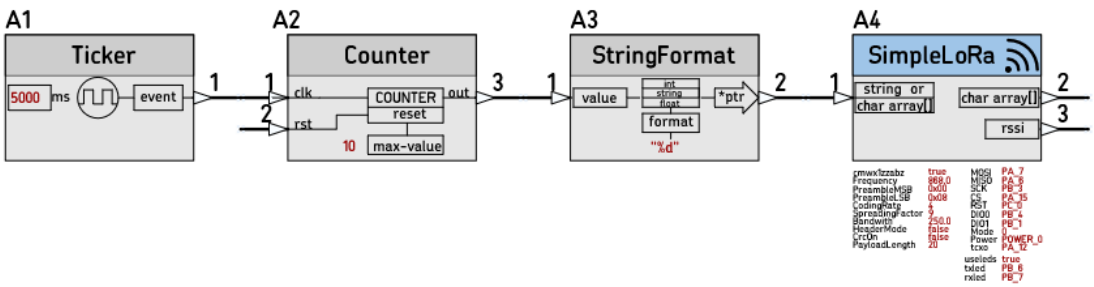
21D_SimpleLora_test

A project to test the Node SimpleLoRa.

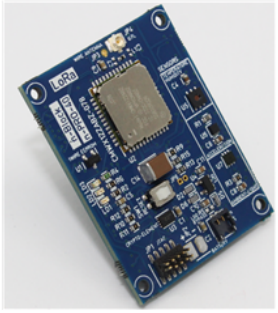
The Shematic Design repository is here: 21D_SimpleLoRa_test_SchDESIGN

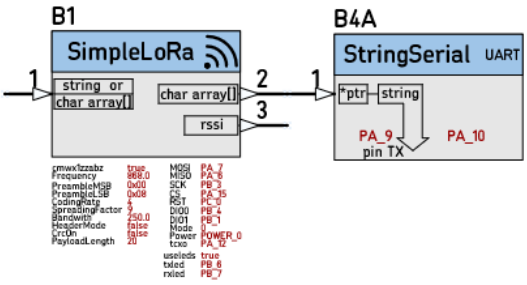
Design

We are using a multi board Design: Nodes 'A' are for the transmitting board and Nodes 'B' for the Receiving board. The Transmitting board sends a new counter value every 5sec and the Receiving board prints that value to the serial port.

