Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

1909

Accredited to ISO/IEC 17025:2017

Environmental Test Services Ltd

Issue No: 022 **Issue date:** 26 May 2020

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Testing performed at the above address only

DETAIL OF ACCREDITATION

Flexible Scope

The Flexible Scope applies to the laboratory's accreditation to BS EN ISO/IEC17025:2017 for testing activities in accordance with the standards listed 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 GEN4.

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
AEROSPACE COMPONENTS AND EQUIPMENT BATTERIES AND CELLS CIRCUIT BREAKERS AND SWITCHES COATINGS: METALLIC COATINGS: NON-METALLIC COMPUTERS AND PERIPHERALS ELECTRICAL/ELECTRONIC COMPONENTS, CONNECTORS AND PRODUCTS ELECTRICAL CABLES ELECTRO-MECHANICAL DEVICES ENCLOSURES FOR ELECTRICAL EQUIPMENT FANS FASTENERS HOSES, PIPES AND TUBES INSTRUMENTS: INDICATING/RECORDING INSULATION MATERIALS: ELECTRICAL IT EQUIPMENT LUMINAIRES MARINE EQUIPMENT MEASURING EQUIPMENT MICRO-ELECTRONIC CIRCUITS AND COMPONENTS MISSILE COMPONENTS MOTOR VEHICLE ACCESSORIES AND COMPONENTS OFFICE EQUIPMENT: ELECTRICAL OPHTHALMIC PRODUCTS: OPTICAL OPTICAL FIBRE PACKAGES AND PACKAGING MATERIALS PAINTS AND VARNISHES PLUGS AND SOCKETS: ELECTRICAL POWER SUPPLIES: ELECTRICAL PRINTED CIRCUIT BOARDS RADAR EQUIPMENT RADIO AND TV EQUIPMENT	**ENVIRONMENTAL TESTS** (non-explosive items) **1 CLIMATIC** 1.1 HIGH TEMPERATURE - -Constant Max temp: +200°C Max chamber size: 0.47 m x 0.65 m x 0.4 m - Constant/Cyclic Max temp: +175°C Max chamber size: 1.0 m x 1.1 m x 1.0 m (high) Max temp: +70°C Max chamber size: (Walk-In) 1.8 m x 2.4 m x 2.4 m (high) 1.2 LOW TEMPERATURE - Constant/Cyclic Min temp: -70°C Max chamber size: 1.0 m x 1.1 m x 1.0 m (high) Min temp: -40°C Max chamber size: (Walk-In) 1.8 m x 2.4 m x 2.4 m (high)	BS 2011:B:1977(1980) BS EN 60068-2-2:1993 Tests Ba, Bb, Bd (forced air circulation, Methods A and B) BS EN 60068-2-2:2007 IEC 60068-2-2:1974 IEC 60068-2-2:2007 DEF STAN 07-55:1975 Tests B1, B2 DEF STAN 00-35:2006,Pt3,Issue4 Test CL1 / CL2 ETSI EN 300 019 Part 2.1: 2014 ETSI EN 300 019 Part 2.2: 2013 ETSI EN 300 019 Part 2.7: 2003 MIL-STD-810E:1989(1990) Method 501.3 MIL-STD-810F:2000 Method 501.4 MIL-STD-810G:2008 Method 501.5 MIL-STD-810G:2014 w/Ch1 Method 501.6 RTCA DO-160D RTCA DO-160E RTCA DO-160F para 4.5.3, 4.5.4, 4.5.5, 5.3.1 RTCA DO-160G BS 2011:A:1990 BS EN 60068-2-1:1993 Tests Aa, Ab, Ad (forced air Circulation, Methods A and B) BS EN 60068-2-1:2007 IEC 68-2-1:1990 IEC 60068-2-1:1993 IEC 60068-2-1:2007 DEF STAN 07-55:1975 Tests B4, B5 DEF STAN 00-35:2006,Pt3,Issue4 Test CL4 / CL5 ETSI EN 300 019 Part 2.1: 2014 ETSI EN 300 019 Part 2.2: 2013 ETSI EN 300 019 Part 2.7: 2003 MIL-STD-810E:1989(1990) Method 502.3

