

Radiofrequency Electromagnetic Pollution of the Habitat Created by Mobile Communications

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Abstract: The declared intensive development of 5G mobile communications, involving a significant increase in the mobile traffic area capacity and density of sources of electromagnetic radiation in a very wide frequency range can cause an unacceptable electromagnetic pollution of the habitat and a serious threat to public health. Effective management of these processes is impossible without the objective prediction of levels of electromagnetic background created at the implementation of the declared set of 5G scenarios and services. The aim of this paper is to present a practical technique for such prediction. The author has developed a technique for the assessment of integral levels of electromagnetic background created by wireless information services, based on the forecast of the average electromagnetic loading on area created by radiations of spatially distributed base stations and terminal devices of mobile communications. This loading created by 4G/5G systems can be defined on the base of the estimation of average area traffic capacity and available parameters of the equipment and topology of mobile communication networks. The author proposes expressions of acceptable complexity for estimating the electromagnetic background intensity created by stationary and mobile components of 4G/5G systems, and provides calculation results illustrating processes of electromagnetic background generation by these systems in different frequency ranges with different area traffic capacity and different sizes of base stations service areas, confirming the

danger of unacceptable deterioration of electromagnetic ecology of the habitat at the further expansion of mobile communications.

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