Exp.3

Oscilloscope Applications

Objective:

Using the oscilloscope's Lissajous figures, we measure both the frequency and phase of unkown signal using another signal with known frequency and phase.

Components:

- 4 probes

Theory:

A lissajous figure is produced easily on an oscilloscope in XY mode. One can apply one signal to the vertical deflection plates while applying a second signal to the horizontal deflection plates. The resulting waveform is called Lissajous figure. This mode can be used to measure phase or frequency relationships between two signals.

A. Frequency Measurements Using Lissajous Figures

- Test the 4 probes using Oscilloscope
- Connect the output of the two function generator channels with the oscilloscope's channels using the probes.
- Display the two signals in the time domain and adjust the amplitude and frequency and phase of the function generator outputs to be exact say Amp=10V, F=1KHz and the phase change as you need to make the two signal synchronized.
- Adjust the Oscilloscope to run in XY-Mode with split display.
- Change the parameter as the following table and draw the output Lissajous figures.

ΔΘ	F1 (Ch1)	F2 (Ch2)	Output Figure
0	1K	1k	
0	1k	2k	
0	2K	1K	
0	10K	3K	
90	10K	10K	
45	10K	10K	
135	10K	10K	