LumenRadio’s embedded operating system MiraOS enables the world’s most resilient wireless mesh connectivity for business critical applications. Integrating MiraOS into products enables connecting, controlling and collecting data wirelessly without worries. MiraOS can operate on any radio chip, on any frequency band.

### Connected Lighting
- Automated emergency lighting
- Retail signage
- Commercial building luminary control
- Architectural lighting control
- Street and road lighting control

### HVAC & Building Control
- Heat, ventilation and air control
- Building usage optimisation
- Building sensing

### Industrial Sensor Networks
- Predictive maintenance
- Condition monitoring
- Vibration monitoring

### Physical Security & Access Control
- Building and room access security
- Perimeter protection
- Fire detection and alarm systems

### When MiraOS Outperforms Its Competitors
- Radio environment with lots of disturbances*
- Low power consumption is critical
- Data losses in the network are not allowed
- Building wide network needed

*Patented frequency agility

The system scans the radio waves and detects the activity from other networks. It then uses that information to predict how the interference will evolve over time and then decides on what channels to use. This is done on every node in the system which avoids causing collisions with other networks.

### CUSTOMER CASE SWEGON

**80%** reduced installation cost compared to wired installation

**35%** expected savings in support, RMA and TCO

Enables new, **revenue-generating** services

### WHY LUMENRADIO?
- Reliable, robust wireless communication
- Fast commissioning, flexible to changes
- Over the air firmware updates
- Ultra low power consumption
- Long term partner from design to maintenance

www.lumenradio.com
Building blocks of MiraOS

Application OS
- End user application hosting in OS
- Multi-threading
- Task Scheduling
- Kernel Clock

Mesh Network
- Automatic, self healing, self optimizing Mix&Match formation™
- Border router (Gateway), Routing/Ultra Low Energy routing (Meshing), Ultra-Low Energy non routing (Leaf)
- >10000 units network size
- <5ms latency/hop

IPv6
- 6LoWPAN
- Up to 8 UDP sockets

Security
- AES128-CCM (Counter with CBC-MAC)
- Separate Commissioning Key

Low Energy
- 10 years on coin cell battery for leaf nodes
- 3 years on coin cell battery for meshing nodes
- >15 years on AA battery for meshing nodes

Resource Requirements
- < 150kB Flash
- < 40kB SRAM
- > Cortex M0 @ 40MHz

Commissioning
- NFC commissioning
- BLE commissioning

MSS
- BLE beacon
- Bluetooth Mesh

Chipset support
- nRF 52832
- nRF 52840
- TI CC2538
- NXP MKW41x
- nRF 52810
- EFR32xx
- TI CC13xx

Reliability
- Cognitive Coexistence
- Adaptive FDMA
- TSCH (Time Synchronized Channel Hopping)
- < +/- 5μs time sync precision/hop
- CSMA/CD
- Link Layer Ack

Device Management
- FOTA for Routing devices
- FOTA for low energy battery devices
- FOTA external CPU
- Network QoS metrics

Hardware Abstraction Layer
- GPIO driver
- UART driver
- SPI driver
- I2C driver
- NFC driver
- ADC driver
- FrontEnd driver for long range options

CONTACT

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With patented technologies and an unique operating system, LumenRadio provides ultra-reliable mesh connectivity for the most business critical applications.