

# Maximize your CBRS Priority Access License

## CBRS PAL auction generates widespread interest

The Federal Trade Commission's CBRS (3.5GHz spectrum) PAL auction recently ended after 271 organizations from 20 of the largest counties bid for over 22,000 available licenses. Major winners included traditional operators, cable companies and non-traditional players like Wireless Internet Service Providers (WISPs) and companies spanning the utility, energy, manufacturing and agriculture industries.

The auction was significant because CBRS can increase an operator's network capacity and its ability to provide wireless internet services to rural homes as well as private networks to businesses.

## CBRS brings cost-effective broadband services to underserved communities

The commercialization of CBRS gives operators the power to deliver affordable, high-speed fixed broadband services to customers in underserved communities.

It allows operators to leverage fixed wireless access (FWA) in rural areas to deliver service from a cell site to rural homes and business via a CPE (Customer Premise Equipment), a small transceiver that provides broadband service to the customer's location. Operators have found that through the use of existing cellular sites, new radios can be added to deliver internet services wirelessly, which is much more cost effective than cable- or fiber-based solutions that require right-of-way access, trenching and other time-consuming and costly operations.

## Samsung CBRS solutions



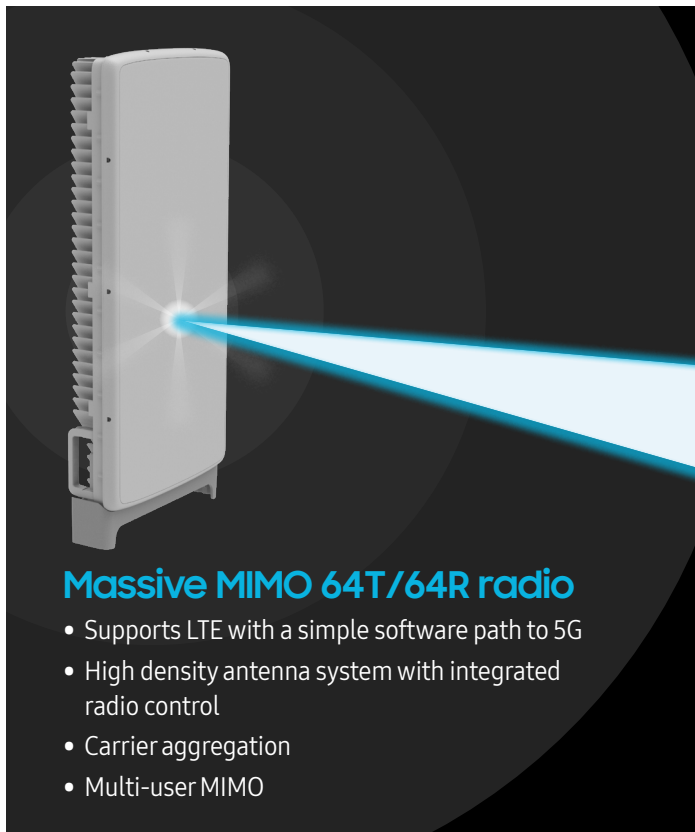
**4T/4R 20W Radio**  
(Pole/Wall/Tower Mount)



**64T/64R Massive MIMO Radio**  
(Tower)

## Samsung CBRS Massive MIMO Radio

Samsung's CBRS solutions provide operators with a fixed wireless access (FWA) approach for rural areas to deliver service from a cell site to otherwise hard-to-reach homes and businesses.



The Samsung CBRS Massive MIMO (Multiple Input-Multiple Output) Radio integrates a radio unit with a 64T/64R antenna array for macro cell-site deployment in the 3.5GHz spectrum band. The Massive MIMO radio uses advanced vertical and horizontal antenna beamforming technology for extremely high-sector throughput, allowing operators to use a single radio as a point-to-multipoint radio source, and effectively serve multiple simultaneous users in the service area with their own signals.

Based on the 3GPP Release 15 standard, the solution will initially deliver multi-carrier LTE, with a software upgrade path to 5G NR for additional performance growth.

Samsung's CBRS Massive MIMO 64T/64R solution can operate over the entire CBRS Spectrum of 150MHz (IBW). It can simultaneously transmit 100MHz (OBW) of spectrum with a combination of contiguous or non-contiguous 10 and 20MHz carriers across the entire CBRS Band (both PAL and GAA) which is un-matched by other commercial solutions. This capability directly improves the performance of the network because every carrier that is included adds to the overall capacity of the network. Carrier aggregation improves the throughput of each device and the overall sector.

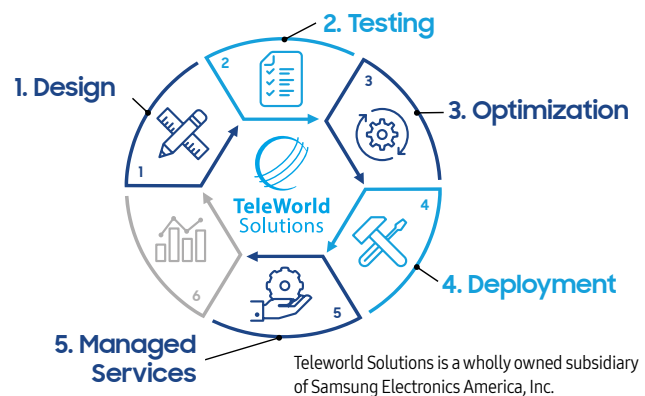
## Samsung's proven deployment experience

Samsung understands the importance of delivering high-quality service and network infrastructure to provide our customers with industry leading wireless network solutions. Samsung's deployment services start the moment the components leave the factory and make their way through our best-in-class supply chain. We offer a full suite of turnkey services from site surveys to installation, integration, commissioning, and optimization.

Samsung has built advanced mobile networks all over the globe, with a focus on technology-forward markets like Korea, Japan, the United States and India. Our extensive experience enables faster project rollouts and stronger deployment capabilities to meet time, quality and cost targets for our customers.

Samsung is continuously working to advance its end-to-end network services offering. As a part of this ongoing effort, Samsung recently acquired TeleWorld Solution (TWS), which specializes in designing and optimizing mobile networks. TWS provides a unique approach to their services by integrating innovation, automation, best practices, and an experienced industry workforce with their service. By using this approach, TWS exceeds in every service it provides, expediting network design, automating network optimization, saving costs through network analysis, and even integrating technology into their network to create efficiency.

### Samsung and Teleworld Solutions provide full-service, end-to-end deployment services



Samsung provides operators with the power to deliver affordable, high-speed fixed broadband services to their customers with CBRS-based solutions.