



# TEST REPORT

**Report No.:20161025001S**

Testing Laboratory Name .....	Shenzhen CCT Testing Technology Co.,Ltd.
Address .....	3F, Huafeng Business Building, Pu'an Industrial Zone, Bao'an District,Shenzhen, China
Testing location .....	Shenzhen CCT Testing Technology Co.,Ltd.
Applicant's Name .....	WEWON ENVIRONMENTAL CHAMBERS CO., LTD.
Address .....	No 9, Jin Yuling Road, Sang Yuan Industrial Zone, Dongcheng, Dongguan, Guangdong
Manufacturer .....	WEWON ENVIRONMENTAL CHAMBERS CO., LTD.
Address .....	No 9, Jin Yuling Road, Sang Yuan Industrial Zone, Dongcheng, Dongguan, Guangdong
Standard.....	EN 61010-1:2010
Product .....	ENVIRONMENTAL CHAMBERS
Trademark .....	WEWON
Model and/or type reference .....	WHTH-1000-70, WHTH-1000-40, WHTH-1000-20, WHTH-1000-0, WHTH-800-70, WHTH-800-40, WHTH-800-20, WHTH-800-0, WHTH-408-70, WHTH-408-40, WHTH-408-20, WHTH-408-0, WHTH-225-70, WHTH-225-40, WHTH-225-20, WHTH-225-0, WHTH-150-70, WHTH-150-40, WHTH-150-20, WHTH-150-0, WHTH-80-70, WHTH-80-40, WHTH-80-20, WHTH-80-0,
Rating(s).....	220-240/380V~, 50/60Hz, 5500W
Test date .....	Oct. 15– Oct. 25, 2016
Date of report .....	Oct. 25, 2016
Written by(Lisa Lee): .....	<i>Lisa Lee</i>
Tested by( Nancy Chan ): .....	<i>Nancy chan</i>
Reviewer by(CS Chan): .....	<i>CS Chan</i>





**LVD REPORT**  
**EN 61058-1**  
**Switches for appliances**  
**Part 1: General requirements**

Test specification		
Standard.....	: EN61010-1:2010	
Procedure deviation .....	: CE	
Non-standard test method .....	: N/A	
Test item description .....		: ENVIRONMENTAL CHAMBERS
Model and/or type reference .....	: WHTH-1000-70, WHTH-1000-40, WHTH-1000-20, WHTH-1000-0, WHTH-800-70, WHTH-800-40, WHTH-800-20, WHTH-800-0, WHTH-408-70, WHTH-408-40, WHTH-408-20, WHTH-408-0, WHTH-225-70, WHTH-225-40, WHTH-225-20, WHTH-225-0, WHTH-150-70, WHTH-150-40, WHTH-150-20, WHTH-150-0, WHTH-80-70, WHTH-80-40, WHTH-80-20, WHTH-80-0,	
Trade Name.....	: WEWON	
Rating(s).....	: 220-240/380V~, 50/60Hz, 5500W	
Test case verdicts		
Test case does not apply to the test object ...:	N/A or N	
Test item does meet the requirement .....	: P(ass)	
Test item does not meet the requirement .....	: F(ail)	



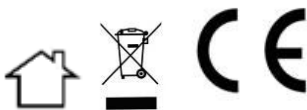
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<p><b>General remarks:</b></p> <p>"(see remark #)" refers to a remark appended to the report.</p> <p>"(see appended table)" refers to a table appended to the report.</p> <p>Throughout this report a comma is used as the decimal separator.</p> <p>The test results presented in this report relate only to the object tested.</p> <p>This report shall not be reproduced except in full without the written approval of the testing laboratory.</p>	<p><b>Tests performed (name of test and test clause):</b></p>
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**Artwork of Marking Label**

**(the marking is printed on the outside of the unit.)**

ENVIRONMENTAL CHAMBERS  
Model : WHTH-1000-70  
Rated : 220-240/380V~, 50/60Hz, 5500W



WEWON ENVIRONMENTAL CHAMBERS CO., LTD.



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EN 61010-1			
Cl.	Requirement – Test	Result	Verdict
5	MARKING AND DOCUMENTATION		—
5.1.1	General		—
	Required equipment markings are:	Suitable markings provided on the rear of the units	P
	visible:	Markings are visible	P
	From the exterior; or	Markings visible from the exterior	P
	After removing a cover; or	Markings visible from the exterior	N
	Opening a door	Markings visible from the exterior	N
	After removal from a rack or panel	Markings visible from the exterior	N
	Not put on parts which can be removed by an operator	Provided on parts which are removable with tool only	P
	Letter symbols (IEC 60027) used	Not used	N
	Graphic symbols (IEC 61010-1: Table 1) used	Provided	P
5.1.2	Identification		—
	Equipment is identified by:		—
5.1.2a)	Manufacturer's or supplier's name or trademark	Provided	P
5.1.2b)	Model number, name or other means	Provided	P
	Manufacturing location identified	Manufactured at one location	N
5.1.3	Mains supply		—
	Equipment is marked as follows:		—
5.1.3a)	Nature of supply:		—
	1) a.c. rated mains frequency or range of frequencies:	--	N
	2) d.c. with symbol 1		P
5.1.3b)	rated supply voltage(s) or range :		P
5.1.3c)	Max. rated power (W or VA) or input current :		P
	The measured value not more than 110 %		P
	If more than one voltage range:		—
	Separate values marked; or		P



