Advanced Safety Products

Technology Corp

CE

T.C.F.

Quality • Reliability • Professionalism

ADVANCED SAFETY PRODUCT
ASP TECHNOLOGY CORP

8F,-1, No.1, Zhongzheng Rd., Tucheng Dist., New Taipei City 23670, Taiwan (R.O.C.)
TEL:886-2-22613919, FAX:886-2-22613918, E-mail: asp.twn@gmail.com

Document of Contents

Note: * In response to Energy Saving and Carbon Reduction requirements, the technical file report T.C.F. (Technical Constructional File) to electronically file-based, written report will focus on important section and informational purposes only.

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致產品行銷歐洲之客戶 (CE Marking)

A. 自 1996 年 1 月 1 日起，銷歐產品必需符合歐盟 EMC 指令之後才能上市。
B. 自 1997 年 1 月 1 日起，銷歐產品必須同時符合 EMC 指令和低電壓指令 (LVD-Safety) 之後才能上市。
C. 自 2006 年 7 月 1 日起，銷歐產品必需符合歐盟 RoHS 指令之後才能上市。

技術檔案在行銷前必須準備齊全，以備歐聯國家機構隨時抽查，其內容至少包含：

1. Declaration of Conformity (D.O.C.) Form — 必須由歐洲分公司或進口商簽名負責 (見附件樣本)。
2. EMC 測試報告和 LVD-Safety 測試報告 — 可由實驗室核發或透過認證機構。
3. 原始之設計圖稿及規格書(如：線路圖、方塊圖、PCB Layout 圖、User's Manual 和 Sevice Manual 等)
4. 敘述製造時之生產檢查程序，以確保 EMC 和 LVD-Safety 特性之維持。
5. 任何會影響到 EMC 和 LVD-Safety 的變更敘述和必要之測試記錄。

附註：* 產品上要貼上歐聯指令要求之 Label 標示。
* D.O.C.簽名負責之廠商，有責任確保銷售之產品在 EMC 和 LVD-Safety 方面仍符合規定。
* 以上文件必需一份置於 D.O.C.簽名負責人手中備查。

附註：* 為響應節能減碳之環保要求，技術檔案報告 T.C.F. (Technical Constructional File) 以電子檔為主，書面報告將酌量擇重點提供並僅供參考。

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A. D.O.C. OR V.O.C.

DECLARATION OF CONFORMITY OR/AND VERIFICATION(IF ANY)

EC DECLARATION OF CONFORMITY

ANTARI LIGHTING AND EFFECTS LTD.
NO.8, LN. 231, NANKAN RD., SEC. 1, LUZHU DIST.,
TAOYUAN CITY 33859, TAIWAN (R.O.C.)
(Name / Address)

We herewith declare that the following designated product type

FOG MACHINE

Model Name : **Z-380,Z-390**

Conform with the essential requirement of the relevant European Directive:

- LVD Directive: 2014/35/EU

They are based on the following standards：

Safety Reference Standard:

- **EN 60335-1:2012+A11:2014** – Household and similar electrical appliances – Safety – Part 1: General requirements.
- **EN 62233:2008/AC:2008** –Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure

The following authorized person who compiled the relevant documentation and established in the Europe Community.

_____, _____
(*Name*) (*Address*)

MANUFACTURER / IMPORTER

(Surname, forename)
(Company Stamp)

2016.07.11
(Date and Place)

CE

EC DECLARATION OF CONFORMITY

ANTARI LIGHTING AND EFFECTS LTD.
NO. 8, LN. 231, NANKAN RD., SEC. 1, LUCHU DIST,
TAOYUAN CITY 33859, TAIWAN (R.O.C.)
(Name / Address)

We herewith declare that the following designated product type

FOG MACHINE

Model Name : **Z-380,Z-390**

Conform with the essential requirement of the relevant European Directive:

- EMC Directive: 2014/30/EU
- LVD Directive: 2014/35/EU

They are based on the following standards：

- **EN 55014-1:2006+A2:2011** - Electromagnetic compatibility-Requirements for household appliances, electric tools and similar apparatus Part 1: Emission
- **EN 55014-2:2015** - Electromagnetic compatibility-Requirements for household appliances, electric tools and similar apparatus-Part 2: Immunity-Product family standard
- **EN 61000-3-2:2014 -** Electromagnetic Compatibility Part 3-2 Limits for harmonics current emission for Input current up to 16A.
- **EN 61000-3-3:2013 -** Electromagnetic Compatibility Part 3-3 Limits-Section 3 Limitation of voltage Fluctuations and flicker in low voltage supply Systems for equipment with rated current up to 16A.
- **EN 60335-1:2012+A11:2014** – Household and similar electrical appliances – Safety – Part 1: General requirements.
- **EN 62233:2008/AC:2008** –Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure

The following authorized person who compiled the relevant documentation and established in the Europe Community.

_____., _____
(*Name*) (*Address*)

MANUFACTURER / IMPORTER

(Surname, forename)
(Company Stamp)

2016.07.11
(Date and place)

ADVANCED SAFETY PRODUCT
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TEL:886-2-22613919, FAX:886-2-22613918, E-mail:ASP.twn@gmail.com

VERIFICATION OF CONFORMITY

We Hereby Certify that

The following mentioned product has been tested in typical configuration by ASP.

Applicant:

ANTARI LIGHTING AND EFFECTS LTD.
NO.8, LN. 231, NANKAN RD., SEC. 1, LUZHU DIST.,
TAOYUAN CITY 33859, TAIWAN (R.O.C.)

Product Type:

FOG MACHINE

Model Name: **Z-380,Z-390**

Is in compliance with the European Council Directive 2014/35/EU

The submitted samples comply with the requirements of the following standard(s):

EN 60335-1:2012+A11:2014, EN 62233:2008/AC:2008

CE

This verification refers only to the units submitted for test. The CE mark as shown above can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.

Signed for and on behalf of ASP Technology Corp.

Kevin Ku/ Manager.
ASP Technology Corp.

Jul. 11, 2016
Date.

The technical report issued by ASP will support you affix the CE marking.

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B.
TEST REPORT

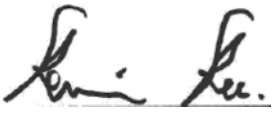
TEST REPORT
EN 60335-1
Household and similar electrical appliances – Safety –
Part 1:General requirements

Report reference No ……..:	PN664B
Date of issue ……..……..:	2016-07-07
Total number of pages (Report) ……..:	59
Testing laboratory ……..……..:	ASP Technology Corp.
Address ……..……...:	8F, -1, No.1, Zhongzheng Rd., Tucheng Dist., New Taipei City 23670, Taiwan (R.O.C.)
Testing location ……..…..:	As Above
Applicant's name……..……..…..:	Antari Lighting And Effects Ltd.
Address ……..……...:	No.8, Ln. 231, Sec. 1, Nankan Rd., Luzhu Dist., Taoyuan City 33859, Taiwan (R.O.C.)
Trade Mark……..…..…....:	Antari
Manufacturer……..:	Antari Lighting And Effects Ltd.
Address……..……..:	No.8, Ln. 231, Sec. 1, Nankan Rd., Luzhu Dist., Taoyuan City 33859, Taiwan (R.O.C.)
Test specification:	
Standard ……..……..:	EN 60335-1:2012+A11:2014
Test procedure……...:	LVD report
Non-standard test method ……..:	N/A

Prepared by (name + signature)……..:

Stark Wu

Approved by (+ signature)……..:



Kevin Ku

Type item description……..…....:	Fog Machine
Representative Model..……..……..:	Z-380,Z-390
Type Reference…….....:	--
Rating(s) ……..……..……..:	220-240Vac, 50/60Hz, 1230-1450W

Test item particulars description…….……..….:

Classification of installation and use.…: Class I appliance.

Supply Connection ……..: Type X attachment power cord.

Possible test case verdicts:

- test case does not apply to the test subject ….....: N(.A.)
- test object does meet the requirement …..……..: P(ass)
- test object does not meet the requirement …....: P(ass)

Testing .....

Date of receipt of test item ..... Aug. 27, 2015

Date (s) of performance of tests ..... Aug. 31-Sep. 17, 2015

General remarks:

"(see remark #)" refers to a remark appended to the report.
"(see appended table)" refers to a table appended to the report.
Throughout this report a comma is used as the decimal separator.
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 testing laboratory.

General product information:

The E.U.T.(Equipment Under Test) is a fog machine, emits a dense vapour that appears similar to fog.

Variant Description:

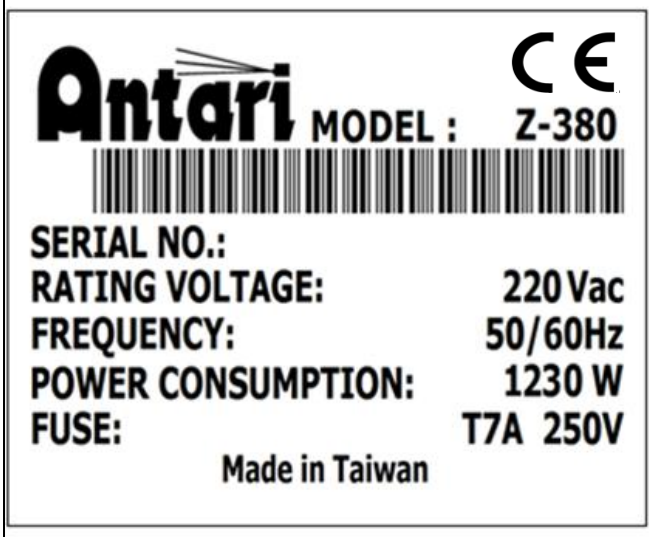
--

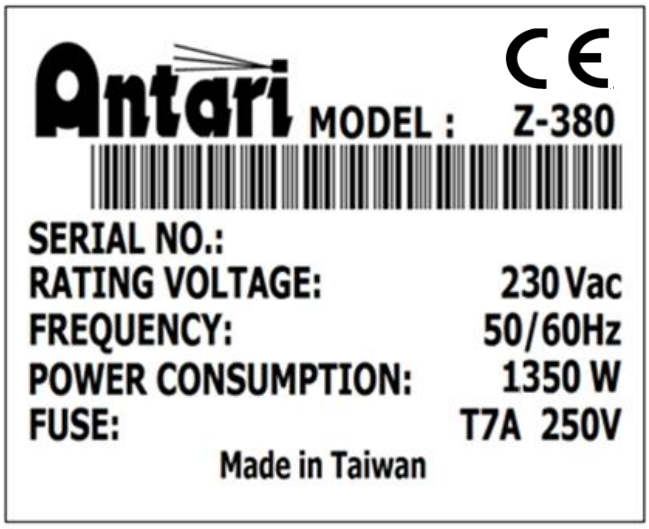
Factory:

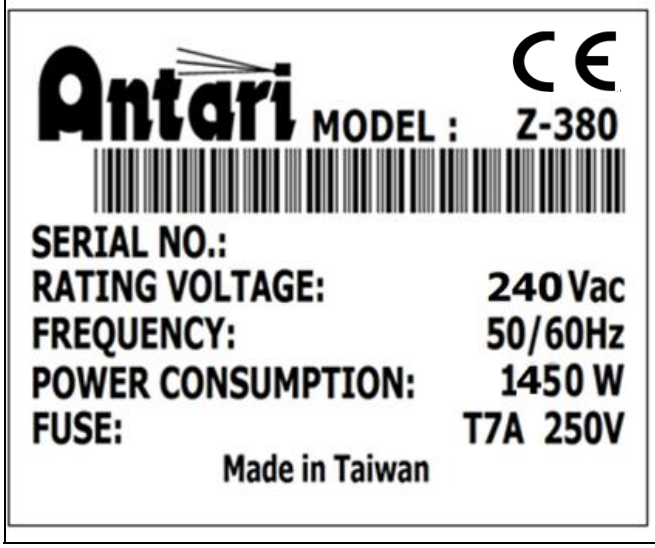
Antari Lighting And Effects Ltd.

