

Length, Croatia, HMI/FSB-LPMD (FSB - Laboratory for Precise Measurements of Length)

Calibration or Measurement Service			Measurand Level or Range			Measurement Conditions/Independent Variable		Expanded Uncertainty					NMI / Internal Service Identifier	Comments
Class	Instrument or Artifact: Measurand	Instrument Type or Method	Minimum value	Maximum value	Units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?		
End standards	Gauge block: central length, L	Mechanical comparison, comparator	0.5	100	mm			$(0.05 + 1.1L)$, L in m	μm	2	95%	No	1	Approved on 30 January 2009
End standards	Long gauge block	Length measuring machine	100	500	mm			$(0.35 + 1.0L)$, L in m	μm	2	95%	No	2	Approved on 30 January 2009
End standards	Micrometer setting rod and length bar: central length, L	Length measuring machine	0	500	mm			$(0.6 + 11.5L)$, L in m	μm	2	95%	No	3	Approved on 30 January 2009
Diameter standards	External cylinder (plug): diameter, L	Length measuring machine	0.1	100	mm			0.7	μm	2	95%	No	4	Approved on 03 November 2009
Diameter standards	External cylinder (plug): diameter	Length measuring machine	100	200	mm			1	μm	2	95%	No	4	Approved on 03 November 2009
Diameter standards	Internal cylinder (ring): diameter, D	Length measuring machine	8	150	mm			$(0.6 + 0.7D)$, D in m	μm	2	95%	No	5	Approved on 03 November 2009
Roughness standards	Roughness standards (ISO 5436-1 type C, D) ISO roughness parameter	Roughness instrument	0.02	30	μm	Average parameter, R_a	ISO 4287	$(12 + 38R_a)$, R_a in μm	nm	2	95%	No	8	Approved on 03 November 2009
Roughness standards	Roughness standards (ISO 5436-1 type C, D) ISO roughness parameter	Roughness instrument	0.025	100	μm	Peak parameter, R_z	ISO 4287	$(22 + 46R_z)$, R_z in μm	nm	2	95%	No	8	Approved on 03 November 2009
Line standards	Precision line scale: line spacing L	Laser interferometer and CCD microscope	0	300	mm			$(150 + L)$, L in mm	nm	2	95%	No	9	Approved on 03 August 2011

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Laser radiations	Stabilized laser of the mise en pratique: vacuum wavelength	Optical beat frequency	633	633	nm	Temperature	(20 ± 5) °C	0.04	fm	2	95%	No	10	Approved on 01 April 2010
Laser radiations	Stabilized laser of the mise en pratique: absolute frequency	Optical beat frequency	474	474	THz	Temperature	(20 ± 5) °C	24	kHz	2	95%	No	10	Approved on 01 April 2010
Laser radiations	Other stabilised laser: vacuum wavelength	Optical beat frequency	633	633	nm			1.0E-09		2	95%	Yes	11	Approved on 01 April 2010
End standards	Gauge block: central length L	Interferometry, exact fractions	0.5	100	mm			Q[30, 0.5L], L in mm	nm	2	95%	No	20	Approved on 08 October 2012
Roundness standards	External cylinder (plug): roundness, R	Form tester stylus instrument	0	100	µm	Diameter	8 mm to 200 mm	Q[110, 20R], R in µm	nm	2	95%	No	12	Approved on 08 October 2012
Roundness standards	Internal cylinder (ring): roundness, R	Form tester stylus instrument	0	100	µm	Diameter	8 mm to 200 mm	Q[110, 20R], R in µm	nm	2	95%	No	13	Approved on 08 October 2012
Roundness standards	Hemisphere: roundness, R	Form tester stylus instrument	0	3	µm	Diameter	8 mm to 200 mm	Q[90, 20R], R in µm	nm	2	95%	No	14	Approved on 08 October 2012
Screw standards	Thread plugs, plain; simple pitch diameter	3 wire method, length measuring machine	1	60	mm	Pitch	0.25 mm to 6 mm	3.0	µm	2	95%	No	6	Approved on 20 February 2013
Screw standards	Thread rings, plain; simple pitch diameter	Two-ball stylus, length measuring machine	4	60	mm	Pitch	0.6 mm to 6 mm	3.0	µm	2	95%	No	7	Approved on 20 February 2013

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Screw standards	Thread plug, plain; pitch diameter	3 wire method, length measuring machine	1	60	mm	Pitch	0.25 mm to 6 mm	3.0	µm	2	95%	No	21	Approved on 12 September 2016
Screw standards	Thread ring, plain; pitch diameter	Two-ball stylus, length measuring machine	4	60	mm	Pitch	0.6 mm to 6 mm	3.0	µm	2	95%	No	22	Approved on 12 September 2016
Screw standards	Thread plug, plain; pitch	Optical, tool microscope	0.25	6	mm			1.7	µm	2	95%	No	23	Approved on 12 September 2016
Screw standards	Thread ring, plain; pitch	Length measuring machine	0.6	6	mm			1.2	µm	2	95%	No	24	Approved on 12 September 2016