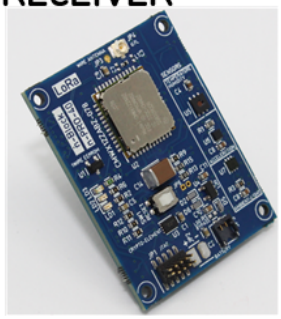


TRANSMITTER





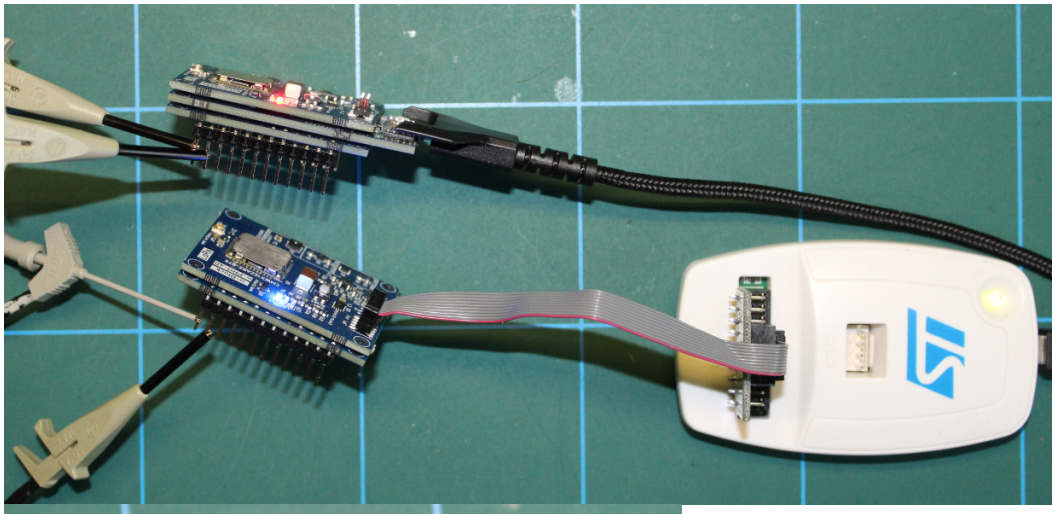
RECEIVER

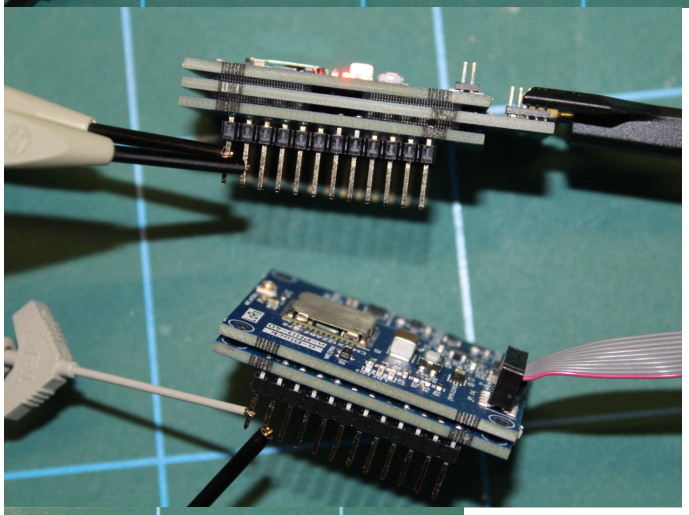


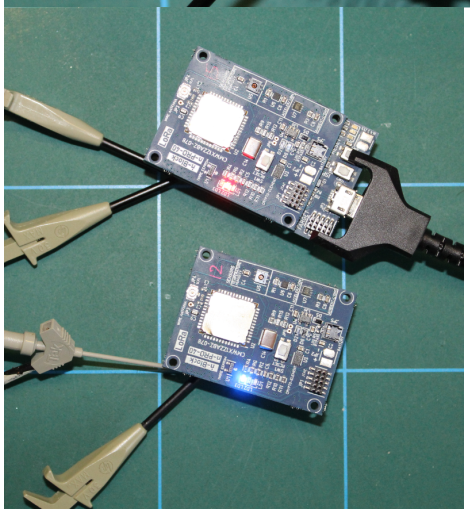
Setup

n-Blocks PRO series boards allow fast and compact prototyping. We are using

- 2x n-PRO-40 Lora boards
- 2x n-PRO-24 pinstrip breakout boards
- 1x n-PRO-DAP to connect the Receiver board to PC USB.

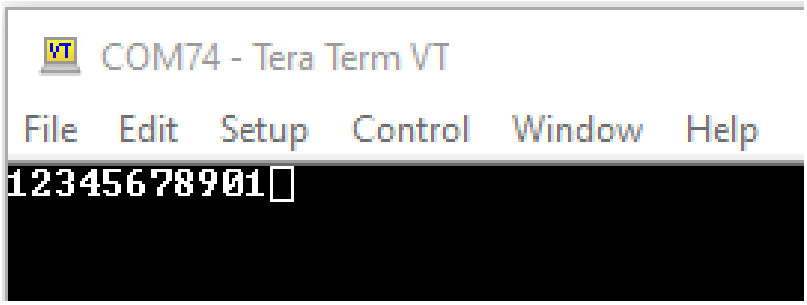






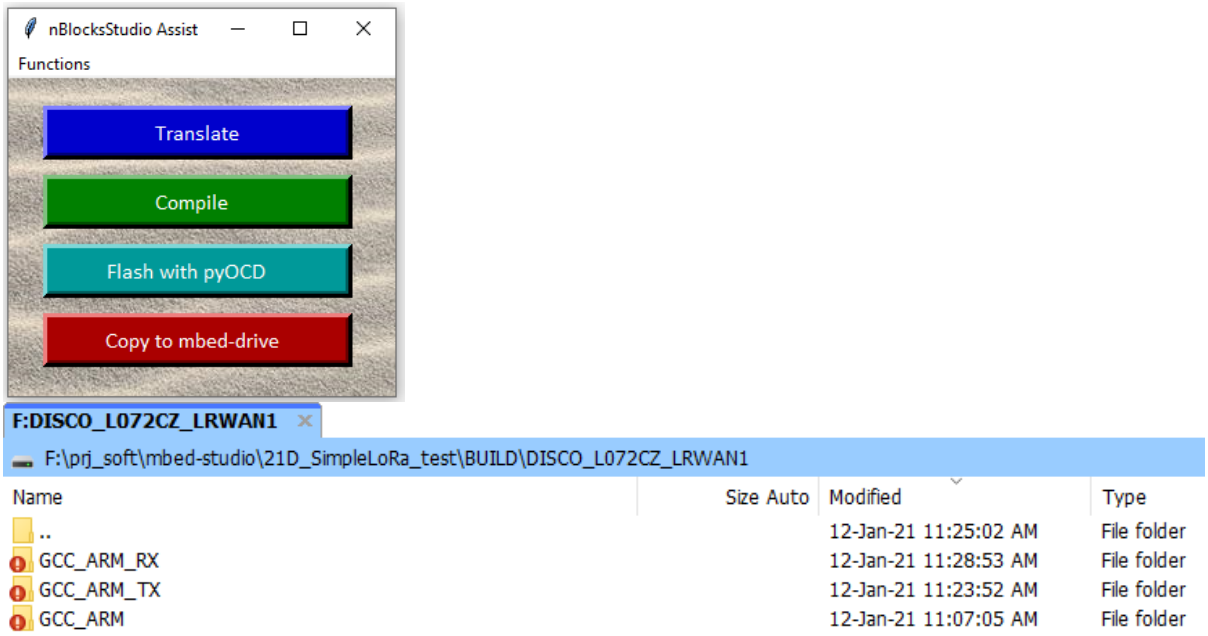
Receiver

The Receiver board is connected to PC terminal via the n-PRO-DAP board USB interface. The received characters are printed in the screen. In every transmission we see the next value of the transmitted Counter content.



