

Planning Criteria to Improve Energy Efficiency of Mobile Radio Systems

Author(s) - Institution(s):

Marina Barbiroli, UNIBO

Claudia Carciofi, FUB

Vittorio Degli Esposti, UNIBO

Paolo Grazioso, FUB

Doriana Guiducci, FUB

Valeria Petrini, UNIBO

Guido Riva, FUB

Corresponding author email: pgrazioso@fub.it

Corresponding WG group: WG3

Abstract:

The cellular layout of a mobile radio system has an impact on its performance (in terms of both coverage and capacity) as well as on its economical and environmental sustainability in terms of power consumption and of exposure of population to electromagnetic field.

In this paper we study different cellular coverage strategies to identify which solutions better meet the constraints on the above mentioned parameters. Both an idealized, 2D case and a more detailed urban layout case are considered in the work: in the latter case a 3D ray tracing tool is used as propagation mode I. Generally, a trade-off is required to reach the best performance in terms of radio coverage, system throughput and energy efficiency.