

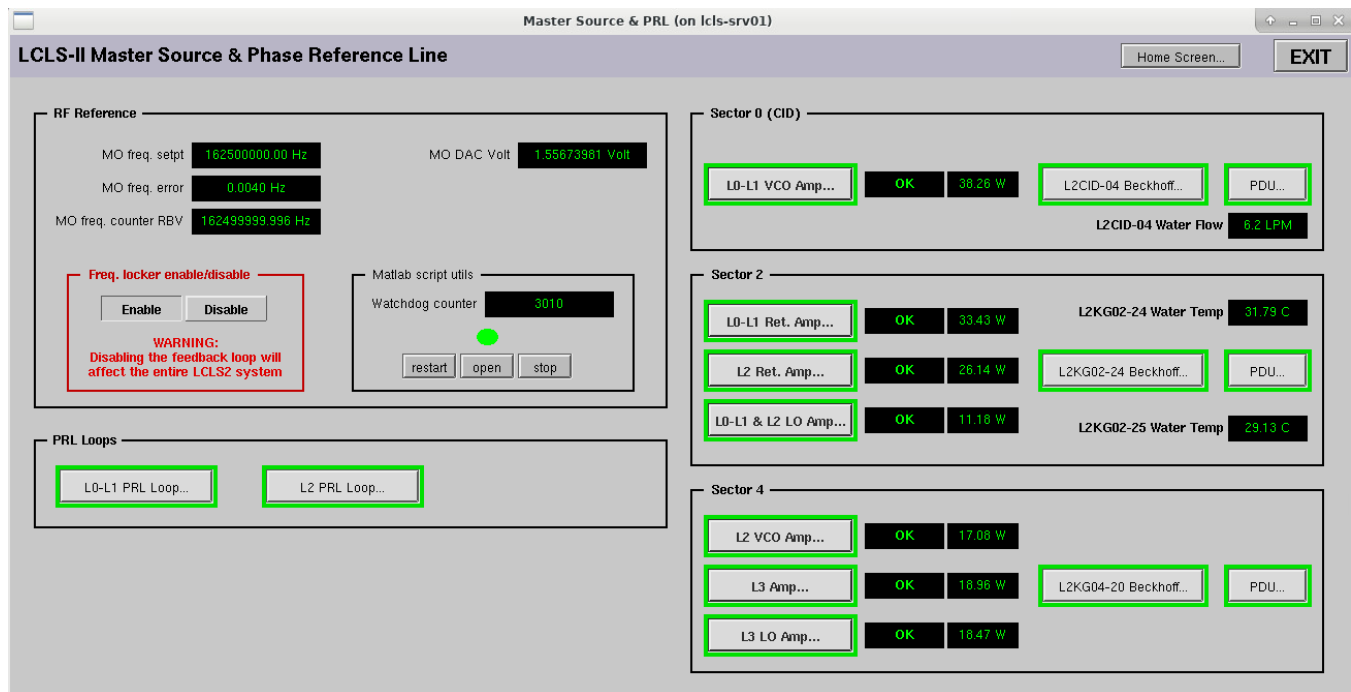
Displays

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MS/PRL main screen

Location: lclshome (SC) --> RF/Global --> Phase Reference Line



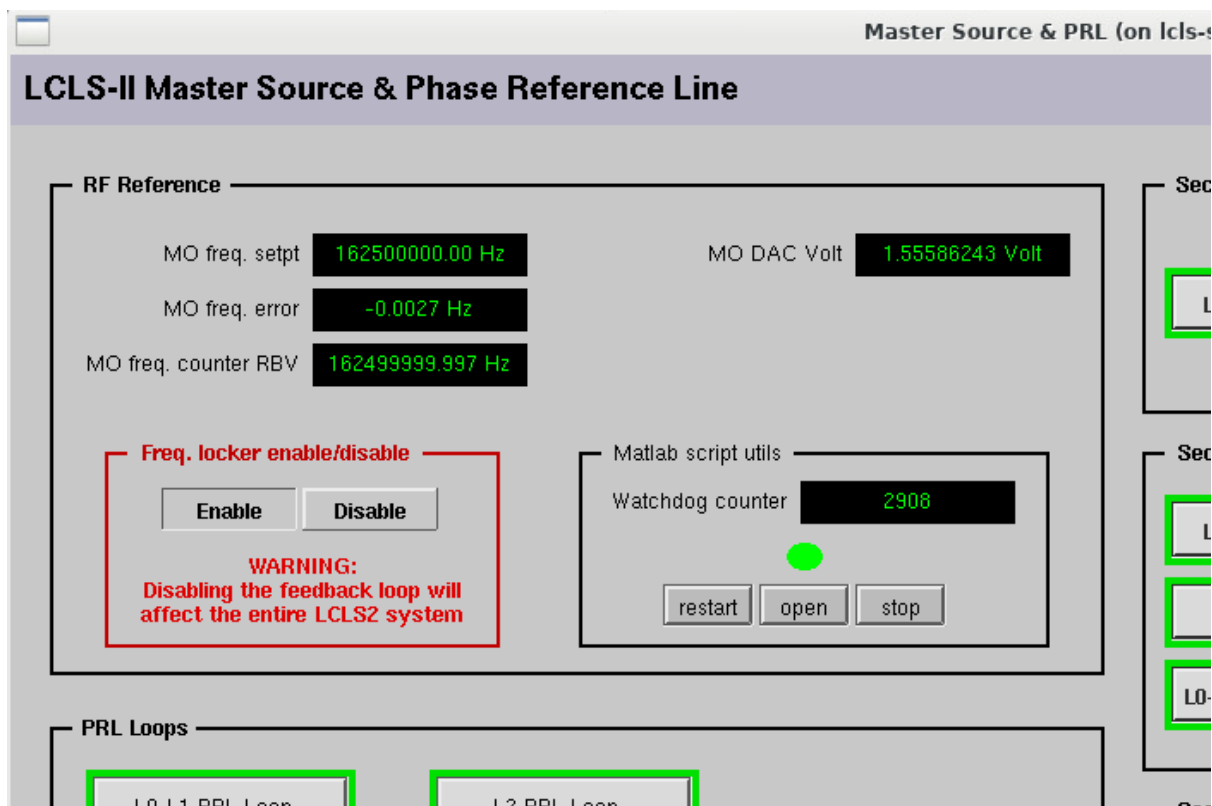
RF Reference (MO Locker)

Location: lclshome (SC) --> RF/Global --> Phase Reference Line

Description: Frequency counter and MO locker matlab script



- Freq locker Enable/Disable button should be set to "Enable"
- MO freq setpoint should be 162.5 MHz
- MO freq error should be < ~1 Hz
- Matlab script LED should be green
- All PVs should be in NO_ALARM state
- For help, refer to [Troubleshooting](#) page



PRL Loops

Location: Iclshome (SC) --> RF/Global --> Phase Reference Line --> L0-L1 PRL Loop...(etc.)

Description: Phase Reference Line feedback loops



- ADC Ampl = ON, Error = OFF, Lock = ON
- LED PV should read "101: Locked"
- Tx/Rx frame rates should be ~5000'
