

Connecting iBOBs to the eMerlin Correlator

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Introduction

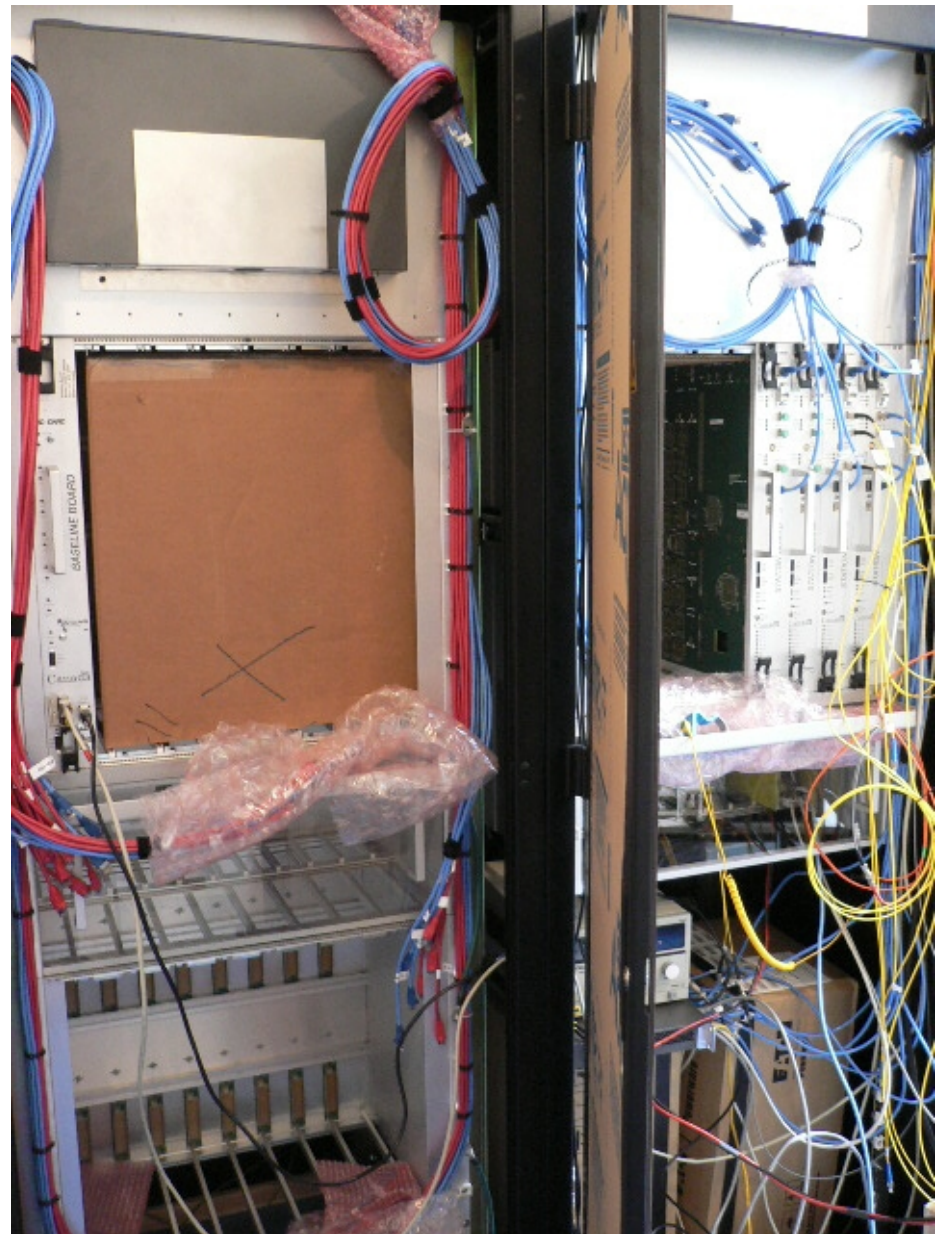
- eMerlin correlator hardware & iBOB connection
- Station Board configuration
- eMerlin import from Onsala
- Data flow control

