

IEC 62368-1, 1 Ed. (2010-01)
TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING

R = Required to be at Lab
S = May be subcontracted
W = May be witnessed at MTL

Clause 62368-1 1Ed.	Measurement/testing	Testing / measuring equipment / material needed		Subcontracting
5.2.2.2	Steady- state voltage and current limits	Amp- and voltmeter suitable for the current and waveform, frequency meter Measuring instruments in according IEC 60990: 1999 Figure 4 and 5		RB
5.2.2.4	Single pulse limits	Oscilloscope		RB
5.3.6.	Accessibility to electrical energy sources and safeguards	Blunt probe of Figure V.3		RB
5.4.1.11	Thermoplastic parts on which conductive metallic parts are directly mounted	Vicat test B 50 of ISO 306		S
		Ball pressure test apparatus according to IEC 60695-10-2 Oven at least 125°C		RB
5.4.1.5, 9.2.5	Maximum operating temperatures for insulating materials	Voltage supply	Single phase voltage supply systems/variability/adequacy	RB
			Three phase voltage supply systems	S
		Temperature (rise)	Temperature recorder (multi-channel)	RB
			Thermocouples	RB
			Winding resistance (normally > 1,0 Ω 2-wire, 4-wire <1,0 Ω).	RB
		Voltage	Voltmeters (ac/dc)	RB
			High voltage meter (probe)	RB
		Current	Currents (ac/dc)	RB
Loading	Loads (resistive)	RB		
5.4.2, 5.4.3, 5.4.4	Clearances, creepage distance, solid insulation	Oscilloscope		RB
		Dial gauge or caliper		RB
		Micrometer		RB
		Pins etc. With different diameters		RB
		Microscope		RB
		Impulse test generator circuit 1 of Table D.1.		RT

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		Impulse test generator circuit 2 of Table D.1. impulse test generator circuit 3 of Table D.1	RB RC
		Test equipment for tracking index per IEC 60112	S
		Mandrel (figure 32 to 35), metal foil, equipment suitable for electrical strength test, oads	S
5.4.5.1	Antenna terminal insulation	Insulation resistance meter (500V > 4 MΩ), Impulse test generator circuit 1 of Table D.1	RC
5.4.7	Thermal cycling test procedure	Full draught oven (± 2°C) Cooling facility (0°±2 C)	S
5.4.10	Humidity conditioning	Chamber RH 93% ± 3%, 20...30 ° C	RB
		Chamber RH 93% ± 3%, 40°C ± 2° C	RB
5.4.11	Electrical strength test	Test Instrument/equipment according to Figure 36 for electric strength	RB
5.4.12	Protection against transient voltages from external circuits	Blunt probe figure V.3	RB
5.4.13	Separation between external circuits and earth	Non-inductive Resistor 5000Ω, Ampere meter	RB
5.5.2.3	Capacitor discharge	Measuring instrument with input impedance 100MΩ or more in parallel with an input capacitance of 25pF or less	RB
5.5.5	Components and parts that may bridge insulation	Force of 10 N ± 1 N	RB
5.6.6.4	Resistance of protective conductors and their terminations	High current source with a voltage not exceeding 12 V,	RB
	Determination of the overcurrent protective device and circuit (Annex R)	Source with at least 1500A short circuit	S
5.7	Prospective touch voltage, touch current and proactive conductor current	Networks in according IEC 60990:1999 figures 4 and 5, Non-inductive Resistor 5000Ω ± 10%	RB
6.2.2	Power source circuit classification	Watt meter, variable resistor load, stop watch	RB

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6.4.8.2.3	Top openings and top openings properties	Cheesecloth bleached cotton cloth 40g/m ²		RB
8.5.4.2	Equipment having an electromechanical device for destruction of media	Test probe (jointed) of Annex V (figure V.1 and V.2) and wedge probe V.4 Force 45N and 90 N with wedge probe		RB S
8.5.5.2.1	Mechanical enclosure requirements for rotating solid media	Scale, cylindrical probe / feeler gauge Vernier calliper		RB
8.5.5.2.2	High pressure lamps	Dark sticky mat, , magnified glass with a resolution of 0,1 mm		RB
8.6.2	Static stability for floor standing equipment	Inclined plane 15° (Inclined plane 10°)		RB
		Force 250N/ Test tool 800Nwith a flat surface 12,5cm by 20cm		RB
8.6.3.1	Glass slide test	Glass plate, 10°		RB
8.6.3.2	Horizontal force test	Inclined plane 15°, force 100N		RB
8.7	Equipment mounted to a wall or ceiling	Several weights, timer		RB
8.8	Handle strength test method	75mm width, several weights, scale, timer		RB
8.9	Wheels or casters attachment requirement	Force 20N, stop watch		RB
8.10	Carts, stands and similar carriers	Force up to 440 N with a circular plan surface \varnothing 30mm, , stop watch,		RB
8.11	Mounting means for rack mounted equipment	Several weights, timer		RB
8.12	Telescoping or rod antennas (Annex 10)	test tool for applying torque up to 0,6Nm, test tool for applying force 20N, stop watch		RV
10	Radiations	Laser (including laser diodes)	Several special equipment for laser classification(IEC 60825-1)	S
		Light emitting diodes (LEDs)	Several special equipment for LED classification(IEC 62471:2006)	S
		X-ray	Radiation monitor, ionizing chamber type with an effective area of 1 000 mm ²	S

