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Переклад з української мови на англійську

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SEPARATE DIVISION “CERTIFICATION-METROLOGICAL
TESTING CENTER “LORTA” OF STATE ENTERPRISE
“LVIV STATE PLANT “LORTA”
(SD “TC LORTA”)

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**TEST PROTOCOL No. 23-0121-01
dated 02.10.2023**

of metal detector

model X-Finder

**LVIV
2023**

APPROVED BY
Director of SD "TC LORTA"
/signature/ V.H. Klishevskyi
02.10.2023

*/SEAL/ UKRAINE, LVIV * SEPARATE DIVISION "CERTIFICATION-METROLOGICAL
TESTING CENTER "LORTA" OF STATE ENTERPRISE "LVIV STATE PLANT "LORTA" *
22392905 * for certificates*

**TEST PROTOCOL No. 23-0121-01
dated 02.10.2023**

metal detector
model X-Finder
factory (serial) number: w/n

1 Manufacturer enterprise: Individual Entrepreneur Cherniavskyi Maksym Andriiovych, Ukraine

2 Applicant enterprise: Limited Liability Company "UKRSEPROSERVICE", Ukraine, Kyiv, Stratehichne highway str., 11 office 40

3 Purpose of testing: establishment of compliance of sample characteristics with requirements of DSTU EN 60335-1:2015, DSTU EN 55014-1:2016, DSTU EN 55014-2:2017, DSTU EN 61000-3-2:2016, DSTU EN 61000-3-3:2017

4 Basis for conducting tests: Letter from Limited Liability Company "UKRSEPROSERVICE" No. 9 dated 10.09.2023

5 Sample selection: Sample selection conducted by Limited Liability Company "UKRSEPROSERVICE"

6 Testing location: 79040, Lviv, Patona str., 32, tel. (032) 262-93-08, tel./fax 229-75-11, accredited Testing Center of SD "TC LORTA". Accreditation certificate No. 20042 dated 14.07.2019

7 Testing time:

7.1 Start of testing: 11.09.2023

7.2 End of testing: 02.10.2023

8 Test results are presented in the attached protocols:

- safety requirements compliance test results protocol No. 23-0121-01-1 on pages 3-28
- electromagnetic compatibility requirements compliance test results protocol No. 23-0121-01-2 on pages 29-38

9 Conclusion: tested samples of metal detector model X-Finder, factory (serial) number: w/n comply with the requirements of DSTU EN 60335-1:2015, DSTU EN 55014-1:2016, DSTU EN 55014-2:2017, DSTU EN 61000-3-2:2016, DSTU EN 61000-3-3:2017

NOTES: **The test results values relate only to the tested product sample.**

Complete or partial copying of the Protocol without permission from SD "TC LORTA" is prohibited.

Quality Manager of SD “TC LORTA”
Kniazieva

/signature/

V.V.

PROTOCOL No. 23-0121-01-1

**of results of safety
compliance testing
for metal detector model X-Finder**

factory serial number: w/n

1 Product description: handheld device of Class III protection against electric shock. Supply voltage 6 V (4 batteries of 1.5V each).

2 Purpose of testing: Verification of parameters for compliance with safety requirements according to: DSTU EN 60335-1:2015

3 Testing methods and conditions according to: DSTU EN 60335-1:2015

4 Measurement uncertainty: Data on measurement uncertainty is provided in Appendix A on page 4.

5 Test results: Tables of test results are provided in Appendix(es) B on pages 5-28 of this protocol.

6 Used designations and abbreviations:

P - positive test result;

N - negative test result;

N/A - requirement does not apply to this type of product due to absence of component or material in this design configuration;

Protocol is invalid without appendices.

Head of Safety Testing Laboratory

/signature/

L.V. Kinash

Responsible Tester

/signature/

R.O. Pashchak

Measurement Uncertainty Data

Table A.1

Measured quantities during testing	Extended measurement uncertainty
Active transitional resistance, Ohm	
-0.5	0.005 (k=2, P=0.95)
Insulation resistance, MOhm	
- 10	0.00021 (k=2, P=0.95)
- 1000	0.0021 (k=2, P=0.95)
Leakage current, mA	0.04 (k=2, P=0.95)
Test voltage, V	
- 1000	16 (k=2, P=0.95)
- 5000	28 (k=2, P=0.95)
Leakage paths, air gaps and insulation distances, mm	
- 5	0.020 (k=2, P=0.95)
- 10	0.055 (k=2, P=0.95)
- 100	0.097 (k=2, P=0.95)
Power consumption, W	
- 200	1.8 (k=2, P=0.95)
AC voltage, range 750 V	
- nominal value 220	1 (k=1.65, P=0.95)
- nominal value 380	1 (k=1.65, P=0.95)
DC voltage, range 1000 V	
- nominal value 50	0.01 (k=1.65, P=0.95)
AC current, range 20 A	
- nominal value 1	0.01 (k=1.65, P=0.95)
- nominal value 5	0.02 (k=1.65, P=0.95)
- nominal value 10	0.03 (k=1.65, P=0.95)
Applied force	$\leq 2.00\%$; (k=2, P=0.95)
Temperature, K	1.4 (k=2, P=0.95)
Angle of inclination, °	18.31'
Energy flux density, $\mu\text{W}/\text{cm}^2$	1.3 (k=2, P=0.95)
Corrected sound power level, dB	1.5 (k=2, P=0.95)
Sound pressure, dB	2.5 (k=2, P=0.95)

Table B.1

DSTU EN 60335-1:2015			
Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
Section 4	GENERAL REQUIREMENTS		
	Appliances must be designed in such a way that under normal operation they cannot become a source of danger to personnel or the environment, even in case of careless handling.	provided	P
Section 5	GENERAL TEST CONDITIONS		
5.4	If the appliance under test is also powered by other types of energy, for example gas, the influence of its consumption must be taken into account.		N/A
5.5	During testing, the appliance or any of its moving parts are installed in the most unfavorable position possible under normal operation.	provided	P
5.6	Appliances with control or switching devices whose adjustment can be changed by the consumer are tested at the most unfavorable positions of the control elements of these devices.		N/A
5.7	Tests are conducted in places protected from drafts, at an ambient temperature of $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$.	provided	P
5.8	Test conditions related to frequency and voltage.	provided	P
5.8.1	Appliances intended to operate only on alternating current are tested with alternating current at nominal frequency, and appliances intended to operate on both alternating and direct current are tested under the most unfavorable type of power supply.	constant	P
5.8.2	Appliances intended to operate at several nominal voltages are tested at the most unfavorable voltage.		N/A
5.8.3	If for heating appliances and combined appliances the marking establishes a range of nominal power consumption, and testing must be conducted at power consumption equal to the nominal power consumption multiplied by a coefficient, then the appliance operates:		
	— at the upper limit of the range of nominal power consumption multiplied by the coefficient, if the latter is greater than 1;		N/A
	— at the lower limit of the range of nominal power consumption multiplied by the coefficient, if the latter is less than 1.		N/A
	If the coefficient is not specified, the power consumption should equal the most unfavorable value within the range.		N/A
5.8.4	If the appliance marking establishes a range of nominal voltages and nominal power consumption that corresponds to the average value of the nominal voltage range, and testing must be conducted at power consumption equal to the nominal power consumption multiplied by a coefficient, then the appliance		

	operates:		
	— at power consumption whose value is calculated at the upper limit of the nominal voltage range multiplied by the coefficient, if the latter is greater than 1;		N/A
	— at power consumption whose value is calculated at the lower limit of the nominal voltage range multiplied by the coefficient, if the latter is less than 1.		N/A
	If the coefficient is not specified, the power consumption should correspond to the power consumption at the most unfavorable voltage within the range of nominal voltages.		N/A
5.9	If the appliance manufacturer allows the use of different heating elements or accessories, then the appliance is tested with those elements or accessories that give the most unfavorable results.		N/A
5.10	Testing is conducted on the appliance in the state of delivery.	provided	P
	Built-in appliances and fixed appliances are installed according to instructions before testing begins		N/A

Continuation of Table B.1

DSTU EN 60335-1:2015			
Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
5.11	Appliances intended for connection to the mains by means of a flexible cord are tested with an appropriate flexible cord connected to the appliance.		N/A
5.12	If specified that heating appliances and combined appliances must operate at power consumption multiplied by a coefficient.		N/A
	For heating elements with significant positive temperature coefficient of resistance, except PTC heating elements.		N/A
5.13	Testing of appliances with PTC heating elements is conducted at voltage corresponding to the specified power consumption.		N/A
5.14	If class 01 or class I appliances have accessible metal parts that are not earthed and not separated from live parts by an intermediate earthed metal part, such parts are checked for compliance with requirements specified for class II construction.		N/A
5.15	If appliances have parts that operate at safety extra-low voltage, such parts are checked for compliance with requirements specified for class III constructions.		N/A
5.16	During testing of electronic circuits, it is necessary that the power source does not experience external interference that may affect test results.		N/A
5.17	Appliances powered by rechargeable batteries are tested according to Annex B.		N/A
5.18	If linear and angular dimensions are specified without tolerance, ISO 2768-1 applies.		N/A
Section 6	CLASSIFICATION		
6.1	For protection against electric shock, appliances must belong to one of the following classes: I, II or III.	III class	P
6.2	Appliances must have an appropriate degree of protection against harmful effects of water.		N/A
Section 7	MARKING AND INSTRUCTIONS		
7.1	The following data shall be indicated on the appliances:		
	- Nominal voltage or range of nominal voltages in volts	DC 6 V	P
	- Conventional symbol for type of current, if nominal frequency is not specified		N/A
	- Nominal power consumption in watts or current in amperes	provided	P
	- Trade name, trademark of manufacturer or responsible supplier	Individual Entrepreneur Cherniavskyi Maksym Andriiovych	P
	- Model name or type	X-Finder	P
	- Conventional symbol 5172 (according to IEC	provided	P

	60417), only for class II appliances		
	IP symbol for degree of protection against water ingress, except IPXO		N/A
	Marking with nominal voltage or range of nominal voltages for appliances intended for connection to supply mains must include:		
	— 230 V for single-phase appliances		N/A
	— 400 V for multi-phase appliances		N/A
7.2	Stationary appliances with multi-channel power supply must have an inscription with the following content:		
	"WARNING! Before accessing terminals, all power circuits must be switched off".		N/A
	Placement of warning inscription near the cover that closes access to terminals.		N/A
7.3	Appliances designed to operate within a range of nominal values without adjustment within the range must be marked with the lower and upper limits of the range, separated by a dash.		N/A

