

At C-band, a microwave link that crosses the VLA array at 6.2 and 6.4 GHz produces RFI in a few antennas. The interference is caused by highly collimated point-to-point microwave links affecting some stations, not the entire array. As with most RFI, it can be flagged and easily identified by the pipeline or visual inspection. However, with this type of RFI, the data quality can be severely affected. The most severe effect is compression of the entire baseband, leading to a loss of bandwidth and sensitivity in affected antennas. This issue only occurs with 3-bit samplers; 8-bit samplers are more tolerant to the received signal levels, where standard RFI flagging is sufficient.

This issue is only seen in extended array configurations (A and B). The microwave link affects antennas on pads N28 and W36 in B-configuration and W40, E40, E48, and E56 in A-configuration. The intensity of the RFI is variable and can be stronger on some days than others. In the worst scenario, it can affect antennas on pads N24, N32, and E32 in both A and B configurations.

In addition to the standard NRAO default 3-bit C-band resources, C32f2A and C32f3B for A and B configuration, the user will find an alternative setup which utilizes the 3-bit and 8-bit samplers, C32f2A.alt and C32f3B.alt, for A and B configuration, respectively. These new hybrid resources will maintain the same bandwidth as the NRAO default resource setups for 3-bit C-band. The strategy consists of moving one of the 3-bit basebands outside the RFI affected part of the band and adding an 8-bit baseband in its place. For a point source of around 100 mJy, our tests point to an improvement of the image's dynamic range of 20% using the suggested hybrid 3/8-bit samplers after 3 hours on-source. Although this number can vary depending on the source intensity, weather, source extension, and eventual self-calibration. Our tests indicate the hybrid 3/8-bit resource works better than the standard 3-bit resource when observing at C-band (using 3-bit) in A and B configurations.

We strongly suggest using one of the new hybrid 3/8-bit NRAO default resources for C-band projects at A and B configurations instead of a wideband setup with 3-bit samplers only.