Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

UKAS TESTING **0332** **Accredited to ISO/IEC 17025:2017**	**ZF Automotive UK Limited** **Issue No:** 086 **Issue date:** 15 May 2026	
	The Hub **Central Boulevard** **Shirley** **Solihull** **B90 8BG**	**Contact: Mr Gareth Morgan** **Tel: +44 (0)121 506 5269** **E-Mail: Gareth.Morgan@zf.com** **Website: www.zf.com/engineeringservices**
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 Equipment Alternators Electrical/Electronic Components Electro-mechanical Devices Engine Control Systems Generators Generator Control Units Ignition Systems IT Equipment Instruments Luminaires Microelectronic Circuits and Components Military Equipment and Material Motor Vehicle Components and Accessories Motor Vehicle Systems Power Supplies (Electrical) Transducers Voltage Regulators Weapon Systems	**1 EMC TESTING** 1.1 MILITARY AND AUTOMOTIVE 1.1.1 Conducted Emissions 20 Hz to 400 MHz	BS3G100: Part 4: Section 2: 1973/1980 CISPR 25:1995 CISPR 25:2002 CISPR 25:2008 CISPR 25:2016 CISPR 25: 2021 DEF STAN 59-41: Issue 3:1988 DEF STAN 59-41: Issue 5:1995 Supplements A and B DEF STAN 59-411:2007 inc. A1:2008 DCE01.B, DCE02.B MIL STD 461A :1968 MIL STD 461B:1980 MIL STD 461C:1986 MIL STD 461D:1993 MIL STD 461E:1999 MIL STD 461F:2007 MIL STD 461G:2015 MIL STD 462:1967 MIL STD 462D:1993 RTCA/DO-160A:1980 RTCA/DO-160B:1984 RTCA/DO-160C:1989 RTCA/DO-160D:1997 EUROCAE-ED14D:1997 RTCA/DO-160E:2004 EUROCAE-ED14E:2004 RTCA/DO-160F:2007 EUROCAE-ED14F:2007 RTCA/DO-160G:2010 EUROCAE-ED14G:2007 MVEE 595:1975

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 2	**1 EMC TESTING** (cont'd) 1.1 MILITARY AND AUTOMOTIVE (cont'd)	
	1.1.1 Conducted Emissions 20 Hz to 400 MHz (cont'd)	BOEING D6-16050-2:1977 BOEING D6-16050-3:1984 BOEING D6-16050-4:1991 BOEING D6-160500-5B:2004 BOEING D6-16050-5C:2006 Westland Agusta EA98Q010J:1986 Ford ES-XW7T-1A278-AB:1999 Section CE 410 and CE 420 Ford ES-XW7T-1A278-AC:2003 Section CE 410 and CE 420 Fiat 9.90110 :2003 Section 2.7.10
	1.1.2 Radiated Emissions 20 Hz to 40 GHz	BS3G100:Part 4: Section 2 1973/1980 UNECE Regulation 10.06 including Amendment 1: 2020 UNECE Regulation 10.05 including Amendment 1: 2016 CISPR 25:1995, Class 1-4 CISPR 25:2021 CISPR 25:2002 CISPR 25:2008 CISPR 25:2016 CISPR 25: 2021 DEF STAN 59-41: Issue 3:1988 DEF STAN 59-41: Issue 5:1995 Supplements D, E and F DEF STAN 59/411:2007 inc. A1:2008 DRE01.B, DRE02.B EUROCAE-ED-14D:1997 MIL STD 461A:1968 MIL STD 461B:1980 MIL STD 461C:1986 MIL STD 461D:1993 MIL STD 461E:1999 MIL STD 461F:2007 MIL STD 461G:2015 MIL STD 462:1967 MIL STD 462D:1993 RTCA/DO-160A:1980 RTCA/DO-160B:1984 RTCA/DO-160C:1989 RTCA/DO-160D:1997 RTCA/DO-160E:2004

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 2	**1 EMC TESTING** (cont'd) 1.1 MILITARY AND AUTOMOTIVE (cont'd) 1.1.2 Radiated Emissions 20 Hz to 40 GHz (cont'd)	RTCA/DO-160F:2007 RTCA/DO-160G:2010 SAE J1113/41:1995 EC Directive 95/54/EC Annex VII Annex VII & VIII EC Directive 2004/104/EC Annex VII & VIII MVEE 595:1975 BOEING D6-16050-2:1977 BOEING D6-16050-3:1984 BOEING D6-16050-4:1991 BOEING D6-16050-5B:2004 BOEING D6-16050-5C:2006 Westland Agusta EA98Q010J:1986 General Motors GM 9114P:1987 Ford ES-XW7T-1A278-AB:1999 Section RE 310 Ford ES-XW7T-1A278-AC :2003 Section RE 310 Fiat 9.90110 :2003 Section 2.7.9 GMW 3097:2006
	1.1.3 Conducted Susceptibility 10 Hz to 400 MHz	ISO 11452-4:1995 ISO 11452-4:2001 ISO 11452-4:2005 ISO 11452-4:2011 ISO 11452-4:2020 BS3G100:Part 4: Section 2 1973/1980 UNECE Regulation 10.06 including Amendment 1: 2020 UNECE Regulation 10.05 including Amendment 1: 2016 DEF STAN 59-41: Issue 3:1988 DEF STAN 59-41: Issue 5:1995 Supplements G, H and J DEF STAN 59-411:2007 inc. A1:2008 DCS01.B, DCS02.B, DCS03.B EUROCAE-ED-14D:1997 MIL STD 461A:1968 MIL STD 461B:1980 MIL STD 461C:1986 MIL STD 461D:1993 MIL STD 461E:1999 MIL STD 461F:2007 MIL STD 461G:2015

