



**IEC QUALITY ASSESSMENT SYSTEM FOR  
ELECTRONIC COMPONENTS (IECQ)**

*BLQ ENV-TEST IS AN INDEPENDENT DIVISION OF GLENAIR ITALIA*



ISO / IEC 17025 QUALIFIED

# Environmental Test Laboratories



Environmental • Electrical / Optical • Mechanical

MAY 2019



ISO/IEC 17025

# BLQ ENV-Test: IEC Qualified Laboratory, Inspection, and Measurement Services

ISO 9001 and EN 9100 registered; comprehensive test plans, reports, and documentation IAW customer requirements

Environmental testing, consisting of the complete range of mechanical, electrical and environmental stress factors that affect electronic equipment, cabling, and systems is now available from BLQ ENV-Test, Glenair's IEC/IECQ certified independent testing laboratory, offering accelerated lead times—from initial quoting to final test report delivery.

- Mechanical / dynamic testing for both electrical and fiber optic components, subsystems, and wiring harnesses
- Automatic testing of harnessing with scientific root cause analysis
- Fast turnaround on quotes and testing services
- Decades of experience
- Unique expertise in high-voltage (partial discharge) testing
- Professionally prepared test reports supplied for every project
- Ample in-house resources for both small and large-scale equipment test plans

<b>Electrical</b>	Insulation · High Voltage Dielectric Test · Resistance Current · Partial Discharge · EMC Shielding
<b>Ethernet/Optic</b>	Ethernet Certification · Optical Insertion Loss / Return Loss Photonic / Color / Lux Intensity Measurement
<b>Environmental</b>	Heat · Cold · Thermal Shock · Humidity · Ice · Salt Spray Low Pressure · Fluid Test · Seal and Pressure
<b>Mechanical / Dynamics</b>	Vibration · Mechanical Shock · Compression Force Tensile Strength · Torque Force · Release Mechanism Test
<b>Leakage</b>	Oil Leakage · Air Leakage · Helium Leakage Watertightness IP67 and IP68
<b>Metrology and Dimensional</b>	Dimensional · Profile Measurement · Thread Measurement Hardness Testing · Roughness Measurement
<b>Rubber and Plastic Materials</b>	Density Measurement · Compression Set · FTIR · Hardness Elongation at Break · Tensile Strength · Dielectric Breakdown
<b>Plating</b>	Elemental Composition of the Plating Metallographic Section Plating Adhesion and Corrosion · X-Ray Measurement
<b>Harnessing</b>	Automatic Test of Insulation · Resistance Dielectric Withstanding Voltage



