TEST REPORT
BS EN 14604
Smoke Alarm Devices

Report Reference No. .....:	17ZCTS0911005LR
Tested by (printed name and signature) ..... :	Kevin Yang .....
Checked by (printed name and signature) ..... :	King Hu .....
Date of issue :	September 18, 2017
Testing Laboratory Name.....:	**Shenzhen ZCT Technology Co., Ltd.**
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Applicant's name.....:	Shenzhen Jikaida Technology Co., Ltd
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Manufacturer's name.....:	Same as applicant
Address: .....:	
Factory's name.....:	Same as applicant
Address: .....:	
Test specification:	
Standard.....:	☒ BS EN 14604:2005
Test procedure.....:	Commission test
Procedure deviation.....:	No
Non-standard test method.....:	No
Test Report Form No.....:	BS EN 14604
Test Report Form(s) Originator.....:	N/A
Master TRF.....:	2007-09
Test item description.....:	Smoke and Carbon Monoxide Detector
Trade Mark.....:	-
Model/Type reference.....:	JKD-512COM, JKD-516COM, JKD-518COM
Parameter.....:	DC 4,5V 3x1,5V AA

Copy of marking plate:	
CE Shenzhen Jikaida Technology Co., Ltd No. 791 West Yangming Road, Yangming Sub-district, Yuyao City, Zhejiang Province, China BS EN14604: 2005 Smoke and Carbon Monoxide Detector Model: xxx DC 4,5V 3x1,5V AA WARNING 1. Please press test button and stimulates smoke use to check its performance and use cloth to Clean smoke alarms and replace battery. 2. Please read use's manual before installing smoke alarms and replace battery. 3. Replace battery when horn beeps every 30s and continuous horn indicates alarm. Date of manufacture: 2017-02 Test the alarm for correct operation using the test facility, whenever the battery is replaced.	xxx=JKD-512COM, JKD-516COM, JKD-518COM

Summary of testing:
This testing sample complies with BS EN14604: 2005

Test Report Content
This test report consists of: Main report Annex I: Photo Documentation, **2** page(s).

Test item particulars:	
Operate using:	☐scattered light, transmitted light ☒ ionization
Type of Battery:	Type of Battery: DC 4,5V 3x1,5V AA
Current:	10 μA
Test case verdicts:	
Test case does not apply to the test object ...:	N/A
Test object does meet the requirement .....:	Pass (P)
Test object does not meet the requirement ..:	Fail (F)
Testing:	
Date of receipt of test item .....:	August 25, 2017
Date(s) of performance of test .....:	August 25, 2017 to September 18, 2017

General remarks:

The test results presented in this report relate only to the item(s) tested.

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

"(see Annex #)" refers to an annex appended to the report.

"(see appended table)" refers to a table in the CB Test Report.

Throughout this report a comma (point) is used as the decimal separator.

Description of product:

Smoke and Carbon Monoxide Detector, models JKD-512COM, JKD-516COM, JKD-518COM, fixed unit, surface mounted.
Type of battery: DC 4,5V 3x1,5V AA, Current: 10μA, Consumption: 90μW, Operate using Scattered light, transmitted light.

Model difference

1, Smoke and Carbon Monoxide Detector, models JKD-512COM, JKD-516COM, JKD-518COM, specificaiton as the following:
DC 4,5V 3x1,5V AA
Current: 10 μA
2. The only difference between models JKD-512COM, JKD-516COM, JKD-518COM, is only the model designation, different models are sale for differenct customer.

Remarks:
1. The samples for each group of testing were selected randomly from the samples provided by the manufacturer.
2. The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
3. The trademark and type identification are shown both in manual and enclosure. See manual firstly.
4. Determination of the test result includes consideration of measurement uncertainty from the test equipment and methods.
5. We conclude that the product(s) presented in this test report complies (comply) with the standard according to the test results on the submitted samples.

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict
4	**General requirements**		-
4.1	**Compliance**		-
	In order to comply with this document the smoke alarm shall meet the requirements of this clause, which shall be verified by visual inspection or engineering assessment, shall be tested as described in Clause 5 and shall meet the requirements of the tests.		P
	For smoke alarms which a manufacturer claims are suitable for leisure accommodation vehicles, the tests in Annex L shall be applied.		N
4.2	**Individual alarm indicator (optional)**		
	Alarm indicators, if fitted, shall be red and shall be separate from the mains-on indicator.		N
	This visual indicator may also perform another additional function but the alarm indication needs to be distinct from this additional function.		N
	The failure of any visual indicator shall not prevent the emitting of a fire alarm signal.		N
4.3	**Mains-on indicator**		-
	A smoke alarm intended to be connected to the AC mains shall be provided with a continuous mains on indicator to indicate energization of the unit.		N
	This indicator shall be coloured green and shall be separate from any other indicators.		N
	If more than one light-emitting indicator is provided on the smoke alarm, the mains-on indicator shall be green, an alarm indicator shall be red, and a fault indicator shall be amber or yellow.		N
4.4	**Connection of external ancillary devices**		-
	The smoke alarm may provide for connections to external ancillary devices (e.g. remote indicators, control relays, transmitters), but open- or short-circuit failure of these connections shall not prevent the correct operation of the smoke alarm.	not connection of external ancillary device	N
4.5	**Means of calibration**		-
	The manufacturer's means of calibration shall not be readily adjustable, on site, after manufacture.		P
4.6	**User replaceable components**		-
	Except for batteries or fuses, a smoke alarm shall have no user replaceable or serviceable components.	Only battery can be replaced by user	P
4.7	**Normal power source**		-
	The power source of the smoke alarm may be internal or external to the smoke alarm housing.	Internal power source	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Where the power source is internal to the smoke alarm, the source shall meet the following requirements.		P
	The power source shall operate the smoke alarm for at least one year's life, including routine testing (see 4.15).		P
	A distinctive audible fault signal shall be given before the battery is incapable of operating for alarm purposes (see 5.16).		P
	The smoke alarm shall be capable of producing an alarm signal for at least 4 min at the battery voltage at which a fault signal is normally obtained or 30 days of fault signal operation (see 4.15).		P
	The internal power source shall be replaceable by the user unless its operating life (see 4.15) in the smoke alarm is 10 years or greater.		P
4.8	**Standby power source**		-
4.8.1	**General**		-
	For smoke alarms intended for connection to an external power supply, for which an integral backup/ standby power facility is provided, the following requirements shall apply:		P
	a) primary cell battery back-up: the back-up power supply shall be capable of meeting the requirements of 4.15;		P
	b) rechargeable back-up power sources: the back-up power source shall be capable of supplying the quiescent load of the smoke alarm for a minimum period of 72 h followed by an alarm signal as specified in 5.17 for at least 4 min in the event of fire, or in the absence of a fire, a fault warning for at least 24 h.		N
	In the absence of suitable test procedures to verify the back-up power source, data concerning the smoke alarm loads and the back-up facility characteristics shall be used to indicate that the above requirements can be met.		P
4.8.2	**Monitoring of back-up power source**		-
	The back-up power source shall be monitored by the smoke alarm for faults.		P
	These faults shall include low back-up, open circuit and short circuit failure of the back-up (see 5.23).		P
4.9	**Electrical safety requirements**		-
	The apparatus shall be designed and constructed so as to present no danger, either in normal use or under fault conditions, as determined by the tests and requirements in 5.24.		P

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4.10	**Routine test facility**		-
	A routine test facility shall be provided on all smoke alarms to simulate either mechanically or electrically the presence of smoke in the sensing assembly.		P
	The test feature shall be accessible from outside the smoke alarm when installed as specified in the installation instructions.		P
4.11	**Terminals for external conductors**		-
	The smoke alarm or base, as appropriate, if intended to have external connections, shall provide for the connection of conductors by means of screws, nuts or equally effective devices.		N
	For mains powered smoke alarms which utilize a "flying lead"–type connector, this connector shall be regarded as a conductor.		N
	If terminals are provided, they shall allow the connection of conductors having nominal cross-sectional areas of between 0,4 mm_2 and 1,5 mm_2.		N
	Disconnection of the conductors, or access to the conductors for disconnection, shall not be possible without the use of a tool.		N
	Terminals shall be designed so that they clamp the conductor between metal surfaces without rotation of those surfaces but with sufficient contact pressure and without damage to the conductor.		N
	Flying lead type connectors shall be subjected to a pull test, such that when the connector is subjected to a pull of 20 N without jerks for 1 min in any direction allowed by the design, the connector does not become detached.		N
4.12	**Smoke alarm signals**		-
	In a smoke alarm which employs one or more non-fire alarm features the following operation shall be obtained:		P
	a) the smoke alarm fire alarm signal shall take precedence over any other signal even when such other signal is initiated first.		P
	b) distinctive signals shall be obtained between a smoke alarm's fire alarm and other non-fire alarm functions.		P
	Use of a common sounder is permitted if distinctive signals are obtained.		P
	If an audible fault signal is provided it shall be distinctive from all alarm signals but may be common to all functions employed.		P
4.13	**Battery removal indication**		-

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	The removal of any user-replaceable battery used to power, or provide back-up power, for the smoke detection circuit/sounder, from a battery or mains powered d.c. backed smoke alarm, shall result in a visual, mechanical or audible warning that the battery has been removed.		P
	The visual warning shall not depend upon a power source.		P
	NOTE Conformity may be achieved by, but is not restricted to, one of the following examples:		P
	a) a warning flag that will be exposed with the battery removed and the cover closed;		P
	b) a hinged cover or battery compartment that cannot be closed when the battery is removed;		P
	c) a unit that cannot be replaced upon its mounting base/bracket with the battery removed.		P
4.14	**Battery connections**		-
	Lead or terminal connections to batteries shall be identified with the proper polarity (plus or minus).		P
	The polarity may be indicated on the unit adjacent to the battery terminals or leads.		P
	Any leads connecting the terminal connectors of batteries in smoke alarms to the smoke alarm circuit board shall be provided with strain relieving devices adjacent to both battery terminal connectors and the smoke alarm circuit board so that when the leads are subjected to a pull of 20 N without jerks for 1 min in any direction allowed by the design, the pull is not transmitted to the joints between the leads and the battery terminal connectors or between the leads and the smoke alarm circuit board.		P
4.15	**Battery capacity**		-
	The batteries supplied with or specified for use in smoke alarms shall be capable of supplying the quiescent load of the smoke alarm together with the additional load resulting from a routine weekly 10 s test, for at least 1 year before the battery fault warning is given.		P
	At the point when the battery fault warning commences, the batteries shall have sufficient capacity to give an alarm signal as specified in 5.17 for at least 4 min in the event of fire, or in the absence of fire a battery fault warning for at least 30 days.		P
	In the absence of suitable test procedures to verify battery capacity, data concerning the smoke alarm loads and the battery characteristics shall be used to indicate that the above requirement can be met.		P
4.16	**Protection against the ingress of foreign**		-

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	bodies		
	The smoke alarm shall be so designed that a sphere of diameter (1,3 ± 0,05) mm cannot pass into the sensor chamber(s).	Diameter test sphere: 1,3 mm	P
	NOTE This requirement is intended to restrict the access of insects into the sensitive parts of the smoke alarm.		P
	It is known that this requirement is not sufficient to prevent the access of all insects, however it is considered that extreme restrictions on the size of access holes may introduce the danger of clogging by dust etc.		P
	It may therefore be necessary to take other precautions against false alarms due to the entry of small insects.		P
4.17	**Additional requirements for software controlled smoke alarms**		-
4.17.1	**General**		-
	For smoke alarms, which rely on software control in order to fulfil the requirements of this document, the requirements of 4.17.2, 4.17.3 and 4.17.4 shall be met.		N
4.17.2	**Software documentation**		-
4.17.2.1	The manufacturer shall submit documentation which gives an overview of the software design.		N
	This documentation shall be in sufficient detail for the design to be inspected for compliance with this document and shall include at least the following:		N
	a) a functional description of the main program flow (e.g. as a flow diagram or structogram) including:		N
	1) a brief description of the modules and the functions that they perform;		N
	2) the way in which the modules interact;		N
	3) the overall hierarchy of the program;		N
	4) the way in which the software interacts with the hardware of the smoke alarms;		N
	5) the way in which the modules are called, including any interrupt processing.		N
	b) a description of which areas of memory are used for the various purposes (e.g. the program, site specific data and running data);		N
	c) a designation, by which the software and its version can be uniquely identified.		N
4.17.2.2	The manufacturer shall have available detailed design documentation, which only needs to be nprovided if required by the testing authority		N

