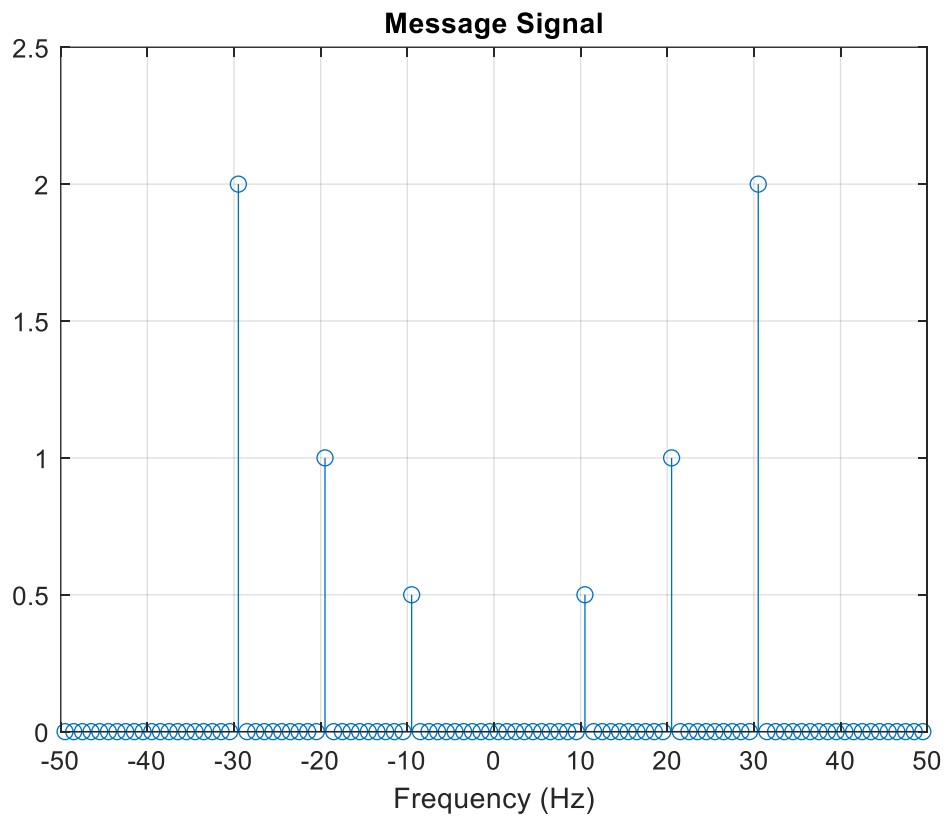
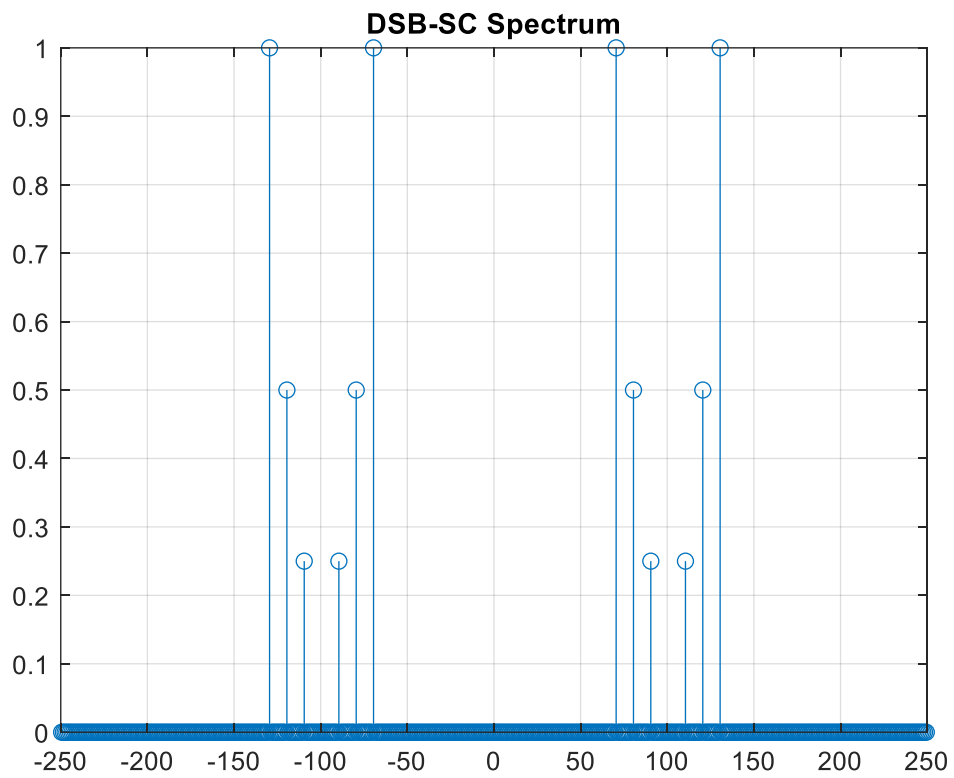


