



## Certified Calibration Technician (CCT) Body of Knowledge Map 2017 - 2024

The Certified Calibration Technician (CCT) Body of Knowledge (BoK) has been updated to ensure that the most current state of a calibration technician's practice is being tested in the examination. For more information on how a BoK is updated, a description of the process is available at <https://asq.org/cert/exam-development>.

To determine whether the topics in the 2017 BoK are still relevant to the role of CCTs, and to identify any new topics that have emerged, a comprehensive job analysis survey was conducted with ASQ CCTs. The results indicated most of the topics that were in the 2017 BoK are still relevant to the job roles of CCTs. As displayed in Table 2, two 2017 BoK subtopics (V.C.2 and V.C.4) were removed and several subtexts were revised.

The 2024 CCT BoK will be introduced in the **December 2024** testing window. Both BoKs will be available online until February 1, 2025, at which time the 2017 BoK will be archived.

### **General comments about ASQ Body of Knowledge updates**

When an ASQ BoK is updated, most of the material covered in the BoK remains the same. There are very few programs that change significantly over a 5-7 year period. A key point made to all the exam development committees is that ASQ Certification exams need to reflect “the state of practice” not “the state of the art.” This approach ensures exams remain relevant to current professional practices, rather than being swayed by momentary trends. When a new BoK is announced, we also include a “BoK Map” that details the changes between the two Bodies of Knowledge, focusing on what has been added or removed.

### Specific comments about the 2024 CCT Body of Knowledge updates

The CCT BoK mostly stayed the same with the 2024 update. There were no major changes to content in Section I, Section II, Section III, and Section IV. Two subtopics were removed from Section V: Roles and responsibilities of auditor, auditee, and client (V.C.2) and Auditing tools such as checklist and final report (V.C.4). Three areas increased in level of cognition: II.B, III.A, and V.F.2. Two areas decreased in level of cognition: I.E and V.B.

Table 1 portrays the change in the number of examination items allocated to each section of the BoK. The section names have all remained the same. Table 2, on page 3, presents the 2024 CCT BoK and maps the topics to the 2017 BoK. Table 3, starting on page 11, presents the 2017 CCT BoK and maps the topics to the 2024 BoK. Details on changes between the two can be found below.

Table 1. CCT BoK Section Item Allocation

<b>BoK Section</b>	<b>2017 BoK</b>	<b>2024 BoK</b>	<b>Difference</b>
I. General Metrology	30	30	<b>0</b>
II. Measurement Systems	26	26	<b>0</b>
III. Calibration Systems	30	28	<b>-2</b>
IV. Measurement Uncertainty and Applied Math	24	25	<b>+1</b>
V. Quality Systems and Standards	15	16	<b>+1</b>

Table 2. 2024 CCT BoK mapped to 2017 CCT BoK

2017 BoK	2024 BoK Details	Notes
Section	<b>I. General Metrology [30 Questions]</b>	
I.A	<b>A. Base SI units</b> Describe and define the seven base units: 1) meter, 2) kilogram, 3) second, 4) ampere, 5) kelvin, 6) candela, and 7) mole. (Understand) NOTE: The application of these units is covered in I.B., I.C., I.D, and I.E.	Added 'I.D' to the note
I.B	<b>B. Derived SI units</b> Define, calculate, and convert various derived units, such as 1) degree, 2) ohm, 3) pascal, 4) newton, 5) joule, 6) coulomb, 7) hertz, and 8) watt. (Apply)	Added: 8) watt
I.C	<b>C. SI multipliers and conversions</b> Define various multipliers, such as 1) kilo, 2) deci, 3) centi, and 4) milli. Calculate converted values, such as mega to kilo and micro to milli. (Apply)	
I.D	<b>D. Fundamental constants</b> Identify the fundamental constants of 1) velocity or speed of light in a vacuum (c), 2) gravitational constant (g), 3) Planck's constant (h), 4) Avogadro constant ( $N_A$ ), 5) Boltzmann (kB), and 6) elementary charge (e), and their standard symbols and common applications. (Understand) NOTE: The values of these constants and the formulas for calculating them will <u>not</u> be tested.	Removed: 3) universal gas constant (R)  Added: 3) Planck's constant (h), 4) Avogadro constant ( $N_A$ ), 5) Boltzmann (kB), and 6) elementary charge (e)
I.E	<b>E. Common measurements</b> Describe and apply IM&TE in measuring 1) temperature, 2) humidity, 3) pressure, 4) torque, 5) force, 6) mass, 7) voltage / current / resistance, 8) time / frequency, 9) linear displacement, 10) power, 11) dimensional, 12) viscosity, 13) volume, 14) luminosity, 15) flow, 16) energy, and 17) density. (Apply)	Added: 10) power, 11) dimensional, 12) viscosity, 13) volume, 14) luminosity, 15) flow, 16) energy, and 17) density  Decreased cognitive level from Evaluate to Apply

