

# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK

 <p>1204</p> <p>Accredited to ISO/IEC 17025:2005</p>	<h3>3C Test Ltd</h3>	
	<p><b>Issue No:</b> 036      <b>Issue date:</b> 30 October 2009</p>	
	<p>Silverstone Technology Park Silverstone Circuit Silverstone Northamptonshire NN12 8GX</p>	<p><b>Contact:</b> Mr J R M Gordon-Colebrooke <b>Tel:</b> +44 (0)1327 857500 <b>Fax:</b> +44 (0)1327 857747 <b>E-Mail:</b> sales@3ctest.co.uk <b>Website:</b> www.3ctest.co.uk</p>
<p><b>Testing performed at the above address only</b></p>		

### DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
Aerospace Equipment Compressors Computers and peripherals Construction Plant and Equipment Domestic Appliances: Electrical Electrical/electronic Components Electrical/electronic Connectors Electrical/electronic Products Electro-Mechanical Devices Electronic Products, Digital Enclosures for Electrical Equipment Fans Flowmeters Gas Appliances Generators: Electrical Generators: Power Generators: Welding IT Equipment Instruments: Indicating/Recording Lamps: Electrical Lawnmowers Lifts: Electrical Marine Equipment Measuring Equipment Military Equipment Motor Vehicle Accessories and Components Motor Vehicles Motors: Electrical Printed Circuit Boards Radio and TV Equipment Safety Appliances and Equipment Switchboards: Electrical Telecommunication Equipment Tools: Hand (Electrical)	<p><b>1 EMC TESTS</b></p> <p>1.1 Conducted Emissions 9 kHz to 300 MHz AC mains: Single phase up to 16A Voltage up to 240 V Continuous and Discontinuous DC voltage, up to 60V/100A</p>	EN 55013:1990 excluding TV and VCR's BS 6527:1989 EN 55011:1991 EN 55011:1998 plus Amd 1 and 2 EN 55011:2007 including amendment A2:2007 EN 55014-1:1993 including Amendment A1:1997 EN 55014-1:1997 EN 55014-1:2006 EN 55022:1988 and 1995 plus Amendments 1 and 2 EN 55022:1998 plus Amendments 1 and 2 Conducted emissions on Telecom Ports included only where CDN's can be used CISPR 22:1997 plus Amendments 1 and 2 Conducted emissions on Telecom Ports included only where CDN's can be used EN 55022:2006 including Amendment A1:2007 Conducted emissions on Telecom Ports included only where CDN's can be used CISPR 22:2005 Conducted emissions on Telecom Ports included only where CDN's can be used



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Continued from Page 1  Transformers: Electrical Vibrasonic Equipment Video Equipment	<b>1 EMC TESTS (cont'd)</b>  1.1 Conducted Emissions (cont'd)	FCC CFR 47:Part 15B ANSI C63.4:1992 ANSI C63.4:2003 FCC CFR47 Part 18 FCC/OST MP-5:1986 CISPR 25:1995 Germanischer Lloyd GL 2001, VI, Part 7, Chapter 3, Section 3 Part B21 Ford ES-XW7T-1A278-AC (CE420) GM3097:2004 (3.3.2) CISPR 16-2-1:2005 (Ed 1.1)
	1.2 Radiated Emissions: 150 kHz to 18 GHz AC mains: as in 1.1	BS 6527:1989 EN 55011:1991 EN 55011:1998 plus Amd 1 and 2 EN 55011:2007 including Amendment A2:2007 EN 55022:1988 and 1995 plus Amendments 1 and 2 EN 55022:1998 plus Amd 1 and 2 CISPR22:1997 plus Amd 1 and 2 EN55022:2006 including Amendment A1:2007 CISPR22:2005 AS/NZS 3548:1995 FCC CFR 47:Part 15B ANSI C63.4:1992 ANSI C63.4:2003 Inc Bore Sight Measurement FCC CFR47 Part 18 FCC/OST MP-5:1986 Ford ES-XW7T-1A278-AC - RE310 GM3097:2004 (3.3.1) CISPR 25:1995 CISPR 25:2002 EC Directive 95/54/EC, Annex 7 and 8 EC Directive 2004/104/EC, Annex IV, V, VII and VIII EC Directive 2006/28/EC EC Directive 97/24/EC, chapter 8 ANNEX II AND III ANNEX V AND VI