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	It shall comprise at least the following:		-
	a) an overview of the whole system configuration, including all software and hardware components;		N
	b) a description of each module of the program, containing at least:		N
	1) the name of the module;		N
	2) a description of the tasks performed;		N
	3) a description of the interfaces, including the type of data transfer, the valid data range and the checking for valid data.		N
	c) full source code listings, as hard copy or in machine-readable form (e.g. ASCII-code), including all global and local variables, constants and labels used, and sufficient comment for the program flow to be recognized;		N
	d) details of any software tools used in the design and implementation phase (e.g. CASE-tools, compilers).		N
4.17.3	Software design		N
	In order to ensure the reliability of the smoke alarm, the following requirements for software design shall apply:		N
	a) the software shall have a modular structure;		N
	b) the design of the interfaces for manually and automatically generated data shall not permit invalid data to cause errors in the program operation;		N
	c) the software shall be designed to avoid the occurrence of deadlock of the program flow.		N
4.17.4	The storage of programs and data		N
	The program necessary to comply with this document and any preset data, such as manufacturer's settings, shall be held in non-volatile memory.		N
	Writing to areas of memory containing this program and data shall only be possible by the use of a special tool or code and shall not be possible during normal operation of the detector.		N
	Site-specific data shall be held in memory which will retain data for at least two weeks without power from the mains or any replaceable battery, unless provision is made for the automatic renewal of such data, following loss of power, within 1 h of power being restored.		N

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4.18	Inter-connectable smoke alarms		N
	If a means of connecting a number of smoke alarms to give a general alarm signal is provided the following shall apply (see 5.19).		N
	a) The audible alarm signal shall be emitted by all of the interconnecting smoke alarms when the smoke is detected by any one or more of them.		N
	If the smoke alarms are provided with an alarm silence facility, initiation of the alarm silence period of one of the smoke alarms shall not prevent the audible alarm signal being emitted by that smoke alarm when the smoke is detected by any of the other alarms.		N
	b) The interconnection of the maximum number of smoke alarms allowed by the manufacturer shall not have a significant effect on the sensitivity of the smoke alarms nor their ability to meet the battery capacity or sound output requirements (see 4.15 and 5.17).		N
	c) For battery-operated smoke alarms, open or short-circuits of the interconnecting leads either shall not prevent the smoke alarms from functioning individually or shall result in an alarm condition or fault warning.		N
	NOTE This requirement does not apply to mains, or mains/battery supplied smoke alarms, for which the supply and interconnect wiring should be installed in accordance with the appropriate national regulations.		N
4.19	Marking and data		-
4.19.1	Smoke alarm marking		-
	Each alarm shall be indelibly marked with the following:		-
	a) the number and date of this document, i.e. EN 14604:2005;	BS EN14604:2005	P
	b) the name or trade mark and address of the manufacturer or supplier;	Shenzhen Jikaida Technology Co., Ltd No. 791 West Yangming Road, Yangming Sub-district, Yuyao City, Zhejiang Province, China	P
	c) the date of manufacture, or the batch number;	2012-11	P
	d) the manufacturer's recommended date for replacement, subject to normal, regular		P

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	maintenance;		
	e) smoke alarms incorporating user replaceable batteries: the type or numbers of batteries recommended by the manufacturer and an instruction to the user "Test the alarm for correct operation using the test facility, whenever the battery is replaced"; which shall be visible during the operation of changing the batteries;	6F22 9V DC “Test the alarm for correct operation using the test facility, whenever the battery is replaced”	N
	f) smoke alarms incorporating non-replaceable batteries: the warning "WARNING — Battery not replaceable —See instruction manual" which shall be visible during normal use.		N
	Conformity shall be checked by visual inspection.		-
	The indelibility of the marking shall be checked by establishing that it cannot be removed when rubbed lightly with a piece of cloth soaked with petroleum spirit and then water.	15s: petroleum 15s: water Still indelibility	P
4.19.2	**Packaging marking**		-
	The point-of-sale carton, in which a smoke alarm employing a radionuclide is packaged, shall be permanently marked on the exterior with the trefoil symbol, name of radionuclide, and activity.		p
4.19.3	**Data**	See user manual	-
	Information supplied on or with smoke alarms shall include instructions on siting, installation and maintenance.		P
	The information provided with smoke alarms incorporating user-replaceable batteries shall include specific guidance on changing the batteries.		P
	This guidance shall include any advice which is necessary to ensure that the battery is properly connected.		P
	It shall also include a recommendation that the operation of the alarm is tested with the test facility whenever the batteries are replaced.		P
	NOTE It is recommended that the guidance should also state that if the alarm fails to operate correctly, the advice of the manufacturer should be sought.		P
	For smoke alarms incorporating non-replaceable batteries, information shall be given on the action to be taken if a battery fault warning is emitted.		P
	Information for inter-connectable smoke alarms shall state the maximum number that may be interconnected.		P
	Details of suitable cables shall also be given.		N
	Information for smoke alarms intended for connection to mains supplies shall include a warning that draws attention to the hazards associated with		N

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Clause	Requirement + Test	Result - Remark	Verdict
	mains voltages and recommends that the smoke alarm, together with any associated supply and interconnect wiring, be installed in accordance with appropriate national electrical installation regulations.		
	If it is claimed that the smoke alarm is also suitable for use in leisure accommodation vehicles (LAVs) this shall be clearly stated in the information supplied on or with the smoke alarm.	Not suitable for LAVs	N
5	**Tests**		-I
5.1	**General**		-
5.1.1	**Atmospheric conditions for tests**		-
	Unless otherwise stated in a test procedure, the testing shall be carried out after the test specimen has been allowed to stabilize in the standard atmospheric conditions for testing as described in EN 60068-1:1994 as follows:		-
	a) temperature 15 °C to 35 °C;		-
	b) relative humidity 25 % to 75 %;		-
	c) air pressure 86 kPa to 106 kPa.		-
	If variations in these parameters have a significant effect on a measurement, then such variations shall be kept to a minimum during a series of measurements carried out as part of one test on one specimen.		-
5.1.2	**Operating conditions for tests**		-
	If a test method requires a specimen to be operational, then the specimen shall be connected to, or provided with, a suitable power source with characteristics as required by the manufacturer's data.		-
	Unless otherwise specified in the test method, the power source parameters applied to the specimen shall be set within the manufacturer's specified range(s) and shall remain substantially constant throughout the tests.		-
	The value chosen for each parameter shall normally be the nominal value, or the mean of the specified range.		-
5.1.3	**Mounting arrangements**		-
	The specimen shall be mounted by its normal means of attachment in accordance with the manufacturer's instructions.		P
	If these instructions describe more than one method of mounting then the method considered to be most unfavourable shall be chosen for each test.		P

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Clause	Requirement + Test	Result - Remark	Verdict
5.1.4	**Tolerances**		-
	If a specific tolerance or limit is not specified in a requirement or test procedure, a tolerance of ± 5 % shall be applied.		P
5.1.5	**Measurement of response threshold value**		-
	The specimen, for which the response threshold value is to be measured, shall be installed in the smoke tunnel, described in Annex A, in its normal operating position, by its normal means of attachment.		-
	The orientation of the specimen, relative to the direction of airflow, shall be the least sensitive orientation, as determined in the directional dependence test, unless otherwise specified in the test procedure.		-
	Before commencing each measurement, the smoke tunnel shall be purged with clean air to ensure that the tunnel and the specimen are free from the test aerosol.		-
	The air velocity in the proximity of the specimen shall be (0,2 ± 0,04) ms_{-1} during the measurement, unless otherwise specified in the test procedure.		--
	Unless otherwise specified in the test procedure, the air temperature in the tunnel shall be (23 ± 5) °C and shall not vary by more than 5 °C for all the measurements on a particular smoke alarm type.		-
	The specimen shall be connected to its power source as described in 5.1.2, and shall be allowed to stabilize for at least 15 min, unless otherwise specified by the manufacturer.		-
	The test aerosol, as described in Annex B, shall be introduced into the tunnel such that the rate of increase of aerosol density is as follows:		-
	0,015 <= $\Delta m / \Delta t$ <=0,1 dB m^{-1} min^{-1} for smoke alarms using scattered or transmitted light;	Transmitted light	P
	0,05 <=$\Delta y/\Delta t$ <=0,3min^{-1} for smoke alarms using ionization.		N
	NOTE These ranges are intended to allow the selection of a convenient rate, depending upon the smoke alarm's sensitivity, to obtain a response in a reasonable time.		-
	The initially selected rate of increase in aerosol density shall be similar for all measurements on a particular smoke alarm type.		-
	All aerosol density measurements shall be made in the proximity of the specimen.		-
	The response threshold value is the aerosol density (m or y) at the moment that the specimen gives an alarm signal. This shall be recorded as m (dB m_{-1}) for		-

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Clause	Requirement + Test	Result - Remark	Verdict
	smoke alarms using scattered or transmitted light, or as *y* for smoke alarms using ionization (see Annex C).		
5.1.6	**Provision for tests**		-
	The following shall be provided for testing compliance:		P
	a) 20 specimens;	20 specimens	P
	b) data required in 4.19.		-
	The specimens submitted shall be deemed representative of the manufacturer's normal production with regard to their construction and calibration.		P
	This implies that the mean response threshold value of the 20 specimens, found in the initial sensitivity test, shall also represent the production mean, and that the limits specified in the initial sensitivity test shall also be applicable to the manufacturer's production.		P
5.1.7	**Test schedule**		-
	The smoke alarms shall be numbered as specified in 5.4.2.	Each sample be numbered	P
	The tests on each smoke alarm indicated in Table 1 shall be carried out in the order in which they are listed.		P

Table 1 — Test schedule		
Radiated electromagnetic fields	5.14	11
Conducted disturbances induced by electromagnetic field	5.14	2
Fast transient bursts	5.14	12
Slow high energy transients	5.14	13
Fire sensitivity	5.15	17, 18, 19, 20
Battery fault warning	5.16	1,15
Sound output	5.17	1,15
Sounder durability	5.18	15
Inter-connectable smoke alarms	5.19	14
Alarm silence facility	5.20	16
Variation in supply voltage	5.21	2
Polarity reversal	5.22	16
Back-up power source	5.23	Additional specimens (as

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Clause	Requirement + Test	Result - Remark	Verdict
			required)
	Electrical safety	5.24	Additional specimens (as required)
	Alarms for leisure accommodation vehicles	Annex L	9
	NOTE The test specified in 5.6 is only applied to detectors using scattered light or transmitted light, as detectors using ionization are considered unlikely to be influenced.		
5.2	**Repeatability**		-
5.2.1	**Object**		-
	To show that the smoke alarm has stable behaviour with respect to its sensitivity even after a number of alarm conditions.		P
5.2.2	**Test procedure**		-
	The response threshold value of the specimen to be tested shall be measured as described in 5.1.5 six times.		P
	The specimen's orientation relative to the direction of air flow is arbitrary, but it shall be the same for all six measurements.		P
	The maximum response threshold value shall be designated y_{max} or m_{max}, the minimum value shall be designated y_{min} or m_{min}.		P
5.2.3	**Requirements**		-
	The ratio of the response threshold values y_{max}:y_{min} *or* m_{max}:m_{min} shall be not greater than 1,6. The lower response threshold value y_{min} shall be not less than 0,2 or m_{min} shall be not less than 0,05 dB m^{-1}.	M_{max}:M_{min}=1:1,3	P
5.3	**Directional dependence**		-
5.3.1	**Object**		-
	To show that the sensitivity of the smoke alarm is not unduly dependent on the direction of airflow around the smoke alarm.		-
5.3.2	**Test procedure**		-
	The response threshold value of the specimen to be tested shall be measured eight times as described in 5.1.5 with the specimen being rotated 45° about its vertical axis between each measurement, so that the measurements are taken for eight different orientations relative to the direction of air flow.		P
	The maximum response threshold value shall be designated y_{max} or m_{max}, the minimum value shall be designated y_{min} or m_{min}.		P

