



TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING
IEC 60335-1, 5 Edition (2010) – A1/2013 – A2/2016
Household and similar electrical appliances – Safety – Part 1: General requirements
PROVISIONAL

- “R” Required
- “S” May be subcontracted, see OD 2012
- “SF” Specialized Facility, see IECEE 02-2
- “W” Witness testing in the categories “MED” and “MEAS”
- “3PPS” Three Phase Power Supply required

Clause	Measurement/testing	Testing / measuring equipment / material needed	Subcontracting
2	<i>Normative References</i>	<i>Access to copies of listed standards</i>	R
4	<i>General requirement</i>	<i>None</i>	
5	<i>General conditions for the tests</i>	<i>None</i>	
6	<i>Classification</i>	<i>None</i>	
7	<i>Marking and instructions</i>	<i>Petroleum spirit</i>	R
8	<i>Protection against access to live parts</i>	<i>Test probe B, 13 and 41 of IEC 61032, voltmeter, mill-ammeter, oscilloscope, force gauges, 2000 ohm non-inductive resistor, Coulometer, energymeter</i>	R S
9	<i>Starting of motor-operated appliances</i>	<i>None</i>	
10	<i>Power input and current</i>	<i>Chronometer, Voltmeter, ammeter, wattmeter</i>	R
11	<i>Heating</i>	<i>Temperature controlled room, Temperature Recorder, Fine wire thermocouples, Test corners, Winding resistance measurement system, Probe for measurement of surface temperature</i>	R R
12	<i>Void</i>		

Clause	Measurement/testing	Testing / measuring equipment / material needed	Subcontracting
13	Leakage current and electric strength at operating temperature	Metal foil, Leakage current meter, Isolation transformer, HV test supply, Network (Fig.4 of IEC60990)	R
14	Transient overvoltages	Impulse voltage test generator and monitor	S
15	Moisture resistance	IP test equipment, Measurement beaker, Spray nozzle (for testing appliances that cannot be placed under the oscillating tube specified in IEC 60529) as appropriate according to the requirement of Part 2s(Only when the second numeral more than "0" is given) NaCl, Rinsing agent Humidity cabinet capable of (93 ± 3)%RH at selected temperature with HV test facilities	R R R
16	Leakage current and electric strength	Metal foil, Low impedance ammeter, HV test supply	R
17	Overload protection of transformers and associated circuits	Included above	
19	Abnormal operation	Electrostatic discharge test apparatus (IEC 61000-4-2), Radiated field test apparatus (IEC 61000-4-3), Fast transient burst test apparatus (IEC 61000-4-4), Voltage surge test apparatus (IEC 61000-4-5), Injected current test apparatus (IEC 61000-4-6), Voltage dip and interruption test apparatus (IEC 61000-4-11), Mains signal test apparatus (IEC 61000-4-13)	S
20	Stability and mechanical hazards	Inclined plane, masses, force gauges, test probe similar to test probe B of IEC 61032 with circular stop face 50 mm Ø	R
21	Mechanical strength	Spring hammer, Hardened steel pin, Force gauges	R
22	Construction	Test rig for torque on pin supported appliance, Heating cabinet (70°C ±2°C), Test probe 11 of IEC 61032, Test fingernail (Figure 7), Force gauge, Oscilloscope and test probe according to DSH 716 Pressure test apparatus Automatic cord reel test apparatus Oxygen bomb with pressure apparatus Methylated spirits Small parts cylinder in Figure 13	R R S S S R

Clause	Measurement/testing	Testing / measuring equipment / material needed	Subcontracting
23	Internal wiring	Flexing test apparatus	R
24	Components	Laboratory may or may not have facilities for testing to component standards. Certification by specialist laboratories is accepted for compliance	S
25	Supply connection and external flexible cords	Flexing test apparatus, Cord anchorage force & torque tester	R
26	Terminals for external conductors	Torque screwdriver	R
27	Provision for earthing	Earth continuity tester, access to ISO2178 and ISO1463 testing	R
28	Screws and connections	Torque gauge	R
29	Clearances, creepage distances and solid insulation	Mechanical measurement tools, Rod or ball gauges, Proof tracking test apparatus	R
30	Resistance to heat and fire	Ball Pressure test apparatus, Glow wire & Needle flame test apparatus, Apparatus for low power circuit determination. Horizontal and vertical burning test apparatus ISO 9772 test apparatus	R S S
31	Resistance to rusting	Part 2 requirements	
32	Radiation, toxicity and similar hazards	Part 2 requirements	
Annex A	Routine tests	None	
Annex B	Appliances powered by rechargeable batteries	Free fall test apparatus (IEC 60068-2-31, Procedure 2)	S
Annex C	Ageing test on motors	Nothing special	
Annex D	Thermal motor protectors	Nothing special	
Annex E	Needle flame test	Needle flame test apparatus (IEC 60695-11-5)	R
Annex F	Capacitors	Impulse voltage test apparatus, Endurance test apparatus (IEC 60384-14)	S
Annex G	Safety isolating transformers	As required by part 2's	
Annex H	Switches	Endurance test apparatus (IEC 61058-1)	S



Clause	Measurement/testing	Testing / measuring equipment / material needed	Subcontracting
<i>Annex I</i>	<i>Motors having basic insulation that is inadequate for the rated voltage of the appliance</i>	<i>Nothing special</i>	
<i>Annex J</i>	<i>Coated printed circuit boards</i>	<i>Coated printed circuit boards test apparatus (IEC 60664-3)</i>	<i>S</i>
<i>Annex K</i>	<i>Overvoltage categories</i>	<i>None</i>	
<i>Annex L</i>	<i>Guidance for the measurement of clearances and creepage distances</i>	<i>None</i>	
<i>Annex M</i>	<i>Pollution degree</i>	<i>None</i>	
<i>Annex N</i>	<i>Proof tracking test</i>	<i>Proof tracking test apparatus (IEC 60112)</i>	<i>R</i>
<i>Annex O</i>	<i>Selection and sequence of the tests of Clause 30</i>	<i>None</i>	
<i>Annex P</i>	<i>Guidance for the application of this standard to appliances used in warm damp equable climates</i>	<i>None</i>	
<i>Annex Q</i>	<i>Sequence of tests for the evaluation of electronic circuits</i>	<i>None</i>	
<i>Annex R</i>	<i>Software evaluation</i>	<i>Capability for Software evaluation (IEC 60730-1)</i>	<i>S and see Note 1a and 1b</i>
<i>Annex S</i>	<i>Battery-operated appliances powered by batteries that are non-rechargeable or not recharged in the appliance</i>	<i>Power supply</i>	<i>R</i>
<i>Annex T</i>	<i>UV-C radiation effect on non-metallic materials</i>	<i>Testing apparatus related to UV-C radiation</i>	<i>S</i>

Note 1a: Capability of software evaluation according Annex R may either exist at the laboratory or be provided by the manufacturer, in accordance with OD-2045, Guideline Document & Instruction for testing purposes on how to implement the Annex R of IEC 60335-1 and Annex H of IEC 60730-1

Note 1b: Although no specific test equipment for 60335-1 is required, the relevant information according to the Annex R of IEC60335-1 shall be supplied by the manufacturer.