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	Values differ by less than 20 %		P
5.1.3d)	operator-set for different rated supply voltages:		—
	Indicates the equipment set voltage		N
	portable equipment indication is visible from the exterior		N
	Changing the setting changes the indication		N
5.1.3e)	Accessory mains socket-outlets accepting standard mains plugs are marked:		—
	With the voltage if it is different from the mains supply voltage :		N
	For use only with specific equipment		N
	If not marked for specific equipment it is marked with:		—
	The maximum rated current or power; or		N
	Symbol 14 with full details in the documentation		N
5.1.4	Fuses		—
	Operator replaceable fuse marking (see also 5.4.5) :	Provided	P
5.1.5	Terminals, connections and operating devices		—
	Where necessary for safety, indication of purpose of terminals, connectors, controls and indicators marked		P
	If insufficient space, symbol 14 used		N
5.1.5.1	Terminals		N
	Mains supply terminals identified		N
	Other terminal marking:		P
5.1.5.1a)	functional earth terminals (symbol 5 used)		N
5.1.5.1b)	protective conductor terminals:		—
	Symbol 6 is placed close to or on the terminal; or		N
	Part of appliance inlet		N
5.1.5.1c)	terminals of measuring and control circuits (symbol 7 used)		P
5.1.5.1d)	Hazardous live terminals supplied from the interior		—
	Standard mains socket outlet; or		N
	Ratings marked; or		N
	Symbol 14 used		N
5.1.5.1e)	accessible functional earth terminals:		—



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	Self-evident; or		N
	Indication (symbol 8 acceptable)		N
5.1.5.2	Measuring circuit terminals		—
	For terminals other than those permanently connected and not accessible:		—
	rated voltage or current marked		N
	Unless clear indication that below limits:		—
	Maximum rated voltage to earth is marked; or		N
	For specific connection to other equipment terminals only, and means for identifying provided		N
	Appropriate measurement category marked (CAT II, CAT III or CAT IV); or		N
	No measurement category marked (CAT I)		N
	Required markings are adjacent to terminals; or		N
	If insufficient space:		—
	On the rating plate or scale plate; or		N
	terminal is marked with symbol 14		N
5.1.6	Switches and circuit breakers		—
	If disconnecting device, on or off position marked		N
5.1.7	Equipment protected by double insulation or reinforced insulation		—
	Protected throughout (symbol 11 used)	Not protected by double insulation or reinforced insulation	N
	Only partially protected (symbol 11 not used)	Not protected by double insulation or reinforced insulation	N
5.1.8	Field-wiring terminal boxes		—
	If terminal or enclosure exceeds 60 °C:		—
	Cable temperature rating marked	None provided	N
	Marking visible or beside terminal	None provided	N
5.2	Warning markings		—
	Visible when ready for normal use	Visible on the exterior	P
	Are near or on applicable parts		P
	Symbols and text correct dimensions and colour		P
	If necessary marked with symbol 14		N



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	Statement to isolate or disconnect		N
5.3	Durability of markings		—
	The required markings remain clear and legible in normal use		P
5.4	Documentation		—
5.4.1	General		—
	Equipment is accompanied by documentation which includes:		—
5.4.1a)	Intended use	Provided	P
5.4.1b)	Technical specification	Provided	P
5.4.1c)	Instructions for use	Provided	P
5.4.1d)	Name and address of manufacturer or supplier	Provided	P
5.4.1e)	Information specified in 5.4.2 to 5.4.5		—
5.4.1f)	If marking of terminals required, definition of measurement category		N
5.4.1g)	If CAT 1:		—
	Warning		N
	Ratings		N
	Warning statements and a clear explanation of warning symbols:		—
	Provided in the documentation; or		N
	Information is marked on the equipment		N
5.4.2	Equipment ratings		—
	Documentation includes:		—
5.4.2a)	Supply voltage or voltage range	Provided	P
	Frequency or frequency range	Provided	P
	Power or current rating	Provided	P
5.4.2b)	Description of all input and output connections	Provided	P
5.4.2c)	rating of insulation of external circuits, when such circuits are nowhere accessible		N
5.4.2d)	Statement of the range of environmental conditions		P
5.4.2e)	Degree of protection (IEC 60529)		N
5.4.3	Equipment installation		—
	Documentation includes instructions for:		—
5.4.3a)	Assembly, location and mounting		P



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5.4.3b)	Protective earthing		N
5.4.3c)	Connections to supply		P
5.4.3d)	permanently connected equipment:		—
	1) Supply wiring requirements		N
	2) If external switch or circuit-breaker, requirements and location recommendation		N
5.4.3e)	Ventilation requirements		N
5.4.3f)	Special services (e. g. air, cooling liquid)		N
5.4.3g)	Maximum sound power level		N
5.4.3h)	Instructions about sound pressure		N
5.4.3i)	Permanently connected measuring terminals:		—
	Measurement category		N
	Rated maximum working voltage or current		N
5.4.4	Equipment operation		—
	Instructions for use include:		—
5.4.4a)	Identification of operating controls		P
5.4.4b)	Positioning for disconnection		P
5.4.4c)	Interconnection		P
5.4.4d)	Specification of intermittent operation limits		N
5.4.4e)	Explanation of symbols used		P
5.4.4f)	Replacement of consumable materials		N
5.4.4g)	Cleaning and decontamination (see 11.2)		N
5.4.4h)	Listing of any poisonous or injurious gases and quantities		N
5.4.4i)	Risk-reduction procedures relating to flammable liquids		N
	A statement about protection impairment if used in a manner not specified by the manufacturer		N
5.4.5	Equipment maintenance and service		—
	Instructions include:		—
	Sufficient preventive maintenance and inspection information		N
	Replacement of hoses, etc.		N
	Specific battery type		N
	Any manufacturer specified parts		N





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	Rating and characteristics of fuses		N
5.4.6	Integration into systems or effects resulting from special conditions		N
	Aspects resulting from integration into systems or effects resulting from special ambient or application conditions shall be described in the documentation.		N

