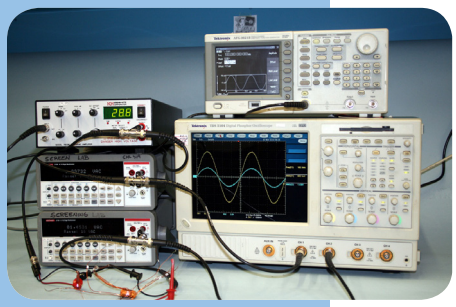
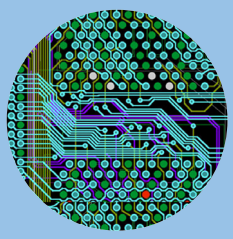
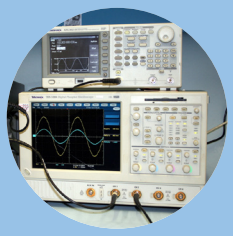


Reliability Assures Success



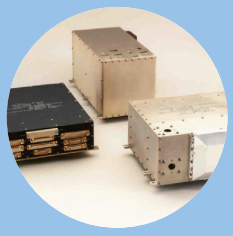
Design



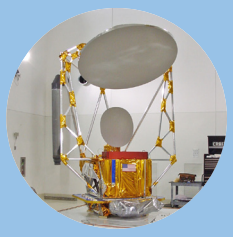
Test



Build



Assembly



Flight

Assurance Technology Corporation (ATC) is one of the most experienced parts screening firms in North America for space, aerospace, avionics, military and commercial electronics industries. For more than four decades, Assurance Technology Corporation has successfully processed nearly a quarter-billion dollars in parts, serving more than 400 different customers. ATC's achievements have been made possible by our commitment to a close working relationship with our customers and our ability to tailor our testing processes to meet their specific requirements from our deep experience with all types of parts.

Our production and test facility in Chelmsford, Massachusetts is the site for the majority of our testing, qualification and compliance verification for both space and ground-based parts. The facility is multi-functional and contains the state-of-the-art equipment necessary to test parts at all stages from initial parts reliability screening to full, system-level environmental qualification. We have continually invested in our facilities, acquiring equipment, fixtures, and software specifically designed to perform high-reliability parts screening. Our commitment to continuous improvement and the latest equipment and test methods assure successful product development.

Evaluation and Test Services

- External Visual Examination
- Functional and DC Electrical Test
- Temperature Cycling
- Constant Acceleration
- Voltage Condition Testing
- Radiographic Inspection And Analysis
- Destructive Physical Analysis
- Stabilization Bake
- AC Electrical Test
- Thermal Shock
- High Temperature Reverse Bias Testing
- Source Inspection
- Particle Impact Noise Detection (PIND)
- Part Marking
- Failure Analysis
- Vacuum Bake
- High and Low Temp Electrical Test
- Power Burn-In
- Hermetic Seal (Fine and Gross)
- Surge Current Testing
- High Reliability Device Packaging
- Part Analysis
- Highly Accelerated Life Test (HALT)

Part Test and Screening Services

Assurance Technology Corporation has 1000s of man-years of experience providing part testing, screening, qualification and environmental testing for the Space, Avionic, Military, and Commercial industries.

Our staff of Parts, Electrical, Mechanical, and Test Engineers are fully trained and prepared to work with our customers to develop the processes and the required documentation, test fixtures, and test data to ensure processing is accurate, complete and meets the customer's most stringent requirements.

Enabling this success is ATC's sophisticated equipment and advanced technology test systems, comprehensive software test libraries, specific test fixtures, and a wide array of environmental test equipment, all housed in a modern 18,000 square foot parts processing facility located in Chelmsford, Massachusetts.





