Ente Certificazione Macchine

Via Cà Bella, 243 40053 Valsamoggia Località Castello di Serravalle (Bo) Italy
Turkish Branch: Testroof Engineering and Certification Co., Ltd.

2014/35/EU, 2006/42/EC
Technical Requirement Assesment Report
EN 60335-1:2012/AC:2014
EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Applicant/Holder.....:	İZMAK TURİZM SOĞUTMA VE END. MUTFAK SAN.TİC.LTD.ŞTİ. Fatih Mah. 1140 Sk. No:7 Sarnıç / İzmir / TURKEY
Manufacturer.....:	İZMAK TURİZM SOĞUTMA VE END. MUTFAK SAN.TİC.LTD.ŞTİ. Fatih Mah. 1140 Sk. No:7 Sarnıç / İzmir / TURKEY
Product / Model(s).....:	Counter Type Refrigerator / TT-7D-11 SA, TT S7 107, TT S7 140, TT S7 153, TT S7 180, TT S7 225, TT S6 107, TT S6 140, TT S6 153, TT S6 180, TT S6 225, TT7-D 11, TT7-D 21, TT7-D 31
Testing Model.....:	TT S7 153
Testing Laboratary.....:	Testroof Mühendislik ve Belgelendirme Tic. Ltd. Şti.
Testing Address.....:	Fatih Mah. 1140 Sk. No:7 Sarnıç / İzmir / TURKEY
Report Number.....:	TRA-17/0297/04
Date of issue.....:	2017-10-23
Standard.....:	EN 60335-1:2012/AC:2014, EN 60335-2-89:2010/A1:2016
Number of pages (Report).....:	37
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Compiled by.....:	Eng. E. CENGİZ	Approved by.....:	Eng. M. KOCAS
(PASS signature)		(PASS signature)	

test case does not applytothe test object.....:	N
test object does meet the requirement.....:	PASS
test object does not meet the requirement.....:	F(ail)

The variants (TT-7D-11 SA, TT S7 107, TT S7 140, TT S7 153, TT S7 180, TT S7 225, TT S6 107, TT S6 140, TT S6 153, TT S6 180, TT S6 225, TT7-D 11, TT7-D 21, TT7-D 31) were analyzed and verified similar to the tested one (same construction, components and enclosure). The difference has no impact on the safety characteristics, then the result of this test report are valid for all models.

"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

Through out this report a comma is used as the decimal separator.

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
6.	**Classification**		
6.1	Appliances shall be of one of the following classes with respect to protection against electric shock: **class 0, class 01, class I, class II, class III.**	Class I	PASS
6.2	Appliances shall have the appropriate degree of protection against harmful ingress of water.	IPX0	PASS
6.101	**Refrigerated display and storage cabinets** shall be at least one of the following climatic classes: – appliance of class 1; – appliance of class 2; – appliance of class 3; – appliance of class 4; – appliance of class 5.	Climatic Class N	PASS
7.	**Marking and instructions**		
7.1	Appliances shall be marked with the – **rated voltage** or **rated voltage range** in volts; – symbol for nature of supply, unless the **rated frequency** is marked; –**rated current** in amperes; – name, trade mark or identification mark of the manufacturer or responsible vendor; – model or type reference; – symbol 5172 of IEC 60417, for **class II appliances** only; – IP number according to degree of protection against ingress of water, other than IPX0. the power input, in watts, of heating systems, if greater than 100 W; – the defrosting power input, in watts, if the current corresponding to the defrosting power input is greater than the **rated current** of the appliance; – one or more of the alpha-numeric characters SN, N, ST, T, 1, 2, 3, 4 or 5, indicating the climatic class of the appliance; – for incandescent lamps, the maximum rated wattage of the lamp, in watts; – for discharge lamps, the rated wattage of the lamp, in watts; – the total mass of refrigerant for each separate refrigerant circuit; – for a single component refrigerant, at least one of the following: *the chemical name, *the chemical formula, *the refrigerant number; * The enclosure of electrically-operated water valves incorporated in external hose-sets for connection of an appliance to the water mains shall be marked with symbol IEC 60417-5036 DB:2002-10) if their **working voltage** exceeds **extra-low voltage.**	✔ 230V 1N-PE 50Hz 2.2 A TT S7 153	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
7.2	**Stationary appliances** for multiple supply shall be marked with the substance of the following: Warning: Before obtaining access to terminals, all supply circuits must be disconnected. This warning shall be placed in the vicinity of the terminal cover.	Not multible supply	N
7.3	* Appliances having a range of rated values and which can be operated without adjustment throughout the range shall be marked with the lower and upper limits of the range separated by a hyphen. * Appliances having different rated values and which have to be adjusted for use at a particular value by the user or installer shall be marked with the different values separated by an oblique stroke.	Not have range seperated by a hypen	N
7.4	If the appliance can be adjusted for different **rated voltages**, the voltage to which the appliance is adjusted shall be clearly discernible.	Not have different voltages	N
7.5	* For appliances marked with more than one **rated voltage** or with one or more **rated voltage ranges**, the **rated power input** or **rated current** for each of these voltages or ranges shall be marked. However, if the difference between the limits of a **rated voltage range** does not exceed 10 % of the mean value of the range, the marking for **rated power input** or **rated current** may be related to the mean value of the range. * The upper and lower limits of the **rated power input** or **rated current** shall be marked on the appliance so that the relation between input and voltage is clear.	Not more than one rated voltage	N
7.6	When symbols are used, they shall be as shown in standard. The symbol for nature of supply shall be placed next to the marking for **rated voltage**. The symbol for **class II appliances** shall be placed so that it will be obvious that it is a part of the technical information and is unlikely to be confused with any other marking. Units of physical quantites and their symbols shall be those of the international standardized system. Symbol 5021 of IEC 60417] equipotentiality	✔ All symbols as shown in the standard	PASS
7.7	Appliances to be connected to more than two supply conductors and appliances for multiple supply shall have a connection diagram fixed to them, unless the correct mode of connection is obvious.	Not have more than two supply conductor	N
7.8	Except for **type Z attachment**, terminals used for connection to the supply mains shall be indicated as follows: – terminals intended exclusively for the neutral conductor shall be indicated by the letter N; – protective earthing terminals shall be indicated by symbol 5019 of IEC 60417. These indications shall not be placed on screws, removable washers or other parts which can be removed when conductors are being connected.	✔ indicated by symbol 5019 of IEC 60417	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

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7.9	Unless it is obviously unnecessary, switches which may give rise to a hazard when operated shall be marked or placed so as to indicate clearly which part of the appliance they control. Indications used for this purpose shall, wherever practicable, be comprehensible without a knowledge of languages or national standards.	✓	PASS
7.10	* The different positions of switches on **stationary appliances** and the different positions of controls on all appliances shall be indicated by figures, letters or other visual means. * If figures are used for indicating the different positions, the **off position** shall be indicated by the figure 0 and the position for a higher value, such as output, input, speed or cooling effect, shall be indicated by a higher figure. * The figure 0 shall not be used for any other indication unless it is positioned and associated with other numbers so that it does not give rise to confusion with the indication of the **off position.**	✓	PASS
7.11	Controls intended to be adjusted during installation or in normal use shall be provided ith an indication for the direction of adjustment.	✓	PASS
7.12	* Instructions for use shall be provided with the appliance so that the appliance can be used safely. * If it is necessary to take precautions during **user maintenance**, appropriate details shall be given. The instruction shall contain information regarding the maximum loading of each type of shelf. For appliances which use **flammable refrigerants**, the instructions shall include information pertaining to the handling, servicing and disposal of the appliance. The instructions for appliances which use **flammable refrigerants** shall include the substance of the following warnings: – WARNING: Keep clear of obstruction all ventilation openings in the appliance enclosure or in the structure for building-in. – WARNING: Do not use mechanical devices or other means to accelerate the defrosting process, other than those recommended by the manufacturer. – WARNING: Do not damage the refrigerant circuit. – WARNING: Do not use electrical appliances inside the food storage compartments of the appliance, unless they are of the type recommended by the manufacturer. For appliances which use flammable insulation blowing gases, the instructions shall include information regarding disposal of the appliance. For appliances provided with double-capped fluorescent lamps, the instructions shall include the information that lamps have to be replaced by identical lamps only. An explanation shall be given of the meaning of the alpha-numeric characters, indicating the climatic class of the appliance, that are marked on the appliance. The instructions for split-systems that use a **flammable refrigerant** shall include the substance of the following warning. WARNING: In order to reduce flammability hazards the installation of this appliance must only be carried out by a suitably qualified person.	✓	PASS

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

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7.12.1	If it is necessary to take precautions during installation of the appliance, appropriate details shall be given. For appliances with a separate **refrigerant condensing unit**, the instructions shall include a statement containing the substance of the following: The installation of the appliance and the **refrigerant condensing unit** must only be made by the manufacturer's service personnel or similarly **skilled person**. The information provided with an appliance with a separate **refrigerant condensing unit** shall include – information on the type of separate **refrigerant condensing unit** to which the cabinet shall be connected; – an electrical diagram showing the electrical terminals for connections. For appliances intended for connection to the water supply mains, the instructions shall include: – information on the maximum permissible inlet water pressure; – information on the minimum permissible inlet water pressure necessary for the safe operation of the appliance. For appliances intended for connection to a water supply for cooling purposes, the instructions shall contain information on the maximum permitted temperature of the inlet water consistent with safe operation of the appliance.	✔	PASS
7.12.2	If a **stationary appliance** is not fitted with a **supply cord** and a plug, or with other means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III conditions, the instructions shall state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules	✔	PASS
7.12.3	If the insulation of the fixed wiring supplying an appliance for permanent connection to the supply mains can come into contact with parts having temperature rise exceeding 50 K during the test of clause 11, the instructions shall state that the fixed wiring insulation must be protected, for example, by insulating sleeving having an appropriate temperature rating.	N/A See clause 11.	N
7.12.4	The instructions for **built-in appliances** shall include information with regard to the following: – dimensions of the space to be provided for the appliance; – dimensions and position of the means for supporting and fixing the appliance within this space; – minimum distances between the various parts of the appliance and the surrounding structure; – minimum dimensions of ventilating openings and their correct arrangement; – connection of the appliance to the supply mains and the interconnection of any separate components; – necessity to allow disconnection of the appliance from the supply after installation, unless the appliance incorporates a switch complying with 24.3. The disconnection may be achieved by having the plug accessible or by incorporating a switch in the fixed wiring in accordance with the wiring rules. The perpendicular height of the triangle containing the warning sign B.3.2 from ISO 3864 shall be at least 15 mm.	Not built in appliance	N

