ALBA RF Status

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The RF Group

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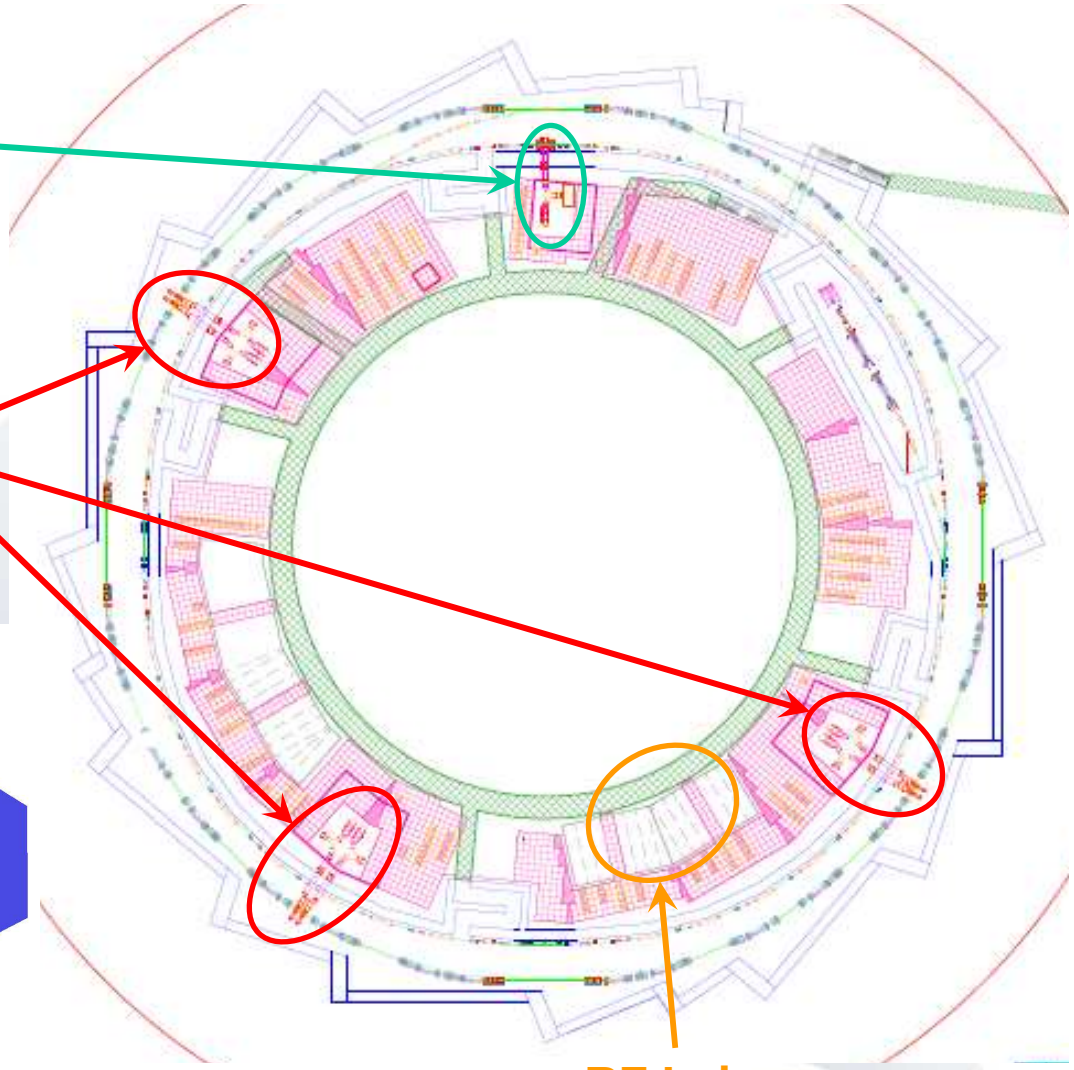
Status

- Booster Cavity
- SR Dampy Cavity
- Transmitters
- Waveguides
- High Power RF Lab
- LLRF
- Next

