

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

Magnizon Power Systems LTD

71-75, Shelton Street, London, Greater London, WC2H 9JQ, UNITED KINGDOM Registered in UNITED KINGDOM, Number 11983678

Product Name: MUOD Series Outdoor UPS

Model/Type No.: MUOD1K, MUOD2K, MUOD3K, MUOD6K, MUOD10K

Prepared By: Shenzhen Hongcai Testing Technology Co., Ltd.
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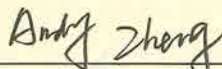
Report Number: HCT18CR-0211S-1

Tested Date: April 12-24, 2018

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Tested By: Toby Zhang / *Toby Zhang*

Reviewed By:



Andy Zheng

Project Engineer

Approved By:

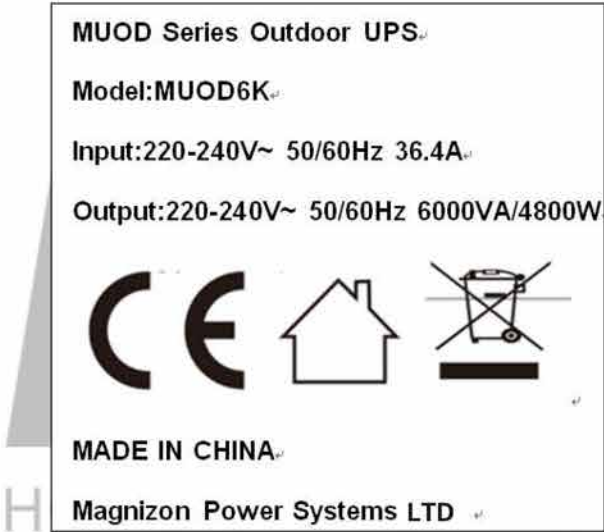


Joseph Li

Technical Manager

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TEST REPORT EN 62040-1 Uninterruptible power systems (UPS) – Part 1: General and safety requirements for UPS	
Report Reference No.....	HCT18CR-0211S-1
Tested by (name + signature).....	Toby Zhang <i>Toby Zhang</i>
Reviewed by (name + signature).....	Andy Zheng <i>Andy Zheng</i>
Date of issue.....	September 9, 2016
Testing Laboratory Name	Shenzhen Hongcai Testing Technology Co., Ltd.
Address.....	1st-3rd Floor, Building C, Shuanghuan Xin Yi Dai Hi-Tech Industrial Park, No.8 Baoqing Road, Baolong Industrial Zone, Longgang District, Shenzhen City, P.R.China
Applicant's name	Magnizon Power Systems LTD
Address.....	71-75, Shelton Street, London, Greater London, WC2H 9JQ, UNITED KINGDOM Registered in UNITED KINGDOM, Number 11983678
Test specification:	
Standard	EN 62040-1:2008+A1:2013
Test procedure.....	CE/LVD Test report
Non-standard test method.....	N/A
Test Report Form No.....	IEC62040_1A
Test Report Form(s) Originator	TÜV Rheinland Japan Ltd.
Master TRF	Dated 2009-11
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If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.	
Test item description.....	MUOD Series Outdoor UPS
Trade Mark.....	Magnizon
Manufacturer.....	Magnizon Power Systems LTD
Address.....	JAFZA LB11, 1st floor, Office 32, Jebel Ali Free Zone, Dubai-U.A.E, PO Box no:263819
Model/Type reference	MUOD1K, MUOD2K, MUOD3K, MUOD6K, MUOD10K
Ratings.....	Input:220-240V~, 36.4A, 50/60Hz Output:220-240V~, 6KVA, 4.8W

Summary of testing:	
Tests performed (name of test and test clause): -- EN 62040-1:2008+A1:2013	Testing location: 1st-3rd Floor, Building C, Shuanghuan Xin Yi Dai Hi-Tech Industrial Park, No.8 Baoqing Road, Baolong Industrial Zone, Longgang District, Shenzhen City, P.R.China
Summary of compliance with National Differences: N/A	
Copy of marking plate:	
	
Note:	
<ul style="list-style-type: none"> -Marking label was stucked on front external enclosure. -The above marking are the minimum requirements required by the safety standard. For the final production sample, the marking which do not give rise to misunderstanding may be add. -Other model markings are the same as MUOD6K, except the model number. - The height dimension of CE mark should not less than 5mm, the height dimension of WEEE symbol should not less than 7mm. - As declared by the applicant the authorized EEA representative or importer was not decided at the time of application, but will be marked on the products before placing them on the market. 	

Particulars: test item vs. test requirements.....:	
Equipment mobility	Movable equipment
Operating condition	Continuous operation
Mains supply tolerance (%)	± 10%
Tested for IT power systems	No
IT testing, phase-phase voltage (V)	N/A
Class of equipment	Class I
IP protection class	IP20
Mass of equipment (kg)	See user manual for details
Possible test case verdicts:	
- test case does not apply to the test object	N/A
- test object does meet the requirement	P (Pass)
- test object does not meet the requirement	F (Fail)
Testing	
Date of receipt of test item	2018-04-12
Date(s) of performance of tests.....	2018-04-12 to 2018-04-24
General remarks:	
<p>The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. "(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report.</p> <p>Throughout this report a comma (point) is used as the decimal separator.</p>	
General product information:	
<ol style="list-style-type: none"> The equipment is class II, adaptor used in information technology equipment; All models are identical to each other except for secondary windings of transformer, secondary components, output ratings and output terminal construction (detail see the photos). Due to the similarity between models, the following models were selected for electrical and Mechanical tests in order to represent the whole series. <ul style="list-style-type: none"> -- MUOD6K (max voltage, max current, max power). Manufacturer declared the product operating temperature 35°C. 	

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Clause	Requirement	Remark	Result
4	GENERAL CONDITIONS FOR THE TESTS		P
4.5	Components		P
	Comply with this standard 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)	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		N
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		N
1.5.6/RD	Capacitors bridging insulation		N
1.5.7/RD	Resistors bridging insulation		N
1.5.7.1/RD	Resistors bridging functional insulation, basic insulation or supplementary insulation		N
1.5.7.2/RD	Resistors bridging double insulation or reinforced insulation between the a.c. mains supply and other circuits		N
1.5.7.3/RD	Resistors bridging double insulation or reinforced insulation between the a.c. mains supply and circuits connected to an antenna or coaxial cable		N
1.5.8/RD	Components in equipment for IT power systems		N
4.6	Power interface		P
1.6.1/RD	AC power distribution systems	TN power system.	P

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Clause	Requirement	Remark	Result
1.6.2/RD	Input current	The steady state input current of the equipment shall not exceed the rated current by more than 10% under normal load.(see appended table)	P
1.6.4/RD	Neutral conductor	Neutral conductor is basic insulated from earth and body of the equipment.	P

4.7	Marking and instructions		P
4.7.1	General	Required marking was located on the outside of the equipment.	P
4.7.2	Power rating		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 supply(d.c.)		N
	Input rated frequency/range(Hz)	See the copy of marking plate	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
	Number of output phases(1 ϕ -3 ϕ)with/without neutral	1 ϕ with neutral	P
	Output rated active power(W)	See the copy of marking plate	P
	Output rated apparent power(VA)	See the copy of marking plate	P
	Output symbol for nature of supply(d.c.)	AC output	N
	Rated frequency or rated frequency range(Hz)	See the copy of marking plate	P
	Max.ambient operating temperature range($^{\circ}$ C)	35 $^{\circ}$ C	P
	Manufacturer name or trademark or identification mark	See the copy of marking plate	N
	Type/model type reference	See model list	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.		P

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Clause	Requirement	Remark	Result
	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
4.7.3.1	General	The instruction contains information for operation, installation, servicing, transport, storage and technical data.	P
4.7.3.2	Installation		P
4.7.3.3	Operation		P
4.7.3.4	Maintenance		P
4.7.3.5	Distribution related backfeed		N
4.7.4	Main voltage adjustment.		N
1.7.4/RD	Supply voltage adjustment.		N
	Methods and means of adjustment; reference to installation instructions.		N
4.7.5 1.7.5/RD	Power outlets	Markings to show the maximum permitted load was placed beside the standard power supply outlets.	P
4.7.6 1.7.6/RD	Fuse identification (marking, special fusing characteristics, cross-reference)	Relevant marking was shown beside the circuit breaker of input. For fuses not located on the operator access area, relevant information specified in the instruction.	P
4.7.7 1.7.7/RD	Wiring terminals	See below	P
1.7.7.1/RD	Protective earthing and bonding terminals.	The earth terminal is marked with the standard earth symbol near the terminal	P
1.7.7.2/RD	Terminal for a.c.mains supply conductors.		N
1.7.7.3/RD	Terminals for d.c. mains supply conductors.		N
4.7.8	Battery terminals	The marking "+" and "-" for indication of polarity of battery provided.	P
4.7.9 1.7.8/RD	Controls and indicators		P

