



TEST REPORT

IEC/EN

60335 & 60601

Household and Similar Electrical Appliances Safety and Effectiveness of Medical Electrical Equipment

Report Reference No.: 45122 164

Date of issue.....: 20.08.2020

Total number of pages.....: 44

Testing Authority.....: Nevon Solutions Product Safety Lab

Address.....: C4, Laghu Udyog, IB Patel Rd, Goregaon East, Mumbai 063

Test specification:

Standard: IEC 60335-1
IEC 60601-1

Test procedure.....: As per Respective IEC Standard Page 3

Receipt of Samples.....: 04-07-2020 (4 July 2020)

Date of Test.....: 17-07-2020 (17 July 2020)

Test Result/Conclusion.....: PASS - See Results & Conclusion Page 5

Test Sample Description:

Product: Ultraviolet Sterilizers Box/Chamber

Brand/Make Name.....: Nevon

Model No.....: C72

Manufacturer Name.....: NevonSolutions Pvt Ltd

Ratings.....: AC 230V 50/60 Hz

Possible test case verdicts:

- test case does not apply to the test object : N/A
- test object does meet the requirement..... : P(Pass)
- test object does not meet the requirement..... : F(Fail)

Tested By

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(Director)




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SECTION 1 SUMMARY OF TESTING

Summary of testing: PASS	
Tests performed (name of test and test clause): All items	Testing location: NevonSolutions Pvt Ltd, C4, Laghu Udyog, IB Patel Rd, Goregaon East, Mumbai 063
<p>Summary of compliance:</p> <p>We tested UV Sterilizer devices model No C72 to determine weather it is in compliance with relevant IEC standards IEC 60335-1: 2010 and IEC 60601-1. We found that the product met the below testing requirements when tested as received.</p> <p>The UV-C Sterilizers were tested against the current standards: IEC 60335-1: 2010 IEC 60601-1</p> <p>Model references and rated inputs C72 – 88W 230V</p> <p>Copy of Marking Plate</p> <div></div>	

SECTION 2 TEST ENVIRONMENT & CONDITIONS

Clause	Requirement	Test Site	Test Date
4	Suitable Devices for Measuring Voltage, Current Power & Frequency	Nevon Product Testing Lab , Mumbai	17-07-2020
7	Spirit & Water	Nevon Product Testing Lab , Mumbai	17-07-2020
8	Test Probe Setup For Protection Against Live Parts	Nevon Product Testing Lab , Mumbai	17-07-2020
10	Voltmeter Ammeter For Voltage, Current Measurement & Wattage Calculation	Nevon Product Testing Lab , Mumbai	17-07-2020
23	Internal Wiring Flexing Test Apparatus	Nevon Product Testing Lab , Mumbai	17-07-2020
27	Earthing Continuity Testing Meter	Nevon Product Testing Lab , Mumbai	17-07-2020
8	Voltmeter & Ammeter Setup For Input & Output Voltage Current & Leakage Current Detection	Nevon Product Testing Lab , Mumbai	17-07-2020
	254nm UV-C Radiation Measurement Instrument	Nevon Product Testing Lab , Mumbai	17-07-2020
	UVC Radiation Leakage Test Instrument	Nevon Product Testing Lab , Mumbai	19-08-2020

SECTION 3 EUT INFORMATION (Equipment Under Test)

Equipment Under Test (EUT): Nevon UVLizer C72 – Ultraviolet Sterilizer

Product Type: Electronic Device

Model No/Variant: C72

Dimensions: 585x302x286mm

Weight: 15kg

Operating Voltage: 230V AC

Total Wattage: 88W

Product Material: Mild Steel Powder Coated

Country Of Manufacture: India

Product Color: White

SECTION 3 TEST CONFIGURATION & TEST REPORT

Clause	Test	Result/Remark	Verdict
4.11	POWER INPUT		
	Input Voltage Testing	Device Working at 230V AC	P
	Input Current Testing	0.769 Amperes	P
	Current (A)		N/A
	Calculated Wattage	176 Watt	P
7	MARKINGS & INSTRUCTIONS		
7.1	Rated Voltage of Voltage Range V	230V	P
	Frequency Hz	50Hz	P
	Rated current (A)		N/A
	Product Name	UVLizer	P
	Model Number	C72	P
	Manufacturer/Company Name	Nevon Solutions Pvt Ltd	P
	CE RoHS Markings	CE RoHS	P
	Electronic Waste Marking	Provided	P
	Country or Manufacture	India	P
7.1.3	Durability Of Markings	Resistant to Water & Ethyl Alcohol	P
7.6	Correct Symbols Used		P
7.9	Marking or placing of switches which may cause a hazard	No Such Switches	N/A
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means	Provided on Display	P
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		N/A
7.11	Indication for direction of adjustment of controls		N/A
7.12	Instructions for safe use provided	Provided on User Manual	P
7.12.1	Sufficient details for installation supplied	Provided on User Manual	P
	Sufficient details for Product Working Supplied	Provided on User Manual	P

	UV Safety Warning Instructions Provided	Provided on Product	P
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	No Detachable Parts	N/A
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		
	- built-in appliances		P
	- fixed appliances		P
	- 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		P
	Only possible to touch parts separated from live parts by double or reinforced insulation		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		P
	Test for an appliance with one or more rated voltage ranges (IEC/EN 60335-1/A2)	Only one voltage	N/A
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2	(See appended table)	P
	Test for an appliance with one or more rated voltage ranges (IEC/EN 60335-1/A2)		N/A
11	HEATING		
11.1	No excessive temperatures in normal use		P
13	LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE		
13.1	Leakage current not excessive and electric strength adequate	See below	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..... :		N/A

	Protective impedance and radio interference filters disconnected before carrying out the tests		N/A
13.2	Leakage current measured by means of the circuit described in figure 4 of IEC 60990		N/A
	Leakage current measurements	(See appended table)	N/A
13.3	The appliance is disconnected from the supply		P
	Electric strength tests according to table 4	(See appended table)	N/A
	No breakdown during the tests		P

16 LEAKAGE CURRENT AND ELECTRIC STRENGTH

16.1	Leakage current not excessive and electric strength adequate		P
	Protective impedance disconnected from live parts before carrying out the tests		N/A
16.2	Single-phase appliances: test voltage 1,06 times rated voltage :	244 V	P
	Three-phase appliances: test voltage 1,06 times rated voltage divided by $\sqrt{3}$:		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

17 OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS

	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use	(See appended table)	P
	Appliance supplied with 1,06 or 0,94 times rated voltage 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

