VLBA ACQUISITION MEMO #214

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To: VLBA Data Acquisition Group

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Subject: Some tests of the TI TL592B amplifier

The TL592B made by Texas Instruments is a low noise version of the 592. This IC has been tested for use as a recorder pre-amplifier. Since it was not clear from the data sheet (shown in Table 1) whether the low noise performance is independent of the gain (set by a resistor), we measured the equivalent noise voltage (referred to as the input) as a function of gain. The results plotted in Figure 1 show that low noise is only obtained for resistor values which result in a high gain. This fact will have to be taken into consideration for any design using this IC. At high gain the performance is as good as the cascode amplifier (see VLBA Acquisition Memo #186) using discrete components.

The propagation time delay also varied from the stated data sheet value. The time delay was found to be in the range of 18 ns which is somewhat higher than the typical value of 7.5 ns given. It is very likely however that the length of cable used may account for most of the discrepancy.

Table 1.

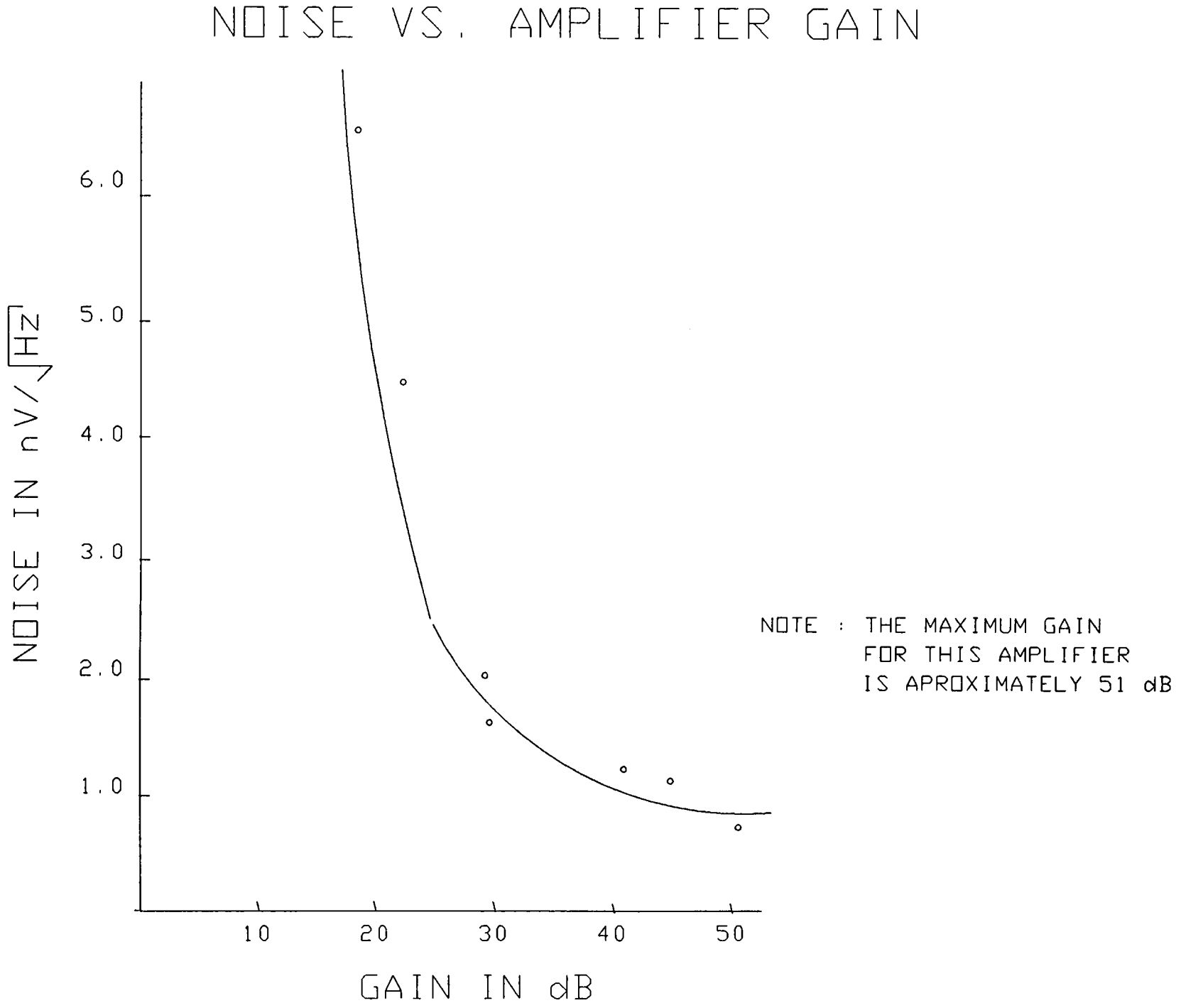
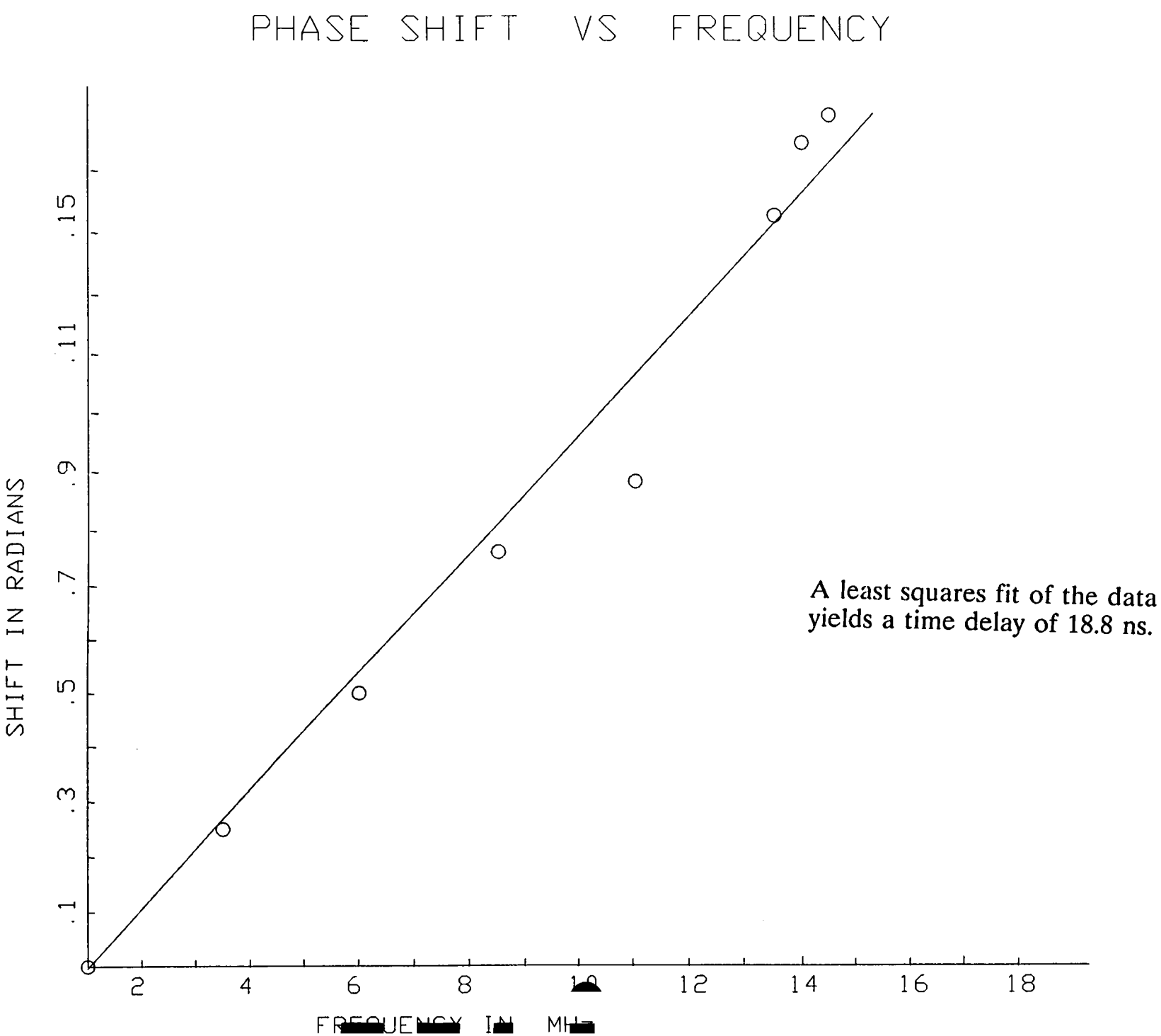

NOISE VS. AMPLIFIER GAIN
NOISE IN nV/√Hz
6.0
5.0
4.0
3.0
2.0
1.0
10
20
30
40
50
GAIN IN dB
NOTE : THE MAXIMUM GAIN
FOR THIS AMPLIFIER
IS APROXIMATELY 51 dB

Figure 1.



A least squares fit of the data yields a time delay of 18.8 ns.