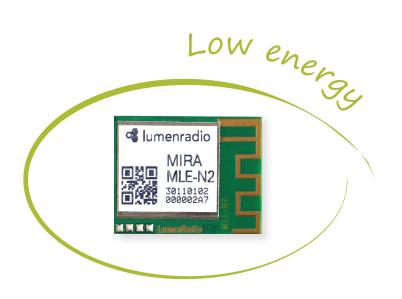# MLE-N2

MIRA LOW ENERGY RADIO MODULE

The LumenRadio **MLE-N2** (Mira Low Energy) module is a small size, cost efficient, industrial grade, multi standard radio module, designed for high volume production of products without the need of an external antenna. MLE-N2 is based on the Nordic Semiconductor nRF52840 and features a powerful ARM Cortex M4 microcontroller with a dual radio for Bluetooth based standards and 802.15.4 based standards. MLE-N2 is optimized for low energy applications built on MiraOS and the MiraMesh radio stack.

The MiraOS, MSS (Multi standard support) feature will allow concurrent operation of MiraMesh and Bluetooth v5.0 and NFC. This feature provides reliable mesh networking through MiraMesh with concurrent support for easy commissioning, local control and user interaction over Bluetooth v5.0/NFC using a smartphone or tablet. Ultra-low energy consumption allows for battery-powered products or energy harvesting operation. MLE-N2 is an SMD module and thanks to its small footprint it can easily be integrated into any product.

Low energy

FEATURES

- Based on Nordic Semiconductor nRF52840 chipset
- Up to 8dBm configurable transmit output power
- -95dBm receiver sensitivity
- 103dB link budget
- On board antenna
- NFC-A support
- -40 - +85 °C operating temperature
- ARM Cortex-M4F at 64MHz operation
- 1MB flash and 256kB RAM
- 1.7 VDC - 3.6 VDC operation
- AES 128-bit ECB/CCM/AAR hardware accelerator
- 12bit ADC, SPI, I2C, UART, PWM, USB 2.0, GPIO
- Pre certified for Europe (ETSI RED), US (FCC/CFR 47 Part 15 unlicensed modular transmitter approval)*, Canada (IC RSS)*
- 19,0 x 15,2 x 2,2mm footprint

KEY FEATURES WHEN USED TOGETHER WITH MIRAOS

- Ultra reliable and scalable meshed network
- IPv6 support
- High-precision time source (<50 μs clock throughout the network) for exact time stamping of data or triggering of events
- Bluetooth beacon support (any format supported)
- MSS - Supports concurrent MiraMesh and Bluetooth v5.0
- 16μA average current consumption* in routing (meshing) mode
- 7μA average current consumption* in non-routing (leaf) mode
- Cognitive Coexistence - adaptive frequency-hopping providing ultra reliable data transfer and ultra-low power consumption
- FOTA (Firmware Over The Air) updates
- Up to 1200 pkt/min true meshing network throughput (1 pkt = 160 bytes)

Current consumption is measured in a network with a throughput of 10 pkt/min

BENEFITS

- Ultra-low power operation
- Industrial Grade
- Low Cost
- Multi Standard Support
- Easy Integration into size constrained Products

MAIN APPLICATIONS

- Connected lighting
- HVAC & Building control and sensor networks
- Industrial sensor networks
- Physical security and access control

19.8

15.5

2.0