

# Session startup

Use the official Parkes vnc sessions on joffrey:1. Do not use joffrey:2.

**The recording machine is different to the DAS control machine! See below**

Start the following (in different virtual desktops).

## Parkes control

- showtel
- 2 spare xterms for commands (atsnap, lorum below)

## DAS control

- `ssh -X vlbi@pkvlbidas then das1`
- `ssh -X vlbi@pkvlbidas then das2`

## LBADR control

- `ssh -X vlbi@pkvsi1 then cdisko2`

For DAS and cdisko usage and control see [here](#)

# Experiment Startup

## Receiver Selection

*The telescope should be parked before you change receiver otherwise the translator can get stuck.  
Run `atsnap park` in an xterm on joffrey*

Select the required receiver in "operfcc" and click "place selected receiver on axis".



Your selected receiver will be on axis once all five status buttons are green and read 'ok'. Alternatively, you can turn on Focus cabin camera using Parkes Monitor & Control GUI to monitor the receiver change. Remember to turn the cameras off when the change is complete, as it is a source of RFI.

Click on the receiver name below for receiver specific setup notes.

Receiver	Wavelength
<a href="#">UWB-Low</a>	704 MHz-4.032 GHz
<a href="#">Multi</a>	21cm/1.4 GHz
<a href="#">H-OH</a>	18cm/1.6 GHz
<a href="#">Galileo</a>	12cm/2.4 GHz
<a href="#">METH6</a>	5cm/6.7 GHz
<a href="#">Mars</a>	3cm/8.6 GHz
<a href="#">13mm</a>	13mm/22 GHz

You **MUST** select the receiver before starting at snap below, otherwise pointing will be wrong.

## IF setup

As of February 2019, observers no longer have to directly call lorun to set up the LO chain.

Both the LO and cal control unit are set via an executable shell script named with the project code and sequential letter epoch (e.g. v558c.sh). This script will call lorun and ccurun and set loGUI and the Cal Control Unit for the appropriate project epoch. LBA support staff will have set up the utility scripts before your observations.

```
cd ~/lba
./v558c.sh
```

Make sure that the executable exits without throwing any errors. If the LO setup does not exit cleanly, contact LBA support staff as there may be issues with the Parkes Conversion System.

The Switch Matrix is only needed when Mark5 recorder is used (see the [Mark5 setup notes](#) ). The DAS are not connected through the switch matrix

## Antenna schedule

The antenna schedule should be copied automatically. If it is missing, download the .psn file from the atnf ftp area (see experiment wiki). As pksobs on joffrey run atsnap, with the name of the .psn file. E.g.

```
→ atsnap vc001.psn
```

The .psn files will be in ~pksobs/lba

## DAS setup/Attenuation

Make sure that levels on the VLBI DAS are within range (ie the IF Level is mid range).

If not, adjust attenuation on the loGUI.

Use the C12 attenuators 1&2 for coarse setup (acts on both IFs), use the C40 1,2,3,4 attenuators for fine setup. Usually only the C40 attenuators should be adjusted.

*Before adjusting attenuation, click the “refresh” button on loGUI near the bottom left*

