

MIRA WIDE AREA RADIO MODULE

The LumenRadio **MWA-N2** (Mira Wide Area) module is an industrial grade, long range, multi standard radio module, designed for high volume production. MWA-N2 is based on the Nordic Semiconductor nRF52840 and features a powerful ARM Cortex M4 microcontroller and dual radio for Bluetooth based standards and 802.15.4 based standards with the option of on module or external antenna. MWA-N2 is optimized for 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. MWA-N2 is an SMD module and thanks to with its small footprint it can be easily be integrated into any product. Best in class +1200m line of sight range, due to the built in PA and LNA.

Long range



FEATURES

- Based on Nordic Semiconductor nRF52840 chipset
- Up to 22dBm configurable transmit output power
- -103dBm receiver sensitivity
- 125dB link budget
- Off 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)*
- 33,5 x 16,5 x 3,77mm 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)
- Controllable PA and LNA
- MSS - Supports concurrent MiraMesh and Bluetooth v5.0
- 7µA average current consumption* in non-routing (leaf) mode
- 16µA average current consumption* in routing (meshing) 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)

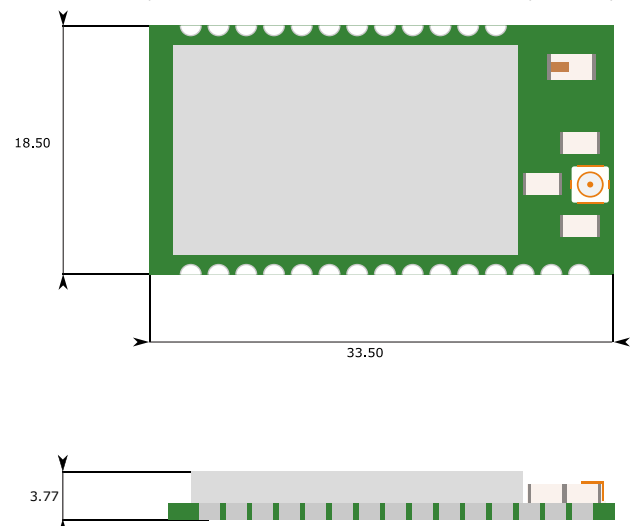
*Current consumption is measured in a network with a throughput of 10 pkt/min

BENEFITS

- Long Range operation
- Industrial Grade
- Multi Standard Support
- Easy integration into products through standard SMT process
- External and internal antenna options

MAIN APPLICATIONS

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



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Typ	Max	Unit
Supply voltage	V_{CC}	2.0		3.6	V
Peak current	I_{MAX}			250	mA
Voltage on any digital pin	V_{IO}			$V_{CC} + 0.3$	V
Storage temperature	T_{STG}	-40		+125	°C
Input RF level	P_{IN}			10	dBm
Electrostatic discharge voltage (human body model)	V_{ESD}			1	kV

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Unit
Peak current consumption in TX mode, no peripherals	I_{TX_PEAK}		High Power Mode: 200 Low Power Mode: 15		mA
Peak current consumption in RX mode, no peripherals	I_{RX_PEAK}		High Power Mode: 15 Low Power Mode: 10		mA
Average current consumption with MiraOS in speed rate 8 with frontend enabled	I_{AVG}		66		uA
Logic 0 input voltage threshold	V_{LOW_TH}		$0.3 \times V_{CC}$		V
Logic 1 input voltage threshold	V_{HI_TH}		$0.7 \times V_{CC}$		V

RF CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Unit
RF frequency range		2402		2480	MHz
Receiver sensitivity, PER = 1%	RX_{SENS}	-103			dBm
Transmitter max output power	P_{OUT_MAX}			22	dBm



With patented technologies, a unique operating system and state of the art radio modules LumenRadio provides ultra-reliable mesh connectivity for the most business critical applications.

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