Vibration Measurements at TTF

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Zeuthen, January 22, 2004

Technology Working Group

Topics

- **Sensors**

- **The new Hardware and Software**

- **Status**

- **Some first Data**

Hardware: E. Gadinkel, O. Savlanski, M. Stolper
Software: M. Lomperski

Sensors and Amplifiers

- **Piezoelectric Accelerometer**
  - Different types used
    - Brül & Kjaer 8318
    - Endevco 7703/1000
  - Charge sensitivity 70 to 100 pC/(m/s2)
  - Operate at He Temp with reduced sensitivity (~1/3)
- **Amplifier**
  - Brül & Kjaer Charge Amplifier 2635
    - Older type used at TTF (single Channel)
    - New type used for tests (double channel)

Sensor Connection to Amplifier and ADC

8 Channel ADC with USB Interface

Flange with Feed through SMA

Sensors

Cold   Warm   RG58   RG58

Radiation resistive cable

Charge amplifier and Integrator per channel
Power ground free

32 Channel ADC Common ground
Board in IRM
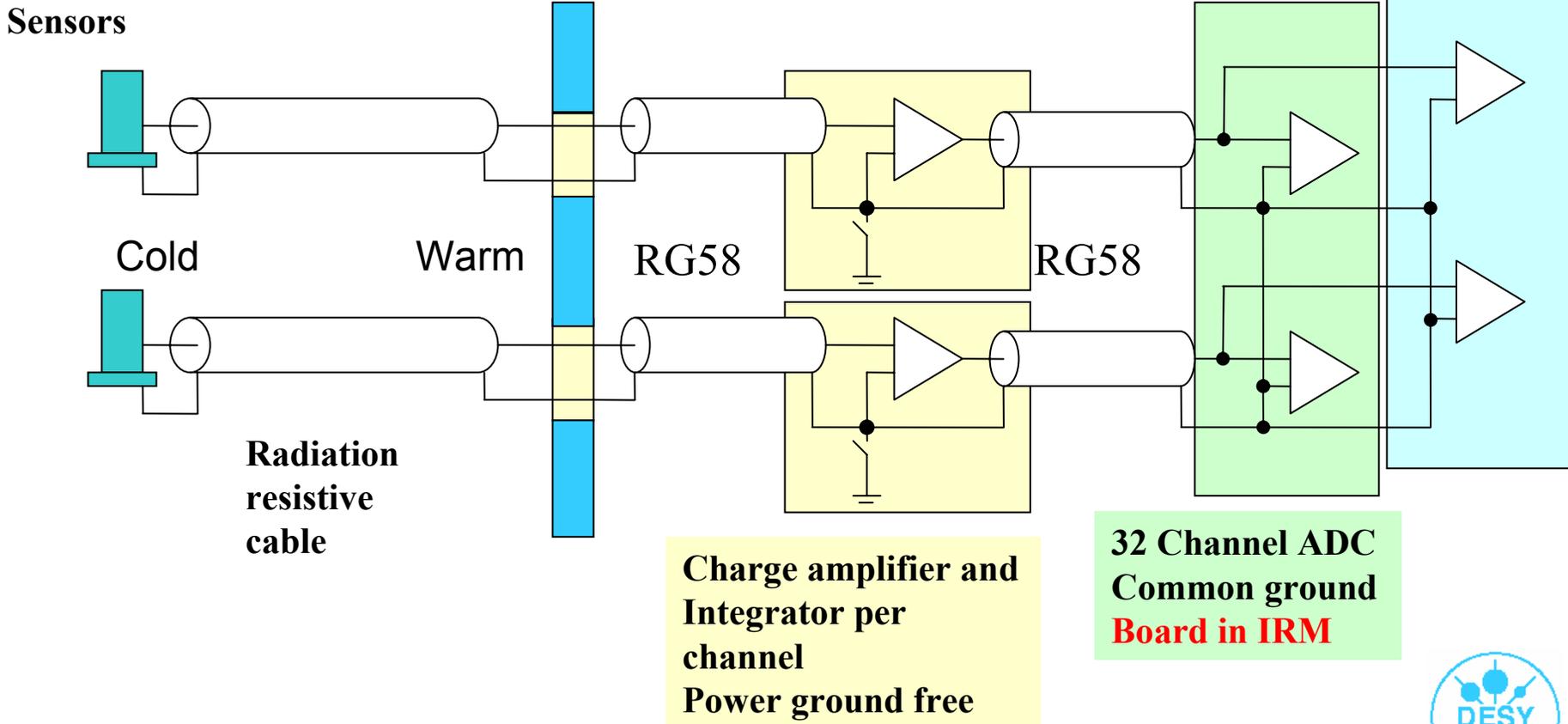
Location of Sensors