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		Effect of UV radiation on materials (Annex C)	Test equipment according to ISO 178, 179, 180, 527 and 8256 and according ISO 4892 series.	S
		Human exposure to UV radiation (Annex C)	Measuring equipment according to IEC 62471	S
Annex B.2.5	Input test	Amp-meter suitable for the current and waveform, power meter, voltmeter,		RB
		Variable loads		RB
		Signal generator in acc. IEC 60107-1:1997		RV
Annex B.3.2	Covering of ventilation openings	piece of card with 200 g/m ² density		RB
Annex Annex E	Test conditions for equipment contain audit amplifiers	Testing box		RA
		Signal generator (sinus) 1kHz or alternative Band-pass filter for wide-band noise measurement, pink noise signal generator		RA
Annex F.3.9.2	Durability	water/piece of cloth/ timer		RB
Annex F.3.9.3	Durability	Petroleum spirit (85% n-hexane), (CAS# 110-54-3)		RB
Annex G.7.3.3; G.8.5.3; G.8.6.3	Alternative test method	Cheesecloth (bleached cotton cloth 40g/m ²) Wrapping Tissue (12g/ m ² – 30g/m ²)		RB
Annex G.9	Mains supply cord	Test equipment according IEC 60227		S
		Appropriate weights		RB
		Torque meter or equivalent		RB
Annex G.13	IC current limiters	resistor: 100 Ω capacitor: 425 μF inductance: 352 mH; 11 Ω dc resistance Oven with a range of -30°C up to 70°C		S
Annex G.14	Test for resistor serving as safeguard	Impulse test generator circuit 1 of Table D.1. Impulse test generator circuit 2 of Table D.1. impulse test generator circuit 3 of Table D.1 Test according to IEC 60068-2-78		RT RB RC S
Annex G.18.6.2	Thermal condition	Full draught oven (± 2°C)		S
Annex G.18.6.4	Abrasion resistance test	Scratch test device with steel pin		S
Annex G.21	Liquid filled components			
	Hydrostatic pressure	Hydrostatic pressure test device		S

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	Tubing and fittings compatibility test	Tensile strength test device in acc to ISO 527 series	S
	Vibration test	Vibration generator (0,35mm/10Hz-55Hz-10Hz) IEC 60068-2-6	S
Annex Annex J	Insulated winding wires for use without interleaved insulation	Test equipment according to IEC 60851-3,IEC 60851-5 and IEC 60851-6	S
Annex M.6.1.2	Battery – Test to simulate internal faults nail piercing test	Wooden board thickness 10mm or more, nail diameter 3mm	S
Annex M.6.2	Leakage current	Insulation resistance meter	S
Annex P.2	Safeguards against entry of solid foreign objects	Suitable tool (or tools) to simulate a straight metal object, 1mm in diameter, length up to 13 mm	RB
Annex M.8	Protection against internal ignition from external spark sources – Spark Test	Equipment according to IEC 60896-21:2005 Sub cl. 6.4	S
Annex Annex S	Tests for resistance to heat and fire	Needle flame test apparatus acc. to IEC 60695-11-5:2004	RB
		Distillate fuel oil as described in Annex S.3.2	S
		500W flame test apparatus in acc. to IEC 60695-11-20:1999	RB
		Cheesecloth (bleached cotton cloth 40g/m ²), Wrapping Tissue (12g/ m ² – 30g/m ²)	RB
Annex Annex T.2 - T.4	Steady force test	10N ± 1N Test finger (figure V1 or V2 unjointed , 30N± 3N) Test tool 100N± 10N with a circular plan surface Ø 30mm Scale up 18 kg, Stop watch	RB
Annex T.5	Steady force test, 250 N	Test tool 250N± 10N with a circular plan surface Ø 30mm.	RB
Annex T.6	Enclosure impact test	Ø 50mm/500g± 25g steel ball	RB
Annex T.7	Drop test	Hard wood 13mm on 18mm ± 2mm plywood, two layers. ruler up to 1000 mm ± 10mm	RB
AnnexT.8	Stress relief test	Measuring equipment according to IEC 60695-10-3 or Oven 70K over normal temp.	RB
Annex T.9	Glass breakage	steel ball 50mm, approx 500g., Fragmentation test Centre punch and a square of 50 mm side	RB
Annex U	Mechanical strength of CRTs and protection against the effects of implosion	Test equipment acc.IEC -61965 Scale, diamond stylus, cooling liquid, timer	S

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Annex V.1.6	Test method 5 – Terminals intended to be used by an ordinary person	Force 1 N ± 0,1N Terminal probe IEC 61032:1997 figure 4	RB

Note: The presence of equipment alone does not indicate a satisfactory situation. Assessors must evaluate the equipment design, calibration, uncertainty and documentation to ensure compliance with the directions of the standard. The requirements of ISO/IEC 17025 regarding validation are applicable, as the tests of this standard are not standardised tests.

IEC 62368-1 equipment has been sub-grouped into:

- 'RA' = 'Required for audio'; in addition to 'RB', required for testing apparatus with audio amplifiers (audio power >0,5 W)
- 'RB' = 'Required Basic'; test and measurement equipment required for all equipment
- 'RC' = 'Required for antenna'; in addition to 'RB', required for testing equipment with connection(s) to a cable distribution system
- 'RT' = 'Required for telecom'; in addition to 'RB', required for testing apparatus with connection(s) to a telecommunication network.
- 'RV' = Required for CRT / Plasma/LCD in addition to 'RB' required for testing CRT Cathode ray Tubes/ picture tubes or plasma/LCD