

TEST REPORT

Applicant : Foshan Unipower Electronic Co., Ltd
Address : Block7, No.115, 1st ZhangCha Road, Foshan, Guangdong Province, P.R.China

Manufacturer : Foshan Unipower Electronic Co., Ltd
Address : Block7, No.115, 1st ZhangCha Road, Foshan, Guangdong Province, P.R.China

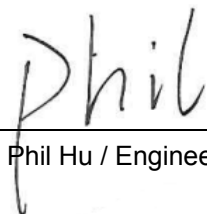
Product Name : UPS
Trade Mark : N/A
Model No. : S600, S800, S1000
Ratings : See the copy of marking plate for detail

Standard : Uninterruptible power systems(UPS)
Part 1: General and safety requirements for UPS
EN 62040-1: 2008+A1:2013

Date of Receiver : December 14, 2019
Date of Test : December 14, 2019 to December 17, 2019
Date of Issue : December 17, 2019
Test Report Form No : NTCS-IEC62040-1-A2-E
Test Result : Pass *

This Test Report is Issued Under the Authority of :

Compiled by


Phil Hu / Engineer

Approved by


Han Song / Manager

*Remarks:

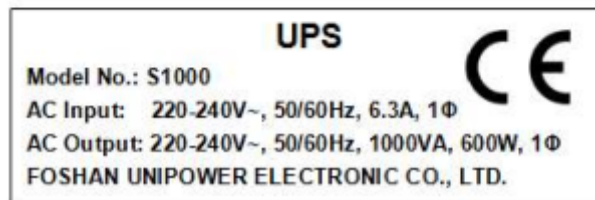
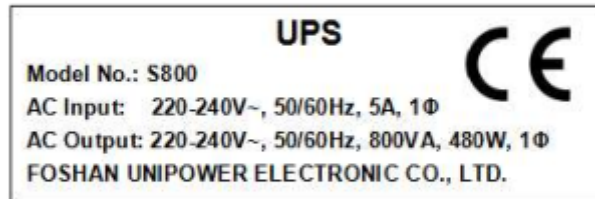
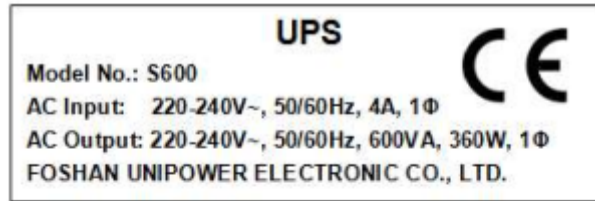
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of Shenzhen Nore Testing Center Co., Ltd. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.



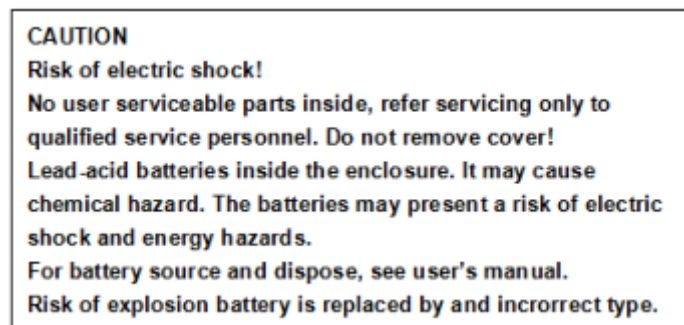
Revision History of This Test Report

Report Number	Description	Issued Date
NTC1912801SV00	Initial Issue	2019-12-17

Copy of marking plate:



Copy of warning marking plate:



Note:

The height of graphical symbols was not less than 5 mm; The height of Recycling graphical symbols was not less than 7 mm;

The above markings are the minimum requirements required by the safety standard. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.

Summary of testing:

The submitted samples were found to comply with the above standard.

- Tests performed on the bench
- Maximum ambient temperature: +40°C
- Tested for moderate conditions
- Evaluation for use on elevations not exceeding 2000m (see Note of subclause 1.2)

Test item particulars	
Equipment mobility.....	<input checked="" type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in
Connection to the mains	<input checked="" type="checkbox"/> pluggable equipment <input checked="" type="checkbox"/> type A <input type="checkbox"/> type B <input type="checkbox"/> permanent connection <input checked="" type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input type="checkbox"/> not directly connected to the mains
Operating condition	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time:
Access location	<input checked="" type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location
Over voltage category (OVC)	<input type="checkbox"/> OVC I <input checked="" type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input type="checkbox"/> other:
Mains supply tolerance (%) or absolute mains supply values	-10% to 6%
Tested for IT power systems	<input type="checkbox"/> Yes (only for Norway) <input checked="" type="checkbox"/> No
IT testing, phase-phase voltage (V)	N/A
Class of equipment	<input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Not classified
Considered current rating of protective device as part of the building installation (A)	16A
Pollution degree (PD)	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
IP protection class	IP20
Altitude during operation (m)	Up to 2000m
Altitude of test laboratory (m)	below 2000m
Mass of equipment (kg)	10.8Kg(for S1000), 6.1Kg(for S800), 5.2Kg(for S600)
Possible test case verdicts:	
- test case does not apply to the test object	N (Not Applicable)
- test object does meet the requirement.....	P (Pass)
- test object does not meet the requirement.....	F (Fail)
General remarks:	
<p>"(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report. Throughout this report a comma(point) is used as the decimal separator. Standard EN 62040-1: 2008+A1: 2013 is to be used in conjunction with EN 60950-1: 2006+A11: 2009+A12: 2011+ A1: 2010+ A2: 2013, which is referred to in this TRF by "RD".</p>	
General product information:	
<p>The equipment is general designed for using with information technology equipment. Double/reinforced insulation provided between primary circuits and SELV circuits by safety isolation transformer and optocoupler sufficient clearances and creepage distances within the unit. Appliance shall be provided with an approved power supply cord with plug complying with the national regulations of the countries in which the appliance is to be sold. Factory: Foshan Unipower Electronic Co., Ltd Address : Block7, No.115, 1st ZhangCha Road, Foshan, Guangdong Province, P.R.China</p>	

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	GENERAL CONDITIONS FOR TESTS		P
4.5	Components		P
	Comply with IEC 62040-1 or relevant component standard	Components, which were found to affect safety aspects, comply with the requirements of this standard or within the safety aspects of the relevant IEC component standards. (see appended table 4.5)	P
1.5.2/RD	Evaluation and testing of components	Components, which are certified to IEC and/or national standards, are applied correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment.	P
1.5.3/RD	Thermal controls	Thermal controls used.	P
1.5.4/RD	Transformers	Transformers used are suitable for their intended application and comply with the relevant requirements of the standard.	P
1.5.5/RD	Interconnecting cables	The interconnecting cable is carrying only SELV voltage on a low energy level.	P
1.5.6/RD	Capacitors bridging insulation	X2 capacitors provided between lines	P
1.5.7/RD	Resistors bridging insulation	See below.	P
1.5.7.1/RD	Resistors bridging functional, basic or supplementary insulation	Bleeder resistors bridging functional insulation.	P
1.5.7.2/RD	Resistors bridging double or reinforced insulation between a.c. mains and other circuits	No such resistors used.	N
1.5.7.3/RD	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable	No such resistors used.	N
1.5.8/RD	Components in equipment for IT power systems	TN power system.	N
4.6	Power interface		P
1.6.1/RD	AC power distribution systems	For connection to TN power system.	P
1.6.2/RD	Input current	(see appended table 4.6)	P
4.6 1.6.4/RD	Neutral conductor	Neutral conductor is basic insulated from earth and body of the equipment.	P

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.7	Marking and instructions		P
4.7.1	General	Required marking was located on the outside of the equipment.	P
4.7.2 1.7.1/RD	Power rating	See the copy of marking plate	P
	Input rated voltage/range (V)	See the copy of marking plate	P
	Input rated current/range (A).....	See the copy of marking plate	P
	Input symbol for nature of supply (d.c.)	AC input	N
	Input rated frequency/range (Hz)	See the copy of marking plate	P
	Number of Input phases and neutral.....	1φ with neutral	P
	Output rated voltage/range (V)	See the copy of marking plate	P
	Output rated current/range (A)	See the copy of marking plate	P
	Output rated power factor, if less than unity, or active power and apparent power or active power and rated current	See the copy of marking plate	P
	Number of output phases and neutral.....	1φ with neutral	P
	Output rated active power (W or kW)	See the copy of marking plate	P
	Output rated apparent power (VA or kVA)	See the copy of marking plate	P
	Output symbol for nature of supply (d.c.)	AC output	N
	Output rated frequency/range (Hz)	See the copy of marking plate	P
	Ambient operating temperature range (°C).....	0-40°C	P
	Rated short-time withstand current (I_{cw}) or rated conditional short-circuit current (I_{cc})	See the copy of marking plate	P
	Manufacturer's name or trademark or identification mark	See the copy of marking plate	P
	Type/model or type reference	See the copy of marking plate	P
	Symbol for Class II equipment only	Class I equipment	N
	Other symbols	Additional symbols or marking do not give rise to misunderstanding.	P
	Certification marks	CE	P
	INSTRUCTIONS FOR UNITS WITH AUTOMATIC BYPASS/MAINTENANCE BYPASS, ADDITIONAL INPUT A.C. SUPPLY, OR EXTERNAL BATTERIES, HAVING TEXT "SEE INSTALLATION INSTRUCTIONS BEFORE CONNECTING TO THE SUPPLY"		N
4.7.3	Safety instructions		P

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.3.1	General	The instruction contains information for operation, installation, servicing, transport, storage and technical data.	P
4.7.3.2	Installation :	Installation instructions are available to the user in User Manual.	P
	Location in a restricted access location only ... :	No a restricted access location.	N
	Permanent connector UPS :	Not an permanent equipment	N
	Pluggable type A or Pluggable type B UPS :	Pluggable type A UPS.	P
4.7.3.3	Operation..... :	The equipment is intended to be operated by layperson.	P
4.7.3.4	Maintenance..... :	The instruction of maintenance is only included in the user manual.	P
4.7.3.5	Distribution related backfeed..... :	Not permanently connected equipment	N
4.7.4 1.7.4/RD	Main voltage adjustment :	No voltage selector.	N
	Methods and means of adjustment; reference to installation instructions :		N
4.7.5 1.7.5/RD	Power outlets..... :	For standard power supply outlet, marking was placed beside to shown the maximum load that is permitted to be connected to it.	P
4.7.6 1.7.6/RD	Fuse identification (marking, special fusing characteristics, cross-reference) :	Marking required	P
4.7.7 1.7.7/RD	Wiring terminals	See below	P
1.7.7.1/RD	Protective earthing and bonding terminals :	the equipment is not permanently connected or provided with a non-detachable power supply cord	N
1.7.7.2/RD	Terminals for a.c. mains supply conductors..... :	Power plug used.	N
1.7.7.3/RD	Terminals for d.c. mains supply conductors..... :	Supply by AC source only.	N
4.7.8	Battery terminals :	Internal battery used The marking "+" and "-" for indication of polarity of battery provided.	P

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.9 1.7.8/RD	Controls and indicators	See below	P
1.7.8.1/RD	Identification, location and marking	LCD provided to indicate the working condition, located on the front panel. A corresponding statement was provided in the User's Manual.	P
1.7.8.2/RD	Colours	Colors are acceptable due to only used for information (no safety involved even if disregarded).	P
1.7.8.3/RD	Symbols	The functional switch on LCD display panel of UPS is marked with "ON", "OFF"	P
1.7.8.4/RD	Markings using figures		N
4.7.10 1.7.9/RD	Isolation of multiple power sources	Provided in the user manual.	N
4.7.11 1.7.2.4/RD	IT power systems	TN power distribution systems	N
4.7.12	Protection in building installation	The protection does not rely upon building installation. The protection is provided by input breaker.	N
	Rated short-time withstand current (I_{cw})		N
	Rated conditional short circuit current (I_{cc})		N
	a) If higher I_{cp} stated ≤ 10 kA		N
	a) If higher I_{cp} stated > 10 kA		N
4.7.13 5.1/RD	High leakage current (mA)	Leakage current of the equipment does not exceed 3.5mA.	N
4.7.14 1.7.10/RD	Thermostats and other regulating devices	No thermostats and other regulating devices	N
4.7.15 1.7.2.1/RD and 1.7.8.1/RD	Language(s)	LCD provided to indicate the working condition, located on the front panel. A corresponding statement was provided in the User's Manual.	P
4.7.16 1.7.11/RD	Durability of markings	The marking withstands required tests	P
4.7.17 1.7.12/RD	Removable parts	No required markings placed on removable parts.	P

