

## Operational Description

The heart of the 1322x Network Node is Freescale's MC1322x 99-pin LGA Platform-in-Package (PiP) solution that can be used for wireless applications ranging from simple proprietary point-to-point connectivity to complete ZigBee mesh networking. The MC1322x is designed to provide a highly integrated, total solution, with premier processing capabilities and very low power consumption. The MC1322x MCU resources offer superior processing power for ZigBee and IEEE 802.15.4 applications. A full 32-bit ARM7TDMI-S core operates up to 26 MHz. A 128 Kbyte FLASH memory is mirrored into a 96 Kbyte RAM for upper stack and applications software. In addition, an 80 Kbyte ROM is available for boot software, peripheral device drivers, standardized IEEE 802.15.4 MAC and communications stack software. A full set of peripherals and Direct Memory Access (DMA) capability for transceiver packet data complement the processor core. The RF radio interface provides for low cost and high density as shown in [Figure 3](#). An onboard balun along with a TX/RX switch allows direct connection to a single-ended  $50\text{-}\Omega$  antenna. The integrated PA provides programmable output power typically from -30 dBm to +2 dBm, and the RX LNA provides -95 dBm sensitivity. This solution also has onboard bypass capacitors and crystal load capacitors for the smallest footprint in the industry. All components are integrated into the package except the crystal and antenna.

Augmenting the core device on the Network Node are:

- Low-cost 2.4 GHz ISM Band radio
- 2.0 USB connection
- User interface with pushbuttons, LEDs and 128x64 pixel graphic LCD
- Versatile power sources and management
- Debug / development ports
- Audio subsystem
- GPIO connector for system expansion

  

- The antenna supplied is a Titanis 2.4 GHz (Part number 2010B6090-01) with 4.4 dbi gain, 50 ohms and 4.4 dbi gain in the 2.4-2.5 GHz band