



ALBA

Synchrotron Light Source in Barcelona (Spain)

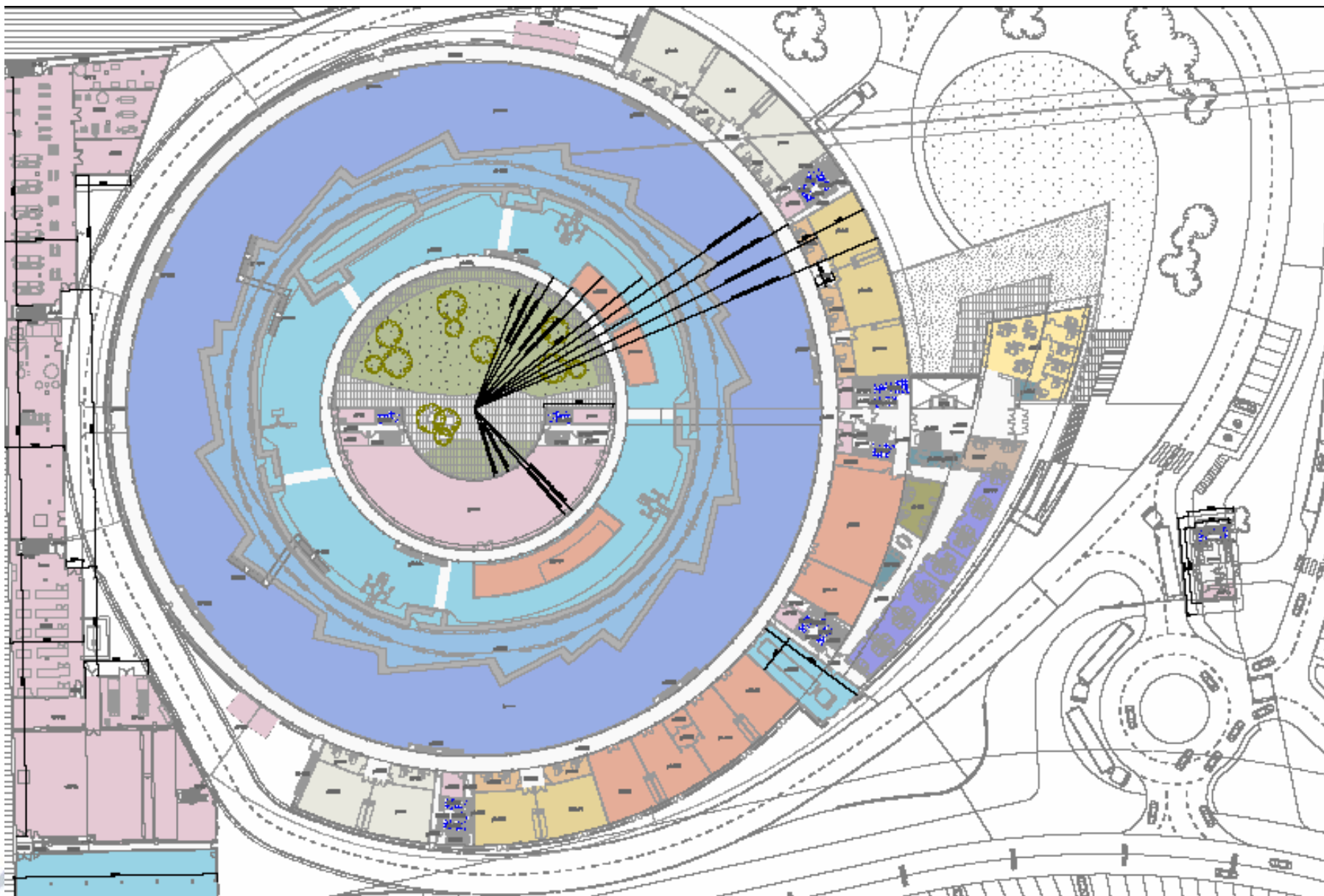
3 GeV accelerator

30 beamlines (7 on day one)

50 -50 Spanish Government - Catalan Government

First beam for users 2010





Time Schedule

| | As for June 2004 |
|--------------------------------|-------------------|
| Building construction | 01.2006 - 07.2007 |
| Linac | |
| Call for tender | 01.2005 - 06.2005 |
| Construction | 07.2005 - 07.2007 |
| Installation and commissioning | 08.2007 - 12.2007 |
| Booster | |
| Call for tender for components | 03.2005 - 12.2005 |
| Construction | 2006 - 2007 |
| Installation and commissioning | 01.2008 - 09.2008 |
| Storage Ring | |
| Call for tender for components | 02.2005 - 12.2005 |
| Construction | 2006 - 2007 |
| Installation | 04.2008 - 10.2008 |
| Storage Ring Commissioning | 11.2008 - 06.2009 |
| Beam Lines Commissioning | 07.2009 - 04-2010 |
| Beam for users | 05.2010 |

