Experiment 3: AM De-Modulation
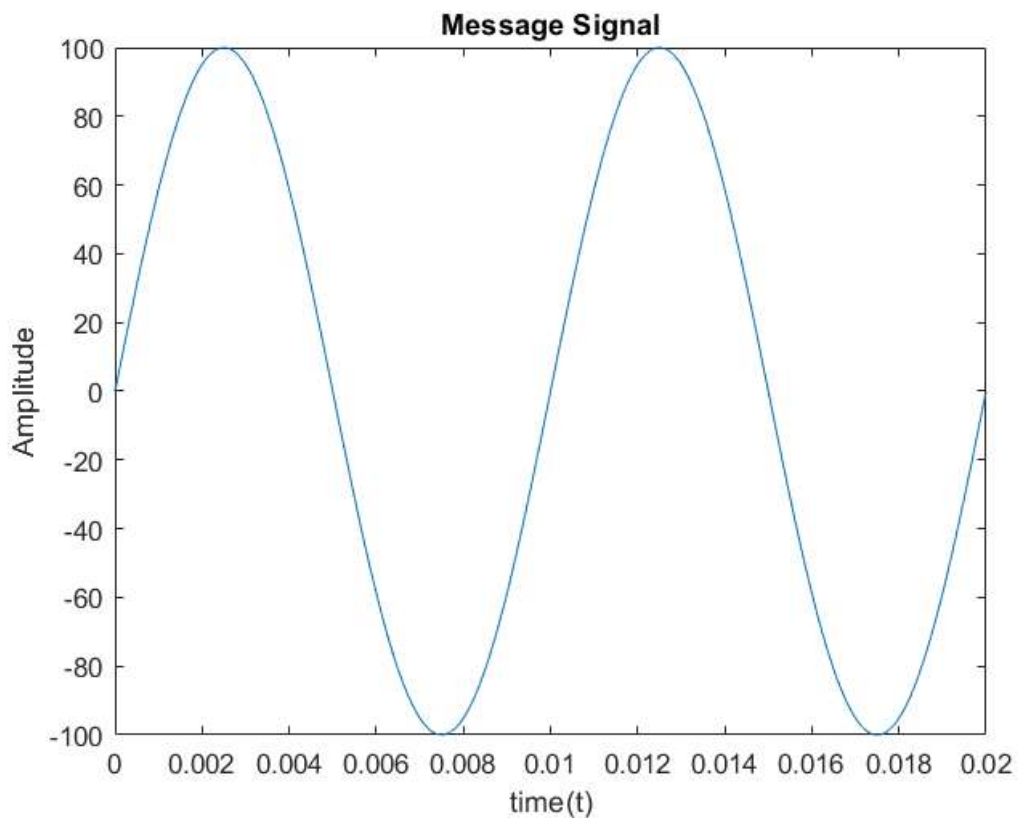
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```matlab
U= 0.5; %% Modulation index
t = linspace(0, 0.2, 100000); % Time Pereiod of Simulation
```

Message Signal

```matlab
Am = 100; % Message Signal
fm = 100; % Frequency of message
ym = Am*sin(2*pi*fm*t); %message signal
figure;
plot(t(1:10000), ym(1:10000));