General Layout

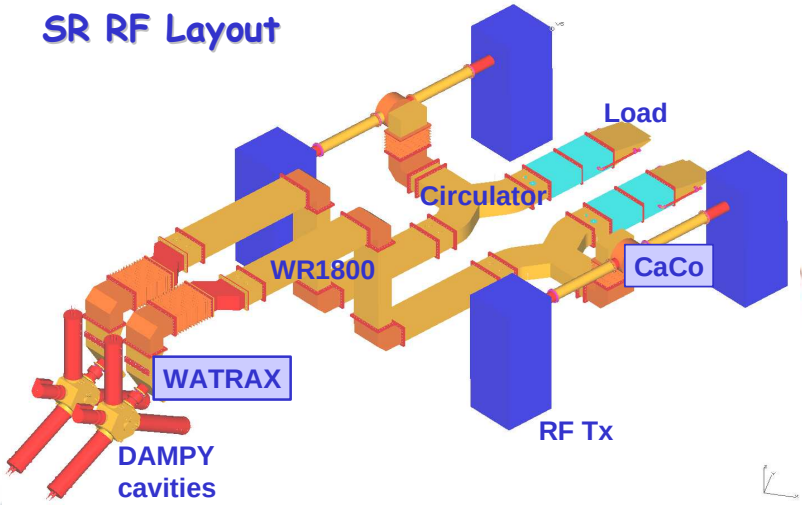
Booster RF Plant
(1 Tx / cavity)

Storage Ring RF Plants
(2 Tx / cavity)

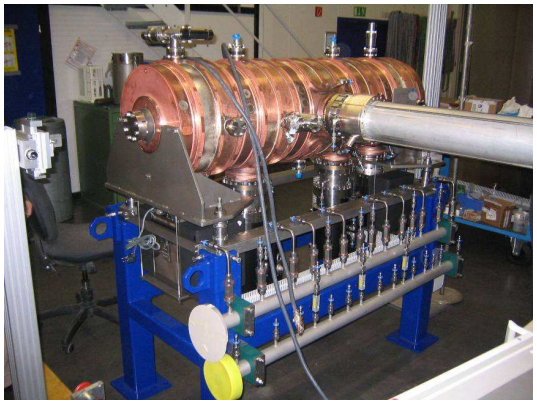


RF Lab
(1 Tx / cavity)

SR RF Layout

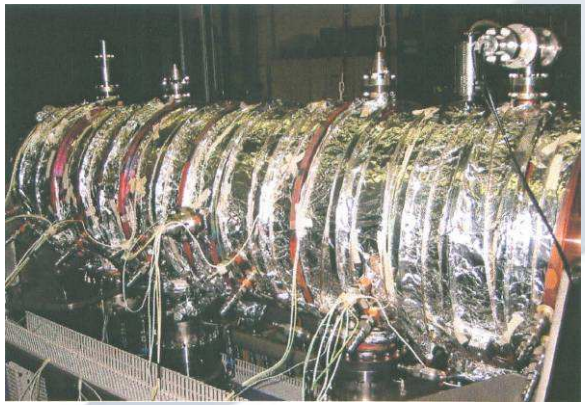


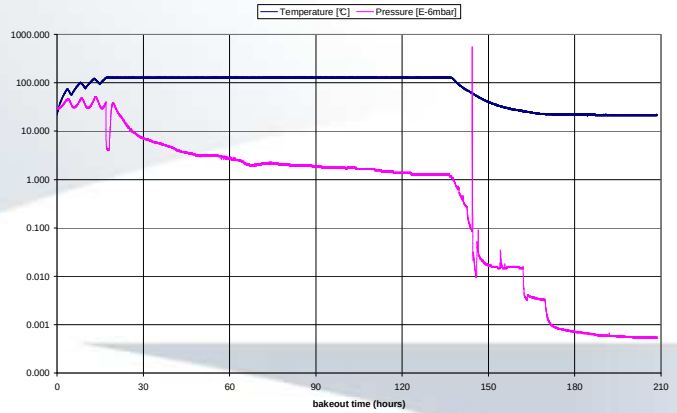
Booster Cavity



FAT at ACCEL

- Low power RF tests **OK**
  - Rshunt 15.4 MΩ
- Vacuum tests **OK**
  - Final pressure $5.5\ 10^{-10}$ mbar
  - Outgasing rate $3\ 10^{-13}$ mbar.l/s/cm^2





