5G

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5G/B5G Key Technologies Enabled High-Speed Railway Communications

Abstract

The 5th generation mobile communication (5G) is the focus of attention for both academic and industry. Multi-scenario, multi-target, multi-technology convergence is an important feature that distinguishes 5G from other generations of mobile communication systems. International Telecommunication Union (ITU), World Wireless Research Forum (WWRF), China 5G Standards Promotion Group IMT-2020, EU 5G Research Organization NGMN and METIS all take high-speed railway or high-speed mobility as an important scene of 5G. High-speed railway is a typical vertical application industry for 5G.

This presentation is going to address the future business and application requirements for high-speed railway development. Firstly, the necessity and scientific significance of 5G/B5G technology will be discussed when the application to high-speed railway system is concerned. Secondly, the differences between high-speed railway dedicated mobile communication system and public mobile communication system will be accessed in terms of communication environment, business requirements and performance evaluation indices. Finally, the applications of 5G/B5G technology for future high-speed railway communication from high-speed railway business model, network architecture, channel model, to reliable transmission key technology will be discussed. Technologies such as millimeter wave communication, large-scale antenna array, ultra-reliable low-latency communication, beam management and other key technologies will be covered.