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Temperature

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
1	Liquid In Glass Thermometer	-30 °C ~ 0 °C	0.26 °C	0.29 °C	in house procedure TG-01 ASTM E 77 - 1998
		0 °C ~ 100 °C	0.11 °C	0.19 °C	
		100 °C ~ 200 °C	0.11 °C	0.19 °C	
2	temperature Sensor with display unit	-30 °C ~ 0 °C	0.25 °C	0.28 °C	in house procedure TI-01 JIS Z 8710 - 1993
		0 °C ~ 100 °C	0.10 °C	0.18 °C	
		100 °C ~ 200 °C	0.10 °C	0.18 °C	
		200 °C ~ 600 °C	1.79 °C	0.82 °C	
		600 °C ~ 1000 °C	3.40 °C	3.85 °C	
3	Temperature Indicator (without sensor) for Thermocouple Sensor :				in house procedure INTC-01 ASTM E 220-2007
		K-type -270 °C ~ 1372 °C	0.09 °C	0.35 °C	
		J-type -210 °C ~ 1200 °C	0.09 °C	0.31 °C	
		T-type -270 °C ~ 400 °C	0.09 °C	0.15 °C	
		E-type -270 °C ~ 1000 °C	0.08 °C	0.12 °C	
		R-type -50 °C ~ 1768 °C	0.13 °C	0.80 °C	
		S-type -50 °C ~ 1768 °C	0.12 °C	0.80 °C	
		B-type 0 °C ~ 1820 °C	0.60 °C	1.40 °C	
	for Resistance Thermometer Sensor	-200 °C ~ 800 °C	0.08 °C	0.21 °C	in house procedure RTD-01 ASTM E 644 - 2011
4	Thermocouple	-30 °C ~ 0 °C	0.26 °C	0.29 °C	in house procedure EVT-01 ASTM E 220-2007
		0 °C ~ 200 °C	0.12 °C	0.19 °C	
		200 °C ~ 600 °C	1.9 °C	0.82 °C	
		600 °C ~ 1000 °C	3.4 °C	3.85 °C	
5	Resistance Thermometer	-30 °C ~ 0 °C	0.25 °C	0.31 °C	In house procedure TTP-01 ASTM E 644 - 2011
		0 °C ~ 200 °C	0.09 °C	0.22 °C	
6	Temperature Enclosure				in house procedure WOB-01, OB-01, FN-01 AS 2853 - 1986
		Waterbath -30 °C ~ 100 °C	0.08 °C	0.2 °C	
		Oilbath 0 °C ~ 200 °C	0.09 °C	0.2 °C	
		Oven, Incubator -30 °C ~ 0 °C	0.86 °C	0.6 °C	
		0 °C ~ 200 °C	0.94 °C	0.6 °C	
		200 °C ~ 500 °C	2.1 °C	4.1 °C	
		Furnace 0 °C ~ 1000 °C	3.4 °C	3.1 °C	
7	Thermohygrometer	30 % ~ 95 %	2.3 %RH	2.8 %RH	In house procedure THM-01 JIS B 7920 - 2000
		15 °C ~ 40 °C	0.51 °C	0.9 °C	
8	Thermometer Radiasi (infrared)	0 °C ~ 100 °C	1.6 °C	1.20 °C	In house procedure IRT-01 JIS C 1612 - 2000
		100 °C ~ 200 °C	1.5 °C	1.65 °C	
		200 °C ~ 300 °C	1.5 °C	1.88 °C	
		300 °C ~ 400 °C	1.2 °C	1.96 °C	
		400 °C ~ 500 °C	1.3 °C	1.96 °C	
9	Climatic Chamber	500 °C ~ 650 °C	1.3 °C	1.96 °C	In house procedure MKSP CC-01
		-30 °C ~ 100 °C	0.82 °C	-	
		40 % ~ 95 %	0.89 %RH	-	

Mass

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
10	Weights (conventional mass)	0.001 g	0.0079 mg	0.014 mg	in house procedure MW-01 CSIRO 2004
		0.002 g	0.0078 mg	0.022 mg	
		0.005 g	0.0077 mg	0.031 mg	
		0.01 g	0.0080 mg	0.032 mg	
		0.02 g	0.0081 mg	0.023 mg	
		0.05 g	0.0090 mg	0.024 mg	
		0.1 g	0.0088 mg	0.034 mg	
		0.2 g	0.011 mg	0.028 mg	
		0.5 g	0.011 mg	0.038 mg	
		1 g	0.014 mg	0.041 mg	
		2 g	0.014 mg	0.048 mg	
		5 g	0.017 mg	0.068 mg	
		10 g	0.022 mg	0.068 mg	
		20 g	0.029 mg	0.080 mg	
		50 g	0.051 mg	0.110 mg	
		100 g	0.072 mg	0.159 mg	
		200 g	0.10 mg	0.298 mg	

Mass (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
11	Balance (electronic, mechanic)	500 g	0.72 mg	1.9 mg	in house procedure MWB-03 CSIRO 2004
		1 kg	0.82 mg	2.1 mg	
		2 kg	7.3 mg	7.2 mg	
		5 kg	10.35 mg	11.48 mg	
		10 kg	0.071 g	0.068 g	
		20 kg	0.087 g	0.12 g	
		30 kg	0.098 g	0.13 g	
		0 g ~ 22 g	0.038 mg	0.033 mg	
		22 g ~ 52 g	0.077 mg	0.057 mg	
		52 g ~ 110 g	0.15 mg	0.113 mg	
		110 g ~ 220 g	0.27 mg	0.22 mg	
		220 g ~ 320 g	0.41 mg	1.22 mg	
		320 g ~ 520 g	0.65 mg	1.22 mg	
		520 g ~ 1010 g	1.4 mg	1.7 mg	
		1010 g ~ 2200 g	4.1 mg	7.26 mg	
		2200 g ~ 3200 g	8.9 mg	8.15 mg	
		3200 g ~ 5200 g	12 mg	11.04 mg	
		5 kg ~ 11 kg	0.071 g	0.065 g	
		11 kg ~ 31 kg	0.10 g	0.13 g	
		31 kg ~ 60 kg	0.67 g	0.95 g	
		60 kg ~ 100 kg	1.3 g	1.3 g	
		100 kg ~ 300 kg	7.2 g	3.6 g	
		300 kg ~ 500 kg	40 g	8.5 g	
		500 kg ~ 1000 kg	0.077 kg	0.063 kg	
		1000 kg ~ 3000 kg	1.2 kg	0.13 kg	
		3000 kg ~ 5000 kg	2.3 kg	0.32 kg	
		5000 kg ~ 10000 kg	3.5 kg	0.63 kg	

