



Custom Antenna Design

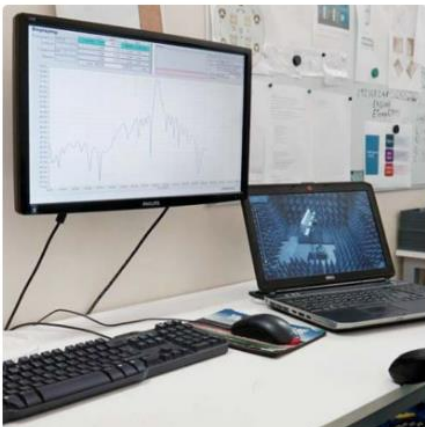
Overcome your wireless network challenges with custom antennas from Alpha Wireless.

[Talk to the Experts](#)



One Size Doesn't Fit All

Each network has unique needs, topography and customer requirements. We listen to you, understand your challenges and recommend the best antennas for the job. If we don't have the antenna you need, we'll design it from whiteboard to prototype in 90 days.

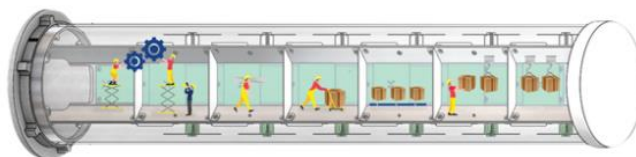


Confidence to Deploy New Technology

We've been designing and delivering antennas globally for more than 15 years. If you're building or expanding a network using technology that's new to you, having a partner with extensive experience and the ability to deliver the exact antennas you need saves you time, money and headaches.

Customization Keeps You Competitive

Operators today need every possible edge to leverage spectrum, deliver reliable service and reduce costs. As urban areas become more congested with businesses, people and RF, it is important think creatively about options. Bring us your ideas; we're all about innovation.



Custom Antenna Projects

Massive MIMO

Massive multiple-input/multiple-output (MIMO) technology includes multiple antennas to increase capacity, density, and spectrum efficiency in 5G wireless cellular networks. Alpha Wireless created custom antenna designs in the 3.5 GHz band for a Tier-1 customer and several other customers. ✕

Massive multiple-input/multiple-output (MIMO) antennas are a popular choice for 5G networks, optimizing spectrum and increasing capacity and density. Antenna technology is constantly evolving. The latest MIMO antennas have 32 or 64 ports, and they are typically integrated with OEM radios.

The radiating elements are spaced at 0.5λ to facilitate beamforming. Beamforming is the practice of focusing a signal in a specific direction rather than in all directions. Beamforming facilitates more direct communication between the transmitter and receiver, resulting in a stable, reliable connection and faster data speeds.

Massive MIMO antennas include complex calibration networks and filters that require close collaboration between the antenna vendor and the radio vendor.



Streetscape Solutions

Congested downtown areas have strict zoning and planning requirements that make it difficult to get approvals for antenna placement. Yet full coverage for 5G networks is best with multiple nodes close to users. Operators are easily getting approvals using Alpha Wireless antennas. Alpha antennas have the smallest form factor on the market and blend seamlessly with dedicated smart poles, light poles, smart bins and other street furniture. ✕

Streetscape solutions are urban wireless network installations that enable operators to blend 5G antennas into the normal streetscape. This makes zoning and planning approvals much easier to obtain. Antennas configured this way deliver targeted in-fill coverage and capacity at the street level and reach where macro solutions cannot.

The solutions come in many forms, and innovative operators are constantly coming up with new ideas. Smart light poles, traffic lights and smart trash bins are already in use. Here are two examples.

A Smart Pole Solution in Frankfurt

G and G Stadtsysteme, a Ligman Evolve distribution partner in Germany, brought together Telefonica, which needed antenna locations for its urban 4G/5G rollout program, and Mainova, which owned the street lights in the city's center. Telefonica needed to satisfy the city's planning and zoning requirements by minimizing the visual impact of its installations.

The solution was to combine light pole and antenna functionality in one installation using Ligman Evolve's Smart Pole solution. Alpha Wireless makes the smallest-diameter cannister antenna on the market, and it is similar in diameter to the Smart Pole. Adding the antenna to the top of the smart pole and concealing the radios inside created the discreet solution Telefonica needed. The solution reduced urban clutter and minimized deployment time.

The pole conceals the macro radios delivering 1800 and 2600 MHz in the podium sections of the pole. The Alpha Wireless AW3833-S cannister antenna is mounted on top of the pole in the same color as the pole. In this installation, G and G Stadtsysteme intentionally used 3.5 GHz antennas to better understand the frequency band.



A Smart Bin Solution in Dublin

Bigbelly Smart Waste & Recycling has installed its Telebelly smart waste solution in Dublin. Telebelly offers solar-powered trash and recycling bins with battery storage that compact waste to hold 5x what fits in a normal bin. All waste is contained in the bin for better aesthetics, and the “smart” bin notifies the city when it’s time for collection.

The bin doubles as a location for wireless network equipment and antennas. In an installation such as this, space is at a premium, so Bigbelly chose Alpha Wireless antennas. The small form factor of the Alpha antennas and Alpha’s willingness to customize makes Alpha antennas ideal for this urban application.

The smart bins check all the boxes as locations that can contribute to establishing ubiquitous 5G service – close to the user for dependability, frequent placement for signal strength and planning and zoning-friendly for good aesthetics and fast and simple installation.



“Alpha Wireless has solutions that enhance our ability to deliver custom solutions to our customers. We value the willingness of Alpha Wireless to work with our team to design non-standard solutions to meet our customer needs.”

Colin Cunningham, Cellnex, Portarlington, Ireland