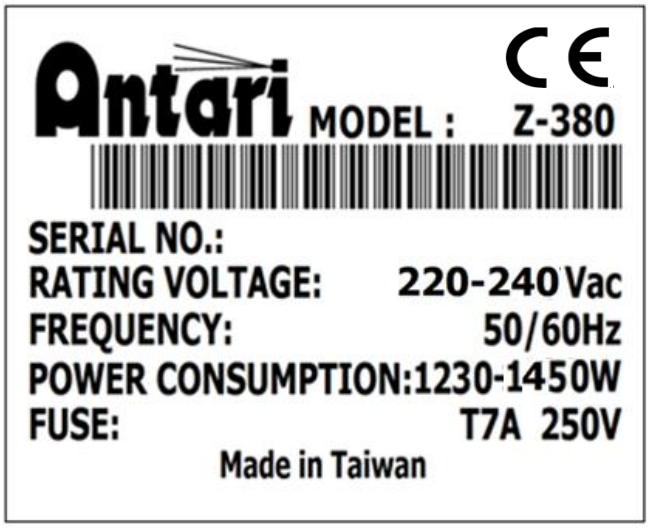
No.8, Ln. 231, Nankan Rd., Sec. 1, Luzhu Dist., Taoyuan City 33859, Taiwan (R.O.C.)

Summary of testing:	
Tests performed (name of test and test clause):	**Testing location:** ASP Technology Corporation. 8F,-1, No.1, Zhongzheng Rd., Tucheng Dist., New Taipei City 23670, Taiwan (R.O.C.)
Summary of compliance with National Differences: **N/A**	
Copy of marking plate:	









Clause	Requirement - Test	Result - Remark	Verdict
5	GENERAL CONDITIONS FOR THE TESTS		
	Tests performed according to cl. 5, e.g. nature of supply, sequence of testing, etc.	Tested according to Cl.5 requirements	P
6	CLASSIFICATION		
6.1	Protection against electric shock: Class 0, 0I, I, II, III ..... :	Class I	P
6.2	Protection against harmful ingress of water	IPX0	p
7	MARKING AND INSTRUCTIONS		
7.1	Rated voltage or voltage range (V)..... :	220-240Vac	P
	Nature of supply ..... :	AC	P
	Rated frequency (Hz) ..... :	50/60Hz	P
	Rated power input (W) ..... :	1230-1450W	P
	Rated current (A) ..... :	Marked with rated Watt	N/A
	Manufacturer's or responsible vendor's name, trademark or identification mark ..... :	Antari	P
	Model or type reference ..... :	Z-380	P
	Symbol 5172 of IEC 60417, for Class I appliances	Class I	P
	IP number, other than IPX0 ..... :	Ordinary appliance	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
7.2	Warning for stationary appliances for multiple supply	One supply only	N/A
	Warning placed in vicinity of terminal cover		N/A
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen	220-240Vac is marked	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
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		N/A
	Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear		N/A
7.6	Correct symbols used	Compliance checked.	P

Clause	Requirement - Test	Result - Remark	Verdict
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:		N/A
	- marking of terminals exclusively for the neutral conductor (N)		P
	- 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
	The figure 0 indicates only OFF position, unless no confusion with the OFF position	Identification marking by 0/1	P
7.11	Indication for direction of adjustment of controls		P
7.12	Instructions for safe use provided	See appended table	P
7.12.1	Sufficient details for installation supplied	User's manual has description for safe handling, cleaning and maintenance	P
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	With the power cord and plug as disconnection means	P
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	Not exceeding 50k	N/A
7.12.4	Instructions for built-in appliances:		N/A
	- dimensions of space		N/A
	- dimensions and position of supporting means		N/A
	- distances between parts and surrounding structure		N/A
	- dimensions of ventilation 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

Clause	Requirement - Test	Result - Remark	Verdict
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord		P
	Replacement cord instructions, type Y attachment	Not with Type Y attachment	N/A
	Replacement cord instructions, type Z attachment	Not with Type Z attachment	N/A
7.13	Instructions and other texts in an official language	English	P
7.14	Marking clearly legible and durable		P
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	No cover can be moved by operator	N/A
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation		P
	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	Marking on the switch	N/A
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link	Marking on the inlet.	N/A
8	PROTECTION AGAINST ACCESS TO LIVE PARTS		
8.1	Adequate protection against accidental contact with live parts		P
8.1.1	Requirement applies for all positions, detachable parts removed		P
	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		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	Class I equipment	N/A
	Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts		N/A
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032: no contact with live parts of visible glowing heating elements	No visible glowing	P
8.1.4	Accessible part not considered live if:		N/A

Clause	Requirement - Test	Result - Remark	Verdict
	- 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		N/A
	- 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:		N/A
	- built-in appliances		N/A
	- fixed appliances		N/A
	- appliances delivered in separate units		N/A
8.2	Class II appliances and constructions constructed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only	Class I appliance	N/A
	Only possible to touch parts separated from live parts by double or reinforced insulation		N/A
9	STARTING OF MOTOR-OPERATED APPLIANCES		
	Requirements and tests are specified in part 2 when necessary		P
10	POWER INPUT AND CURRENT		
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 for an appliance with one or more rated voltage ranges		N/A
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2		N/A
	Test for an appliance with one or more rated voltage ranges		N/A
11	HEATING		
11.1	No excessive temperatures in normal use		P
11.2	Placing and mounting of appliance as described		P

Clause	Requirement - Test	Result - Remark	Verdict
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		P
	the windings makes it difficult to make the necessary connections		P
11.4	Heating appliances operated under normal operation at 1.15 times rated power input :		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 operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage..... :		P
11.7	Operation duration corresponding to the most unfavourable conditions of normal use		P
11.8	Temperature rises not exceeding values in table 3	(see appended table)	P
	Sealing compound does not flow out		P
	Protective devices do not operate, except		P
	components in protective electronic circuits tested for the number of cycles specified in 24.1.4		N/A
13	LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE		
13.1	Leakage current not excessive and electric strength adequate		P
	Heating appliances operated at 1.15 times rated power input ..... :		N/A
	Motor-operated appliances and combined appliances supplied at 1.06 times rated voltage..... :		P
	Protective impedance and radio interference filters disconnected before carrying out the tests		P
13.2	Leakage current measured by means of the circuit described in figure 4 of IEC 60990		P
	Leakage current measurements		P
13.3	The appliance is disconnected from the supply	(see appended table)	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

Clause	Requirement - Test	Result - Remark	Verdict
	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		
15.1	Enclosure provides the degree of moisture protection according to classification of the appliance	IPX0	P
	Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3		P
	No trace of water on insulation which can result in a reduction of clearances and creepage distances below values specified in clause 29		P
15.1.1	Appliances, other than IPX0, subjected to tests as specified in IEC 60529 ..... :	IPX0	N/A
	Water valves 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

Clause	Requirement - Test	Result - Remark	Verdict
	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
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions		N/A
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Detachable parts tested as specified		N/A
15.2	Spillage of liquid does not affect the electrical insulation		P
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N/A
	Detachable parts removed		P
	Overfilling test with additional amount of water, over a period of 1 min (l):		P
	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
	Humidity test for 48 h in a humidity cabinet	RH: 93%, 25°C for 48 hrs	P
	The appliance withstands the tests of clause 16		P
16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		
16.1	Leakage current not excessive and electric strength adequate	(see appended table)	P
	Protective impedance disconnected from live parts before carrying out the tests		P
16.2	Single-phase appliances: test voltage 1.06 times rated voltage ..... :	240V*1.06=254.4V	P
	Three-phase appliances: test voltage 1.06 times rated voltage divided by √3..... :		N/A
	Leakage current measurements	(See appended table)	P
16.3	Electric strength tests according to table 7	(see appended table)	P
	No breakdown during the tests		P

Clause	Requirement - Test	Result - Remark	Verdict
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	(See appended table)	N/A
	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 ..... :		N/A
	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,		N/A
	however limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		N/A
18	ENDURANCE		
	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	Compliance checked	P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe	See appended table	N/A
	Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11		N/A
19.2	Test of appliance with heating elements with restricted heat dissipation; test voltage (V): power input of 0.85 times rated power input..... :		P
19.3	Test of 19.2 repeated; test voltage (V): power input of 1.24 times rated power input..... :		P
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

Clause	Requirement - Test	Result - Remark	Verdict
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, if required		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		N/A
19.8	Three-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
	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	Non electric circuit	N/A
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.3 and 19.11.4		N/A
	Appliances having a switch with an off position obtained by electronic disconnection, or a switch placing the appliance in a stand-by mode, subjected to the tests of 19.11.4		P

Clause	Requirement - Test	Result - Remark	Verdict
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8		N/A
19.11.1	Before applying the fault conditions a) to f) in 19.11.2, it is checked if circuits or parts of circuit meet both of the following conditions:		N/A
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 15 W according to the tests specified		N/A
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction in other parts of the appliance does not rely on the correct functioning of the electronic circuit		N/A
19.11.2	Fault conditions applied one at a time, the appliance operated under conditions specified in cl. 11, but supplied at rated voltage, the duration of the tests as specified:		N/A
	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		N/A
	c) short circuit of capacitors, unless they comply with IEC 60384-14		N/A
	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		N/A
	e) failure of triacs in the diode mode		N/A
	f) failure of an integrated circuit		N/A
	g) failure of an electronic power switching device		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
	During and after each test the following is checked:		N/A
	- the temperature rise of the windings do not exceed the values specified in table 8		N/A
	- the appliance complies with the conditions specified in 19.13		N/A
	- 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 all three of the following conditions are met:		N/A
	- the material of the printed circuit board withstands the burning test of annex E		N/A