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
Continued from Page 1	**ENVIRONMENTAL TESTS** **1 CLIMATIC** (cont'd)	
SATELLITES AND SUB-ASSEMBLIES SECURITY DEVICES AND ALARMS SMOKE DETECTORS SONAR EQUIPMENT TELECOMMUNICATION EQUIPMENT TRANSFORMERS: ELECTRICAL WEAPONS AND SUB-ASSEMBLIES	1.2 LOW TEMPERATURE (cont'd)	MIL-STD-810F:2000 Method 502.4 MIL-STD-810G:2008 Method 502.5 MIL-STD-810G:2014 w/Change 1 Method 502.6 RTCA DO-160D RTCA DO-160E RTCA DO-160F para 4.5.1, 5.3.1 RTCA DO-160G
	1.3 CHANGE OF TEMPERATURE	
	- Automatic transference Temp range: -70°C to +200°C Max chamber size: 0.47 m x 0.65 m x 0.40 m (high)	BS 2011:N:1985(1987) Tests Na, Nb BS EN 60068-2-14:2000 BS EN 60068-2-14:2009 IEC 60068-2-14:1984 IEC 60068-2-14:2009
	- Single chamber (cyclic) Temp range: -70°C to +150°C Max rate of change: 10°C/min Max chamber size: 0.6 m x 0.6 m x 0.6 m	DEF STAN 07-55:1975 Test B14 (Proc A) DEF STAN 00-35:2006,Pt3,Issue4 Test CL14 MIL-STD-810E:1989(1990) Method 503.3 MIL-STD-810F:2000 Method 503.4 MIL-STD-810G:2008 Method 503.5 MIL-STD-810G:2014 w/Change 1 Method 503.6 RTCA DO-160D RTCA DO-160E RTCA DO-160F para 5.3.1, 5.3.2, 5.3.3 RTCA DO-160G
	Temp range: -70°C to +150°C Max rate of change: 3°C/min Max chamber size: (Walk-In) 1.8 m x 2.4 m x 2.4 m (high)	
	- Manual transference (2 chambers) Temp range: -70°C to +175°C Max chamber size: **1.0 m x 1.1 m x 1.0 m (high)** Temperature/humidity cyclic	
	1.4 HIGH HUMIDITY	
	- Constant/Cyclic Humidity range: 10% rh to 98% rh	BS 2011:Ca:1977(1987) BS 2011:Db:1981 BS 2011:Cb:1990 BS EN 60068-2-30:2005 Test Db BS EN 60068-2-78:2002 Test Cab BS EN 60068-2-78:2013 Test Cab IEC 68-2-3:1969 IEC 68-2-30:1980 IEC 60068-2-30:2005 IEC 68-2-56:1988 IEC 60068-2-78:2012 Test Cab
	Temp range: +10°C to +85°C Max chamber size: 1.0 m x 1.1 m x 1.0 m (high)	
	Temp range: +10°C to +70°C Max chamber size: (Walk-In) 1.8 m x 2.4 m x 2.4 m (high)	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Pages 1 and 2	**ENVIRONMENTAL TESTS**	
	1 CLIMATIC (cont'd)	DEF STAN 07-55:1975 Tests B6, B7, B8
	1.4 HIGH HUMIDITY (cont'd)	DEF STAN 00-35:2006,Pt3,Issue4 Test CL7 ETSI EN 300 019 Part 2.1: 2014 ETSI EN 300 019 Part 2.2: 2013 ETSI EN 300 019 Part 2.7: 2003 MIL-STD-810E:1989(1990) Method 507.3 MIL-STD-810F:2000 Method 507.4 MIL-STD-810G:2008 Method 507.5 MIL-STD-810G:2014 w/Change 1 Method 507.6 RTCA DO-160D RTCA DO-160E RTCA DO-160F para 6.3.1, 6.3.2, 6.3.3 RTCA DO-160G
	1.5 COMPOSITE - Temperature/humidity cyclic Humidity range: 10% rh to 98% rh (at temps > +10°C) Temp range: -70°C to +85°C Max chamber size: 1.0 m x 1.1 m x 1.0 m (high)	BS EN 60068-2-38:1999, Test Z/AD BS EN 60068-2-38:2009, Test Z/AD IEC 60068-2-38:1974 IEC 60068-2-38:2009, Test Z/AD MIL-STD-883E:1995 Method 1004.7
	1.6 LOW PRESSURE Temp range: ambient Min pressure: 3.4 kPa Max Chamber size: 1.0 m x 0.75 m (diameter)	BS 2011:M:1984 BS EN 60068-2-13:1999 IEC 60068-2-13:1983 DEF STAN 00-35:2006,Pt3,Issue4 Test CL21 MIL-STD-810E:1989(1990) Method 500.3 MIL-STD-810F:2000 Method 500.4 MIL-STD-810G:2008 Method 500.5 MIL-STD-810G:2014 w/Change 1 Method 500.6 RTCA DO-160D RTCA DO-160E RTCA DO-160F para 4.6.1 RTCA DO-160G

