/A
	- children being supervised not to play with the appliance		N/A
	For a part of class III construction supplied from a detachable power supply unit, the instructions state that the appliance is only to be used with the unit provided		N/A
	Instructions for class III appliances state that it must only be supplied at SELV, unless		N/A
	it is a battery-operated appliance, the battery being charged outside the appliance		N/A
	For appliances for altitudes exceeding 2000 m, the maximum altitude is stated ....:		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	The instructions for appliances incorporating a functional earth states that the appliance incorporates an earth connection for functional purposes only		N/A
7.12.1	Sufficient details for installation supplied		N/A
	For an appliance intended to be permanently connected to the water mains and not connected by a hose-set, this is stated		N/A
	If different rated voltages or different rated frequencies are marked, the instructions state what action to be taken to adjust the appliance		N/A
7.12.2	Stationary appliances not fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III, the instructions state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules		N/A
7.12.3	Insulation of the fixed wiring in contact with parts exceeding 50 K during clause 11; instructions state that the fixed wiring must be protected		N/A
7.12.4	Instructions for built-in appliances:		-
	- dimensions of space		N/A
	- dimensions and position of supporting and fixing		N/A
	- minimum distances between parts and surrounding structure		N/A
	- minimum dimensions of ventilating openings and arrangement		N/A
	- connection to supply mains and interconnection of separate components		N/A
	- allow disconnection of the appliance after installation, by accessible plug or a switch in the fixed wiring, unless		N/A
	a switch complying with 24.3		N/A
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord		N/A
	Replacement cord instructions, type Y attachment		N/A
	Replacement cord instructions, type Z attachment		N/A
7.12.6	Caution in the instructions for appliances incorporating a non-self-resetting thermal cut-out that is reset by disconnection of the supply mains, if this cut-out is required to comply with the standard		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
7.12.7	Instructions for fixed appliances stating how the appliance is to be fixed		N/A
7.12.8	Instructions for appliances connected to the water mains:		-
	- max. inlet water pressure (Pa)..... .....:		N/A
	- min. inlet water pressure, if necessary (Pa)..... :		N/A
	Instructions concerning new and old hose-sets for appliances connected to the water mains by detachable hose-sets		N/A
7.12.9	Instructions specified in 7.12 and from 7.12.1 to 7.12.8 appear together before any other instructions supplied with the appliance		N/A
	These instructions may be supplied with the appliance separately from any functional use booklet		N/A
	They may follow the description of the appliance that identifies parts, or follow the drawings/sketches		N/A
	In addition, instructions are also available in an alternative format such as on a website or on request from the user in a format such as a DVD		N/A
	In addition, instructions are also available in an alternative format such as on a website or in a format such as a DVD..... .....:		N/A
7.13	Instructions and other texts in an official language		N/A
7.14	Markings clearly legible and durable:		-
	Signal words WARNING, CAUTION, DANGER in uppercase having a height as specified..... .....:		N/A
	Uppercase letter of the text explaining the signal word not smaller than 1,6 mm ....:		N/A
	Moulded in, engraved, or stamped markings either raised above or have a depth below the surface of at least 0,25 mm, unless		N/A
	contrasting colours are used		N/A
	Markings checked by inspection, measurement and rubbing test as specified		P
7.15	Markings on a main part		P
	Marking clearly discernible from the outside, if necessary after removal of a cover		P
	For portable appliances, cover can be removed or opened without a tool		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation		N/A
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions		N/A
	Indications for switches and controls placed on or near the components. Marking not on parts which can be positioned or repositioned in such a way that the marking is misleading		N/A
	The symbol IEC 60417-5018 placed next to the symbol IEC 60417-5172 or IEC 60417-5180		N/A
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		N/A
8	**PROTECTION AGAINST ACCESS TO LIVE PARTS**		**P**
8.1	Adequate protection against accidental contact with live parts	Power supplies desktop and direct plug-in Open frame and encapsulated power supply -– under end product consideration	P
8.1.1	Requirement applies for all positions, detachable parts removed		P
	Lamps behind a detachable cover not removed, if conditions met		N/A
	Insertion or removal of lamps, protection against contact with live parts of the lamp cap		N/A
	Use of test probe B of IEC 61032, with a force not exceeding 1 N: no contact with live parts		P
	Use of test probe B of IEC 61032 through openings, with a force of 20N: no contact with live parts		P
8.1.2	Use of test probe 13 of IEC 61032, with a force not exceeding 1 N, through openings in class 0 appliances and class II appliances/constructions: no contact with live parts		P
	Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts		N/A
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032, with a force not exceeding 1 N: no contact with live parts of visible glowing heating elements or supporting parts		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	For a single switching action obtained by a switching device, requirements as specified		N/A
	For appliances with a supply cord and without a switching device, the single switching action may be obtained by the withdrawal of the plug		P
8.1.4	Accessible part not considered live if:		-
	- safety extra-low a.c. voltage: peak value not exceeding 42.4 V		N/A
	- safety extra-low d.c. voltage: not exceeding 42.4 V		P
	- or separated from live parts by protective impedance		P
	If protective impedance: d.c. current not exceeding 2 mA, and		N/A
	a.c. peak value not exceeding 0.7 mA	<0,3 mApk	P
	- for peak values over 42.4 V up to and including 450 V, capacitance not exceeding 0,1 μF		N/A
	- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 μC		N/A
	- for peak values over 15kV, the energy in the discharge not exceeding 350 mJ		N/A
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		-
	- built-in appliances	Open frame and encapsulated power supply -– under end product consideration	N/A
	- fixed appliances		N/A
	- appliances delivered in separate units		N/A
8.2	Class II appliances and constructions constructed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only	Power supplies desk-top and direct plug-in Open frame and encapsulated power supply -– under end product consideration	P
	Only possible to touch parts separated from live parts by double or reinforced insulation	Power supplies desk-top and direct plug-in Open frame and encapsulated power supply -– under end product consideration	P
9	**STARTING OF MOTOR-OPERATED APPLIANCES**		**N/A**
	Requirements and tests are specified in part 2 when necessary		N/A
10	**POWER INPUT AND CURRENT**		**P**

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
10.1	Power input at normal operating temperature, rated voltage and normal operation not deviating from rated power input by more than shown in table 1 . :	(see appended table)	N/A
	If the power input varies throughout the operating cycle and the maximum value of the power input exceeds, by a factor greater than two, the arithmetic mean value of the power input occurring during a representative period, the power input is the maximum value that is exceeded for more than 10 % of the representative period		N/A
	Otherwise the power input is the arithmetic mean value		N/A
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless		N/A
	the rated power input is related to the arithmetic mean value		N/A
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2 ..... :	(see appended table)	P
	If the current varies throughout the operating cycle and the maximum value of the current exceeds, by a factor greater than two, the arithmetic mean value of the current occurring during a representative period, the current is the maximum value that is exceeded for more than 10 % of the representative period		N/A
	Otherwise the current is the arithmetic mean value		P
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless		P
	the rated current is related to the arithmetic mean value of the range		N/A
11	**HEATING**		**P**
11.1	No excessive temperatures in normal use		P
11.2	The appliance is held, placed or fixed in position as described ..... :		P
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		N/A
	the windings are non-uniform or it is difficult to make the necessary connections		P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
11.4	Heating appliances operated under normal operation at 1.15 times rated power input (W) .....:		N/A
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage (V).....:	94 V; 254,4 V	P
11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage (V).....:		N/A
11.7	Operation duration corresponding to the most unfavourable conditions of normal use		P
11.8	Temperature rises monitored continuously and not exceeding the values in table 3 .....:	(see appended table)	P
	If the temperature rise of a motor winding exceeds the value of table 3, or		N/A
	if there is doubt with regard to classification of insulation,		N/A
	tests of Annex C are carried out		N/A
	Sealing compound does not flow out	No sealing compound	N/A
	Protective devices do not operate, except		P
	components in protective electronic circuits tested for the number of cycles specified in 24.1.4		N/A
13	**LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE**		**P**
13.1	Leakage current not excessive and electric strength adequate		P
	Heating appliances operated at 1.15 times the rated power input (W).....:		N/A
	Motor-operated appliances and combined appliances supplied at 1.06 times the rated voltage (V) .....:	254,4 V	P
	Protective impedance and radio interference filters disconnected before carrying out the tests		P
13.2	The leakage current is measured by means of the circuit described in Figure 4 of IEC 60990:1999		P
	For class 0I appliances and class I appliances, except parts of class II construction, C may be replaced by a low impedance ammeter		N/A
	Leakage current measurements .....:	(see appended table)	P
13.3	The appliance is disconnected from the supply		P
	Electric strength tests according to table 4 .....:	(see appended table)	P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	No breakdown during the tests		P
14	**TRANSIENT OVERVOLTAGES**		**N/A**
	Appliances withstand the transient over-voltages to which they may be subjected		N/A
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6 ..... :	(see appended table)	N/A
	No flashover during the test, unless		N/A
	of functional insulation if the appliance complies with clause 19 with the clearance short-circuited		N/A
15	**MOISTURE RESISTANCE**		**P**
15.1	Enclosure provides the degree of moisture protection according to classification of the appliance	IP40 (IP00 for building-in version)	P
	Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3		P
	No trace of water on insulation which can result in a reduction of clearances or creepage distances below values specified in clause 29		P
15.1.1	Appliances, other than IPX0, subjected to tests as specified in IEC 60529..... :		N/A
	Water valves containing live parts in external hoses for connection of an appliance to the water mains tested as specified for IPX7 appliances		N/A
15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test		N/A
	Built-in appliances installed according to the instructions		N/A
	Appliances placed or used on the floor or table placed on a horizontal unperforated support		P
	Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board		P
	For IPX3 appliances, the base of wall mounted appliances is placed at the same level as the pivot axis of the oscillating tube		N/A
	For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube, and		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	for appliances normally used on the floor or table, the movement is limited to two times 90° for a period of 5 min, the support being placed at the level of the pivot axis of the oscillating tube		P
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions		N/A
	Appliances normally fixed to a ceiling are mounted underneath a horizontal unperforated support, the pivot axis of the oscillating tube located at the level of the underside of the support, and		N/A
	for IPX4 appliances, the movement of the tube is limited to two times 90° from the vertical for a period of 5 min		N/A
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Detachable parts subjected to the relevant treatment with the main part		N/A
	However, if a part has to be removed for user maintenance and a tool is needed, this part is not removed		N/A
15.2	Spillage of liquid does not affect the electrical insulation		N/A
	Spillage solution comprising water containing approximately 1 % NaCl and 0,6 % rinsing agent		N/A
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N/A
	Detachable parts are removed		N/A
	Overfilling test with additional amount of the solution, over a period of 1 min (l).....:		N/A
	The appliance withstands the electric strength test of 16.3		N/A
	No trace of water on insulation that can result in a reduction of clearances or creepage distances below values specified in clause 29		N/A
15.3	Appliances proof against humid conditions		P
	Checked by test Cab: Damp heat steady state in IEC 60068-2-78		P
	Detachable parts removed and subjected, if necessary, to the humidity test with the main part		P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Humidity test for 48 h in a humidity cabinet		P
	Reassembly of those parts that may have been removed		P
	The appliance withstands the tests of clause 16		P
16	**LEAKAGE CURRENT AND ELECTRIC STRENGTH**		**P**
16.1	Leakage current not excessive and electric strength adequate		P
	Protective impedance disconnected from live parts before carrying out the tests		P
	Tests carried out at room temperature and not connected to the supply		P
16.2	Single-phase appliances: test voltage 1.06 times rated voltage (V) ..... :	254,4 V; 60 Hz	P
	Three-phase appliances: test voltage 1.06 times rated voltage divided by √3 (V) ..... :		N/A
	Leakage current measurements ..... :	(see appended table)	P
	Limit values doubled if:		-
	- all controls have an off position in all poles, or		N/A
	- the appliance has no control other than a thermal cut-out, or		N/A
	- all thermostats, temperature limiters and energy regulators do not have an off position, or		N/A
	- the appliance has radio interference filters		N/A
	With the radio interference filters disconnected, the leakage current do not exceed limits specified..... :	(see appended table)	P
16.3	Electric strength tests according to table 7..... :	(see appended table)	P
	Test voltage applied between the supply cord and inlet bushing and cord guard and cord anchorage as specified..... :	(see appended table)	N/A
	No breakdown during the tests		P
17	**OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS**		**P**
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use ..... :	(see appended table)	P
	Appliance supplied with 1.06 or 0.94 times rated voltage under the most unfavourable short-circuit or overload likely to occur in normal use (V)..... :	254,4 V 94 V	P
	Basic insulation is not short-circuited		P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K		P
	Temperature of the winding not exceeding the value specified in table 8		P
	However, limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		N/A
18	**ENDURANCE**		**N/A**
	Requirements and tests are specified in part 2 when necessary		N/A
19	**ABNORMAL OPERATION**		**P**
19.1	The risk of fire, mechanical damage or electric shock under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe .....:	(see appended table)	P
	Appliances incorporating heating elements subjected to the tests of 19.2 and 19.3, and	No heating elements	N/A
	if the appliance also has a control that limit the temperature during clause 11 it is subjected to the test of 19.4, and		N/A
	if applicable, to the test of 19.5		N/A
	Appliances incorporating PTC heating elements are also subjected to the test of 19.6		N/A
	Appliances incorporating motors subjected to the tests of 19.7 to 19.10, as applicable		N/A
	Appliances incorporating electronic circuits subjected to the tests of 19.11 and 19.12, as applicable		P
	Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11		N/A
	Appliances incorporating voltage selector switches subjected to the test of 19.15		N/A
	Unless otherwise specified, the tests are continued until a non-self-resetting thermal cut-out operates, or		N/A
	until steady conditions are established		P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	If a heating element or intentionally weak part becomes open-circuited, the relevant test is repeated on a second sample		N/A
19.2	Test of appliances with heating elements with restricted heat dissipation; test voltage (V), power input of 0.85 times rated power input (W) ..... :		N/A
19.3	Test of 19.2 repeated; test voltage (V), power input of 1.24 times rated power input (W) ..... :		N/A
19.4	Test conditions as in clause 11, any control limiting the temperature during tests of clause 11 short-circuited		N/A
19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the sheath		N/A
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		N/A
	The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4		N/A
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions		N/A
	The working voltage of the PTC heating element is increased by 5% and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1.5 times working voltage or until the PTC heating element ruptures (V)..... :		N/A
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque, or		N/A
	locking moving parts of other appliances		N/A
	Locked rotor, capacitors open-circuited one at a time		N/A
	Test repeated with capacitors short-circuited one at a time, unless		N/A
	the capacitor is of class S2 or S3 of IEC 60252-1		N/A
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed..... :		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	An electronic timer or programmer that operates to ensure compliance with the test before the maximum period under the conditions of Clause 11 is reached, is a protective electronic circuit		N/A
	Other appliances supplied with rated voltage for a period as specified .....:		N/A
	Winding temperatures not exceeding values specified in table 8 .....:	(see appended table)	N/A
19.8	Multi-phase motors operated at rated voltage with one phase disconnected		N/A
19.9	Running overload test on appliances incorporating motors intended to be remotely or automatically controlled or liable to be operated continuously		N/A
	Motor-operated and combined appliances for which 30.2.3 is applicable and that use overload protective devices relying on electronic circuits to protect the motor windings, are also subjected to the test		N/A
	Winding temperatures not exceeding values as specified .....:	(see appended table)	N/A
19.10	Series motor operated at 1.3 times rated voltage for 1 min (V).....:		N/A
	During the test, parts not being ejected from the appliance		N/A
19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless		P
	they comply with the conditions specified in 19.11.1		N/A
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8, unless		N/A
	restarting does not result in a hazard		N/A
	Appliances having a device with an off position obtained by electronic disconnection, or a device placing the appliance in a stand-by mode, subjected to the tests of 19.11.4		N/A
	If the safety of the appliance under any of the fault conditions depends on the operation of a miniature fuse-link complying with IEC 60127, the test of 19.12 is carried out		P
	During and after each test the following is checked:		-
	- the temperature of the windings do not exceed the values specified in table 8		P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- the appliance complies with the conditions specified in 19.13		P
	- any current flowing through protective impedance not exceeding the limits specified in 8.1.4		P
	If a conductor of a printed board becomes open-circuited, the appliance is considered to have withstood the particular test, provided both of the following conditions are met:		-
	- the base material of the printed circuit board withstands the test of Annex E		N/A
	- any loosened conductor does not reduce clearance or creepage distances between live parts and accessible metal parts below the values specified in clause 29		N/A
19.11.1	Fault conditions a) to g) in 19.11.2 are not applied to circuits or parts of circuits meeting both of the following conditions:		-
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 15 W according to the tests specified		N/A
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction of other parts of the appliance does not rely on the correct functioning of the electronic circuit		N/A
19.11.2	Fault conditions applied one at a time, the appliance operating under conditions specified in clause 11, but supplied at rated voltage, duration of the tests as specified:		-
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in clause 29		P
	b) open circuit at the terminals of any component		P
	c) short circuit of capacitors, unless		P
	they comply with IEC 60384-14		P
	d) short circuit of any two terminals of an electronic component, other than integrated circuits		P
	This fault condition is not applied between the two circuits of an optocoupler		P
	e) failure of triacs in the diode mode		P
	f) failure of microprocessors and integrated circuits		N/A
	g) failure of an electronic power switching device		P
	Each low power circuit is short-circuited by connecting the low-power point to the pole of the supply source from which the measurements were made		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
19.11.3	If the appliance incorporates a protective electronic circuit that operates to ensure compliance with clause 19, the appliance is tested as specified		N/A
19.11.4	Appliances having a device with an off position obtained by electronic disconnection, or		N/A
	a device that can be placed in the stand-by mode,		N/A
	subjected to the tests of 19.11.4.1 to 19.11.4.7, the device being set in the off position or in the stand-by mode		N/A
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.4.1 to 19.11.4.7, the tests being carried out after the protective electronic circuit has operated, except that		N/A
	appliances operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena.		N/A
	Surge protective devices disconnected, unless		N/A
	They incorporate spark gaps		N/A
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4		N/A
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, at frequency ranges specified		N/A
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4, test level 3 or 4 as specified		N/A
19.11.4.4	The power supply terminals of the appliance subjected to voltage surges in accordance with IEC 61000-4-5, test level 3 or 4 as specified		N/A
	An open circuit test voltage of 2 kV is applicable for the line-to-line coupling mode		N/A
	An open circuit test voltage of 4 kV is applicable for the line-to-earth coupling		N/A
	Earthed heating elements in class I appliances disconnected		N/A
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3		N/A
19.11.4.6	Appliances having a rated current not exceeding 16 A are subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-11		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Appliances having a rated current exceeding 16 A are subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-34		N/A
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2		N/A
19.11.4.8	The appliance is supplied at rated voltage and operated under normal operation. After 60s the power supply is reduced to a level such that the appliance ceases to respond or parts controlled by the programmable component cease to operate		N/A
	The appliance continues to operate normally, or		N/A
	requires a manual operation to restart		N/A
19.12	If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with IEC 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A)..... :	Measured: >10 A; fuse rated 3,15 A	P
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		P
	Temperature rises not exceeding the values shown in table 9 ..... :	(see appended table)	P
	Compliance with clause 8 not impaired		P
	If the appliance can still be operated it complies with 20.2		P
	Insulation, other than of class III appliances or class III constructions that do not contain live parts, withstands the electric strength test of 16.3, the test voltage as specified in table 4:		-
	- basic insulation (V)..... :	1250 V	P
	- supplementary insulation (V)..... :	1750 V	P
	- reinforced insulation (V) ..... :	3000 V	P
	After operation or interruption of a control, clearances and creepage distances across the functional insulation withstand the electric strength test of 16.3, the test voltage being twice the working voltage		P
	The appliance does not undergo a dangerous malfunction, and		P
	no failure of protective electronic circuits, if the appliance is still operable		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Appliances tested with an electronic switch in the off position, or in the stand-by mode:		-
	- do not become operational, or		N/A
	- if they become operational, do not result in a dangerous malfunction during or after the tests of 19.11.4		N/A
	If the appliance contains lids or doors that are controlled by one or more interlocks, one of the interlocks may be released provided that:		-
	- the lid or door does not move automatically to an open position when the interlock is released, and		N/A
	- the appliance does not start after the cycle in which the interlock was released		N/A
19.14	Appliances operated under the conditions of clause 11, any contactor or relay contact operating under the conditions of clause 11 being short-circuited		N/A
	For a relay or contactor with more than one contact, all contacts are short-circuited at the same time		N/A
	A relay or contactor operating only to ensure the appliance is energized for normal use is not short-circuited		N/A
	If more than one relay or contactor operates in clause 11, they are short-circuited in turn		N/A
19.15	For appliances with a mains voltage selector switch, the switch is set to the lowest rated voltage position and the highest value of rated voltage is applied		N/A
20	**STABILITY AND MECHANICAL HAZARDS**		**P**
20.1	Appliances having adequate stability		P
	Tilting test through an angle of 10°, appliance placed on an inclined plane/horizontal support, not connected to the supply mains; appliance does not overturn	Desktop version.	P
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15°		N/A
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 9		N/A
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury		N/A
	Protective enclosures, guards and similar parts are non-detachable, and		N/A
	have adequate mechanical strength		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Enclosures that can be opened by overriding an interlock are considered to be detachable parts		N/A
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard by unexpected closure		N/A
	Not possible to touch dangerous moving parts with the test probe described		N/A
21	**MECHANICAL STRENGTH**		**P**
21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling	Power supplies desktop and direct plug-in Open frame and encapsulated power supply -– under end product consideration	P
	Checked by applying 3 blows to every point of the enclosure like to be weak, in accordance with test Ehb of IEC 60068-2-75, spring hammer test, with an impact energy of 0,5 J	(see appended table) desktop and direct plug-in version	P
	The appliance shows no damage impairing compliance with this standard, and		P
	compliance with 8.1, 15.1 and clause 29 not impaired		P
	If doubt, supplementary or reinforced insulation subjected to the electric strength test of 16.3	No doubt	N/A
	If necessary, repetition of groups of three blows on a new sample		N/A
21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements		P
	Test not applicable if the thickness of supplementary insulation is at least 1 mm and reinforced insulation at least 2 mm		P
	The insulation is tested as specified, and does withstand the electric strength test of 16.3		N/A
22	**CONSTRUCTION**		**P**
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled	IP40 (IP00 for building-in version)	P
22.2	Stationary appliance: means to ensure all-pole disconnection from the supply being provided:		-
	- a supply cord fitted with a plug, or		N/A
	- a switch complying with 24.3, or		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided, or		N/A
	- an appliance inlet		N/A
	Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase, permanently connected class 01 and class I appliances, connected to the phase conductor		N/A
22.3	Appliance provided with pins: no undue strain on socket-outlets	Direct plug-in version	P
	Applied torque not exceeding 0.25 Nm	Direct plug-in version	P
	Pull force of 50N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1mm		P
	Each pin subjected to a torque of 0.4Nm; the pins are not rotating, unless		P
	rotating does not impair compliance with this standard		P
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		N/A
22.5	No risk of electric shock when touching pins, for appliances having a capacitor with rated capacitance equal to or greater than 0,1μF, the appliance being disconnected from the supply at the instant of voltage peak	Open frame and encapsulated power supply -– under end product consideration	P
	Voltage not exceeding 34 V (V) .....:	33 V	P
	If compliance relies on the operation of an electronic circuit, the electromagnetic phenomena tests of 19.11.4.3 and 19.11.4.4 are applied		N/A
	The discharge test is then repeated three times, voltage not exceeding 34 V (V).....:		N/A
22.6	Electrical insulation not affected by condensing water or leaking liquid		N/A
	Electrical insulation of Class II appliances not affected if a hose ruptures or seal leaks		N/A
	In case of doubt, test as described		N/A
22.7	Adequate safeguards against the risk of excessive pressure in appliances containing liquid or gases or having steam-producing devices		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
22.8	Electrical connections not subject to pulling during cleaning of compartments to which access can be gained without the aid of a tool, and that are likely to be cleaned in normal use	Open frame and encapsulated power supply -– under end product consideration	N/A
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances, unless	Open frame and encapsulated power supply -– under end product consideration	P
	the substance has adequate insulating properties		N/A
22.10	Not possible to reset voltage-maintained non-self-resetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance, if:		N/A
	- a non-self-resetting thermal cut-out is required by the standard, and		N/A
	- a voltage maintained non-self-resetting thermal cut-out is used to meet it		N/A
	Non-self-resetting thermal motor protectors have a trip-free action, unless		N/A
	they are voltage maintained		N/A
	Reset buttons of non-self-resetting controls so located or protected that accidental resetting is unlikely		N/A
22.11	Reliable fixing of non-detachable parts that provide the necessary degree of protection against electric shock, moisture or contact with moving parts	Open frame and encapsulated power supply -– under end product consideration	P
	Obvious locked position of snap-in devices used for fixing such parts		N/A
	No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing		N/A
	Tests as described		P
22.12	Handles, knobs etc. fixed in a reliable manner, if loosening result in a hazard		N/A
	Removing or fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible, if resulting in a hazard		N/A
	A choking hazard does not apply to appliances for commercial use		N/A
	Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied		N/A
	Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	If the part is removed and can be contained within the small parts cylinder, it is considered to be a choking hazard		N/A
22.13	Unlikely that handles, when gripped as in normal use, make the operator's hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		N/A
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance		P
	No exposed pointed ends of self-tapping screws or other fasteners, likely to be touched by the user in normal use or during user maintenance		N/A
22.15	Storage hooks and the like for flexible cords smooth and well rounded		N/A
22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands and no undue wear of contacts		N/A
	Cord reel tested with 6000 operations, as specified		N/A
	Electric strength test of 16.3, voltage of 1000 V applied		N/A
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner		N/A
22.18	Current-carrying parts and other metal parts resistant to corrosion		P
22.19	Driving belts not relied upon to provide the required level of insulation, unless	No driving belts	N/A
	constructed to prevent inappropriate replacement		N/A
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless		N/A
	material used is non-corrosive, non-hygroscopic and non-combustible		N/A
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless	No that kind of material used	P
	impregnated		N/A
	This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		N/A
22.22	Appliances not containing asbestos	No asbestos	P
22.23	Oils containing polychlorinated biphenyl (PCB) not used	No oils	P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
22.24	Bare heating elements, except in class III appliances or class III constructions that do not contain live parts, adequately supported	No bare heating elements	N/A
	In case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts		N/A
22.25	Sagging heating conductors, except in class III appliances or class III constructions that do not contain live parts, cannot come into contact with accessible metal parts		N/A
22.26	For class III constructions the insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation		N/A
22.27	Parts connected by protective impedance separated by double or reinforced insulation	CY1, CY2	P
22.28	Metal parts of Class II appliances conductively connected to gas pipes or in contact with water, separated from live parts by double or reinforced insulation	No metal parts	N/A
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of access to live parts is maintained after installation		N/A
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or	Power supplies desktop and direct plug-in construction Open frame and encapsulated power supply -– under end product consideration	P
	so constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete		N/A
22.31	Neither clearances nor creepage distances over supplementary and reinforced insulation reduced below values specified in clause 29 as a result of wear		P
	Neither clearances nor creepage distances between live parts and accessible parts reduced below values for supplementary insulation if wires, screws etc. become loose		P
22.32	Supplementary and reinforced insulation constructed or protected against pollution so that clearances or creepage distances are not reduced below the values in clause 29	Power supplies desk-top, direct plug-in and encapsulated construction Open frame -– under end product consideration	P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.2		N/A
	Ceramic material not tightly sintered, similar materials or beads alone not used as supplementary or reinforced insulation		N/A
	Ceramic and similar porous material in which heating conductors are embedded is considered to be basic insulation, not reinforced insulation		N/A
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N/A
22.33	Conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts are not in direct contact with live parts, or		N/A
	unearthed metal parts separated from live parts by basic insulation only		N/A
	Electrodes not used for heating liquids		N/A
	For class II constructions, conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts, not in direct contact with basic or reinforced insulation, unless		N/A
	the reinforced insulation consists of at least 3 layers		N/A
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation, unless		N/A
	the reinforced insulation consists of at least 3 layers		N/A
	An air layer not used as basic or supplementary insulation in a double insulation system if likely to be bridged by leaking liquid		N/A
22.34	Shafts of operating knobs, handles, levers etc. not live, unless		N/A
	the shaft is not accessible when the part is removed		N/A
22.35	For other than class III constructions, handles, levers and knobs, held or actuated in normal use, not becoming live in the event of a failure of basic insulation		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of a failure of basic insulation, are either adequately covered by insulation material or their accessible parts are separated from their shafts or fixings by supplementary insulation		N/A
	This requirement does not apply to handles, levers and knobs on stationary appliances and cordless appliances, other than those of electrical components, provided they are reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		N/A
	Insulating material covering metal handles, levers and knobs withstand the electric strength test of 16.3 for supplementary insulation		N/A
22.36	For appliances other than class III, handles continuously held in the hand in normal use so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless		N/A
	they are separated from live parts by double or reinforced insulation		N/A
22.37	Capacitors in Class II appliances not connected to accessible metal parts and their casings, if of metal, separated from accessible metal parts by supplementary insulation, unless	No accessible metal parts	N/A
	the capacitors comply with 22.42		N/A
22.38	Capacitors not connected between the contacts of a thermal cut-out		N/A
22.39	Lamp holders used only for the connection of lamps		N/A
22.40	Motor-operated appliances and combined appliances intended to be moved while in operation, or having accessible moving parts, fitted with a switch to control the motor. The actuating member of the switch being easily visible and accessible		N/A
	If the appliance cannot operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation being fitted with a switch for stopping the operation. The actuating member of the switch being easily visible and accessible		N/A
22.41	No components, other than lamps, containing mercury		N/A
22.42	Protective impedance consisting of at least two separate components	CY1, CY2	P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited	<0,6 mApk	P
	Resistors checked by the test of 14.1 a) in IEC 60065		N/A
	Capacitors checked by the tests for class Y capacitors in IEC 60384-14	Certified components. See list of components.	P
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N/A
22.44	Appliances not having an enclosure that is shaped or decorated like a toy		P
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.3 due to deformation as a result of an external force applied to the enclosure	Open frame and encapsulated power supply construction -– under end product consideration	P
22.46	For programmable protective electronic circuits used to ensure compliance with the standard, the software contains measures to control the fault/error conditions in table R.1		N/A
	Software that contains measures to control the fault/error conditions specified in table R.2 is to be specified in parts 2 for particular constructions or to address specific hazards		N/A
	These requirements are not applicable to software used for functional purpose or compliance with clause 11		N/A
22.47	Appliances connected to the water mains withstand the water pressure expected in normal use		N/A
	No leakage from any part, including any inlet water hose		N/A
22.48	Appliances connected to the water mains constructed to prevent backsiphonage of non-potable water		N/A
22.49	For remote operation, the duration of operation is to be set before the appliance can be started, unless		N/A
	the appliance switches off automatically or can operate continuously without hazard		N/A
22.50	Controls incorporated in the appliance take priority over controls actuated by remote operation		N/A
22.51	There is a control on the appliance manually adjusted to the setting for remote operation before the appliance can be operated in this mode		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	There is a visual indication showing that the appliance is adjusted for remote operation		N/A
	These requirements not necessary on appliances that can operate as follows, without giving rise to a hazard:		-
	- continuously, or		N/A
	- automatically, or		N/A
	- remotely		N/A
22.52	Socket-outlets on appliances accessible to the user in accordance with the socket-outlet system used in the country in which the appliance is sold		N/A
22.53	Class II appliances and class III appliances that incorporate functionally earthed parts have at least double insulation or reinforced insulation between live parts and the functionally earthed parts		N/A
22.54	Button cells and batteries designated R1 not accessible without the aid of a tool, unless		N/A
	the cover of their compartment can only be opened after at least two independent movements have been applied simultaneously		N/A
22.55	Devices operated to stop the intended function of the appliance, if any, are be distinguished from other manual devices by means of shape, size, surface texture or position ..... :		N/A
	The requirement concerning position does not preclude use of a push on push off switch		N/A
	An indication when the device has been operated is given by:		-
	– tactile feedback from the actuator or from the appliance, or		N/A
	– reduction in heat output; or		N/A
	– audible and visible feedback		N/A
22.56	Detachable power supply part provided with the part of class III construction		N/A
22.57	The properties of non-metallic materials do not degrade from exposure to UV-C radiation, as specified in Annex T		N/A
	This requirement does not apply to glass, ceramics or similar materials		N/A
23	**INTERNAL WIRING**		**P**
23.1	Wireways smooth and free from sharp edges		P
	Wires protected against contact with burrs, cooling fins etc.		P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Wire holes in metal well-rounded or provided with bushings	Plastic enclosure	N/A
	Wiring effectively prevented from coming into contact with moving parts	No moving parts	N/A
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges		N/A
	Beads inside flexible metal conduits contained within an insulating sleeve		N/A
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		N/A
	Flexible metallic tubes not causing damage to insulation of conductors		N/A
	Open-coil springs not used		N/A
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N/A
	No damage after 10 000 flexings for conductors flexed during normal use, or		N/A
	100 flexings for conductors flexed during user maintenance		N/A
	Electric strength test of 16.3, 1000 V between live parts and accessible metal parts		N/A
	Not more than 10% of the strands of any conductor broken, and		N/A
	not more than 30% for wiring supplying circuits that consume no more than 15W		N/A
23.4	Bare internal wiring sufficiently rigid and fixed		P
23.5	The insulation of internal wiring subjected to the supply mains voltage withstanding the electrical stress likely to occur in normal use		P
	Basic insulation electrically equivalent to the basic insulation of cords complying with IEC 60227 or IEC 60245, or		N/A
	no breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		P
	For class II construction, the requirements for supplementary insulation and reinforced insulation apply,		P
	except that the sheath of a cord complying with IEC 60227 or IEC 60245 may provide supplementary insulation.		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	A single layer of internal wiring insulation does not provide reinforced insulation		P
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by clamping at both ends, or		N/A
	be such that it can only be removed by breaking or cutting		N/A
23.7	The colour combination green/yellow only used for earthing conductors	Applicable for Class I	P
23.8	Aluminium wires not used for internal wiring	Copper wires used	P
23.9	Stranded conductors not consolidated by soldering where they are subjected to contact pressure, unless		N/A
	the contact pressure is provided by spring terminals		N/A
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, at least equivalent to that of light polyvinyl chloride sheathed flexible cord (60227 IEC 52)		N/A
24	**COMPONENTS**		**P**
24.1	Components comply with safety requirements in relevant IEC standards		P
	List of components ..... :	(see appended table)	P
	Motors not required to comply with IEC 60034-1, they are tested as part of the appliance		N/A
	Relays tested as part of the appliance, or		N/A
	alternatively acc. to IEC 60730-1, and meeting the additional requirements in IEC 60335-1		N/A
	The requirements of Clause 29 apply between live parts of components and accessible parts of the appliance		P
	Components can comply with the requirements for clearances and creepage distances for functional insulation in the relevant component standard		P
	30.2 of this standard apply to parts of non-metallic material in components including parts of non-metallic material supporting current-carrying connections		P
	Components that have not been previously tested to comply with the IEC standard for the relevant component are tested according to the requirements of 30.2		P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Components that have been previously tested to comply with the resistance to fire requirements in the IEC standard for the relevant component need not be retested provided the specified conditions are met		P
	If these conditions are not satisfied, the component is tested as part of the appliance.		P
	Power electronic converter circuits not required to comply with IEC 62477-1, they are tested as part of the appliance		N/A
	If components have not been tested and found to comply with relevant IEC standard for the number of cycles specified, they are tested in accordance with 24.1.1 to 24.1.9		N/A
	For components mentioned in 24.1.1 to 24.1.9 no additional tests specified in the relevant component standard are necessary other than those specified in 24.1.1 to 24.1.9		N/A
	Components not tested and found to comply with relevant IEC standard and components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		P
	Lampholders and starterholders that have not being tested and found to comply with the relevant IEC standard, tested as a part of the appliance and additionally according to the gauging and interchangeability requirements of the relevant IEC standard		N/A
	No additional tests specified for nationally standardized plugs such as those detailed in IEC/TR 60083 or connectors complying with the standard sheets of IEC 60320-1 and IEC 60309		P
24.1.1	Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, comply with IEC 60384-14		P
	If the capacitors have to be tested, they are tested according to Annex F		N/A
24.1.2	Transformers in associated switch mode power supplies comply with Annex BB of IEC 61558-2-16	Switch mode transformer acc. to IEC 61558-2-16+A1, Annex BB (see Attachment No.4)	P
	Safety isolating transformers comply with IEC 61558-2-6		N/A
	If they have to be tested, they are tested according to Annex G		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

