Qingdao Innova Bio-Meditech Co., Ltd.

TEST REPORT

Prepared For :	**Qingdao Innova Bio-Meditech Co., Ltd.**
Product Name:	**Cold storage equipment**
Model(s):	**MR-V60P,MR-V100P,MR-V226P,MR-V312P,MR-V316P,MR-V416P,MR-V656P,MR-V1006P,MR-V1500P,MR-V60PS,MR-V100PS,MR-V416PS,MR-V656PS,MR-V1006PS,MR-V50C,MR-V70C,MR-V130C,MR-V230C,MR-V300C,MR-V360C,MR-V400C,MR-V560C,MR-V660C,MR-V760C,MR-V1160C,MR-V1360C,MR-V288C,MR-V388C,MR-V668C,MR-V868C,MR-V1008C,MBR-4V1008P,MBR-4V368P,MBR-4V658P,MBR-4V208P,MBR-4V108P,PUF-70H20D,PUF-86H20A,ALG-40F,PRF-115,DRF-35,TWW35,TWW45,TWW55,MRF-40V519P,MRF-40V528P,MRF-40V368P,MRF-25V528P,MRF-25V368P,MRF-25V300P,MRF-25V200C,MRF-25V400C,MRF-40V200C,MRF-40V400C,MRF-60V200C,MRF-60V400C**
Prepared By :	**Qingdao Innova Bio-Meditech Co., Ltd.**
Assessment Date:	**2025-06-04**
Date of Report :	**2025-06-04**
Report No.:	**ZNWS07250603102**

TEST REPORT

Report Reference No.....:	**ZNWS07250603102**
Date of issue.....:	2025-06-04
Assessment Laboratory.....:	Qingdao Innova Bio-Meditech Co., Ltd.
Address..... :	No. 176 Jufeng Road, 266121, Qingdao, China
Applicant name.....:	Qingdao Innova Bio-Meditech Co., Ltd.
Address..... :	No. 176 Jufeng Road, 266121, Qingdao, China
Assessment specification:	
Standards.....:	EN IEC 61326-1:2021; EN 61010-1:2010
Non-standard test method.....:	N/A
Assessment Report Form No.....:	--
Test Report Form(s) Originator.....:	
Master TRF.....:	Dated: 2020-08
This report is specially limited to the above client company and product model only. It may not be duplicated without prior written consent.	
Test item description.....:	Cold storage equipment
Trade Mark.....:	N/A
Manufacturer.....:	Qingdao Innova Bio-Meditech Co., Ltd.
Model..... :	MR-V60P
Ratings.....:	N/A

Assessment procedure and location:

Assessment Laboratory.....:	Qingdao Innova Bio-Meditech Co., Ltd.
Address.....:	No. 176 Jufeng Road, 266121, Qingdao, China
Date of Assessment.....:	2025-06-04
Assessed by (name + signature)..... :	**Eric.Zhang**
Reviewed by (name + signature)..... :	**Yanlei.Jia**
Approved by (name + signature).....:	**Xun.Su**

EN 61326 report

1.TEST RESULTS SUMMARY

Test Results Summary

Test Items	Test Results
1 Radiation Emission Test	PASS
2 Electrostatic Discharge Test	PASS
3 Radio Frequency Electromagnetic Field	PASS

2.GENERAL INFORMATION

2.1.Report Information

2.1.1. This report is not a certificate for quality, it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that TEST approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that TEST in any way guarantees the later performance of the product/equipment.

2.1.2. The sample/s mentioned in this report is/are supplied by applicant, therefore assumes no responsibility for the accuracy of information on the brand names, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the applicant at an additional fee. No third part can obtain a copy of this report through TEST, unless the applicant has authorized TEST in writing to do so.

2.2.Description of Device (EUT)

Description:	Cold storage equipment
Model Number:	MR-V60P
Applicant:	Qingdao Innova Bio-Meditech Co., Ltd.
Manufacturer:	Qingdao Innova Bio-Meditech Co., Ltd.

2.3.Test facility

See page 3

2.4.Test Uncertainty

Conducted Emission Uncertainty = ±2.66dB
Radiated Emission Uncertainty = ±4.26dB

2.5.Test Condition

Temperature: 22℃-28℃
Relative Humidity: 45%-68%

2.6.Performance Criterion

Performance criterion A:

The equipment shall continue to operate as intended during the test.
No change of actual operating state (for example change of channel) is allowed as a result of the application of the test.
Multifunction equipment shall for each function meet the relevant requirements. Evaluation is carried out for audio and video functions.

Performance criterion B:

The equipment shall continue to operate as intended after the test. No loss of function is allowed after the test when the apparatus is used as intended. But failures which are recovered automatically but which cause temporary delay in processing, are permissible. No change of actual operating state for example change of channel or stored data and settings is allowed as a result of the application of the test. During the test, degradation of performance is allowed.

3.TEST INSTRUMENT USED

3.1.For Radiation Emission Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Interval
1.	Spectrum Analyzer	Rohde&schwarz	FSEA20	DE25181	2021.08.18	1 Year
2.	ositioning Controller	C&C	CC-C-1F	N/A	2021.08.18	1 Year
3.	Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-333	2021.08.18	1 Year
4.	Horn Antenna	Schwarzbeck	BBHX9120	9120-426	2021.08.18	1 Year
5.	RF Switch	EM	EMSW18	SW060023	2021.08.18	1 Year
6.	Amplifier	Agilent	8447F	3113A06717	2021.08.18	1 Year
7.	Coaxial Cable	Schwarzbeck	AK9513	9513-10	2021.08.18	1 Year
8.	EMI Test Receiver	Rohde&schwarz	ESPI	25498514	2021.08.18	1 Year

3.2.For Electrostatic Discharge Immunity Test

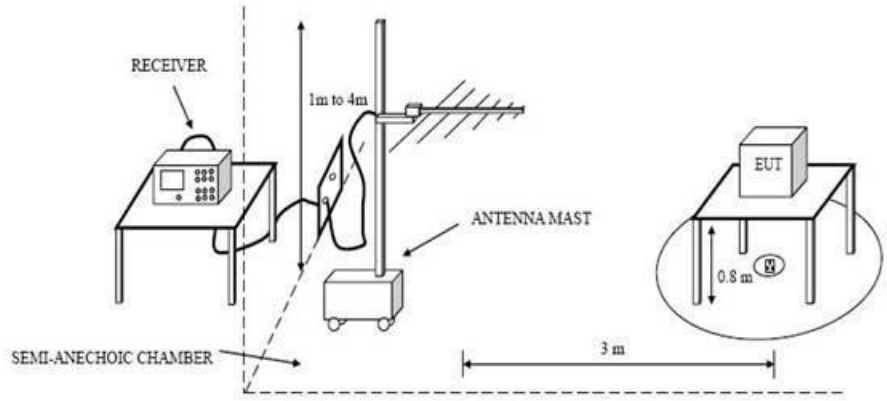
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Interval
1.	ESD Tester	Noiseken	ESS-200AX	0223	2021.08.18	1 Year

3.3.For Radio Frequency Electromagnetic Field

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Interval
1.	Signal Generator	IFR	2032	203002/100	2021.08.18	1 Year
2.	Amplifier	A&R	150W1000	301584	2021.08.18	1 Year
3.	Dual Directional Coupler	A&R	DC6080	301508	2021.08.18	1 Year
4.	Power Head	A&R	PH2000	301193	2021.08.18	1 Year
5.	Power Meter	A&R	PM2002	302799	2021.08.18	1 Year
6.	Field Monitor	A&R	FM5004	300329	2021.08.18	1 Year
7.	Field Probe	A&R	FP5000	300221	2021.08.18	1 Year

4.RADIATION EMISSION TEST

4.1.Block Diagram of Test Setup



4.2.Test Standard

EN IEC 61326-1:2021

4.3.Radiation Emission Limit

All emanations from a Class B computing devices or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dB u/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Notes: 1. The tighter limit shall apply at the edge between two frequency bands.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

4.4.EUT Configuration on Test

The test Class B regulations test method must be used to find the maximum emission during radiated emission test.
The configuration of EUT is same as used in the test.

4.5.Operating Condition of EUT

4.5.1. Setup the EUT as shown on Section 4.1.
4.5.2. Turn on the power of all equipments.
4.5.3. Let the EUT work in test mode (On) and measure it and test it.

4.6.Test Procedure

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table can rotate

360 degrees to determine the position of the maximum emission level. The EUT is set 3meters away from the receiving antenna which is mounted on a antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna (calibrated by dipole antenna) are used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.
The bandwidth setting on the test receiver (R&S TEST RECEIVER ESPI) is 120kHz. The EUT is tested in Anechoic Chamber.

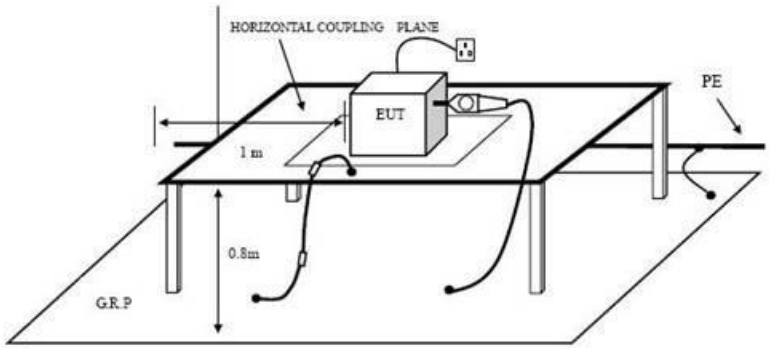
4.7.Radiation Emission Test Results

PASS

5.ELECTROSTATIC DISCHARGE TEST

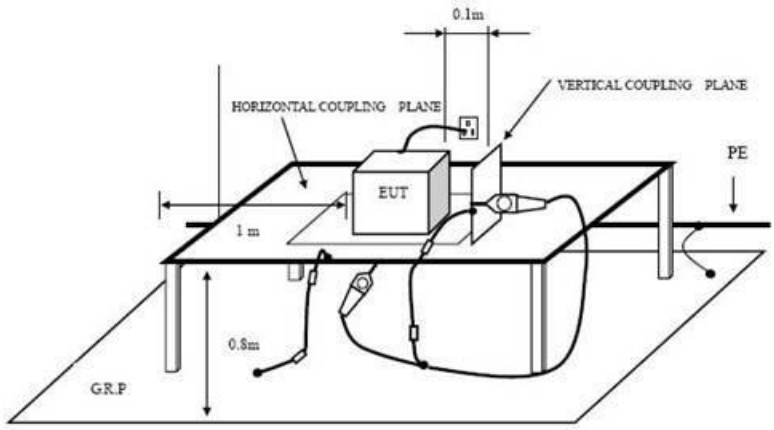
5.1.Block Diagram of Test Setup

5.1.1. Block Diagram of ESD Test Setup (Direct Discharge)



DIRECT DISCHARGE SETUP

5.1.2. Block Diagram of ESD Test Setup (Indirect Discharge)



INDIRECT DISCHARGE SETUP

5.2.Test Standard

EN IEC 61326-1:2021 (EN 61000-4-2:2009)

Severity Level 3 for Air Discharge at 8kV

Severity Level 2 for Contact Discharge at 4kV

5.3.Severity level and Performance criterion

5.3.1. Severity level

Level	Test Voltage Contact Discharge (kV)	Test Voltage Air Discharge (kV)
1.	2	2
2.	4	4
3.	6	8
4.	8	15
X.	Special	Special

Performance criterion: **B**

5.4.EUT Configuration on Test

The configurations of EUT are listed in Section 4.4.

