

Dynamic testing



Controlled vibration and shock testing will ensure that equipment can withstand all dynamic stresses it may encounter both during operation and shipment.



Vibration sine + temperature
Vibration random + temperature
Bump
Shock

40 Lower Oakham Way
Oakham Business Park
Mansfield
Nottinghamshire
NG18 5BY

Climatic testing



Climatic testing covers a broad spectrum of test procedures simulating environmental conditions which may be found anywhere in the world.

IEC

**IECQ
-CECC-**

Dry heat

Dry cold

Damp heat steady state

Damp heat cyclic



Low air pressure

Temperature change-rapid in air

Temperature change-gradual

**Composite temperature/
cyclic test**

**40 Lower Oakham Way
Oakham Business Park
Mansfield
Nottinghamshire
NG20 5BY**

APPROVALS



DEFENSE LOGISTICS AGENCY
DLA Land and Maritime
POST OFFICE BOX 3990
COLUMBUS, OHIO 43216-3990

IN REPLY
REFER TO

DLA LAND AND MARITIME (VQP-10-021271/Ms. Taylor)

October 12, 2010

SUBJECT: Test Laboratory Facility Audit Approval: July 26 & 27, 2010
EIA-364

Mr. Tony Penke
Glenair UK Ltd Test House
40 Lower Oakham Way
Oakham Business Park
Mansfield, Nottingham UK NG185BY

Dear Mr. Penke

As a result of the DLA Land and Maritime audit on July 26 & 27, 2010 Glenair UK Ltd Test House is considered suitably equipped to test military product per MIL-DTL-83513, and standards EIA-364. The responses to the audit findings have been reviewed and approved. Glenair Test House is considered suitably equipped to perform testing on military devices currently listed on the DLA Land and Maritime Laboratory Suitability List.

This approval is valid until terminated by written notification from the Qualifying Activity. The normal period of Facility Approval is five years from the date of the audit. However, your facility may be re-audited at any time. If warranted, Facility Approval may be withdrawn by this Center at any time. Facility Approval is subject to the conditions stated in DoD Manual 4120.24M, SD-6, and VQP's booklet entitled "Certification and Qualification Information for Conventional Specifications." Also, please reference page 5 of the following link on guidelines to yearly reporting that must be sent to DLA Land and Maritime to maintain your listing on the lab suitability list.

http://www.dscc.dla.mil/downloads/VQGeneral/Lab_Suit_Book_8888.pdf

If you have any questions concerning this letter, please contact Ms. Sonya Taylor at 614-692-2193 or email Sonya.Taylor@dlam.mil.

Sincerely,

ALAN J. WILL
Chief
Passive Devices Branch

cc: VQP (Dwight Oglesby)

IEC QUALITY ASSESSMENT SYSTEM FOR ELECTRONIC COMPONENTS (IECQ)

Certificate of Approval of Independent Test Laboratory

Registration Number: T3003 IECQ

Issue Number: 4

Page 1 of 2

of: **Glenair UK Limited**

at their place(s) of work:

40 Lower Oakham Way
Oakham Business Park
Mansfield
Nottinghamshire
NG18 5BY

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: 01 January 2013

IECQ Certification Body

Date of Expiry: 31 December 2015



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 Electrotechnical Commission (IEC) implemented in BS 5000 Part 3. This certificate remains the property of British Standards Institution and shall be returned immediately upon request.
Contact BSI: Kitemark Court, Davy Avenue, Knowlton, Milton Keynes MK5 8PP, UK
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bsi.