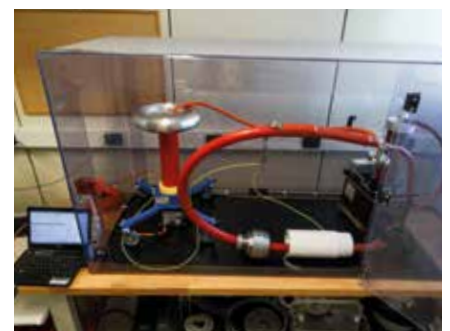
## ELECTRICAL / EMC TESTING

CONTACT RESISTANCE	APPLICABLE STANDARD
Minimum res. 1 $\mu\Omega$	ISO/IEC 17025 Accredited test: BS EN / IEC 60512-2-1 ; BS EN / IEC 60512-2-2
	Standard which we are specialist: EIA-364-06; EIA-364-23; SAE AS39029; VG95234; VG95328; VG96929; VG95351; VG96934; VG95319-2; MIL-DTL-26482; MIL-DTL-38999; AFNOR NF F 61-030
INSULATION RESISTANCE & INSULATION RESISTANCE AT HIGH TEMPERATURE	APPLICABLE STANDARD
1 - 1500 VDC ; 100 $\Omega$ - 2000 T $\Omega$	ISO/IEC 17025 Accredited test: BS EN / IEC 60512-3-1
Up to 260°C	Standard which we are specialist: EIA-364-21; VG95234; VG95328; VG96929; VG95351; VG96934; VG95319-2; MIL-DTL-26482; MIL-DTL-38999; SAE AS 50151; AFNOR NF F 61-030; MIL-DTL-38999; MIL-DTL-26482
DIELECTRIC WITHSTANDING VOLTAGE SEA LEVEL & ALTITUDE	APPLICABLE STANDARD
AC Voltage 50 Hz - 60Hz : 0 - 50 KVAC ; Max I. Leak: 300mA	ISO/IEC 17025 Accredited test: BS EN / IEC 60512-3-1
DC Voltage: 1 - 1500 VDC	Standard which we are specialist:
Pressure 5mBar	EIA-364-21; VG95328; VG96929; VG95351; VG96934; VG95319-2; EIA-364-20; MIL-DTL-26482; MIL-DTL-38999; AFNOR NF F 61-030
CURRENT TEMPERATURE RISE AND CURRENT DE-RATING	APPLICABLE STANDARD
DC Current : 0 - 2000 Ampere	ISO/IEC 17025 Accredited test: BS EN / IEC 60512-5-1 ; BS EN / IEC 60512-5-2
	Standard which we are specialist: AFNOR NF F 61-030; VG95328; VG96929; VG95319-2; VG95234; EIA-364-70
PARTIAL DISCHARGE	SPECIFICATION APPLICABLE
AC Voltage 50 Hz - 60Hz : 0 - 50 KVAC ; Max I. Leak: 300mA	Standard which we are specialist: ASTM D 1868-07; IEC 60270; EN 2591-227
PD event time resolution: < 2 ns	
Minimum PD level: 4 pC	
Center frequency 0 Hz $\pm$ 32 MHz	
Frequency domain bandwidth: 9 kHz, 40 kHz, 100 kHz, 160 kHz, 300kHz, 650kHz, 1MHz, 1.5MHz	
HOUSING / SHELL-TO-SHELL CONDUCTIVITY	SPECIFICATION APPLICABLE
Resolution: 0,001mV	ISO/IEC 17025 Accredited test: BS EN / IEC 60512-2-6
	Standard which we are specialist: EIA-364-83; MIL-DTL-26482; MIL-DTL-38999; VG95234; VG95328; VG96929; VG95351; VG96934; VG95319-2
EMC-EMI	APPLICABLE STANDARD
Shielding effectiveness	ISO/IEC 17025 Accredited test: BS EN / IEC 62153-4-7
Tiaxial Method	Standard which we are specialist:
9 kHz - 2,6 GHz ; 90dB max.	VG95328; VG96929; VG96934; VG95319-2; VG95234; MIL-DTL-26482; MIL-DTL-38999
MAGNETIC PERMEABILITY	SPECIFICATION APPLICABLE
1.5 $\mu$ ; 2.0 $\mu$ ; 2.5 $\mu$	Standard which we are specialist: EIA-364-54; ASTM A342/A342M; MIL-DTL-26482; MIL-DTL-38999

**Electrical / EMC Testing services** cover the complete range of performance requirements for interconnect cabling and electronic components. Glenair brings years of EMC design engineering experience into the testing process, ensuring equipment under test is always correctly fixtured and prepared for the most accurate results.

### Available Tests:

- Contact resistance
- Dielectric withstanding voltage (DWV)
- Current rating
- Insulation resistance
- EMC shielding
- Partial discharge





# Ethernet / Optical Fiber

## ETHERNET / OPTICAL FIBER / HIGH SPEED DATA



ETHERNET	SPECIFICATION APPLICABLE
Up to CAT. Fa	Standard which we are specialist: CEI EN 50173; TIA/EIA 568; ISO/IEC 11801

OPTICAL FIBER - INSERTION LOSS	SPECIFICATION APPLICABLE
850/1300/1310/1550 nm; Res. 0,01dB	Standard which we are specialist: TIA/EIA-455-34; MIL-PRF-28776

OPTICAL FIBER - RETURN LOSS	SPECIFICATION APPLICABLE
850/1300/1310/1550 nm	Standard which we are specialist: TIA/EIA-455-107; MIL-PRF-28776

