LIGO

# Fast DAQ Channel

Commissioning Meeting, Aug 30, 2004

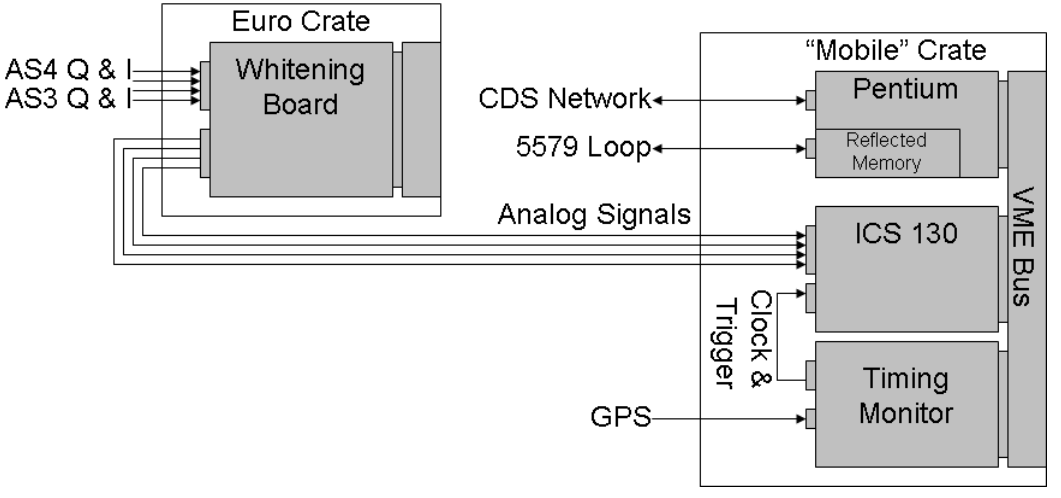
Daniel Sigg

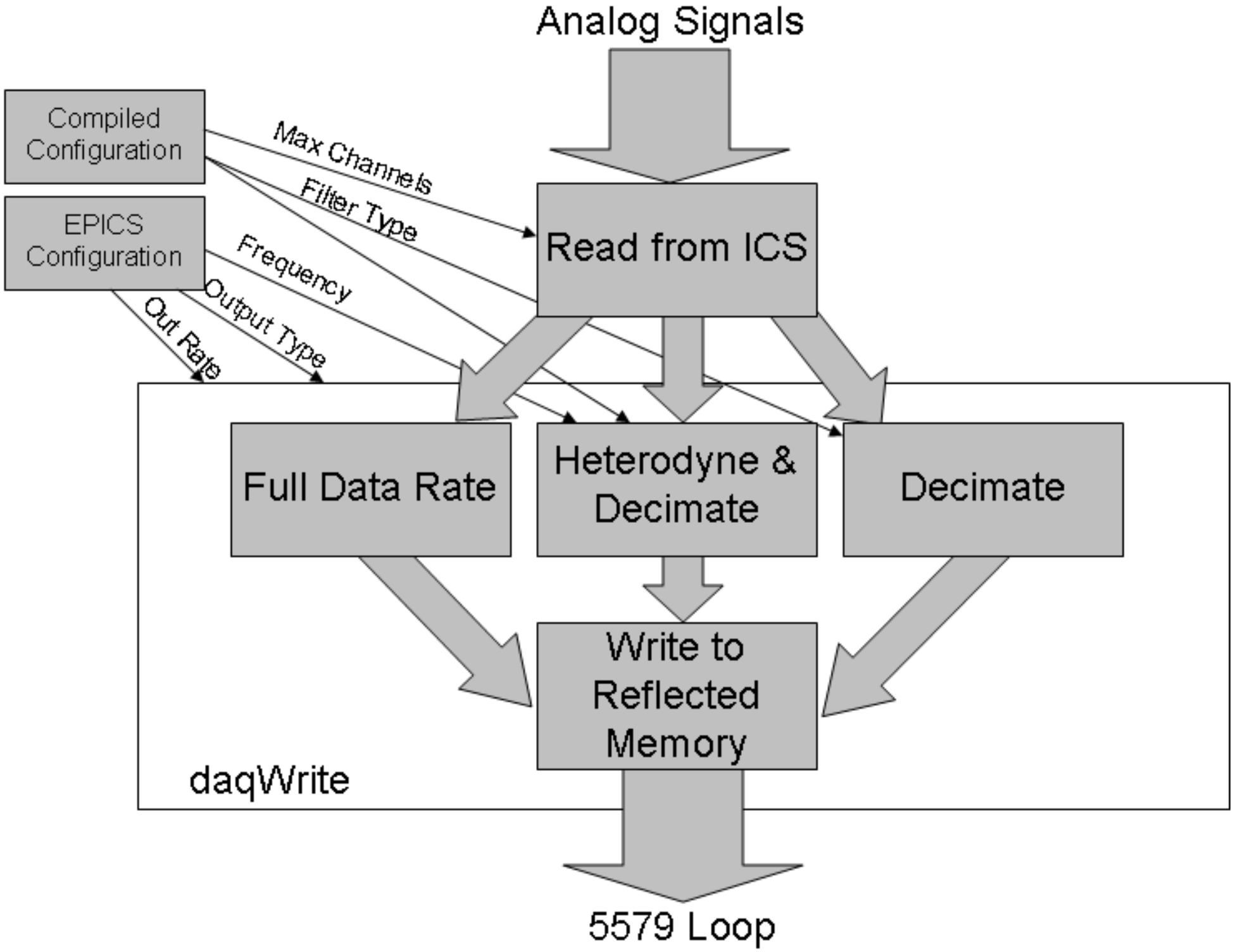
G040432-00-D

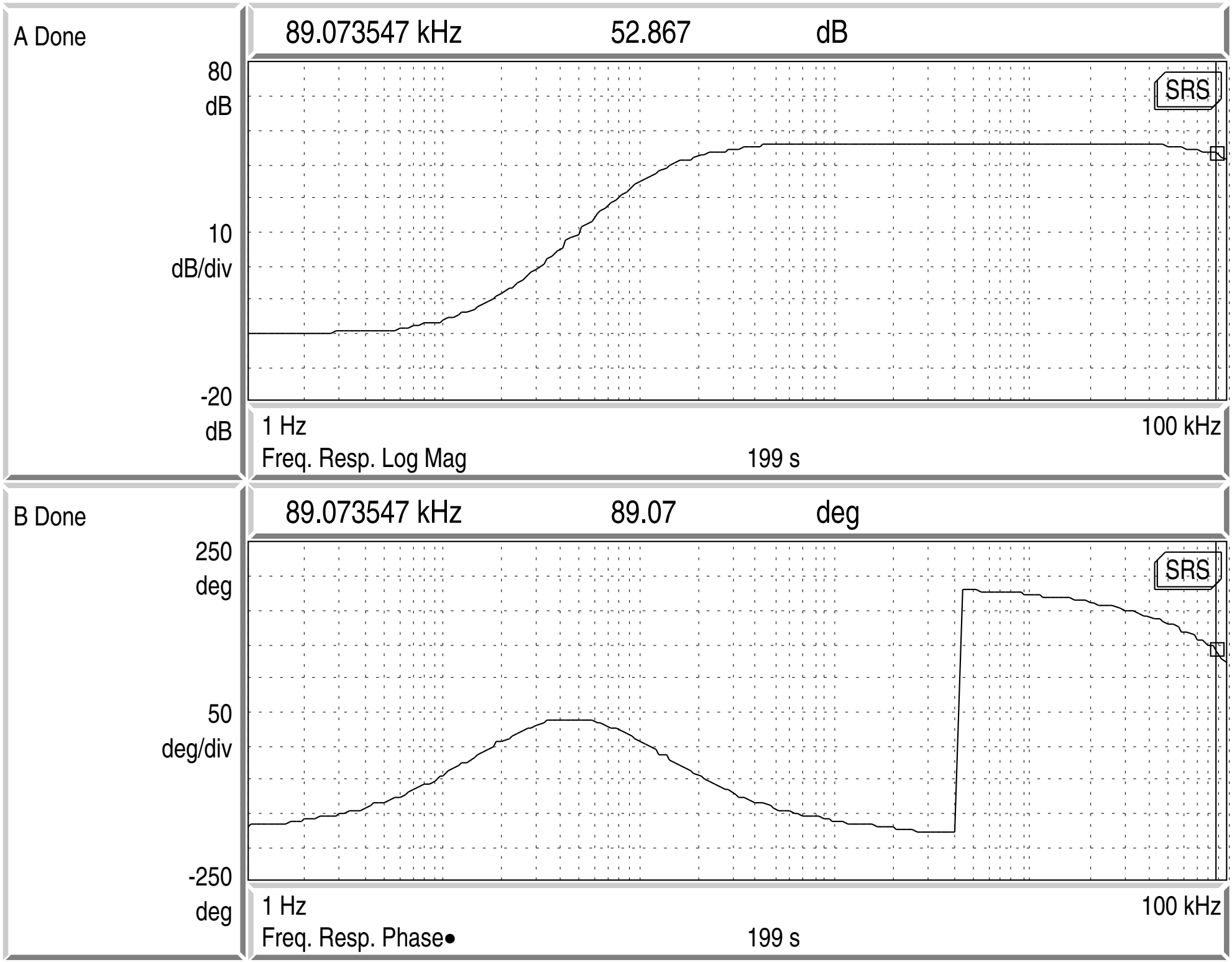
LIGO

# Basic Design

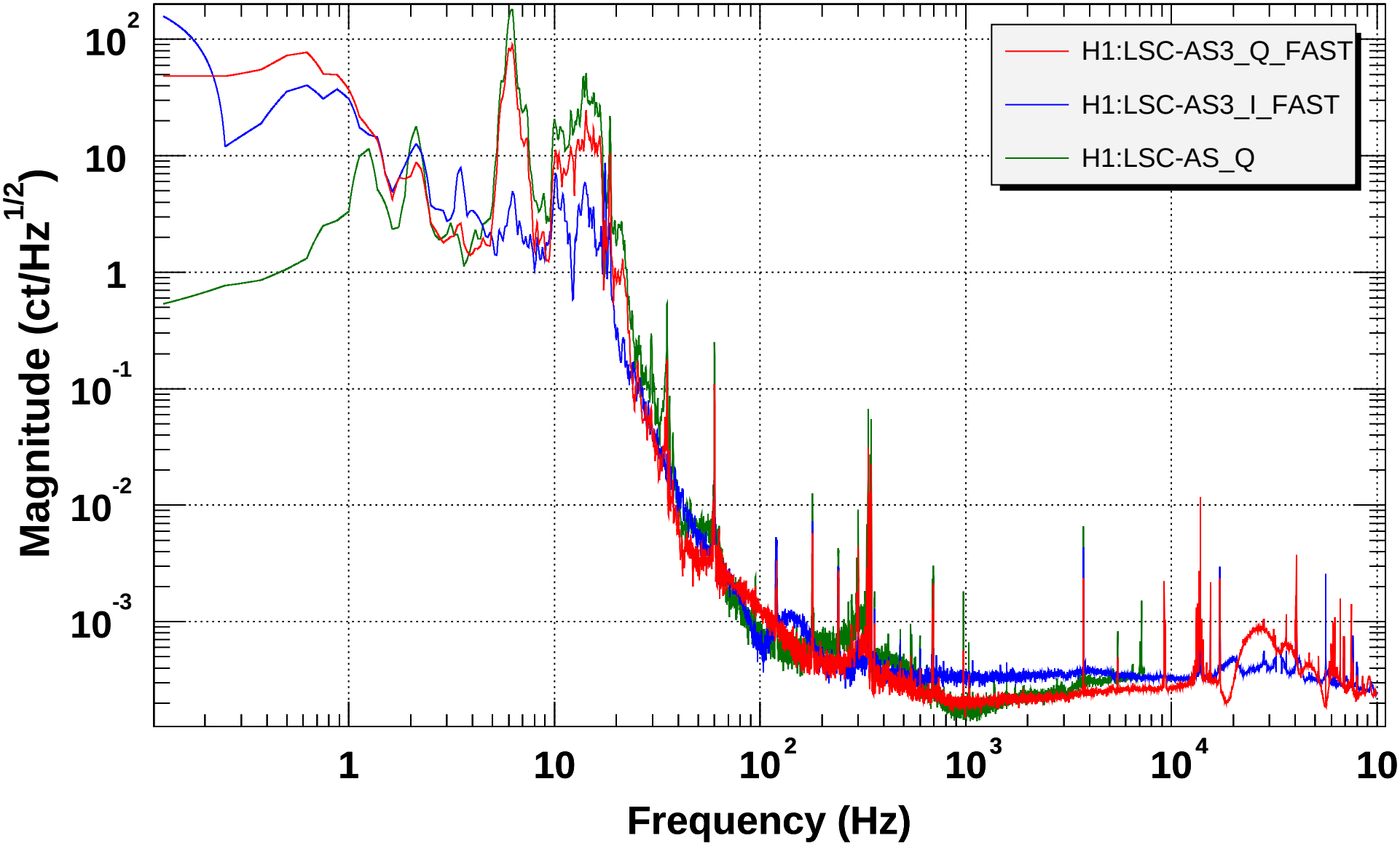
- New ADCU unit
- 4-8 channels at 262.144 kHz sampling rate
  - 2 MB/s to 4 MB/s data rate
  - Not archived; analog testpoints
- Heterodyning
  - Frequency must be a multiple of 128 Hz
  - Complex time series data
  - Archived at rates between 2048 Hz and 16384 Hz