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Clause	Requirement + Test	Result - Remark	Verdict
	The orientations, for which the maximum and minimum response threshold values were measured, shall be noted.		P
	In the following tests the orientation, for which the maximum response threshold was measured, is referred to as the least sensitive orientation and the orientation, for which the minimum response threshold was measured, is referred to as the most sensitive orientation.		P
5.3.3	**Requirements**		-
	The ratio of the response threshold values y_{max}:y_{min} or m_{max}:m_{min} shall not be greater than 1,6.	m_{max}:m_{min}: 1:1,3	P
	The lower response threshold value y_{min} shall not be less than 0,2 or m_{min} shall not be less than 0,05 dB m_{-1}.	m_{min}: 0,06dB m^{-1}	P
5.4	**Initial sensitivity**		-
5.4.1	**Object**		-
	To establish the sensitivity of each smoke alarm prior to testing. This will be used as a baseline for the following tests.		P
5.4.2	**Test procedure**		-
	Measure the response threshold value of the specimens as described in 5.1.5.		P
	Number the smoke alarms in order of sensitivity, number 1 having the lowest response threshold and number 20 the highest response threshold.		P
	The maximum response threshold value shall be designated y_{max} or m_{max} and the minimum value shall be designated y_{min} or m_{min}.		P
	The mean of these response threshold values shall be calculated and shall be designated as y or m .		P
5.4.3	**Requirement**		-
	The following relationships shall hold y_{max}: y or m_{max}: m ≤ 1,33 and y :y_{min} or m :m_{min} ≤ 1,5.		P
5.5	**Air movement**		-
5.5.1	**Object**		-
	To show that the sensitivity of the smoke alarm is not unduly affected by the rate of the air flow, and that it is not unduly prone to false alarms in draughts or in short gusts.		P
5.5.2	**Test procedure**		-
	The response threshold value of the specimen to be tested is measured as described in 5.1.5 in the most and least sensitive orientations, and shall be appropriately designated $y_{(0,2)max}$ and $y_{(0,2)min}$ or		P

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Clause	Requirement + Test	Result - Remark	Verdict
	$m_{(0,2)max}$ and $m_{(0,2)min}$.		
	These measurements shall then be repeated but with an air velocity in the proximity of the smoke alarm of (1 ± 0,2) ms^{-1}.		P
	The response threshold values in these tests shall be designated $y_{(1,0)max}$ and $y_{(1,0)min}$ or $m_{(1,0)max}$ and $m_{(1,0)min}$.		P
	For ionization chamber alarms only, the specimen to be tested shall then be subjected, in its most sensitive orientation, to an aerosol-free air flow at a velocity of (5 ± 0,5) ms^{-1} for a period of 5 min.		P
5.5.3	**Requirements**		-
	One of the following relationships shall hold:		-
	$0,625 \leqslant \frac{y_{(0,2)max.} + y_{(0,2)min.}}{y_{(1,0)max.} + y_{(1,0)min.}} \leqslant 1,6$; a)	1,2	P
	$0,625 \leqslant \frac{m_{(0,2)max.} + m_{(0,2)min.}}{m_{(1,0)max.} + m_{(1,0)min.}} \leqslant 1,6$ b)		N
	and the alarm shall emit neither a fault signal nor an alarm signal during the test with aerosol free air.		P
5.6	**Dazzling**		-
5.6.1	**Object**		-
	To show that the sensitivity of the smoke alarm is not unduly influenced by the close proximity of artificial light sources.		P
	This test is only applied to smoke alarms using scattered light or transmitted light as ionization chamber smoke alarms are considered unlikely to be influenced.		P
5.6.2	**Test procedure**		-
	The dazzling apparatus, described in Annex D, is installed in the smoke tunnel described in Annex A.		-
	The specimen is installed in the dazzling apparatus in the least sensitive orientation and connected to its power source as described in 5.1.2.		-
	The following test procedure is then applied.		-
	The response threshold value is measured as described in 5.1.5.		P
	The four lamps are switched simultaneously ON for 10 s and then OFF for 10 s, ten times.		P
	The four lamps are then switched ON again and after at least 1 min the response threshold value is		P

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Clause	Requirement + Test	Result - Remark	Verdict
	measured as described in 5.1.5, with the lamps ON.		
	The four lamps are then switched OFF.		P
	The above procedure is then repeated, but with the smoke alarm rotated 90° in one direction (either direction may be chosen), from the least sensitive orientation.		P
	For each orientation, the maximum response threshold value shall be designated m_{max} and the minimum response threshold value shall be designated m_{min}.		P
5.6.3	**Requirements**		-
	During the periods when the switching sequences are being conducted and when the lamps are all on for at least 1 min, the specimen shall emit neither an alarm nor fault signal.		P
	For each orientation, the ratio of the response threshold m_{max}:m_{min} shall not be greater than 1,6.	m_{max}:m_{min}=1:1,25	P
5.7	**Dry heat**		-
5.7.1	**Object**		-
	To demonstrate the ability of the smoke alarm to function correctly at high ambient temperatures, which may occur for short periods in the service environment.		P
5.7.2	**Test procedure**		-
	The specimen to be tested shall be installed in the smoke tunnel described in Annex A, in its least sensitive orientation, with an initial air temperature of (23 ± 5) °C, and shall be connected to its power source as described in 5.1.2.		P
	The air temperature in the tunnel shall then be increased to (55 ± 2) °C, at a rate not exceeding 1 °C min^{-1}, and maintained at this temperature for 2 h.		P
	The response threshold value shall then be measured as described in 5.1.5 but with the temperature at (55 ± 2) °C.		P
	Of the two response threshold values measured for the specimen in this test and the initial sensitivity test, the greater shall be designated y_{max} or m_{max} and the lesser y_{min} or m_{min}.		P
5.7.3	**Requirements**		-
	No alarm of fault signals shall be given during the conditioning. The ratio of the response threshold values y_{max}:y_{min} or m_{max}:m_{min} shall not be greater than 1,6.	m_{max}:m_{min}=1:1,35	P
5.8	**Cold (operational)**		-
5.8.1	**Object**		-

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Clause	Requirement + Test	Result - Remark	Verdict
	To demonstrate the ability of the smoke alarm to function correctly at low ambient temperatures, which may occur for short periods in the service environment.		P
5.8.2	**Test procedure**		-
	The specimen to be tested shall be installed in the smoke tunnel described in Annex A, in its least sensitive orientation, with an initial air temperature of (23 ± 5) °C, and shall be connected to its power source as described in 5.1.2.		P
	The air temperature in the tunnel shall then be decreased to (0 ± 2) °C, at a rate not exceeding 1 °Cmin^{-1}, and maintained at this temperature for 2 h.		P
	The response threshold value shall then be measured as described in 5.1.5 but with the temperature at (0 ± 2) °C.		P
	Of the two response threshold values measured for the specimen in this test and the initial sensitivity test, the greater shall be designated y_{max} or m_{max} and the lesser y_{min} or m_{min}.		P
5.8.3	**Requirement**		-
	No alarm or fault signals shall be given during the conditioning.		P
	The ratio of the response threshold values y_{max}:y_{min} or m_{max}:m_{min} shall not be greater than 1,6.	m_{max}:m_{min}=1:1,41	P
5.9	**Damp heat (operational)**		-
5.9.1	**Object**		-
	To demonstrate the ability of the smoke alarm to function correctly after exposure to high relative humidity (without condensation) and temperature, which may occur for short periods in the service environment.		P
5.9.2	**Test procedure**		-
	The specimen to be tested shall be exposed to an initial air temperature of (40 ± 2) °C, and a relative humidity of less than 45 %.		P
	After 2 h, the relative humidity is to be increased to (93 ± 3) % over a period of 1 h.		P
	This temperature and humidity shall be maintained for a period of 4 days.		P
	The specimen shall have a recovery period of 1 h to 2 h at the standard laboratory conditions.		P
	The response threshold value shall then be measured as described in 5.1.5.		P
	Of the two response threshold values measured for the specimen in this test and the initial sensitivity		P

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Clause	Requirement + Test	Result - Remark	Verdict
	test, the greater shall be designated y_{max} or m_{max} and the lesser y_{min} or m_{min}.		
	No alarm or fault signals shall be given during the conditioning.		P
	The ratio of the response threshold values y_{max}:y_{min} or m_{max}:m_{min} shall not be greater than 1,6.	m_{max}:m_{min}=1:1,35	P
5.10	**Sulphur dioxide (SO_2) corrosion**		P
5.10.1	**Object**		-
	To demonstrate the ability of the smoke alarm to withstand the corrosive effects of sulphur dioxide as an atmospheric pollutant.		-
5.10.2	**Test procedure**		-
5.10.2.1	**Reference**		-
	The test apparatus and procedure shall be as described in EN 60068-2-42:2003, except that the conditioning shall be as described below.		P
5.10.2.2	**State of the specimen during conditioning**		-
	The specimen shall be mounted as described in 5.1.3. It shall not be supplied with power during the conditioning, but it shall have untinned copper wires, of the appropriate diameter, connected to sufficient terminals to allow the final measurement to be made, without making further connections to the specimen.		P
5.10.2.3	**Conditioning**		-
	The following conditioning shall be applied:		P
	Temperature (25 ± 2) °C;	25°C	P
	Relative humidity (93 ± 3) %;	95%	P
	SO_2 concentration (25 ± 5) ppm (by volume) i.e. (25 ± 5) x 10^{-6};	25 ppm	P
	Duration 4 days.	96 hrs	P
5.10.2.4	**Final measurements**		-
	Immediately after the conditioning, the specimen shall be subjected to a drying period of 16 h at 40 °C,		P
	≤ 50 % RH, followed by a recovery period of 1 h to 2 h at the standard laboratory conditions.		P
	After this recovery period, the response threshold value shall be measured as described in 5.1.5.		P
	The greater of the response threshold value measured in this test and that measured for the same specimen in the initial sensitivity test shall be designated y_{max} or m_{max}, and the lesser shall be designated y_{min} or m_{min}.		P
5.10.3	**Requirements**		P

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Clause	Requirement + Test	Result - Remark	Verdict
	The ratio of the response threshold values y_{max}:y_{min} or m_{max}:m_{min} shall not be greater than 1,6.		P
5.11	**Impact**		-
5.11.1	**Object**		-
	To demonstrate the immunity of the smoke alarm to mechanical impacts upon its surface, which it may sustain in the normal shipping, installation and service environment, and which it can reasonably be expected to withstand.		P
5.11.2	**Test procedure**		-
5.11.2.1	**Apparatus**		-
	The test apparatus shall consist of a swinging hammer incorporating a rectangular-section aluminium alloy head (aluminium alloy AlCu4SiMg complying with EN 573-4, solution treated and precipitation treated condition) with the plane impact face chamfered to an angle of 60° to the horizontal, when in the striking position (i.e. when the hammer shaft is vertical).		P
	The hammer head shall be (50 ± 2,5) mm high, (76 ± 3,8) mm wide and (80 ± 4) mm long at mid height as shown in Figure E.1. A suitable apparatus is described in Annex E.		P
5.11.2.2	**State of the specimen during conditioning**		-
	The specimen shall be rigidly mounted to the apparatus by its normal mounting means and shall be positioned so that it is struck by the upper half of the impact face when the hammer is in the vertical position (i.e. when the hammer head is moving horizontally).		P
	The azimuthal direction and position of impact, relative to the specimen, shall be chosen as that most likely to impair the normal functioning of the specimen.		P
	The specimen shall be connected to its power source as described in 5.1.2.		P
5.11.2.3	**Conditioning**		-
	The following conditioning shall be applied:		P
	Impact energy (1,9 ± 0,1) J;		P
	Hammer velocity (1,5 ± 0,13) ms^{-1};		P
	Number of impacts 1.		P
5.11.2.4	**Measurements during conditioning**		-
	The specimen shall be monitored during the conditioning and for a further 2 min after the impact to detect any alarm or fault signals.		P

