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TEST REPORT
IEC 60335-2-21 & IEC 60335-2-40
Safety of household and similar electrical appliances
Part 2: Particular requirements for water heaters & particular requirements for electrical heat pumps, air-conditioners and dehumidifiers

Report Number. ..... :	23029040BKK-001
Date of issue ..... :	07 March 2023
Total number of pages ..... :	222 Pages
Name of Testing Laboratory preparing the Report ..... :	Intertek Testing Services (Thailand) Ltd.
Applicant's name ..... :	Panasonic Corporation
Address ..... :	1006, Oaza Kadoma, Kadoma City, Osaka 571-8501, Japan.
Test specification:	
Standard ..... :	IEC 60335-2-21:2012, COR1:2013, AMD1:2018 & IEC 60335-2-40:2018 used in conjunction with IEC 60335-1:2010, COR1:2010, COR2:2010, AMD1:2013, COR1:2014, AMD2:2016, COR1:2016
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC60335_2_21&40I
Test Report Form(s) Originator .... :	LCIE
Master TRF ..... :	Dated 2020-04-09

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
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Test item description ..... :	Air-to-Water Heatpump (Outdoor unit)
Trade Mark(s) ..... :	Panasonic
Manufacturer ..... :	Panasonic Corporation 1006, Oaza Kadoma, Kadoma City, Osaka 571-8501, Japan.
Model/Type reference ..... :	**Air-to-Water Heatpump (Outdoor unit):** WH-WDG05LE5 WH-WDG07LE5 WH-WDG09LE5
Ratings ..... :	230V~ 50Hz; Class I; R290 (See details in marking on page 06 to 08 general product information in page 10 to 11)

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**CB Testing Laboratory:**	Intertek Testing Services (Thailand) Ltd.	
Testing location/ address.....:		1285/5 Prachachuen Road., Wongsawang, Bangsue, Bangkok, 10800 THAILAND	
Tested by (name, function, signature).....:		Chain Rangsiri (Test Engineer)	
Approved by (name, function, signature)...:		Peerapon Sintuaus (Reviewer)	
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address.....:		N/A	
Tested by (name, function, signature).....:		N/A	
Approved by (name, function, signature)...:		N/A	
☒	**Testing procedure: CTF Stage 2:**	Panasonic Corporation	
Testing location/ address.....:		2-3-1-1 Noji-higashi, Kusatsu City, Shiga 525-8520, Japan	
Tested by (name + signature).....:		Eiji Goto	
Witnessed by (name, function, signature) .:		Tanawat Yoksakoon (Witness tester)	
Approved by (name, function, signature)...:		Peerapon Sintuaus (Reviewer)	
☐	**Testing procedure: CTF Stage 3:**	N/A	
☐	**Testing procedure: CTF Stage 4:**	N/A	
Testing location/ address.....:		N/A	
Tested by (name, function, signature).....:		N/A	
Witnessed by (name, function, signature) .:		N/A	
Approved by (name, function, signature)...:		N/A	
Supervised by (name, function, signature) :		N/A	

List of Attachments (including a total number of pages in each attachment):

Attachment 1: List of Equipment (1 page)

Attachment 2: Attachment IEC 60335-2-21 & 40 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES, 2019-11-01 (15 pages)

Attachment 3: Attachment IEC 60335-2-21 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES, 2022-04-14 (15 pages)

Attachment 4: Unit Picture (5 pages)

Summary of testing:

Tests performed (name of test and test clause):

Clause 7	:	Marking and instructions
Clause 8	:	Protection against access to live parts
Clause 10	:	Power input and current
Clause 11	:	Heating
Clause 13	:	Leakage current and electric strength at operating temperature
Clause 15	:	Moisture resistance
Clause 16	:	Leakage current and electric strength
Clause 19	:	Abnormal operation
Clause 20	:	Stability and mechanical hazards
Clause 21	:	Mechanical strength
Clause 22	:	Construction
Clause 23	:	Internal wiring
Clause 24	:	Components
Clause 25	:	Supply connection and external flexible cords
Clause 26	:	Terminals for external conductors
Clause 27	:	Provision for earthing
Clause 28	:	Screws and connections
Clause 29	:	Clearances, Creepage distances and Solid insulation
Clause 30	:	Resistance to heat and fire
Clause 31	:	Resistance to rusting

Testing location:

1. All clause (except clause 19.7 Fan motor)

Intertek Testing Services (Thailand) Ltd.

1285/5 Prachachuen Road., Wongsawang, Bangsue, Bangkok, 10800 THAILAND

2. Clause 19.7 (Fan motor)

Panasonic Corporation

2-3-1-1 Noji-higashi, Kusatsu City, Shiga 525-8520, Japan

Summary of compliance with National Differences (List of countries addressed):

- N/A

☒ **The product fulfils the requirements of**

- IEC 60335-2-21:2012, COR1:2013, AMD1:2018
- IEC 60335-2-40:2018
- IEC 60335-1:2010, COR1:2010, COR2:2010, AMD1:2013, COR1:2014, AMD2:2016, COR1:2016
- IEC 62233:2005
- EN 60335-2-21:2003+A1:2005+A2:2008
- EN 60335-2-21:2021 + A1:2021
- EN 60335-2-40:2003+A11:2004+A12:2005+A1:2006+A2:2009+A13:2012
- EN 60335-1:2012+AC:2014+A11:2014+A13:2017+A1:2019+A14:2019+A2:2019
- EN 60335 1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019 + A15:2021
- EN 62233:2008+AC:2008

Statement concerning the uncertainty of the measurement systems used for the tests

(may be required by the product standard or client)

☐ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

Procedure number, issue date and title:

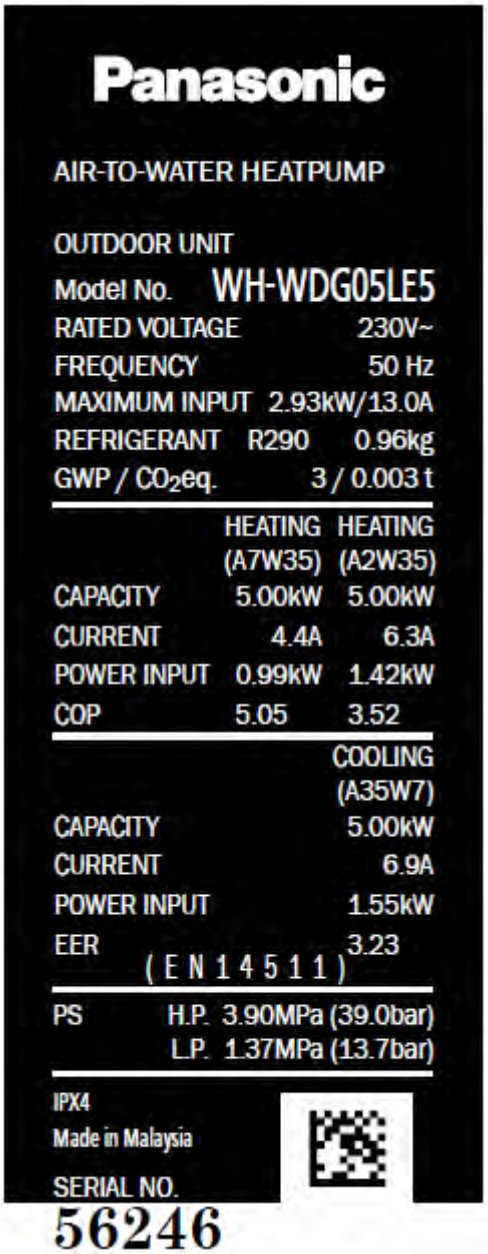
Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

☒ **Statement not required by the standard used for type testing**

(Note: When IEC or ISO standard requires a statement concerning the uncertainty of the measurement systems used for tests, this should be reported above. The informative text in parenthesis should be delete in both cases after selecting the applicable option)

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



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Copy of marking plate: (Cont'd)

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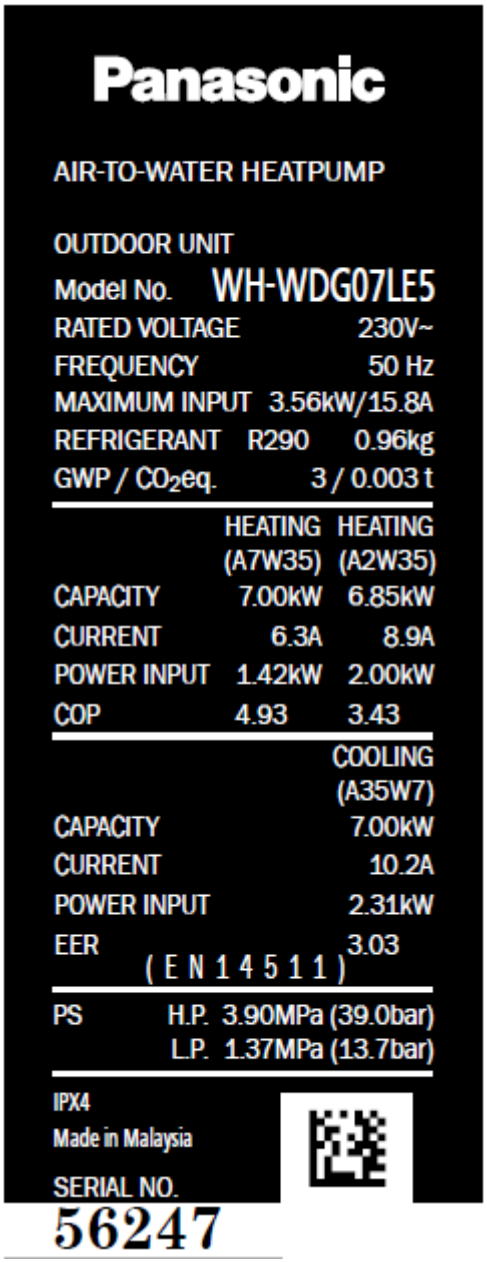

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Copy of marking plate: (Cont'd)

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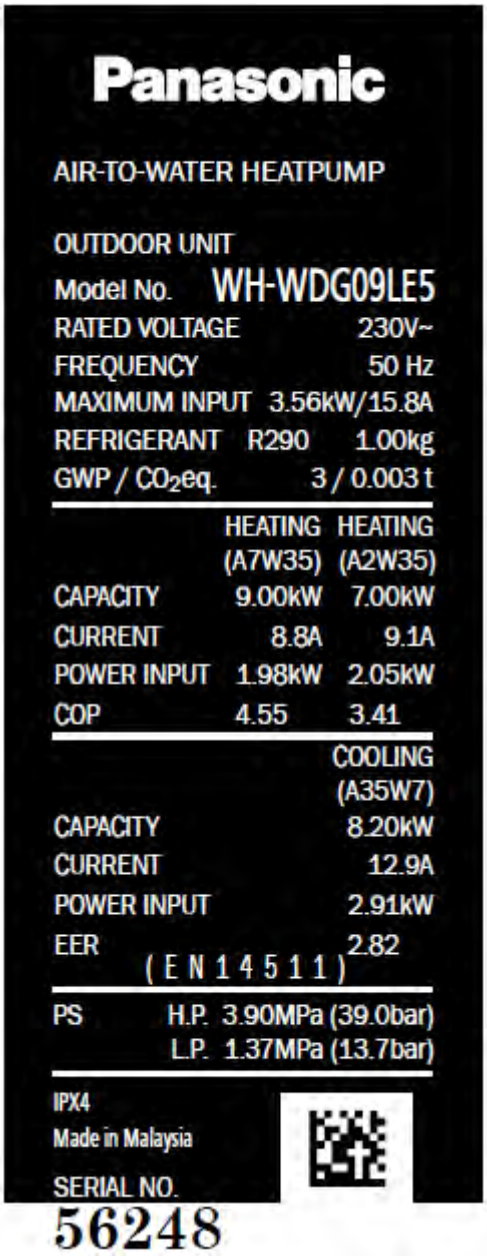

(Cont'd)

Test item particulars.....:	Air-to-Water Heatpump (Outdoor unit)
Classification of installation and use.....:	Class I; Fixed appliance
Supply Connection.....:	Set of terminals for connection to indoor unit by interconnection cord
.....:	
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item .....:	15 November 2022
Date (s) of performance of tests .....:	01 December 2022 – 23 February 2023

General remarks:

The test results presented in this report relate only to the object tested.

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The measurement uncertainty has been taken into consideration of the test results.

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☒ **Yes** ☐ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) .....:	See in general product information

General product information and other remarks:

No.	Items	General product information
1	Product type	Air-to-Water Heatpump (Outdoor unit) (Air-to-Water Heatpump (Outdoor unit) designed to operate in combination with Air-to-water Hydromodule + Tank (Indoor unit)
2	Class of appliance	Class I appliance
3	Operating mode	Cooling and Heating mode
4	Refrigerant used	R290
5	Supply connection	Based on manufacturer instruction - Indoor unit is provided with set of terminals for connection to supply main by supply cord - Outdoor unit is provided with set of terminals and to be connected to indoor unit by interconnection cord - Indoor unit and outdoor unit are connected for communication by communication cable
6	Supply cord specification	Supply cord, interconnection cord and communication cable are not provided with this product, however installation and specification specified in manufacturer instruction - Supply cord: 60245 IEC57 (For reference, connected supply terminal of indoor unit) - Interconnection cord: 60245 IEC57 - Installed by qualified person

General product information and other remarks: (Cont'd)

The following models are included by this test report.

No.	Air-to-Water Heatpump (Outdoor unit)	Power supply	Maximum input	Refrigerant	
				Type	Amount (max)
1.	WH-WDG05LE5	230V~ 50Hz	2,93kW / 13,0A	R290	0,96 kg
2.	WH-WDG07LE5		3,56kW / 15,8A	R290	0,96 kg
3.	WH-WDG09LE5		3,56kW / 15,8A	R290	1,00 kg

Regarding to manufacturer instruction, all models have the same construction, design and basic components used, except model name and some components as in table 24.1.

The following models were selected as representative sample for testing in this report

1. Outdoor unit model WH-WDG09LE5 matching with indoor unit model WH-ADC0509L6E5AN were selected as representative sample for testing at electrical rating to represent all outdoor units in this report
2. Outdoor unit model WH-WDG09LE5 matching with indoor unit model WH-ADC0509L3E5B were selected as representative sample for testing at electrical rating represent all outdoor units in this report

Note:
1. Air-to-water Hydromodule + Tank (Indoor unit) designed to operate in combination with an air-to-water heatpump (Outdoor unit) containing refrigerant R290
2. Refrigerant only contain in outdoor unit, no refrigerant pipe connection to indoor unit
3. Indoor units are provided by manufacturer as set combination matching with above outdoor unit for testing only. So, test result of indoor units is not covered in this report

Name and address of factory (ies):

Item	Information
Model	WH-WDG05LE5 WH-WDG07LE5 WH-WDG09LE5
Factory 1	Panasonic Appliances Air-Conditioning Malaysia Sdn. Bhd. Lot 2, Persiaran Tengku Ampuan, Sec. 21, Shah Alam Industrial Site,Selangor, Malaysia
Factory 2	Panasonic AVC Networks Czech, s.r.o. U Panasoniku 1, 32084, Plzeň, Czech Republic

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
5	**GENERAL CONDITIONS FOR THE TESTS**		—
	Tests performed according to clause 5, e.g. nature of supply, sequence of testing, etc.		P
5.2	Tests of clause 21 carried out on separate samples. Tests of clauses 11, 19 and 21 require pressure measurements made at various points in refrigerating system ..... (IEC 60335-2-40)		P
	At least one additional specially prepared sample required for tests of annex FF (Leak simulation tests)(IEC 60335-2-40)		N/A
	Temperatures on refrigerant piping measured during test of clause 11(IEC 60335-2-40)		P
	If the tests of Annex LL are carried out, at least two additional sensors are needed. (IEC 60335-2-40)		N/A
	If the test of Annex NN has to be carried out, an additional appliance may be used.(IEC 60335-2-40)		N/A
	Due to the potentially hazardous nature of the tests of Clause 21 and Annexes EE and FF, special precautions need to be taken when carrying out the tests.(IEC 60335-2-40)		P
5.6	Appropriate controls rendered inoperative during the test(IEC 60335-2-40)		P
5.7	Tests of clauses 10 and 11 carried out under most severe operating conditions within operating temperature range specified by manufacturer. Annex AA provide examples of such temperature conditions (IEC 60335-2-40)		P
5.10	For split-package units, refrigerant lines installed in accordance with installation instructions(IEC 60335-2-40)	No refrigerant pipe used between indoor unit and outdoor unit	N/A
	Length of pipe is between 5 m and 7,5 m (IEC 60335-2-40)		N/A
	Thermal insulation of refrigerant lines applied in accordance with installation instruction (IEC 60335-2-40)		N/A
5.101	Motor-compressor comply with cl.19 of IEC 60335-2-34, unless (IEC 60335-2-40)		P
	motor-compressor comply with that standard (IEC 60335-2-40)		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
5.102	Motor-compressors tested and comply with IEC 60335-2-34 need not additionally tested for clause 21(IEC 60335-2-40)		N/A
6	**CLASSIFICATION**		—
6.1	Protection against electric shock: Class I, II, III ..... (IEC 60335-2-40)	Class I Appliance	P
	Water heaters shall be class I, class II or class III...		N/A
6.2	Protection against harmful ingress of water, IP degree in accordance with IEC 60529 (IEC 60335-2-40:2018)		—
	-appliances or parts intended for outdoor use be at least IPX4		P
	-appliances intended only for indoor use (excluding laundry rooms) be IPX0		N/A
	-appliances intended only for indoor use (excluding laundry rooms) be IPX0		N/A
	Water heaters for installation outdoors shall be at least IPX4. Other water heaters shall be at least IPX1;(IEC 60335-2-21)		N/A
6.101	Degree of accessibility (accessible/not accessible to the general public) (IEC 60335-2-40)	Accessible to general Public	P
7	**MARKING AND INSTRUCTIONS**		—
7.1	Rated voltage or voltage range (V).....:	230V~	P
	Symbol for nature of supply including number of phases, unless for single phase operation (IEC 60335-2-40):	230V~	P
	Rated frequency (Hz).....:	50Hz	P
	Rated power input (W), or .....:	See in marking plate	P
	Rated current (A) .....:	See in marking plate	P
	Manufacturer's or responsible vendor's name, trademark or identification mark .....:	Panasonic Corporation, Panasonic	P
	Model or type reference.....:	See in general product information	P
	Symbol IEC 60417-5172, for class II appliances		N/A
	IP number, other than IPX0 .....:	IPX4, Outdoor unit	P
	Symbol IEC 60417-5180 (2003-02),, for class III appliances, unless		N/A
	the appliance is operated by batteries only, or		N/A
	for appliances powered by rechargeable batteries recharged in the appliance		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Symbol IEC 60417-5018, for class II and class III appliances incorporating a functional earth		N/A
	Symbol IEC 60417-5036, for the enclosure of electrically-operated water valves in external hose-sets for connection of an appliance to the water mains, if the working voltage exceeds extra-low voltage		N/A
	Closed water heater shall be marked with a statement that pressure relief device is to be fitted unless incorporated in the appliance (IEC 60335-2-21)		N/A
	Closed water heater having rated pressure less than 0.6 MPa and low pressure water heaters that a pressure reducing valve is to be fitted in the installation (IEC 60335-2-21)		N/A
	Open-outlet water heaters marked with a warning about no connection to tap or any fitting not recommended by manufacturer (IEC 60335-2-21)		N/A
	Refrigerant charge for each refrigerating system, (IEC 60335-2-40):	See in marking plate	P
	Refrigerant as designated under ISO 817……(IEC 60335-2-40):	R290	P
	Permissible excessive operating pressure for the storage tank (for sanitary hot water heat pumps); (IEC 60335-2-40):		N/A
	Maximum allowable pressure in the water and/or brine circuit for the heat exchanger for hydronic fan coil units; (IEC 60335-2-40):		N/A
	Maximum allowable pressure for the refrigerant circuit; if the permissible excessive operating pressure for the suction and discharge side differ, a separate indication is required (IEC 60335-2-40):	H.P. 3,90MPa L.P. 1,37MPa	P
	for pre-charged pipe sets (IEC 60335-2-40):		N/A
	-refrigerant number in accordance with ISO 817		N/A
	-the refrigerant charge in the line set		N/A
	-maximum allowable pressure		N/A
	Ratings in watts and voltage of a UV-C germicidal lamp system if employed ..... (IEC 60335-2-40):		N/A
	Separate marking of the appliances with all the rated characteristics of the supplementary heaters (IEC 60335-2-40):		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Appliances are marked with all of the designations and the rated inputs of the supplementary heaters for which they are intended to be used, and have provision for identifying the actual heater that is field installed ..... (IEC 60335-2-40):		N/A
	Marking of direction of fluid flow (IEC 60335-2-40)	Evident form the design	N/A
	For appliances using flammable refrigerants, the flame symbol ISO 7010-W021 (2011-05) and the operator's manual symbol described in 7.6 be visible when viewing the appliance after it has been installed..... (IEC 60335-2-40)		P
	Marking may be behind a detachable part ..... (IEC 60335-2-40)		P
	Perpendicular height of the triangle used for the symbol shall be at least 30 mm. (IEC 60335-2-40)		P
	For appliances that are not single packaged units, the required markings be provided on all indoor and outdoor units which complete the refrigerating system when installed……..(IEC 60335-2-40)		P
	When an A2L refrigerant is used, the flame symbol ISO 7010-W021 (2011-05) be replaced with the A2L symbol described in 7.6. ……(IEC 60335-2-40)		N/A
	If a flammable refrigerant is used, the symbols for "read operator's manual", "operator's manual; operating instructions" and "service indicator; read technical manual" (symbols ISO 7000-0790 (2004-01) and ISO 7000-1659 (2004-01)) including colour and format be placed on the appliance in a location visible to the persons required to know the information. The perpendicular height of the symbol be at least 10 mm..... (IEC 60335-2-40)		P
	If a flammable refrigerant is used, the symbols for "read operator's manual", "operator's manual; operating instructions" and "service indicator; read technical manual" (symbols ISO 7000-0790 (2004-01) and ISO 7000-1659 (2004-01)) including colour and format be placed on the appliance in a location visible to the persons required to know the information. The perpendicular height of the symbol be at least 10 mm. (IEC 60335-2-40)		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	When an A2L refrigerant is used, the flame symbol ISO 7010-W021 (2011-05) be replaced with the A2L symbol described in 7.6. (IEC 60335-2-40)		N/A
	For appliances, which are not fixed appliances, the minimum room size X shall be specified on the appliance. The X in the marking shall be determined in m2 according to Clause GG.2 for unventilated areas; and the X in the marking shall not be required if the refrigerant charge (*m*c) of the appliance is up to *m*1 according to GG.1.1. (IEC 60335-2-40)	Fixed appliance	N/A
	Following warning also be applied to the non-fixed appliance when a flammable refrigerant is employed. The warning be placed on the outside of the appliance such that it is visible when in service for non-fixed appliance. WARNING Appliance shall be installed, operated and stored in a room with a floor area larger than 'X' m². (IEC 60335-2-40)		N/A
	Minimum room size X be specified on the appliance. The X in the marking be determined in m^2 according to Annex GG; the marking not be required if the refrigerant charge (mc) of the appliance is up to m1 according to GG.1.2. (IEC 60335-2-40)		N/A
	If not already visible when accessing service port and if service port provided, service port marked to identify type of refrigerant. If refrigerant is flammable, symbol B.3.2 of ISO 3864, be included, without specifying the colour. When an A2L refrigerant is used, the flame symbol ISO 7010-W021 (2011-05) be replaced with the A2L symbol described in 7.6. (IEC 60335-2-40)		P
	Appliances employing refrigerating systems with maximum allowable pressures > than 7 MPa be marked with symbol ISO 7000-1701 (2004-01) followed by the text "(X) MPa" and the Operator's manual; operating instructions symbol ISO 7000-1641 (2004-01). (IEC 60335-2-40)		N/A
	Where: "X" is not less than the maximum allowable pressure as determined in Annex EE. (IEC 60335-2-40)		N/A
7.2	Warning for stationary appliances for multiple supply		N/A
	Warning placed in vicinity of terminal cover		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen		N/A
	Different rated values marked with the values separated by an oblique stroke		N/A
7.4	Appliances adjustable for different rated voltages or rated frequencies, the voltage or the frequency setting is clearly discernible		N/A
	Requirement met if frequent changes are not required and the rated voltage or rated frequency to which the appliance is to be adjusted is determined from a wiring diagram		N/A
7.5	Appliances with more than one rated voltage or one or more rated voltage ranges, marked with rated input or rated current for each rated voltage or range, unless		N/A
	the power input is related to the arithmetic mean value of the rated voltage range		N/A
	Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear		N/A
7.6	Correct symbols used		P
	Symbol for nature of supply placed next to rated voltage		P
	Symbol for class II appliances placed unlikely to be confused with other marking		N/A
	Units of physical quantities and their symbols according to international standardized system		P
	Symbol ISO 7010-W021 (2011-05). .....(IEC 60335-2-40)		P
	Symbol ISO 7000-1659 (2004-01) (IEC 60335-2-40)		P
	A2L symbol .....(IEC 60335-2-40)		N/A
	Symbol ISO 7000-1701 (2004-01) .....(IEC 60335-2-40)		N/A
	Symbol IEC 60417-6040 (2010-08) .....(IEC 60335-2-40)		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Symbol ISO 7000-1641 (2004-01) .....(IEC 60335-2-40)		P
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply, unless		P
	correct mode of connection is obvious		N/A
7.8	Except for type Z attachment, terminals for connection to the supply mains indicated as follows:		—
	- marking of terminals exclusively for the neutral conductor (letter N)	See in indoor unit for terminals for connection to supply main	N/A
	- marking of protective earthing terminals (symbol IEC 60417-5019)	See in indoor unit for terminals for connection to supply main	N/A
	- marking of functional earthing terminals (symbol IEC 60417-5018)		N/A
	- marking not placed on removable parts		N/A
7.9	Marking or placing of switches which may cause a hazard		N/A
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means ....:	Letters and symbols used on control panel of indoor unit	N/A
	This applies also to switches which are part of a control		N/A
	If figures are used, the off position indicated by the figure 0		N/A
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		N/A
7.11	Indication for direction of adjustment of controls		P
7.12	Instructions for safe use provided		P
	Details concerning precautions during user maintenance		P
	The instructions state that:		—
	- the appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction		P
	- children being supervised not to play with the appliance		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	For a part of class III construction supplied from a detachable power supply unit, the instructions state that the appliance is only to be used with the unit provided		N/A
	Instructions for class III appliances state that it must only be supplied at SELV, unless		N/A
	it is a battery-operated appliance, the battery being charged outside the appliance		N/A
	For appliances for altitudes exceeding 2000 m, the maximum altitude is stated .... :		N/A
	The instructions for appliances incorporating a functional earth states that the appliance incorporates an earth connection for functional purposes only		N/A
	Classification of 6.101 included, for appliances not accessible to general public (IEC 60335-2-40)		N/A
	For appliances using flammable refrigerants, an installation, service and operation manual, either separate or combined manuals, shall be provided and include the information given in Annex DD. (IEC 60335-2-40)		P
	The instructions for close water heaters shall state the substance of the following (IEC 60335-2-21):		—
	the water may drip from the discharge pipe of the pressure-relief device and that this pipe must be left open to the atmosphere		N/A
	the pressure-relief device is to be operated regularly to remove lime deposits and to verify that it is not blocked;		N/A
	How the water heater can be drained.		N/A
7.12.1	Sufficient details for installation supplied		P
	For an appliance intended to be permanently connected to the water mains and not connected by a hose-set, this is stated		N/A
	If different rated voltages or different rated frequencies are marked, the instructions state what action to be taken to adjust the appliance		N/A
	Sufficient details for installation or maintenance supplied (IEC 60335-2-40):		—
	- national wiring regulations for installation		P
	- the dimensions of the space necessary for correct installation of the appliance including the minimum permissible distance to adjacent structures		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	-- for appliances with supplementary heaters, the minimum clearance from the appliance to combustible surfaces		N/A
	- a wiring diagram with a clear indication of the connections and wiring to external control devices and supply cord		N/A
	-the range of external static pressures at which the appliance was tested (add-on heat pumps and appliances with supplementary heaters only)		N/A
	-the method of connection to the appliance to the electrical supply and interconnection of separate components		P
	-indication of which parts of the appliance are suitable for outdoor use, if applicable	IPX4, Outdoor unit	P
	-details of type and rating of fuses , or rating of circuit breakers		P
	-details of supplementary heating elements that may be used in conjunction with the appliance, including fitting instructions either with the appliance or with the supplementary heater		N/A
	-maximum and minimum water or brine operating temperatures		N/A
	-maximum and minimum water or brine operating pressures	See in indoor unit	N/A
	-instructions on charging of refrigerants when addition of charge is required by the manufacturer for completing the refrigerating system	No additional refrigerant charge requires	N/A
	- Open storage tanks of heat pumps for water heating, accompanied by an instruction sheet which state that the vent shall not be obstructed		N/A
	The installation instructions shall state the substance of the following		—
	-the type or characteristics of the pressure relief device, how to connect it, unless it is incorporated in the appliance	Incorporated in the appliance	N/A
	-a discharge pipe connected to the pressure relief device installed downwards direction and in a frost-free environment		P
	-the type or characteristics of a pressure reducing valve and the installation details (for appliances having a rated pressure less than 0,6 MPa)		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	The instructions for close water heaters incorporating heat exchanger shall give details on the installation of control devices and the temperature settings that are necessary to prevent operation of the thermal cut-out caused by the heat from the exchanger (IEC 60335-2-21)		N/A
	The instructions for cistern-fed water heaters and low-pressure water heaters shall contain the substance of the following (IEC 60335-2-21): Warning : Do not connect any pressure-relief device to the vent pipe of this water heater		N/A
7.12.2	Stationary appliances not fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III, the instructions state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules	See in indoor unit for connection to supply main	N/A
7.12.3	Insulation of the fixed wiring in contact with parts exceeding 50 K during clause 11; instructions state that the fixed wiring must be protected		N/A
7.12.4	Instructions for built-in appliances:		—
	- dimensions of space		N/A
	- dimensions and position of supporting and fixing		N/A
	- minimum distances between parts and surrounding structure		N/A
	- minimum dimensions of ventilating openings and arrangement		N/A
	- connection to supply mains and interconnection of separate components		N/A
	- allow disconnection of the appliance after installation, by accessible plug or a switch in the fixed wiring, unless		N/A
	a switch complying with 24.3		N/A
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord		N/A
	Replacement cord instructions, type Y attachment	Interconnection cord	P
	Replacement cord instructions, type Z attachment		N/A
7.12.6	Caution in the instructions for appliances incorporating a non-self-resetting thermal cut-out that is reset by disconnection of the supply mains, if this cut-out is required to comply with the standard		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
7.12.7	Instructions for fixed appliances stating how the appliance is to be fixed		P
7.12.8	Instructions for appliances connected to the water mains:		—
	- max. inlet water pressure (Pa) ....:	Indoor unit connected to the water main	N/A
	- min. inlet water pressure, if necessary (Pa) .....:		N/A
	Instructions concerning new and old hose-sets for appliances connected to the water mains by detachable hose-sets		N/A
7.12.9	Instructions specified in 7.12 and from 7.12.1 to 7.12.8 appear together before any other instructions supplied with the appliance		P
	These instructions may be supplied with the appliance separately from any functional use booklet		P
	They may follow the description of the appliance that identifies parts, or follow the drawings/sketches		P
	In addition, instructions are also available in an alternative format such as on a website or on request from the user in a format such as a DVD		P
	In addition, instructions are also available in an alternative format such as on a website or in a format such as a DVD..... .....:	Website	P
7.13	Instructions and other texts in an official language	English	P
7.14	Markings clearly legible and durable:		—
	Signal words WARNING, CAUTION, DANGER in uppercase having a height as specified ....:		N/A
	Uppercase letter of the text explaining the signal word not smaller than 1,6 mm ....:		N/A
	Moulded in, engraved, or stamped markings either raised above or have a depth below the surface of at least 0,25 mm, unless		N/A
	contrasting colours are used		P
	Markings checked by inspection, measurement and rubbing test as specified		P
7.15	Markings on a main part		P
	Marking clearly discernible from the outside, if necessary after removal of a cover		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	For portable appliances, cover can be removed or opened without a tool		N/A
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation		P
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions		P
	Indications for switches and controls placed on or near the components. Marking not on parts which can be positioned or repositioned in such a way that the marking is misleading	See in indoor unit for control panel	N/A
	Marking on panel allowed, provided panel in place for intended operation of appliance (IEC 60335-2-40)	See in indoor unit for control panel	N/A
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		P
7.101	Marking of fuses and overload protective devices, if replaceable (IEC 60335-2-40):		P
	- fuse rated current in amperes, type and rated voltage		P
	- manufacturer and model of the overload protective device		N/A
	The water inlet and the water outlet shall be identified. (IEC 60335-2-21)		N/A
	This identification shall not be on detachable parts.		N/A
	If colours are used, blue shall be used for the inlet and red for the outlet.		N/A
	An alternative means of identification may be by means of arrows showing the direction of the water flow		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
7.102	Marking for connection with aluminium wire, if necessary (IEC 60335-2-40)		N/A
7.103	For appliances made up of more than one factory made assembly specified by the manufacturer to be used together, instructions shall be provided for completing the assembly to ensure compliance with the requirements (IEC 60335-2-40)		N/A
7.104	For partial units, the instructions or markings shall include the following additional information. (IEC 60335-2-40)		—
	For evaporating units and condensing units, the instructions or markings shall include wording to assure that the maximum operating pressure is considered when connecting to any condenser unit or evaporator unit.		N/A
	For evaporating units, condensing units and condenser units, the instructions or markings shall include refrigerant charging instructions		N/A
	A warning to assure that partial units shall only be connected to an appliance suitable for the same refrigerant.		N/A
	This unit <model xxx> is a partial unit air conditioner, complying with partial unit requirements of this International Standard, and must only be connected to other units that have been confirmed as complying to corresponding partial unit requirements of this International Standard.		N/A
	The electrical interfaces shall be specified with purpose, voltage, current, and safety class of construction.		N/A
	The SELV connection points, if provided, are to be clearly indicated in the instructions. The connection point should be marked with the “read the instructions” symbol per ISO 7000-0790 (2004-01) and the Class III symbol according to IEC 60417-5180 (2003-02).		N/A
7.105	For appliances using flammable refrigerants that have safety features depending upon the proper function of a refrigerant detecting system, the instructions or unit markings contain the substance of the following: (IEC 60335-2-40)		—
	“This unit is equipped with a refrigerant leak detector for safety. To be effective, the unit must be electrically powered at all times after installation, other than when servicing.”		N/A
	If any supplemental unit is employed to detect leaked refrigerant, such unit shall also apply this marking or be accompanied by such instructions.		N/A
7.106	For appliances using flammable refrigerants that have safety features depending upon the proper function of ventilation, the instructions or unit markings shall contain the substance of the following: (IEC 60335-2-40)		—