title('Message Signal');
xlabel('time(t)');
ylabel('Amplitude');
```
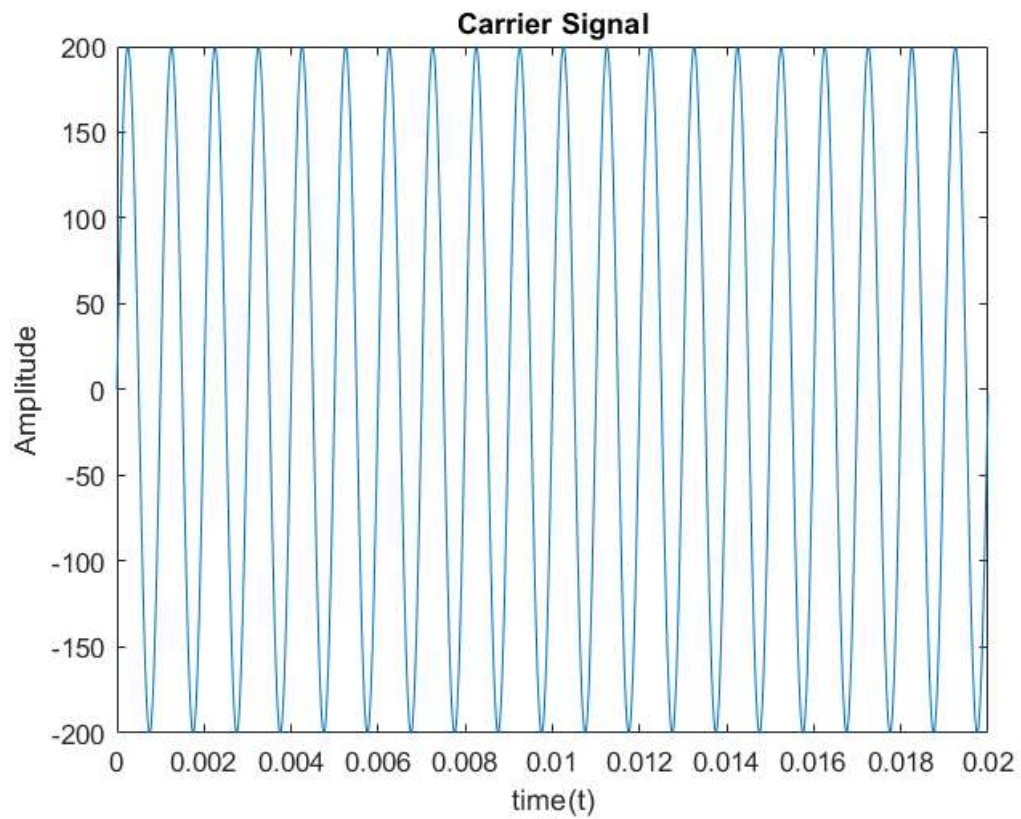

Carrier Signal

```matlab
Ac = Am/U; % carrier amplitude
fc = 1000; % carrier frequency
yc = Ac*sin(2*pi*fc*t); %carrier signal

