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TEST REPORT

Reference No	WTX23X12276829X1S
Applicant	GlobTek, Inc.
Address	186 Veterans Dr. Northvale, NJ 07647 USA
Manufacturer :	GlobTek, Inc.
Address	186 Veterans Dr. Northvale, NJ 07647 USA
Product Name :	POWER SUPPLY
Model No	GT (M or -) 41060 (- or CC) WWVV-X.X (see general product information for model designation)
Test specification :	IEC 61558-2-16:2021 used in conjunction with IEC 61558-1:2017 Include deviations for Australia and New Zealand Safety of power transformers, power supplies, reactors and similar products for supply voltages up to 1100 V Part 2: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units
Date of Receipt sample	2023-12-29
Date of Test	2023-12-29 to 2024-01-15
Date of Issue	2024-03-05
Test Report Form No	WTX_IEC61558_2-16_2021A
Test Result	Pass a final for the second se

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 the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

Prepared By: Waltek Testing Group (Shenzhen) Co., Ltd.

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Tested by:

John Zhong

John Zhong

Approved by:

Harvid Wei

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Test item description	POWER SUP	PLY	
Trademark:	GlobTek,	Inc. A A A	
Model and/or type reference:	GT (M or -) 41	060 (- or CC) WWVV-X.X	
at at not stat as	10 10 1	product information for model designation)	
Serial number:	1		
Rating(s):	Input: 100-240	V~ 50-60Hz or 50/60Hz 0.6A	
atter white white white white	Output: 3-30Vdc, Max.3.00A, Max.25W		
Remark: Whether parts of tests for the product □ Yes ⊠ No If Yes, list the related test items and lab in		contracted to other labs:	
Test items: Lab information:			
Summary of testing:	Mr. 24	a shart the star will a	
Tests performed (name of test and	test clause):	Testing location:	
- IEC 61558-1:2017		Waltek Testing Group (Shenzhen) Co., Ltd.	
- IEC 61558-2-16:2021		Address: 1/F., Room 101, Building 1, Hongwei	
- AS/NZS 61558.1:2018+A1:2020+A2	2:2020	Industrial Park, Liuxian 2nd Road, Block 70 Bao'an	
- AS/NZS 61558.2.16:2022		District, Shenzhen, Guangdong, China	
The submitted samples were found to		a to be the set when	
the requirements of above specification Summary of compliance with Nation		at with which which which and a	
List of countries addressed: AU=Australia		Australia and New Zealand National Differences	
The product runns the requirement	s of European	Australia and New Zealand National Differences	
Copy of marking plate:	PART NO/料号: MODEL /型号: GTM INPUT/输入: 100-24 OUTPUT/输出: 30V	com & SUPPLY(电源适配器) 41060-2530 40V~, 50-60 Hz, 0.6 A 0.833A 2000 RoHS 2 2000 RoHS 2 bgique	
t the set of all and	仅适用于海拔2000 MADE IN CHINA		



VVMLIFL

Test item particulars:	
Protection against electric shock	Class II
Supply Connection:	Direct plug-in
Possible test case verdicts:	The street must must must wont .
- test case does not apply to the test object	N/A (not applicable)
- test object does meet the requirement	P (Pass)
- test object does not meet the requirement	F (Fail)
when when the state of	The street with white white white white
Name and address of factory (ies):	1. GlobTek, Inc.
	186 Veterans Dr. Northvale, NJ 07647 USA
	2. GlobTek (Suzhou) Co., Ltd
	Buildng 4, No. 76 JinLing East Road, Suzhou
	Industrial Park, Suzhou, 215021, JiangSu, China
	3. Shenzhen ENG Electronics Co., Ltd.
	Building B2 West, 1st FL, Building A4, East, 3rd FL Building A4, CNNC Industrial Zone, East Baishixia Community, Fuyong street, Bao'an District, Shenzhen, China
General remarks:	i at at at the set with
The test results presented in this report relate only to the This report shall not be reproduced, except in full, without laboratory.	out the written approval of the Issuing testing

"(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.

The original test report ref. No. WTX23X12276829S dated 2024-01-17 was modified on 2024-02-18 to include the following changes and/or additions:

1. Modified the table 24.1 components information of Plug unit (for AU type) include: model, Standard version and refer Report No.

After review, no tests need to be done include and this report will supersede the original report.



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General product information:

Product covered by this report is power supply module. GT (M or -) 41060 (- or CC) WWVV-X.X series for Limited Power Source (LPS) application.

Direct plug-in power supplies are provided with suitable external enclosure. The external enclosure and plug holder parts of the enclosure are ultrasonic welded.

The power supplies are rated class II equipment.

GT (M or -) 41060 (- or CC) WWVV-X.X :

M or - for marked identification and not related to safety;

41060: Series code;

(- or CC): "-" = Constant Voltage Model,

CC = Constant Current Model;

WW: is the rated output wattage designation, with a maximum value of "25";

VV: is the standard rated output voltage designation, with a maximum value of "30";

- X.X: Denotes the optional deviation, subtracted or added from standard output voltage in 0.1 volt increments or blank to indicate the no voltage different.

Models GTM41060-1505 and GTM41060-2530 are tested as typical models, model differences were also considered in this report.

Model	Output Voltage	Output Voltage Max. output current	
GT (M or -) 41060 (- or CC) WWVV-X.X	3-30Vdc	3 A	25W

All models were evaluated for maximum manufacturer's recommended ambient of 40 °C.

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IEC 61558-2-16

	Requirement + Test	Result - Remark	Verdic
8	MARKING AND OTHER INFORMATION	<u>. 15 16 5</u> 5	
8.1	Transformers shall be marked with the following (for symbols see Table 1):	NITER WAITER WAITER WAITER	Р
Jet whi	a) rated supply voltage(s) or the rated supply voltage range(s) (V):	100-240V ~_	J LOP
+ 18	b) rated output voltage(s) (V or kV):	See marking label	P
when	c) rated output (VA, kVA, or W)	auter mater while we	N/A
st	d) rated output current(s) (A or mA):	See marking label	e Po
me 1	e) rated supply frequency(ies) (Hz)	50-60Hz or 50/60Hz	P
dt.	f) rated power factor (if not 1):	i i i it	N/A
the sta	g) symbol AC for alternating current, or DC for direct current-output	The symbol for DC The symbol \sim for AC	Р
whitek	h) relevant graphical symbols shown in Table 101 that indicate the kind of transformer in addition with the symbol for SMPS. (IEC 61558-2-16: 2021)	For example:	Р
At	i) name or trademark of the manufacturer or responsible vendor	See marking label	Р
	j) model or type reference	See marking label	JUL P
inex whi	k) vector group in accordance with IEC 60076-1 for three phase transformer	Not a 3-phase transformer.	N/A
* 56	I) symbol for class II construction		P
w.	symbol for class III construction		N/A
Where .	m) indication of the protection index IP	IPX0	NP.
Set .	n) rated maximum ambient temperature <i>t</i> a, if other than 25 °C	40°C	P
	o) rated minimum ambient temperature <i>ta</i> min, if lower than +10 °C and if a temperature sensitive device is used	0°C	P
+ whitek	p) duty cycle, if any, unless the operating time is limited by the construction of the transformer or corresponds to the operating conditions specified in the relevant part of IEC 61558-2.	A MALE MALE MALE MALE	N/A
where a	q) symbol for overvoltage category, if other than OVC II	miret whilet while while	N/A
Jet N	r) transformers used with forced air cooling shall be marked with "AF" in m/s	at set set set	N/A
at de	s) Information from the manufacturer to the purchaser (data sheet)	See below.	Р
with	 short-circuit voltage (% rated supply voltage) for stationary transformers > 1000 VA 	white white white w	N/A
	- electrical function of the transformer	The electrical input/output rating is shown.	P

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IEC 61558-2-16			
Clause	Requirement + Test	Result - Remark	Verdict
Whitek w	 All markings except those under i) and j) may be illustrated as QR Code according ISO/IEC 18004. 	WALL WALTER WALTER	Р
	t) symbol indicating the maximum altitude of installation, if higher than 2 000 m	t it is it	N/A
8.2	Marking for transformers IP00 or for associated transformers: type and trademark, instruction sheets	the white white white	N/A
8.3	Adjusted voltage easily and clearly discernible	No adjustable voltage.	N/A
8.4	For each tapping or winding: rated output voltage and rated output	Single output.	N/A
	necessary connections clearly indicated	me m m	N/A
8.5	For non-short-circuit proof transformers or non- inherently short-circuit proof transformers designed to be protected by fuses shall be marked:	Symbol provided on marking plate.	P
* vunitek	Rated current (A or mA) and symbol for time cur- rent characteristics of the fuses for non-inherently short-circuit proof transformer with incorporated fuses and non-short-circuit proof transformer:	white white white	N/A
WALTER W	For non-short-circuit proof transformers or non- inherently short-circuit proof transformers designed to be protected with protective devices other than fuses shall be marked:	whitek whitek whitek white	N/A
et muite	Manufacturer's models or type reference of the protective device, and/or the ratings of the protective device	a state where where	N/A
superiet.	Instruction sheet for transformers with replaceable protective device (other than fuses) information with information about the replacement.	whilet whilet whilet whi	N/A
8.6	Terminals for neutral: "N"	1 10 10 5	N/A
at a	Terminal for protective earth marked with earthing symbol		N/A
and and	Identification of input terminals:	reasoning while while	N/A
* 10	Identification of output terminals:	the state	N/A
- THE	Symbol for any point/terminal in connection with frame or core		N/A
8.7	Indication for correct connection	still out and and which	√ [™] P
8.8	Instruction sheet for type X, Y, Z attachments	the state of the s	N/A
8.9	Transformer for indoor use shall be marked with the relevant symbol.	Contraction and	P N
8.10	Symbol for Class II construction not confused with manufacturer's name or any other identification	at writter writer writers	n R
white	Class II transformer with parts to be mounted – delivered with all parts for class II after mounting.	No such parts.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	white white where	t the the the star	
and the second s	Symbol for class II transformer placed on the part which provides class II.	when when we are	P S
8.11	Correct symbols:	MUTER WALT WALL WAL	• Р •
10 3	Volts	V A A A	_⊘P
in the	Amperes	A (mA)	N P N
ex white	Volt amperes (or volt-amperes reactive for reactors)	VA or (VAR)	N/A
. At	Watts	W	e Por
mr.	Hertz	Hz N	P
de la	Input	PRI	N/A
w w	Output	SEC	N/A
St 5	Direct current	d.c. (DC) or ====	P 5
- 20	Neutral	N we we we	Р
5 . Set	Single-phase a.c.	\sim μ μ μ	P
20	Three-phase a.c.	3~ ~	N/A
State .	Three-phase and neutral a.c.	$3N$ \sim $<$	N/A
20. 0	Power factor	cos φ	N/A
NETE WAS	Class II construction		5 ⁵⁵ P 50 ⁵
iet mite	Class III construction		N/A
Mulet.	Equipment of overvoltage category I	I I whet we will	N/A
Whitek W	Equipment of overvoltage category II	II	- P-
LIEK WAL	Equipment of overvoltage category III	III of soft with	N/A
et white	Equipment of overvoltage category IV	IV	N/A
Miller .	Fuse	to the state of	Pot-
	Rated max. ambient temperature	ta	Р
NUTE NO	Rated minimum ambient temperature	tamin	N/A
4	Rated minimum temperature	tmin	N/A
in mer	Frame or chassis (or core terminal)	The second second	N/A
+ whitek	Protective earth (ground)		N/A

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IP number

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IEC 61558-2-16			
Clause	Requirement + Test	Result - Remark	Verdict
AND .	Earth (ground or functional earth)		N/A
me m	For indoor use only	C and and a	Р
stre whi	To indicate that the appliance is intended to be usable up to the maximum altitude 3 000 m.	≤ 3000m	P
Whitek	To indicate that the power supply unit shall not be used, if pins of the plug part are damaged.	Ĵ¥.	P
*	Additional Symbols (IEC 61558-2-16:2021)	me me m	Р
mer on	SMPS (Switch mode power supply unit)		P N
er er	SMPS incorporating a Fail-safe separating transformer	⊖ _F	N/A
white	SMPS incorporating a Non-short-circuit-proof separating transformer	8	N/A
WALL W	SMPS incorporating a Short-circuit-proof separating transformer (inherently or non-inherently)	8	N/A
et	SMPS incorporating a Fail-safe isolating transformer	⊖ _F	N/A
- still	SMPS incorporating a Non-short-circuit-proof isolating transformer	Θ	N/A
unitet m	SMPS incorporating a Short-circuit-proof isolating transformer (inherently or non-inherently)	Ð	N/A
inet anti	SMPS incorporating a Fail-safe safety isolating transformer	F F	N/A
et white	SMPS incorporating a Non-short-circuit-proof safety isolating transformer	Ð	N/A
whitek	SMPS incorporating a Short-circuit-proof safety isolating transformer (inherently or non-inherently)	Ð	NALTE PAR
milet win	SMPS incorporating a Fail-safe auto-transformer	OF STATES	N/A
Tet white	SMPS incorporating a Non-short-circuit proof auto-transformer	A such south south	N/A
white	SMPS incorporating a Short-circuit proof auto-transformer (inherently or non-inherently)		N/A

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IEC 61558-2-16			
Clause	Requirement + Test	Result - Remark	Verdict
8.12	Number, letters or other visual means for different positions of regulating devices and switches	while while while	N/A
me u	OFF position indicated by number 0	INTER WALLS WALLS V	N/A
istek whi	Greater output, input etc. indicated by higher number	ret write minet on	N/A
8.13	Marking not on screws or other easily removable parts	t stat stat with	P P
	Marking clearly discernible (transformer ready for use)	when we get	Р
Nº V	Marking for terminals clearly discernible if necessary after removal of the cover	white white white	N/A
n w	Marking for terminals: no confusion between input and output	NUTE WALTE WALL W	N/A
in write	Marking for interchangeable protective devices positioned adjacent to the base	et watter watter wat	N/A
WALTE	Marking for interchangeable protective devices clearly discernible after removal of cover and protective device	white white white	N/A
8.14	Visible information (symbols) shall be provided, when it is necessary to take special precautions for installation, transportation or use (in the catalogue, data sheet, instruction sheet or packaging):	white white white	State State
Whitek	For non-inherently short-circuit proof transformers with non-self-resetting or non-replaceable devices and non-replaceable intentional weak parts: The device cannot be reset or replaced after a short-circuit or an overload	white white white	N/A
INLIEK MI	For transformers generating a protective earth conductor current greater than 10 mA and are intended for permanent connection	NUTER WALTER WALTER N	N/A
	The installation shall be made according to the wiring rules.	ret milet milet and	ret where wh
* white	For stationary transformers exceeding 1000 VA: The short circuit voltage expressed as a percentage of the rated supply voltage	WALTER WALTER WALTE	N/A
NUTER	The electrical function of the transformer	let bet bet	P N
tret we	the limiting temperature of the winding under abnormal conditions which shall be respected when the transformer is built into an appliance as information for appliance design;	and solution solution	N/A
white	For transformers not designed for series and/or parallel connection with more than one output winding, not for series or parallel connection	Set monther monther month	N/A

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		-	
	V	V	
R	-	-	

IEC 61558-2-16			
Clause	Requirement + Test	Result - Remark	Verdict
WALTER W	For IP00-transformers the test of 27.2 is not performed. The result may be affected by the enclosure in the final application.	WALL WALL WITH WITH	N/A
8.15	Marking durable and easily legible	the state of the	Р
8.16	Portable transformers with integrated plugs complying with EN 50075 (IEC plug type C), shall use the symbol IEC 60417-6352:2015-10. The instruction sheet of the plug in transformer shall contain the following information, or equivalent: if the pins of the plug parts are damaged, the plug- in power symply shall be accorded.	ANTICE MATCH MATCH	P
9 5	in power supply shall be scrapped. PROTECTION AGAINST ELECTRIC SHOCK	At the state whet	P
9.1	General	er me m m	Р
9.1	Transformers shall be enclosed and provided with adequate protection against contact with hazardous-live-parts and shall have no risk of an electric shock from stored charge on capacitors.	A STORE AND A STORE AND	P
9.2	Protection against contact with hazardous-live- parts	ret ret riet wie	P.
9.2.1	Determination of hazardous-live-parts	ner mer mer m	Р
9.2.1.1	A live part is not a hazardous-live-part if it is separated from the supply by double or reinforced insulation and the requirements of 9.2.1.2 or 9.2.1.3 are met when the transformer is supplied at rated supply voltage	A STER WITH WALTER W	S NO P SI
9.2.1.2	The voltage shall not exceed 35 V AC peak or 60 V ripple free DC.	Measured maximum output voltage: Max. 30Vd.c.	e- Prek
9.2.1.3	Where the voltage exceeds 35 V (peak) AC or 60 V ripple free DC, the touch current shall not exceed:	L/N and accessible output terminal / enclosure: max.218Vac.	P
1 5	- for AC. 0,7 mA (peak)	Max. 0.05 mA	P
- ne	- for DC. 2,0 mA	in white white white is	N/A
ex whitex	In addition, when a capacitor is connected to live parts:	maret maret somaret	Р
9.2.1.3.1	The discharge shall not exceed 45 μC for stored voltages between 60 V and 15 kV, or	The state states white	N/A
9.2.1.3.2	The energy of discharge shall not exceed 350 mJ for stored voltages exceeding 15 kV.	at the set set	N/A
9.2.2	Accessibility to hazardous-live-parts	the way way and	Р
Jer white	Transformers shall be constructed to provide adequate protection against accessibility to hazardous-live-parts.	and and and and and all	P

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and and	IEC 61558-2-16			
Clause	Requirement + Test	Result - Remark	Verdic	
WALTER W	Class I and II transformers shall be so constructed and enclosed that there is adequate protection against accidental contact with hazardous-live- parts.	The plastic enclosure considered as electrical and mechanical enclosure.	Р	
inter whi	For class I transformers, accessible parts shall be separated from hazardous-live-parts by at least basic insulation.	Tet would would would a	P	
WALLER V	Class II transformers shall be so constructed and enclosed that there is adequate protection against accessibility to basic insulation and to conductive parts separated from hazardous-live-parts by basic insulation only.	MALIER MALIER MALIER MALIER	P	
NUTE W	Only parts separated from hazardous-live parts by double or reinforced insulation may be accessible	NITER MUTER WALTER WALTE	N/A	
	Hazardous-live-parts shall not be accessible after removal of detachable parts except for	No detachable parts.	N/A	
- 5	- lamps having caps larger B9 and E10	a at at a	N/A	
m	- type D fuse holder	untit white white white	N/A	
white a	IP00 transformers shall comply with the end product standard after incorporation in the end product.	whitek whitek whitek whitek	P	
	The insulating properties of lacquer, enamel, paper, cotton, oxide film on conductive parts and sealing compound shall not be considered as giving the required protection against accidental contact with hazardous-live-parts with the exception of fully insulated winding wire (FIW).	and white white white	Ρ	
white .	Shafts, handles, operating levers, knobs and the like shall not be hazardous-live-parts.	white white white white	N/A	
ner m	Compliance is checked by inspection and by the relevant tests of IEC 60529.	MIEL WALFEL MAILE MALL	Р	
see whit	Class II transformers and Class II parts of Class I construction are tested with the test pin (fig. 3)	Tet martet waiter waiter w	P	
* white	Hazardous live parts shall not be touchable by test finger (fig. 4) with the exception of fully insulated winding wire (FIW).	No live parts were touched.	P	
WALTE D	for Class II transformers: conductive parts separated by basic insulation from hazardous live parts not touchable by test finger	white white white white	STO P	
ir ynn st se	hazardous live parts shall not be touchable with the test pin	No live parts were touched.	Р	
9.2.3	Accessibility of non-hazardous live parts	et allet inter water w	R/	
whitek	Non-hazardous live parts of the output circuit isolated from the input circuit by double or reinforced insulation may be accessible under the following conditions:	white white white white	P	
do-	following conditions:	a se de de		

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and and	IEC 61558-2-16			
Clause	Requirement + Test	Result - Remark	Verdic	
Sarin .	 for no-load output voltages not exceeding 35 V peak AC or 60 V ripple-free DC, both poles may be accessible; 	The no load output voltage is 30Vdc Max.	P	
thet whit	 for no-load output voltages exceeding 35 V peak AC or 60 V ripple-free DC and not exceeding 250 V AC, only one of the poles may be accessible. 	FET MALTER MALTER MALTER W	N/A	
9.3 🧷	Protection against hazardous electrical discharge	s at at at a	¢ P_S	
WALLER V	Transformers with primary supply plug: 1 s after the interruption of the supply the voltage between the pins do not exceed 35 V (peak) AC or 60 V ripple free DC	24V Max.	P	
NUTER WA	Transformers without a primary supply plug: 5 s after the interruption of the supply the voltage between the input terminals do not exceed 35 V (peak) AC. or 60 V ripple free DC.	white white white white	N/A	
t set	If the nominal capacitance is $\leq 0,1 \ \mu F$ – no test is conducted.	white white with w	N/A	
Whitek a	- 10 times switch the supply source on and off, or use a special equipment for to switch off at the most unfavourable electrical angle	white white white white	N/A	
det d	If the measured voltage is > 60 V ripple free DC, the discharge must be \leq 45 μ C.	and some some some	N/A	
10	CHANGE OF INPUT VOLTAGE SETTING			
et white	Transformers with more than one rated supply voltage shall be so constructed that the voltage setting cannot be changed without the aid of a tool.	No such devices.	N/A	
winter	Transformers which can be set to different rated supply voltages:	WALTER WALTER WALTE WALTE	N/A	
INLIET W	- The indication of voltage for which the transformer is set is discernible on the transformer.	NITER WAITER WAITER WAITER	N/A	
10.101	A wide range (e.g. 100 V AC to 240 V AC) of supply voltage is allowed (IEC 61558-2-16: 2021)	NET WATER WATE WATER W	P	
WALTE	- if the output voltage does not exceed the rated output voltage	watter watter waiter wat	Ρ	
WALTER D	- if the no-load output voltage does not exceed the limits of the output voltage deviation	NUTER AND A MALTER AND THE	P	
11,8-	OUTPUT VOLTAGE AND OUTPUT CURRENT UN	DER LOAD	<́₽́	
11.1	Difference from rated value (without rectifier; with rectifier):	With rectifier. (see appended table)	Р	
June - June	 a) inherently short-circuit proof transformers with one rated output voltage for the output voltage: AC≤ 10%; DC≤ 15% 	white white white wh	N/A	
	 b) inherently short-circuit proof transformers with more than one rated output voltage for the highest output voltage: AC≤10%; DC≤15% 	WALLER MALLE MALL MALL	N/A	

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IEC 61558-2-16			
Clause	Requirement + Test	Result - Remark	Verdic
WALTER IN	 c) inherently short-circuit proof transformers with more than one rated output voltage for the other output voltages: AC≤15%; DC≤20% 	which which which which	N/A
10 - 5	d) other transformers for the output voltages: AC≤5%; DC≤10%	(see appended table)	P
11.2	If a transformer is marked with the rated output, the rated output voltage, the rated output current, and the rated power factor, these values shall be substantially in agreement with each other.	ANNUT WALTER WALTER WAT	P
SUNLIFEK S	If no rated output current is assigned to the transformer, the rated output current for the purpose of this specification can be calculated from the rated output and the rated output voltage.	Whitek whitek whitek white	N/A
12	NO-LOAD OUTPUT VOLTAGE (IEC 61558-2-16:202	21) 0	Р
set wate		Input terminals of the rectifier are not accessible to user.	ST P
12.101	The no load output voltage shall not exceed :	1 1 1 1 S	P
whitek as	- For SMPS incorporating separating or auto- transformers: 1000V AC. or 1415 V ripple free DC	watch water water water	N/A
د. مار مار	- For SMPS including isolating transformers: 500 V AC. or 708 V ripple-free DC	at when we start	N/A
et set	- For SMPS including safety isolating transformers: 50 V AC. or 120 V ripple-free DC	- A MARY SALE A	Р
	For independent SMPS incorporating separating transformers, isolating transformers or auto-transformers: 50 V AC. or 120 V ripple-free DC		N/A
minet w	For independent SMPS, this output voltage limitation applies even when output windings, not for interconnection, are connected in series	white white white white	N/A
ret whit	The requirement for series connection does not apply to associated or IP 00 SMPS	et the state state a	N/A
12.202	The difference between no-load output voltage and the output voltage measured in clause 11 does not exceed the values of table 102	where we would write write	P
12.103	Unless otherwise specified by the manufacturer, SMPS shall be tested with 20 cm to 200 cm length of wire connected to the output terminals under the most unfavourable conditions. Twisted wires or cables rated in accordance with IEC 60227-5:2011 (type 60227 IEC 53) may be used. The cross sectional area of the conductors shall be determined in accordance with the rated output current of the SMPS, and the current density shall not exceed 5 A/mm ² in normal use.	analet analet analet analet and	Per survey
13	SHORT-CIRCUIT VOLTAGE	at the set of	N/A

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IEC 61558-2-16

Clause	Requirement + Test	Result - Remark	Verdic
- Julie	AND MALE MALL MALL MALL AND	1 10 10 T	. 1 ⁴ . 1 ⁴
34	The short-circuit voltage measured shall not deviate by more than 20 % from the value marked.	No marked.	N/A
14	HEATING	where where white whi	P
14.1	General requirements	1. 20 S. S.	Р
14.1.1	Temperature-rise test	Let allet white white	31 × P11
+ 18	No excessive temperature in normal use	and the	P
when	The manufacturer may choose the simulated load methods according to 14.1.2.1 or 14.1.2.2 instead of the direct load method that may be applied.	white white white	SUN P
Shi S	Room temperature: rated ambient temperature ta ± 5 °C	white white white w	P
at a	Type X, Y, Z attachments: 1 pull (5 N) to the connection windings	Not white white	N/A
- whe	Upri (V): 1,1 times rated supply voltage loaded with rated impedance – for independent transformers	264V (240 x 1.1)	P
	Upri (V): 1,1 times rated supply voltage: with I sec (A), measured with rated impedance and 1,0 times of the rated supply voltage for others than independent transformers	wontreet wontreet wontreet won	N/A
dt .	Max. temperature windings	(see appended table)	N/A
in m	- Class A: 100 °C	at ante white	N/A
* .6	- Class E: 115 °C	the state	N/A
ma	- Class B: 120 °C	and the spirit while	W P
det.	- Class F: 140 °C	1 A A	N/A
m	- Class H: 165 °C	Intre white white w	N/A
1th	- other classes	a at at a	/A
n sn st sn	Temperature of external enclosures of stationary transformers:	ALTE WALL WALL WALL	N/A
	- bare metal: 65 °C	The white white white	N/A
6 10	- metal covered by lac or varnish: 70 °C	it at at	N/A
m	- other material: 80 °C	white white when	N/A
WALTER	Temperature of external enclosure of stationary transformer 85 °C (not touchable with the IEC test finger)	whitek whitek whitek wh	N/A
LIC WA	Temperature of external enclosures, handles, etc. of portable transformers:	LIPE WATER WATER WAT	P
et alle	- continuously held parts of metal: 48 °C	at that the the	N/A
29	- continuously held parts of other material: 48 °C	me me m	N/A
55	- not continuously held parts of metal: 60 °C	1 1 1	N/A

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Clause	Requirement + Test	Result - Remark	Verdic
NULL .	 not continuously held parts of other material: 80 °C 	Plastic enclosure.	Р
m m	Temperature of terminals for external conductors and terminals of switches 70 °C	No switch.	N/A
in me	Temperature of internal and external wiring:	Tet whet mile while y	PN
t st	- rubber: 65 °C	No rubber.	N/A
me	- PVC: 70 °C	Internal plug pin lead wire	P
de	Temperature of parts where safety can be affected:	i shak th	N/A
me a	- rubber: 75 °C	multi antili antili anti	N/A
dt .	- phenol-formaldehyde: 105 °C	s A A A	N/A
w. w	- urea-formaldehyde: 85 °C	stren white white white	N/A
St . 5	- impregnated paper and fabric: 85 °C	a at at at	N/A
-m	- impregnated wood: 85 °C	which which which which	N/A
t whitet	- PVC, polystyrene and similar thermoplastic material: 65 °C	minet whitet whitet whit	N/A
de la	- varnished cambric: 75 °C	s it it lit	N/A
m n	Temperature rise of supports 85 °C	intre-white white white	Р
inet whi	Temperature of printed boards:	UL approved PCB used, the limit is 130 °C	LICP N
1 1	- bonded with phenol-formaldehyde: 105 °C	+ 10	N/A
m	- melamine-formaldehyde: 105 °C	mark which which we	N/A
- Set	- phenol-furfural: 105 °C	A A A A	N/A
m.	- polyester: 105 °C	white white white white	N/A
Set .	- bonded with epoxy: 140 °C	PCB rating: 130°C	P
19 - 5 19 - 5	Electric strength between input and output windings (18.3, 1 min); test voltage (V)	net white white with	Р
14.101	Winding temperature measured by thermocouples at the surface of the winding (IEC 61558-2-16: 2021)	t let the stret with	Р
	- if the internal frequencies is > 500Hz	sure and sure an	Р
WALLE N	- the values of Table 2 for windings temperatures are reduced by 10°C	Class: 120-10=110° C	. [™] P
14.102	SMPS shall be tested at 0,9 times and 1,1 times the rated supply voltage	ster white white white	N ¹ P
14.2	Application of 14.1 or 14.3 according to the insulatio	n system	P.
14.2.1	Class of insulation system (classified materials according to IEC 60 085 and IEC 60 216)	Class B	Р
14.2.2	No classified material, or system but the measured temperature does not exceed the value of Class A	WALTER MALTE WALT WAL	N/A

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in which	IEC 61558-2-16	at the the all is	in an
Clause	Requirement + Test	Result - Remark	Verdic
14.2.3	No classified material or system but the measured temperature exceeds the value for Class A, the live parts of the transformers are submitted to the test of 14.3	MALIER MALIER MALIER MALIER	N/A
14.3	Accelerated ageing test for undeclared class of insu	lation system	N/A
14.3.1	General Cycling test (10 cycles):	Measured transformer winding within the specified limit on normal heating test.	N/A
14.3.2	Heat run (temperature in table 4)	No to the total of the	N/A
14.3.3	Vibration test: 30 min; amplitude 0,35 mm; frequency range: 10 Hz, 55 Hz, 10 Hz	white white white white	N/A
14.3.4	Moisture treatment (48 h, 17.2)	sitet shift white white	N/A
14.3.5	Measurements and tests at the beginning and after each test:	et tot stat what	N/A
	- deviation of the no-load input current, measured at the beginning of the test less than 30%	when where we we	N/A
jt.	- insulation resistance acc. cl.18.1 and 18.2	A A A	N/A
ound on Street south	 electric strength, no breakdown (18.3 and 18.4); 2 min; test voltage 35% of specified value 	uniter white white white	N/A
	 Transformers (50 or 60 Hz version) are tested after the dielectric strength test as follows: under no load; duration: 5 min; Upri(V):1,2 times rated supply voltage; frequency (Hz): 2 times rated frequency 	white white white	N/A
15	SHORT-CIRCUIT AND OVERLOAD PROTECTION	intre water water water	P
15.1	General requirements	a a a at	Р
15.1.1	Short circuit and overload test method		Р
JEK WALT	Tests direct after 14.1 at the same ta and without changing position.	(see appended table)	N LIFE P
	Supply voltage between 0,9 times and 1,1 times of the rated supply voltage	264V (240 x 1.1) 90V (100 x 0.9)	St P
NULLEK W	Transformer with rectifier tests of 15.2 and 15.3 at the input and the output terminals of the rectifier.	the the wind white	F Pet
	Transformers with more than one output winding or tapping, all windings tested with normal load, the winding with the highest temperature is short circuited.	tret white white white	N/A
WALL	Wining protected inherently (15.2)	et night inight which we	N/A
Whitek.	 Max. temperature of winding protected inherently (insulation class): 150°C (A); 165°C (E); 175°C (B); 190°C (F); 210°C (H) 	whet milet whilet whi	N/A

