

1.9-cm primary focus receiver (13500-18700 MHz)

This is a 1-channel broad-band system used for spectroscopy. It has a linearly polarized feed. So far, only few test observations could be made to measure the variation of its parameters with frequency.

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
13.75	B	linear	1.5	35	1.1	32	39	1.8	61	60.3	Mar 2001
15.42	B	linear	1.7	37	1.2	32	41	1.8	64	53.5	Apr 2003
18.00	B	linear	1.2	46	0.90	51	32	1.7	53	46.5	Mar 2001
normalized Gain curve ($G = A0 + A1 \cdot \text{Elv} + A2 \cdot \text{Elv}^2$)								Observed in confirmed			
A0=0.95912		A1= 2.5000E-3		A2=-3.8149E-5		Apr 2003					

Comments:

- The values at 15.4 GHz could be derived from cross-scans during spectroscopic observations. Thanks to N. Nagar!
- Values at 18 GHz are a bit uncertain.

Version description for OBSINP

RX Name	Wavelength [cm]	Frequency (center) [GHz]	Nr. of Horns
P19mm 4-Box (13.5-18.7 GHz)	2.2-1.6	13.5-18.7	1
Version:	Comment		
1. Cont./Line: 13,3-16,75 GHz (BW: 500 MHz)	VLBA IF Continuum and spectroscopy version, 1st freq. range		
2. Cont./Line: 16,55-18,5 GHz (BW: 500 MHz)	VLBA IF Continuum and spectroscopy version, 2nd freq. range		
3. Cont./Line: 13,5-16,95 GHz (BW: 100 MHz)	narrow band IF Continuum and spectroscopy version, 1st freq. range		
4. Cont./Line: 16,3-18,5 GHz (BW: 100 MHz)	narrow band IF Continuum and spectroscopy version, 2nd freq. range		
Horn offsets [arcsec]	-904.0, 1077.4		

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

optical: optical fibre with 4 GHz of band width

BW: band width

TP: total power

1.9cm PFK (Multi-RX-Box I)			
Channel	IF	Pol.	Comment
1	SB	linear	TP A
2	BB	linear	TP A
3	VLBA	linear	TP A

Spectroscopy modes and resolution

BW	nchan	nu	Df	Dv	dv
MHz		MHz	kHz	km/s	km/s
100	32768	13500	3.1	0.068	0.079
100	32768	14000	3.1	0.065	0.076
100	32768	14500	3.1	0.063	0.073
100	32768	15000	3.1	0.061	0.071
100	32768	15500	3.1	0.059	0.068
100	32768	16000	3.1	0.057	0.066
100	32768	16500	3.1	0.055	0.064
100	32768	17000	3.1	0.054	0.062
100	32768	17500	3.1	0.052	0.061
100	32768	18000	3.1	0.051	0.059
100	32768	18500	3.1	0.049	0.057
500	32768	13500	15.3	0.339	0.393
500	32768	14000	15.3	0.327	0.379
500	32768	14500	15.3	0.315	0.366
500	32768	15000	15.3	0.305	0.354
500	32768	15500	15.3	0.295	0.342
500	32768	16000	15.3	0.286	0.332
500	32768	16500	15.3	0.277	0.322
500	32768	17000	15.3	0.269	0.312
500	32768	17500	15.3	0.261	0.303
500	32768	18000	15.3	0.254	0.295
500	32768	18500	15.3	0.247	0.287

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



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Last update: **2013/10/21 15:38**

