


# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

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

 <p><b>UKAS</b> CALIBRATION</p> <p>0666</p> <p>Accredited to ISO/IEC 17025:2005</p>	<h3>Allied Aerosystems Ltd</h3> <p>Issue No: 007    Issue date: 16 February 2009</p>	
	<p><b>Avionic and Metrology Centre</b> Unit G1/2 Treforest Industrial Estate Pontypridd CF37 5YL</p>	<p><b>Contact: Mr P Ashurst</b> Tel: +44 (0)870 200 7000 Fax: +44 (0)870 200 1001 E-Mail: <a href="mailto:phillip.ashurst@allied-aerosystems.com">phillip.ashurst@allied-aerosystems.com</a> Website: <a href="http://www.allied-aerosystems.com">www.allied-aerosystems.com</a></p>
<p><b>Calibration performed at the above address only</b></p>		

### DETAIL OF ACCREDITATION

Measured Quantity Instrument or Gauge	Range	Best Measurement Capability Expressed as an Expanded Uncertainty ( $k=2$ )	Remarks
<b>DC VOLTAGE</b>			
Generation	up to 220 mV 220 mV to 2.2 V 2.2 V to 22 V 22 V to 220 V 220 V to 1100 V	11 ppm + 1 $\mu$ V 8 ppm + 2 $\mu$ V 8 ppm + 8 $\mu$ V 9 ppm + 120 $\mu$ V 12 ppm + 0.8 mV	
Measurement	up to 120 mV 120 mV to 1.2 V 1.2 V to 12 V 12 V to 120 V 120 V to 1050 V	15 ppm + 2 $\mu$ V 11 ppm + 3 $\mu$ V 11 ppm + 9 $\mu$ V 14 ppm + 130 $\mu$ V 16 ppm + 1 mV	
<b>DC CURRENT</b>			
Generation	up to 220 $\mu$ A 220 $\mu$ A to 2.2 mA 2.2 mA to 22 mA 22 mA to 220 mA 220 mA to 2.2 A	68 ppm + 12 nA 68 ppm + 12 nA 68 ppm + 120 nA 82 ppm + 1.2 $\mu$ A 120 ppm + 35 $\mu$ A	
Measurement	up to 120 $\mu$ A 120 $\mu$ A to 1.2 mA 1.2 mA to 12 mA 12 mA to 120 mA 120 mA to 1.05 A	40 ppm + 7 nA 40 ppm + 7 nA 40 ppm + 70 nA 100 ppm + 2 $\mu$ A 210 ppm + 37 $\mu$ A	
<b>DC RESISTANCE</b>			
Sourcing	1.0 $\Omega$ 1.9 $\Omega$ 10 $\Omega$ 19 $\Omega$ 100 $\Omega$ 190 $\Omega$ 1.0 k $\Omega$ 1.9 k $\Omega$ 10 k $\Omega$ 19 k $\Omega$ 100 k $\Omega$	150 ppm 150 ppm 40 ppm 40 ppm 24 ppm 24 ppm 17 ppm 17 ppm 16 ppm 16 ppm 19 ppm	