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JAN .	IEC 61558-2-16	at the ste at	and and
Clause	Requirement + Test	Result - Remark	Verdic
WALT	Winding protected by protective device:	t mill and the and the	P
WALLER M	 Test according 15.3.2 - 15.3.3 – 15.3.4: max. temperature of winding during the time required or the time T given in table 6 (insulation class): 200 °C (A); 215 °C ;(E); 225 °C (B); 240 °C (F); 260 °C (H) 	A TOT WATTON WATTON W	N/A
et white	 Test according 15.3.1: max. temperature of winding during the first hour, peak value (insulation class): 200 °C (A); 215 °C (E); 225 °C (B); 240 °C (F); 260 °C (H) 	Protected, no high temperature	P
NI- V	 Test according 15.3.1: max. temperature of winding after first hour, peak value (insulation class): 175 °C (A); 190 °C (E); 200 °C (B); 215 °C (F); 235 °C (H) 	White white white wh	P
ret would	 Test according 15.3.1: max. temperature of winding after first hour, arithmetic mean value (insulation class):150 °C (A); 165 °C (E); 175 °C (B); 190 °C (F); 210 °C (H) 	a set and and and	Р
WILLIEK W	 Test according 15.3.5: max. temperature of winding (insulation class): 175 °C (A); 190 °C (E); 200 °C (B); 215 °C (F); 235 °C (H) 	water wiret muret an	P Junto Marine
inst uni	Max. temperature of external enclosures (accessible by test finger) 105 °C	at the set	P
et _56	Max. temperature of insulation of wiring (rubber and PVC) 85 °C		P
24	Temperature rise of supports 105 °C	s while white white	Р
15.1.2	Alternative short circuit and overload test method	+ it it it	P
INLIEK UN	The manufacturer may choose to apply any of the following methods described in 14.1.2.1 and 14.1.2.2. These test procedures are according to IEC 60076-11:2004, 23.2.1 and 23.2.2	white white white w	P
15.2	Inherently short-circuit proof transformers	s at at a	N/A
4	Inherently short-circuit proof transformers are tested by short-circuiting the output windings until steady-state conditions are reached	a set set set	N/A
15.3	Non-inherently short-circuit proof transformers	white white white	Y P
WALLEY W	Non-inherently short-circuit proof transformers are tested as follows	minet minet whitet a	Per Per
15.3.1	Output terminals short-circuited: protection device operates, test at 0,9 1,1 of the rated supply voltage	wiret whitet whitet whi	Set P
15.3.2	If protected by a fuse accordance with either IEC 60 269-2 or IEC 60 269-3, or a technical equivalent fuse, the transformer is loaded as in table 6.	and the ret	N/A

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N. M.	IEC 61558-2-16			
Clause	Requirement + Test	Result - Remark	Verdict	
15.3.3	If protected by a fuse accordance with either IEC 60 127(all parts) or ISO 8820(all parts), or a technical equivalent fuse, the transformer is loaded with the current as specified for the longest pre arcing time. If protected by miniature fuses in accordance to IEC 60127(all parts), 1,5 times of the rated fuse, until steady state condition (in addition)	AND	N/A	
15.3.4	If protected by a circuit-breaker according to IEC 60 898(all parts) the transformer is loaded with a current equal to 1,45 times the value of the circuit-breaker rated current	water water water water	N/A	
15.3.5	If other overload protection than a fuse (IEC 60 127) or a circuit-breaker (IEC 60 269) test with 0,95 times of operating current	Protected by electronic circuit	P S	
A WALLER	If an internal week point is used, the test must be repeated with two new samples. The two additional samples works similar to the first sample. Temperatures in the limit of table 5	et white white white whi	N/A	
15.4	For non-short-circuit proof transformers: temperature rises values in table 5, tests as indicated in 15.3	WALTER WALTER WALTER WALTER	N/A	
15.5	For fail-safe transformers:	at the state	N/A	
15.5.1	Three additional new specimens are used			
er white	- Upri (V): 1,1 times rated supply voltage	and the state of the second	Le and	
	- Isec (A): 1,5 times rated output current	with the start	18	
MALT	- time until steady-state conditions t1 (h):	alist alist and white	weit's	
at	- time until failure t2 (h): t1; 5 h	Mr. m. s. L at	, de	
15.5.2	During the test:	with miles white white	_s [™] N/A ⊲	
de a	- no flames, molten material, etc.	and the	N/A	
a sure	- temperature of enclosure 175 °C	Let only any and any all	N/A	
+ _#	- temperature of plywood support 125 °C	a to the de	N/A	
me	After the test:	MUTE WALT WALL WAL	N/A	
WALLER WALL	 electric strength (Cl. 18, 1 min, test voltage: 35% of specified value); no flashover or break- down for primary-to-secondary only for safety isolating, isolating and separating transformer and for primary-to-body for all kinds of transformer 	aniset unifet unifet unifet	N/A	
	- bare hazardous live parts not accessible by test finger through holes of enclosure	Whitek whitek white wh	N/A	

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St. Martin	IEC 61558-2-16			
Clause	Requirement + Test	Result - Remark	Verdict	
15.101	Electronic circuits shall be so designed and applied that a fault condition within the SMPS will not cause electric shock, or fire hazard, and unintentional operation of the appliance will not impair safety.	(Details see Annex H)	Р	
16	MECHANICAL STRENGTH		Por Por	
16.1	General	and the state	P .	
white	After tests of 16.2, 16.3 and 16.4	the mutater white white whi	Р	
de	- no damage	s at the	P.	
when y	- hazardous live parts not accessible by test pin according to 9.2.2	antifer write write anti-	P	
NUT UN	- no damage for insulating barriers	that attact on the south .	р ¹⁰ Р .,	
de la	- handles, levers, etc. have not moved on shafts	w w	N/A	
16.2	Stationary transformers	set and the analy and an	N/A	
t st	3 blows, impact energy 0,5 ±0,05 J	the second secon	N/A	
16.3	Portable transformers (except of direct plug in transformers)	white white white white	N/A	
white w	For portable transformers: 100 falls, 25 mm	The will mile white	N/A	
16.4	Portable transformers provided with integral pins for of the fixed wiring	introduction in socket outlets	P	
16.4.1	General requirements		Р	
WALTE	Portable transformers with integral pins for introduction into fixed socket-outlets shall have adequate mechanical strength.	white white white wh	P. 1	
whitek wh	Plug in power supply units with integral main plug complying with IEC TR 60083, without plugs complying with EN 50075 (IEC plug type C) shall be tested:	AU plug, complying with AS/NZS 3112:2017	P	
ret whit	a) plug-in transformers: tumbling barrel test: 50 times, x ≤ 250 g; 25 times, x > 250 g	235g, 50 times	LICKP	
+ #	b) torque test of the plug pins with 0,4 Nm	Str. St. St.	P	
which	c) pull force according to table 7 for each pin	- outer outer and work	P	
16.4.2	Portable transformers provided with integral pins according to EN 50075 (IEC plug type C) for introduction in socket-outlets of the fixed wiring	WALTER WALTER WALTER WALTER	N/A	
NUTER WAY	a) The test is carried in a tumbling barrel as described in IEC 60068-2-31.	Lifet minet multiple multiple	N/A	
EX MALLE	- 1000 times: x ≤ 100 g; 500 times: 100 g< x ≤ 200 g; 200 times: g< 100 x	et allet allet anitet an	N/A	
MUTER	- pull force according to IEC 60884-1:2002, 24.10 for each pin	the set and with	N/A	
20	b) torque test of the plug pins with 0,4 Nm	my my my	N/A	

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in and	IEC 61558-2-16			
Clause	Requirement + Test	Result - Remark	Verdict	
16.5	Additional requirements for transformers to be used in vehicles and railway applications		N/A	
16.5.1	Transformers to be used in vehicles and railway applications		N/A	
ister whi	An test according IEC 61373 shall be performed with conditions of Table 8 and Table 9 and the frequency values depending on the weight of the specimen are defined in Table 10	and white white white	N/A	
16.5.2	Test requirements for the transportation of transform	ners of the second	N/A	
Whitek w	Shock and vibration testing requirements for transformers subjected to while being transported per IEC 60721-3-2 with conditions according to Table 11 and Figure 8.	whilet whilet whilet while	N/A	
17	PROTECTION AGAINST HARMFUL INGRESS OF	WATER AND MOISTURE	Р	
17.1	Degree of protection (IP code marked on the transfe	ormer)	P	
17.1.1	General requirements	IPX0	Р	
MALTER	Test according to 17.1.2 and for other IP ratings test according to IEC 60 529:	whitet whitet whitet wh	P	
WALTER W	- stable operating temperature before starting the test for < IPX8	NUTEX INTEX INTEX WALTE	N/A	
LIEK WAL	- the water for the test shall be at a temperature of 15±10℃	at antet wint	N/A	
et unite	- transformer mounted and wired as in normal use		N/A	
- Jet	- fixed transformer mounted as in normal use by the tests according to 17.1.2 A to J	when we are a set of	N/A	
	 portable transformers placed in the most unfavourable position and wired as in normal use 	whit whit whit white	N/A	
Set and	- glands tightened with a torque equal to two- thirds of 25.6	at the set of	N/A	
	After the tests:	of mur mur and	N/A	
A NUTE	- dielectric strength test according to 18.3	et let set wet w	N/A	
~ ~	Inspection:	me me me	N/A	
WALTER WAS	 a) no access with hazardous-live-parts or hazardous moving parts with the relevant test probe according to the test described in 17.1.2, items A 1), B 1) and C 1). The test finger may penetrate but the stop face (ø 50 x 20 mm) shall not pass through the openings for the number 2 of the first characteristic numeral 	aniset whitet white white	N/A	

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S. S.	IEC 61558-2-16	of the the th	the the
Clause	Requirement + Test	Result - Remark	Verdict
NALIFEK NA	 b) no entry into the transformer enclosure by the relevant test probe for solid-object-proof transformers according to test described in 17.1.2, items A 2) and B 2). The protection is satisfactory if the full diameter of the probe does not pass through any openings; 	AND	N/A
A NUTER	c) no deposit of talcum powder in dust-proof transformers	t at at at	N/A
5 det	d) no deposit of talcum powder inside dust-tight transformers	when we we	N/A
NUTER M	e) no trace of water on live parts except SELV parts below 15 V AC or 25 V DC or insulation if hazard for the user or surroundings no reduction of creepage distances	MALE MALEY MALEY	N/A
set white	 f) no accumulation of water inside the enclosures of drip-proof, spray-proof, splash-proof and jet- proof transformers, which may impair safety 	et white white whit	N/A
	g) no trace of water entered in any part of water- tight transformer	aniset aniset aniset	N/A
17.1.2	Tests on transformers with enclosure:	a at at	P P
m. n	A) Solid-object-proof transformers:	mer white white a	P
LIEK WAL	- 2 IP2X test finger (IEC 60 529) and test pin (fig. 3)	at while we	TEX NITEP W
* 1	- rigid sphere		∳
m	B) Solid-object-proof transformers:	antite white white	N/A
. At	- IP3X, wire 2,5 mm; force 3 N	s at the	N/A
m	- IP4X, wire 1 mm; force 1 N	unite white white	N/A
. at	C) Dust-proof transformers, IP5X;	a de de	N/Ă
n n St s	1) At every possible point with a probe according to test probe D of B 1).	NIT WALL WALL W	N/A
- an	2) dust chamber according to IEC 60 529, fig. 2:	ret intre white whi	N/A
4 10	a) transformer has operating temperature	a de de	- N/A
with	b) transformer, still operating, is placed in the dust chamber	WALT WALT WAL	N/A
and a	c) the door of the dust chamber is closed	NUTER INVIEW MUTER	N/A
de la	d) fan/blower is switched on	an an at	N/A
ne se	e) after 1 min transformer is switched off for cooling time of 3 h	ster white white wh	N/A
white	D) Dust-tight transformers (IP6X) test according with C)	and white white white	N/A
WALTER	E) Drip-proof transformers (IPX1) test according to fig. 3 of IEC 60 529 for 10 min	white white white	N/A

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Clause	Requirement + Test	Result - Remark	Verdic
WILLEY W	F) Rain-proof transformers (IPX2) test according to fig. 3 of IEC 60 529 for 10 min in operation, any angle up to 15°	WALLEY WALLEY WALLEY	N/A
inet whi whi	G) Spray proofed transformers (IPX3) test according to fig. 4 of IEC 60 529 for 10 min in operation and 10 min switched off , time for complete oscillation (2 x 120°) is 4 sec.	ret wattet wattet wat	N/A
whitek a	 H) Splash-proof transformers (IPX4) test according to fig. 4 of IEC 60 529 (see F) for 10 min in operation and 10 min switched off (the tube shall oscillate ≈360) 	white white white	N/A
NUTEX IN	I) Jet-proof transformer (IPX5) test according to fig. 6 of IEC 60 529 (nozzle 6,3mm)	Tet wet wret	N/A
ret warr	J) Powerful Jet-proof transformer (IPX6) test according to fig. 6 of IEC 60 529 (nozzle 12 mm)	et anifet anifet ani	N/A
t de	K) Watertight transformers (IPX7)	A A A	N/A
-m	L) Pressure watertight transformers (IPX8)	unite unite unit	N/A
17.2	After moisture test (48 h for IP20, 168 h for other transformers):	48h	MUTER UNP
LITER MAL	- insulation resistance and electric strength (Cl. 18)	at white it	Tet The P
18	INSULATION RESISTANCE AND ELECTRIC STR	ENGTH	P
18.2	Insulation resistance between:	a with mint would	UN BU
tr	- live parts and body for basic insulation $\ge 2 \text{ M}\Omega$	St The st	N/A
mar	- live parts and body for reinforced insulation ≥ $7 MΩ$	>100MΩ	White MP
Intree M	- input circuits and output circuits for basic insulation $\ge 2 \text{ M}\Omega$	NUTER WHITER WALLER W	N/A
Tek whit	- input circuits and output circuits for double or reinforced insulation $\ge 5 \text{ M}\Omega$	>100MΩ	WE WE TEP
* whitek	- each input circuit and all other input circuits connected together $\ge 2 M\Omega$	- uset while while	N/A
Whitek .	- each output circuit and all other output circuits connected together $\ge 2 M\Omega$	tet tet tet	N/A
Set .	- hazardous live parts and metal parts with basic insulation (Class II transformers) $\geq 2~M\Omega$	when when when	N/A
let all	- conductive parts of class II transformers which are separated from hazardous-live parts by basic insulation only, and the body $\ge 5 \text{ M}\Omega$	at let the st	N/A
- Let	- metal foil in contact with inner and outer surfaces of insulating enclosures ≥ 7 MΩ	>100MΩ	Р
18.3	Electric strength test (1 min): no flashover or breakdown:	Mult while while	S P

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Clause	Requirement + Test	Result - Remark	Verdic
J.T.	with white white with the state	the state	JIP NIC
In a	Overvoltage category	Une me me	Р
white whi	1) functional insulation; working voltage (V); test voltage (V)	NITER MAILER WAITER W	N/A
Tex white	2) basic insulation; working voltage (V); test voltage (V)	(see table 18.3)	of Street
* aniret	3) supplementary insulation; working voltage (V); test voltage (V)	t stat stat with	N/A
	4) double or reinforced insulation	(see table 18.3)	Р
white w	 5) Functional insulation for windings intended to be connected in series or parallel (test voltage = working voltage + 500 V) 	white white white	N/A
18.3.1	A partial discharge test according to IEC 60664-1, (see test description below) shall be performed, if FIW wires or TIW wires are used and if the recurring peak working voltage Ut across the insulation is greater than 750 V. The relevant recurring peak voltage is the maximum measured voltage between the input and the output circuit, if the secondary side is earthed. The measuring shall be done at 1,0 of the maximum rated input voltage.	at an itek an itek an itek	N/A
18.3.1.101	For transformers incorporated in an SMPS in accordance with Annex BB, a partial discharge type test in accordance with Annex AA shall be performed	and when an an	N/A
18.4	Does not apply (IEC 61558-2-16:2021)	a the set of	IN CONTRACT
18.101	SMPS shall fulfil the impulse dielectric test in accordance with Annex R of IEC 61558-1:2017	when when when	P
MAL WALTER	After the test of 18.3, the SMPS shall be connected to the impulse test equipment. The impulse dielectric test shall be carried out in accordance with Annex R of IEC 61558-1:2017 between the input and output terminals of the SMPS. The interval between the impulses shall be at least 1 s if the impulses are produced inside the SMPS.	White white white w	P
Montret .	During the test, there shall be no breakdown of the insulation between turns of a winding, between input and output circuits, between adjacent input or output circuits, or between the windings and any conductive core	white white white	
18.5	Touch current and protective earthing conductor	r current	P
18.5.1	General	a at at i	1 5 P
18.5.2	Touch current	is one was a	Р

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1 JAN	IEC 61558-2-16	the star star with .	no in
Clause	Requirement + Test	Result - Remark	Verdic
WALTER WAL	Touch current measured after the clause 14 test (hot) for class I and class II transformers (class II transformers with metal foil at the plastic surface). The test circuit according figure 10. Measuring network according Figure J.1 (Annex J). If the frequency is >30kHz, measuring across the 500 ohm resistor of J.1 (burn effects).	AND	P
antitet a	Measurement of the touch current with switch p in both positions and in combination with switches e and n. The measured values are less than the required values of table 15.	Under normal condition: Max. 0.08mA (to output terminals) Max. 0.01 (to accessible enclosure)	P.C
	switches n and e in on position	Tet Tet stret wire	P
4	switch n: off and switch e: on	her me in the	Р
in white	switch n: on and switch e: off	et uset when when	of Por
18.5.3	Protective earthing conductor current	w. w.	N/A
winter w	The transformer is connected as in clause 14 Impedance of the ammeter < 0,5 ohm, connected between earthing terminal of the transformer and protective earthing conductor	White white white white	N/A
LIEK WAL	The measured values are less than the required values of table 15.	at mint white	N/A
19	CONSTRUCTION		P .
19.1	General construction	the outer white white w	P
19.1.1	General		
19.1.2	Auto-transformers	No auto-transformers	N/A
19.1.2.1	Plug connected auto-transformers where the rated input voltage is higher than the rated output voltage, shall not have any potential to protective earthing at the output socket higher than the rated output voltage.	No polarised input	N/A
19.1.2.2	Polarised input and output plug and socket-outlet system: an instruction shall be given for not using such a transformer with a nonpolarized plug and socket-outlet system.	sources sources sources an	N/A
19.1.2.3	A polarity detecting device only energises the output in the case: output potential to earth \leq rated output voltage, also with reversed input plug.	Monthet Monthet Monthet Month	N/A
er m	- The contact separation of the device is \geq 3mm	street while while while	N/A
1 1	- A current to earth does not exceed 0,75 mA.	, a at at	N/A
white	- All tests are repeated under fault conditions of H.3.3. The potential to earth does not exceed 1,1 times the max output voltage for more than 5 s.	AND MALE MALE MALE A	N/A

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all'	IEC 61558-2-16	at the the se	no an
Clause	Requirement + Test	Result - Remark	Verdic
WALTER OU	 for class I transformers, the insulation between the input / output winding and the body shall consist of at least basic insulation (rated for the working voltage) 	AND AND MADE	N/A
inet which	 for class II transformers, the insulation between the input / output winding and the body shall consist of double or reinforced insulation (rated for the working voltage). 	Tet white whitet whi	N/A
19.1.3	Separating transformers	t white muse white	P
19.1.3.1	Input and output circuits electrically separated.	w w	P
19.1.3.2	The insulation between input and output winding(s) consist of basic insulation	white white white	M P
NUTE WIN	Class I transformer	set site with all	LIE JULI- S
set and	- Insulation between input windings and body consist of basic insulation	at let set is	N/A
t de	- Insulation between output windings and body consist of basic insulation	whi whi whi	N/A
- ne	Class II transformer	white white white	P
WALTER W	- Insulation between input windings and body consist of double or reinforced insulation	NUTER INTER WAITER	N/A
LIEX WAL	- Insulation between output windings and body consist of double or reinforced insulation	at white a	Set STEP
19.1.3.3	The insulation between input windings and intermediate conductive parts and the output windings and intermediate part consist of basic insulation	and some and and	N/A
suret .	For class I transformer the insulation between input and output windings via the intermediate conductive parts consist of basic insulation	white white white	N/A
n wi Set whis * .et	For class II transformer the insulation between input winding and the body and between the output windings and the body via the intermediate conductive parts consist of double or reinforced insulation.	The summer summer summer	P
19.1.3.4	Parts of output circuits may be connected to protective earthing	watter watter wait	N/A
19.1.3.5	No direct contact between output circuits and the body, unless:	whitek whitek whitek.	N/A
NITER WILL	- Allowed for associated transformers by the relevant equipment standard	LIEK WALTER WALTER WA	N/A
19.1.4	Isolating transformers and safety isolating transformers	at most most who	et un set P
19.1.4.1	Input and output circuits electrically separated	State of the state	- P /
man	No possibility of any connection between these circuits	MALTE WALTE WALTE	V P

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- Maria	IEC 61558-2-16	at the strand all	IEC 01550-2-10			
Clause	Requirement + Test	Result - Remark	Verdict			
19.1.4.2	The insulation between input and output winding(s) consist of double or reinforced insulation (exception see 19.1.4.4)	White white white with	Р			
Set and	Class I transformers not intended for connection to the mains by a plug:	at at at at	N/A			
et whitet	- Insulation between input windings and body connected to earth consist of basic insulation (rated for the input voltage)	t while while while whi	N/A			
WALTER N	- Insulation between output windings and body, connected to earth consist of basic insulation rated (rated for the output voltage)	whitet whitet whitet white	N/A			
nister whi	Class I transformers intended for connection to the mains by a plug:	whet while while while	N/A			
ret white	- Insulation between input windings and body connected to earth consist of basic insulation (rated to the working voltage)	et white white white an	N/A			
white.	- Insulation between output windings and body, connected to earth consist of supplementary insulation (rated for the working voltage)	wonthet wonthet wonthet wonth	N/A			
in an	Class II transformers	white mile white white	N° P			
	- Insulation between input windings and body consist of double or reinforced insulation (rated for the input voltage)	at white white white	NUTEP N			
et would	- Insulation between output windings and body consist of double or reinforced insulation (rated for the output voltage)	white white white wh	P			
19.1.4.3	For transformers with intermediate conductive parts not connected to the body (between input/output):	Iron core was considered as primary circuit	N/A			
19.1.4.3.1	For class I and class II transformers the insulation between input and output windings, via intermediate conductive parts, consist of double or reinforced insulation (rated for the working voltage)	NUTER WALTER WALTER WALTER	N/A			
A JUNITER JU	- For class II transformers the insulation between input winding and the body and between the output windings and the body via the intermediate conductive parts consist of double or reinforced insulation. (rated for the input voltage and output voltage), for SELV circuits only basic insulation is required.	whilet whilet whilet while	N/A			
et white	- For transformers, different from independent, the insulation between input and output windings, via intermediate conductive parts, consist of double or reinforced insulation (rated for the working voltage)	and white white white	N/A			
19.1.4.3.2	Class I transformers with earthed core, and not allowed for class II equipment	and ret and the and the and	N/A			

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IEC 61558-2-16 Clause Requirement + Test Result - Remark Verdict Insulation between the input winding and the N/A earthed core: basic insulation rated for the input voltage Insulation between the output winding and the N/A earthed core: basic insulation rated for the output voltage 19.1.4.3.3 Insulation between: input and intermediate Р conductive parts, and output and intermediate parts consist of at least basic insulation If the insulation from input or output to the Iron core was considered as P intermediate metal part is less than basic primary circuit insulation, the part is considered to be connected to input or output. 19.1.4.4 For class I transformers, with protective screen, not N/A connected to the mains by a plug the following conditions comply: The insulation between input winding and N/A protective screen consist of basic insulation (rated for the input voltage) The insulation between output winding and N/A protective screen consist of basic insulation (rated for the output voltage) The protective screen consist of metal foil or a N/A wire wound screen extending the full width of the windings and has no gaps or holes Where the protective screen does not cover the N/A entire width of the input winding, additional insulation to ensure double insulation in this area, is used. N/A If the protective screen is made by a foil, the turns are isolated, overlap at least 3 mm The cross-section of the screen and the lead N/A out wire is at least corresponding to the rated current of the overload protective device The lead out wire is soldered or fixed to the N/A protective screen. For transformers for connection to the mains by the N/A means of a plug of any type (incorporating or not), the alternative with basic insulation plus protective screening is not allowed. 19.1.4.5 No connection between output circuit and N/A protective earth, except of associated transformers (allowed by equipment standard) or 19.8 is fulfilled. 19.1.4.6 No connection between output circuit and body, N/A except of associated transformers (allowed by

equipment standard) or when 19.8 is fulfilled.

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- Inter	IEC 61558-2-16	et all all all	m. In.
Clause	Requirement + Test	Result - Remark	Verdic
J.	and and an an an	- 10 5th 5th	all' and
19.1.4.7	The distance between input and output terminals for the connection of external wiring is ≥ 25 mm	white white white	P
19.1.4.8	Portable transformers having an rated output \leq 630 VA shall be class II.	NUTE MOUT MOUT W	Р
19.1.4.9	No connection between output circuit and body except of associated transformers (allowed by equipment standard)	Tet white white whi	S P S
19.1.4.10	Protective screening is not allowed for transformers with plug connection to the mains	white white white	N/A
19.2 📣	Flammability of materials	aller with which a	JUL JUL
nitet sint	Materials known to be highly flammable, such as celluloid, shall not be used in the construction of transformers.	LIEK MILEY MALLEY WA	The Min P
Set mires	Cotton, silk, paper and similar fibrous material shall not be used as insulation, unless impregnated.	at set set at	P
	Wax and similar impregnators shall not be used, unless suitably restrained from migration	when when we	P
where a	Wood, even if impregnated, shall not be used as supplementary or reinforced insulation	white white white	N/A
19.3	Short-circuit characteristics of portable transformers	white white white w	N° P
15 2	Portable transformer: short-circuit proof or fail-safe	and the second	P
19.4	Class II transformer contact prevention of accessible conductive parts		S P
et whitet	There shall be provisions to prevent contact between accessible conductive parts and conduits or metal sheaths of supply wiring for class II transformers.	and at at at	P
19.5	Class II transformer insulation reassembling after se	ervice	N/A
intrest wind	Parts of class II transformers serving as supplementary insulation or reinforced insulation which might be omitted during reassembly after servicing, shall either:	white white white w	N/A
	- be fixed in such a way that they cannot be removed without being seriously damaged; or	when when when	N/A
MALL	 be so designed that they cannot be replaced in an incorrect position and that, if they are omitted, the transformer is rendered inoperable or is manifestly incomplete 	white white white	N/A
نه نه مار	Sleeving may, however, be used as supplementary insulation on internal wiring, if it is retained in position by positive means.	which which which we	N/A
19.6	Loosening of wires, screws or similar parts	up mus mus m	Р
WALTER V	Class I and II transformers: creepage distances and clearances over supplementary or reinforced insulation if wire, screw, nut, etc. become loose or fall out of position not less than 50% specified values (Cl. 26)	and and and and and	P P

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IEC 61558-2-16			
Clause	Requirement + Test	Result - Remark	Verdict
	and and all all and a start of	t set set and and	N NUT
19.7	Resistor or capacitor connection with accessible con		N/A
WALTE W	Conductive parts connected to accessible metal parts by resistors or capacitors shall be separated from hazardous live parts by double or reinforced insulation	No such parts	N/A
19.8	Bridging of separated conductive parts by resistors	or capacitors	Р
er white	Resistors or capacitors connected between hazardous live parts and the body (accessible metal parts) consist of:	et wintrest whites whites wh	P
wint y	- components according to IEC 60 065, 14.2 or capacitor Y2 according to IEC 60 384-14	antife watte amile wat	N/A
mile on	- at least two separate components	Certified Y-capacitor according to IEC 60384-14	P
LIER WALT	- if one component is short-circuited or opened, values specified in Cl. 9 shall not be exceeded	et whitet whitet whitet w	N/A
* WALTER	 if the working voltage is ≤ 250 V, one Y1 capacitor according 60384-14 is allowed 	with milet milet was	N/A
WALTER W	- For a working voltage above 250 V AC and not exceeding 500 V AC and an overvoltage category III, two Y1 capacitors are required.	whitet whitet whitet white	N/A
19.9	Insulating material separating input and output wind	lings	N/A
	Insulation material input/output and supplementary insulation of rubber resistant to ageing	s por sur	N/A
t white	Creepage distances (if cracks) > specified values (Cl. 26)	white white white wh	N/A
19.10	Accidental contact protection against hazardous-live coating	e-parts provided by isolating	N/A
WUTTER MI	Protection against accidental contact by insulating coating:	NITER WALTER WALTER WALTER	N/A
LIEK WALT	a) ageing test (IEC 60068-2-14), test Na: 168 h; 70± 2℃	ster and tex and senter and tex	N/A
et whitek	b) impact test (spring-operated impact hammer according to IEC 60 068-2-75; 0,5 ± 0,05 J)	a milet milet whilet wh	N/A
whitek a	c) scratch test (hardened steel pin) electric strength test according to Cl. 18.3	tet stet stet with	N/A
19.11	Insulating material of handles, operating levers, kno	bs and similar parts	N/A
nere min	Handles, levers, knobs, etc.:	ster strer white white	N/A
14 11	- insulating material	the set of the	N/A
The works	- supplementary insulation covering	set aller aller white a	N/A
t whitek	- separated from shafts or fixing by supplementary insulation	the set set with an	N/A
19.12	Winding construction	mer mer mer m	Р

