PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Organization of:

Covalent Metrology

921 Thompson Place, Sunnyvale, CA 94085

and hereby declares that the Organization is accredited in accordance with the recognized International Standard:

ISO/IEC 17025:2017

Whereby, technical competence has been confirmed for the associated scope supplement, in the fields of:

Chemical, Dimensional Inspection, Optical, Mechanical, and Non-Destructive Testing

(As detailed in the supplement)

Accreditation claims for conformity assessment activities shall only be made from the addresses referenced within this certificate and shall apply solely to those activities identified in the related scope. This Accreditation is granted subject to the Accreditation Body rules governing the Accreditation referred to above, and the Organization hereby commits to observing and complying with those rules in their entirety.

For PJLA:

Tracy Szerszen
President

Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

Initial Accreditation Date:	*Issue Date:*	*Expiration Date:*
November 11, 2025	November 11, 2025	December 31, 2027

Accreditation No.:	*Certificate No.:*
129554	L25-835

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjlabs.com

Certificate of Accreditation: Supplement

Covalent Metrology

921 Thompson Place, Sunnyvale, CA 94085
Contact Name: Craig Hunter Email: Craig@covalentmetrology.com

Accreditation is granted to the facility to perform the following conformity assessment activities:

FIELD OF TEST	ITEMS, MATERIALS, OR PRODUCTS TESTED	COMPONENT, CHARACTERISTIC, PARAMETER TESTED	SPECIFICATION OR STANDARD METHOD	TECHNOLOGY OR TECHNIQUE USED	FLEX CODE	LOCATION OF ACTIVITY
Non-Destructive	Various Solid Materials	Imaging of solid materials and detection of surface and internal flaws or weaknesses (e.g. voids, delamination, or cracks)	COV-26-SOP AWS C3.7 NASA PEM INST-001	Scanning Acoustic Microscopy (SAM)	F1, F2, F4	F
Non-Destructive	Crystalline materials	Crystal structure	COV-29-SOP ASTM D5187	X-Ray Diffraction (XRD)	F1, F2, F4	F
Non-Destructive	Crystalline materials	Phase composition and Preferred Orientation	COV-29-SOP	X-Ray Diffraction (XRD)	F1, F4	F
Non-Destructive	Various Solid Materials	High-resolution 2D and 3D imaging of internal material features	COV-31-SOP	Micro CT (µCT)	F1, F4	F
Dimensional Inspection	Various Solid Materials	Atomic-resolution imaging to study very small features down to nanoscale. Elemental analysis	COV-11-SOP ISO 29301	Transmission Electron Microscopy (TEM)	F1, F2, F4	F
Dimensional Inspection	Various Solid Materials	High-resolution imaging and analysis of materials at the nanoscale	COV-12-SOP ASTM E2142 ASTM E766	Dual Beam Focused Ion Beam (FIB) SEM	F1, F2, F4	F
Dimensional Inspection	Various Solid Materials	High-resolution surface imaging and compositional elemental analysis of a variety of materials	COV-13-SOP ASTM E1508	Scanning Electron Microscopy/Energy Dispersive Spectroscopy (SEM-EDS)	F1, F2, F4	F
Dimensional Inspection	Various Solid Materials	Surface topography imaging and measurement of mechanical properties of materials	COV-14-SOP ISO 19606 ISO 25178 - 2	Atomic Force Spectroscopy (AFM)	F1, F2, F4	F
Dimensional Inspection	Various Solid Materials	Surface area, pore size, pore volume, and pore size distribution of materials	COV-23-SOP ISO 9277 ISO 18757	Physisorption Analyzer (BET)	F1, F2, F4	F
Dimensional Inspection	Various Solid and Liquid Materials	Hydrodynamic size and size distribution of nanoparticles and macromolecules in a liquid	COV-24-SOP ISO 22412	Dynamic Light Scattering Particle Analysis (DLS)	F1, F2, F4	F

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Mechanical	Various Solid Materials	Tensile, compression, bend, peel, and shear forces	COV-19-SOP ASTM E8 ASTM D882 ASTM D638	Instron Universal Testing Machine (UTM)	F1, F2, F4	F
Mechanical	Various Solid Materials	Hardness, Elastic modulus, and Creep	COV-20-SOP ISO 14577	Nanoindentation	F1, F2, F4	F
Optical	Various Solid Materials	Surface Imaging and topography (shape and height) of materials over an area, generating 3D maps of the surface	COV-27-SOP IPC-A-600 IPC-A-610 IPC-6012 IPC-TM-650, Method 2.4.53 J-STD-001 ASTM E1382 ASTM E112 ISO 17637 ISO 5817 ASTM E1823	Optical Microscopy and Profilometry	F1, F2, F4	F
Optical	Various Solid Materials	Thickness, optical constants, and other material properties	COV-22-SOP ASTM F576 (modified)	Spectroscopic Ellipsometry (SE)	F1, F4	F
Chemical	Various Solid and Liquid Materials	Identification of organic compounds and functional groups	COV-15-SOP	Fourier Transform Infrared spectroscopy (FT-IR)	F1, F3, F4	F
Chemical	Various Solid and Liquid Materials	Identification and quantification of volatile, semi-volatile organic and pyrolyzed organic compounds	COV-16-SOP ISO 20595 ASTM D8401-24	Gas Chromatography Mass Spectrometry (GC-MS)	F1, F2, F3, F4	F
Chemical	Various Solid and Liquid Materials	Quantitative trace elemental analysis	COV-17-SOP ISO 11885 ASTM D1976	Inductively Couple Plasma Optical Emission Spectroscopy (ICP-OES)	F1, F2, F3, F4	F
Chemical	Various Solid and Liquid Materials	Quantitative ultra-trace elemental analysis	COV-18-SOP ASTM D5673 ISO 17294-1 UOP1005-14	Inductively Couple Plasma Mass Spectrometry (ICP-MS)	F1, F2, F3, F4	F

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Chemical	Various Solid and Liquid Materials	Structure, composition, purity, and dynamics	ISO 24583 ASTM E2977	Nuclear Magnetic Resonance (NMR)	F1, F2, F3, F4	F
Chemical	Various Solid and Liquid Materials	Molecular structure, functional groups, molecular bonds, and crystal structure	COV-25-SOP	Raman Spectroscopy	F1, F2, F3, F4	F
Chemical	Various Solid and Liquid Materials	Identification, quantification, and characterization of substances measuring UV-Vis-NIR transmittance and absorbance.	COV-28-SOP ASTM D1003 ASTM E308	UV/Vis spectroscopy	F1, F3, F4	F
Chemical	Various Solid Materials	Surface elemental composition, chemical states, and electronic structure of the top 1-10 nanometers of a material	COV-30-SOP ASTM E2735-14	X-Ray Photoelectron Spectroscopy (XPS)	F1, F2, F3, F4	F

1. Location of activity:

Location	Location
F	Conformity assessment activity is performed at the CABs fixed facility

2. Flex Code:
   F0- Fixed scope item. No deviations allowed to the line item as identified, except for updating to the most recent version of an accredited standard method after verification.
   F1- Laboratory has the capability to test a new item, material, matrix, or product similar in composition to item, material, matrix, or product identified on the scope
   F2- Laboratory has the capability to introduce the newest revision of an accredited authoritative standard method (with no modifications) identified on the scope
   F3- Laboratory has the capability to introduce a parameter/component/analyte to an accredited test method identified on the scope
   F4- Laboratory has the capability to introduce a new revision of an accredited non-standard method using the same technology or technique identified on the scope
   F5- Laboratory has the capability to introduce a validated method that is equivalent to an accredited method (using same technology or technique) identified on the scope