5.5.Operating Condition of EUT

5.5.1. Setup the EUT as shown in Section 4.5. except the test set up replaced by section 5.1.

5.6.Test Procedure

5.6.1. Air Discharge:

This test is done on non-conductive surfaces. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT.

After each discharge, the discharge electrode shall be removed from the EUT.

The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

5.6.2. Contact Discharge:

All the procedure shall be same as Section 5.6.1 except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

5.7.Test Results

PASS

Please refer to the following page.

Electrostatic Discharge Test Results

Qingdao Innova Bio-Meditech Co., Ltd.

Date: Apr.02, 2025

Applicant :	Qingdao Innova Bio-Meditech Co., Ltd.	Test Date :	Apr.02, 2025
EUT :	Cold storage equipment	Temperature :	24℃
M/N :	MR-V60P	Humidity :	49%
Test Engineer :	Jack	Test Mode :	On

Air Discharge: ±8kV For each point positive 10 times and negative 10 times

Contact Discharge: ±4kV

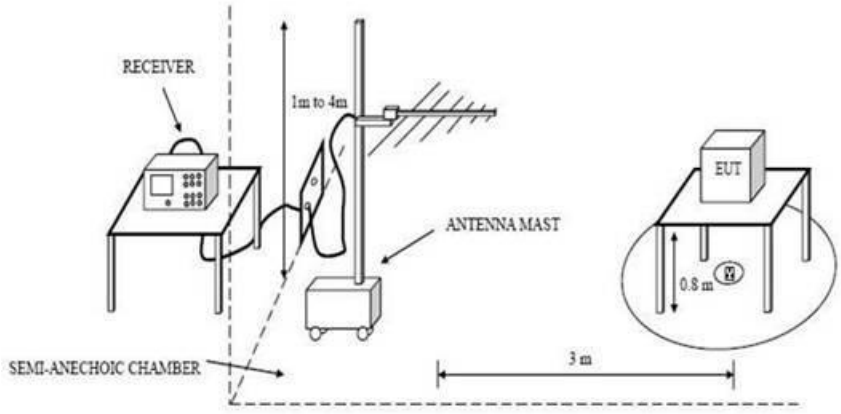
Location		**Kind** A-Air Discharge C-Contact Discharge	**Result**
Surface	20 points	A	PASS
Slot	10 points	A	PASS
HCP	5 points	C	PASS
VCP	5 points	C	PASS
Surface	20 points	A	PASS

Discharge should be considered on Contact and Air and Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP).

6. RF FIELD STRENGTH SUSCEPTIBILITY TEST

6.1. Block Diagram of Test Setup

6.1.1. Block diagram of Test Setup



6.2. Test Standard

EN IEC 61326-1:2021 (EN 61000-4-3:2006+A2:2010)
Severity Level 2 at 3V/m

6.3. Severity level and Performance criterion

6.3.1. Severity level

Level	Field Strength V/m
1.	1
2.	3
3.	10
X.	Special

Performance criterion : **A**

6.4. EUT Configuration on Test

The configuration of EUT is listed in Section 4.4.

6.5. Operating Condition of EUT

Setup the EUT as shown in Section 6.1. The operating condition of EUT is listed in section 4.5.

6.6. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above the ground. The EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually. In order to judge the EUT performance, a CCD camera is used to monitor the EUT.

All the scanning conditions are as follows:

Condition of Test	Remarks
1. Fielded Strength	3 V/m (Severity Level 2)
2. Radiated Signal	Modulated
3. Scanning Frequency	80 - 1000 MHz
4. Sweeping time of radiated	0.0015 decade/s
5. Dwell Time	1 Sec.

6.7. Test Results

PASS

Please refer to the following page.

RF Field Strength Susceptibility Test Results

Qingdao Innova Bio-Meditech Co., Ltd.

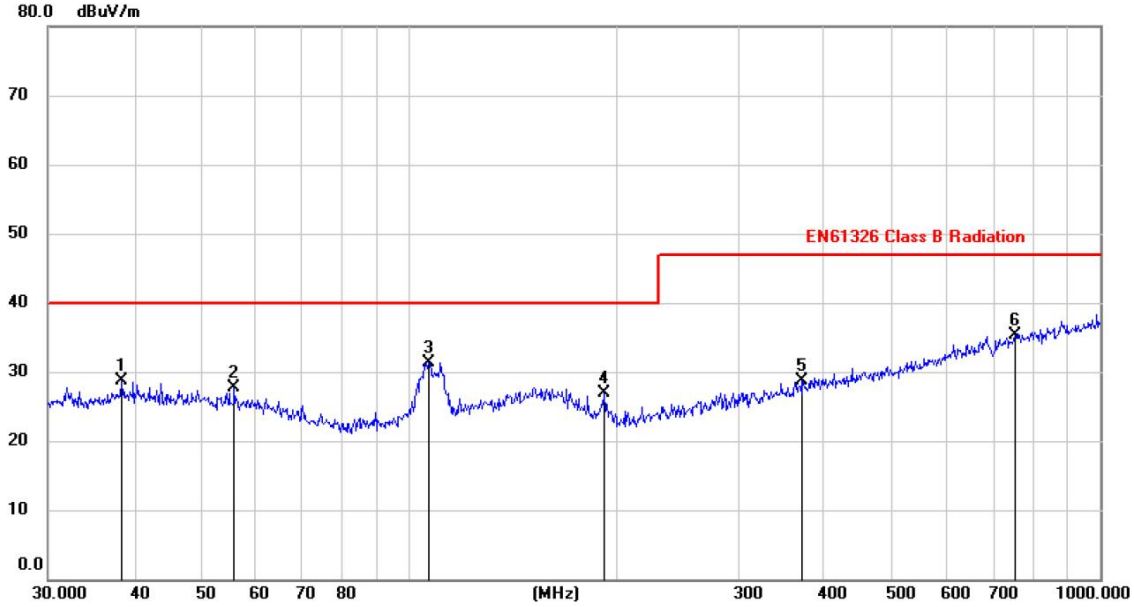
Date: Apr.02, 2025

Applicant :	Qingdao Innova Bio-Meditech Co., Ltd.	Test Date :	Apr.02, 2025
EUT :	Cold storage equipment	Temperature :	24℃
M/N :	MR-V60P	Humidity :	49%
Test Engineer :	Jack	Test Mode :	On
Modulation:	AM	Pulse	none 1 kHz 80%
Criterion : A			

Steps	Frequency Range: 80-1000MHz	
	1%	1%
	Horizontal	Vertical
Front	Pass	Pass
Right	Pass	Pass
Rear	Pass	Pass
Left	Pass	Pass

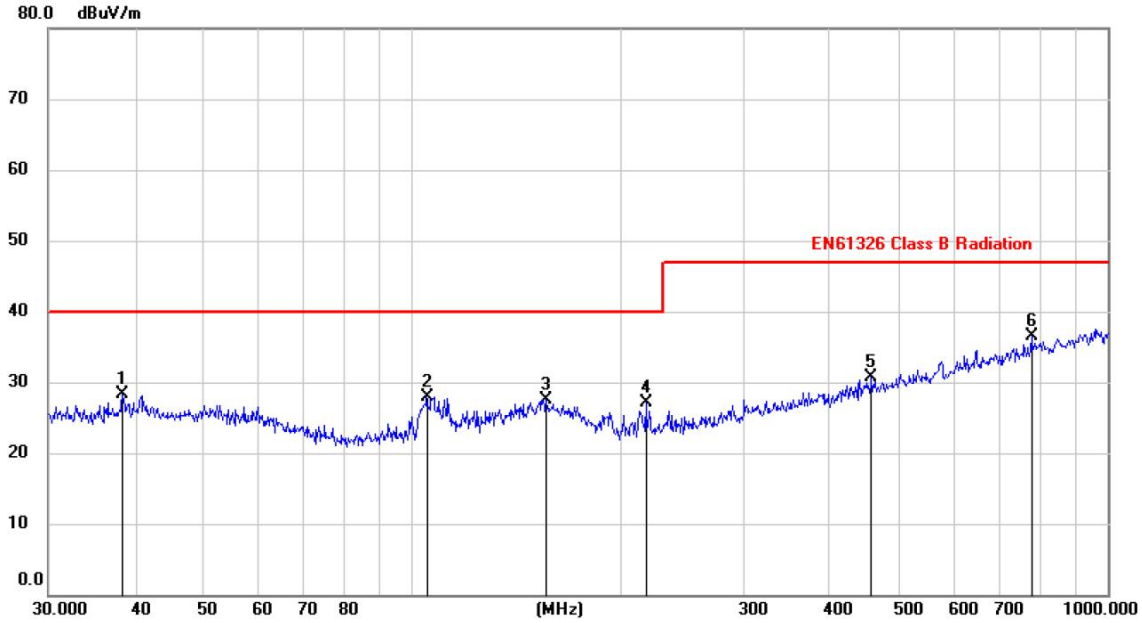
7.Test Data

Job No.:		Polarization:	Vertical
Standard:	EN 61326-1	Power Source:	DC12V
Test item:	Radiation Test	Date:	Apr.02, 2025
Temp.(℃)/Hum.(%RH):	24℃/47%RH	Time:	
EUT:	Cold storage equipment	Test By:	
Model:	MR-V60P	Distance:	3m
Note:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		38.3462	14.75	13.95	28.70	40.00	-11.30	peak			
2		55.8047	14.40	13.23	27.63	40.00	-12.37	peak			
3	*	106.7587	20.10	11.22	31.32	40.00	-8.68	peak			
4		191.7450	16.07	10.82	26.89	40.00	-13.11	peak			
5		370.7023	13.58	15.20	28.78	47.00	-18.22	peak			
6		752.7432	13.80	21.45	35.25	47.00	-11.75	peak			

Job No.:		Polarization:	Vertical
Standard:	EN 61326-1	Power Source:	DC12V
Test item:	Radiation Test	Date:	Apr.02, 2025
Temp.(℃)/Hum.(%RH):	24℃/47%RH	Time:	
EUT:	Cold storage equipment	Test By:	
Model:	MR-V60P	Distance:	3m
Note:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		cm	degree	
1		38.3462	14.38	13.95	28.33	40.00	-11.67	peak			
2		105.2718	16.88	11.09	27.97	40.00	-12.03	peak			
3		155.9101	13.01	14.57	27.58	40.00	-12.42	peak			
4		216.7828	16.01	11.11	27.12	40.00	-12.88	peak			
5		457.5073	13.71	17.09	30.80	47.00	-16.20	peak			
6	*	776.8778	14.80	21.78	36.58	47.00	-10.42	peak			

