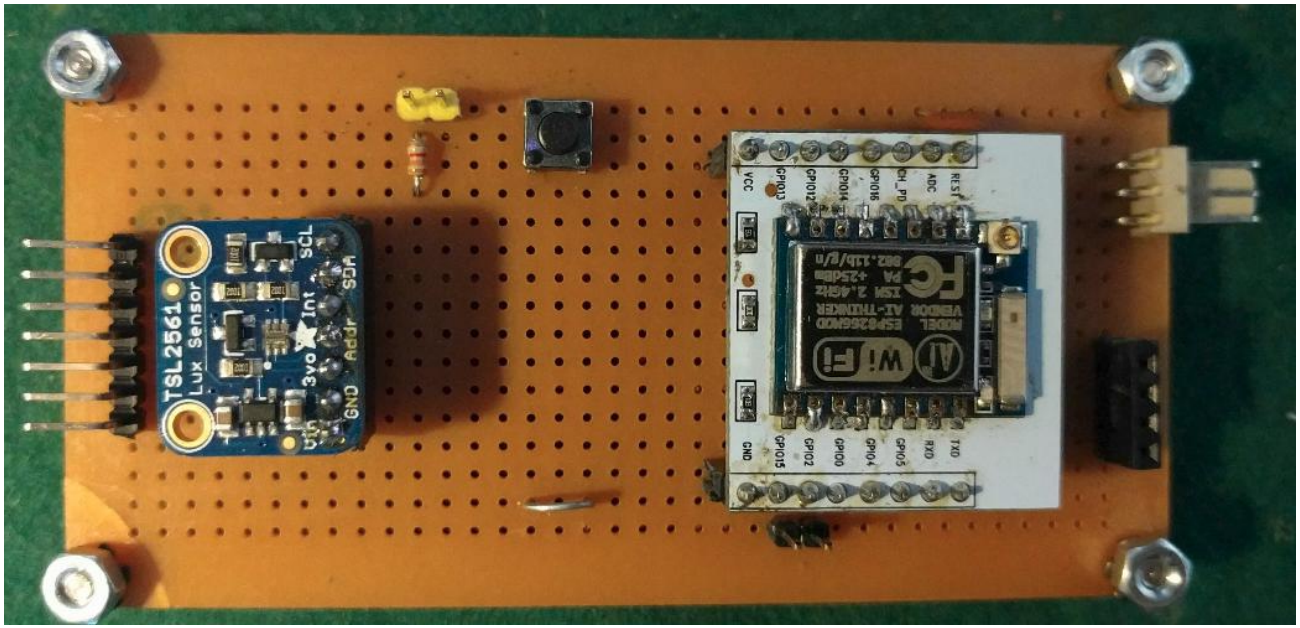
Fotómetro IoT

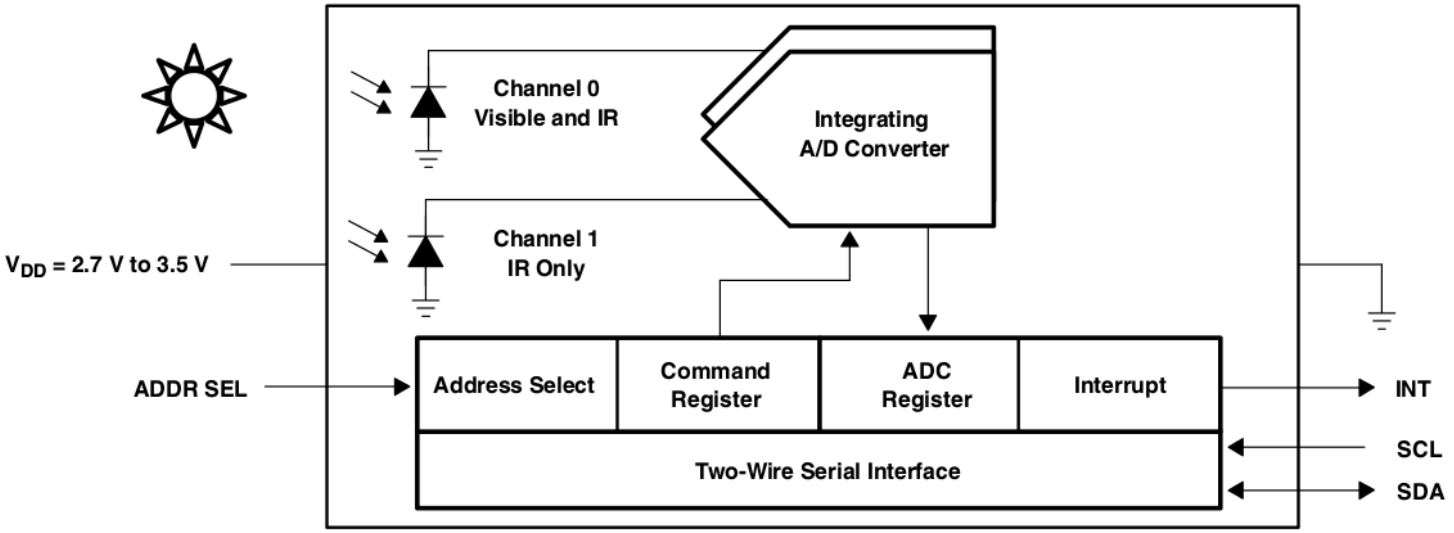


Rev 2.0

Fotómetro IoT

- Basado en el IC TSL2561

Functional Block Diagram



Fotómetro Conectividad

IC2Cloud

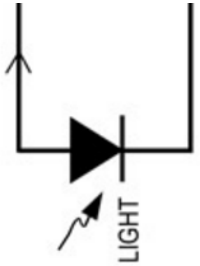
Cloud

Remote Access

WIFI

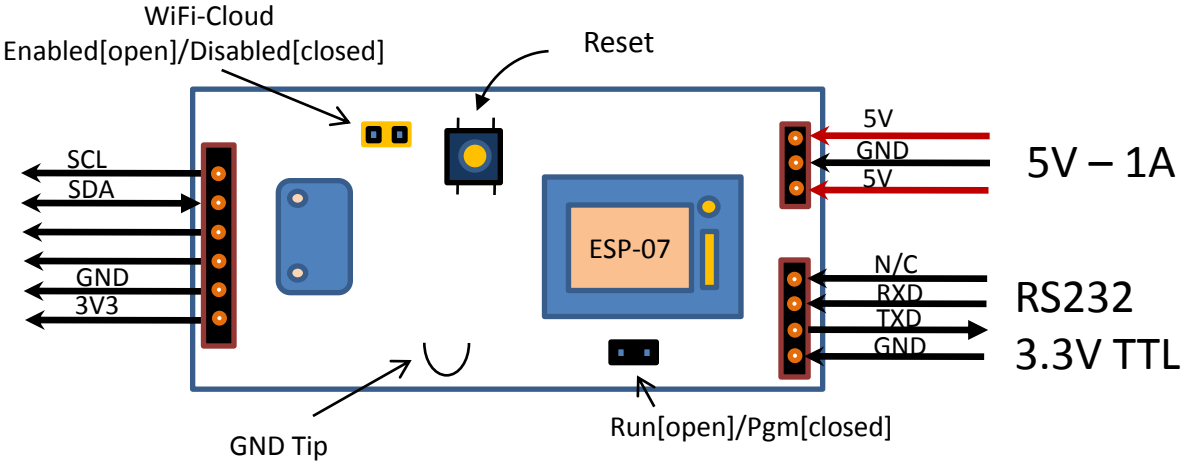
Fotómetro

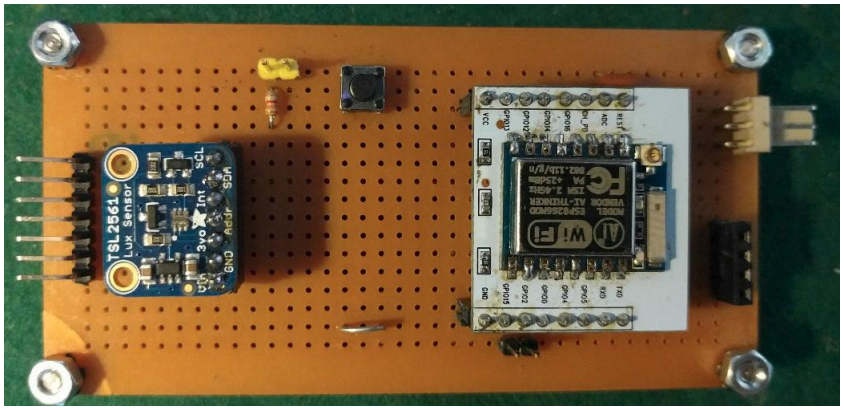
RS232

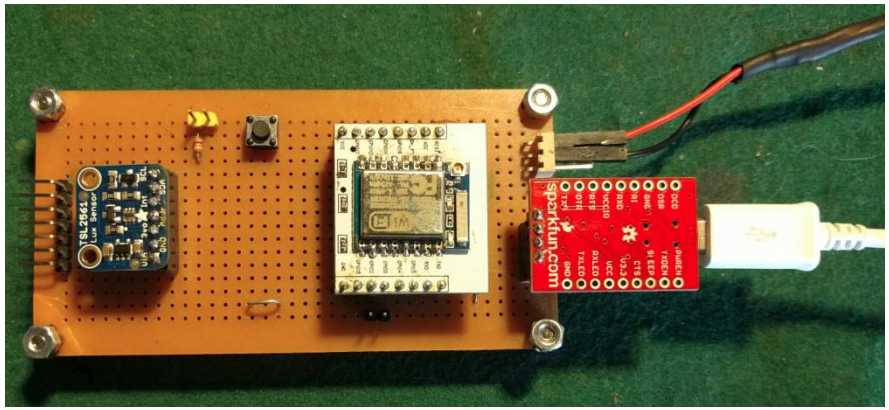


Fotómetro I/O

- Second TLS
- OLED Display
- Extension







Photometer operating modes

-**Cloud mode**: when WIFI is available (yellow jumper open at power on)
-**Standalone mode:** when WIFI is not available (yellow jumper closed at power on)

-In both cases serial output is available . Output Rate: 1 sample every 2 seconds(1)

-**Cloud mode:** Samples are sent to cloud and from cloud to phone apk (illuminance.apk)

