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5G Electromagnetic spectrum regime and environmental health ecosystems sustainability

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The widespread adoption of 5G cellular networks has drawn public attention, with some citizens viewing the fifth generation of wireless networks 5G as a threat to public health, believing that electromagnetic field (EMF) exposure is greater than exposure from current 4G networks. Observations on 5G make it difficult for some countries to fully deploy 5G networks into wide scale digital consumption. The 5G electromagnetic spectrum are the ranges of electromagnetic radiative frequencies, wavelengths, and photon energies that a 5G base station can transmit. The 5G electromagnetic spectrum includes electromagnetic waves with frequencies ranging from one hertz to more than 300 gigahertz, corresponding to wavelengths ranging from thousands of kilometres to the smallest fraction in the nearest radius. The digital society reliance on the 5G mobile broadband with extraordinary data rate will require more electromagnetic spectrum to be available in the nearest future. The novel technologies in conjunction with subsisting telecommunication infrastructures will require frequencies for their continual operations. The current research investigated the existing mobile terrestrial radio frequency bands and proposed the trend for the future electromagnetic spectrum rationalization for healthy environmental ecosystem in the ongoing broadband regime intensification. The research provided insight into the 5G mobile spectrum estimation ranging from extreme low frequency (ELF), ultra-low frequency (ULF), low frequency (LF), medium frequency (MF), ultra-high frequency (UHF) and extreme high frequency (EHF). The 5G electromagnetic spectrum compatibility evaluation were provided focusing on existent mobile technologies development below 20GHz where environmental friendly 5G technologies will be established at present. The research established that the radio frequency spectrum as synthetic national resources will become progressively competitive in the future for telecommunication business operations. The paper concluded that the future telecommunication infrastructure development must diminish the influences of electromagnetic frequency radiation for environmental health ecosystem sustainability.

Keywords: 5G Electromagnetic Radiation, 4G/LTE Mobile Communication, Radio Frequency Band, International Mobile Telecommunications(ITU), Internet of Things(IoT), International Telecommunication Union (ITU), Machine-2-Machine(M2M) Communication, Mobile Service Radio Wave Propagation, Spectrum Planning, Non-Ionizing Radiation.

Biography

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