

2.2cm/2.5cm prime focus receiver (12100-12280 MHz/12900-13600 MHz)

This is a 2-channel system used for spectroscopy. The 2.5cm part is realized by a new filter. The calibration parameters are still somewhat uncertain (about 10%). The lower part of the band at 12.1 GHz is affected by RFI from TV satellites which might also explain the higher Tsys.

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
12.10	A	LCP	6.5	128	1.4	93	48	1.9	71	65.0	Dec 2009
12.10	A	RCP	5.6	210	1.4	155	48	1.9	70	65.0	Dec 2009
12.18	A	LCP	5.2	79	1.4	57	47	1.9	75	65.0	Dec 2009
12.18	A	RCP	4.5	102	1.4	78	47	1.9	71	65.0	Dec 2009
13.09	A	LCP	2.0	64	1.45	44	51	1.9	78	62.0	Aug 2009
13.09	B	RCP	2.0	65	1.45	45	51	1.9	78	62.0	Aug 2009
13.39	A	LCP	1.8	61	1.4	42	50	1.9	74	59.3	Sep 2005
13.39	B	RCP	2.1	63	1.4	44	50	1.9	74	59.3	Sep 2005
normalized Gain curve ($G = A0 + A1 \cdot \text{Elv} + A2 \cdot \text{Elv}^2$)							Observed in	confirmed			
A0 = 0.9644			A1 = 2.1838E-03			A2 = -3.3018E-05			Dec 2009		

Comments:

- The values across the band and for LCP and RCP do not differ significantly in the 2.2cm band.

Version description for OBSINP

RX Name	Wavelength [cm]	Frequency (center) [GHz]	Nr. of Horns
P22mm 4-Box (12,1- 13,6 GHz)	2.2-2.5	12.1-13.6 (13.1)	1
Version:	Comment		
1. Cont./Line: 12,1-12,25 GHz (2,5 cm) (BW: 100 MHz)	Continuum and spectroscopy at 2.5cm		
2. Cont./Line: 12,9-13,6 GHz (2,2 cm) (BW: 100 MHz)	Continuum and spectroscopy at 2.2cm		
Horn offsets [arcsec]	-1155.5, 1066.7		

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

2.2cm/2.5cm PFK (Multi-RX-Box II)			
Channel	IF	Pol.	Comment
1	SB	LCP	2.2cm, TP A
2	SB	RCP	2.2cm, TP B
3	SB	cross	2.2cm, cos AB
4	SB	cross	2.2cm, sin AB
5	SB	LCP	2.5cm, TP A
6	SB	RCP	2.5cm, TP B

Spectroscopy modes and resolution

BW	nchan	nu	Df	Dv	dv
MHz		MHz	kHz	km/s	km/s
100	32768	12100	3.1	0.076	0.088
100	32768	12150	3.1	0.075	0.087
100	32768	12200	3.1	0.075	0.087
100	32768	12250	3.1	0.075	0.087
100	32768	12900	3.1	0.071	0.082
100	32768	13000	3.1	0.070	0.082
100	32768	13100	3.1	0.070	0.081
100	32768	13200	3.1	0.069	0.080
100	32768	13300	3.1	0.069	0.080
100	32768	13400	3.1	0.068	0.079
100	32768	13500	3.1	0.068	0.079
100	32768	13600	3.1	0.067	0.078

BW ... band width

nchan ... number of spectral channels

nu ... center frequency

Df ... Channel separation (in frequency)

Dv ... Channel separation (in velocity)

dv ... Velocity resolution ($dv=1.16 \cdot Dv$)

Tcal and Tsys measurements

TODO

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