Environmental test laboratory

**INDEPENDENT TEST HOUSE
SCOPE OF APPROVAL**

APPROVAL CODE:	ISSUE: F	DATE: 28/11/2013
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CONDITIONING TESTS

COMPONENT/ DEVICES TESTED	TESTS UNDERTAKEN	SPECIFICATIONS APPLICABLE
Electrical/Electronic Components as follows: Electrical/Fibre optic connectors Electro/Mechanical Devices Wiring Harnesses Switches Aerospace Components & Equipment Automotive Components & Equipment	MECHANICAL/DYNAMIC	
	VIBRATION-SINUSOIDAL (temperature -65c/260c) Freq. Range: 5 to 3000 Hz Peak thrust: 35.6kN Max pk/pk displacement: 50mm	BS 2011:Fc: IEC 68-2-6 BS EN 60068-2-6 EN2591-403 EIA-364-28
	VIBRATION/RANDOM (temperature -65c/260c) Sine on random Random on random	BS 2011:Fd Fda Fdb Fdc IEC 68-2-34,35,36,37 EN2591-403 EIA-364-28
	(Gunfire) Freq.Range: 5 to 2000 Hz Peak thrust: 35.6 kN Max pk/pk displacement: 50mm	
	SHOCK (Half sine, Sawtooth, and Trapezoidal waveforms) Peak thrust: 106kN	BS 2011:Ea IEC 68-2-27 EN2591-402 EIA-364-27
	BUMP (Half sine) Severity: 20/40 gn	BS 2011:Eb BS EN 60068-2-29
	BOUNCE Lab equip model SC100	MIL-DTL-55116C

**INDEPENDENT TEST HOUSE
SCOPE OF APPROVAL**

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CONDITIONING TESTS

COMPONENT/ DEVICES TESTED	TESTS UNDERTAKEN	SPECIFICATIONS APPLICABLE
	CLIMATIC	
	DAMP HEAT STEADY STATE (High Humidity-Constant) Temp. Range:+10C to +90C Humidity Range:10 to 98%rh Chamber Size: 650mmx500mmx600mm 800mmx600mmx500mm	BS 2011: Ca IEC 60068-2-3 EN2591-304 EIA-364-31
	DAMP HEAT-CYCLIC Temp. Range:+10C to +90C Humidity Range:10 to 98%rh Chamber Size: 650mmx500mmx600mm 800mmx600mmx500mm	BS 2011: Db IEC 60068-2-30 EN2591-302 EN2591-321 EIA-364-59
	TEMPERATURE-DRY COLD Min Temp: -85C Max chamber size 420mmx430mmx480mm Min Temp: -40C Max chamber size 650mmx500mmx600mm 800mmx600mmx500mm	BS 2011:2.1A IEC 60068-2-1 EN2591-310 EIA-364-59
	TEMPERATURE-DRY HEAT (High Temperature-Constant) Maximum Temp: +300C Chamber Size: 450mmx580mmx460mm	BS 2011: 2:1B IEC 60068-2-2 EN2591-309 EIA-364-17

**INDEPENDENT TEST HOUSE
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CONDITIONING TESTS

COMPONENT/ DEVICES TESTED	TESTS UNDERTAKEN	SPECIFICATIONS APPLICABLE
	CLIMATIC	
	THERMAL SHOCK	BS 2011: Na
	Temp. Range:-73C to +215C	IEC 60068-2-14
	Chamber Size:	EN2591-305
	300mmx350mmx300mm	EN2591-323
	Change rate 12C/min 4Kg	EIA-364-32
		IEC 512-11d
	Manual	
	Maximum Temp: +300C	
	Minimum Temp: -85C	
	Refer to Dry cold & Dry Heat	
	CHANGE OF TEMPERATURE	BS 2011:Nb
	Gradual in air	IEC 60068-2-14
	Temp. Range:-73C to +180C	
	Chamber Size:	
	650mmx500mmx600mm	
	800mmx600mmx500mm	
	Maximum rate of change:	
	-40C to +180C: 4C/Min	
	+180C to -40C: 2C/Min	
	Chamber Size:	
	610mmx670mmx710mm	
	Maximum rate of change:	
	+85C to -40C: 6.5C/Min	
	-40C to +85C: 8.9C/Min	

**INDEPENDENT TEST HOUSE
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CONDITIONING TESTS

COMPONENT/ DEVICES TESTED	TESTS UNDERTAKEN	SPECIFICATIONS APPLICABLE
	CORROSION	
	SALT/SO₂ SPRAY (FOG)	BS 2011: Ka
	Max chamber size	BS 2011: Kb
	120 Ltrs/4.2 cu.ft	IEC 60068-2-11
	715x490x490 mm	EN2591-307
		ASTM G85 A4
		EIA-364-26
	MISCELLANEOUS	
	SEALING	BS 2011: Part 2.1
	Helium/Air	BS EN 60068-2-17
	Pfeiffer Qualytest	EN2591-312
	Pfeiffer Smart test	EIA-364-02
	TENSILE/COMPRESSION	EIA-364-08
	Maximum load : 30Kn	EIA-364-13
	Constent/cyclic	EIA-364-37
	FLUID CONTAMINATION	BS EN 60068-2-45
	Immersion	EN2591-315
		EIA-364-10
	VACUUM	EN2591-34
	Immersion at low air pressure	EIA-364-03 (Altitude immersion)
	HYDROSTATIC PRESSURE	EIA-364-39
	Maxium pressure:45MPa	Subsea harness evaluation
	CH 1 : Dia 150mm x 1500mm	Electrical loading if applicable
	CH 2 : Dia 75mm x 500mm	
	CH 3 : Dia 60mm x 300mm	
	CH 3 : Dia 150mm x 750mm	