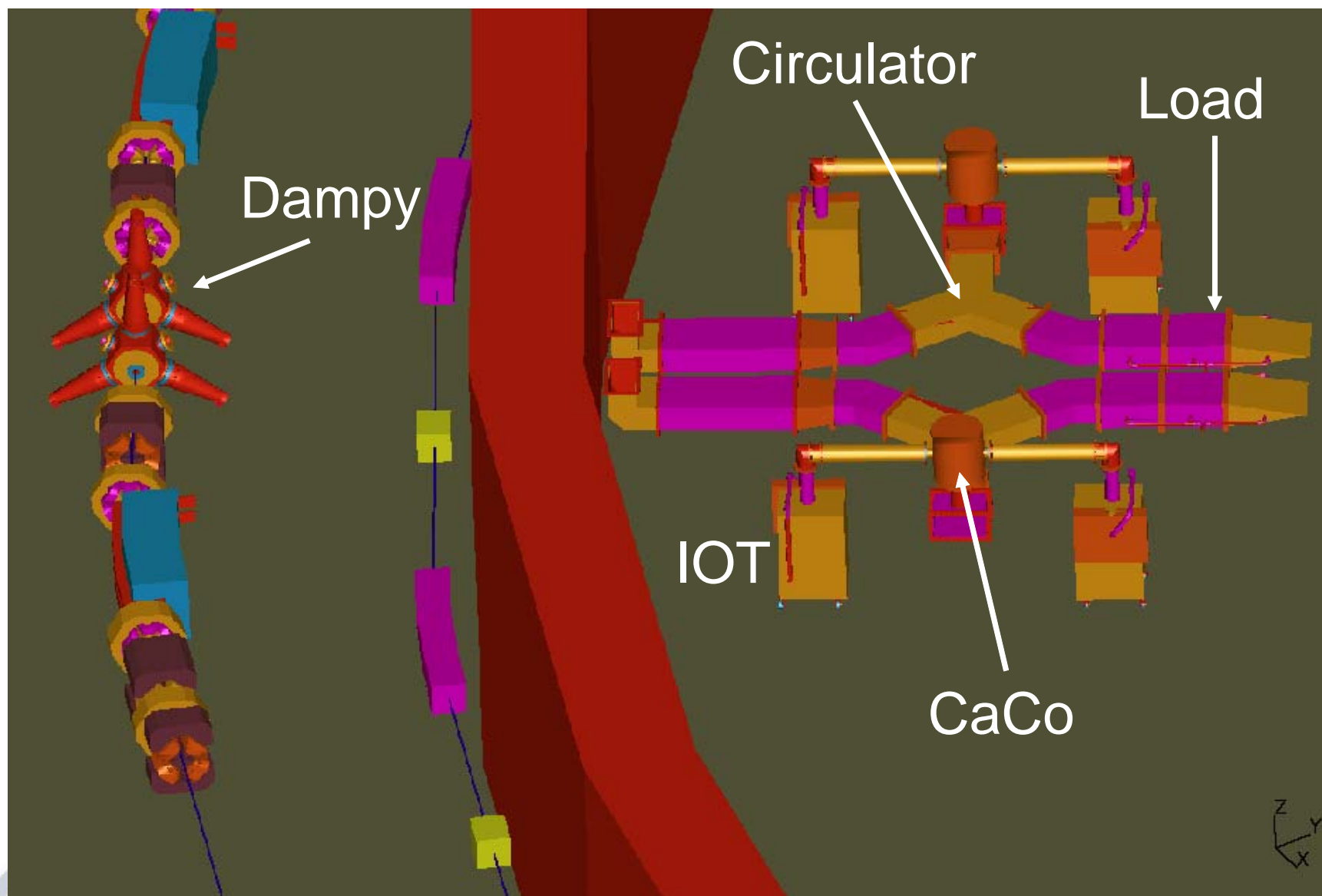
RF Parameters

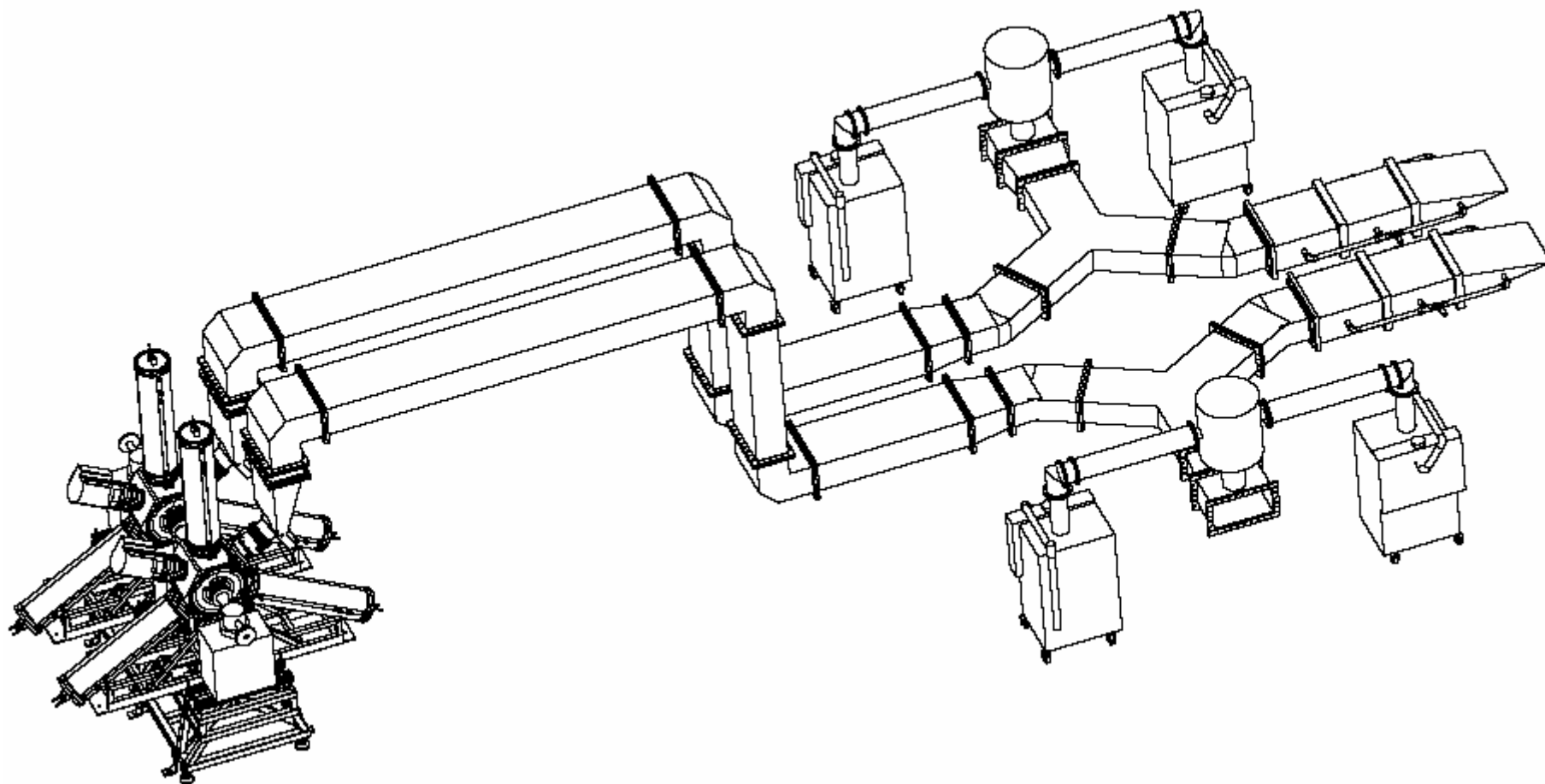
| | | |
|-------------------|------|----------|
| RF Voltage | 3600 | kV |
| Beam current | 400 | mA |
| Losses (inc. IDs) | 1300 | keV/turn |
| Beam power | 520 | kW |