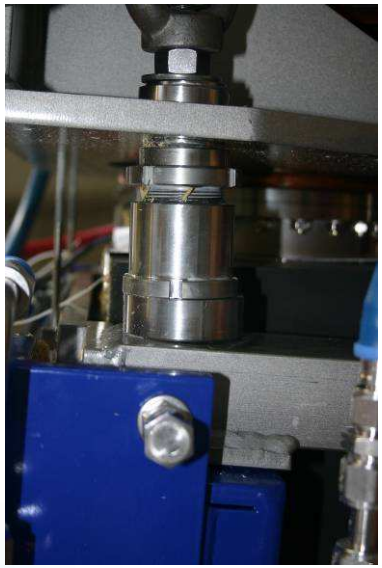
Sent to CELLS on March 19th… but …

Booster Cavity

Accident during unloading from the truck on March 20th

Booster Cavity

Cavity was sent to ACCEL for evaluation of damages and repair evaluation, but …

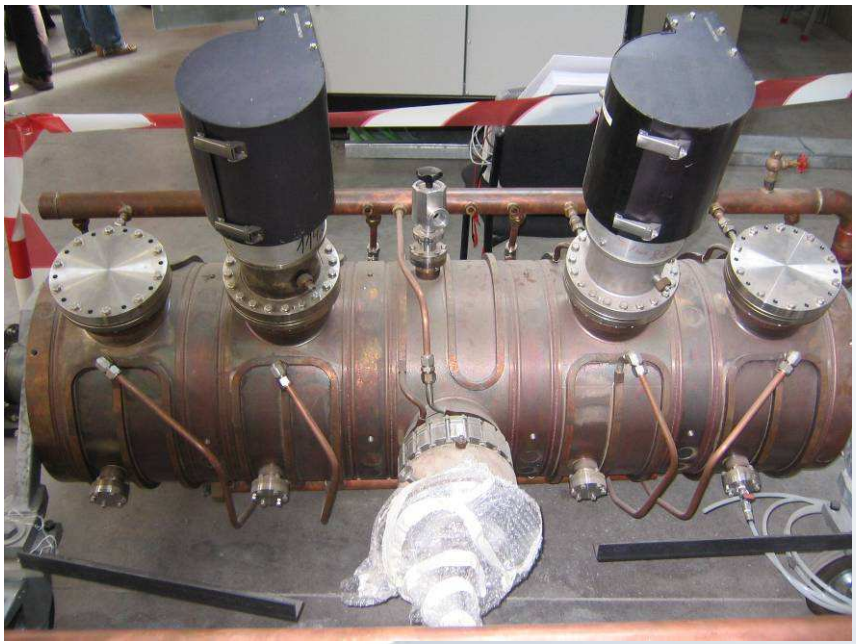


… no way to repair it. A new one has to be purchased. Two options:

1) purchasing it again to ACCEL
2) obtain one from DESY

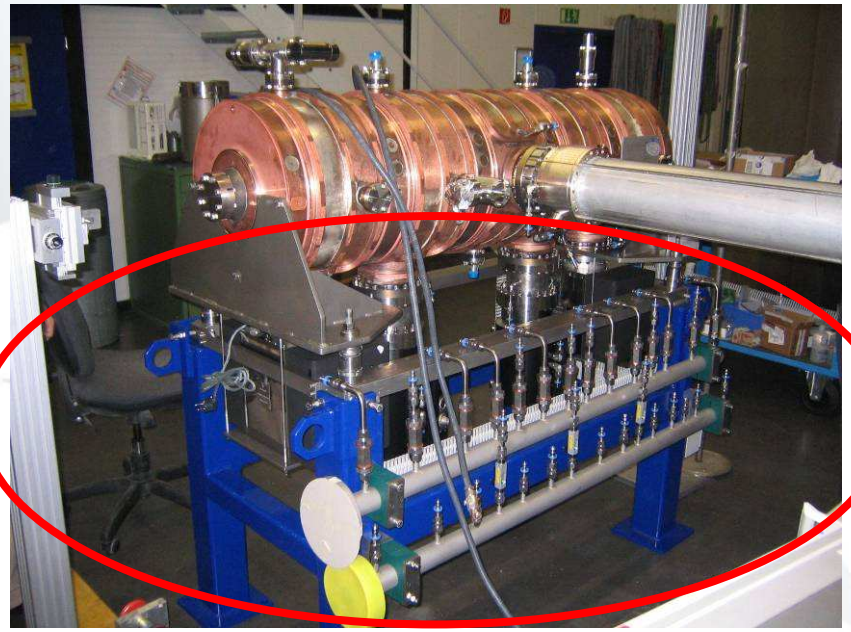
A Collaboration Agreement have been signed with DESY and a complete cavity has been delivered to us on September 26th.

Booster Cavity



5 cell cavity from DESY

We will use ACCEL's girder and ancilliaries and adapt them to the DESY cavity



SR Dampy Cavity

October 2006: Problems detected with the presence of a HOM
to Feb 2007: Intensive simulation and modification approved
June 2007: Pre-series cavity delivered by ACCEL
July 2007: Bead Pull measurements with the Daresbury system

No improvement on the HOM impedance

In addition, overheating of a flange in the cavity was detected at Willy Wien

Flange modification is needed

Next presentations of Michel and Ernst for details and questions

Transmitter (TX)

