

# 3.6cm secondary focus receiver (7800-8900 MHz)

This is a 4-channel system mainly for sensitive continuum observations, polarimetry, VLBI and pulsar observations. Simultaneous operation with the S-band (13cm, 2.2 GHz) receiver for geo VLBI observations are possible.

## 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
8.410	I (BB)	RCP	2.5	22	1.35	18	45	2.6	49	81.7	Jul 2008
8.410	J (BB)	LCP	2.5	22	1.35	18	45	2.6	49	81.7	Jul 2008
8.550	I (BB)	RCP	2.5	23	1.35	18	46	2.6	50	80.6	Jul 2008
8.550	J (BB)	LCP	2.5	25	1.35	19	46	2.6	50	80.6	Jul 2008
<b>normalized Gain curve (<math>G = A0 + A1 \cdot \text{Elv} + A2 \cdot \text{Elv}^2</math>)</b>							<b>Observed in confirmed</b>				
A0 = 0.97453		A1 = 1.192E-3		A2 = -1.389E-5		Dec 2001					
A0 = 0.99500		A1 = 4.3434e-04		A2 = -1.0562e-05		Feb 2007					

## Comments:

- All values are valid for the new receiver which was installed in September 2001. If you need data for the old one, please contact akraus\_at\_mpifr-bonn.mpg.de.
- Note that (against our usual designation) Channel A is RCP and B LCP!
- The new gain curve (Feb 2007) was corrected for opacity.
- If no other information about the opacity is available a typical zenith tau value of about 0.018 should do a good job.

## Version description for OBSINP

RX Name	Wavelength [cm]	Frequency (center) [GHz]	Nr. of Horns
<b>S36mm + 13cm</b>	3.6/13	7.9-9.0 (8.35)/2.4	1
<b>Version:</b>	<b>Comment</b>		
1. Continuum (BW: 1.1 GHz)	Broad Band Continuum + Polarimeter		
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: 1.1 GHz)	Pulsar 1.1 GHz BW Version		
5. Pulsar (BW: 500 MHz)	Pulsar 500 MHz BW Version		
6. Pulsar (BW: 100 MHz)	Pulsar 100 MHz BW Version		

## 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

3.6cm SFK single horn receiver with polarimeter (+13cm offset horn for Geo-VLBI)			
Channel	IF	Pol.	Comment
1	SB	RCP	TP A
2	SB	LCP	TP B
3	SB	cross	cos AB
4	SB	cross	sin AB
5	SB	RCP	13cm, TP A
6	BB	LCP	TP A
7	BB	RCP	TP B
8	BB	cross	cos AB
9	BB	cross	sin AB
10	VLBA	LCP	TP A
11	VLBA	RCP	TP B
12	VLBA	cross	cos AB
13	VLBA	cross	sin AB

## Spectroscopy modes and resolution

BW	nchan	nu	Df	Dv	dv
MHz		MHz	kHz	km/s	km/s
100	32768	7800	3.1	0.117	0.136
100	32768	8000	3.1	0.114	0.133
100	32768	8200	3.1	0.112	0.129
100	32768	8400	3.1	0.109	0.126
100	32768	8600	3.1	0.106	0.123
100	32768	8800	3.1	0.104	0.121
500	32768	7800	15.3	0.586	0.680
500	32768	8000	15.3	0.572	0.663
500	32768	8200	15.3	0.558	0.647

<b>BW</b>	<b>nchan</b>	<b>nu</b>	<b>Df</b>	<b>Dv</b>	<b>dv</b>
<b>MHz</b>		<b>MHz</b>	<b>kHz</b>	<b>km/s</b>	<b>km/s</b>
500	32768	8400	15.3	0.545	0.632
500	32768	8600	15.3	0.532	0.617
500	32768	8800	15.3	0.520	0.603

## Tcal and Tsys measurements



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