

CALIBRATION SYSTEM CERTIFICATE

With respect to products (measuring instruments and testing instruments), we hereby certify that we have established our calibration system traceable to the national (international) standards, as shown below.

Mitutoyo Corporation qualifies for the registered business operator*¹ of the Japan Calibration Service System (JCSS*²) and use standards that are traceable to the national standard owned by the National Metrology Institute of Japan / National Institute of Advanced Industrial Science and Technology (NMIJ/AIST) for calibration service.

Being endorsed by the above facts, the calibration results stated in the Mitutoyo-issued calibration certificate stamped with a JCSS mark shall be deemed to be traceable to the national standard.

The Production, Inspection and Calibration Service Departments of Mitutoyo Corporation also use standards which are traceable to the standard calibrated in advance by one of the registered operators of JCSS to perform inspection and calibration services for products (measuring equipment) so that calibration results are traceable to the national standard.

Since the International Accreditation Japan / National Institute of Technology and Evaluation (IAJapan/NITE), which is the accredited organization of JCSS, has signed in the International Laboratory Accreditation Cooperation (ILAC) and the Asia Pacific Accreditation Cooperation (APAC), the calibration certificate issued by Mitutoyo Corporation and stamped with a JCSS mark shall be valid in the countries and commercial areas which also have signed in ILAC and APAC.

*1) In Mitutoyo Corporation, we have 6 JCSS registered operations as follows:

- Metrological Standards Calibration Section
- Miyazaki Plant
- Utsunomiya Calibration Center
- Kawasaki Calibration Center
- Hiroshima Calibration Center
- Techno Services Business Division

*2) The JCSS registered operator conforms to the requirement of ISO/IEC 17025.

