# Schedule of Accreditation

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| Organisation Name | University College Cork |
| Trading As | Tyndall National Institute |
| INAB Reg No | 372T |
| Contact Name | Finbarr Waldron |
| Address | Lee Maltings, Prospect Row, Dyke Parade, Cork |
| Contact Phone No | 021 2346093 |
| Email | finbarr.waldron@tyndall.ie |
| Website | http://www.tyndall.ie |
| Accreditation Standard | EN ISO/IEC 17025 T |
| Standard Version | 2017 |
| Date of award of accreditation | 13/06/2018 |
| Scope Classification | Mechanical testing |
| Scope Classification | Non-destructive testing |

Services available to the public[1]

[1] Refer to document on interpreting INAB Scopes of Accreditation

| Sites from which accredited services are delivered | | |
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| (the detail of the accredited services delivered at each site are on the Scope of Accreditation) | | |
| | | |
| | **Name** | **Address** |
| 1 | Tyndall National Institute | Lee Maltings, Prospect Row, Dyke Parade, Cork, Ireland, none |

# Scope of Accreditation

## Tyndall National Institute

### Mechanical Testing

**Category: A**

| Product categories - Tests | Test detail | Product detail | Range of Measurement | Equipment/Technique | Std. Ref & SOP | |
|---|---|---|---|---|---|---|
| 1119 Assemblies - .49 Other tests | Leaded and Leadless ceramic components. Leaded and Leadless metal components. Components with glass seals. Components with solder seals. Components with welded seals. Electromechanical components Passive components, Discrete components. | Particle Impact Noise Detection (PIND) Test. This test determines the presence or absence of loose particles in a component cavity as a result of their impact with the component case during a shock & vibration test. The sample is classified as a failure when a noise voltage in excess of 1.5X10E-2 Volts is detected. | The technique is a mechanical test which shocks and vibrates the sample and detects the presence of loose particles which excite the transducer due to their impact with the component case. | Vibration Frequency (40Hz to 150Hz), Acceleration (98.1m/sec2 to 11,772 m/sec2), Time (2.0sec to 4.0sec), Noise voltage (0 to 5.0 X 10E-2). | US Military Standard 883L, Method 2020.9, Condition A. (Particle Impact Noise Detection Test) | |
| 1144 Mechanical tests on assemblies - .99 Other assemblies | | Die Shear Strength Test. The test is a destructive measurement of the shear force required to break the bond used to mount a silicon chip or passive element within an | Determination of the shear force required to destructively remove a mounted element within an electronics component - i.e. measurement of the breaking strength of | 0 to 196N | US Military Standard 883L, Method 2019.10 (Die Shear Strength) | |

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| | | electronic component. | the bond used to attach a silicon chip or passive element to a substrate within an electronic component. The technique involves the use of a shear strength tester which applies a shear force to one side of the element to be tested. The breaking strength of the bond is recorded. | | | |
| | | Wire Bond Pull Strength Test. The test is a destructive pull test which determines the breaking strength of a wire bond within an electronic component. | Determination of the force required to break a wire bond. The technique involves the use of a tensile test system equipped with a hook which pulls the bond wire upwards until it breaks. The breaking strength and location of the break is recorded. The purpose of the test is to ensure that the bond wire meets the required strength. | 0 to 0.5N. | US Military Standard 883L, Method 2011.10, Condition D. (Bond Strength - Destructive Bond Pull Test) | |

## Non-Destructive Testing

**Category: A**

| NDT test field - Product type | Product tested | Test description | Equipment/technique | Range of measurement | Std. ref & SOP | |
|---|---|---|---|---|---|---|
| 601 Radiographic examinations - .09 assemblies | Leaded and Leadless ceramic components. Leaded and Leadless metal components. Components with glass seals. Components with solder seals. Components with welded seals. Electromechanical components Passive components, Discrete components. | Radiographic Inspection - Measurement of the physical size of internal defects using radiography to determine if they are within defined limits for: length, width, height, thickness, and area. | Determination of the presence of quantifiable defects (such as foreign objects) within the sealed case of an electronic component using a radiographic technique. The equipment used is an X-ray inspection system equipped with measurement function. | 1.0 X 10E-6 meters to 9.0 X 10E-3 meters | US Military Standard 883L, Method 2012.11 (Radiography) | |
| 605 Penetrant testing | | Helium Fine Leak Test - Quantify the rate of leakage of helium to determine if it is within the prescribed acceptance criteria: 1.0 X 10E-8 to 1.0 X 10E-11 Pa-m3/sec. | Determine the effectiveness (hermeticity) of the seal of a microelectronic component or semiconductor device with a designed internal cavity. The technique used is measurement of the helium leak rate by means of a mass spectrometer following soaking of the sample in a high pressure helium atmosphere. | Helium Pressure (650Pa to 0.52MPa), Time (30sec to 36,000 sec), Leak rate (1.0 X 10E-8 to 1.0 X 10E-11 Pa-m3/sec). | US Military Standard 883H, Method 1014.13, Condition A1 (Seal - Tracer Gas Helium Fine Leak Test). | |
| | | Perfluorocarbon Gross leak Test - The test determines the effectiveness of the | The test technique involves pressurisation of the test sample in a perfluorocarbon test | Pressure (0.31MPa to 0.73MPa), Temperature | US Military Standard 883L, Method 1014.17, Condition C1 (Seal - | |

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| | | seal of a microelectronic component or semiconductor device with a designed internal cavity by establishing the presence or absence of bubbles issuing from the cavity when the sample is immersed in a high-temperature test bath following pressurisation in the (perfluorocarbon) test fluid. | fluid within a pressure vessel following which the sample is placed in a high temperature bath and is observed to determine the presence or absence of bubbles issuing from the cavity. the presence of bubbles indicates a seal defect. | (373K to 423K), Time (7,200sec to 84,600sec). | Perfluorocarbon Gross Leak Test). | |
| 607 Visual inspection of materials | | External Visual Inspection - Measurements of the physical size of external defects to determine if they are within defined limits for: length, width, height, thickness, and area. | Determination of quantifiable external quality of workmanship and materials of electronic components. The technique used is a high magnification optical inspection using a microscope equipped with measurement scale. | 1.0 X 10E-6 meters to 9.0 X 10E-3 meters | US Military Standard 883L Method 2009.14 (External Visual) | |
| | | Internal Visual Inspection - Measurements of the physical size of internal defects to determine if they are within defined limits for: length, width, height, thickness, and area. | Determination of quantifiable internal quality of workmanship and materials of electronic components. The purpose of the test is to quantify the defects present in the internal materials or construction of an electronic component sample including those which may have been introduced by previous testing. The technique used is a | 1.0 X 10E-6 meters to 9.0 X 10E-3 meters | US Military Standard 883L, Method 2013.1 (Internal Visual Inspection for DPA) & Method 2017.12 (Internal Visual Inspection - Hybrid). | |

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| | | | high magnification optical inspection using a microscope equipped with measurement scale. | | | |