The National Physical Laboratory is operated on behalf of the DTI by NPL Management Limited, a wholly owned subsidiary of Serco Group plc.

The NPL TSARS can achieve calibrations with uncertainties < 1%, (as demonstrated in Ref. 2). The NPL primary standard cryogenic radiometer and consequently all its derived scales are traceable to the NPL Spectral Responsivity scale, which is in turn traceable to the SI units with uncertainties less than 1%. The NPL Spectral Responsivity scale is based on the measurement of the spectral responsivity of a reference detector calibrated against the NPL Primary Standard cryogenic radiometer. The NPL Spectral Responsivity scale is extrapolated to the UV and IR spectral regions through specially designed and calibrated filter radiometers.

The NPL TSARS is a collaborative project established with TNO TPD in Delft. As part of this project, one of the TSARS was taken to TNO TPD in Delft to be included in the radiometric calibration of the Global Ozone Monitoring Experiment (GOME 2).

To demonstrate the flexibility and performance of TSARS, a collaborative project was established with TNO TPD in Delft. As part of this project, one of the TSARS was taken to TNO TPD in Delft to be included in the radiometric calibration of the Global Ozone Monitoring Experiment (GOME 2).

NPL provides a wide range of materials and services to support the Earth Observation community. These include:

- Reference Reflectometer
- Variable Black Body
- Reference Spectral Radiance Source
- Filter Radiometry Facility at NPL
- Gonio RAdiometric Spectrometer

NPL has championed the use of radiometrically calibrated filter radiometers. The TIFRI Black Body and variable black body are used to calibrate other detectors. The TIFRI Black Body is a large-scale variable black body specifically targeted to meet the requirements of the Earth Observation community, known as the Transfer Standard Absolute Radiance Source (TSARS). The TSARS provides a known source of spectral radiance. In this way the source emission scales, reference spectral radiance source and a lamp illuminated spectral radiance standard (TSARS). In the latter case the uncertainty required is 0.4% across the 75 mm diameter exit port. In addition, a set of filter radiometers are used to calibrate other detectors and, from there, other scales or transfer standards.

The concept of the TRUTHS mission is to provide the EO community with a wide range of services. These include:

- Spectral emission scales
- Gonio-metric measurements (reflectance and transmittance)
- Small and large samples
- Wide spectral range (200 nm to 100 µm)
- Wide dynamic range
- High accuracy
- Low cost – fast time

The first optical satellite to fully calibrate itself against a primary standard in space was the GERB. It allows a low mass, low operational power whilst maintaining performance in terms of absolute spectral radiance using sources specifically designed and calibrated at NPL. The instrument measures in all bands of the Earth Observation spectrum from the UV to the IR. The concept makes use of a reflecting mirror to enhance the emissivity of a nominally low mass black disc.

In black body design supported under a contract to ESA. It allows a low mass, low operational power whilst maintaining performance in terms of absolute spectral radiance. The instrument measures in all bands of the Earth Observation spectrum from the UV to the IR. The concept makes use of a reflecting mirror to enhance the emissivity of a nominally low mass black disc.

In summary, NPL's vision is to be a European centre to provide an independent service to validate and QA EO data for both end users and data providers.