



ARTEFACTS

FOR

MEASUREMENT AUDITS

PURPOSE

This document provides a listing of measurement artefacts that are available for use in APLAC Measurement Audits.

AUTHORSHIP

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FURTHER INFORMATION

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ARTEFACTS FOR MEASUREMENT AUDITS

Date of Survey: June - July 2003

APLAC Proficiency Testing Committee

Acronyms: AVM: Acoustic and Vibration Measurement

ELE: Electrical Calibration

HTM: Heat and Thermometry

DM: Dimensional Metrology

F&T: Force and Torque

MAS: Mass and Related Quantities

PRS: Pressure

OPT: Optics

RM: Reference Materials

Artefacts for Measurement Audits – APLAC PT005
[AUSTRALIA]

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No.	Field	Name (Type) of artefact	ID/Serial number	Measurement Range	Reference Laboratory	Typical MU of Ref Value	Comments	AB/Economy
1	AVM	Accoustic Calibrator B&K 4231	1838888		NML/CSIRO			NATA/Australia
2	AVM	Calibration Exciter RION VE-10	250705		NML/CSIRO			NATA/Australia
3	AVM	Charge Amplifier RION UV-06	52650782		NML/CSIRO			NATA/Australia
4	ELE	Attenuator HP 8419B 3 dB	21196		NML/CSIRO			NATA/Australia
5	ELE	Attenuator HP 8491B 6 dB	22763		NML/CSIRO			NATA/Australia
6	ELE	Attenuator HP 8491B 10 dB	37175		NML/CSIRO			NATA/Australia
7	ELE	Attenuator HP 8491B 20 dB	28696		NML/CSIRO			NATA/Australia
8	ELE	Calibrator Fluke 5500A	6335021		NML/CSIRO			NATA/Australia
9	ELE	Dual-Directional Coupler HP 778D	16996		NML/CSIRO			NATA/Australia
10	ELE	Fluke 867B Graphical Multimeter	DM7100031		NML/CSIRO			NATA/Australia
11	ELE	High Resistance Meter HP 4339B	TBA2		NML/CSIRO			NATA/Australia
12	ELE	Multimeter HP 34401A, DMM"A"	3146A69992		NML/CSIRO	DCV: 0.000001 V at 1 V	6 digits	NATA/Australia
13	ELE	Multimeter HP 34401A, DMM"B"	3146A70030		NML/CSIRO	ACV: 200 ppm at 750V, 1kHz		NATA/Australia
14	ELE	Ohm Meter Nanovolt / Micro HP 34420A	LN68386		NML/CSIRO			NATA/Australia
15	ELE	Resister Guideline 100 Gohm 9336	63858		NML/CSIRO			NATA/Australia
16	ELE	Resister Guideline 100 Mohm 9336	63874		NML/CSIRO			NATA/Australia
17	ELE	Rubidium Oscillator	TBA3		NML/CSIRO			NATA/Australia
18	HTM	Dry Block Calibrator (Ametek Jofra 650SE)	7988-01113		NML/CSIRO			NATA/Australia
19	HTM	Hygrometer Testo 610	DN037392		NML/CSIRO			NATA/Australia
20	HTM	Infrared Thermometer Cole Pamer 1000 C	LN68390		NML/CSIRO			NATA/Australia
21	HTM	PRT L&N 8931, 0 - 250 C	T5020		NML/CSIRO			NATA/Australia
22	HTM	Thermocouple Type "K" 0 - 1100 C	RS28287		NML/CSIRO	(15 + 0.07% of E) μ V		NATA/Australia
23	HTM	Thermometer Digital - Comark C9008	25465/18		NML/CSIRO			NATA/Australia

