

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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



1896

Accredited to
ISO/IEC 17025:2005

Electronic Test and Calibration Ltd

Issue No: 023

Issue date: 20 October 2014

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Testing performed at the above address only

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
Computers and peripherals Domestic appliances Electrical/Electronic components Electrical/Electronic products Telecommunications equipment IT equipment	1 CIVIL EMC Tests	
	1.1 Conducted Emissions 9 kHz to 30 MHz	EN 55011:1998+A1:1999 + A2:2002 EN 55011:2007 EN 55011:2007+A2:2007 EN 55011:2009 EN 55011: 2009+A1:2010 EN 55014-1:2000 EN 55014-1:2006 EN 55014-1:2006+A1:2009 EN 55014-1:2006+A2:2011 CISPR 14-1:2005 EN 55022:1998 EN 55022:1998+A1:2000+A2:2003 EN 55022:2006 EN 55022: 2006+A1:2007 EN 55022:2006+A2:2010 EN 55022:2010 CISPR 22:1997 CISPR 22:2005 CISPR 16-2-1:2003 CISPR 16-2-1:2003+A1:2005 CISPR 16-2-1:2008 CISPR 16-2-1:2008 Ed2+A1:2010 CISPR 16-2-1:2008 Ed2+A2:2013 CISPR 16-1-2:2003+A1:2004+A2:2006
	1.2 Radiated Emissions Magnetic Field 10 kHz to 30 MHz	EN 60945:2002



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As listed on Page 1	1 CIVIL EMC Tests (cont'd)	
	1.3 Radiated Emissions - Electric Field 30 MHz to 18 GHz	EN 55011:1998+A1:1999 + A2:2002 EN 55011:2007 EN 55011:2007+A2:2007 EN 55011:2009 EN 55011: 2009+A1:2010 EN 55014-1:2000 EN 55014-1:2006 EN 55014-1:2006+A1:2009 EN 55014-1:2006+A2:2011 CISPR 14-1:2005 EN 55022:1998 EN 55022:1998+A1:2000+A2:2003 EN 55022:2006 EN 55022:2006+A1:2007 EN 55022:2006+A2:2010 EN 55022:2010 CISPR 22:1997 CISPR 22:2005 CISPR 16-2-3:2006 CISPR 16-2-3:2010 Ed3
	1.4 Electrostatic Discharge Up to 30 kV	IEC 801-2:1991 IEC 1000-4-2:1995, A1 and A2 EN 61000-4-2:1995, A1 and A2 EN 61000-4-2:2009
	1.5 Radiated Immunity 80 MHz to 1000 MHz up to 20 V/m and 2700 MHz up to 10 V/m	IEC 1000-4-3:2002 EN 61000-4-3:1996 EN 61000-4-3:1996+A1:1998+A2:2001 EN 61000-4-3:2002 EN 61000-4-3:2002+A1:2002+IS1:2004 EN 61000-4-3:2006 EN 61000-4-3:2006+A1:2008 EN 61000-4-3:2006+A2:2010