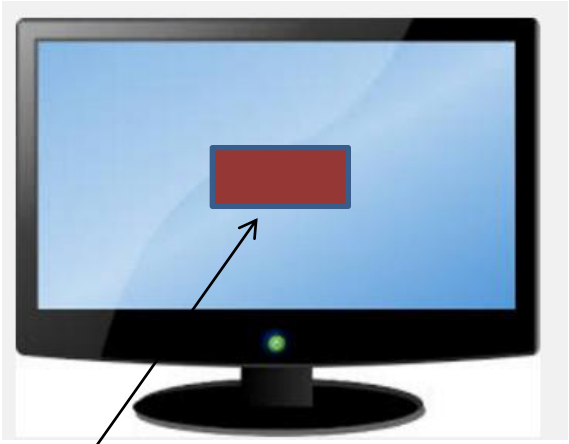
-WIFI parameters setup

Wireles router / AP / Hotspot Name : **IOT_WIFI**
Password: **GEDA2016**

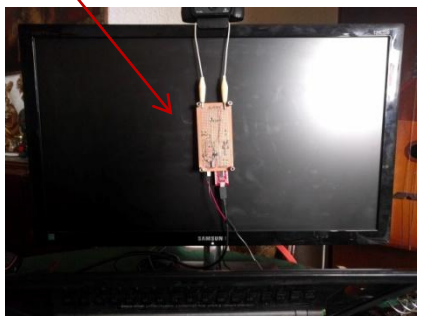
Tests

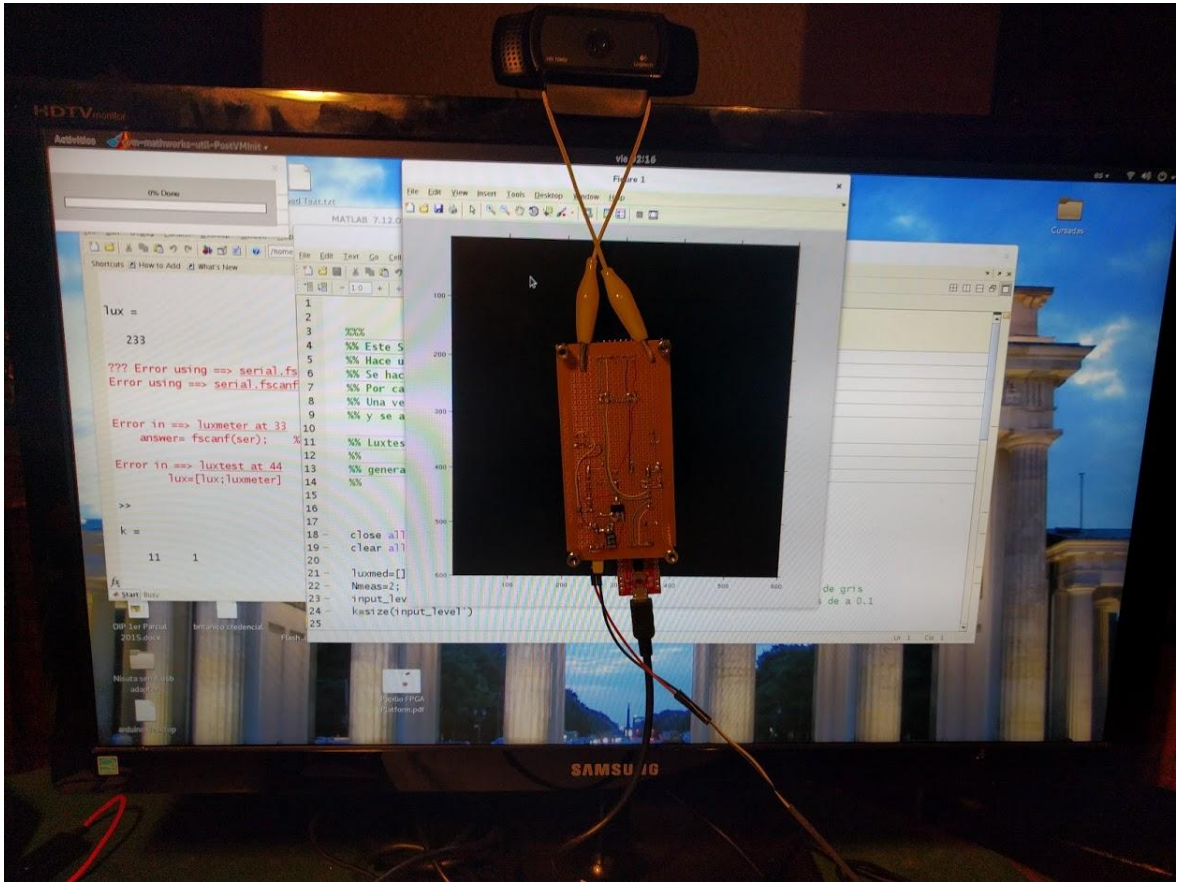
Automated Gamma Measurement for LCD display using Matlab

