

WORKING AREAS:

- 1. LENGTH / SIZE**
- 2. ELECTRIC**
- 3. TIME and FREQUENCY**
- 4. TEMPERATURE**
- 5. RADIATION TEMPERATURE**
- 6. MOISTURE**
- 7. ACOUSTIC**
- 8. VIBRATION**
- 9. OPTICAL**
- 10. FORCE**
- 12. TORQUE**
- 13. PRESSURE**
- 14. MASS**
- 15. FLUID FLOW**
- 16. DENSITY**
- 17. VOLUME**
- 18. VISCOSITY**
- 19. REFERENCES**

In the presentation of the scope of accreditation for calibration laboratories, the measurement sizes indicated below and the device class and devices that can be calibrated with these fields should be specified .

1. LENGTH / SIZE

1.1 Radiations in “Mise En Pratique ” Document

1.1.1 Laser

1.1.2 Spectrum Lamp

1.2 Linear Dimensions

Length

1.2.1 Measuring Devices

- Interferometers (laser , length) (system , optical equipment ,
- refractometer) Electromagnetic / Electronic Distance Meters (EDM device)
- 1-Dimensional Measuring Device (Universal
- etc.) Height Measuring Device
- 1-Size Progress Amount Measurement Devices [Transducer , Actuator , Inductive Probe] (LVDT, PZT,...)
- Gauge Block Comparators
- Measurement Time Test Device (Measurement Time calibrator , Comparator Calibrator etc.).

1.2.2 Size Standards

- Gauge Block (Short 0.5 mm - 100 mm)
- Long Gauge Block (Length Bar) (125 mm - 1000 mm)
- Micrometer Adjustment Bar [Flat , Screw]
- Step Gauge
- Gap Gauge
- Thickness Gauge (Sentil etc.) (Feeler gauge)

1.2.3 Line Standards

- Precision Line Scale
- Microscope Control Micrometer (Stage
- Micrometer) Grid Plate
- 1-Size Grating
- 2-Dimension
- Grating Line
- Thickness Standard
- Tape Measure (Land , Workshop , Pi), (Geodesic) Wire
- Terrain Leveling Bar (Mira etc.)
- Steel Ruler , Workshop or Mechanical Work Scales

1.2.4 Diameter Standards

- Outer Cylinder (Buffer Gauge (Ref, Pass-Through etc.), Piston, Pin (Screw Measuring



Pins), Wire, Set Gauge)

- Inner Cylinder (Ring Gauge (Ref, Pass Through, etc.))
- Globe (Ball, Screw Measuring Probes (T-Probe))

1.3 Pain

1.3.1 Apartment Divisions with Angle resulting Eden Device / Standards

- Optical Polygon Index Table
- Rotary Table , Scale with Rotary Encoder

1.3.2 Small-Angle Manufacturers

- Sinus (Bar, Table)

1.3.3 Angle Measuring Devices

- autocollimator Electronic
- Level Meter Clinometer
- Water Scale
- Theodolite Total station
- Nivo
- (Bevel) Protractor
- Steepness Measuring Devices

1.3.4 Angle Artifacts (Standards)

- Angle Gauge Block
- 90 ° (Steel , Granite) Perpendicular Standard
- 90 ° Cylinder Perpendicularity Standard Taper Gauge (Taper gauge)
- X- Block
- V- Block

1.3.5 Angle Prisms

- Optic Perpendicular Standard (Optic Square, Pentaprism)
- Retroreflector (Cube- Corner, Cat-Eye) Prism

1.3.6 Flatness Standards

- Optical Flat
- Optical Parallel (Parallel Slope)
- Mirror
- plates

1.3.7 Roundness Standards

- Outer Cylinder (Roundness measurements outer diameter)
- Inner Cylinder (Roundness measurements inner diameter)
- Globe - semi- sphere
- Magnification Rate Standard (Flik Standard)

1.3.8 Linearity Standards

- Linearity (Gauge) Standard
- Cylindrical Linearity Standard

- Recording / Sled Linearity

1.3.9 Cylindrical Standards

- Outer Cylinder (Cylindrical Measurements Outer Diameter) Inner
- Cylinder (Cylindrical Measurements Outer Diameter)