DINT – Digitizer In Telescope

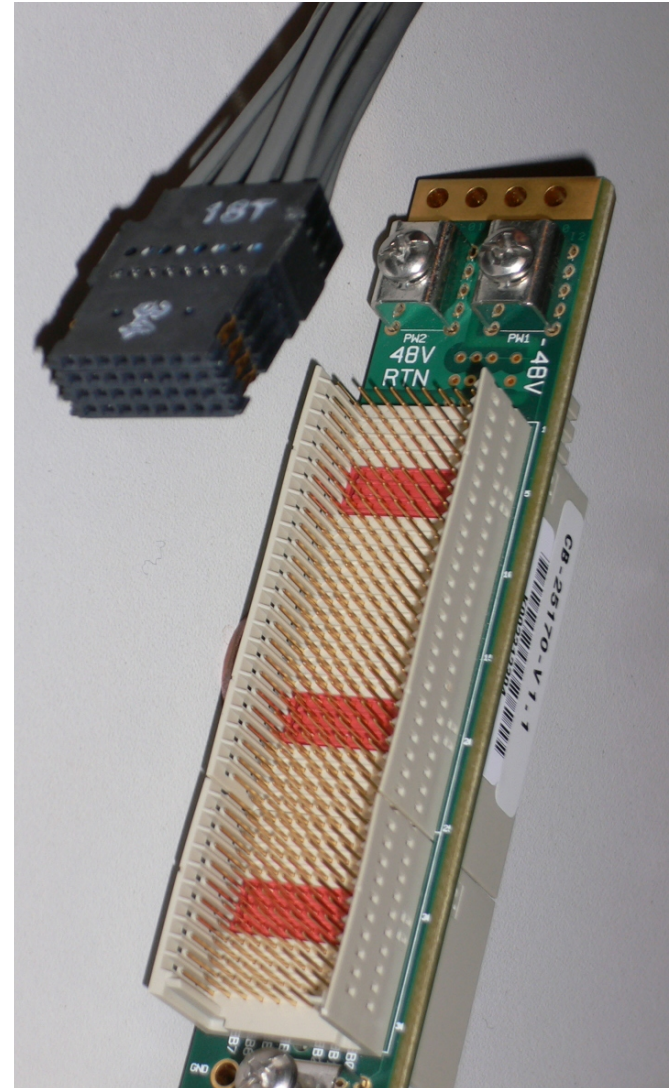


Racks

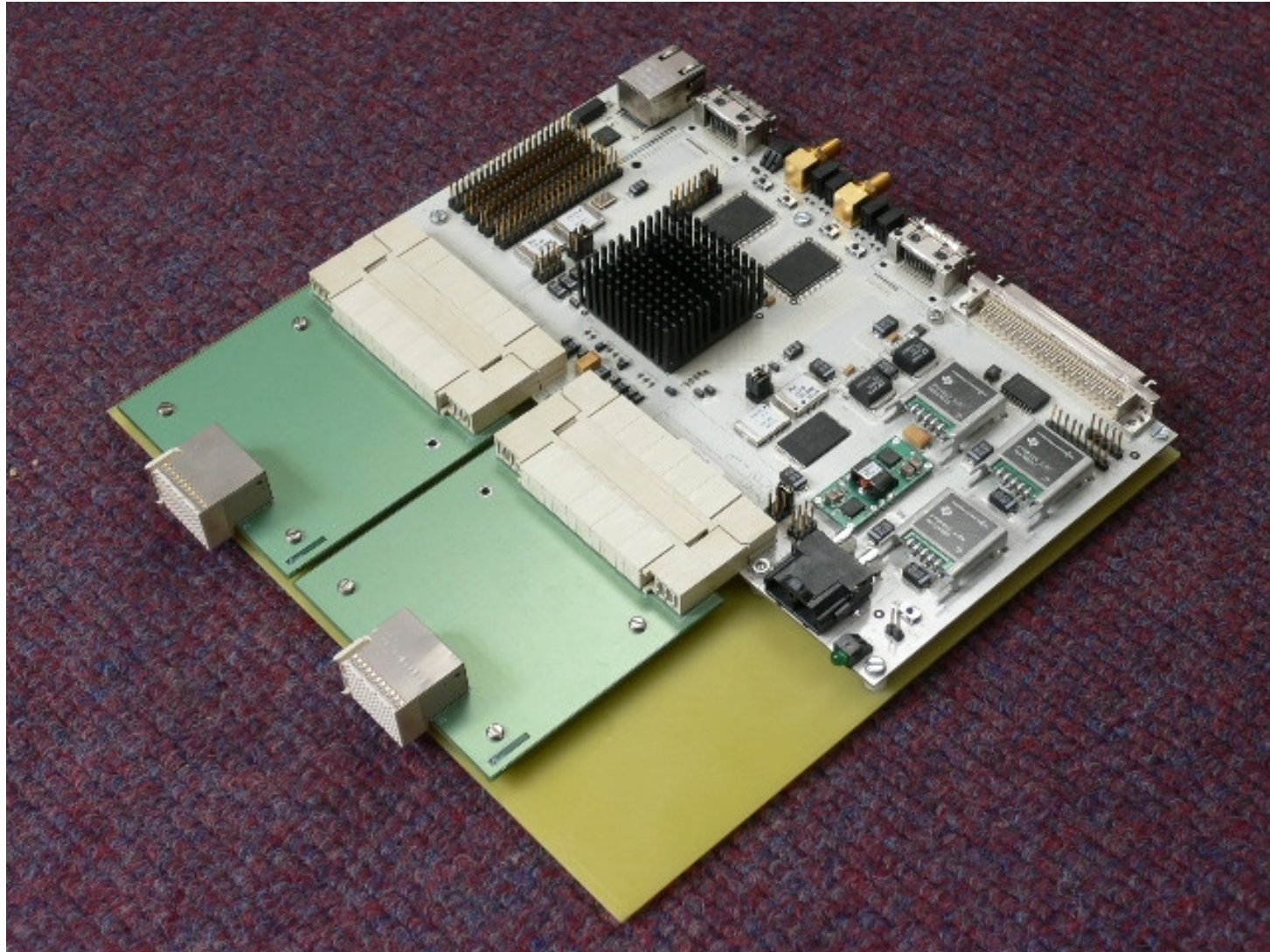
- At left baseline rack with one board
- There is space for 16
- At right station rack with 4 Station Boards out of 8 populated
- Under this a 6U rack for crossbar boards and iBOBs