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Clause	Requirement	Remark	Result
1.7.8.1/RD	Identification, location and marking.	LCD provided to indicate the working condition, located on the front panel.	P
1.7.8.2/RD	Colours.		P
1.7.8.3/RD	Symbols	Symbol for 'standby' (No. 5009) provided on button on the front panel of enclosure	P
1.7.8.4/RD	Markings using figures.		N
4.7.10 1.7.9/RD	Isolation of multiple power sources.		N
4.7.11 1.7.2.4/RD	IT power systems		N
4.7.12	Protection in building installations		N
4.7.13 5.1/RD	High leakage current(mA)	Leakage current does not exceed 3.5mA	P
4.7.14 1.7.10/RD	Thermostats and other regulating devices		N
4.7.15 1.7.2.1/RD and 1.7.8.1/RD	Language(s)	English.	P
4.7.16 1.7.11/RD	Durability of markings	The markings were rubbed with cloth soaked with water for 15s and then again for 15s with the cloth soaked with petroleum spirit. After this test, there was no damage to the label. The marking of the label did not fade. There was neither curling nor lifting of the label edge.	P
4.7.17 1.7.12/RD	Removable parts	No required markings placed on removable parts.	P
4.7.18 1.7.13/RD	Replaceable batteries	Detailed instructions provided in the user's manual.	P
	Language(s).....:	English used	-
4.7.19 1.7.2.5/RD	Operator access with a tool		P
4.7.20	Battery	With battery compartment.	P
	Clearly legible information		P
	Battery type	Lithium battery	P

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Clause	Requirement	Remark	Result
	Nominal voltage of total battery(V)		N
	Nominal capacity of total battery (optional)		N
	Warning label		P
	Instructions	Sufficient information provided in the users manual regarding the battery replacement.	P
4.7.21	Installation instructions	Detailed information regarding power distribution system, special attention to 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		P
2.1.1.1/RD	Access to energized parts		P
	Test by inspection.....:		-
	Test with test finger.....:		-
	Test with test pin.:		-
	Test with test probe.....:		-
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.	P
2.1.1.4/RD	Access to hazardous voltage circuit wiring	No operator accessible hazardous voltage circuit wiring.	P
2.1.1.5/RD	Energy hazards	No risk of injury due to energy hazard in operator access area.	P
2.1.1.6/RD	Manual controls	Manual controls such as push button are separated from hazardous voltages.	P
2.1.1.7/RD	Discharge of capacitors in equipment		P
	Time-constant (s); measured voltage (V):	(see appended table)	-
2.1.1.8/RD	Energy hazards - d.c. mains supplies		N
	a) Capacitor connected to the DC mains supply		N

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Clause	Requirement	Remark	Result
	b) Internal battery connected to the DC mains supply		N
2.1.1.9/RD	Audio amplifiers in information technology equipment		N
5.1.2	Protection for UPS intended to be used in service access areas		P
5.1.3	Protection for UPS intended to be used in restricted access areas		N
5.1.4	Backfeed protection	No shock hazard exist at a.c. input terminals 1s after de-energization of a.c. input.	P
	Description of the construction	For pluggable type A, backfeed protection achieved by the operation of relays and the relative circuits provided in the a.c. input line.	P
5.1.5	Emergency switching (disconnect) device		N
5.2	Requirements for auxiliary circuits		P
5.2.1 2.2/RD	Safety extra low voltage circuits – SELV		P
2.2.1/RD	General requirements		P
2.2.2/RD	Voltages under normal conditions	Not exceed 42,4 V peak, or 60 V d.c.	P
2.2.3/RD	Voltages under fault conditions		P
2.2.4/RD	Connection of SELV circuits to other circuits		P
5.2.2 2.3/RD	Telephone network voltage circuits – TNV	No TNV circuits	N
2.3.1/RD	Limits		N
	a) TNV-1 CIRCUITS		N
	b) TNV-2 CIRCUITS and TNV-3 CIRCUITS		N
2.3.2/RD	Separation of TNV circuits 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

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Clause	Requirement	Remark	Result
2.3.4/RD	Connection of TNV circuits to other circuits		N
2.3.5/RD	Test for operating voltages generated externally		N
5.2.3 2.4/RD	Limited current circuits		P
2.4.1/RD	General requirements		P
2.4.2/RD	Limit values	See appended table	P
	Frequency(Hz).....:		-
	Measured current(mA).....:		-
	Measured voltage(V).....:		-
	Measured capacitance(uF).....:		-
2.4.3/RD	Connection of limited current circuits to other circuits	SELV circuits as limited current circuit connected to primary via bridging components	P
5.2.4 3.5/RD	External signaling circuits		P
3.5.1/RD	General requirements		P
3.5.2/RD	Types of interconnection circuits	SELV circuits	P
3.5.3/RD	ELV circuits as interconnection circuits		N
3.5.4/RD	Data ports for additional equipment		N
5.2.5 2.5/RD	Limited power sources		N
	Inherently limited output		N
	Impedance limited output		N
	Overcurrent protective device limited output		N
	Regulating network limited output under normal operating and single fault condition		N
	Regulating network limited output under normal operating conditions and overcurrent protective device limited output under single fault condition		N
	Output Voltage(V),output current(A),apparent power(VA).....:		-
	Current rating of overcurrent protective device(A)		-
5.3	Provisions for earthing and bonding		P

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Clause	Requirement	Remark	Result
5.3.1 2.6/RD	General	Reliable connection of relevant conductive parts to the PE terminal (Power plug) via green/yellow insulated wires.	P
2.6.2/RD	Functional earthing		P
2.6.3/RD	Protective earthing and protective bonding conductors		P
2.6.3.1/RD	General		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.	See sub-clause 2.6.3.4/RD, rated current below 16A.	N
	Rated current (A), cross-sectional area(mm ²), AWG.....		-
2.6.3.4/RD	Resistance(Ω)of earthing conductors and their terminations, test current(A).	Measured the resistance of protective bonding conductor not exceed 0.1 Ω . (see appended table)	P
2.6.3.5/RD	Colour of insulation.	The insulation of wire be green/yellow	P
2.6.4/RD	Terminals		P
2.6.4.1/RD	General.		P
2.6.4.2/RD	Protective earthing and bonding terminals.	Earthing terminal in the appliance inlet is regarded as the main protective earthing terminal.	P
	Rated current(A), type and nominal thread diameter(mm).....		-
2.6.4.3/RD	Separation of the protective earthing conductor from protective bonding conductors		P
2.6.5/RD	Integrity of protective earthing		P
2.6.5.1/RD	Interconnection of equipment	This unit has its own earthing connection. PE terminals of outlets reliably connected to PE terminal of unit. (power plug). Green wire terminal of outlet connector to metal chassis by nut, screw and star washer.	P

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Clause	Requirement	Remark	Result
2.6.5.2/RD	Components in protective earthing conductors and protective bonding conductors		N
2.6.5.3/RD	Disconnection of protective earth		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		P
2.6.5.8/RD	Reliance on telecommunicatin network or cable distribution system		N
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
4.2/RD	Steady force test, 30N		N
5.2/RD	Abnormal operating and fault conditions		P
5.3.3	Protective bonding		N

5.4	AC and d.c. power isolation		P
5.4.1 3.4/RD	General		P
3.4.1/RD	General requirement		P
3.4.2/RD	Disconnect devices		P
3.4.3/RD	Permanently connected equipment		N
3.4.4/RD	Parts which remain energized		P
3.4.5/RD	Switches in flexible cords		N
3.4.6/RD	Number of poles - single-phase and d.c. equipment	The disconnect device disconnects both poles simultaneously.	P
3.4.7/RD	Number of poles – three-phase equipment		N
3.4.8/RD	Switches as disconnect devices		N
3.4.9/RD	Plugs as disconnect devices		N
3.4.10/RD	Interconnected equipment		N

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Clause	Requirement	Remark	Result
3.4.11/RD	Multiple power sources		N
5.4.2	Disconnect devices	AC Inlet used	P
5.5	Overcurrent and earth fault protection		P
5.5.1	General		P
2.7.4/RD	Number and location of protective devices.	For single-phase unit with neutral, fuse provided protection on line conductor.	P
2.7.5/RD	Protection by several devices.		P
2.7.6/RD	Warning to service personnel.		N
5.5.2	Basic requirements	Protection against excess currents, short-circuits and earth faults in input and output circuits for pluggable type A.	P
5.5.3	Battery circuit protection.	Protection against over current by fuses.	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, there was no hazardous conditions under any simulated fault conditions.	P
5.5.3.3	Rating of protective device	The rating of the protective devices inside the EUT indicated in the instruction manual, and provides adequate safety protection during abnormal and/or fault conditions.	P
5.3.1/RD	Protection against overload and abnormal operation		P
5.6	Protection of personnel-Safety interlocks		N
5.6.1	Operator protection		N
2.8/RD	Safety interlocks		N
2.8.1/RD	General principles		N
2.8.2/RD	Protection requirements		N

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Clause	Requirement	Remark	Result
2.8.3/RD	Inadvertent reactivation		N
2.8.4/RD	Fail-safe operation		N
2.8.5/RD	Moving parts		N
2.8.6/RD	Overriding		N
2.8.7/RD	Switches and relays		N
2.8.7.1/RD	Contact gaps(mm)		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
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
2.10.1.1/R D	Frequency		P
2.10.1.2/R D	Pollution degrees		P
2.10.1.3/R D	Reduced values for functional insulation		N
2.10.1.4/R D	Intervening unconnected conductive parts		P
2.10.1.5/R D	Insulation with varying dimensions		N
2.10.1.6/R D	Special separation requirements		N

