

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

 9373 Accredited to ISO/IEC 17025:2017	Resonate Testing Limited	
	Issue No: 017 Issue date: 17 October 2024	
	Unit 1, Bridge Technology Park Carnagat Lane Chancellors Road Newry Northern Ireland BT35 8XF	Contact: Mary Dowey Tel: +44 (0) 2890 736390 E-Mail: info@resonatetesting.com Website: www.resonatetesting.com
Testing performed at the above address only		

Flexible Scope

For the areas of the schedule marked with ** and listed below only the laboratory is accredited to ISO/IEC17025:2017 for testing activities in accordance with the standards in the schedule. This may also include tests on the same or similar product types against standards, or customer-specified methods, that are not specifically listed in this Schedule, providing that:

- (1) The method or standard does not introduce new principles of measurement.
- (2) The method or standard does not require measurements to be made outside the parametric boundaries defined in this Schedule.

Information about flexible scopes of accreditation is available in UKAS document GEN 4 / EA2/15 and ILAC G18

Types of tests where the flexible scope applies in accordance with Lab document QS00372

Dynamic Tests
Climatic Tests
Flammibility Vertical, Horizontal and 45 degrees



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DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
<p>GENERAL AND NON-EXPLOSIVE STORES AND EQUIPMENT including:</p> <p>Aerospace Structures, Materials & Equipment Agricultural Equipment Construction Plant, Equipment, Products and Materials Computers & Peripherals Domestic Appliances Electrical/Electronic Components, Connectors & Products Electro-Mechanical Devices Fire-fighting and Detection equipment Hydraulic equipment and fitting Loaded Containers Marine Equipment Mechanical products and plant Medical devices and components Mining Equipment Missile Sub-Assemblies and Components Motor Vehicles Accessories & Components Office Equipment Packages & Packaging Material Plastics and Products Pressure vessels Radar Equipment Radio & Television Equipment Rail and Rolling stock equipment and components Safety Appliances & Equipment Satellites & Sub-Assemblies</p> <p>Security Devices & Alarms Structures and components Shipping Containers & Systems Sub-sea equipment & components Telecommunications Equipment Thermal imaging Unit Loads Unitised Loads Weapons and Sub-Assemblies</p>	<p>ENVIRONMENTAL TESTS (non-explosive items)</p> <p>Dynamic tests Single Parameters **</p> <p>VIBRATION-Sinusoidal</p> <p>Freq range: 5-2500 Hz Peak Thrust: 54 kN Max pk/pk displacement: 100mm</p> <p>Temp range:-50°C to+120°C (max ramp rate 10°C/min) 10%-98% rh (depending on temperature range) 1 m x 1.13 m x 1.08 m</p> <p>VIBRATION-Random</p> <p>Freq range: 5-2500 Hz Peak RMS thrust: 54 kN Max pk/pk displacement: 100mm</p> <p>Temp range:-50°C to+120°C (max ramp rate 10°C/min) 10%-98% rh (depending on temperature range) 1 m x 1.13 m x 1.08 m</p>	<p>IEC EN 60068-2-6:2007 IEC EN 60068-2-6:1995 IEC EN 60068-2-50:2000 IEC EN 60068-2-51:2000 IEC EN 60068-2-53:2010 RTCA/DO-160C to G Section 8 MIL STD 810 G (2014) 514.7 MIL STD 810 H 514.8 MIL STD 810 G 520.3 MIL STD 810 G (2014) 520.4 MIL STD 810 H 520.5 ISO 16750-3:2023 Tests III, IX ISO 16750-3:2012 Tests III, IX (Table 16)</p> <p>QS000296:Issue 01 In house procedure for combined climatic and dynamic testing</p> <p>IEC EN 60068-2-64:2008+A1:2019 IEC EN 60068-2-64:2008 IEC EN 60068-2-64:1995 IEC EN 60068-2-53:2010 RTCA/DO-160C to G Section 8 MIL STD 810 G (2014) 514.7 MIL STD 810 H 514.8 MIL STD 810 G 520.3 MIL STD 810 G (2014) 520.4 MIL STD 810 H 520.5 ISO 16750-3:2012 Tests IV, V, VII, VIII ISO 16750-3:2012 Tests IV, V, VII, VIII</p>