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	"This unit is equipped with electrically powered safety measures. To be effective, the unit must be electrically powered at all times after installation, other than when servicing."		N/A
	If any supplemental unit is employed to dilute leaked refrigerant, such unit shall also apply this marking or be accompanied by such instructions.		N/A
7.107	For flammable refrigerants, when addition of charge is required by the manufacturer installation instructions for completing the refrigerating system, the manufacturer provides a label that allows the installer to note the resulting total refrigerant charge for each refrigerating system. See Figure 101 for an example of label for field charged units (IEC 60335-2-40)	No additional refrigerant charge requires	N/A
7.108	For appliances using flammable refrigerants, the flame symbol described in 7.6 be visible in each of the following conditions. (IEC 60335-2-40)		—
	- on the packaging of the appliance if the appliance is charged with refrigerant excluding appliances with A2L refrigerant charge not exceeding m_1;		P
	- when viewing the appliance on display for sale. This does not apply to appliances using A2L refrigerants.		P
	For appliances that are not factory sealed single packaged units, the required markings shall be provided on all indoor and outdoor units which complete the refrigerating system.		P
7.109	Appliances employing UV-C germicidal lamp systems shall be marked with ultraviolet radiation hazard symbol IEC 60417-6040 (2010-08) and the Read operator's manual symbol ISO 7000-0790 (2004-01) in the following locations (IEC 60335-2-40)		—
	- doors and access panels that provide direct access to an area within the appliance where the measured UV-C spectral irradiance is greater than 1,7 μW/cm^2;		N/A
	- user maintenance access panels		N/A
	- UV-C barriers		N/A
7.110	For appliances that employ UV-C germicidal lamp systems, the instructions include the substance of the following: (IEC 60335-2-40)		—
	- this appliance contains a UV-C lamp;		N/A
	- read the maintenance instructions before opening the appliance;		N/A
	- details for cleaning and other user maintenance of the appliance. They shall state that prior to cleaning or other maintenance, the appliance must be disconnected from the supply mains;		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- precautions to be taken when replacing UV-C emitters and starters, if applicable;		N/A
	- unintended use of the appliance or damage to the housing may result in the escape of dangerous UV-C radiation. UV-C radiation may, even in small doses, cause harm to the eyes and skin;		N/A
	- the appliance must be disconnected from the supply before replacing the UV-C lamp;		N/A
	- doors and access panels bearing the ultraviolet radiation hazard symbol which may have UV-C spectral irradiance greater than 1,7 μW/cm^2 are provided with an interlock switch to interrupt the power to the UV-C lamps for your safety. Do not over-ride;		N/A
	- before opening doors and access panels bearing the ultraviolet radiation hazard symbol for the conducting user maintenance, it is recommended to disconnect the power;		N/A
	- UV-C barriers bearing the ultraviolet radiation hazard symbol should not be removed;		N/A
	- for appliances with UV-C lamps, information on the replacement of UV-C lamps shall be given, including the model and/or part number;		N/A
	- if field installed, the factory specified UV-C germicidal lamp systems approved for use with the subject product shall be specified in the instructions by the specific model number;		N/A
	- do not operate UV-C lamps outside of the appliance.		N/A
7.111	For appliances employing refrigerating systems with maximum allowable pressures greater than 7 MPa, the instructions shall include the substance of the following: (IEC 60335-2-40)		—
	- WARNING: System contains refrigerant under very high pressure. The system must be serviced by qualified persons only.		N/A
8	**PROTECTION AGAINST ACCESS TO LIVE PARTS**		—
8.1	Adequate protection against accidental contact with live parts		P
8.1.1	Requirement applies for all positions, detachable parts removed		P
	Lamps behind a detachable cover not removed, if conditions met		N/A
	Insertion or removal of lamps, protection against contact with live parts of the lamp cap		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Use of test probe B of IEC 61032, with a force not exceeding 1 N: no contact with live parts		P
	Use of test probe B of IEC 61032 through openings, with a force of 20N: no contact with live parts		P
8.1.2	Use of test probe 13 of IEC 61032, with a force not exceeding 1 N, through openings in class 0 appliances and class II appliances/constructions: no contact with live parts		P
	Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts		P
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032, with a force not exceeding 1 N: no contact with live parts of visible glowing heating elements or supporting parts		N/A
	For a single switching action obtained by a switching device, requirements as specified		N/A
	For appliances with a supply cord and without a switching device, the single switching action may be obtained by the withdrawal of the plug		N/A
8.1.4	Accessible part not considered live if:		—
	- safety extra-low a.c. voltage: peak value not exceeding 42.4 V		N/A
	- safety extra-low d.c. voltage: not exceeding 42.4 V		N/A
	- or separated from live parts by protective impedance		N/A
	If protective impedance: d.c. current not exceeding 2 mA, and		N/A
	a.c. peak value not exceeding 0.7 mA		N/A
	- for peak values over 42.4 V up to and including 450 V, capacitance not exceeding 0,1 μF		N/A
	- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 μC		N/A
	- for peak values over 15kV, the energy in the discharge not exceeding 350 mJ		N/A
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		—
	- built-in appliances		N/A
	- fixed appliances		P
	- appliances delivered in separate units		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	As regards the products which have a dedicated installation panel or cover and which cannot be installed without them, compliance is checked according to 5.10 (after the installation as instructed in the installation manual). (IEC 60335-2-40)		P
8.2	Class II appliances and constructions constructed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only		P
	Only possible to touch parts separated from live parts by double or reinforced insulation		P
9	**STARTING OF MOTOR-OPERATED APPLIANCES**		—
	Requirements and tests are specified in part 2 when necessary		N/A
10	**POWER INPUT AND CURRENT**		—
10.1	Power input at normal operating temperature, rated voltage and normal operation not deviating from rated power input by more than shown in table 1……..:	(see appended table)	P
	If the power input varies throughout the operating cycle and the maximum value of the power input exceeds, by a factor greater than two, the arithmetic mean value of the power input occurring during a representative period, the power input is the maximum value that is exceeded for more than 10 % of the representative period		N/A
	Otherwise the power input is the arithmetic mean value		N/A
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless		N/A
	the rated power input is related to the arithmetic mean value		N/A
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2……:	(see appended table)	P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	If the current varies throughout the operating cycle and the maximum value of the current exceeds, by a factor greater than two, the arithmetic mean value of the current occurring during a representative period, the current is the maximum value that is exceeded for more than 10 % of the representative period		N/A
	Otherwise the current is the arithmetic mean value		N/A
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless		N/A
	the rated current is related to the arithmetic mean value of the range		N/A
11	**HEATING**		—
11.1	No excessive temperatures in normal use		P
	Compliance is checked by the tests of Annex C, if	(IEC 60335-2-40):	—
	- temperature of motor winding exceeds values shown in Table 3 (IEC 60335-2-40)		N/A
	- there is doubt about the classification of the insulation system of the motor (IEC 60335-2-40)		N/A
11.2	Placing and mounting of appliance	(IEC 60335-2-40):	—
	- clearances to adjacent surfaces		P
	- flow rates for liquid source or sink equipment shall be the minimum specified in the instructions except for hydronic fan coil units where the flow rates and liquid temperatures shall be the maximum specified in the instructions;		P
	- static pressures		N/A
	- means of adjusting the flow, flow for tests be minimum obtainable		N/A
	- adjustable limit controls set at the maximum cut-out setting and the minimum differential		P
	For appliances with supplementary heaters, use test casing of 11.9 (IEC 60335-2-40)		N/A
11.2.1	For appliances with supplementary heaters, an inlet duct is connected to the inlet air opening (IEC 60335-2-40)		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Appliance that includes or has provision for supplementary heater is fitted with a metal outlet duct in accordance with Figure 102a) or Figure 102b), depending on the direction of the airflow (IEC 60335-2-40)		N/A
	Inlet duct is provided with an adjustable restricting means by which the airflow can be reduced. ..... (IEC 60335-2-40)		N/A
	Restriction should be uniform across the duct's cross sectional area, so that the full heating coil surface will be exposed to the airflow except when the restriction is closed. .. (IEC 60335-2-40)		N/A
11.2.2	Ducted appliance without supplementary heaters is fitted with an outlet duct sized to fit the casing flanges, or opening without flanges, or locations marked for flanges, and arranged to discharge away from the return air inlet (IEC 60335-2-40)		N/A
	Outlet duct is provided with a restricting means to obtain the maximum static pressure given in the instructions (IEC 60335-2-40)		N/A
11.2.3	For the evaluation and testing of partial units, the following test setup and conditions are to be applied. (IEC 60335-2-40)		—
	-evaporator units and condenser units are tested as individual units at the maximum ambient temperature stated in the instructions. If not stated in the instructions, these units shall be tested at an ambient temperature that is equal to the saturated temperature of the refrigerant at the marked maximum allowable operating pressure (± 0,1 MPa) minus 10 K (± 1 K).		N/A
	-condensing units are tested in the cooling mode only, at the maximum specified ambient temperature with 9 K (± 1 K) sub-cooling and the maximum specified evaporating pressure with 11 K (± 1 K) superheat. For condensing units provided with expansion device(s), the superheat/sub-cooling is to be as under the normal control of the expansion device(s).		N/A
	-evaporating units, intended for cooling only, are tested in the cooling mode only with a condensing pressure that is equal to the marked maximum allowable operating pressure (± 0,1 MPa) with 9 K (± 1 K) sub-cooling.		N/A
	-evaporating units that are intended for reverse cycle operation are tested in the heating mode only, at the maximum specified evaporating pressure.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		P
	the windings are non-uniform or it is difficult to make the necessary connections		P
	Temperature rise determine by thermocouples or resistance method. (IEC 60335-2-40)		P
	Where the external accessible surfaces are suitably flat and access permits, then the test probe of Figure 103 may be used to measure the temperature rises of external accessible surfaces specified in Table 101 (IEC 60335-2-21)		N/A
11.4	Test performed at supply voltage between 0,94 and 1.06 times the rated voltage (IEC 60335-2-40)		P
	Heating appliances operated under normal operation at 1.15 times rated power input (IEC 60335-2-40)		N/A
11.5	Test conducted in the heating mode and in the cooling mode, if both exist (IEC 60335-2-40)		P
	All supplementary heating elements operative simultaneously (IEC 60335-2-40)		N/A
11.6	Defrost test in the most unfavourable conditions, if needed (IEC 60335-2-40)		N/A
11.7	The appliance is operated until steady conditions are established or until the thermostat interrupts the current for the first time after 16 h, whichever is shorter (IEC 60335-2-21)		P
	Appliances operated continuously until steady conditions except for defrost tests		P
11.8	Monitored temperatures not exceeding the values of Table 3 (IEC 60335-2-40)	(see appended table)	P
	Protective devices do not operate (IEC 60335-2-40)		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
	The temperature rise limit does not apply to switches or controls tested in accordance with the conditions occurring in the appliance.		P
	Sealing compound not flowing out(IEC 60335-2-40)		P
	Temperature of the air in the outlet duct not exceeding 90°C (IEC 60335-2-40)		N/A
	During the test, the temperature rises are monitored continuously and shall not exceed the values shown in Table 3 and Table 101. (IEC 60335-2-21)		P
11.9	Test casing and installation of the rest of the appliances in accordance with the manufacturer's instructions (IEC 60335-2-40)		N/A
	Glass fibre insulation for appliances without indication of minimum clearances according to the manufacturer; the thermocouple in contact with the enclosure (IEC 60335-2-40)		N/A
13	**LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE**		—
13.1	Leakage current not excessive and electric strength adequate		P
	Heating appliances operated at 1.15 times the rated power input (W)……:		N/A
	Motor-operated appliances and combined appliances supplied at 1.06 times the rated voltage (V)……...:	230V x 1,06 = 243,8V	P
	Protective impedance and radio interference filters disconnected before carrying out the tests		P
13.2	The leakage current is measured by means of the circuit described in Figure 4 of IEC 60990:1999		P
	For class 0I appliances and class I appliances, except parts of class II construction, C may be replaced by a low impedance ammeter		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	For stationary class I appliances, the leakage current shall not exceed 2 mA per kilowatt rated power input with a maximum value of 10 mA for appliances accessible to the general public, and a maximum value of 30 mA for appliances not accessible to the general public. (IEC 60335-2-40)		P
	Leakage current measurements……..:	(see appended table)	P
13.3	The appliance is disconnected from the supply		P
	Electric strength tests according to table 4……:	(see appended table)	P
	No breakdown during the tests		P
14	**TRANSIENT OVERVOLTAGES**		—
	Appliances withstand the transient over-voltages to which they may be subjected		N/A
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6 ..... :	(see appended table)	N/A
	No flashover during the test, unless		N/A
	of functional insulation if the appliance complies with clause 19 with the clearance short-circuited		N/A
15	**MOISTURE RESISTANCE**		—
15.1	Electrical components of appliances shall be protected against the ingress of water (rain, overflow from the drain pan or defrosting, tests of 15.2, 15.3, 11.6 and Cl. 16) (IEC 60335-2-40)		P
	After test, water inside the enclosure has not reduced the creepage distances and clearances below the values of Cl. 29 (IEC 60335-2-40)		P
	Motor-compressor not operated and detachable parts are removed during 15.2 and 15.3 (IEC 60335-2-40)		P
15.2	Tests in accordance with IEC 60529 in appliances other than IPX0, as specified (IEC 6033	IPX4, Outdoor unit	P
	The test is only applicable to cistern-type water heaters. .....(IEC 60335-2-21)		N/A
15.3	Drain pan filled to brim and subjected to continuous overflow and fan(s) switched on ..... (IEC 60335-2-40)		N/A
15.101	Spillage test as specified for indoor floor or wall mounted units accessible to the general public		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	After spillage completed, appliance withstand test of clause 16 ..... (IEC 60335-2-40)		N/A
16	**LEAKAGE CURRENT AND ELECTRIC STRENGTH**		—
16.1	Leakage current not excessive and electric strength adequate		P
	Protective impedance disconnected from live parts before carrying out the tests		P
	Tests carried out at room temperature and not connected to the supply		P
16.2	Single-phase appliances: test voltage 1.06 times rated voltage (V)……:	230V x 1,06 = 243,8V	P
	Three-phase appliances: test voltage 1.06 times rated voltage divided by √3 (V)……:		N/A
	Leakage current measurements……..:	(see appended table)	P
	Limit values doubled if:		—
	- all controls have an off position in all poles, or		N/A
	- the appliance has no control other than a thermal cut-out, or		N/A
	- all thermostats, temperature limiters and energy regulators do not have an off position, or		N/A
	- the appliance has radio interference filters		N/A
	With the radio interference filters disconnected, the leakage current do not exceed limits specified .....:	(see appended table)	N/A
	Leakage current measurements.(IEC 60335-2-40)		N/A
16.3	Electric strength tests according to table 7 .....:	(see appended table)	P
	Test voltage applied between the supply cord and inlet bushing and cord guard and cord anchorage as specified .....:	(see appended table)	N/A
	No breakdown during the tests		P
17	**OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS**		—
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use .....:	(see appended table)	N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Appliance supplied with 1.06 or 0.94 times rated voltage under the most unfavourable short-circuit or overload likely to occur in normal use (V)…….:		N/A
	Basic insulation is not short-circuited		N/A
	Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K		N/A
	Temperature of the winding not exceeding the value specified in table 8		N/A
	However, limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		N/A
18	**ENDURANCE**		—
	Requirements and tests are specified in part 2 when necessary		N/A
19	**ABNORMAL OPERATION**		—
19.1	The risk of fire, mechanical damage or electric shock under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe ……..:	(see appended table)	P
	Failure of transfer medium flow or of any control device not result in a hazard (IEC 60335-2-40)		P
	Appliances are subjected to the tests specified in 19.2 to 19.10, 19.101, 19.102 and 19.103, as applicable. (IEC 60335-2-40)		P
	Appliances incorporating electronic circuits are also subjected to the tests of 19.11 and 19.12, as applicable		P
	Appliances incorporating contactors or relays are subjected to the test of 19.14.		P
	Appliances incorporating voltage selector switches are subjected to the test of 19.15.		N/A
	For closed water heaters, low pressure water heaters and open-outlet water heaters: -compliance checked by 19.2, 19.3 and 19.4		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Or - 19.101 applies for appliances not liable to be emptied in normal use and having all following features: (IEC 60335-2-21) - an outer enclosure of metal or a water container of metal and an outer enclosure of non-metallic material; (see note 1) - non-combustible thermal insulation (see note 2) - a capacity exceeding 30 l - a rated power input not exceeding 6 kW (see notes 3 and 4)		N/A
19.2	Test of appliance with heating elements with restricted heat dissipation; test voltage (V): power input of 0.85 times rated power input		N/A
	Appliance operated empty with thermal control operating in clause 11 short-circuited (see note) (IEC 60335-2-21)		N/A
	Test of appliances with supplementary heaters 1: (IEC 60335-2-40)		N/A
19.3	Test at temperature permitting continuous operation of the motor-compressor and electric heating elements at same time (IEC 60335-2-40)		N/A
19.4	Test conditions as in clause 11, any control limiting the temperature during tests of clause 11 short-circuited		P
	Test of appliance with any defect which expected during normal use ..... (IEC 60335-2-40)		P
	Open-outlet water heaters: ..... (IEC 60335-2-21) -19.2 repeated with container filled with water min. 10mm above heater -1.15 times rated power input		N/A
19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the sheath		N/A
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		N/A
	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		N/A
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	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 or until the PTC heating element ruptures (V)……..:		N/A
19.7	Test of appliance with motor rotors, other than motor-compressors and stationary circulation pumps in compliance with IEC 60335-2-51, operated for 15 days (360 h) or until protection device opens circuit (IEC 60335-2-40)		P
	Insulation of motor windings ... (IEC 60335-2-40):	(See appended table)	P
	Temperature of enclosure does not exceed (°C) ..... (IEC 60335-2-40):	(See appended table)	P
	Temperature of the windings does not exceed the values shown in the table 8; temperature (°C) ..... (IEC 60335-2-40):	(See appended table)	P
	Electric strength test as specified in 16.3, 72 h after the beginning of the test.. (IEC 60335-2-40)		P
	At the end, leakage current between windings and enclosure does not exceed 2 mA ..... (IEC 60335-2-40)	(See appended table)	P
	Winding temperatures not exceeding values specified in table 8……:	(see appended table)	P
	If the motor-compressor has not been type-tested against the requirements of IEC 60335-2-34, a sample is provided with the rotor locked and being filled with oil and refrigerant as intended. (IE		P
	Sample is subjected to the tests specified in 19.101, 19.102, 19.103 and 19.105 of IEC 60335-2-34:2012, if applicable, and complies with the requirements in 19.104 of IEC 60335-2-34:2012. ..... (IEC 60335-2-40)		P
	Locked rotor, capacitors open-circuited one at a time		N/A
	Test repeated with capacitors short-circuited one at a time, unless		N/A
	the capacitor is of class S2 or S3 of IEC 60252-1		N/A
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed……:		N/A
	An electronic timer or programmer that operates to ensure compliance with the test before the maximum period under the conditions of Clause 11 is reached, is a protective electronic circuit		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Other appliances supplied with rated voltage for a period as specified……..:		N/A
19.8	Three phase motors other than motor compressors are operated under the conditions of Clause 11 at rated voltage or at the upper limit of the rated voltage range with one phase disconnected, until steady conditions are obtained or the protective device operates. (IEC 60335-2-40)		N/A
19.9	Running overload test on appliances incorporating motors intended to be remotely or automatically controlled or liable to be operated continuously		N/A
	Motor-operated and combined appliances for which 30.2.3 is applicable and that use overload protective devices relying on electronic circuits to protect the motor windings, are also subjected to the test		N/A
	Winding temperatures not exceeding values as specified……..:		N/A
19.10	Series motor operated at 1.3 times rated voltage for 1 min (V)……:		N/A
	During the test, parts not being ejected from the appliance		N/A
19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless		P
	they comply with the conditions specified in 19.11.1		P
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8, unless		P
	restarting does not result in a hazard		P
	Appliances having a device with an off position obtained by electronic disconnection, or a device placing the appliance in a stand-by mode, subjected to the tests of 19.11.4		N/A
	If the safety of the appliance under any of the fault conditions depends on the operation of a miniature fuse-link complying with IEC 60127, the test of 19.12 is carried out		P
	During and after each test the following is checked:		—
	- the temperature of the windings do not exceed the values specified in table 8		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- the appliance complies with the conditions specified in 19.13		P
	- any current flowing through protective impedance not exceeding the limits specified in 8.1.4		N/A
	If a conductor of a printed board becomes open-circuited, the appliance is considered to have withstood the particular test, provided both of the following conditions are met:		—
	- the base material of the printed circuit board withstands the test of Annex E		N/A
	- any loosened conductor does not reduce clearance or creepage distances between live parts and accessible metal parts below the values specified in clause 29		N/A
19.11.1	Fault conditions a) to g) in 19.11.2 are not applied to circuits or parts of circuits meeting both of the following conditions:		—
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 15 W according to the tests specified		P
	- the 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		P
19.11.2	Fault conditions applied one at a time, the appliance operating under conditions specified in clause 11, but supplied at rated voltage, duration of the tests as specified:		—
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in clause 29		N/A
	b) open circuit at the terminals of any component		P
	c) short circuit of capacitors, unless		P
	they comply with IEC 60384-14		P
	d) short circuit of any two terminals of an electronic component, other than integrated circuits		P
	This fault condition is not applied between the two circuits of an optocoupler		P
	e) failure of triacs in the diode mode		N/A
	f) failure of microprocessors and integrated circuits		P
	g) failure of an electronic power switching device		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Each low power circuit is short-circuited by connecting the low-power point to the pole of the supply source from which the measurements were made		P
19.11.3	If the appliance incorporates a protective electronic circuit that operates to ensure compliance with clause 19, the appliance is tested as specified		N/A
19.11.4	The first paragraph of Part 1 in not applicable for stand-by mode if unintentional operation does not cause any hazards (IEC 60335-2-40)		P
	Appliances having a device with an off position obtained by electronic disconnection, or		N/A
	a device that can be placed in the stand-by mode,		N/A
	subjected to the tests of 19.11.4.1 to 19.11.4.7, the device being set in the off position or in the stand-by mode		N/A
	Tests are carried out after the protective electronic circuit has operated during the relevant tests of Clause 19 except 19.2, 19.6, 19.11.3, 19.102 and 19.103. (IEC 60335-2-40)		N/A
	If the appliance incorporates more than one protective electronic circuit, each protective electronic circuit has to be tested individually with the appliance operated under normal operation at any temperature within the working range. (IEC 60335-2-40)		N/A
	Components protected by a protective electronic circuit that have been previously tested and shown to comply with the requirements of 19.11.4 of its standard need not to be retested in the final application, if engineering judgement gives evidence that the test in the final application will not lead to a hazardous condition. (IEC 60335-2-40)		N/A
	Surge protective devices disconnected, unless		N/A
	They incorporate spark gaps		N/A
	For these tests, it may be necessary to provide specially prepared component samples, e.g. compressors with locked rotor (IEC 60335-2-40)		N/A
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4		N/A
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, at frequency ranges specified		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4, test level 3 or 4 as specified		N/A
19.11.4.4	The power supply terminals of the appliance subjected to voltage surges in accordance with IEC 61000-4-5, test level 3 or 4 as specified		N/A
	An open circuit test voltage of 2 kV is applicable for the line-to-line coupling mode		N/A
	An open circuit test voltage of 4 kV is applicable for the line-to-earth coupling		N/A
	Earthed heating elements in class I appliances disconnected		N/A
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3		N/A
19.11.4.6	Appliances having a rated current not exceeding 16 A are subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-11		N/A
	Appliances having a rated current exceeding 16 A are subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-34		N/A
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2		N/A
19.11.4.8	The appliance is supplied at rated voltage and operated under normal operation, at any temperature within the working range. After 60s the power supply is reduced to a level such that the appliance ceases to respond or parts controlled by the programmable component cease to operate (IEC 60335-2-40)		N/A
	The appliance continues to operate normally, or		N/A
	requires a manual operation to restart		N/A
19.12	If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with IEC 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A)…….:	Measure: ≥ 10A; Rated current of fuse 3,15A	P
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		P
	Temperature rises not exceeding the values shown in table 9…….:	(see appended table)	P
	Compliance with clause 8 not impaired		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	If the appliance can still be operated it complies with 20.2		P
	Insulation, other than of class III appliances or class III constructions that do not contain live parts, withstands the electric strength test of 16.3, the test voltage as specified in table 4:		—
	- basic insulation (V)……..:	1000V	P
	- supplementary insulation (V)……..:	1750V	P
	- reinforced insulation (V)……..:	3000V	P
	After operation or interruption of a control, clearances and creepage distances across the functional insulation withstand the electric strength test of 16.3, the test voltage being twice the working voltage		P
	The appliance does not undergo a dangerous malfunction, and		P
	no failure of protective electronic circuits, if the appliance is still operable		P
	Appliances tested with an electronic switch in the off position, or in the stand-by mode:		—
	- do not become operational, or		P
	- if they become operational, do not result in a dangerous malfunction during or after the tests of 19.11.4		N/A
	If the appliance contains lids or doors that are controlled by one or more interlocks, one of the interlocks may be released provided that:		—
	- the lid or door does not move automatically to an open position when the interlock is released, and		N/A
	- the appliance does not start after the cycle in which the interlock was released		N/A
19.14	Appliances operated under the conditions of clause 11, any contactor or relay contact operating under the conditions of clause 11 being short-circuited		P
	For a relay or contactor with more than one contact, all contacts are short-circuited at the same time		P
	A relay or contactor operating only to ensure the appliance is energized for normal use is not short-circuited		P
	If more than one relay or contactor operates in clause 11, they are short-circuited in turn		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Locking in the "on" position of the main contacts of a contact intended for switching on and off the heating element(s) in normal use is considered to be a fault condition, unless the appliance is provided with at least two sets of contacts connected in series. This condition is, for example, achieved by providing two contactors operating independently of each other or by providing one contactor having two independent armatures operating two independent sets of main contacts (IEC 60335-2-40)		N/A
19.15	For appliances with a mains voltage selector switch, the switch is set to the lowest rated voltage position and the highest value of rated voltage is applied		N/A
19.101	Appliance tested for 24h as specified in clause 11 but with empty container (IEC 60335-2-21)		N/A
	The appliance is operated under the conditions in Clause 11 at rated voltage or at the upper limit of the rated voltage range, at an ambient temperature of 23 °C ± 5 °C. When steady conditions are attained, the heat transfer medium flow of the outdoor heat exchanger is restricted or shut off, whichever is the most unfavourable without the appliance being non-operative. (IEC 60335-2-40)		P
	After this test, protective devices that may have operated are reset, and the test is repeated, with the heat transfer medium flow, fluid or air, of the indoor heat exchanger, restricted or shut off, whichever is the most unfavourable without the appliance being non-operative. In the case of appliances with defrosting systems, the heat transfer medium flow rate is additionally shut off at the beginning of the defrosting phase (IEC 60335-2-40)		P
	Appliances incorporating a motor common to both the indoor and outdoor heat exchangers are subjected to the above test, the motor being disconnected once steady conditions are attained. (IEC 60335-2-40)		N/A
19.102	The indoor heat exchanger of appliances using water as a heat transfer medium is subjected to the described test. (IEC 60335-2-40)		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
19.103	Test of air to air appliances at rated voltage or at the upper limit of the rated voltage range. Dry-bulb temperature is 5 K below values specified by manufacturer (IEC 60335-2-40)		N/A
	Test with the dry-bulb temperature 10 K over the values specified by manufacturer (IEC 60335-2-40)		N/A
19.104	All appliances provided with supplementary heaters and with free air discharge are subjected to the specified test in each mode of operation.		N/A
	During the test the temperature shall not exceed 150 °C but an overshoot of 25 °C is permitted during the first hour. .....(IEC 60335-2-40)		N/A
20	**STABILITY AND MECHANICAL HAZARDS**		—
20.1	Appliances having adequate stability	Fixed appliance	N/A
	Tilting test through an angle of 10°, appliance placed on an inclined plane/horizontal support, not connected to the supply mains; appliance does not overturn		N/A
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15°		N/A
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 9		N/A
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury		P
	Protective enclosures, guards and similar parts are non-detachable, and		P
	have adequate mechanical strength		P
	Enclosures that can be opened by overriding an interlock are considered to be detachable parts		N/A
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard by unexpected closure		P
	Not possible to touch dangerous moving parts with the test probe described		P
21	**MECHANICAL STRENGTH**		—
21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Checked by applying 3 blows to every point of the enclosure like to be weak, in accordance with test Ehb of IEC 60068-2-75, spring hammer test, with an impact energy of 0,5 J	(see appended table)	P
	The appliance shows no damage impairing compliance with this standard, and		P
	compliance with 8.1, 15.1 and clause 29 not impaired		P
	If doubt, supplementary or reinforced insulation subjected to the electric strength test of 16.3		N/A
	If necessary, repetition of groups of three blows on a new sample		N/A
	Safety requirements of ISO 5149-2 applied (IEC 60335-2-40)		P
	Safety requirements specified in Annex EE applied. The pressure test in Annex EE applies to parts other than pressure vessels. (IEC 60335-2-40)		P
21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements		P
	Test not applicable if the thickness of supplementary insulation is at least 1 mm and reinforced insulation at least 2 mm		P
	The insulation is tested as specified, and does withstand the electric strength test of 16.3		N/A
	Appliances using flammable refrigerants shall withstand the effects of vibration during transport. Appliance is tested in its final packaging for transport and shall withstand a random vibration test according to ASTM D4728-06 (IEC 60335-2-40)		P
22	**CONSTRUCTION**		—
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled	IPX4, Outdoor unit	N/A
22.2	Stationary appliance: means to ensure all-pole disconnection from the supply being provided:		
	- a supply cord fitted with a plug, or		N/A
	- a switch complying with 24.3, or		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided, or	Connection to supply main provided by indoor unit which not cover in test report	N/A
	- an appliance inlet		N/A
	Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase, permanently connected class 01 and class I appliances, connected to the phase conductor		N/A
22.3	Appliance provided with pins: no undue strain on socket-outlets		N/A
	Applied torque not exceeding 0.25 Nm		N/A
	Pull force of 50N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1mm		N/A
	Each pin subjected to a torque of 0.4Nm; the pins are not rotating, unless		N/A
	rotating does not impair compliance with this standard		N/A
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		P
22.5	No risk of electric shock when touching pins, for appliances having a capacitor with rated capacitance equal to or greater than 0,1μF, the appliance being disconnected from the supply at the instant of voltage peak		N/A
	Voltage not exceeding 34 V (V)……...:		N/A
	If compliance relies on the operation of an electronic circuit, the electromagnetic phenomena tests of 19.11.4.3 and 19.11.4.4 are applied		N/A
	The discharge test is then repeated three times, voltage not exceeding 34 V (V)……:		N/A
22.6	Electrical insulation not affected by condensing water or leaking liquid		P
	Electrical insulation of Class II appliances not affected if a hose ruptures or seal leaks		N/A
	In case of doubt, test as described		N/A
	Drain hole correct positioned to prevent water from impairing electrical insulation (IEC 60335-2-21)		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Dimension of drain hole: min. ∅=5mm or 20 mm^2 with width min. 3mm (IEC 60335-2-21)		P
	Electrical insulation not affected by snow penetration to the appliance enclosure (IEC 60335-2-40)		P
22.7	Adequate safeguards against the risk of excessive pressure in appliances containing liquid or gases or having steam-producing devices		N/A
22.8	Electrical connections not subject to pulling during cleaning of compartments to which access can be gained without the aid of a tool, and that are likely to be cleaned in normal use		N/A
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances, unless		P
	the substance has adequate insulating properties		N/A
22.10	Not possible to reset voltage-maintained non-self-resetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance, if:		N/A
	- a non-self-resetting thermal cut-out is required by the standard, and		N/A
	- a voltage maintained non-self-resetting thermal cut-out is used to meet it		N/A
	Non-self-resetting thermal motor protectors have a trip-free action, unless		N/A
	they are voltage maintained		N/A
	Reset buttons of non-self-resetting controls so located or protected that accidental resetting is unlikely		N/A
22.11	Reliable fixing of non-detachable parts that provide the necessary degree of protection against electric shock, moisture or contact with moving parts		P
	Obvious locked position of snap-in devices used for fixing such parts		N/A
	No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing		N/A
	Tests as described		P
22.12	Handles, knobs etc. fixed in a reliable manner, if loosening result in a hazard		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Removing or fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible, if resulting in a hazard		N/A
	A choking hazard does not apply to appliances for commercial use		N/A
	Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied		N/A
	Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied		N/A
	If the part is removed and can be contained within the small parts cylinder, it is considered to be a choking hazard		N/A
22.13	Unlikely that handles, when gripped as in normal use, make the operator's hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		N/A
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance		P
	No exposed pointed ends of self-tapping screws or other fasteners, likely to be touched by the user in normal use or during user maintenance		P
	This requirement does not apply to the metallic fins of heat exchangers. (IEC 60335-2-40)		P
22.15	Storage hooks and the like for flexible cords smooth and well rounded		N/A
22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands and no undue wear of contacts		N/A
	Cord reel tested with 6000 operations, as specified		N/A
	Electric strength test of 16.3, voltage of 1000 V applied		N/A
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner		N/A
22.18	Current-carrying parts and other metal parts resistant to corrosion		P
22.19	Driving belts not relied upon to provide the required level of insulation, unless		N/A
	constructed to prevent inappropriate replacement		N/A
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	material used is non-corrosive, non-hygroscopic and non-combustible		N/A
	Thermal insulation not used for basic insulation of internal wiring (IEC 60335-2-21)		N/A
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless		P
	impregnated		N/A
	This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		P
22.22	Appliances not containing asbestos		P
22.23	Oils containing polychlorinated biphenyl (PCB) not used		P
22.24	Bare heating elements, except in class III appliances or class III constructions that do not contain live parts, adequately supported		N/A
	In case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts		N/A
	Bare heating elements shall be supported so that, in case of rupture or sagging, the heating conductor cannot come into contact with accessible metal parts nor give rise to a hazard. (wood or composite enclosures not allowed) (IEC 60335-2-40)		N/A
	Bare heating elements not used with wood or wood composite enclosures. (IEC 60335-2-40)		N/A
22.25	Sagging heating conductors, except in class III appliances or class III constructions that do not contain live parts, cannot come into contact with accessible metal parts		N/A
22.26	For class III constructions the insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation		N/A
22.27	Parts connected by protective impedance separated by double or reinforced insulation		N/A
22.28	Metal parts of Class II appliances conductively connected to gas pipes or in contact with water, separated from live parts by double or reinforced insulation		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of access to live parts is maintained after installation		N/A
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or		P
	so constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete		P
22.31	Neither clearances nor creepage distances over supplementary and reinforced insulation reduced below values specified in clause 29 as a result of wear		P
	Neither clearances nor creepage distances between live parts and accessible parts reduced below values for supplementary insulation if wires, screws etc. become loose		P
22.32	Supplementary and reinforced insulation constructed or protected against pollution so that clearances or creepage distances are not reduced below the values in clause 29		P
	Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.2		N/A
	Ceramic material not tightly sintered, similar materials or beads alone not used as supplementary or reinforced insulation		N/A
	Ceramic and similar porous material in which heating conductors are embedded is considered to be basic insulation, not reinforced insulation		N/A
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N/A
22.33	Conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts are not in direct contact with live parts, or		P
	unearthed metal parts separated from live parts by basic insulation only		N/A
	Electrodes not used for heating liquids		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	For class II constructions, conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts, not in direct contact with basic or reinforced insulation, unless		P
	the reinforced insulation consists of at least 3 layers		N/A
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation, unless		P
	the reinforced insulation consists of at least 3 layers		N/A
	An air layer not used as basic or supplementary insulation in a double insulation system if likely to be bridged by leaking liquid		P
22.34	Shafts of operating knobs, handles, levers etc. not live, unless		N/A
	the shaft is not accessible when the part is removed		N/A
22.35	For other than class III constructions, handles, levers and knobs, held or actuated in normal use, not becoming live in the event of a failure of basic insulation		N/A
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of a failure of basic insulation, are either adequately covered by insulation material or their accessible parts are separated from their shafts or fixings by supplementary insulation		N/A
	For stationary appliances and cordless appliances this requirement does not apply to handles, levers and knobs on stationary appliances, other than those of electrical components, provided they are reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		N/A
	Insulating material covering metal handles, levers and knobs withstand the electric strength test of 16.3 for supplementary insulation		N/A
22.36	For appliances other than class III, handles continuously held in the hand in normal use so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	they are separated from live parts by double or reinforced insulation		N/A
22.37	Capacitors in Class II appliances not connected to accessible metal parts and their casings, if of metal, separated from accessible metal parts by supplementary insulation, unless		N/A
	the capacitors comply with 22.42		N/A
22.38	Capacitors not connected between the contacts of a thermal cut-out		P
22.39	Lamp holders used only for the connection of lamps		N/A
22.40	Motor-operated appliances and combined appliances intended to be moved while in operation, or having accessible moving parts, fitted with a switch to control the motor. The actuating member of the switch being easily visible and accessible		N/A
	If the appliance cannot operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation being fitted with a switch for stopping the operation. The actuating member of the switch being easily visible and accessible		N/A
22.41	No components, other than lamps, containing mercury		P
22.42	Protective impedance consisting of at least two separate components		N/A
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited		N/A
	Resistors checked by the test of 14.1 a) in IEC 60065		N/A
	Capacitors checked by the tests for class Y capacitors in IEC 60384-14		N/A
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N/A
22.44	Appliances not having an enclosure that is shaped or decorated like a toy		P
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.3 due to deformation as a result of an external force applied to the enclosure		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
22.46	For programmable protective electronic circuits used to ensure compliance with the standard, the software contains measures to control the fault/error conditions in table R.1		N/A
	If the protective electronic circuit software is a part of the normal operation control, inspection of software shall be limited to relevant source code of safety controls or related software controls. Alternative methods may be used if they demonstrate equivalent levels of safety. (IEC 60335-2-40)		N/A
	Software that contains measures to control the fault/error conditions specified in table R.2 is to be specified in parts 2 for particular constructions or to address specific hazards		N/A
	These requirements are not applicable to software used for functional purpose or compliance with clause 11		N/A
22.47	Appliances shall withstand the water pressure occurring in normal use. (IEC 60335-2-21)		—
	-twice the rated pressure, for closed water heaters. If the water heater is supplied through a pressure reducing valve, the container is subjected to twice the working pressure instead;		N/A
	-1,5 times rated pressure, for cistern-fed water heaters and low-pressure water heaters;		N/A
	- 0,15 MPa, for open-outlet water heaters		N/A
	- 0,03 Mpa, for cistern-type water heaters.		N/A
	Water shall not leak from the appliance and there shall be no permanent deformation to such an extent that compliance with this standard is impaired.		N/A
22.48	Appliances connected to the water mains constructed to prevent backsiphonage of non-potable water		N/A
22.49	For remote operation, the duration of operation is to be set before the appliance can be started, unless	No remote operation, only control panel on indoor unit	N/A
	the appliance switches off automatically or can operate continuously without hazard		N/A
22.50	Controls incorporated in the appliance take priority over controls actuated by remote operation	No remote operation, only control panel on indoor unit	N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
22.51	There is a control on the appliance manually adjusted to the setting for remote operation before the appliance can be operated in this mode	No remote operation, only control panel on indoor unit	N/A
	There is a visual indication showing that the appliance is adjusted for remote operation		N/A
	These requirements not necessary on appliances that can operate as follows, without giving rise to a hazard:		—
	- continuously, or		N/A
	- automatically, or		N/A
	- remotely		N/A
22.52	Socket-outlets on appliances accessible to the user in accordance with the socket-outlet system used in the country in which the appliance is sold		N/A
22.53	Class II appliances and class III appliances that incorporate functionally earthed parts have at least double insulation or reinforced insulation between live parts and the functionally earthed parts		N/A
22.54	Button cells and batteries designated R1 not accessible without the aid of a tool, unless		N/A
	the cover of their compartment can only be opened after at least two independent movements have been applied simultaneously		N/A
22.55	Devices operated to stop the intended function of the appliance, if any, are be distinguished from other manual devices by means of shape, size, surface texture or position ……:	Devices operated to stop the intended function of the appliance provided by control panel of indoor unit which not cover in test report	N/A
	The requirement concerning position does not preclude use of a push on push off switch		N/A
	An indication when the device has been operated is given by:		
	– tactile feedback from the actuator or from the appliance, or		P
	– reduction in heat output; or		N/A
	– audible and visible feedback		P
22.56	Detachable power supply part provided with the part of class III construction		N/A
22.57	The properties of non-metallic materials do not degrade from exposure to UV-C radiation, as specified in Annex T		N/A
	This requirement does not apply to glass, ceramics or similar materials		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
22.101	The rated pressure of (IEC 60335-2-21)		—
	- closed water heaters intended for direct connection to the water main shall be at least 0.6 Mpa		N/A
	- closed water heaters and low pressure water heaters to be supplied by a pressure reducing valve which is not incorporated in the appliance shall be at least 0.1 Mpa		N/A
	Cistern-fed water heaters: -rated pressure max. 0.2 Mpa		N/A
	Appliances intended to be fixed, securely fixed (IEC 60335-2-40)		P
22.102	Appliances provided with supplementary heaters (IEC 60335-2-40)		—
22.102.1	Appliances provided with supplementary heaters for air shall be provided with at least two thermal cut-outs. (IEC 60335-2-40)		N/A
	thermal cut-out intended to operate first shall be either a self-resetting thermal cut-out or a non-self-resetting thermal cut-out (IEC 60335-2-40)		N/A
	other thermal cut-out shall be a non-self-resetting thermal cut-out. (IEC 60335-2-40)		N/A
22.102.2	Appliances provided with supplementary heaters for water incorporate a non-self-resetting thermal cut-out, providing all-pole disconnection that operates separately from water thermostats. (IEC 60335-2-40)		N/A
	However, for appliances intended to be connected to fixed wiring, the neutral conductor need not be disconnected. (IEC 60335-2-40)		N/A
22.102.3	Thermal cut-outs of the capillary type open in the event of leakage of the capillary tube (IEC 60335-2-40)		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
22.102	Closed water heaters shall be constructed so that repeated drawing off does not cause the water to boil. (IEC 60335-2-21)		N/A
	Temperature of the water, measured by means of a thermocouple at the outlet, shall not exceed 98 °C		N/A
22.103	Closed water heaters: pressure relief devise prevent pressure from exceeding rated pressure by more than 0.1 MPa (IEC 60335-2-21)		N/A
	Sensing and switching elements of electromechanical non-self-resetting cut-outs be functionally independent of other control devices.(I		N/A
	If the switching element of a non self-resetting cut-out is operating a relay or contactor, the relay or contactor may also be operated by other control devices. Protective electronic circuits are covered by Clause 19. ..... (IEC 60335-2-40)		N/A
22.104	Outlet of open-outlet water heaters shall be constructed so that the water flow is not limited to such an extent that the container is subjected to a significant pressure. (IEC 60335-2-21)		N/A
	The vent pipe of low pressure water heaters shall have an internal diameter of at least 20mm		N/A
	Containers of sanitary hot water heat pumps withstand twice permissible operating pressure in closed containers or ..... (IEC 60335-2-40)		N/A
	0,15 MPa in open containers..... (IEC 60335-2-40)		N/A
	without leakage or rupture ..... (IEC 60335-2-40)		N/A
22.105	Cistern-type water heaters shall be constructed so that the container is always at atmospheric pressure by means of a vent having an area of at least 30 mm^2 and a minimum dimension of at least 3 mm (IEC 60335-2-21)		N/A
	Air or vapour cushion in closed containers not exceeding the 10% (IEC 60335-2-40)		N/A
22.106	Closed water heaters: thermal cut-out providing all-pole disconnection, independent from the thermostat (IEC 60335-2-21)		N/A
	Pressure relief devices operating at 0,1MPa over the permissible pressure (IEC 60335-2-40)		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
22.107	Heating elements and thermal control sensors in contact with the outer surface of the container shall be held in position securely.(IEC 60335-2-21)		N/A
	Water outlet systems of open containers free from obstruction causing over-pressure. (IEC 60335-2-40)		N/A
	Vented containers of sanitary hot water heat pumps always open to the atmosphere through appropriate aperture (IEC 60335-2-40)		N/A
22.108	Storage tanks of sanitary hot water heat pumps shall be resistant to vacuum pressure impulses which may occur in normal use.(IEC 60335-2-40)		N/A
	Appliances for wall mounting shall have reliable provision for fixing to a wall, independent of the connection to the water mains.(IEC 60335-2-21)		N/A
22.109	Replacement of non-self-resetting thermal cut-outs does not damage other connections (IEC		N/A
	Appliances having a capacity of more than 15 l that cannot be emptied through a drain fitted in the water pipes shall incorporate means for draining that requires a tool for its operation (IEC 60335-2-21)		N/A
22.110	Non-self-resetting thermal cut-outs operate without short-circuiting live parts of different potential and without causing contact between live parts and enclosure (IEC 60335-2-40)		P
	Test repeated five times without blowing 3 A fuse which connects appliance to earth ..... (IEC 60335-2-40)		P
	Electric strength test as specified in clause 16.3 for supplementary heating elements (IEC 60335-2-		N/A
	Open-outlet water heaters with plastic enclosure instructions ensure correct installation (see NOTE) (IEC 60335-2-21)		N/A
22.111	Manual resetting of thermostats not necessary after power supply interruption (IEC 60335-2-40)		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Closed water heaters with heat exchanger shall be constructed so that during normal use the thermal cut-out does not operate due to heat from the exchanger. (IEC 60335-2-21)		N/A
22.112	The construction of the refrigerating system complies with the requirements of Section 3 of ISO 5149. (IEC 60335-2-40)		P
22.113	When a flammable refrigerant is used, refrigerant tubing is protected or enclosed to avoid mechanical damage. (IEC 60335-2-40)		P
	The tubing is protected to the extent that it will not be handled or used for carrying during moving of the product (IEC 60335-2-40)		P
	Tubing located within the confines of the cabinet is considered to be protected from mechanical damage. (IEC 60335-2-40)		P
22.114	When a flammable refrigerant is used, low temperature solder alloys, such as lead/tin alloys, are not acceptable for pipe connections.. (IEC 60335-2-40)		P
22.115	The refrigerant charge (*m*c) of all refrigerating systems within the appliance employing A2 and A3 refrigerants shall not exceed *m*3 as defined in Annex GG. (IEC 60335-2-40)		P
	The refrigerant charge (*m*c) in each refrigerating system employing A2L refrigerant shall not exceed *m*3 as defined in Annex GG. (IEC 60335-2-40)		N/A
	The construction of the refrigerating system using flammable refrigerants shall comply with the requirements in Annex GG. (IEC 60335-2-40)		P
22.116	Appliances using flammable refrigerants constructed so that any leaked refrigerant will not flow or stagnate so as to cause a fire or explosion hazard in areas within the appliance and connected ducts where electrical components, which could be a source of ignition and which could function under normal conditions or in the event of a leak, are fitted. (IEC 60335-2-40)		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Separate components, such as thermostats, which are charged with less than 0,5 g of a flammable gas are not considered to cause a fire or explosion hazard in the event of leakage of the gas within the component itself.(IEC 60335-2-40)		N/A
	Refrigerant pipes containing A2L refrigerant which connect refrigerating system components not be considered a source of leaked refrigerant for the purpose of evaluating potential for fire or explosion hazard relative to potential ignition sources within the appliance if the piping within the area of the appliance to be evaluated complies with all of the following (IEC 60335-2-40)		—
	- no connecting joints;		N/A
	- no bends with centreline bend radius less than 2,5 times the external pipe diameter;		N/A
	- protected from potential damage during normal operation, service or maintenance.		N/A
	All electrical components that could be a source of ignition and which could function under normal conditions or in the event of a leak, complies with at least one of the following: (IEC 60335-2-40)		—
	- be located in an enclosure which complies with Clause 20 of IEC 60079-15:2010 for restricted breathing enclosures suitable for use with group IIA gases or the refrigerant used.		N/A
	- not be located in an area where a potentially flammable gas mixture will accumulate as demonstrated by the test of Annex FF. Electrical components not located in an area where a potentially flammable gas mixture will accumulate as demonstrated by the test of Annex FF are not considered an ignition source.		N/A
	- for A2L refrigerants, located in an enclosure which is in compliance with Annex NN.		N/A
	Components and apparatus complying with Clause 8 to 19 of IEC 60079-15:2010, for group IIA gases or the refrigerant used or an applicable standard that makes electrical components suitable for use in Zone 2, 1 or 0 as defined IEC 60079-14 are not considered as a source of ignition. .....(IEC 60335-2-40)	Complied to Clause 22.5 IEC 60079-15:2010 as requires by the requirement	P
	For A2L refrigerants, electrical components in compliance with Annex JJ are not considered a potential ignition source. .....(IEC 60335-2-40)		N/A
	For A2L refrigerants, switching devices in compliance with all of the following are not considered a potential ignition source: (IEC 60335-2-40)		—
	- the device is capable of 100 000 cycles per Clause 24;		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- the switched electrical load (L_e) in kVA is less than or equal to:		N/A
	Le = 5 x $(6,7/S_u)^4$ when breaking all phases;		N/A
	Le = 2,5 x $(6,7/S_u)^4$ when breaking two legs of a three phase load, or when breaking one or two legs of a single phase load	Le = _____ (kvA)	N/A
	The burning velocity (Su) for the purpose of determining the maximum quenching diameter (dq) in Annex JJ and the maximum allowable electrical load Le according to the above shall take into consideration the effect of humidity on burn velocity (Su)..... (IEC 60335-2-40)		N/A
	The burning velocity (Su) be the highest value of (IEC 60335-2-40)		—
	- as specified in ISO 817; or		N/A
	- as measured in humid air at 27 °C ± 0,5 C dew point at 101,3 kPa containing 21,0 ± 0,1 % O2 excluding water vapour determined at the nominal composition as specified in ISO 817.		N/A
	Burning velocity (Su) (cm/s) ..... :	Su = _____ (cm/s)	N/A
	For appliances with A2L refrigerants, electrostatic air cleaners and similar devices which may produce electrical arcing during normal operation that could ignite the refrigerant used, and which are installed in the unit airstream or connecting ducts, are not considered as a potential ignition source if the airflow is monitored and the energy source of the electric arcing is switched off when the airflow is below the minimum airflow according to Annex GG. ..... (IEC 60335-2-40)		N/A
22.117	Hot surfaces		N/A
22.117.1	Temperatures on surfaces that exposed to leakage of flammable refrigerants not exceed maximum allowable surface temperature given in Annex BB..... (IEC 60335-2-40)		N/A
	Flammable refrigerants except A2L refrigerants not listed in Annex BB, the maximum allowable surface temperature is determined by AIT reduced by 100 K..... (IEC 60335-2-40)	Measured surface temperature: 93,7 (°C)	P
	A2L refrigerants not listed in Annex BB, the maximum allowable surface temperature is determined by the highest of AIT reduced by 100 K or, if tested per annex KK, the hot surface ignition temperature reduced by 100 K, but not higher than 700 °C..... (IEC 60335-2-40)	Measured surface temperature: _____ (°C)	N/A
	Surfaces in compliance with this clause not be considered a potential ignition source. (IEC 60335-		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
22.117.2	Temperatures on surfaces that may be exposed to leakage of A2L refrigerants may exceed the maximum allowable surface temperature in case of loss of airflow when all the following applies: (IEC 60335-2-40):		—
	- the temperatures are not exceeding the maximum allowable surface temperature with the minimum airflow;..... (IEC 60335-2-40)		N/A
	- the airflow is supervised and the heat source of the hot surface is switched off, when the airflow is below the minimum airflow. (IEC 60335-2-40)		N/A
22.117.3	Open source of ignition, including open flames, pilot flames, direct spark ignition or hot surface ignition or other similar sources of ignition in the combustion air-stream, if the combustion air is drawn from an unventilated space in which leaked refrigerant may enter through the combustion air intake, are allowed, when these appliances are provided with a flame arrest or equivalent to ensure that in the event of an ignition, the flame will not propagate. (IEC 60335-2-40)		P
22.118	When a flammable refrigerant is used, all appliances charged with refrigerant at the manufacturing location or charged on site as recommended by the manufacturer. (IEC 60335-2-40)		P
	A part of an appliance that is charged on site, which requires brazing or welding in the installation shall not be shipped with a flammable refrigerant charge. Joints made in the installation between parts of the refrigerating system, with at least one part charged, made in accordance with the following. (IEC 60335-2-40)		—
	– A brazed, welded, or mechanical connection shall be made before opening the valves to permit refrigerant to flow between the refrigerating system parts. A vacuum valve shall be provided to evacuate the interconnecting pipe and/or any uncharged refrigerating system part.	Appliances charged with refrigerant at the manufacturing location and no Joints made in the installation between parts of the refrigerating system	N/A
	– Mechanical connectors used indoors shall comply with ISO 14903. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be re-fabricated	No mechanical connectors used indoors	N/A
	– Refrigerant tubing shall be protected or enclosed to avoid damage		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Flexible refrigerant connectors (such as connecting lines between the indoor and outdoor unit) that may be displaced during normal operations shall be protected against mechanical damage. (IEC 60335-2-40)		N/A
22.119	Condensing units and evaporating units shall be equipped with a pressure limiting device or equivalent to assure that the equipment does not exceed the maximum allowable pressure. (IEC 60335-2-40)		P
	For partial units, the interconnection circuits for signal communication between each unit shall be of the same type.		N/A
	SELV level connection is recommended.		N/A
22.120	Partial units shall be provided with a means of connection to the supply mains and shall not be powered by an electrical circuit from another appliance. (IEC 60335-2-40)		N/A
22.121	For the installation condition of appliances using an A2L refrigerant and where a refrigerant detection system is applied to fulfil the requirements of Annex GG, the refrigerant sensor of the system shall be located where leaking refrigerant is likely to stagnate. The sensor be located: (IEC 60335-2-40):		—
	- within the unit for appliances connected via an air duct system to one or more rooms,		N/A
	- within the unit where release height h0 as determined in Clause GG.2 is not more than 1,5 m		N/A
	- where the release height h0 as determined in Clause GG.2 is more than 1,5 m, the sensor may be located within		N/A
	- the unit, or		N/A
	- 100 mm or less directly below the unit, or		N/A
	- remote located within 300 mm above the floor. If a remote located sensor is specified by the manufacturer, the instructions shall state that the sensor shall be located within		N/A
	1)10 m horizontal distance in line sight of the unit and on a wall within the room in which the unit is installed, or		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	2)7 m, if not in line sight of the unit, and on a wall within the room in which the unit is installed. The distance from the unit to the sensor shall be measured as the shortest horizontal unobstructed path between the unit and the nearest sensor.		N/A
	For installations with field applied mechanical joints which are exposed in the occupied space, the instructions state that a sensor be located (IEC 60335-2-40):		—
	- remote located within 2 m horizontal distance in line of sight of the unit and on a wall within the room in which the unit is installed; and		N/A
	- 100 mm above the floor where h0 is not more than 300 mm from the floor; or		N/A
	- 300 mm above the floor where h0 is greater than 300 mm from the floor.		N/A
	The following mechanical joints not require that sensor: (IEC 60335-2-40)		—
	- mechanical joints in compliance with ISO 14903;		N/A
	- joints in enclosures which vent to the unit or to the outside		N/A
	Tested in accordance with Annex MM. Remote located sensor location is not tested. Sensors located 100 mm or less directly below the unit are not considered remote sensors. (IEC 60335-2-40)		N/A
22.122	Refrigerant detection systems that are required by this standard for A2L refrigerants comply with Annex LL..... (IEC 60335-2-40)		N/A
22.123	For appliances connected via an air duct system to one or more rooms using an A2L refrigerant (IEC 60335-2-40)		—
	- which include a separate section with refrigerant containing components except pipes (e.g. compressors, condensers), and		N/A
	- which are isolated from the airflow and located in a room smaller than Amin per Clause GG.2,		N/A
	then Clause GG.4 (ventilated enclosure) can be applied, where the required ventilation can be provided by the ventilation system. That section shall have an opening to the outdoor or indoor air-stream to be able to ventilate the refrigerant to an area in compliance with Annex GG.		N/A
22.124	If a refrigerant detection system is used, care has to be taken that in the event of a leak, accumulating refrigerant will be detected properly in every operating mode (e.g. indoor fan off).		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Tested in accordance with Annex MM. Remote located sensor location is not tested. Sensors located 100 mm or less directly below the unit are not considered remote sensors.		N/A
22.125	Refrigerating systems that fulfil all of the following conditions be considered enhanced tightness refrigerating systems: (IEC 60335-2-40)		—
	bullet a) to bullet f)		N/A
	g) vibrations exceeding 0,30 G RMS, when measured with a low pass filter at 200 Hz, are not allowed in the refrigerant containing parts in the occupied space under normal operation		N/A
	h) indoor heat exchangers be protected from damage in the event of freezing		N/A
	i) the maximum speed of the fan, in normal operation, shall be less than 90 % of the maximum allowable fan speed as specified by the manufacturer of the fan wheel. If the manufacturer does not specify a maximum allowable fan speed then the fan wheel shall be tested as described.		N/A
22.126	Germicidal lamps are limited to low pressure mercury lamps with a quartz envelope having a continuous spectral irradiance at 254 nm.		N/A
22.127	Appliance enclosure, UV-C lamps and UV-C barriers be located in such a manner that the UV-C spectral irradiance is not emitted outside the unit into an occupied space at a level exceeding the irradiance limit specified in 32.101.1.		N/A
	Appliance indoor airflow inlet and outlet be considered as possible radiation paths. The unit filters are not considered UV-C barriers.		N/A
22.128	For appliances that employ UV-C germicidal lamp systems and which have doors and/or panels that provide direct access to an area within the appliance where the measured UV-C spectral irradiance is greater than 1,7 µW/cm^2, the doors and/or panels be equipped with an interlock device that terminates the power to the lamps when opened. ..... (IEC 60335-2-40)		N/A
	If a switch is used to de-energize the UV-C lamps so as to meet the requirement, it is not possible to operate the switch with test probe B of IEC 61032.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
22.129	For user maintenance access areas, the UV-C spectral irradiance not exceed the limit specified in 32.101.2 with the access panels opened or removed as needed to perform the required user maintenance. ..... (IEC 60335-2-40)		N/A
	Panels that are opened or removed to perform user maintenance are required to be closed or put back in place for proper operation of the appliance. ..... (IEC 60335-2-40)		N/A
22.130	If the replacement of the UV-C lamp is allowed by the user, the appliance shall be constructed so that (IEC 60335-2-40)		—
	- the replacement of the UV-C lamp is easily possible		N/A
	- if screws or components are omitted or incorrectly positioned or fastened, the appliance is rendered inoperable or manifestly incomplete.		N/A
22.131	Appliances that employ refrigerants in a transcritical refrigerating system are equipped with a pressure-limiting device that operates no greater than the maximum allowable pressure plus the tolerance of the pressure-limiting device.		N/A
23	**INTERNAL WIRING**		—
23.1	Wireways smooth and free from sharp edges		P
	Wires protected against contact with burrs, cooling fins etc.		P
	Wire holes in metal well-rounded or provided with bushings		P
	Wiring effectively prevented from coming into contact with moving parts		P
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges		N/A
	Beads inside flexible metal conduits contained within an insulating sleeve		N/A
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		N/A
	Flexible metallic tubes not causing damage to insulation of conductors		N/A
	Open-coil springs not used		N/A
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N/A
	No damage after 10 000 flexings for conductors flexed during normal use, or		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	100 flexings for conductors flexed during user maintenance		N/A
	Electric strength test of 16.3, 1000 V between live parts and accessible metal parts		N/A
	Not more than 10% of the strands of any conductor broken, and		N/A
	not more than 30% for wiring supplying circuits that consume no more than 15W		N/A
23.4	Bare internal wiring sufficiently rigid and fixed		N/A
23.5	The insulation of internal wiring subjected to the supply mains voltage withstanding the electrical stress likely to occur in normal use		P
	Basic insulation electrically equivalent to the basic insulation of cords complying with IEC 60227 or IEC 60245, or		N/A
	no breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		P
	For class II construction, the requirements for supplementary insulation and reinforced insulation apply,		P
	except that the sheath of a cord complying with IEC 60227 or IEC 60245 may provide supplementary insulation.		N/A
	A single layer of internal wiring insulation does not provide reinforced insulation		P
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by clamping at both ends, or		P
	be such that it can only be removed by breaking or cutting		N/A
23.7	The colour combination green/yellow only used for earthing conductors		P
23.8	Aluminium wires not used for internal wiring		P
23.9	Stranded conductors not consolidated by soldering where they are subjected to contact pressure, unless		P
	the contact pressure is provided by spring terminals		N/A
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, at least equivalent to that of light polyvinyl chloride sheathed flexible cord (60227 IEC 52)		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
23.101	Internal wiring that is exposed to direct or reflected UV-C radiation be UV-C resistant. (IEC 60335-2-40)		N/A
	Samples of the internal wiring are conditioned in accordance with Annex OO.		N/A
	On completion of the conditioning, the cable is wrapped in metal foil and is wound around a conductive mandrel 15 mm in diameter for three turns.		N/A
	A voltage of 2 000 V is applied for 15 min between the conductor and the mandrel.		N/A
	No breakdown.		N/A
24	**COMPONENTS**		—
24.1	Components comply with safety requirements in relevant IEC standards		P
	List of components……..:	(see appended table)	P
	Motors not required to comply with IEC 60034-1, they are tested as part of the appliance		P
	Relays tested as part of the appliance, or		P
	alternatively acc. to IEC 60730-1, and meeting the additional requirements in IEC 60335-1		N/A
	The requirements of Clause 29 apply between live parts of components and accessible parts of the appliance		P
	Components can comply with the requirements for clearances and creepage distances for functional insulation in the relevant component standard		P
	30.2 of this standard apply to parts of non-metallic material in components including parts of non-metallic material supporting current-carrying connections		P
	Components that have not been previously tested to comply with the IEC standard for the relevant component are tested according to the requirements of 30.2		P
	Components that have been previously tested to comply with the resistance to fire requirements in the IEC standard for the relevant component need not be retested provided the specified conditions are met		P
	If these conditions are not satisfied, the component is tested as part of the appliance.		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Power electronic converter circuits not required to comply with IEC 62477-1, they are tested as part of the appliance		P
	If components have not been tested and found to comply with relevant IEC standard for the number of cycles specified, they are tested in accordance with 24.1.1 to 24.1.9		P
	For components mentioned in 24.1.1 to 24.1.9 no additional tests specified in the relevant component standard are necessary other than those specified in 24.1.1 to 24.1.9		P
	Components not tested and found to comply with relevant IEC standard and components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		P
	Lampholders and starterholders that have not being tested and found to comply with the relevant IEC standard, tested as a part of the appliance and additionally according to the gauging and interchangeability requirements of the relevant IEC standard		N/A
	No additional tests specified for nationally standardized plugs such as those detailed in IEC/TR 60083 or connectors complying with the standard sheets of IEC 60320-1 and IEC 60309		N/A
	Motor-compressors not tested according to IEC 60335-2-34 (not necessary to meet all requirements of IEC 60335-2-34.)(IEC 60335-2-40)		P
24.1.1	Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, complying with IEC 60384-14		P
	If the capacitors have to be tested, they are tested according to Annex F		N/A
24.1.2	Transformers in associated switch mode power supplies comply with Annex BB of IEC 61558-2-16		P
	Safety isolating transformers complying with IEC 61558-2-6		N/A
	If they have to be tested, they are tested according to Annex G		N/A
24.1.3	Switches complying with IEC 61058-1, the number of cycles of operation being at least 10 000		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	If they have to be tested, they are tested according to Annex H		N/A
	If the switch operates a relay or contactor, the complete switching system is subjected to the test		N/A
	If the switch only operates a motor staring relay complying with IEC 60730-2-10 with the number of cycles of a least 10 000 as specified, the complete switching system need not be tested		N/A
24.1.4	Automatic controls complying with IEC 60730-1 with the relevant part 2. The number of cycles of operation being at least:		
	- thermostats: 10 000		N/A
	- temperature limiters: 1 000		N/A
	- self-resetting thermal cut-outs (3 000		N/A
	- voltage maintained non-self-resetting thermal cut-outs: 1 000		N/A
	- other non-self-resetting thermal cut-outs: (IEC 60335-2-40): 300		N/A
	- timers: 3 000		N/A
	- energy regulators: 10 000		N/A
	- thermostats which control motor-compressor (IEC 60335-2-40): 100 000	Electronic thermostat Relay: 100000 cycles	P
	- motor-compressor starting relays (IEC 60335-2-40): 100 000		N/A
	- automatic thermal motor-protectors for hermetic and semi-hermetic type motor-compressors (IEC 60335-2-40): min 2 000		N/A
	- manual reset thermal motor-protectors for hermetic and semi-hermetic type motor-compressors (IEC 60335-2-40): 50		N/A
	- other automatic thermal motor protectors (IEC 60335-2-40): 2 000		N/A
	- other manual reset thermal motor protectors (IEC 60335-2-40): 30		N/A
	- refrigerant detection systems self-resetting 300		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- refrigerant detection systems non self-resetting 30		N/A
	- electromechanical proof of airflow control 100000		N/A
	- self-resetting electrical pressure-limiting device 3000		N/A
	- non-self-resetting electrical pressure-limiting device 300		N/A
	The number of cycles for controls operating during clause 11 need not be declared, if the appliance meets the requirements of this standard when they are short-circuited		N/A
	Thermal motor protectors are tested in combination with their motor under the conditions specified in Annex D		N/A
	For water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains, the degree of protection declared for subclause 6.5.2 of IEC 60730-2-8 is IPX7		N/A
	Thermal cut-outs of the capillary type comply with the requirements for type 2.K controls in IEC 60730-2-9		N/A
	Thermal cut-outs incorporated in closed water heaters shall comply with the requirements of IEC 60730-1(EN 60730-1)for type 2B controls, unless they are tested with the appliance. (IEC 60335-2-21)		N/A
24.1.5	Appliance couplers complying with IEC 60320-1		N/A
	However, for class II appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3		N/A
	Interconnection couplers complying with IEC 60320-2-2		N/A
24.1.6	Small lamp holders similar to E10 lampholders complying with IEC 60238, the requirements for E10 lampholders being applicable		N/A
24.1.7	For remote operation of the appliance via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is IEC 62151		N/A
24.1.8	The relevant standard for thermal links is IEC 60691		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Thermal links not complying with IEC 60691 are considered to be an intentionally weak part for the purposes of Clause 19		N/A
24.1.9	Contactors and relays, other than motor starting relays, tested as part of the appliance		P
	They are also tested in accordance with Clause 17 of IEC 60730-1, the number of cycles of operations in 24.1.4 selected according to the contactor or relay function in the appliance……...:	100000 Cycles	P
24.2	Appliances not fitted with:		—
	-switches, automatic controls or power supplies in flexible cords		N/A
	- devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		P
	- thermal cut-outs that can be reset by soldering, unless		P
	the solder has a melding point of at least 230 ˚C		N/A
24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and have a contact separation in all poles, providing full disconnection under overvoltage category III conditions		N/A
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC/TR 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1		N/A
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance, and used accordingly		N/A
	Voltage across capacitors in series with a motor winding does not exceed 1,1 times rated voltage, when the appliance is supplied at 1,1 times rated voltage under minimum load		N/A
24.6	Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42 V		N/A
	In addition, the motors comply with the requirements of Annex I		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
24.7	Detachable hose-sets for connection of appliances to the water mains comply with IEC 61770	No detachable hose-sets	N/A
	They are supplied with the appliance		N/A
	Appliances intended to be permanently connected to the water mains not connected by a detachable hose-set		N/A
24.8	Motor running capacitors in appliances for which 30.2.3 is applicable and that are permanently connected in series with a motor winding, not causing a hazard in event of a failure	No motor running capacitors	N/A
	One or more of the following conditions are to be met:		—
	- the capacitors are of class S2 or S3 according to IEC 60252-1		N/A
	- the capacitors are housed within a metallic or ceramic enclosure		N/A
	- the distance of separation of the outer surface to adjacent non-metallic parts exceeds 50 mm		N/A
	- adjacent non-metallic parts within 50 mm withstand the needle-flame test of Annex E		N/A
	- adjacent non-metallic parts within 50 mm classified as at least V-1 according to IEC 60695-11-10		N/A
24.101	Thermal cut-outs shall be non-self-resetting. They shall have a trip-free switching mechanism or be located so that they can only be reset after removal of a non-detachable cover. (IEC 60335-2-21)		N/A
	Replaceable parts of thermal control devices identified by marking (IEC 60335-2-40)		P
24.102	Pressure-limiting devices used in transcritical refrigerating systems complies with IEC 60730-2-6 and (IEC 60335-2-40)		N/A
	- be of type 2A or 2B;		N/A
	- have a trip free mechanism of type 2 J		N/A
	- the deviation and drift not exceed + 0 %.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	The operating temperature of the thermal cut-out of a closed water heater shall ensure that the water temperature cannot exceed either 99 °C or that the thermal cut out operate before its temperature exceeds 110 °C (IEC 60335-2-21)		N/A
24.102.1	Tested as specified (IEC 60335-2-21) Water temperature not exceeding 99°C		N/A
	If compliance relies on the operation of an electronic circuit, the test is repeated under the following conditions applied separately: – the fault conditions in a) to g) of 19.11.2 applied one at a time to the electronic circuit; – the electromagnetic phenomena tests of 19.11.4.1 to 19.11.4.7 applied to the appliance. The temperature of the water at the outlet shall not exceed 99 °C during or after each of the tests		N/A
	If the electronic circuit is programmable, the software shall contain measures to control the fault/error conditions specified in Table R.1 and is evaluated in accordance with the relevant requirements of Annex R.		N/A
24.102.2	Tested as specified The thermal cut-off temperature shall operate before its temperature exceeds 110°C. The water temperature shall not exceed 20K of the maximum permitted operating temperature of the thermal cut-out. (IEC 60335-2-21)		N/A
	If compliance relies on the operation of an electronic circuit, the test is repeated under the following conditions applied separately: – the fault conditions in a) to g) of 19.11.2 applied one at a time to the electronic circuit; – the electromagnetic phenomena tests of 19.11.4.2 and 19.11.4.5 applied to the appliance. The temperature of the water at the outlet shall not exceed 110 °C during or after each of the tests.		N/A
25	**SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS**		—
25.1	Appliance not intended for permanent connection to fixed wiring, means for connection to the supply:		—
	- supply cord fitted with a plug, the current rating and voltage rating of the plug being not less than the corresponding ratings of its associated appliance		N/A
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance, or		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- pins for insertion into socket-outlets		N/A
	- supply cord fitted with a plug may be provided, if (IEC 60335-2-40):		—
	• the appliance is only for indoor use		N/A
	• it is marked with a rating of 25 A or less		N/A
	• it complies with the code requirements of the country where it will be used		N/A
	Appliance inlet not allowed (IEC 60335-2-21 & IEC 60335-2-40)		N/A
25.2	Appliance not provided with more than one means of connection to the supply mains		N/A
	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown		N/A
25.3	Appliance intended to be permanently connected to fixed wiring provided with one of the following means for connection to the supply mains:		—
	- a set of terminals allowing the connection of a flexible cord		N/A
	- a fitted supply cord		N/A
	- a set of supply leads accommodated in a suitable compartment		N/A
	- a set of terminals for the connection of cables of fixed wiring, cross-sectional areas specified in 26.6, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support	For interconnection cord	P
	- a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate types of cable or conduit, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support		N/A
	For a fixed appliance constructed so that parts can be removed to facilitate easy installation, this requirement is met if it is possible to connect the fixed wiring without difficulty after a part of the appliance has been fixed to its support		P
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimension according to table 10 (mm)……:		N/A
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in clause 29		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
25.5	Method for assembling the supply cord to the appliance:		—
	- type X attachment		N/A
	- type Y attachment	Fixed wiring (For interconnection cord)	P
	- type Z attachment, if allowed in relevant part 2		N/A
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N/A
	For multi-phase appliances supplied with a supply cord and that are intended to be permanently connected to fixed wiring, the supply cord is assembled to the appliance by type Y attachment		N/A
25.6	Plugs fitted with only one flexible cord		N/A
25.7	Supply cords, other than for class III appliances, being one of the following types:		—
	- rubber sheathed (at least 60245 IEC 53)		N/A
	- polychloroprene sheathed (at least 60245 IEC 57)	For interconnection cord	P
	- cross-linked polyvinyl chloride sheathed (at least 60245 IEC 88)		N/A
	- polyvinyl chloride sheathed. Not used if they are likely to touch metal parts having a temperature rise exceeding 75 K during the test of clause 11		—
	• light polyvinyl chloride sheathed cord (60227 IEC 52), for appliances not exceeding 3 kg		N/A
	• ordinary polyvinyl chloride sheathed cord (60227 IEC 53), for other appliances		N/A
	- heat resistant polyvinyl chloride sheathed. Not used for type X attachment other than specially prepared cords		—
	• heat-resistant light polyvinyl chloride sheathed cord (60227 IEC 56), for appliances not exceeding 3 kg		N/A
	• heat-resistant polyvinyl chloride sheathed cord (60227 IEC 57), for other appliances		N/A
	- halogen-free, low smoke, thermoplastic insulated and sheathed		—
	• light duty halogen-free low smoke flexible cable (62821 IEC 101) for circular cable and (62821 IEC 101f) for flat cable		N/A
	• Ordinary duty halogen-free low smoke flexible cable (62821 IEC 102) for circular cable and (62821 IEC 102f(for flat cable		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Supply cords for class III appliances adequately insulated		N/A
	Test with 500 V for 2 min for supply cords of class III appliances that contain live parts		N/A
	Supply cords for outdoor use not lighter than polychloroprene sheathed flexible cord (60245 IEC 57) (IEC 60335-2-40)		N/A
25.8	Nominal cross-sectional area of supply cords not less than table 11; rated current (A); cross-sectional area (mm²)……..:	See in indoor unit for connection to supply main	N/A
25.9	Supply cords not in contact with sharp points or edges	For interconnection cord	P
25.10	Supply cord of class I appliances have a green/yellow core for earthing	Supply cord not provided with appliance	N/A
	In multi-phase appliances, the colour of the neutral conductor of the supply cord is blue.		N/A
	Where additional neutral conductors are provided in the supply cord:		—
	– other colours may be used for these additional neutral conductors;		N/A
	– all of the neutral conductors and line conductors are identified by marking using the alpha numeric notation specified in IEC 60445		N/A
	– the supply cord is fitted to the appliance		N/A
25.11	– the supply cord is fitted to the appliance		N/A
	the contact pressure is provided by spring terminals		N/A
25.12	Insulation of the supply cord not damaged when moulding the cord to part of the enclosure		N/A
25.13	Inlet openings so constructed as to prevent damage to the supply cord	For interconnection cord	P
	If it is not evident that the supply cord can be introduced without risk of damage, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		N/A
	If unsheathed supply cord, a similar additional bushing or lining is required, unless the appliance is		N/A
	class 0, or		N/A
	a class III appliance not containing live parts		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
25.14	Supply cords moved while in operation adequately protected against excessive flexing		N/A
	Flexing test, as described:		—
	- applied force (N)……..:		N/A
	- number of flexings……..:		N/A
	The test does not result in:		—
	- short-circuit between the conductors, such that the current exceeds a value of twice the rated current		N/A
	- breakage of more than 10% of the strands of any conductor		N/A
	- separation of the conductor from its terminal		N/A
	- loosening of any cord guard		N/A
	- damage to the cord or the cord guard		N/A
	- broken strands piercing the insulation and becoming accessible		N/A
25.15	For appliances with supply cord and appliances to be permanently connected to fixed wiring by a flexible cord, conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage	For interconnection cord	P
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		P
	Pull and torque test of supply cord:		—
	- fixed appliances: pull 100 N; torque (not on automatic cord reel) (Nm)……..:	0,35 Nm	P
	- other appliances: values shown in table 12: mass (kg); pull (N); torque (not on automatic cord reel) (Nm)……..:		N/A
	Pull and torque test of supply cord, values shown in table 12: mass (kg); pull (N); torque (not on automatic cord reel) (Nm)……..:		N/A
	Cord not damaged and max. 2 mm displacement of the cord		P
25.16	Cord anchorages for type X attachments constructed and located so that:		—
	- replacement of the cord is easily possible		N/A
	- it is clear how the relief from strain and the prevention of twisting are obtained		N/A
	- they are suitable for different types of supply cord		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless		N/A
	they are separated from accessible metal parts by supplementary insulation		N/A
	- the cord is not clamped by a metal screw which bears directly on the cord		N/A
	- at least one part of the cord anchorage securely fixed to the appliance, unless		N/A
	it is part of a specially prepared cord		N/A
	- screws which have to be operated when replacing the cord do not fix any other component, unless		N/A
	the appliance becomes inoperative or incomplete or the parts cannot be removed without a tool		N/A
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N/A
	- for class 0, 0I and I appliances they are of insulating material or are provided with an insulating lining, unless		N/A
	failure of the insulation of the cord does not make accessible metal parts live		N/A
	- for class II appliances they are of insulating material, or		N/A
	if of metal, they are insulated from accessible metal parts by supplementary insulation		N/A
	After the test of 25.15, under the conditions specified, the conductors have not moved by more than 1 mm in the terminals		N/A
25.17	Adequate cord anchorages for type Y and Z attachment, test with the cord supplied with the appliance	For interconnection cord	P
25.18	Cord anchorages only accessible with the aid of a tool, or	For interconnection cord	P
	Constructed so that the cord can only be fitted with the aid of a tool		P
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N/A
	Tying the cord into a knot or tying the cord with string not used		N/A
25.20	The conductors of the supply cord for type Y and Z attachment insulated from accessible metal parts	For interconnection cord	P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed:		—
	- to permit checking of conductors with respect to correct positioning and connection before fitting any cover		P
	- so there is no risk of damage to the conductors or their insulation when fitting the cover		P
	- for portable appliances, so that the uninsulated end of a conductor, if it becomes free from the terminal, prevented from contact with accessible metal parts		N/A
	2 N test to the conductor for portable appliances; no contact with accessible metal parts		N/A
25.22	Appliance inlets:		—
	- live parts not accessible during insertion or removal		N/A
	Requirement not applicable to appliance inlets complying with IEC 60320-1		N/A
	- connector can be inserted without difficulty		N/A
	- the appliance is not supported by the connector		N/A
	- not for cold conditions if temp. rise of external metal parts exceeds 75 K during clause 11, unless		N/A
	the supply cord is unlikely to touch such metal parts		N/A
25.23	Interconnection cords comply with the requirements for the supply cord, except that:		—
	- the cross-sectional area of the conductors is determined on the basis of the maximum current during clause 11		P
	- the thickness of the insulation may be reduced		N/A
	- for class I or class II appliance with class III construction, the cross sectional areas of the conductors need not comply with 25.8 if specified conditions are met		N/A
	If necessary, electric strength test of 16.3		N/A
25.24	Interconnection cords not detachable without the aid of a tool if compliance with this standard is impaired when they are disconnected		P
25.25	Dimensions of pins that are inserted into socket-outlets compatible with the dimensions of the relevant socket-outlet.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Dimensions of pins and engagement face in accordance with the dimensions of the relevant plug in IEC/TR 60083		N/A
26	**TERMINALS FOR EXTERNAL CONDUCTORS**		—
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors	For connection with interconnection cord	P
	Terminals only accessible after removal of a non-detachable cover, except		P
	for class III appliances that do not contain live parts		N/A
	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		N/A
26.2	Appliances with type X attachment and appliances for the connection of cables to fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless	For connection with interconnection cord	P
	the connections are soldered		N/A
	Screws and nuts not used to fix any other component, except		P
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		P
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone, unless		N/A
	barriers provided so that neither clearances nor creepage distances between live parts and other metal parts reduced below the values for supplementary insulation if the conductor becomes free at the soldered joint		N/A
26.3	Terminals for type X attachment and for connection of cables of fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure but without damaging the conductor	For connection with interconnection cord	P
	Terminals fixed so that when the clamping means is tightened or loosened:		—
	- the terminal does not become loose		P
	- internal wiring is not subjected to stress		P
	- neither clearances nor creepage distances are reduced below the values in clause 29		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Compliance checked by inspection and by the test of subclause 9.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified (Nm)……:	Diameter: 4,8 mm. Torque applied: 1,33 Nm	P
	No deep or sharp indentations of the conductors		P
26.4	Terminals for type X attachment, except those having a specially prepared cord and those for the connection of cables of fixed wiring, no special preparation of conductors such as by soldering, use of cable lugs, eyelets or similar, and	For connection with interconnection cord	P
	so constructed or placed that conductors prevented from slipping out when clamping screws or nuts are tightened		P
26.5	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection to other parts that result in a hazard		N/A
	Stranded conductor test, 8 mm insulation removed		N/A
	No contact between live parts and accessible metal parts and,		N/A
	for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only		N/A
26.6	Terminals for type X attachment and for connection of cables of fixed wiring suitable for connection of conductors with cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm²)……:	For connection with interconnection cord Rated current: 13,0A, 15,8A Cross sectional area: 2,5 mm² (See instruction)	P
	If a specially prepared cord is used, terminals need only be suitable for that cord		N/A
26.7	Terminals for type X attachment, except in class III appliances not containing live parts, accessible after removal of a cover or part of the enclosure		N/A
26.8	Terminals for the connection of fixed wiring, including the earthing terminal, located close to each other	For connection with interconnection cord	P
26.9	Terminals of the pillar type constructed and located as specified		N/A
26.10	Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless		N/A
	conductors ends fitted with means suitable for screw terminals		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Pull test of 5 N to the connection		N/A
26.11	For type Y and Z attachment, soldered, welded, crimped or similar connections may be used		N/A
	For Class II appliances, the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N/A
	If soldering, welding or crimping alone used, barriers provided so that clearances and creepage distances between live parts and other metal parts are not reduced below the values for supplementary insulation if the conductor becomes free		N/A
27	**PROVISION FOR EARTHING**		—
27.1	Accessible metal parts of Class 0I and I appliances permanently and reliably connected to an earthing terminal or earthing contact of the appliance inlet		P
	Earthing terminals and earthing contacts not connected to the neutral terminal		P
	Class 0, II and III appliances have no provision for earthing		N/A
	Safety extra-low voltage circuits not earthed, unless		N/A
	protective extra-low voltage circuits		N/A
	Class I water heaters, sheath of heating element permanently and reliably connected to earthing terminal, unless (IEC 60335-2-21)		P
	-provided with inlet and outlet pipes of metal permanently and reliably connected to earthing terminal (IEC 60335-2-21)		P
	-other accessible metal parts in contact with the water permanently and reliably connected to earthing terminal (IEC 60335-2-21)		N/A
27.2	Clamping means of earthing terminals adequately secured against accidental loosening		P
	Terminals for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm², and		N/A
	do not provide earthing continuity between different parts of the appliance, and		N/A
	conductors cannot be loosened without the aid of a tool		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
27.3	For a detachable part having an earth connection and being plugged into another part of the appliance, the earth connection is made before and separated after current-carrying connections when removing the part		N/A
	For appliances with supply cords, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		P
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
27.4	No risk of corrosion resulting from contact between parts of the earthing terminal and the copper of the earthing conductor or other metal		P
	Parts providing earthing continuity, other than parts of a metal frame or enclosure, have adequate resistance to corrosion		P
	If of steel, these parts provided with an electroplated coating with a thickness at least 5 µm		P
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		P
	In the body of the earthing terminal is a part of a frame or enclosure of aluminium or aluminium alloys, precautions taken to avoid risk of corrosion		N/A
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
27.5	Low resistance of connection between earthing terminal and earthed metal parts		P
	This requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit, provided the clearances of basic insulation are based on the rated voltage of the appliance		N/A
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
	Resistance not exceeding 0,1 Ω at the specified low-resistance test (Ω)……..:	0,03Ω	P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	If the ground continuity between system components meets the minimum values specified in 27.5, it is considered to meet the requirements without dedicated grounding conductors (IEC 60335-2-40)		P
27.6	The printed conductors of printed circuit boards not used to provide earthing continuity in hand-held appliances.		N/A
	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		N/A
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
28	**SCREWS AND CONNECTIONS**		—
28.1	Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses		P
	Screws not of soft metal liable to creep, such as zinc or aluminium		P
	Diameter of screws of insulating material min. 3 mm		N/A
	Screws of insulating material not used for any electrical connections or connections providing earthing continuity		N/A
	Screws used for electrical connections or connections providing earthing continuity screwed into metal		P
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		N/A
	For type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw impairs basic insulation		N/A
	For screws and nuts; torque-test as specified in table 14……:	(see appended table)	P
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure is not transmitted through non-ceramic insulating material liable to shrink or distort, unless		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	there is resiliency in the metallic parts to compensate for shrinkage or distortion of the insulating material		N/A
	This requirement does not apply to electrical connections in circuits of appliances for which:		—
	• 30.2.2 is applicable and that carry a current not exceeding 0,5 A		N/A
	• 30.2.3 is applicable and that carry a current not exceeding 0,2 A		P
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		P
	Thread-cutting (self-tapping) screws and thread rolling screws only used for electrical connections if they generate a full form standard machine screw thread		N/A
	Thread-cutting (self-tapping) screws not used if they are likely to be operated by the user or installer		N/A
	Thread-cutting, thread rolling and space threaded screws may be used in connections providing earthing continuity provided it is not necessary to disturb the connection:		—
	- in normal use,		P
	- during user maintenance,		P
	- when replacing a supply cord having a type X attachment, or		N/A
	- during installation		P
	At least two screws being used for each connection providing earthing continuity, unless		P
	the screw forms a thread having a length of at least half the diameter of the screw		P
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity		P
	This requirement does not apply to screws in the earthing circuit if at least two screws are used, or		P
	if an alternative earthing circuit is provided		N/A
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if the connections are subjected to torsion		N/A
29	**CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION**		—