**INDEPENDENT TEST HOUSE
SCOPE OF APPROVAL**

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CONDITIONING TESTS

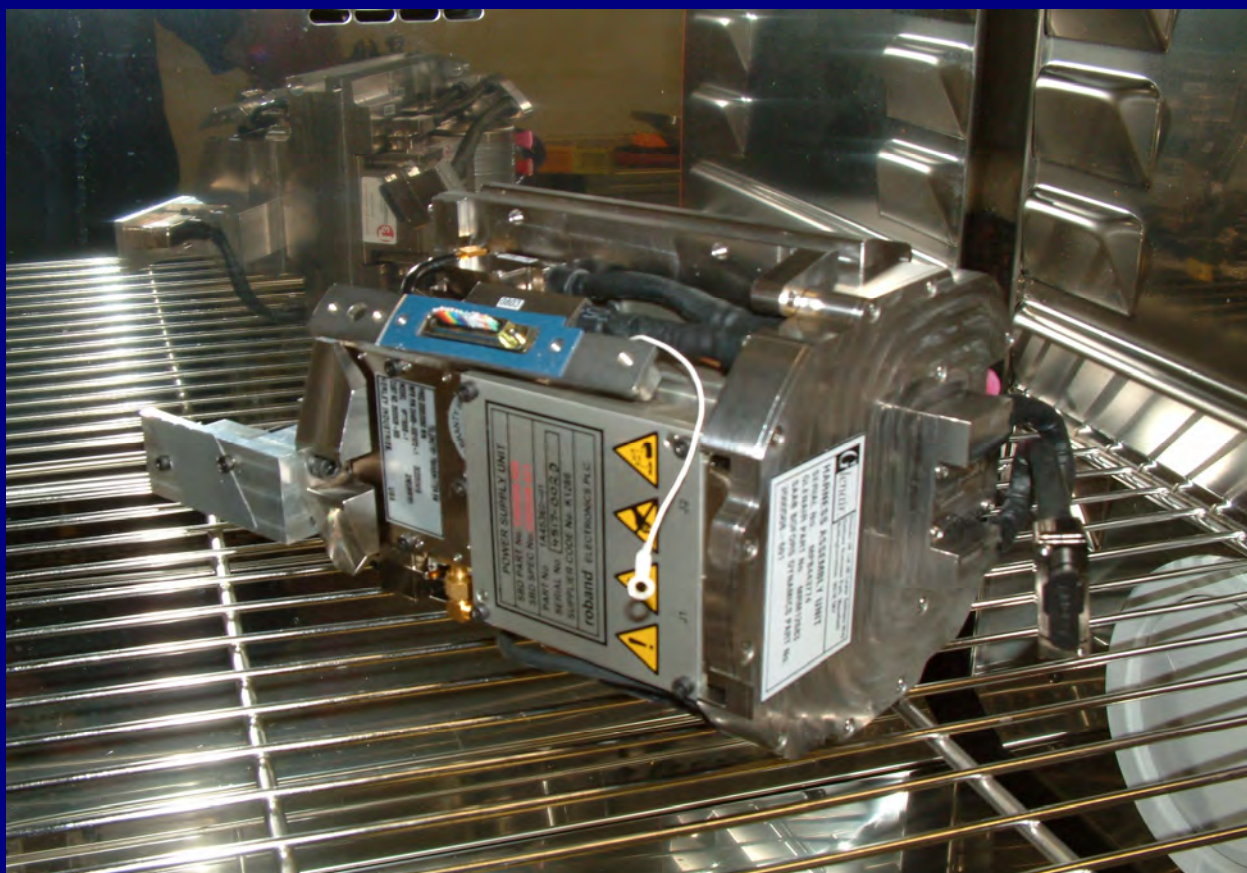
COMPONENT/ DEVICES TESTED	TESTS UNDERTAKEN	SPECIFICATIONS APPLICABLE
	MISCELLANEOUS	IEC: 60512-23-3
	EMC	
	Shielding effectiveness Line Injection Method HP 8753C Network analyzer HP 85046A S parameter test set, 300KHz-3GHz	
	FILTER ATTENUATION	
	HP 8753C Network analyzer HP 85046A S parameter test set, 300KHz-3GHz AGILENT E5071C network analyzer with TDR option	EIA-364-101
	INTERCONNECT ANALYSIS	EIA-364-108
	Differential Impedance, Insertion & return loss, crosstalk measurements. AGILENT E5071C network analyzer with TDR option DTX-1800 cable analyser CAT6	The facility is primarily used for conditioning samples for spacecraft subsystems & laser applications
	VACUUM BAKEOUT	
	CH 1: Dia 500mm x 500mm CH 2: Dia 300mm x 400mm Temp: Ambient to 125 c Base Pressure: 1E-6mbar payload/Temp dependent Turbo molecular system RGA Mass spectrometer	