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Pages 1 and 2	**ENVIRONMENTAL TESTS** (cont'd)	
	1 CLIMATIC (cont'd)	
	1.7 HIGH PRESSURE	DEF STAN 07-55:1975, Test B15 DEF STAN 00-35:2006,Pt3,Issue4 Test CL15 RTCA DO-160D RTCA DO-160E RTCA DO-160F para 4.6.3 RTCA DO-160G
	Temp range: ambient Max pressure: 304 kPa Max Chamber size: 1.0 m x 0.75 m (diameter)	
	1.8 DECOMPRESSION	DEF STAN 00-35:2006,Pt3,Issue4 Test CL9 RTCA DO-160D RTCA DO-160E RTCA DO-160F para 4.6.2 RTCA DO-160G MIL-STD-810G:2008 Method 500.5 MIL-STD-810G:2014 w/Change 1 Method 500.6
	Temp range: ambient Max/Min pressure: 304 kPa/3.4 kPa Max Chamber size: 1.0 m x 0.75 m (diameter)	
	1.9 SALT MIST & SALT CORROSION	BS 2011:Ka:1982 BS 2011:Kb:1987 BS EN 60068-2-11:1999 BS EN 60068-2-52:1996 IEC 60068-2-11:1981 IEC 60068-2-52:1996 IEC 68-2-52:1984 DEF STAN 07-55:1975, Test C2 DEF STAN 07-55:1975, Test C5 DEF STAN 00-35:2006,Pt3,Issue4 Test CN2 MIL-STD-810E:1989(1990) Method 509.3 MIL-STD-810F:2000 Method 509.4 MIL-STD-810G:2008 Method 509.5 MIL-STD-810G:2014 w/Change 1 Method 509.6 RTCA DO-160D RTCA DO-160E RTCA DO-160F para 14 RTCA DO-160G
	Temp range: ambient to +55°C Chamber size: 1.4 m x 0.8 m x 0.8 m	
	1.10 ICING/FREEZING RAIN	MIL-STD-810E:1989 Method 521.1 MIL-STD-810F:2000 Method 521.2 MIL-STD-810G:2008 Method 521.3 MIL-STD-810G:2014 w/Change 1 Method 521.4
	Max chamber size: 1.8 m x 2.4 m x 2.4 m (high)	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Pages 1 and 2	**ENVIRONMENTAL TESTS** (cont'd)	
	1 CLIMATIC (cont'd) 1.10 ICING/FREEZING RAIN (cot'd)	RTCA DO-160D RTCA DO-160E RTCA DO-160F para 24.4.4 RTCA DO-160G DEF STAN 00-35:2006,Pt3,Issue4 Test CL10, Test Procedure A
	1.11 WATER - drops (ambient temperature) Max Test area: 1.0 m x 1.0 m	DEF STAN 07-55:1975, Test D4 DEF STAN 00-35:2006,Pt3,Issue4 Test CL28 MIL-STD-108E:4.3:1966 MIL-STD-810F:2000 Method 506.4 MIL-STD-810G:2008 Method 506.5 MIL-STD-810G:2014 w/Change 1 Method 506.6 RTCA DO-160D RTCA DO-160E RTCA DO-160F para 10.3.1, 10.3.2 RTCA DO-160G
	1.12 WATER – Ingress Protection	BS EN 60529:1992 BS EN 60529:1992+A2:2013 IPX1, IPX2, IPX3, IPX4, IPX5, IPX6 IEC 60529:1989+A1:1999 IPX1, IPX2, IPX3, IPX4, IPX5, IPX6
	1.13 WATER IMMERSION Max Tank size: 850 mm x 550 mm x 390 mm (high)	BS EN 60529:1992 BS EN 60529:1992+A2:2013 IPX7 and IPX8 to 20 metres IEC 60529:1989+A1:1999 IPX7 and IPX8 to 20 metres DEF STAN 00-35, CL 29 MIL-STD-810E 1989, Method 512.3 MIL-STD-810F:2000 Method 512.4 MIL-STD-810G:2008 Method 512.5 MIL-STD-810G:2014 w/Change 1 Method 512.6
	1.14 SOLIDS / DUST – Dust test Chamber size: 1.0 m x 1.0 m x 1.0 m	BS EN 60529:1992+A2:2013, IP4X BS EN 60529:1992+A2:2013, IP5X IEC 60529:1989+A1:1999, IP5X
	1.15 DUST – Dust tight Chamber size: 1.0 m x 1.0 m x 1.0 m	BS EN 60529:1992, IP6X BS EN 60529:1992+A2:2013, IP6X BS EN 60068-2-18:2001 IEC 60068-2-18:2000 IEC 60529:1989+A1:1999