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Clearances, creepage distances and solid insulation withstand electrical stress		P
	For coatings used on printed circuits boards to protect the microenvironment (Type 1) or to provide basic insulation (Type 2), Annex J applies:		N/A
	The microenvironment is pollution degree 1 under type 1 protection		N/A
	For type 2 protection, the spacing between the conductors before the protection is applied is not less than the values specified in Table 1 of IEC 60664-3		N/A
	These values apply to functional, basic, supplementary and reinforced insulation……:		N/A
	For motor-compressor complies with IEC 60335-2-34, parts related not checked (IEC 60335-2-40)		N/A
	For motor-compressor not complying with IEC 60335-2-34, additions and modifications as specified (IEC 60335-2-40)		P
29.1	Clearances not less than the values specified in table 16, taking into account the rated impulse voltage for the overvoltage categories of table 15, unless……...:	(see appended table)	P
	for basic insulation and functional insulation they comply with the impulse voltage test of clause 14		N/A
	However, if the distances are affected by wear, distortion, movement of the parts or during assembly, the clearances for rated impulse voltages of 1500V and above are increased by 0,5 mm and the impulse voltage test is not applicable		P
	For appliances intended for use at altitudes exceeding 2 000 m, the clearances in Table 16 is increased according to the relevant multiplier values in Table A.2 of IEC 60664-1		N/A
	Impulse voltage test is not applicable:		—
	- when the microenvironment is pollution degree 3, or		P
	- for basic insulation of class 0 and class 01 appliances		N/A
	- to appliances intended for use at altitudes exceeding 2 000		N/A
	Appliances are in overvoltage category II		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	A force of 2 N is applied to bare conductors, other than heating elements		P
	A force of 30 N is applied to accessible surfaces		P
29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage		P
	The values of table 16 or the impulse voltage test of clause 14 are applicable……:	(see appended table)	N/A
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1,0 mm if the microenvironment is pollution degree 1		N/A
	Lacquered conductors of windings considered to be bare conductors		P
29.1.2	Clearances of supplementary insulation not less than those specified for basic insulation in table 16……..:	(see appended table)	P
29.1.3	Clearances of reinforced insulation not less than those specified for basic insulation in table 16, using the next higher step for rated impulse voltage……:	(see appended table)	P
	For double insulation, with no intermediate conductive part between basic and supplementary insulation, clearances are measured between live parts and the accessible surface, and the insulation system is treated as reinforced insulation		P
29.1.4	Clearances for functional insulation are the largest values determined from:		—
	- table 16 based on the rated impulse voltage…..:	(see appended table)	P
	- table F.7a in IEC 60664-1, frequency not exceeding 30 kHz		N/A
	- clause 4 of IEC 60664-4, frequency exceeding 30 kHz		N/A
	If values of table 16 are largest, the impulse voltage test of clause 14 may be applied instead, unless		N/A
	the microenvironment is pollution degree 3, or		P
	the distances can be affected by wear, distortion, movement of the parts or during assembly		N/A
	However, clearances are not specified if the appliance complies with clause 19 with the functional insulation short-circuited		N/A
	Lacquered conductors of windings considered to be bare conductors		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	However, clearances at crossover points are not measured		P
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		N/A
29.1.5	Appliances having higher working voltages than rated voltage, clearances for basic insulation are the largest values determined from:		—
	- table 16 based on the rated impulse voltage…..:	2500V	P
	- table F.7a in IEC 60664-1, frequency not exceeding 30 kHz		N/A
	- clause 4 of IEC 60664-4, frequency exceeding 30 kHz		N/A
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1 or Clause 4 of IEC 60664-4, the clearances of supplementary insulation are not less than those specified for basic insulation		N/A
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1, the clearances of reinforced insulation dimensioned as specified in Table F.7a are to withstand 160% of the withstand voltage required for basic insulation		N/A
	If clearances for basic insulation are selected from Clause 4 of IEC 60664-4, the clearances of reinforced insulation are twice the value required for basic insulation		N/A
	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 not less than those specified in table 16, but using the next lower step for rated impulse voltage		N/A
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation are based on the working voltage used as the rated voltage in table 15		N/A
29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree……..:	(see appended table)	P
	Pollution degree 2 applies, unless		P
	- precautions taken to protect the insulation; pollution degree 1		N/A
	- insulation subjected to conductive pollution; pollution degree 3		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	A force of 2 N is applied to bare conductors, other than heating elements		P
	A force of 30 N is applied to accessible surfaces		P
	In a double insulation system, the working voltage for both the basic and supplementary insulation is taken as the working voltage across the complete double insulation system		P
	Insulation located in airflow, pollution degree 3 unless (IEC 60335-2-40)		P
	Insulation enclosed or located so that unlikely to be exposed to pollution due to normal use (IEC 60335-2-40)		P
29.2.1	Creepage distances of basic insulation not less than specified in table 17……..:	(see appended table)	P
	However, if the working voltage is periodic and has a frequency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table 17……:		N/A
	Except for pollution degree 1, corresponding creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14……:		N/A
29.2.2	Creepage distances of supplementary insulation at least those specified for basic insulation in table 17, or……..:	(see appended table)	P
	Table 2 of IEC 60664-4, as applicable……:		N/A
29.2.3	Creepage distances of reinforced insulation at least double those specified for basic insulation in table 17, or……:	(see appended table)	P
	Table 2 of IEC 60664-4, as applicable……:		N/A
29.2.4	Creepage distances of functional insulation not less than specified in table 18……..:	(see appended table)	P
	However, if the working voltage is periodic and has a frequency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table 18……:		N/A
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
29.3	Supplementary and reinforced insulation have adequate thickness, or a sufficient number of layers, to withstand the electrical stresses		P
	Compliance checked:		—
	- by measurement, in accordance with 29.3.1, or		P
	- by an electric strength test in accordance with 29.3.2, or		N/A
	- for insulation, other than single layer internal wiring insulation; by an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3, and		N/A
	for accessible parts of reinforced insulation consisting of a single layer, by measurement in accordance with 29.3.4, or		N/A
	- by an assessment of the thermal quality of the material according to 29.3.3 combined with an electric strength test in accordance with 23.5, for each single layer internal wiring insulation touching each other, or		N/A
	- as specified in subclause 6.3 of IEC 60664-4 for insulation that is subjected to any periodic voltage having a frequency exceeding 30 kHz		N/A
29.3.1	Supplementary insulation have a thickness of at least 1 mm		P
	Reinforced insulation have a thickness of at least 2 mm		N/A
29.3.2	Each layer of material withstand the electric strength test of 16.3 for supplementary insulation		N/A
	Supplementary insulation consist of at least 2 layers		N/A
	Reinforced insulation consist of at least 3 layers		N/A
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2, followed by		N/A
	the electric strength test of 16.3		N/A
	If the temperature rise during the tests of clause 19 does not exceed the value specified in table 3, the test of IEC 60068-2-2 is not carried out		N/A
29.3.4	Thickness of accessible parts of reinforced insulation consisting of a single layer not less than specified in table 19 ..... :		N/A
30	**RESISTANCE TO HEAT AND FIRE**		—

