# 7mm secondary focus receiver (33500-50000 MHz)

This is a 4-channel two horn system for continuum, spectroscopy and VLBI observations. Attention: When frequencies lower than 35 GHz are selected, the receiver operates in double sideband mode for some parts of the observed bandpass. Please contact staff for advice.

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
36.25	A/B	LCP/RCP	10.6	124	0.78	159	26	1.6	47	24.4	Oct 2021
38.75	A/B	LCP/RCP	15.0	144	0.73	159	26	1.6	47	24.4	Oct 2021
41.25	A/B	LCP/RCP	15.0	144	0.73	159	26	1.6	47	24.4	Oct 2021
43.75	A/B	LCP/RCP	15.0	144	0.73	159	26	1.6	47	24.4	Oct 2021
44.1 (narrow band)	A+B	LCP+RCP	13	100	0.66	140	23	1.67	40	19.5	Dec 2019
46.25	A/B	LCP/RCP	15.0	144	0.73	159	26	1.6	47	24.4	Oct 2021
48.75	A/B	LCP/RCP	15.0	144	0.73	159	26	1.6	47	24.4	Oct 2021
normalize	d Gain c	urve (G = A)	0 + 4		$v + A2 \cdot Elv2$	2) Obs	served in		со	nfirmed	

## **Calibration Information**

normalize	d Gain c	urve (G = A	0 + A1·El	v + A2·Elv2	2) Obs	erved in		СО	onfirmed
A0 = 0.834	9 A1	= 8.312E-3	A2 = -:	1.046E-04	Belo	w 40 GHz	, Oct 202	21	
A0 = 0.785	2 A1	= 1.126E-2	A2 = -1	1.475E-04	40-4	5 GHz, Oo	t 2021		
A0 = 0.760	8 A1	= 1.487E-2	A2 = -2	2.310E-04	45-5	50 GHz, Oo	t 2021		

#### **Comments:**

- Please note, that Tsys and SEFD are given for zenith. For sensitivity calculations, please take the atmosphere's opacity into account!
- The data was corrected for sky opacity with observations from the WVR. Typical zenith opacities under good weather conditions are around 0.07 to 0.1 at 42 GHz.
- For informations about the old parameters please contact Uwe Bach (ubach\_at\_mpifr.de).

## Version description for OBSINP

RX Name	Wavelength [cm]	Frequency (center) [GH	z] Nr. of Horns			
S7mm double beam RX	0.7	33.5-50.0 (42.0)	2			
Version:	Comment					
1. Continuum (BW: 2.5 GHz) Broad Band Continuum						
2. Line (BW: 2500 MHz)	Spectroscopy/Continuum using optical IF					

RX Name	Wavelength [cm]	Frequency	(center)	[GHz]	Nr. o	of Horns
Horn offsets [arcsec]	107.7,-451.8; 219.2	,-451.8				

#### **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 "OnIPlot 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

7mm SFK dual horn receiver								
Channel	IF	Pol.	Comment					
1	2.5 GHz	LCP	TP A, horn 1					
2	2.5 GHz	RCP	TP B, horn 1					
3	2.5 GHz	LCP	TP A, horn 2					
4	2.5 GHz	RCP	TP B, horn 2					

#### Spectroscopy modes and resolution

To be done.

## Tcal and Tsys measurements

To be done.

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