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As listed on Pages 1 and 2	<b>1 EMC TESTS (cont'd)</b>	
	1.2 Radiated Emissions: (cont'd)	Germanischer Lloyd GL 2001, VI, Part 7, Chapter 3, Section 3, Part B2 ISO 13766:2006 EN ISO 14982:1998 EN 13309:2000 ECE Regulation 10.02:1997, Annex 7 and 8 CISPR 16-2-3:2006
	1.3 Power Absorbing Emissions Measurements (Power Clamp) 30 MHz to 300 MHz AC mains: as in 1.1	EN 55014-1:1993 including Amendment A1:1997 EN 55014-1:1997 EN 55014-1:2006 EN 55013:1990 excluding TV and VCR's CISPR 16-2-2:2005
	1.4 Harmonic Emissions Up to 16 A	BS EN 61000-3-2:1995 including Amendments 1, 2 and 3 EN 61000-3-2:2000 inc Amd 1 and 2 EN 61000-3-2:2006 IEC 61000-3-2:2000 inc Amd 1 and 2
	1.5 Flicker Measurement Up to 16 A	EN 61000-3-3:1995 including Amendment A1:2001 & A2:2006 IEC 61000-3-3:1994 including Amendment A1:2001 & A2:2005 EN61000-3-3:2008
	1.6 Fast Transient/Burst Immunity 0.5 to 4.0 kV 5/50 nsec, 5 kHz repetition AC mains: as in 1.1	IEC 801-4:1988 EN 61000-4-4:1995 including Amendment A1:2001 and A2:2002 IEC 61000-4-4:1995 including Amendment A1:2000 and A2:2002 EN 61000-4-4:2004



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As listed on Pages 1 and 2	<b>1 EMC TESTS (cont'd)</b>  1.7 Surge Immunity Waveforms 1.2/50 (8/20) $\mu$ s AC mains: as in 1.1	EN 61000-4-5:1995 including Amendment A1:2001 IEC 61000-4-5:1995 including Amendment A1:2000 EN 61000-4-5:2006
	1.8 AC Power Ports Voltage Dips, Interruptions and Fluctuations AC mains: as in 1.1	EN 61000-4-11:1994 including Amendment A1:2001 EN 61000-4-11:2004 IEC 61000-4-11:2004 IEC 61000-4-11:1994 inc Amd 1
	1.9 Radiated Immunity 27 to 2700 MHz at 20 V/m AC mains: as in 1.1   Absorption Chamber 400 MHz - 10 GHz at 100 V/m	IEC 801-3:1984 EN 61000-4-3:1996 EN 61000-4-3:2002 inc Amd 1 IEC 61000-4-3:1995 IEC 61000-4-3:2002 inc Amd 1 EN 61000-4-3:2006 EC Directive 95/54/EC, Annex 9 ECE Regulation 10.02:1997, Annex 9  SAE J1113-21:1998 ISO 11452-2:1995 ISO 11452-2:2004, substitution method ISO 11451-1:2005 EC Directive 2004/104/EC, Annex VI & IX EC Directive 2006/28/EC EC Directive 97/24/EC, chapter 8 ANNEX IV & ANNEX VII ISO 13766:2006 EN ISO 14982:1998 EN13309:2000 Ford ES-XW7T-1A278-AC - RI114 GM3097:2006 - 3.4.2 SAE J1113-25:1999