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
30.1	External parts of non-metallic material,		P
	parts supporting live parts, and		P
	parts of thermoplastic material providing supplementary or reinforced insulation		P
	sufficiently resistant to heat		P
	Ball-pressure test according to IEC 60695-10-2		P
	External parts tested at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C)……:	(see appended table)	P
	Parts supporting live parts tested at 40°C plus the maximum temperature rise determined during the test of clause 11, or at 125 °C, whichever is the higher; temperature (°C)……...:	(see appended table)	P
	Parts of thermoplastic material providing supplementary or reinforced insulation tested at 25 °C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C)……:	(see appended table)	N/A
30.2	Parts of non-metallic material resistant to ignition and spread of fire		P
	This requirement does not apply to:		—
	parts having a mass not exceeding 0,5 g, provided the cumulative effect is unlikely to propagate flames that originate inside the appliance by propagating flames from one part to another, or		P
	decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance		P
	Compliance checked by the test of 30.2.1, and in addition:		P
	- for attended appliances, 30.2.2 applies		N/A
	- for unattended appliances, 30.2.3 applies		P
	For appliances for remote operation, 30.2.3 applies		N/A
	For base material of printed circuit boards, 30.2.4 applies		P
30.2.1	Parts of non-metallic material subjected to the glow-wire test of IEC 60695-2-11 at 550 °C	(see appended table 30.2)	P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	However, test not carried out if the material is classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least 550 °C, or		N/A
	the material is classified at least HB40 according to IEC 60695-11-10		N/A
	Parts for which the glow-wire test cannot be carried out need to meet the requirements in ISO 9772 for material classified HBF		N/A
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		P
	The tests are not applicable to conditions as specified……..:	(i) Soldered connections on printed circuit boards (ii) Parts supporting connections in low-power circuits	P
30.2.3.1	Parts of non-metallic material supporting connections carrying a current exceeding 0,2 A during normal operation, and		P
	parts of non-metallic material, other than small parts, within a distance of 3 mm,		P
	subjected to the glow-wire test of IEC 60695-2-11 with a test severity of 850 °C	(see appended table 30.2)	P
	Glow-wire applied to an interposed shielding material, if relevant		N/A
	The glow-wire test is not carried out on parts of material classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least 850 °C		N/A
30.2.3.2	Parts of non-metallic material supporting connections, and		P
	parts of non-metallic material within a distance of 3mm,		P
	subjected to glow-wire test of IEC 60695-2-11		P
	The test severity is:		—
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation		P
	- 650 °C, for other connections		N/A
	Glow-wire applied to an interposed shielding material, if relevant		P
	However, the glow-wire test of 750 °C or 650 °C as appropriate, is not carried out on parts of material fulfilling both or either of the following classifications:		—

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- a glow-wire ignition temperature according to IEC 60695-2-13 of at least:		N/A
	• 775 °C, for connections carrying a current exceeding 0,2 A during normal operation		N/A
	• 675 °C, for other connections		N/A
	- a glow-wire flammability index according to IEC 60695-2-12 of at least:		N/A
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation		N/A
	- 650 °C, for other connections		N/A
	The glow-wire test is also not carried out on small parts. These parts are to:		—
	- comprise material having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or		N/A
	- comprise material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- comply with the needle-flame test of Annex E, or		N/A
	- comprise material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
	The consequential needle-flame test of Annex E applied to non-metallic parts that encroach within the vertical cylinder placed above the centre of the connection zone and on top of the non-metallic parts supporting current-carrying connections, and parts of non-metallic material within a distance of 3 mm of such connections if these parts are those:		—
	- parts that withstood the glow-wire test of IEC 60695-2-11 of 750 °C or 650 °C as appropriate, but produce a flame that persist longer than 2 s, or		P
	- parts that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- small parts, that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- small parts for which the needle-flame test of Annex E was applied, or		N/A
	- small parts for which a material classification of V-0 or V-1 was applied		N/A
	However, the consequential needle-flame test is not carried out on non-metallic parts, including small parts, within the cylinder that are:		—

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- parts having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or		N/A
	- parts comprising material classified as V-0 or V-1 according to IEC 60695-11-10, or		N/A
	- parts shielded by a flame barrier that meets the needle-flame test of Annex E or that comprises material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
30.2.4	Base material of printed circuit boards subjected to the needle-flame test of Annex E		P
	Test not applicable to conditions as specified…...:	(see appended table 30.2/30.2.4)	N/A
31	**RESISTANCE TO RUSTING**		—
	Relevant ferrous parts adequately protected against rusting		P
	Salt mist test of IEC 60068-2-52, severity 2 (IEC 60335-2-40)		P
	Before test, coatings are scratched by means of a harden steel pin as specified (IEC 60335-2-40)		P
	Five scratches made at least 5mm apart and at least 5mm from the edges (IEC 60335-2-40)		P
	Appliance not deteriorated to such an extent that compliance with cl. 8 and cl. 27 is impaired (IEC 60335-2-40)		P
	Coating not be broken and not loosened from the metal surface (IEC 60335-2-40)		P
32	**RADIATION, TOXICITY AND SIMILAR HAZARDS**		—
	Appliance does not emit harmful radiation or present a toxic or similar hazard due to their operation in normal use		P
	Compliance is checked by the limits or tests specified in part 2, if relevant		P
32.101	UV-C irradiance test (IEC 60335-2-40)		—
32.101.1	For the occupied space outside the unit, a test be performed to determine the UV-C spectral irradiance.)		N/A
	Emissions from the equipment not exceed a UV-C spectral irradiance limit of 0,2 μW/cm^2		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
32.101.2	For areas inside the unit that are accessible for anticipated user maintenance and are not equipped with the interlock required by Subclause 22.128, there be no UV-C spectral irradiance greater than 1,7 μW/cm^2		N/A
	UV-C spectral irradiance is measured at any point of accessibility required for user maintenance.		N/A
	When determining user accessibility, consideration should be given to the actual degree of exposure that the user would experience in performing his duties.		N/A
	Compliance is determined by measuring the UV-C irradiance per IEC 62471:2006, Clause 5 and Annex B.		N/A
32.101.3	UV-C irradiance is measured at the location in Table 101		N/A
32.101.4	When conducting UV-C irradiance tests:		N/A
	- the UV-C irradiance measurements are conducted with a scanning spectroradiometer, or a narrow band range radiometer;		N/A
	- all panels and components are positioned or adjusted in the most severe position		N/A
	- removable air filters are removed;		N/A
	- measurements are made at the worst case location and angle of incidence;		N/A
	- the minimum specified duct and configuration, including any duct liners, specified by the manufacturer be in place and the measurements taken at the opening at the end of the duct.		N/A
A	**ANNEX A (INFORMATIVE) ROUTINE TESTS**		—
	Description of routine tests to be carried out by the manufacturer		N/A
B	**ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES THAT ARE RECHARGED IN THE APPLIANCE**		—
	The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance		N/A
	Three forms of construction covered:		—

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	a) Appliance supplied directly from the supply mains or a renewable energy source, the battery charging circuitry and other supply unit circuitry incorporated within the appliance		N/A
	b) The part of the appliance incorporating the battery is supplied from the supply mains or a renewable energy source, via a detachable supply unit. The battery charging circuitry is incorporated within the part of the appliance containing the battery		N/A
	c) The part of the appliance incorporating the battery is supplied from the supply mains or a renewable energy source, via a detachable supply unit. The battery charging circuitry is incorporated within the detachable supply unit		N/A
3.1.9	Appliance operated under the following conditions:		—
	- the appliance, supplied by its fully charged battery, operated as specified in relevant part 2		N/A
	- the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		N/A
	-if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		N/A
	- if the appliance incorporates inductive coupling between two parts that are detachable from each other, the appliance is supplied from the supply mains with the detachable part removed		N/A
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		N/A
5.B.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		N/A
7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals		N/A
	The positive terminal indicated by symbol IEC 60417-5005 and the negative terminal by symbol IEC 60417-5006		N/A
	Appliances intending to be supplied from a detachable supply unit marked with symbol IEC 60417-6181 and its type reference along with symbol ISO 7000-0790 (2004-01), or		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	use only with <model designation> supply unit ... .:		N/A
7.6	Symbols 60417-5005 and IEC 60417-5006		N/A
7.12	The instructions give information regarding charging		N/A
	The instructions for appliances incorporating batteries intended to be replaced by the user includes required information		N/A
	Instructions for appliances containing non user-replaceable batteries state the substance of the following:		—
	This appliance contains batteries that are only replaceable by skilled persons		N/A
	Instructions for appliances containing non-replaceable batteries shall state the substance of the following:		—
	This appliance contains batteries that are non-replaceable		N/A
	For appliances intending to be supplied from a detachable supply unit for the purposes of recharging the battery, the type reference of the detachable supply unit is stated along with the following:		—
	WARNING: For the purposes of recharging the battery, only use the detachable supply unit provided with this appliance		N/A
	If the symbol for detachable supply unit is used, its meaning is explained		N/A
7.15	Markings placed on the part of the appliance connected to the supply mains		N/A
	The type reference of the detachable supply unit is placed in close proximity to the symbol		N/A
8.2	Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment		N/A
	If the appliance can be operated without batteries, double or reinforced insulation required		N/A
11.7	The battery is charged for the period stated in the instructions or 24 h……:		N/A
11.8	Temperature rise of the battery surface does not exceed the limit in the battery manufacturer's specification; measured (K); limit (K)……..:		N/A
	If no limit specified, the temperature rise does not exceed 20 K; measured (K) ……:		N/A
19.10	Not applicable		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
19.B.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		N/A
19.B.102	For appliances having batteries that can be removed without the aid of a tool, short-circuit of the terminals of the battery, the battery being fully charged,		N/A
19.B.103	Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		N/A
19.13	The battery does not rupture or ignite		N/A
21.B.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength		N/A
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-31, the number of falls being:		—
	- 100, if the mass of the part does not exceed 250 g (g)……..:		N/A
	- 50, if the mass of the part exceeds 250 g…….:		N/A
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met		N/A
22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		N/A
25.13	An additional lining or bushing not required for interconnection cords in class III appliances or class III constructions operating at safety extra-low voltage not containing live parts		N/A
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		N/A
	For other parts, 30.2.2 applies		N/A
C	**ANNEX C (NORMATIVE) AGEING TEST ON MOTORS**		—
	Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding		N/A
	Test conditions as specified		N/A
D	**ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS**		—
	Applicable to appliances having motors that incorporate thermal motor protectors necessary for compliance with the standard		N/A
	Test conditions as specified		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
E	**ANNEX E (NORMATIVE) NEEDLE-FLAME TEST**		—
	Needle-flame test carried out in accordance with IEC 60695-11-5, with the following modifications:		P
7	Severities		—
	The duration of application of the test flame is 30 s ± 1 s		P
9	Test procedure		—
9.1	The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1		P
9.2	The first paragraph does not apply		P
	If possible, the flame is applied at least 10 mm from a corner		P
9.3	The test is carried out on one specimen		P
	If the specimen does not withstand the test, the test may be repeated on two additional specimens, both withstanding the test		N/A
11	Evaluation of test results		—
	The duration of burning not exceeding 30 s		P
	However, for printed circuit boards, the duration of burning not exceeding 15 s		N/A
F	**ANNEX F (NORMATIVE) CAPACITORS**		—
	Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or voltage dividing, comply with the following clauses of IEC 60384-14, with the following modifications:		—
1.5	Terms and definitions		—
1.5.3	Class X capacitors tested according to subclass X2		N/A
1.5.4	This subclause is applicable		N/A
1.6	Marking		—
	Items a) and b) are applicable		N/A
3.4	Approval testing		—
3.4.3.2	Table 3 is applicable as described		N/A
4.1	Visual examination and check of dimensions		—
	This subclause is applicable		N/A
4.2	Electrical tests		—
4.2.1	This subclause is applicable		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.2.5	This subclause is applicable		N/A
4.2.5.2	Only table 11 is applicable		N/A
	Values for test A apply		N/A
	However, for capacitors in heating appliances the values for test B or C apply		N/A
4.12	Damp heat, steady state		—
	This subclause is applicable		N/A
	Only insulation resistance and voltage proof are checked		N/A
4.13	Impulse voltage		—
	This subclause is applicable		N/A
4.14	Endurance		—
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 are applicable		N/A
4.14.7	Only insulation resistance and voltage proof are checked		N/A
	No visible damage		N/A
4.17	Passive flammability test		—
	This subclause is applicable		N/A
4.18	Active flammability test		—
	This subclause is applicable		N/A
G	**ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS**		—
	The following modifications to this standard are applicable for safety isolating transformers:		—
7	Marking and instructions		—
7.1	Transformers for specific use marked with:		—
	-name, trademark or identification mark of the manufacturer or responsible vendor ..... :		N/A
	-model or type reference ..... :		N/A
17	Overload protection of transformers and associated circuits		—
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		N/A
22	Construction		—

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable		N/A
29	Clearances, creepage distances and solid insulation		—
29.1, 29.2, 29.3	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply		N/A
	For insulated winding wires complying with subclause 19.12.3 of IEC 61558-1 there are no requirements for clearances or creepage distances		N/A
	For windings providing reinforced insulation, the distance specified in item 2c of table 13 of IEC 61558-1 is not assessed		N/A
	For safety isolating transformers subjected to periodic voltages with a frequency exceeding 30 kHz, the clearances, creepage distances and solid insulation values specified in IEC 60664-4 are applicable, if greater than the values specified in items 2a, 2c and 3 in table 13 of IEC 61558-1		N/A
H	**ANNEX H (NORMATIVE) SWITCHES**		—
	Switches comply with the following clauses of IEC 61058-1, as modified below:		—
	The tests of IEC 61058-1 carried out under the conditions occurring in the appliance		N/A
	Before being tested, switches are operated 20 times without load		N/A
8	Marking and documentation		—
	Switches are not required to be marked		N/A
	However, a switch that can be tested separately from the appliance marked with the manufacturer’s name or trade mark and the type reference		N/A
13	Mechanism		—
	The tests may be carried out on a separate sample		N/A
15	Insulation resistance and dielectric strength		—
15.1	Not applicable		N/A
15.2	Not applicable		N/A
15.3	Applicable for full disconnection and micro-disconnection		N/A
17	Endurance		—
	Compliance is checked on three separate appliances or switches		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	For 17.2.4.4, the number of cycles declared according to 7.1.4 is 10 000, unless		N/A
	otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335 ..... :		N/A
	Switches for operation under no load and which can be operated only by a tool, and		N/A
	switches operated by hand that are interlocked so that they cannot be operated under load,		N/A
	are not subjected to the tests		N/A
	However, switches without this interlock are subjected to the test of 17.2.4.4 for 100 cycles of operation		N/A
	Subclauses 17.2.2 and 17.2.5.2 not applicable		N/A
	The ambient temperature during the test is that occurring in the appliance during the test of Clause 11 in IEC 60335-1		N/A
	The temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1 (K) ..... :		N/A
20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		—
	Clause 20 is applicable to clearances across full disconnection and micro-disconnection		N/A
	It is also applicable to creepage distances for functional insulation, across full disconnection and micro-disconnection, as stated in Table 24		N/A
I	**ANNEX I (NORMATIVE)** **MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE**		—
	The following modifications to this standard are applicable for motors having basic insulation that is inadequate for the rated voltage of the appliance:		—
8	Protection against access to live parts		—
8.1	Metal parts of the motor are considered to be bare live parts		N/A
11	Heating		—
11.3	The temperature rise of the body of the motor is determined instead of the temperature rise of the windings		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
11.8	The temperature rise of the body of the motor, where in contact with insulating material, not exceeding values in table 3 for the relevant insulating material		N/A
16	Leakage current and electric strength		—
16.3	Insulation between live parts of the motor and its other metal parts is not subjected to the test		N/A
19	Abnormal operation		—
19.1	The tests of 19.7 to 19.9 are not carried out		N/A
19.I.101	Appliance operated at rated voltage with each of the following fault conditions:		—
	- short circuit of the terminals of the motor, including any capacitor incorporated in the motor circuit		N/A
	- short circuit of each diode of the rectifier		N/A
	- open circuit of the supply to the motor		N/A
	- open circuit of any parallel resistor, the motor being in operation		N/A
	Only one fault simulated at a time, the tests carried out consecutively		N/A
22	Construction		—
22.I.101	For class I appliances incorporating a motor supplied by a rectifier circuit, the d.c. circuit being insulated from accessible parts of the appliance by double or reinforced insulation		N/A
	Compliance checked by the tests specified for double and reinforced insulation		N/A
J	**ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS**		—
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		—
5.7	Conditioning of the test specimens		—
	When production samples are used, three samples of the printed circuit board are tested		N/A
5.7.1	Cold		—
	The test is carried out at -25 °C		N/A
5.7.3	Rapid change of temperature		—
	Severity 1 is specified		N/A
5.9	Additional tests		—
	This subclause is not applicable		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
K	**ANNEX K (NORMATIVE)** **OVERVOLTAGE CATEGORIES**		—
	The information on overvoltage categories is extracted from IEC 60664-1		P
	Overvoltage category is a numeral defining a transient overvoltage condition		P
	Equipment of overvoltage category IV is for use at the origin of the installation		N/A
	Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements		N/A
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		P
	If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		N/A
	Equipment of overvoltage category I is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriate low level		N/A
L	**ANNEX L (INFORMATIVE)** **GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES**		—
	Information for the determination of clearances and creepage distances		P
M	**ANNEX M (NORMATIVE)** **POLLUTION DEGREE**		—
	The information on pollution degrees is extracted from IEC 60664-1		P
	Pollution		—
	The microenvironment determines the effect of pollution on the insulation, taking into account the macroenvironment		P
	Means may be provided to reduce pollution at the insulation by effective enclosures or similar		P
	Minimum clearances specified where pollution may be present in the microenvironment		P
	Degrees of pollution in the microenvironment		—
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence		N/A
	- pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected		P
	- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected		P
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		N/A
N	**ANNEX N (NORMATIVE)** **PROOF TRACKING TEST**		—
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:		—
7	Test apparatus		N/A
7.3	Test solutions		N/A
	Test solution A is used		—
10	Determination of proof tracking index (PTI)		N/A
10.1	Procedure		—
	The proof voltage is 100V, 175V, 400V or 600V ..... :		N/A
	The test is carried out on five specimens		N/A
	In case of doubt, additional test with proof voltage reduced by 25V, the number of drops increased to 100		N/A
10.2	Report		—
	The report states if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V		N/A
O	**ANNEX O (INFORMATIVE)** **SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30**		—
	Description of tests for determination of resistance to heat and fire		P
P	**ANNEX P (INFORMATIVE)** **GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN TROPICAL CLIMATES**		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Modifications applicable for class 0 and 01 appliances having a rated voltage exceeding 150V, intended to be used in countries having a tropical climate and that are marked with symbol IEC 60417-6332		—
	Modifications may also be applied to class 1 appliances having a rated voltage exceeding 150V, intended to be used in countries having a tropical climate and that are marked with symbol IEC 60417-6332, if liable to be connected to a supply mains that excludes the protective earthing conductor		—
5.7	The ambient temperature for the tests of clauses 11 and 13 is 40 +3/0 °C		N/A
7.1	The appliance marked with symbol IEC 60417-6332		N/A
7.12	The instructions state that the appliance is to be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA		N/A
	The instructions state that the appliance is considered to be suitable for use in countries having a warm damp equable climate, but may also be used in other countries		N/A
	If symbol IEC 60417-6332 is used, its meaning is explained		N/A
11.8	The values of Table 3 are reduced by 15 K		N/A
13.2	The leakage current for class I appliances not exceeding 0,5 mA		N/A
15.3	The value of t is 37 °C		N/A
16.2	The leakage current for class I appliances not exceeding 0,5 mA (mA):		N/A
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3		N/A
Q	**ANNEX Q (INFORMATIVE)** **SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS**		—
	Description of tests for appliances incorporating electronic circuits		—
R	**ANNEX R (NORMATIVE)** **SOFTWARE EVALUATION**		—
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 validated in accordance with the requirements of this annex		N/A
R.1	Programmable electronic circuits using software		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 constructed so that the software does not impair compliance with the requirements of this standard		N/A
R.2	Requirements for the architecture		—
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 use measures to control and avoid software-related faults/errors in safety-related data and safety-related segments of the software		N/A
R.2.1.1	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.2 have one of the following structures:		—
	- single channel with periodic self-test and monitoring		N/A
	- dual channel (homogenous) with comparison		N/A
	- dual channel (diverse) with comparison		N/A
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 have one of the following structures:		—
	- single channel with functional test		N/A
	- single channel with periodic self-test		N/A
	- dual channel without comparison		N/A
R.2.2	Measures to control faults/errors		—
R.2.2.1	When redundant memory with comparison is provided on two areas of the same component, the data in one area is stored in a different format from that in the other area		N/A
R.2.2.2	Programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.2 and that use dual channel structures with comparison, have additional fault/error detection means for any fault/errors not detected by the comparison		N/A
R.2.2.3	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, means are provided for the recognition and control of errors in transmissions to external safety-related data paths		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
R.2.2.4	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, the programmable electronic circuits incorporate measures to address the fault/errors in safety-related segments and data indicated in table R.1 and R.2 as appropriate		N/A
R.2.2.5	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, detection of a fault/error occur before compliance with clause 19 and 24.102.1 is impaired		N/A
R.2.2.6	The software is referenced to relevant parts of the operating sequence and the associated hardware functions		N/A
R.2.2.7	Labels used for memory locations are unique		N/A
R.2.2.8	The software is protected from user alteration of safety-related segments and data		N/A
R.2.2.9	Software and safety-related hardware under its control is initialized and terminates before compliance with clause 19 and 24.102.1 is impaired		N/A
R.3	Measures to avoid errors		—
R.3.1	General		—
	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, the following measures to avoid systematic fault in the software are applied		—
	Software that incorporates measures used to control the fault/error conditions specified in table R.2 is inherently acceptable for software required to control the fault/error conditions specified in table R.1		N/A
R.3.2	Specification		—
R.3.2.1	Software safety requirements:	Software Id:	N/A
	The specification of the software safety requirements includes the descriptions listed		N/A
R.3.2.2	Software architecture		—

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Clause	Requirement + Test	Result - Remark	Verdict
R.3.2.2.1	The specification of the software architecture includes the aspects listed - techniques and measures to control software faults/errors (refer to R.2.2); - interactions between hardware and software; - partitioning into modules and their allocation to the specified safety functions; - hierarchy and call structure of the modules (control flow); - interrupt handling; - data flow and restrictions on data access; - architecture and storage of data; - time-based dependencies of sequences and data	Document ref. No:	N/A
R.3.2.2.2	The architecture specification is validated against the specification of the software safety requirements by static analysis		N/A
R.3.2.3	Module design and coding		—
R.3.2.3.1	Based on the architecture design, software is suitably refined into modules		N/A
	Software module design and coding is implemented in a way that is traceable to the software architecture and requirements		N/A
R.3.2.3.2	Software code is structured		—
R.3.2.3.3	Coded software is validated against the module specification by static analysis		N/A
	The module specification is validated against the architecture specification by static analysis		N/A
R.3.3.3	Software validation		—
	The software is validated with reference to the requirements of the software safety requirements specification		N/A
	Compliance is checked by simulation of:		—
	- input signals present during normal operation		N/A
	- anticipated occurrences		N/A
	- undesired conditions requiring system action		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

TABLE R.1 [e] – GENERAL FAULT/ERROR CONDITIONS

Component [a]	Fault/error	Acceptable measures [b, c]	Definitions	Document reference for applied measure	Document reference for applied test	Ver-dict
1 CPU 1.1 Registers	Stuck at	Functional test, or periodic self-test using either: - static memory test, or - word protection with single bit redundancy	H.2.16.5 H.2.16.6 H.2.19.6 H.2.19.8.2	--	--	N/A
1.2 VOID	--	--	--	--	--	N/A
1.3 Programme counter	Stuck at	Functional test, or Periodic self-test, or Independent time-slot monitoring, or Logical monitoring of the programme sequence	H.2.16.5 H.2.16.6 H.2.18.10.4 H.2.18.10.2	--	--	N/A
2 Interrupt handling and execution	No interrupt or too frequent interrupt	Functional test, or time-slot monitoring	H.2.16.5 H.2.18.10.4	--	--	N/A
3 Clock	Wrong frequency (for quartz synchronized clock: harmonics/ sub-harmonics only)	Frequency monitoring, or time slot monitoring	H.2.18.10.1 H.2.18.10.4	--	--	N/A
4. Memory 4.1 Invariable memory	All single bit faults	Periodic modified checksum, or multiple checksum, or word protection with single bit redundancy	H.2.19.3.1 H.2.19.3.2 H.2.19.8.2	--	--	N/A
4.2 Variable memory	DC fault	Periodic static memory test, or word protection with single bit redundancy	H.2.19.6 H.2.19.8.2	--	--	N/A
4.3 Addressing (relevant to variable and invariable memory)	Stuck at	Word protection with single bit redundancy including the address	H.2.19.8.2	--	--	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

5 Internal data path	Stuck at	Word protection with single bit redundancy	H.2.19.8.2	--	--	N/A
5.1 VOID	--	--	--	--	--	N/A
5.2 Addressing	Wrong address	Word protection with single bit redundancy including the address	H.2.19.8.2	--	--	N/A
6 External communication	Hamming distance 3	Word protection with multi-bit redundancy, or CRC – single work, or Transfer redundancy, or Protocol test	H.2.19.8.1 H.2.19.4.1 H.2.18.2.2 H.2.18.14	--	--	N/A
6.1 VOID	--	--	--	--	--	N/A
6.2 VOID	--	--	--	--	--	N/A
6.3 Timing	Wrong point in time	Time-slot monitoring, or scheduled transmission Time-slot and logical monitoring, or comparison of redundant communication channels by either: - reciprocal comparison - independent hardware comparator	H.2.18.10.4 H.2.18.18 H.2.18.10.3 H.2.18.15 H.2.18.3	--	--	N/A
	Wrong sequence	Logical monitoring, or time-slot monitoring, or Scheduled transmission	H.2.18.10.2 H.2.18.10.4 H.2.18.18			
7 Input/output periphery	Fault conditions specified in 19.11.2	Plausibility check	H.2.18.13	--	--	N/A
7.1 VOID	--	--	--	--	--	N/A
7.2 Analog I/O 7.2.1 A/D and D/A-converter	Fault conditions specified in 19.11.2	Plausibility check	H.2.18.13	--	--	N/A
7.2.2 Analog multiplexer	Wrong addressing	Plausibility check	H.2.18.13	--	--	N/A
8 VOID	--	--	--	--	--	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

9 Custom chips [d] e.g. ASIC, GAL, gate array	Any output outside the static and dynamic functional specification	Periodic self-test	H.2.16.6	--	--	N/A

NOTE A Stuck-at fault model denotes a fault model representing an open circuit or a non-varying signal level. A DC fault model denotes a stuck-at fault model incorporating short circuit between signal lines.

[a)] For fault/error assessment, some components are divided into their sub-functions.
[b)] For each sub-function in the table, the Table R.2 measure will cover the software fault/error.
[c)] Where more than one measure is given for a sub-function, these are alternatives.
[d)] To be divided as necessary by the manufacturer into sub-functions.
[e)] Table R.1 is applied according to the requirements of R.1 to R.2.2.9 inclusive.