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 2	1 **EMC TESTING** (cont'd) 1.1 MILITARY AND AUTOMOTIVE (cont'd) 1.1.3 Conducted Susceptibility (cont'd)	MIL STD 462:1967 MIL STD 462D:1993 RTCA/DO-160A:1980 RTCA/DO-160F:2007 RTCA/DO-160B:1984 RTCA/DO-160C:1989 RTCA/DO-160D:1997 RTCA/DO-160E:2004 RTCA/DO-160F:2007 RTCA/DO-160G:2010 SAE J1113/2:1996 SAE J1113/4:1998 EC Directive 95/54/EC Annex IX EC Directive 2004/104/EC Annex IX MVEE 595:1975 BOEING D6-16050-2:1977 BOEING D6-16050-3:1984 BOEING D6-16050-4:1991 BOEING D6-16050-5B:2004 BOEING D6-16050-5C:2006 Westland Agusta EA98Q010J:1986 Ford ES-XW7T-1A278-AB:1999 Section RI 112 ES-XW7T-1A278-AC :2003 Section RI 112, RI 150 Fiat 9.90110 :2003, Section 2.7.7 GMW 3097:2006

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 2	1 **EMC TESTING** (cont'd)	
	1.1 MILITARY AND AUTOMOTIVE	
	1.1.4 Radiated Susceptibility	ISO 11452-2:1995 ISO 11452-2:2004 ISO 11452-2:2019
	20 Hz to 18 GHz	ISO 11452-3:1995 ISO 11452-3:2001
	14 kHz to 18 GHz 200 V/m	ISO 11452-5:1995 ISO 11452-5:2002 ISO 11452-9:2012 ISO 11452-9:2021
	400 MHz to 1 GHz 700 V/m CW	BS3G100: Part 4:Section 2 1973/1980 UNECE Regulation 10.06 including Amendment A1: 2020 ALSE & Stripeline methods UNECE Regulation 10.05 including Amendment 1: 2016 DEF STAN 59-41: Issue 3:1988
	1 GHz to 18 GHz 3000 V/m CW (duty cycle 1 % up to 2 GHz and 6 % up to 18 GHz)	DEF STAN 59-41: Issue 5:1995 Supplement V DEF STAN 59-411:2007 inc. A1:2008 DRS01.B, DRS02.B, DRS03.B

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 2	**1 EMC TESTING** (cont'd) 1.1 MILITARY AND AUTOMOTIVE (cont'd) 1.1.4 Radiated Susceptibility (cont'd) Magnetic Immunity	EUROCAE-ED-14D:1997 MIL STD 461A:1968 MIL STD 461B:1980 MIL STD 461C:1986 MIL STD 461D:1993 MIL STD 461E:1999 MIL STD 461F:2007 MIL STD 461G:2015 MIL STD 462:1967 MIL STD 462D:1993 RTCA/DO-160A:1980 RTCA/DO-160B:1984 RTCA/DO-160C:1989 RTCA/DO-160D:1997 RTCA/DO-160E:2004 RTCA/DO-160F:2007 RTCA/DO-160G:2010 SAE J1113-21:1998 EC Directive 95/54/EC Annex 9 EC Directive 2004/104/EC Annex IX Mazda MES PW67600 (1995) test RI01-2 Ford ES-FZAF-1316-AA (1992) test RI01-2 Ford ES-FZAF-1316-AA (1992) test RI01-2 Ford ES-XW7T-1A278-AB:1999 Section RI 110, RI 114 Ford ES-XW7T-1A278-AC :2003 Section RI 114 MVEE 595:1975 BOEING D6-16050-2:1977 BOEING D6-16050-3:1984 BOEING D6-16050-4:1991 BOEING D6-16050-5B:2004 BOEING D6-16050-5C:2006 Westland Agusta EA98Q010J:1986 Fiat 9.90110 :2003, Section 2.7.6 GMW 3097:2006 ISO 11452-8:2008 ISO 11452-8:2015

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 2	**1 EMC TESTING** (cont'd) 1.1 MILITARY AND AUTOMOTIVE (cont'd) 1.1.5 Power Surges and Transients for damped sinusoids, 7 kHz - 100 MHz, maximum levels 1500 V / 75 A	DEF STAN 59-41: Issue 3:1988 DEF STAN 59-41: Issue 5:1995 Supplements, K, L, M, N, S and T DEF STAN 59-411:2007 inc. A1:2008 DCS05.B, DCS06.B EUROCAE-ED-14D:1997 MIL STD 461A:1968 MIL STD 461B:1980 MIL STD 461C:1986 MIL STD 461D:1993 MIL STD 461E:1999 MIL STD 461F:2007 MIL STD 461G:2015 MIL STD 462:1967 MIL STD 462D:1993 RTCA/DO-160A:1980 RTCA/DO-160B:1984 RTCA/DO-160C:1989 RTCA/DO-160D:1997 RTCA/DO-160E:2004 RTCA/DO-160F:2007 RTCA/DO-160G:2010 BOEING D6-16050-2:1977 BOEING D6-16050-3:1984 BOEING D6-16050-4:1991 BOEING D6-16050-5B:2004 BOEING D6-16050-5C:2006
	1.1.6 Automotive Transients, Noise and Voltage Tests	ISO 7637-2:1990 ISO 7637-2:2011 ISO 7637-2:2004 ISO 7637-3:1995 ISO 7637-3:2007 ISO 7637-3:2016 Ford ES-XW7T-1A278-AB:1999 Section CI 210, CI 220, CI 230 CI 240, CI 250, CI 260 & CI 270 UNECE Regulation 10.06 including Amendment 1: 2020 UNECE Regulation 10.05 including Amendment 1: 2016