TX01 delivered 6th August 2007

HVPS cabinet

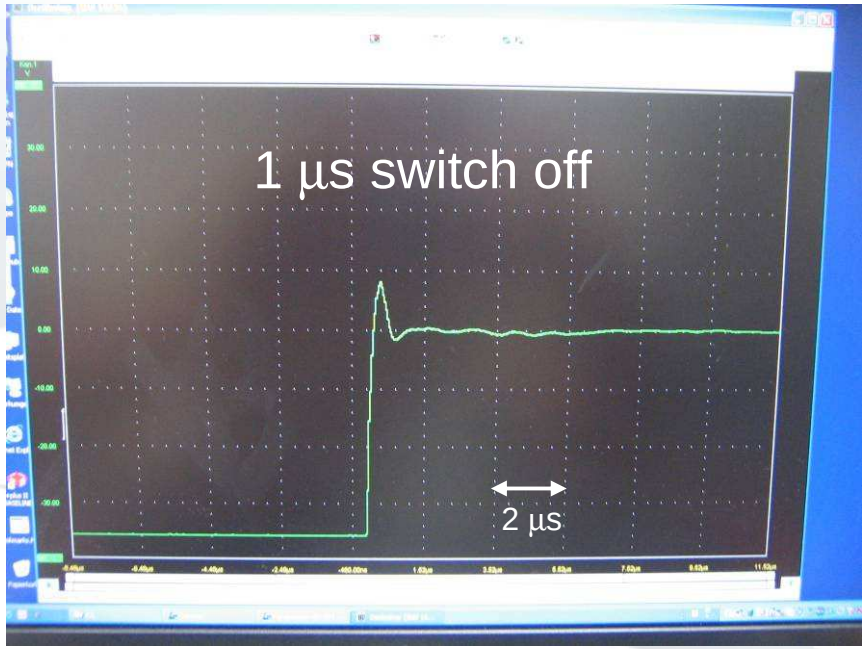
IOT cabinet

Output cavity already modified to coaxial 6 1/8" , for better reliability at 80 kW.

Thomson Broadcast and Multimedia AG

Transmitter (TX)

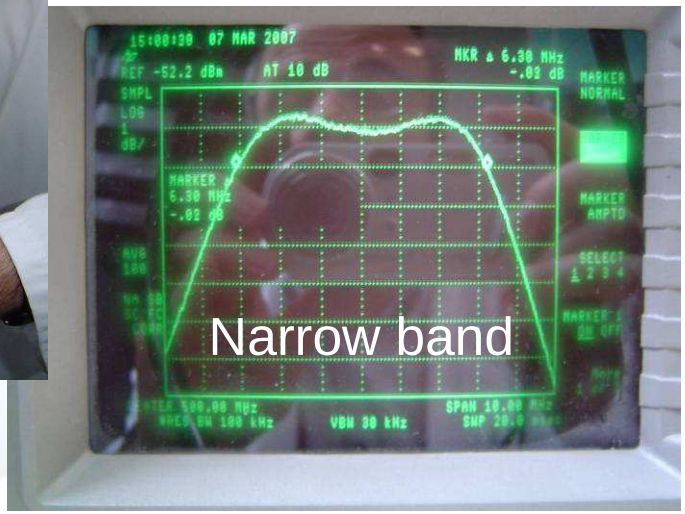
Commissioning in progress

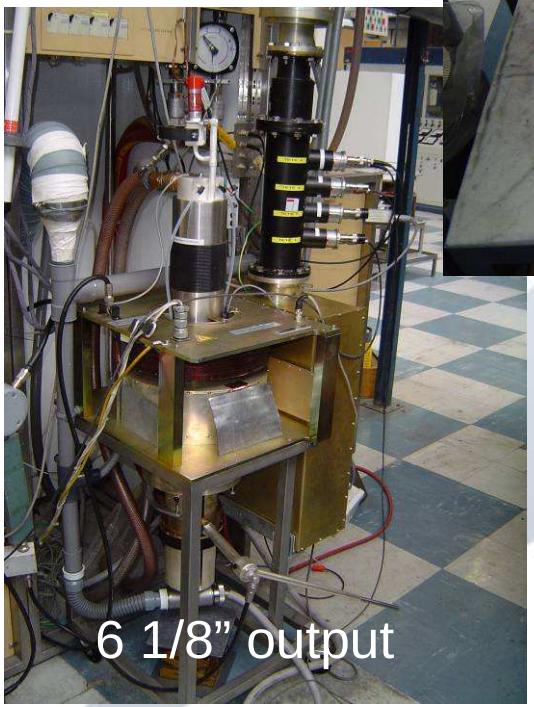


Thomson Broadcast and Multimedia AG

Transmitter (TX)

TH 793-1: New IOT development





Tested for 150h (including 50h at 80 kW)
Tests with the monofrequency cavity just starting