plot(t(1:10000), yc(1:10000));
title('Carrier Signal');
xlabel('time(t)');
```
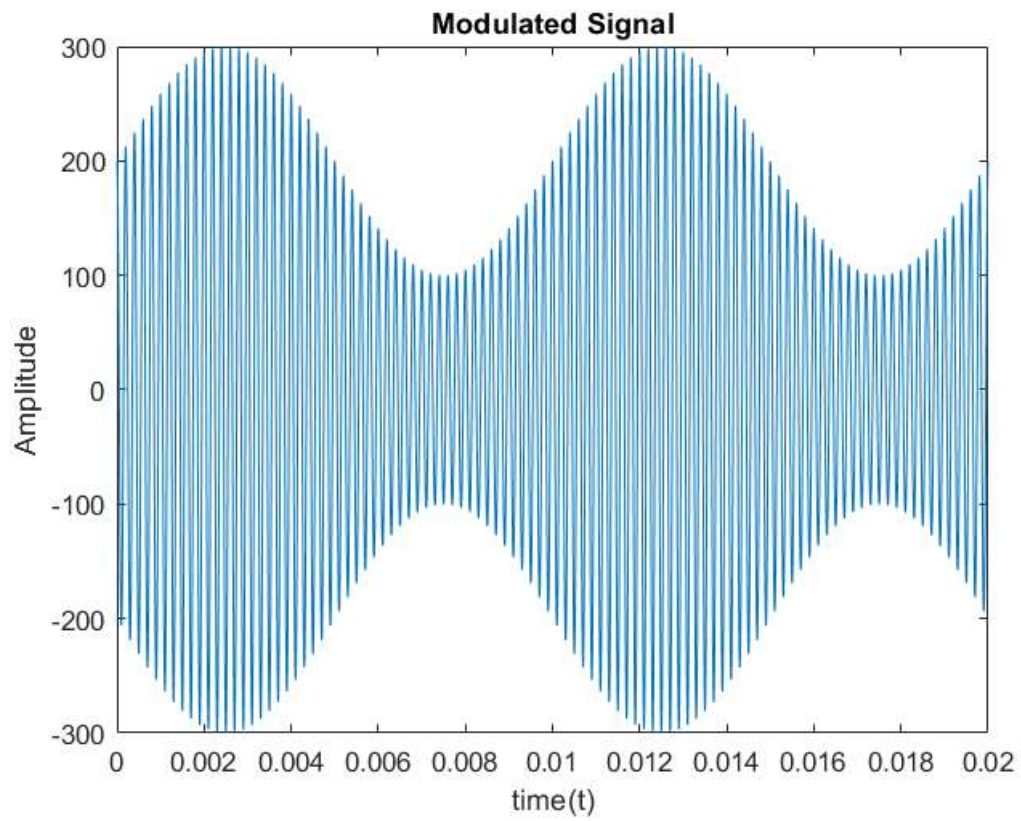
```
ylabel('Amplitude');
```
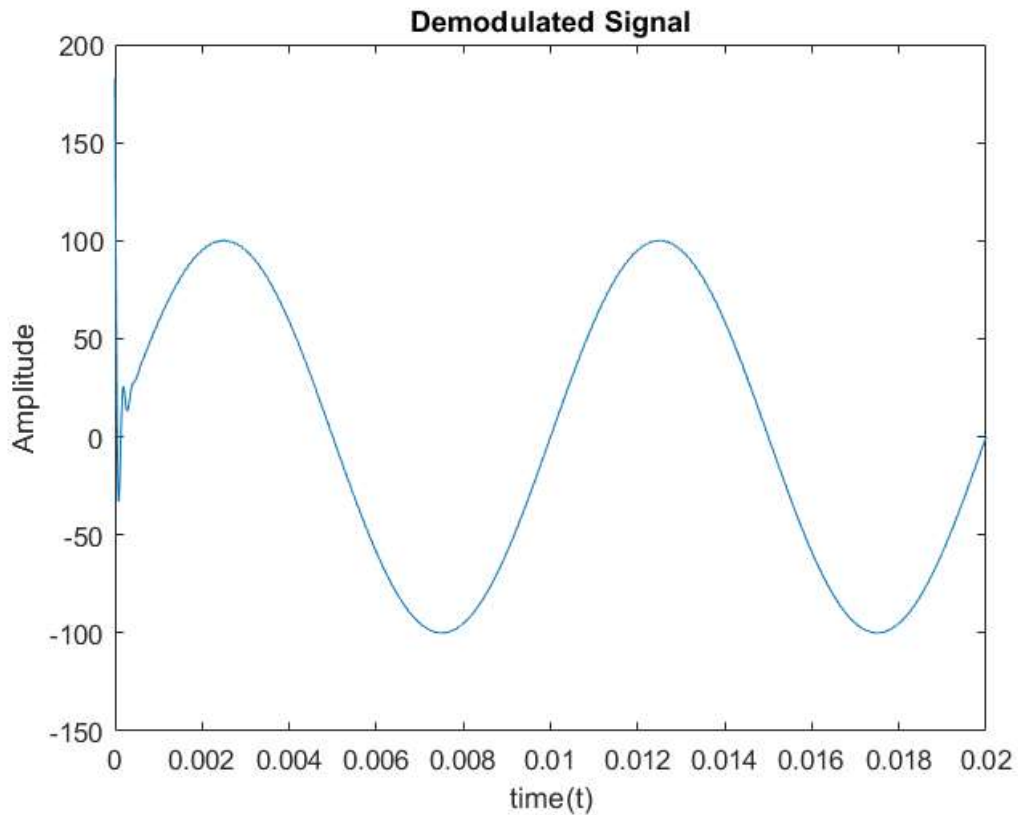

Carrier Signal

Modulated Signal