6	PROTECTION AGAINST ELECTRIC SHOCK		—
6.1	General		—
6.1.1	Requirements		—
	Accessible parts not hazardous live in normal condition and single fault condition		P
	Conformity is checked by the determination of 6.2 and 6.3 followed by the tests of 6.4 to 6.11		—
6.1.2	Exceptions		—
	Capacitance test		N
	Parts not hazardous live 10 s after interruption of supply		N
6.2	Determination of accessible parts		—
6.2.1	General		
6.2.2	Examination		P
6.2.3	Openings above parts that are hazardous live		N
6.2.4	Openings for pre-set controls		N
6.3	Limits values for accessible parts		—
6.3.1	Levels in normal condition		P
6.3.2	Levels in single fault condition		P
6.4	Protection in normal condition (see 6.2, 6.3.1, 6.7, 6.8 and 8.1)		P
6.5	Additional means of protection in case of SINGLE FAULT CONDITIONS		—
6.5.1	General		—
	ACCESSIBLE parts shall be prevented from becoming HAZARDOUS LIVE in SINGLE FAULT CONDITION.		P
6.5.2	Protective bonding		—
	accessible conductive parts:		—



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	Separated by double insulation or reinforced insulation; or		N
	Bonded to the protective conductor terminal; or		N
	Separated by screen or barrier bonded to protective conductor terminal from parts which are hazardous live		N
6.5.2.1	General		N
6.5.2.2	Integrity of protective bonding		—
6.5.2.2a)	protective bonding consists of directly connected structural parts or discrete conductors or both; and withstands thermal and dynamic stresses		N
6.5.2.2b)	Soldered connections:		—
	Independently secured		N
	Not used for other purposes		N
	Screw connections are secured		N
6.5.2.2c)	protective bonding not interrupted		N
6.5.2.2d)	Any moveable connection specifically designed, and meets 6.5.1.3		N
6.5.2.2e)	No external metal braid of cables used		N
6.5.2.2f)	If mains supply passes through:		—
	Means provided for passing protective conductor;		N
	Impedance meets 6.5.1.3.		N
6.5.2.2g)	Protective conductors bare or insulated, if insulated, green/yellow		N
	Exceptions:		—
	1) earthing braids;		N
	2) internal protective conductors etc.;		N
	Green/yellow not used for other purposes		N
6.5.2.2h)	Terminal suitable, and meets 6.5.1		N
6.5.2.3	Protective conductor terminal		—
6.5.2.3a)	Contact surfaces are metal		N
6.5.2.3b)	Appliance inlet used		N
6.5.2.3c)	For rewirable cords and permanently connected equipment, protective conductor terminal is close to mains supply terminals		N
6.5.2.3d)	If no mains supply is required, any protective conductor terminal:		—



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	Is near terminals of circuit for which protective earthing is necessary		N
	External if other terminals external		N
6.5.2.3e)	Equivalent current-carrying capacity to mains supply terminals		N
6.5.2.3f)	If plug-in, makes first and breaks last		N
6.5.2.3g)	If also used for other bonding purposes, protective conductor:		—
	Applied first;		N
	Secured independently;		N
	Unlikely to be removed by servicing; or		N
	Warning marking requires replacement of protective conductor		N
6.5.2.3h)	Protective conductor of measuring circuit:		N
	1) Current rating;		N
	2) protective bonding:		—
	Not interrupted; or		N
	Indirect bonding used (see 6.5.1.5)		N
6.5.2.3i)	Functional earth terminals allow independent connection		N
6.5.2.3j)	If a binding screw:		—
	Suitable size for bond wire		N
	Not smaller than M 4 (No. 6)		N
	At least 3 turns of screw engaged		N
	Contact pressure not capable of reduction by deformation of materials		N
	Passes tightening torque test		N
6.5.2.4	Impedance of protective bonding of plug-connected equipment		N
6.5.2.5	Impedance of PROTECTIVE BONDING of PERMANENTLY CONNECTED EQUIPMENT		N
6.5.2.6	Transformer PROTECTIVE BONDING screen		N
6.5.3	Supplementary insulation and reinforced insulation(see 6.7, 6.8 and 6.9.2)		—
6.5.4	Protective impedance		N
6.5.4a)	High-integrity single component used (s. 14.6); or		N
6.5.4b)	A combination of components used		N



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6.5.5	Automatic disconnection of the supply		N
	If used, it meets :		—
6.5.5a)	Rated disconnecting time within limit specified		N
6.5.5b)	Rated for maximum rated load		N
6.6	Connections to external circuits		—
6.6.1	General		—
	Connections do not cause accessible parts of the following to become hazardous live in normal condition or single fault condition:		—
6.6.1a)	The external circuits		P
6.6.1b)	The equipment		P
	Separation of circuits provided; or		P
	Short circuit of separation does not cause a Hazard		P
	Instructions or markings include:		—
	1) rated conditions for terminal		N
	2) Required rating of external circuit insulation		N
6.6.2	terminals for external circuits		—
	terminals which receive a charge from an internal capacitor are not hazardous live		N
	High voltage terminals energized from the interior are:		—
	Not accessible if connected; or		N
	Unmated hazardous live terminals not accessible ; or		N
	marked with symbol 12		N
6.6.3	Circuits with terminals which are hazardous live		—
	These circuits are:		—
	Not connected to accessible conductive parts; or		N
	Connected to accessible conductive parts, but are not mains circuits and have one terminal contact at earth potential		N
	No accessible conductive parts are hazardous live		N
6.6.4	Accessible terminals for stranded conductors		—
6.6.4a)	No risk of accidental contact because:		—
	Located or shielded		N
	Self-evident or marked whether connected to accessible conductive parts		N



