

# Advanced LTE Network Deployment Methodology: A case Study for Dakar Region

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**Abstract**—This work describes the dimensioning process of LTE access network for an ISP, its models, methods and the tool used to dimension the network. LTE is a system with larger bandwidths (up to 20 MHz), low latency and Packet optimized radio access technology having peak data rates of 100 Mbps in downlink and 50 Mbps in the uplink. Radio access technology for LTE is OFDM (Orthogonal frequency division multiplexing) that provides higher spectral efficiency and more robustness against multipath and fading, as compared to CDMA (Code division multiple access). In order to offer the operators increased flexibility in network deployment, the LTE system supports bandwidth scalability and both FDD and TDD duplexing methods. The main objectives of our research was the identification of LTE features relevant for the dimensioning, to define the basic models for Access Network Dimensioning to estimate Coverage needs of the infrastructure, the Network Element Count Estimation and the Capacity Evaluation..

**Keyword**—*LTE; 4G; ISP; Network; Dimensioning.*



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