EN 61010-1 report			
Clause	Requirement	Result	Verdict
4	TESTS		P
4.4	Testing in single fault conditions		P
4.4.1	Fault tests		P
4.4.2	Application of single fault conditions		P
4.4.2.1	single fault conditions not covered by 4.4.2.2 to 4.4.2.14		—
4.4.2.2	Protective impedance		P
4.4.2.3	Protective conductor		P
4.4.2.4	Equipment or parts for short-term or intermittent operation		N
4.4.2.5	Motors		—
	– stopped while fully energized		N
	– prevented from starting		N
	– one phase interrupted (multi-phase)		N
4.4.2.6	Capacitors		P
4.4.2.7	Mains transformers		P
4.4.2.7.2	Short circuit		P
4.4.2.7.3	Overload		P
4.4.2.8	Outputs		P
4.4.2.9	Equipment for more than one supply		N
4.4.2.10	Cooling		—
	– air holes closed		N
	– fans stopped		N
	– coolant stopped		N
	– loss of cooling liquid		N
4.4.2.11	Heating devices		N
	– timer overridden		N
	– temperature controller overridden		N
4.4.2.12	Insulation between circuits and parts		N
4.4.2.13	Interlocks		N
4.4.2.14	Voltage selectors		N
4.4.3	Duration of tests		—
4.4.4	Conformity after application of fault conditions		P
5	MARKING AND DOCUMENTATION		P
5.1.1	Required equipment markings		—
	– visible from the exterior; or	Marking for double insulation, caution, CE are marked on apparatus surface.	P
	– visible after removing cover or opening door	No such parts used.	N
	– visible after removal from a rack or panel	No such parts used.	N

	Not put on parts which can be removed by an operator		P
	Letter symbols (IEC 60027) used		P
	Graphic symbols (IEC 61010-1: Table 1) used	Refer to rating label	P
5.1.2	Identification		
	Equipment is identified by:		—
	a) Manufacturer’s or supplier’s name or trademark	See page 2	P
	b) Model number, name or other means	See page 2	P
	Manufacturing location identified	Only one factory	P
5.1.3	Mains supply		P
	Equipment is marked as follows:		—
	a) Nature of supply:		—
	1) a.c. rated mains frequency or range of frequencies ..... :		—
	2) d.c. with symbol 1..... :		P
	b) rated supply voltage(s) or range ..... :	12V DC	—
	c) Max. rated power (W or VA) or input current..... :		—
	The marked value not less than 90 % of the maximum value		N
	If more than one voltage range:		—
	Separate values marked; or		N
	Values differ by less than 20 %		N
	d) operator-set for different rated supply voltages:		—
	Indicates the equipment set voltage		N
	Portable equipment indication is visible from the exterior		N
	Changing the setting changes the indication		N
	e) Accessory mains socket-outlets accepting standard mains plugs are marked:		—
	With the voltage if it is different from the mains supply voltage.....:		—
	For use only with specific equipment		N
	If not marked for specific equipment it is marked with:		—
	The maximum rated current or power; or		N
	Symbol 14 with full details in the documentation		N
5.1.4	Fuses		P
	Operator replaceable fuse marking		
5.1.5	Terminals, connections and operating devices		P
5.1.5.1	General		—
	Where necessary for safety, indication of purpose of terminals, connectors, controls and indicators marked		P
	If insufficient space, symbol 14 used		P
	Push-buttons and actuators of emergency stop devices and indicators:		—
	– used only to indicate a warning of danger; or		N
	– the need for urgent action		N
	– coloured red		N

	– coded as specified in IEC 60073		N
	Supplementary means of coding provided, if meaning of colour relates (see IEC 60073):		—
	– to safety of persons; or		N
	– safety of the environment		N
5.1.5.2	terminals		P
	Mains supply terminal identified		P
	Other terminal marking:		—
	a) functional earth terminals (symbol 5 used)		N
	b) protective conductor terminals:		—
	Symbol 6 is placed close to or on the terminal; or		N
	Part of appliance inlet		N
	c) terminals of control circuits (symbol 7 used)		N
	d) Hazardous live terminals supplied from the interior		N
	Standard mains socket outlet; or		N
	Ratings marked; or		N
	Symbol 14 used		N
5.1.6	Switches and circuit breakers	VDE approved	P
	If disconnecting device, off position clearly marked		P
	If push-button used as power supply switch:		—
	– symbol 9 and 15 used for on-position		N
	– symbol 10 and 16 used for off-position		N
	– pair of symbols 9, 15 and 10, 16 close together		N
5.1.7	Equipment protected by double insulation or reinforced insulation		P
	Protected throughout (symbol 11 used)		P
	Only partially protected (symbol 11 not used)		N
5.1.8	Field-wiring terminal boxes		N
	If terminal or enclosure exceeds 60 C:		—
	Cable temperature rating marked ..... :		—
	Marking visible before and during connection or beside terminal		
5.2	Warning markings		P
	Visible when ready for normal use		P
	Are near or on applicable parts		P
	Symbols and text correct dimensions and colour:		—
	a) symbols min 2,75 mm and text 1,5 mm high and contrasting in colour with background		P
	b) symbols and text moulded, stamped or engraved in material min. 2,0 mm high and		N
	0,5 mm depth or raised if not contrasting in colour		N
	If necessary marked with symbol 14		P
	Statement to isolate or disconnect if access by using a tool to		P

	hazardous live parts is permitted		
5.3	Durability of markings		P
	The required markings remain clear and legible in normal use		P
5.4	Documentation		P
5.4.1	General		P
	Equipment is accompanied by documentation for safety purposes for operator or responsible body		P
	Safety documentation for service personnel authorized by the manufacturer		P
	Documentation necessary for safe operation is provided in printed media or		P
	in electronic media if available at any time		N
	Documentation includes:		—
	a) intended use		P
	b) technical specification		P
	c) name and address of manufacturer or supplier		P
	d) information specified in 5.4.2 to 5.4.6		P
	e) information to mitigate residual risk (see also subclause 17)		N
	f) accessories for safe operation of the equipment specified		N
	g) guidance provided to check correct function of the equipment, if incorrect reading may cause a hazard from harmful or corrosive substances of hazardous live parts		N
	h) instructions for lifting and carrying		N
	Warning statements and a clear explanation of warning symbols:		—
	– provided in the documentation; or		P
	– information is marked on the equipment		
5.4.2	Equipment ratings		P
	Documentation includes:		—
	a) Supply voltage or voltage range..... :	12V DC	—
	Frequency or frequency range ..... :		—
	Power or current rating..... :	2.5A	—
	b) Description of all input and output connections in accordance to 6.6.1 a)		P
	c) rating of insulation of external circuits in accordance to 6.6.1 b)		N
	d) Statement of the range of environmental conditions (see 1.4)		N
	e) Degree of protection (IEC 60529)	IP20	N
	f) If impact rating less than 5 J:		—
	IK code in accordance to IEC 62262 marked; or		N
	symbol 14 of table 1 marked, with		N
	rated energy level and test method stated		N

5.4.3	Equipment installation	Provided in user's manual	P
	Documentation includes instructions for:		—
	a) assembly, location and mounting requirements		P
	b) protective earthing		P
	c) connections to supply		N
	d) permanently connected equipment:		—
	1) Supply wiring requirements		N
	2) If external switch or circuit-breaker, requirements and location recommendation		N
	e) ventilation requirements		N
	f) special services (e. g. air, cooling liquid)		N
	g) instructions relating to sound level		N
5.4.4	Equipment operation		P
	Instructions for use include:		—
	a) identification and description of operating controls		P
	b) positioning for disconnection		N
	c) instructions for interconnection		N
	d) specification of intermittent operation limits		N
	e) explanation of symbols used	Symbols have explanation in user manual.	P
	f) replacement of consumable materials		N
	g) cleaning and decontamination	Use soft dry cloth without any solvents or water.	P
	h) listing of any poisonous or injurious gases and quantities		N
	i) risk reduction procedures relating to flammable liquids (see 9.5)		N
	j) risk reduction procedures relating burn from surfaces permitted to exceed limits of 10.1		N
	Additional precautions for IEC 60950 conforming equipment in regard to moistures and liquids		N
	A statement about protection impairment if used in a manner not specified by the manufacturer		N
5.4.5	Equipment maintenance and Service		P
	Instructions for responsible body include:		—
	Instructions sufficient in detail permitting safe maintenance and inspection and continued safety:		—
	Instruction against the use of detachable mains supply cord with inadequate rating		N
	Specific battery type of user replaceable batteries		P
	Any manufacturer specified parts		N

	Rating and characteristics of fuses		P
	Instructions include following subjects permitting safe servicing and continued safety:		—
	a) product specific risks may affect service personnel		P
	b) protective measures for these risks		P
	c) verification of the safe state after repair		P
5.4.6	Integration into systems or effects resulting from special conditions		N
	Aspects described in documentation		N
6	PROTECTION AGAINST ELECTRIC SHOCK		P
6.1	General		P
6.1.1	Requirements		P
	Protection against electric shock maintained in normal condition and single fault condition		P
	accessible parts not hazardous live	All accessible parts are not hazards live	P
	Voltage, current, charge or energy below the limits in normal condition and in single fault condition between:		—
	accessible parts and earth		P
	two accessible parts on same piece of the equipment within a distance of 1,8 m		N
	Conformity is checked by the determination of 6.2 and 6.3		N
	followed by the tests of 6.4 to 6.11		N
6.1.2	Exceptions		P
	Following hazardous live parts may be accessible to an operator:		—
	a) parts of lamps and lamp sockets after lamp removal		N
	b) parts to be replaced by operator only by the use of tool and warning marking		N
	Those parts not hazardous live 10 s after interruption of supply		N
	Capacitance test if charge is received from internal capacitor		N
6.2.1	General		P
	Unless obviously determination of accessible parts as specified in 6.2.2 to 6.2.4		P
6.2.2	Examination		N
	– with jointed test finger (as specified B.2)		N
	– with rigid test finger (as specified B.1) and a force of 10 N		N
6.2.3	Openings above parts that are hazardous live		N
	– test pin with length of 100 mm and 4 mm in diameter applied		N
6.2.4	Openings for pre-set controls		N
	– test pin with length of 100 mm and 3 mm in diameter applied		N
6.3	Limit values for accessible parts		P

