

VLBA ACQUISITION MEMO #209

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To: VLBA Data Acquisition Group
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Subject: BBC LO phase stabilization time

While small frequency steps (<20 MHz) can be made in less than one second, large frequency changes require extra time for the LO phase to stabilize. For example, switching from 500 MHz to 1000 MHz requires 30 seconds to stabilize the phase to within one degree of the final value. The problem which is common (even in commercial synthesizers) is due to the change in heat dissipation with frequency and subsequent time needed to re-establish thermal equilibrium. The attached figure shows some data taken at Pie Town. For most frequency switching schemes the stabilization drift is small.

~~Speed
500 MIN~~

530 → 500
501 → 500

750 → 500

1000 → 500

1000 → 500
1000 → 500
1000 → 500

LO - STABILITY for
off setting LO & Re-tuning
to 500 MHz

5.6 GHz = 10⁹ ?

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