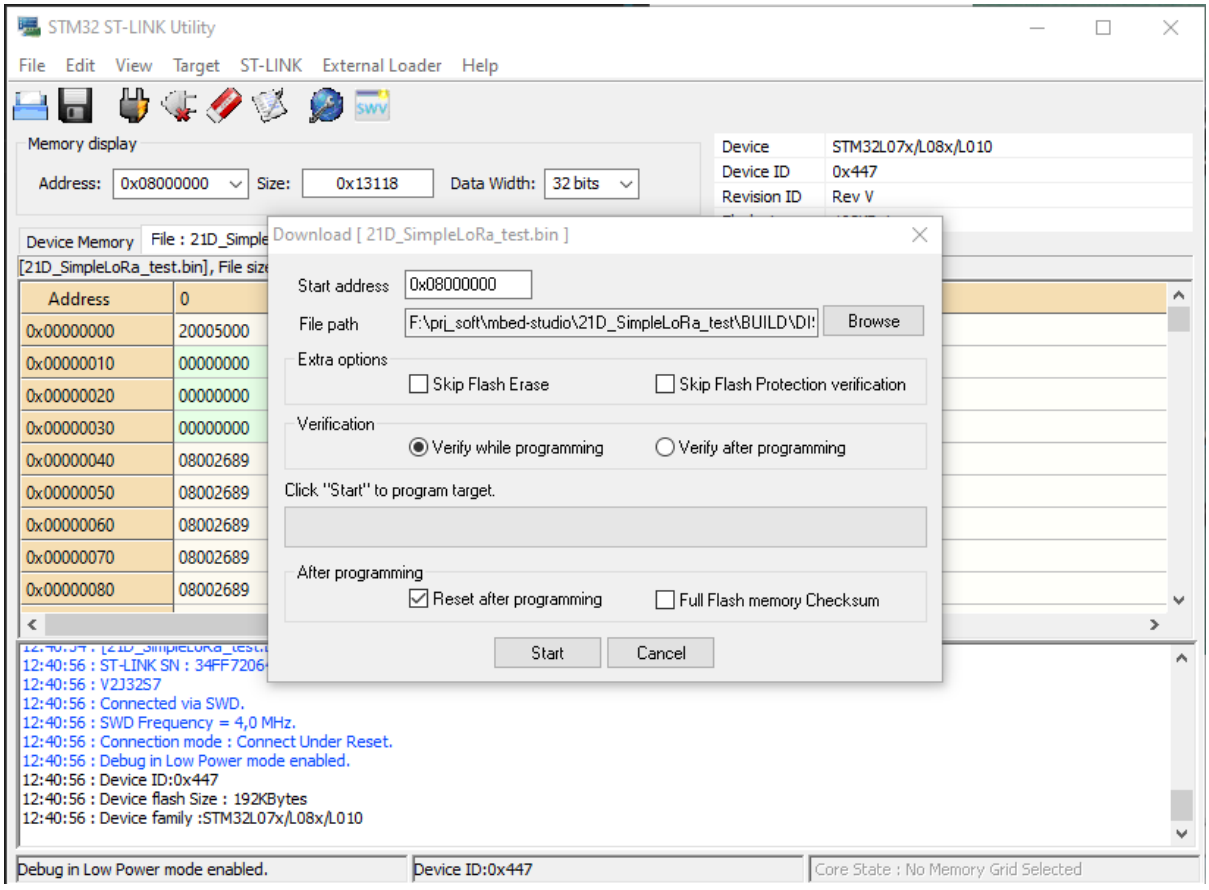
RX and TX builds

Using the nBlocksStudio assist, we have created 2 builds, one for RX board and one for TX board. Each contains a binary file to be programmed to Microcontroller flash memory



Flash programming

In this example we are using SM32 ST-Link Utility software to program the Microprocessor Flash memory. TX / RX board is programmed with the respective binary file



Radio current consumption during Transmission

The pulses, in below 2 images, are created from the TX current on a 10Ω shunt resistor on the power supply line of the TX board power.

The smaller (6 mA) current pulse is for 0 dBm and the larger (125 mA) for 20 dBm power

For this test the SimpleLora Node parameter `useleds` is set to `false` so the TX Led current does not disrupt the Radio transmission current measurement

Tests

- TX every 5s ✔
- TX every 1s ✔
- Receive and print TX Counter up to 100 ✔
- Leds are ON for 4ms ✔
- TX_led (TX board) and RX_led (RX board) seem about synchronized to naked eye ✔