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Abstract
Internet and wireless communication products have come into our daily life. There is a lot of excitement in the current technologies about the wireless communication and Internet, such as people can use wireless telephone almost everywhere. Regarding the wireless networks, IEEE 802.11, 802.11b, 802.11a and 802.11g are the most popular standards. The most updated one is the IEEE 802.11g.
In this thesis, based on the specifications of IEEE 802.11g, we design and implement a MAC module of WLAN (Wireless LAN). The Verilog HDL (Hardware Description Language) is used to design the MAC module hardware circuits. All the simulations and function verifications have been carried out. Finally, the MAC module of WLAN is implemented by using the Virtex II V2MB1000 FPGA (Field Programmable Gate Array) development board of Xilinx. The implemented MAC can be applied to WLANs with IEEE 802.11b/g of 2.4 GHz ISM band and with 802.11a of 5 GHz ISM band. Our MAC module can perform the following functions, namely, back-off Procedure, CRC32 code generation and verification, CSMA/CA procedure, RTS/CTS procedure, retransmission procedure, receiving frame classification. All these functions have been tested and verified.
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