Lab 2 Preparation

1. MATLAB

% Plot of Gs(f) = (2/T) \* |Sh(f)|^2 (1 - cos(3pifT))

% set up time, frequency, sampling rate, bit rate parameters

signal = wavread('DSPLabG2.wav');

fs = 10^4;

bitrate = 10^3;

duration = length(signal)/fs;

T = 1:1/fs:length(signal);

f = fs/bitrate; % ten samples per bit

% Sh(f) = Fourier transform of rectangular pulse of width T/2

% = T/2 \* sinc(T/2)

Sh = (T/2) \* sinc(T/2);

% Sh = sinc(T/2);

Gs = (2/length(T)) \* times(abs(Sh),abs(Sh)) \* (1 - cos(3\*pi\*f\*T));

% Gs = (2/length(T)) \* times(abs(Sh),abs(Sh));

plot(Gs)

See block diagram.

Noise suppression filter specs: Make the filter as close to ideal as possible.

Gaussian noise: the number of samples of all amplitudes will follow a Gaussian distribution. White noise: the power spectrum will be flat.

Signal to computation ratio: ?