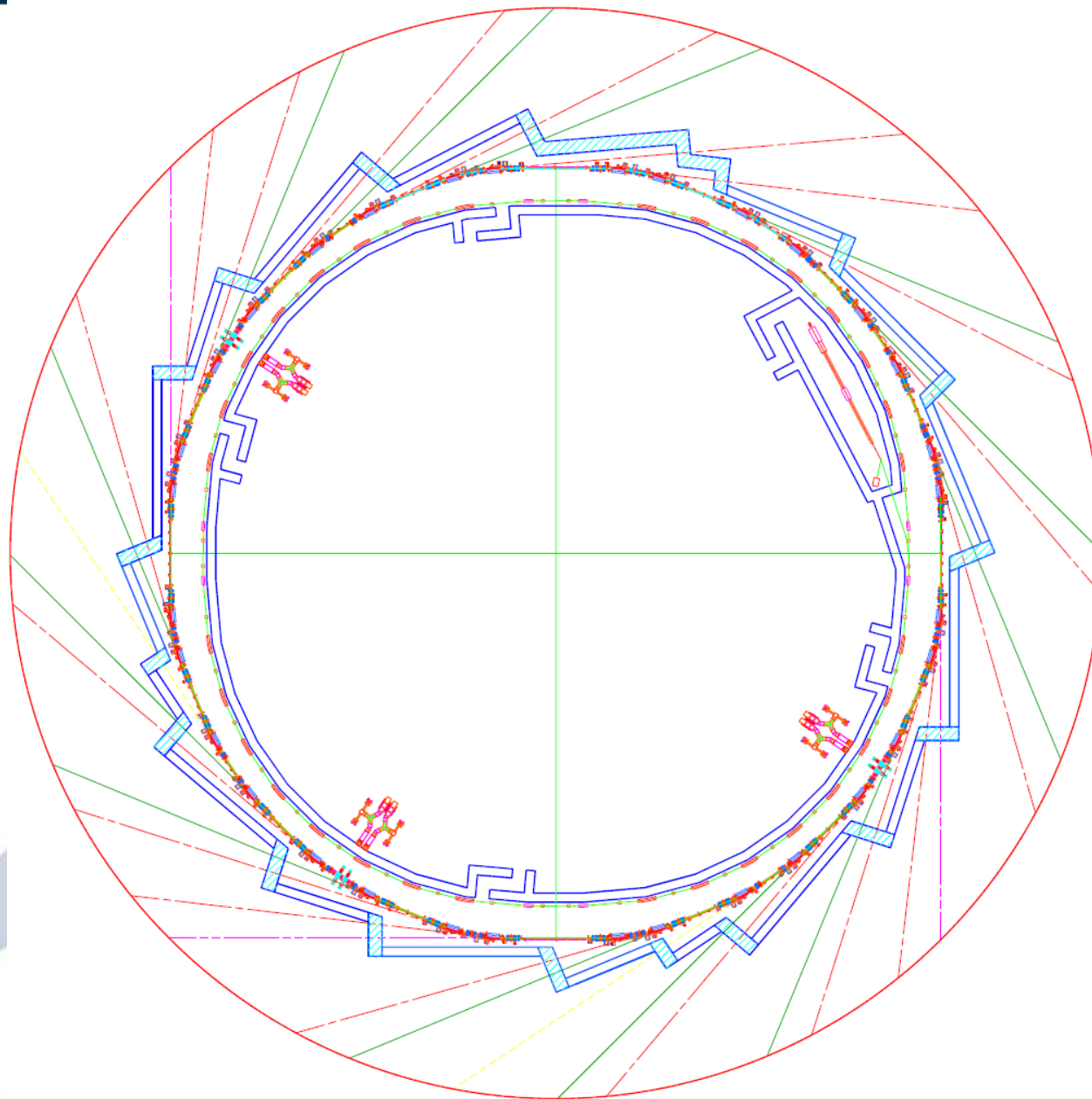
TRANSMITTER

| | |
|-------------|------------|
| Tube type | IOT |
| Number | 6 x 2 IOTs |
| Power | 2 x 80 kW |
| Combination | CaCo |

| | |
|------------------|---------------------------|
| CAVITY | DAMPY |
| Type | single-cell HOM damped |
| Number | 6 |
| Frequency | 500 MHz |
| Rsh | 3.1 Mohm |
| Voltage | 600 kV |
| Input power | 150 kW |
| Cooling capacity | >60 kW |