Clause	Requirement - Test	Result - Remark	Verdict
	- any loosened conductor does not reduce the clearances or creepage distances between live parts and accessible metal parts below the values specified in cl. 29		N/A
	- the appliance withstands the tests of 19.11.2 with open-circuited conductor bridged		N/A
19.11.4	Appliances having a device with an off position obtained by electronic disconnection, or		N/A
	a device that can be placed in the stand-by mode,		N/A
	subjected to the tests of 19.11.4.1 to 19.11.4.7		N/A
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.4.1 to 19.11.4.7, 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
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4		N/A
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3		N/A
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4, test level 3 or 4 as specified		N/A
19.11.4.4	The power supply terminals of the appliance subjected to voltage surges in accordance with IEC 61000-4-5, test level 3 or 4 as specified		N/A
	Earthed heating elements in class I appliances disconnected		N/A
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3		N/A
19.11.4.6	The appliance is subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-11		N/A
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2		N/A
19.11.4.8	The appliance is supplied at rated voltage and operated under normal operation. After 60s the power supply is reduces to a level such that the appliance ceases to respond or a programmable component cease to operate.		N/A
	The appliance continues to operate normally or requires a manual operation to restart		N/A

Clause	Requirement - Test	Result - Remark	Verdict
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):		N
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		P
	Enclosures not deformed to such an extent that compliance with cl. 8 is impaired		P
	If the appliance can still be operated it complies with 20.2		P
	Insulation, other than of class I appliance, withstand the electric strength test of 16.3, the test voltage specified in table 4:		P
	- basic insulation..... :	1250Vac	P
	- supplementary insulation..... :	1750Vac	P
	- reinforced insulation..... :	3000Vac	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		N/A
	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:		N/A
	- do not become operational, or		N/A
	- if they become operational, do not result in a dangerous malfunction during or after the tests of 19.11.4		N/A
19.14	Appliances operated under the conditions of Clause 11. Contactors or relays contacts operating under the conditions of clause 11 short-circuited		N/A
20	STABILITY AND MECHANICAL HAZARDS		P
20.1	Adequate stability	Portable appliance	P
	Tilting test through an angle of 10° (appliance placed on an inclined plane/horizontal plane); appliance does not overturn		P
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15°		P

Clause	Requirement - Test	Result - Remark	Verdict
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 9		N/A
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury	No moving parts	N/A
	Protective enclosures, guards and similar parts are non-detachable		N/A
	Adequate mechanical strength and fixing of protective enclosures		N/A
	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		N/A
21	MECHANICAL STRENGTH		
21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P
	Checked by applying blows to the appliance in accordance with test Ehb of IEC 60068-2-75, spring hammer test, impact energy 0,5 J		P
	If necessary, supplementary or reinforced insulation subjected to the electric strength test of 16.3	No breakdown	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		N/A
	The insulation is tested as specified, unless		N/A
	the thickness of supplementary insulation is at least 1 mm and reinforced insulation is at least 2 mm		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:		P
	- 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

Clause	Requirement - Test	Result - Remark	Verdict
	Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase, permanently connected class 01 and class I appliances, connected to the phase conductor		N/A
22.3	Appliance provided with pins: no undue strain on socket-outlets		N/A
	Applied torque not exceeding 0.25 Nm		N/A
	Pull force of 50N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1mm		N/A
	Each pin subjected to a torque 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	Not expect 34V after 1 sec	P
22.6	Electrical insulation not affected by condensing water or leaking liquid		P
	Electrical insulation of Class II appliances not affected in case of a hose rupture or seal leak		P
22.7	Adequate safeguards against the risk of excessive pressure in appliances provided with steam-producing devices		P
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		P
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances		P
	Adequate insulating properties of oil or grease to which insulation is exposed		P
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		N/A
	Non-self resetting thermal motor protectors have a trip-free action, unless		N/A
	they are voltage maintained		N/A

Clause	Requirement - Test	Result - Remark	Verdict
	Location or protection of reset buttons of non-self-resetting controls is so 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
	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	Enclosure:50N	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		P
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		P
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		P
22.15	Storage hooks and the like for flexible cords smooth and well rounded		P
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		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	No driving belts.	N/A

Clause	Requirement - Test	Result - Remark	Verdict
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
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated		N/A
	This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		N/A
22.22	Appliances not containing asbestos		N/A
22.23	Oils containing polychlorinated biphenyl (PCB) not used		P
22.24	Bare heating elements adequately supported		N/A
	In case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts		N/A
22.25	Sagging heating conductors cannot come into contact with accessible metal parts		N/A
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		P
22.28	Metal parts of Class II appliances conductively connected to gas pipes or in contact with water: separated from live parts by double or reinforced insulation		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	Class I	N/A
	so constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete		N/A
22.31	Clearances and creepage distances over supplementary and reinforced insulation not reduced below values specified in clause 29 as a result of wear		P
	Clearances and creepage distances between live parts and accessible parts not reduced below values for supplementary insulation, if wires, screws etc. become loose		P

Clause	Requirement - Test	Result - Remark	Verdict
22.32	Supplementary and 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		P
	Electrodes not used for heating liquids		P
	For class II constructions, conductive liquids that are or may become accessible in normal use, not in direct contact with basic or reinforced insulation	Class I appliance	N/A
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation		N/A
22.34	Shafts of operating knobs, handles, levers etc. not live, unless the shaft is not accessible when the part is removed	Not become live part	P
22.35	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 a failure of basic insulation, are either adequately covered by insulation material or their accessible parts are separated from their shafts or fixings by supplementary insulation		N/A
	This requirement does not apply to handles, levers and knobs on stationary appliances 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		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

Clause	Requirement - Test	Result - Remark	Verdict
22.37	Capacitors in Class II appliances not connected to accessible metal parts, unless complying with 22.42	Class I appliance	N/A
	Metal casings of capacitors in Class II appliances separated from accessible metal parts by supplementary insulation, unless complying with 22.42		N/A
22.38	Capacitors not connected between the contacts of a thermal cut-out	No contacts with thermal cutout	N/A
22.39	Lamp holders used only for the connection of lamps		N/A
22.40	Motor-operated appliances and combined appliances intended to be moved while in operation, or having accessible moving parts, fitted with a switch to control the motor. The actuating member of the switch being easily visible and accessible	Provide switch	P
	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
22.41	No components, other than lamps, containing mercury		N/A
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
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N/A
22.44	Appliances shall not have an enclosure that is shaped or decorated like a toy	Not look like a toy	P
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	Software used in protective electronic circuits is software class B or C …….		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

Clause	Requirement - Test	Result - Remark	Verdict
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
	- operate continuously,		N/A
	- operate automatically, or		N/A
	- be operated remotely		N/A
23	INTERNAL WIRING		
23.1	Wireways smooth and free from sharp edges	Smooth and free from sharp	P
	Wires protected against contact with burrs, cooling fins etc.		P
	Wire holes in metal well rounded or provided with bushings	Wire don't through metal hole	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	Not be stress	P
	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
23.4	Bare internal wiring sufficiently rigid and fixed		N/A
23.5	The insulation of internal wiring withstanding the electrical stress likely to occur in normal use		P

Clause	Requirement - Test	Result - Remark	Verdict
	No breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation	2000V/15mins	P
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by positive means	Not used sleeving	P
23.7	The colour combination green/yellow used only for earthing conductors	Class I	P
23.8	Aluminium wires not used for internal wiring	No aluminium wire	P
23.9	No lead-tin soldering of stranded conductors where they are subject to contact pressure, unless		P
	clamping means so constructed that there is no risk of bad contact due to cold flow of the solder		P
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		
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 24.1.9		N/A
	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		N/A
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		N/A
	tested according to annex F		N/A
24.1.2	Safety isolating transformers complying with IEC 61558-2-6, or	Test in this appliance	P
	tested according to annex G	See attached table	P
24.1.3	Switches complying with IEC 61058-1, the number of cycles of operation being at least 10 000, or	Complying with IEC 61058-1	P
	tested according to annex H		N/A
	If the switch operates a relay or contactor, the complete switching system is subjected to the test		N/A
24.1.4	Automatic controls complying with IEC 60730-1 with relevant part 2. The number of cycles of operation being:		N/A

Clause	Requirement - Test	Result - Remark	Verdict
	- thermostats: 10 000		N/A
	- temperature limiters: 1 000		N/A
	- self-resetting thermal cut-outs: 300		N/A
	- voltage maintained non-self-resetting thermal cut-outs: 1000		N/A
	- other non-self-resetting thermal cut-outs: 30		N/A
	- timers: 3 000		N/A
	- energy regulators: 10 000		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		P
	However, appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3	IPX0	N/A
	Interconnection couplers complying with IEC 60320-2-2		N/A
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	Relays, other than motor starting relays, tested as part of the appliance		N/A
24.2	No switches or automatic controls in flexible cords		P
	No devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		P
	No thermal cut-outs that can be reset by soldering		P
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	Provide power plug	P

Clause	Requirement - Test	Result - Remark	Verdict
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC 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	Not used	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
24.7	Hose-sets for connection of appliances to the water mains, complying with IEC 61770 and supplied with the appliance		N/A
25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		N/A
25.1	Appliance not intended for permanent connection to fixed wiring, means for connection to the supply:		
	- 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		P
	- pins for insertion into socket-outlets		P
25.2	Appliance not provided with more than one means of connection to the supply mains		N/A
	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
	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

Clause	Requirement - Test	Result - Remark	Verdict
	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, dimension according to table 10		P
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in 29		P
25.5	Method for assemble supply cord with the appliance:		
	- type X attachment		P
	- type Y attachment		N/A
	- 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		N/A
25.7	Supply cords being one of the following types:		
	- rubber sheathed (at least 60245 IEC 53)		N/A
	- polychloroprene sheathed (at least 60245 IEC 57)		N/A
	- 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 exceeding 3 kg		P
	- ordinary polyvinyl chloride sheathed cord (at least 60227 IEC 53), other appliances		N/A
	Heat resistant polyvinyl chloride sheathed: Not used for type X attachment other than specially prepared cords.		N
	- 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
25.8	Nominal cross-sectional area of supply cords according to table 11; rated current (A); cross-sectional area (mm^2) ..... :	0.75mm^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

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
	clamping means so constructed that there is no risk of bad contacts due to cold flow of the solder		P
25.12	Moulding the cord to part of the enclosure does not damage the insulation of the supply cord		N/A
25.13	Inlet opening so shaped as to prevent damage to the supply cord		N/A
	Unless the enclosure at the inlet opening is of insulation material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		N/A
	If unsheathed supply cord, a similar additional bushing or lining is required, unless		N/A
	the appliance is class 0		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	Conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage	100N,0.35Nm	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 10: pull (N); torque (not on automatic cord reel) (Nm):		P
	Max. 2 mm displacement of the cord, and conductors not moved more than 1 mm in the terminals		P

Clause	Requirement - Test	Result - Remark	Verdict
	Creepage distances and clearances not reduced below values specified in 29.1		P
25.16	Cord anchorages for type X attachments constructed and located so that:		
	- replacement of the cord is easily possible		N/A
	- it is clear how the relief from strain and the prevention of twisting are obtained		N/A
	- they are suitable for different types of 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
	- 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 part of a specially prepared cord		N/A
	- screws which have to be operated when replacing the cord do not fix any other component, if applicable		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 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 if of metal, they are insulated from accessible metal parts by supplementary insulation		N/A
25.17	Adequate cord anchorages for type Y and Z attachment		P
25.18	Cord anchorages only accessible with the aid of a tool, or		P
	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
	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		N/A