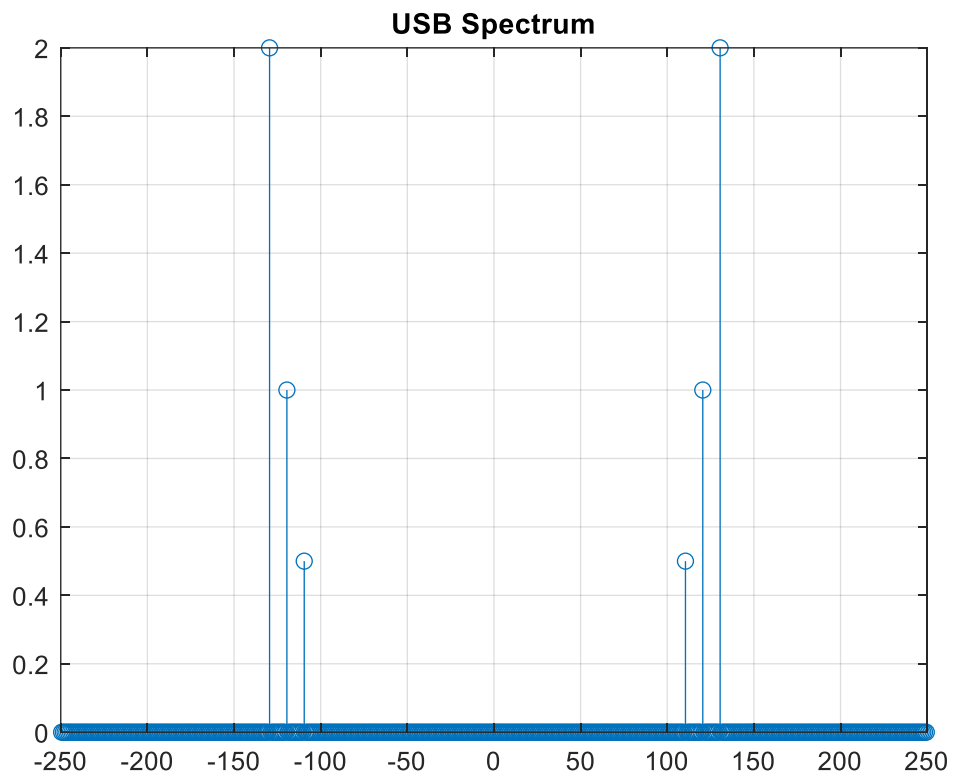
Q1



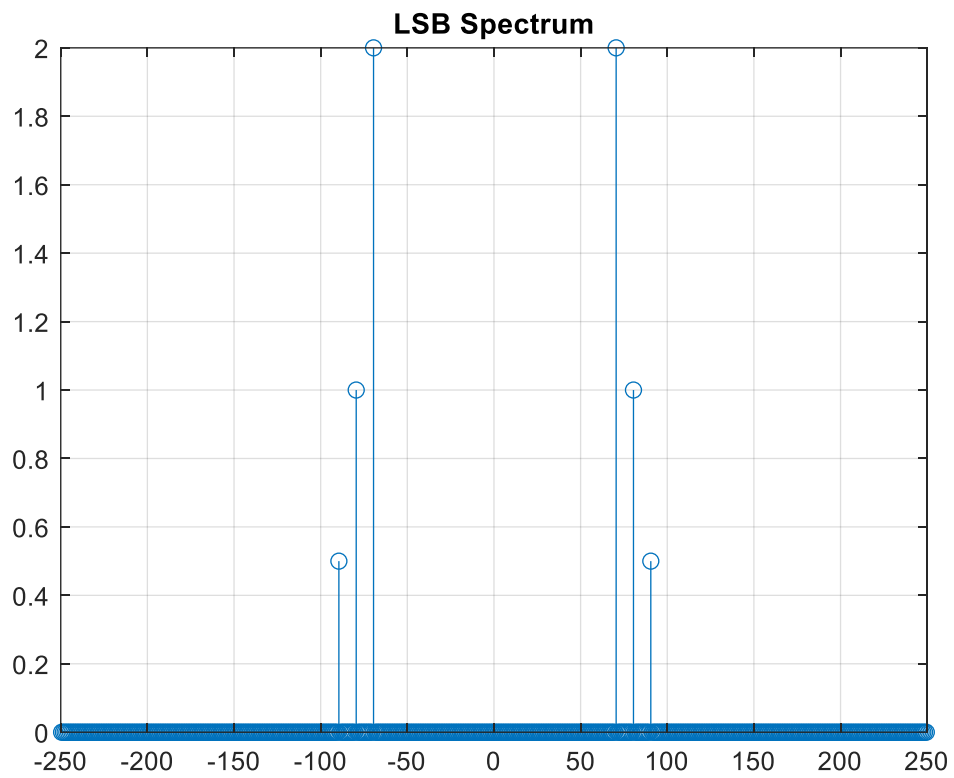
*Figure 1 – Message Signal Spectrum (10 Hz, 20 Hz and 30 Hz)*



