

REDUCE ENERGY CONSUMPTION IN WI-FI MAC LAYER TRANSMITTER & RECEIVER BY USING EXTENDED VHDL MODELING

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ABSTRACT

Mobility and portability is the major advantages that IEEE 802.11 wireless networks offer over their traditional counter- parts, i.e. wired Ethernet networks. However, when nodes are mobile or portable units, power consumption becomes a primary issue since terminals are usually battery driven.

The wireless local area network, WLAN is dominated by IEEE 802.11 standard. It becomes one of the main focuses of the WLAN research. Now most of the ongoing research projects are simulation based as their actual hardware implementation is not cost effective. The main cores of the IEEE 802.11 standard are the CSMA/CA, Physical and MAC layers. But only MAC layer for transmitter and receiver are modeled in this paper using the VHDL modeling with the reducing of power consumption.

The VHDL (Very High Speed Hardware Description Language) is defined in IEEE as a tool of creation of electronics system because it supports development, verification, synthesis and testing of hardware design, the communication of hardware design data and the maintenance, modification and procurement of hardware. It is a common language for electronics design and development prototyping. The main purpose of the IEEE 802.11 standards are to provide wireless connectivity to devices that require a faster installation, such as Laptops, PDA's or generally mobile devices inside a WLAN.

Using proposed algorithm, we develop a case study and provide interesting indications to minimize the power consumption of IEEE 802.11 terminals.

KEYWORDS: WLAN, IEEE 802.11, VHDL, Wi-Fi Mac Layer, FPGA