- Support for FSR GW channels
- Support added to dataviewer/dtt


Euro Crate
Whitening Board
AS4 Q & I
AS3 Q & I
"Mobile" Crate
Pentium
Reflected Memory
CDS Network
5579 Loop
Analog Signals
ICS 130
VME Bus
Clock & Trigger
Timing Monitor
GPS


Analog Signals
Compiled Configuration
EPICS Configuration
Max Channels
Filter Type
Frequency
Output Type
Out Rate
Read from ICS
Full Data Rate
Heterodyne & Decimate
Decimate
Write to Reflected Memory
daqWrite
5579 Loop


A Done
89.073547 kHz
52.867
dB
80
dB
10
dB/div
-20
dB
SRS
1 Hz
100 kHz
Freq. Resp. Log Mag
199 s
B Done
89.073547 kHz
89.07
deg
250
deg
50
deg/div
-250
deg
SRS
1 Hz
100 kHz
Freq. Resp. Phase●
199 s

# Fast DAQ Channel on AS3




T0=23/08/2004 00:19:08 Avg=10/Bin=80L BW=0.187356

LIGO

# Proposal

- Add a fast ADCU to each interferometer
- Costs:
  - 3 CPUs VMIC 7805: $3600 ea.
  - 3 reflective memory boards: $2500 ea.
  - 5 ICS-130 (2 spares): $8000 ea.
  - 3 timing boards (D980369): free(?)
  - 6 whitening boards (D040425): $1000 per board
  - Total: ~$65k, allocated $15k (test)