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As listed on Page 1	1 CIVIL EMC Tests (cont'd) 1.6 Radiated Susceptibility Alternative method Reverberation Chamber 80 MHz to 18 GHz Mode Tuning and Mode Stirring <table><tr><td>MHz</td><td>V/m</td><td>dBuV/m</td></tr><tr><td>80</td><td>200</td><td>166</td></tr><tr><td>200</td><td>400</td><td>172</td></tr><tr><td>300</td><td>500</td><td>174</td></tr><tr><td>1000</td><td>500</td><td>174</td></tr></table> <table><tr><td>GHz</td><td>V/m</td><td>dBuV/m</td></tr><tr><td>1 to 12.4</td><td>350</td><td>171</td></tr><tr><td>12.4 to 18</td><td>200</td><td>166</td></tr></table>	MHz	V/m	dBuV/m	80	200	166	200	400	172	300	500	174	1000	500	174	GHz	V/m	dBuV/m	1 to 12.4	350	171	12.4 to 18	200	166	EN 61000-4-21:2003 EN 61000-4-21:2011
	MHz	V/m	dBuV/m																							
	80	200	166																							
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1000	500	174																								
GHz	V/m	dBuV/m																								
1 to 12.4	350	171																								
12.4 to 18	200	166																								
	1.7 Fast Transient and Burst Immunity	IEC 801-4:1988 IEC 1000-4-4:1995+A1:2001+A2:2001 EN 61000-4-4:1995 EN 61000-4-4:1995+A1:2001+A2:2001 EN 61000-4-4:2004 EN 61000-4-4:2004+A1:2010 EN 61000-4-4:2012																								
	1.8 Surge Immunity	IEC 1000-4-5:1995+A12001 EN 61000-4-5:1995+A1:2001 EN 61000-4-5:2006																								
	1.9 Conducted Radio Frequency Disturbance 150 kHz to 80 MHz	IEC 61000-4-6:1996+A1:2001+A2:2004 EN 61000-4-6:1996 EN 61000-4-6:1996+A1:2001+A2:2004 EN 61000-4-6:2007 EN 61000-4-6:2009																								



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	1.10 Power Frequency Magnetic Field Immunity	EN 61000-4-8:1994+A1 EN 61000-4-8: 2010
	1.11 Pulsed Magnetic Field immunity	EN 61000-4-9:1993
	1.12 Mains Dips and Interruptions (5 seconds Maximum)	IEC 1000-4-11:1994 EN 61000-4-11:1994 EN 61000-4-11:2004
	1.13 Conducted Voltage Harmonics (Emissions) Up to 40th Harmonic	EN 61000-3-2:1995 EN 61000-3-2:2000, Ed2 EN 61000-3-2:2006 EN 61000-3-2:2006+A2:2009
	1.14 Conducted AC Mains Flicker/Emissions	EN 61000-3-3:1995 EN 61000-3-3:1995+A1:2001+A2:2005 EN 61000-3-3:2008
	1.15 EMC Tests These generic and product specific tests are included in this Schedule, but limited to those basic standards that are explicitly listed in Sections 1.1 to 1.14.	Generic and Product Standards EN 50081-1:1992 EN 50081-2:1994 EN 50082-1:1996 EN 50082-2:1996 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 EN 61000-6-3:2007+A1 2011 EN 61000-6-4:2001 EN 61000-6-4:2007+ A1:2011 EN 61326:1997 EN 61326:1997 + A1:1998 + A2:2001 + A3:2003 EN 61326-1:2006 EN 61326-2-2:2006 EN 61326-2-2:2013 EN 61326-1:2013



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As listed on Page 1	<p>1 CIVIL EMC Tests (cont'd)</p> <p>1.14 EMC Tests (cont'd)</p> <p>These generic and product specific tests are included in this Schedule, but limited to those basic standards that are explicitly listed in Sections 1.1 to 1.13.</p>	<p>Generic and Product Standards</p> <p>EN 55024:1998 EN 55024:1998, A1:2001 + A2:2003 EN 55024:2010 EN 60945:2002 Sections 9 & 10 EN 60601-1-2:1993 EN 60601-1-2:2001 + A1:2006 EN 60601-1-2:2007 EN 55103-1:2009 EN 55103-2:2009 EN 50293:2012 EN 60947-4-2:2012 EN 50121-3-2:2006 EN 50121-4:2006 EN 50121-5:2006</p>
	<p>2 MILITARY EMC Tests</p> <p>2.1 Conducted Emissions:</p> <p>Power, Control and Signal Leads: 20 Hz to 150 MHz</p> <p>Antenna Terminals 10 kHz to 18 GHz</p>	<p>MIL STD 461E MIL STD 461F CE101, CE102 DEF STAN 59-41:Part 3, Section 3, Issue 1:2003 DCE01, DCE02 RTCA DO 160 G Section 21</p> <p>DEF STAN 59-411 Am 1 DCE01, DCE02 AECTP-500 Ed 4 NCE01, NCE02 NCE05 MIL STD 461E and F CE106</p>
	<p>2.2 Radiated Emissions: Electric Field: 10 kHz to 18 GHz</p>	<p>MIL STD 461D - RE102, RE103 MIL STD 461E - RE102, RE103 MIL STD 461F - RE102, RE103 DEF STAN 59-41:Part 3, Section 3, Issue 1:2003 DRE01 DEF STAN 59-411 Am 1 DRE01 AECTP-500 Ed 4 NRE02, NRE03 RTCA DO 160 G Section 21</p>