24.1.3	Switches comply with IEC 61058-1, the number of cycles of operation being at least 10 000			N/A
	If they have to be tested, they are tested according to Annex H			N/A
	If the switch operates a relay or contactor, the complete switching system is subjected to the test			N/A
	If the switch only operates a motor staring relay complying with IEC 60730-2-10 with the number of cycles of a least 10 000 as specified, the complete switching system need not be tested			N/A
24.1.4	Automatic controls comply with IEC 60730-1 with the relevant part 2. The number of cycles of operation being at least:			-
	- thermostats:	10 000		N/A
	- temperature limiters:	1 000		N/A
	- self-resetting thermal cut-outs:	300		N/A
	- voltage maintained non-self-resetting thermal cut-outs:	1 000		N/A
	- other non-self-resetting thermal cut-outs:	30		N/A
	- timers:	3 000		N/A
	- energy regulators:	10 000		N/A
	The number of cycles for controls operating during clause 11 need not be declared, if the appliance meets the requirements of this standard when they are short-circuited			N/A
	Thermal motor protectors are tested in combination with their motor under the conditions specified in Annex D			N/A
	For water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains, the degree of protection declared for subclause 6.5.2 of IEC 60730-2-8 is IPX7			N/A
	Thermal cut-outs of the capillary type comply with the requirements for type 2.K controls in IEC 60730-2-9			N/A
24.1.5	Appliance couplers comply with IEC 60320-1			P
	However, for class II appliances classified higher than IPX0, the appliance couplers comply with IEC 60320-2-3			N/A
	Interconnection couplers comply with IEC 60320-2-2			N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
24.1.6	Small lamp holders similar to E10 lampholders comply with IEC 60238, the requirements for E10 lampholders being applicable		N/A
24.1.7	For remote operation of the appliance via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is IEC 62151		N/A
24.1.8	The relevant standard for thermal links is IEC 60691		N/A
	Thermal links not complying with IEC 60691 are considered to be an intentionally weak part for the purposes of Clause 19		N/A
24.1.9	Contactors and relays, other than motor starting relays, tested as part of the appliance		N/A
	They are also tested in accordance with Clause 17 of IEC 60730-1, the number of cycles of operations in 24.1.4 selected according to the contactor or relay function in the appliance.....:		N/A
24.2	Appliances not fitted with:		-
	- switches, automatic controls or power supplies in flexible cords		P
	- devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		P
	- thermal cut-outs that can be reset by soldering, unless		P
	the solder has a melding point of at least 230 ˚C		N/A
24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and have a contact separation in all poles, providing full disconnection under overvoltage category III conditions		N/A
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC/TR 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1		P
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance, and used accordingly		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Voltage across capacitors in series with a motor winding does not exceed 1,1 times rated voltage, when the appliance is supplied at 1,1 times rated voltage under minimum load		N/A
24.6	Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42 V		N/A
	In addition, the motors comply with the requirements of Annex I		N/A
24.7	Detachable hose-sets for connection of appliances to the water mains comply with IEC 61770		N/A
	They are supplied with the appliance		N/A
	Appliances intended to be permanently connected to the water mains not connected by a detachable hose-set		N/A
24.8	Motor running capacitors in appliances for which 30.2.3 is applicable and that are permanently connected in series with a motor winding, not causing a hazard in event of a failure		N/A
	One or more of the following conditions are to be met:		-
	- the capacitors are of class S2 or S3 according to IEC 60252-1		N/A
	- the capacitors are housed within a metallic or ceramic enclosure		N/A
	- the distance of separation of the outer surface to adjacent non-metallic parts exceeds 50 mm		N/A
	- adjacent non-metallic parts within 50 mm withstand the needle-flame test of Annex E		N/A
	- adjacent non-metallic parts within 50 mm classified as at least V-1 according to IEC 60695-11-10		N/A
25	**SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS**		**P**
25.1	Appliance not intended for permanent connection to fixed wiring, means for connection to the supply:		-
	- supply cord fitted with a plug, the current rating and voltage rating of the plug being not less than the corresponding ratings of its associated appliance		N/A
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance, or	Desktop version	P
	- pins for insertion into socket-outlets	Direct plug-in version	P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
25.2	Appliance not provided with more than one means of connection to the supply mains		P
	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown		N/A
25.3	Appliance intended to be permanently connected to fixed wiring provided with one of the following means for connection to the supply mains:		-
	- a set of terminals allowing the connection of a flexible cord		N/A
	- a fitted supply cord		N/A
	- a set of supply leads accommodated in a suitable compartment		N/A
	- a set of terminals for the connection of cables of fixed wiring, cross-sectional areas specified in 26.6, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support		N/A
	- a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate types of cable or conduit, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support		N/A
	For a fixed appliance constructed so that parts can be removed to facilitate easy installation, this requirement is met if it is possible to connect the fixed wiring without difficulty after a part of the appliance has been fixed to its support		N/A
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimension according to table 10 (mm).....:		N/A
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in clause 29		N/A
25.5	Method for assembling the supply cord to the appliance:		-
	- type X attachment		N/A
	- type Y attachment		N/A
	- type Z attachment, if allowed in relevant part 2		N/A
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	For multi-phase appliances supplied with a supply cord and that are intended to be permanently connected to fixed wiring, the supply cord is assembled to the appliance by type Y attachment		N/A
25.6	Plugs fitted with only one flexible cord		N/A
25.7	Supply cords, other than for class III appliances, being one of the following types:		-
	- rubber sheathed (at least 60245 IEC 53)		N/A
	- polychloroprene sheathed (at least 60245 IEC 57)		N/A
	- polyvinyl chloride sheathed. Not used if they are likely to touch metal parts having a temperature rise exceeding 75 K during the test of clause 11		-
	• light polyvinyl chloride sheathed cord (60227 IEC 52), for appliances not exceeding 3 kg		N/A
	• ordinary polyvinyl chloride sheathed cord (60227 IEC 53), for other appliances		N/A
	- heat resistant polyvinyl chloride sheathed. Not used for type X attachment other than specially prepared cords		-
	• heat-resistant light polyvinyl chloride sheathed cord (60227 IEC 56), for appliances not exceeding 3 kg		N/A
	• heat-resistant polyvinyl chloride sheathed cord (60227 IEC 57), for other appliances		N/A
	- halogen-free, low smoke, thermoplastic insulated and sheathed		-
	• light duty halogen-free low smoke flexible cable (62821 IEC 101) for circular cable and (62821 IEC 101f) for flat cable		N/A
	• Ordinary duty halogen-free low smoke flexible cable (62821 IEC 102) for circular cable and (62821 IEC 102f(for flat cable		N/A
	Supply cords for class III appliances adequately insulated		N/A
	Test with 500 V for 2 min for supply cords of class III appliances that contain live parts		N/A
25.8	Nominal cross-sectional area of supply cords not less than table 11; rated current (A); cross-sectional area (mm²)..... :		N/A
25.9	Supply cords not in contact with sharp points or edges		N/A
25.10	Supply cord of class I appliances have a green/yellow core for earthing		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	In multi-phase appliances, the colour of the neutral conductor of the supply cord is blue		N/A
	Where additional neutral conductors are provided in the supply cord:		-
	– other colours may be used for these additional neutral conductors;		N/A
	– all of the neutral conductors and line conductors are identified by marking using the alpha numeric notation specified in IEC 60445		N/A
	– the supply cord is fitted to the appliance		N/A
25.11	Conductors of supply cords not consolidated by soldering where they are subject to contact pressure, unless		N/A
	the contact pressure is provided by spring terminals		N/A
25.12	Insulation of the supply cord not damaged when moulding the cord to part of the enclosure		N/A
25.13	Inlet openings so constructed as to prevent damage to the supply cord		N/A
	If it is not evident that the supply cord can be introduced without risk of damage, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		N/A
	If unsheathed supply cord, a similar additional bushing or lining is required, unless the appliance is		N/A
	class 0, or		N/A
	a class III appliance not containing live parts		N/A
25.14	Supply cords moved while in operation adequately protected against excessive flexing		N/A
	Flexing test, as described:		-
	- applied force (N) .....:		N/A
	- number of flexings .....:		N/A
	The test does not result in:		-
	- short-circuit between the conductors, such that the current exceeds a value of twice the rated current		N/A
	- breakage of more than 10% of the strands of any conductor		N/A
	- separation of the conductor from its terminal		N/A
	- loosening of any cord guard		N/A
	- damage to the cord or the cord guard		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- broken strands piercing the insulation and becoming accessible		N/A
25.15	For appliances with supply cord and appliances to be permanently connected to fixed wiring by a flexible cord, conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage		N/A
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		N/A
	Pull and torque test of supply cord:		-
	- fixed appliances: pull 100 N; torque (not on automatic cord reel) (Nm)..... :		N/A
	- other appliances: values shown in table 12: mass (kg); pull (N); torque (not on automatic cord reel) (Nm)..... :		N/A
	Cord not damaged and max. 2 mm displacement of the cord		N/A
25.16	Cord anchorages for type X attachments constructed and located so that:		-
	- replacement of the cord is easily possible		N/A
	- it is clear how the relief from strain and the prevention of twisting are obtained		N/A
	- they are suitable for different types of supply cord		N/A
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless		N/A
	they are separated from accessible metal parts by supplementary insulation		N/A
	- the cord is not clamped by a metal screw which bears directly on the cord		N/A
	- at least one part of the cord anchorage securely fixed to the appliance, unless		N/A
	it is part of a specially prepared cord		N/A
	- screws which have to be operated when replacing the cord do not fix any other component, unless		N/A
	the appliance becomes inoperative or incomplete or the parts cannot be removed without a tool		N/A
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N/A
	- for class 0, 0I and I appliances they are of insulating material or are provided with an insulating lining, unless		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	failure of the insulation of the cord does not make accessible metal parts live		N/A
	- for class II appliances they are of insulating material, or		N/A
	if of metal, they are insulated from accessible metal parts by supplementary insulation		N/A
	After the test of 25.15, under the conditions specified, the conductors have not moved by more than 1 mm in the terminals		N/A
25.17	Adequate cord anchorages for type Y and Z attachment, test with the cord supplied with the appliance		N/A
25.18	Cord anchorages only accessible with the aid of a tool, or		N/A
	Constructed so that the cord can only be fitted with the aid of a tool		N/A
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N/A
	Tying the cord into a knot or tying the cord with string not used		N/A
25.20	The conductors of the supply cord for type Y and Z attachment insulated from accessible metal parts		N/A
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed:		-
	- to permit checking of conductors with respect to correct positioning and connection before fitting any cover		N/A
	- so there is no risk of damage to the conductors or their insulation when fitting the cover		N/A
	- for portable appliances, so that the uninsulated end of a conductor, if it becomes free from the terminal, prevented from contact with accessible metal parts		N/A
	2 N test to the conductor for portable appliances; no contact with accessible metal parts		N/A
25.22	Appliance inlets:		-
	- live parts not accessible during insertion or removal		P
	Requirement not applicable to appliance inlets complying with IEC 60320-1		P
	- connector can be inserted without difficulty		P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- the appliance is not supported by the connector		P
	- not for cold conditions if temp. rise of external metal parts exceeds 75 K during clause 11, unless		N/A
	the supply cord is unlikely to touch such metal parts		N/A
25.23	Interconnection cords comply with the requirements for the supply cord, except that:		-
	- the cross-sectional area of the conductors is determined on the basis of the maximum current during clause 11		N/A
	- the thickness of the insulation may be reduced		N/A
	- for class I or class II appliance with class III construction, the cross sectional areas of the conductors need not comply with 25.8 if specified conditions are met		N/A
	If necessary, electric strength test of 16.3		N/A
25.24	Interconnection cords not detachable without the aid of a tool if compliance with this standard is impaired when they are disconnected		N/A
25.25	Dimensions of pins that are inserted into socket-outlets compatible with the dimensions of the relevant socket-outlet.	Direct plug-in power supply	P
	Dimensions of pins and engagement face in accordance with the dimensions of the relevant plug in IEC/TR 60083		P
26	**TERMINALS FOR EXTERNAL CONDUCTORS**		**N/A**
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors	Appliance inlet or plug (Desk top / direct plug-in construction) Input connector (Open frame construction) End product consideration (Encapsulated construction)	N/A
	Terminals only accessible after removal of a non-detachable cover, except		N/A
	for class III appliances that do not contain live parts		N/A
	Earthing terminals may be accessible if a tool is required to make the connections and means are provided to clamp the wire independently from its connection		N/A
26.2	Appliances with type X attachment and appliances for the connection of cables of fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	the connections are soldered		N/A
	Screws and nuts not used to fix any other component, except		N/A
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		N/A
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone, unless		N/A
	barriers provided so that neither clearances nor creepage distances between live parts and other metal parts reduced below the values for supplementary insulation if the conductor becomes free at the soldered joint		N/A
26.3	Terminals for type X attachment and for connection of cables of fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure but without damaging the conductor		N/A
	Terminals fixed so that when the clamping means is tightened or loosened:		-
	- the terminal does not become loose		N/A
	- internal wiring is not subjected to stress		N/A
	- neither clearances nor creepage distances are reduced below the values in clause 29		N/A
	Compliance checked by inspection and by the test of subclause 9.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified (Nm) .....:		N/A
	No deep or sharp indentations of the conductors		N/A
26.4	Terminals for type X attachment, except those having a specially prepared cord and those for the connection of cables of fixed wiring, no special preparation of conductors such as by soldering, use of cable lugs, eyelets or similar, and		N/A
	so constructed or placed that conductors prevented from slipping out when clamping screws or nuts are tightened		N/A
26.5	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection to other parts that result in a hazard		N/A
	Stranded conductor test, 8 mm insulation removed		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	No contact between live parts and accessible metal parts and,		N/A
	for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only		N/A
26.6	Terminals for type X attachment and for connection of cables of fixed wiring suitable for connection of conductors with cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm²)..... :		N/A
	If a specially prepared cord is used, terminals need only be suitable for that cord		N/A
26.7	Terminals for type X attachment, except in class III appliances not containing live parts, accessible after removal of a cover or part of the enclosure		N/A
26.8	Terminals for the connection of fixed wiring, including the earthing terminal, located close to each other		N/A
26.9	Terminals of the pillar type constructed and located as specified		N/A
26.10	Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless		N/A
	conductors ends fitted with means suitable for screw terminals		N/A
	Pull test of 5 N to the connection		N/A
26.11	For type Y and Z attachment, soldered, welded, crimped or similar connections may be used		N/A
	For Class II appliances, the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N/A
	If soldering, welding or crimping alone used, barriers provided so that clearances and creepage distances between live parts and other metal parts are not reduced below the values for supplementary insulation if the conductor becomes free		N/A
27	**PROVISION FOR EARTHING**		**P**
27.1	Accessible metal parts of Class 0I and I appliances permanently and reliably connected to an earthing terminal or earthing contact of the appliance inlet		N/A
	Earthing terminals and earthing contacts not connected to the neutral terminal	Class I power supply	P
	Class 0, II and III appliances have no provision for protective earthing	Class II power supply	P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Class II appliances and class III appliances can incorporate an earth for functional purposes		N/A
	Safety extra-low voltage circuits not earthed, unless		N/A
	protective extra-low voltage circuits	Class I power supply	P
27.2	Clamping means of earthing terminals adequately secured against accidental loosening		N/A
	Terminals for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm², and		N/A
	- do not provide earthing continuity between different parts of the appliance, and		N/A
	- conductors cannot be loosened without the aid of a tool		N/A
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
27.3	For a detachable part having an earth connection and being plugged into another part of the appliance, the earth connection is made before and separated after current-carrying connections when removing the part	Class I power supplies. Power supplies desk-top and direct plug construction. (with incorporated appliance inlet)	P
	For appliances with supply cords, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		N/A
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
27.4	No risk of corrosion resulting from contact between parts of the earthing terminal and the copper of the earthing conductor or other metal		N/A
	Parts providing earthing continuity, other than parts of a metal frame or enclosure, have adequate resistance to corrosion		N/A
	If of steel, these parts provided with an electroplated coating with a thickness at least 5 µm		N/A
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		N/A
	In the body of the earthing terminal is a part of a frame or enclosure of aluminium or aluminium alloys, precautions taken to avoid risk of corrosion		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
27.5	Low resistance of connection between earthing terminal and earthed metal parts	No earthed parts	N/A
	This requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit, provided the clearances of basic insulation are based on the rated voltage of the appliance		N/A
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
	Resistance not exceeding 0,1 Ω at the specified low-resistance test (Ω)..... :		N/A
27.6	The printed conductors of printed circuit boards not used to provide earthing continuity in hand-held appliances.		N/A
	They may be used to provide earthing continuity in other appliances if at least two tracks are used with independent soldering points and the appliance complies with 27.5 for each circuit		N/A
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
28	**SCREWS AND CONNECTIONS**		**N/A**
28.1	Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses		N/A
	Screws not of soft metal liable to creep, such as zinc or aluminium		N/A
	Diameter of screws of insulating material min. 3 mm		N/A
	Screws of insulating material not used for any electrical connections or connections providing earthing continuity		N/A
	Screws used for electrical connections or connections providing earthing continuity screwed into metal		N/A
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	For type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw impairs basic insulation		N/A
	For screws and nuts; torque-test as specified in table 14 .....:	(see appended table)	N/A
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure is not transmitted through non-ceramic insulating material liable to shrink or distort, unless		N/A
	there is resiliency in the metallic parts to compensate for shrinkage or distortion of the insulating material		N/A
	This requirement does not apply to electrical connections in circuits of appliances for which:		-
	• 30.2.2 is applicable and that carry a current not exceeding 0,5 A		N/A
	• 30.2.3 is applicable and that carry a current not exceeding 0,2 A		N/A
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		N/A
	Thread-cutting (self-tapping) screws and thread rolling screws only used for electrical connections if they generate a full form standard machine screw thread		N/A
	Thread-cutting (self-tapping) screws not used if they are likely to be operated by the user or installer		N/A
	Thread-cutting, thread rolling and space threaded screws may be used in connections providing earthing continuity provided it is not necessary to disturb the connection:		-
	- in normal use,		N/A
	- during user maintenance,		N/A
	- when replacing a supply cord having a type X attachment, or		N/A
	- during installation		N/A
	At least two screws being used for each connection providing earthing continuity, unless		N/A
	the screw forms a thread having a length of at least half the diameter of the screw		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity		N/A
	This requirement does not apply to screws in the earthing circuit if at least two screws are used, or		N/A
	if an alternative earthing circuit is provided		N/A
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if the connections are subjected to torsion		N/A
29	**CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION**		**P**
	Clearances, creepage distances and solid insulation withstand electrical stress		P
	For coatings used on printed circuits boards to protect the microenvironment (Type 1) or to provide basic insulation (Type 2), Annex J applies ..... :		N/A
	The microenvironment is pollution degree 1 under type 1 protection		N/A
	For type 2 protection, the spacing between the conductors before the protection is applied is not less than the values specified in Table 1 of IEC 60664-3		N/A
	These values apply to functional, basic, supplementary and reinforced insulation..... :		N/A
29.1	Clearances not less than the values specified in table 16, taking into account the rated impulse voltage for the overvoltage categories of table 15, unless ..... :	(see appended table) Open frame and encapsulated power supply construction -– under end product consideration	P
	for basic insulation and functional insulation they comply with the impulse voltage test of clause 14		N/A
	However, if the distances are affected by wear, distortion, movement of the parts or during assembly, the clearances for rated impulse voltages of 1500V and above are increased by 0,5 mm and the impulse voltage test is not applicable		N/A
	For appliances intended for use at altitudes exceeding 2 000 m, the clearances in Table 16 is increased according to the relevant multiplier values in Table A.2 of IEC 60664-1		N/A
	Impulse voltage test is not applicable:		-
	- when the microenvironment is pollution degree 3, or		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- for basic insulation of class 0 and class 01 appliances, or		N/A
	- to appliances intended for use at altitudes exceeding 2 000 m		N/A
	Appliances are in overvoltage category II		P
	A force of 2 N is applied to bare conductors, other than heating elements		P
	A force of 30 N is applied to accessible surfaces		P
29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage	Open frame and encapsulated power supply construction -– under end product consideration	P
	The values of table 16 or the impulse voltage test of clause 14 are applicable .....:	(see appended table)	P
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1,0 mm if the microenvironment is pollution degree 1		N/A
	Lacquered conductors of windings considered to be bare conductors		P
29.1.2	Clearances of supplementary insulation not less than those specified for basic insulation in table 16:	(see appended table) Open frame and encapsulated power supply construction -– under end product consideration	P
29.1.3	Clearances of reinforced insulation not less than those specified for basic insulation in table 16, using the next higher step for rated impulse voltage:	(see appended table) Open frame and encapsulated power supply construction -– under end product consideration	P
	For double insulation, with no intermediate conductive part between basic and supplementary insulation, clearances are measured between live parts and the accessible surface, and the insulation system is treated as reinforced insulation		P
29.1.4	Clearances for functional insulation are the largest values determined from:		-
	- table 16 based on the rated impulse voltage .....:	(see appended table)	P
	- table F.7a in IEC 60664-1, frequency not exceeding 30 kHz		N/A
	- clause 4 of IEC 60664-4, frequency exceeding 30 kHz		P
	If values of table 16 are largest, the impulse voltage test of clause 14 may be applied instead, unless		P
	the microenvironment is pollution degree 3, or	PD2	N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	the distances can be affected by wear, distortion, movement of the parts or during assembly		N/A
	However, clearances are not specified if the appliance complies with clause 19 with the functional insulation short-circuited		P
	Lacquered conductors of windings considered to be bare conductors		P
	However, clearances at crossover points are not measured		P
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		N/A
29.1.5	Appliances having higher working voltages than rated voltage, clearances for basic insulation are the largest values determined from:		-
	- table 16 based on the rated impulse voltage..... :		P
	- table F.7a in IEC 60664-1, frequency not exceeding 30 kHz		N/A
	- clause 4 of IEC 60664-4, frequency exceeding 30 kHz		P
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1 or Clause 4 of IEC 60664-4, the clearances of supplementary insulation are not less than those specified for basic insulation		N/A
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1, the clearances of reinforced insulation dimensioned as specified in Table F.7a are to withstand 160% of the withstand voltage required for basic insulation		N/A
	If clearances for basic insulation are selected from Clause 4 of IEC 60664-4, the clearances of reinforced insulation are twice the value required for basic insulation		N/A
	If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage		N/A
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation are based on the working voltage used as the rated voltage in table 15		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree.....:	(see appended table)	P
	Pollution degree 2 applies, unless		P
	- precautions taken to protect the insulation; pollution degree 1		N/A
	- insulation subjected to conductive pollution; pollution degree 3		N/A
	A force of 2 N is applied to bare conductors, other than heating elements		P
	A force of 30 N is applied to accessible surfaces		P
	In a double insulation system, the working voltage for both the basic and supplementary insulation is taken as the working voltage across the complete double insulation system		P
29.2.1	Creepage distances of basic insulation not less than specified in table 17 .....:	(see appended table) Open frame and encapsulated power supply construction -– under end product consideration	P
	However, if the working voltage is periodic and has a frequency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table 17 .....:	Table 17 applied	P
	Except for pollution degree 1, corresponding creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14.....:		N/A
29.2.2	Creepage distances of supplementary insulation at least those specified for basic insulation in table 17, or.....:	(see appended table)	P
	Table 2 of IEC 60664-4, as applicable.....:		N/A
29.2.3	Creepage distances of reinforced insulation at least double those specified for basic insulation in table 17, or.....:	(see appended table)	P
	Table 2 of IEC 60664-4, as applicable.....:		N/A
29.2.4	Creepage distances of functional insulation not less than specified in table 18 .....:	(see appended table)	P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	However, if the working voltage is periodic and has a frequency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table 18..... :		P
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		P
29.3	Supplementary and reinforced insulation have adequate thickness, or a sufficient number of layers, to withstand the electrical stresses	Open frame and encapsulated power supply construction -– under end product consideration	P
	Compliance checked:		-
	- by measurement, in accordance with 29.3.1, or		P
	- by an electric strength test in accordance with 29.3.2, or		P
	- for insulation, other than single layer internal wiring insulation, by an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3, and		N/A
	for accessible parts of reinforced insulation consisting of a single layer, by measurement in accordance with 29.3.4, or		N/A
	- by an assessment of the thermal quality of the material according to 29.3.3 combined with an electric strength test in accordance with 23.5, for each single layer internal wiring insulation touching each other, or		N/A
	- as specified in subclause 6.3 of IEC 60664-4 for insulation that is subjected to any periodic voltage having a frequency exceeding 30 kHz		N/A
29.3.1	Supplementary insulation have a thickness of at least 1 mm		P
	Reinforced insulation have a thickness of at least 2 mm	Enclosure thickness	P
29.3.2	Each layer of material withstand the electric strength test of 16.3 for supplementary insulation		N/A
	Supplementary insulation consist of at least 2 layers		N/A
	Reinforced insulation consist of at least 3 layers		N/A
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2, followed by		N/A
	the electric strength test of 16.3		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	If the temperature rise during the tests of clause 19 does not exceed the value specified in table 3, the test of IEC 60068-2-2 is not carried out		N/A
29.3.4	Thickness of accessible parts of reinforced insulation consisting of a single layer not less than specified in table 19 .....:		N/A
30	**RESISTANCE TO HEAT AND FIRE**		**P**
30.1	External parts of non-metallic material,	Open frame and encapsulated power supply construction -– under end product consideration	P
	parts supporting live parts, and		P
	parts of thermoplastic material providing supplementary or reinforced insulation		P
	sufficiently resistant to heat		P
	Ball-pressure test according to IEC 60695-10-2		P
	External parts tested at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C) .....:	(see appended table 30.1)	P
	Parts supporting live parts tested at 40°C plus the maximum temperature rise determined during the test of clause 11, or at 125 °C, whichever is the higher; temperature (°C) .....:	(see appended table 30.1)	P
	Parts of thermoplastic material providing supplementary or reinforced insulation tested at 25 °C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C).....:	(see appended table 30.1)	P
30.2	Parts of non-metallic material resistant to ignition and spread of fire		P
	This requirement does not apply to:		-
	parts having a mass not exceeding 0,5 g, provided the cumulative effect is unlikely to propagate flames that originate inside the appliance by propagating flames from one part to another, or		N/A
	decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance		N/A
	Compliance checked by the test of 30.2.1, and in addition:		-
	- for attended appliances, 30.2.2 applies		N/A
	- for unattended appliances, 30.2.3 applies		P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	For appliances for remote operation, 30.2.3 applies		N/A
	For base material of printed circuit boards, 30.2.4 applies		P
30.2.1	Parts of non-metallic material subjected to the glow-wire test of IEC 60695-2-11 at 550°C	(see appended table 30.2)	P
	However, test not carried out if the material is classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least 550 °C, or		N/A
	the material is classified at least HB40 according to IEC 60695-11-10		N/A
	Parts for which the glow-wire test cannot be carried out need to meet the requirements in ISO 9772 for material classified HBF		N/A
30.2.2	Appliances operated while attended, parts of non-metallic material supporting current-carrying connections, and		N/A
	parts of non-metallic material within a distance of 3mm of such connections,		N/A
	subjected to the glow-wire test of IEC 60695-2-11 with appropriate severity level:	(see appended table 30.2)	N/A
	- 750 °C, for connections carrying a current exceeding 0,5 A during normal operation		N/A
	- 650 °C, for other connections		N/A
	Glow-wire applied to an interposed shielding material, if relevant		N/A
	The glow-wire test is not carried out on parts of material classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least:		-
	- 750 °C, for connections carrying a current exceeding 0,5 A during normal operation		N/A
	- 650 °C, for other connections		N/A
	The glow-wire test is also not carried out on small parts. These parts are to:		-
	- comprise material having a glow-wire flammability index of at least 750 °C, or 650 °C as appropriate, or		N/A
	- comply with the needle-flame test of Annex E, or	(see appended table 30.2/30.2.4)	N/A
	- comprise material classified as V-0 or V-1 according to IEC 60695-11-10..... :		N/A
	Glow-wire test not applicable to conditions as specified ..... :		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		P
	The tests are not applicable to conditions as specified .....:		N/A
30.2.3.1	Parts of non-metallic material supporting connections carrying a current exceeding 0,2 A during normal operation, and		P
	parts of non-metallic material, other than small parts, within a distance of 3 mm,		P
	subjected to the glow-wire test of IEC 60695-2-11 with a test severity of 850 °C	(see appended table 30.2)	P
	Glow-wire applied to an interposed shielding material, if relevant		N/A
	The glow-wire test is not carried out on parts of material classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least 850 °C		N/A
30.2.3.2	Parts of non-metallic material supporting connections, and		P
	parts of non-metallic material within a distance of 3mm,		P
	subjected to the glow-wire test of IEC 60695-2-11 with appropriate severity level:	(see appended table 30.2)	P
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation		P
	- 650 °C, for other connections		N/A
	Glow-wire applied to an interposed shielding material, if relevant		N/A
	However, the glow-wire test of 750 °C or 650 °C as appropriate, is not carried out on parts of material fulfilling both or either of the following classifications:		-
	- a glow-wire ignition temperature according to IEC 60695-2-13 of at least:		N/A
	• 775 °C, for connections carrying a current exceeding 0,2 A during normal operation		N/A
	• 675 °C, for other connections		N/A
	- a glow-wire flammability index according to IEC 60695-2-12 of at least:		N/A
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation		N/A
	- 650 °C, for other connections		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	The glow-wire test is also not carried out on small parts. These parts are to:		-
	- comprise material having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or		N/A
	- comprise material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- comply with the needle-flame test of Annex E, or		P
	- comprise material classified as V-0 or V-1 according to IEC 60695-11-10		P
	The consequential needle-flame test of Annex E applied to non-metallic parts that encroach within the vertical cylinder placed above the centre of the connection zone and on top of the non-metallic parts supporting current-carrying connections, and parts of non-metallic material within a distance of 3 mm of such connections if these parts are those:		-
	- parts that withstood the glow-wire test of IEC 60695-2-11 of 750 °C or 650 °C as appropriate, but produce a flame that persist longer than 2 s, or		N/A
	- parts that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- small parts, that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- small parts for which the needle-flame test of Annex E was applied, or		N/A
	- small parts for which a material classification of V-0 or V-1 was applied		N/A
	However, the consequential needle-flame test is not carried out on non-metallic parts, including small parts, within the cylinder that are:		-
	- parts having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or		N/A
	- parts comprising material classified as V-0 or V-1 according to IEC 60695-11-10, or		N/A
	- parts shielded by a flame barrier that meets the needle-flame test of Annex E or that comprises material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
30.2.4	Base material of printed circuit boards subjected to the needle-flame test of Annex E	(see appended table 30.2/30.2.4)	P
	Test not applicable to conditions as specified ..... :		N/A
31	**RESISTANCE TO RUSTING**		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Relevant ferrous parts adequately protected against rusting		N/A
	Tests specified in part 2 when necessary		N/A
32	**RADIATION, TOXICITY AND SIMILAR HAZARDS**		N/A
	Appliance does not emit harmful radiation or present a toxic or similar hazard due to their operation in normal use		N/A
	Compliance is checked by the limits or tests specified in part 2, if relevant		N/A
A	**ANNEX A (INFORMATIVE) ROUTINE TESTS**		**P**
	Description of routine tests to be carried out by the manufacturer		P
B	**ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES THAT ARE RECHARGED IN THE APPLIANCE**		**N/A**
	The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance		N/A
	Three forms of construction covered:		-
	a) Appliance supplied directly from the supply mains or a renewable energy source, the battery charging circuitry and other supply unit circuitry incorporated within the appliance		N/A
	b) The part of the appliance incorporating the battery is supplied from the supply mains or a renewable energy source, via a detachable supply unit. The battery charging circuitry is incorporated within the part of the appliance containing the battery		N/A
	c) The part of the appliance incorporating the battery is supplied from the supply mains or a renewable energy source, via a detachable supply unit. The battery charging circuitry is incorporated within the detachable supply unit		N/A
3.1.9	Appliance operated under the following conditions:		-
	- the appliance, supplied by its fully charged battery, operated as specified in relevant part 2		N/A
	- the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	-if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		N/A
	- if the appliance incorporates inductive coupling between two parts that are detachable from each other, the appliance is supplied from the supply mains with the detachable part removed		N/A
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		N/A
5.B.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		N/A
7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage (V) and polarity of the terminals..... ..... :		N/A
	The positive terminal indicated by symbol IEC 60417-5005 and the negative terminal by symbol IEC 60417-5006		N/A
	Appliances intending to be supplied from a detachable supply unit marked with symbol IEC 60417-6181 and its type reference along with symbol ISO 7000-0790 (2004-01), or		N/A
	use only with <model designation> supply unit ... :		N/A
7.6	Additional symbols		N/A
7.12	The instructions give information regarding charging		N/A
	Instructions for appliances incorporating batteries intended to be replaced by the user include required information		N/A
	Instructions for appliances containing non user-replaceable batteries state the substance of the following:		-
	This appliance contains batteries that are only replaceable by skilled persons		N/A
	Instructions for appliances containing non-replaceable batteries shall state the substance of the following:		-
	This appliance contains batteries that are non-replaceable		N/A
	For appliances intending to be supplied from a detachable supply unit for the purposes of recharging the battery, the type reference of the detachable supply unit is stated along with the following:		-
	WARNING: For the purposes of recharging the battery, only use the detachable supply unit provided with this appliance		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	If the symbol for detachable supply unit is used, its meaning is explained		N/A
7.15	Markings placed on the part of the appliance connected to the supply mains		N/A
	The type reference of the detachable supply unit is placed in close proximity to the symbol		N/A
8.2	Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment		N/A
	If the appliance can be operated without batteries, double or reinforced insulation required		N/A
11.7	The battery is charged for the period stated in the instructions or 24 h.....:		N/A
11.8	Temperature rise of the battery surface does not exceed the limit in the battery manufacturer's specification; measured (K); limit (K) .....:		N/A
	If no limit specified, the temperature rise does not exceed 20 K; measured (K) .....:		N/A
19.1	Appliances subjected to tests of 19.B.101, 19.B.102 and 19.B.103		N/A
19.10	Not applicable		N/A
19.B.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		N/A
19.B.102	For appliances having batteries that can be removed without the aid of a tool, short-circuit of the terminals of the battery, the battery being fully charged,		N/A
19.B.103	Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		N/A
19.13	The battery does not rupture or ignite		N/A
21.B.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength		N/A
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-31, the number of falls being:		-
	- 100, if the mass of the part does not exceed 250 g (g).....:		N/A
	- 50, if the mass of the part exceeds 250 g.....:		N/A
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		N/A
25.13	An additional lining or bushing not required for interconnection cords in class III appliances or class III constructions operating at safety extra-low voltage not containing live parts		N/A
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		N/A
	For other parts, 30.2.2 applies		N/A
C	**ANNEX C (NORMATIVE) AGEING TEST ON MOTORS**		**N/A**
	Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding		N/A
	Test conditions as specified		N/A
D	**ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS**		**N/A**
	Applicable to appliances having motors that incorporate thermal motor protectors necessary for compliance with the standard		N/A
	Test conditions as specified		N/A
E	**ANNEX E (NORMATIVE) NEEDLE-FLAME TEST**		**P**
	Needle-flame test carried out in accordance with IEC 60695-11-5, with the following modifications:		-
7	Severities		P
	The duration of application of the test flame is 30 s ± 1 s		P
9	Test procedure		-
9.1	The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1		P
9.2	The first paragraph does not apply		P
	If possible, the flame is applied at least 10 mm from a corner		P
9.3	The test is carried out on one specimen		P
	If the specimen does not withstand the test, the test may be repeated on two additional specimens, both withstanding the test		N/A
11	Evaluation of test results		P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	The duration of burning not exceeding 30 s		N/A
	However, for printed circuit boards, the duration of burning not exceeding 15 s		P
F	**ANNEX F (NORMATIVE) CAPACITORS**		**N/A**
	Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or voltage dividing, comply with the following clauses of IEC 60384-14, with the following modifications:		-
1.5	Terms and definitions		N/A
1.5.3	Class X capacitors tested according to subclass X2		N/A
1.5.4	This subclause is applicable		N/A
1.6	Marking		N/A
	Items a) and b) are applicable		N/A
3.4	Approval testing		N/A
3.4.3.2	Table 3 is applicable as described		N/A
4.1	Visual examination and check of dimensions		N/A
	This subclause is applicable		N/A
4.2	Electrical tests		N/A
4.2.1	This subclause is applicable		N/A
4.2.5	This subclause is applicable		N/A
4.2.5.2	Only table 11 is applicable		N/A
	Values for test A apply		N/A
	However, for capacitors in heating appliances the values for test B or C apply		N/A
4.12	Damp heat, steady state		N/A
	This subclause is applicable		N/A
	Only insulation resistance and voltage proof are checked		N/A
4.13	Impulse voltage		N/A
	This subclause is applicable		N/A
4.14	Endurance		N/A
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 are applicable		N/A
4.14.7	Only insulation resistance and voltage proof are checked		N/A
	No visible damage		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.17	Passive flammability test		N/A
	This subclause is applicable		N/A
4.18	Active flammability test		N/A
	This subclause is applicable		N/A
G	**ANNEX G (NORMATIVE)** **SAFETY ISOLATING TRANSFORMERS**		**P**
	The following modifications to this standard are applicable for safety isolating transformers:		-
7	Marking and instructions		P
7.1	Transformers for specific use marked with:		-
	-name, trademark or identification mark of the manufacturer or responsible vendor..... :	See Annex BB (Attachment No. 4) from IEC 61558-2-16+A1	P
	-model or type reference ..... :		P
17	Overload protection of transformers and associated circuits		-
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		N/A
22	Construction		N/A
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable		N/A
29	Clearances, creepage distances and solid insulation		-
29.1, 29.2, 29.3	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply		P
	For insulated winding wires complying with subclause 19.12.3 of IEC 61558-1 there are no requirements for clearances or creepage distances		P
	For windings providing reinforced insulation, the distance specified in item 2c of table 13 of IEC 61558-1 is not assessed		P
	For safety isolating transformers subjected to periodic voltages with a frequency exceeding 30 kHz, the clearances, creepage distances and solid insulation values specified in IEC 60664-4 are applicable, if greater than the values specified in items 2a, 2c and 3 in table 13 of IEC 61558-1		P
H	**ANNEX H (NORMATIVE)** **SWITCHES**		**N/A**
	Switches comply with the following clauses of IEC 61058-1, as modified below:		-
	The tests of IEC 61058-1 carried out under the conditions occurring in the appliance		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Before being tested, switches are operated 20 times without load		N/A
8	Marking and documentation		N/A
	Switches are not required to be marked		N/A
	However, a switch that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference		N/A
13	Mechanism		N/A
	The tests may be carried out on a separate sample		N/A
15	Insulation resistance and dielectric strength		N/A
15.1	Not applicable		N/A
15.2	Not applicable		N/A
15.3	Applicable for full disconnection and micro-disconnection		N/A
17	Endurance		N/A
	Compliance is checked on three separate appliances or switches		N/A
	For 17.2.4.4, the number of cycles declared according to 7.1.4 is 10 000, unless		N/A
	otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335 .....:		N/A
	Switches for operation under no load and which can be operated only by a tool, and		N/A
	switches operated by hand that are interlocked so that they cannot be operated under load,		N/A
	are not subjected to the tests		N/A
	However, switches without this interlock are subjected to the test of 17.2.4.4 for 100 cycles of operation		N/A
	Subclauses 17.2.2 and 17.2.5.2 not applicable		N/A
	The ambient temperature during the test is that occurring in the appliance during the test of Clause 11 in IEC 60335-1		N/A
	The temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1 (K).....:		N/A
20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		-
	Clause 20 is applicable to clearances across full disconnection and micro-disconnection		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	It is also applicable to creepage distances for functional insulation, across full disconnection and micro-disconnection, as stated in Table 24		N/A
I	**ANNEX I (NORMATIVE)** **MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE**		**N/A**
	The following modifications to this standard are applicable for motors having basic insulation that is inadequate for the rated voltage of the appliance:		-
8	Protection against access to live parts		N/A
8.1	Metal parts of the motor are considered to be bare live parts		N/A
11	Heating		N/A
11.3	The temperature rise of the body of the motor is determined instead of the temperature rise of the windings		N/A
11.8	The temperature rise of the body of the motor, where in contact with insulating material, not exceeding values in table 3 for the relevant insulating material		N/A
16	Leakage current and electric strength		N/A
16.3	Insulation between live parts of the motor and its other metal parts is not subjected to the test		N/A
19	Abnormal operation		N/A
19.1	The tests of 19.7 to 19.9 are not carried out		N/A
19.I.101	Appliance operated at rated voltage with each of the following fault conditions:		-
	- short circuit of the terminals of the motor, including any capacitor incorporated in the motor circuit		N/A
	- short circuit of each diode of the rectifier		N/A
	- open circuit of the supply to the motor		N/A
	- open circuit of any parallel resistor, the motor being in operation		N/A
	Only one fault simulated at a time, the tests carried out consecutively		N/A
22	Construction		N/A
22.I.101	For class I appliances incorporating a motor supplied by a rectifier circuit, the d.c. circuit being insulated from accessible parts of the appliance by double or reinforced insulation		N/A
	Compliance checked by the tests specified for double and reinforced insulation		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
J	**ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS**		**N/A**
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		-
5.7	Conditioning of the test specimens		N/A
	When production samples are used, three samples of the printed circuit board are tested		N/A
5.7.1	Cold		N/A
	The test is carried out at -25 °C		N/A
5.7.3	Rapid change of temperature		N/A
	Severity 1 is specified		N/A
5.9	Additional tests		N/A
	This subclause is not applicable		N/A
K	**ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES**		**P**
	The information on overvoltage categories is extracted from IEC 60664-1		P
	Overvoltage category is a numeral defining a transient overvoltage condition		P
	Equipment of overvoltage category IV is for use at the origin of the installation		N/A
	Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements		N/A
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		P
	If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		N/A
	Equipment of overvoltage category I is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriate low level		N/A
L	**ANNEX L (INFORMATIVE) GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES**		**P**
	Information for the determination of clearances and creepage distances		P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