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.18 1.7.13/RD	Replaceable batteries	Detailed instructions provided in the user's manual.	P
	Language(s)	English.	--
4.7.19 1.7.2.5/RD	Operator access with a tool.....	All areas containing hazard(s) are inaccessible to the operator.	P
4.7.20	Battery		P
	Clearly legible information		P
	Battery type (lead-acid, NiCd, etc.) and number of blocks or cells		P
	Nominal voltage of total battery (V)		P
	Nominal capacity of total battery (optional)	See the copy of marking plate	P
	Warning label		P
	Instructions	Instructed the replacement of battery type and numbers, terminal torque, personnel knowledgeable about batteries and required precautions and relevant cautions or warnings. Warning label denote energy or electrical shock and chemical hazard and reference to the maintenance, handling and disposal requirements.	P
2.1.1.5/RD	Protection against energy hazards		P
4.7.21 1.7.2.4/RD	Installation instructions	Detailed information regarding power distribution system, special attention to instructions of the side of external interfaces.	P

5	FUNDAMENTAL DESIGN REQUIREMENTS		P
5.1	Protection against electric shock and energy hazards		P
5.1.1 2.1.1/RD	Protection for UPS intended to be used in operator access areas	See below.	P
2.1.1.1/RD	Access to energized parts	Checked by test finger and test pin. No accessible hazard energized parts.	P
	Test by inspection	Not accessible	P
	Test with test finger (Figure 2A)	Not accessible	P

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Test with test pin (Figure 2B)	Not accessible	P
	Test with test probe (Figure 2C)	No TNV circuits.	N
2.1.1.2/RD	Battery compartments	No TNV circuits inside battery compartment.	P
2.1.1.3/RD	Access to ELV wiring	No ELV wiring in operator accessible area.	N
	Working voltage (V_{peak} or V_{rms}); minimum distance through insulation (mm)		--
2.1.1.4/RD	Access to hazardous voltage circuit wiring	Insulation of internal wiring not operator accessible.	N
2.1.1.5/RD	Energy hazards	No energy hazard at operator accessible SELV interfaces.	P
2.1.1.6/RD	Manual controls	No conductive controls or handles or alike provided.	N
2.1.1.7/RD	Discharge of capacitors in equipment	No risk of electric shock.	P
	Measured voltage (V); time-constant (s).....	(see appended table 2.1.1.7/RD)	—
2.1.1.8/RD	Energy hazards – d.c. mains supply	Not connected to DC mains supply.	N
	a) Capacitor connected to the d.c. mains supply ...:		N
	b) Internal battery connected to the d.c. mains supply		N
2.1.1.9/RD	Audio amplifiers in information technology equipment	No audio amplifier	N
5.1.2 2.1.1.5 c) /RD	Protection for UPS intended to be used in service access areas	Checked by inspection, unintentional contact is unlikely during service operations.	N
	Hazardous energy level		N
5.1.3 2.1.1.5 c) /RD	Protection for UPS intended to be used in restricted access areas	Not for restricted access area	N
	Hazardous energy level		N
5.1.4	Backfeed protection	(see appended table 5.1.4)	P
	Shock hazard after de-energization of a.c. input for UPS	See appended table 5.2.1 and Subclause 2.2.3/RD	P
	Measured voltage (V); time-constant (s).....		--
	Description of the construction	For pluggable UPS, backfeed protection achieved by the operation of relays and the relative circuits provided in the a.c. input line.	P

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Air gap is employed for backfeed protection	The relay provides a contact gap of 1.9 mm minimum between each contact.	P
5.1.5	Emergency switching (disconnect) device	Pluggable equipment type A, no emergency switching device for the load required.	N

5.2	Requirements for auxiliary circuits		P
5.2.1 2.2/RD	Safety extra low voltage circuit - SELV		P
2.2.1/RD	General requirements		P
2.2.2/RD	Voltages under normal conditions (V)		P
2.2.3/RD	Voltages under fault conditions (V)		P
2.2.4/RD	Connection of SELV circuits to other circuits ..		N
5.2.2 2.3/RD	Telephone network voltage circuits - TNV		P
2.3.1/RD	Limits		P
	Type of TNV circuits		--
2.3.2/RD	Separation of TNV circuits from other circuits and from accessible parts		P
2.3.2.1/RD	General requirements		P
2.3.2.2/RD	Protection by basic insulation		P
2.3.2.3/RD	Protection by earthing		N
2.3.2.4/RD	Protection by other constructions		N
2.3.3/RD	Separation from hazardous voltages		P
	Insulation employed		P
2.3.4/RD	Connection of TNV circuits to other circuits		P
	Insulation employed		--
2.3.5/RD	Test for operating voltages generated externally		N
5.2.3 2.4/RD	Limited current circuits	(See appended table 5.2.3)	P
2.4.1/RD	General requirements		P
2.4.2/RD	Limit values	(See appended table 5.2.3)	—
	Frequency (Hz).....		—
	Measured current (mA)		—
	Measured voltage (V).....		—
	Measured circuit capacitance (nF or μF)		—
2.4.3/RD	Connection of limited current circuits to other circuits		N

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.2.4 3.5/RD	External signaling circuits		P
3.5.1/RD	General requirements	Considered.	P
3.5.2/RD	Types of interconnection circuits :	SELV circuits.	P
3.5.3/RD	ELV circuits as interconnection circuits	No such ELV circuits.	N
3.5.4/RD	Data ports for additional equipment		N
5.2.5 2.5/RD	Limited power source		N
	a) Inherently limited output		N
	b) Impedance limited output		N
	c) Regulating network limited output under normal operating and single fault condition		N
	d) Overcurrent protective device limited output		N
	Max. output voltage (V), max. output current (A), max. apparent power (VA) :		--
	Current rating of overcurrent protective device (A) .. :		--
	Use of integrated circuit (IC) current limiters		--

5.3	Protective earthing and bonding		P
5.3.1	General		P
2.6/RD	Provisions for earthing and bonding	Reliable connection of relevant conductive parts to the PE terminal (AC inlet) via green/yellow insulated wires.	P
2.6.1/RD	Protective earthing	Relevant earthing conductive parts reliably connected to PE Pin of AC inlet.	P
2.6.2/RD	Functional earthing		P
2.6.3/RD	Protective earthing conductors and protective bonding conductors	Protective bonding conductors have sufficient current-carrying capacity.	P
2.6.3.1/RD	General	Compliance checked. Protective bonding conductors have sufficient current-carrying capacity.	P
2.6.3.2/RD	Size of protective earthing conductors	See sub-clause 2.6.3.4/RD, rated current below 16A.	N
	Rated current (A), cross-sectional area (mm ²), AWG :		—
2.6.3.3/RD	Size of protective bonding conductors		P
	Rated current (A), cross-sectional area (mm ²), AWG :	Comply with 2.6.3.4/RD	—

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Protective current rating (A), cross-sectional area (mm ²), AWG	Comply with 2.6.3.4/RD	—
2.6.3.4/RD	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min)	(See appended table 5.3)	P
2.6.3.5/RD	Colour of insulation.....	Yellow-and-Green	P
2.6.4/RD	Terminals		P
2.6.4.1/RD	General	AC inlet as protective earth terminal.	P
2.6.4.2/RD	Protective earthing and bonding terminals	Adequate protective earth connection, see also Subclause 2.6.3.4/RD and 3.3/RD.	P
	Rated current (A), type, nominal thread diameter (mm)	Comply with 2.6.3.4/RD	—
2.6.4.3/RD	Separation of the protective earthing conductor from protective bonding conductors	Separate PE and protective bonding by conductor.	P
2.6.5/RD	Integrity of protective earthing	See below.	P
2.6.5.1/RD	Interconnection of equipment	This unit has it's own earthing connection. PE terminals of outlets reliably connected to PE terminal of unit. (AC inlet). Yellow/Green wire terminal of outlet connector to metal chassis	P
2.6.5.2/RD	Components in protective earthing conductors and protective bonding conductors		N
2.6.5.3/RD	Disconnection of protective earth	AC inlet is considered as possible disconnection. AC input power is cut off before removal of earth pin.	P
2.6.5.4/RD	Parts that can be removed by an operator	Plug, earthing connected before and disconnected after hazardous voltage. No other operator removable parts.	P
2.6.5.5/RD	Parts removed during servicing	Protective earthed parts cannot be removed in a way which impairs safety.	P
2.6.5.6/RD	Corrosion resistance	No risk of corrosion.	P
2.6.5.7/RD	Screws for protective bonding	Adequate connection of protective bonding	P
2.6.5.8/RD	Reliance on telecommunication network or cable distribution system	Protective earthing is not rely on telecommunication network or cable distribution system.	N

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.3.2 2.6.1/RD	Protective earthing	Reliable connection of relevant conductive parts to the PE terminal (via green/ yellow insulated wires)	P
2.10/RD	Clearances, creepage distances and distances through insulation		P
4.2/RD	Mechanical strength	Earthed or unearthed conductive enclosures do not bridge parts between which a hazardous energy level exists and not contact a bare part at hazardous voltage.	P
5.2/RD	Electric strength		P
5.3.3	Protective bonding		N

5.4	AC and d.c. power isolation		P
5.4.1	General	Disconnection from the mains supply considered.	P
3.4/RD	Disconnection from the mains supply	Disconnection from the mains supply with an appliance inlet	P
3.4.1/RD	General requirement	See below.	P
3.4.2/RD	Disconnect devices	Approved AC inlet provided as disconnect device	P
3.4.3/RD	Permanently connected equipment	Not a permanently equipment.	N
3.4.4/RD	Parts which remain energized	Adequate protection provided to service personnel during backup mode.	P
3.4.5/RD	Switches in flexible cords	None provided.	N
3.4.6/RD	Number of poles - single-phase and d.c. equipment	The appliance approved AC inlet disconnected both poles simultaneously.	P
3.4.7/RD	Number of poles - three-phase equipment	Single-phase equipment.	N
3.4.8/RD	Switches as disconnect devices	No switches provided.	N
3.4.9/RD	Plugs as disconnect devices		P
3.4.10/RD	Interconnected equipment	No interconnected equipment	N
3.4.11/RD	Multiple power sources	EUT is pluggable type and receives power form the AC mains and - in case of AC mains failure - from the built-in batteries. No marking required.	N
5.4.2	Disconnect devices	Refer to cl.3.4.2/RD	P

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict

5.5	Overcurrent and earth fault protection		P
5.5.1	General		P
2.7.3/RD	Short-circuit backup protection	Pluggable equipment type A. Building installation is considered as providing short-circuit backup protection.	P
2.7.4/RD	Number and location of protective devices :	Over current protector provided in live conductor (at rear panel).	P
2.7.5/RD	Protection by several devices	Only one protection device provided.	N
2.7.6/RD	Warning to service personnel :	No double-pole fusing inside this pluggable equipment type A UPS. Stated in the user's manual.	P
5.5.2	Basic requirements	Protection for input is provided by the building for pluggable equipment type A inlet. Pluggable equipment type A outputs provided	P
5.5.3	Battery circuit protection		P
5.5.3.1	Overcurrent and earth fault protection		P
5.5.3.2	Location of protective device	For internal battery bank, the protective devices are directly located behind the supply wire of the DC utility. For the charger circuit, two was no hazardous conditions under any simulated fault conditions.	P
5.5.3.3	Rating of protective device	Protection against overcurrent by two fuses (parallel) in the plus pole of the battery supply circuit of the UPS.	P
5.3.1/RD	Protection against overload and abnormal operation	(see appended table 8.3)	P

5.5.4	Short-time withstand current		P
5.5.4.1	General		N
5.5.4.2	Modes of operation		N
5.5.4.3	Test procedure		N
5.5.4.3.1	General application		N
	Rated UPS output current/(r.m.s) (A) :		--
	Prospective test current/(r.m.s) (A) :		--