## PHOTONIC / OPTICAL TESTS

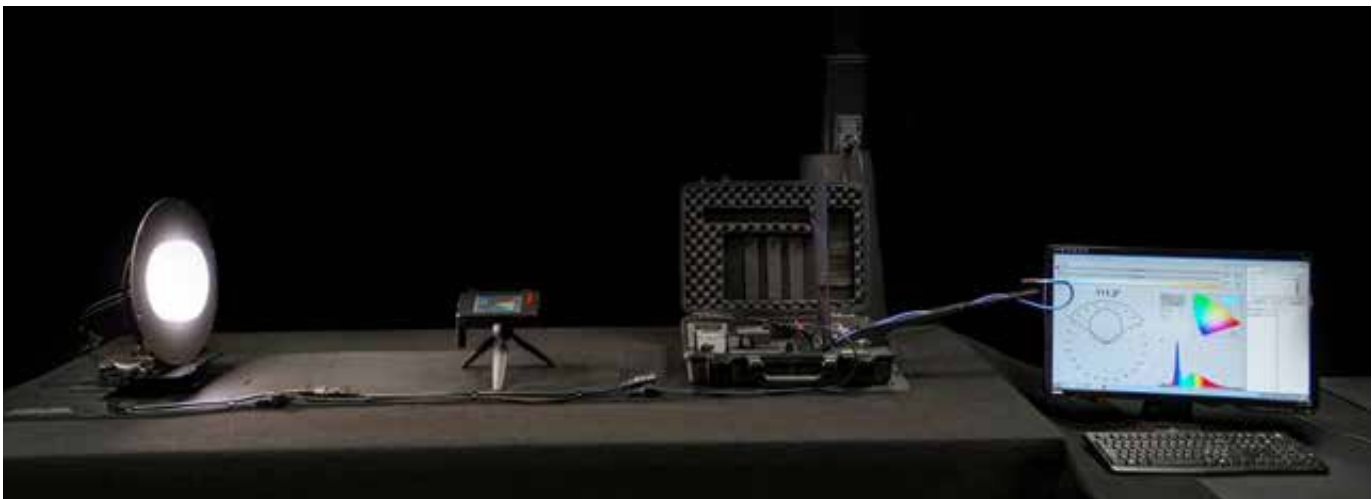
Light measurement, to measure the main luminous features of our lighting products for railways, such as headlights, taillights, traffic lights, and other onboard or trackside lighting devices.

Inside this dark room we are able to measure luminous flux (lumen), luminous intensity (candle), chromatic coordinates (X,Y), color rendering index (CRI), color temperature (CCT), the spectral chart and the angular distribution of the light.

Our fixed equipment measures features inside our dark room, and our small portable device makes measurements in remote locations.

The rail products under test shown in the pictures are a marker lamp(the white lamp, left), and a tail lamp (the red lamp).

PHOTONIC TESTS	SPECIFICATION APPLICABLE
Flux, Lumen: 10 - 50,000; Intensity, candela: 10 - 50,000; Color Temperature:1,000 - 10,000 K; CRI Index: 0 - 100	Standard which we are specialist: CEI EN 60598-1



# Environmental Tests

## TEMPERATURE / HUMIDITY TESTING

DAMP HEAT STEADY STATE	APPLICABLE STANDARD
Temp. Range : +10°C to +90°C	ISO/IEC 17025 Accredited test: BS EN / IEC 60068-2-3
Humidity Range : 10 to 98%rh	Standard which we are specialist: EIA-364-31; AFNOR NF F 61-030; VG95328; VG96929; VG95351; VG96934; VG95319-2; VG95234; MIL-DTL-38999; MIL-DTL-26482
Chamber Size:	
690mmx600mmx610mm	
500mmx610mmx500mm	

DAMP HEAT-CYCLIC	APPLICABLE STANDARD
Temp. Range : +10°C to +90°C (with humidity) ; -40°C to 180°C	ISO/IEC 17025 Accredited test: BS EN / IEC 60068-2-30
Humidity Range : 10 to 98%rh	Standard which we are specialist: EIA-364-31; AFNOR NF F 61-030; VG95328; VG96929; VG95351; VG96934; VG95319-2; VG95234; MIL-DTL-38999; MIL-DTL-26482
Chamber Size :	
650mmx500mmx600mm	
800mmx600mmx500mm	

COLD	APPLICABLE STANDARD
Min Temp : -65°C	ISO/IEC 17025 Accredited test: BS EN / IEC 60068-2-1
Max chamber size :	Standard which we are specialist: EIA-364-59 ; VG95234; VG95328; VG96929; VG95351; VG96934; VG95319-2
800mmx600mmx500mm	

ICE RESISTANCE	APPLICABLE STANDARD
Min Temp : -65°C	Standard which we are specialist: MIL-DTL-38999
Max chamber size :	
800mmx600mmx500mm	

Temperature and Humidity Testing is performed using industry-standard and IEC accepted practices of temperature cycling and humidity exposure. New and high-quality testing equipment ensures accurate results.