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Clause	Requirement	Remark	Result
2.10.1.7/R D	Insulation in circuits generating starting pulses		N
2.10.2/RD	Determination of working voltage		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	(see appended table)	P
2.10.3.1/R D	General		P
2.10.3.2/R D	Mains transient voltages		P
	a) AC MAINS SUPPLY		P
	b) Earthed DC MAINS SUPPLIES		N
	c) Unearthed DC MAINS SUPPLIES		P
	d) Battery operation		N
2.10.3.3/R D	Clearances in primary circuits		P
2.10.3.4/R D	Clearances in secondary circuits		P
2.10.3.5/R D	Clearances in circuits having starting pulses		N
2.10.3.6R D	Transients from an a.c. mains supply		P
2.10.3.7/R D	Transients from a d.c. mains supply		N
2.10.3.8/R D	Transients from telecommunication networks and cable distribution systems		N
2.10.3.9/R D	Measurement of transient voltages		N
	a) Transients from a MAINS SUPPLY		N
	b) Transients from a TELECOMMUNICATION NETWORK		N
2.10.4/RD	Creepage distances	(see appended table)	P
2.10.4.1/R D	General		P

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Clause	Requirement	Remark	Result
2.10.4.2/R D	Material group and comparative tracking index		P
	CTI tests.....:		-
2.10.4.3/R D	Minimum creepage distances		P
2.10.5/RD	Solid insulation		P
2.10.5.1/R D	General		P
2.10.5.2/R D	Distances through insulation		P
	Electric strength test for thin sheet insulating material.....:		-
2.10.5.3/R D	Insulating compound as solid insulation		P
2.10.5.4/R D	Semiconductor devices		P
2.10.5.5/R D	Cemented joints		P
2.10.5.6/R D	Thin sheet material - General		P
	Number of layers(pcs).....:		-
	Electric strength test		-
2.10.5.7/R D	Separable thin sheet material		P
2.10.5.8/R D	Non-separable thin sheet material		N
2.10.5.9/R D	Thin sheet material - standard test procedure		P
	Electric strength test		-
2.10.5.10/ RD	Thin sheet material - alternative test procedure		N
	Electric strength test		-
2.10.5.11/ RD	Insulation in wound components		N
2.10.5.12/ RD	Wire in wound components		N
2.10.5.13/ RD	Wire with solvent-based enamel in wound components		N

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Clause	Requirement	Remark	Result
	Number of layers (pcs)		N
	Two wires in contacted inside wound component; angle between 45 ⁰ and 90 ⁰		N
2.10.5.14/RD	Additional insulation in wound components		N
2.10.6/RD	Construction of printed boards		P
2.10.6.1/RD	Uncoated printed boards		P
2.10.6.2/RD	Coated printed boards		N
2.10.6.3/RD	Insulation between conductors on the same inner surface of a printed board		P
2.10.6.4/RD	Insulation between conductors on different surfaces of a printed board		P
2.10.7/RD	Component external terminations		N
2.10.8/RD	Tests on coated printed boards and coated components		N
2.10.8.1/RD	Sample preparation and preliminary inspection		N
2.10.8.2/RD	Thermal conditioning		N
2.10.8.3/RD	Electric strength test		N
2.10.8.4/RD	Abrasion resistance test		N
2.10.9/RD	Thermal cycling		N
2.10.10/RD	Test for Pollution Degree 1 environment and for insulating compound		N
2.10.11/RD	Tests for semiconductor devices and for cemented joints		N
2.10.12/RD	Enclosed and sealed parts		N

6	WIRING, CONNECTIONS AND SUPPLY		P
6.1	General		P
6.6.1 3.1/RD	Introduction		P

EN 62040-1			
Clause	Requirement	Remark	Result
3.1.1/RD	Current rating and overcurrent protection	All internal wires were UL recognized wirings which were PVC insulated. Internal wiring gauge was suitable for current intended to be carried.	P
3.1.2/RD	Protection against mechanical damage	Wires do not touch sharp edges which could damage the insulation and cause hazard, wires pass the holes in metal provided with bushings.	P
3.1.3/RD	Securing of internal wiring	Internal wires were secured by stud terminals and quick connect terminals and cable ties so that a loosening or excessive strain on the terminal connection is unlikely, no damage of conductor insulation.	P
3.1.4/RD	Insulation of conductors	The insulation of the individual conductors was suitable for the application and the working voltage.	P
3.1.5/RD	Beads and ceramic insulators	Beads were contained within insulating sleeves and were secured that they could not change their position and create hazards.	P
3.1.6/RD	Screws for electrical contact pressure	No screws of insulating material used for electrical connection.	P
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 or spaced thread screws used for connection of current-carrying parts.	P
3.1.9/RD	Termination of conductors	Close-fitting tubing applied over the wire and its termination, and other conductors are reliable secured by mechanical fixing means.	P
	10N pull test	Break away or pivot on its terminal is unlikely	P

EN 62040-1			
Clause	Requirement	Remark	Result
3.1.10/RD	Sleeving on wiring	Heat-shrunk tube used to provide supplementary insulation of internal wire, it will not slip as the enough length.	P
6.1.2	Dimensions and ratings of busbars and insulated conductors		P

6.2	Connection to power		P
6.2.1	General provisions for connection to power		P
3.2.2/RD	Multiple supply connections		N
3.2.3/RD	Permanently connected equipment		N
	Number of conductors, Diameter (mm) of cable and conduits.....:		-
3.2.4/RD	Appliances inlets		P
3.2.5/RD	Power supply cords		N
3.2.5.1/RD	AC power supply cords		N
	Type.....:		--
	Rated current(A), cross-sectional area(mm ²), AWG.....:		-
3.2.5.2/RD	DC power supply cords		N
3.2.6/RD	Cord anchorages and strain relief		N
	Pull (N)		-
3.2.7/RD	Protection against mechanical damage		P
3.2.8/RD	Cord guards		N
	D(mm); test mass(g)		-
	Radius of curvature of cord (mm)		-
6.2.2	Means of connection		P
	More than one supply connection		N

6.3	Wiring terminals for external power conductors		N
3.3.1/RD	Wiring terminals		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

EN 62040-1			
Clause	Requirement	Remark	Result
	Rated current(A), cord/cable type, cross-sectional area (mm ²)		-
3.3.5/RD	Wiring terminal sizes		N
	Rated current (A), type and nominal thread diameter(mm)		-
3.3.6/RD	Wiring terminals 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	Stability	Not become physically unstable to the degree under conditions of normal use.	P
4.1/RD	Angle of 10 ⁰		P
	Test: force (N)		N

7.3	Mechanical strength		P
4.2.1/RD	General	Enclosure and chassis of metal material. Tests performed and passed. 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, 10N		P
4.2.3/RD	Steady force test, 30N		N
4.2.4/RD	Steady force test, 250N		P
4.2.5/RD	Impact test		P
	Fall test		P
	Swing test		P
4.2.6/RD	Drop test		N

EN 62040-1			
Clause	Requirement	Remark	Result
4.2.7/RD	Stress relief test		N
4.2.8/RD	Cathode ray tubes		N
	Picture tube separately certified		N
4.2.9/RD	High pressure lamps		N
4.2.10/RD	Wall or ceiling mounted equipment; force		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.	P
4.3.2/RD	Handles and manual controls; force (N).		N
4.3.3/RD	Adjustable controls.		N
4.3.4/RD	Securing of parts.		P
4.3.5/RD	Connection of plugs and sockets.		N
4.3.7/RD	Heating elements in earthed equipment		N
4.3.11/RD	Containers for liquids or gases		N
4.4/RD	Protection against hazardous moving parts		N
4.4.1/RD	General		N
4.4.2/RD	Protection in operator access areas		N
4.4.3/RD	Protection in restricted access locations		N
4.4.4/RD	Protection in service access areas		N
4.5/RD	Thermal requirements		P
4.5.1/RD	General		P
4.5.2/RD	Temperature tests		P
4.5.3/RD	Temperature limits for materials		P
4.5.4/RD	Touch temperature limits		P
4.5.5/RD	Resistance to abnormal heat		P
7.4.2	Openings		N
7.4.3	Gas concentration		N
7.4.4	Equipment movement		N
7.5 4.7/RD	Resistance to fire		P

EN 62040-1			
Clause	Requirement	Remark	Result
4.7.1/RD	Reducing the risk of ignition and spread of flame		P
	Method 1, selection and application of components wiring and materials		P
	Method 2, application of all of simulated fault condition tests		N
4.7.2/RD	Conditions for a fire enclosure		P
4.7.2.1/RD	Parts requiring a fire enclosure		P
4.7.2.2/RD	Parts not requiring a fire enclosure		N
4.7.3/RD	Materials		P
4.7.3.1/RD	General		P
4.7.3.2/RD	Materials for fire enclosures	Matel enclosure	N
4.7.3.3/RD	Materials for components and other parts outside fire enclosures		N
4.7.3.4/RD	Materials for components and other parts inside fire enclosures		N
4.7.3.5/RD	Materials for air filter assemblies		N
4.7.3.6/RD	Materials used in high-voltage components		N
	UPS intened to be used in operator access area		N
	Batteries have flammability class HB or better		N

7.6	Battery location		N
7.6.1	Battery location and installation		N
7.6.2	Accessibility and maintainability		N
7.6.3	Distance		N
7.6.4	Case insulation		N
7.6.5	Wiring		P
7.6.6	Electrolyte spillage		N
7.6.7	Ventilation	See annex M.	N
7.6.8	Charging voltages	Protected against excessive voltages under normal and single fault conditions.	N
7.7 4.5/RD	Temperature rise	No excessive temperature measured during normal operation.	N
4.5.1/RD	General		N

EN 62040-1			
Clause	Requirement	Remark	Result
4.5.2/RD	Temperature tests		N
4.5.3/RD	Temperature limits for materials		N
	Maximum temperatures.....:	(see appended table)	-
4.5.4/RD	Touch temperature limits		N
4.5.5/RD	Resistance to abnormal heat	(see appended table)	N