Clause	Requirement - Test	Result - Remark	Verdict
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed to permit checking of conductors with respect to correct positioning and connection before fitting any cover, no risk of damage to the conductors when fitting the cover, no contact with accessible metal parts if a conductor becomes loose, etc.		N/A
	For portable appliances, the uninsulated end of a conductor prevented from any contact with accessible metal parts, unless the end of the cord is such that the conductors are unlikely to slip free		N/A
25.22	Appliance inlet:		N/A
	- live parts not accessible during insertion or removal		P
	- connector can be inserted without difficulty		P
	- the appliance is not supported by the connector		P
	- is not for cold conditions if temp. rise of external metal parts exceeds 75 K, unless the supply cord is not likely to touch such metal parts		P
25.23	Interconnection cords comply with the requirements for the supply cord, except as specified		P
	If necessary, electric strength test of 16.3		P
25.24	Interconnection cords not detachable without the aid of a tool if compliance with the standard is impaired when they are disconnected		P
25.25	Dimensions of pins compatible with the dimensions of the relevant socket-outlet. Dimensions of pins and engagement face in accordance with the relevant plug in IEC 60083		P
26	TERMINALS FOR EXTERNAL CONDUCTORS		
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors		N/A
	Terminals only accessible after removal of a non-detachable cover		N/A
	However, 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		N/A
	Screws and nuts serve only to clamp supply conductors, except		N/A

Clause	Requirement - Test	Result - Remark	Verdict
	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		N/A
	Soldering alone used, barriers provided, clearances and creepage distances satisfactory 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	Type Y	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 loosen		N/A
	- internal wiring is not subjected to stress		N/A
	- clearances and creepage distances are not reduced below the values in 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. Nominal diameter of thread (mm); screw category; torque (Nm):		N/A
26.4	Terminals for type X attachment, except those with a specially prepared cord, and those for connection to fixed wiring, no special preparation of conductors required, and so constructed or placed that conductors prevented from slipping out		N/A
26.5	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection to other parts that result in a hazard		N/A
	Stranded conductor test, 8 mm insulation removed		N/A
	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

Clause	Requirement - Test	Result - Remark	Verdict
26.8	Terminals for the connection to fixed wiring, including the earthing terminal, located close to each other	Not used	N/A
26.9	Terminals of the pillar type constructed and located as specified	Not used	N/A
26.10	Terminals with screw clamping and screw less 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		N/A
26.11	For type Y and Z attachment: soldered, welded, crimped and similar connections may be used	Class I	N/A
	For Class II appliances: the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N/A
	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	Class I	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	No SELV circuit	N/A
27.2	Clamping means adequately secured against accidental loosening		N/A
	Terminals used for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm^2, 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		N/A
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		P
	For appliances with supply cord, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		N/A

Clause	Requirement - Test	Result - Remark	Verdict
27.4	No risk of corrosion resulting from contact between metal of earthing terminal and other metal		P
	Adequate resistance to corrosion of coated or uncoated parts providing earthing continuity, other than parts of a metal frame or enclosure		P
	Parts of steel providing earthing continuity provided at the essential areas with an electroplated coating, 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 case of aluminium alloys precautions taken to avoid risk of corrosion		P
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		P
	Resistance not exceeding 0,1 Ω at the specified low-resistance test		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		
28.1	Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses	screw connection: 1. housing screws not likely to be tightened by the user terminal screw for the safety ground connector	P
	Screws not of soft metal liable to creep, such as zinc or aluminium		N/A
	Diameter of screws of insulating material min. 3 mm		N/A
	Screws of insulating material not used for any electrical connection or connections providing earthing continuity		N/A
	Screws used for electrical connections or connections providing earthing continuity screw into metal		N/A

Clause	Requirement - Test	Result - Remark	Verdict
	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; test as specified		N/A
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure not transmitted through insulating material liable to shrink or distort, unless shrinkage or distortion compensated		P
	This requirement does not apply to electrical connections in circuits carrying a current not exceeding 0.5A		P
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		P
	Thread-cutting (self-tapping) screws and thread rolling screws only used for electrical connections if they generate a full form standard machine screw thread		P
	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
	- during installation		N/A
	At least two screws being used for each connection providing earthing continuity, unless		N/A
	the screw forms a thread having a length of at least half the diameter of the screw		N/A
	Thread-cutting and space-threaded screws may be used in connections providing earthing continuity, provided unnecessary to disturb the connection and at least two screws are used for each connection		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

Clause	Requirement - Test	Result - Remark	Verdict
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if subjected to torsion		P
29	CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION		
	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
	The microenvironment is pollution degree 1 under Type 1 coating		N/A
	No clearance or creepage distance requirements under Type 2 coating		N/A
29.1	Clearances not less than the values specified in table 16, taking into account the rated impulse voltage for the overvoltage categories of table 15, unless		P
	for basic insulation and functional insulation they comply with the implulse 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:		N/A
	- when the microenvironment is pollution degree 3		N/A
	- for basic insulation of class 0 and class 01 appliances		N/A
	Appliances are in overvoltage category II		P
	Clearances less than specified in table 16 not allowed for basic insulation of class 0 and class 0I appliances,		P
	or if pollution degree 3 is applicable		N/A
	Compliance is checked by inspection and measurements as specified		N/A
29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage		P
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1mm 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

Clause	Requirement - Test	Result - Remark	Verdict
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
29.1.4	For functional insulation, the values of table 16 are applicable, unless		P
	the appliance complies with clause 19 with the functional insulation short-circuited		P
	Lacquered conductors of windings considered to be bare conductors,but the clearances specified in table 16 are reduced by 0.5mm for rated impulse voltage of at least 1500v		P
	However, clearances at crossover points are not measured		N/A
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		N/A
29.1.5	Appliances having higher working voltage than rated voltage, the voltage used for determining clearances from table 16 is the sum of the rated impulse voltage and the difference between the peak value of the working voltage and the peak value of the rated voltage		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 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		P
	precautions taken to protect the insulation; pollution degree 1		N/A
	insulation subjected to conductive pollution; pollution degree 3		N/A
	Compliance is checked by inspection and measurements as specified		P
29.2.1	Creepage distances of basic insulation not less than specified in table 17		P

Clause	Requirement - Test	Result - Remark	Verdict
	For pollution degree 1, creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14		N/A
29.2.2	Creepage distances of supplementary insulation at least as specified for basic insulation in table 17		N/A
29.2.3	Creepage distances of reinforced insulation at least double as specified for basic insulation in table 17		P
29.2.4	Creepage distances of functional insulation not less than specified in table 18		P
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		P
29.3	Supplementary and reinforced insulation having adequate thickness, or a sufficient number of layers, to withstand the electrical stresses		N/A
	And 2mm for reinforced insulation	Enclosure 2mm	P
	- measurement, in accordance with 29.3.1, or		N/A
	- 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		N/A
29.3.1	Supplementary insulation having a thickness of at least 1 mm		N/A
	Reinforced insulation having a thickness of at least 2 mm		N/A
29.3.2	Each layer of material withstand the electric strength test of 16.3 for supplementary insulation		N/A
	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
30	RESISTANCE TO HEAT AND FIRE		
30.1	External parts of non-metallic material,		P
	parts supporting live parts, and		P
	thermoplastic material providing supplementary or reinforced insulation,		P

Clause	Requirement - Test	Result - Remark	Verdict
	sufficiently resistant to heat		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) .. :		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)..... :		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)..... :		N/A
30.2	Parts of non-metallic material adequately resistant to ignition and spread of fire		P
	This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance		N/A
	Compliance checked by the test of 30.2.1. In addition:		N/A
	- attended appliances, 30.2.2 applies		N/A
	- unattended appliances, 30.2.3 applies		N/A
	Appliances for remote operation, 30.2.3 applies		N/A
	Base material of printed circuit board, 30.2.4 applies		N/A
30.2.1	Glow-wire test of IEC 60695-2-11 at 550 °C, unless		P
	the material is classified at least HB40 according to IEC 60695-11-10		P
	Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category HBF material		N/A
30.2.2	Appliances operated while attended, parts of non-metallic material supporting current-carrying connections, and parts of non-metallic material within a distance of 3mm of such connections, are subjected to the glow-wire test of IEC 60695-2-11.		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:		N
	-750°C, for connections carrying a current exceeding 0,5A during normal operation		N/A
	-650°C, for other connections		N/A
	Test as specified for an interposed shielding material		N/A
	When the glow-wire test of IEC 60695-2-11 is carried out, the temperatures are:		N

Clause	Requirement - Test	Result - Remark	Verdict
	-750°C, for connections carrying a current exceeding 0,5A during normal operation		N/A
	-650°C, for other connections		N/A
	Test not applicable to conditions as specified		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		P
30.2.3.1	Parts of insulating material supporting connections carrying a current exceeding 0.2A during normal operation, and		P
	parts of non-metallic material within a distance of 3mm,		N/A
	subjected to the glow-wire test of IEC 60695-2-11 with a test severity of 850°C		N/A
	Glow-wire test not carried out on parts of material classified as having a glow-wire flammability index of at least 850°C according to IEC 60695-2-12		N/A
	Glow-wire test not carried out on small parts that comply with the needle-flame test of Annex E or on small parts of material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
	Test as specified for an interposed shielding material		N/A
30.2.3.2	Parts of non-metallic material supporting current-carrying connections, and		N/A
	parts of insulating material within a distance of 3mm,		N/A
	subjected to glow-wire test of IEC 60695-2-11		N/A
	Test not carried out on material having a glow-wire ignition temperature according to IEC 60695-2-13 of at least:		N/A
	-775°C, for connections carrying a current exceeding 0,2A during normal operation		N/A
	-675°C, for other connections		N/A
	When the glow-wire test of IEC 60695-2-11 is carried out, the temperatures are:		N
	-750°C, for connections carrying a current exceeding 0,2A during normal operation		N/A
	-650°C, for other connections		N/A
	Parts that during the test produce a flame persisting longer than 2 s, tested as specified		N/A
	If a flame persists longer than 2 s during the test, parts above the connection, as specified, subjected to the needle-flame test of annex E, unless		N/A

Clause	Requirement - Test	Result - Remark	Verdict
	the material is 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
31	RESISTANCE TO RUSTING		P
	Relevant ferrous parts adequately protected against rusting		P
32	RADIATION, TOXICITY AND SIMILAR HAZARDS		P
	Appliance shall not emit harmful radiation, present a toxic or similar hazard due to their operation in normal use		P
	Relevant tests specified in part 2, if necessary		P

Clause	Requirement - Test	Result - Remark	Verdict
A	ANNEX A (INFORMATIVE) ROUTINE TESTS		P
	Description of routine tests to be carried out by the manufacturer	Declared by the manufacturer	P
B	ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES		N
	The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance		N/A
	This annex does not apply to battery chargers		N/A
3.1.9	Appliance operated under the following conditions:		N
	-the appliance, supplied by its fully charged battery, operated as specified in relevant part 2		N/A
	-the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		N/A
	-if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		N/A
	If the appliance incorporates inductive coupling between two parts that are detachable from each other, the appliance is supplied from the supply mains with the detachable part removed		N/A
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		N/A
5.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		N/A
7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals		N/A
7.12	The instructions for appliances incorporating batteries intended to be replaced by the user includes required information		N/A
	Details about how to remove batteries containing materials hazardous to the environment given		N/A
7.15	Markings placed on the part of the appliance connected to the supply mains		N/A
8.2	Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment		N/A

