

NATIONAL RADIO ASTRONOMY OBSERVATORY  
Green Bank, West Virginia

Electronics Division Technical Note No. 149

Title: INTERFEROMETER ANALOG OPTICAL LINKS

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### Analog Optical Link Response

The amplitude and phase response of a 6 kilometer loop of fiber was measured. This loop had 12 splices and five connector pairs. The RF loss was about 30 dB and electrical delay was 27.8 microseconds. The amplitude response varies less than 1.5 dB from 10 MHz to 1000 MHz as shown in Figure 1. The phase response variation from linear phase with frequency is less than 5 degrees from 100 MHz to 800 MHz as shown in Figure 2. Measurements were also made of the difference in phase shift between two parallel transmission systems with 3 km of fiber subjected to temperature variations and antenna movement. The phase change at 500 MHz was less than .25 degree rms during a 50 hour test run.

FIGURE 1

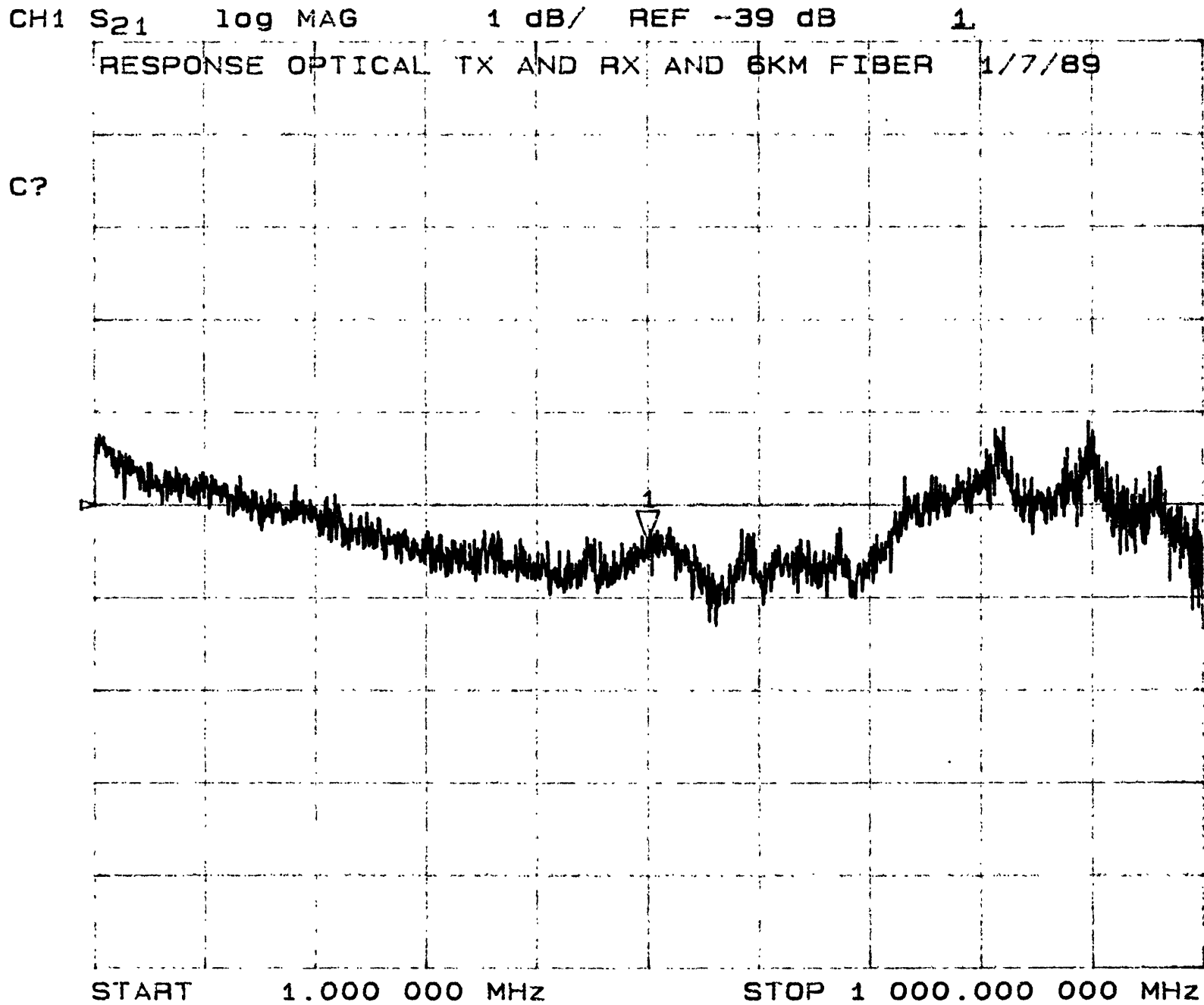


FIGURE 2