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		υı	55	0-2	

Clause Requirement + Test Result - Remark Verd				
	Requirement i reat	rtesur - rtemark	Verdic	
19.12.1	Undue displacement in all types of transformers not allowed:	white white white y	P	
m. m	- of input or output windings or turns thereof	mire white white wh	Р	
aret whit	- of internal wiring or wires for external connection	Tel miret inited inter	St. St. P	
* white	- of parts of windings or of internal wiring in case of rupture or loosening	t Tet stet with	P P	
19.12.2	Serrated tape:	me me me	N/A	
where y	- distance through insulation according to table 22	WALTER WALTER WALTER W	N/A	
STER IN	- one additional layer of serrated tape, and	at not not it	N/A	
	- one additional layer without serration	in all all all	N/A	
	 in case of cheekless bobbins the end turns of each layer shall be prevented from being displaced 	et watter water water	N/A	
19.12.3	Insulated winding wires, in an insulation system providing basic, supplementary or reinforced insulation, shall meet the following requirements.	Approved TIW used	N ^M SP	
uni. su	Multi-layer extruded or spirally wrapped insulation, passed the tests of annex K	UNITED WATER WATER WA	P	
LIL WAL	Basic insulation: two wrapped or one extruded wire	and white white	N/A	
WALTE	Supplementary insulation: two layers, wrapped or extruded	2 WALTER WALTER WALTER	N/A	
WINLTER	Reinforced insulation: three layers wrapped or extruded	MUTER MATER MAILTER W	NUTE NO	
det .	Spirally wrapped insulation:	s at at a	N/A	
n m	 creepage distances between wrapped layers > cl. 26 _ P1 values 	NUT WALL WALL WAS	N/A	
a white	• path between wrapped layers sealed, the test voltage of K2 is multiplied with 1,35	Set while white white	N/A	
	• test 26.2.4 – Test A, passed for wrapped layers	- whet whet white	N/A	
MITER	• the finished component pass routine test for the electric strength test according to cl. 18.3	ret the whet	N/A	
a)	Insulated winding wire used for basic or supplementary insulation in a wound part:	when we we we	N/A	
20	comply with annex K	the which which when	N/A	
et alle	two layers for supplementary insulation	at that they they	N/A	
24	one layer for basic insulation	ne m m	N/A	

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Clause	Clause Deminerant - Test			
Clause	Requirement + Test	Result - Remark	Verdict	
whites w	one layer for mechanical separation between the insulated wires of primary and secondary. This layer fulfils the requirement of basic insulation.	AND AND AND AND A	N/A	
b)	Insulated winding wire used for reinforced insulation in a wound part:	Approved TIW used	N ST P	
et . 50t	comply with annex K	e at at at	P S	
2m	three layers	mus mus mus	P	
NJIET .	relevant dielectric strength test of 18.3	d . 10 . 50 .	S P	
40 A	Where the insulated winding wire is wound:	mer mer mer m	Р	
NUTER ON	upon metal or ferrite cores	the set store of	Р	
	upon enamelled wire	in the second	Р	
No. WILL	under enamelled wire	et the when when	. P.O	
* would	• one layer for mechanical separation between the insulated wires and the core or the enamelled wires is required. This layer fulfils the requirement of basic insulation.	whitet whilet whitet	P	
unt u	both windings shall not touch each other and also not the core.	WELTER WALTE WALT WA	Р	
NET WAL	100 % routine test of Annex K3 is fulfilled	at another white	N/A	
et mire	no creepage distances and clearances for insulated winding wires		IN THE P	
c)	Toroidal cores used with TIW wires for double or reinforced insulation between the primary and secondary circuits shall comply with the following:	white white white	N/A	
INTEX M	1) a coating which fulfils the requirements of basic insulation between a winding and the core	The safet mark and	N/A	
aret yunin	 2) The primary winding consists of TIW wire with 3 layers (reinforced insulation) and the secondary winding consists of enamelled wire. These independent windings shall not be able to contact each other either by mechanical separation or a gap which fulfil the dielectric strength tests for basic insulation. 	Sex while while while	N/A	
MALL NA	3) For polyfilar windings (primary and secondary windings in contact with each other), the primary winding consists of TIW wire with 3 layers and the secondary winding consists of a TIW wire with 1 layer (requirements for primary and secondary windings can be changed). This construction also is allowed for use with EE-cores or similar.	and and and and and and	N/A	
d)	Toroidal cores used with FIW wires for double or reinforced insulation between the primary and secondary circuits shall comply with the following:	whilet whilet while y	N/A	

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IEC 61558-2-16			and an
Clause	Requirement + Test	Result - Remark	Verdic
WALLST	 a coating, which fulfil the requirements of basic insulation. 	WALLEY WALTER WALTER	N/A
NAL AN	 The primary winding consists of FIW wire for reinforced insulation and the secondary winding consist of FIW wire – of basic insulation. These independent windings shall not be able to contact each other either by mechanical separation or a gap which fulfil the dielectric strength test for basic insulation. 	ALTE MALTER MALTER MAL	N/A
MULTER W	3) For polyfilar windings (primary and secondary windings in contact with each other), the primary winding and the secondary winding consist of FIW wire for reinforced insulation. This construction also is allowed to use for EE-core or similar.	water water water	N/A
e)	Toroidal cores used with TIW in combination with FIW wire, for double or reinforced insulation between the primary and secondary circuits shall comply with the following:	et whitet whitet whit	N/A
	1) a coating, which fulfils the requirements of basic insulation.	the set set	N/A
er sonife sonife sonife	 2) The primary winding consists of FIW wire for reinforced insulation, and the secondary winding consists of TIW wire for basic insulation (1 layer). These independent windings shall not be able to contact each other either by mechanical separation or a gap which fulfil the dielectric strength tests for basic insulation. 	and and solution and	N/A
	 3) For polyfilar windings (primary and secondary windings in contact with each other), the primary winding consists of TIW wire for reinforced insulation (3 layer) and the secondary winding consists of FIW wire for reinforced insulation. This construction also is allowed for use with EE-cores or similar. 	SUNTER SUNTER SUNTER SU	N/A
f) NUTLIN	Toroidal cores used with TIW in combination with FIW wire, for basic insulation between the primary and secondary circuits shall comply with the following:	WALTER WALTER WALTER	N/A
10	1) a coating, which fulfils the requirements of basic insulation	un un sin	N/A
et white	 2) The primary winding consists of FIW wire for basic insulation, and the secondary winding consists of TIW wire for basic insulation (1 layer). These independent windings shall not be able to contact each other either by mechanical separation or a gap which fulfils the dielectric strength tests for basic insulation. 		N/A

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and the	IEC 61558-2-16	at the strain	ne in
Clause	Requirement + Test	Result - Remark	Verdic
Walte	3) For polyfilar windings (primary and secondary	while while while	N/A
NALIFER AND	windings in contact with each other), the primary winding consists of TIW wire for supplementary insulation (2 layers) and the secondary winding consists of FIW wire for basic insulation. This construction also is allowed for use with EE-cores or similar.	NUTER WALLER WALLER WAL	ret white w
	 4) Further polyfilar constructions with FIW and TIW wires in combination with enamelled wires for basic insulation only: 4.1) Primary winding consists of enamelled wire, secondary winding consists of FIW wire for reinforced insulation 	WALTER WALTER WALTER	N/A
nich wind seit wird	4.2) Primary winding consists of enamelled wire, secondary winding consists of TIW wire for reinforced insulation	street written writer w	et set in
19.12.3.1	Max. class F for transformers which use FIW-wire	mer mer m	N/A
19.12.3.2	FIW wires comply with IEC 60851-5:2008, IEC 60317-0-7 and IEC 60317-56.	Multiple would write	N/A
WALTER W	• other nominal diameter as mentioned in table 24 can be calculated with the Formula (6) in 26.3.5:	winex waiter whiley	N/A
still while	FIW wire used for basic or supplementary insulation for transformers according 19.1.3:	at a summer any	M
	• the test voltage of table 14, based on the working voltage of basic or supplementary insulation, comply with the min. voltage strength of table 24	WALTER WALTER WALTE	N/A
miret wh	• one layer for mechanical separation is located between the insulated wires of primary and secondary. This layer fulfil the requirement of basic insulation	NUTER WATER WATER OF	N/A
St WALS	between FIW and enamelled wire, no requirements of creepage distances and clearances	and white white whi	N/A
m	no touch of FIW and enamelled wires	white white white	N/A
WALTER N	FIW wire used for double or reinforced insulation for transformers according 19.1.4:	white multiple waited	WILLER WILLER
uret uni	the test voltage of table 14, based on the working voltage of basic or supplementary insulation, comply with the min. voltage strength of table 24	and white white	N/A
with	• for primary and secondary winding FIW-wire for basic insulation is used	white white white	N/A

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Clause	Requirement + Test	Result - Remark	Verdic	
. IT'	white white white white white and the	- 15 15 5 ⁶	alle all	
	• one layer for mechanical separation is located between the insulated wires of primary and secondary. This layer fulfil the requirement of basic insulation	super spectral spectral spectral	N/A	
iner whit	no touch between the basic insulated PRI and SEC FIW-wires	Tet whitet whitet wh	N/A	
et white	between PRI- and SEC-FIW wires, no requirements of creepage distances and clearances	t watter watter watte	N/A	
white v	Alternative construction used for reinforced insulation (reinforced insulated FIW wire and enamelled wire)	watter watter watter	N/A	
ne we	• the test voltage of table 14, based on the working voltage reinforced insulation, comply with the min. voltage strength of table 24	and which which we	N/A	
	• one layer for mechanical separation is located between the reinforced insulated FIW wire and the enamelled wire. This layer fulfil the requirement of basic insulation	whitek whitek whitek	N/A	
MULTE W	no touch between the FIW wire and the enamelled wire	milet whilet while y	N/A	
ities whi	• between the reinforced FIW wire and any other parts, no requirements of creepage distances and clearances exist	at a summer way	N/A	
white	Alternative construction with FIW wires, basic or supplementary insulated for transformers with double or reinforced insulation:	watthe water water	N/A	
millet ou	• the test voltage of table 14, based on the working voltage of basic or supplementary insulation, comply with the min. voltage strength of table 24	SUNCE SUNTER SUNTER OF	N/A	
Tet whit	PRI or SEC basic insulated FIW wire and to the other winding (enamelled wire) requirements of supplementary insulation	The want of water water	N/A	
whitek w	creepage distances and clearances between the basic insulated FIW wire and the enamelled wire for basic or supplementary insulation are required.	White white white	N/A	
dit.	Where the FIW wire is wound		N/A	
in m	upon metal or ferrite cores	LIFE INLIFE WALLE WI	N/A	
VER WALTE	• one layer for mechanical separation between the insulated wires and the core or the enamelled wires is required. This layer fulfils the requirement of basic insulation.	at water water	N/A	
w.	both windings shall not touch each other and also not the core.	white white white	N/A	

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- all'	IEC 61558-2-16	the star star	me an
Clause	Requirement + Test	Result - Remark	Verdict
19.13	Fixing of handles, operating levers and similar parts		
White w	Handles, operating levers and similar parts shall be fixed in a reliable manner so that they will not become loose as a result of heating, vibration, etc. which may occur in normal use.		N/A N/A
19.14	Fixing of covers providing protection against electric	shock	Р
MALTE	Protection against electric shock: covers securely fixed, 2 independent fixing means, one with tool	Enclosure secured by ultrasonic welding	P
19.15	Strain on fixed socket-outlets caused by pin-transformers connection		N/A
	Transformer with pins for fixed socket-outlets: no strain on socket-outlet	and white where we	N/A
w. w	Additional torque ≤ 0,25 Nm	with white white white	N/A
19.16 <	Portable transformers for use in irregular or harsh conditions		P
t set	Portable transformers for use in irregular or harsh conditions	wind which which	Р
white Tet	Portable transformers having a weight not exceeding 18 kg shall have a protection index IPX4 or higher.	IP20 for indoor use only.	NP at suffic
19.17	Drain hole of transformers protected against ingress	of water	N/A
NITER WAL	Transformers having a protection index from IPX1 up to and including IPX6 shall have an effective drain hole at least 5 mm in diameter or 20 mm ² in area, with a width of at least 3 mm.	at white white	N/A
MALTER	The drain hole is not required if the transformer, including its windings and core and all uninsulated live parts, are completely embedded in a potting material.	white white white	N/A
19.18 Plug connected transformers protected against ingress		ess of water	N/A
uni un	Transformers classified for a protection index higher than IPX1 and having a cord provided with a plug; it shall be a moulded-on plug.	inter white white white	N/A
19.19	Flexible cable or flexible cord connection for class I	portable transformers	N/A
WALTER	Class I transformers with a non-detachable flexible cable or cord with earth conductor and a plug with earth contact	watter watter watter w	N/A
19.20	SELV- and PELV-circuit separation of live parts	white and a south and	JO P
NUTEX WIN	Live parts of SELV- and PELV-circuits shall be electrically separated from each other and from other circuits	Lifet whitet whitet white	WILLIP W
Set white	- SELV output circuits separated by double or reinforced insulation from all other than SELV or PELV circuits	at white white white	Р
white	- SELV output circuits separated by basic insulation from other SELV or PELV circuits	WALTER MALTER MALTER WA	N/A

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Clause	Requirement + Test	Result - Remark	Verdict	
19.20.1	SELV circuits and parts not connected to protective earth, to live parts, or protective conductors forming part of other circuits	white white white white	P	
inet and	Nominal voltage (V) > 25 V a.c. or 60 V d.c., the required insulation fulfils the high voltage test according to table 14	Tet whitet whitet whitet al	P	
19.20.2	PELV-circuits double or reinforced insulation is necessary	+ white white white whit	N/A	
19.21	Protection against contact for FELV-circuit		N/A	
wint s	FELV-circuits: protection against contact fulfils the min. test voltage required for the primary circuit	SUNTER MATTE MALIT MAL	N/A	
19.22	Protective earthing regarding class II transformers	the street outer white	л ¹⁰ Р "/	
Jet out	Class II transformers shall not be provided with means for protective earth	at the state state of	Sec.P	
A WALLEY	A class II transformer intended for looping-in may have an internal terminal for maintaining the electrical continuity of a protective earthing conductor not terminating in the transformer, provided that the terminal is insulated from the accessible conductive parts by class II insulation.	whitek whitek whitek white	N/A	
19.23	Protective earthing regarding class III transformers		N/A	
nt yn	Class III transformers shall not be provided with means for protective earth	at whit whit when a	N/A	
20	COMPONENTS	and the state south was	R	
20.1	Components such as switches, plugs, fuses, lamp holders, capacitor and flexible cables and cords, comply with relevant IEC standard	See appended Critical Component list.	P	
NUNLIFEK W	Components inside the transformer pass all tests of this standard together with the transformer tests	Lifet milet mulet amilet	P S	
inet anti	Testing of components separately to the transformer according the relevant standard:	the state what wanted as	J. P	
ex whitek	- Ratings of the component in line with the transformer ratings, including inrush current. Component test according the component standard, based on the component marking (rating).	while while while while	N/A	
	- Components without markings tested under transformer conditions including inrush current.	NIT WIT WIT W	Р	
ret _{vunir} e t	- If no IEC standard exists, the component is tested under transformer conditions.	Components complied with IEC or UL. Components which comply with UL standard only are tested additionally under transformer conditions.	P	
20.2	Appliance couplers for main supply shall comply with:	white white white whi	N/A	

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. 642				
IEC	61	558	3-2-1	6

Clause	Requirement + Test	Result - Remark	Verdict
WALTE	- IEC 60 320 for IPX0	t of and white	N/A
15	- IEC 60320-2-3 or IEC 60309 for other	Star Star	N/A
20.3	Automatic controls shall comply with IEC 60730-1	NUT WITH WITH	N/A
20.3	Thermal-links comply with IEC 60691	a at the	N/A
20.5	Switches shall comply with annex F	No switch	N/A
20.0	Disconnection from the supply:		N/A
whitek	 by a switch, disconnecting all poles of the supply (full disconnection under the relevant overvoltage category) 	and and and and	N/A
det .	- or a flexible supply cable and cord with plug	a at at	N/A
n yn	- or an instruction sheet: disconnection by all- poles switches incorporated in fixed wiring	WITT WITT WALL W	N/A
20.6	Socket-outlets of the output circuit shall be such that there is no unsafe compatibility to plugs complying with input circuit.	and the ret	N/A
NN LEX	SELV plug and socket-outlets shall comply with IEC 60 884-2-4 and IEC 60 906-3	white white white	N/A
ant whi	Plugs and socket-outlets for SELV systems with both a rated current ≤3A and a rated voltage ≤ 24 VAC or 60VDC with a power not exceeding 72W are allowed to comply only with following:	white white white w	N/A
et white	- It is not possible for plugs to enter socket- outlets of other standardised voltage system	Se the select solution	N/A
MUTER	- Socket outlets do not accommodate plugs of other standardised voltage systems	t the set with	N/A
Jet .	- Socket outlets do not have a protective earth contact	when we we	N/A
et s	PELV plug and socket-outlets shall comply with following:	white white white w	N/A
y where	- It is not possible for plugs to enter socket- outlets of other standardised voltage system	ster white shirt wh	N/A
white	- Socket outlets do not accommodate plugs of other standardised voltage systems	e white white white	N/A
white s	- Socket outlets do not have a protective earth contact	milet waiter waiter	N/A
LIEK WIN	FELV plug and socket-outlets shall comply with following:	LITER INTER MATTER W	N/A
EX WALTE	- It is not possible for plugs to enter socket- outlets of other standardised voltage system	at that what whi	N/A
. Jet	- Socket outlets do not accommodate plugs of other standardised voltage systems	A A A	N/A

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all'	IEC 61558-2-16				
Clause	Requirement + Test	Result - Remark	Verdic		
20.7	Thermal cut-outs, thermal links, overload relays, fuses and other overload protective devices shall have adequate breaking capacity	White white white	MUTH NUM		
50 - 50 51 ⁰⁴ - 615	- Thermal cut outs fulfil the relevant requirements of 20.8 and 20.9	at at the	N/A		
y	- Thermal links fulfil the relevant requirements of 20.9	which which which	N/A		
white the second second	- The breaking capacity is in accordance with the relevant fuse standard	white white white	Р		
white a	For fuses according IEC 60127 and IEC 60269, the fuse current does not exceed 1,1 times of the rated value	SWALTER WALTER SWALTER	UN V P		
20.8	Thermal cut outs shall meet the requirements of 20.8.1.1 and 20.8.2, or 20.8.1.2 and 20.8.2.	and all all all a	N/A		
20.8.1	Requirements according to IEC 60730-1	and main which	N/A		
20.8.1.1	Thermal cut-out tested as component shall comply with IEC 60 730-1	work minet minet	N/A		
UNLIEK	a) Thermal cut outs type 1 or type 2 (see 6.4 of IEC 60730-1:2013)	ret sit with	N/A		
Lifet whi	b) Thermal cut outs fulfil the requirements of micro-interruption (type 1.C or 2.C) or micro- disconnection, (type 1.B or 2.B) (see IEC 60730-1:2013)	at which white whi	N/A		
while	c) Thermal cut outs with manual rest have a trip free mechanism (type 1.E and 2.E) (see IEC 60730-1:2013)	white white white	N/A		
when a	d) The number of cycles of automatic action shall be:	WALTE WALTE WALT	N/A		
ne in	- 3000 cycles for self-resetting thermal cut-outs	NUTER INTERNATION	N/A		
Tex whit	- 300 cycles for non-self-resetting thermal cut- outs resetting by hand	at the whet will	N/A		
* NITER	- 300 cycles for non-self-resetting thermal cut- outs resetting disconnecting	t at at a	N/A		
	- 30 cycles for non-self-resetting thermal cut-outs which are only resettable by a tool	white white with	N/A		
nn n	e) Thermal cut outs fulfil the electrical stress according 6.14.2 of IEC 60730-1:2013	White White white	N/A		
er m	f) Characteristic of thermal cut-outs:	LIER MITE WALT WA	N/A		
8 1	- ratings according IEC 60730-1:2013, cl. 5	i de la compañía de la	N/A		
mar	- classification according to:	et intre white whit	N/A		
t	1) nature of supply to IEC 60730-1:2013, cl. 6.1	s at at	N/A		
when .	2) type of load controlled to IEC 60730-1:2013, cl. 6.2	WALTE WALT WALL	N/A		

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Clause	Requirement + Test	Result - Remark	Verdic	
with .	 degree of protection IPX0 to IEC 60730- 1:2013, cl. 6.5.1 	White white white	N/A	
ne m	4) degree of protection IP0X to IEC 60730- 1:2013, cl. 6.5.2	NUTE WALLS WILL W	N/A	
an wer	5) pollution degree to IEC 60730-1:2013, cl. 6.5.3	ret wret white whi	N/A	
at white	6) comparative tracking index to IEC 60730- 1:2013, cl. 6.13	t stat stat with	N/A	
Lifet	7) max. ambient temperature to IEC 60730- 1:2013, cl. 6.7	when when we want	N/A	
20.8.1.2	Thermal cut-out tested as a part of the transformer, test with 3 samples:	which which which is	N/A	
nt sur	- at least micro-interruption or micro- disconnection (IEC 60730-1:2013)	NUTE WALT WALL W	N/A	
anne.	- 300 h aged at ta (transformer) + 10°C	et ouret outer and	N/A	
	- subjected to a number of cycles for automatic operating according 20.8.1.1	The state with	N/A	
MALTER W	During the test no sustaining arcing shall occur, during and after the test no damage at the thermal cut out and the transformer in the sense of this standard	white white white	N/A	
20.8.2	Thermal cut-outs shall have adequate breaking capacity	et a south and	N/A	
20.8.2.1	The output of the transformer with a non-self- resetting thermal cut out is short circuited at a supply voltage 1, 1 of rated supply voltage. After opening of the cut off, the supply voltage is switched of, until the transformer is cooling down.	A ANTINE ANTINE ANTINE	N/A	
Str.	- 3 cycles at 25° C for transformers without tamin	A St St	N/A	
h. n.	- 3 cycles at t _{amin} for transformers with t _{amin}	NET MAL WAL W	N/A	
TEX WALT	- after the 3 cycles short circuit of the output at 1,1 of rated supply voltage for 48 h.	Set unifet whilet and	N/A	
* whitek	During the tests no sustaining arcing shall occur After the test: withstand the test of clause 18, show no damage in sense of this standard, and be operational.	white white white	N/A	
20.8.2.2	The output of the transformer with a self-resetting thermal cut out is short circuited at a supply voltage 1, 1 of rated supply voltage.	and and and	N/A	
	- 48 h at 25° C for transformers without t _{amin}	in me me	N/A	
ie muite	- 24 h at ta and 24 h at t _{amin} for transformers with t _{amin}	et united white white	N/A	

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IEC 61558-2-16				
Clause	Requirement + Test	Result - Remark	Verdict	
WALTER W	During the tests no sustaining arcing shall occur After the test: withstand the test of clause 18, show no damage in sense of this standard, and be operational.	MALE MALE MALE	N/A	
20.8.3	Test of a PTC resistor:	at at at	N/A	
et 10	5 cycles: transformer short-circuited for 48 h by 1,1 times of the input voltage and max. ta	WIT WIT WIT	N/A	
MILEY .	5 cycles: transformer short-circuited for 48 h by 0,9 times of the input voltage and min. ta (if declared)	south south south	N/A	
NITEX WA	After the test: withstand the test of clause 18, show no damage in sense of this standard, and be operational.	and when when a	N/A	
20.9	Thermal links shall be tested in one of the following two ways.	et unet moret and	N/A	
20.9.1	Thermal-links shall comply with IEC 60 691 as a separate component.	- let set set	N/A	
	- electrical conditions to IEC 60691, cl. 6.1	Mrs. Mr. M.	N/A	
INLIE N	- thermal conditions to IEC 60691, cl. 6.2	let set state	N/A	
с. 	- ratings to 8 b) of IEC 60691:2015	ne me me	N/A	
NITE MAI	- suitability of sealing components, impregnating fluids or cleaning solvents 8 c) of IEC 60691:2015	at a survey and	N/A	
20.9.2	Thermal-links tested as a part of the transformer:	anti water water	N/A	
- 15	- ageing test 300 h by 35 °C or ta + 10 °C	s at at	N/A	
with	- After transformer fault condition the thermal link operate without sustaining arcing	while while while	N/A	
in in	- after opening the thermal-link shall have an insulation resistance of at least 0,2 $M\Omega$	Martin Martin WALLE W	N/A	
ine main	- 3 cycles for replaceable thermal-links	set uset auter and	N/A	
at miret	- 3 new specimens for not replaceable thermal- links	- ret ret ret	N/A	
20.10	Self-resetting devices not used if mechanical, electrical, etc. hazards	white white white	N/A	
20.11	Thermal cut-outs intended to be reset by soldering operation shall not be used for overload protection.	unit white where	N/A	
20.12	Overload protection devices do not operate during test (20 times switched on and off, at no load); Upri (V): 1,1 times rated supply voltage.	and white white w	P	
21	INTERNAL WIRING	ier white white white	AL BL	
21.1	Internal wiring and electrical connections protected or enclosed	und what mines	JUNIT P.M	
4	Wire-ways smooth and free from sharp edges	No sharp edges.	P	

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Clause	Requirement + Test	Result - Remark	Verdic	
21.2	Openings in sheet metal: edges rounded (radius ≥ 1,5 mm) or bushings of insulating material	while while while while	N/A	
21.3	Uninsulated conductors: distances adequately maintained	ALTE WALL WALL WALL	Р	
21.4	When external wires are connected to terminal, internal wiring shall not loosen up	THE WATER WITTE WATER W	PN	
21.5	Insulation of heat-resistant and non-hygroscopic material for insulated conductors subject to temperature rise > limiting values given in 14.1	WALTER WALTER WALTER WAL	P	
22	SUPPLY CONNECTION AND EXTERNAL FLEXIB	LE CABLES AND CORDS	√ ⁰ P	
22.1	All cables, flexible cords etc. shall have appropriate current and voltage ratings	Output cord is suitably used within the current and voltage rating.	P	
22.2	Input and output wiring inlet and outlet openings for external wiring: separate entries without damage to protective covering of cable or cord	Output cord with integral bushing	Р	
WALL State	Input and output wiring inlet and outlet openings for flexible cables or cords: insulating material or bushing of insulating material	white white white white	P	
m a	Bushings for external wiring: reliably fixed, not of rubber unless part of cord guard	Bushing for output cord.	N P	
22.3	Fixed transformer:	at whit whit w	N/A	
et de	- possible to connect after fixing		<∕∽N/A	
	- inside space for wires allow easy introduction and connection of conductors	White white white wh	N/A	
white .	- fitting of cover without damage to conductors	white muser white white	N/A	
	 contact between insulation of external supply wires and live parts of different polarity not allowed 	NUTER WALLER WALLER WALLER	N/A	
22.4	Length of power supply cord for portable transformers:	set intret water water w	N/A	
at multer	- not exceed 2 m for cross-sectional area of 0,5 mm ²	- Just millet initiat initiat	N/A	
NUTER .	- exceed 2 m for cross-sectional areas greater than 0,5 mm ² .	ret ret aret water	N/A	
22.5	Power supply cords for transformers IP20 or higher and transformers for "indoor use only" \geq IP20:	when when we we we	N/A	
tet vanite	 for transformers with a mass ≤ 3 kg: IEC 60227-5:2011 – type 60227 IEC 52 or ordinary tough rubber sheathed flexible cable or cords according to IEC 60245-4:2011 – type 60245 IEC 53; 	et white white white wh	N/A	

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IEC 61558-2-16			
Clause	Requirement + Test	Result - Remark	Verdic
NATES N	 for transformers with a mass > 3 kg: IEC 60227-5:2011 – type 60227 IEC 53 or ordinary tough rubber sheathed flexible cable or cords according to IEC 60245-4:2011 – type 60245 IEC 53. 	ANTER MATTER MATTER	N/A
et artet	Power supply cords for transformers for outdoor use: ≥ IPX0: IEC 60245-4:2011 – type 60245 IEC 57	to white white white	N/A
22.6	Power supply cords for single-phase portable transformers with input current \leq 16A:	when when when a	N/A
an s	- cord set fitted with an appliance coupler in accordance with IEC 60320(all parts)	and white and all	N/A
22.7	Nominal cross-sectional area (mm ²); input current (A) at rated output not less than shown in table 16	NUTE WALT WALL WALL	P
22.8	Class I transformer with power supply flexible cable: green/yellow core connected to earth terminal	something white white	N/A
	Plug for single-phase transformer with input current at rated output ≤16 A shall comply with IEC TR 60083, IEC 60 906-1 or IEC 60 309(all parts)	white white white we	N/A
22.9	Type X, Y or Z attachments: see relevant part of IEC 61558-2.	For output cord: type Z	P
22.9.1	For type Z attachment: moulding enclosure and external flexible cable or cord do not affect insulation of cable	a start outer outer	P P
22.9.2	Inlet openings or inlet bushing: without risk of damage to protective covering of external flexible cable or cord	whitek whitek whitek wh	N/A
Set .	Insulation between conductor and enclosure:	a at at a	N/A
an an	- for Class I transformer: insulation of conductor plus separate basic insulation	int white white white	N/A
s. mr	- for Class II transformer: insulation of conductor plus double or reinforced insulation	and white white white	N/A
	The sheath of an external flexible cable or cord equivalent to at least that of a cord complying with IEC 60227 (all parts) or 60245 (all parts) is regarded as basic insulation.	WALTER WALTER WALTER W	N/A
street was	A lining or a bushing of insulating material in a metallic enclosure is only regarded as supplementary insulation	Lifet white white	N/A
LEX WALTE	An enclosure of insulating material is regarded as reinforced insulation	et miret unitet unitet	N/A
22.9.3	Inlet bushings:	the state	- N/A
with .	- no damage to external flexible cable or cord	INTER WALT WALT W	N/A
it.	- reliably fixed		N/A

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IEC 61558-2-16				
Clause	Requirement + Test	Result - Remark	Verdic	
W.L.	- not removable without tool	NAL MALE MALTE	N/A	
MALTER M	 not integral with external flexible cable or cord (for type X attachment) 	wiret whilet whilet w	N/A	
LIEX WAL	- not of natural rubber except for Class I transformer with type X, Y and Z attachments	stet astet mittet and	N/A	
22.9.4	For transformers which are moved while operating:	50 S. S. S.	N/A	
wint	- cord guards, if any, of insulating material and fixed	WALTER WALTER WALT	N/A	
MULTER V	Compliance is tested by the oscillating test according to fig. 12:	WALTER WALTER WALTER	N/A	
State of	- loaded force during the test according to fig. 12	to the state	N/A	
	- 10 N for a cross-sectional area > 0,75	in my my m	N/A	
Ster Mart	- 5 N for other cords	at 11 5th 15	N/A	
	After the test according to fig. 12:	me m m	N/A	
NULL	- no short-circuit between the conductors	- the state street	N/A	
	- no breakage of more than 10% of stands of any conductor	at at at	N/A	
State . C	- no separation of the conductor from the terminal	inthe survey with a	N/A	
in the	- no loosening of any cord guards	The sure of	N/A	
et ste	- no damage of the cord or cord guard		N/A	
- Let	 no broken strands piercing the insulation and not becoming accessible 	wint's wint wint	N/A	
22.9.5	Cord anchorages for type X attachment:	INTE WALT WANT	J P	
untret w	- glands in portable transformers not used unless possibility for clamping all types and sizes of cable	NITER WAITER WAITER W	N/A	
TEL WALT	- moulded-on designs, tying the cable into a knot and tying the end with string not allowed	set water water wat	N/A	
the state	- labyrinths, if clearly how, permitted	i to to the	N/A	
-m-	- replacement of cable easily possible	which which which	N/A	
WALTER W	 protection against strain and twisting clearly how 	minet aniret aniret	N/A	
nifek whi	- suitable for different types of cable unless only one type of cable for transformer	Lifet all of marth an	N/A	
set mire	- the entire flexible cable or cord with covering can be mounted into the cord anchorage	at that the set	N/A	
	- if tightened or loosened no damage	me me m	N/A	
wintite .	 no contact between cable or cord and accessible or electrically connected clamping screws 	whilet whilet while	N/A	

