HERA

TAS POTENTIAL CONTRIBUTION

ESTEC 04/02/2019

ThalesAlenia Space
a Thales / Leonardo company

TAS POTENTIAL CONTRIBUTION TO HERA MISSION

Thales Alenia Space (TAS) has identified these main opportunities:

TAS-I → Transponder and Antenna

TAS-F → Solar arrays and Cubesats IT

TAS-E → TT&C subsystem and ISL electronics

TAS-CH → LIDAR and Cameras

TAS-B → TWTA

TAS-UK → Inertial Measurement Unit

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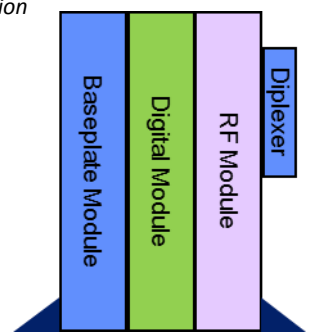
The equipment is composed by three modules and a diplexer:

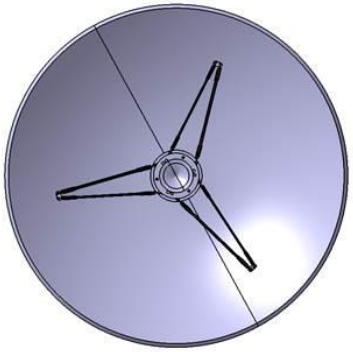
- *Digital Module (PCB Based)*
- *RF Module (PCB Based)*
  - *TT&C Rx Section, TT&C Tx Section and PDT Section*
- *Baseplate Module (PCB Based)*
  - *DC/DC Converter*
  - *Post-Regulator Section*

The proposed design allows achieving a very compact unit:

- *Preliminary mass estimation: < 2 kg*
- *Preliminary envelope dimension: 188x170x110 mm³*



TAS-I Transponder



The RF performance are:
Peak gain: 37.0 dBi at Dw link
Axial ratio: 0.7
Feed characterization: swe
Mass expected : < 8 Kg
Antenna diameter: about 1100 mm
Antenna length: about 350 mm
Volume allocated: 1150 x 450 x 1150 mm

TAS-I Antenna

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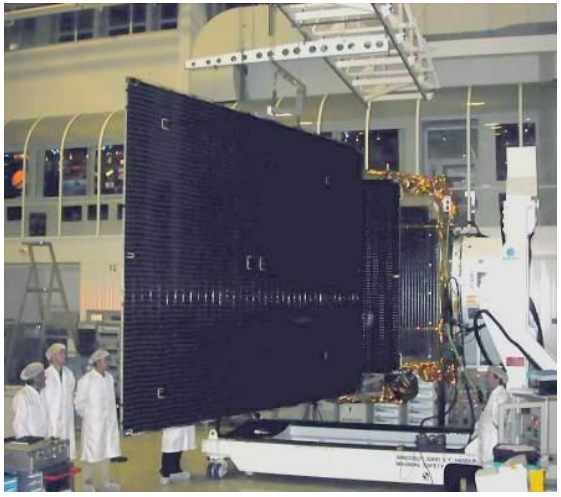
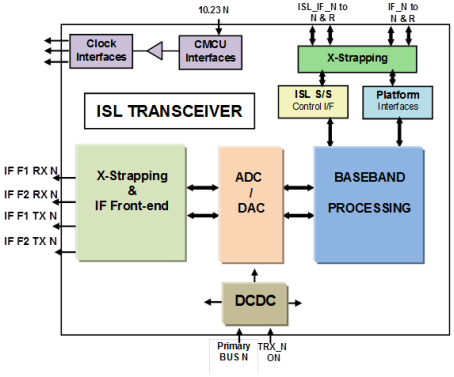
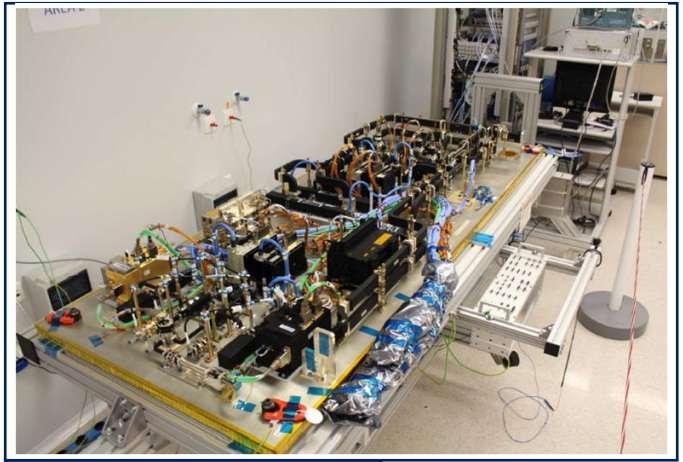


TAS-F Solar Array



TAS-E ISL Electronics



TAS-E TT&C Subsystem

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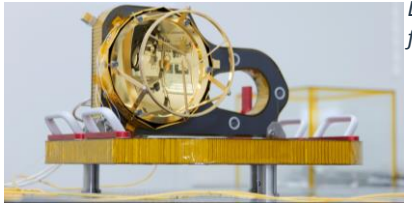
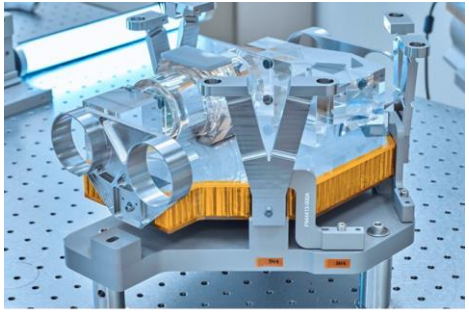


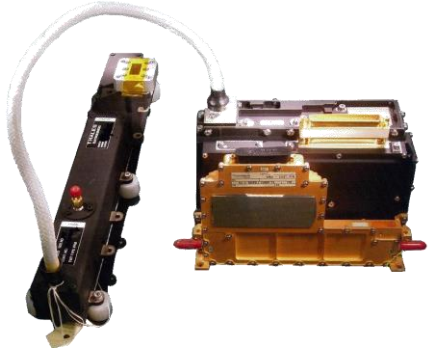
Laser Altimeter for Bepi Colombo



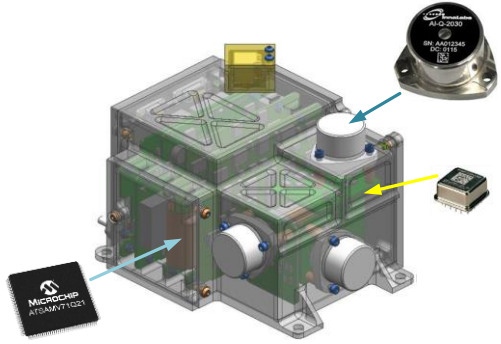
Spectrometers for ALADIN / ATLID Instruments

Miniaturized Cameras for ExoMars Rover

TAS-CH Lidar & Cameras



TAS-B TWTA



Baselined ExM Rover IMU

- *Minimal modification for HERA*

Reconfigured as follows

- *FPGA replaced by SAMV71Q21 (1/Axis)*
- *SGH-15 replaced by SGH-03*
- *QA3000 replaced by AI-Q-30*
- *Additional of a watch-dog circuit to protect the SAMV71*

Qualification of AI-Q-30 external to HERA

- *Component and LAT costs only*

TAS-UK IMU

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