



CERTIFICATE OF ACCREDITATION

ANSI-ASQ National Accreditation Board

500 Montgomery Street, Suite 625, Alexandria, VA 22314, 877-344-3044

This is to certify that

Evans Analytical Group, LLC
15 Morgan Street
Irvine, CA 92618

has been assessed by ANAB
and meets the requirements of international standard

ISO/IEC 17025:2005

while demonstrating technical competence in the field of

TESTING

Refer to the accompanying Scope of Accreditation for information regarding the types of tests to which this accreditation applies.

AT-1663
Certificate Number


ANAB Approval

Certificate Valid: 06/28/2016-06/02/2018
Version No. 002 Issued: 06/28/2016



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated January 2009).



ANSI-ASQ National Accreditation Board

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

Evans Analytical Group, LLC

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TESTING

Valid to: June 2, 2018

Certificate Number: AT-1663

I. Electrical

FIELD OF TEST	ITEMS, MATERIALS, OR PRODUCTS TESTED	SPECIFIC TESTS OR PROPERTIES MEASURED	SPECIFICATION, STANDARD METHOD OR TECHNIQUE USED	DETECTION LIMIT/RANGE/ EQUIPMENT
Voltage Stress	Integrated Circuits	Rise / Fall Time (2 to 10) ns Rise / Delay Time (130 to 170) ns Current (0.15 to 5.86) A	JEDEC JS-001 JESD22-A114 Mil Std 883 TM 3015 AEC-Q100-002 AEC-Q101-001 Test – Human Body Model	768, 1024, and 2304 Pin Capacity 100 V to 8 kV Thermo Fisher Scientific MK2, MK4, Paragon
		Frequency (11 to 16) MHz Current (1.5 to 16.1) A	JEDEC JESD22-A115 AEC-Q100-003 AEC-Q101-002 Test – Machine Model	768, 1024, and 2304 Pin Capacity 50 V to 2 kV Thermo Fisher Scientific MK2, MK4, Paragon
		I-Test V _{supply} Over-Voltage Test	JEDEC JESD78 AEC-Q100-004 Test –IC Latch-Up	768, 1024, and 2304 Pin Capacity 100 mA to 300 mA Temp (70 to 125) °C Thermo Fisher Scientific MK2, MK4, Paragon
		Rise / Fall Time < 400 ps Peak Current (2.25 to 18) A	JEDEC JESD22-C101 AEC-Q100-011 AEC-Q101-005 Test – Field Induced Charged Device Model	50 V to 2 kV Thermo Fisher Scientific, Orion, Orion2



II. Thermal

FIELD OF TEST	ITEMS, MATERIALS, OR PRODUCTS TESTED	SPECIFIC TESTS OR PROPERTIES MEASURED	SPECIFICATION, STANDARD METHOD OR TECHNIQUE USED	DETECTION LIMIT/RANGE/ EQUIPMENT
Environmental Stress	Integrated Circuits	HTOL (High Temperature Operating Life)	JESD22-A108	(85 ~ 150) °C ± 3 °C (1 to 4) V, (0 to 52) A, ADEC 7056/92 AEHR Max2
		HTSL (High Temperature Storage Life)	JESD22-A103	150 °C (- 0 °C, +10 °C) Thelco
		THB (Temperature Humidity Bias)	JESD22-A101	85 °C ± 2 °C 85 % ± 5 %RH Non-Condensing, Thermotron SM-32C
		PPOT – Pressure Pot (Autoclave)	JESD22-A102	121 °C ± 2 °C 29.7 psia, 100 %RH Hirayama HA300MIV
		HAST (Highly Accelerated Stress Test)	JESD22-A110	110 °C ± 2°C, 17.7 psia 130 ± 2°C, 33.3 psia 85 % ± 5 %RH Trio-tech 1000X Hirayama R7/8
		TMCL – Temperature Cycling	JESD22-A104 Mil Std. 883 TM 1010	Condition A-N (air to air) (-65 to 150) °C (10 to 15) min Dwell <10 s transfer ESPEC TSE-11 TSA70/100
		Thermal Shock	JESD22-A106 Mil Std. 883 TM 1011	(-65 to 150) °C (Liquid to Liquid) 5 min dwell <10 s transfer Blue M LTB-ATS-B
		Moisture Reflow Sensitivity	JEDEC J-STD-020	Level 1 ~ 6 HAFO 1675 Bake 125 + (-0 to 5) °C ESPEC PRA-2AP (30 to 85) °C ± 2 °C (60 to 85)% ±3% RH HELLER 1500. 1809 260 °C peak reflow ESPEC TH HELLER reflow
		Preconditioning	JESD22-A113	Level 1 ~ 6 HAFO 1675 Bake 125 + (-0 to 5) °C ESPEC PRA-2AP (30 to 85) °C ± 2 °C (60 to 85) ±3 %RH HELLER 1500. 1809 260 °C peak reflow ESPEC TH HELLER reflow

III. Optical

FIELD OF TEST	ITEMS, MATERIALS, OR PRODUCTS TESTED	SPECIFIC TESTS OR PROPERTIES MEASURED	SPECIFICATION, STANDARD METHOD OR TECHNIQUE USED	DETECTION LIMIT/RANGE/ EQUIPMENT
Failure Analysis	Integrated Circuits and Electronic Components	EDX - Energy Dispersive X-ray Spectroscopy	Customer and Sample Dependent	FEI Nova Nanolab Dual-Beam FIB using Oxford Detector; Elements C to U; (5- 30) keV; Line scan; Dot map
		Bond Shear Test	JEDEC – JESD22-B117; JEDEC – JESD22-B116; AEC-Q100; Customer and Sample Dependent	Royce Instruments 620; SMS-250 g; Accuracy: ±0.251 gf Capacity: 250 gf Max SMS-5K; Accuracy ± 0.0051 kgf Capacity: 5 kgf Max
		Wire Pull Test	MIL-STD-883 Method 2011.9; AEC-Q100; Customer and Sample Dependent	Royce Instruments 620; SMW-100g; Accuracy ± 0.1001 gf Capacity: 100 gf Max
		SEM- Scanning Electron Microscope (Defects Imaging)	Customer and Sample Dependent	FEI Nova Nanolab Dual-Beam FIB; Knights CAD Navigation; Cross-sectioning sub-micron features by “slice and view”; 6” wafer/sample capacity; Ion Channeling Imaging

Notes:

1. This scope is formatted as part of a single document including the Certificate of Accreditation No. AT-1663.



 Vice President