19 ABNORMAL OPERATION

19.1	The risk of fire or mechanical damage under abnormal or careless operation obviated		P
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	Electronic circuits so designed and applied that a fault will not render the appliance unsafe		P
	Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11 (IEC/EN 60335-1/A2)	No contactors, no relays	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 :		N/A
19.3	Test of 19.2 repeated; test voltage (V): power input of 1,24 times rated power input :		N/A
19.4	Test conditions as in cl. 11, any control limiting the temperature during tests of cl. 11 short-circuited	No thermostat or similar	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	No appropriate heating elements	N/A
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		N/A
	The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4		N/A
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions	No appropriate heating elements	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
19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless they comply with the conditions specified in 19.11.1		P
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.3 and 19.11.4 (IEC/EN 60335-1/A1)		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 (IEC/EN 60335-1/A1)		N/A
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8 (IEC/EN 60335-1/A2)		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:	
	- 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:	
	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 (IEC/EN 60335-1/A1)	N/A
	g) failure of an electronic power switching device (IEC/EN 60335-1/A2)	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:	
	- 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:	
	- the material of the printed circuit board withstands the burning test of annex E	N/A
	- 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 switch with an off position obtained by electronic disconnection, or (IEC/EN 60335-1/A1)	N/A
	a switch that can be placed in the stand-by mode, (IEC/EN 60335-1/A1)	N/A
	subjected to the tests of 19.11.4.1 to 19.11.4.7 (IEC/EN 60335-1/A1)	N/A
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.4.1 to 19.11.4.7, except that (IEC/EN 60335-1/A1)	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. (IEC/EN 60335-1/A1)	N/A
	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 (IEC/EN 60335-1/A2)	N/A
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4 (IEC/EN 60335-1/A1)	N/A

19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3 (IEC/EN 60335-1/A1)	N/A
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21 MECHANICAL STRENGTH

21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling	P
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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 (IEC/EN 60335-1/A1)

N/A

If necessary, supplementary or reinforced insulation subjected to the electric strength test of 16.3

N/A

If necessary, repetition of groups of three blows on a new sample

N/A

The requirement is not applicable to the glass envelopes of heat lamps incorporated in ceiling mounted heat lamp appliances. (IEC/EN 60335-2-30/A2)

N/A

For appliances with heating elements in direct contact with accessible panels made of glass, ceramic or similar material : applied to the panel a force of 2 J (IEC/EN 60335-2-30/A2)

See above

N/A

21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements (IEC/EN 60335-1/A1)	No accessible insulation (heating foil)	N/A
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The insulation is tested as specified, unless (IEC/EN 60335-1/A1)

N/A

the thickness of supplementary insulation is at least 1 mm and reinforced insulation is at least 2 mm (IEC/EN 60335-1/A1)

N/A

21.101	For visibly glowing radiant heaters: mass 5 kg placed for 1 min on central part of the fireguard (IEC/EN 60335-2-30)	No appropriate heater	N/A
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21.102	Test for heaters having a part fixed to the wall and other part hinged to it. (IEC/EN 60335-2-30)	No appropriate heater	N/A
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After the test, compliance with 8.1 and Clause 29.1 shall not be impaired.

N/A

22 CONSTRUCTION

22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled	N/A
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22.2	Stationary appliance: means to provide all-pole disconnection from the supply provided, the following means being available:		
	- 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
	Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase permanently connected class I appliances, connected in the phase conductor		N/A
	Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase, permanently connected class 01 and class I appliances, connected to the phase conductor (IEC/EN 60335-1/A2)		N/A
22.3	Appliance provided with pins: no undue strain on socket-outlets		N/A
	Applied torque not exceeding 0,25 Nm		N/A
	Pull force of 50 N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1 mm		N/A
	Each pin subjected to a torque of 0,4 Nm; 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, the appliance being disconnected from the supply at the instant of voltage peak. (IEC/EN 60335-1/A1)		P
	Tests as described		N/A
22.12	Handles, knobs etc. fixed in a reliable manner	No Handles,Knobs	N/A
	Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible		N/A
	Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied		N/A
	Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied		N/A

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		N/A
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance		P
	No exposed pointed ends of self tapping screws etc., liable to be touched by the user in normal use or during user maintenance		P
22.15	Storage hooks and the like for flexible cords smooth and well rounded		N/A
22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands, no undue wear of contacts		N/A
	Cord reel tested with 6000 operations, as specified		N/A
	Electric strength test of 16.3, voltage of 1000 V applied		N/A
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner		N/A
	Not applicable to rollers or feet prevent overheating of walls or floor if the appliance meets the requirement of clause 19 without these parts in place. (IEC/EN 60335-2-30/A2)		N/A
22.18	Current-carrying parts and other metal parts resistant to corrosion under normal conditions of use		N/A
22.19	Driving belts not used as electrical insulation		N/A
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless material used is non-corrosive, non-hygroscopic and non- combustible		N/A
	Compliance is checked by inspection and, if necessary, by appropriate test		N/A
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated	None of mentioned materials used	P
	This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements (IEC/EN 60335-1/A2)		N/A
22.22	Appliances not containing asbestos		P
22.23	Oils containing polychlorinated biphenyl (PCB) not used		N/A
22.24	Bare heating elements adequately supported to prevent contact with accessible metal parts in case of rupture or sagging		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	N/A
22.28	Metal parts of Class II appliances conductively connected to gas pipes or in contact with water: separated from live parts by double or reinforced insulation	N/A
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of access to live parts is maintained after installation	N/A
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or	P
	so constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete	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	N/A
	Clearances and creepage distances between live parts and accessible parts not reduced below values for supplementary insulation, if wires, screws etc. become loose	N/A
22.36	Handles continuously held in the hand in normal use are so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless they are separated from live parts by double or reinforced insulation	N/A
22.37	Capacitors in Class II appliances not connected to accessible metal parts, unless complying with 22.42	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	N/A
22.39	Lamp holders used only for the connection of lamps	N/A
	For replaceable heat lamps in ceiling mounted heat lamp appliances, ceramic insulating parts of lampholders are used. (IEC/EN 60335-2-30/A2)	N/A