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Typical power factor		--
	Initial asymmetric peak current ration (I_{pk} / I_{cw}) ..	$I_{cw} \leq 1kA$	--
	Minimum duration of prospective test current (cycles 50/60 Hz)		--
5.5.4.3.2	Exemption from testing	$I_{cw} \leq 1kA$	P

5.6	Protection of personnel – Safety interlocks		N
5.6.1	Operator protection	No safety interlocks.No hazardous parts in operator access areas	N
2.8/RD	General principles		N
2.8.1/RD	Protection requirements	No safety interlocks.	N
2.8.2/RD	Inadvertent reactivation		N
2.8.3/RD	Fail-safe operation		N
2.8.4/RD	Protection against extreme hazard		N
2.8.5/RD	Moving parts		N
2.8.6/RD	Overriding		N
2.8.7/RD	Switches, relays and their related circuits		N
2.8.7.1/RD	Separation distances for contact gaps and their related circuits		N
2.8.7.2/RD	Overload test		N
2.8.7.3/RD	Endurance test		N
2.8.7.4/RD	Electric strength test		N
2.8.8/RD	Mechanical actuators		N
5.6.2	Service person protection		N
5.6.2.1	Introduction		N
5.6.2.2	Covers		N
5.6.2.3	Location and guarding of parts		N
5.6.2.4	Parts on doors		N
5.6.2.5	Component access		N
2.8.3/RD	Fail-safe operation		N
5.6.2.6	Moving parts		N
5.6.2.7	Capacitor banks		N
5.6.2.8	Internal batteries		N

5.7 2.10/RD	Clearances, creepage distances and distances through insulation		P
2.10.1/RD	General		P

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.1.1/R D	Frequency	Considered	P
2.10.1.2/R D	Pollution degrees	Pollution degree 2.	P
2.10.1.3/R D	Reduced values for functional insulation	The functional insulation complied with clause 5.3.4/RD	N
2.10.1.4/R D	Intervening unconnected conductive parts	Considered.	P
2.10.1.5/R D	Insulation with varying dimensions	No reduction of distances considered.	N
2.10.1.6/R D	Special separation requirements	Not special separation requirements.	N
2.10.1.7/R D	Insulation in circuits generating starting pulses	No such circuit generating starting pulses.	N
2.10.2/RD	Determination of working voltage	(See appended table 5.7)	P
2.10.2.1/R D	General		P
2.10.2.2/R D	RMS working voltage		P
2.10.2.3/R D	Peak working voltage		P
2.10.3/RD	Clearances		P
2.10.3.1/R D	General		P
2.10.3.2/R D	Mains transient voltages	Normal transient voltage considered.	P
	a) AC mains supply	2500V _{peak}	P
	b) Earthed d.c. mains supplies	Not intended for d.c. mains supplies	N
	c) Unearthed d.c. mains supplies		P
	d) Battery operation	Internal battery considered.	N
2.10.3.3/R D	Clearances in primary circuits	(see appended table 5.7)	P
2.10.3.4/R D	Clearances in secondary circuits	(see appended table 5.7)	P
2.10.3.5/R D	Clearances in circuits having starting pulses	The circuit will not generating starting pulse.	N
2.10.3.6/R D	Transients from a.c. mains supply	Considered.	P
2.10.3.7/R D	Transients from d.c. mains supply	Not connected to d.c. mains supply.	N

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.3.8/R D	Transients from telecommunication networks and cable distribution systems	Not connected to telecommunication networks and cable distribution systems	N
2.10.3.9/R D	Measurement of transient voltage levels	Normal transient voltage considered.	N
	a) Transients from a mains supply		N
	For an a.c. mains supply		N
	For a d.c. mains supply		N
	b) Transients from a telecommunication network :		N
2.10.4/RD	Creepage distances	(see appended table 5.7)	P
2.10.4.1/R D	General	Considered.	P
2.10.4.2/R D	Material group and comparative tracking index		P
	CTI tests	Material group IIIb is assumed to be used.	P
2.10.4.3/R D	Minimum creepage distances	(see appended table 5.7)	P
2.10.5 /RD	Solid insulation	Solid insulating materials having adequate thickness are provided.	P
2.10.5.1/R D	General	Considered.	P
2.10.5.2/R D	Distances through insulation	(see appended table 5.7)	P
2.10.5.3/R D	Insulating compound as solid insulation	(see appended table 4.5)	P
2.10.5.4/R D	Semiconductor devices	Optocouplers used.	P
2.10.5.5/R D	Cemented joints	No cemented joint.	N
2.10.5.6/R D	Thin sheet material – General	Thin sheet material in form of polyester tape used in transformer.	P
2.10.5.7/R D	Separable thin sheet material	Tapes used in transformers.	P
	Number of layers (pcs)		--
2.10.5.8/R D	Non-separable thin sheet material	Not used.	N
2.10.5.9/R D	Thin sheet material – standard test procedure	Tapes used in transformers.	P
	Electric strength test	(see appended table 5.7)	—

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.5.10 /RD	Thin sheet material – alternative test procedure		N
	Electric strength test		—
2.10.5.11 /RD	Insulation in wound components	No such components.	N
2.10.5.12 /RD	Wire in wound components		P
	Working voltage		—
	a) Basic insulation not under stress		N
	b) Basic, supplementary, reinforced insulation		P
	c) Compliance with Annex U		P
	Two wires in contact inside wound component; angle between 45° and 90°		P
2.10.5.13 /RD	Wire with solvent-based enamel in wound components	No wire with solvent-based enamel in wound components.	N
	Electric strength test		—
	Routine test		N
2.10.5.14 /RD	Additional insulation in wound components	No additional insulation used.	N
	Working voltage		—
	- Basic insulation not under stress		N
	- Supplementary, reinforced insulation		N
2.10.6/RD	Construction of printed boards	See below.	P
2.10.6.1/RD	Uncoated printed boards	Uncoated printed boards used.	P
2.10.6.2/RD	Coated printed boards	No such boards used.	N
2.10.6.3/RD	Insulation between conductors on the same inner surface of a printed board	No such boards used.	N
2.10.6.4/RD	Insulation between conductors on different layers of a printed board	No such boards used.	N
	Distance through insulation		--
	Number of insulation layers (pcs)		--
2.10.7/RD	Component external terminations	No such construction.	N
2.10.8/RD	Tests on coated printed boards and coated components	No coated printed boards and components.	N
2.10.8.1/RD	Sample preparation and preliminary inspection		N
2.10.8.2/RD	Thermal conditioning		N

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.8.3/RD	Electric strength test		—
2.10.8.4/RD	Abrasion resistance test		N
2.10.9/RD	Thermal cycling	No special insulation in order to reduce distance.	N
2.10.10/RD	Test for Pollution Degree 1 environment and insulating compound		N
2.10.11/RD	Tests for semiconductor devices and cemented joints	Approved opto-couplers provided. No other parts to be tested. (see appended table 4.5)	P
2.10.12/RD	Enclosed and sealed parts		N

6	Wiring, connections and supply		P
6.1	General		P
6.1.1	Introduction	Considered.	P
3.1/RD	General	See below	P
3.1.1/RD	Current rating and overcurrent protection	Adequate cross sectional areas on internal wiring.	P
3.1.2/RD	Protection against mechanical damage	Wire ways are smooth and free from edges. Wires are adequately fixed to prevent excessive strain on wire and terminals and avoiding damage to the insulation of the conductors.	P
3.1.3/RD	Securing of internal wiring	Internal wirings is secured against excessive strain, loosening of terminals and damage to the conductor insulation.	P
3.1.4/RD	Insulation of conductors	Insulation on internal conductors is considered to be of adequate quality and suitable for the application and the working voltage involved.	P
3.1.5/RD	Beads and ceramic insulators	No beads or similar ceramic insulators on conductors	N
3.1.6/RD	Screws for electrical contact pressure	No screws of insulating material used for electrical connection.	P

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.1.7/RD	Insulating materials in electrical connections	All current carrying and safety earthing connections are metal to metal.	P
3.1.8/RD	Self-tapping and spaced thread screws	No self-tapping and spaced thread screws used.	N
3.1.9/RD	Termination of conductors	Terminations can not become displaced so that clearances and creepage distances can be reduced.	P
	10 N pull test	Break away or pivot on its terminal is unlikely	P
3.1.10/RD	Sleeving on wiring	Sleeves are used as supplementary insulation.	P
6.1.2	Dimensions and rating of busbars and insulated conductors		N

6.2	Connection to power		P
6.2.1	General provisions for connection to power	See below.	P
3.2.2/RD	Multiple supply connections	Single supply connection.	N
3.2.3/RD	Permanently connected equipment	Not a permanently connected equipment. It's a pluggable equipment type A equipment.	N
	Number of conductors, diameter of cable and conduits (mm)		--
3.2.4/RD	Appliance inlets	Approved appliance inlets used	P
3.2.5/RD	Power supply cords		N
3.2.5.1/RD	AC power supply cords		N
	Type	(See appended table 4.5)	--
	Rated current (A), cross-sectional area (mm ²), AWG		--
3.2.5.2/RD	DC power supply cords	Not connected to DC power supply.	N
3.2.6/RD	Cord anchorages and strain relief	Approved appliance inlets used	N
	Mass of equipment (kg), pull (N)		--
	Longitudinal displacement (mm)		--
3.2.7/RD	Protection against mechanical damage	No parts under this unit likely to damage the power supply cord. Enclosure without sharp edges.	P

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.8/RD	Cord guards	Appliance inlet and outlets used.	N
	Diameter or minor dimension D (mm); test mass (g) :		--
	Radius of curvature of cord (mm)..... :		--
6.2.2	Means of connection :	Appliance inlet used.	P
	More than one supply connection :	Single voltage range supply connection.	N
6.3	Wiring terminals for external power conductors		N
3.3/RD	Wiring terminals for connection of external conductors	No external power conductor provided	N
3.3.1/RD	Wiring terminals	Not permanently connected equipment.	N
3.3.2/RD	Connection of non-detachable power supply cords		N
3.3.3/RD	Screw terminals		N
3.3.4/RD	Conductor sizes to be connected		N
	Rated current (A), cord/cable type, cross-sectional area (mm ²)..... :		--
3.3.5/RD	Wiring terminal sizes		N
	Rated current (A), type, nominal thread diameter (mm) :		--
3.3.6/RD	Wiring terminal design		N
3.3.7/RD	Grouping of wiring terminals		N
3.3.8/RD	Stranded wire		N
7	Physical requirements		P
7.1	Enclosure	The frame or chassis not be used to carry current. And provided adequate protection against risk of fire, electric shock, injury to persons and hazardous energy level.	P
7.2 4.1/RD	Stability		P
	Angle of 10°	The unit does not overbalance	P
	Test force (N) :		N
7.3 4.2/RD	Mechanical strength		P

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.2.1/RD	General	Tests performed and passed. Results see below. After the tests, unit complied with the requirements of sub-clauses 2.1.1/RD, 2.6.1/RD, 2.10/RD and 4.4.1/RD.	P
4.2.2/RD	Steady force test, 10 N	10 N applied to all components	P
4.2.3/RD	Steady force test, 30 N	No such compartments.	N
4.2.4/RD	Steady force test, 250 N	250N applied to outer enclosure. No energy or other hazards.	P
4.2.5/RD	Impact test	No hazard as a result from steel ball impact test.	P
	Fall test	No hazard as a result from steel ball impact test.	P
	Swing test	No hazard as a result from steel sphere ball swung test.	P
4.2.6/RD	Drop test; height (mm) :	No required for this equipment.	N
4.2.7/RD	Stress relief test	70°C, 7hours	P
4.2.8/RD	Cathode ray tubes	No cathode ray tube.	N
	Picture tube separately certified :		—
4.2.9/RD	High pressure lamps	No high pressure lamp provided.	N
4.2.10/RD	Wall or ceiling mounted equipment; force (N) . :	Not for wall or ceiling mounting.	N

