# LoRa Data Rates, what are they?

One of the settings that can be adjusted with our LoRa Board is known as the Data Rate and can affect the performance in speed and range of your LoRa Node. In this guide we'll evaluate the data rates for our most popular LoRa Regions.

Usually the data rate can vary how the packet is transmitted and in turn affects how many packets you can send per day and how long it takes between transmissions. It also factors in suitability for transmitting on the move and distances.

The following tests were performed using our Arduino LoRa Node and are applicable to all of our LoRa Nodes.

**Let's start with the simplest region:**

# EU868

Primarily for EU868 The data rate affects what is known as the Spreading Factor, the spreading factor essentially changes how long of a period to transmit the data over with anything from a 3 Byte packet taking 0.0515 seconds to transmit to 1.3189 Seconds. As you're only allowed approximately 30 Seconds of transmission time per day for most LoRa providers this equates to 500 times a day vs 22.

Usually it is recommended to use SF7 in the EU which equates to **data rate 5** on our nodes. If you're using OTAA it'll usually start at data rate 0 and then adjust down. If your gateway doesn't pick up the transmission from the node you can then decrease the data rate by 1 until the gateway picks up the packet. However usually going under data rate 2 is not recommended.

The lowest is DR0 and goes up to DR5. In: DR0:SF12, DR1: SF11, DR2: SF10, DR3: SF9, DR4: SF8, DR5: SF7.

# US915

The data rates are similar to Europe, however the lowest spreading factor allowed is 10.

Usually this is more complicated, however thanks to the firmware on our chips it's made rather easy.

Usually it's recommended to start at Data Rate 3 and decrease down until you get a successful

transmission.

The lowest is DR0 and goes up to DR3. DR0:SF10, DR1: SF9, DR2: SF8, DR3: SF7

## AU915

Closer to America, the Australian AU915 frequency plan follows the same rules as the EU868 band with the 5 different data rates.

Usually it is recommended to use SF7 in the EU which equates to **data rate 5** on our nodes.

The lowest is DR0 and goes up to DR5. In: DR0:SF12, DR1: SF11, DR2: SF10, DR3: SF9, DR4: SF8, DR5: SF7.