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IEC 61558-2-16				
Clause	Requirement + Test	Result - Remark	Verdict	
NALIE	and and and and an	- site site with and		
	- cord clamped by metal screw not allowed	Mr. Mr. D.	N/A	
In The M	- one part securely fixed to transformer	let the tree street	N/A	
19 - 5	- for Class I transformer: insulating material or insulated from metal parts	at all an in	N/A	
	- for Class II transformers: insulating material or supplementary insulation from metal parts	at whit whit whe w	N/A	
when	Cord anchorages for type X, Y, Z attachments: cores of power external flexible cable or cord insulated from accessible metal parts by:	watter watter water wat	N/A	
W J	- basic insulation (Class I transformers), separate insulating barrier/cord anchorage	and white white white	N/A	
nt wh	 supplementary insulation (Class II transformers), special lining/cable or cord sheath of cable sheath of cable 	at the state while which is	N/A	
	Cord anchorages for type X and Y attachments:	me me me	N/A	
WALTE	- replacement of external flexible cable or cord does not impair compliance with standard	WALTER WALTER WALTER WALT	N/A	
WALTER W	- the entire flexible cable or cord with covering can be mounted into the cord anchorage	MATER INTER WATER WATER	N/A	
de la	- if tightened or loosened no damage	A A	N/A	
et mire	 no contact between cable or cord and accessible or electrically connected clamping screws 	and the second of	N/A	
	- cord clamped by metal screws not allowed	me me me	N/A	
N.S.C.	- knots in cord not used	let the state and	N/A	
	- labyrinths, if clearly how, permitted	me me me	N/A	
WITE M	Tests for type X with special cords, type Y, type Z	Output cord are type Z for all models.	P	
Tek yonit	Test for type X attachments one test with a cord with smallest and one test with a cord with the largest cross-sectional area:	Set white white white w	Р	
mar	- for the test with clamping screws or tightened with torque 2/3 of that specified in table 18	WALTER WALTER WALTE WALT	P	
NUTE	- not possible to push cable into transformer	at all all all	P	
	- 25 pulls of 1 s	nes me me m	Р	
The MA	- 1 min torque according to table 17	set set set site	P	
	- mass (kg); pull (N); torque (Nm):	Mass <1kg; 30N; 0.1Nm		
NALL'S	- during test: cable not damaged	of the the state of	P	
MALTER	 after test: longitudinal displacement ≤ 2 mm for cable or cord and ≤ 1 mm for conductors in terminals 	white white white white	P	

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all'	IEC 61558-2-16				
Clause	Requirement + Test	Result - Remark	Verdic		
white Let	- creepage distances and clearances values specified in Cl. 26	while while while	P		
22.9.6	Space for external cords or cable for fixed wiring and for type X and Y attachments:	ALTE WALLS WALLS V	N/A		
in whi	- before fitting cover, possibility to check correct connection and position of conductors	Tet white white wh	N/A		
at antire	- cover fitted without damage to supply cords	at the the with	N/A		
whitek a	 for portable transformers: contact with accessible metal parts if conductor becomes loose not allowed unless for type X and Y attachments terminations of cords do not slip free of conductor 	and the set	N/A		
	Space for external cords or cable for type X attachment and for connection to fixed wiring, in addition:	the supply when we	N/A		
L 15	- conductor easily introduced and connected	The second second	N/A		
white	 possibility of access to terminal for external conductor after removal of covers without special purpose tool 	white white white	N/A		
23	TERMINALS FOR EXTERNAL CONDUCTORS	White white white y	N/A		
23.1	Transformer for connection to fixed wiring and transformer without power supply cords with type Y and Z attachments: only connections by screws, nuts or equally effective devices.	at an and an	N/A		
-24	Terminals are integral part of the transformer:	mer mer me	N/A		
MALTER	- comply with IEC 60 999-1 under transformer conditions	whilet whilet whilet	N/A		
Set .	Other terminals:	the state	N/A		
and and	- separately checked according to IEC 60 998-2-1, IEC 60 998-2-2 or IEC 60 947-7-1	The state state and	N/A		
s. A	- used in accordance with their marking	a me me re	N/A		
white	- checked according to IEC 60 999-1 under transformer conditions	white white white	N/A		
white white	Transformer with type X attachments: soldered connection permitted if reliance not placed upon soldering, crimping or welding alone unless by barriers, creepage distances and clearances between hazardous live parts and other conductive part cannot be reduced to less than 50% of specified value (CI.26) should conductor break away	ANTICAL MALICAL MALICAL	N/A		
white	Transformer with type Y and Z attachments for external conductors: soldered, welded, crimped, etc. connections allowed	white white white	N/A		

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all'	IEC 61558-2-16				
Clause	Requirement + Test	Result - Remark	Verdic		
- STA	white and white the states	- 10 ST ST	STE OUR		
Whitek W	For Class II transformer: reliance not placed upon soldering, crimping or welding alone unless by barriers, creepage distances and clearances between hazardous live parts and other conductive parts cannot be reduced to less than 50% of specified value (CI.26) should conductor break away	ANTER ANTER ANTER A	N/A		
23.2	Terminals for type X with special cords Y and Z attachments shall be suitable for their purpose:	whitek whitek white	N/A		
. Set	- test by inspection according to 23.1 and 23.2	at let let	N/A		
W. Y	- pull of 5 N to the connection before test according to 14.1	unit unit unit.	N/A		
23.3	Other terminals than Y and Z attachments shall be so fixed that when the clamping means is tightened or loosened:	st set set .	N/A		
-24-	- terminal does not work loose	me me m	N/A		
- NUTER	- internal wiring is not subjected to stress	- let get get	N/A		
	 creepage distances and clearance are not reduced below the values specified in CI. 26 	whit white with	N/A		
23.4	Other terminals than Y and Z attachments shall be so designed that:	unit wait wat a	N/A		
it's white	- they clamp the conductor between metallic surfaces with sufficient contact pressure	a white wh	N/A		
white	- without damage to the conductor	a star with mit	N/A		
	- test by inspection according to 23.3 and 23.4	THE DR. N.	N/A		
white .	- 10 times fastening and loosening a conductor with the largest cross-sectional area with 2/3 of the torque specified in Cl. 25	some on the south	N/A		
23.5	Terminals for fixed wiring and for type X: located near their associated terminals of different polarities and the earth terminal if any	The set were as	N/A		
23.6	Terminal blocks not accessible without the aid of a tool	- 10t 10t 10	N/A		
23.7	Transformer with type X attachments: stranded conductor test (8 mm removed):	white white white	N/A		
we s	- Class I transformers: no connection between live parts and accessible metal parts	white whit white	N/A		
in in	- free wire of earth terminal: no touching of live parts	stret white white wh	N/A		
vintret.	- Class II transformers: no connection between live parts and accessible metal parts, no connection between live parts and metal parts separated from accessible metal parts by supplementary insulation	A WALLER WALLER WALLER	N/A		

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Clause	Requirement + Test	Result - Remark	Verdic
S. L.L.	and and war with the	Set 5th star	LITE MALL
23.8	Terminals for a current > 25 A:	mer mer mer in	N/A
NUTER A	- pressure plate, or	let set set a	N/A
	- two clamping screws	W. M. M. M.	N/A
23.9	When terminal, other than protective earth conductor, screws loosened as far as possible, no contact:	Tet white white white	N/A
white	- between terminal screws and accessible metal parts	WALTER WALTER WALTE	N/A
SUMITE SUN	- between terminal screws and accessible metal parts separated only by basic or supplementary insulation for Class II transformers	sunifict sunificity sunifications	N/A
24	PROVISION FOR PROTECTIVE EARTHING	L. M. M. A	P
24.1	Class I transformers: accessible conductive parts connected to earth terminal	Class II transformers	N/A
white	Class II transformers: no provision for protective earth	white white white	NET VP.T
24.2	Protective earth terminal for connection to fixed wiring and for type X attachment transformers: comply with Cl. 23, adequately locked, not possible to loosen without a tool	Unifet would would would would	N/A
24.3	No risk of corrosion from contact between metal of earth terminal and other terminal	a great sat	N/A
when	In case of earth terminal body of Al, no risk of corrosion from contact between Cu and Al	white white white	N/A
white	Body of earth terminal or screws/nuts of brass or other metal resistant to corrosion	white white white of	N/A
24.4	Resistance of connection between earth terminal and metal parts $\leq 0,1\Omega$ with a min. 25 A or 1,5 times rated input current at 1 min	NITER WHITER WHITER WHIT	N/A
24.5	Class I transformers with external flexible cables or cords:	ver white white white	N/A
white	- current-carrying conductors becoming touch before the earth conductor	white white white y	N/A
25	SCREWS AND CONNECTIONS	at set set	N/A
25.1	Screwed connections withstand mechanical stresses	No screw	N/A
Et MUTE	Screws transmitting contact pressure or likely to be tightened by the user or having a diameter < 2,8 mm, shall screw into metal	et the white	N/A
- Liet	Screws not of metal which is soft or liable to creep (Zn, Al)	we we the	N/A
. et	Screws of insulating material: not used for electrical connection	which which which a	N/A

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1 Marth	IEC 61558-2-16			
Clause	Requirement + Test	Result - Remark	Verdic	
WALTER W	Screws not of insulating material if their replacement by metal screws can impair supplementary or reinforced insulation	which which which w	N/A	
inet smi	Screws to be removed (replacement etc. of power supply cord) not of insulating material if their replacement by metal screws can impair basic insulation	and white white white	N/A	
WALL JEK	For a screw in engagement with the threads of insulating material: No damage after torque test: diameter (mm); torque (Nm); ten times	A CALLER AND AND A	N/A	
with s	For nuts and other screws: No damage after torque test: diameter (mm); torque (Nm); five times	suntil sunt sunt sun	N/A	
25.2	Screws in engagement with thread of insulating material:	street while while while	N/A	
in mun	 length of engagement ≥ 3 mm + 1/3 screw diameter or 8 mm whichever is shorter 	et whilet while while	N/A	
MUTER	- correct introduction into screw hole	- let set set	N/A	
25.3	Electrical connections: contact pressure not transmitted through insulating material	white white white w	N/A	
25.4	In case of use of thread-forming (sheet metal) screws for connection of current-carrying parts: clamping and locking means provided	south some and some	N/A	
et would	Thread-cutting (self-tapping) screws used for the connection of current-carrying parts allowed if they generate a full form machine screw thread and if not operated by the user	wonthe wonthet wonthet	N/A	
whitek w	Thread-cutting screws and thread-forming screws used for earth continuity allowed if at least 2 screws for each connection are used and it is not necessary to disturb the connection in normal use	white white white a	N/A	
25.5	Screws for current-carrying mechanical connections locked against loosening	at the state with	N/A	
* Jet	Rivets for current-carrying connections subject to torsion locked against loosening	- at all sut	N/A	
25.6	Test of screwed glands with a torque according table 19. After the test no damage at the transformer and the gland.	SUNCE SUPER	N/A	
26	CREEPAGE DISTANCES, CLEARANCES AND DIS	STANCES THROUGH	× P	
26.2	Creepage distances and clearances	in my my m	Р	
26.2.1	General	at that the state	P.N	
- Set	The creepage distance and clearance values are shown in Table 20 and Table 21.	when with the	P	
26.2.2	Windings covered with adhesive tape	inter when when a	Р	

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Clause	Requirement + Test	Result - Remark	Verdic
NULLI-	- all insulating materials are classified according to IEC 60085 and IEC 60216 (all parts);	while while while w	N/A
ne m	- the impulse voltage dielectric test of 6.1.2.2.1 of IEC 60664-1:2007 is fulfilled; and	ALLE MALL MALL MA	Р
in which	- test A of 26.2.4 is fulfilled	Jet allet mile and	N/A
26.2.3	Uncemented insulating parts pollution degree P2 or P3	Pollution degree 2	N P
et	- all isolating material are classified acc. to IEC 60085 and IEC 60216(all parts)	at let let	P
m a	- values of pollution degree 1 are not applicable	and and and an	Р
26.2.4	Cemented insulating parts	it it st st	N/A
(dt _ 5 ⁶	- all isolating materials are classified acc. to IEC 60085 and IEC 60216(all parts)	at at let let	N/A
- vur-	- values of distance through insulation (dti) are fulfilled	winit wat wat	N/A
when .	- creepage distances and clearances are not required	MALIFE MALIFE MALL W	N/A
unite wi	- test A of this sub clause is fulfilled	uset allet muser and	N/A
	Test A	n. m	N/A
in which	- thermal class	at anise white	N/A
* 18	- working voltage		N/A
	- Test with three specially specimens, with uninsulated wires, without impregnation or potting	(see appended table)	N/A
In 1	Two of the three specimens are subjected to:	mail and and a	N/A
INLIER WIN	- the relevant humidity treatment according to 17.2 (48 h)	whitek anitek analek and	N/A
Tex white	- the relevant dielectric strength test of 18.3 multiplied with factor 1,35	set suret intret soures	N/A
* whitek	- One of the three specimens is subjected to the relevant dielectric strength test of 18.3 multiplied by the factor 1,35 immediately at the end of the last cycle with high temperature	wanter watter water	N/A
we way	Impulse dielectric test according to 6.1.2.2.1 of IEC 60664-1:2007 – see Annex R of IEC 61558-1	WALL MALL WALL WA	N/A
26.2.5	Enclosed parts (e.g. by impregnation or potting)	and a tet whet white	N/A
26.2.5.1	- The requirements of reduced values as stated for pollution degree 1 (P1) are fulfilled	at the state state	N/A
. jet	- all isolating materials are classified acc. to IEC 60085 and IEC 60216(all parts)	when when when	N/A
sur .	Test B	with white white w	N/A

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Clause	Requirement + Test	Result - Remark	Verdic
North .	- thermal class	White white white	N/A
Jet .	- test voltage of 500 V or the working voltage	at the state of	N/A
LIFE WALT	- Test with three specially specimens, potted or impregnated. The dielectric strength test is applied directly to the joint.	(see appended table)	N/A
* 15	Two of the three specimens are subjected to:	Shi shi sh	N/A
white	- the relevant humidity treatment according to 17.2 (48 h)	white white white	N/A
winter w	- the relevant dielectric strength test of 18.3 multiplied with factor 1,25	MALTER MALTER MALTER M	N/A
NUTER WAS	- One of the three specimens is subjected to the relevant dielectric strength test of 18.3 multiplied by the factor 1,25 immediately at the end of the last cycle with high temperature	stret souther souther south	N/A
	The three spacemen pass the Impulse dielectric test according to 6.1.2.2.1 of IEC 60664-1:2007- see Annex R of IEC 61558-1	white white white	N/A
26.2.5.2	- The requirements of distance through insulation (dti) are fulfilled. (P1 values are not required)	milet antifet antifet an	N/A
LIEK WAL	- all isolating materials are classified acc. to IEC 60085 and IEC 60216(all parts)	et white white	N/A
at all	Test C		N/A
m	- thermal class	white white white	• N/A
Set	- test voltage of 500 V or the working voltage	at at let	N/A
where w	- Test with three specimens, potted or impregnated. (finished components)	(see appended table)	N/A
m m	- Neither cracks, nor voids in the insulating compounds	NUTER WHITE WALL WAL	N/A
See white	Two of the three specimens are subjected to:	set stret outer outer	N/A
* mirek	- the relevant humidity treatment according to 17.2 (48 h)	t ret ret aret	N/A
	- the relevant dielectric strength test of 18.3 multiplied with factor 1,35	some sure sure .	N/A
sines you	- One of the three specimens is subjected to the relevant dielectric strength test of 18.3 multiplied by the factor 1,35 immediately at the end of the last cycle with high temperature	while while while whi	N/A
et white	The three spacemen pass the Impulse dielectric test according to 6.1.2.2.1 of IEC 60664-1:2007 – see Annex R of IEC 61558-1	at white white white	N/A
26.3	Distance through insulation	1 5th 5th 5th	N P

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	IEC 61558-2-16			
Clause	Requirement + Test	Result - Remark	Verdict	
26.3.1	For supplementary, double or reinforced insulation, the required values of Tables 22 are fulfilled	which which which which	Р	
sunt su Lifet smi	The insulation fulfil the material classification according IEC 60085 and 60216(all parts) or the test of 14.3	net set set set	Р	
26.3.2	Reduced values of the thickness of insulation for supplementary or reinforced insulation are allowed if the following conditions are fulfilled:	t suret intret whitet and	N/A	
MATER	- the isolating materials are classified acc. to IEC 60085 and IEC 60216(all parts)	tet stat what	N/A	
4	- the test of 14.3 is fulfilled	me m m	N/A	
1747 - 310 184 - 154	- If both requirements are fulfilled, the required values for solid insulation can be multiplied by 0,4	NITER WALTER WALTER WALTER	N/A	
	 Minimum thickness of reinforced insulation <u>></u>0,2 mm 	south south south so	N/A	
wints	 Minimum thickness of supplementary insulation <u>></u>0,1 mm 	white white white whi	N/A	
26.3.3	Insulation in thin sheet form	ift ist site and	P	
Ster at	 If the layers are non-separable (glued together): 	at all the state	N/A	
200	The requirement of 3 layers is fulfilled	s your she	N/A	
et waite	The mandrel test according 26.3.4 is fulfilled with 150±10 N	ANNIE MALINE MAILER WA	N/A	
whitek	• The required values for d.t.i. of thin layers in Tables 22 is fulfilled.	wiret whitet whitet white	N/A	
st	- If the layers are separated:	and the state	Р	
uni mi	The requirement of 2 layers is fulfilled	Insulation tape wrap around external of switch mode transformer	Р	
et whitek	If serrated tape is used, 1 additional layer (serrated) and one additional layer without serration is required	white white white	N/A	
NNLTEX 1	• The mandrel test according 26.3.4 is fulfilled on each layer with 50±5 N	Tet and wird and	P	
Jet in	• The required values for d.t.i. of thin layers in Tale 22 is fulfilled.	at the test the	P	
20	- If the layers are separated (alternative):	the must when when	N/A	
Set Mult	The requirement of 3 layers is fulfilled	at that the states	N/A	
- white	If serrated tape is used, 1 additional layer (serrated) and one additional layer without serration is required	while while while and	N/A	

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Clause	Requirement + Test	Result - Remark	Verdic
WILLE	which which when when the state of the	Land and the state	
Set	The mandrel test according 26.3.4 is fulfilled on 2/3 of the layers with 100±5 N	when when we we	N/A
n n	• The required values for d.t.i. of thin layers in Tale 22 is fulfilled.	nist white white whe	N/A
at whitek	Test according to 14.3 and if the isolating materials are classified acc. to IEC 60085 and IEC 60216(all parts) no distances through insulation are required for insulation in thin sheet form	Tet white white white	N/A
	The values for thin layers are used for insulation in thin sheet form as follows:	Tet with milet of	LIE PER
LIEX IN	 rated output > 100 VA values for thin layers apply 	all so set and	N/A
et . 5	 rated output ≥ 25 VA and ≤ 100 VA 2/3 of the values for thin layers apply 	it with with with	Р
- Sul-	 rated output < 25 VA 1/3 of the values for thin layers apply 	with white white	N/A
26.3.4	Mandrel test of insulation in thin sheet form (specimen of 70±0,5 mm width are necessary):	white white white	P
MULLE W	 If the layers are non-separable – at least 3 layers glued together fulfil the test: 	antifet whitet white why	N/A
Set out	- pull force of 150±10 N	at a set of	N/A
et white	 high voltage test of 5,0 kV or the test voltage of 18.3 multiplied by 1,35 whatever is the greater. No flashover, no breakdown. 	A STATE WITH ANTIFA	N/A
MUTER	- If the layers are separable and 2/3 of at least 3 layers fulfil the test.	Tet Jet with	N/A
	- pull force of 100±5 N	me me me	N/A
NUT W	 high voltage test of 5,0 kV or the test voltage of 18.3 multiplied by 1,25 whatever is the greater. No flashover, no breakdowns. 	NITER WALTER WALTER WAL	N/A
ynn t cit	- If the layers are separable 1 of at least 2 layers fulfil the test:	fer watte water water	Р
white	- pull force of 50±5 N	- whet when white a	ທີ່ P
MALTER S	 high voltage test of 5,0 kV or the test voltage of 18.3 multiplied by 1,25 whatever is the greater. No flashover, no breakdown. 	WITTER WAITER WAITER WA	IT PA
26.3.5	For transformers with FIW wires	a at at a	N/A
- 147	- thermal cycles	the ment white white	N/A
et _5°	- test voltage of 500 V or the working voltage	at at at at	N/A
24	- Test with three specimens	(see appended table)	N/A
10	Two of the three specimens are subjected to:	A do the	N/A

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all	IEC 61558-2-16		
Clause	Requirement + Test	Result - Remark	Verdict
AND .	- the relevant humidity treatment according to 17.2 (48 h)	White white white	N/A
no m	- the relevant dielectric strength test of 18.3	mite white white wh	N/A
iset whi	- One of the three specimens is subjected to the relevant dielectric strength test of 18.3 immediately at the end of the last cycle with high temperature	Tet white white white	N/A
	The partial discharge test shall be done at the end of the cycling test at normal room temperature as performed in 18.3.1.	white white white a	N/A
nitet un	The values of allowed voltage strength for other FIW dimensions than defined in Table 24 are calculated	and white multiply white	N/A
26.101	Creepage distances and distances through insulation given in Table 21, Table 22 and Table 23 of IEC 61558-1:2017 are generally applicable (IEC 61558-2-16: 2021)	(see appended table)	un fet P
26.102	In compliance with IEC 60664-4:2005, the requirements of 26.103 to 26.106 for creepage distances, clearances and solid insulation are required above 30 kHz and up to the frequency of 3 MHz. For frequencies above 3 MHz, the tests in accordance with 7.4 and 7.5 of IEC 60664-4:2005, high-frequency testing (high-frequency high-voltage test and high-frequency partial discharge test) shall be carried out.	white white white white	P
26.103	Clearance (IEC 61558-2-16:2021)	and white white white	P
MUTER	a) Clearance for frequency ≥ 30 kHz according figure 101 two determinations are necessary:	stat strat what a	N/A
INITEK JUN	• determination based on the rated impulse voltage of the rated supply voltage in accordance with Table 103 and Table 104.	where we we we	N/A
ret whit	determination based on the measured peak working voltage in accordance with Table 106.	est that strest sures	N/A
t stet	 b) Clearance for frequency ≤ 30 kHz according figure 101 two determinations are necessary: 	white the state	P N
No.	determination based on the rated impulse voltage of the rated supply voltage in accordance with Table 103 and Table 104.	white white where we	P
at a	• determination based on the measured peak working voltage in accordance with Table 105.	sure sure sure on	Р
26.104	The working voltages of Table 105 and Table 106 for determination of clearances are peak working voltages. (IEC 61558-2-16: 2021)	LICE WALTER WALTE WALT	P
whit	All peak working voltages including µs-peaks shall be used to determine clearances in accordance with Table 105 and Table 106.	WALTER WALTE WALT	P.
26.105	Creepage distances (IEC 61558-2-16: 2021)	sites with white w	NP NP

Clause

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Verdict

Ρ

Ρ

Ρ

Ρ

Ρ

Ρ

Ρ

N/A

P P

P P

Ρ

N/A

N/A

N/A

Ρ

Ρ

Ρ

Requirement + Test	Result - Remark
we a start when when the start	the start of the s
Two determinations of creepage distances are necessary (see Figure 102)	white white white white
 determination based on the measured RMS working voltage in accordance with Table 21 of IEC 61558-1:2017; 	MITE WALL WALL WALL WALL
 determination based on the measured peak working voltage in accordance with Table 107 to Table 112 and the fundamental frequency shall be considered 	A CALLER AND THE MALLER AND
A high-frequency RMS ripple voltage content not more than 10% can be neglected.	II when the state much
The values in Table 107 to Table 112 do not take into account the effects of tracking phenomena for frequencies above 30 kHz.	and white maret anates
The most severe value of the required creepage distances in accordance with Table 107 to Table 112 for frequencies above 30 kHz and the relevant values in Table 21 of IEC 61558-1:2017 shall take precedence.	et waitet waitet waitet
If the value of the creepage distance is lower than the value of the clearance, the value of the clearance shall be applicable for the creepage distance.	white white white
The peak working voltage also includes any DC voltage and any repetitive peak impulse generated by the SMPS (and 26,105). A determination based	at an and

WALLER W	the value of the clearance, the value of the clearance shall be applicable for the creepage distance.	white white white white
NITEX WAY	The peak working voltage also includes any DC voltage and any repetitive peak impulse generated by the SMPS (see 26.105). A determination based on RMS values is also required (see 26.104 and Table 112).	at an inter an inter a
26.106	Distance through insulation (IEC 61558-2-16:2021)	which which when we
whiter.	Instead of partial discharge with high frequency voltage the test of the distance and the calculation of the electric field is applicable under the following conditions:	white white white white
20 2	- the max. frequency is < 10 MHz	the more more an
LIER WALT	- the field strength approximately comply with Figure 103	Tet martet waitet waiter w
et whitet	- no voids or gaps are present in between the solid insulation	with mitter amitter ami
whitek	For thick layers $d1 \ge 0.75$ the peak value of the field strength is $\le 2 \text{ kV/mm}$	stat what what while
NUTEK IN	For thin layers d2 \leq 30 µm the peak value of the field strength is \leq 10 kV/mm	at let get get
19t - 54	For d1 > d > d2 formula (2) is used for calculation the field strength	a state and and
27	RESISTANCE TO HEAT, FIRE AND TRACKING	it water water water wa
27.1	General	A 10 10 5
27.2	Resistance to heat	white whe whe with

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Sec.	IEC 61558-2-16	the star strends	me in
Clause	Requirement + Test	Result - Remark	Verdic
27.2.1	All insulating parts are resistant to heat	neiter uniter uniter w	P
UNLIFE UN	For parts of rubber, which passed the test of 19.9, no additional test is required.	No rubber used	N/A
ifet whi	The tests are not required for cables and small connectors with a rated current ≤ 3 A, a rated voltage ≤ 24 V AC or 60 V DC and a power ≤ 72 W	Tet wantet wattet watte	N COP
27.2.2	External accessible parts	t let set state	Nº RU
whitek a	The Ball-pressure test: diameter of impression ≤ 2 mm; heating cabinet temperature (°C) at 70±2 °C or the temperature T of 14.1 (T+15±2) is fulfilled.	(See appended table)	P
27.2.3	Internal parts	stat state with with	Р
Set white	For insulating material retaining current carrying parts in position, the ball-pressure test -: diameter of impression ≤ 2 mm; heating cabinet temperature (°C) at 125±2 °C or the temperature T of 14.1 (T + 15±2) is fulfilled	(See appended table)	P
27.3	Resistance to abnormal heat under fault conditions	me me m	N/A
27.4	Resistance to fire	ster ster with mi	P
27.4.1	All isolating parts of the transformer shall be resistant to ignition and spread of fire. The test according to IEC 60695-2-10 is required	and said an and	- P
27.4.2	External accessible parts (glow wire tests)		Ø P S
m	- 650°C for enclosures	white white where	en P
	 650 °C for parts retaining current carrying parts in position and terminals for external conductors Current ≤ 0,2 A 	whitet whitet whitet w	UT PIE
INTE MA	 750° C for parts retaining current carrying parts in position and terminals for external conductors with fixed wiring. Current > 0,2 A 	white white white white	N/A
VINLIEK WILLEK	 850° C for parts retaining current carrying parts in position and terminals for external conductors with non-fixed wiring. Current > 0,2 A 	WALTER WALTER WALTER	N/A
27.4.3	Internal parts	s & to	P P
we w	- 550 °C for internal insulating material – not retaining current carrying parts in position	white sures sures sure	N/A
in m	- 650 °C for coil formers (bobbins)	T1 July and and	P\
et white	 650 °C for parts retaining current carrying parts in position and terminals for external conductors. Current <a> 0,2 A 	at monther would would .	N/A
whiter	 750 °C for parts retaining current carrying parts in position and terminals for external conductors with fixed wiring. Current > 0,2 A 	Bobbin, PCB	NET NR

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	IEC 61558-2-16		
Clause	Requirement + Test	Result - Remark	Verdict
WALLER WAY	 850 °C for parts retaining current carrying parts in position and terminals for external conductors with non-fixed wiring. Current > 0,2 A 	AND	N/A
27.5	For IP other than IPX0: If insulating parts retaining current carrying parts in position and under P3 conditions, the material resistance to tracking is at least material of group IIIb	Tet wantet wantet wantet w	N/A
	Material group IIIb (100≤CTI≤175) is not recommended for application in pollution degree 3 above 630V	when when we are	N/A
NUTEX MIL	Test (175 V): no flashover or breakdown before 50 drops	net net with with	N/A
28	RESISTANCE TO RUSTING	the the star se	N/A
The Moult	Ferrous parts protected against rusting	et the with miles of	N/A
ANNEX E	GLOW WIRE TEST	200 200 20	Р
E.1	The test is required according to IEC 60695-2-10 and IEC 60695-2-11 with the following additions:	Considered.	P
E.2	The requirements of 8.2, "Test temperatures" of IEC 60695-2-11:2014, apply with the temperature stated in 27.4 of IEC 61558-1	writer writer writer write	whiP et
E.3	Clause 7, "Conditioning", of IEC 60695-2-11:2014 apply, preconditioning is required	and a suntile south a	P 🖑
E.4	Clause 8, "Test procedure", of IEC 60695-2- 11:2014 apply, the tip of the glow wire is applied to the flat side of the surface.	white white white wh	Phu
ANNEX F	REQUIREMENTS FOR MANUALLY OPERATED S PARTS OF THE TRANSFORMER	WITCHES WHICH ARE	N/A
F.2	Manually operated mechanical switches, tested as separate component, shall comply with IEC 61058:2016 under the conditions of F.2.	NJEK WALTER WALTER WALTER	N/A
F.3	Manually operated mechanical switches tested as part of the transformer shall comply with the conditions specified under F.3	and the ret ret of	N/A
ANNEX H	ELECTRONIC CIRCUITS	while while while while	Р
H.1	For transformers including electronic circuits, the following requirements apply additionally to Clauses 5, 15, 26. This annex is not required for associated transformers	white white white white	P
H.2	General notes on tests (addition to clause 5)	the way way with a	Р
Н.3 🖉	SHORT-CIRCUIT AND OVERLOAD PROTECTION	(ADDITION TO CLAUSE 15)	P S
H.3.1	Circuits designed and applied so that fault conditions do not render the appliance unsafe	which which we will be	Р
me i	During and after each test:	with white white white	P