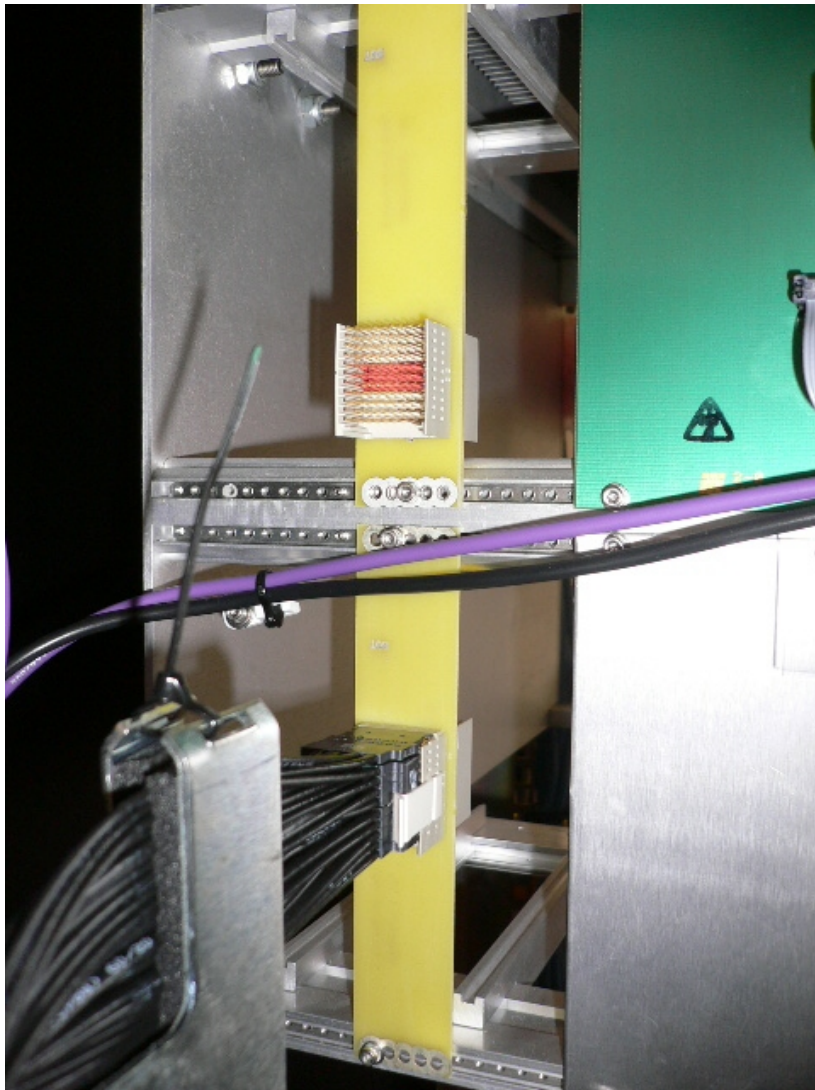
Station Board Backplane



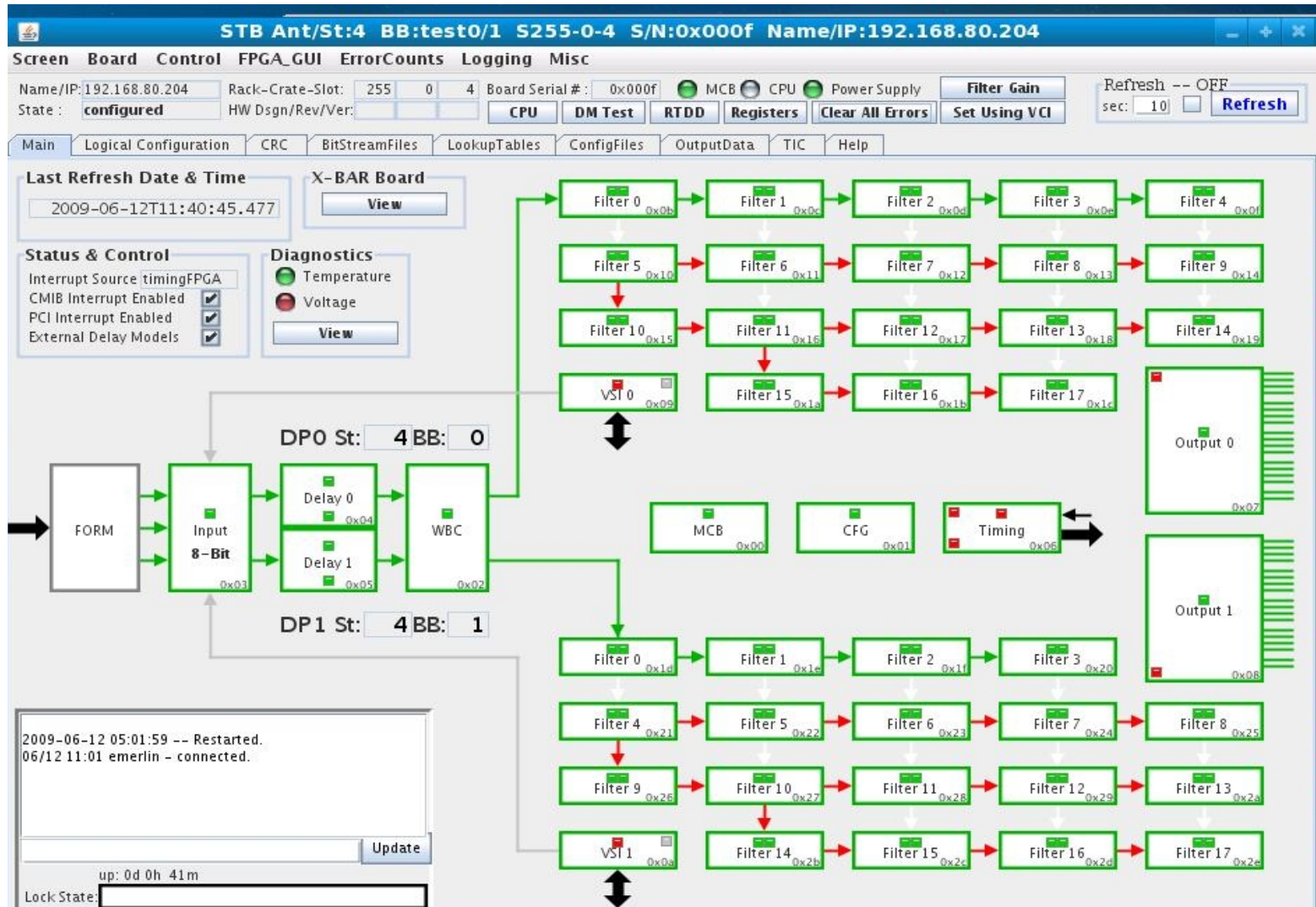
iBOB with Adaptor cards