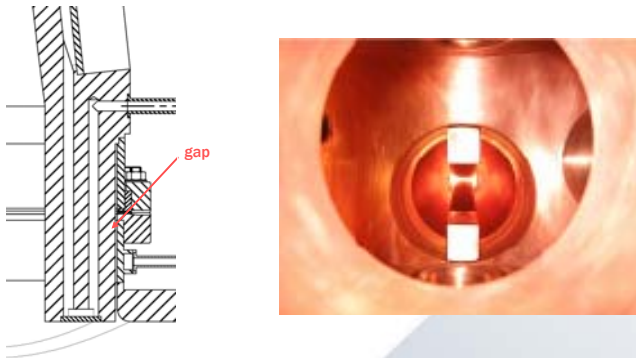




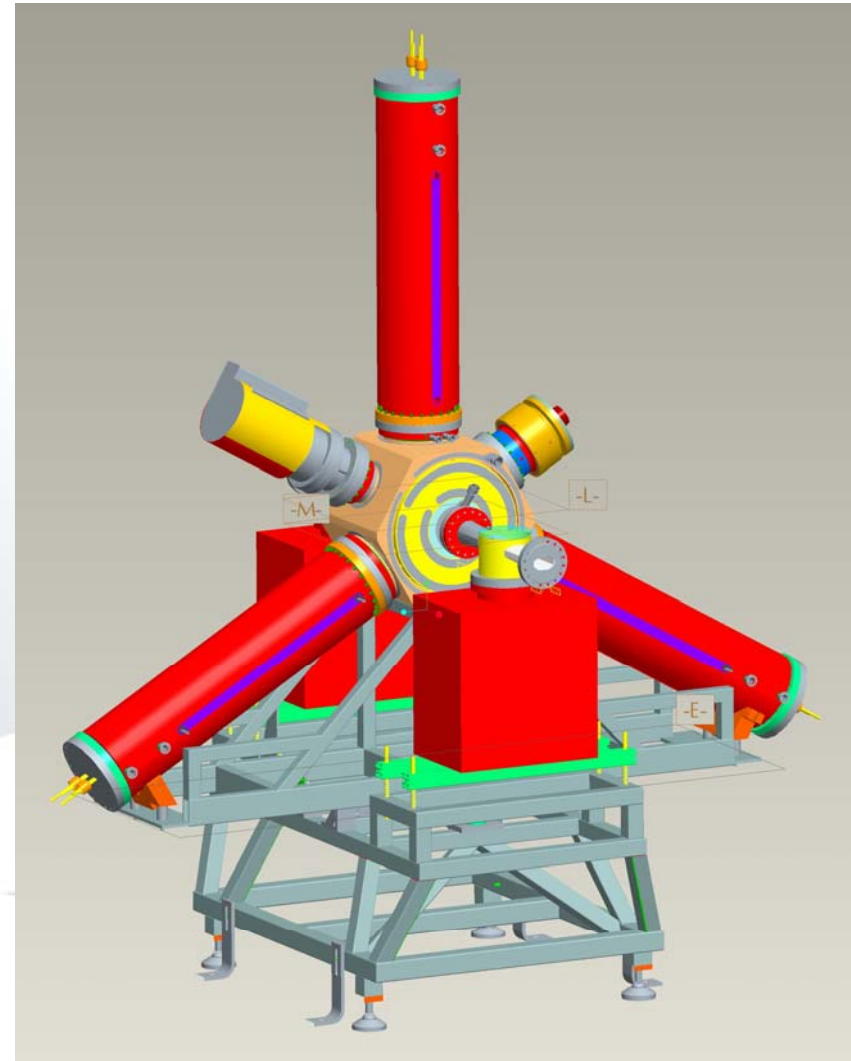
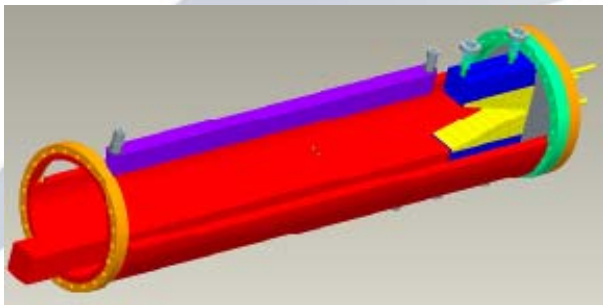


DAMPY:

1) Improved RF losses



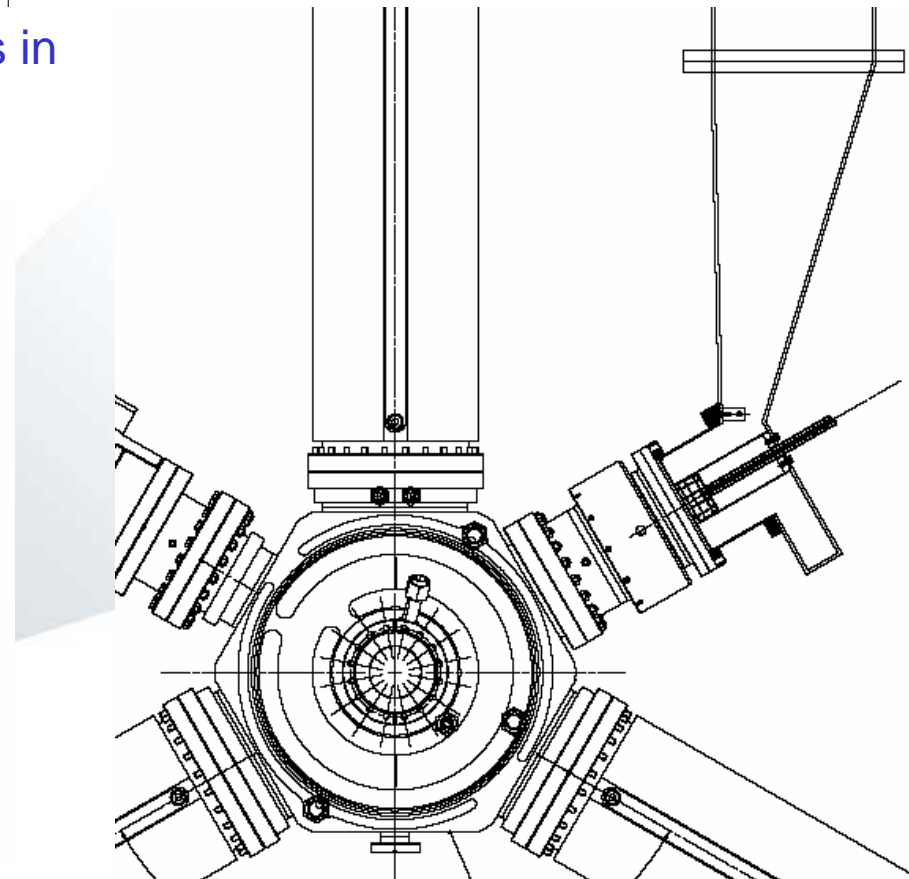
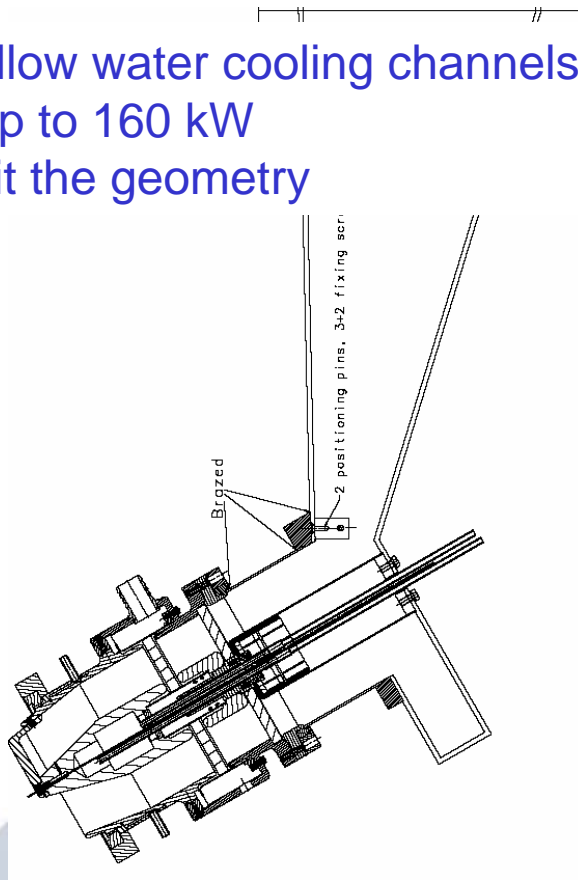
2) Improved waveguide dampers