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Clause	Requirement + Test	Result - Remark	Verdict
5.11.2.5	**Final measurements**		-
	After the conditioning the response threshold value shall be measured as described in 5.1.5.		P
	The greater of the response threshold value measured in this test and that measured for the same specimen in the initial sensitivity test shall be designated y_{max} or m_{max}, and the lesser shall be designated y_{min} or m_{min}.		P
5.11.3	**Requirements**		-
	No alarm or fault signals shall be given during the conditioning or the additional 2 min.	No alarm or fault signals.	P
	The impact shall not detach the alarm from its base, or the base from the mounting.		P
	The cover of the smoke alarm shall not unscrew or open.		P
	The ratio of the response threshold values y_{max}:y_{min} or m_{max}:m_{min} shall not be greater than 1,6.	m_{max}:m_{min}=1: 1,5	P
5.12	**Vibration (operational)**		P
5.12.1	**Object**		-
	To demonstrate the immunity of the smoke alarm to vibration at levels considered appropriate to the normal service environment.		-
5.12.2	**Test procedure**		-
5.12.2.1	**Reference**		-
	The test apparatus and procedure shall be as described in EN 60068-2-6:1995 and as described below.		P
5.12.2.2	**State of the specimen during conditioning**		P
	The specimen shall be mounted on a rigid fixture as described in 5.1.3 and shall be connected to its power source as described in 5.1.2.		P
	The vibration shall be applied in each of three mutually perpendicular axes, in turn.		P
	The specimen shall be mounted so that one of the three axes is perpendicular to its normal mounting plane.		P
5.12.2.3	**Conditioning**		-
	The following conditioning shall be applied:		-
	Frequency range (10 to 150) Hz;		-
	Acceleration amplitude 5 m s^{-2} (≈ 0,5 gn);		-
	Number of axes 3;		-
	Sweep rate 1 octave min^{-1};		-

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Clause	Requirement + Test	Result - Remark	Verdict
	Number of sweep cycles 1 per axis.		-
	NOTE The vibration operational and endurance tests may be combined such that the specimen is subjected to the operational test conditioning followed by the endurance test conditioning in one axis before changing to the next axis.		-
	Only one final measurement need then be made.		-
5.12.2.4	**Measurements during conditioning**		-
	The specimen shall be monitored during the conditioning period to detect any alarm or fault signals.		-
5.12.2.5	**Final measurements**		-
	After the conditioning the specimen is to be inspected visually for mechanical damage both internally and externally.		-
	The response threshold value shall be measured as described in 5.1.5.		-
	The greater of the response threshold value measured in this test and that measured for the same specimen in the initial sensitivity test shall be designated y_{max} or m_{max}, and the lesser shall be designated y_{min} or m_{min}.		-
5.12.3	**Requirements**		-
	No alarm or fault signals shall be given during the conditioning.		P
	No mechanical damage, either internally or externally, shall result.		P
	The lid of the smoke alarm shall not unscrew or open.	Not unscrew, not open, still in its position	P
	The ratio of the response threshold values y_{max}:y_{min} or m_{max}:m_{min} shall not be greater than 1,6.	m_{max}:m_{min}=1:1,35	P
5.13	**Vibration (endurance)**		P
5.13.1	**Object**		-
	To demonstrate the ability of the smoke alarm to withstand the long term effects of vibration at levels appropriate to the shipping, installation and service environment.		P
5.13.2	**Reference**		-
	The test apparatus and procedure shall be as described in EN 60068-2-6:1995 and as described below.		P
5.13.2.1	**State of the specimen during conditioning**		-
	The specimen shall be mounted on a rigid fixture as described in 5.1.3, but shall not be supplied with power during conditioning.		P

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Clause	Requirement + Test	Result - Remark	Verdict
	The vibration shall be applied in each of three mutually perpendicular axes, in turn.		P
	The specimen shall be mounted so that one of the three axes is perpendicular to its normal mounting axis.		P
5.13.2.2	**Conditioning**		-
	The following conditioning shall be applied:		-
	Frequency range (10 to 150) Hz;		P
	Acceleration amplitude 10 m s^{-2} (1,0 *g*n);		P
	Number of axes 3;		P
	Sweep rate 1 octave min^{-1};		P
	Number of sweep cycles 20 per axis.		P
	NOTE The vibration operational and endurance tests may be combined such that the specimen is subjected to the operational test conditioning followed by the endurance test conditioning in one axis before changing to the next axis.		P
	Only one final measurement need then be made.		P
5.13.2.3	**Final measurements**		-
	After the conditioning the response threshold value shall be measured as described in 5.1.5.		P
	The greater of the response threshold value measured in this test and that measured for the same specimen in the initial sensitivity test shall be designated y_{max} or m_{max}, and the lesser shall be designated y_{min} or m_{min}.		P
5.13.3	**Requirements**		-
	The ratio of the response threshold values y_{max}:y_{min} or m_{max}:m_{min} shall not be greater than 1,6.	m_{max}:m_{min}=1:1,45	P
5.14	**Electromagnetic Compatibility (EMC), immunity tests (operational)**		P
	The following EMC immunity tests shall be carried out, as described in EN 50130-4:1995:		P
	a) mains supply voltage dips and short interruptions;		P
	b) electrostatic discharge;		P
	c) radiated electromagnetic fields;		P
	d) conducted disturbances induced by electromagnetic fields;		P
	e) fast transient bursts;		P

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Clause	Requirement + Test	Result - Remark	Verdict
	f) slow high-energy voltage surges.		P
	The required operating condition shall be as described in 5.1.2.		P
	For these tests the criteria for compliance specified in EN 50130-4:1995 and the following shall apply.		P
	1) The functional test, called for in the initial and final measurements, shall be as follows:		P
	the response threshold value shall be measured as described in 5.1.5.		P
	the greater of the response threshold value measured in this test and that measured for the same specimen in the initial sensitivity test shall be designated y_{max} or m_{max}, and the lesser shall be designated y_{min} or m_{min}.	m_{max}:m_{min}=1:1,32	P
	2) The acceptance criteria for the functional test after the conditioning shall be as follows:		P
	the ratio of the response threshold values y_{max} : y_{min} or m_{max} : m_{min} shall not be greater than 1,6.	m_{max}:m_{min}=1:1,40	P
5.15	**Fire sensitivity**		-
5.15.1	**Object**		-
	To demonstrate the ability of the smoke alarm to respond to a broad spectrum of smoke types as required for general application in fire detection systems for residences.		P
5.15.2	**Test procedure**		-
5.15.2.1	**General**		-
	The fire sensitivity tests shall be conducted in a room as shown in Annex F.		P
	The specimens shall be subjected to the four test fires TF2 to TF5.		P
	The type, quantity and arrangement of the fuel and the method of combustion are described in Annexes G to J, for each test fire, along with the end of test condition and the required profile curve limits.		P
	In order to be a valid test fire, the development of the fire shall be such that the profile curves of m against y, and m against time, fall within the specified limits, up to the time when all of the specimens have generated an alarm signal, or the end of test condition is reached, whichever is the earlier.		P
	If these conditions are not met then the test is invalid and shall be repeated. It is permissible, and may be necessary, to adjust the quantity and arrangement of the fuel to obtain valid test fires.		P
5.15.2.2	**Mounting of the specimens**		-

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Clause	Requirement + Test	Result - Remark	Verdict
	The specimens shall be mounted in accordance with the manufacturer's instructions, such that they are in the least sensitive orientation, relative to an assumed air flow from the centre of the room to the specimen.		P
	For smoke alarms intended for wall mounting only, the four specimens shall be mounted within 0,5 m of the middle of the long walls as shown in Annex F with specimens 18 and 19 at the least distance below the ceiling, and specimens 17 and 20 at the greatest distance below the ceiling, consistent with the manufacturer's instructions.		P
	For smoke alarms intended for either ceiling or wall mounting, specimens 17 and 18 shall be mounted on the ceiling within the designated area and specimens 19 and 20 shall be mounted on the walls as described above.		P
	Each specimen shall be connected to its power source as described in 5.1.2, and shall be allowed to stabilize in its quiescent condition before the start of each test fire.		P
5.15.2.3	**Initial conditions**		-
	Before each test fire the room shall be ventilated with clean air until it is free from smoke, and so that the conditions listed below can be obtained.		P
	The ventilation system shall then be switched off and all doors, windows and other openings shall be closed.		P
	The air in the room shall then be allowed to stabilize, and the following conditions shall be obtained before the test is started:		P
	Temperature T = (23 ± 5) °C[1)];		P
	Air movement: negligible		P
	y = 0,05;		P
	m = 0,02 dB m^{-1}.		P
5.15.2.4	**Recording of the fire parameters and response values**		-
	During each test fire the fire parameters shown in Table 2 shall be recorded against the time from the start of the test.		P
	Each parameter shall be recorded continuously or at least once per second.		P
	1) The stability of the air and temperature affects the smoke flow within the room.		P
	This is particularly important for the test fires, which produce low thermal lift for the smoke (e.g. TF2 and TF3).		P
	It is therefore recommended that the difference between		P

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Clause	Requirement + Test	Result - Remark	Verdict
	the temperature near the floor and the ceiling is < 2oC, and that local heat sources that can cause convection currents (e.g. lights and heaters) should be avoided.		
	If it is necessary for people to be in the room at the beginning of a test fire, they should leave as soon as possible, taking care to produce the minimum disturbance to the air.		P

Table 2 — Fire parameters and response values		
Parameter	Symbol	Units
Temperature change	ΔT	°C
Smoke density (ionization)	y	dimensionless
Smoke density (optical)	m	dB m^{-1}

	The alarm signal given by the specimen shall be taken as the indication that an alarm has responded to the test fire.		P
	The time of response of each specimen shall be recorded along with the fire parameters ΔT_a, y_a, and m_a, at the moment of response.		P
	The response of the smoke alarm after the end of test condition has been reached shall be ignored.		P
5.15.3	**Requirements**		-
	All four specimens shall generate an alarm signal, in each test fire, before the specified end of test condition is reached.		p
5.16	**Battery fault warning**		-
5.16.1	**Object**		-
	To demonstrate that a smoke alarm will give an audible fault warning before an increase in the internal resistance or decrease in the terminal voltage of the battery prevents correct operation.		P
5.16.2	**Test procedure**		P
5.16.2.1	Connect the alarm as shown in Figure 1 and apply the tests described in 5.16.2.2 to 5.16.2.5.		P
5.16.2.2	With the series resistor *R* set to zero and the supply voltage *V* set to the rated battery voltage V_R, measure the response threshold of the alarm in accordance with 5.1.5.		P
5.16.2.3	With the series resistor *R* set to zero, decrease the supply voltage V in stages of 0,1 volts at intervals of at least 1 min, until the fault warning is given.		P
	Record the supply voltage at which the fault warning is given as V_E and measure the response threshold		P

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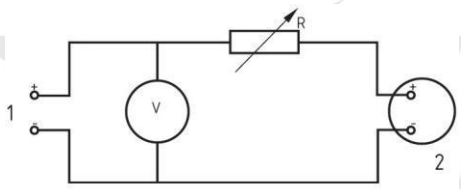
Clause	Requirement + Test	Result - Remark	Verdict
	of the alarm in accordance with 5.1.5.		
5.16.2.4	With the supply voltage V set at V_R, increase the resistance of the series resistor R from zero in increments of 1 at intervals of at least 1 min until the fault warning is given.		P
	Record the resistance of the series resistor at which the fault warning is given as R_A and measure the response threshold of the alarm in accordance with 5.1.5.		P
5.16.2.5	Repeat the procedure described in 5.16.2.4 with the supply voltage V set at 0,75 (V_R – V_E) + V_E, 0,5 (V_R – V_E) + V_E, and 0,25 (V_R – V_E) + V_E in turn, and record the resistances of the series resistor at which the fault warning is given as R_B, R_C and R_D, respectively.		P
5.16.3	**Requirements**		-
	The ratio of the response thresholds measured in 5.16.2.3, 5.16.2.4 or 5.16.2.5 to the response threshold measured in 5.16.2.2 shall be not less than 0,625 and not greater than 1,6.		P
			-
	Key 1 Regulated dc power supply 2 Self contained smoke alarm with battery removed		-
	Figure 1 - Battery fault warning test circuit		-
5.17	**Sound output**		-
5.17.1	**Object**		-
	To demonstrate that the smoke alarm is capable of providing an adequate sound output.		-
5.17.2	**Method of test**		-
	At least two samples shall be tested.		P
	Units intended additionally for multiple-station interconnection shall be tested in that configuration with the maximum line resistance and maximum number of networked alarms, and the sound output measured on the smoke alarm subject to an abnormal smoke condition.		p
	Mains powered smoke alarms shall be tested when connected to a source of rated voltage and frequency.		N
	Battery powered (or equivalent) smoke alarms shall be tested with the battery depleted to a point just		P