22.40	Motor-operated appliances and combined appliances intended to be moved while in operation, or having accessible moving parts, fitted with a switch to control the motor. The actuating member of the switch being easily visible and accessible	N/A
	Unless the appliance can operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation being fitted with a switch. The actuating member of the switch being easily visible and accessible (IEC/EN 60335-1/A2)	N/A
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 are not allowed to have an enclosure that is shaped and decorated so that the appliance is likely to be treated as a toy by children	P
	Appliances shall not have an enclosure that is shaped or decorated like a toy (IEC/EN 60335-1/A2)	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	N/A
22.46	Software used in protective electronic circuits is software class B or C (IEC/EN 60335-1/A1)	N/A
22.47	Appliances connected to the water mains withstand the water pressure expected in normal use (IEC/EN 60335-1/A1)	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 (EN 60335-1/A1)	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 (IEC/EN 60335-1/A2)		N/A
22.50	Controls incorporated in the appliance take priority over controls actuated by remote operation ((IEC/EN 60335-1/A2))	No appropriate controls	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 (IEC/EN 60335-1/A2)		N/A
	There is a visual indication showing that the appliance is adjusted for remote operation (IEC/EN 60335-1/A2))		N/A
	Manual setting and visual indication not necessary on appliances that can operate as follows, without giving rise to a hazard (IEC/EN 60335-1/A2) :		N/A
	- operate continuously,		N/A
	- operate automatically, or		N/A
	- be operated remotely		N/A
22.52	Socket-outlets on appliances accessible to the user in accordance with the socket-outlet system used in the country in which the appliance is sold (IEC/EN 60335-1/A2)		N/A
22.101	Heater other than heaters for mounting at high level shall be guarded in order to prevent contact with heating elements (IEC/EN 60335-2-30)		N/A
23	INTERNAL WIRING		
23.1	Wireways smooth and free from sharp edges		P
	Wires protected against contact with burrs, cooling fins etc.		P
	Wire holes in metal well rounded or provided with bushings		P
	Wiring effectively prevented from coming into contact with moving parts		P
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges or corners		N/A
	Beads inside flexible metal conduits contained within an insulating sleeve		N/A
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		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
	No breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation	N/A
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by positive means	P
23.7	The colour combination green/yellow used only for earthing conductors	P
23.8	Aluminium wires not used for internal wiring	N/A
23.9	No lead-tin soldering of stranded conductors where they are subject to contact pressure, unless	N/A
	clamping means so constructed that there is no risk of bad contact due to cold flow of the solder	N/A
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, at least equivalent to that of light polyvinyl chloride sheathed flexible cord (60227 IEC 52) (IEC/EN 60335-1/A1)	N/A
25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS	
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	N/A
	- pins for insertion into socket-outlets	N/A
25.2	Appliance not provided with more than one means of connection to the supply mains	P

	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown		N/A
25.3	Connection of supply conductors for appliance intended to be permanently connected to fixed wiring possible after the appliance has been fixed to its support		N/A
	Appliance provided with a set of terminals for the connection of cables or fixed wiring, cross-sectional areas specified in 26.6		N/A
	Appliance provided with a set of terminals allowing the connection of a flexible cord		N/A
	Appliance provided with a set of supply leads accommodated in a suitable compartment		N/A
	Appliance provided with a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate type of cable or conduit		N/A
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimensions according to table 10		N/A
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in 29		N/A
25.5	Method for assemble supply cord with the appliance:		
	- type X attachment		N/A
	- type Y attachment		P
	- type Z attachment		N/A
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N/A
25.6	Plugs fitted with only one flexible cord		P
	Supply cords of single-phase portable appliances having a rated current not exceeding 16 A, fitted with a plug complying with the following standard sheets of IEC 60083:75 (EN 60335-1)		
	- for Class I appliances: standard sheet C2b, C3b or C4		N/A
 :		
	- for Class II appliances: standard sheet C5 or C6 ... :	C5 variante II	P
25.7	Supply cords being one of the following types (IEC/EN 60335-1/A2):		P

	- 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 not exceeding 3 kg	H03VVH2-F only for 4595 and 6090 SHB	N/A
	- ordinary polyvinyl chloride sheathed cord (at least 60227 IEC 53), other appliances	All other H05VV-F	N/A
	Heat resistant polyvinyl chloride sheathed: Not used for type X attachment other than specially prepared cords.		N/A
	- Heat-resistant light polyvinyl chloride sheathed cord (at least 60227 IEC 56), appliances not exceeding 3 kg		N/A
25.18	Cord anchorages only accessible with the aid of a tool, or		N/A
	so constructed that the cord can only be fitted with the aid of a tool		N/A
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N/A
	Tying the cord into a knot or tying the cord with string not used		N/A
25.20	Conductors of the supply cord for type Y and Z attachment adequately additionally insulated		N/A
27	PROVISION FOR EARTHING		
27.1	Accessible metal parts of Class 0I and I appliances, permanently and reliably connected to an earthing terminal or contact of the appliance inlet		P
	Earthing terminals not connected to neutral terminal		P
	Class 0, II and III appliance have no provision for earthing		P
	Safety extra-low voltage circuits not earthed, unless protective extra-low voltage circuits		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 (IEC/EN 60335-1/A1)	N/A
	For appliances with supply cord, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage	N/A
27.4	No risk of corrosion resulting from contact between metal of earthing terminal and other metal	N/A
	Adequate resistance to corrosion of coated or uncoated parts providing earthing continuity, other than parts of a metal frame or enclosure	N/A
	Parts of steel providing earthing continuity provided at the essential areas with an electroplated coating, thickness at least 5 µm	N/A
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure	N/A
	In case of aluminium alloys precautions taken to avoid risk of corrosion	N/A
27.5	Low resistance of connection between earthing terminal and earthed metal parts	N/A
	This requirement does not apply to connections providing earthing continuity in the protective extra- low voltage circuit, provided that clearances of basic insulation are based on the rated voltage of the appliance	N/A
	Resistance not exceeding 0,1 Ω at the specified low- resistance test	N/A
27.6	The printed conductors of printed circuit boards shall not be used to provide earthing continuity in hand- held appliances. (IEC/EN 60335-1/A2)	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 (IEC/EN 60335-1/A2)	N/A
	The printed conductors of printed circuit boards not used to provide earthing continuity in hand held appliances	N/A

	They may be used in other appliances if:	
	- at least two tracks are used with independent soldering points and the appliance complies with requirements of 27.5 for each circuit	N/A
	- the material of the printed circuit board complies with IEC 60249-2-4 or IEC 60249-2-5	N/A