BESSY Development

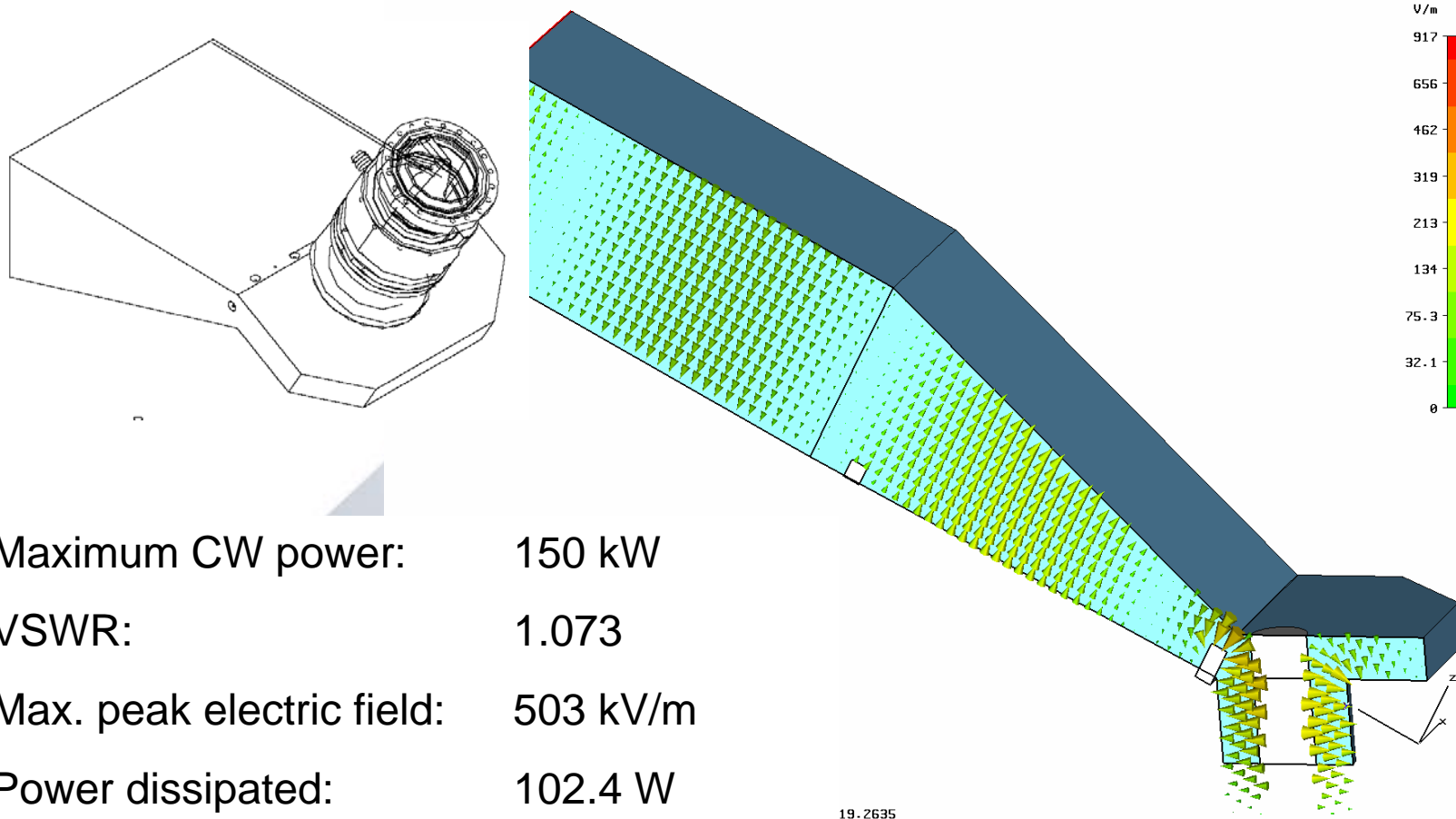
Waveguide to Coaxial transition

- 1) Allow water cooling channels in
- 2) Up to 160 kW
- 3) Fit the geometry



B.Baricevic and M.Cornelis

Waveguide to Coaxial transition



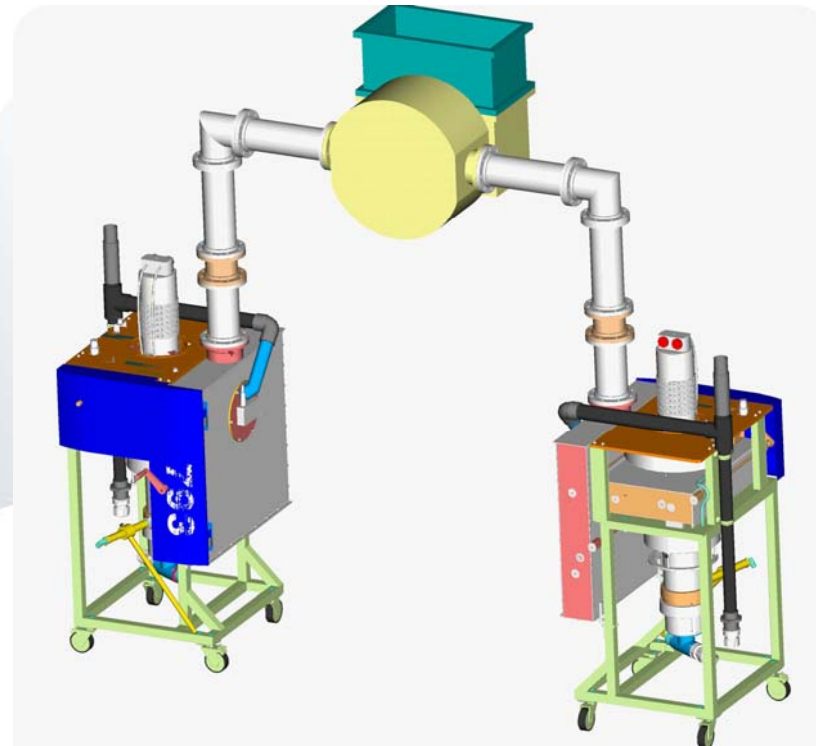
B.Baricevic

CaCo: Cavity Combiner

- 1) Combine 2 IOTs
- 2) Filter Harmonics
- 3) Operation with faulty IOT

Prototype ordered May 2005
Low power test 1st week October
High Power test end of October