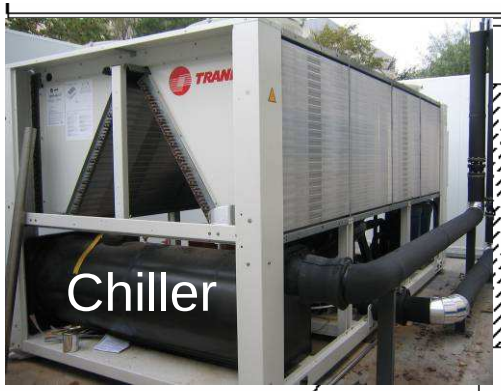
Thales Electron Devices (TED)

Waveguide

LOT 1 (MEGA):	Standard Components
29th March 2007	1st batch delivered
LOT 2 (Ferrite Inc.):	Circulators
22nd August 2007	1st unit delivered
LOT 3 (AFT):	Dummy Loads
23rd May 2007	1st unit delivered

All components installed or ready to be installed in the RF Lab

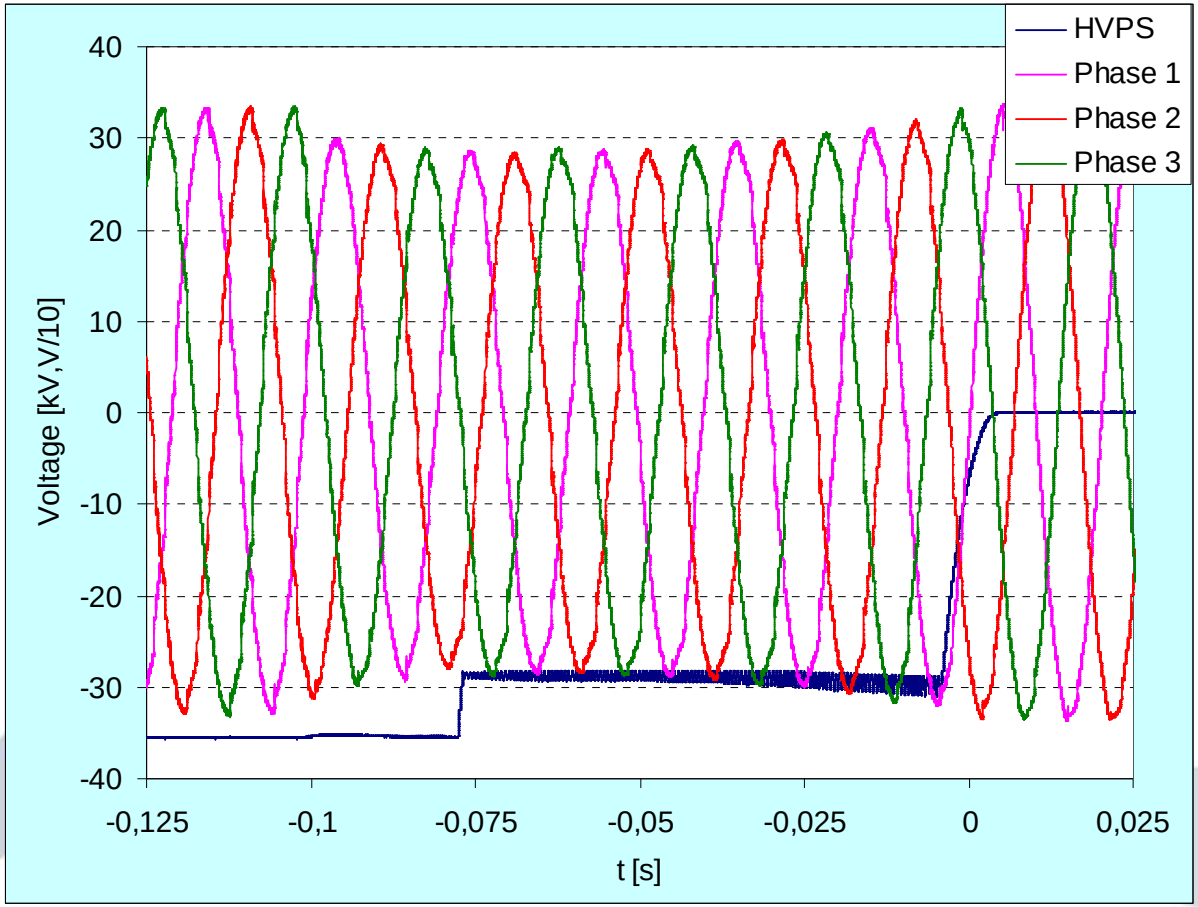
RF High Power Lab



- CSN / SCAR permission given
- Diesel Generator operational
- Water Chiller operational
- Cooling piping almost finished
- Personal Safety System (PSS) operational
- Equipment Protection System (EPS) installed and partially tested

