

Cryogenic Tests Service

Range of services

With over 15 years experience in cryogenic applications, Callisto is able to offer high precision and cost effective cryogenic test equipment and services, for a wide range of applications and sectors.

Callisto's Dewar (cryostat) has been designed in particular for the testing of RF and microwave components at cryogenic temperatures down to 15 Kelvin. The Dewar is equally well adapted for testing any electronic circuit, processor or small mechanical components. The Dewar solution enables a vacuum environment and uses a two stage closed cooling cycle Helium refrigerator.



Description

Connection to the external world can be made to the test component by means of a number of re-configurable access ports in the walls of the Dewar. Coaxial and/or waveguide test ports may be used depending on the application. Low thermal loss transmission lines are used inside the Dewar to ensure optimum thermal isolation.

Some additional multi-way electrical connections are also available for control, signalling or power circuits. The Dewar is equipped with internal thermometers linked to an external computer for logging purposes. The computer and logger can also record analogue or digital parameters from the test bench, in case that the recording of measured parameters as a function of temperature is required.

The maximum component size which can be accommodated is defined by the cold station enclosure size of 400mm x 400mm x 120mm.

Test Dewar: Cover removed



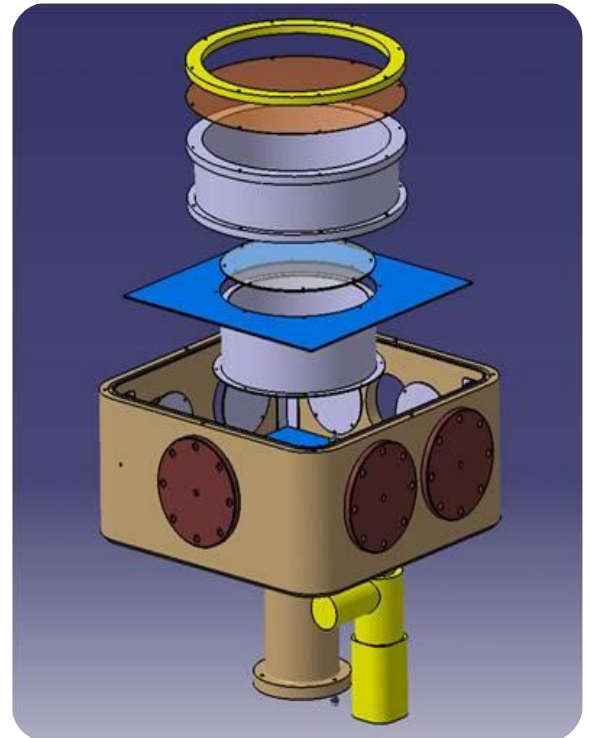
The re-configurable access ports include 2 large 80 mm vacuum flanges plus 4 standard KF50 flanges. These ports can be configured with hermetic connectors such as coaxial (SMA, K-type, N-Type, other), waveguide, electrical (DC), optical, etc...

Key Features

- Cryo Test Service or Test Bench Package
- 15K and/or 50K tests
- RF components test (coaxial and/or waveguide)
- Electronic components test
- Up to 6 test ports
- Small mechanical components test
- Recording of temperatures and measured parameters
- Tested component up to 400x400x120mm
- 4 hours cooldown and 4 hours warmup time (typical)

Test Dewar Specifications

Parameter	Specifications
Base Operation Temperature	First Stage < 50 Kelvin, Second Stage < 15 Kelvin unloaded
Test Enclosure Environment	Vacuum < 10 ⁻⁵ Torr/mbar
Dewar Material	Aluminium
Cold Plate Material	Copper, Nickel plated
Cold Plate Dimensions	400 mm x 400 mm (width/length)
Cool Down and Warm-up Times	~4 hours cooldown time, ~4 hours warmup time (using integrated heating circuit). (cooldown and warmup time depend on the size and mass of components tested and heat loads applied.)
Internal clear height above cold plate	120 mm
Cooling Power	First Stage 25 Watts, Second Stage 6 Watts
Maximum Test Duration	~10,000hrs – close cycle refrigerator
Test Ports	2x ports of 80mm 4x ports of 50mm They can be configured for waveguide, coaxial RF, direct RF feeds or other types of connector.
Thermometry	4x Silicon Diode cryogenic thermometers (more thermometers available on request)
External logging	Up to 20 analogue channels and 16 digital lines. Analogue parameters sampled at 60 readings/second (max). PC based data written to ASCII file.



Test Bench Equipment Package

A complete RF Test bench is available to clients for their own in-house component testing (DC-40GHz). The test solution includes the above described Dewar, cryo-cold head, cryo-compressor, and vacuum pump.

Test Service

Callisto's test service offer allows clients a flexible solution to evaluate the performance of components at cryo temperatures, priced on a per-test basis and minimising capital expenditure. The comprehensive service includes:

- Test planning, feasibility assessment, evaluation of test requirements and definition of needs for test jigs, interface adapters etc.
- Provision of any necessary test jigs, adapters interface cables or transmission lines.
- Installation of components to be tested.
- Operation of cryogenic test Dewar and associated monitoring equipment.
- Conducting or assisting in conducting measurements on components.
- Vector network analyser results, operating up to 40GHz.
- Test service report.
- All testing is carried out at Callisto's facilities located near Toulouse, France.