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As listed on Pages 1 and 2	<b>1 EMC TESTS (cont'd)</b>  1.9 Radiated Immunity (cont'd)  Stripline 10 kHz to 400 MHz at 200 V/m	SAE J1113-23:1995 ISO 11452-5:2004, 150mm stripline substitution method EC Directive 2004/104/EC, Annex IX EC Directive 2006/28/EC EC Directive 97/24/EC, chapter 8 ANNEX VII
	1.10 Power Frequency Magnetic Fields (Immunity) Frequency: 50 Hz Field strength: 100 A/m AC mains: as in 1.1	EN 61000-4-8:1994 IEC 61000-4-8:1993
	1.11 Pulse Magnetic Immunity Field strength: 1000 A/m AC mains: as in 1.1	EN 61000-4-9:1994 IEC 61000-4-9:1993
	1.12 Conducted Immunity 150 kHz to 230 MHz  RF voltage up to 10 Vrms AC Mains: as in 1.1  BCI 1 MHz to 400 MHz	EN 61000-4-6:1996 including Amendment A1:2001 IEC 61000-4-6:1996 including Amendment A1:2000 EN 61000-4-6:2007 EC Directive 95/54/EC, Annex 9 ISO 11452-4:2001 ISO 11452-4:2005, subst. method EC Directive 2004/104/EC, Annex IX EC Directive 2006/28/EC EC Directive 97/24/EC, chapter 8 ANNEX VII Ford ES-XW7T-1A278-AC - RI112 GM3097:2006 - 3.4.1 ECE Regulation 10.02:1997, Annex 9



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As listed on Pages 1 and 2	<p><b>1 EMC TESTS (cont'd)</b></p> <p>1.13 Electrostatic Discharge Immunity Positive and Negative Polarity (ESD) Up to 20 kV</p> <ul style="list-style-type: none"> <li>• Direct and Indirect</li> <li>• Air and Contact Discharge</li> </ul>	<p>IEC 801-2:1984 and 1991 EN 61000-4-2:1995 including Amendment A1:1998 and A2:2001 IEC 61000-4-2:1995 including Amendment A1:1998 and A2:2000 ISO 10605:2001 Ford ES-XW7T-1A278-AC - CI280 GM3097:2006 - 3.6 ISO 13766:2006 EN ISO 14982:1998 EN13309:2000</p>
	<p>1.14 Vehicle Transient Testing 12 and 24 v Emissions and Immunity</p>	<p>ISO 7637-1:1990, except Pulse 5 ISO 7637-2:1990, except Pulses 1, 2, 5 ISO 7637-1:2002 ISO 7637-2:2004 ISO 7637-3:1995 Ford ES-XW7T-1A278-AC - CI220 GM 3097:2006 (3.5.1, 3.5.2 and 3.5.3)</p>
	<p>1.15 Generic Standards</p> <p>These Generic and Product specific tests are included in this Schedule, but limited to those referred basic standards that are explicitly listed in Sections 1.1 to 1.14.</p>	<p>EN 61000-6-1:2001 EN 61000-6-1:2007 EN 61000-6-2:2001 EN 61000-6-2:2005 EN 61000-6-3:2001 + A11 Conducted emissions on Ports only where CDN's can be used EN 61000-6-3:2007 EN 61000-6-4:2001 EN 61000-6-4:2007 EN 50081-1:1992 EN 50082-1:1997 EN 50081-2:1994 EN 50082-1:1992 EN 50082-2:1994 EN 50121-4:2006 EN 50121-3-2:2006 EN 50130-4:1995 including Amendment A1:1998 &amp; A2:2003</p>