Mitutoyo Corporation
Quality Assurance Department

Yasuhiro Takahashi,
Department Manager

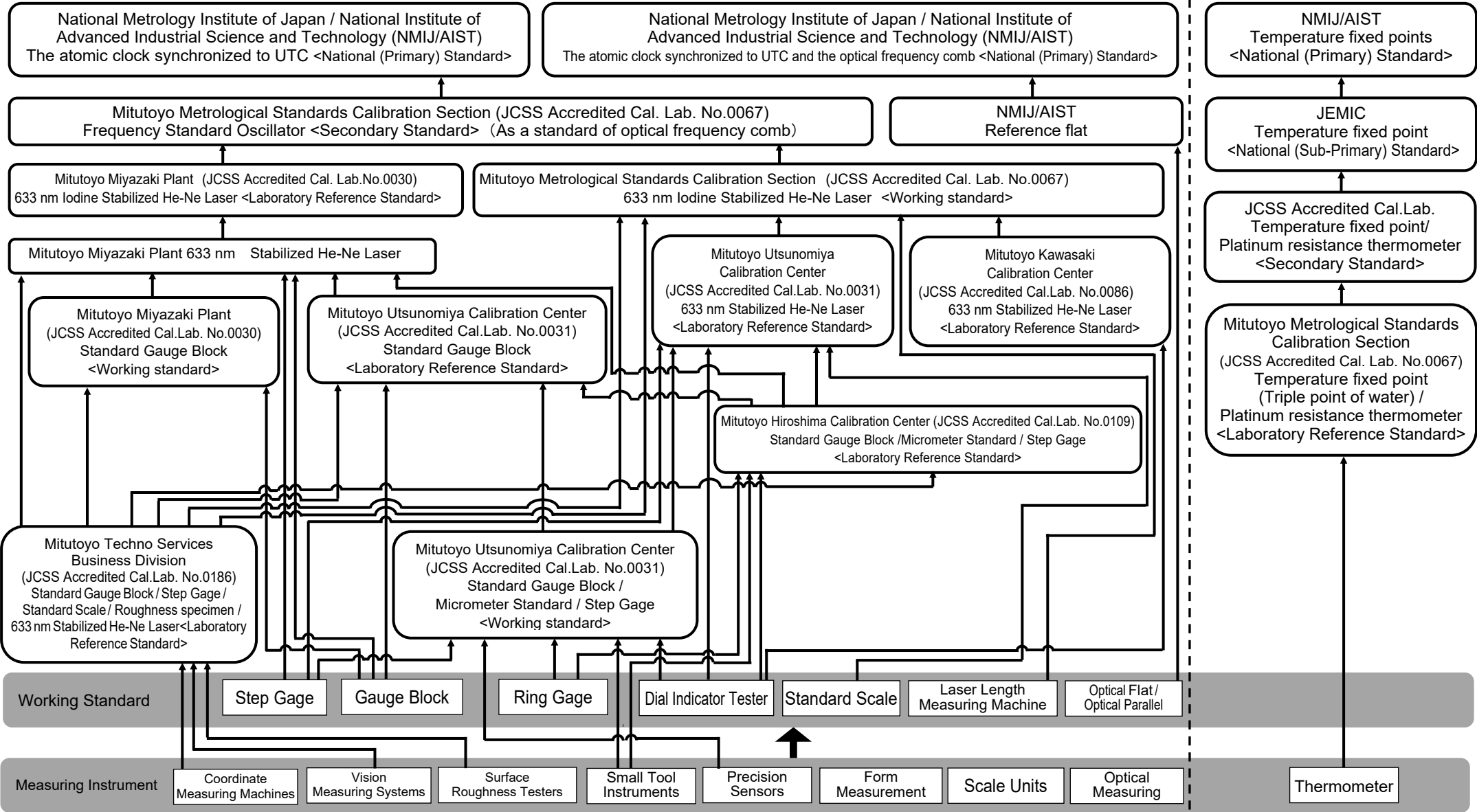
As of 2020-11-18

QA-I000208 Rev.39.0

Traceability of Mitutoyo Standard

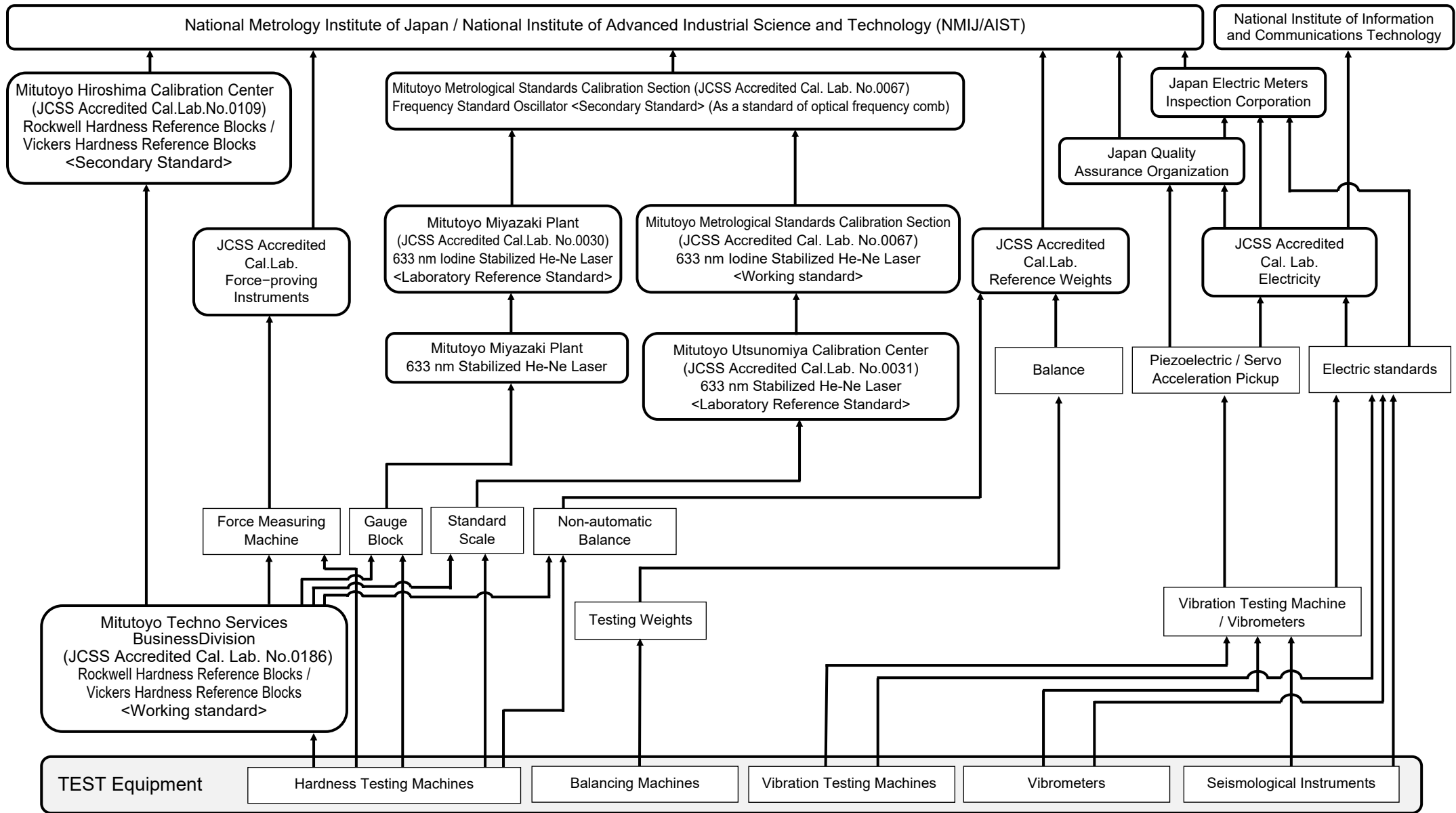
Traceability of Length Field

Traceability of Temperature



◆ This chart shows a simplified traceability system of a part of Mitutoyo products. Detailed traceability charts are published for each product.

Traceability of Test Equipment




◆ This chart shows a simplified traceability system of a part of Mitutoyo products. Detailed traceability charts are published for each product.

Certification of Accreditation by JCSS

- (1) Metrological Standards Calibration Section
- (2) Miyazaki Plant
- (3) Utsunomiya Calibration Center
- (4) Kawasaki Calibration Center
- (5) Hiroshima Calibration Center
- (6) Techno Services Business Division

(1)

(English Translation)



Certificate of Accreditation

IAJapan hereby accredits the following conformity assessment body as a calibration laboratory of Japan Calibration Service System (JCSS).


Accreditation Identification : JCSS 0067 Calibration
 Name of Conformity Assessment Body :
 Metrological Standards Calibration Section,
 Metrological Standards Office, Mitutoyo Corporation
 Name of Legal Entity : Mitutoyo Corporation
 Location of Conformity Assessment Body :
 430-1, Kamiyokoba, Tsukuba-shi, Ibaraki 305-0854, Japan
 Scope of Accreditation :
 Length, Temperature (as attached)
 Accreditation Requirement :
 ISO/IEC 17025:2017
 Accreditation Requirements in the Section 6 of Accreditation Scheme (JCSS) 2nd Edition
 Effective Date of Accreditation: 2020-04-15
 Expiry Date of Accreditation: 2024-04-14
 (Date of Initial Accreditation: 2017-04-28)

KISHIMOTO Isao
 Chief Executive, IAJapan
 National Institute of Technology and Evaluation

International Accreditation Japan (IAJapan) is a laboratory accreditation body which has signed MRAs of ILAC (International Laboratory Accreditation Cooperation) and APAC (Asia Pacific Accreditation Cooperation).
 MRA requirements are, in addition to relevant international standards and guides, requirements for participation in proficiency testing programs, surveillance and re-assessment, and the policy for the traceability of measurement for MRA purposes.
 This laboratory fulfills ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation means this laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations (refer to joint ISO-ILAC-APAC Conformance dated April 2017).
 This accreditation information is the information as of the effective date of accreditation. The latest accreditation information can be found on the IAJapan website.

(2)

(English Translation)



Certificate of Accreditation

IAJapan hereby accredits the following conformity assessment body as a calibration laboratory of Japan Calibration Service System (JCSS).


