

AHP – 2

- Increasing f_s will improve frequency resolution and may provide a more accurate representation of the power spectrum.

- Decreasing f_s below the Nyquist frequency could lead to aliasing, distorting the power spectrum.

- By varying the above parameters in the power spectrum graph of the modulated and demodulated graph we observe that :

1. Number of Samples (N):

- Increasing N will improve frequency resolution in the power spectrum graphs, allowing for a clearer representation of signal components.

- Decreasing N may lead to spectral leakage and less accurate frequency information.

2. Carrier Peak Amplitude (A_c):

- Increasing A_c will increase the amplitude of the carrier signal, affecting the amplitude of the sidebands in the power spectrum of the modulated signal.

3. Message Signal Peak Amplitude (A_m):

- Increasing A_m will increase the modulation depth and potentially result in a broader frequency spectrum with more pronounced sidebands.

4. Carrier Frequency ($f_{c_}$):

- Increasing $f_{c_}$ will shift the entire power spectrum to higher frequencies.

5. Message Frequency ($f_{m_}$):

- Increasing $f_{m_}$ will shift the spectrum to higher frequencies and may increase the spacing between sidebands in the modulated signal's power spectrum.

6. Sampling Frequency (f_s):