- Each TTF module is equipped with two Sensors

- Sensors mounted to the endplate of the Quadrupole
  - ☐ Vertical
  - ☐ Horizontal
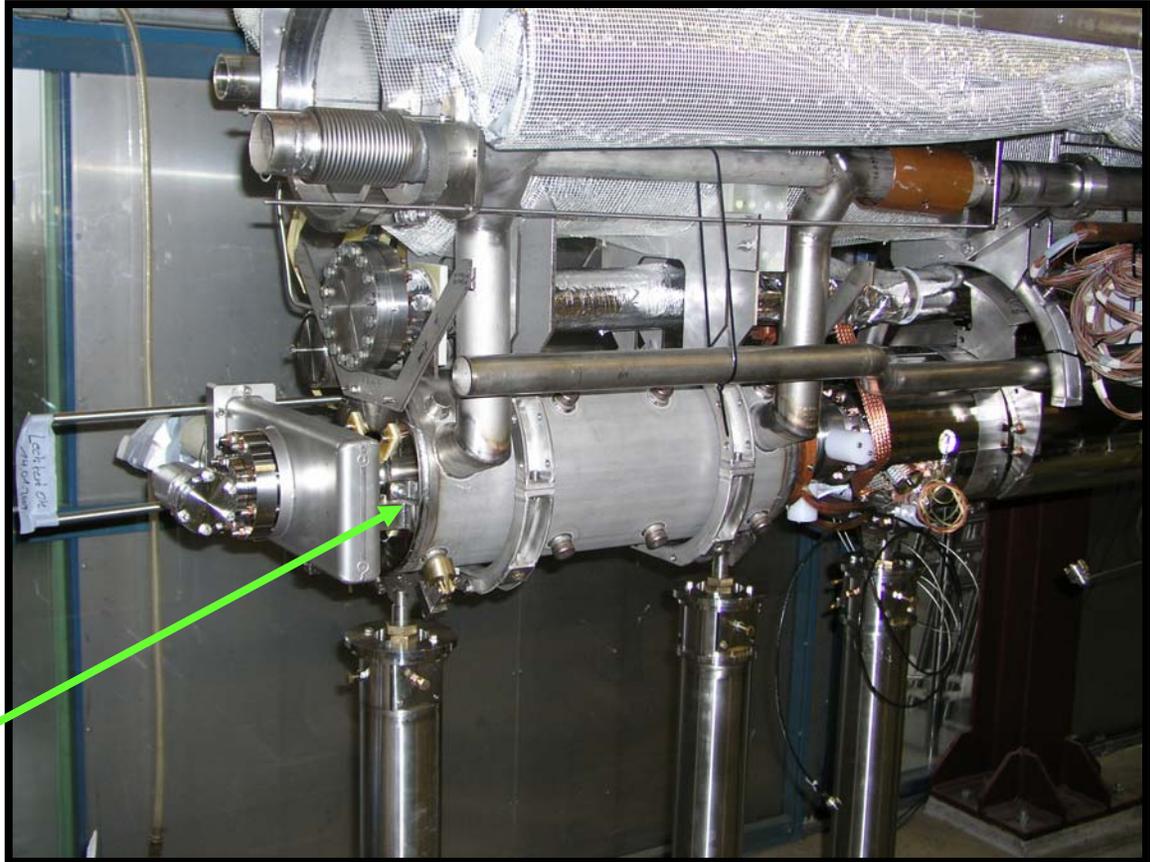
New Data Acquisition System
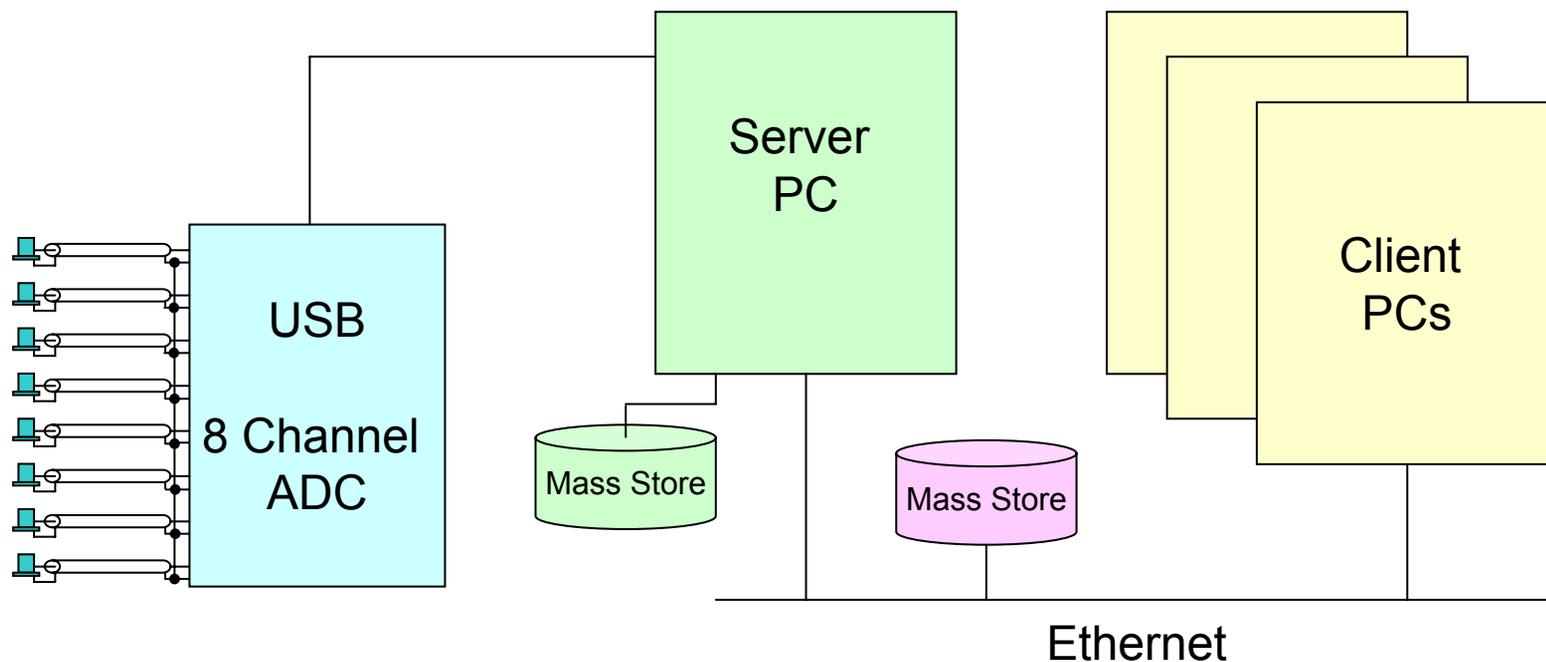
Data acquisition with Visual Basic

Software

- ■ Data Acquisition by Mark Lomperski
  - □ Rate up to 1 kHz over long times
  - □ Continuously stored data
  - □ Online display
  - □ Data archived on mass store
  - □ Files (.csv) for analysis available
- ■ Minor improvements needed

