Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

2360 **Accredited to ISO/IEC 17025:2005**	**RN Electronics Ltd** **Issue No:** 041 **Issue date:** 12 July 2019	
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Testing performed at the above address only		

Flexible Scope

The Flexible Scope applies to the laboratory's accreditation to ISO/IEC17025:2005 for testing activities in accordance with the standards listed in the schedule for EMC and Radio. 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 LAB39

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 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	**1.1 CIVIL EMC TESTS** 1.1.1 Conducted Emissions 9 kHz to 30 MHz	CISPR 22:2005 + A1 and A2 (Edition 5.2) EN 55016-2-1:2004 + A1:2005 EN 55016-2-1:2014 EN 55016-2-1:2009 + A1:2011 EN 55011:1998 + A1:1999, A2:2002 EN 55011:2007 + A2:2007 EN 55011-2009+ A1:2010 EN 55014-1:2000 + A1:2001+ A2:2002 EN 55014-1:2006 + A1:2009 EN 55014-1:2006 + A1:2009 & A2 2011 CISPR 22:1997 EN 55022:1998+A1:2000 and A2:2003 EN 55022:2006+ A1:2007 EN 55022:2010 EN 55032:2012 EN 55032:2015 ANSI C63.4:2003 ANSI C63.4:2009 ANSI C63.4:2014 FCC CFR 47: Part 15B FCC CFR 47: Part 18 FCC/OST MP5:1986 ICES-003:2012 ICES-003:2016

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 1	**1.1 CIVIL EMC TESTS** (cont'd)	
	1.1.2 Signal Line Conducted Emissions 150 kHz to 30 MHz Signal lines/DC in and out	EN 55022:1998 including Amendment A1:2000 + A2:2003 (limited to where standard ISN's and CDN's can be used) EN 55022:2006 + A1:2007 EN 55022:2010 EN 55032:2012 EN 55032:2015
	1.1.3 Radiated Emissions 9 kHz to 40 GHz	EN 55016-2-3:2004 + A1:2005 & A2:2005 EN 55016-2-3:2006 EN 55016-2-3:2010 + A1:2010 + A2:2014 EN 55011:1998 + A1:1999 and A2:2002 EN 55011:2007 + A2:2007 EN 55011-2009 + A1:2010 EN 55014-1:2006 + A1:2009 & A2 2011 EN 55022:1998 + A1:2000 and A2:2003 EN 55022:2006 + A1:2007 EN 55022:2010 EN 55032:2012 EN 55032:2015 ANSI C63.4:2003 ANSI C63.4:2009 ANSI C63.4:2014 FCC CFR 47: Part 15B FCC CFR 47: Part 18 FCC/OST MP5:1986 ICES-003:2012 ICES-003:2016
	1.1.4 Harmonics (Emissions): Conducted Current Measurements up to the 40th Harmonic	EN 61000-3-2:2000 EN 61000-3-2:2006 Amendment A1:2009 & A2:2009 EN 61000-3-2:2014

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 1	**1.1 CIVIL EMC TESTS** (cont'd)	As listed on Page 1
	1.1.5 Flicker (Emissions) Conducted AC Mains	EN 61000-3-3:1995 incl. Amendment A1:2001 & A2:2006 EN 61000-3-3:2008 EN 61000-3-3:2013
	1.1.6 Power Absorbing Emissions Measurements (Power Clamp) 30 MHz to 1 GHz	EN 55014-1:2000 + A1:2001and A2:2002 EN 55014-1:2006 + A1:2009 EN 55014-1:2006 + A1:2009 & A2 2011
	1.1.7 Electrostatic Discharge Immunity (ESD): Up to 15 kV	IEC 801-2:1991 EN 61000-4-2:1995 + 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 + A1:1998and A2:2001 EN 61000-4-3:2002 + A1:2002 EN 61000-4-3:2006 + A1:2008 + A2:2010
	1.1.9 Fast Transient/Burst Immunity: 0.25 kV to 4.0 kV	IEC 801-4:1988 EN 61000-4-4:1995 + A1:2001+ A2:2001 EN 61000-4-4:2004 + A1 EN 61000-4-4:2012
	1.1.10 Surge Immunity Waveforms: 0.2 kV to 4.4 kV	EN 61000-4-5:1995 + A1:2001 EN 61000-4-5:2006 EN 61000-4-5:2014
	1.1.11 Conducted RF Immunity: 150 kHz to 230 MHz up to 10 V rms	EN 61000-4-6:1996 + A1:2001 EN 61000-4-6:2007 EN 61000-4-6:2009 EN 61000-4-6:2014