Continuation of Table B.1

DSTU EN 60335-1:2015			
Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
7.4	If the device can operate at different rated voltages, the voltage marking for which the device is adjusted must be clearly indicated.		N/A
7.5	For devices marked with multiple rated voltages or multiple ranges of rated voltages, the rated power consumption or rated current must be indicated for each of these voltages or ranges.		N/A
7.6	Compliance with the use of conventional symbols in marking	provided	P
7.7	Devices intended for connection to more than two supply conductors, and devices with multi-channel power supply must have a connection diagram attached to the device if the correct connection method is not obvious.		N/A
7.8	Compliance with marking for terminals for connection to the mains (except type Z):		
	- neutral conductor with letter <N>		N/A
	- earthing with symbol 5019 according to IEC 60417	Class III	N/A
	These markings must not be on screws, removable washers or other parts that can be removed during wire connection.		N/A
7.9	Switches whose untimely operation may cause danger must be marked or positioned so that it is clear which part of the device they are intended to control.		N/A
7.10	Different positions of switches on stationary devices and different positions of control devices on all devices must be marked with numbers, letters or other visual means.		N/A
	Use of digit "0" to indicate "OFF" position	provided	P

7.11	Indication of control directions for control devices	provided	P
7.12	Operating instructions must be provided with the device, setting out measures for safe use of the device.	provided	P
7.12.1	If precautionary measures are necessary during device installation, their detailed description must be provided with the device.	provided	P
7.12.2	If a stationary device is not equipped with a power cord with plug or other means for disconnection from the power supply with a gap between contacts in all poles that ensures complete disconnection under overvoltage category III conditions, the instructions must state that such disconnection means must be installed in the permanent wiring, in accordance with electrical installation rules.		N/A
7.12.3	The instructions must state that the device should protect the permanent wiring when in contact with parts (with temperature excess greater than 50 K).		N/A
7.12.4	Instructions for built-in devices must contain the following information:		
	- dimensions of space required for building in the device;		N/A
	- dimensions and position of means for supporting and fixing the device within the specified space;		N/A
	- minimum gaps between different parts of the device and parts of surrounding furniture;		N/A
	- minimum dimensions of ventilation openings and their correct positioning;		N/A
	- method of connecting the device to the power supply and interconnection of all separate components;		N/A
	- ensuring the possibility of disconnecting the device from the power source after device installation, if the device is not equipped with a switch		N/A
7.12.5	For devices with type X cord attachment that have a specially prepared cord, the instructions must contain the following information:		
	"If the power cord is damaged, it must be replaced with a special cord or kit".	Y	N/A
	For devices with type Y cord attachment, the instructions must contain the following information.		

Continuation of Table B.1

DSTU EN 60335-1:2015			
Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
7.12.5	"In case of damage to the power cord, its replacement must be carried out by the manufacturer, service department or similar qualified personnel to avoid danger".		N/A
	For devices with type Z cord attachment, the instructions must contain the following information:		
	"The power cord is not replaceable. If the cord is damaged, the device is not repairable".		N/A
7.12.6	Instructions for heating devices equipped with non-self-resetting thermal switches must contain information regarding connection to the power source.		N/A
7.12.7	Instructions for mounting devices must specify how the device is mounted on the support.		N/A
7.12.8	Instructions for devices connected to the water supply system must specify:		
	- maximum water pressure at inlet, in pascals;		N/A
	- minimum water pressure at inlet, in pascals;		N/A
	- do not reuse old hose sets		N/A
7.13	Instructions and other texts must be written in the official language of the country to which the device is supplied.	Ukrainian	P
7.14	Marking must be easily recognizable and durable.	provided	P
7.15	Compliance with marking placement	provided	P
7.16	Presence of marking of fuse or thermal link		N/A
Section 8 PROTECTION AGAINST ACCESS TO LIVE PARTS			
8.1	Devices must be designed and enclosed so as to provide adequate protection against accidental contact with live parts.	Class III	P
8.1.1	The device operates in all positions possible during normal operation.	provided	P
	Protection against accidental contact with lamp bases that are live.		N/A
	Absence of contact of the test probe with live parts protected only by varnish, enamel, etc.		N/A
8.1.2	Openings in class 0 devices, class II devices and class II constructions, except openings that provide access to lamp bases or to live parts of sockets, are checked with test probe 13 according to IEC 61032, which is inserted without significant force.		N/A
8.1.3	Absence of contact of the test probe with parts of heating elements with visible glow that are live in all devices except class II.		N/A
8.1.4	Accessible parts are not considered live parts if:		
	- they are supplied with safely extra-low voltage AC that does not exceed 42.4 V (peak value);	no parts available	N/A
	- they are supplied with safely extra-low voltage DC that does not exceed 42.4 V;		N/A

	- separated by protective impedance		N/A
	In the presence of protective impedance, the current between these accessible parts and the power source must not exceed 2 mA for direct current, and for alternating current 0.7 mA (peak value); at the same time:		
	- capacitance must not exceed 0.1 μ F (for voltages over 42.4 V up to 450 V inclusive);		N/A
	- electric discharge must not exceed 45 μ C (for voltages over 450 V up to 15 kV inclusive)		N/A
	- for peak voltages over 15 kV, the energy of electric discharge must not exceed 350 mJ		N/A

Continuation of Table B.1

Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
8.1.5	Live parts of built-in appliances, fixed appliances and appliances supplied as separate units must be protected by basic insulation before installation or assembly.	provided	P
8.2	Class II appliances and structures must be designed and enclosed in such a way as to provide adequate protection against accidental contact with basic insulation and with metal parts separated from live parts only by basic insulation.	provided	P
Section 9	STARTING OF ELECTROMECHANICAL APPLIANCES		
	Additional requirements are established in	<i>this section is not applicable</i>	N/A
Section 10	POWER CONSUMPTION AND CURRENT		
10.1	Deviation of power consumption at rated voltage and normal operating temperature within the limits according to Table 1:		
	- appliance type		N/A
	- power consumption(s) 520 W		N/A
	- deviation(s) +5/-10 %		N/A
10.2	Deviation of consumed current at normal operating temperature within the limits according to Table 2:		
	- appliance type:		
	- current(s) A	measured: A	N/A
	- deviation(s) +5/-10 %	measured: %	N/A
Section 11	HEATING		
11.1	Appliances and the surrounding environment during normal operation must not overheat excessively.	provided	P
11.2	Hand-held appliances are fixed in normal position.		N/A
	Appliances with pins for insertion into outlets are plugged into an appropriate wall socket outlet.		N/A
	Built-in appliances are installed according to instructions.		N/A
	Other heating appliances and other combined appliances are installed in a test corner:		
	- on the floor;		N/A
	- on one of the walls		N/A
	— appliances that are usually mounted to the ceiling are fixed to the ceiling of the test corner as close to the walls as possible, similar to normal operation		N/A
	Other electromechanical appliances are installed:		
	- on a horizontal support;	provided	P
	- on a vertical support;		N/A
	- to the underside of a horizontal support		N/A
	The cord is unwound to 1/3 of the total length for devices with automatic cord winding.		N/A

	The cord is extended 50 cm from other cord storage devices.		N/A
11.3	Temperature rise of various parts, except for winding temperature, is determined by fine-wire thermocouples placed so that they minimally affect the temperature of the tested part.	provided	P
	Temperature rise of windings is determined by the resistance method.	provided	P
11.4	Heating appliances operate at 1.15 times the rated power consumption.		N/A
11.5	Electromechanical appliances operate from 0.94 to 1.06 times the rated voltage value.	provided	P
11.6	Combined appliances operate from 0.94 to 1.06 times the rated voltage value.		N/A

Continuation of Table B.1

Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
11.7	Appliances operate for a period whose duration corresponds to the most unfavorable conditions during normal operation.	provided	P
11.8	Maximum normal temperature rise according to Table 3	see Table B.2	P
	Testing of electric motor temperature rise according to Appendix C		N/A
	Protective devices must not operate, and potting compound must not leak out		N/A
Section 13	LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE		
13.1	At operating temperature, the appliance leakage current must not exceed permissible values, and its electric strength must be adequate	Class III	N/A
13.2	Leakage current must not exceed corresponding values (measurement using the circuit shown in Figure 4 IEC 60990)		N/A
13.3	The appliance is disconnected from the power supply and immediately the insulation is subjected for 1 min to testing with voltage at 50 Hz or 60 Hz frequency according to IEC 61180-1. During insulation testing there must be no breakdown		N/A
Section 14	TRANSIENT OVERVOLTAGES		
	Appliances must withstand transient overvoltages to which they may be subjected	air gaps correspond to Table 16	N/A
Section 15	MOISTURE RESISTANCE		
15.1	Provision by the appliance housing of degree of protection against moisture according to classification	provided	P
15.1.1	Appliances, except IPX0 rating, are tested according to IEC 60529	provided	P
	Testing of water valves in which there are live parts	provided	P
15.1.2	Hand-held appliances are continuously rotated to the most unfavorable positions	provided	P
	Built-in appliances are installed according to instructions		N/A
	Appliances normally used on floor or table are placed on horizontal support		N/A
	Appliances that are usually mounted to wall, and appliances with pins, are mounted as in normal operation in the center of a wooden board		N/A
	For IPX3 rating appliances, the base of the wall-mounted appliance is placed at the same level as the axis point of the oscillating tube		N/A
	For IPX4 rating appliances, the horizontal axis of the appliance must coincide with the main axis of tube		N/A

	oscillation		
	Placement of wall-mounted appliances as close as possible to the floor		N/A
	Appliances that are usually mounted on ceiling are fixed from below under horizontal support		N/A
	For IPX4 rating appliances, tube movement is limited to two 90° deviations		N/A
	Appliances with Type X cord attachment are equipped with flexible cord of the lightest permissible type		N/A
	Removable parts are removed and subjected to appropriate treatment together with the main part		N/A
15.2	Appliances in which liquid overflow is possible during normal operation must be designed so that this overflow does not affect electrical insulation.		N/A
15.3	Appliances must be impermeable to moisture at relative humidity $(93 \pm 3)\%$ $t = (20-30)^{\circ}\text{C}$	48 h	P
Section 16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		
16.1	The appliance leakage current must not exceed permissible values, and its electric strength must meet requirements		N/A

