Swakeup

More Than A Simple Wakeup Light

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The Idea

- Wakeup light which is a part of the *IoT*

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- Swakeup $\rightarrow$ engl. "Swedish Wakeup Light"

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- Wakeup light which is a part of the *IoT*
- Swakeup $\rightarrow$ engl. "Swedish Wakeup Light"
- Wakes up, displays time, weather, mails, facebook
- Smart, small, USB charger included

System Overview

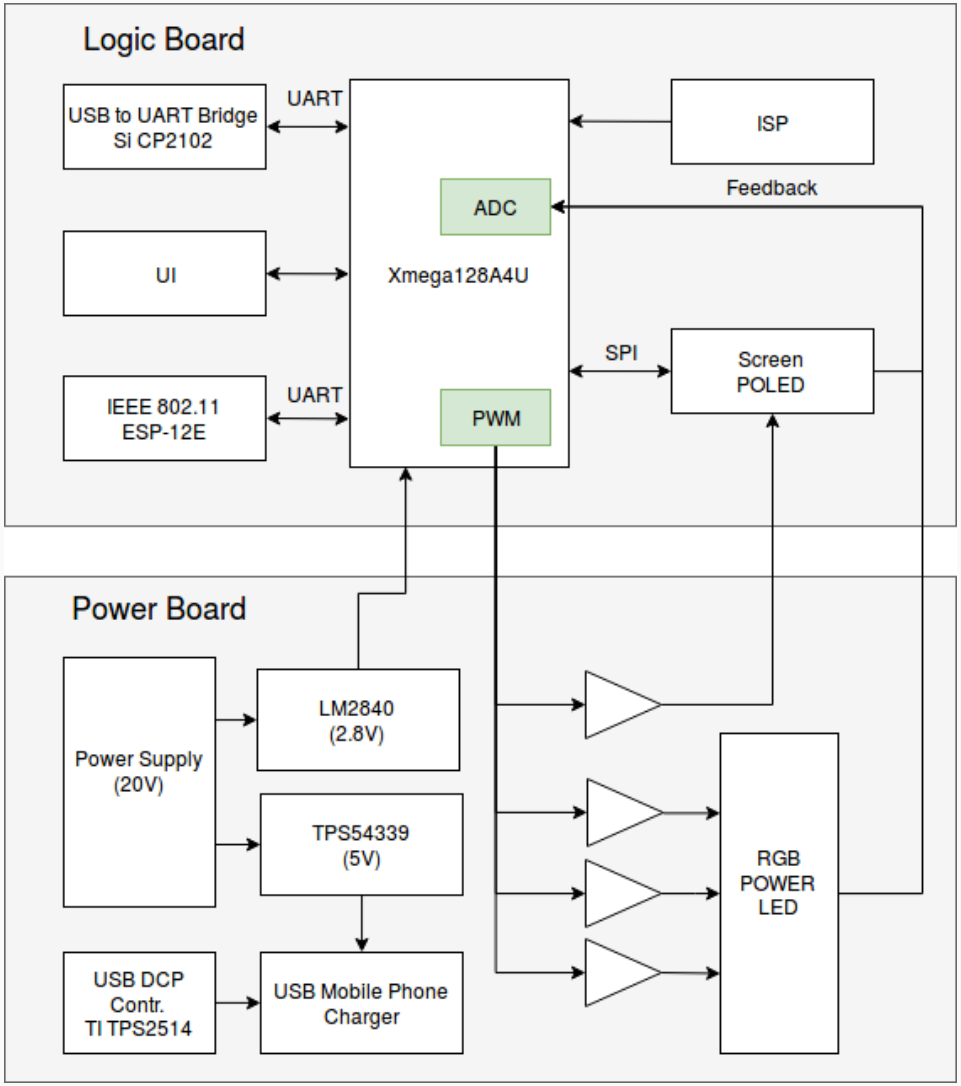

Figure 1: System Overview

Hardware

Power Board

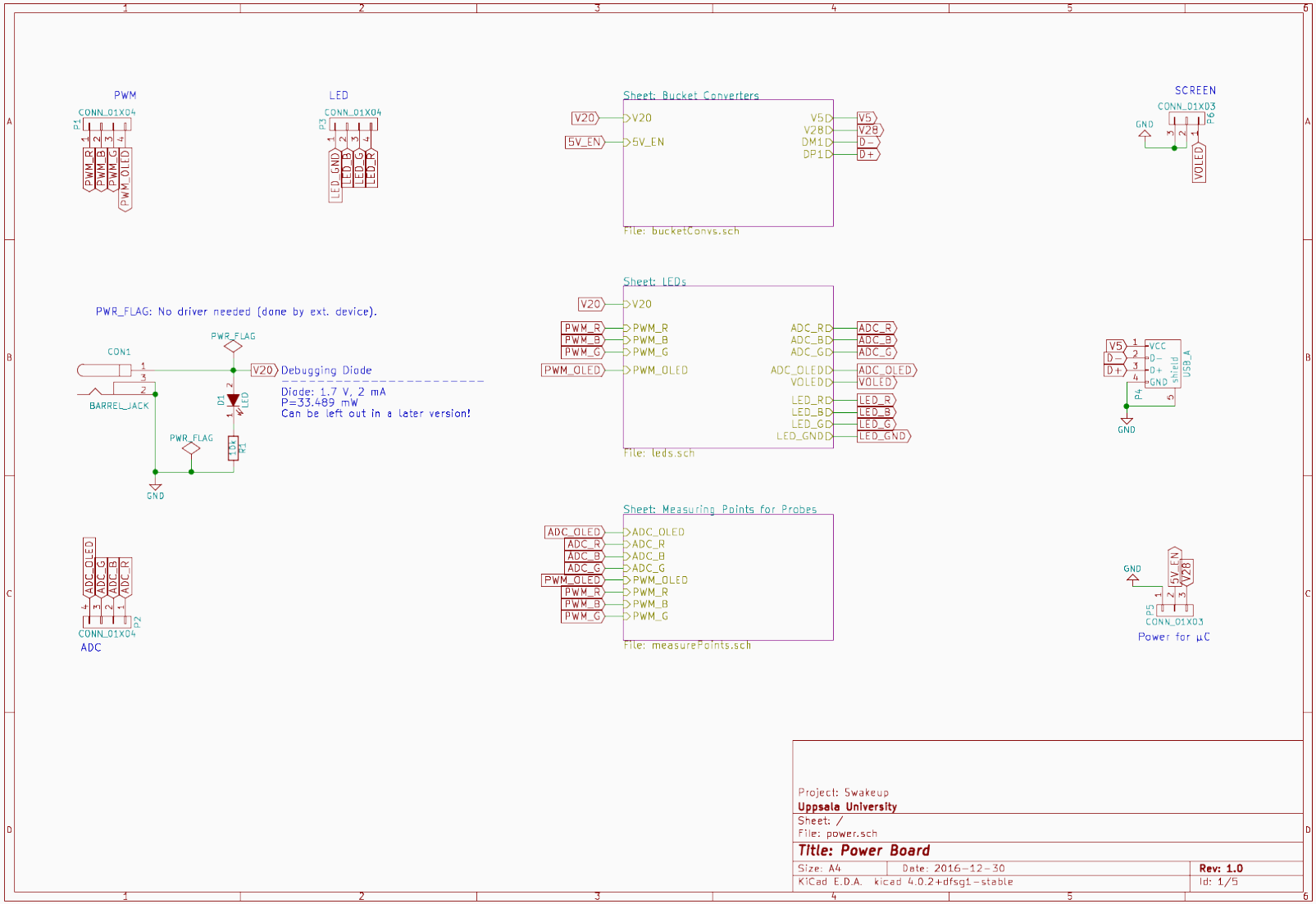

Figure 2: Top View Of The Power Board Schematics

Logic Board

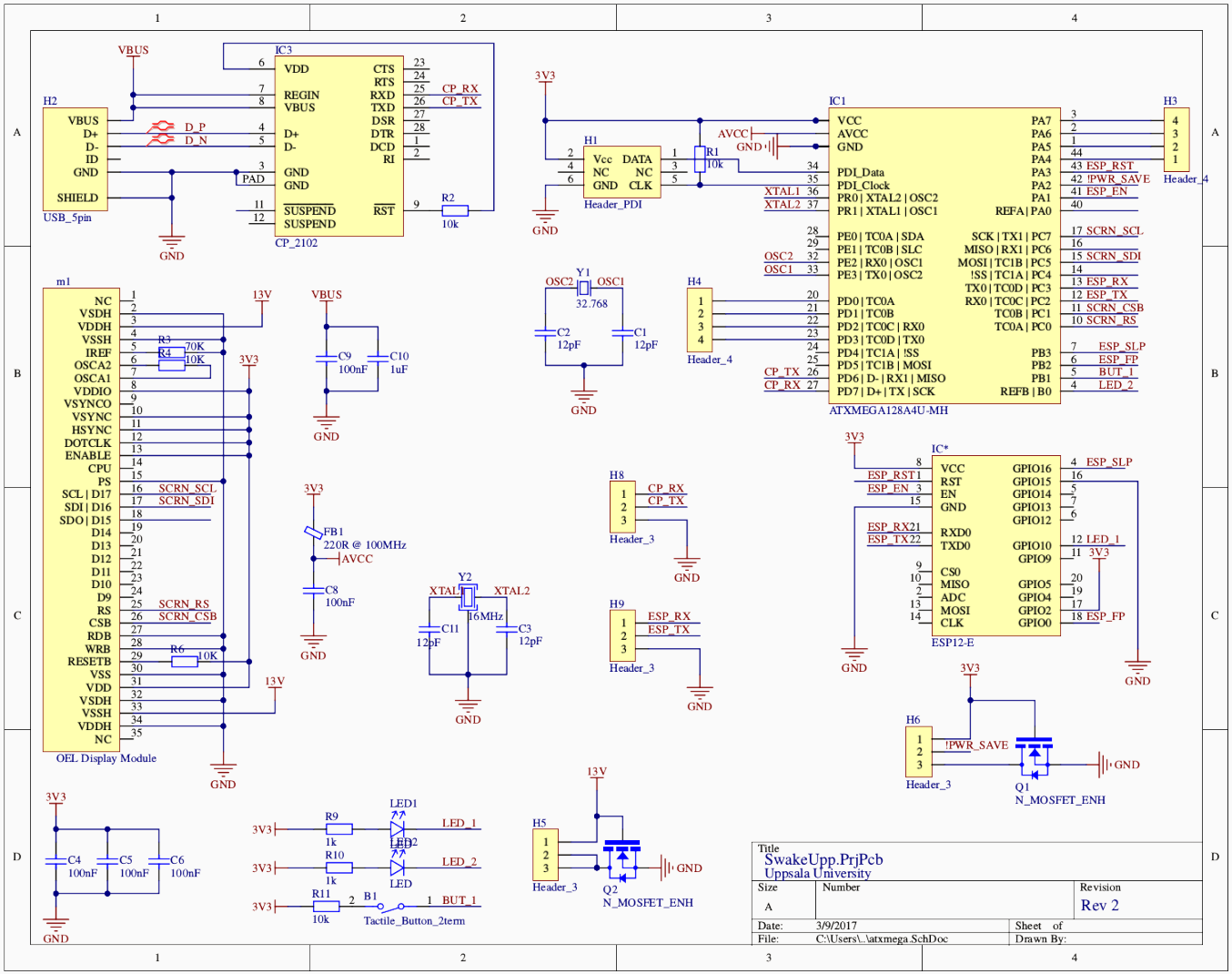

Figure 3: Logic Board Schematics

Software

Code Structure

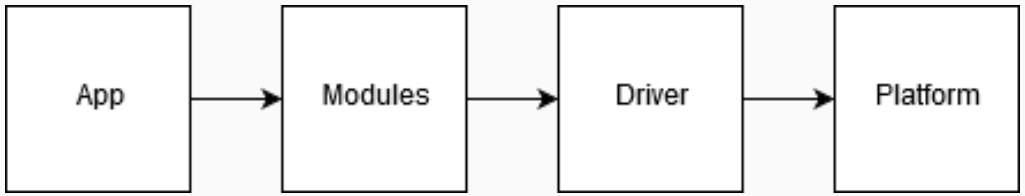

Figure 4: Abstract Layering Model

Code Organisation

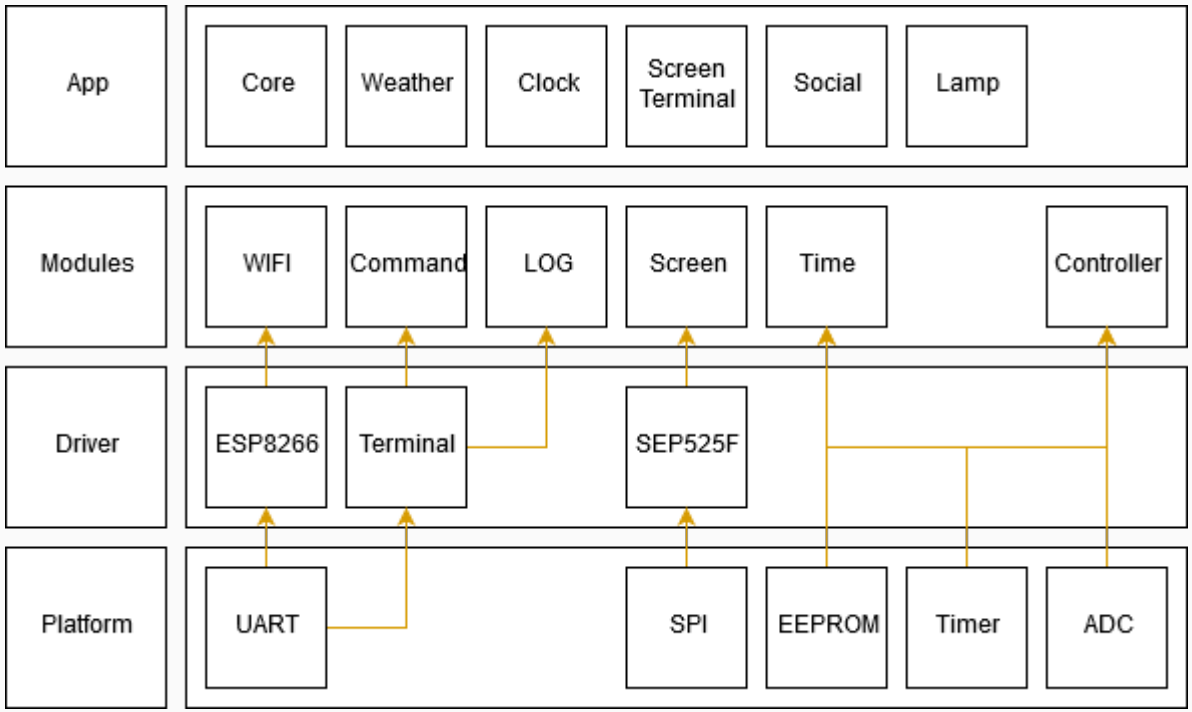

Figure 5: Block Diagram Of The Code Organisation

Operating System - Modules And Events

```
#define MODULE_DEFINE(VAR, DESC, INIT, DEINIT, ...)     \
        Module VAR = {                                  \
                .init = INIT,                           \
                .deinit = DEINIT,                       \
                .cnt = 0,                               \
                .name = DESC,                           \
                .deps = { __VA_ARGS__ }                 \
        }
MODULE_DEFINE(CORE, "Central core", init, deinit, &TIME, &COMMAND, &ESP8266);
```

```
#define EVENT_REGISTER(eventName, desc)\
        Event eventName = \
        {.eventId = __COUNTER__, .data = 0, .description = desc, .descLen = sizeof(desc) }
EVENT_REGISTER(EVENT_UART_DELIMITER, "Got UART delimiter");
```

```
event_addListener(&EVENT_UART_DELIMITER, callback);
```

```
event_fire(&EVENT_UART_DELIMITER, SYSTEM_ADDRESS_CAST (&delimiters[USART_ID][i]));
```

Realization (1)