1.3.10 Optical Standards

- Lens (Lens) Radius
- Standards

1.4 Complex Geometry

1.4.1 Surface Roughness Standards

- (Groove) Depth (Step Height) Standard (Ex . ISO 5436-1 Type A) End-
- Control Standard (Ex . ISO 5436-1 Type B)
- Wavelength Standard (Ex . ISO 5436-1 Type C) Surface
- Roughness Standard (Ex . ISO 5436-1 Type D) Profile
- Coordinate Standard (Ex . ISO 5436-1 Type E)
- Software Measurement Standard (Reference Software Data Set)

1.4.2 Screw Standards

- Straight Screw Buffer Gauge
- Conical Screw Buffer Gauge
- Straight Screw Ring Jig Conical
- Screw Ring Jig
- API Type Screw Gauge : Internal Diameter API
- Type Screw Gauge : Outside Diameter

1.4.3 Gear Wheel Standards

- Straight Gear Wheel Bevel
- Gear Wheel Gear Wheel
- Gauge
- Gear Wheel Progress Gauge Gear
- Wheel Evolvent Gauge

1.4.4 CMM Artifacts

- Sphere (Hole) Plate Ball
- Rod Great
- CMM Artifact
- Reference Software

1.4.5 2 - Dimension 3-Dimensional Measuring Devices

- Projection Device Measuring
- Microscope
- Three Dimensional Measuring Device (CMM)
- Laser Tractor Measuring System Motion (
- Location Change Angle) Unit Profile
- Measuring Device
- Flatness (wavefront) Interferometer
- Form Measuring Device
- Surface Roughness Measurement Device

1.4.6 Hardnes

- Rockwell Hardness Tip Vickers
- Hardness Tip

1.5 Various Dimensional Equipment and Standards

1.5.1 Handheld Basic Measuring Devices

- Micrometer
 - Outer Diameter
 - Micrometer Micrometer Head
 - Depth Micrometer
 - Two dotted Inner Diameter Micrometer
 - Three -Point Internal Diameter Micrometer
- calipers
 - Caliper (Outer diameter , inner diameter , depth , step measurements)
 - Depth caliper



- Depth Gauge Measure
- Time
 - Secretion Comparator (Precision Probe)
 - Measuring Hours (Comparator)
 - the indicator
- Fork Gauge (inside , outside)
- Profile Gages Screw
- Tooth Combs Radius
- Gages
- Eddy Current Test Blocks
- Ultrasonic Test Blocks Applicator
- grindometer
- Paint adhesion Test Comb (Cross-Cut) EN ISO 2409 Hole
- gauge (Bore Gauge etc.)
- Hole Template
- Thickness Gauge (Inside , outside , passometers etc.)

1.5.2 Pressure Artifacts

- Piston / Cylinder Unit

1.5.3 Temperature Elongation

- Elongation Coefficient of Temperature Artifact

1.5.4 Long Distance

- Geodesic Station Points (Triangulation Points)

1.5.5 Reference Materials

- Standard Particle
- [Sieve , Network] Opening (Aperture)

1.5.6 Coating Thickness

- Coating Thickness Standard (Thickness Foils)
- Coating Thickness Measurement Device

1.5.7 Refractive Index

- Refractometer for Optical Materials

2. ELECTRIC

2.1 DC Voltage (≤ 1100 V)

2.1.1 DC Voltage Sources

- DC Voltage Standard DC
- Voltage Source
- Calibrator : DC Voltage

2.1.2 DC Voltage Meters

- Multimeter : DC Voltage
- Multi -Function Transfer Standard : DC Voltage
- Nanovoltmetr to
- Mikrovoltmetr
- to DC Voltmeter

2.1.3 DC Voltage Ratios

- Resistive Divider
-
-



DC Voltage Divider
Proportion Meter

2.2 DC Resistor

2.2.1 DC Resistance Standards and Resources

- DC Resistance Standard
- Calibrator : Resistance
- DC Current Shunt
- Resistance Box
- Resistance : Temperature Coefficient
- Resistance : Power Factor

2.2.2 DC Resistance Meters

- Multimeter : Resistance
- Multi -Function Transfer Standard : Resistance
- Mikroohmmeter to
- ohmmeter
- Teraohmmeter to
- Resistance Bridge
- Insulation Test Device