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
	2 MILITARY EMC Tests (cont'd)	
	2.3 Radiated Emissions: Magnetic Field: 20 Hz to 250 kHz	MIL STD 461E - RE101 MIL STD 461F - RE101 DEF STAN 59-41:Part 3, Section 3, Issue 1:2003 DRE02 DEF STAN 59-411 Am 1 DRE02 AECTP-500 Ed 4 NCS12, NRE01
	2.4 Exported Transients Power Lines	DEF STAN 59-41:Part 3, Section 3, Issue 1:2003 DCE03 DEF STAN 59-411 Am 1 DCE03 AECTP-500 Ed 4 NCE04
	2.5 Radiated Susceptibility: Electric Field: 10 kHz to 18 GHz GHz V/m dBuV/m 0.0001 200 V/m 166 1 to 18 50 V/m 154 See also section 2.12 below Alternative method GHz V/m dBuV/m 1 to 12.4 350 171 12.4 to 18 200 166	MIL STD 461E - RS103 MIL STD 461F - RS103 DEF STAN 59-41:Part 3, Section 3, Issue 1:2003 DRS02 DEF STAN 59-411 Am 1 DRS02 AECTP-500 Ed 4 NRS02 RTCA DO 160 G Section 20
	2.6 Radiated Susceptibility: Magnetic Field: 0 Hz to 100 kHz Maximum Field Strength: 196 dBpT	MIL STD 461E and F RS101 DEF STAN 59-41:Part 3, Section 3, Issue 1:2003 DRS01, DRS03 DEF STAN 59-411 Am 1 DRS01, DRS03 AECTP-500 Ed 4 NRS01, NRS04



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	2 MILITARY EMC Tests (cont'd)	
	2.7 Conducted Susceptibility: Inter and Cross Modulation and Rejection of Unwanted Signals: 30 Hz to 18 GHz	MIL STD 461E MIL STD 461F CS103, CS104 and CS105 AECTP-500 Ed 4 NCS03, NCS04, NCS05
	2.8 Conducted Susceptibility: Power, Control and Signal Lines including Bulk Current Injection 20 Hz to 400 MHz	MIL STD 461D MIL STD 461E MIL STD 461F CS114 DEF STAN 59-41:Part 3, Section 3, Issue 1:2003 DCS02 and DCS03 DEF STAN 59-411 Am 1 DCS02, DCS03 AECTP-500 Ed 4 NCS02, NCS07 RTCA DO 160 G Section 20
	2.9 Conducted Susceptibility: Primary Power Lines, 20 Hz - 150 kHz	MIL STD 461E MIL STD 461F CS101 DEF STAN 59-41:Part 3, Section 3, Issue 1:2003 DCS01 DEF STAN 59-411 Am 1 DCS01 AECTP-500 Ed 4 NCS01
	2.10 Electrostatic Discharge Up to 30 kV contact	DEF STAN 59-41:Part 3, Section 3, Issue 1:2003 DCS10 DEF STAN 59-411 Am 1 DCS10 AECTP-500 Ed 4 NCS12 RTCA DO 160 G Section 25