RF High Power Lab

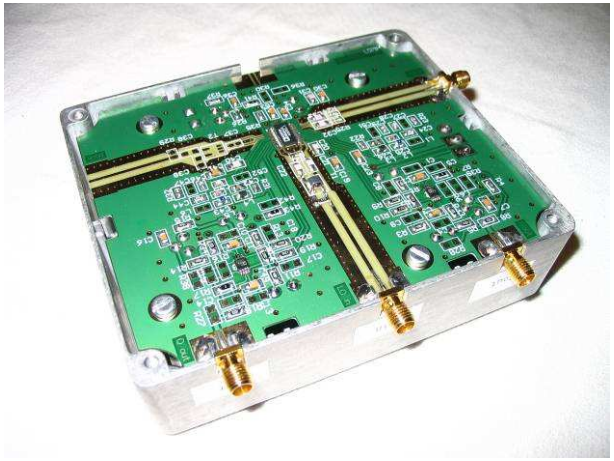
Diesel mains drop by 15% when the chiller compressors switch on

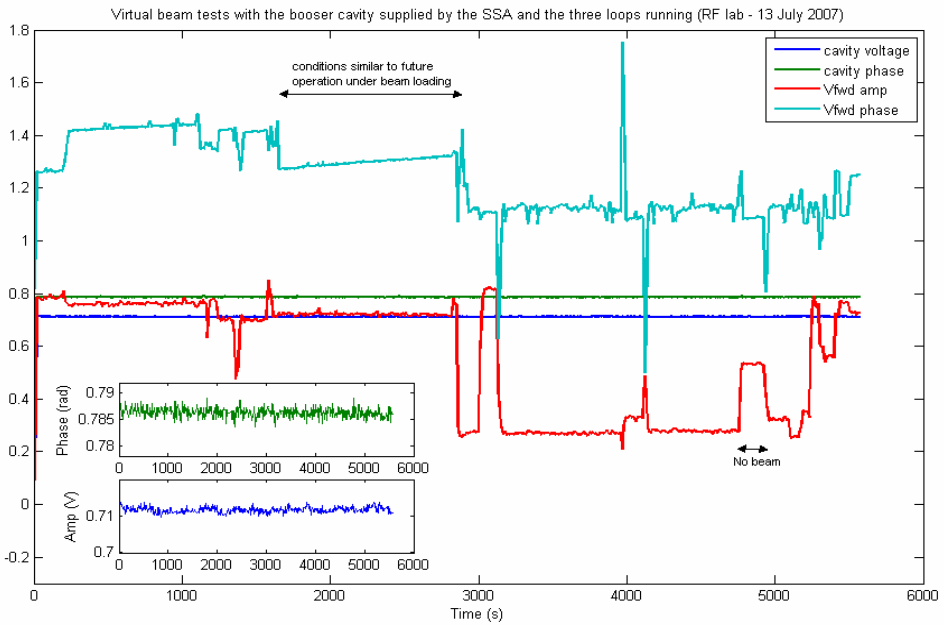


The transmitter trips. Maximum power up to yesterday 40 kW.

Analogue LLRF

The three regulation loops are now operational.