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CELLS AND BATTERIES Batteries and battery using equipment	<p>VIBRATION – Sinusoidal High/Low temperature Constant/cycling</p> <p>Freq range: 2 to 2500Hz Peak force: 54 kN Max Peak to peak displacement: 100mm</p> <p>Temp range:-50°C to+120°C (max ramp rate 10 °C/min) 10%-98%rh (depending on the temperature range) 1 m x 1.13 m x 1.08 m</p> <p>VIBRATION – Random High/Low temperature Constant/cycling</p> <p>Freq range: 2 to 2500Hz Peak force: 54 kN Max Peak to peak displacement: 100mm</p> <p>Temp range:-50°C to+120°C (max ramp rate 10 °C/min) 10%-98%rh (depending on the temperature range) 1 m x 1.13 m x 1.08 m</p>	<p>IEC/EN 62133-2 7.3.8.1 Vibration</p> <p>UN ST/SG/AC.10/11 Rev 6 Section 38.3 Test T3 Vibration</p> <p>UN ECE R100 Rev.3 E/ECE/324 Rev.3 E/ECE/TRANS/505 Rev.3 Annex 9A Vibration</p> <p>RTCA DO-227a 2.2.1.1.2 Cell Vibration 2.2.2.1.2 Battery Vibration 2.2.3.1.1 End Item Vibration</p> <p>ETSO-C142b TSO-C142b</p>



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GENERAL AND NON-EXPLOSIVE STORES AND EQUIPMENT (cont'd)	ENVIRONMENTAL TESTS (non-explosive items) (cont'd)	
CELLS AND BATTERIES (cont'd)	Dynamic testing ** Shock Classical shock with half sine, terminal peak sawtooth, trapezoidal, Shock Responsive Spectrum (SRS) Ambient temperature Half Sine Severity: 150g Minimum pulse width: 2ms Maximum pulse width: 20ms Sawtooth Severity: 100g Minimum pulse width: 6ms Maximum pulse width: 20ms Trapezoid Severity: 50g Minimum pulse width: 11ms Maximum pulse width: 18ms Triangular Severity: 80g Minimum pulse width: 6ms Maximum pulse width: 20ms Temp range:-50°C to+120°C (max ramp rate 10°C/min) 10%-98% rh (depending on temperature range) 1 m x 1.13 m x 1.08 m	IEC EN 60068-2-27:2008 IEC EN 60068-2-53:2010 RTCA/DO-160 C to G Section 7 MIL STD 810 G (2014) 516.7 MIL STD 810 H 516.8 MIL STD 810 G 520.3 MIL STD 810 G (2014) 520.4 MIL STD 810 H 520.5 ISO 16750-3:2023 ISO 16750-3:2012 QS000296:Issue 01 In house procedure for combined climatic and dynamic testing IEC EN 62133-2 7.3.8.2 Shock UN ST/SG/AC.10/11 Rev 6 Section 38.3 Test T.4 Shock RTCA DO-227a 2.4.1.1.3 Cell Shock Test 2.4.2.1.3 Battery Shock Test 2.4.3.1.2 End Item Shock Test



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GENERAL AND NON-EXPLOSIVE STORES AND EQUIPMENT (cont'd)	Complex Shock/pyroshock - Shock Response Spectrum (SRS) synthesis – Impact plate method based on mass dummy trials. SRS Frequency to 25kHz max, SRS Amplitude to 9000g max. Ambient temperature	QS00400: Issue 03 In house Test Method SRS Shock test (Impact plate).
GENERAL AND NON-EXPLOSIVE STORES AND EQUIPMENT (cont'd)	Dynamic Testing ** Drop Test (Free Fall)	MIL STD 810 G 516.7 MIL STD 810 H 516.8 Transit Drop Procedure IV
CELLS AND BATTERIES (cont'd)	Max Mass of item - 200kg Max Drop Height - 3.05m	IEC EN 62133-2 7.3.3 Free Fall IEC EN 62619:2022 7.2.3 Drop test (cell or cell block, and battery system) block) RTCA DO-227a 2.4.1.2.4 Cell Drop Test 2.4.2.2.2 Battery Drop Test



