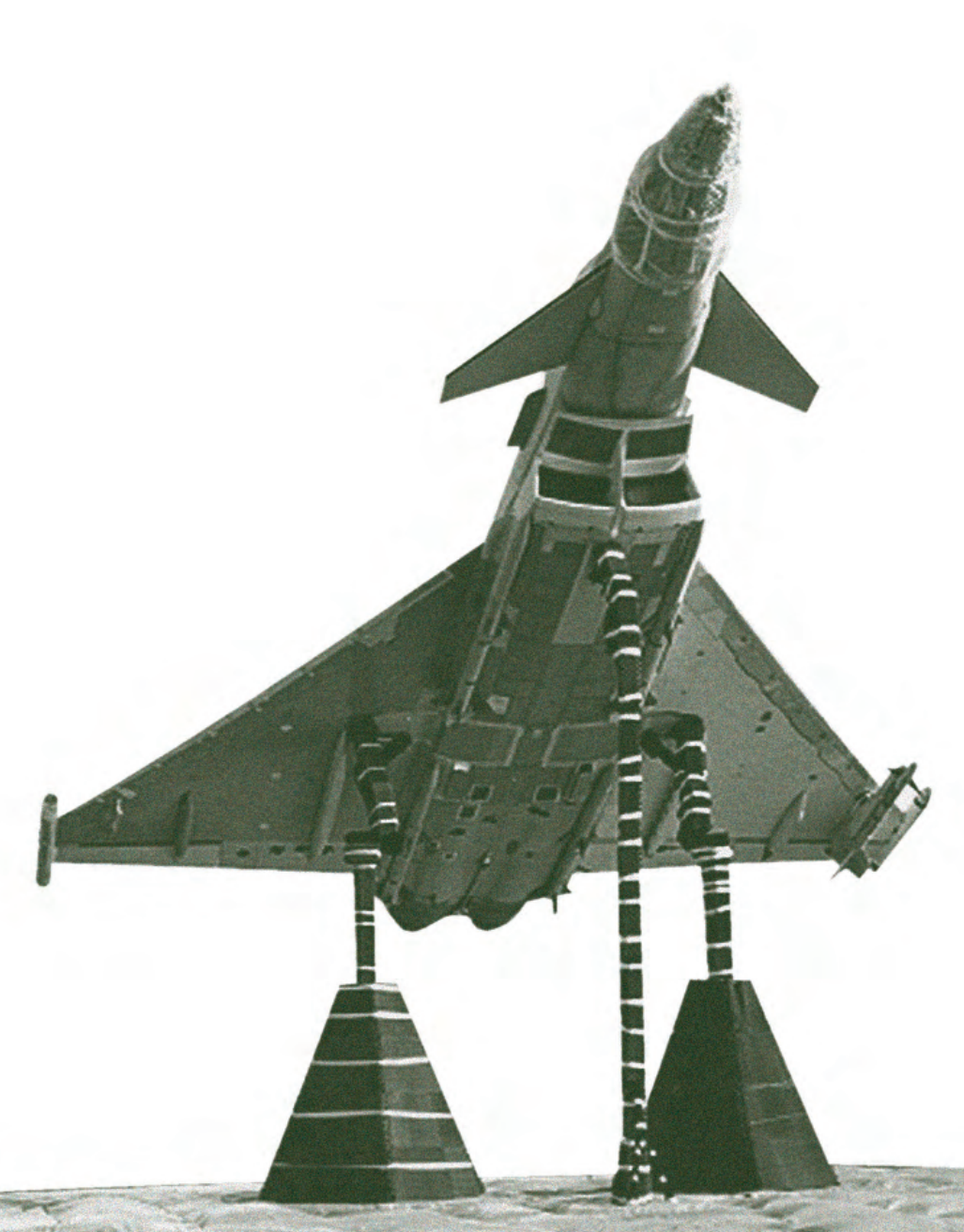


## Low Observable Design and Test & Analysis Facilities

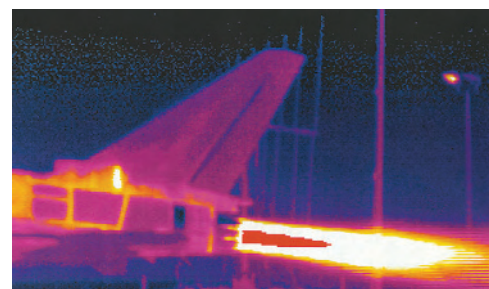


### Introduction

In the design and manufacture of both current and future generation aircraft, the Low Observable properties of a platform are now as important a consideration as other design factors such as aerodynamic performance and weight.

Threats to aircraft can come in all shapes and sizes and encompass more or less the whole of the Electromagnetic spectrum. From RF, through Infrared to visual and onto UV.

