



H1 Squeezer Experiment Update

March 18, 2010

LVC Meeting, Arcadia

ANU, AEI, MIT, CIT and LHO collaboration

Progress

- ❑ On budget & no major roadblocks so far
 - No major schedule setback (maybe ~2 month behind with optics procurement)
 - 2nd update review was held on February 9, 2010
- ❑ New postdoc (Lisa B.)
- ❑ Lasers ready at MIT; locked together
- ❑ OPO ready at ANU with 5-6dB of squeezing
 - Ready to ship in March, required in early May
- ❑ Electronics is 80% complete; will be done by May
- ❑ Developed a noise and servo model
- ❑ Next: Set up the AEI SHG at MIT

Highlights

□ ANU OPO development

- Ready to ship (schedule says March 2010).
- Traveling wave bowtie design works.
- Grad. students will travel to MIT to set it up.

□ LHO

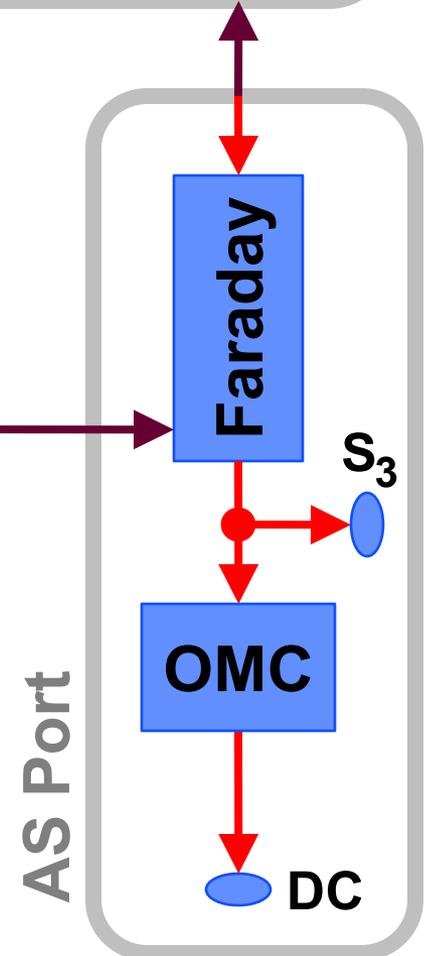
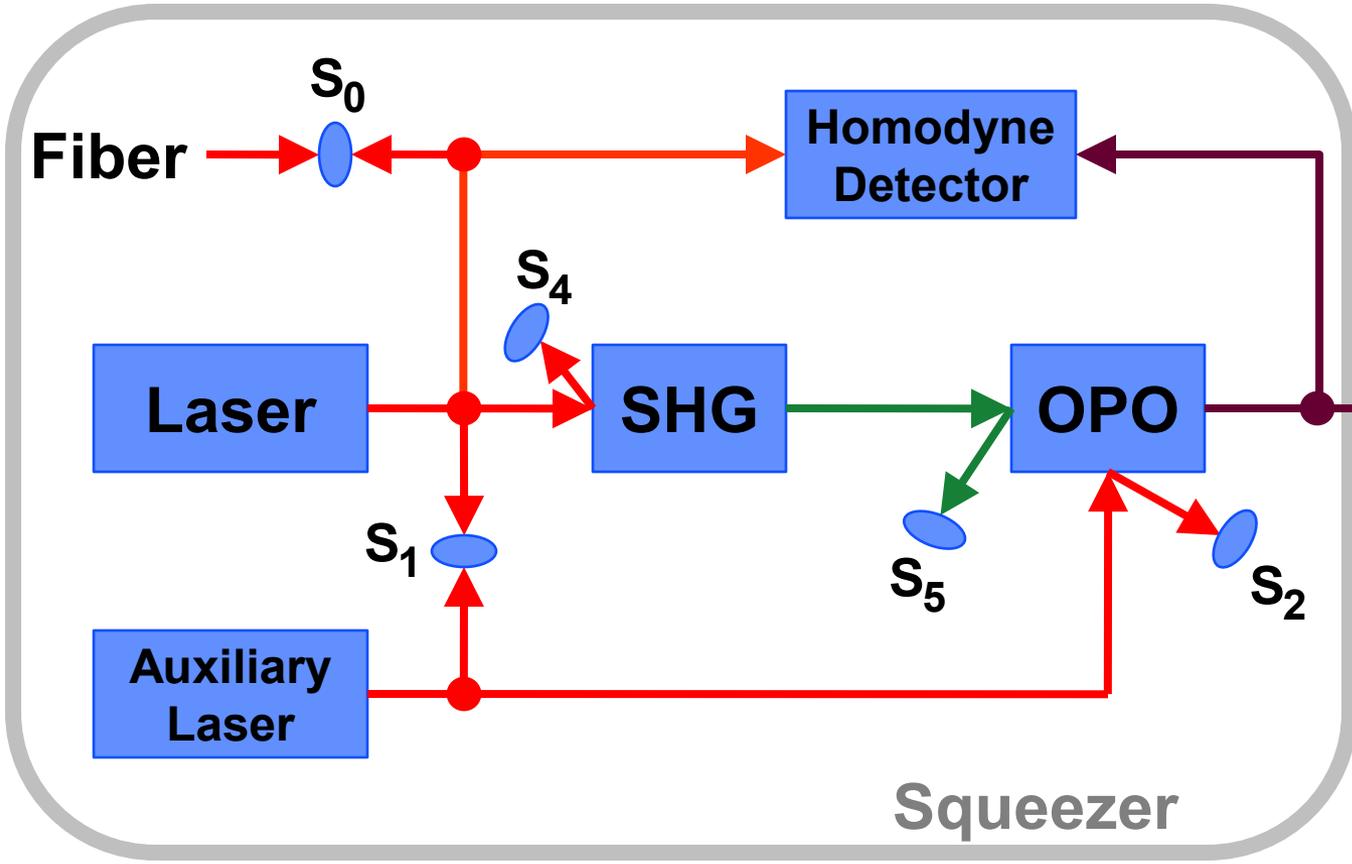
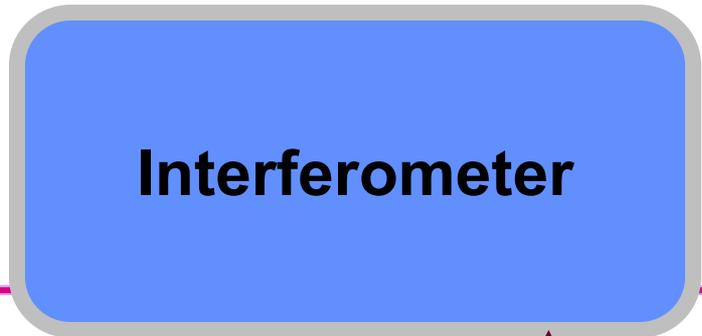
- RF electronics: built, 80% installed, working.
- TTFSS for laser locking: built, installed, working.
- Demodulator design by Rich A., 1st unit in hand, working.
- Servo boards (CM): 2 units built, testing, remainder in production.
- Slow controls (Beckhoff): 1 unit built, working.

