

CBRS & Private LTE/5G Networks: 2023 – 2030 – Opportunities, Challenges, Strategies & Forecasts

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Abstracts

After many years of regulatory, standardization and technical implementation activities, the United States' dynamic, three-tiered, hierarchical framework to coordinate shared use of 150 MHz of spectrum in the 3.5 GHz CBRS (Citizens Broadband Radio Service) band has finally become a commercial success. Although the shared spectrum arrangement is access technology neutral, the 3GPP cellular wireless ecosystem is at the forefront of CBRS adoption, with more than half of all active CBSDs (Citizens Broadband Radio Service Devices) based on LTE and 5G NR air interface technologies. LTE-based CBRS network deployments have gained considerable momentum in recent years and encompass hundreds of thousands of cell sites – operating in both GAA (General Authorized Access) and PAL (Priority Access License) spectrum tiers – to support use cases as diverse as mobile network densification, FWA (Fixed Wireless Access) in rural communities, MVNO (Mobile Virtual Network Operator) offload, neutral host small cells for in-building coverage enhancement, and private cellular networks in support of IIoT (Industrial IoT), enterprise connectivity, distance learning and smart city initiatives.

Commercial rollouts of 5G NR network equipment operating in the CBRS band have also begun, which are laying the foundation for advanced application scenarios that have more demanding performance requirements in terms of throughput, latency, reliability, availability and connection density – for example, Industry 4.0 applications such as connected production machinery, mobile robotics, AGVs (Automated Guided Vehicles) and AR (Augmented Reality)-assisted troubleshooting. Examples of 5G NR-based CBRS network installations range from luxury automaker BMW Group's industrial-grade 5G network for autonomous logistics at its Spartanburg plant in South Carolina and the U.S. Navy's standalone private 5G network at NAS (Naval Air Station) Whidbey Island to Comcast's and Charter's ongoing 5G RAN (Radio Access Network) buildouts

based on strand-mounted CBRS radios and mobile operator Verizon's planned activation of 5G NR-equipped CBRS small cells to supplement its existing 5G service deployment over C-band and mmWave (Millimeter Wave) spectrum.

SNS Telecom & IT estimates that annual investments in LTE and 5G NR-based CBRS RAN, mobile core and transport network infrastructure reached \$900 Million in 2023. Complemented by an expanding selection of 3GPP Band 48/n48-compatible end user devices, the market is further expected to grow at a CAGR of approximately 20% over the next three years to surpass \$1.5 Billion in annual spending by 2026. Much of this growth will be driven by private cellular, neutral host and fixed wireless broadband network deployments, as well as 5G buildouts aimed at improving the economics of the cable operators' MVNO services.

The wider global market for private cellular networks is also continuing its upward trajectory with deployments targeting a multitude of use cases across various industries, ranging from localized wireless systems for dedicated connectivity in factories, warehouses, mines, power plants, substations, offshore wind farms, oil and gas facilities, construction sites, maritime ports, airports, hospitals, office buildings and university campuses to regional and nationwide sub-1 GHz private wireless broadband networks for utilities, FRMCS (Future Railway Mobile Communication System)-ready networks for train-to-ground communications, and hybrid government-commercial public safety LTE networks, as well as rapidly deployable systems such as the German Armed Forces' ZNV (Deployable Cellular Networks) solution, Hsinchu City Fire Department's satellite-backhauled portable 5G network for emergency communications and BBC's (British Broadcasting Corporation) temporary private 5G network used during King Charles' coronation. Custom-built cellular networks have also been implemented in locations as remote as Antarctica and there are even plans for installations on the moon's surface and outer space.

SNS Telecom & IT estimates that global spending on private 5G and 4G LTE network infrastructure for vertical industries will grow at a CAGR of approximately 18% over the next three years, eventually accounting for more than \$6.4 Billion by the end of 2026. As much as 40% of these investments – nearly \$2.8 Billion – will be directed towards the build-out of standalone private 5G networks that will become the predominant wireless communications medium to support the ongoing Industry 4.0 revolution for the digitization and automation of manufacturing and process industries. This unprecedented level of growth is likely to transform private cellular networks into an almost parallel equipment ecosystem to public mobile operator infrastructure in terms of market size by the late 2020s.

Spanning over 3,000 pages, the "CBRS & Private LTE/5G Networks: 2023 – 2030 – Opportunities, Challenges, Strategies & Forecasts" report package encompasses two comprehensive reports covering CBRS and private cellular networks:

LTE & 5G NR-Based CBRS Networks: 2023 – 2030 – Opportunities, Challenges, Strategies & Forecasts

Private LTE & 5G Network Ecosystem: 2023 – 2030 – Opportunities, Challenges, Strategies, Industry Verticals & Forecasts

This report package presents an in-depth assessment of both CBRS and private LTE/5G markets, including the value chain, market drivers, barriers to uptake, enabling technologies, operational and business models, vertical industries, application scenarios, key trends, future roadmap, standardization, spectrum availability and allocation, regulatory landscape, case studies, ecosystem player profiles and strategies. The report package also provides forecasts for network infrastructure and terminal equipment from 2023 to 2030.

The report package comes with an associated Excel datasheet suite covering quantitative data from all numeric forecasts presented in both reports, as well as two databases tracking over 800 LTE/5G NR-based CBRS network installations and more than 6,400 global private LTE/5G engagements.

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