FullyRe-usable Encoder Using SOLS Technique for DSRC Applications

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Abstract- *To promote intelligent and smart transportation services into our daily life the dedicated short range communication is an advanced technique. Data encoding techniques like FM0 and Manchester encoders are used to promote communication among vehicles. These encoding techniques generally works at transistor level hence the transmitted signal reach with dc-balance, enhance the signal reliability. In existing works the design has the limitation that it does not support fully reused VLSI architectures. To rectify these problems, the FM0 and Manchester encoders are designed with SOLS technique to achieve high speed and fully reused VLSI architectures for DSRC application systems. The performance of this paper is implemented on post layout simulation in 45nm CMOS technology. This model not only supports fully reused architecture but also provides high performance.*

Keywords *- Coconut Dedicated short-range communication,Similarity oriented logic simplification, FM0, Manchester*

I. INTRODUCTION

In order to encode the data, we normally utilize FM0 or Manchester encoding which can be utilized to decrease noise in the channel.By utilizing a SOLS system, here we can outline a reused VLSI engineering. The SOLS strategy comprise of two techniques: area compact retiming and balance logic operation sharing.

Standards of FM0 and Manchester code:

A. FM0 Encoding:

The FM0 having the accompanying three principles.

- The FMO code must allow the transition between A and B, when X is the logic-0.

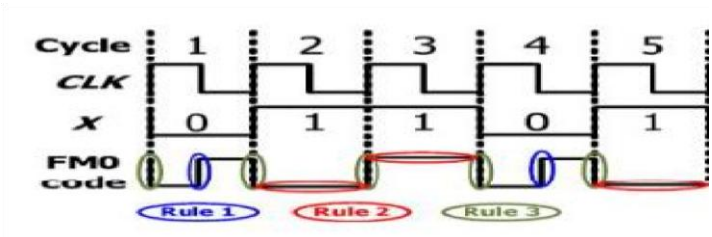


Fig.1: FM0 Encoding

- There is no transition is allowed between A and B,when X is logic-1.

There must be a transition between two consecutive input data.

B. Manchester Encoding:

The Manchester encoding is finished with the X-OR operation by utilizing the clock and X. The clock dependably has a move inside the one cycle

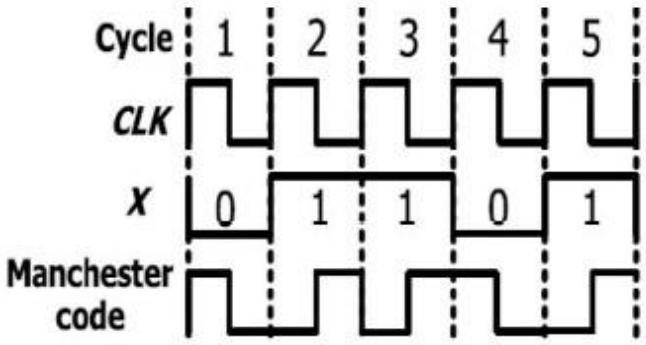
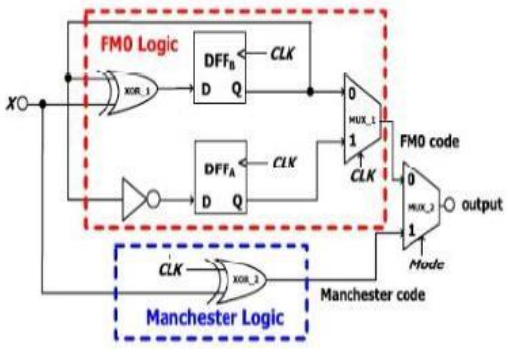


Fig. 2: Manchester Encoding

II.DESIGNCONSIDERATIONS

A. SOLS Technique:

Regularly DSRC encoders make utilization of both the FM0 and the Manchester encoding. Subsequently both the encoders can be consolidated together to shape a reusable encodersuch a reusable encoder can be given as appeared in fig.3



This piece graph can be further rearranged utilizing the SOLS system. The SOLS encoder comprises of predominantly two strategies, area compact retiming and the balance logic operation sharing.

III.PROPOSED SYSTEM

The following fig.4 shows the transmitter block diagram and fig.5 shows the receiver block diagram.

