

## Calibration and Measurement Capability (CMC)

Length Laboratory															
Calibration or Measurement Service			Measurand Level or Range			Measurement Conditions/Independent Variable		Expanded Uncertainty					Reference Standard used in calibration		Service Identifier
Quantity/Class	Instrument or Artifact	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?	Standard	Source of traceability	
Length: End standards	Gauge block	Mechanical comparison to gauge block	0,1	100	mm	Temperature	(20 ± 1) °C	$\sqrt{40^2 + (0.9 \cdot l)^2}$ l en mm	nm	2	95%	No	Gage blocks grade K	PTB	INM-L05-01
						Material	Acero								
Length: End standards	Gauge block	Mechanical comparison to gauge block	>100	500	mm	Temperature	(20 ± 1) °C	$\sqrt{71^2 + (1.1 \cdot l)^2}$ l en mm	nm	2	95%	No	Gage blocks grade K	PTB	INM-L05-03
						Material	Acero								
Length	Coordinate Measurement Machine	Direct measurement	20	620	mm	Temperature	(20 ± 1) °C	Depends on the machine performance	µm	2	95%	No	Step gauge	CENAM	INM-L05-04
Length	Profile projector	Direct measurement	0	200	mm	Temperature	(20 ± 1) °C	0.5	µm	2	95%	No	Standard scale	CENAM	INM-L05-05
Length	Granite surface plate	Indirect measurement	0	1.000	mm	Temperature	(20 ± 1) °C	2	µm	2	95%	No	Ruler of righteousness, gauge blocks, pin guages	PTB	INM-L05-06
Length	Protactor (angle gage)	Direct measurement	0.1	90	° " '''	Temperature	(20 ± 1) °C	2	"	2	95%	No	Angular blocks	CENAM	INM-L05-07
Length	Precision Spirit Level	Indirect measurement	0,02	0,1	mm/m	Temperature	(20 ± 1) °C	5	µm/m	2	95%	No	Dial indicator	PTB	INM-L05-08
Length	Sine table	Indirect measurement	0	300	mm	Temperature	(20 ± 1) °C	10	µm	2	95%	No	Cordinate measuring machine	PTB	INM-L05-09
Length	Dial indicator tester	Direct measurement	0	25	mm	Temperature	(20 ± 1) °C	0,7	µm	2	95%	No	Cordinate measuring machine	PTB	INM-L05-10
Length	Precision square	Indirect	20	630	mm	Temperature	(20 ± 1) °C	2.5+L/333,	µm	2	95%	No	Cordinate	CENAM	INM-L05-11

