

## A Study of Using Different Printed Circuit Board Design Methods on Ethernet Signals

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**Abstract :** Data transmission size and frequency requirements are increasing rapidly in electronic communication protocols. Increasing data transmission speeds have made the design of printed circuit boards much more important. It is important to carefully examine the requirements and make analyses before and after the design of the digital electronic circuit board. It delves into impedance matching techniques, signal trace routing considerations, and the impact of layer stacking on signal performance. The paper extensively explores techniques for minimizing crosstalk issues and interference, presenting a holistic perspective on design strategies to optimize the quality of high-speed signals. Through a comprehensive review of these design methodologies, this study aims to provide insights into achieving reliable and high-performance printed circuit board layouts for these signals. In this study, the effect of different design methods on Ethernet signals was examined from the type of S parameters. Siemens company HyperLynx software tool was used for the analyses.

**Keywords :** HyperLynx, printed circuit board, s parameters, ethernet

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