8	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
8.1 5.1.1/RD	General provisions for earth leakage	For single-phase EUT. (see appended table)	P
5.1.7/RD	Equipment with touch current exceeding 3.5mA		N
5.1.7.1/RD	General		N
5.1.7.2/RD	Simultaneous multiple connections to the supply		N

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

8.3	Abnormal operating and fault conditions		P
8.3.1	General		P
5.3.1/RD	Protection against overload and abnormal operation		P
5.3.2/RD	Motors		N
5.3.3/RD	Transformers		P
5.3.4/RD	Functional insulation		P
5.3.5/RD	Electromechanical components	No electromechanical components except for approved relays provided.	N
5.3.9/RD	Compliance criteria for abnormal operating and fault conditions	Compliance checked. During the test, no fire propagated beyond the equipment, no molten metal was emitted. After the test, electric strength tests were passed.	P
5.3.9.1/RD	During the tests		P
5.3.9.2/RD	After the tests		P
8.3.2	Simulation of faults	(see appended table)	P

EN 62040-1			
Clause	Requirement	Remark	Result
8.3.3	Conditions for tests	The equipment was tested under normal use and foreseeable misuse conditions.	P

9	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		N
6.1.2.1/RD	Requirements		N
	Test voltage (V)		-
	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)		-
	Current limiting method.....		-
3.5/RD	Interconnection of equipment		N
3.5.1/RD	General requirements		N
3.5.2/RD	Types of interconnection circuits		N
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/RD	TNV circuits		N
2.3.1/RD	Limits		N
	Type of TNV circuits.....		-

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Clause	Requirement	Remark	Result
2.3.2/RD	Separation from other circuits and from accessible parts		N
	Insulation employed.....:		-
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 of 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		N
2.10.4.1/RD	General		N
2.10.4.2/RD	Material group and comparative tracking index		N
2.10.4.3/RD	Minimum creepage distances		N

M/RD	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		N
	Test carried out when doubt with regard to the classification of the insulating system of a motor winding		N
M.1/RD	Introduction		N
M.2/RD	Method A		N
M.3/RD	Method B		N
M.3.1/RD	Ringling signal		N
M.3.1.1/RD	Frequency(Hz)		-

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Clause	Requirement	Remark	Result
M.3.1.2/R D	Voltage(V)		-
M.3.1.3/R D	Cadence; time (s),voltage(v)		-
M.3.1.4/R D	Single fault current (mA)		-
M.3.2/RD	Tripping device and monitoring voltage		N
M.3.2.1/R D	Conditions for use of a tripping device of a monitoring voltage		N
M.3.2.2/R D	Tripping device		N
M.3.2.3/R D	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 18kg, and of stationary equipment(see 4.7.3.2)		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 IEC60695-11-3)		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(see4.7.3.2and 4.7.3.4)		N
A.2.1/RD	Samples, material.....		-
	Wall thickness(mm)		-
A.2.2/RD	Conditioning of samples		N
A.2.3/RD	Mounting of samples		N

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Clause	Requirement	Remark	Result
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)		-
	Sample 3 burning time(s)		-
A.3/RD	Hot flaming oil test (see 4.6.2)		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 and 5.3.2)		N
B.1/RD	General requirements		N
	Position.....:		-
	Manufacturer.....:		-
	Type.....:		-
	Rated values.....:		-
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 over load test for d. c. motors in secondary circuits		N

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Clause	Requirement	Remark	Result
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		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		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 and 5.3.3)		P
	Position.....:		-
	Manufacturer.....:		-
	Type.....:		-
	Rated values.....:		-
	Method of protection.....:		-
C.1/RD	Overload test		P
C.2/RD	Insulation		P
	Protection from displacement of winding.....:		P

D/RD	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		P
D.1/RD	Measuring instrument	As in figure D.1 used.	P
D.2/RD	Alternative measuring instrument		N

E/RD	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)		N
F/RD	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10)		P

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Clause	Requirement	Remark	Result

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 levels (V)		N
G.6/RD	Determination of minimum clearances		N

H	ANNEX H, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER AND FOREIGN OBJECTS (see IEC60529)		N
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I	ANNEX I, BACKFEED PROTECTION TEST		P
I.1	General		P
I.2	Test for pluggable UPS	Test for single-phase equipment.	P
I.3	Test for permanently connected UPS		N
I.4	Load-induced change of reference potential		N
I.5	Solid-state backfeed protection		N
J/RD	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		N
	Metal used.....:		N
K/RD	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.7)		N

EN 62040-1			
Clause	Requirement	Remark	Result
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	Worst case loads specified by the manufacturer maintained during the relevant tests.	P
L.2	Reference resistive load		N
L.3	Reference inductive-resistive load		N
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		P

M	ANNEX M, VENTILATION OF BATTERY COMPARTMENTS		P
M.1	General	(see appended table)	P
M.2	Normal conditions		P
M.3	Blocked conditions		P
M.4	Overcharge conditions		P

N	ANNEX N, MINIMUM AND MAXIMUM CROSS-SECTIONS OF COPPER CONDUCTORS SUITABLE FOR CONNECTION (see 6.3)		N
	Conductor cross-sections (extract from IEC 60439-1).....:		-
O	ANNEX O, GUIDANCE FOR DISCONNECTION OF BATTERIES DURING SHIPMENT		N
O.1	Applicable products		N
O.2	Battery disconnection.		N

EN 62040-1			
Clause	Requirement	Remark	Result
O.3	Package labeling/marketing.		N
O.4	Damage inspection.		N
O.5	The importance of safe handling procedures.		N



4.5	TABLE: Critical components information					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾	
PCB (PFC PSDR)	Interchangeable	Interchangeable	PCB FR-4 2S 2oz 215*315.5mm	UL 94	UL	
Current fuse (F4)	COOPER Bussmann	BS88 80FE	80A 690Vac /500Vdc TIME12.7*77	UL 248 IEC/EN 60127-2	UL	
Current fuse (F2)	Littelfuse	KLK D30	FUSE LITTEL KLK D30 30A 600Vdc	UL 248 IEC/EN 60127-2	UL	
Electrolytic Capacitors (C1)	Interchangeable	Interchangeable	CAP MKP 2.2uF 275VAC K -X2 31*13.7*25-27.5mm	--	Tested with appliance	
Electrolytic Capacitors (C6、C7、C8、C9)	Interchangeable	Interchangeable	CAP EL-AL 680uF 450V M RAD 35*65mm 105°C" CD294"	--	Tested with appliance	
Transformer (TX1)	Interchangeable	Interchangeable	TX 1352 49:49:49 FER EE-16	--	Tested with appliance	
Line Choke (L301、L302)	Interchangeable	Interchangeable	CHOKE 330uH 1.7D*2 IRONPOWDER DT200-35B DM	--	Tested with appliance	
Diode (D308、D310)	FAIRCHILD	RHRG30120	30A 1200V TO-247	--	Tested with appliance	
IGBT (Q314、Q315、Q316、Q318)	FAIRCHILD	FGL60N100B NTD	60A 1000V N TUBE TO-264	--	Tested with appliance	
SCR (Q305)	IXYS	CLA50E1200 HB	50A 1200V TUBE TO-247	--	Tested with appliance	
SCR (Q301、Q302)	VISAY	40TPS12APBF	35A 1200V TUBE TO-247	--	Tested with appliance	
PCB (INV PSDR)	Interchangeable	Interchangeable	PCB FR-4 2S 2oz 174.5*315.5mm	UL 94	UL	
Electrolytic Capacitors (C207)	Jianghai Capacitor Co., Ltd	CBB20R	CAP MPP 20uF 275V J BULK AXI 100	IEC 60384-16	UL	
Line Choke (L201、L202)	Interchangeable	Interchangeable	CHOKE 300uH 1.7D*2 IRONPOWDER DT200-35B DM	--	Tested with appliance	
Diode (D203、D204)	FAIRCHILD	RHRP15120	15A 1200V TO-220	--	Tested with appliance	
IGBT (Q201、Q202、Q203、Q204)	FAIRCHILD	FGL40N120A ND	64A 1200V N TUBE TO-264	--	Tested with appliance	

RELAY (RY2, RY6)	SONG CHUAN	832A-1C-F-C	RELAY 12VDC 30A 250VAC	UL508&873	UL
Transformer (TX3)	Interchangeable	Interchangeable	TX 1352 49:49:49 FER EE-16	--	Tested with appliance
MOSFET(Q3)	TOSHIBA/	2SK2962	1A 100V N TAP TO-92M	--	Tested with appliance
Wire Stock	Interchangeable	Interchangeable	65*0.254mm 12AWG	UL1015	UL

Supplementary information:

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

4.6 1.6.2/RD	TABLE: electrical data(in normal conditions)						P
Fuse #	Irated (A)	U (V)	P (KW)	I (A)	Ifuse (A)	Condition/status	
F1	--	198/50	4.25	32.65	32.65	Loading: 4KW Lamp	
F1	--	198/60	4.23	32.61	32.61	Loading: 4KW Lamp	
F1	36.4	220/50	4.18	31.85	31.85	Loading: 4KW Lamp	
F1	36.4	220/60	4.17	31.62	31.62	Loading: 4KW Lamp	
F1	36.4	240/50	4.19	31.50	31.50	Loading: 4KW Lamp	
F1	36.4	240/60	4.18	31.46	31.46	Loading: 4KW Lamp	
F1	--	264/50	4.21	30.32	30.32	Loading: 4KW Lamp	

