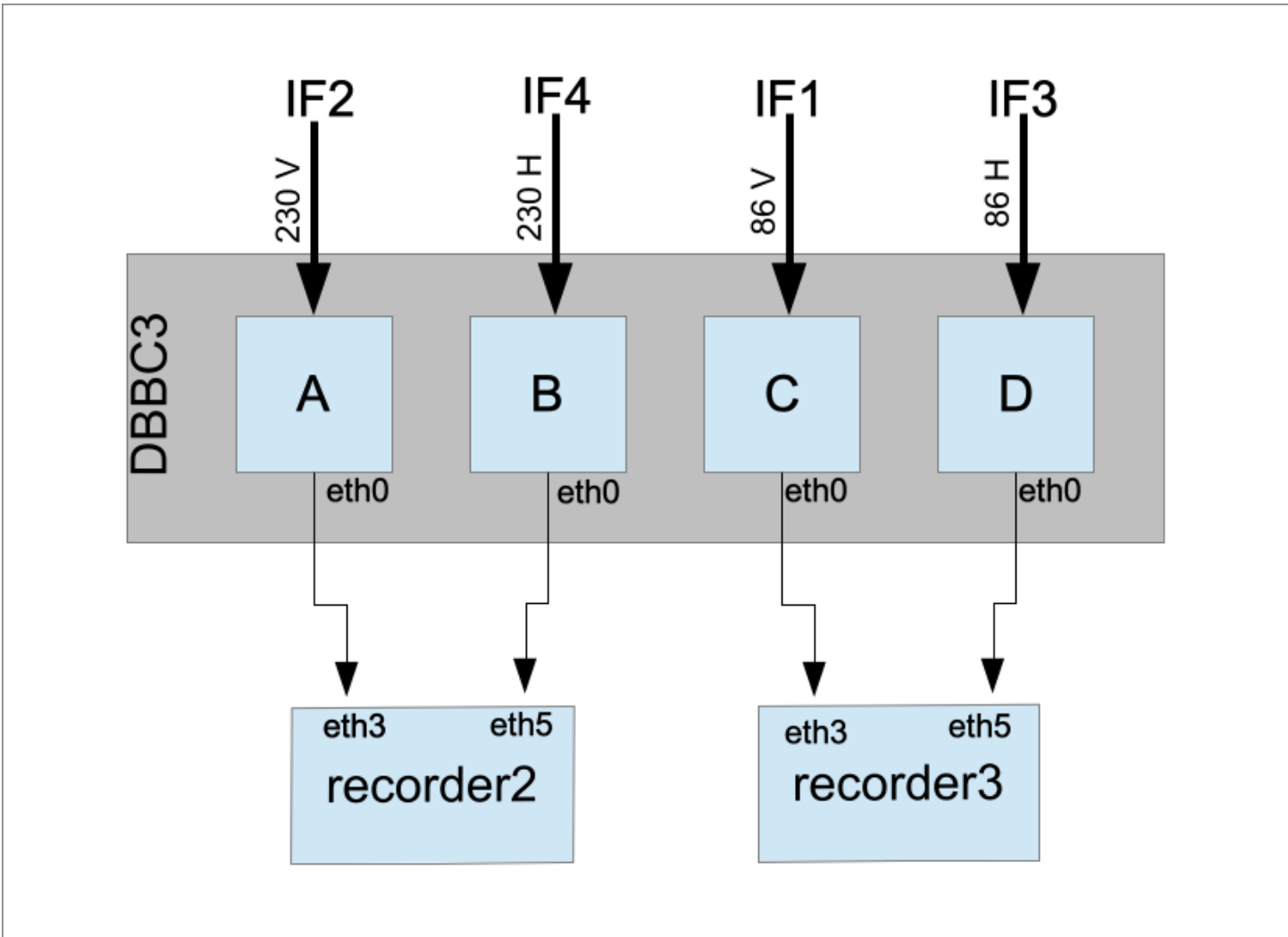


System schematics



Important note:

27/Nov.2024: The DBBC3 is showing synchronisation issues in this session (actually since Nov. 12). Investigations are ongoing, but it is yet unclear of the impact on data quality that the problem may have. The vdif headers and time look ok, but we also saw jumps in the 1PPS and the sampler offsets that could create issues only detected at correlation.