Continuation of Table B.1

Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
16.2	The leakage current of the test parts of the appliance must not exceed the corresponding values.		N/A
16.3	During electric strength tests according to Table 7, there must be no breakdown.		N/A
Section 17	PROTECTION AGAINST OVERLOAD OF TRANSFORMERS AND ASSOCIATED CIRCUITS		
	Appliances having circuits supplied from transformers must be designed so that in case of short circuit of circuits that may occur during normal operation, excessive heating of the transformer or circuits connected to it does not occur.		N/A
	Temperature rise of insulation of conductors of safety extra-low voltage circuits not more than 15 K from those given in Table 3.		N/A
	Winding temperature must not exceed: for class not more than according to Table 8.		N/A
Section 18	DURABILITY		
	Additional requirements are established as necessary determined in Part 2.	<i>this section is not applicable</i>	N/A
Section 19	ABNORMAL OPERATION		
19.1	Ensuring by appliance design minimum safety during abnormal or careless operation.	provided	P
	Electronic circuits must be designed so that when they are damaged, there is no danger of electric shock, ignition, mechanical hazard or incorrect operation.		N/A
19.2	Appliances with heating elements are tested under conditions of Section 11 at 0.85 of rated power consumption with limited heat dissipation.		N/A
19.3	Testing according to 19.2 is repeated, but at predetermined supply voltage that provides power consumption equal to 1.24 of rated power consumption during normal operation mode, when power consumption has stabilized.		N/A
19.4	The appliance is tested under conditions of Section 11 with short-circuited thermal limiting device.		N/A
19.5	Class 0I, I appliances with tubular or pressed heating elements are tested according to 19.4, with one end of the element connected to the heating element sheath.		N/A
19.6	Appliances with PTC heating elements operate at rated voltage until reaching steady state characterized by stabilization of power consumption and temperature.		N/A
	The operating voltage of the PTC heating element is increased by 5%, and the appliance operates again until reaching steady state. Then voltage is increased		N/A

	in the same manner until it reaches 1.5 times rated voltage, or until the PTC heating element fails, whichever occurs first.		
19.7	The appliance operates under braking conditions:		
	- by rotor blocking;		N/A
	- by blocking moving parts for other appliances		N/A
	Short-circuiting of capacitors connected to auxiliary motor winding.		N/A
	During each test, appliances equipped with timer or programmer operate at voltage equal to rated voltage for a period equal to the maximum period provided by the timer or programmer.		N/A
	Other appliances operate at rated voltage for: a) 30 s for:		
	— hand-held appliances,		N/A
	— appliances that are kept in the on state by hand or foot;		N/A

Continuation of Table B.1

Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
19.7	— appliances that are continuously loaded manually;		N/A
	b) 5 min for other appliances that operate under supervision;		N/A
	c) until reaching steady state - for other appliances.	provided	P
	Winding temperature must not exceed for class ____ °C according to Table 8		N/A
19.8	In appliances with three-phase motor, one phase is opened		N/A
19.9	Overload testing is applied to appliances with electric motors equipped with remote or automatic control, or intended for continuous operation.		N/A
	Winding temperature rise for class ____ °C during overload testing of motors intended for continuous operation, remote or automatic control		N/A
19.10	Appliances with series-wound motors are tested at 1.3 times rated voltage for 1 min at minimum possible load. During testing, parts must not be ejected from the appliance.		N/A
19.11	Compliance of electronic circuits is verified by simulating the faults specified in 19.11.2 of each circuit or its part, in case of non-compliance with conditions specified in 19.11.1		N/A
	Testing of appliances equipped with protective electronic circuit according to 19.11.3 and 19.11.4.		N/A
	Testing of appliances equipped with switches with electronic opening according to 19.11.4		N/A
	Testing is conducted according to 19.12 if appliance safety depends on operation of miniature fuse link		N/A
	Winding temperature must not exceed values given in Table 8		N/A
	Current flowing through protective impedance must not exceed values given in 8.14		N/A
19.11	Breaking of conductor on printed circuit board is permitted with simultaneous fulfillment of conditions:		
	- printed circuit board material withstands testing according to Appendix E		N/A
	- any conductor weakening does not lead to reduction of creepage distances and clearances between parts;		N/A
	- appliance withstands testing according to 19.11.2 in case of opening conductor of bridge circuit		N/A
19.11.1	Faults from lists a) to e) specified in 19.11.2 are not simulated for circuits provided that:		
	electronic circuit is low-power;		N/A
	hazardous situations in other parts of the product are not related to normal functioning of electronic circuit		N/A
19.11.2	Possible faults during testing:		
	a) short circuit of functional insulation;	provided	P
	b) opening of terminals of any element;		N/A

	c) short circuit of capacitors not complying with IEC 60384-14;		N/A
	d) short circuit of any two terminals of electronic elements (except integrated circuits and optocouplers);		N/A
	e) fault of triacs in diode assembly;		N/A
	f) fault of integrated circuits		N/A
	g) failure of electronic switching device (particularly regarding turn-on mode with loss of gate (base) control). During this test, winding temperature must not exceed values given in 19.7 of this standard.		N/A
	PTC-S thermistors are short-circuited		N/A
	Short circuit of low-power circuit	provided	P
	Duration of tests in case of fault occurrence equals:		

Continuation of Table B.1

Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
19.11.2	- specified in 11.7, if the fault cannot be detected by the consumer;		N/A
	- specified in 19.7, if the fault can be detected by the consumer;		N/A
	- until reaching steady state for circuits permanently connected to the mains		N/A
	The test is considered complete if power supply inside the appliance ceases	provided	P
19.11.3	Testing of appliances equipped with protective electronic circuit according to 19.11.2 from a) to f)		N/A
19.11.4	Testing of appliances equipped with switches with electronic opening according to 19.11.4.1-19.11.4.7		N/A
19.11.4.1	For appliances affected by electrostatic discharges according to IEC 61000-4-2, test level 4 is applied		N/A
19.11.4.2	The appliance is subjected to radiated field effects according to IEC 61000-4-3 at test level 3, if applicable.		N/A
19.11.4.3	Appliances are subjected to electrical fast transient/burst according to IEC 61000-4-4. For signal and control lines, test level 3 is applied. For power supply lines - level 4.		N/A
19.11.4.4	Power terminals of the appliance are affected by surge voltage according to IEC 61000-4-5,		N/A
19.11.4.5	The appliance is subjected to conducted disturbances induced by radio-frequency fields according to IEC 61000-4-6 at test level 3. During testing, the entire frequency range from 0.15 MHz to 80 MHz is covered.		N/A
19.11.4.6.	The appliance is classified as class 3 for voltage dips and short interruptions according to IEC 61000-4-11 requirements.		N/A
19.11.4.7	The appliance is subjected to harmonics and interharmonics according to IEC 61000-4-13 at test level class 2.		N/A
19.11.4.8	The appliance must return to normal operation from the same position of the operating cycle at which the supply voltage drop occurred, or after manual restart		N/A
19.12	If safety depends on operation of miniature fuse link in case of fault, it is replaced with an ammeter and the test is repeated		N/A
	If the measured current does not exceed the minimum current of the fuse link by 2.1 times, the circuit is not considered sufficiently protected, the fuse link is short-circuited and the test is repeated		N/A
	If the measured current is at least 2.75 times the minimum current of the fuse link, the circuit is considered sufficiently protected		N/A
	If the measured current is more than 2.1 but less than		N/A

	2.75 times the minimum current of the fuse link, the fuse link is short-circuited and the test is conducted for ____ minutes.		
19.13	During tests, the appliance housing must not emit flames, molten metal, harmful or flammable gases	provided	P
	Maximum permissible temperature rise during abnormal operation according to Table 9:		
	- wooden supports, walls, ceiling and floor of test corner, not more than 150;	4	P
	- power cord insulation, not more than 150;		N/A
	- supplementary and reinforced insulation, except for insulation made of thermoplastic materials, not more than 1.5 times the corresponding value in Table 3		N/A
	Electric strength under abnormal operation conditions		N/A
19.14	Appliances operate under conditions described in Section 11 of this standard. Any contact of contact group or relay operating under conditions created according to Section 11 requirements must be short-circuited.		N/A

Continuation of Table B.1

Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
Section 20	STABILITY AND MECHANICAL HAZARDS		
20.1	Appliances, except fixed and hand-held appliances, intended for use on surfaces must be sufficiently stable. Compliance with the requirement is verified by the following test: The appliance is installed in any normal operating position:		
	- on a plane inclined at 10°;		N/A
	- on a plane inclined at 15° for appliances with heating elements		N/A
	Temperature rise must not be greater than values given in Table 9		N/A
20.2	Adequate protection from moving parts of the appliance		N/A
	Protective covers, guards and similar elements must be non-removable elements		N/A
	Unexpected repeated switching of self-resetting thermal switches and protective devices must not lead to hazard		N/A
Section 21	MECHANICAL STRENGTH		
21.1	Appliances must have adequate mechanical strength and be designed to withstand incorrect handling that is possible during normal operation. Three impacts with collision energy of 0.5 J are applied to the rigidly fixed appliance at each point of the housing considered weak.	provided	P
	In doubtful cases, supplementary or reinforced insulation is subjected to electric strength testing according to 16.3		N/A
	In doubtful cases due to defect appearance, testing is repeated on a new specimen		N/A
	Accessible parts of solid insulation must have sufficient strength to prevent penetration of sharp objects	provided	P
Section 22	CONSTRUCTION		
22.1	Construction compliance with IEC 60529 requirements when differing from 0 of the first digit in IP marking	provided	P
22.2	Guaranteed disconnection of all supply poles for stationary appliances by one of the methods:		
	- power cord equipped with plug;		N/A
	- switch complying with 24.3;		N/A
	- indication in instructions of necessity to install isolator mounted in fixed wiring;		N/A
	- appliance coupler		N/A
	Single-pole switches and single-pole protective		N/A

	devices that disconnect heating elements in single-phase class 0I and class I appliances permanently connected to power supply must be connected to the phase conductor of the supply		
22.3	Appliances with pins intended for insertion into socket outlets must not create excessive mechanical loads on these outlets. (torque not more than 0.25 N·m)		N/A
22.4	Appliances for heating liquids and appliances causing excessive vibration must not have pins for insertion into outlets.		N/A
22.5	Absence of shock hazard from charged capacitors when touching plug pins (voltage not more than 34 V, $C \leq 0.1 \mu\text{F}$)		N/A
22.6	Absence of condensate effect on insulation	provided	P
	Electric insulation of class II appliances must not weaken in case of hose or hermetic seal damage.		N/A
22.7	Appliances containing liquid or gas during normal operation or having devices for steam production must be equipped with appropriate devices to prevent excessive pressure rise.		N/A

