

9-cm primary focus receiver (2860-3140 and 3290-3600 MHz)

This system is mainly used for spectroscopy observations. It has a feed with one linear polarization.

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 |
|--|---------|--------------|----------|----------|--------------------|-----------|--------------------|------------------|--------------------|---------------|-------------|
| 2.900 | A | linear | 6.8 | 38 | 1.55 | 25 | 57 | 2.1 | 76 | 266 | Sep 2009 |
| 3.000 | A | linear | 6.7 | 37 | 1.55 | 24 | 56 | 2.1 | 74 | 256 | Sep 2009 |
| 3.100 | A | linear | 6.3 | 33 | 1.55 | 21 | 57 | 2.0 | 76 | 251 | Sep 2009 |
| 3.350 | A | linear | 5.7 | 34 | 1.55 | 22 | 56 | 2.1 | 74 | 227 | Sep 2009 |
| 3.450 | A | linear | 5.5 | 34 | 1.55 | 22 | 56 | 2.1 | 74 | 221 | Sep 2009 |
| 3.550 | A | linear | 5.2 | 30 | 1.55 | 19 | 57 | 2.1 | 75 | 217 | Sep 2009 |
| normalized Gain curve ($G = A0 + A1 \cdot Elv + A2 \cdot Elv^2$) | | | | | | | Observed in | confirmed | | | |
| A0=1.0 | | A1=0.0 | | A2=0.0 | | Sep 2009 | | | | | |

Comments:

- RFI-situation (in summer 2011): There are several radar systems operating in the frequency range 3000-3400 MHz. Especially between 3200-3400 MHz very strong RFI is to be expected, however, all these systems operate mainly during daytime. Usually there are very few interferences during nighttime and weekends. The range 3400-3600 MHz currently seems to be free of RFI.

Version description for OBSINP

| RX Name | Wavelength [cm] | Frequency (center) [GHz] | Nr. of Horns |
|---|--|--------------------------|--------------|
| P90mm (2,86-3,6 GHz) | 9.0 | 2.9-3.6 | 1 |
| Version: | Comment | | |
| 1. Cont./Line(USB): 2,86-3,14 GHz (BW: 100 MHz) | Continuum and spectroscopy 1st freq. range | | |
| 2. Cont./Line(LSB): 3,29-3,6 GHz (BW: 100 MHz) | Continuum and spectroscopy 2nd freq. range | | |
| Horn offsets [arcsec] | 0.0, 0.0 | | |

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

| 9.0cm PFK | | | |
|-----------|----|--------|---------|
| Channel | IF | Pol. | Comment |
| 1 | SB | linear | TP A |

Spectroscopy modes and resolution

| BW | nchan | nu | Df | Dv | dv |
|-----|-------|------|-----|-------|-------|
| MHz | | MHz | kHz | km/s | km/s |
| 100 | 32768 | 2900 | 3.1 | 0.315 | 0.366 |
| 100 | 32768 | 3000 | 3.1 | 0.305 | 0.354 |
| 100 | 32768 | 3100 | 3.1 | 0.295 | 0.342 |
| 100 | 32768 | 3200 | 3.1 | 0.286 | 0.332 |
| 100 | 32768 | 3300 | 3.1 | 0.277 | 0.322 |
| 100 | 32768 | 3400 | 3.1 | 0.269 | 0.312 |
| 100 | 32768 | 3500 | 3.1 | 0.261 | 0.303 |
| 100 | 32768 | 3600 | 3.1 | 0.254 | 0.295 |

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

August 2015

Tcal and Tsys



Opacity and T0



Antenna model



December 2012



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