ISO/IEC 17025

Environmental Test Laboratory

Fast and reliable IEC qualified assessment laboratory for electronic components (IECQ)

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 Glenair's IEC/IECQ certified testing laboratories. Test engineers and technicians follow qualified processes, and report generation protocols to deliver timely and professional environmental testing services. As an interconnect component manufacturer and wire and cable assembly supplier, Glenair is well-versed in all aspects of qualification testing including corrosion resistance, solvent resistance, electromagnetic compatibility, dielectric withstanding voltage, current rating and so on. Our test laboratories are equipped with current-generation equipment, and are maintained in accordance with industry best practices and certification agency requirements. Perhaps most importantly, Glenair environmental test services are offered with accellerated lead times—from initial quoting to final test report delivery. Please contact the factory for more information

- **Mechanical / dynamic testing for fiber optic systems, electrical components, wiring harnesses**
- **Broad spectrum of electrical testing (resistance, current rating, EMC shielding and more)**
- **Heat, cold, and thermal shock testing**
- **Corrosion and solvent resistance testing**
- **Fast turnaround on quotes and testing services**
- **Decades of experience**

Mechanical / Dynamic Testing
IEC QUALITY ASSESSMENT SYSTEM FOR ELECTRONIC COMPONENTS (IECQ)

MECHANICAL / DYNAMIC TESTING

ELECTRICAL AND ELECTRONIC COMPONENTS/DEVICES TESTED
Electrical/Fibre optic connectors
Electro/Mechanical Devices
Wiring Harnesses
Switches
Aerospace Components & Equipment
Automotve Components & Equipment
Railway Components

VIBRATION-SINSOIDAL (Ambient temperature)	
MECHANICAL/DYNAMIC TESTS	**STANDARD**
Freq. Range: 5 to 2000 Hz	BS EN/IEC 60068-2-6
Peak thrust: 8,90kN	EIA-364-28
Max pk/pk displacement: 50mm	

VIBRATION/RANDOM (Ambient temperature)	
MECHANICAL/DYNAMIC TESTS	**STANDARD**
Freq.Range: 5 to 2000 Hz	BS EN / IEC 60068-2-64
Peak thrust: 5,76 kN	EN 61373
Max pk/pk displacement: 50mm	EIA-364-28

SHOCK (Half sine, Sawtooth, and Trapezoidal waveforms)	
MECHANICAL/DYNAMIC TESTS	**SPECIFICATION APPLICABLE**
Peak thrust : 17,36kN	BS EN / IEC 60068-2-27 EIA-364-27 EN 61373

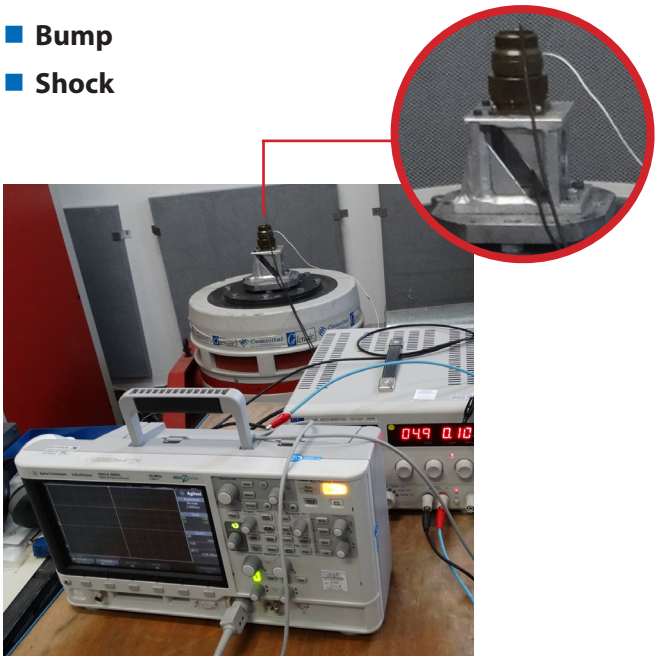
BUMP (Half sine)	
MECHANICAL/DYNAMIC TESTS	**STANDARD**
Severity: 20/40 gn	BS EN / IEC 60068-2-29:1993

DISCONTINUITY (During vibrations)	
MECHANICAL/DYNAMIC TESTS	**STANDARD**
0.1 µs Electrical discontinuity	EIA-364-28

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**



Electrical Testing
IEC QUALITY ASSESSMENT SYSTEM FOR ELECTRONIC COMPONENTS (IECQ)

