

Affordable determination of spacecraft magnetic properties with high precision despite the absence of a coil facility by measurements in uncompensated and perturbed facility environments.

Key Features

- “Simplified” and “advanced” level of confidence evaluation based on mean and standard deviation or probability density functions
- New probe calibration technology
- Instant multi-probe snapshot measurements
- No Helmholtz coil facility required
- Earth and industrial magnetic noise identification/elimination
- Typical measurement range: 1 to 45000 nT
- Typical background noise: 2–5 nT
- Data acquisition time: < 5 sec

Output of GAMAX Software

- Global dipole moment prediction
- Multi-point far-field predictions
- Optimal multi-point compensation

Error

- Far-field and global dipole moment prediction error < 5 %

Size of Test Device

- From tiny devices to large spacecraft

Limitations

- No soft-magnetic material
- Non-magnetic handling hardware

Typical Hardware Setup

- 4 to 8 non-magnetic rods of 1 to 6 m
- 2 to 4 fluxgate magnetometers per rod
- 1 multi-channel data acquisition electronics
- 1 calibration unit
- 1 computer

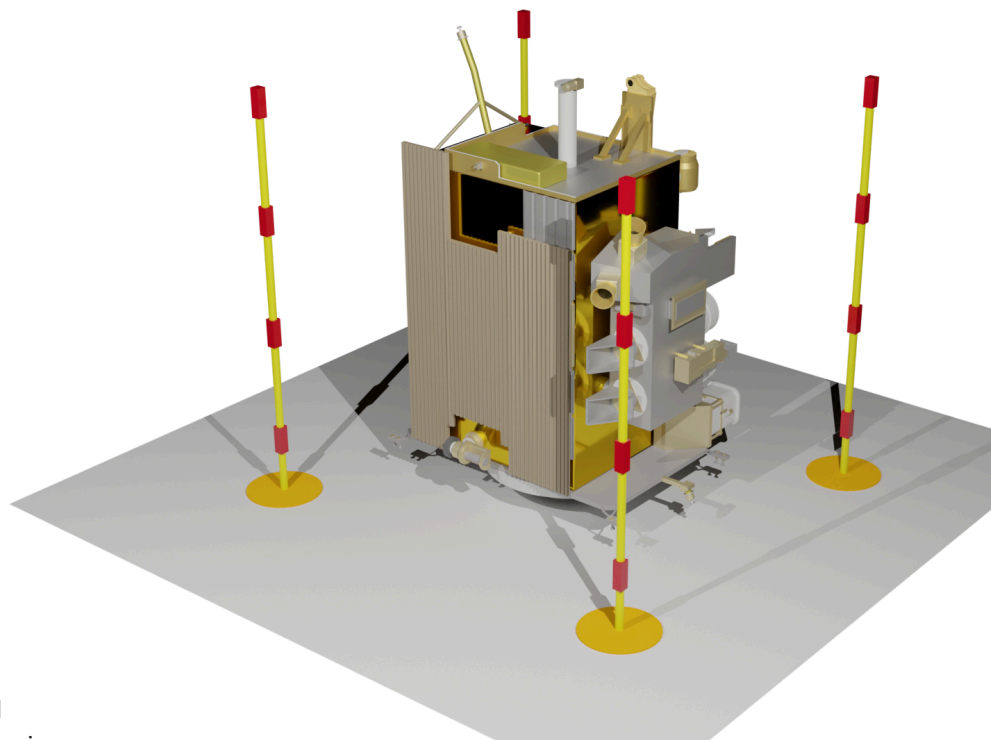
Validation example

Test setup

- Test device of top complexity
- Number of rods: 4
- Number of probes per rod: 4

GAMAX Result

- Optimal number of dipoles: 6
- Rms ambient disturbance: 41615 nT
- Test device fields: 26 nT
- Field fit error: 2.3 %
- Global moment error: 0.9 %
- Far field error: 1.2 %



Test setup with 4 rods and 16 probes