**Available Tests:**

- Dry heat
- Dry cold
- Damp heat steady state
- Damp heat cyclic
- Thermal shock



# Environmental Test

## CORROSION / FLUID

DRY HEAT - TEMPERATURE LIFE TEST	APPLICABLE STANDARD
Maximum Temp : +260°C	ISO/IEC 17025 Accredited test: BS EN / IEC 60068-2-2
Chamber Size :	Standard which we are specialist: EIA-364-17; VG95234; VG95328; VG96929; VG95351; VG96934; VG95319-2; MIL-DTL-26482; MIL-DTL-38999; AFNOR NF F 61-030
500mmx600mmx600mm	
THERMAL SHOCK / TEMPERATURE CYCLING	APPLICABLE STANDARD
Temp. Range : -65°C to +260°C	ISO/IEC 17025 Accredited test: BS EN / IEC 60068-2-14
Manual (two chambers method)	Standard which we are specialist: EIA-364-32; VG95234; VG95328; VG96929; VG95351; VG96934; VG95319-2; MIL-DTL-26482; MIL-DTL-38999; AFNOR NF F 61-030
CHANGE OF TEMPERATURE	APPLICABLE STANDARD
Gradual in air; -75°C / +180°C; -75°C to +180°C: 5°C/Min ; +180°C to -75°C: 2,5°C/Min	ISO/IEC 17025 Accredited test: BS EN / IEC 60068-2-14
LOW PRESSURE / ALTITUDE / ALTITUDE IMMERSION	APPLICABLE STANDARD
Sea level to 5mBar ; up to 200°C	Standard which we are specialist: EIA-364-03; MIL-DTL-26482; VG95234; VG95328; VG96929; VG95319-2.
SALT SPRAY / CORROSION TEST	APPLICABLE STANDARD
Max chamber size : 500 Lt	ISO/IEC 17025 Accredited test: BS EN / IEC 60068-2-11
Salt spray static, cyclic (salt spray + humidity), dynamic (salt spray + durability)	Standard which we are specialist: IEC 60068-2-52; ASTM B117-11; ISO 9227; ASTM D1654 - 92; AFNOR NF F 61-030; EIA-364-26; VG95234; VG95328; VG96929; VG95351; VG96934; VG95319-2; MIL-DTL-26482; MIL-DTL-38999
FLUID RESISTANCE	APPLICABLE STANDARD
Testing & evaluation of materials to fluid.	Standard which we are specialist: EIA-364-10; MIL-DTL-38999; MIL-DTL-26482; VG95234; VG95328; VG96929; VG95351; VG96934; VG95319-2; MIL-DTL-38999; MIL-DTL-26482; AFNOR NF F 61-030

Accelerated harsh-weather testing is performed to ensure components under test meet qualification requirements for galvanic corrosion and resistance, resistance to solvents, and SO2.

**Available Tests:**

- Salt spray/SO2
- Resistance to solvents



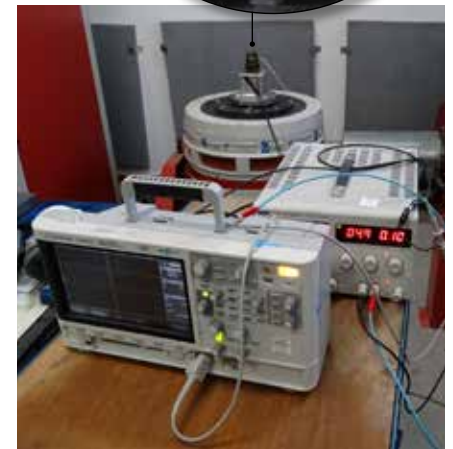
**MECHANICAL / DYNAMIC TESTING / LEAKAGE**

