MATLAB FIR FILTER DESIGN EXERCISE*

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Abstract

This is FIR filter design exercise in MATLAB.

1 FIR Filter Design MATLAB Exercise

1.1 Design by windowing

Exercise 1

(Solution on p. 2.) Assuming sampling rate at 48kHz, design an order-40 low-pass filter having cut-off frequency 10kHz by windowing method. In your design, use Hamming window as the windowing function.

1.2 Parks-McClellan Optimal Design

Exercise 2

Assuming sampling rate at 48kHz, design an order-40 lowpass filter having transition band 10kHz-11kHz using the Parks-McClellan optimal FIR filter design algorithm.

(Solution on p. 2.)

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Solutions to Exercises in this Module

Solution to Exercise (p. 1)

b = fir1(40, 10.0/48.0)

Solution to Exercise (p. 1)

b = remez(40,[1 1 0 0],[0 10/48 11/48 1])