



IEC 60950-1, 2nd ED. (2005-12) including A1 (2009-12) TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING

S=May be subcontracted

- 'RB' = 'Required Basic'; test and measurement equipment required for all equipment.
- 'RT' = 'Required for telecom'; in addition to 'RB', required for testing apparatus with connection(s) to a telecommunication network.
- 'RC' = 'Required for antenna'; in addition to 'RB', required for testing equipment with connection(s) to a cable distribution system

Clause	Measurement/testing	Testing / measuring equipment / material needed	Subcontracting
1.2.13.15	Cheesecloth (for Annexes A.3 and B.6 & B.7)	Bleached cotton cloth 40g/m ²	RB
1.2.13.16	Wrapping Tissue (for 4.7.3.6 and Annexes B.6 & B.7)	12g/ m ² – 30g/m ²	RB
1.6.2	Input current	Amp-meter suitable for the current and waveform	RB
1.7.11	Durability	Petroleum spirit (aliphatic solvent hexane or reagent grade hexane)/water/piece of cloth	RB
2.1.1.1	Access to energized parts	Test finger (joint /rigid 30N, fig. 2A)	SMT-PB
		Test pin (fig. 2B/ Ø4mm/Ø3mm/15 mm long)	SMT-1213
		Test probe (Fig. 2C, Ø12mm/80mm)	SMT-TD15
2.1.1.5	Energy Hazard	Variable resistive load	RB
2.1.1.7	Plug discharge	Measuring instrument with input impedance 100MΩ±5 MΩ in parallel with an input capacitance of 25pF or less.	RB
2.1.1.9 (and 4.5.1)	Audio Amplifiers	Suitable signal generator and audio power measuring equipment per 4.2.4 and 9.1.1 of IEC 60065	RB
2.3.1	Limits of TNV circuits	Non-inductive Resistor 5000Ω± 2%,	RT
2.3.4	Connection of TNV circuits to other circuits		
2.3.5	Test for operating voltages generated externally	Test generator (120V± 2V a.c., 50 or 60 Hz, 1200Ω± 2%)	RT
2.4.2	Limited current circuits, limit values	Resistor 2 000 Ω± 10%, Capacitance measuring device	RB
2.6.3.4	Resistance of earthing conductors	High current source with a voltage not exceeding 12 V	RB
2.9.2	Humidity conditioning	Chamber ((93± 3)%, 20...30 ° C)	GDJS-015B
2.10	Creepage distance/clearance/distance through	Oscilloscope	CK-1



	insulation (determination of requirements; working voltage measurements)		
	Creepage distance/clearance/distance through insulation (measurements)	Dial gauge	RB
		Micrometer	RB
		Pins etc. With different diameters	RB
		Microscope	RB
2.10.3.9	Measurement of transient levels	Test-generator; reference 2 of table N.1	S
2.10.4	Creepage distances	Test equipment for tracking index per IEC 60112	CK-1
2.10.9 & 2.10.10 & 2.10.11 (and 2.10.8.2)	Thermal cycling and thermal ageing	Full draught oven ($\pm 2^{\circ}\text{C}$) Cooling facility (0°C)	GDJS-015B
2.10.8.4	Abrasion resistance test	Scratch test device with steel pin	S
2.10.7	Enclosed and sealed parts	See 2.10.9 & 2.10.10	S
3.1.5, 3.1.9 and 4.2.2	10 N steady force test	Suitable tool for applying steady force of 10 N \pm 1N	SMT-02T10
3.2.5.1	AC Power Supply Cords	Test equipment according IEC 60227	S
3.2.6	Cord anchorage and strain relief	Appropriate weights	RB
3.2.8	Cord guards	See 3.2.6	RB
4.1.	Stability	Inclined plane 10°	RB
		Force 250N/ Test tool 800N with a flat surface 12,5cm by 20cm	RB
4.2.3	Steady force test 30 N	Test finger (rigid $30\text{N} \pm 3\text{N}$, fig. 2A)	SMT-PB
4.2.4	Steady state force, 250 N	Test tool $250\text{N} \pm 10\text{N}$ with a circular plan surface $\varnothing 30\text{mm}$.	SMT-368T5
4.2.5	Impact test	$\varnothing 50\text{mm}/500\text{g} \pm 25\text{g}$ steel ball	SMT-B50H
4.2.6	Drop test	Hard wood 13mm on $18\text{mm} \pm 2\text{mm}$ plywood, two layers.	DT-60KG
4.2.7	Stress relief	Measuring equipment according tp IEC 60695-10-3 or Oven 70K over normal temp.	RB
4.2.8	Cathode ray tube	Test equipment acc. IEC 60065	S
4.2.10	Wall or ceiling mounted equipment	Several weights	RB
4.2.11	Rotating solid media	Scale, cylindrical probe / feeler gauge Vernier calliper	RB
4.3.2	Handles and manual controls	Force 15N/20N/30N/50N	RB