VIBRATION - SINUSOIDAL	APPLICABLE STANDARD
Freq. Range: 5 to 2000 Hz Peak thrust: 8,90kN (30G max. up to 5Kg.sample) Max pk/pk displacement: 50mm Ambient temperature	ISO/IEC 17025 Accredited test: BS EN / IEC CEI EN 60068-2-6  Standard which we are specialist: EIA-364-28; VG95351; VG96934; VG95319-2; MIL-DTL-26482; AFNOR NF F 61-030
VIBRATION - RANDOM	APPLICABLE STANDARD
Freq. Range: 5 to 2000 Hz Peak thrust: 5,76kN (25G max. up to 5Kg.sample) Max pk/pk displacement: 50mm	ISO/IEC 17025 Accredited test: BS EN / IEC CEI EN 60068-2-64  Standard which we are specialist: EIA-364-28; VG95234; VG95328; VG96929; VG95319-2; MIL-DTL-26482; EN 61373; AFNOR NF F 61-030
SHOCK - BUMP	APPLICABLE STANDARD
(Half sine, Sawtooth, and Trapezoidal waveforms) Peak thrust: 17,36kN (100G max. up to 5Kg.sample) Max pk/pk displacement: 50mm	ISO/IEC 17025 Accredited test: BS EN / IEC CEI EN 60068-2-27 ; BS EN / IEC CEI EN 60068-2-29  Standard which we are specialist: EIA-364-27; VG95234; VG95328; VG96929; VG95351; VG96934; VG95319-2; CEI EN 61373; MIL-DTL-26482
DISCONTINUITY MEASUREMENT DURING VIBRATION	APPLICABLE STANDARD
Measurement of electrical discontinuity (up to 0,1µs) or fiber optic insertion loss	Standard which we are specialist: EIA-364-28
AXIAL FORCE (compression and tensile)	APPLICABLE STANDARD
Force: 0,05 N to 10KN  Example - Insert test: Contact Retention; Contact insertion and removal forces; Maintenance aging; Insert Retention; Gage location and retention; Insertion and removal tool abuse; Installing/removal tool abuse; Probe Damage; Insert bond strength; Insert grommet bonding; Retention of the insulation in the casing;	Standard which we are specialist: EIA-364-05; EIA-364-24; EIA-364-35; EIA-364-25; EIA-364-29; VG95328; VG96929; VG95319-2; VG95234; MIL-DTL-26482; MIL-DTL-38999; MIL-DTL-26482; MIL-DTL-38999; AFNOR NF 61-030
Example -Contact & crimp test: Contact engaging and separating forces; Withdrawal force of the individual contact; Tensile Strength: Crimp tensile strength; Pull Out force; Tensile force	SAE AS39029; EIA-364-29; MIL-DTL-26482; VG95328; VG96929; VG95319-2; VG95234; EIA-364-08.
Example - External bending moment - Crush	MIL-DTL-26482; AS95234; SAE AS5015; MIL-DTL-38999
TORQUE FORCE	APPLICABLE STANDARD
Force: 0,1 Nm to 100 Nm  Example: Mating - Un-mating force ; Coupling and uncoupling torque	Standard which we are specialist: EIA-364-13; EIA-364-114; MIL-DTL-26482; MIL-DTL-38999; VG95328; VG96929; VG95351; VG96934; VG95319-2; VG95234; AFNOR NF F 61-030
RELEASE MECHANISM MACHINE	APPLICABLE STANDARD
Acceleration: 3m/s <sup>2</sup>  Lanyard: Pull-separation; Fail-safe disengagement	Standard which we are specialist: MIL-DTL-38999/31
LEAKAGE TEST	APPLICABLE STANDARD
Watertightness (up to 50BAR)	Standard which we are specialist: VG95234; VG96929; VG95351; VG96934; VG95319-2; IEC 60068-2-17; EN 60529 IPX7-IPX8; MIL-DTL-26482
Oil Leakage (up to Up to 150 Bar)	
Air Leakage (up to 4 Bar)	Standard which we are specialist: EIA-364-02; VG95328; MIL-DTL-26482 ; DIN EN 60068-2-17 Qa
Helium leakage	Standard which we are specialist: MIL-STD-202 TEST METHOD 112; IEC60068-2-17 QK
MISCELLANOUS	
Visual & Dimensional evaluation - Crimp: Examination on wired samples - durability - Impact - Marking Test - Solderability	

Controlled vibration and shock testing ensures electrical and electronic components can withstand specified forms of dynamic stress encountered during operation and shipping.

