

Experiment No 5

Envelope Detection

Laboratory Tasks

Demodulation of AM signals using envelope detection.

Background

Read Chapter#03 of the text [John G. Proakis and Masoud Salehi (2014)] for theoretical background of the experiment.

Description

1. Generate the AM signal as done in the previous experiment. This time make sure that the modulation index of the AM signal is less than one.
2. Place a diode followed by a RC circuit to recover the envelop of the AM signal.
3. Design the values of time constant RC so that the demodulated signal closely follows the envelope of AM signal.
4. Implement the circuit on breadboard and observe the output. Take snapshots of your message signal, AM signal and the demodulated signal.
5. For task in (4), explain the output waveform, the methodology and the circuit.

Rubrics for hardware experiments evaluation are as follows:

Performance	Exceeds expectation (2)/(1)	Meets expectation (1.5)/(0.5)	Does not meet expectation (0)/(0)	Marks
R1: Realization of Experiment's Hardware on Breadboard. Marks: 0-2	The circuit is patched correctly, and safely, with neat connections on the breadboard	The circuit is patched neatly and correctly, but not in a workable form	Incapable to patch the circuit correctly and neatly on breadboard	
R2: Knowledge of theoretical aspects Marks: 0-2	Has theoretical knowledge required for the experiment	Has partial theoretical knowledge about the experiment	Has no background knowledge about the experiment	
R3: Conducting Hardware Experiment. Marks: 0-1	All the required tasks are correctly implemented	The required tasks are partially implemented	Unable to implement all the tasks even with guidance	
R4: Demonstrate proper results with justification. Marks: 0-2	Correct results are provided with required justification	Results are provided with minor errors and/or with little justification	Results are provided with major errors and/or with no justification	