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CaCo: Cavity Combiner

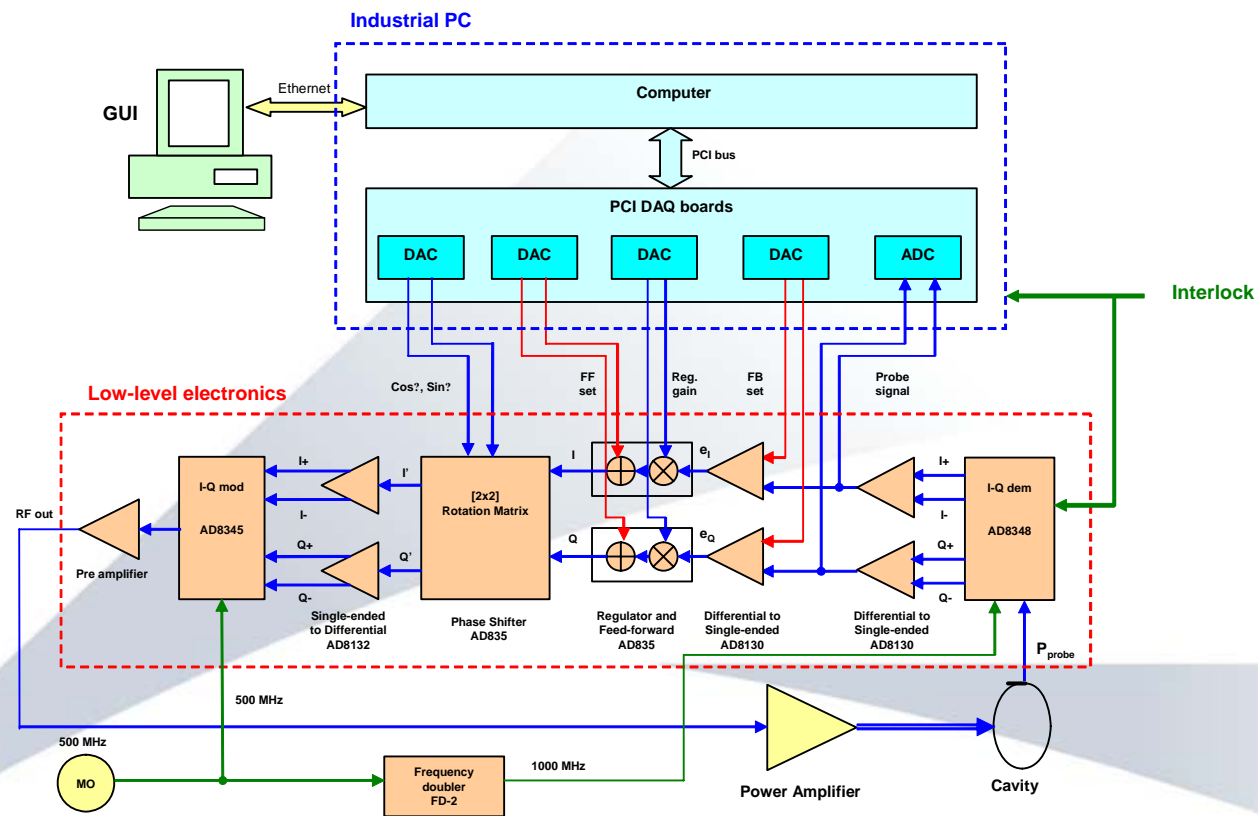
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See CaCo talk in session 5 by Borut Baricevic