**Available Tests:**

- **Vibration sine**
- **Vibration random**
- **Bump**
- **Shock**





**METROLOGY**

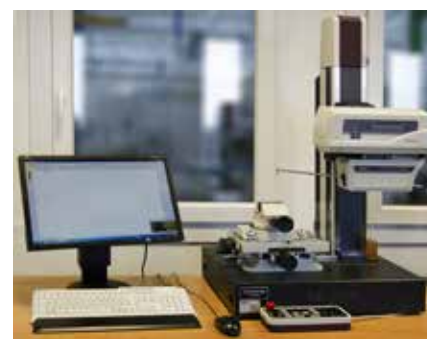
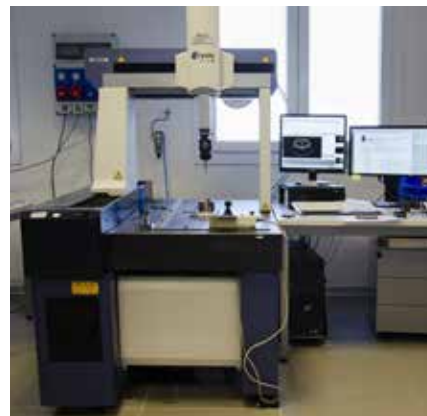
DIMENSIONAL INSPECTION		
INSTRUMENT		ACCURACY
Visual Inspection	Microscope	Magnification X1000
Optical 3D measurement	Tesa Visio 300 DCC	(measuring range) X/Y=300X200mm (measuring range) Z=150mm X/Y-Accuracy at 20°C=2,4+4•L/1000Z- Accuracy at 20°C= 3+1•L/100*
Contour Measuring Instrument	Mitutoyo CV 4500S4	DZ1 axis=0,02um DX AXIS=0,05um (measuring range) Xaxis=0-100mm (measuring range) Z1 axis=0-60mm
Optical - Profile projector	Visual scope 300V	0-100mm D=0,001mm
Coordinate Measuring Machine CMM	Tesa Micro-Hite 3D	440 x 500 x 420 mm D=0,001mm
	Mitutoyo Crysta Apex-C	500x700x400mm D=0,001mm
Standard instrument	Height gauge	0-600mm D=0,001mm
	Caliper	0-600mm D=0,01mm
	Micrometer	0-150mm D=0,001mm
	Gauge	Thread, Dial, Bore, Johansson
METALLOGRAPHIC SECTION		
Sample preparation; potting of the sample, cross sectioning; measurement with microscope	NIKOM LV150NL (1000x)	D=0,01µm
CALIBRATION OF THREAD GAGE OR GAUGE BLOCK		
INSTRUMENT		ACCURACY
Thread measurement	DMS680	0-100mm D=0,0001mm
Inspection of plain plug and plain ring gage; Gauge block.		
Inspection of thread plug, thread ring		
HARDNESS TESTER		
INSTRUMENT		ACCURACY
Measure of metal hardness, VICKERS (HV)	Hardness tester Innovatest	HV0,02-HV50 D=0,1Hv
SURFACE ROUGHNESS TESTER		
INSTRUMENT		ACCURACY
Measure of roughness	Surtronic S128 Taylor-Hobson	D=0,01µm +/-500µm

Measurement Solutions Capabilities

**ACCURACY:** All our instruments are calibrated and evaluated for the most accurate measurement of your components

**FLEXIBILITY:** We measure and report on all components or just a single characteristic

**CAPABILITIES :** From calibration of customer's gauge tools to the design and manufacture of specialized gauges or fixtures.



