

Status of the GPS implementation in AMS

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GPS flight module

- Delivered at CERN in March (twice), problem with protection box
- Stored by M. Capell in a protected place
- Needs Clean Room for opening of the protection box
- Assistance from Alcatel-Alenia for powering and first start-up ensured by LPTA, Montpellier

Remark:

need of intense testing with GPS flight module with DAQ/Trigger before its implementing in the AMS detector due to the differences in parameter settings of FM and QM (from CNES) modules

GPSE card, cables and PS

- GPSE card:
production of FM, QM and SM (TECNOTRON)
all functionalities OK, with front panel corrected
for cabling optimization
→ thermal test at Zurich/CERN then coated

tests in M-crate FM module performed (M. Karpinski)
- Cables FM:
 - power GPS – TMPB module, ordered (A. Lebedev)
 - GPS – GPSE card, ordered (A. Lebedev)
 - antenna – GPS, length measured (F. Cadoux)
of the total of 283.8 cm
will be ordered (C. Zurbach)
- Power Supply:
to be provided by MIT (M. Capell)
when ready?

GPS software

- AMS framework exists (A. Lebedev):
 - to send commands
 - retrieve telemetry
 - extract UTC time synchronized with a trigger works
- Commands defined (C. Zurbach and M. Grondin) for:
 - initialization – cold start-up and warm start-up
 - standard (everyday) running
 - monitoring mode
- In flight: GPS data will come in raw format, relevant information to be extracted on Earth

Analysis of data going on, documentation in preparation (C. Zurbach)

GPS software - modes

- Standard GPS data acquisition:
 - slave mode data: UTC time per sec (μ sec)
 - synchronized on p.p.s. signal
 - commands via GPSE card
- Development of the monitoring procedures:
 - free mode data
 - UTC time, Quality Estimator and flags
 - stability of the internal clocks studies to be continued (to define frequency of calibration data to be taken during flight)

Complete library will be built before July 2007
and tested next from May:

Half of the commands missing, call parameters to be understood and to be provided (C. Zurbach)

Planning

- Next tests with QM GPS from CNES in May 2007
- Tests with Flight Module in Clean Room:
→ *startup date could be June 2007*
- All hardware at CERN before summer 2007
- Completion of the software library: summer 2007
- **Aim: GPS fully implemented in AMS02 in beginning 2008**