Server PC

Client

Preamplifier, Piezzo sensor and Geophone, outside TTF, floor

Some preliminary data

- Some first data were taken last weekend

- Analysis has started

  - More time needed for checking and comparing

  - Comparison with data from the geophone

  - Correlations need to be added

Fourier Spectrum

ACC2 horizontal, vertical
Vertical outside TTF Tunnel on floor
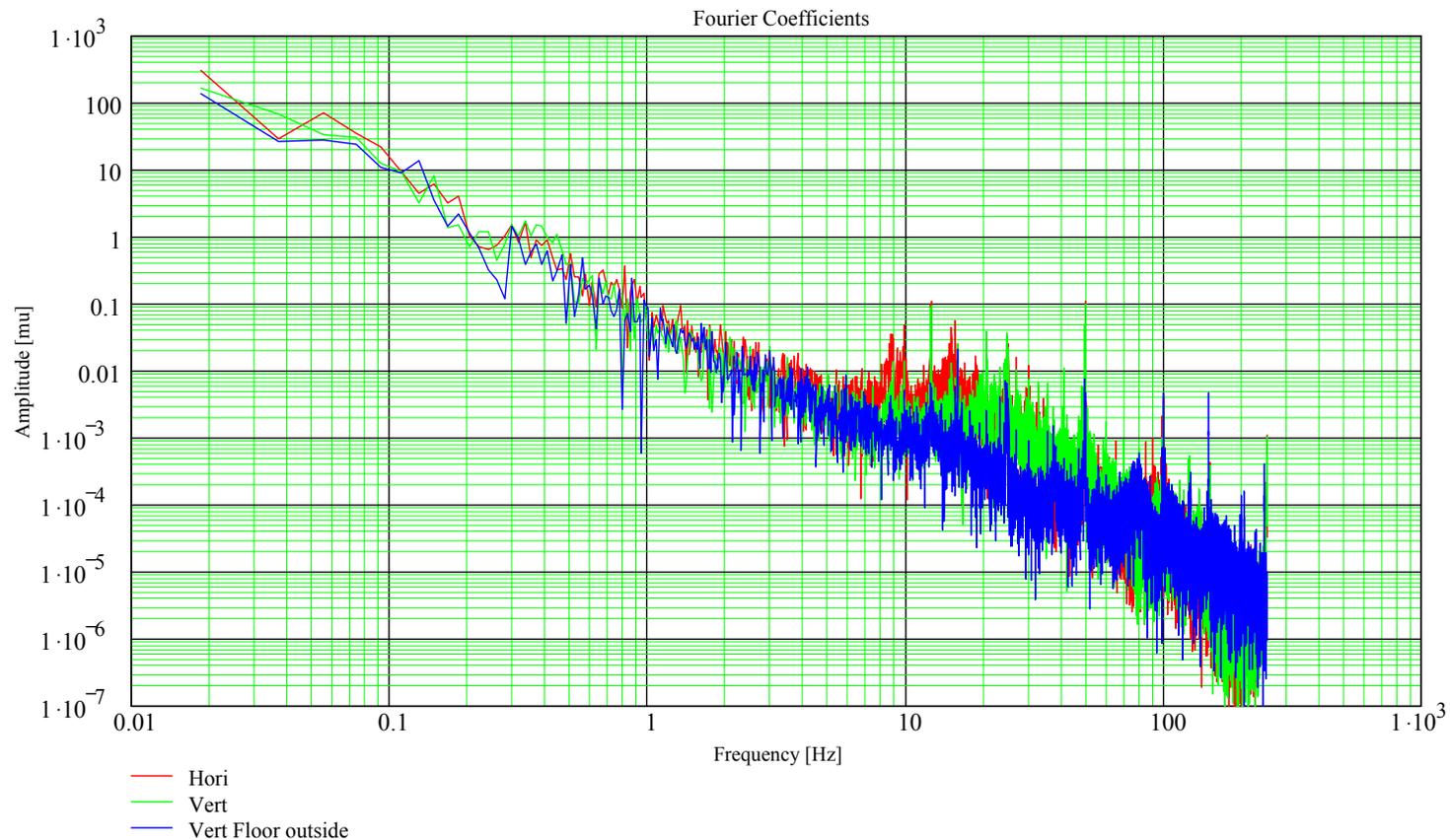
Preliminary!

Power Spectrum

ACC2 horizontal, vertical
Vertical outside TTF Tunnel on floor

Preliminary!

