

Antenna Design Services

Plextek are an engineering design consultancy specialising in wireless and sensing technologies. We provide our customers with competitive advantage by supporting their product design roadmap. Our broad capability set complements your in-house team to deliver technically challenging advancements, while minimising risk. Our antenna team can apply their specialism to your problem or challenge, so you get the benefit of creative problem solvers with exceptional technical ability.

Here are some examples where we have applied our understanding of antenna design to benefit our clients:

1. We have produced multiple antenna systems for secure military mesh applications, where utilising beamforming in a single transmission direction the quality and safety of service is improved, even as increasing numbers of nodes join the network.
2. Working with a vehicle telematics company, we re-designed their cellular antenna to become integral to the existing PCB, optimising the ability to manufacture at large volumes whilst dramatically reducing costs. This demanded careful consideration of the destined environment and device placement, which were challenging requirements.
3. For a satellite application, we 3D -printed a complex waveguide antenna array in aluminium, which provided increased performance, whilst reducing the overall size, weight, and cost.
4. We designed and integrated antennas into the fixed wings of an unmanned aerial vehicle platform, taking account of the platform's existing functionality and materials to maximise the antenna's gain and bandwidth, as well as controlling its radiation pattern.

Our expertise includes the following:

- Design and modelling through to and including manufacture
- Propagation modelling and propagation surveys in complex environments (e.g. ground wave, surface wave, ionospheric propagation, tropospheric propagation, urban and suburban propagation, cellular propagation, indoor propagation, two-ray propagation, ground reflection coefficient)
- Complete spectrum understanding: HF, VHF, UHF, microwave frequencies, mm-wave frequencies, narrowband, wideband and multiple-frequency single antennas
- Electronic scanning, phased arrays, frequency-scanning and leaky-wave technologies
- Waveguide, substrate integrated waveguide (SIW) and microstrip technology
- 3D electromagnetic simulation using finite-difference time-domain (FDTD using SEMCAD X) method and Method of Moments (MoM using FEKO)
- RF Testing using Spectrum Analysers, Vector Network Analysers, Signal Generators and Power Meters
- NFC integration
- PCB design, including chip antennas
- 5G technologies: OFDM, Massive MIMO & cross-layer processing

About Plextek

We have a 30 year history of providing technology solutions to a variety of organisations and industries. Plextek understands today's key challenges for smarter technology development and can generate both the ideas and deliverable solutions to the assured level of security, performance, resilience and ergonomics that you need. We are a product development & consulting company that works with clients to achieve results based on their specific requirements. Our engineering experience, supported by our library of IP for key technology elements, aids accelerated time to market and greater cost effectiveness.

Contact

If you are interested to know more about how Plextek can help you achieve your technology goals, please contact hello@plextek.com to discuss your objectives further.

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