Prüfbericht-Nr.: *Test Report No.:*	**15091276 004**	**Auftrags-Nr.:** *Order No.:*	154229960	Seite 1 von 91 *Page 1 of 91*
Kunden-Referenz-Nr.: *Client Reference No.:*	341559	**Auftragsdatum:** *Order date:*	2017-03-02	
Auftraggeber: *Client:*	**NINGBO CITY GENGXIN APPLIANCE INDUSTRY CO., LTD.** *Xinpu Town, Cixi, Zhejiang 315322 P.R. China*			
Prüfgegenstand: *Test item:*	Fireplace Heater			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	EFxSP,EFxSPB,EFxSK,EFxSKB,EFxSLB,EFxSL,EFxK,EFxKB,EFzL,EFxSP-DZ, EFxSPB-DZ, EFxSK-DZ,EFxSKB-DZ,EFxSLB-DZ,EFxSL-DZ,EFxK-DZ,EFxKB-DZ, EFySP,EFySPB,EFySK,EFySKB,EFySLB,EFySL, EFyK,EFyKB,EFySP-DZ, EFySPB-DZ,EFySK-DZ,EFySKB-DZ,EFySLB-DZ,EFySL-DZ, EFyK-DZ,EFyKB-DZ, **EF431SLY-V** (x=420, 421, 422, 423, 425, 430, 431; y=450, 451, 452, 453, 455, 456; z=490, 491, 492, 493, 494)			
Auftrags-Inhalt: *Order content:*	GS Approval			
Prüfgrundlage: *Test specification:*	EN 60335-1:2012+A11 EN 62233 :2008	EN 60335-2-30:2009+A11 AfPS GS 2014 :01		

Wareneingangsdatum: *Date of receipt:*	2017-03-21
Prüfmuster-Nr.: *Test sample No.:*	A000503900
Prüfzeitraum: *Testing period:*	2017-03-22
Ort der Prüfung: *Place of testing:*	TÜV Rheinland (Shanghai) Co., Ltd.
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shanghai) Co., Ltd.
Prüfergebnis*: *Test result*:*	Pass

geprüft von / *tested by*:

Datum *Date*	Name/Stellung *Name/Position*	Unterschrift *Signature*
2017.03.31	Shi Honghui/PE	

kontrolliert von / *reviewed by*:

Datum *Date*	Name/Stellung *Name/Position*	Unterschrift *Signature*
2017.03.31	Yi Zhuangcheng/TC	

Sonstiges / *Other*:
This report is based on 15091276 001 to 003, and is created for additional model.
Foreseeable use was considered. Currently neither a safeguard clause procedure has been invoked nor is an increase in accidents known for these products.
This report contains IEC report pages from 2 to 84, EN deviation report pages from 85 to 91.
CDF 1 dated on 2017-03-31 replaces CDF 1 dated on 2017-01-17.
Attachment 1: Test equipments list (1 page)
Attachment 2: Acceptance test report 50074994 001 for speaker used at fireplace heater (27 pages)

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *Test item complete and undamaged*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT
IEC 60335-2-30
Safety of household and similar electrical appliances
Part 2: Particular requirements for room heaters

Report Number. ..... :	**15091276 004**
Date of issue ..... :	See cover page
Total number of pages ..... :	See cover page
Applicant's name ..... :	**NINGBO CITY GENGXIN APPLIANCE INDUSTRY CO., LTD.**
Address ..... :	Xinpu Town, Cixi, Zhejiang 315322 P.R. China
Test specification:	
Standard ..... :	IEC 60335-2-30 (Fifth edition) :2009 used in conjunction with IEC 60335-1:2010 (Fifth Edition)
Test procedure ..... :	GS Approval
Non-standard test ethod ..... :	N/A
Test Report Form No. ..... :	IEC60335_2_30J
Test Report Form(s) Originator .... :	LCIE
Master TRF ..... :	Dated 2013-09

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.

Test item description ..... :	Fireplace Heater
Trade Mark ..... :	N/A
Manufacturer ..... :	Same as applicant
Model/Type reference ..... :	EFxSP,EFxSPB,EFxSK,EFxSKB,EFxSLB,EFxSL,EFzL, EFxSP-DZ,EFxSPB-DZ, EFxSK-DZ,EFxSKB-DZ,EFxSLB-DZ, EFxSL-DZ,EFxK,EFxKB,EFxK-DZ,EFxKB-DZ,EFySP,EFySPB, EFySK,EFySKB,EFySLB,EFySL,EFySP-DZ, EFySPB-DZ, EFySK-DZ,EFySKB-DZ,EFySLB-DZ, EFySL-DZ,EFyK,EFyKB, EFyK-DZ,EFyKB-DZ; **EF431SLY-V** (x=420, 421, 422, 423, 425, 430, 431; y=450, 451, 452, 453, 455, 456; z=490, 491, 492, 493, 494)
Ratings ..... :	See rating labels

Testing procedure and testing location:			
☒	**Testing Laboratory:**	TÜV Rheinland (Shanghai) Co., Ltd	
Testing location/ address ..... :		No. 177,178, Lane 777 West Guangzhong Road, Jing'an District, Shanghai 200072, P.R. China.	
☐	**Associated Laboratory:**		
Testing location/ address ..... :			
	Tested by (name + signature) ..... :	See cover page	
	Approved by (name + signature).. :	See cover page	
☐	**Testing procedure: TMP**		
Testing location/ address ..... :			
	Tested by (name + signature) ..... :		
	Approved by (name + signature).. :		
☐	**Testing procedure: WMT**		
Testing location/ address ..... :			
	Tested by (name + signature) ..... :		
	Witnessed by (name + signature). :		
	Approved by (name + signature).. :		
☐	**Testing procedure: SMT**		
Testing location/ address ..... :			
	Tested by (name + signature) ..... :		
	Approved by (name + signature).. :		
	Supervised by (name + signature) :		
☐	**Testing procedure: RMT**		
Testing location/ address ..... :			
	Tested by (name + signature) ..... :		
	Approved by (name + signature).. :		
	Supervised by (name + signature) :		

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

See cover page

Summary of testing:

For report 15091276 001:
EF421SLB, EF450SLB, EF493L were selected for all type test.
EF421SPB and EF450SKB were subjected to tests of 10-13.
EF450SKB was subjected to tests of Clause 17;
EF450SK was subjected to tests of Clause 19.11, 19.12
The laser radiant power test of LED lamp was performed and passed according to IEC/EN 62471, thermal test and fault conditions for PCB of LED lamp have been with the appliance and passed.
Test results fulfil the requirements of the standard.

For report 15091276 002:
Construction check is performned on alternative main PCB.

For report 15091276 003:
EF421SLB-DZ, EF450SLB-DZ was subjected to tests of 10-13, 19 and construction check.

Tests performed (name of test and test clause):

EF431SLY-V is subjected to construction check.

Testing location:

TÜV Rheinland (Shanghai) Co., Ltd.
No. 177,178, Lane 777 West Guangzhong Road, Jing'an District, Shanghai 200072, P.R. China.

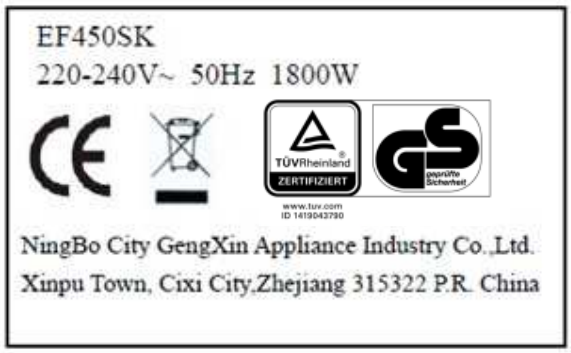
Summary of compliance with National Differences

List of countries addressed:

EU Group Differences

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.



1. EFxSP,EFxSPB,EFxSK,EFxSKB,EFxSLB,EFxSL,EFzL,EFxSP-DZ,EFxSPB-DZ,EFxSK-DZ, EFxSKB-DZ,EFxSLB-DZ,EFxSL-DZ,EFxK,EFxKB,EFxK-DZ,EFxKB-DZ,**EF431SLY-V** share the same rating label with EF420SK, except type description on rating label;
2. EFySP,EFySPB, EFySK,EFySKB,EFySLB,EFySL,EFySP-DZ,EFySPB-DZ,EFySK-DZ,EFySKB-DZ, EFySLB-DZ,EFySL-DZ,EFyK,EFyKB, EFyK-DZ,EFyKB-DZ share the same rating label with EF450SK, except type description on rating label

(x=420, 421, 422, 423, 425, 430, 431; y=450, 451, 452, 453, 455, 456; z=490, 491, 492, 493, 494)

Test item particulars.....:	Fireplace Heater
Classification of installation and use.....:	Fixed appliance for EFxSP,EFxSPB,EFxSK, EFxSKB,EFxSLB,EFxSL,EFzL,EFxK,EFxKB, EFySP,EFySPB,EFySK,EFySKB,EFySLB,EFySL, EFyK,EFyKB; **EF431SLY-V** Portable appliance for EFxSP-DZ,EFxSPB-DZ, EFxSK-DZ,EFxSKB-DZ,EFxSLB-DZ, EFxSL-DZ, EFxK-DZ,EFxKB-DZ,EFySP-DZ,EFySPB-DZ, EFySK-DZ,EFySKB-DZ, EFySLB-DZ,EFySL-DZ, EFyK-DZ,EFyKB-DZ
Supply Connection.....:	Fixed power cord (Type Y attachment)
.....:	
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 .....:	See cover page
Date (s) of performance of tests.....:	See cover page
General remarks:	
The test results presented in this report relate only to the object tested. **This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.** **"(see Enclosure #)" refers to additional information appended to the report.** **"(see appended table)" refers to a table appended to the report.** **Throughout this report a ☒ comma / ☐ point is used as the decimal separator.**	
Manufacturer's Declaration per sub-clause 6.2.5 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) ..... :	NINGBO CITY GENGXIN APPLIANCE INDUSTRY CO., LTD. Xinpu Town, Cixi, Zhejiang 315322 P.R. China
General product information:	
For report 15091276 001 issued on 2016-04-19: All models are fireplace heaters for household use only. The appliance is intended to be used as wall-mounted appliance. The heating assembly consists of two sets of heating element and a fan motor. A non-self-resetting thermal cut-out that is reset by disconnection of the supply mains was used on the heating assembly. LED PCB fixed in flame roller combined with a synchronous motor is used to simulate the flame. The relationship among them are described as below:	

1. The fireplace heater can be divided into three groups according to the size.

Group 1: EFxSLB, EFxSL, EFxSP, EFxSPB, EFxSK, EFxSKB.
Group 2: EFySLB, EFySL, EFySP, EFySPB, EFySK, EFySKB.
Group 3: EFzL.

(x=420, 421, 422, 423, 425, 430, 431; y=450, 451, 452, 453, 455, 456; z=490, 491, 492, 493, 494)

The models with suffix “S” stand for ultra-thin fireplace heater.
The models with suffix “L” stand for having the LED lights.
The models with suffix “B” stand for having background light.
The models with suffix “P” stand for original simulation of flame.
The models with suffix “K” stand for multi-color simulation of flame.
The models with suffix “PB” stand for original simulatin of flame and background light.
The models with suffix “KB” stand for multi-color simulation of flame and background light.

2. The types in each group have the same construction except for the appearance and decoration.

3. The heating assembly used on Group 1 and Group 3 have the same rating, but different size.
The heating assembly used on Group 2 and Group 3 have the same size, but different rating.

4. Group 1 and Group 3 have the same control PCB. EFxSL, EFySL and EFzL have the same main PCB.

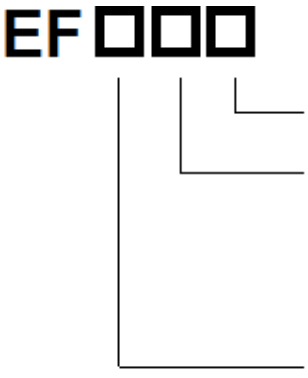
The main PCB has the same electronic circuit basically except for the connector & components for LED light.

For report 15091276 002 issued on 2016-05-10:

Alternative main PCB is added, compared with original one, only three resistors were removed.

For report 15091276 003 issued on 2017-01-17:

Additional models EFxSP-DZ,EFxSPB-DZ, EFxSK-DZ,EFxSKB-DZ,EFxSLB-DZ, EFxSL-DZ,EFxK,EFxKB, EFxK-DZ,EFxKB-DZ,EFySP-DZ,EFySPB-DZ,EFySK-DZ,EFySKB-DZ,EFySLB-DZ,EFySL-DZ,EFyK, EFyKB,EFyK-DZ,EFyKB-DZ(x=420, 421, 422, 423, 425, 430, 431; y=450, 451, 452, 453, 455, 456) are added. Differences betwwen original models see below:



Blank: original models
-DZ: with stand foot, other construction is same as original models

K: same as SL, except the color of LED lamps are changed from orange to colorful;
KB: same as SLB, except the color of LED lamps are changed from orange to colorful;
SL/SLB/SP/SPB/SK/SKB same as before

x=420, 421, 422, 423, 425, 430, 431;
y=450, 451, 452, 453, 455, 456

For report 15091276 004:

Additional model EF431SLY-V was added. It is based on EF431SL, compared original model, EF431SLY-V has sound module, and the remote controller of EF431SLY-V is different. Other construction is the same.
Some alternative components were added, details refer to bold face in table 24.1.

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict

5	GENERAL CONDITIONS FOR THE TESTS		P
	Tests performed according to cl. 5, e.g. nature of supply, sequence of testing, etc.		P
5.2	Heaters intended to be installed adjacent to each other, tests made with sufficient number. (IEC 60335-2-30)		N/A
5.3	Appliance used for tests of Cl. 19 also used for the test of Cl. 22.24 (IEC 60335-2-30)		P
	Test of Cl. 22.24 carried out after test of Cl. 29 (IEC 60335-2-30)		P
5.6	Thermostats short-circuited if sensible to room air temperature (IEC 60335-2-30)	No such thermostat	N/A
	However, if the thermostat can be set so that it does not cycle, it is not short-circuited, unless otherwise specified (IEC 60335-2-30)		N/A
5.10	Heaters intended to be installed adjacent to each other, installed in accordance with instructions (IEC 60335-2-30)		N/A
5.101	Heaters intended to be used as both portable and fixed appliances are subjected to the tests applicable to both types (IEC 60335-2-30)		N/A
5.102	If the heater is a combination of two or more types, tests relevant for each type (IEC 60335-2-30)		N/A
	Heaters for wall-mounting are tested both as heaters for mounting high level and as heaters for mounting other than at high level (IEC 60335-2-30)		N/A
	Unless the installation instructions state that the heater has to be installed at least 1,8m above the floor. (IEC 60335-2-30)		N/A

6	CLASSIFICATION		P
6.1	Protection against electric shock: Class 0, 0I, I, II, III .....:	Class I	P
6.2	Protection against harmful ingress of water		P
	Heaters intended for use in greenhouses or building sites shall be at least IPX4 (IEC 60335-2-30)		N/A

7	MARKING AND INSTRUCTIONS		P
7.1	Rated voltage or voltage range (V) .....:	220-240V	P
	Symbol for nature of supply, or .....:	~	P
	Rated frequency (Hz).....:	50Hz	P
	Rated power input (W):.....:	See rating labels	P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Rated current (A) .....:		N/A
	Manufacturer's or responsible vendor's name, trademark or identification mark .....:	See rating labels	P
	Model or type reference.....:	See rating labels	P
	Symbol 5172 of IEC 60417, for Class II appliances		N/A
	IP number, other than IPX0 .....:		N/A
	Symbol IEC 60417-5180, for class III appliances, unless		N/A
	the appliance is operated by batteries only		N/A
	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
	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		N/A
	Heaters intended to be filled with liquid by the user shall be marked with max. and min. levels (IEC 60335-2-30)		N/A
	Heaters shall be marked: WARNING "Do not cover" - or with the symbol 5641 of IEC 60417-1 except for colours (IEC 60335-2-30)		P
	This Marking is not required for- (IEC 60335-2-30)		N/A
	- Heaters for mounting high level; (IEC 60335-2-30)		N/A
	- visible glowing radiant heaters (IEC 60335-2-30)		N/A
	- heaters constructed so that they cannot be covered: (IEC 60335-2-30)		N/A
	- heaters also intended to dry clothes and witch comply with IEC 60335-2-43 (IEC 60335-2-30)		N/A
	-heaters for mounting under benches (IEC 60335-2-30)		N/A
	Heaters having a fireguard that is intended to be removed for transportation or storage shall be marked to state that the heater must not be operated without this guard in place (IEC 60335-2-30)		N/A
	For ceiling mounting heat lamp appliances, the maximum rated wattage and type of each lamp shall be marked (IEC 60335-2-30)		N/A
7.2	Warning for stationary appliances for multiple supply		N/A
	Warning placed in vicinity of terminal cover		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen		P
	Different rated values marked with the values separated by an oblique stroke		N/A
7.4	Appliances adjustable for different rated voltages, the voltage setting is clearly discernible		N/A
	Requirement met if frequent changes are not required and the rated voltage 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 is related to the arithmetic mean value of the rated voltage range		P
	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	V, W, Hz	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		N/A
	Units of physical quantities and their symbols according to international standardized system		P
	Symbol 5641 of IEC 60417-1 (do not cover) is used except for colours (IEC 60335-2-30)		N/A
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply		N/A
7.8	Except for type Z attachment, terminals for connection to the supply mains indicated as follows:		P
	- marking of terminals exclusively for the neutral conductor (N)		N/A
	- marking of protective earthing terminals (symbol 5019 of IEC 60417)		P
	- marking not placed on removable parts		P
7.9	Marking or placing of switches which may cause a hazard		P
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means.....:		P
	This applies also to switches which are part of a control		P
	If figures are used, the off position indicated by the figure 0		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		P
7.11	Indication for direction of adjustment of controls		P
7.12	Instructions for safe use provided		P
	Details concerning precautions during user maintenance		P
	The instructions state that:		P
	- 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	Replaced by EN 60335-1: 2012	N/A
	- children being supervised not to play with the appliance	Replaced by EN 60335-1: 2012	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
	Instructions for safe use provided: ..... (IEC 60335-2-30)		P
	- If Symbol 5641 of IEC 60417-1 (do not cover) is marked on the appliance, its meaning is explained. (IEC 60335-2-30)		P
	-For heaters marked ”Do not cover” (or with symbol) contain the substance of: In order to avoid overheating, do not cover the heater (IEC 60335-2-30)		P
	-Statement: heater is not located immediately below a socket-outlet (IEC 60335-2-30)		P
	-Statement for heaters with heating elements in direct contact with accessible panel made of glass, ceramic or similar material , includes the following warning: The heater must not be used if the glass *(or ceramic or similar material*) panels are damaged (IEC 60335-2-30)		N/A
	-Statements for visibly glowing radiant heaters, other than heaters for mounting at high level, includes the substance of following: Do not use the heater with a programmer, timer or any other device that switches the heater on automatically (IEC 60335-2-30)		N/A
	-have a fireguard that can be partly removed without the aid of a tool includes the substance of following:..... (IEC 60335-2-30)		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	The fireguard of this heater is intended to prevent direct access to heating elements and must be in place when the heater is used.		N/A
	The fireguard does not give full protection for young people and infirm persons		N/A
	-Statements for portable heaters : Do not use this heater in the immediate surroundings of a bath, a shower or a swimming pool (IEC 60335-2-30)	For models with suffix “-DZ”	P
	-Statements for visibly glowing radiant heaters: shall be provided for cleaning the reflector, if appropriate (IEC 60335-2-30)		N/A
	-Statement: shall be provided for replacing the lamps of fuel-effect heaters (IEC 60335-2-30)		N/A
	-Statements for oil-filled radiators: ..... (IEC 60335-2-30)		N/A
	- this heater is filled with a precise quantity of special oil. Repairs requiring opening of the oil container are only to be made by the manufacturer or his service agent who should be contacted if there is an oil leakage		N/A
	- regulations concerning the disposal of oil when scrapping the appliance have to be followed		N/A
	Instructions shall be provided for routine cleaning of ceiling mounted heat lamp appliances including removal of covers if applicable (IEC 60335-2-30)		N/A
	The instructions for room heaters without a built-in room thermostat or thermal control limiting the room temperature shall include the substance of the following: WARNING: This heater is not equipped with a device to control the room temperature. Do not use this heater in small rooms when they are occupied by persons not capable of leaving the room on their own, unless constant supervision is provided.		P
7.12.1	Sufficient details for installation supplied		P
	For an appliance intended to be permanently connected to the water mains and not connected by a hose-set, this is stated		N/A
	Instructions for heaters intended to be fixed by screws or other give details on the method of fixing (IEC 60335-2-30)		P
	Instructions for visibly glowing radiant heaters warn about the possible danger of installation close to curtains and other combustible materials (IEC 60335-2-30)		N/A
	Instructions for heaters for mounting at high level state that the heater must be installed at least 1,8 m above the floor (IEC 60335-2-30)	Not intended to be installed high level	N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Instructions for fixed heaters likely to be used in a bathroom: that the heater is to be installed so that switches and other controls cannot be touched by a person in the bath or shower (IEC 60335-2-30)	Not used in bathroom	N/A
	Statement for heaters with rollers or feet delivered separately: how they have to be fixed (IEC 60335-2-30)		P
	Statement for heaters intended to be installed in wardrobes or ceiling: for proper installation in a wardrobe or in the ceiling (IEC 60335-2-30)		N/A
	The installation instructions for ceiling mounted heat lamp appliances, recessed into a ceiling place or cavity shall give details for proper installation in the ceiling and shall state the substance of the following:..... (IEC 60335-2-30)		N/A
	-The appliance shall, under no circumstances, be covered with insulating material or similar material.		N/A
	-Regulations concerning the discharge of air have to be fulfilled.		N/A
	-Joists, beams and rafters shall not be cut or notched to install the appliance		N/A
	The installation instructions for heaters for mounting under church benches shall state: ..... (IEC 60335-2-30)		N/A
	-The heater is intended for installation under benches that are fixed in position		N/A
	- The minimum distance between the underside of the installed heater and the floor		N/A
	-The minimum distances of the relevant surfaces of the heaters to the front and rear edge of the underside of the bench which shall be not less than 50 mm		N/A
	The installation instructions for heaters intended to be built into the floor and that incorporate a floor level grille shall state the substance of the following: (IEC 60335-2-30) After installation, ensure that any drain holes are free from obstruction.		N/A
	Ensure that any floor level grille has a mechanical strength consistent with the national building codes. (IEC 60335-2-30)		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 stating that the fixed wiring must be protected		N/A
7.12.4	Instructions for built-in appliances:		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	- dimensions of space		N/A
	- dimensions and position of supporting means		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		P
	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		P
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:		N/A
	- 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
7.13	Instructions and other texts in an official language		P
7.14	Marking clearly legible and durable		P
	The height of the “Do not cover “ symbol shall be at least 15 mm (IEC 60335-2-30)		P
	The height of the words “Do not cover “ shall be at least 3 mm (IEC 60335-2-30)		N/A
	The height of the words relating to the maximum rated wattage and type of heat lamp shall be at last 6mm (IEC 60335-2-30)		N/A
7.15	Marking 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 60335-2-30			
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		P
	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		P
	Heaters for mounting at high level, indication of the different positions of switches visible from a distance of 1 m (IEC 60335-2-30)		N/A
	Marking concerning covering visible shall be visible after the heater has been installed. It shall not be placed on the bottom of, or on the back of, portable heaters. (IEC 60335-2-30)	For models with suffix “-DZ”	P
	Marking not placed on the back of portable heaters (IEC 60335-2-30)	For models with suffix “-DZ”	P
	Marking concerning removable fireguards visible before fitting the fireguard (IEC 60335-2-30)		N/A
	For ceiling mounted heat lamp appliances, the marking relating to the maximum rated wattage and type of heat lamp shall be visible when replacing a lamp in accordance with the instructions (IEC 60335-2-30)		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		P
	This requirement does not apply to live parts of screw-type or bayonet-type lampholders incorporated in ceiling mounted heat lamp appliances that are only accessible when the heat lamp is extracted (IEC 60335-2-30)		N/A
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: no contact with live parts		P
	Detachable fireguards not removed if their removal requires the use of a tool, provided that (IEC 60335-2-30)		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	- the instructions state that the plug must be removed from the socket-outlet before cleaning the reflector, or		N/A
	- the heater incorporates a switch having contact separation all poles that provides full disconnection under overvoltage category III conditions		N/A
8.1.2	Use of test probe 13 of IEC 61032 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		P
8.1.4	Accessible part not considered live if:		P
	- 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	For remote controller	P
	- or separated from live parts by protective impedance		N/A
	If protective impedance: d.c. current not exceeding 2 mA, and		N/A
	a.c. peak value not exceeding 0.7 mA		N/A
	- 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:		P
	- built-in appliances		N/A
	- fixed appliances		P
	- appliances delivered in separate units	For models with suffix “-DZ”	P
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		P
	Only possible to touch parts separated from live parts by double or reinforced insulation		P
	During user maintenance and after the removal of detachable parts during replacement of heat lamp, the basic insulation of internal wiring may be touched provided electrically equivalent to the insulation of cords complying with IEC 60227 or IEC 60245 (IEC 60335-2-30)		N/A
10	POWER INPUT AND CURRENT		P