Legend:
- Hori
- Vert
- Vert ,floor, outside tunnel
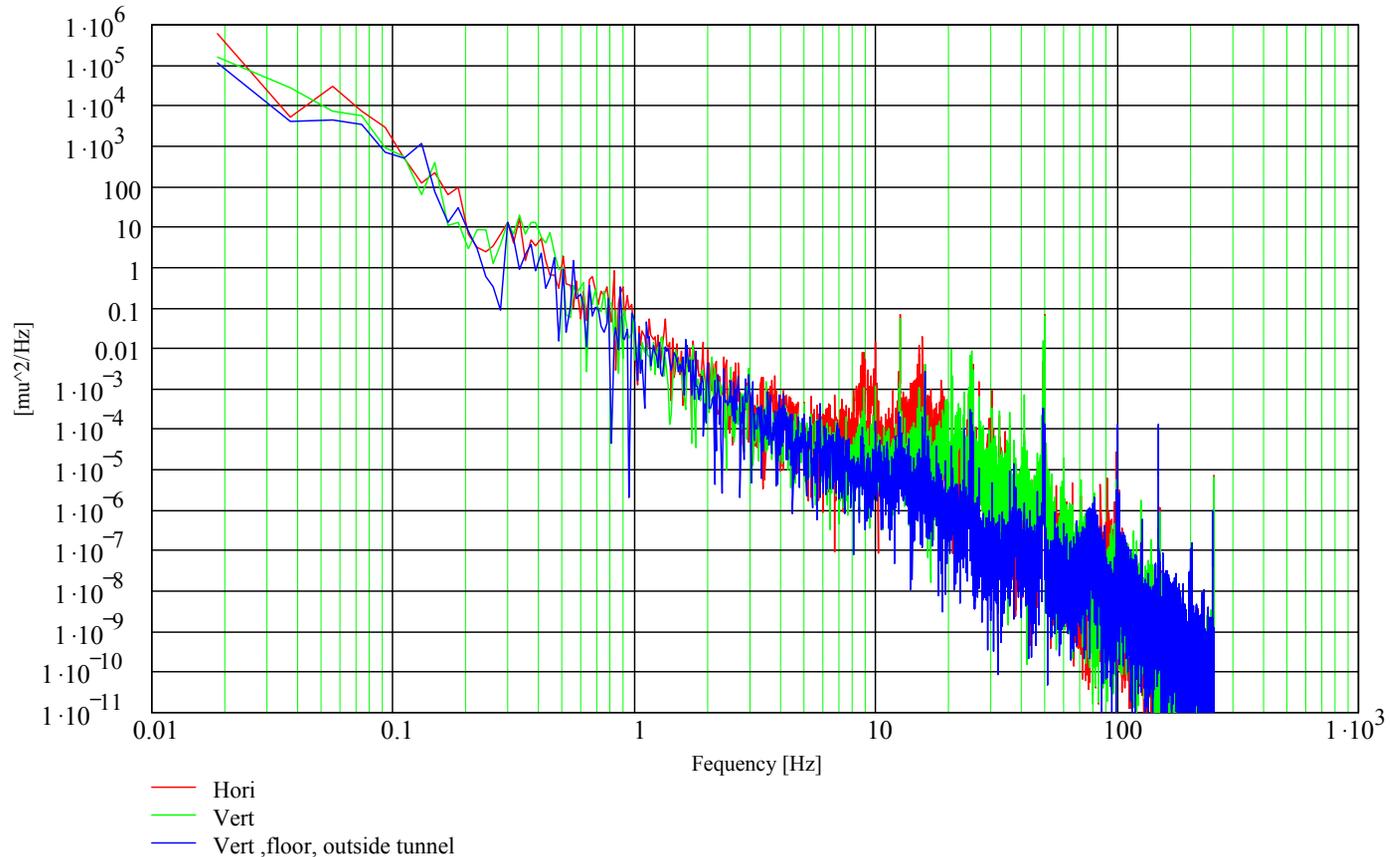
Integrated Spectrum

