

VLBA ACQUISITION MEMO #227

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25 October 1990

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To: VLBA Data Acquisition Group
From: Alan E.E. Rogers
Subject: Alternative mixers for better sideband rejection in the BBC

Considerable effort (see VLBA Acquisition Memo #215) is required to "trim up" the SSB mixers in the BBC. Presently most BBCs use the Minicircuit's LMX-113 mixers. Measuring the mixers and sorting them into matched pairs is advantageous but some trimming is still needed - presumably because the mixers which look matched in the test fixture are not so well matched when used in the SSB submodule.

I have now tested some VARI-L DBM-143 mixers and based on a sample of 4, I find them to be more consistent. These mixers have a much flatter response from 500 to 1000 MHz and I found the worst case difference between mixers (measured in a test jig (see VLBA Acquisition Memo #183) to be 5 degrees of phase and 0.5 dB in amplitude. When soldered into the SSB mixer no adjustments were needed to achieve 25 dB rejection at the worst case L.O. and baseband frequency.