IEC 60335-2-30			
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)	P
	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		P
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)	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 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	Placing and mounting of appliance	(IEC 60335-2-30)	P
	-Portable fan heaters	For models with suffix “-DZ”	P
	-Other heaters normaly placed on a floor		N/A
	-Fixed heater for mounting at high level		N/A
	-Other fixed heaters for wall mounting	For models without suffix “-DZ”	P
	-Heaters for ceiling mounting)		N/A
	-Heaters for mounting under benches		N/A
	- Built-in heaters		N/A
	- Fixed heater with opening at floor level, felt pad pushed flat into the opening		N/A
	-Heaters having an air-outlet grille intended to be recessed in a floor, a window-sill or similar		N/A
	-Appliance provided with an automatic cord reel		N/A
	-Appliance with cord storage devices, other than automatic cord reel intended to accommodate supply cord partially while the appliance is in operation		N/A
	-Ceiling mounted heat lamp appliances		N/A
	-Recessed ceiling mounted heat lamp appliances are mounted as near as possible to the walls		N/A
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	the windings makes it difficult to make the necessary connections		N/A
	Temperature rise of the felt pad (IEC 60335-2-30)		N/A
11.4	Heating appliances operated under normal operation at 1.15 times rated power input .....:		P
	If the temperature rise limits are exceeded in appliances incorporating motors, transformers or electronic circuits and the power input is lower than the rated power input, the test is repeated with the appliance supplied at 1.06 times rated voltage ..... (IEC 60335-2-30)		N/A
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage .....:		N/A
11.6	Combined appliances are operated as heating appliances.... (IEC 60335-2-30)		P
11.7	Operation until steady conditions established (IEC 60335-2-30)		P
11.8	Temperature rises monitored continuously and not exceeding the values in table 3 .....:	(see appended tables)	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
	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
	Sealing compound does not flow out		P
	Modification of temperature rise in table 3 (IEC 60335-2-30)		P
	Temperature rise limits of motors, transformers or components of electronic circuits and other parts may be exceed by 1.15 times rated power input (IEC 60335-2-30)		N/A
	Outer surface of liquid container of unvested liquid-filled radiators shall be at least 50 K less than the boiling point of liquid (IEC 60335-2-30)	Boiling-point: .. °C	N/A
	Temperature rise of surfaces shall not exceed the values in table 101 (IEC 60335-2-30)	(see appended table)	P
	-Heaters intended to be mounted under church benches, the temperature rise of surfaces accessible to the test rod shall not exceed 70K (IEC 60335-2-30)		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	-For heaters intended to be mounted under other benches, temperature rises not exceeding values in table 3, for parts that are held for short periods only (IEC 60335-2-30)		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 rated power input.....:		P
	Motor-operated appliances and combined appliances supplied at 1.06 times rated voltage.....:		N/A
	Protective impedance and radio interference filters disconnected before carrying out the tests		P
13.2	For class 0, class II and class III appliances, leakage current measured by means of the circuit described in figure 4 of IEC 60990		N/A
	For other appliances, a low impedance ammeter may be used		P
	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
	No breakdown during the tests		P
14	TRANSIENT OVERVOLTAGES		N/A
	Appliances withstand the transient overvoltages 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 of functional insulation		N/A
	In case of flashover of functional insulation, 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		N/A
	Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	No trace of water on insulation which can result in a reduction of clearances and creepage distances below values specified in clause 29		N/A
15.1.1	Appliances, other than IPX0, subjected to tests as specified in IEC 60529.....:		N/A
	Water valves containing live parts and that are incorporated 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		N/A
	Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board		N/A
	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		N/A
	However, 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		N/A
	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		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
	Appliances with type X attachment fitted with a flexible cord as described		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N/A
	Detachable parts removed		N/A
	Overfilling test with additional amount of water, 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 and creepage distances below values specified in clause 29		N/A
	Heaters intended to be built into the floor and having a grille or opening at or near to the floor level shall be constructed so that such spillage does not affect their electrical insulation..... (IEC 60335-2-30)		N/A
	The heater is installed as specified in 11.2, however the felt pad is not applied. The content of a container filled with approximately 10 l of water containing 1 % NaCl and 0,6 % rinsing agent as specified in Annex AA of IEC 60335-2-5 is poured steadily over the grille of the appliance at the most unfavourable place over a period of approximately 10 s.		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 and 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
	Humidity test for 48 h in a humidity cabinet	25° C, 95%RH,48H	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		N/A
	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.....:		P
	Three-phase appliances: test voltage 1.06 times rated voltage divided by √3 .....:		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Leakage current measurements	(see appended table)	P
	Limit values doubled if:		N/A
	- 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.....:		N/A
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)	P
	No breakdown during the tests		P
17	OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS		N/A
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use		P
	Appliance supplied with 1.06 or 0.94 times rated voltage and the most unfavourable short-circuit or overload likely to occur in normal use applied.....:		P
	Basic insulation is not short-circuited		P
	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		N/A
	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 or mechanical damage under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Heaters compliance is checked by the tests of Cl. 19.5, 19.6, 19.11, 19.12, 19.101 to 19.115, as applicable (IEC 60335-2-30)		P
	Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11		P
19.2	Test of appliance with heating elements with restricted heat dissipation; test voltage (V): power input of 0.85 times rated power input .....:		N/A
19.3	Test of 19.2 repeated; test voltage (V): power input of 1.24 times rated power input .....:		N/A
19.4	Test conditions as in cl. 11, any control limiting the temperature during tests of cl. 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 elements 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		N/A
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque or locking moving parts of other appliances		N/A
	Locked rotor, motor capacitors open-circuited or short-circuited, if required		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
	capacitor is of class P2 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
	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

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
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.....:		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 they comply with the conditions specified in 19.11.1		P
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8, unless		P
	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		P
	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:		P
	- the temperature of the windings do not exceed the values specified in table 8		P
	- 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		N/A
	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:		N/A
	- 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

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
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:		P
	- 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		P
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction in other parts of the appliance does not rely on the correct functioning of the electronic circuit		P
19.11.2	Fault conditions applied one at a time, the appliance operated under conditions specified in cl. 11, but supplied at rated voltage, the duration of the tests as specified:		P
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in 29		N/A
	b) open circuit at the terminals of any component		P
	c) short circuit of capacitors, unless they comply with IEC 60384-14	C2, C3, C5, C9, C11	P
	d) short circuit of any two terminals of an electronic component, other than integrated circuits. This fault condition is not applied between the two circuits of an optocoupler	D1, D2, D3, D4, RV1	P
	e) failure of triacs in the diode mode		N/A
	f) failure of an integrated circuit	U3	P
	g) failure of an electronic power switching device		N/A
	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
19.11.3	If the appliance incorporates a protective electronic circuit which operates to ensure compliance with clause 19, the relevant test is repeated with a single fault simulated, as indicated in a) to f) of 19.11.2		N/A
19.11.4	Appliances having a device with an off position obtained by electronic disconnection, or		P
	a device that can be placed in the stand-by mode,		P
	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		P
	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

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4		P
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3		P
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		P
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		P
	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		P
19.11.4.6	The appliance is subjected to voltage dips and interruptions in accordance with IEC 61000-4-11		P
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2		P
19.11.4.8	The appliance ins supplied at rated voltage and operated under normal operation. After 60s the power supply ins reduces to a level such that the appliance ceases to respond or a programmable component cease to operate		P
	The appliance continues to operate normally, or		P
	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) .....:	Fuse:1,0 A Measured current>>10A	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
	During Cl. 19.106, the temperature of motor windings shall not exceed the values in table 8 (IEC 60335-2-30)		P
	Insulation, other than of class III appliance, withstand the electric strength test of 16.3, the test voltage specified in table 4:		P
	- basic insulation .....:	1000V	P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	- supplementary insulation.....:	1750	P
	- reinforced insulation.....:	3000V	P
	After operation or interruption of a control, clearances and creepage distances across the functional insulation withstanding 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		N/A
	no failure of protective electronic circuits, if the appliance is still operable		N/A
	Appliances tested with an electronic switch in the off position or in the stand-by mode, do not become operational		P
	- do not become operational, or		P
	- 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:		N/A
	- 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. Contactors or relays contacts operating under the conditions of clause 11 short-circuited		P
	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		P
	If more than one relay or contactor operates in clause 11, they are short-circuited in turn		P
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
19.101	Heaters operated at 1.24 times rated power input, all thermal controls operated during the test of Cl. 11 short-circuited simultaneously (IEC 60335-2-30)	EF421SLB: 264,5V 2700W; EF450SLB: 266,4V 2430W; EF493L: 267,3V 2700W	P
19.102	Circular and similar portable heaters which emit heat in several directions are placed as close as possible to one of the walls of the test corner at 1.24 times rated power input (IEC 60335-2-30)		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
19.103	Tests specified for heaters, other than (IEC 60335-2-30)		P
	- heaters for mounting at high level except those intended to be installed in wardrobes (IEC 60335-2-30)		N/A
	- visibly glowing radiant heaters (IEC 60335-2-30)		N/A
	- portable fan heaters (IEC 60335-2-30)	For models with suffix “-DZ”	P
	Heaters operated as specified in Cl. 11 but covered with felt strips (IEC 60335-2-30)		P
	The temperature rise of the strips not exceeds 150 K . An over-shoot of 25K is allowed during the first hour .....(IEC 60335-2-30)	EF421SLB:: 152,9K during the first hour; EF450SLB: 96,4K during the first hour; EF493L:: 153,5K during the first hour Non-self-resetting thermal cut acted	P
	Heaters intended to be installed in wardrobes, including heaters for mounting at high level, comply with the test with any self-resetting thermal cut-out short-circuited..... (IEC 60335-2-30)		N/A
19.104	Built-in heaters, having air outlet in the floor, window-sill or similar locations, special conditions as specified, thermal controls operated during the test of Cl. 11 short-circuited ..... (IEC 60335-2-30)		N/A
	The temperature rise of the strips not exceeds 150 K . An over-shoot of 25K is allowed during the first hour ..... (IEC 60335-2-30)		N/A
19.105	Heaters having a liquid container to be filled by the user, tests specified in Cl. 11 but container empty (IEC 60335-2-30)		N/A
19.106	Fan heaters and other heaters, incorporating motors, tests specified in Cl. 11 but locked rotor and heaters supplied at rated voltage (IEC 60335-2-30)	Lock the fan motor, the non-self-resetting thermal cut on acted at once Max temperature of synchronous motor is 55,9°C for GX-EF450A, 44,2° C for 42TYJ until steady condition	P
19.107	Fan heaters with an enclosure substantially of non-metallic material, tests specified in Cl. 11 but the voltage at the terminal of the motor is supplied separately at its working voltage, thermal controls operated during the test of Cl. 11 short-circuited..... (IEC 60335-2-30)		P
19.108	Portable fan heaters, tests specified in Cl. 11. but a sheet of paper covered the air inlets for 4 h (IEC 60335-2-30)		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
19.109	Portable fan heaters, tests specified in Cl. 11 but air flow directed against a wall, thermal controls operated during the test of Cl. 11 short-circuited (IEC 60335-2-30)		P
	Maximum temperature rise (K) on the wall does not exceed 150 K (IEC 60335-2-30)		P
19.110	Portable visibly glowing radiant heaters, tests specified in Cl. 11 but radiation directed against a wall (IEC 60335-2-30)		N/A
	Maximum temperature rise (K) on the wall does not exceed 70 K (IEC 60335-2-30)		N/A
19.111	Visibly glowing radiant heaters, other than heaters for mounting at high level, tests specified in Cl. 11 but rated power input and a piece flannelette in contact with the fireguard. The flannelette shall not smoulder or ignite within 10 s (IEC 60335-2-30)		N/A
19.112	Portable heaters, tests specified in Cl. 11 but overturned position on a soft wood surface covered with a double layer cotton gauze. The cotton gauze or the wood surface shall not smoulder or ignite (IEC 60335-2-30)		P
	Surface of oil-filled radiators shall be at least 40 K lower than the boiling point (°C) of the oil, no deformation of container, leakage of oil or emission of flames (IEC 60335-2-30)	(see appended table) Boiling-point: .. °C	N/A
	Pressure in liquid-filled radiators (IEC 60335-2-30)	(see appended table)	N/A
	Fuel effect heaters intended to be placed in a fireplace not subjected to this test (IEC 60335-2-30)		N/A
19.113	Fan heaters having an enclosure substantially of non-metallic material, tests specified in Cl.11 but all self-resetting thermal cut-outs and controls which operated during the test of Cl. 11 short-circuited and the fan motor is stalled (IEC 60335-2-30)		N/A
19.114	Oil filled radiators, tests specified in Cl. 11 but at rated power input, the oil level is approximately 10 mm above the heating element and the container resealed (IEC 60335-2-30)		N/A
	Surface of container shall be at least 40 K lower than the boiling point of the oil (IEC 60335-2-30)	(see appended table)	N/A
19.115	Ceiling mounted heat lamp appliances tests specified in Cl. 11 but at the highest rated wattage heat lamps fitted as allowed by the construction. (IEC 60335-2-30)		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
20	STABILITY AND MECHANICAL HAZARDS		P
20.1	Portable heaters shall have adequate stability (IEC 60335-2-30)	For models with suffix “-DZ”	P
	Portable heaters placed: (IEC 60335-2-30)		P
	- most unfavourable normal position of use on a inclined plane of 15 °. The heater shall not overturn (IEC 60335-2-30)		P
	- on a horizontal plane with 5 N applied to the top. The heater shall not overturn (IEC 60335-2-30)		N/A
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury		P
	Protective enclosures, guards and similar parts are non-detachable, and		P
	have adequate mechanical strength		P
	Enclosures that can be opened by overriding an interlock are considered to be detachable parts		P
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard, by unexpected reclosure		N/A
	Not possible to touch dangerous moving parts with test probe		P
21	MECHANICAL STRENGTH		P
21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		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		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		N/A
	Compliance also checked by the tests of 21.101 and 21.102 (IEC 60335-2-30)		N/A
	For appliances with heating elements that are in direct contact with accessible glass panels, the impact energy of the blows applied to the panel is 2 J (IEC 60335-2-30)		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
	The insulation is tested as specified, unless		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	the thickness of supplementary insulation is at least 1 mm and reinforced insulation is at least 2 mm		P
21.101	Visibly glowing radiant heaters, other than heaters for mounting at high level, placed that the central part of the fireguard is horizontal - a mass of 5 kg having a flat base 100 mm placed for 1 min on the central part of the fireguard. The fireguard show no significant permanent deformation (IEC 60335-2-30)		N/A
21.102	Heaters having a part fixed to the wall or ceiling and another part hinged to it, fixed in accordance with the instructions - the hinged part fall away under its own weight five times - after test the heater compliance with Cl. 8.1 and Cl. 29.1 and show no damage (IEC 60335-2-30)		N/A
21.103	Panel heaters for ceiling mounting, suspension means shall have adequate strength - a load equal four times the mass of appliance suspended from the centre for 1 h - if suspension means rigid, torque of 2.5 Nm applied for 1 min in each direction - after tests suspension means shall show no significant deformation (IEC 60335-2-30)		N/A
22	CONSTRUCTION		P
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled		N/A
22.2	Stationary appliance: means to provide all-pole disconnection from the supply provided, the following means being available:		N/A
	- a supply cord fitted with a plug		P
	- a switch complying with 24.3		N/A
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided		N/A
	- an appliance inlet		N/A
	Single-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		N/A
	Applied torque not exceeding 0.25 Nm		N/A
	Pull force of 50 N 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		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Each pin subjected to a tork of 0.4Nm; the pins are not rotating unless rotating does not impair compliance with the standard		N/A
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 the pins of the plug, for appliances having a capacitor with rated capacitance exceeding 0,1µF, the appliance being disconnected from the supply at the instant of voltage peak		P
	Voltage not exceeding 34 V (V) :		P
22.6	Electrical insulation not affected by condensing water or leaking liquid		N/A
	Electrical insulation of Class II appliances not affected in case of a hose rupture or seal leak		N/A
	In case of doubt, test as described		N/A
22.7	Heaters containing liquid or gas shall be constructed that they withstand the pressure to occur during use -appliance subjected to twice the highest pressure during the tests of Cl. 19.101, 19.103 or 19.112 -after test there shall be no leakage of liquid or gas (IEC 60335-2-30)	Test pressure: ...Pa	N/A
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		N/A
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances, unless		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:		P
	- a non-self-resetting thermal cut-out is required by the standard, and		P
	- a voltage maintained non-self-resetting thermal cut-out is used to meet it		P
	Non-self-resetting thermal motor protectors have a trip-free action, unless		N/A
	they are voltage maintained		P
	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		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Obvious locked position of snap-in devices used for fixing such parts		P
	No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing		P
	Tests as described		P
22.12	Handles, knobs etc. fixed in a reliable manner		P
	Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible		P
	Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied		P
	Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied		N/A
22.13	Unlikely that handles, when gripped as in normal use, make the operators hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only	No handles	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 etc., liable 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, 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		P
	Requirement does not apply to rollers or feet, meets requirements of Cl. 19 without rollers or feet (IEC 60335-2-30)		N/A
22.18	Current-carrying parts and other metal parts resistant to corrosion under normal conditions of use		P
22.19	Driving belts not used as electrical insulation		N/A
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless material used is non-corrosive, non-hygroscopic and non-combustible		N/A
	Compliance is checked by inspection and, if necessary, by appropriate test		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated		P
	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		P
22.23	Oils containing polychlorinated biphenyl (PCB) not used		P
22.24	Bare heating elements shall be supported to prevent excessive displacement occurring during normal use. The rupture of the heating element shall not give rise to a hazard. Compliance is checked by inspection, after the bare heating conductor has been cut in the most unfavourable place. The string shall not break (IEC 60335-2-30)		P
22.25	Sagging heating conductors cannot come into contact with accessible metal parts		P
22.26	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		N/A
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		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		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		P
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