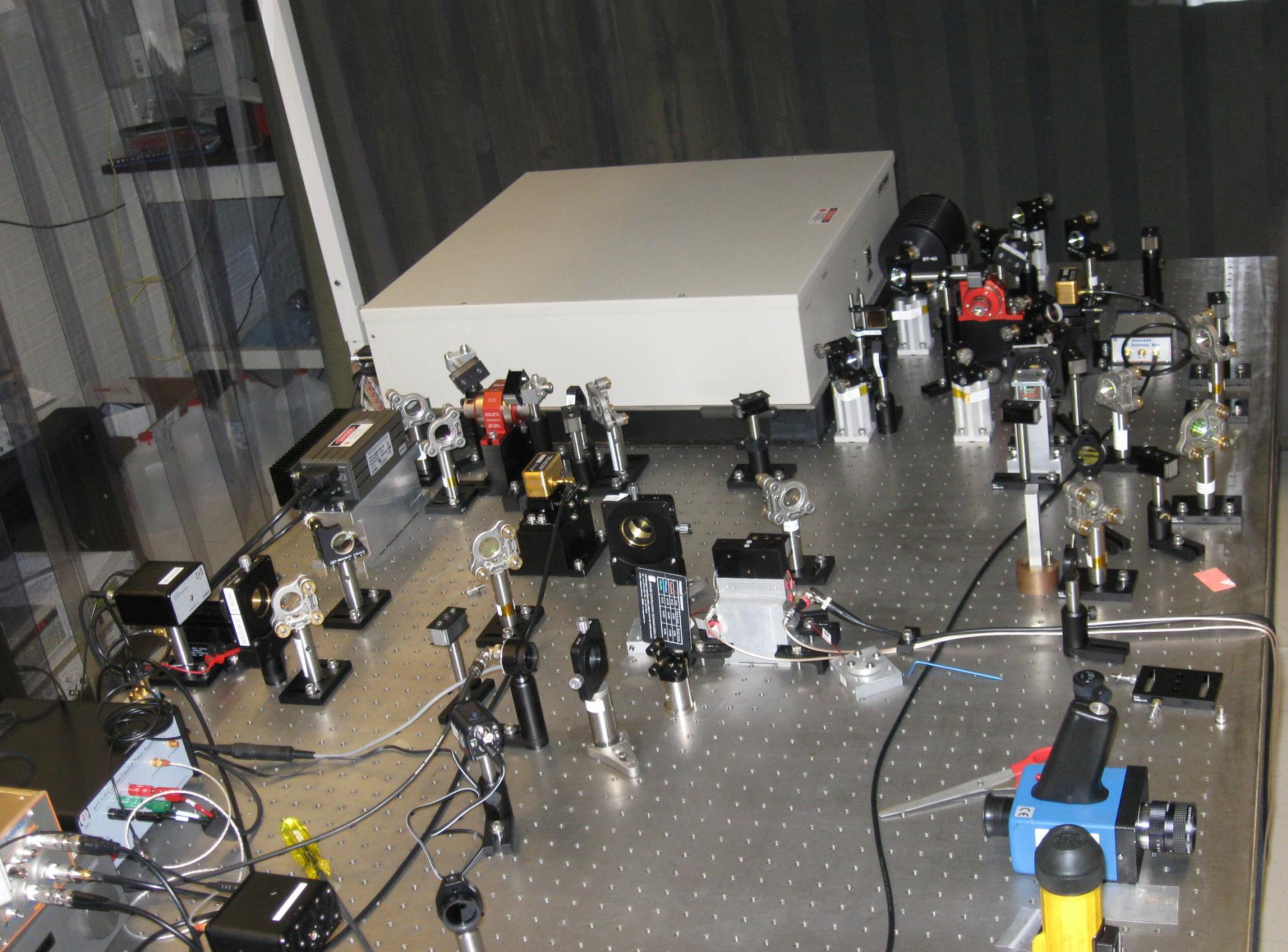
Completion expected: May 2010.

