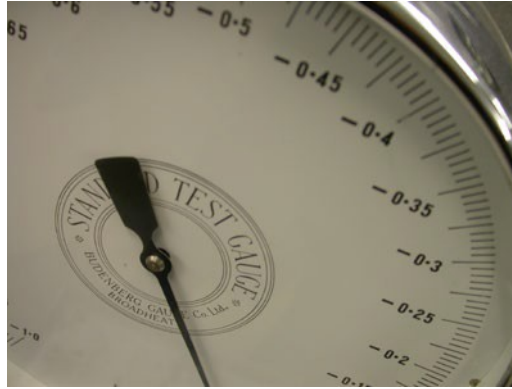


# Climatic & Dynamic Test Services

Leading European Test Facility for Components, Materials and Equipment



## Climatic & Dynamic Test Services

### Climatic Testing

- Dry heat and dry cold
- Damp heat
- Low air pressure
- Thermal shock, liquid to liquid and air to air
- Temperature cycling
- Electrical endurance
- Salt atmosphere/corrosion

### Dynamic Testing

- Vibration
- Shock
- Bump
- Acceleration

### Electrical Testing

### Solderability

The Spectrum Control Test House holds DLA Laboratory Suitability approval for performing tests in accordance with MIL-STD-883.

## Test House Capabilities

Spectrum Control is continuously developing its capabilities and test methods in response to customer requirements. Our investment in state-of-the-art equipment includes a vibration system which extends the static load capability from 80kg to a massive 500kg. The 20kN system features a shaker with a 51mm travel providing sine, random, and sine-on-random waveforms.

Certified test methods:

### EIA-364 (Connectors)

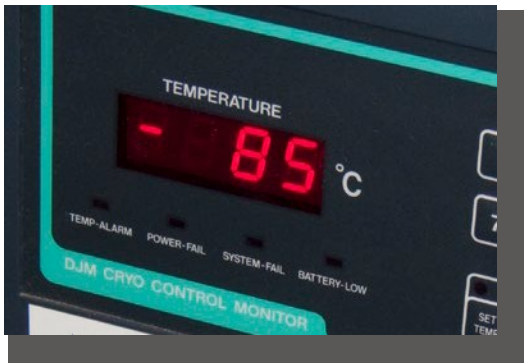
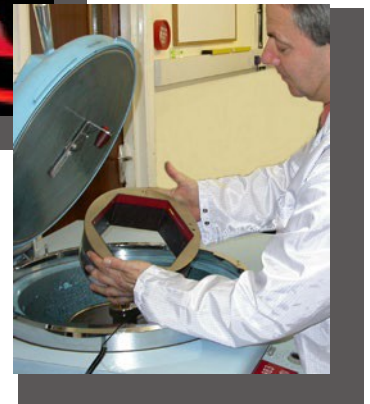
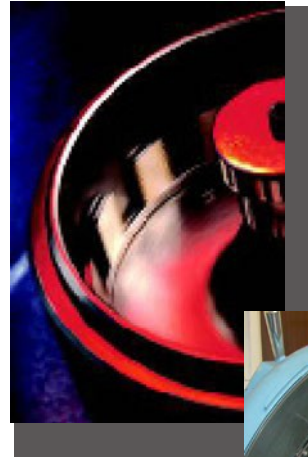
- EIA-364-28 Vibration
- EIA-364-26 Salt Spray

### BS-EN-60068-2-50

- Bump hot & cold -55°C to 150°C
- Mechanical shock hot & cold

### MIL-STD-883

- Temperature cycle TM1010 condition A - C
- Burn-in TM1015 condition A & C
- Steady-state lift TM1005 condition A & C



In addition to the vibration and shock test services on offer, we have an extended cold storage capability to -85°C and a larger temperature cycle and humidity chamber with an internal volume of 800 x 650 x 950mm.

In this chamber, products may be temperature cycled over the range of -70°C to 180°C. Other chambers offer up to 300°C.

## Experience and Flexibility

Our skilled team of engineers and technicians has decades of experience to support specification definition to ensure 'Fit for Purpose' testing is defined and performed. We are also able to offer an innovative approach to adapt current methods and techniques to fit modern challenging requirements.

We have the flexibility to support 'out-of-hours' testing to fit with customers' tight programme schedules and the capability to design and manufacture new test equipment and test methods. Working with customers, we can simply perform tests or manage and deliver entire test programmes.