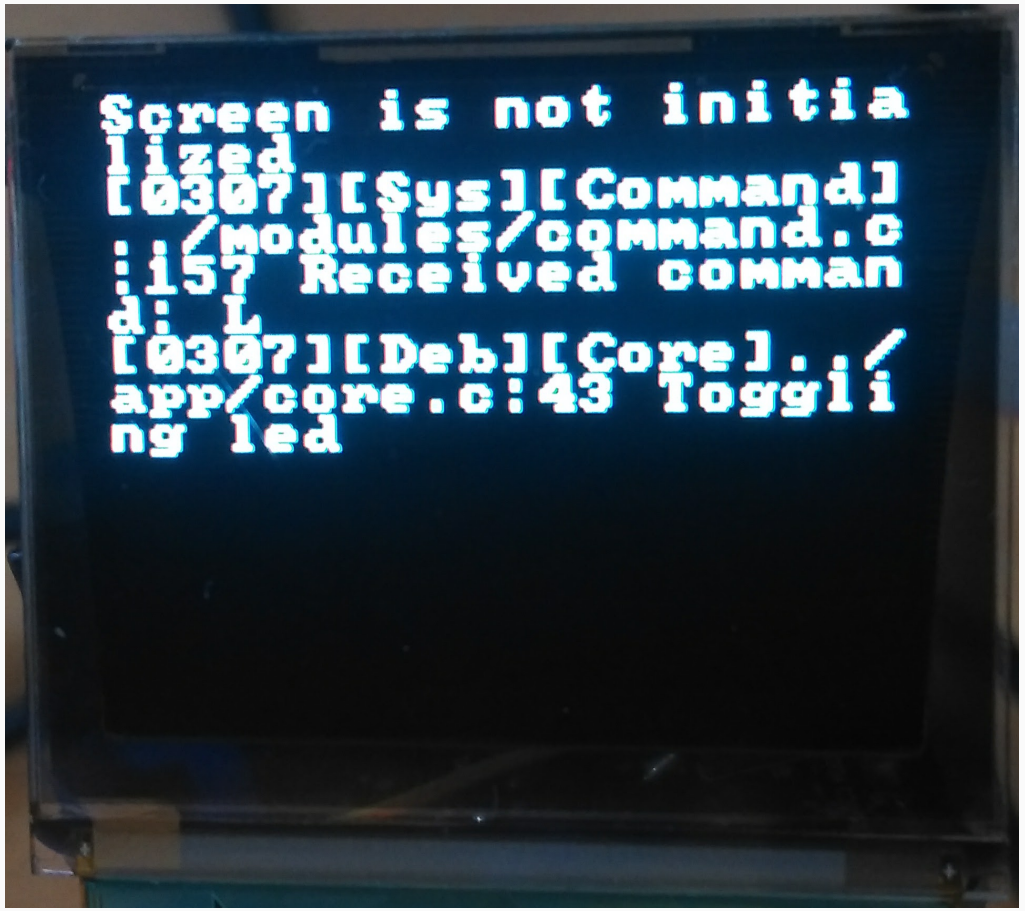

Figure 6: Screen Logging

Realization (2)