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 2	**1 EMC TESTING** (cont'd) 1.1 MILITARY AND AUTOMOTIVE (cont'd) 1.1.6 Automotive Transients, Noise and Voltage Tests (cont'd)	Ford ES-XW7T-1A278-AC :2003 Section RI 130, CI 210, CI 220 CI 230, CI 250, CI 260 & CI 270 Fiat 9.90110 :2003 Section 2.7.4, 2.7.5 SAE J1113-11:1995, excluding Pulse 5 SAE J1113-12:1994 EC Directive 2004/104/EC Annex X ISO 16750-2:2012
	1.1.7 Exported Spikes and Transients	ISO 7637-2:1990 ISO 7637-2:2004 BOEING D6-16050-4:1991 BOEING D6-16050-5B:2004 BOEING D6-16050-5C:2006 DEF STAN 59-41: Issue 3:1988 DEF STAN 59-41: Issue 5:1993 Supplements C DEF STAN 59-411:2007 inc. A1:2008 DCE03.B EUROCAE ED-14D :1997 MIL STD 461A:1968 MIL STD 461B:1980 MIL STD 461C:1986 MIL STD 462:1967 RTCA/DO-160A:1980 RTCA/DO-160B:1984 RTCA/DO-160C:1989 RTCA/DO-160D:1997 RTCA/DO-160E:2004 RTCA/DO-160F:2007 RTCA/DO-160G:2010 SAE J1113/42:1994 Westland Agusta EA98Q010J:1986 UNECE Regulation 10.06 including Amendment 1: 2020 UNECE Regulation 10.05 including Amendment 1: 2016

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 2	**1 EMC TESTING** (cont'd) 1.1 MILITARY AND AUTOMOTIVE (cont'd) 1.1.8 Lightning Strike Damped Sinusoids 3200 V/128 A 0.1/6.4 μs Pulse 2300 V/460 A 6.4/70 μs Pulse 1600 V/320 A Pin Injection Ground Injection Cable Induction Single Stroke Multiple Stroke Multiple Burst	DEF STAN 59-41: Issue 5:1995 Supplement Q, short waveforms levels A, B, C and D, intermediate levels A, B and C RTCA/DO-160A:1980 RTCA/DO-160B:1984 RTCA/DO-160C:1989 section 22 RTCA/DO-160C: Change No 2:1992 Section 22 RTCA/DO-160D:1997 section 22 RTCA/DO-160D: Change No 3:2002 Section 22 RTCA/DO-160E:2004 section 22 RTCA/DO-160F:2007 section 22 Waveforms 1, 2, 3 and 4 RTCA/DO-160G:2010 Section 22 EUROCAE ED-84:1997, Chapter 5 BOEING D6-16050-4:1991 Section 7.4 BOEING D6-16050-5B:2004 Section 7.4 BOEING D6-16050-5C:2006 Section 7.4 AIRBUS ABD0100.1.2 section 3.2.2 FAA AC20-136:1990 MIL STD 461G:2015 CS 117

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 2	**1 EMC TESTING** (cont'd) 1.1 MILITARY AND AUTOMOTIVE (cont'd) 1.1.9 Electromagnetic Pulse (Induced Transients) for damped sinusoids, 7 kHz - 100 MHz maximum levels 1500 V/40 A	DEF STAN 59-41: Issue 5:1995 Supplements L and N DEF STAN 59-411:2007 inc. A1:2008 DCS05.B MIL STD 461A:1968 MIL STD 461B:1980 MIL STD 461C:1986 MIL STD 461D:1993 MIL STD 461E:1999 MIL STD 461F:2007 MIL STD 461G:2015 MIL STD 462:1967 MIL STD 462D:1993 Westland Agusta EA98Q010J:1986
	1.1.10 Electrostatic Discharge ± 25 kV Air Discharge	DEF STAN 59-41: Issue 5:1995 Supplement R DEF STAN 59-411:2007 including A1:2008 DCS10.B EUROCAE ED-14D:1997 RTCA/DO-160D:1997 RTCA/DO-160E:2004 RTCA/DO-160F:2007 RTCA/DO-160G:2010 MIL STD 461G :2015 CS 118 ISO 10605 :2001 ISO 10605 :2008 Ford ES-XW7T-1A278-AB:1999 Section CI 280 Ford ES-XW7T-1A278-AC :2003 Section CI 280 Fiat 9.90110 :2003 Section 2.7.8 GMW 3097:2006 EN 61000-4-2:2009

