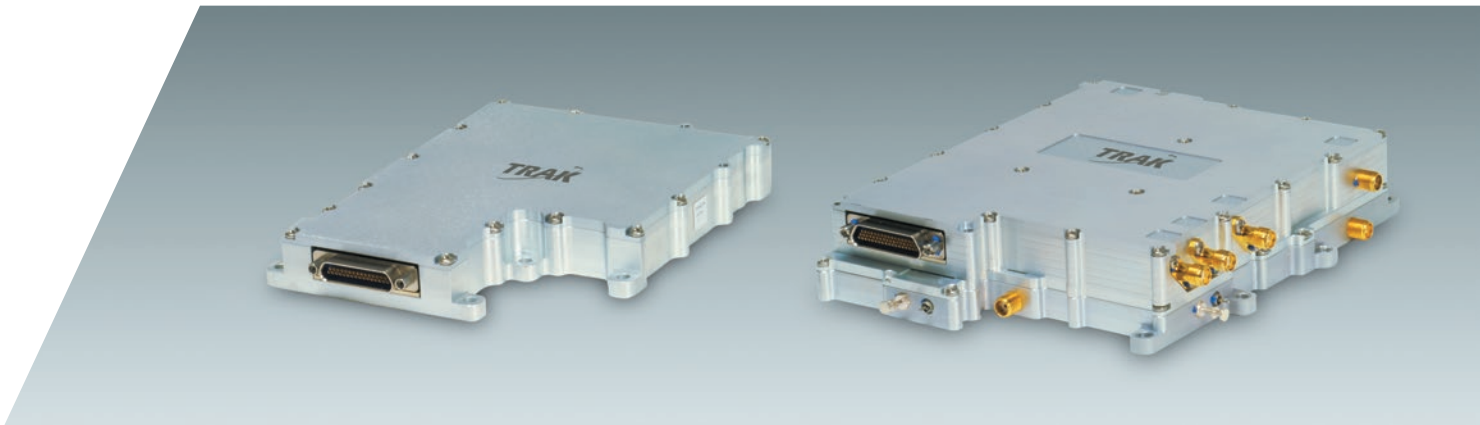


Keys to Choosing the Right Integrated Microwave Assembly Partner for the Future



In our personal lives, we look for the best partners to help us succeed — physicians, financial advisors, insurance agents, contractors, etc. We look for experience, ability, honesty and a cooperative attitude. The process is the same with key partners in business, such as an IMA provider that will be responsible for a big part of your latest development program.

As Size, Weight, and Performance (SWaP) issues drive more and more of today's platform design decisions, supply chain managers and engineering directors alike must see further into the future on the issues that will determine ultimate success. With IMAs, decisions around the microwave and digital transmit/receive functions in your block diagram are critical. Should you design separate TX and RX modules, or one transceiver?

Where should the crossover between the analog and digital transmission be? Many of those issues will be in the hands of your IMA partner, who must apply a unique combination of in-depth experience and the ability to achieve creative solutions for new design requirements. Make sure your company is working with the right partner.

Selecting an IMA partner

Modern defense, satellite and aerospace systems increasingly rely on integrated microwave assemblies, which means that IMA supplier companies assume responsibility for the larger portion of the overall system. As you make the important choice for a partner, consider these important questions:

Have they have asked the right questions? Your IMA partner needs to know you as much as you need to know them. They need to understand your overall system design philosophy, not just the technical specifications of their part of the project.

Have you asked these important questions of yourself: Are you looking for design expertise or a factory, a partner or supplier, design and manufacturing or just build-to-print with a little added value? Partners come in all shapes and colors; understanding who you are first will allow the most logical partners to stand out.

Does the potential partner have a robust center of excellence for design, test, and assembly? Have they

demonstrated a convincing commitment to operational excellence at-large? The development of an integrated assembly typically requires a number of different technologies, some of which may require a company to stretch beyond its historic capabilities. The ability to accomplish these new engineering tasks is a measure of a company's commitment to quality.

Is this a mixed signal subsystem? Don't assume that a potential partner with extensive analog experience can simply add on the digital functions, or vice versa. Design/performance tradeoffs such as the frequency conversion scheme and the point in the signal chain where analog-to-digital conversion is implemented are best decided by a team that has collaborated before and has in-house expertise in both core disciplines.

Is your partner's competence maintained as the design moves from the device level, up the block diagram from the microwave circuits to the digital circuits and software? Do they thoroughly understand the full range of tradeoffs that can be explored to achieve an optimal solution?

Looking deeper...

Every manufacturer of high performance electronic equipment will have established competence in a few specific areas. For example, among the engineering capabilities at TRAK Microwave Corporation, expertise in microwave ferrites, frequency control and timing technologies

stand out as its greatest engineering strengths. In manufacturing, TRAK has well-established methods for high reliability and high quality, including experience with hi-rel space systems, automated assembly and multilayer circuits. While these assets are visible evidence of the company's capabilities, the demand is steadily growing for the design and manufacture of assemblies that encompass multiple technologies and further refinement of current capabilities.

TRAK's experience with frequency source, control and timing circuits includes in-depth understanding of low-noise design, spectral purity and precision measurements. This knowledge can be leveraged for more than just frequency generation circuits, applying also to amplifiers, filters and other supporting circuits. There is a direct engineering path from these fundamentals to additional capabilities that may be needed for up/downconverters, modulators/demodulators, power amplifiers—or entire multifunction receiver, transmitter and signal processing systems.

At the assembly level, this core design knowledge is added to manufacturing experience and applied to power integrity, thermal management, shock and vibration performance, electromagnetic compatibility (EMC), and all the other issues that take on greater importance across the multiple functions in an IMA.

Growing the IMA relationship

This note is intended to help identify the characteristics that make up the right IMA partner for your company's next development project. Asking the right questions and evaluating the answers will lead you to the best choice for this critical partnership.

As you reach a conclusion, a final consideration is the future of the relationship. Do you have confidence that your IMA partner will take the new capabilities developed for this IMA project and use them to build greater depth of knowledge for the next one?