- Loop Lock Disable should be "Enabled"
- All PVs should be in NO_ALARM state
- For help, refer to [Troubleshooting](#) page

L0-L1 PRL Loop / VCO Control (on lcls-srv01)

PRL for L0-L1 PRL Loop / VCO Control

EXIT

	Readback	Readback (Raw Value)	Control (Raw Value)	
Firmware Version	20	0x14		
Additional Phase Shift (in degree)	0.00000000	0x0	0x0	0.000
Loop Filter Reset	Normal	0x0	0x0	Normal
LED	101: Locked	0x5	0x5	
Phase Err (before phase shift, degree)	0.01647949	0x9		
Phase Err (after phase shift, degree)	0.00961304	0x3fffd		
Lock Logic Status	1	0x1		
Input MUX	Chn2-Chn1	0x1	0x1	Chn2-Chn1
w0 scale	1.00000000	0x20	0x20	1.00
w1 (radian)	150.00000000	0x12c0	0x12c0	150.00
Ramp Slop for Phase Shift (in degree)	0	0x0	0x0	0
ADC0 Amplitude (in volt)	1.41177063	0x1915e		
ADC1 Amplitude (in volt)	0.93125610	0x108f8		
Loop Lock Disable	Enabled	0x0	0x0	Enable
Reset Lock Logic State Machine	Normal	0x0	0x0	Normal

ADC Ampl.