2017 BoK	2024 BoK Details	Notes
I.F	<b>F. Traceability standards and hierarchy</b> Identify various aspects of traceability, such as traceability through commercial laboratories, national laboratories, international metrology organizations, and SI units. Understand the realization and dissemination of SI units. (Apply)	Added: SI units and realization and dissemination of SI units
I.G	<b>G. Measurement standards</b> Define and distinguish between various types of standards, such as 1) primary, 2) secondary, 3) reference, 4) working, 5) intrinsic, 6) derived, 7) consensus, and 8) transfer, and identify when to use them in various situations. (Analyze)	Added: 2) secondary
I.H	<b>H. Substitution of standards</b> Assess when and how calibration standards can be substituted based on 1) measurement requirements, 2) equipment availability, 3) equipment specifications, etc. (Evaluate)	
<b>II. Measurement Systems [26 Questions]</b>		
II.A	<b>A. Measurement methods</b> Describe and employ various measurement methods, such as 1) direct (e.g., absolute and fundamental), 2) indirect, 3) ratio, 4) transfer (e.g., comparison), 5) differential, and 6) substitution by unit under test (UUT). (Evaluate)	Added: (e.g., absolute and fundamental) and (e.g., comparison)
II.B	<b>B. Measurement characteristics</b> Define and distinguish various characteristics used for basic measurements, such as 1) variability, 2) sensitivity, 3) repeatability, 4) reproducibility, 5) bias, 6) linearity, 7) stability, and 8) measurand. (Apply) NOTE: The use of these characteristics in uncertainty measurements is covered in IV.	Increased cognitive level from Understand to Apply
II.C	<b>C. Measurement data considerations</b> Identify and analyze various aspects of measurement data, such as 1) format, 2) readability, 3) resolution, 4) suitability for use, and 5) confidentiality. (Analyze)	
II.D	<b>D. IM&amp;TE specification terms and characteristics</b> Demonstrate knowledge of common specification descriptions, such as 1) percent of full scale, 2) percent of range, 3) percent of reading, and 4) number of counts. Describe and distinguish between characteristics of specifications, such as 5) tolerance and specifications, 6) baseline modifiers and qualifiers, 7) output, 8) scale, and 9) floor terms. (Analyze)	
II.E	<b>E. Error sources</b> Identify, mitigate, and correct error sources that can affect measurement results, such as 1) drift, 2) bias, 3) operator error, 4) measurement process, and 5) environment. (Evaluate)	Added: mitigate and 4) measurement process

2017 BoK	2024 BoK Details	Notes
II.F	<b>F. Measurement assurance program (MAP)</b> Explain basic MAP concepts, such as 1) interlaboratory comparisons and testing schemes, 2) proficiency tests, 3) gage R&R studies, and 4) statistical process control (SPC). (Understand)	Added: 4) statistical process control (SPC)
	<b>III. Calibration Systems [28 Questions]</b>	Number of questions changed from 30 to 28
III.A	<b>A. Calibration procedures</b> Identify and apply common elements of calibration procedures, such as 1) required equipment, 2) equipment listing, 3) environmental considerations and restraints, and 4) common procedures. (Analyze)	Removed: 2) revisions  Increased cognitive level from Apply to Analyze
III.B	<b>B. Standardization and adjustment methods</b> Utilize methods, such as 1) spanning, 2) nulling, 3) zeroing, and 4) linearization, to adjust and standardize IM&TE and analyze the outcomes. (Analyze)	
	<b>C. Industry practices and regulations</b>	
III.C.1	<b>1. Industry practices</b> Identify various sources of industry-accepted metrology and calibration practices, such as published resources, national standards, and international standards. (Understand)	Removed: manufacturer recommendations
III.C.2	<b>2. Regulations, mandates, and guidance</b> Define and distinguish between government regulations, traceability, and other legally mandated metrology requirements, such as national or international guidance. Identify which rules or conventions take precedence in various situations. (Apply)	
III.D	<b>D. Environmental control</b> Recognize various environmental parameters for 1) humidity, 2) dust levels, 3) electrostatic discharge (ESD), 4) temperature, 5) vibration, 6) pressure, etc., and explain their influence on calibration activities. (Apply)	Added: 6) pressure
	<b>E. Calibration processes for IM&amp;TE</b>	
III.E.1	<b>1. Process flow</b> Describe the basic flow of IM&TE through the calibration process. (Understand)	
III.E.2	<b>2. Logistical information</b> Explain IM&TE logistical information, such as 1) equipment identification, 2) ownership, 3) service history, and 4) process tracking systems. (Understand)	
III.E.3	<b>3. Roles and responsibilities</b> Identify roles and responsibilities of calibration staff members, such as 1) laboratory manager, 2) technical manager, 3) scheduler, 4) quality manager, and 5) technician. (Understand)	