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

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7.12.5	For appliances with **type X attachment** having a specially prepared cord, the instructions shall contain the substance of the following. If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer or its service agent. For appliances with **type Y attachment**, the instructions shall contain the substance of the following. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard. For appliances with **type Z attachment**, the instructions shall contain the substance of the following. The supply cord cannot be replaced. If the cord is damaged the appliance should be scrapped.	✔ Type Y	PASS
7.12.6	The instructions for **heating appliances** incorporating a **non-self-resetting thermal cut-out** that is reset by disconnection of the supply mains shall contain the substance of the following: CAUTION: In order to avoid a hazard due to inadvertent resetting of the thermal cutout, this appliance must not be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly switched on and off by the utility.	✔	PASS
7.12.7	The instructions for **fixed appliances** shall state how the appliance is to be fixed to its support.	✔	PASS
7.12.8	The instructions for appliances connected to the water mains shall state – the maximum inlet water pressure, in pascals; – the minimum inlet water pressure, in pascals, if this is necessary for the correct operation of the appliance. The instructions for appliances connected to the water mains by **detachable hose-sets** shall state that the new hose-sets supplied with the appliance are to be used and that old hose-sets should not be reused.	Do not connect to water mains	N
7.13	Instructions and other text required by this standard shall be written in an official language of the country in which the appliance is to be sold.	✔	PASS
7.14	The markings required by the standard shall be clearly legible and durable.	✔	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

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7.15	The markings specified in 7.1 to 7.5 shall be on a main part of the appliance. Markings on the appliance shall be clearly discernible from the outside of the appliance but if necessary after removal of a cover. For **portable appliances** it shall be possible to remove or open this cover without the aid of a **tool**. For **stationary appliances** at least the name or trade mark or identification mark of the manufacturer or responsible vendor and the model or type reference shall be visible when the appliance is installed as in normal use. These markings may be beneath a **detachable cover**. Other markings may be beneath a cover only if they are near to the terminals. For **fixed appliances**, this requirement applies after the appliance has been installed according to the instructions provided with the appliance. Indications for switches and controls shall be placed on or near these components. They shall not be placed on parts which can be positioned or repositioned in such a way that the marking is misleading. The marking of the wattage of illuminating lamps shall be easily discernible while the lamp is being replaced. For appliances which use **flammable refrigerant**, the marking of the type of **flammable refrigerant** and of the flammable insulation blowing gas, shall be visible when gaining access to the motor-compressors, and, in the case of appliances with a remote **refrigerant condensing unit**, the pipe connections. The warning sign IEC 60417-5041 (DB:2002-10) shall be placed on the nameplate of the unit near the declaration of the refrigerant type and charge information, It shall be visible after Installation of the appliance.	✔	PASS
7.16	If compliance with this standard depends upon the operation of a replaceable **thermal link** or fuse link, the reference number or other means for identifying the link shall be marked at such a place that it is clearly visible when the appliance has been dismantled to the extent necessary for replacing the link. This requirement does not apply to links which can only be replaced together with a part of the appliance.	✔	PASS
7.101	Equipotential bonding terminals shall be indicated by the symbol number 5021 as specified in IEC 60417. These indications shall not be placed on screws, removable washers or other parts which can be removed when conductors are being connected.	✔ symbol number 5021 in IEC 60417	PASS
8.	***Protection against access to live parts***		
8.1	Appliances shall be constructed and enclosed so that there is adequate protection against accidental contact with **live parts**.	✔	PASS
8.1.1	The requirement of 8.1 applies for all positions of the appliance when it is operated as in normal use, and after the removal of **detachable parts**. *Lamps are not removed, provided that the appliance can be isolated from the supply by means of a plug or an **all-pole disconnection**. However during insertion or removal of lamps, protection against contact with **live parts** of the lamp cap shall be ensured.* *Where an appliance has parts which require adjustment under operating conditions by a **skilled person** after removal of **non-detachable parts, live parts** shall not be accessible and they shall be protected at least by **basic insulation**.*	✔	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
8.1.2	Test probe 13 of IEC 61032 is applied without appreciable force through openings in **class 0 appliances**, **class II appliances** and **class II constructions**, except for those giving access to lamp caps and **live parts** in socket-outlets.	Class I	N
8.1.3	Instead of test probe B and test probe 13, for appliances other than those of **class II**, test probe 41 of IEC 61032 is applied without appreciable force to ***live parts*** *of* ***visibly glowing heating elements***, all poles of which can be disconnected by a single switching action. It is also applied to parts supporting such elements, provided that it is obvious from the outside of the appliance, without removing covers and similar parts, that these supporting parts are in contact with the element. It shall not be possible to touch these **live parts**.	✓ test probe 41 of IEC 61032 is applied	PASS
8.1.4	An **accessible part** is not considered to be live if – the part is supplied at **safety extra-low voltage**, provided that • for a.c., the peak value of the voltage does not exceed 42,4 V, • for d.c., the voltage does not exceed 42,4 V, or – the part is separated from **live parts** by **protective impedance**. If **protective impedance** is used, the current between the part and the supply source shall not exceed 2 mA for d.c., its peak value shall not exceed 0,7 mA for a.c. and – for voltages having a peak value over 42,4 V up to and including 450 V, the capacitance shall not exceed 0,1 ☐F, – for voltages having a peak value over 450 V up to and including 15 kV, the discharge shall not exceed 45 ☐C.	Not have accessible part	PASS
8.1.5	**Live parts** of **built-in appliances, fixed appliances** and appliances delivered in separate units, shall be protected at least by **basic insulation** before installation or assembly.	✓	PASS
8.2	**Class II appliances** and **class II constructions** shall be constructed and enclosed so that there is adequate protection against accidental contact with **basic insulation** and metal parts separated from **live parts** by **basic insulation** only. It shall only be possible to touch parts which are separated from **live parts** by **double insulation** or **reinforced insulation**.	Class I appliance	N
9.	**Starting of motor-operated appliances**		
	This clause of Part 1 is not applicable.		N
10.	**Power input and current**		
10.1	If an appliance is marked with **rated power input**, the power input at normal operating temperature shall not deviate from the **rated power input** by more than the deviation shown in table 1 The deviation for **motor-operated appliances** applies for **combined appliances** if the power input of the motors is more than 50 % of the **rated power input**.	✓ 507 W , 2.2 A	PASS
10.2	If an appliance is marked with **rated current**, the current at normal operating temperature shall not deviate from the **rated current** by more than the deviation shown in table 2. The deviation for **motor-operated appliances** applies for **combined appliances** if the current of the motors is more than 50 % of the **rated current**	✓ 507 W, 2.2 A	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
10.101	The power input of a defrosting system shall not deviate from the defrosting power input marked on the appliance by more than the deviation shown in Table 1.	It is not more than deviation	PASS

11.	**Heating**		
11.1	Appliances and their surroundings shall not attain excessive temperatures in normal use.	✔	PASS
11.2	**Hand-held appliances** are held in their normal position of use. Appliances with pins for insertion into socket-outlets are plugged into an appropriate wallmounted socket-outlet. **Built-in appliances** are installed in accordance with the instructions for installation.	✔	PASS
11.3	Temperature rises, other than those of windings, are determined by means of fine-wire thermocouples positioned so that they have minimum effect on the temperature of the part under test. Thermocouples used for determining the temperature rise of the surface of walls, ceiling and floor of the test corner are attached to the back of small blackened disks of copper or brass, 15 mm in diameter and 1 mm thick. The front of the disk is flush with the surface of the board. As far as is possible, the appliance is positioned so that the thermocouples detect the highest temperatures. The temperature rise of electrical insulation, other than that of windings, is determined on the surface of the insulation at places where failure could cause – a short circuit; – contact between **live parts** and **accessible metal parts**; – bridging of insulation; – a reduction of **clearances** or **creepage distances** below the values specified in clause 29. Temperature rises of windings are determined by the resistance method unless the windings are non-uniform or if it is difficult to make the necessary connections, in which case the temperature rise is determined by means of thermocouples.	✔	PASS
11.4	**Heating appliances** are operated under **normal operation** and at 1,15 times **rated power input**.	*Not a heating appliance*	N
11.5	**Motor-operated appliances** are operated under **normal operation** and supplied with the most unfavourable voltage between 0,94 times and 1,06 times the **rated voltage**.	✔ Supplied 243,8V	PASS
11.6	**Combined appliances** are operated under **normal operation** and supplied with the most unfavourable voltage between 0,94 times and 1,06 times the **rated voltage**.	✔	PASS
11.7	The appliance is operated for a duration corresponding to the most unfavourable conditions of normal use.	✔	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

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11.8	During the test, the temperature rises are monitored continuously and shall not exceed the values shown in table 3. However, if the temperature rise of the motor winding exceeds the value specified in table 3 or if there is doubt with regard to the temperature classification of the insulation of the motor, the tests of annex C are carried out. **Protective devices** shall not operate and sealing compound shall not flow out. However, components in **protective electronic circuits** are allowed to operate provided they are tested for the number of cycles of operation specified in 24.1.4.	✔ Not exceed the values shown in table 3	PASS
11.101	If the temperature of any part of the appliance is higher than the required limits given in 11.8, the test is performed again, the **thermostats** or similar control devices being set at the lowest temperature with the short circuit removed.	Not have temperature higher than required limits	N
11.102	The appliance is supplied at the most unfavourable voltage between 0,94 and 1,06 times the **rated voltage**. If the defrosting time is controlled by an adjustable device, the device is set to the time given by the manufacturer. If a control device is used which stops the defrosting at a given temperature or pressure, the defrosting period is automatically terminated when the control operates. The temperatures and temperature rises shall not exceed the values given in Tables 3 and 101.	✔	PASS
11.103	**Ancillary heating elements** are energized with the refrigerating system switched off, if this is possible in normal use. They are supplied at 1,15 times their power input rating, until steady conditions are reached. Temperature rises are measured by thermocouples fixed on the outside surface of the insulation of the **ancillary heating element**.	*Not a heating appliance*	N
12	**VOID**		
13.	**Leakage current and electric strength at operating temperature**		
13.1	At operating temperature, the leakage current of the appliance shall not be excessive and its electric strength shall be adequate	✔	PASS
13.2	The leakage current is measured by means of the circuit described in figure 4 of IEC 60990 between any pole of the supply and ***accessible metal parts*** connected to metal foil having an area not exceeding *20 cm* ☐ *10* cm which is in contact with **accessible *surfaces*** *of* insulating materials.	✔	PASS
13.3	The appliance is disconnected from the supply and the insulation is immediately subjected to a voltage having a frequency of 50 Hz or 60 Hz for 1 min, in accordance with IEC 61180-1. The high-voltage source used for the test is to be capable of supplying a short circuit current Is between the output terminals after the output voltage has been adjusted to the appropriate test voltage. The overload release of the circuit is not to be operated by any current below the tripping current Ir. The values of Is and Ir are given in Table 5 for various high-voltage sources. The test voltage is applied between **live parts** and **accessible parts**, non-metallic parts being covered with metal foil. For **class II constructions** having intermediate metal between **live parts** and **accessible parts**, the voltage is applied across the **basic insulation** and the **supplementary insulation.**	✔	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