2.3 Electrical Conductivity

- Metal Materials
- Semiconductor and Similar Materials
- Electrical Conductivity Meter (Metal materials)

2.4 DC Current (<100 A)

2.4.1 DC Current Sources

- DC Current Source
- Calibrator : DC Current
- Transconductance Amplifier

2.4.2 DC Current Meters

- Multimeter : DC Current
- Multi Function Transfer Standard : DC Current
- Pikoampermetr to
- Nanoampermetr to

2.5 AC Resistor

- Ammeter
- Pensampermetr to

2.5.1 AC Resistance Standards

- Real Component
- Virtual Component

2.5.2 High Current AC Resistance Standards (Shunts)

2.5.3 AC Resistance Meters

- LCR Meter : AC Resistance

2.6 Capacitance

2.6.1 Capacitor

- Capacitance
- Standards



- Capacitance Boxes

2.6.2 Loss Factor

- Capacitance
- Standards
Capacitance Boxes

2.6.3 Capacitance Meters

- LCR Meter : Capacitance
- Capacitance Bridge

2.7 Inductance

2.7.1 Inductor

- Inductance Standard
- Mutual Inductance
- Standard Inductance Box

2.7.2 Inductance Meters

- LCR Meter : Inductance

2.8 AC Voltage (≤ 1100 V)

2.8.1 AC-DC Transfer Standards

- Thermal Converter
- AC-DC Transfer Standard
- Mikropotansiyometr to
Standard
- AC Measurement
Standard

2.8.2 AC Voltage Sources

- AC Voltage Source
- Calibrator : AC Voltage
- AC Calibrator

2.8.3 AC Voltage Meters

- Multimeter : AC Voltage
- Multi Function Transfer Standard : AC Voltage AC
- Measurement Standard
- AC Voltmeter

2.8.4 AC Voltage Ratios

- real
 - Inductive Voltage Divider
 - AC Bridge Standard Syncro
 - -resolver
- Virtual
 - Inductive Voltage Divider
 - AC Bridge Standard
 - Syncro -resolver
- debilitation
 - Inductive Voltage Divider
 - Attenuator box
- Gain
Attenuator box

2.9 AC Current (<100 A)

2.9.1 AC-DC Current Transfer Standard

- Thermal Current Converter
- Thermal Converter and AC / DC Current Shunt
- AC-DC Transfer Standard and AC / DC Current Shunt AC /
- DC Current Shunt

2.9.2 AC Current Sources

- AC Current Source
- Calibrator : AC Current
- Transconductance Amplifier

2.9.3 AC Current Meters

- Multimeter : AC Current
- Multi -Function Transfer Standard : AC Current AC
- Ammeter
- Pensampermetr to

2.10 AC Power and Energy

2.10.1 Active Power : Single Phase

- Power Meter
- Wattmeter
- power
Inverter

2.10.2 Active Power : Three Phases

- Power
- Meter
Wattmeter

2.10.3 Reactive Power : Single Phase

- Power Meter
- Wattmeter

2.10.4 Reactive Power : Three Phases

- Power Meter
- Wattmeter

2.10.5 Apparent Power : Single Phase

- Power Meter
- Wattmeter

2.10.6 Active Energy : Three Phases

- Energy Meter

2.10.7 Reactive Energy : Three Phases

- Energy Meter

2.11 DC High Voltage (> 1100 V)

2.11.1 DC High Voltage Sources

- DC Kilovolt Welding
- Insulation Test Device

2.11.2 DC High Voltage Meters

- DC Kilovoltmeter
- DC High Voltage Measurement System

2.11.3 DC High Voltage Ratios



- High Voltage Resistive Divider High
- Voltage Probe

2.12 AC High Voltage (> 1100 V)

2.12.1 AC High Voltage Sources

- AC High Voltage Source

2.12.2 AC High Voltage Meters

- AC High Voltage Meter
- AC High Voltage Measurement System (Resistive and Capacitive Divider)