Continuation of Table B.1

DSTU EN 60335-1:2015			
Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
22.8	Absence of strain on electrical connections in accessible compartments subject to cleaning		N/A
22.9	Absence of effect of oil, grease and similar substances on insulation	provided	P
22.10	Absence of re-energization maintained by non-self-resetting thermal switches		N/A
	Non-self-resetting thermal motor protector must perform disconnection		N/A
	Compliance of placement of non-self-resetting control devices		N/A
22.11	Compliance of fastening of non-removable parts	provided	P
	Compliance of fastening of snap-in devices		N/A
22.12	Handles, knobs, grips, levers and similar parts must be fastened in such a way that they do not loosen during normal operation if this may lead to hazard.	provided	P
22.13	Ensuring by design of handles held in hand during normal operation the impossibility of touching parts with temperature rise exceeding the value permitted for short-time contact		N/A
22.14	Absence of serrated and sharp edges	provided	P
	Absence of sharp, protruding ends of self-tapping screws	provided	P
22.15	Hooks and other similar applications must be smooth and well rounded	provided	P
22.16	Compliance of design of cord winding reels		N/A
	In doubtful cases, cord insulation is subjected to electric strength testing according to 16.3		N/A
22.17	Compliance of design of spacers to protect the appliance from overheated walls		N/A
22.18	Corrosion resistance of current-carrying and other metal parts		N/A
22.19	Compliance of belt application		N/A
22.20	Not permitted: direct contact between live parts and thermal insulation if the thermal insulation material is corrosive, hygroscopic and flammable.	provided	P
22.21	Wood, cotton, silk, ordinary paper and similar fibrous or hygroscopic materials cannot be used as insulation unless they are impregnated.	provided	P
22.22	Appliances must not contain asbestos	provided	P
22.23	Oils containing polychlorinated biphenyl (PCB) must not be used in appliances	provided	P
22.24	Absence of contact of uninsulated heating elements, in case of their breakage, with accessible metal parts		N/A
22.25	Appliances, except class III appliances, must be designed so that sagging heating conductors cannot contact accessible metal parts.		N/A
22.26	Ensuring appropriate insulation for appliances having		N/A

	class III parts		
22.27	Parts connected through protective impedance must be separated by double or reinforced insulation		N/A
22.28	Metal parts in class II appliances must be separated by double or reinforced insulation from gas or water supply network	Class III	N/A
22.29	Class II appliances intended for permanent connection to fixed wiring must be designed so that the required degree of protection against access to live parts is maintained after appliance installation		N/A
22.30	Structural parts of class II that are supplementary or reinforced insulation must be:		

Continuation of Table B.1

DSTU EN 60335-1:2015			
Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
	- either fixed so that they cannot be removed without serious damage;		N/A
	- or designed so that they cannot be installed in incorrect position		N/A
22.31	Clearances and creepage distances along supplementary and reinforced insulation due to wear must not become less than values specified in Section 29.		N/A
22.32	Protection of supplementary and reinforced insulation from contamination and dust		N/A
	Compliance of parts made of natural or synthetic rubber used as supplementary insulation		N/A
	Loosely sintered ceramic and similar materials, as well as beads, must not be used as supplementary or reinforced insulation		N/A
22.33	Absence of contact of conductive liquids with live parts		N/A
	In class II constructions such liquids must not contact basic or reinforced insulation		N/A
	In class II constructions conductive liquids that contact live parts must not contact reinforced insulation		N/A
22.34	Shafts of operating buttons, knobs, handles and similar parts must not be live if the shaft is accessible during removal of said parts.		N/A
22.35	Compliance of design of operating buttons, knobs, handles in case of basic insulation damage		N/A
22.36	Absence of contact during normal gripping of handles with metal parts not separated by double or reinforced insulation from live parts		N/A
22.37	Absence of contact of capacitors with accessible metal parts in class II appliances		N/A
22.38	Capacitors must not be connected between thermal switch contacts.		N/A
22.39	Lamp holders should be used only for connecting lamps.		N/A
22.40	Electromechanical and combined appliances that move during operation or have accessible moving parts must have a switch in the motor control circuit.		N/A
22.41	Appliances must not have components containing mercury, except for lamps	provided	P
22.42	Protective impedance must consist of at least two separate components		N/A
22.43	Appliances that can be switched to different voltages must be designed so that accidental switching is prevented.		N/A
22.44	Appliances must not be equipped with protective	provided	P

	devices (covers, housings) that resemble toys		
22.45	Compliance of design of appliances using air as reinforced insulation		N/A
22.46	Software used in protective electronic circuits must be class B or C software.		N/A
22.47	Appliances intended for connection to water supply network must withstand water pressure possible under normal operating conditions.		N/A
22.48	Appliances intended for connection to water supply network must be designed to prevent entry of non-potable water into the water supply network.		N/A
22.49	For remote control, the duration of appliance operation must be set before the appliance starts operating		N/A
22.50	Manual control devices must have priority over remote control devices		N/A

Continuation of Table B.1

DSTU EN 60335-1:2015			
Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
22.51	Appliance control devices must provide the ability to adjust the appliance in manual mode for transferring it to remote control mode. Presence of visual indication		N/A
22.52	Socket outlets on appliances must comply with requirements of the "socket outlet/plug" system		N/A
Section 23	INTERNAL WIRING		
23.1	Wire grooves must be smooth and without sharp edges		N/A
	Wires must not contact burrs, cooling fins or similar edges		N/A
	Wire holes in metal must be smooth or equipped with sleeves		N/A
	Wires must be protected from touching moving parts		N/A
23.2	Compliance of insulated beads and similar ceramic insulators		N/A
23.3	Absence of excessive strain on electrical connections and wires during movement of product parts		N/A
	Flexible metal tubes must not damage insulation of wires placed in them		N/A
	Springs whose coils do not compress against each other must not be used to protect wires		N/A
23.4	Uninsulated internal wires must be sufficiently rigid and so fastened that during normal operation clearances and creepage distances cannot become less than values specified in Section 29.		N/A
23.5	Electric strength of internal wiring insulation (absence of breakdown at U=2000 V)		N/A
23.6	Reliable fastening of insulating tubes used as supplementary insulation		N/A
23.7	Wires marked with yellow-green color combination should be used only as earthing wires.		N/A
23.8	Aluminum wires cannot be used for internal wiring		N/A
23.9	Multistrand wires cannot be connected with lead-tin solder in places where contact pressure acts		N/A
23.10	Compliance of insulation and sheath of internal wiring in external shafts intended for connecting the appliance to water supply network		N/A
Section 24	COMPONENTS		
24.1	Components must comply with safety requirements of corresponding IEC standards insofar as necessary	provided	P
24.1.1	Capacitors that are permanently under voltage for radio interference suppression must comply with IEC 60384-14 (testing if necessary according to Appendix F)		N/A
24.1.2	Safety isolating transformers must comply with IEC 61558-2-6 (testing if necessary according to Appendix		N/A

	G)		
24.1.3	The corresponding standard for switches is IEC 61058-1. The number of operating cycles declared in 7.1.4 according to IEC 61058-1 must be not less than 10,000. If they are to be tested, they are tested according to Appendix H of this standard.		N/A
24.1.4	Automatic control devices must comply with IEC 60730-1. The number of operating cycles must be not less than:		N/A
	— for thermostats 10,000		N/A
	— for thermal limiters 1,000		N/A
	— for self-resetting thermal switches 300		N/A
	— for non-self-resetting thermal switches that maintain selected voltage value 1,000		N/A
	— for other non-self-resetting thermal switches 30		N/A
	— for timers 3,000		N/A
	— for energy regulators 10,000		N/A
24.1.5	Appliance couplers must comply with IEC 60320-1, interconnection couplers - IEC 60320-2-2		N/A

Continuation of Table B.1

DSTU EN 60335-1:2015			
Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
24.1.6	Miniature lamp holders, analogous in design to E10 holders, must comply with IEC 60238, for E10 holders - IEC 60061-1.		N/A
24.1.7	If remote control of the device is carried out by means of a telecommunications network, the standards regulating safety requirements for the telecommunications interface in the device are EN 41003 and section 6.3 of EN 60950-1:2006.		N/A
2.4.1.8	Requirements for fuse links are regulated by IEC 60691 standard.		N/A
	Fuse links that do not meet IEC 60691 requirements are subjected to testing in accordance with section 19.		N/A
24.1.9	Relays, except for motor starting relays, are tested as part of the device. However, at the same time, they must also be tested for compliance with the requirements of section 17 of IEC 60730-1 under maximum load conditions.		N/A
24.2	Devices must not be equipped with:		
	- switches or regulating devices in flexible cords;		N/A
	- devices that cause protective devices in stationary wiring to operate in case of damage to the device;		N/A
	- thermal switches that return to the original position by soldering.		N/A
24.3	Compliance of the gap between switch contacts for guaranteed disconnection of all poles of stationary devices (overvoltage category III).		N/A
24.4	Compliance with the design of plugs and sockets used for connecting heating elements and extra-low voltage circuits.		N/A
24.5	Capacitors in auxiliary motor windings must be marked with rated voltage and rated capacity.		N/A
24.6	The operating voltage of electric motors directly connected to the supply network and having basic insulation inadequate for the device's rated voltage must not exceed 42 V and comply with the requirements of Appendix I.		N/A
24.7	A set of hoses for connecting devices to the water supply network must comply with IEC 61770 requirements.		N/A
Section 25	CONNECTION TO POWER SOURCE AND EXTERNAL FLEXIBLE CORDS		
25.1	Compliance of the connection means for devices not intended for permanent connection:		
	- power cord equipped with plug;		N/A
	- appliance inlet;		N/A
	- pins for insertion into sockets.		N/A
25.2	Presence of no more than one means of connection to		N/A

	the network (except stationary ones with multiple power sources).		
	Stationary devices with multiple power sources may be equipped with more than one connection means.		N/A
25.3	Compliance of connection means and completeness for devices intended for permanent connection to stationary wiring:		
	- set of terminals capable of connecting stationary wiring cables with nominal wire cross-section specified in 26.2;		N/A
	- set of terminals capable of connecting flexible cord;		N/A
	- set of supply wires located in the appropriate compartment;		N/A
	- set of terminals and cable entries allowing connection of appropriate types of cables or conduits.		N/A
25.4	Compliance of cable and conduit entry size for devices with rated current not exceeding 16 A according to table 10.		N/A
25.5	Power cords must be attached to the device by one of the following methods:		
	— type X attachment;		N/A
	— type Y attachment;		N/A
	— type Z attachment, if permitted in the corresponding part 2.		N/A
25.6	Plugs must be connected to only one power cord.	provided	P