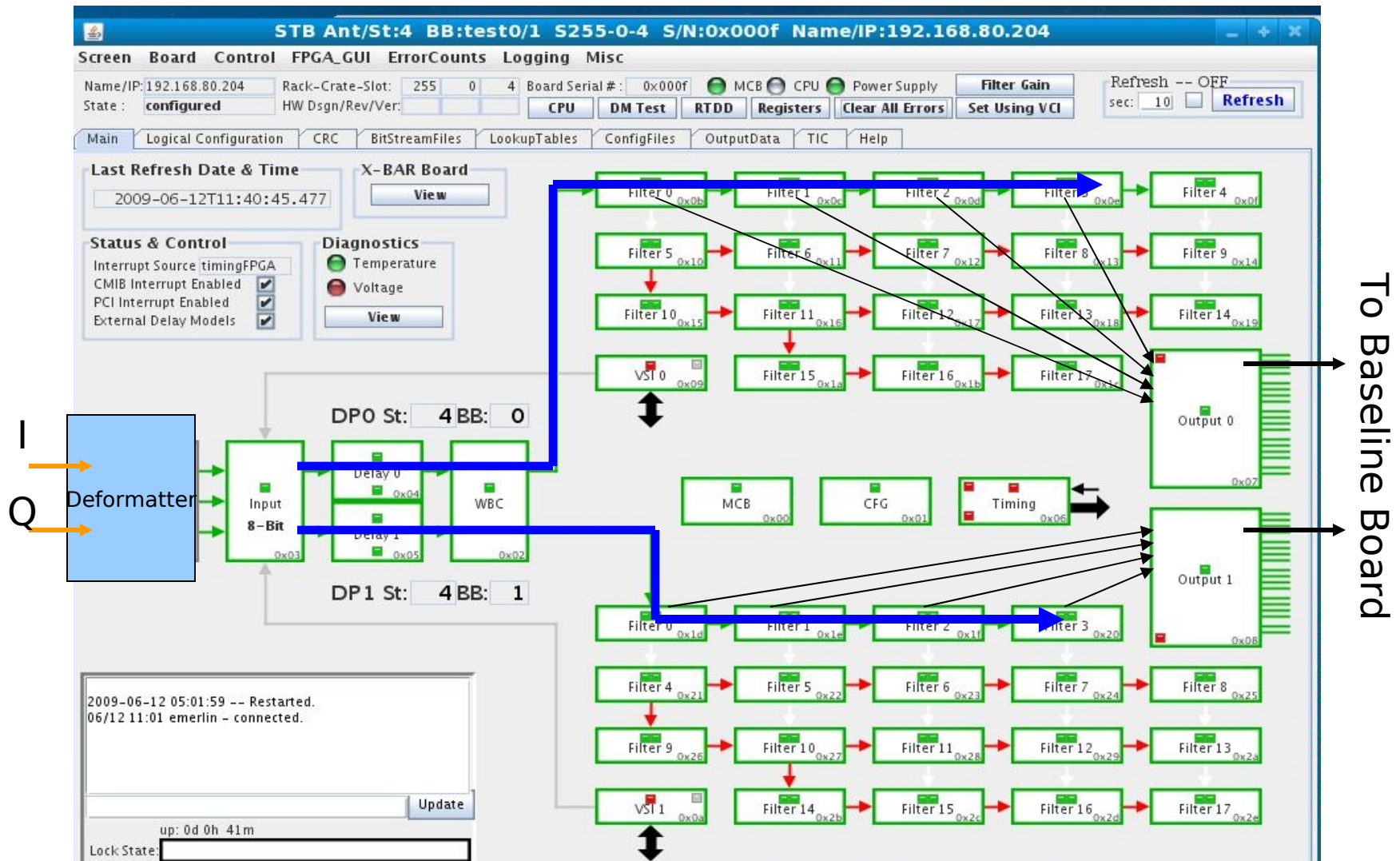
iBOB Backplane Connector



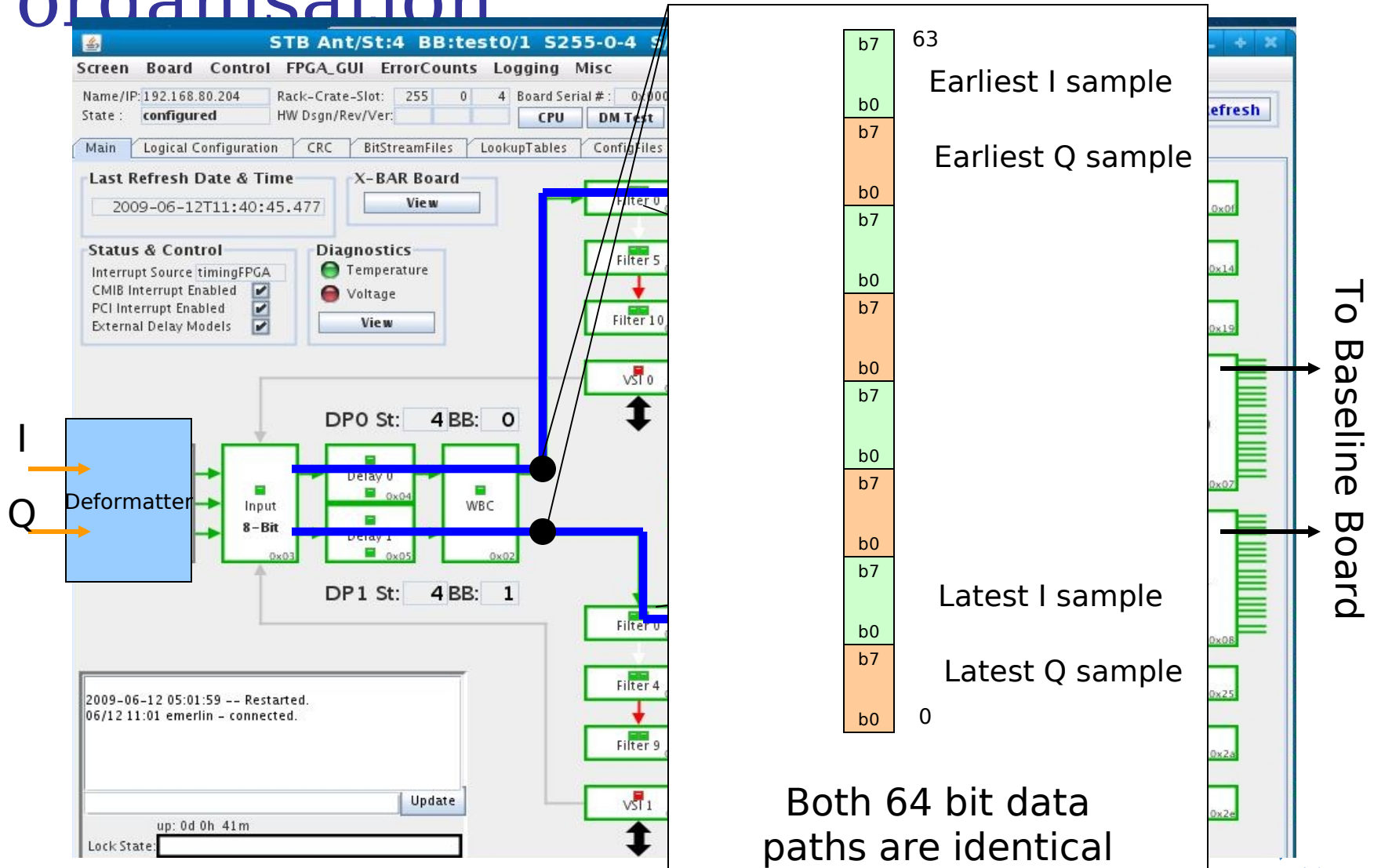
Station Board Signal Flow