- High Voltage Probe
- 2.12.3 AC High Voltage Peak Value Meters
 - AC High Voltage Meter
 - AC High Voltage Measurement System (Resistive and Capacitive Divider) High
 - Voltage Probe
- 2.12.4 Ratio Error
 - Voltage Transformer
 - Voltage Transformer Bridge
- 2.12.5 Phase shift
 - Voltage Transformer
 - Voltage Transformer Bridge
- 2.13 DC High Current (> 100 A)
 - 2.13.1 DC High Current Sources
 - 2.13.2 DC High Current Meters
 - 2.13.3 DC High Current Rate
- 2.14 AC High Current (> 100 A)
 - 2.14.1 AC High Current Sources
 - 2.14.2 AC High Current Meters
 - 2.14.3 Ratio Error
 - Current Transformer
 - Current Transformer Bridge
 - 2.14.4 Phase Shift
 - Current Transformer
 - Current Transformer Bridge
- 2.15 Electrical Discharge
 - 2.15.1 Visible Load
 - Partial Discharge Calibrator
 - Partial Discharge Measurement Device
 - 2.15.2 Response
 - Electrostatic Discharge Target
- 2.16 Pulsed High Voltage and Current
 - 2.16.1 Lightning Impulse Voltage Parameter
 - Lightning Impulse Voltage Measurement System
 - Impact Calibrator
 - Digital Recorder / Meter
 - 2.16.2 Lightning Pulse Time Parameter
 - Lightning Impulse Voltage Measurement System
 - Impact Calibrator
 - Digital Recorder / Meter
 - 2.16.3 Switching Pulse Voltage Parameter
 - Switching Pulse Voltage Measurement System
 - Impact Calibrator
 - Digital Recorder / Meter
 - 2.16.4 Switching Pulse Time Parameter
 - Switching Pulse Voltage Measurement System
 - Impact Calibrator



- Digital Recorder / Meter
- 2.16.5 Pulse Current Parameter
 - Pulse Current Measurement
 - System Impact Divider
- 2.16.6 Pulse Current Time Parameter
 - Pulse Current Measurement
 - System Impact Divider



2.16.7 Pulse Energy

- Impact Calibrator
- Shunt
- transducer

2.17 High Voltage Impedance

2.17.1 Capacitance and Loss Factor

- Compress Gas Capacitor
- High Voltage Capacitor

2.17.2 Inductance and Loss Angle

- High Voltage Reactor

2.17.3 Resistance

- High Voltage Resistance

2.17.4 Impedance

- Standard Loads for Measurement Transformers

2.17.5 Phase Shift

- Standard Loads for Measurement Transformers

2.18 Radio Frequency (RF) Power

2.18.1 Absolute RF Power

- RF Power Supply
 - Reference Power Output of RF Power
 - Meters Signal Source
- RF Power Meter
 - RF Power Meter
 - Spectrum Analyzer

2.18.2 Calibration Factor , Efficient Efficiency

- Thermistor
- Power Sensor (Thermocouple , Diode Sensor)

2.19 Reflection Coefficient and Attenuation Ratio Size (In case of Vector Network Analyzer and similar devices are not used)

