# ABSTRACT

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LTE (Long Term Evolution), mobile communication standard known as 4G, advanced in resource management, modulations, and increased bandwidth. The 5G, already present in several countries such as China, United States, etc., presents even more speed, in addition to low latencies. While it does not go global, the demand for resources increases, which motivates research within LTE, in order to get more performance and provide more bandwidth. In this context, the theme of the coexistence of Wi-Fi and LTE networks arises, which consists of allowing the expansion of transmission capacities by making additional use of unlicensed frequency bands for traffic transmission, such as 5 GHz. The problem is that this band is public and used in Wi-Fi networks; therefore it is necessary to regulate this implementation, so that the frequencies with customer traffic do not run out, making its use by native Wi-Fi devices unfeasible. A fair coexistence plan for the use of frequencies is necessary. Two technologies aimed at this scenario are LTE-Unlicensed and Licensed-Assisted Access (LAA). The first operates in a mode of pre-set time cycles of transmission duration or duty cycle, the second with a spectrum sensing mechanism before transmissions in the unlicensed band. The objective of this dissertation is to evaluate the performance of two standards for the coexistence of LTE and Wi-Fi networks in unlicensed bands, which are *Licensed-Assisted Access* and LTE-U. For this, the ns-3 network simulation software was used, with specific framework for network coexistence standards. The results show that the LAA and LTE-U standards, despite the different spectrum access mechanisms, allow coexistence, highlighting the significant impact that LTE-U causes on Wi-Fi devices, even in a scenario with few users, as well as the poor performance of LAA nodes when coexisting with Wi-Fi networks in high-density scenarios.

Keywords: LTE. 4G. 5G. LAA. Wi-Fi. Coexistence of LTE and Wi-Fi networks.