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As listed on Pages 1 and 2	<p><b>1 EMC TESTS (cont'd)</b></p> <p>1.15 Generic Standards (cont'd)</p> <p>Note: International Standards, EN, ENV and IEC, listed in this Schedule, that have been adopted nationally as BS EN DD ENV and BS IEC and are technically identical, can be considered as being included in this Schedule.</p>	<p>EN 50270:2006 EN 50293:2000 EN 60601-1-2:1993 EN 60601-1-2:2001 EN 60601-1-2:2007 EN 55014-2:1997 including Amendment A1:2001 BS EN 55014-2:1997 including Amendment A1:1998, A2:2001 and A3:2007 EN 61326:1997 plus Amd 1, 2 and 3 EN 61326-1:2006 EN 55024:1998 plus Amd 1 and 2 CISPR24:1997 plus Amd 1 and 2 Analogue Voice Ports are not included within the scope of Testing EN 60945:2002, section 9 &amp; 10 EN 61800-3:2004, excluding Clause 6.2.2, 6.2.3.2, 6.2.3.3, 6.2.4.2, 6.2.4.3 &amp; 6.2.5 Note: Up to 16 Amps for EN 61000-3-2 and EN 61000-3-3 and up to 32 Amps per phase other tests</p>
<p>The following describes the OEM requirements assessed and the test chamber where the testing is performed and proficiency testing has been successfully completed</p> <p>OEM: Ford, GM Chamber(s): AC1, AC2, AC3</p> <p>OEM: Ford, GM Chamber(s): AC1, AC3</p>	<p><b>Automotive EMC Laboratory Recognition Program (AEMCLRP)</b></p> <p>1.16 AEMCLRP Testing</p> <p>1.16.1 Radiated Emissions</p> <p>1.16.2 Absorption Chamber 400 MHz - 10 GHz at 100 V/m Substitution and Closed Loop Methods 600V/m 1.2GHz - 3.4GHz, substitution method</p>	<p>This laboratory has been assessed against the AEMCLRP scheme requirements</p> <p>CISPR 25:2002 Ford ES-XW7T-1A278-AC GM3097:2006</p> <p>SAE J1113-21:1998 ISO 11452-2:2004 Ford ES-XW7T-1A278-AC GM3097:2006</p>



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<p>The following describes the OEM requirements assessed and the test chamber where the testing is performed and proficiency testing has been successfully completed (cont'd)</p> <p>OEM: Ford, GM Chamber(s): AC2, SR1</p> <p>OEM: Ford, GM Chamber(s): Lab3, Auto 1, Auto 2, SR1</p> <p>OEM: Ford, GM Chamber(s): AC1, AC2, AC3, SR1</p>	<p><b>Automotive EMC Laboratory Recognition Program (AEMCLRP)</b> (cont'd)</p> <p>1.16 AEMCLRP Testing (cont'd)</p> <p>1.16.3 Bulk Current Injection 1 MHz to 400 MHz</p> <p>1.16.4 ESD Up to 25 kV</p> <p>1.16.5 Conducted Emissions 100 kHz - 108 MHz (Voltage method only)</p>	<p>This laboratory has been assessed against the AEMCLRP scheme requirements (cont'd)</p> <p>ISO 11452-4:2005 Ford ES-XW7T-1A278-AC GM3097:2006</p> <p>ISO 10605:2001 Ford ES-XW7T-1A278-AC GM3097:2006</p> <p>CISPR 25:2002 Ford ES-XW7T-1A278-AC GM3097:2006</p>
As listed on Pages 1 and 2	<p><b>2 MILITARY/AEROSPACE</b></p> <p>2.1 Conducted Emissions:</p> <p>Power, Control and Signal Leads: DC to 400 MHz</p>	<p>MIL STD 461E, CE101 and CE102 DEF STAN 59-41:Part 3, Section 3, Issue 1:2003 DCE01 &amp; DCE02 DEF STAN 59-411:Part 3 Issue 1:2007 DCE01 &amp; DCE02 RTCA/DO160C Section 21 RTCA/DO160E, Section 21</p>
	<p>2.2 Radiated Emissions: Electric Field:</p> <p>10 kHz to 18 GHz</p>	<p>MIL STD 461D and E, RE102 DEF STAN 59-41:Part 3, Section 3, Issue 1:2003 DRE01 DEF STAN 59-411:Part 3 Issue 1:2007 DRE01 RTCA/DO160C, Section 21 RTCA/DO160E, Section 21</p>