2.19.1 Reflection Coefficient

- Passive Microwave Circuit Element

2.19.2 Attenuation Rate

- reducing
- Two Door Passive Microwave Circuit Element

2.19.3 Directivity , Effective Source Reflection Coefficient

- Directional Connectors
- Power Dividers

2.20 Scattering (S) Parameters (Vector)

2.20.1 Reflection Coefficient (S_{ii})

- Passive Microwave Circuit Element

2.20.2 Transmission Coefficient (S_{ij})

- reducing
- Two Door Passive Microwave Circuit Element

2.20.3 Directivity , Effective Source Reflection Coefficient

- Directional Connectors



- Power Dividers

2.21 RF Noise

2.21.1 Noise Temperature or Excessive Noise Rate (ENR)

- Noise Source

2.21.2 Amplifier Noise Parameters

- amp

2.21.3 Phase Noise

- Sign Source



2.22 RF Voltage and Current

2.22.1 RF-DC Difference

- Thermal Voltage Inverter
- AC-DC Current Standard

2.22.2 RF Voltage Source

2.22.3 RF Voltmeter

2.22.4 RF Current Source

2.22.5 RF Transfer Impedance

- RF Current Clamp
- ESD target

2.22.6 RF Voltage Divider Factor

- Burst Adapter
- Oscilloscope Probe

2.22.7 RF Coupling Factor

- Coupling-Decoupling Network (CDN)
- EM Current Clamp
- Absorption Clamp

2.23 Electrostatic Field Intensity

- Electrostatic Field Meter
- Electrostatic Generator

2.24 Electric Field Intensity

- Electric Field Intensity Meter
- Electric Field Probe

2.25 Magnetic Flux

- Flux Meter
- Flux Etalon

2.26 DC Magnetic Flux Density and Intensity

- Magnetic Flux Density Meter
- Magnetic Field Strength
Meter

2.27 AC Magnetic Flux Density and Intensity

- Magnetic Flux Density Meter
- Magnetic Field Strength
Meter

2.28 Antenna Features

2.28.1 Antenna Factor

2.28.2 Antenna Gain

2.29 Signal and Pulse Characteristics

2.29.1 Vertical Deflection (Gain)

- Oscilloscope



2.29.2 Horizontal Deflection (Time)

- Oscilloscope

2.29.3 Rise Time

- Oscilloscope

2.29.4 Band Width

- Oscilloscope

2.29.5 Pulse Amplitude

- Impact Source
- Function Source

2.29.6 Pulse Time Parameters

- Impact Source



- Function Source
- 2.29.7 Modulation , AM and FM
 - Signal Source
 - Spectrum Analyzer
 - Modulation Meter
 - Jitter Gauge
- 2.29.8 Distortion and Harmonic
 - Components Signal Source
 - Distortion Meter
 - Spectrum Analyzer

3. TIME and FREQUENCY

3.1 Frequency

3.1.1 Frequency Sources

- Frequency Standard
- Frequency Generator

3.1.2 Frequency Meters

- Frequency Counter
- Tachometer
- Strobe

3.2 Time Range

3.2.1 Period Resources

- Period Source

3.2.2 Time Range Sources

- Rise / Fall Time Source
- Pulse Width Source
- Time Difference Source
- Delay Source

3.2.3 Period Meters

- Period Meter

3.2.4 Time Interval Meters

- Rise / Fall Time Meter
- Pulse Width Meter
- Time Difference Meter
 - Frequency Counter
 - Stopwatch
 - Timer
- Delay Meter

4. TEMPERATURE

4.1 Contact Temperature Fixed Point Cells

4.1.1 Primary Level Fixed Point Cell



4.1.2 Secondary Level Fixed Point Cell

4.2 Standard Platinum Resistance Thermometers (SPRT)

4.2.1 Capsule Type SPRT

4.2.2 Long Body SPRT (including HTSPRT)

4.3 Resistance Thermometers

4.3.1 Platinum Resistance Thermometers (PRT)

4.3.2 Industrial Platinum Resistance Thermometers (PRT)

4.3.3 Thermistor

4.4 Thermocouples

4.4.1 Platinum Based Reference

- Thermocouples R
- S
- B
- Platinum / Podium (Pt / Pd)
- Gold / Platinum (Au / Pt)

4.4.2 Industrial Thermocouples

- T
- E
- K
- N
- J
- U
- L

4.5 Liquid Glass Thermometers

4.6 Indicator Temperature Monitors (thermistor , resistance , thermocouple sönsör of the)

4.7 Other Thermometers

4.7.1 Surface Temperature Thermometers

4.7.2 Weather Sensors

4.8 Other Measurement Services

4.8.1 Compensation Cables for Cold Joints

4.8.2 Wire Melting Point Cable for Thermocouples

4.8.3 Temperature Indicators and

- Calibrators Temperature Indicator
 - Cold Joint ON
 - Cold Joint OFF
- Temperature Calibrator
 - Cold Joint ON
 - Cold Joint OFF

4.8.4 Controlled Volumes (Temperature Distribution)

- oven
- incubator
- Cold room (deep freezer
- etc.). Air Conditioning Cabinet



Sterilizer (Autoclave)