Volume

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
12	Piston Pipette	10 uL ~ 1000 uL	0.19 uL	0.12 uL	in house procedure PIP-01 ISSN 1368-6550
		1 mL ~ 10 mL	1.2 uL	1.39 uL	
13	Volumetric Glassware; Volumetric Measures	0 mL ~ 0.5 mL	0.0002 mL	0.0017 mL	in house procedure MVL-01 ASTM E 542-01, 2012
		0.5 mL ~ 1 mL	0.00095 mL	0.0021 mL	
		1 mL ~ 5 mL	0.0013 mL	0.0035 mL	
		5 mL ~ 25 mL	0.0046 mL	0.011 mL	
		25 mL ~ 100 mL	0.013 mL	0.032 mL	
		100 mL ~ 500 mL	0.065 mL	0.11 mL	
		500 mL ~ 1000 mL	0.13 mL	0.19 mL	
		1000 mL ~ 5000 mL	0.64 mL	0.88 mL	
		5000 mL ~ 20000 mL	4.8 mL	4.8 mL	

Density

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
14	Hydrometer	0.650 g/ml ~ 1.000 g/ml	0.0007 g/ml	-	in house procedure HD-01 AS 2026-1994
		1.000 g/ml ~ 1.500 g/ml	0.0011 g/ml	-	
		1.500 g/ml ~ 2.000 g/ml	0.0016 g/ml	-	

Force

No.	Instrument to be calibrated	Measurement Range				CMC - Jakarta		CMC - Surabaya		Methods/Specifications	
15	Universal Testing Machine	0	kN	~	1	kN	0.83	%	-		in house procedure UTM-01 ASTM E4 - 2013
		0	kN	~	5	kN	0.58	%	-		
		0	kN	~	20	kN	0.59	%	-		
		0	kN	~	100	kN	0.60	%	-		
		0	kN	~	300	kN	0.63	%	-		
16	Push Pull Gauge	0	gf	~	200	gf	0.090	gf	-		in house procedure PP-01 ASTM E4 - 2013
		0	gf	~	500	gf	0.45	gf	0.29	gf	
		0	gf	~	1000	gf	1.1	gf	0.59	gf	
		0	kgf	~	2	kgf	0.0019	kgf	-		
		0	kgf	~	5	kgf	0.0046	kgf	-		
		0	kgf	~	10	kgf	0.011	kgf	0.008	kgf	
		0	kgf	~	20	kgf	0.019	kgf	0.007	kgf	
		0	kgf	~	50	kgf	0.045	kgf	0.11	kgf	
		0	kgf	~	100	kgf	0.11	kgf	0.57	kgf	
		1 kgf = 9,80665 N									
17	Load Cell / Proving Ring	1 kN				0.60	%	-		In house procedure LC-01 ISO 376 : 2011	
		5 kN				0.31	%	-			
		20 kN				0.32	%	-			
		100 kN				0.31	%	-			
		300 kN				0.31	%	-			
18	Durometer Calibrator	Type A	0	N	~	10	N	0.032	N	-	In house procedure LC-01 ISO 376 : 2011
		Type B	0	N	~	45	N	0.065	N	-	

Torque

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
19	Torque Wrench	0 Nm ~ 30 Nm	0.23 Nm	0.12 Nm	in house procedure TW - 01 ISO 6789 : 2003
		30 Nm ~ 50 Nm	0.51 Nm	0.16 Nm	
		50 Nm ~ 100 Nm	0.81 Nm	0.31 Nm	
		100 Nm ~ 500 Nm	3.7 Nm	3.4 Nm	
		500 Nm ~ 1100 Nm	8.4 Nm	8.9 Nm	
20	Torque Meter	0 Nm ~ 1 Nm	0.0044 Nm	0.0002 Nm	in house procedure TWM - 01 BS 7882 : 2008
		1 Nm ~ 5 Nm	0.0042 Nm	0.024 Nm	
		5 Nm ~ 10 Nm	0.0053 Nm	0.024 Nm	
		10 Nm ~ 50 Nm	0.13 Nm	0.042 Nm	
		50 Nm ~ 100 Nm	0.25 Nm	0.072 Nm	
		100 Nm ~ 400 Nm	0.50 Nm	0.28 Nm	
		400 Nm ~ 1000 Nm	0.85 Nm	0.68 Nm	

Pressure

No.	Instrument to be calibrated	Measurement Range				CMC - Jakarta		CMC - Surabaya		Methods/Specifications	
21	Dead Weight Tester	100	PSI	~	16000	PSI	0.050	%	-		in house procedureTK DWT-01 Euramet cg-3 v-1.0
22	Pressure Test Gauge (pneumatic)	-0.1	bar	~	-1	bar	0.0009	bar	-		in-house procedure TK TGG-01
		0.7	bar	~	7	bar	0.0011	bar	-		
		4	bar	~	40	bar	0.010	bar	-		
23	Pressure Test Gauge (hydraulic)	1	bar	~	60	bar	0.020	bar	-		in house procedureTK TGG-01 DKD-R 6-1
		1	bar	~	100	bar	0.030	bar	-		
		1	bar	~	250	bar	0.10	bar	-		
		1	bar	~	600	bar	0.20	bar	-		
		1	bar	~	1000	bar	0.71	bar	-		
24	Pressure Gauge (pneumatic)	0	mBar	~	5	mBar	0.031	mBar	-		in house procedure TK PG-01 DKD-R 6-1
		5	mBar	~	50	mBar	0.032	mBar	-		
		0.1	bar	~	1	bar	0.0064	bar	0.01	bar	
		1	bar	~	5	bar	0.086	bar	0.05	bar	
		5	bar	~	10	bar	0.086	bar	-		
		10	bar	~	25	bar			0.08	bar	
		25	psi	~	300	psi	0.77	psi	-		
		(1 psi = 6894.76 Pa)									
25	Pressure Gauge (hydraulic)	6	bar	~	60	bar	0.47	bar	0.20	bar	in house procedure TK PG-01 DKD-R 6-1
		60	bar	~	100	bar	0.71	bar	0.22	bar	
		100	bar	~	250	bar	1.7	bar	0.63	bar	
		250	bar	~	600	bar	3.5	bar	1.97	bar	
		600	bar	~	1000	bar	6.4	bar			
		(1 bar = 10 ⁵ Pa)									
26	Vacuum Gauge	0	cmHg	~	-76	cmHg	0.50	cmHg	0.24	cmHg	in house procedure TK VG-01 DKD-R 6-2
		(1 cmHg = 1 333, 224 Pa)									
27	Pressure Transmitter	-0.1	bar	~	-1	bar	0.051	%	-		in house procedure TK TGG-02 DKD-R 6-1
		0.7	bar	~	7	bar	0.041	%	-		
		4	bar	~	40	bar	0.041	%	-		
		1	bar	~	60	bar	0.050	%	-		
		60	bar	~	100	bar	0.050	%	-		
		100	bar	~	250	bar	0.050	%	-		
		250	bar	~	600	bar	0.050	%	-		
28	Barometer	940	mbar a	~	1060	mbar a	1.6	mbar a	-		in-house procedure BR-01