<b>2017 BoK</b>	<b>2024 BoK Details</b>	<b>Notes</b>
III.E.4	<p><b>4. Scheduling</b> Determine IM&amp;TE scheduling considerations, such as 1) planned calibration intervals, 2) material or equipment requests, 3) steps in the notification process, 4) overdue lists, and 5) staff workloads, and analyze their impact. (Analyze)</p>	
III.F	<p><b>F. Validation processes</b> Determine issues related to validating manual and automated calibration systems and identify unique validation considerations for software or firmware that is part of IM&amp;TE or calibration processes. Apply verification of standard methods and validation of self-developed processes. (Apply)</p>	Added: Apply verification of standard methods and validation of self-developed processes.
III.G	<p><b>G. Records management</b> Define and describe document control in terms of maintaining the integrity and confidentiality of various calibration records, such as 1) audit results, 2) staff training, 3) uncertainty budgets, 4) customer data, 5) technical records, 6) documented processes, 7) requests, 8) contracts, and 9) tenders. (Apply)</p>	<p>Removed: in both electronic and paper formats</p> <p>Added: 5) technical records, 6) documented processes, 7) requests, 8) contracts, and 9) tenders</p>
III.H	<p><b>H. Official reports</b> Describe and distinguish various types of formal results reporting, such as 1) calibration certificates, 2) calibration labels, 3) nonconformance calibration reports, and 4) test reports. (Apply)</p>	
<b>IV. Measurement Uncertainty and Applied Math [25 Questions]</b>		Number of questions changed from 24 to 25
IV.A	<p><b>A. Uncertainty terminology</b> Define and explain basic terms, such as 1) guard-banding, 2) probability for false rejection (PFR, also known as Type I error), 3) probability for false acceptance (PFA, also known as Type II error), 4) test uncertainty ratio (TUR), 5) test accuracy ratio (TAR), 6) bias, 7) percent of tolerance, and 8) gage R&amp;R. (Apply)</p>	<p>Removed: 5) error</p> <p>Added: 2) probability for false rejection (PFR, also known as Type I error) and 3) probability for false acceptance (PFA, also known as Type II error)</p>
IV.B	<p><b>B. Uncertainty budget components</b></p>	Removed: 2) human factors and 5) reference standards

2017 BoK	2024 BoK Details	Notes
	Define and identify various type A and type B uncertainty components, such as 1) environment, 2) methods, 3) unit under test, 4) materials, 5) resolution, and 6) the key elements and steps of developing an uncertainty budget. (Apply)	Added: 5) resolution
IV.C	<p><b>C. Uncertainty determination and reporting</b>  Define various methods to determine and report measurement uncertainty, such as 1) combined and expanded uncertainty, 2) coverage factors, 3) confidence levels, 4) effective degrees of freedom, 5) distribution factors, 6) uncertainty calculation elements (e.g., mean, standard deviation, root sum square (RSS), and variance), and 7) statement of conformity / decision rule (e.g., simple acceptance). (Apply)</p>	<p>Removed: 2) weighted factors and 3) explanatory graphics</p> <p>Added: 5) distribution factors and 7) statement of conformity / decision rule (e.g., simple acceptance)</p>
	<b>D. Technical and applied mathematics</b>	
IV.D.1	<p><b>1. Scientific and engineering notation</b>  Express a floating-point number in scientific and engineering notation. (Apply)</p>	
IV.D.2	<p><b>2. English / Metric conversions</b>  Convert various units of measurement between English / U.S. Customary Units and metric units, such as 1) length, 2) area, 3) volume, 4) capacity, and 5) mass. (Apply)</p>	
IV.D.3	<p><b>3. Ratios</b>  Express various terms, such as 1) percentage, 2) parts per million (ppm), and 3) decibels (dB). (Apply)</p>	
IV.D.4	<p><b>4. Tables, graphs, and plots</b>  Interpret tables and graphs to determine intermediate and extrapolated values. Illustrate the aspects of slope, intercept, and linearity of data sets in relation to graphs and plots. (Analyze)</p>	Combined (a) and (b) into one subtext
IV.D.5	<p><b>5. Rounding, truncation, and significant figures</b>  Determine the resolution of calculations (e.g., number of digits and least significant digit). Round and truncate to a specified number of digits. (Apply)</p>	Added: Determine the resolution of calculations (e.g., number of digits and least significant digit).
IV.D.6	<p><b>6. Order of mathematical operations</b>  Identify the correct order for performing mathematical operations and solve equations that contain multiple operations. (Apply)</p>	
IV.D.7	<p><b>7. Algebraic equations</b>  Use basic algebra to solve for the unknown. (Apply)</p>	
IV.D.8	<p><b>8. Angular conversions</b></p>	