M	**ANNEX M (NORMATIVE)** **POLLUTION DEGREE**		**P**
	The information on pollution degrees is extracted from IEC 60664-1		P
	Pollution		P
	The microenvironment determines the effect of pollution on the insulation, taking into account the macroenvironment		P
	Means may be provided to reduce pollution at the insulation by effective enclosures or similar		P
	Minimum clearances specified where pollution may be present in the microenvironment		P
	Degrees of pollution in the microenvironment		P
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		-
	- pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence		N/A
	- pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected		P
	- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected		N/A
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		N/A
N	**ANNEX N (NORMATIVE)** **PROOF TRACKING TEST**		**N/A**
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:		-
7	Test apparatus		N/A
7.3	Test solutions		N/A
	Test solution A is used		N/A
10	Determination of proof tracking index (PTI)		N/A
10.1	Procedure		N/A
	The proof voltage is 100V, 175V, 400V or 600V .. :		N/A
	The test is carried out on five specimens		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	In case of doubt, additional test with proof voltage reduced by 25V, the number of drops increased to 100		N/A
10.2	Report		N/A
	The report states if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V		N/A
O	**ANNEX O (INFORMATIVE) SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30**		**P**
	Description of tests for determination of resistance to heat and fire		P
P	**ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN TROPICAL CLIMATES**		**N/A**
	Modifications applicable for class 0 and 01 appliances having a rated voltage exceeding 150V, intended to be used in countries having a tropical climate and that are marked with symbol IEC 60417-6332		N/A
	Modifications may also be applied to class 1 appliances having a rated voltage exceeding 150V, intended to be used in countries having a tropical climate and that are marked with symbol IEC 60417-6332, if liable to be connected to a supply mains that excludes the protective earthing conductor		N/A
5.7	The ambient temperature for the tests of clauses 11 and 13 is 40 +3/0 °C		N/A
7.1	The appliance marked with symbol IEC 60417-6332		N/A
7.12	The instructions state that the appliance is to be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA		N/A
	The instructions state that the appliance is considered to be suitable for use in countries having a tropical climate, but may also be used in other countries		N/A
	If symbol IEC 60417-6332 is used, its meaning is explained		N/A
11.8	The values of Table 3 are reduced by 15 K		N/A
13.2	The leakage current for class I appliances not exceeding 0,5 mA		N/A
15.3	The value of t is 37 °C		N/A
16.2	The leakage current for class I appliances not exceeding 0,5 mA (mA):		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3		N/A
Q	**ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS**		**P**
	Description of tests for appliances incorporating electronic circuits		P
R	**ANNEX R (NORMATIVE) SOFTWARE EVALUATION**		**N/A**
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 validated in accordance with the requirements of this annex		N/A
R.1	Programmable electronic circuits using software		N/A
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 constructed so that the software does not impair compliance with the requirements of this standard		N/A
R.2	Requirements for the architecture		N/A
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 use measures to control and avoid software-related faults/errors in safety-related data and safety-related segments of the software		N/A
R.2.1.1	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.2 have one of the following structures:		-
	- single channel with periodic self-test and monitoring		N/A
	- dual channel (homogenous) with comparison		N/A
	- dual channel (diverse) with comparison		N/A
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 have one of the following structures:		-
	- single channel with functional test		N/A
	- single channel with periodic self-test		N/A
	- dual channel without comparison		N/A
R.2.2	Measures to control faults/errors		N/A
R.2.2.1	When redundant memory with comparison is provided on two areas of the same component, the data in one area is stored in a different format from that in the other area		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
R.2.2.2	Programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.2 and that use dual channel structures with comparison, have additional fault/error detection means for any fault/errors not detected by the comparison		N/A
R.2.2.3	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, means are provided for the recognition and control of errors in transmissions to external safety-related data paths		N/A
R.2.2.4	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, the programmable electronic circuits incorporate measures to address the fault/errors in safety-related segments and data indicated in table R.1 and R.2 as appropriate		N/A
R.2.2.5	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, detection of a fault/error occur before compliance with clause 19 is impaired		N/A
R.2.2.6	The software is referenced to relevant parts of the operating sequence and the associated hardware functions		N/A
R.2.2.7	Labels used for memory locations are unique		N/A
R.2.2.8	The software is protected from user alteration of safety-related segments and data		N/A
R.2.2.9	Software and safety-related hardware under its control is initialized and terminates before compliance with clause 19 is impaired		N/A
R.3	Measures to avoid errors		N/A
R.3.1	General		N/A
	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, the following measures to avoid systematic fault in the software are applied		N/A
	Software that incorporates measures used to control the fault/error conditions specified in table R.2 is inherently acceptable for software required to control the fault/error conditions specified in table R.1		N/A
R.3.2	Specification		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
R.3.2.1	Software safety requirements:	Software Id:	N/A
	The specification of the software safety requirements includes the descriptions listed		N/A
R.3.2.2	Software architecture		N/A
R.3.2.2.1	The specification of the software architecture includes the aspects listed - techniques and measures to control software faults/errors (refer to R.2.2); - interactions between hardware and software; - partitioning into modules and their allocation to the specified safety functions; - hierarchy and call structure of the modules (control flow); - interrupt handling; - data flow and restrictions on data access; - architecture and storage of data; - time-based dependencies of sequences and data	Document ref. No:	N/A
R.3.2.2.2	The architecture specification is validated against the specification of the software safety requirements by static analysis		N/A
R.3.2.3	Module design and coding		N/A
R.3.2.3.1	Based on the architecture design, software is suitably refined into modules		N/A
	Software module design and coding is implemented in a way that is traceable to the software architecture and requirements		N/A
R.3.2.3.2	Software code is structured		N/A
R.3.2.3.3	Coded software is validated against the module specification by static analysis		N/A
	The module specification is validated against the architecture specification by static analysis		N/A
R.3.3.3	Software validation		N/A
	The software is validated with reference to the requirements of the software safety requirements specification		N/A
	Compliance is checked by simulation of:		-
	- input signals present during normal operation		N/A
	- anticipated occurrences		N/A
	- undesired conditions requiring system action		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

TABLE R.1 [e] – GENERAL FAULT/ERROR CONDITIONS						
Component [a]	Fault/error	Acceptable measures [b, c]	Definitions	Document reference for applied measure	Document reference for applied test	Ver-dict
1 CPU 1.1 Registers	Stuck at	Functional test, or periodic self-test using either: - static memory test, or - word protection with single bit redundancy	H.2.16.5 H.2.16.6 H.2.19.6 H.2.19.8.2			N/A
1.2 VOID						N/A
1.3 Programme counter	Stuck at	Functional test, or Periodic self-test, or Independent time-slot monitoring, or Logical monitoring of the programme sequence	H.2.16.5 H.2.16.6 H.2.18.10.4 H.2.18.10.2			N/A
2 Interrupt handling and execution	No interrupt or too frequent interrupt	Functional test, or time-slot monitoring	H.2.16.5 H.2.18.10.4			N/A
3 Clock	Wrong frequency (for quartz synchronized clock: harmonics/ sub-harmonics only)	Frequency monitoring, or time slot monitoring	H.2.18.10.1 H.2.18.10.4			N/A
4. Memory 4.1 Invariable memory	All single bit faults	Periodic modified checksum, or multiple checksum, or word protection with single bit redundancy	H.2.19.3.1 H.2.19.3.2 H.2.19.8.2			N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

4.2 Variable memory	DC fault	Periodic static memory test, or word protection with single bit redundancy	H.2.19.6 H.2.19.8.2			N/A
4.3 Addressing (relevant to variable and invariable memory)	Stuck at	Word protection with single bit redundancy including the address	H.2.19.8.2			N/A
5 Internal data path	Stuck at	Word protection with single bit redundancy	H.2.19.8.2			N/A
5.1 VOID						N/A
5.2 Addressing	Wrong address	Word protection with single bit redundancy including the address	H.2.19.8.2			N/A
6 External communication	Hamming distance 3	Word protection with multi-bit redundancy, or CRC – single work, or Transfer redundancy, or Protocol test	H.2.19.8.1 H.2.19.4.1 H.2.18.2.2 H.2.18.14			N/A
6.1 VOID						N/A
6.2 VOID						N/A
6.3 Timing	Wrong point in time	Time-slot monitoring, or scheduled transmission Time-slot and logical monitoring, or comparison of redundant communication channels by either: - reciprocal comparison - independent hardware comparator	H.2.18.10.4 H.2.18.18 H.2.18.10.3 H.2.18.15 H.2.18.3			N/A
	Wrong sequence	Logical monitoring, or time-slot monitoring, or Scheduled transmission	H.2.18.10.2 H.2.18.10.4 H.2.18.18			

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

7 Input/output periphery	Fault conditions specified in 19.11.2	Plausibility check	H.2.18.13			N/A
7.1 VOID						N/A
7.2 Analog I/O 7.2.1 A/D and D/A-converter	Fault conditions specified in 19.11.2	Plausibility check	H.2.18.13			N/A
7.2.2 Analog multiplexer	Wrong addressing	Plausibility check	H.2.18.13			N/A
8 VOID						N/A
9 Custom chips [d] e.g. ASIC, GAL, gate array	Any output outside the static and dynamic functional specification	Periodic self-test	H.2.16.6			N/A

NOTE A Stuck-at fault model denotes a fault model representing an open circuit or a non-varying signal level. A DC fault model denotes a stuck-at fault model incorporating short circuit between signal lines.