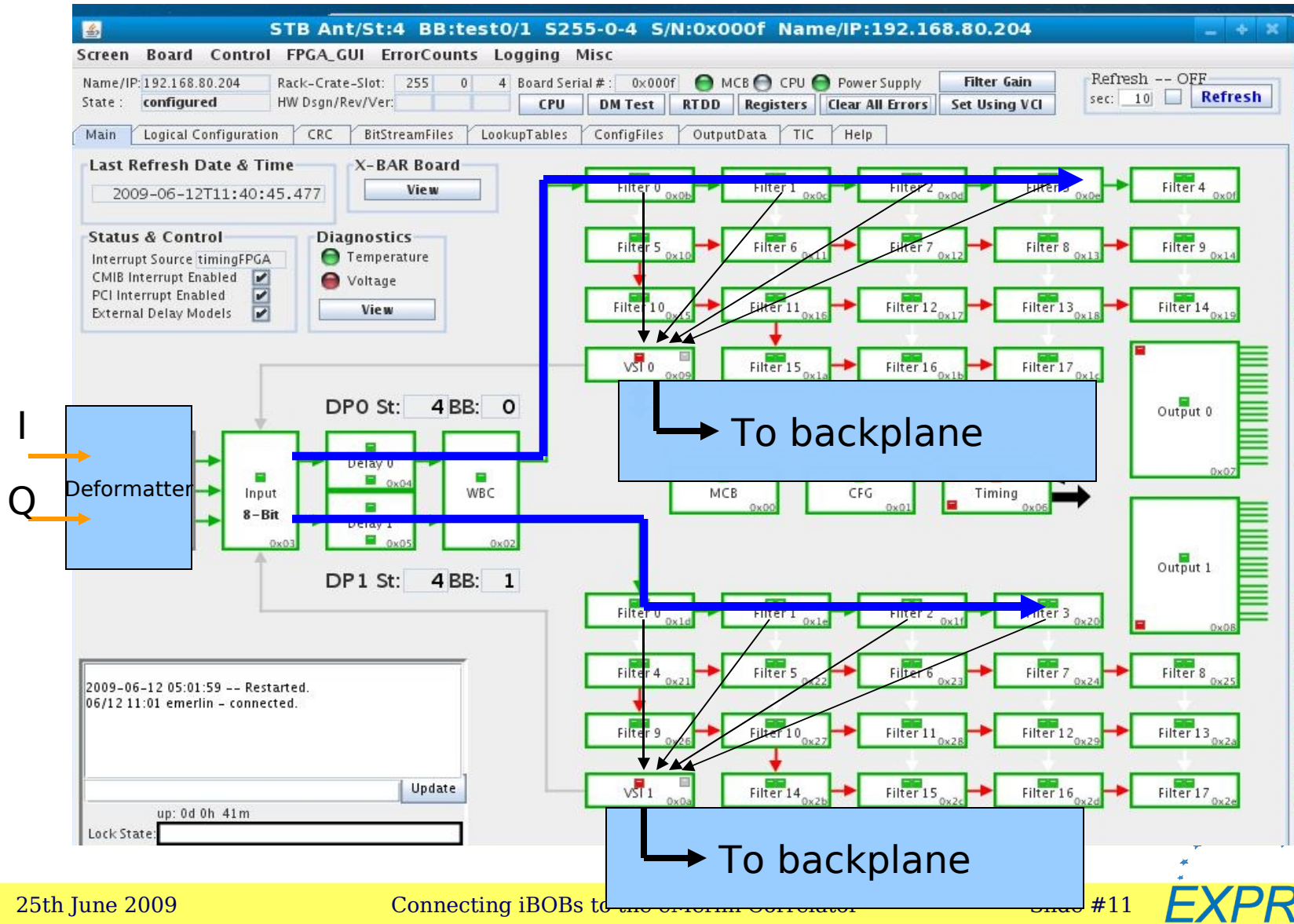
SB Signal Flow – Local Data



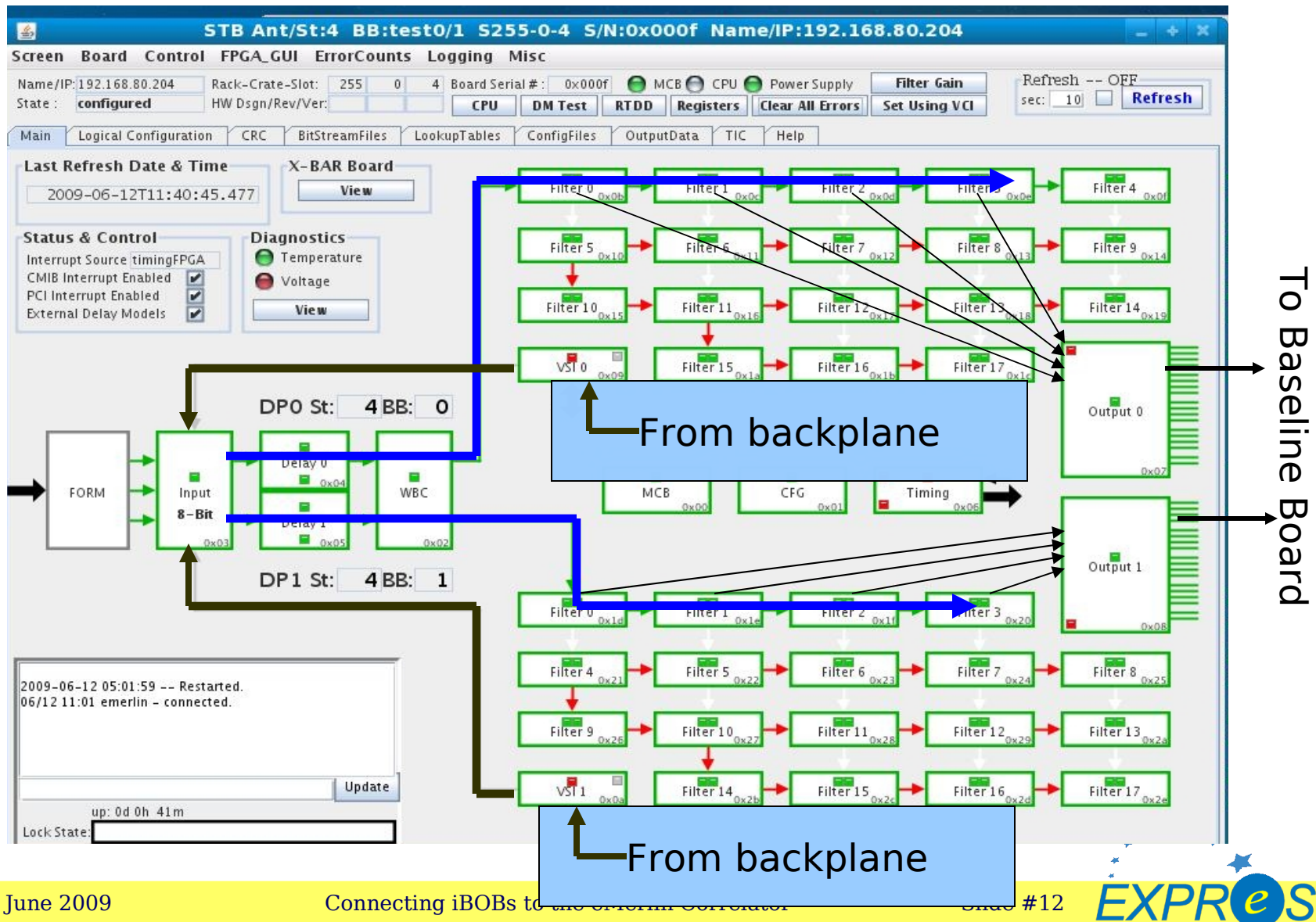
SB Signal Flow – 8 bit data organisation