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6.6.4b)	Accessible terminals will not work loose		P
6.7	Insulation requirements		P
6.7.1	General		P
6.7.1.1	The nature of insulation		P
6.7.1.2	CLEARANCES		P
6.7.1.3	CREEPAGE DISTANCES		P
6.7.1.4	Solid insulation		N
6.7.1.5	Requirements for insulation according to type of circuit		P
6.7.2	Insulation for MAINS CIRCUITS of OVERVOLTAGE CATEGORY II with a nominal supply voltage up to 300 V		P
6.7.2.1	CLEARANCES and CREEPAGE DISTANCES		P
6.7.2.2	Solid insulation		N
6.7.2.2.1	General		P
6.7.2.2.2	Moulded and potted parts		N
6.7.2.2.3	Inner insulating layers of printed wiring boards		P
6.7.2.2.4	Thin-film insulation		P
6.7.3	Insulation for secondary circuits derived from MAINS CIRCUITS of OVERVOLTAGE CATEGORY II up to 300 V		N
6.7.3.1	General		N
6.7.3.2	CLEARANCES		N
6.7.3.3	CREEPAGE DISTANCES		N
6.7.3.4	Solid insulation		N
6.7.3.4.1	General		N
6.7.3.4.2	Moulded and potted parts		N
6.7.3.4.3	Inner insulating layers of printed wiring boards		N
6.7.3.4.4	Thin-film insulation		N
6.8	Procedure for voltage tests		P
6.8.1	General		P
6.8.2	Humidity preconditioning		P
6.8.3	Test procedures		P
6.8.3.1	The a.c. voltage test		P
6.8.3.2	The 1 min d.c. voltage test		P



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6.8.3.3	The impulse voltage withstand test		N
6.9	Constructional requirements for protection against electric shock		—
6.9.1	General		—
	If a failure could cause a hazard:		—
6.9.1a)	Security of wiring connections		P
6.9.1b)	Screws securing removable covers		P
6.9.1c)	Accidental loosening		N
	Easily damaged materials not used		P
	Non-impregnated hygroscopic materials not used		P
6.9.2	Insulating materials		—
	The following shall not be used as insulation for safety purposes:		P
	a) materials which can easily be damaged (for example, lacquer, enamel, oxides, anodic films);		P
	b) non-impregnated hygroscopic materials (for example, paper, fibres, fibrous materials).		—
6.9.3	Colour coding		—
6.10	Connection to the mains supply source and connections between parts of equipment		—
6.10.1	Mains supply cords		—
6.10.1a)	Rated for maximum equipment current (see 5.1.3c)		N
	Cable complies with IEC 60227 or IEC 60245		N
6.10.1b)	Heat-resistant if likely to contact hot parts		N
6.10.1c)	Temperature rating (cord and inlet)		N
6.10.1d)	Green/yellow used only for connection to protective conductor terminals		N
	Detachable cords with IEC 60320 mains connectors:		—
	Conform to IEC 60799; or		P
	Have the current rating of the mains connector		P
6.10.2	Fitting of non-detachable mains supply cords		—
	Non-detachable cord protection:		—
6.10.2a)	Inlet or bushing smoothly rounded; or		N
6.10.2b)	Insulated cord guard protruding $\geq 5D$		N



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	The protective earth conductor is the last to take the strain		N
6.10.2	Cord anchorages:		—
6.10.2.1	Cord entry		N
	MAINS supply cords shall be protected against abrasion and sharp bends at the point where the cord enters the equipment, by one of the following means:		N
	a) an inlet or bushing with a smoothly rounded opening;		N
	b) a reliably fixed flexible cord guard made of insulating material protruding beyond the inlet opening by at least five times the overall diameter of a cord with the largest cross-sectional area which can be fitted. For flat cords, the larger cross-sectional dimension is taken as the overall diameter.		N
6.10.2.2	Cord anchorage		N
6.10.3	Plugs and connectors		—
6.10.3a)	Mains supply plugs, connectors etc., conform with relevant specifications		P
6.10.3b)	If equipment supplied at voltages below 6.3.2.a) or from a sole source:		—
	Plugs of supply cords do not fit mains sockets above rated supply voltage		N
	Mains-type plugs used only for connection to mains supply		N
6.10.3c)	Plug pins which receive a charge from an internal capacitor		N
6.10.3d)	Accessory mains socket outlets:		—
	1) Marking if accepts a standard MAINS plug (see 5.1.3e)		N
	2) Input has a protective earth conductor if outlet has earth TERMINAL contact		N
6.11	Disconnection from supply source		—
6.11.1	General		—
	Disconnects all current carrying conductors		P
6.11.1.1	Exceptions		—
6.11.1.1a)	Equipment supplied by low energy source; or		N
6.11.1.1b)	Equipment connected to impedance protected supply; or		N



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6.11.1.1c)	Equipment constitutes an impedance protected load		N
6.11.2	Requirements according to type of equipment		—
6.11.2.1	Permanently connected equipment and multi-phase equipment		—
	Employs switch or circuit-breaker		N
	If switch or circuit-breaker is not part of the equipment, documentation specifies:		—
6.11.2.1a)	Switch or circuit-breaker to be included in building installation		N
6.11.2.1b)	Location		N
6.11.2.1c)	Marking		N
6.11.2.2	Single-phase cord-connected equipment		—
	Equipment is provided with:		—
6.11.2.2a)	Switch or circuit-breaker; or		N
6.11.2.2b)	Appliance coupler (disconnectable without tool); or		N
6.11.2.2c)	Separable plug (without locking device)		N
6.11.2.3	Hazards arising from function		—
	Emergency switch		P
	Emergency switch $\leq 1$ m from the moving part		P
6.11.3	Disconnecting devices		—
	Electrically close to the supply		P
6.11.3.1	Switches and circuit-breakers		—
	When used as disconnection device:		—
	Meets IEC 60947-1 and IEC 60947-3		N
	Marked to indicate function		N
	Not incorporated in mains cord		N
	Does not interrupt protective earth conductor		N
	If has other contacts meets separation requirements of 6.6 and 6.7		N
6.11.3.2	Appliance couplers and plugs		—
	Where an appliance coupler or separable plug is used as the disconnecting device (see 6.11.2.2):		—
	Readily identifiable and easily reached by the operator		N
	Single-phase portable equipment cord length $\leq 3$ m		N





