Hilbert Transform Experiments
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1. Design a 23-tap Hilbert transform filter using `remez.exe`. Use a sampling rate of 16,000 Hz. Use just one band extending from 1000 Hz to 7000 Hz with a gain of 1.

2. Plot the amplitude response of your filter in dB vs. frequency.

3. Write a C program to implement your filter using the DSK. Take the input samples from the signal generator from the left codec input channel. Send the filter output samples to the left codec output channel. Also send the delayed input samples at the center tap of the filter to the right codec output channel.

4. Set the signal generator for a sine wave with a frequency in the 1000 to 7000 Hz passband. Display the left and right line outputs on two oscilloscope channels.
5. Use the oscilloscope phase difference measuring function to measure the phase shift between the left and right channel outputs. Vary the input frequency over the passband and check that the phase difference remains 90 degrees.