

SM-TLB Theory of Operation

The SM-TLB is a mote for our SkyMote 802.15.4 Wireless Sensor Network (WSN). It has built-in sensors for temperature, light, and bump.

The SM-TLB sleeps most of the time to allow for multi-year battery life. At user-defined intervals from 1-60 seconds the SM-TLB wakes up, takes readings from the built-in sensors, and sends those readings to its parent.

The SMB is powered by 3 AA batteries. This is converted to 2.8 volts using a LDO linear regulator, and 2.8 volts is the main system voltage for the SMB.

The SM-TLB has an internal ceramic chip antenna for the 2.4 GHz wireless communication.

A SkyMote network has a tree topology with the following components:

Bridge: A bridge is used to connect the wireless network to a host via Ethernet or USB. Each network has only 1 bridge. The wireless transceiver on a bridge is always on. A bridge can have up to 16 children (repeaters and motes).

Repeater: Creates a wireless link between 1 parent and up to 16 children. The wireless transceiver on a repeater is always on.

Mote: End-device with sensors and actuators. Generally operated in sleeping mode, where the device (including wireless transceiver) is shut down most of the time, and wakes up periodically. A sleeping mote cannot have children.