Accreditation Identification : JCSS 0030 Calibration
 Name of Conformity Assessment Body :
 Miyazaki Plant, Mitutoyo Corporation
 Name of Legal Entity :
 Mitutoyo Corporation
 Location of Conformity Assessment Body :
 10652-1 Kou, Tano-cho, Miyazaki-shi,
 Miyazaki 889-1701, Japan
 Scope of Accreditation :
 Length (as attached)
 Accreditation Requirement :
 ISO/IEC 17025:2017
 Accreditation Requirements in the Section 6 of Accreditation Scheme (JCSS) 2nd Edition
 Effective Date of Accreditation: 2020-11-02
 Expiry Date of Accreditation: 2024-11-01
 (Date of Initial Accreditation: 2004-08-13)

KISHIMOTO Isao
 Chief Executive, IAJapan
 National Institute of Technology and Evaluation

International Accreditation Japan (IAJapan) is a laboratory accreditation body which has signed MRAs of ILAC (International Laboratory Accreditation Cooperation) and APAC (Asia Pacific Accreditation Cooperation).
 MRA requirements are, in addition to relevant international standards and guides, requirements for participation in proficiency testing programs, surveillance and re-assessment, and the policy for the traceability of measurement for MRA purposes.
 This laboratory fulfills ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation means this laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations (refer to joint ISO-ILAC-APAC Conformance dated April 2017).
 This accreditation information is the information as of the effective date of accreditation. The latest accreditation information can be found on the IAJapan website.

(3)

(English Translation)



Certificate of Accreditation

IAJapan hereby accredits the following conformity assessment body as a calibration laboratory of Japan Calibration Service System (JCSS).


Accreditation Identification : JCSS 0031 Calibration
 Name of Conformity Assessment Body :
 Utsunomiya Calibration Center, Techno-Service Business Division, Mitutoyo Corporation
 Name of Legal Entity :
 Mitutoyo Corporation
 Location of Conformity Assessment Body :
 2300-1, Shimooguri-machi, Utsunomiya-shi, Tochigi 321-0923, Japan
 Scope of Accreditation : Length (as attached)
 Accreditation Requirement : ISO/IEC 17025:2017
 Accreditation Requirements in the Section 6 of Accreditation Scheme (JCSS) 2nd Edition
 Effective Date of Accreditation: 2019-06-07
 Expiry Date of Accreditation: 2020-12-07
 (Date of Initial Accreditation: 1994-05-02)

Kenichi Yamamoto
 Chief Executive, IAJapan
 National Institute of Technology and Evaluation

International Accreditation Japan (IAJapan) is a laboratory accreditation body which has signed MRAs of ILAC (International Laboratory Accreditation Cooperation) and APAC (Asia Pacific Accreditation Cooperation).
 MRA requirements are, in addition to relevant international standards and guides, requirements for participation in proficiency testing programs, surveillance and re-assessment, and the policy for the traceability of measurement for MRA purposes.
 This laboratory fulfills ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation means this laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations (refer to joint ISO-ILAC-APAC Conformance dated April 2017).
 This accreditation information is the information as of the effective date of accreditation. The latest accreditation information can be found on the IAJapan website.

(4)

(English Translation)



Certificate of Accreditation

IAJapan hereby accredits the following conformity assessment body as a calibration laboratory of Japan Calibration Service System (JCSS).


Accreditation Identification : JCSS 0086 Calibration
 Name of Conformity Assessment Body :
 Kawasaki Calibration Center, Techno Service Division,
 Mitutoyo Corporation
 Name of Legal Entity :
 Mitutoyo Corporation
 Location of Conformity Assessment Body :
 1-20-1 Sakado Takatsu-ku, Kawasaki-shi, Kanagawa
 604-8511, Japan
 Scope of Accreditation :
 Length (as attached)
 Accreditation Requirement : ISO/IEC 17025:2017
 Accreditation Requirements in the Section 6 of Accreditation Scheme (JCSS) 2nd Edition
 Effective Date of Accreditation: 2020-02-04
 Expiry Date of Accreditation: 2024-02-03
 (Date of Initial Accreditation: 2020-02-04)

YAMAMOTO Kenichi
 Chief Executive, IAJapan
 National Institute of Technology and Evaluation

International Accreditation Japan (IAJapan) is a laboratory accreditation body which has signed MRAs of ILAC (International Laboratory Accreditation Cooperation) and APAC (Asia Pacific Accreditation Cooperation).
 MRA requirements are, in addition to relevant international standards and guides, requirements for participation in proficiency testing programs, surveillance and re-assessment, and the policy for the traceability of measurement for MRA purposes.
 This laboratory fulfills ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation means this laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations (refer to joint ISO-ILAC-APAC Conformance dated April 2017).
 This accreditation information is the information as of the effective date of accreditation. The latest accreditation information can be found on the IAJapan website.