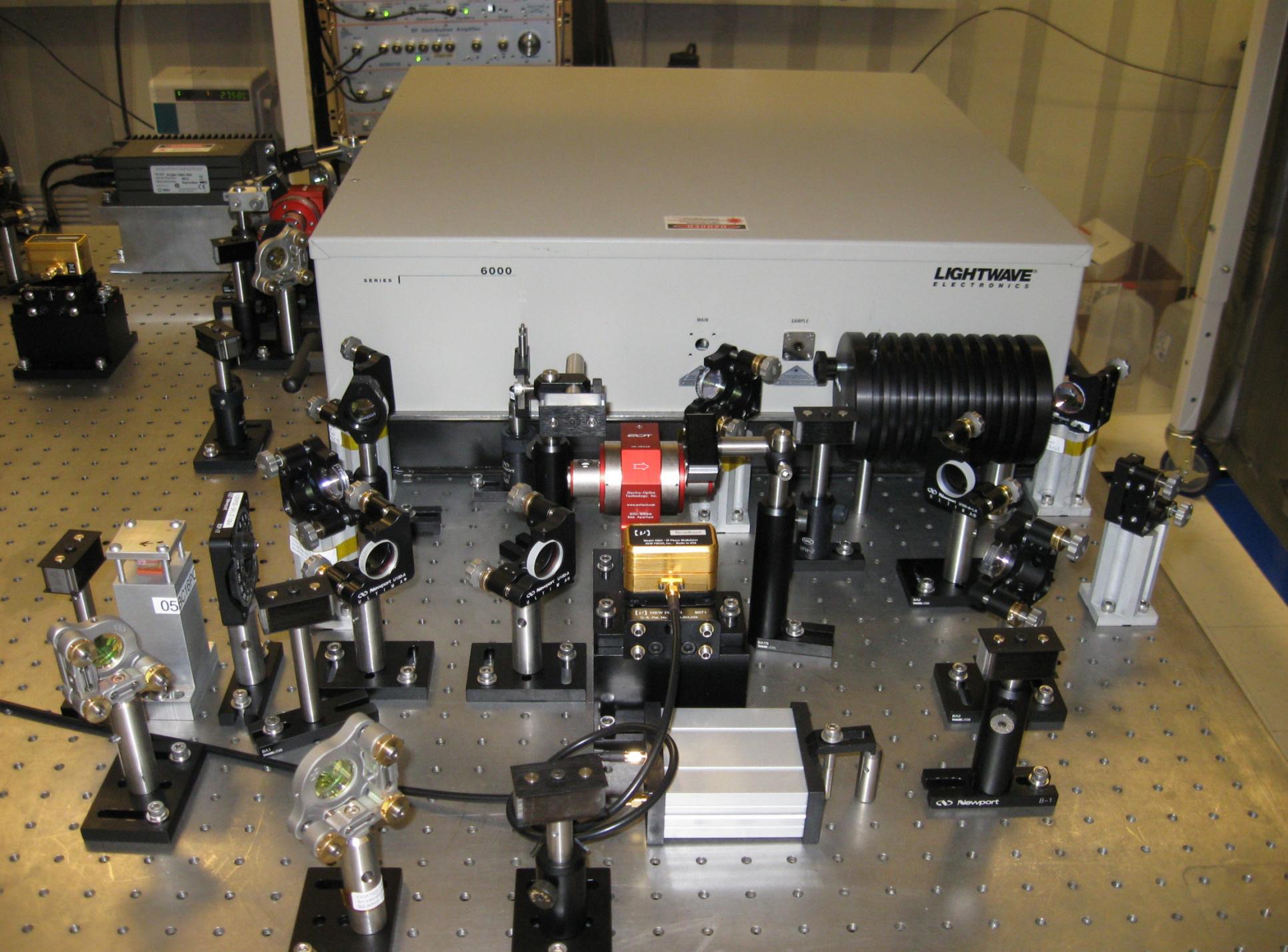
□ MIT

- Lasers fully operational, locked with 1MHz bandwidth.
- Optics ordered for SHG/OPO mirrors, HR mirrors, beam splitters, dichroics, etc.

Block Schematics