- Liquid Bath
- Ash Oven

4.8.5 Dry Block Calibrators

5. RADIATIONTEMPERATURE

5.1 Radiation Temperature Fixed Point Cells

5.1.1 Primary Level Fixed Point Cell

5.1.2 Secondary Level Fixed Point Cell

5.2 Reference Radiation Thermometers

5.3 Industrial Radiation Thermometers

- Pyrometer
- Thermal Camera
- IR Thermometer
- IR Ear Thermometer

5.4 Variable Temperature Black Body Sources

- Black Body
- IR Calibrator



5.5 Strip Lamps

- Vacuum Lamp
- Gas Lamp

6. MOISTURE

6.1 hygrometer

- Dew Point Temperature Meter
- Hygrometer
- Relative Humidity Meter (Capacitive , resistive , thermograph , mechanical , wet / dry chamber)
- Wetness Meter

6.2 Dynamic Resources

- Dew Point Source
- Relative Humidity Source
- Mixing Flow

6.3 Static Sources



6.3.1 Salt Solution

- Saturated Salt Solution
- Unsaturated Salt Solution

6.3.2 Reference Gases

6.4 Controlled Volumes (Relative Humidity Distribution)

- Air Conditioning Cabinet
- Relative Humidity Source
- Sterilizer (Autoclave)

7. ACOUSTIC

7.1 Sound in Air Environment

- 7.1.1 Microphone : Pressure Sensitivity
- 7.1.2 Microphone : Free Field Sensitivity
- 7.1.3 Microphone : Scattered Field Sensitivity
- 7.1.4 Sound Calibrator : Sound Pressure Level : Single Frequency
- 7.1.5 Sound Calibrator : Sound Pressure Level : Multi Frequency
- 7.1.6 Sound Level Meter : Sound Pressure Response Level
- 7.1.7 Sound Level Meter : Free Field Response Level
- 7.1.8 Sound Level Meter : Scattered Field Response Level
- 7.1.9 Sound Level Meter : Audio Violence Response Level
- 7.1.10 Artificial Ear: System Response Level
- 7.1.11 Artificial Ear: Acoustic Impedance
- 7.1.12 Reference Sound Source : Sound Power Level
- 7.1.13 Reference Sound Source : Versatility Response
- 7.1.14 Audiometer . Air Transmission Response Level
- 7.1.15 Audiometer . Bone Conduction Response Level

7.2 Sound in Water Environment

- 7.2.1 Ultrasonic Hydrophone : Free Field Sensitivity
- 7.2.2 Non- Ultrasonic Hydrophone : Free Field Sensitivity
- 7.2.3 Non- Ultrasonic Hydrophone : Pressure Level
- 7.2.4 Ultrasound Transducer : Ultrasonic Power
- 7.2.5 Ultrasound Transducer : Routing
- 7.2.6 Ultrasound Transducer : Ultrasonic Pressure

8. VIBRATION

8.1 Linear Vibration

- 8.1.1 Vibration Measuring Device : Frequency Response
- 8.1.2 Vibration Measuring Device : Shock response
- 8.1.3 Acceleration Calibrator : Acceleration Output (Sinus)
- 8.1.4 Acceleration Calibrator : Shock Output
- 8.1.5 Acceleration Meter : Load Sensitivity
- 8.1.6 Acceleration Meter : Shock Sensitivity
- 8.1.7 Acceleration Measuring Chain : Tension Accuracy
- 8.1.8 Acceleration Measurement Chain : Shock Sensitivity

8.2 Angular Vibration

- 8.2.1 Angular Vibration Measuring Device : Angular Acceleration Response
- 8.2.2 Angular Vibration Measuring Device : Impulse Response
- 8.2.3 Angular Acceleration Calibrator : Angular Acceleration Output (Sinus)
- 8.2.4 Angular Momentum Meter : Load Sensitivity
- 8.2.5 Angular Acceleration Measuring Chain : Tension Accuracy

9. OPTICAL

9.1 Photometry

- 9.1.1 Light Intensity
 - Tungsten Lamp
 - LED
- 9.1.2 Light Sensitivity
 - Illuminometers to
- 9.1.3 Luminous Flux
 - Tungsten Lamp
 - LED
- 9.1.4 Brightness Level
 - Tungsten Lamp
- 9.1.5 Shine (Luminosity)
 - Tungsten Based Welding
- 9.1.6 Sparkle Sensitivity
 - Sparkle Gauge
- 9.1.7 Light Exposure
 - General Source
 - FlashPhotometer

