

# 30cm primary focus receiver (800-1300 MHz)

This broad-band system is mainly used for VLBI observations. Be aware, that this band may be influenced by RFI (especially below 1 GHz). In 2011 a new satellite was launched by NASA, Aquarius, that uses a radar from 1220 MHz to 1280 MHz to measure the roughness of the oceans surface. During its 10-15 min passage over Effelsberg every 7 days the receiver will be most likely saturated. More information about the satellite and when it actually passes Effelsberg can be found on the following page: [Aquarius Mission page by NASA](#) and [Visible passes over Effelsberg](#).

## 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
1.285	A	LCP	14.0	97	1.5	65	53	2.1	71	628	Sep 2008
1.285	B	RCP	13.0	100	1.5	67	53	2.1	71	644	Sep 2008
<b>normalized Gain curve (<math>G = A0 + A1 \cdot \text{Elv} + A2 \cdot \text{Elv}^2</math>)</b>						<b>Observed in</b>	<b>confirmed</b>				
A0 = 1.0 A1 = 0.0 A2 = 0.0						Sep 2008	Nov 2012				

## Comments:

- Beware of strong RFI throughout the whole band!
- The individual values may vary with frequency (800-1300 MHz). If you need additional information, please contact Alex Kraus (akraus\_at\_mpifr-bonn.mpg.de) or Uwe Bach (ubach\_at\_mpifr-bonn.mpg.de).

## Version description for OBSINP

RX Name	Wavelength [cm]	Frequency (center) [GHz]	Nr. of Horns
<b>P300mm 4-box</b>	30	0.8-1.3 (1.05)	1
<b>Version:</b>	<b>Comment</b>		
1. Cont/Line (BW: 100 MHz)	Narrow band Continuum		
2. Pulsar (BW: 100 MHz)	Narrow band Continuum pulsar setup		
<b>Horn offsets [arcsec]</b>	-988.7, 999.7		

The Horn offset result from the offset position in the prime focus multi-receiver-box II.

## 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

30cm PFK (Multi-RX-Box II)			
Channel	IF	Pol.	Comment
1	SB	LCP	TP A
2	SB	RCP	TP B

## Spectroscopy modes and resolution

BW	nchan	nu	Df	Dv	dv
MHz		MHz	kHz	km/s	km/s
100	32768	800	3.1	1.144	1.327
100	32768	900	3.1	1.017	1.179
100	32768	1000	3.1	0.915	1.061
100	32768	1100	3.1	0.832	0.965
100	32768	1200	3.1	0.762	0.884
100	32768	1300	3.1	0.704	0.816

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)

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