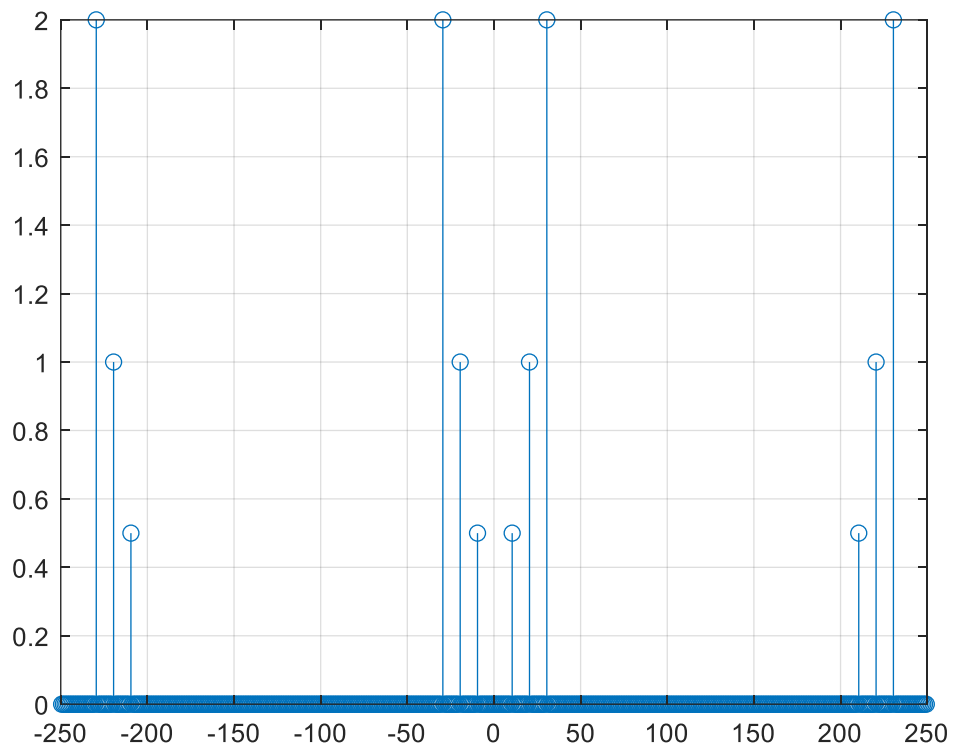
*Figure 2 – DSB-SC Spectrum of Message Signal (100 Hz)*



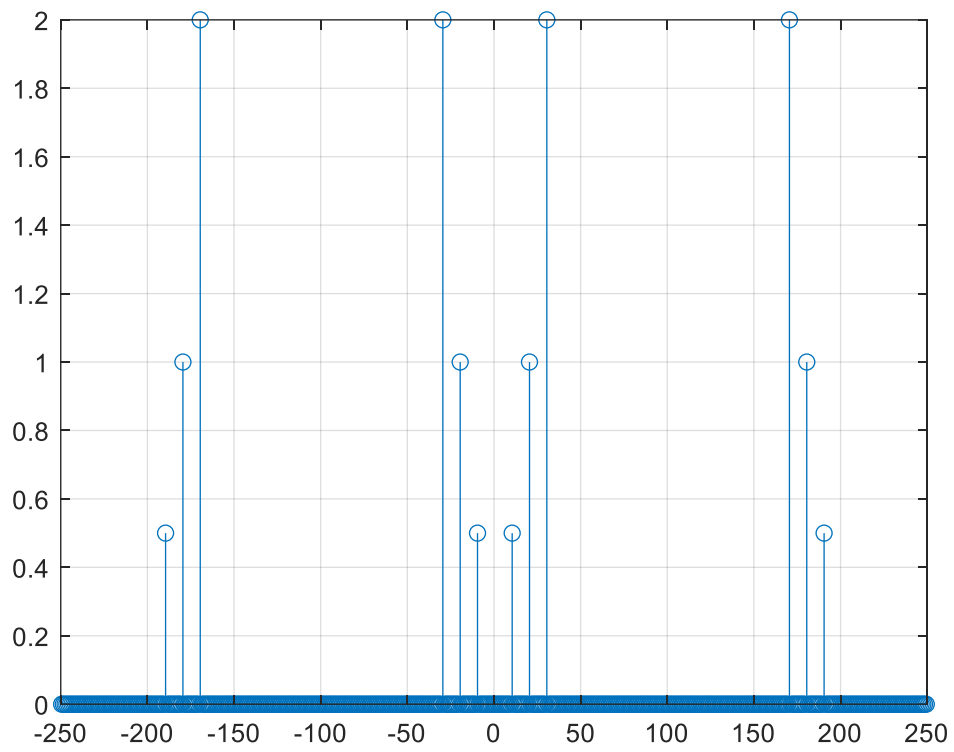
*Figure 3 - USB Spectrum of Message Signal (100 Hz)*