Hardness

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
29	Hardness Tester	41.0 HR B (low)	0.35 HR B	0.41 HR B	In house procedure HT - 01 JIS B 7726 - 1997 JIS B 7725 - 2010
		64.9 HR B (medium)	0.35 HR B	0.81 HR B	
		95.6 HR B (high)	0.35 HR B	0.36 HR B	
		29.0 HR C (low)	0.35 HR C	0.12 HR C	
		43.8 HR C (medium)	0.35 HR C	0.35 HR C	
		63.0 HR C (high)	0.35 HR C	0.35 HR C	
		215 HV ₁₀	2.5 HV ₁₀	4.7 HV ₁₀	
		430 HV ₁₀	5.0 HV ₁₀	2.2 HV ₁₀	
		751 HV ₁₀	8.7 HV ₁₀	7.5 HV ₁₀	
		112 HB W	2.4 HB W	2.35 HB W	
		248 HB W	5.2 HB W	3.37 HB W	
		591 HB W	12.3 HB W	3.79 HB W	
30	Durometer	10 HS ~ 90 HS	0.62 HS	0.8 HS	In house procedure HDT - 01 ASTM D 2240-05 (2010)

Length

No.	Instrument to be calibrated	Measurement Range				CMC - Jakarta		CMC - Surabaya		Methods/Specifications
31	Gauge Block	0.5	mm	~	10	mm	0.076	µm	-	in house procedure ML30
		10	mm	~	25	mm	0.083	µm	-	
		25	mm	~	50	mm	0.10	µm	-	
		50	mm	~	75	mm	0.13	µm	-	
		75	mm	~	100	mm	0.16	µm	-	
32	Outside Micrometer	0	mm	~	150	mm	1.01	µm	1.0	in house procedure ML 16 JIS B 7502 - 1994
		150	mm	~	1500	mm	7.4	µm	7.3	
33	Inside Micrometer	0	mm	~	100	mm	1.2	µm	1.1	in house procedure ML 15 JIS B 7502 - 1994
		100	mm	~	1500	mm	7.2	µm	6.1	
34	Depth Micrometer	0	mm	~	150	mm	1.2	µm	1.2	in house procedure ML 10 JIS B 7544 - 1994
		150	mm	~	300	mm	5.9	µm	-	
35	Three Point Internal Micrometer/ Holtest	0	mm	~	100	mm	5.8	µm	-	In house procedure ML 26 JIS B 7502 - 1994
36	Calliper	0	mm	~	1500	mm	19	µm	19	in house procedure ML 17 JIS B 7507 - 1994
37	Height Gauge	0	mm	~	1500	mm	19	µm	19	in house procedure ML 09 JIS B 7517 - 1993
38	Dial Indicator	0	mm	~	10	mm	2	µm	2.3	in house procedure ML 04 JIS B 7533 - 1990
		10	mm	~	25	mm	7	µm	7.3	
39	Dial Gauge Tester	0	mm	~	5	mm	0.4	µm	0.70	in house procedure ML 05 JIS B 7502 - 1994
		0	mm	~	25	mm	1	µm	0.89	
40	Cylinder Gauge (Bore Gauge) Anvil	0	mm	~	25	mm	1	µm	1.5	In house procedure ML 18 JIS B 7515 - 1982
		0	mm	~	800	mm	2.6	µm	2.5	
41	Thread Plug Gauge: average diameter	M	1	~	M	150	5	µm	5.1	In house procedure ML 02
	Thread Plug Gauge: Major & minor diameter	M	1	~	M	150	3	µm	1.2	JIS B 0261 - 2004
	Thread Plug Gauge: Pitch Angel	M	1	~	M	150	0.07	menit	3.5	
42	Plug Gauge	0	mm	~	50	mm	1	µm	-	In house procedure ML 28 JIS B 7420 - 1997
		50	mm	~	300	mm	4.4	µm	-	
	Plug Gauge	0	mm	~	25	mm	-	2.6	µm	
		25	mm	~	250	mm	-	4.8	µm	
43	Ring Gauge	0	mm	~	300	mm	3.7	µm	-	In house procedure ML 21 JIS B 7420 - 1997
	Ring Gauge	0	mm	~	250	mm	-	4.8	µm	
44	Feeler Gauge	0	mm	~	10	mm	2	µm	2.6	in house procedure ML 11 JIS B 7524 - 2008
45	Pin Gauge	0	mm	~	60	mm	1.2	µm	-	In house procedure ML 01 JIS B 7420 - 1997
	Pin Gauge	0	mm	~	25	mm	-	2.7	µm	
46	Snap Gauge	0	mm	~	500	mm	1.9	µm	2.1	In house procedure ML 07 JIS B 7420 - 1997
47	Gap Gauge	0	mm	~	300	mm	4	µm	4.9	In house procedure ML 29 JIS B 7420 - 1997
48	Bevel Protractor	0	°	~	90	°	0.6	menit		in house procedure ML 13 BS 1685 : 2008
50	Theodolite: Angular Scale verification Liquid level sensitivity	0	°	~	360	°	5	sec	5	In house procedure ML 08 ISO 17123-2
		0	mm/m	~	0.5	mm/m	0.02	mm/m	0.02	
51	Measuring Microscope: Scale deviation	200	mm	x	200	mm	3.3	µm	-	in house procedure ML 19 JIS B 7153
	Measuring Microscope: Scale deviation	300	mm	x	300	mm	-	3.0	µm	
		0	°	~	360	°	-	0.05	menit	
52	Measuring Projector (Profile Projector)	0	°	~	360	°	4.4	menit	4	in house procedure ML 20 JIS B 7184 - 1999
	Scale deviation	200	mm	x	200	mm	3.3	µm	3.1	