[a] For fault/error assessment, some components are divided into their sub-functions.
[b] For each sub-function in the table, the Table R.2 measure will cover the software fault/error.
[c] Where more than one measure is given for a sub-function, these are alternatives.
[d] To be divided as necessary by the manufacturer into sub-functions.
[e] Table R.1 is applied according to the requirements of R.1 to R.2.2.9 inclusive.

S	**ANNEX S (NORMATIVE) BATTERY OPERATED APPLIANCES POWERED BY BATTERIES THAT ARE NON-RECHARGEABLE OR NOT RECHARGED IN THE APPLIANCE**		**N/A**
	The following modifications to this standard are applicable for battery-operated appliances where the batteries are either non-rechargeable (primary batteries), or		N/A
	rechargeable batteries (secondary batteries) that are not recharged in the appliance		N/A
5.8.1	If the supply terminals for the connection of the battery have no indication of polarity, the more unfavourable polarity is applied		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.S.101	Appliances intended for use with a battery box are tested with the battery box supplied with the appliance or with the battery box recommended in the instructions		N/A
5.S.102	Appliances are tested as motor-operated appliances.		N/A
7.1	Appliances marked with the battery voltage (V) and the polarity of the terminals, unless..... .....:		N/A
	the polarity is irrelevant		N/A
	Appliances also marked with:		N/A
	– name, trade mark or identification mark of the manufacturer or responsible vendor..... .....:		N/A
	– model or type reference..... .....:		N/A
	– IP number according to degree of protection against ingress of water, other than IPX0 .. ..:		N/A
	– type reference of battery or batteries..... .....:		N/A
	If relevant, the positive terminal is indicated by the symbol IEC 60417-5005 and the negative terminal by the symbol IEC 60417-5006		N/A
	If appliances use more than one battery, they are marked to indicate correct polarity connection of the batteries		N/A
7.6	Additional symbols		N/A
7.12	The instructions contain the following, as applicable:		N/A
	– the types of batteries that may be used... .....:		N/A
	– how to remove and insert the batteries		N/A
	– non-rechargeable batteries are not to be recharged		N/A
	– rechargeable batteries are to be removed from the appliance before being charged		N/A
	– different types of batteries or new and used batteries are not to be mixed		N/A
	– batteries are to be inserted with the correct polarity		N/A
	– exhausted batteries are to be removed from the appliance and safely disposed of		N/A
	– if the appliance is to be stored unused for a long period, the batteries are removed		N/A
	– the supply terminals are not to be short-circuited		N/A
11.5	Appliances are supplied with the most unfavourable supply voltage between		-

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict
	– 0,55 and 1,0 times the battery voltage, if the appliance can be used with non-rechargeable batteries		N/A
	– 0,75 and 1,0 times battery voltage, if the appliance is designed for use with rechargeable batteries only		N/A
	The values specified in Table S.101 for the internal resistance per cell of the battery is taken into account		N/A
19.1	The tests are carried out with the battery fully charged unless otherwise specified		N/A
19.13	The battery does not rupture or ignite		N/A
19.S.101	Appliances are supplied with the voltage specified in 11.5. The supply terminals having an indication of polarity are connected to the opposite polarity, unless		N/A
	such a connection is unlikely to occur due to the construction of the appliance		N/A
19.S.102	For appliances with provision for multiple batteries, one or more of the batteries are reversed and the appliance is operated, if reversal of batteries is allowed by the construction		N/A
25.5	The flexible leads or flexible cord used to connect an external battery or battery box in is connected to the appliance by a type X attachment		N/A
25.13	This requirement is not applicable to the flexible leads or flexible cord connecting external batteries or a battery box with an appliance		N/A
25.S.101	Appliances have suitable means for connection of the battery. If the type of battery is marked on the appliance, the means of connection is suitable for this type of battery		N/A
26.5	Terminal devices in an appliance for the connection of the flexible leads or flexible cord connecting an external battery or battery box are so located or shielded that there is no risk of accidental connection between supply terminals		N/A
30.2.3.2	There is no battery in the area of the vertical cylinder used for the consequential needle flame test, unless		N/A
	the battery is shielded by a barrier that meets the needle flame test of Annex E, or		N/A
	that comprises material classified as V-0 or V-1 according to IEC 60695-11-10		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

T	**ANNEX T (NORMATIVE) UV-C RADIATION EFFECT ON NON-METALLIC MATERIALS**		**N/A**
	Requirements for non-metallic materials subject to direct or reflected UV-C radiation exposure and whose mechanical and electrical properties are relied upon for compliance with the		N/A
	Does not apply to glass, ceramic and similar materials		N/A
	Tested as specified in ISO 4892-1 and ISO 4892-2, with the following modifications:		-
	Modifications to ISO 4892-1:		N/A
5.1.6	The UV-C emitter is a low pressure mercury lamp with a quartz envelope having a continuous spectral irradiance of 10 W/m2 at 254 nm		N/A
	Subclause 5.1.6.1 and Table 1 are not applicable		N/A
5.2.4	The black-panel temperature shall be 63 °C +/- 3 °C		N/A
5.3.1	Humidification of the chamber air is specified in part 2 when necessary		N/A
9	This clause is not applicable		N/A
	Modifications to ISO 4892-2:		N/A
7.1	At least three test specimens are tested		N/A
	Ten samples of internal wiring is tested		N/A
7.2	The specimens are attached to the specimen holders such that they are not subject to any stress		N/A
7.3	Apparatus prepared as specified		N/A
	The test specimens and, if used, the irradiance-measuring instrument are exposed for 1 000 h		N/A
7.4	If used, a radiometer is mounted and calibrated such that it measures the irradiance at the exposed surface of the test specimen		N/A
7.5	Material properties and test methods for parts providing mechanical support or impact resistance as specified in Table T.1		N/A
	Material properties and test method for electrical insulation of internal wiring as specified in Table T.2		N/A
8	This clause is not applicable		N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

10.1	TABLE: Power input deviation				N/A
Input deviation of/at:	**P rated (W)**	**P measured (W)**	**Δ P**	**Required Δ P**	**Remark**
Supplementary information:					

10.2	TABLE: Current deviation				P
Current deviation of/at:	**I rated (A)**	**I measured (A)**	**Δ I**	**Required Δ I**	**Remark**
GTM91120-3007.5-2.5-T2					
100 V; 50 Hz	0,7	0,47	- 33%	+ 20%	P
240 V; 50 Hz	0,3	0,24	- 20%	+ 20%	P
100 V; 60 Hz	0,7	0,47	- 33%	+ 20%	P
100 V; 60 Hz	0,3	0,24	- 20%	+ 20%	P
GTM91120-3014.5-2.5-T2					
100 V; 50 Hz	0,7	0,64	- 8,6%	+ 20%	P
240 V; 50 Hz	0,3	0,32	+ 6,7%	+ 20%	P
100 V; 60 Hz	0,7	0,62	- 11,4%	+ 20%	P
100 V; 60 Hz	0,3	0,32	+6,7%	+ 20%	P
GTM91120-3024-T3A					
100 V; 50 Hz	0,7	0,59	- 15,7%	+ 20%	P
240 V; 50 Hz	0,3	0,30	0%	+ 20%	P
100 V; 60 Hz	0,7	0,59	- 15,7%	+ 20%	P
100 V; 60 Hz	0,3	0,30	0%	+ 20%	P
GTM91120-3036-T2					
100 V; 50 Hz	0,7	0,61	- 12,9%	+ 20%	P
240 V; 50 Hz	0,3	0,30	0%	+ 20%	P
100 V; 60 Hz	0,7	0,60	- 14,3%	+ 20%	P
100 V; 60 Hz	0,3	0,30	0%	+ 20%	P
Supplementary information: In case used input current 1,5 A (instead of range), deviation is even lower.					

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

11.8 a	**TABLE: Heating test**		P
	Test voltage (V)..... :	94 V	—
	Ambient (°C)..... :	40°C	—

Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Transformer T1 winding	60	70
Transformer T1 core	56	Cl 30
Capacitor C2	55	65
Optocoupler U2	49	60
Capacitor CY1	41	85
PCB near Q1	53	90
Inductor LF2	54	90
Capacitor CX1	33	60
Inductor LF1 winding	58	90
PCB near R11	57	90
Enclosure outside top	28	59
Supplementary information: Model: GTM91120 Series Desktop 5 V (Output load: 5,0 Vdc; 4 A)		

11.8 b	**TABLE: Heating test**		P
	Test voltage (V)..... :	254,4 V	—
	Ambient (°C)..... :	40°C	—

Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Transformer T1 winding	61	70
Transformer T1 core	57	Cl 30
Capacitor C2	49	65
Optocoupler U2	49	60
Capacitor CY1	41	85
PCB near Q1	54	90
Inductor LF2	54	90
Capacitor CX1	26	60
Inductor LF1 winding	31	90
PCB near R11	45	90
Enclosure outside top	28	59
Supplementary information: Model: GTM91120 Series Desktop 5 V (Output load: 5,0 Vdc; 4 A)		

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

11.8 c	**TABLE: Heating test**		P
	Test voltage (V) ..... :	94 V	—
	Ambient (°C) ..... :	40°C	—

Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Transformer T1 winding	67	70
Transformer T1 core	60	Cl 30
Capacitor C2	60	65
Optocoupler U2	54	60
Capacitor CY1	45	85
PCB near Q1	52	90
Inductor LF2	28	90
Capacitor CX1	41	60
Inductor LF1 winding	74	90
PCB near R11	66	90
Enclosure outside top	27	59
Supplementary information: Model: GTM91120 Series Desktop 36 V (36,0 Vdc; 1,25 A)		

11.8 d	**TABLE: Heating test**		P
	Test voltage (V) ..... :	254,4 V	—
	Ambient (°C) ..... :	40°C	—

Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Transformer T1 winding	55	70
Transformer T1 core	49	Cl 30
Capacitor C2	38	65
Optocoupler U2	43	60
Capacitor CY1	37	85
PCB near Q1	44	90
Inductor LF2	25	90
Capacitor CX1	23	60
Inductor LF1 winding	33	90
PCB near R11	39	90
Enclosure outside top	21	59
Supplementary information: Model: GTM91120 Series Desktop 36 V (36,0 Vdc; 1,25 A)		

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

11.8 e	**TABLE: Heating test**		P
	Test voltage (V)..... :	94 V	—
	Ambient (°C)..... :	40°C	—

Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Transformer T1 winding	26	70
Transformer T1 core	26	Cl 30
Capacitor C2	22	65
Optocoupler U2	24	60
Capacitor CY1	13	85
PCB near Q1	25	90
Inductor LF2	14	90
Capacitor CX1	12	60
Inductor LF1 winding	23	90
PCB near R11	24	90
Enclosure outside top	11	59
Supplementary information: Model: GTM91128LI3CEL Output load (12,6 Vdc; 1,0 A)		

11.8 f	**TABLE: Heating test**		P
	Test voltage (V)..... :	254,4 V	—
	Ambient (°C)..... :	40°C	—

Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Transformer T1 winding	33	70
Transformer T1 core	33	Cl 30
Capacitor C2	25	65
Optocoupler U2	30	60
Capacitor CY1	17	85
PCB near Q1	32	90
Inductor LF2	17	90
Capacitor CX1	13	60
Inductor LF1 winding	19	90
PCB near R11	25	90
Enclosure outside top	14	59
Supplementary information: Model: GTM91128LI3CEL Output load (12,6 Vdc; 1,0 A)		

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

11.8 g	**TABLE: Heating test**		P
	Test voltage (V) ..... :	94 V	—
	Ambient (°C) ..... :	40°C	—

Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Transformer T1 winding	35	70
Transformer T1 core	34	cl.30
Fuse F1	19	85
Capacitor C2	34	65
Optocoupler U2	35	60
Capacitor CY1	30	85
PCB near Q1	37	90
Inductor LF2	25	90
Capacitor CX1	21	60
Fuse F2	19	85
Inductor LF1 winding	35	90
PCB near R11	37	90
Enclosure inside near label	32	59
Enclosure outside top	24	59
Supplementary information: Model: GTM91120 Series Potted 19 V, Output load (19,0 Vdc; 1,58A)		

11.8 h	**TABLE: Heating test**		P
	Test voltage (V) ..... :	94 V	—
	Ambient (°C) ..... :	40°C	—

Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

11.8 h	**TABLE: Heating test**		P
	Test voltage (V)..... :	94 V	—
	Ambient (°C)..... :	40°C	—

Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Transformer T1 winding	36	70
Transformer T1 core	35	cl.30
Fuse F1	15	85
Capacitor C2	30	65
Optocoupler U2	34	60
Capacitor CY1	30	85
PCB near Q1	34	90
Inductor LF2	26	90
Capacitor CX1	16	60
Fuse F2	14	85
Inductor LF1 winding	23	90
PCB near R11	29	90
Enclosure inside near label	30	59
Enclosure outside top	22	59
Supplementary information: Model: GTM91120 Series Potted 19 V, Output load (19,0 Vdc; 1,58A)		

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

11.8 i	**TABLE: Heating test**		P
	Test voltage (V) ..... :	94 V	—
	Ambient (°C) ..... :	40°C	—

Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Transformer T1 winding	44	70
Transformer T1 core	41	cl.30
Fuse F1	16	85
Capacitor C2	35	65
Optocoupler U2	35	60
Capacitor CY1	25	85
PCB near Q1	45	90
Inductor LF2	47	90
Capacitor CX1	21	60
Fuse F2	11	85
Inductor LF1 winding	39	90
PCB near R11	42	90
Capacitor C11	35	65
Supplementary information: Model: GTM91120 Series Open Frame 5V, Output load (5,0 Vdc; 4 A)		

11.8 j	**TABLE: Heating test**		P
	Test voltage (V) ..... :	254,4 V	—
	Ambient (°C) ..... :	40°C	—

Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Transformer T1 winding	47	70
Transformer T1 core	44	cl.30
Fuse F1	12	85
Capacitor C2	32	65
Optocoupler U2	36	60
Capacitor CY1	26	85
PCB near Q1	47	90
Inductor LF2	46	90
Capacitor CX1	16	60
Fuse F2	8	85
Inductor LF1 winding	22	90
PCB near R11	34	90

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

11.8 j	**TABLE: Heating test**		P
	Test voltage (V)..... :	254,4 V	—
	Ambient (°C)..... :	40°C	—

Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Capacitor C11	34	65
Supplementary information: Model: GTM91120 Series Open Frame 5V, Output load (5,0 Vdc; 4 A)		

11.8 k	**TABLE: Heating test**		P
	Test voltage (V)..... :	94 V	—
	Ambient (°C)..... :	40°C	—

Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Transformer T1 winding	53	70
Transformer T1 core	43	cl.30
Fuse F1	20	85
Capacitor C2	37	65
Optocoupler U2	35	60
Capacitor CY1	23	85
PCB near Q1	51	90
Inductor LF2	12	90
Capacitor CX1	22	60
Fuse F2	13	85
Inductor LF1 winding	51	90
PCB near R11	48	90
Capacitor C11	25	65
Supplementary information: Model: GTM91120 Series Open Frame 36V (36,0 Vdc; 1,25 A)		

11.8 l	**TABLE: Heating test**		P
	Test voltage (V)..... :	254,4 V	—
	Ambient (°C)..... :	40°C	—

Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Transformer T1 winding	56	70
Transformer T1 core	49	cl.30
Fuse F1	12	85
Capacitor C2	30	65

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

11.8 I	**TABLE: Heating test**		P
	Test voltage (V) ..... :	254,4 V	—
	Ambient (°C) ..... :	40°C	—

Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Optocoupler U2	37	60
Capacitor CY1	25	85
PCB near Q1	48	90
Inductor LF2	14	90
Capacitor CX1	15	60
Fuse F2	9	85
Inductor LF1 winding	25	90
PCB near R11	36	90
Capacitor C11	27	65
Supplementary information: Model: GTM91120 Series Open Frame 36V (36,0 Vdc; 1,25 A)		

11.8	**TABLE: Heating test, resistance method**					N/A
	Test voltage (V) ..... :					—
	Ambient, t1 (°C) ..... :					—
	Ambient, t2 (°C) ..... :					—
Temperature rise of winding:	**R1 (Ω)**	**R2 (Ω)**	**Δ T (K)**	**Max. Δ T (K)**	**Insulation class**	
Supplementary information:						

13.2	**TABLE: Leakage current**		P
	Heating appliances: 1.15 x rated input (W) .. :	/	—
	Motor-operated and combined appliances: 1.06 x rated voltage (V) ..... :	254,4 V; 60 Hz	—

Leakage current between:	**I (mA)**	**Max. allowed I (mA)**
Live parts and enclosure wrapped in metal foil	< 30 µA	0,35 mA pk
Live parts and earth (class I appliances)	0,048	3,5*
Supplementary information: * - end product consideration limits		

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

13.3	TABLE: Dielectric strength		P
Test voltage applied between:		**Test potential applied (V)**	**Breakdown / flashover (Yes/No)**
Basic insulation		1000	No
Supplementary insulation		1750	No
Reinforced insulation		3000	No
Supplementary information:			

14	TABLE: Transient overvoltages					N/A
Clearance between:	**Cl (mm)**	**Required Cl (mm)**	**Rated impulse voltage (V)**	**Impulse test voltage (V)**	**Flashover (Yes/No)**	
Supplementary information:						

16.2	TABLE: Leakage current			P
	Single phase appliances: 1.06 x rated voltage (V).....:	254,4 V; 60 Hz		—
	Three phase appliances 1.06 x rated voltage divided by √3 (V).....:	/		—
Leakage current between:		**I (mA)**	**Max. allowed I (mA)**	
Live parts and enclosure wrapped in metal foil		<0,01	0,25*	
Live parts and earth (class I appliances)		0,048	3,5*	
Supplementary information: * - end product consideration limits				

16.3	TABLE: Dielectric strength		P
Test voltage applied between:		**Test potential applied (V)**	**Breakdown / flashover (Yes/No)**
Basic insulation		1250	No
Supplementary insulation		1750	No
Reinforced insulation		3000	No
Supplementary information:			

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

17	TABLE: Overload protection	
Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Model: GTM91120-3007.5-2.5-TB (T1: Pin TA to Pin TB)	115	175
Model: GTM91120-3036-TB (T1: Pin TA to Pin TB)	155	175
Model: GTM91128LI3CEL (T1: Pin TA to Pin TB)	119	175
Supplementary information:		

17	TABLE: Overload protection, resistance method					
	Test voltage (V) ..... :					—
	Ambient, t1 (°C) ..... :					—
	Ambient, t2 (°C) ..... :					—
Temperature of winding:		**R1 (Ω)**	**R2 (Ω)**	**Δ T (K)**	**T (°C)**	**Max. T (°C)**
Supplementary information:						

19	Abnormal operation conditions						P
Operational characteristics			**YES/NO**	**Operational conditions**			
Are there electronic circuits to control the appliance operation?			No	-			
Are there "off" or "stand-by" position?			No	-			
The unintended operation of the appliance results in dangerous malfunction?			No	-			
Sub-clause	**Operating conditions description**	**Test results description**	**PEC description**	**EMP 19.11.4**	**Software type required**	**19.11.3 PEC**	**Final result**
19.2				N.A			N/A
19.3							N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

19	Abnormal operation conditions						P
Operational characteristics			**YES/NO**	**Operational conditions**			
Are there electronic circuits to control the appliance operation?			No	-			
Are there "off" or "stand-by" position?			No	-			
The unintended operation of the appliance results in dangerous malfunction?			No	-			
Sub-clause	**Operating conditions description**	**Test results description**	**PEC description**	**EMP 19.11.4**	**Software type required**	**19.11.3 PEC**	**Final result**
19.4							N/A
19.5							N/A
19.6				N.A			N/A
19.7							N/A
19.8							N/A
19.9							N/A
19.10							N/A
19.11.2	240 V	No hazard					P
19.11.4.8							N/A
19.10X							N/A
Supplementary information:							

19.7	TABLE: Abnormal operation, locked rotor/moving parts					N/A
	Test voltage (V)..... :					—
	Ambient, t1 (°C)..... :					—
	Ambient, t2 (°C)..... :					—
Temperature of winding:		**R1 (Ω)**	**R2 (Ω)**	**Δ T (K)**	**T (°C)**	**Max. T (°C)**

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

19.9	TABLE: Abnormal operation, running overload		N/A
	Test voltage (V) ..... :		—
	Ambient, t1 (°C) ..... :		—
	Ambient, t2 (°C) ..... :		—

Temperature of winding:	R1 (Ω)	R2 (Ω)	Δ T (K)	T (°C)	Max. T (°C)

Supplementary information:

19.11	TABLE: Short circuit and overload protection					P
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Diode D7 GTM91128 LI3CEL	Short	264	< 1 s (10 min)	F1/F2	0,05	Output switched off immediately. No defect. No hazard. Same result with and without load.
Diode D7 GTM91120-3048-AB	Short	264	< 1 s (10 min)	F1/F2	0,05	Output switched off immediately. No defect. No hazard. Same result with and without load.
Optocoupler IC1 Pin 1 to pin 2 GTM91120-3048-AB	Short	264	< 1 s (10 min)	F1/F2	0,05	Output switched off immediately. No defect. No hazard. Same result with and without load.
Optocoupler IC1 Pin 3 to pin 4 GTM91120-3048-AB	Short	264	< 1 s (10 min)	F1/F2	0,05	Output switched off immediately. No defect. No hazard. Same result with and without load.
functional insulation short-circuited:						
Capacitor CX1	Short	264	< 1 s	F1/F2	> 6,6	Fuse F1/F2 opened immediately. No hazard.
Capacitor C2	Short	264	< 1 s	F1/F2	> 6,6	Fuse F1/F2 opened immediately. No hazard.

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

19.11	TABLE: Short circuit and overload protection					P
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Additional component faults						
Transformer T1 Pin 1 to pin 2 GTM91120-3014.5-2.5-AB	Short	264	< 1 s (10 min)	F1/F2	0,10	Output switched on/off. No defect. No hazard.
Transformer T1 Pin 3 to pin 5 GTM91120-3014.5-2.5-AB	Short	264	< 1 s (10 min)	F1/F2	0,10	Output switched off immediately. No defect. No hazard.
Transistor Q1 D – S GTM91120-3014.5-2.5-AB	Short	264	< 1 s (10 min)	F1/F2	> 6,6	Output switched off immediately. Fuse F1/F2 opened immediately. Unit damaged. No hazard.
Transformer overload						
Transformer T1 Pin TA to pin TB GTM91120-3007.5-2.5-AB	Short	264	< 1 s (10 min)	F1/F2	0,10	Output switched off immediately and was trying to switch on. No defect. No hazard. No excessive temperature rise.
Transformer T1 Pin TA to pin TB GTM91120-3048-AB	Short	264	< 1 s (10 min)	F1/F2	> 6,6	Output switched off immediately and was trying to switch on. After 5 min the fuse F1/F2 opened immediately. Unit damaged. No hazard. No excessive temperature rise.
Transformer T1 Pin TA to pin TB GTM91128 LI3CEL	Short	264	< 1 s (10 min)	F1/F2	0,10	Output switched off immediately and was trying to switch on. No defect. No hazard. No excessive temperature rise.
Transformer T1 Pin TA to pin TB	Overload	264	--	F1/F2	--	No secondary current limitation. Refer to output overload.
Misuse						

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

19.11	TABLE: Short circuit and overload protection					P
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Output GTM91120-3014.5-2.5-AB	Short	264	< 1 s (10 min)	F1/F2	0,10	Output switched off immediately and was trying to switch on. No defect. No hazard. No excessive temperature rise.
Output GTM91120-3007.5-2.5-TB	Overload	264	120 min	F1/F2	0,29	Max. load: 4,8Vdc @ 4,5A. Max. measured temperature on T1 winding was 115,1°C @ 40°C ambient. No defect. No hazard.
Output GTM91120-3048-TB	Overload	264	120 min	F1/F2	0,39	Max. load: 48,0Vdc @ 0,8A. Max. measured temperature on T1 winding was 154,7°C @ 40°C ambient. Limit in Accordance with Annex C is 165°C No defect. No hazard.
Output GTM91128 LI3CEL	Overload	264	120 min	F1/F2	0,33	Max. load: 13,0Vdc @ 2,4A. Max. measured temperature on T1 winding was 118,5°C @ 40°C ambient. No defect. No hazard.
Supplementary information: There was no flame, extensive smoke or melted metal. When components were failing, the test was repeated two times. Test time: The time until the effect occurred was recorded. The value in bracket records the time, the failure was not removed.						

19.13	TABLE: Abnormal operation, temperature rises	P
Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Plastic enclosure material	74	Cl.30
Transformer bobbin	114	Cl.30
Supplementary information:		

21.1	TABLE: Impact resistance		P
Impacts per surface	**Surface tested**	**Impact energy (Nm)**	**Comments**
3	Enclosure	0,5 Nm	No damage
Supplementary information:			

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

24.1	TABLE: Critical components information				P
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity**
GTM91120-WWVV-X.X-TB					
Enclosure	SABIC Innovative Plastics	SE1X SE1 SE100 HF500R CX7211 EXCY0098 C2950 PC945	Rated min. 94V-1 at min. 2,0 mm thickness; RTI = 95°C Overall dimensions: 102 by 47 by 37 mm Top and bottom cover are ultrasonic welded.	IEC/EN 60335	Tested with the appliance
Enclosure Alternative	Tejin Chemicals	LN-1250P LN-1250G	Rated min. 94V-1 at min. 2,0mm thickness; RTI = 125°C Overall dimensions: 102 by 47 by 37 mm Top and bottom cover are ultrasonic welded.	IEC/EN 60335	Tested with the appliance
European Plug (2pin)	ZhongRui	R-EU-2	10A 250V	IEC/EN 60335	Tested with the appliance
European Plug (3pin)	ZhongRui	R-EU-3	10A 250V	IEC/EN 60335	Tested with the appliance
European Plug material	SABIC Innovative Plastics	SE1X SE1 SE100 HF500R CX7211 EXCY0098 C2950 PC945	10A 250V	IEC/EN 60335	Tested with the appliance
PCB	+ Brite Plus Electronics (Suzhou)	DGV0-3A	OD: 90 by 39 mm; thickness 1,6 mm Rated 94V-0; 130°C	IEC/EN 60335	Tested with the appliance

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

24.1	TABLE: Critical components information				P
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity**
Appliance inlet CON1 Class I units	Zhejiang LECI Electronics	DB-6	250 Vac; 2,5A; 3 pins	IEC/EN 60320-1	VDE
Appliance inlet CON1 Class II units	Z hejiang LECI Electronics	DB-8	250 Vac; 2,5A; 2 pins	IEC/EN 60320-1	VDE
Functional ground wire Class I units	+ KUNSHAN NEW ZHICHENG ELECTRONICS TECHNOLOGIES CO LTD	1015	Min.300V; 105°C; VW-1; 18AWG or better	IEC/EN 60335	Tested with the appliance
Shrink tubing on functional ground wire Class I units	+ Shenzhen Woer Heat-Shrinkable Material	RSFR-H	Rated: Min. 300V; 125°C; VW-1	IEC/EN 60335	Tested with the appliance
GTM91120-WWVV-X.X-PB					
Enclosure cover	SABIC Innovative Plastics	SE1X SE1 SE100 HF500R CX7211 EXCY0098 C2950 PC945	Rated min. 94V-1 at min. 2,0 mm thickness; RTI = 95°C Overall dimensions: 97 by 45 by 32 mm	IEC/EN 60335	Tested with the appliance
PCB	+ Brite Plus Electronics (Suzhou)	DGV0-3A	OD: 90 by 39 mm; thickness 1,6 mm Rated 94V-0; 130°C	IEC/EN 60335	Tested with the appliance
GTM91120-WWVV-X.X-FB					
PCB	+ Brite Plus Electronics (Suzhou)	DGV0-3A	OD: 102 by 51 mm; thickness 1,6 mm Rated 94V-0; 130°C	IEC/EN 60335	Tested with the appliance
Input connector CON1	Neltron Industrial Co., Ltd.	2114S	Min 240V; Min1.5A; Flame class min. V-2;	IEC/EN 60335	Tested with the appliance

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

24.1	TABLE: Critical components information				P
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity**
GTM91128LI1CEL; GTM91128LI2CEL; GTM91128LI3CEL					
Enclosure	SABIC Innovative Plastics	SE1X SE1 SE100 HF500R CX7211 EXCY0098 C2950 PC945	Rated min. 94V-1 at min. 2,0 mm thickness; RTI = 95°C Overall dimensions: 118 by 53 by 37 mm Top and bottom cover are ultrasonic welded.	IEC/EN 60335	Tested with the appliance
Enclosure Alternative	Tejin Chemicals	LN-1250P LN-1250G	Rated min. 94V-1 at min. 2,0 mm thickness; RTI = 125°C Overall dimensions: 118 by 53 by 37 mm Top and bottom cover are ultrasonic welded.	IEC/EN 60335	Tested with the appliance
PCB	+ Brite Plus Electronics (Suzhou)	DGV0-3A DKV0-3A	OD: 105 by 47 mm; thickness 1,6 mm Rated 94V-0; 130°C	IEC/EN 60335	Tested with the appliance
PCB Alternative	Walex Electronic (Wuxi) Co Ltd	T2A / T2B / T4	V-0, 130°C, min thickness: 1,6mm	IEC/EN 60335	Tested with the appliance
PCB Alternative	Dongguan He Tong Electronics Co Ltd	CEM1 / 2V0 / FR4	V-0, 130°C, min thickness: 1,6mm	IEC/EN 60335	Tested with the appliance
PCB Alternative	Cheerful Electronic (Hk) Ltd	03 / 03A	V-0, 130°C, min thickness: 1,6mm	IEC/EN 60335	Tested with the appliance
PCB Alternative	Dongguan Daysun Electronic Co Ltd	DS2	V-0, 130°C, min thickness: 1,6mm	IEC/EN 60335	Tested with the appliance
PCB Alternative	Suzhou City Yilihua Electronics Co Ltd	YLH-1	V-0, 130°C, min thickness: 1,6mm	IEC/EN 60335	Tested with the appliance

