1.3cm secondary focus receiver (21600-24400 MHz)

This is a 2-channel system for VLBI observations.
This system has been replaced by the new double beam receiver.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·Elv + A2·Elv2)			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

Spectroscopy modes and resolution

BW	nchan	nu	Df	Dv	dv
MHz		MHz	kHz	km/s	km/s
100	32768	22000	3.1	0.042	0.048
100	32768	23000	3.1	0.040	0.046
100	32768	24000	3.1	0.038	0.044
500	32768	22000	15.3	0.208	0.241
500	32768	23000	15.3	0.199	0.231
500	32768	24000	15.3	0.191	0.221

BW ... band width
nchan ... number of spectral channels
nu ... center frequency
Df ... Channel separation (in frequency)
Dv ... Channel separation (in velocity)

dv … Velocity resolution (dv=1.16*Dv)

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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