(5)

(English Translation)



Certificate of Accreditation

IAJapan hereby accredits the following conformity assessment body as a calibration laboratory of Japan Calibration Service System (JCSS).


Accreditation Identification : JCSS 0109 Calibration
 Name of Conformity Assessment Body :
 Hiroshima Calibration Center,
 Techno-Service Business Division, Mitutoyo Corporation
 Name of Legal Entity :
 Mitutoyo Corporation
 Location of Conformity Assessment Body :
 10626-62, Ichinomakoyama, Gouhara-cho, Kure-City,
 Hiroshima-Pref 737-0161, Japan
 Scope of Accreditation :
 Length, Hardness (as attached)
 Accreditation Requirement :
 ISO/IEC 17025:2017
 Accreditation Requirements in the Section 6 of Accreditation Scheme (JCSS) 2nd Edition
 Effective Date of Accreditation: 2019-06-07
 Expiry Date of Accreditation: 2023-06-06
 (Date of Initial Accreditation: 2002-04-11)

Kenichi Yamamoto
 Chief Executive, IAJapan
 National Institute of Technology and Evaluation

International Accreditation Japan (IAJapan) is a laboratory accreditation body which has signed MRAs of ILAC (International Laboratory Accreditation Cooperation) and APAC (Asia Pacific Accreditation Cooperation).
 MRA requirements are, in addition to relevant international standards and guides, requirements for participation in proficiency testing programs, surveillance and re-assessment, and the policy for the traceability of measurement for MRA purposes.
 This laboratory fulfills ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation means this laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations (refer to joint ISO-ILAC-APAC Conformance dated April 2017).
 This accreditation information is the information as of the effective date of accreditation. The latest accreditation information can be found on the IAJapan website.

(6)

(English Translation)



Certificate of Accreditation

IAJapan hereby accredits the following conformity assessment body as a calibration laboratory of Japan Calibration Service System (JCSS).

Accreditation Identification : JCSS 0186 Calibration
 Name of Conformity Assessment Body :
 Techno-Service Business Division, Mitutoyo Corporation
 Name of Legal Entity :
 Mitutoyo Corporation
 Location of Conformity Assessment Body :
 796-1, Hiramatsu-honcho, Utsunomiya-shi,
 Tochigi 321-0932, Japan
 Scope of Accreditation :
 Length, Hardness (as attached)
 Accreditation Requirement :
 ISO/IEC 17025:2017
 Accreditation Requirements in the Section 6 of Accreditation Scheme (JCSS) 2nd Edition
 Effective Date of Accreditation: 2019-05-22
 Expiry Date of Accreditation: 2023-03-21
 (Date of Initial Accreditation: 2006-12-27)

KISHIMOTO Isao
 Chief Executive, IAJapan
 National Institute of Technology and Evaluation

International Accreditation Japan (IAJapan) is a laboratory accreditation body which has signed MRAs of ILAC (International Laboratory Accreditation Cooperation) and APAC (Asia Pacific Accreditation Cooperation).
 MRA requirements are, in addition to relevant international standards and guides, requirements for participation in proficiency testing programs, surveillance and re-assessment, and the policy for the traceability of measurement for MRA purposes.
 This laboratory fulfills ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation means this laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations (refer to joint ISO-ILAC-APAC Conformance dated April 2017).
 This accreditation information is the information as of the effective date of accreditation. The latest accreditation information can be found on the IAJapan website.