Dage XD7500 & 7600 Radiographic System



ESPEC Humidity Chamber



Credence ASL 300 Mixed Signal Tester

Examples Of Our Electrical Testing Services Include:

- Functional AC and DC Electrical Testing
- Performance Testing Under Environmental Conditions
- High and Low Electrical Parameter Testing
- RF Testing Of Devices Pre And Post Life Test
- Other Custom Designed Test Sequences

STI Discrete Tester



A Sample Matrix Of Our Environmental Testing Services Include:

Test / Standard Method	MIL-STD-883 Method	MIL-STD-750 Method	MIL-STD-202 Method
External Visual	2009	2071	
Temperature Cycling	1010	1051	107
Thermal Shock	1011	1056	107
Humidity Testing (85/85)			103
Moisture Resistance	1004	1021	
Particle Impact Noise Detection (PIND)	2020	2052	
Hermiticity (Hermetic Seal)	1014	1071	112
Stabilization Bake	1008	1032	
Real Time Radiographic Examination	2012	2076	209
Burn In (Static and Dynamic)	1015	1038, 1039, 1040, 1042	
Constant Acceleration / Centrifuge	2001	2006	212
LIFE Testing (Accelerated, Steady State, Intermittent)	1005, 1006	1026, 1027, 1036, 1037	108
Solderability	2003	2026	208

Value Added Services

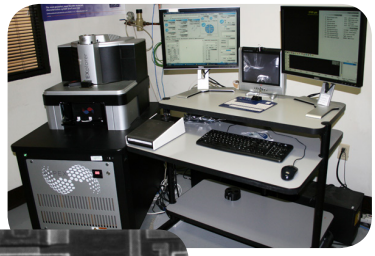
Additionally, Assurance Technology offers a broad range of value added services that can be tailored for complete parts procurement, qualification, processing, and bonded storage.

- Radiation Effects Testing And Analysis (Total Ionizing Dose, Enhanced Low Dose Radiation, Neutron, Single Event Upset)
- Tape And Reel Packaging Services In Accordance With EIA-481-1
- Counterfeit Part Detection Evaluation Services
- Prohibited Material Analysis
- Hot Solder Dip Services (Tin Whisker Mitigation, Gold Mitigation, ROHS Compliance)
- Confocal Scanning Acoustic Microscopy (CSAM)
- Variable Frequency Vibration
- Mil-Spec Device Marking
- Mechanical Shock Testing
- Highly Accelerated Stress Test (HAST)
- Vacuum Bake And Volatile Organic Compound (VOC) Analysis

Analysis Laboratory

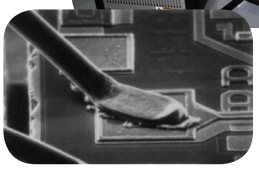
The ATC Analysis facilities are an integral part of our high reliability parts screening process. The ATC laboratory performs analyses to space specifications, military specifications and custom processing and criteria for hundreds of customers over the past 40+ years.

Aspen Exployer SEM



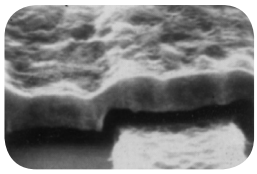
Destructive Physical Analysis (DPA) Laboratory

Destructive Physical Analysis (DPA) is a controlled disassembly, visual examination and physical testing of a sample group selected from a production lot to assure a reliable product. Military and NASA specifications (MIL-STD-1580, MIL-STD-883, and S-311-M-70) are used depending upon the customer's requirements. All defects and anomalies are reported for customer review before the analysis is completed. The results of all testing are presented in a formal report with photographic and test result data. Complete confidentiality is maintained throughout the analysis and reporting of the results.



Die Bond (500x)

Metalization Step (10,000x)



The corporate commitment to providing the most sophisticated equipment for performing DPA on the most complex parts is evident throughout the DPA Laboratory.

DPA Equipment Includes:

Optical Examination

- Keyence 3D Microscope with Ball Grid Array Inspection Capture
- Nikon Low (Power Microscope Digital) With Magnification Of 5X To 200X.
- Zeiss Microscope (High Power Digital) With Magnification Of 75X To 1760X Including Light/Dark Field And Nomarski Differential Interference Color Contrast.

