

1.3cm secondary focus receiver (21600-24400 MHz)

This is a 2-channel system for VLBI observations.

In fall 2013 this system will be replaced by a new double-horn receiver.

Calibration Information

| Frequency [GHz] | Channel | Polarisation | Tcal [K] | Tsys [K] | Sensitivity [K/Jy] | SEFD [Jy] | Aperture Eff. [%] | TMB/S [K/Jy] | Main Beam Eff. [%] | FWHM [arcsec] | Last update |
|--|---------|----------------|----------|-----------------|--------------------|-----------|-------------------|--------------------|--------------------|------------------|-------------|
| 21.73 | A | LCP | 5.1 | 78 | 0.90 | 96 | 28 | 1.8 | 47 | 36.5 | Jul 2007 |
| 21.73 | B | RCP | 4.9 | 84 | 0.90 | 105 | 28 | 1.8 | 47 | 36.4 | Jul 2007 |
| 22.23 | A | LCP | 5.0 | 91 | 0.9 | 110 | 30 | 1.8 | 47 | 36.5 | Jul 2008 |
| 22.23 | B | RCP | 5.0 | 88 | 0.9 | 105 | 30 | 1.8 | 47 | 36.5 | Jul 2008 |
| 23.05 | A | LCP | 3.4 | 83 | 0.9 | 97 | 30 | 1.8 | 48 | 36 | Jul 2008 |
| 23.05 | B | RCP | 3.7 | 70 | 0.9 | 91 | 30 | 1.8 | 47 | 36 | Jul 2008 |
| normalized Gain curve ($G = A0 + A1 \cdot \text{Elv} + A2 \cdot \text{Elv}^2$) | | | | | | | | Observed in | | confirmed | |
| A0 = 0.95282 | | A1 = 3.6092E-3 | | A2 = -6.8913E-5 | | Mar 2003 | | | | | |
| A0 = 0.91119 | | A1 = 4.7557E-3 | | A2 = -6.2902E-5 | | Feb 2007 | | | | | |

Comments:

- Note that the system temperature at this frequency depends strongly on weather conditions!
- The new gain curve (Feb 2007) was corrected for opacity. Because of the previous point it is always recommended to correct data at 1.3cm for opacity.
- Zenith tau values can range from 0.05 to 0.2.

Version description for OBSINP

| RX Name | Wavelength [cm] | Frequency (center) [GHz] | Nr. of Horns |
|--------------------------------|---|--------------------------|--------------|
| S13mm Multifrequency RX | 1.3 | 21.7-24.4 (23.05) | 1 |
| Version: | Comment | | |
| 1. Continuum (BW: 2 GHz) | Broad Band Continuum | | |
| 2. Line (BW: 100 MHz) | Spectroscopy/Continuum using narrow band IF + VLBI IF Polarimeter | | |
| 3. Line (BW: 500 MHz) | Spectroscopy/Continuum using VLBA IF + VLBA IF Polarimeter | | |
| 4. Pulsar (BW: 500 MHz) | Pulsar 500 MHz BW Version | | |
| Horn offsets [arcsec] | -593.0,55.4 | | |

Channel assignment in the MBFITS data files

Note that the narrow line and VLBA IF channels are usually only available when the specific line version of the receiver was selected. In addition for most receivers with narrow line channels the cables at the patch board need to be connected by the receiver group.

To select different channel numbers in OBSINP, the online plot, or the toolbox the numbers have to be specified like $c(1)+c(2)$ to add channel 1 and 2. E.g. channel 1 and 2 contain the LCP and RCP broadband channels, then "OnlPlot pen='c(1)+c(2)'" or "toolbox use='c(1)+c(2)'" will select these channels. In OBSINP the pen can be directly specified in the receiver selection menu.

Abbreviations:

SB: narrow band channel (Schmalband-Kanal), 100 MHz band width

BB: digital broad band channel (Breitband-Kanal), band width varies for different receivers

VLBA: VLBA IF, 500 MHz band width

BW: band width

TP: total power

| 2cm SFK single horn receiver | | | |
|------------------------------|------|-------|---------|
| Channel | IF | Pol. | Comment |
| 1 | SB | LCP | TP A |
| 2 | SB | RCP | TP B |
| 3 | SB | cross | cos AB |
| 4 | SB | cross | sin AB |
| 5 | VLBA | LCP | TP A |
| 6 | VLBA | RCP | TP B |
| 7 | VLBA | cross | cos AB |
| 8 | VLBA | cross | sin AB |
| 9 | BB | LCP | TP A |
| 10 | BB | RCP | TP B |

Tcal measurements

VLBI calibration was only performed for the lower part of the band. Frequencies above 22.8 GHz will follow.



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