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	Protective earth conductor connected first and disconnected last		N
7	PROTECTION AGAINST MECHANICAL HAZARDS		—
7.1	General		—
	Conformity is checked by 7.2 to 7.6		P
7.2	Sharp edges		P
	All easily-touched parts of the equipment shall be smooth and rounded so as not to cause injury during NORMAL USE of the equipment.		P
7.3	Moving parts		—
7.3.1	General		N
7.3.2	Exceptions		—
	If it is not feasible for operating reasons to prevent certain moving parts from causing a potential HAZARD, access is permitted in the following circumstances.		N
7.3.3	RISK assessment for mechanical HAZARDS to body parts		N
	RISKS shall be reduced to a tolerable level by at least the applicable minimum protective measure of Table 12, taking into account the Severity, probability of exposure and possibility of avoiding the HAZARD.		N
7.3.4	Limitation of force and pressure		N
	The physical levels specified below are not considered to be hazardous. They are based on a combination of contact force, duration and contact area. The levels below shall be met in NORMAL CONDITION and SINGLE-FAULT CONDITION.		N
7.3.5	Gap limitations between moving parts		N
7.3.5.1	Gap limitations between moving parts – Access normally allowed		N



	If the force and pressure of the moving parts exceed the limits of 7.3.4 and if a body part could be inserted between moving parts, the width of the gap shall not decrease from a value larger than the minimum gap of Table 13 for that body part to a value smaller than the minimum gap in NORMAL CONDITION and SINGLE-FAULT CONDITION.		N
7.3.5.2	Gap limitations between moving parts – Access normally prevented		N
	While parts are moving, gaps between moving parts into which body parts could be inserted shall not increase to more than the acceptable gap of Table 14, in NORMAL CONDITION and SINGLE-FAULT CONDITION.		N
7.4	Stability		—
	Marking of non-automatic means		P
	Conformity tests:		—
7.4a)	10° tilt test		P
7.4b)	multi-directional force test		P
7.4c)	downward force test		P
7.5	Provisions for lifting and carrying		—
7.5.1	General		N
	Equipment or parts having a mass of 18 kg or more shall be provided with a means for lifting and carrying, or directions shall be given in the documentation.		—
7.5.2	Handles and grips		N
	If carrying handles or grips are fitted to the equipment, or supplied with it, they shall be capable of withstanding a force of four times the weight of the equipment.		N
7.5.3	Lifting devices and supporting parts		N
	Parts of lifting devices and parts that support heavy loads shall be RATED load or shall be tested to withstand four times the maximum static load.		N
7.6	Wall mounting		—
	Mounting brackets withstand four times weight		N



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7.7	Expelled parts		—
	Equipment contains or limits the energy		N
	Protection not removable without the aid of a tool		N

8	Resistance to mechanical stresses		—
8.1	General		P
	Equipment shall not cause a HAZARD when subjected to mechanical stresses likely to occur in NORMAL USE.		P
8.2	ENCLOSURE rigidity tests		P
8.2.1	Static test		P
	The equipment is held firmly against a rigid support and subjected to a force of 30 N applied by the hemispherical end of a hard rod of 12 mm diameter.		P
8.2.2	Impact test		P
	Bases, covers, etc., intended to be removed and replaced by an OPERATOR have their fixing screws tightened using a torque likely to be applied in NORMAL USE. With the equipment held firmly against a rigid support, the impact is applied to any point on surfaces which are easily touched in NORMAL USE and which would be likely to cause a HAZARD if damaged.		N
8.3	Drop test		N
8.3.1	Equipment other than HAND-HELD EQUIPMENT and DIRECT PLUG-IN EQUIPMENT		P
	The equipment is placed in its position of NORMAL USE on a smooth, hard rigid surface of concrete or steel. It is then tilted about each bottom edge in turn so that the distance between the opposite edge and the test surface is 100 mm for equipment up to 20 kg, 25 mm for equipment between 20 kg and 100 kg, or so that the angle made by the bottom and test surface is 30°, whichever is less severe.		P
8.3.2	HAND-HELD EQUIPMENT and DIRECT PLUG-IN EQUIPMENT		N



	<p>The equipment is dropped once through a distance of 1 m onto a 50 mm thick hardwood board having a density of more than 700 kg/m<sup>3</sup> lying flat on a rigid base such as concrete.</p> <p>The equipment is dropped so that it lands in the position expected to present the most severe condition.</p>		N
--	--	--	---

9	Protection against the spread of fire		—
9.1	General		P
	There shall be no spread of fire outside the equipment in NORMAL CONDITION or in SINGLE FAULT CONDITION.		P
9.2	Eliminating or reducing the sources of ignition within the equipment		—
9.2a)	1) Limited-energy circuit (see 9.3); or		N
	2) Insulation meets the requirements for basic insulation; or		N
	Bridging the insulation does not cause ignition		N
9.2b)	Surface temperature of liquids and parts (see 9.4.a)		N
9.2c)	No ignition in circuits designed to produce heat		N
9.3	Containment of the fire within the equipment, should it occur		—
9.3.1	General		N
	The possibility of the spread of fire outside the equipment is considered to be reduced to a tolerable level if the equipment meets one of the following constructional requirements:		N
	a) energizing of the equipment is controlled by a switch that needs to be continuously held in the energized state by the OPERATOR;		N
	b) the equipment and the equipment ENCLOSURE conform to the constructional requirements of 9.3.2 and the applicable requirements of 9.5 are met.		N
9.3.2	Constructional requirements		—



