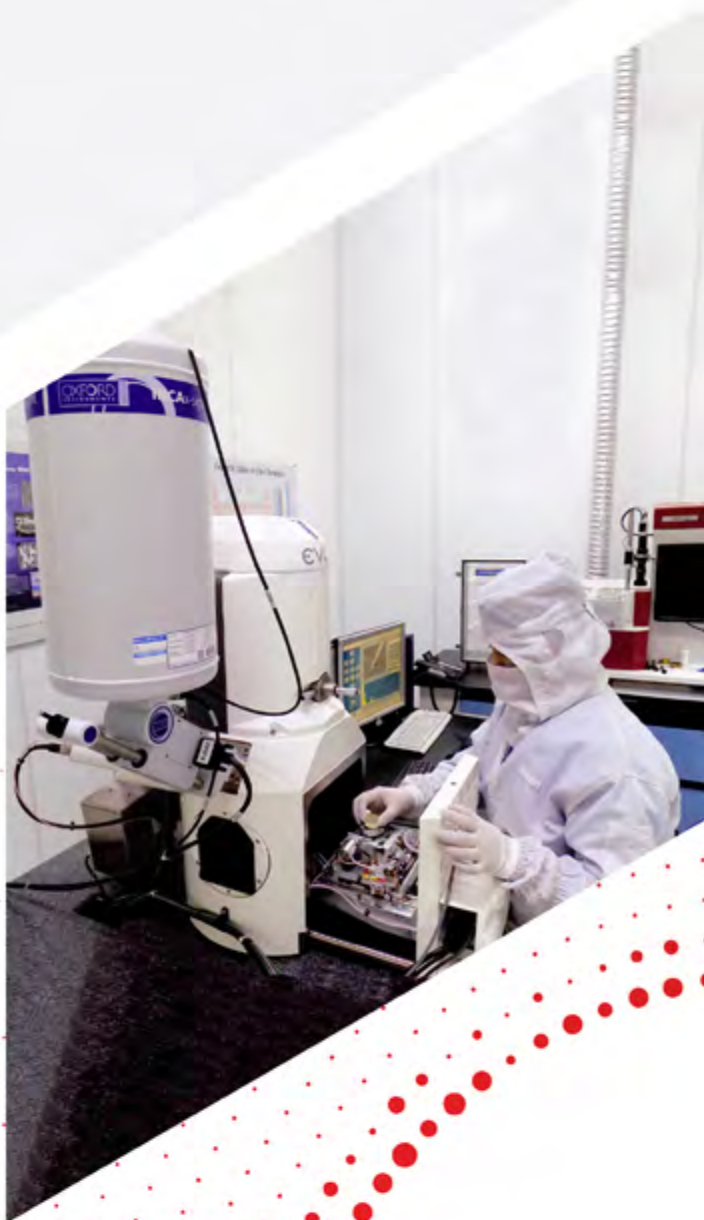




A member of  ACIndustrials



# ATCLAB

ANALYTICAL TESTING AND CALIBRATION

# About Us

IMI provides global manufacturing solutions, including innovative electronics manufacturing services (EMS) and power semiconductor assembly and test services (SATS) for diversified markets such as those in the automotive, industrial, aerospace and other industries.

IMI's Analytical Testing and Calibration or ATC Laboratory has been involved in the development of cost-effective and timely failure analysis, reliability testing, and calibration services for many years while adhering to strict quality standards.

**ATC Accreditation**  
Philippine Accreditation Bureau



## ATC Laboratory

is ISO17025 accredited and expert in:

- Identification of the failure mode, failure mechanism, and probable causes
- Accelerated stress testing and modeling in predicting product life profile and reliability
- Calibration and verification of inspection and measuring instruments in consonance with international standards

**IMI ATC Lab** takes pride in its highly competent, committed, and disciplined professionals from various disciplines that include Metallurgy, Materials Science, Physics, Chemistry, Instrumentation, and Electronics.



Calibration



Failure Analysis



Reliability Engineering

## Test Facilities and Equipment

Our facilities and equipment include:



Class 10K Cleanroom



Vibration Testing Room



Calibration Rooms



Chemical Laboratory

# Reliability Test Services

Our reliability engineering team:

- Designs reliability stress test plan conforming to international standards
- Builds customized reliability test set-up
- Performs accelerated stress test to predict product life profile and define applicable warranty

