

## **A110LR09x Radio Module Theory of Operation**

The A110LR09A and A110LR09C are for low power wireless applications in the European 868 – 870MHz, and US 902 – 928MHz ISM band. The devices can be used to implement a variety of networks, including; point to point, point to multipoint, peer to peer and mesh networks.

The A110LR09A and A110LR09C both interface to an application microcontroller via an SPI bus. Physical and MAC layer functionality are accessed via the SPI bus through addressable registers as well as execution commands. Data received, or to be transmitted, are also accessed through the SPI bus and are implemented as a FIFO register (64 bytes each for Tx and Rx).

To transmit, a frame of data is placed in the FIFO; this may include a destination address. A transmit command is given, which will transmit the data according to the initial setup of the registers. To receive data, a receive command is given, which enables the unit to “listen” for a transmission; when such a transmission occurs, it places the received frame in the FIFO. When neither transmit nor receive is required, the device can enter either an Idle mode, from which it can quickly re-enter a receive/transmit mode, or a low power sleep mode from which a crystal startup is required prior to transmit or receive operation.