9.2 Features of Detectors

- 9.2.1 Sensitivity , Spectral , Power
 - Broadband Detector
- 9.2.2 Sensitivity , Spectral , Radiation Level
 - Broadband Detector
 - spectroradiometer
- 9.2.3 Sensitivity , Spectral , Radiation
 - spectroradiometer
- 9.2.4 Sensitivity , Laser , Power
 - General Detector
- 9.2.5 Sensitivity , Laser , Energy
 - General Detector
- 9.2.6 Sensitivity , Sun , Power
 - General Detector
- 9.2.7 Sensitivity , Sun , Radiation Level
 - General Detector



9.2.8 Sensitivity , Black Body , Total Radiation Level

- Broadband Detector

9.2.9 Sensitivity , Ultraviolet , Broadband Radiation Level

- UV Radiometer

9.2.10 Sensitivity , Ultraviolet , Broadband Radiation Exposure

- UV Radiometer

9.3 Spectral Extension Properties of Resources

9.3.1 Radiation Level , Spectral

- Tungsten Lamp
- Deuterium Lamp

9.3.2 Radiation , Spectral

- Tungsten Lamp
- Deuterium Lamp

9.3.3 Optical Power , Spectral Total Radiation

- Laser

9.3.4 Radiation Intensity , Spectral

- Tungsten Lamp
- Deuterium Lamp

9.4 Spectral-Total Measurements of Sources and Detectors

9.4.1 Distribution Temperature

- Tungsten Lamp

9.4.2 Associated Color Temperature

- Tungsten Lamp

9.4.3 Correlated Color Temperature Sensitivity

- Color Temperature Meter

9.4.4 Color , Radiating

- General Source , xy
- General Source , uv
- General Source , u'-v '

9.4.5 Indicator , Color Space , L * a * b *

9.4.6 Trilogical Sensitivity

- colorimeter

9.4.7 Color Rendering Index , R_a

- General Source

9.4.8 Radiation , Total

- Black Body

9.5 Properties of Materials

9.5.1 Permeability , Regular , Spectral

- Spectral Neutral Material

9.5.2 Permeability , Messy , Spectral

- Spectral Neutral Material

9.5.3 Absorption , Regular , Spectral

- Spectral Neutral Material

9.5.4 Absorption , Messy , Spectral

- Spectral Neutral Material



- 9.5.5 Reflection , Regular , Spectral
 - Spectral Neutral Material
- 9.5.6 Reflection , Diffuse , Spectral
 - Spectral Neutral Material
- 9.5.7 Emissivity
 - General Material
- 9.5.8 Release , Spectral
 - General Material
- 9.5.9 BRDF
 - General Material
- 9.5.10 Reflection Factor
 - General Material
- 9.5.11 Radiation Factor
 - General Material
 - Fluorescent Material
- 9.5.12 Luminescent Radiation Factor
 - Fluorescent Material
- 9.5.13 Wavelength
 - Spectral Selective Permeable
 - Material Spectral Selective Reflective Material
- 9.6 Color and Other Spectral Total Measurements of Materials
 - 9.6.1 Color , Surface , x , y , Y
 - General Material
 - Fluorescent Material
 - Diffuse Reflective Material
 - 9.6.2 Color , Surface , L * a * b *
 - General Material
 - Fluorescent Material
 - Diffuse Reflective Material
 - 9.6.3 Color , Passed , x , y , Y
 - General Material
 - 9.6.4 Color , Passed , L * a * b *
 - General Material
 - 9.6.5 Mirroring Back
 - General Material
 - 9.6.6 Brightness
 - General Material
 - 9.6.7 Haze
 - General Material
 - 9.6.8 Glow Factor
 - General Material
 - 9.6.9 Shine Coefficient
 - General Material
 - 9.6.10 Whiteness
 - General Material



9.7 Fiberoptic

9.7.1 Sensitivity

- Fiberoptic Power Meter

9.7.2 Wavelength

- Fiberoptic Source
- Optical Spectrum Analyzer
- Wavelength Meter

9.7.3 Attenuation

- Optical Fiber
- Optical Fiber Component

9.7.4 Chromatic Dispersion

- Optical Fiber
- Zero Wavelength , Optical Fiber
- Slope , Optical Fiber

9.7.5 Length

- Optical Fiber
- Optical Time Reflectometer (OTDR)