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14	**Transient overvoltages**		
	Appliances shall withstand the transient overvoltages to which they may be subjected. Compliance is checked by subjecting each **clearance** having a value less than those specified in table 16 to an impulse voltage test. The impulse test voltage has a no-load waveshape corresponding to the *1,2/50 ☐s* standard impulse specified in *IEC 61180-1.* It is supplied from a generator having a virtual impedance of *12 ☐*. The impulse test voltage is applied three times for each polarity with intervals of at least *1 s.* The impulse test voltage is specified in table 6 for **rated impulse voltages** given in table 15	✓ Impulse rated voltage applied.	PASS
15.	**Moisture resistance**		
15.1	The enclosure of the appliance shall provide the degree of protection against moisture in accordance with the classification of the appliance.	✓	PASS
15.1.1	*Appliances other than those classified IPX0 are subjected to the tests of IEC 60529* *as follows:* *– IPX1 appliances as described in subclause 14.2.1;* *– IPX2 appliances as described in subclause 14.2.2;* *– IPX3 appliances as described in subclause 14.2.3a;* *☐☐IPX4 appliances as described in subclause 14.2.4a;* *– IPX5 appliances as described in subclause 14.2.5;* *– IPX6 appliances as described in subclause 14.2.6;* *– IPX7 appliances as described in subclause 14.2.7. For this test the appliance is immersed* *in water containing approximately 1 % NaCl* *Water valves containing **live parts** and that are incorporated in external hoses for connection of an appliance to the water mains are subjected to the test specified for IPX7 appliances.*	IPX0	PASS
15.1.2	**Hand-held appliances** are turned continuously through the most unfavourable positions during the test. **Built-in appliances** are installed in accordance with the instructions.	Not Hand-held appliance or built in appliance	N
15.2	Appliances subject to spillage of liquid in normal use shall be constructed so that such spillage does not affect their electrical insulation.	✓	PASS
15.3	Appliances shall be proof against humid conditions that may occur in normal use.	✓	PASS
15.101	Appliances subject to spillage of liquid from containers on the inside walls of the cabinet or compartment, or on the top of the cabinet, shall be constructed so that such spillage does not affect their electrical insulation.	✓	PASS

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EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
15.102	The apparatus shown in Figure 101 is filled with water, containing approximately 1 % NaCl and 0,6 % of acid rinsing agent as specified in annex AA of IEC 60335-2-5, to the level of the lip. The displacement block is supported just above the water by means of any suitable release mechanism and bridge support. All shelves and containers which can be removed without the use of a tool are removed and the appliance is disconnected from the supply. Lamp covers are not removed. The apparatus is supported with its base horizontal, and so positioned and at such a height that the water is discharged over the back and side interior walls of the cabinet or compartment, including any electrical components mounted thereon, in the most unfavourable manner when the release mechanism is operated. The test is made only once with the apparatus in any one position, but the test may be repeated as many times as necessary in different positions, provided that there is no residual water on parts wetted by a previous test. Immediately after the test, the appliance shall withstand the electric strength test of 16.3 and inspection shall show that there is no trace of water on insulation which could result in a reduction of **clearances** and **creepage distances** below the values specified in clause 29. Furthermore, if the inspection shows that water is in contact with the defrost heating element or its insulation, it shall withstand the test of 22.102.	✔	PASS
15.103	Appliances, other than **built-in appliances**, are tilted at an angle of up to 2° to the position of normal use in the direction which is likely to be the most unfavourable for this test. The appliance is disconnected from the supply and the controls are set to the on position. From a height of approximately 50 mm, 0,5 l of water, containing approximately 1 % NaCl and 0,6 % of acid rinsing agent as specified in annex AA of IEC 60335-2-5, is poured uniformly in approximately 60 s over any surface of the appliance with less than 2° inclination to the horizontal. Only surfaces measuring more than 60 mm in at least one direction, and less than 2,2 m above the floor are taken into consideration. Immediately after the test, the appliance shall withstand the electric strength test of 16.3 and inspection shall show that there is no trace of water on insulation which could result in a reduction of **clearances** and **creepage distances** below the values specified in clause 29.	✔	PASS
16.			
16.1	The leakage current of the appliance shall not be excessive and its electric strength shall be.	✔	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
16.2	An a.c. test voltage is applied between **live parts** and **accessible metal parts** that are connected to metal foil having an area not exceeding *20 cm* ☐ *10* cm in contact with **accessible surfaces** of insulating materials. The test voltage is – 1,06 times **rated voltage**, for single-phase appliances; – 1,06 times **rated voltage**, divided by 3 , for three-phase appliances. The leakage current is measured within 5 s after the application of the test voltage. The leakage current shall not exceed the following values: – for **class II appliances** 0,25 mA – for **class 0**, **class 0I** and **class III appliances** 0,5 mA – for **portable class I appliances** 0,75 mA – for **stationary class I motor-operated appliances** 3,5 mA – for **stationary class I heating appliances** 0,75 mA or 0,75 mA per kW **rated power input** of the appliance with a maximum of 5 mA, whichever is higher	✓ ✓ *243,8 V*	PASS
16.3	Immediately after the test of 16.2, the insulation is subjected to a voltage of substantially sinusoidal waveform having a frequency of 50 Hz or 60 Hz for 1 min. The values of the test voltage for different types of insulation are given in table 7. **Accessible parts** of insulating material are covered with metal foil. A test voltage is applied between **accessible metal parts** and the **supply cord** which is wrapped with metal foil where it is located in an inlet bushing, a cord guard or a cord anchorage, any clamping screws being tightened to two-thirds of the torque specified in table 14. The test voltage is 1 250 V for **class 0 appliances** and **class I appliances** and 1 750 V for **class II appliances**.	✓	PASS
17.	**Overload protection of transformers and associated circuits**		
	Appliances incorporating circuits supplied from a transformer shall be constructed so that in the event of short circuits which are likely to occur in normal use, excessive temperatures do not occur in the transformer or in the circuits associated with the transformer.	Not have circuits supplied from a transformer	N
18.	**Endurance**		
	This clause of Part 1 is not applicable.		N
19.	**Abnormal operation**		
19.1	Appliances shall be constructed so that as a result of abnormal or careless operation, the risk of fire, mechanical damage impairing safety or protection against electric shock is obviated as far as is practicable. **Electronic circuits** shall be designed and applied so that a fault condition will not render the appliance unsafe with regard to electric shock, fire hazard, mechanical hazard or **dangerous malfunction**.	✓	PASS
19.2	Appliances with heating elements are tested under the conditions specified in clause 11 but with restricted heat dissipation. The supply voltage, determined prior to the test, is that required to provide a power input of 0,85 times **rated power input** under **normal operation** when the power input has stabilized. This voltage is maintained throughout the test.	*Not a heating appliance*	N

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
19.3	The test of 19.2 is repeated but with a supply voltage, determined prior to the test, equal to that required to provide a power input of 1,24 times **rated power input** under **normal operation** when the power input has stabilized. This voltage is maintained throughout the test.	N/A	N
19.4	The appliance is tested under the conditions specified in clause 11. Any control that limits the temperature during the test of clause 11 is short-circuited.	✓ See Clause 11	PASS
19.5	The test of 19.4 is repeated on **class 01 appliances** and **class I appliances** incorporating tubular sheathed or embedded heating elements. However, controls are not short-circuited but one end of the element is connected to the sheath of the heating element. This test is repeated with the polarity of the supply to the appliance reversed and with the other end of the element connected to the sheath. The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an **all-pole disconnection** occurs during the test of 19.4.	✓	PASS
19.6	Appliances with **PTC heating elements** are supplied at **rated voltage** until steady conditions with regard to power input and temperature are established. The **working voltage** of the **PTC heating element** is increased by 5 % and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1,5 times **working voltage** is reached, or until the **PTC heating element** ruptures, whichever occurs first.	Do not have PTC heating element	N
19.7	The appliance is operated under stalled conditions by – locking the rotor if the locked rotor torque is smaller than the full load torque; – locking moving parts of other appliances.	✓	PASS
19.8	One phase of appliances incorporating three-phase motors is disconnected. The appliance is then operated under **normal operation** and supplied at **rated voltage** for the period specified in 19.7.	Not three phase appliance	N
19.9	Not applicable.		N
19.10	Appliances incorporating series motors are operated with the lowest possible load and supplied at 1,3 times **rated voltage** for 1 min.	✓	PASS
19.11	**Electronic circuits** are checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless they comply with the conditions specified in 19.11.1.	Do not have electronic circuit	N
19.11.1	Fault conditions a) to f) specified in 19.11.2 are not applied to circuits or parts of circuits when both of the following conditions are met: – the **electronic circuit** is a low-power circuit as described below; – protection against electric shock, fire hazard, mechanical hazard or **dangerous malfunction** of other parts of the appliance does not rely on the correct functioning of the **electronic circuit**.	N/A	N