9.3.2a)	Insulated wires have flammability classification FV1 or better		P
	Connectors and insulating material have flammability classification FV2 or better		P
9.3.2b)	The enclosure is constructed as follows :		—
	1) Bottom constructed with:		—
	No openings; or		N
	Extent as specified in figure 7; or		N
	Baffles as specified in figure 6; or		N
	Perforated as specified in Table 12; or		N
	Metal screen with a mesh		N
	2) Sides have no openings as specified in figure 7		P
	3) Material of enclosure and any baffle or flame barrier is made of:		—
	Metal (except magnesium); or		N
	Non metallic materials have flammability classification FV1 or better		P
	4) enclosure and any baffle or flame barrier have adequate rigidity		P
9.4	Limited-energy circuit		—
9.4a)	Potential not more than 30 r.m.s. and 42.4 V peak, or 60 V dc		P
9.4b)	Current limited by one of following means:		—
	1) Inherently or by impedance; or		P
	2) Overcurrent protective device; or		P
	3) A regulating network limits also in single fault condition		P
9.4c)	Is separated by at least basic insulation		P
	If overcurrent protective device used:		—
	Fuse or a non adjustable electromechanical device		P
9.5	Requirements for equipment containing or using flammable liquids		N
	Flammable liquids contained in or specified for use with equipment do not cause spread of fire		N
	Risk is reduced to a tolerable level :		—
9.5a)	The temperature of surface or parts in contact with flammable liquids is 25 °C below fire point		N



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9.5b)	The quantity of liquid is limited		N
9.5c)	Flames are contained within the equipment		N
	Detailed instructions for risk-reduction provided		N
9.6	Overcurrent protection		P
	Devices not in the protective conductor		P
	Fuses or single-pole circuit-breakers not fitted in neutral (multi-phase)		P
9.6.1	General		P
	Equipment intended to be energized from a MAINS supply shall be protected by fuses, circuitbreakers, thermal cut-outs, impedance limiting circuits or similar means, to provide protection against excessive current being drawn from the MAINS in case of a fault in the equipment.		P
9.6.2	Permanently connected equipment		N
	Overcurrent device:		—
	Fitted within the equipment; or		N
	Specified in manufacturer's instructions		N
9.6.3	Other equipment		P
	Protection within the equipment		P

10	Equipment temperature limits and resistance to heat		—
10.1	Surface temperature limits for protection against burns		—
	Easily touched surfaces within the limits		P
	Heated surfaces necessary for functional reasons exceeding specified values:		—
	Are recognizable as such by appearance or function; or		P
	Are marked with symbol 13		P
	Guards are not removable without tool		P
10.2	Temperatures of windings		N
	Limits not exceeded in:		—
	normal condition		N
	single fault condition		N
10.3	Other temperature measurements		P



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	Following measurements conducted if applicable:		—
10.3a)	Value of 60 °C of field-wiring terminal box not exceeded		N
10.3b)	Surface of flammable liquids and parts in contact with this liquids		N
10.3c)	Surface of non-metallic enclosures		P
10.3d)	Parts made of insulating material supporting parts connected to mains supply		N
10.3e)	Terminals carrying a current more than 0.5 A		N
10.4	Conduct of temperature test		P
10.4.1	General		P
10.4.2	Temperature measurement of heating equipment		P
10.4.3	Equipment intended for installation in a cabinet or a wall		N
10.5	Resistance to heat		P
10.5.1	Integrity of clearance and creepage distances		P
10.5.2	Non-metallic enclosures		P
	After treatment:		N
	No hazardous live parts accessible;		N
	Tests of 8.1 and 8.2		N
	In case of doubt, tests of 6.8 (without humidity preconditioning)		N
10.5.3	Insulating material		N
10.5.3a)	Parts supporting parts connected to mains supply		P
10.5.3b)	Terminals carrying a current more than 0.5 A		N
	Examination of material data; or		P
	in case of doubt::		—
	1) Ball pressure test; or		P
	2) Vicat softening test of ISO 306		P

11	Protection against hazards from fluids		—
11.1	General		N
11.2	Cleaning		N
11.3	Spillage		N
11.4	Overflow		N



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11.5	Battery electrolyte		—
	Battery electrolyte leakage presents no hazard		N
11.6	Specially protected equipment		N
11.7	Fluid pressure and leakage		—
11.7.1	Maximum pressure		—
	Maximum pressure of any part does not exceed Prated		
11.7.2	Leakage and rupture at high pressure		N
	Test to IEC 60335 (refrigeration only)		N
11.7.3	Leakage from low-pressure parts		N
11.7.4	Overpressure safety device		—
	Does not operate in normal use		N
	Meets ISO 4126-1; and		N
	It is conform with:		—
11.7.4a)	Connected as close as possible to parts intended to be protected		N
11.7.4b)	Easy access for inspection, maintenance and repair		N
11.7.4c)	Adjustment only with tool		N
11.7.4d)	No discharge towards person		N
11.7.4e)	No hazard from deposit of discharged material		N
11.7.4f)	Adequate discharge capacity		N
11.7.4g)	No shut-off valve between overpressure safety device and protected parts		N

12	Protection against radiation, including laser sources, and against sonic and ultrasonic pressure		—
12.1	General		—
	Equipment provides protection		N
12.2	Equipment producing ionizing radiation		N
12.2.1	Ionizing radiation		N
12.2.2	Accelerated electrons		N
12.3	Ultra-violet (UV) radiation	(Conformity test under consideration)	—
	No unintentional and hazardous escape of UV radiation		P





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12.4	Micro-wave radiation		—
	Power density does not exceed 10 W/m <sup>2</sup> :		N
12.5	Sonic and ultrasonic pressure		—
12.5.1	Sound level		N
12.5.2	Ultrasonic pressure		N
12.6	Laser sources (IEC 60825-1)		N