**INDEPENDENT TEST HOUSE
SCOPE OF APPROVAL**

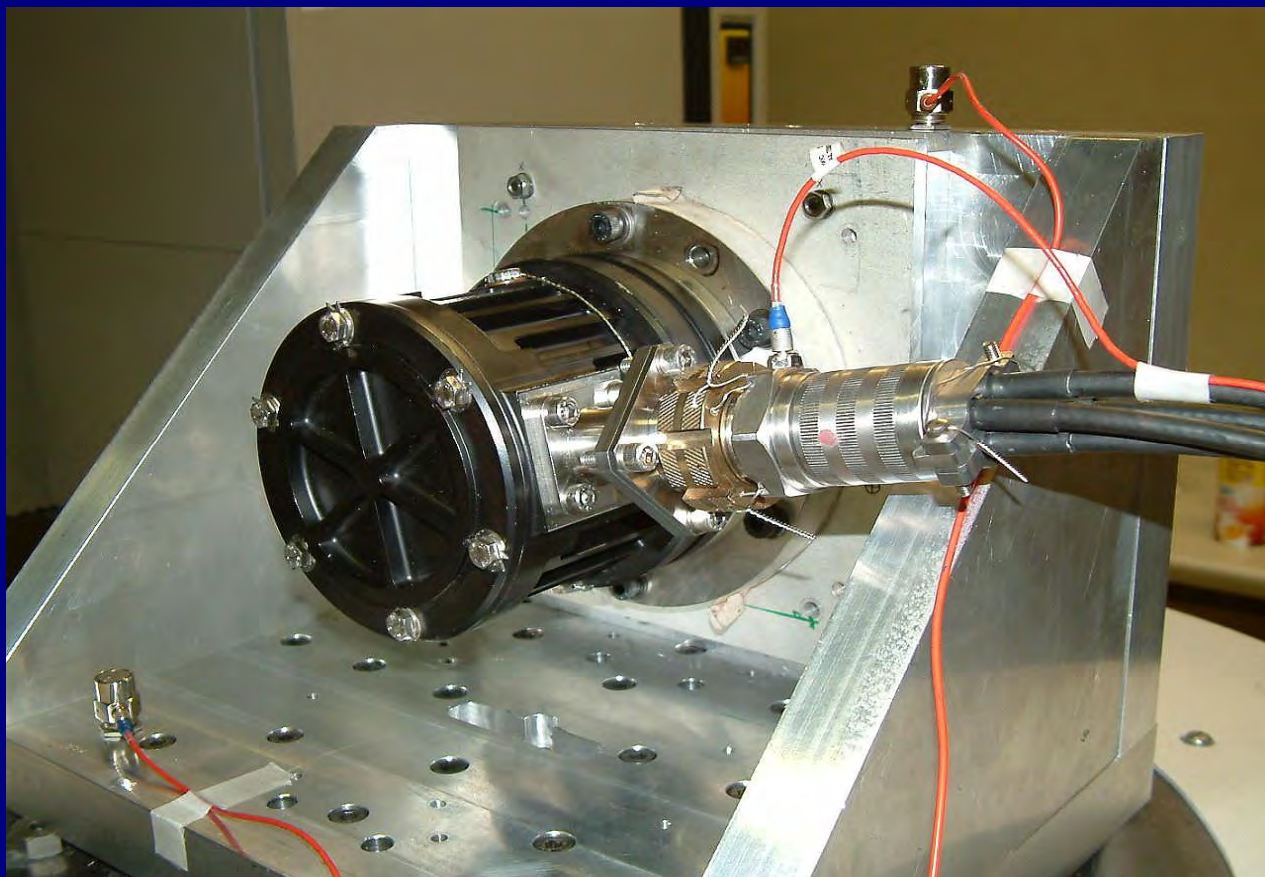
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CONDITIONING TESTS

