VLBA Acquisition Memo # 85

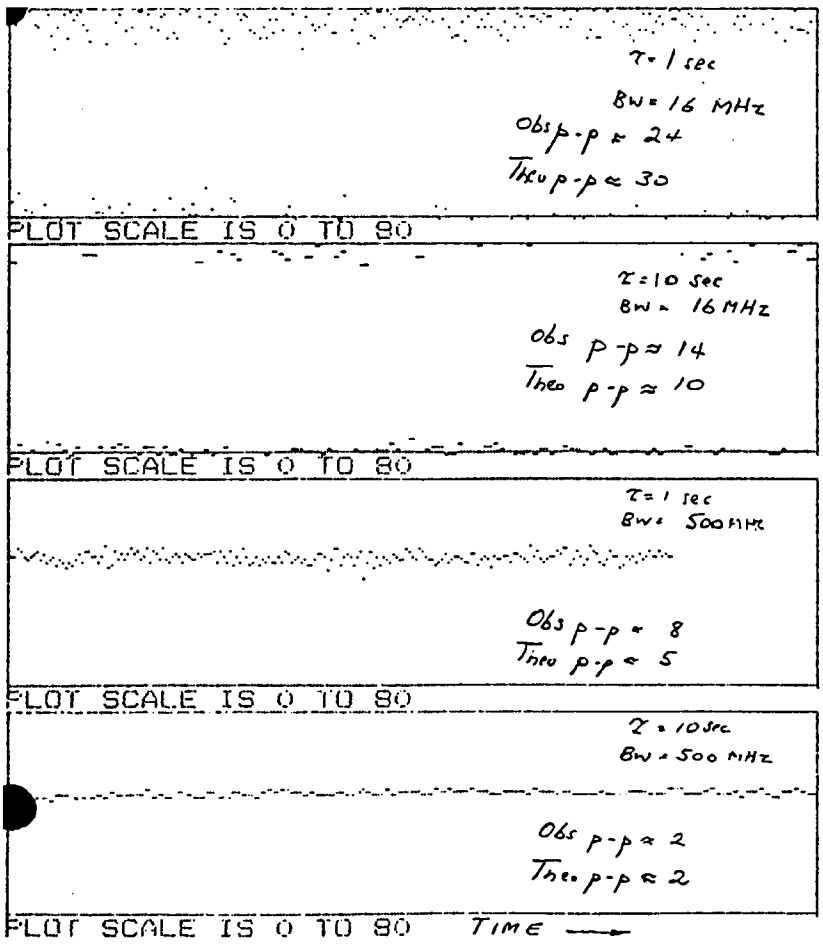
3 April 1987

To: VLBA Data Acquisition Group

From: Alan E.E. Rogers

Subject: Tests of the Switched Power or "Synchronous" Detectors in the I.F. Distributors and Baseband Converters

The switched power is measured by separately accumulating the total power counts (from the voltage to frequency converter connected to the square law detector for signal and reference periods and then taking the difference. The total and switched power are also averaged for a time interval that can be selected via the MCB. The figure shows the switched power for averaging times for 1 and 10 seconds and bandwidths of 16 MHz (from the Baseband coverter) and 500 MHz (from the I.F. distributor). The fluctuations observed are close to the theoretical values calculated on the assumption that the I.F. noise is Gaussian and stationary.



Test of switched power fluctuations

Date 24 March 87

Total power count 16,384

For $\tau = 1$ sec, BW = 16 MHz

1 σ noise = $\frac{16,384}{\sqrt{16 \times 10^6}} \times 2 = 8$ units