Department of Electronic and Telecommunication Engineering

University of Moratuwa, Sri Lanka

EN3053 - Digital Communications - I

Lab Assignment

Eye diagrams and Equalization

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Submitted on

December 11, 2021

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Note: `MATLAB R2018a` *of the MathWorks Inc. is used for the implementation.*

1 Task 1

Please note that for the MATLAB implementation bit rate(bits/second) of the generator was assumed to be 10. As we consider BPSK for the Task 1 and 2, the symbol rate(symbols/second) is remain the same as the bit rate of the generator.

1.1 Generation of an Impulse Train Representing BPSK Symbols

Binary data of the generator $D \in \{0, 1\}$ is mapped in to an impulse train according to the following function where $A(Amplitude)$ of the impulse was taken as 1 in the MATLAB implementation.

$$amplitude\ of\ the\ k^{th}\ impulse = \begin{cases} +A & if\ D = 1 \\ -A & if\ D = 0 \end{cases}$$

1.2 Transmit Signal

1.3 Sinc function as the Impulse response

1.4 Eye Diagram