UPDATE 3/Dec./2024: The issue was tracked to a glitch in our PPS signal feeding the DBBC3. It was resolved by re-introducing a filter card before the distribution to the DBBC3 backend. The DBBC3 has been 4 days without having sync issues since then, so problem is considered solved.

Setup 86 GHz

Target band: 86.000 - 87.024

1st LO: 93.0 GHz

RF: LSB 5-9 GHz

2nd LO (DBBC3): 9.048 GHz

Sky freq: 83.952 - 88.048 GHz

sky	83952	85976	86000	87024
after 1st DC	9048	8024	7000	5976
after 2nd DC	0	1024	2048	3072

=> DBBC3 should use filter1= 2000-3000

Setup 230 GHz

Target band: 215.000 - 216.024

1st LO: 221.010 GHz

RF: LSB 5-9 GHz

2nd LO (DBBC3): 8.058 GHz

Sky freq: 211.962 - 216.058 GHz

sky	212952	213976	215000	216024
after 1st DC	8058	7034	6010	4986
after 2nd DC	0	1024	2048	3072

=> DBBC3 should use filter1 = 2000-3000

DBBC3 setup

- Check the setup files (located in c:\DBBC_CONF\OCT_D_120)
 - When using 1GHz filters the vsi_bitmask needs to be adapted in the core3h config files for all the boards running a 1 GHz filter. Files with the correct setups have been prepared e.g.: oct_D_1GHz_core3H_1.fila10g (for board A). These files need to be referenced in the main config file: dbbc3_config_file_oct_D_120.txt. In the setup folder:
 - delete dbbc3_config_file_oct_D_120.txt
 - copy dbbc3_config_file_oct_D_120_copy_1GHz.txt -> dbbc3_config_file_oct_D_120.txt
 - **Note:** in order to restore the correct setup with 2 GHz filters after the FPT test do:
 - delete dbbc3_config_file_oct_D_120.txt
 - copy dbbc3_config_file_oct_D_120_copy_2GHz.txt -> dbbc3_config_file_oct_D_120.txt
- load the OCT_120 firmware (from the DBBC3 desktop)
- verify the setup *from the control computer*:

```
/home/oper/rothmann/dbbc3/utilities/dbbc3ctl.py dbbc3
and do
check system all
```

- `run /home/oper/rothmann/dbbc3/utilities/setupFPT_Nov22.py dbbc3` (sets the 1GHz filters and the LO freqs)

Modules & Recorders

recorder2

slot 1: MPIH%028/48000

slot 2: MPIH%029/48000

recorder3

slot 1: MPIH%034/48000

slot 2: EHT%0036/48000

module setup (do on both recorders)

```
group=new:12    (or group=mount:12 is group was already created)
input_stream=add:stream1:vdif:8224:50:42:eth3:::1
input_stream=add:stream2:vdif:8224:50:42:eth5:::2
input_stream=commit
group=open:12
```

Line injection test (2024 Nov 11th)