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
19.11.2	The following fault conditions are considered and, if necessary, applied one at a time, consequential faults being taken into consideration: a) short circuit of **functional insulation** if **clearance**s or **creepage distances** are less than the values specified in clause 29; b) open circuit at the terminals of any component; c) short circuit of capacitors, unless they comply with IEC 60384-14; d) short circuit of any two terminals of an **electronic component**, other than an integrated circuit. This fault condition is not applied between the two circuits of an optocoupler; e) failure of triacs in the diode mode; f) failure of an integrated circuit. All possible output signals are considered for faults occurring within the integrated circuit. If it can be shown that a particular output signal is unlikely to occur, then the relevant fault is not considered.	N/A	N
19.11.3	If the appliance incorporates a **protective electronic circuit** which operates to ensure compliance with clause 19, the relevant test is repeated with a single fault simulated, as indicated in a) to f) of 19.11.2.	Do not incorporate a protective electronic circuit	N
19.11.4	Appliances having a switch with an **off position** obtained by electronic disconnection, or a switch that can be placed in the stand-by mode, are subjected to the tests of 19.11.4.1 to 19.11.4.7. The tests are carried out with the appliance supplied at **rated voltage**, the switch being set in the **off position** or in the stand-by mode. Appliances incorporating a **protective electronic circuit** are subjected to the tests of 19.11.4.1 to 19.11.4.7. The tests are carried out after the **protective electronic circuit** has operated during the relevant tests of Clause 19 except 19.2, 19.6 and 19.11.3. However, appliances that are operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena. The tests are carried out with surge arresters disconnected, unless they incorporate spark gaps.	Do not have a switch with off position	N
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4 being applicable. Ten discharges having a positive polarity and ten discharges having a negative polarity are applied at each preselected point.	Not required	N
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3 being applicable.	Do not subjected	N
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4. Test level 3 is applicable for signal and control lines. Test level 4 is applicable for the power supply lines. The bursts are applied for 2 min with a positive polarity and for 2 min with a negative polarity.	Do not subjected	N
19.11.4.4	The power supply terminals of the appliance are subjected to voltage surges in accordance with IEC 61000-4-5, five positive impulses and five negative impulses being applied at the selected points. Test level 3 is applicable for the line-to-line coupling mode, a generator having a source impedance of 2 ☐☐being used. Test level 4 is applicable for the line-to-earth coupling mode, a generator having a source impedance of 12 ☐☐being used. Earthed heating elements in **class I appliances** are disconnected during this test. For appliances having surge arresters incorporating spark gaps, the test is repeated at a level that is 95 % of the flashover voltage.	✔	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3 being applicable. During the test, all frequencies between 0,15 MHz to 80 MHz are covered	Do not subjected	N
19.11.4.6	The appliance is subjected to voltage dips and interruptions in accordance with IEC 61000-4-11. The durations specified in Table 1 of IEC 61000-4-11 are applied to each test level, the dips and interruptions being applied at zero crossing of the supply voltage.	Do not subjected	N
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2 being applicable.	Do not subjected	N
19.12	If safety of the appliance depends upon the operation of a miniature fuse-link complying with IEC 60127 during any of the fault conditions specified in 19.11.2, the test is repeated but with the miniature fuse-link replaced by an ammeter. If the current measured. -does not exceed 2,1 times the rated current of the fuse-link, the circuit is not considered to be adequately protected and the test is carried out with the fuse-link short-circuited; – is at least 2,75 times the rated current of the fuse-link, the circuit is considered to be adequately protected; – is between 2,1 times and 2,75 times the rated current of the fuse-link, the fuse link is short-circuited and the test is carried out ☐☐for the relevant period or for 30 min, whichever is the shorter, for quick acting fuselinks; ☐☐for the relevant period or for 2 min, whichever is the shorter, for time lag fuse-links.	Not depends upon the operation of a miniature fuse-link	N
19.13	During the tests the appliance shall not emit flames, molten metal, or poisonous or ignitable gas in hazardous amounts and temperature rises shall not exceed the values shown in table 9. After the tests and when the appliance has cooled to approximately room temperature, the enclosure shall not have deformed to such an extent that compliance with clause 8 is impaired and the appliance shall comply with 20.2 if it can still be operated. When the insulation, other than that of **class III appliances**, has cooled down to approximately room temperature, it shall withstand the electric strength test of 16.3, the test voltage, however, being as specified in table 4. For appliances which are immersed in or filled with conducting liquid in normal use, the appliance is immersed in or filled with water for 24 h before the electric strength test is carried out. The appliance shall not undergo a **dangerous malfunction**, and there shall be no failure of **protective electronic circuits** if the appliance is still operable. Appliances tested with an electronic switch in the **off position**, or in the stand-by mode, shall not become operational.	✔	PASS
19.101	**Ancillary heating elements** shall be dimensioned and located so that there is no risk of fire even in the case of abnormal operation.	Not anciallary heating element	N
19.102	Appliances shall be constructed so that they shall not cause any risk of fire, mechanical hazard or electric shock even in the case of abnormal operation.	✔	PASS
19.103	Illuminating equipment shall not cause any fire hazard under abnormal operating conditions.	✔	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
20.	**Stability and mechanical hazards**		
20.1	Appliances, other than **fixed appliances** and **hand-held appliances**, intended to be used on a surface such as the floor or a table shall have adequate stability.	✓	PASS
20.2	Moving parts of appliances shall, as far as is compatible with the use and working of the appliance, be positioned or enclosed to provide adequate protection against personal injury in normal use.	✓	PASS
21.	**Mechanical strength**		
21.1	Appliances shall have adequate mechanical strength and be constructed to withstand such rough handling that may be expected in normal use.	✓	PASS
21.2	**Accessible parts** of solid insulation shall have sufficient strength to prevent penetration by sharp implements.	✓	PASS
21.101	Lamps liable to be accessible to users shall either: – be subject to the test given in clause 21; or – be protected against mechanical shock such that when subjected to the following test for protection against mechanical shock, no contact with the lamp occurs.	✓	PASS
22.	**Construction**		
22.1	If the appliance is marked with the first numeral of the IP system, the relevant requirements of IEC 60529 shall be fulfilled.	IPX0	N
22.2	For **stationary appliances**, means shall be provided to ensure **all-pole disconnection** from the supply mains. Such means shall be one of the following: – a **supply cord** fitted with a plug; – a switch complying with 24.3; – a statement in the instructions that a disconnection incorporated in the fixed wiring is to be provided; – an appliance inlet. Single-pole switches, and single-pole **protective devices** that disconnect heating elements from the supply mains, in single-phase, permanently connected **class I appliances** shall be connected to the phase conductor.	✓ a **supply cord** fitted with a plug;	PASS
22.3	Appliances with pins for insertion into socket-outlets shall not impose undue strain on these socket-outlets. The means for retaining the pins shall withstand the forces to which the pins are likely to be subjected in normal use.	✓	PASS
22.4	Appliances for heating liquids and appliances causing undue vibration shall not be provided with pins for insertion into socket-outlets.	✓	PASS
22.5	Appliances intended to be connected to the supply mains by means of a plug shall be constructed so that in normal use there is no risk of electric shock from charged capacitors when the pins of the plug are touched.	✓	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
22.6	Appliances shall be constructed so that their electrical insulation cannot be affected by water that could condense on cold surfaces or by liquid that could leak from containers, hoses, couplings and similar parts of the appliance. The electrical insulation of **class II appliances** and **class II constructions** shall not be affected if a hose ruptures or a seal leaks. **Thermostats**, except their temperature sensitive parts, shall not be placed in contact with an evaporator unless they are adequately protected against the effects of condensation appearing on cold surfaces and against the effect of water formed during the defrosting process.	✔	PASS
22.7	Appliances, including protective enclosures of a protected cooling system, that use **flammable refrigerants** shall withstand: – a pressure of 3,5 times the saturated vapour pressure of the refrigerant at 70 °C, or equal to 3,5 times the pressure at the critical temperature if this is lower than 70 °C, the test pressure being rounded up to the next 0,5 MPa (5 bar), for parts exposed to the high side pressure during normal use; – a pressure of 5 times the saturated vapour pressure of the refrigerant at 20 °C, or equal to 2,5 MPa (25 bar), whichever is the greater, the test pressure being rounded up to the next 0,2 MPa (2 bar) for parts exposed only to low side pressure during normal use.	✔	PASS
22.8	For appliances having compartments to which access can be gained without the aid of a **tool** and that are likely to be cleaned in normal use, the electrical connections shall be arranged so that they are not subject to pulling during cleaning.	Cannot access without a tool	N
22.9	Appliances shall be constructed so that parts such as insulation, internal wiring, windings, commutators and slip rings are not exposed to oil, grease or similar substances, unless the substance has adequate insulating properties so that compliance with the standard is not impaired.	✔	PASS
22.10	It shall not be possible to reset voltage-maintained **non-self-resetting thermal cutouts** by the operation of an automatic switching device incorporated within the appliance. Non-self-resetting thermal motor protectors shall have a trip-free action unless they are voltage maintained. Reset buttons of non-self-resetting controls shall be located or protected so that their accidental resetting is unlikely to occur if this could result in a hazard.	✔	PASS
22.11	**Non-detachable parts** that protect against access to **live parts**, moisture or contact with moving parts shall be fixed in a reliable manner and withstand the mechanical stress occurring during normal use. Snap-in devices used for fixing such parts shall have an obvious locked position. The fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing shall be reliable.	✔	PASS
22.12	Handles, knobs, grips, levers and similar parts shall be fixed in a reliable manner so that they will not work loose in normal use if loosening could result in a hazard. If these parts are used to indicate the position of switches or similar components, it shall not be possible to fix them incorrectly if this could result in a hazard.	✔	PASS