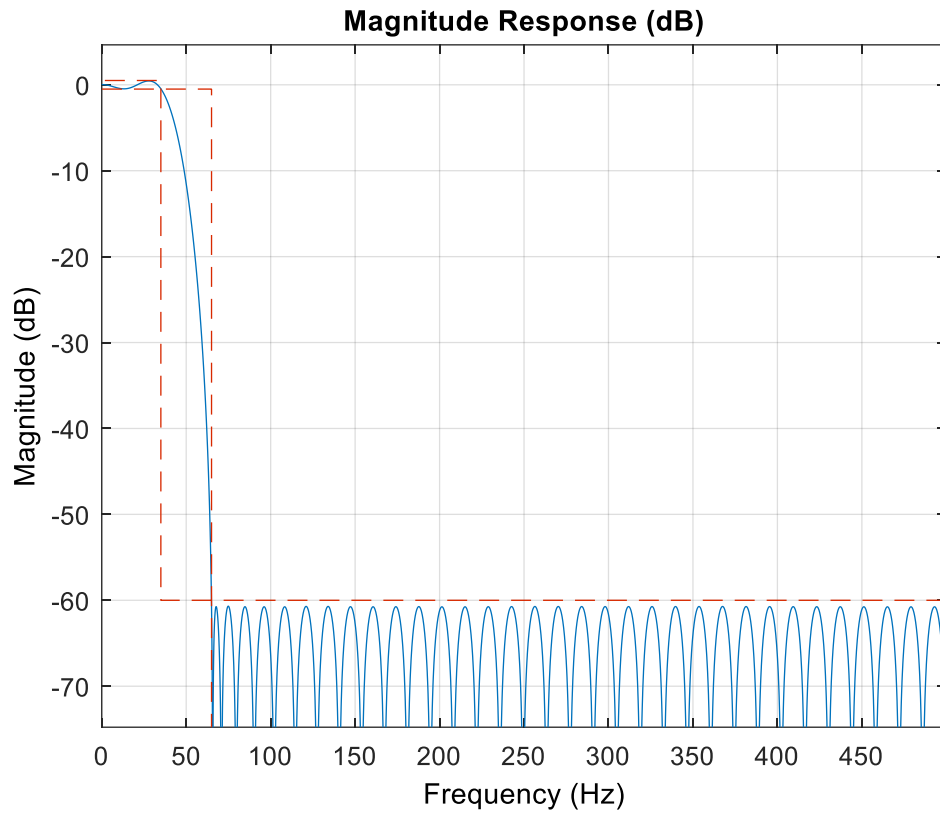
*Figure 4 - LSB Spectrum of Message Signal (100 Hz)*



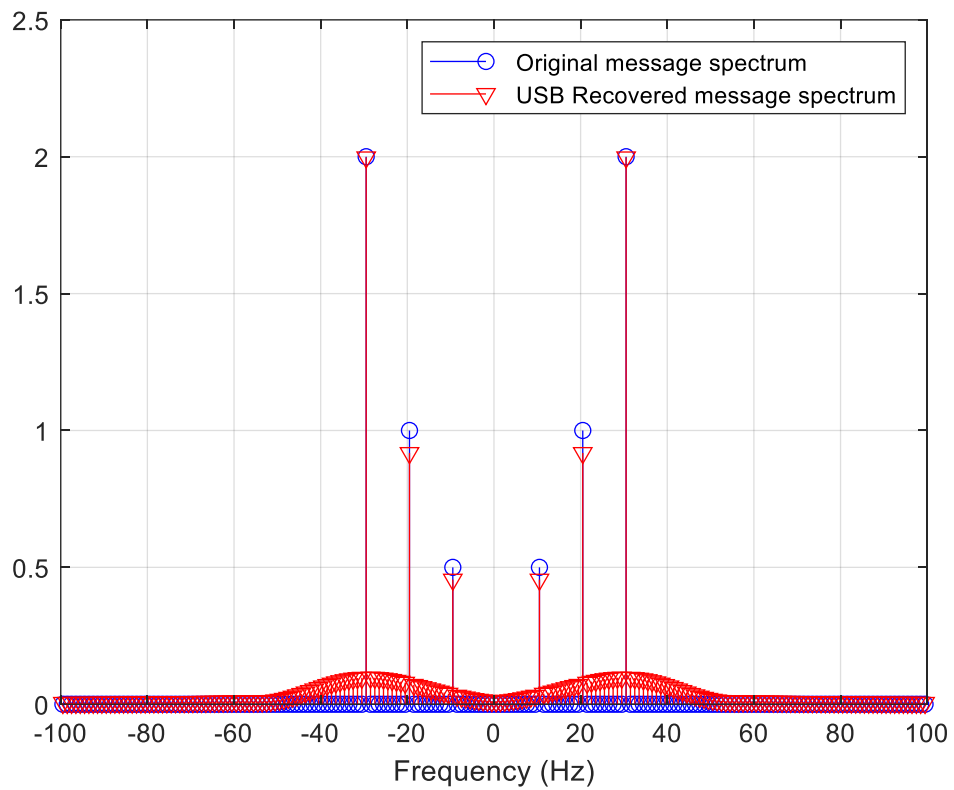
*Figure 5 - USB Spectrum of Message Signal before Low Pass Filter*