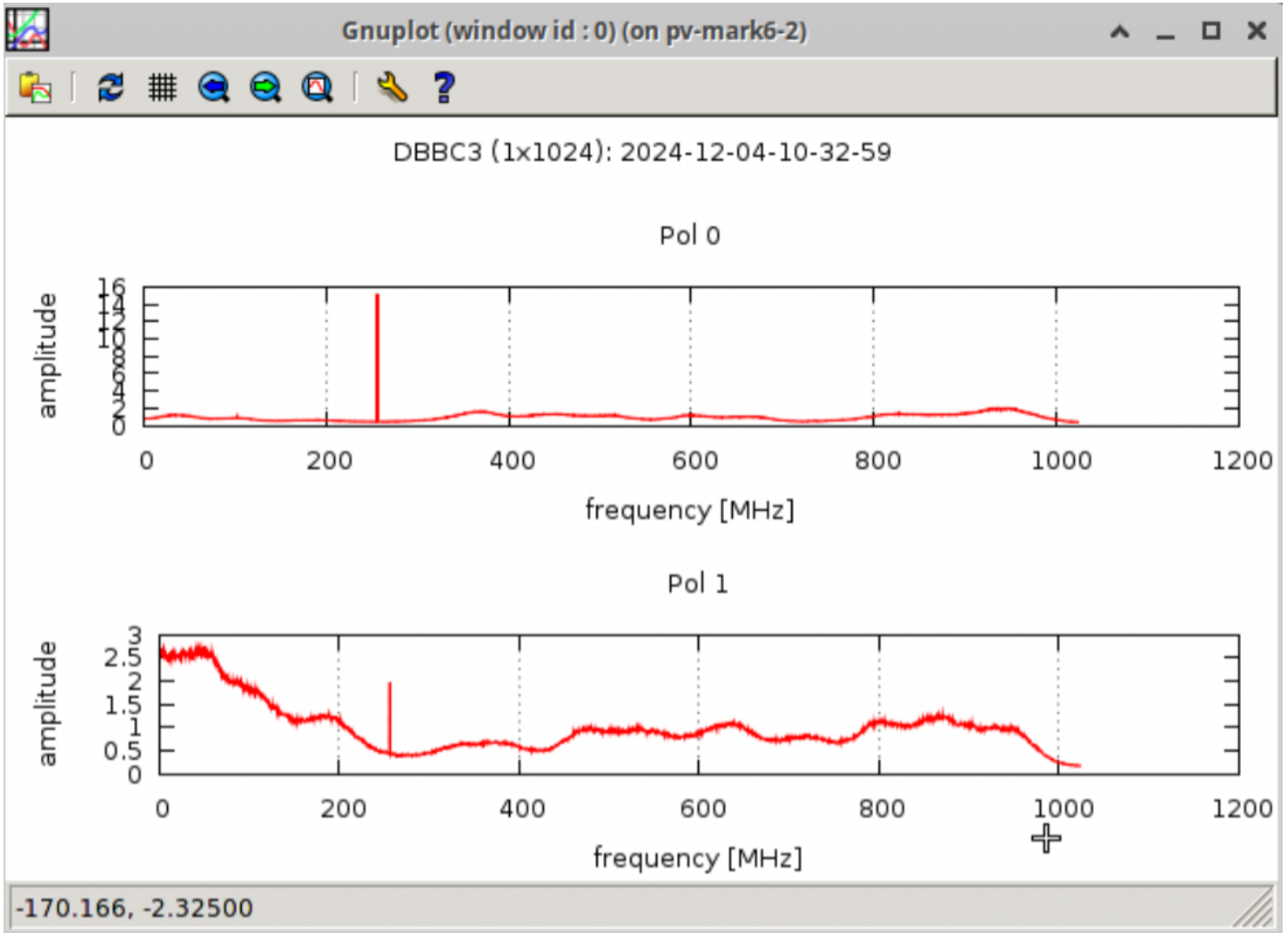
- To record data in a recorder and show the bandpass for 1-GHz setups plot use script: `plot_dbbc3_generic.sh` (from a recorder)

230 GHz signal chain

Line freq: 5754 MHz (corresponds to 215.256 GHz sky)

connected to boards A and B (corresponding to IF2 and IF4)

Line is expected to appear at 256 MHz in the filtered band. Difference in Pol. power comes from mislegment of tone-injection horn.