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
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 29and reinforced insulation designed or protected against deposition of dirt or dust		P
	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 material or beads alone not used as supplementary or reinforced insulation		N/A
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N/A
	Insulating material in which heating conductors are embedded is considered to be basic insulation and not reinforced insulation		N/A
22.33	Conductive liquids that are or may become accessible in normal use are not in direct contact with live parts		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 the shaft is not accessible when the part is removed		P
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		P
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of an insulation fault, they are either adequately covered by insulation material, or their accessible parts are separated from their shafts or fixings by supplementary insulation		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	This requirement does not apply to handles, levers and knobs on stationary appliances other than those of electrical components, provided they are either reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		P
	Insulating material covering metal handles, levers and knobs withstand the electric strength test of 16.3 for supplementary insulation		N/A
22.36	Handles continuously held in the hand in normal use are so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless 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		N/A
	the capacitors comply with 22.42		N/A
22.38	Capacitors not connected between the contacts of a thermal cut-out		P
22.39	Lamp holders used only for the connection of lamps		N/A
	For ceiling mounted heat lamp appliances, the insulating parts of lampholders used for the connection of replaceable heat lamp shall be ceramic (IEC 60335-2-30)		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
	Unless the appliance can operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation being fitted with a switch. The actuating member of the switch being easily visible and accessible		N/A
22.41	No components, other than lamps, containing mercury		P
22.42	Protective impedance consisting of at least two separate components		N/A
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited		N/A
	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		N/A
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

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.4 due to deformation as a result of an external force applied to the enclosure		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 shall 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	A control on the appliance being manually adjusted to the setting for remote operation before the appliance can be operated in this mode		N/A
	There is a visual indication showing that the appliance is adjusted for remote operation		N/A
	Manual setting and visual indication not necessary on appliances that can operate as follows, without giving rise to a hazard:		N/A
	- operate continuously,		N/A
	- operate automatically, or		N/A
	- be operated 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
22.101	Heaters other than heaters for mounting at high level, shall be guarded in order to prevent contact with heating elements (IEC 60335-2-30)		P
	Test probe 41 IEC 61032 applied with a force not exceeding 5N not touch the heating elements		P
	Fireguards shall have no openings which exceed		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	- a major dimension of 126 mm and a corresponding minor dimension of 12 mm, or		N/A
	- a major dimension of 53 mm and a corresponding minor dimension of 20 mm		N/A
	These dimensions also apply to any gap between the fireguard and its immediate surround. However, any apertures having a minor dimension of less than 5 mm are ignored.		N/A
22.102	Fireguards shall have a total open area not less than 50% of the surface area of the fireguard (IEC 60335-2-30)		N/A
22.103	Fireguards not completely removable without use of a tool (IEC 60335-2-30)		N/A
22.104	Appliance for wall mounting so constructed That they can be securely fixed to a wall (IEC 60335-2-30)		P
22.105	Accessible panels made of glass, ceramic or similar material in direct contact with heating elements shall withstand thermal shock (1 l water (15 ± 5)°C is directed onto the central part of the panel at a rate of 10 ml/s through a 5 mm diameter tube) The panel shall not be damaged (IEC 60335-2-30)		N/A
22.106	Portable appliances not have openings on the underside that would allow small items to penetrate and touch live parts (IEC 60335-2-30)	For models with suffix “-DZ”	P
22.107	Visibly glowing radiant heaters, after fixing to a wall or ceiling direction of radiation cannot be changed without the aid of a tool (IEC 60335-2-30)		N/A
22.108	Visibly glowing radiant heaters other than heaters for mounting at high level, incorporates not thermostats, timers or similar means which switch on heating elements automatically, unless at least one heating element is already visibly glowing.(IEC 60335-2-30)		N/A
22.109	Disconnection of supply by a switch in the OFF position shall not rely on electronic components (IEC 60335-2-30)		P
22.110	Heaters intended to be mounted under church benches: metal surfaces accessible to the 75mm diameter test rod shall have a non-metallic coating with a thickness of at least 50 microns (IEC 60335-2-30)		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 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Wire holes in metal well rounded or provided with bushings		P
	Wiring effectively prevented from coming into contact with moving parts		P
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges or corners		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 100 flexings for conductors flexed during user maintenance		N/A
	Electric strength test, 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 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		P
	No breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		P
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by clamping at both ends, or		P
	be such that it can only be removed by breaking or cutting		P
23.7	The colour combination green/yellow used only for earthing conductors		P
23.8	Aluminium wires not used for internal wiring		P
23.9	Stranded conductors not consolidated by soldering where they are subjected to contact pressure, unless		P
	the contact pressure is provided by spring terminals		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
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
	Components not tested and found to comply with relevant IEC standard for the number of cycles specified are tested in accordance with 24.1.1 to 24.1.6		P
	Components not tested and found to comply with relevant IEC standard, components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		P
	Lampholders and starterholders 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, complying with IEC 60384-14, or	Approved type	P
	tested according to annex F		N/A
24.1.2	Safety isolating transformers complying with IEC 61558-2-6, or		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	tested according to annex G		N/A
24.1.3	Switches complying with IEC 61058-1, the number of cycles of operation being at least 10 000, or		P
	tested according to annex H		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
	Switches operating during the test of Cl. 19.112: 300 (IEC 60335-2-30)		N/A
24.1.4	Automatic controls complying with IEC 60730-1 with relevant part 2. The number of cycles of operation being:		P
	- thermostats: 10 000		P
	- temperature limiters: 1 000		N/A
	- self-resetting thermal cut-outs: 10 000 (IEC 60335-2-30)		N/A
	-non-self-resetting thermal cut-outs operating during 19.112: 300 (IEC 60335-2-30)		N/A
	-for other non-self-resetting thermal cut-outs: 1 000 (IEC 60335-2-30)		N/A
	- voltage maintained non-self-resetting thermal cut-outs: 1 000		P
	- timers: 3 000		N/A
	- energy regulators: 10 000		N/A
	thermostats of liquid-filled radiators which operate during Cl. 11 to limit the surface temperature rise to 85 K: 100.000 (IEC 60335-2-30)		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
24.1.5	Appliance couplers complying with IEC 60320-1		N/A
	However, appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3		N/A
	Interconnection couplers complying with IEC 60320-2-2		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
24.1.6	Small lamp holders similar to E10 lampholders complying with IEC 60238, the requirements for E10 lampholders being applicable		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 IEC 62151		N/A
24.1.8	The relevant standard for thermal links is IEC 60691. 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		P
	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:		P
	- switches or automatic controls 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 having 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		N/A
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance and used accordingly		N/A
	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 42V.		N/A
	In addition, the motors are complying with the requirements of Annex I		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
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:		N/A
	- the capacitors are of class P2 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
24.101	Oil-filled radiators, devices incorporated to comply with Cl. 19.114 shall be non-self-resetting (IEC 60335-2-30)		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:		P
	- supply cord fitted with a plug		P
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance		N/A
	- pins for insertion into socket-outlets		N/A
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	Connection of supply conductors for appliance intended to be permanently connected to fixed wiring possible after the appliance has been fixed to its support		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Appliance provided with a set of terminals for the connection of cables or fixed wiring, cross-sectional areas specified in 26.6		N/A
	Appliance provided with a set of terminals allowing the connection of a flexible cord		N/A
	Appliance provided with a set of supply leads accommodated in a suitable compartment		N/A
	Appliance provided with a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate type of cable or conduit		N/A
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimensions according to table 10		N/A
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in 29		N/A
25.5	Method for assemble supply cord with the appliance:		P
	- type X attachment		N/A
	- type Y attachment		P
	- type Z attachment, if allowed in part 2		N/A
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N/A
25.6	Plugs fitted with only one flexible cord		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
25.7	Supply cords being one of the following types:		P
	- rubber sheathed (at least 60245 IEC 53)	H05RR-F	P
	- polychloroprene sheathed (at least 60245 IEC 57)	H05RN-F	P
	- cross-linked polyvinyl chloride sheathed (at least 60245 IEC 87)		N/A
	Polyvinyl chloride sheathed: Not used if they are likely to touch metal parts having a temperature rise exceeding 75K during the test of Clause 11.		N/A
	- light polyvinyl chloride sheathed cord (at least 60227 IEC 52), appliances not exceeding 3 kg		N/A
	- ordinary polyvinyl chloride sheathed cord (at least 60227 IEC 53), other appliances	H05VV-F	P
	Heat resistant polyvinyl chloride sheathed: Not used for type X attachment other than specially prepared cords.		N/A
	- Heat-resistant light polyvinyl chloride sheathed cord (at least 60227 IEC 56), appliances not exceeding 3 kg		N/A
	- heat-resistant polyvinyl chloride sheathed cord (60227 IEC 57), other appliances		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
	Supply cords of portable heaters intended to be used in greenhouses shall not be lighter than ordinary polychloroprene sheathed flexible cord (IEC 60335-2-30)		N/A
	Supply cords of heaters intended to be used on building sites shall not be lighter than heavy ordinary polychloroprene sheathed flexible cord (60245 IEC 66) (IEC 60335-2-30)		N/A
	For portable oil-filled radiators fitted with polyvinyl chloride sheathed cords (code designation 60227 IEC 52 or code designation 60227 IEC 53), metal parts likely to touch the supply cord in normal use include those parts that are inaccessible to the 75 mm diameter test rod specified in Table 101 but that may come into contact with the cord when it is wrapped around the heater. This does not apply if storage means for the cord are provided. (IEC 60335-2-30)		N/A
25.8	Nominal cross-sectional area of supply cords according to table 11; rated current (A); cross-sectional area (mm^2).....:	<10A; 1,0mm^2	P
25.9	Supply cord not in contact with sharp points or edges		P
25.10	Green/yellow core for earthing purposes in Class I appliance		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
25.11	Conductors of supply cords not consolidated by lead-tin soldering where they are subject to contact pressure, unless		P
	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		P
	If the enclosure at the inlet opening is not of insulating material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		P
	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 adequately protected against excessive flexing		N/A
	Flexing test:		N/A
	- applied force (N) .....:		N/A
	- number of flexings .....:		N/A
	The test does not result in:		N/A
	- short circuit between the conductors		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, within the meaning of the standard, to the cord or the cord guard		N/A
	- 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		P
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		P
	Pull and torque test of supply cord, values shown in table 12: mass (kg); pull (N); torque (not on automatic cord reel) (Nm) .....:	100N; 0,35Nm	P
	Cord not damaged and max. 2 mm displacement of the cord		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	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		P
25.16	Cord anchorages for type X attachments constructed and located so that:		N/A
	- 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 cord		N/A
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless separated from accessible metal parts by supplementary insulation		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
	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	Type Y attachment	P
25.18	Cord anchorages only accessible with the aid of a tool, or		N/A
	so constructed that the cord can only be fitted with the aid of a tool		P
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Tying the cord into a knot or tying the cord with string not used		N/A
25.20	Conductors of the supply cord for type Y and Z attachment adequately additionally insulated		P
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed:		N/A
	- 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 inlet:		N/A
	- live parts not accessible during insertion or removal. Requirement not applicable to appliance inlets complying with IEC 60320-1		N/A
	- connector can be inserted without difficulty		N/A
	- the appliance is not supported by the connector		N/A
	- 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 as that		N/A
	- 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
	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 the 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.		N/A
	Dimensions of pins and engagement face in accordance with the dimensions of the relevant plug in IEC/TR 60083		N/A
26	TERMINALS FOR EXTERNAL CONDUCTORS		P
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Terminals only accessible after removal of a non-detachable cover		P
	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 connection to fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless the connections are soldered	Type Y attachment	N/A
	Screws and nuts serve only to clamp supply conductors, 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 to fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure and without damaging the conductor		N/A
	Terminals for type X attachment and those for connection to fixed wiring so fixed that when tightening or loosening the clamping means:		N/A
	- 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

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
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
	No contact between live parts and accessible metal parts and, 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 to fixed wiring suitable for connection of conductors with required cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm^2):		N/A
	Terminals only suitable for a specially prepared cord		N/A
26.7	Terminals for type X attachment accessible after removal of a cover or part of the enclosure		N/A
26.8	Terminals for the connection to 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 conductors ends fitted with a device suitable for screw terminals		N/A
	Pull test of 5 N to the connection		P
26.11	For type Y and Z attachment: soldered, welded, crimped and similar connections may be used		P
	For Class II appliances: the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N/A
	For Class II appliances: soldering, welding or crimping alone used, barriers provided, clearances and creepage distances satisfactory 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 contact of the appliance inlet		P
	Earthing terminals not connected to neutral terminal		P
	Class 0, II and III appliance have no provision for earthing		N/A
	Safety extra-low voltage circuits not earthed, unless protective extra-low voltage circuits		N/A
27.2	Clamping means adequately secured against accidental loosening		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Terminals used 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		N/A
	Conductors cannot be loosened without the aid of a tool		P
27.3	For detachable parts that are plugged into another part of the appliance, and having an earth connection, the earth connection made before and separated after current-carrying connections when removing the part		N/A
	For appliances with supply cord, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		P
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		P
	Parts providing earthing continuity, other than parts of a metal frame or enclosure, have adequate resistance to corrosion		P
	If of steel, these parts provided with an electroplated coating with a thickness at least 5 µm		P
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		P
	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
27.5	Low resistance of connection between earthing terminal and earthed metal parts		P
	This requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit, provided that clearances of basic insulation are based on the rated voltage of the appliance		N/A
	Resistance not exceeding 0,1 Ω at the specified low-resistance test	Max.0,05Ω	P
27.6	The printed conductors of printed circuit boards shall not be 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
28	SCREWS AND CONNECTIONS		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
28.1	Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses		P
	Screws not of soft metal liable to creep, such as zinc or aluminium		P
	Diameter of screws of insulating material min. 3 mm		N/A
	Screws of insulating material not used for any electrical connection or connections providing earthing continuity		P
	Screws used for electrical connections or connections providing earthing continuity screw into metal		P
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		N/A
	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 can impair basic insulation		N/A
	For screws and nuts; torque-test as specified in table 14 .....:	(see appended table)	P
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		P
	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:		N/A
	• 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 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		P
	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:		P
	- in normal use,		N/A
	- during user maintenance,		N/A
	- when replacing a supply cord having a type X attachment, or		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	- during installation		P
	At least two screws being used for each connection providing earthing continuity, unless		P
	the screw forms a thread having a length of at least half the diameter of the screw		N/A
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity		P
	This requirement does not apply to screws in the earthing circuit if at least two screws are used, or		P
	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		P
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.....:		P
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)	P
	for basic insulation and functional insulation they comply with the impulse voltage test of clause 14		N/A
	However, if the construction is 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
	Impulse voltage test not applicable:		P
	- when the microenvironment is pollution degree 3		P
	- for basic insulation of class 0 and class 01 appliances		N/A
	Appliances are in overvoltage category II		P
	A force of 2 N is applied to bare conductors, other than heating elements		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	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		P
	The values of table 16 or the impulse voltage test of clause 14 are applicable .....:		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		P
29.1.3	Clearances of reinforced insulation not less than those specified for basic insulation in table 16, but using the next higher step for rated impulse voltage		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		N/A
29.1.4	Clearances for functional insulation are the largest values determined from:		P
	- 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		N/A
	If values of table 16 are largest, the impulse voltage test of clause 14 may be applied instead, unless		N/A
	the microenvironment is pollution degree 3, or		P
	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		N/A
	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:		N/A
	- table 16 based on the rated impulse voltage.....:		N/A
	- table F.7a in IEC 60664-1, frequency not exceeding 30 kHz		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	- clause 4 of IEC 60664-4, frequency exceeding 30 kHz		N/A
	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
29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree		P
	Pollution degree 2 applies, unless		N/A
	-precautions taken to protect the insulation; pollution degree 1		N/A
	-insulation subjected to conductive pollution; pollution degree 3		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
	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
	For fan heaters, the microenvironment is pollution degree 3 unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal use of the appliance. (IEC 60335-2-30)		P
29.2.1	Creepage distances of basic insulation not less than specified in table 17		P

IEC 60335-2-30			
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 17 .....:		N/A
	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 :		P
29.2.2	Creepage distances of supplementary insulation at least as specified for basic insulation in table 17 or		P
	Table 2 of IEC 60664-4, as applicable.....:		N/A
29.2.3	Creepage distances of reinforced insulation at least double as specified for basic insulation in table 17 or		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		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 18 .....:		N/A
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		N/A
29.3	Supplementary and reinforced insulation having adequate thickness, or a sufficient number of layers, to withstand the electrical stresses		P
	Compliance checked by:		P
	- measurement, in accordance with 29.3.1, or		P
	- an electric strength test in accordance with 29.3.2, or		N/A
	- 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
	- 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 having a thickness of at least 1 mm		P
	Reinforced insulation having a thickness of at least 2 mm		P
29.3.2	Each layer of material withstand the electric strength test of 16.3 for supplementary insulation		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Supplementary insulation consisting of at least 2 layers		N/A
	Reinforced insulation consisting 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
	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,		P
	parts supporting live parts, and		P
	thermoplastic material providing supplementary or reinforced insulation,		P
	sufficiently resistant to heat		P
	For portable fan heaters, the temperature rises determined during the tests of clause 19 are not taken into account (IEC 60335-2-30)	For models with suffix “-DZ”	P
	Ball-pressure test according to IEC 60695-10-2		P
	External parts: 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)	P
	Parts supporting live parts: 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)	P
	Parts of thermoplastic material providing supplementary or reinforced insulation, 25°C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C).....:		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
30.2	Parts of non-metallic material adequately resistant to ignition and spread of fire		P
	This requirement does not apply to:		P
	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		P
	Compliance checked by the test of 30.2.1, and in addition:		P
	- for attended appliances, 30.2.2 applies		N/A
	- for unattended appliances, 30.2.3 applies		P
	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	The Glow-wire test is carried out on enclosures at a temperature of 650°C (IEC 60335-2-30)		P
	Parts of non-metallic material subjected to the glow-wire test of IEC 60695-2-11 at 550 °C		N/A
	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
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		P
	Tests not applicable to conditions as specified		N/A
30.2.3.1	Parts of non-metallic material supporting connections carrying a current exceeding 0.2A during normal operation, 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 a test severity of 850°C		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 current-carrying connections, and		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	parts of non-metallic material within a distance of 3mm,		P
	subjected to glow-wire test of IEC 60695-2-11		P
	The test severity is:		P
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation		P
	- 650 °C, for other connections		P
	Glow-wire applied to an interposed shielding material, if relevant		P
	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		N/A
	- 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
	the material is classified as V-0 or V-1 according to IEC 60695-11-10		N/A
	The glow-wire test is also not carried out on small parts. These parts are to:		P
	- 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		N/A
	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:		P
	- 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		P
	- parts that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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		P
	- 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:		N/A
	- 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 needle-flame test of annex E		P
	Test not applicable to conditions as specified		N/A
30.101	Fan heaters having an enclosure of substantially non-metallic material shall be resistant to fire. The needle test flame of Annex E is carried out on the enclosure of the appliance. This test is not carried out on fan heaters that are also intended to be operated at maximum heat output with the fan switched off. (IEC 60335-2-30)		N/A
31	RESISTANCE TO RUSTING		P
	Relevant ferrous parts adequately protected against rusting		P
	Tests specified in part 2 when necessary		P
32	RADIATION, TOXICITY AND SIMILAR HAZARDS		P
	Appliance does not emit harmful radiation or present a toxic or similar hazard due to their operation in normal use		P
	Compliance is checked by the limits or tests specified in part 2, if relevant		P
A	ANNEX A (INFORMATIVE) ROUTINE TESTS		P
	Description of routine tests to be carried out by the manufacturer		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
B	ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES		N/A
C	ANNEX C (NORMATIVE) AGEING TEST ON MOTORS		N/A
D	ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS (IEC 60335-1/A1 : 2004)		N/A
E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST (IEC 60335-1/A2: 2006)		P
	Needle-flame test carried out in accordance with IEC 60695-11-5, with the following modifications:		P
7	Severities		P
	The duration of application of the test flame is 30 s ± 1 s		P
9	Test procedure		P
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
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
	The duration of burning not exceeding 30 s		N/A
	However, for printed circuit boards, the duration of burning not exceeding 15 s	PCB	P
F	ANNEX F (NORMATIVE) CAPACITORS		N/A
G	ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS		N/A
H	ANNEX H (NORMATIVE) SWITCHES		N/A
I	ANNEX I (NORMATIVE) MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
J	ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS		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
	Sequences for the determination of clearances and creepage distances		P
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 microenvironment		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

