Experiment 4B

Amplitude Modulation

Introduction

Experiment 4B: Implementation using TMS320C5515

In the previous experiment, amplitude modulation was implemented in Matlab environment. The aim of this experiment is implementation of amplitude modulation in real world, by means of TMS320C5515 kits.

Before the Experiment

1. Review experiments 4A and 2B.
2. Learn how amplitude modulation works and find out how demodulation operation is applied.

Experiment 4B.1

Implement analog modulation on TMS320C5515 by following the steps outlined below:

1. Write a program which generates 2KHz sinusoidal signals. You can make use of Experiment 2B for this purpose.
2. Add code fragments to your program so that it takes the carrier signal (either from left or right channel) from the analog input of the kit.
3. Apply amplitude modulation by:

   Assume your carrier signal which you generated is *carrier_data* and analog signal you received is named as *message_input*

   message_data = float(message_input/pow(2,16));

   *output = (1+message_data)*carrier_data;*
   *output_16 = output*pow(2,16);*

   I2S0_W0_MSW_W = output_16;
   I2S0_W0_LSW_W = 0;

I2S0_W1_MSW_W = output_16;
I2S0_W1_LSW_W = 0;

Connect a 300 Hz sinusoidal signal to your kit and observe the modulated signal on oscilloscope.

Experiment 4B.1

Change the 300 Hz signal to triangular wave and square wave and observe the resulted modulated signals on oscilloscope.

Report

1. Prepare your report in a suitable format.