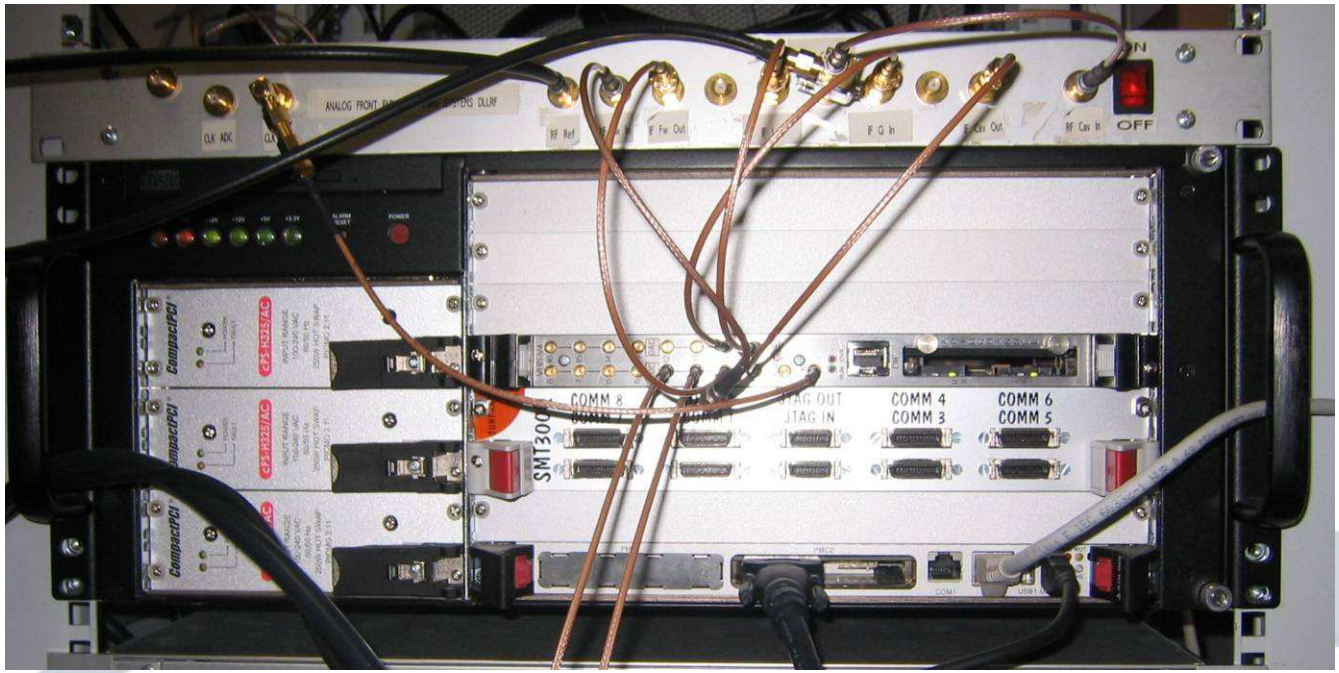


See next presentation by Hooman

Digital LLRF

The three regulation loops are now operational.

