



How to Deploy a Private 5G Network Fit For a King

The highly anticipated Coronation of King Charles III was a momentous event, and the entire world wanted a front-row seat. Together, Alpha Wireless and Neutral Wireless delivered robust, uninterrupted connectivity across the entire royal procession route with the world's largest temporary private 5G network for broadcast deployed to date, enabling the BBC's global broadcast of this once-in-a-generation event.



The Customer

Neutral Wireless is a modern and multi-faceted wireless communications company with extensive experience in its field. The senior team have worked together for over a decade, building a substantial knowledge base pertaining to FPGA development, Software-Defined Radio, and Private Mobile Networks. They have a proven track-record of advising international companies and government regulators and have consistently delivered on projects across the globe.

Neutral Wireless offer design and integration services for a wide variety of potential use cases. Their “truly-mobile” Lomond Network-In-a-Box can provide a fully operational non-public network in as little as 5 minutes of set-up, making it the perfect pop-up solution for live events and sports broadcasting. Their team of specialized FPGA engineers operate across a myriad of design areas involving AMD-Xilinx hardware and SDR systems: from embedded system and bespoke RFSoc design to the creation of rapid development workflows for streamlined system integration. They also offer professional short courses for training engineers or non-technical audiences.

Location

United Kingdom

The Product



AW3828-E-F

The Challenge

In preparation for the Coronation of King Charles III, the BBC (British Broadcasting Corporation) needed uninterrupted connectivity to capture essential video of the ceremony for a worldwide broadcast. With the procession set to follow an iconic route from Buckingham Palace to Trafalgar Square in Central London, traditional methods such as satellite trucks and cables were impractical. However, the public mobile network infrastructure was insufficient to handle the scale and demands of this monumental occasion.

The BBC contracted Neutral Wireless to establish secure, private 5G communications along the entire procession route to enable an uninterrupted broadcast. To ensure high-quality, real-time media transmission, high data transfer rates and reliability were required, as well as security measures to protect sensitive media content. Yet, the tree-lined route along “The Mall” posed significant technical challenges for network coverage, due to potential line-of-sight issues and unique terrain.



The Solution

To ensure exceptional RF performance and seamless coverage, Neutral Wireless partnered with Alpha Wireless in the deployment of the world’s largest temporary private 5G network for broadcast to date. Alpha Wireless AW3828-E-F directional panel antennas were used to deliver the capacity needed within the extended 3300-4200 MHz (3.5 GHz) frequency bands to provide compatibility with various 5G standards.

The high-performance AW3828-E-F antennas offered high gain and premium coverage throughput, in 33°, 45°, 60°, 90°, and 120° beamwidths for versatility and flexibility. The deployment team used UK LiDAR data models from CloudRF to strategically identify optimal mast positions along the ceremonial route of historical and architectural significance.

With a 65° Azimuth sector design, this solution delivered precision-focused coverage throughout the entire procession route, optimizing signal strength and quality where needed. Robust 4x4 Multiple-Input, Multiple-Output (MIMO) technology maximized throughput, essential for handling the high data loads required for professional broadcast video feed without disruption.

A Remote Electrical Tilt (eRET) feature in the AW3828-E-F solution allowed real-time adjustment of the antenna’s elevation beam — critical for optimizing signal coverage and throughput in the congested environment. Plus, an enhanced tilt range of 0° to 10° enabled precise fine-tuning of the coverage area for uninterrupted connectivity despite line-of-sight challenges.

The Results

Careful planning and deployment allowed Neutral Wireless and Alpha Wireless to overcome unique challenges encountered in establishing the world's largest temporary private 5G network for broadcast covering the coronation ceremony. Strategic placement of antenna masts minimized interference from the tree-lined environment, keeping the signal path clear and uninterrupted. Likewise, placing the masts at strategic positions enabled signal propagation to be maximized, helping to ensure the availability of the substantial bandwidth required for media uploads.



Communications have changed drastically in the 70 years since the last coronation of a British monarch. With the robust, secure, private 5G connectivity provided by Neutral Wireless and Alpha Wireless, BBC journalists were empowered to seamlessly and efficiently deliver global broadcast coverage of the historic Coronation of King Charles III.

Why Alpha Wireless

The Alpha Wireless AW3828-E-F antenna was selected based on exceptional technical capabilities ideally suited to deploying a large-scale 5G network, as well as Alpha Wireless' ability to provide innovative solutions to overcome environmental and economic challenges. With decades of experience in the design and manufacture of quality solutions, and more than 1.5 million antennas installed worldwide, Alpha Wireless specializes in maximizing coverage, capacity, and cost-efficiency. Contact Alpha Wireless to learn how to solve even the most complex antenna and site-related network issues.

We have collaborated with Alpha Wireless for more than 5 years, incorporating their antennas into all our 5G-for-Broadcast projects across Ireland, the UK, Denmark, Kenya, France, and New Zealand. This commitment has garnered us international recognition, as evidenced by winning multiple IBC Innovation and Accelerator Project Awards, and the 2023 EBU Best Technology and Innovation Award."

Cameron Speirs
CEO, Neutral Wireless