


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

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|  <p>2360</p> <p>Accredited to ISO/IEC 17025:2005</p> | <h3>RN Electronics Ltd</h3> <p>Issue No: 017 Issue date: 17 January 2012</p> | |
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| <p>Testing performed at the above address only</p> | | |

DETAIL OF ACCREDITATION

| Materials/Products tested | Type of test/Properties measured/Range of measurement | Standard specifications/ Equipment/Techniques used |
|---|--|--|
| <p>Computers and Peripherals Domestic Appliances: Electrical Electrical/Electronic Products Electronic Products: Digital Electro-Mechanical Devices ISM Equipment IT Equipment Laboratory Equipment Medical/Dental Equipment Office Equipment: Electrical Security Equipment Telecommunications Equipment Welding Equipment</p> | <p>1 CIVIL EMC TESTS</p> <p>1.1.1 Conducted Emissions 150 kHz to 30 MHz</p> | <p>CISPR 22:2005 And A1 and A2 (Edition 5.2)</p> <p>EN 55016-2-1:2004 including Amendment A1:2005</p> <p>EN 55011:1998 including Amendment A1:1999 and A2:2002</p> <p>EN 55011:2007 including Amendment A2:2007</p> <p>EN 55014-1:2000 including Amendment A1:2001 and A2:2002</p> <p>EN 55014-1:2006 including Amendment A1:2009</p> <p>CISPR 22:1997</p> <p>EN 55022:1998 including Amendment A1:2000 and A2:2003</p> <p>EN 55022:2006 including Amendment A1:2007</p> <p>ANSI C63.4:2003</p> <p>FCC CFR 47:Part 15B</p> <p>FCC CFR 47:Part 18</p> <p>FCC/OST MP5:1986</p> |
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| As listed on Page 1 | 1 CIVIL EMC TESTS (cont'd) | |
| | 1.1.2 Radiated Emissions 30 MHz to 18 GHz | ANSI C63.4:2003 EN 55016-2-3:2004 including Amendment A1:2005 & A2:2005 EN 55016-2-3:2006 EN 55011:1998 including Amendment A1:1999 and A2:2002 EN 55011:2007 including Amendment A2:2007 EN 55022:1998 including Amendment A1:2000 and A2:2003 EN 55022:2006 including Amendment A1:2007 FCC CFR 47:Part 15B FCC CFR 47:Part 18 FCC/OST MP5:1986 |
| | 1.1.3 Conducted Current Harmonics (Emissions): Measurements up to 40 th Harmonic | EN 61000-3-2:2000 EN 61000-3-2:2006 Amendment A1:2009 & A2:2009 |
| | 1.1.4 Conducted AC Mains Flicker (Emissions) | EN 61000-3-3:1995 including Amendment A1:2001 & A2:2006 EN 61000-3-3:2008 |
| | 1.1.5 Signal Line Conducted Emissions 150 kHz to 30 MHz Signal lines/DC in and out | EN 55022:1998 including Amendment A1:2000 and A2:2003 (limited to where standard ISN's and CDN's can be used) EN 55022:2006 including Amendment A1:2007 |
| | 1.1.6 Power Absorbing Emissions Measurements (Power Clamp) 30 MHz to 1 GHz | EN 55014-1:2000 including Amendment A1:2001 and A2:2002 EN 55014-1:2006 including Amendment A1:2009 |
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| As listed on Page 1 | 1 CIVIL EMC TESTS (cont'd) | |
| | 1.1.7 Electrostatic Discharge Immunity (ESD): Up to 15 kV Direct and Indirect Air and Contact Discharge Positive and Negative Polarity | IEC 801-2:1991 EN 61000-4-2:1995 including Amendment 1:1998 and 2:2001 EN 61000-4-2:2009 |
| | 1.1.8 Radiated Electromagnetic Field Immunity: 80 MHz to 3 GHz | EN 61000-4-3:1996 including Amendment A1:1998 and A2:2001 EN 61000-4-3:2002 including Amendment A1:2002 EN 61000-4-3:2006 including Amendment A1, A2 |
| | 1.1.9 Fast Transient/Burst Immunity: 0.25 kV to 4.0 kV Positive and Negative Polarity 5 ns rise time, 10 ns duration 15 ms burst duration | IEC 801-4:1988 EN 61000-4-4:1995 including Amendment A1:2001 and A2:2001 EN 61000-4-4:2004 + A1 |
| | 1.1.10 Surge Immunity Waveforms: 0.2 kV to 4.4 kV 1.2/50 (8/20) μ s Common mode Differential mode | EN 61000-4-5:1995 including A1:2001 EN 61000-4-5:2006 |
| | 1.1.11 Conducted Radio Frequency Immunity: 150 kHz to 230 MHz RF voltage up to 10 V rms Injection via coupling networks, direct injection or bulk current injection | EN 61000-4-6:1996 including Amendment A1:2001 EN 61000-4-6:2007 EN 61000-4-6:2009 |
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| As listed on Page 1 | <p>1 CIVIL EMC TESTS (cont'd)</p> <p>1.1.12 Power-Frequency Magnetic Fields (Immunity) Frequency: 16 Hz to 500 Hz Field strength: up to 100 A/m</p> | <p>EN 61000-4-8:1993 including Amendment A1:2001 EN 61000-4-8:2010</p> |
| | <p>1.1.13 AC Power Ports Voltage Dips, Interruptions and Fluctuations (Immunity): Voltage Dips: up to 100% Voltage Reductions: up to 100% Voltage Fluctuations: up to 100% Frequency variations</p> | <p>EN 61000-4-11:1994 including Amendment A1:2001 EN 61000-4-11:2004 EN 60945:2002</p> |
| | <p>1.1.14 EMC Tests</p> <p>This section includes generic and product family standards that refer to basic standards included in Sections 1.1.1 to 1.1.13</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 50081-1:1992 EN 50081-2:1993 EN 50082-1:1997 EN 61000-6-1:2001 EN 61000-6-1:2007 EN 61000-6-2:1999 EN 61000-6-2:2001 EN 61000-6-2:2005 EN 61000-6-3:2001 including Amendment A1:2004 EN 61000-6-3:2007 EN 61000-6-4:2001 EN 61000-6-4:2007 EN 55014-2:1997 including Amendment A1:2001 & A2 2008 Amendment A1:2001 EN 60601-1-2:1993 EN 60601-1-2:2001 EN 60601-1-2:2007 EN 60945:2002 EN 61326:1997 including Amendment A1:1998, A2:2001 & A3:2003 EN 61326-1:2006 EN 61326-2-1:2006</p> |



