

Towards a better LTE licensed assisted access (LAA)

Topic

Today both LTE and 802.11 (WiFi) can be used in unlicensed bands at 5 GHz. Therefore, in order to achieve seamless coexistence 3GPP Rel. 14 has standardized LTE licensed assisted access (LAA) that aims to make LTE more coexistence friendly with WiFi by incorporating listen before talk (LBT). However, the proposed approach is not very efficient. This is because if an LTE eNB wins channel contention before start of next LTE slot, the LTE-LAA transmits a reservation signal to keep the channel until the end of the current LTE slot to start transmission. Such a reservation signal represents a wastage of the valuable spectrum.

Goal

The goal is to research whether the amount of transmitted reservation signals can be reduced to a minimum while guaranteeing the fairness of Wi-Fi and LTE-LAA. The proposed LTE-LAA channel access schemes should be analyzed by means of network simulations using NS3.

Requirements

- Good understanding how WiFi (IEEE 802.11) and LTE,
- Knowledge of network simulation tools like NS2/3, OMNeT++, ...

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References

[1] LTE-LAA in NS3: <https://www.nsnam.org/~tomh/ns-3-lbt-documents/html/lbt-wifi-coexistence.html>