6.3.1	Levels in normal condition		—
	a) Voltage limits less than 33 V r.m.s. and 46,7 V peak or 70 V d.c.		P
	for wet locations voltage limits less than 16 V r.m.s. and 22,6 V peak or 35 V d.c.		N
	Voltages are not hazardous live the levels of:		—
	b) Current less than 0,5 mA r.m.s. for sinusoidal,		—
	0,7 mA peak non-sinusoidal or mixed frequencies or 2 mA d.c. when measured with measuring circuit		—
	70 mA r.m.s. when measured with circuit A.3 for higher frequencies		N
	or		—
	c) Levels of capacitive charge or energy less:		—
	1) 45 µC for voltages up to 15 kV peak or d.c. or line A of Figure 3		N
	2) 350 mJ stored energy for voltages above 15 kV peak or d.c.		N
6.3.2	Levels in single fault condition		—
	a) Voltage limits less than 55 V r.m.s. and 78 V peak or 140 V d.c.		P
	for wet locations voltage limits less than 33 V r.m.s. and 46,7 V peak or 70 V d.c.		N
	Voltages are not hazardous live the levels of:		—
	b) Current less than 3,5 mA r.m.s. for sinusoidal,		P
	5 mA peak non-sinusoidal or mixed frequencies or 15 mA d.c. when measured with measuring circuit		P
	A.1 or A.2 if less than 100 Hz		P
	for wet locations measuring circuit A.4 used		N
	500 mA r.m.s. when measured with circuit A.3 for higher frequencies		N
	or		—
	c) Levels of capacitive charge or energy less line B of Figure 3		N
6.4	Primary means of protection		P
6.4.1	Accessible parts prevented from being hazardous live by one or more of following means:		—
	a) enclosures or protective barriers (see 6.4.2)		P
6.4.2	enclosures or protective barriers		—
	– meet rigidity requirements of 8.1		P
	– meet requirements for basic insulation, if protection is provided by insulation		P
	–meet requirements of 6.7 for creepage and		P
	clearances between accessible parts and		P
	hazardous live parts, if protection is provided by		P

	limited access		P
6.4.3	Basic insulation		—
	meet clearance, creepage distance and	solid	P
	insulation requirements of 6.7		P
	c) clearance, creepage distance between terminations of the impedance meet requirements of basic insulation of 6.7		N
6.5	Additional means of protection in case of single fault condition		P
6.5.1	Accessible parts are prevented from becoming hazardous live by the primary means of protection and supplemented by one of:		—
	a) protective bonding (see 6.5.2)		N
	b) supplementary insulation (see 6.5.3)		P
	c) automatic disconnection of the supply (see 6.5.5)		N
	d) current- or voltage-limiting device (see 6.5.6)		N
	Alternatively one of the single means of protection is used:		—
	e) reinforced insulation (see 6.5.3)		P
	f) protective impedance (see 6.5.4)		P
6.5.2	Protective bonding		P
6.5.2.1	Accessible conductive parts, may become hazardous live in single fault condition:		—
	Bonded to the protective conductor terminal; or		N
	Separated by conductive screen or barrier bonded to protective conductor terminal		N
6.5.2.2	Integrity of protective bonding		—
	a) protective bonding consists of directly connected structural parts or discrete conductors or both; and withstands thermal and dynamic stresses		P
	b) Soldered connections:		—
	Independently secured against loosening		N
	Not used for other purposes		N
	c) Screw connections are secured		N
	d) protective bonding not interrupted; or		N
	exempted as removable part carries mains supply input connection		N
	e) Any movable protective bonding connection specifically designed, and meets 6.5.2.4		N
	f) No external metal braid of cables used (not regarded as protective bonding)		
	g) If mains supply passes through:		—
	Means provided for passing protective conductor;		N
	Impedance meets 6.5.2.4		N
	h)Protective conductors bare or insulated, if insulated, green/yellow		P

	Exceptions:		—
	1) earthing braids;		P
	2) internal protective conductors etc.;		P
	Green/yellow not used for other purposes		P
	terminal suitable for connection of a protective conductor, and meets 6.5.2.3		P
6.5.2.3	Protective conductor terminal		—
	a) Contact surfaces are metal		P
	b) Appliance inlet used		P
	c) For rewirable cords and permanently connected equipment, protective conductor terminal is close to mains supply terminals		N
	d) If no mains supply is required, any protective conductor terminal:		—
	Is near terminals of circuit for which protective earthing is necessary		N
	External if other terminals external		N
	e) Equivalent current-carrying capacity to mains supply terminals		N
	f) If plug-in, makes first and breaks last		N
	g) If also used for other bonding purposes, protective conductor:		—
	Applied first;		N
	Secured independently;		N
	Unlikely to be removed by servicing		N
	h) Protective conductor of measuring circuit:		—
	1) Current rating equivalent to measuring circuit terminal;		N
	2) protective bonding: not interrupted by any switch or interrupting device		N
	i) functional earth terminals allow independent connection		N
	j) If a binding screw used for Protective conductor terminal:		N
	Suitable size for bond wire		N
	Not smaller than M 4		N
	At least 3 turns of screw engaged		N
	Passes tightening torque test		N
	k) Contact pressure not capable being reduced by deformation of materials		N
6.5.2.4	Impedance of protective bonding of plug-connected equipment		—
	Impedance between protective conductor terminal and each accessible part where protective bonding is specified, is:		—
	– less than 0,1 Ohm; or		N
	– less than 0,2 Ohm if equipment is provided with		N

	non-detachable cord		
6.5.2.5	Bonding impedance of permanently connected equipment		—
6.5.2.6	Transformer protective bonding screen		—
	Transformer provided with screen for protective bonding:		—
	screen bonding consists of directly connected structural parts or discrete conductors or both; and withstands thermal and dynamic stresses (see 6.5.2.2 a)		N
	screen bonding with soldered connection (see 6.5.2.2 b)		N
	–Independently secured against loosening		N
	–Not used for other purposes		N
6.5.3	Supplementary and reinforced insulation		P
	Meet clearance, creepage distance and solid insulation requirements of 6.7		P
6.5.4	Protective impedance		N
	Limits current or voltage to level of 6.3.1 in normal and to level of 6.3.2 in single fault condition		N
	clearance, creepage distance between terminations of the impedance meet requirements of double or reinforced insulation of 6.7		N
	The protective impedance consists of one or more of the following:		—
	a) appropriate single component suitable for safety and reliability for protection, it is:		—
	1) rated twice the maximum working voltage		N
	2) resistor rated for twice the power dissipation for maximum working voltage		N
	b) combination of components		N
	Single electronic device not used as protective impedance		N
6.5.5	Automatic disconnection of the supply		N
	a) rated to disconnect the load within time specified in Figure 2		N
	b) rated for the maximum load conditions of the equipment		N
6.5.6	Current- or voltage-limiting devices		N
	Device complies with all of:		—
	a) rated to limit the current or voltage to the level of 6.3.2		N
	b) rated for the maximum working voltage; and		N
	rated for the maximum operational current if applicable		N
	c) clearance, creepage distance between terminations of the impedance meet requirements of supplementary insulation of 6.7		N
6.6	Connections to external circuits		P
6.6.1	Connections do not cause accessible parts of the following to become hazardous live in normal condition or single fault		—

	condition:		
	– the external circuits		P
	– the equipment		P
	Protection achieved by separation of circuits; or		N
	short circuit of separation does not cause a hazard		P
	Instructions or markings for each terminal include:		—
	a) rated conditions for terminal		N
	b) Required rating of external circuit insulation		N
6.6.2	Terminals for external circuits		P
	Terminals which receive a charge from an internal capacitor are not hazardous live after 10 s of interrupting supply connection		P
6.6.3	Circuits with terminals which are hazardous live		N
	These circuits are:		—
	Not connected to accessible conductive parts; or		N
	Connected to accessible conductive parts, but are not mains circuits and have one terminal contact at earth potential		N
	No accessible conductive parts are hazardous live		N
6.6.4	Accessible terminals for stranded conductors		N
	No risk of accidental contact because:		—
	– Located or shielded		N
	– Self-evident or marked whether or not connected to accessible conductive parts		N
	Accessible terminals will not work loose		N
6.7	Insulation requirements		P
6.7.1	The nature of insulation		—
6.7.1.1	Insulation between accessible parts or between separate circuits consist of clearances, creepage distances and solid insulation if provided as protection against a hazard		P
6.7.1.2	Clearances		—
	Required clearances reflecting factors of 6.7.1.1		P
	Equipment rated for operating altitude greater than 2000 m correction factor of Table 3 of 61010-1 applied		P
6.7.1.3	Creepage distances		—
	Required creepage distances reflecting factors of 6.7.1.1 a) to d)		P
	CTI material group reflected by requirements		P
	CTI test performed		P
6.7.1.4	Solid insulation		—
	Required solid insulation reflecting factors of 6.7.1.1 a) to d)		P
6.7.1.5	Requirements for insulation according to type of circuit		—
	a) 6.7.2 mains circuits of overvoltage category II up to nominal supply voltage of 300 V		N

	b) 6.7.3 secondary circuits separated from circuits defined in a) by transformer		N
	e) K.3 circuits having one or more of:		—
	1) maximum transient overvoltage is limited to known level below the level of mains circuit		N
	2) maximum transient overvoltage above the level of mains circuit		N
	3) Working voltage is the sum of more than one circuit or a mixed voltage		N
	4) Working voltage includes recurring peak voltage, may include non-sinusoidal or non-periodic waveform		N
	5) Working voltage with a frequency above 30 kHz		N
6.7.2	Insulation for mains circuits of overvoltage category II with a nominal supply voltage up to 300 V		N
6.7.2.1	Clearances and creepage distances		—
	Values for mains circuits of Table 4 are met		P
	Coatings to achieve reduction to pollution degree 1 comply with requirements of Annex H		N
6.7.2.2	Solid insulation		—
6.7.2.2.1	Withstands electrical and mechanical stresses in normal use and all rated environmental conditions of 1.4		N
	Equipment passed voltage tests of 6.8.3 with values of Table 5		N
	Complies as applicable:		—
	a) enclosure or protective barrier of Clause 8		N
	b) moulded and potted parts requirements of 6.7.2.2.2		N
	c) inner layers of printed wiring boards requirements of 6.7.2.2.3		N
	d) thin-film insulation requirements of 6.7.2.2.4		N
	Conductors between same two layers are separated by at least 0,4 mm after moulding is completed		N
6.7.2.2.3	Inner insulating layers of printed wiring boards		—
	Separated by at least 0,4 mm between same two layers		N
	Reinforced insulation have adequate electric strength; one of following methods used:		—
	a) thickness of insulation is at least 0,4 mm		N
	b) insulation is assembled of minimum two separate layers, each rated for test voltage of Table 5 for basic insulation		N
	c) insulation is assembled of minimum two separate layers, where the combination is rated for test voltage of Table 5 for reinforced insulation		N
6.7.2.2.4	Thin-film insulation		—
	Conductors between same two layers are separated by		N