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 1	**1.1 CIVIL EMC TESTS** (cont'd)	
	1.1.12 Power-Frequency Magnetic Field Immunity 16 Hz to 500 Hz up to 100 A/m	EN 61000-4-8:1993 + A1:2001 EN 61000-4-8:2010
	1.1.13 a) Voltage Dips, Interruptions and Fluctuations Immunity	EN 61000-4-11:1994 + A1:2001 EN 61000-4-11:2004 + A1:2017
	b) Voltage and Frequency variations	EN 60945:2002
	1.1.14 EMC Tests This section includes generic and product family standards that refer to basic standards included in Sections 1.1.1 to 1.1.13 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.	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 + A1:2004 EN 61000-6-3:2007 EN 61000-6-3:2007 + A1:2011 EN 61000-6-4:2001 EN 61000-6-4:2007 EN 61000-6-4:2007 + A1:2011 EN 55014-2:1997 + A1:2001 and A2 2008 EN 55014-2:2006 + A1:2009 EN 55014-2:2015 EN 55103-2:2009 EN 60601-1-2:1993 EN 60601-1-2:2001 EN 60601-1-2:2007 EN 60601-1-2:2015 EN 60945:2002 EN 61326:1997+ A1:1998, A2:2001 and A3:2003 EN 61326-1:2006 EN 61326-1:2013 EN 61326-2-1:2006 EN 61326-2-1:2013

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
As listed on Page 1	**1.1 CIVIL EMC TESTS** (cont'd) 1.1.14 EMC Tests (cont'd)	EN 61326-2-2:2006 EN 61326-2-2:2013 EN 61326-2-3:2006 EN 61326-2-3:2013 EN 61326-2-6:2006 EN 61326-2-6:2013 EN 50121-3-2:2016 excluding AC power outlet port for public use EN 50130-4:1996 + A1:2001 and A2:2003 EN50130-4:2011 + A1:2014 EN 55024:1998 + A1:2001 and A2:2003 EN 55024:2010 + A1:2016 EN 55035:2017 excluding Broadband impulse noise disturbances EN 50498:2010 EN 301 489-1:V1.6.1:2005 EN 301 489-1:v1.8.1 EN 301 489-1:v1.9.2 EN 301 489-1:V2.2.0 EN 301 489-3:V1.4.1:2002 EN 301 489-3:V1.6.1:2013 EN 301 489-3:V2.1.1 EN 301 489-4:V3.2.0 EN 301 489-5:V1.3.1:2002 EN 301 489-5:V2.2.0 EN 301 489-17:V1.2.1:2002 EN 301 489-17:V2.2.1:2012 EN 301 489-17:V3.2.0

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
Automotive Equipment ESA/components	**1.2 AUTOMOTIVE EMC TESTS** 1.2.1 Radiated Emissions 30 MHz to 1 GHz	 UN Regulation no. 10 Revision 4. UN Regulation no. 10 Revision 5 EN 55025:2003
	1.2.2 Radiated Immunity Absorption Chamber 400 MHz - 2 GHz at 30 V/m	UN Regulation no. 10 Revision 4. UN Regulation no. 10 Revision 5 ISO 11452-2:2004
	1.2.3 Conducted Immunity BCI 20 MHz to 400 MHz, 60 mA	UN Regulation no. 10 Revision 4. UN Regulation no. 10 Revision 5 ISO 11452-4:2005 (substitution method only)
	1.2 AUTOMOTIVE EMC TESTS (cont'd) 1.2.4 Vehicle Transient Emissions and Immunity 12 and 24 v Systems	 ISO 7637-2:2004 Pulses 1, 2a, 2b, 3a, 3b & 4 UN Regulation no. 10 Revision 4 UN Regulation no. 10 Revision 5