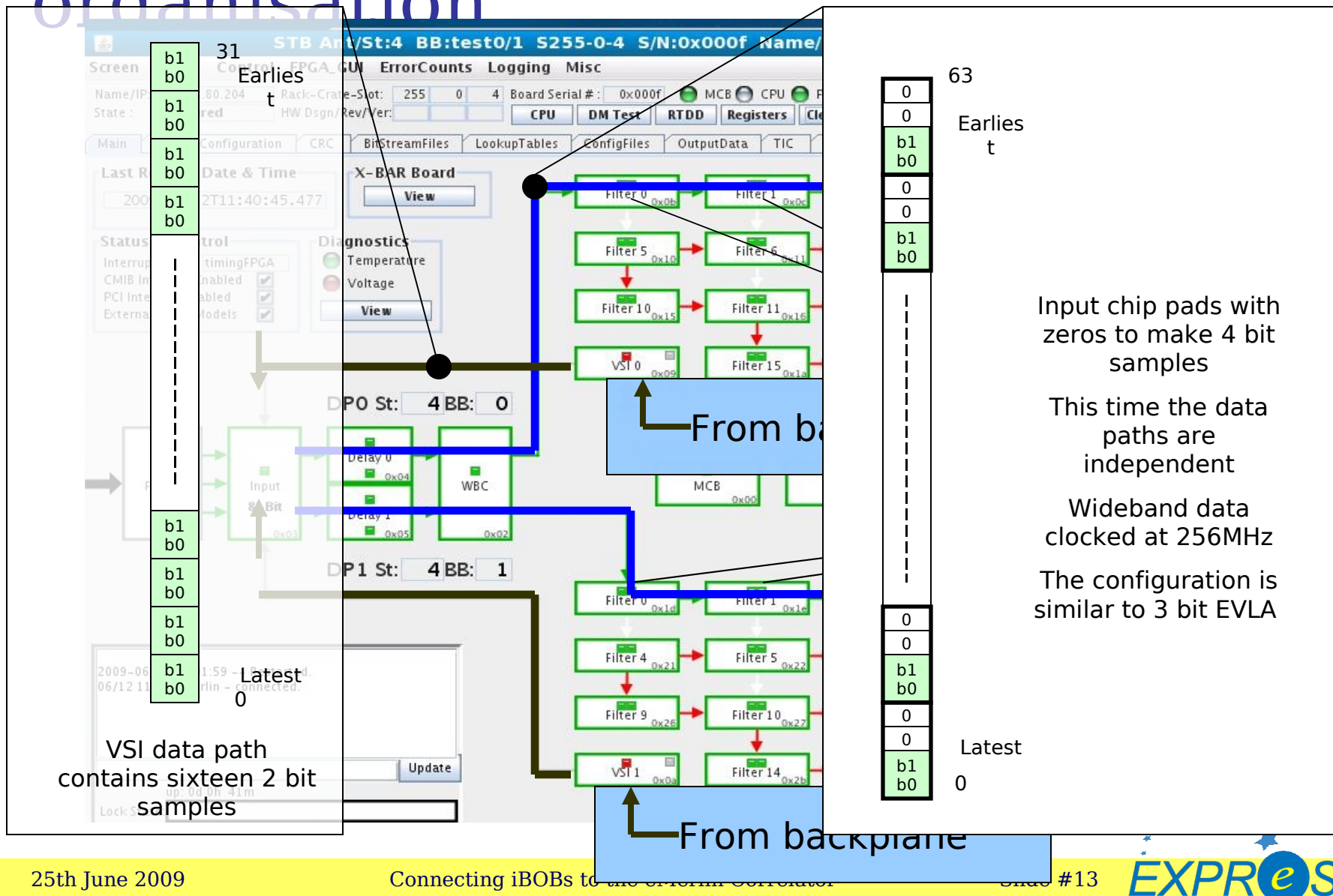
SB Signal Flow – eMerlin Export



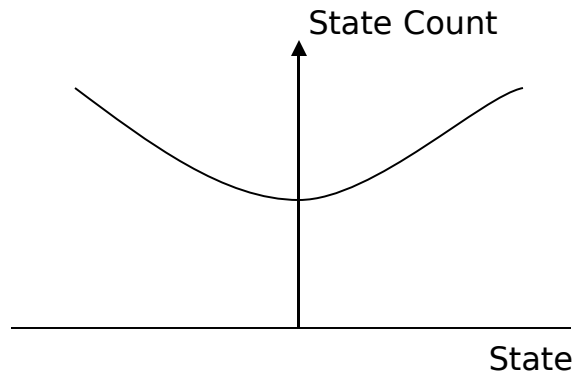
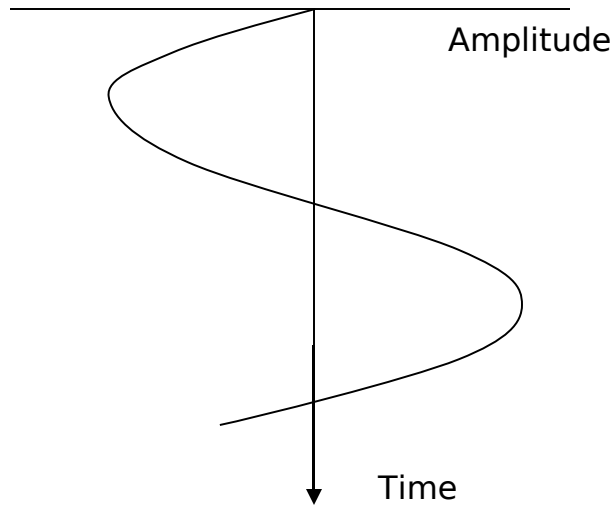
SB Signal Flow – eMerlin Import



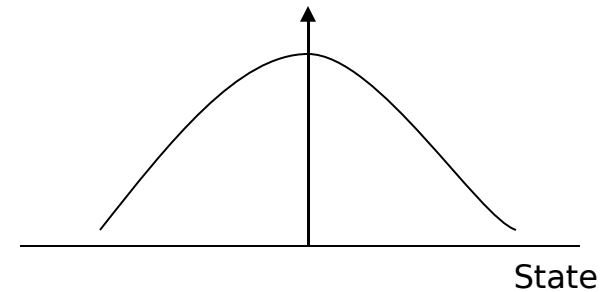
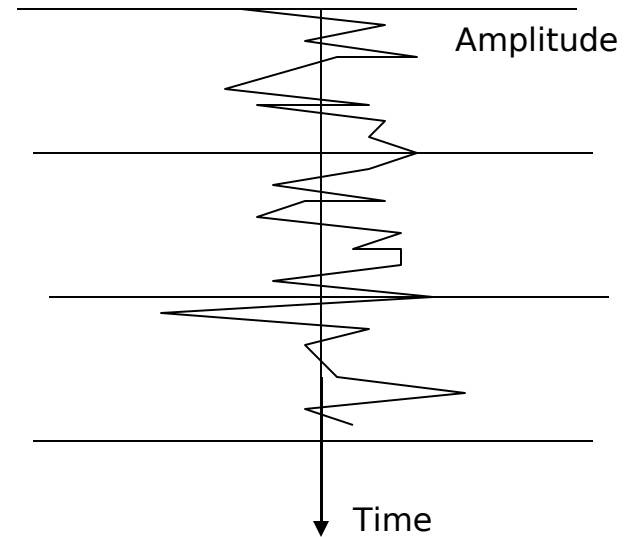
SB Signal Flow – VSI data organisation