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Clause	Requirement + Test	Result - Remark	Verdict
	above or at the battery fault warning level.		
	Mains powered smoke alarms incorporating a stand-by power source shall be tested both as mains and battery powered as described above.		N
	NOTE 1 If more than five smoke alarms can be interconnected it is permissible to interconnect a minimum of five alarms and simulate the remainder by an equivalent electrical load.		N
	The smoke alarm shall be mounted on a mounting board as described in EN 54-3.		P
	The sound level shall be measured 3 m from the smoke alarm either directly in front of the smoke alarm or at an angle specified by the manufacturer within 45° of this		P
	A sound level meter conforming to EN 61672-1:2003, class 2 or better shall be used.		P
	The A-weighted sound level shall be measured and recorded in dB using the F (Fast) detector indicator characteristic. In the case of fluctuating sound, the maximum value indicated during at least a complete cycle of the sound pattern shall be taken.		P
	The measurement shall be made in a free field condition to minimize the effects of reflected sound energy.		P
	The ambient noise level shall be at least 10 dB (A) below the measured level produced by the alarm.		P
	NOTE 2 Free field conditions may be simulated by mounting the unit on a wooden board with the centre of the alarm under test at least 1,2 m above the ground (see EN 54-3) and with the microphone located 3 m from the unit and directly in front and conducting the test outdoors on a clear day with a wind velocity of not more than 8 km h^{-1} and an ambient temperature of 15 °C to 25 °C.		P
	NOTE 3 Alternatively an anechoic chamber of not less than 28 m^3, with no dimension less than 2 m and with an absorption factor of 0,99 or greater from 100 Hz to 10 kHz for all surfaces, may be used for this measurement.		P
5.17.3	**Requirements**		-
	For battery operated alarms, the sound output shall be at least 85 dB(A) at 3 m after 1 min of alarm operation and at least 82 dB(A) after 4 min of alarm operation.		P
	For mains powered alarms, the sound output shall be at least 85 dB(A) at 3 m after 4 min of alarm		P

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Clause	Requirement + Test	Result - Remark	Verdict
	operation.		
	For both battery operated and main powered alarms, the maximum sound output shall be 110 dB(A) at 3 m after 1 min of alarm operation.		p
	The maximum nominal frequency shall not exceed 3,5 kHz.		P
5.18	**Sounder durability**		-
5.18.1	**Object**		-
	To demonstrate the ability of the smoke alarm's sounder to operate as intended after prolonged operation.		P
5.18.2	**Test procedure**		P
	Connect the specimen to its power source as described in 5.1.2.		P
	Battery operated smoke alarms shall use a stabilized supply adjusted to the specified voltage.		P
	Operate the specimen for 8 h of alternate 5-minute periods of energization and de-energization in the standby and alarm conditions.		P
	After the conditioning, the sound output of the smoke alarm shall be measured as specified in 5.17.		P
5.18.3	**Requirements**		-
	The specimen shall meet the sound output requirements as specified in 5.17.		P
5.19	**Inter-connectable smoke alarms**		-
5.19.1	**Object**		-
	To demonstrate correct functioning of inter-connectable smoke alarms.		N
5.19.2	**Test procedure**		-
5.19.2.1	Connect the alarm under test with the maximum number of smoke alarms allowed in the manufacturer's instructions (see 4.19).		N
	NOTE If more than five smoke alarms may be interconnected it is permissible to interconnect a minimum of five alarms and simulate the remainder by an equivalent electrical load.		N
	Trigger one smoke alarm into the alarm condition and check all of the interconnected alarms for an audible alarm signal.		N
	If the smoke alarms have an alarm silence facility, operate the alarm silence control on one smoke alarm and, during the alarm silence period, trigger another smoke alarm into the alarm condition.		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict
	Check the interconnected smoke alarms for an audible alarm signal, including the smoke alarm in the alarm silence condition.		N
5.19.2.2	With the smoke alarms interconnected in accordance with 5.19.2.1, measure the response threshold of the alarm under test in accordance with 5.1.5.		N
5.19.2.3	For battery-operated smoke alarms repeat the test in 5.19.2.2 with the interconnecting leads short circuited.		N
5.19.2.4	With smoke alarms interconnected in accordance with 5.19.2.1, repeat the sound output test in 5.17 on one of the smoke alarms.		N
	During this test ensure that the other interconnected smoke alarms are sufficiently screened or distanced so that their audible alarm signals do not influence the measurement.		N
5.19.2.5	For battery-operated smoke alarms repeat the test in 5.19.2.4 with interconnecting leads short-circuited.		N
5.19.2.6	Reassess the battery capacity requirements taking into account the load introduced by interconnecting the maximum permitted number of smoke alarms.		N
5.19.3	**Requirements**		-
5.19.3.1	All the interconnected smoke alarms shall give an audible alarm signal within 1 min when tested in accordance with 5.19.2.1.		N
5.19.3.2	The ratio(s) of the response thresholds measured in accordance with 5.19.2.2 and, for battery operated smoke alarms the response thresholds measured in accordance with 5.19.2.3, to the response threshold measured for the same specimen in accordance with 5.4 shall be between 0,625and 1,6.		N
5.19.3.3	The sound output shall be at least 85 dB(A) when measured in accordance with 5.19.2.4 and, for battery-operated smoke alarms, when measured in accordance with 5.19.2.5.		N
5.19.3.4	The assessment in 5.19.2.6 shall indicate that the battery capacity requirements specified in 4.15 can still be met.		N
5.20	**Alarm silence facility (optional)**		-
5.20.1	**Object**		-
	If means of temporarily disabling or desensitising a smoke alarm are provided the following shall apply.		P
	a) The initiation of the alarm silence period shall require the operation of a manual control on the smoke alarm.		P
	NOTE 1		P

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict
	This control may be the same as a manual control provided for routine testing.		
	b) Operation of the alarm silence control shall desensitise the smoke alarm for at least 5 min.		P
	The sensitivity of the smoke alarm shall be restored within 15 min of operation of the alarm silence control.		P
	If the alarm silence period is adjustable it shall not be possible to set it to less than 5 min or to more than 15 min.		P
	c) Continuous operation of the alarm silence control shall not lead to the smoke alarm being desensitised for more than 15 min without an audible warning being given.		P
	NOTE 2 This requirement is intended to prevent the permanent loss of sensitivity due to accidental or deliberate jamming of the control.		P
5.20.2	**Test requirement**		-
5.20.2.1	Generate smoke in accordance with 5.1.5, in the smoke tunnel specified in Annex A, with an air velocity of (0,2 ± 0,04) m s-1 and an air temperature of (22 ± 5) °C, but increase the smoke density to three times the response threshold recorded for alarm number 16 (*m*16 or *y*16), when tested in accordance with 5.3.2. Using alarm number 16, with a supply voltage corresponding to that of a new battery, operate the alarm silence control, immediately insert the alarm into the smoke-filled smoke tunnel and maintain the smoke density between three and four times m_{16} or y_{16} for at least 15 min.		p
5.20.2.2	Repeat the test in 5.20.2.1 but with a supply voltage of V_E, as determined in 5.16.2.3.		P
5.20.2.3	With the supply voltage corresponding to that of a new battery, put alarm number 16 into the alarm silence condition by the operation of the alarm silence control.		P
	Measure the response threshold as described in 5.1.5 but with the smoke generation commencing (15 ± 0,25) min after the operation of the alarm silence control.		P
5.20.2.4	Repeat the test described in 5.20.2.3 but with a supply voltage of V_E, as determined in 5.16.2.3.		P
5.20.2.5	Repeat the test in 5.20.2.3 but, after operating the alarm silence control, hold the control on continuously for the remainder of the test.		P
5.20.3	**Requirements**		-

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict
5.20.3.1	When tested in accordance with 5.20.2.1 and 5.20.2.2, the alarm shall not emit an alarm signal during the first 5 min after the alarm silence control is operated.		P
5.20.3.2	The ratio of the response thresholds measured in accordance with 5.20.2.3 and 5.20.2.4 to the response threshold recorded for alarm number 16 when tested in accordance with 5.4 shall be not less than 0,625 and not greater than 1,6.		P
5.20.3.3	When tested in accordance with 5.20.2.5 either:		P
	a) within 15 min of the initial operation of the alarm silence control the alarm shall emit an audible signal (alarm or battery fault warning) for as long as the control is held on; or		P
	b) the ratio of the response threshold measured during the test to the response threshold recorded for the same alarm when tested in accordance with 5.4 shall be not less than 0,625 and not greater than 1,6		P
5.21	**Variation in supply voltage**		-
5.21.1	**Object**		-
	To show that, within the specified range(s) of the supply voltage, the sensitivity of the smoke alarm is not unduly dependent on these parameters.		P
5.21.2	**Test procedure**		-
	The response threshold value of the specimen to be tested shall be measured as described in 5.1.5, under the extremes of the specified supply conditions (e.g. maximum and minimum voltage).		P
	For self-contained smoke alarms intended for operation from mains supplies, the alarm shall be tested with supply voltages of 0,85 times the lower limit and 1,1 times the upper limit of the nominal supply voltage range specified in the manufacturer's requirements. If the smoke alarm is provided with a rechargeable battery, sufficient time shall be allowed for the battery voltage to stabilize before the response threshold is measured.		P
	For self-contained battery operated smoke alarms, the tests shall be carried out with a supply voltage corresponding to that of a new battery, and also at the fault voltage (V_E) as determined in 5.16.2.3.		p
	A smoke alarm with a standby battery (or equivalent) is also to be tested but with the primary supply disconnected.		P
	For smoke alarms intended to operate from any external supply other than mains, the manufacturer shall specify a maximum and minimum voltage.		P

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict
	Tests shall be conducted at the maximum and minimum voltage.		P
5.21.3	**Requirements**		-
	The ratio of the response threshold values *y*max : *y*min or m_{max} : m_{min} shall not be greater than 1,6.	m_{max} : m_{min} = *1:1,50*	P
	The lower response threshold value y_{min} shall not be less than 0,2 or m_{min} shall not be less than 0,05 dB m_{-1}.		P
5.22	**Battery reversal**		-
5.22.1	**Object**		-
	To demonstrate the ability of the smoke alarm to function properly after being misconnected with respect to polarity.		P
5.22.2	**Test procedure**		-
	Any user-replaceable batteries shall be fitted with reversed polarity for 10 s to 15 s, if it is possible to establish the reversed connection with the intended battery type, without causing mechanical damage to the smoke alarm.	Reverse polarity: 15s	P
	Following the reverse polarity conditioning, the specimen shall be connected to its power source as described in 5.1.2 and its response threshold value measured as in 5.1.5.		P
	Apply a voltage to the alarm of V_E as determined in 5.16.2 minus 5 %.		P
	Of the two response threshold values for the specimen in this test and the initial sensitivity test, the greater shall be designated y_{max} or m_{max} and the lesser y_{min} or m_{min}.		P
5.22.3	**Requirements**		-
	The ratio of the response threshold values y_{max}:y_{min} or m_{max}:m_{min} shall not be greater than 1,6.	m_{max}:m_{min} =*1:1,32*	P
	When voltage V_E minus 5 % is applied, the battery fault warning shall be given.		P
5.23	**Back-up power source**		-
5.23.1	**Object**		-
	To demonstrate that the back-up power source is correctly monitored.		P
5.23.2	**Test procedure**		-
5.23.2.1	**Low back-up**		P
	The test procedure set out in 5.16 shall be used to simulate the depletion of the back-up power source to the point where a low back-up warning is given.		P