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		P
	- 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		N/A
	- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected		P
	- 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		P
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:		P
7	Test apparatus		P
7.3	Test solutions		P
	Test solution A is used		P
10	Determination of proof tracking index (PTI)		P
10.1	Procedure		P
	The proof voltage is 100V, 175V, 400V or 600V :	175V	P
	The last paragraph of Clause 3 applies		P
	The test is carried out on five specimens		P
	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 stating 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 WARM DAMP EQUABLE CLIMATES (IEC 60335-1/A1 : 2004)		N/A

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
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

10.1	TABLE: Power input deviation				P
Input deviation of/at:	P rated (W)	P measured (W)	dP	Required dP	Remark
230V	2000	2055	+2,8%	-10% ~ +5%	EF421SLB
230V	1800	1791	-0,5%	-10% ~ +5%	EF450SLB
230V	2000	1973	-1,4%	-10% ~ +5%	EF493L
230V	2000	1990	-0,5%	-10% ~ +5%	EF421SPB
230V	1800	1832	+1,7%	-10% ~ +5%	EF450SKB
230V	2000	1960	-2,0%	-10% ~ +5%	EF421SLB-DZ
230V	1800	1788	-0,7%	-10% ~ +5%	EF450SLB-DZ

10.2	TABLE: Current deviation				N/A
Current deviation of/at:	I rated (A)	I measured (A)	dI	Required dI	Remark

11.8	TABLE: Heating test, thermocouples (For EF421SLB)		P
	Test voltage (V).....:	251,6	—
	Ambient (°C) .....:	18,2	—

Thermocouple locations	dT (K)	Max. dT (K)
Power cord	9,2	50
Terminal block	5,8	85(T110)
Synchronous motor surface	18,5	80
PCB	11,7	120
Winding of transformer	18,8	80
X2 capacitor	2,8	60(T85)
Relay	9,4	60(T85)
Switch	22,5	75(T100)
Heating element supporter /Internal wire	23,5	155(T180)
Thermal cut-out 85°C	47,1	For Ref.
Fan motor winding	45,3	80
Air outlet	83,1	175
Accessible metal enclosure	34,5	85
Control panel	15,8	60
Glass panel	17,9	100
Test corner	26,2	60

11.8	TABLE: Heating test, resistance method (For EF421SLB)		P
	Test voltage (V).....:	251,6	—
	Ambient, t_1 (°C) .....:	15,0	—
	Ambient, t_2 (°C) .....:	18,2	—

Temperature rise of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	Max. dT (K)	Insulation class
Winding of fan motor	312	403	69,6	90	120

Winding of synchronous motor	19,82k	23,30k	40,6	90	120

11.8	TABLE: Heating test, thermocouples (For EF450SLB)		P
	Test voltage (V) ..... :	264,8	—
	Ambient (°C) ..... :	18,8	—

Thermocouple locations	dT (K)	Max. dT (K)
Power cord	10,3	50
Terminal block	8,1	85(T110)
Synchronous motor surface	17,1	80
PCB	12,7	120
Winding of transformer	10,8	80
X2 capacitor	3,4	60(T85)
Relay	9,9	60(T85)
Switch	33,6	75(T100)
Heating element supporter /Internal wire	31,9	155(T180)
Thermal cut-out 85°C	35,8	Reference
Fan motor winding	72,8	80
Air outlet	119,8	175
Accessible metal enclosure	35,9	85
Control panel	19,7	60
Glass panel	28,1	100
Test corner	44,6	60

11.8	TABLE: Heating test, resistance method (For EF450SLB)		P
	Test voltage (V) ..... :	264,8	—
	Ambient, t_1 (°C) ..... :	17,3	—
	Ambient, t_2 (°C) ..... :	18,8	—

Temperature rise of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	Max. dT (K)	Insulation class
Winding of fan motor	324	440	88,7	90	120
Winding of synchronous motor	18,99k	21,90k	37,1	90	120

11.8	TABLE: Heating test, thermocouples (For EF493L)		P
	Test voltage (V) ..... :	257,1	—
	Ambient (°C) ..... :	18,5	—

Thermocouple locations	dT (K)	Max. dT (K)
Power cord	10,5	50
Terminal block	5,5	85(T110)
Synchronous motor surface	17,8	80

PCB	12,1	120
Winding of transformer	10,5	80
X2 capacitor	8,9	60(T85)
Relay	10,1	60(T85)
Switch	2,6	75(T100)
Thermal cut-out 85°C	29,3	Reference
Fan motor winding	25,6	80
Internal wire	25,2	155(T180)
Air outlet	81,8	175
Accessible metal enclosure	21,2	85
Control panel	0,8	60
Glass panel	4,1	100
Test corner	11,9	60

11.8	TABLE: Heating test, resistance method (For EF493L)					P
	Test voltage (V) ..... :		257,1			—
	Ambient, t_1 (°C) ..... :		16,8			—
	Ambient, t_2 (°C) ..... :		18,5			—
Temperature rise of winding		R_1 (Ω)	R_2 (Ω)	dT (K)	Max. dT (K)	Insulation class
Winding of synchronous motor		19,92k	21,90k	23,3	90	120
Winding of fan motor		319	367	36,1	90	120

11.8	TABLE: Heating test, thermocouples (EF421SPB)		P
	Test voltage (V) ..... :	258,7	—
	Ambient (°C) ..... :	24,7	—
Thermocouple locations	dT (K)	Max. dT (K)	
Power cord	9,0	50	
Terminal block	5,7	85(T110)	
Synchronous motor surface	18,9	80	
PCB	10,3	120	
X2 capacitor	2,1	60(T85)	
Relay	9,7	60(T85)	
Switch	27,0	75(T100)	
Heating element supporter /Internal wire	19,0	155(T180)	
Internal wire	23,6	Reference	
Thermal cut-out 85°C	46,2	155(T180)	
Fan motor winding	59,0	80	
Air outlet	86,2	175	

Accessible metal enclosure	22,8	85
Control panel	19,8	60
Glass panel	3,4	100
Test corner	38,7	60

11.8	TABLE: Heating test, resistance method (EF421SPB)				P
	Test voltage (V) ..... :		257,3		—
	Ambient, t_1 (°C) ..... :		22,0		—
	Ambient, t_2 (°C) ..... :		24,7		—
Temperature rise of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	Max. dT (K)	Insulation class
Winding of fan motor	323	409	65,6	90	120
Winding of the synchronous motor	19,22k	21,90k	33,1	90	120

11.8	TABLE: Heating test, thermocouples (EF450SKB)		P
	Test voltage (V) ..... :	255,6	—
	Ambient (°C) ..... :	24,7	—
Thermocouple locations	dT (K)	Max. dT (K)	
Power cord	9,0	50	
Terminal block	7,0	85(T110)	
Synchronous motor surface	17,1	80	
PCB	3,4	120	
Winding of transformer	8,8	80	
X2 capacitor	2,7	60(T85)	
Relay	11,6	60(T85)	
Switch	27,0	75(T100)	
Heating element supporter /Internal wire	28,9	155(T180)	
Thermal cut-out 85°C	14,6	Reference	
Internal wire	42,5	155(T180)	
Fan motor winding	42,6	80	
Air outlet	84,2	175	
Accessible metal enclosure	28,7	85	
Control panel	19,0	60	
Glass panel	8,4	100	
Test corner	36,1	60	

11.8	TABLE: Heating test, resistance method (EF450SKB)		P
	Test voltage (V) ..... :	255,6	—
	Ambient, t_1 (°C) ..... :	24,0	—
	Ambient, t_2 (°C) ..... :	24,7	—

Temperature rise of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	Max. dT (K)	Insulation class
Winding of fan motor	330	399	53,4	90	120
Winding of the synchronous motor	19,51k	22,20k	34,9	90	120

11.8	TABLE: Heating test, thermocouples (EF450SLB-DZ)		P
	Test voltage (V) ..... :	264,5	—
	Ambient (°C) ..... :	25,0	—

Thermocouple locations	dT (K)	Max. dT (K)
Power cord	6,2	50
Synchronous motor surface	15,6	80
Thermal cut-out 85°C	38,9	For Ref.
Fan motor winding	31,0	80
Air outlet	91,3	175
Immediate surrounds	20,2	85
Test corner	1,0	60

11.8	TABLE: Heating test, resistance method (EF450SLB-DZ)		P
	Test voltage (V) ..... :	264,5	—
	Ambient, t_1 (°C) ..... :	25,0	—
	Ambient, t_2 (°C) ..... :	25,0	—

Temperature rise of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	Max. dT (K)	Insulation class
Winding of fan motor	322	412	72,5	90	120
Winding of the synchronous motor	19,33k	22,1k	37,2	90	120

11.8	TABLE: Heating test, thermocouples (EF421SLB-DZ)		P
	Test voltage (V) ..... :	261,1	—
	Ambient (°C) ..... :	25,0	—

Thermocouple locations	dT (K)	Max. dT (K)
Power cord	6,8	50
Synchronous motor surface	16,8	80
Thermal cut-out 85°C	49,4	For Ref.
Fan motor winding	23,7	80
Air outlet	69,3	175
Immediate surrounds	16,8	85
Test corner	2,9	60

11.8	TABLE: Heating test, resistance method (EF421SLB-DZ)		P
	Test voltage (V) ..... :	261,1	—
	Ambient, t_1 (°C) ..... :	25,0	—

	Ambient, t_2 (°C) ..... :		25,0		—
Temperature rise of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	Max. dT (K)	Insulation class
Winding of fan motor	313	363	41,5	90	120
Winding of the synchronous motor	19,45k	21,20k	23,4	90	120

13.2	TABLE: Leakage current (For EF421SLB; EF493L)			P
	Heating appliances: 1.15 x rated input.....:	2504W		—
	Motor-operated and combined appliances: 1.06 x rated voltage.....:	---		—
Leakage current between		I (mA)	Max. allowed I (mA)	
L/N and plastic enclosure, switch etc.		0,002	0,25	
L/N and earthing metal		0,013	1,5	
Remark: Only max. value among all tested models listed above.				

13.2	TABLE: Leakage current (EF421SLB-DZ)			P
	Heating appliances: 1.15 x rated input.....:	2504W		—
	Motor-operated and combined appliances: 1.06 x rated voltage.....:	---		—
Leakage current between		I (mA)	Max. allowed I (mA)	
L/N and plastic enclosure, switch etc.		0,002	0,25	
L/N and earthing metal		0,013	0,75	
Remark: Only max. value among all tested models listed above.				

13.2	TABLE: Leakage current (For EF450SLB)			P
	Heating appliances: 1.15 x rated input.....:	2254W		—
	Motor-operated and combined appliances: 1.06 x rated voltage.....:	---		—
Leakage current between		I (mA)	Max. allowed I (mA)	
L/N and plastic enclosure, switch etc.		0,002	0,25	
L/N and earthing metal		0,011	1,35	
Remark: Only max. value among all tested models listed above.				

13.2	TABLE: Leakage current (For EF450SLB-DZ)			P
	Heating appliances: 1.15 x rated input.....:	2254W		—
	Motor-operated and combined appliances: 1.06 x rated voltage.....:	---		—
Leakage current between		I (mA)	Max. allowed I (mA)	
L/N and plastic enclosure, switch etc.		0,002	0,25	
L/N and earthing metal		0,011	0,75	
Remark: Only max. value among all tested models listed above.				

13.2	TABLE: Leakage current (For EF421SPB; EF450SKB)		P
	Heating appliances: 1.15 x rated input.....:	2254W	—
	Motor-operated and combined appliances: 1.06 x rated voltage.....:	---	—
Leakage current between		I (mA)	Max. allowed I (mA)
L/N to plastic enclosure, switch etc.		0,003 peak	0,35 peak
L/N to Earthed metal		0,011	0,75
Remark: Only max. value among all tested models listed above.			

13.3	TABLE: Electric strength		P
Test voltage applied between:		Voltage (V)	Breakdown (Yes/No)
L/N and control panel/plastic enclosure		3000	No
L/N and earthing metal enclosure		1000	No

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

16.2	TABLE: Leakage current (For all models)		P
	Single phase appliances: 1.06 x rated voltage..... :	254,4V	—
	Three phase appliances 1.06 x rated voltage divided by √3:..... :		—
Leakage current between		I (mA)	Max. allowed I (mA)
L/N and plastic enclosure, switch etc.		0,003	0,25
L/N and earthing metal		0,010	0,75
Remark: Only max. value among all tested models listed above.			

16.3	TABLE: Electric strength		
Test voltage applied between:		Voltage (V)	Breakdown(Yes/No)
L/N and control panel/plastic enclosure/non-earthed metal surface		3000	No
L/N and earthing metal enclosure		1250	No

17	TABLE: Overload protection, temperature rise (For EF421SLB, EF450SLB and EF493L)		P
Temperature rise of part/at:		dT (K)	Max. dT (K)
Winding of transformer		116,9°C	215°C
Note: the secondary winding of transformer was short circuited, the thermal link in primary winding acted			

17	TABLE: Overload protection, temperature rise (For EF450SKB)	P

Temperature rise of part/at:	dT (K)	Max. dT (K)
Winding surface	94,4°C	190°C
Core surface	79,7°C	190°C

19	**Abnormal operation conditions**	**P**

Operational characteristics	YES/NO	Operational conditions
Are there electronic circuits to control the appliance operation?	YES	Electronic circuits control the ON/OFF of heating element, fan motor, synchronous motor and LEDs.
Are there “off” or “stand-by” position?	YES	When switched on and no input from control panel or remote controller, the product will be in stand-by mode; during active mode, touch the power button on control panel or press the power button on remote control will lead the product into stand-by mode.
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	N/A	N/A	N/A	N/A
19.3	---	N/A	N/A	N/A	N/A	N/A	N/A
19.4	---	N/A	N/A	N/A	N/A	N/A	N/A
19.5	---	N/A	N/A	N/A	N/A	N/A	N/A
19.6	---	N/A	N/A	N/A	N/A	N/A	N/A
19.7	---	N/A	N/A	N/A	N/A	N/A	N/A
19.8	---	N/A	N/A	N/A	N/A	N/A	N/A
19.9	---	N/A	N/A	N/A	N/A	N/A	N/A
19.10	---	N/A	N/A	N/A	N/A	N/A	N/A
19.11.2	Tested at rated voltage	No hazard.	N/A	N/A	N/A	N/A	P
19.101	Tested at 1,24 Pn	Pass	N/A	N/A	N/A	N/A	P
19.103	Tested at 1,15 Pn	Pass	N/A	N/A	N/A	N/A	P
19.106	Tested at rated voltage	Pass	N/A	N/A	N/A	N/A	P
19.107	Tested at 1,15 Pn	Pass	N/A	N/A	N/A	N/A	P
19.108	Tested at 1,15 Pn	Pass	N/A	N/A	N/A	N/A	P
19.109	Tested at 1,15 Pn	Pass	N/A	N/A	N/A	N/A	P
19.112	Tested at 1,15 Pn	Pass	N/A	N/A	N/A	N/A	P
Supplementary information:							

19.7	TABLE: Abnormal operation, locked rotor/moving parts					N/A
	Test voltage (V) ..... :					—
	Ambient, t_1 (°C) ..... :					—
	Ambient, t_2 (°C) ..... :					—
Temperature of winding		R_1 (Ω)	R_2 (Ω)	dT (K)	T (°C)	Max. T (°C)

19.9	TABLE: Abnormal operation, running overload					N/A
	Test voltage (V) ..... :					—
	Ambient, t_1 (°C) ..... :					—
	Ambient, t_2 (°C) ..... :					—
Temperature of winding		R_1 (Ω)	R_2 (Ω)	dT (K)	T (°C)	Max. T (°C)

19.13	TABLE: Abnormal operation, temperature rises	P
Thermocouple locations	dT (K)	Max. dT (K)
Power cord	17,9	150
Heating element supporter	103,0	For clause 30.1
Plastic flame plate	39,0	For clause 30.1
Test corner	77,5	150
Strip (19.103) for models without “-DZ ”	50,9	175
Wall (19.109) for models with “-DZ”	52,9	150
Remark: max values were recorded for all models		

24.1	TABLE: Components				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity
Power Plug	Shanghai Dinatong Wire Co., Ltd.	DNT-13	AC 250V; 16A	DIN VDE 0620	VDE 40024353
	NINGBO XUANHUA ELECTRIC CO. LTD.	XH-03	AC 250V; 16A	DIN VDE 0620	VDE 40019691
	Shangyu Jintao Electron Co., Ltd.	JT003	AC 250V; 16A	DIN VDE 0620	VDE 40021286
Power Cord	Shanghai Dinatong Wire Co., Ltd.	H05VV-F	3G 1,0mm^2	EN 50525-2-11	VDE 40021216
	NINGBO XUANHUA ELECTRIC CO. LTD.	H05VV-F	3G 1,0mm^2	EN 50525-2-11	VDE 40038850
	Shangyu Jintao Electron Co., Ltd.	H05VV-F	3G 1,0mm^2	EN 50525-2-11	VDE 40013419
	Shangyu Jintao Electron Co., Ltd.	H05RN-F	3G 1,0mm^2	EN 50525-2-21	VDE 40018106

Terminal block	Openwise Industrial Ltd.	500	AC 450V; 2,5mm^2; T110ºC	EN 60998	VDE 40022325
	Heavy Power Co., Ltd.	PA10	AC 450V; 2,5mm^2; T110ºC	EN 60998	VDE 40018352
	Shenzhen Hongyu Electrical Co., Ltd.	HYT-500	AC 450V; 2,5mm^2; T110ºC	EN 60998	VDE 40020423
	Heavy Power Co.,Ltd.	PA9	450V; 2,5mm^2; T110	EN 60998	VDE 40016425
	Foshan Nanhai DingQing Hardware & Electric Co., Ltd.	PA9	450V; 2,5mm^2; T110	EN 60998	VDE 40027883
Thermal cut-out	Au One Electrical Company Ltd.	AUT-85-P	AC 250V; 16A; 85°C; 10E3; T170	EN 60730-1 EN 60730-2-9	VDE 117928
	Chung Shun Industrial Co.Ltd.	**CH-005-H**	**AC 250V; 16A; 85°C; 10E3; T150**	**EN 60730-1 EN 60730-2 -9**	**VDE 40010201**
Switch	Ningbo Soken Electrical Co., Ltd.	RK1-11	AC 250V; 16(6)A, 10E3, T100	EN 61058-1	VDE 40012988
	Yueqing Weite Electronic Co., Ltd.	KCD3	AC 250V; 16A; 10E3; T105	EN 61058-1	VDE 40029666
LED PCB for flame simulation(for EFzL, EFySLB, EFySL, EFySLB-DZ, EFySL-DZ, EFyK, EFyKB, EFyK-DZ, EFyKB-DZ)	Ningbo City Gengxin Appliance Industry Co., Ltd.	GX-EF450SL GX-EF490SL	--	EN 60335-1 EN 60335-2-30	Tested with Appliance
	Ningbo City Gengxin Appliance Industry Co., Ltd.	GX-EF450SL-6LED	--	EN 60335-1 EN 60335-2-30	Tested with Appliance
LED PCB for flame simulation (for EFxSLB, EFxSL, EFxSLB-DZ, EFxSL-DZ, EFxK, EFxKB, EFxK-DZ, EFxKB-DZ)	Ningbo City Gengxin Appliance Industry Co., Ltd.	GX-EF420SL	--	EN 60335-1 EN 60335-2-30	Tested with Appliance
	Ningbo City Gengxin Appliance Industry Co., Ltd.	GX-EF420SL-12LED	--	EN 60335-1 EN 60335-2-30	Tested with Appliance
LED PCB for flame simulation (for EFySP, EFySPB, EFySP-DZ, EFySPB-DZ)	Ningbo City Gengxin Appliance Industry Co.	GX-EF450SP	--	EN 60335-1 EN 60335-2-30	Tested with Appliance
LED PCB for flame simulation (for EFySK, EFySKB, EFySK-DZ, EFySKB-DZ)	Ningbo City Gengxin Appliance Industry Co.	GX-EF450SK	--	EN 60335-1 EN 60335-2-30	Tested with Appliance
LED PCB for flame simulation (For EFxSP, EFxSPB EFxSP-DZ, EFxSPB-DZ)	Ningbo City Gengxin Appliance Industry Co.	GX-EF420SP	--	EN 60335-1 EN 60335-2-30	Tested with Appliance
LED PCB for flame simulation (for EFxSK, EFxSKB, EFxSK-DZ, EFxSKB-DZ)	Ningbo City Gengxin Appliance Industry Co.	GX-EF420SK	--	EN 60335-1 EN 60335-2-30	Tested with Appliance

