

- **High precision Doppler measurements and on-board navigation**
 - simultaneous measurements on two frequencies : 401.25MHz and 2036.25MHz
 - provides elementary velocity measurements with an accuracy better than 0.3mm/s
 - delivers real time PVT information in ITRF and J2000 reference frames with sub metric to centimetre accuracy depending on orbit and spacecraft characteristics
 - capacity to provide geodesic data to help altimeter tracking
- **Beacons tracking capability :**
 - up to 7 beacons simultaneously (7 dual frequency channels)
 - increases the number of passes and measurements
 - increases geometric diversity
 - decreases tracking conflicts and consequently allows lower elevation measurements and a wider coverage
- **Autonomous operation (Switch ON and forget it !) :**
 - routine high precision navigation mode reached autonomously
 - only Manoeuvre prediction TC needed in routine, if any
- **Power supply :**
 - 22 - 37 V DC
 - 23 W typical ; 30 W at Warm up, less than 2 hr
- **TM/TC I/F:**
 - MIL-STD-1553 / CCSDS packet terminal protocol
 - max TM rate < 4kbits/s (all TM activated)
 - 2 Bi-Level status per chain (power and software status)
- **10 MHz reference signal distribution :**
 - high stability
 - monitored with an accuracy of 10-12
 - Internally cross-strapped
- **On board time tagging capacity :**
 - external pulse time tagging capacity or pps distribution
 - microsecond accuracy W.r.t. International Atomic Time Scale
- **CPU/SW :**
 - rad tolerant design with SPARC ERC32 processor and memory fault detection and recovery
 - whole software stored twice in 2 redundant banks of EEPROM ; may be fully uploaded w/o any mission interruption



DORIS DGXX BDR (DORIS Redundant Box)

- ♦ 18Kg
- ♦ 390 x 370 x 165 (mm)
- ♦ cold redundancy of receivers and Oscillators
- ♦ Automatic switch of the antenna signal to the active receiver
- ♦ 3rd order phase loop
 - band width filter : 25 Hz @ 2036.25MHz
- ♦ Ultra Stable Oscillators (C-MAC Frequency Products)
 - frequency stability of 2.10-13 over 10s
 - Thanks to lessons learnt from Jason1, a Hardening process has been applied to decrease the sensitivity to the radiations by a factor of 10



DORIS antenna

- (CHELTON Antennas)
- ♦ 2Kg
- ♦ high 420mm x φ160mm

- **Will fly on board :**
 - ♦ Jason2 (NASA/NOAA/Eumetsat/CNES Altimetry Mission)
 - ♦ Cryosat2 (ESA Ice monitoring Mission)
 - ♦ AltiKa/SARAL (ISRO/CNES Altimetry/Argos Mission)
 - ♦ ...