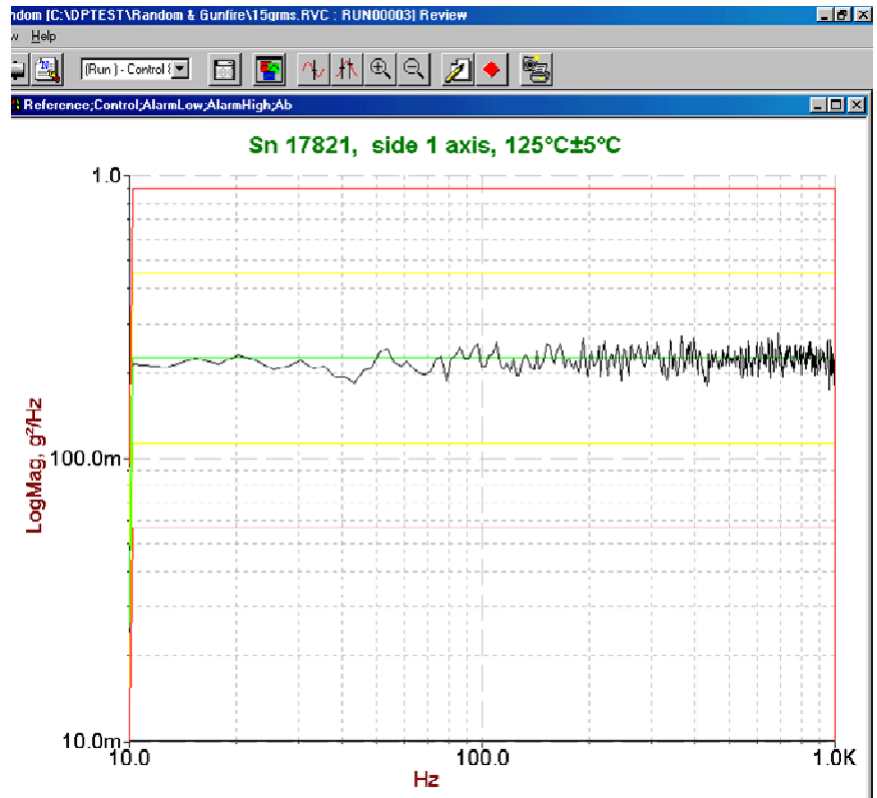
### Expertise in testing

- Sub-sea systems
- Aerospace equipment
- Electrical & electronic devices
- Electrical connectors
- Microelectronic modules
- Electromechanical devices
- Defence and space class components
- Automotive parts and accessories

# Ultra High Temperature Vibration & Shock Testing

In the process of drilling for oil & gas, electrical and electronic components experience arguably the harshest environments of them all.

Spectrum Control has developed a proprietary system for subjecting small microelectronic modules and other components to mechanical shock and vibration testing at temperatures up to 225°C. These combined conditions stress components to the maximum levels fully representative of the deep well drilling process.



## Climatic Testing

Our climate testing is an essential part of qualification where products are exposed to a harsh working environment. We offer a wide variety of services to test products to the limit of endurance.



Fully calibrated instrumentation is key to repeatable test results

Environment conditioning provides either a natural or artificial environment to which the specimen may be exposed. This allows the specimen performance to be assessed under many differing conditions in a controlled laboratory environment.



Humidity testing

### Capabilities include:

- Steady state hot and cold storage -85°C to 300°C
- Temperature cycle and shock -70°C to +300°C
- Liquid to liquid thermal shock -74°C to +160°C
- Humidity (steady state & cyclic) 10% RH to 98% RH
- Salt mist and corrosion
- Low air pressure 1000 Pa
- Steam aged solderability
- Resistance to solvents
- Endurance testing

# Summary of Test Methods and Specifications

Detail and revision level available on request.

	IEC/BS EN 60068-2	MIL-STD 202	MIL-STD 810	MIL-STD 883	MIL-STD 750
<b>Climatic Tests - single parameter</b>					
High temp storage. Max 250°C	•	•	•		
Low temp storage. Min -80°C	•		•		
Temp change (thermal shock) Rapid air to air -70°C to 200°C Gradual air to air -70°C to 200°C Rapid liquid to liquid -74°C to 160°C	•	•	•	•	•
High humidity steady state 10°C to 85°C 10%rh to 98%rh	•	•			
High humidity cyclic 10°C to 85°C 10%rh to 98%rh	•	•	•	•	•
Low pressure 1000Pa (equiv. 31,200m)	•	•	•	•	•
Salt mist	•	•	•		•
Salt corrosion	•			•	•
<b>Climatic Tests - Combined parameters</b>					
High temp/low temp/low pressure -70°C to 160°C 1000Pa (31,200m)	•	•	•	•	•
<b>Dynamic Tests</b>					
Vibration - sinusoidal Frequency range 5 to 5,000Hz Peak thrust 20kN Max pk/pk disp +/- 50mm Temp -50°C to 150°C including cyclic	•	•	•	•	•
Vibration - random Frequency range 5 to 4,000Hz Peak thrust 20kN Max pk/pk disp +/- 50mm Temp -50°C to 150°C including cyclic	•	•	•	•	
Shock Max severity 30,000gn Max mass 22kg Max size 0.2m x 0.2m x 0.2m	•	•	•	•	•
Bump Max severity 40g Max mass 23kg Max size 0.3m x 0.3m x 0.3m	•				
Acceleration - steady state Max accel 40,000gn Max item mass 0.2kg Max item size 0.1m x 0.1m x 0.1m	•	•	•	•	•
<b>Additional Test Services</b>					
Resistance to solvents/contaminating fluids Solvent/fluid to be specified	•	•		•	•
Solderability (soldering heat) Soldering baths/irons as specified Steam ageing available	•	•		•	•
Robustness of terminations Tensile Bending Torsion Torque Solder pad adhesion	•	•		•	•
Insulation resistance		•		•	

Whilst every effort is made to ensure the accuracy of the information contained in this document is correct, no responsibility can be accepted for any errors and/or omissions.

Descriptions and specifications of products are subject to change without notice.

October 2018