ON

Error

OFF

Lock

ON

Unlock Count

1023

Reset

Normal

TxFramerate (Master)

5000 Hz

RxFramerate (Slave)

5000 Hz

RxErroDrop Count (Slave)

4

Fault Buffer Control

LED st waveform/ Phase Error waveform

OnDemand Buffer 0 Control

LED st waveform/ Phase Error waveform

OnDemand Buffer 1 Control

ADC[0:3] waveforms

PRL Amps/Attenuators

Location: lcls/home (SC) --> RF/Global --> Phase Reference Line --> L0-L1 VCO Amp...(etc.)

Description: Phase Reference Line power amplifiers and digital attenuators



- Fault status and status message should be "OK"
- Amp alarms should read "OK"
- Setpt. RBV should read "At target"
- Amp Reset should be in "Standby"
- For help, refer to [Troubleshooting](#) page

PRL Amp: PRL:SYS0:02:L0 (on lcls-srv01)

PRL Amplifier (PRL:SYS0:02:L0)

EXIT

L0-L1 VCO

Amp

Fault StatusOK

Status MessageOK

Fwd Power38.17 W45.82 dBm

Ref Power1.78 W32.51 dBm

Fwd Pwr AlarmOK

PS AlarmOK

Temp AlarmOK

Amp ResetResetStandby

Attenuator

Attenuation Setpt.-+7.00 dB

Setpt. RBV7.00 dBAt target

<----- Decrease power

Increase power ----->

Increase 1 step (0.25 dB)Decrease 1 step (0.25 dB)

Go to max attenuation

Ramp to target setpointAbort

Step Count:0 / 17

Max 31.75 dB

Min 0.00 dB

Target setpt 7.00 dB

Expert...

Amp/Attenuator Expert Screen

Location: lclshome (SC) --> RF/Global --> Phase Reference Line --> L0-L1 VCO Amp...(etc.) --> Expert...

Description: Power amplifier and digital attenuator expert controls

PRL Amp Expert: PRL:SYS0:02:L0 (on lcls-srv01)
EXIT

PRL Amplifier Expert Settings (PRL:SYS0:02:L0)

L0-L1 VCO

***** EXPERTS ONLY *****

Fwd Power
45.81 dBm
38.14 W
Conversion...

Ref Power
32.51 dBm
1.78 W
Conversion...

Attenuator

Setpt.
7.00
7.00 dB

Max attn limit
31.75
31.75 dB

Min attn limit
0.00
0.00 dB

MSB
7
6
5
4
3
2
1
LSB

Setpt. bits

MSB
7
6
5
4
3
2
1
LSB

RBV bits

Latch bit
Off

Ramping

Target setpt
7.00
7.00 dB

Ramp initial
17.00
17.00 dB

Ramp increment
-0.62 dB

Ramp # steps
17
17

Ramp step delay
3
3 s

Ramp Check
Disabled
Enabled
Enabled

Fwd Pwr trip check

Val (0 = trip)
1

Fwd pwr current
45.81346

Fwd pwr previous
45.81685

Lower threshold
25.00000
25.00000

Upper threshold
38.00000
38.00000

Enable/Disable
Disabled
Enabled
Enabled

Water/Temp/Misc

Location: lclshome (SC) --> RF/Global --> Phase Reference Line

Description: Beckhoff low-level displays, rack water & temperature, PDUs for amp AC power etc.



- Occasionally PDU alarm PVs will be INVALID (purple) because of a hardware problem. This should not affect PRL functionality.
- All other PVs should be in NO_ALARM state

L2CID-04 Beckhoff...

PDU...

L2CID-04 Water Flow

6.4 LPM

L2KG02-24 Water Temp

31.76 C

L2KG02-24 Beckhoff...

PDU...

L2KG02-25 Water Temp

29.16 C

L2KG04-20 Beckhoff...

PDU...