



Lifetime Power[®] Energy Harvesting Development Kit for Wireless Sensors

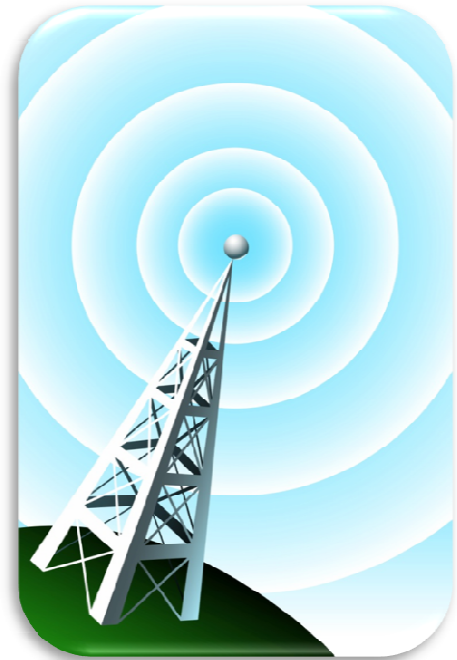
P2110-EVAL-01

Powercast Technology Overview

- Delivers micro-power over distance using common radio waves
 - microwatts(μ W) to low milliwatts (mW)
- Green/CleanTech power solution
 - eliminates wires, simplifies installation
 - reduces/eliminates battery replacement
 - provides lifetime power
 - hazardous material shipping & disposal costs reduced or eliminated

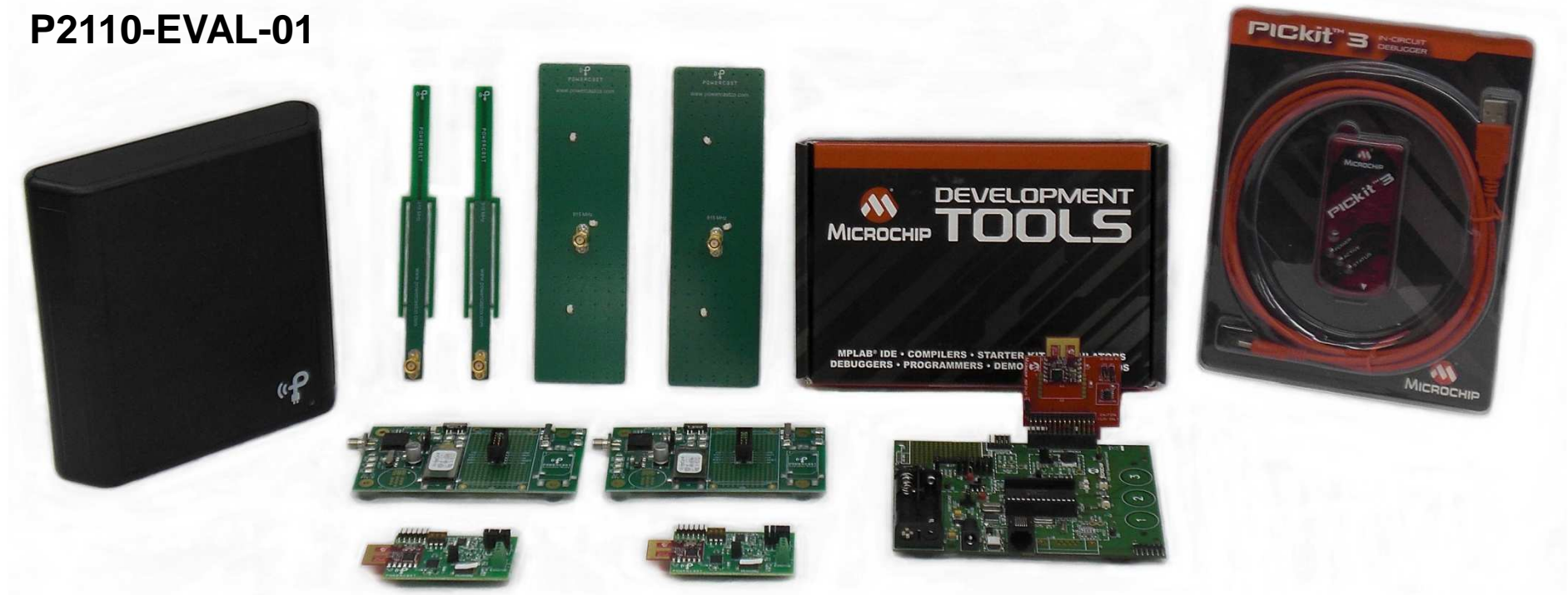
Why RF Power?

