LoRaWAN Device Classes

A

LoRa

WAN

C

B
INTRO

• In this tutorial I will explain what LoRaWAN device classes are.
## LORAWAN DEVICE CLASSES

The LoRaWAN specification [4] defines three device classes:

<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A(ll)</td>
<td>Battery powered devices. Each device uplink to the gateway and is followed by two short downlink receive windows.</td>
</tr>
<tr>
<td>B(eacon)</td>
<td>Same as class A but these devices also opens extra receive windows at scheduled times.</td>
</tr>
<tr>
<td>C(ontinuos)</td>
<td>Same as A but these devices are continuously listening. Hence these devices uses more power and are often mains powered.</td>
</tr>
</tbody>
</table>
CLASS A

- At any time an end node can broadcast a signal. After this uplink transmission (tx) the end node will listen for a response from the gateway.

- The end node opens two receive slots at $t_1$ and $t_2$ seconds after an uplink transmission. The gateway can respond within the first receive slot or the second receive slot, but not both.

- Class B and C devices must also support class A functionality.
CLASS B

- In addition to Class A receive slots, class B devices opens extra receive slots at scheduled times.

- The end node receives a time synchronised beacon from the gateway, allowing the gateway to know when the node is listening.

- A class B device does not support device C functionality.
CLASS C

- In addition to Class A receive slots a class C device will listen continuously for responses from the gateway.

- A class C device does not support device B functionality.