ASIAN INSTITUTE OF TECHNOLOGY
SCHOOL OF ENGINEERING AND TECHNOLOGY
TELECOMMUNICATIONS
AT77.02 - SIGNALS, SYSTEMS AND STOCHASTIC PROCESSES

Analyzing Frequency Spectrum of Signals

1 Objectives

1. To generate signals using Function generator and display them in the oscilloscope.

2. To display a signal in the frequency domain using a frequency analyzer

2 Hardware

Osilloscope
Function generator
Frequency Analyzer

3 Background and Theory

Frequency analyzer can be used to display the signal in frequency domain and analyze frequency components.

4 Procedure

1. Generate the following waveforms using function generator and display them in the oscilloscope

   (a) $2\sin(2000\pi t)$
   (b) $\cos(5000\pi t)$
   (c) A square wave with amplitude of 2V and frequency of 100kHz
   (d) A triangular wave with amplitude of 4V and frequency of 200kHz
   (e) A rectangular pulse with a pulse width of 0.2us

2. Using frequency analyzer, find the frequency spectrum of above signals (Fundamental frequency, harmonics etc.)

3. By calculation verify your results

5   Discussion

Do you see any difference between theoretical and experimental values, if so comment on the difference.