13	PROTECTION AGAINST LIBERATED GASES AND SUBSTANCES, EXPLOSION AND IMPLOSION		—
13.1	Poisonous and injurious gases and substances		P
	Attached data/test reports demonstrate conformity		P
13.2	Explosion and implosion		—
13.2.1	Components		—
	Components liable to explode:		—
	Pressure release device provided; or		N
	Apparatus incorporates OPERATOR protection (see also 7.6)		P
	Pressure release device:		—
	Discharge without danger		N
	Cannot be obstructed		N
13.2.2	Batteries and battery charging		—
	If explosion or fire hazard could occur:		—
	Protection incorporated in the equipment; or		N
	Instructions specify batteries with built-in protection		N
	In case of wrong type of battery used:		—
	No hazard; or		N
	Warning by marking and within instructions		N
	Equipment with means to charge rechargeable batteries:		—
	Warning against the charging of non-rechargeable batteries; and		N
	Type of rechargeable battery indicated; or		N
	Symbol 14 used		N
	Battery compartment design		N
	Single component failure		N



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	Polarity reversal test		N
13.2.3	Implosion of cathode ray tubes		—
	If maximum face dimensions > 160 mm :		—
	Intrinsically protected and correctly mounted; or		N
	enclosure provides protection:		N
	If non-intrinsically protected:		—
	Screen not removable without tool		N
	If glass screen, not in contact with surface of tube		N

14	Components AND SUBASSEMBLIES		—
14.1	General		P
	Where safety is involved, components meet relevant requirements		P
14.2	Motors		—
14.2.1	Motor temperatures		—
	Does not present a hazard when stopped or prevented from starting; or		N
	Protected by overtemperature or thermal protection device conform with 14.3		N
14.2.2	Series excitation motors		—
	Connected direct to device, if overspeeding causes a hazard		P
14.3	Overtemperature protection devices		N
	Devices operating in a single fault condition		N
14.3a)	Reliable function is ensured		N
14.3b)	Rated to interrupt maximum current and voltage		N
14.3c)	Does not operate in normal use		N
14.4	Fuse holders		N
	No access to hazardous live parts		N
14.5	Mains voltage selecting devices		N
	Accidental change not possible		N
14.6	Mains transformers tested outside equipment		N
14.7	Printed wiring boards		P
	Data shows conformity with FV-1 of IEC 60707 or better; or		P
	Test shows conformity with FV-1 of IEC 60707 or		P



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	better; or		
	Thin film flexible PCB with limited-energy circuit used		N
14.8	Circuits or components used as transient overvoltage limiting devices		—
	After test, no sign of overload or degradation		N

15	Protection by interlocks		—
15.1	General		—
	Interlocks are designed to remove a hazard before operator exposed		N
15.2	Prevention of reactivation		N
15.3	Reliability		—
	Single fault unlikely to occur; or		N
	Cannot cause a hazard		N

16	HAZARDS RESULTING FROM APPLICATION		—
16.1	Reasonably foreseeable misuse		N
16.2	Ergonomic aspects		N
	If the following factors could give rise to a HAZARD, a RISK assessment shall be documented, taking into account at least the following aspects:		—
	a) limitation of body dimensions;		N
	b) displays and indicators;		N
	c) accessibility and conventions of controls;		N
	d) arrangements of TERMINALS.		N

17	RISK ASSESSMENT		N
	If examination of the equipment shows that HAZARDS not fully addressed in Clauses 6 to 16 (see 1.2.1) might arise, then RISK assessment is required. It shall be carried out and documented to achieve at least a TOLERABLE RISK by an iterative process covering the following.		N
	a) RISK analysis RISK analysis is the process to identify HAZARDS and to estimate the RISKS based on the use of		N



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	available information.		
	<p>b) RISK evaluation</p> <p>Each RISK analysis requires a plan to evaluate the estimated severity and likelihood of a RISK, and to judge the acceptability of the resulting RISK level.</p>		N
	<p>c) RISK reduction</p> <p>If the initial RISK level is not acceptable, steps shall be taken to reduce the RISK. The process of RISK analysis and RISK evaluation shall then be repeated, including checking that no new RISKS have been introduced.</p>		N

4.4	TABLE: Testing in single FAULT CONDITION-Results		Form A.2	P
Test subclause	Fault No.	Fault description	How was test terminated Comments	Meets 4.4.4
4.4.2.2	1	Protector conductor interrupted	No hazards voltages observed. Temperatures do not exceed limits of 105°C for accessible parts and table 16 limits for single fault condition when thermal equilibrium was achieved.	P
4.4.2.4	2	Cooling Fan mounted on the inside of the equipment stalled		N
4.4.2.4	3	Cooling Fan installed inside of the equipment stalled		N



5.3	TABLE: Durability of markings				Form A.4	P
Marking method (see NOTE)				Agent		
1) Adhesive Label				A Water		
2) Die stamped				B Isopropyl alcohol		
NOTE – Where applicable include print method, label material, ink or paint type, fixing method, adhesive and surface to which marking is fixed.						
Marking location				Marking method (see above)		
Identification (5.1.2)				1)		
Mains supply (5.1.3)				1)		
Fuses (5.1.4)				1)		
Terminals and operating devices (5.1.5.1)				2)		
Measuring circuit TERMINALS (5.1.5.2)				N/A		
Switches and circuit breakers (5.1.6)				N/A		
Double/reinforced equipment (5.1.7)				N/A		
Field wiring TERMINAL boxes (5.1.8)				N/A		
Warning marking (5.2)				1)		
Battery charging (13.2.2)				N/A		
Method	Test agent	Remains legible Verdict	Label loose Verdict	Curled edges Verdict	Comments	
1	Water	P	N/A	N/A	Remains legible	
1	Isopropyl Alcohol	P	N/A	N/A	Remains legible	