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict
5.23.2.2	**Open circuit**		-
	The back-up power supply shall be disconnected or removed as appropriate and mains power applied to the unit.		P
5.23.2.3	**Short-circuit**		-
	The back-up power supply shall be disconnected and replaced with a short-circuit between the backup terminals and the mains power applied to the unit.		P
5.23.3	**Requirements**		-
	When tested as described in 5.23.2.1, a low back-up signal shall be obtained both with mains power to the unit and without mains power to the unit.		P
	When tested as described in 5.23.2.2, the smoke alarm shall give an audible warning.		P
	When tested as described in 5.23.2.3, the smoke alarm shall give an audible warning.		P
5.24	**Electrical safety – assessment and testing to determine the adequacy of personal protection against hazardous currents passing through the human body (electric shock), excessive temperature and the start and spread of fire**		P
5.24.1	**Marking**		-
	The apparatus shall be marked in accordance with EN 60065, Clause 5.	See appendix A	P
	NOTE The required markings may be on any external part of the apparatus but it is not necessary for the specified markings to be visible after installation.		P
	For class I apparatus, the following information shall be given close to the mains input terminals: **"WARNING - THIS APPARATUS MUST BE EARTHED"**		N
	If live parts are made accessible when a cover is removed or opened, a warning shall be displayed which is visible before the cover is removed or opened.		N
5.24.2	**Heating under normal operating conditions**		-
	The apparatus shall conform to the requirements of EN 60065, Clause 7.		P
5.24.3	**Shock hazard under normal operating conditions**		-
	The apparatus shall conform to the requirements of EN 60065, Clauses 8 and 9 when mounted in any orientation on a vertical surface and when mounted on the underside of a horizontal surface.	See appendix A	P
	NOTE		P

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict
	The requirement of EN 60065, 9.1.6 applies to the pins of an appliance inlet on the apparatus following withdrawal of the connector attached to the mains supply wires.		
5.24.4	**Insulation requirements**		-
	Apparatus intended to be operated from a supply greater than 34 V (peak or d.c.) shall conform to the requirements of EN 60065, Clause 10 disregarding the test specified in 10.1 of that standard.	See Appendix A	P
5.24.5	**Fault conditions**		-
	The apparatus shall conform to the requirements of EN 60065, Clause 11.	See Appendix A	P
5.24.6	**Mechanical strength**		-
	The apparatus shall conform to the requirements of EN 60065, Clause 12 disregarding 12.1.1 of that standard.	See Appendix A	P
5.24.7	**Clearances and creepage distances**		-
	The apparatus shall conform to the requirements of EN 60065, Clause 13.	See Appendix A	P
5.24.8	**Components**		-
	Resistors, capacitors, inductors and transformers, the short-circuiting or disconnecting of which would cause an infringement of the requirements for operation under fault conditions, in respect of overheating, fire or shock hazard, shall conform to the relevant requirements of EN 60065, Clause 14.	See Appendix A	P
	Protective devices, switches, safety interlocks, voltage setting devices and the housing arrangements for batteries shall conform to the relevant requirements of EN 60065, Clause 14.	See Appendix A	P
	The power, voltage and current ratings, as appropriate, of all components shall be suitable for the application in which they are used.		P
	Conformity shall be checked by circuit measurement, analysis of the circuit design, measurements on the components in question and by inspection, as appropriate.		P
5.24.9	**Protection against the start and spread of fire**		-
	The apparatus shall conform to the requirements of EN 60065, Clause 20.		P
5.24.10	**Parts connected to the supply mains**		-
	The apparatus shall comply with the requirements of Clause 13 of EN 60065.	See Appendix A	P

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict
5.24.11	**Wiring connections**		-
	The apparatus shall comply with the requirements of 3.1, 3.2, 3.3 and 3.4 of EN 60950-1:2001.	See Appendix B	P
	In these sub-clauses, reference to 2.9 and 5.1 shall be read as references to 9.3.5 and Clause 7 respectively of EN 60065.		-
5.24.12	**Resistance to the effects of heat and fire**		-
	The apparatus shall comply with the requirements of EN 60950-1:2001, 4.7, 4.7.1, 4.7.2, and 4.7.3	See Appendix B	P
5.24.13	**Definitions**		-
	For definitions of terms used in the clauses of EN 60065 or EN 60950-1:2001 referred to above, reference shall be made to Clause 2 of EN 60065 or 1.2 of EN 60950-1:2001 respectively.	See Appendix B	P

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

Appendix A

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict
5.24.1	**Marking**		-
	The apparatus shall be marked in accordance with EN 60065, Clause 5.		P
5	MARKING		
	Comprehensible and easily discernible		P
	Permanent durability against water and petroleum spirit		P
5.1 a), b)	Identification, maker, model :		P
c)	Class II symbol if applicable		N
d), e)	Rated supply voltage and symbol :	Built-in power source, battery, DC 4,5V 3x1,5V AA	P
f)	Frequency if safety dependant		N
g), h), i)	Rated current or power consumption :	10μA	N
5.2 a)	Earth terminal		N
b)	Hazardous live terminals		N
c)	Supply output terminals (other than mains)		N
5.3	Use of triangle with exclamation mark		P
5.4	Instructions for use		P
5.4.1a)	Mains powered equipment not exposed to dripping or splashing. Warning concerning objects filled with liquid, etc.		P
b)	Hazardous live terminals, instructions for wiring		N
c)	Instructions for replacing lithium battery		N
	Instructions for modem if fitted		N
d)	Class I earth connection warning		N
e)	Instructions for multimedia system connection		N
f)	Special stability warning for fixed installation		N
5.4.2	Disconnect device: plug/coupler or all-pole mains switch location, accessibility and markings		N
	Instructions for permanently connected		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict
	equipment		

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict
5.24.2	**Heating under normal operating conditions** (BS EN 14604)		P
	The apparatus shall conform to the requirements of EN 60065, Clause 7.		P
7	HEATING UNDER NORMAL OPERATING CONDITIONS		
7.1	Temperature rises not exceeding specified values, any single protective device defeated except those of Cl. 7.1 a) and b)	See table 7.1	P
7.1.1	Temperature rise of accessible parts		P
7.1.2	Temperature rise of parts providing electrical insulation		P
7.1.3	Temperature rise of parts acting as a support or as a mechanical barrier		P
7.1.4	Temperature rise of windings		P
7.1.5	Parts not subject to a limit under 7.1.1 to 7.1.4		P
7.2	Softening temperature of insulating material supporting parts conductively connected to the mains carrying a current > 0,2 A at least 150 °C	See table 7.2	P

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict

7.1	TABLE: temperature rise measurements:		P
	Power consumption in the OFF/Stand-by……..:	90μW (10μA)	--
	Position of the functional switch (W) .....:		N

Cond.	Un (V)	Hz	In (A)	Pn (W)	V out	Pout (W)	Operating Condition
1	9V	DC	10μA	90μW	9,2V DC	90μW	Stand-by mode

	Buzzer impedance (Ω) :	8 Ω	—
	Several loudspeaker systems		--
	Marking of loudspeaker terminals		--

Temperature Rise dT of Part	dT (K)			Limit dT (K)
Test Condition No.	No _1_	No ____	No ____	
Surface of Capacitor (C1)	2,0	-	-	85 °C
Enclosure, inside	0,5	-	-	For Cl. 12.1.5
Enclosure, top	1,0	-	-	60
Slight contact switch	0,7	-	-	50
Enclosure, side	0,3	-	-	60
PWB surface	1,4	-	-	85
Winding temperature rise measurements				
Ambient temperature t1 (°C)	25,0°C	-	-	-
Ambient temperature t2 (°C)	25,0°C	-	-	-

Temperature rise dT of winding: $dT = \frac{(R_2 - R_1)}{R_1} \times (234.5 + t1) - (t2 - t1)$	R_1 (Ω)	R_2 (Ω)	dT (K)	Limit dT (K)	Insulation class
Primary winding of main transformer (Condition No. 1)	-	-	-	-	--

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict

Table 7.2	Softening temperature of thermoplastics	P

Temperature T of part	T - normal conditions (°C)	T - fault conditions (°C)	T softening (°C)
Material of slight contact switch	0,5	0,5	> 150

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict
5.24.3	**Shock hazard under normal operating conditions** (BS EN 14604)		-
	The apparatus shall conform to the requirements of EN 60065, Clauses 8 and 9 when mounted in any orientation on a vertical surface and when mounted on the underside of a horizontal surface.		P
8	CONSTRUCTIONAL REQUIREMENTS WITH REGARD TO THE PROTECTION AGAINST ELECTRIC SHOCK		-
8.1	Conductive parts covered by lacquer, paper, untreated textile oxide films and beads etc. considered to be bare		P
8.2	No shock hazard when changing voltage setting device, fuse-links or handling drawers etc.		P
8.3	Insulation of hazardous live parts not provided by hygroscopic material		P
8.4	No risk of electric shock following the removal of a cover which can be removed by hand		P
8.5	Class I equipment		
	Basic insulation between hazardous live parts and earthed accessible parts		N
	Capacitors bridging basic insulation complying with 14.2.1 a)		N
8.6	Class II equipment and Class II constructions within Class I equipment		N
	Reinforced or double insulation between hazardous live parts and accessible parts		N
	Components bridging reinforced or double insulation complying with 14.1 a) or 14.3		N
	Basic and supplementary insulation each being bridged by a capacitor complying with 14.2.1 a)		N
	Reinforced or double insulation being bridged with 2 capacitors in series complying with 14.2.1 a)		N
	Reinforced or double insulation being bridged with a single capacitor complying with 14.2.1 b)		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict
	Basic insulation bridged by components complying with 14.3.4.3		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict
8.7	Basic insulation between parts at 35 V to 71 V (peak) a.c. or 60 V to 120 V d.c. and accessible parts		N
	Reinforced or double insulation between circuits operating at voltages between 35 V and 71 V (peak) a.c. or between 60 V and 120 V d.c. and hazardous live parts at higher voltage		N
	Separation by Class II isolating transformer		N
	Separation by Class I transformer		N
	Separation by earthed conductive part		N
8.8	Double Insulation: the Basic or Supplementary insulation > 0,4 mm (mm) .....:		N
	Reinforced insulation > 0,4 mm (mm) .....:		N
	Thin sheet insulation used inside the enclosure.		-
	Basic or supplementary insulation, at least two layers, each meeting 10.3 dielectric		N
	Basic or supplementary insulation, three layers any two of which meet 10.3 dielectric		N
	Reinforced insulation, two layers each of which meet 10.3 dielectric		N
	Reinforced insulation, three layers any two which meet 10.3 dielectric		N
8.9	Primary Wiring: Adequate insulation between internal hazardous live conductors and accessible parts		N
	Secondary Wiring: Adequate insulation between internal hazardous live parts and conductors connected to accessible parts		N
8.10	Class II Wiring: (1) Primary: Double insulation between conductors connected to the mains and accessible parts. (2) Secondary: Double insulation between conductors connected to accessible parts and the mains		N
8.11	Detaching of wires		
	No undue reduction of creepages or clearance	No risk of any wires	N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict
	distances if wires become detached	becoming detached	
	Vibration test carried out .....:		N
8.12	Adequate cross-sectional area of internal wiring to mains socket-outlets		N
8.13	Adequate fastening of windows, lenses, lamp covers etc. (pull test 20 N for 10 s)		N
8.14	Adequate fastening of covers (pull test 50 N for 10 s)		P
8.15	No risk of damage to the insulation of internal wiring due to hot parts or sharp edges (2N force)		P
8.16	Only special supply equipment can be used		N
8.17	Insulated winding wire without additional interleaved insulation		N
8.18	Endurance test as required by 8.17		N
8.19	Disconnection from the mains		N
8.19.1	Disconnect device		N
	All-pole switch or circuit breaker with >3mm contact separation		N
8.19.2	Mains switch ON indication		N
8.20	Switch not fitted in the mains cord		N
8.21	Bridging components comply with clause 14		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict
9	ELECTRIC SHOCK HAZARD UNDER NORMAL OPERATING CONDITIONS		-
9.1	Testing on the outside		-
9.1.1	For voltages >1000 V ac or >1500 V dc complies with clause 13.3.1 for basic insulation		N
9.1.1.1 a)	Determination of Hazardous Live parts		P
b)	Touch current measured from terminal devices using the network in annex D .....:	See table 9.1	P
c)	Discharge not exceeding 45 µC		P
d)	Energy of discharge not exceeding 350 mJ		P
9.1.1.2	Test with test finger and test probe		P
9.1.2	No hazardous live shafts of knobs, handles or levers		P
9.1.3	Ventilation holes tested by means of 4 mm x 100 mm test pin		P
9.1.4	Terminal devices - within 25mm tested with 1 mm x 20 mm test pin (10 N); test probe D of IEC 61032		P
	Terminal devices tested with 1 mm x 100 mm straight wire (1 N); test probe D of IEC 61032		P
9.1.5	Pre-set controls tested with 2.5 mm x 100 mm test pin (10 N); test probe C of IEC 61032		N
9.1.6	No shock hazard due to stored charge on withdrawal of the mains plug; voltage (V) after 2 s .....:	No such capacitor	P
	If C is not greater than 0,1 µF no test needed		N
9.1.7	Enclosure sufficiently resistant to external force		P
a)	Test probe 11 of IEC 61032 for 10 s (50 N)		P
b)	Test hook of fig. 4 for 10 s (20 N)		P
c)	Conductive enclosure: 30 mm diameter test tool for 5 s (100 or 250 N) .....:		N
9.2	No hazard 2s after removing a cover by hand		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict
5.24.4	**Insulation requirements** (BS EN 14604)		-
	Apparatus intended to be operated from a supply greater than 34 V (peak or d.c.) shall conform to the requirements of EN 60065, Clause 10 disregarding the test specified in 10.1 of that standard.		-
10	INSULATION REQUIREMENTS		-
10.1	Insulation resistance (MΩ) at least 2 MΩ min. after surge test for basic and 4 MΩ min. for reinforced insulation :	Battery to Enclosure body: > 50 MΩ	P
10.2	Humidity treatment 48 h or 120 h :	48 h	P
10.3	Insulation resistance and dielectric strength	See table 10.3	P