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Clause	Requirement + Test	Result - Remark	Verdic
WALTER .	- temperatures do not exceed values specified in table 5	which which	P
	- transformer complies with conditions specified in sub-clause 15.1	MITE WALT MALL W	Р
A WALLEY	If a conductor of a pcb becomes open circuited, the transformer is considered to have withstood the particular test, provided that all six conditions as specified are met	and white white white	N/A
H.3.2	Fault conditions a) to f) of sub-clause H.3.3 are not tested if the following conditions are met:	at let set	Peter
st.	- electronic circuit is a low-power circuit as specified	white white white	Р
n van	- safety of the appliance as specified does not rely on correct functioning of the electronic circuit	and the second	P
H.3.3	Fault conditions tested as specified when relevant:	m. m. m	Р
WALTE	a) short-circuit of creepage distances and clearances, if less than specified in Cl. 26	WALTER WALTER WALTER	N/A
500	b) open circuit at the terminals of any component	a at at	J. P
Nr N	c) short-circuit of capacitors, unless they comply with IEC 60 384-14	mer whi whe w	Р
in white	d) short-circuit of any two terminals of an electronic component as specified	and while we	P
white	e) any failure of an integrated circuit as specified	and the state will	N/A
	f) low-power circuit: low-power points are connected to the supply source	when we set set	P P
NUTER ON	Cl. 15 is repeated with a simulated fault as indicated in a) to e), if the transformer incorporates an electronic circuit to ensure compliance with Cl. 15	white white white	N/A
sex while	Fault condition e) is applied for encapsulated and similar components	set white white whi	N/A
* whitek	PTC's and NTC's are not short-circuited if they are used as specified	- whet while while	N/A
⊣.3.4	If for a fuse-link complying with IEC 60 127-3 rated fuse current I1 is used, current I2 is measured as specified:	SULEX AND DE MULTER	INTER PR
inex wh	- if I2 < 2,1 x I1 test of 15.8 is repeated with fuse- link short-circuited	set and whet we	N/A
de de	- if I2 > 2,75 x I1, no other tests are necessary	10 V	N/A
mart	If I2 > 2,1 x I1 and I2 < 2,75 x I1 test of 15.8 is repeated as specified	of white white white	N/A
white	For fuses other than those complying with IEC 60 127-3, the test is carried out as specified 15.3.2 to 15.3.5	whitek whitek whitek	WILL WP

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	IEC 01008-2-10		
Clause	Requirement + Test	Result - Remark	Verdic
H.4	CREEPAGE DISTANCES, CLEARANCES AND DIS INSULATION (ADDITION TO CLAUSE 26)	TANCES THROUGH	N/A
H.4.1	For live parts separated by basic insulation smaller cr and cl as in 26 are allowed, if H.3 is fulfilled.	ALTE WALT WALT WAL	N/A
an white	In optocouplers no requirements of cr and cl	tet the street white	N/A
et whitet	For coatings annex W applies. Smaller distances as required in IEC 60664-3:2016, clause 4 are applicable,	t white white white w	N/A
	For potted transformers cycling tests according to 26.2. are applicable	white a start multiple white	N/A
H.4.2	The ma. surface temperature of optocouplers is 50 K	at set set set set	N/A
ANNEX K	INSULATED WINDING WIRES	the main me mi	N/A
K.1	Wire construction:	at set set set	N/A
t stet	insulated winding wire for basic or supplementary insulation (see 19.12.3)	when we get	N/A
Alt .	• insulated winding wire for reinforced insulation (see 19.12.3)	white white white white	N/A
in in	 splid circular winding wires and stranded winding wires with 0,05 to 5,0 mm diameter 	unite waite waite waite	N/A
	spirally wrapped insulation – overlapping	at anite white	N/A
K.2	Type tests		N/A
K.2.1	General Tests between ambient temperature between 15°C and 35°C and at a humidity between 25% and 75 %	while while while while	N/A
K.2.2	Electric strength test	s at the th	N/A
K.2.2.1	Solid circular winding wires and stranded winding wires	NET WALL WALL WALL	N/A
ar white	Test samples prepared according to clause 4.4.1 of IEC 60851-5:2008 (twisted pair)	ret whiles white white	N/A
a wintres	Dielectric strength test: 6 kV for reinforced insulation	MALIER WALTER WALTER W	N/A
WALLEK WA	Dielectric strength test: 3 kV for basic or supplementary insulation	suret minet assiret and	N/A
K.2.2.2	Square or rectangular wires.	and the set	N/A
nt me	Test samples prepared according to clause 4.7.1 of IEC 60851-5:2008	LIFE WAITE WALT WAL	N/A
ie vinere	Dielectric strength test: 5,5 kV for reinforced insulation	WALTER WALTER WALTE V	N/A
WALTER	Dielectric strength test: 2,75 kV for basic or supplementary insulation	millet whilet whilet wh	N/A
K.2.3	Flexibility and adherence	See a second	N/A

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Clause	Requirement + Test	Result - Remark	Verdic
J.T.	and and any and and any	the state of the	JIP NIP
- millet	Claus 5.1 in Test 8 of IEC 60851-3:2009 shall be used	white white white	N/A
me m	Test samples prepared according to clause 5.1.1.4 of IEC 60851-3:2009	nife white white w	N/A
	Dielectric strength test: 5,5 kV for reinforced insulation	Tet whitet whiter whi	N/A
WALTER	Dielectric strength test: 2,75 kV for basic or supplementary insulation	t united whites white	N/A
đ	Mandrel diameter according table K.1	1 at at	N/A
when w	The tension to the wire during winding on mandrel is 118 N/mm² (118 MPa)	antit anti anti	N/A
K.2.4 📣	Heat shock	LIEK NUTER WAITE W	N/A
LEX WALT	Test samples prepared according to 3.2.1 (in Test 9) of IEC 60851-6:2012	of set sof al	N/A
1 At	high voltage test immediately after this test	an an an	N/A
white	Dielectric strength test: 5,5 kV for reinforced insulation	white white white	N/A
WALTER W	Dielectric strength test: 2,75 kV for basic or supplementary insulation	milet while while a	N/A
K.2.5	Retention of dielectric strength after bending (test as specified under test 13 of 4.6.1 c) of IEC 60 851-5)	tet an inter an	N/A
er intre	high voltage test immediately after this test	and the state	N/A
Tet	Dielectric strength test: 5,5 kV for reinforced insulation	when we we are	N/A
sil.	Dielectric strength test: 2,75 kV for basic or supplementary insulation	white white white	N/A
К.З 🛷	Testing during manufacturing	NUTES WALTE WALTE W	N/A
K.3.1	General Tests as subjected in K.3.2 and K.3.3	ret minet aniset and	N/A
K.3.2 🦽	Routine test		N/A
with	Dielectric strength test: 4,2 kV for reinforced insulation	white white white	N/A
white of	Dielectric strength test: 2,1 kV for basic or supplementary insulation	white white white	N/A
K.3.3	Sampling test	let the states	N/A
K.3.3.1	Solid circular winding wires and stranded winding wires	the state of the	N/A
- Jet	Test with a twisted pair, prepared according clause 4.4.1 of IEC 60851-5:2008	which which which	N/A
	Dielectric strength test: 6 kV for reinforced insulation	WILLEY WALTE WALT	N/A
		1	100

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IEC 61558-2-16				
Clause	Requirement + Test	Result - Remark	Verdict	
	with white where the set of	15 AT 50	and and	
	Dielectric strength test: 3 kV for basic or supplementary insulation	soft when she	N/A	
K.3.3.2	Square or rectangular wire	NUTE WALT WALL V	N/A	
stret whi	Samples prepared according to clause 4.7.1 of IEC 60851-5:2008	set uset milet and	N/A	
et miret	Dielectric strength test: 5,5 kV for reinforced insulation	t the set of	N/A	
	Dielectric strength test: 3 kV for basic or supplementary insulation	with with with	N/A	

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Verdict

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Clause	Requirement + Test
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Result

- Remark

t - Remark

ANNEX V	ANNEX V, SYMBOLS TO BE USED FOR THERMAL CUT-OUT	S N/A
Figure V.1	Restored by manual operation	N/A
Figure V.2	Restored by disconnection of the supply	N/A
Figure V.3	Thermal link θ	N/A
Figure V.4	Self-resetting thermal cut-out	N/A

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Verdict

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Clause	

Requirement + Test

Result - Rema

t - Remark	
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11 <u>200 1 7 1</u>	NO-LOAD OUTPUT VOLTAGE					
Clause		1	1		12	
type/rated output/	rated voltage (V)	sec. voltage (V)	delta Usec (%)	Usec V no-load output	delta Usec no-load output %	further information
5.0		4.94	2.6	5.13	3.84	100V/50Hz
GTM41060	- 5.0	4.94	^{رو} 2.6	5.13	3.84	100V/60Hz
1505 / 5VDC	3A 5.0	4.95	2.4	5.12	3.43	240V/50Hz
	5.0	4.95	2.4	5.12	3.43	240V/60Hz
5° 5°	30.0	29.94	0.1	30.03	0.30	100V/50Hz
GTM41060	1 30.0	29.94	0.1	30.03	0.30	100V/60Hz
2530 / 30VD 0.833A	30.0	29.94	0.1	30.03	0.30	240V/50Hz
14	30.0	30.0 29.94 0.1 30.03 0.30		240V/60Hz		
Limits	5°	the star	±10		±20	1 1 - 1 -

de la companya de la comp		N 4			de la	10 10
14	TABLE: Heating Test	de la	8 - 5 ⁰	e ster	In The of	P s
Set	Supply voltage (V):	90V/ 60Hz	90V/ 60Hz	264V/ 50Hz	264V/ 50Hz	
	Ambient (°C):	See below	See below	See below	See below	
Maximu	m measured temperature T of part/at:		Т ('	°C)		max. temperature limit, (°C)
		Vertical	Horizont al	Vertical	Horizont al	TEN JEN .
Model:	GTM41060-1505	Set and	er antre	white a	me m	m. m
Enclosu	re inside near plug holder	74.9	78.6	75.6	80.0	Ref.
Enclosu	re outside near plug holder	51.1	51.5	51.3	52.4	~ ⁶ 80 ~ ⁶
MOV1 b	oody	69.0	72.4	70.1	73.7	85
CX1 boo	dy	74.7	75.3	79.5	79.7	100
NF1 wir	nding	88.4	92.4	81.4	86.0	120
NF1 bol	obin	86.9	91.0	81.3	86.2	120
C1 body	I get get agent with white	83.4	88.0	83.4	88.7	105
PCB ne	ar DB1	78.9	84.0	85.7	91.6	130 <i></i> ^
SH2 boo	dy	75.8	81.5	83.6	89.9	Ref.
T1 wind	ing	98.8	99.9	106.6	107.2	110
T1 core	t set set set mer when	98.1	99.2	105.8	106.4	110
PCB ne	ar T1	105.7	106.9	114.4	115.1	130
CY1 boo	dy	94.5	95.5	101.8	102.3	125

Reference N	lo.: WTX23X12276829X1S
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Ref.

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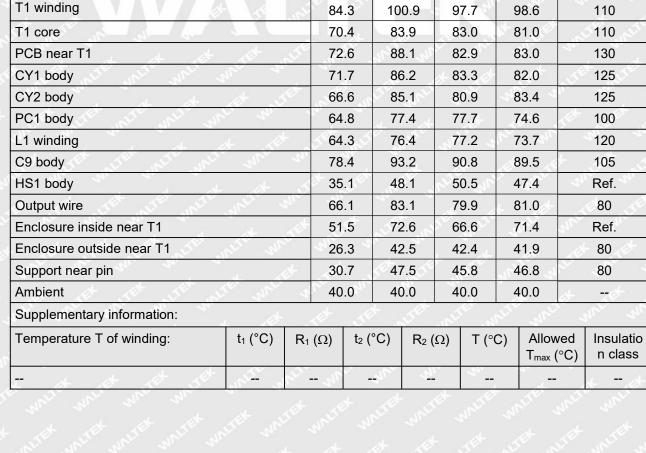
105

130

Ref.

APR INTE		IEC 61558-2-1	6 🖉			
Clause	Requirement + Test	NUTER WALTER	Resi	ult - Remar	k	
7 J.	inter when when we	In.	A	1 1	e de	
PC1 body	and the state	83.3	86.5	87.6	90.5	
L1 winding	Jack mar white when we	105.7	102.9	113.5	109.1	1
C9 body	the second second	87.8	85.9	92.4	89.9	
HS1 body	set wife white white wh	101.0	101.5	106.4	106.8	¢+
Output wir	e	71.6	67.3	74.8	70.0	
Enclosure	inside near T1	62.3	66.4	64.4	69.0	
Enclosure	outside near T1	59.1	64.3	62.5	67.4	21
Support ne	ear pin	47.1	47.4	47.3	47.8	
Ambient	m. m. m.	40.0	< 40.0 <i>(</i>	40.0	40.0	1
Model: G	TM41060-2530	re me m	14		A	, de
Enclosure	inside near plug holder	60.3	79.2	71.8	75.6	
Enclosure	outside near plug holder	33.9	49.9	48.5	48.7	
MOV1 boo	dy	57.7	75.5	69.3	71.1	
CX1 body	set the set with	76.5	94.4	78.4	80.3	
NF1 windi	ng	75.1	92.7	78.0	79.7	5
NF1 bobbi	in at at set	75.9	96.5	86.8	91.3	
C1 body	ner we we we	71.2	92.9	88.9	94.7	5
PCB near	DB1	66.7	89.0	86.2	92.3	
SH2 body	24 124 124 2 34	88.1	105.9	101.1	102.9	1
T1 winding		84.3	100.9	97.7	98.6	
T1 core		70.4	83.9	83.0	81.0	
		0 10		V		





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	and the
Result - Remark	Verdict

Supplementary information:

The heating test performed at unit continuous operation.

15	TABL	TABLE: SHORT-CIRCUIT AND OVERLOAD PROTECTION							
	ambie	ent temperat	ure (°C)		:	24.9			
type/rated	doutput	r-cold Ω	r-warm Ω	temp. °C	ext. encl °C	. support °C	int. + ext. wire	further information	
GTM4106 / 5Vdc, 3A		NJ PAT MAL	*	136.9	74.1	47.9	81.0		
GTM4106 / 30Vdc, 0		10 - 10 -		120.9	76.2	41.2	47.0	<u></u> .	

Note:

1. The model of GTM41060-1505 that output overload to 4.5A, the unit protected, T1 winding max. temp.: 136.9°C no hazards.

2. The model of GTM41060-2530 that output overload to 1.9A, the unit protected, T1 winding max. temp.: 120.9°C no hazards.

3. Rated ambient temperature ta: 40°C

18.2 TABLE: insulation resistance measuremen	its	· / P
Insulation resistance R between:	R (MΩ)	Required R (MΩ)
Model: GTM41060-1505		ster street white a
Different polarity of Live part after open fuse (L/N)	>100	2
Live part (L/N) to enclosure (rounded with metal foil)	>100	The second second
Live part (L/N) to output terminal	>100	5
1 layer insulation tape	>100	
T1: primary and secondary	>100	5
T1: core and secondary	>100	1 m 5 m
metal foil in contact with inner and outer surfaces of enclosures	>100	in set water 7 mint wa
Model: GTM41060-2530	the second	A 10 10 5
Different polarity of Live part after open fuse (L/N)	>100	2
Live part (L/N) to enclosure (rounded with metal foil)	>100	A 14 74 5th
Live part (L/N) to output terminal	>100	5
1 layer insulation tape	>100	5 5
T1: primary and secondary	>100	5
T1: core and secondary	>100	5
metal foil in contact with inner and outer surfaces of enclosures	>100	st the 7.00 mile



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	NP
Result - Remark	Verdict
	Result - Remark

Supplementary information:

5 5

18.3	TABLE: Dielectric Strength		15 15 SP
Test volta	ge applied between:	Test potential applied (V)	Breakdown / flashover (Yes/No)
Model: G	TM41060-1505	set intret untile unit	when when when
Different p	polarity of Live part after open fuse (L/N)	1820 AC	A Not St
Live part (L/N) to enclosure (rounded with metal foil)	3640 AC	No
Live part (L/N) to output terminal	3690 AC	No No
T1: prima	ry and secondary	3690 AC	No
T1: core a	nd secondary	3690 AC	No No No
3 layers o	of insulating tape	3690 AC	No
metal foil enclosure	in contact with inner and outer surfaces of s	3690 AC	No
Model: G	TM41060-2530	. the state state	White white white
Different p	polarity of Live part after open fuse (L/N)	1820 AC	No
Live part (L/N) to enclosure (rounded with metal foil)	3640 AC	No No
Live part (L/N) to output terminal	3800 AC	A No A
T1: prima	ry and secondary	3800 AC	No No
T1: core a	ind secondary	3800 AC	Not S
3 layers o	of insulating tape	3800 AC	No
metal foil enclosure	in contact with inner and outer surfaces of s	3800 AC	No
Suppleme	entary information:	A A	at at set

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ANNEX H	Electro	onic circui	its fault test					s it is	⊱ P.≪	
mr.	ambient temperature (°C):					: 25.0				
dt.	Test vo	oltage(V)	<u> </u>			264	4V	the state	1th	
Component No. fault		Test voltage	Test time Fuse N		No. Fuse current(A)		Result			
Model: GT	M41060	-1505	me a	e de	1.to	1	t Set	NUTER ANUTER AN	NUTE N	
BD1	INTER	SC	264V	1s	F1	er A	0	Fuse (F1) opene immediately, no		
C1	5th			Fuse (F1) opene immediately, no						
D1		SC	264V	1s	E1	u.	0,00	Fuse (F1) opene immediately, no		

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lause	Requirement + Test	

Clause	Requir	rement + Te	st	Mr. The	- m	Result - Rema	Verdict	
ANNEX H	Electr		ts fault test	S	+	and the set	NUTER NUTE	Р
				THE WALL	- mr	05.0		P
in the			ure (°C)			25.0	Miller Mille	N. L.
	-					264V	10 T	
Componer		fault	Test voltage	Test time	Fuse N	o. Fuse current(A)	Resul	t
T1 (pin 1-3)	MUTER	SC	264V	1s 3	F1	0	Fuse (F1) open immediately, no	
T1 (pin 2-4)	Nifet V	SC	264V	10min	F1	0.00	Fuse (F1) open immediately an ten times, no ha	d repeat
T1 (pin 5-6)	et with	SC	264V	10min	F1	0.026	Unit shut down damage, no ha	
Q1 pin S-D	WALT	SC	264V	1s	F1	0	Fuse (F1) open immediately an ten times, no ha	d repeat
Q1 pin S-G	UNLITEK .	SC	264V	10min	F1	0.012	Unit shut down damage, no ha	
Q1 pin D-G	Jet 1	SC	264V	10min	_√F1	0.012	Unit shut down damage, no ha	
IC1 pin 1-5		SC	264V	10min	5 F1	0.012	Unit work norm hazard.	ally, no
PC1 pin 1		oc	264V	10min	51 ⁶⁰ F1	0.012	Unit shut down damage, no ha	
PC1 pin 3	me	OC	264V	10min	F1	0.012	Unit shut down damage, no ha	
PC1 pin 1-2	2	SC	264V	10min	F1	0.012	Unit shut down damage, no ha	
PC1 pin 3-4	let w	SC	264V	10min	F1	0.012	Unit shut down damage, no ha	
C8	+ NALTE	SC	264V	10min	F1	0.012	Unit shut down damage, no ha	
D4	Tek	SC	264V	10min	Ę1	0.012	Unit shut down damage, no ha	
Output	20.	SC	264V	10min	F1	0.012	Unit shut down	, no

Model: GTM41060-2530

	0-200					
BD1	SC	264V	1s	F1	0	Fuse (F1) opened immediately, no hazard.
C1	SC	264V	1s	F1	0	Fuse (F1) opened immediately, no hazard.
D1	SC	264V	1s	F1	0	Fuse (F1) opened immediately, no hazard.
T1 (pin 1-3)	SC	264V	1s	JF1	0	Fuse (F1) opened immediately, no hazard.

Waltek Testing Group (Shenzhen) Co., Ltd. http://www.waltek.com.cn

damage, no hazard.

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lause	Requirement + Test	

ult - Remark	
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Clause	Requi	Requirement + Test					esult - Rema	Verdict	
	1	m. m		14	4 14		the fl	* NITER STILL	and a second
ANNEX H		- <u>A</u>	its fault test	A	- Martin	J.	the she	20 20	Р
5 ⁶⁷ . 3	ambie	nt temperat	ture (°C)			25	5.0	the set	J.S.C.
2. 2.	Test v	oltage(V)		de la constance	:	26	64V	she she	2
Componer	nt No.	fault	Test voltage	Test time	Fuse N	0.	Fuse current(A)	Resul	1
T1 (pin 2-4)	white	SC	264V	10min	F1	*		Fuse (F1) open immediately an ten times, no ha	d repeat
T1 (pin 5-6)	Liter 1	SC	264V	10min	F1		0.11	Unit shut down, damage, no ha	
Q1 pin S-D	iet un	SC	264V	15	F1	191 191	0	Fuse (F1) open immediately an ten times, no ha	d repeat
Q1 pin S-G	WALTE	SC	264V	10min	F1	çet.	0.016	Unit shut down, damage, no ha	
Q1 pin D-G	WALLEK.	SC	264V	10min	F1	÷	0.016	Unit shut down, damage, no ha	
IC1 pin 1-5	Lifet al	SC	264V	10min	√F1	4	0.016	Unit work norm hazard.	ally, no
PC1 pin 1		OC	264V	10min	ر بر ^{کرد} آبار	in.	0.016	Unit shut down, damage, no ha	
PC1 pin 3		ос	264V	10min	F1		0.016	Unit shut down, damage, no ha	
PC1 pin 1-2	2012	SC	264V	10min	F1	() 	0.016	Unit shut down, damage, no ha	
PC1 pin 3-4	here .	SC	264V	10min	F1		0.016	Unit shut down, damage, no ha	
C8	SEX JUP	SC	264V	10min	F1	3	0.016	Unit shut down, damage, no ha	
D4	t 5	SC	264V	10min	F1	ь. Г	0.016	Unit shut down,	

Note: S-C: Shout circuit, O-C: Open circuit

SC

264V

Output

20 TA	BLE: Components	m m		at let	.√₽ .
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity1)
Plug unit (for AU type)	GlobTek, Inc.	Q-SAA	ATTER WATER WAY	AS/NZS 3112: 2017+A1:2021	Refer Report No. : WTX24D0102 3115Z

10min

F1

0.016

Waltek Testing Group (Shenzhen) Co., Ltd. http://www.waltek.com.cn

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damage, no hazard.

Unit shut down, no

damage, no hazard.

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Verdict

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Clause Requirement + Test	
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UL 248-14

20	TABLE: Components	the set is	in which which	m m	P
Object/part N	lo. Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity1)
Enclosure an Plug holder material	d SABIC INNOVATIVE PLASTICS B V	945(GG) 915R(GG)	PC, Min. V-0, Min. thickness: 2.0mm, 120°C	IEC 61558-1 UL 94 UL 746 A/B/C/D	Tested with appliance UL E45329
Alt. use	SABIC JAPAN L L C	945(GG) 915R(GG)	PC, Min. V-0, Min. thickness: 2.0mm, 120°C	IEC 61558-1 UL 94 UL 746 A/B/C/D	Tested with appliance UL E207780
Alt. use	LG Chem (Guangzhou) Engineering Plastics Co Ltd	LUPOY EF- 1006F(m)	Min. V-0, Min. 120°C, Min. 2.0mm thickness	UL 94	UL E248280
Alt. use	Covestro Deutschland AG	FR6005 + (z)	Min. V-0, Min. 105°C, Min. 2.0mm thickness	UL 94	UL E41613
Alt. use	SILVER AGE ENGINEERING PLASTICS (DONGGUAN) CC LTD	PC2330	Min. V-0, Min. 115°C, Min. 2.0mm thickness	UL 94	UL E225348
Output Cord	Interchangeable	Interchangeab le	Min. 24AWG, Min. 300Vac, Min. 80°C	IEC 61558-1 UL 758	Tested with appliance UL approved
PCB	WALEX ELECTRONIC (WUXI) CO LTD	T2 T2A T2B T4	Min. 1.6 mm thickness, min. V-0, 130°C	IEC 61558-1 UL 796	Tested with appliance UL E154355
Alt. use	SUZHOU CITY YILIHUA ELECTRONICS CO LTD	YLH-1	Min. 1.6 mm thickness, min. V-0, 130°C	UL 796	UL E251781
Alt. use	DAFENG AREX ELECTRONICS TECHNOLOGY CO LTD	02V0 03V0 04V0	Min. 1.6 mm thickness, min. V-0, 130°C	UL 796	UL E186016
Alt. use	SHENZHEN TONGCHUANGXI N ELECTRONICS CO LTD		Min. 1.6 mm thickness, min. V-0, 130°C	UL 796	UL E250336
Fuse (F1,F2) (F2 is optiona	Conquer Electronics Co., Ltd.	MST series	T1A or 2A, 250V	IEC 60127-1 IEC 60127-3 UL 248-1	VDE 40017118 UL E82636

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Clause	Requirement + Test	Result - Remark	Verdict
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20	TABLE: Components	et let a	LIE WALL WALL	we sur	Р
Object/part N	lo. Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity1)
Alt. use	Suzhou Walter Electronic Co. Ltd.	2010	T1A or 2A, 250V	IEC 60127-1 IEC 60127-3 UL 248-1 UL 248-14	VDE 40018781 UL E56092
Alt. use	Dongguan Better	932	T1A or 2A, 250V	IEC 60127-1 IEC 60127-3 UL 248-1 UL 248-14	VDE 40033369 UL E300003
X capacitor (CX1)(optiona	al) Cheng Tung Industrial Co., Ltd.	СТХ	Max 0.47µF, Min.300V,110°C X1 or X2	IEC/EN 60384- 14 UL 1414	ENEC-02671 UL E193049
Alt. use	Tenta Electric Industrial Co. Ltd.	MEX	Max 0.47µF, Min.300V,110°C X1 or X2	IEC/EN 60384- 14 UL 60384-14 UL 1414	VDE 119119 UL E222911
Alt. use	Ultra Tech Xiphi Enterprise Co. Ltd.	HQX	Max 0.47µF, Min.300V,110°C X1 or X2	IEC/EN 60384- 14 UL 60384-14 UL 1414	VDE 40015608 UL E183780
Alt. use	Dain Electronics Co., Ltd.	MEX	Max 0.47µF, Min.300V,110°C X1 or X2	IEC/EN 60384- 14 UL 60384-14 UL 1414	VDE 40018798 UL E147776
Alt. use	Dain Electronics Co., Ltd.	MPX	Max 0.47µF, Min.300V,110°C X1 or X2	IEC/EN 60384- 14 UL 60384-14 UL 1414	VDE 40018798 UL E147776
Alt. use	Dain Electronics Co., Ltd.	NPX	Max 0.47µF, Min.300V,110°C X1 or X2	IEC/EN 60384- 14 UL 60384-14 UL 1414	VDE 40018798 UL E147776
Alt. use	Shantou High-New Technology Dev. Zone Songtian Enterprise Co., Ltd.	МРХ МКР	Max 0.47µF, Min.300V,110°C X1 or X2	IEC/EN 60384- 14 UL 60384-14 UL 1414	VDE 40034679 UL E208107
Y capacitor (CY1, CY2) (CY2 optiona	TDK Corporation	CD	Y1, AC250V, Max 3300pF	IEC/EN 60384- 14 UL 60384-14 UL 1414	VDE 40029780 UL E37861

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Clause	Requirement + Test	Result -

ult -	Remark	
ult -	Remark	

lt - Remark	
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Clause R	equirement + Test			Result - Remark		
20 T.	ABLE: Components	t to a	LIET WALTER WALT	White White	Р	
Object/part No	o. Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity1)	
Alt. use	Success Electronics Co., Ltd.	SE	Y1, AC250V, Max 3300pF	IEC/EN 60384- 14 UL 60384-14 UL 1414	VDE 40037211 VDE 40020002 UL E114280	
Alt. use	Success Electronics Co., Ltd.	SB	Y1, AC250V, Max 3300pF	IEC/EN 60384- 14 UL 60384-14 UL 1414	VDE 40037221 VDE 40020001 UL E114280	
Alt. use	Murata Mfg. Co., Ltd.	КХ	Y1, AC250V, Max 3300pF	IEC/EN 60384- 14 UL 60384-14 UL 1414	VDE 40002831 UL E37921	
Alt. use	Haohua Electronic Co.	CT7	Y1, AC250V, Max 3300pF	IEC/EN 60384- 14 UL 60384-14 UL 1414	VDE 40003902 UL E233106	
Alt. use	JYA-NAY Co., Ltd.	JN	Y1, AC250V, Max 3300pF	IEC/EN 60384- 14 UL 60384-14 UL 1414	UL E201384 TUV R 50232059	
Alt. use	SHANTOU HIGH- NEW TECHNOLOGY DEVELOPMNT ZONE SONGTIAN ENTERPRISE CO LTD	CD CE	Y1, AC250V, Max 3300pF	IEC/EN 60384- 14	VDE 40025754 VDE 40025748 UL E208107	
Varistor MOV1 (Optional)	Xiamen SET Electronics Co., Ltd.	TFV8S471K	Max. Continuous voltage: min 300Vac(rms),	IEC 61051-1 IEC 61051-2	TUV J 50554061	

125°C

voltage:

Min.