2017 BoK	2024 BoK Details	Notes
	Convert various angular units, such as degrees, minutes, seconds, grads, and radians. (Apply)	
	<b>V. Quality Systems and Standards [16 Questions]</b>	Number of questions changed from 15 to 16
	<b>A. Quality management systems</b>	
V.A.1	<b>1. System components</b> Define and distinguish between various components of a quality system, such as 1) management and customer focus, 2) employee training and development, and 3) continuous process improvement. (Apply)	
V.A.2	<b>2. Strategic and tactical processes</b> Identify various methods used to develop, improve, and review quality systems, such as 1) mission and goals, 2) planning and deployment, and 3) cross-functional teams. (Understand)	
V.B	<b>B. Quality control tools</b> Understand the seven basic quality tools: 1) flowcharts / process maps, 2) check sheets, 3) Pareto chart, 4) cause and effect diagrams, 5) scatter diagrams, 6) control charts, and 7) histograms. (Understand)	Decreased cognitive level from Analyze to Understand
	<b>C. Quality audits</b> Define and describe the following elements of quality audits. (Understand)	
V.C.1	<b>1.</b> Types of audits, such as internal, external, product, and process.	
V.C.3	<b>2.</b> Audit components, such as audit plan, audit purpose, and audit standard.	
	<b>D. Corrective action for nonconformances</b>	
V.D.1	<b>1. Nonconformance identification</b> Determine conformance status and compare methods with the standards. Apply various methods of identifying and segregating nonconforming IM&TE. (Evaluate)	Added: compare methods with the standards
V.D.2	<b>2. Impact assessment</b> Apply various tools for evidence (e.g., reverse traceability, customer notification, product recall, calibration standard evaluation, and root-cause analysis) in response to out-of-tolerance conditions for IM&TE and nonconforming work. (Apply)	Added: nonconforming work
V.E	<b>E. Professional conduct and ethics</b> Demonstrate appropriate behaviors that are aligned with the ASQ Code of Ethics for various situations. (Apply)	
	<b>F. Occupational safety requirements</b>	
V.F.1	<b>1. Hazards and safety equipment</b>	



<b>2017 BoK</b>	<b>2024 BoK Details</b>	<b>Notes</b>
	Assess potential hazards in the work environment, such as 1) improper ventilation, 2) soldering fumes, and 3) suboptimal workplace lighting. Identify appropriate personal protective equipment (PPE) for various situations. (Apply)	
V.F.2	<p><b>2. Occupational health and safety</b> Understand when and how to use various elements of occupational health and safety, such as 1) safety data sheet terms, 2) material labeling requirements, and 3) workplace safety. (Apply)</p>	<p>Removed: (SDS – formerly known as MSDS)</p> <p>Added: Understand when and how to use</p> <p>Increased cognitive level from Understand to Apply</p>
V.F.3	<p><b>3. Housekeeping</b> Apply housekeeping methods in the calibration environment, such as 1) maintenance, 2) 6S, 3) IM&amp;TE, and 4) cleaning. (Apply)</p>	
V.F.4	<p><b>4. Pre and post calibration condition</b> Describe proper set-up prior to calibration and how to return IM&amp;TE to safe, operational set-up upon completion. (Apply)</p>	<p>Added: IM&amp;TE</p> <p>Revised subtext for clarification</p>
	<p><b>G. Quality standards and guides</b> Explain the benefits and importance of the following documents and organizations in relation to calibration. (Understand)</p>	
V.G.1	<p><b>1. Quality standards and guides, including ISO 9001-2015, ISO / IEC 17025-2017, ISO 10012, GUM (JCGM 100:2008), and VIM (JCGM 200:2012).</b></p>	<p>Removed: ISO / IEC 17025-2005, ANSI/NCSL Z540.3-2006</p> <p>Added: ISO / IEC 17025-2017 and ISO 10012</p>
V.G.2	<p><b>2. Accreditation bodies such as those recognized by IAF (International Accreditation Forum) and ILAC (International Laboratory Accreditation Cooperation).</b></p>	<p>Added: IAF (International Accreditation Forum)</p>