10.3	**TABLE: Insulation Resistance Measurements**	**P**

Insulation resistance R between:	R (MΩ)	Required R (MΩ)
Battery terminal and enclosure	> 100	2
Battery terminal and slight contact switch	> 100	2

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict
5.24.5	**Fault conditions** (BS EN 14604)		-
	The apparatus shall conform to the requirements of EN 60065, Clause 11.		-
11	FAULT CONDITIONS		
11.1	No shock hazard under fault condition		P
11.2	Heating under fault condition	See table 11.2	P
	No hazard from softening solder		P
	No flaming more than 10s	No flaming	P
	Soldered terminations not used as protective mechanism		P
11.2.1	Measurement of temperature rises		P
11.2.2	Temperature rise of accessible parts		P
11.2.3	Temperature rise of parts, other than windings, providing electrical insulation		P
	Temperature rise of printed circuit boards (PCB) exceeding the limits of table 3 by max. 100 K for max. 5 min		N
	a) Temperature rise of printed circuit boards (PCB) to 20.1.3, exceeding the limits of table 3 by not more than 100 K for an area not greater than 2 cm²		N
	b) Temperature rise of printed circuit boards (PCB) to 20.1.3 up to 300 K for an area not greater than 2 cm² for a maximum of 5 min		N
	Meets all the special conditions if conductors on printed circuit boards are interrupted		N
	Class I protective earthing maintained		N
11.2.4	Temperature rise of parts acting as a support or mechanical barrier		P
11.2.5	Temperature rise of windings		P
11.2.6	Temperature rise of parts not subject to the limits of 11.2.1 to 11.2.5 Table 3 e) "Other Parts"		P

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict

Table 11.2	**summary of fault condition tests**		P
	Voltage (V) 0,9 or 1,1 times rated voltage .....:	4,5x1,1 V DC	
	Frequency (Hz)……..:	DC	
	Ambient temperature (°C) .....:	20,5 – 23,5	

No	Component	Fault	Temp Rise/ Component	Other results (include description and test duration)
1	Battery	S-C	-	No hazard, until steady conditions established. Test time: 3 h 8 min.
2	Buzzer	s-c	--	No higher temperature rise occurred, no hazard. Un = 9,9 V Test time: 41 min.
3	Buzzer	Overload (load 4Ω)	-	No hazard, until steady conditions established. Un = 9,9 V Test time: 3 h 12 min.
4	C1	s-c	-	No hazard. Un = 9,9 V Test time: 3 h 50 min.
5	D3	s-c	-	No hazard, until steady conditions established. Test time: 3 h 56 min.
6	Q1	s-c		No hazard, until steady conditions established. Test time: 1 h 25 min.

supplementary information			
Electric strength test pri.-sec. 500 V AC /1min after tests was OK.			
	Winding temperature rise measurements		
	Ambient temperature t1 (°C)	25,1	-

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict
	Ambient temperature t2 (°C)	25,3	-

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict
5.24.6	**Mechanical strength** (BS EN 14604)		-
12	MECHANICAL STRENGTH		
12.1.1	Bump test where mass >7 kg		N
12.1.2	Vibration test (portable, metal, musical amps)		N
12.1.3	Impact hammer test		P
	Steel ball test (for non-ventilated solid areas)		P
12.1.4	Drop test for portable apparatus where mass <= 7 kg		N
12.1.5	Thermoplastic enclosures stress relief test		P
12.2	Fixing of knobs, push buttons, keys and levers		P
12.3	Remote controls with hazardous live parts		N
12.4	Drawers (pull test 50 N, 10 s)		P
12.5	Antenna coaxial sockets providing isolation		N
12.6	Telescoping or rod antennas construction		N
12.6.1	Telescoping or rod antennas securement		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict
5.24.7	**Clearances and creepage distances** (BS EN 14604)		-
	The apparatus shall conform to the requirements of EN 60065, Clause 13.		-
13	**CLEARANCE AND CREEPAGE DISTANCES**		
13.1	Clearances in accordance with 13.3	See table 13	P
	Creepage distances in accordance with 13.4	See table 13	P
13.2	Determination of operating voltage	See table 13	P
13.3	Clearances		P
13.3.2	Circuits conductively connected to the mains comply with table 8 and, where applicable, table 9		P
13.3.3	Circuits not conductively connected to the mains comply with table 10		N
13.3.4	Measurement of transient voltages		N
13.4	Creepage distances		P
	Creepage distances greater than table 11 minima		P
13.5	Printed boards		N
13.5.1	Clearances and creepage distances between conductors on printed circuit boards, one of which may be conductively connected to the mains, as in fig. 10		N
13.5.2	Type B coated printed circuit boards complying with IEC 60664-3 (basic insulation only)		N
13.6	Conductive parts along uncemented joints clearances and creepage distances comply with 13.3 and 13.4		N
	Conductive parts along reliably cemented joints comply with 8.8		N
13.7	Enclosed, enveloped or hermetically sealed parts: not conductively connected to the mains: clearances and creepage distances as in table 12		N
13.8	Parts filled with insulating compound, meeting the requirements of 8.8		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict
5.24.8	**Components** (BS EN 14604)		-
	Resistors, capacitors, inductors and transformers, the short-circuiting or disconnecting of which would cause an infringement of the requirements for operation under fault conditions, in respect of overheating, fire or shock hazard, shall conform to the relevant requirements of EN 60065, Clause 14.		P
	Protective devices, switches, safety interlocks, voltage setting devices and the housing arrangements for batteries shall conform to the relevant requirements of EN 60065, Clause 14.		P
13	**TABLES: clearances and creepage distances**		**P**

Rated supply voltage:	Max. 9V	Pollution degree:	2	Material Group:	IIIb

2 N force on internal parts applied:	No reduction
30 N force on outside of conductive enclosure applied:	No conductive enclosure

Location	Operating Voltage		Clearance (mm)		Creepage (mm)	
	V rms	V peak	Min	Actual	Min	Actual
Circuits conductively connected to the mains (use Tables 8, 9 and 11): see note below.						
Primary (ac) to Earth (B)	-	-	-	-	-	-
Primary (+dc) to Earth max (B)	-	-	-	-	-	-
Primary (-dc) to Earth max (B)	-	-	-	-	-	-
Across thermal link in main transformer (B)	-	-	-	-	-	-
Across primary directly connected to the mains (B)	-	-	-	-	-	-
Relay input to output (R)	-	-	-	-	-	-
Primary to Iron core of stand-by transformer (B)	-	-	-	-	-	-
Iron to secondary of stand-by transformer (S)	-	-	-	-	-	-
Primary to secondary of stand-by	-	-	-	-	-	-

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

transformer (R)						
Primary to Iron core of main transformer (R)	-	-	-	-	-	-
Primary to secondary of main transformer (R)	-	-	-	-	-	-
Primary to Secondary on PWB (R)	-	-	-	-	-	-
Hazardous live on PWB to secondary of main transformer (R)	-	-	-	-	-	-
Primary to accessible conductive parts (R)	-	-	-	-	-	-
Hazardous live secondary to non-hazardous live secondary (R)	-	-	-	-	-	-
Hazardous live secondary to unearthed conductive enclosure (R)	-	-	-	-	-	-

Notes:

1. Secondary circuits of Class II apparatus which have connector terminals that could be earthed (e.g. antenna signal input), are subjected to the requirements for circuits conductively connected to the mains in Tables 8 and 9.

2. Floating secondary circuits of Class I apparatus which have connector terminals that could be earthed (e.g. antenna signal input), are subjected to the requirements for circuits conductively connected to the mains in Tables 8 and 9 unless the floating secondary circuit is separated from the primary circuits by an earthed metal screen (e.g. in the power transformer), or the floating secondary circuit is connected to earth via a component such as a capacitor.

3. For insufficient clearances and creepage distances from secondary to secondary circuits and from secondary circuits to earth, see Cl. 4.3.1, 4.3.2 and 11.2.

4. If the minimum creepage distance in Table 11 is less than the minimum required clearance in Tables 8, 9 or 10 as required, then the value for clearance is used as the minimum creepage distance .

"Min" = minimum required.

"Actual = Actual dimensions measured.