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24	DM	Caliper Digimatic 0 - 300 mm	9846		NML/CSIRO		NATA/Australia
25	DM	Extensometer 50 mm, 5 mm travel with Indicator 8142 S/N 43	213		NML/CSIRO		NATA/Australia
26	DM	Gauge Block 1 mm	940580		NML/CSIRO		NATA/Australia
27	DM	Gauge Block 10 mm	950118		NML/CSIRO		NATA/Australia
28	DM	Gauge Block 100 mm	897105		NML/CSIRO		NATA/Australia
29	DM	Gauge Block 50 mm	950243		NML/CSIRO		NATA/Australia
30	DM	Micrometer Setting Rod Gauge - 500 mm	M25830		NML/CSIRO		NATA/Australia
31	DM	Micrometer Setting Rod Gauge - 500 mm	M25831		NML/CSIRO		NATA/Australia
32	DM	Micrometer Setting Rod Gauge - 1000 mm	M25832		NML/CSIRO		NATA/Australia
33	DM	Micrometer Setting Rod Gauge - 1000 mm	M25833		NML/CSIRO		NATA/Australia
34	F&T	Load Cell 50 kN HBM & Toledo Indicator 8142	H30138		NML/CSIRO		NATA/Australia
35	F&T	Torque Indicator Nobar	24776		NML/CSIRO		NATA/Australia
36	F&T	Torque Transducer and Signal Conditioner	25714		NML/CSIRO		NATA/Australia
37	F&T	Torque Transducer and Signal Conditioner	26041		NML/CSIRO		NATA/Australia
38	F&T	Torque wrench Snap-On 36" / 914 mm	1532		NML/CSIRO		NATA/Australia
39	F&T	Torque wrench Snap-On 8" / 203 mm	2047		NML/CSIRO		NATA/Australia
40	MAS	Mass 1 g	BOXA/1		NML/CSIRO		NATA/Australia
41	MAS	Mass 1 g	BOXB/1		NML/CSIRO		NATA/Australia
42	MAS	Mass 1 g	BOXC/1		NML/CSIRO		NATA/Australia
43	MAS	Mass 1 kg	BOXA/1KG		NML/CSIRO		NATA/Australia
44	MAS	Mass 1 kg	BOXB/1KGA		NML/CSIRO		NATA/Australia
45	MAS	Mass 1 kg	BOXC/1000		NML/CSIRO		NATA/Australia
46	MAS	Mass 10 g	BOXA/10GRM		NML/CSIRO		NATA/Australia
47	MAS	Mass 10 g	BOXB/10.GRM		NML/CSIRO		NATA/Australia
48	MAS	Mass 10 g	BOXC/10		NML/CSIRO		NATA/Australia
49	MAS	Mass 200 g	BOXA/200G		NML/CSIRO		NATA/Australia
50	MAS	Mass 200 g	BOXB/200GA		NML/CSIRO		NATA/Australia
51	MAS	Mass 200 g	BOXC/200		NML/CSIRO		NATA/Australia
52	MAS	Mass Set - M28321	M28321		NML/CSIRO		NATA/Australia
53	MAS	Mass Set - M28322	M28322		NML/CSIRO		NATA/Australia
54	PRS	Pressure Balance - Hydraulic (70,000 kPa)	8065-94		NML/CSIRO		NATA/Australia
55	PRS	Pressure Balance - Pneumatic (-100 kPa to 3500 kPa)	8064-94		NML/CSIRO		NATA/Australia
56	PRS	Pressure Calibrator Ametek PPCE - 7000 kPa	006572-00030		NML/CSIRO		NATA/Australia

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57	PRS	Pressure Transducer 1 MPa + Indicator Model 8142	H10158		NML/CSIRO			NATA/Australia
58	PRS	Pressure Transducer 50 MPa + Indicator Model 8142	G01196		NML/CSIRO			NATA/Australia
59	PRS	Pressure Transducer 50 MPa + Indicator Model 8142	F89189		NML/CSIRO			NATA/Australia
60	DM	Setting Ring Gauge 33.76 mm	6621		NML/CSIRO			NATA/Australia
61	DM	Sylvac D80 Display Unit and Probe	01129-8080		NML/CSIRO			NATA/Australia
62	OPT	Illuminance Meter Minolta T-1M	918045		NML/CSIRO			NATA/Australia