## Services

### Compliance Testing based on International Standards

- High Temperature Storage and Operating Life Tests (HTS and HTOL) based on IEC 60068-2-14, JESD22-A104, JESD22-A105
- Low Temperature Storage and Operating Life Tests (LTS and LTOL) based on IEC 60068-2-1, JESD22-A119
- Temperature Humidity Test (THT), biased and unbiased based on IEC 60068-2-30, IEC 60068-2-38, IEC 60068-2-78, JESD22-A101
- Temperature Cycle Test (TCT and PTCE)/Temperature Shock Test (TST) based on IEC 60068-2-14, JESD22-A104, JESD22-A105
- Temperature Step Test based on ISO 16750-4
- Highly Accelerated Life Test (HALT)/ Highly Accelerated Stress Screen (HASS) based on MIL-HDBK-338
- Sinusoidal/ Sine Vibration test based on IEC 60068-2-6 and JIS D 1601
- Random Vibration Test based on IEC 60068-2-64, MIL-STD-810G, Part Two, 514.6 and ASTM D4728
- Classical/Mechanical Shock Test based on IEC 60068-2-27, IEC 60068-2-29, MIL-STD-810G, Part Two, 516.6
- Power Module Test based on AECQ101 standard

### Mechanical Tests

- Free Fall
- Fluid/ Substance Stability Test/ Resistance Test to Chemical Loads

### Others

- Electrochemical Migration Resistance Test
- Fluid/ Substance Stability Test/ Resistance Test to Chemical Loads
- Insulation Resistance Test
- Moisture Sensitivity Level Preconditioning
- Solderability Testing
- Electromagnetic Compatibility (EMC) Tests



Scanning Electron Microscope (SEM) with Energy Dispersive Spectroscopy (EDS) EVO40 maximum magnification: 1,000,000x



Scanning Acoustic Microscope (SAM) Evolution II transducers: 20 MHz, 30 MHz, 50 MHz, 75 MHz, 110 MHz



Ion Milling



Nicolet iS50 Fourier Transform Infrared Spectrometer (FTIR) Spectral Range: 350-7800 1/cm-1



# Failure Analysis Test Services

Going beyond identifying the defect, our failure analysis experts

- Analyze failure
- Identify failure mode and failure mechanism
- Recommend preventive measures on probable cause of failure

## Services

### Sample Preparation

- Mechanical Cross section with Parallel Lapping
- Physical Etching – Ion Milling
- Laser Decapsulation

### Ionic Contamination

- Ion Chromatography
- Critical Cleanliness Control System (C3)
- Resistivity of Solvent Extract (ROSE) Method

### Plating Thickness Measurements (Non-Destructive)

- ENIG Plated
- Electrolytic Plated
- Immersion Tin Plated

### Material Composition Analysis

- Elemental Analysis
- Elemental Mapping
- Contamination Analysis
- RoHS Screening
- FTIR Analysis
- Organic Material Characterization

### Delamination Inspection

- Scanning Acoustic Microscope Inspection (Non-Destructive)
- Cross-section/SEM Inspection (Destructive)

### Chemical Destructive Analysis

- Chemical Decapsulation (gold, aluminum, copper)
- Chemical Deglobbing
- Cratering Test
- Wet Etching

### Surface Analysis

- Surface Morphology
- Die Surface Inspection

### Imaging

- Three Modes Optical Inspection (brightfield, darkfield, differential interference contrast)
- 3D Optical Imaging
- 3D SAM Imaging
- Thermal Imaging/ Fault Isolation Through Hotspot Detection
- X-Ray Imaging
- SEM Imaging

### Pre and Post-Reliability Test Inspection

- Component and Module Integrity Inspection
- Via Holes Crack/Resin Recession
- Solder Joint/Solderability Inspection
- IMC Thickness Measurement
- BGA Solderability Inspection based on IPC7095A
- Tin Whisker Inspection based on JESD201A and JESD22A121A

### Others

- Component Level Failure Analysis
- Board Level Failure Analysis
- PCBA Inspection (based on IPC-A-610G)
- Internal Structure Analysis
- Dimensional Measurement
- Surface Insulation Resistance Test
- Dye Penetration Analysis

### Flux Analysis

- Solids Content
- Halide Content
- Acid Content



Temperature Shock Test Chamber  
Weiss TS-120  
-80°C to 220°C



High or Low Temperature Storage Test Chamber  
Tenney BTC:  
-73°C to 200°C  
Enviro Oven MO384: 30°C to 300 °C



Temperature Humidity Test Chamber Weiss WK340  
-45°C to 180°C  
10% to 98% RH

### More Equipment

- Optical Microscope
- Infrared Thermograph (IR Camera)
- Precision Saw
- Sputter Coater
- Ultrasonic Cleaner
- Microprobe Station
- Curve Tracer
- Oscilloscope
- Spectrum Analyzer
- Programmable DC Supply
- X-Ray Equipment
- Grinder/Polisher
- High or Low Temperature Storage Test Chamber
- HALT/HASS Chamber
- X-ray Fluorescence