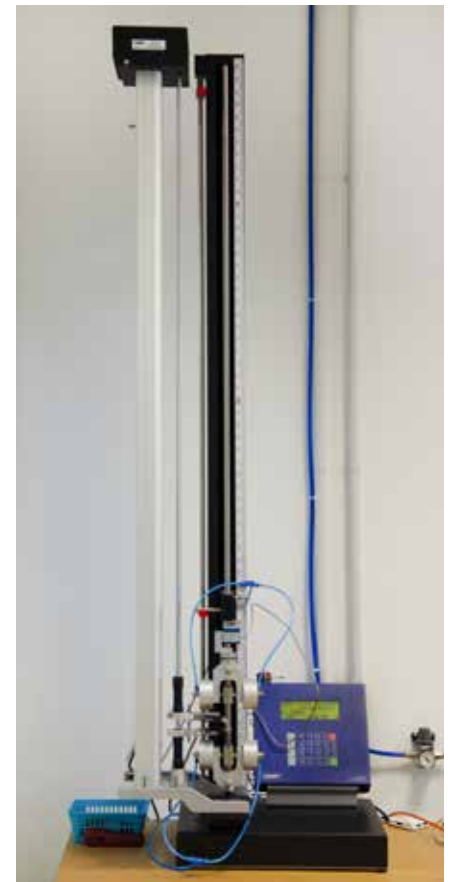
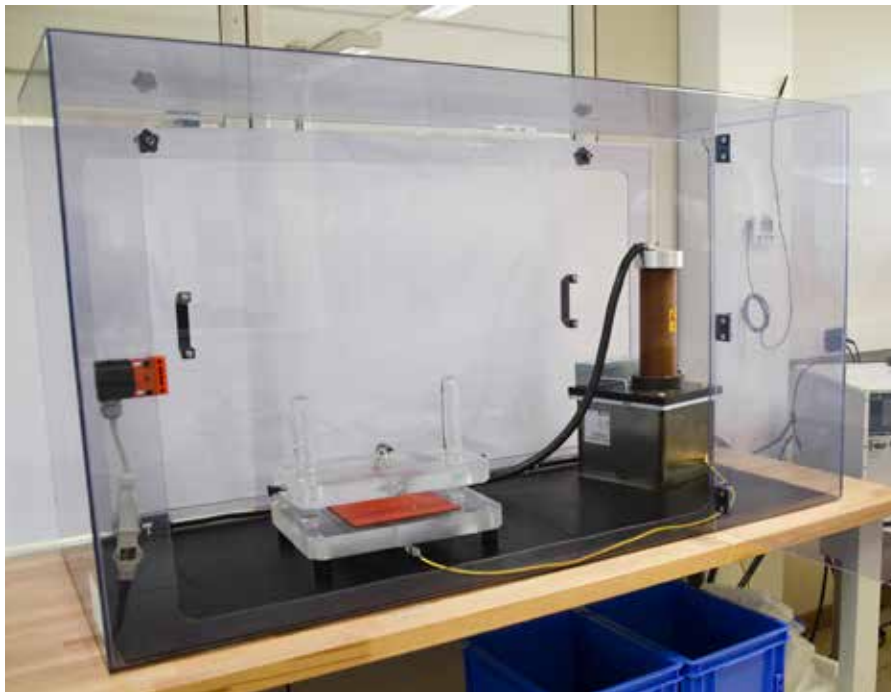


# Inspection Rubber

## RUBBER

RUBBER - PLASTIC MATERIAL INSPECTION		
INSTRUMENT		LEVEL
Control on batch formulation	Agilent Cary 630 FTIR spectrometer	400-4650cm <sup>-1</sup> D=4cm <sup>-1</sup>
Hardness measurement	Rupac Durometer Shore A 6110075	0-90ShoreA D=1ShoreA
Measure elongation at break and tensile strength	EXpert 7601 XLT D412 Tension Testing System	0-1000N D=0,01N
Density measurement	PCE-ABZ + Density determination kit	0-200g D=0,0001g
Compression set measurement	Gibitre C-Set	N/A
Dielectric Breakdown Voltage and Dielectric Strength (ASTM D149)	High voltage Tester Phenx 6CP50/10-3; Schleich GLP2	0-50KVAC 50-60Hz
Standard Test Methods for DC Resistance or Conductance of Insulating Materials (ASTM D257)	Megohmmeter Sefelec M1501M	0-1500VDC

We have all the instruments to make a characterization of rubber materials: formulation (FTIR), density, hardness, mechanical propriety, and electrical propriety.



# Inspection Plating

## PLATING

PLATING INSPECTION		
INSTRUMENT		LEVEL
Metallic coatings thickness; Elemental composition of coatings	X-ray fluorescence spectroscopy (Fischerscope X-Ray XULM)	0-12,5um D=0,01um
Measure of the plating thickness (preparation of the samples; potting of the sample, cross sectioning; measure with microscope)	NIKOM LV150NL (1000x)	D=0,01um
Nonconductive coatings thickness (cataphoresis, painting) on non-ferrous metals, iron or steel	Magnetic inductive/Eddy current measurement instrument (Dualscope FMP20)	0-800um D=0,01um
Elemental composition of metal alloys/solutions	ICP-OES (Agilent 5110)	ppb
Copper sulfate test	N/A	N/A
Elemental composition of plating bath solutions	AAS (PerkinElmer PinAAcle 900T)	ppm

Our chemical plating lab can analyze your coating and help to ensure the correct formulation of the galvanic bath.



