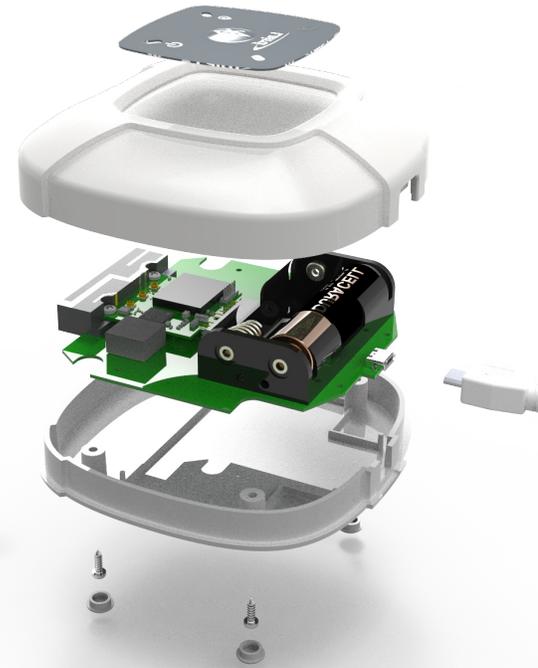


5

Things to look for in a Custom Antenna Manufacturer



Why Choose a Custom Antenna?



Maximum Performance

Lower Cost Solutions



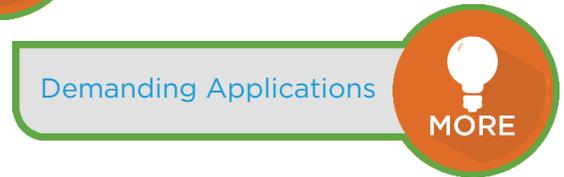
Custom Multi-Band Capabilities



Specific RF Performance Requirements



Custom Mechanical Requirements



Demanding Applications

Custom Antenna Design and Manufacturing

The demand for customized antennas is growing as the IoT (Internet of Things) market is exploding. According to Forbes, the global IoT market will rise from \$157B in 2016 to \$457B by 2020. As IoT grows, companies with little or no experience in radio frequency design will need to add wireless connectivity to their products. "Antennas will play a huge role in the growth of IoT as market growth demands antennas in smaller spaces, at lower costs, and with increased performance," according to Kelly Hill, in a recent RCR Wireless report.

As the demand for smaller antennas that support multiple frequencies and wireless technologies (Wi-Fi, Bluetooth, Cellular) increases, so will the demand for custom antennas that provide specific performance and coverage that can't be found in an off-the-shelf antenna. Antenna design and manufacturing are complex processes. Finding the right antenna design and manufacturing company to partner with is critical to the success of your wireless product. This guide provides five key capabilities to look for in a custom design and manufacturing company.



1

World Class Support - From Design to Finished Product.

Look for an experienced, integrated support team of industrial designers, antenna designers, and project managers.

As important as the manufacturing capabilities of a potential antenna manufacturing partner are, having a world class, experienced support team is critical. The team must be capable of optimizing the shape, performance, size, cost, assembly, and desirability of the final product. They should employ experienced mechanical/industrial designers that understand the spatial and material challenges unique to antenna performance and manufacturing, not just standard enclosure designs. The team must also understand where the product will be sold and the various regulatory bodies that control frequency spectrum, allowable output power, and testing requirements.

Working with an integrated support team is critical throughout all the stages of design, validation and manufacturing. Even when your product is prototyped and has final engineering and material specifications, having design, manufacturing and material engineers working together throughout the whole process will enable your antenna to move smoothly into production, saving you time and money.



2

State-of-the-Art Simulation Tools

Designing and optimizing the performance of your antenna for your specific application, with the efficient use of time, will require state-of-the-art simulation tools.

The antenna design team will need to utilize 3D simulation software for fast design iterations and simulations. The software should include the latest AI (artificial intelligence) capabilities to ensure that the antenna design is as small as possible for the required performance. Designers will use these simulation tools to address challenges such as gain, pattern regulatory restrictions, efficient matching to the radio system, as well as environmental and mechanical requirements.



3

Rapid Prototyping

The earlier in the antenna design process critical measurements and prototypes can be produced, the faster the final product can be produced successfully.

Rapid prototyping requires having all the necessary machinery, preferably a full machine shop, to quickly fabricate scale models of antennas, using three-dimensional, computer aided design (CAD). Whether the antenna ends up on a printed circuit board (PCB) or connected separately, 3D printing capabilities are necessary to ensure the fastest prototyping possible.



4

On-site Testing and Verification

A design and manufacturing company that can test and verify 3D antenna performance and regulatory compliance in-house will save critical time, avoid delays, and ensure your antenna exceeds all performance expectations.

A top-quality design and manufacturing partner will have the latest performance testing equipment, including on-site 3D antenna test chambers, network analyzers, and power testing equipment. These 3D chambers can characterize antenna parameters such as radiation patterns, gain, efficiency, correlation and diversity gain, as well as polarization purity and S-parameters. This ensures that interference from other wireless communications will not degrade the performance of the antenna and the associated wireless device.



5

Proven, Competitive, High Volume Manufacturing Capabilities

Choose a contract antenna manufacturer that has a proven track record of success, experience with your volume requirements, and can scale with your needs.

The best antenna designs are useless if the final product can't be manufactured at a competitive price with the highest quality. Repeatable antenna performance in a production environment requires a stable design, proven manufacturing process, and end-of-line test equipment for performance verification. Look for documented assembly processes, as well as test equipment including low PIM test stations and antenna test chambers.

Choose a company that provides quality assurance with innovative end-of-line testing methodologies. You should verify any overseas facilities and additional partnerships follow the legal policies of that region and have confidentiality agreements in place.

Your project can't move forward successfully if the manufacturer you choose can't provide products in the time frames you need or are too expensive. Verify what their average lead time/turnaround is, as they must meet your lead times and pricing requirements without sacrificing the quality you require and expect.

Learn What Laird Can Do for You

Laird is a world leader in custom antenna design and manufacturing – a custom antenna supplier for many of the world's leading brands. Laird offers state-of-the-art, turnkey OEM custom design services for a wide variety of antennas in frequencies from 30 MHz to 40 GHz. Learn more about how Laird can design and manufacture the best antenna for your wireless device, and how to contact us for more information at:

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