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

24.1	TABLE: Critical components information				P
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity**
PCB Alternative	Shanghai Arex Precision Electronic Co Ltd	02V0 04V0	V-0, 130°C, min thickness: 1,6mm	IEC/EN 60335	Tested with the appliance
PCB Alternative	Kuotiang Ent Ltd	C-2 C-2A	V-0, 130°C, min thickness: 1,6mm	IEC/EN 60335	Tested with the appliance
PCB Alternative	Shenzhen Tongchuangxin Electronics Co Ltd	TCX	V-0, 130°C, min thickness: 1,6mm	IEC/EN 60335	Tested with the appliance
PCB Alternative	Pacific Win Industrial Ltd	PW-02 PW-03	V-0, 130°C, min thickness: 1,6mm	IEC/EN 60335	Tested with the appliance
Appliance inlet CON1 Class II units	Zhejiang LECI Electronics	DB-8	250 Vac; 2,5A; 2 pins	IEC/EN 60335	Tested with the appliance
For all models					
Fuse F1, F2	+ Walter Electronic	ICP 2010	T3,15A; 250Vac 3,6×10 mm; pigtail leads	IEC/EN 60127	VDE
Fuse F1, F2 Alternative	+Zhongshan Lanbao Electrical Appliances	RTI-10	T3,15A; 250Vac 3,6×10 mm; pigtail leads	IEC/EN 60127	VDE
Fuse F1, F2 Alternative	+ Conquer	MST	T3,15A; 250Vac 8,35 x 4,3 x 7,7 mm	IEC/EN 60127	VDE
Fuse F1, F2 Alternative	+ Lanson	SMT	T3,15A; 250Vac 3,6×10 mm; pigtail leads	IEC/EN 60127	VDE
Fuse F1, F2 shrink tubing only for 3.6X10mm fuse	Shenzhen Woer Heat-Shrinkable Material	RSFR-H	Rated: 600V; 125°C; VW-1	IEC/EN 60335	Tested with the appliance

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

24.1	TABLE: Critical components information				P
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity**
Varistor MOV (Optional)	+ Thinking	TVR07471	300 Vrms; 385 Vdc diameter: 7 mm	IEC/EN 61051-2	VDE
Varistor MOV (Optional) Alternative	+ Thinking	TVR10471	300 Vrms; 385 Vdc diameter: 10 mm	IEC/EN 61051-2	VDE
Varistor MOV (Optional) Alternative	+ Thinking	TVR14471	300 Vrms; 385 Vdc diameter: 14 mm	IEC/EN 61051-2	VDE
Varistor MOV (Optional) Alternative	+ Thinking	TVR14471	300 Vrms; 385 Vdc diameter: 14 mm	IEC/EN 61051-2	VDE
Varistor MOV (Optional) Alternative	+ Joyin Co., Ltd.	JVR07N471K	300 Vrms; 385 Vdc diameter: 7 mm	IEC/EN 61051-2	VDE
Varistor MOV (Optional) Alternative	+ Joyin Co., Ltd.	JVR10N471K	300 Vrms; 385 Vdc diameter: 10 mm	IEC/EN 61051-2	VDE
Varistor MOV (Optional) Alternative	+ Centra	CNR0 7D471K	300 Vrms; 385 Vdc diameter: 7 mm	IEC/EN 61051-2	VDE
Varistor MOV (Optional) Alternative	+ Centra	CNR 10D471K	300 Vrms; 385 Vdc diameter: 10 mm	IEC/EN 61051-2	VDE
Varistor MOV (Optional) Alternative	+ Success Electronics	SVR07D471K	300 Vrms; 385 Vdc diameter: 7 mm	IEC/EN 61051-2	VDE

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

24.1	TABLE: Critical components information				P
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity**
Varistor MOV (Optional) Alternative	+ Success Electronics	SVR10D471K	300 Vrms; 385 Vdc diameter: 10 mm	IEC/EN 61051-2	VDE
Varistor MOV (Optional) Alternative	+ Ceramate Techn. Co., Ltd.	GNR07D471K	300 Vrms; 385 Vdc diameter: 7 mm	IEC/EN 61051-2	VDE
Varistor MOV (Optional) Alternative	+ Ceramate Techn. Co., Ltd.	GNR10D471K	300 Vrms; 385 Vdc diameter: 10 mm	IEC/EN 61051-2	VDE
Varistor MOV (Optional) Alternative	+ Brightking (Shenzhen) Co., Ltd.	07D471K	300 Vrms; 385 Vdc diameter: 7 mm	IEC/EN 61051-2	VDE
Varistor MOV (Optional) Alternative	+ Brightking (Shenzhen) Co., Ltd.	10D471K	300 Vrms; 385 Vdc diameter: 10 mm	IEC/EN 61051-2	VDE
X-Capacitor CX1	+ Cheng Tung Industrial	CTX	Min. 250Vac; max. 0,47µF; min. X2	IEC/EN 60384-14	VDE
X-Capacitor CX1 Alternative	+ Dain Electronics Co Ltd	MPX	Min. 250Vac; max. 0,47µF; min. X2	IEC/EN 60384-14	VDE
X-Capacitor CX1 Alternative	+ Ultra Tech Xiphi	UTX	Min. 250Vac; max. 0,47µF; min. X2	IEC/EN 60384-14	VDE
Y-Capacitor CY1	+ Murata Mfg Co Ltd	KX Series	Min. 250Vac; max. 620pF; min. Y1	IEC/EN 60384-14	VDE
Y-Capacitor CY1 Alternative	+ SUCCESS	SE, SB	Min. 250Vac; max. 620pF; min. Y1	IEC/EN 60384-14	VDE

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

24.1	TABLE: Critical components information				P
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity**
Y-Capacitor CY1 Alternative	+ TDK	CD	Min. 250Vac; max. 620pF; min. Y1	IEC/EN 60384-14	VDE
Y-Capacitor CY1 Alternative	+ WALSIN TECHNOLOGY CORP	AH	Min. 250Vac; max. 620pF; min. Y1	IEC/EN 60384-14	VDE
Y-Capacitor CY1 Alternative	+ JYA-NAY CO LTD	JN	Min. 250Vac; max. 620pF; min. Y1	IEC/EN 60384-14	VDE
Inductor LF1	Suzhou Hejia Electronics / GlobTek/Zhong Tong/BOAM	GTM91120-LF1	Open type construction OD: 15,5 by 16,0 by 12,0 mm Rated: Min.17mH Temperature Class: B	IEC/EN 60335	Tested with the appliance
Insulation tape on sec. heatsink HS2	Jingjiang Yahua Pressure-sensitive Adhesive	PZ, CT, WF	Polyester tape130°C 0,05 mm thickness; 3 layers used	IEC/EN 60335	Tested with the appliance
Insulation tape on sec. heatsink HS2 Alternative	YILIN	LY-XX	Polyester tape130°C 0,05 mm thickness; 3 layers used	IEC/EN 60335	Tested with the appliance
Electrolytic capacitor C2	+ Nippon Chemi-Con	KMM	Rated: min.68µF; min.400V; 105°C	IEC/EN 60335	Tested with the appliance
Transformer T1 (5V-7,5V)	GlobTek /HAOPUWEI /BOAM	GT-3005001	Open type construction OD: 25 by 22 by 14 mm Rating: Input: 100-240V Output: 5-7,5V Core: Ferrite, EE2218W Insulation is achieved by triple insulation wire on secondary winding Temperature Class: B	IEC/EN 60335	Tested with the appliance

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

24.1	TABLE: Critical components information				P
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity**
Transformer T1 (7,6V-10,5V)	GlobTek /HAOPUWEI /BOAM	GT-3009001	Open type construction OD: 25 by 22 by 14 mm Rating: Input: 100-240V Output: 7,6-10,5V Core: Ferrite, EE2218W Insulation is achieved by triple insulation wire on secondary winding Temperature Class: B	IEC/EN 60335	Tested with the appliance
Transformer T1 (10,6V-14,5V)	GlobTek /HAOPUWEI /BOAM	GT-3012001	Open type construction OD: 25 by 22 by 14 mm Rating: Input: 100-240V Output: 10,6-14,5V Core: Ferrite, EE2218W Insulation is achieved by triple insulation wire on secondary winding Temperature Class: B	IEC/EN 60335	Tested with the appliance
Transformer T1 (14,6V-19,5V)	GlobTek /HAOPUWEI /BOAM	GT-3015001	Open type construction OD: 25 by 22 by 14 mm Rating: Input: 100-240V Output: 14,6-19,5V Core: Ferrite, EE2218W Insulation is achieved by triple insulation wire on secondary winding Temperature Class: B	IEC/EN 60335	Tested with the appliance

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

24.1	TABLE: Critical components information				P
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity**
Transformer T1 (19,6V-24V)	GlobTek /HAOPUWEI /BOAM	GT-3024001	Open type construction OD: 25 by 22 by 14 mm Rating: Input: 100-240V Output: 19,6-24V Core: Ferrite, EE2218W Insulation is achieved by triple insulation wire on secondary winding Temperature Class: B	IEC/EN 60335	Tested with the appliance
Transformer T1 (24,1V-36V)	GlobTek /HAOPUWEI /BOAM	GT-3048001	Open type construction OD: 25 by 22 by 14 mm Rating: Input: 100-240V Output: 24,1-48V Core: Ferrite, EE2218W Insulation is achieved by triple insulation wire on secondary winding Temperature Class: B	IEC/EN 60335	Tested with the appliance
-Bobbin	Chang Chun Plastics	T375J	Rated: V-0 at min. 0,75 mm thickness; min. 150°C	IEC/EN 60335 (QMFZ2) (QMFZ8)	Accepted cURus E59481
-Bobbin Alternative	Chang Chun Plastics	T375HF	Rated: V-0 at min. 0,43 mm thickness; min. 150°C	IEC/EN 60335 (QMFZ2) (QMFZ8)	Accepted cURus E59481
-Bobbin Alternative	Chang Chun Plastics	PBT-4130	Rated: V-0 at min. 0,74 mm thickness; min. 140°C	IEC/EN 60335 (QMFZ2) (QMFZ8)	Accepted cURus E59481
-Bobbin Alternative	Sumitomo	PM-9820	Rated: V-0 at min. 0,74 mm thickness; min. 150°C	IEC/EN 60335 (QMFZ2) (QMFZ8)	Accepted cURus E41429
-Bobbin Alternative	Hitachi Chemical	CP-J-8800	Rated: V-0 at min. 0,74 mm thickness; min. 150°C	IEC/EN 60335 (QMFZ2) (QMFZ8)	Accepted cURus E42956

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

24.1	TABLE: Critical components information				P
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity**
-Primary wire	JIANGSU DARTONG M & E CO LTD	UEW	Enamelled Cu-wire; Diameter 0,35 and 0,19 mm Min: 130°C	IEC/EN 60335 (OBMW2)	Accepted UR E237377
-Secondary wire	Great leoflon industrial co ltd	TRWB	Triple insulated wire Diameter: 0,45 mm 130°C	IEC/EN 60335 IEC/EN 61558-2-16 Annex K (OBJT2)	Accepted VDE 136581 UR E211989
-Secondary wire Alternative	Cosmolink	TIW-M	Triple insulated wire Diameter: 0,45 mm 130°C	IEC/EN 60335 IEC/EN 61558-2-16 Annex K (OBJT2)	Accepted VDE 138053 UR E213764
-Secondary wire Alternative	Furukawa	TEX-E	Triple insulated wire Diameter: 0,45 mm 130°C	IEC/EN 60335 IEC/EN 61558-2-16 Annex K (OBJT2)	Accepted VDE 6735 UR E206440
Optocoupler U2	+ Everlight Electronics Co Ltd	EL817 series	Dti >0,5mm, int. cr > 6,0mm, ext. cr > 7,7mm, Isolation 3000Vac min., 110°C min.,	IEC/EN 60747-5-5 VDE 0884	FIMKO, VDE,
Optocoupler U2 Alternative	+ LITE-ON	LTV-817	Dti >0,6mm, int. cr > 5,2mm, ext. cr > 7,8mm, Isolation 3000Vac min., 110°C min.,	IEC/EN 60747-5-5 , VDE 0884	VDE
Optocoupler U2 Alternative	+ TOSHIBA	TLP781F	Dti > 0,4mm, Ext cr > 8,0mm, Isolation 3000Vac min., 110°C min.,	IEC/EN 60747-5-5	SEMKO VDE
Optocoupler U2 Alternative	+ COSMO	K1010	Dti > 0,4mm, Int cr > 5,3mm, Ext cr > 8,0mm, Isolation 3000Vac min., 110°C min.,	IEC/EN 60747-5-5 VDE 088	FIMKO, VDE,

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

24.1	TABLE: Critical components information				P
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity**
Electrolytic capacitor C11, C12	+SAMXON	KM	Min. 2200µF; 10V; 16V; 35V; 63V; The cap. voltage depends on rated output voltage.	-	-
Supplementary information: 1) An asterisk indicates a mark which assures the agreed level of surveillance. See Licenses and Certificates of Conformity for verification. + means, that components from other vendor and other model number, but with the same or better/higher rating and equivalent approvals are accepted.					

28.1	TABLE: Threaded part torque test			N/A
Threaded part identification:	**Diameter of thread (mm)**	**Column number (I, II, or III)**	**Applied torque (Nm)**	
Supplementary information:				

29.1	TABLE: Clearances						P
	Overvoltage category .... :		II				—
		Type of insulation:					
Rated impulse voltage (V):	**Min. cl (mm)**	**Basic (mm)**	**Supplementary (mm)**	**Reinforced (mm)**	**Functional (mm)**	**Verdict / Remark**	
330	0,2* / 0,5 / 0,8**					N/A	
500	0,2* / 0,5 / 0,8**					N/A	
800	0,2* / 0,5 / 0,8**					N/A	
1 500	0,5 / 0,8** / 1,0***					N/A	
2 500	1,5 / 2,0***	X	X		X	P	
4 000	3,0 / 3,5***			X		P	
6 000	5,5 / 6,0***					N/A	
8 000	8,0 / 8,5***					N/A	
10 000	11,0 / 11,5***					N/A	

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

29.1	TABLE: Clearances		P
	Overvoltage category..... ....:	II	—

		Type of insulation:				
Rated impulse voltage (V):	Min. cl (mm)	Basic (mm)	Supplementary (mm)	Reinforced (mm)	Functional (mm)	Verdict / Remark

Supplementary information:

*) For tracks on printed circuit boards if pollution degree 1 and 2
**) For pollution degree 3
***) If the construction is affected by wear, distortion, movement of the parts or during assembly

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										P
Working voltage (V):	Creepage distance (mm) Pollution degree										
	1	2			3			Type of insulation			
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb*	B**	S**	R**	Verdict
≤50	0,18	0,6	0,85	1,2	1,5	1,7	1,9		—	—	N/A
≤50	0,18	0,6	0,85	1,2	1,5	1,7	1,9	—		—	N/A
≤50	0,36	1,2	1,7	2,4	3,0	3,4	3,8	—	—		N/A
125	0,28	0,75	1,05	1,5	1,9	2,1	2,4		—	—	N/A
125	0,28	0,75	1,05	1,5	1,9	2,1	2,4	—		—	N/A
125	0,56	1,5	2,1	3,0	3,8	4,2	4,8	—	—		N/A
250	0,56	1,25	1,8	2,5	3,2	3,6	4,0	X	—	—	P
250	0,56	1,25	1,8	2,5	3,2	3,6	4,0	—	X	—	P
250	1,12	2,5	3,6	5,0	6,4	7,2	8,0	—	—	X	P
400	1,0	2,0	2,8	4,0	5,0	5,6	6,3		—	—	N/A
400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—		—	N/A
400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	—	—	X	P
500	1,3	2,5	3,6	5,0	6,3	7,1	8,0		—	—	N/A
500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	—		—	N/A
500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	—	—		N/A
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		—	—	N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										P
Working voltage (V):	**Creepage distance (mm) Pollution degree**										
	1	**2**			**3**			**Type of insulation**			
		Material group			**Material group**						
		I	**II**	**IIIa/IIIb**	**I**	**II**	**IIIa/IIIb***	**B****	**S****	**R****	**Verdict**
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	—		—	N/A
>630 and ≤800	3,6	6,4	9,0	12,6	16,0	18,0	20,0	—	—		N/A
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5		—	—	N/A
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	—		—	N/A
>800 and ≤1000	4,8	8,0	11,2	16,0	20,0	22,0	25,0	—	—		N/A
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0		—	—	N/A
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	—		—	N/A
>1000 and ≤1250	6,4	10,0	14,2	20,0	25,0	28,0	32,0	—	—		N/A
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0		—	—	N/A
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	—		—	N/A
>1250 and ≤1600	8,4	12,6	18,0	25,0	32,0	36,0	40,0	—	—		N/A
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0		—	—	N/A
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	—		—	N/A
>1600 and ≤2000	11,2	16,0	22,0	32,0	40,0	44,0	50,0	—	—		N/A
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0		—	—	N/A
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	—		—	N/A
>2000 and ≤2500	15,0	20,0	28,0	40,0	50,0	56,0	64,0	—	—		N/A
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0		—	—	N/A
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	—		—	N/A
>2500 and ≤3200	20,0	25,0	36,0	50,0	64,0	72,0	80,0	—	—		N/A
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0		—	—	N/A
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	—		—	N/A
>3200 and ≤4000	25,0	32,0	44,0	64,0	80,0	90,0	100,0	—	—		N/A
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0		—	—	N/A
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	—		—	N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										P
Working voltage (V):	**Creepage distance (mm) Pollution degree**										
	1	**2**			**3**			**Type of insulation**			
		Material group			**Material group**						
		I	**II**	**IIIa/IIIb**	**I**	**II**	**IIIa/IIIb***	**B****	**S****	**R****	**Verdict**
>4000 and ≤5000	32,0	40,0	56,0	80,0	100,0	112,0	126,0	—	—		N/A
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0		—	—	N/A
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	—		—	N/A
>5000 and ≤6300	40,0	50,0	72,0	100,0	126,0	142,0	160,0	—	—		N/A
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0		—	—	N/A
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	—		—	N/A
>6300 and ≤8000	50,0	64,0	90,0	126,0	160,0	180,0	200,0	—	—		N/A
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0		—	—	N/A
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	—		—	N/A
>8000 and ≤10000	64,0	80,0	112,0	160,0	200,0	220,0	250,0	—	—		N/A
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0		—	—	N/A
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	—		—	N/A
>10000 and ≤12500	80,0	100,0	142,0	200,0	250,0	280,0	320,0	—	—		N/A
Supplementary information:											
*) Material group IIIb is allowed if the working voltage does not exceed 50 V **) B = Basic insulation, S = Supplementary insulation, R = Reinforced insulation											

29.2	TABLE: Creepage distances, functional insulation							P
Working voltage (V):	**Creepage distance (mm) Pollution degree**							
	1	**2**			**3**			
		Material group			**Material group**			
		I	**II**	**IIIa/IIIb**	**I**	**II**	**IIIa/IIIb***	**Verdict / Remark**
≤10	0,08	0,4	0,4	0,4	1,0	1,0	1,0	N/A
50	0,16	0,56	0,8	1,1	1,4	1,6	1,8	N/A
125	0,25	0,71	1,0	1,4	1,8	2,0	2,2	N/A

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

29.2	TABLE: Creepage distances, functional insulation							P
Working voltage (V):	**Creepage distance (mm) Pollution degree**							
	1	**2**			**3**			
		Material group			**Material group**			
		I	**II**	**IIIa/IIIb**	**I**	**II**	**IIIa/IIIb***	**Verdict / Remark**
250	0,42	1,0	1,4	2,0	2,5	2,8	3,2	P
400	0,75	1,6	2,2	3,2	4,0	4,5	5,0	N/A
500	1,0	2,0	2,8	4,0	5,0	5,6	6,3	N/A
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	N/A
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	N/A
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	N/A
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	N/A
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	N/A
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	N/A
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	N/A
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	N/A
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	N/A
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	N/A
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	N/A
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	N/A
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	N/A
Supplementary information: *) Material group IIIb is allowed if the working voltage does not exceed 50 V								

30.1	TABLE: Ball Pressure Test of Thermoplastics		P
Allowed impression diameter (mm) .....:		2,0 mm	—
Object/ Part No./ Material	**Manufacturer/ trademark**	**Test temperature (°C)**	**Impression diameter (mm)**
Enclosure	SABIC Innovative Plastics	87°C	< 1,4 mm
Enclosure Alternative	Tejin Chemicals	87°C	< 1,4 mm

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

30.1	TABLE: Ball Pressure Test of Thermoplastics		P
Allowed impression diameter (mm) .....:		2,0 mm	—
Object/ Part No./ Material	**Manufacturer/ trademark**	**Test temperature (°C)**	**Impression diameter (mm)**
European Plug (3pin)	ZhongRui, R-EU-3	125°C	< 1,4 mm
European Plug (2pin)	ZhongRui, R-EU-2	125°C	< 1,4 mm
Input connector CON1	Neltron Industrial Co., Ltd., 2114S	125°C	< 1,4 mm
Appliance inlet CON1 Class I units	Zhejiang LECI Electronics, DB-6	125°C	< 1,4 mm
Appliance inlet CON1 Class II units	Zhejiang LECI Electronics, DB-8	125°C	< 1,4 mm
Transformer bob- in T1 (5V-7,5V)	GlobTek, GT-3005001	125°C	< 1,4 mm
Transformer T1 (7,6V-10,5V)	GlobTek, GT-3009001	125°C	< 1,4 mm
Transformer T1 (10,6V-14,5V)	GlobTek, GT-3012001	125°C	< 1,4 mm
Transformer T1 (14,6V-19,5V)	GlobTek, GT-3015001	125°C	< 1,4 mm
Transformer T1 (19,6V-24V)	GlobTek, GT-3024001	125°C	< 1,4 mm
Transformer T1 (24,1V-36V)	GlobTek, GT-3048001	125°C	< 1,4 mm
Supplementary information:			

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

30.2	TABLE: Resistance to heat and fire - Glow wire tests							P
Object/ Part No./ Material	**Manufacturer / trademark**	**Glow wire test (GWT); (°C)**						**Verdict**
		550	**650**		**750**		**850**	
			te	**ti**	**te**	**ti**		
Enclosure	SABIC Innovative Plastics	P	0 s	0 s	/	/	/	P
Enclosure Alternative	Tejin Chemicals	P	0 s	0 s	/	/	/	P
European Plug (3pin)	ZhongRui, R-EU-3	P	/	/	0 s	0 s	P	P
European Plug (2pin)	ZhongRui, R-EU-2	P	/	/	0 s	0 s	P	P
Input connector CON1	Neltron Industrial Co., Ltd., 2114S	P	/	/	0 s	0 s	P	P
Appliance inlet CON1 Class I units	Zhejiang LECI Electronics, DB-6	P	/	/	0 s	0 s	P	P
Appliance inlet CON1 Class II units	Zhejiang LECI Electronics, DB-8	P	/	/	0 s	0 s	P	P
Transformer T1 bobin (5V-7,5V)	GlobTek, GT-3005001	P	/	/	0 s	0 s	P	P
Transformer T1 bobin (7,6V-10,5V)	GlobTek, GT-3009001	P	/	/	0 s	0 s	P	P
Transformer T1 bobin (10,6V-14,5V)	GlobTek, GT-3012001	P	/	/	0 s	0 s	P	P
Transformer T1 bobin (14,6V-19,5V)	GlobTek, GT-3015001	P	/	/	0 s	0 s	P	P
Transformer T1 bobin (19,6V-24V)	GlobTek, GT-3024001	P	/	/	0 s	0 s	P	P

IEC 60335-1			
Clause	Requirement + Test	Result - Remark	Verdict

Transformer T1 bobin (24,1V-36V)	GlobTek, GT-3048001	P	/	/	0 s	0 s	P	P

Object/ Part No./ Material	Manufacturer / trademark	Glow-wire flammability index (GWFI), °C				GW ignition temp. (GWIT), °C		Verdict
		550	650	750	850	675	775	

The test specimen passed the glow wire test (GWT) with no ignition [(t_e – t_i) ≤ 2s] (Yes/No) :	Yes
If no, then surrounding parts passed the needle-flame test of annex E (Yes/No) ..... :	No
The test specimen passed the test by virtue of most of the flaming material being withdrawn with the glow-wire (Yes/No)? .....:	No
Ignition of the specified layer placed underneath the test specimen (Yes/No) .....:	No
Supplementary information: - 550 °C GWT not relevant (or applicable) to parts of material classified at least HB40 or if relevant HBF - The GWIT pre-selection option, the 850 °C GWFI pre-selection option, and the 850 °C GWT are not relevant (or applicable) for attended appliances	

30.2/30.2.4	TABLE: Needle- flame test (NFT)				P
Object/ Part No./ Material	**Manufacturer/ trademark**	**Duration of application of test flame (ta); (s)**	**Ignition of specified layer Yes/No**	**Duration of burning (tb) (s)**	**Verdict**
PCB	Brite Plus Electronics, DGV0-3A	30	No	<15	P
Supplementary information: - NFT not relevant (or applicable) for Parts of material classified as V-0 or V-1 - NFT not relevant (or applicable) for Base material of PCBs classified as V-0 or if relevant VTM-0					

List of test equipment used:

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

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

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

Attachment No. 1
(National deviations)

ATTACHMENT TO TEST REPORT IEC 60335-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Household and similar electrical appliances – Safety – Part 1: GENERAL REQUIREMENTS	
Differences according to:	EN 60335-1:2012 + AC:2014 + A11:2014 EN 62233:2008
Attachment Form No.:	EU_GD_IEC60335_1T
Attachment Originator:	Nemko AS
Master Attachment:	2015-03

	CENELEC COMMON MODIFICATIONS		
6.1	Delete “class 0” and “class 01”		P
7.1	Single-phase appliances to be connected to the supply mains: 230 V covered	100-240 V~	P
	Multi-phase appliances to be connected to the supply mains: 400 V covered		N/A
7.10	Devices used to start/stop operational functions of the appliance distinguished from other manual devices by means of shape, size, surface texture, position, etc.		N/A
	An indication that the device has been operated is given by:		-
	• a tactile feedback, or		N/A
	• an audible and visual feedback		N/A
7.12	The instructions include the substance of the following:		-
	- this appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved	End product evaluation	N/A
	- children shall not play with the appliance	End product evaluation	N/A
	- cleaning and user maintenance shall not be made by children without supervision	End product evaluation	N/A
7.12.Z1	The specific instructions related to the safe operation of this appliance is collated together in the front section of the user instructions	End product evaluation	N/A
	The height of the characters, measured on the capital letters, is at least 3 mm		N/A
	These instructions are also available in an alternative format, e.g. on a website		N/A
8.1.1	Also test probe 18 of EN 61032 is applied	Applied to direct plug-in and desktop version	P
	The appliance being in every possible position during the test, except that		P
	appliances normally used on the floor and having a mass exceeding 40 kg are not tilted		P
	The force on the probe in the straight position is increased to 10 N when probe 18 is used	Applied to direct plug-in and desktop version	P
	When using test probe 18 the appliance is fully assembled as in normal use without any parts removed, and		P

	parts intended to be removed for user maintenance are also not removed		N/A
8.2	Compliance is checked by applying the test probes of EN 61032	Applied to direct plug-in and desktop version	P
	For built-in appliances and fixed appliances, the test probe B and probe 18 of EN 61032 are applied only after installation	Open frame and encapsulated version – end product evaluation	P
11.8	Footnotes to “External enclosure of motor-operated appliances” to be taken into account		P
15.1.2	Appliances with an automatic cord reel tested with the cord in the most unfavourable position so that the reeling of the wet cord may affect electrical insulation during operation, the cord not being dried before reeling		N/A
20.2	When using the test probe similar to test probe B with a circular stop face, the accessories and detachable covers are removed		P
	Test probe 18 applied with a force of 2,5N on the appliance fully assembled		P
24.1	Components comply with the safety requirements specified in the relevant standards as far as they reasonably apply		P
	The requirements of Clause 29 of this standard apply between live parts of components and accessible parts of the appliance.		P
	The requirements of 30.2 of this standard apply to parts of non-metallic material in components including parts of non-metallic material supporting current-carrying connections inside components		P
	Components that have not been previously tested or do not comply with the standard for the relevant component are tested according to the requirements of 30.2		N/A
	Components that have been previously tested and shown to comply with the resistance to fire requirements in the standard for the relevant component need not be retested provided that:		-
	- the severity specified in the component standard is not less than the severity specified in 30.2, and		P
	- the test report for the component states whether it complied with the standard for the relevant component with or without flame, flames not exceeding 2 s during the test are ignored		P
	Unless components have been previously tested and found to comply with the relevant standard for the number of cycles specified, they are tested in accordance with 24.1.1 to 24.1.9		N/A