**Table 3. 2017 CCT BoK mapped to the 2024 CCT BoK**

2017 BoK		2024 BoK		Notes
Code	Label	Code	Label	
<b>I. General Metrology</b>				
<b>I.A</b>	Base SI units	<b>I.A</b>	Base SI units	Added 'I.D' to the note
<b>I.B</b>	Derived SI units	<b>I.B</b>	Derived SI units	Added: 8) watt
<b>I.C</b>	SI multipliers and conversion	<b>I.C</b>	SI multipliers and conversion	
<b>I.D</b>	Fundamental constants	<b>I.D</b>	Fundamental constants	Removed: 3) universal gas constant (R) Added: 3) Planck's constant (h), 4) Avogadro constant (N <sub>A</sub> ), 5) Boltzmann (kB), and 6) elementary charge (e)
<b>I.E</b>	Common measurements	<b>I.E</b>	Common measurements	Added: 10) power, 11) dimensional, 12) viscosity, 13) volume, 14) luminosity, 15) flow, 16) energy, and 17) density Decreased cognitive level from Evaluate to Apply
<b>I.F</b>	Traceability standards and hierarchy	<b>I.F</b>	Traceability standards and hierarchy	Added: SI units and realization and dissemination of SI units
<b>I.G</b>	Measurement standards	<b>I.G</b>	Measurement standards	Added: 2) secondary
<b>I.H</b>	Substitution of standards	<b>I.H</b>	Substitution of standards	
<b>II. Measurement Systems</b>				
<b>II.A</b>	Measurement methods	<b>II.A</b>	Measurement methods	Added: (e.g., absolute and fundamental) and (e.g., comparison)
<b>II.B</b>	Measurement characteristics	<b>II.B</b>	Measurement characteristics	Increased cognitive level from Understand to Apply
<b>II.C</b>	Measurement data considerations	<b>II.C</b>	Measurement data considerations	
<b>II.D</b>	IM&TE specification terms and characteristics	<b>II.D</b>	IM&TE specification terms and characteristics	

2017 BoK		2024 BoK		Notes
Code	Label	Code	Label	
<b>II.E</b>	Error sources	<b>II.E</b>	Error sources	Added: mitigate and 4) measurement process
<b>II.F</b>	Measurement assurance program (MAP)	<b>II.F</b>	Measurement assurance program (MAP)	Added: 4) statistical process control (SPC)
<b>III. Calibration Systems</b>				
<b>III.A</b>	Calibration procedures	<b>III.A</b>	Calibration procedures	Removed: 2) revisions  Increased cognitive level from Apply to Analyze
<b>III.B</b>	Standardization and adjustment methods	<b>III.B</b>	Standardization and adjustment methods	
<b>III.C.1</b>	Industry practices	<b>III.C.1</b>	Industry practices	Removed: manufacturer recommendations
<b>III.C.2</b>	Regulations, mandates, and guidance	<b>III.C.2</b>	Regulations, mandates, and guidance	
<b>III.D</b>	Environment control	<b>III.D</b>	Environment control	Added: 6) pressure
<b>III.E.1</b>	Process flow	<b>III.E.1</b>	Process flow	
<b>III.E.2</b>	Logistical information	<b>III.E.2</b>	Logistical information	
<b>III.E.3</b>	Roles and responsibilities	<b>III.E.3</b>	Roles and responsibilities	
<b>III.E.4</b>	Scheduling	<b>III.E.4</b>	Scheduling	
<b>III.F</b>	Validation processes	<b>III.F</b>	Validation processes	Added: Apply verification of standard methods and validation of self-developed processes.
<b>III.G.</b>	Records management	<b>III.G.</b>	Records management	Removed: in both electronic and paper formats  Added: 5) technical records, 6) documented processes, 7) requests, 8) contracts, and 9) tenders