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Measured Quantity Instrument or Gauge	Range	Best Measurement Capability Expressed as an Expanded Uncertainty ( $k=2$ )	Remarks
DC RESISTANCE (cont'd)			
Sourcing (cont'd)	190 k $\Omega$ 1.0 M $\Omega$ 1.9 M $\Omega$ 10 M $\Omega$ 19 M $\Omega$ 100 M $\Omega$	19 ppm 31 ppm 31 ppm 51 ppm 74 ppm 170 ppm	
Measurement	up to 12 $\Omega$ 12 $\Omega$ to 120 $\Omega$ 120 $\Omega$ to 1.2 k $\Omega$ 1.2 k $\Omega$ to 12 k $\Omega$ 12 k $\Omega$ to 120 k $\Omega$ 120 k $\Omega$ to 1.2 M $\Omega$ 1.2 M $\Omega$ to 12 M $\Omega$ 12 M $\Omega$ to 120 M $\Omega$	49 ppm + 64 $\mu\Omega$ 33 ppm + 0.7 m $\Omega$ 25 ppm + 0.7 m $\Omega$ 24 ppm + 7 m $\Omega$ 26 ppm + 79 m $\Omega$ 39 ppm + 4 $\Omega$ 94 ppm + 54 $\Omega$ 0.1% + 1.4 k $\Omega$	
AC VOLTAGE			
Generation	<p>10 Hz to 20 Hz 1 mV to 2.2 mV 2.2 mV to 22 mV 22 mV to 220 mV 220 mV to 2.2 V 2.2 V to 22 V 22 V to 220 V</p> <p>20 Hz to 40 Hz 1 mV to 2.2 mV 2.2 mV to 22 mV 22 mV to 220 mV 220 mV to 2.2 V 2.2 V to 22 V 22 V to 220 V</p> <p>40 Hz to 20 kHz 1 mV to 2.2 mV 2.2 mV to 22 mV 22 mV to 220 mV 220 mV to 2.2 V 2.2 V to 22 V 22 V to 220 V</p> <p>50 Hz to 1 kHz 220 V to 1100 V</p> <p>20 kHz to 50 kHz 1 mV to 2.2 mV 2.2 mV to 22 mV 22 mV to 220 mV 220 mV to 2.2 V 2.2 V to 22 V 22 V to 220 V</p>	<p>0.1% + 6 <math>\mu</math>V 0.09% + 7 <math>\mu</math>V 0.09% + 19 <math>\mu</math>V 0.09% + 120 <math>\mu</math>V 0.09% + 2 mV 0.09% + 12 mV</p> <p>0.09% + 6 <math>\mu</math>V 0.07% + 7 <math>\mu</math>V 0.07% + 12 <math>\mu</math>V 0.07% + 35 <math>\mu</math>V 0.07% + 0.4 mV 0.07% + 4 mV</p> <p>0.09% + 6 <math>\mu</math>V 0.05% + 7 <math>\mu</math>V 0.02% + 12 <math>\mu</math>V 0.02% + 13 <math>\mu</math>V 0.02% + 82 <math>\mu</math>V 0.02% + 2 mV</p> <p>0.03% + 7 mV</p> <p>0.14% + 6 <math>\mu</math>V 0.11% + 7 <math>\mu</math>V 0.06% + 12 <math>\mu</math>V 0.03% + 24 <math>\mu</math>V 0.03% + 0.3 mV 0.04% + 5 mV</p>	



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AC VOLTAGE (cont'd)			
Generation (cont'd)	<i>50 kHz to 100 kHz</i> 1 mV to 2.2 mV 2.2 mV to 22 mV 22 mV to 220 mV 220 mV to 2.2 V 2.2 V to 22 V 22 V to 220 V	0.21% + 10 μV 0.14% + 10 μV 0.13% + 35 μV 0.04% + 93 μV 0.04% + 0.5 mV 0.09% + 12 mV	
	<i>100 kHz to 300 kHz</i> 1 mV to 2.2 mV 2.2 mV to 22 mV 22 mV to 220 mV 220 mV to 2.2 V 2.2 V to 22 V	0.4% + 18 μV 0.2% + 18 μV 0.17% + 35 μV 0.07% + 180 μV 0.09% + 2 mV	
	<i>300 kHz to 500 kHz</i> 1 mV to 2.2 mV 2.2 mV to 22 mV 22 mV to 220 mV 220 mV to 2.2 V 2.2 V to 22 V	0.7% + 35 μV 0.27% + 35 μV 0.26% + 47 μV 0.18% + 500 μV 0.21% + 6 mV	
	<i>500 kHz to 1 MHz</i> 1 mV to 2.2 mV 2.2 mV to 22 mV 22 mV to 220 mV 220 mV to 2.2 V 2.2 V to 22 V	0.76% + 35 μV 0.59% + 35 μV 0.52% + 120 μV 0.35% + 1.2 mV 0.45% + 11 mV	
Measurement	<i>20 Hz to 40 Hz</i> 1.2 mV to 12 mV 12 mV to 120 mV 120 mV to 1.2 V 1.2 V to 12 V 12 V to 120 V	0.12% + 9 μV 0.08% + 13 μV 0.08% + 59 μV 0.08% + 700 μV 0.09% + 7 mV	
	<i>40 Hz to 1 kHz</i> 1.2 mV to 12 mV 12 mV to 120 mV 120 mV to 1.2 V 1.2 V to 12 V 12 V to 120 V	0.08% + 8 μV 0.03% + 13 μV 0.03% + 27 μV 0.03% + 250 μV 0.04% + 3.1 mV	
	<i>50 Hz to 1 kHz</i> 120 V to 700 V	0.09% + 25 mV	
	<i>1 kHz to 20 kHz</i> 1.2 mV to 12 mV 12 mV to 120 mV 120 mV to 1.2 V 1.2 V to 12 V 12 V to 120 V	0.09% + 8 μV 0.05% + 27 μV 0.04% + 28 μV 0.04% + 250 μV 0.04% + 3.1 mV	