Our proposed system is as shown in above fig. it contains two main parts transmitter and receiver. As we are using these encoding methods for short range communication we will show some real time application of communication like transmission of text file from one pc to other PC. The role of PC in our project will be generation of random binary message or loading data file and transmitting that file on serial port as well as receiving processed data on serial port by FPGA. We have to show some graphical analysis of communication like graph of SNR vs BER, for this we will use Matlab Software, where we can easily Create GUI based application on which we can show graphical analysis effectively.As most of latest PC or Laptops doesn't contain serial port we have to use Serial to USB Converter.

The main task of FM0 and Manchester Encoding will be performed on FPGA. To make architecture area efficient we will try to use part of similar logical circuit of FM0 and Manchester commonly using SOLS method.

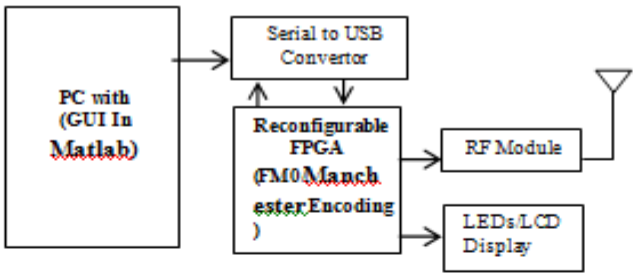


Fig.4: Transmitter Block Diagram

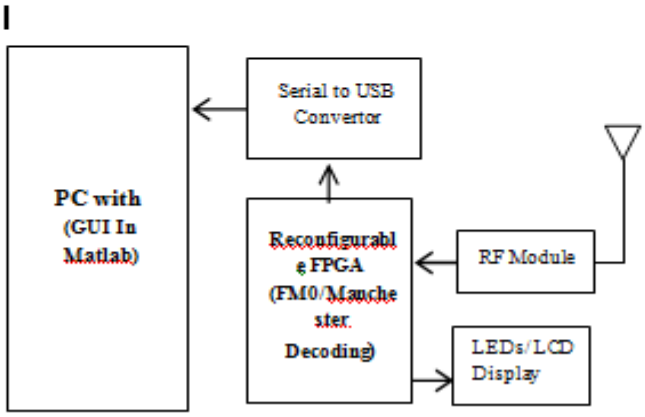
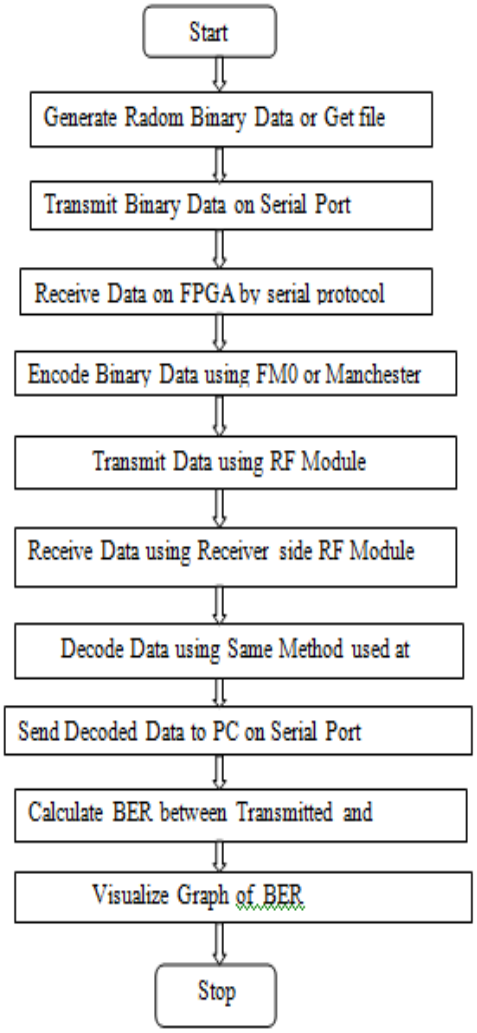


Fig.5: Receiver Block Diagram

IV.IMPLEMENTATION

Algorithm:



V.RESULT AND DISCUSSION

A. Transmitter GUI window:

B.

Here we are using the MATLAB software. A graphical user interface (GUI) is a graphical display in one or more windows containing controls, called components that enable a user to perform interactive tasks.GUI components can include push buttons, radio buttons, Edit text, Static text and slider.