Low Level RF Analogue Prototype

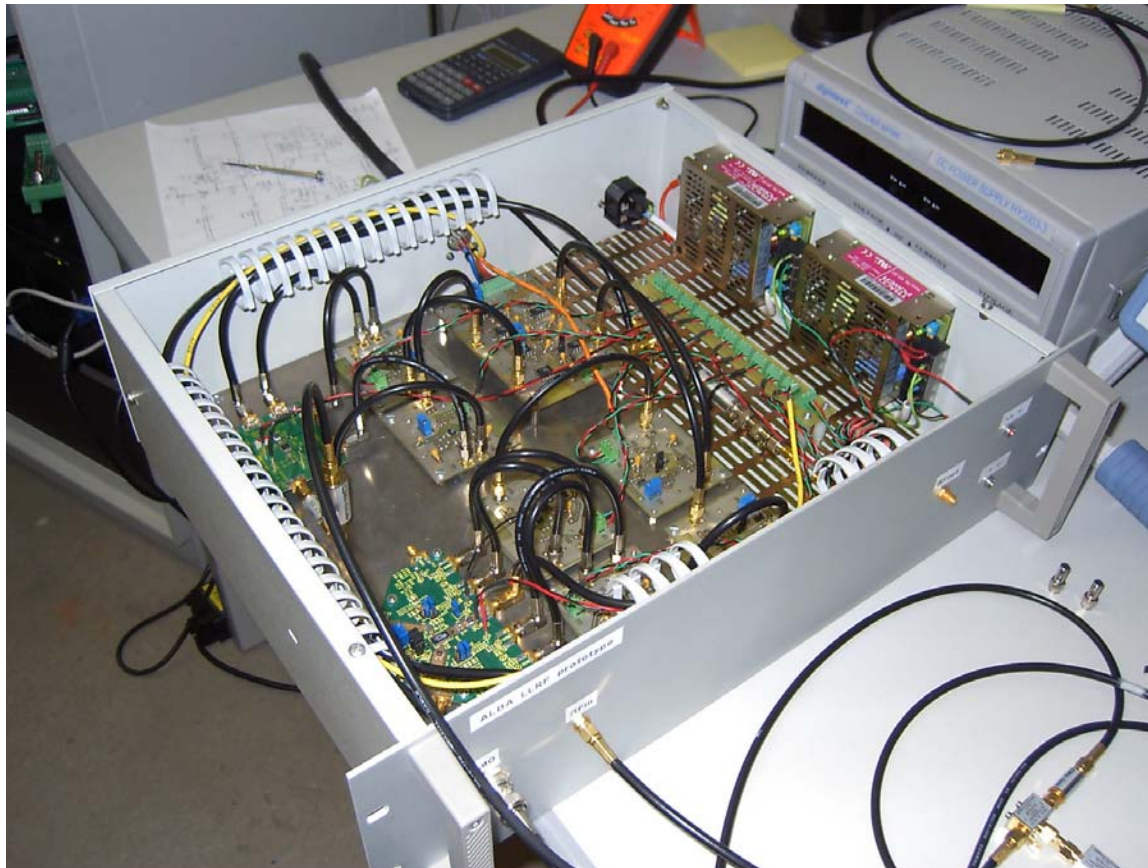
I/Q Modulation / Demodulation



H.Hassanzadegan

Low Level RF

Analogue Prototype



The low-level electronics



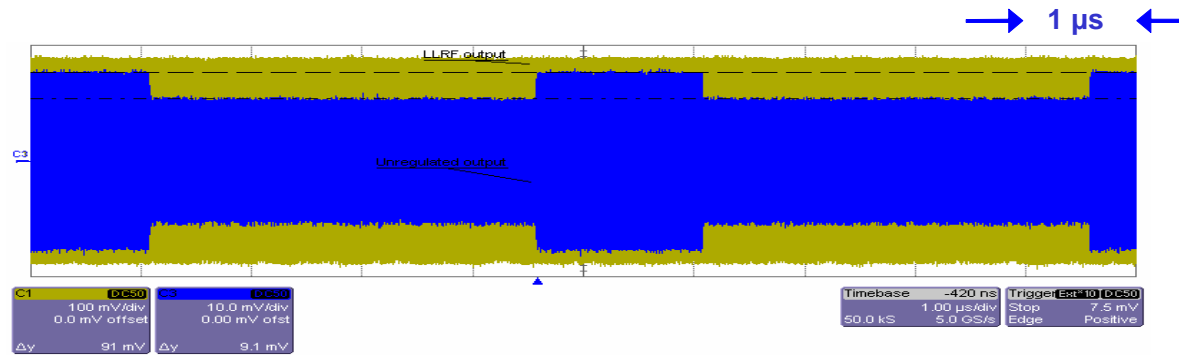
The mockup cavity



H.Hassanzadegan

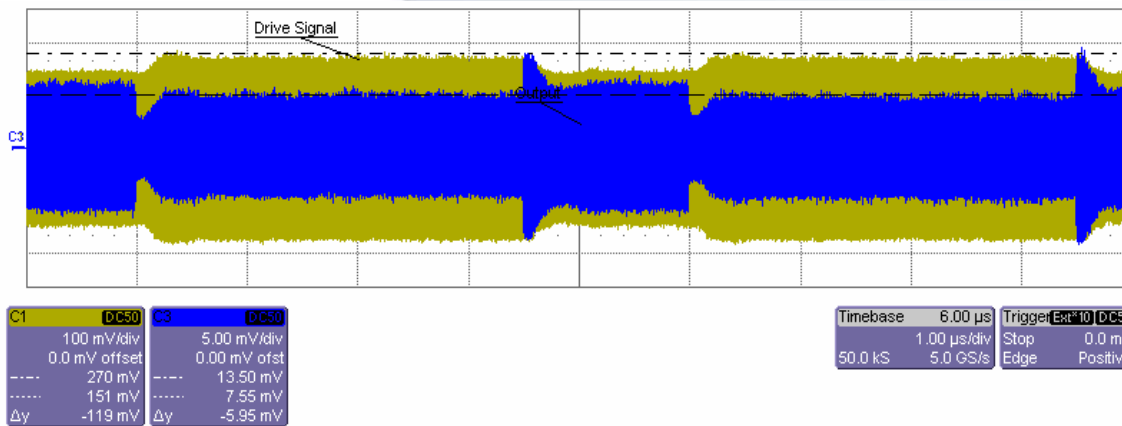
Low Level RF

Analogue Prototype



Amplitude without regulation

| | |
|----------------------------|---------|
| Steady state output | |
| Measured: | 7.6 mV |
| Calculated: | 7.5 mV |
| Ripple | |
| Measured: | ~2 mV |
| Calculated: | 3.5 mV |
| Loop delay | |
| Measured: | ~200 ps |
| Band width | |
| Measured: | ~1 MHz |