5.1.1/5.7 2.1.1.3/RD/ 2.10.5.2/RD	TABLE: distance through insulation measurements				N
Distance through insulation di at /of:		Up (V)	Test voltage (V)	Required di (mm)	Di (mm)
Note (s): Approved component, for details refer to table 4.5					

5.1.1 2.1.1.7/RD	TABLE: discharge of capacitors test				N
Condition	$\tau_{calculated}$ (s)	$\tau_{measured}$ (s)	$t_{u \rightarrow ov}$ (s)	Comments	
Note(s):					

5.2.3 2.4/RD	TABLE: limited current circuits				N
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Location	Voltage (V)	Current (mA)	Freq. (Hz)	Limit (mA)	Comments
Note(s):					

5.3 2.6.3.4/RD	TABLE: provisions for protective earthing				P
Location	Resistance measured(mΩ)			Comments	
PE pole to the furthest metal enclosure	62			Test with current 32A, 2min	
Note(s):					

5.7 2.10.2/RD	TABLE: working voltage measurement			P
Location	RMS voltage(V)	Peak voltage(V)	Comments	
TX1 Pin 1 to 3(FC1623)	240	460		
TX1 Pin 4 to 5(FC1623)	240	465		
CT201 Pin 1 to 2	250	480		
CT201 Pin 1 to 3	250	485		
CT201 Pin 1 to 5	252	495	Max. RMS and Vpeak	
CT201 Pin 1 to 6	250	485		
CT201 Pin 4 to 2	248	485		
CT201 Pin 4 to 3	246	486		
CT201 Pin 4 to 5	246	485		
CT201 Pin 4 to 6	248	486		
TX2 Pin 1 to 3	245	470		
TX2 Pin 4 to 5	245	465		
TX1 Pin 1 to 3(BCK 4201)	250	465		
TX1 Pin 4 to 5(BCK 4201)	250	470		
P4 Pin1 to 3	240	430		

P4 Pin1 to 4	238	425	
P4 Pin2 to 3	238	425	
P4 Pin2 to 4	240	430	
CY1	250	435	
Note (s):			

5.7 2.10.3/RD, 2.10.4/RD	TABLE: clearance and creepage distance measurements						P
clearance cl and creepage distance dcr at/of:	Up (V)	Ur. m. s. (V)	Required cl (mm)	cl (mm)	Required dcr (mm)	dcr (mm)	
L to N before F1	420	240	2.0	>3.0	2.4	>3.0	
Trance between F1 pins	420	240	2.0	>5.0	2.4	>5.0	
Primary to secondary trace of CY1,	435	250	4.0	>5.5	5.0	>5.5	
Primary to secondary side of P4	425	240	4.0	>5.5	4.8	>5.5	
Primary to secondary side of TX1	465	240	4.2	>8.0	4.8	>8.0	
Primary to secondary side of TX2	470	245	4.2	>8.0	4.9	>8.0	
Primary to secondary side of CT201	495	252	4.2	>8.0	5.0	>8.0	
TX1 secondary Pin to core	465	240	4.2	>8.0	4.8	>8.0	
TX2 secondary Pin to core	470	245	4.2	>8.0	4.9	>8.0	
CT201 secondary Pin to core	485	252	4.2	>8.0	5.0	>8.0	
Note (s):							

7.5 4.7/RD	TABLE: resistance to fire				P
part	manufacturer of material	type of material	thickness (mm)	flammability class	
transformer bobbin	--	TX 1352 49:49:49 FER EE-16	Min. 0.4mm	V-0	
Note(s):					

7.7 4.5/RD	TABLE A: maximum temperatures measurement				P
	test voltage (V)	See below			—
	t _{amb1} (°C)	--			—
	t _{amb2} (°C)	--			—
maximum temperature T of part/at:		T (°C)			allowed T _{max} (°C)
Test Voltage	220V/60Hz ¹⁾ NORMAL WORKING	240V/60Hz ²⁾ NORMAL WORKING	220V/60Hz ¹⁾ Locked fan	220V/60Hz ²⁾ Stified air port	--
101 Input wire	37.7	37.9	36.9	37.8	80
102 Internal wire	37.5	37.6	36.9	40.7	80
103 Enclosure inside	37.2	37.3	39.3	45.0	95
104 C42 body	42.1	42.1	41.5	57.1	105
105 PCB near Q5	43.8	43.9	43.2	63.2	130
106 PCB near D12	48.6	48.4	48.1	76.3	130
107 TX1 winding(FC1623)	46.4	46.3	45.9	68.0	110
108 TX1 core (FC1623)	45.6	44.6	45.1	68.2	110
109 PCB near TX1 (FC1623)	45.5	45.4	44.9	64.1	130
110 C10 body	40.3	40.4	39.6	50.5	105
111 PCB near U5	43.0	43.4	42.4	54.2	130
112 C15 body	47.2	47.1	46.7	68.3	105
113 C04 body	37.4	37.5	36.6	42.9	105
114 L01	39.3	39.7	38.7	46.5	120
115 PCB near MOV04	38.3	38.1	37.5	43.6	130
116 PCB near D901	41.8	41.9	41.3	49.7	130
117 C917	40.9	41.0	40.5	48.7	105
118 PCB near Q901	42.1	42.3	41.6	49.8	130
119 TX1 winding(BCK 4201)	42.6	42.8	41.9	50.2	110
120 TX1 core (BCK 4201)	42.9	43.0	42.3	50.6	110
201 PCB near (BCK 4201)	53.5	54.0	53.0	72.6	130
202 C910 body	39.8	39.9	39.3	47.8	105
203 C2 body	41.2	41.3	40.7	51.3	105
204 PCB near U903	35.5	36.1	36.9	35.8	130
205 TX2 winding(T1601)	39.2	39.3	38.5	48.0	110
206 TX2 core(T1601)	39.5	40.0	38.8	49.6	110
207 PCB near TX2(T1601)	39.4	39.4	38.7	49.6	130
209 PCB near Q316	41.4	41.5	40.6	52.1	130
210 CT301	40.6	41.1	40.0	49.7	110

211 L301	43.2	43.2	42.8	50.6	120
212 C3 body	41.7	41.9	41.3	50.8	105
213 CT201 winding	40.5	40.6	39.9	45.8	110
214 CT201 core	40.5	40.9	39.9	46.2	110
215 PCB near CT201	40.5	41.0	39.9	46.3	130
216 C207 body	40.3	40.3	39.7	47.0	105
217 L202	41.2	41.4	40.7	47.4	120
218 PCB near Q204	41.9	42.0	41.5	47.6	130
219 Enclosure outside	41.4	41.3	41.1	44.6	95
220 C5 body	41.8	41.9	41.4	47.8	105
208 Ambient	35.0	35.0	35.0	35.0	---
temperature T of winding:	R_1 (Ω)	R_2 (Ω)	T ($^{\circ}\text{C}$)	allowed T_{max} ($^{\circ}\text{C}$)	insulation class
Note(s):					
1. 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.					
2. With a specified maximum ambient temperature and test temperature of 40 $^{\circ}\text{C}$, the maximum permitted temperatures are calculated as follows:					

7.7 4.5.5/RD	TABLE B: ball pressure test of thermoplastic parts			P
	Allowed impression diameter (mm)	$\leq 2\text{mm}$		—
Part		test temperature ($^{\circ}\text{C}$)		Impression diameter(mm)
T1 bobbin		125		0.8
Enclosure plastic		125		1.0
Note(s):				

8.1 5.1.1/RD	TABLE: touch current measurement				P
Condition	location	Current(mA)	Freq.(Hz)	Limit (mA)	comments
Unit on	L/N to enclosure	0.01	50	3.5	--
Unit on	L/N to output terminal	0.02	50	0.25	--
Note (s):					

8.2/9 5.2/RD/6/RD	TABLE: electric strength tests, impulse tests and voltage surge tests			P
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Test voltage applied between:	test voltage(V) a. c / d. c.	Breakdown Yes/No
Primary circuits to plastic enclosure	AC3000	NO
Primary circuits to output terminal	AC3000	NO
Main transformer Pri. to Sec.	AC3000	NO
Main transformer core to Pri. and Sec. Coil	AC1500	NO
Primary circuits to PE	AC1500	NO
Note (s):		

8.3	TABLE: abnormal operating and fault condition tests		P
	Ambient temperature (°C).....:	25.5°C	—
	Mode/type of EUT	GH 11 6kva	—
	Manufacture of EUT.....:	SHENZHEN SMARTKEY POWER CO.,LTD.	—
	Rated marking of EUT.....:	See page 1	—

No	Component	Fault	Test voltage (V)	Test Time	Fuse No	Fuse current (A)	result
01	C04	s-c	220	1s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
02	C3	s-c	220	1s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
03	Q314 pin(G-S)	s-c	220	1s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
04	Q314 pin(D-G)	s-c	220	1s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
05	CT201 pin1 to pin3	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
06	CT201 pin4 to pin5	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
07	TX1(FC162 3) pin1 to pin3	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
08	TX1(FC162 3) pin4 to pin5	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
09	TX1 (BCK 4201) pin1 to pin3	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.