ACC2 horizontal, vertical
Vertical outside TTF Tunnel on floor

Preliminary!
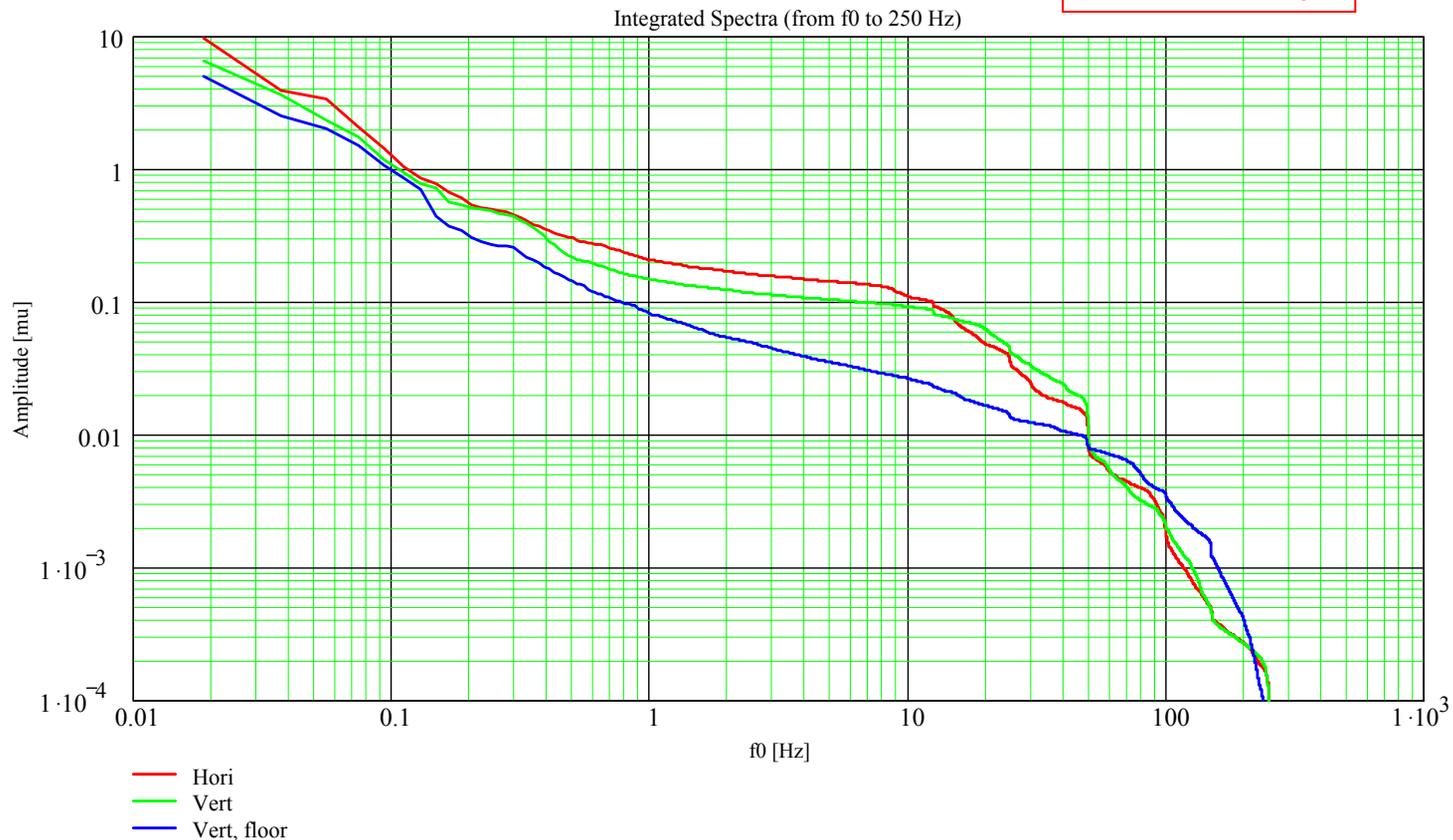
Summary

- Cabling improved to reduce noise

- New Data Acquisition System running

- Data taking (without TTF operation) has started

- Analysis must be checked and improved

- Aim to be ready for the next run

- All modules equipped with x,y sensors then