28 SCREWS AND CONNECTIONS

28.1	Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses		P
	Screws not of soft metal liable to creep, such as zinc or aluminium		P
	Diameter of screws of insulating material min. 3 mm		N/A
	Screws of insulating material not used for any electrical connection or connections providing earthing continuity		N/A
	Screws used for electrical connections or connections providing earthing continuity screw into metal		N/A
	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	(See appended table)	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		N/A
	This requirement does not apply to electrical connections in circuits carrying a current not exceeding 0,5 A		N/A
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		N/A
	Thread-cutting (self-tapping) screws and thread rolling screws only used for electrical connections if they generate a full form standard machine screw thread (IEC/EN 60335-1/A2)		N/A
	Thread-cutting (self-tapping) screws not used if they are likely to be operated by the user or installer (IEC/EN 60335-1/A2)		N/A

	Thread-cutting, thread rolling and space threaded screws may be used in connections providing earthing continuity provided it is not necessary to disturb the connection (IEC/EN 60335-1/A2):	N/A
	- 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 (IEC/EN 60335-1/A2)	N/A
	Thread-cutting (self-tapping) screws only used for electrical connections if they generate a full form standard machine screw thread	N/A
	Such screws not used if they are likely to be operated by the user or installer unless the thread is formed by a swaging action	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
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if subjected to torsion	N/A

UV WAVELENGTH, INTENSITY & SAFETY MEASUREMENT

UV C Validation	Device emits UV in the 254nm UV C Wavelength	P
254 Nanometer Output Validation	Device emits UVC in the 254 nm Wavelength	P