	applicable clearances and creepage distance of 6.7.2.1		
	Reinforced insulation have adequate electric strength; one of following methods used:		—
	a) thickness through the insulation at least 0,4 mm		N
	b) insulation is assembled of min two separate layers, each rated for test voltage of Table 5 for basic insulation		N
	c) insulation is assembled of min three separate layers, where the combination of two layers passed voltage tests of 6.8.3 with values of Table 5 for reinforced insulation		N
6.7.3	Insulation for secondary circuits derived from mains circuits of overvoltage category II up to 300 V		N
6.7.3.1	Secondary circuits where separation from mains circuits is achieved by a transformer providing:		—
	– reinforced insulation		P
	– double insulation		N
	– screen connected to the protective conductor terminal		N
6.7.3.2	Clearances		—
	a) meet the values of Table 6 for basic insulation and supplementary insulation; or		N
	twice the values of Table 6 for reinforced insulation		N
	or		—
	b) pass the voltage tests of 6.8 with values of Table 6;		—
	with following adjustments:		—
	1) values for reinforced insulation are 1,6 times the values for basic insulation		N
	2) if operating altitude is greater than 2000 m values of clearances multiplied with factor of Table 3		N
	3) minimum clearance is 0,2 mm for pollution degree 2 and 0,8 mm for pollution degree 3		N
6.7.3.3	Creepage distances		—
	Based on working voltage meets the values of Table 7 for basic and supplementary insulation		P
	Values for reinforced insulation are twice the values of basic insulation		P
	Coatings to achieve reduction to pollution degree 1 comply with requirements of Annex H		N
6.7.3.4	Solid insulation		—
6.7.3.4.1	Withstands electrical and mechanical stresses in normal use and all rated environmental conditions of 1.4		—
	a) Equipment passed voltage test of 6.8.3.1 for 5 s with values of Table 6 for basic and supplementary insulation		N
	values for reinforced insulation are 1,6 times the values of basic insulation		N

	b) if working voltage exceeds 300 V, equipment passed voltage test of 6.8.3.1 for 1 min with a test voltage of 1,5 times working voltage for basic or supplementary insulation		N
	value for reinforced insulation are twice the working voltage		N
	Complies as applicable:		—
	1) enclosure or protective barrier of Clause 8		N
	2) moulded and potted parts requirements of 6.7.3.4.2		N
	3) inner layers of printed wiring boards requirements of 6.7.3.4.3		N
	4) thin-film insulation requirements of 6.7.3.4.4		N
6.7.3.4.2	Moulded and potted parts		—
	Conductors between same two layers are separated by applicable distances of Table 8		N
6.7.3.4.3	Inner insulation layers of printed wiring boards		—
	Separated by at least by applicable distances of Table 8 between same two layers		N
	Reinforced insulation have adequate electric strength; one of following methods used:		—
	a) thickness at least applicable distance of Table 8		N
	b) insulation is assembled of minimum two separate layers, each rated for test voltage of Table 6 for basic insulation		N
	c) insulation is assembled of min two separate layers, where the combination is rated for 1,6 times the test voltage of Table 6		N
6.7.3.4.4	Thin-film insulation		—
	Conductors between same two layers are separated by applicable clearances and creepage distance of 6.7.3.2 and 6.7.3.3		N
	Reinforced insulation have adequate electric strength; one of following methods used:		—
	a) thickness at least applicable distance of Table 8		N
	b) insulation is assembled of min. two separate layers, each rated for test voltage of Table 6 for basic insulation		N
	a.c. test of 6.8.3.1; or		N
	d.c. test of 6.8.3.2 for circuits stressed only by d.c. voltages		N
6.8	Procedure for dielectric strength tests		P
6.9	Constructional requirements for protection against electric shock		P
6.9.1	If a failure could cause a hazard:		—
	a) security of wiring connections		N
	b) screws securing removable covers		P
	c) accidental loosening		P
	d) clearances and creepage distances not reduced below the		P

	values of basic insulation by loosening of parts or wires		
6.9.2	Insulating materials		P
	Material not to be used for safety relevant insulation:		—
	a) easily damaged materials not used		P
	b) non-impregnated hygroscopic materials not used		N
6.9.3	Colour coding		P
	Green-and-yellow insulation shall not be used except:		—
	a) protective earth conductors;		P
	b) protective bonding conductors;		P
	c) potential equalization conductors;		P
	d) functional earth conductors		N
6.10	Connection to mains supply source and connections between parts of equipment		N
6.10.1	Mains supply cords		—
	rated for maximum equipment current (see 5.1.3 c)		P
	Cable complies with IEC 60227 or IEC 60245		P
	Heat-resistant if likely to contact hot parts		N
	Temperature rating (cord and inlet) .....:		—
	Green/yellow used only for connection to protective conductor terminals		P
	Detachable cords with IEC 60320 mains connectors:		—
	Conform to IEC 60799; or		P
	Have the current rating of the mains connector		P
6.10.2	Fitting of non-detachable mains supply cords		—
6.10.2.1	Cord entry		—
	a) inlet or bushing with a smoothly rounded opening; or		N
	b) insulated cord guard protruding >5 D (diameter)		N
6.10.2.2	Cord anchorage		—
	Protective earth conductor is the last to take the strain		P
	a) cord is not clamped by direct pressure from a screw		N
	b) knots are not used		N
	c) cannot push the cord into the equipment to cause a hazard		N
	d) no failure of cord insulation in anchorage with metal parts		N
	e) not to be loosened without a tool		N
	f) cord replacement does not cause a hazard and method of strain relief is clear		N
	Push-pull and or torque test		N
6.10.3	Plugs and connectors		P
	Mains supply plugs, connectors etc., conform with relevant specifications		P
	If equipment supplied at voltages below 6.3.2.a) or from a sole source:		—
	Plugs of supply cords do not fit mains sockets above rated		P

	supply voltage		
	Mains type plugs used only for connection to mains supply		P
	Plug pins which receive a charge from an internal capacitor		P
	Accessory mains socket outlets:		—
	a) marking if accepts a standard mains supply plug (see 5.1.3e)		N
	b) input has a protective earth conductor if outlet has earth terminal contact		P
6.11	Disconnection from supply source		P
6.11.1	Disconnects all current-carrying conductors		P
6.11.2	Exceptions		N
6.11.3	Requirements according to type of equipment		—
6.11.3.1	Permanently connected equipment and multi-phase equipment		P
	Employs switch or circuit-breaker		P
	If switch or circuit-breaker is not part of the equipment, documentation requires:		—
	a) switch or circuit-breaker to be included in building installation		P
	b) suitable location easily reached		P
	c) marking as disconnecting for the equipment		P
6.11.3.2	Single-phase cord-connected equipment		P
	Equipment is provided with one of the following:		—
	a) switch or circuit-breaker		P
	b) appliance coupler (disconnectable without tool)		P
	c) separable plug (without locking device)		P
6.11.4	Disconnecting devices		P
6.11.4.1	Disconnecting device part of equipment		N
	Electrically close to the supply		N
	Power-consuming components not electrically located between the supply source and the disconnecting device		N
	Except electromagnetic interference suppression circuits permitted to be located on the supply side of the disconnecting device		N
6.11.4.2	Switches and circuit-breakers		P
	When used as disconnection device:		—
	Meets IEC 60947-1 and IEC 60947-3		P
	Marked to indicate function .....:		—
	Not incorporated in mains cord		P
	Does not interrupt protective earth conductor		P
6.11.4.3	Appliance couplers and plugs		P
	Where an appliance coupler or separable plug is used as the disconnecting device (see 6.11.3.2):		—

	Readily identifiable and easily reached by the operator		P
	Single-phase portable equipment cord length not more than 3 m		N
	Protective earth conductor connected first and disconnected last		P
7	PROTECTION AGAINST MECHANICAL HAZARDS		P
7.1	Equipment does not cause a mechanical hazard in normal nor in single fault condition		P
	Conformity is checked by 7.2 to 7.7		P
7.2	Sharp edges		P
	Easily touched parts are smooth and rounded		P
	Do not cause injury during normal use and		P
	Do not cause injury during single fault condition		P
7.3	Moving parts		P
7.3.1	Hazards from moving parts limited to a tolerable level with the conditions specified in 7.3.2 and 7.3.5		N
	Risk assessment in accordance with 7.3.3 carried out		N
7.3.2	Exceptions		N
	Access to hazardous moving parts permitted under following circumstances:		—
	a) obviously intended to operate on parts or materials external of the equipment		N
	inadvertent touching of moving parts minimized by equipment design (e .g. guards or handles)		N
	b) If operator access is unavoidable outside normal use following precautions have been taken:		—
	1) access requires tool		N
	2) statement about training in the instructions		N
	3) warning markings on covers prohibiting access by untrained operators		N
	or symbol 14 with full details in documentation		N
7.3.3	Risk assessment for mechanical hazards to body parts		N
	Risk is reduced to a tolerable level by protective measures as specified in table 12		N
	Minimum protective measures:		—
	A. Low level measures		N
	B. Moderate measures		N
	C. Stringent measures		N
7.3.4	Limitation of force and pressure		N
	Following levels are met in normal and single fault condition:		—
	Continuous contact pressure below 50 N / cm² with force below 150 N		N
	Temporary force below 250 N for an area at least of 3 cm² for		N

	a maximum duration of 0,75 s		
7.3.5	Gap limitations between moving parts		N
7.3.5.1	Access normally allowed		—
	If levels of 7.3.4 exceeded and body part may be inserted minimum gap as specified in table 13 assured in normal and in single fault condition		N
7.3.5.2	Access normally prevented		—
	Maximum gap as specified in table 14 assured in normal and in single fault condition		N
7.4	Stability		P
	Equipment not secured to building structure is physical stable		P
	Stability maintained after opening of drawers etc. by automatic means, or		N
	warning marking requires the application of means		N
	Compliance checked by following tests as applicable:		—
	a) 10° tilt test for other than handheld equipment		P
	b) multi-directional force test for equipment exceeds height of 1 m and mass of 25 kg		N
	c) downward force test for floor-standing equipment		N
	d) overload test with 4 times maximum load for castor or support that supports greatest load		N
	e) castor or support that supports greatest load removed from equipment		N
7.5	Provisions for lifting and carrying		N
7.5.1	Equipment more than 18 kg :		—
	Has means for lifting or carrying; or		N
	Directions in documentation		N
7.5.2	Handles and grips		—
	Handles or grips withstand four times weight		N
7.5.3	Lifting devices and supporting parts		—
	Rated for maximum load; or		N
	tested with four times maximum static load		N
7.6	Wall mounting		N
	Mounting brackets withstand four times weight		N
7.7	Expelled parts		N
	Equipment contains or limits the energy		N
	Protection not removable without the aid of a tool		N
8	RESISTANCE TO MECHANICAL STRESSES		P
8.1	Equipment does not cause a hazard when subjected to mechanical stresses in normal use		P
	Normal protection level is 5 J		P
	Levels below 5 J but not less than 1 J are acceptable if all of following criteria are met:		—

	a) lower level justified by risk assessment of manufacturer		N
	b) equipment installed in its intended application is not easily touched		N
	c) only occasional access during normal use		N
	d) IK code in accordance to IEC 62262 marked or symbol 14 used with full information in the documentation		N
	for non-metallic enclosures rated below 2 °C ambient temperature value chosen for minimum rated temperature		N
	impact energies between IK values, the IK code marked for nearest lower value		N
	Conformity is checked by performing following tests:		—
	1) static test of 8.2.1		P
	2) impact test of 8.2.2 with 5 J except for hand-held equipment		P
	if impact energy not selected to 5 J alternate method of IEC 62262 used		N
	3) drop test of 8.3.1 or 8.3.2 except for fixed equipment and equipment with mass over 100 kg		N
	Equipment rated with an impact rating of IK 08 that obviously meets the criteria		N
	After the tests inspection with following results:		—
	– hazardous live parts above the limits of 6.3.2 not accessible		P
	– insulation pass the voltage tests of 6.8		P
	i) no leaks of corrosive and harmful substances		P
	ii) enclosure shows no cracks resulting in a hazard		P
	iii) clearances not less than their permitted values		P
	iv) insulation of internal wiring remains undamaged		P
	v) protective barriers not damaged or loosened		P
	vi) No moving parts exposed, except permitted by 7.3		N
	vii) no damage which could cause spread of fire		P
8.2	Enclosure rigidity test		P
8.2.1	Static test		P
	– 30 N with 12 mm rod to each part of enclosure		P
	– in case of doubt test conducted at maximum rated ambient temperature		N
8.2.2	Impact test		P
	Impact applied to any part of enclosure causing a hazard if damaged		P
	Impact energy level and corresponding IK code .....:		—
	Non-metallic enclosures cooled to minimum rated ambient temperature if below 2 °C		P
8.3	Drop test		N
8.3.1	Other than hand-held and direct-plug-in equipment		N

