



# ATC LAB

ANALYTICAL TESTING AND CALIBRATION



# About Us

A leading global electronics manufacturing solutions expert, IMI specializes in highly reliable and quality electronics for long product life cycle segments in the automotive, industrial, power electronics, communications, and the medical markets.

The company provides engineering, manufacturing, and support and fulfillment capabilities to diverse industries globally.

Our Analytical Testing and Calibration or ATC laboratory delivers fast, reliable testing and calibration services across industries. With cutting-edge equipment and a commitment to innovation, we help customers solve problems and maintain seamless operations.

## ATC Accreditation



PAB ACCREDITED  
TESTING AND CALIBRATION LABORATORY  
PNS ISO/IEC 17025:2017

# ATC Laboratory

\*ISO/ IEC17025 accredited laboratory by the PAB (Philippine Accreditation Bureau) and expert in the following:

- Identification of the failure mode, failure mechanism, and probable causes;
- Accelerated stress testing and modeling in predicting product life profile and reliability; and
- 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



Reliability Engineering



Failure Analysis

*(\*) Accredited Scope*

# Test Facilities and Equipment

Our facilities and equipment include:



Class 10K Cleanroom



Reliability Laboratory



Calibration Laboratory



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 AQG324

Automotive application based on AECQ101

Thin Whisker Susceptibility based on JESD201



### Mechanical Tests

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

### 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
- Power Cycling Test
- Pre-EMC



High or Low Temperature Storage Test Chamber  
Tenney BTC:  
-73°C to 200°C  
Enviro Oven M0384:  
30°C to 300 °C



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



Semi Anechoic Chamber  
Conducted Emission and Radiated Emission  
150 kHz to 2.5 GHz



Drop Test  
ISO 2248-1985,  
GB/ t48575-92,  
JIS Z0202-1994  
Maximum Drop Height: 1.5m  
Maximum Load Weight: 80kg



Vibration Testing Room  
Model: i240/SA3M  
Sine Wave: 1142 m/s2  
Random Wave: 800 m/s2 rms  
Shock Wave: 2285 m/s2 peak

# 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  
 Mechanical Decapsulation & Dismantling  
 Physical Etching (via Ion Milling or Laser decapsulation)

### Physical Analysis

\*Cross-section/SEM Inspection & SEM Dimensional Measurements (Destructive)  
 Component & Module Integrity Inspection  
 \*Solder Joint/Solderability Inspection /IMC Thickness Measurements  
 BGA Solderability Inspection based on IPC7095A  
 \*Tin Whisker Inspection based on JESD201A & JESD22A121A  
 PCBA Inspection ((based on IPC-A-610H)  
 Dye Penetrant Test

### Imaging

Three Modes Optical Inspection (brightfield, darkfield, differential interference contrast)  
 \*Scanning Acoustic Microscopy (SAM) Imaging: Delamination Inspection & %Void Measurement  
 X-ray Imaging  
 SEM Imaging  
 Thermal Imaging / Fault Isolation Through Hotspot Detection

### \*Plating Thickness Measurements (Non-Destructive)

ENIG/ ENEPIG Plated  
 Electrolytic Plated  
 Immersion Tin Plated

### Surface Analysis / Material Composition Analysis

Surface Morphology / Die Surface Inspection  
 \*Elemental Analysis / Elemental Mapping (via SEM EDS, FESEM EDS)  
 \*Organic Material Characterization (via FTIR)  
 \*RoHS Screening (via XRF)



### Ionic Contamination

\*Ion Cleanliness Test for PCB/PCBA (via Ion Chromatography)  
 Critical Cleanliness Control System (C3)  
 Resistivity of Solvent Extract (ROSE) Method

### Chemical Destructive Analysis

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

### \*Thermal Analysis of Polymers, Plastics & Adhesives

|                               |                           |
|-------------------------------|---------------------------|
| Melting point / Melting Range | Identification            |
| Heat Capacity                 | Thermal stability         |
| Crystallization               | Decomposition temperature |
| Glass transition              | Purity                    |

### Others

Component Level Failure Analysis  
 Board Level Failure Analysis  
 Technical Cleanliness (ISO 16232 / VDA 19.1)  
 Camera Module Bombing Leak Test  
 NVR (Non Volatile Residue Test)  
 Oil Residue Determination



Field Emission Scanning  
 Electron Microscopy  
 (FESEM EDS)  
 Max Magnification: 1,000,000x  
 Resolution: 0.9 nm at 15 keV ;  
 1.4 nm at 1 keV



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



Phenom XL  
 (100,000x)



Thermal Analyzer  
 Discovery DSC 250  
 (-90°C to 550°C)  
 Discovery TGA 55  
 (25°C to 1000°C)



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

# Calibration

CALIBRATION SERVICES | ACCREDITED SCOPE

| Measured Quantities/<br>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  | 0-300 mm                                |
| *Feeler Gauges  | Up to 3mm                               |
| *Steel rules  | 0-150 mm                                |
| *Profile Projector  | 0-150mm, X and Y-axis                   |
| *Weighing Instruments                                       | up to 160 kgf                           |
| *Pressure gauge, transducers,<br>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 180 M $\Omega$                     |
| *LCR Meters   | 0 to 180 M $\Omega$ ; 2 mF;20 H         |
| *Digital Multimeters  | up to 6.5 digits<br>resolution          |
| *Clampmeter   | up to 1000 A, AC/DC                     |
| *Frequency Meters   | up to 15 MHz                            |
| *Timer/ Stop watch  | up to 550 mins.                         |
| *Frequency standard/ source                                 | 10 Hz to 1 MHz                          |
| *Oscilloscope   | 600 MHz; 40 V; 400 ms                   |
| *DC power supply  | 1000 V, 20 A                            |
| *High voltage tester (Hipot)                                | up to 40 kV DC<br>up to 28 kV AC @60 Hz |

| Measured Quantities/<br>Instruments   | Range to be calibrated                                |
|---|---|
| *Thermometry instruments<br>(thermometers, indicators,<br>controllers, recorders,<br>transmitters, transducers) | Thermocouple and RTD<br>types; -200 to 1767<br>deg. C |
| *Ovens and baths  |   |
| *Incubator  |   |
| *Autoclaves and sterilizing<br>ovens  | -80 to 300 deg. C                                     |
| *Industrial freezers and<br>refrigerators   |   |
| *Thermohygrometer/<br>Thermohygrograph  | 20-40 °C<br>33-96 % RH                                |
| Environmental Chamber (RH)  | 10-95 % RH<br>-80 to 300 °C                           |
| Current Shunt   | 20 A  |
| *Resistors/ Decade Box  | up to 1 Gohm  |
| Resistivity/ Conductivity<br>meters   | as per standard<br>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   | up to 30 Nm   |
| Thermometry sensors<br>(thermocouples, RTDs,<br>thermostat, surface probe,<br>bimetallic, glass thermometer)    | -30 to 130 deg. C                                     |



# Calibration

CALIBRATION SERVICES | ACCREDITED SCOPE

## 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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