EIS offer a complete life-cycle service starting at the concept phase moving through design and production and eventually to in-service support.



# Low Observable Design and Test & Analysis Facilities

## Mobile RCS Imaging Monitoring System

Mobile RCS/Imaging system can be established at various indoor locations on any site, to suit target or test requirement e.g. production-line, dispersal hangar, R&D test rig, empty hangar space etc. Rapid test capability set-up and measurement times.

Frequency Coverage	2GHz - 18GHz – in three bands (2-4, 4-8 & 8-18).
RCS Dynamic Range and sensitivity	Typically up to 90 dB with high sensitivity.
Antennae Suite	Range of linear polarised broad-band antennae sub-systems providing; monostatic or quasi-monostatic capability, narrow and/or broad beam illumination and linear polarisation combinations.
Clutter Rejection and Reduction	Pulse Bracketed/Gated system with fast rise and fall times (typically $\leq 4\text{ns}$ ) with pseudo, random phase coding and background subtraction available.
Data Acquisition	Fast data acquisition with multi-waveform programmable table, typically sequenced at 1000 kHz pulse repetition rate. Twin channel, coherent receiver providing full, linear polarisation, matrix capability.
System Accuracy	Typically $\pm 1\text{-}3\text{dB}$ , but dependent on target size, type and RCS level.
Target Size	Whole-body or Zonal-body (zones on a large whole-body) targets up to $\sim 5\text{m}$ diameter and up to 35 tonnes load capability can be handled.
Support System	Range of LO support systems and test rigs available. Custom made LO systems can be manufactured in house.
Imaging Capability	Capable of high resolution SAR (synthetic aperture radar) and ISAR (inverse SAR) 2D & 3D imaging.
Diagnostics	Powerful RCS/Image analysis and diagnostic software available.
Reporting	Data collection &/or analysis reporting available to suit the customer's needs.

## IR Facilities

### G-A Facilities

- Spatial Measurement Equipment
  - MWIR (3-5 $\mu\text{m}$ ) LWIR (8-12 $\mu\text{m}$ ) Thermal Imaging Cameras
  - Measure target temperatures from  $-60^{\circ}\text{C}$  up to  $1500^{\circ}\text{C}$
- Spectral Measurement Equipment
  - CI SYTSEMS SR5000 CVF – (Spectral Range: 1.25-14.8 $\mu\text{m}$ )
  - Black Body Calibration Sources  $-70^{\circ}\text{C}$  to  $1050^{\circ}\text{C}$
  - Full atmospheric Calibration facility

### A-A Facilities

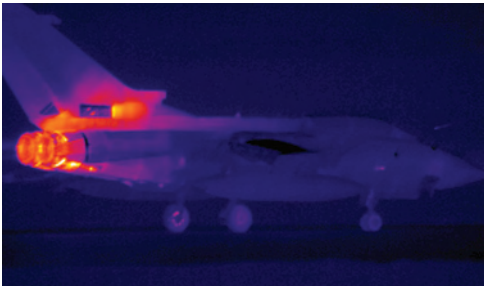
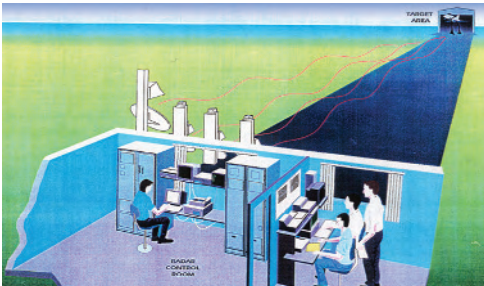
- Measurements of targets from 2 platforms (Jetstream & Helicopter) using the same IR measurement systems as above
- Measurement ceilings of 26000 and 10000ft respectively

### G-G Facilities

- IR measurement equipment from G-A and A-A can be used to perform ground based measurements. Trials experience in airframe hotspot surveys, engine/plume measurements and blackbody calibration measurements.

## RCS Range

262m (antenna to turntable, quasi far field ground plane type).	
Main Turntable	12m Diameter, 35 tonnes load capacity rotation from 2.5 to 50 $^{\circ}$ / min
Support Systems	Full range of aircraft and target support systems including a 6.5m ogive for targets up to 12.5 tonnes
Frequency of operation	2-18GHz in 4 bands, Full polarisation H, V and Cross Pol
Pulse Parameters	Pulsed RF, widths from 5ns to 1000ns, PRF upto 1MHz 2 independently programmable range gates
Dynamic Range	Typically $>90\text{db}$ with high sensitivity and low background clutter
Antennas	4 purpose-designed dual-polarised offset parabolas in monostatic configuration
Imaging Capability	20 ISAR (Inverse Synthetic Aperture Radar)
Diagnostics	Powerful RCS/image analysis and diagnostic software available
Reporting	Data collection &/or analysis reporting available to suit customers needs



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