2017 BoK		2024 BoK		Notes
Code	Label	Code	Label	
<b>III.H</b>	Official reports	<b>III.H</b>	Official reports	
<b>IV. Measurement Uncertainty and Applied Math</b>				
<b>IV.A</b>	Uncertainty terminology	<b>IV.A</b>	Uncertainty terminology	Removed: 5) error  Added: 2) probability for false rejection (PFR, also known as Type I error) and 3) probability for false acceptance (PFA, also known as Type II error)
<b>IV.B</b>	Uncertainty budget components	<b>IV.B</b>	Uncertainty budget components	Removed: 2) human factors and 5) reference standards  Added: 5) resolution
<b>IV.C</b>	Uncertainty determination and reporting	<b>IV.C</b>	Uncertainty determination and reporting	Removed: 2) weighted factors and 3) explanatory graphics  Added: 5) distribution factors and 7) statement of conformity / decision rule (e.g., simple acceptance)
<b>IV.D.1</b>	Scientific and engineering notation	<b>IV.D.1</b>	Scientific and engineering notation	
<b>IV.D.2</b>	English / Metric conversions	<b>IV.D.2</b>	English / Metric conversions	
<b>IV.D.3</b>	Ratios	<b>IV.D.3</b>	Ratios	
<b>IV.D.4</b>	Tables, graphs, and plots	<b>IV.D.4</b>	Tables, graphs, and plots	Combined (a) and (b) into one subtext
<b>IV.D.5</b>	Rounding, truncation, and significant figures	<b>IV.D.5</b>	Rounding, truncation, and significant figures	Removed: a given number  Added: Determine the resolution of calculations (e.g., number of digits and least significant digit).
<b>IV.D.6</b>	Order of mathematical operations	<b>IV.D.6</b>	Order of mathematical operations	

2017 BoK		2024 BoK		Notes
Code	Label	Code	Label	
IV.D.7	Algebraic equations	IV.D.7	Algebraic equations	
IV.D.8	Angular conversions	IV.D.8	Angular conversions	
<b>V. Quality Systems and Standards</b>				
V.A.1	System components	V.A.1	System components	
V.A.2	Strategic and tactical processes	V.A.2	Strategic and tactical processes	
V.B	Quality control tools	V.B	Quality control tools	Decreased cognitive level from Analyze to Understand
V.C.1	Types of audits such as internal, external, product, and process.	V.C.1	Types of audits, such as internal, external, product, and process.	
V.C.2	Roles and responsibilities of auditor, auditee, and client.	—	—	Removed original V.C.2 from BoK
V.C.3	Audit components including but not limited to audit plan, audit purpose, and audit standard.	V.C.2	Audit components, such as audit plan, audit purpose, and audit standard.	
V.C.4	Auditing tools such as checklist, and final report.	—	—	Removed original V.C.4 from BoK
V.D.1	Nonconformance identification	V.D.1	Nonconformance identification	Added: compare methods with the standards
V.D.2	Impact assessment	V.D.2	Impact assessment	Added: nonconforming work
V.E	Professional conduct and ethics	V.E	Professional conduct and ethics	
V.F.1	Hazards and safety equipment	V.F.1	Hazards and safety equipment	
V.F.2	Occupational health and safety	V.F.2	Occupational health and safety	Removed: (SDS – formerly known as MSDS)  Added: Understand when and how to use  Increased cognitive level from Understand to Apply

2017 BoK		2024 BoK		Notes
Code	Label	Code	Label	
V.F.3	Housekeeping	V.F.3	Housekeeping	
V.F.4	Pre and post calibration condition	V.F.4	Pre and post calibration condition	Added: IM&TE Revised subtext for clarification
V.G.1	Quality standards and guides such as ISO/IEC 17025-2005, ANSI/NCSL Z540.3-2006, ISO 9001-2015, GUM (JCGM 100:2008), and VIM (JCGM 200:2012).	V.G.1	Quality standards and guides, including ISO 9001-2015, ISO / IEC 17025-2017, ISO 10012, GUM (JCGM 100:2008), and VIM (JCGM 200:2012).	Removed: ISO / IEC 17025-2005, ANSI/NCSL Z540.3-2006 Added: ISO / IEC 17025-2017 and ISO 10012
V.G.2	Accreditation boards, such as those recognized by ILAC (International Laboratory Accreditation Cooperation).	V.G.2	Accreditation bodies such as those recognized by IAF (International Accreditation Forum) and ILAC (International Laboratory Accreditation Cooperation).	Added: IAF (International Accreditation Forum)