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Abstract
In this thesis, we propose the design and implementation of MAC module with programmable DSP for a high-speed wireless LAN (WLAN). Our system operates in the 2.4 GHz ISM band and we employ DSP chip TMX320C6211 as the central controller to implement the MAC module which is based on IEEE 802.11b WLAN standard. Integrating MAC module with the baseband and RF front-end modules implemented with Intersil chips, a maximum speed of 11Mbps can be achieved.

The high-speed and low cost properties of the programmable DSP chip TMX320C6211can meet the requirement of a high-speed control and processing demanded in the MAC module. This DSP development system also provides the embedded kernel, DSP/BIOS, which has good real-time instrumentation and thread management. The firmware design complexity can be reduced significantly and therefore, fewer mistakes will be made during in the design stage. This results in speeding up the development process. This kind of DSP development system is suitable for the updating design of our systems that is due to their specification changed frequently in the near future.

For the completeness and the purpose of verification, we integrate the MAC, baseband, and RF front-end modules as a high-speed transmission system. This system is then applied to a wireless printer. Results show that our design can work properly in this wireless printer application.
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