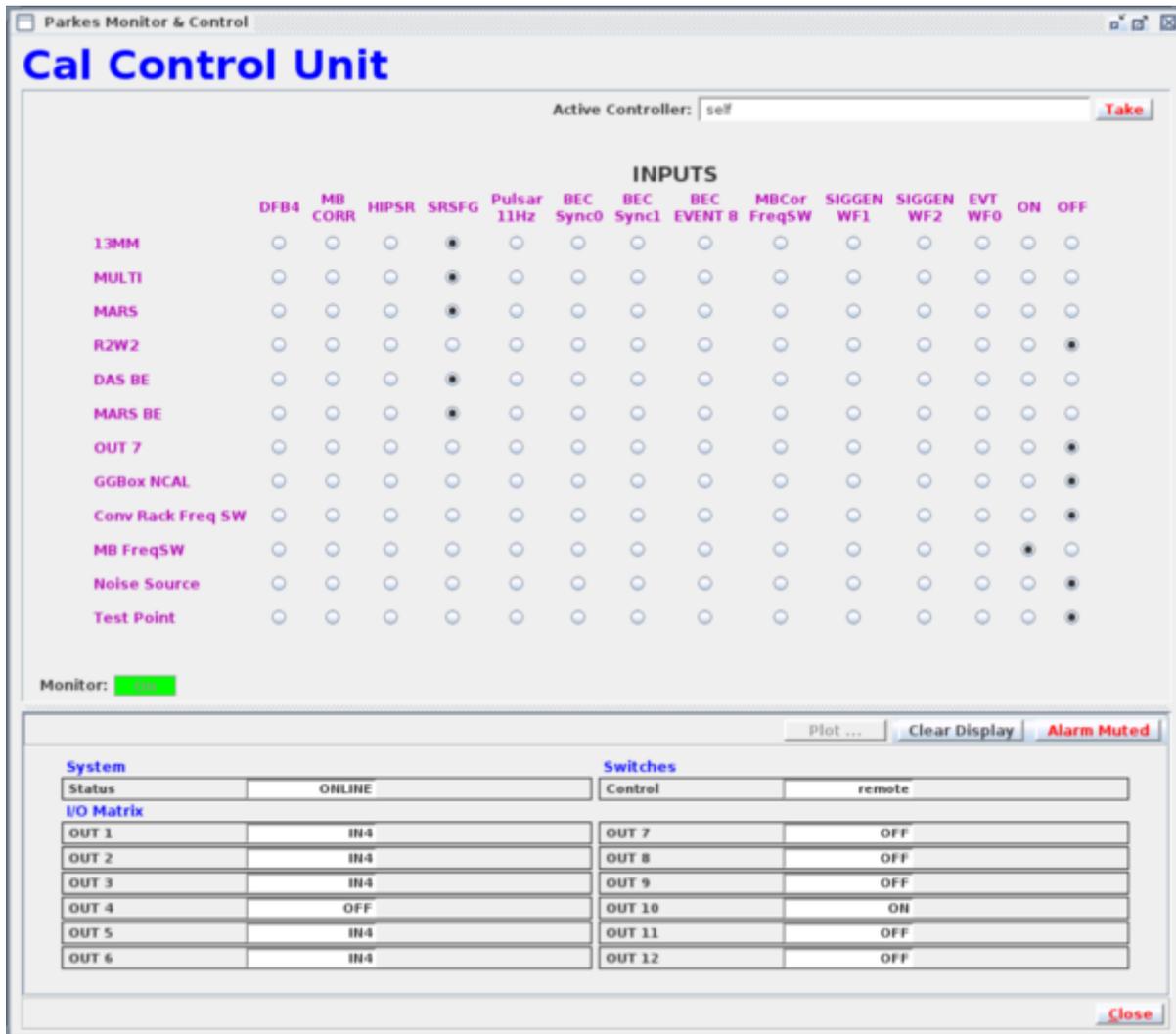
If you need to change the attenuation, you may want to update the lorun .cmd file.

## Cal Control Unit

Tsys is measured by sending a 200 Hz signal to the receiver and a detector connected to the analog output of the VLBI DAS. The lorun script (should) setup the “Stanford Research Systems” signal generator to 200 Hz and amplitude is 5V.

The project executable that was run to set up the LO chain via lorun will also have also called ccurun and set up the Cal Control Unit appropriately for your project.

To view the calibration set up, you can start the “Cal Control Unit” from PKMC gui to ensure all relevant receivers are connected to SRSFG as well as the “DAS BE” and “MARS BE” if Mars is being used.



## Polarisation

If the polarisation is swapped, a quick remedy is to swap the DAS inputs at the bottom of rack 2 in the equipment room upstairs. Swap the A1/B1 and A2/B2 short patch cables between the DAS OUT and DAS IN. However when observing remotely this may not be possible. For dual polarization experiments just make a note in the wiki. For single pol experiments just make a different channel selection in cdisco to select the other polarisation.