LED PCB for background decoration (for EFxSPB, EFxSKB, EFxSLB, EFySPB, EFySKB, EFySLB, EFxSPB-DZ, EFxSKB-DZ, EFxSLB-DZ, EFySPB-DZ, EFySKB-DZ, EFySLB-DZ)	Ningbo City Gengxin Appliance Industry Co., Ltd.	GX-3B	--	EN 60335-1 EN 60335-2-30	Tested with Appliance
Internal wire (for heating element)	Ningbo Haoguang Electric Appliance Co.,Ltd.	H05S-K	0,75/1,0mm^2; 180°C	EN 50525-2-41	VDE 40038042
	Jiang Yin Tianqi Silicone Rubber Products Co., Ltd.	H05SJ-K/ H05S-K	0,75/1,0mm^2; 180°C	EN 50525-2-41	VDE 40017265
	Cixi Shuanghong Wire Co., Ltd.	H05SJ-K/ H05S-K	0,75/1,0mm^2; 180°C	EN 50525-2-41	VDE 40017324
	Ningbo Nissei Electric Co., Ltd.	H05SJ-K/ H05S-K	0,75/1,0mm^2; 180°C	EN 50525-2-41	VDE 40022880
Internal wire (for LED)	Yueqing Boyuan Electronic Wire & Cable Co Ltd	2468	26AWG; 300V; 80°C	UL 758	UL E203561
	ZHONGSHAN NANTOU BOYU WIRE MFR	2468	26AWG; 300V; 80°C	UL 758	UL E314089
	GUANGDONG XINLONG ENTERPRISE CO	2468	26AWG; 300V; 80°C	UL 758	UL E207567
Internal wire (others)	Ningbo Haoguang Electric Appliance Co.,Ltd.	H05V-K	1x0,5/0,75/1,0mm^2; 70°C	EN 50525-2-31	VDE 126062
		H05S-K	1x0,5/0,75/1,0mm^2; 180°C	EN 50525-2-41	VDE 40038042
	Jiang Yin Tianqi Silicone Rubber Products Co., Ltd.	H05SJ-K/ H05S-K	1x0,5/0,75/1,0mm^2; 180°C	EN 50525-2-41	VDE 40017265
	Cixi Shuanghong Wire Co., Ltd.	H05SJ-K/ H05S-K	1x0,5/0,75/1,0mm^2; 180°C	EN 50525-2-41	VDE 40017324
	Ningbo Nissei Electric Co., Ltd.	H05SJ-K/ H05S-K	1x0,5/0,75/1,0mm^2; 180°C	EN 50525-2-41	VDE 40022880
Heating element (for EFySLB, EFySL, EFySP, EFySPB, EFySK, EFySKB, EFySP-DZ, EFySPB-DZ, EFySK-DZ, EFySKB-DZ, EFySLB-DZ, EFySL-DZ, EFyK, EFyKB, EFyK-DZ, EFyKB-DZ)	Ningbo City Gengxin Appliance Industry Co., Ltd.	---	230V~; 1800W	EN 60335-1 EN 60335-2-30	Tested with Appliance

Heating element (for EFxSP, EFxSPB, EFxSK, EFxSKB, EFxSLB, EFxSL, EFzL, EFxSP-DZ, EFxSPB-DZ, EFxSK-DZ, EFxSKB-DZ, EFxSLB-DZ, EFxSL-DZ, EFxK, EFxKB, EFxK-DZ, EFxKB-DZ, **EF431SLY-V**)	Ningbo City Gengxin Appliance Industry Co., Ltd.	---	230V~; 2000W	EN 60335-1 EN 60335-2-30	Tested with Appliance
Fan motor	Ningbo City Gengxin Appliance Industry Co., Ltd.	YJF-EF420S	328Ω (23,0˚C); Class E	EN 60335-1 EN 60335-2-30	Tested with appliance
Synchronous Motor (for flame simulation)	Ningbo City Gengxin Appliance Industry Co., Ltd.	GX-EF450A	AC 220-240V; 50/60Hz; winding: 20100Ω (23ºC); Class E	EN 60335-1 EN 60335-2-30	Tested with appliance
	Ningbo City Gengxin Appliance Industry Co., Ltd.	42TYJ	AC 220-240V; 50/60Hz; winding: 20100Ω (23ºC); Class E	EN 60335-1 EN 60335-2-30	Tested with appliance
Control PCB (for EFxSP, EFxSPB, EFxSK, EFxSKB,EFxSLB, EFxSL, EFzL, EFxSP-DZ, EFxSPB-DZ, EFxSK-DZ, EFxSKB-DZ, EFxSLB-DZ, EFxSL-DZ, EFxK, EFxKB, EFxK-DZ, EFxKB-DZ, **EF431SLY-V**)	International Laminate Material Ltd.	FR-4 (GX-EF420)	94V-0; 130 ºC	UL 94	UL E134893
Control PCB (for EFySP, EFySPB, EFySK, EFySKB, EFySLB, EFySL, EFySP-DZ, EFySPB-DZ, EFySK-DZ, EFySKB-DZ, EFySLB-DZ, EFySL-DZ, EFyK, EFyKB, EFyK-DZ, EFyKB-DZ)	International Laminate Material Ltd.	FR-4 (GX-EF450)	94V-0; 130 ºC	UL 94	UL E134893
Main PCB (for EFxSL, EFzL, EFxSL-DZ, EFxK, EFxK-DZ, EFySL, EFySL-DZ, EFyK, EFyK-DZ)	International Laminate Material Ltd.	FR-4 (GX-EF420S/SL-B/3B)	94V-0; 130 ºC	UL 94	UL E134893
Main PCB (for EFxSLB, EFxSLB-DZ, EFxKB, EFxKB-DZ, EFySLB, EFyKB, EFySLB-DZ, EFyKB-DZ)	International Laminate Material Ltd.	FR-4 (GX-EF420S/SL-B/3B)	94V-0; 130 ºC	UL 94	UL E134893

Main PCB (for EFxSKB, EFySKB, EFxSKB-DZ, EFySKB-DZ)	International Laminate Material Ltd.	GX-EF420SKB /450SKB	94V-0; 130 ºC	UL 94	UL E134893
Main PCB (for EFxSP, EFxSPB, EFxSK, EFxSP-DZ, EFxSPB-DZ, EFxSK-DZ, EFySP, EFySPB, EFySK, EFySP-DZ, EFySPB-DZ, EFySK-DZ)	International Laminate Material Ltd.	GX-EF420SK /450SK GX-EF420SP/B GX-EF450SP/B	94V-0; 130 ºC	UL 94	UL E134893
Main PCB for EF431SLY-V	**International Laminate Material Ltd.**	**GX-EF420SLVY GX-EF450SLVY**	**94V-0; 130 ºC**	**UL 94**	**UL E134893**
Fuse	Shenzhen Lanson Electronics Co., Ltd.	Series 3JFxxx250V	AC 250V; 1A	EN 60127	VDE 40009301
	Dongguan Better Electronic Technology Co., Ltd.	334 - Serie(s)	AC 250V; 1A	EN 60127	VDE 40025428
	Hollyland Company Limited	5ET	AC 250V; 1A	EN 60127	VDE 40015669
	XC Electronics (Shen Zhen) Corp. Ltd.	3F	AC 250V; 1A	EN 60127	VDE 40019636
Varistor	Brightking Inc.	471KD07	AC 470V; -40°C to 85°C	IEC 61051-2 IEC 61051-2-2	VDE 40027827
	Kay (Wuxi) Electronic Co., Ltd.	MYG07-471	AC 470V; -40°C to 85°C	IEC 61051-1 IEC 61051-2	TÜV B 09 07 68808 004
X2 capacitor (0,1uF/0,22uF on main PCB and 0,1uF on terminal box)	Cixi Sanbei Electronic Co., Ltd.	MPX	AC 275V; 0,1uF; 0,22uF; 40/100/21/C	EN 60384-14	VDE 134381
	Changzhou Dejie Optoelectronics Technology Co., Ltd.	MPX/MKP	AC 275V; 0,1uF; 0,22uF; 40/100/21	EN 60384-14	**TÜV R 50297652**
	Foshan Shunde Fongming Electronic Tech Co.,Ltd.	MKP-X2	AC 275V; 0,1uF; 0,22uF; 40/105/21	EN 60384-14	VDE 40025702
	Shunde Da Hua Electric Co.,Ltd.	HD104/ HD224	AC 275V; 0,1uF; 0,22uF; 40/85/21	EN 60384-14	VDE 40027182
Y capacitor	Tenta Electric Industrial Co. Ltd.	MEY	AC 275V; Y2; 222M; 40/100/21	EN 60384-14	VDE 40035983
	Hongzhi Enterprises Ltd.	Y	AC 250V; Y1; 222M; 25/085/21	EN 60384-14	VDE 40004354
	Guangdong South Hongming Electronic Science and Technology Co., Ltd	F	AC 250V; Y1: 222M; 20/125/21	EN 60384-14	VDE 40036393
Optocoupler	Everlight Electronics Co., Ltd.	EL817	≥7,6mm; 6000V; -55° to 100°C	EN 60747-5-5	VDE 132249
Relay	Ningbo Songle Relay Co., Ltd.	SRD-12VDC-SL-A	250V AC; 10A; 30V DC; 10A; 85˚C; 100,000	EN 61810-1	TÜV R 50056114

	Yuyao Hui Long Cang Relay MFG Factory	973-12VDC-SL-A	AC 240V; 7A; -40˚C to 85˚C; 100,000	EN 61810-1	TÜV R 50156096
Transformer (except EFxSP, EFxSPB, EFxSK, EFxSP-DZ, EFxSPB-DZ, EFxSK-DZ, EFySP, EFySPB, EFySK, EFySP-DZ, EFySPB-DZ, EFySK-DZ)	Yuyao Sile Electronics Co., Ltd.	EE19	Input: 220-240V; Output: 10V; N1: ϕ0,25/150TS; N2: ϕ0,18/31TS; N3: ϕ0,45/22TS; Class 105	EN 60335-1 EN 60335-2-30	Tested with appliance
Speaker for EF431SLY-V	**Ningbo City Gengxin Appliance Industry Co., Ltd.**	**GX-EF420SLVY GX-EF450SLVY**	**Same as photo**	**EN 60065**	**Tested with appliance**
Pri. winding in transformer	Zhejiang Honglei Copper Co Ltd	2UEW	130°C	UL 1446	UL E307975
	Jiangsu Dartong M & E Co Ltd	2UEW	130°C	UL 1446	UL E237377
Triple insulated winding in transformer	Shanghai Xiangxiang Electron Co., Ltd.	TKE-B TKE-E	130°C; reinforced insulation	EN 60950-1	VDE 40026588
[1)] An asterisk indicates a mark which assures the agreed level of surveillance					

28.1	TABLE: Threaded part torque test			P
Threaded part identification		Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)
Fixed screw		4,0	II	1,2
Earthing screw		4,0	II	1,2

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

*) The value is increased to 0,8mm for pollution degree 3
*) If the construction is affected by wear, distortion, movement of the parts or during assembly, the value is increased by 0,5 mm

Remark:

L/N of heating element and earthed metal: Cr.>Cl.=11,0mm.

L/N of switch and earthed metal: Cr.>Cl.=8,0mm.

L/N of terminal block and earthed metal: Cr.>Cl.=9,0mm.

L/N of fan motor to core: Cr.>Cl.=2,5mm.

L/N of synchronous motor to metal part: Cr.>Cl.=5,0mm.

L/N of PCB to lower voltage: Cl.=1,8mm; Cr.=4,0mm

L/N of PCB to earthed part: Cr.=Cl.=12,0mm.
Live part on speaker to earthed metal: Cr.=Cl.=4,2mm

L to N of heating element: Cr.>Cl.>>3,2mm.

L to N of PCB: Cr.>Cl.=3,2mm.

Internal wire and accessible surface: Cr.>Cl.=4,5mm.

L/N of heating element and air inlet: Cr.>Cl.=20,0mm.

Transformer on main PCB: min. spacing between pri.winding terminal to sec.winding terminal on PCB: Cr.=Cl.=7,0mm; the sec.winding is UL listed reinforced insulation wire, terminal of winding to ferrite core: Cr.=Cl.=5,0mm; pri-winding to terminal of sec.winding: Cr.=Cl.=4,0mm.

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	0,2	0,6	0,9	1,2	1,5	1,7	1,9		—	—	N/A
≤50	0,2	0,6	0,9	1,2	1,5	1,7	1,9	—		—	N/A
≤50	0,4	1,2	1,8	2,4	3,0	3,4	3,8	—	—		N/A
>50 and ≤125	0,3	0,8	1,1	1,5	1,9	2,1	2,4		—	—	N/A
>50 and ≤125	0,3	0,8	1,1	1,5	1,9	2,1	2,4	—		—	N/A
>50 and ≤125	0,6	1,6	2,2	3,0	3,8	4,2	4,8	—	—		N/A
>125 and ≤250	0,6	1,3	1,8	2,5	3,2	3,6	**4,0**		—	—	**P**
>125 and ≤250	0,6	1,3	1,8	2,5	3,2	3,6	**4,0**	—		—	**P**
>125 and ≤250	1,2	2,6	3,6	5,0	6,4	7,2	**8,0**	—	—		**P**
>250 and ≤400	1,0	2,0	2,8	4,0	5,0	5,6	**6,3**		—	—	P
>250 and ≤400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—		—	N/A
>250 and ≤400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	—	—		N/A
>400 and ≤500	1,3	2,5	3,6	5,0	6,3	7,1	8,0		—	—	N/A
>400 and ≤500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	—		—	N/A
>400 and ≤500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	—	—		N/A
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		—	—	N/A
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	—		—	N/A
>500 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
>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
*), B=Basic, S=Supplementary and R=Reinforced											

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
≤50	0,2	0,6	0,8	1,1	1,4	1,6	1,8	N/A
>50 and ≤125	0,3	0,7	1,0	1,4	1,8	2,0	2,2	N/A
>125 and ≤250	0,4	1,0	1,4	2,0	2,5	2,8	**3,2**	P
>250 and ≤400	0,8	1,6	2,2	3,2	4,0	4,5	5,0	N/A
>400 and ≤500	1,0	2,0	2,8	4,0	5,0	5,6	6,3	N/A
>500 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

TABLE 30 RENSISTANCE TO HEAT, FIRE AND TRACKING (appended table)														P
Component	Manufacturer	Type	Ball pressure test					Glow wire test					Needle-flame test	Verdict
			75°C	cl. 11 +40°C	125°C	cl. 19 +25°C		GWT 550°C	GWT 650°C	GWT 750°C	GWFI 850°C	GWIT		
Plastic supporting LED PCB	---	POM			125					2s	2s			P
Transparent flame barrel	---	PMMA	75						No flame					P
Side plate near plastic supporting LED	---	POM	75						No flame					P
Side plate near synchronous motor	---	ABS	75						No flame					P
Side LED cover	---	ABS	75						No flame					P
Transformer bobbin	---	PF			125					No flame	No flame			P
Heating element supporter	---	PA			125				No flame					P
Wire connector	---	PA			125					2s	1s			P
Bobbin of fan motor		PA			125				No flame					P
Bobbin of synchronous motor	---	PA			125				No flame					P

Cord anchorage	---	PA	75						No flame					P
Flame plate		PS	75						7s					P
PCB	---	---											P	P

List of test equipment used: (See attachment 1)
(Note: This is an example of the required attachment. Other forms with a different layout but containing similar information are also acceptable.)

Clause	Measurement / testing	Testing / measuring equipment / material used	Range used	Calibration date

IEC60335_30I- ATTACHMENT			
Clause	Requirement - Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60335-2-30
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES
(Household and similar electrical appliances – Safety –
Part 2: Particular requirements for room heaters)

Differences according to:		EN 60335-2-30:2009 + A11: 2012 used in conjunction with EN 60335-1:2012 EN 62233:2008
Attachment Form No.	**:**	EU_GD_IEC60335_2_30J
Attachment Originator	**:**	LCIE
Master Attachment	**:**	2013-09

	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		P
	Multi-phase appliances to be connected to the supply mains: 400 V covered		N/A
	The instructions shall include the substance of the following: (EN 60335-2-30)		P
	Children of less than 3 years should be kept away unless continuously supervised.		P
	Children aged from 3 years and less than 8 years shall only switch on/off the appliance provided that it has been placed or installed in its intended normal operating position and they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children aged from 3 years and less than 8 years shall not plug in, regulate and clean the appliance or perform user maintenance.		P
	CAUTION — Some parts of this product can become very hot and cause burns. Particular attention has to be given where children and vulnerable people are present.		P
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.		P
	An indication that the device has been operated is given by:		P
	• a tactile feedback, or		N/A
	• an audible and visual feedback		P
7.12	The instructions include the substance of the following:		P

IEC60335_30I- ATTACHMENT			
Clause	Requirement - Test	Result - Remark	Verdict
	- 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		P
	- children shall not play with the appliance		P
	- cleaning and user maintenance shall not be made by children without supervision		P
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		P
	The height of the characters, measured on the capital letters, is at least 3 mm		P
	These instructions are also available in an alternative format, e.g. on a website		P
8.1.1	Also test probe 18 of EN 61032 is applied		P
	The appliance being in every possible position during the test		P
	The force on the probe in the straight position is increased to 10 N when probe 18 is used		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	No such part.	N/A
8.2	Compliance is checked by applying the test probes of EN 61032		P
	For built-in appliances and fixed appliances, the test probe B and probe 18 of EN 61032 are applied only after installation		N/A
11.8	Footnotes to “External enclosure of motor-operated appliances” to be taken into account		N/A
	The temperature rise of surfaces of heaters shall not exceed the values shown in Table 101. (EN 60335-2-30)		P
11.Z101	For the measurement of temperature rises the instructions from the manufacturer on where the appliance has to be situated during normal operations have to be followed. (EN 60335-2-30)		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

IEC60335_30I- ATTACHMENT			
Clause	Requirement - Test	Result - Remark	Verdict
20.2	Parts that are intended to be removed only for user maintenance are not removed. (EN 60335-2-30)		P
	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
22.Z101	Stationary appliances part or all of the body of which are positioned at a height below 850 mm from the floor and portable appliances that can be used on the floor shall not have accessible openings with a minor dimension exceeding 5,5mm. (EN 60335-2-30)		P
22.Z102	For appliances fitted with a supply cord with a plug, the free length of the supply cord measured from the inlet point in the appliance to the inlet point in the plug including the cord guard, shall be not less than 1 m and no more than 1,9 m. (EN 60335-2-30)	1,55m	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		P
	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:		P
	- 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		P
	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

IEC60335_30I- ATTACHMENT			
Clause	Requirement - Test	Result - Remark	Verdict
	Components that have not been separately tested and found to comply with the relevant standard, and		P
	components that are not marked or not used in accordance with their marking,		P
	are tested in accordance with the conditions occurring in the appliance, the number of samples being that required by the relevant standard		P
	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		P
	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,		N/A
	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:		P
	- for Class I appliances: standard sheet C2b, C3b or C4 ....:		P

IEC60335_30I- ATTACHMENT			
Clause	Requirement - Test	Result - Remark	Verdict
	- for Class II appliances: standard sheet C5 or C6 ....:		N/A
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:		N/A
	• 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		N/A
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 50366 or 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		N/A
	The duration of the test is as specified in 19.7		N/A

IEC60335_30I- ATTACHMENT			
Clause	Requirement - Test	Result - Remark	Verdict
ZA	**ANNEX ZA** (NORMATIVE) **SPECIAL NATIONAL CONDITIONS**		P
	Norway		N/A
19.5	The test is also applicable to appliances intended to be permanently connected to fixed wiring		N/A
	Norway		N/A
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		P
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		P
25.8	In the table, the lines for 10 A and 16 A are replaced by:		N/A
	> 10 and ≤ 13 1,25		N/A
	> 13 and ≤ 16 1,5		N/A
ZB	**ANNEX ZB** (INFORMATIVE) **A-DEVIATIONS**		N/A
	Ireland		N/A
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		P
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		P