Setup



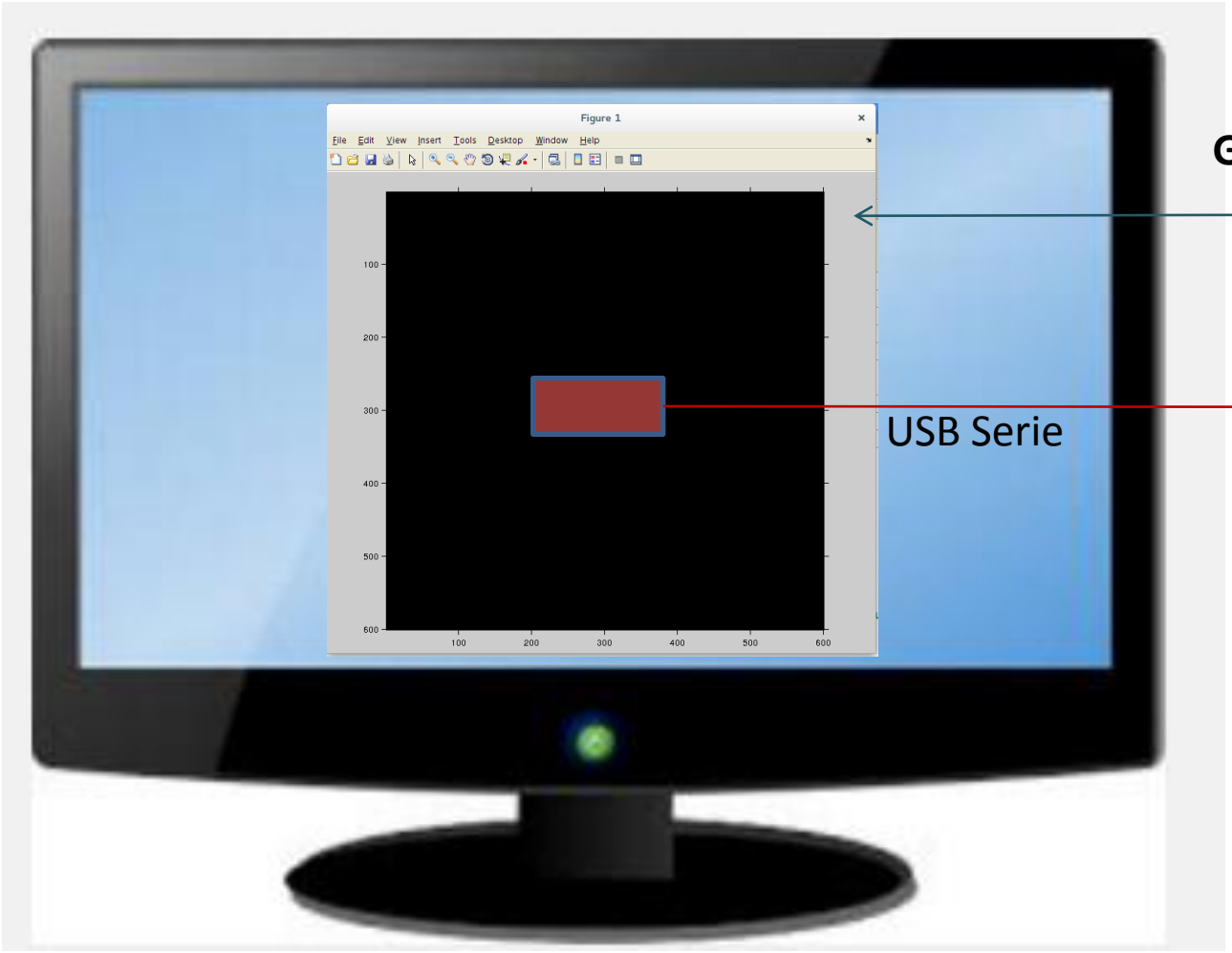
Fotometer





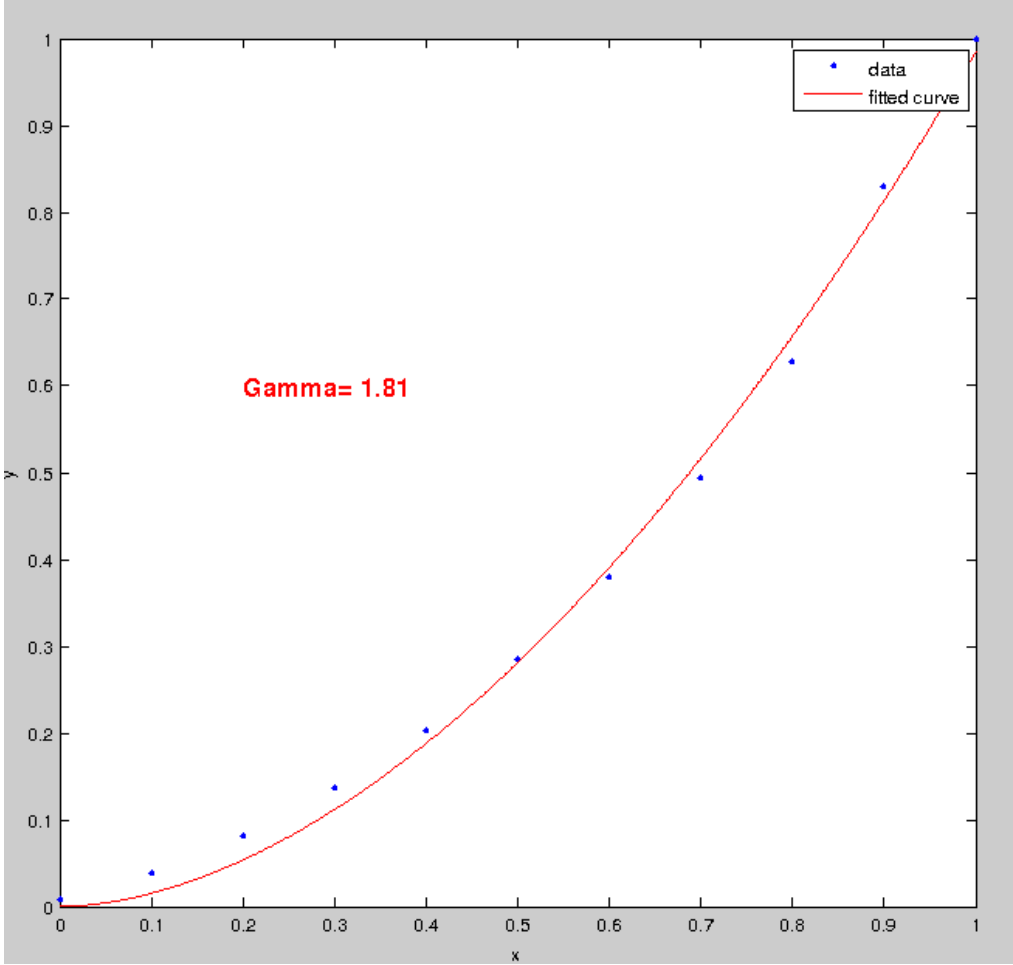
Tests

Automated Gamma Measurement