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LHO LIGO-T1500062-v6

END_STATION: Yend DATE: 1/15/19

Calibration Log

For different measurements listed below record six minutes of data for each setting and record the GPS time. For background measurements take 60 seconds of data. To avoid the transient and power instability issue, watch the OFSPD and TxPD monitor to see if they are reasonable before recording the GPS time for each measurement. From the terminal, open gpsclock and dataviewer. Open dataviewer traces for: $(IFO):CAL-PCAL(END)_TX_PD_VOLTS_OUT, $(IFO):CAL-PCAL(END)_RX_PD_VOLTS_OUT, $(IFO):CAL-PCAL(END)_OFS_PD_OUT, and $(IFO):CAL-PCAL(END)_WS_PD_OUT. MON MON

1. DAQ Calibration: Apply calibrated voltage from Martel for 15 seconds each. Use the command line tool: cdsutils avg (sec) (channel) where sec=15 and channel = $(IFO):CAL_PCAL(END)_WS_PD_INMON. connect to In1 on "BNC to DB9" module.
   a. 0V=~~1538~~ 29 cts cts, GPS time at start: 1231607 ~~104~~ 135
   b. 1V=1638 cts, GPS time at start: 104
   c. 2V=3275 cts, GPS time at start: 192
2. $(IFO):CAL-PCAL(END)_OPTICALFOLLOWERSERVOOFFSET 3.75 V
3. $(IFO):CAL-PCAL(END)_OPTICALFOLLOWERSERVOGAIN: 38.2 dB
4. $(IFO):CAL-PCAL(END)_LASERPOWERCONTROL 5.0V V

A.1. Measurement Settings, Procedure and Record Sheet:

Connect blue loop PDMON to BNC to DB9 Ch. 1

For the following measurements, the channels referred to are:
TxPD = $(IFO):CAL-PCAL(END)_TX_PD_VOLTS_OUT
RxPD = $(IFO):CAL-PCAL(END)_RX_PD_VOLTS_OUT
OFSPD = $(IFO):CAL-PCAL(END)_OFS_PD_OUT
WSPD = $(IFO):CAL-PCAL(END)_WS_PD_OUT

Use the command line tool for each of the measurements: cdsutils avg (duration) (channel1) (channel2) (channel3).

1. Block the outer beam using the beam dump and place the Working Standard (WS#) on the path of the inner beam going to the test mass at TX module and record data below:

TxPD and WS#PD reading when the WS# is at inner beam at the TX module				
Data Acquisition (in GPS Time)		Readings as obtained from MEDM screen:		
Start Time #1	1231608~~580~~	730	TxPD	5042 ← should be volts, not counts.
Duration	~~360~~ 240		WSPD	-1.359 (-3.159?)
End Time #1	~~740~~	970	OFSPD	-3.732

2. Move the beam block to the inner beam and place the WS# on the outer beam at TX module and record data below:

TxPD and WS#PD reading when the WS# is at outer beam at the TX module			
Data Acquisition (in GPS Time)		Readings as obtained from MEDM screen:	
Start Time #1	609 130	TxPD	5042
Duration	~~360~~ 240	WSPD	-3.225
End Time #1	370	OFSPD	-3.732

razor blade dump inside Tx module

3. Close the shutter and take a background measurement for 60 seconds and record the data:

Background for TX and WS when WS is at TX			
Data Acquisition (in GPS Time)		Readings as obtained from MEDM screen:	
Start Time #1	609 450	TxPD	18.5
Duration	60	WSPD	-0.0005
End Time #1	510	OFSPD	-0.011

Leave the beam block where it was in step 2

4. Move the WS to Receiver (RX) Module and place it at the position of RxPD. Open the shutter and take a measurement and record that data below:

TxPD and WS#PD reading when the WS# is at outer beam at the RX module			
Data Acquisition (in GPS Time)		Readings as obtained from MEDM screen:	
Start Time #1	610 100	TxPD	5042
Duration	~~360~~ 240	WSPD	-3.187
End Time #1	340	OFSPD	-3.733