Clause	Requirement - Test	Result - Remark	Verdict
	If the appliance can be operated without batteries, double or reinforced insulation required		N/A
11.7	The battery is charged for the period described		N/A
19.1	Appliances subjected to tests of 19.101, 19.102 and 19.103		N/A
19.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		N/A
19.102	Short-circuiting of the terminals of the battery, being fully charged, for appliances having batteries that can be removed without the aid of a tool		N/A
19.103	Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		N/A
21.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength, checked according to procedure 2 of IEC 68-2-32		N/A
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-32, the number of falls being:		N/A
	- 100, the mass of part does not exceed 250 g		N/A
	- 50, the mass of part exceeds 250 g		N/A
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met		N/A
22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		N/A
25.13	An additional lining or bushing not required for interconnection cords operating at safety extra-low voltage		N/A
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		N/A
	For other parts, 30.2.2 applies		N/A
C	ANNEX C (NORMATIVE) AGEING TEST ON MOTORS		N/A
	Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding		N/A
D	ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS		N/A
	Applicable to appliances having motors that incorporate thermal motor protectors		N/A
E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST		P

Clause	Requirement - Test	Result - Remark	Verdict
	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
8	Test procedure		P
8.2	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
8.4	The first paragraph does not apply		P
	If possible, the flame is applied at least 10 mm from a corner		P
8.5	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		P
10	Evaluation of test results		P
	The duration of burning not exceeding 30 s		P
	However, for printed circuit boards, the duration of burning not exceeding 15 s		P
F	ANNEX F (NORMATIVE) CAPACITORS		N/A
	Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or voltage dividing, comply with the following clauses of IEC 60384-14, with the following modifications:		N/A
1.5	Terminology		N/A
1.5.3	Class X capacitors tested according to subclass X2		N/A
1.5.4	This subclause is applicable		N/A
1.6	Marking		N/A
	Items a) and b) are applicable		N/A
3.4	Approval testing		N/A
3.4.3.2	Table II is applicable as described		N/A
4.1	Visual examination and check of dimensions		N/A
	This subclause is applicable		N/A
4.2	Electrical tests		N/A
4.2.1	This subclause is applicable		N/A
4.2.5	This subclause is applicable		N/A

Clause	Requirement - Test	Result - Remark	Verdict
4.2.5.2	Only table IX is applicable		N/A
	Values for test A apply		N/A
	However, for capacitors in heating appliances the values for test B or C apply		N/A
4.12	Damp heat, steady state		N/A
	This subclause is applicable		N/A
	Only insulation resistance and voltage proof are checked		N/A
4.13	Impulse voltage		N/A
	This subclause is applicable		N/A
4.14	Endurance		N/A
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 applicable		N/A
4.14.7	Only insulation resistance and voltage proof are checked		N/A
	Visual examination, no visible damage		N/A
4.17	Passive flammability test		N/A
	This subclause is applicable		N/A
4.18	Active flammability test		N/A
	This subclause is applicable		N/A
G	ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS		N/AN
	The following modifications to this standard are applicable for safety isolating transformers:		N/A
7	Marking and instructions		N/A
7.1	Transformers for specific use marked with:		N/A
	-name, trademark or identification mark of the manufacturer or responsible vendor		N/A
	-model or type reference		N/A
17	Overload protection of transformers and associated circuits		N/A
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		N/A
22	Construction		N/A
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable		N/A

Clause	Requirement - Test	Result - Remark	Verdict
29	Clearances, creepage distances and solid insulation		N/A
29.1, 29.2 and 29.3	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply		N/A
H	ANNEX H (NORMATIVE) SWITCHES		
	Switches comply with the following clauses of IEC 61058-1, as modified:		N/A
	-The tests of IEC 61058-1 carried out under the conditions occurring in the appliance	Use IEC61058-1 certified switch	N/A
	-Before being tested, switches are operated 20 times without load		N/A
8	Marking and documentation		N/A
	Switches are not required to be marked		N/A
	However, switches that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference		N/A
13	Mechanism		N/A
	The tests may be carried out on a separate sample		N/A
15	Insulation resistance and dielectric strength		N/A
15.1	Not applicable		N/A
15.2	Not applicable		N/A
15.3	Applicable for full disconnection and micro-disconnection		N/A
17	Endurance		N/A
	Compliance is checked on three separate appliances or switches		N/A
	For 17.2.4.4, the number of cycles is 10 000, unless otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335		N/A
	Switches for operation under no load and which can be operated only by a tool and switches operated by hand that are interlocked so that they cannot be operated under load, are not subjected to the tests		N/A
	Subclauses 17.2.2 and 17.2.5.2 not applicable		N/A
	The ambient temperature during the test is that occurring in the appliance during the test of Clause 11 in IEC 60335-1		N/A
	Temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1		N/A
20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		N/A

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

Clause	Requirement - Test	Result - Remark	Verdict
J	ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS		N/A
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		N/A
5.7	Conditioning of the test specimens		N/A
	When production samples are used, three samples of the printed circuit board are tested		N/A
5.7.1	cold		N/A
	The test is carried out at -25°C		N/A
5.7.3	Rapid change of temperature		N/A
	Severity 1 is specified		N/A
5.9	Additional tests		N/A
	This subclause is not applicable		N/A
K	ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES		P
	The information on overvoltage categories is extracted from IEC 60664-1		P
	Overvoltage category is a numeral defining a transient overvoltage condition		P
	Equipment of overvoltage category IV is for use at the origin of the installation		N/A
	Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements		N/A
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		N/A
	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		
	Sequences for the determination of clearances and creepage distances		P
M	ANNEX M (NORMATIVE) POLLUTION DEGREE		P

Clause	Requirement - Test	Result - Remark	Verdict
	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
	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		P
	- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected		N/A
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		N/A
N	ANNEX N (NORMATIVE) PROOF TRACKING TEST		P
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:	Done with glow wire test	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 ....:		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		P

Clause	Requirement - Test	Result - Remark	Verdict
	The report stating if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V		P
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		N/A
	Modifications applicable for class 0 and 01 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WDaE		N/A
	Modifications may also be applied to class 1 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WdaE, if liable to be connected to a supply mains that excludes the protective earthing conductor		N/A
5	General conditions for the tests		N/A
5.7	The ambient temperature for the tests of Clauses 11 and 13 is 40 $^{+3}/_{0}$		N/A
7	Marking and instructions		N/A
7.1	The appliance marked with the letters WDaE		N/A
7.12	The instructions state that the appliance is to be supplied through a RCD having a rated residual operating current not exceeding 30 mA		N/A
	The instructions state that the appliance is considered to be suitable for use in countries having a warm damp equable climate, but may also be used in other countries		N/A
11	Heating		N/A
11.8	The values of Table 3 are reduced by 15 K		N/A
13	Leakage current and electric strength at operating temperature		N/A
13.2	The leakage current for class I appliances not exceeding 0,5 mA		N/A
15	Moisture resistance		N/A
15.3	The value of t is 37 °C		N/A
16	Leakage current and electric strength		N/A
16.2	The leakage current for class I appliances not exceeding 0,5 mA		N/A
19	Abnormal operation		N/A
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3		N/A

Clause	Requirement - Test	Result - Remark	Verdict
Q	ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS		N/A
	Description of tests for appliances incorporating electronic circuits		N/A
R	ANNEX R (NORMATIVE) SOFTWARE EVALUATION		N/A
	Software evaluated in accordance with the following clauses of Annex H of IEC 60730-1, as modified		N/A
H.2	Definitions		N/A
	Only definitions H.2.16 to H.2.20 applicable		N/A
H.7	Information		N/A
	Only footnotes 12) to 18) of Table 7.2, as modified, applicable		N/A
H.11.12	Controls using software		N/A
	All the subclauses of H.11.12, as modified, except H.11.12.6 and H.11.12.6.1, applicable		N/A
H.11.12.7	Delete text		N/A
H.11.12.7.1	For appliances using software class C having a single channel with self-test and monitoring structure, the manufacturer provides the measures necessary to address the fault/errors in safety related segments and data		N/A
H.11.12.8	Software fault/error detection occurs before compliance with 19.13 of IEC 60335-1 is impaired		N/A
H.11.12.8.1	Replace text		N/A
H.11.12.13	Software and safety related hardware under its control initializes and terminates before compliance with 19.13 of IEC 60335-1 is impaired		N/A

Clause	Requirement - Test	Result - Remark	Verdict

10.1	TABLE: Power input deviation (Heating mode)					P
Input deviation of/at:		P rated (W)	P measured (W)	dP	Required dP	Remark
220V / 50Hz		1230	1240	10 (0.81%)	Less than +5% and -10%	P
220V / 60Hz		1230	1256	26 (2.11%)	Less than +5% and -10%	P
230V / 50Hz		1350	1337	-13 (0.96%)	Less than +5% and -10%	P
230V / 60Hz		1350	1349	-3 (-0.22%)	Less than +5% and -10%	P
240V / 50Hz		1450	1469	19 (1.31%)	Less than +5% and -10%	P
240V / 60Hz		1450	1491	41 (2.83%)	Less than +5% and -10%	P

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

Clause	Requirement - Test	Result - Remark	Verdict

11.8	TABLE: Heating test, thermocouples			P
	Test voltage (V).....	254.4Vac		—
	Ambient (°C)	28.35 °C		—
Thermocouple locations		T(°C)	dT (K)	Max. dT (K)
Near Q8		42.67	14.32	
T2 Center		49.93	21.58	75
T2 Side		49.51	21.16	75
RL1 Center		48.36	20.01	
F1 Body		46.15	17.8	
C3 Body		55.72	27.37	50
U2 Body		43.87	15.52	
NME Body		31.05	2.7	
CX4 Body		36.52	8.17	
FL2 Line		50.39	22.04	
Button Stop		28.94	0.59	
Near Heat Wire		36.51	8.16	
Near FL2		49.33	20.98	
U4 Body		45.28	16.93	
Internal wire of primary side Blue		30.76	2.41	
Enclosure Outside		34.6	6.25	60
Enclosure near hear Fan		37.98	9.63	60
Ambient		28.35		
Note.				