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 2	**1 EMC TESTING** (cont'd) 1.1 MILITARY AND AUTOMOTIVE (cont'd) 1.1.11 Compass Safe Distance	RTCA/DO-160D:1997 RTCA/DO-160E:2004 RTCA/DO-160F:2007 RTCA/DO-160G:2010
	FACILITIES Screened Semi-Anechoic Room G: 8.4 m x 5.6 m x 4.8 m high Door: 4 m x 3.5 m high Screened Semi-Anechoic Room H: 6 m x 5.6 m x 3.6 m high Door: 2.4 m x 2.4 m high Screened Semi-Anechoic Room I: 8.4 m x 5.6 m x 6 m high Door: 4 m x 3.5 m high Screened Semi-Anechoic Room J: 6 m x 6 m x 3.6 m high Door: 2.4 m x 2.4 m high Screened Semi-Anechoic Room K: 6 m x 6 m x 3.1 m high Door: 2.4 m x 2.4 m high	
	Power supplies: 50 Hz 240 V 50 A 400 Hz 50 A DC 24 V 10 A A 186 kVA variable speed drive with AC and DC load banks is connected to the screened room wall enabling generators, alternators and motors to be tested on load. Compressed Air and cooling water are also available.	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
Aerospace Equipment Alternators Electrical/Electronic Components Electro-mechanical Devices Electronic Equipment for Rail Engine Control Units Ignition Systems Information Technology Equipment Instruments: Indicating and Recording Microelectronic Circuits and Components Military Equipment and Materials Motor Vehicle Components and Accessories Motor Vehicle Systems Transducers Weapon Systems	**ENVIRONMENTAL TESTS (non-explosive items)** **2 CLIMATIC TESTS** 2.1 Dry Heat Up to + 180 °C Min RH 20 % Test chamber size: 2500 litre	BS EN 60068-2-2:1993 BS EN 60068-2-2:2007 BS 3G 100-2.3.2: 1970 RTCA/DO-160D:1997 RTCA/DO-160E:2004 RTCA/DO-160F:2007 RTCA/DO-160G:2010 MIL-STD-810E:1989 Method 501.3 DEF STAN 00-35 (Part 3) Issue 3:1999: Test CL1 DEF STAN 00-35: Part 3, Issue 4:2006: Test CL1 DEF STAN 00-035: Part 3, Issue 5:2017: Test CL2 MIL-STD-810F:2000 Method 501.4 MIL-STD 810G:2008 Method 501.5 MIL-STD 810G:2014:CN1 Method 501.6 MIL-STD-810H:2019 & CN1 2022 Method 501.7 ISO 16750-4: 2003 Sections 5.1,5.2 ISO 16750-4: 2006 Sections 5.1,5.2 ISO 16750-4: 2010 Sections 5.1,5.2 ISO 16750-4: 2023 Sections 5.1,5.2 BS EN 50155:2007 Section 12.2.4
	2.2 Humidity - Steady State Temperature: +10 °C to +85 °C Humidity: 20 % to 98 % RH Test chamber size: 2500 litre Humidity - Cyclic Temperature: +10 °C to +85 °C Humidity: 20 % to 98 % Variants 1 and 2 Test chamber size: 2500 litre	BS 2011:2.1 Ca:1977 IEC 68-2-3:1969 IEC 60068-2-78:2001 BS EN 60068-2-78:2002: Test Cab BS EN 60068-2-78:2013: Test Cab **DEF STAN 00-35 (Part 3) Issue 3:1999:** Test CL7 DEF STAN 00-35 (Part 3) Issue 4:2006 **Test CL7** DEF STAN 00-035 (Part 3) Issue 5:2017 Test CL6 BS EN 60068-2-30:1999, Test Db IEC 60068-2-30:1980 BS EN 60068-2-30:2005 RTCA/DO-160D:1997 RTCA/DO-160E:2004 RTCA/DO-160F:2007 RTCA/DO-160G:2010

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 13	**ENVIRONMENTAL TESTS (non-explosive items)** (cont'd)	
	2 CLIMATIC TESTS (cont'd)	
	2.2 Humidity - Cyclic (cont'd)	MIL-STD-810E:1989 Method 507.3 MIL-STD-810F:2000 Method 507.4 MIL-STD-810G:2008 Method 507.5 MIL-STD-810G:2014:CN1 Method 507.6 MIL-STD-810H:2019 & CN1 2022 Method 507.6
	Combined test -	BS 3G 100-2.3.7: 1972 DEF STAN 00-35 (Part 3) Issue 3:1999: Test CL6 DEF STAN 00-35 (Part 3) Issue 4:2006 Test CL6 DEF STAN 00-035 (Part 3) Issue 5:2017 Test CL6
	High humidity/low temperature Temperature: - 50 °C to + 85 °C Humidity: 20 % to 98 % RH Test chamber size: 2500 litre	BS EN 60068-2-38:1999, Test Z/AD BS EN 60068-2-38:2009, Test Z/AD IEC 60068-2-38:1974 ISO 16750-4: 2003 Sections 5.6, 5.7 ISO 16750-4: 2006 Sections 5.6, 5.7 ISO 16750-4: 2010 Sections 5.6, 5.7 ISO 16750-4: 2023 Sections 5.6, 5.7 BS EN 50155:2007 Section 12.2.5

