

# **New Radio Technologies for Mobile Networks: Key Pieces of the 4G+/5G Puzzle**

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## **Abstracts**

This study examines the key radio technologies for mobile networks in the five years to come. 4G evolutions and 5G networks will integrate the major technological innovations described in this report and will allow the use of mobile technologies in unlicensed frequency bands and the support of a huge number of machines with optimised characteristics such as power consumption or reduced device cost.

Improvements in carrier aggregation support will enable mobile operators to fully exploit their spectrum asset and to provide higher data rates to their customers while expanding their network capacity. Improvements in antenna systems will enable higher spectrum efficiency, reduced interferences and operation of mobile systems in frequency bands above 6 GHz.

In the longer term, innovations in 3GPP Release 14 will focus on latency reduction, use of unlicensed spectrum by mobile networks, massive Multiple-Input Multiple-Output (MIMO) antenna use, active antenna systems and indoor positioning.

Further Releases will pave the way for 5G with use of spectrum above 6 GHz, improvements in signalling and control, work on new modulation schemes, 3D massive MIMO, cognitive radios and ultra-dense HetNets.

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