

Assessment of the Energy Efficiency Enhancement of Future Mobile Networks

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Abstract:

We assess the energy efficiency of mobile networks in 2020, and compare it with a 2010 baseline. A comprehensive assessment approach is taken, considering all relevant aspects such as data traffic growth, hardware evolutions, mobile network deployments and operations including network sharing, dynamic switching on/off radio resources. Moreover, in order to show the best technical capacities of mobile networks in achieving energy efficiency in 2020, while meanwhile ensuring a fair comparison with the 2010 baseline scenarios, we apply a realistically appropriate approach for network dimensioning, determining suitable site densities that are in line with up- and downlink coverage and performance requirements. The results show energy efficiency improvement factor of ~793 in 2020 over 2010.