CASE STUDY LA-RICS

Flexible Antennas for FirstNet® / LMR

Image courtesy of Los Angeles Sheriff

RELIABLE AND ACCURATE NETWORK PERFORMANCE ADVANCES MULTI-AGENCY PUBLIC SAFETY COMMUNICATIONS

"A unified, regional voice and data system to provide public safety responders with unparalleled, interoperable communications and mobile capabilities" is the vision of the Los Angeles Regional Interoperable Communications System (LA-RICS). Formed and operated by the County of Los Angeles and 23 municipalities, the LA-RICS network consists of a Land Mobile Radio (LMR) system and 4G LTE network (FirstNet®). The FirstNet Nationwide Public Safety Broadband Network is critical to advance the way public safety personnel respond to incidents, close cases, and protect communities.

With 74 fixed and mobile transmission towers covering more than 4,000 square miles, and various technologies co-located in the same vehicle, LA-RICS knew their antenna systems needed to address:

- RF signal interference between the existing LMR and multi-carrier LTE network channels.
- Global Positioning System (GPS) tracking function accuracy and reliability.
- Topography coverage complications.

PCTEL

WORKING TOGETHER TO IMPROVE OPERATIONAL PERFORMANCE

With a history of working together, LA-RICS approached PCTEL to address challenges with the 4G LTE public safety broadband network. After a thorough review of the system's goals, PCTEL presented a comprehensive proposal that included cost-effective, RF-system planning and installation and a radio-agnostic antenna solution.

Side-By-Side Comparison Win

LA-RICS performed a comparison of PCTEL's antenna proposal and an alternate antenna supplier's proposal. The review revealed shortcomings in the durability, construction, and RF performance of the alternate proposal. In contrast, PCTEL's Trooper™ antennas were positioned as the right choice due to their RF and mechanical properties, product customization, warranty policy, competitive pricing, and the company's technical support and industry-wide brand acceptance.

The Right Vehicle Antenna

Meeting the public safety industry's environmental specifications for vehicular applications, the state-of-the-art, multiband Trooper 4G LTE antenna platform was used to connect LA-RICS modems to the LTE system. This low-profile, rugged antenna offers optimal 4G LTE cellular coverage, multiport 802.11ac MIMO add-in options for Wi-Fi/Bluetooth connectivity, vehicular hotspot network support, and a narrow footprint.

High-Rejection GPS Technology

Knowing where vehicles are located is critical to LA-RICS' operations. PCTEL's GPS multiband antennas feature proprietary high-rejection technology that effectively prevents nearby antennas from interfering with GPS sensitivity and performance. The result is reliable tracking of vehicles and assets, during RF-intensive public safety operations.

Optimized Antenna Placement

To ensure the antennas operate at peak performance, PCTEL provided RF modeling and layout services to determine optimal antenna placement on the rooftops of popular public safety vehicles, such as the Ford Police Interceptor®. For each model, the best antenna placement was identified for maximum system gain, radiation pattern symmetry, isolation among multiple frequencies, and overall network efficiency.

Customized Installation Efficiency

Managing multiple coax cables leading to multiple antenna systems within the vehicles was critical. In any vehicle, there can be 16-20 cables, including the 4G LTE router with up to eight antenna ports, LMR radio with four ports and space for redundant or future antenna ports. LA-RICS recognized the opportunity for costly installation errors with all of these connections, which could lead to system failure and removal of a vehicle from service. PCTEL addressed this challenge by providing two separate antenna colors and detailed technology labeling to facilitate the installation process and reduce potential errors.

Successful Antenna Solution

The Los Angeles County Sheriff's Department confirmed that the thousands of PCTEL antennas installed were keeping operations running smoothly. The Trooper platform operates in VHF, UHF, 3G/4G LTE, and GPS bands that encompass 66 UHF T-band sheriff radio channels, providing the performance the agency needs to support public safety.

Network Supports Rose Parade

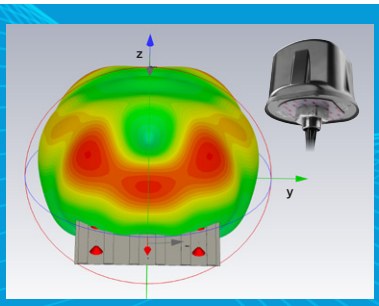
In February 2017, an LA-RICS press release highlighted how the network operated during the Tournament of Roses Parade. "We saw outstanding performance from the LA-RICS system at the Rose Parade this year, helping a broad coalition of public safety responders do their jobs more efficiently," said John Radeleff, LA-RICS Interim Executive Director. "The long parade route, large crowds, and high-profile event provide a unique challenge for public safety, and this network served as a key asset to help public safety fulfill its mission to keep the 750,000 attendees safe."

WIRELESS EXPERTISE

As a leading manufacturer of wireless antenna solutions, PCTEL's engineering team leveraged their extensive expertise in RF design to solve LA-RICS' complex 4G LTE requirements. Trusted by public safety agencies, we help organizations build reliable and effective connections between devices, people and places.

4G LTE MULTIBAND ANTENNA

Trooper™ antenna has a narrow footprint that easily accommodates rooftop placement restrictions on popular police vehicles.



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Learn how PCTEL can help you with your LMR and FirstNet antenna requirements at:

> pctel.com/antenna-products