*Figure 6 - LSB Spectrum of Message Signal before Low Pass Filter*



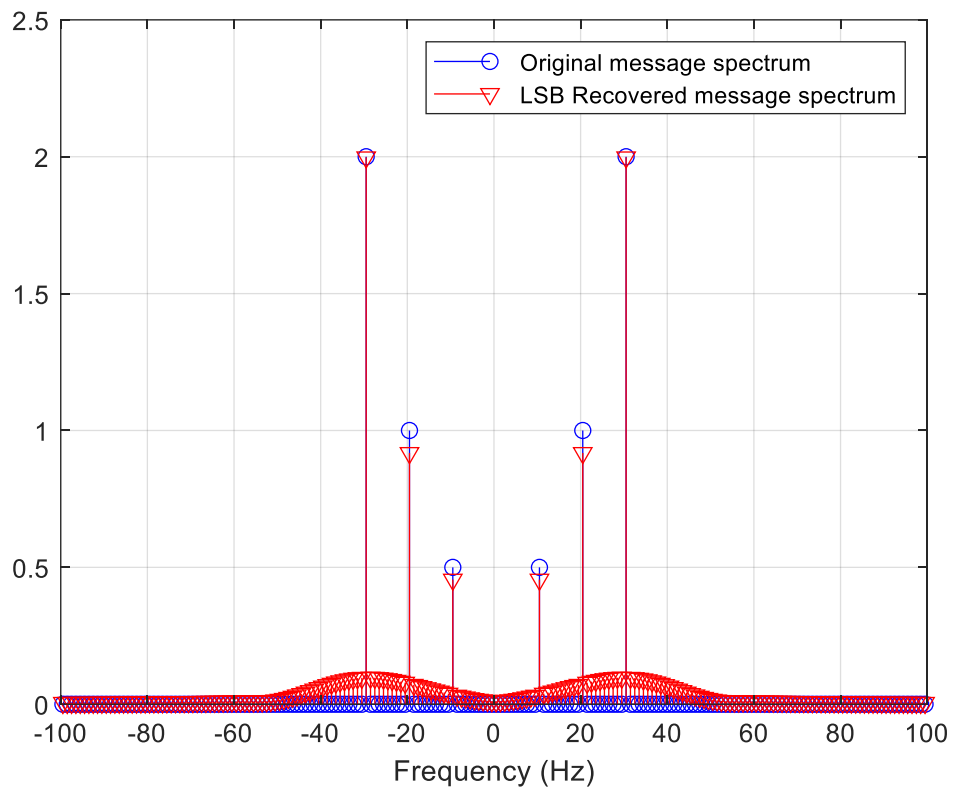
*Figure 7 - Low Pass Filter*



*Figure 8 – USB Recovered Message Signal after Low Pass Filter*

After passing through the low pass filter (with a cutoff of 35 and a stop at 65), our signal ultimately returns to the frequency values of our original signal. Thus, we can state that our signal has been preserved during the transfer.