[CANADA]

Name of Providing AB: National Research Council Canada- CLAS (SCC)
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No.	Field	Name (Type) of artefact	ID/Serial number	Measurement Range	Reference Laboratory	Typical MU of Ref Value	Comments	AB/Economy
1	ELE	Standard Resistor	MIL 9331/1	1 ohm	NRC/NMS	< 1 ppm	Actual uncertainty will be assigned at time of comparison	SCC/Canada
2	ELE	Standard Resistor	MIL 9331/1M	1 M Ohm	NRC/NMS	< 5 ppm		SCC/Canada
3	ELE	Standard Resistor	MIL 9331/10M	10 M Ohm	NRC/NMS	< 8 ppm		SCC/Canada

[CHINA]

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 PEOPLE'S REPUBLIC OF CHINA
Contact Person:
Phone: 86 10 8226 0759
Fax: ditto
Email:

No.	Field	Name (Type) of artefact	ID/Serial number	Measurement Range	Reference Laboratory	Typical MU of Ref Value	Comments	AB/Economy
1	ELE	Standard Capacitor	GR1404	10 pF, 100 pF, 1000 pF	CNAL No. L0152	0.001%		CNAL/China
2	ELE	Attenuator type159-90	604	0 dB - 90 dB 10 MHz - 18 GHz	CNAL No. L0152	0.09 dB 30 MHz, 10 dB		CNAL/China
3	ELE	Coaxial Thermistor	861	0.5 mW - 10 mW 10 MHz - 18 GHz	CNAL No. L0152	2.3 % 2000 MHz		CNAL/China

[JAPAN]

Name of Providing AB: International Accreditation Japan (IAJapan)
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Email: murata-yukio@nite.go.jp

No.	Field	Name (Type) of artefact	ID/Serial number	Measurement Range	Reference Laboratory	Typical MU of Ref Value	Comments	AB/Economy
1	DM	Gauge Block Set (6 pieces)	N2001 - N2004	1 mm, 10 mm, 20 mm, 50 mm, 100 mm	NMIJ		JIS B 7506 Class K	IAJapan/Japan
2	DM	Gauge Block Set (6 pieces)	N2012	1 mm, 10 mm, 20 mm, 50 mm, 100 mm	NMIJ		JIS B 7506 Class 0	IAJapan/Japan
3	DM	Gauge Block Set (6 pieces)	N2016	125 mm, 150 mm, 200 mm, 250 mm, 500 mm	NMIJ		JIS B 7506 Class 0	IAJapan/Japan
4	DM	Gauge Block		800 mm	NMIJ			IAJapan/Japan
5	DM	Long Gauge Block		900 mm	NMIJ			IAJapan/Japan
6	DM	Gauge Block		1 mm, 3 mm, 8 mm, 25 mm, 75 mm	NMIJ			IAJapan/Japan
7	DM	Gauge Block (in inch)	10010	0.004 inch	NMIJ			IAJapan/Japan
8	DM	Gauge Block (in inch)	10172	0.050 inch	NMIJ			IAJapan/Japan
9	DM	Gauge Block (in inch)	000094	0.060 inch	NMIJ			IAJapan/Japan
10	DM	Gauge Block (in inch)	000132	0.070 inch	NMIJ			IAJapan/Japan
11	DM	Gauge Block (in inch)	010008	0.080 inch	NMIJ			IAJapan/Japan
12	DM	Gauge Block (in inch)	000565	0.090 inch	NMIJ			IAJapan/Japan
13	DM	Gauge Block (in inch)	002975	0.500 inch	NMIJ			IAJapan/Japan
14	DM	Gauge Block (in inch)	000885	0.600 inch	NMIJ			IAJapan/Japan
15	DM	Gauge Block (in inch)	010156	0.700 inch	NMIJ			IAJapan/Japan
16	DM	Standard Scale	95304	250 mm				IAJapan/Japan
17	DM	External Micrometer	1325070	300 - 400 mm				IAJapan/Japan
18	DM	Digimatic External Micrometer	0239314	2 - 25 mm				IAJapan/Japan
19	DM	Gear Tooth Micrometer	1172909	0 - 25 mm				IAJapan/Japan

