

luXbeacon Datasheet

A Batteryless Beacon for Maintenance-free IoT Applications

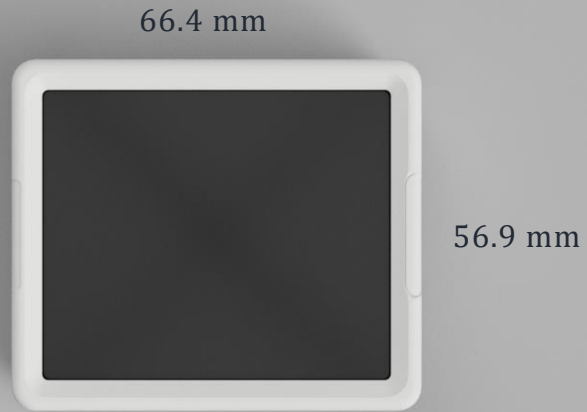
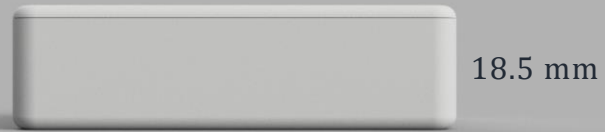
Project page @
<http://smedia.ust.hk/luxbeacon/>



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1. Look & Dimension



2. HW Specification - 1

Energy Harvesting Unit

Model name:	AM-1815CA
Type:	Amorphous solar cell
Dimensions:	58.1 x 64.4 mm
Datasheet:	click here

Bluetooth Unit

Bluetooth chipset:	Nordic Semiconductor's nRF51 Series
Bluetooth version:	Bluetooth Low Energy 4.0
Transmission power:	-20 to +4 dBm
Sensitivity:	-90 dBm

2. HW Specification - 2

Computation Unit

Computation device:	Cortex M0
Data rates:	1 Mbps, and 2 Mbps
Memory:	256 KB flash, 32 KB RAM

Power Management Unit

Power management chipset:	S6AE103A
Datasheet:	click here

Energy Storage

Type:	Super-capacitor
Capacity:	1.5 F

3. Protocol Compatibility

- **luXbeacon supports following protocols:**

- Apple's iBeacon
- Google's EddyStone



- **luXbeacon proprietary protocol for**

- battery monitoring
- supercapacitor monitoring



4. Performance Analysis

An indoor location with **> 200 lux** for **> 9 hours** daily, luXbeacon can sustain/extend:

Beacon Setting: <i>broadcast interval, Tx power (ms, dBm)</i>	Original lifetime: <i>using CR2477 (years)</i>	Extended lifetime <i>using CR2477 (years)</i>	Gains
300, 0	1.0	2.5 	x 2.5
100, 0	0.3	0.68 	x 2.25

- 1. More reliable smart applications and user experiences**
- 2. Less maintenance and urgency**

