

The Faraday Test Centre

A world class test centre in Rochester, U.K., which specialises in environmental and electromagnetic compatibility testing.

baesystems.com/faradaytestcentre



BAE SYSTEMS

The Faraday Centre

Testing products to the extremes

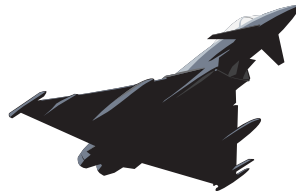
78,000 feet

Our maximum altitude test level is equivalent to reaching the 'Stratosphere', the Earth's second layer of the atmosphere



55,000 feet

Eurofighter Typhoon maximum altitude



Most fighter jets don't pull more than 9 G-force

30-38,000 feet

Typical cruising altitude of a commercial airliner



Our centrifuge can apply a maximum G-force of 30g



29,029 feet

Height of Mount Everest, the world's highest mountain

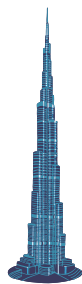
-60 degrees Celcius the lowest temperature at the top of Mt. Everest



and lowest freezing temperature test

2,717 feet

Burj Khalifa - World's tallest building



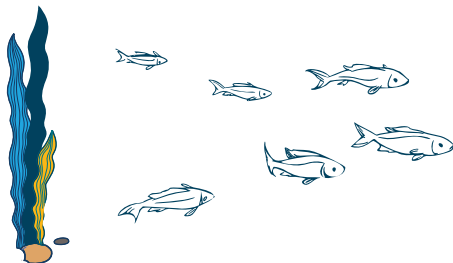
Sea level

0 feet
1.0 bar
(pressure)



131 feet
4.0 bar
(pressure)

Our maximum pressure test level

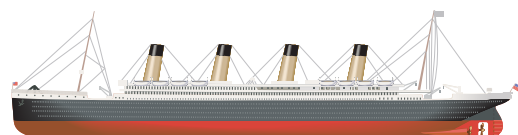


1,000 feet - Scuba diving record



12,500 feet
385 bar
(pressure)

Remains of RMS Titanic



For more than 50 years, the Faraday Test Centre's specialist team has ensured that a wide range of commercial and military products are able to function in the harshest environments. The centre has its own purpose-built facility on the BAE Systems site in Rochester, Kent, and has an extensive United Kingdom Accreditation Service (UKAS) scope of accreditation for testing in accordance with quality standard ISO / IEC 17025 for both electromagnetic compatibility and environmental requirements. UKAS is appointed by government, to assess and accredit organisations that provide services including certification, testing, inspection, calibration, validation and verification.

The Faraday Test Centre offers a wide range of services to meet its customers' requirements, including:

- Extensive environmental testing
- Electromagnetic compatibility testing
- Test procedure and reports



Testing electromagnetic compatibility

The Faraday Test Centre's Electromagnetic Compatibility (EMC) Laboratory is accredited to perform tests against military and civil aerospace standards.

Housing several shielded rooms including three large anechoic chambers, the facility can perform tests on multiple products simultaneously, including radiated immunity and emissions across the frequency range of 10 kilohertz to 40 gigahertz. Field strengths are available up to 2000 volts per metre (pulse) and 700 volts per metre (continuous wave).

Alongside radiated and conducted emissions, the laboratory is equipped to perform a wide range of impulse and damped sine transient tests to military and commercial aerospace standards.

Specialised programmable power supplies allow the laboratory to simulate a wide range of platform power supplies and perform power variation tests on DC, single phase or three phase equipment up to 18 kilovolt amps and in excess of 400 volts.

The large anechoic chambers are 8.5 metres long by 7.5 metres wide by 4.2 metres high with a 3 metre by 3.5 metre access door and each chamber has a shielded control/test equipment room. This allows even the largest systems to be tested, while maintaining isolation for any support equipment. Each chamber is equipped with a wide variety of power supplies.