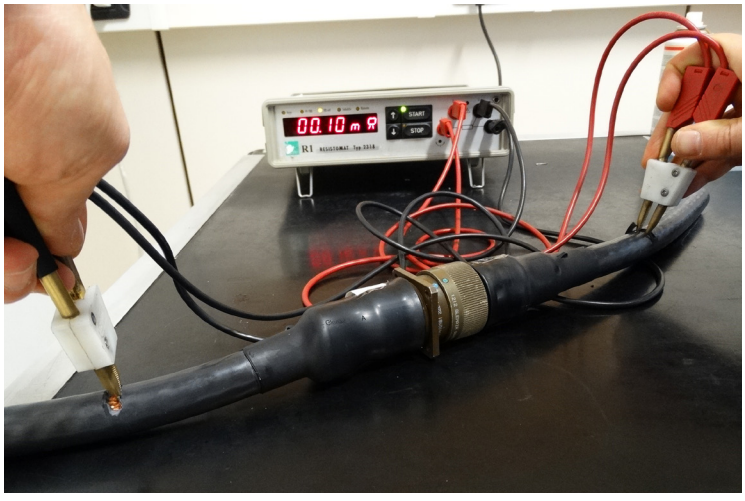
ELECTRICAL / EMC TESTING

ELECTRICAL	
EMC	**SPECIFICATION APPLICABLE**
Shielding effectiveness	BS EN / IEC 62153-4-7
Tiaxial Method	
9 kHz - 2,6 GHz	
CONTACT RESISTANCE	**SPECIFICATION APPLICABLE**
DC Voltage	BS EN / IEC 60512-2-1
20 mΩ - 200 kΩ	BS EN / IEC 60512-2-2
1 µΩ	EIA-364-06
INSULATION RESISTANCE	**SPECIFICATION APPLICABLE**
DC Voltage	BS EN / IEC 60512-3-1
1 - 1500 V	EIA-364-21
100 Ω - 2000 TΩ	
DIELECTRIC WITHSTANDING VOLTAGE	**SPECIFICATION APPLICABLE**
AC Voltage 50 Hz : 0 - 40 Kv	BS EN / IEC 60512-4-1 EIA-364-20
TEMPERATURE RISE AND CURRENT DE-RATING	**SPECIFICATION APPLICABLE**
DC Current : 0 - 2000 Ampere	BS EN / IEC 60512-5-1 BS EN / IEC 60512-5-2 EIA-364-70

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**



Temperature/Humidity Testing
IEC QUALITY ASSESSMENT SYSTEM FOR ELECTRONIC COMPONENTS (IECQ)

TEMPERATURE / HUMIDITY TESTING

CLIMATIC (High Humidity - Constant)	
DAMP HEAT STEADY STATE	**SPECIFICATION APPLICABLE**
Temp. Range : +10°C to +90°C	BS EN / IEC 60068-2-3 EIA-364-31
Humidity Range : 10 to 98%rh	
Chamber Size: 690mmx600mmx610mm 500mmx610mmx500mm	
DAMP HEAT-CYCLIC	**SPECIFICATION APPLICABLE**
Temp. Range : +10°C to +90°C	BS EN / IEC 60068-2-30 EIA-364-59
Humidity Range : 10 to 98%rh	
Chamber Size : 650mmx500mmx600mm 800mmx600mmx500mm	
DAMP DRY COLD	**SPECIFICATION APPLICABLE**
Min Temp : -75°C	BS EN / IEC 60068-2-1 EIA-364-59
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**

TEMPERATURE / HUMIDITY TESTING

CLIMATIC (High Temperature-Constant)	
TEMPERATURE-DRY HEAT	**SPECIFICATION APPLICABLE**
Maximum Temp : +300°C	BS EN / IEC 60068-2-2 EIA-364-17
Chamber Size : 500mmx600mmx600mm	
THERMAL SHOCK	**SPECIFICATION APPLICABLE**
Temp. Range : -60°C to +300°C	BS EN / IEC 60068-2-14
Manual (two chambers method)	
CHANGE OF TEMPERATURE	**SPECIFICATION APPLICABLE**
Gradual in air	BS EN / IEC 60068-2-14
Maximum Temp : +180°C	
Minimum Temp : -75°C	
Maximum rate of change : -75°C to +180°C: 5°C/Min +180°C to -75°C: 2,5°C/Min	

Salt Spray / Corrosion Testing
IEC QUALITY ASSESMENT SYSTEM FOR ELECTRONIC COMPONENTS (IECQ)

SALT SPRAY / CORROSION TESTS

CORROSION	
SALT/SO2 SPRAY (FOG)	**SPECIFICATION APPLICABLE**
Max chamber size : 500 Lt	BS EN / IEC 60068-2-11 EIA-364-26

Accelerated harsh-weather testing is performed to ensure components under test meet qualification requirements for galvanic corrosion and resistance, resistance to solvents, and S02.