Length	Precision square	measurement	0.1	500	mm	Temperature	(20 ± 1) °C	L en mm	µm	2	95%	No	measuring machine	CENAM	INM-L05-11
Angle	Angle gauge blocks	Indirect measurement	0.1	90	° " "	Temperature	(20 ± 1) °C	7	"	2	95%	No	Angular blocks and/or coordinate measuring machine	CENAM	INM-L05-12
Length	Complex geometries	Indirect measurement	0	1.000	mm	Temperature	(20 ± 1) °C	2.5+L/333, L en mm	µm	2	95%	No	Coordinate measuring machine	CENAM	INM-L05-13
Length	Standard bar	Indirect measurement	4	1.000	mm	Temperature	(20 ± 1) °C	2.5+L/333, L en mm	µm	2	95%	No	Coordinate measuring machine	CENAM	INM-L05-14
Length	Ring gage	Indirect measurement	4	100	mm	Temperature	(20 ± 1) °C	0.6	µm	2	95%	No	Coordinate measuring machine	PTB	INM-L05-15
Length	Thread gage	Indirect measurement	4	100	mm	Temperature	(20 ± 1) °C	2	µm	2	95%	No	Maquina de medición por coordenadas	PTB	INM-L05-16
Length	Outer conical threaded gauge	Indirect measurement	4	100	mm	Temperature	(20 ± 1) °C	2	µm	2	95%	No	Coordinate measuring machine	PTB	INM-L05-17
Length	Height master	Indirect measurement	0	400	mm	Temperature	(20 ± 1) °C	2	µm	2	95%	No	Coordinate measuring machine	PTB	INM-L05-18
Length	Precision Ruler	Indirect measurement	0	2.000	mm	Temperature	(20 ± 1) °C	5	µm	2	95%	No	Coordinate measuring machine	PTB	INM-L05-19
Length	Micrometer head	Indirect measurement	4	100	mm	Temperature	(20 ± 1) °C	0.8	µm	2	95%	No	Coordinate measuring machine	PTB	INM-L05-20
Length	Feeler gauges	Direct measurement	0	30	mm	Temperature	(20 ± 1) °C	1	µm	2	95%	No	Laser interferometer or micrometer	CENAM o PTB	INM-L05-21
Length	Pin gages	Direct measurement	0	10	mm	Temperature	(20 ± 1) °C	0,1	µm	2	95%	No	Coordinate measuring machine, laser interferometer or micrometer	CENAM o PTB	INM-L05-22
Length	Standard scale	Direct measurement	0	150	mm	Temperature	(20 ± 1) °C	0.7	µm	2	95%	No	Vision measuring system	CENAM	INM-L05-23
Length	Sieve	Direct measurement	0	150	mm	Temperature	(20 ± 1) °C	1.5	µm	2	95%	No	Vision measuring system	CENAM	INM-L05-24

Length	Straight Edge	Indirect measurement	0	1.000	mm	Temperature	(20 ± 1) °C	2	µm	2	95%	No	Coordinate measuring machine or dial comparator	CENAM o PTB	INM-L05-25
Length	Tape measure	Direct measurement	0	50	m	Temperature	(20 ± 1) °C	29.7+9.6*L, L en m	µm	2	95%	No	Standard tape	PTB	INM-L05-26
Length	Meter counter	Direct measurement	0	100	m	Temperature	(20 ± 1) °C	0.05	%	2	95%	Si	Standard tape	PTB	INM-L05-27
Length	5 step block	Direct measurement	2,5	12,5	mm	Temperature	(20 ± 1) °C	1	mm	2	95%	No	Laser interferometer or micrometer	CENAM o PTB	INM-L05-28
Length	Single axis coordinate machine	Direct measurement	0	3	m	Temperature	(20 ± 1) °C	Depends on the machine performance		2	95%	No	laser interferometer, ruler or gauges	CENAM o PTB	INM-L05-29
Length	Gauge block comparator	Direct measurement	0	100	mm	Temperature	(20 ± 1) °C	Depends on instrument performance		2	95%	No	Gauge blocks grade K	CENAM o PTB	INM-L05-30
Length	Height gage	Direct measurement	0	600	mm	Temperature	(20 ± 1) °C	0.2 a 6	mm	2	95%	No	Gauge blocks	CENAM o PTB	INM-L05-31
Length	Gauge block	Mechanical comparison to gauge block	>100	150	mm	Temperature	(20 ± 1) °C	0.1+0.001L, L en mm	µm	2	95%	No	Gauge blocks grade K	PTB	INM-L05-32
Length	Gauge block	Mechanical comparison to gauge block	>150	500	mm	Temperature	(20 ± 1) °C	0.15+0.0015L, L en mm	µm	2	95%	No	Gauge blocks grade K	PTB	INM-L05-33
Length	Micrometer column (micrometer head and indicator)	Indirect measurement	0	300	mm	Temperature	(20 ± 1) °C	0.7+.018L, L en mm	µm	2	95%	No	Coordinate measuring machine	PTB	INM-L05-34
Length	Caliper Checker	Direct measurement	0	650	mm	Temperature	(20 ± 1) °C	2.2+.096L, L en mm	µm	2	95%	No	Coordinate measuring machine Brown & Sharpe	CENAM	INM-L05-35

**Last updated: 2026-01-06**