IEC60335_30I- ATTACHMENT			
Clause	Requirement - Test	Result - Remark	Verdict
ZC	**ANNEX ZC** (NORMATIVE) **NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS**		P
	A list of referenced documents in this standard		P
ZD	**ANNEX ZD** (INFORMATIVE) **IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS**		P
	A table with IEC and CENELEC code designations for flexible cords		P
ZE	**ANNEX ZE** (INFORMATIVE) **SPECIFIC ADDITIONAL REQUIREMENTS FOR APPLIANCES AND MACHINES INTENDED FOR COMMERCIAL USE**		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**		P
	List of standards under CENELEC/TC61 with the allocation under the LVD (Low Voltage Directive) or the MD (Machinery Directive)..... :	LVD	P
ZG	**ANNEX ZG** (NORMATIVE) **UV APPLIANCES**		N/A
ZZ	**ANNEX ZZ** (INFORMATIVE) **COVERAGE OF ESSENTIAL REQUIREMENTS OF EC DIRECTIVES**		P
	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)		P

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		P
	Limit ……100%	Measured max. :1,976%	P

Measurement and Test Equipment List

Used MTE

Attachment: 1

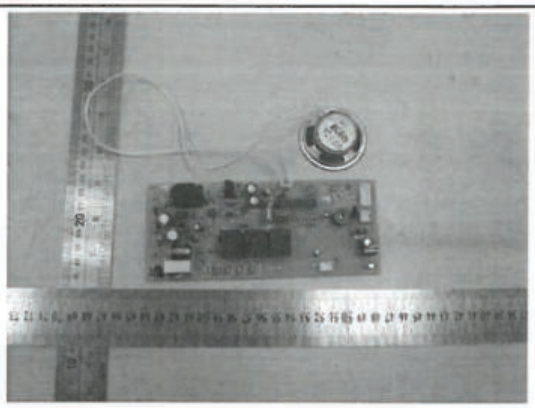
Report No.: 15091276 004 **Order No.: 154229960**

Description	MTE Type/model Internal ID	Next Calibration Date
☒ *Digital Caliper*	0~150mm L502	08.09.2017
☒ *Steel Tape*	5m L810	18.10.2017

Date and Signature: 2017.03.22 SHH

Prüfbericht-Nr.: *Test Report No.:*	**50074994 001**	**Auftrags-Nr.:** *Order No.:*	154229960	Seite 1 von 27 *Page 1 of 27*
Kunden-Referenz-Nr.: *Client Reference No.:*	52189049	**Auftragsdatum:** *Order date:*	2017.03.01(154229960)	
Auftraggeber: *Client:*	NINGBO CITY GENGXIN APPLIANCE INDUSTRY CO., LTD.			
Prüfgegenstand: *Test item:*	Speaker used at fireplace heater			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	(see page 3 for details)			
Auftrags-Inhalt: *Order content:*	TUV Rheinland Safety Assessment Test Report			
Prüfgrundlage: *Test specification:*	EN 60065:2014			

Wareneingangsdatum: *Date of receipt:*	Test sample received date: 21.03.2017
Prüfmuster-Nr.: *Test sample No.:*	A000503900-001
Prüfzeitraum: *Testing period:*	2017.03.22 - 2017.03.22
Ort der Prüfung: *Place of testing:*	see page 3
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland Shanghai Co. Ltd
Prüfergebnis*: *Test result*:*	Pass



geprüft von / *tested by:*			**kontrolliert von** / *reviewed by:*		
30.03.2017	Haibo Xu/ PE		30.03.2017	Nelson Yao / Reviewer	
Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*

Sonstiges / *Other:*
Per application letter dated: 02.03.2017

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *Test item complete and undamaged*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT
IEC 60065
Audio, video and similar electronic apparatus – Safety requirements

Report Number. ..... :	**50074994 001**
Date of issue ..... :	**2017-03-28**
Total number of pages ..... :	**27**
Name of Testing Laboratory preparing the Report ..... :	TÜV Rheinland Shanghai Co. Ltd
Applicant's name ..... :	NINGBO CITY GENGXIN APPLIANCE INDUSTRY CO., LTD.
Address ..... :	Xinpu Town CIXI, ZHE JIANG 315322, P.R.CHINA
Test specification:	
Standard ..... :	IEC 60065:2014
Test procedure ..... :	TUV Reinland Test report
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC60065M
Test Report Form(s) Originator .... :	Intertek Semko AB
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 ..... :	Speaker used at fireplace heater		
Trade Mark ..... :	N/A		
Manufacturer ..... :	Same as applicant		
Model/Type reference ..... :	EF431SLY-V (Models for fireplace heater) GX-EF420SLVY GX-EF450SLVY (Models for speaker drive PCB)		
Ratings ..... :	Refer to the main system test report		
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**Testing Laboratory:**	TÜV Rheinland Shanghai Co. Ltd	
Testing location/ address ..... :		No.177, 178, Lane 777 West Guangzhong Road, Jing'an District, Shanghai, China	
Tested by (name, function, signature) ..... :		See cover page	
Approved by (name, function, signature)... :		See cover page	
☐	**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 1- National differences (14 pages)

- Attachment 2 - Photo documentation (1 page)

Total number of pages in each attachment is indicated in each individual attachment.

Summary of testing:

All applicable tests as described in Test Case and Measurement Sections were performed.
Pre-production samples without serial numbers.
Specified maximum ambient temperature for operation is +45 °C.

Max. normal load: speaker with drive PCB was working continually and the speaker working at max. volume.

Tests performed (name of test and test clause):	**Testing location:**
7 Heating under normal operating conditions 11 Fault conditions	TÜV Rheinland Shanghai Co. Ltd No.177, 178, Lane 777 West Guangzhong Road, Jing'an District, Shanghai, China

Summary of compliance with National Differences (List of countries addressed):
EU Group Differences, EU Special National Conditions.

☒ **The product fulfils the requirements of EN 60065:2014**

Copy of marking plate:

Please refer to the main system test report

Test item particulars.....:	
Classification of installation and use.....:	Component for building-in
Supply Connection.....:	Factory wire
.....:	
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 .....:	2016-03-21
Date (s) of performance of tests.....:	2016-03-22

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) ..... :	NINGBO CITY GENGXIN APPLIANCE INDUSTRY CO., LTD. Xinpu Town CIXI, ZHE JIANG 315322, P.R.CHINA

General product information:

The product is a Speaker (8Ω, 0.5W) used at fireplace heater, The speaker was powered by low voltage circuits which insulated from primary circuits. The speaker with drive PCB was intended to be used at fireplace heater.

The speaker with drive PCB was considered as a component for building-in.
And the fireplace heater have been evaluated in the test report 15091276 004.

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
3	**GENERAL REQUIREMENTS**		N/A
	Safety class of the apparatus ..... :	The product was considered as a component for building-in. it should be considered in final system.	N/A
4	**GENERAL TEST CONDITIONS**		N/A
4.1.4	Ventilation instructions require the use of the test box	Yes	N/A
5	**MARKING AND INSTRUCTIONS**		N/A
5.1	**General requirements**		N/A
	Comprehensible and easily discernible	The product was considered as a component for building-in. it should be considered in final system.	N/A
	Permanent durability against water and petroleum spirit		N/A
5.2	**Identification and supply rating**		N/A
	a) Identification, maker ..... :	The product was considered as a component for building-in. it should be considered in final system.	N/A
	b) Model number or type reference ..... :		N/A
	c) Class II symbol or Class II with functional earth symbol if applicable ..... :		N/A
	d) Nature of supply ..... :		N/A
	e) Rated supply voltage ..... :		N/A
	f) Mains frequency if safety dependant ..... :		N/A
	g) Rated current or power consumption for apparatus supplied by supply apparatus for general use, on apparatus or in instruction manual ..... :		N/A
	Measured current or power consumption ..... :		N/A
	Deviation % (max 10%) ..... :		N/A
	h) Rated current or power consumption for apparat-us intended for connection to an a.c. mains supply :		N/A
	Measured current or power consumption ..... :		N/A
	Measured current or power consumption for Television set ..... :		N/A
	Deviation % (max 10%) ..... :		N/A
	Symbols explained in the user manual		N/A

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
5.3	**Terminals**		N/A
	a) Earth terminal		N/A
	b) Hazardous live terminals		N/A
	c) Markings on supply output terminals		N/A
5.4	**Caution marking**		N/A
	a) Use of triangle with exclamation mark		N/A
	b) Marking on loudspeaker grille, IEC 60417-5036		N/A
	c) User-replaceable coin / button cell battery marking		N/A
5.5	**Instructions**		N/A
5.5.1	Safety relevant information	The product was considered as a component for building-in. it should be considered in final system.	N/A
5.5.2	a) Mains powered equipment not exposed to dripping or splashing. Warning concerning objects filled with liquid, etc.		N/A
	b) Hazardous live terminals, instructions for wiring		N/A
	c) Instructions for replacing lithium battery		N/A
	d) Class I earth connection warning		N/A
	e) Instructions for multimedia system connection		N/A
	f) Special stability warning for attachment of the apparatus to the floor/wall		N/A
	g) Warning: battery exposure to heat		N/A
	h) Warning: protective film on CRT face		N/A
	i) Warning: Non-floor standing TV >7kg		N/A
	j) Warning: User replaceable coin / button cell battery		N/A
5.5.3	a-b) Disconnect device: plug/coupler or all-pole mains switch location, accessibility and markings		N/A
	c) Instructions for permanently connected equipment		N/A
	Marking, signal lamps or similar for completely disconnection from the mains		N/A
6	**HAZARDOUS RADIATION**		N/A
6.1	Ionizing radiation < 36 pA/kg (0,5 mR/h)	No such radiation exist.	N/A
	Ionizing radiation under fault condition		N/A
6.2	Laser radiation, emission limits to IEC 60825-1:2007 ..... :		N/A

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
	Emission limits under fault conditions ..... :		N/A
6.3	Light emiting diodes (LEDs) according to IEC 62471		N/A

7	**HEATING UNDER NORMAL OPERATING CONDITIONS**		P
7.1	**General**		**P**
7.1.1	Temperature rises not exceeding specified values; fuse links and other protective devices defeated	(see appended table)	P
7.1.2	Temperature rise of accessible parts	(see appended table)	N/A
7.1.3	Temperature rise of parts providing electrical insulation	(see appended table)	N/A
7.1.4	Temperature rise of parts acting as a support or as a mechanical barrier	(see appended table)	N/A
7.1.5	Temperature rise of windings	(see appended table)	N/A
7.1.6	Parts not subject to a limit under 7.1.1 to 7.1.4	(see appended table)	P
7.2	Softening temperature of insulating material supporting parts conductively connected to the mains carrying a current > 0,2 A at least 150 °C	(see appended table)	N/A

8	**CONSTRUCTIONAL REQUIREMENTS WITH REGARD TO THE PROTECTION AGAINST ELECTRIC SHOCK**		N/A
8.1	Conductive parts covered by lacquer, paper, untreated textile oxide films and beads etc. considered to be bare	The product was considered as a component for building-in. it should be considered in final system.	N/A
8.2	No shock hazard when changing voltage setting device, fuse-links or handling drawers etc.		N/A
8.3	Insulation of hazardous live parts not provided by hygroscopic material		N/A
8.4	No risk of electric shock from accessible parts or from parts rendered accessible following the removal of a cover which can be removed by hand		N/A
8.5	**Class I apparatus**		N/A
	Basic insulation between hazardous live parts and earthed accessible parts	The product was considered as a component for building-in. it should be considered in final system.	N/A
	Resistors bridging basic insulation complying with 14.2 a)		N/A
	Capacitors bridging basic insulation complying with 14.3.2 a)		N/A
	Protective earthing terminal		N/A
8.6	**Class II apparatus**		N/A

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
	a) Basic and supplementary insulation between hazardous live parts and accessible parts	The product was considered as a component for building-in. it should be considered in final system.	N/A
	b) Reinforced insulation between hazardous live parts and accessible parts		N/A
8.7	**Components bridging insulation**		N/A
	Basic insulation bridged by components complying with 14.4.5.3		N/A
	Components bridging basic, supplementary, double or reinforced insulation complying with 14.2 a) or 14.4		N/A
	Basic and supplementary insulation each being bridged by a capacitor or RC-unit complying with 14.3.2 a)		N/A
	Double or reinforced insulation being bridged with 2 capacitors or RC-units in series complying with 14.3.2 a)		N/A
	Double or reinforced insulation being bridged with a single capacitor or RC-unit complying with 14.3.2 b)		N/A
8.8	**Insulation thickness and thin sheet materials**		N/A
	Basic or supplementary insulation > 0,4 mm (mm) :		N/A
	Reinforced insulation > 0,4 mm (mm) ..... :		N/A
	Thin sheet material used inside the equipment		N/A
	Basic or supplementary insulation, at least two layers, each meeting 10.4		N/A
	Basic or supplementary insulation, three layers any two of which meet 10.4		N/A
	Reinforced insulation, two layers each of which meet 10.4		N/A
	Reinforced insulation, three layers any two which meet 10.4		N/A
8.9	Adequate insulation between internal hazardous live conductors and accessible parts, or between internal hazardous live parts and conductors connected to accessible parts		N/A
8.10	Double insulation between accessible parts and conductors connected to the mains		N/A
	Double insulation between conductors connected to accessible parts and parts connected to the mains		N/A
8.11	**Detaching of wires**		N/A
	No undue reduction of creepage or clearance distances if wires become detached		N/A

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
	Vibration test carried out ..... :		N/A
8.12	Adequate fastening of windows, lenses, lamp covers etc. (pull test 20 N for 10 s)		N/A
8.13	Adequate fastening of covers (push/pull test 50 N for 10 s)		N/A
8.14	No risk of damage to the insulation of internal wiring due to hot parts or sharp edges		N/A
8.15	Only special supply equipment can be used		N/A
8.16	Insulated winding wire without additional interleaved insulation		N/A
8.17	Endurance test as required by 8.16		N/A
8.18	**Disconnection from the mains**		
	Disconnect device		N/A
	All-pole switch or circuit breaker with >3mm contact separation		N/A
	Mains switch ON indication		N/A
8.19	Switch not fitted in the mains cord		N/A
8.20	Bridging components comply with clause 14		N/A
8.21	Non-separable thin sheet material		N/A
9	**ELECTRIC SHOCK HAZARD UNDER NORMAL OPERATING CONDITION**		N/A
9.1	**Testing on the outside**		N/A
9.1.1	**General**		N/A
9.1.1.1	**Requirements**		N/A
	Accessible parts shall not be hazardous live	The product was considered as a component for building-in. it should be considered in final system.	N/A
	Inaccessible terminals are not accessible or comply with relevant requirements		N/A
	For voltages >1000 V ac or >1500 V dc complies with clause 13.3.1 for basic insulation ..... :		N/A
9.1.1.2	**Determination of hazardous live parts**		
	a) Open circuit voltages		N/A
	b) Touch current measured from terminal devices using the network in annex D ..... :		N/A
	c) Discharge not exceeding 45 µC		N/A
	d) Energy of discharge not exceeding 350 mJ		N/A
9.1.1.3	Test with test finger and test probe		N/A

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
9.1.2	No hazardous live shafts of knobs, handles or levers		N/A
9.1.3	Ventilation holes and other holes tested by means of 4 mm x 100 mm test pin		N/A
9.1.4	Terminal devices tested with 1 mm x 20 mm test pin (10 N); test probe D of IEC 61032		N/A
	Terminal devices tested with 1 mm x 100 mm straight wire (1 N); test probe D of IEC 61032		N/A
9.1.5	Pre-set controls tested with 2.5 mm x 100 mm test pin (10 N); test probe C of IEC 61032		N/A
9.1.6	**Withdrawal of the mains plug**		
	No shock hazard due to stored charge after 2 s ... :		N/A
	Bleeder resistor(s) comply with 14.2 or no shock hazard when open circuited		N/A
	If C is not greater than 0,1 µF no test needed		N/A
9.1.7	**Resistance to external force**		
	a) Test probe 11 of IEC 61032 for 10 s (50 N)		N/A
	b) Test hook of fig. 4 for 10 s (20 N)		N/A
	c) 30 mm diameter test tool for 5 s (100 or 250 N)		N/A
9.2	No hazard after removing a cover by hand		N/A
10	**INSULATION REQUIREMENTS**		N/A
10.2	Insulation resistance (MΩ) at least 2 MΩ min. after surge test for basic and 4 MΩ min. for reinforced insulation ..... :	The product was considered as a component for building-in. it should be considered in final system.	N/A
10.3	Humidity treatment 48 h or 120 h ..... :		N/A
10.4	**Insulation resistance and dielectric strength**		N/A
	Between parts of different polarity directly connected to the mains	(see appended table)	N/A
	Between parts separated by BASIC or SUPPLEMENTARY insulation	(see appended table)	N/A
	Between parts separated by REINFORCED insulation	(see appended table)	N/A
11	**FAULT CONDITIONS**		P
11.1	No shock hazard under fault condition		P
11.2	**Heating**		**P**
11.2.1	**Requirements**		**P**
	No danger of fire to the surroundings		P
	Safety not impaired by abnormal heat		P

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
	Flames extinguish within 10 seconds		N/A
	No hazard from softening solder		N/A
	Soldered terminations not used as protective mechanism		N/A
11.2.2	Measurement of temperature rises	(see appended table)	P
11.2.3	Temperature rise of accessible parts	The product was considered as a component for building-in. it should be considered in final system.	N/A
11.2.4	Temperature rise of parts, other than windings and printed boards, providing electrical insulation	(see appended table)	N/A
11.2.5	Temperature rise of parts acting as a support or mechanical barrier		N/A
11.2.6	Temperature rise of windings	(see appended table)	P
11.2.7	**Printed boards**		N/A
	Temperature rise does not exceed the limits of table 3 or exceed the limits of table 3 by max. 100 K for max. 5 min	(see appended table)	N/A
	a) Temperature rise of V-0 or VTM-0 printed circuit boards exceeding the limits of table 3 by not more than 100 K for an area not greater than 2 cm^2		N/A
	b) Temperature rise of V-0 or VTM-0 printed circuit boards exceeding the limits of table 3 up to 300 K for an area not greater than 2 cm^2 for a maximum of 5 min		N/A
	Meets all the special conditions if conductors on printed circuit boards are interrupted		N/A
	Class I protective earthing maintained		N/A
11.2.8	Temperature rise of parts not subject to the limits of 11.2.2 to 11.2.7 shall not exceed the limits in table 3, item e), "Fault conditions".	(see appended table)	N/A
12	**MECHNICAL STRENGTH**		N/A
12.1	**Complete apparatus**		N/A
12.1.1	The apparatus have adequate mechanical strength		N/A
12.1.2	Bump test where mass >7 kg		N/A
12.1.3	Vibration test		N/A
12.1.4	Impact hammer test		N/A
	Steel ball test		N/A
12.1.5	Drop test for portable apparatus where mass ≤ 7 kg		N/A
12.1.6	Thermoplastic enclosures stress relief test		N/A

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
12.2	Fixing of knobs, push buttons, keys and levers		N/A
12.3	Remote controls with hazardous live parts		N/A
12.4	Drawers (pull test 50 N, 10 s)		N/A
12.5	Antenna coaxial sockets providing isolation		N/A
12.6	**Telescoping or rod antennas**		N/A
12.6.1	6,0mm diameter end		N/A
	Prevented from falling into the apparatus		N/A
12.6.2	Physical securement, removal prevented		N/A
12.7	**Apparatus containing coin / button cell batteries**		N/A
12.7.2	Reduced possibility for children to remove battery		N/A
12.7.3	**Tests**		N/A
12.7.3.2	Stress relief test		N/A
12.7.3.3	Battery replacement test		N/A
12.7.3.4	Drop test		N/A
12.7.3.5	Impact test		N/A
12.7.3.6	Crush test		N/A
12.7.4	Battery not accessible; or not removable		N/A
13	**CLEARANCES AND CREEPAGE DISTANCES**		N/A
13.1	Clearances in accordance with 13.3	The product was considered as a component for building-in. it should be considered in final system.	N/A
	Creepage distances in accordance with 13.4		N/A
13.2	Determination of working voltage		N/A
13.3	**Clearances**		
13.3.1	Comply with 13.3 or Annex J		N/A
13.3.2	Circuits conductively connected to the mains comply with table 8 and, where applicable, table 9..... :		N/A
13.3.3	Circuits not conductively connected to the mains comply with table 10		N/A
13.3.4	Measurement of transient voltages		N/A
13.4	Creepage distances not less than appropriate table 11 minimum values		N/A
13.5	**Printed boards**		N/A
13.5.1	Conductors complying with pull-of and peel strength requirements, one of which may be conductively connected to the mains, as in fig. 10		N/A