State Count Histograms

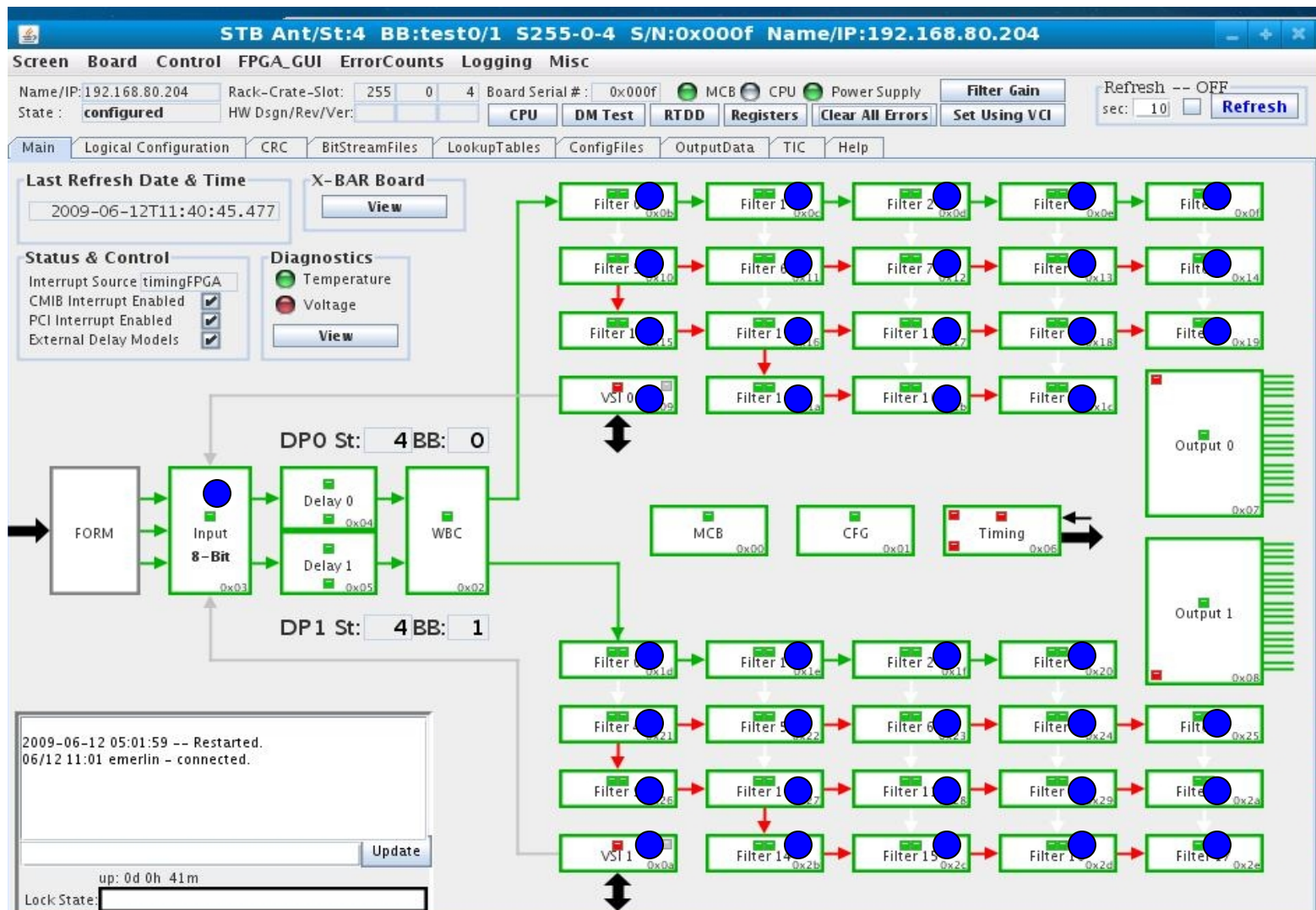


Sinusoid

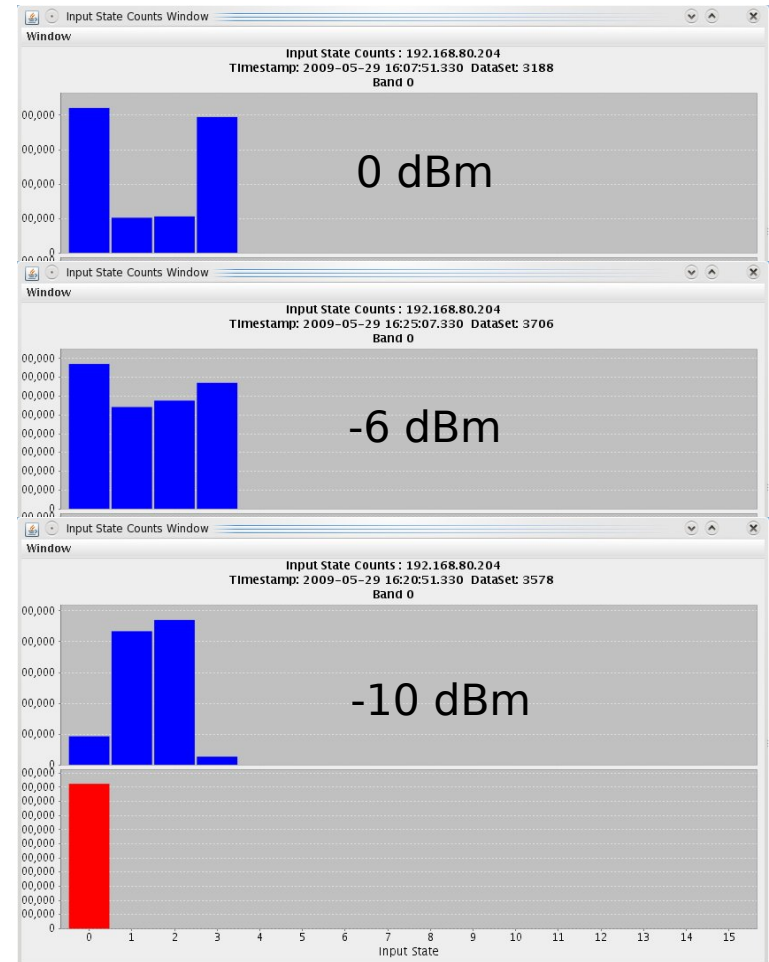
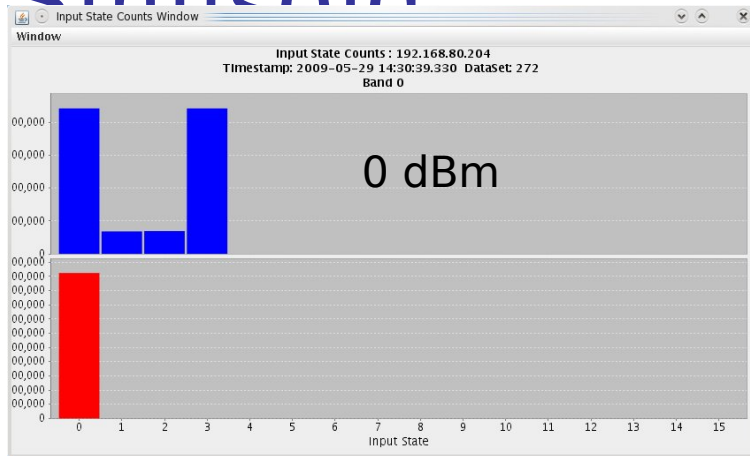