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| As listed on Page 1 | 1 CIVIL EMC TESTS (cont'd) | |
| | 1.1.14 EMC Tests (cont'd) | EN 61326-2-2:2006 EN 61326-2-3:2006 EN 61326-2-6:2006 EN 50130-4:1996 including Amendment A1:1998 & A2:2003 EN 55024:1998 including Amendment A1:2001 and A2:2003 EN 301 489-1:V1.6.1:2005 EN 301 489-1:v1.8.1 EN 301 489-3:V1.4.1:2002 EN 301 489-5:V1.3.1:2002 EN 301 489-17:V1.2.1:2002 EN 55014-1:2006 including Amendment A1:2009 |
| | 1.2 AUTOMOTIVE EMC TESTS | |
| | 1.2.1 Radiated Emissions 30 MHz to 1 GHz ESA/components | 2004/104/EC, Annexes VII and VIII EN 55025:2003 |
| | 1.2.2 Radiated Immunity Absorption Chamber 400 MHz - 2 GHz at 30 V/m ESA/components | 2004/104/EC Annexes IX ISO 11452-2:2004 |
| 1.2.3 Conducted Immunity BCI 20 MHz to 400 MHz, 60Ma ESA/components | 2004/104/EC Annexes IX ISO 11452-4:2005 | |
| 1.2.4 Vehicle Transient Testing 12 and 24 v Emissions and Immunity | ISO 7637-2:2004 Pulses 1, 2a, 2b, 3a, 3b & 4 2004/104/EC Annexes X | |
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| | <p>EMC FACILITIES</p> <p>1.2.5 Screened Rooms 1 Semi-Anechoic Chamber: 4.8 m x 3.6 m x 4.8 m 2 Semi-Anechoic Chamber: 8.3 m x 5.4 m x 3.6 to 5.5 m 3 Screened Room: 3.6 m x 2.4 m x 3.0 m 4 Screened Room: 4.2 m x 3.6 m x 2.4 m 5 Control Room: 3.6 m x 2.4 m x 2.4 m 6 Control Room: 2.4 m x 2.4 m x 2.4 m</p> <p>1.2.6 Open Area Test Sites 1 3 m and 10 m Open Area Test Sites 2 3 m Semi-Anechoic Chamber OATS with increased uncertainty between 30 MHz to 50 MHz</p> <p>Single phase: 50 Hz 230V 30A supply Single phase: 50 Hz 115V 43A supply Single phase: 60 Hz 115V 17A supply Single phase: 400 Hz 115V 12A supply Three phase: 50 Hz 400V 50A supply</p> | |
| | <p>2 RADIO TRANSMITTER AND RECEIVER TESTING</p> <p>2.1 PMR & Short Range Radio Testing</p> <p>2.1.1 Frequency Error and Stability: 9 kHz to 26.5 GHz</p> <p>2.1.2 Carrier Power: Hz to Hz Up to 2 W < 18 GHz Up to 100 W < 4 GHz</p> <p>2.1.3 Effective Radiated Power (ERP) & Equivalent Isotropic Radiated Power (EIRP): 30 MHz to 18 GHz</p> <p>2.1.4 Maximum Spectral Power Density: 1 GHz to 22 GHz</p> | <p>EN 300 086-1:V1.2.1:2001 EN 300 086-2:V1.1.1:2001 EN 300 113-1:V1.5.1:2003 EN 300 113-2:V1.3.1:2003 EN 300 220-1:V2.1.1:2006 EN 300 220-1:V2.3.1:2009 EN 300 220-2:V2.1.1:2006 EN 300 220-2:V2.3.1:2010 EN 300 220-3:V1.1.1:2000 EN 300 330-1:V1.4.1:2004 EN 300 330-2:V1.2.1:2004 EN 300 328:V1.6.1:2004 EN 300 328:V1.7.1:2006 EN 300 440-1:V1.3.1:2001 EN 300 440-2:V1.1.2:2004 EN 301 357-1:V1.2.1:2001 EN 301 357-2:V1.2.1:2001</p> |