Scope of Service and Calibration Uncertainty

L is measured length (mm)

◆ General Field of Calibration : Length

	Type of Service	Item	Calibration Scope	Expanded Uncertainty ^{Note 1} (Level of Confidence Approximately 95 %)		
1	Laser Wavelength	Frequency stabilized laser in the 633 nm / 532 nm region		1.1×10^{-13}		
2	Length Measuring Instrument	Gauge Blocks (Interferometry method)	Gauge Blocks	From 0.1 mm up to 100 mm	0.020 μm	
				More than 100 mm up to 250 mm	$(0.010 + 0.00010 \cdot L) \mu\text{m}$	
				More than 250 mm up to 1000 mm	$(0.020 + 0.00020 \cdot L) \mu\text{m}$	
3		Gauge Blocks (Comparison method)	Gauge Blocks	From 0.1 mm up to 100 mm	0.06 μm	
					More than 100 mm up to 1000 mm	$(0.04 + 0.00043 \cdot L) \mu\text{m}$
4		End gages with Flat ends (Interferometry method)	Check Master	Up to 2100 mm	$(0.18 + 0.38 \cdot L / 1000) \mu\text{m}$	
5						Caliper Checker
6						Inside Micro Checker
7						Step Master
8		End gages with Flat ends (Comparison method)	Depth Micro Checker	From 0.5 mm up to 300 mm	$(0.5 + L / 1000) \mu\text{m}$	
9			Height Master	Up to 1000 mm		
10			Cylindrical Gages	From 25 mm up to 500 mm		
11			Micrometer standards	From 25 mm up to 1000 mm		$(0.4 + L / 1000) \mu\text{m}$
12		Standard Scale	Standard scale	Up to 350 mm	$(0.10 + 0.12 \cdot L / 1000) \mu\text{m}$	
					More than 350 mm up to 1000 mm	$(0.06 + 0.25 \cdot L / 1000) \mu\text{m}$
13				Reference scale	Pattern size: From 0.2 mm up to 4 mm	0.11 μm
14			Calibration chart			
15		Ring gages	Setting Rings	From 6 mm up to 80 mm	0.7 μm	
					More than 80 mm up to 120 mm	0.8 μm
16		Calibration testers For dial gages	Calibration Tester	Up to 5 mm	0.10 μm	
					More than 5 mm up to 25 mm	0.3 μm
		Indicator Checker	Up to 100 mm	$(0.1 + 4.8 \cdot L / 1000) \mu\text{m}$		
17	Micrometers (including Micrometer Heads)		Up to 25 mm	0.3 μm		
			More than 25 mm up to 500 mm	$(1.2 + L / 175) \mu\text{m}$		
18	Indicating Micrometers		Micrometer: Up to 100 mm	$(0.9 + L / 250) \mu\text{m}$		
			Indicator: ± 0.06 mm	$(0.3 + L / 125) \mu\text{m}$		
19	Calipers		Up to 600 mm	0.02 mm		
			More than 600 mm up to 1000 mm	0.03 mm		
20	Height Gages		Up to 600 mm	0.015 mm		
			More than 600 mm up to 1000 mm	0.020 mm		
21	Depth Gages		Up to 600 mm	0.02 mm		
			More than 600 mm up to 1000 mm	0.03 mm		
22	Dial gages	Dial Indicators	Up to 5 mm	0.5 μm		
				More than 5 mm up to 50.8 mm	1.1 μm	
				More than 50.8 mm up to 100 mm	1.7 μm	
23	Dial Test Indicators		Up to 0.6 mm	0.5 μm		
			More than 0.6 mm up to 1.6 mm	1.2 μm		
24	Cylinder gauges	Bore Gages	From 6 mm up to 400 mm	0.7 μm		
25	Electrical comparators	Mu-Checker	$\pm 5 \mu\text{m}$	0.15 μm		
				$\pm 200 \mu\text{m}$	0.2 μm	
				$\pm 2000 \mu\text{m}$	1.0 μm	
26	Dimensional Measuring Instrument	Sphere (Average diameter)	Master Ball	From 2 mm less than 10 mm	0.06 μm	
					From 10 mm up to 40 mm	$(0.024 + 2.6 \cdot L / 1000) \mu\text{m}$
27	Coordinate Measuring Machines	Coordinate Measuring Machines, Vision Measuring System	Up to 61 mm	$(0.1 + 0.6 \cdot L / 1000) \mu\text{m}$		
				Up to 650 mm	$(0.13 + 0.11 \cdot L / 1000) \mu\text{m}$	
				Up to 1000 mm	$(0.2 + 0.2 \cdot L / 1000) \mu\text{m}$	
				Up to 10000 mm ^{Note 2}	$(0.1 + 0.6 \cdot L / 1000) \mu\text{m}$	