Max. Continuous

385Vac(rms),

Min. 125 C

IEC 61051-1 IEC

61051-2

VDE

40023049

10D621K

SHANTOU HIGH-

TECHNOLOGY

DEVELOPMNT

ZONE SONGTIAN

ENTERPRISE CO

NEW

LTD

Alt. use

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Verdict

IEC 61558-2-16

Clause	Requirement + Test	Result - Remar

ult - Remark	-24	~~~

20 1	TABLE: Components				P
Object/part N	lo. Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity1)
Alt. use	Thinking Electronic Industrial Co., Ltd	TVR10621	Max. Continuous voltage: Min. 385Vac(rms), Min. 125 C	IEC 61051-1 IEC 61051-2	VDE005944
Alt. use	Guangdong Huiwan Electronics Technology Co.Ltd	V-621K-10D EH	Max. Continuous voltage: Min. 385Vac(rms), Min. 125 C	IEC 61051-1 IEC 61051-2	VDE 40043880
Photo coupler (PC1)	r Everlight Electronics Co., Ltd.	EL817	Dti=0.5mm Int. , dcr=6.0mm EXT.dcr=7.7mm, thermal cycling test,110°C	IEC/EN 60747-5- 2	VDE 132249
Alt. use	COSMO ELECTRONICS CORP	К1010	Dti=0.6mm Int. , dcr=4.0mm EXT.dcr=5.0mm, thermal cycling test,115°C	IEC/EN 60747-5- 2	VDE 101347
Alt. use	COSMO Electronics Corporation	KP1010	Dti=0.6mm Int. , dcr=4.0mm EXT.dcr=5.0mm, thermal cycling test,115°C	IEC/EN 60747-5- 2	VDE 101347
Alt. use	Lite-On Technology Corporation	LTV-817	Dti=0.8mm Int. , EXT.dcr=7.8mm, thermal cycling test,110°C	IEC/EN 60747-5- 2	VDE 40015248
Alt. use	Bright Led Electronics Corp.	BPC-817 A/B/C/D/L BPC-817 M BPC-817 S	Dti=0.4mm EXT. dcr=7.0mm, thermal cycling test,110°C	IEC/EN 60747-5- 2	VDE 40007240
Line filter NF	1 GlobTek/HAOPUW EI/HEJIA/BOAM/E NG	NF00009B	130°C	IEC 61558-1	Tested with appliance

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Verdict

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Clause	Requirement + Test	

Result - Remark

Remark

20 T	ABLE: Components	et let is	The write write	mer mer	20	Р
Object/part N	o. Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)		k(s) of prmity1)
Transformer (T1)	GlobTek/ BOAM/ HAOPUWEI/ ENG	XF00290 3-5V XF00290A 5.1-6.9V XF00328 7- 11.9V XF00291 12- 15.9V XF00318 16- 18V XF00295 18.1-20V XF00230 20.1-24V	Class B, with critical component listed below	IEC 61558-1	Tested	
-Insulation system	GLOBTEK INC	GTX-130-TM	Class 130(B)	UL 1446	UL E2	43347
Alt. use	SHAN DONG BOAM ELECTRIC CO LTD	BOAM-01 B1	Class 130(B)	UL 1446	UL E2	52329
Alt. use	WUXI HAOPUWEI ELECTRONICS CO LTD	ZT-130	Class 130(B)	UL 1446	UL E3	15275
Alt. use	ENG ELECTRIC CO LTD	ENG130-1	Class 130(B)	UL 1446	UL E3	08897
- Magnet wire	PACIFIC ELECTRIC WIRE & CABLE (SHENZHEN) CO LTD	UEWN/U	MW28-C, 130°C	UL 1446	UL E2	01757
Alt. use	BOLUO COUNTY XIN LONG ELECTRICIAN DATA CO LTD	2UEW-F (UL E229423)	MW 79-C, 155°C	UL 1446	UL E2	29423
Alt. use	JUNG SHING WIRE CO LTD	UEW-4 (UL E174837)	MW75C, 130°C	UL 1446	UL E1	74837
Alt. use	JUNG SHING WIRE CO LTD	UEY-2 (UL E174837)	MW28-C, 130°C	UL 1446	UL E1	74837
Alt. use	JIANGSU HONGLIU MAGNET WIRE TECHNOLOGY CO LTD	2UEW/130 (UL E335065)	MW75-C, 130°C	UL 1446	UL E3	35065
Alt. use	WUXI JUFENG COMPOUND LINE CO LTD	2UEWB (UL E206882)	MW75#, 130°C	UL 1446	UL E2	06882

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Verdict

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Clause Requirement + Te	t Result
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lt - Remark

20	TAE	BLE: Components	et the si	it white white	me m	20.	Р
Object/part No.		Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) r) conformity	
Alt. use	. use JIANGSU UEW MW 75-C, 130°C UL 1446 DARTONG M & E (UL E237377) CO LTD		UL 1446	UL E237377			
Alt. use	12 E	SHANDONG SAINT ELECTRIC CO LTD	UEW/130 (UL E194410)	MW75#, 130°C	UL 1446	UL E194410	
Alt. use	4 7 4	ZHEJIANG LANGLI ELECTRIC EQUIPMENTS CO LTD	UEW (UL E222214)	MW 79#, 130°C	UL 1446	UL E222214	
Alt. use	a an	NINGBO JINTIAN NEW MATERIAL CO LTD	2UEW (UL E227047)	MW 75-C, 130°C	UL 1446	UL E227047	
-Triple- insulated wir (Secondary)		Great Leoflon Industrial Co., Ltd.	. TRW (B) Class B, reinforced insulation UL 2353 UL 60601-1 Tested wit appliance VDE 1365 UL E21194		ince 136581		
Alt. use		COSMOLINK CO. Ltd.	TIW-M Serie(s)	Class B, reinforced insulation	IEC 61558-1 UL 2353 UL 60601-1		
Alt. use	stek st	Furukawa Electric Co., Ltd. Electronics & Automotive Systems Company Global Business Development Division	TEX-E	Class B, reinforced insulation	ed UL 2353 appliance		
Alt. use	4 5 4	TOTOKU ELECTRIC CO LTD	TIW-2	Reinforced insulation, rated 130° C (Class B)	IEC 61558-1 UL 2353 UL 60601-1	applia VDE 40044	
Alt. use	*	HOI LUEN ELECTRICAL MFR CO LTD	THL-F-xx, THL-F-SB-xx	Reinforced insulation, Class B	IEC 61558- 1 UL 2353 UL 60601- 1	appliance	
-Bobbin	mi	CHANG CHUN PLASTICS CO LTD	T375J T375HF	V-0, 150°C, thickness 0.45 mm min.	UL 94 UL 746 A/B/C/D	UL E59481	
Alt. use	N. T.E.	CHANG CHUN PLASTICS CO LTD	4130	V-0, 140°C, thickness 0.74 mm min.	UL 94 UL 746 A/B/C/D	UL E59481	

TABLE: Components

SUMITOMO BAKELITE CO

Manufacturer/ trademark

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Alt. use

Object/part No.

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Requirement + Test	SIN SIN F
	Requirement + Test

Remark	
Koman	

Jet Ster .	Result	t - Remark		Verdict
n n	a de da	t it it	. 5°	100
			20	Р
Type/model	Technical data	Standard (Edition / year)		rk(s) of ormity1)
PM-9820 PM-9823	V-0, 150°C, thickness 0.45 mm min.	UL 94 UL 746 A/B/C/D	UL E	41429
1350F-1 1350T-1 44	Min.130°C	UL 510	UL E	17385
370S(b)	Min.130°C	UL 510	UL E	175868

1. 14 m	LTD	PM-9823	mm min.	UL 746 A/B/C/D	- m - m
-Insulating tape	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	1350F-1 1350T-1 44	Min.130°C	UL 510	UL E17385
Alt. use	BONDTEC PACIFIC CO LTD	370S(b)	Min.130°C	UL 510	UL E175868
Alt. use	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PZ CT WF	Min.130°C	UL 510	UL E165111
Alt. use	Huizhou Yahua Sticking Tape co. Ltd	PZ CT WF	Min.130°C	UL 510	UL E495875
Alt. use	JINGJIANG JINGYI ADHESIVE PRODUCT CO LTD	JY25-A(b)	Min.130°C	UL 510	UL E246950
Alt. use	CHANG SHU LIANG YI TAPE INDUSTRY CO LTD	LY-XX(a)(b)	Min.130°C	UL 510	UL E246820
-PTFE tubing	GREAT HOLDING INDUSTRIAL CO LTD	TFT / TFS	Min. 300V, 200°C	UL 224	UL E156256
Alt. use	SHENZHEN WOER HEAT- SHRINKABLE MATERIAL CO LTD	WF	600V, 200°C	UL 224	UL E203950
Alt. use	CHANGYUAN ELECTRONICS (SHENZHEN) CO LTD	CB-TT-T / CB- TT-S	Min. 300V, 200°C	UL 224	UL E180908
Bleeder Resistor(RA, RB)	Yageo Corporation	RV series	Max. 604 KΩ Min.1/4	IEC 61558-1	DK-108482- UL
Alt. use	Ralec Electronic Corp	RTV series	Max. 604 KΩ Min.1/4	IEC 61558-1	DK-66106- M1-UL

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Clause	Requirement + Test	Result - Remark	Verdict
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20	TAI	ABLE: Components			20	Р		
Object/pa	rt No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)			
Alt. use	et wi	Guangdong Fenghua Advanced Technology Holding Co.,Ltd.	RVS series	Max. 604 KΩ Min.1/4	IEC 61558-1	NO109708		
Copora		Viking Tech Coporation Kaoshiung Branch	HVRC series	Max. 604 KΩ Min.1/4	IEC 61558-1		B . No.: 21748-	
Alt. use		TZAI YUAN ENTERPRISE CO LTD	HSMD OR SMD	Max. 604 KΩ Min.1/4	IEC 61558-1	DK-2 M1-L	9431- IL	
Alt. use		Yageo Corporation	AH series	Max. 604 KΩ Min.1/4	IEC 61558-1	DK-1 UL	10207-	
Alt. use	whet	WALSIN TECHNOLOGY CORP	WF12N	Max. 604 KΩ Min.1/4	IEC 61558-1	DK-1 UL	19162-	
Alt. use PDC		PDC	FVS03,FVS05 ,FVS06,FVS2 0,TF25V,TF06 V,TF08V,TF1 2V,TF20V,FV S25	Max. 604 KΩ Min.1/4	IEC 61558-1	DK-1 UL	01615-	
1) An aste	erisk in	dicates a mark which	assures the agi	eed level of survei	llance		- 1	
Suppleme	ntary i	information: N/A		1 1 5	ALLE MILE	JAL	m	

26	TABLE: Working voltage measurement.				
Location		RMS voltage (V)	Peak voltage (V)	Comments	
Model: GTM	M41060-150	5, 1 1	UNLIE WALT WA	me me m	
T1 Pin 1 to	pin 5 🔬	194	392	Max. Peak voltage	
T1 Pin 1 to	pin 6	244	360	when the set	
T1 Pin 2 to	pin 5	245	360	The street surfer and the survey	
T1 Pin 2 to	pin 6	233	352	an in in it it	
T1 Pin 3 to	pin 5	230	352	stek strek shifts white white	
T1 Pin 3 to	pin 6 🦽	245	364	Max. RMS voltage	
T1 Pin 4 to	pin 5	245	360	et intertainte inter intertaint	
T1 Pin 4 to	pin 6	245	364	the second second	
Between tw	o pin CY1	117	188	The source of th	
PC1 pin 1 to	p pin 3	120	196	LA A A A	

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SE INTE			IEC 61558-2-16		
Clause	Requiremer	nt + Test	MITER WALL V	Result - Remark	Verdict
PC1 pin 1 t	to pin 4	193	352	net white white white	WALTE WALT
PC1 pin 2 t	to pin 3	200	360	t let set set	stift miller
PC1 pin 2 to pin 4		. 195 ⁻	356	mer mer wer w	
Model: GT	M41060-2530	the mar man	- In	with which which we	set antie and
T1 Pin 1 to	pin 5	244	360	me me m m	
T1 Pin 1 to	pin 6	257	484	Max. RMS voltage , Max	x. Peak voltage
T1 Pin 2 to	pin 5	193	352	a man	d. A

T1 Pin 2 to pin 6	194	456	STER MUTER INTE MADE WALK
T1 Pin 3 to pin 5	245	416	
T1 Pin 3 to pin 6	253	472	TET MUTET MAIL WALL WALL WA
T1 Pin 4 to pin 5	195	360	. I A A A A
T1 Pin 4 to pin 6	194	392	and white white white whe whe
Between two pin CY1	120	196	a at set set set
Between two pin CY2	193	352	unite wait wat wat wat
CY1 pri. and CY2 sec.	245	360	at at let the state
PC1 pin 1 to pin 3	200	360	stre white white where all a
PC1 pin 1 to pin 4	199	356	at the state state of
PC1 pin 2 to pin 3	199	360	a we all all a set
PC1 pin 2 to pin 4	198	365	and the state out the second
Note(s):	it it	with other other	me me me

Operating conditions: Input voltage: = AC 240V (rated voltage)

Used to determine the test voltage of dielectric strength and clearance, creepage distance and Dti.

26	Table: c	reepage dista	ances and cl	earances a	and distance	es through	insulation	• P •
Insulation		Required	Clear	ance	Cree	page	Dti	
		Insulation	Measured (mm)	Required (mm)	Measured (mm)	Required (mm)	Measured (mm)	Required (mm)
Model: GTM	41060-15	05	54 J.	t st	55 .5	et Niler	MALIE WAY	me
L & N trace b fuse	efore	BI	2.8	2.4	2.8	2.5	Tet - MIP	r n u ter
Two terminal	s of F1	BI	2.8	2.4	2.8	2.5		
Two terminal	s of F2	JUL BIAN	2.8	2.4	2.8	2.5	t <u>-</u> 50	
Between two CY1	pin	BI	7.4	4.5	7.5	4.8		
Live parts to accessible parts	arts	RI	5.5	4.5	5.5	4.8	m- m	<u>-1</u> 40 at at

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Clause	Requiremen	t + Test	t + Test Result - Remark				Verdic	
- LIV	white white	m n	24.		A 1	* 15-	Star S	
Primary ci secondary (PCB trace PC1)	circuits	RI	7.4	4.5	7.5	4.8	SEX JUNITE	WALTER
Primary ci secondary (PCB trace		RI	7.4	4.6	7.5	4.9	Vaniser.	MITEL N
	er primary secondary	RI	7.4	4.6	7.5	4.9	antier an	t je
Transform secondary core	er winding to	RI	7.4	4.6	7.5	4.9	er	-unt
Enclosure	11	RI	70-	JUR- MU	an and a second	min - m	2.5	2.0
Model: GT	M41060-2530	Ste Mult	me a	n	4	1.1	- 15	Str.
L & N trace fuse	e before	BI	2.8	2.4	2.8	2.5		
Two termir	nals of F1	BI	2.8	2.4	2.8	2.5	marte - m	Ster.
Two termir	nals of F2	BI	2.8	2.4	2.8	2.5		. -
Between tv CY1	wo pin	BI	3.7	2.4	4.7	2.5	area anna	wint2
Between tv CY2	wo pin	BI	4.2	2.4	4.2	2.5	A ret	UNLIFE V
CY1 pri. ai sec.	nd CY2	RI	5.5	4.5	6.5	4.8	NUTER I	Tex and
_ive parts accessible		RI	5.7	4.5	5.7	4.8	an <u>-</u> ar	0+ <u>-</u> 54
Primary cir secondary PCB trace PC1)	circuits	RI	7.5	4.5	7.5	4.8	ret united	WALTER .
Primary ci secondary PCB trace		RI	5.6	4.8	6.6	5.2	NULTER V	NUTEK-
	er primary secondary	RI	5.6	4.8	6.6	5.2	NUNTER WA	int whi
Transform secondary core	er winding to	RI	5.6	4.8	6.6	5.2	ine whit	white
Enclosure	n n	RI			* <u>-</u> *	J"- N	2.5	2.0

1. The core of transformer (T1) is considered as primary.

2. If no specified, the worst condition was considered.

27.2 TABLE: BALL-PRESSURE TEST FOR ENCLOSURE

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1	05			/
	1	V		
				4
0	_		5	1

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Clause	Requirement + Test	Result - Remark	Verdict
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Material	Temperature (°C)	Result (mm)	Comments
Plastic enclosure	125	1.2	See table 20
Remark:	15 15 55 3	set white white wh	24 24 24 2

27.4	TABLE:	LE: GLOW-WIRE TEST FOR ENCLOSURE					
Material	all the second	Temperature (°C)	Result (mm)	Comments	۲.		
Plastic encl	losure	650	No flame	See table 20			

27.2	TABLE: BALL-PRESSU	-PRESSURE TEST FOR INSULATION MATERIAL RETAINING RRYING PART	
Material	Temperatu	re (°C) Result (mm)	Comments
T1 bobbin	125	0.8	See table 20
PCB	B 125 0.4		See table 20
Remark:	he the to the	1 14 14 5th S	it whit whit whit whi

1. 201	Temperature (°C)	Result (mm)	Comments	55		
	750 / 850	No flame / No flame	See table 20			
ne ne	650 / 750	No flame / No flame	See table 20			
1 1	650 / 750	No flame / No flame	See table 20			
the main	850	No flame	See table 20	ma		
nector	850	No flame	See table 20	de-		
		CURRENT CARRYING PART Temperature (°C) 750 / 850 650 / 750 650 / 750 850	CURRENT CARRYING PARTTemperature (°C)Result (mm)750 / 850No flame / No flame650 / 750No flame / No flame650 / 750No flame / No flame850No flame	Temperature (°C)Result (mm)Comments750 / 850No flame / No flameSee table 20650 / 750No flame / No flameSee table 20650 / 750No flame / No flameSee table 20650 / 750No flame / No flameSee table 20850No flameSee table 20		

26.2 TEST A		CREEPAGE DISTAN	NCES AND CL	EARAN	CES	AND DISTANC	ES	N/A	
		h three special prepar ited wires, without pot							
cycles 2 x working betwe pri / s	l voltage en	68 h at the temperature acc. Cl. 14 (min. 85 °C)	1 hour 25 °C	2 hc 0 °		1 hour 25 °C			
he m	-40	i st st	t 5th	5 ⁶⁷ . 1	55	with white	m	-24-	-24
at at	J.F.	with white white	the th	4		+ A	15	J.t.	

26.2	TABLE: CREEPAGE DISTANCES AND CLEARANCES AND DISTANCES	N/A
TEST B	THROUGH INSULATION	m

Waltek Testing Group (Shenzhen) Co., Ltd. http://www.waltek.com.cn

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SET MUTE	IEC	61558-2-16	Intre Mail
Clause	Requirement + Test	Result - Remark	Verdict

	st with three specially prep ting or impregnation (P1)	pared specimen	s with				
cycles with 2 x working volt between pri / sec	68 h at the temperature acc. Cl. 14 (min. 85 °C)	1 hour 25 °C	2 ho 0 °(1 hour 25 °C		
of the sur	et white white	- MALL WA	- 54 + 54	* د خ	ret minutes	Viirt wei	et re

26.2 TEST C		CREEPAGE DISTAN GH INSULATION	NCES AND CL	EARAN	CES A	ND DISTANC	ES	N/A
		h three specially prepa only dti is required)	ared specimen	s with				
cycles 2 x working betwe pri / s	i voltage en	68 h at the temperature acc. Cl. 14 (min. 85 °C)	1 hour 25 °C	2 hc 0 °		1 hour 25 °C		
and a	n n		t th		5	an and an	in mer	m
*	1 1	of the street	nere whe	14	2n		t it	1st

1 22 1

N IN

Annex U	1	άŤ.	тŃ,	J. P.	U.5.1	THER	MAL E	INDUR		E TEST		A		*
Type ref.			A		3	et .	55	15		an'	× .	Nutra .	m	-m
Rated PRI-Voltage			5° V	2	10						é.	de .	S.	50
Rated SEC- Voltage	J.et		t	fet s	NUTER	WALT	r m	ine w	NUL	men	m	* *	et.	NI CAN
Material of Winding		- nu			dt.	S.C.	.5	*	çer i	NUTE	MALA	mi	- 5	n.
Material of bobbin		ST.	JULIE V	m	4	n.	n.	20.		A	de	ß	۲.	et.
Material of resin	4	4		1	÷	Set .	S.S.F.	- MITE	n.	Ir W	5	me	m	-24
Material of potting		10.2	555	me	m			and and a		ŧ .	it.	. At	54	ۍ نړ
Material of foil			st	đ	5	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	£.,	NUTE.	MULT	m	4	ст. 1	en-	20,
Components removed for test	mere	min	- sul	str i	and the second	5ª	+ 3	set		NUTER	whit	cex w	J.et.	MULTER
tw	500	WITE .	. Nr.	. w		m	m		4	A	,ê	-	ð.	Set
SIT IN I		с. 			et.	J.t.	N. S. S. S.	e anil	الم ا	197 - S	Wer	m	n	
Objective test duration (days)	-11	176 3	mer	- Mr.	4	at .	Let.			et in	Set.	WNLTEX	MAL	et we
Theoretical test temperature	MALT	est me	5.00	min	whe	-ur	dr.	Nº LEX		- 51	*	Left .	NUTEX	white
Sample		1		2		3		4		5		6		7
Winding	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC
Start – Rk	et	J.	N.S.	" in		ant.	m	-m.						de

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1	ar .	v_{n}					01000	210	15		<u> </u>		<u>s</u>	10	Jb.
Clause	Require	ment	+ Tes	t	Str.	. SITER	we?	-sur	Re	sult - F	Remark	- ~v			Verdict
26.2 TEST A	TABLE: THROU					ICES A		EARA	NCE	S AND) DIST/	ANCE	S	34 34	N/A
	Test wit														
cycles 2 x working betwe pri / s	y voltage en		68 h a nperat Cl. (min. 8	ture a 14			our °C		hour °C		1 hou 25 °C				
After 4 h – F	٦w	1th	58	1	S.C.	IN LIE	m	m	4	3	24			t	15
After 4 h – v temperature		t.	M Et	50 J.	•	Set .	N NITEK	MULTE	t m	3 et 3	VALTER.	unit	m		Mr.
After 4 h - o temperature		ur.	× . 	est.	-m	*	Set .	S.L.T.E.K.	NNL'S	in. K	LEX W	J.T.E.K.	WALTE	-m	LIL N
After 24 h -	Rw	J.S.	u.	Ρ.	m	20			Ar		5 ×	÷	dit.	.3	19
After 24 h – winding temperature	Alt .	N.S.EX	whit		Tex	SMITE	wini .	50 54	er er	Junit Stet	vunt street	hr La	set ss	si Jet	MUTE
After 24 h - temperature		et s	MUTER	whit	-1	N.S.C.	white	m	24			50	د.	et .	NUTER
Final test pe (days)	eriod	1	́Т.		ine.	4	NUT P		- and			et	5.04 - 5.04		set a
Output volta (11.1) under	age r load			at .	10	and a	, er	256		2	ar	4	nr Nr	201	* 3
Insulating resistance	where the	N.	5	-	Set	MALTE	r whit	et m	50	WILLE	where	-su	у	st.	with
High voltage (35% of the in Table 8.a	values	it i	VIII LIEK	NUT NUT	* *	NYTEX.	NULTER	MALTE	t su	C. C. S.	UNLIEK.	min	un.		white Text

Annex U	U.5.2 The use of an other constant S other than 4500 in tw tests Test1:10 days
Type ref.	at the white white white white white and the start the
Rated PRI-Voltage	with we will get get get affet wither which which which
Rated SEC- Voltage	white white white white white the state street white and
Material of Winding	tet stet white white white white with all the st
Material of bobbin	when when the set set state state matter while while while
Material of resin	tet tret white white white white white the set of
Material of potting	with the ret ret ret wire mark which which which which
Material of foil	et stret water water water water water and the
Components removed for test	Tet stet white white white white white white white white

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Clause R	Require	ement	+ Test	р. 1	<u>500 - 50</u>	NUE	me	4	Res	sult - F	Remark		*	V	erdict
tw			<u></u>	-5°	*	et.	NUTER	JAN S	er		WITE	- shere	-10-		
S. St. St.	in.	÷.,	In the	m	m		<i></i>	di la	- 4	*	1th	Stor.	54	· ·	54
Objective test duration (days)		Jet .N	NUTER	white	in'	Set 3	Maria	me	ne.	* *	et.	. Let		*
Theoretical tes temperature	st	50	+	fet as	NUTER	NNETE	* un	50 5	white	mer	m		n" t	NI T	- 50°
Sample			1		2		3		4		5		6		7
Winding		PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC
Start – Rk	24			1	- 2	t.	Set	. NI	JAN	1	N	June -	m	-24	
After 4 h – Rw	1		55	M.C.	me	-1					÷	At	1		et .
After 4 h – win temperature	iding	.5	24- UN	Set	INLIEK	ne	LET JU	170	MULT	m	-m	st.	Nr.	100	
After 4 h - over temperature	n	- Aller	- 3	÷.	STER .	NUTE	- unit	5×-71	NITER	MUTE	man	111	5° 4	11-1	Jun .
After 24 h - Ru	w s	le.	m	20.		d.	13		et .	5 etc	NITE.	J. P.	n.	2	W.C.
After 24 h – winding temperature	* we	set s	MUTER	whit	Jun'	-	NALL LIEX	WIT NITE	unit's	et	arek y	NUTER	white	r	Tet 1
After 24 h - ove temperature	en	ar ⁱ		A	m	-2	et .	5 ^{0%}			an an	Set .	WITEK	MALT	in m
Final test perio (days)	bd			18 J	1	10		e l	50		2	+ .6	5 ^{et} N	NUTER	WILL
Output voltage (11.1) under lo	e bad	1.7 Et	WALTE	inn.	Ser S	Nº.	me	-20	* 5	et.	. Let	1		et	NUTER
Insulating resistance		est al	NUTER	NINE	t un	50 5	WULL	anne	m	4	n" N	SN.	54 54	-	,et
High voltage to (35% of the va in Table 8.a	est alues	me	ret w	LIEK	white	- un	STER W	ar ar	white		יין אין אין	et	WITEK	UNLIE UNLIE	t whi

Annex U	U.5.2 The use of an other constant S other than 4500 in tw tests Test2:120 days
Type ref.	MALT MALL WAT WILL BE SHE SHE SHE SHE
Rated PRI-Voltage	at let stret outer on the works what when we a
Rated SEC- Voltage	and white white the state states mater whites whites white white
Material of Winding	white white white will be an at the rest rest with
Material of bobbin	t it fet the wife mile while white white whe whe
Material of resin	and the sale and the set of the state
Material of potting	at all still mark while while while whe will we

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White .

Clause	Require	ment	+ Test	<u>ب</u> لا ا	Store .	all ^{er}	with	-sul	Re	sult - F	Remark		*	V	'erdict
Material of fo	oil		-m-	24.	*	.itr	.54	.5	¢+	and the second	IN THE	und'	-m	2	and a
Components removed for	5	1	NUT	which .	MA	e e	str.	-on-	میں اکرنے	*	Let N	NUTER	WALTE	* m	Set N
tw 🖉	- 50		Star S	1.5°	white	m			- ²		4	it.	de la	5	* 3
S	20		L	st	jet-	1	+	Ś.,	NUTER	MALT	an	1	h.	2m	-24.
Objective tes duration (day		mure	me	4	N At	nn.		÷ _	set .	NUTER	MALTE	t whi	JEK W	J.T.B.	white
Theoretical t temperature		Ser.	WALTE	whit	w	9 	-SNT-	-14 -14	÷ .	at .		. NLTE	t	iet n	NUTER .
Sample			1		2		3		4		5		6		7
Winding		PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC
Start – Rk	Set	5	at an	5.0	INLIE	m	11		24			*	1th	10	
After 4 h – R	Rw	r.			×	13		et .	S.C.	IN THE	MALI	110	2	ST.	m
After 4 h – w temperature		NUTER	mur	ne.	2	1	- Alt	5 4	et .	Tex	NUTEX	SIN'S	at in	Set 1	MITER
After 4 h - ov temperature		et s	WITER	white	an an	× .	m	m	- 'n	*	Stite Stite	Set	التاري	+	LIEK N
After 24 h –	Rw	4	din .	-4		1	, C1 *	50	m	24					e.
After 24 h – winding temperature		100		Ø.	20.	anus.	¢.	1.64	1	3	- Pari	50 - S F	nite	NINLI I TEX	
After 24 h - c temperature		Let.	56		set s	NITER	WILT	t su	J.E. V	NUTE .	white	m	* - 5 ¹	r A	- THE
Final test pe (days)	riod	÷	Nº LET	5	4	at .	WILTER	MILIE	* we	S. I. S.	NUTER	white	Mai		nt .
Output voltage (11.1) under	ge Ioad	-14	, , 	NEX		+	Jet .	J.T.E.K.	MALTE	- un	JEK W	J.T.E.	White	. wini	n
Insulating resistance	WALTE	with	- NI		sur-	20.	* _	et	NUTER	INLIE	t smi	et N	NUTER .	WALTE	e whit
High voltage (35% of the in Table 8.a	e test values	NUTE	whit	-117	er er	on Jet	WILLE INLIE	ni Juli	cet w	L.T.E.K.	MALTER	uni	set w	Jet	WALTER

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Verdict

Clause Requirement + Test	Result - Remark
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AA	ANNEX AA	mer me me	N/A
IN THE M	PARTIAL DISCHARGE (PD) TEST	with state strate with	N/A
	at left ref right writer which w	her all all an	
вВ	ANNEX BB	ret wet aller aller	N/A
at all the	Particular requirements for associated transformers supplies with internal frequencies > 500 Hz	for switch mode power	N/A
30	See separate test report-form for these Annex.	mer mer mer m	N/A
3B.8	MARKING AND OTHER INFORMATION	let the state of	N/A
3B.8.2	Marking for transformers IP00 or for associated transformers: type and trademark, instruction sheets	and an an and an	N/A
3B.8.11	Correct symbols:	and the state	N/A
- Mur	Volts	V million voi	N/A
t Set	Amperes	A (mA)	N/A
- zu-	Volt amperes (or volt-amperes reactive for reactors)	VA or (VAR)	N/A
State .	Watts	W J J J	N/A
in a	Hertz	Hz	N/A
LIER ME	Input	PRI	N/A
	Output	SEC	N/A
ER MALTE	Direct current	d.c. (DC) or ===	N/A
	Neutral	N	N/A
where	Single-phase a.c.	with all on the one	N/A
it	Three-phase a.c.	$_{ m 3}$ \sim	N/A
mer m	Three-phase and neutral a.c.	3N \sim	N/A
de la	Power factor	cos φ	N/A
- m	Class II construction	and which which	N/A
	Class III construction	We at a set and a	N/A
WALTER W	Equipment of overvoltage category I	I while while whi	N/A
lifet whi	Equipment of overvoltage category II	II whet we show	N/A
iet white	Equipment of overvoltage category III	III of such such	N/A
- Intret	Equipment of overvoltage category IV	IV	N/A

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Clause	Requirement + Test	Result - Remark	Verdic
MALTE	The set of the set of the set	t still night with a	N/A
	Fuse-link	\square	
n n	Rated max. ambient temperature	ta	N/A
1 . S	Rated minimum ambient temperature	tamin	N/A
- 20-	Rated minimum temperature	t _{min}	N/A
A NUTE	Frame or core terminal		N/A
54	Protective earth		N/A
	IP number	IPXX	N/A
NUTER ON	Earth (ground for functional earth)	The survey warres while	N/A
Set out	For indoor use only		N/A
Whitek	To indicate that the appliance is intended to be usable up to the maximum altitude 3 000 m.	≤ 3000m	N/A
vouret v	To indicate that the power supply unit shall not be used, if pins of the plug part are damaged.	Ĵ¥.	N/A
in we	Additional Symbols (IEC 61558-2-16:09)	and white white	N/A
et white	SMPS incorporating a Fail-safe separating transformer		N/A
SUMLIER.	SMPS incorporating a Non-short-circuit-proof separating transformer		N/A
NUTE W	SMPS incorporating a Short-circuit-proof separating transformer (inherently or non-inherently)		N/A
White State	SMPS incorporating a Fail-safe isolating transformer	F or F	N/A
white	SMPS incorporating a Non-short-circuit-proof isolating transformer		N/A
WALLEY V	SMPS incorporating a Short-circuit-proof isolating transformer (inherently or non-inherently)		N/A
it with	SMPS incorporating a Fail-safe safety isolating transformer	F	N/A
whitek	SMPS incorporating a Non-short-circuit-proof safety isolating transformer	0	N/A