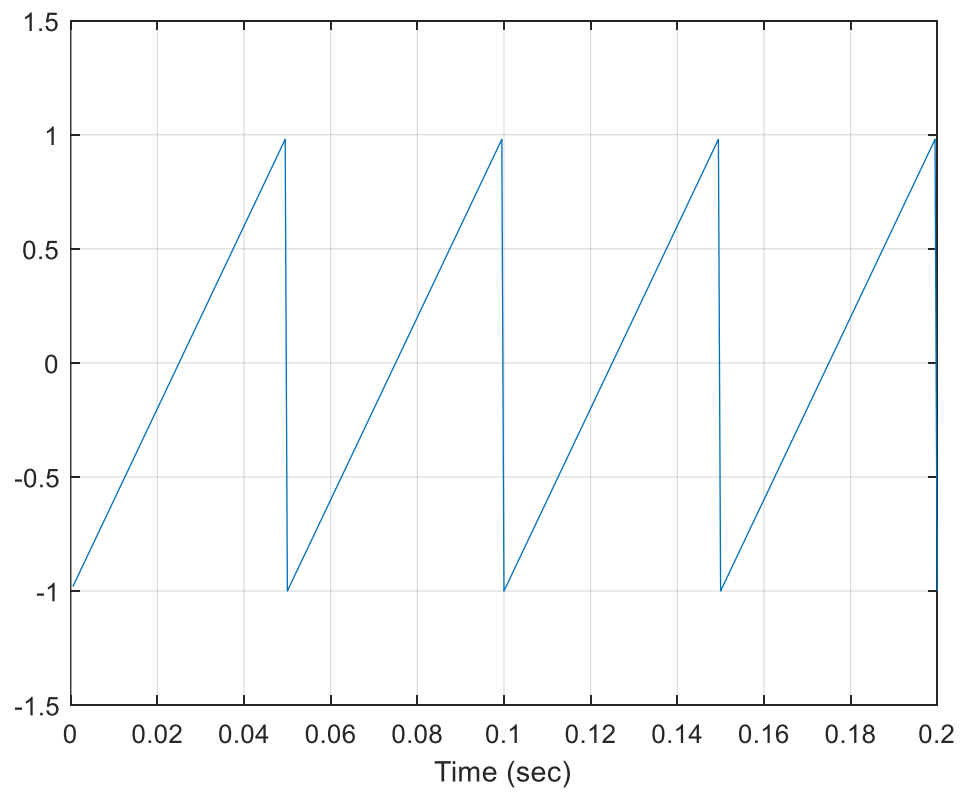




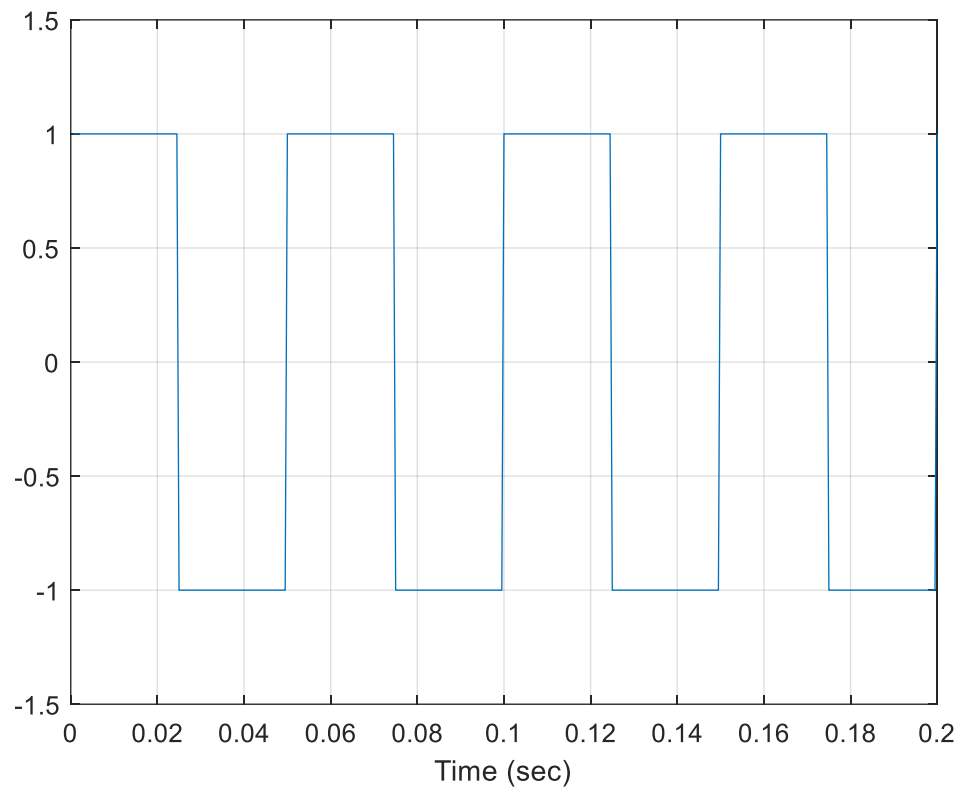
*Figure 9 - LSB Recovered Message Signal after Low Pass Filter*

After passing through the low pass filter (with a cutoff of 35 and a stop at 65), our signal ultimately returns to the frequency values of our original signal. Thus, we can state that our signal has been preserved during the transfer.