Length (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
53	Autolevel: optic level verification	100 mm/m ~ 300 mm/m	5 sec	5 sec	In house procedure ML 12
	Liquid level sensitivity	0 mm/m ~ 0.5 mm/m	0.02 mm/m	0.02 mm/m	JIS B 7511
54	Steel Ruler	0 mm ~ 1000 mm	650 µm	339 µm	in house procedure ML 03 JIS B 7516 – 2005
55	Roll Meter	0 m ~ 1 m	0.7 mm	0.7 mm	In house procedure ML 06 JIS B 7512 – 2005 JIS B 7522 – 2005
		1 m ~ 10 m	2 mm	2.9 mm	
		10 m ~ 20 m	3 mm	3.0 mm	
		20 m ~ 100 m	7 mm	7.2 mm	
		100 m ~ 200 m	10 mm	12 mm	
56	Water Pass	0.02 mm/m ~ 10 mm/m	0.01 mm/m	0.012 mm/m	In house procedure ML 31 DIN 877-1986
57	Test Sieve	0 mm ~ 10 mm	4.1 µm	5.9 µm	In house procedure ML 22 ASTM E11- 13
58	Coating Thickness	0 mm ~ 8 mm	1.5 µm	1.4 µm	In house procedure ML 23 ASTM B 499-2009
59	Scale Loupe	0 mm ~ 20 mm	4 µm	6.8 µm	In house procedure ML 25 JIS B 7153 - 1995
60	Thickness Film	0 mm ~ 10 mm	1.2 µm	2.7 µm	In house procedure ML 27 JIS B 7524 – 2008
61	Graticule/ Calibration Grid	0 mm ~ 200 mm	4.4 µm	4.7 µm	In house procedure ML 25 JIS B 7153 - 1995
62	Thickness Gauge	0 mm ~ 10 mm	0.6 µm	0.62 µm	in house procedure ML 14 JIS B 7503 – 2011
		10 mm ~ 100 mm	6 µm	5.8 µm	
63	Standar Scale	0 mm ~ 300 mm	4.4 µm	4.8 µm	in house procedure ML 46 JIS B 7541 – 2001
64	Head Micrometer	0 mm ~ 25 mm	1 µm	1 µm	in house procedure ML 44 JIS B 7502 - 1994
65	Pitch Gage	0.2 mm ~ 10 mm	4.1 µm	3.7 µm	in house procedure ML 47 JIS B 0261 - 2004
66	Depth Gauge	0 mm ~ 300 mm	18 µm	18 µm	in house procedure ML 48 JIS B 7544 - 1994
67	Taper Gauge	0 mm ~ 200 mm	4.4 µm	4.7 µm	in house procedure ML 38 User Manual 2Dpak II-Mitutoyo
68	Ultrasonic Thickness Meter	0.5 mm ~ 100 mm	6 µm	5.8 µm	in house procedure ML 37 ASTM E 797-2010
69	Radius Gauge	0.1 mm ~ 150 mm	3.9 µm	-	in house procedure ML 42, Uncertainty and Dimensional Calibration, Journal of Research of NIST
	Radius Gauge	0.1 mm ~ 250 mm	-	5.6 µm	
70	Angle Block	0.2 ° 90 °	4.4 sec	3.5 sec	in house procedure ML 24 NBSIR 80-1967
71	3-Wire	0.17 mm ~ 3.2 mm	3.7 µm	3.7 µm	in house procedure ML 43
72	Setting Bar	0 mm ~ 300 mm	4.6 µm	4.8 µm	in house procedure ML 33 JIS B 7420
73	Step Gauge	20 mm ~ 600 mm	3.8 µm	3.8 µm	in house procedure ML 34
74	Straight Edge (Straightness) (Ketinggian) (Keparallelan) (Lebar)	0 mm ~ 500 mm	2.3 µm	-	in house procedure ML 36 JIS B 7514
			6.6 µm	-	
			2.3 µm	-	
			6.6 µm	-	
75	Square (Squareness)	0 mm ~ 500 mm	3.4 µm	-	in house procedure ML 35 JIS B 7526
76	V- Block (Flatness-Permukaan bawah)	0 mm ~ 150 mm	1.8 µm	2.6 µm	in house procedure ML-40 JIS B 7540
	(Flatness-Permukaan V)				
	(Keparallelan-permukaan bawah & cylinder permukaan V block))				
	(Kemiringan-jalur V dari permukaan bawah) (Keparallelan-diantara permukaan sis & cylinder permukaan V block)				
77	Surface Plate	1000 mm x 1000 mm	2.5 µm	-	in house procedure ML-39 JIS B 7513

Length (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
78	Roughness Tester	0.05 μ mRa ~ 12.5 μ mRa	0.075 μ mRa	-	in house procedure ML 41 User Manual 'Surface Roughness Tester-SJ-40-Mitutoyo'
79	Microscope	0.002 mm ~ 10 mm	4 μ m	-	in house procedure ML 32 JIS B 7153
80	Welding Gauge Panjang (Skala Linier)	0 mm ~ 300 mm	4.5 μ m	-	in-house procedure MKSP ML-48
	Panjang (Skala Taper)	0 mm ~ 200 mm	4.5 μ m	-	
	Sudut	0 ° ~ 90 °	3.4 detik	-	
81	Ultrasonic Standard Block	0 mm ~ 300 mm	4.5 μ m	-	in-house procedure MKSP ML-49
	Diameter	0 mm ~ 300 mm	4.5 μ m	-	
	Sudut	0 ° ~ 90 °	3.4 detik	-	
82	Counter Meter	0 m ~ 9999 m	29 mm	-	in-house procedure MKSP ML-51