Gaussian

Station Board State Counts



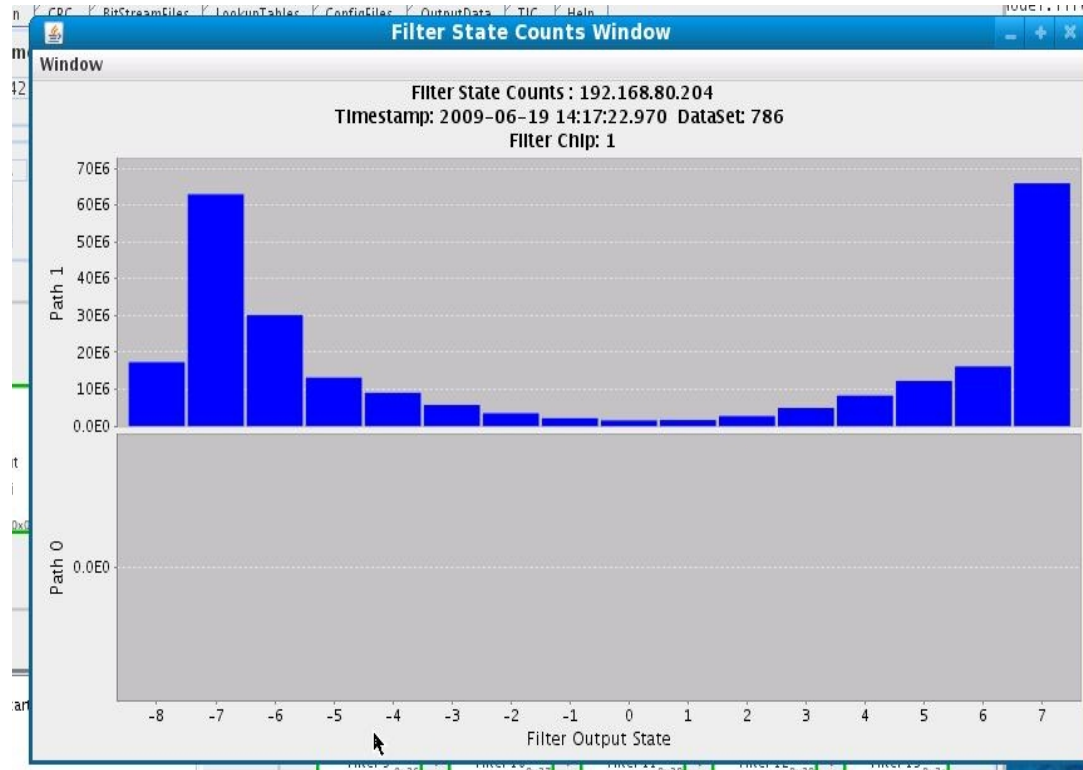
Input Chip State Counts 88MHz Sinusoid



Data from Onsala via Network

Data from local iBOB

Filter Chip State Counts

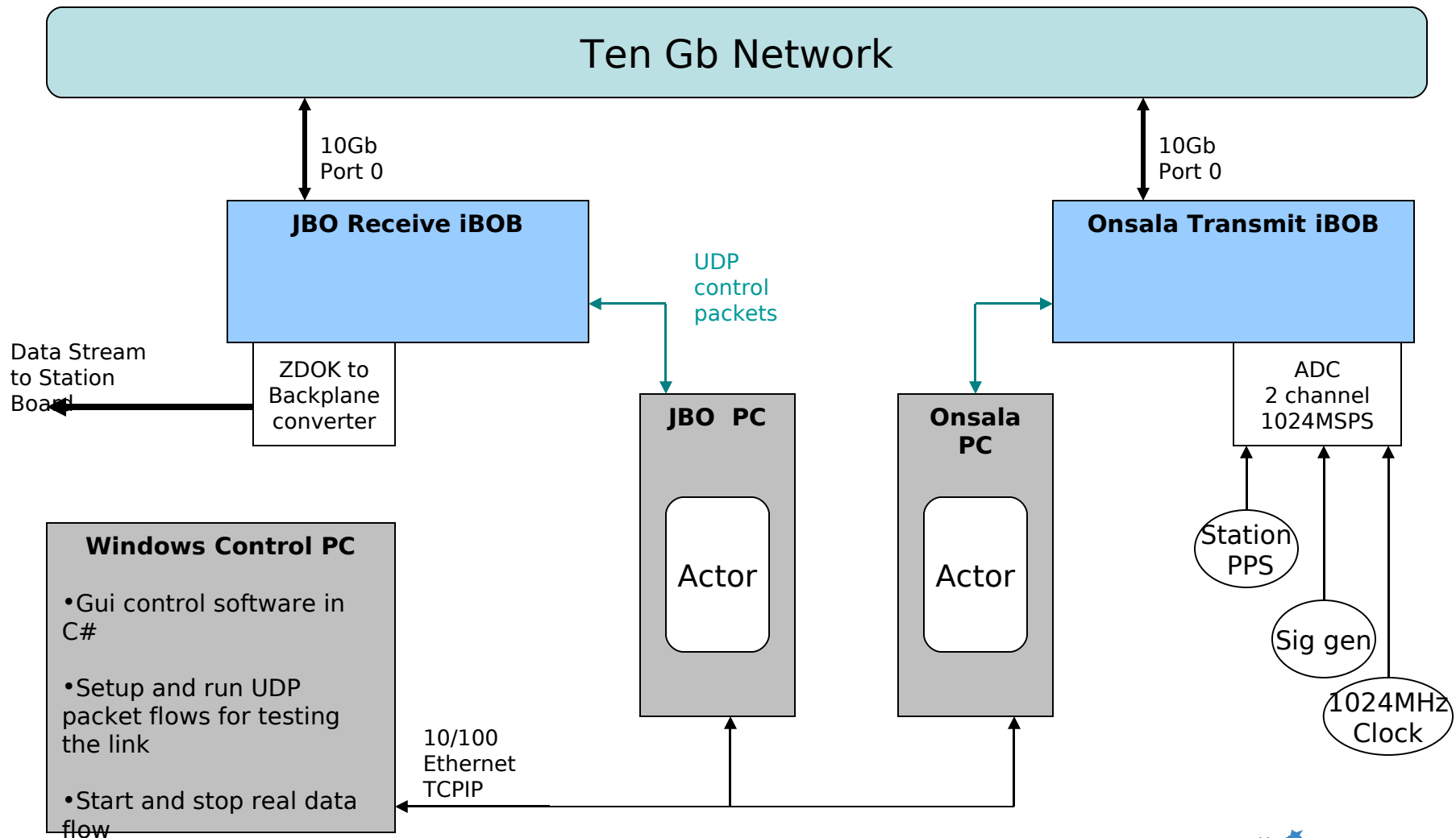


Filter chip output

Data source is 88MHz, -6dBm sinusoid at Onsala

SB configured as for 3 bit EVLA

iBOB Control (RHJ)



•Can be anywhere

iBOB Control Register

- 32 bit register allows software control over FPGA fabric
- Interface is common to iNetTest and data flow

iBOB Control Register

Bit	Use
0	Arm – start test flow on next PPS
1	Not used
2	One shot – start test flow immediately
3	Cancel burst – return transmitter to idle state
4	state
5	Reset Counters – reset statistics counters
6	Histogram enable –
7	Event enable
8	Send data
9	Set realtime
10-	Latch Time
31	Not used

iBOB Status Register

Bit	Use
0-15	Packet size from MAC
16-	Receiver state
23	Not used
24-	Real time done – 1 when time has been set
28	Sending – 1 when transmitting packets
29	Control pkt – 0 = data, 1 = control packet
30	
31	

Questions/Answers

- Contact information
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- Additional Information
<http://expres-eu.org/> [note: only one
“s”]
<http://www.jive.nl/>
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