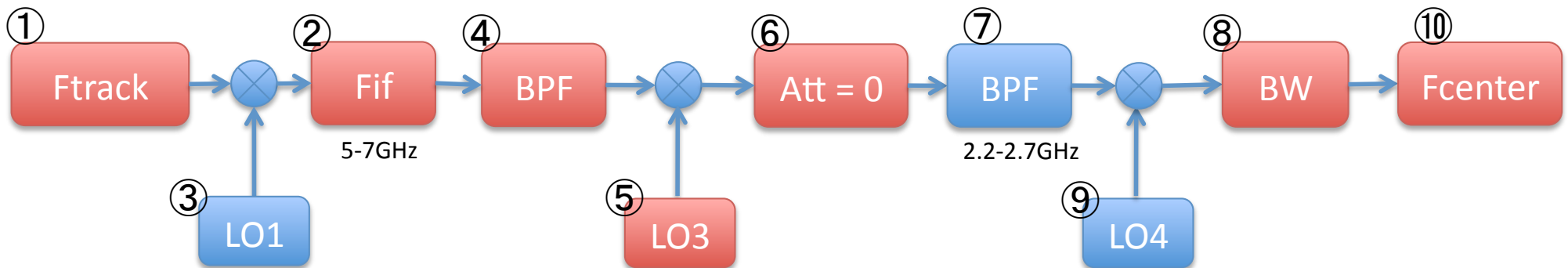


Using the AC45 spectrometer along with the standard (non-BEARS) receivers requires some attention, particularly for the 512 MHz bandwidth mode. Here I describe some of the important points that observers should note when preparing the Obstable. In the following schematic figure, boxes highlighted in red require user input through the Obstable user interface.



- ① Specify your tracking frequency
- ② Specify your desired IF frequency. Use the recommended value given on the Obstale manual if you are not sure
- ③ The first LO frequency is determined from  $F_{\text{track}}$ ,  $F_{\text{if}}$  and the sideband you chose.  $F_{\text{LO}} = F_{\text{track}} \pm F_{\text{if}}$ .
- ④ This bandpass filter extracts portions (500 MHz) of the IF frequency. This has to be consistent with the difference between the  $F_{\text{track}}$  and  $F_{\text{center}}$  values.
- ⑤ This LO frequency is set by the user. You need to make sure that  $(F_{\text{if}} - \text{LO3})$  is in the range 2.2 – 2.7 GHz because there is a bandpass filter (⑦) downstream. If your bandwidth specified in ⑧ is 512MHz, make sure that your IF after down-conversion is 2.45 GHz.
- ⑥ The attenuator value should be set to zero when using AC45.
- ⑦ This bandpass filter is fixed at 2.2 – 2.7 GHz.
- ⑧ Select your bandwidth here.
- ⑨ This LO frequency is automatically calculated by adding the down-converted IF (2.2 – 2.7 GHz) to the center frequencies that depend on the bandwidth selected in ⑧ (see the table below). This LO frequency is not shown in the Obstale.
- ⑩ Enter your center array frequency (e.g. enter 115.271202 GHz for setting the 12CO line at the center of the array).

bandwidth	center IF
512	768 MHz
32	752 MHz
16 A	752 MHz
16 B	768 MHz