Clause	Requirement - Test	Result - Remark	Verdict

13.2	TABLE: Leakage current (at operating temperature)		P
	Heating appliances: 1.15 x rated input.....:	--	--
	Motor-operated and combined appliances: 1.06 x rated voltage .....:	240V*1.06=254.4V	P

Leakage current between	I (mA)	Max. allowed I (mA)
Line to earthed metal	0.142	Less than 0.75
Neutral to earthed metal	0.135	Less than 0.75

13.3	TABLE: Electric strength (at operating temperature)	P

Test voltage applied between:	Voltage (V)	Breakdown (Yes/No)
Between Live part and accessible parts over basic insulation	1250Vac	No
Between Live part and accessible parts over supplementary insulation	1750Vac	No
Between Live part and accessible parts over reinforce insulation	3000Vac	No

16.2	TABLE: Leakage current		P
	Single phase appliances: 1.06 x rated voltage .....:	240V*1.06=254.4V	P
	Three phase appliances 1.06 x rated voltage divided by √3: .....:	--	—

Leakage current between	I (mA)	Max. allowed I (mA)
Line to earthed metal	0.142	Less than 0.75
Neutral to earthed metal	0.135	Less than 0.75

16.3	TABLE: Electric strength	P

Test voltage applied between:	Voltage (V)	Breakdown (Yes/No)
Between Live part and accessible parts over basic insulation	1250Vac	No
Between Live part and accessible parts over supplementary insulation	1750Vac	No
Between Live part and accessible parts over reinforce insulation	3000Vac	No

Clause	Requirement - Test	Result - Remark	Verdict

17	TABLE: Overload protection, temperature rise		N/A
Temperature rise of part/at:		dT (K)	Max. dT (K)
--		--	--
Remark:			

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)

19.11	TABLE: Abnormal operation, component failure					N/A
	Input voltage:					
Failed components	Fault condition	Test duration	Fault current A	Winding temperature °C	result	

19.13	TABLE: Abnormal operation, temperature rises		N/A
Thermocouple locations		dT (K)	Max. dT (K)
Locked rotor/moving part		--	--

Clause	Requirement - Test	Result - Remark	Verdict

24.1	TABLE: Components				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity
Enclosure	--	--	Metal, thickness 1.66mm min.	--	--
Power Plug	Yi Huan Precision Industry	IH-303	250V, 16A	VDE 0620-1	VDE
Power Cord	Chung Kwang Electric Wire & Cable Co., Ltd.	H05VV-F	3 x 0.75 mm²	VDE 0281-5	VDE
Power Connector	Yi Huan Precision Industry	IH-501B	250V, 10A	--	VDE
Appliance inlet	Neutrik Group	NAC3MPA	250V, 20A	IEC/EN 60320-1	VDE
Circuit breaker	Hwawon Electric Industrial Co Ltd	HW-15CP	250V, 7A	UL 1077	UL
Heater	SJHI (XIAMEN) Co., Ltd.	--	--	--	--
Pump	ULKA s.r.l.	EX5	240V, 50Hz, 48W	IEC/EN 60335-1 IEC/EN 60335-2-41	UL, VDE
Thermostats (for heater)	WAKO Electronics Co Ltd	CH-15	250V, 10A, Max 250 degree C	UL 873 IEC/EN 60730-1 IEC/EN 60730-2-9	UL
Thermal protector (for pump)	SEKI Controls Co	ST-22	250V, 6A, Max 90 degree C	IEC/EN 60730-1 IEC/EN 60730-2-9	VDE
Electric valve	KSD Kaosun Ind. Co., Ltd.	HA Series	24Vdc, 6.8W	--	--
Tubing	--	--	600V, 125 degree C, VW-1	UL 224	UL
Primary Wire	--	--	600V, 16/18AWG, 105 degree C	UL 758	UL
PCB material	--	--	105 degree C, V-0 min or better	UL 796	UL
Relay (RLY1/RLY4)	Tyco Electronics (Shenzhen) Co., Ltd.	OZ-SS-112L	240V, 16A	IEC/EN 61801-1	TUV, VDE
Relay (RLY2/RLY3)	Tyco Electronics (Shenzhen) Co., Ltd.	OZ-SS-112DM	240V, 16A	IEC/EN 61801-1	TUV, VDE
Varistor (ZNR1)	Disc Varistor	MOV Series	120V, 241K	IEC/EN 61051-1	VDE
Varistor (ZNR2)	Disc Varistor	MOV Series	220V, 470K	IEC/EN 61051-1	VDE
Fuse (F1)	JENN FENG Electric Industrial Co Ltd	GTG52	250Vac, 35A	UL	UL
Transformer (T1)	--	--	Class A	--	--
RTH1	--	--	5Ω, 3A	--	--
Primary connector	--	DMX PCB/3PIN V4 DMX PCB/5PIN V4	--	UL 1977	UL
Power supply unit	--	TS-926	110-240V, 50/60Hz	IEC/EN 60335-1	VDE, TUV

Clause	Requirement - Test	Result - Remark	Verdict

28.1	TABLE: Threaded part torque test		P
Threaded part identification	Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)
Side cover	4	II	1.2 Nm

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

		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	1,0	—	—	—	—	N/A
2 500	1,5	V	V	V	—	P
4 000	3,0	—	—	—	V	P
6 000	5,5	—	—	—	—	N/A
8 000	8,0	—	—	—	—	N/A
10 000	11,0	—	—	—	—	N/A

a. The distances specified apply only to clearances in air.

b. The smaller clearances specified in IEC 60664-1 have not been adopted for practical reasons, such as mass-production tolerances.

c. This value is increased to 0,8 mm for pollution degree 3.

d. If the construction is such that the distances could be affected by wear, by distortion, by movement of the parts or during assembly, the clearances for rated impulse voltages of 1 500 V and above are increased by 0,5 mm

Clause	Requirement - Test	Result - Remark	Verdict

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										P
Working voltage (V)	Creepage distance (mm) Pollution degree										
	1	2			3			Type of insulation			Verdict
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	B*)	S*)	R*)	
≤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	B*)	—	—	P
>125 and ≤250	0,6	1,3	1,8	2,5	3,2	3,6	4,0	—	S*)	—	P
>125 and ≤250	1,2	2,6	3,6	5,0	6,4	7,2	8,0	—	—	R*)	P
>250 and ≤400	1,0	2,0	2,8	4,0	5,0	5,6	6,3		—	—	N/A
>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

Clause	Requirement - Test	Result - Remark	Verdict

>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											

Clause	Requirement - Test	Result - Remark	Verdict

29.2	TABLE: Creepage distances, functional insulation							P
Working voltage (V)	Creepage distance (mm) Pollution degree							Verdict / Remark
	1	2			3			
		Material group			Material group			
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	
≤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

Clause	Requirement - Test	Result - Remark	Verdict

30.1	TABLE: Ball pressure			P
Part		Test temperature (°C)	Impression diameter (mm)	Allowed impression diameter (mm)
PWB		125°C	1.1	≦2
Transformer Bobbin		125°C	0.84	≦2

30.2	TABLE: Glow Wire Test		P
Part		Test temperature (°C)	Verdict
PWB		750	P
Remark			

TEST REPORT EN 62233 Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure	
Report reference No	PN664B
Date of issue	2016-07-07
Total number of pages (Report)	4
Testing laboratory:	ASP Technology Corp.
Address:	8F,-1, No.1, Zhongzheng Rd., Tucheng Dist., New Taipei City 23670, Taiwan (R.O.C.)
Testing location:	8F,-1, No.1, Zhongzheng Rd., Tucheng Dist., New Taipei City 23670, Taiwan (R.O.C.)
Applicant's name:	Antari Lighting And Effects Ltd.
Address:	No.8, Ln. 231, Sec. 1, Nankan Rd., Luzhu Dist., Taoyuan City, 33859, Taiwan (R.O.C.)
Manufacturer's name:	Antari Lighting And Effects Ltd.
Address:	No.8, Ln. 231, Sec. 1, Nankan Rd., Luzhu Dist., Taoyuan City, 33859, Taiwan (R.O.C.)
Test procedure:	
Procedure deviation:	Not applicable.
Non-standard test method:	Not applicable.
National deviations:	Not applicable.
Type item description:	Fog Machine
Trademark:	Antari
Representative Model:	Z-380,Z-390
Type Reference:	--
Rating(s):	220-240Vac, 50/60Hz, 1230-1450W
Testing:	
Date of receipt of test item:	Sep.03, 2015
Date (s) of performance of tests:	Sep.07-25, 2015
Summary of testing:	The submitted sample complies with the specified standard of EN 62233 clause 4.2.4.1 Time domain evaluation method.
The testing described in this report has been carried out to the best of our knowledge and ability, and our responsibility is limited to the exercise of reasonable care. This certification is not intended to believe the sellers from their legal and/or contractual obligations.	

1.GENERAL INFORMATION

1.1 DESCRIPTION OF EUT

1.2 RELATED INFORMATION OF EUT

Power Supply : 220-240Vac, 50/60Hz, 1230-1450W
Power Line : ■ Nonshielded □ Shielded □ None, Length: 1.8 m
Control Line : □ Nonshielded □ Shielded □ None, Length: _____ m

*For more detailed features, please refer to User's Manual.

1.3 TESTED CONFIGURATION

No devices were required.

Product	Manufacturer	Model No.	Serial No.	I/O Cable
N/A	N/A	N/A	N/A	N/A

1.4 DEVIATION RECORD

(If any deviation from additions to or exclusions from test method must be stated)

N/A

1.5 MODIFICATION RECORD

No modifications were required. (That is the EUT complied with the requirement as tested.)

2.SUMMARY OF TEST RESULTS

2.1 EMISSIONS:

2.1.1 Household and Similar Electrical Appliance Electromagnetic Fields Test

- -PASS

3.TEST DATA & RELATED INFORMATION

3.1 EMISSIONS:

3.1.1 Household and Similar Electrical Appliance Electromagnetic Fields Test Data:

A. Operating Conditions of the EUT: Operation Mode

Test Specification	EN 62233:2008/AC:2008		
Test Equipment	Exposure Level Tester: ELT-400 (Narda)		
Climatic Condition	Ambient Temperature: 26 °C	Relative Humidity: 58 % RH	Atmospheric Pressure: 992 mbar
Test Result	Measured P%=4.549% Max (R.M.S)	Range: Low	Low Cut: 10Hz
Power Supply System	AC Power: 230V, 50Hz		

Measuring Distance(cm): 30	**Sensor Locations: Around**	
Test Point	**P% (Limit: 100%)**	**TEST RESULTS**
1	**0.621**	**Pass**
2	**0.759**	**Pass**
3	**0.683**	**Pass**
4	**0.519**	**Pass**
5	**0.966**	**Pass**

8F,-1, No.1, Zhongzheng Rd., Tucheng Dist., New Taipei City 23670, Taiwan (R.O.C.)
TEL:886-2-22613919, FAX:886-2-22613918, E-mail: asp.twn@gmail.com