SERIES 6000

LIGHTWAVE ELECTRONICS

Red component with white text and arrow:

Optical Isolator

Yellow component with black text:

Optical Isolator

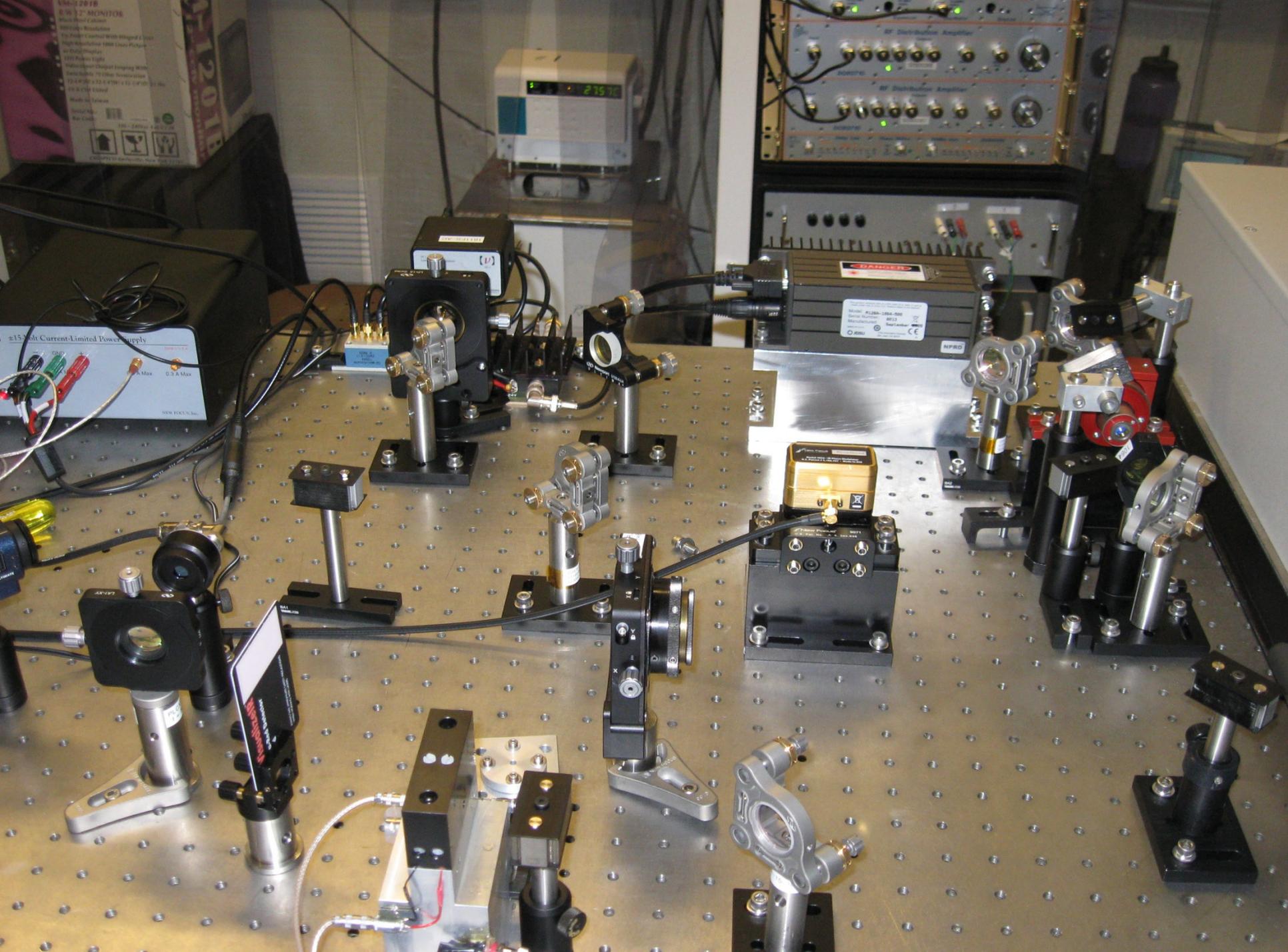
Black component with white text:

Optical Isolator

Newport B-1

05

1 21000



215 VOLT MONITOR
Power Switch Control
RF Power Control With Integrated 2-Port
High Impedance 1000 Ohm Load Port
RF Power Output
LED Power Light
Voltage Output Display Range With
Adjustable 10-200mV Sensitivity
12.5VDC 1.25A FUSE 1.25A FUSE 1.25A
MADE IN CANADA
NEW FAX 516-241-1111

215 Volt Current-Limited Power Supply
0.3A Max
NEW FAX 516-241-1111

2.7570

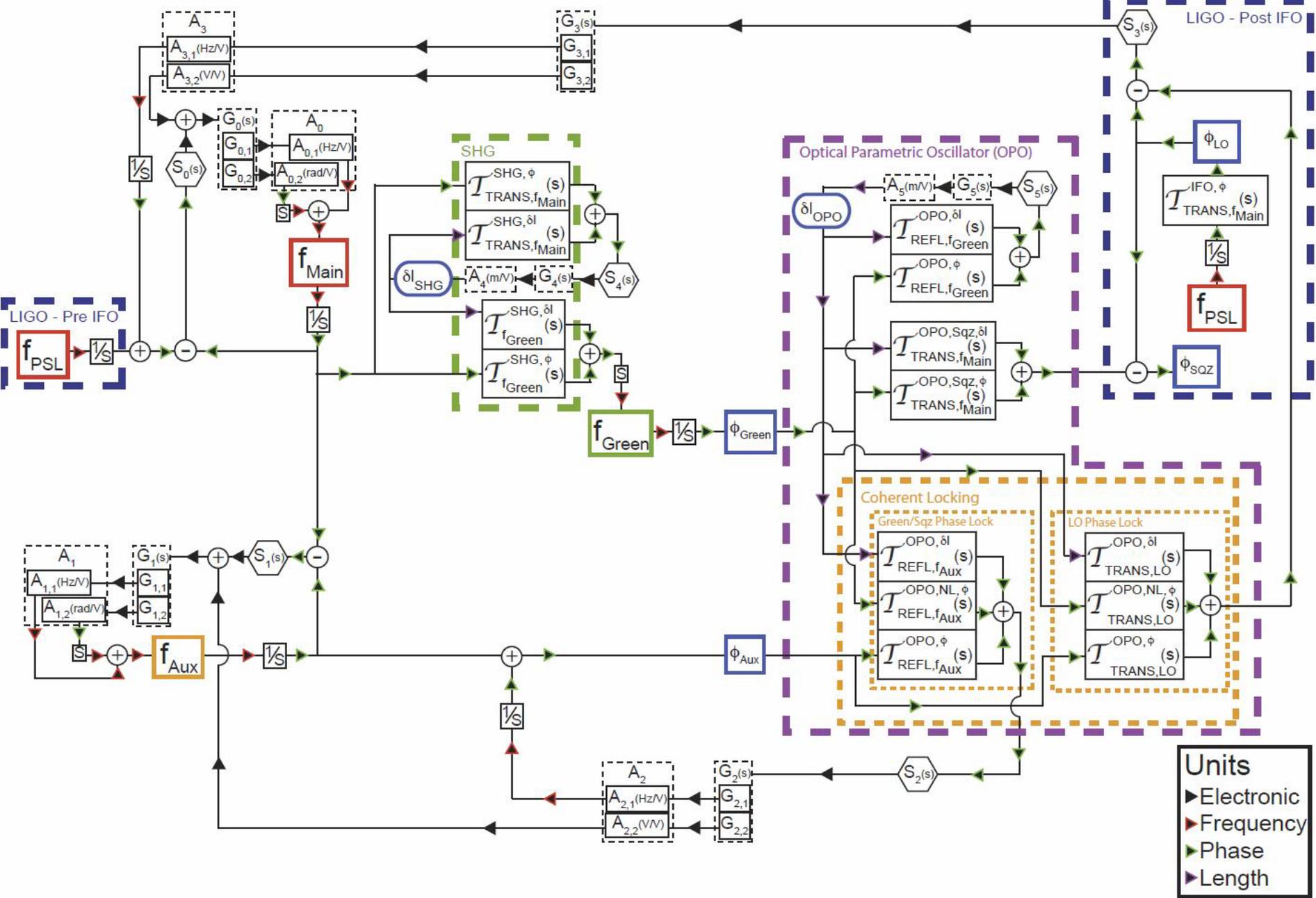
RF Distribution Amplifier
RF Distribution Amplifier

