# Optimization of remote electrical tilts for improving LTE network coverage and capacity based on cell traces

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**Abstract:**

Adjusting antenna tilts is one of the most powerful techniques used by operators in cellular networks to solve coverage and capacity problems. In this paper, a novel self-tuning algorithm for adjusting antenna tilts in a LTE system on a cell-by-cell basis is presented. The aim of the algorithm is to improve both network coverage and overall spectral efficiency, while eliminating cell overshooting problems. For this purpose, several new performance indicators are computed to detect insufficient cell coverage, cell overshooting and abnormal cell overlapping from information avail able in connection traces. Algorithm assessment is carried out over a static system-level simulator implementing a real macrocellular scenario. During the analysis, the proposed algorithm is compared with classical self-tuning algorithms that modify other base station parameters, such as transmission power or antenna tilt. Results show that the proposed algorithm can solve coverage and capacity problems more effectively than previous algorithms.