## Generating a test tone

**THE FOLLOWING IS OF HISTORICAL INTEREST ONLY AND IS NO LONGER NEEDED**

If you need to check that you are observing at the right frequency, you can use the vertex radiator to generate a test tone using the following procedure:

- Find the LO HP 8648D in the lower half of rack 7 (upstairs) and ensure it has RF OFF.
- Connect the "Vertex 2" port (also labelled "LO") at the top of rack 6 to the HP 8648D RF output.
- Connect the "Vertex 1" port (also labelled "DC") to the power supply unit about midway up rack 7. You can use any of the ports labelled "2", "3", or "4".
- Turn on the rack 7 power supply unit by first moving down the switch (towards the "ON" label)

above the port used to connect to the “Vertex 1” port, then moving down the switch next to the “+24V” label on the right of the unit. There should now be a green light next to each of the switches you just moved.

- Set the frequency of the HP 8648D LO to an appropriate harmonic frequency. For example, to generate a tone at 8420 MHz, choose the 20th harmonic of 421.0 MHz (ie. set the LO frequency to 421.0 MHz).
- Set the RF level of the HP 8648D LO to a very low level, no higher than ~ -12 dBm.
- Turn the RF ON for the HP 8648D LO, to generate the tone.

## Post observations

## Onsource flagging

Get the on source flagging file for the whole session. Log onto a Solaris machine (e.g. pavo) as observer and run “antfg”: pavo-101% antfg <year> <dayno start> <dayno end> This creates an AIPS style flagfile as ./antflag

E.g.

```
pavo-101% antfg 2006 316 323
```

This creates a flagfile covering range of days 2006/316-323 inclusive. This file should be copied to Epping and put in the vlbi ftp area /pub/people/vlbi/cal/parkes/logs with the name MonthYear, using a 3 letter abbreviation for the month. E.g.:

```
> scp antflag vlbi@athena:/nfs/ftp/people/vlbi/cal/parkes/logs/Nov2006.antflag
```

Note that the flag data for an entire session should be contained in a single file. A CGI script extracts the needed entries for individual experiments.

## Tsys

### For observations from 2008 and onwards

Tsys values are recorded in

```
/nfs/PKSlocal/logs/monitor_data/backends/yyyy-mm-dd_rack3ASD.csv
```

These should be mirrored to Sydney, using the following command logged in to a Marsfield Unix machine as vlbi.

```
> parkeslogs.sh
```

### For data pre 2007 (Nov 2007 and earlier)

A program SYSTEMP runs on the Vax YOWIE, reading the Synch Demod attached to the AT samplers, near the DAS inputs (upstairs control room).

The inputs to the synch Demod are set up by the user - in recent years I have been using the analogue outputs of the DAS Fine Tuner (FT) for this purpose. This isn't ideal but is the best we have. (See notes below).

The program writes 15-second averages to the file;

```
YOWIE: :OBS$DATA: [SYSTEMP]SYSTEMP_G.LOG
```

where each use of the program creates a higher version of this file.

These can be FTP'd by logging-in to YOWIE (as VLBI, usual pw), Appropriate local Parkes (Solaris) machines to use as an intermediate storage location include sagitta, pavo, pisces, perseus or orion.

```
$vlbi> sd obs$data:[systemp]
$vlbi> ftp <target_machine>
....
ftp> put SYSTEMP_G.LOG;356 systemp.355
```

Once the files are on the Parkes Solaris system you can produce something more usable with the utility pks\_tsys;

```
sagitta% ~rey052/bin/pks_tsys
SYSTEMP input file [SYSTEMP.LOG] : systemp.355
TSYS output file [TSYS] : v215a.tsys
Integration interval [ 5.000min] :
Diode scale factors [ 1.0000 1.0000] :
```

which averages the raw numbers with a specified interval (default 5 minutes) and scales the values with user-specified calibration factors. These factors need to be determined from calibration observations e.g. "SPOT".

The file created looks like;

```
! PRKS Tsys data from file: systemp.355
! Tcal A/B = 1.0000 1.0000 * 1.0000
318 09:12:35.2      30.4401      29.6506 ! 0.17 0.20 19
318 09:17:29.6      30.3742      29.7018 ! 0.29 0.31 18
318 09:22:24.0      30.4703      29.6044 ! 0.15 0.13 19
...
```

which should be close to the format needed for AIPS. The numbers after the "!" are the RMS values for each channel and the number of values in the average.

From:

<https://www.atnf.csiro.au/vlbi/dokuwiki/> - **ATNF VLBI Wiki**

Permanent link:

<https://www.atnf.csiro.au/vlbi/dokuwiki/doku.php/lbaops/parkesnotes>

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