7.4	Construction details		P
7.4.1	Introduction		P
4.3.1/RD	Edges and corners	Edges and corners of the enclosure are rounded and smoothed	P
4.3.2/RD	Handles and manual controls; force (N)..... :		P
4.3.3/RD	Adjustable controls	No adjustable controls.	N
4.3.4/RD	Securing of parts	Mechanical fixings in such a way designed that they will withstand mechanical stress occurring in normal use.	P
4.3.5/RD	Connection by plugs and sockets	No mismatch of connectors.	P
4.3.7/RD	Heating elements in earthed equipment	No heating elements provided.	N

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.11/RD	Containers for liquids or gases	No containers for liquid or gases in the equipment	N
4.4/RD	Protection against hazardous moving parts	No such parts.	P
4.4.1/RD	General	DC fan, test finger applied to openings. No fan blade accessible.	P
4.4.2/RD	Protection in operator access areas	No service access areas	P
4.4.3/RD	Protection in restricted access locations	No service access areas	P
4.4.4/RD	Protection in service access areas	No service access areas	P
4.4.5/RD	Protection against moving fan blades	No service access areas	P
4.4.5.1/RD	General		P
	Not considered to cause pain or injury. a)		N
	Is considered to cause pain, not injury. b)		N
	Considered to cause injury. c)		P
4.4.5.2	Protection for users	Protection against moving fan blades by metal enclosure	P
	Use of symbol or warning		P
4.4.5.3	Protection for service persons	Protection against moving fan blades by metal enclosure	P
	Use of symbol or warning		N
4.5/RD	Thermal requirements		P
4.5.1/RD	General	See below.	P
4.5.2/RD	Temperature tests	(See appended table 7.7)	P
	Normal load condition per Annex L	See Annex L	--
4.5.3/RD	Temperature limits for materials	(see appended table 7.7)	P
4.5.4/RD	Touch temperature limits	(see appended table 7.7)	P
4.5.5/RD	Resistance to abnormal heat	(see appended table 7.4)	P
7.4.2	Openings	Suitable construction prevent vertical access to bare parts of hazardous voltage. (see appended table 7.4.2)	P
7.4.3	Gas Concentration	For the ventilation of the lead-acid battery refer to table M	P
7.4.4	Equipment movement	No castors provided.	N
7.5 4.7/RD	Resistance to fire		P
4.7.1/RD	Reducing the risk of ignition and spread of flame	See below.	P

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Method 1, selection and application of components wiring and materials	Use of materials with the required flammability classes. (see appended table 7.5)	P
	Method 2, application of all of simulated fault condition tests		N
4.7.2/RD	Conditions for a fire enclosure	See below.	P
4.7.2.1/RD	Parts requiring a fire enclosure	Internal components required a fire enclosure.	P
4.7.2.2/RD	Parts not requiring a fire enclosure	The fire enclosure is required to cover all parts.	N
4.7.3/RD	Materials	See below.	P
4.7.3.1/RD	General	Components and materials have adequate flammability classification.	P
4.7.3.2/RD	Materials for fire enclosures	Panel is V-1 or better and other enclosure is made of metal.	P
4.7.3.3/RD	Materials for components and other parts outside fire enclosures	No parts outside the fire enclosure.	N
4.7.3.4/RD	Materials for components and other parts inside fire enclosures	Internal components except small parts are minimum V-2 material. Batteries have a flammability class of HB or better.	P
4.7.3.5/RD	Materials for air filter assemblies	No air filters in the equipment.	N
4.7.3.6/RD	Materials used in high-voltage components	No parts exceeding 4kV.	N

7.6	Battery location		P
7.6.1	Battery location and installation	Maintenance free batteries used inside the UPS. The batteries are connected by quick connect terminals (no necessary tightening).	P
7.6.2	Accessibility and maintainability	No requirements declared by the battery manufacturer.	P
7.6.3	Distance	The temperature of the electrolyte and the gas emission are within the limits of this standard (see appropriate subclauses).	P
7.6.4	Case insulation	No Ni-Cd battery used inside.	P

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
7.6.5	Wiring	The protection of connection wiring complies with subclause 3/RD.	P
7.6.6	Electrolyte spillage	Sealed maintenance free batteries provided with an unlikely emission of electrolyte (VRLA type).	P
7.6.7	Ventilation	For the ventilation of the lead-acid battery refer to table M.	P
7.6.8	Charging voltage	Protected against excessive voltages under normal and single fault conditions.	P

7.7	Temperature rise		P
4.5/RD	Thermal requirements		P
4.5.1/RD	General		P
4.5.2/RD	Temperature tests	(see appended table 7.7)	P
	Normal load condition per Annex L		--
4.5.3/RD	Temperature limits for materials	(see appended table 7.7)	P
4.5.4/RD	Touch temperature limits	(see appended table 7.7)	P
4.5.5/RD	Resistance to abnormal heat	(see appended table 7.4)	P

8	Electrical requirements and simulated abnormal conditions		P
8.1	General provisions for earth leakage		P
5.1.1/RD	General	(see appended table 8)	P
5.1.7/RD	Equipment with touch current exceeding 3,5 mA	The touch current does not exceed 3.5mA.	N

8.2 5.2/RD	Electric strength		P
5.2.1/RD	General	(see appended table 5.7)	P
5.2.2/RD	Test procedure	(see appended table 5.7)	P

8.3	Abnormal operating and fault conditions		P
8.3.1	General		P
5.3.1/RD	Protection against overload and abnormal operation	(see appended table 8.3)	P
5.3.2/RD	Motors	(see appended Annex B/RD)	P
5.3.3/RD	Transformers	(see appended Annex C/RD)	P
5.3.4/RD	Functional insulation.....	By short-circuit	P

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.3.5/RD	Electromechanical components	No such electromechanical components that will cause hazard	N
5.3.9/RD	Compliance criteria for abnormal operating and fault conditions	See below	P
5.3.9.1/RD	During the tests	No fire or molten metal occurred and no deformation of enclosure during the tests.	P
5.3.9.2/RD	After the tests	No reduction of clearance and creepage distances. Electric strength test is made on functional, basic and reinforced insulation.	P
8.3.2	Simulation of faults	(see appended table 8.3)	P
8.3.3	Conditions for tests	The equipment was tested under normal use and foreseeable misuse conditions.	P

9 6/RD	Connection to telecommunication networks		N
6.1/RD	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		N
6.1.1/RD	Protection from hazardous voltages		N
6.1.2/RD	Separation of the telecommunication network from earth	No telecommunication network circuits	N
6.1.2.1/RD	Requirements		N
	Supply voltage (V)	1.5kV	—
	Current in the test circuit (mA)		—
6.1.2.2/RD	Exclusions		N
6.2/RD	Protection of equipment users from overvoltages on telecommunication networks		N
6.2.1/RD	Separation requirements		N
6.2.2/RD	Electric strength test procedure		N
6.2.2.1/RD	Impulse test		N
6.2.2.2/RD	Steady-state test		N
6.2.2.3/RD	Compliance criteria		N
6.3/RD	Protection of the telecommunication wiring system from overheating		N
	Max. output current (A)		--
3.5/RD	Interconnection of equipment		N
3.5.1/RD	General requirements		N
3.5.2/RD	Types of interconnection circuits		N

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.5.3/RD	ELV circuits as interconnection circuits		N
3.5.4/RD	Data ports for additional equipment		N
2.1.3/RD	Protection in restricted access locations		N
2.3.1/RD	Limits		N
	Type of TNV circuits		--
2.3.2/RD	Separation from other circuits and from accessible parts		N
2.3.2.1/RD	General requirements		N
2.3.2.2/RD	Protection by basic insulation		N
2.3.2.3/RD	Protection by earthing		N
2.3.2.4/RD	Protection by other constructions		N
2.3.3/RD	Separation from hazardous voltages		N
	Insulation employed		--
2.3.4/RD	Connection of TNV circuits to other circuits		N
	Insulation employed		--
2.3.5/RD	Test for operating voltages generated externally		N
2.6.5.8/RD	Reliance on telecommunication network or cable distribution system	Protective earthing does not rely on a telecommunication network or a cable distribution system.	N
2.10.3.3/RD	Clearances in primary circuits		N
2.10.3.4/RD	Clearances in secondary circuits		N
2.10.4/RD	Creepage distances	Considered.	N
2.10.4.1/RD	General		N
2.10.4.2/RD	Material group and comparative tracking index		N
	CTI tests		—
2.10.4.3/RD	Minimum creepage distances		N

M/RD	Annex M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1/RD)		N
M.1/RD	Introduction		N
M.2 /RD	Method A		N
M.3/RD	Method B		N
M.3.1/RD	Ringing signal		N
M.3.1.1/RD	Frequency (Hz)		--
M.3.1.2/RD	Voltage (V)		--

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.3.1.3/RD	Cadence; time (s), voltage (V)		--
M.3.1.4/RD	Single fault current (mA)		--
M.3.2/RD	Tripping device and monitoring voltage		N
M.3.2.1/RD	Conditions for use of a tripping device or a monitoring voltage		--
M.3.2.2/RD	Tripping device		N
M.3.2.3/RD	Monitoring voltage (V)		N

A/RD	Annex A, Tests for resistance to heat and fire		N
A.1/RD	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2/RD)		N
A.1.1/RD	Samples		--
	Wall thickness (mm).....		--
A.1.2/RD	Conditioning of samples; temperature (°C)		N
A.1.3/RD	Mounting of samples		N
A.1.4/RD	Test flame (see IEC 60695-11-3)		N
	Flame A, B, C or D		--
A.1.5/RD	Test procedure		N
A.1.6/RD	Compliance criteria		N
	Sample 1 burning time (s)		--
	Sample 2 burning time (s)		--
	Sample 3 burning time (s)		--
A.2/RD	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2/RD and 4.7.3.4/RD)		N
A.2.1/RD	Samples, material.....		--
	Wall thickness (mm).....		--
A.2.2/RD	Conditioning of samples; temperature (°C)		N
A.2.3/RD	Mounting of samples		N
A.2.4/RD	Test flame (see IEC 60695-11-4)		N
	Flame A, B or C		--
A.2.5/RD	Test procedure		N
A.2.6/RD	Compliance criteria		N
	Sample 1 burning time (s)		--
	Sample 2 burning time (s)		--
	Sample 3 burning time (s)		--
A.2.7/RD	Alternative test acc. to IEC 60695-11-5, cl. 5 and 9		N
	Sample 1 burning time (s)		--
	Sample 2 burning time (s)		--

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Sample 3 burning time (s)		--
A.3/RD	Hot flaming oil test (see 4.6.2/RD)		N
A.3.1/RD	Mounting of samples		N
A.3.2/RD	Test procedure		N
A.3.3/RD	Compliance criterion		N

B/RD	Annex B, Motor tests under abnormal conditions (see 4.7.2.2/RD and 5.3.2/RD)		P
B.1/RD	General requirements		P
	Position	Enclosure Inside	--
	Manufacturer	(see appended table 4.5)	--
	Type	(see appended table 4.5)	--
	Rated values	(see appended table 4.5)	--
B.2/RD	Test conditions		N
B.3/RD	Maximum temperatures		N
B.4/RD	Running overload test		N
B.5/RD	Locked-rotor overload test		N
	Test duration (days)		--
	Electric strength test: test voltage (V)		--
B.6/RD	Running overload test for d.c. motors in secondary circuits		N
B.6.1/RD	General		N
B.6.2/RD	Test procedure		N
B.6.3/RD	Alternative test procedure		N
B.6.4/RD	Electric strength test; test voltage (V)		N
B.7/RD	Locked-rotor overload test for d.c. motors in secondary circuits		N
B.7.1/RD	General		N
B.7.2/RD	Test procedure		N
B.7.3/RD	Alternative test procedure		N
B.7.4/RD	Electric strength test; test voltage (V)		N
B.8/RD	Test for motors with capacitors		N
B.9/RD	Test for three-phase motors		N
B.10/RD	Test for series motors		N
	Operating voltage (V)		--

C/RD	Annex C, Transformers (see 1.5.4/RD and 5.3.3/RD)		P
	Position	TX1	—
	Manufacturer	(See appended table 4.5)	—