for LCD display using Matlab:
Measurement Loop



Tests: Samsung T24C550

Automated Gamma Measurement for LCD display using Matlab
Results:



Tests: Samsung T24C550

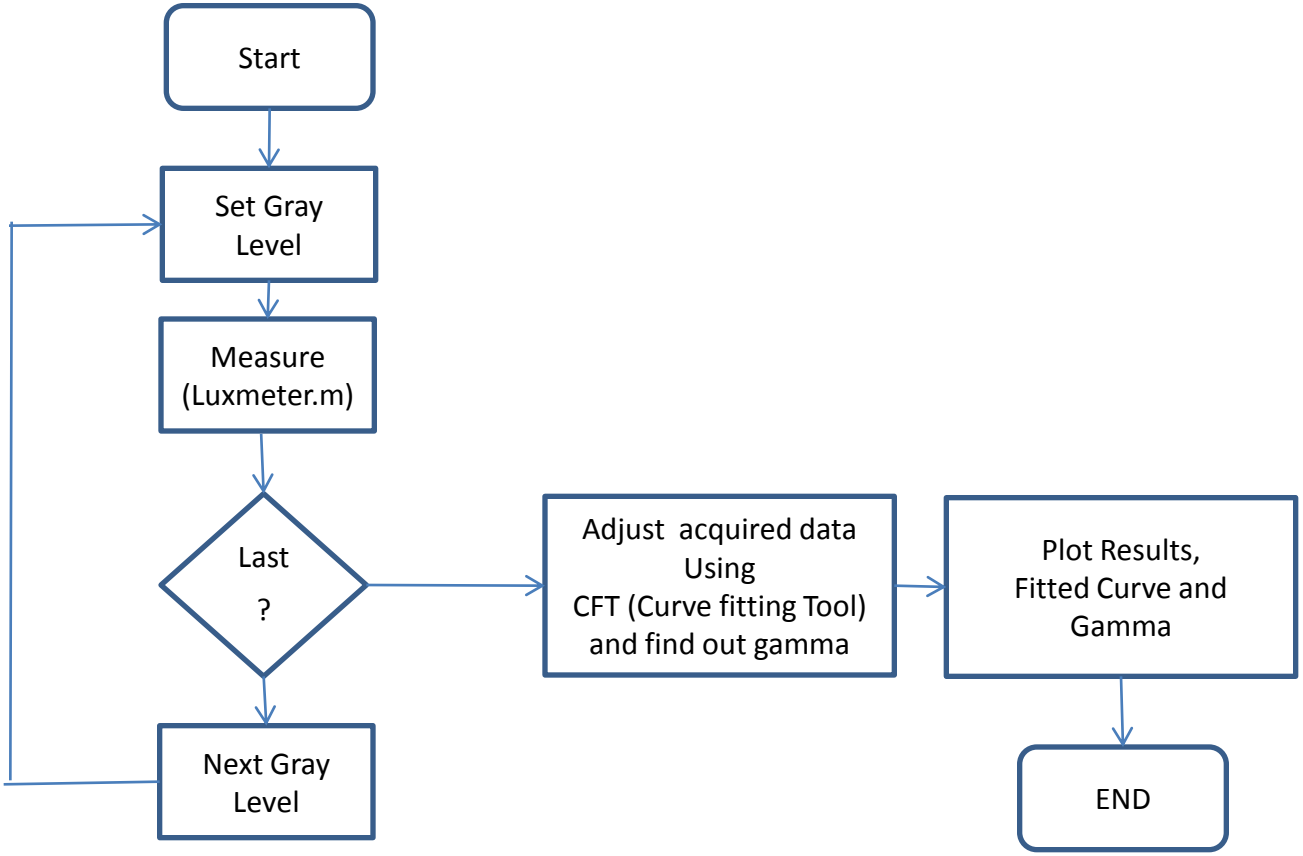
Automated Gamma Measurement for LCD display using Matlab
Results:

Gamma Control	Measured Gamma
-3	1.6
0	1.8
+3	2.1

Matlab Files

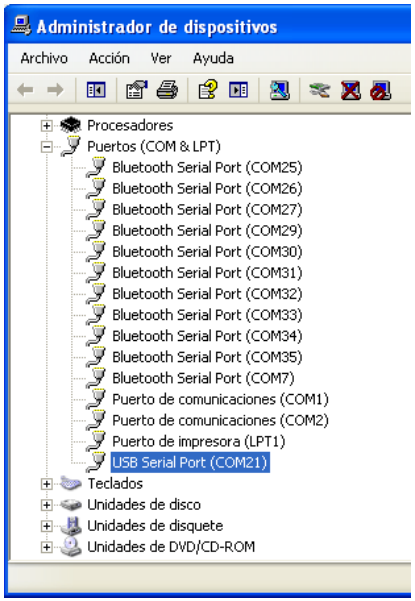
Luxmeter.m : Returns Light Luminosity in lux

Luxtest.m : Photometer Measurement Program



Measurement setup and use

1- Connect the photometer to USB to serial converter
2- Connect the photometer to power supply
3- Connect the USB serial converter cable to computer USB port
4 Find out the USB serial port on computer (COMxx)



5- Edit and modify serial port on luxmeter.m

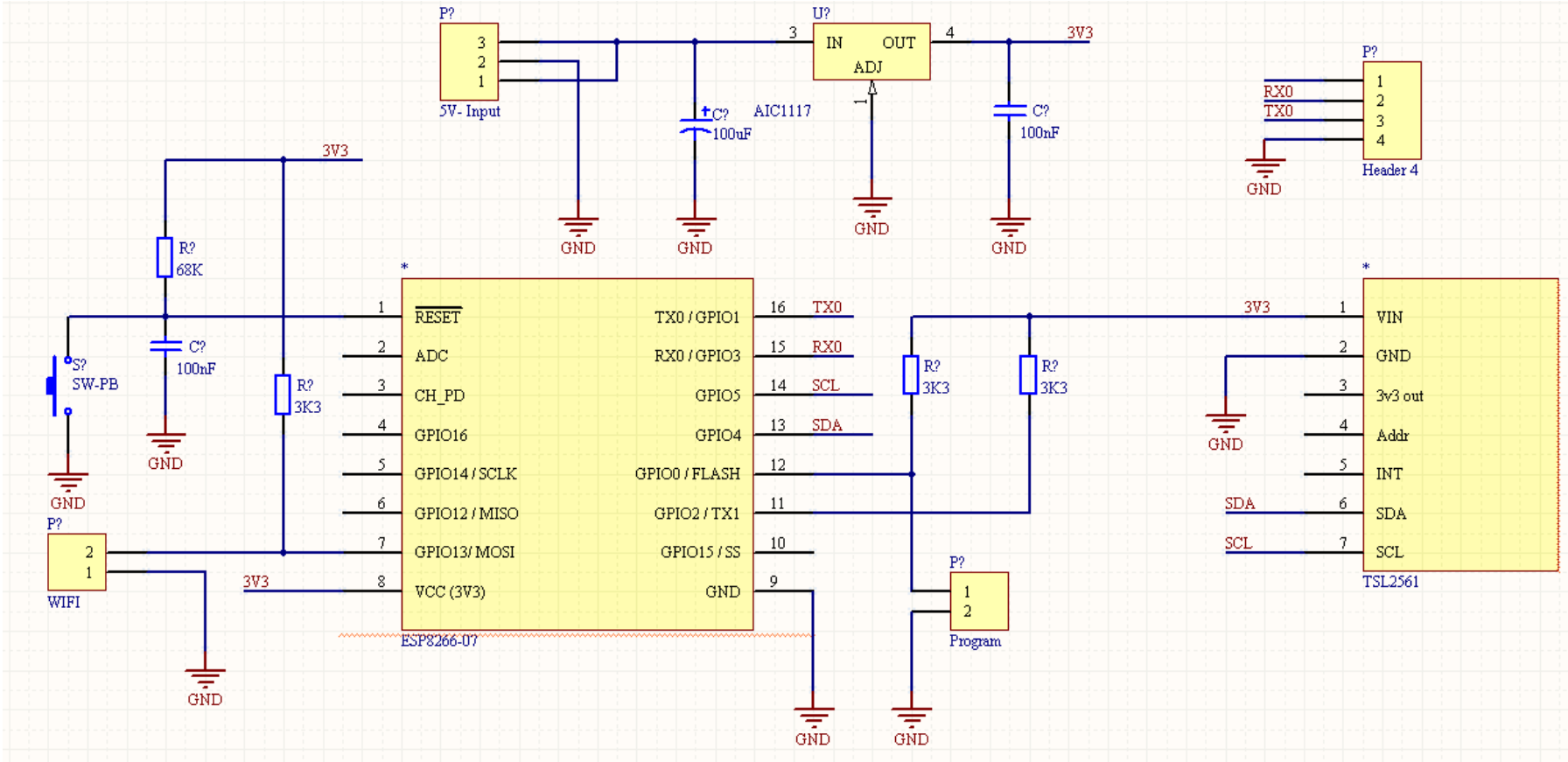
```
ser = serial('COM1');            % Windows port style
ser = serial('/dev/ttyUSB0');    % Linux port style
```

Measurement setup and use

6- Attach photometer as close a possible to monitor
7- Open matlab and run luxtest.m

Notes: Each sample is taken every 2 seconds (defined on firmware)
Two samples are taken per gray level and averaged
(see Nmeas on luxtest.m)

Schematic


P?
5V- Input
U?
IN
OUT
ADJ
AIC1117
3V3
C?
100uF
C?
100nF
GND
P?
RX0
TX0
Header 4
R?
68K
S?
SW-PB
C?
100nF
R?
3K3
P?
WIFI
RESET
ADC
CH_PD
GPIO16
GPIO14 / SCLK
GPIO12 / MISO
GPIO13/ MOSI
VCC (3V3)
TX0 / GPIO1
RX0 / GPIO3
GPIO5
GPIO4
GPIO0 / FLASH
GPIO2 / TX1
GPIO15 / SS
GND
TX0
RX0
SCL
SDA
ESP8266-07
R?
3K3
R?
3K3
P?
Program
VIN
GND
3v3 out
Addr
INT
SDA
SCL
TSL2561

APP: Illuminance.apk

http://personal.ik.itba.edu.ar/~jacoby/ilum/