```
y = ammod(ym, fc, 100000, 0, Ac); % modulated signal

plot(t(1:10000), y(1:10000));
title('Modulated Signal');
xlabel('time(t)');
ylabel('Amplitude');
```

Modulated Signal

Demodulated Signal

```
z = amdemod(y, fc, 100000, 0, Ac); % demodulated signal

plot(t(1:10000), z(1:10000));
title('Demodulated Signal');
xlabel('time(t)');
ylabel('Amplitude');
```
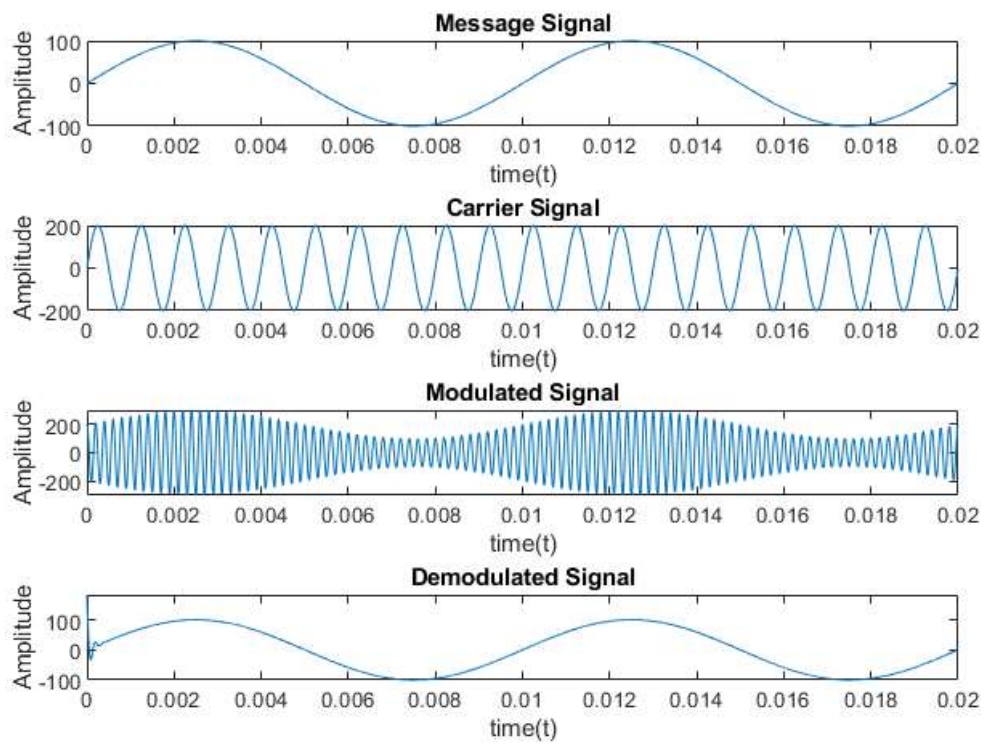
Demodulated Signal


```
%ylim([-10, 10]);
```

Plotting it all together

```
subplot(4, 1, 1);
plot(t(1:10000), ym(1:10000));
title('Message Signal');
xlabel('time(t)');
ylabel('Amplitude');
subplot(4, 1, 2);
plot(t(1:10000), yc(1:10000));
title('Carrier Signal');
xlabel('time(t)');
ylabel('Amplitude');
subplot(4, 1, 3);
plot(t(1:10000), y(1:10000));
title('Modulated Signal');
xlabel('time(t)');
ylabel('Amplitude');
subplot(4, 1, 4);
plot(t(1:10000), z(1:10000));
title('Demodulated Signal');
xlabel('time(t)');
ylabel('Amplitude');
```

Thank You

By Yusuf Ahmed Khan