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 13	**ENVIRONMENTAL TESTS (non-explosive items)** (cont'd) **2 CLIMATIC TESTS** (cont'd)	
	2.3 Salt Mist - Test chamber size: 1100 litre	BS EN 60068-2-11 :1999 : Test Ka BS 7479 :1991 ISO 9227:1990 ISO 9227:2006 ISO 9227:2012 ISO 9227:2017 IEC 60068-2-11:1981 DIN 50021:1988 ASTM B117 :2003 ASTM B117 :2009 ASTM B117 :2011 ASTM B117 :2016 JIS Z2371 :1994
	Salt Mist - Cyclic Max Temperature: + 70 °C Max Humidity: 100 % RH Test chamber size: 1100 litre	BS EN 60068-2-52:1996, Test Kb BS EN 60068-2-52:2018, Test Kb RTCA/DO-160D:1997 RTCA/DO-160E:2004 RTCA/DO-160F: 2007 RTCA/DO-160G:2010 MIL-STD-810E:1989 Method 509.3 MIL-STD-810F:2000 Method 509.4 MIL-STD-810G:2008 Method 509.5 MIL-STD-810G:2014:CN1 Method 509.6 MIL-STD-810H:2022:CN1 Method 509.8 DEF STAN 00-35 (Part 3) Issue 3:1999: Test CN2 DEF STAN 00-35 (Part 3) Issue 4:2006 Test CN2 DEF STAN 00-035 (Part 3) Issue 5:2017
	Salt Mist Modified (SO^2)	ASTM G85-19 Annex A4 ISO 16750-4:2003 Section 5.5.1, 5.5.2 ISO 16750-4:2006 Section 5.5.1, 5.5.2 ISO 16750-4:2010 Section 5.5.1, 5.5.2 ISO 16750-4:2023 Section 5.5.1, 5.5.2 BS EN 50155:2007 Section 12.2.10

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 13	**ENVIRONMENTAL TESTS (non-explosive items)** (cont'd) **2 CLIMATIC TESTS** (cont'd) 2.4 Ingress Protection IP3X Solid Foreign Objects (diameter ≥ 2.5 mm) IP4X Solid Foreign Objects (diameter ≥ 1.0 mm) IP5X / IP5XK Dust Protected IP6X / IP6XK Dust Tight (Dust chamber: 1 m x 1 m x 1 m) IPX1 Vertical Dripping Water IPX2 Vertical Dripping Water (15° tilted) (Drip tray: 0.45 m x 0.35 m) IPX3 Spraying Water IPX4 Splashing Water IPX5 Water Jets IP5XK Water Jets IPX6 Powerful Jetting Water IP6XK Powerful Jetting Water IPX7 Temporary Immersion IPX8 Continuous Immersion IPX9K Water with High Pressure/Steam Jet Cleaning Water Immersion Water Ingress	 BS EN 60529 :1992(2000) IEC 60529 :2001 DIN 40053:1972 DIN 40050: Part 9:1993 ISO 16750-4:2010 Sections 5.10 ISO 20653:2006 ISO 20653:2013 ISO 16750-4:2003 Section 7 ISO 16750-4:2006 Section 7 ISO 16750-4:2010 Section 7 ISO 16750-4 :2023 Section 7 BS EN 60529 +A1 2000 BS EN 60529 +A2 2013 ISO 16750-4:2003 Section 5.4.3 ISO 16750-4:2006 Section 5.4.3 ISO 16750-4:2010 Section 5.4.3 ISO 16750-4:2023 Section 5.4.3 BS EN 50155:2007 Section 12.2.12

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 13	**ENVIRONMENTAL TESTS (non-explosive items)** (cont'd) **2 CLIMATIC TESTS** (cont'd) 2.5 Low Temperature Min Temperature: - 70 °C Test chamber size: 2500 litre	BS EN 60068-2-1 :1993 IEC 68-2-1 :1990 BS EN 60068-2-1 :2007 RTCA/DO-160D:1997 RTCA/DO-160E:2004 RTCA/DO-160F:2007 RTCA/DO-160G:2010 MIL-STD-810E:1989 Method 502.3 MIL-STD-810F:2000 Method 502.4 MIL-STD-810G:2008 Method 502.5 MIL-STD-810G:2014:CN1 Method 502.6 MIL-STD-810H:2019 & CN1 2022 Method 502.7 DEF STAN 00-35 (Part 3) Issue 3:1999 Test CL4 DEF STAN 00-35 (Part 3) Issue 4:2006 Test CL4 DEF STAN 00-035 (Part 3) Issue 5:2017 Test CL5 ISO 16750-4:2003 Sections 5.1, 5.2 ISO 16750-4:2006 Sections 5.1, 5.2 ISO 16750-4:2010 Sections 5.1, 5.2 ISO 16750-4:2023 Sections 5.1, 5.2 BS EN 50155:2007 Sections 12.2.3 and 12.2.14 BS 3G 100-2.3.2: 1970 Section 6

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 13	**ENVIRONMENTAL TESTS (non-explosive items)** (cont'd) **2 CLIMATIC TESTS** (cont'd) 2.6 Thermal Cycling Temperature Range: - 70 °C to 180 °C Max rate: 15 °C/min Test chamber size: 2500 litre	BS 2011:2.1 N:1985, Test Nb IEC 68-2-14:1984 BS EN 60068-2-14:2000, Test Nb BS EN 60068-2-14:2009, Test Nb RTCA/DO-160D:1997 Section 5.0 (Categories A, B and C) RTCA/DO-160F: 2007 (Categories A, B and C) RTCA/DO-160G:2010 Section 5.0 (Categories A, B and C) ISO 16750-4:2003 Section 5.3 ISO 16750-4:2006 Section 5.3 ISO 16750-4:2010 Section 5.3 ISO 16750-4:2023 Section 5.3 DEF STAN 00-35 (Part 3) Issue 3:1999 Tests CL2 (Proc B), CL5 (Proc B) & CL14 DEF STAN 00-35 (Part 3) Issue 4:2006 Tests CL2 (Proc B), CL5 (Proc B) & CL14 DEF STAN 00-035 (Part 3) Issue 5:2017 Tests CL2 (Proc B), CL5 (Proc B) & CL14 BS EN 50155:2007 Section 12.2.13