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
13.5.2	Type B coated printed circuit boards complying with IEC 60664-3 (basic insulation only)		N/A
13.6	Conductive parts along uncemented joints clearances and creepage distances comply with 13.3 and 13.4		N/A
	Conductive parts along reliably cemented joints comply with 8.8		N/A
	Temperature cycle test and dielectric strength test		N/A
	500V test for transformers, magnetic coupler and similar devices, if insulation is relied upon for safety		N/A
13.7	Enclosed, enveloped or hermetically sealed parts not conductively connected to the mains, clearances and creepage distances as in table 12		N/A
13.8	Parts filled with insulating compound, meeting the requirements of 8.8		N/A
14	**COMPONENTS**		N/A
14.1	Flammability according to IEC 60695-11-10 or annex G, or 20.2.5		N/A
14.2	**Resistors**		N/A
	Resistors separately approved ..... :		N/A
	a) Resistors between hazardous live parts and accessible metal parts		N/A
	b) Resistors, other than between hazardous live parts and accessible parts		N/A
14.3	**Capacitors and RC units**		N/A
	Capacitors separately approved :		N/A
14.3.1	Damp heat test duration 21 days		N/A
14.3.2	Y capacitors tested to IEC 60384-14:2005 ..... :		N/A
14.3.3	X capacitors tested to IEC 60384-14:2005 ..... :		N/A
14.3.4	Capacitors operating at mains frequency but not connected to the mains: tests for X2 ..... :		N/A
14.3.6	Capacitors with volume exceeding 1750 mm³, where short-circuit current exceeds 0,2 A: compliance with IEC 60384-1, 4.38 category B or better ..... :		N/A
	Capacitors with volume exceeding 1750 mm³, mounted closer to a potential ignition source than table 13 permits: compliance with IEC 60384-1, 4.38 category B or better ..... :		N/A
14.4	**Inductors and windings**		N/A
14.4.1	Comply with IEC 61558-1, IEC 61558-2 (as relevant) and clause 20.2.5		N/A

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
	Transformers and inductors separately approved :		N/A
14.4.2	Transformers and inductors marked with manufacturer's name and type ..... :		N/A
14.4.3	General		N/A
	Insulation material complies with clause 20.2.5		N/A
14.4.4	**Constructional requirements**		
14.4.4.1	Clearances and creepage distances comply with clause 13		N/A
14.4.4.2	Transformers meet the constructional requirements		N/A
14.4.5	**Separation between windings**		
14.4.5.1	Class II transformers have adequate separation between hazardous live parts and accessible parts (double or reinforced insulation) ..... :		N/A
	Coil formers and partition walls > 0,4 mm		N/A
14.4.5.2	Class I transformers, with basic insulation and protective screening only if all 7 conditions are met		N/A
14.4.5.3	Separating transformers with at least basic insulation		N/A
14.4.6	**Insulation between hazardous live parts and accessible parts**		N/A
14.4.6.1	Class II transformers have adequate insulation between hazardous live parts and accessible parts (double or reinforced insulation)		N/A
	Coil formers and partition walls > 0,4 mm		N/A
14.4.6.2	Class I transformers have adequate insulation between hazardous live parts and accessible conductive parts or those conductive parts or protective screens connected to a protective earth terminal		N/A
	Winding wires connected to protective earth have adequate current-carrying capacity		N/A
14.5	**High voltage components and assemblies (U > 4kV peak)**		N/A
14.5.1	Component meets category V-1 of IEC 60695-11-10		N/A
14.5.2	High voltage transformers and multipliers		N/A
14.5.3	High voltage assemblies and other parts		N/A
14.6	**Protective devices**		N/A
14.6.1	Protective devices used within their ratings		N/A
	External clearances and creepage distances meet requirement of clause 13 for the voltage across the device when opened		N/A
14.6.2	**Thermal releases**		N/A

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
14.6.2.1	Comply with 14.6.2.2, 14.6.2.3 or 14.6.2.4		N/A
14.6.2.2	a) Thermal cut-outs separately approved		N/A
	b) Thermal cut-outs tested as part of the submission		N/A
14.6.2.3	a) Thermal links separately approved		N/A
	b) Thermal links tested as part of the submission		N/A
14.6.2.4	Thermal devices re-settable by soldering		N/A
14.6.3	**Fuses and fuse holders**		N/A
14.6.3.1	Fuse-links in the mains circuit according to IEC 60127		N/A
14.6.3.2	Correct marking of fuse-links adjacent to holder ... :		N/A
14.6.3.3	Not possible to connect fuses in parallel		N/A
14.6.3.4	Not possible to touch hazardous live parts when replacing fuse-links without the use of a tool ..... :		N/A
14.6.4	PTC thermistors comply with IEC 60730-1:2010		N/A
	PTC devices (>15 W) category V-1 or better		N/A
14.6.5	Circuit protectors have adequate breaking capacity and their position is correctly marked		N/A
14.7	**Switches**		N/A
14.7.1 a)	Separate testing to IEC 61058-1 including: - 10 000 operations - Normal pollution suitability - For CRT TV's, make and break speed independent of speed of actuation - V-0 or compliance with G.1.1		N/A
14.7.1 b)	**Tested in the apparatus**		N/A
	Switch controlling > 0.2A with open contact voltage > 35 V (peak) / 24 V dc complying with 14.6.3, 14.6.4 and V-0 or G.1.1		N/A
	Switch controlling > 0.2A with open contact voltage < 35 V (peak) / 24 V dc complying with 14.6.3 and V-0 or G.1.1		N/A
	Switch controlling ≤ 0.2A with open contact voltage > 35 V (peak)/24 V dc complying with 14.6.4 and V-0 or G.1.1		N/A
14.7.2	Switch tested to 14.7.1 b) checked according to IEC 61058-1 clause 13.1 and 10 000 operation test		N/A
14.7.3	Switch tested to 14.6.1 b) compliant with IEC 61058-1 subclause 16.2.2 d) and m) not attaining excessive temperatures in use		N/A
14.7.4	Switch tested to 14.6.1 b) has adequate dielectric strength		N/A

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
14.7.5	Mains switch controlling mains socket outlets additional tests to IEC 61058-1		N/A
14.8	Safety interlocks according to 2.8 of IEC 60950-1		N/A
14.9	Voltage setting device and the like are not likely to be changed accidentally		N/A
14.10	**Motors**		N/A
14.10.1	a) Endurance test on motors		N/A
	b) Motor start test		N/A
	Dielectric strength test		N/A
14.10.2	Not adversely affected by oil or grease etc.		N/A
14.10.3	Protection against moving parts		N/A
14.10.4	Motors with phase-shifting capacitors, three-phase motors and series motors meet clause. B.8, B.9 and B.10 of IEC 60950-1, Annex B		N/A
14.11	**Batteries**		N/A
14.11.1	Comply with IEC 62133 if applicable		N/A
	Batteries mounted with no risk of accumulation of flammable gases		N/A
14.11.2	No possibility of recharging user replaceable non-rechargeable batteries		N/A
14.11.3	Recharging currents and times within manufacturers limits		N/A
	Lithium batteries discharge and reverse currents within the manufacturers limits		N/A
14.11.4	Battery mould stress relief		N/A
14.11.5	Battery drop test		N/A
14.12	**Optocouplers**		N/A
	Comply with constructional requirements of clause 8		N/A
	External clearances and creepage comply with 13.1		N/A
	Compound completely filling the casing or internal clearances and creepage comply with 13.1 ..... :		N/A
	a) Complies with 13.6 (jointed insulation) and N.3.2		N/A
	b) Complies with IEC 60747-5-5:2007		N/A
	c) Complies with 13.8		N/A
14.13	**Surge suppression varistors**		N/A
	Comply with IEC 61051-2		N/A
	Not connected between mains and accessible parts except for earthed parts of permanently connected apparatus		N/A

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
	GDT bridging basic insulation complies with electric strength and distance requirements		N/A
	Complies with the climatic, voltage, current pulse, fire hazard and thermal stress requirements of 14.13		N/A
15	**TERMINALS**		N/A
15.1	**Plugs and sockets**		N/A
15.1.1	Mains plug, appliance inlet, interconnection couplers and mains socket-outlet meet the appropriate standard		N/A
	Overloading of plugs or appliance inlets prevented if the apparatus has mains socket outlets		N/A
	Overloading of internal wiring prevented if the apparatus has mains socket outlets		N/A
15.1.2	Design of connectors other than for mains power		N/A
	Design of sockets with symbol of 5.3 b) design		N/A
15.1.3	Design of terminals and connectors used in output circuits of supply apparatus		N/A
15.2	**Provision for protective earthing**		N/A
	Accessible conductive parts of Class I equipment reliably connected to earth terminal, within equipment		N/A
	Protective earth conductors correctly fixed and coloured		N/A
	Separate protective earth terminal near mains terminal and comply with 15.3		N/A
	Protective earth terminal resistant to corrosion		N/A
	Earth resistance test: < 0,1 Ω at 25 A ..... :		N/A
15.3	**Terminals for external flexible cords and for permanent connection to the mains supply**		N/A
15.3.1	Adequate terminals for connection of permanent wiring		N/A
15.3.2	Reliable connection of non-detachable cords		N/A
	Not soldered to conductors of a printed circuit board		N/A
	Adequate clearances and creepage distances between connections should a wire break away		N/A
	Wire secured by additional means to the conductor		N/A
15.3.3	Screws and nuts clamping conductors have adequate threads: ISO 261, ISO 262 or similar		N/A

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
15.3.4	Conductors adequately fixed (two independent fixings)		N/A
15.3.5	Terminals allow connection of conductors having appropriate cross-sectional area		N/A
15.3.6	Terminals to 15.3.3 have sizes required by table 16		N/A
15.3.7	Terminals clamp conductors between metal and have adequate pressure		N/A
	Terminals designed to avoid conductor slipping out when tightened		N/A
	Terminals adequately fixed when tightened or loosened (no loosening, wiring not stressed, distances not reduced)		N/A
15.3.8	Terminals carrying a current more than 0,2 A: contact pressure not transmitted by insulating material except ceramic		N/A
15.3.9	Termination of non-detachable cords: wires terminated near to each other		N/A
	Terminals located and shielded: test with 8 mm strand		N/A
15.4	**Devices forming a part of the mains plug**		N/A
15.4.1	No undue strain on mains socket-outlets		N/A
15.4.2	Device complies with standard for dimensions of mains plugs		N/A
15.4.3	Device has adequate mechanical strength (tests a,b,c)		N/A
16	**EXTERNAL FLEXIBLE CORDS**		N/A
16.1	Mains cords sheathed type, complying with IEC 60227 for PVC or IEC 60245 for synthetic rubber cords ..... :		N/A
	Non-detachable cords for Class I have green/yellow core for protective earth		N/A
16.2	Mains cords conductors have adequate cross-sectional area for rated current consumption of the equipment		N/A
16.3	Flexible cords not complying with 16.1, used for interconnections between separate units of equipment used in combination and carrying hazardous live voltages comply with a) and b)		N/A
16.4	Flexible cords used for connection between equipment have adequate cross-sectional areas to avoid temperature rise under normal and fault conditions		N/A
16.5	Adequate strain relief on external flexible cords		N/A

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
	Not possible to push cord back into equipment		N/A
	Strain relief device unlikely to damage flexible cord		N/A
	For mains cords of Class I equipment, hazardous live conductors become taut before earth conductor		N/A
16.6	Apertures for external flexible cord: no risk of damage to the cord during assembly or movement in use		N/A
16.7	Transportable apparatus have appliance inlet according to IEC 60320-1 or means of stowage to protect the cord		N/A
17	**ELECTRICAL CONNECTIONS AND MECHANICAL FIXINGS**		N/A
17.1	Table 20 torque test metal thread, 5 times ..... :		N/A
	Table 20 torque test non-metallic thread, 10 times .. :		N/A
17.2	Correct introduction into female threads in non-metallic material		N/A
17.3	Cover fixing screws captive or no hazard when replaced by a screw whose length is 10 times its diameter		N/A
17.4	No loosening of conductive parts carrying a current > 0,2 A		N/A
17.5	Contact pressure not transmitted through insulating material other than ceramic for connections carrying a current > 0,2 A		N/A
17.6	Stranded conductors of flexible supply cords carrying a current > 0,2 A with screw terminals not consolidated by solder		N/A
17.7	Cover fixing devices have adequate strength and their positioning is unambiguous		N/A
17.8	Fixing means for detachable legs or stands provided		N/A
17.9	Internal pluggable connections, affecting safety, unlikely to become disconnected		N/A
18	**MECHANICAL STRENGTH OF PICTURE TUBES AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION**		N/A
18.1	Comply with IEC 61965 or 18.2		N/A
18.2	Non-intrinsically protected tubes		N/A
19	**STABILITY AND MECHANICAL HAZARDS**		N/A

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
19.1	Apparatus > 7kg have adequate stability or is required to be fastened in place and provided with the warning of 5.5.2 f) ..... :		N/A
19.2	Test at 10° to the horizontal		N/A
19.3	Vertical force test 100 N applied downwards		N/A
19.4	Horizontal force test, 100 N or 13% of weight, applied horizontally to point of least stability		N/A
19.5	Edges or corners not hazardous		N/A
19.6	**Mechanical strength of glass**		N/A
19.6.1	Glass surfaces (exc.laminated) with an area exceeding 0,1 m² or major dimension > 450 mm, pass the test of 12.1.4		N/A
19.6.2	Fragmentation test		N/A
19.7	**Wall or ceiling mounting means**		N/A
19.7.1 - 19.7.3	Not dislodged and remain mechanically intact after test according to 19.7.2 Test 1, Test 2 or Test 3..... :		N/A
20	**RESISTANCE TO FIRE**		N/A
20.1	Start and spread of fire is prevented		N/A
20.2	**Electrical components and mechanical parts**		N/A
20.2.1	a) Exemption for components contained in an enclosure of material V-0 to IEC 60695-11-10 with openings not exceeding 1 mm in width		N/A
	b) Exemption for small components		N/A
20.2.2	Electrical components meet the requirements of Clause 14 or 20.2.5		N/A
20.2.3	Insulation of internal wiring working at voltages > 4 kV or leaving an internal fire enclosure, or located within the areas mentioned in Table 21, comply with G.2		N/A
20.2.4	Material of printed circuit boards on which the available power exceeds 15 W at a voltage between 50 V and 400 V (peak) a.c. or d.c. meets V-1 or better to IEC 60695-11-10, unless used in a fire enclosure		N/A
	Material of printed circuit boards on which the available power exceeds 15 W at a voltage >400 V (peak) a.c. or d.c. meets V-0 to IEC 60695-11-10.		N/A
20.2.5	Components and parts not covered by 20.1.1, 20.1.2 and 20.1.3 (other than fire enclosures) mounted nearer to a potential ignition source than the distances in Table 21 comply with the relevant flammability category in Table 21	(see appended table)	N/A

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
	Components and parts as above but shielded from a potential ignition source, with the barrier area in accordance with Table 21 and fig. 13		N/A
	Apparatus with voltages >4kV under normal operating conditions and distances to the enclosure exceed those specified Table 21, flammability classification HB40 or better is required for the enclosure		N/A
20.3	**Fire enclosure**		N/A
20.3.1	Potential ignition sources with open circuit voltage > 4 kV (peak) a.c. or d.c. contained in a fire enclosure to V-1		N/A
20.3.2	Internal fire enclosures with openings not exceeding 1 mm in width and with openings for wires completely filled		N/A
20.3.3	Requirements of 20.2.1 and 20.2.2 met by an internal fire enclosure		N/A

ANNEX A	**ADDITIONAL REQUIREMENTS FOR APPARATUS WITH PROTECTION AGAINST SPLASHING WATER**		N/A
A.5	**Marking and instructions**		N/A
A.5.1	A.5.2 i) Marked with at least IPX4 (IEC 60529) 5.5.2 a) does not apply		N/A
A.10	**Insulation requirements**		N/A
A.10.3	**Splash and humidity treatment**		N/A
A.10.3.1	The enclosure provide adequate protection against splashing water		N/A
A.10.3.2	Complies with 10.3,duration of the test is 168h		N/A

ANNEX B	**APPARATUS TO BE CONNECTED TO TELECOMUNICATION THE TELECOMMUNICATION NETWORKS**		N/A
	Complies with IEC 62151 clause 1		N/A
	Complies with IEC 62151 clause 2		N/A
	Complies with IEC 62151 clause 3 modified		N/A
	Complies with IEC 62151 clause 4 modified		N/A
	Complies with IEC 62151 cause 5 modified		N/A
	Complies with IEC 62151 clause 6		N/A
	Complies with IEC 62151 clause 7		N/A
	Complies with IEC 62151 annex A, B and C		N/A

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX L	**ADDITIONAL REQUIREMENTS FOR ELECTRONIC FLASH APPARATUS FOR PHOTOGRAPHIC PURPOSES**		N/A
L.5	**Marking and instructions**		N/A
L.5.5.1	Instructions for battery chargers and Supply apparatus indicating type or model number of flash apparatus with which it is to be used		N/A
	Instructions for flash apparatus indicating type or model number of battery chargers or Supply apparatus with which it is to be used		N/A
L.7	**Heating under normal operating conditions**		N/A
L.7.1.6	Lithium batteries meet permissible temp rise in Table 3		N/A
L.9	**Electric shock hazard under normal operating conditions**		N/A
L. 9.1.1.1	Terminals for connection to synchroniser not hazardous live		N/A
L.14	**Components**		N/A
L.14.6.7	Mains switch characteristics appropriate to its function under normal conditions		N/A

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict

7.1	**TABLE: Heating Test**	**P**
	Ambient (°C) ..... :	23.6°C —
	Loudspeaker impedance (Ω)..... :	—

Cond.	U_n (V)	Hz	I_n (A)	P_n (W)	U_{out} (V)	P_{out} (W)	Operating Condition / Status
-							**Tests were considered in the final system. Please refer to the test report 15091276 004**

Test condition No.	*	**No.**	**No.**	—
Thermocouple Locations	**dT (K)**	**dT (K)**	**dT (K)**	**dT (K) limit**
X-Capacitor	3.0	-	-	**45**
Inductor 5D-9 coil	4.8	-	-	**50**
Electrolytic capacitor near Inductor	7.3	-	-	**50**
Inductor coil near Y-capacitor	13.5	-	-	**50**
Y-capacitor body	8.3	-	-	**45**
Optical-coupler body	10.2	-	-	**45**
PCB near SR3100	8.4	-	-	**75**
REL1	9.5	-	-	**30**
REL2	11.9	-	-	**30**
REL3	10.4	-	-	**30**
Ambient	23.6°C	-	-	-

Supplementary information:
* Input : 264V,50Hz, speaker with drive PCB was working continually and the speaker working at max. volume.

	TABLE: Heating test, resistance method	**N/A**
	Test condition No. ..... :	—
	Ambient, t_1 (°C)..... :	—
	Ambient, t_2 (°C)..... :	—

Temperature rise of winding	**R_1 (Ω)**	**R_2 (Ω)**	**ΔT (K)**	**Max. dT (K)**	**Insulation class**

Supplementary information:

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict

7.2	TABLE: Heat Resistance of Insulating Materials			N/A
Temperature T of part	**T - normal conditions (°C)**	**T - fault conditions (°C)**	**Min T softening (°C)**	

10.4	TABLE: Dielectric Strength		N/A
Test voltage applied between:	**Test potential applied (V)**	**Breakdown / flashover (Yes/No)**	
Between mains poles (primary fuse disconnected)			
Between parts separated by basic or supplementary insulation			
Between parts separated by double or reinforced insulation			
Supplementary information:			

10.4	TABLE: Insulation Resistance Measurements		N/A
Insulation resistance R between:	**R (MΩ)**	**Required R (MΩ)**	
Between mains poles (primary fuse disconnected)			
Between parts separated by basic or supplementary insulation			
Between parts separated by double or reinforced insulation			
Supplementary information:			

11	TABLE: Fault Conditions				P
No.	**Component**	**Fault**	**dT (K) / Component**	**Test conditions, test duration, test result**	
1	Speaker	Short circuit	PCB near SR3100:33.3°C; REL1: 35.3°C; X-Capacitor: 27.1°C Ambient:23.4°C	Unit was operating normally, no damage, no hazards.	
Supplementary information: The product was considered as a component for building-in. other parts should be considered in final system.					