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
22.13	Appliances shall be constructed so that when handles are gripped in normal use, contact is unlikely between the operator's hand and parts having a temperature rise exceeding the value specified in table 3 for handles which are held for short periods only in normal use.	✓	PASS
22.14	Appliances shall have no ragged or sharp edges, other than those necessary for the functioning of the appliance, that could create a hazard for the user in normal use or during **user maintenance**. Pointed ends of self-tapping screws or other fasteners shall be located so that they are unlikely to be touched by the user in normal use or during **user maintenance**.	✓	PASS
22.15	Storage hooks and similar devices for flexible cords shall be smooth and wellrounded.	✓	PASS
22.16	Automatic cord reels shall be constructed so that they do not cause – undue abrasion or damage to the sheath of the flexible cord; – breakage of conductor strands; – undue wear of contacts.	Not automatic cord	N
22.17	Spacers intended to prevent the appliance from overheating walls shall be fixed so that it is not possible to remove them from the outside of the appliance by hand or by means of a screwdriver or a spanner.	✓	PASS
22.18	Current-carrying parts and other metal parts, the corrosion of which could result in a hazard, shall be resistant to corrosion under normal conditions of use.	✓	PASS
22.19	Driving belts shall not be relied upon to provide the required level of insulation unless they are constructed to prevent inappropriate replacement.	✓	PASS
22.20	Direct contact between **live parts** and thermal insulation shall be effectively prevented unless such material is non-corrosive, non-hygroscopic and non-combustible.	✓	PASS
22.21	Wood, cotton, silk, ordinary paper and similar fibrous or hygroscopic material shall not be used as insulation, unless impregnated.	✓	PASS
22.22	Appliances shall not contain asbestos.	✓	PASS
22.23	Oils containing polychlorinated biphenyl (PCB) shall not be used in appliances.	✓	PASS
22.24	Bare heating elements shall be supported so that the heating conductor is unlikely to come into contact with **accessible metal parts** if they rupture.	✓	PASS
22.25	Appliances, other than those of **class III**, shall be constructed so that sagging heating conductors cannot come into contact with **accessible metal parts**.	✓	PASS
22.26	Appliances having parts of **class III construction** shall be constructed so that the insulation between parts operating at **safety extra-low voltage** and other **live parts** complies with the requirements for **double insulation** or **reinforced insulation**.	Not have parts of Class III	N
22.27	Parts connected by **protective impedance** shall be separated by **double insulation** or **reinforced insulation**.	Not connected to protective impedance	N

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
22.28	For **class II appliances** connected in normal use to the gas mains or to the water mains, metal parts conductively connected to the gas pipes or in contact with the water shall be separated from **live parts** by **double insulation** or **reinforced insulation**.	Not Class II appliance	N
22.29	**Class II appliances** intended to be permanently connected to fixed wiring shall be constructed so that the required degree of access to **live parts** is maintained after installation.	✓	PASS
22.30	Parts of **class II construction** which serve as **supplementary insulation** or **reinforced insulation**, and which could be omitted during reassembly after servicing, shall be – fixed so that they cannot be removed without being seriously damaged, or – constructed so that they cannot be replaced in an incorrect position and if they are omitted, the appliance is rendered inoperable or manifestly incomplete.	✓	PASS
22.31	**Clearances** and **creepage distances** over **supplementary insulation** and **reinforced insulation** shall not be reduced below the values specified in clause 29 as a result of wear. If a part, such as a wire, screw, nut or spring, becomes loose or falls out of position, **clearances** and **creepage distances** between **live parts** and **accessible parts** shall not be reduced below the values specified for **supplementary insulation.**	✓	PASS
22.32	**Supplementary insulation** and **reinforced insulation** shall be constructed or protected so that the deposition of pollution resulting from wear of parts within the appliance does not reduce **clearances** or **creepage distances** below the values specified in clause 29. Parts of natural or synthetic rubber used as **supplementary insulation** shall be resistant to ageing or be located and dimensioned so that **creepage distances** are not reduced below the values specified in 29.2, even if cracks occur. Ceramic material which is not tightly sintered, similar materials or beads alone shall not be used as **supplementary insulation** or **reinforced insulation**.	✓	PASS
22.33	Conductive liquids that are or may become accessible in normal use shall not be in direct contact with **live parts**. Electrodes shall not be used for heating liquids. For **class II construction**, conductive liquids that are or may become accessible in normal use shall not be in direct contact with **basic insulation** or **reinforced insulation**. For **class II construction**, conductive liquids which are in contact with **live parts** shall not be in direct contact with **reinforced insulation**. Heating conductors having only one layer of insulation shall not be in direct contact with water or ice during normal use.	✓	PASS
22.34	Shafts of operating knobs, handles, levers and similar parts shall not be live unless the shaft is inaccessible when the part is removed.	✓	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
22.35	For constructions other than those of **class III**, handles, levers and knobs which are held or actuated in normal use shall not become live in the event of an insulation fault. If these handles, levers or knobs are of metal and if their shafts or fixings are likely to become live in the event of an insulation fault, they shall be adequately covered by insulating material or their **accessible parts** shall be separated from their shafts or fixings by **supplementary insulation.**	✓	PASS
22.36	For appliances other than those of **class III**, handles which are continuously held in the hand in normal use shall be constructed so that when gripped in normal use, the operator's hand is not likely to touch metal parts unless thay are separated from **live parts** by **double insulation** or **reinforced insulation**.	Not have continuously held part	N
22.37	For **class II appliances**, capacitors shall not be connected to **accessible metal parts** and their casings, if of metal, shall be separated from **accessible metal parts** by **supplementary insulation**. This requirement does not apply to capacitors complying with the requirements for **protective impedance** specified in 22.42.	Not class II appliance	N
22.38	Capacitors shall not be connected between the contacts of a **thermal cut-out.**	✓	PASS
22.39	Lampholders shall be used only for the connection of lamps.	***Not have lampholders***	N
22.40	**Motor-operated appliances** and **combined appliances** which are intended to be moved while in operation, or which have **accessible moving parts**, shall be fitted with a switch to control the motor. The actuating member of this switch shall be easily visible and accessible.	Not to be moved while operation	N
22.41	Appliances shall not incorporate components, other than lamps, containing mercury.	✓	PASS
22.42	**Protective impedance** shall consist of at least two separate components whose impedance is unlikely to change significantly during the lifetime of the appliance. If any one of the components is short-circuited or open-circuited the values specified in 8.1.4 shall not be exceeded.	Do not exist protective impedance	N
22.43	Appliances which can be adjusted for different voltages shall be constructed so that accidental changing of the setting is unlikely to occur.	Not adjusted for different voltages	N
22.44	Appliances shall not have an enclosure that is shaped and decorated so that the appliance is likely to be treated as a toy by children.	✓	PASS
22.45	When air is used as **reinforced insulation**, the appliance shall be constructed so that **clearances** cannot be reduced below the values specified in 29.1.3 due to deformation as a result of an external force applied to the enclosure.	Do not used air for reinforced insulation	N
22.46	Software used in **protective electronic circuits** shall be **software class B** or **software class C**.	Do not have protective electronic circuits	N
22.47	Appliances intended to be connected to the water mains shall withstand the water pressure expected in normal use.	Do not connected to the water mains	N
22.48	Appliances intended to be connected to the water mains shall be constructed to prevent backsiphonage of non-potable water into the water mains.	Do not intended to be connect water mains	N
22.101	Lampholders shall be fixed so that they do not work loose in normal use.	***Do not have lampholders***	N

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
22.102	Insulated wire heaters and their joints, located in, and in integral contact with, thermal insulation, shall be protected against entry of water.	✓	PASS
22.103	Appliances connected to the water supply mains shall withstand the water pressure to which they may be subjected in normal use.	Do not connected to water supply	N
22.104	**Accessible glass panels** with an area having any two orthogonal dimensions exceeding 75 mm shall be made from glass that shatters in small pieces when broken.	✓	PASS
22.105	The mass of refrigerant in appliances which use **flammable refrigerant** in their cooling system shall not exceed 150 g in each separate refrigerant circuit.	✓	PASS
22.106	Appliances with a protected cooling system and which use **flammable refrigerants** shall be so constructed as to avoid any fire or explosion hazard in the event of leakage of the refrigerant from the cooling system.	Do not contain flammable refrigerant	N
22.106.1	A leakage is simulated at the most critical point of the cooling system.	N/A	N
22.106.2	All accessible surfaces of protected cooling system components, including accessible surfaces in intimate contact with protected cooling system, are scratched using the tool the tip of which is shown in Figure 102.	N/A	N
22.107	For compression-type appliances with unprotected cooling systems and which use **flammable refrigerants**, any electrical component located inside the food storage compartment, which during **normal operation** or abnormal operation produces arcs or sparks, and luminaries, shall be tested and found at least to comply with the requirements of Annex BB for group IIA gases or the refrigerant used. This requirement does not apply to – **non-self-resetting protective devices** necessary for compliance with Clause 19,nor to – intentionally weak parts that become permanently open-circuited during the tests of Clause 19, even if they produce arcs or sparks during operation. Refrigerant leakage into food storage compartments shall not result in an explosive atmosphere outside the food storage compartments in areas where electrical components that produce arcs and sparks during **normal operation** or abnormal operation, or luminaries are mounted, when doors or lids remain closed or when opening or closing doors or lids, unless these components have been tested and found at least to comply with Annex BB for group IIA gases or the refrigerant used. This requirement does not apply to – **non-self-resetting protective devices** necessary for compliance with Clause 19,nor to – intentionally weak parts that become permanently open-circuited during the tests of Clause 19, even if they produce arcs or sparks during operation.	Do not have flammable refrigerant	N