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 13	**ENVIRONMENTAL TESTS (non-explosive items)** (cont'd) **2 CLIMATIC TESTS** (cont'd)	
	2.7 Thermal Shock Temperature Range: -80 °C to +200 °C in <30 secs	BS 2011: Part 2.1 Na:1985 IEC 68-2-14:1984 BS EN 60068-2-14:2000, Test Na BS EN 60068-2-14:2009, Test Na RTCA DO-160D: 1997 Section 5.0 (Category S2) RTCA/DO-160E:2004 Section 5.0 (Category S2) RTCA DO-160F: 2007 Section 5.0 (Category S2) RTCA DO-160G: 2010 Section 5.0 (Category S2) MIL-STD-810E:1989 Method 503.3 MIL-STD-810F:2000 Method 503.4 MIL-STD-810G:2008 Method 503.5 MIL-STD-810G:2014:CN1 Method 503.6 MIL-STD-810H:2019 & CN1 2022 Method 503.7 DEF STAN 00-35 (Part 3) Issue 3:1999 Test CL14 DEF STAN 00-35 (Part 3) Issue 4:2006 Test CL14 DEF STAN 00-035 (Part 3) Issue 5:2017 Test CL14 ISO 16750-4:2003 Sections 5.3.3 ISO 16750-4:2006 Sections 5.3.2 ISO 16750-4:2010 Sections 5.3.2 ISO 16750-4:2023 Sections 5.3.2 BS 3G 100-2.3.15:1978 Section 4.3 (Category B)
	2.8 Fluid Contamination Temperature Range: Ambient to + 150 °C (storage) Spray, dipped or brushed	BS EN 60068-2-74:2000 Pt2 Tst Xc RTCA/DO-160D:1997 RTCA/DO-160E:2004 RTCA/DO–160F:2007 RTCA/DO–160G:2010 MIL-STD-810F:2000 Method 504 MIL-STD-810G:2008 Method 504.1 MIL-STD-810G:2014:CN1 Method 504.2 MIL-STD-810H:2019 & CN1 2022 Method 504.3 DEF STAN 00-35 (Part 3) Issue 3:1999 Test CN4

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 13	**ENVIRONMENTAL TESTS (non-explosive items)** (cont'd) **2 CLIMATIC TESTS** (cont'd) 2.8 Fluid Contamination (cont'd)	DEF STAN 00-35 (Part 3) Issue 4:2006 Test CN4 DEF STAN 00-035 (Part 3) Issue 5:2017 Test CN4 ISO 16750-5:2003 ISO 16750-5:2010 ISO 16750-5:2023 BS 3G 100-2.3.12: 1991
	2.9 Icing Test chamber size: 2500 litre	RTCA/DO-160C:1989, Section 24 Eqpt categories A, C RTCA/DO-160D:1997, Section 24 Eqpt categories A, C RTCA/DO-160F:2007, Section 24 Equipment categories A, C RTCA/DO–160G:2010, Section 24 Equipment categories A, C 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:CN1 Method 521.4 MIL-STD-810H:2019 & CN1 2022 Method 521.4 DEF STAN 00-35 (Part 3) Issue 3:1999, Test CL10 (Procedure A) DEF STAN 00-35 (Part 3) Issue 4:2006 Test CL10 (Procedure A) DEF STAN 00-035 (Part 3) Issue 5:2017 Test CL10 (Procedure A) BS 3G 100-2.3.2: 1970 Section 6.2.1.3 BS 3G 100-2.3.9: 1972 Section 6 (Test C)
	2.10 Drip-Proof/Waterproof/Rain Drip tray: 1.00 m x 0.75 m	RTCA/DO-160C:1989, Section 10.3.1 RTCA/DO-160D:1997, Section 10.3.1 RTCA/DO-160E:2004, Section 10.3.2 RTCA/DO-160F:2007, Section 10.3.2 RTCA/DO–160G:2010, Section 10.3.2 Cats Y & W

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 13	**ENVIRONMENTAL TESTS (non-explosive items)** (cont'd) **2 CLIMATIC TESTS** (cont'd) 2.10 Drip Proof/Waterproof/Rain (cont'd)	MIL-STD-810E: 1989, Method 506.3, Procedure II MIL-STD-810F:2000, Method 506.4, Procedure III MIL-STD-810G:2008 Method 506.5, Procedure III MIL-STD-810G:2014:CN1 Method 506.6 MIL-STD-810G:2014:CN1 Method 506.6, Procedure III MIL-STD-810H:2019 & CN1 2022 Method 506.6 Procedure III DEF STAN 00-35 (Part 3) Issue 3:1999 Test CL28 DEF STAN 00-35 (Part 3) Issue 4:2006 Test CL28 DEF STAN 00-035 (Part 3) Issue 5:2017 Test CL28 BS 3G 100-2.3.11: 1973 Section 4 (Grade B)
	2.11 Ice Water Shock – Splash Water Method Temperature 0 to +125 °C	ISO 16750-4, Sections 5.4:2003, 2006, 2010 and 2023
	2.12 Water Immersion Air to Liquid Cylindrical submersion tank Diameter: 0.75m Depth: 1.4 m	DEF STAN 00-35 (Part 3) Issue 3:1999 Test CL29 DEF STAN 00-35 (Part 3) Issue 4:2006 Test CL29 DEF STAN 00-035 (Part 3) Issue 5:2017 Test CL29 MIL-STD-810E:1989 Method 512.3 Procedure I MIL-STD-810F:2000 Method 512.4 Procedure I MIL-STD-810G:2008 Method 512.5 Procedure I MIL-STD-810G:CN1:2014 Method 512.6 Procedure I MIL-STD-810H:2019 & CN1 2022 Method 512.6 Procedure I

