



VIT[®]

Vellore Institute of Technology
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Subject code: ECE2023 – Principles of Sensors and Data Acquisition

Slot: L15+L16

Lab Midterm

Signal Convergence and modulation in Mobile Networking

Aim:

To find the lost power of the transmitted message signal and to pass it through different filters for different outputs

Theory:

This is the real world application of using coherent detection of communication signals to demodulate it from the carrier frequency to the message frequency.

The signal is taken in by the receiver, and another signal generator with the same frequency as the carrier frequency of the transmitted wave will be there inside the receiver. In coherent detection, both the phases of the signal should be same, otherwise will affect the power of the message signal output received at the other end.

Working:

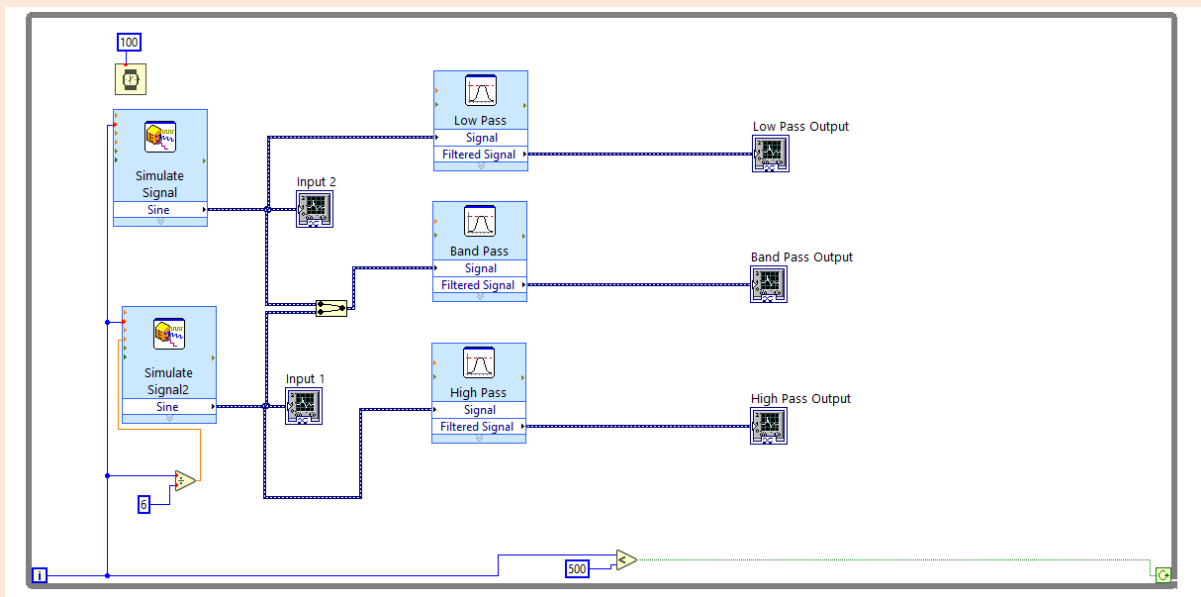
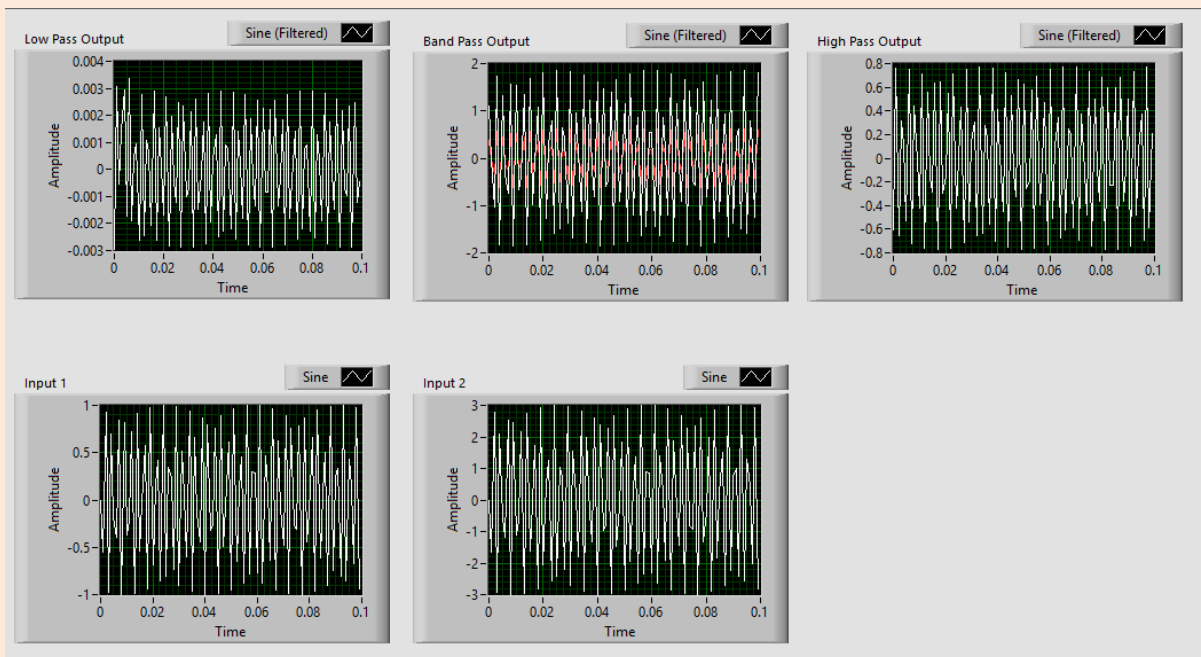
In this experiment, the phase of the constant signal is changed to evaluate the difference in the power and the frequency is changed to observe the different results given by the filters on combination of the signals.