Continuation of Table B.1

DSTU EN 60335-1:2004			
Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
25.6	Power cords for single-phase portable appliances not exceeding 16 A must be equipped with a plug that complies with the following IEC 60083:1975 standard sheets:		
	For Class I appliances: standard sheet C2b, C3b or C4;		N/A
	For Class II appliances: standard sheet C5 or C6.1		N/A
25.7	Power cords must be classified as one of the following types:		
	— rubber-sheathed cord		N/A
	— polychloroprene-sheathed cord;		N/A
	— ordinary flexible polychloroprene-sheathed cord (designation 57 according to IEC 60245).		N/A
	When using high-flexibility power cords, they must be no weaker than:		
	— cord with sheath and rubber insulation (designation 86 according to IEC 60245)		N/A
	— cord with PVC cross-linked sheath and rubber insulation (designation 87 according to IEC 60245)		N/A
	— cord with cross-linked PVC insulation and sheath (designation 88 according to IEC 60245).		N/A
	— light cords in polyvinyl chloride - light cords in polyvinyl chloride sheath (designation 52 according to IEC 60227) for appliances with mass not exceeding 3 kg;		N/A
	— ordinary cords in polyvinyl chloride sheath (designation 53 according to IEC 60227) for all other appliances		N/A
	In heat-resistant polyvinyl chloride sheath:		
	— light cords in heat-resistant polyvinyl chloride sheath (designation 56 according to IEC 60227) for appliances with mass not exceeding 3 kg;		N/A
	— cords in heat-resistant polyvinyl chloride sheath (designation 57 according to IEC 60227) for all other appliances		N/A
	— cords with thermoplastic compound sheath that does not contain halogens.		N/A
25.8	Power cord conductors must have a nominal cross-sectional area of not less than the values given in Table 11.		N/A
25.9	Absence of contact between the power cord and sharp projections or edges of the appliance.		N/A
25.10	The power cord of Class I appliances must have a yellow-green conductor connected to the appliance earthing terminal and to the earthing contact of the plug.		N/A
25.11	Absence of lead-tin solder in places where contact pressure acts when connecting the power cord.		N/A

25.12	Power cord insulation must not be damaged during cord crimping into the housing part.		N/A
25.13	Entry openings must not damage the power cord sheath.		N/A
25.14	Appliances with power cords that are moved during operation must be designed to prevent excessive bending of the power cord at its entry point into the appliance.		N/A
25.15	Power cord attachment must prevent tension and twisting at the connection point:		
	- power cord displacement not more than 2 mm;		N/A
25.16	Cord attachment means for Type X attachment must be designed and positioned so that:		
	- cord replacement can be easily performed;		N/A
	- it is clear how cord strain relief is achieved;		N/A
	- they are suitable for securing different types of cords;		N/A
	- the cord cannot touch the clamping screws of the cord attachment;		N/A
	- the cord cannot be secured with metal screws that bear directly on the cord;		N/A

Continuation of Table B.1

DSTU EN 60335-1:2015			
Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
	- at least one part of the attachment assembly must be securely fastened to the appliance;		N/A
	- screws that must be used when replacing the cord must not be used for fastening other components		N/A
	- tests according to 25.15 are conducted even if labyrinths can be bypassed;		N/A
	- for Class 0, 0I and I appliances, cord attachment means must be made of insulating material or equipped with an insulating gasket		N/A
25.16	- for Class II appliances, cord attachment means must be made of insulating material, and if they are made of metal, they must be isolated from accessible metal parts by supplementary insulation		N/A
25.17	Compliance of Type Y and Type Z cord attachment		N/A
25.18	The cord attachment assembly must be positioned so that it is accessible only with the use of a tool, or it must be designed so that the cord can be installed only with the aid of a tool.		N/A
25.19	For Type X attachment in portable appliances, cable glands cannot be used as a cord attachment assembly. It is not permissible to tie the cord in a knot or secure the cord with rope.		N/A
25.20	For Type Y attachment and Type Z attachment, insulated conductors of the power cord must be additionally insulated from accessible metal parts: by basic insulation for Class 0, Class 0I and Class I appliances, and by supplementary insulation for Class II appliances.		N/A
25.21	The compartment for connecting power cables to stationary wiring or cord by method X must be designed so that:		
	- before installing any cover, the correct connection and positioning of conductors can be verified;		N/A
	- any covers can be installed without risk of damaging conductors or their insulation;		N/A
	- for portable appliances, the uninsulated end of a conductor, if it falls out of the terminal, cannot touch accessible metal parts.		N/A
25.22	Appliance inlets must be positioned so:		
	- that live parts are not accessible when inserting or removing the connector;		N/A
	- that the connector can be inserted without difficulty;		N/A
	- that after inserting the connector, the appliance does not rest on the connector in any position on a flat surface		N/A
	- appliance inlets must not be designed for cold conditions if the temperatures of external metal parts		N/A

	of the appliance during tests according to Section 11 exceed 75 K		
25.23	Compliance with the design of interconnecting cords, except that:		
	- cross-sectional area is determined by the maximum current value;		N/A
	- insulation thickness may be less than required if the voltage in the given conductor is less than the rated voltage		N/A
25.24	Interconnecting cords must not be removable without the use of a tool if their disconnection violates compliance with the requirements of this standard.		N/A
25.25	The dimensions of appliance pins that are inserted into sockets must be compatible with the dimensions of corresponding sockets.		N/A
Section 26	TERMINALS FOR EXTERNAL CONDUCTORS		
26.1	Appliances must have terminals or equivalent effective means for connection to external conductors.		N/A

Continuation of Table B.1

DSTU EN 60335-1:2004			
Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
	Terminals must be accessible only after removing a non-removable cover.		N/A
	Earthing terminals may be accessible.		N/A
26.2	Requirements for terminals for appliances with Type X cord attachment and appliances intended for connection to stationary wiring.		N/A
	Screws and nuts cannot be used for fastening other components, except for internal conductors.		N/A
	Application of external conductor connection by soldering in appliances with Type X cord attachment.		N/A
26.3	Terminals for appliances with Type X cord attachment and for connection to stationary wiring must be secured appropriately so that:		
	- the terminal does not become loose;		N/A
	- internal wiring is not subjected to tension;		N/A
	- clearances and creepage distances do not become less than the values specified in Section 29.		N/A
26.4	Terminals for appliances with Type X cord attachment and terminals intended for connection to stationary wiring must not require specially prepared conductors.		N/A
26.5	Terminals for Type X attachment must be positioned or protected so that if during connection of a stranded conductor to the terminal one of its wires remains free, there is no risk of accidental contact with other parts that could lead to a hazard.		N/A
26.6	Terminals for Type X attachment and for connection to stationary wiring must allow connection of conductors having nominal cross-sectional areas specified in Table 13.		N/A
26.7	Terminals for Type X attachment must be accessible after removing a cover or part of the housing.		N/A
26.8	Terminals for connection to stationary wiring, together with earthing terminals, must be located close to each other.		N/A
26.9	Compliance with the design of pillar-type terminals.		N/A
26.10	Compliance with the application of terminals with screw and screwless terminals for connecting tinsel cord.		N/A
26.11	Application of external conductor connection by soldering, welding, crimping or similar methods in appliances with Type Y, Z cord attachment.		N/A
Section 27	EARTHING		
27.1	Accessible metal parts of Class 01, I appliances must be permanently and reliably connected to earth.	Class III	N/A
	Earthing terminals must not be connected to the neutral terminal.		N/A

	Class 0, II, and III appliances must not have means for earthing.	provided	P
27.2	Clamping means of earthing terminals must be protected against accidental loosening.		N/A
	Terminals for connecting external conductors intended for potential equalization must allow connection of conductors having nominal cross-sectional area from 2.5 mm ² to 6 mm ² .		N/A
27.3	Earthing connection of removable parts to the product by means of a plug must precede connection of current-carrying parts.		N/A
	Tension on current-carrying conductors must occur earlier than on the earthing conductor in case the cord slips out of the attachment assembly.		N/A
27.4	All parts of the earthing terminal intended for connecting external conductors must be such that no corrosion hazard arises through contact between these parts.		N/A

Continuation of Table B.1

DSTU EN 60335-1:2015			
Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
27.4	Parts intended to ensure earthing continuity, except for parts of metal frame or housing, must be made of metal having appropriate corrosion resistance.		N/A
	Parts made of plated or unplated steel, which are intended to provide or transmit contact pressure, must have appropriate protection against corrosion.		N/A
	If the earthing terminal housing is part of a frame or housing made of aluminum or aluminum alloy, measures must be taken to protect against corrosion due to contact between copper and aluminum or their alloys.		N/A
27.5	Resistance between the earthing contact and earthed metal parts not more than 0.1 Ω .		N/A
27.6	Printed conductors of a printed circuit board (electronic board with printed wiring) cannot be used as elements that ensure continuous electrical contact with earth in portable appliances.		N/A
	Condition for using printed conductors for earthing.		N/A
Section 28	SCREWS AND CONNECTIONS		
28.1	Fastening connections must withstand mechanical loads that occur during normal operation.	provided	P
	Screws must not be made of soft material.	provided	P
	Screws made of insulating material must have a diameter of not less than 3 mm and must not be used for electrical connections.		N/A
	Screws that provide electrical contact must be screwed into metal.	provided	P
28.1	Screws must not be made of insulating material if their replacement with metal ones could damage supplementary or reinforced insulation.		N/A
	Screws that can be removed during power cord replacement must not be made of insulating material if their replacement with metal ones could damage basic insulation.		N/A
28.2	Electrical connections and connections that ensure earthing continuity must be designed so that contact pressure is not transmitted through insulating material.		N/A
28.3	Self-tapping screws (sheet metal) must be used only for electrical connections that tightly press parts against each other.		N/A
	Self-threading screws and screws with rolled thread must be used for electrical connections only when the thread has the standard form of screw thread created by machine.		N/A
	Self-tapping screws, screws with rolled thread and screws with spaced thread may be used in connections		N/A

	that ensure permanent (continuous) contact with earth, in the absence of need to break this connection.		
	At least 2 screws must be used to create each connection of continuous contact with earth, except when the screw forms a thread whose length is not less than half the screw diameter.		N/A
28.4	Measures must be taken against loosening of screws and nuts intended for mechanical connection of different parts of the appliance, if this connection is simultaneously an electrical connection or a connection that ensures earthing continuity.		N/A
	Rivets used for electrical connections must be protected against loosening.		N/A
Section 29	CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION		
29.1	Appliances must be designed so that clearances, creepage distances and solid insulation are capable of withstanding electrostatic field stress to which the appliance may likely be subjected.	see Table B.7	P

Continuation of Table B.1

DSTU EN 60335-1:2015			
Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
	Clearances must not be less than the values specified in Table 16.	see Table B.7	P
	Examples of constructions where distances may change are constructions containing soldering, plug-type connections and screw terminals, as well as clearances of motor windings. Appliances belong to overvoltage category II. (clearances for rated impulse voltage are increased by 0.5 mm)		N/A
29.1.1	Clearances of basic insulation must be sufficient to withstand overvoltages that may be present during operation, specified in Table 16.		N/A
	Clearances on terminals of tubular heating elements (TEHs) may be reduced to 1.0 mm if pollution degree 1 micro-environment is present.		N/A
	Enameled winding wires are considered bare conductors.		N/A
29.1.2	Clearances of supplementary insulation must not be less than the values specified for basic insulation in Table 16.		N/A
29.1.3	Clearances of reinforced insulation must not be less than the values specified for basic insulation in Table 16, but using the next higher value of rated impulse voltage.		N/A
29.1.4	For functional insulation, values from Table 16 are applied. However, clearances are not determined if the appliance meets the requirements of Section 19 with short-circuited functional insulation.		N/A
	Enameled winding wires are considered bare conductors. But clearances at their crossing points are not measured.		N/A
	Clearance between surfaces of PTC heating elements may be reduced to 1 mm.		N/A
29.1.5	Clearances for appliances where operating voltage is higher than rated voltage.		N/A
	Clearances of basic insulation on the secondary side of step-down transformer with earthing.		N/A
	Clearances of functional insulation for circuits supplied with voltage lower than rated voltage.		N/A
29.2	Appliances must be designed so that creepage distances are not less than those corresponding to operating voltage, taking into account material group and pollution degree.		N/A
29.2.1	Creepage distances for basic insulation must not be less than the values specified in Table 17.		N/A
29.2.2	Creepage distances for supplementary insulation must not be less than the values specified for basic insulation in Table 17.		N/A

29.2.3	Creepage distances for reinforced insulation must not be less than double the values specified for basic insulation in Table 17.		N/A
29.2.4	Creepage distances for functional insulation must not be less than the values specified in Table 18.		N/A
29.3	Supplementary and reinforced insulation must have sufficient thickness or consist of a sufficient number of layers.		N/A
29.3.1	Insulation thickness must be no less than:		
	- 1 mm for supplementary insulation;		N/A
	- 2 mm for reinforced insulation		N/A
29.3.2	Each layer of material must withstand the electric strength test according to 16.3 for supplementary insulation.		N/A
	Supplementary insulation must consist of not less than two layers of material, and reinforced insulation - not less than three layers.		N/A
29.3.3	Insulation is subjected to dry heat test Bb according to IEC 60068-2-2.		N/A

Continuation of Table B.1

DSTU EN 60335-1:2015			
Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
Section 30	HEAT RESISTANCE AND REACTION TO FIRE		
30.1	External parts made of non-metallic materials, parts made of insulating materials that support live parts, including connections, and parts made of thermoplastic materials used as supplementary or reinforced insulation, damage to which may lead to violation of appliance compliance with the requirements of this standard, must be sufficiently heat resistant.		N/A
30.2	Components of the appliance made of non-metallic materials must be resistant to ignition and fire spread.		N/A
30.2.1	Components made of non-metallic materials are subjected to glow-wire resistance tests according to IEC 60695-2-11 requirements. Tests are conducted at a temperature of 550°C.		N/A
30.2.2	Glow-wire testing of components made of insulating materials for appliances intended for supervised operation according to IEC 60695-2-11 requirements not less than:		N/A
	750°C - for connections that carry current exceeding 0.5 A during normal operation;		N/A
	650°C - for all other connections.		N/A
30.2.3	Appliances intended for unsupervised operation are tested according to requirements 30.2.3.1 and 30.2.3.2 of this standard.		N/A
30.2.3.1	Glow-wire testing of parts made of insulating material that are fastening elements or support connections through which current exceeding 0.2 A passes, as well as parts located at a distance not exceeding 3 mm from such connections according to IEC 60695-2-11 with test condition severity of 850°C.		N/A
30.2.3.2	Testing of parts made of insulating material that are fastening elements or support connections through which electric current passes, as well as parts located at a distance not exceeding 3 mm from such connections:		N/A
	— 775°C - for connections that carry electric current exceeding 0.2 A during normal operation;		N/A
	— 675°C - for all other electrical connections.	provided	P
30.2.4	Printed circuit board base material is tested with needle flame according to Appendix E.	provided	P
Section 31	CORROSION RESISTANCE		
	Parts made of ferrous metals, corrosion of which may lead to violation of appliance compliance with the requirements of this standard, must have sufficient	provided	P

	protection against corrosion.		
Section 32	RADIATION, TOXICITY AND SIMILAR HAZARDOUS FACTORS		
	Appliances must not be a source of harmful radiation or pose toxic or other similar hazards during normal operation.	provided	P

End of Table B.1

DSTU EN 60335-1:2015			
Section Number, Item	Requirement / Test Method	Test Result / Explanation	Conclusion
Appendix A	Control tests (informative)		N/A
Appendix B	Appliances supplied from rechargeable batteries (normative)		N/A
Appendix C	Ageing test of electric motors (normative)		N/A
Appendix D	Thermal protection devices for electric motors (normative)		N/A
Appendix E	Needle flame test (normative)		N/A
Appendix F	Capacitors (normative)		N/A
Appendix G	Protective isolating transformers (normative)		N/A
Appendix H	Switches (normative)		N/A
Appendix I	Electric motors having basic insulation not designed for the rated voltage of the appliance (normative)		N/A
Appendix J	Printed circuit boards with protective coating (normative)		N/A
Appendix K	Overvoltage categories (normative)		N/A
Appendix L	Guidance for measurement of clearances and creepage distances (normative)		N/A
Appendix M	Pollution degree (normative)		N/A
Appendix N	Tracking test (normative)		N/A
Appendix O	Selection and sequence of test according to Clause 30 (informative)		N/A
Appendix P	Guidance for application of the requirements of this standard to appliances operated in permanently hot humid climates (informative)		N/A
Appendix Q	Test procedure for evaluation of electronic circuits (informative)		N/A
Appendix R	Software evaluation (normative)		N/A
Appendix ZA	SPECIAL NATIONAL CONDITIONS (normative)		N/A
Appendix ZC	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS AND CORRESPONDING EUROPEAN PUBLICATIONS (normative)		N/A
Appendix ZD	IEC AND CENELEC DESIGNATIONS FOR FLEXIBLE CORDS (informative)		N/A
Appendix	SPECIAL ADDITIONAL REQUIREMENTS FOR		N/A

ZE	APPLIANCES AND MACHINES INTENDED FOR COMMERCIAL USE (informative)		
Appendix ZF	CRITERIA APPLIED FOR DISTRIBUTION ACCORDING TO LVD OR MD DIRECTIVES OF PRODUCTS FALLING WITHIN THE SCOPE OF EN 60335 SERIES STANDARDS (informative)		N/A
Appendix ZZ	COVERAGE OF ESSENTIAL REQUIREMENTS OF EUROPEAN COUNCIL DIRECTIVES (informative)		N/A

Table B.2 Maximum normal temperature rise

Part	Temperature rise, K	Measured temperature rise, K
Windings if winding insulation is made according to IEC 60085:		
- class 105	75 (65)	N/A
- class 120	90 (80)	N/A
- class 130	95 (85)	N/A
- class 155	115	N/A
- class 180	140	N/A
- class 200	160	N/A
- class 220	180	N/A
- class 250	210	N/A
Pins of appliance inlets:		
- for very hot conditions	130	N/A
- for hot conditions	95	N/A
- for cold conditions	45	N/A
Terminals, including earthing terminals, for external conductors of stationary appliances if they are not equipped with power cord	60	N/A
Environment of switches of thermostats and thermal cut-outs:		
- without T-marking	30	N/A
- with T-marking	T-25	N/A
Rubber or polyvinyl chloride insulation of internal and external conductors, including power cords:		
- without temperature characteristic specification	50	2
- with temperature characteristic (T)	T-25	N/A
Cord sheaths used as supplementary insulation	35	N/A
Moving contacts of cord winding reels	65	N/A
Rubber, except synthetic, used for glands and other parts, damage to which may affect safety:		
- used as supplementary or reinforced insulation	40	N/A
- in other cases	50	N/A
Lamp holders with T-marking		
- B15 and B22 marked T1	140	N/A
- B15 and B22 marked T2	185	N/A
- other lamp holders	T-25	N/A
Lamp holders without T-marking		
- E14 and B15	110	N/A
- B22, E26 and E27	140	N/A
- other lamp holders and starter holders for fluorescent lamps	55	N/A
Materials used for insulation, except conductor and winding insulation:		

-		2
Wood, in general	65	N/A
- Wooden supports, walls, ceiling and floor of test corner and wooden cabinets:		
* for stationary appliances intended for continuous operation for long periods	60	N/A
* for other appliances	65	2

End of Table B.2 Maximum normal temperature rise

Part	Temperature rise, K	Measured temperature rise, K
External surfaces of capacitors:		
- with marking of maximum operating temperature (T)	T-25	N/A
- without marking of maximum operating temperature:		
* small ceramic capacitors for suppression of television and radio interference	50	N/A
* capacitors complying with IEC 60384-14	50	N/A
External housing of electromechanical devices, except for handles that are held in hand during normal operation	60	N/A
Surfaces of handles, buttons, knobs and similar parts that are continuously held in hand during normal operation:		
- made of metal	30	N/A
- made of porcelain or glass-like material	40	N/A
- made of molded material, rubber or wood	50	N/A
Surfaces of handles, buttons, knobs and similar parts that are briefly held in hand during normal operation:		
- made of metal	35	N/A
- made of porcelain or glass-like material	45	N/A
- made of molded material, rubber or wood	60	N/A
Parts in contact with oil having a flash point of t °C	t-50	N/A

Table B.3 Leakage current at operating temperature

Type of appliance	Permissible leakage current values, mA	Test result
for class II appliances	0.25	N/A
for class 0, class 01 and class III appliances	0.5	N/A
for portable class I appliances	0.75	N/A
for stationary electromechanical class I appliances	3.5	N/A
for stationary heating class I appliances	0.75 or 0.75 per 1 kW but not more than 5 mA	N/A