4.3.6	Direct plug-in equipment	Test equipment (see Fig. 11 of IEC 60065)	RB
4.3.12	Flammable liquids	Measuring equipment for concentration of flammable vapours	S
4.3.13.2	Ionizing radiation	Ionization meter (Annex H)	S
4.3.13.3	Effect of UV radiation on materials	Test equipment according to ISO 178, 179, 180, 527 and 8256 and according ISO 4892 series.	UV-263LS
4.3.13.4	Human exposure to UV radiation	Measuring equipment according to IEC 60825-9	S
4.3.13.5.1	Laser (including laser diodes)	Several special equipment for laser classification(IEC 60825-1)	S
4.3.13.5.2	Light emitting diodes (LEDs)	Several special equipment for LED classification(IEC 62471)	S
4.4	Protection against hazardous moving parts	Test finger (joint /rigid 30N, fig. 2A)	RB
4.5	Thermal requirements		RB
	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
4.5.5	Resistance to abnormal heat	Ball pressure test apparatus according to IEC 60695-10-2 Oven at least 125°C	ZBP-T GW-500
4.6.2	Bottoms of fire enclosure	Distillate fuel oil as described in Annex A.3.2	S
4.6.4.2	Evaluation of larger openings	Suitable tool (or tools) to simulate a straight metal object, 1mm in diameter, length up to 13 mm	RB
4.6.5	Adhesives for constructional purposes	Oven up to 100 ° C	GW-500
4.7	Resistance to fire(Table 4E)	Test of Annex A or test of 14.4 of IEC 60065 or needle flame test according to IEC 60695-2-2 Glow Wire Test of IEC 60695-2-2 Hot wire test of IEC 60695-2-20	RSY-LT ZRS-3H ZY-3
5.1	Touch current and protective conductor current	Measuring instruments of Annex D	RB
5.2	Electric strength	Test equipment with the relevant voltage and tripping current.	RB
6.2.1	Separation requirements	Test probe (Fig. 2C, 12mm/80mm)	SMT-TD15
6.2.2.1	Impulse Test	Impulse test generator according to Annex N	SUG-CCITT-A



6.2.2.3		insulation resistance (500 V dc > 2 M Ω)	WB2681A
7.4.2	Voltage surge test	Test generator reference 3 of table N.1	SUG-CCITT-A
7.4.3	Impulse test	Test generator reference 1 of table N.1	
Annex AA	Mandrel test	Test equipment as described in IEC 61 558	S
Annex CC		resistor: 100 $\Omega \pm 5 \Omega$; capacitor: 425 $\mu\text{F} \pm 10 \mu\text{F}$; 425 $\mu\text{F} \pm 1 \mu\text{F}$ inductance: 350 mH $\pm 10 \text{ mH}$; 10 $\Omega \pm 2 \Omega$ dc resistance Oven with a range of -30°C $\pm 2^\circ\text{C}$ up to 70°C $\pm 2^\circ\text{C}$	S
Annex DD	Requirements for the mounting means of rack-mounted equipment	Stop watch, weights	RB
Annex EE	Household and home/office document/media shredders	Wedge probe (Fig. EE.1 and EE.2)	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 60950 equipment have been sub-grouped into:

- 1) Equipment with connection(s) to a telecommunication network (called RT)
- 2) Equipment with connection(s) to a cable distribution system (called RC)
- 3) Equipment with CRT Cathode ray Tubes
- 4) Other apparatus with none of the features mentioned under 1) to 3) including Plasma and LCD products. Will at least need RB