

## 1. Description

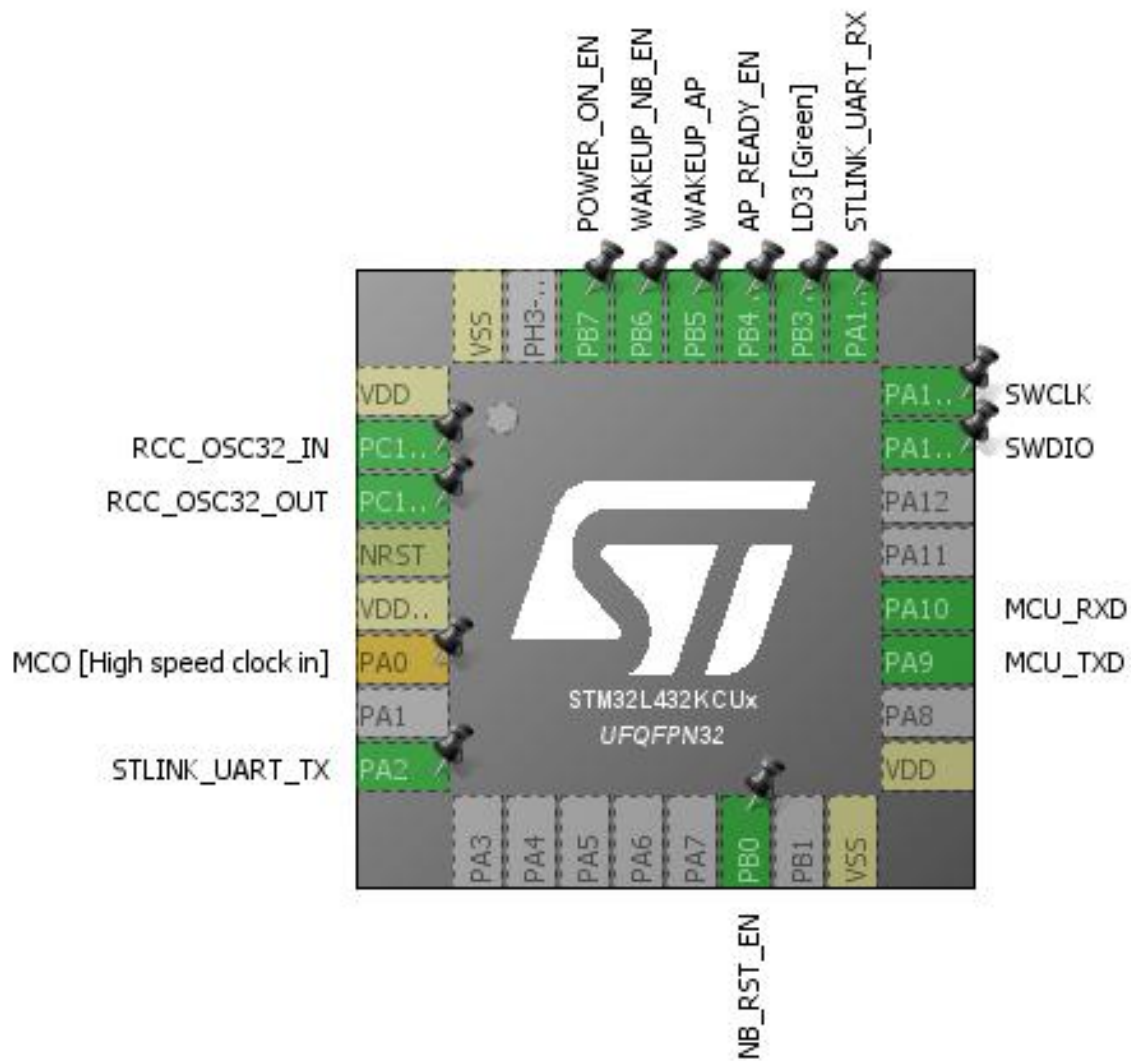
### 1.1. Project

|                 |                    |
|-----------------|--------------------|
| Project Name    | STM32L432_ME3616   |
| Board Name      | NUCLEO-L432KC      |
| Generated with: | STM32CubeMX 4.27.0 |
| Date            | 10/14/2018         |

### 1.2. MCU

|                |               |
|----------------|---------------|
| MCU Series     | STM32L4       |
| MCU Line       | STM32L4x2     |
| MCU name       | STM32L432KCUx |
| MCU Package    | UFQFPN32      |
| MCU Pin number | 32            |

