1.3-cm primary focus receiver (17900-26240 MHz)

This receiver was build for spectroscopic observations. It has a linearly polarized feed.

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
18.5	A+B	linear	3.5	63	1.1	57	39	1.7	65	45.9	May 2009
19.0	A+B	linear	3.3	60	1.06	52	37	1.6	65	45.5	Sep 2009
20.0	A+B	linear	2.9	68	0.94	72	33	1.6	59	43.8	Feb 2008
22.0	A+B	linear	2.2	63	0.9	69	32	1.5	61	42.7	Dec 2009
23.7	A+B	linear	1.6	65	0.8	76	29	1.4	58	42.2	Jan 2008

normalized Gain curve (G = A0 + A1·Elv + A2·Elv2)			Observed in	confirmed
A0 = 0.88196	A1 = 6.6278E-3	A2 = -9.2334E-5	Feb 2007	

Comments:

- Both, the horizontal and vertical linear polariztions are measured. Channel A contains the horizontal direction and channel B the vertical. Decoupling between both axes is larger than 32dB.
- For continuum observations both channels were added to avoid artificial variations of linearly polarized sources caused by the linearly polarized channels of the receiver.
- Note that the system temperature at this frequency strongly depends on weather conditions!
- Spectroscopic observations of sources with significant continuum emission at frequencies >23 GHz might suffer from instable baselines. This could cause problems when measuring weak, broad lines. Possible solution: the new control system allows to drive the focus on a cosine wave with a given amplitude (e.g. lambda/8) and frequency during the measurements. This largely suppresses the appearance of standing waves and therewith improves the baseline stability.

Version description for OBSINP

RX Name	Wavelength [cm]	Frequency (center) [GHz]	Nr. of Horns
P13mm (17,9-26,5 GHz)	1.3	17.9-26.5	1
Version:	**Comment**		
1. Cont./Line(LSB): 17,9-22,5 GHz (BW: 500 MHz)	Continuum and spectroscopy 1st freq. range		
2. Cont./Line(USB): 22,5-26,5 GHz (BW: 500 MHz)	Continuum and spectroscopy 2nd freq. range		

RX Name	**Wavelength [cm]**	**Frequency (center) [GHz]**	**Nr. of Horns**
Horn offsets [arcsec]	0.0, 0.0		

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

1.3cm PFK			
Channel	**IF**	**Pol.**	**Comment**
1	BB	linear	TP A
2	BB	linear	TP B
3	VLBA	linear	TP A
4	VLBA	linear	TP B
5	VLBA	cross	cos AB
6	VLBA	cross	sin AB

Tcal and Tsys measurements