# Calibration

CALIBRATION SERVICES | ACCREDITED SCOPE

Measured Quantities/ Instruments	Range to be calibrated
Micrometers	0 – 300 mm
Dial Test Indicators	0 – 1 mm
Dial Gauges	0 – 10 mm
Vernier and Digital Calipers	0-600 mm
Height Gauges	0-600 mm
Feeler Gauges	Up to 3mm
Steel rules	0-1000 mm
Profile Projector	0-150mm, X and Y-axis
Weighing Instruments	up to 160 kgf
Pressure gauge, transducers, transmitters and recorders	10,000 psi
Vaccum gauges	0~ -25 inHg
Force gauge	up to 160 kgf
Voltmeters	up to 1000 V
Ammeters	0 to 20 A
Wattmeters	up to 20.9 kW
Ohmmeters	0 to 1.1 GΩ
LCR Meters	0 to 200 Ω; 2 mF; 20 H
Digital Multimeters	up to 8.5 digits resolution
Clampmeter	up to 1000 A, AC/DC
Frequency Meters	up to 15 MHz
Timer/ Stop watch	up to 570 mins.
Frequency standard/ source	10 Hz to 1 MHz
Oscilloscope	600 MHz; 60 V; 400 ms
DC power supply	1000 V, 20 A
High voltage tester (Hipot)	up to 40 kV

Measured Quantities/ Instruments	Range to be calibrated
Thermometry instruments (thermometers, indicators, controllers, recorders, transmitters, transducers)	Thermocouple and RTD types; -200 to 1370 deg. C
Ovens and baths	
Incubator	
Autoclaves and sterilizing ovens	-80 to 300 deg. C
Industrial freezers and refrigerators	
Thermohygrometer/ Thermohygrograph	20-40 °C 33-96 % RH
Environmental Chamber (RH)	10-95 % RH -80 to 300 °C
Current Shunt	20 A
Resistors/ Decade Box	up to 1 Gohm
Resistivity/ Conductivity meters	as per standard solutions
pH meter	4, 7 and 10 pH
Field Meter / Charge Plates	1000 V
Current/ Voltage Calibrator	1000 V, 20 A
Air Ionizers	voltage decay/ time
Electronic Load	1000 V, 20 A
Torque wrench	up to 600 Nm
Torque meter	25 Nm
Thermometry sensors (thermocouples, RTDs, thermostat, surface probe, bimetallic, glass thermometer)	-30 to 130 deg. C



# Calibration

CALIBRATION SERVICES | ACCREDITED SCOPE

## OTHER CAPABILITIES

### Electrical

- Current Shunt Resistor
- Decade Resistor
- Resistivity Meter
- Wrist / Foot Strap Tester
- Charge Plate Monitor (up to 1000 V)
- Field Meter (up to 1000 V)
- Ground Bond Tester
- Earth Ground Tester
- Hi Pot Tester
- Current / Voltage Calibrator
- Air Ionizer
- Counter
- Electronic Load
- Non-contact tachometer

### Mass/Volume

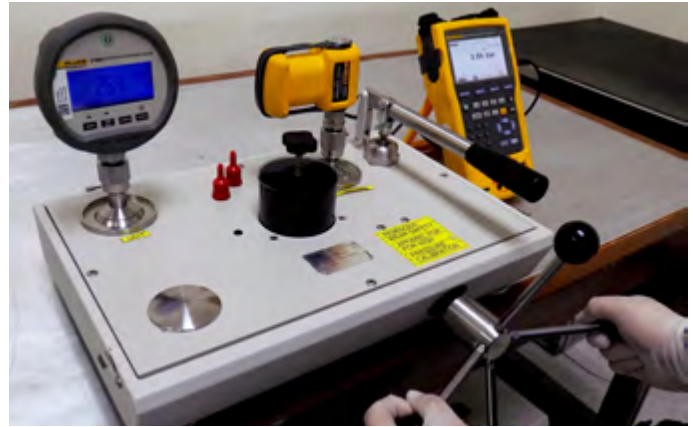
- Tension Gauge
- Gram Gauge
- Torque Driver
- Torque Tester
- Pressure Gauge
- Force Gauge
- Push-Pull Gauge
- Test Weights Calibration, up to 2 kg
- Common Laboratory Glasswares like flasks, beakers, pipetes, burettes

### Mechanical

- Measuring Microscope
- Pin Gauge
- Paste Height Tester

### Temperature

- Thermocouple



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