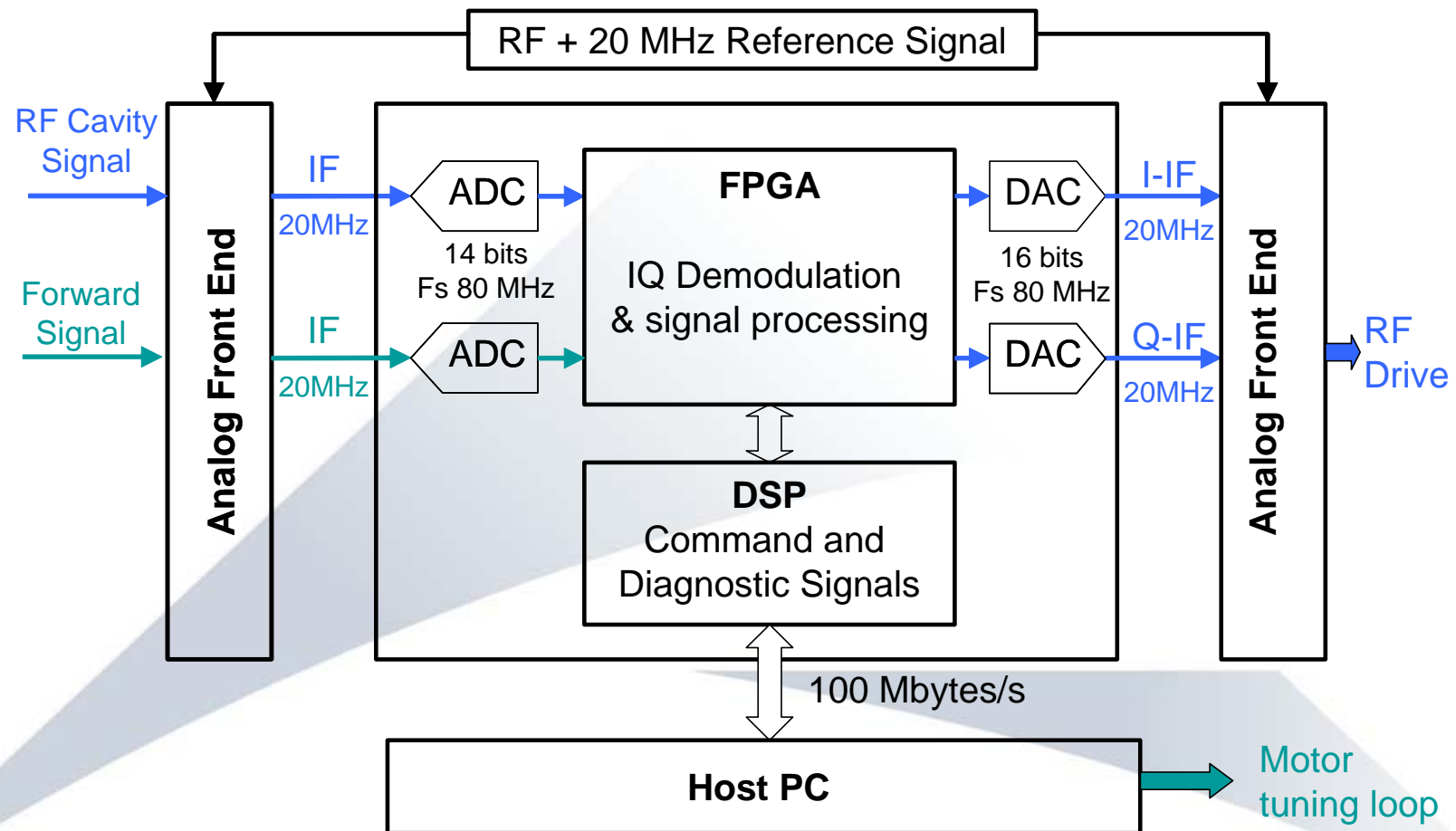
Amplitude with regulation

H.Hassanzadegan

Low Level RF

Digital approach

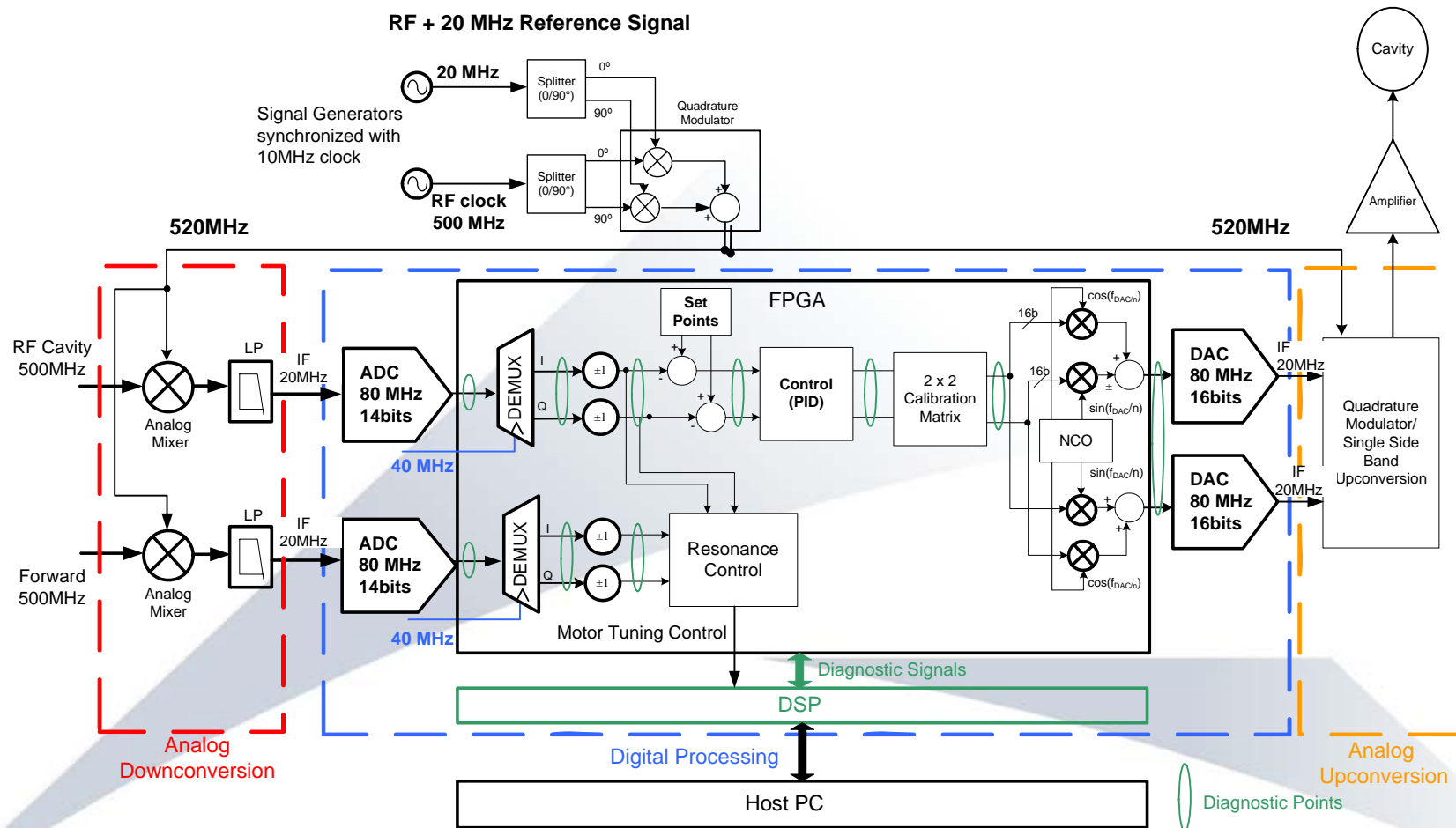
Hardware Description



H.Hassanzadegan and A.Salom

Low Level RF Digital approach

Signal Processing



H.Hassanzadegan and A.Salom

Summary

- 1) Dampy tender: closing next month
- 2) CaCo prototype: by Thales, next month
- 3) WG to COAX transition: order prototype end of 2005
- 4) Transmitter tendering: beginning 2006
- 5) Analogue LLRF: prototype in test
- 6) Digital LLRF: under design

The RF & Diagnostics Section

Francis Perez
Borut Baricevic
Hooman Hassanzadegan
Paco Sanchez
Angel Olmos
Angela Salom
Ubaldo Iriso
Marc Cornelis (support Eng. Div.)
David Beltran (support Comp. Div.)