- Wire-free Operation
 - Untethered placement and mobility
 - Operates anywhere in range of a suitable RF power source
 - One-to-many charging
- Reliable
 - Power source is controlled/deterministic
 - Available on demand
 - Minimal effects from weather / time-of-day
- End product differentiation
 - Sealable / waterproof
 - Zero maintenance



A complete development kit for low-power, battery-free, wireless applications.

P2110-EVAL-01

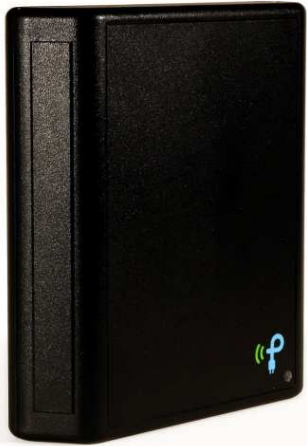


- Power range of 40-45 feet with included patch antennas
- Pre-loaded, custom firmware for out-of-the-box operation
- Data displayed on a PC with HyperTerminal (or equivalent)

Kit Components

TX91501-3W-ID

915MHz Powercaster™ Transmitter



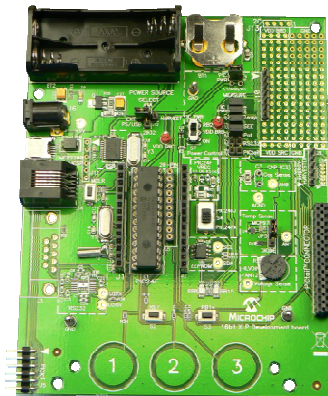
PICKit™ 3
Programmer



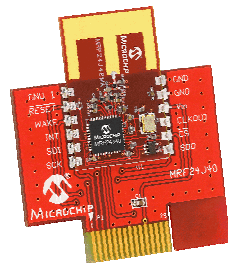
Receiving Antennas
Dipole and Patch

P2110-EVB

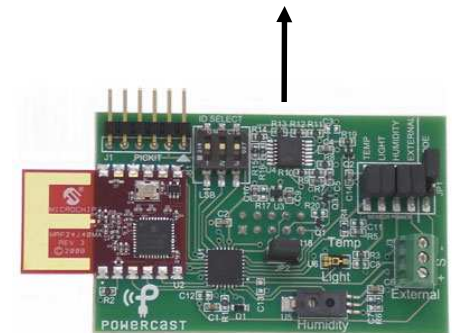
P2110 Evaluation Board



XLP 16-bit
Development Board



PICtail™ Daughter Card
(2.4GHz / 802.15.4)



WSN-EVAL-01

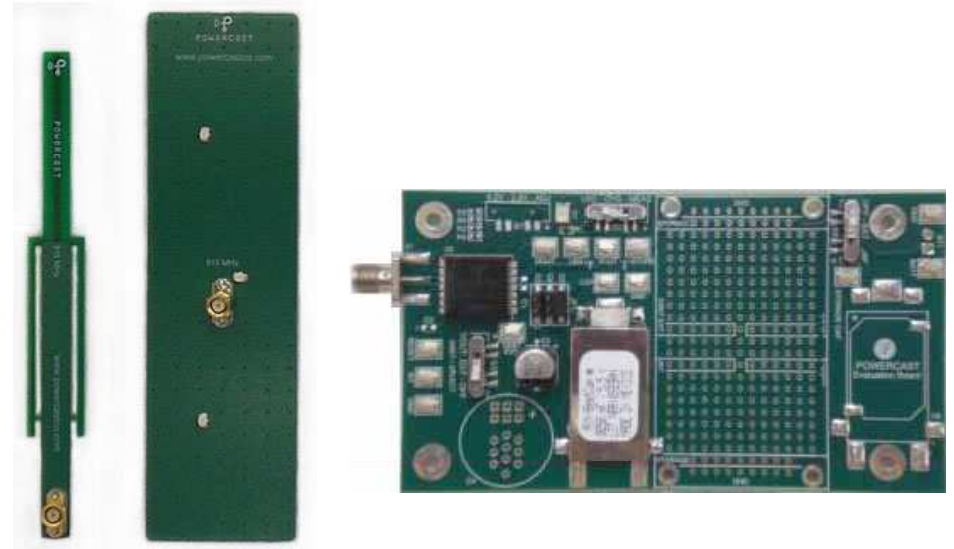
Wireless Sensor Board

Power System



Transmitter Features:

- 915MHz, 3-watt transmitter
- Transmits power and data
- 8dBi integrated antenna
- Dual DC power jacks
- Powers multiple receivers



Receiver Features:

- P2110 Powerharvester®
- Receives power and data
- Converts RF to DC
- Charge / Power management
- I/O for interface to MCU

Wireless Sensor Board

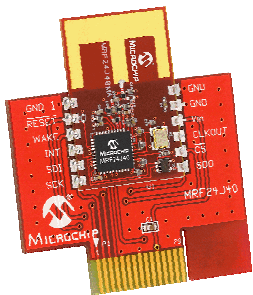
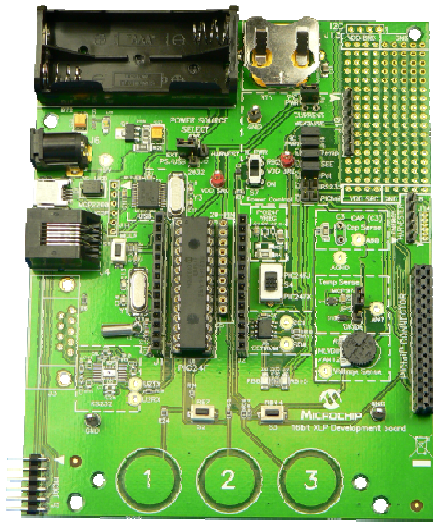
Features:

- Node ID selection
- Transmitter ID capture
- RSSI calculation
- Temperature sensor
- Humidity sensor
- Light sensor
- External sensor port
- PIC® MCU
- 2.4GHz / 802.15.4 radio module
- Pre-loaded, custom firmware
- PICkit™ programming header
- Attaches to P2110 evaluation board



Jointly developed sensor board – available only in the kit.

Access Point



Features:

- MCU and wireless development platform
 - PIC® MCU
 - PICtail™ 2.4GHz / 802.15.4 radio module
- Pre-loaded, custom firmware
 - Receives all data packets
 - Configured for up to 8 sensor nodes IDs
 - Maintains time counters for each node
- USB interface for power and data
- PICkit™ programming header

Data Output to PC

```
Powercast - HyperTerminal
File Edit View Call Transfer Help
[Icons]

Lifetime Power(R) Energy Harvesting Development Kit for Wireless Sensors
Powercast Corporation
Version 1.0

Packet # 1 | Node 5 | TX ID 009 | Temp 73.8 F | Light 339 lx
Time 00:00:07 | dT 00:07 | RSSI 1.08mW | Humidity -- % | Extrnl 0 mV

Packet # 2 | Node 5 | TX ID 009 | Temp 73.7 F | Light 333 lx
Time 00:00:09 | dT 00:02 | RSSI 1.42mW | Humidity -- % | Extrnl 0 mV

Packet # 3 | Node 5 | TX ID 009 | Temp 73.7 F | Light 322 lx
Time 00:00:10 | dT 00:01 | RSSI 1.37mW | Humidity -- % | Extrnl 0 mV

Packet # 4 | Node 5 | TX ID 009 | Temp 73.9 F | Light 317 lx
Time 00:00:12 | dT 00:02 | RSSI 1.17mW | Humidity -- % | Extrnl 0 mV

Packet # 5 | Node 5 | TX ID 009 | Temp 73.8 F | Light 270 lx
Time 00:00:15 | dT 00:03 | RSSI 0.56mW | Humidity -- % | Extrnl 0 mV

Data from Access Point      Data from Wireless Sensor Board

Connected 0:00:24 Auto detect 19200 8-N-1 SCROLL CAPS NUM Capture Print echo
```