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
S	**ANNEX S (NORMATIVE)** **BATTERY OPERATED APPLIANCES POWERED BY BATTERIES THAT ARE NON-RECHARGEABLE OR NOT RECHARGED IN THE APPLIANCE**		—
	The following modifications to this standard are applicable for battery-operated appliances where the batteries are either non-rechargeable (primary batteries), or		N/A
	rechargeable batteries (secondary batteries) that are not recharged in the appliance		N/A
5.8.1	If the supply terminals for the connection of the battery have no indication of polarity, the more unfavourable polarity is applied		N/A
5.S.101	Appliances intended for use with a battery box are tested with the battery box supplied with the appliance or with the battery box recommended in the instructions		N/A
5.S.102	Appliances are tested as motor-operated appliances.		N/A
7.1	Appliances marked with the battery voltage (V) and the polarity of the terminals, unless ....:		N/A
	the polarity is irrelevant		N/A
	Appliances also marked with:		—
	– name, trade mark or identification mark of the manufacturer or responsible vendor ....:		N/A
	– model or type reference ....:		N/A
	– IP number according to degree of protection against ingress of water, other than IPX0... .....:		N/A
	– type reference of battery or batteries..... .....:		N/A
	If relevant, the positive terminal is indicated by the symbol IEC 60417-5005 and the negative terminal by the symbol IEC 60417-5006		N/A
	If appliances use more than one battery, they are marked to indicate correct polarity connection of the batteries		N/A
7.6	Additional symbols		N/A
7.12	The instructions contain the following, as applicable:		—
	– the types of batteries that may be used... .....:		N/A
	– how to remove and insert the batteries		N/A
	– non-rechargeable batteries are not to be recharged		N/A
	– rechargeable batteries are to be removed from the appliance before being charged		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	– different types of batteries or new and used batteries are not to be mixed		N/A
	– batteries are to be inserted with the correct polarity		N/A
	– exhausted batteries are to be removed from the appliance and safely disposed of		N/A
	– if the appliance is to be stored unused for a long period, the batteries are removed		N/A
	– the supply terminals are not to be short-circuited		N/A
11.5	Appliances are supplied with the most unfavourable supply voltage between		—
	– 0,55 and 1,0 times the battery voltage, if the appliance can be used with non-rechargeable batteries		N/A
	– 0,75 and 1,0 times battery voltage, if the appliance is designed for use with rechargeable batteries only		N/A
	The values specified in Table S.101 for the internal resistance per cell of the battery is taken into account		N/A
19.1	The tests are carried out with the battery fully charged unless otherwise specified		N/A
19.13	The battery does not rupture or ignite		N/A
19.S.101	Appliances are supplied with the voltage specified in 11.5. The supply terminals having an indication of polarity are connected to the opposite polarity, unless		N/A
	such a connection is unlikely to occur due to the construction of the appliance		N/A
19.S.102	For appliances with provision for multiple batteries, one or more of the batteries are reversed and the appliance is operated, if reversal of batteries is allowed by the construction		N/A
25.5	The flexible leads or flexible cord used to connect an external battery or battery box in is connected to the appliance by a type X attachment		N/A
25.13	This requirement is not applicable to the flexible leads or flexible cord connecting external batteries or a battery box with an appliance		N/A
25.S.101	Appliances have suitable means for connection of the battery. If the type of battery is marked on the appliance, the means of connection is suitable for this type of battery		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
26.5	Terminal devices in an appliance for the connection of the flexible leads or flexible cord connecting an external battery or battery box are so located or shielded that there is no risk of accidental connection between supply terminals		N/A
30.2.3.2	There is no battery in the area of the vertical cylinder used for the consequential needle flame test, unless		N/A
	the battery is shielded by a barrier that meets the needle flame test of Annex E, or		N/A
	that comprises material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
T	**ANNEX T (NORMATIVE) UV-C RADIATION EFFECT ON NON-METALLIC MATERIALS**		—
	Requirements for non-metallic materials subject to direct or reflected UV-C radiation exposure and whose mechanical and electrical properties are relied upon for compliance with the		N/A
	Does not apply to glass, ceramic and similar materials		N/A
	Tested as specified in ISO 4892-1 and ISO 4892-2, with the following modifications:		—
	Modifications to ISO 4892-1:		—
5.1.6	The UV-C emitter is a low pressure mercury lamp with a quartz envelope having a continuous spectral irradiance of 10 W/m2 at 254 nm		N/A
	Subclause 5.1.6.1 and Table 1 are not applicable		N/A
5.2.4	The black-panel temperature shall be 63 °C +/- 3 °C		N/A
5.3.1	Humidification of the chamber air is specified in part 2 when necessary		N/A
9	This clause is not applicable		N/A
	Modifications to ISO 4892-2:		—
7.1	At least three test specimens are tested		N/A
	Ten samples of internal wiring is tested		N/A
7.2	The specimens are attached to the specimen holders such that they are not subject to any stress		N/A
7.3	Apparatus prepared as specified		N/A
	The test specimens and, if used, the irradiance-measuring instrument are exposed for 1 000 h		N/A
7.4	If used, a radiometer is mounted and calibrated such that it measures the irradiance at the exposed surface of the test specimen		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
7.5	Material properties and test methods for parts providing mechanical support or impact resistance as specified in Table T.1		N/A
	Material properties and test method for electrical insulation of internal wiring as specified in Table T.2		N/A
8	This clause is not applicable		N/A
AA	**ANNEX AA (INFORMATIVE) (IEC 60335-2-40)** **EXAMPLES FOR OPERATING TEMPERATUES OF THE APPLIANCE**		—
	Table AA.1 Examples for operating temperatures of the appliance		P
BB	**ANNEX BB (NORMATIVE) (IEC 60335-2-40)** **SELECTED INFORMATION ABOUT REFRIGERANTS**		—
	Table BB.1 Refrigerant designation		P
CC	**ANNEX CC(INFORMATIVE) (IEC 60335-2-40)** **TRANSPORTATION, MARKING AND STORAGE FOR UNITS THAT EMPLOY FLAMMABLE REFRIGERANTS**		—
DD	**ANNEX DD (NORMATIVE) (IEC 60335-2-40)** **SERVICE OPERATIONS**		—
DD.1	**General**		—
	Each service manual shall include requirements of clauses according to Table DD.1. Different manuals can be combined into one manual.	=	P
DD.2	**Symbols**		—
	The symbols referred to in 7.6 (without colours is permitted) and the information of the warning marking shall be provided as follows:		P
	WARNING Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.		P
	The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.		P
	Do not pierce or burn.		P
	Be aware that refrigerants may not contain an odour.		P
	The manufacturer may provide other suitable examples or may provide additional information about the refrigerant odour.		P
DD.3	**Information in manual**		—

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
DD.3.1	**General**		—
	The following information shall be specified in the manual where the information is needed for the function of the manual and as applicable to the appliance:		P
	- information for spaces where refrigerant pipes are allowed, including statements	Refrigerant piping work is not required	N/A
	that the installation of pipe-work shall be kept to a minimum;	Refrigerant piping work is not required	N/A
	that pipe-work shall be protected from physical damage and, in the case of flammable refrigerants, shall not be installed in an unventilated space, if that space is smaller than Amin in Annex GG, except for A2L refrigerants where the installed pipes comply with 22.116. In case of field charge, the effect on refrigerant charge caused by the different pipe length has to be quantified;	- Refrigerant piping work is not required - The refrigerant cycle is completed inside the outdoor unit	N/A
	that compliance with national gas regulations shall be observed;		P
	that mechanical connections made in accordance with 22.118 shall be accessible for maintenance purposes;		N/A
	that, for appliances containing flammable refrigerants, the minimum floor area of the room shall be mentioned in the form of a table or a single figure without reference to a formula;	The refrigerant cycle is completed inside the outdoor unit	N/A
	- the maximum refrigerant charge (m_{max});	No additional charge required	N/A
	- instructions how to determine the additional refrigerant charge and how to complete the refrigerant charge on the label provided by the manufacturer considering the requirements in 7.107;	No additional charge required	N/A
	- the minimum rated airflow, if required by Annex GG;		N/A
	- information for handling, installation, cleaning, servicing and disposal of refrigerant;		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	-for appliances using flammable refrigerants, instructions shall include the minimum installed height hinst (when required to calculate Amin), refrigerant charge mc and minimum room area of the space Amin or a minimum room area of conditioned space TAmin where applicable. Additional minimum room area data may be provided based on other installed heights and/or charge levels.	The refrigerant cycle is completed inside the outdoor unit	N/A
	- detailed instructions on how to install the appliance to ensure that the release height h0 as determined in Clause GG.2 of the installed appliance is not lower than h0 used for the calculation of Amin;		N/A
	- a warning to keep any required ventilation openings clear of obstruction;		P
	- a notice that servicing shall be performed only as recommended by the manufacturer;		P
	- a warning that ducts connected to an appliance shall not contain a potential ignition source;		N/A
	- instructions for wiring to external zoning dampers and/or mechanical ventilation, if required to comply with Clause GG.9, to ensure that upon detection of a leak, the zoning dampers are driven fully open and additional mechanical ventilation is activated;		N/A
	- for appliances relying on safety measures according to GG.8.3 instructions for wiring to external ventilation;		N/A
	- when a remote located refrigerant sensor is specified by the manufacturer, the instructions shall state when it is required and how to install and connect the sensor;		N/A
	- for appliances using A2L refrigerants, connected via an air duct system to one or more rooms, the supply and return air shall be directly ducted to the space. Open areas such as false ceilings shall not be used as a return air duct;		N/A
	- the following information requirements apply for enhanced tightness refrigerating systems using A2L refrigerants:		N/A
	Equipment piping in the occupied space shall be installed in such a way to protect against accidental damage in operation and service.		P
	Precautions shall be taken to avoid excessive vibration or pulsation to refrigerating piping.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Protection devices, piping and fittings shall be protected as far as possible against adverse environmental effects, for example, the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris.		P
	Provision shall be made for expansion and contraction of long runs of piping.		P
	Piping in refrigerating systems shall be so designed and installed to minimize the likelihood hydraulic shock damaging the system.		P
	Solenoid valves shall be correctly positioned in the piping to avoid hydraulic shock.		P
	Solenoid valves shall not block in liquid refrigerant unless adequate relief is provided to the refrigerant system low pressure side.		P
	Steel pipes and components shall be protected against corrosion with a rustproof coating before applying any insulation.		N/A
	Flexible pipe elements shall be protected against mechanical damage, excessive stress by torsion, or other forces. They should be checked for mechanical damage annually.		N/A
	The indoor equipment and pipes shall be securely mounted and guarded such that accidental rupture of equipment cannot occur from such events as moving furniture or reconstruction activities.		N/A
	Where safety shut off valves are specified, the minimum room area may be determined based on the maximum amount of refrigerant that can be leaked as determined in GG.12.2.		N/A
	Where safety shut off valves are specified, the location of the valve in the refrigerating system relative to the occupied spaces shall be as described in GG.12.1.		N/A
	Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure. No leak shall be detected.		N/A
	- For mechanical ventilation as specified in GG.8.3, the air extraction opening from the room shall be located equal or below the refrigerant release point. For floor mounted units, it shall be as low as practicable. The air extraction openings shall be located in a sufficient distance from the air intake openings to prevent re-circulation to the space.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
DD.3.2	**Unventilated areas**		—
	For appliances containing more than m1 for any refrigerating circuit, the manual shall include a statement advising that an unventilated area where the appliance using flammable refrigerants is installed shall be so constructed that should any refrigerant leak, it will not stagnate so as to create a fire or explosion hazard. This shall include:		P
	- a warning that the non-fixed appliance shall be stored in an well-ventilated area where the room size corresponds to the room area as specified for operation;		N/A
	- a warning that the non-fixed appliance shall be stored in a room without continuously operating open flames (for example an operating gas appliance) and or other potential ignition sources (for example an operating electric heater, hot surfaces);		N/A
	- a warning that if appliances with A2L refrigerants connected via an air duct system to one or more rooms are installed in a room with an area less than Amin as determined in Clause GG.2, that room shall be without continuously operating open flames (for example an operating gas appliance) or other potential ignition sources (for example an operating electric heater, hot surfaces). A flame-producing device may be installed in the same space if the device is provided with an effective flame arrest;		N/A
	- for appliances using A2L refrigerants connected via an air duct system to one or more rooms, a warning with the substance of the following: “Auxiliary devices which may be a potential ignition source shall not be installed in the duct work. Examples of such potential ignition sources are hot surfaces with a temperature exceeding X°C and electric switching devices”;		N/A
	- for appliances using A2L refrigerants connected via an air duct system to one or more rooms, a warning that only auxiliary devices approved by the appliance manufacturer or declared suitable with the refrigerant shall be installed in connecting ductwork. The manufacturer can list in the instructions all approved auxiliary devices by the manufacturer and model number for use with the specific appliance, if those devices have a potential to become an ignition source.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	The manufacturer should specify other potential continuously operating sources known to cause ignition of the refrigerant used.		P
DD.3.3	**Qualification of workers**		—
	The manual shall contain specific information about the required qualification of the working personnel for maintenance, service and repair operations. Every working procedure that affects safety means shall only be carried out by competent persons according to Annex HH.		P
	Examples for such working procedures are:		P
	breaking into the refrigerating circuit;		P
	opening of sealed components;		P
	opening of ventilated enclosures.		P
DD.4	**Information on servicing**		—
DD.4.1	**General**		—
	The manual shall contain specific information for service personnel according to DD.4.2 to DD.4.10.		P
DD.4.2	**Checks to the area**		—
	Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised. For repair to the refrigerating system, DD.4.3 to DD.4.7 shall be completed prior to conducting work on the system.		P
DD.4.3	**Work procedure**		—
	Work shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed.		P
DD.4.4	**General work area**		—
	All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.		P
DD.4.5	**Checking for presence of refrigerant**		—
	The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
DD.4.6	**Presence of fire extinguisher**		—
	If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.		P
DD.4.7	**No ignition sources**		—
	No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.		P
	All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space.		P
	Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.		P
DD.4.8	**Ventilated area**		—
	Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.		P
	A degree of ventilation shall continue during the period that the work is carried out.		P
	The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.		P
DD.4.9	**Checks to the refrigerating equipment**		—
	Where electrical components are being changed, they shall be fit for the purpose and to the correct specification.		P
	At all times the manufacturer’s maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer’s technical department for assistance.		P
DD.4.10	**Checks to electrical devices**		—
	Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.		P
	Initial safety checks shall include:		P
	that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;		P
	that no live electrical components and wiring are exposed while charging, recovering or purging the system;		P
	that there is continuity of earth bonding.		P
DD.5	**Repairs to sealed components**		—
DD.5.1	During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.		P
DD.5.2	Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.		P
	Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres.		P
	Replacement parts shall be in accordance with the manufacturer’s specifications.		P
DD.6	**Repair to intrinsically safe components**		—
	Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.		P
	Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.		P
DD.7	**Cabling**		—
	Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects.		P
	The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.		P
DD.8	**Detection of flammable refrigerants**		—
	Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.		P
	Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration.		P
	Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.		P
	Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.		P
	If a leak is suspected, all naked flames shall be removed/extinguished.		P
	If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.		P
DD.9	**Removal and evacuation**		—
	When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used.		P
	However, for flammable refrigerants it is important that best practice is followed since flammability is a consideration.		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	The following procedure shall be adhered to:		P
	remove refrigerant;		P
	purge the circuit with inert gas		P
	evacuate		P
	purge with inert gas		P
	open the circuit by cutting or brazing.		P
	The refrigerant charge shall be recovered into the correct recovery cylinders.		P
	For appliances containing flammable refrigerants other than A2L refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants		P
	This process may need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.		P
	For appliances containing flammable refrigerants, other than A2L refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.		P
	This process shall be repeated until no refrigerant is within the system.		P
	When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.		P
	Ensure that the outlet for the vacuum pump is not close to any potential ignition sources and that ventilation is available.		P
DD.10	**Charging procedures**		—
	In addition to conventional charging procedures, the following requirements shall be followed.		P
	Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.		P
	Cylinders shall be kept in an appropriate position according to the instructions.		P
	Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Label the system when charging is complete (if not already).		P
	Extreme care shall be taken not to overfill the refrigerating system.		P
	Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas.		P
	The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.		P
DD.11	**Decommissioning**		—
	Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail.		P
	It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.		P
	a) Become familiar with the equipment and its operation.		P
	b) Isolate system electrically.		P
	c) Before attempting the procedure, ensure that:		P
	mechanical handling equipment is available, if required, for handling refrigerant cylinders;		P
	all personal protective equipment is available and being used correctly;		P
	the recovery process is supervised at all times by a competent person;		P
	recovery equipment and cylinders conform to the appropriate standards.		P
	d) Pump down refrigerant system, if possible.	No pump down required	N/A
	e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.		P
	f) Make sure that cylinder is situated on the scales before recovery takes place.		P
	g) Start the recovery machine and operate in accordance with instructions.		P
	h) Do not overfill cylinders (no more than 80 % volume liquid charge).		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	i) Do not exceed the maximum working pressure of the cylinder, even temporarily.		P
	j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.		P
	k) Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.		P
DD.12	**Labelling**		—
	Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant.		P
	The label shall be dated and signed.		P
	For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.		P
DD.13	**Recovery**		—
	When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.		P
	The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.		P
	The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.		P
	If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.		P
EE	**ANNEX EE (NORMATIVE) PRESSURE TESTS**	**(IEC 60335-2-40)**	—
EE.1	**General**		—
	All refrigerating system parts shall withstand the maximum allowable pressure expected in normal operation, abnormal operation, and standstill.		P
	compressor tested for compliance with IEC 60335-2-34 need not be additionally tested.		P
EE.2	**Pressure test value determined under testing carried out in Clause 11**		—

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	A refrigerating system component that is exposed to pressure shall be subjected to measurement of the maximum allowable pressure developed in the refrigerating system when tested under the conditions specified in Clause 11.		P
	The pressure test value shall be at least three times the maximum allowable pressure developed during operation under Clause 11.		P
EE.3	**Pressure test value determined under testing carried out in Clause 19**		—
	A refrigerating system component that is exposed to pressure shall be subjected to measurement of the maximum allowable pressure developed in the refrigerating system when tested under the conditions specified in Clause 19.		P
	The pressure test value shall be at least three times the maximum allowable pressure developed during abnormal operation (see Clause 19).		P
EE.4	**Pressure test value determined under testing carried out under standstill conditions**		—
EE.4.1	In order to determine the standstill pressure, the appliance shall be soaked in the highest operating temperature specified by the manufacturer for 1 h with power off.		N/A
	A refrigerating system component that is exposed only to low side pressure shall be subjected to measurement of the maximum allowable pressure developed in the refrigerating system under the condition of standstill.		N/A
	The pressure test value shall be at least three times the maximum allowable pressure developed during standstill.		N/A
	Pressure gauges and control mechanisms need not be subjected to the test, provided the parts meet the requirements of the component.		N/A
EE.4.2	The pressure test shall be carried out on three samples of each component. The test samples are filled with a liquid, such as water, to exclude air and are connected in a hydraulic pump system. The pressure is raised gradually until the required test pressure is reached. The pressure is maintained for at least 1 min, during which time the sample shall not leak.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Where gaskets are employed for sealing parts under pressure, leakage at gaskets is acceptable, provided the leakage only occurs at a value greater than 120 % of the maximum allowable pressure and the test pressure is still reached for the specified time. Additional sealing measures, such as an “O” ring, for pressure testing may be provided.		N/A
EE.5	**Fatigue test option for Clause EE.1 and EE.4.2**		—
EE.5.1	The components shall be subjected to a test at 66,7 % of the test pressure determined by Clauses EE.2, EE.3 or EE.4, provided the components comply with the fatigue test in Clause EE.5. This test is conducted on a separate sample.		N/A
EE.5.2	Three samples of each refrigerant-containing part shall be tested at the cyclic pressure values specified in EE.5.7 and EE.5.8 for the number of cycles specified in EE.5.6, as described in EE.5.4.		N/A
EE.5.3	The samples shall be considered to comply with EE.5.5 on completion of the test and if they do not rupture, burst, or leak.		N/A
EE.5.4	The test samples shall be filled with fluid, and shall be connected to a pressure driving source. The pressure shall be raised and lowered between the upper and lower cyclic values at a rate specified by the manufacturer. The pressure shall reach the specified upper and lower values during each cycle. The shape of the pressure cycle shall be such that the upper and lower pressure values shall be maintained for at least 0,1 s.		N/A
	the operating temperatures of the appliance under the conditions of steady state operation of Clause 11 are less than or equal to 125 °C for copper or aluminium, or 200 °C for steel, the test temperature of the component part or assembly shall be at least 20 °C.		N/A
	If the continuous operating temperature of the component exceeds 125 °C for copper or aluminium, or 200 °C for steel, the test temperature of the parts or assemblies that are at these temperatures, and subjected to the pressure, shall be at least 25 °C greater than the temperature of the part measured during the test of Clause 11 for copper or aluminium and 60 °C higher for steel.		N/A
	For other materials, the effects of temperature on the material fatigue characteristics shall be evaluated by conducting the test at the higher temperatures and considering the material characteristics at the higher temperatures.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
EE.5.5	The pressure for the first cycle shall be the maximum evaporating pressure for low-pressure side components or the maximum condensing pressure for the high-pressure side components.		N/A
EE.5.6	The total number of cycles shall be 250 000. The test pressures shall be determined by EE.5.7 (except the first and last cycles as noted in EE.5.5 and EE.5.8).		N/A
EE.5.7	The pressure for the test cycles shall be as follows:		N/A
	a) For components subject to high side pressures, the upper pressure value shall not be less than the saturated vapour pressure of the refrigerant at 50 °C and the lower pressure value shall not be greater than the saturated vapour pressure of the refrigerant at 5 °C. For hot water heat pumps, the upper pressure shall not be less than 80 % of the maximum allowable pressure under the conditions of Clause 11.		N/A
	b) For components subjected to only low side pressures, the upper pressure value shall be not less than the saturated vapour pressure of the refrigerant at 30 °C and the lower pressure value shall be between 0 bar and the greater of 4,0 bar or the saturated vapour pressure of the refrigerant at –13 °C.		N/A
EE.5.8	For the final test cycle, the test pressure shall be increased to two times the minimum upper pressure specified in EE.5.7.		N/A
FF	**ANNEX FF (NORMATIVE) (IEC 60335-2-40)** **LEAK SIMULATION TESTS**		—
FF.1	**General**		—
	A leakage of refrigerant is simulated at the most critical point in the refrigeration refrigerating system.		N/A
	The method to simulate a leakage at the most critical point is to inject refrigerant vapour through a suitable capillary tube at that point.		N/A
	A critical point is a joint in the refrigerant system tubing, a bend of more than 90°, or other point judged to be a weak point in the refrigerant containing system due to the thickness of the metal, exposure to damage, sharpness of a bend or the manufacturing process.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	A quantity of refrigerant leaked is equal to the rated refrigerant charge amount or the amount that will leak as determined by test. The refrigerant is injected at the most critical point and the most unfavourable direction at ambient temperature (20 °C to –25 °C). Where LFL is referenced in this annex, the LFL shall be taken at the nominal composition as specified in ISO 817.		N/A
FF.2	**Test methods**		—
FF.2.1	The appliance is modified by introducing a simulated leak through a capillary tube. The leak rate shall be maintained at 25 % ± 5 % of the refrigerant charge in 1 min.		N/A
FF.2.2	During this test, the appliance is switched off or operated under normal operation at rated voltage, whichever gives the most unfavourable result unless a prepurge is activated prior to energizing any loads, in which case the test shall be conducted with the appliance operating. During a test where the appliance is operating, refrigerant gas injection is started at the same time as the appliance is switched on.		N/A
FF.2.3	For refrigerant blends, the test shall be carried out using the nominal composition as defined in ISO 817.		N/A
FF.2.4	The test is conducted in a room that is draft free and of sufficient size to conduct the test.		N/A
	The minimum volume (V) is: V = (15 x mc)/LFL		N/A
	Care shall be taken that the installation of the capillary tube does not unduly influence the results of the test and that the structure of the appliance does not unduly influence the results of the test.		N/A
	The instrument used for monitoring the refrigerant gas concentration shall have a fast response to the gas concentration, typically 2 s to 3 s and shall be located so as to not unduly influence the results of the test.		N/A
	If gas chromatography is used to measure the refrigerant gas concentrations, the gas sampling in confined areas shall not exceed 2 ml every 30 s.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
FF.2.5	The measured concentration of refrigerant gas surrounding the component shall not exceed 25 % of the LFL of the refrigerant gas, and shall not exceed 15 % of the LFL of the refrigerant gas for a time period of 5 min or the duration of the test if less than 5 min during and after the amount has been injected. The measured concentration of refrigerant gas surrounding a component that will not function during the prepurge time may exceed the 25 % of the LFL during the prepurge time.		N/A
	The LFL is as specified in Annex BB for the refrigerant used.		N/A
GG	**ANNEX GG (NORMATIVE) (IEC 60335-2-40) CHARGE LIMITS, VENTILATION REQUIREMENTS AND REQUIREMENTS FOR SECONDARY CIRCUITS**		—
GG.1	**Requirements for refrigerant charge limits**		—
GG.1.1	General		—
	When a flammable refrigerant is used, the requirements for installation space of appliance and/or ventilation requirements are determined according to	The refrigerant cycle is completed inside the outdoor unit	P
	- the refrigerant charge (M) (mc) used in the appliance,		P
	- the installation location,		P
	- the type of ventilation of the location or of the appliance.		P
	Symbol mc denotes the refrigerant charge of a single refrigerating system. Where multiple refrigerating systems are servicing the same space, the refrigerating system with the largest refrigerant charge shall be used.		P
	Where the parameters lower flammability limit (LFL) and molecular weight (M) are referenced in Annex GG, the values used shall be based on WCF – Worst Case Formulation as defined in ISO 817.		P
GG.1.2	**Determination of the case applicable**		—
	Determine the case applicable based on the relationship of the refrigerant charge (mc) and m1, m2, m3, defined as follows:		P
	m1 = 4 × LFL		P
	m2 = 26 × LFL		P
	m3 = 130 × LFL		P
	where *LFL* is the lower flammability limit in kg/m3 for the refrigerant used.		P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	For A2L refrigerants, m1, m2, m3 is defined as follows:		N/A
	m1 = 6 × LFL		N/A
	m2 = 52 × LFL		N/A
	m3 = 260 × LFL		N/A
	where LFL is the lower flammable limit in kg/m3 for the refrigerant used.		N/A
	If an appliance with A2L refrigerant has more than one refrigerating system, refrigerant charge (mc) refers to the refrigerating system with the largest charge serving the same space.		N/A
GG.1.3	**Determination of unventilated room area for appliances using A2L refrigerants**		—
	For the purpose of determination of room area (A) when used to calculate the maximum allowable refrigerant charge (mmax) in an unventilated space, the following shall apply.		N/A
	The room area (A) shall be defined as the room area enclosed by the projection to the floor of the walls, partitions and doors of the space in which the appliance is installed.		N/A
	Spaces connected by only drop ceilings, ductwork, or similar connections shall not be considered a single space.		N/A
	For units mounted higher than 1,6 m, and in compliance with GG.2.2, spaces divided by partition walls which are no higher than 1,6 m shall be considered a single space.		N/A
	For fixed appliances, rooms on the same floor and connected by an open passageway between the spaces can be considered a single room when determining compliance to Amin, if the passageway complies with all of the following.		N/A
	It is a permanent opening.		N/A
	It extends to the floor.		N/A
	It is intended for people to walk through.		N/A
	For fixed appliances, the area of the adjacent rooms, on the same floor, connected by permanent opening in the walls and/or doors between occupied spaces, including gaps between the wall and the floor, can be considered a single room when determining compliance to Amin, provided all of the following are met.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	The space shall have appropriate openings according to GG.1.4.		N/A
	The minimum opening area for natural ventilation Anvmin shall not be less than Anv_{min}		N/A
	The equation is not applicable for refrigerants with a molar mass less than 42, as the equation is based on the principle that the density of the gases generates sufficient driving force to be successfully used with natural ventilation.		N/A
GG.1.4	**Opening conditions for connected rooms and natural ventilation**		—
	When the openings for connected rooms or natural ventilation are required, the following conditions shall be applied.		N/A
	The area of any openings above 300 mm from the floor shall not be considered in determining compliance with Anvmin. The area of any openings above 300 mm from the floor shall not be considered in determining compliance with Anvmin.		N/A
	At least 50 % of the required opening area Anvmin shall be below 200 mm from the floor.		N/A
	The bottom of the lowest openings shall not be higher than the point of release when the unit is installed and not more than 100 mm from the floor.		N/A
	Openings are permanent openings which cannot be closed.		N/A
	The height of the openings between the wall and floor which connect the rooms are not less than 20 mm.		N/A
	A second higher opening shall be provided. The total size of the second opening shall not be less than 50 % of minimum opening area for Anvmin and shall be at least 1,5 m above the floor.		N/A
GG.2	**Requirements for charge limits in unventilated areas**		—
GG.2.1	**General**		—
	Clause GG.2 is applicable for appliances with a refrigerant charge m1 < mc ≤ m2 and for non-fixed factory sealed single package units with a refrigerant charge of m1 < mc ≤ 2 × m1:		N/A
	For non-fixed factory sealed single package units with a refrigerant charge of m1 < mc ≤ 2 × m1, the requirements of Clause GG.7 apply.		N/A
	For systems using A2L refrigerants with a refrigerant charge of m1 < mc ≤ m3 that comply with the conditions in 22.125, the requirements of Clause GG.10 can apply.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	For other appliances with a refrigerant charge of m1 < mc ≤ m2:		N/A
	The maximum refrigerant charge in a room shall be in accordance with the following:		N/A
	mmax = 2,5 × (LFL)(5/4) × h0 × (A)1/2, not to exceed mmax = SF × LFL × h0 × A (GG.8)		N/A
	or the required minimum floor area Amin to install an appliance with refrigerant charge mc (kg) shall be in accordance with following:		N/A
	Amin = (mc / (2,5 × (LFL)(5/4) × h0)) 2, not less than Amin = mc / (SF × LFL × h0) (GG.9)		N/A
	If the minimum installed height given by the manufacturer is higher than the reference installed height, then in addition Amin and mmax for the reference installed height have to be given by the manufacturer. An appliance may have multiple reference installed heights. In this case, Amin and mmax calculations shall be provided for all applicable reference installed heights.		N/A
	For appliances serving one or more rooms with an air duct system, the lowest opening of the duct connection to each conditioned space or any opening of the indoor unit greater than 5 cm2, at the lowest position to the space, shall be used for h0. However, h0 shall not be less than 0,6 m. Amin shall be calculated as a function of the opening heights of the duct to the spaces and the refrigerant charge for the spaces where leaked refrigerant may flow to, considering where the unit is located. Amin shall be calculated for the spaces where a duct is connected or an indoor unit is located. If all spaces have room area more than respective Amin, no further measure is required. If any room area of spaces is below Amin, measures according to Clause GG.8 or GG.9 shall be provided for appliances using A2L refrigerants.		N/A
GG.2.2	**Appliances using A2L refrigerants with incorporated circulation airflow**		—
GG.2.2.1	**General**		—
	Incorporated circulation airflow applies to fixed appliances only.		N/A
	When the fan incorporated to an appliance is continuously operated or operation is initiated by a refrigerant detection system with a sufficient circulation airflow rate (see also Table GG.2), the maximum refrigerant charge can be increased or minimum room area can be reduced according to the following:		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	The maximum refrigerant charge in a room shall be in accordance with m_{max}		N/A
	or the required minimum room area Amin of installed appliance with refrigerant charge mc (kg) shall be in accordance with Amin		N/A
	Circulation airflow (Table GG.2)		—
G.2.2.2	**Continuous circulation airflow**		—
	The fan shall run continuously, other than for short periods for maintenance and service. The airflow shall be detected continuously or monitored continuously. Within 10 s in the event that the airflow is reduced, the following actions shall be taken:		N/A
	Disable the compressor operation.		N/A
	Warn user that airflow is reduced.		N/A
GG.2.2.3	**Circulation airflow activated by a refrigerant detection system**		—
	If a refrigerant detection system is activated per Annex LL, the following actions shall be taken and continue for at least 5 min after the refrigerant detection system has reset:		N/A
	The fan shall be switched on.		—
	Disable the compressor operation unless the compressor operation reduces the leak rate or the total amount released to the indoor space.		N/A
	Where a remote refrigerant detection system is used in a room with multiple units, all of the detection system activated safety measures shall be applied to all units in the room which rely on the remote refrigerant detection system.		N/A
GG.3	**Requirements for charge limits in areas with mechanical ventilation**		—
	Mechanical ventilation applies to fixed appliances only.		N/A
	Mechanical ventilation occurs when the appliance enclosure or the room is provided with a ventilating system that, in the event of a leak, is intended to vent refrigerant into an area where there is not a potential ignition source and the gas can be readily dispersed.		N/A
	The appliance enclosure shall have a ventilation system that produces airflow within the appliance enclosure and meets the requirements of Clause GG.4 or is intended to be installed in a room that meets the requirements of Clause GG.5.		N/A
GG.4	**Requirements for mechanical ventilation within the appliance enclosure**		—

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	The refrigerating circuit is provided with a separate enclosure that does not communicate with allow flow from inside the enclosure to the room. The appliance enclosure shall have a ventilation system that produces airflow from the appliance interior to the outside through a ventilation shaft.		N/A
	The manufacturer shall specify the ventilation shaft width and height, the maximum length and number of bends		N/A
	The negative pressure measurement in the interior of the appliance enclosure shall be 20 Pa or more and the flow rate to the exterior shall be at least Qmin.		N/A
GG.5	**Requirements for mechanical ventilation for rooms complying with ISO 5149**		—
	Machinery rooms shall meet the requirements of Clause 5 of ISO 5149-3:2014.		N/A
GG.6	**Requirements for refrigerating systems employing secondary heat exchangers**		—
	If a flammable refrigerant is used and the system contains a secondary heat exchanger, the heat exchanger shall not allow the release of refrigerant into areas served by the secondary heat exchanger fluid if these areas are covered by Annex GG. The following may be considered to comply with this requirement:		N/A
	- an open loop secondary system vented to the outside; or		N/A
	- an automatic air/refrigerant separator and pressure relief valve is placed in the secondary circuit on the outlet pipe from the evaporator or the condenser. The air/refrigerant separator and pressure relief valve is at a high level relative to the outlet of the heat exchanger where leaked refrigerant may accumulate. The pressure relief valve shall have a flow rating rated to discharge the refrigerant that can be released through the heat exchanger. The air/refrigerant separator and pressure relief valve shall discharge the refrigerant into a space compliant with the charge limitations in Annex GG or to the outside; or		N/A
	- a double wall heat exchanger, or		N/A
	- a refrigerant system where the pressure of the secondary circuit is always greater than the pressure of the primary circuit in the area of contact, or		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- the bursting of the secondary heat exchanger is avoided by		N/A
	1) the use of a freezing protection device (testing of which is described in item 2) below) which considers:		N/A
	fluid freezing point;		N/A
	distribution through the heat exchanger;		N/A
	glide of the evaporating refrigerant;		N/A
	service procedures that could lead to freeze damage, for example adding or removing the refrigerant in liquid phase from a heat exchanger containing standing water;		N/A
	2) specifying requirements for specific properties of the secondary heat exchanger fluid to prevent corrosion, including:		N/A
	water: the manufacturer shall specify in the installation manual the water quality necessary for the specified heat exchanger;		N/A
	brine: the manufacturer shall specify in the installation manual the type of brine and its permitted concentration range for which the heat exchanger is suitable.		N/A
GG.7	**Non fixed factory sealed single package units with a refrigerant charge of *m*1 < *mc* ≤ 2 × *m*1**		—
GG.7.1	**Determination of refrigerant charge**		—
	For non-fixed factory sealed single package units (i.e. one functional unit in one enclosure) with a refrigerant charge amount of m1 < M mc ≤ 2 × m1, the maximum refrigerant charge in a room shall be in accordance with m_{max}		N/A
	or the required minimum floor area, Amin, to install an appliance with refrigerant charge mc shall be in accordance with A_{min}		N/A
	When the appliance is switched on, a fan shall operate continuously supplying a minimum airflow as under normal steady state conditions, even when the compressor is switched off by the thermostat.		N/A
GG.7.2	**Mechanical requirements**		—
GG.7.2.1	**General**		—
	The appliance shall withstand the effects of dropping and vibration during transport and normal use without leaking refrigerant.		N/A
GG.7.2.2	**Random vibration test**		—

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	The appliance is tested in its final packaging for transport and shall withstand a random vibration test for 180 min according to ASTM D 4728-06. The power spectral density profiles to be applied are those specified in Figure X1.1 and Table X1.1 of ASTM D 4728-06:2012 for truck transportation.		N/A
GG.7.2.3	**Drop test with packaging**		—
	The appliance is tested in its final packaging for transport and shall withstand the following number of drops on a horizontal hardwood board 20 mm thick placed on a concrete or similar hard surface:		N/A
	one with the appliance held upright;		—
	one for each of the four edges of the bottom side, with the bottom side forming an angle of about 30° to the horizontal.		N/A
GG.7.2.4	**Drop test without packaging**		—
	The tests of GG.7.2.3 are repeated on the appliance without its packaging and with the drop height according to the Table GG.4		N/A
GG7.2.5	**Test after installation**		—
	The appliance is installed in accordance with the installation instructions. It is supplied at rated voltage or at the upper limit of the rated voltage range and operated at ambient temperature.		N/A
GG.7.3	**Vibration test**		—
	The appliance shall be constructed so that its operation does not cause resonance points in the piping connected to the compressor.		N/A
GG.8	**Ventilated area requirements for appliances using A2L refrigerants**		—
GG.8.1	**General**		N/A
	Clause GG.8 is applicable for appliances with a refrigerant charge 0 < mc ≤ m3.		N/A
	Ventilation shall be employed when refrigerant charge is mc > mmax.		N/A
	Natural and mechanical ventilation apply to fixed appliances only.		N/A
GG.8.2	**Natural ventilation requirements for appliances using A2L refrigerants**		—
GG.8.2.1	**General**		—
	Natural ventilation shall be permitted for A2L refrigerants on the conditions as outlined in GG.8.2.2 and GG.8.2.3.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Subclause GG.8.2 is applicable for appliances with a refrigerant charge of mc < m3.		N/A
GG.8.2.2	**Natural ventilation to occupied indoor space**		—
	If natural ventilation is applied in occupied space, all of the following shall be met.		N/A
	- Natural ventilation shall be made to a room where sufficient air is available to dilute the refrigerant below the LFL.		N/A
	- Natural ventilation from an occupied space shall not be made to outdoor.		N/A
	- For natural ventilation opening provided to an unoccupied space, the total area of the space in which the appliance is installed and the adjacent space which is connected by the natural ventilation shall have a room area more than Amin according to Clause GG.2 for mc. If the total room area is not large enough, the measure of GG.8.3 or Clause GG.9 shall be taken.		N/A
	- The openings for natural ventilation shall comply with GG.1.4.		N/A
	The minimum opening area for natural ventilation shall be calculated using Anv_{min}		N/A
	The equation is not applicable for refrigerants with a molar mass less than 42, as the equation is based on the principle that the density of the gases generates sufficient driving force to be successfully used with natural ventilation.		N/A
GG.8.2.3	**Natural ventilation to outdoors or unoccupied indoor space**		—
	If natural ventilation is applied in occupied space, all of the following shall be met.		N/A
	- Natural ventilation to the outside is not allowed below ground level.		N/A
	- For natural ventilation opening provided to an unoccupied space, the total area of the space in which the appliance is installed and the adjacent space which is connected by the natural ventilation, shall have a room area more than Amin according to Clause GG.2 for mc. If the total room area is not large enough, other measure of GG.8.3 or Clause GG.9 shall be taken.		N/A
	- The openings for natural ventilation shall comply with GG.1.4.		N/A
	- The minimum opening area for natural ventilation shall be calculated using the following equation: m_{max} and Anv_{min}		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	The equation is not applicable for refrigerants with a molar mass less than 42, as the equation is based on the principle that the density of the gases generates sufficient driving force to be successfully used with natural ventilation.		N/A
GG.8.3	**Mechanical ventilation requirements for rooms with appliances using A2L refrigerants**		—
GG.8.3.1.1	**Continuous operation of the fan**		—
	The fan shall run continuously, other than for short periods for maintenance and service. The airflow shall be detected continuously or monitored continuously. Within 10 s in the event that the airflow is reduced, the following actions shall be taken:		N/A
	- Disable the compressor operation unless the compressor operation reduces the leak rate or the total amount released to the indoor space.		N/A
	- Warn user that airflow is reduced.		N/A
GG.8.3.1.2	**Fan activated by a refrigerant detection system**		—
	If a refrigerant detection system is activated per Annex LL, the following actions shall be taken and continue for at least 5 min after the refrigerant detection system has reset:		N/A
	- The fan shall be switched on.		N/A
	- Disable the compressor operation unless the compressor operation reduces the leak rate or the total amount released to the indoor space.		N/A
	The refrigerant detection system and controls shall maintain the purge cycle for at least 5 min after the refrigerant detection system has reset.		N/A
GG.8.3.2	**Required airflow**		—
	The airflow shall be calculated using of the formula below. Losses caused by ducts or other components in the air stream shall be considered.		N/A
G.8.3.3	**Requirement for opening**		—
	The lower edge of the opening of the mechanical ventilation shall not be more than 100 mm above the floor.		N/A
	The air extraction openings shall be located at sufficient distance from the air intake openings to prevent re-circulation to the space.		N/A
GG.9	**Charge limits for appliances using A2L refrigerants connected via an air duct system to one or more rooms**		—
GG.9.1	**General**		—