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AC VOLTAGE (cont'd) Measurement (cont'd)	<p><i>20 kHz to 50 kHz</i> 1.2 mV to 12 mV 12 mV to 120 mV 120 mV to 1.2 V 1.2 V to 12 V 12 V to 120 V</p> <p><i>50 kHz to 100 kHz</i> 1.2 mV to 12 mV 12 mV to 120 mV 120 mV to 1.2 V 1.2 V to 12 V 12 V to 120 V</p> <p><i>100 kHz to 300 kHz</i> 12 mV to 120 mV 120 mV to 1.2 V 1.2 V to 12 V</p> <p><i>300 kHz to 1 MHz</i> 12 mV to 120 mV 120 mV to 1.2 V 1.2 V to 12 V</p>	<p>0.23% + 8 <math>\mu</math>V 0.11% + 13 <math>\mu</math>V 0.07% + 34 <math>\mu</math>V 0.07% + 50 <math>\mu</math>V 0.08% +5.6 mV</p> <p>1% + 11 <math>\mu</math>V 0.4% + 36 <math>\mu</math>V 0.2% + 96 <math>\mu</math>V 0.2% + 600 <math>\mu</math>V 0.3% + 13 mV</p> <p>1.1% + 37 <math>\mu</math>V 0.6% + 300 <math>\mu</math>V 0.6% + 2.4 mV</p> <p>2% + 120 <math>\mu</math>V 2% + 1.3 mV 2% + 12 mV</p>	
AC CURRENT Generation	<p><i>50 Hz to 1 kHz</i> 22 <math>\mu</math>A to 220 <math>\mu</math>A 220 <math>\mu</math>A to 2.2 mA 2.2 mA to 22 mA 22 mA to 220 mA 220 mA to 2.2 A</p> <p><i>1 kHz to 5 kHz</i> 22 <math>\mu</math>A to 220 <math>\mu</math>A 220 <math>\mu</math>A to 2.2 mA 2.2 mA to 22 mA 22 mA to 220 mA 220 mA to 2.2 A</p> <p><i>5 kHz to 10 kHz</i> 22 <math>\mu</math>A to 220 <math>\mu</math>A 220 <math>\mu</math>A to 2.2 mA 2.2 mA to 22 mA 22 mA to 220 mA 220 mA to 2.2 A</p>	<p>0.03% + 24 nA 0.03% + 120 nA 0.03% + 500 nA 0.03% + 5 <math>\mu</math>A 0.11% + 53 <math>\mu</math>A</p> <p>0.1% + 24 nA 0.09% + 600 nA 0.09% + 5.8 <math>\mu</math>A 0.09% + 58 <math>\mu</math>A 0.12% + 120 <math>\mu</math>A</p> <p>0.27% + 120 nA 0.27% + 1.2 <math>\mu</math>A 0.26% + 12 <math>\mu</math>A 0.26% + 120 <math>\mu</math>A 1.4% + 240 <math>\mu</math>A</p>	



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AC CURRENT (cont'd) Measurement	<i>50 Hz to 1 kHz</i> 12 µA to 120 µA 120 µA to 1.2 mA 1.2 mA to 12 mA 12 mA to 120 mA 120 mA to 1.05 A  <i>1 kHz to 5 kHz</i> 120 µA to 1.2 mA 1.2 mA to 12 mA 12 mA to 120 mA 120 mA to 1.05 A	0.16% + 43 nA 0.15% + 300 nA 0.15% + 2.4 µA 0.15% + 24 µA 0.25% + 240 µA  0.16% + 700 nA 0.17% + 7 µA 0.17% + 63 µA 0.25% + 260 µA	
FREQUENCY	10 MHz  1 Hz to 100 Hz 100 Hz to 1 kHz 1 kHz to 10 kHz 10 kHz to 100 kHz 100 kHz to 60 MHz	1 in 10 <sup>9</sup>  2 in 10 <sup>5</sup> 2 in 10 <sup>7</sup> 2 in 10 <sup>8</sup> 1 in 10 <sup>8</sup> 2 in 10 <sup>9</sup>	For oscillator calibration over gate times of >= 100 s
END			