UVC Intensity Measurement



P

UVC Leakage Testing - Panel



P

UVC Leakage Testing - Top Bottom



P

UVC Leakage Testing - Front

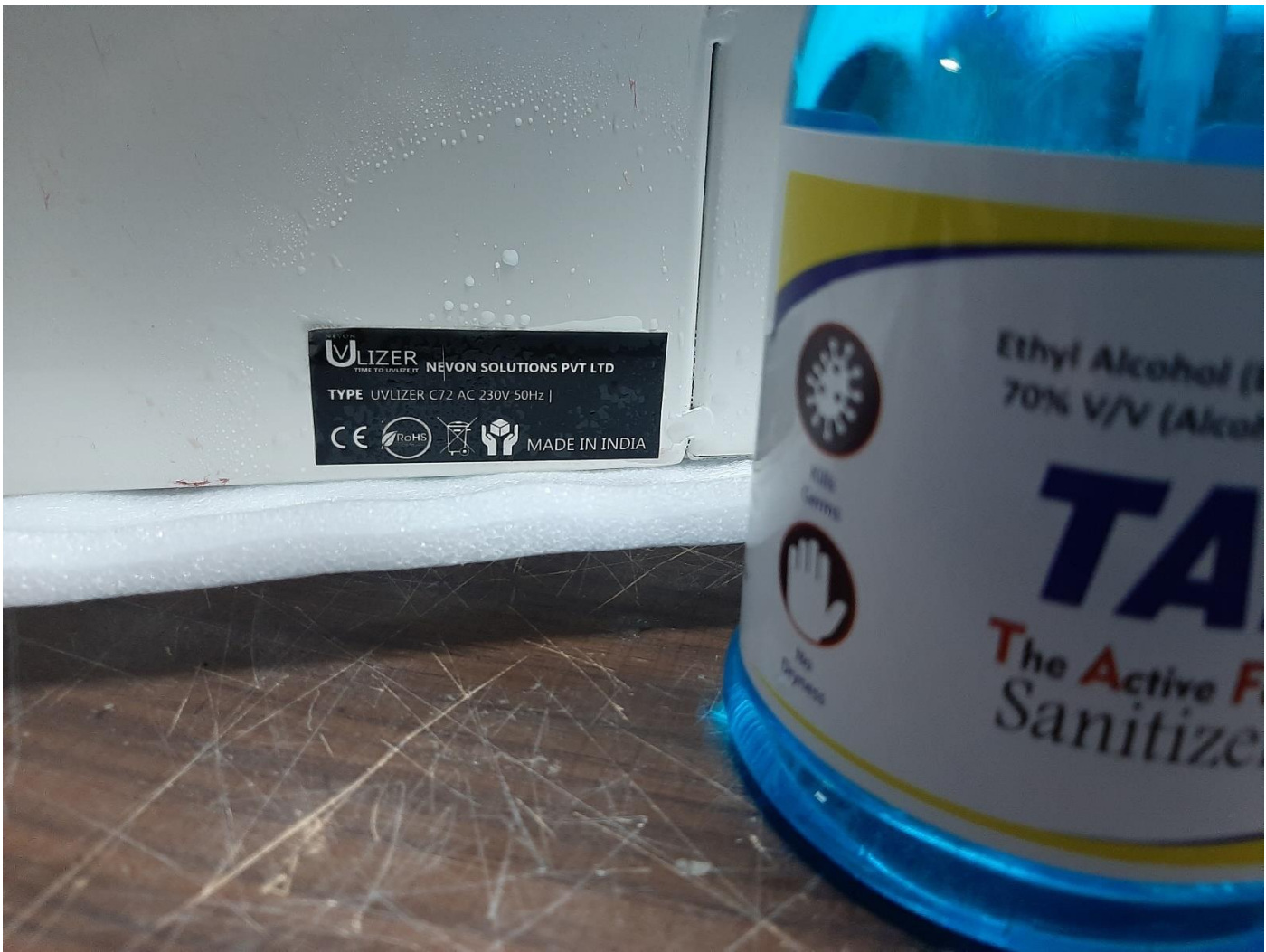


P

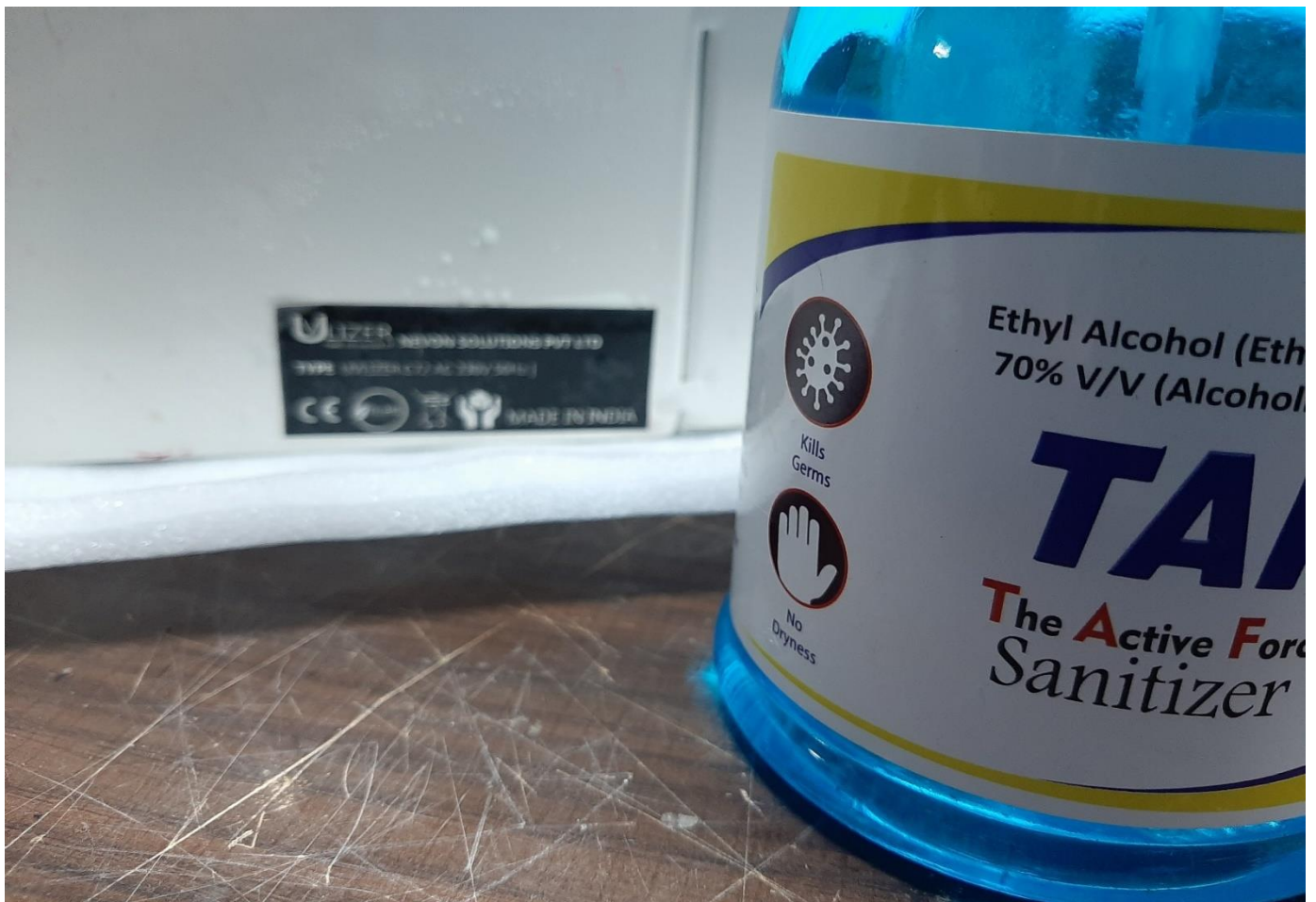
SECTION 2 Appendix I – Photographs of Test Configurations