	For components mentioned in 24.1.1 to 24.1.9, no additional tests specified in the relevant standard for the component are necessary other than those specified in 24.1.1 to 24.1.9		P
	Components that have not been separately tested and found to comply with the relevant standard, and		N/A
	components that are not marked or not used in accordance with their marking,		N/A
	are tested in accordance with the conditions occurring in the appliance, the number of samples being that required by the relevant standard		N/A
	Lamp holders and starter holders that have not been previously tested and found to comply with the relevant standard are tested as a part of the appliance and additionally comply with the gauging and interchangeability requirements of the relevant standard under the conditions occurring in the appliance		N/A
	Where the relevant standard specifies these gauging and interchangeability requirements at elevated temperatures, the temperatures measured during the tests of Clause 11 are used		N/A
	Plugs and socket-outlets and other connecting devices of interconnection cords are not interchangeable with plugs and socket-outlets listed in IEC/TR 60083 or IEC 60906-1, or		N/A
	with connectors and appliance inlets complying with the standard sheets of IEC 60320-1,		P
	if direct supply to these parts from the supply mains gives rise to a hazard		N/A
24.1.7	If the remote operation of the appliance is via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is EN 41003		N/A
	Compliance with Clause 8 of this standard is not impaired by connecting the appliance to a device covered by EN 41003		N/A
24.Z1	For motor running capacitors (IEC 60252-1 type P2) with a metallic enclosure having an overpressure fuse the flame testing of internal plastic parts supporting current carrying connections as required in 30.2.2 and 30.2.3.1 is not necessary		N/A
25.6	Supply cords of single-phase portable appliances having a rated current not exceeding 16 A, fitted with a plug complying with the following standard sheets of IEC/TR 60083:		-
	- for Class I appliances: standard sheet C2b, C3b or C4 ..... :		N/A

	- for Class II appliances: standard sheet C5 or C6 .....:		P
25.7	Rubber sheathed cords (60245 IEC 53) are not suitable for appliances intended to be used outdoors or when they are liable to be exposed to significant amount of ultraviolet radiation		P
	Halogen-free thermoplastic compound sheathed supply cords have properties at least those of:		-
	• halogen-free thermoplastic compound sheathed cords (H03Z1Z1H2-F or H03Z1Z1-F), for appliances having a mass not exceeding 3 kg		N/A
	• halogen-free thermoplastic compound sheathed cords (H05Z1Z1H2-F or H05Z1Z1-F), for other appliances		N/A
	Cross-linked halogen-free compound sheathed supply cords have properties at least those of cross-linked halogen-free compound sheathed cords (H07ZZ-F)		N/A
26.11	Conductors connected by soldering are not considered to be positioned or fixed so that reliance is not placed upon the soldering alone to maintain them in position unless they are held in place near the terminals independently of the solder		P
29.3.Z1	Appliance constructed so that if there is a possibility of damaging the insulation during installation, the insulation withstands the scratch and penetration test of 21.2		N/A
32	Compliance regarding electromagnetic fields is checked according to EN 62233		P
Annex I, 19.I.101	The appliance is supplied at rated voltage and operated under normal operation with each of the fault conditions specified		P
	The duration of the test is as specified in 19.7		P

ZA	**ANNEX ZA** (NORMATIVE) **SPECIAL NATIONAL CONDITIONS**		P
	Norway		-
19.5	The test is also applicable to appliances intended to be permanently connected to fixed wiring		N/A
	Norway		-
22.2	The second paragraph of this subclause, dealing with single-phase, permanently connected class I appliances having heating elements, is not applicable due to the supply system		N/A
	All CENELEC countries		-
25.6 and 25.25	Information concerning National plug and socket-outlets is available from the CENELEC website. Normative national requirements concerning plug and socket-outlets are shown in the relevant National standard		P
	Ireland and United Kingdom		-
25.8	In the table, the lines for >10 A and ≤16 A are replaced by:		-
	> 10 and ≤ 13 1,25 (1,0)[b]		N/A
	> 13 and ≤ 16 1,5 (1,0)[b]		N/A
ZB	**ANNEX ZB** (INFORMATIVE) **A-DEVIATIONS**		N/A
	Ireland		-
25.6	These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and in general allow only plugs complying with I.S. 401:1997, or equivalent, to be fitted to domestic appliances		N/A
	United Kingdom		-
25.6	These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and in general allow only plugs to BS 1363 to be fitted to domestic appliances. It also allows plugs to BS 4573 and EN 50075 to be fitted to shavers and toothbrushes		N/A

ZC	**ANNEX ZC** (NORMATIVE) **NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS**		N/A
	A list of referenced documents in this standard		N/A
ZD	**ANNEX ZD** (INFORMATIVE) **IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS**		N/A
	A table with IEC and CENELEC code designations for flexible cords		N/A
ZE	**ANNEX ZE** (INFORMATIVE) **SPECIFIC ADDITIONAL REQUIREMENTS FOR APPLIANCES AND MACHINES INTENDED FOR COMMERCIAL USE**		N/A
7.1	Business name and full address of the manufacturer and, where applicable, his authorized representative.....:		N/A
	Model or type reference.....:		N/A
	Serial number, if any.....:		N/A
	Production year		N/A
	Designation of the appliance .....:		N/A
7.12	Instructions provided with the appliance so that the appliance can be used safely		N/A
	The instructions contain at least the following information:		-
	- the business name and full address of the manufacturer and, where applicable, his authorized representative		N/A
	- model or type reference of the appliance as marked on the appliance itself, except for the serial number		N/A
	- the designation of the appliance together with its explanation in case it is given by a combination of letters and/or numbers		N/A
	- the general description of the appliance, when needed due to the complexity of the appliance		N/A
	- specific precautions if required during installation, operation, adjusting, user maintenance, cleaning, repairing or moving		N/A
	- when needed drawings, diagrams, descriptions and explanations necessary for the safe use and user maintenance of the appliance		N/A
	- the possible reasonably foreseeable misuse and, whenever relevant, a warning against the effects it may have on the safe use of the appliance		N/A

	The words “Original instructions” appear on the language version(s) verified by the manufacturer or by the authorized representative		N/A
	When a translation of the original instructions has been provided by a person introducing the appliance on the market; the meaning of the sentence “Translation of the original instructions” appear in the relevant instructions delivered with the appliance		N/A
	The instructions for maintenance/service to be done by specialized personnel, mandated by the manufacturer or the authorized representative may be supplied in only one Community language which the specialized personnel understand		N/A
	The instructions indicate the type and frequency of inspections and maintenance required for safe operation including the preventive maintenance measures		N/A
7.12.ZE1	If needed for specific appliances, the following information to be given:		-
	• on use, transportation, assembly, dismantling when out of service, testing or foreseeable breakdowns, if these operations have consequences on stability of the appliance in order to avoid overturning, falling or uncontrolled movements of the appliance or of its component parts		N/A
	• on how to maintain adequate mechanical stability when in use, during transportation, assembly, dismantling, scrapping and any other action involving the appliance		N/A
	• on the protective measures to be taken by the user, including, where appropriate, the personal protective equipment to be provided		N/A
	• on the operating method to be followed in the event of accident or breakdown; if a blockage is likely to occur the operating method to safely unblock the appliance		N/A
	• on the specifications on the spare parts to be used, when these affect the health and safety of the operator		N/A
	• on airborne noise emissions, determined and declared in accordance with the relevant Part 2, which includes:		-
	- the A-weighted emission sound pressure level at workstations, where this exceeds 70 dB(A).....;		N/A
	- where this level does not exceed 70 dB(A), this fact is indicated		N/A

	- the peak C-weighted instantaneous sound pressure value at workstations, where this exceeds 63 Pa (130 dB in relation to 20 µPa).....:		N/A
	- the A-weighted sound power level emitted by the machinery, where the A-weighted emission sound pressure level at workstations exceeds 80 dB(A).....:		N/A
7.12.ZE2	The instructions includes a warning to disconnect the appliance from its power source during service and when replacing parts		N/A
	If the removal of the plug is foreseen, it is clearly indicated that the removal of the plug has to be such that an operator can check from any of the points to which he has access that the plug remains removed		N/A
	If this is not possible, due to the construction of the appliance or its installation, a disconnection with a locking system in the isolated position is provided		N/A
19.11.4.8	The appliance continues to operate, without causing any hazard to the user, from the same point in its operating cycle at which the voltage fluctuation occurred, or		N/A
	a manual operation is required to restart it		N/A
20.1	Appliances and their components and fittings have adequate mechanical stability during transportation, assembly, dismantling and any other action involving the appliance		N/A
20.2	Dangerous moving transmission parts safeguarded either by design or guards		N/A
	When guards are used, they are fixed guards, interlocking movable guards or protective devices		N/A
	Moving parts directly involved in the function of the appliance which cannot be made completely inaccessible fitted with:		-
	- fixed guards or interlocking movable guards preventing access to those sections of the parts that are not used in the work, and		N/A
	- adjustable guards restricting access to those sections of the moving parts where access is necessary		N/A
	Interlocking movable guards used where frequent access is required		N/A
21.1	Appliances and their components and fittings have adequate mechanical strength and is constructed to withstand such rough handling that may be expected in normal use, during transportation, assembly, dismantling, scrapping and any other action involving the appliance		N/A

22.ZE.1	For appliances provided with a seat, the seat gives adequate stability		N/A
	The distance between the seat and the control devices capable of being adapted to the operator		N/A
22.ZE.2	For appliances provided with separate devices for the start and the stop functions, the stop function is unambiguously identifiable and does always override the start function		N/A
	For appliances provided with one device performing the start and the stop function, the stop function is unambiguously identifiable and does always override the start function		N/A
22.ZE.3	Appliances designed in such a way that incorrect mounting is avoided, if this can lead to an unsafe situation		N/A
	If this is not possible, information on the correct mounting is given directly on the part and/or the enclosure		N/A
22.ZE.4	Where the weight, size or shape prevents appliances from being moved manually, they are fitted with attachments for lifting gear, or		N/A
	so designed that they can be fitted with such attachments, or		N/A
	be shaped in such a way that standard lifting gear can easily be used		N/A
	Appliances to be moved manually are constructed or equipped so that they can be moved easily and safely		N/A
22.ZE.5	The fixing systems of fixed guards which prevent access to dangerous moving transmission parts only removable with the use of tools		N/A
	If such guards have to be removed by the user for routine cleaning or maintenance their fixing systems remain attached to the fixed guards or to the machine after removal		N/A
	Where possible, guards are incapable of remaining in place without their fixings		N/A
	This does not apply if, after removal of the screws, or if the component is incorrectly repositioned, the appliance becomes inoperative		N/A
	Movable guards are interlocked		N/A
	The interlocking devices prevent the start of hazardous appliance functions until the guards are fixed in their position, and give a stop command whenever they are no longer closed		N/A

	Where it is possible for an operator to reach the danger zone before the risk due to hazardous appliance functions has ceased, movable guards associated with a guard locking device in addition to an interlocking device that:		-
	- prevents the start of hazardous appliance functions until the guard is closed and locked, and		N/A
	- keeps the guard closed and locked until the risk of injury from the hazardous appliance functions has ceased		N/A
	Interlocking movable guards remain attached to the appliance when open, and		N/A
	they are designed and constructed in such a way that they can be adjusted only by means of an intentional action		N/A
22.ZE.6	Interlocking movable guards designed in such a way that the absence or failure of one of their components prevents starting or stops the hazardous appliance functions		N/A
	The guard is opened to the extent needed to cause the interlocking to operate and is then closed, the number of operations being defined in the specific Part 2 .....:		N/A
	After this test any defect that may be expected in normal use is applied to the interlock system, including interruption of the supply, only one defect being simulated at a time		N/A
	After these tests the interlock system is fit for further use		N/A
22.ZE.7	Adjustable guards restricting access to areas of the moving parts strictly necessary for the work are:		-
	- adjustable manually or automatically, depending on the type of work involved, and		N/A
	- readily adjustable without the use of tools		N/A
22.ZE.8	In case of interruption, re-establishment after an interruption or fluctuation in whatever manner of the power supply, the appliance does not restart		N/A
	However, automatic restarting of the operation is allowed if the appliance may continue to operate, without causing any hazard to the user, from the same point in its operating cycle at which the voltage interruption or fluctuation occurred		N/A
22.ZE.9	Appliances fitted with means to isolate them from all energy sources		N/A
	Such isolators are clearly identified, and		N/A
	they are capable of being locked if reconnection endanger persons		N/A

	After the energy source is disconnected, it is possible to dissipate any energy remaining or stored in the circuits of the appliance without risk to persons		N/A
ZF	**ANNEX ZF** (INFORMATIVE) **CRITERIA APPLIED FOR THE ALLOCATION OF PRODUCTS COVERED BY STANDARDS IN THE EN 60335 SERIES UNDER LVD OR MD**		N/A
	List of standards under CENELEC/TC61 with the allocation under the LVD (Low Voltage Directive) or the MD (Machinery Directive)..... :		N/A
ZG	**ANNEX ZG** (NORMATIVE) **UV APPLIANCES**		N/A
	The following modifications to this standard apply to appliances having UV emitters		N/A
	This annex is not applicable to appliances covered by the scopes of IEC 60335-2-27, IEC 60335-2-59 or IEC 60335-2-109		N/A
7.12.ZG	The instructions for appliances incorporating UVC emitters include the substance of the following: WARNING — This appliance contains a UV emitter. Do not stare at the light source		N/A
32	For appliances incorporating UV emitters the manufacturer delivers a declaration providing evidence that the plastic material exposed to the radiation is UV resistant		N/A
ZZ	**ANNEX ZZ** (INFORMATIVE) **COVERAGE OF ESSENTIAL REQUIREMENTS OF EC DIRECTIVES**		N/A
	Description of the relation between this European standard and the LVD (Low Voltage Directive, 2006/95/EC) and the MD (Machinery Directive, 2006/42/EC)		N/A

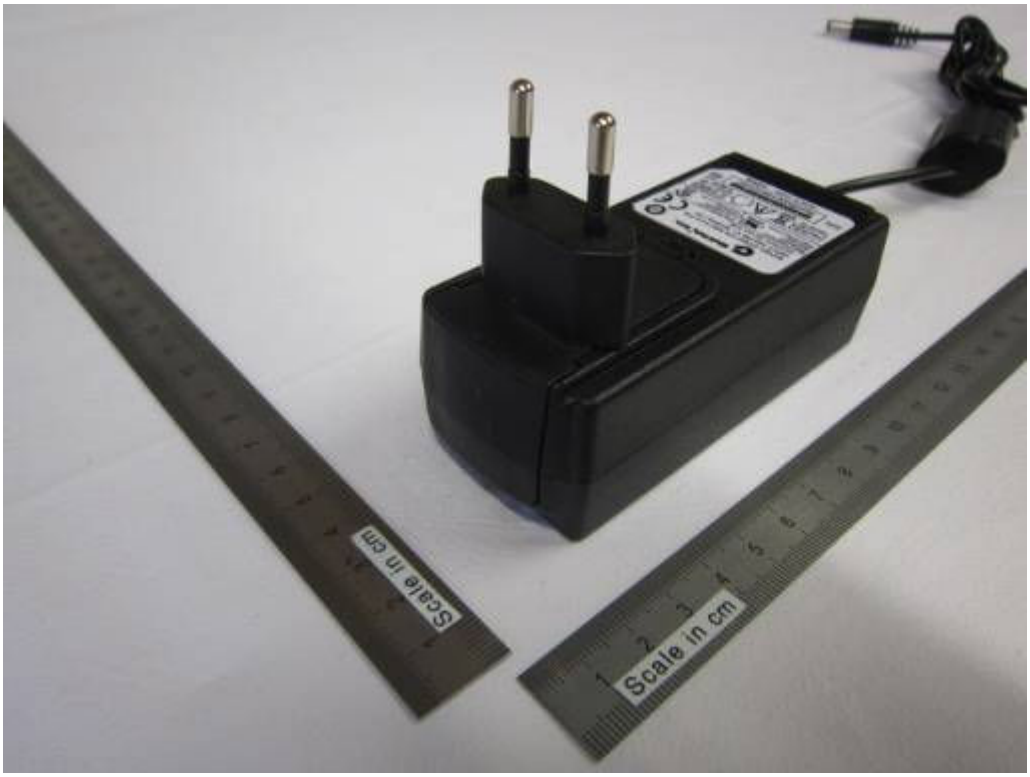
Annex EN 62233:2008			
Clause	Requirement + Test	Result - Remark	Verdict
EMF- ELECTROMAGNETICS FIELDS			
	The tested product also complies with the requirements of EN 62233:2008		
	Limit ……100%	Measured max. : < 5 %	P

ZZA	**ANNEX ZZA** (INFORMATIVE) **RELATIONSHIP BETWEEN THIS EUROPEAN STANDARD AND THE SAFETY OBJECTIVES OF DIRECTIVE 2014/35/EU [2014 OJ L96] AIMED TO BE COVERED (EN 60335-1/A13:2017)**		**P**
	Correspondence between this European Standard and Annex I of Directive 2014/35/EU [2014 OJ L96]		P
ZZB	**ANNEX ZZB** (INFORMATIVE) **RELATIONSHIP BETWEEN THIS EUROPEAN STANDARD AND THE ESSENTIAL REQUIREMENTS OF DIRECTIVE 2006/42/EC AIMED TO BE COVERED (EN 60335-1/A13:2017)**		**N/A**
	Correspondence between this European Standard and Annex I of Directive 2006/42/EC [OJ No L 157]		N/A

Attachment No. 3
(Photos)