	Tests conducted with a drop height or angle of .....:		—
8.3.2	hand-held and direct-plug-in equipment		—
	Non-metallic enclosures cooled to minimum rated ambient temperature if below 2 °C		N
	Drop test conducted with an height of 1 m		N
9	PROTECTION AGAINST THE SPREAD OF FIRE		P
9.1	No spread of fire in normal and single fault condition		P
	Mains supplied equipment meets requirements of 9.6 additionally		P
	Conformity is checked by minimum one or a combination of the following (see Figure 11):		—
	a) Single Fault test of 4.4; or		P
	b) Application of 9.2 (eliminating or reducing the sources of ignition); or		P
	c) Application of 9.3 (containment of fire within the equipment)		P
9.2	Eliminating or reducing the sources of ignition within the equipment		P
	a) 1) Limited-energy circuit (see 9.4); or		N
	b) 2) basic insulation provided for parts of different potential; or		N
	Bridging the insulation does not cause ignition		N
	c) Surface temperature of liquids and parts (see 9.5)		N
	d) No ignition in circuits designed to produce heat		N
9.3	Containment of the fire within the equipment, should it occur		P
9.3.1	Spread of fire outside equipment reduced to a tolerable level if:		—
	a) Energizing of the equipment is controlled by an operator held switch		P
	b) Enclosure is conform with constructional requirements of 9.3.2; and		P
	Requirements of 9.5 are met		P
9.3.2	Constructional requirements		—
	a) Connectors and insulating material have flammability classification V-2 or better		P
	b) Insulated wires and cables are flame retardant (VW-1 or equivalent)		P
	c) Enclosure meets following requirements:		—
	1) Bottom and sides in arc of 5 ° (see Figure 13) to non-limited circuits (9.4) meets:		—
	i) no openings; or		N
	ii) perforated as specified in table 16; or		N
	iii) metal screen with a mesh; or		N
	iv) baffles as specified in Figure 12		N

	2) Material of enclosure and any baffle or flame barrier is made of:		—
	Metal (except magnesium); or		N
	Non-metallic materials have flammability classification V-1 or better		N
	3) Enclosure and any baffle or flame barrier have adequate rigidity		P
9.4	Limited-energy circuit		N
	a) Potential not more than 30 r.m.s. and 42,4 V peak, or 60 V dc		N
	b) Current limited by one of following means:		—
	1) Inherently or by impedance (see table 17); or		N
	2) Overcurrent protective device (see table 18); or		N
	3) A regulating network limits also in single fault condition (see table 17)		N
	c) Is separated by at least basic insulation		N
	Fuse or a nonadjustable electromechanical device is used		N
9.5	Requirements for equipment containing or using flammable liquids		N
	Flammable liquids contained in or specified for use with equipment do not cause spread of fire		N
	Risk is reduced to a tolerable level:		—
	a) The temperature of surface or parts in contact with flammable liquids is 25 °C below fire point		N
	b) The quantity of liquid is limited		N
	c) Flames are contained within the equipment		N
	Detailed instructions for risk-reduction provided		N
9.6	Overcurrent protection		P
9.6.1	Mains supplied equipment protected		P
	Basic insulation between mains parts of opposite polarity provided		P
	Devices not in the protective conductor		P
	Fuses or single-pole circuit-breakers not fitted in neutral (multi-phase)		P
9.6.2	permanently connected equipment		N
	Overcurrent protection device:		—
	Fitted within the equipment; or		N
	Specified in manufacturer's instructions		N
9.6.3	Other equipment		—
	Protection within the equipment		N
10	EQUIPMENT TEMPERATURE LIMITS AND RESISTANCE TO HEAT		P
10.1	Surface temperature limits for protection against burns		P
	Easily touched surfaces within the limits in normal and in		—

	single fault condition:		
	– at an specified ambient temperature of 40 °C		N
	– for equipment rated above 40 °C ambient temperature limits not exceeded raised by the difference to 40 °C		N
	Heated surfaces necessary for functional reasons exceeding specified values:		—
	– Are recognizable as such by appearance or function; or		N
	– Are marked with symbol 13		N
	– Guards are not removable without tool		N
10.2	Temperatures of windings		N
	Limits not exceeded in:		—
	normal condition		N
	single fault condition		N
10.3	Other temperature measurements		P
	Following measurements conducted if applicable:		—
	a) Value of 60 °C of field-wiring terminal box not exceeded		N
	b) Surface of flammable liquids and parts in contact with this liquids		N
	c) Surface of non-metallic enclosures		P
	d) Parts made of insulating material supporting parts connected to mains supply		N
	e) Terminals carrying a current more than 0,5 A		N
10.4	Conduct of temperature tests		P
10.4.1	Tests conducted under reference test conditions and manufacturer’s instructions		P
10.4.2	Temperature measurement of heating equipment		N
	Tests conducted in test corner		N
10.4.3	Equipment intended for installation in a cabinet or wall		N
	Equipment built in as specified in installation instructions		N
10.5	Resistance to heat		P
10.5.1	Integrity of clearance and creepage distances		P
10.5.2	Non-metallic enclosures		N
	Within 10 min after treatment:		—
	Equipment subjected to suitable stresses of 8.2 and 8.3 complying with criteria of 8.1		N
10.5.3	Insulating material		P
	a) Parts supporting parts connected to mains supply		P
	b) Terminals carrying a current more than 0,5 A		P
	Examination of material data; or		P
	in case of doubt:		P
	1) Ball pressure test; or		P
	2) Vicat softening test of ISO 306		P
11	PROTECTION AGAINST HAZARDS FROM FLUIDS		N

11.1	Protection to operators and surrounding area provided by equipment	No fluids used	N
	All fluids specified by manufacturer considered		N
11.2	Cleaning		N
11.3	Spillage		N
11.4	Overflow		N
11.5	Battery electrolyte		N
	Battery electrolyte leakage presents no hazard		N
11.6	Specially protected equipment		N
11.7	Fluid pressure and leakage		N
11.7.1	Maximum pressure ..... :		—
	Maximum pressure of any part does not exceed Prated		N
11.7.2	Leakage and rupture at high pressure		—
	Fluid-containing parts subjected to hydraulic test if ....:		—
	a) product of pressure and volume > 200 kPal; and		N
	b) pressure > 50 kPa		N
	Parts of refrigerating systems meets pressure-related requirements of IEC 60335-24 or IEC 60335-2-89		N
11.7.3	Leakage from low-pressure parts		N
11.7.4	Overpressure safety device		N
	Does not operate in normal use		N
	a) Connected as close as possible to parts intended to be protected		N
	b) Easy access for inspection, maintenance and repair		N
	c) Adjustment only with tool		N
	d) No discharge towards person		N
	e) No hazard from deposit of discharged material		N
	f) Adequate discharge capacity		N
	No shut-off valve between overpressure safety device and protected parts		N
12	Protection against radiation, including laser sources, and against sonic and ultrasonic pressure		N
12.1	Equipment provides protection		N
12.2	Equipment producing ionizing radiation		N
12.2.1	Ionizing radiation		N
12.2.1.1	Equipment meets the following requirements:		—
	a) if intended to emit radiation meets requirements of 12.2.1.2; or		N
	tested, classified and marked in accordance to IEC 60405		N
	b) if only emits stray radiation meets requirements of 12.2.1.3		N
12.2.1.2	Equipment intended to emit radiation		—
	Effective dose rate of radiation measured .....:		—
	If dose rate exceeds 5 μSv/h marked with the following:		—

	a) symbol 17 (ISO 361)		N
	b) abbreviations of the radionuclides..... :		—
	c) with maximum dose at 1 m; or ..... :		—
	with dose rate value between 1 µSv/h and		
12.2.1.3	Equipment not intended to emit radiation		—
	Limit for unintended stray radiation of 1 µSv/h at any easily reached point kept .....:		—
12.2.2	Accelerated electrons		—
	Compartments opened only by the use of a tool		N
12.3	Ultraviolet (UV) radiation		N
	No unintentional hazardous escape of UV radiation:		—
	– checked by inspection; and		N
	– evaluation of risk assessment documentation		N
12.4	Microwave radiation		N
	Power density does not exceed 10 W/m2 ..... :		N
12.5	Sonic and ultrasonic pressure		N
12.5.1	Sound level		—
	No hazardous sound emission		N
	Maximum sound pressure level measured and calculated for maximum sound power level as specified in ISO 3746 or ISO 9614-1		N
	Instruction describes measures for protection		N
12.5.2	Ultrasonic pressure		N
	Equipment not intended to emit ultrasound does not exceed limit of 110 dB between 20 kHz and 100 kHz		N
	Equipment intended to emit ultrasound:		N
	Outside useful beam does not exceed limit of 110 dB between 20 kHz and 100 kHz		N
	If inside useful beam above values exceeded:		—
	Marked with Symbol 14 of table 1		N
	and following information in the documentation:		—
	a) dimensions of useful beam		N
	b) area where ultrasonic pressure exceed 110 dB		N
	c) maximum sound pressure inside beam area		N
12.6	Laser sources		N
	Equipment meets requirements of IEC 60825-1		N
13	PROTECTION AGAINST LIBERATED GASES AND SUBSTANCES, EXPLOSION AND IMPLOSION		P
13.1	Poisonous and injurious gases and substances		P
	No poisonous or injurious gases or substances liberated in normal condition		P
	Attached data/test reports demonstrate conformity		N
13.2	Explosion and implosion		N