Theory complete, application Incomplete

Output:

The frequency changes according to the 'for' loop and similarly, the phase of the second generator also changes with a minute value.

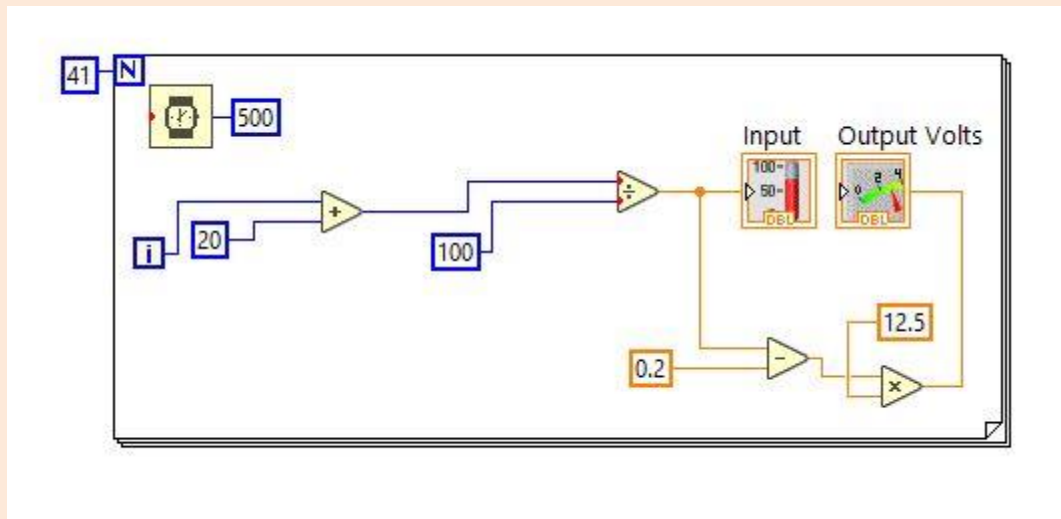
When they are merged, the power output will reduce with the formula $1 - \sin^2(\theta)$, where θ will extent from 0 to $500/6$ (approx. to 90) and the power can be displayed in a screen. For the power to be maximum, the θ should be zero.



Level Shifter

Aim:

To convert the scale of the input from 0.2-0.6V to 0 to 5V



The loop creates the input from 0.2 to 0.6 V

The conversion is by reducing the input by 0.2 and then scaling the whole scale into 0-5V

Output:

