

# Wireless Modules: Cut Costs, Time and Risk

## The Rise of Wireless Technology Solutions

Wireless connectivity is becoming increasingly common with a variety of technologies available to satisfy a broad range of connectivity needs. The cost of wired installations and relative convenience of comparable wireless solutions continue to drive the deployment of more and more wireless devices; however, while the popularity of wireless technology continues to grow, it remains a highly technical subject requiring considerable competence and expertise. To address this, wireless technology vendors have worked to introduce tools and services to reduce wireless development time and risk. The rise of wireless modules is one example of how vendors are making wireless solutions more accessible to developers and adding value through hardware and software.

## Wireless Modules

Wireless modules are proven technology “building blocks” that can be assembled into an application quickly and without RF expertise, greatly reducing development time and overall project risks. Users are no longer required to possess a strong understanding of RF engineering principles or manufacturing experience. This in turn frees their time to focus on other aspects of application development and deployment.

## Benefits of Wireless Modules

- *Reduced Time-to-Market:* By providing developers with a complete, ready-to-deploy solution, wireless modules can significantly reduce the time required to deploy wireless technology into an application.
- *Reduced Development Expense:* Wireless technology development requires significant capital investment that can make per-unit prices more expensive than module solutions outside of very large volumes.
- *Inherited Certification Testing:* For wireless modules that are pre-certified with regulatory bodies such as the FCC, developers can inherit the certification and reduce testing time and overall expense.
- *Simplified Manufacturing:* Wireless modules typically ship to developers pre-tested and fully calibrated, eliminating the need for expensive and highly specialized RF test and calibration tools.
- *Reduced Development Risk:* By using a proven wireless module solution, developers do not need to guess what RF performance will be, or if it will pass regulatory testing.
- *Stable Hardware Platform:* For those doing custom code development with wireless technology, modules deliver a sound and stable hardware platform from which to work.
- *Technology Maintenance:* Module solutions are routinely improved with additional features through firmware releases, reducing the maintenance cost of applications.
- *Protocol:* Developers benefit from a simplified interface to standard and proprietary protocols.
- *Easy-to-Use:* Effective wireless module solutions employ simple interfaces (UART, SPI, etc.), making it easy to include them in applications.

*“We’ve been creating alternative energy solutions for more than 20 years, so we understand wind power.”*

*“When we needed a solid wireless solution, we considered a number of options. Going with a Digi module saved us time and money, allowing us to focus on our passion: developing Wind Energy solutions that are needed now more than ever.”*

*– Paul Thomas of Southwest Windpower.*

### Selecting the Right Module Solution

Not all modules are created equal. An effective module solution should provide a user with all the features desired in an application, yet also be easy to configure and deploy. It should be manufactured to a high standard and deliver stable performance across a variety of environmental conditions; however, some module providers compromise on features, components and quality. When evaluating different RF module solutions, consider the following:

- Does the module include an antenna or antenna connector, or will you need to include this in your application?
- Do module specifications reflect real-world experience (e.g., is module current draw accurately reflected)?
- How is transmit (TX) power measured? Does the module provider include antenna gain in TX power specifications?
- Does the module come with the appropriate regulatory certifications for your application? Examples include FCC (USA), IC (Canada), ETSI (Europe), C-TICK (Australia), Telec (Japan) and others.
- How does the module perform across different environments (e.g., over temperature)?

For more information on how module solutions can be leveraged in your application, contact Ember or Digi International today.

*“Flexibility and reliability are critical to our applications.”*

*“To optimize natural gas production our wireless I/O units are used to monitor and control multiple gas wells from a single controller. When cold nights and frost threatens to damage millions of dollars of crops, our wireless sensors are critical to the irrigation control and frost prevention system. Digi wireless modules are available in a variety of configurations, so we can select and deploy the right wireless solution quickly. And because it’s from Digi, we know it’s reliable.”*

*– Louie Kalman of G3 Technologies.*

- Time to Market
- Reduced Development Expense
- Easy-to-Deploy
- Certifications
- Proven Hardware
- Flexibility
- Reduced Risk



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