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	IEC 61558-2-16		24 - 44
Clause	Requirement + Test	Result - Remark	Verdic
WALLS	SMPS incorporating a Short-circuit-proof safety isolating transformer (inherently or non-inherently)		N/A
LIEX MALT	SMPS incorporating a Fail-safe auto-transformer		N/A
et whitet	SMPS incorporating a Non-short-circuit proof auto-transformer	or -O-	N/A
WALTER N	SMPS incorporating a Short-circuit proof auto-transformer (inherently or non-inherently)	or -O	N/A
niter wh	SMPS (Switch mode power supply unit)		N/A
BB.9	PROTECTION AGAINST ELECTRIC SHOCK		N/A
BB.10	CHANGE OF INPUT VOLTAGE SETTING		N/A
BB.11	OUTPUT VOLTAGE AND OUTPUT CURRENT UN	DER LOAD	N/A
BB.12	NO-LOAD OUTPUT VOLTAGE (see supplementary	/ requirements in Part 2)	N/A
BB.13	SHORT-CIRCUIT VOLTAGE		N/A
BB.14	HEATING		N/A
BB.14.2	Application of 14.1 or 14.3 according to the insulation system	and white white	N/A
BB.14.2.1	Class of isolating system (classified materials according to IEC 60 085 and IEC 60 216)	Stand of the solution	N/A
BB.14.2.2	No classified material, or system but the measured temperature does not exceed the value of Class A	Tet with milet of	N/A
BB.14.2.3	No classified material or system but the measured temperature exceeds the value for Class A, the live parts of the transformers are submitted to the test of 14.3	white white white whit	N/A
BB.14.3	Accelerated ageing test for undeclared class of isolating system	Steet watter waiter watte	N/A
White	Cycling test (10 cycles):	a set set when	N/A
	– measuring of the no-load input current (mA)	Mr. M. M. S	N/A
BB.14.3.1	– heat run (temperature in table 2)	whet whet white wh	N/A
BB.14.3.2	 vibration test: 30 min; amplitude 0,35 mm; frequency range: 10 Hz, 55 Hz, 10 Hz 	and that the all	N/A
BB.14.3.3	– moisture treatment (48 h, 17.2)	I'm all all all	N/A
BB.14.3.4	Measurements and tests at the beginning and after each test:	Set white white white.	N/A
whiter	 deviation of the no-load input current, measured at the beginning of the test is 30% 	t with milet milet w	N/A

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and a	IEC 61558-2-16										
Clause	Requirement + Test	Result - Remark	Verdic								
Murry.	– insulation resistance acc. cl.18.1 and 18.2	L WALTER WATER WATER WATER	N/A								
NUNLIFEK WI	 electric strength, no breakdown (18.3); 2 min; test voltage 35% of specified value (table VI) 	stret mulet antifet antifet	N/A								
et would	 Transformers (50 or 60 Hz version) are tested after the dielectric strength test as follows: under no load; duration: 5 min; Upri(V):1,2 times rated supply voltage; frequency (Hz): 2 times rated frequency 	a ret wonthet wonthet wonthet	N/A								
BB.15	SHORT-CIRCUIT AND OVERLOAD PROTECTION	l	N/A								
BB.16	MECHANICAL STRENGTH		N/A								
BB.17	PROTECTION AGAINST HARMFUL INGRESS OF	WATER AND MOISTURE	N/A								
BB.18	INSULATION RESISTANCE AND ELECTRIC STR	ENGTH	N/A								
BB.18.2	Insulation resistance between:		N/A								
su t set	 live parts and body for basic insulation 2 M 	a wine wine and a	N/A								
where .	 live parts and body for reinforced insulation 7 M 	white white white wh	N/A								
white w	 input circuits and output circuits for basic insulation 2 M 	white white white white	N/A								
NUTE WAL	 input circuits and output circuits for double or reinforced insulation 5 M 	of white white	N/A								
EK WALTER	 each input circuit and all other input circuits connected together 2 M 	and a south south the	N/A								
MALTER	 each output circuit and all other output circuits connected together 2 M 	the wiret white whi	N/A								
minet un	 hazardous live parts and metal parts with basic insulation (Class II transformers) 2 M 	the state with with	N/A								
Set all	 body and metal parts with basic insulation (Class II transformers) 5 M 	at at the set	N/A								
t set	 metal foil in contact with inner and outer surfaces of enclosures 2 M 	st wat wat wat	N/A								
BB.18.3	Electric strength test (1 min): no flashover or breakdown:	white white whe we	N/A								
white w	 basic insulation between input circuits and output circuits; working voltage (V); test voltage (V): 	white white white white	N/A								
ret unite	 2) double or reinforced insulation between input circuits and output circuits; working voltage (V); test voltage (V)	and which which which	N/A								
	3) basic or supplementary insulation between:	Mr. Mr. M.	N/A								
white	a) live parts of different polarity; working voltage (V); test voltage (V)	A MUTCH NOUTER MOUTER MON	N/A								

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- C.L.		
IEC	61558-	2-16

	Requirement + Test	Result - Remark	Verdict
WILL'S V	and all all all all all the	the star star	
Jet i	b) live parts and the body if intended to be connected to protective earth	when we at left	N/A
	c) inlet bushings and cord guards and anchorages:	NUTE MOUT MOUT W	N/A
in which	d) live parts and an intermediate conductive part:	ret white white whi	N/A
an and the	e) intermediate conductive parts and body .:	+ set set and	N/A
WALTER W	4) Reinforced insulation between the body and live parts; working voltage (V); test voltage (V):	MUTER INNUTER MOUTER	N/A
nistek sunis	 5) Functional insulation for windings intended to be connected in series or parallel (test voltage = working voltage + 500 V) (IEC 61558-2-16:2009) 	white white white wh	N/A
18.102 (A1)	Partial discharge tests according IEC 60664-1 , if the working voltage is > 750 V peak	white white white	N/A
Just a	Partial discharge is ≤ 10 pC at time P2 See Fig. 19.101	when we we we	N/A
BB.19	CONSTRUCTION	· · · · · · · · · · · · · · · · · · ·	N/A
BB.19.1	General construction	the state of	N/A
BB.19.1.1	General		N/A
BB.19.1.2	Auto-transformers	and the state with	N/A
BB.19.1.2. 1	For plug connected auto-transformers with rated input voltage > rated output voltage the potential to earth shall not exceed the rated output voltage.	white white white	N/A
BB.19.1.2. 2	Polarised input and output plug and socket-outlet system: an instruction is given with the information, that the transformer shall not be used with non- polarised plug and socket outlet system.	LIFE WALTER WALTER WA	N/A
BB.19.1.2. 3	A polarity detecting device only energises the output in the case: output potential to earth \leq rated output voltage, also with reversed input plug.	which which which	N/A
	- The contact separation of the device is \geq 3mm	me in m	N/A
water we	- A current to earth does not exceed 0,75 mA.	Tet stret white	N/A
whet and	 All tests are repeated under fault conditions of H.3.3 of annex H of part 1. The potential to earth does not exceed the max output voltage for more than 5 s. 	Lifet writes writes wri	N/A
BB.19.1.3	Separating transformers	at miller while while	N/A
BB.19.1.3.	Input and output circuits electrically separated.	the state	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
ALTE A	and all all all all all	at at at	
BB.19.1.3. 2	The insulation between input and output winding(s) consist of basic insulation	show when sh	N/A
m. m.	Class I SMPS	NUTE MALL MALL V	N/A
LIFE WALSE	 Insulation between input windings and body consist of basic insulation 	ret miret amiret and	N/A
et whitet	 Insulation between output windings and body consist of basic insulation 	t stat what what	N/A
	Class II SMPS	the in a	N/A
white w	 Insulation between input windings and body consist of double or reinforced insulation 	NALTER WALTER WALTER	N/A
nties whi	 Insulation between output windings and body consist of double or reinforced insulation 	LIEK WALTER WALTER W	N/A
BB.19.1.3. 3	The insulation between input windings and intermediate conductive parts and the output windings and intermediate part consist of basic insulation	et white white whi	N/A
and an	For class I SMPS the insulation between input and output windings via the intermediate conductive parts consist of basic insulation	whi whi whi	N/A
STER WALTER	For class II SMPS the insulation between input winding and the body and between the output windings and the body via the intermediate conductive parts consist of double or reinforced insulation.	at an one way	N/A
BB.19.1.3. 4	Parts of output circuits may be connected to protective earth	when when when	N/A
BB.19.1.3. 5	No direct contact between output circuits and the body, unless:	which which which	N/A
mi m	 Allowed for associated transformers by the equipment standard 	ILTER MALT WALL W	N/A
BB.19.1.4	Isolating transformers and safety isolating transformers	ist uniter unite uni	N/A
BB.19.1.4. 1	Input and output circuits electrically separated	white white white	N/A
WALTER W	No possibility of any connection between these circuits	milet milet milet	N/A
BB.19.1.4. 2	The insulation between input and output winding(s) consist of double or reinforced insulation (exception see 19.1.4.4)	Lifet whilet whitet w	N/A
Set white	Class I transformers not intended for connection to the mains by a plug:	* white white whi	wini _
whitek w	 Insulation between input windings and body connected to earth consist of basic insulation rated to the input voltage 	whitek whitek whitek	N/A

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Clause	Clause Requirement + Test Result - Remark V			
	Requirement + rest	Result - Remain	Verdic	
WALTER WA	 Insulation between output windings and body, connected to earth consist of basic insulation rated for the output voltage 	while while while	N/A	
LIEK INLIS	Class I transformers intended for connection to the mains by a plug:	at at set is	N/A	
et would	 Insulation between input windings and body connected to earth consist of basic insulation rated to the working voltage 	white white white	N/A	
whitek of	 Insulation between output windings and body, connected to earth consist of supplementary insulation rated for the working voltage 	WALTER WALTER WALTER	N/A	
State N	Class II transformers	at at at	N/A	
Tet white	 Insulation between input windings and body consist of double or reinforced insulation rated to the input voltage 	et minet minet and	N/A	
* white	 Insulation between output windings and body consist of double or reinforced insulation, rated to the output voltage 	Montret Montret Montret	N/A	
BB.19.1.4. 3	For transformers with intermediate conductive parts not connected to the body (between input/output):	milet whilet whilet	united auniter	
BB.19.1.4. 3.1	For class I and class II transformers the insulation between input and output windings, via intermediate conductive parts, consist of double or reinforced insulation, rated to the working voltage.	at a writter w	N/A	
surfice a	 For class II transformers the insulation between input winding and the body and between the output windings and the body via the intermediate conductive parts consist of double or reinforced insulation. (rated to the input voltage, for SELV circuits only basic insulation to the body) 	White white white	N/A	
Tex white	 For transformers, different from independent, the insulation between input and output windings, via intermediate conductive parts, consist of double or reinforced insulation, rated to the working voltage. 	The subscript subscript subscript	N/A	
BB.19.1.4. 3.2	Class I transformers with earthed core, and not allowed for class II equipment	uset muset muset	N/A	
STER MAL	 Insulation from the input to the earthed core: basic insulation rated for the input voltage 	ret ret sites	N/A	
ret white	 Insulation from the output voltage to the earthed core: basic insulation rated for the output voltage 	A NUTER WITTER MANY	N/A	
BB.19.1.4. 3.3	Insulation between : input to intermediate conductive parts and output and intermediate parts consist of at least basic insulation	suret souret souret	N/A	

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I MILLE	IEC 61558-2-16				
Clause	Requirement + Test	Result - Remark	Verdict		
antifet un	 If the insulation from input or output to the intermediate metal part is less than basic insulation, the part is considered to be connected to input or output. 	SUPER SUPER SUPER SUPER	N/A		
BB.19.1.4. 4	For class I transformers, with protective screen, no t connected to the mains by a plug the following conditions comply:	Tet unifet unifet uni	N/A		
WALL	 The insulation between input winding and protective screen consist of basic insulation (rated input voltage) 	watter watter watte	N/A		
NUTER WAL	 The insulation between output winding and protective screen consist of basic insulation (rated output voltage) 	spirit white white	N/A		
Tet white	 The protective screen consist of metal foil or a wire wound screen extending the full width of the windings and has no gaps or holes 	et aniret aniret anir	N/A		
Whitek y	 Where the protective screen does not cover the entire width of the input winding, additional insulation to ensure double insulation in this area, is used. 	white white white	N/A		
Mr w	 If the screen is made by a foil, the turns are isolated, overlap at least 3 mm 	net whit whe v	N/A		
et autet	 The cross-section of the screen and the lead out wire is at least corresponding to the rated current of the overload device 	and the second	N/A		
- At	 The lead out wire is soldered or fixed to the protective screen. 	white white white	N/A		
when w	Protective screening is not allowed for transformers with plug connection to the mains	white white white	N/A		
BB.19.1.4. 5	No connection between output circuit and protective earth, except of associated transformers (allowed by equipment standard) or 19.8 is fulfilled.	and an at a	N/A		
BB.19.1.4. 6	No connection between output circuit and body, except of associated transformers (allowed by equipment standard)	white white white	N/A		
BB.19.1.4. 7	The distance between input and output terminals for the connection of external wiring is ≥ 25 mm	the set set	N/A		
BB.19.1.4. 8	Portable transformers having an rated output ≤ 630 VA shall be class II.	in we we	N/A		
BB.19.1.4. 9	No connection between output circuit and body except of associated transformers (allowed by equipment standard)	at which which we	N/A		
BB.19.1.4. 10	Protective screening is not allowed for transformers with plug connection to the mains	when we we we	N/A		
BB.19.12	Windings construction	mer mer mer	N/A		

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IEC	61558-2-1	6

Clause	Requirement + Test	Result - Remark	Verdict
DD 40 40 4		and and a share	N/A
BB.19.12.1	Undue displacement in all types of transformers not allowed:	with the set	Let Set
m m	 of input or output windings or turns thereof 	ALTE WALL WALL V	N/A
	 of internal wiring or wires for external connection 	set wiret whilet whi	N/A
ex whitek	 of parts of windings or of internal wiring in case of rupture or loosening 	t unt with and	N/A
BB.19.12.2	Serrated tape:	the the tr	N/A
MULT OIL	 distance through insulation according to table 13 	white white white.	N/A
STER INT	 one additional layer of serrated tape, and 	the set set	N/A
	 one additional layer without serration 	is my my m	N/A
it white	 in case of cheek less bobbins the end turns of each layer shall be prevented from being displaced 	and white white shi	N/A
BB.19.12.3	Insulated windings wires providing basic, supplementary or reinforced insulation, meet the following requirements:	white white white	N/A
and and	 Multi-layer extruded or spirally wrapped insulation, passed the tests of annex K 	inter survey and a	N/A
et set	Basic insulation: two wrapped or one extruded wire	a contra an	N/A
white	Supplementary insulation: two layers, wrapped or extruded	white white white	N/A
mar n	Reinforced insulation: three layers wrapped or extruded	white white white	N/A
INLIE MAL	Spirally wrapped insulation:	the star star a	N/A
Jet all	 creepage distances between wrapped layers > cl. 26 _ P1 values 	at the state of	N/A
x .50x	path between wrapped layers sealed, the test voltage of K2 is multiplied with 1,35	which we will	N/A
-sul	 test 26.2.4 – Test A, passed for wrapped layers 	which which which	N/A
we we	• the finished component pass the electric strength test according to cl. 18.3	unite while while	N/A
a)	Insulated winding wire used for basic or supplementary insulation in a wound part:	LIFE WALTER WALTER WA	N/A
IE WALTE	comply with annex K	at what what with	N/A
A	two layers for supplementary insulation	the main an	N/A
	one layer for basic insulation	10 5° 5°	N/A

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St. Mar	IEC 61558-2-16				
Clause	Requirement + Test	Result - Remark	Verdict		
surficet an	 one layer for mechanical separation between the insulated wires of primary and secondary. This layer fulfils the requirement of basic insulation. 	whitek whitek whitek whi	N/A		
b)	Insulated winding wire used for reinforced insulation in a wound part:	Tet anitet waitet waite	N/A		
et .50	comply with annex K	- at at at	N/A		
20	three layers	mer mer me	N/A		
MITER.	relevant dielectric strength test of 18.3	at the set o	N/A		
	Where the insulated winding wire is wound:	me me me	N/A		
muse wi	upon metal or ferrite cores	the state strate with	N/A		
at a	upon enamelled wire	- 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10	N/A		
and and	under enamelled wire	et allet muse while	N/A		
* white	 one layer for mechanical separation between the insulated wires and the core or the enamelled wires is required. This layer fulfils the requirement of basic insulation. 	white white white	N/A		
wer w	 both windings shall not touch each other and also not the core. 	NUTE MALIT WALL WA	N/A		
in m	100 % routine test of Annex K3 of part 1 is fulfilled	and white white	N/A		
EX WALTE	no creepage distances and clearances for insulated winding wires	and the substantiates	N/A		
c)	Toroidal cores used with TIW wires for double or reinforced insulation between the primary and secondary circuits shall comply with the following:	winet whitet whitet w	N/A		
UNITER WI	1) a coating which fulfils the requirements of basic insulation between a winding and the core	The surface and the service	N/A		
Tet watt	2) The primary winding consists of TIW wire with 3 layers (reinforced insulation) and the secondary winding consists of enamelled wire. These independent windings shall not be able to contact each other either by mechanical separation or a gap which fulfil the dielectric strength tests for basic insulation.	WALTER WALTER WALTER	N/A		
AND A	3) For polyfilar windings (primary and secondary windings in contact with each other), the primary winding consists of TIW wire with 3 layers and the secondary winding consists of a TIW wire with 1 layer (requirements for primary and secondary windings can be changed). This construction also is allowed for use with EE-cores or similar.	and and and and and	N/A		

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	-	-		/
	1	V		ľ
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			/	4

all'	IEC 61558-2-16	at the the stress	me an
Clause	Requirement + Test	Result - Remark	Verdict
d)	Toroidal cores used with FIW wires for double or reinforced insulation between the primary and secondary circuits shall comply with the following:	White white white	N/A
Lift out	1) a coating, which fulfil the requirements of basic insulation.	at at at a	N/A
et wintrest	2) The primary winding consists of FIW wire for reinforced insulation and the secondary winding consist of FIW wire – of basic insulation. These independent windings shall not be able to contact each other either by mechanical separation or a gap which fulfil the dielectric strength test for basic insulation.	WALLER WALLER WALLER	N/A
ntite wh ret whit t ret	 For polyfilar windings (primary and secondary windings in contact with each other), the primary winding and the secondary winding consist of FIW wire for reinforced insulation. This construction also is allowed to use for EE-core or similar. 	A MALER MALE MALE	N/A
9)	Toroidal cores used with TIW in combination with FIW wire, for double or reinforced insulation between the primary and secondary circuits shall comply with the following:	WALTER WALTER WALTER	N/A
LIEK WIL	1) a coating, which fulfils the requirements of basic insulation.	at anith an	N/A
WALTER WALTER	 The primary winding consists of FIW wire for reinforced insulation, and the secondary winding consists of TIW wire for basic insulation (1 layer). These independent windings shall not be able to contact each other either by mechanical separation or a gap which fulfil the dielectric strength tests for basic insulation. 	white white white	N/A
ret white	 For polyfilar windings (primary and secondary windings in contact with each other), the primary winding consists of TIW wire for reinforced insulation (3 layer) and the secondary winding consists of FIW wire for reinforced insulation. This construction also is allowed for use with EE-cores or similar. 	Set wanted wanted water	N/A
	Toroidal cores used with TIW in combination with FIW wire, for basic insulation between the primary and secondary circuits shall comply with the following:	anifek white white	N/A
et .54	1) a coating, which fulfils the requirements of basic insulation	a stat st	N/A

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Mr.	IEC 61558-2-16				
Clause	Requirement + Test	Result - Remark	Verdic		
WALTER WALT	2) The primary winding consists of FIW wire for basic insulation, and the secondary winding consists of TIW wire for basic insulation (1 layer). These independent windings shall not be able to contact each other either by mechanical separation or a gap which fulfils the dielectric strength tests for basic insulation.	White white white	N/A		
WALTER ON	3) For polyfilar windings (primary and secondary windings in contact with each other), the primary winding consists of TIW wire for supplementary insulation (2 layers) and the secondary winding consists of FIW wire for basic insulation. This construction also is allowed for use with EE-cores or similar.	WALTER WALTER WALTER	N/A		
ret would	 4) Further polyfilar constructions with FIW and TIW wires in combination with enamelled wires for basic insulation only: 4.1) Primary winding consists of enamelled wire, secondary winding consists of FIW 	at not not not	N/A		
	wire for reinforced insulation	white white white	20. 20.		
	4.2) Primary winding consists of enamelled wire, secondary winding consists of TIW	stret stret swiret	milet amilet		
	wire for reinforced insulation	10. 20 × 1	A St		
BB.19.12.3 .1	Max. class F for transformers which use FIW-wire	the watte wa	N/A		
BB.19.12.3 .2	FIW wires comply with IEC 60851-5:2008, IEC 60317-0-7 and IEC 60317-56.	MALTER WILL'S WALTE	N/A		
WALTER W	 other nominal diameter as mentioned in table 24 can be calculated with the Formula (6) in 26.3.5: 	antifet whilet anifet	N/A		
ine sur	FIW wire used for basic or supplementary insulation for transformers according 19.1.3:	NUTE MALTE WALTE W	Nu - S		
A MALTER	• the test voltage of table 14, based on the working voltage of basic or supplementary insulation, comply with the min. voltage strength of table 24	NATER WATER WATE	N/A		
WALLER WA	one layer for mechanical separation is located between the insulated wires of primary and secondary. This layer fulfil the requirement of basic insulation	Whitek whitek whitek	N/A		
iet white	 between FIW and enamelled wire, no requirements of creepage distances and clearances 	and white white w	N/A		
2.	no touch of FIW and enamelled wires	mer wer with	N/A		
white w	FIW wire used for double or reinforced insulation for transformers according 19.1.4:	miller miller amiles	N/A		

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and a	IEC 61558-2-16	at the star of	ma an
Clause	Requirement + Test	Result - Remark	Verdio
WALTER W	 the test voltage of table 14, based on the working voltage of basic or supplementary insulation, comply with the min. voltage strength of table 24 	Whitek whitek whitek w	N/A
iren whi	for primary and secondary winding FIW- wire for basic insulation is used	LEX MUTER WALTER WAL	N/A
et sunifet	one layer for mechanical separation is located between the insulated wires of primary and secondary. This layer fulfil the requirement of basic insulation	et warret warret warre	N/A
. lit	no touch between the basic insulated PRI and SEC FIW-wires	white when when	N/A
net and	between PRI- and SEC-FIW wires, no requirements of creepage distances and clearances	and which which we	N/A
+ white	Alternative construction used for reinforced insulation (reinforced insulated FIW wire and enamelled wire)	A MALEY MALEY WALLEY	N/A
NALITEK N	 the test voltage of table 14, based on the working voltage reinforced insulation, comply with the min. voltage strength of table 24 	whitek whitek whitek w	N/A
et unité	one layer for mechanical separation is located between the reinforced insulated FIW wire and the enamelled wire. This layer fulfil the requirement of basic insulation	The work would would	N/A
mer	no touch between the FIW wire and the enamelled wire	WALL WALL WALL	N/A
inter aut	 between the reinforced FIW wire and any other parts, no requirements of creepage distances and clearances exist 	White white white w	N/A
* whitek	Alternative construction with FIW wires, basic or supplementary insulated for transformers with double or reinforced insulation:	white white white	- 101
WALTER D	• the test voltage of table 14, based on the working voltage of basic or supplementary insulation, comply with the min. voltage strength of table 24	whitek whitek whitek	N/A
ili wh tek sté	PRI or SEC basic insulated FIW wire and to the other winding (enamelled wire) requirements of supplementary insulation	inter white white wh	N/A
WALTER	 creepage distances and clearances between the basic insulated FIW wire and the enamelled wire for basic or supplementary insulation are required. 	while while white	N/A

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i an	IEC 61558-2-16	et the the stress	me an
Clause	Requirement + Test	Result - Remark	Verdic
WILL'S		alite with while we	N/A
	Where the FIW wire is wound	The the second	N/A
me in	upon metal or ferrite cores	and a star with a start	J.
LIFE WALT	• one layer for mechanical separation between the insulated wires and the core or the enamelled wires is required. This layer fulfils the requirement of basic insulation.	set white white white	N/A
WALT	 both windings shall not touch each other and also not the core. 	white white white w	N/A
BB.20	COMPONENTS		N/A
3B.21	INTERNAL WIRING		N/A
BB.22	SUPPLY CONNECTION AND EXTERNAL FLEXIBL	E CABLES AND CORDS	N/A
BB.23	TERMINALS FOR EXTERNAL CONDUCTORS		N/A
BB.24	PROVISION FOR PROTECTIVE EARTHING		N/A
BB.25	SCREWS AND CONNECTIONS		N/A
BB.26	CREEPAGE DISTANCES AND CLEARANCES		N/A
BB.26.1	See 26.101	and the state of the	N/A
BB.26.2	Creepage distances (cr) and clearances (cr)	mere white white white	s/N/A
BB.26.2.1	Windings covered with adhesive tape	1 1 1 1	N/A
- m	- the values of pollution degree 1 are fulfilled	and the she	N/A
ex whitek	 all isolating material are classified acc. to IEC 60085 and IEC 60216 	MITE WITH WATER W	N/A
	- test A of 26.2.3 is fulfilled	s st at	N/A
BB.26.2.2	Uncemented insulating parts pollution degree P2 or P3	ant and and and	N/A
unti un	 all isolating material are classified acc. to IEC 60085 and IEC 60216 	stret white white white	N/A
THE WALL	- values of pollution degree 1 are not applicable	let thet when when	N/A
BB.26.2.3	Cemented insulating parts	and the second	N/A
while	 all isolating materials are classified acc. to IEC 60085 and IEC 60216 	MALTER MALTER MALTE M	N/A
WALTER W	 values of distance through insulation (dti) are fulfilled 	Intret white white and	N/A
with whit	 creepage distances and clearances are not required 	Tex milet waited waited	N/A
at at	 test A of this sub clause is fulfilled 	i s a de	N/A
-m	Test A	white white white s	N/A
- 5 th	– thermal class	A A A	N/A
24 1	working voltage	inter which which we	N/A

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	1	\mathbf{V}	1	ľ
		V		
1				2

IEC 61558-2-16				
Clause	Requirement + Test	Result - Remark	Verdict	
	with white where white white and	A A St.	STR WAY	
NALTEX MA	 Test with three specially specimens, with uninsulated wires, without impregnation or potting 	(see appended table)	N/A	
the state	Two of the three specimens are subjected to:		N/A	
in white	 the relevant humidity treatment according to 17.2 (48 h) 	Set white white white	N/A	
WALTE	 the relevant dielectric strength test of 18.3 multiplied with factor 1,35 	WATER WAITER WHITE	N/A	
wintifet wi	 One of the three specimens is subjected to the relevant dielectric strength test of 18.3 multiplied by the factor 1,35 immediately at the end of the last cycle with high temperature 	NALIER WALLER WALLER WAL	N/A	
ret white	Impulse dielectric test according to 4.1.1.2.1 of IEC 60 664-1 (1,2 / 50 s waveform) – see Annex R of IEC 61558-1	et waiset waiset waiset	N/A	
3B.26.2.4	Enclosed parts, by impregnation or potting	- let set site	N/A	
3B.26.2.4. 1	 The requirements of reduced values as stated for pollution degree 1 (P1) are fulfilled 	when we we we	N/A	
alt al	 all isolating materials are classified acc. to IEC 60085 and IEC 60216 	with which which which	N/A	
in man	Test B	and white	N/A	
the set	– thermal class		N/A	
m	working voltage	white white white	N/A	
WALFER W	 Test with three specially specimens, potted or impregnated. The dielectric strength test is applied directly to the joint. 	(see appended table)	N/A	
Intra whit	Two of the three specimens are subjected to:	all all miles with	N/A	
Jet Mile	 the relevant humidity treatment according to 17.2 (48 h) 	at the set set	N/A	
* Jet	 the relevant dielectric strength test of 18.3 multiplied with factor 1,25 	when we are	N/A	
WALTER W	 One of the three specimens is subjected to the relevant dielectric strength test of 18.3 multiplied by the factor 1,25 immediately at the end of the last cycle with high temperature 	white white white w	N/A	
inter white	The three spacemen pass the Impulse dielectric test according to 4.1.1.2.1 of IEC 60 664-1 (1,2 / 50 s waveform) – see Annex R of IEC 61558-1	LIEK WHITEK WHITEK WHITE	N/A	
3B.26.2.4. 2	 The requirements of distance through insulation (dti) are fulfilled. (P1 values are not required) 	which which which	N/A	
sur s	 all isolating materials are classified acc. to IEC 60085 and IEC 60216 	white white white whe	N/A	

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Clause	Requirement + Test	Result - Remark	Verdict
and the second	mi with which we are	the star star	
	Test C	me me m n	N/A
INLIER IN	– thermal class	the set set at	N/A
	– working voltage	U. M. M. W.	N/A
ITE WALT	 Test with three specimens, potted or impregnated. (finished components) 	(see appended table)	N/A
et white	 Neither cracks, nor voids in the insulating compounds 	Muset muset muset	N/A
. At	Two of the three specimens are subjected to:	1 A At	N/A
we w	 the relevant humidity treatment according to 17.2 (48 h) 	suntil sunti sunt sun	N/A
min un	 the relevant dielectric strength test of 18.3 multiplied with factor 1,35 	STER MALTE MALT WAL	N/A
A SUNTREY	 One of the three specimens is subjected to the relevant dielectric strength test of 18.3 multiplied by the factor 1,35 immediately at the end of the last cycle with high temperature 	WALTER WALTER WALTER	N/A
WALFER W	The three spacemen pass the Impulse dielectric test according to 4.1.1.2.1 of IEC 60 664-1 (1,2 / 50 s waveform) – see Annex R of IEC 61558-1	ouret wouret wouret wou	N/A
BB.26.3	Distance through insulation	2 4 4	N/A
E WALTE	For double or reinforced insulation, the required values of Tables 13, C1, and D1 – boxes 2b, 2c and 7 are fulfilled	water water water	N/A
when is	The insulation fulfil the material classification according IEC 60085 or 60216 or the test of 14.3	south white south all	N/A
BB.26.3.1	Reduced values of the thickness of insulation for supplementary or reinforced insulation are allowed if the following conditions are fulfilled:	street white white whi	N/A
t set	 the isolating materials are classified acc. to IEC 60085 and IEC 60216 	white white white	N/A
me	- the test of 14.3 is fulfilled	white white white a	N/A
watter w	 If both requirements are fulfilled, the required values for solid insulation can be multiplied by 0,4 	WHITEK WHITEK WHITEK WA	N/A
NUTER WAL	 Minimum thickness of reinforced insulation ≥0,2 mm 	LIEX MUTEX WALTER WALTE	N/A
Set WALTER	 Minimum thickness of supplementary insulation <u>></u>0,1 mm 	at minet minet would	N/A
BB.26.3.2	Insulation in thin sheet form	i it it	N/A
me 1	 If the layers are non-separable (glued together): 	white white white w	N/A