UVC Intensity Test



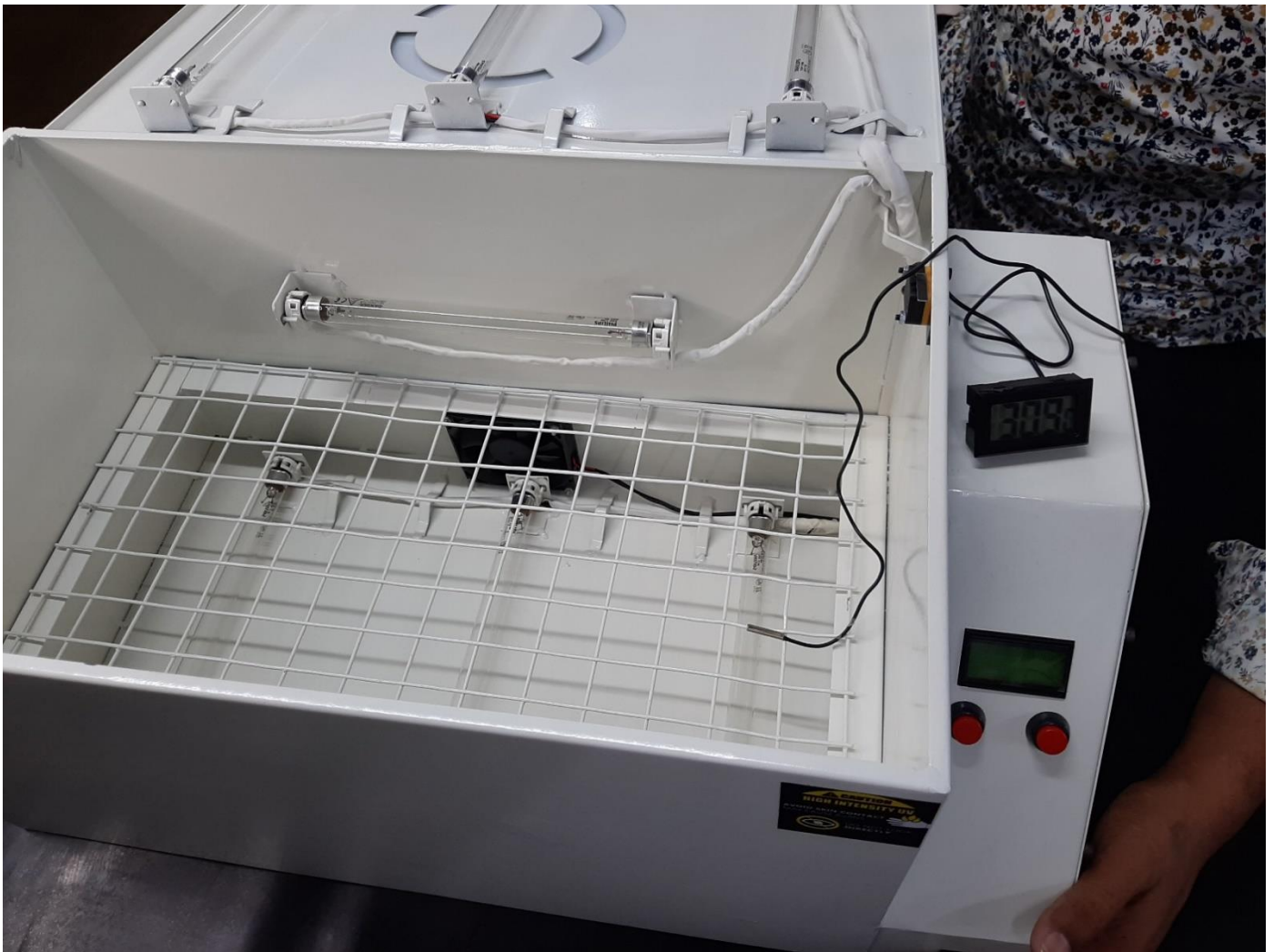
Durability Of Markings



Durability Of Markings



Earthing Testing



Wire Overheat/Temperature Testing



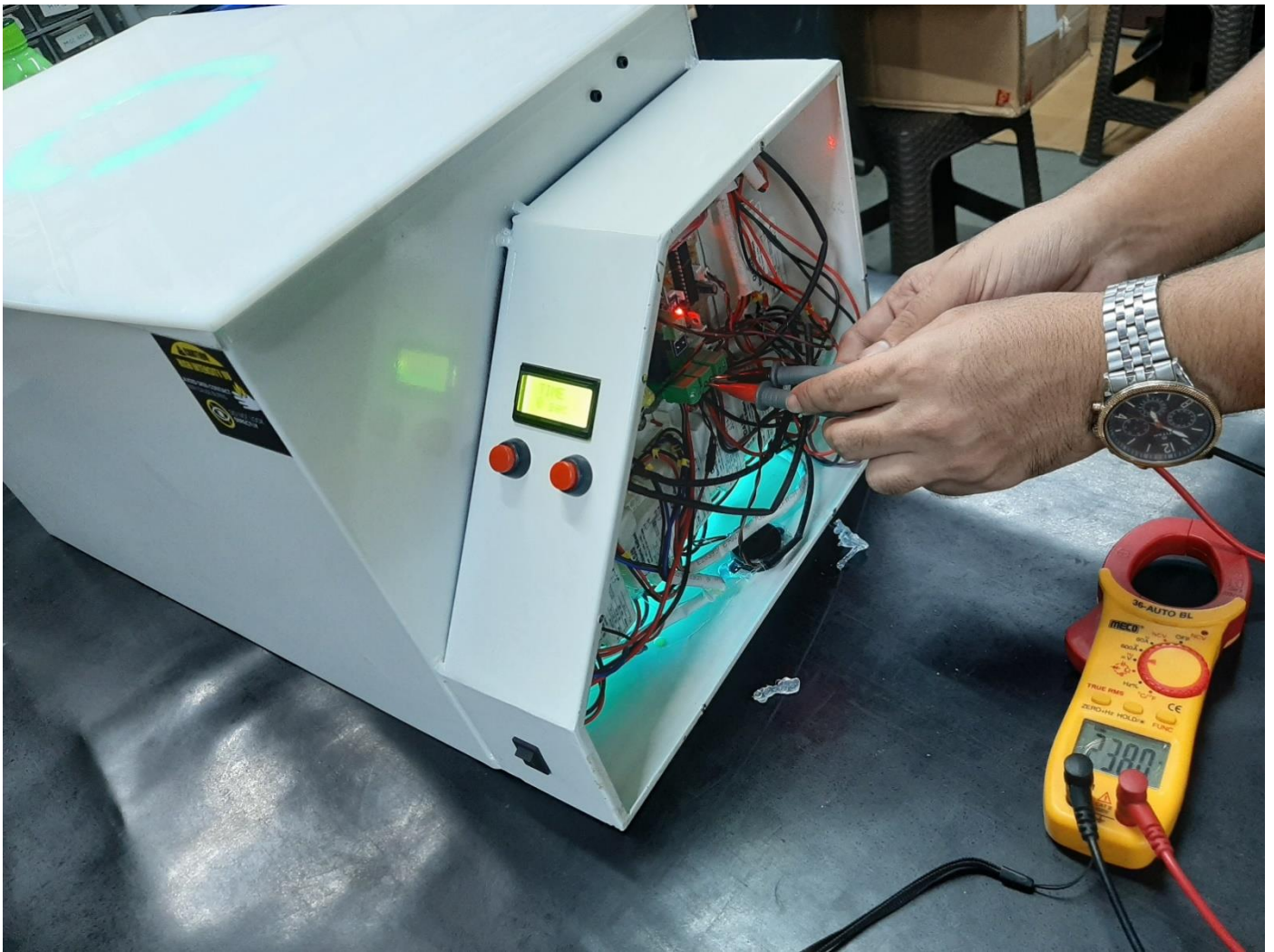
Input Current & Voltage Testing



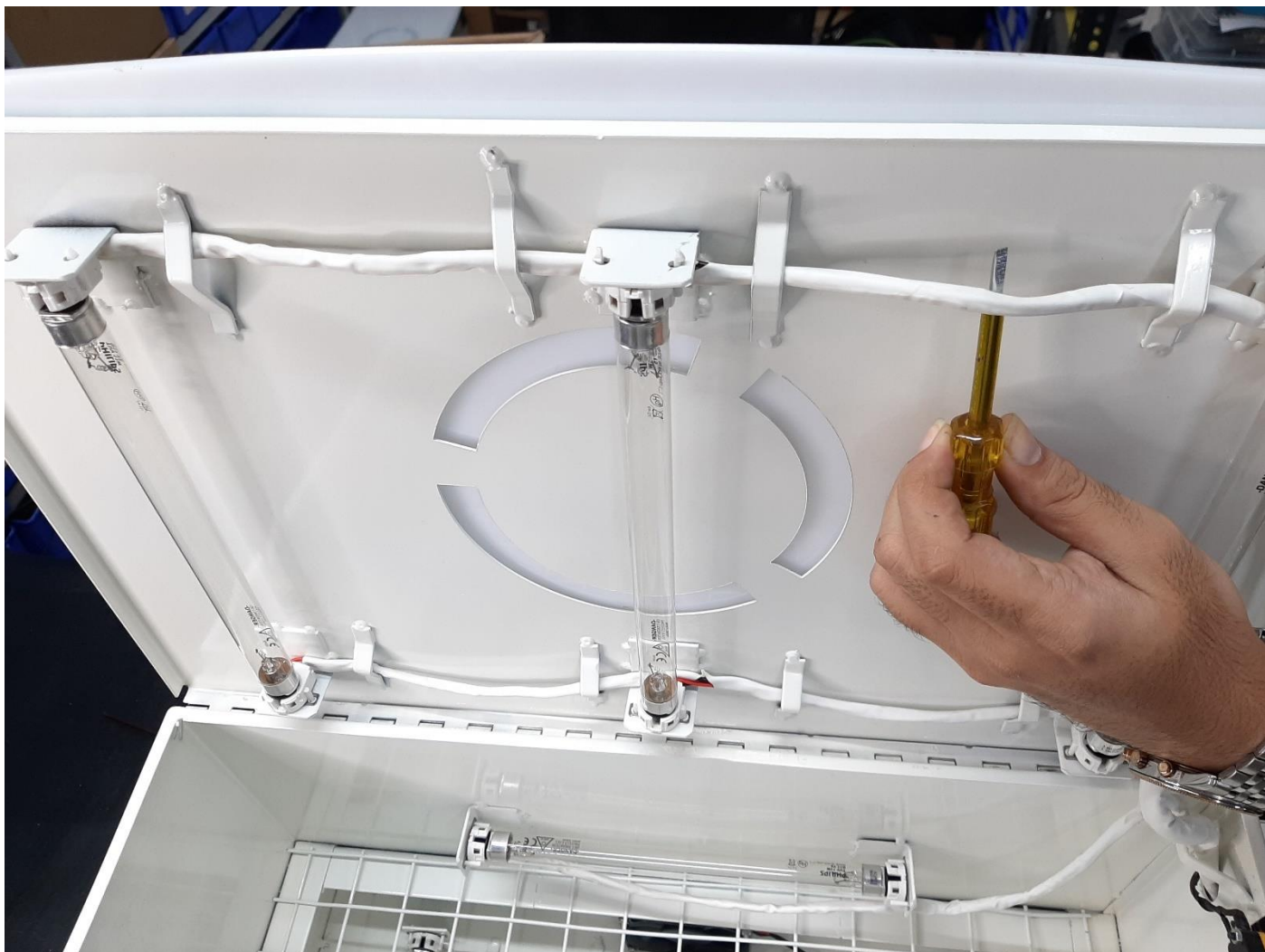
Temperature Overheat Testing



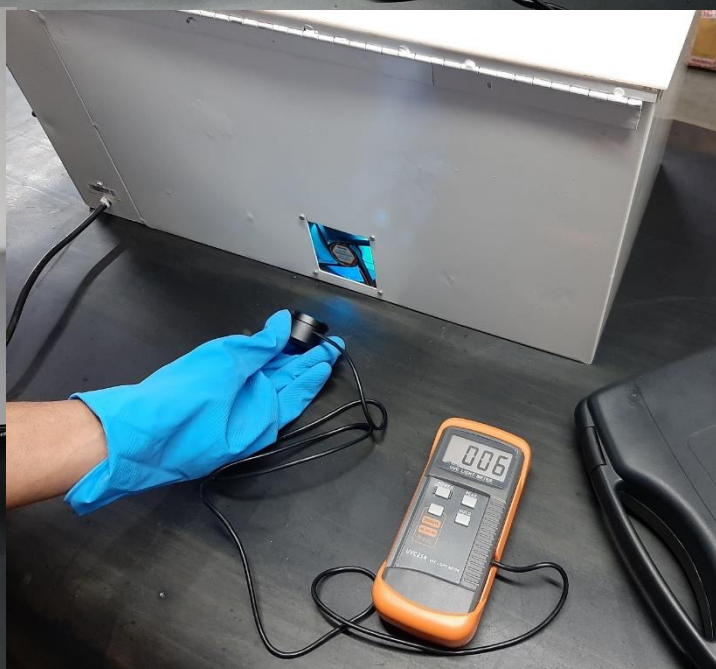
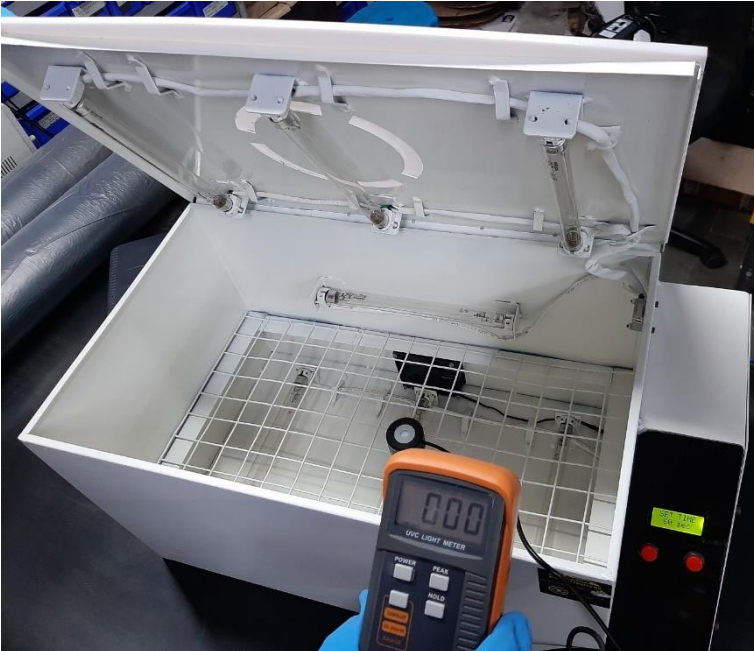
Access to Live Parts Testing



Input Power - Voltage Testing



Wire Flex Testing



UVC Leakage Testing

SECTION 2 Appendix II – Photographs of EUT



10.1	TABLE: Power input deviation					P
Input deviation of/at:		P rated (W)	P measured (W)	Dp	Required Dp	Remark
SHS		530	540	+2	+5/-10	P
SKDH		460	480	-4	+5/-10	P
SKSH		410	410	0	+5/-10	P
SKWH		410	410	0	+5/-10	P
4595SHB		480	490	+2	+5/-10	P
6090SHB		480	440	-8	+5/-10	P

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

11.8	TABLE: Heating test, thermocouples SKWH and SHS measured due to worst case conditions					P
	Test voltage (V)			At 1,15 times rated input		—
	Ambient (°C).....			25,4		—
Thermocouple locations		dT (K)	(°C)	Max. dT (K)	Max. (°C)	
SKSH	Heating surface	73,0		100		
	Frame alu	19,0		85		

	Rear side	47,2		100	
	Power cord	47,2		50	
SHS	Heating surface	89,2		100	
	Frame alu	37,5		85	
	Power cord	37,5		50	
	Wooden test corner	31,0		60	

11.8	TABLE: Heating test, resistance method							N/A
	Test voltage (V)..... :							—
	Ambient, t1 (°C) :							—
	Ambient, t2 (°C) :							—
Temperature rise of winding		R ₁ (Ω)	R ₂ (Ω)	dT (K)	(°C)	Max. dT (K)	Max. (°C)	Insulation class

13.2	TABLE: Leakage current							P
	Heating appliances: 1.15 x rated input.....:							—
	Motor-operated and combined appliances: 1,06 x rated voltage.....:							—
Leakage current between					I (mA)		Max. allowed I (mA)	
SKSH:	L/N – enclosure in contact with metal foil				0,02		0,25	
SHS:	L/N – enclosure in contact with metal foil				0,2		0,25	

