Laboratory Name: Astro Cables SAL
Industrial Zone- Bekaa – Lebanon

Accreditation Standard ISO/IEC 17025:2017 **Accreditation Number:** TL644-25 Annex:1/3

Discipline/ Group	Test / Parameter	Standard	Equipment Used	Range / Conditions	Remarks
Electrical	Conductor DC Resistance	IEC 60228	QJ36 Bridge + LT-62112 Fixture	0.1 mΩ·m – 50 Ω·km @20°C	Copper/Aluminum conductors
Electrical	Insulation Resistance	IEC 60227-1 / IEC 60245-1	LT-42024 Water Bath + LT-62218 IR Tester	Up to 10^{12} Ω	Cable core at ref. temperature
Dimensional	Insulation / Sheath Thickness, Outer Diameter	IEC 60811-201	LT-31108-B Projector	0.1–10 mm / 3–80 mm	Thickness and diameter measurement
Mechanical	Tensile Strength & Elongation (pre-age)	IEC 60811-501	LT-21003A / LT-21006 Tensile Testers + LT-22060 Cutter	Load up to 20 kN	PVC & XLPE materials
Thermal	Aging & Tensile after Aging	IEC 60811-401 / -501	LT-42167 Aging Oven + Tensile Tester	100–160°C / 168h	Comparison before/ after ageing
Thermal	Hot-Set Test (XLPE)	IEC 60811-507	LT-42043 Hot Set Device + LT-42167 Oven	200°C / 15 min	Cross-linked materials
Thermal	Pressure Test at High Temperature (PVC)	IEC 60811-508	LT-42149 / 42149B Pressure Device + Oven	100–150°C	Thermoplastic materials
Thermal Shock	Resistance to Cracking (Thermal Shock)	IEC 60811-509	LT-22148 Device + LT-42167 Oven	150–200°C	Anti-cracking / winding test
Fire	Vertical Flame Propagation	IEC 60332-1-2	LT-52029 Vertical Flame Chamber	1 kW flame / ≤425 mm burn length	Cable fire propagation
Fire	Smoke Density (3 m cube)	IEC 61034-2	LT-52114 Smoke Density Tester	≥60% light transmittance	Low smoke emission
Chemical	Halogen Acid Gas (pH, Conductivity)	IEC 60754-2	LT-52161 Halogen Tester	pH > 4.3, Conductivity < 10 µS/mm	LSZH material test
Chemical	Fluorine Content	IEC 60754-2	LT-52160 Fluorine Analyzer	0–5% F	Halogen content determination
Dimensional	Overall Diameter Measurement	IEC 60811-201 / IEC 60227-2	LT-31108-B Projector	3–80 mm	Total cable outer diameter
Dimensional	Eccentricity / Concentricity	IEC 60811-201	LT-31108-B Projector	0–20% deviation	Derived from thickness profiles
Dimensional	Ovality	IEC 60811-201	LT-31108-B Projector	≤5% variation	Outer diameter ovality
Dimensional	Thickness of Bedding / Inner Sheath	IEC 60811-202	LT-31108-B + LT-22059 Slicer	0.5–5 mm	Applicable to armoured/ multi-core

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Dimensional	Thickness of Armour Tape/Wire	IEC 60811-203	LT-31108-B + Micrometer	0.1–3 mm	Armour layer thickness
Physical	Density of Insulation or Sheath	IEC 60811-304	LT-42024 Water Bath + Balance	0.8–1.6 g/cm^3	Displacement method
Thermal	Shrinkage Test After Heating	IEC 60811-300	LT-42167 Oven	100–160°C	Length variation after heating
Thermal	Loss of Mass (PVC)	IEC 60811-409	LT-42167 Oven + Balance	100–150°C / 168h	Material stability check
Visual	Surface Examination	IEC 60811-100	LT-31108-B Projector / Visual	N/A	Visual surface inspection
Conductor Verification	Tensile Strength & Elongation of Individual Wire	IEC 60228 (Cl. 5.2)	LT-21003A / LT-21006 Tensile Tester	Load up to 2 kN	Routine / Type Test
Conductor Verification	Number & Diameter of Wires in Strand	IEC 60228 (Cl. 5.3)	LT-31108-B Projector + Micrometer	Wire Ø 0.1–5 mm	Routine / Type Test
Conductor Verification	Cross-Sectional Area of Conductor	IEC 60228 (Cl. 5.5 / Annex B)	LT-31108-B Projector	1–630 mm^2	Routine / Type Test
Conductor Verification	Resistance After Annealing (Cu)	IEC 60228 (Cl. 5.6)	LT-42167 Oven + QJ36 Bridge	20°C Reference	Type Test
Conductor Verification	Surface Condition / Finish	IEC 60228 (Cl. 6)	Visual Inspection + LT-31108-B Projector	N/A	Routine Inspection
Conductor Verification	Elongation After Annealing (Cu Wire)	IEC 60228 (Annex A)	LT-21003A / LT-21006 Tensile Tester	Elongation 10–40%	Type Test
Conductor Verification	Sector Conductor Shape / Angle Measurement	IEC 60228 (Annex F)	LT-31108-B Projector	0–120° Sector Angle	Type Test
Electrical	Conductor DC Resistance	IEC 60228 / IEC 60502-1 Cl.18.2	QJ36 Bridge + LT-62112 Fixture	0.1 mΩ·m – 50 Ω·km @20°C	Routine / Type Test
Electrical	Insulation Resistance (at 20°C)	IEC 60227-1 / IEC 60245-1 / IEC 60502-1	LT-42024 Water Bath + LT-62218 IR Tester	Up to 10^{12} Ω	Routine Test
Electrical	Insulation Resistance after Immersion in Water	IEC 60227-1 Cl.18.3.2 / IEC 60502-1	LT-42024 Water Bath + LT-62218 IR Tester	24h immersion @ room temperature	Type Test

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Electrical	Conductor Continuity / Integrity	IEC 60227-1 Cl.18.4	LT-62218 IR Tester / Continuity Circuit	N/A	Routine Test
Electrical	High Voltage Withstand (Dielectric Test)	IEC 60227-1 Cl.18.2 / IEC 60502-1 Cl.18.4	HV Test Transformer (0–5kV AC)	3.5 kV for 450/750V, 5 kV for 0.6/1kV, 5 min	Routine / Type Test
Electrical	Conductor Continuity (After Extrusion)	IEC 60502-1	QJ36 Bridge / Continuity Circuit	≤ Standard limits	Routine Test
Electrical	Voltage Drop / Resistance Uniformity	IEC 60228 Annex C / IEC 60502-1	QJ36 Bridge	≤ 3% variation between phases	Type Test
Electrical	Insulation Resistance vs Temperature Trend	IEC 60227 / IEC 60502 (App. A)	LT-42024 Water Bath + LT-62218 IR Tester	20°C to 70°C range	Type Test

*All tests listed are performed using existing calibrated equipment traceable to ISO/IEC 17025 standards. Environmental conditions maintained at 20–27°C and RH ≤ 65%.

*Calibration & Traceability

All measuring and testing equipment in Astro Power Cables Quality Control & Testing Laboratory are calibrated at defined intervals per ISO/IEC 17025:2017. Calibration certificates are traceable to national or international standards and maintained in the M&TE register. Environmental monitoring ensures reliable, repeatable measurement conditions.

Each listed test method is executed per the corresponding IEC standard. Laboratory reports clearly indicate the applied method, sample details, and results