Assessment of the Energy Efficiency Enhancement of Future Mobile Networks

Author(s) - Institution(s):
Haibin Zhang, TNO
Remco Litjens, TNO
Yohan Toh, TNO
Oliver Blume, ALU

Corresponding author email: haibin.zhang@tno.nl

Corresponding WG group: WG3

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.