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
22.108	Compression-type appliances which use **flammable refrigerants** shall be constructed so that leaked refrigerant will not stagnate and thus cause a fire or explosion hazard in areas outside the food storage compartments where components producing arcs or sparks or luminaires are mounted. This requirement does not apply to areas where – **non-self-resetting protective devices** necessary for compliance with Clause 19 or – intentionally weak parts that become permanently open circuited during the test of Clause 19 are mounted, even if they produce arcs and sparks during operation.	Do not have Flammable refrigerant	N
22.109	Temperatures on surfaces that may be exposed to leakage of **flammable refrigerants** shall not exceed the ignition temperature of the refrigerant as specified in Table 102, reduced by 100 K.	Do not have flammable refrigerant	N
22.110	The interior of compartments, in appliances with a **free space** which is enclosed by sliding doors or sliding lids, shall be visible from the outside with the doors or lids closed.	✔	PASS
22.111	The doors and lids of compartments in appliances with a **free space** shall be capable of being opened from the inside. This requirement is not applicable to sliding doors or lids.	✔	PASS
22.112	Drawers which are only accessible after opening a door or lid shall not contain a **free space**.	✔	PASS
22.113	Drawers which are accessible without opening a door or lid and which contain a **free space** shall – have an opening in their rear wall that has a height of at least 250 mm and a width of at least two-thirds of the inner width of the drawer; – be capable of being opened from the inside.	✔	PASS
22.114	Split-system appliances that use a **flammable refrigerant** shall not be fitted with precharged interconnection refrigerant piping.	Not use flammable refrigerant	N
23.	**Internal wiring**		
23.1	Wireways shall be smooth and free from sharp edges. Wires shall be protected so that they do not come into contact with burrs, cooling fins or similar edges which may cause damage to their insulation. Holes in metal through which insulated wires pass shall have smooth well-rounded surfaces or be provided with bushings. Wiring shall be effectively prevented from coming into contact with moving parts.	✔	PASS
23.2	Beads and similar ceramic insulators on live wires shall be fixed or located so that they cannot change their position or rest on sharp edges. If beads are inside flexible metal conduits, they shall be contained within an insulating sleeve, unless the conduit cannot move in normal use.	✔	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
23.3	Different parts of an appliance that can move relative to each other in normal use or during **user maintenance** shall not cause undue stress to electrical connections and internal conductors, including those providing earthing continuity. Flexible metallic tubes shall not cause damage to the insulation of the conductors contained within them. Open-coil springs shall not be used to protect the wiring. If a coiled spring, the turns of which touch one another, is used for this purpose, there shall be an adequate insulating lining in addition to the insulation of the conductors.	✓	PASS
23.4	Bare internal wiring shall be rigid and fixed so that, in normal use, **clearances** or **creepage distances** cannot be reduced below the values specified in clause 29.	✓ See Clause 29	PASS
23.5	The insulation of internal wiring shall withstand the electrical stress likely to occur in normal use.	✓	PASS
23.6	When sleeving is used as **supplementary insulation** on internal wiring, it shall be retained in position by positive means.	✓	PASS
23.7	Conductors identified by the colour combination green/yellow shall only be used for earthing conductors.	✓	PASS
23.8	Aluminium wires shall not be used for internal wiring.	✓ Copper wires used	PASS
23.9	Stranded conductors shall not be consolidated by lead-tin soldering where they are subjected to contact pressure, unless the clamping means is constructed so that there is no risk of bad contact due to cold flow of the solder.	✓	PASS
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, shall be at least equivalent to that of light polyvinyl chloride sheathed flexible cord (code designation 60227 IEC 52).		N
24.			
24.1	Components shall comply with the safety requirements specified in the relevant IEC standards as far as they reasonably apply.	✓	PASS
24.1.1	The relevant standard for capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing is IEC 60384-14. If they have to be tested, they are tested in accordance with annex F.	✓	PASS
24.1.2	The relevant standard for **safety isolating transformers** is IEC 61558-2-6. If they have to be tested, they are tested in accordance with annex G.		N
24.1.3	The relevant standard for switches is IEC 61058-1. The number of cycles of operation declared for 7.1.4 of IEC 61058-1 shall be at least 10 000. If they have to be tested, they are tested in accordance with annex H.	✓	PASS
24.1.4	The relevant standard for automatic controls is IEC 60730-1 together with its relevant part 2.	✓	PASS
24.1.5	The relevant standard for appliance couplers is IEC 60320-1. However, for appliances classified higher than IPX0, the relevant standard is IEC 60320-2-3. The relevant standard for interconnection couplers is IEC 60320-2-2.	✓	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
24.1.6	The relevant standard for small lampholders similar to E10 lampholders is IEC 60238, the requirements for E10 lampholders being appplicable. However, they need not accept a lamp with an E10 cap complying with the current edition of Standard Sheet 7004-22 of IEC 60061-1.	*Do not have lampholders*	N
24.2	Appliances shall not be fitted with – switches or automatic controls in flexible cords; – devices that cause the **protective device** in the fixed wiring to operate in the event of a fault in the appliance; – **thermal cut-outs** that can be reset by a soldering operation.	✓	N
24.3	Switches intended to ensure **all-pole disconnection** of **stationary appliances**, as required in 22.2, shall be directly connected to the supply terminals and shall have a contact separation in all poles, providing full disconnection under overvoltage category III conditions.	✓	PASS
24.4	Plugs and socket-outlets for **extra-low voltage** circuits, and those used as terminal devices for heating elements, shall not be interchangeable with plugs and socket-outlets listed in IEC 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1.		N
24.5	Capacitors in auxiliary windings of motors shall be marked with their rated voltage and their rated capacitance and shall be used in accordance with these markings.	✓	PASS
24.6	The **working voltage** of motors directly connected to the supply mains and having **basic insulation** that is inadequate for the **rated voltage** of the appliance, shall not exceed 42 V. In addition, they shall comply with the requirements of annex I.		N
24.7	Hose-sets for the connection of appliances to the water mains shall comply with IEC 61770. They shall be supplied with the appliance	Not connected to water mains	N
25.	**Supply connection and external flexible cords**		
	This clause of Part 1 is not applicable to those parts related to motor-compressors with facilities for connecting a **supply cord**, complying with the appropriate requirements of IEC 60335-2-34.	✓	PASS
25.1	Appliances, other than those intended to be permanently connected to fixed wiring, shall be provided with one of the following means for connection to the supply mains: – **supply cord** fitted with a plug; – an appliance inlet having at least the same degree of protection against moisture as required for the appliance; – pins for insertion into socket-outlets.	✓ **supply cord** fitted with a plug;	PASS
25.2	Mains-operated appliances shall not be provided with more than one means of connection to the supply unless – the appliance consists of two or more completely independent units built together in one enclosure; – the relevant circuits are adequately insulated from each other.	✓	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
25.3	Appliances intended to be permanently connected to fixed wiring shall allow the connection of the supply conductors after the appliance has been fixed to its support and shall be provided with one of the following means for connection to the supply mains: – a set of terminals allowing the connection of cables of fixed wiring having the nominal cross-sectional areas specified in 26.6; – a set of terminals allowing the connection of a flexible cord; – a set of **supply leads** accommodated in a suitable compartment; – a set of terminals and cable entries, conduit entries, knock-outs or glands, which allow the connection of the appropriate types of cable or conduit.	✓	PASS
25.4	For appliances intended to be permanently connected to the fixed wiring and having a **rated current** not exceeding 16 A, cable and conduit entries shall be suitable for cables or conduits having a maximum overall dimension shown in table 10. Conduit entries, cable entries and knock-outs shall be constructed or located so that the introduction of the conduit or cable does not reduce **clearances** or **creepage distances** below the values specified in clause 29.	✓	PASS
25.5	**Supply cords** shall be assembled to the appliance by one of the following methods: – **type X attachment**; – **type Y attachment**; – **type Z attachment**, if allowed in the relevant part 2. **Type X attachments**, other than those having a specially prepared cord, shall not be used for flat twin tinsel cords.	✓ **type Y attachment**;	PASS
25.6	Plugs shall not be fitted with more than one flexible cord.	✓	PASS
25.7	**Supply cords** shall not be lighter than – braided cord (code designation 60245 IEC 51), if allowed in the relevant part 2; – ordinary tough rubber sheathed cord (code designation 60245 IEC 53); – ordinary polychloroprene sheathed flexible cord (code designation 60245 IEC 57); – flat twin tinsel cord (code designation 60227 IEC 41), if allowed in the relevant part 2; – light polyvinyl chloride sheathed cord (code designation 60227 IEC 52), for appliances having a mass not exceeding 3 kg; – ordinary polyvinyl chloride sheathed cord (code designation 60227 IEC 53), for appliances having a mass exceeding 3 kg. Polyvinyl chloride sheathed cords shall not be used for appliances if the temperature rise of external metal parts exceeds 75 K during the test of clause 11. However, they may be used if – the appliance is constructed so that the **supply cord** is not likely to touch such metal parts in normal use; – the **supply cord** is appropriate for higher temperatures. In this case, **type Y attachment** or **type Z attachment** shall be used.	✓	PASS

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
25.8	Conductors of **supply cords** shall have a nominal cross-sectional area not less than that shown in table 11.	✓ 1,5 mm2	PASS
25.9	**Supply cords** shall not be in contact with sharp points or edges of the appliance.	✓	PASS
25.10	The **supply cord** of **class I appliances** shall have a green/yellow core that is connected to the earthing terminal of the appliance and to the earthing contact of the plug.	✓	PASS
25.11	Conductors of **supply cords** shall not be consolidated by lead-tin soldering where they are subjected to contact pressure, unless the clamping means is constructed so that there is no risk of a bad contact due to cold flow of the solder.	✓	PASS
25.12	The insulation of the **supply cords** shall not be damaged when moulding the cord to part of the enclosure.	✓	PASS
25.13	Inlet openings for **supply cords** shall be constructed so that the sheath of the **supply cord** can be introduced without risk of damage. Unless the enclosure at the inlet opening is insulating material, a **non-detachable lining** or **non-detachable bushing** shall be provided that complies with 29.3 for **supplementary insulation**. If the **supply cord** is unsheathed, a similar additional bushing or lining is required, unless the appliance is **class 0**.	✓	PASS
25.14	Appliances provided with a **supply cord** that are moved while in operation shall be constructed so that the **supply cord** is adequately protected against excessive flexing where it enters the appliance.	Not moved while operation	N
25.15	Appliances provided with a **supply cord**, and appliances intended to be permanently connected to fixed wiring by a flexible cord, shall have a cord anchorage. The cord anchorage shall relieve conductors from strain, including twisting, at the terminals and protect the insulation of the conductors from abrasion. It shall not be possible to push the cord into the appliance to such an extent that the cord or internal parts of the appliance could be damaged.	✓	PASS