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| | <p>2 RADIO TRANSMITTER AND RECEIVER TESTING (cont'd)</p> <p>2.1 PMR & Short Range Radio Testing (cont'd)</p> <p>2.1.5 Frequency Deviation: 150 kHz to 1.3 GHz</p> <p>2.1.6 Frequency Range: 9 kHz to 26.5 GHz</p> <p>2.1.7 Adjacent Channel Power: 150 kHz to 22.5 GHz</p> <p>2.1.8 Modulation Depth & Bandwidth: 150 kHz to 1.3 GHz</p> <p>2.1.9 Spurious Emissions: 9 kHz to 26.5 GHz</p> <p>2.1.10 Intermodulation Attenuation: 20 MHz to 18 GHz</p> <p>2.1.11 Transmitter Transient Behaviour: 150 kHz to 1.3 GHz</p> <p>2.1.12 Transmitter Attack and Release Time: 9 kHz to 26.5 GHz</p> <p>2.1.13 H-Field: 9 kHz to 30 MHz</p> | |
| Fixed Link Radio Equipment | <p>2.2 Microwave Radio Transmitter and Receiver Testing</p> <p>2.2.1 Output power up to 100 W < 4 GHz up to 2 W < 40 GHz</p> | <p>EN 302 217-2-2:V1.1.3:2004 EN 302 217-2-2:V1.2.3:2007</p> |



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| | <p>2 RADIO TRANSMITTER AND RECEIVER TESTING (cont'd)</p> <p>2.1 Microwave Radio Transmitter and Receiver Testing (cont'd)</p> <p>2.2.2 Frequency Error & Stability 9 kHz to 40 GHz</p> <p>2.2.3 RF Spectrum Mask 9 kHz to 40 GHz</p> <p>2.2.4 Discrete CW Components exceeding the spectrum mask limit</p> <p>2.2.5 External Spurious Emissions 9 kHz to 40 GHz</p> <p>2.2.6 BER as a function of Receiver Input Signal Level</p> <p>2.2.7 Co-Channel Interference</p> <p>2.2.8 Adjacent Channel Interference</p> <p>2.2.9 CW Spurious Interference 30 MHz to 26.5 GHz</p> | |
| | <p>NOTE:</p> <p>Microwave antenna performance measurements and analogue link equipment performance measurements are excluded from the scope of this schedule.</p> | |
| | <p align="center">END</p> | |