Electrical

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
83	DC Current Source	0.1 mA ~ 10 mA	0.8 μ A	-	in house procedure MKSP ECL-01-2002, Kalibrasi DC Current Source
		10 mA ~ 100 mA	8.4 μ A	-	
		100 mA ~ 1 A	120 μ A	-	
		1 A ~ 3 A	1.3 mA	-	
84	DC High Current Source	10 A ~ 200 A	2 A	-	In house procedure ECL 16
		200 A ~ 400 A	7.6 A	-	
		400 A ~ 600 A	7.7 A	-	
		600 A ~ 800 A	7.7 A	-	
		800 A ~ 1000 A	7.8 A	-	
85	AC High Current Source	f = 50 Hz ~ 60 Hz			In house procedure ECL 16
		0 A ~ 200 A	2.0 A	-	
		200 A ~ 400 A	4.1 A	-	
		400 A ~ 600 A	4.1 A	-	
		600 A ~ 800 A	5.2 A	-	
		800 A ~ 1000 A	5.3 A	-	
86	AC Current Source	f = 45 Hz ~ 1kHz			in house procedure MKSP ECL-01-2002
		0.1 A ~ 1 A	0.6 mA	-	
		1 A ~ 3 A	2.8 mA	-	
87	DC Ammeter	0 μ A ~ 200 μ A	4.7 nA	-	in-house procedure MKSP ECL-03
		0.2 mA ~ 2 mA	0.04 μ A	-	
		2 mA ~ 20 mA	0.36 μ A	-	
		20 mA ~ 200 mA	9.4 μ A	-	
		0.2 A ~ 2 A	0.1 mA	-	
		2 A ~ 10 A	0.7 mA	-	
		10 A ~ 20 A	1.2 mA	-	
88	AC Ammeter	f = 45 Hz ~ 1 kHz			in-house procedure MKSP ECL-02
		0 μ A ~ 200 μ A	26 nA	-	
		0.2 mA ~ 2 mA	0.26 μ A	-	
		2 mA ~ 20 mA	3 μ A	-	
		20 mA ~ 200 mA	25 μ A	-	
		0.2 A ~ 2 A	0.24 mA	-	
		2 A ~ 10 A	2 mA	-	
		f = 45 Hz ~ 500 Hz			
		10 A ~ 20 A	4 mA	-	
89	DC Voltage Source	1 mV ~ 100 mV	0.012 mV	-	in house procedure MKSP ECL-01-2002, Kalibrasi DC Voltage Source
		100 mV ~ 1 V	0.013 mV	-	
		1 V ~ 10 V	0.04 mV	-	
		10 V ~ 100 V	0.74 mV	-	
		100 V ~ 1000 V	8.2 mV	-	
90	DC HV Source	0 kV ~ 1 kV	0.06 kV	-	In house procedure ECL 12
		1 kV ~ 5 kV	0.08 kV	-	
		5 kV ~ 10 kV	0.15 kV	-	
		10 kV ~ 15 kV	0.23 kV	-	
		15 kV ~ 20 kV	0.37 kV	-	
		20 kV ~ 25 kV	0.44 kV	-	
91	AC Voltage Source	f = 10 Hz ~ 20kHz			in house procedure MKSP ECL-01-2002, Kalibrasi AC Voltage Source
		1 mV ~ 100 mV	0.0001 mV	-	
		100 mV ~ 1 V	0.2 mV	-	

Electrical (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	
		1 V ~ 10 V	1.2 mV	-	
		10 V ~ 100 V	12 mV	-	
		100 V ~ 750 V	98 mV	-	
92	AC HV Source	f = 50 Hz			In house procedure ECL 11
		0 kV ~ 1 kV	0.15 kV	-	
		1 kV ~ 5 kV	0.16 kV	-	
		5 kV ~ 10 kV	0.32 kV	-	
		10 kV ~ 15 kV	0.49 kV	-	
		15 kV ~ 20 kV	0.64 kV	-	
		20 kV ~ 25 kV	0.75 kV	-	
93	DC Voltmeter	0 mV ~ 200 mV	2 μV	-	in-house procedure MKSP ECL-03
		200 mV ~ 2 V	0.01 mV	-	
		2 V ~ 20 V	0.2 mV	-	
		20 V ~ 200 V	2 mV	-	
		200 V ~ 500 V	5 mV	-	
		500 V ~ 1000 V	10 mV	-	
94	AC Voltmeter	45 Hz ~ 10 kHz			in-house procedure MKSP ECL-04
		0 mV ~ 200 mV	39 μV	-	
		0.2 V ~ 2 V	0.1 mV	-	
		2 V ~ 20 V	1 mV	-	
		20 V ~ 200 V	12 mV	-	
		200 V ~ 700 V	59 mV	-	
		45 Hz ~ 1 kHz			
		700 V ~ 1000 V	80 mV	-	
95	Resistor	1 Ω ~ 10 Ω	5.8 mΩ	-	in house procedure MKSP ECL-01-2002
		10 Ω ~ 100 Ω	9 mΩ	-	
		100 Ω ~ 1000 Ω	0.12 Ω	-	
		1 kΩ ~ 10 kΩ	0.61 Ω	-	
		10 kΩ ~ 100 kΩ	2 Ω	-	
		100 kΩ ~ 1 MΩ	0.12 kΩ	-	
		1 MΩ ~ 10 MΩ	0.5 kΩ	-	
		10 MΩ ~ 100 MΩ	18 kΩ	-	
96	Ohm Meter	0.1 Ω	5.9 mΩ	-	in-house procedure MKSP ECL-05
		1 Ω	5.9 mΩ	-	
		10 Ω	5.9 mΩ	-	
		100 Ω	6.2 mΩ	-	
		1 kΩ	0.02 Ω	-	
		10 kΩ	0.1 Ω	-	
		100 kΩ	2.0 Ω	-	
		1 MΩ	0.1 kΩ	-	
		10 MΩ	1.3 kΩ	-	
		100 MΩ	34.8 kΩ	-	
		1000 MΩ	1268 kΩ	-	
97	Capacitance Meter	f = 1 kHz			in-house procedure ECL 09
		1 nF	0.023 nF	-	
		10 nF	0.023 nF	-	
		20 nF	0.024 nF	-	
		50 nF	0.027 nF	-	
		100 nF	0.039 nF	-	
		1 μF	0.9 nF	-	
		10 μF	0.007 μF	-	
		100 μF	0.105 μF	-	
98	Inductance Meter	f = 1 kHz			in-house procedure MKSP ECL-08
		1 mH	0.058 mH	-	
		10 mH	0.059 mH	-	
		19 mH	0.063 mH	-	
		29 mH	0.070 mH	-	
		50 mH	0.087 mH	-	
		100 mH	1.18 mH	-	
		1 H	0.059 mH	-	
		10 H	0.122 mH	-	
99	AC Watt Meter	V = 20 V ~ 1000 V; I ≥ 1A f = 45 Hz ~ 400 Hz; cos φ = 1			in-house procedure ECL 10
		0 kW ~ 1 kW	0.2 W	-	
		1 kW ~ 10 kW	1.7 W	-	
		10 kW ~ 100 kW	5.2 W	-	
		100 kW ~ 1000 kW	13.4 W	-	
100	Insulation Tester	1 kΩ	0.7 Ω	-	In house procedure ECL 13
		10 kΩ	4.5 Ω	-	
		100 kΩ	45 Ω	-	