EMC Laboratory capabilities

- Conducted emission (frequency range 20 hertz to 1 gigahertz)
- Radiated magnetic field emission (frequency range 20 hertz to 250 kilohertz)
- Conducted susceptibility audio frequency (frequency range 20 hertz to 300 kilohertz)
- Conducted susceptibility RF (frequency range 4 kilohertz to 400 megahertz)
- Radiated electric field susceptibility (frequency range 10 kilohertz to 40 gigahertz)
- Electromagnetic pulse (EMC covering the range 10 kilohertz to 100 megahertz)
- Transient tests as per MIL STD 461, RTCA DO160, DEF STAN 59-411 and Eurofighter Typhoon requirements
- Power supply frequency variations and transients
- Electrostatic discharge (up to 30 kilovolt)
- Compass safe distance (magnetic influence)

Environmental testing

The climatic and dynamic test facilities at the Environmental Test Laboratory are extensive. They include:

- **Climatic**

Most of our climatic chambers have viewing windows and cable/utility entry ports to enable unit operation.

- **Explosive and rapid decompression**

The laboratory has developed specialised facilities for simulating the rapid pressure changes experienced during extreme flying conditions and high-altitude canopy burst emergencies. Decompression times less than 100 milliseconds can be achieved. The maximum altitude we can test is 35 millibar (approximately 78,000 feet).

- **Waterproofness**

The laboratory can simulate a wide variety of conditions including blowing rain, driving rain, drip, water spray and immersion. The test limit for driving rain is 4 inches per hour and 18 metres per second and the maximum depth for immersion is 10 metres (pressurised equivalent).

- **Overpressure**

The centre's cylindrical test chamber has a 0.9 metre diameter and is 0.85 metre deep and is capable of pressures up to 4 bar gauge.

- **Salt corrosion**

A variety of salt mist and combined salt/humidity storage tests can be performed.

- **Temperature/humidity**

There are a variety of chambers for high and low temperature and humidity. The largest chamber is suitable for testing 1.83 metre high racks. We can test between: -60 to +140 degrees Celsius and 50 percent to 95 percent Relative Humidity (RH).

- **Thermal shock**

Thermal shock can be achieved by transferring products between any of the thermal chambers. Max 10 degrees Celsius a minute.

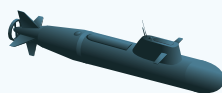
Temp shock/variation



Humidity



Pressure



Altitude



Salt corrosion



Acceleration



Vibration



- **Temperature/altitude/humidity (TAH)**

The laboratory has three chambers which are capable of a wide range of combined TAH environments. The maximum volume is 1 metre by 1 metre by 1.5 metres deep. The TAH facilities can also be utilised to simulate icing and moisture breathing conditions experienced during flight descent.

- **Vibration/shock**

Each shaker has its own room and can apply vibration and shock on three axis. The normal orientation of the items tested can be maintained at room temperature using high-pressure hydrostatic slip tables for the horizontal axis vibration. Single-direction vibration can be applied at high and low temperatures in our reliability test centre.

Using up-to-date vibration control technology, we generate a wide range of test profiles including swept sine, sine dwell, broadband random, random on random, sine on random, gunfire, mixed modes, bump, classical shock (TP sawtooth, half sine). The maximum mass we test will depend on the individual test requirements of the product.

- **Acceleration**

The centrifuge can apply a maximum G-force of 30g on payloads up to 42kilograms. In addition to the on-board mains supply, there are 30 x 5amp slip rings and two 1553 lines available for unit operation. Test equipment can also be strapped onto a central platform, allowing direct unit connection.

- **Handling**

A variety of facilities are available for transit drop (free fall), bench handling and drop and topple testing. The maximum mass we can test is 100 kilograms.

Get in touch

03300 484291

faraday.test@baesystems.com

baesystems.com/faradaytestcentre

Faraday Test Centre

BAE Systems

Marconi Way

Rochester, Kent



BAE Systems Electronic Systems



BAE Systems Inc



BAE Systems, Inc



BAE Systems, Inc



BAE Systems, Inc



BAE Systems
Marconi Way
Rochester
Kent
ME1 2XX
United Kingdom
Tel: 01634 844400

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