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
25.16	Cord anchorages for **type X attachments** shall be constructed and located so that – replacement of the cord is easily possible; – it is clear how the relief from strain and the prevention of twisting are obtained; – they are suitable for the different types of **supply cord** that may be connected, unless the cord is specially prepared; – the cord cannot touch the clamping screws of the cord anchorage if these screws are accessible, unless they are separated from **accessible metal parts** by **supplementary insulation**; – the cord is not clamped by a metal screw which bears directly on the cord; – at least one part of the cord anchorage is securely fixed to the appliance, unless it is part of a specially prepared cord; – screws which have to be operated when replacing the cord do not fix any other component. However, this does not apply if • after removal of the screws, or if the component is incorrectly repositioned, the appliance becomes inoperative or is obviously incomplete; • the parts intended to be fastened by them cannot be removed without the aid of a **tool** during the replacement of the cord; – if labyrinths can be bypassed the test of 25.15 is nevertheless withstood; – for **class 0 appliances**, **class 0I appliances** and **class I appliances**, they are of insulating material or are provided with an insulating lining, unless failure of the insulation of the cord does not make **accessible metal parts** live; – for **class II appliances**, they are of insulating material or, if of metal, they are insulated from **accessible metal parts** by **supplementary insulation**.	Type Y attachment	N
25.17	For **type Y attachment** and **type Z attachment**, cord anchorages shall be adequate.	✓	PASS
25.18	Cord anchorages shall be arranged so that they are only accessible with the aid of a **tool** or shall be constructed so that the cord can only be fitted with the aid of a **tool**.	✓	PASS
25.19	For **type X attachment**, glands shall not be used as cord anchorages in **portable appliances**. Tying the cord into a knot or tying the cord with string is not allowed.	Type Y attachment	N
25.20	The insulated conductors of the **supply cord** for **type Y attachment** and **type Z attachment** shall be additionally insulated from **accessible metal parts** by **basic insulation** for **class 0 appliances**, **class 0I appliances** and **class I appliances,** and by **supplementary insulation** for **class II appliances**. This insulation may be provided by the sheath of the **supply cord** or by other means.	✓	N

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
25.21	The space for the connection of **supply cords** having **type X attachment**, or for the connection of fixed wiring, shall be constructed – so that it is possible to check that the supply conductors are correctly positioned and connected before fitting any cover; – so that any cover can be fitted without risk of damage to the conductors or their insulation; – for **portable appliances**, so that the uninsulated end of a conductor, should it become free from the terminal, cannot come into contact with **accessible metal parts**.	Type Y attachment	N
25.22	Appliance inlets shall – be located or enclosed so that **live parts** are not accessible during insertion or removal of the connector; – be located so that the connector can be inserted without difficulty; – be located so that, after insertion of the connector, the appliance is not supported by the connector when it is placed in any position of normal use on a flat surface; – not be an appliance inlet for cold conditions if the temperature rise of external metal parts of the appliance exceeds 75 K during the test of clause 11, unless the **supply cord** is unlikely to touch such metal parts in normal use.	✓	PASS
25.23	**Interconnection cords** shall comply with the requirements for the **supply cord**, except that – the cross-sectional area of the conductors of the **interconnection cord** is determined on the basis of the maximum current carried by the conductor during the test of clause 11 and not by the **rated current** of the appliance; – the thickness of the insulation of the conductor may be reduced if the voltage of the conductor is less than the **rated voltage**.	✓	PASS
25.24	**Interconnection cords** shall not be detachable without the aid of a **tool** if compliance with this standard is impaired when they are disconnected.	✓	PASS
25.25	The dimensions of pins of appliances that are inserted into socket-outlets shall be compatible with the dimensions of the relevant socket-outlet. Dimensions of the pins and engagement face are to be in accordance with the dimensions of the relevant plug listed in IEC 60083.	✓	PASS
26.	**Terminals for external conductors**		
	This clause of Part 1 is not applicable to those parts of motor-compressors with facilities for connecting a **supply cord** and complying with the appropriate requirements of IEC 60335-2-34.	✓	PASS
26.1	Appliances shall be provided with terminals or equally effective devices for the connection of external conductors. The terminals shall only be accessible after the removal of a **non- detachable cover**. However, earthing terminals may be accessible if a **tool** is required to make the connections and means are provided to clamp the wire independently from its connection.	✓	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
26.2	Appliances having **type X attachment**, except those having a specially prepared cord, and appliances for connection to fixed wiring shall be provided with terminals in which the connections are made by means of screws, nuts or similar devices, unless the connections are soldered. The screws and nuts shall not be used to fix any other component except that they may also clamp internal conductors if these are arranged so that they are unlikely to be displaced when fitting the supply conductors. If soldered connections are used, the conductor shall be positioned or fixed so that reliance is not placed upon the soldering alone to maintain it in position. However, soldering alone may be used if barriers are provided so that **clearances** and **creepage distances** between **live parts** and other metal parts cannot be reduced below the values specified for **supplementary insulation** if the conductor becomes free at the soldered joint.	Do not have type X attachment	N
26.3	Terminals for **type X attachment** and those for connection to fixed wiring shall be constructed so that they clamp the conductor between metal surfaces with sufficient contact pressure but without causing damage to the conductor. The terminals shall be fixed so that when the clamping means is tightened or loosened – the terminal does not become loose; – internal wiring is not subjected to stress; – **clearances** and **creepage distances** are not reduced below the values specified in clause 29.	✔	PASS
26.4	Terminals for **type X attachment**, except **type X attachments** having a specially prepared cord, and terminals for connection to fixed wiring, shall not require special preparation of the conductor. They shall be constructed or placed so that the conductor cannot slip out when clamping screws or nuts are tightened.	✔	PASS
26.5	Terminals for **type X attachment** shall be located or shielded so that if a wire of a stranded conductor escapes when the conductors are fitted, there is no risk of accidental connection to other parts that could result in a hazard.	✔	PASS
26.6	Terminals for **type X attachment** and for connection to fixed wiring shall allow the connection of conductors having the nominal cross-sectional areas shown in table 13. However, if a specially prepared cord is used, the terminals need only be suitable for the connection of that cord.	✔	PASS
26.7	Terminals for **type X attachment** shall be accessible after removal of a cover or part of the enclosure.	✔	PASS
26.8	Terminals for the connection of fixed wiring, including the earthing terminal, shall be located close to each other.	✔	PASS
26.9	Terminals of the pillar type shall be constructed and located so that the end of a conductor introduced into the hole is visible, or can pass beyond the threaded hole for a distance equal to half the nominal diameter of the screw but at least 2,5 mm.	✔	PASS
26.10	Terminals with screw clamping and screwless terminals shall not be used for the connection of the conductors of flat twin tinsel cords unless the ends of the conductors are fitted with means suitable for use with screw terminals.	✔	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
26.11	For appliances having **type Y attachment** or **type Z attachment**, soldered, welded, crimped or similar connections may be used for the connection of external conductors. For **class II appliances**, the conductor shall be positioned or fixed so that reliance is not placed upon the soldering, crimping or welding alone to maintain the conductor in position. However, these methods may be used alone if barriers are provided so that **clearances** and **creepage distances** between **live parts** and other metal parts cannot be reduced below the values specified for **supplementary insulation**, if the conductor becomes free at the soldered or welded joint or slips out of the crimped connection.	✓	PASS
27.	**Provision for earthing**		
	Compliance is not checked on parts related to motor-compressors if the motor-compressor complies with IEC 60335-2-34.	✓	PASS
27.1	**Accessible metal parts** of **class 0I appliances** and **class I appliances** that may become live in the event of an insulation fault, shall be permanently and reliably connected to an earthing terminal within the appliance or to the earthing contact of the appliance inlet. Earthing terminals and earthing contacts shall not be connected to the neutral terminal. **Class 0 appliances**, **class II appliances** and **class III appliances** shall have no provision for earthing. **Safety extra-low voltage** circuits shall not be earthed unless they are **protective extra-low voltage circuits**.	✓	PASS
27.2	The clamping means of earthing terminals shall be adequately secured against accidental loosening. Terminals for the connection of external equipotential bonding conductors shall allow the connection of conductors having nominal cross-sectional areas of 2,5 mm² to 6 mm² and shall not be used to provide earthing continuity between different parts of the appliance. It shall not be possible to loosen the conductors without the aid of a **tool**.	✓	PASS
27.3	If a **detachable part** having an earth connection is plugged into another part of the appliance, the earth connection shall be made before the current-carrying connections are established. The current-carrying connections shall be separated before the earth connection when removing the part. For appliances with **supply cords**, the arrangement of the terminals, or the length of the conductors between the cord anchorage and the terminals, shall be such that the currentcarrying conductors become taut before the earthing conductor if the cord slips out of the cord anchorage.	✓	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
27.4	All parts of the earthing terminal intended for the connection of external conductors shall be such that there is no risk of corrosion resulting from contact between these parts and the copper of the earthing conductor or any other metal in contact with these parts. Parts providing earthing continuity, other than parts of a metal frame or enclosure, shall be of metal having adequate resistance to corrosion. If these parts are of steel, they shall be provided at the essential areas with an electroplated coating having a thickness of at least 5 ☐m. Parts of coated or uncoated steel that are only intended to provide or to transmit contact pressure shall be adequately protected against rusting. If the body of the earthing terminal is a part of a frame or enclosure of aluminium or aluminium alloy, precautions shall be taken to avoid the risk of corrosion resulting from contact between copper and aluminium or its alloys.	✔	PASS
27.5	The connection between the earthing terminal or earthing contact and earthed metal parts shall have low resistance. If the **clearances** of **basic insulation** in a **protective extra-low voltage circuit** are based on the **rated voltage** of the appliance, this requirement does not apply to connections providing earthing continuity in the **protective extra-low voltage circuit**.	✔	PASS
27.6	The printed conductors of printed circuit boards shall not be used to provide earthing continuity in **hand-held appliances**. They may be used to provide earthing continuity in other appliances if – at least two tracks are used with independent soldering points and the appliance complies with 27.5 for each circuit, – the material of the printed circuit board complies with IEC 60249-2-4 or IEC 60249-2-5.	Do not have printed circuit board	N
28.	**Screws and connections**		
	Compliance is not checked on parts related to motor-compressors if the motor-compressor complies with IEC 60335-2-34.	✔	PASS
28.1	Fixings, the failure of which may impair compliance with this standard, electrical connections and connections providing earthing continuity shall withstand the mechanical stresses occurring in normal use. Screws used for these purposes shall not be of metal which is soft or liable to creep, such as zinc or aluminium. If they are of insulating material, they shall have a nominal diameter of at least 3 mm and they shall not be used for any electrical connections or connections providing earthing continuity. Screws used for electrical connections or for connections providing earthing continuity shall screw into metal. Screws shall not be of insulating material if their replacement by a metal screw could impair **supplementary insulation** or **reinforced insulation**. Screws that may be removed when replacing a **supply cord** having a **type X attachment** or when undertaking **user maintenance** shall not be of insulating material if their replacement by a metal screw could impair **basic insulation**.	✔	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
28.2	Electrical connections and connections providing earthing continuity shall be constructed so that contact pressure is not transmitted through insulating material that is liable to shrink or to distort unless there is sufficient resiliency in the metallic parts to compensate for any possible shrinkage or distortion of the insulating material. This requirement does not apply to electrical connections in circuits carrying a current not exceeding 0,5 A.	✔	PASS
28.3	Space-threaded (sheet metal) screws shall only be used for electrical connections if they clamp the parts together. Thread-cutting (self-tapping) screws shall only be used for electrical connections if they generate a full form standard machine screw thread. Such screws shall not be used if they are likely to be operated by the user or installer unless the thread is formed by a swaging action. Thread-cutting and space-threaded screws may be used in connections providing earthing continuity provided it is unnecessary to disturb the connection in normal use and at least two screws are used for each connection.	✔	PASS
28.4	Screws and nuts that make a mechanical connection between different parts of the appliance shall be secured against loosening if they also make electrical connections or connections providing earthing continuity. Rivets used for electrical connections or for connections providing earthing continuity shall be secured against loosening if these connections are subject to torsion in normal use.	✔	PASS
29.	**Clearances, creepage distances and solid insulation**		
	Appliances shall be constructed so that the **clearances**, **creepage distances** and solid insulation are adequate to withstand the electrical stresses to which the appliance is liable to be subjected. Compliance is not checked on parts related to motor-compressors if the motor-compressor complies with IEC 60335-2-34. For motor-compressors not complying with IEC 60335-2-34, the additions and modifications specified in IEC 60335-2-34 are applicable.	✔	PASS
29.1	**Clearances** shall not be less than the values specified in Table 16, taking into account the **rated impulse voltage** for the overvoltage categories of Table 15, unless, for **basic insulation** and **functional insulation**, they comply with the impulse voltage test of Clause 14. However, if the construction is such that the distances could be affected by wear, by distortion, by movement of the parts or during assembly, the **clearances** for **rated impulse voltages** of 1 500 V and above are increased by 0,5 mm and the impulse voltage test is not applicable. The impulse voltage test is not applicable when the microenvironment is pollution degree 3 or for **basic insulation** of **class 0 appliances** and **class 01 appliances**.	✔ See test report	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
29.1.1	The **clearances** of **basic insulation** shall be sufficient to withstand the overvoltages likely to occur during use, taking into account the **rated impulse voltage**. The values of table 16 are applicable. The **clearance** at the terminals of tubular sheathed heating elements may be reduced to 1,0 mm if the microenvironment is pollution degree 1. Lacquered conductors of windings are considered to be bare conductors.	✓	PASS
29.1.2	**Clearances** of **supplementary insulation** shall be not less than those specified for **basic insulation** in table 16.	✓	PASS
29.1.3	**Clearances** of **reinforced insulation** shall be not less than those specified for **basic insulation** in table 16, but using the next higher step for **rated impulse voltage** as a reference.	✓	PASS
29.1.4	For **functional insulation**, the values of table 16 are applicable. However, **clearances** are not specified if the appliance complies with clause 19 with the **functional insulation** short-circuited. Lacquered conductors of windings are considered to be bare conductors. However, **clearances** at crossover points are not measured. The **clearance** between surfaces of **PTC heating elements** may be reduced to 1 mm.	✓	
29.1.5	For appliances having higher **working voltages** than **rated voltage**, for example on the secondary side of a step-up transformer, or if there is a resonant voltage, the voltage used for determining **clearances** from table 16 shall be the sum of the **rated impulse voltage** and the difference between the peak value of the **working voltage** and the peak value of the **rated voltage**. If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, **clearances** of **basic insulation** on the secondary side shall be not less than those specified in table 16, but using the next lower step for **rated impulse voltage** as a reference. For circuits supplied with a voltage lower than **rated voltage**, for example on the secondary side of a transformer, **clearances** of **functional insulation** are based on the **working voltage**, which is used as the **rated voltage** in table 15.	✓	PASS
29.2	Appliances shall be constructed so that **creepage distances** are not less than those appropriate for the **working voltage**, taking into account the material group and the pollution degree. Pollution degree 2 applies unless – precautions have been taken to protect the insulation, in which case pollution degree 1 applies; – the insulation is subjected to conductive pollution, in which case pollution degree 3 applies. Unless insulation is enclosed or located so that it is unlikely to be exposed to pollution by condensation due to normal use of the appliance, insulation in appliances is in Pollution Degree 3 and shall have a CTI value of not less than 250.	✓	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
29.2.1	**Creepage distances** of **basic insulation** shall not be less than those specified in table 17. Except for pollution degree 1, if the test of clause 14 has been used to check a particular **clearance**, the corresponding **creepage distance** shall not be less than the minimum dimension specified for the **clearance** of table 16.	✓	PASS
29.2.2	**Creepage distances** of **supplementary insulation** shall be at least those specified for **basic insulation** in table 17.	✓	PASS
29.2.3	**Creepage distances** of **reinforced insulation** shall be at least double those specified for **basic insulation** in table 17.	✓	PASS
29.2.4	**Creepage distances** of **functional insulation** shall be not less than those specified in table 18. However, **creepage distances** may be reduced if the appliance complies with clause 19 with the **functional insulation** short-circuited.	✓	PASS
29.3	**Supplementary insulation** and **reinforced insulation** shall have adequate thickness, or have a sufficient number of layers, to withstand the electrical stresses that can be expected during the use of the appliance.	✓	PASS
29.3.1	*The thickness of the insulation shall be at least* *– 1 mm for **supplementary insulation**;* *– 2 mm for **reinforced insulation**.*	✓	PASS
29.3.2	*Each layer of material shall withstand the electric strength test of 16.3 for **supplementary insulation**. **Supplementary insulation** shall consist of at least 2 layers of material and **reinforced insulation** of at least 3 layers.*	✓	PASS
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2 for 48 h at a temperature of 50 K in excess of the maximum temperature rise measured during the test of Clause 19. At the end of the period, the insulation is subjected to the electric strength test of 16.3 at the conditioning temperature and also after it has cooled down to room temperature. If the temperature rise of the insulation measured during the tests of Clause 19 does notexceed the value specified in Table 3, the test of IEC 60068-2-2 is not carried out.	✓	PASS
30.	**Resistance to heat and fire**		
30.1	External parts of non-metallic material, parts of insulating material supporting **live parts** including connections, and parts of thermoplastic material providing **supplementary insulation** or **reinforced insulation,** shall be sufficiently resistant to heat if their deterioration could cause the appliance to fail to comply with this standard. This requirement does not apply to the insulation or sheath of flexible cords or internal wiring.	✓	PASS
30.2	Parts of non-metallic material shall be resistant to ignition and spread of fire. This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance.	✓	PASS
30.2.1	Parts of non-metallic material are subjected to the glow-wire test of IEC 60695-2-11, which is carried out at 550 °C.	✓	PASS