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
	2 RADIO TRANSMITTER & RECEIVER TESTING	
	2.1 PMR & Short Range Radio Testing	ETSI EN 300 225 V1.5.1 ETSI EN 300 225 V1.4.1 • Clause 8 Field measurement • Clause 9 Transmitter (with the exception of environmental tests and 9.6 Sensitivity of the modulator, including microphone)
	2.1.1 Frequency Error and Stability: 9 kHz to 40 GHz	• Clause 10 Receiver ETSI EN 300 422-1 V1.2.2 EN 300 422-1 V1.4.2 (except for measurements that require an acoustic coupler)
	2.1.2 Carrier Power: Up to 2 W < 18 GHz Up to 100 W < 4 GHz	EN 300 422-2 V1.3.1 (except for measurements that require an acoustic coupler) EN 300 220-1 v2.4.1 EN 300 220-2 v2.4.1 • Clause 9 Transmitter (with the exception of environmental tests and 9.6 Sensitivity of the modulator, including microphone) □ Clause 10 Receiver ETSI EN 300 422-1 V1.2.2 EN 300 422-1 V1.4.2 (except for measurements that require an acoustic coupler) EN 300 422-2 V1.3.1 (except for measurements that require an acoustic coupler)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
	2 RADIO TRANSMITTER & RECEIVER TESTING (cont'd) **2.1 PMR & Short Range Radio Testing** (cont'd)	ETSI EN 300 225 V1.5.1 ETSI EN 300 225 V1.4.1 • Clause 8 Field measurement • Clause 9 Transmitter (with the exception of environmental tests and 9.6 Sensitivity of the modulator, including microphone)
	2.1.3 Effective Radiated Power (ERP) & Equivalent Isotropic Radiated Power (EIRP): 30 MHz to 18 GHz	EN 300 330:V2.1.1 EN 300 330-1 v1.7.1 EN 300 330-1 v1.8.1 EN 300 330-2 v1.5.1 EN 300 330-2 v1.6.1 EN 300 113-1 v1.7.1 EN 300 113-2 v1.5.1 EN 300 086:V2.1.2 EN 300 086-1:V1.2.1 EN 300 086-2:V1.1.1
	2.1.4 Maximum Spectral Power Density:	EN 300 086-2:V1.3.1 EN 300 113:V2.2.1 EN 300 113-1:V1.5.1 EN 300 113-2:V1.3.1
	2.1.5 Receiver LBT threshold	EN 300 220-1:V2.1.1 EN 300 220-1:V2.3.1
	2.1.6 Frequency Deviation: 150 kHz to 1.3 GHz	EN 300 220-1:V2.4.1 EN 300 220-1:V3.1.1 EN 300 220-2:V2.1.1 EN 300 220-2:V2.3.1
	2.1.7 Frequency Range: 9 kHz to 26.5 GHz	EN 300 220-2:V2.4.1 EN 300 220-2:V3.1.1 EN 300 220-3:V1.1.1 EN 300 330:V2.1.1
	2.1.8 Adjacent Channel Power: 150 kHz to 26.5 GHz	EN 300 330-1:V1.4.1 EN 300 330-2:V1.2.1 EN 300 328:V1.6.1 EN 300 328:V1.7.1 EN 300 328:V1.8.1
	2.1.9 Modulation Depth & Bandwidth: 150 kHz to 1.3 GHz	EN 300 328:V1.9.1 EN 300 328:V2.1.1 EN 300 440:V2.1.1 EN 300 440-1:V1.3.1 EN 300 440-1:V1.6.1 EN 300 440-2:V1.1.2 EN 300 440-2:V1.4.1
	2.1.10 Spurious Emissions: 9 kHz to 231 GHz	EN 301 357-1:V1.2.1 EN 301 357-1:V1.4.1 EN 301 357-2:V1.2.1 EN 301 357-2:V1.4.1