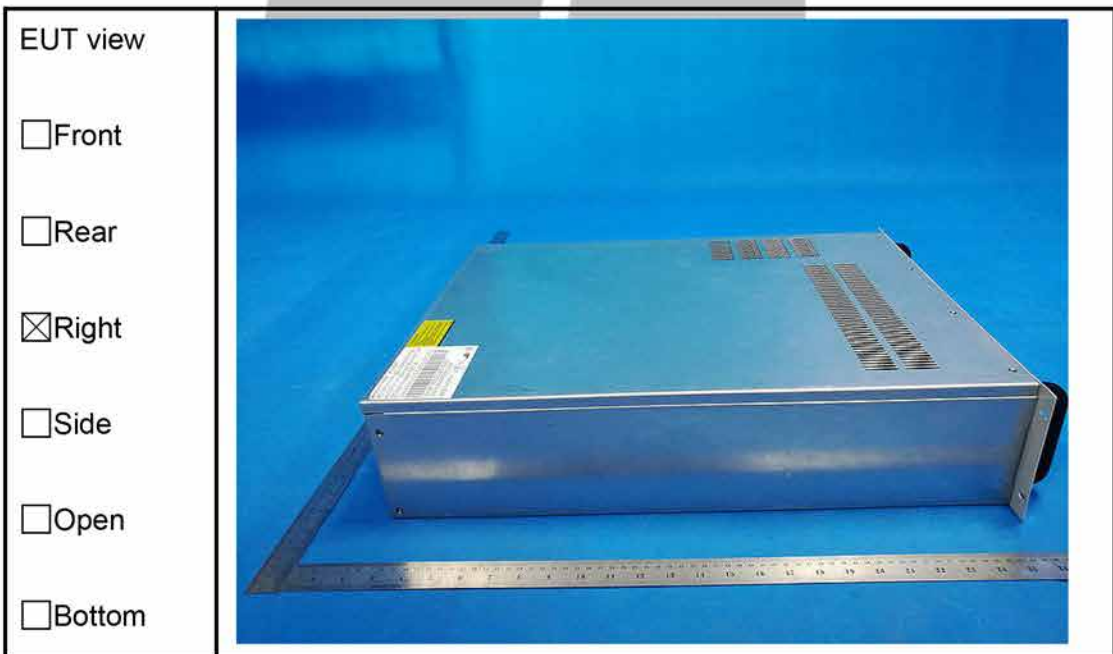
10	TX1 (BCK 4201) pin4 to pin5	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
11	TX2(T1601) pin1 to pin3	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
12	TX2(T1601) pin4 to pin5	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
13	C10	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
14	Q9	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
15	C42	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
16	TX	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
17	D20	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
18	C49	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
19	Q5	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
20	C15	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
21	U5	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
22	C207	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
23	Q204	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.
24	Q314	s-c	220	10min s	F1	0	After s-c, the unit shutdown immediately, F1 opened no hazard.

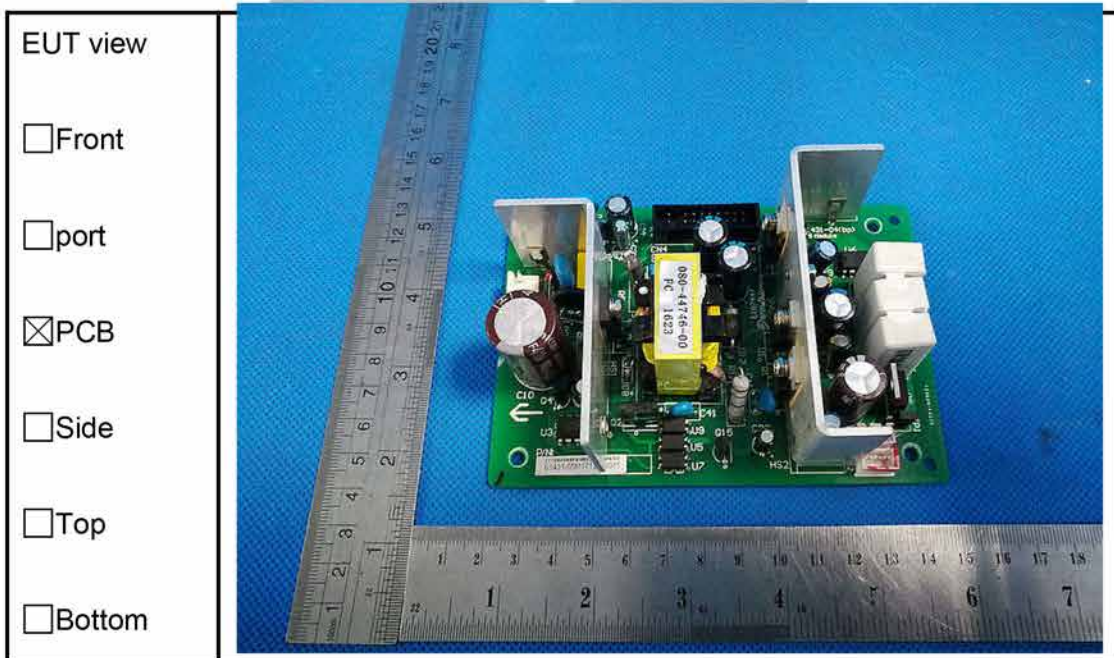
Note (s): S-C=short circuit, O-L=over load

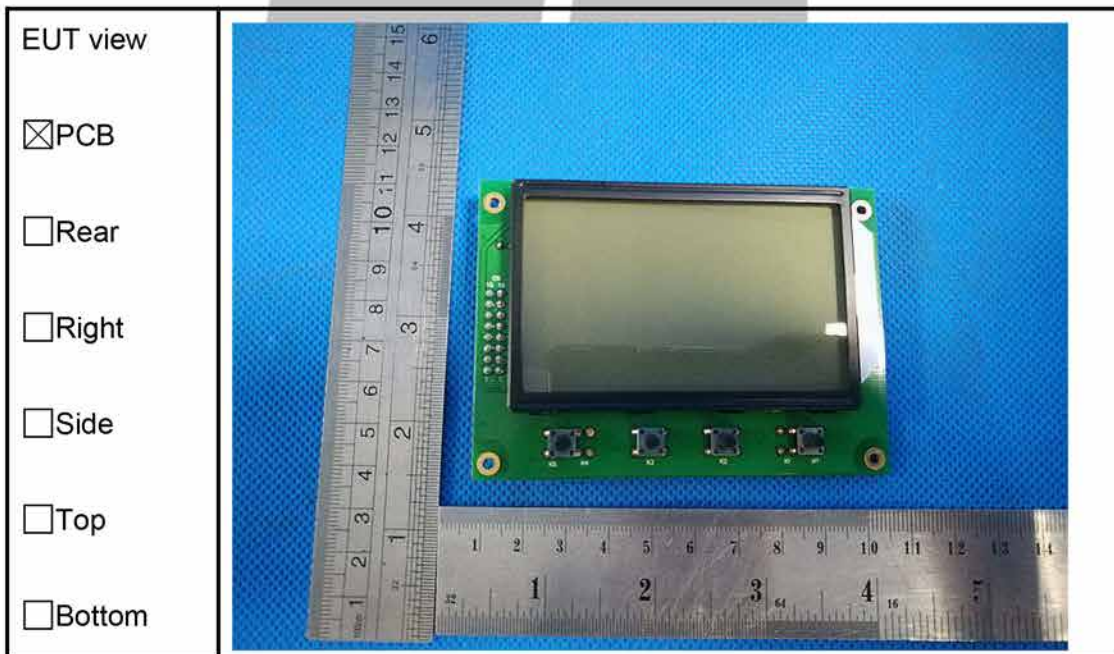
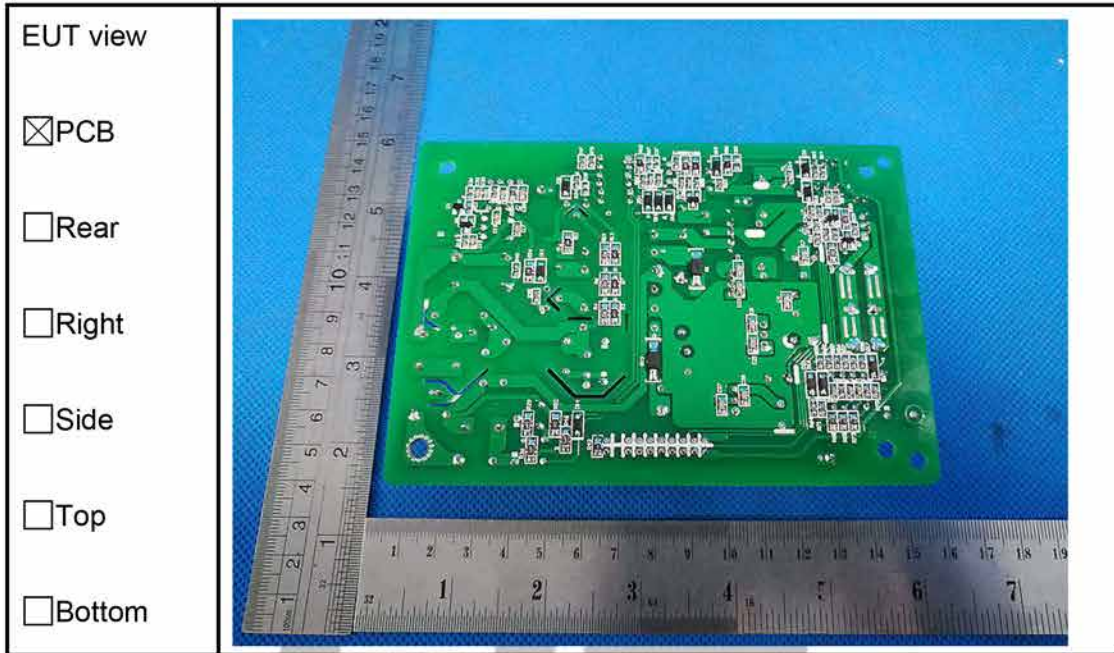
Attachment Photos of Product