Available Tests:

- **Salt spray/SO2**
- **Resistance to solvents**

MISCELLANEOUS TESTS

MISCELLANEOUS	
TENSILE/COMPRESSION	**SPECIFICATION APPLICABLE**
Maximum load : 10KN	BS EN / IEC 60512-15-1
Manual	EIA-364-35
FLUID CONTAMINATION	**SPECIFICATION APPLICABLE**
Immersion	BS EN / IEC 60068-2-45 EIA-364-10
WATERTIGHTNESS	**SPECIFICATION APPLICABLE**
Maxium pressure : 5 Bar	BS EN / IEC 60529
IP67, IP68	

Glenair testing facilities can perform additional qualification testing ranging from pull (tensile), compression, immersion, and hydrostatic pressure.

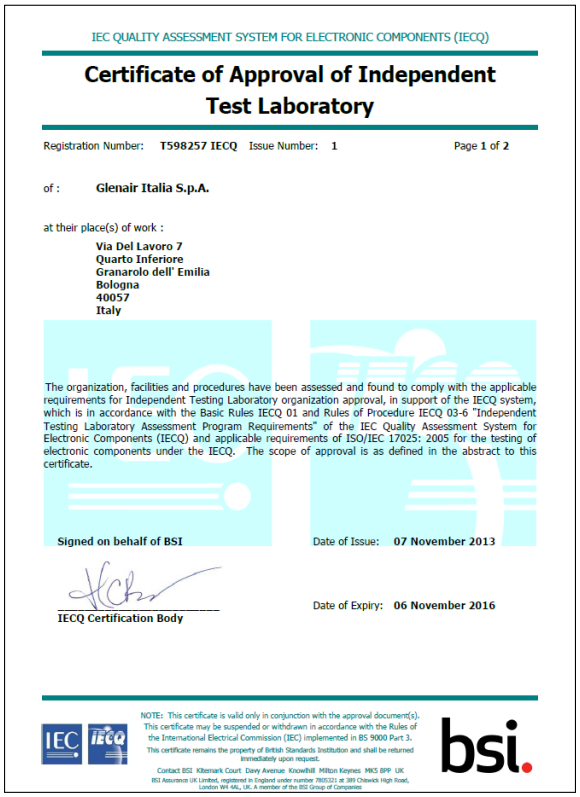
Available Tests:

- **Low air pressure**
- **Tensile/compression**
- **Crimp graduation**
- **Sealing**
- **Hydrostatic pressure**

Environmental Test Laboratory
IEC QUALITY ASSESMENT SYSTEM FOR ELECTRONIC COMPONENTS (IECQ)

MEASUREMENT PARAMETER AND RANGE		LABORATORY LIMITS (+/-)
DC VOLTAGE	1mV-1,5kV	0,20%
AC VOLTAGE	10mV-12kV (50Hz)	1,50%
DC CURRENT	>40mA-10A	1,00%
	10A-2000A	0,50%
AC CURRENT	10A- 700A (50Hz)	0,50%
DC RESISTANCE	>20mOhm-200kOhm	0,10%
	>100MOhm-1TOhm	3,00%
TEMPERATURE	-75C to 300C	0,40%
FORCE	0.1N-10kN	2,00%
TORQUE	0.Nm-5.0Nm	5,00%
HUMIDITY	10%rh-98%rh	5,00%

IEC QUALITY ASSESTMENT SYSTEM FOR ELECTRONIC COMPONETS (IECQ)



IEC QUALITY ASSESSMENT SYSTEM FOR ELECTRONIC COMPONENTS (IECQ)

Certificate of Approval of Independent Test Laboratory

Registration Number: **T598257 IECQ** Issue Number: **1** Page **1** of **2**

of : **Glenair Italia S.p.A.**

at their place(s) of work :

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

The organization, facilities and procedures have been assessed and found to comply with the applicable requirements for Independent Testing Laboratory organization approval, in support of the IECQ system, which is in accordance with the Basic Rules IECQ 01 and Rules of Procedure IECQ 03-6 "Independent Testing Laboratory Assessment Program Requirements" of the IEC Quality Assessment System for Electronic Components (IECQ) and applicable requirements of ISO/IEC 17025: 2005 for the testing of electronic components under the IECQ. The scope of approval is as defined in the abstract to this certificate.