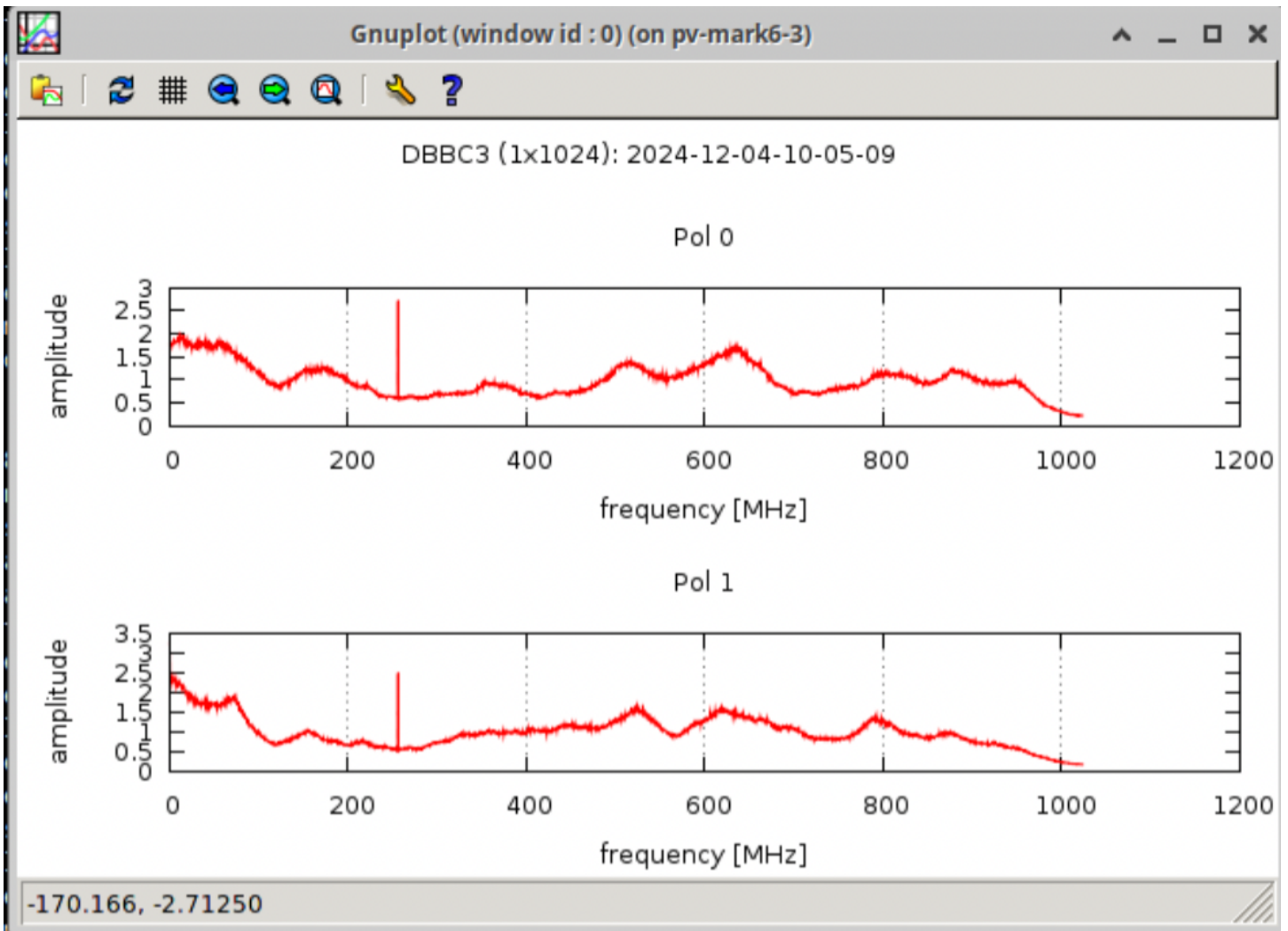


86 GHz signal chain

Line freq 6744 MHz (corresponds to 86.256 GHz sky)

connected to boards C and D (corresponding to IF1 and IF3)

Line is expected to appear at 256 MHz in the filtered band. Difference in Pol. power comes from misalignment of tone-injection horn.



Action

- Repeat phase test and tone injection if possible before observation - DONE: All systems OK.