Graphical User Interface is nothing but user interface that allows us to interact with the electronic devices through the graphical icons. The fig. 6 below shows the transmitter GUI window. Here first we are transmitting a single bit then after we are moving towards transmitting the text messages.Output of transmitter side is also shown in the below fig. 6.

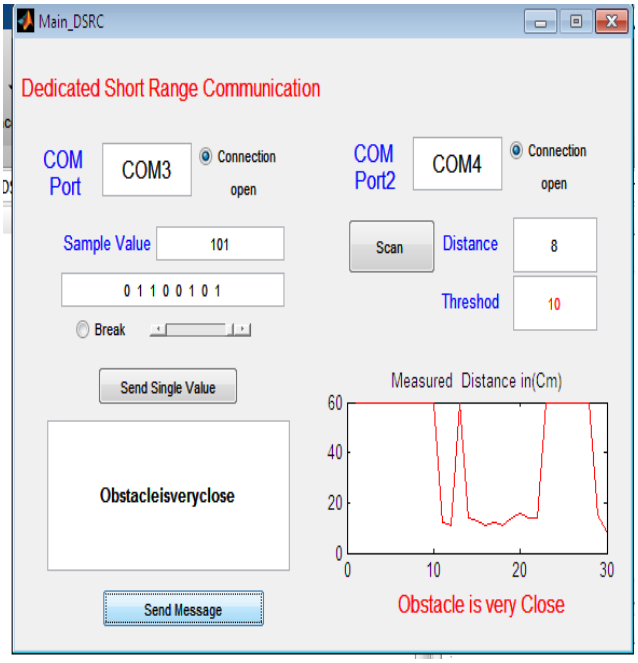


Fig. 6: Transmitter GUI Window

B.Receiver GUI Window:

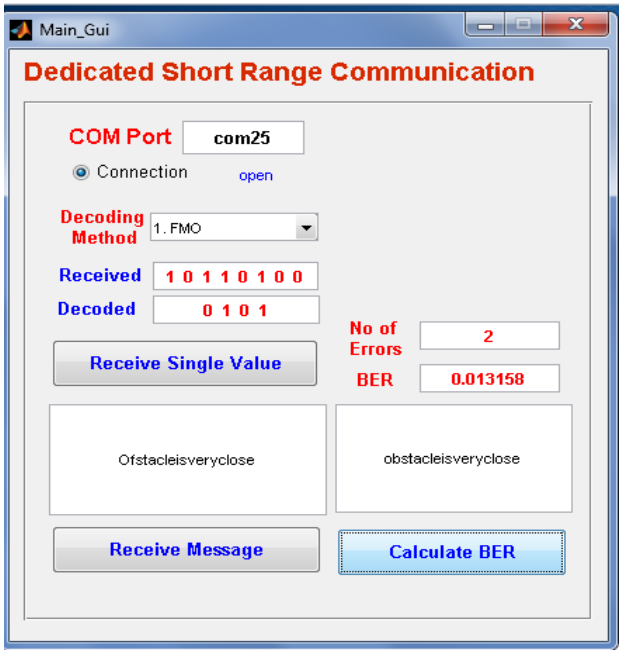


Fig 7: Receiver GUI Window

On the receiver side GUI window, here we are receiving the single bit first. And then we are waiting for the transmission of text messages as soon as text messages transmitted, it can be received by the receiver side. Output of the receiver GUI window is as shown above.

VI. CONCLUSION AND FUTURE SCOPE

In DSRC correspondence, the wellbeing messages are encoded and transmitted to the next DSRC prepared vehicles which thusly improve the security of the vehicles .The data is encoded usingFM0 and Manchester encoding. In any case, the wide code differing qualities restrains the equipment use rate of such a reusable encoder. Subsequently another strategy for outlining such an encoder called SOLS system can be utilized. The SOLS encoder is of preferred point of interest over the ordinary reusable encoder regarding gadget usage.

DSRC communication offers an easy and reliable vehicular communication. In such a correspondence framework, the encoding and interpreting part can expend a substantial memory space and also it can lessen gadget usage. Henceforth new SOLS decoder framework can likewise be advanced alongside the encoder part in order to lessen the memory wastage further

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