5. Move the beam block at TX to the outer beam leaving the working standard in the same position and record data below:

in the Rx module

TxPD and WS#PD reading when the WS# is at inner beam at the RX module			
Data Acquisition (in GPS Time)		Readings as obtained from MEDM screen:	
Start Time #1	610 620	TxPD	5042
Duration	~~360~~ 240	WSPD	-3.132
End Time #1	860	OFSPD	-3.733

6. Close the shutter and take background measurement for 60 seconds and record the data below:

TxPD and WS#PD reading when the WS# is at outer beam at the TX module			
Data Acquisition (in GPS Time)		Readings as obtained from MEDM screen:	
Start Time #1	610 990	TxPD	17.5
Duration	60	WSPD	-0.0005
End Time #1	611050	OFSPD	-0.011

still blocking outer beam in Tx module

7. Remove the WS from RxPD position and replace it with RxPD. Close the RxPD enclosure and open the shutter to make measurement. Record the data below:

TxPD and RxPD reading of the inner beam			
Data Acquisition (in GPS Time)		Readings as obtained from MEDM screen:	
Start Time #1	611 610	TxPD	5042
Duration	~~360~~ 240	RxPD	3670
End Time #1	850	OFSPD	-3.733

8. Move the beam block to the inner beam and take measurement. Record the data below:

TxPD and RxPD reading of the outer beam			
Data Acquisition (in GPS Time)		Readings as obtained from MEDM screen:	
Start Time #1	610 940	TxPD	5043
Duration	~~360~~ 240	RxPD	3733
End Time #1	611 180	OFSPD	-3.733

9. Close the shutter and move the beam block away from the inner beam path and take a background measurement for 60 seconds and record the data below:

Background for TxPD and RxPD			
Data Acquisition (in GPS Time)		Readings as obtained from MEDM screen:	
Start Time #1	612 310	TxPD	18
Duration	60	RxPD	-1 ct.
End Time #1	~~38~~ 370	OFSPD	-0.011

shut off excitations

Yend

shutter still removed.

- need to ck. calibration of WSH voltmeter in Lab w/ Mantel. S/N 2846476

- Ck beam positions at Rx sensor photo using white card. Do 18th thing to ck ETM alignment

3.187
3.225 } 0.9882 (-1.18%) outer

3.132
3.159 } .9915 (-0.985%) inner

7. Open parametersforScript02.m script.
   (a) Enter appropriate calibration date, location and GPS time (This is usually same as the one for first parameter file unless you are re-running the analysis code).
   (b) Make sure the workingcopy_location has appropriate path.
   (c) This parameter file is associated with Script02.
8. Run Script02_pcalDataandResults.m.
   (a) This will fetch the data from the server; write it as txt files into the folder.
   (b) It also plots the ratios and saves the plots to the same folder. Make sure the plots are satisfactory before closing it.
   (c) Additionally it will save a DYYYYMMDD_Ratio.mat and DYYYYMMDD_Results.mat file that contains calibration results.
9. In Matlab Command window run the following command.
   pcalPublishReport(ifo_arm, outputFilename)
   (a) ifo_arm = 'LHOX' or 'LHOY' or 'LLOX' or 'LLOY'
   (b) outputFilename
      - '' (empty string will return default filename)
      - 'XXXXX.pdf'

4.2 SVN Update

1. On the terminal window set the path to '../PhotonCalibrator/measurements/appropriate end station folder' and use the following svn command. Refer to T1500095 for details.
   - svn add DYYYYMMDD/
   - svn commit -m "add an update message"
   - svn update
2. Also make sure the changes you made to the scripts inside 'pcalEndstation' folder are committed to the svn.

4.3 DCC Update

1. Upload the report published in section 4.1.5 to their respective T -document as a new version.
2. Update DCC-T1500622 with svn link to the new calibration folder 'DYYYYMMDD'.