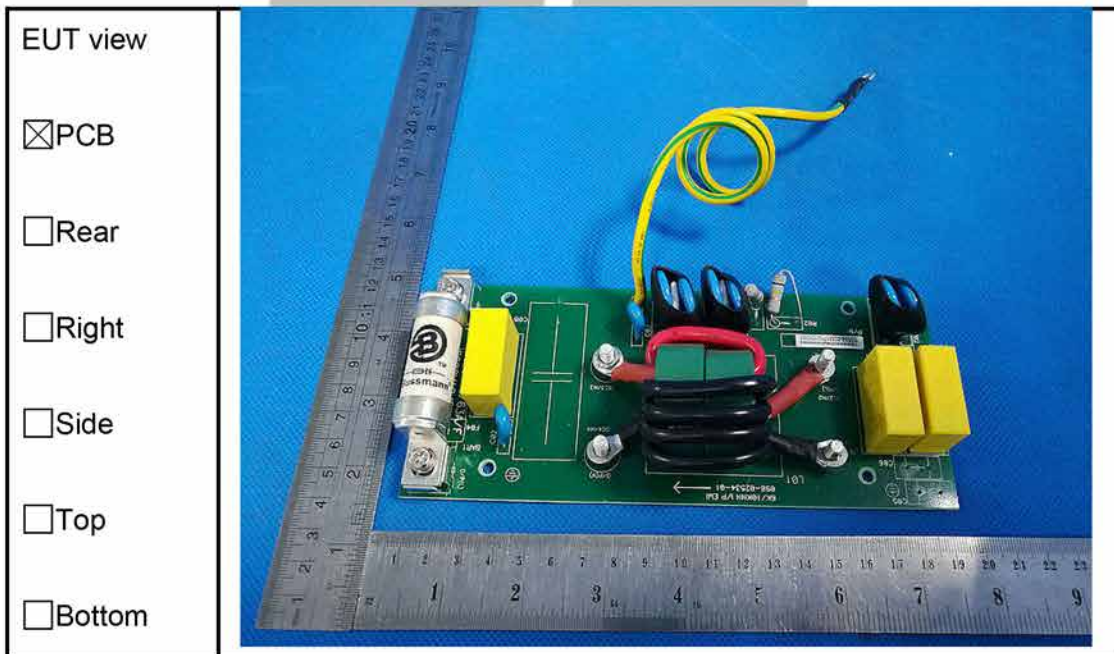
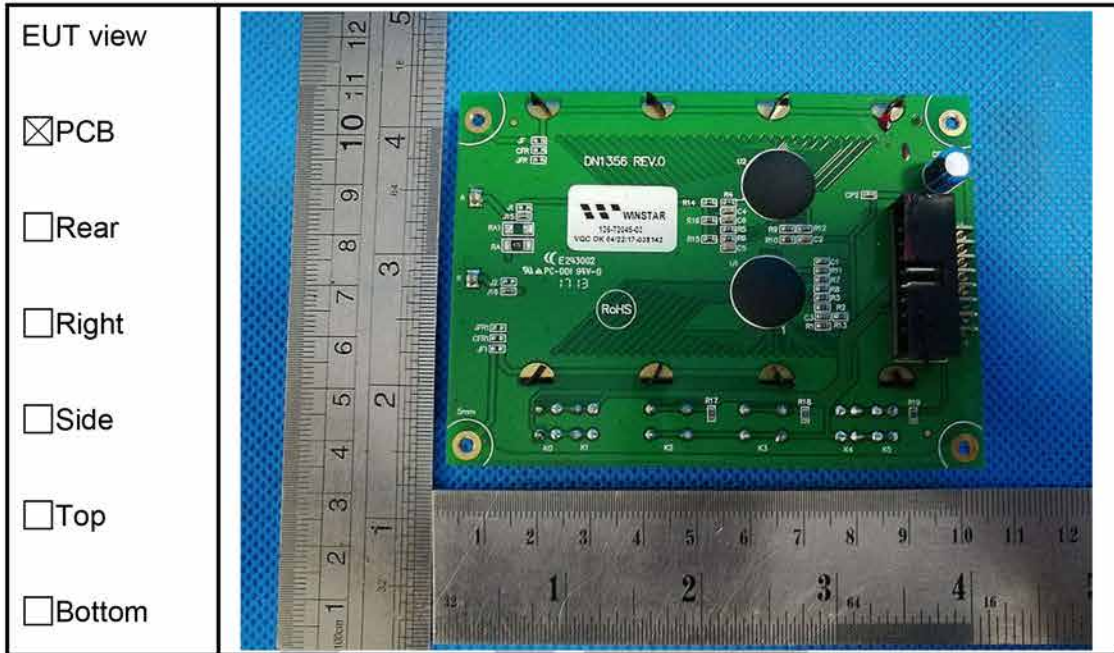


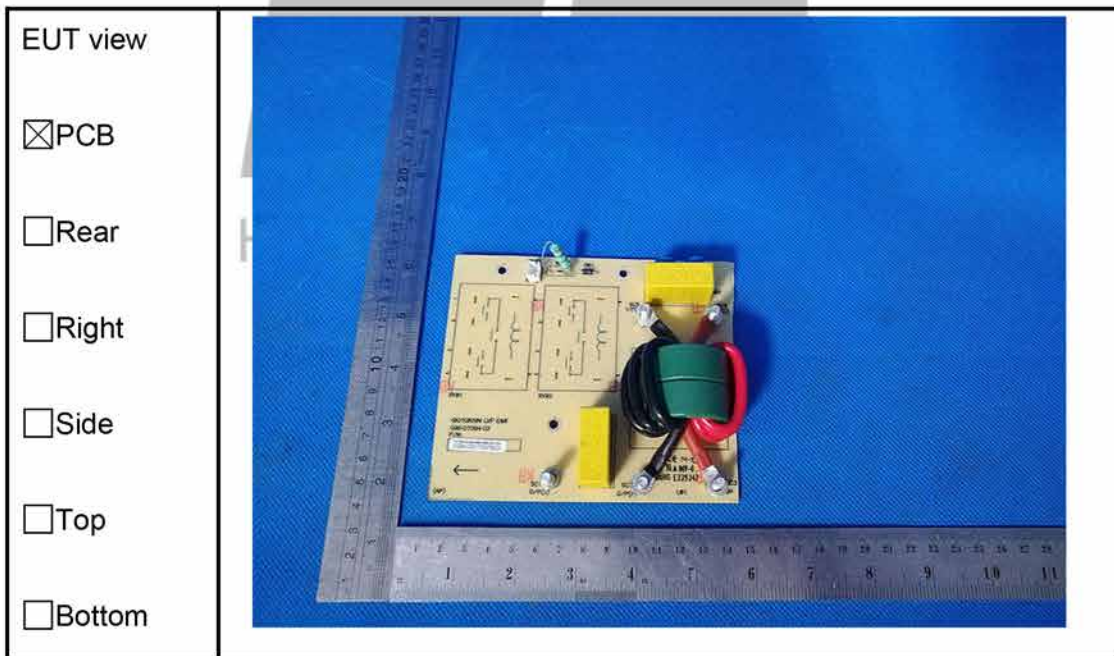
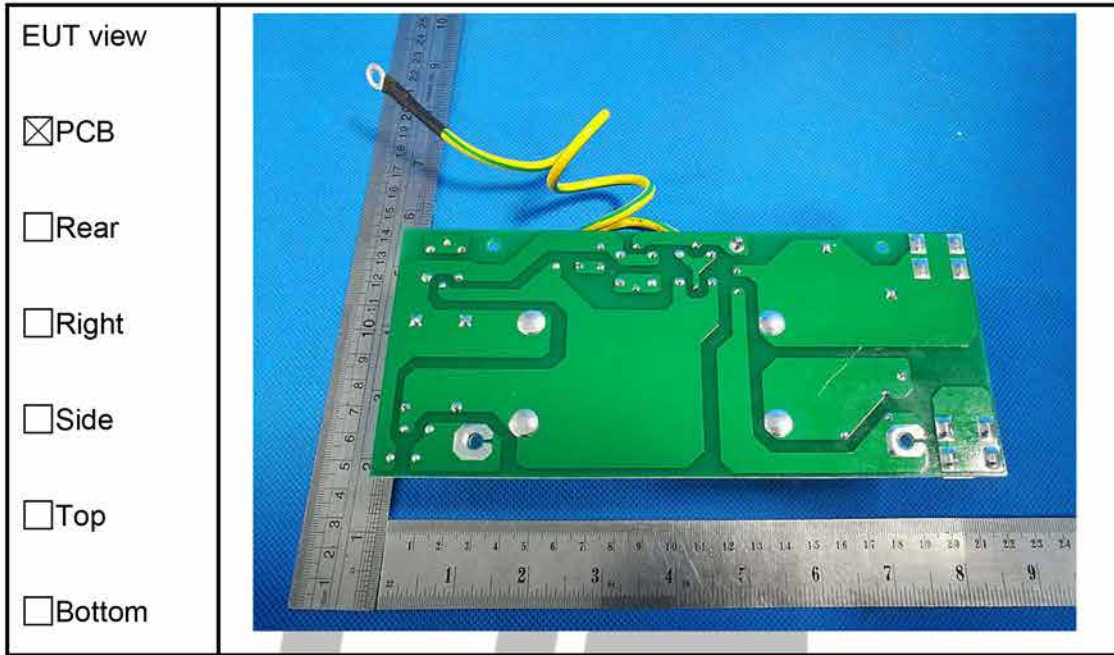