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20	DM	Calibration Tester (Micrometer Calibrator) UDT-2	010108	0 - 25 mm			min. reading 0.001 mm	IAJapan/Japan
21	DM	Digimatic Calliper	0080340	0 - 200 mm				IAJapan/Japan
22	DM	M-shape Calliper N-20	00032254	0 - 200 mm				IAJapan/Japan
23	DM	M-shape Calliper N-60	247496	0 - 600 mm			min. reading 0.05 mm	IAJapan/Japan
24	DM	Calliper Checker CC-600C	220116					IAJapan/Japan
25	DM	Test Indicator						IAJapan/Japan
26	DM	Depth Gauge	115681	0 - 300 mm				IAJapan/Japan
27	DM	Height Gauge	106577	0 - 300 mm				IAJapan/Japan
28	DM	Dial Gauge	9334G3	0 - 10 mm				IAJapan/Japan
29	DM	Ring Gauge	020054	5.0 mm			5.001 mm	IAJapan/Japan
30	DM	Ring Gauge	012326	25.0 mm			25.000 mm	IAJapan/Japan
31	DM	Ring Gauge	020018	50.0 mm			49.993 mm	IAJapan/Japan
32	DM	Ring Gauge	019176	70.0 mm			70.005 mm	IAJapan/Japan
33	DM	Ring Gauge	100035	150.0 mm			149.996 mm	IAJapan/Japan
34	DM	Steel Tape	2212	10 m				IAJapan/Japan
35	DM	Rule	0261	300 mm				IAJapan/Japan
36	MAS	Standard Mass	T1, T4, T5, T6	1 g*2, 10 g*2, 100 g*2, 1 kg*2, 10 kg*2			OIML E2	IAJapan/Japan
37	MAS	Standard Mass Set		5 g, 50 g, 500 g, 5 kg			OIML E2	IAJapan/Japan
38	ELT	DMM (6 1/2, 5 1/2) HP 34401A	US36130224				HP	IAJapan/Japan
39	ELT	DMM (6 1/2, 4 1/2) 7562-c-1/D/DA	12A12919A				Yokogawa	IAJapan/Japan
40	ELT	DMM (6 1/2, 4 1/2) R6441A-00JA	100800193				Advantest	IAJapan/Japan
41	ELT	DMM (3 1/2) 83-3	77290259				Fluke	IAJapan/Japan
42	HTM	SPRT R35	GS03801	-50 - 200 degree C	NMIJ			IAJapan/Japan
43	HTM	SPRT R35	GS03802	-50 - 200 degree C	NMIJ			IAJapan/Japan
44	OPT	Illuminance Meter	5711130	0.001 - 299.99 lx	NMIJ	2 % +/- 1 digit		IAJapan/Japan

Artefacts for Measurement Audits – APLAC PT005

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No.	Field	Name (Type) of artefact	ID/Serial number	Measurement Range	Reference Laboratory	Typical MU of Ref Value	Comments	AB/Economy
1	DM	Gauge Block 1mm	10727	1 mm	Mitsutoyo	0.04um		JAB/Japan
2	DM	Gauge Block 10 mm	18625	10 mm	Mitsutoyo	0.04um		JAB/Japan
3	DM	Gauge Block 100 mm	10828	100 mm	Mitsutoyo	0.04um		JAB/Japan
4	MAS	Mass 50 g	91125510	50 g	Sartorius	30 ug		JAB/Japan
5	MAS	Mass 100 g	11425203	100 g	Sartorius	50 ug		JAB/Japan
6	MAS	Mass 200 g	91125313	200 g	Sartorius	100 ug		JAB/Japan

