MO Design and Status Review

MO system status and production plans - discussion

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MSK Collaboration Workshop 2015
GPSDO

- Two boxes:
  - 2U - GPS receiver + Rubidium Oscillator
  - 1U – ultra low noise OCXO + isolation amplifier

- Delivered by external company (Precision Test Systems)

- Status of order:
  - first unit fully tested and accepted with modifications
  - two new units ordered
  - first unit will be upgraded after next two units arrival

- Problems:
  - no device at DESY to properly measure the phase noise and stability (E5052B SSA from Agilent is insufficient)

- Sources of delays:
  - Prototype evaluation (months)

- Planned delivery time:
  - two new units: middle of August 2015
  - upgrade: end of September 2015
New Signal Source Analyzers

- Needed to measure MO sources

- TimePod
  - tested, low spurs
  - small frequency range 0.5 – 30 MHz
  - TimePod price from 15k to 25k depends on options

- Holzworth

- Anapico

- Plan
  - test Anapico (already in DESY)
  - test Holzworth (borrow)
  - make measurements with external sources
100 MHz Synthesizer

- 2U 19" box
- Design and production in DESY
- Mechanics are ready
- Soon ready for tests (no showstoppers)
- Current status:
  - Waiting for the offer for new locking modules with full documentation (Altium schematics and PCB layout, production files)
  - Assembly in progress
- Missing parts:
  - TMCB + backplane (ordered)
  - display adapter board (under design by M. Sosnowski)
  - locking module (but prototype ready)
- Sources of delays:
  - locking module evaluation and bug fixing (failure report ready and sent)
  - Mechanics and PCB designers have limited time
- Price and delivery time:
  - minimum 3 units are required (4 would be reasonable)
  - No offer yet for locking modules
1.3 GHz Synthesizer

> 5U 19" box

> Design and production in DESY

> Current status/problems:
  - mechanics under design
  - order MX13 multiplier for 2 more units
  - how to properly design a cooling for HPA?

> Missing parts:
  - TMCB + backplane (ordered) + firmware + DFMC-SFP4 (not ordered yet, tests first?)
  - HPA (ordered)
  - uVM (ordered) + firmware + Zone3 board (no specs yet)
  - display adapter board (under design by M. Sosnowski)
  - mechanics (under design by M. Woźniczko + Ł. Zembala)

> Planned delivery time for entire device:
  - first unit in August 2015
Power Supply Module

> 3U 19" box, redundant – 2 units

> Delivered by external company - Wiener

> Status of order:
  - Modules are included in the order for LLRF stations
  - Cables not ordered yet, the final length is unknown

> Plan:
  - To be tested with every MO module

> Planned delivery time:
  - Devices come regularly, most of them are installed in the tunnel
  - at certain point one unit should be available for MO
Redundancy Box

- 5U 19" box
- Design and production in DESY
- Status of project
  - High-Q filter ready to use
  - RF switch PCB in production
  - Redundancy controller – specs and concept in progress
- Sources of delay:
  - RF switch PCB design - directional coupler simulations
- Planned delivery time:
  - end of the year
RF Distribution Box

- 5U 19" module
- Design and production in DESY
- Status of project:
  - Project not started yet
  - Splitters already in DESY
  - TMCB + backplane (ordered)
  - FRED (available)
- Problems:
  - no design of monitoring input and reflected power
  - no manpower
- Planned delivery time:
  - end of September/October 2015?
Online Phase Noise Tester - Anapico

➢ 3U 19" module
➢ Delivered by external company - Anapico
➢ Device already in DESY
➢ Problems:
  ▪ phase noise performance is a question mark
  ▪ test with external source needs to be performed
  ▪ manpower
> The MO room in XTIN is unfurnished.

> Plan for furnishing:

- Installation of AC mains and Ethernet on the wall (status unknown)
- Place a desk, chairs and order PC
- Order a moving table
- floor finish? painting, covering?

> Racks status:

- MO racks levelled
- Finishing works ongoing (cover some pipes, etc.)
**Schedule and Documentation**

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Optimistic prediction of modules delivery dates.

Documentation to every device is on the N: drive

Specifications:

\`\`\`4all\public\MSK_Projekte\RFSyn\XFEL_MasterOscillator\`1Specification

Designs:

\`\`\`4all\public\MSK_Projekte\RFSyn\XFEL_MasterOscillator\`2Design