# Inspection Harness

## HARNESSES

AUTOMATIC MEASUREMENT		
TEST	INSTRUMENT	LEVEL
Insulation resistance	EST AUTES750; WEETECH W434; WEETECH W454	up to 5000VAC,.
Dielectric withstanding voltage		up to 1500VDC - 100GOHM
Resistance		Res.1mohm

MANUAL MEASUREMENT		
Insulation resistance	Megaohmmeter	I.R.:up to 1500VDC - 1Tohm
Dielectric withstanding voltage	High voltage tester	DWV: up to 1200VAC
Resistance	Ohmmeter	Resolution 0,001mohm
LC measurement (Inductance ; Capacitance)	Fluke PM6304	C=0,00pF to 31,8F; L=0,00uH to 63KH
Power Generator	Power generator DC and AC	up to 140VDC / 260VAC
Oscilloscope	Tektronix MSO5054	500MHz & 10 GS/s
Insertion loss (multimode - single mode)	Optical source, optical power meter, OTDR	850-1310-1550nm
Return loss (multimode - single mode)		850-1300-1310-1550
OTDR - Optical Time Domain Reflectometer		850/1300/1310/1550 nm
Ethernet	Fluke DSX5000	Up to Cat Fa (7a)
Air Leakage automatic	Fortest	Up to 6 Bar / 0,001mBar loss
Air Leakage manual	Manual pump	Up to 250 Bar
Air Flow	Air Flow meter Baggi	Up to 30 Standard litre per minute
Helium leakage	ASM340 Pfeiffer	5.10-12 mbar.l/s

Our harness final inspection guarantees fast and accurate testing of your wire harnesses with the latest automatic test equipment.





# MISSION-CRITICAL INTERCONNECT SOLUTIONS

## Glenair, Inc.

1211 Air Way • Glendale, California • 91201-2497

Telephone: 818-247-6000 • Fax: 818-500-9912 • sales@glenair.com

[www.glenair.com](http://www.glenair.com)

### Glenair Power Products Group

20 Sterling Drive  
Wallingford, CT  
06492

Telephone:  
203-741-1115  
Facsimile:  
203-741-0053  
sales@glenair.com

### Glenair UK Ltd

40 Lower Oakham Way  
Oakham Business Park  
Mansfield, Notts  
NG18 5BY England

Telephone:  
+44-1623-638100  
Facsimile:  
+44-1623-638111  
sales@glenair.co.uk

### Glenair Microway Systems

7000 North Lawndale Avenue  
Lincolnwood, IL  
60712

Telephone:  
847-679-8833  
Facsimile:  
847-679-8849

### Glenair Nordic AB

Gustav III : S Boulevard 42  
SE-169 27 Solna  
Sweden

Telephone:  
+46-8-50550000  
sales@glenair.se

### Glenair GmbH

Schaberweg 28  
61348 Bad Homburg  
Germany

Telephone:  
06172 / 68 16 0  
Facsimile:  
06172 / 68 16 90  
info@glenair.de

### Glenair Iberica

C/ La Vega, 16  
45612 Velada  
Spain

Telephone:  
+34-925-89-29-88  
Facsimile:  
+34-925-89-29-87  
sales@glenair.es

### Glenair Italia S.p.A.

Via Del Lavoro, 7  
40057 Quarto Inferiore –  
Granarolo dell'Emilia  
Bologna, Italy

Telephone:  
+39-051-782811  
Facsimile:  
+39-051-782259  
info@glenair.it

### Glenair France SARL

7, Avenue Parmentier  
Immeuble Central Parc #2  
31200 Toulouse  
France

Telephone:  
+33-5-34-40-97-40  
Facsimile:  
+33-5-61-47-86-10  
sales@glenair.fr

### Glenair Korea

B-1304 Gunpo IT Valley  
148 Gosan-Ro, Gunpo-Si  
Kyunggi-Do, Korea  
435-733

Telephone:  
+82-31-8068-1090  
Facsimile:  
+82-31-8068-1092  
sales@glenair.kr

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