

Figure 1: Block Diagram of Network Repeater

3.6 Symbol Generator and Output Multiplexer

The character symbol generator and output multiplexer will generate symbol. These symbols are the;

- Bad character, transmitted to indicate the receive error
- Jam character, transmitted to indicate collision
- Idle character, transmitted to indicate there is no activity on the network
- Preamble character, transmitted to allow for carrier sensing and clock recovery by the receiving node.[9]

4. Result

The proposed architecture is coded using VHDL. The design has been implemented using Xilinx project navigator. The target device is xc3s400 package pq208. Design is simulated using Modelsim simulator (Fig. 2). Result from synthesis report is shown in table number 1.

| Number of slices | Number of slice flip flop | Number of 4 input LUTs | Number of bounded IOBs |
|------------------|---------------------------|------------------------|------------------------|
| 3584 | 7168 | 7168 | 141 |

The proposed design is compared with various other similar designs and summary is given in table no. 2. Although the platforms are different, proposed design operates on 335 mW. Power consumption is measured using Xilinx Xpower tool and moderate power consumption is observed. Power analyzes Xilinx report view shown:

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Release - XPower SoftwareVersion:G.28
Copyright (c) 1995-2004 Xilinx, Inc. All rights reserved.
Design: core
Preferences: core.pcf
Part: 3s400pq208-4
Data version: ADVANCED,v1.0,11-03-03
    
```

| Power summary: | I (mA) | P (mW) |
|------------------------------------|--------|--------|
| Total estimated power consumption: | | 335 |

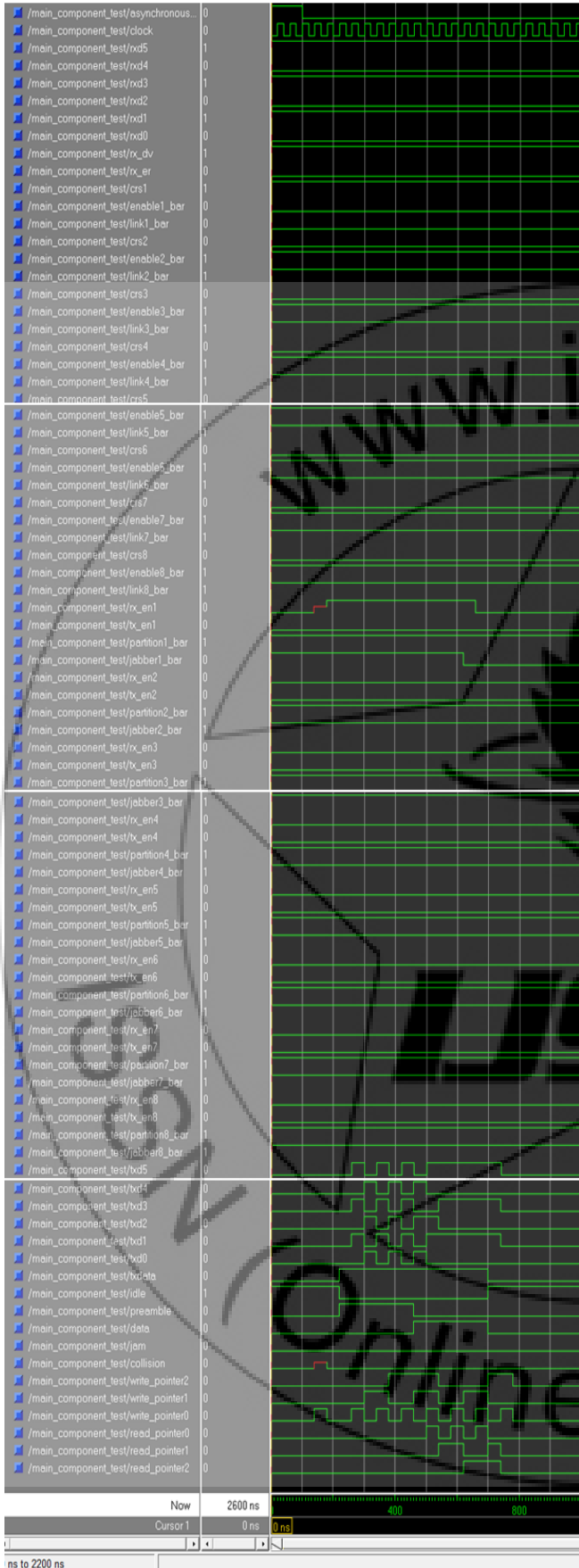


Figure 2: Simulation Waveforms

Table 2: Comparison with other design

| Architecture | Technology | Total power consumption | Number of ports |
|--------------|---------------------|-------------------------|-----------------|
| [2] | VUL160A | 4.4W | 8 |
| [3] | LXT9785 | 250mW | 8 |
| [4] | 88E3082 88E3083 | 1200mW (150mW/port) | 8 |
| Proposed | SPARTAN3 XC3S400 | 335mW | 8 |

5. Conclusion

The paper investigates that in network repeater there are five main components. Out of which port controller is the one facing more problems. In that unit there were combinational loop. From the simulation result shown in figure 2 it is concluded that the repeater receives data on port and retransmit to all other ports. The collision waveform is generated if more than one port active. After continuous transmission jabbering condition created. If the collision occur jam symbol generated. So, after simulating I got the simulation waveforms. In this way Network repeater perform the different functionality.

References

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physical layer transceiver datasheet Rev.1.0

Author Profile



Sudarshan M. Dighade is currently pursuing his master's of engineering program in Electronics and telecommunication (Signal processing) from Bhivrabai Sawant Collage of engineering and research, Narhe, Pune, University of Pune, India.



Pranav P. Kulkarni received Master of engineering program in Microelectronics from Victoria University. He is working as an Associate Professor with institute of Bhivrabai sawant collage of engineering and research, Narhe, Pune, University of Pune, India.

