

# Embedded Radio Module for Data Link Applications

Product Concept



A low power embedded radio module based on reconfigurable system-on-a-chip (SoC) technology that enables cost-effective tactical machine-to-machine communications between sensor systems and remote infrastructure systems.

## Your Challenges

Do you face any of these challenges developing an “unmanned sensor system” for operation in a tactical environment?

- You need to send the data collected by distributed remote sensors to a centralized infrastructure system using an existing or custom RF front-end
- You need to transmit or receive data collected by remote sensors to a gateway or data collection system via wireless RF link
- You have significant constraints on size, weight, and power
- Your platform needs to operate in a harsh environment
- You have custom RF, processing, I/O or software requirements that cannot be met by traditional COTS suppliers
- You need critical waveform components to make your application work

## Spectrum's Solution

Spectrum can customize its embedded radio module technologies to help you overcome your data link connectivity challenges:

- Single card “IF-to-Ethernet” solution: Bridge between the analog IF of your existing RF front-end with an IF frequency of 70 MHz and your remote sensors Ethernet interface to provide a data link of up to 10.71 Mbps back to the centralized infrastructure.
- Single card “RF-to-Ethernet” solution (optional): Spectrum can tailor its embedded radio modules to act as a wireless adapter to operate in the military Ultra High Frequency (UHF) (225 – 400 MHz), L-Band, Ka-Band, or X-Band frequency range. Insert this transceiver into your remote sensor package and connect to your existing power amplifier, LNA and antenna assembly to provide a data link of up to 10.71 Mbps back to the data collection system.
- The single board radio module is designed to draw less than 15 watts combined for RF, IF, and baseband signal processing
- Operate at temperature ranges from -40 to 70 degrees C and altitudes of up to 40,000 ft with shock and vibration tolerance
- Modular hardware and software architecture that can be rapidly customized to meet your specifications in as little as 90 calendar days
- Spectrum’s solutions can include components specific to STANAG 7085, and other data link waveforms such as an OQPSK modulator/demodulator, a convolutional encoder and a Turbo decoder

## Description

Spectrum’s embedded radio module technologies can be tailored specifically for wireless data link applications. Spectrum offers single-card solutions to support black-side (IF-to-Ethernet) digitization and processing of complex waveforms requiring low latency deterministic operation to maintain synchronization on a time synchronous network. The solutions can be conduction-cooled for rugged configurations and support a single IF input/output channel, an internal or external 10 MHz reference or high-speed sample clock, Gigabit Ethernet, RS-232 and JTAG connectivity. The rugged configuration is size, weight, power, and cost optimized for production deployments in harsh environments. See Figure 1 for a concept of operations.

For details on other embedded radio module options, please refer to the SDR-4800 family datasheet at [www.spectrumsignal.com/products/soc/sdr\\_4800.asp](http://www.spectrumsignal.com/products/soc/sdr_4800.asp).

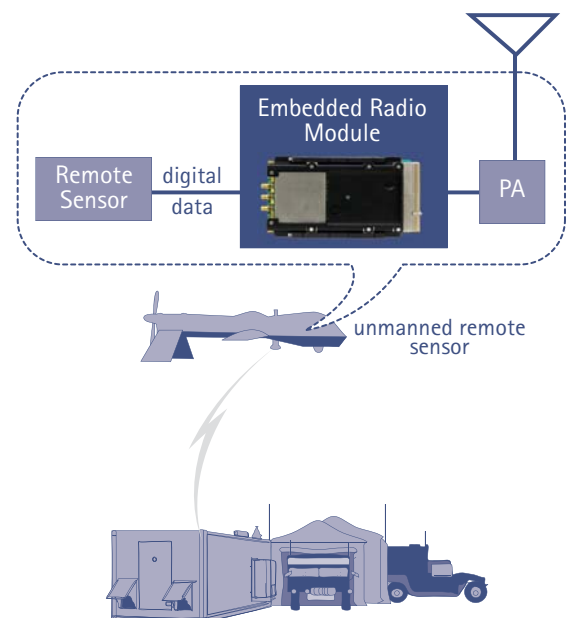


Figure 1. Concept of Operations

This is a product concept based on an application reference design. To determine the configuration and performance that best matches your application, please contact Spectrum Sales. Spectrum reserves the right to change the specifications without warning until final product is available.