MEASUREMENT PARAMETER AND RANGE			LABORATORY LIMITS (+/-)
DC VOLTAGE	1mV-1kV		0.20%
	1kV-15kV		2.00%
AC VOLTAGE	10mV-4kV	(50Hz)	1.50%
DC CURRENT	>1mA-1A		0.50%
	1A-600A		0.50%
AC CURRENT	10mV- 10A	(50Hz)	0.20%
DC RESISTANCE	1uOhm-100mOhms		0.50%
	>100mOhm-100MOhm		0.10%
	>100MOhm-1TOhm		3.00%
TEMPERATURE	-75C to 200C		0.40%
	>200C to 600C		1.50%
FORCE	0.1N-30kN		2.00%
TORQUE	0.Nm-5.0Nm		5.00%
HUMIDITY	10%rh-98%rh		5.00%



Climatic Test / Water Jet Test



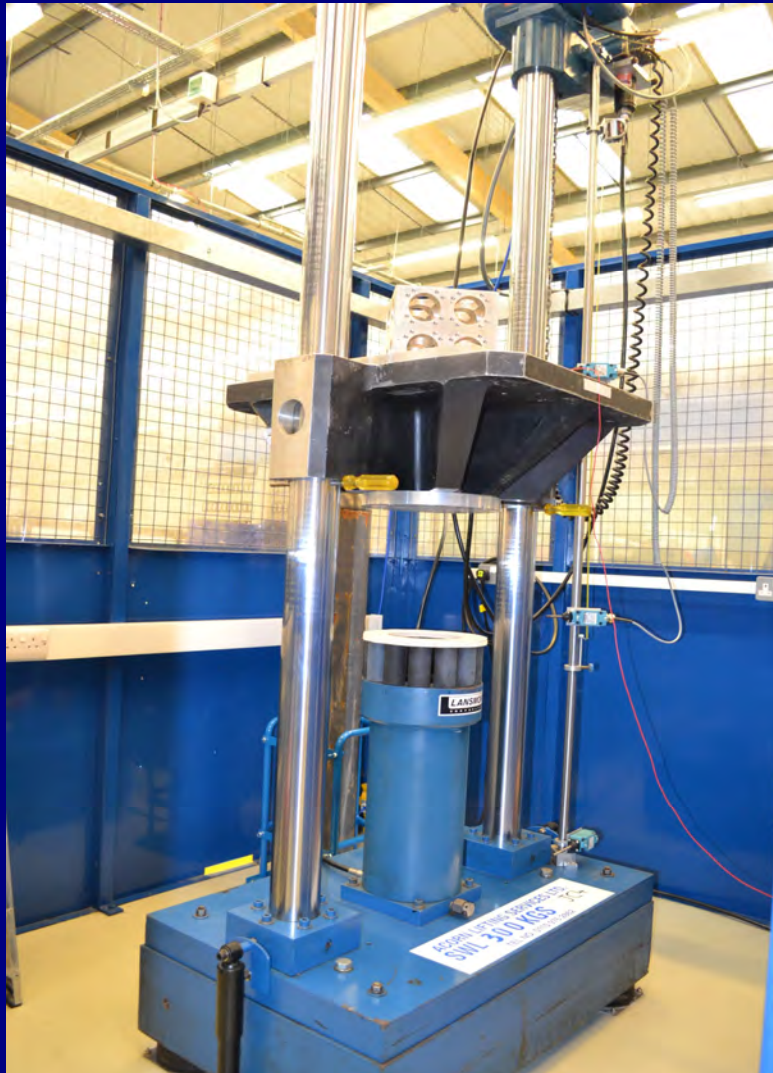
Vibration Testing



Corrosion Testing

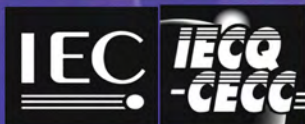
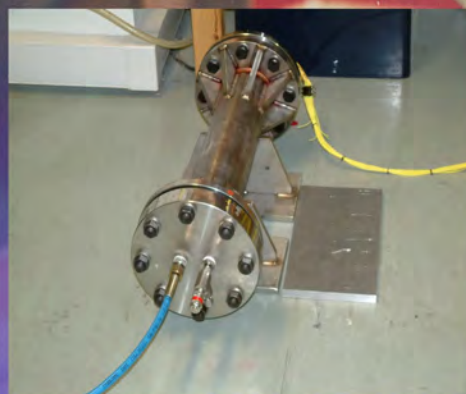
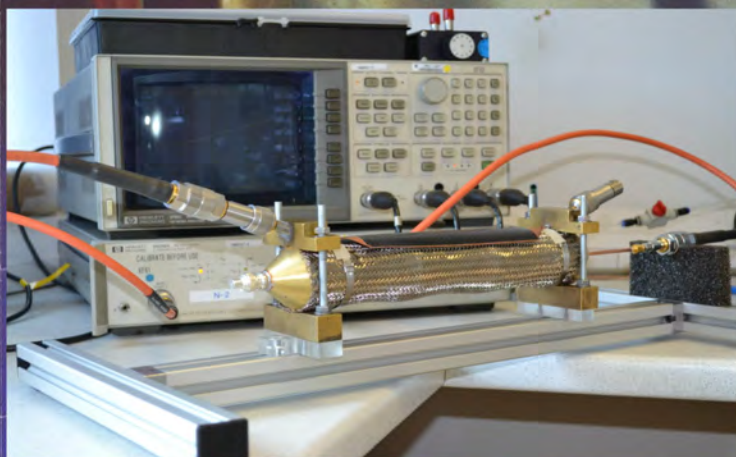