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Clause GG.9 is applicable for appliances with a refrigerant charge 0 < mc ≤ m3..The maximum refrigerant charge can be increased or the minimum room area can be reduced if the following requirements are met.		N/A
	The appliance shall be provided with a refrigerant detection system according to Annex LL, or the fan shall operate continuously and the airflow shall be monitored continuously.		N/A
	mmax shall be determined based on the total area of the conditioned space (TA) connected by ducts taking into consideration that the circulation airflow distributed to all the rooms by the appliance integral indoor fan will mix and dilute the leaking refrigerant before entering any room. In the case when no refrigerant detection system is provided then, spaces where the airflow may be limited by zoning dampers shall not be included in the determination of TA.		N/A
GG.9.2	**Continuous circulation airflow**		—
	The fan shall run continuously, other than for short periods for maintenance and service. The airflow shall be detected continuously or monitored continuously. Within 10 s in the event that the airflow is reduced, the following actions shall be taken:		N/A
	- Disable the compressor operation.		N/A
	- Warn user that airflow is reduced.		N/A
GG.9.3	**Circulation airflow activated by a refrigerant detection system**		—
	When a refrigerant detection system according to Annex LL operates, the following shall be initiated.		N/A
	Disable the compressor operation unless the compressor operation reduces the leak rate or the total amount of charge released to the indoor space.		N/A
	Fully open all zoning damper of the appliance and energize control signals to open any external zoning dampers if applicable.		N/A
	Activate additional mechanical ventilation, if required.		N/A
	The refrigerant detection system and controls shall maintain the above action until at least 5 min after the refrigerant detection system has reset. Building fire and smoke systems may override this function.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	If the continuous operation of duct fan is employed, additional ventilation shall also be continuously operated.		N/A
GG.10	**Allowable charge for enhanced tightness refrigerating systems**		—
GG.10.1	**General**		—
	Clause GG.10 is applicable to enhanced tightness refrigerating systems using A2L refrigerants with refrigerant charge m1 < mc ≤ number of indoor units × m2, not to exceed 4 x m2.		N/A
	For appliances with more than one indoor unit, individual indoor unit cooling capacity shall not exceed 35 kW when tested in accordance with ISO 5151, ISO 13253, or ISO 15042 at T1 conditions.		N/A
	For heating only appliances with more than one indoor unit, individual indoor unit heating capacity shall not exceed 35 kW when tested in accordance with ISO 5151, ISO 13253, or ISO 15042 at H1 conditions.		N/A
	The appropriate measures to be taken shall be ventilation (natural or mechanical), safety shut-off valves and safety alarm, in conjunction with refrigerant detection systems as specified in GG.10.2 to GG.10.5.		N/A
	A safety alarm alone shall not be considered as an appropriate measure where occupants are restricted in their movement (see Clause GG.13).		N/A
GG.10.2	**Requirement for units with incorporated circulation airflow to prevent stagnation**		—
GG.10.2.1	**General**		—
	For indoor units where h0 as determined in Clause GG.2 is less than 1,8 m, and for indoor units connected to one or more spaces by ducts which supply or return air from the space at a height less than 1.8 m, circulation airflow for the purpose of mixing the air in the room shall be provided.		N/A
	Where mechanical ventilation is required per Subclause GG.10.4 or Subclause GG.10.5, units where h0 is equal or greater than 1,8 m, air circulation for the purpose of mixing the air in the room shall also be provided.		N/A
	The circulation shall operate continuously or be turned on by refrigerant detection systems. The minimum air velocity and minimum airflow shall be as follows:		N/A
	Minimum airflow = 240 m^3/h		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Minimum air velocity		N/A
	The unit air velocity (v) shall be calculated as airflow divided by the nominal face area of the outlet. The grill area shall not be deducted.		N/A
	As an alternative, for airflow angles between 15 degrees and 90 degrees, the minimum air velocity (vmin) can be determined by linear interpolation of the values included in Table GG.5.		N/A
	Where a single remote refrigerant detection system sensor is used in a room with multiple units, this requirement shall apply to all units in the room which do not have a dedicated refrigerant detection system.		N/A
GG.10.2.2	**Continuous circulation airflow**		—
	The fan shall run continuously, other than for short periods for maintenance and service. The airflow shall be detected continuously or monitored continuously. Within 10 s in the event that the airflow is reduced, the following actions shall be taken:		N/A
	- Disable the compressor operation unless the compressor operation reduces the leak rate or the total amount released to the indoor space.		N/A
	- Warn user that airflow is reduced.		N/A
GG.10.2.3	**Circulation airflow initiated by a refrigerant detection system**		—
	When any refrigerant detection system is activated per Annex LL in response to a detected leak into the space, all indoor units in that room which are served by the same outdoor unit shall take the following actions and continue for at least 5 min:		N/A
	- The fan shall be switched on.		N/A
	- Disable the compressor operation unless the compressor operation reduces the leak rate or the total amount released to the indoor space.		N/A
GG.10.3	**Required measures for allowable refrigerant charge**		—
GG.10.3.1	**Spaces except lowest underground floor of the building**		—
	Where the refrigerant charge does not exceed maximum refrigerant charge in GG.10.4, no additional measures are required.		N/A
	Where the charge exceeds the maximum refrigerant charge in GG.10.4 but is less than or equal to the maximum refrigerant charge in GG.10.5, then at least one additional measure shall be taken in accordance with Clause GG.11, GG.12, or GG.13.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Where the refrigerant charge exceeds the maximum refrigerant charge in GG.10.5, at least two additional measures are taken in accordance with Clause GG.11, GG.12, or GG.13.		N/A
GG.10.3.2	**Lowest underground floor of the building**		—
	Where the refrigerant charge exceeds the maximum refrigerant charge in GG.10.4, two additional measures shall be taken in accordance with Clause GG.11, GG.12, or GG.13.		N/A
	The refrigerant charge shall not exceed the maximum refrigerant charge in GG.10.5.		N/A
GG.10.4	**Maximum refrigerant charge**		—
	The maximum refrigerant charge mmax in a room and the required minimum room area Amin of the installed appliance with refrigerant charge mc shall be in accordance with m_{max} and A_{min}		N/A
GG.10.5	**Maximum refrigerant charge when employing additional measures**		—
	The maximum refrigerant charge mmax and minimum room area Amin are calculated in accordance with m_{max} and A_{min}		N/A
GG.11	**Ventilation for enhanced tightness refrigerating systems using A2L refrigerants**		—
GG.11.1	**General**		—
	Ventilation shall be made to a place where sufficient air is available to dilute the leaked refrigerant such as outdoors or a large space. The indoor place used to provide ventilation air shall have sufficient volume, including the volume of the room in which the indoor unit is installed, to ensure that the maximum refrigerant charge specified in GG.10.4 is not exceeded.		N/A
GG.11.2	**Natural ventilation**		N/A
	If natural ventilation is applied, all of the following shall be met.		N/A
	- Natural ventilation from an occupied space shall not be made to outdoors.		N/A
	- For natural ventilation opening provided to an occupied space, the total area of the space in which the appliance is installed and the adjacent space which is connected by the natural ventilation shall have a room area more than Amin according to Clause GG.2 for mc. If the total room area is not large enough, the measure of GG.11.3 shall be taken.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- Openings for natural ventilation shall comply with GG.1.4.		N/A
	- The minimum opening area for natural ventilation shall be calculated using equation (GG.29): Anv_{min}		N/A
	The equation is not applicable for refrigerants with a molar mass less than 42, as the equation is based on the principle that the density of the gases generates sufficient driving force to be successfully used with natural ventilation.		N/A
G.11.3	**Mechanical ventilation**		—
GG.11.3.1	**Operation of mechanical ventilation**		—
	Operation shall be according to GG.8.3.1, and for all indoor units in the same space which are served by a single refrigerating system, the fan shall be switched on to provide the minimum circulation airflow per GG.10.2.		N/A
GG.11.3.2	**Required airflow**		—
	For (Q × 0,25*LFL)/10 < 1, the airflow of the mechanical ventilation shall be at least the quantity that satisfies the following formula for m_c		N/A
	For (Q × 0,25*LFL)/10 ≥ 1, the airflow shall be determined according the following formula for Q		N/A
GG.11.3.3	**Mechanical ventilation openings**		—
	The upper edge of the air extraction opening from the room shall be located equal or below the refrigerant release point.		N/A
	For floor mounted units, openings shall be according to GG.8.3.3.		N/A
GG.11.3.4	**Operation of mechanical ventilation**		—
	Mechanical ventilation shall be operated continuously or shall be switched on by a refrigerant detection system.		N/A
GG.12	**Safety shut-off valves for enhanced tightness refrigerating systems using A2L refrigerants**		—
GG.12.1	**Location**		—
	Safety shut-off valves shall be located in a space with a room volume large enough so that the maximum refrigerant charge complies with GG.10.4, GG.10.5, or outside. Safety shutoff valve shall be positioned to enable access for maintenance by an authorized person.		N/A
GG.12.2	**Design**		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Safety shut-off valves shall be designed to close in the event of an electric power failure, e.g. spring return solenoid valves.		N/A
	If safety shut-off valves are used to comply with GG.10.4 or GG.10.5, then the released amount of refrigerant shall be limited to 0,5 × LFL × room volume.		N/A
	The amount of refrigerant that can be leaked shall consider the response time of the sensor and the controller that activates the valves and the remaining amount of refrigerant that is contained in each section of the refrigerating system after the valves are closed.		N/A
GG.13	**Safety alarms for enhanced tightness refrigerating systems using A2L refrigerants**		—
GG.13.1	**General**		—
	If an alarm is employed to warn of a leak in the occupied space, the alarm shall warn of a refrigerant leak in accordance with GG.13.2. The alarm shall be turned on by the signal from the refrigerant detection system. The alarm shall also alert an authorized person to take appropriate action.		N/A
GG.13.2	**Alarm system warning**		—
GG.13.2.1	**General**		—
	The alarm system shall warn both audibly and visibly, such as both a loud (15 dBA above the background level) buzzer and a flashing light.		N/A
GG.13.2.2	**Alarm for general occupancy**		—
	At least one alarm inside the occupied space shall be installed. For the occupancy listed below, the alarm system shall also warn at a supervised location, such as the night porter’s location, as well as the occupied space.		N/A
	Rooms, parts of buildings, building where		N/A
	sleeping facilities are provided,		N/A
	people are restricted in their movement,		N/A
	an uncontrolled number of people are present, or		N/A
	to which any person has access without being personally acquainted with the necessary safety precautions.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
HH	**ANNEX HH (INFORMATIVE) (IEC 60335-2-40)** **Competence of service personnel**		—
	Special training additional to usual refrigerating equipment repair procedures is required when equipment with flammable refrigerants is affected	No refrigerant system in indoor unit, see in outdoor unit instruction	N/A
JJ	**ANNEX JJ (NORMATIVE) (IEC 60335-2-40)** **ALLOWABLE OPENING OF RELAYS AND SIMILAR COMPONENTS TO PREVENT IGNITION OF A2L REFRIGERANTS**		—
JJ.1	**General**		—
	Annex JJ is applicable to electric components or devices of appliances using A2L refrigerants.		N/A
	Annex JJ defines the maximum size of openings in relays and similar components that prevents flame propagation to outside. A relay and similar components that comply with the requirements of this annex are not considered as a potential ignition source for A2L refrigerants.		N/A
JJ.2	**Definition of the opening**		—
	The effective diameter is the equivalent diameter of a circular opening that has the same quenching effect to an opening of any shape. The effective diameter of the opening of relays and similar components is defined as d_{eff}		N/A
JJ.3	**Determination of maximum allowable opening**		—
	Relays and similar components shall not be considered as a potential ignition source if the effective diameter of all holes complies with the following equation:		N/A
	Alternatively, a type test can be used to determine if relays and similar components are not a potential ignition source. This type test shall show that there is no propagation of a flame from any contact inside of the relay to the outside, for the concentration of the refrigerant as used for determining the maximum burning velocity. Where the type test is used, the effective diameter limit is 12 mm.		N/A
KK	**ANNEX KK (NORMATIVE) (IEC 60335-2-40)** **TEST METHOD FOR HOT SURFACE IGNITION TEMPERATURE FOR A2L**		—
KK.1	**General**		—
	The hot surface ignition temperature of A2L refrigerants shall be determined according to Annex KK. The refrigerants shall be sprayed onto a horizontal flat plate surface which is set at the test temperature.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The test system consists of a hot plate, a spray tube and a chimney. Figure KK.1, Figure KK.2 and Figure KK.3 display the set-up of the test apparatus.		N/A
KK.2	**Test equipment requirements**		—
	The hot plate shall have the following characteristics. The hot plate shall consist of a flat stainless steel plate with the dimensions:		N/A
	Diameter: 50 mm ± 2,0 mm		N/A
	Thickness: 6 mm –0/+2,0 mm		N/A
	Surface texture: ISO 1302		N/A
	The hot plate shall be positioned horizontally. The heaters shall provide uniform heating of the plate. All surfaces other than the test surface should be thermally insulated using ceramic fibre board capable to withstand 815 °C. This insulation shall be such that vapours cannot be ignited by other than the hot plate top surface.		N/A
	Spray system shall consist of a liquid supply, two valves (trap liquid volume of 1,0 cm3 ± 0,2 cm3), tubing for directing the spray. The spray tube from valve to the end shall have the following dimensions:		N/A
	Length: 250 mm ± 5,0 mm		N/A
	Outer diameter: ≤ 4 mm		N/A
	Inner diameter: 1,6 mm ± 0,1 mm		N/A
	Use a type K thermal couple with the individual wires spot welded on opposite sides of the centre of the upper surface of the hot plate.		N/A
	A borosilicate or quartz glass chimney shall be 230 mm ± 10 mm long and 70 mm ± 10 mm inner diameter . The chimney shall be supported so that it is vertically mounted and has a gap of 2,5 mm ± 0,2 mm between its bottom edge and the top on the insulation.		N/A
KK.3	**Procedure**		—
	The ambient conditions of the test shall be set at 23 °C ± 3 °C and 50 % RH ± 5 % RH. The chimney and hot plate establishes a constant air velocity during the test. This airflow dilutes the vapours so that an optimum (near stoichiometric) concentration for ignition develops over the hot surface.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The test shall be performed in a laboratory fume hood. The test apparatus including the chimney top shall be located in the laminar flow region of the laboratory fume hood so the chimney flow is not disturbed.		N/A
	The end of the spray refrigerant line shall be placed 40 mm ± 10 mm above the hot plate and shall point at the centre of the hot plate. The tube shall be perpendicular to the horizontal plate.		N/A
	Operating steps:		—
	1) The hot plate shall be heated until a steady test temperature is maintained for 5 min. The plate temperature shall be kept within ±15 °C of the set-point during the test.		N/A
	2) Refrigerant used for the test shall be the nominal composition (NC) per ISO 817. Refrigerant from the liquid phase shall be trapped between valve 1 and valve 2. Open valve C to spray the liquid refrigerant onto the centre of the hot plate.		N/A
	3) Observe and record if ignition (flames) occurs or does not occur within 3 min after release.		N/A
	Care shall be given to avoid vapours getting under the insulation, any ignition outside of the chimney is due to ignition on surfaces hotter than the test surface.		N/A
	4) A minimum of 5 min of ventilation shall be allowed between runs to clear out reaction products and residual refrigerant.		N/A
	5) Perform a minimum of 5 repetitions trials at each temperature being tested.		N/A
	6) The temperature of the hot plate shall be set at 800 °C, if ignition occurs, then the plate temperature is to be reduced in increments of 20 °C until no ignition occurs in five trials. This temperature is to be recorded as the hot surface ignition temperature (HSIT).		N/A
KK.4	**Test report**		—
	The results shall be recorded in a test report. The report shall include all the information necessary for the interpretation of the test and all information required by the method used. The report shall include:		N/A
	documentation with the sample identity and composition,		N/A
	temperature where ignition did not occur and where ignition did occur if applicable.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The reported hot surface ignition temperature shall be highest temperature with no ignition in five trials.		N/A
LL	**ANNEX LL (NORMATIVE) ..... (IEC 60335-2-40)** **REFRIGERANT DETECTION SYSTEMS FOR A2L REFRIGERANTS**		—
LL.1	**General**		—
	Refrigerant detection systems shall be set to be activated before the refrigerant concentration reaches 25 % of the LFL. Where LFL is referenced in this annex, the LFL shall be taken at WCF – Worst Case Formulation as specified in ISO 817.		N/A
LL.2	**Function of the refrigerant detection systems**		—
	The refrigerant detection systems shall be capable of detecting a pre-set level of the refrigerant concentration of the refrigerant that the sensor is designated to be used with and initiate the operation as defined in Annex GG.		N/A
LL.3	**Refrigerant detection system range, accuracy and response time**		—
	Refrigerant detection system shall make output according to the applicable clauses of Annex GG of this standard within 30 s when the sensor is put into refrigerant concentration of 25 % of LFL or lower.		N/A
	The refrigerant detection system, including the sensors, shall comply with the above requirements over the full range of operating temperature and humidity as specified by the appliance manufacturer		N/A
LL.4	**Refrigerant detection system calibration**		—
	The refrigerant detection systems shall be pre-set and calibrated (with an accuracy of ± 20 %) from the factory for the refrigerant used.		N/A
LL.5	**Electrical outputs for refrigerant detection system**		—
	The device shall have an output in accordance with the applicable clauses of Annex GG of this standard.		N/A
LL.6	**Vibration requirements**		—
	A sensor shall withstand vibration without breakage or damage of parts and shall continue to function. The vibration parameters shall be defined based on the intended application and expected transportation. If vibration operating parameters are not established by the manufacturer, then a sample of the sensor shall be subject to the requirements defined below.		N/A
LL.7	**Refrigerant detection system self-test routine**		—

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	The detection system shall include a means for self-testing the sensor to determine the output is at proper range. The test shall be run at least every hour and if a failure is detected, an alarm shall be activated.		N/A
	If the sensor has a defined life and requires replacement after a given period, then the detection system shall initiate an alarm or indication that replacement is required. If sensor becomes more sensitive with aging to generate false alarm, the end of life alarm can be omitted.		N/A
LL.8	**Sensor identification**		—
	The sensors shall be marked with		N/A
	name, trade mark or identification mark of the manufacturer or responsible vendor;		N/A
MM	**ANNEX MM (NORMATIVE) ..... (IEC 60335-2-40)** **REFRIGERANT SENSOR LOCATION CONFIRMATION TEST**		—
MM.1	**General**		—
	This test is applicable to appliances with refrigerant detection systems other than remote detection.		N/A
	The purpose of this test is to demonstrate that the sensor(s) of the refrigerant detection system(s), where required, will adequately detect refrigerant, in the event of a leak when installed in the location specified by the manufacturer.		N/A
	Compliance will be determined by measurement of the refrigerant concentration in the location of the sensor.		N/A
	The composition of the refrigerant used for the test shall be taken as the nominal composition as specified in ISO 817. Where LFL is referenced in this annex, the LFL shall be taken at the nominal composition as specified in ISO 817.		N/A
MM.2	**Test methods**		—
MM.2.1	The appliance is modified by introducing a simulated leak through a capillary tube. The leak rate shall be maintained at mr in g/s. The simulated leak is applied for 1 min.		N/A
	The free volume (Vfree) shall be determined by calculating the volume of the appliance bounded by a horizontal plane at the lowest point of the simulated leak, the appliance enclosure walls and the plane of the supply and return openings.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The volume shall be reduced by the volume of components or enclosed compartments within the bounded space. Components and enclosed compartments within the bounded space with a volume of less than 0,001 m3 can be ignored.		N/A
	A leakage of refrigerant in the refrigerating system is simulated at the unfavourable critical points for detection of the leak.		N/A
	A critical point is a joint in the refrigerant system tubing, a bend of more than 90 degrees, or other point judged to be a weak point in the refrigerant containing system due to the thickness of the metal, exposure to damage, sharpness of a bend or the manufacturing process, an unfavourable point is a point where the path between the leakage point and the point of detection location is more distant or more obstructed. The refrigerant is injected at the most critical point and the most unfavourable direction at ambient temperature (15 °C to 35 °C). The capillary tube shall discharge refrigerant into a chamber or similar device which will reduce the refrigerant velocity into the appliance or space.		N/A
	Care shall be taken that the installation of the capillary tube does not unduly influence the results of the test and that the structure of the appliance does not unduly influence the results of the test.		N/A
MM.2.2	During this test, following appliance operating modes shall be tested;		—
	- Fan OFF, and		N/A
	- Fan ON.		N/A
	If the minimum airflow specified by the manufacturer is not less than the minimum airflow specified in GG.2.2 or Clause GG.9, testing in the fan ON mode is not required.		N/A
MM.2.3	The appliance shall be installed according to the instructions.		—
	Appliances that can be installed in different positions shall be tested in all positions allowed by the manufacturer. The supply and return openings shall not be covered and the manufacturers recommended air-filters shall be installed per instructions.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
M.2.5	The instrument used for monitoring the refrigerant gas concentration shall have a fast response to the gas concentration, at least 90 % response within 10 s (time constant 4,3 s) and shall be located as close to the intended sensor location as possible, but care should be taken not to unduly influence the results of the test. It shall be calibrated to have an accuracy of ± 1 % of gas concentration between 20 % and 30 % gas concentration.		N/A
	For small products where an additional sensor cannot be built-in, the evaluation of MM.2.6 shall suffice.		N/A
	The refrigerant gas concentrations sampling shall be made at least every 10 s.		N/A
NN	**ANNEX NN (NORMATIVE) ..... (IEC 60335-2-40)** **FLAME ARREST ENCLOSURE VERIFICATION TEST FOR A2L REFRIGERANTS**		—
NN.1	**General**		—
	Annex NN is applicable to appliances using A2L refrigerants		N/A
	A flame arrest enclosure is a device or assembly enclosing components with electrical contacts that are made and broken, or similar devices which may become a source of ignition which will withstand an internal ignition of a A2L refrigerant vapour which may enter it without suffering damage and without transmission of flame from the internal ignition to an external A2L refrigerant vapour of the same refrigerant.		N/A
	Electrical components enclosed in a flame arrest enclosure in compliance with the test procedures below shall not be considered as a source of ignition.		N/A
	If all openings in the enclosure comply with Annex JJ, the enclosure is deemed to comply.		N/A
	The following test requirements are based on consideration of IEC 60079-15:2010, Clause 17, as applicable to the products within the scope of IEC 60335-2-40, and specific to the use of flammable A2L refrigerants.		N/A
NN.2	**Test method**		—
OO	**ANNEX OO (NORMATIVE) ..... (IEC 60335-2-40)** **UV RADIATION CONDITIONING**		—

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
OO.1	Ten samples of the internal wiring are subjected to ultraviolet light conditioning according to Clause OO.2 or OO.3. When the internal wiring is provided in more than one colour, ten samples of each colour are subjected to this conditioning.		N/A
	The test samples are mounted on the inside of the cylinder in the ultraviolet light apparatus perpendicular to the light source and in such a way that the samples do not touch each other.		N/A
OO.2	The samples are to be exposed for 1 000 h to xenon-arc, method A, in accordance with ISO 4892-2. There shall be continuous exposure to light and intermittent exposure to water spray. The cycle shall consist of 102 min without water spray and 18 min with water spray. The apparatus shall operate with a water-cooled xenon-arc lamp, borosilicate glass inner and outer optical filters, a spectral irradiance of 0,35 W/m2/nm at 340 nm and a black panel temperature of (65 ± 3) °C. The temperature of the chamber shall be (45 ± 3) °C. The relative humidity in the chamber shall be (50 ± 5) %.		N/A
OO.3	The samples are to be exposed for 720 h to open-flame carbon-arc, in accordance with ISO 4892-4. There shall be continuous exposure to light and intermittent exposure to water spray. The cycle shall consist of 102 min without water spray and 18 min with water spray. The apparatus shall operate with an open-flame carbon-arc lamp, borosilicate glass Type 1 inner and outer optical filters, a spectral irradiance of 0,35 W/m2/nm at 340 nm and a black panel temperature of (63 ± 3) °C. The temperature of the chamber shall be (45 ± 3) °C. The relative humidity in the chamber shall be (50 ± 5) %.		N/A
AA	**ANNEX AA(NORMATIVE) ADDITIONAL REQUIREMENT FOR IMMERSION HEATER UNITS INTENDED FOR THE INSTALLATION IN HEAT EXCHANGE CLOSED WATER HEATERS (IEC 60335-2-21)**		—
	The following requirements of this standard are for immersion heater units intended for the installation in a heat exchange closed water heater. Other subclauses of this standard not mentioned in this annex are applicable. Where “water heater” is written, the requirement applies for “immersion heater units” of this annex.		N/A
5.2	Additional immersion heater units may be required for the tests of Clause 19 and 22.102.		N/A
5.3	The test is to be carried out in a water tank according to the instructions of the manufacturer of the immersion heater unit		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
7.1	Immersion heater units for multiple supply shall be marked with their rated power input for each supply circuit.		N/A
	Immersion heater units shall be marked with the rated pressure. The rated pressure shall not be lower than 0,6 MPa.		N/A
7.12.1	The installation instruction shall include the following:		—
	– type, the volume or volume range, and dimensions of the tank in which the immersion heater unit can be installed;		N/A
	– the positioning of the immersion heater unit within the tank;		N/A
	– a statement that the installer must check that there is water in the tank before the immersion heater unit is switched on the first time;		N/A
	– that a pressure-relief device is to be installed in the installation, unless it is not already part of the water tank installation;		N/A
	– the type and properties of the pressure-relief device and how to install it;		N/A
	– that a discharge pipe connected to the pressure relief device shall be installed with a steady downward inclination in a frost-free environment.		N/A
	The instructions for immersion heater units for water tanks with an incorporated heat exchanger shall include instructions for the installation of thermal controls and their temperature setting in order to prevent the thermal cut-out from operating due to the heat of the heat exchanger.		N/A
19.1	For immersion heater units, the tests of 19.2 and 19.3 are applicable		N/A
19.13	During the test, the immersion heater unit shall not show any leakage.		N/A
22.47	The immersion heater units shall withstand the water pressure occurring in normal use.		N/A
22.101	The rated pressure of immersion heater units intended to be exposed directly to the water main shall be at least 0,6 MPa.		N/A
22.112	Immersion heater units shall be supplied with a seal or similar means to ensure that there is no leakage from the tank after installation.		N/A
22.113	The immersion heater unit shall not be able to be removed from the tank without the aid of a tool.		N/A
24.102	The thermal cut-out shall operate before the water temperature exceeds 99 °C and the water temperature shall not exceed the opening temperature of the thermal cut-out by more than 20 K.		N/A

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

10.1	**TABLE: Power input deviation**				P
Input deviation of/at:	**P rated (W)**	**P measured (W)**	**Δ P**	**Required Δ P**	**Remark**
Outdoor unit model WH-WDG09LE5 matching with indoor unit model WH-ADC0509L6E5AN					
Power supply 1 - (Cooling mode)					
230V 50Hz	3560	1943	-45,42%	+15%	Cooling Mode
Power supply 1 - (Heating mode – Heat pump					
230V 50Hz	3560	3154	-11,40%	+15%	Heating Mode
Outdoor unit model WH-WDG09LE5 matching with indoor unit model WH-ADC0509L3E5B					
Power supply 1 - (Cooling mode)					
230V 50Hz	3560	1882	-47,13%	+15%	Cooling Mode
Power supply 1 - (Heating mode – Heat pump)					
230V 50Hz	3560	2691	-24,41%	+15%	Heating Mode
Supplementary information: N/A					

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

10.2	**TABLE: Current deviation**				P
Current deviation of/at:	**I rated (A)**	**I measured (A)**	**Δ I**	**Required Δ I**	**Remark**
Outdoor unit model WH-WDG09LE5 matching with indoor unit model WH-ADC0509L6E5AN					
Power supply 1 - (Cooling mode)					
230V 50Hz	15,8	8,52	-46,07%	+15%	Cooling Mode
Power supply 1 - (Heating mode – Heat pump					
230v 50Hz	15,8	5,64	-64,30%	+15%	Heating Mode
Outdoor unit model WH-WDG09LE5 matching with indoor unit model WH-ADC0509L3E5B					
Power supply 1 - (Cooling mode)					
230V 50Hz	15,8	8,27	-47,65%	+15%	Cooling Mode
Power supply 1 - (Heating mode – Heat pump					
230V 50Hz	15,8	9,11	-42,34%	+15%	Heating Mode
Supplementary information:					

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

11.8	TABLE: Heating test, thermocouples			P
	Mode of operation	Cooling mode	Heating mode	
	Test voltage (V)……..:	Power supply 1: 243,8V 50Hz	Power supply 1: 243,8V 50Hz (Heat pump)	—
	Ambient, t_1 (°C) ……:	30/43 (Indoor/ outdoor)	30/35 (Indoor/ outdoor)	
	Ambient, t_2 (°C) ……:	30/43 (Indoor/ outdoor)	30/35 (Indoor/ outdoor)	—
Thermocouple locations		T (°C)		Max. T (°C)
Outdoor unit model WH-WDG09LE5 matching with indoor unit model WH-ADC0509L6E5AN				
Model WH-WDG09LE5 (Outdoor unit)				
Insulation of supply cord		52,8	41,4	75
Terminal block		54,7	42,2	85
Internal wire to PCB		56,3	42,5	75
Capacitor C309 on PCB. [T=105ºC]		57,3	43,4	105
Capacitor C200 on PCB. [T=105ºC]		51,7	41,3	105
Switching transformer T200 on PCB.		51,4	42,4	105
Line filter LF100 on PCB.		54,7	42,2	90
Relay RY-AC on PCB.		55,6	43,0	Ref.
Capacitor C307 AFC 105K on PCB. [T=110ºC]		57,0	43,6	110
Capacitor C102 LE105 on PCB. [T=100ºC]		53,6	42,7	100
PCB [ACXA73-30600-TR]		62,2	46,6	145
Internal wire to fan motor		55,4	42,5	75
Fan motor winding [ZKSN-160-8-3] [DC]		46,8	37,6	105
Fan motor enclosure		46,0	36,9	Ref.
Reactor		62,8	47,1	90
4Way valve		62,5	55,7	90
Cover Compressor		84,1	66,2	Ref.
Internal wire to compressor		58,3	47,0	75
Compressor enclosure		104,6	81,5	Ref.

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

Discharge pipe of refrigerant pipe	93,7	73,5	Ref.
Middle coil of refrigerant pipe	48,9	36,4	Ref.
Suction pipe of refrigerant pipe	36,9	36,5	Ref.
Wall	41,9	31,7	90
External enclosure	46,0	36,3	85
Air outlet	42,6	33,8	Ref.
Plate heat	31,9	33,9	Ref.
Supplementary information: Winding temperatures of DC fan motor were not measurable by thermocouple or resistance method. The temperature measurements were made on the hottest point of external enclosure of motor. With the significant temperature differences to limits, we are of the opinion that they complied with the requirements of this clause.			

11.8	**TABLE: Heating test, resistance method**					P
	Mode of operation	Cooling mode				
	Test voltage (V) ……:	Power supply 1: 243,8V 50Hz				—
	Ambient, t_1 (°C) ……:	30/43 (Indoor/outdoor)				—
	Ambient, t_2 (°C) ……:	30/43 (Indoor/outdoor)				—
Temperature of winding		R_1 (Ω)	R_2 (Ω)	T (°C)	Max. T (°C)	Insulation class
Outdoor unit model WH-WDG09LE5						
Compressor winding 1		0,68	0,84	108,7	140	Synthetic
Compressor winding 2		0,69	0,85	110,0	140	Synthetic
Compressor winding 3		0,69	0,86	112,4	140	Synthetic
4 Way valve outdoor unit		22,82	24,85	67,8	120	Class B
Reactor		0,28	0,30	69,6	100	Class A
Supplementary information: N/A						

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

11.8	**TABLE: Heating test, resistance method**					P
	Mode of operation	Heating mode (heat pump)				
	Test voltage (V) ……:	Power supply 1: 243,8V 50Hz				—
	Ambient, t_1 (°C) ……:	30/35 (Indoor/outdoor)				—
	Ambient, t_2 (°C) ……:	30/35 (Indoor/outdoor)				—
Temperature of winding		R_1 (Ω)	R_2 (Ω)	T (°C)	Max. T (°C)	Insulation class
Outdoor unit model WH-WDG09LE5						
Compressor winding 1		0,66	0,78	84,4	140	Synthetic
Compressor winding 2		0,66	0,78	86,7	140	Synthetic
Compressor winding 3		0,67	0,80	88,3	140	Synthetic
4 Way valve outdoor unit		22,14	24,10	58,9	120	Class B
Reactor		0,27	0,29	61,8	100	Class A
Supplementary information: N/A						

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

11.8	TABLE: Heating test, thermocouples			P
	Mode of operation	Cooling mode	Heating mode	
	Test voltage (V)……..:	Power supply 1: 243,8V 50Hz	Power supply 1: 243,8V 50Hz (Heat pump)	—
	Ambient, t_1 (°C) ……:	30/43 (Indoor/ outdoor)	30/35 (Indoor/ outdoor)	
	Ambient, t_2 (°C) ……:	30/43 (Indoor/ outdoor)	30/35 (Indoor/ outdoor)	—
Thermocouple locations		T (°C)		Max. T (°C)
Outdoor unit model WH-WDG09LE5 matching with indoor unit model WH-ADC0509L3E5B				
Model WH-WDG09LE5 (Outdoor unit)				
Insulation of supply cord		45,9	39,7	75
Terminal block		46,2	39,0	85
Internal wire to PCB.		49,0	39,4	75
Capacitor C309 on PCB. [T=105ºC]		51,7	40,0	105
Capacitor C200 on PCB. [T=105ºC]		51,9	40,1	105
Switching transformer T200 on PCB.		51,6	41,9	105
Line filter LF100 on PCB.		53,8	39,5	90
Relay RY-AC on PCB.		53,2	40,3	Ref.
Capacitor C307 AFC 105K on PCB. [T=110ºC]		52,6	40,2	110
Capacitor C102 LE105 on PCB. [T=100ºC]		53,3	40,8	100
PCB. [ACXA73-30600-TR]		61,3	41,9	145
Internal wire to fan motor		50,5	41,2	75
Fan motor winding [ZKSN-160-8-3] [DC]		50,4	37,3	105
Fan motor enclosure		49,9	37,1	Ref.
Reactor		50,7	48,9	90
4Way valve		52,8	53,1	90
Cover Compressor		59,4	48,9	Ref.
Internal wire to compressor		49,9	48,1	75
Compressor enclosure		77,5	80,5	Ref.

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

Discharge pipe of refrigerant pipe	68,7	81,4	Ref.
Middle coil of refrigerant pipe	51,1	38,1	Ref.
Suction pipe of refrigerant pipe	47,6	47,0	Ref.
Wall	43,7	35,3	90
External enclosure	45,6	36,3	85
Air outlet	49,7	38,8	Ref.
Plate heat	14,1	34,4	Ref.
Supplementary information: Winding temperatures of DC fan motor were not measurable by thermocouple or resistance method. The temperature measurements were made on the hottest point of external enclosure of motor. With the significant temperature differences to limits, we are of the opinion that they complied with the requirements of this clause.			

11.8	**TABLE: Heating test, resistance method**					P
	Mode of operation	Cooling mode				
	Test voltage (V) ……:	Power supply 1: 243,8V 50Hz				—
	Ambient, t_1 (°C) ……:	30/43 (Indoor/outdoor)				—
	Ambient, t_2 (°C) ……:	30/43 (Indoor/outdoor)				—
Temperature of winding		R_1 (Ω)	R_2 (Ω)	T (°C)	Max. T (°C)	Insulation class
Outdoor unit model WH-WDG09LE5						
Compressor winding 1		0,82	0,94	84,0	140	Synthetic
Compressor winding 2		0,81	0,92	83,0	140	Synthetic
Compressor winding 3		0,82	0,94	84,5	140	Synthetic
4 Way valve outdoor unit		23,03	23,89	53,4	120	Class B
Reactor		0,44	0,45	53,0	100	Class A
Supplementary information: N/A						

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

11.8	**TABLE: Heating test, resistance method**		P
	Mode of operation	Heating mode (heat pump)	
	Test voltage (V) ……:	Power supply 1: 243,8V 50Hz	—
	Ambient, t_1 (°C) ……:	30/35 (Indoor/outdoor)	—
	Ambient, t_2 (°C) ……:	30/35 (Indoor/outdoor)	—

Temperature of winding	R_1 (Ω)	R_2 (Ω)	T (°C)	Max. T (°C)	Insulation class
Outdoor unit model WH-WDG09LE5					
Compressor winding 1	0,73	0,82	68,6	140	Synthetic
Compressor winding 2	0,75	0,84	69,7	140	Synthetic
Compressor winding 3	0,75	0,84	68,2	140	Synthetic
4 Way valve outdoor unit	21,16	23,04	59,0	120	Class B
Reactor	0,23	0,24	54,7	100	Class A
Supplementary information: N/A					

13.2	**TABLE: Leakage current**		P
	Heating appliances: 1,15 x rated input (W).....:	—	—
	Motor-operated and combined appliances: 1,06 x rated voltage (V).....:	Power supply 1: 243,8V	—

Leakage current between	I (mA)	Max. allowed I (mA)
Outdoor unit model WH-WDG09LE5 matching with indoor unit model WH-ADC0509L6E5AN		
Power supply 1 - (Cooling mode)		
Any pole of supply and earthed metal parts	4,5	7,12 [1)]
Live parts and accessible non-metallic material parts	0,03 (peak)	0,35 (peak)
Power supply 1 - (Heating mode – Heat pump)		
Any pole of supply and earthed metal parts	4,6	7,12 [1)]
Live parts and accessible non-metallic material parts	0,03 (peak)	0,35 (peak)

Supplementary information:

[1)] Rated power input 3,56kW, max allowed 7,12mA
(leakage current shall not exceed 2 mA per kilowatt rated power input with a maximum value of 10mA for appliances accessible to the general public)

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

13.2	**TABLE: Leakage current**		P
	Heating appliances: 1,15 x rated input (W).....:	—	—
	Motor-operated and combined appliances: 1,06 x rated voltage (V).....:	Power supply 1: 243,8V	—

Leakage current between	I (mA)	Max. allowed I (mA)
Outdoor unit model WH-WDG09LE5 matching with indoor unit model WH-ADC0509L3E5B		
Power supply 1 - (Cooling mode)		
Any pole of supply and earthed metal parts	6,8	7,12 [1)]
Live parts and accessible non-metallic material parts	0,03 (peak)	0,35 (peak)
Power supply 1 - (Heating mode – Heat pump)		
Any pole of supply and earthed metal parts	7,0	7,12 [1)]
Live parts and accessible non-metallic material parts	0,03 (peak)	0,35 (peak)

Supplementary information:

[1)] Rated power input 3,56kW, max allowed 7,12mA
(leakage current shall not exceed 2 mA per kilowatt rated power input with a maximum value of 10mA for appliances accessible to the general public)

13.3	**TABLE: Dielectric strength**	P

Test voltage applied between:	Test potential applied (V)	Breakdown / flashover (Yes/No)
Live parts and earthed metal parts	1000	No
Parts separated by supplementary insulation	1750	No
Live parts and accessible non-metallic material parts	3000	No
Supplementary information: N/A		

14	**TABLE: Transient overvoltages**	N/A

Clearance between:	**Cl (mm)**	**Required Cl (mm)**	**Rated impulse voltage (V)**	**Impulse test voltage (V)**	**Flashover (Yes/No)**
Supplementary information: N/A					

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

16.2	**TABLE: Leakage current**		P
	Single phase appliances: 1,06 x rated voltage (V):	To Power supply 1: 243,8V	—
	Three phase appliances 1,06 x rated voltage divided by √3 (V) .....:	--	—

Leakage current between	I (mA)	Max. allowed I (mA)
Outdoor unit model WH-WDG09LE5 matching with indoor unit model WH-ADC0509L6E5AN		
Power supply 1		
Live parts and earthed metal parts	5,30	7,12 [1)]
Live parts and accessible non-metallic material parts	0,02	0,25
Outdoor unit model WH-WDG09LE5 matching with indoor unit model WH-ADC0509L3E5B		
Power supply 1		
Live parts and earthed metal parts	6,80	7,12 [1)]
Live parts and accessible non-metallic material parts	0,02	0,25

Supplementary information:

[1)] Rated power input 3,56kW, max allowed 7,12mA
(leakage current shall not exceed 2 mA per kilowatt rated power input with a maximum value of 10mA for appliances accessible to the general public)

16.3	**TABLE: Dielectric strength**	P

Test voltage applied between:	Test potential applied (V)	Breakdown / flashover (Yes/No)
Live parts and earthed metal parts	1250	No
Parts separated by supplementary insulation	1750	No
Live parts and accessible non-metallic material parts	3000	No
Supplementary information: N/A		

17	**TABLE: Overload protection**	N/A

Thermocouple locations	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Supplementary information: N/A		

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

17	**TABLE: Overload protection, resistance method**					N/A
	Test voltage (V).....:	—				**—**
	Ambient, t1 (°C) .....:	—				**—**
	Ambient, t2 (°C) .....:	—				**—**
Temperature of winding	**R1 (Ω)**	**R2 (Ω)**	**Δ T (K)**	**T (°C)**	**Max. T (°C)**	
Supplementary information: N/A						