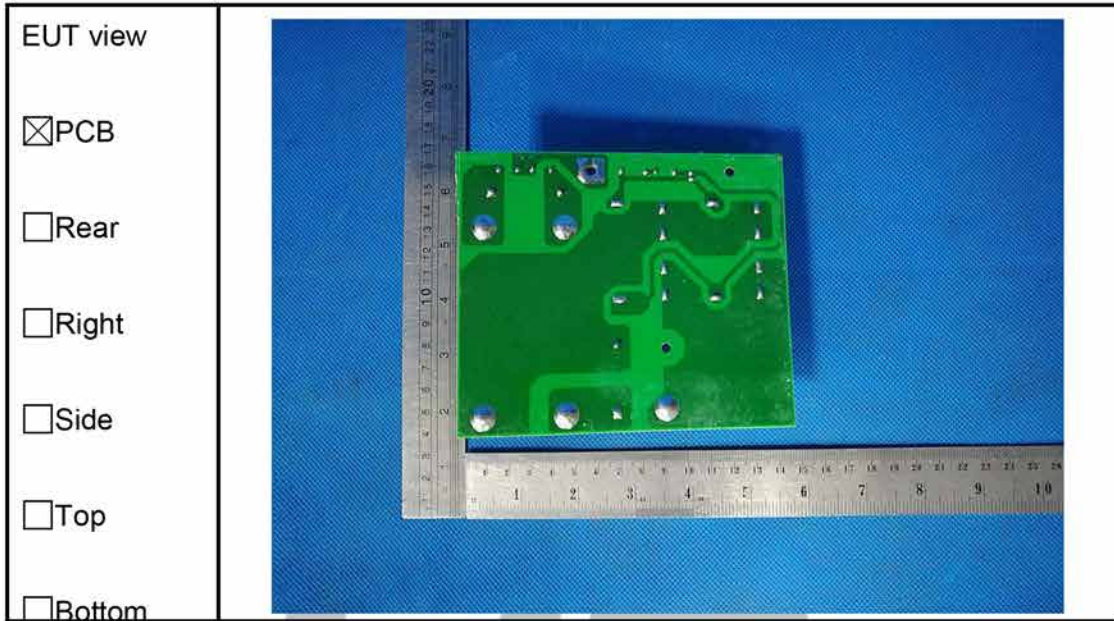


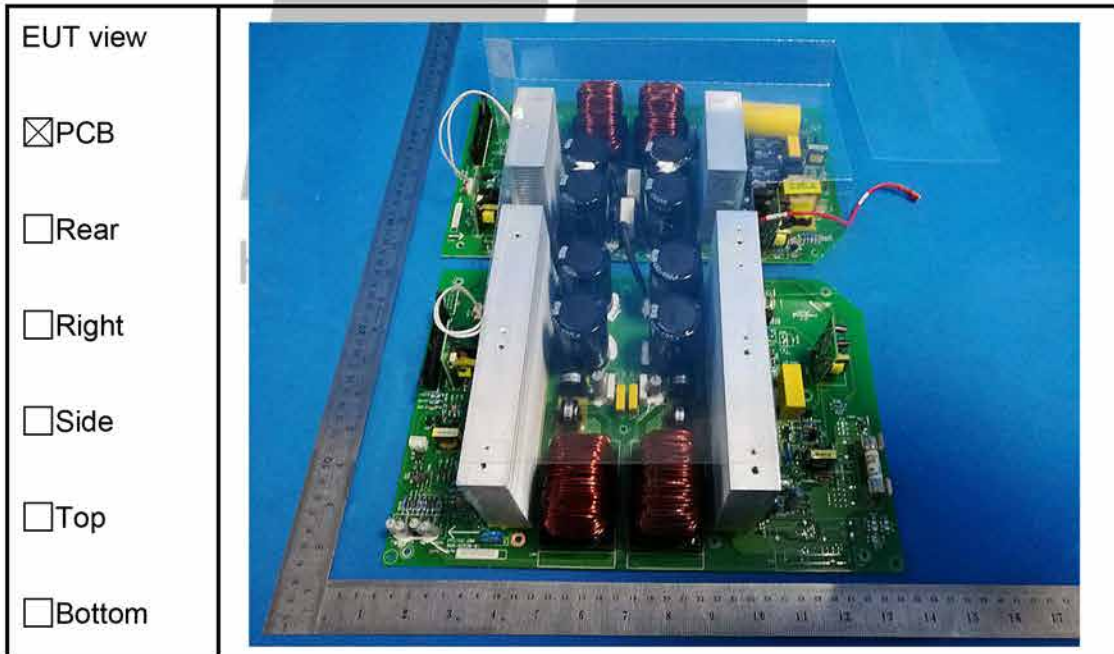
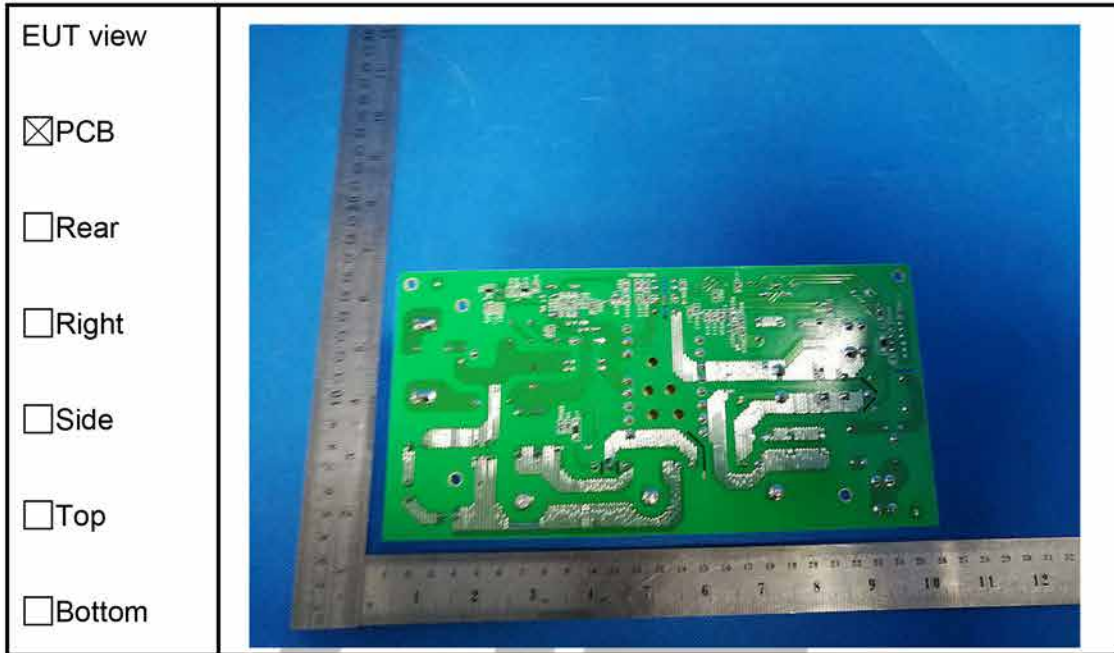


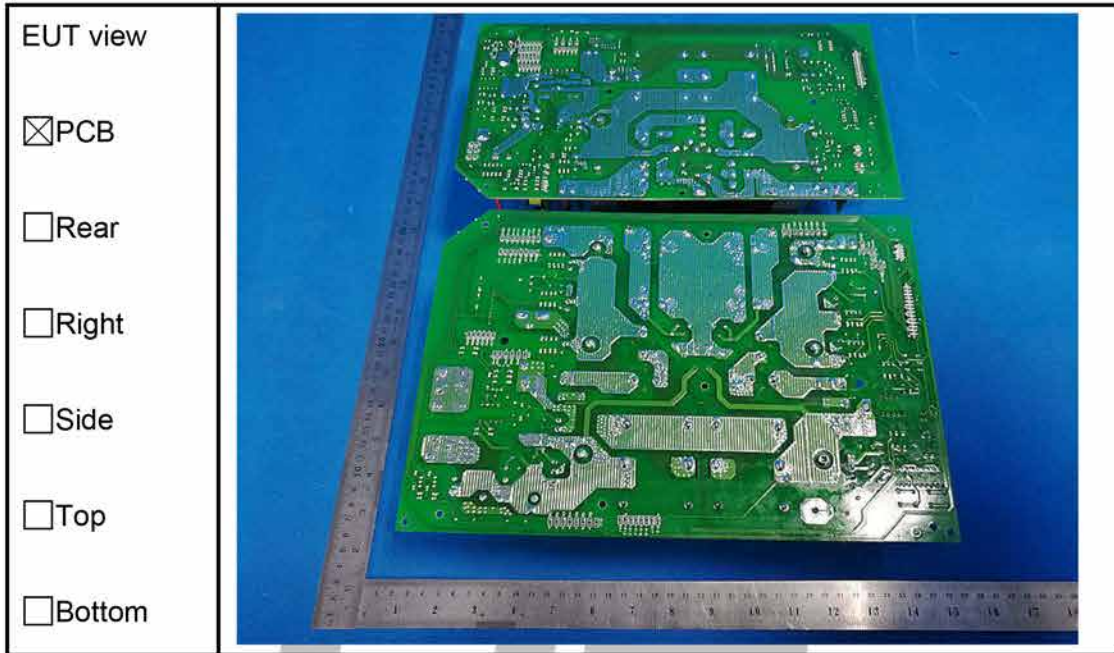












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