

National Radio Astronomy Observatory

Socorro, New Mexico

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To: Dick Manchester

From: R. D. Ekers



Subject: Bandwidth and Mosaicing Synthesis

After the AT meeting on Friday I realized that 10 seconds is not the appropriate time scale to cycle through the bandwidth synthesis frequencies (or the the mosaicing positions). The 10 second averaging time is set by the requirement that there is negligible time smearing for a source at the edge of the field which is considerably shorter than the minimum time step for a fully sampled UV plane. If we require a sample in the time direction every half dish diameter in the UV plane this corresponds to a 40 second interval for the 6 kilometer array.

Here is an additional idea I forget to mention in relation to the need to cover the range from 17 to 25 GHz at K band. Since it is not currently technically possible to build a low noise receiver with this bandwidth we were thinking about shifting the band center for the two orthogonal polarizations, one covering the range 17 to 22 the other 21 to 26. This only allows polarization measurements in the overlap region and reduces sensitivity by having only one polarization channel outside this region. However, it does allow both interesting spectral line regions to be reached. Perhaps ATSOC may want to think about this mode.

RDE/ef