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

19	**Abnormal operation conditions**	P

Operational characteristics	YES/NO	Operational conditions
Are there electronic circuits to control the appliance operation?	Yes.	The controller are set at the maximum cut-out setting and minimum differential
Are there “off” or “stand-by” position?	Yes	The first paragraph of Part 1, clause 19.11.4 is not applicable for stand-by mode since unintentional operation does not cause any hazards.
The unintended operation of the appliance results in dangerous malfunction?	No.	No mechanical hazard or dangerous malfunction

Sub-clause	Operating conditions description	Test results description	PEC description	EMP 19.11.4	Software type required	19.11.3 PEC	Final result
19.2	--	--	--	--	--	--	N/A
19.3	--	--	--	--	--	--	N/A
19.4	Stopping in any position by remote control and ON/OFF switch	Operate in correct functions, No hazard	--	--	--	--	P
19.5	--	--	--	--	--	--	N/A
19.6	--	--	--	--	--	--	N/A
19.7	Fan motor is locked	No hazard	--	--	--	--	P
	Compressor is locked	No hazard	--	--	--	--	P
19.8	--	--	--	--	--	--	N/A
19.9	--	--	--	--	--	--	N/A
19.10	--	--	--	--	--	--	N/A
19.11.2	Open circuit and short circuit of component.	Operate until steady conditions or stopped to operates, No hazard	--	--	--	--	P
19.11.4.8	--	--	--	--	--	--	N/A
19.101	See in clause 19,101	No hazard	--	--	--	--	P
Supplementary information: N/A							

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

19.7	**TABLE: Abnormal operation, locked rotor/moving parts**					P
	Test voltage (V) .....:			230 V 50Hz (Supplied to main terminal)		—
	Ambient, t1 (°C) .....:			23 °C		—
	Ambient, t2 (°C) .....:			23 °C		—
Temperature of winding		**R1 (Ω)**	**R2 (Ω)**	**Δ T (K)**	**T (°C)**	**Max. T (°C)**
Fan motor winding model: ZKSN-160-8-3						
- Maximum temperature during 1st hour		—	—	23,7	215	E
- Maximum temperature after 1st hour		—	—	—	—	E
- Average temperature after 1st hour		—	—	—	—	E
- Enclosure temperature		—	—	23,7	150	—
Supplementary information: N/A						

19.7	**TABLE: electric strength measurements after 72 hours**		P
Test voltage applied between:		Test voltage (V)	Breakdown Yes / No
Live parts and earthed metal parts		1250	No
Parts separated by supplementary insulation		1750	No

19.7	**TABLE: leakage current measurements after 72 hours**		P
	A voltage equal to twice the rated voltage (V):	460V	—
Leakage current I between:		I (mA)	Required I (mA)
Live parts and accessible metal parts (ZKSN-160-8-3)		0,01	2,0
Supplementary information: N/A			

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

19.7	**Abnormal operation conditions – Locked rotor test motor-compressor**					P
	Motor-compressor.....:	7JD420XAA62				
	Start device .....:	—				
	Protector.....:	—				
	Start capacitor .....:	—				
	Run capacitor .....:	—				
	Cooling; (static); (fan-m^3/h); (oil); .....:	Static				
	Thermal motor-protection system .....:	—				
		Self-resetting				Manually reset
Rated voltage		Vn max (V)			Vn max (V)	Vn min (V)
		After 72 h	After 288 h	After 360 h	After 363 h	After 50 cycles
High-voltage test (see 16.3)		—	—	—	—	P
Leakage current (mA) (see 16.2)		—	—	—	—	0,5
Electric strength (see 13.3)		—	—	—	—	N/A
Room temperature (°C) (20 ± 5°C)		—	—	—	—	22,6
Number of cycles (≥ 2000 or 50)		—	—	—	—	50
Housing temperature (°C) (≤ 150°C)		—	—	—	—	23,8
supplementary information: N/A						

19.9	**TABLE: Abnormal operation, running overload**					N/A
	Test voltage (V).....:	—				**—**
	Ambient, t1 (°C) .....:	—				**—**
	Ambient, t2 (°C) .....:	—				**—**
Temperature of winding	**R1 (Ω)**	**R2 (Ω)**	**Δ T (K)**	**T (°C)**	**Max. T (°C)**	
Supplementary information: N/A						

19.13	**TABLE: Abnormal operation, temperature rises**		P
Thermocouple locations		**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Wall		63,8	175
Insulation of supply cord		56,6	175
Supplementary information: N/A			

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

21.1	**TABLE: Impact resistance**		P
Impacts per surface	**Surface tested**	**Impact energy (Nm)**	**Comments**
Three	Outdoor fan guard	0,5	No damage
Three	Outdoor Handle	0,5	No damage
Supplementary information: N/A			

22.102	**TABLE: Repeated drawing-offs**	N/A
Product		Measured temperature (°C)
--		--
Supplementary information: N/A		

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

24.1	TABLE: Critical components information				P
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1])**
Components Outdoor units model: WH-WDG05LE5; WH-WDG07LE5 and WH-WDG09LE5					
Terminal Block	Jinlong	JXO-C7(5P)	600VAC; 35A; UL94V-0; Material: PBT (G30%)	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Compressor	Panasonic	7JD420XAA62	Class E	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Pressure Switch	Saginomiya	ACB-4UB	OFF:3,9MPa; ON:3,0MPa	IEC/EN 12263	TUV Rheinland
Fan Motor	Welling	ZKSN-160-8-3	280-340VDC; 8P; 120W; Class E	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
4 Way Valve Coil	San Hua	SQ-D	15,4VDC; 0,7W; Class B	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Expansion Valve Coil	FUJIKOKI	CAM-MD	12VDC; 46Ω; Class A	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Reactor	Qingdao yunlu Energy technology	R1839PPHA	50/60Hz; 18A; 3,9mH; 67mΩ; Class H	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
PCB	Panasonic	R-1786	CEM3; UL94V-0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
PCB (Alternative)	NANYA PLASTIC	CEM-3-10	CEM3; UL94V-0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
PCB (Alternative)	SHENGYI	S2126	CEM3; UL94V-0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Switching Transformer T200	Dezhou Sanhe	SANHE-28-609	Class E	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Bobbin Switching Transformer T200	Sumitomo Bakelite	PM-9820	Phenolic resin UL94V-0 GWFI 850°C	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Noise Filter LF100	Dezhou Sanhe	SH-T38-009	6,0mH; Class E	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance

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Bobbin Noise Filter LF100	CHANG CHUN PLASTICS	--	PBT UL94V-0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
X Capacitor C101, C102	Okaya	LE	310V; 1,0µF	IEC/EN 60384-14	SE-ENEC-2200776
X Capacitor C101; C102 (Alternative)	Panasonic	ECQUL	275V; 1,0µF	IEC/EN 60384-14	VDE: 121548
X Capacitor C101; C102 (Alternative)	Winday Electronic	SMXDG	275V; 1,0µF	IEC/EN 60384-14	ENEC/VDE: 40030283
X Capacitor C103	Okaya	LE	275V; 3,3µF	IEC/EN 60384-14	SE-ENEC-2200776
X Capacitor C103 (Alternative)	Winday Electronic	SMXDG	275V; 3,3µF	IEC/EN 60384-14	ENEC/VDE: 40030283
Y Capacitor C105; C108; C109; C111	Okaya	YF	300V; 0,01µF	IEC/EN 60384-14	SE-ENEC-2100747
Y Capacitor C100	TDK	CS	250V; 2200pF	IEC/EN 60384-14	VDE: 40029781
Y Capacitor C100 (Alternative)	EG	DCF	250V; 2200pF	IEC/EN 60384-14	VDE: 40015758
Y Capacitor C106A; C107A; C110A; C112A	MURATA	SA	250V; 100pF	IEC/EN 60384-14	VDE: 40042990
Y Capacitor C106A; C107A; C110A; C112A (Alternative)	EG	DCF	250V; 100pF	IEC/EN 60384-14	VDE: 40015758
Varistor VA100; VA101; VA200	Thinking	TVR	510V	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE: 005944
Varistor VA100; VA101; VA200 (Alternative)	Panasonic	ERZV	510V	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE: 005912
Varistor VA100; VA101; VA200 (Alternative)	Centra Science	CNR	510V	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE: 40008220
Varistor VA102	Centra Science	CNR	1000V	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE: 40008220

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

Varistor VA102 (Alternative)	Panasonic	ERZV	1000V	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE: 005912
Varistor VA103	Centra Science	CNR	620V	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE: 40008220
Varistor VA103 (Alternative)	Panasonic	ERZV	620V	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE: 005912
Relay RY-AC; RY-PWR2	Daiichi	DX1U	250V; 20A	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40 IEC/EN 61810-1 IEC/EN 60079-15	Tested in Appliance and VDE: 40025802
Relay RY-HT1 ; RY-HT2	Omron	G5NB	250V; 3A	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40 IEC/EN 61810-1 IEC/EN 60079-15	Tested in Appliance and VDE: 137575
Fuse1	Nippon Seisen	GDU	250V; 30A	IEC/EN 60127-2	SEMKO: 1700093
Fuse1 (Alternative)	S.O.C.	TLCR	250V; 30A	IEC/EN 60127-1 IEC/EN 60127-2	VDE 40014460
Fuse1 (Alternative)	Hollyland	61T(P)	250V; 30A	IEC/EN 60127-2+A1	SEMKO: 1815434
Fuse2; 5	S.O.C.	SET	250V; 3,15A	IEC/EN 60127-2+A1	SEMKO: 1815434
Fuse2; 5 (Alternative)	Nippon Seisen	FSL	250V; 3,15A	IEC/EN 60127-2	SEMKO: 1718869
Fuse2; 5 (Alternative)	Hollyland	50T	250V; 3,15A	IEC/EN 60127-2	VDE: 40014460
Fuse3; 4	Nippon Seisen	FCR	250V; 20A	IEC/EN 60127-2	JET2014-31003
SEN1	Asahi Kasei	CQ	50A	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
PTC	Dandong guotong electronic	MZ-47R	280VAC; 27A 47Ω	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
PTC (Alternative)	Dandong guotong electronic	MZ9247RN	280VAC; 27A 47Ω	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Photo Coupler PC200; 300	Lite On	LTV-816	5000V	IEC/EN 60747-5-5	VDE: 40015248

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

Photo Coupler PC200; 300 (Alternative)	Everlight	EL816	5000V	IEC/EN 60747-5-5	VDE: 132249
Photo Coupler PC200; 300 (Alternative)	Renesas Electronics	PS2581	5000V	IEC/EN 62368-1	SEMKO: 1516323
Photo Coupler PC400	Everlight	EL816	5000V	IEC/EN 60747-5-5	VDE: 132249
Photo Coupler PC400 (Alternative)	Lite On	LTV-816	5000V	IEC/EN 60747-5-5	VDE: 40015248
Photo Coupler PC400 (Alternative)	Renesas Electronics	PS2581	5000V	IEC/EN 62368-1	SEMKO: 1516323
Photo Coupler PC401	Everlight	EL816	5000V	IEC/EN 60747-5-5	VDE: 132249
Photo Coupler PC401 (Alternative)	Lite On	LTV-816	5000V	IEC/EN 60747-5-5	VDE: 40015248
Photo Coupler PC401 (Alternative)	Renesas Electronics	PS2581	5000V	IEC/EN 62368-1	SEMKO: 1516323
Connector; CN-COMP	ZHEJIAN ZUCH Technology	HW6204J	600V/15A; PA66 UL94-V0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Connector; CN-COMP (Alternative)	JST	VL	600V/20A; PA6 UL94V-0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Connector; CN-FM1	JST	VH	250V; 7A; PBT; UL94V-0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Connector; CN-FM1 (Alternative)	Yeon Ho	YW	250V; 7,5A; PBT; UL94V-0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Connector; CN-FM1 (Alternative)	ZHEJIAN ZUCH Technology	HW3960J	250V; 10A; PA66; UL94V-0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Connector; CN-FM1 (Alternative)	CWB	VH	250V; 7A; PA66; UL94V-0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Connector; CN-HT2	JST	VH	250V; 7A; PA66; UL94V-0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

Connector; CN-HT2 (Alternative)	Yeon Ho	YW	250V; 7,5A; PBT; UL94V-0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Connector; CN-HT2 (Alternative)	ZHEJIAN ZUCH Technology	HW3960J	250V; 10A; PA66; UL94V-0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Connector; CN-HT2 (Alternative)	CWB	VH	250V; 7A; PA66; UL94V-0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Connector; CN-HOT	JST	VH	250V; 7A; PA66; UL94V-0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Connector; CN-HOT (Alternative)	YEONHO	YW	250V; 7,5A; PA66; UL94V-0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Connector; CN-HOT (Alternative)	ZHEJIAN ZUCH Technology	HW3960J	250V; 10A; PA66; UL94V-0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Connector; CN-HOT (Alternative)	CWB	VH	250V; 7A; PA66; UL94V-0	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Diode Bridge DB200	YANGJIE ELECTRONIC	YBS	1000V/2A	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Diode Bridge DB200 (Alternative)	Lite On	MSB	1000V/2A	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Diode Bridge DB300	YANGJIE ELECTRONIC	GBJ	600V/25A	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Transistor Q300, Q301	Renesas	RJH65T04B	650V/30A	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Transistor Module Q500	Fuji Erectric	6MBP20XSC060-50-F1	600V/20A	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Transistor Module Q500 (Alternative)	Mitsubishi Electric	PSS20S93E6-C	600V/20A	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Transistor Module Q800	Mitsubishi Electric	SLIMDIP-L	600V/15A	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

Transistor Module Q800 (Alternative)	SILAN	SDM15L60RA	600V/15A	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Capacitor C308, C309	Nantong Jianghai	CD297	400V/720μF	IEC/EN 60335-1 IEC/EN 60335-2-21 IEC/EN 60335-2-40	Tested in Appliance
Supplementary information: **[1]) Provided evidence ensures the agreed level of compliance. See OD-CB2039.**					

24.102.1	**TABLE: Operating of thermal cut-out**	N/A
Product	Measured temperature (°C)	
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Supplementary information: N/A		

24.102.2	**TABLE: Operating of thermal cut-out**		N/A
Product	Measured temperature (°C)		
	Thermal cut-out	Water	
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Supplementary information: N/A			

28.1	**TABLE: Threaded part torque test**		P
Threaded part identification	**Diameter of thread (mm)**	**Column number (I, II, or III)**	**Applied torque (Nm)**
Earth screw (Outdoor unit) (On panel)	4,86	II	2,0
Terminal screw (Outdoor unit) (On panel)	4,86	II	2,0
Supplementary information: N/A			

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

29.1	**TABLE: Clearances**		P
	Overvoltage category..... .... :	II	—

		Type of insulation:				
Rated impulse voltage (V):	**Min. cl (mm)**	**Basic (mm)**	**Supplementary (mm)**	**Reinforced (mm)**	**Functional (mm)**	**Verdict / Remark**
330	0,2* / 0,5 / 0,8**	–	–	–	–	N/A
500	0,2* / 0,5 / 0,8**	–	–	–	–	N/A
800	0,2* / 0,5 / 0,8**	–	–	–	–	N/A
1 500	0,5 / 0,8** / 1,0***	–	–	–	–	N/A
2 500	1,5 / 2,0***	3,32[a)]	14,4 [b)]	–	3,79[c)]	P
4 000	3,0 / 3,5***	–	–	–	–	N/A
6 000	5,5 / 6,0***	–	–	–	–	N/A
8 000	8,0 / 8,5***	–	–	–	–	N/A
10 000	11,0 / 11,5***	–	–	–	–	N/A

Supplementary information:

***) For tracks on printed circuit boards if pollution degree 1 and 2**
****) For pollution degree 3**
*****) If the construction is affected by wear, distortion, movement of the parts or during assembly**

[a)] Measure between different potential pin L to G on PCB. (ACXA73-48340)

[b)] Measure between sensor outdoor unit to accessible part

[c)] Measure between potential pin of Fuse4 on PCB. (ACXA73-48340)

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

29.2	**TABLE: Creepage distances, basic, supplementary and reinforced insulation**	P

Working voltage (V)	**Creepage distance (mm) Pollution degree**										
	1	**2**			**3**			**Type of insulation**			
		Material group			**Material group**						
		I	**II**	**IIIa/IIIb**	**I**	**II**	**IIIa/IIIb***	**B****	**S****	**R****	**Verdict**
≤50	0,18	0,6	0,85	1,2	1,5	1,7	1,9		—	—	N/A
≤50	0,18	0,6	0,85	1,2	1,5	1,7	1,9	—		—	N/A
≤50	0,36	1,2	1,7	2,4	3,0	3,4	3,8	—	—		N/A
125	0,28	0,75	1,05	1,5	1,9	2,1	2,4		—	—	N/A
125	0,28	0,75	1,05	1,5	1,9	2,1	2,4	—		—	N/A
125	0,56	1,5	2,1	3,0	3,8	4,2	4,8	—	—		N/A
250	0,56	1,25	1,8	**2,5**	3,2	3,6	4,0	3,29 a)	—	—	P
250	0,56	1,25	1,8	**2,5**	3,2	3,6	4,0	—	14,4 b)	—	P
250	1,12	2,5	3,6	5,0	6,4	7,2	8,0	—	—		N/A
400	1,0	2,0	2,8	4,0	5,0	5,6	6,3		—	—	N/A
400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—		—	N/A
400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	—	—		N/A
500	1,3	2,5	3,6	5,0	6,3	7,1	8,0		—	—	N/A
500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	—		—	N/A
500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	—	—		N/A
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		—	—	N/A
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	—		—	N/A
>630 and ≤800	3,6	6,4	9,0	12,6	16,0	18,0	20,0	—	—		N/A
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5		—	—	N/A
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	—		—	N/A
>800 and ≤1000	4,8	8,0	11,2	16,0	20,0	22,0	25,0	—	—		N/A
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0		—	—	N/A
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	—		—	N/A
>1000 and ≤1250	6,4	10,0	14,2	20,0	25,0	28,0	32,0	—	—		N/A
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0		—	—	N/A

IEC 60335-2-21 & 60335-2-40											
Clause	Requirement + Test							Result - Remark			Verdict
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	—		—	N/A
>1250 and ≤1600	8,4	12,6	18,0	25,0	32,0	36,0	40,0	—	—		N/A
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0		—	—	N/A
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	—		—	N/A
>1600 and ≤2000	11,2	16,0	22,0	32,0	40,0	44,0	50,0	—	—		N/A
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0		—	—	N/A
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	—		—	N/A
>2000 and ≤2500	15,0	20,0	28,0	40,0	50,0	56,0	64,0	—	—		N/A
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0		—	—	N/A
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	—		—	N/A
>2500 and ≤3200	20,0	25,0	36,0	50,0	64,0	72,0	80,0	—	—		N/A
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0		—	—	N/A
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	—		—	N/A
>3200 and ≤4000	25,0	32,0	44,0	64,0	80,0	90,0	100,0	—	—		N/A
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0		—	—	N/A
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	—		—	N/A
>4000 and ≤5000	32,0	40,0	56,0	80,0	100,0	112,0	126,0	—	—		N/A
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0		—	—	N/A
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	—		—	N/A
>5000 and ≤6300	40,0	50,0	72,0	100,0	126,0	142,0	160,0	—	—		N/A
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0		—	—	N/A
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	—		—	N/A
>6300 and ≤8000	50,0	64,0	90,0	126,0	160,0	180,0	200,0	—	—		N/A
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0		—	—	N/A
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	—		—	N/A
>8000 and ≤10000	64,0	80,0	112,0	160,0	200,0	220,0	250,0	—	—		N/A
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0		—	—	N/A
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	—		—	N/A
>10000 and ≤12500	80,0	100,0	142,0	200,0	250,0	280,0	320,0	—	—		N/A

Supplementary information:

***) Material group IIIb is allowed if the working voltage does not exceed 50 V**

****) B = Basic insulation, S = Supplementary insulation, R = Reinforced insulation**

a) Measure between different potential pin L to G on PCB. (ACXA73-48340)

b) Measure between sensor outdoor unit to accessible part

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

29.2	**TABLE: Creepage distances, functional insulation**							P
Working voltage (V)	**Creepage distance (mm) Pollution degree**							
	1	**2**			**3**			
		Material group			**Material group**			
		I	**II**	**IIIa/IIIb**	**I**	**II**	**IIIa/IIIb***	**Verdict / Remark**
≤10	0,08	0,4	0,4	0,4	1,0	1,0	1,0	N/A
50	0,16	0,56	0,8	1,1	1,4	1,6	1,8	N/A
125	0,25	0,71	1,0	1,4	1,8	2,0	2,2	N/A
250	0,42	1,0	1,4	2,0	2,5	2,8	3,2	P (3,79mm) [a)]
400	0,75	1,6	2,2	3,2	4,0	4,5	5,0	N/A
500	1,0	2,0	2,8	4,0	5,0	5,6	6,3	N/A
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	N/A
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	N/A
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	N/A
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	N/A
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	N/A
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	N/A
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	N/A
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	N/A
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	N/A
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	N/A
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	N/A
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	N/A
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	N/A

Supplementary information:

***) Material group IIIb is allowed if the working voltage does not exceed 50 V**

[a)] Measure between potential pin of Fuse4 on PCB. (ACXA73-48340)

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

30.1	**TABLE: Ball Pressure Test of Thermoplastics**		P
Allowed impression diameter (mm) ..... :		≤ 2,0 mm	—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)
PCB. (ACXA73-48340)	Panasonic	125	1,2
PCB. (ACXA73-48340) (Alternative use)	NANYA PLASTIC	125	1,2
PCB. (ACXA73-48340) (Alternative use)	SHENGYI	125	1,3
Connector, CN-PWR	JST	125	1,1
Connector, CN-PWR (Alternative)	Yeon Ho	125	1,1
Connector, CN-PWR (Alternative)	ZHEJIAN ZUCH Technology	125	1,3
Terminal Block	Jinlong	125	1,2
Switching Transformer T200	Dezhou Sanhe	125	1,1
Noise Filter LF100	Dezhou Sanhe	125	0,7
Connector, CN-COMP	ZHEJIAN ZUCH Technology	125	1,4
Connector, CN-COMP (Alternative)	JST	125	1,4
Connector, CN-FM1	JST	125	0,9
Connector, CN-HOT	JST	125	1,1
Connector, CN-HOT (Alternative)	YEONHO	125	1,1
Connector, CN-HOT (Alternative)	ZHEJIAN ZUCH Technology	125	1,3
Control box outdoor unit	--	75	1,0
Supplementary information: N/A			

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

30.2/ 30.2.4	**TABLE: Needle- flame test (NFT)**				P
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
PCB. (ACXA73-48340)	Panasonic	30	No	0	P
PCB. (ACXA73-48340) (Alternative use)	NANYA PLASTIC	30	No	0	P
PCB. (ACXA73-48340) (Alternative use)	SHENGYI	30	No	0	P
Supplementary information: **NFT not relevant (or applicable) for Parts of material classified as V-0 or V-1** **NFT not relevant (or applicable) for Base material of PCBs classified as V-0 or if relevant VTM-0**					

30.2	**TABLE: Resistance to heat and fire - Glow wire tests**							**P**
Object/ Part No./ Material	**Manufacturer / trademark**	**Glow wire test (GWT); (°C)**						**Verdict**
		550	**650**		**750**		**850**	
			te	**ti**	**te**	**ti**		
Connector, CN-PWR	JST	--	--	--	X/--	X/--	X	P
Connector, CN-PWR (Alternative)	Yeon Ho	--	--	--	X/--	X/--	X	P
Connector, CN-PWR (Alternative)	ZHEJIAN ZUCH Technology	--	--	--	X/--	X/--	X	P
Terminal Block	Jinlong	--	--	--	X/--	X/--	X	P
Switching Transformer T200	Dezhou Sanhe	--	--	--	X/--	X/--	X	P
Noise Filter LF100	Dezhou Sanhe	--	--	--	X/--	X/--	X	P
Connector, CN-COMP	ZHEJIAN ZUCH Technology	--	--	--	X/--	X/--	X	P
Connector, CN-COMP (Alternative)	JST	--	--	--	X/--	X/--	X	P

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

Connector, CN-FM1	JST	--	--	--	X/--	X/--	X	P
Connector, CN-HOT	JST	--	--	--	X/--	X/--	X	P
Connector, CN-HOT (Alternative)	YEONHO	--	--	--	X/--	X/--	X	P
Connector, CN-HOT (Alternative)	ZHEJIAN ZUCH Technology	--	--	--	X/--	X/--	X	P
Control box outdoor unit	--	X/--	--	--	--	--	--	P

Object/ Part No./ Material	**Manufacturer / trademark**	**Glow-wire flammability index (GWFI), °C**				**GW ignition temp. (GWIT), °C**		**Verdict**
		550	**650**	**750**	**850**	**675**	**775**	
--	--	--	--	--	--	--	--	--

The test specimen passed the glow wire test (GWT) with no ignition [($t_e - t_i$) ≤ 2s] (Yes/No):	Yes
If no, then surrounding parts passed the needle-flame test of annex E (Yes/No)..... :	N/A
The test specimen passed the test by virtue of most of the flaming material being withdrawn with the glow-wire (Yes/No)? ..... :	No
Ignition of the specified layer placed underneath the test specimen (Yes/No)..... :	No

Supplementary information:

550 °C GWT not relevant (or applicable) to parts of material classified at least HB40 or if relevant HBF
The GWIT pre-selection option, the 850 °C GWFI pre-selection option, and the 850 °C GWT are not relevant (or applicable) for attended appliances.

IEC 60335-2-21 & 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

Appendix EMF		P
	TEST: Evaluation of the magnetic fields	--
Applied standards:	IEC 62233:2005, EN 62233:2008 (incl. Corr.1:2008)	--
Method	Used method: 5.5.2 Time domain evaluation	—
Applied Limit	ICNIRP Guidelines	—

Identification of the appliance	Type of apparatus	Air-to-water Hydromodule + Tank (Indoor unit)
	Rated Voltage	230V
	Rated Frequency	50Hz
Parameters required prior to the test	Laboratory Ambient Temperature	25 °C ± 10 °C
	Supply Voltage	(Rated Voltage ± 2 %) V
	Supply Frequency	(Rated Frequency ± 2 %) Hz
Parameters recorded during the test	Laboratory Ambient Temperature	30°C
	Supply Voltage	230V
	Supply Frequency	50HZ
Operating Mode	Cooling and heating mode	

Method 5.5.2

Measuring Positions	Measuring Distance	Coupling Factor	Measurement Uncertainty
Round	30	0,18	N/A

Frequency (kHz)	Limit (%)	Measured Maximum Value (%)
0,01 to 400	100	8,9

Supplementary information:

The measured maximum value in this table may be weighted with the coupling factor if applicable, and the measurement uncertainty is applied if the measured result is more than 75 % of the limit.

This result is reported by maximum result of WH-ADC0509L6E5AN and WH-ADC0509L3E5B

Attachment No.1: List of test equipment

Clause	Measurement / testing	Testing / measuring equipment / material used, (Equipment ID)	Range used	Last Calibration date	Calibration due date
19,7	Temperature	Graphtec data logger with sensors (Temperature data logger) (H30929480)	(-100) – 400℃	26 January 2023	25 January 2024
19,7	Voltage	Digital power meter (91M627786)	0 – 600V 0 – 20A	26 January 2023	25 January 2024
19,7	Current	Digital multimeter (17430062)	0 – 50A	25 January 2023	24 January 2024
19,7	Voltage	Withstand Voltage Tester (12097528)	700V – 20kV	26 January 2023	25 January 2024

Attachment 2: Attachment IEC 60335-2-21 & 40 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES, 2019-11-01

IEC60335_2_21&40G ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT **IEC 60335-2-21 & 40** **EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES** (**PART 2: PARTICULAR REQUIREMENTS FOR WATER HEATERS & PARTICULAR REQUIREMENTS FOR ELECTRICAL HEAT PUMPS, AIR-CONDITIONERS AND DEHUMIDIFIERS**)			
Differences according to .....:	EN 60335-2-21 2003 + A1:2005 + A2:2008 and EN 60335-2-40 2003 + A11:2004 + A12:2005 + A1:2006 +A2 :2009 +A13: 2012 used in conjunction with EN 60335-1:2012+ AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019 EN 62233:2008+AC :2008		
Attachment Form No.....:	EU_GD_IEC60335_2_21&40G		
Attachment Originator .....:	LCIE		
Master Attachment.....:	2019-11-01		
	CENELEC COMMON MODIFICATIONS (EN)		—
6.1	Delete “class 0” and “class 01”		N/A
7.1	Single-phase appliances to be connected to the supply mains: 230 V covered		P
	Multi-phase appliances to be connected to the supply mains: 400 V covered		N/A
7.12	The instructions include the substance of the following:		P
	- this appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved		P
	- children shall not play with the appliance		P
	- cleaning and user maintenance shall not be made by children without supervision		P

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7.12.1	For appliances that are **intended** to be permanently connected to fixed wiring, and have a leakage current that may exceed 10 mA, The installation instructions shall state that the installation of a residual current device (RCD) having a rated residual operating current not exceeding 30 mA is advisable. .(EN 60335-2-40)		N/A
	For appliances not accessible to the general public and which are intended to be permanently connected to fixed wiring and which may have leakage currents exceeding 10 mA, the installation instructions shall specify the rating of the residual current device (RCD) to be installed. (EN 60335-2-40)		N/A
8.1.1	Also test probe 18 of EN 61032 is applied		P
	The appliance being in every possible position during the test, except that		P
	appliances normally used on the floor and having a mass exceeding 40 kg are not tilted		P
	The force on the probe in the straight position is increased to 10 N when probe 18 is used		P
	When using test probe 18 the appliance is fully assembled as in normal use without any parts removed, and		P
	parts intended to be removed for user maintenance are also not removed		P
8.1.3	Instead of test probe B, test probe 18 and test probe 13, for appliances other than those of class II, test probe 41 of IEC 61032 is applied with a force not exceeding 1 N to live parts of visibly glowing heating elements, all poles of which can be disconnected by a single switching action		N/A
8.2	Compliance is checked by inspection and by applying the test probes of EN 61032 in accordance with the conditions specified in 8.1.1		P
	Test probe B and probe 18 of EN 61032 are applied to built-in appliances and fixed appliances only after installation		P
13.2	For stationary class I appliances, the leakage current may exceed 3.5mA but shall not exceed 2 mA per kilowatt rated power input with a maximum value of 10 mA for appliances accessible to the general public, and a maximum value of 30 mA for appliances not accessible to the general public. (EN 60335-2-40)		P
16.2	For stationary class I appliances, the leakage current may exceed 3.5mA but shall not exceed 2 mA per kilowatt rated power input with a maximum value of 10 mA for appliances accessible to the general public, and a maximum value of 30 mA for appliances not accessible to the general public. (EN 60335-2-40)		P

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15.1.2	Appliances with an automatic cord reel tested with the cord in the most unfavourable position so that the reeling of the wet cord may affect electrical insulation during operation, the cord not being dried before reeling		N/A
20.2	For appliances having dangerous moving parts, due to their working function, e.g. the needle of a sewing machine, tools of kitchen machines or the blade of an electrical knife, full protection is not possible for performing their intended use		N/A
	When using the test probe similar to test probe B of EN 61032, having a circular stop face and applied with a force of 5N, the accessories and detachable covers are removed		P
	Test probe 18 applied with a force of 2,5N on the appliance fully assembled		P
22.12	Other parts intended to be detached during use, maintenance or cleaning (e.g. batteries, battery covers, lids, attachments, steam nozzles) are not considered as parts providing a similar function as handles, knobs, grips, levers		N/A
22.17	The requirement is not applicable to built-in appliances		N/A
24.1	Components comply with the safety requirements specified in the relevant standards as far as they reasonably apply		P
	The requirements of Clause 29 of this standard apply between live parts of components and accessible parts of the appliance.		P
	The requirements of 30.2 of this standard apply to parts of non-metallic material in components including parts of non-metallic material supporting current-carrying connections inside components		P
	Components that have not been previously tested or do not comply with the standard for the relevant component are tested according to the requirements of 30.2		P
	Components that have been previously tested and shown to comply with the resistance to fire requirements in the standard for the relevant component need not be retested provided that:		—
	- the severity specified in the component standard is not less than the severity specified in 30.2, and		P
	- the test report for the component states whether it complied with the standard for the relevant component with or without flame, flames not exceeding 2 s during the test are ignored		P

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	Unless components have been previously tested and found to comply with the relevant standard for the number of cycles specified, they are tested in accordance with 24.1.1 to 24.1.9		P
	For components mentioned in 24.1.1 to 24.1.9, no additional tests specified in the relevant standard for the component are necessary other than those specified in 24.1.1 to 24.1.9		P
	Components that have not been separately tested and found to comply with the relevant standard, and		P
	components that are not marked or not used in accordance with their marking,		P
	are tested in accordance with the conditions occurring in the appliance, the number of samples being that required by the relevant standard		P
	Lamp holders and starter holders that have not been previously tested and found to comply with the relevant standard are tested as a part of the appliance and additionally comply with the gauging and interchangeability requirements of the relevant standard under the conditions occurring in the appliance		N/A
	Where the relevant standard specifies these gauging and interchangeability requirements at elevated temperatures, the temperatures measured during the tests of Clause 11 are used		N/A
	Plugs and socket-outlets and other connecting devices of interconnection cords are not interchangeable with plugs and socket-outlets listed in IEC/TR 60083 or IEC 60906-1, or		N/A
	with connectors and appliance inlets complying with the standard sheets of IEC 60320-1,		N/A
	if direct supply to these parts from the supply mains gives rise to a hazard		N/A
24.1.7	If the remote operation of the appliance is via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is EN 41003		N/A
	Compliance with Clause 8 of this standard is not impaired by connecting the appliance to a device covered by EN 41003		N/A
24.Z1	Type S2 and S3 capacitors according to EN 60252-1 are not required to undergo the testing as required by 30.2.2 and 30.2.3.1		N/A

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24.102.2	During the test, compliance with 19.13 shall not be impaired. (EN 60335-2-21)		P
25.1	Plugs and pins for insertion into socket outlets follow the relevant standards sheets in Annex ZH		N/A
25.7	Rubber sheathed cords (60245 IEC 53) are not suitable for appliances intended to be used outdoors or		N/A
	when they are liable to be exposed to significant amount of ultraviolet radiation		N/A
25.25	Instead of IEC/TR 60083, dimensions of the pins and engagement face of plugs of appliances that are inserted into socket-outlets are in accordance with the dimensions of the relevant plug standard		N/A
	Common plugs and socket-outlets types in CENELEC countries as shown in Annex ZH		N/A
26.11	Conductors connected by soldering are not considered to be positioned or fixed so that reliance is not placed upon the soldering alone to maintain them in position unless they are held in place near the terminals independently of the solder		N/A
29.3.Z1	Appliance constructed so that if there is a possibility of damaging the insulation during installation, the insulation withstands the scratch and penetration test of 21.2		N/A
32	Compliance regarding electromagnetic fields is checked according to EN 62233		P
Annex I, 19.I.101	The appliance is supplied at rated voltage and operated under normal operation with each of the fault conditions specified		N/A
	The duration of the test is as specified in 19.7		N/A

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GG.2	For non-fixed factory sealed single package units with a charge amount of $m_1<M\leq 2xm_1$, the requirements of GG.Z1 apply. (EN 60335-2-40)		N/A
GG.Z1.1	When the appliance is switched on, a fan shall operate continuously supplying a minimum airflow as under normal steady state conditions, event when the compressor is switched off by the thermostat. (EN 60335-2-40)		N/A
GG.Z1.2	The appliance shall withstand the effects of dropping and vibration during transport and normal use without leaking refrigerant (EN 60335-2-40)		N/A
GG.Z1.2.1	Random vibration test for 180 min according to ASTM D 4728-01 as described. (EN 60335-2-40)		N/A
GG.Z1.2.2	Drops test in its final packaging, as described Drop height (EN 60335-2-40)	cm	N/A
GG.Z1.2.3	Drops test without its final packaging, as described Drop height (EN 60335-2-40)	cm	N/A
GG.Z1.2.4	Cycles 240h , each cycle the compressor runs 10 min + rest period 5 min. (EN 60335-2-40)		N/A
GG.Z1.3	The appliance shall be constructed so that its operation does not cause resonance points in the piping connected to the compressor. (EN 60335-2-40)		N/A
ZA	**ANNEX ZA** (NORMATIVE) **SPECIAL NATIONAL CONDITIONS**		N/A
			—
	Denmark, Sweden, Norway and Finland		—
7.12.8	The maximum inlet water pressure is at least 1,0 MPa :		N/A
			—
	Norway		—
22.2	The second paragraph of this subclause, dealing with single-phase, permanently connected class I appliances having heating elements, is not applicable due to the supply system		P
			—
	Denmark		—
22.47	The maximum inlet water pressure is at least 1,0 MPa :		N/A
			—
	Ireland and United Kingdom		—

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25.8	In the table, the lines for 10 A and 16 A are replaced by:		—
	> 10 and ≤ 13 1,25		N/A
	> 13 and ≤ 16 1,5		N/A
			—
ZB	**ANNEX ZB** (INFORMATIVE) **A-DEVIATIONS**		—
			—
	Ireland		—
25.6	These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and in general allow only plugs complying with I.S. 401:1997, or equivalent, to be fitted to domestic appliances		N/A
			—
	United Kingdom		—
25.6	These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and in general allow only plugs to BS 1363 to be fitted to domestic appliances. It also allows plugs to BS 4573 and EN 50075 to be fitted to shavers and toothbrushes		N/A
			—
ZC	**ANNEX ZC** (NORMATIVE) **NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS**		—
	A list of referenced documents in this standard		P
			—
ZD	**ANNEX ZD** (INFORMATIVE) **IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS**		—
	A table with IEC and CENELEC code designations for flexible cords		P
ZE	**ANNEX ZE** (INFORMATIVE) **SPECIFIC ADDITIONAL REQUIREMENTS FOR APPLIANCES AND MACHINES INTENDED FOR COMMERCIAL USE**		—
7.1	Business name and full address of the manufacturer and, where applicable, his authorized representative.....:		N/A
	Model or type reference .....:		N/A
	Serial number, if any .....:		N/A
	Production year		N/A
	Designation of the appliance.....:		N/A

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7.12	Instructions provided with the appliance so that the appliance can be used safely		N/A
	The instructions contain at least the following information:		—
	- the business name and full address of the manufacturer and, where applicable, his authorized representative		N/A
	- model or type reference of the appliance as marked on the appliance itself, except for the serial number		N/A
	- the designation of the appliance together with its explanation in case it is given by a combination of letters and/or numbers		N/A
	- the general description of the appliance, when needed due to the complexity of the appliance		N/A
	- specific precautions if required during installation, operation, adjusting, user maintenance, cleaning, repairing or moving		N/A
	- when needed drawings, diagrams, descriptions and explanations necessary for the safe use and user maintenance of the appliance		N/A
	- the possible reasonably foreseeable misuse and, whenever relevant, a warning against the effects it may have on the safe use of the appliance		N/A
	The words “Original instructions” appear on the language version(s) verified by the manufacturer or by the authorized representative		N/A
	When a translation of the original instructions has been provided by a person introducing the appliance on the market; the meaning of the sentence “Translation of the original instructions” appear in the relevant instructions delivered with the appliance		N/A
	The instructions for maintenance/service to be done by specialized personnel, mandated by the manufacturer or the authorized representative may be supplied in only one Community language which the specialized personnel understand		N/A
	The instructions indicate the type and frequency of inspections and maintenance required for safe operation including the preventive maintenance measures		N/A
	The instructions shall indicate the substance of the following: (EN 60335-2-40) “This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons”.		N/A