IEC 60065			
Clause	Requirement + Test	Result - Remark	Verdict

13	TABLE: Clearance And Creepage Distance Measurements					N/A
Rated supply voltage:		Pollution degree .. :		Material Group .... :		
2 N force on internal parts applied:						
30 N force on outside of conductive enclosure applied:						

clearance and creepage distance at/of:	Working voltage (V)		Clearance (mm)		Creepage (mm)	
	U peak	U r.m.s.	Required	Measured	required	Measured
Primary (ac) to Earth (B)						
Primary (+dc) to Earth max (B)						
Primary (-dc) to Earth max (B)						
Across mains fuse F____ (B)						
Across primary directly connected to the mains (B)						
Hazardous live secondary to Earth (B)						
Optocoupler input to output (R)						
Primary to Secondary (R)						
Primary to accessible conductive parts (R)						
Hazardous live secondary to non-hazardous live secondary (R)						
Hazardous live secondary to unearthed conductive enclosure (R)						

Supplementary information:

The product was considered as a component for building-in. it should be considered in final system.

14	TABLE: Critical components information				N/A
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1)]**
- Description:					

Supplementary information:

[1)] Provided evidence ensures the agreed level of compliance. See OD-CB2039.

The product was considered as a component for building-in. it should be considered in final system.

IEC60065M - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60065
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES

(Audio, video and similar electronic apparatus – Safety requirements)

Differences according to.....:	EN 60065:2014
Attachment Form No.....:	EU_GD_IEC60065M
Attachment Originator .....:	Intertek Semko AB
Master Attachment.....:	Date 2016-10

	CENELEC COMMON MODIFICATIONS (EN)			
General	1.1.3 Note 2	5.4 Note	5.5.2 Note 1 and Note 2	P
	13.3.1 Note 4	14.1 Note 1 and Note 2	15.1.1 Note 1 and Note 2	
	15.2 Note 2	16.1 Note 2	16.2 Note	
	20 Note	J.3 Note 1 and Table J.1 Note 2		
1.2	**Normative references**			P
	Add the following: EN 71-1, *Safety of toys – Part 1: Mechanical and physical properties* EN 50332-1, *Sound system equipment: Headphones and earphones associated with personal music players – Maximum sound pressure level measurement methodology – Part 1: General method for "one package equipment"* EN 50332-2, *Sound system equipment: Headphones and earphones associated with personal music players – Maximum sound pressure level measurement methodology – Part 2: Matching of sets with headphones if either or both are offered separately, or are offered as one package equipment but with standardised connectors between the two allowing to combine components of different manufacturers or different design*			P

IEC60065M - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

3	**General requirements**		P
3.Z1	**Protective devices** To protect against excessive current, short-circuits and earth faults in MAINS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c): a) except as detailed in b) and c), protective devices necessary to comply with the requirements of Clause 11 shall be included as parts of the equipment; b) for components in series or parallel with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation; c) it is permitted for equipment supplied via an industrial mains plug or for PERMANENTLY CONNECTED APPARATUS, to rely on dedicated over current and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for apparatus not supplied via an industrial mains plug or for PERMANENTLY CONNECTED APPARATUS the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.		N/A
4	**General test conditions**		P
4.1.1	**Replace** the text of the note by: NOTE For ROUTINE TEST, reference is made to EN 50514:2008.		N/A

IEC60065M - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

6	**Hazardous radiations**		N/A
6.1	**Replace** the entire subclause by the following: Apparatus including a potential source of ionizing radiation shall be so constructed that personal protection against ionizing radiation is provided under normal operating conditions and under fault conditions. *Compliance is checked by measurement under the following conditions*: *In addition to the normal operating conditions, all controls adjustable from the outside BY HAND, by any object such as a tool or a coin, and those internal adjustments or pre-sets which are not locked in a reliable manner, are adjusted so as to give maximum radiation whilst maintaining an intelligible picture for 1 h, at the end of which the measurement is made.* NOTE 1 Soldered joints and paint lockings are examples of adequate locking. *The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm^2, at any point 10 cm from the outer surface of the apparatus* *Moreover, the measurement shall be made under fault conditions causing an increase of the high-voltage, provided an intelligible picture is maintained for 1 h, at the end of which the measurement is made.* *The dose-rate shall not exceed 1 µSv/h (0,1 mR/h) taking account of the background level.* NOTE 2 These values appear in Council Directive 96/29/Euratom of 13 May 1996. *A picture is considered to be intelligible if the following conditions are met*: *- a scanning amplitude of at least 70 % of the usable screen width;* *- a minimum luminance of 50 cd/m^2 with locked blank raster provided by a test generator;* *- a horizontal resolution corresponding to at least 1,5 MHz in the centre, with a similar vertical degradation;* *- not more than one flashover per 5 min.*		N/A
16	**External flexible cords**		N/A
16.1	**Add** the following note after the first paragraph: NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.		N/A

IEC60065M - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

Z1	**Protection against excessive sound pressure from personal music players**		N/A
Z1.1	**General** This subclause specifies requirements for protection against excessive sound pressure from personal music players that are closely coupled to the ear. Requirements for earphones and headphones intended for use with personal music players are also covered. A personal music player is a portable equipment for personal use, that: − is designed to allow the user to listen to recorded or broadcast sound or video; and − uses a listening device, such as headphones or earphones that can be worn in or on or around the ears; and − is body worn (of a size suitable to be carried in a clothing pocket) and is intended for the user to walk around while in use. EXAMPLES CD players, MP3 audio players, mobile phones with MP3 type features, PDA's or similar equipment. A personal music player shall comply with the requirements of this subclause. NOTE 1 Protection against acoustic energy sources from telecom terminal equipment is referenced to ITU-T Recommendation P.360. The requirements in this subclause are valid for music or video mode only. The requirements do not apply to: − professional equipment; NOTE 2 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment. − hearing aid equipment and other devices for assistive listening; − the following types of analogue personal music players: • long distance radio receiver (for example, a multiband radio receiver or a world band radio receiver, an AM radio receiver) and • cassette player/recorder; NOTE 3 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies. − player while connected to an external amplifier that does not allow the user to walk around while in use. For equipment clearly designed or intended for use by young children, the limits of EN 71-1 apply.		N/A

IEC60065M - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Z1.2	**Equipment requirements** No safety provision is required for equipment that complies with the following: − equipment provided as a package (personal music player with its listening device), where the acoustic output $L_{Aeq,T}$ is ≤ 85 dB(A) measured while playing the fixed "programme simulation noise" as described in EN 50332-1; and − personal music player provided with an analogue electrical output socket for a listening device, where the electrical output is ≤ 27 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" as described in EN 50332-1. NOTE 1 Wherever the term acoustic output is used in this subclause, the 30 s A-weighted equivalent sound pressure level *L*Aeq,T is meant. See also Z1.5 and Annex ZE. All other equipment shall: a) protect the user from unintentional acoustic outputs exceeding those mentioned above; and b) have a standard acoustic output level not exceeding those mentioned above, and automatically return to an output level not exceeding those mentioned above when the power is switched off; and c) provide a means to actively inform the user of the increased sound pressure when the equipment is operated with an acoustic output exceeding those mentioned above. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an acoustic output exceeding those mentioned above. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time; and NOTE 2 Examples of means include visual or audible signals. Action from the user is always required. NOTE 3 The 20 h listening time is the accumulative listening time, independent how often and how long the personal music player has been switched off. d) have a warning as specified in Z1.3; and e) not exceed the following: 1) equipment provided as a package (player with its listening device), the acoustic output shall be ≤ 100 dB(A) measured while playing the fixed "programme simulation noise" described in EN 50332-1; and 2) a personal music player provided with an analogue electrical output socket for a listening device, the electrical output shall be ≤ 150 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" described in EN 50332-1. For music where the average sound pressure (long term $L_{Aeq,T}$) measured over the duration of the song is lower than the average produced by the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song does not exceed the basic limit of 85 dB(A). In this case, *T* becomes the duration of the song. NOTE 4 Classical music typically has an average sound pressure (long term *L*Aeq,T) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the song and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dB(A). NOTE 5 For example, if the player is set with the programme simulation noise to 85 dB(A), but the average music level of the song is only 65 dB(A), there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dB(A).		N/A

IEC60065M - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Z1.3	The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following: − the symbol of Figure Z1 with a minimum height of 5 mm; and − the following wording, or similar: To prevent possible hearing damage, do not listen at high volume levels for long periods.  **Figure Z1 – Warning label (IEC 60417-6044)** Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.		N/A
Z1.4	**Requirements for listening devices (headphones, earphones, etc.)**		N/A
Z1.4.1	**Corded passive listening devices with analogue input** With 94 dB(A) sound pressure output $L_{Aeq,T}$, the input voltage of the fixed "programme simulation noise" described in EN 50332-2 shall be ≥ 75 mV. This requirement is applicable in any mode where the headphones can operate including any available setting (for example built-in volume level control, an additional sound feature like equalization, etc.). NOTE The values of 94 dB(A) – 75 mV correspond with 85 dB(A) – 27 mV and 100 dB(A) – 150 mV.		N/A
Z1.4.3	**Cordless listening devices** In wireless mode: − with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and − respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and − with volume and sound settings in the listening device (for example built-in volume level control, additional sound feature like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the above-mentioned programme simulation noise, the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dB(A).		N/A

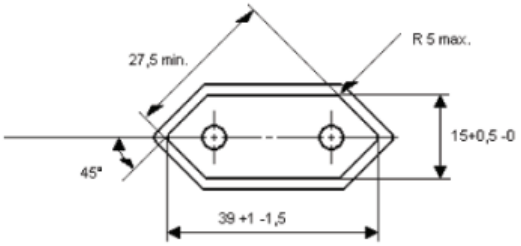
IEC60065M - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Z1.5	**Measurement methods** Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable. Unless stated otherwise, the time interval *T* shall be 30 s. NOTE Test method for cordless equipment provided without listening device should be defined.		N/A
	ANNEXES		N/A
Annex B	**Replace** the text of Note 1 by the following: In the CENELEC countries listed in IEC 62151, special national conditions apply.		N/A
Annex N	After the note in N.1, **add** the following: For ROUTINE TEST, reference is made to EN 50514:2008.		N/A
ZA	**NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS**		—
ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		N/A
2.6.1	**Denmark** The following is added: Certain types of Class I apparatus, see 15.1.1, may be provided with a plug not establishing earthing continuity when inserted in Danish socket-outlets *Justification:* Heavy Current Regulations, Section 6c		N/A
3.Z1	**Denmark** **Add** to the end of the subclause Due to many existing installations where the socket-outlets can be protected with fuses with higher rating than the rating of the socket-outlets the protection for pluggable equipment type A shall be an integral part of the equipment. *Justification:* In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.		N/A

IEC60065M - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.4	**Denmark, Finland, Norway and Sweden** To the end of the subclause the following is added: CLASS I apparatus which is intended for connection to the building installation wiring via a plug or an appliance coupler, or both and in addition is intended for connection to other apparatus or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network TERMINALS and ACCESSIBLE parts, have a marking stating that the apparatus must be connected to an earthed MAINS socket-outlet. The marking text in the applicable countries shall be as follows: In **Denmark**: “Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.” In **Finland**: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In **Norway**: “Apparatet må tilkoples jordet stikkontakt” In **Sweden**: “Apparaten skall anslutas till jordat uttag”		N/A

IEC60065M - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.5.2	**Norway and Sweden** **Add** to the end of 5.5.2 (after the compliance statement) the following: The screen of the coaxial cable of the television distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation need to be isolated from the screen of a coaxial cable based television distribution system. It is however accepted to provide the insulation external to the apparatus by an adapter or an interconnection cable with galvanic isolator, which may be provided by a retailer, for example. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the apparatus is intended to be used in: “Apparatus connected to the protective earthing of the building installation through the MAINS connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a television distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)” NOTE In Norway, due to regulation for installations of CATV-installations, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min. Translation to Norwegian (the Swedish text will also be accepted in Norway): “Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel-TV nettet.” Translation to Swedish: ”Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet.”		N/A

IEC60065M - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
13.3.1	**Norway** **Add** to the second paragraph the following: Due to the IT power distribution system used, the a.c. MAINS supply voltage is considered to be equal to the line-to-line voltage, and will remain 230 V in case of a single earth fault. *Justification:* Based on a use in Norway of an IT power distribution system where the neutral is not provided		N/A
15.1.1	**Denmark** To the first paragraph the following is added: In Denmark, supply cords of single phase appliances having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1. Appliances of Class I provided with socket-outlets with earth contact or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug which assure earth continuity with the socket-outlet in accordance with DS 60884-2-D1. If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-1. To the second paragraph the following is added: Socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance with DS 60884-2-D1 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with DS 60884-2-D1 Standard Sheet DKA 1-3a or DKA 1-1c. To the third paragraph the following is added: Mains socket-outlets with earthing contact shall be in compliance with DS 60884-2-D1, Standard sheet DK 1-3a, DK 1-1c, DK 1-1d, DK 1-5a or DK 1-7a *Justification*: Heavy Current Regulations, Section 6c		N/A
15.1.1	**Ireland** Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, “13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. *Justification*: SI 525: 1997		N/A

IEC60065M - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

15.1.1	**Norway** Mains socket-outlets mounted on Class II apparatus shall comply with the specifications given in CEE Publ. 7 as far as applicable, with the following amendments: § 8 Dimensions a) 2,5 A 250 V two-pole socket-outlets for electronic apparatus shall comply with the enclosed Standard Sheet I. STANDARD SHEET I 2,5 A/250 V SOCKET-OUTLET FOR ELECTRONIC APPLIANCES OF CLASS II  Dimensions in mm Other dimensions according to CEE Publication 7 Standard Sheet I "Portable Single-Way Socket-Outlets". § 24 Mechanical strength a) 2,5 A, 250 V socket-outlets for Class II electronic apparatus are tested as specified in EN 60065:2014, 12.1.3. Also the protecting rim shall be tested. *Justification*: Act of 24 May 1929 relating to supervision of electrical installation (TEA 1929/FEL 1998).		N/A
15.1.1	**United Kingdom** Apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug shall be fitted with a "standard plug" in accordance with Statutory Instrument 1768: 1994: The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those Regulations. NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug. *Justification*: SI 1768: 1994		N/A

IEC60065M - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex B	**Finland, Norway and Sweden** All sub clauses given below are sub clauses of IEC 62151 (ref. corrigenda 1 and 2 to IEC 62151). **Subclause 4.1.1 (corrigendum 2):** **Add** after the first paragraph: NOTE In **Finland**, **Norway** and **Sweden**, CLASS I equipment which is intended for connection to the building installation via a non-industrial plug or a non-industrial appliance coupler, or both and in addition is intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and ACCESSIBLE parts, has a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Finland: " Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan " In Norway: "Apparatet må tilkoples jordet stikkontakt" In Sweden: "Apparaten skall anslutas till jordat uttag" **Subclause 4.1.4 (corrigendum 1)** **Add** at the end of the subclause: NOTE In **Norway**, for requirements see 4.1.1, note and 5.3.1, note 1. **Subclause 4.2.1.2 (corrigendum 1)** **Add** at the end of the subclause: NOTE 3 In **Norway**, for requirements see 5.3.1, note 1. **Subclause 4.2.1.3 (corrigendum 2)** **Add** at the end of the subclause: NOTE In **Norway**, for requirements see 4.1.1, note and 5.3.1, note 1. **Subclause 4.2.1.4 (corrigendum 1)** **Number** the existing note as NOTE 1 and **add** at the end of the subclause the following NOTE 2: NOTE 2 In **Norway**, for requirements see 4.1.1, note and 5.3.1, note 1. **Subclause 5.3.1 (corrigendum 1)** **Add** after the first test specifications paragraph: NOTE 1 In **Finland**, **Norway** and **Sweden**, there are additional requirements for the insulation. **Renumber** the existing note as NOTE 2. For additional requirements for the insulation in Finland, Norway and Sweden in NOTE 1 the following text is added between the first and the second paragraph (this text is identical to the corresponding EN 60950-1:2001): NOTE 1 In **Finland**, **Norway** and **Sweden**, if this insulation is solid, including insulation forming part of a component, it shall at least consist of either • two layers of thin sheet material, each of which shall pass the electric strength test below, or • one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in the accordance with the compliance clause below and in addition: • passes the test and inspection criteria of 13.6 with an electric strength test of 10.3 using the test voltage of 1,5 kV multiplied by 1,6, and • is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5 kV (for performance of the test see N.2.1). It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2. A capacitor classified Y3 according to EN 132400:1994, may bridge this insulation under the following conditions: • the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 132400, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in IEC 62151:2000, 6.2.1; • the additional testing shall be performed on all the test specimens as described in EN 132400; • the impulse test of 2,5 kV is to be performed before the endurance test in EN 132400 in the sequence of tests as described in EN 132400. **Subclause 5.3.2 (corrigendum 1)** **Add** after the fourth dash: NOTE In **Finland**, **Norway** and **Sweden**, exclusions are applicable for equipment which is intended for connection to the building installation wiring using screw terminals or other reliable means, and for equipment which is intended for connection to the building installation wiring via an industrial plug and socket -outlet or an appliance coupler, or both, complying with EN 60309 or with a comparable national standard.		N/A

IEC60065M - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
J.2	**Norway** After Table J.1 the following is added: Due to the IT power distribution system used, the a.c. MAINS supply voltage is considered to be equal to the line-to-line voltage, and will remain 230 V in case of a single earth fault. *Justification:* Based on a use in Norway of an IT power distribution system where the neutral is not provided		N/A
ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		N/A
5.1	**Italy** The following requirements shall be fulfilled: - The power consumption in Watts (W) shall be indicated on TV receivers and in their instruction for use (Measurement according to IEC 60107-1) NOTE EN 60555-2 has since been replaced by IEC 60107-1:1997. - TV receivers shall be provided with an instruction for use, schematic diagrams and adjustments procedure in Italian language. - Marking for controls and terminals shall be in Italian language. Abbreviation and international symbols are allowed provided that they are explained in the instruction for use. - The ECC manufacturers are bound to issue a conformity declaration according to the above requirements in the instruction manual. The correct statement for conformity to be written in the instruction manual, shall be: Questo apparecchio è fabbricato nella CEE nel rispetto delle disposizioni del D.M. marzo 1992 ed è in particolare conforme alle prescrizioni dell'art. 1 dello stesso D.M. - The first importers of TV receivers manufactured outside EEC are bound to submit the TV receivers for previous conformity certification to the Italian Post Ministry (PP.TT). The TV receivers shall have on the backcover the certification number in the following form: D.M. 26/03/1992 xxxxx/xxxxx/S or T or pT S for stereo T for teletext pT for retrofitable teletext *Justification:* Ministerial Decree of 26 March 1992: National rules for television receivers trade. NOTE The ministerial decree above contains additional, but not safety relevant requirements.		N/A

IEC60065M - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
6.1	**Germany** The following requirement applies: For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking. *Justification*: German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the Council Directive 96/29/Euratom in Germany. NOTE Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int+49-531-592-6320, Internet: http://www.ptb.de		N/A
14.1	**Sweden** The following requirements shall be fulfilled: Switches containing mercury such as thermostats, relays and level controllers are not allowed.		N/A

ATTACHMENT 2 Photo Documentation

Report No.: 50074994 001

Type Designation: EF431SLY-V (Models for fireplace heater)
GX-EF420SLVY GX-EF450SLVY (Models for speaker drive PCB)

Photo 1 Top view

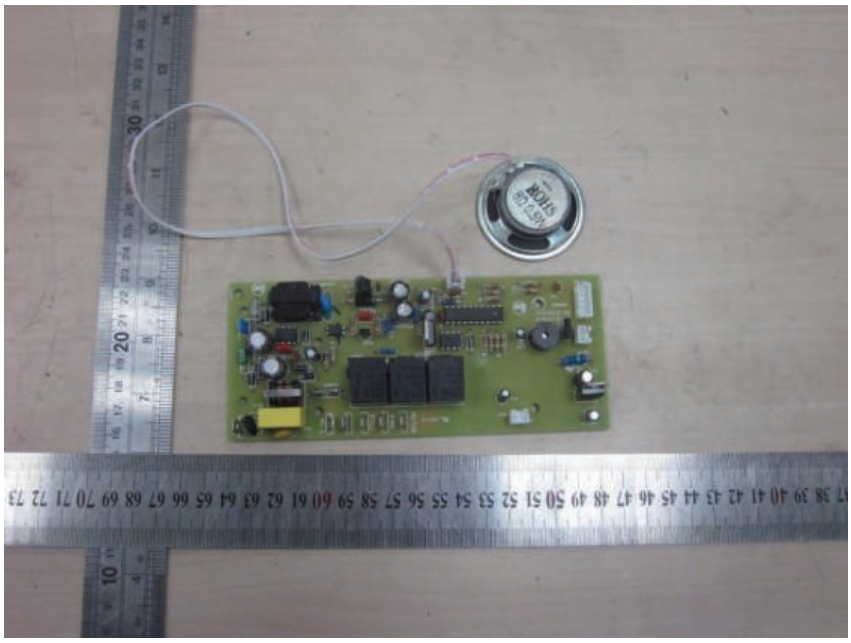


Photo 2 Bottom view