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
	2 RADIO TRANSMITTER & RECEIVER TESTING (cont'd) **2.1 PMR & Short Range Radio Testing** (cont'd) 2.1.11 Intermodulation Attenuation: 20 MHz to 18 GHz 2.1.12 Transmitter Transient Behaviour: 150 kHz to 1.3 GHz 2.1.13 Transmitter Attack and Release Time: 9 kHz to 26.5 GHz 2.1.14 H-Field: 2.1.15 Receiver Sensitivity 2.1.16 Receiver Blocking 2.1.17 Co-channel Rejection 2.1.18 Adjacent channel selectivity 2.1.19 Blocking 2.1.20 Intermodulation response 2.1.21 Spurious response rejection	ETSI EN 300 225 V1.5.1 ETSI EN 300 225 V1.4.1 • Clause 8 Field measurement The standards on page 6 also apply to tests on pages 7 and 8 EN 301 893 V2.1.1 including DFS testing EN 300 422-1:V1.5.1 EN 300 422-1:V1.4.1 EN 300 422-1:V2.1.2 ANSI C 63.10:2009 ANSI C 63.10:2009 RSS-Gen Issue 4:2014 RSS-Gen Issue 5:2018 RSS-210 issue 9:2016 including Amendment:2017 RSS-220 issue 1:2009 including Amendment 1:2018 RSS-247 Issue 2:2017 excluding DFS testing

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
	2.2 Microwave Radio Transmitter and Receiver Testing 2.2.1 Output power up to 100 W < 4 GHz up to 2 W < 40 GHz 2.2.2 Frequency Error & Stability 9 kHz to 40 GHz 2.2.3 RF Spectrum Mask 9 kHz to 40 GHz	
	2 RADIO TRANSMITTER & RECEIVER TESTING (cont'd) **2.2 Microwave Radio Transmitter and Receiver Testing** (cont'd) 2.2.4 Discrete CW Components exceeding the spectrum mask limit 2.2.5 External Spurious Emissions 9 kHz to 231 GHz 2.2.6 BER as a function of Receiver Input Signal Level 2.2.7 Co-Channel Interference 2.2.8 Adjacent Channel Interference 2.2.9 CW Spurious Interference 30 MHz to 40 GHz	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
	EMC FACILITIES 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 7 Fully-Anechoic Chamber: 3.3m x 2.3m x 2.3m 8 Fully-Anechoic Chamber: 5.7m x 1.9m x 1.9m 9 Screened Room: 3.7m x 3.1m x 2.4m 10 Semi-Anechoic Chamber: 10.0m x 6m x 5.5m 11 Control Room: 3.6m x 2.4m x 2.4m 12 Screened Room: 3.6m x 2.4m x 2.4m Open Area Test Sites 3m and 10m Open Area Test Sites (30M – 1GHz) 3m, 5m, 10m, & 30m Open Area Test Sites (9kHz – 30MHz) Power Supplies Single Phase: 50Hz 230V 30A supply Single Phase: 50Hz 115V 43A supply Single Phase: 60Hz 115V 17A supply Single Phase: 400Hz 115V 12A supply Three Phase: 50Hz 400V 50A supply	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
US MRA - FCC Scope of Accreditation		
(example descriptions only)		
UNINTENTIONAL RADIATORS FCC Part 15, subpart B	Radiated Emissions 9 kHz to 40 GHz Conducted Emissions 9 kHz to 30 MHz	ANSI C63.4-2014
INDUSTRIAL, SCIENTIFIC AND MEDICAL EQUIPMENT Consumer ISM Equipment FCC Part 18	Radiated Emissions 9 kHz to 40 GHz Conducted Emissions 9 kHz to 30 MHz	FCC MP-5 (February 1986),
INTENTIONAL RADIATORS FCC Part 15, subpart C	Radiated Tests 9 kHz to 231 GHz Conducted Tests 9 kHz to 231 GHz Radio tests as per standard. Includes but not limited to: Peak transmit power Emission bandwidth / Occupied BW Modulation Power spectral density Band edge tests Permitted Frequency range In-band unwanted emissions Out-of-band emissions Spurious Emissions Reaction time Frequency and Time Stability	ANSI C63.10-2013