Table B.4 Electric strength at operating temperature

Insulation	Rated (working)	Test voltage, V	Test result
-------------------	------------------------	------------------------	--------------------

	voltage, V		
Basic insulation	SELV	500	N/A
	up to 150 incl.	1000	N/A
	over 150 to 250 incl.	1000	N/A
	over 250	$1.2U + 700$	N/A
Supplementary insulation	up to 150 incl.	1250	N/A
	over 150 to 250 incl.	1750	N/A
	over 250	$1.2U + 1450$	N/A
Reinforced insulation	up to 150 incl.	2500	N/A
	over 150 to 250 incl.	3000	N/A
	over 250	$2.4U + 2400$	N/A

Table B.5 Leakage current after humidity test

Type of appliance	Permissible leakage current values, mA	Test result
for class II appliances	0.25	N/A
for class 0, class 01 and class III appliances	0.5	N/A
for portable class I appliances	0.75	N/A
for stationary electromechanical class I appliances	3.5	N/A
for stationary heating class I appliances	0.75 or 0.75 per 1 kW but not more than 5 mA	N/A

Table B.6 Electric strength after humidity test

Insulation	Rated (working) voltage, V	Test voltage, V	Test result
Basic insulation	SELV	500	N/A
	up to 150 incl.	1000	N/A
	over 150 to 250 incl.	1000	N/A
	over 250	$1.2U + 700$	N/A
Supplementary insulation	up to 150 incl.	1250	N/A
	over 150 to 250 incl.	1750	N/A
	over 250	$1.2U + 1450$	N/A
Reinforced insulation	up to 150 incl.	2500	N/A
	over 150 to 250 incl.	3000	N/A
	over 250	$2.4U + 2400$	N/A
Between accessible metal parts and metal foil wrapping the supply cord at locations of inlet bushing, cord guard or rigid fastening device with screw clamp	for class 0 and I appliances	1250	N/A
	for class II appliances	1750	N/A

Table B.7 Minimum clearances

Type of insulation	Rated voltage, V	Overvoltage category	Rated impulse voltage, V	Minimum clearance, mm	Measured clearance, mm
Reinforced	6	-	-	-	N/A
Basic	6	-	-	-	N/A

Table B.8 Minimum creepage distances

Type of insulation	Working voltage, V	Pollution degree	Material group	Minimum creepage distance, mm	Measured creepage distance, mm
Reinforced	6	-	-	-	N/A
Basic	6	-	-	-	N/A

End of safety compliance test results

Head of Product Safety Testing Laboratory

/signature/

L.V. Kinash

Responsible Tester

/signature/

R.O. Pashchak

PROTOCOL No. 23-0121-01-2**Results of electromagnetic compatibility
compliance testing
of metal detector model X-Finder**

Factory serial number: w/n

1 Product description: Portable electrical device for searching metallic objects in the ground. Electronic control circuit. Powered by 4 AAA batteries.

2 Description of interference-generating element: Sensor coil, control circuit.

3 Purpose of testing: Verification of parameters for compliance with electromagnetic compatibility requirements according to: DSTU EN 55014-1:2016, DSTU EN 55014-2:2017, DSTU EN 61000-3-2:2016, DSTU EN 61000-3-3:2017

4 Test methods and conditions according to: DSTU EN 55014-1:2016, DSTU EN 55014-2:2017, DSTU EN 61000-3-2:2016, DSTU EN 61000-3-3:2017

5 Measurement uncertainty: Measurement uncertainty data is provided in Appendix A on page 30.

6 Test results: Test result tables are provided in Appendix(ces) B, C, D, E, F, K, L on pages 31-38 of this protocol.

The protocol is not valid without appendices.

Head of Electromagnetic Compatibility Testing Laboratory
Stiopkin

/signature/ O.S.

Responsible Tester

/signature/ R.O. Pashchak

Measurement uncertainty data

Table A.1

Measured quantities during testing	Expanded measurement uncertainty
Radio interference voltage (emission)	4.1 dB (k=2, P=0.95)
Radio interference field strength (radiation emission)	5.3 dB (k=2, P=0.95)
Radio interference power	4.5 dB (k=2, P=0.95)
Immunity to voltage dips, short interruptions and	0.82 dB (k=2, P=0.95)
Immunity to electrostatic discharges	5.86 dB (k=2, P=0.95)
Immunity to electrical fast transients/burst	using coupling/decoupling devices 0.28 dB (k=2, P=0.95) using capacitive clamp 0.64 dB (k=2, P=0.95)
Immunity to surge voltage and current	1.08 dB (k=2, P=0.95)
Immunity to magnetic fields at power frequency	4.12 dB (k=2, P=0.95)

Table B.1 Test results for compliance with standards for voltage values of continuous electromagnetic disturbances, dB μ V, generated at the power supply terminals of household appliances and equipment and control devices containing semiconductor devices, according to section 4.1.1 and table 1 of DSTU EN 55014-1:2016

Frequency, MHz	At power supply terminals				At load and additional terminals			
	Standardized value		Obtained value		Standardized value		Obtained value	
	quasi-peak, dB μ V	average, dB μ V	quasi-peak, dB μ V	average, dB μ V	quasi-peak, dB μ V	average, dB μ V	quasi-peak, dB μ V	average, dB μ V
1	2	3	4	5	6	7	8	9
0.15	66.0	59.0	**	**	80.0	70.0	**	**
0.16	65.4	58.3	**	**	80.0	70.0	**	**
0.24	62.1	53.9	**	**	80.0	70.0	**	**
0.35	58.9	49.8	**	**	80.0	70.0	**	**
0.5	56.0	46.0	**	**	74.0	64.0	**	**
1.0	56.0	46.0	**	**	74.0	64.0	**	**
1.4	56.0	46.0	**	**	74.0	64.0	**	**
2.0	56.0	46.0	**	**	74.0	64.0	**	**
3.5	56.0	46.0	**	**	74.0	64.0	**	**
5.0	56.0	46.0	**	**	74.0	64.0	**	**
6.0	60.0	50.0	**	**	74.0	64.0	**	**
10.0	60.0	50.0	**	**	74.0	64.0	**	**
20.0	60.0	50.0	**	**	74.0	64.0	**	**
22.0	60.0	50.0	**	**	74.0	64.0	**	**
30.0	60.0	50.0	**	**	74.0	64.0	**	**
Note 1. The symbol "*" means that the obtained values do not exceed the sensitivity levels of the measuring complex. Note 2. The symbol "**" means that the requirements do not apply to this product or the average value is not measured according to table 1 of DSTU EN 55014-1:2016.								

Test conditions:

- measurement of electromagnetic disturbance voltage was conducted in a shielded room that meets the requirements of 5.3 DSTU EN 55014-1:2016;
- device testing was conducted for each of the power supply wires with determination of the maximum value in all operating modes.

Table C.1 Test results for compliance with standards for electromagnetic disturbance power, dBpW, generated at terminals of domestic and similar household electrical appliances and similar equipment and electric tools, according to section 4.1.2 and table 2a of DSTU EN 55014-1:2016

Frequency, MHz	Calibration factor of clamp KP-1, dB	Household and similar appliances				Electric tool with rated motor power												Expanded measurement uncertainty , dB
		Standardized value, dBpW, max		Measured value, dBpW		P ≤ 700 W				P 700 W to 1000 W				P ≥ 1000 W				
						Standardized value, dBpW, max		Measured value, dBpW		Standardized value, dBpW, max		Measured value, dBpW		Standardized value, dBpW, max		Measured value, dBpW		
		quasi- peak	average	quasi- peak	average	quasi- peak	average	quasi- peak	average	quasi- peak	average	quasi- peak	average	quasi- peak	average	quasi- peak	average	
30	7.0	45.0	35.0	**	**	45.0	35.0	**	**	49.0	39.0	**	**	55.0	45.0	**	**	3.16
45	5.3	46.7	36.7	**	**	46.7	36.7	**	**	50.0	40.0	**	**	56.7	46.7	**	**	3.16
65	4.8	48.3	38.3	**	**	48.3	38.3	**	**	52.3	42.3	**	**	58.3	48.3	**	**	3.16
90	3.8	49.7	39.7	**	**	49.7	39.7	**	**	53.7	43.7	**	**	59.7	49.7	**	**	3.16
150	1.9	51.9	41.9	**	**	51.9	41.9	**	**	55.9	45.9	**	**	61.9	51.9	**	**	2.24
180	0.8	52.7	42.7	**	**	52.7	42.7	**	**	56.7	46.7	**	**	62.7	52.7	**	**	2.24
220	0.6	53.6	43.6	**	**	53.6	43.6	**	**	57.6	47.6	**	**	63.6	53.6	**	**	2.24
300	3.2	55.0	45.0	**	**	55.0	45.0	**	**	59.0	49.0	**	**	65.0	55.0	**	**	2.24

Note 1. The symbol "*" means that the obtained values do not exceed the sensitivity of the measuring complex.

Note 2. The symbol "***" means that the requirements do not apply to this product or the value is not measured according to table 2 of DSTU EN 55014-1:2016.

Table C.2 Test results for compliance with standards for electromagnetic disturbance power taking into account exceedances according to section 4.1.2 and table 2b of DSTU EN 55014-1:2016

Frequency, MHz	Standardized quasi-peak value, dBpW, not more than according to table 2a DSTU	Corresponding norm exceedance, dBpW, according to table 2b DSTU	Standards, dBpW, calculated according to Note 2 in table 2b DSTU	Test result
30	45.0	N/A	45.0	N/A
45	46.7	N/A	46.7	N/A
65	48.3	N/A	48.3	N/A
90	49.7	N/A	49.7	N/A
150	51.9	N/A	51.9	N/A
180	52.7	N/A	52.7	N/A
200	53.15	N/A	53.15	N/A
220	53.6	N/A	51.6	N/A

:	:	:	:	:
300	55.0	N/A	45.0	N/A

The following symbols and abbreviations are used in the table: **P** - positive test result; **N** - negative test result; **N/A** - requirement does not apply to this equipment category.