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Type	(See appended table 4.5)	—
	Rated values	(See appended table 4.5)	—
	Method of protection.....	Inherent impedance	—
C.1/RD	Overload test		P
C.2/RD	Insulation	(see appended table C.2/RD)	P
	Protection from displacement of windings.....	By insulation tapes	P
D/RD	Annex D, Measuring instruments for touch current tests (see 5.1.4/RD)		P
D.1/RD	Measuring instrument	As in figure D.1 used.	P
D.2/RD	Alternative measuring instrument	Not used.	N
E/RD	Annex E, Temperature rise of a winding (see Annex E/RD)		N
F/RD	Annex F, Measurements of clearances and creepage distance (see 2.10/RD and Annex G/RD)		P
G/RD	Annex G, Alternative method for determining minimum clearances		N
G.1/RD	Clearances		N
G.1.1/RD	General		N
G.1.2/RD	Summary of the procedure for determining minimum clearances		N
G.2/RD	Determination of mains transient voltage (V)		N
G.2.1/RD	AC mains supply		N
G.2.2/RD	Earthed d.c. mains supplies		N
G.2.3/RD	Unearthed d.c. mains supplies		N
G.2.4/RD	Battery operation		N
G.3/RD	Determination of telecommunication network transient voltage (V)		N
G.4/RD	Determination of required withstand voltage (V)		N
G.4.1/RD	Mains transients and internal repetitive peaks :		N
G.4.2/RD	Transients from telecommunication networks . :		N
G.4.3/RD	Combination of transients		N
G.4.4/RD	Transients from cable distribution systems		N
G.5/RD	Measurement of transient voltages (V)		N
	a) Transients from a mains supply		N
	For an a.c. mains supply		N
	For a d.c. mains supply		N
	b) Transients from a telecommunication network		N

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.6/RD	Determination of minimum clearances		N
H	Annex H, Guidance on protection against ingress of water and foreign objects (see IEC 60529)		N
I	Annex I, Backfeed protection test		P
I.1	General		P
I.2	Test for pluggable UPS	Backfeed relay provided	P
I.3	Test for permanently connected UPS		N
I.4	Load-induced change of reference potential	(See appended table 5.1.4)	P
I.5	Solid-state backfeed protection (see clause 7.1-7.5 of IEC 62040-2 and clause 7.1-7.2 of IEC 62040-3)		N
J/RD	Annex J, Table of electrochemical potentials (see 2.6.5.6/RD)		N
	Metal(s) used		—
K/RD	Annex K, Thermal controls (see 1.5.3/RD and 5.3.8/RD)		N
K.1/RD	Making and breaking capacity		N
K.2 /RD	Thermostat reliability; operating voltage (V) ... :		N
K.3/RD	Thermostat endurance test; operating voltage (V)		N
K.4/RD	Temperature limiter endurance; operating voltage (V)		N
K.5/RD	Thermal cut-out reliability		N
K.6/RD	Stability of operation		N
L	Annex L, Reference loads		P
L.1	General		P
L.2	Reference resistive load		N
L.3	Reference inductive-resistive load		--
L.4	Reference capacitive-resistive loads		N
L.5	Reference non-linear load		P
L.5.1	General		P
L.5.2	Test method		P
L.5.3	Connection of the non-linear reference load	Worst case power factors as specified by the manufacturer maintained during the relevant tests.	--

EN 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
M	Annex M, Ventilation of battery compartments		P
M.1	General	Sufficient openings and a suitable arrangement of components (circuit breaker) are provided in such a way that a local concentration of hydrogen and oxygen is not possible. No requirement regarding the separation of operational arcing parts from battery vents/valves.	P
M.2	Normal conditions	See appended table M	P
M.3	Blocked conditions	Block test applied, see appended table 8.3	P
M.4	Overcharge conditions	See appended table M.	P
N	Annex N, Minimum and maximum cross-sections of copper conductors suitable for connection (see 6.3)		N
U/RD	Annex U, Insulated winding wires for use without interleaved insulation (see 2.10.5.4/RD)		N
			—
V/RD	Annex V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1/RD)		P
V.1/RD	Introduction	See below.	P
V.2/RD	TN power distribution systems	See sub-clause 1.6.1/RD.	P
V.3/RD	TT power distribution systems		N
V.4/RD	IT power distribution systems		N

4.5	TABLE: list of critical components				P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity ¹⁾
Whole unit					
Plug of power cord	SHENZHEN TONGYUAN INDUSTRIAL CO., LTD.	TY-E301	16A, 250V	VDE0620	VDE:40027699
Alternative	SHENZHEN DONGJU WIRE & CABLE CO., LTD.	DJ-027	16A, 250V	VDE0620	VDE:40032334
Alternative	VARIOUS	VARIOUS	16A, 250V	VDE0620	VDE
Cable of power cord	SHENZHEN TONGYUAN INDUSTRIAL CO., LTD.	H05VV-F	3X1.0mm ² (for S1000) 3X0.75mm ² (for S600, S800)	VDE0281	VDE:101980
Alternative	SHENZHEN DONGJU WIRE & CABLE CO., LTD.	H05VV-F	3X1.0mm ² (for S1000) 3X0.75mm ² (for S600, S800)	VDE0281	VDE:129988
Alternative	VARIOUS	VARIOUS	3X1.0mm ² (for S1000) 3X0.75mm ² (for S600, S800)	VDE0281	VDE
Connector of power cord	SHENZHEN TONGYUAN INDUSTRIAL CO., LTD.	TYC13S	10A, 250V	EN 60320	VDE:40028132
Alternative	SHENZHEN DONGJU WIRE & CABLE CO., LTD.	DJ-022	10A, 250V	EN 60320	VDE:40032464
Alternative	VARIOUS	VARIOUS	10A, 250V	EN 60320	VDE
Appliance inlet with integrated fuse-holder	RONG FENG INDUSTRIAL CO., LTD.	RF-2004	6.3A, 250V	EN 60320 EN 60127	VDE:40029087
Alternative	ZHE JIANG BEI ER JIA ELECTRONIC CO., LTD.	SK-A01-004K	6.3A, 250V	EN 60320 EN 60127	VDE:40023738

Fuse (for S1000)	WALTER ELECTRONIC CO., LTD.	TSC	T6.3AL, 250V	EN 60127	VDE: 40016670
Fuse (for S800)	WALTER ELECTRONIC CO., LTD.	TSC	T5AL, 250V	EN 60127	VDE: 40016670
Fuse (for S600)	WALTER ELECTRONIC CO., LTD.	TSC	T4AL, 250V	EN 60127	VDE: 40016670
Appliance outlets (for S1000)	RONG FENG INDUSTRIAL CO., LTD.	742W-4P	10A, 250V	EN 60320	VDE: 40029805 UL: E95905
Appliance outlets (for S800, S600)	RONG FENG INDUSTRIAL CO., LTD.	742W-2P	10A, 250V	EN 60320	VDE: 40029805 UL: E95905
Alternative	ZHE JIANG BEI ER JIA ELECTRONIC CO., LTD.	ST-A02-K2	10A, 250V	EN 60320	VDE:40025072
Cool Fan (for S1000)	DCBRUSHLES SFAN	PS60S12H	DC12V, 0.15A	EN 60950-1	UL:E192307
Main Transformer (for S1000)	YAN SHUN ELECTRIC INDUSTRIAL (HUI ZHOU) CO., LTD.	CEIK- 11450- W2L	Class B insulation 130°C	---	Test with appliance
Main transformer (for S800)	CHUAN SHUN ELECTRIC INDUSTRIAL CO., LTD.	CE800- 9640-E2L	Class B insulation 130°C	---	Test with appliance
Main transformer (for S600)	CHUAN SHUN ELECTRIC INDUSTRIAL CO., LTD.	CE650- 8642- W2L	Class B insulation 130°C	---	Test with appliance
Battery (1pcs provided) (for S600)	SHEN ZHEN LEOCH BATTERIES TECHNOLOG Y CO LTD	DJW Series	DJW12V-7.5	---	UL:MH26866
Battery (1pcs provided) (for S800)	SHEN ZHEN LEOCH BATTERIES TECHNOLOG Y CO LTD	DJW Series	DJW12V-9	---	UL:MH26866
Battery (2pcs provided) (for S1000)	SHEN ZHEN LEOCH BATTERIES TECHNOLOG Y CO LTD	DJW Series	DJW12V-7.5	---	UL:MH26866

Front panel cover	CHI MEI CORPORATION	PA-765A(+)	V-0, 85°C, Min. 2.1mm thickness	---	UL: E56070
Alternative	LG CHEMICAL LTD.	AF312	V-0, 85°C, Min. thickness 2.1mm	---	UL: E67171
Metal Chassis	---	---	Min. 1.2mm thickness	---	Test with appliance
X capacitor (C211, C201)	LIAO NING DIYA CAPACITOR CO LTD	MKP-X2	0.1μF, 280V/250V, 100°C min.	IEC 60384-14	VDE: 40019857
Relay (RY200A)	SONG CHUAN PRECISION CO., LTD	881-2CH-F-C	Contact: 6A, 250Vac Coil: 12Vdc Each contact gap: ≥1.4mm, Class F	EN618 10-1 EN602 55-23	VDE:123905
Alternative	XIAMEN SONG CHUAN PRECISION CO., LTD.	875B-1CH-F-C	Contact:17A, 250Vac Coil: 12Vdc Each contact gap: ≥1.4mm, Class F	EN618 10-1 EN602 55-23	VDE:123905
Relay (RY201, RY202, RY203, RY204)	XIAMEN SONG CHUAN PRECISION CO., LTD.	833H-1C-F-C	Contact:7A, 250Vac Coil: 12Vdc	EN618 10-1 EN602 55-23	UL: E88991
Alternative	NINGBO YINZHOU YONGLIN ELECTRICAL EQUIPMENT CO., LTD.	YL303H-S-12	Contact: 7A, 240V; Coil: DC24V	EN618 10-1 EN602 55-23	UL: E233840
Alternative	NINGBO YINZHOU YONGLIN ELECTRICAL EQUIPMENT CO., LTD.	YL303H-S-12	Contact: 7A, 250V; Coil: 24Vdc	EN618 10-1 EN602 55-23	UL: E233840
Current transformer (CT-1)	CHUAN SHUN ELECTRIC INDUSTRIAL CO., LTD.	D01969L	130°C	---	Test with appliance
Opto-coupler (U1A, U4A, U5A)	Sharp Corporation	PC817	Dt>0.4mm, 115°C min.	EN60747-5-2,	VDE: 40008087

Fuse (F1, F2, F3) (for S1000)	CHE YEN INDUSTRIAL CO., LTD.	ATY-N	40A, 32V	---	UL: E208387
Fuse (F1, F3) (for S600, S800)	CHE YEN INDUSTRIAL CO., LTD.	ATY-N	40A, 32V	---	UL: E208387
Alternative	CHE YEN INDUSTRIAL CO., LTD.	AB19	40A, 32V	---	UL: E208387
Electrolytic Capacitor (E14)	---	---	35V, 1000uF, 105°C	---	Test with appliance
Heat shrunk tube	VARIOUS	VARIOUS	600V, 125 C	UL 224	UL 180908
Internal wire of input and output	SANSHUI CITY HENGDA ELECTRICAL CO., LTD.	1015	16-18AWG, 600V, 105°C	---	UL: E229361
Battery wire	SANSHUI CITY HENGDA ELECTRICAL CO., LTD.	1015	12AWG, 105°C 600V	---	UL: E229361
PCB	WODE ELECTRONIC S TECHNOLOGY(ZHUHAI) CO., LTD	RXD-11	V-0, 130°C, single layer	---	UL: E323980
Alternative	VARIOUS	VARIOUS	V-0, 130°C,	---	UL

Supplementary information:

1) Provided evidence ensures the agreed level of compliance.