◆General Field of Calibration : Length

	Type of Service		Item	Calibration Scope		Expanded Uncertainty ^{Note 1} (Level of Confidence Approximately 95 %)
28	Dimensional Measuring Instrument	Surface Texture	Roughness Specimen (Surface Texture Material Measures for calibration)	Depth: From 0.3 μm up to 20 μm		$2 \times \sqrt{6.70^2 + (2.74 \times d)^2}$ nm <i>d</i> (μm): Depth
				Arithmetical mean deviation of the roughness profile From 0.1 μm up to 5 μm		$2 \times \sqrt{6.82^2 + (2.74 \times Ra)^2}$ nm <i>Ra</i> (μm): Arithmetical mean deviation of the roughness profile
				Maximum height of the roughness profile From 0.3 μm up to 20 μm		$2 \times \sqrt{35.8^2 + (2.74 \times Rz)^2}$ nm <i>Rz</i> (μm): Maximum height of the roughness profile
			Surface Roughness Testers (Contact (stylus) Instrument)	Arithmetical Mean deviation of the roughness profile <i>Ra</i>	0.2 μm	0.02 μm
					0.5 μm	
					1.5 μm	
				Maximum height of the roughness profile <i>Rz</i>	1.5 μm	0.15 μm
2.5 μm						
8.5 μm						

◆General Field of Calibration : Temperature

	Type of Service		Calibration Scope		Expanded Uncertainty ^{Note 1} (Level of Confidence Approximately 95 %)
1	Contact type thermometer	Resistance thermometer (Comparison calibration)	100 Ω (Four wires System)	From 0 °C up to 40 °C	6 mK
		Temperature sensors with display unit (Comparison calibration)	From 0 °C up to 40 °C		8 mK

◆General Field of Calibration : Hardness

	Type of Service		Calibration Scope	Expanded Uncertainty ^{Note 1} (Level of Confidence Approximately 95 %)	
				Permanent Laboratory	On-Site Calibration
1	Rockwell hardness testing machines, etc.	Rockwell Hardness Reference Blocks	From 20 HRC up to 25 HRC	0.43 HRC	—
			More than 25 HRC less than 35 HRC	0.44 HRC	—
			From 35 HRC up to 45 HRC	0.42 HRC	—
			More than 45 HRC less than 55 HRC	0.39 HRC	—
			From 55 HRC up to 65 HRC	0.35 HRC	—
		Rockwell Hardness Testing Machines	From 20 HRC up to 25 HRC	—	0.45 HRC
			More than 25 HRC less than 35 HRC	—	0.46 HRC
			From 35 HRC up to 45 HRC	—	0.44 HRC
			More than 45 HRC less than 55 HRC	—	0.41 HRC
			From 55 HRC up to 65 HRC	—	0.37 HRC
2	Vickers hardness testing machines, etc.	Vickers Hardness Reference Blocks	From 85HV up to 1050 HV (Test force from 0.9807 N up to 490.3 N)	$d > 193 \mu\text{m}$ 2.2 % $d \leq 193 \mu\text{m}$ $(228/d) + 1.02$ % Where: <i>d</i> is the length of a diagonal line of the indentation (μm)	
		Vickers Hardness Testing Machines	From 85HV up to 1050 HV (Test force from 0.9807 N up to 490.4 N)	a) $d > 170 \mu\text{m}$ 2.4 % b) $d \leq 170 \mu\text{m}$ $(230/d + 1.1)$ % Where: <i>d</i> is the length of a diagonal line of the indentation (μm)	

Note1) These values are the smallest uncertainties. Therefore, they sometimes differ from the uncertainties written in the Calibration Certificates
 Note2) Exclude Vision Measuring System.