Table D.1 Test results for compliance with standards for quasi-peak voltage values of discontinuous electromagnetic disturbances (click disturbances), dB(μ V), generated by household appliances and equipment and control devices containing semiconductor devices, at power supply terminals according to requirements 4.2 of DSTU EN 55014-1:2016

Determination of repetition frequency and standardized level of discontinuous electromagnetic disturbances				
Measurement frequency, MHz			*	*
Standardized level of continuous electromagnetic disturbances L, dB, max			*	*
Compliance of discontinuous disturbances with requirements for click disturbances p. 3.2			*	*
Observation time T, min			*	*
Number of click disturbances n ₁ (or switching operations n ₂) during observation time T			*	*
Repetition frequency of short-term disturbances N = n ₁ /T (or N = n ₂ *f/T)			*	*
Magnitude of standard increase for short-term disturbances ΔL, dB:				
- when N < 0.2 ΔL = 44 dB			*	*
- when 0.2 < N < 30 ΔL = 20 lg (30/N) dB			*	*
- when N > 30 ΔL = 0 dB			*	*
Conclusion about the necessity of applying standards for continuous disturbances to this device when determining the nature of disturbance according to p. 4.2.2.1			*	*
Verification of the product for "Individual switching operations" according to p. 4.2.3.1 (which are not taken into account)			Result	
Purpose of switching operations (according to subparagraphs a), b), c), d))			*	
Presence of other short-term disturbances besides individual switching operations			*	
Conclusion about the necessity to stop testing and recognize results as positive			*	
Verification of the product for "Instantaneous switching" according to p. 4.2.3.3			Result	
Repetition frequency of short-term disturbances does not exceed 5			*	
Duration of all n ₁ (or n ₂) short-term disturbances does not exceed 20 ms			*	
90% of all short-term disturbances have duration less than 10 ms			*	
Test product satisfies standards regardless of amplitude of short-term disturbances			*	
Evaluation of test results using upper quartile method				
Measurement frequency, MHz	Standardized level of short-term disturbances L _q = L + ΔL, dB, max	Number of short-term disturbances exceeding level L _q during observation time T		Conclusion about compliance of product with DSTU EN 55014-1:2016 requirements
		standard n ₁ /4 (n ₂ /4), max	measured	
0.15	*	*	*	*
0.5	*	*	*	*
1.4	*	*	*	*
30	*	*	*	*
Note. * - requirement does not apply to the tested product.				

Table E.1 Test results for compliance with standards for quasi-peak field strength values, dB μ V/m, of radiated electromagnetic disturbances generated by household appliances and equipment and electric tools at a distance of 10m, according to section 4.1.2.2 and table 3 of DSTU EN 55014-1:2016

Measurement frequency, MHz	Standardized quasi-peak value, dB μ V/m	Antenna calibration coefficients, dB	Obtained values taking into account antenna calibration coefficients, dB μ V/m
30	30	24.5	*
45	30	20	*
65	30	18	*
90	30	8	*
150	30	12.5	*
180	30	14.5	*
220	30	16.5	*
230	30	17	*
300	37	19	*
450	37	23.5	*
600	37	25.5	*
750	37	28	*
900	37	30.5	*
1000	37	32.5	*
Note 1. The symbol "*" means that the obtained values do not exceed the sensitivity levels of the measuring complex taking into account antenna calibration coefficients. Note 2. The symbol "***" means that the requirements do not apply to this product.			

Table F.1 Equipment classification according to section 5 of DSTU EN 61000-3-2:2016

For harmonic current standardization, equipment is classified as follows:	
Class A: — balanced three-phase equipment; — household appliances, except equipment identified as class D; — tools, except portable tools; — dimmers for incandescent lamps; — audio equipment.	N/A
Class B: — portable tools; — non-professional arc welding apparatus.	N/A
Class C: — lighting equipment.	N/A
Class D: — Equipment having specified power according to 6.2.2 not greater than 600 W, of such types: — personal computers and personal computer monitors; — television receivers; — refrigerators and freezers having one or more variable speed drives for controlling compressor motor(s).	N/A
Power consumption, W	N/A
Equipment supply voltage, V	N/A

Table F.2 Results of equipment current harmonics measurements according to sections 6, 7 of DSTU EN 61000-3-2:2016

Harmonic order, n	Maximum permissible harmonic current, mA				Measurement result, mA	Conclusion
	Class A	Class B	Class C	Class D		
2	**	**	**	**	**	**
3	**	**	**	**	**	**
4	**	**	**	**	**	**
5	**	**	**	**	**	**
6	**	**	**	**	**	**
7	**	**	**	**	**	**
8	**	**	**	**	**	**
9	**	**	**	**	**	**
10	**	**	**	**	**	**
11	**	**	**	**	**	**
12	**	**	**	**	**	**
12	**	**	**	**	**	**
14	**	**	**	**	**	**
15	**	**	**	**	**	**
16	**	**	**	**	**	**
17	**	**	**	**	**	**
18	**	**	**	**	**	**
19	**	**	**	**	**	**
20	**	**	**	**	**	**

“**” - requirements do not apply to this product

End of Table F.2

Harmonic order, n	Maximum permissible harmonic current, mA				Measurement result, mA	Conclusion
	Class A	Class B	Class C	Class D		
21	**	**	**	**	**	**
22	**	**	**	**	**	**
23	**	**	**	**	**	**
24	**	**	**	**	**	**
25	**	**	**	**	**	**
26	**	**	**	**	**	**
27	**	**	**	**	**	**
28	**	**	**	**	**	**
29	**	**	**	**	**	**
30	**	**	**	**	**	**
31	**	**	**	**	**	**
32	**	**	**	**	**	**
33	**	**	**	**	**	**
34	**	**	**	**	**	**
35	**	**	**	**	**	**
36	**	**	**	**	**	**
37	**	**	**	**	**	**
38	**	**	**	**	**	**
39	**	**	**	**	**	**
40	**	**	**	**	**	**

*** - requirements do not apply to this product

Table K.1 Test results for compliance with voltage fluctuation and flicker standards generated at power supply terminals by test equipment with rated current not exceeding 16A, according to requirements of section 5 of DSTU EN 61000-3-3:2017

Test type number	Test type (measured parameter)	Standardized value, max	Test result	Compliance with ND
1	Short-term flicker severity P_{st}	-	-	N/A
2	Long-term flicker severity P_{lt}	-	-	N/A
3	Maximum steady-state voltage change dc, %	-	-	N/A
4	Maximum absolute voltage change d_{max} , %:			
	a)	-	-	N/A
	b)	-	-	N/A
	c)	-	-	N/A
5	Voltage change characteristic d(t), % (for time at least 500ms)	-	-	N/A
The following symbols and abbreviations are used in the "Compliance with ND" column: P - positive test result; N - negative test result; N/A - requirement does not apply to this equipment category according to sections 1, 5, 6.1 of DSTU EN61000-3-3.				

Equipment conditions and operating modes during testing:

- equipment was tested under normal conditions according to requirements of section 6 of DSTU EN 61000-3-3;
- before and after testing, equipment operability control was conducted according to ND; evaluation of voltage fluctuations and flicker was conducted according to ND for equipment and taking into account requirements and recommendations of section 4 of DSTU EN 61000-3-3.

Table H.1 Test results for household electrical appliances, electric tools and similar equipment on electromagnetic compatibility immunity according to requirements of section 5 and table 1 of DSTU EN 55014-2:2017

Test (type of interference), basic standard for test method and test setup		Technical test requirements		Interference application port	Requirements for performance criterion	Test result
5.1 Electrostatic discharge, IEC 61000-4-2		4 kV, contact		enclosure	B	P
		8 kV, air			B	P
5.2 Electrical fast transients (asymmetric path), IEC 61000-4-4		0.5 kV (peak value) 5/50 ns (Tr/Td) 5 kHz (repetition frequency)		signal and control	-	N/A
				DC power supply	-	N/A
				AC power supply	B	N/A
5.3 Currents induced by electromagnetic fields in frequency band from 0.15 MHz to 230 MHz, IEC 61000-4-6		0.15 MHz to 230 MHz AM-1 kHz, 80% 1 V (unmod., RMS) 150 Ω-internal source resistance		signal and control	-	N/A
				DC power supply	-	N/A
				AC power supply	A	N/A
5.4 Currents induced by electromagnetic fields in frequency band from 0.15 MHz to 80 MHz, IEC 61000-4-6		0.15 MHz to 80 MHz AM-1 kHz, 80% 1 V (unmod., RMS) 150 Ω-internal source resistance		signal and control	-	N/A
				DC power supply	-	N/A
				same but at 3 V level		AC power supply
5.5 Radio frequency electromagnetic fields in frequency band 80-1000 MHz, IEC 61000-4-3		80 MHz to 1000 MHz AM-1 kHz, 80% 3 V/m (unmod., RMS)		enclosure	-	N/A
5.6 Voltage (current) surges, IEC 61000-4-5 (5 positive and 5 negative pulses each)		1.2/50 (8/20) μs (Tr/Td)	1 kW	between phases	-	N/A
			1 kW	between phase and neutral	B	N/A
			2 kW	between phase and ground	B	N/A
			2 kW	between neutral and ground	B	N/A
5.7 Voltage dips and interruptions, IEC 61000-4-11:		Test level (%Ut)	Duration (number of periods)			
Interruptions		0	0.5	AC power input ports	C	N/A
Voltage dips in % of Ut	60	40	10		C	N/A
	30	70	50		C	N/A

The following symbols and abbreviations are used in the table:

Ut - rated supply voltage of test equipment;

Tr/Td - duration of pulse rise time/pulse duration at 0.5 amplitude level respectively;

A, B, C - performance criteria of test equipment according to section 6 of DSTU EN 55014-2;

P - positive test result;

N - negative test result;

N/A - requirement does not apply to this equipment category according to section 7 of DSTU EN

55014-2;

The test product according to section 4 of DSTU EN 55014-2 belongs to category **II** and according to section 7 of this standard and design features of the product, corresponding tests were applied to it, the results of which are entered in table H.1.

Product conditions and operating modes during testing:

- the product was tested under normal conditions of intended use according to the operating manual (instructions) taking into account requirements of section 8 of DSTU EN 55014-2;
- before and after each test, product operability control was conducted according to ND;
- performance quality evaluation criteria were selected according to ND for the product taking into account requirements and recommendations of sections 6 and 7 of DSTU EN 55014-2.

End of electromagnetic compatibility compliance test results

Head of Electromagnetic Compatibility Laboratory

/signature/

O.S. Stiopkin

Responsible Tester

/signature/

R.O. Pashchak

TRANSLATION AGENCY "ALPHABETA"

Confirms that the translation is performed by a competent translator. There are no erasures, amendments, crossed out words, unspecified emendations and other peculiarities. Translation is correct, complete and certified.

Acknowledges the authenticity of the signature of translator **Dmytriieva Hanna Vitaliivna**, who translated this Document from Ukrainian into English.