Electrical (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
		1 MΩ	0.73 kΩ	-	
		10 MΩ	4.6 kΩ	-	
		100 MΩ	71 kΩ	-	
		1 GΩ	1 MΩ	-	
		10 GΩ	7.4 MΩ	-	
		100 GΩ	127 MΩ	-	
		1 TΩ	30 GΩ	-	
101	DC Clamp Meter	f = 50 Hz ~ 60 Hz			In house procedure ECL 15
		10 A ~ 50 A	0.55 A	-	
		50 A ~ 100 A	0.79 A	-	
		100 A ~ 200 A	0.95 A	-	
		200 A ~ 500 A	1.80 A	-	
		500 A ~ 800 A	3.86 A	-	
		800 A ~ 1000 A	3.87 A	-	
102	AC Clamp Meter	f = 50 Hz ~ 60 Hz			In house procedure ECL 14
		10 A ~ 50 A	0.31 A	-	
		50 A ~ 100 A	0.41 A	-	
		100 A ~ 200 A	1.11 A	-	
		200 A ~ 500 A	1.83 A	-	
		500 A ~ 800 A	3.34 A	-	
		800 A ~ 1000 A	3.35 A	-	
103	Oscilloscope - DC Voltage Amplitude	1 mV/Div	0.19 mV/Div	-	in house procedure MKSP ECL-17-2013
		2 mV/Div	0.19 mV/Div	-	
		5 mV/Div	0.21 mV/Div	-	
		10 mV/Div	0.24 mV/Div	-	
		20 mV/Div	0.30 mV/Div	-	
		50 mV/Div	0.50 mV/Div	-	
		100 mV/Div	0.86 mV/Div	-	
		200 mV/Div	1.6 mV/Div	-	
		0.5 V/Div	3.8 mV/Div	-	
		1 V/Div	7.5 mV/Div	-	
		2 V/Div	15 mV/Div	-	
104	Oscilloscope - AC Voltage Amplitude	10 Hz ~ 10 kHz			in house procedure MKSP ECL-18-2013
		5 mV	0.21 mV	-	
		10 mV	0.24 mV	-	
		20 mV	0.30 mV	-	
		50 mV	0.50 mV	-	
		100 mV	0.86 mV	-	
		200 mV	1.6 mV	-	
		500 mV	3.8 mV	-	
		1 V	7.5 mV	-	
		2 V	15 mV	-	
105	Oscilloscope - Time Base	1 μs	5.8 ns	-	in house procedure MKSP ECL-19-2013
		2 μs	5.8 ns	-	
		5 μs	5.8 ns	-	
		10 μs	8.2 ns	-	
		20 μs	8.3 ns	-	
		50 μs	8.6 ns	-	
		100 μs	58.5 ns	-	
		200 μs	60 ns	-	
		500 μs	70 ns	-	
		1 ms	0.6 μs	-	
		2 ms	0.6 μs	-	
		5 ms	0.7 μs	-	
		10 ms	6 μs	-	
		20 ms	6 μs	-	
		50 ms	10 μs	-	
		100 ms	63 μs	-	
		200 ms	415 μs	-	
		500 ms	1028 μs	-	
		1 s	2 ms	-	
		2 s	8 ms	-	
		5 s	77 ms	-	

WAKTU DAN FREKWENSI

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
106	Stopwatch	10 s ~ 60 s	0.84 s	0.83 s	in-house procedure MKSP STP - 01
		1 menit ~ 5 menit	0.84 s	0.83 s	

WAKTU DAN FREKWENSI (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
		5 menit ~ 10 menit	0.84 s	0.83 s	Kalibrasi Stopwatch
		10 menit ~ 60 menit	0.84 s	0.83 s	
		1 jam ~ 5 jam	0.84 s	0.83 s	
		5 jam ~ 10 jam	0.84 s	0.83 s	
		10 jam ~ 24 jam	0.84 s	0.83 s	
107	Frequency Source	0 Hz ~ 10 Hz	120 mHz	-	in-house procedure ECL 01
		10 Hz ~ 100 Hz	120 mHz	-	
		100 Hz ~ 500 Hz	1200 mHz	-	
		500 Hz ~ 1 kHz	1.2 Hz	-	
		1 kHz ~ 10 kHz	12 Hz	-	
		10 kHz ~ 20 kHz	24 Hz	-	
		20 kHz ~ 50 kHz	60 Hz	-	
108	Frequency Meter	50 kHz ~ 100 kHz	120 Hz	-	in house procedure ECL 07
		100 Hz	4.2 mHz	-	
		1 kHz	1.2 Hz	-	
		10 kHz	11.61 Hz	-	
		20 kHz	11.63 Hz	-	
		50 kHz	11.70 Hz	-	
		100 kHz	116.14 Hz	-	
109	RPM-Meter (optical sensor)	1 MHz	0.13 kHz	-	in house procedure TCH - 01
		10 MHz	1.2 kHz	-	
		100 rpm ~ 500 rpm	0.6 rpm	-	
		500 rpm ~ 1000 rpm	0.6 rpm	-	
		1000 rpm ~ 5000 rpm	1.0 rpm	-	
		5000 rpm ~ 10000 rpm	1.6 rpm	-	
		10000 rpm ~ 20000 rpm	2.6 rpm	-	
		20000 rpm ~ 50000 rpm	5.8 rpm	-	
		50000 rpm ~ 60000 rpm	10.7 rpm	-	

PHOTOMETRY

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
110	Luxmeter	0 lux ~ 20 lux	2.04 lux	-	In house procedure LX - 01
		20 lux ~ 200 lux	2.04 lux	-	
		200 lux ~ 2000 lux	2.04 lux	-	
111	Glossmeter	69.0 Gloss ~ 110.0 Gloss	1.5 Gloss	-	In house procedure GM - 01
		82.0 Gloss ~ 106.0 Gloss	1.5 Gloss	-	
		92.0 Gloss ~ 103.0 Gloss	1.5 Gloss	-	

INSTRUMEN ANALISA

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
112	Spectrophotometer	279.35 nm	0.91 nm	1.9 nm	In house procedure FTM - 01
		360.85 nm			
		453.60 nm			
		536.35 nm			
		637.65 nm			
		0.0 %T	1.4 %T	0.5 %T	
		9.8 %T			
		49.9 %T			
		52.2 %T			
		100 %T			
		SRE 220	0.52 %T	0.52 %T	
		SRE 340			
		SRE 400			
113	pH Meter	0 pH ~ 14 pH	0.012 pH	0.011 pH	in-house procedure MKSP PH-01
114	Viscosity	5 cP ~ 100000 cP	1.1 %	-	In house procedure VIS -01
115	Conductivity	84 μS ~ 1.4 mS	1.0 μS	1.0 μS	In house procedure CD - 01
		1.4 mS ~ 5 mS	5.02 μS	6.8 μS	
		5 mS ~ 12.8 mS	2.0 μS	27 μS	
		12.8 mS ~ 111.8 mS	51 μS	307 μS	
116	Refractometer	0 Brix ~ 60 Brix	0.13 Brix	-	In house procedure RFT - 01