[KOREA]

Name of Providing AB: Korea Laboratory Accreditation Scheme (KOKAS)
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 REPUBLIC OF KOREA
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Email: metrology@ats.go.kr

No.	Field	Name (Type) of artefact	ID/Serial number	Measurement Range	Reference Laboratory	Typical MU of Ref Value	Comments	AB/Economy
1	DM	Parallel Thread Gauge		M3, M25, M50	KTL	2.0 um	Pitch Diameter	KOLAS/Korea
2	ELE	Standard Capacitor	GR 1404	100 pF, 1000 pF	KRISS	100 pF: 0.00014 pF 1000 pF: 0.0019 pF		KOLAS/Korea
3	ELE	Coaxial Fixed Attenuator	Agilent 8419B	10 dB, 30 dB, 1 GHz, 10 GHz, 18 GHz	KRISS	0.072 dB at 10 dB, 1GHz		KOLAS/Korea
4	HTM	Industrial Platinum Resistance Thermometer	HART Model 5682-S	- 50 - 250 degree	KRISS	10 mK		KOLAS/Korea

[MEXICO]

Name of Providing AB: Entidad Mexicana de Acreditacion, a.c. (ema)
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Fax: 52 55 5591 0529
Email: coordpea@ema.org.mx

No.	Field	Name (Type) of artefact	ID/Serial number	Measurement Range	Reference Laboratory	Typical MU of Ref Value	Comments	AB/Economy
1	MAS	Graduated Neck Type Volumetric Field Standard	4	20 L	NML/CENAM			ema / Mexico

[New Zealand]

Name of Providing AB: International Accreditation New Zealand (IANZ)
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Fax: 64 9 525 2266
Email: rsteiner@ianz.govt.nz

No.	Field	Name (Type) of artefact	ID/Serial number	Measurement Range	Reference Laboratory	Typical MU of Ref Value	Comments	AB/Economy
1	MAS	Mass 6	84334	6 masses 100 g - 140 g	NML	0.000035 g to 0.00015 g	last calibrated 1998	IANZ / New Zealand
2	MAS	Mass 8	S-24100	8 masses 1 g - 50 g	MSL	0.0000015 g to 0.000014 g	last calibrated 1999	IANZ / New Zealand

[PAPUA NEW GUINEA]

Name of Providing AB: Papua New Guinea Laboratory Accreditation Scheme
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Email: standard_metrology@nisit.gov.pg

No.	Field	Name (Type) of artefact	ID/Serial number	Measurement Range	Reference Laboratory	Typical MU of Ref Value	Comments	AB/Economy
1	MAS	Mass set	APT 5061 (15-71-1)	5 mg - 100 g	NML/CSIRO	1 - 6 * 10 ⁻⁵		PNGLAS /Papua New Guinea
2	MAS	Mass set	APT 5061 (16-71-1)	200 g - 10 kg	NML/CSIRO	3 * 10 ⁻⁴ to 50 * 10 ⁻⁴		PNGLAS /Papua New Guinea
3	MAS	Mass set	APT 5061 (17-71-1)	8 masses 1 g - 50 g	MSL	50 * 10 ⁻⁴		PNGLAS /Papua New Guinea

[SINGAPORE]

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 Singapore 159 835
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	Field	Name (Type) of artefact	ID/Serial number	Measurement Range	Reference Laboratory	Typical MU of Ref Value	Comments	AB/Economy
1	PRS	Standard Test Gauge		0 - 1000 Bar	NMI/NMC			SAC/Singapore
2	DM	Digimatic Micrometer		0 25 mm	NMI/NMC			SAC/Singapore