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Pages 1 and 2	**ENVIRONMENTAL TESTS** (cont'd) 2 DYNAMIC 2.1a VIBRATION - Sinusoidal (ambient temperature) Electromagnetic Vibrator System 1 Slip-table (600mm x 600mm) Freq range: 5 to 3000 Hz Peak thrust: 13.3 kN Max pk/pk displacement: 25 mm Electromagnetic Vibrator System 3 Freq range: 5 to 3000 Hz Peak thrust: 15 kN Max pk/pk displacement: 50mm Electromagnetic Vibrator System 4 Freq range: 10 to 2000 Hz Peak thrust: 28 kN Max pk/pk displacement: 25mm 2.1b VIBRATION - Sinusoidal (combined with temperature) Electromagnetic Vibrator System 2 Head Expander (440mm x 440mm) Freq range: 5 to 3000 Hz Peak thrust: 13.3 kN Max pk/pk displacement: 25mm Temp range: -50°C to +125°C Max rate of change: 10°C/min Chamber size: 0.7 m x 0.7 m x 0.7 m General Note: Consideration of the above systems maximum acceleration is dependant on load and frequency	 BS 2011:Fc:1983(1986) BS 2011:Z/AFc:1984 BS 2011:Z/BFc:1984 BS EN 60068-2-6:1996 BS EN 60068-2-6:2008 BS EN 60068-2-50:2000 BS EN 60068-2-51:2000 IEC 68-2-6:1982 IEC 60068-2-6:2007 IEC 60068-2-50:1983 IEC 60068-2-51:1983 DEF STAN 07-55:1975, Test A1 DEF STAN 00-35:2006,Pt3,Issue 4 Test M1 ETSI EN 300 019 Part 2.1: 2014 MIL-STD-108E:4.3:1966 MIL STD 810E:1989 Method 514.4 MIL-STD-810F:2000 Method 514.5 MIL-STD-810G:2008 Method 514.6 MIL-STD-810G:2014 w/Change 1 Method 514.7 RTCA DO-160D RTCA DO-160E RTCA DO-160F para 8.5.1, 8.7.1 RTCA DO-160G

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Pages 1 and 2	**ENVIRONMENTAL TESTS** (cont'd) **2 DYNAMIC (contd)** 2.2a VIBRATION – Mixed Mode (ambient temperature) Vibration can be applied using all of the four vibrator systems described above with some consideration to thrust derating. Vibration types: - Broad Band Random - Sine on Random (Fixed/ Swept sine tones) - Random on Random (Fixed/Swept narrow bands) - Simulated Gunfire 2.2b VIBRATION – Mixed Mode (combined with temperature) As above using:- Electromagnetic Vibrator System 2 Temp range: -50°C to +125°C	BS 2011:Fd:1973(1984) BS EN 60068-2-64:1995 BS EN 60068-2-64:2008 IEC 68-2-34:1973 IEC 68-2-64:1973 IEC 60068-2-64:1993 IEC 60068-2-64:2008 DEF STAN 07-55:1975, Test A2 DEF STAN 00-35:2006 Pt3,Issue 4, Chap 2-01, Test M1 ETSI EN 300 019 Part 2.1: 2014 ETSI EN 300 019 Part 2.2: 2013 ETSI EN 300 019 Part 2.7: 2003 MIL-STD-810E:1989(1990) Method 514.4 MIL-STD-810F:2000 Method 514.5 MIL-STD-810G:2008 Method 514.6 MIL-STD-810G:2014 w/Change 1 Method 514.7 MIL-STD-810E:1989(1990) Method 519.4 (Gunfire) MIL-STD-810F:2000 Method 519.5 MIL-STD-810G:2008 Method 519.6 MIL-STD-810G:2014 w/Change 1 Method 519.7 RTCA DO-160D RTCA DO-160E RTCA DO-160F para 8.5.2, 8.7.2, 8.8 RTCA DO-160G