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict
14	COMPONENTS		
14.1	Resistors		-
	a) Resistors between hazardous live parts and accessible metal parts		N
	b) Resistors, other than between hazardous live parts and accessible parts		N
	Resistors separately approved .....:		N
14.2	Capacitors and RC units		--
	Capacitors separately approved		N
14.2.1	Y capacitors tested to IEC 60384-14, 2nd edition .....:		N
14.2.2	X capacitors tested to IEC 60384-14, 2nd edition .....:		N
14.2.3	Capacitors operating at mains frequency but not connected to the mains: tests for X2 .....:		N
14.2.5 a)	Capacitors with volume exceeding 1750 mm³, where short-circuit current exceeds 0,2 A: compliance with IEC60384-1, 4.38 category B or better .....:		N
b)	Capacitors with volume exceeding 1750 mm³, mounted closer to a potential ignition source than table 5 permits: compliance with IEC 60 384-1, 4.38 category B or better .....:		N
	Shielded by a barrier per Table 21 .....:		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict
14.3	Inductors and windings		-
	Comply with IEC 61558-1, IEC 61558-2 (as relevant) and clause 20.1.4		N
14.3.1	Transformers and inductors marked with manufacturer's name and type .....:	Not used transformer and inductor	N
	Transformers and inductors separately approved .....:		N
14.3.2	General		P
14.3.3	Constructional requirements (complete appended tables or include manufacturers constructional insulation descriptions)		P
14.3.3.1	Clearances and creepage distances comply with clause 13	See appended table 13	P
14.3.3.2	Transformers meet the constructional requirements		P
14.3.4.1	Class II transformers have adequate separation between hazardous live parts and accessible parts (double or reinforced insulation)	Reinforced insulation used	P
	Coil formers and partition walls = 0,4 mm		N
14.3.4.2	Class I transformers, with basic insulation and protective screening only if all 7 conditions of 14.3.4.2 are met		N
14.3.4.3	Separating transformers with at least basic insulation		N
14.3.5.1	Class II transformers have adequate insulation between hazardous live parts and accessible parts (double or reinforced insulation)	Reinforced insulation used	P
	Coil formers and partition walls = 0,4 mm		N
14.3.5.2	Class I transformers have adequate insulation between hazardous live parts and accessible conductive parts or those conductive parts or protective screens connected to a protective earth terminal		N
	Winding wires connected to protective earth have adequate current-carrying capacity		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict
14.4	High voltage components		-
	High-voltage components and assemblies: U > 4 kV (peak) separately approved		N
	Component meets category V-1 of IEC 60707		N
14.4.1	High voltage transformers and multipliers tested as part of the submission		N
14.4.2	High voltage assemblies and other parts tested as part of the submission		N
14.5	Protective devices		-
	Protective devices used within their ratings		P
	External clearances and creepage distances meet requirement of clause 13 for the voltage across the device when opened	See table 13	P
14.5.1.1	a) Thermal cut-outs separately approved		N
	b) Thermal cut-outs tested as part of the submission		N
14.5.1.2	a) Thermal links separately approved		N
	b) Thermal links tested as part of the submission		N
14.5.1.3	Thermal devices re-settable by soldering		N
14.5.2.1	Fuse-links in the mains circuit according to IEC 60127		N
14.5.2.2	Correct marking of fuse-links adjacent to holder :		N
14.5.2.3	Not possible to connect fuses in parallel .....:		N
14.5.2.4	Not possible to touch hazardous live parts when replacing fuse-links without the use of a tool .....:		N
14.5.3	PTC-S thermistors comply with IEC 60730-1		N
	PTC-S devices (15 W) category V-1 or better		N
14.5.4	Circuit protectors have adequate breaking capacity and their position is correctly marked		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict
14.6	Switches		N
14.6.1 a)	Separate testing to IEC 61058 including: 10 000 operations Normal pollution suitability Resistance to heat and fire level 3 V-0 compliance with annex G, G.1.1 and Peak inrush rating of switch Measured/calculated inrush.....:	Slight Contact Switch: 10 000 cycles	P
14.6.1 b)	Tested in the apparatus:		N
	Switch controlling > 0.2A with open contact voltage > 35 V (peak)/24 V dc complying with 14.6.3, 14.6.4 and V-0 in annex G, G.1.1		N
	Switch controlling > 0.2A with open contact voltage < 35 V (peak)/24 V dc complying with 14.6.3 and V-0 in annex G, G.1.1		N
	Switch controlling = 0.2A with open contact voltage > 35 V (peak)/24 V dc complying with 14.6.4 and V-0 in annex G, G.1.1		N
14.6.2	Switch tested to 14.6.1 b) constructed to IEC 61058-1 subclause 13.1 and has making/breaking action independent of speed of actuation		N
14.6.3	Switch tested to 14.6.1 b) compliant with IEC 61058-1 subclause 16.2.2 d), l) and m) not attaining excessive temperatures in use		N
14.6.4	Switch tested to 14.6.1 b) has adequate dielectric strength		N
14.6.5	Mains switch controlling mains socket outlets additional tests to IEC 60058-1		N
	Socket outlet current marking correct		N
14.7	Safety interlocks		-
	Safety interlocks to 2.8 of IEC 60950		N
14.8	Voltage setting devices		--
	Voltage setting device not likely to be changed accidentally		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict
14.9	Motors		-
14.9.1	Endurance test on motors		N
	Motor start test		N
	Dielectric strength test		N
14.9.2	Not adversely affected by oil or grease etc.		N
14.9.3	Protection against moving parts		N
14.9.4	Motors with phase-shifting capacitors, three-phase motors and series motors meet clause. B.8, B.9 and B.10 of IEC 60950, Annex B		N
14.10	Batteries		P
14.10.1	Batteries mounted with no risk of accumulation of flammable gases		P
14.10.2	No possibility of recharging non-rechargeable batteries		P
14.10.3	Recharging currents and times within manufacturers limits		N
	Lithium batteries discharge and reverse currents within the manufacturers limits		N
14.10.4	Battery mould stress relief		P
14.10.5	Battery drop test		P
14.11	Optocouplers		--
	Optocouplers comply with Cl. 8		N
	Internal and external dimensions to 13.1. or alternatively 13.6 (jointed insulation)		N
14.12	Surge suppression varistors		-
	Comply with IEC 61051-2		N
	Not connected between mains and accessible parts except for earthed parts of permanently connected apparatus		N
	Complies with the current pulse, fire hazard and thermal stress requirements of 14.12		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict
5.24.9	**Protection against the start and spread of fire** (BS EN 14604)		-
	The apparatus shall conform to the requirements of EN 60065, Clause 20.		P
5.24.10	**Parts connected to the supply mains** (BS EN 14604)		-
	The apparatus shall comply with the requirements of Clause 13 of EN 60065.		P
20	RESISTANCE TO FIRE		-
20.1	Electrical components and mechanical parts		--
	a) Exemption for components contained in an enclosure of material V-0 to IEC 60707 with openings not exceeding 1 mm in width		N
	b) Exemption for small components as defined in 20.1		P
20.1.1	Electrical components meet the requirements of Clause 14 or 20.1.4		P
20.1.2	Insulation of internal wiring working at voltages > 4 kV or leaving an internal fire enclosure, not contributing to the spread offire		N
20.1.3	Material of printed circuit boards on which the available power exceeds 15 W at a voltage between 50 V and 400 V (peak) a.c. or d.c. meets V-1 or better to IEC60707, unless used in a fire enclosure	PCB board is of V-0 material	P
	Material of printed circuit boards on which the available power exceeds 15 W at a voltage >400 V (peak) a.c. or d.c. meets V-0 to IEC 60707		N
20.1.4	Components and parts not covered by 20.1.1, 20.1.2 and 20.1.3 (other than fire enclosures) mounted nearer to a potential ignition source than the distances in Table 21 comply with the relevant flammability category in Table 21		P
	Components and parts as above but shielded from a potential ignition source, with the barrier area in accordance with Table 21 and fig. 13		N
	Apparatus with voltages > 4 kV under normal		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict
	conditions, and distances to enclosure exceed those specified by Table 21, HB40 min enclosure		

EN 60065			
Clause	Requirement + Test	Result - Remark	Verdict
20.2	Fire enclosure		--
20.2.1	Potential ignition sources with open circuit voltage > 4 kV (peak) a.c. or d.c. contained in a fire enclosure to V-1		N
20.2.2	Internal fire enclosures with openings not exceeding 1 mm in width and with openings for wires completely filled		N
20.2.3	Requirements of 20.2.1 and 20.2.2 met by an internal fire enclosure		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

Appendix B

EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict
5.24.11	**Wiring connections** (BS EN 14604)		P
	The apparatus shall comply with the requirements of 3.1, 3.2, 3.3 and 3.4 of EN 60950-1:2001.		P
3	WIRING, CONNECTIONS AND SUPPLY		P
3.1	General		P
3.1.1	Current rating and over current protection		P
3.1.2	Protection against mechanical damage	Internal wiring is adequately fixed and can not touch parts that could cause damage to the insulation.	P
3.1.3	Securing of internal wiring		P
3.1.4	Insulation of conductors		N
3.1.5	Beads and ceramic insulators		N
3.1.6	Screws for electrical contact pressure		N
3.1.7	Insulating materials in electrical connections		N
3.1.8	Self-tapping and spaced thread screws	Not used such screw	N
3.1.9	Termination of conductors		N
	10 N pull test		N
3.1.10	Sleeving on wiring		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict
3.2	Connection to an a.c. mains supply or a d.c. mains supply–		P
3.2.1	Means of connection ..... :	Built-in power source	P
3.2.1.1	Connection to an a.c. mains supply		N
3.2.1.2	Connection to a d.c. mains supply		P
3.2.2	Multiple supply connections		N
3.2.3	Permanently connected equipment		P
	Number of conductors, diameter (mm) of cable and conduits ..... :		-
3.2.4	Appliance inlets		N
3.2.5	Power supply cords		N
3.2.5.1	AC power supply cords		N
	Type ..... :		—
	Rated current (A), cross-sectional area (mm^2), AWG .....:		—
3.2.5.2	DC power supply cords		N
3.2.6	Cord anchorages and strain relief		N
	Mass of equipment (kg), pull (N) .....:		—
	Longitudinal displacement (mm) .....:		—
3.2.7	Protection against mechanical damage		P
3.2.8	Cord guards		N
	D (mm); test mass (g) .....:		—
	Radius of curvature of cord (mm) .....:		—
3.2.9	Supply wiring space		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict
3.3	Wiring terminals for connection of external conductors		N
3.3.1	Wiring terminals		N
3.3.2	Connection of non-detachable power supply cords		N
3.3.3	Screw terminals		N
3.3.4	Conductor sizes to be connected		N
	Rated current (A), cord/cable type, cross-sectional area (mm^2) ..... :		-
3.3.5	Wiring terminal sizes		N
	Rated current (A), type and nominal thread diameter (mm) ..... :		-
3.3.6	Wiring terminals design		N
3.3.7	Grouping of wiring terminals		N
3.3.8	Stranded wire		N
3.4	Disconnection from the mains supply		P
3.4.1	General requirement		P
3.4.2	Disconnect devices		P
3.4.3	Permanently connected equipment		N
3.4.4	Parts which remain energized		N
3.4.5	Switches in flexible cords		P
3.4.6	Single-phase equipment and d.c. equipment		P
3.4.7	Three-phase equipment		N
3.4.8	Switches as disconnect devices		N
3.4.9	Plugs as disconnect devices		P
3.4.10	Interconnected equipment		N
3.4.11	Multiple power sources		N

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict
5.24.12	**Resistance to the effects of heat and fire** (BS EN 14604)		P
	The apparatus shall comply with the requirements of EN 60950-1:2001, 4.7, 4.7.1, 4.7.2, and 4.7.3		P
4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame		P
	Method 1, selection and application of components wiring and materials	(see table 4.7)	P
	Method 2, application of all of simulated fault condition tests		N
4.7.2	Conditions for a fire enclosure		P
4.7.2.1	Parts requiring a fire enclosure		P
4.7.2.2	Parts not requiring a fire enclosure		N
4.7.3	Materials		P
4.7.3.1	General		P
4.7.3.2	Materials for fire enclosures		P
4.7.3.3	Materials for components and other parts outside fire enclosures		N
4.7.3.4	Materials for components and other parts inside fire enclosures		P
4.7.3.5	Materials for air filter assemblies		N
4.7.3.6	Materials used in high-voltage components		N
Table 4.7	resistance to fire		P

Part	Manufacturer of material	Type of material	Thickness (mm)	Fammability class
PWB	Eversun Electronic Co., Ltd.	YY-CK11 or YY-CZ11	1,6	V-0
Enclosure	Chi Mei Corporation	PA-765A (+)	2,2	V-1

BS EN 14604			
Clause	Requirement + Test	Result - Remark	Verdict

List of Critical Components and Materials	P

Object/Part No.	Manufacturer /Trademark	Type/Model	Technical Data	Standard	Mark(s) of Conformity
Heat-shrinkable tube	Shenzhen Woer Heat-Shrinkable Material Co., Ltd.	RSFR-x	600 V, 125°C	--	UL (E203950)
PWB	Eversun Electronic Co., Ltd.	YY-CK11, YY-CZ11	1,6 UL94 V-0	Test with appliance	UL
Enclosure	Chi Mei Corporation	PA-765A (+)	2,2 UL94 V-1	Test with appliance	UL

Annex I: Photo Documentation

Type of equipment, model: Smoke and Carbon Monoxide Detector, JKD-512COM, JKD-516COM, JKD-518COM

Details of: Smoke and Carbon Monoxide Detector

View:

[X] general

[ ] front

[ ] rear

[ ] right

[ ] left

[ ] top

[ ] bottom

Details of: Smoke and Carbon Monoxide Detector

View:

[X] general

[ ] front

[ ] rear

[ ] right

[ ] left

[ ] top

[ ] bottom

Details of: Smoke and Carbon Monoxide Detector

View:

[X] general

[ ] front

[ ] rear

[ ] right

[ ] left

[ ] top

[ ] bottom

- End of Test Report-