GTM91120-30XX-TB

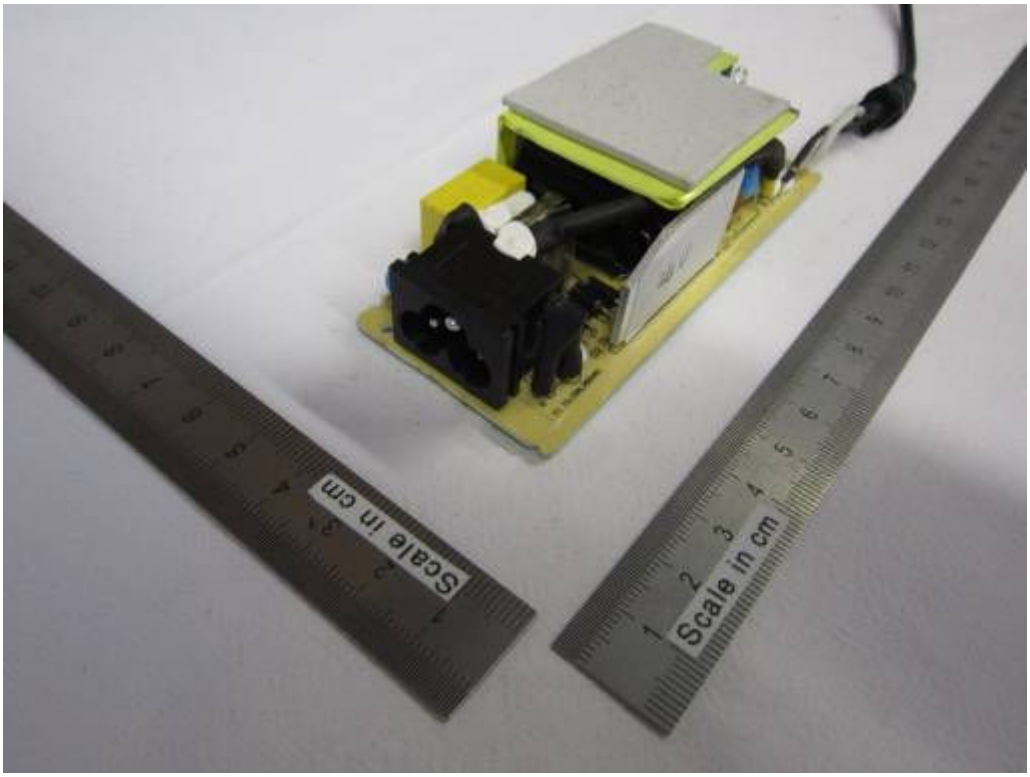

Scale in cm
Scale in cm

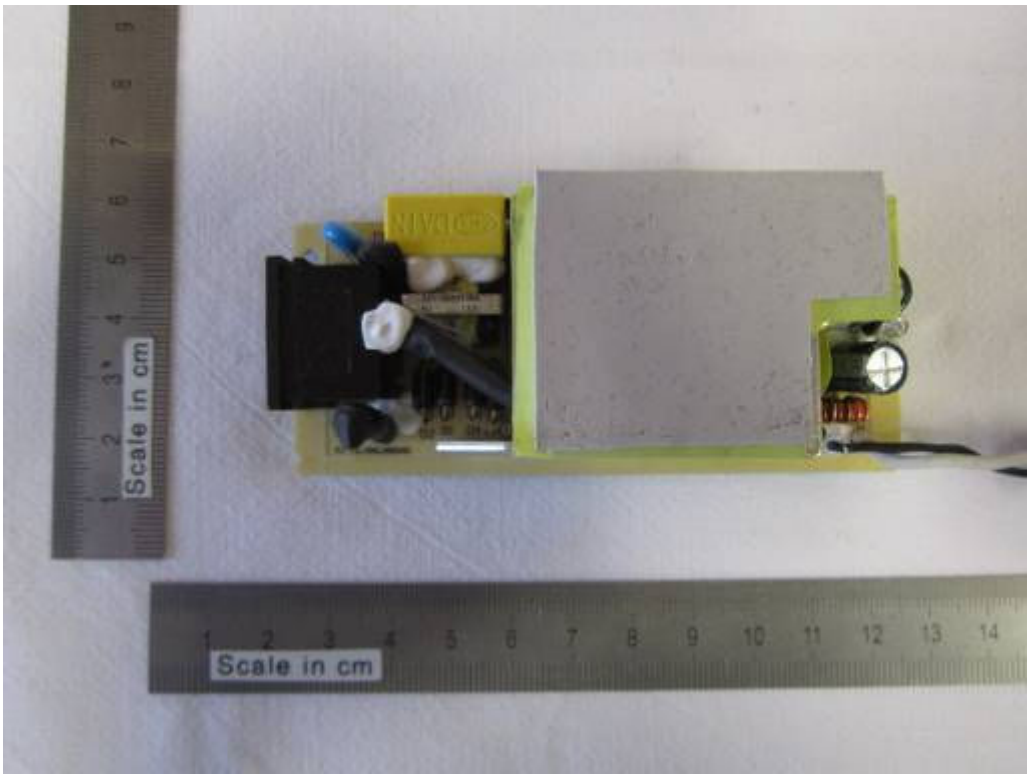

Scale in cm
Scale in cm

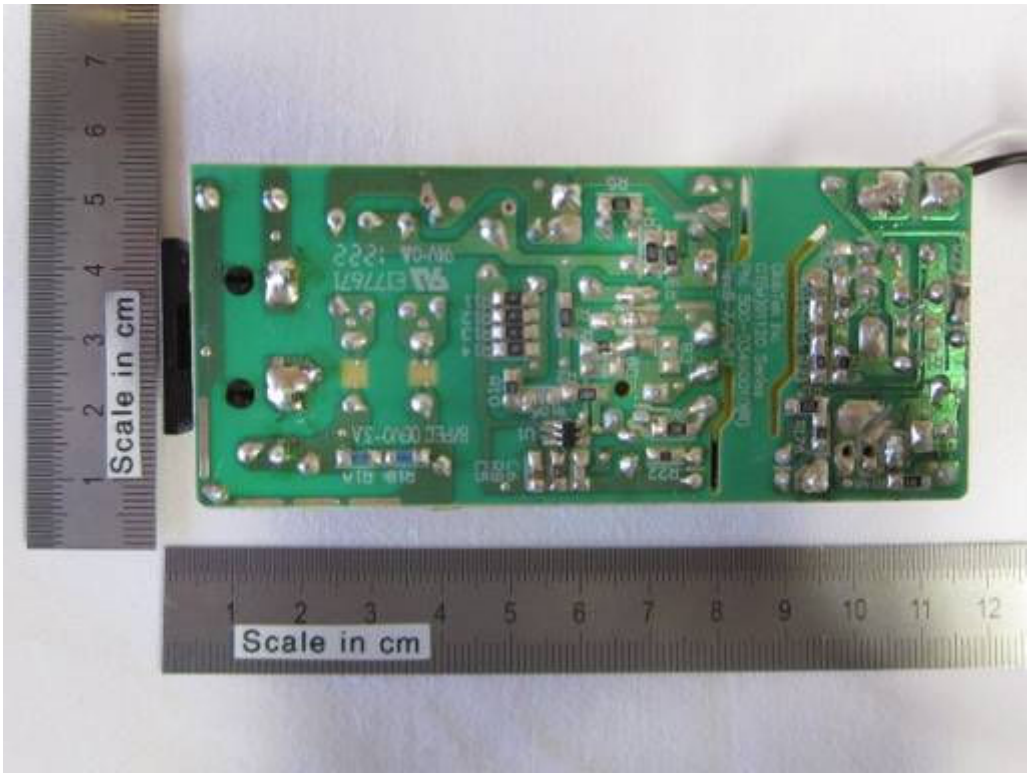

Scale in cm
Scale in cm


Scale in cm
Scale in cm

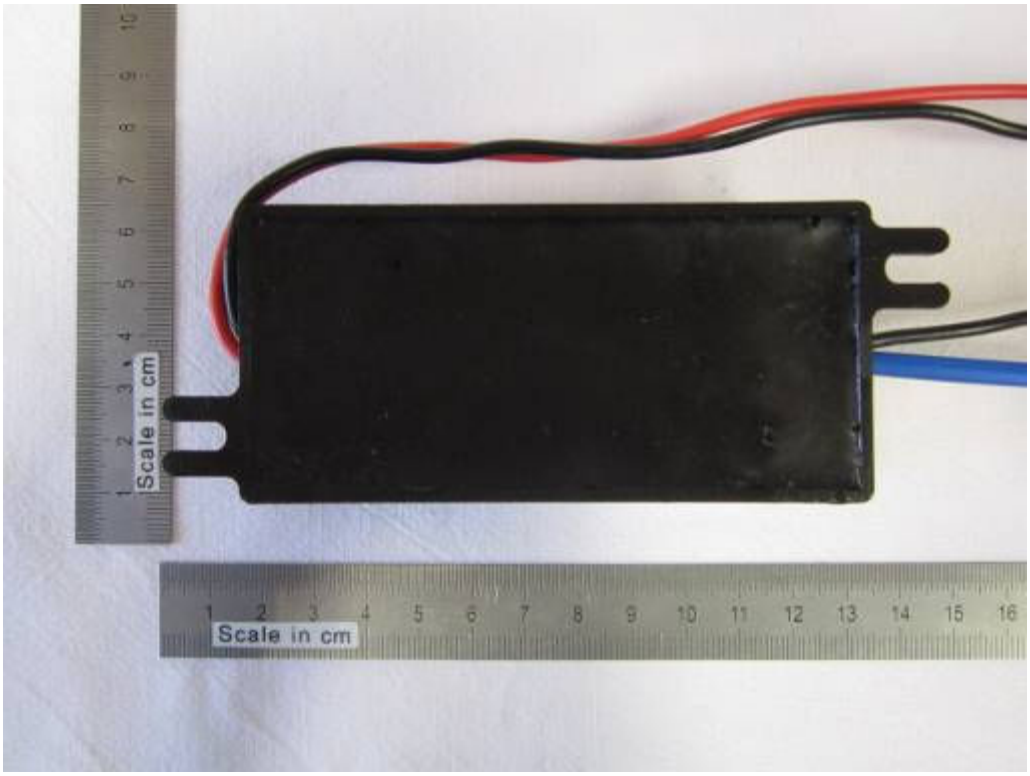

Scale in cm
Scale in cm

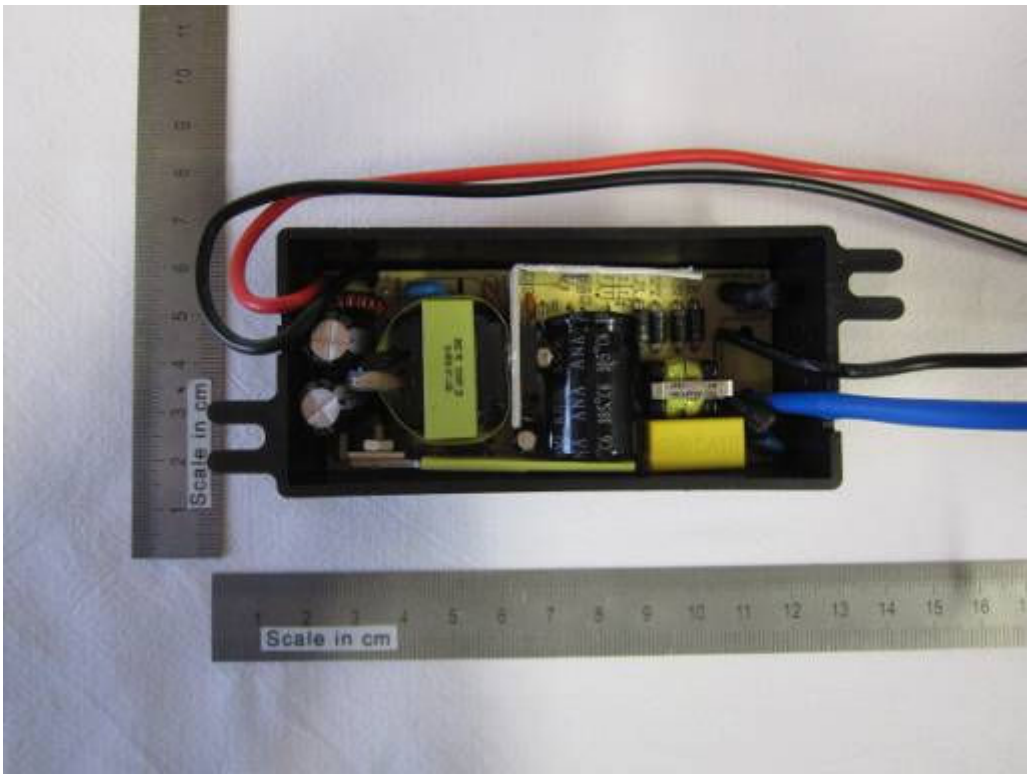

Scale in cm
Scale in cm

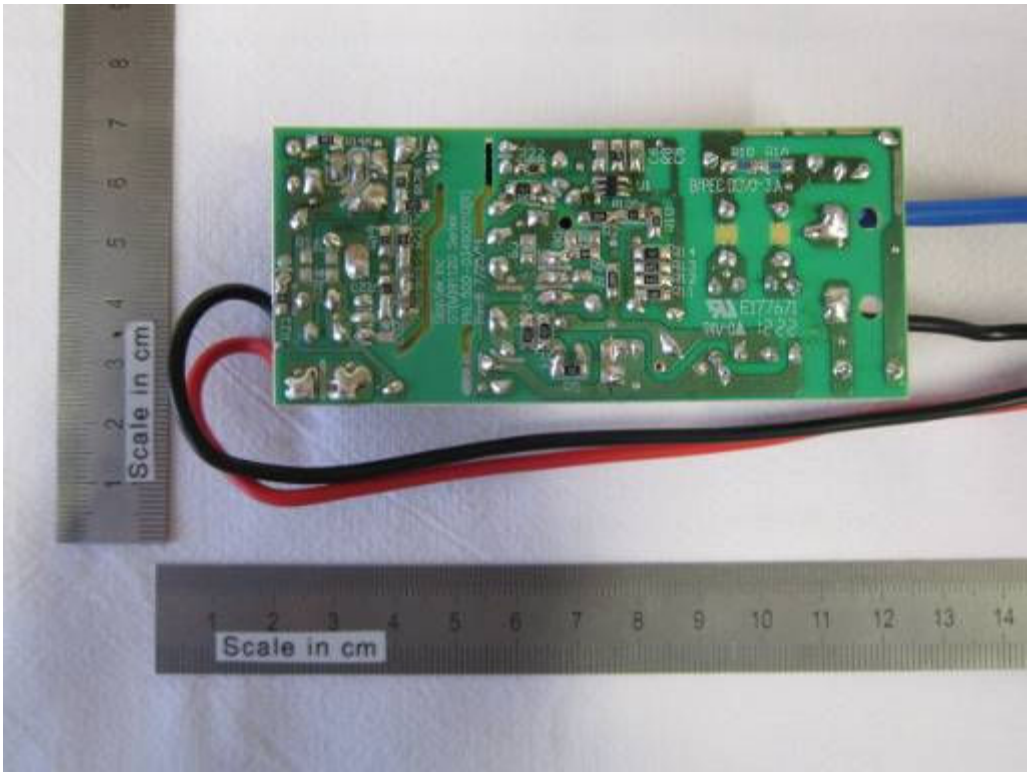

Scale in cm
Scale in cm


Scale in cm
Scale in cm

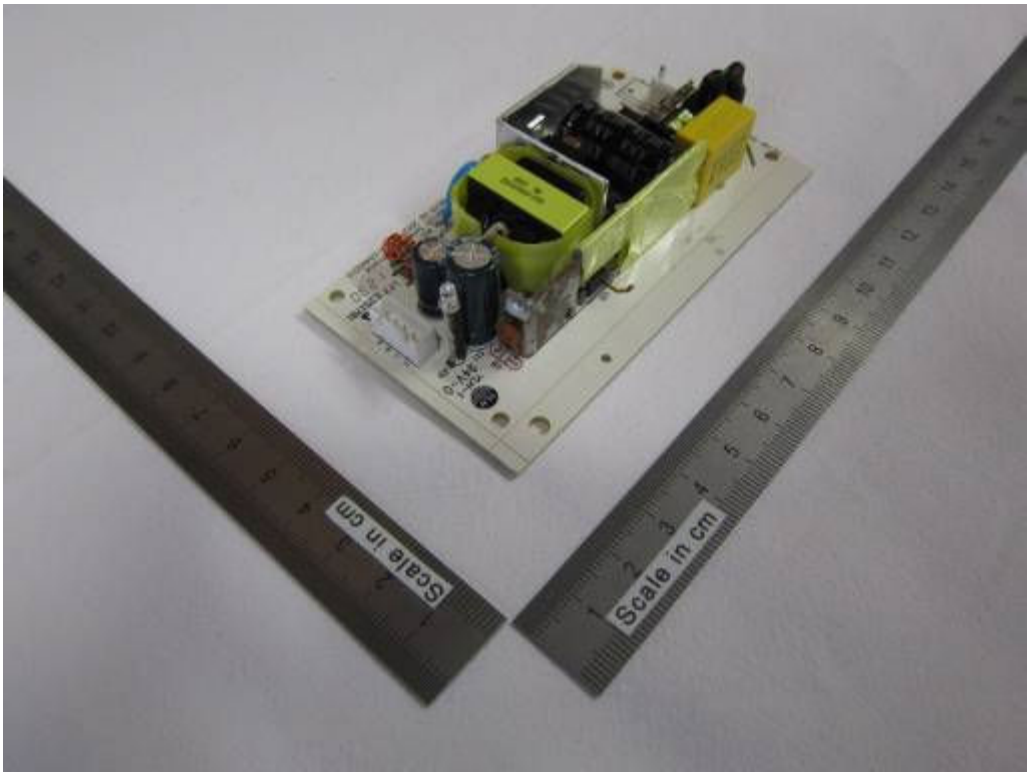
GTM91120-30XX-PB

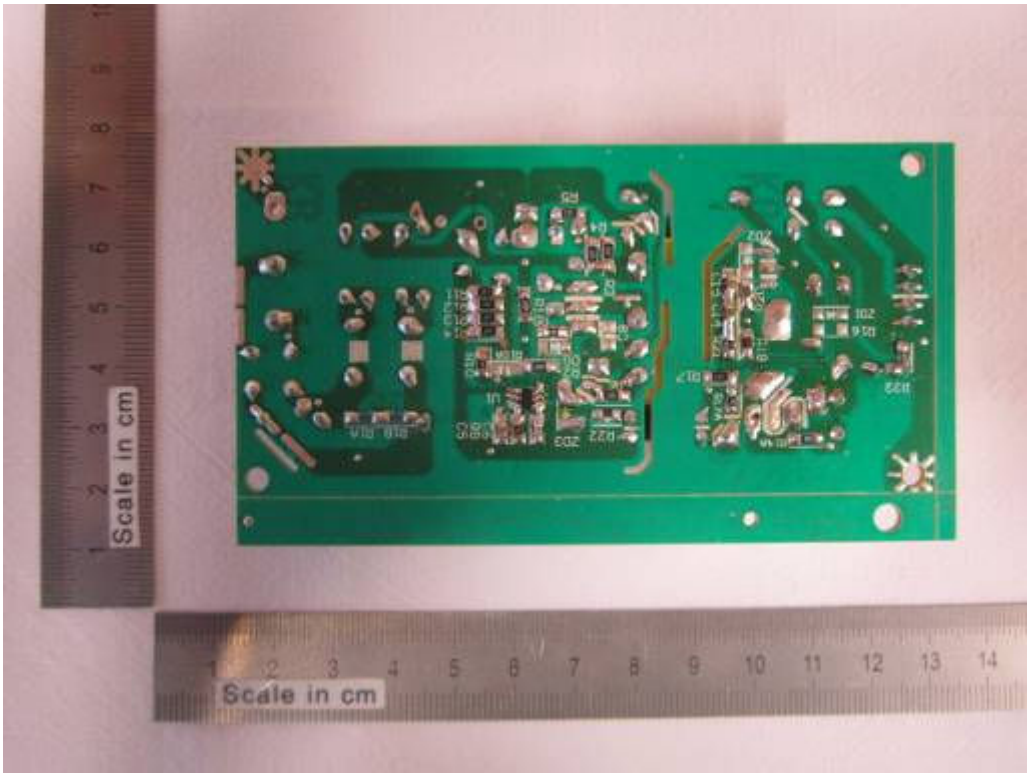



Scale in cm
Scale in cm

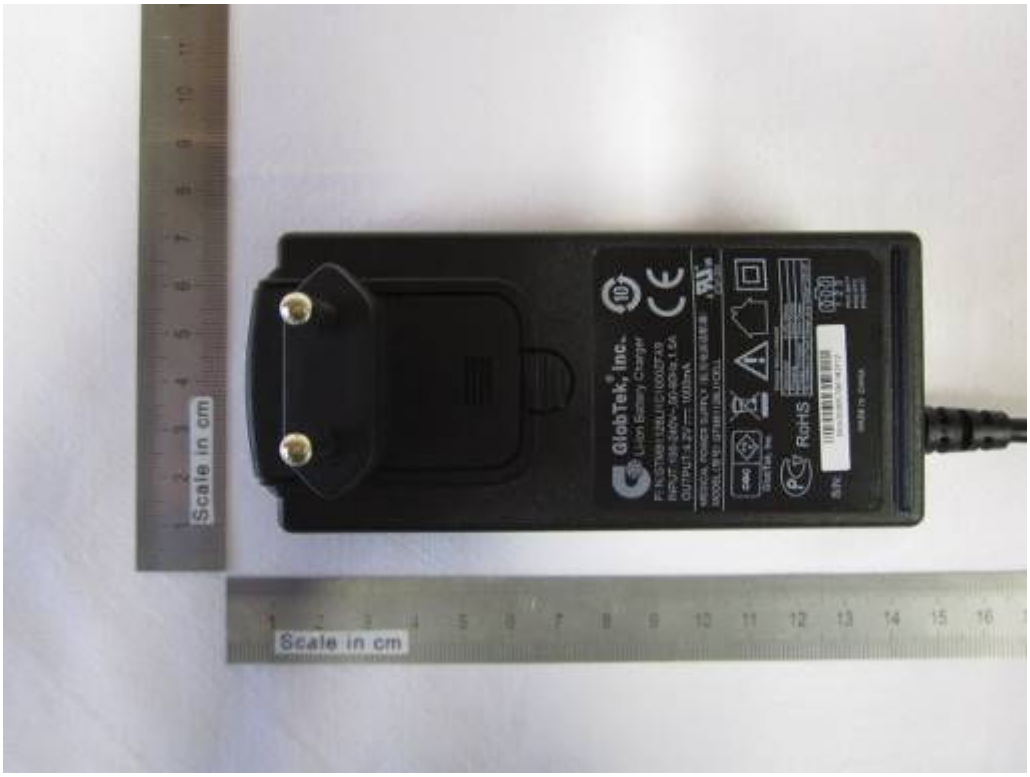

Scale in cm
Scale in cm

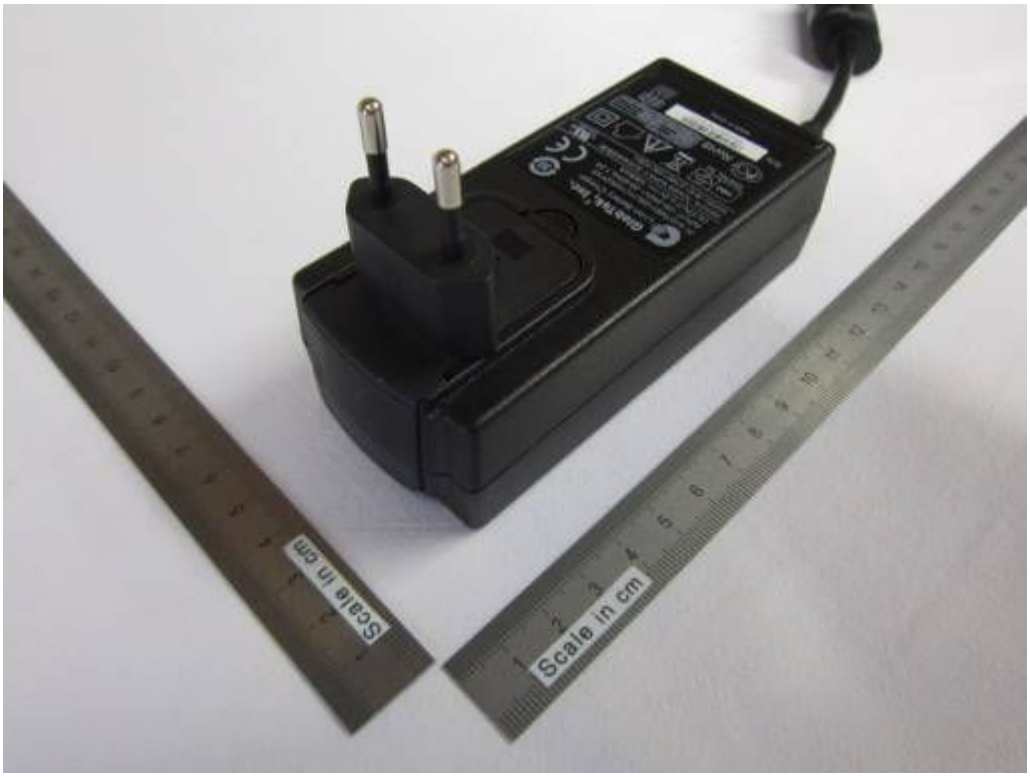
GTM91120-30XX-FB



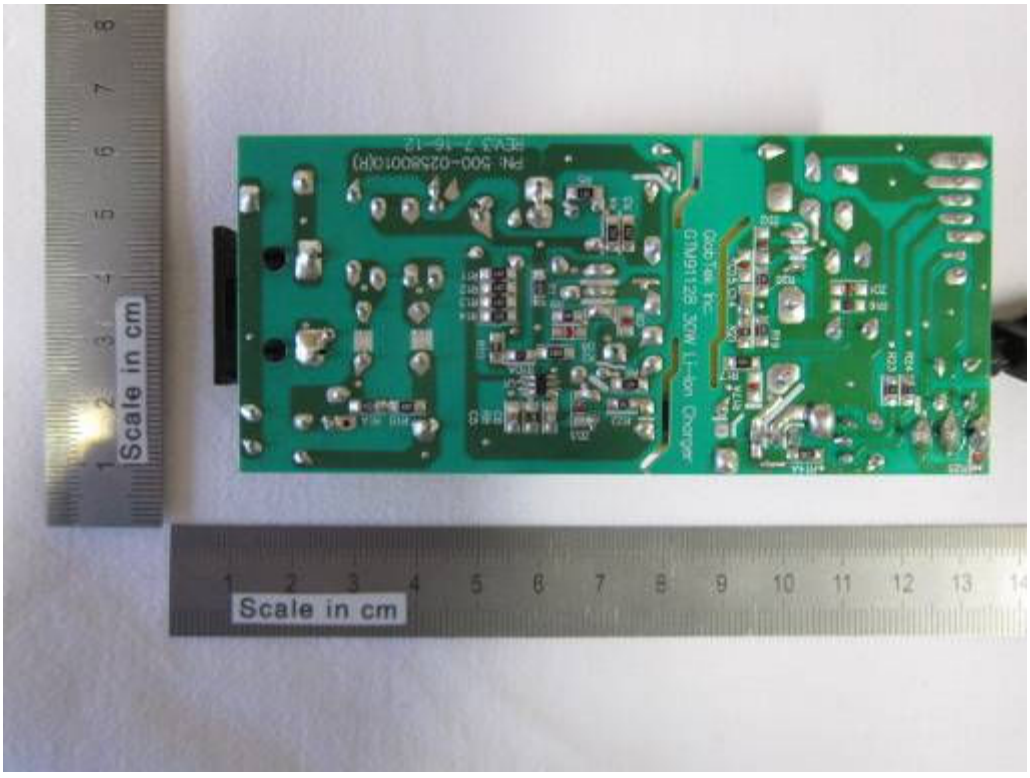


GTM91128LI1CELL, GTM91128LI2CELL, GTM91128LI3CELL


Scale in cm
Scale in cm
GlobTek, Inc.
RoHS


Scale in cm
Scale in cm


Scale in cm

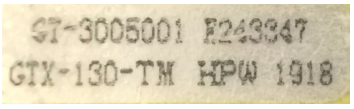

Scale in cm
Scale in cm

Attachment No. 4

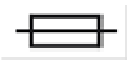
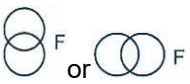
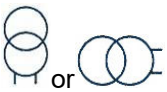
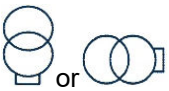
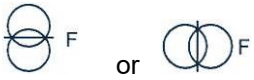
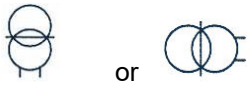
(Annex BB extract from IEC 61558-2-16:2009 + A1:2013)

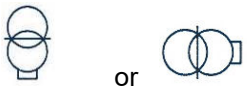
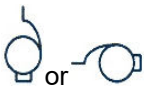
Annex BB extract from IEC 61558-2-16:2009 + A1:2013 for evaluation of transformers used in power supply.

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict

BB	**Annex BB**		
	Particular requirements for associated transformers for switch mode power supplies with internal frequencies > 500 Hz		P
	See separate test report-form for these Annex.		P
BB.8	**MARKING AND OTHER INFORMATION**		P
BB.8.2	Marking for transformers IP00 or for associated transformers: type and trademark, instruction sheets	Transformer marked with: 	P
BB.8.11	Correct symbols:		N/A
	Volts	V	N/A
	Amperes	A (mA)	N/A
	Volt amperes (or volt-amperes reactive for reactors)	VA or (VAR)	N/A
	Watts	W	N/A
	Hertz	Hz	N/A
	Input	PRI	N/A
	Output	SEC	N/A
	Direct current	d.c. (DC) or ⎓	N/A
	Neutral	N	N/A
	Single-phase a.c.	~	N/A
	Three-phase a.c.	3 ~	N/A
	Three-phase and neutral a.c.	3N ~	N/A
	Power factor	cos φ	N/A
	Class II construction	⧈	N/A
	Class III construction	III	N/A
	Equipment of overvoltage category I	I	N/A
	Equipment of overvoltage category II	II	N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict

	Equipment of overvoltage category III		N/A
	Equipment of overvoltage category IV		N/A
	Fuse-link		N/A
	Rated max. ambient temperature	t_a	N/A
	Rated minimum ambient temperature	t_{amin}	N/A
	Rated minimum temperature	t_{min}	N/A
	Frame or core terminal		N/A
	Protective earth		N/A
	IP number	IPXX	N/A
	Earth (ground for functional earth)		N/A
	For indoor use only		N/A
	To indicate that the appliance is intended to be usable up to the maximum altitude 3 000 m.		N/A
	To indicate that the power supply unit shall not be used, if pins of the plug part are damaged.		N/A
	Additional Symbols (IEC 61558-2-16:09)		N/A
	SMPS incorporating a **Fail-safe separating transformer**		N/A
	SMPS incorporating a **Non-short-circuit-proof separating transformer**		N/A
	SMPS incorporating a **Short-circuit-proof separating transformer** (inherently or non-inherently)		N/A
	SMPS incorporating a **Fail-safe isolating transformer**		N/A
	SMPS incorporating a **Non-short-circuit-proof isolating transformer**		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
	SMPS incorporating a **Short-circuit-proof isolating transformer** (inherently or non-inherently)		N/A
	SMPS incorporating a **Fail-safe safety isolating transformer**		N/A
	SMPS incorporating a **Non-short-circuit-proof safety isolating transformer**		N/A
	SMPS incorporating a **Short-circuit-proof safety isolating transformer** (inherently or non-inherently)		N/A
	SMPS incorporating a Fail-safe **auto-transformer**		N/A
	SMPS incorporating a **Non-short-circuit proof auto-transformer**		N/A
	SMPS incorporating a **Short-circuit proof auto-transformer** (inherently or non-inherently)		N/A
	SMPS (Switch mode power supply unit)		N/A
BB.9	**PROTECTION AGAINST ELECTRIC SHOCK**		N/A
BB.10	**CHANGE OF INPUT VOLTAGE SETTING**		N/A
BB.11	**OUTPUT VOLTAGE AND OUTPUT CURRENT UNDER LOAD**		N/A
BB.12	**NO-LOAD OUTPUT VOLTAGE (see supplementary requirements in Part 2)**		N/A
BB.13	**SHORT-CIRCUIT VOLTAGE**		N/A
BB.14	**HEATING**		P
BB.14.2	Application of 14.1 or 14.3 according to the insulation system	Heating test performed according to conditions of appliance. See results of original report.	P
BB.14.2.1	Class of isolating system (classified materials according to IEC 60 085 and IEC 60 216)	Class B	P
BB.14.2.2	No classified material, or system but the measured temperature does not exceed the value of Class A		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
BB.14.2.3	No classified material or system but the measured temperature exceeds the value for Class A, the live parts of the transformers are submitted to the test of 14.3		N/A
BB.14.3	Accelerated ageing test for undeclared class of isolating system		N/A
	Cycling test (10 cycles):		N/A
	– measuring of the no-load input current (mA)		N/A
BB.14.3.1	– heat run (temperature in table 2)		N/A
BB.14.3.2	– vibration test: 30 min; amplitude 0,35 mm; frequency range: 10 Hz, 55 Hz, 10 Hz		N/A
BB.14.3.3	– moisture treatment (48 h, 17.2)		N/A
BB.14.3.4	Measurements and tests at the beginning and after each test:		N/A
	– deviation of the no-load input current, measured at the beginning of the test is ≤ 30%		N/A
	– insulation resistance acc. cl.18.1 and 18.2		N/A
	– electric strength, no breakdown (18.3); 2 min; test voltage 35% of specified value (table VI)		N/A
	– Transformers (50 or 60 Hz version) are tested after the dielectric strength test as follows: under no load; duration: 5 min; Upri(V):1,2 times rated supply voltage; frequency (Hz): 2 times rated frequency		N/A
BB.15	**SHORT-CIRCUIT AND OVERLOAD PROTECTION**		N/A
BB.16	**MECHANICAL STRENGTH**		N/A
BB.17	**PROTECTION AGAINST HARMFUL INGRESS OF WATER AND MOISTURE**		N/A
BB.18	**INSULATION RESISTANCE AND ELECTRIC STRENGTH**		P
BB.18.2	Insulation resistance between:		P
	– live parts and body for basic insulation ≥ 2 MΩ		N/A
	– live parts and body for reinforced insulation ≥ 7 MΩ		N/A
	– input circuits and output circuits for basic insulation ≥ 2 MΩ		N/A
	– input circuits and output circuits for double or reinforced insulation ≥ 5 MΩ	(see appended table)	P

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
	– each input circuit and all other input circuits connected together ≥ 2 MΩ	(see appended table)	P
	– each output circuit and all other output circuits connected together ≥ 2 MΩ		N/A
	– hazardous live parts and metal parts with basic insulation (Class II transformers) ≥ 2 MΩ		N/A
	– body and metal parts with basic insulation (Class II transformers) ≥ 5 MΩ		N/A
	– metal foil in contact with inner and outer surfaces of enclosures ≥ 2 MΩ		N/A
BB.18.3	Electric strength test (1 min): no flashover or breakdown:		P
	1) basic insulation between input circuits and output circuits; working voltage (V); test voltage (V) .....:		N/A
	2) double or reinforced insulation between input circuits and output circuits; working voltage (V); test voltage (V) .....:	(see appended table)	P
	3) basic or supplementary insulation between:	(see appended table)	P
	a) live parts of different polarity; working voltage (V); test voltage (V)		P
	b) live parts and the body if intended to be connected to protective earth .....:		N/A
	c) inlet bushings and cord guards and anchorages .....:		N/A
	d) live parts and an intermediate conductive part .....:		N/A
	e) intermediate conductive parts and body .:		N/A
	4) Reinforced insulation between the body and live parts; working voltage (V); test voltage (V) .....:		N/A
	5) Functional insulation for windings intended to be connected in series or parallel (test voltage = working voltage + 500 V) (IEC 61558-2-16:2009)		N/A
18.102 (A1)	Partial discharge tests according IEC 60664-1 , if the working voltage is > 750 V peak		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
	Partial discharge is ≤ 10 pC at time P2 See Fig. 19.101		N/A
BB.19	**CONSTRUCTION**		P
BB.19.1	**General construction**		P
BB.19.1.1	General		N/A
BB.19.1.2	Auto-transformers		N/A
BB.19.1.2.1	For plug connected auto-transformers with rated input voltage > rated output voltage the potential to earth shall not exceed the rated output voltage.		N/A
BB.19.1.2.2	Polarised input and output plug and socket-outlet system: an instruction is given with the information, that the transformer shall not be used with non-polarised plug and socket outlet system.		N/A
BB.19.1.2.3	A polarity detecting device only energises the output in the case: output potential to earth ≤ rated output voltage, also with reversed input plug.		N/A
	– The contact separation of the device is ≥ 3mm		N/A
	– A current to earth does not exceed 0,75 mA.		N/A
	– All tests are repeated under fault conditions of H.3.3 of annex H of part 1. The potential to earth does not exceed the max output voltage for more than 5 s.		N/A
BB.19.1.3	Separating transformers		N/A
BB.19.1.3.1	Input and output circuits electrically separated.		N/A
BB.19.1.3.2	The insulation between input and output winding(s) consist of basic insulation		N/A
	Class I SMPS		N/A
	– Insulation between input windings and body consist of basic insulation		N/A
	– Insulation between output windings and body consist of basic insulation		N/A
	Class II SMPS		N/A
	– Insulation between input windings and body consist of double or reinforced insulation		N/A
	– Insulation between output windings and body consist of double or reinforced insulation		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
BB.19.1.3.3	The insulation between input windings and intermediate conductive parts and the output windings and intermediate part consist of basic insulation		N/A
	For class I SMPS the insulation between input and output windings via the intermediate conductive parts consist of basic insulation		N/A
	For class II SMPS the insulation between input winding and the body and between the output windings and the body via the intermediate conductive parts consist of double or reinforced insulation.		N/A
BB.19.1.3.4	Parts of output circuits may be connected to protective earth		N/A
BB.19.1.3.5	No direct contact between output circuits and the body, unless:		N/A
	– Allowed for associated transformers by the equipment standard		N/A
BB.19.1.4	Isolating transformers and safety isolating transformers		P
BB.19.1.4.1	Input and output circuits electrically separated		P
	No possibility of any connection between these circuits		P
BB.19.1.4.2	The insulation between input and output winding(s) consist of double or reinforced insulation (exception see 19.1.4.4)		P
	Class I transformers **not** intended for connection to the mains by a plug:		—
	– Insulation between input windings and body connected to earth consist of basic insulation rated to the input voltage		N/A
	– Insulation between output windings and body, connected to earth consist of basic insulation rated for the output voltage		N/A
	Class I transformers intended for connection to the mains by a plug:		N/A
	– Insulation between input windings and body connected to earth consist of basic insulation rated to the working voltage		N/A
	– Insulation between output windings and body, connected to earth consist of supplementary insulation rated for the working voltage		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
	Class II transformers		P
	– Insulation between input windings and body consist of double or reinforced insulation rated to the input voltage		P
	– Insulation between output windings and body consist of double or reinforced insulation, rated to the output voltage		N/A
BB.19.1.4.3	For transformers with intermediate conductive parts not connected to the body (between input/output):		-
BB.19.1.4.3.1	For class I and class II transformers the insulation between input and output windings, via intermediate conductive parts, consist of double or reinforced insulation, rated to the working voltage.		N/A
	– For class II transformers the insulation between input winding and the body and between the output windings and the body via the intermediate conductive parts consist of double or reinforced insulation. (rated to the input voltage, for SELV circuits only basic insulation to the body)		N/A
	– For transformers, different from independent, the insulation between input and output windings, via intermediate conductive parts, consist of double or reinforced insulation, rated to the working voltage.		N/A
BB.19.1.4.3.2	Class I transformers with earthed core, and not allowed for class II equipment		N/A
	– Insulation from the input to the earthed core: basic insulation rated for the input voltage		N/A
	– Insulation from the output voltage to the earthed core: basic insulation rated for the output voltage		N/A
BB.19.1.4.3.3	Insulation between: input to intermediate conductive parts and output and intermediate parts consist of at least basic insulation		N/A
	– If the insulation from input or output to the intermediate metal part is less than basic insulation, the part is considered to be connected to input or output.		N/A
BB.19.1.4.4	For class I transformers, with protective screen, **no**t connected to the mains by a plug the following conditions comply:		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
	– The insulation between input winding and protective screen consist of basic insulation (rated input voltage)		N/A
	– The insulation between output winding and protective screen consist of basic insulation (rated output voltage)		N/A
	– The protective screen consist of metal foil or a wire wound screen extending the full width of the windings and has no gaps or holes		N/A
	– Where the protective screen does not cover the entire width of the input winding, additional insulation to ensure double insulation in this area, is used.		N/A
	– If the screen is made by a foil, the turns are isolated, overlap at least 3 mm		N/A
	– The cross-section of the screen and the lead out wire is at least corresponding to the rated current of the overload device		N/A
	– The lead out wire is soldered or fixed to the protective screen.		N/A
	Protective screening is not allowed for transformers with plug connection to the mains		P
BB.19.1.4.5	No connection between output circuit and protective earth, except of associated transformers (allowed by equipment standard) or 19.8 is fulfilled.		N/A
BB.19.1.4.6	No connection between output circuit and body, except of associated transformers (allowed by equipment standard)		N/A
BB.19.1.4.7	The distance between input and output terminals for the connection of external wiring is ≥ 25 mm		N/A
BB.19.1.4.8	Portable transformers having an rated output ≤ 630 VA shall be class II.		P
BB.19.1.4.9	No connection between output circuit and body except of associated transformers (allowed by equipment standard)		N/A
BB.19.1.4.10	Protective screening is not allowed for transformers with plug connection to the mains		P
BB.19.12	Windings construction		P
BB.19.12.1	Undue displacement in all types of transformers not allowed:		P