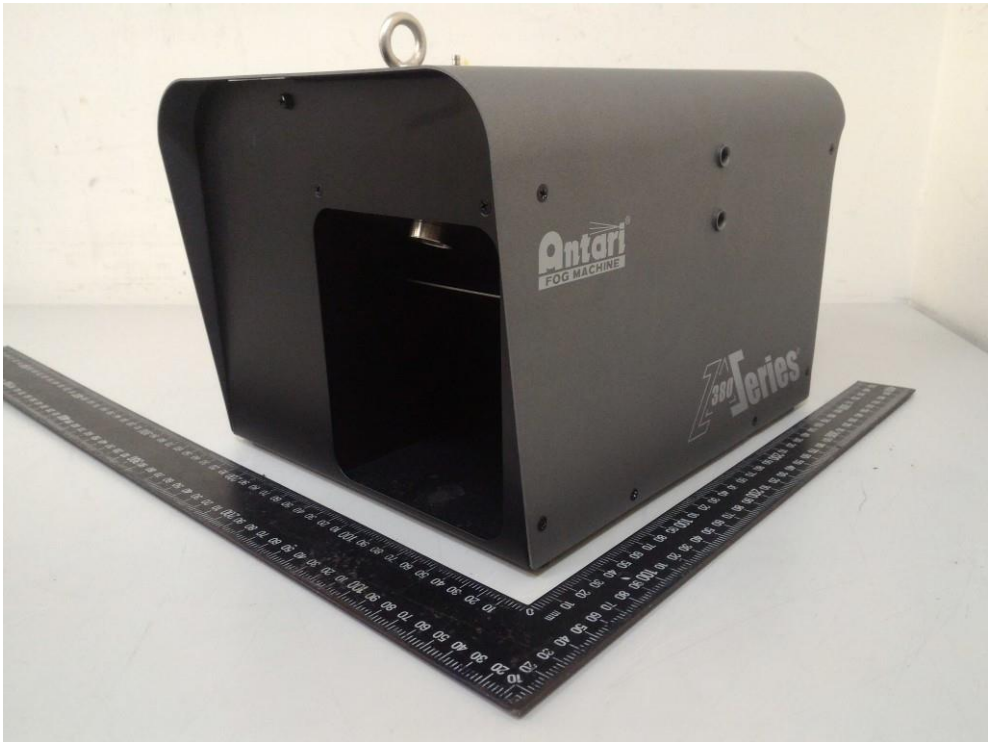
C.
CONSTRUCTION PHOTOS

Annex. EUT Photographs

Model: Z-380

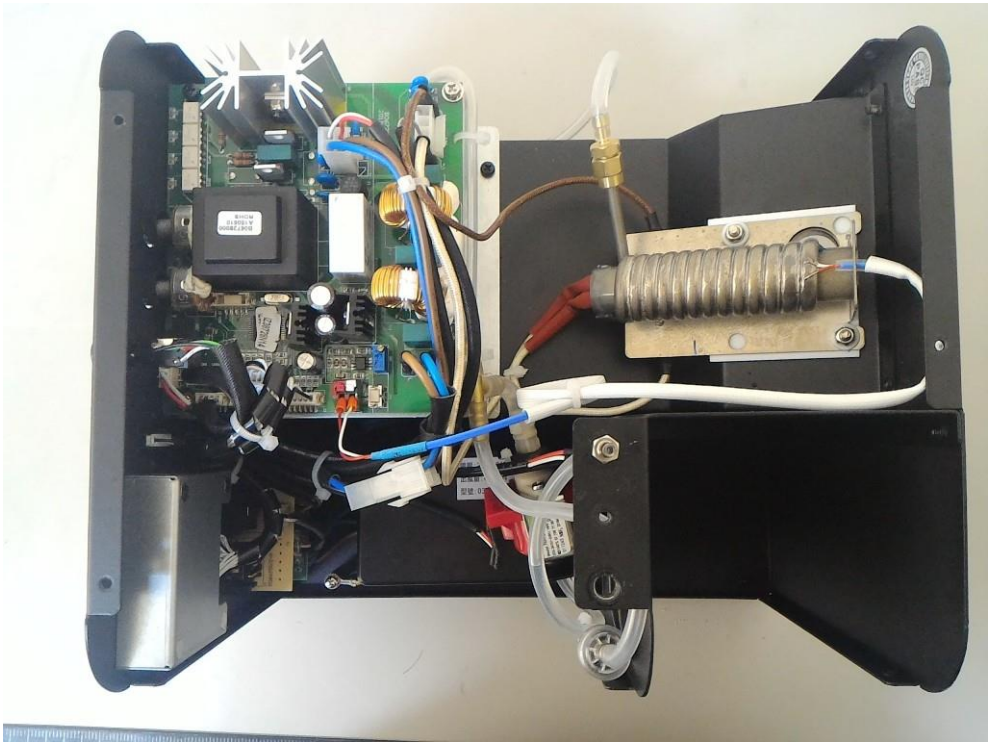
Annex. EUT Photographs

Model: Z-380



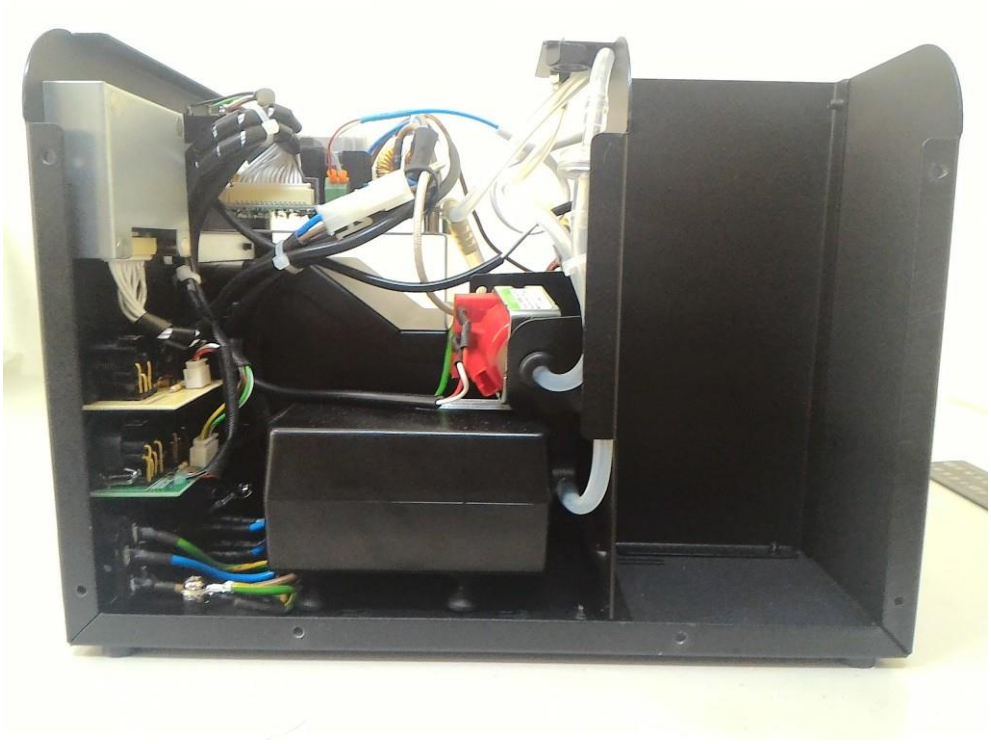
Annex. EUT Photographs

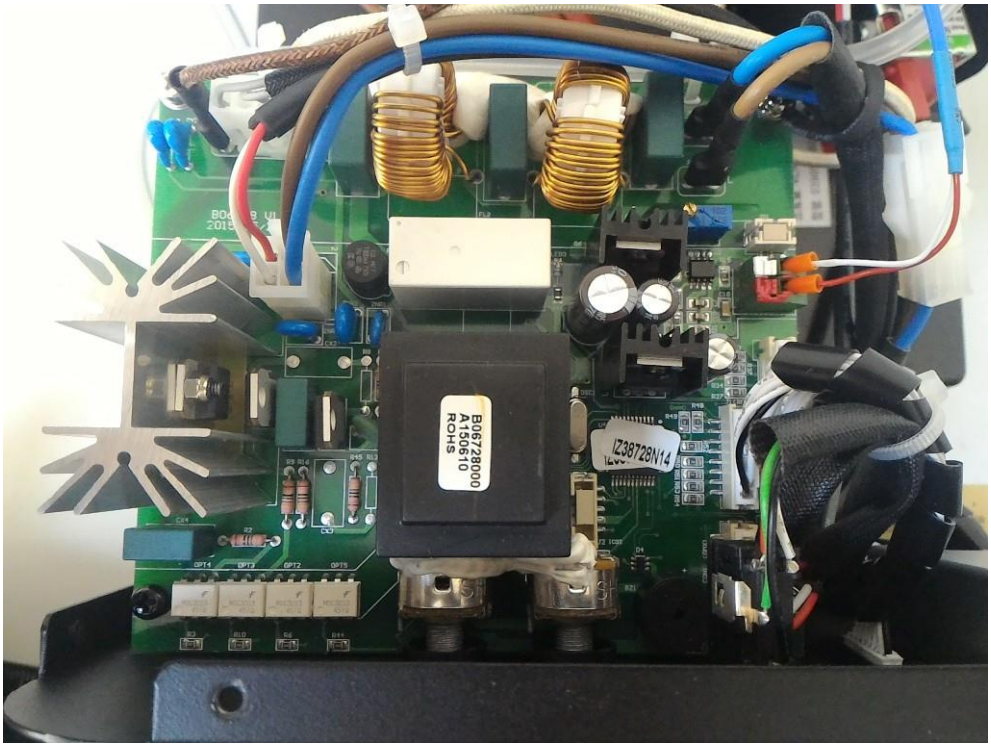
Model: Z-380



Annex. EUT Photographs

Model: Z-380





ADVANCED SAFETY PRODUCT
ASP TECHNOLOGY CORP

8F,-1, No.1, Zhongzheng Rd., Tucheng Dist., New Taipei City 23670, Taiwan (R.O.C.)
TEL:886-2-22613919, FAX:886-2-22613918, E-mail: asp.twn@gmail.com

D. TECHNICAL DOCUMENTATION

(A) A general description;

(B) Conceptual design and manufacturing drawings and schemes of components, sub-assemblies, circuits, etc.;

(C) Descriptions and explanations necessary for the understanding of those drawings and schemes and the operation of the electrical equipment;

(D) A list of the harmonized standards applied in full or in part the references of which have been published in the Official Journal of the European Union or international or national standards referred to in Articles 13 and 14 and, where those harmonized standards or international or national standards have not been applied, descriptions of the solutions adopted to meet the safety objectives of the Directive, including a list of other relevant technical specifications applied. In the event of partly applied harmonized standards or international or national standards referred to in Articles 13 and 14, the technical documentation shall specify the part which have been applied;

(E) Results of design calculations made, examinations carried out, etc.

Z-380 Fazer

Machine User Manual

CONFORMS TO ANSI/UL STD.999
CERTIFIED TO CAN/CSA STD. C22.2 No.104
9700333

RoHS

English

Z380 Series®

User Manual

Safety Information

Please read the following safety information carefully before operating the machine. Information includes important safety information about installation, usage, and maintenance. Pay attention to all warning labels and instructions in this manual and printed on the machine.

If you have questions about how to operate the machine safely, please contact your local Antari dealer for help.