EN 60335-2-89:2010/A1:2016
Household and similar electrical appliances - Safety –
Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit or compressor

Clause	Requirement	Result / Remark	Verdict
30.2.2	For appliances that are operated while attended, parts of insulating material supporting current-carrying connections, and parts of insulating material within a distance of 3 mm of such connections, are subjected to the glow-wire test of IEC 60695-2-11 that is carried out at – 750 °C, for connections that carry a current exceeding 0,5 A during **normal operation**, – 650 °C, for other connections.		N
30.2.3	Appliances that are operated while unattended are tested as specified in 30.2.3.1 and 30.2.3.*2*	✓	PASS
30.2.3.1	Parts of insulating material supporting connections that carry a current exceeding 0,2 A during **normal operation**, and parts of insulating material within a distance of 3 mm of such connections, shall have a glow-wire flammability index of at least 850 °C according to IEC 60695-2-12, the test sample being no thicker than the relevant part.	✓	PASS
30.2.3.2	Parts of insulating material supporting current-carrying connections, and parts of insulating material within a distance of 3 mm of such connections, are subjected to the glowwire test of IEC 60695-2-11. However, the glow-wire test is not carried out on parts of material classified as having a glow-wire ignition temperature according to IEC 60695-2-13 of at least – 775 °C, for connections which carry a current exceeding 0,2 A during **normal operation**; – 675 °C, for other connections, provided that the test sample was no thicker than the relevant part.	✓	PASS
30.2.4	The base material of printed circuit boards is subjected to the needle-flame test of annex E. The flame is applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use.	Not have printed circuit board	N
31.	**Resistance to rusting**		
	Ferrous parts, the rusting of which might cause the appliance to fail to comply with this standard, shall be adequately protected against rusting.	✓	PASS
32.			
	Appliances shall not emit harmful radiation or present a toxic or similar hazard.	✓	PASS

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23

ANNEX

10.1	TABLE: Power input deviation				P
Input deviation of/at:	P rated (W)	P measured (W)	dP	Required dP	Remark
230V 50Hz	507	487	PASS0.05%	PASS20%	P
Supplementary information: Rated voltage: AC230V, 50Hz, 507					

11.8	TABLE: Heating test, thermocouples		P
	Test voltage (V)	243,8V, 50 Hz	
	Ambient (oC)	24.5	

Thermocouple locations	dT (K)	Max. dT (K)
Varistor	32.1	60(T-25)
Opto-coupler	24.2	75(T-25)
Internal wire	34.9	50
Enclosure(inside)	32.8	For 30.1
Enclosure(outside)	21.3	60
Test corner	4.6	65
Supplementary information: Appliance was tested until steady conditions established.		

13.2	TABLE: Leakage current		P
	Heating appliances: 1.15 x rated input	---	
	Motor-operated and combined appliances: 1.06xratedvoltage	243.8V	

Leakage current between	I (mA)	Max. allowed I (mA)
L/N and Output terminal	0,01	0,375
L/N and Enclosure	0,01	0.375

13.3	TABLE: Electric strength	P
L/N and Output terminal	Voltage (V)	Breakdown (Yes/No)
L/N and Enclosure Pri-winding and Output terminal	1000	No
L/N and Enclosure	1000	No
Pri-winding and Enclosure	1000	No

24.1	TABLE: Components (see CDF)				P
Object / part No	Manufacturer/trademark	Type / model	Technical data	Standard	Mark(s) of conformity
I) An asterisk indicates a mark which assures the agreed level of surveillance					

Date/ Engineer: Eng. E. CENGIZ 2017-10-23

Control: Eng. M. KOCAS 2017-10-23