Model: K1200-1004-000
Serial Number: 8813
Manufactured: 10/10/00
O.F.S.O. CE

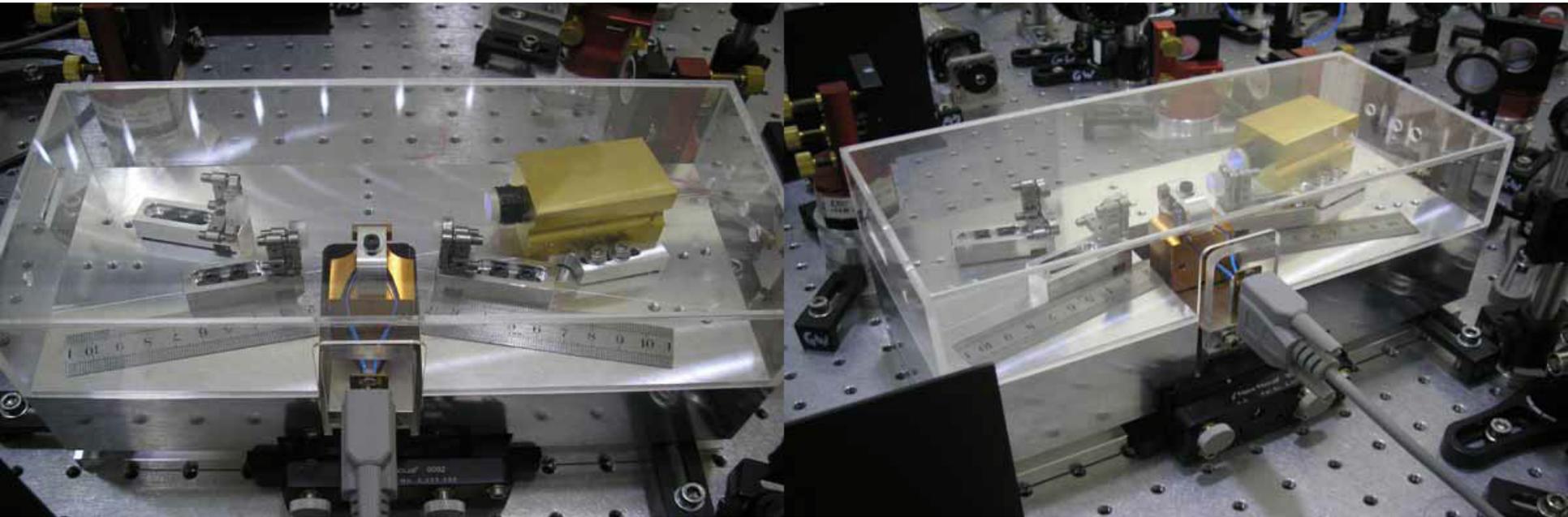
RF Power Light

RF Power Light



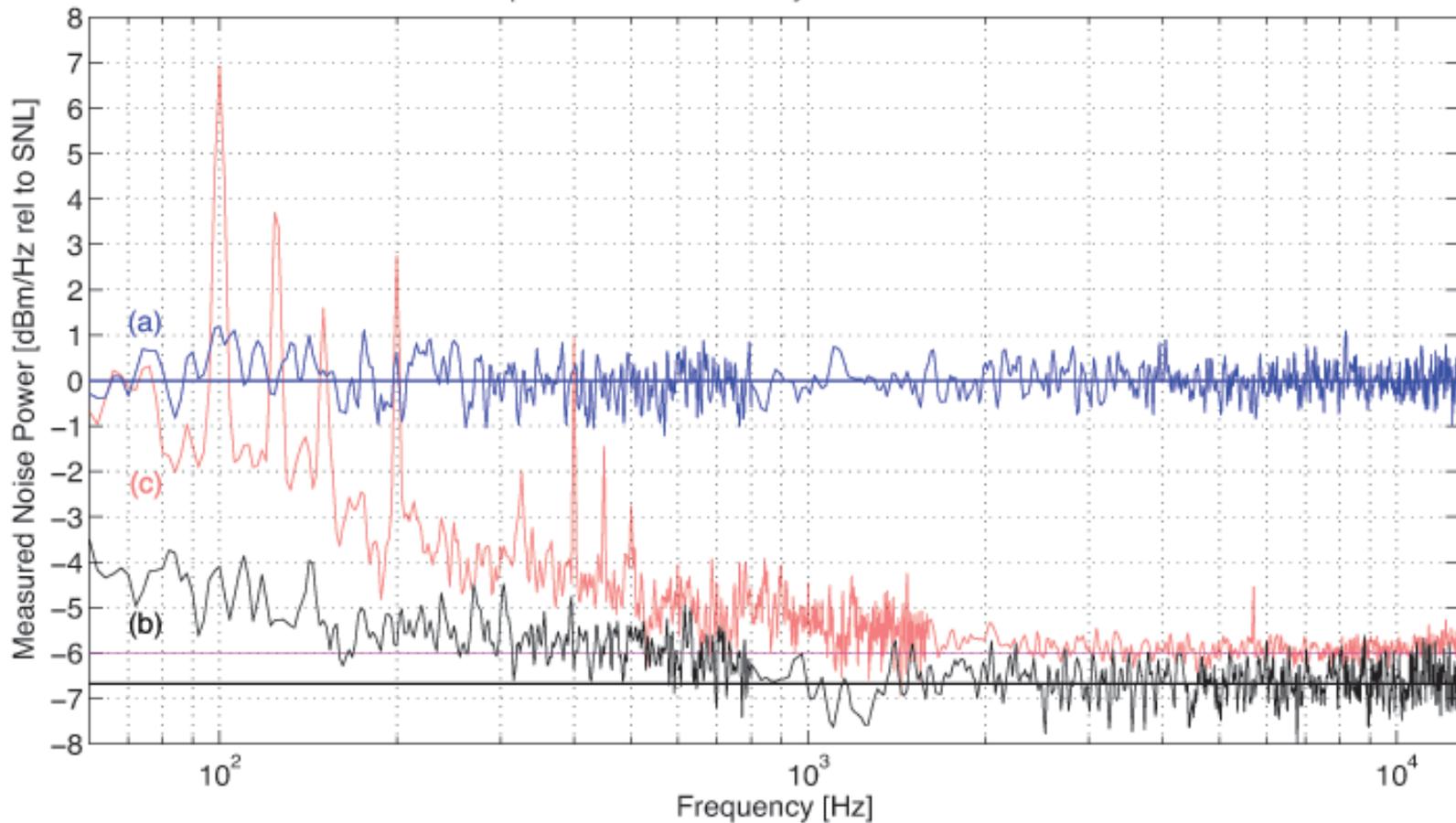


ANU Traveling wave OPO

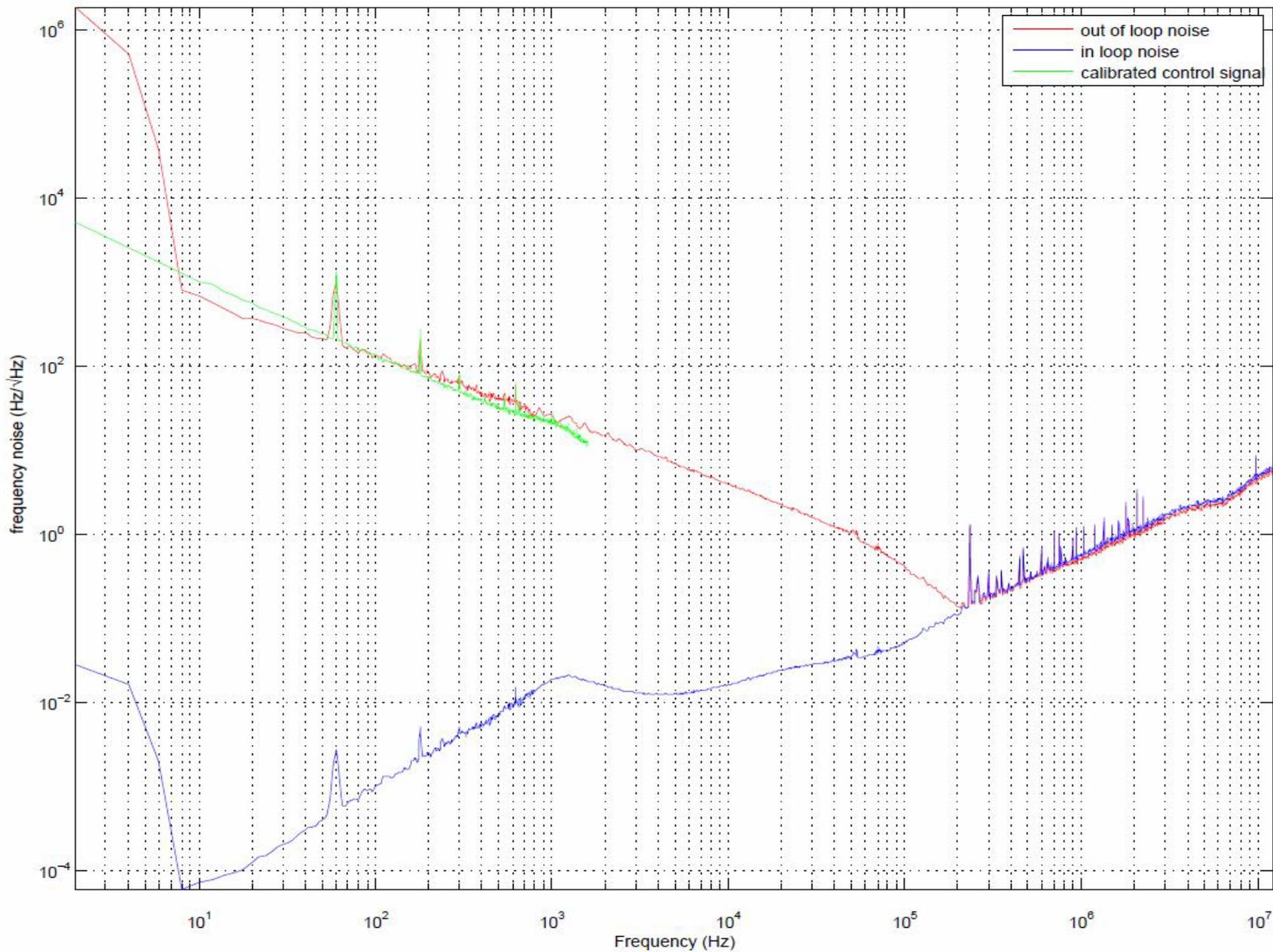


OPO Performance

Comparison – 14th January 2010 to Amaldi 8 Data



full frequency noise (slightly fudged)



Plan

- ❑ Continue to test AEI SHG
Built our own when we get the optics
- ❑ OPO to arrive in May 2010
 - OPO integration will start immediately afterwards
- ❑ Electronics production will wrap up in May 2010
- ❑ Advanced LIGO Faraday isolator (Mike S.)
assembled by June 2010
- ❑ Need to start thinking about in-vacuum work
- ❑ Additional funding was approved

Summary

- ❑ Lasers and OPO ready
- ❑ Electronics is nearing completion
- ❑ No major roadblocks so far
- ❑ On budget & on schedule