

# Test of TX and RX module and Arduino

## Purpose

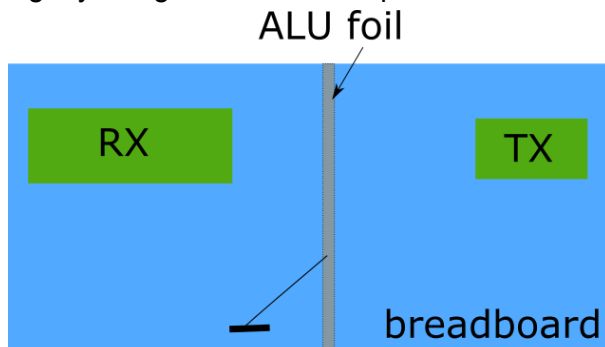
Check of RX and TX module and simple function check of Arduino, port 13 and port 8 in case one suspects some of the parts do not function correctly.

## What you need

TX and RX module, one or two Arduino units, USB cables to connect Arduino units to PC, PC with Arduino SDK and lab source code for the RX and TX modules. A breadboard and a aluminum foil strip 10cm x 17,3 cm. A crocodile clip

## Simple test of TX and RX module

Connect the TX module and RX module. Put the TX module and RX module on each breadboard or when using a single breadboard put them as far from each other as possible. If possible put a 10cm by 17.3 cm aluminum foil in between them and connect this foil to ground, e.g. by using the crocodile clip.



The TX should have its antenna output connected to an antenna wire. The RX module should **not** use an antenna wire. Instead we connect to antenna input with a 220 ohm resistor to the ground.

The digital output of the receiver should be connected a led that serial coupled with 1K ohm resistor. Check polarity of LED when connecting.

Connect pin13 of an Arduino to the digital input of the TX module. Compile and download the test code below to the Arduino connected to the TX module.

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If the arduino works ok it's led should now blink and if the receiver works, the led at the receiver should blink in the same pace as the led on the Arduino.

If the above works with one Arduino then switch out the working one with the other Arduino unit you have and check if this also works.

## Arduino TX test code

```
#include "Arduino.h"
/*
  Modified 2016-02-20: Ben Smeets
  Test of TX module and Arduino
  TX:
  Configure TX module. Connect Arduino pin13 to digital in of TX module
  RX:
  Configure receiver module with LED (serial coupled with a 1K ohm resistor)
  on digital output, do not forget to connect the antenna input of the module
  to ground with a 220 ohm resistor to reduce the signal strength on the
  input of the receiver.

  LED should start to blink in same manner as led on Arduino
*/

int txpin = 13; /* = connected to led */

void setup() {
  Serial.begin(9600); // Speed of your serial window
  pinMode(txpin, OUTPUT);
}

/* Trial TX test loop: */
void loop() {
  digitalWrite(txpin, LOW);
  delay(1000);
  digitalWrite(txpin, HIGH);
  delay(200);
}
```

## More advanced Arduino test

Now couple the TX and RX to each Arduino board and couple that as above. Again the receiver should have its antenna input grounded with a 220 ohm resistor. Also the receivers digital output should not only go to the receiver Arduino unit pin8 but also to the LED that is serial coupled with a 1K ohm resistor.

Take the TX and RX code from the lab course. In the RX code set the sender code to 0, which means the receiver will not filter on a specific sender code. Load the lab TX and RX code and

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compile/download these to respective Arduino unit. The TX starts sending a pattern of on off commands which should be seen by the weak pulsing of the led on the TX Arduino unit. In the serial log/trace window you should see the command from send no 12 coming in.

Now the led on the receiver Arduino should go on and off in a continuous sequence and the receiver's LED should show the activity of the sender.