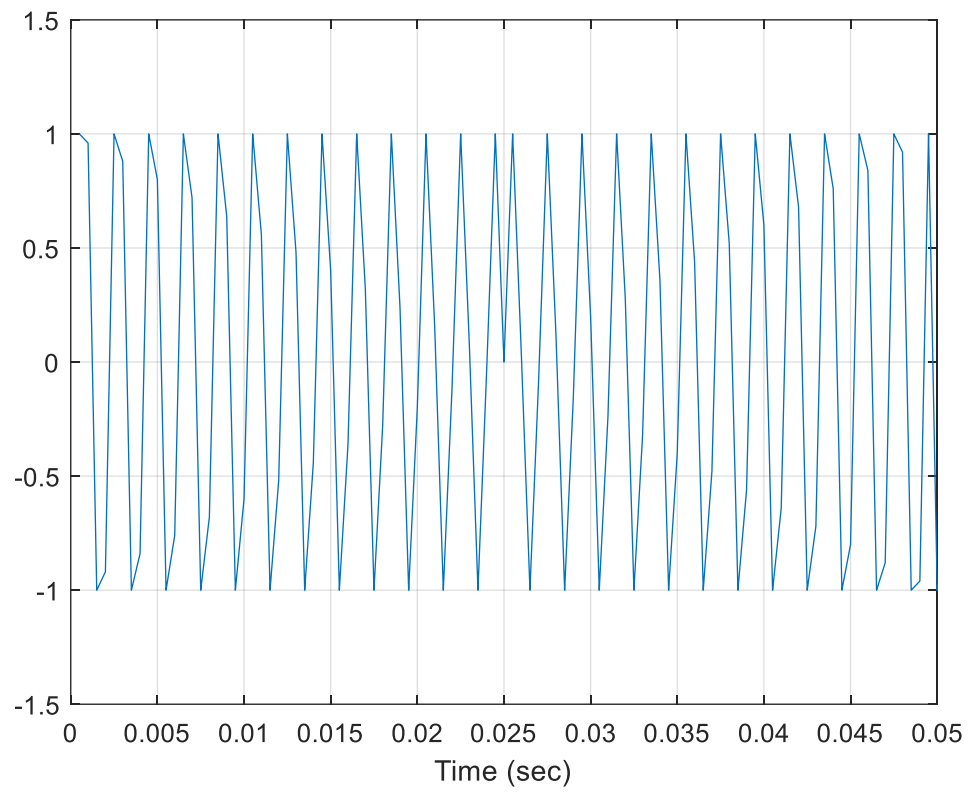
Q2



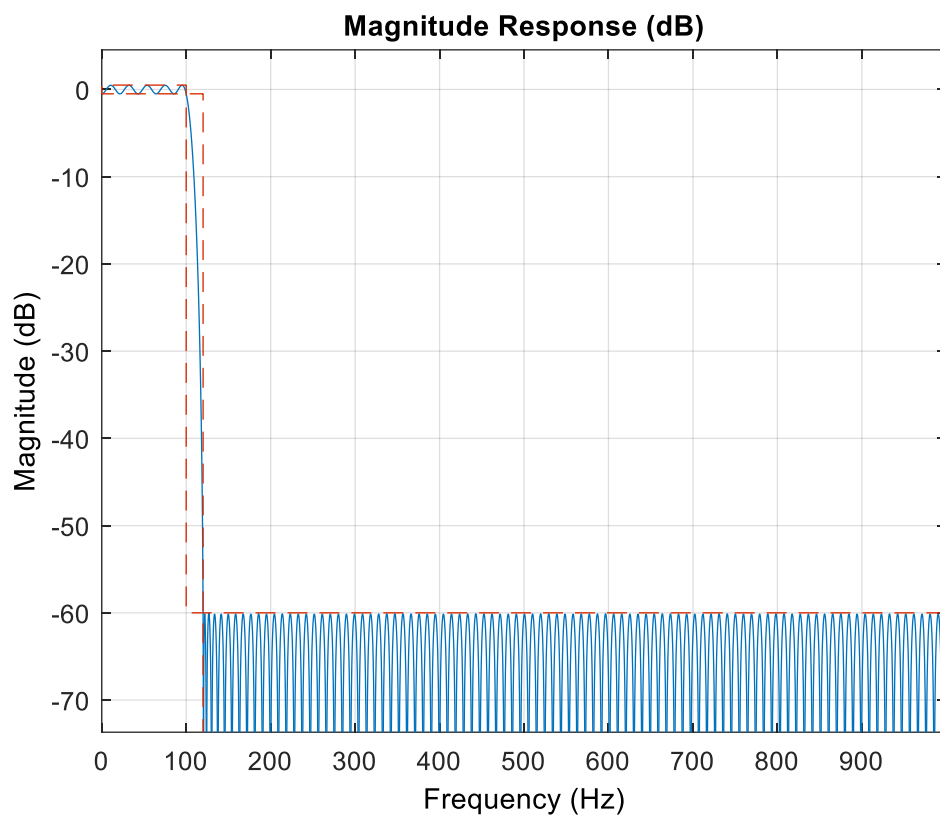
*Figure 10 - Sawtooth Message Signal (20 Hz)*



