Experiment No: 01

Name of the Experiment: Design, Implementation, and Performance Testing of an ASK Digital Modulation circuit using a Trainer Board.

Objectives!

The objectives of this experiment is to design, implement, and analyze an Amplitude shift keying (ASK) digital modulation aircuit using a trainer board.

The experiment aims to:

→ Understand the working principles of ASK modulation
→ Contruct an ASK modulator circuid using a trainer board.
→ Observe and analyze the output waveform using an oscilloscope.

Theory: Amplitude shift keying (ASK) is a digital modulation technique in which the amplitude of a carrier signal remains constant in frequency and phase, while the amplitude is switched between two levels:

→ A high amplitude represents a logic '1',
→ A low amplitude (or zero) represents a logic '0'.

Block Diagram:

| Binary Data Source | → | ASK Modulator (Trainer Board) | → | Output signal (Oscilloscope) |
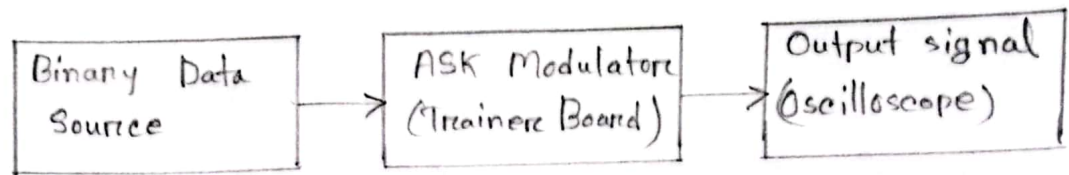
Apparatus Required:

(1) Digital Trainer Board
(2) Oscilloscope
(3) Power Supply
(4) Function Generator
(5) Connecting wires

Circuit Diagram:

Procedure:

(1) Connect the function generator to generate a sinusoidal carrier wave.

(2) Connect the digital input source to provide binary data

(3) Apply the required voltage to power the trainer board

(4) Observe the ask ASK modulated signal on the oscilloscope.

(5) Measure the amplitude variations for different binary inputs.

(6) Compare the transmitted signal with the original carrier wave.

(7) Check for signal losses in the modulated output.

Precautions:

→ Ensure correct correct polarity of power supply connections to prevent damage.

→ Avoid loose connections that may cause signal disturbances.

→ Do not exceed the voltage rating of components to prevent othenh overheadin overheating.

Result: The oscilloscope display the ASK waveform, showing amplitude variations based on the input data.

Discussion: We implement the circuit of ASK and by testing the performance we understand the operation of ASK digital modulation circuit.