

# S110mm - 11cm secondary focus receiver (2.5-3.0 GHz)

This system is mainly used for sensitive continuum and pulsar observations. Be aware, that this band may be influenced by RFI.

## Overview

| RX Name       | Band | Frequency (center) [GHz] | Polarisation  | Nr. of Horns | Horn position relativ to center of focus cabin |
|---------------|------|--------------------------|---------------|--------------|------------------------------------------------|
| <b>S110mm</b> | S    | 2.5-3.0                  | dual-circular | 1            | Az: 19.0 arcsec, Elv: 1593.0 arcsec            |

## 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 |
|--------------------------------------------------------------------------------------------------|---------|--------------|----------|----------|--------------------|--------------------|-------------------|------------------|--------------------|---------------|-------------|
| 2.6395                                                                                           | A/B     | LCP/RCP      | 2.5      | 17       | 1.5                | 11                 | 53                | 2.3              | 81                 | 275           | Jan 2014    |
| <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 |                    | Feb 2007           |                   | Nov 2012         |                    |               |             |

## Comments:

- The values for LCP and RCP do not differ significantly.
- A typical value for the zenith opacity is 0.010.

## Available receiver versions (for OBSINP)

| Version        | Description                           | Usage                  |
|----------------|---------------------------------------|------------------------|
| EDDPOL         | spectro-polarimeter backend           | continuum observations |
| EDD_GSPEC      | gated spectrometer with xx channels   | spectroscopy           |
| EDD_GSPEC_128k | gated spectrometer with 128k channels | spectroscopy           |
| EDD_GSPEC_512k | gated spectrometer with 512k channels | spectroscopy           |
| EDD_PULSAR     | pulsar backend                        | pulsars / transients   |

Below here: Information is currently updated.

## 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

#### 11cm SFK single horn receiver (multi channel polarimeter 2.595-2.675GHz)

| Channel | IF  | Pol.  | Comment                                                  |
|---------|-----|-------|----------------------------------------------------------|
| 1       | SB  | LCP   | center=2.595 GHz, BW=10 MHz, TP A                        |
| 2       | SB  | RCP   | center=2.595 GHz, BW=10 MHz, TP B                        |
| 3       | SB  | cross | center=2.595 GHz, BW=10 MHz, cos AB                      |
| 4       | SB  | cross | center=2.595 GHz, BW=10 MHz, sin AB                      |
| 5       | SB  | LCP   | center=2.605 GHz, BW=10 MHz, TP A                        |
| 6       | SB  | RCP   | center=2.605 GHz, BW=10 MHz, TP B                        |
| 7       | SB  | cross | center=2.605 GHz, BW=10 MHz, cos AB                      |
| 8       | SB  | cross | center=2.605 GHz, BW=10 MHz, sin AB                      |
| 9-28    | ... | ...   | continues in 10 MHz steps until                          |
| 29      | SB  | LCP   | center=2.675 GHz, BW=10 MHz, TP A                        |
| 30      | SB  | RCP   | center=2.675 GHz, BW=10 MHz, TP B                        |
| 31      | SB  | cross | center=2.675 GHz, BW=10 MHz, cos AB                      |
| 32      | SB  | cross | center=2.675 GHz, BW=10 MHz, sin AB                      |
|         |     |       | the last 4 channels contain the total IF 2.595-2.675 GHz |
| 33      | SB  | LCP   | center=2.635 GHz, BW=80 MHz, TP A                        |
| 34      | SB  | RCP   | center=2.635 GHz, BW=80 MHz, TP B                        |
| 35      | SB  | cross | center=2.635 GHz, BW=80 MHz, cos AB                      |
| 36      | SB  | cross | center=2.635 GHz, BW=80 MHz, sin AB                      |

## Spectroscopy modes and resolution

| BW  | nchan | nu   | Df  | Dv    | dv    |
|-----|-------|------|-----|-------|-------|
| MHz |       | MHz  | kHz | km/s  | km/s  |
| 100 | 32768 | 2600 | 3.1 | 0.352 | 0.408 |

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)

## Tcal and Tsys measurements



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