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 13	**ENVIRONMENTAL TESTS (non-explosive items)** (cont'd) **2 CLIMATIC TESTS** (cont'd) 2.13 Low Pressure/Temperature and Over Pressure Temperature / Low Pressure Temperature range: -70 °C to +180 °C Minimum Pressure: 1.0 kPa (10 mbar) Maximum chamber size: 1.02 m x 1.01 m x 1.01 m	BS 3G 100-2.3.2:1970, Section 6.1.3, 6.2.1.1, 6.2.1.2, 6.4.2, 6.4.3 BS EN60068-2-13:1999, Test M BS EN60068-2-40:2000, Test Z/AM BS EN60068-2-41:2000, Test Z/BM IEC 60068-2-13:1983, Test M IEC 60068-2-40:1976, Test Z/AM DEF STAN 00-35 (Part 3)/3:1999, Test CL11, CL12, CL20 & CL21 DEF STAN 00-35 (Part 3)/4:2006, Test CL11, CL12, CL20 & CL21 DEF STAN 00-035 (Part 3)/5:2017, Test CL11, CL12, CL20 & CL21 MIL-STD-810E: 1989 Method 500.3, Procedures I, II MIL-STD-810F:2000 Method 500.4, Procedures I, II MIL-STD-810G:2008 Method 500.5, Procedures I, II MIL-STD-810G w/change 1: 2014 Method 500.6, Procedures I, II MIL-STD-810H:2019 & CN1 2022 Method 500.6, Procedures I, II RTCA/DO - 160D Section 4.6.1, 4.6.3 RTCA/DO - 160E Section 4.6.1, 4.6.3 RTCA/DO - 160F Section 4.6.1, 4.6.3 RTCA/DO - 160G Section 4.6.1, 4.6.3

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 13	**ENVIRONMENTAL TESTS (non-explosive items)** (cont'd) **3 DYNAMIC TESTING** 3.1 Bump Testing Max mass: 700 kg Max size: 1.0 x 1.0 x 0.8 m Peak thrust: 66 kN Max level: 100 g	BS EN 60068-2-29 :1993 IEC 68-2-29 :1987 DEF STAN 00-35 (Part 3) Issue 3:1999, Test M12 DEF STAN 00-35 (Part 3) Issue 4:2006, Test M12 DEF STAN 00-035 (Part 3) Issue 5:2017, Test M3
	3.2 Mechanical Shock Max mass: 700 kg Max size: 1.0 m x 1.0 m x 0.8 m Peak thrust: 66 kN Max level: 180 g Table size: 750 mm x 750 mm	BS EN 60068-2-27:1993 BS EN 60068-2-27:2009 IEC 60068-2-27:2008 IEC 68-2-27:1987 RTCA/DO-160D:1997, (EUROCAE ED-14D) Procedure I RTCA/DO-160E:2004 RTCA/DO-160F:2007 RTCA/DO-160G:2010 MIL STD 810D:1983 Method 516.3 Section 3-4, Test Procedure II MIL-STD-810E:1989 Method 516.4 MIL-STD-810F:2000 Method 516.5 Test Procedures I and V MIL-STD-810G:2008 Method 516.6 Test Procedures I and V MIL-STD-810G:2014:CN1 Method 516.7 Test Procedures I II and V MIL-STD-810H:2019 & CN1 2022 Method 516.8 Procedures I II and V DEF STAN 00-35 (Part 3) Issue 3:1999, Test M3 DEF STAN 00-35 (Part 3) Issue 4:2006, Test M3 DEF STAN 00-035 (Part 3) Issue 5:2017, Test M3 ISO 16750-3:2007 ISO 16750-3:2012 ISO 16750-3:2023 BS EN 61373:2010 BS EN 50155:2007 Section 12.2.11