ALAT KESEHATAN

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
1	Alat Bedah Frekwensi Tinggi (ESU) Power Cutting Power Coagulating	0 W ~ 400 W 0 W ~ 400 W	0.58 W 0.58 W	0.58 W 0.58 W	in-house procedure (MD-01)
2	Alat Hisap Medik (Suction Pump/Suction Unit) Suction Thorax	0 mmHg ~ 700 mmHg	4.09 mmHg	4.09 mmHg	In-house procedure (MD-02)
3	Anaesthesia Unit	0 lpm ~ 25 lpm 0 % Vapor ~ 12 %Vapor	0.58 lpm 0.58 % Vapor	0.58 lpm 0.58 % Vapor	In-house procedure (MD-03)
4	Bed Side Monitor (Patient Monitor) Blood Pressure Saturasi O2 Pulse Rate Heart Rate Respirasi	0 mmHg ~ 295 mmHg 75 % ~ 100 % 30 bpm ~ 250 bpm 30 bpm ~ 300 bpm 15 brpm ~ 120 brpm	0.82 mmHg 0.82 % 0.82 bpm 0.82 bpm 0.82 brpm	0.82 mmHg 0.82 % 0.82 bpm 0.82 bpm 0.82 brpm	In-house procedure (MD-04)
5	Blood Pressure Monitor (Tensimeter elektrik)	0 mmHg ~ 295 mmHg	0.82 mmHg	0.82 mmHg	In-house procedure (MD-05)
6	Blood Solution Warmer (Blood Warmers, Fluid Solution Warmers)	0 °C ~ 50 °C	0.5 °C	0.5 °C	In-house procedure (MD-06)
7	Cardiotocograph	30 bpm ~ 240 bpm	0.65 bpm	0.65 bpm	In-house procedure (MD-11)
8	Defibrillator (DC Shock) Energy Heart Rate	0.1 joule ~ 360 joule 30 bpm ~ 240 bpm	0.59 Joule 0.82 bpm	0.59 Joule 0.82 bpm	In-house procedure (MD-08)
9	Defibrillator Monitor Energy Heart Rate Saturasi O2 Pulse Rate Respirasi	0.1 joule ~ 360 joule 30 bpm ~ 300 bpm 75 % ~ 100 % 30 bpm ~ 250 bpm 15 brpm ~ 120 brpm	0.59 Joule 0.82 bpm 0.82 % 0.82 bpm 0.82 brpm	0.59 Joule 0.82 bpm 0.82 % 0.82 bpm 0.82 brpm	In-house procedure (MD-09)
10	Dental Unit Vacuum Pressure	0 mmHg ~ -700 mmHg 0 mmHg ~ 5000 mmHg	4.09 mmHg 1.04 mmHg	4.09 mmHg 1.04 mmHg	In-house Procedure (MD-10)
11	Echocardiograph Fetal Heart rate	~ 30 bpm ~ 240 bpm	0.65 bpm	0.65 bpm	In-house procedure (MD-11)
12	Elecrocardiograf (EKG Recorder) Heart Rate Sensitivitas Kecepatan Kertas	~ 30 bpm ~ 300 bpm 0 mm/mV ~ 20 mm/mV 0 mm/s ~ 50 mm/s	0.82 bpm 0.93 mm/mV 0.93 mm/s	0.82 bpm 0.93 mm/mV 0.93 mm/s	In-house procedure (MD-12)
13	Elecrocardiograph Monitor (ECG Monitor) Heart Rate	30 bpm ~ 300 bpm	0.82 bpm	0.82 bpm	In-house procedure (MD-13)
14	ENT Treatment Vacuum Pressure	0 mmHg ~ -700 mmHg 0 mmHg ~ 5000 mmHg	4.09 mmHg 1.04 mmHg	4.09 mmHg 1.04 mmHg	In-house procedure (MD-14)
15	Examination Lamp (Lampu Tindakan) Head Lamp / Ligh Source / Operating Lamp Celing Type	0 lux ~ 200 Klux	0.5 lux	0.5 lux	In-house procedure (MD-15)
16	Fetal Detektor (Doppler) Fetal Heart rate	30 bpm ~ 240 bpm	0.65 bpm	0.65 bpm	In-house procedure (MD-17)
17	Incubator Perawatan (Infant Incubator, Baby Incubator) Kebisingan Flow rate Kelembaban	25 °C ~ 40 °C 30 dbA ~ 80 dbA 0 m/s ~ 0.5 m/s 0 % ~ 90 %	0.15 °C - - -	0.15 °C - - -	In-house procedure (MD-17)
18	Infant Warmer	25 °C ~ 40 °C	0.15 °C	0.15 °C	In-house procedure (MD-18)
19	Infusion Pump Flow rate Pressure	0.5 ml/H ~ 1000 ml/H 0 psi ~ 45 psi	0.29 ml/H 0.06 psi	0.29 ml/H 0.06 psi	In-house procedure (MD-19)
20	Nebulizer Flow Time	0 lpm ~ 25 lpm 0 menit ~ 9 jam	0.58 lpm 0.58 menit	0.58 lpm 0.58 menit	In-house procedure (MD-20)