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
	– of input or output windings or turns thereof		P
	– of internal wiring or wires for external connection		N/A
	– of parts of windings or of internal wiring in case of rupture or loosening		P
BB.19.12.2	Serrated tape:		N/A
	– distance through insulation according to table 13		N/A
	– one additional layer of serrated tape, and		N/A
	– one additional layer without serration		N/A
	– in case of cheek less bobbins the end turns of each layer shall be prevented from being displaced		N/A
BB.19.12.3	Insulated windings wires providing basic, supplementary or reinforced insulation, meet the following requirements:		N/A
	•Multi-layer extruded or spirally wrapped insulation, passed the tests of annex K	Secondary TIW	P
	•Basic insulation: two wrapped or one extruded wire		N/A
	•Supplementary insulation: two layers, wrapped or extruded		N/A
	•Reinforced insulation: three layers wrapped or extruded	One layer required between primary and TIW for mechanical separation	P
	Spirally wrapped insulation:		N/A
	•creepage distances between wrapped layers > cl. 26 _ P1 values		N/A
	•path between wrapped layers sealed, the test voltage of K2 is multiplied with 1,35		N/A
	•test 26.2.4 – Test A, passed for wrapped layers		N/A
	•the finished component pass the electric strength test according to cl. 18.3		N/A
a)	Insulated winding wire used for basic or supplementary insulation in a wound part:		N/A
	•comply with annex K		N/A
	•two layers for supplementary insulation		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
	•one layer for basic insulation		N/A
	•one layer for mechanical separation between the insulated wires of primary and secondary. This layer fulfils the requirement of basic insulation.		N/A
b)	Insulated winding wire used for reinforced insulation in a wound part:		P
	•comply with annex K		P
	•three layers		P
	•relevant dielectric strength test of 18.3		P
	Where the insulated winding wire is wound:		P
	•upon metal or ferrite cores		N/A
	•upon enamelled wire		P
	•under enamelled wire		P
	•one layer for mechanical separation between the insulated wires and the core or the enamelled wires is required. This layer fulfils the requirement of basic insulation.		P
	•both windings shall not touch each other and also not the core.		P
	100 % routine test of Annex K3 of part 1 is fulfilled		P
	no creepage distances and clearances for insulated winding wires		P
c)	Toroidal cores used with TIW wires for double or reinforced insulation between the primary and secondary circuits shall comply with the following:		N/A
	1) a coating which fulfils the requirements of basic insulation between a winding and the core		N/A
	2) The primary winding consists of TIW wire with 3 layers (reinforced insulation) and the secondary winding consists of enamelled wire. These independent windings shall not be able to contact each other either by mechanical separation or a gap which fulfil the dielectric strength tests for basic insulation.		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
	3) For polyfilar windings (primary and secondary windings in contact with each other), the primary winding consists of TIW wire with 3 layers and the secondary winding consists of a TIW wire with 1 layer (requirements for primary and secondary windings can be changed). This construction also is allowed for use with EE-cores or similar.		N/A
d)	Toroidal cores used with FIW wires for double or reinforced insulation between the primary and secondary circuits shall comply with the following:		N/A
	1) a coating, which fulfil the requirements of basic insulation.		N/A
	2) The primary winding consists of FIW wire for reinforced insulation and the secondary winding consist of FIW wire – of basic insulation. These independent windings shall not be able to contact each other either by mechanical separation or a gap which fulfil the dielectric strength test for basic insulation.		N/A
	3) For polyfilar windings (primary and secondary windings in contact with each other), the primary winding and the secondary winding consist of FIW wire for reinforced insulation. This construction also is allowed to use for EE-core or similar.		N/A
e)	Toroidal cores used with TIW in combination with FIW wire, for double or reinforced insulation between the primary and secondary circuits shall comply with the following:		N/A
	1) a coating, which fulfils the requirements of basic insulation.		N/A
	2) The primary winding consists of FIW wire for reinforced insulation, and the secondary winding consists of TIW wire for basic insulation (1 layer). These independent windings shall not be able to contact each other either by mechanical separation or a gap which fulfil the dielectric strength tests for basic insulation.		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
	3) For polyfilar windings (primary and secondary windings in contact with each other), the primary winding consists of TIW wire for reinforced insulation (3 layer) and the secondary winding consists of FIW wire for reinforced insulation. This construction also is allowed for use with EE-cores or similar.		N/A
f)	Toroidal cores used with TIW in combination with FIW wire, for basic insulation between the primary and secondary circuits shall comply with the following:		N/A
	1) a coating, which fulfils the requirements of basic insulation		N/A
	2) The primary winding consists of FIW wire for basic insulation, and the secondary winding consists of TIW wire for basic insulation (1 layer). These independent windings shall not be able to contact each other either by mechanical separation or a gap which fulfils the dielectric strength tests for basic insulation.		N/A
	3) For polyfilar windings (primary and secondary windings in contact with each other), the primary winding consists of TIW wire for supplementary insulation (2 layers) and the secondary winding consists of FIW wire for basic insulation. This construction also is allowed for use with EE-cores or similar.		N/A
	4) Further polyfilar constructions with FIW and TIW wires in combination with enamelled wires for basic insulation only: 4.1) Primary winding consists of enamelled wire, secondary winding consists of FIW wire for reinforced insulation 4.2) Primary winding consists of enamelled wire, secondary winding consists of TIW wire for reinforced insulation		N/A
BB.19.12.3.1	Max. class F for transformers which use FIW-wire		N/A
BB.19.12.3.2	FIW wires comply with IEC 60851-5:2008, IEC 60317-0-7 and IEC 60317-56.		N/A
	•other nominal diameter as mentioned in table 24 can be calculated with the Formula (6) in 26.3.5:		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
	FIW wire used for basic or supplementary insulation for transformers according 19.1.3:		–
	•the test voltage of table 14, based on the working voltage of basic or supplementary insulation, comply with the min. voltage strength of table 24		N/A
	•one layer for mechanical separation is located between the insulated wires of primary and secondary. This layer fulfil the requirement of basic insulation		N/A
	•between FIW and enamelled wire, no requirements of creepage distances and clearances		N/A
	•no touch of FIW and enamelled wires		N/A
	FIW wire used for double or reinforced insulation for transformers according 19.1.4:		N/A
	• the test voltage of table 14, based on the working voltage of basic or supplementary insulation, comply with the min. voltage strength of table 24		N/A
	•for primary and secondary winding FIW-wire for basic insulation is used		N/A
	•one layer for mechanical separation is located between the insulated wires of primary and secondary. This layer fulfil the requirement of basic insulation		N/A
	•no touch between the basic insulated PRI and SEC FIW-wires		N/A
	•between PRI- and SEC-FIW wires, no requirements of creepage distances and clearances		N/A
	Alternative construction used for reinforced insulation (reinforced insulated FIW wire and enamelled wire)		N/A
	• the test voltage of table 14, based on the working voltage reinforced insulation, comply with the min. voltage strength of table 24		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
	• one layer for mechanical separation is located between the reinforced insulated FIW wire and the enamelled wire. This layer fulfil the requirement of basic insulation		N/A
	• no touch between the FIW wire and the enamelled wire		N/A
	• between the reinforced FIW wire and any other parts, no requirements of creepage distances and clearances exist		N/A
	Alternative construction with FIW wires, basic or supplementary insulated for transformers with double or reinforced insulation:		–
	• the test voltage of table 14, based on the working voltage of basic or supplementary insulation, comply with the min. voltage strength of table 24		N/A
	• PRI or SEC basic insulated FIW wire and to the other winding (enamelled wire) requirements of supplementary insulation		N/A
	• creepage distances and clearances between the basic insulated FIW wire and the enamelled wire for basic or supplementary insulation are required.		N/A
	Where the FIW wire is wound		N/A
	•upon metal or ferrite cores		N/A
	•one layer for mechanical separation between the insulated wires and the core or the enamelled wires is required. This layer fulfils the requirement of basic insulation.		N/A
	• both windings shall not touch each other and also not the core.		N/A
BB.20	**COMPONENTS**		N/A
BB.21	**INTERNAL WIRING**		N/A
BB.22	**SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CABLES AND CORDS**		N/A
BB.23	**TERMINALS FOR EXTERNAL CONDUCTORS**		N/A
BB.24	**PROVISION FOR PROTECTIVE EARTHING**		N/A
BB.25	**SCREWS AND CONNECTIONS**		N/A
BB.26	**CREEPAGE DISTANCES AND CLEARANCES**		P

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
BB.26.1	See 26.101		P
BB.26.2	Creepage distances (cr) and clearances (cr)		P
BB.26.2.1	Windings covered with adhesive tape		N/A
	– the values of pollution degree 1 are fulfilled		N/A
	– all isolating material are classified acc. to IEC 60085 and IEC 60216		N/A
	– test A of 26.2.3 is fulfilled		N/A
BB.26.2.2	Uncemented insulating parts pollution degree P2 or P3		N/A
	– all isolating material are classified acc. to IEC 60085 and IEC 60216		N/A
	– values of pollution degree 1 are not applicable		N/A
BB.26.2.3	Cemented insulating parts		N/A
	– all isolating materials are classified acc. to IEC 60085 and IEC 60216		N/A
	– values of distance through insulation (dti) are fulfilled		N/A
	– creepage distances and clearances are not required		N/A
	– test A of this sub clause is fulfilled		N/A
	Test A		N/A
	– thermal class		N/A
	– working voltage		N/A
	– Test with three specially specimens, with uninsulated wires, without impregnation or potting	(see appended table)	N/A
	Two of the three specimens are subjected to:		N/A
	– the relevant humidity treatment according to 17.2 (48 h)		N/A
	– the relevant dielectric strength test of 18.3 multiplied with factor 1,35		N/A
	– One of the three specimens is subjected to the relevant dielectric strength test of 18.3 multiplied by the factor 1,35 immediately at the end of the last cycle with high temperature		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
	Impulse dielectric test according to 4.1.1.2.1 of IEC 60 664-1 (1,2 / 50 µs waveform) – see Annex R of IEC 61558-1		N/A
BB.26.2.4	Enclosed parts, by impregnation or potting		N/A
BB.26.2.4.1	– The requirements of reduced values as stated for pollution degree 1 (P1) are fulfilled		N/A
	– all isolating materials are classified acc. to IEC 60085 and IEC 60216		N/A
	Test B		N/A
	– thermal class		N/A
	– working voltage		N/A
	– Test with three specially specimens, potted or impregnated. The dielectric strength test is applied directly to the joint.	(see appended table)	N/A
	Two of the three specimens are subjected to:		N/A
	– the relevant humidity treatment according to 17.2 (48 h)		N/A
	– the relevant dielectric strength test of 18.3 multiplied with factor 1,25		N/A
	– One of the three specimens is subjected to the relevant dielectric strength test of 18.3 multiplied by the factor 1,25 immediately at the end of the last cycle with high temperature		N/A
	The three spacemen pass the Impulse dielectric test according to 4.1.1.2.1 of IEC 60 664-1 (1,2 / 50 µs waveform) – see Annex R of IEC 61558-1		N/A
BB.26.2.4.2	– The requirements of distance through insulation (dti) are fulfilled. (P1 values are not required)		N/A
	– all isolating materials are classified acc. to IEC 60085 and IEC 60216		N/A
	Test C		N/A
	– thermal class		N/A
	– working voltage		N/A
	– Test with three specimens, potted or impregnated. (finished components)	(see appended table)	N/A
	– Neither cracks, nor voids in the insulating compounds		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
	Two of the three specimens are subjected to:		N/A
	– the relevant humidity treatment according to 17.2 (48 h)		N/A
	– the relevant dielectric strength test of 18.3 multiplied with factor 1,35		N/A
	– One of the three specimens is subjected to the relevant dielectric strength test of 18.3 multiplied by the factor 1,35 immediately at the end of the last cycle with high temperature		N/A
	The three spacemen pass the Impulse dielectric test according to 4.1.1.2.1 of IEC 60 664-1 (1,2 / 50 µs waveform) – see Annex R of IEC 61558-1		N/A
BB.26.3	**Distance through insulation**		P
	For double or reinforced insulation, the required values of Tables 13, C1, and D1 – boxes 2b, 2c and 7 are fulfilled		P
	The insulation fulfil the material classification according IEC 60085 or 60216 or the test of 14.3	Class B	P
BB.26.3.1	Reduced values of the thickness of insulation for supplementary or reinforced insulation are allowed if the following conditions are fulfilled:		N/A
	– the isolating materials are classified acc. to IEC 60085 and IEC 60216		N/A
	– the test of 14.3 is fulfilled		N/A
	– If both requirements are fulfilled, the required values for solid insulation can be multiplied by 0,4		N/A
	– Minimum thickness of reinforced insulation $\geq$0,2 mm		N/A
	– Minimum thickness of supplementary insulation $\geq$0,1 mm		N/A
BB.26.3.2	Insulation in thin sheet form	Required basic insulation - two layers for mechanical separation; due to TIW used for reinforced.	N/A
	– If the layers are non-separable (glued together):		N/A
	– The requirement of 3 layers is fulfilled		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
	– The mandrel test according 26.3.3 is fulfilled with 150 N		N/A
	– The required values for d.t.i. of Tables 13, C.1 and D.1 – marked by index ”e” is fulfilled.		N/A
	– If the layers are separated:		N/A
	– The requirement of 2 layers is fulfilled		N/A
	– If serrated tape is used, 1 additional layer (serrated) and one additional layer without serration is required		N/A
	– The mandrel test according 26.3.3 is fulfilled on each layer with 50 N		N/A
	– The required values for d.t.i. of Tables 13, C.1 and D.1 – marked by index ”e” is fulfilled.		N/A
	– If the layers are separated (alternative:		N/A
	- The requirement of 3 layers is fulfilled		N/A
	– If serrated tape is used, 1 additional layer (serrated) and one additional layer without serration is required		N/A
	– The mandrel test according 26.3.3 is fulfilled on 2/3 of the layers with 100 N		N/A
	– The required values for d.t.i. of Tables 13, C.1 and D.1 – marked by index ”e” is fulfilled.		N/A
	Test according to 14.3 and if the isolating materials are classified acc. to IEC 60085 and IEC 60216 no distances through insulation are required for insulation in thin sheet form		N/A
	The figures within square brackets in box 2 and 7 of table 13 (C.1/D.1) are used for insulation in thin sheet form as follows:		N/A
	– rated output > 100 VA values in square brackets apply		N/A
	– rated output ≥ 25 VA ≤ 100 VA 2/3 of the value in square brackets apply		N/A
	– rated output ≤ 25 VA 1/3 of the value in square brackets apply		N/A
BB.26.3.3	Mandrel test of insulation in thin sheet form (specimen of 70 mm width are necessary):		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
	– If the layers are non-separable – at least 3 layers glued together fulfil the test:		N/A
	– pull force of 150 N		N/A
	– high voltage test of 5,0 kV or the test voltage of 18.3 multiplied by 1,25 whatever is the greater. No flashover, no breakdown.		N/A
	– If the layers are separable and 2/3 of at least 3 layers fulfil the test.		N/A
	– pull force of 100 N		N/A
	– high voltage test of 5,0 kV or the test voltage of 18.3 multiplied by 1,25 whatever is the greater. No flashover, no breakdowns.		N/A
	– If the layers are separable 1 of at least 2 layers fulfil the test:		N/A
	– pull force of 50 N		N/A
	– high voltage test of 5,0 kV or the test voltage of 18.3 multiplied by 1,25 whatever is the greater. No flashover, no breakdown.		N/A
BB.26.101	Creepage distances, clearances and distances through insulation, specified values according to (EN 61558-2-16:09):		P
	– table 13, material group IIIa (part 1)		P
	– table C, material group II (part 1)		N/A
	– table D, material group I (part 1)		N/A
	– working voltage	278 V	P
	– rated supply frequency 50/60 Hz	50-60 Hz	P
	– rated internal frequency	<100 kHz	P
	1. Insulation between input and output circuits (basic insulation):		N/A
	a) measured values ≥ specified values (mm) .....:		N/A
	2. Insulation between input and output circuits (double or reinforced insulation):	(see appended table)	P
	a) measured values ≥ specified values (mm) .....:		P

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
	b) measured values ≥ specified values (mm) .....:		N/A
	c) measured values ≥ specified values (mm) .....:		P
	3. Insulation between adjacent input circuits: measured values ≥ specified values (mm) .....:		N/A
	Insulation between adjacent output circuits: measured values ≥ specified values (mm) .....:		N/A
	4. Insulation between terminals for external connection:		N/A
	a) measured values ≥ specified values (mm) .....:		N/A
	b) measured values ≥ specified values (mm) .....:		N/A
	c) measured values ≥ specified values (mm) .....:		N/A
	5. Basic or supplementary insulation:		N/A
	a) measured values ≥ specified values (mm) .....:		N/A
	b) measured values ≥ specified values (mm) .....:		N/A
	c) measured values ≥ specified values (mm) .....:		N/A
	d) measured values ≥ specified values (mm) .....:		N/A
	e) measured values ≥ specified values (mm) .....:		N/A
	6. Reinforced or double insulation: measured values ≥ specified values (mm) :		N/A
	7. Distance through insulation:	(see appended table)	P
	a) measured values ≥ specified values (mm) .....:		P
	b) measured values ≥ specified values (mm) .....:		N/A
	c) measured values ≥ specified values (mm) .....:		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
BB.26.102	Values of IEC 61558-2-16 applicable for frequency up to 3 MHz (EN 61558-2-16:09)		P
	For frequency above 3 MHz clause 7 of IEC 60664-4 is applicable (high frequency testing)		N/A
BB.26.103	Clearance (EN 61558-2-16:09)		P
	a.) Clearance for frequency ≥ 30 kHz according figure 101 two determinations are necessary:	<100 kHz	P
	– determination based on peak working voltage according Table 104:		P
	Peak working voltage	<600 Vpk	P
	Basic insulation: required / measured	Table 13 applied	P
	Double or reinforced insulation: required / measured value	Table 13 applied	P
	– and alternative if applicable for approximately homogeneous field according to Table 102		N/A
	Peak working voltage		N/A
	Basic insulation: required / measured		N/A
	Double or reinforced insulation: required / measured value		N/A
	– determination based on measured r.m.s. working voltage according Tables 13, C1 and D1 (see clause 26.101)	278 V	P
	The minimum clearance is the greater of the two values.	Table 13 applied	P
	b.) Clearance for frequency ≤ 30 kHz according figure 101 two determinations are necessary:		N/A
	– determination based on peak working voltage with recurring peak voltages according Table 103:		N/A
	– determination based on measured r.m.s. working voltage according Tables 13, C1 and D1 (see clause 26.101)		N/A
	The minimum clearance is the greater of the two values.		N/A
BB.26.104	The working voltages of Table 102, 103 and 104 are peak voltages including µsec peaks EN 61558-2-16:09)		N/A
	The working voltage according to Table 13 of part 1 are r.m.s. voltages		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
BB.26.105	Creepage distances		P
	Two determinations of creepage distances are necessary (see Figure 102)		P
	– determination based on measured peak working voltage according Tables 105 to 110		P
	Peak working voltage	<600 Vpk	P
	Pollution degree	P2	P
	Basic or supplementary insulation: required / measured	(see appended table)	P
	Double or reinforced insulation: required / measured value	(see appended table)	P
	– determination based on measured r.m.s. working voltage according Tables 13, C1 and D1 (see clause 26.101)	278 V	P
	If the values based on table 105 to 110 are lower than the relevant values in Tables 13, C.1 or D.1, the higher values shall be applicable	Table 13 applied	P
BB.26.106	Distance through insulation (EN 61558-2-16:09)		P
	Instead of partial discharge with high frequency voltage the test of the distance and the calculation of the electric field is applicable under the following conditions:		P
	– the max. frequency is < 10 MHz	<100 kHz	P
	– the field strength approximately comply with Figure 103		P
	– no voids or gaps are present in between the solid insulation		N/A
	For thick layers d1 $\geq$ 0,75 the peak value of the field strength is $\leq$ 2 kV/mm		N/A
	For thin layers d2 $\leq$ 30 µm the peak value of the field strength is $\leq$ 10 kV/mm		N/A
	For d1 > d > d2 equation (1) is used for calculation the field strength		P
BB.26.107 (A1)	For transformers with FIW wires the following test is required		N/A
	•10 cycles are required		N/A

IEC 61558-2-16 + A1:2013 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
	•68 h test at max heating temperature + 10°C or test at max. allowed winding temperature based on the insulation class (required in table 1) + 10°C		N/A
	•1 h at 25° C		N/A
	•2 h at 0° C		N/A
	•1 h at 25° C – (next cycle start again with 68 h max winding temp + 10)		N/A
	•during the 10 cycles test 2 x working voltage is connected between PRI and SEC		N/A
	•after 10 cycle test 2 transformers are subjected to the 17.2 test for 48 h and direct after the 48 h the dielectric strength test of 18.3 (100 % test voltage) is done		N/A
	•after the 10 cycle test the third sample is tested at the end of the last cycle in the hot position with the dielectric strength test of 18.3 (100 % test voltage)		N/A
	•the partial discharge test according to 18.101 is done after the cycling test and after the high voltage test, if the **peak** working voltage is >750 V		N/A
BB.27	**RESISTANCE TO HEAT, FIRE AND TRACKING**		N/A

IEC 61558-2-16 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
BB.E	**ANNEX E , GLOW WIRE TEST**		N/A
	The test is required according to IEC 60695-2-10 and IEC 60695-2-11 with the following additions:		N/A
BB.E.1	Clause 6, ”Severities” of IEC 6095-2-11, apply with the temperature stated in 27.3 of IEC 61558-1		N/A
BB.E2	Clause 8, ”Conditioning”, of IEC 60695-2-11 apply, preconditioning is required		N/A
BB.E3	Clause 10, ”Test Procedure”, of IEC 60695-2-11apply, The tip of the glow wire is applied to the flat side of the surface.		N/A
BB.F	**ANNEX F, REQUIREMENTS FOR MANUALLY OPERATED SWITCHES WHICH ARE PARTS OF THE TRANSFORMER**		N/A
BB.H	**ANNEX H, ELECTRONIC CIRCUITS** (IEC 61558-1)		N/A
BB.K	**ANNEX K, INSULATED WINDING WIRES FOR USE AS MULTIPLE LAYER INSULATION**		P
BB.K.1	Wire construction:		P
	• insulated winding wire for basic or supplementary insulation (see 19.12.3)		N/A
	• insulated winding wire for reinforced insulation (see 19.12.3)		P
	• splid circular winding wires and stranded winding wires with 0,05 to 5 mm diameter		N/A
	• spirally wrapped insulation - overlapping		N/A
BB.K.2	Type tests		P
BB.K.2.1	General Tests between ambient temperature between 15° C and 35° C and at an humidity between 45% and 75 %		P
BB K.2.2	Electric strength test		P
BB K.2.2.1	Solid circular winding wires and stranded winding wires		P
	Test samples prepared according to clause 4.4.1 of IEC 60851-5:2008 (twisted pair)		P
	Dielectric strength test: 6 kV for reinforced insulation		P
	Dielectric strength test: 3 kV for basic or supplementary insulation		N/A

IEC 61558-2-16 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
BB K.2.2.2	Square or rectangular wires .		N/A
	Test samples prepared according to clause 4.7.1 of IEC 60851-5:2008		N/A
	Dielectric strength test: 5,5 kV for reinforced insulation		N/A
	Dielectric strength test: 2,75 kV for basic or supplementary insulation		N/A
BB K.2.3	Flexibility and adherence		P
	Claus 5.1 in Test 8 of IEC 60851-3:2009 shall be used		P
	Test samples prepared according to clause 5.1.1.4 of IEC 60851-3:2009		P
	Dielectric strength test: 5,5 kV for reinforced insulation		P
	Dielectric strength test: 2,75 kV for basic or supplementary insulation		N/A
	Mandrel diameter according table K.1		P
	The tension to the wire during winding on mandrel is 118 N/mm² (118 MPa)		P
BB.K.2.4	Heat shock		P
	Test samples prepared according to 3.1.1 (in Test 9) of IEC 60851-6:1996		P
	• high voltage test immediately after this test		P
	•Dielectric strength test: 5,5 kV for reinforced insulation		P
	•Dielectric strength test: 2,75 kV for basic or supplementary insulation		N/A
BB.K.2.5	Retention of dielectric strength after bending (test as specified under test 13 of 4.6.1 c) of IEC 60 851-5)		P
	• high voltage test immediately after this test •Dielectric strength test: 5,5 kV for reinforced insulation •Dielectric strength test: 2,75 kV for basic or supplementary insulation		P
BB.K.3	Testing during manufacturing		P
BB.K.3.1	General Tests as subjected in K.3.2 and K.3.3		P

IEC 61558-2-16 Annex BB			
Clause	Requirement + Test	Result - Remark	Verdict
BB K.3.2	Routine test		P
	•Dielectric strength test: 4,2 kV for reinforced insulation		P
	•Dielectric strength test: 2,1 kV for basic or supplementary insulation		P
BB K.3.3	Sampling test		P
BB K.3.3.1	Solid circular winding wires and stranded winding wires		P
	Test with a twisted pair, prepared according clause 4.4.1 of IEC 60851-5:2008		P
	•Dielectric strength test: 6 kV for reinforced insulation		P
	•Dielectric strength test: 3 kV for basic or supplementary insulation		N/A
BB K.3.3.2	Square rectangular wire		N/A
	Samples prepared according to clause 4.7.1 of IEC 60851-5:2008		N/A
	•Dielectric strength test: 5,5 kV for reinforced insulation		N/A
	•Dielectric strength test: 3 kV for basic or supplementary insulation		N/A
BB.U	**ANNEX U – INFORMATIVE – OPTIONAL TW – MARKING FOR TRANSFORMERS**		N/A
V	**ANNEX V, SYMBOLS TO BE USED FOR THERMAL CUT-OUTS**		N/A

BB.26.2 TEST A	TABLE: CREEPAGE DISTANCES AND CLEARANCES AND DISTANCES THROUGH INSULATION				N/A
	Test with three special prepared specimens with uninsulated wires, without potting or impregnation				
cycles with 2 x working voltage between pri / sec	68 h at the temperature acc. Cl. 14 (min. 85 °C)	1 hour 25 °C	2 hour 0 °C	1 hour 25 °C	
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

BB.26.2 TEST B	TABLE: CREEPAGE DISTANCES AND CLEARANCES AND DISTANCES THROUGH INSULATION				N/A
	Test with three specially prepared specimens with potted – P1 values are required				
cycles with 2 x working voltage between pri / sec	68 h at the temperature acc. Cl. 14 (min. 85 °C)	1 hour 25 °C	2 hour 0 °C	1 hour 25 °C	
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

BB.26.2 TEST C	TABLE: CREEPAGE DISTANCES AND CLEARANCES AND DISTANCES THROUGH INSULATION				N/A
	Test with three specially prepared specimens with potting (only dti is required)				
cycles with 2 x working voltage between pri / sec	68 h at the temperature acc. Cl. 14 (min. 85 °C)	1 hour 25 °C	2 hour 0 °C	1 hour 25 °C	
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

BB.26.107 61558-2-16/A1	TABLE: CREEPAGE DISTANCES AND CLEARANCES AND DISTANCES THROUGH INSULATION				N/A
	Test for transformers, use FIW-wire				
cycles with 2 x working voltage between pri / sec	68 h at the temperature acc. Cl. 14 (min. 85 °C)	1 hour 25 °C	2 hour 0 °C	1 hour 25 °C	
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

BB 18.2	TABLE: insulation resistance measurements	P

Insulation resistance R between:	R (MΩ)	Required R (MΩ)
Primary-Secondary (reinforced)	> 100 MΩ	5 MΩ
Input circuit – all other input circuits together	> 100 MΩ	2 MΩ
Output circuit – all other output circuits together	> 100 MΩ	2 MΩ

Supplementary information:

BB 18.3	TABLE: Dielectric Strength	P

Test voltage applied between:	Test potential applied (V)	Breakdown / flashover (Yes/No)
Primary-Secondary (reinforced)	2927 V	No
Input circuit – all other input circuits together	1463 V	No

Supplementary information: Working voltage 278 V, mains voltage 240 V.

BB 26	TABLE: Clearance And Creepage Distance Measurements	P

clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
Primary - Secondary	<600	278	3,0	>8,4	5,6	>8,4

Supplementary information:

BB 26	TABLE: Distance Through Insulation Measurements	P

Distance through insulation di at/of:	U r.m.s. (V)	Test voltage (V)	Required di (mm)	di (mm)
Primary - Secondary	278 V	1463 V	*	0,11

Supplementary information:

*) required one layer for mechanical protection (basic) due to used secondary TIW