General Implementation Notes

These are general notes, observations and ways to avoid common mistakes. They will be updated as and when experiments are tested by the TA/instructor, usually before each new lab, or based on students’ suggestions.

1. **If you are using a constant DC source:** Make sure the multiplier (and other similar components) on the TIMS kit has the AC/DC switch in the correct position. If you are planning to process a signal with a 0 Hz component (such as a constant voltage), the switch is in the DC position. Otherwise, the module will filter the 0 Hz component.

2. **To get a stationary waveform on the oscilloscope:** You can use triggering. You can either manually adjust the trigger level (press the “edge” button in the triggering section and make sure the triggering is set to the channel with the input signal), or use external triggering. For the latter case, you can connect the external trigger input of the oscilloscope to a trigger signal source (such as the original message signal itself, or the processed message signal that is output from the adder or amplifier). You may need to switch the oscilloscope from manual to external triggering, and set the external trigger channel (if there are multiple trigger channels). This can all be done with menus (such as the “edge” menu in the trigger section), but if the buttons on the older oscilloscopes don’t respond, ask the TA/instructor for help.
   
   You can also use the “Single” and “Run/Stop” buttons to take snapshots of your signal, but the oscilloscope display will no longer be in real time if you do this.

3. **Alternative to the spectrum analyzer:** You can also use the oscilloscope itself to display the spectrum of an input signal. Press the “Math” button, and select “FFT”. You might want to set the center frequency and bandwidth, to zoom in on the spectrum of the signal of interest.