4.6, 1.6.2/RD		TABLE: Electrical Data (in normal conditions)					P
fuse #	I rated (A)	U (V)	P (W)	P (VA)	I fuse (A)	condition/status	
For model: S600							
Circuit breaker	-	198/ 50Hz	391.9	633.2	3.198	Rated output load	
Circuit breaker	-	198/ 60Hz	390.9	632.8	3.196	Rated output load	
Circuit breaker	4	220/ 50Hz	381.7	637.3	2.897	Rated output load	
Circuit breaker	4	220/ 60Hz	381.1	635.7	2.890	Rated output load	
Circuit breaker	4	240/ 50Hz	382.6	638.1	2.659	Rated output load	
Circuit breaker	4	240/ 60Hz	382.4	638.8	2.662	Rated output load	
Circuit breaker	-	254.4/ 50Hz	383.6	639.4	2.513	Rated output load	
Circuit breaker	-	254.4/ 60Hz	383.7	639.9	2.515	Rated output load	
For model: S800							
Circuit breaker	-	198/ 50Hz	519.8	838.4	4.234	Rated output load	
Circuit breaker	-	198/ 60Hz	519.2	839.1	4.238	Rated output load	
Circuit breaker	5	220/ 50Hz	518.4	839.6	3.816	Rated output load	
Circuit breaker	5	220/ 60Hz	518.9	837.7	3.808	Rated output load	
Circuit breaker	5	240/ 50Hz	519.5	838.8	3.495	Rated output load	
Circuit breaker	5	240/ 60Hz	519.6	838.4	3.493	Rated output load	
Circuit breaker	-	254.4/ 50Hz	520.6	840.9	3.305	Rated output load	
Circuit breaker	-	254.4/ 60Hz	520.4	840.5	3.304	Rated output load	
For model: S1000							
Circuit breaker	-	198/ 50Hz	722.5	1052.8	5.317	Rated output load	
Circuit breaker	-	198/ 60Hz	728.3	1055.8	5.332	Rated output load	
Circuit breaker	6.3	220/ 50Hz	727.6	1079.2	4.905	Rated output load	
Circuit	6.3	220/ 50Hz	728.6	1079.9	4.908	Rated output load	

breaker		60Hz				
Circuit breaker	6.3	240/50Hz	727.6	1079.4	4.498	Rated output load
Circuit breaker	6.3	240/60Hz	728.6	1080.0	4.500	Rated output load
Circuit breaker	-	254.4/50Hz	732.5	1083.9	4.261	Rated output load
Circuit breaker	-	254.4/60Hz	733.1	1084.1	4.261	Rated output load
Supplementary information:						

5.1.1 2.1.1.5/RD	TABLE: Max. V, A, VA Test				N
Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)	
USB (5V)	--	--	--	--	
RS232 (9V)	--	--	--	--	
Supplementary information: USB no output voltage.					

5.1.1 2.1.1.5/RD	TABLE: Stored Energy			N
Capacitance C (μF)	Voltage U (V)	Energy E (J)		
--	--	--		
Supplementary information:				

5.1.1 2.1.1.7/RD	TABLE: discharge of capacitors in the primary circuit				P
Condition	calculated (s)	measured (s)	t u 0V (s)	Comments	
L-N	---	26ms	---	U=348V, 37%U=128V	
Supplementary information: Test for pluggable type A UPS.					

5.1.4	TABLE: Backfeed protection test			N
Condition	Voltage measured (V)			Comments
	L-N	L-G	N-G	
No load	--	--	--	--
Load-induced change	--	--	--	--

Full load	--	--	--	--
No load	--	--	--	--
Load-induced change	--	--	--	--
Full load	--	--	--	--
Supplementary information:				

5.2.1 2.2/RD	TABLE: insulation / SEL voltage measurement	P
Location	Voltage measured (V)	Comments
Transformer Pin 8 to Bat."-"	23.6Vac	No exceed 42.4Vpeak,60Vdc
Transformer Pin 9 to Bat."-"	12.8Vdc	No exceed 42.4Vpeak,60Vdc
Transformer Pin 10 to Bat."-"	23.6Vac	No exceed 42.4Vpeak,60Vdc
Supplementary information:		

5.2.3 2.4/RD	TABLE: limited current circuits					P
Location	Voltage (V)	Current (mA)	Freq. (Hz)	Limit (mA)	Comments	
Battery mode						
L-N	0.10	0.10	60	0.70	Normal	
L-GND	0.12	0.10	60	0.70	Normal	
N-GND	0.12	0.10	60	0.70	Normal	
L-N	0.10	0.12	60	0.70	Short-circuited R13	
L-GND	0.12	0.16	60	0.70	Short-circuited R13	
N-GND	0.16	0.16	60	0.70	Short-circuited R13	
L-N	0.14	0.12	60	0.70	Short-circuited R7	
L-GND	0.16	0.16	60	0.70	Short-circuited R7	
N-GND	0.14	0.16	60	0.70	Short-circuited R7	
Supplementary information:						
Using the measuring instrument of Annex D and test connect a non-inductive resistor of 2 000Ω.						

5.2.5 2.5/RD	TABLE: Limited Power Sources					N
Circuit output tested:						
Note: Measured Uoc (V) with all load circuits disconnected:						
Component s	Sample No.	Uoc (V)	Isc (A)		VA	
			Meas.	Limit	Meas.	Limit
USB (5V)	--	--	--	--	--	--

5.2.5 2.5/RD	TABLE: Limited Power Sources						N
RS232 (9V)	--	--	--	--	--	--	
Supplementary information: USB no output voltage. Sc=Short circuit, Oc=Open circuit							

5.3 2.6.3.4/RD	TABLE: provisions for protective earthing			P
Location	Resistance measured(mΩ)		Comments	
PE pole of appliance inlet to PE contact of most distant enclosure	9.4		Test with current 32A, 2min Resistance not exceed 100 mΩ.	
PE pole of appliance inlet to PE contact of most distant enclosure	8.9		Test with current 40A, 2min Resistance not exceed 100 mΩ.	
PE pole of appliance inlet to PE terminal of appliance outlet	5.6		Test with current 32A, 2min Resistance not exceed 100 mΩ.	
PE pole of appliance inlet to PE terminal of appliance outlet	5.4		Test with current 40A, 2min Resistance not exceed 100 mΩ.	
supplementary information:				

5.7 2.10.2/RD	Table: Working Voltage Measurement			P
Location	RMS voltage (V)	Peak voltage (V)	Comments	
Main T PinN to Blu.	230	344		
Main T PinN to Red.	237	352		
Main T PinN to Bro.	238	360	Max. Ur.m.s. and Upeak	
Main T PinLL to Blu.	60.5	100		
Main T PinLL to Red.	67.6	110		
Main T PinLL to Bro.	74.9	120		
Main T PinL to Blu.	31.0	52.8		
Main T PinL to Red.	37.8	63.2		
Main T PinL to Bro.	44.7	73.6		
Main T PinH to Blu.	38.2	62.4		
Main T PinH to Red.	31.4	53.6		
Main T PinH to Bro.	24.9	44.0		
Main T PinM to Blu.	14.7	23.6		

Main T PinM to Red.	12.8	12.8	
Main T PinM to Bro.	14.7	23.6	
Main T Pin16V to Blu.	16.1	24.4	
Main T Pin16V to Red.	9.36	13.8	
Main T Pin16V to Bro.	16.2	24.4	
Main T Pin0V to Blu.	6.03	9.6	
Main T Pin0V to Red.	9.24	13.8	
Main T Pin0V to Bro.	4.36	8.2	
Opto-coupler U4A Primary to secondary	9.9	14.6	
Opto-coupler U5A Primary to secondary	233	352	

supplementary information: On Comm board of RS232 transformer TX1 and Opto-coupler
Due to the design of the equipment, no voltage exceed the supply voltage inside the unit. Following voltages are considered: 420Vpeak and 250Vr.m.s.

5.7 2.10.3/RD	TABLE: Clearance And Creepage Distance Measurements					P
clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
Primary circuits to PE through:	420	250	2.0	See below	2.5	See below
- appliance inlet				>4.5		>4.5
- appliance outlet				>5.0		>5.0
Primary circuits to PE through PCB on main board	420	250	2.0	See below		See below
- near trace of R220				3.0		3.0
Primary circuits to SELV circuits through PCB on main board	420	250	4.0	See below	5.0	See below
- under U5A				5.3		>5.3
- under U1A/U4A				5.2		>5.2

Supplementary information:

- (1) Over voltage Category I, MAINS TRANSIENT VOLTAGE 1500V, clearances in secondary circuits B/S 1,9mm.
- (2) All internal wires soldered on PCB are additional crimped with connectors for soldering. Shrink tubings are used to cover the tab connectors.

5.7 2.10.5.2/ RD	TABLE: Distance Through Insulation Measurements				P
Distance through insulation di at/of:		U r.m.s. (V)	Test voltage (V)	Required di (mm)	di (mm)
Opto-coupler (U1A, U4A, U5A)		420	3000Vac	0.4	>0.4
Supplementary information: Approved component, for details refer to table 4.5					

5.7 2.10.5	TABLE: Dielectric Strength			P
Test voltage applied between:		Test potential applied (V)	Breakdown / flashover (Yes/No)	
Primary circuits to metal enclosure		DC2121	No	
Primary circuits to SELV circuits		AC3000	No	
Primary to non-conductive parts		AC3000	No	
Supplementary information:				

7.7 4.5/RD	TABLE: Heating Test				P
Test voltage (V)..... :		See below		—	
Ambient (°C)..... :		See below		—	
Thermocouple Locations		max. temperature measured, (°C)			max. temperature limit, (°C)
Test Voltage		198V/50Hz	254.4V/50Hz	Battery mode	--
S600					
Appliance inlet near "L"		57.6	57.4	54.6	70
Input wire		67.4	73.7	64.8	105
Main Transformer primary		109.4	111.6	117.6	130
Main Transformer secondary		109.3	114.5	119.4	130
Main Transformer core		98.0	104.2	102.0	---
Relay RY200A coil		94.3	98.8	84.6	130
Relay RY201 coil		89.1	87.9	72.5	110
Relay RY202 coil		88.2	92.1	82.5	110
Relay RY203 coil		87.9	106.1	77.1	110
Relay RY204 coil		94.7	104.1	97.8	110
X-cap. C211 body		70.9	75.8	62.0	100
U5A body		74.9	80.1	67.6	100
Current Transformer CT-1 coil		78.6	87.4	74.6	130
X-cap. C210 body		76.1	86.8	73.4	100
Electrolytic Capacitor E14 body		83.3	95.3	84.4	105
PWB near D3		102.1	104.9	90.5	130

PWB near M202	64.4	66.3	114.7	130
PWB near M201	65.8	67.9	116.5	130
Inside wire	86.3	80.2	84.2	105
Appliance outlet near "L"	66.4	67.1	66.5	70
Battery body	63.6	66.8	68.3	---
Battery wire	64.0	67.4	98.6	105
Front panel cover	45.5	47.0.	49.8	90
Enclosure outside up	61.7	61.0	55.4	70
Enclosure outside bottom	62.8	64.7	69.3	70
Ambient(C)	40.0	40.0	40.0	---
S800				
Appliance inlet near "L"	62.2	61.1	57.8	70
Input wire	53.4	52.3	49.0	105
Main Transformer primary	98.1	97.0	99.7	130
Main Transformer secondary	110.2	109.1	111.8	130
Main Transformer core	109.3	108.2	104.9	---
Relay RY200A coil	100.3	99.2	95.9	130
Relay RY201 coil	100.2	99.1	95.8	110
Relay RY202 coil	107.4	106.3	106.5	110
Relay RY203 coil	102.8	101.7	98.4	110
Relay RY204 coil	108.2	109.1	109.4	110
X-cap. C211 body	62.1	61.0	57.7	100
U5A body	62.8	61.7	58.4	100
Current Transformer CT-1 coil	68.3	67.2	63.9	130
X-cap. C210 body	67.9	66.8	63.5	100
Electrolytic Capacitor E14 body	82.4	81.3	78.0	105
PWB near D3	112.6	111.5	98.2	130
PWB near M202	59.1	58.0	70.7	130
PWB near M201	59.8	58.7	71.4	130
Inside wire	61.4	60.3	57.0	105
Appliance outlet near "L"	61.9	60.8	57.5	70
Battery body	61.8	60.7	63.4	---
Battery wire	59.4	58.3	64.1	105
Front panel cover	59.1	58.0	54.7	90
Enclosure outside up	63.9	62.8	59.5	70
Enclosure outside bottom	65.1	64.0	65.7	70
Ambient(C)	40.0	40.0	40.0	---
S1000				
Appliance inlet near "L"	60.6	60.6	60.4	70
Input wire	56.5	58.4	51.7	105
Main Transformer primary	82.6	82.2	85.2	130
Main Transformer secondary	82.3	80.9	86.2	130
Main Transformer core	67.7	64.0	68.1	---
Relay RY200A coil	68.9	60.7	60.7	130

Relay RY201 coil	65.7	65.9	56.5	110
Relay RY202 coil	68.7	60.4	60.8	110
Relay RY203 coil	81.2	86.3	86.4	110
Relay RY204 coil	82.6	84.4	84.4	110
X-cap. C211 body	64.6	66.1	61.1	100
U5A body	54.9	56.7	52.0	100
Current Transformer CT-1 coil	68.5	68.9	58.3	130
X-cap. C210 body	67.6	68.9	58.3	100
Electrolytic Capacitor E14 body	62.6	66.8	60.9	105
PWB near D3	74.3	73.9	74.2	130
PWB near M202	52.6	52.9	94.5	130
PWB near M201	51.9	52.5	72.8	130
Inside wire	54.3	56.8	63.2	105
Appliance outlet near "L"	54.7	56.7	49.8	70
Battery body	48.5	46.8	52.1	---
Battery wire	44.2	44.2	67.4	105
Front panel cover	44.0	44.0	45.7	90
Enclosure outside up	53.4	53.8	57.8	70
Enclosure outside bottom	57.8	58.8	59.6	70
Ambient(C)	40.0	40.0	40.0	---

Supplementary information:

TABLE: Heating test, resistance method					
Test voltage (V)..... :				--	---
Ambient, t ₁ (°C)				--	---
Ambient, t ₂ (°C)				--	---
Temperature rise of winding	R₁ (Ω)	R₂ (Ω)	ΔT (K)	Max. dT (K)	Insulation class

Supplementary information:

The temperatures were measured under worst case normal mode defined in 1.2.2.1/RD and as described in sub-clause 1.6.2/RD and at voltages as described above.

With a specified maximum ambient temperature and test temperature of 40 °C, the maximum permitted temperatures are calculated as follows:

Winding components (providing safety isolation):
- Class B T_{max} = 120 °C - 10 °C = 110 °C

7.4 4.5.5/RD	TABLE: Ball Pressure Test of Thermoplastics			P
Allowed impression diameter (mm)		≤2mm		---
Part		Test temperature (°C)	Impression diameter (mm)	
Bobbin of transformer		125	1.0	

Plastic material of connector	125	1.2
Supplementary information:		

7.4.2	TABLE: openings		P
Location	Size (mm)	Comments	
Top	---	No openings	
Side	Φ=3.3mm	Circular openings with minimum spacing of holes centre to centre of 6.5mm. no hazardous live parts exposed to the openings	
Bottom	---	No openings	
Front	---	No openings	
Back	---	No openings except the holes for ventilation fan provided with guard.	
Supplementary information:			

7.5 4.7/RD	TABLE: Resistance to fire					P
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence	
Front panel cover	CHI MEI CORPORATION	PA-765A(+)	Min. 2.1	V-0	UL: E56070	
Supplementary information:						

8 5.1/RD	TABLE: touch current measurement			P
Measured between:	Measured (mA)	Limit (mA)	Comments/conditions	
To metal enclosure	0.15	3.5	Used a simpson Meter 228	
To non-conductive parts	0.05	0.25	Used a simpson Meter 228	
To SELV circuits	0.05	0.25	Used a simpson Meter 228	
Supplementary information:				

8.3 5.3/RD	TABLE: Fault condition tests		P
	Ambient temperature (°C)	25°C	—
	Power source for EUT: Manufacturer, model/type, output rating	--	—

Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
S600						
Ventilation	Block	240	2.5h	Circuit breaker	---	Normal working, no hazard. Measured temperature of component: Main Transformer coil =134.9℃, ambient=28.8℃
Output	S-C	240	10min	Circuit breaker	---	Unit shutdown immediately, Input fuse open, alarmed and switched to fault mode. No hazard.
Output	S-C	Stored energy mode	10min	Circuit breaker	---	Unit shutdown immediately, alarmed and switched to fault mode. No hazard.
Output	O-L	240	1h	Circuit breaker	---	Unit alarmed and switched to bypass output mode when increased the output to 1.2 times the rated, and shutdown when increased the output to 2.1 times the rated. No hazard.
Output	O-L	Stored energy mode	---	Circuit breaker	---	Unit alarmed when increased the output to 1.2 times the rated and shutdown until the empty of battery. No hazard.
S800						
Ventilation	Block	240	2.5h	Circuit breaker	---	Normal working, no hazard. Measured temperature of component: Main Transformer coil =124.9℃, ambient=28.8℃
Output	S-C	240	10min	Circuit breaker	---	Unit shutdown immediately, Input fuse open, alarmed and switched to fault mode. No hazard.
Output	S-C	Stored energy mode	10min	Circuit breaker	---	Unit shutdown immediately, alarmed and switched to fault mode. No hazard.
Output	O-L	240	1h	Circuit breaker	---	Unit alarmed and switched to bypass output mode when increased the output to 1.2 times the rated, and shutdown when increased the output to 2.1 times the rated. No hazard.
Output	O-L	Stored energy mode	---	Circuit breaker	---	Unit alarmed when increased the output to 1.2 times the rated and shutdown until the empty of battery. No hazard.
S1000						
Ventilation	Block	240	2.5h	Circuit breaker	---	Normal working, no hazard. Measured temperature of component: Main Transformer coil =89.9℃, ambient=28.8℃

Fan	Stalled	240	2.5h	Circuit breakr	---	Normal working, no hazard. Measured temperature of component: Main Transformer coil = 93.3°C, ambient=28.8°C
Output	S-C	240	10min	Circuit breaker	---	Unit shutdown immediately, Input fuse open, alarmed and switched to fault mode. No hazard.
Output	S-C	Stored energy mode	10min	Circuit breaker	---	Unit shutdown immediately, alarmed and switched to fault mode. No hazard.
Output	O-L	240	1h	Circuit breaker	---	Unit alarmed and switched to bypass output mode when increased the output to 1.2 times the rated, and shutdown when increased the output to 2.1 times the rated. No hazard.
Output	O-L	Stored energy mode	---	Circuit breaker	---	Unit alarmed when increased the output to 1.2 times the rated and shutdown until the empty of battery. No hazard.

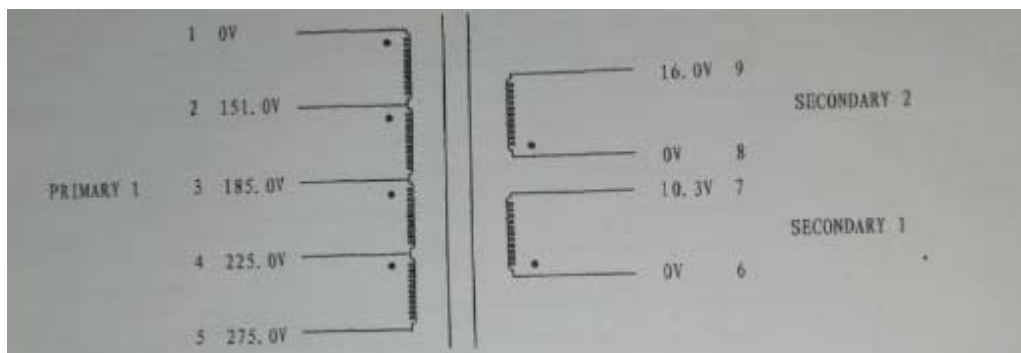
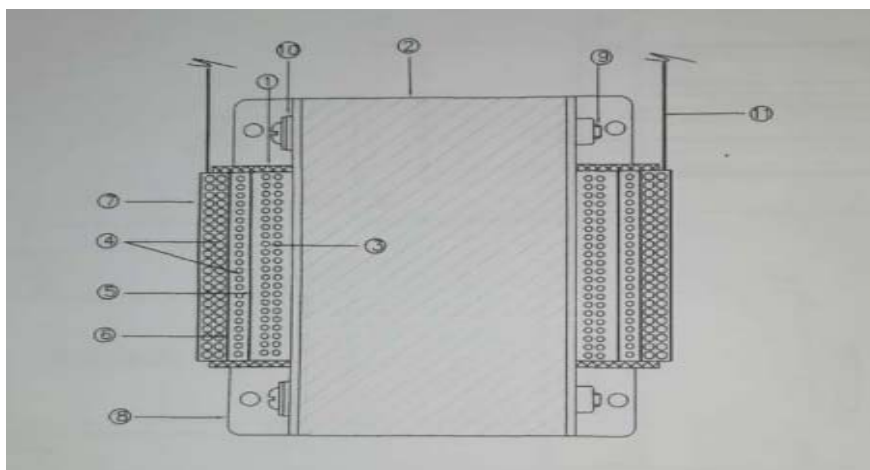
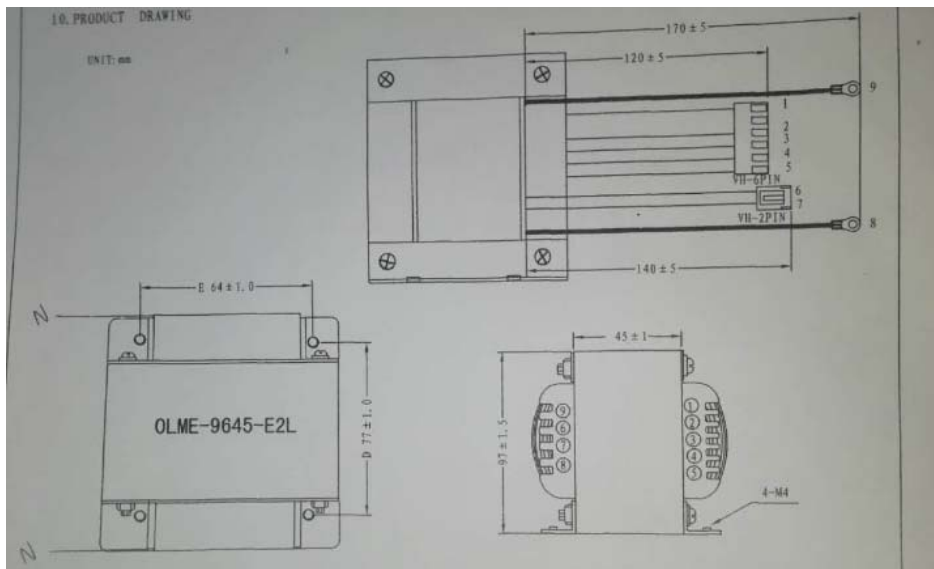
Supplementary information:

C.2/RD	TABLE: transformers							P
Loc.	Tested insulation	Working voltage peak / V (2.10.2)	Working voltage rms / V (2.10.2)	Required electric strength (5.2)	Required clearance / mm (2.10.3)	Required creepage distance / mm (2.10.4)	Required distance thr. insul. (2.10.5)	
Loc.	Tested insulation			Test voltage/ V	Measured clearance / mm	Measured creepage dist./ mm	Measured distance thr. insul. / mm; number of layers	

Supplementary information: RS232 transformer (TX1)

C.2/RD	TABLE: transformers	P
---------------	----------------------------	----------

Transformer:
 Construction/winding diagram:



M	Ventilation of battery compartments	P
	<p>The required dimension for the ventilation openings will be calculated with the following formula:</p> $A \geq Q/360 \text{ [m}^2\text{]}$ <p>with $Q = 0.054 * n * I * C$</p> <p>where:</p> <p>Q : airflow in m²/h n : number of battery cells I : constant factor (0,2A/100Ah for valve regulated lead acid batteries) C : is the battery nominal capacity in Ah at the 10h discharge rate</p> <p>With the specific data for the UPS the following dimension for the ventilation openings is required:</p> <p>For model: S1000 n : 6 cells per battery C : 7.5 Ah</p> $A \geq (0.054 * n * 0.2 \text{ A/100 Ah} * C)/360$ $A \geq 0.27 \text{ cm}^2$ <p>For model: S800 n : 6 cells per battery C : 9 Ah</p> $A \geq (0.054 * n * 0.2 \text{ A/100 Ah} * C)/360$ $A \geq 0.27 \text{ cm}^2$ <p>For model: S600 n : 6 cells per battery C : 9 Ah</p> $A \geq (0.054 * n * 0.2 \text{ A/100 Ah} * C)/360$ $A \geq 0.14 \text{ cm}^2$ <p>Verdict</p> <p>The size of ventilation openings in battery cabinet exceeds the required airflow by far (as well as the UPS).</p>	

Photo documentation

Photo 1



Photo 2

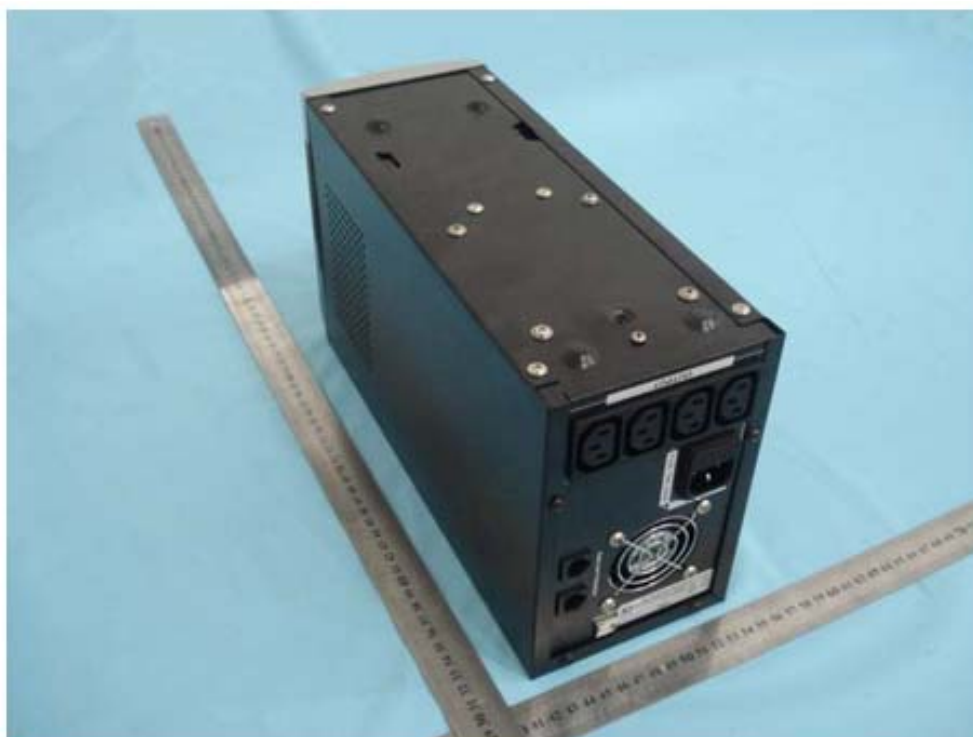


Photo 3

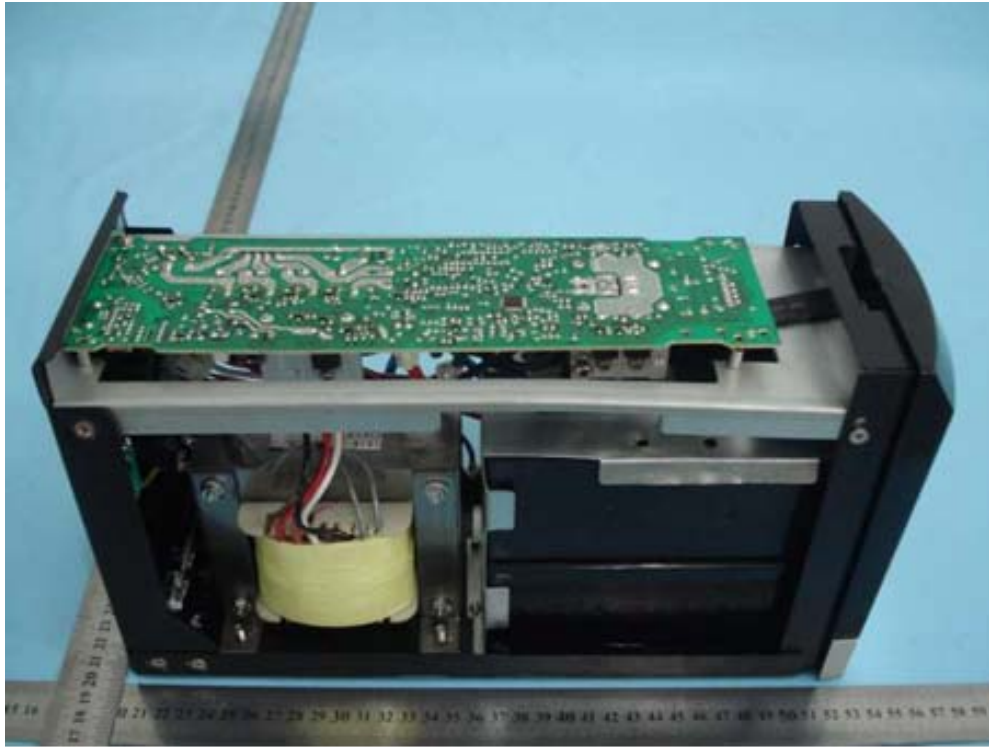


Photo 4

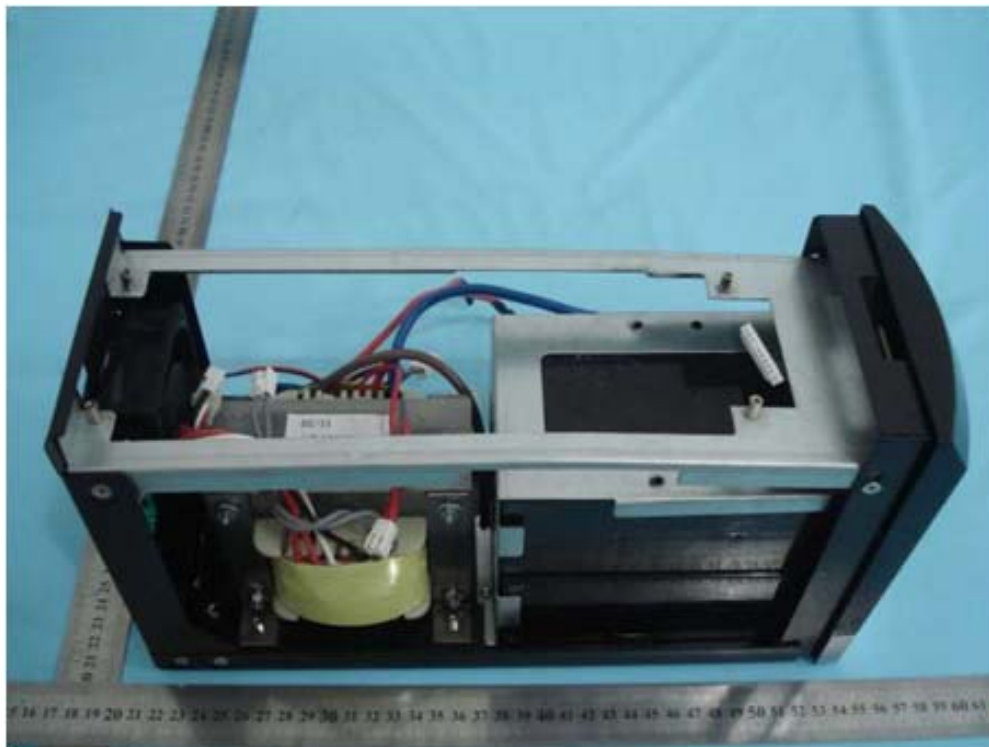


Photo 5

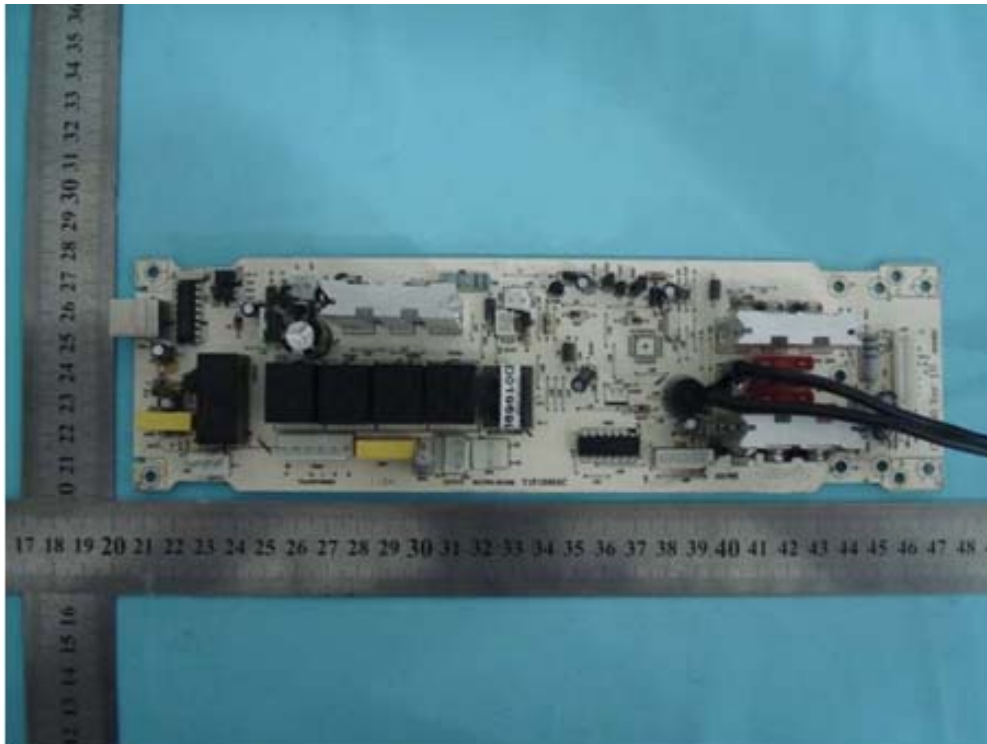


Photo 6

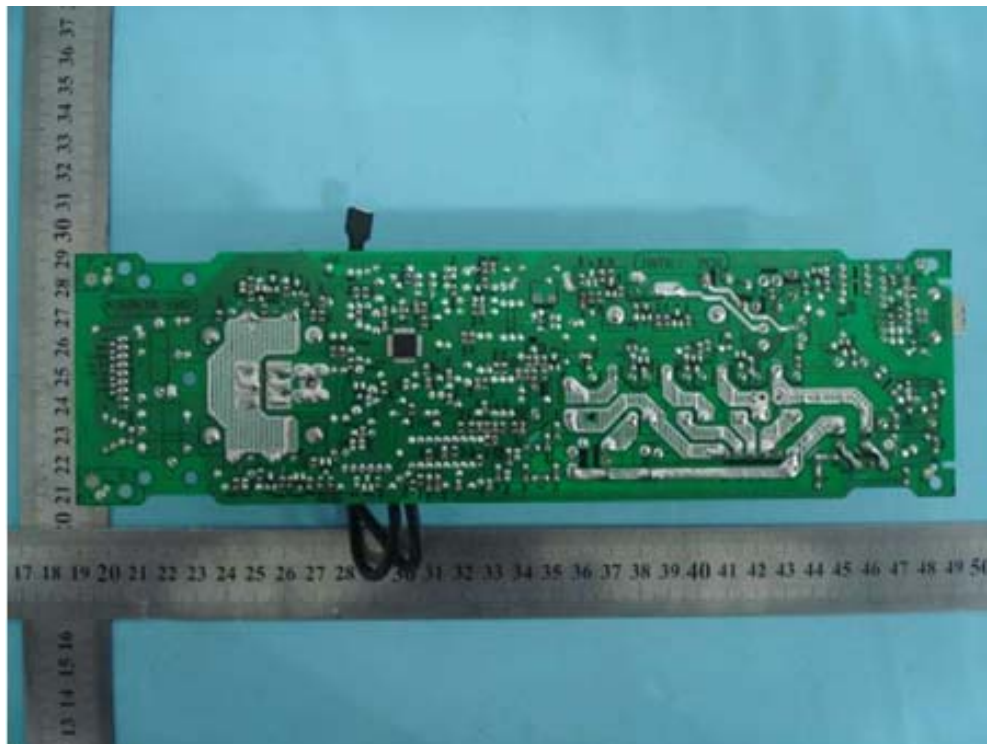


Photo 7



--- END OF THIS REPORT---