

Compare and evaluate some performance parameters of LTE and 5G networks under conditions of users moving on vehicles.

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Abstract: This study compares and evaluates key performance parameters of LTE and 5G networks under user mobility conditions on various transportation vehicles. Through field measurements and simulation, parameters including throughput, latency, handover success rate, and signal stability were analyzed across different vehicle types (cars, buses, and trains) at varying speeds. Results indicate that while LTE provides adequate performance for basic services, 5G demonstrates significantly lower latency and higher throughput, particularly in high-speed scenarios. However, 5G handover success rates were more sensitive to rapid cell transitions, especially in dense urban environments. The findings highlight that 5G's enhanced capabilities are partially offset by challenges in maintaining seamless connectivity during fast mobility. This research provides practical insights for network optimization and deployment strategies to improve user experience in vehicular environments.

Keywords: LTE, 5G, network performance, mobile users