

51st IAA SYMPOSIUM ON SAFETY, QUALITY AND KNOWLEDGE MANAGEMENT IN SPACE
ACTIVITIES (D5)

Prediction, Testing, Measurement and Effects of space environment on space missions (3)

Author: Mr. Robert Elliott
STFC, United Kingdom, robert.elliott@stfc.ac.ukREMOVING INNOVATION BARRIERS THROUGH OPEN ACCESS TEST FACILITIES; INSIGHTS
INTO WHOLE SYSTEM AND SUBSYSTEM TESTING, MEASUREMENT AND CALIBRATION
INFRASTRUCTURE AT THE NEW NATIONAL SATELLITE TEST CENTRE.**Abstract**

The **National Satellite Test Facility (NSTF)** is an independent UK national facility to be built in Harwell for the environmental testing of satellites of up to 7 tonnes in mass. It is funded by the UK Government in response to a study commissioned by the UK Space Agency (UKSA) into the status of existing space test facilities in the UK. The Science and Technology Facility Council (STFC), through its RAL Space department, submitted a business case to the Department for Business, Energy and Industrial Strategy (BEIS) in April 2017, this was approved on the 22nd June 2017, with an allocation of £99M (112M).

Here we will showcase the latest designs and specifications of the new infrastructure, demonstrating its purpose in testing and measurement innovation, and how it's inclusion within the global space ecosystem will help enable a myriad of future missions into earth orbit and beyond.

The NSTF will initially provide:

- Large high-ceiling satellite integration and preparation cleanroom area (Typ. 13m floor to crane hook height)
- Spacecraft centre of gravity and moments of inertia measurement facility,
- Large test facilities for sine and random vibration, pyro-shock and acoustic environmental testing,
- Large thermal vacuum chamber (minimum 7m internal diameter x 12m long to support spacecraft thermal vacuum testing and sensor calibration activities),
- A suitably clean electro-magnetic-compatibility (EMC) facility for spacecraft level EMC testing,
- A near-field radio frequency (RF) test range for testing of communication and RF payloads and satellites.
- Enhanced capabilities within the existing RAL Space facilities to support smaller scale spacecraft and academic / science payload level activities.

The Satellite Test Centre is being built as part of the Harwell Campus Space Cluster, collocated with ESA ECSAT and the rapidly expanding commercial ventures based on site with over 80 companies and employing over 800 people. The NSTF is planned to open for use in spring 2020.