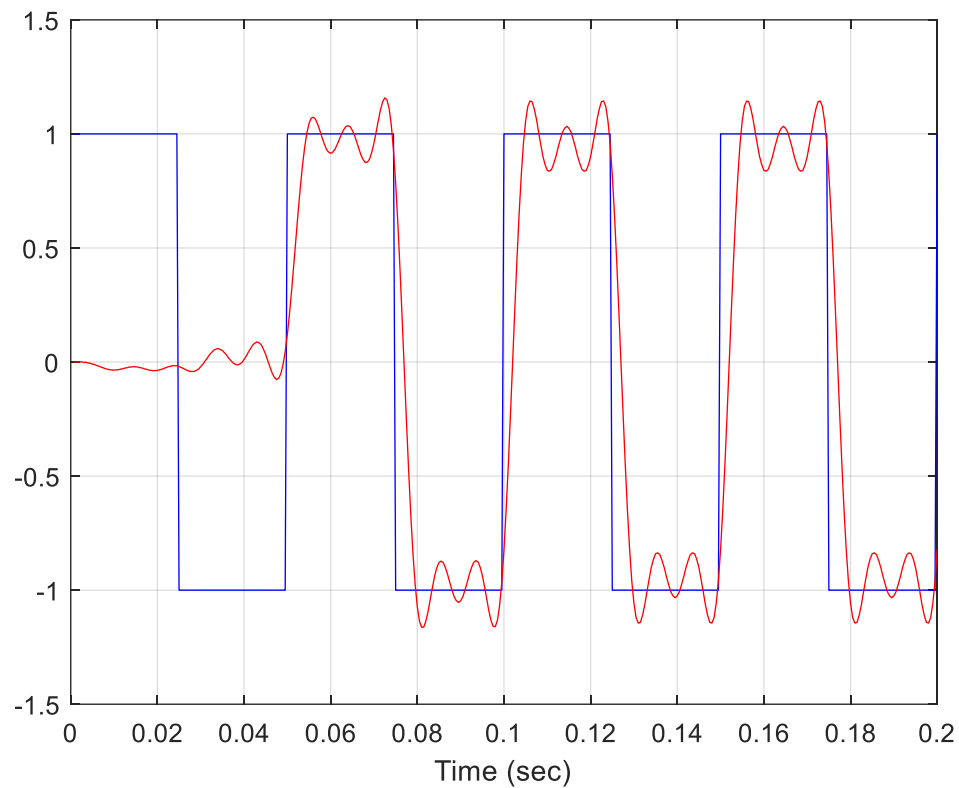
*Figure 11 - Square Message Signal (20 Hz)*



*Figure 12 – QAM Modulation of Sawtooth and Square Message Signals (500 Hz)*

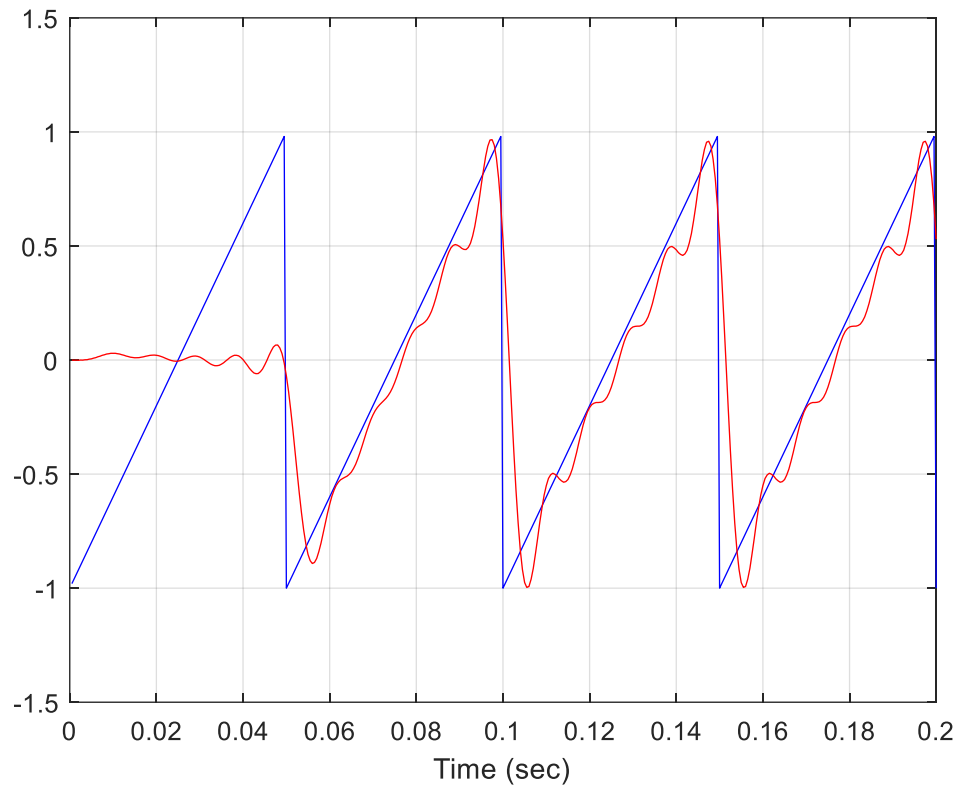


*Figure 13 - Low Pass Filter*



*Figure 14 - QAM Recovered Message Signal after Low Pass Filter for Square Message Signal*

During the suppression of the QAM signal over time, the initial moments involve the process of the filter's transition, during which high-frequency components are detected and eliminated. As a result, the original signal cannot be fully recovered at the beginning.



*Figure 15 - QAM Recovered Message Signal after Low Pass Filter for Sawtooth Message Signal*

During the suppression of the QAM signal over time, the initial moments involve the process of the filter's transition, during which high-frequency components are detected and eliminated. As a result, the original signal cannot be fully recovered at the beginning.