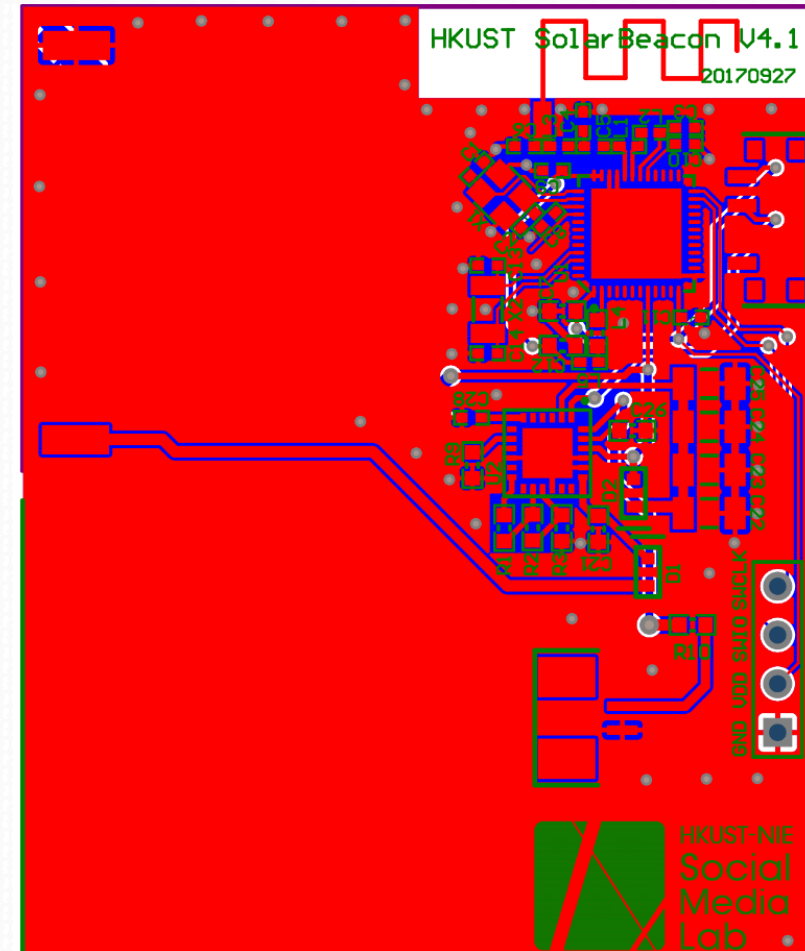
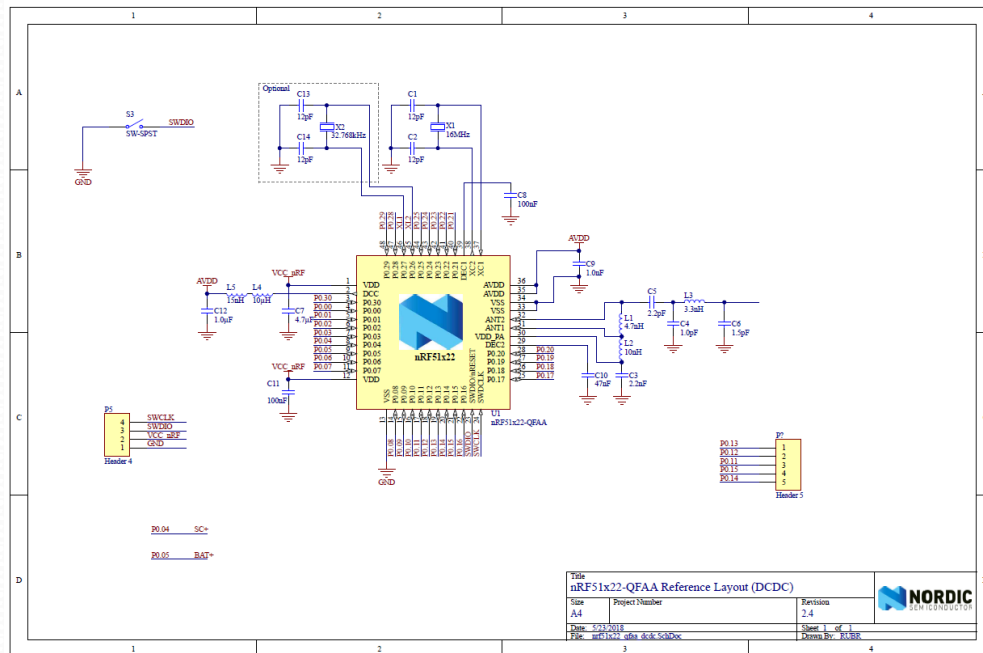
5. Reference Design: PCB

Reference design files with

1. Schematics and routing
2. Gerber file

can be found in the link below:

http://smedia.ust.hk/luxbeacon/open_license.html



5. Reference Design: Firmware

Firmware files with

1. *iBeacon protocol*
2. *luXbeacon protocol*
3. *Supercapacitor and battery monitoring function*