Two commercial digital boards tested: Sundance & Lyrtech



Analogue Front End

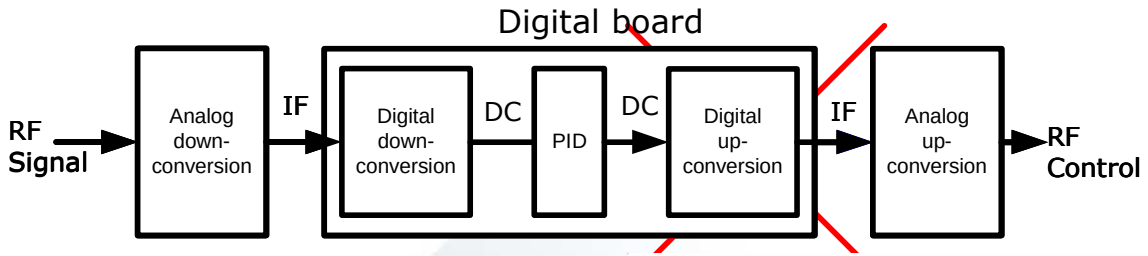
Lyrtech

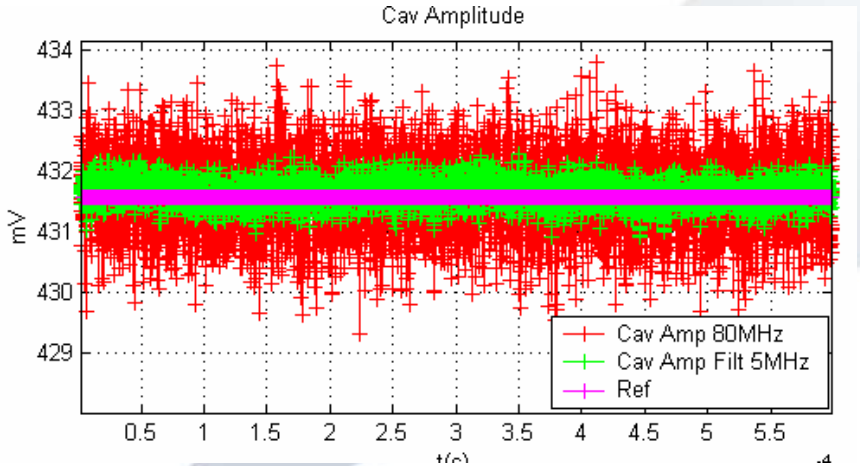
Sundance

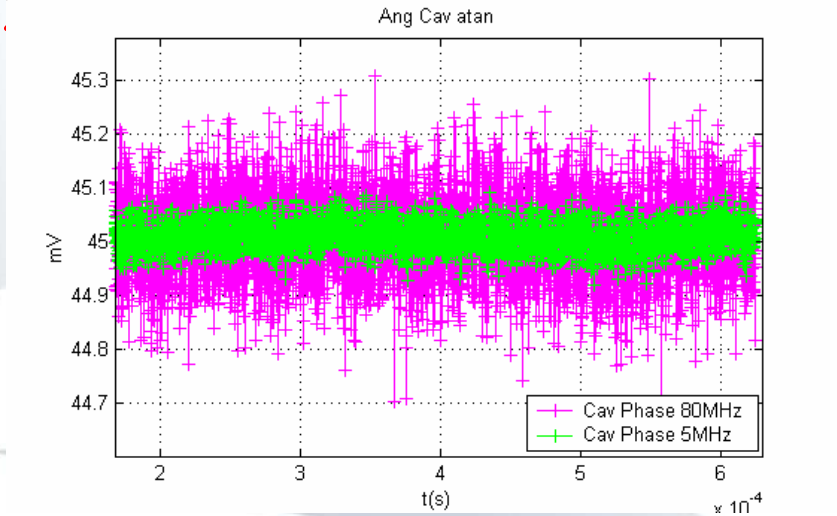
cPCI crate

Digital LLRF: Amplitude and Phase

Hardware modification to improve phase loop dynamic range and to remove upconversion sidebands.



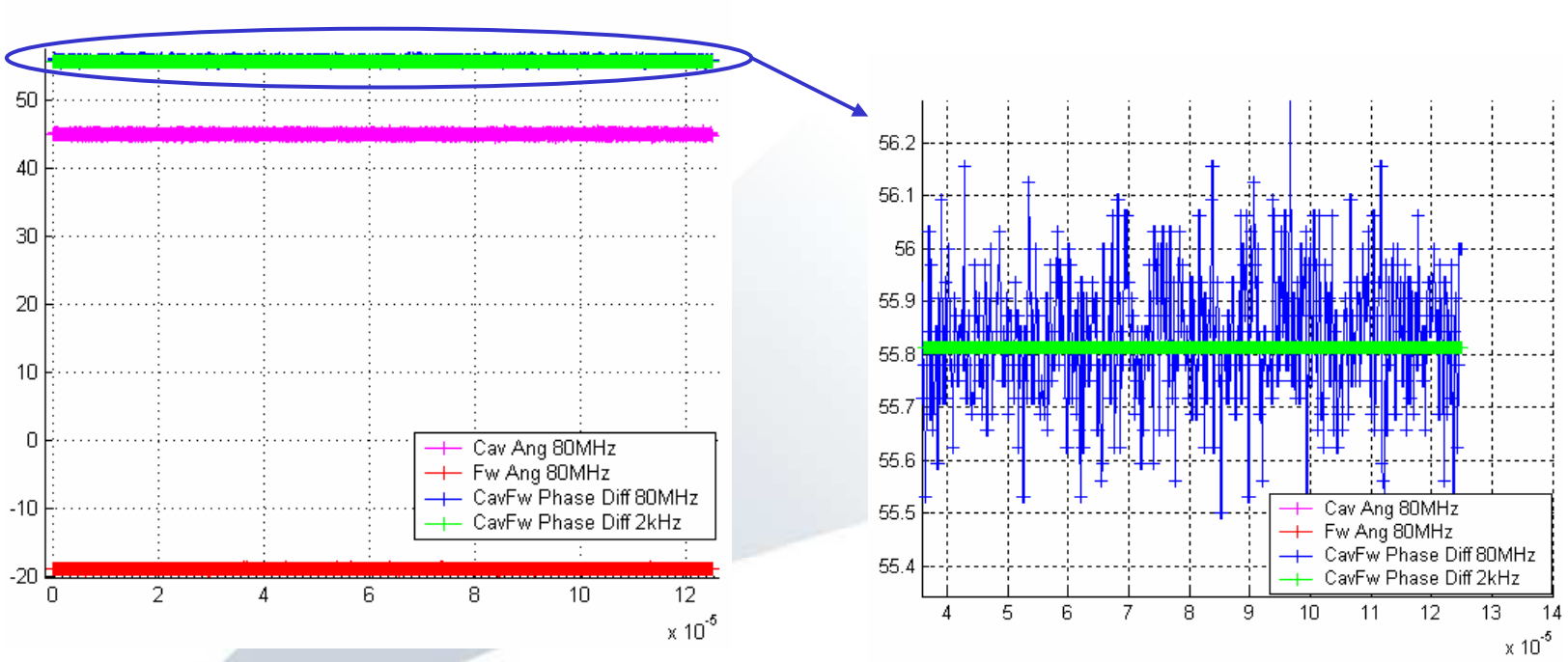




At 5 MHz filtered:	Amplitude noise	±0.5 mV
	Phase noise	±0.05º

Digital LLRF: Frequency Tuning

Cordic algorithm employed for calculating phase difference between forward and cavity voltage



At 2.4 kHz filtered: phase noise ±0.01º

The TTL outputs of the digital board controls directly the driver of the tuning motor

Next

LLRF pre-assembly	May - August 2008
Installation service area	June – November 2008
Components commissioning	July 2008 – January 2009
SR commissioning start	April 2009