13.3	TABLE: Electric strength			P
Test voltage applied between:		Voltage (V)	Breakdown (Yes/No)	
SKSH and SHS:	L/N – enclosure in contact with metal foil	3000	NO	
supplementary information:				

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

16.2	TABLE: Leakage current			P
	Single phase appliances: 1,06 x rated voltage.....:	244 V		—
	Three phase appliances 1,06 x rated voltage divided by $\sqrt{3}$:			—
Leakage current between		I (mA)	Max. allowed I (mA)	
SKSH:	L/N – enclosure in contact with metal foil	0,02	0,25	
SHS:	L/N – enclosure in contact with metal foil	0,2	0,25	

16.3	TABLE: Electric strength			P
Test voltage applied between:		Voltage (V)	Breakdown (Yes/No)	
SKSH and SHS:	L/N – enclosure in contact with metal foil	3000	NO	

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

19.13	TABLE: Abnormal operation, temperature rises				P
Thermocouple locations		dT (K)	(°C)	Max. dT (K)	Max. (°C)
Test corner and power cord		<< 100		150	

24.1	TABLE: Components					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity	
Plug	PLASTRO MEYER	517	2,5A 250V	DIN VDE 0620 EN 50075	VDE	
Power cord (for SHB)	PLASTRO MEYER or CABEL S.r.l.	H03VVH2-F	2x0,75mm ²	HD21	VDE	

Power cord (all other)	PLASTRO MEYER or CABEL S.r.l.	H05VV-F	2x0,75mm ²	HD21	VDE
Heating element	HIS	NN	250 ... 530 W AC230V	Tested in appliance	

¹⁾ An asterisk indicates a mark which assures the agreed level of surveillance

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

supplementary information:

29.1	TABLE: Clearances					P
	Overvoltage category ... :		II			—
		Type of insulation:				
Rated impulse voltage (V):	Min. cl (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark
330	0,5					
500	0,5					
800	0,5					
1500	1,0					
2500	2,0					
4000	3,5				X	P
6000	6,0					
8000	8,5					
10000	11,5					
supplementary information:						

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										P
Working voltage (V)	Creepage distance (mm) Pollution degree										
	1	2			3			Type of insulation			
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	B ^{*)}	S ^{*)}	R ^{*)}	Verdict
≤50	0,2	0,6	0,9	1,2	1,5	1,7	1,9		—	—	
≤50	0,2	0,6	0,9	1,2	1,5	1,7	1,9	—		—	
≤50	0,4	1,2	1,8	2,4	3,0	3,4	3,8	—	—		
>50 and ≤125	0,3	0,8	1,1	1,5	1,9	2,1	2,4		—	—	
>50 and ≤125	0,3	0,8	1,1	1,5	1,9	2,1	2,4	—		—	
>50 and ≤125	0,6	1,6	2,2	3,0	3,8	4,2	4,8	—	—		
>125 and ≤250	0,6	1,3	1,8	2,5	3,2	3,6	4,0		—	—	
>125 and ≤250	0,6	1,3	1,8	2,5	3,2	3,6	4,0	—		—	
>125 and ≤250	1,2	2,6	3,6	5,0	6,4	7,2	8,0	—	—		P
>250 and ≤400	1,0	2,0	2,8	4,0	5,0	5,6	6,3		—	—	
>250 and ≤400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—		—	
>250 and ≤400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	—	—		
>400 and ≤500	1,3	2,5	3,6	5,0	6,3	7,1	8,0		—	—	
>400 and ≤500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	—		—	
>400 and ≤500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	—	—		
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		—	—	
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	—		—	
>500 and ≤800	3,6	6,4	9,0	12,6	16,0	18,0	20,0	—	—		
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5		—	—	
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	—		—	
>800 and ≤1000	4,8	8,0	11,2	16,0	20,0	22,0	25,0	—	—		
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0		—	—	
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	—		—	
>1000 and ≤1250	6,4	10,0	14,2	20,0	25,0	28,0	32,0	—	—		
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0		—	—	
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	—		—	
>1250 and ≤1600	8,4	12,6	18,0	25,0	32,0	36,0	40,0	—	—		
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0		—	—	

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										P
Working voltage (V)	Creepage distance (mm) Pollution degree										
	1	2			3			Type of insulation			
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	B*)	S*)	R*)	Verdict
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	—		—	
>1600 and ≤2000	11,2	16,0	22,0	32,0	40,0	44,0	50,0	—	—		
>2000 and ≤2500	7,5	10,0	14,0	20,0	25, 0	28,0	32,0		—	—	
>2000 and ≤2500	7,5	10,0	14,0	20,0	25, 0	28,0	32,0	—		—	
>2000 and ≤2500	15,0	20,0	28,0	40,0	50,0	56,0	64,0	—	—		
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0		—	—	
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	—		—	
>2500 and ≤3200	20,0	25,0	36,0	50,0	64,0	72,0	80,0	—	—		
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0		—	—	
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	—		—	
>3200 and ≤4000	25,0	32,0	44,0	64,0	80,0	90,0	100,0	—	—		
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0		—	—	
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	—		—	
>4000 and ≤5000	32,0	40,0	56,0	80,0	100,0	112,0	126,0	—	—		
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0		—	—	
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	—		—	
>5000 and ≤6300	40,0	50,0	72,0	100,0	126,0	142,0	160,0	—	—		
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0		—	—	
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	—		—	
>6300 and ≤8000	50,0	64,0	90,0	126,0	160,0	180,0	200,0	—	—		
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0		—	—	
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	—		—	
>8000 and ≤10000	64,0	80,0	112,0	160,0	200,0	220,0	250,0	—	—		
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0		—	—	
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	—		—	
>10000 and ≤12500	80,0	100,0	142,0	200,0	250,0	280,0	320,0	—	—		
*), B=Basic, S=Supplementary and R=Reinforced											

29.2	TABLE: Creepage distances, functional insulation							N/A
Working voltage (V)	Creepage distance (mm) Pollution degree							
	1	2			3			
		Material group			Material group			
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	Verdict / Remark
≤50	0,2	0,6	0,8	1,1	1,4	1,6	1,8	
>50 and ≤125	0,3	0,7	1,0	1,4	1,8	2,0	2,2	
>125 and ≤250	0,4	1,0	1,4	2,0	2,5	2,8	3,2	
>250 and ≤400	0,8	1,6	2,2	3,2	4,0	4,5	5,0	
>400 and ≤500	1,0	2,0	2,8	4,0	5,0	5,6	6,3	
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	



NEVON SOLUTIONS