Scanning Electron Microscope (SEM)

- Scanning Electron Microscopes Equipped With Secondary And Backscatter Detectors And Calibrated For Measurements.
- Energy Dispersive Spectroscopy (EDS) For Material Identification, Mapping, Line Scan, And Quantitative Material Analysis.

Metallurgical Evaluation

- Pace Technologies Sectioning And Polishing Table's Enabling Custom Angle Lapping And 90° Sectioning Of Devices.
- Metallurgical Evaluation Also Includes Chemical Etchants That Allow Examination Of Crystal And Metal Grain Boundaries Of Device Sections.

Radiographic Examination

- System Allows Both Ball Grid Array (BGA) And Void Counts For Specified Attachment Criterion Comparisons.
- Digital Real Time X-Ray For Both Screening And Failure Investigation With 70° Angle Magnified And Orbital Settings Providing Real Time Radiographic Examination With CT Capabilities.

Other Physical Testing Equipment

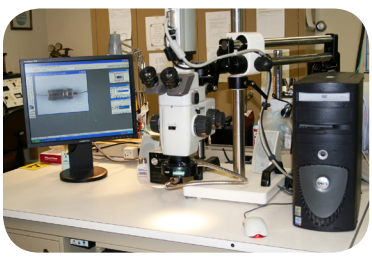
- Dage 4000 Wire Bond Pull Station Used For Destructive And Non-Destructive Wire Bond Attach Testing
- Die Shear Station For Die Attach Strength And Evaluation
- Chatillon Push/Pull Station (Capable Of Up To 500 Pounds)
- Leco Hardness Tester For Metals And Ceramic Evaluation

Additional Analysis Capabilities

- Plastic Package Removal Using Acids And/Or Solvents
- Solderability With Steam Aging
- Resistance To Solvents



Keyence 3D Microscope



Nikon Inspection Microscope

Failure Analysis

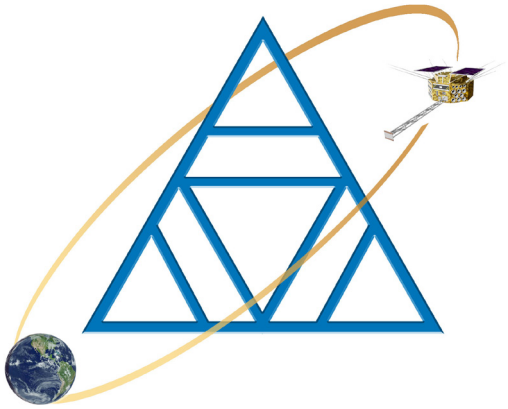
A Failure Analysis (FA) is the controlled investigation and disassembly of a failed part using a systematic procedure to determine the root cause of failure. The process is performed or directed by an experienced FA Engineer trained in the methods required to achieve detection and documentation of the fault based upon the failure symptoms. The equipment utilized in performing a Failure Analysis is the same systems outlined in the DPA section, including Liquid Crystal Hot Spot Detection, Voltage Contrast, Electron Beam Induced Current (EBIC), RGA, CSAM, and any additional analytical techniques required to determine the root cause. The results of all testing and examinations are performed or reviewed by the Failure Analysis Engineer. All analysis results are presented in a formal report.

Construction Analysis

Construction Analysis (CA) is the controlled disassembly of a part with the intent of identifying the materials used both elementally and dimensionally in the construction of the device. The results are presented in a formal report detailing the construction breakdown and quality of the assembly for reliability.

Quality Assurance and Mission Statement

Assurance Technology Corporation is an ISO 9001:2008 and AS9100C:2009 registered company. ATC is committed to providing the highest quality products and service on time that conform to or exceed the performance, reliability and quality requirements of its customers and to continually improve its quality management system. Assurance Technology Corporation is also committed to delivering products free of defects or safety hazards that will not malfunction during their expected life when operated under the intended conditions.



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