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As listed on Pages 1 and 2	<b>2 MILITARY/AEROSPACE</b>	
	2.3 Radiated Emissions: Magnetic Field: 20 Hz to 100 kHz	MIL STD 461E, RE101 DEF STAN 59-411 Part 3 DRE02
	2.4 Exported Transients Power Lines	DEF STAN 59-411 Part 3 Issue 1:2007 DCE03
	2.5 Radiated Susceptibility: Electric Field: 14 kHz to 18 GHz Maximum Field Strength: 50 V/m  100kHz - 18 GHz at Maximum Field Strength: 100 V/m Substitution and Closed Loop Methods	MIL STD 461D and E, RS103 DEF STAN 59-41:Part 3, Section 3, Issue 1:2003 DRS02 DEF STAN 59-411:Part 3 Issue 1:2007 DRS 02 RTCA/DO160C Section 20 RTCA/DO160E Section 20
	2.6 Radiated Susceptibility: Magnetic Field: 20 Hz to 150 kHz Maximum Field Strength: 180 dBpT	MIL STD 461D, E and F RS101 DEF STAN 59-411 Part 3 Issue 1:2007 DRS01
	2.7 Conducted Susceptibility: Transients 10 Hz to 150 kHz	RTCA/DO160E & F Section 19



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As listed on Pages 1 and 2	<p><b>2 MILITARY/AEROSPACE</b> (cont'd)</p> <p>2.8 Conducted Susceptibility: Power, Control and Signal Lines including Bulk Current Injection 10 kHz to 400 MHz</p>	<p>MIL STD 461D and E, CS114 &amp; CS 115 MIL STD 461E and F, CS101 DEF STAN 59-41:Part 3, Section 3, Issue 1:2003 DCS02 DEF STAN 59-411:Part 3 Issue 1:2007 DCS 02, DCS 03 RTCA/DO160C Section 20 RTCA/DO160E &amp; F Section 18</p>
	<p>2.9 Conducted Susceptibility: Primary Power Lines, 20 Hz - 50 kHz</p>	<p>DEF STAN 59-411:Part 3 Issue 1:2007 DCS 01</p>
	<p>2.10 Magnetostatic Field Susceptibility 800 A/m</p>	<p>DEF STAN 59-411:Part 3 DRS03</p>
	<p>2.11 Electrostatic Discharge</p>	<p>DEF STAN 59-41:Part 3, Section 3, Issue 1:2003 DCS10 DEF STAN 59-411:Part 3 Issue 1:2007 DCS10 RTCA/DO160E &amp; F Section 25</p>
	<p>Laboratory Facilities:</p> <p>Semi-Anechoic Chamber AC1 7.6 m (l) x 6.1 m (w) x 3.75 m (h) overall; 6.47 m (l) x 4.94 m (w) x 3.0 m (h) effective</p>	



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	<p>Laboratory Facilities: (cont'd)</p> <p>Semi-Anechoic Chamber AC2 7.3 m (l) x 6.46 m (w) x 3.6 m (h) overall; 6.46 m (l) x 4.97 m (w) x 3.53 m (h) effective</p> <p>Semi-anechoic Chamber AC3 3 m CISPR 16 compliant 9.0 m (l) x 6.1 m (w) x 5.7 m (h) overall; 8.45 m (l) x 5.08 m (w) x 5.65 m (h) effective</p> <p>Semi-anechoic Chamber AC4 10 m CISPR 16 compliant 18.2 m (l) x 12.7 m (w) x 8.1 m (h) overall; 17.7 m (l) x 11.55 m (w) x 7.55 m (h) minimum effective</p> <p>Screened Room SR1 4.85 m (l) x 3.34 m (w) x 3.0 m (h)</p> <p>Dedicated Automotive Transient Laboratory, LAB1</p> <p>Dedicated High Voltage, ESD and Harmonics Laboratory, LAB2</p> <p>Environmentally controlled labs for transient, ESD and Electrical Testing, AUTO 1, AUTO 2, LAB 3</p> <p>Max size of EUT: 4.0 m x 6.0 m x 4.0 m</p> <p>Electrical Supplies: 240V 50/60/400 Hz 16A 110V 50/60/400 Hz 20A 0 - 60V DC</p>	
	END	