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 13	**ENVIRONMENTAL TESTS (non-explosive items)** (cont'd) **3 DYNAMIC TESTING** (cont'd) 3.3 Vibration – Sinusoidal Frequency range: 3 Hz to 2.5 kHz Max mass: 700 kg Max size: 1.0 m x 1.0 m x 0.8 m Peak thrust: 66 kN Slip table size: 750 mm x 750 mm	BS 2011:2.1 Fc:1983 IEC 68-2-6:1982 BS EN 60068-2-6 :1996 IEC 68-2-6 :1995 BS EN 60068-2-6 :2008 IEC 68-2-6:2007 ISO 16750-3:2007 ISO 16750-3:2012 ISO 16750-3:2023 RTCA/DO-160C:1989 (EUROCAE ED-14C) RTCA/DO-160D:1997 (EUROCAE ED-14D) RTCA/DO-160E:2004 RTCA/DO-160F:2007 RTCA/DO–160G:2010 MIL-STD-810E:1989 Method 514.4 MIL-STD-810F:2000 Method 514.5 Test Procedure I and III MIL-STD-810G:2008 Method 514.6 Test Procedure I MIL-STD-810G:2014:CN1 Method 514.7 Test Procedure I MIL-STD-810H:2019 & CN1 2022 Method 514.8 MIL-STD-810G:2014 Method 528.1 Test Procedure I DEF STAN 00-35 (Part 3) Issue 3:1999, Test M1 DEF STAN 00-35 (Part 3) Issue 4:2006, Test M1 DEF STAN 00-035 (Part 3) Issue 5:2017, Test M1
	3.4 Vibration - Random Frequency range: 3 Hz to 2.5 kHz Max mass: 700 kg Max size: 1.0 m x 1.0 m x 0.8 m Peak thrust: 66 kN Slip table size: 750 mm x 750 mm	BS 2011:2.1 Fdb:1973 BS 2011:2.1 Fd:1984 RTCA/DO-160C:1989 (EUROCAE ED-14C) RTCA/DO-160D:1997 (EUROCAE ED-14D) RTCA/DO-160E:2004 RTCA/DO-160F:2007 RTCA/DO-160G:2010 IEC 68-2-37:1986 ISO 16750-3:2007 ISO 16750-3:2012 ISO 16750-3:2023

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 13	**ENVIRONMENTAL TESTS (non-explosive items)** (cont'd) **3 DYNAMIC TESTING** (cont'd) 3.4 Vibration – Random (cont'd)	IEC 68-2-64:1993 MIL-STD-810E:1989 Method 514.4 MIL-STD-810F:2000 Method 514.5 Test Procedure I and III MIL-STD-810G:2008 Method 514.6 Test Procedure I MIL-STD-810G:2014:CN1 Method 514.7 Test Procedure I MIL-STD-810H:2019 & CN1 2022 Method 514.8 Procedure I BS EN 60068-2-64:1995 BS EN 60068-2-64:2008 BS EN 60068-2-64:2008 +A1 2019 DEF STAN 00-35 (Part 3) Issue 3:1999, Test M1 DEF STAN 00-35 (Part 3) Issue 4:2006, Test M1 DEF STAN 00-035 (Part 3) Issue 5:2017, Test M1 BS EN 61373:2010 BS EN 50155 :2007 Section 12.2.11
	3.5 Vibration - Sine on Random Frequency range: 3 Hz to 2.5 kHz Max mass: 700 kg Max size: 1.0 m x 1.0 m x 0.8 m Peak thrust: 66 kN Slip table size: 750mm x 750mm	ISO 16750-3:2007 ISO 16750-3:2012 ISO 16750-3:2023 (Excluding section 4.1.19) RTCA/DO 160D:1997 (EUROCAE ED-14D) RTCA/DO-160E:2004 RTCA/DO-160F:2007 RTCA/DO-160G:2010 MIL-STD-810E:1989 Method 514.4 MIL-STD-810F:2000 Method 514.5 Test Procedure I MIL-STD-810G:2008 Method 514.6 Test Procedure I MIL-STD-810G:2014:CN1 Method 514.7 Test Procedure I MIL-STD-810H:2019 & CN1 2022 Method 514.8 Procedure I DEF STAN 00-35 (Part 3) Issue 3:1999, Test M1 DEF STAN 00-35 (Part 3) Issue 4:2006, Test M1 DEF STAN 00-035 (Part 3) Issue 5:2017, Test M1 BS EN 60068-2-80:2005

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 13	**ENVIRONMENTAL TESTS (non-explosive items)** (cont'd) **3 DYNAMIC TESTING** (cont'd) 3.6 Vibration, Sine-on-Random Mixed mode vibration	BS EN 60068-2-80:2005 IEC 60068-2-80:2005 DEF STAN 00-35 (Part 3) issue 4:2006, Test M1 DEF STAN 00-035 (Part 3) issue 5:2017, Test M1
	3.7 Gunfire Vibration, Sine-on-Random Frequency range: 3 Hz to 2.5 kHz Max mass: 700kg Max size: 1.0 m x 1.0 m x 0.8 m Peak thrust: 66 kN Slip table size: 750 mm x 750 mm	MIL-STD-810E:1989 Method 519.4 MIL-STD-810F:2000 Method 519.5 Test Procedure IV
	3.8 Free Fall, Drop & Topple (Rough Handling) The tests in Sections 3.1 to 3.6 can be performed with temperature and humidity cycling. Temperature: - 50 °C to 180 °C Humidity: 20 % to 98 % RH Chamber size: 1500 litre (max)	BS EN 60068-2-31:1993 (withdrawn) IEC 68-2-31:1969 BS EN 60068-2-31:2008, excluding Free Fall Proc 2 (tumbling barrel) IEC 60068-2-31:2008, excluding Free Fall Proc 2 (tumbling barrel) MIL-STD-810E :1989 Method 516.4, Procedure VI MIL-STD-810F :2000 MIL-STD-810G:2008 & CN1 2022 Method 516.6, Procedure IV MIL-STD-810G:2014:CN1 Method 516.7 Procedure IV MIL-STD-810H :2019 Method 516.8 Procedure IV DEF STAN 00-35 (Part 3) Issue 3:1999, Test M4 DEF STAN 00-35 (Part 3) Issue 4:2006, Test M4 DEF STAN 00-035 (Part 3) Issue 5:2017, Test M4 ISO 16750-3:2023
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