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GENERAL AND NON-EXPLOSIVE STORES AND EQUIPMENT (cont'd)	Climatic tests ** : - Humidity, steady state	IEC 60068-2-67:1995 Part 2-67: Tests - Test Cy: IEC 60068-2-78:2012 Part 2-78: Tests – Test Cab
CELLS AND BATTERIES (cont'd)	Temp range:-75°C to+180°C (max ramp rate 10°C/min) 10%-98% (depending on temperature range) 1 m x 1.13 m x 1.08 m Temp range:-40°C to+180°C (max ramp rate 3°C/min) 10%-98%rh (depending on temperature range) 0.66 m x 0.53 m x 0.42 m High Temp - Low Humidity -constant and cyclic Temp range:-70°C to+180°C (max ramp rate 10°C/min) 1 m x 1.13 m x 1.08 m Temp range:-40°C to+180°C (max ramp rate 3°C/min) 0.66 m x 0.53 m x 0.42 m Temp range:+20°C to+200°C 0.76 m x 0.66 m x 0.86 m	RTCA DO 160 C to G Section 6 MIL STD 810G 507.5 MIL STD 810G (2014) 507.6 RTCA DO-227a 2.4.1.1.6 Cell Humidity Test 2.4.2.1.7 Battery Humidity Test IEC/EN 60068-2-2:2007 Test B: IEC/EN 60068-2-14:2009 & 2023 Test Nb RTCA DO 160 C TO G - Section 4.0 - Section 5.0 MIL STD 810G 501.5 MIL STD 810G (2014) 501.6 MIL STD 810H 501.7 DEF STAN 00-35 Part 3 - Test CL1 - Test CL2
GENERAL AND NON-EXPLOSIVE STORES AND EQUIPMENT (cont'd)	Temp range:-70°C to+180°C (max ramp rate 5°C/min) 0.95 m x 1.05 m x 0.9 m Low Tempertaure	IEC/EN 60068-2-1:2007 Part 2-1: Tests - Test A: Cold IEC/EN 60068-2-14:2009 & 2023 Test Nb RTCA DO 160C-G: - Section 4.0 - Section 5.0 MIL STD 810G 502.5 MIL STD 810G (2014) 502.6 MIL STD 810H 502.7 DEF STAN 00-35 (Part3) - Test CL4 - Test CL5



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CELLS AND BATTERIES (cont'd)		IEC EN 62133-2 7.3.4 Thermal Abuse IEC 62619:2022 7.2.4 Thermal abuse test UN ST/SG/AC.10/11 Rev 6 Section 38.3 Test T.2 Thermal Test UN ECE R100 Rev.3 E/ECE/324 Rev.3 E/ECE/TRANS/505 Rev.3 Annex 9B Thermal shock and cycling test RTCA DO-227a 2.4.1.1.4 Cell Temperature Cycling Test 2.4.2.1.4 Battery Temperature Cycling Test
GENERAL AND NON-EXPLOSIVE STORES AND EQUIPMENT (cont'd)	Climatic tests ** (cont'd) Combined temperature and Humidity cyclic Temp range:-70°C to+180°C (max ramp rate 10°C/min) 10%-98% (depending on temperature range) 1 m x 1.13 m x 1.08 m Temp range:-40°C to+180°C (max ramp rate 3°C/min) 10%-98%rh (depending on temperature range) 0.66 m x 0.53 m x 0.42 m	IEC/EN 60068-2-30:2005 Part 2-30: Test Db IEC/EN 60068-2-38:2009 Part 2-38: Test Z/AD IEC/EN 60068-2-78:2012 Part 2-78: Test Cab MIL STD 810G 507.5 MIL STD 810G (2014) 507.6 RTCA DO160 C to G Section 6.0 DEF STAN 00-35 - Test CL6 - Test CL7 QS000297: Issue 01 in house method Combined temperature humidity cycling test