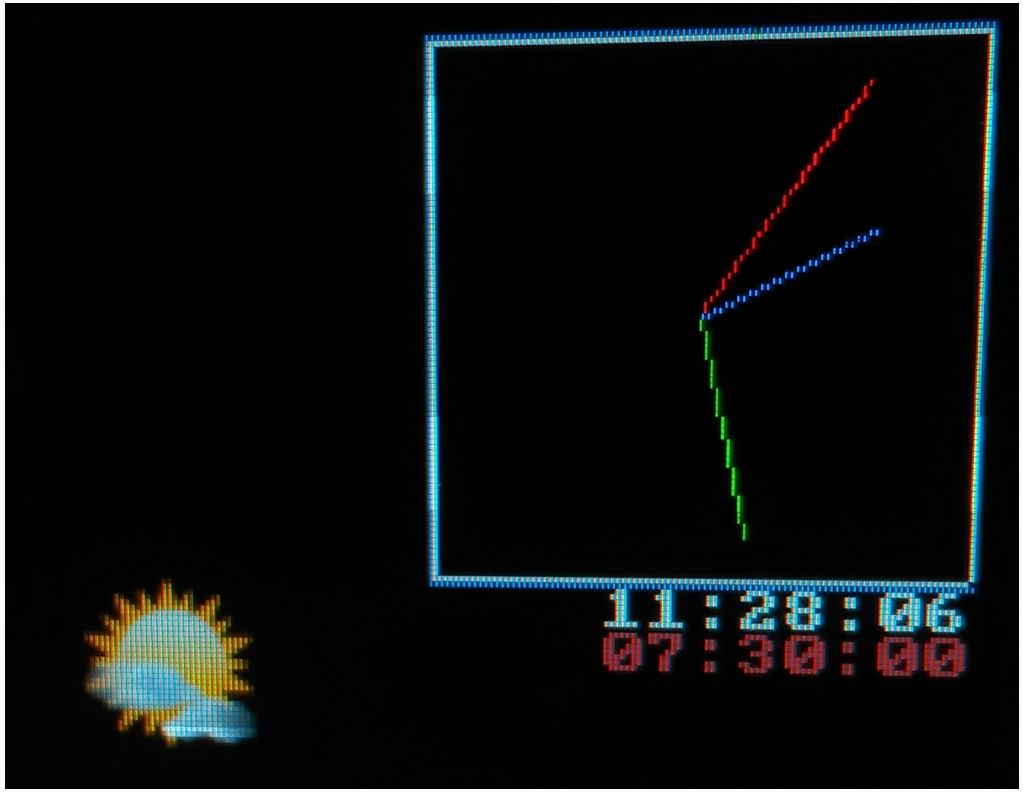

Figure 7: Appearence Of The Clock

Realization (3)

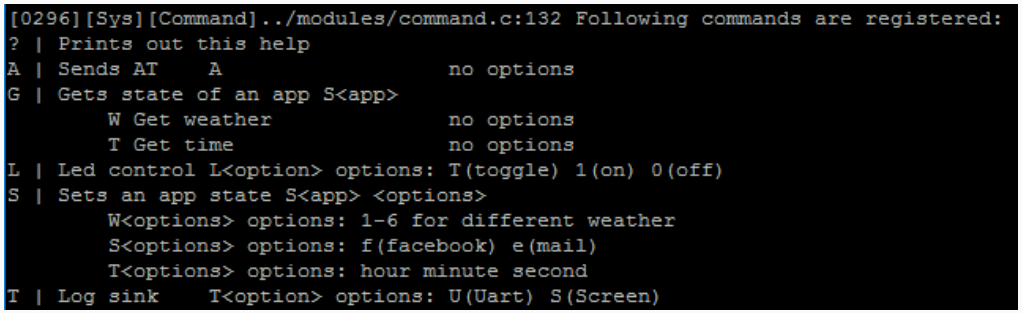

Figure 8: USART Command Interpreter

Status Quo and Outlook

What works? What does not? (1)

HW Block	Working	Problem
USB Charging	✓	
OLED Driver	✓	
Vcc for C	✓	
IEEE 802.11	✓	
USB2UART	✓	
LED Driver		Wrong footprint assignment
Crystal		Wrong pin assignment
USB DCP		Further tests necessary

Table 1: Hardware Overview: What works? What does not?

What works? What does not? (2)

SW Block	Working	Problem
UART	✓	
SPI	✓	
EPROM	✓	
Timer	✓	
ADC		
PWM		
ESP8266	✓	
Terminal	✓	
SEP525F	✓	
Wifi		
Command	✓	
Log	✓	
Screen	✓	
Timekeeper	✓	
Controller		
Core	✓	
Weather	✓	
Clock	✓	
Social		

Table 2: Software Overview: What works? What does not?

Outlook

- HW Rev2 has arrived

Outlook

- HW Rev2 has arrived
- LED driver will work hopefully

Outlook

- HW Rev2 has arrived
- LED driver will work hopefully
- Social connectivity and calendar functions will be implemented

Contact Information

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`https://github.com/s3xm3x/SwakeUp`

Happy Coding :)