- Keep this device dry.
- Always connect to a grounded circuit to avoid risk of electrocution.
- Before connecting machine to power, always check voltage indicate on machine match to your local AC voltage. Do not use the machine if AC power voltage does not match.
- Disconnect the machine from AC power before servicing and when not in use.
- This product is for indoor use only! Do not expose to rain or moisture. If fluid is spilled, disconnect AC power and clean with a damp cloth. If fluid is spilled onto electronic parts, immediately unplug the machine and contact your local Antari dealer for advice.
- No user serviceable and modifiable parts inside. Never try to repair this product, unauthorized technician may lead machine to damage or malfunction.
- For adult use only. Never leave the machine running unattended.
- Installed in well ventilated area. Provide at least 50 cm space around the machine.
- Never add flammable liquid of any kind to the machine.
- Make sure there are no flammable materials close to the machine while operating.
- Only use Antari fluid. Other fluid may lead to heater clog and malfunction.
- If the machine fails to work, unplug the machine and stop operation immediately. Contact your local Antari dealer for advise.
- Before transporting the machine, make sure the fluid tank is completely drained.
- Smoke fluid may present health risks if swallowed. Do not drink smoke fluid. Store it

securely. In case of eye contact or if fluid is swallowed immediately look for medical advice.

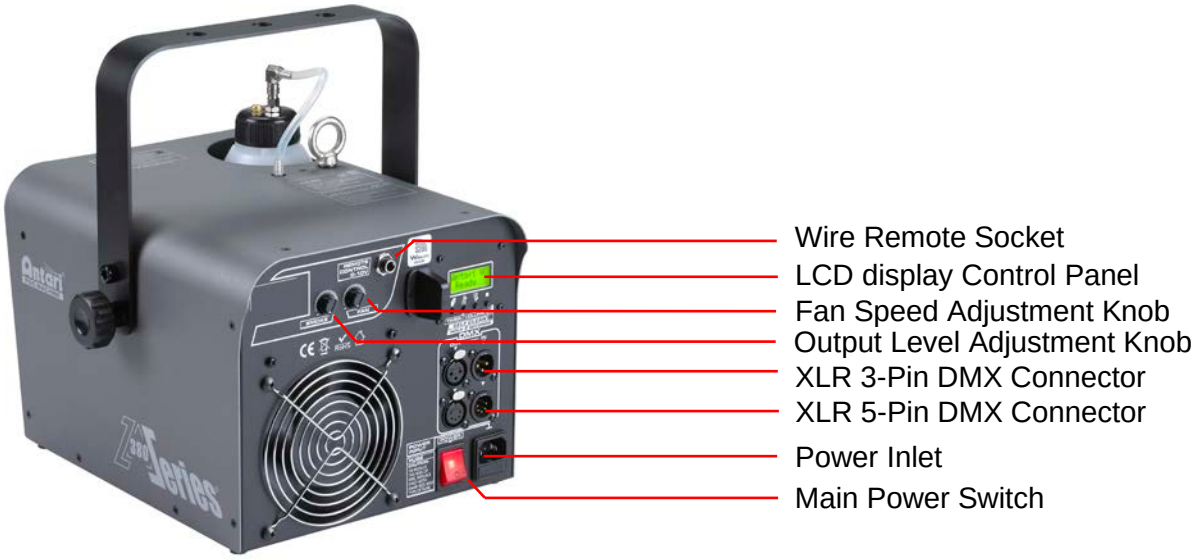
Unpacking and Inspection

Immediately upon receiving the machine, carefully unpack the carton, check all content to ensure that all parts are present and have been received in good condition. If any parts appear damaged or mishandled from shipping, notify the shipper immediately and retrain the packing material for inspection.

What is included: 1 x Z-380 Fazer
1 x Power Cord
1 x User Manual

Product Dimension

Product Overview



Setting Up

Step 1: Place the machine on a flat surface and in a suitable large area with at least 50 cm open space around the machine.

Step 2: Fill the fluid tank with Antari approved fluid.

Step 3: Connect the machine to suitable rated power supply. To determine the power requirement for the machine refer to the label on the back of the machine.

> Always connect the machine to a protected circuit and ensure it is properly grounded to avoid risk of electrocution.

Step 4: Turn on the machine and allow it to heat up. Heat up takes approximatly 1.5 mintues. Once the machine has reached operating temperature, the LCD display will show “Ready to Faze”. Now the machine is ready for operation.

Step 5: To start making haze, locate the ***Volume*** button on the control panel, and press the button to start making faze.

Step 6: To turn off the machine, press ***Stop*** button and put the power switch to the ***OFF*** position.

Operation

Control Panel Operation

The machine can be operated with onboard digital control interface or two rotary knobs located on the rear.

Rotary Knob	Function
SMOKE	Turn haze on/off, adjust output volume from 1~100%
FAN	Adjust fan speed from 20%~100%

Button	Function
[MENU]	Scroll through setting menu
▲ [UP]/[TIMER]	Up/Activate Timer function
▼ [DOWN]/[VOLUME]	Down/Activate Volume function
[STOP]	Deactivate Timer/Volume function

Control Menu

Interval Set 180s	Set interval from 1 to 180 seconds
Duration Set 120s	Set duration from 1 to 120 seconds
Timer Out 100%	Set timer output from 1 to 100%

Volume Out 100%	Set volume output from 1 to 100%
Fan Out 100%	Set fan output from 20 to 100%
DMX512 Add. 511	Set DMX address from 1 to 511
DMX Mode 1Ch	Set DMX mode Sync, 1Ch or 2Ch
Wireless OFF	Turn On or Off wireless control
Quick StartOFF	Turn On or Off run last setting function

Remote Control Operation (Optional)

To operate the machine by remote control, connect the remote to the microphone jack located on the rear of machine. Use the switch to turn haze on/off, and use the rotary knob to adjust the output volume from 1~100%.

Wireless Operation (Optional)

Wireless remote control system W-2 consists of a transmitter equipped with four buttons to turn faze output on or off, and adjust output volume; with an onboard receiver attach to the rear panel of Z-380.

W-2 Wireless Transmitter

Wireless Receiver

Wireless remote control function:

[A] button – Turn on faze output

[B] button – Turn off faze output

[C] button – Increase output volume

[D] button – decrease output volume

In a free open space the effective distance is 50 meters, actual usage depending on obstacle level the effective distance is 10-25 meters.

Registering transmitter

Transmitter can be pair or deleted from the receiver. Each receiver can pair up to 10 transmitters. Follow below steps to pair or delete transmitter from receiver.

Step 1: Power off Z-380 Fazer

Step 2: Press and hold [DOWN] button

Step 3: Turn power on and hold [DOWN] button until below menu shows on display

UP: Pair DOWN:Del

Step 4A: Press [UP] to pair a new transmitter; press any button on the W-2 remote to finish pairing.

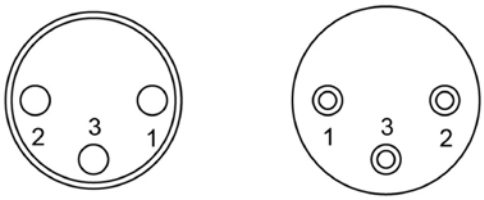
Step 4B: Press [DOWN] button to delete existing transmitter.

Transmitter battery replacement

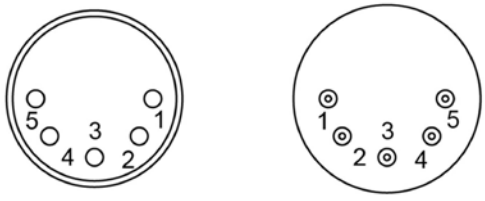
If effective distance seems to be decreased, it is possible the battery level are low and require replacement. In order to replace the battery, undo the three screws on the back of transmitter to release the cover. Replace with same type and specification of battery which is 27A 12V

DMX Connector Pin Assignment

The machine provide 3 or 5 pin XLR connector for DMX connection. Diagram below indicate pin assignment information



3 Pin XLR



5 Pin XLR

Pin	Function
1	Ground
2	Data-
3	Data+

DMX Operation

Making the DMX Connection – Connect machine to a DMX controller or to one of the machines in the DMX chain. The machine uses an 3 or 5 pin XLR connector for DMX connection, the connector is located on the rear of the machine.

DMX Channel Function

Channel Mode	Channel	Value	Function
2	1	0-5	Faze off
	2	6-255	Faze 1-100%
1	1	0-5	Faze off Fan 100%
		6-255	Faze 1-100% Fan 100%
Sync	1	0-5	Faze Off Fan 20%
		6-255	Faze 1-100% Fan 21-100%

Fluid

Only use Antari FLG water-based liquid for the Z-380 Fazer. The machine is tested and

calibrated with this liquid to get the best output performance. Warranty will be void if any other type of liquid is used, improper use of liquid may lead to machine failure and malfunction.

Service and Maintenance

- Do not allow the machine to become contaminated.
- Remove dust from air vents with air compressor, vacuum or a soft brush.
- Only use a damp cloth to clean the casing.
- Before storing run distilled water through the system to help avoid condensing the pump or heater.
- It is recommended to run the machine on a monthly basis in order to achieve best performance and output condition.
- Excessive dust, liquid and dirt built up will degrade performance and cause overheating.

Fuse Replacement

> Disconnect AC power before replacing fuse. Only replace fuse with same type and rating.

Step 1: Disconnect power cord from supply.
Step 2: Use a flat-head screwdriver to release fuse holder.
Step 3: Replace fuse with exact same type and rating as indicated below.
Step 4: Reinsert fuse holder.

Fuse

100V = T8A 250V

120V = T10A 250V

240V = T7A 250V

Error Messages

Heater Overheat	Indicate heater exceed temperature range
Heater Error	Indicate heater not working properly

If above message show on display unplug the machine and stop operation immediately. Contact your local Antari dealer for advise

Technical Specifications

Input voltage	AC120V, 50/60Hz
	AC240V, 50/60Hz
Fuse	100V = T8A 250V
	120V = T10A 250V
	240V = T7A 250V
Heater	1500W
Warm-up time	1.5 min. (approx.)
Coverage volume	6000 cu.ft./min.
Max. operating time	3.5 hrs max. output
Fluid tank capacity	1.2 L
Fluid consumption	6 ml/min.
Compatible fluid	Antari FLG water-based fluid
Control option	DMX 512, Cable remote, Manual, Wireless remote
	Adjustable faze volume and fan speed

DMX channels	2 channels, Faze volume and fan speed
Power connection	IEC
DMX data connection	3 and 5 pin XLR
Remote control connection	3.5mm headphone jack
Dimension	L 328 x W 247.7 x H 264.9 mm
	L 328 x W 247.7 x H 323.9 mm (with hanging bracket)
Dry weight	8.48 kg
Accessories (Optional)	Z-3 remote control, W-2 wireless remote

For current product information visit Antari at:www.antari.com
For information requests please contact us at:sales@antari.com

C08Z38000

www.antari.com

8F,-1, No.1, Zhongzheng Rd., Tucheng Dist., New Taipei City 23670, Taiwan (R.O.C.)
TEL:886-2-22613919, FAX:886-2-22613918, E-mail: asp.twn@gmail.com

E. MODIFICATIONS

ALL MODIFICATIONS THAT MAY AFFECT COMPLIANCE WITH THE STANDARD REQUIREMENTS & NECESSARY TEST DATA(IF ANY)