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	2 MILITARY EMC Tests (cont'd)	
	2.11 Conducted Susceptibility: Structure Current, 60 Hz - 100 kHz	MIL STD 461E MIL STD 461F CS109 AECTP-500 Ed 4 NCS06
	2.12 Radiated Susceptibility Alternative method Reverberation Chamber 80 MHz to 18 GHz Mode Tuning and Mode Stirring MHz V/m dBuV/m 80 200 166 200 400 172 300 500 174 1000 500 174 GHz V/m dBuV/m 1 to 12.4 350 171 12.4 to 18 200 166	MIL STD 461E MIL STD 461F RS103 DEF STAN 59-41:Part 3, Section 3, Issue 1:2003 DRS02 DEF STAN 59-411 Am 1 DRS02 AECTP-500 Ed 4 NRS02 RTCA DO160 E, F and G Section 20 EN 61000-4-21:2003 EN 61000-4-21:2011
	2.13 Audio Frequency Conducted Susceptibility	RTCA DO 160 G Section 18
	2.14 Voltage Spike	RTCA DO 160 G Section 17
	2.15 Power Input Voltage and Frequency Voltage Modulation Frequency Modulation Momentary power interruptions Normal transients Normal Surge Voltage Normal Frequency Transients Normal Frequency Variations Voltage DC Content Voltage Distortion	RTCA DO 160 G Section 16



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	2 MILITARY EMC Tests (cont'd)	
	2.16 Magnetic Effect	RTCA DO 160 G Section 15
	2.17 Induced Signal Susceptibility 20 Hz to 50 kHz Magnetic Fields into equipment Electric Fields into equipment Magnetic Fields into Cables Electric Fields into Cables Spikes induced into Cables	RTCA DO 160 G Section 19
	2.18 Aircraft Electrical Power Characteristics 28 VDC	Mil Std 704F including Notice 1 2008 MIL HNBK 704-8
Facilities and Resources	Laboratory Facilities Main Building Fully Lined Anechoic Chamber ETC799 7.3 m x 4.3 m x 5 m Doors 2 m x 1.4 m Max load 250 kg / m ² Supplies 32 A 230 V / 415 V 50 Hz 16 A 115 V 50 Hz : 60 Hz and 400 Hz @ 3 kVA Reverberation Chamber / Screened Room ETC800 7.3m x 4.3 m x 5 m Doors 2 m x 2 m Max load 1 tonne / m ² Supplies 32 A 230 V / 415 V 50Hz 16 A 115 V 50 Hz : 60 Hz and 400 Hz @ 3 kVA EUT volume 3.2 m x 2.4 m x 2 m Laboratory Facilities Unit 14 Semi Anechoic Chamber EMC054	



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Facilities and Resources (cont'd)	<p>Laboratory Facilities Main Building (cont'd)</p> <p>Laboratory Facilities Unit 14 (cont'd)</p> <p>7.3 m x 4.2 m x 4.2 m Door 0.9 m x 2 m Turntable max load 250 kg</p> <p>Supplies 32 A 230 V / 415 V 50Hz 16 A 115 V 50 Hz : 60 Hz and 400 Hz @ 3 kVA</p> <p>Screened Room EMC</p> <p>3.6 m x 2.4 m x 2.4 m Door 0.86 m x 1.9 m</p> <p>Supplies 32 A 230 V / 415 V 50Hz 16 A 115 V 50 Hz : 60 Hz and 400 Hz @ 3 kVA</p> <p>Dedicated Test areas for: ESD Dips, variation, flicker & harmonics EFT Surge Conducted RF immunity</p> <p>Open Area Test Site Unit 14</p> <p>10 m and 3 m Covered Turntable max load 250 kg</p> <p>Supplies 64 A 230 V / 415 V 50Hz 16 A 115 V 50 Hz : 60 Hz and 400 Hz @ 3 kVA</p>	
END		