10. FORCE

10.1 Force Measuring Devices

- Load Cell
- Force Transducer
- Dynamometer

10.2 Force Calibration Machines

10.3 Material Testing Machines

- Tensile / Compression Testing Machine
- Compression Testing Machine
- Tensile Testing Machine
- Concrete Test Presses
- Notch Impact Test Device
- extensometer

11th. HARDNESS

11.1 Hardness Reference Block

- Rockwell Hardness Reference Block
- Brinell Hardness Reference Block
- Vickers Hardness Reference Block

11.2 Hardness Testing Device

- Rockwell Hardness Testing Device
- Brinell Hardness Testing Device
- Vickers Hardness Testing Device
- Portable (handheld) Hardness Testing Device
- Shore Hardness Testing Device
- IRHD Hardness Testing Device

11.3 Hardness Tip

- Rockwell Ball-Taper Diamond Tip
- Vickers Pyramid Diamond Tip
- Brinell and Rockwell Ball Nib
- Shore, IRHD and Other Tips

12. TORQUE

12.1 Torque Measuring Instruments

- Torque Calibration Machine
- Torque Converter
- Reference Torque Wrench
- Torque Hand Tools Calibration System
- OrkTorqueHandTools
- Torque Magnifier



13. PRESSURE

13.1 Relative Pressure (Hydraulic / Pneumatic)

- Analog Manometer
- Digital Manometer
- Pressure Calibrator
- Pressure Transducer
- Pressure Transmitter
- Piston Pressure Standard (Dead Weight Tester)
- Differential Pressure Meter



13.2 Absolute
Pressure

- Analog Manometer
- Digital Manometer
- Pressure Transducer
- Pressure Transmitter
- Analog Barometer
- Numerical Barometer
-

13.3 Vacuum Gauge Calibration

- Capacitance Diaphragm Type Vacuum Gauge
- Rotary Rotor Type Vacuum Gauge (SRG) Hot
and Cold Cathode Type Vacuum Gauge
- Pirani, thermal conductivity , Thermocouple Type Vacuum Gauge

14. MASS

14.1 Mass
Standard

- Class E1 Mass
- Class E2 Mass
- F1 Class Mass
- Class F2 Mass
- M1 Class Mass
- M2 Class Mass
- M3 Class Mass

14.2 Non- Automatic Weighing Devices

- Scales

15. FLUID FLOW

15.1 Volumetric Fluid Flow

15.1.1 Volumetric Water Flow

- Water Meter

15.1.2 Volumetric Hydrocarbon Flow

- Fuel Counter

15.2 Volumetric Gas Flow

- Gas Meter

15.3 Mass Fluid Flow

15.3.1 Mass Water Flow

- Water Meter

15.3.2 Mass Hydrocarbon Flow

- Fuel Counter

15.4 Mass Gas Flow

- Gas Meter

15.5 Flow Rate

15.5.1 Gas Flow Rate



- Anemometer

15.5.2 Liquid Flow Rate

- Anemometer

15.6 Heat Flow

- Hot Water Meters

16. DENSITY

16.1 Solid Density

16.2 Liquid Density



16.3 hydrometer (Density Measurement Device)

- Specific Gravity (Relative Density) Hydrometers
- Alcoholimeter (% Hydrometers)
- Bomehidrometr to
- Api Hydrometer / Thermohydrometer

17. VOLUME

17.1 Volume Containers

- Balloon Joje
- Meza is
- Pyknometer
- Pipette
- Burette

18. viscosity

18.1 Flow Cups

19. REFERENCES

- CCAUV Classification Of Services in Acoustics, Ultrasound And Vibration, October 2010
- CCEM Classification of Services in Electricity And Magnetism , Version No 7.6, 17 March 2011
- CCL Length Services Classification (I dimv),
- CCM Classification of Services in Mass And Related Quantities, 21 October 2003
- CCPR Classification of Services in Photometry And Radiometry, Version No 10, January 2009
- CCT Classification of Services in Thermometry, May 2010
- CCTF Classification of Services in Time And Frequency , Version 1.0, December 2002