ALAT KESEHATAN (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
21	Phototherapy Unit	0 $\mu\text{W}/\text{cm}^2$ ~ 1999 $\mu\text{W}/\text{cm}^2$	0.01 $\mu\text{W}/\text{cm}^2$	0.01 $\mu\text{W}/\text{cm}^2$	In-house procedure (MD-21)
22	Pulse Oxymeter (Saturasi Oksigen)	75 % ~ 100 %	0.82 %	0.82 %	In-house procedure (MD-22)
23	Spirometer	0 L ~ 3 L	0.43 mL	0.43 mL	In-house procedure (MD-23)
24	Sphygmomanometer (Tensimeter Air Raksa)	0 mmHg ~ 300 mmHg	0.87 mmHg	0.87 mmHg	In-house procedure (MD-24)
25	Ultrasonography (USG) Jarak Kedalaman Pengukuran Dead Zone Pengukuran Gray Scale Target (ϕ) Pengukuran Axial-Lateral Target	0 mm ~ 150 mm	0.06 mm - -	0.06 mm - -	In-house procedure (MD-25)
26	Ventilator Tidal volume Minute vol Breath rate I : E ratio PIP PEEP MAP IPP Peak Inspirasi Flow FIO2	0 (L) ~ 200 (L) 0 (L) ~ 200 (L) 2 (bpm) ~ 150 (bpm) 0.58 0 (cmH2O) ~ 120 (cmH2O) -5 (cmH2O) ~ 40 (cmH2O) 0 (cmH2O) ~ 80 (cmH2O) 0 (cmH2O) ~ 120 (cmH2O) 0 lpm ~ 150 lpm 0 (%) ~ 100 (%)	0.58 (L) 0.58 (L) 0.58 (bpm) 0.58 0.58 (cmH2O) 0.58 (cmH2O) 0.58 (cmH2O) 0.58 (cmH2O) 0.58 lpm 0.58 (%)	0.58 (L) 0.58 (L) 0.58 (bpm) 0.58 0.58 (cmH2O) 0.58 (cmH2O) 0.58 (cmH2O) 0.58 (cmH2O) 0.58 lpm 0.58 (%)	In-house procedure (MD-26)
27	X-Ray dental Panoramic Kuat Cahaya Lampu Kolimator Ketepatan Berkas Kolimasi Akurasi kV Akurasi waktu Expose Reproduksibilitas Expose Linieritas mA/mAs Keluaran Radiasi Berkas Utama (mR) HVL	0 lux ~ 200 lux 0 mm ~ 300 mm 35 KVp ~ 155 KVp 0.1 ms ~ 2000 s 30 Gy ~ 1000 Gy ~ 0.1 mR/min ~ 1000 mR/min 1.2 mAl ~ 14 mAl	0.5 lux - 0.07 Kvp 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	0.5 lux - 0.07 Kvp 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	In-house Procedure (MD-27)
28	X-Ray Dental Unit Ketepatan Berkas Kolimasi Akurasi kV Akurasi waktu Expose Reproduksibilitas Expose Linieritas mA/mAs Keluaran Radiasi Berkas Utama (mR) HVL	0 mm ~ 300 mm 35 KVp ~ 155 KVp 0.1 ms ~ 2000 s 30 Gy ~ 1000 Gy ~ 0.1 mR/min ~ 1000 mR/min 1.2 mAl ~ 14 mAl	- 0.07 Kvp 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	- 0.07 Kvp 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	In-house Procedure (MD-28)
29	X-Ray General Purpose Kuat Cahaya Lampu Kolimator Ketepatan Berkas Kolimasi Akurasi kV Akurasi waktu Expose Reproduksibilitas Expose Linieritas mA/mAs Keluaran Radiasi Berkas Utama (mR) HVL	0 lux ~ 200 lux 0 mm ~ 300 mm 35 KVp ~ 155 KVp 0.1 ms ~ 2000 s 30 Gy ~ 1000 Gy ~ 0.1 mR/min ~ 1000 mR/min 1.2 mAl ~ 14 mAl	0.5 lux - 0.07 Kvp 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	0.5 lux - 0.07 Kvp 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	In-house Procedure (MD-29)
30	X-Ray Mamography Ketepatan Berkas Kolimasi Akurasi kV Akurasi waktu Expose Reproduksibilitas Expose Linieritas mA/mAs Keluaran Radiasi Berkas Utama (mR) HVL	0 mm ~ 300 mm 35 KVp ~ 155 KVp 0.1 ms ~ 2000 s 30 Gy ~ 1000 Gy ~ 0.1 mR/min ~ 1000 mR/min 1.2 mAl ~ 14 mAl	- 0.07 Kvp 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	- 0.07 Kvp 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	In-house Procedure (MD-30)
31	X-Ray Mobile C-Arm Ketepatan Berkas Kolimasi Akurasi kV Akurasi waktu Expose Reproduksibilitas Expose	0 mm ~ 300 mm 35 KVp ~ 155 KVp 0.1 ms ~ 2000 s 30 Gy ~ 1000 Gy	- 0.07 Kvp 0.07 s 0.07 Gy	- 0.07 Kvp 0.07 s 0.07 Gy	In-house Procedure (MD-31)

ALAT KESEHATAN (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
	Linieritas mA/mAs	~	0.07 mAs	0.07 mAs	
	Keluaran Radiasi Berkas Utama (mR)	0.1 mR/min ~ 1000 mR/min	0.07 Gy	0.07 Gy	
	HVL	1.2 mAl ~ 14 mAl	0.09 mmAl	0.09 mmAl	
32	X-Ray Mobile Unit	~			
	Kuat Cahaya Lampu Kolimator	0 lux ~ 200 lux	0.5 lux	0.5 lux	
	Ketepatan Berkas Kolimasi	0 mm ~ 300 mm	-	-	
	Akurasi kV	35 KVp ~ 155 KVp	0.07 Kvp	0.07 Kvp	
	Akurasi waktu Expose	0.1 ms ~ 2000 s	0.07 s	0.07 s	
	Reproduksibilitas Expose	30 Gy ~ 1000 Gy	0.07 Gy	0.07 Gy	
	Linieritas mA/mAs	~	0.07 mAs	0.07 mAs	
	Keluaran Radiasi Berkas Utama (mR)	0.1 mR/min ~ 1000 mR/min	0.07 Gy	0.07 Gy	
	HVL	1.2 mAl ~ 14 mAl	0.09 mmAl	0.09 mmAl	
33	Ventilator Anaesthesia				
	Vaporizer	0 % Vapor ~ 12 % Vapor	0.58 % Vapor	0.58 % Vapor	
	Tidal volume	0 (L) ~ 200 (L)	0.58 (L)	0.58 (L)	
	Minute vol	0 (L) ~ 200 (L)	0.58 (L)	0.58 (L)	
	Breath rate	2 (bpm) ~ 150 (bpm)	0.58 (bpm)	0.58 (bpm)	
	I : E ratio		0.58	0.58	
	PIP	0 (cmH2O) ~ 120 (cmH2O)	0.58 (cmH2O)	0.58 (cmH2O)	
	PEEP	-5 (cmH2O) ~ 40 (cmH2O)	0.58 (cmH2O)	0.58 (cmH2O)	
	MAP	0 (cmH2O) ~ 80 (cmH2O)	0.58 (cmH2O)	0.58 (cmH2O)	
	IPP	0 (cmH2O) ~ 120 (cmH2O)	0.58 (cmH2O)	0.58 (cmH2O)	
	Peak Inspirasi Flow	0 lpm ~ 150 lpm	0.58 lpm	0.58 lpm	
	FIO2	0 (%) ~ 100 (%)	0.58 (%)	0.58 (%)	
34	Syringe Pump				
	Flow Rate	0.5 ml/H ~ 1000 ml/H	0.29 ml/H	0.29 ml/H	
	Pressure	0 psi ~ 45 psi	0.06 psi	0.06 psi	
35	Oxygen Therapy/ Flow Meter	0 lpm ~ 25 lpm	0.58 lpm	0.58 lpm	
36	Treadmill	30 bpm ~ 240 bpm	0.82 bpm	0.82 bpm	
		1 mil/H ~ 10 mil/H	0.05 mil/H	0.05 mil/H	
37	Paparan Radiasi X-Ray	0.1 µSv/hr ~ 500 mSv/hr	-	-	

Notes:

Calibration & Measurement Capability is stated as *Expanded Uncertainty* at approximately 95% confidence level, calculated using *coverage factor* of $k = 2$, includes uncertainty contribution due to reference standards used by the laboratory, measurement process at the laboratory, and contribution due to typical characteristic of nearly ideal device under calibration respective to the laboratory

The actual characteristic of device under calibration shall also be considered for individual calibration certificate issued by the laboratory