13.2.1	Components		P
	Components liable to explode:		—
	Pressure release device provided; or		N
	Apparatus incorporates operator protection (see also 7.7)		P
	Pressure release device:		—
	Discharge without danger		N
	Cannot be obstructed		N
13.2.2	Batteries and battery charging		—
	If explosion or fire hazard could occur:		—
	Protection incorporated in the equipment; or		N
	Instructions specify batteries with built-in protection		N
	In case of wrong type of battery used:		—
	No hazard; or		N
	Warning by marking and within instructions		N
	Equipment with means to charge rechargeable batteries:		—
	Warning against the charging of non-rechargeable batteries; and		N
	Type of rechargeable battery indicated; or		N
	Symbol 14 used		N
	Battery compartment design		N
	Single component failure		N
	Polarity reversal test		N
13.2.3	Implosion of cathode ray tubes		N
	If maximum face dimensions > 160 mm.....:		—
	Intrinsically protected and correctly mounted; or		N
	enclosure provides protection:		N
	If non-intrinsically protected:		—
	Screen not removable without tool		N
	If glass screen, not in contact with surface of tube		N
14	COMPONENTS AND SUBASSEMBLIES		P
14.1	Where safety is involved, components and subassemblies meet relevant requirements	(see table 1)	P
14.2	Motors		N
14.2.1	Motor temperatures		N
	Does not present a hazard when stopped or prevented from starting; or		N
	Protected by over-temperature or thermal protection device conform with 14.3		N
14.2.2	Series excitation motors		N
	Connected direct to device, if overspeeding causes a hazard		N
14.3	Overtemperature protection devices		N
	Devices operating in a single fault condition		N
	a) Reliable function is ensured		N

	b) Rated to interrupt maximum current and voltage		N
	c) Does not operate in normal use		N
	If self-resetting device used to prevent a hazard, protected part requires intervention before restarting		N
14.4	Fuse holders		P
	No access to hazardous live parts		P
14.5	Mains voltage selecting devices		N
	Accidental change not possible		N
14.6	Mains transformers tested outside equipment		
14.7	Printed circuit boards		P
	Data shows conformity with V-1 of IEC 60695-11-10 or better; or		P
	Test shows conformity with V-1 of IEC 60695-11-10 or better		N
	Not applicable for printed wiring boards with limited-energy circuits (9.4)		N
14.8	Circuits or components used as transient overvoltage limiting devices		N
	Test conducted between each pair of mains supply terminals		N
	No hazard resulting from rupture or overheating of the component:		—
	– no bridging of safety relevant insulation		N
	– no heat to other parts above the self-ignition points		N
15	PROTECTION BY INTERLOCKS		N
15.1	Interlocks are designed to remove a hazard before operator exposed		N
15.2	Prevention of reactivation		N
15.3	Reliability		N
	Single fault unlikely to occur; or		N
	Cannot cause a hazard		N
16	HAZARDS RESULTING FROM APPLICATION		N
16.1	Reasonably foreseeable misuse		N
	No hazards arising from settings not intended and not described in the instructions		N
	Other cases of reasonably foreseeable misuse addressed by risk assessment		N
16.2	Ergonomic aspects		N
	Factors giving rise to a hazard the risk assessment is reflecting those aspects:		—
	a) limitation of body dimensions		N
	b) displays and indicators		N
	c) accessibility and conventions of controls		N
	d) arrangement of terminals		N
17	RISK ASSESSMENT		N

	Risk assessment conducted, if hazard might arise and not covered by Clauses 6 to 16		N
	Tolerable risk achieved by iterative documented process covering the following:		—
	a) Risk analysis		N
	Identifies hazards and estimates risk		N
	b) Risk evaluation		N
	Plan to judge acceptability of resulting risk level based on the estimated severity and likelihood of a risk		N
	c) Risk reduction		N
	Initial risk reduced by counter measures;		N
	Repeated risk evaluation without new risks introduced		N
	Risks remaining after risk assessment addressed in instructions to responsible body:		—
	Information contained how to mitigate these risks		N
	Following principles in methods of risk reduction applied by manufacturer in given order:		—
	1) Risks eliminated or reduced as far as possible		N
	2) Protective measures taken for risks that cannot be eliminated		N
	3) User information about residual risk due to any defect of the protective measures		N
	Indication of particular training is required		N
	Specification of the need for personal protective equipment		N
	Conformity checked by evaluation of the risk assessment documentation		N
ANNEX F	ROUTINE TESTS		N
	Manufacturer ´s declaration		N
ANNEX H	QUALIFICATION OF CONFORMAL COATINGS FOR PROTECTION AGAINST POLLUTION		N
H.1	General		N
	Conformal coatings meet the requirements of Clause H.2 and H.3.		N
H.2	Technical properties		N
	Technical properties of conformal coatings are suitable for the intended application. In particular:		—
	a) Manufacturer indicate that it is a coating for PWBs;		N
	b) rated operating temperature include the temperature range of the indicated application;		N
	c) CTI, insulation resistance and dielectric strength are suitable for the intended application;		N
	d) Coating have adequate UV resistance, if it is exposed to sunlight;		N

	e) Flammability rating of the coating is at least the required flammability rating of the applied PWB.		N
H.3	Qualification of coatings		N
	Coating complies with the conformity requirements.		N
ANNEX K	INSULATION REQUIREMENTS NOT COVERED BY CLAUSE 6.7		N

4.4	TABLE: Testing in single fault condition – Results		Form A.1		P
Test subclause	Fault No.	Fault description	Td 4.4.3 (NOTE)	How was test terminated Comments	Meets 4.4.4
--	1.	BD1 S-C	0	Fuse open immediately, no hazards.	Yes
--	2.	C1 S-C	0	Fuse open immediately, no hazards.	Yes
--	3.	C01 S-C	0	Fuse open immediately, no hazards.	Yes
--	4.	Transformer output	00:15:00	Unit shut down, no damage, no hazards.	Yes
NOTE Td = Test duration in hh:mm:ss Record dielectric strength test on Form A.18 and temperature tests on Form A.26A and or A.26B. Record in the comments column for each test whether carried out during or after single fault condition.					
Supplementary information:					

5.1.3c)	TABLE: Mains supply		Form A.2	P
	Marked rating ..... :	AC100-240V		—
	Phase..... :	Single-phase		—
	Frequency ..... :	50/60Hz		—
	Current ..... :	0.5A		—
	Power ..... :	--		—
	Power ..... :	--		—

Test No.	Voltage [V]	Frequency [Hz]	Current [A]	Power [W]	Power [VA]	Comments
1.	240	50	0.26	62.4	-	Normally load
NOTE – Measurements are only required for marked ratings.						
Supplementary information:						

5.3	TABLE: Durability of markings	Form A.3	P

Marking method (see note)	Agent
1) Adhesive label	A Water
2) Ink printed	B Isopropyl alcohol 70%
3) Laser marked	C (specify agent)
4) Film-coated (plastic foil control panel)	D (specify agent)
5) Imprinted on plastic (moulded in)	E (specify agent)

NOTE – Where applicable include print method, label material, ink or paint type, fixing method, adhesive and surface to which marking is fixed.

Marking location	Marking method (see above)
Identification (5.1.2)	1
Mains supply (5.1.3)	--
Fuses (5.1.4)	1
Terminals and operating devices (5.1.5.2)	--
Switches and circuit breakers (5.1.6)	--
Double/reinforced equipment (5.1.7)	5
Field wiring Terminal boxes (5.1.8)	--
Warning marking (5.2)	5
Battery charging (13.2.2)	--

Method	Test agent	Remains legible	Label loose	Curled edges	Comments
		Verdict	Verdict	Verdict	
1	A/B	Yes / No	Yes / No	Yes / No	Pass
1	A/B	Yes / No	Yes / No	Yes / No	Pass
5	A/B	Yes / No	Yes / No	Yes / No	Pass
5	A/B	Yes / No	Yes / No	Yes / No	Pass

Supplementary information:

6	TABLE: Values in normal condition												Form A.5	P
6.1.2	Exceptions							11.2 Cleaning and decontamination						—
6.3.1	Values in normal condition (see NOTE 1)							11.3 Spillage						—
6.6.2	Terminals for external circuit							11.4 Overflow						—
6.10.3	Plugs and connections													—

Item (see Form A.4)	Voltage			Current				Capacitance		10 s / 5 s test (NOTE)			Comments
	V r.m.s.	V peak	V d.c.	Test circuit A1/A2/A3	mA r.m.s.	mA peak	mA d.c.	µC	mJ	V	µC	mJ	
Enclosure	--	--	--	A1	0.026mA	--	--	--	--	--	--	--	

NOTE – A 10 s test is specified in 6.1.2 a) b). A. 5 s test is specified in 6.10.3. The capacitance level versus voltage below the limits given from figure 3 of EN 61010-1.

Supplementary information:

6.3.2	**TABLE: Values in single fault condition**										**Form A.6**	
Item (see Form A.4)	Subclause and	Voltage			Transient (see NOTE)		Current				Capacitance	Comments
	fault No. (see Form A.1)	V r.m.s.	V peak	V d.c.	V	s	Test circuit A1/A2/A3	mA r.m.s.	mA peak	mA d.c.	µF (see note)	
Enclosure	PTC1 S-C	---	--	--	--	--	A1	0.025	--	--	--	--
Enclosure	PTC2 S-C	---	--	--	--	--	A1	0.029	--	--	--	--
NOTE – Transient voltages must be below the limits given from Figure 2 and the capacitance below the limits from figure 3 of EN 61010-1.												
Supplementary information:												

6.5.2.4	TABLE: Bonding impedance of plug connected equipment	Form A.9	N

accessible part under test	Test current [A]	Voltage attained after 1 min [V]	Calculated resistance (Maximum 0,1 or 0,2 Ω) [Ω] (NOTE 1)	Verdict

NOTE 1 – For none-detachable power cord the impedance between protective conductor plug pin of mains cord and each accessible part shall not exceed 0,2 Ohm.

Supplementary information:

6.5.2.5	TABLE: Bonding impedance of permanently connected equipment	Form A.10	N

accessible part under test	Test current [A]	Voltage attained after 1 min (maximum 10 V) [V]	Verdict

Supplementary information:

6.5.2.6	TABLE: Transformer protecive Bonding screen	Form A.11	N

accessible part under test	Test current (see note) [A]	Voltage attained after 1 min (maximum 10 V) [V]	Calculated resistance (maximum 0,1 Ω) [Ω]	Verdict

NOTE – Test current must be twice the value of the overcurrent protection means of the winding. Test is specified in 6.5.2.6 a) or b).

Supplementary information:

6.5.4	**TABLE: protective impedance**	**Form A.12**	P

A single component

Component	Location	Measured		Calculated	Rated		Verdict	Comments
		Working voltage [V]	Current [A]	Power dissipation [W]	Working voltage [V]	Power dissipation [W]		
Grounding pin of appliance inlet and enclosure		0.7	32	-	240	-	P	

A combination of components

Component	Location	Comments

NOTE – A protective impedance shall not be a single electronic device that employs electron conduction in a vacuum, gas or semiconductor.