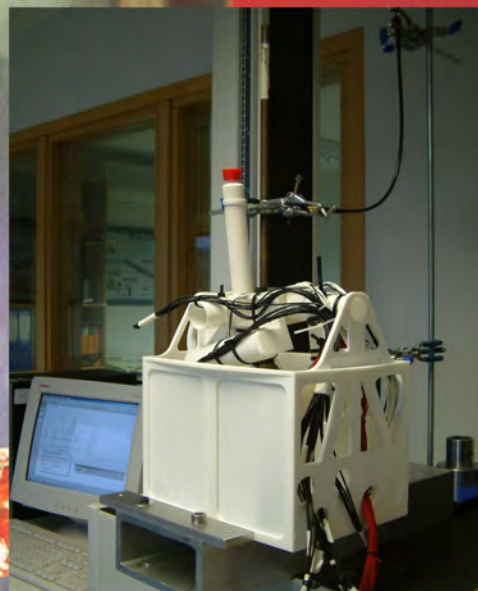
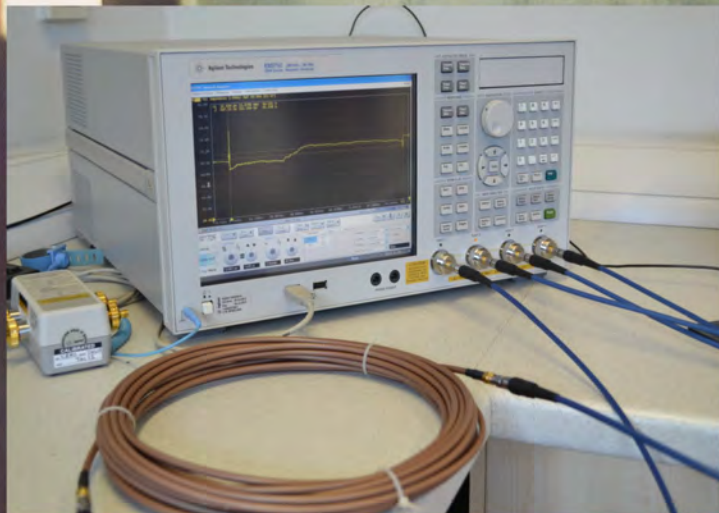


Hydrostatic Pressure Test / Hermetic Leak Test



Shock Test System / Hydrostatic Pressure Test Vessel

Miscellaneous testing



**40 Lower Oakham Way
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Low air pressure
Tensile/compression
EMC shielding
Sealing
Hydrostatic pressure
Flammability
Crimp evaluation
Outgassing

Corrosion testing



Stringent corrosion tests in the laboratory ascertain within a short period the long term behaviour of products and materials.



**40 Lower Oakham Way
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**Salt mist
Resistance to solvents**