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7.12.ZE1	If needed for specific appliances, the following information to be given:		—
	• on use, transportation, assembly, dismantling when out of service, testing or foreseeable breakdowns, if these operations have consequences on stability of the appliance in order to avoid overturning, falling or uncontrolled movements of the appliance or of its component parts		N/A
	• on how to maintain adequate mechanical stability when in use, during transportation, assembly, dismantling, scrapping and any other action involving the appliance		N/A
	• on the protective measures to be taken by the user, including, where appropriate, the personal protective equipment to be provided		N/A
	• on the operating method to be followed in the event of accident or breakdown; if a blockage is likely to occur the operating method to safely unblock the appliance		N/A
	• on the specifications on the spare parts to be used, when these affect the health and safety of the operator		N/A
	on airborne noise emissions, determined and declared in accordance with Annex ZAB , which includes: (EN 60335-2-40)		—
	- The A-weighted emission sound pressure level at workstations, where this exceeds 70 dB(A). If the A-weighted sound pressure level is below 70 dB, no value needs to be given, but the instructions shall state that the A-weighted sound pressure level is below 70 dB.;(EN 60335-2-40)		N/A
	- where this level does not exceed 70 dB(A),this fact is indicated		N/A
	- the peak C-weighted instantaneous sound pressure value at workstations, where this exceeds 63 Pa (130 dB in relation to 20 μPa):		N/A
	- the A-weighted sound power level emitted by the machinery, where the A-weighted emission sound pressure level at workstations exceeds 80 dB(A) :		N/A
7.12.ZE2	The instructions includes a warning to disconnect the appliance from its power source during service and when replacing parts		N/A

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	If the removal of the plug is foreseen, it is clearly indicated that the removal of the plug has to be such that an operator can check from any of the points to which he has access that the plug remains removed		N/A
	If this is not possible, due to the construction of the appliance or its installation, a disconnection with a locking system in the isolated position is provided		N/A
19.11.4.8	The appliance continues to operate, without causing any hazard to the user, from the same point in its operating cycle at which the voltage fluctuation occurred, or		N/A
	a manual operation is required to restart it		N/A
20.1	Appliances and their components and fittings have adequate mechanical stability during transportation, assembly, dismantling and any other action involving the appliance		N/A
	Compliance is checked by inspection and the relevant tests as specified in Annex GG. (EN 60335-2-40)		N/A
20.2	Dangerous moving transmission parts safeguarded either by design or guards		N/A
	When guards are used, they are fixed guards, interlocking movable guards or protective devices		N/A
	Moving parts directly involved in the function of the appliance which cannot be made completely inaccessible fitted with:		—
	- fixed guards or interlocking movable guards preventing access to those sections of the parts that are not used in the work, and		N/A
	- adjustable guards restricting access to those sections of the moving parts where access is necessary		N/A
	Interlocking movable guards used where frequent access is required		N/A
21.1	Appliances and their components and fittings have adequate mechanical strength and is constructed to withstand such rough handling that may be expected in normal use, during transportation, assembly, dismantling, scrapping and any other action involving the appliance		N/A
22.ZE.1	For appliances provided with a seat, the seat gives adequate stability		N/A
	The distance between the seat and the control devices capable of being adapted to the operator		N/A

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22.ZE.2	For appliances provided with separate devices for the start and the stop functions, the stop function is unambiguously identifiable and does always override the start function		N/A
	For appliances provided with one device performing the start and the stop function, the stop function is unambiguously identifiable and does always override the start function		N/A
22.ZE.3	Appliances designed in such a way that incorrect mounting is avoided, if this can lead to an unsafe situation		N/A
	If this is not possible, information on the correct mounting is given directly on the part and/or the enclosure		N/A
22.ZE.4	Where the weight, size or shape prevents appliances from being moved manually, they are fitted with attachments for lifting gear, or		N/A
	so designed that they can be fitted with such attachments, or		N/A
	be shaped in such a way that standard lifting gear can easily be used		N/A
	Appliances to be moved manually are constructed or equipped so that they can be moved easily and safely		N/A
22.ZE.5	The fixing systems of fixed guards which prevent access to dangerous moving transmission parts only removable with the use of tools		N/A
	If such guards have to be removed by the user for routine cleaning or maintenance their fixing systems remain attached to the fixed guards or to the machine after removal		N/A
	Where possible, guards are incapable of remaining in place without their fixings		N/A
	This does not apply if, after removal of the screws, or if the component is incorrectly repositioned, the appliance becomes inoperative		N/A
	Movable guards are interlocked		N/A
	The interlocking devices prevent the start of hazardous appliance functions until the guards are fixed in their position, and give a stop command whenever they are no longer closed		N/A
	Where it is possible for an operator to reach the danger zone before the risk due to hazardous appliance functions has ceased, movable guards associated with a guard locking device in addition to an interlocking device that:		—

Attachment 2: Attachment IEC 60335-2-21 & 40 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES, 2019-11-01

	- prevents the start of hazardous appliance functions until the guard is closed and locked, and		N/A
	- keeps the guard closed and locked until the risk of injury from the hazardous appliance functions has ceased		N/A
	Interlocking movable guards remain attached to the appliance when open, and		N/A
	they are designed and constructed in such a way that they can be adjusted only by means of an intentional action		N/A
	The guard is opened at the extent needed to cause the interlocking to operate and is then closed. This operation is carried out for 5 000 cycles at a rate of 5 cycles per min. (EN 60335-2-40)		N/A
22.ZE.6	Interlocking movable guards designed in such a way that the absence or failure of one of their components prevents starting or stops the hazardous appliance functions		N/A
	The guard is opened to the extent needed to cause the interlocking to operate and is then closed, the number of operations being defined in the specific Part 2.....:		N/A
	After this test any defect that may be expected in normal use is applied to the interlock system, including interruption of the supply, only one defect being simulated at a time		N/A
	After these tests the interlock system is fit for further use		N/A
22.ZE.7	Adjustable guards restricting access to areas of the moving parts strictly necessary for the work are:		N/A
	- adjustable manually or automatically, depending on the type of work involved, and		N/A
	- readily adjustable without the use of tools		N/A
22.ZE.8	In case of interruption, re-establishment after an interruption or fluctuation in whatever manner of the power supply, the appliance does not restart		N/A
	However, automatic restarting of the operation is allowed if the appliance may continue to operate, without causing any hazard to the user, from the same point in its operating cycle at which the voltage interruption or fluctuation occurred		N/A
22.ZE.9	Appliances fitted with means to isolate them from all energy sources		N/A
	Such isolators are clearly identified, and		N/A

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	they are capable of being locked if reconnection endanger persons		N/A
	After the energy source is disconnected, it is possible to dissipate any energy remaining or stored in the circuits of the appliance without risk to persons		N/A
ZF	**ANNEX ZF** (INFORMATIVE) **CRITERIA APPLIED FOR THE ALLOCATION OF PRODUCTS COVERED BY STANDARDS IN THE EN 60335 SERIES UNDER LVD OR MD**		—
	List of standards under CENELEC/TC61 with the allocation under the LVD (Low Voltage Directive) or the MD (Machinery Directive) .....:		P
			—
ZG	**ANNEX ZG** (NORMATIVE) **UV APPLIANCES**		—
	The following modifications to this standard apply to appliances having UV emitters		N/A
	This annex is not applicable to appliances covered by the scopes of IEC 60335-2-27, IEC 60335-2-59 or IEC 60335-2-109		N/A
7.12.ZG	The instructions for appliances incorporating UVC emitters include the substance of the following: WARNING — This appliance contains a UV emitter. Do not stare at the light source		N/A
32	For appliances incorporating UV emitters the manufacturer delivers a declaration providing evidence that the plastic material exposed to the radiation is UV resistant		N/A
			—
ZH	**ANNEX ZH** (INFORMATIVE) **Common plug and socket-outlet types in CENELEC countries**		—
	In general, supply cords of single-phase appliances having a rated current not exceeding 16 A are fitted with a plug complying with the following standard sheets:		N/A
	- for class I appliances or class II appliances with functional earth, standard sheet EU2, EU3 or EU4:		N/A
	- for class II appliances, standard sheet EU5, EU6 or EU7 :		N/A
	There are exemptions or differences in certain CENELEC countries		N/A
			—

Attachment 2: Attachment IEC 60335-2-21 & 40 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES, 2019-11-01

ZI	**ANNEX ZI** (INFORMATIVE) **Information on the application of A11:2014 to EN 60335-1:2012 CENELEC CLC/TC 61(SEC)2096A**		—
	Clarification of the application of parts 2 in conjunction with the 2002 or 2012 version of EN 60335-1		P
			—
ZZA	**ANNEX ZZA** (INFORMATIVE) **RELATIONSHIP BETWEEN THIS EUROPEAN STANDARD AND THE SAFETY OBJECTIVES OF DIRECTIVE 2014/35/EU [2014 OJ L96} AIMED TO BE COVERED**		—
	This standard provides one means of conforming to safety objectives of Directive 2014/35/EU		P
	When cited in the Official Journal under that Directive, compliance with the normative clauses of this standard given in Table ZZA.1 confers a presumption of conformity with the safety objectives of that Directive and associated EFTA regulations		P
	Compliance with this Part 1 when used together with the relevant Part 2 provides one means of conformity with the safety objectives		P
			—
ZZB	**ANNEX ZZB** (INFORMATIVE) **RELATIONSHIP BETWEEN THIS EUROPEAN STANDARD AND THE ESSENTIAL REQUIREMENTS OF DIRECTIVE 2006/42/EC AIMED TO BE COVERED**		—
	This standard provides one means of conforming to essential requirements of EU Directive 2006/42/EC		P
	When cited in the Official Journal under that Directive, compliance with the normative clauses of this standard given in Table ZZB.1 confers a presumption of conformity with the essential requirements of that Directive and associated EFTA regulations		P
	Compliance with this Part 1 when used together with the relevant Part 2 provides one means of conformity with the essential health and safety requirements		P

Attachment 2: Attachment IEC 60335-2-21 & 40 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES, 2019-11-01

Annex EN 62233:2008			
Clause	Requirement + Test	Result - Remark	Verdict
EMF- ELECTROMAGNETICS FIELDS			
	The tested product also complies with the requirements of EN 62233:2008+ AC:2008		—
	Limit ……100%	Measured max.: 8,9 % (Max. result)	P

IEC60335_2_21M ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT **IEC 60335-2-21** **EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES** HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY – PART 2-21: PARTICULAR REQUIREMENTS FOR STORAGE WATER HEATERS			
Differences according to.....:	EN 60335-2-21:2021 + A1:2021 used in conjunction with EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019 + A15:2021 EN 62233:2008 + AC:2008		
TRF template used .....:	IECEE OD-2020-F2:2020, Ed. 1.1		
Attachment Form No.....:	EU_GD_IEC60335_2_21M		
Attachment Originator .....:	Nemko Group AS		
Master Attachment.....:	2022-04-14		
	CENELEC COMMON MODIFICATIONS (EN)		—
6.1	Delete “class 0” and “class 01”		N/A
7.1	Single-phase appliances to be connected to the supply mains: 230 V covered		P
	Multi-phase appliances to be connected to the supply mains: 400 V covered		N/A
7.12	The instructions include the substance of the following:		—
	- this appliance can be used by children aged from 3 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved		P
	- children aged from 3 to 8 years are only allowed to operate the tap connected to the water heater		P
	- children shall not play with the appliance		P
	- cleaning and user maintenance shall not be made by children without supervision		P
8.1.1	Also test probe 18 of EN 61032 is applied		P
	The appliance being in every possible position during the test, except that		P

IEC60335_2_21M ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	appliances normally used on the floor and having a mass exceeding 40 kg are not tilted		P
	The force on the probe in the straight position is increased to 10 N when probe 18 is used		P
	When using test probe 18 the appliance is fully assembled as in normal use without any parts removed, and		P
	parts intended to be removed for user maintenance are also not removed		P
8.1.3	Instead of test probe B, test probe 18 and test probe 13, for appliances other than those of class II, test probe 41 of IEC 61032 is applied with a force not exceeding 1 N to live parts of visibly glowing heating elements, all poles of which can be disconnected by a single switching action		N/A
8.2	Compliance is checked by inspection and by applying the test probes of EN 61032 in accordance with the conditions specified in 8.1.1		P
	Test probe B and probe 18 of EN 61032 are applied to built-in appliances and fixed appliances only after installation		P
15.1.2	Appliances with an automatic cord reel tested with the cord in the most unfavourable position so that the reeling of the wet cord may affect electrical insulation during operation, the cord not being dried before reeling		N/A
19.2	If there are separate thermostats in the phases of a three-phase water heater with star connection (without neutral), all thermostats are short-circuited simultaneously.		N/A
20.2	For appliances having hazardous moving parts, due to their working function, e.g. the needle of a sewing machine, tools of kitchen machines or the blade of an electrical knife, full protection is not possible for performing their intended use		N/A
	When using a test probe similar to test probe B of EN 61032, having a circular stop face and applied with a force of 5N, the accessories and detachable covers are removed		P
	When using test probe 18 it is applied with a force of 2,5N on the appliance fully assembled		P
22.12	Other parts intended to be detached during use, maintenance or cleaning (e.g. batteries, battery covers, lids, attachments, steam nozzles) are not considered as parts providing a similar function as handles, knobs, grips, levers		N/A

Attachment 3: Attachment IEC 60335-2-21 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES, 2022-04-14

IEC60335_2_21M ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
22.17	The requirement is not applicable to built-in appliances		N/A
22.44	An appliance is child-appealing if one of the following criteria is present:		—
	- appliance decorated using faces, cartoon like characters, or similar images		N/A
	- appliance using shapes representing animals, characters, persons or scale models		N/A
	An appliance is child-appealing if more than one of the following criteria are present:		—
	- using non-functional light (functional light is e.g. illumination of an object or area, signal indicating status of an appliance)		N/A
	- using non-functional sound (e.g. music)		N/A
	- using non-functional movement		N/A
	If the appliance is child-appealing, has a mass less than 4 kg or is mounted or normally intended for use at a height less than 850 mm, the following conditions shall be met:		—
	- surface temperature rise requirements not exceeded		N/A
	- hazardous moving parts not accessible		N/A
	- live parts not accessible		N/A
	- liquid temperature requirement not exceeded,		N/A
	unless for vessels in which two independent and sequential actions are needed to access the liquid		N/A
	- the requirement of 22.12 is applicable for all accessible parts of the appliance		N/A
24.1	Components comply with the safety requirements specified in the relevant EN standards as far as they reasonably apply		P
	Motors are not required to comply with EN 60034-1, but tested as part of the appliance according to this standard		P
	Relays are tested as part of the appliance according to this standard		P
	Relays may be alternatively tested to EN 60730-1 and the additional requirements in EN 60335-1		N/A
	The requirements of Clause 29 of this standard apply between live parts of components and accessible parts of the appliance		P

Attachment 3: Attachment IEC 60335-2-21 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES, 2022-04-14

IEC60335_2_21M ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Components may comply with the requirements for clearances and creepage distances for functional insulation as specified in the relevant component standard		P
	The requirements of 30.2 of this standard apply to parts of non-metallic material in components including parts of non-metallic material supporting current-carrying connections inside components		P
	Components that have not been tested and shown to comply with the EN standard for the relevant component are tested according to the requirements of 30.2 of this standard		P
	Components that have been tested and shown to comply with the resistance to fire requirements in the EN standard for the relevant component need not be retested provided that:		—
	- the severity specified in the component standard is not less than the severity specified in 30.2, and		P
	- the test report for the component states the values of t_e and t_i acc. to EN 60695-2-11		P
	If the above two conditions are not satisfied, the component is tested as part of the appliance		P
	Power electronic converter circuits are not required to comply with EN 62477-1, but tested as part of the appliance according to this standard		N/A
	Unless components have been tested and found to comply with the relevant EN standard for the number of cycles specified, they are tested in accordance with 24.1.1 to 24.1.9		P
	For components mentioned in 24.1.1 to 24.1.9, no additional tests specified in the relevant EN standard for the component are necessary other than those specified in 24.1.1 to 24.1.9		P
	Components that have not been tested and found to comply with the relevant EN standard, and		P
	components that are not marked or not used in accordance with their marking,		P
	are tested in accordance with the conditions occurring in the appliance, the number of samples being that required by the relevant standard		P

Attachment 3: Attachment IEC 60335-2-21 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES, 2022-04-14

IEC60335_2_21M ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Lamp-holders and starter-holders that have not been tested and found to comply with the relevant EN standard are tested as a part of the appliance and additionally comply with the gauging and interchangeability requirements of the relevant EN standard under the conditions occurring in the appliance		N/A
	Where the relevant EN standard specifies these gauging and interchangeability requirements at elevated temperatures, the temperatures measured during the tests of Clause 11 are used		N/A
	There are no additional tests specified for nationally standardized plugs such as those detailed in IEC/TR 60083 or connectors complying with the standard sheets of EN 60320-1 and EN 60309, unless they are specifically mentioned in the text of this standard		N/A
	Plugs and socket-outlets and other connecting devices of interconnection cords are not interchangeable with plugs and socket-outlets listed in IEC/TR 60083 or IEC 60906-1, or		N/A
	with connectors and appliance inlets complying with the standard sheets of EN 60320-1, if		N/A
	direct supply to these parts from the supply mains gives rise to a hazard		N/A
	For plugs used in CENELEC countries Annex ZH applies		N/A
24.Z1	Type S2 and S3 capacitors according to EN 60252-1 are not required to undergo the testing as required by 30.2.2 and 30.2.3.1		N/A
25.1	Plugs and pins for insertion into socket outlets follow the relevant standards sheets in Annex ZH		N/A
25.7	Rubber sheathed cords (60245 IEC 53) are not suitable for appliances intended to be used outdoors, or		N/A
	when they are liable to be exposed to significant amount of ultraviolet radiation		N/A
25.25	Instead of IEC/TR 60083, dimensions of the pins and engagement face of plugs of appliances that are inserted into socket-outlets are in accordance with the dimensions of the relevant plug standard		N/A
	Common plugs and socket-outlets types in CENELEC countries as shown in Annex ZH		N/A

IEC60335_2_21M ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
26.11	Conductors connected by soldering are not considered to be positioned or fixed so that reliance is not placed upon the soldering alone to maintain them in position,		N/A
	unless they are held in place near the terminals independently of the solder		N/A
29.3.Z1	Appliance constructed so that if there is a possibility of damaging the insulation during installation, the insulation withstands the scratch and penetration test of 21.2		N/A
32	Compliance regarding electromagnetic fields is checked according to EN 62233		P
Annex I, 19.I.101	The appliance is supplied at rated voltage and operated under normal operation with each of the fault conditions specified		N/A
	The duration of any of the tests is as specified in 19.7		N/A
			—
ZA	**ANNEX ZA (**NORMATIVE) **SPECIAL NATIONAL CONDITIONS (EN)**		—
			—
	Denmark, Sweden, Norway and Finland		—
7.12.8	The maximum inlet water pressure is at least 1,0 MPa ....:		N/A
			—
	Norway		—
19.5	The test is also applicable to appliances intended to be permanently connected to fixed wiring		P
			—
	Norway		—
22.2	The second paragraph of this subclause, dealing with single-phase, permanently connected class I appliances having heating elements, is not applicable due to the supply system		P
			—
22.101	**Denmark, Finland, Norway and Sweden**		—
	For closed water heaters, the minimum rated pressure is 1,0 MPa .....:		N/A
			—
22.102	**Denmark**		—

Attachment 3: Attachment IEC 60335-2-21 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES, 2022-04-14

IEC60335_2_21M ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Cold water inlets on the heated storage water heater, the safety valve and the blow out piping have a clear flow diameter of at least Ø 20 mm ...:		P
			—
	Denmark		—
22.47	The maximum inlet water pressure is at least 1,0 MPa ....:		N/A
			—
	Ireland, United Kingdom and Cyprus		—
25.8	In the table, the line >10 A and ≤16 A is replaced with:		—
	> 10 and ≤ 13 1,25 (1,0)[b]		N/A
	> 13 and ≤ 16 1,5 (1,0)[b]		N/A
			—
ZB	**ANNEX ZB** (INFORMATIVE) **A-DEVIATIONS**		—
			—
24.101	**United Kingdom**		—
	An unvented water heater is fitted with two independent safety devices, in addition to the thermostat used for normal temperature control. These can be a non-self-resetting thermal cutout and a temperature relief valve according to BS 6283 Part 2 or a combined temperature and pressure relief valve according to BS EN 1490		N/A
			—
24.102	**United Kingdom**		—
	The water temperature of the stored water does at no time exceed 100 °C		N/A
			—
	Ireland		—
25.1 and 25.25	These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and in general allow only plugs complying with I.S. 401:1997, or equivalent, to be fitted to domestic appliances		N/A
			—
	United Kingdom		—

Attachment 3: Attachment IEC 60335-2-21 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES, 2022-04-14

IEC60335_2_21M ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
25.1 and 25.25	These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and in general allow only plugs to BS 1363 to be fitted to domestic appliances.		N/A
	It also allows plugs to BS 4573 and EN 50075 to be fitted to shavers and toothbrushes		N/A
			—
ZC	ANNEX ZC **(NORMATIVE)** NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS		—
	A list of documents referred to in the text of this standard in such a way that some or all of their content constitutes requirements of this document		P
			—
ZD	**ANNEX ZD** (INFORMATIVE) **IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS**		—
	List of IEC and CENELEC code designations for flexible cords		P
			—
ZE	**ANNEX ZE** (INFORMATIVE) **SPECIFIC ADDITIONAL REQUIREMENTS FOR APPLIANCES AND MACHINES INTENDED FOR COMMERCIAL USE**		—
7.1	Business name and full address of the manufacturer and, where applicable, his authorized representative.....:		N/A
	Model or type reference .....:		N/A
	Serial number, if any		N/A
	Production year		N/A
	Designation of the appliance.....:		N/A
7.12	Instructions provided with the appliance so that the appliance can be used safely		N/A
	The instructions contain at least the following information:		—
	- the business name and full address of the manufacturer and, where applicable, his authorized representative		N/A
	- model or type reference of the appliance as marked on the appliance itself, except for the serial number		N/A
	- the designation of the appliance together with its explanation in case it is given by a combination of letters and/or numbers		N/A

Attachment 3: Attachment IEC 60335-2-21 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES, 2022-04-14

IEC60335_2_21M ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	- the general description of the appliance, when needed due to the complexity of the appliance		N/A
	- specific precautions required during installation, operation, adjusting, user maintenance, cleaning, repairing or moving		N/A
	- when needed drawings, diagrams, descriptions and explanations necessary for the safe use and user maintenance of the appliance		N/A
	- the possible reasonably foreseeable misuse and, whenever relevant, a warning against the effects it may have on the safe use of the appliance		N/A
	The words “Original instructions” appear on the language version(s) verified by the manufacturer or by the authorized representative		N/A
	When a translation of the original instructions has been provided by a person introducing the appliance on the market; the meaning of the sentence “Translation of the original instructions” appear in the relevant instructions delivered with the appliance		N/A
	The instructions for maintenance/service to be done by specialized personnel, mandated by the manufacturer or the authorized representative may be supplied in only one Community language which the specialized personnel understand		N/A
	The instructions indicate the type and frequency of inspections and maintenance required for safe operation including the preventive maintenance measures		N/A
7.12.ZE1	If needed for specific appliances, the following information to be given:		—
	- on use, transportation, assembly, dismantling when out of service, testing or foreseeable breakdowns, if these operations have consequences on stability of the appliance in order to avoid overturning, falling or uncontrolled movements of the appliance or of its component parts		N/A
	- on how to maintain adequate mechanical stability when in use, during transportation, assembly, dismantling, scrapping and any other action involving the appliance		N/A
	- on the protective measures to be taken by the user, including, where appropriate, the personal protective equipment to be provided		N/A

Attachment 3: Attachment IEC 60335-2-21 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES, 2022-04-14

IEC60335_2_21M ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	- on the operating method to be followed in the event of accident or breakdown; if a blockage is likely to occur the operating method to safely unblock the appliance		N/A
	- on the specifications on the spare parts to be used, when these affect the health and safety of the operator		N/A
	- on airborne noise emissions, determined and declared in accordance with the relevant Part 2, which includes:		—
	- the A-weighted emission sound pressure level at workstations, where this exceeds 70 dB(A) .....;		N/A
	- where this level does not exceed 70 dB(A), this fact is indicated		N/A
	- the peak C-weighted instantaneous sound pressure value at workstations, where this exceeds 63 Pa (130 dB in relation to 20 µPa).....:		N/A
	- the A-weighted sound power level emitted by the machinery, where the A-weighted emission sound pressure level at workstations exceeds 80 dB(A) .....:		N/A
7.12.ZE2	The instructions include a warning to disconnect the appliance from its power source during service and when replacing parts		N/A
	If the removal of the plug is foreseen, it is clearly indicated that the removal of the plug is such that an operator can check from any of the points to which he has access that the plug remains removed		N/A
	If this is not possible, due to the construction of the appliance or its installation, a disconnection with a locking system in the isolated position is provided		N/A
19.11.4.8	The appliance continues to operate, without causing any hazard to the user, from the same point in its operating cycle at which the voltage fluctuation occurred, or		N/A
	a manual operation is required to restart it		N/A
20.1	Appliances and their components and fittings have adequate mechanical stability during transportation, assembly, dismantling and any other action involving the appliance		N/A
20.2	Dangerous moving transmission parts safeguarded either by design or guards		N/A

Attachment 3: Attachment IEC 60335-2-21 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES, 2022-04-14

IEC60335_2_21M ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	When guards are used, they are fixed guards, interlocking movable guards or protective devices		N/A
	Moving parts directly involved in the function of the appliance which cannot be made completely inaccessible fitted with:		—
	- fixed guards or interlocking movable guards preventing access to those sections of the parts that are not used in the work, and		N/A
	- adjustable guards restricting access to those sections of the moving parts where access is necessary		N/A
	Interlocking movable guards used where frequent access is required		N/A
21.1	Appliances and their components and fittings have adequate mechanical strength and is constructed to withstand such rough handling that may be expected in normal use, during transportation, assembly, dismantling, scrapping and any other action involving the appliance		N/A
22.ZE.1	For appliances provided with a seat, the seat gives adequate stability		N/A
	The distance between the seat and the control devices capable of being adapted to the operator		N/A
22.ZE.2	For appliances provided with separate devices for the start and the stop functions, the stop function is unambiguously identifiable and does always override the start function		N/A
	For appliances provided with one device performing the start and the stop function, the stop function is unambiguously identifiable and does always override the start function		N/A
22.ZE.3	Appliances designed in such a way that incorrect mounting is avoided, if this can lead to an unsafe situation		N/A
	If this is not possible, information on the correct mounting is given directly on the part and/or the enclosure		N/A
22.ZE.4	Where the weight, size or shape prevents appliances from being moved manually, they are fitted with attachments for lifting gear, or		N/A
	so designed that they can be fitted with such attachments, or		N/A
	be shaped in such a way that standard lifting gear can easily be used		N/A

IEC60335_2_21M ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Appliances to be moved manually are constructed or equipped so that they can be moved easily and safely		N/A
22.ZE.5	The fixing systems of fixed guards which prevent access to dangerous moving transmission parts only removable with the use of tools		N/A
	If such guards have to be removed by the user for routine cleaning or maintenance their fixing systems remain attached to the fixed guards or to the machine after removal		N/A
	Where possible, guards are incapable of remaining in place without their fixings		N/A
	This does not apply if, after removal of the screws, or if the component is incorrectly repositioned, the appliance becomes inoperative		N/A
	Movable guards are interlocked		N/A
	The interlocking devices prevent the start of hazardous appliance functions until the guards are fixed in their position, and give a stop command whenever they are no longer closed		N/A
	Where it is possible for an operator to reach the danger zone before the risk due to hazardous appliance functions has ceased, movable guards associated with a guard locking device in addition to an interlocking device that:		—
	- prevents the start of hazardous appliance functions until the guard is closed and locked, and		N/A
	- keeps the guard closed and locked until the risk of injury from the hazardous appliance functions has ceased		N/A
	Interlocking movable guards remain attached to the appliance when open, and		N/A
	they are designed and constructed in such a way that they can be adjusted only by means of an intentional action		N/A
22.ZE.6	Interlocking movable guards designed in such a way that the absence or failure of one of their components prevents starting or stops the hazardous appliance functions		N/A
	The guard is opened to the extent needed to cause the interlocking to operate and is then closed, the number of operations being defined in the specific Part 2.....:		N/A

IEC60335_2_21M ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	After this test any defect that may be expected in normal use is applied to the interlock system, including interruption of the supply, only one defect being simulated at a time		N/A
	After these tests the interlock system is fit for further use		N/A
22.ZE.7	Adjustable guards restricting access to areas of the moving parts strictly necessary for the work are:		—
	- adjustable manually or automatically, depending on the type of work involved, and		N/A
	- readily adjustable without the use of tools		N/A
22.ZE.8	In case of interruption, re-establishment after an interruption or fluctuation in whatever manner of the power supply, the appliance does not restart		N/A
	However, automatic restarting of the operation is allowed if the appliance may continue to operate, without causing any hazard to the user, from the same point in its operating cycle at which the voltage interruption or fluctuation occurred		N/A
22.ZE.9	Appliances fitted with means to isolate them from all energy sources		N/A
	Such isolators are clearly identified, and		N/A
	they are capable of being locked if reconnection endanger persons		N/A
	After the energy source is disconnected, it is possible to dissipate any energy remaining or stored in the circuits of the appliance without risk to persons		N/A
			—
ZF	**ANNEX ZF** (INFORMATIVE) **CRITERIA APPLIED FOR THE ALLOCATION OF PRODUCTS COVERED BY STANDARDS IN THE EN 60335 SERIES UNDER LVD OR MD**		—
	List of standards under CENELEC/TC61 with the allocation under the LVD (Low Voltage Directive) or the MD (Machinery Directive) .....:		P
			—
ZG	**ANNEX ZG** (NORMATIVE) **UV APPLIANCES**		—
	The following modifications to this standard apply to appliances having UV emitters		N/A

Attachment 3: Attachment IEC 60335-2-21 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES, 2022-04-14

IEC60335_2_21M ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	This annex is not applicable to appliances covered by the scopes of IEC 60335-2-27, IEC 60335-2-59 or IEC 60335-2-109		N/A
7.12.ZG	The instructions for appliances incorporating UVC emitters include the substance of the following: WARNING — This appliance contains a UV emitter. Do not stare at the light source		N/A
32	For appliances incorporating UV emitters the manufacturer delivers a declaration providing evidence that the plastic material exposed to the radiation is UV resistant		N/A
			—
ZH	**ANNEX ZH** (INFORMATIVE) **Common plug and socket-outlet types in CENELEC countries**		—
	In general, supply cords of single-phase appliances having a rated current not exceeding 16 A are fitted with a plug complying with the following standard sheets:		—
	- for class I appliances or class II appliances with functional earth, standard sheet EU2, EU3 or EU4 .....:		N/A
	- for class II appliances, standard sheet EU5, EU6 or EU7 .....:		N/A
	There are exemptions or differences in certain CENELEC countries		N/A
			—
ZI	**ANNEX ZI** (INFORMATIVE) **Information on the application of A11:2014 to EN 60335-1:2012 CENELEC CLC/TC 61(SEC)2096A**		—
	Clarification of the application of parts 2 in conjunction with the 2002 or 2012 version of EN 60335-1		P
			—
ZZA	**ANNEX ZZA** (INFORMATIVE) **RELATIONSHIP BETWEEN THIS EUROPEAN STANDARD AND THE SAFETY OBJECTIVES OF DIRECTIVE 2014/35/EU [2014 OJ L96} AIMED TO BE COVERED**		—
	This standard provides one means of conforming to safety objectives of Directive 2014/35/EU		P
	When cited in the Official Journal under that Directive, compliance with the normative clauses of this standard given in Table ZZA.1 confers a presumption of conformity with the safety objectives of that Directive and associated EFTA regulations		P

Attachment 3: Attachment IEC 60335-2-21 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES, 2022-04-14

IEC60335_2_21M ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Compliance with this Part 2 when used together with the Part 1 provides one means of conformity with the safety objectives		P
			—
	ANNEX EN 62233:2008 + AC:2008 **EMF- ELECTROMAGNETICS FIELDS**		—
	The tested product also complies with the requirements of EN 62233:2008		—
	Limit ……100%	Measured max.: 8,9 % (Max. result)	P
			—

Attachment 4: Unit Picture

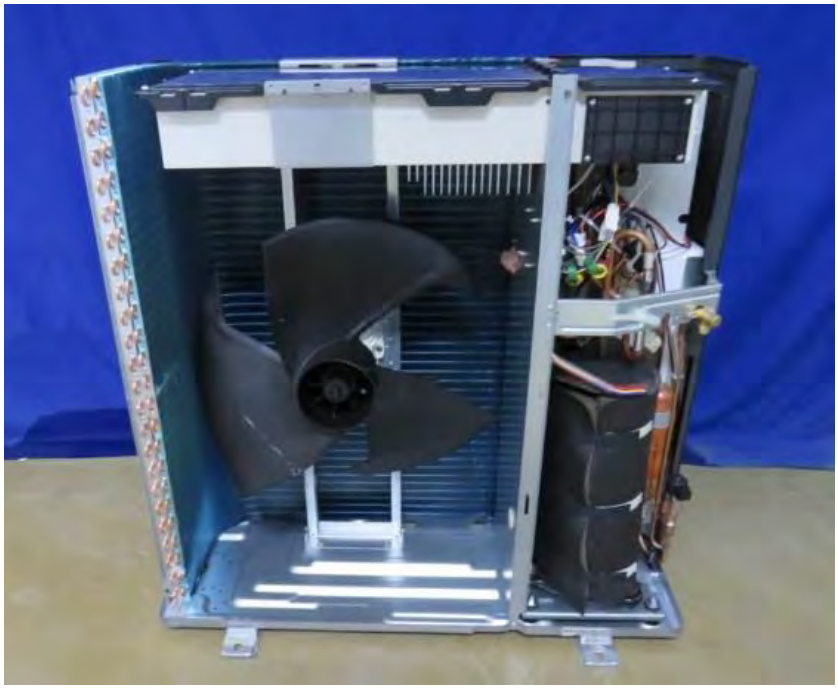
Unit Picture:

Picture No.1 : Overall view of outdoor unit

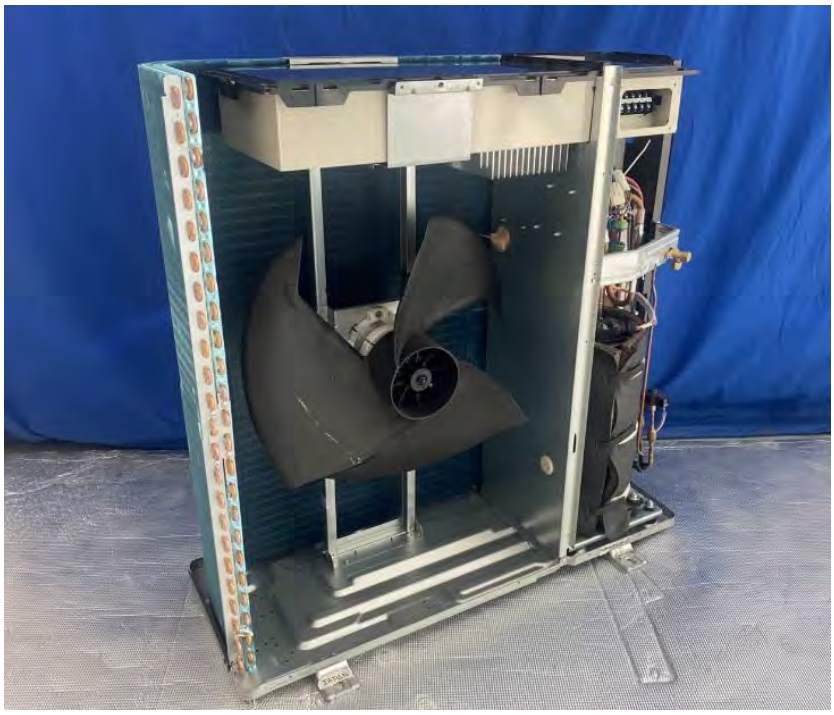
Picture No.2 : Overall rear view of outdoor

Attachment 4: Unit Picture

Unit Picture: (Cont'd)



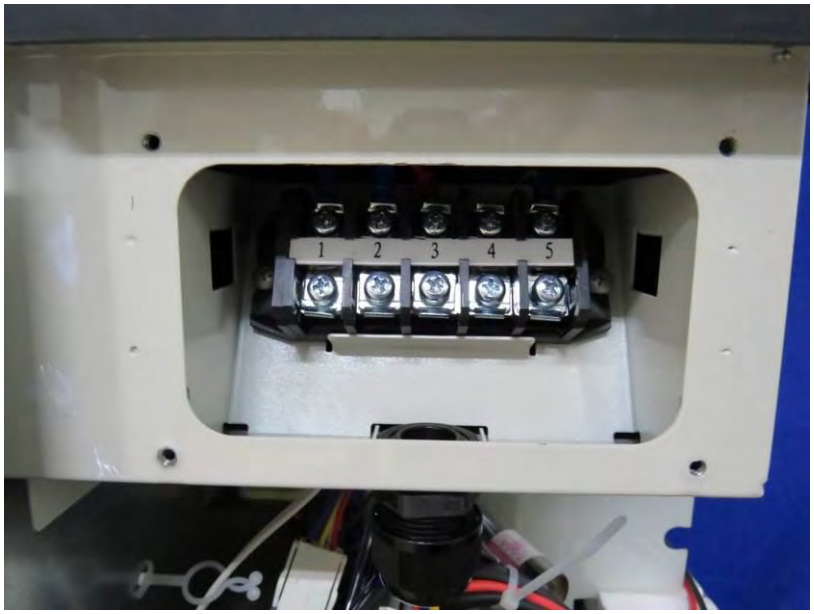
Picture No.3 : Internal view of outdoor unit



Picture No. 4 : Inner side view of outdoor

Attachment 4: Unit Picture

Unit Picture: (Cont'd)



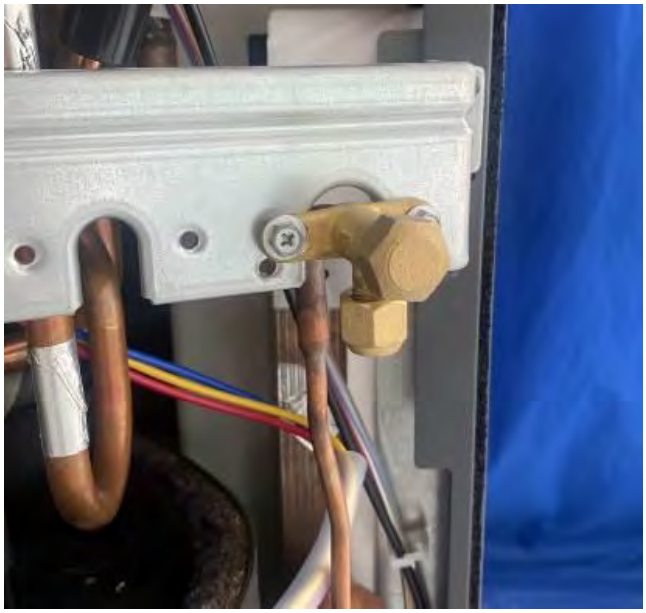
Picture No.5 : Supply terminal of outdoor unit

Picture No.6 : Cord anchorage compartment of outdoor unit

Attachment 4: Unit Picture

Unit Picture: (Cont'd)

Picture No.7 : Compressor compartment of outdoor unit



Picture No.8 : Service port compartment of outdoor unit

Attachment 4: Unit Picture

Unit Picture: (Cont'd)

Picture No.9 : Component view of PCB. of outdoor unit

Picture No.10 : Pattern view of PCB. of outdoor unit

********** **End of Report** **********