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	01000-2-10

Clause	Requirement + Test	Result - Remark	Verdic
ALLEN .	while while while while and the	and the star	
	 The requirement of 3 layers is fulfilled 	me me m	N/A
NUTLE AN	 The mandrel test according 26.3.3 is fulfilled with 150 N 	NITEX MAILER MAILER W	N/A
inet whit	 The required values for d.t.i. of Tables 13, C.1 and D.1 – marked by index "e" is fulfilled. 	ret wartet wartet war	N/A
MULT	 If the layers are separated: 	t set set are	N/A
	- The requirement of 2 layers is fulfilled	m m m	N/A
white w	 If serrated tape is used, 1 additional layer (serrated) and one additional layer without serration is required 	White white white	N/A
it it	 The mandrel test according 26.3.3 is fulfilled on each layer with 50 N 	the world work we	N/A
s sunt t strek	 The required values for d.t.i. of Tables 13, C.1 and D.1 – marked by index "e" is fulfilled. 	et would would would	N/A
20 .	 If the layers are separated (alternative: 	mine our our	N/A
STER OF	- The requirement of 3 layers is fulfilled	10 10 50	N/A
LIEX WAL	 If serrated tape is used, 1 additional layer (serrated) and one additional layer without serration is required 	and some sol a	N/A
et	 The mandrel test according 26.3.3 is fulfilled on 2/3 of the layers with 100 N 		N/A
MULTER V	 The required values for d.t.i. of Tables 13, C.1 and D.1 – marked by index "e" is fulfilled. 	white white white	N/A
miret wh	Test according to 14.3 and if the isolating materials are classified acc. to IEC 60085 and IEC 60216 no distances through insulation are required for insulation in thin sheet form	LIFE WILLEY WILLEY WI	N/A
A MULTER	The figures within square brackets in box 2 and 7 of table 13 (C.1/D.1) are used for insulation in thin sheet form as follows:	while when when	N/A
aufer a	 rated output > 100 VA values in square brackets apply 	when we are the	N/A
n n Lit i	 rated output 25 VA 100 VA 2/3 of the value in square brackets apply 	unt whit when y	N/A
in white	 rated output 25 VA 1/3 of the value in square brackets apply 	white white wh	N/A
3B.26.3.3	Mandrel test of insulation in thin sheet form (specimen of 70 mm width are necessary):	a white white white	N/A
where	 If the layers are non-separable – at least 3 layers glued together fulfil the test: 	Intret MATER WALTER	N/A

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Clause	Requirement + Test	Result - Remark	Verdic
- The second	and the second second second	- At At A	
	– pull force of 150 N	me m m	N/A
WALLE W	 high voltage test of 5,0 kV or the test voltage of 18.3 multiplied by 1,25 whatever is the greater. No flashover, no breakdown. 	NITER MOUTER MOUTER W	N/A
	 If the layers are separable and 2/3 of at least 3 layers fulfil the test. 	Tex white white you	N/A
er antre	– pull force of 100 N	t set set at	N/A
whitek w	 high voltage test of 5,0 kV or the test voltage of 18.3 multiplied by 1,25 whatever is the greater. No flashover, no breakdowns. 	aniset aniset waiset	N/A
mile was	 If the layers are separable 1 of at least 2 layers fulfil the test: 	LIEK WALTER WALTE W	N/A
THE METE	– pull force of 50 N	of 10 50 5	N/A
* WALTER	 high voltage test of 5,0 kV or the test voltage of 18.3 multiplied by 1,25 whatever is the greater. No flashover, no breakdown. 	when white white	N/A
BB.26.101	Creepage distances, clearances and distances through insulation, specified values according to (IEC 61558-2-16:09):	milet whilet whilet	N/A
STER INT	– table 13, material group IIIa (part 1)	at the set of	N/A
	– table C, material group II (part 1)	4 30 40	N/A
in antie	– table D, material group I (part 1)	5 10 3th all	N/A
	– working voltage	me me me	N/A
untile s	 rated supply frequency 50/60 Hz 	Jet Jet alle	N/A
A	- rated internal frequency	m m m	N/A
mer me	1. Insulation between input and output circuits (basic insulation):	NITER WALTER WALTER W	N/A
LIE WALL	a) measured values specified values (mm):	and watter watter wat	N/A
et whitet	2. Insulation between input and output circuits (double or reinforced insulation):	ANITEX MUTEX MAILE	N/A
	a) measured values specified values (mm):	whet milet milet	N/A
NUTER MAI	b) measured values specified values (mm):	Tet the work of	N/A
Jet Alle	c) measured values specified values (mm):	the set of the set	N/A
t jut	3. Insulation between adjacent input circuits: measured values specified values (mm):	white white with	N/A

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IEC 61558-2-16				
Clause	Requirement + Test	Result - Remark	Verdic	
minet an	Insulation between adjacent output circuits: measured values specified values (mm)	which which which	N/A	
ster and	4. Insulation between terminals for external connection:	at at at	N/A	
* Set	a) measured values specified values (mm):	which we we	N/A	
with the set	b) measured values specified values (mm):	white white white	N/A	
we way	c) measured values specified values (mm):	antife antife auto	N/A	
nut and	5. Basic or supplementary insulation:	Tet sifet mile a	N/A	
Jet white	a) measured values specified values (mm):	et tet tet at	N/A	
t stat	b) measured values specified values (mm):	when when when when	N/A	
Nº 1	c) measured values specified values (mm):	white white white	N/A	
nr m	d) measured values specified values (mm):	unite wait wat a	N/A	
the wat	e) measured values specified values (mm):	et a funite an	N/A	
MALIE	6. Reinforced or double insulation: measured values specified values (mm)	white white white	N/A	
J.F.	7. Distance through insulation:	the set set	N/A	
1st .	a) measured values specified values (mm):	which which will	N/A	
n yn	b) measured values specified values (mm):	with some wat w	N/A	
A WAL	c) measured values specified values (mm):	tet white white whi	N/A	
3B.26.102	Values of IEC 61558-2-16 applicable for frequency up to 3 MHz (IEC 61558-2-16:09)	WALTER WALTER WALTE	N/A	
WALTER W	For frequency above 3 MHz clause 7 of IEC 60664-4 is applicable (high frequency testing)	whitet whitet whitet	N/A	
3B.26.103	Clearance (IEC 61558-2-16:09)	a de de	N/A	
at all	a.) Clearance for frequency ≥ 30 kHz according figure 101 two determinations are necessary:	the white white wh	N/A	
when	 determination based on peak working voltage according Table 104 : 	White white whi	N/A	
main	Peak working voltage	and white white	N/A	
A.	Basic insulation: required / measured	The second	N/A	

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	IEC 61558-2-16		
Clause	Requirement + Test	Result - Remark	Verdict
with a	Double or reinforced insulation: required / measured value	WILL WILL WALL	N/A
in in	 and alternative if applicable for approximately homogeneous field according to Table 102 	NUTE MALL MALL W	N/A
LIE WALT	Peak working voltage	ret arret miner and	N/A
t it	Basic insulation: required / measured		N/A
when	Double or reinforced insulation: required / measured value	white white whi	N/A
WALL W	 determination based on measured r.m.s. working voltage according Tables 13, C1 and D1 (see clause 26.101) 	white white white.	N/A
it it	The minimum clearance is the greater of the two values.	the world work we	N/A
n na	 b.) Clearance for frequency ≤ 30 kHz according figure 101 two determinations are necessary: 	et white white whi	N/A
	 determination based on peak working voltage with recurring peak voltages according Table 103 : 	writter writter writter	N/A
when whe	 determination based on measured r.m.s. working voltage according Tables 13, C1 and D1 (see clause 26.101) 	state sector sector a	N/A
et set	The minimum clearance is the greater of the two values.		N/A
BB.26.104	The working voltages of Table 102, 103 and 104 are peak voltages including µsec peaks IEC 61558-2-16:09)	which which which	N/A
stret of	The working voltage according to Table 13 of part 1 are r.m.s. voltages	at at at	N/A
BB.26.105	Creepage distances	in my me a	N/A
See white	Two determinations of creepage distances are necessary (see Figure 102)	et watter watter wat	N/A
et whitet.	 determination based on measured peak working voltage according Tables 105 to 110 	- miret antiet antiet	N/A
Jet .	Peak working voltage	i at st	N/A-
me m	Pollution degree	unit white white	s N/A
NETEX WALT	Basic or supplementary insulation: required / measured	the street sources and	N/A
set whitek	Double or reinforced insulation: required / measured value	at that the man	N/A
- whitek w	 determination based on measured r.m.s. working voltage according Tables 13, C1 and D1 (see clause 26.101) 	and whet where	N/A

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and and a second	IEC 61558-2-16				
Clause	Requirement + Test	Result - Remark	Verdict		
WALL &	If the values based on table 105 to 110 are lower than the relevant values in Tables 13, C.1 or D.1, the higher values shall be applicable	WALL WALL WALL	N/A		
BB.26.106	Distance through insulation (IEC 61558-2-16:09)	1. 1. 1.	N/A		
et whitet	Instead of partial discharge with high frequency voltage the test of the distance and the calculation of the electric field is applicable under the following conditions:	A DE ANNUTER MALIER MALIE	N/A		
đ	 the max. frequency is < 10 MHz 	1 A A	N/A-		
we w	 the field strength approximately comply with Figure 103 	WALTE WALT WALT	N/A		
mit wat	 no voids or gaps are present in between the solid insulation 	white white white all	N/A		
JEL WALTE	For thick layers d1 \geq 0,75 the peak value of the field strength is \leq 2 kV/mm	et muset muset mus	N/A		
* white y	For thin layers d2 \leq 30 µm the peak value of the field strength is \leq 10 kV/mm	MITEX MAILER WAITER	N/A		
WALLEX WA	For $d1 > d > d2$ equation (1) is used for calculation the field strength	set uset whet	N/A		
BB.26.107 (A1)	For transformers with FIW wires the following test is required	at the state	N/A		
	10 cycles are required	2	N/A		
WALTER W	 68 h test at max heating temperature + 10°C or test at max. allowed winding temperature based on the insulation class (required in table 1) + 10°C 	white white white	N/A		
de la	• 1 h at 25° C	Mr. M. M.	N/A		
mer mer	• 2 h at 0° C	with million white w	N/A		
LIEK MALIE	• 1 h at 25° C – (next cycle start again with 68 h max winding temp + 10)	et and want wi	N/A		
et whitet	during the 10 cycles test 2 x working voltage is connected between PRI and SEC	WILL AN ANALITY	N/A		
whitek wh	• after 10 cycle test 2 transformers are subjected to the 17.2 test for 48 h and direct after the 48 h the dielectric strength test of 18.3 (100 % test voltage) is done	whitek whitek whitek	N/A		
Tet white	• after the 10 cycle test the third sample is tested at the end of the last cycle in the hot position with the dielectric strength test of 18.3 (100 % test voltage)	of white white white	N/A		

2 2

Reference No.:

Clause

BB.27

BB.E

BB.E.1

No.: WTX23X12276829X1S Page 104 of 120		
IEC 61558-2-16	at the set of	et intre inne
Requirement + Test	Result - Remark	Verdict
 the partial discharge test according to 18.101 is done after the cycling test and after the high voltage test, if the peak working voltage is >750 V 	viret white white	N/A
RESISTANCE TO HEAT, FIRE AND TRACKING		N/A
ANNEX E , GLOW WIRE TEST	ner me m m	N/A
The test is required according to IEC 60695-2-10 and IEC 60695-2-11 with the following additions:	or watter water waite	N/A
Clause 6, "Severities" of IEC 6095-2-11, apply with the temperature stated in 27.3 of IEC 61558-1	n whitek whitek whitek	N/A
Clause 8, "Conditioning", of IEC 60695-2-11 apply preconditioning is required	, ret and whet a	N/A

BB.E2	Clause 8, "Conditioning", of IEC 60695-2-11 apply, preconditioning is required	unet maret source sources	N/A
BB.E3	Clause 10, "Test Procedure", of IEC 60695-2- 11apply, The tip of the glow wire is applied to the flat side of the surface.	et watter watter watter way	N/A

	ANNEX F, REQUIREMENTS FOR MANUALLY OPERATED SWITCHES WHICH ARE PARTS OF THE TRANSFORMER	N/A
100	ARE PARTS OF THE TRANSFORMER	

BB:H	ANNEX H, ELECTRONIC CIRCUITS (IEC 61558-	<u>́</u> ́́́́́́́́́́́́́́́́́́́́́́́́́́́́́́́́́́́
un m	1)	-20

BB.K	ANNEX K, INSULATED WINDING WIRES FOR USE AS MULTIPLE LAYER INSULATION		
BB.K.1	Wire construction:	N/A	
millet unit	insulated winding wire for basic or supplementary insulation (see 19.12.3)	N/A	
5 Pt	insulated winding wire for reinforced insulation (see 19.12.3)	N/A	
et set	splid circular winding wires and stranded winding wires with 0,05 to 5 mm diameter	N/A	
m	spirally wrapped insulation - overlapping	N/A	
BB.K.2	Type tests	N/A	
BB.K.2.1	General Tests between ambient temperature between 15° C and 35° C and at an humidity between 45% and 75 %	N/A	
BB K.2.2	Electric strength test	N/A	
BB K.2.2.1	Solid circular winding wires and stranded winding wires	N/A	



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	DI	22	0-2	- 1

S. M.L.	IEC 61558-2-16				
Clause	Requirement + Test	Result - Remark	Verdict		
Will V	Test samples prepared according to clause 4.4.1 of	MUSEL MUSEL MALTE	N/A		
de la	IEC 60851-5:2008 (twisted pair)	the state	set set		
nr m	Dielectric strength test: 6 kV for reinforced insulation	ALTE SUNTY SUNTY S	N/A		
	Dielectric strength test: 3 kV for basic or supplementary insulation	ret whiles while wh	N/A		
BB K.2.2.2	Square or rectangular wires .	t wet write muse	N/A		
with at	Test samples prepared according to clause 4.7.1 of IEC 60851-5:2008	sur nu viet	N/A		
Set of	Dielectric strength test: 5,5 kV for reinforced insulation	which which which	N/A		
nt sur	Dielectric strength test: 2,75 kV for basic or supplementary insulation	white white all	N/A		
BB K.2.3	Flexibility and adherence	et inster white whi	N/A		
+ WALTER S	Claus 5.1 in Test 8 of IEC 60851-3:2009 shall be used	the state what	N/A		
MUTER IN	Test samples prepared according to clause 5.1.1.4 of IEC 60851-3:2009	with set wet	N/A		
5104	Dielectric strength test: 5,5 kV for reinforced insulation	ant when when a	N/A		
et set	Dielectric strength test: 2,75 kV for basic or supplementary insulation	a curt wi	N/A		
m	Mandrel diameter according table K.1	white white white	N/A		
WALTER W	The tension to the wire during winding on mandrel is 118 N/mm² (118 MPa)	with with might	N/A		
BB.K.2.4	Heat shock	The In the	N/A		
unti wat	Test samples prepared according to 3.1.1 (in Test 9) of IEC 60851-6:1996	LIFE MAILE WALL W	N/A		
TE WALT	high voltage test immediately after this test	let still allet and	N/A		
A INLIEK	Dielectric strength test: 5,5 kV for reinforced insulation	- ret thet the	N/A		
aliet a	Dielectric strength test: 2,75 kV for basic or supplementary insulation	white white we	N/A		
BB.K.2.5	Retention of dielectric strength after bending (test as specified under test 13 of 4.6.1 c) of IEC 60 851-5)	and when when	N/A		
8 B	high voltage test immediately after this test	i de at	N/A		
	Dielectric strength test: 5,5 kV for reinforced insulation	MULTER WALLE WALL	un un		
	Dielectric strength test: 2,75 kV for basic or supplementary insulation	WALTER WALTER WALTER	white white		

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IEC 6	1558	-2-16
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Clause	Requirement + Test	Result - Remark	Verdict
S. S. S. S.	and all all all a	t at at set	all's and
BB.K.3	Testing during manufacturing	when when when	N/A
BB.K.3.1	General Tests as subjected in K.3.2 and K.3.3	ALLEY WALLEY WALLEY W	N/A
BB K.3.2	Routine test	at at at a	N/A
et set	Dielectric strength test: 4,2 kV for reinforced insulation	and which which	N/A
where .	Dielectric strength test: 2,1 kV for basic or supplementary insulation	while while while	N/A
BB K.3.3	Sampling test	muffer while while	N/A
BB K.3.3.1	Solid circular winding wires and stranded winding wires	and what which all	N/A
Jet Milet	Test with a twisted pair, prepared according clause 4.4.1 of IEC 60851-5:2008	a . 10 . 50 . 55	N/A
t with	Dielectric strength test: 6 kV for reinforced insulation	t at not not	N/A
an a	Dielectric strength test: 3 kV for basic or supplementary insulation	white white white	N/A
BB K.3.3.2	Square rectangular wire	mere white white y	N/A
LIFEK WALT	Samples prepared according to clause 4.7.1 of IEC 60851-5:2008	at white wh	N/A
et whitet	Dielectric strength test: 5,5 kV for reinforced insulation		N/A
- Set	Dielectric strength test: 3 kV for basic or supplementary insulation	the set set	N/A

BB.U	ANNEX U – INFORMATIVE – OPTIONAL TW – MARKING FOR TRANSFORMERS	N/A
V S	ANNEX V, SYMBOLS TO BE USED FOR THERMAL CUT-OUTS	N/A

BB.26.2 TEST A	TABLE: CREEPAGE DISTANCES AND CLEARANCES AND DISTANCES THROUGH INSULATION							N/A
		h three special prepar ited wires, without pot						
cycles 2 x working betwe pri / s	voltage en	68 h at the temperature acc. Cl. 14 (min. 85 °C)	1 hour 25 °C	2 hc 0 °		1 hour 25 °C		
1	Maria	mer mer m.		st	*	at at	STER IN	SE MAL
2.	4	at at ste	MUTER MAL	which	m	m. n	1 20	
3.	No. The	in which we	19. I I	Å		t st	Cet Ste	NITE .
4.		s at at	JIE MILE	MALIN	when	me m	2m	

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Clause	Requirement + Test	Result - Remark	Verdict			

BB.26.2 TEST A		TABLE: CREEPAGE DISTANCES AND CLEARANCES AND DISTANCES THROUGH INSULATION							
		est with three special prepared specimens with ninsulated wires, without potting or impregnation							
2 x workin betw			1 hour 25 °C						
5.	A	at at at	with white	m	-m.	24. 14		A	
6.	Wer we	m. m.	, t	jet-	J.	- 5 ⁰ - 5	Ser Mile	anter	
7.	16 1	t at at	SEC. Mar	ant.	m	In in		4	
8.	an week	mer mer m		A	de	15 5	S. S. S. S.	Inter a	
9.	L A	1 1 5	A SINGLE S	12 31	Υ.	n. n.	20		
10.	. S.	into any me			J.	at at	10	5" .5	

BB.26.2 TEST B		CREEPAGE DISTAN GH INSULATION	ICES AND CL	EARANCES	AND DISTAN	CES N/A
mer m		n three specially prepa P1 values are require		s with	WALLE WAL	St winter gunt
cycles 2 x working betwo pri / s	g voltage een	68 h at the temperature acc. Cl. 14 (min. 85 °C)	1 hour 25 °C	2 hour 0 °C	1 hour 25 °C	SUPLIFIC SUPLIFIC S
1.	4	to the the	Martin Main	me m	2 m	n n i
2.	mere an	a war war		1.	et st	ster street with
3.		t at at	JEE MILE	white white	mer m	- The Let
4.	TEN MIL	while when a		* *	the s	et jet juit
5.		the state of	let ster .	Nerte Maine	when when	m. m
6, 5	5	where when wh	20 2	a de	at at	fit fit
7. 🔊	20	1 1 15	55	er intre in	in which	me m m
8. 🖉	J.F.	NUTE MALL MALL	m. m.		at at	15 15 1
9.	w. v	i i i	5 th 5 th	NUTER IN	1 . White a	ny me m
10.	15 1	E 5° 5° .	m m	In r.		it at at

BB.26.2 TEST C		BLE: CREEPAGE DISTANCES AND CLEARANCES AND DISTANCES ROUGH INSULATION						
Ter write		n three specially prepa only dti is required)	red specimen	s with	t antiel	MULTER	NUNLIEK MINI	it wind
cycles 2 x workin betw pri /	g voltage een	68 h at the temperature acc. Cl. 14 (min. 85 °C)	1 hour 25 °C	2 hou 0 °C		1 hour 25 °C	ster sunite	where

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Verdict

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Clause	Requirement + Test	

Result - Remark

BB.26.2 TEST C		CREEPAGE DISTAN	ICES AND CL	EARAN	CES	AND DISTANC	ES	N/A
Mr. Mr.		h three specially prepa (only dti is required)	ared specimen	s with	NUTE	white white	m	Nr N
cycles 2 x working betwe pri / s	i voltage en	68 h at the temperature acc. Cl. 14 (min. 85 °C)	1 hour 25 °C	2 ho 0 °(1 hour 25 °C	white w	nti wat set water
1.	st	at set set	with white	m	24			t st
2.	in m	m. m.	the second second	1th		1	Ser mur	. which a
3.	1 1	t set set .	THE WILL	m		- n - in		
4.	mil	mer mer m	4	A	1.th	JEt JE	N. J. Far	Inter MA
5.	A	1 1 5	the spirit of	14 N	× .	m. m	20	
6.	JULI .	ner ner ner		al a	de la	at at	55	LIE ME
7.		A A A	Set and	- AND	2	le me	m. m.	
8.	NUT N	in me me	In S.			at the	St 5	et ste
9.		1 A A	At St	Nº11	. un	mr. M	20	14
10.	Clar and	while white y	len da	4		6 <i>1</i> 1	# 5ª	

BB.26.3.5	TABLE: CREEPAGE DISTANCES AND CLEARANCES AND DISTANCES THROUGH INSULATION						
ET NUT	Test for	transformers, use FIW	/-wire		10 A.	when when y	
cycles 2 x working betwe pri / s	y voltage een	68 h at the temperature acc. Cl. 14 (min. 85 °C)	1 hour 25 °C	2 hour 0 °C	1 hour 25 °C	Tet writer whit	
1.55	in white	me me		at at	1 5	NUTER MUTER	
2.	e de	the the second	fer out of	in which	me me	20. 20	
3	JULIE .	when when we		4 14	15 15	JER STR	
4.		1 1 1	NUTE IN	white w	in m	m n s	
5. 5	NITE N	Net more work	<i>n</i> , <i>n</i>	1	at the	10 50 x	
6.		s at at	JER JE	Martin Mart	in the	te m n	
7. 🧷	Ster N	in white white	m. w.	A	, st	at set is	
8.	2	at at	5th 5th	WITE WITE	men me	m. m.	
9. 🖉 🕓	et .50	MUTE WALL W	- 19. A		1 1	t the set	
10.	5		A 14	1° 5°	WELL MAL	mr m	

BB 18.2	TABLE: insulation resistance measurements					
Insulation re	sistance R between:	R (MΩ)	Required R (MΩ)			
at a	et set with mile whi whi	m. m m	the state			

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Clause	Requirement + Test	Result - Remark	Verdict
WALTE	white shite where where the	The set with with	WILL WALL

Supplementary information:

BB 18.3 TABLE: Dielectric Strength	the set	N/A
Test voltage applied between:	Test potential applied (V)	Breakdown / flashover (Yes/No)
whit will will all the state	and when while whi	Muth Muth Muth
the state with mile white white	m m m	- At 12 50
war with the state of the	with author mite white	and any and
THE LIPE METER MATE MADE WALL A	1. Jun at the	at at set
Supplementary information:	AP AP AP AP	are she we

BB 26 N/A **TABLE: Clearance And Creepage Distance Measurements** cl Up U r.m.s. Required cl required dcr clearance cl and creepage dcr distance dcr at/of: (V) (mm) (mm) (mm) (mm) (V) Supplementary information:

BB 26	TABLE: Distance Through Insulation Measurements			or N/A or	
Distance through insulation di at/of:		U r.m.s. (V)	Test voltage (V)	Required di (mm)	di (mm)
nr m	- Mr W	at the set	at white white	white white	- vnr - v
set which	White water shirt whe	the set	. Jet	minet miret	WILLER WI
4 .15	The street with white	mer mer		the state	10 5

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Clause	Requirement + Test	all sure out	Result - Remark	Verdic
Clause	A Charles and a construction of the constructi	HMENT TO TEST RE		Verdie
	AUSTRALIA/NEW (Safety of power transformers for supply Part 2-16: Particular require	IEC 61558-2-16 ZEALAND NATIONAL , reactors, power suppl voltages up to 1 100 V	L DIFFERENCES y units and similar products – Safety – n mode power supply units	
Difference	es according to	/NZS 61558.2.16:2022 /NZS 61558.1:2018 +A		et would
TRF temp	late used: IEC	CEE OD-2020-F3, Ed. 1	1.1 et white white white	mer 1
Attachme	nt Form No AU	_NZ_ND_IEC61558_2	_16H	METER M
Attachme	nt Originator NZ	Electrotechnical Comr	nittee/Standards New Zealand	
Master At	tachment Da	te 2022-07-08		
NUTER SING	National Differences		at white white	
5	GENERAL CONDITIONS FO	OR THE TESTS		Р
5.2	Add the following variation:	the set of	and a state of the state of	P P
	If the tests of AZ.19.201 need are carried out on separate s of specimens is that required (AS/NZS 61558.1:2018/A2:20	pecimens, the number by AS/NZS 3112.		er P
5.5	Replace the text with the follo		it it set all	S P
5.00 - 5.5	For a.c., test voltages are of s wave form, and, if not otherwi frequency of 50 Hz. (AS/NZS 61558.1:2018)		et water water water	un ret P
Sec. Sec.		in the stress	MECHANICAL STRENGTH	
16	MECHANICAL STRENGTH	we we way	t stat strat white all	N/A
16 16.4	MECHANICAL STRENGTH Replace the text with the following the following strength in the fol	owing variation:	White white white w	N/A
		at at at	Whitek whitek whitek white	
16.4	Replace the text with the follo	at at at	NUTER WILLER WALLER	N/A
	Replace the text with the follow VOID (AS/NZS 61558.1:2018/A2:20)20)	ation:	N/A N/A P
16.4 19	Replace the text with the follow VOID (AS/NZS 61558.1:2018/A2:20) CONSTRUCTION	020) n with the following vari	ation:	N/A N/A



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A WALLEY	Compliance is checked as specified in Appendix J of AS/NZS 3112 (AS/NZS 61558.1:2018)	P
20	COMPONENTS	P <
at a	Replace the first paragraph with the following variation:	
et smire	Components shall comply with the safety requirements specified in the relevant IEC or Australian/New Zealand Standards as far as they reasonably apply. (AS/NZS 61558.1:2018)	I P
	Replace the third paragraph with the following variation:	P
whitek w	Compliance with the IEC or Australian/New Zealand Standards for the relevant component does not necessarily ensure compliance with the requirements of this Standard (AS/NZS 61558.1:2018)	P
20.6	Insert the following variation:	P
A WALLER	Plugs and socket-outlets for SELV systems may also comply with the requirements of Appendix E in AS/NZS 3112 (AS/NZS 61558.1:2018/A2:2020)	P P P
22	SUPPLY CONNECTION AND OTHER EXTERNAL FLEXIBLE CABLES OR CORDS	
22.4	Replace the text by the following variation:	N/A
et al	VOID. (AS/NZS 61558.1:2018)	N/A
22.6	Replace the text by the following variation	Р
Whitek av	Power supply cords may be cord sets fitted with appliance couplers in accordance with IEC 60320, provided the transformers are single-phase portable transformers with input current not exceeding 10 A at the rated output (AS/NZS 61558.1:2018)	P
22.8	Replace the second paragraph in the requirement, with the following variation:	N/A
et white	Power supply cords of portable transformers shall be fitted with an appropriately rated plug complying with AS/NZS 3112 or AS/NZS 3123 or IEC 60309 (AS/NZS 61558.1:2018)	N/A



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	IEC61558_2_16E ATTACHM	ENT & S	
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX H	ELECTRONIC CIRCUITS		SP
H.3.1	Add the following to the test specification after the existing third paragraph		
ret whitet	During and after the tests the no-load output voltage of an accessible safety extra-low voltage outlet or connector or Universal Serial Bus (USB) outlet shall not have increased by more than 3 V or 10% of its no-load output voltage in normal use, whichever is higher. (AS/NZS 61558.1:2018)	Max. 0.19V or 3.8% (for model GTM41060-1505) Max. 0.09V or 0.3% (for model GTM41060-2530)	P
4	Special national conditions (if any)		N/A
mer me	Australia		N/A
8	MARKING AND OTHER INFORMATION		<i>"</i> - Р
8.1	After Item a) insert the following variation:	et allet allet and water and	Р
at survicet a	The marking of rated supply voltage or rated supply voltage range of single-phase transformers shall cover 240 V and for poly-phase transformers, 415 V (AS/NZS 61558.1:2018/A2:2020)	antifet antifet antifet antife	P
In In	New Zealand		
85 5	MARKING AND OTHER INFORMATION		P
8.1	After Item a) insert the following variation:	a she and an	Р
ret would	The marking of rated supply voltage of single- phase transformers shall be 230 V and for poly-phase transformers shall be 400 V. (AS/NZS 61558.1:2018/A2:2020)	which which which which	P P
whitek whi	The marking of rated supply voltage range of single-phase transformers shall cover 230 V and for poly-phase transformers, 400 V (AS/NZS 61558.1:2018/A2:2020)	and and and and	S P

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Model: GTM41060-1505



Photo 1



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Photo Documentation



Photo 3



Photo 4

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Photo 5



Photo 6

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Photo 7

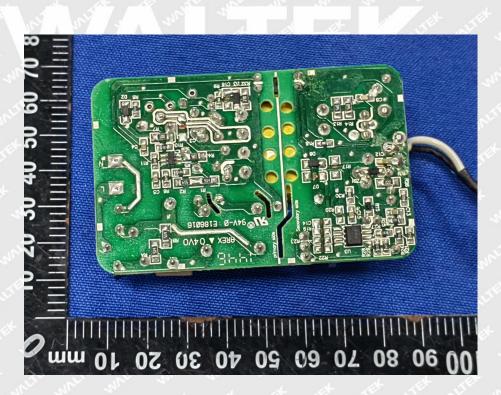


Photo 8

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Model: GTM41060-2530





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Photo 11



Photo 12

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Photo 13



Photo 14

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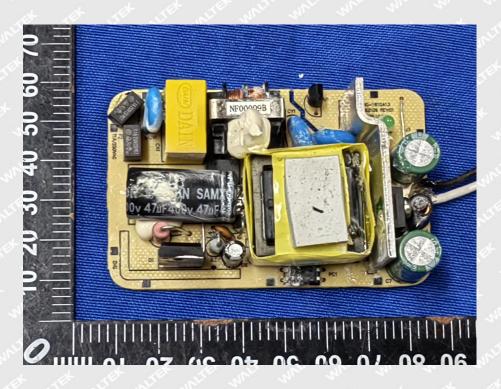


Photo 15

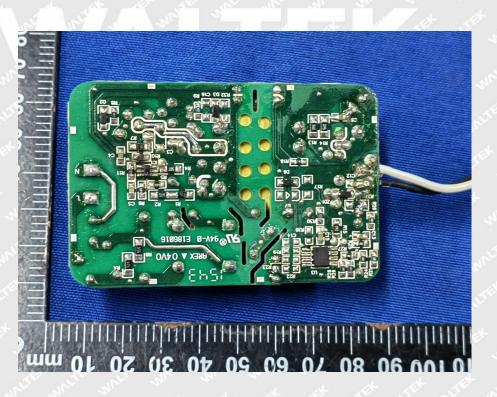


Photo 16

===== End of Report ======