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
COMMERCIAL MOBILE SERVICES (FCC LICENSED RADIO SERVICE EQUIPMENT) FCC Part 22 (cellular) FCC Part 24 FCC Part 25 (non-microwave) FCC Part 27	Radiated Tests 9 kHz to 231 GHz Conducted Tests 9 kHz to 231 GHz Radio tests as per standard.	ANSI/TIA-603-D TIA-102.CAAA-D KDB Publication 971168
GENERAL MOBILE RADIO SERVICES (FCC LICENSED RADIO SERVICE EQUIPMENT) FCC Part 22 (non-cellular) FCC Part 90 (non-microwave) FCC Part 95 FCC Part 97 FCC Part 101 (non-microwave)	Radiated Tests 9 kHz to 231 GHz Conducted Tests 9 kHz to 231 GHz Radio tests as per standard.	ANSI/TIA-603-D TIA-102.CAAA-D
CITIZENS BROADBAND RADIO SERVICES (FCC LICENSED RADIO SERVICE EQUIPMENT) FCC Part 96	Radiated Tests 9 kHz to 231 GHz Conducted Tests 9 kHz to 231 GHz Radio tests as per standard.	ANSI/TIA-603-D TIA-102.CAAA-D KDB Publication 971168

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
MICROWAVE AND MILLIMETRE BANDS RADIO SERVICES (FCC LICENSED RADIO SERVICE EQUIPMENT) FCC Part 25 FCC part 30 FCC Part 74 FCC Part 90 (90Y, 90Z, DSRC) FCC Part 101	Radiated Tests 9 kHz to 231 GHz Conducted Tests 9 kHz to 231 GHz Radio tests as per standard.	ANSI/TIA-603-D TIA-102.CAAA-D
BROADCAST RADIO SERVICES (FCC LICENSED RADIO SERVICE EQUIPMENT) FCC Part 73 FCC Part 74 (non-microwave)	Radiated Tests 9 kHz to 231 GHz Conducted Tests 9 kHz to 231 GHz Radio tests as per standard.	ANSI/TIA-603-D TIA-102.CAAA-D
SIGNAL BOOSTERS Wideband consumer signal boosters Provider-specific signal boosters Industrial signal boosters FCC Part 20	Tests as per KDB Frequency Bands Self-Monitoring Noise Limits, Power Limits, Bidirectional Capability Booster Gain Limits, Gain Control Transmit Power Off Mode Out of Band Emission Limits, Intermodulation Limits, Booster Antenna Kitting Uplink Inactivity Anti-Oscillation Occupied Bandwidth Spurious Emissions	FCC KDB Publication 935210 D03 Signal Booster Measurements v04 (February 12, 2016) FCC KDB Publication 935210 D04 Provider Specific Booster Measurements v02 (February 12, 2016) FCC KDB Publication 935210 D05 Indus Booster Basic Measurements v01r01 (February 12,2016)
Canadian MRA – ISED Scope of Accreditation		
General Requirements for Compliance of Radio Apparatus	Conducted & Radiated Tests 9 kHz to 231 GHz	RSS-Gen Issue 5:2018

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus	Exclusion Calculation only	RSS-102 Issue 5:2015 (RF exposure evaluation)
Licence-Exempt Radio Apparatus: Category I Equipment	Conducted & Radiated Tests 9 kHz to 231 GHz	RSS-210 issue 9:2016 including Amendment:2017
Ultra-Wideband (UWB) Technology	Conducted & Radiated Tests 9 kHz to 231 GHz	RSS-220 issue 1:2009 including Amendment 1:2018
Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices	Conducted & Radiated Tests 9 kHz to 231 GHz	RSS-247 Issue 2:2017 excluding DFS testing
END		

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Accreditation for the purpose of Conformity Assessment Body activity taking into account EA2/17			
Directive / Regulation	**Conformity Assessment procedure/ Module/article**	**Category of products or individual products**	**Essential requirements: Product specification / Properties/Standards**
Mutual Recognition Agreement between the European Union and Australia and New Zealand (OJ L 229 of 17/08/1998, OJ L 359 of 29/12/2012 and OJ L 356 of 22/12/2012)	Conformity Assessment Body (CAB)	Electromagnetic compatibility (EMC) sectoral annex	
END			