

## **Functional Description, ThermaNode**

The ThermaNode is a wireless, ISM band (2.4 GHz) short range device used to collect temperature sensor information and relay it, via the wireless network, to a gateway device for collection and analysis. It consists of an alkaline battery case to provide power, a radio transceiver module, a microprocessor, an onboard temperature and humidity sensor, and an expansion connector to allow one to six optional external thermistors (temperature sensors) to be connected.

Transmissions are in the 2.4 GHz ISM band, DSSS, 0dBm, using O-QPSK modulation. 16 channels are available to the system, located between 2404.6 and 2479.65 MHz, and are selected automatically by the system using a frequency hopping algorithm.

Regulatory compliance is achieved by means of a single-chip transceiver. No external components are required with the exception of a 16 MHz crystal, specified by the manufacturer of the transceiver, and an antenna-matching network. The antenna matching network was adopted from the manufacturer's reference design which has been previously proven to be compliant. There are no components which can be adjusted, changed or substituted in the transceiver circuit. In addition, the antenna is printed on the same PCB as the radio transceiver, and cannot be altered. No external antenna option is available for this unit.