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Pages 1 and 2	**ENVIRONMENTAL TESTS** (cont'd) 2 DYNAMIC (cont'd) 2.3 SHOCK & BUMP (ambient temperature) Vibrator induced Shock & Bump can be applied using all of the four vibrator systems described above with considerations: mass, velocity, displacement limits Shock types: (Classical) Terminal Peak Sawtooth Half sine Trapezoidal 2.4 SYNTHESISED SHOCK PULSE Max severity: 50 g 2.5 SRS (SHOCK RESPONSE SPECTRA) SHOCK & BUMP, SSP, SRS (combined with temperature) As above using:- Electromagnetic Vibrator System 2 Temp range: -50°C to +125°C Max chamber size: 0.7 m x 0.7 m x 0.7 m	BS 2011:Ea:1988 BS 2011:Eb:1987 BS EN 60068-2-27:1993 BS EN 60068-2-29:1993 BS EN 60068-2-27:2009 IEC 68-2-29:1987 IEC 60068-2-27:1987 IEC 60068-2-29:1987 IEC 60068-2-27:2008 DEF STAN 07-55:1975, Test A3 DEF STAN 07-55:1975, Test A5 DEF STAN 00-35:2006 Pt3,Issue 4, Test M12 ETSI EN 300 019 Part 2.1: 2014 ETSI EN 300 019 Part 2.2: 2013 ETSI EN 300 019 Part 2.7: 2003 MIL STD 810E:1989 Method 516.4 MIL-STD-810F:2000 Method 516.5 MIL STD 810G:2008, Method 516.6 MIL-STD-810G:2014 w/Change 1 Method 516.7 RTCA DO-160D:1997 Section 7 RTCA DO-160E:2004 Section 7 RTCA DO-160F:2007 Section 7 RTCA DO-160G:2010 Section 7 NES 1004, 1981, Data Sheet 27 MIL STD 810G:2008, Method 516.6

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Pages 1 and 2	**ENVIRONMENTAL TESTS** (cont'd) **2 DYNAMIC** (cont'd) 2.6 SHOCK – Vertical (ambient temperature) Shock types: (Classical) Terminal Peak Sawtooth Half sine Trapezoidal Shock Machine: Max severity: 600 gn Pulse width: 1 to 80 ms Max item mass: 230 kg Max item size: 0.6 m x 0.6 m x 0.6 m 2.7 ROUGH HANDLING SHOCK 2.7.1 DROP and TOPPLE (ambient temperature) Max item mass: 100 kg Max item size: 1.0 m x 1.0 m x 1.0 m	 BS 2011:Ea:1988 BS EN 60068-2-27:1993 BS EN 60068-2-27:2009 IEC 60068-2-27:1987 IEC 60068-2-27:2008 DEF STAN 07-55:1975, Test A3 DEF STAN 00-35:2006 Pt3,Issue 4, Test M12 MIL STD 810E:1989 Method 516.4 MIL-STD-810F:2000 Method 516.5 MIL STD 810G:2008, Method 516.6 MIL-STD-810G:2014 w/Change 1 Method 516.7 RTCA DO-160D RTCA DO-160E RTCA DO-160F para 7.2.1, 7.3.1 RTCA DO-160G BS 2011:Ec:1977(1983) BS EN 60068-2-31:1993 BS EN 60068-2-31:2008 IEC 68-2-31:1969 IEC 60068-2-31:1969 IEC 60068-2-31:2008 DEF STAN 07-55:1975, Test A4 DEF STAN 00-35:2006 Pt3,Issue 4, Test M4 ETSI EN 300 019 Part 2.7: 2003 MIL STD 810E:1989 Method 516.4 MIL-STD-810F:2000 Method 516.5 MIL STD 810G:2008, Method 516.6 MIL-STD-810G:2014 w/Change 1 Method 516.7

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Pages 1 and 2	**ENVIRONMENTAL TESTS** (cont'd) **2 DYNAMIC** (cont'd) 2.7 ROUGH HANDLING SHOCK 2.7.2 FREE FALL - Vertical impact (ambient temperature) Max item mass: 100 kg Max item size: 1.0 m x 1.0 m x 1.0 m (concrete) Max suspension height: 3.0 m	BS 2011:Ed:1977 BS EN 60068-2-31:2008 BS EN 60068-2-32:1993 IEC 68-2-32:1975 IEC 60068-2-31:2008 IEC 60068-2-32:1975 DEF STAN 00-35:2006 Pt3,Issue 4, Test M5 ETSI EN 300 019 Part 2.2: 2013 ETSI EN 300 019 Part 2.7: 2003 MIL STD 810E:1989 Method 516.4 MIL-STD-810F:2000 Method 516.5 MIL STD 810G:2008, Method 516.6 MIL-STD-810G:2014 w/Change 1 Method 516.7
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