Supplementary information:

6.5.6	TABLE: Current- or voltage-limiting device						Form A.13	N
Component	Location	Measured		Rated		Verdict	Comments	
		Working voltage [V]	Current [A]	Working voltage [V]	Current [A]			
Supplementary information:								

6.8	**TABLE: Dielectric strength tests** **Form A.18**	P
4.4.4.1 b)	Conformity after application of single fault conditions[1]	P
6.4	Primary means of protection[2]	P
6.6	Connections to external circuits	N
6.7.	Insulation requirements[2] (see Annex K)	P
6.10.2	Fitting of non-detachable mains supply cords[1]	N
9.2 a) 2)	Eliminating or reducing the sources of ignition within the equipment	N
9.4 c)	Limited-energy circuit	N
9.6.1	Overcurrent protection basic insulation between mains - parts	P

	Test site altitude ...:	Normal	—
	Test voltage correction factor (see table 10) ...:	Nil	—

Location or references from Forms A.1 and A.14	Clause or sub-clause	Humidity	Working voltage	Test voltage	Comments (note)	Verdict
		Yes/No	V	r.m.s./peak/ d.c.		
V to COM	4.4.4.1 b), 6.4, 6.7, 9.6.1	Yes	600V rms	4260 rms	BI	P
Live part and plastic enclosure	4.4.4.1 b), 6.4, 6.7, 9.6.1	Yes	600V rms	7400 rms	RI	P

[1] Record the fault, test or treatment applied before the dielectric strength test. 2 Humidity preconditioning required.
NOTE: Test duration may be recorded.

Supplementary information:

6.10.2	**TABLE: Cord anchorage** **Form A.19**	N

Location	Mass [kg]	Pull [N]	Verdict	Torque [Nm]	Verdict	Comment

Dielectric strength test for 1 min. (6.8.3.1) ...:		V r.m.s.	

Supplementary information:

7.	**TABLE: Protection against mechanical HAZARDS**	**Form A.20**	**P**
7.3.4	Limitation of force and pressure		—
7.3.5	Gap limitations between moving parts		—

Part / Location	Clause 7.3.4		Clause 7.3.5.1								Clause 7.3.5.2			Verdict	Comments
	Continuous	Temporary	Minimum gaps [mm]								Maximum gaps [mm]				
	Contact pressure max. 50 N /cm² @ max. 150 N	max. 250 N / 3 cm² @ max. 0,75 s	Torso 500	Head 300	Leg 180	Foot 120	Toes 50	Arm 120	Hand 100	Finger 25	Head 120	Foot 35	Finger 4		
Enclosure	max. 50 N /cm² @ max. 150 N	max. 250 N / 3 cm² @ max. 0,75 s	--	--	--	--	--	--	--	--	--	--	--	P	--

Supplementary information:

9	**TABLE: Protection against the spread of fire**		**Form A.22**	**P**
Item	Source of hazard or area of the equipment considered (circuit, component, liquid etc.)	Protection Method (9.1 a, b or c)	Protection details	Verdict
1	Testing in single fault condition (see form A.2 and form A.32)	9a	Tested in appliance, no fire, no hazards.	P
2	Plastic enclosure and PCB	9c	Comply with Cl 9.31	P

Supplementary information:

9.3.2	**TABLE: Constructional requirements**	**Form A.23**	**N**
14.7	Printed circuit boards		

Material tested ..... :		—
Generic name ..... :		—
Material manufacturer..... :		—
Type ..... :		—
Colour ..... :		—
Conditioning details ..... :		—

		Sample					
		1	2	3	4	5	6
Thickness of specimen	mm						
Duration of flaming after first Application	s						
Duration of flaming plus glowing After second application	s						
Specimen burns to holding clamp	Yes/No						
Cotton ignited	Yes/No						
Sample result	Pass/Fail						

Supplementary information:

9.5	TABLE: Requirements for equipment containing or using flammable liquids		N
Type of liquid	9.5 Flammable liquids		Verdict
	b) Quantity	c) Containment	
Supplementary information:			

10.	TABLE : Temperature Measurements Form A.26A	P
10.1	Surface temperature limits – normal condition and / or single fault condition	P
10.2	Temperature of windings – normal condition and / or single fault condition	N
10.3	Other temperature measurements	N

Operating conditions:	Normal operation		
Frequency ..... :	50 Hz	Test room ambient temperature (ta)... :	32 °C
Voltage..... :	230 V	Test duration ..... :	2 h 30 min

Part / Location	*t*m [°C]	*t*c [°C]	t_{max} [°C]	Verdict	Comments
Enclosure	33.2	48.2	70	P	
Electronics capacitor	49.6	64.6	105	P	
Internal wire	37.3	53.4	105	P	
Power switch	35.7	51.2	60	P	
AC inlet	42.4	67.5	95	P	
Power supply cord	32.2	49.5	105	P	
Ambient	-	40	-	-	

NOTE 1 - *tm* = measured temperature

*t*c = *t*m corrected (*t*m–*t*a+ **40 °C** or max. rated ambient)

*t*max = maximum permitted temperature

NOTE 2 - see also 14.1 with reference to component operating conditions

NOTE 3 - Record values for normal condition and / or single fault condition in this Form use additional form if necessary

NOTE 4 - see Form A.26B for details of winding temperature measurements

Supplementary information:

10.2	**TABLE: Temperature of windings** **Resistance method Temperature Measurements**	**Form A.26B**	**N**
4.4.2.7	Mains transformers		
14.2.1	Motor temperatures		

Operating conditions.. :			
Frequency ..... :	Hz	Test room ambient temperature (ta1/ta2) :	/ °C (initial / final)
Voltage..... :	V	Test duration ..... :	h min

Part / Designation	Rcold [Ω]	Rwarm [Ω]	Current [A]	t_r [K]	t_c [°C]	t_{max} [°C]	Verdict	Comments

NOTE 1- *R*cold = initial resistance *R*warm = final resistance

tr = temperature rise *tc* = *tr* corrected (*tc*= *tr* - { *ta*2 - *ta*1} + [40 °C or max rated ambient])

*t*max = maximum permitted temperature

NOTE 2 - Indicate insulation class (IEC 60085) under comments (optional)

NOTE 3 - Record values for normal condition and / or single fault condition in this Form use additional form if necessary

Supplementary information:

10.5.2	**TABLE: Resistance to heat of non-metallic enclosures**	**Form A.27**	**N**
	Test method used:		—
	Non-operative treatment ..... :	[ ]	
	Empty enclosure ..... :	[ ]	
	Operative treatment ..... :	[ ]	
	Temperature during tests..... :	68.2	—

Description	Material	Comments	Verdict

10.5.3	**TABLE: Insulating Materials**		**Form A.28**	**P**
10.5.3 1)	Ball-pressure test			P
	Max. allowed impression diameter ..... :		2 mm	—
Part	Test temperature [°C]		Impression diameter [mm]	Verdict
Terminal block	125		1.2	P
PCB	125		0.9	P
Supplementary information:				

10.5.3 2)	**Vicat softening test (ISO 306)**		**Form A.29**	N
Part	Vicat softening temperature [°C]		Thickness of sample [mm]	Verdict

10.5.3	**TABLE: Insulating Materials**		**Form A.28**	**P**
10.5.3 1)	Ball-pressure test			P
	Max. allowed impression diameter ..... :		2 mm	—
Supplementary information:				

11.7.2	TABLE: Leakage and rupture at high pressure				Form A.31	N
Part	Maximum permissible working pressure [MPa]	Test pressure [MPa]	Leakage Yes / No	Deformation Yes / No	Burst Yes / No	Comments

NOTE – see also Annex G with requirements for USA and Canada.

Supplementary information:

11.7.3	Leakage from low-pressure parts		Form A.32	N
Part	Test pressure [MPa]	Leakage Yes / No	Comments	

Supplementary information:

12.2.1	**TABLE: Ionizing radiation**		**Form A.33**	**N**
12.2.1.2	Equipment intended to emit radiation			N
Locations tested	Measured values [µSv/h]	Verdict	Comments	
Supplementary information:				
12.2.1.3	Equipment not intended to emit radiation		**Form A.34**	**N**
	Max. allowed effective dose rate at 100 mm……:		1 µSv/h	—
Locations tested	Measured values [µSv/h]	Verdict	Comments	

12.2.1	**TABLE: Ionizing radiation**		**Form A.33**	N
12.2.1.2	Equipment intended to emit radiation			N
Locations tested	Measured values [µSv/h]	Verdict	Comments	
Supplementary information:				

12.5.1	**TABLE: Sound level**	**Form A.35**	**N**

Locations tested	Measured maximum sound pressure level dB(A)	Calculated maximum sound power level
At operator's normal position and at bystanders' positions		
a)		
b)		
c)		
d)		
e)		
f)		
Supplementary information:		

12.5.2	Ultrasonic pressure	**Form A.36**	

Locations tested	Measured values		Comments
	[dB]	[kHz]	
At operator's normal position			
At 1 m from the enclosure			
a)			
b)			
c)			
d)			
e)			
NOTE –No limit is specified at present, but a limit of 110 dB above the reference pressure value of 20 μPa is under consideration for applicable frequencies between 20 kHz and 100 kHz.			

12.5.1	TABLE: Sound level	Form A.35	N
Locations tested	Measured maximum sound pressure level dB(A)	Calculated maximum sound power level	
Supplementary information:			

13.2.2	TABLE: Batteries	Form A.37	N
	Battery load and charging circuit diagram:		
	Battery type ..... :	--	—
	Battery manufacturer/model/catalogue No. ..... :	--	—
	Battery ratings..... :	-	—
	Reverse polarity instalment test	No hazards	

Single component failures	Verdict	
Component	Open circuit	Short circuit
Supplementary information:		

14.3	TABLE: Overtemperature protection devices	Form A.38	N

Reliability test			
Component	Type (note)	Verdict	Comments

NOTE:

NSR= non-self-resetting (10 times)

NR = non-resetting (1 time)

SR = self-resetting (200 times)

Supplementary information:

Annex

Photo of machine

/Photo/

Nameplate

Cold storage equipment

Model(s):MR-V60P

CE

Manufacturer: Qingdao Innova Bio-Meditech Co., Ltd.

Address: No. 176 Jufeng Road, 266121, Qingdao, China

Notice

1. This evaluation report is for samples only.

2. This evaluation report has assessed the basic requirements of the sample according to relevant standards.

3. This evaluation report is invalid without authorized signature.

4. This assessment report shall not be altered or deleted,

5. This assessment report shall not be used as a forensic expertise.

6. This assessment report is internal data and does not have the ability of public disclosure.

7. Client shall put forward demurrer within 15days after received report. laboratory shall refuse disposal if exceeded the time limit.

8. The assessment results presented in this report relate only to the object assessment.