Signed on behalf of BSI

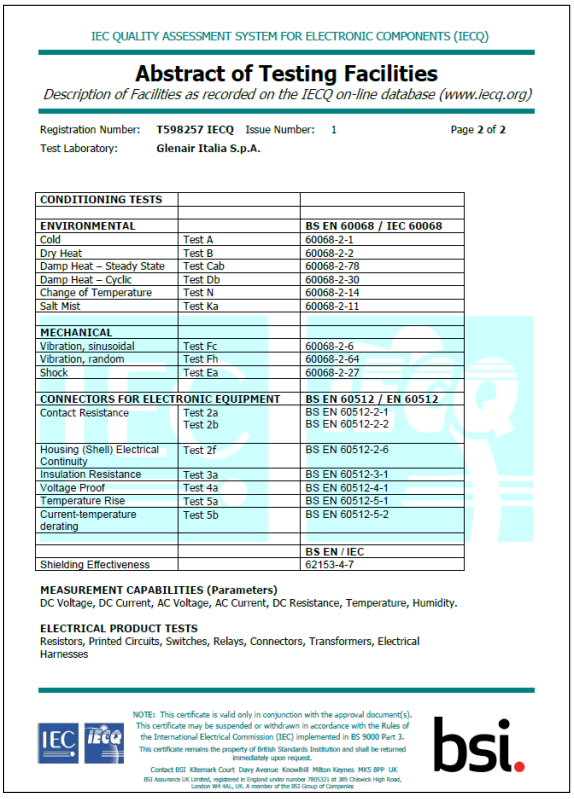
Date of Issue: **07 November 2013**

IECQ Certification Body

Date of Expiry: **06 November 2016**

NOTE: This certificate is valid only in conjunction with the approval document(s). This certificate may be suspended or withdrawn in accordance with the Rules of the International Electrical Commission (IEC) implemented in BS 9000 Part 3. This certificate remains the property of British Standards Institution and shall be returned immediately upon request.

Contact BSI Kitemark Court Davy Avenue Knowlhill Milton Keynes MK5 8PP UK
BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK. A member of the BSI Group of Companies



IEC QUALITY ASSESSMENT SYSTEM FOR ELECTRONIC COMPONENTS (IECQ)

Abstract of Testing Facilities

Description of Facilities as recorded on the IECQ on-line database (www.iecq.org)

Registration Number: **T598257 IECQ** Issue Number: **1** Page **2** of **2**

Test Laboratory: **Glenair Italia S.p.A.**

CONDITIONING TESTS		
ENVIRONMENTAL		**BS EN 60068 / IEC 60068**
Cold	Test A	60068-2-1
Dry Heat	Test B	60068-2-2
Damp Heat – Steady State	Test Cab	60068-2-78
Damp Heat – Cyclic	Test Db	60068-2-30
Change of Temperature	Test N	60068-2-14
Salt Mist	Test Ka	60068-2-11
MECHANICAL		
Vibration, sinusoidal	Test Fc	60068-2-6
Vibration, random	Test Fh	60068-2-64
Shock	Test Ea	60068-2-27
CONNECTORS FOR ELECTRONIC EQUIPMENT		**BS EN 60512 / EN 60512**
Contact Resistance	Test 2a Test 2b	BS EN 60512-2-1 BS EN 60512-2-2
Housing (Shell) Electrical Continuity	Test 2f	BS EN 60512-2-6
Insulation Resistance	Test 3a	BS EN 60512-3-1
Voltage Proof	Test 4a	BS EN 60512-4-1
Temperature Rise	Test 5a	BS EN 60512-5-1
Current-temperature derating	Test 5b	BS EN 60512-5-2
		BS EN / IEC
Shielding Effectiveness		62153-4-7

MEASUREMENT CAPABILITIES (Parameters)
DC Voltage, DC Current, AC Voltage, AC Current, DC Resistance, Temperature, Humidity.

ELECTRICAL PRODUCT TESTS
Resistors, Printed Circuits, Switches, Relays, Connectors, Transformers, Electrical Harnesses

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Glenair®

Out of This World

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