



IIT Madras 5G TestBed

PHY L1 CONTROLLER IMPLEMENTATION ON MICROBLAZE SOFT CORE PROCESSOR

Project Report

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Abstract

In this Report, Controller which provides a bunch of Control informations for RRH block and functional blocks in BBU present in Downlink chain of Transmitter is Designed on MicroBlaze Processor. MicroBlaze is a soft-core processor, enabling us to rapidly configure an embedded hardware platform and immediately start software coding in an Industry standard environment. Unlike Zynq processor, MicroBlaze consists of in-built streaming options. So we can directly stream any data we want through Vivado SDK, without connecting an external memory to store.

Firstly, the algorithm of Controller is studied and the program is written in Vivado SDK which receives certain amount of data from higher layer modules and generate the configuration data. A Block Diagram is created in the software Vivado such that this controller is implemented on MicroBlaze Processor. Techniques for starting MicroBlaze automatically and debugging the appropriate configurations to achieve reasonable latency for real time application are presented. Output data is tested and verified both in Software Simulation and Hardware on Xilinx ZCU102 Evaluation Board.

Note – The contents of the project cannot be described here as this project report is Confidential property of 5G Testbed lab , IIT Madras.