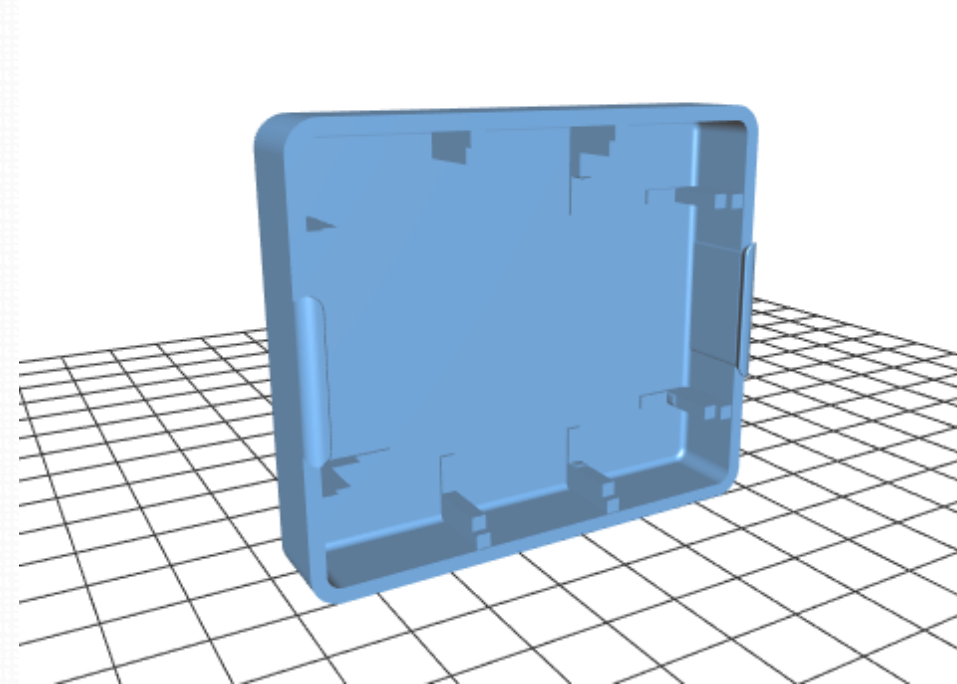
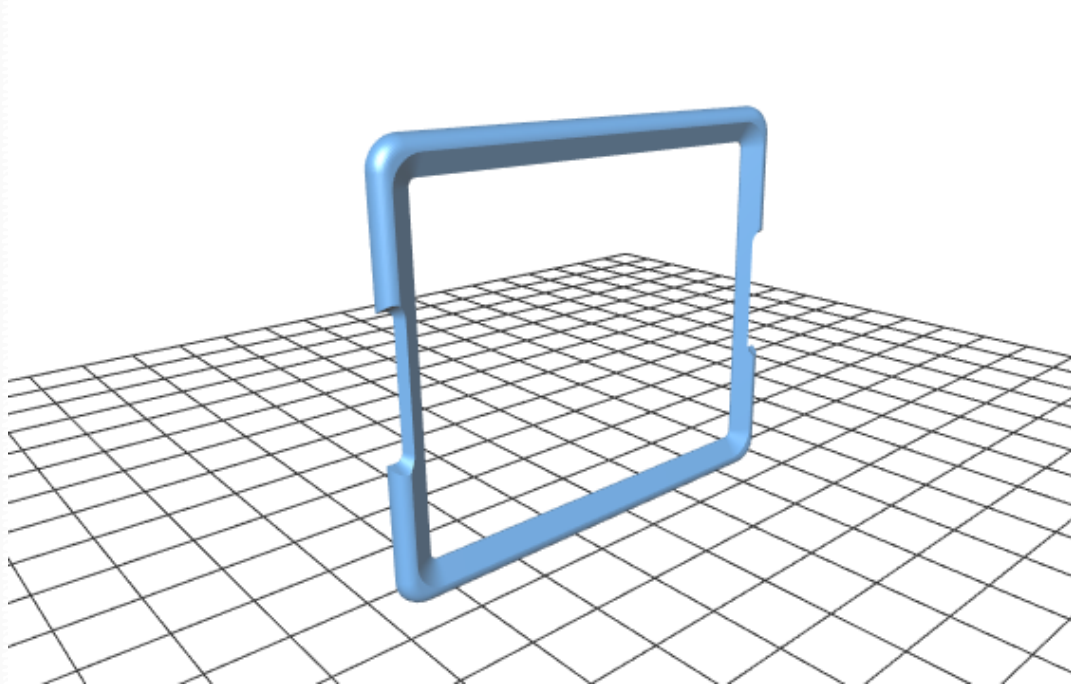
can be found in the link below:

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5. Reference Design: Casing

3D printable .stl files can be found in the link below:

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