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GENERAL AND NON-EXPLOSIVE STORES AND EQUIPMENT (cont'd) CELLS AND BATTERIES (cont'd)	Temperature and altitude Temp range:-70°C to+180°C Maximum altitude: 100,000ft (max ramp rate 5°C/min) 0.95 m x 1.05 m x 0.9 m	IEC/EN 60068-2-13:1983 Part 2- Test M IEC/EN 60068-2-39:2015 Part 2-39: MIL STD 810G 500.5 MIL STD 810G (2014) 500.6 MIL STD 810G 520.3 MIL STD 810G (2014) 520.4 MIL STD 810H 520.5 DEF STAN 00-35 (Part3) <ul style="list-style-type: none">- Test CL11- Test CL12- Test CL21 RTCA DO 160C-G: <ul style="list-style-type: none">- Section 4.0 UN ST/SG/AC.10/11 Rev 6 Section 38.3 Test T.1 Altitude simulation RTCA DO-227a 2.4.1.1.5 Cell Altitude Test 2.4.2.1.5 Battery Altitude Tolerance Test
GENERAL AND NON-EXPLOSIVE STORES AND EQUIPMENT (cont'd)	Climatic tests ** (cont'd) Thermal Shock Two chamber method & Automated transfer. Temp range:-70°C to+180°C 0.95 m x 1.05 m x 0.9 m	IEC 60068-2-14:2009 MIL STD 810G 503.5 MIL STD 810G (2014) 503.6 MIL STD 810H 503.7 DEF STAN 00-35 (Part3) <ul style="list-style-type: none">- Test CL14 RTCA DO 160C-G Section 5.0



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GENERAL AND NON-EXPLOSIVE STORES AND EQUIPMENT (cont'd)	Ingress Protection Tests IP1X protection from hand 50mm IP2X protection from finger 12.5mm IP3X protection from a tool 2.5mm IP4X protection from a wire 1.0mm IP5X dust protected IP6X dust tight IPX1 dripping water IPX2 dripping water, tilted up to 15° IPX3 spraying water IPX4 splashing water IPX5 water jets/high velocity water IPX6 powerful water jets/ strong high velocity water IPX7 immersion (1m)/ temporary immersion IPX8 immersion continuous immersion	BS EN 60529:1992 +A2:2013 IEC 60529:1989 +A2:2013 ISO 20653 :2023 ISO 20653: 2013 IEC 60068-2-68:1994 - La2 IEC 60068-2-18:2000/ BS EN 60068-2-18: 2001 - Ra 2, Rb 1.2, Rb 2, Rc 1.



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GENERAL MATERIALS FOR AIRCRAFT INTERIORS – seat cushion	Flammability Test	DOT/FAA/AR-00/12 – FAA FIRE TEST HANDBOOK Chapter 7: Seat Cushion Flammability (CS/FAR 25.853)
GENERAL MATERIALS FOR AIRCRAFT INTERIORS – Ceiling & Sidewall Liner Panels Class C Compartments	Flammability Test	DOT/FAA/AR-00/12 – FAA FIRE TEST HANDBOOK Chapter 8: Cargo Liner Burnthrough (CS/FAR 25.855)
AIRCRAFT POWERPLANT COMPONENTS including: All firewall components Shrouds Cowling and Nacelle Skins Hoses and hose assemblies Fluid Assemblies	Fire Penetration Fire Resistance Fire Proof	QS00118 In House Powerplant Fire test method covering: FAA AC20–135 FAA engineering report 3A ISO2685 (1990 & 1998) DOT/FAA/AR-00/12:FAA FIRE TEST HANDBOOK – Chapter 12 DOT/FAA/AR-00/12:FAA FIRE TEST HANDBOOK – Chapter 11 SAE AS1055 SAE AIR/AS1377 SAE AS4273 (CS/FAR 25.867, 25.865, 25,1181, 25.1191, 25.1183, 25.1193, FAR 33.17, CS-E-130) TSO C140, TSO C53A, TSO C75 RTCA DO-160 G Section 26
GENERAL MATERIALS FOR AIRCRAFT INTERIORS	Flammability – Vertical **	DOT/FAA/AR-00/12:FAA FIRE TEST HANDBOOK – Chapter 1 (CS/FAR 25.853 and 25.855)
	Flammability – Horizontal **	DOT/FAA/AR-00/12:FAA FIRE TEST HANDBOOK – Chapter 3 (CS/FAR 25.853)
	Flammability – 45 degrees **	DOT/FAA/AR-00/12:FAA FIRE TEST HANDBOOK – Chapter 2
END		