6.2	TABLE: List of ACCESSIBLE parts	Form A.6	P
6.1.2	Exceptions		—
6.2	Determination of accessible parts		—



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Item	Description	Determination method (NOTE 5)	Exception under 6.1.2 (NOTE 4)
1)	Back of unit	Steel Finger	N
2)	Top of unit	Steel Finger	N
3)	Side of unit	Steel Finger	N
4)	Front of unit	Steel Finger	N
NOTE 1 – Test fingers and pins are to be applied without force unless a force is specified (see 6.2.1)			
NOTE 2 – Special consideration should be given to inadequate insulation and high voltage parts (see 6.2)			
NOTE 3 – Parts are considered to be accessible if they could be touched in the absence of any covering which is not considered to provide suitable insulation (see note to paragraph 1 of 6.4).			
NOTE 4 – Capacitor test may be required (see Form A.7).			
NOTE 5 – The determination methods are: visual; rigid test finger; jointed test finger; pin 3 mm diameter; pin 4 mm diameter.			
Supplementary information			

6.5.2	TABLE: Cross-sectional area of bonding conductors		Form A.9	N
Conductor location		Cross-sectional area mm <sup>2</sup>	Verdict	

6.5.4	TABLE: Bonding impedance of plug connected equipment			Form A.10	N
ACCESSIBLE part under test		Test current A	Voltage attained after 1 min V	Calculated resistance (maximum allowed 0,1 Ω) Ω	Verdict



<b>6.7</b>	<b>TABLE: Dielectric strength tests</b>		<b>Form A.14</b>		<b>P</b>	
4.4.4.1 b)	Conformity after application of fault conditions <sup>1</sup>				P	
6.4	Protection in NORMAL CONDITION				P	
6.5.2	DOUBLE INSULATION and REINFORCED INSULATION				N	
6.6.1	Connections to external circuits				P	
6.7.3.1 c)	CLEARANCE values – General: reduced CLEARANCES for homogeneous construction				P	
6.10.2.5	Fitting of non-detachable MAINS SUPPLY cords <sup>1</sup>				N	
8	Mechanical resistance to shock and impact				P	
9.1 a) 2)	Eliminating or reducing the sources of ignition within the equipment				N	
9.3 c)	Limited-energy circuit				N	
11.2	Cleaning <sup>1</sup>				N	
11.3	Spillage <sup>1</sup>				N	
11.4	Overflow <sup>1</sup>				N	
11.6	Specially protected equipment <sup>1</sup>				N	
<sup>1</sup> Record the fault, test or treatment applied before the dielectric strength test						
	Test site altitude .....			106m	—	
	Test voltage correction factor (see Table 10) ... :			1.12	—	
Location	Clause or sub-clause	Humidity Yes/No	Working voltage V	Test voltage r.m.s/peak/d.c V	Comments	Verdict
Line to Neutral	4.4.4/6.4	No	264	1500	No breakdown	P
L&N to enclosure	4.4.4/6.4	No	264	1500	No breakdown	P
Line to Neutral	6.8.4	No	264	1500	No breakdown	P
L&N to enclosure	6.8.4	No	264	1500	No breakdown	P
Supplementary information:						



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## Photo document for ENVIRONMENTAL CHAMBERS

Photo 1 General Appearance of the EUT



Photo 2 General Appearance of the EUT



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**Photo 3 General Appearance of the EUT**



**Photo 4 General Appearance of the EUT**



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**Photo 5 Inside of the EUT**



**Photo 6 Inside of the EUT**



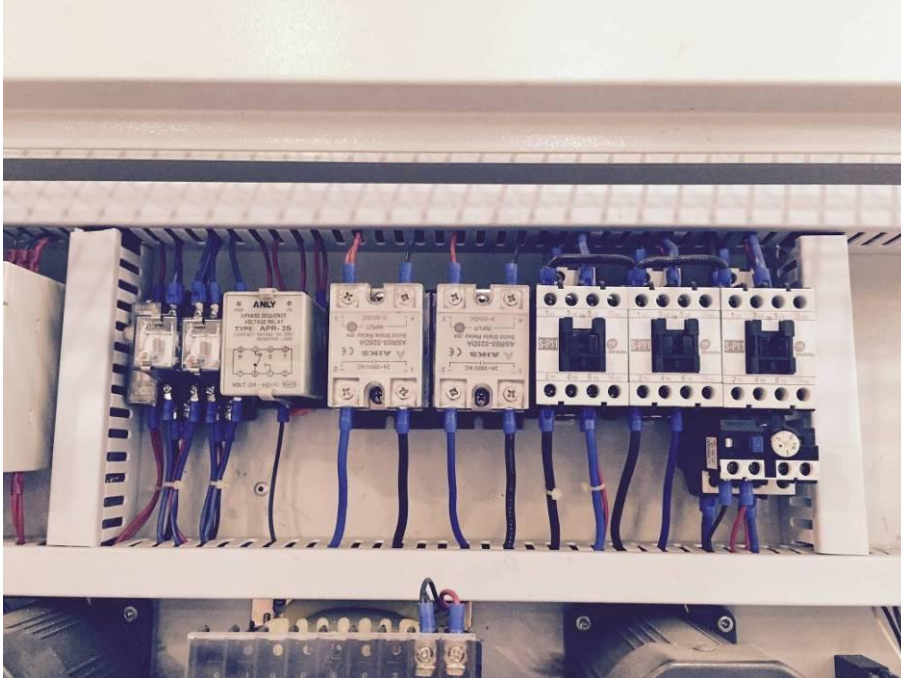
**Photo 7 Inside of the EUT**



**Photo 8 Inside of the EUT**



**Photo 9 Inside of the EUT**



**Photo 10 Inside of the EUT**