## 2. Pinout Configuration



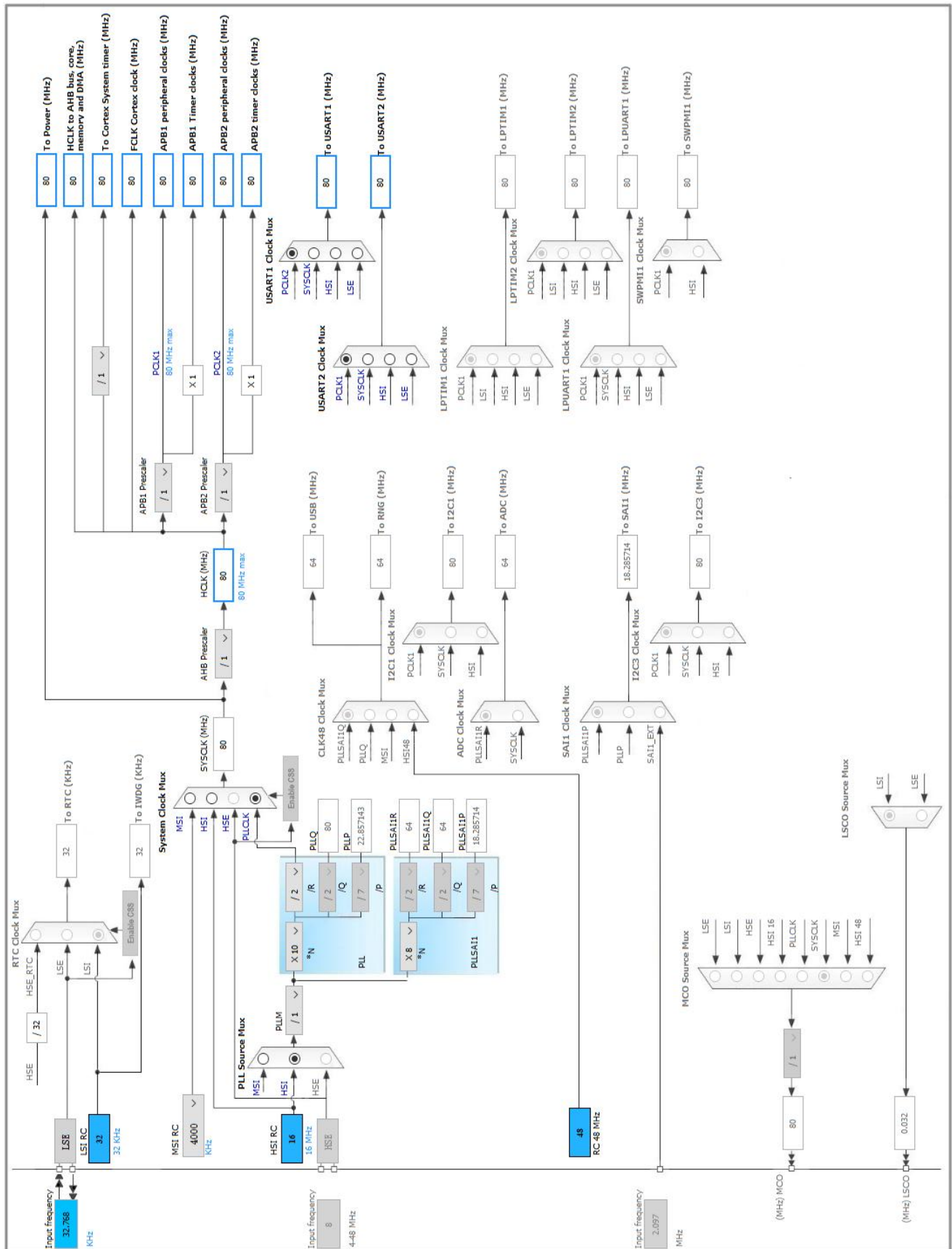
### 3. Pins Configuration

| Pin Number<br>UFQFPN32 | Pin Name<br>(function after<br>reset) | Pin Type | Alternate<br>Function(s) | Label                     |
|------------------------|---------------------------------------|----------|--------------------------|---------------------------|
| 1                      | VDD                                   | Power    |                          |                           |
| 2                      | PC14-OSC32_IN (PC14)                  | I/O      | RCC_OSC32_IN             |                           |
| 3                      | PC15-OSC32_OUT (PC15)                 | I/O      | RCC_OSC32_OUT            |                           |
| 4                      | NRST                                  | Reset    |                          |                           |
| 5                      | VDDA/VREF+                            | Power    |                          |                           |
| 6                      | PA0 *                                 | I/O      | RCC_CK_IN                | MCO [High speed clock in] |
| 8                      | PA2                                   | I/O      | USART2_TX                | STLINK_UART_TX            |
| 14                     | PB0 **                                | I/O      | GPIO_Output              | NB_RST_EN                 |
| 16                     | VSS                                   | Power    |                          |                           |
| 17                     | VDD                                   | Power    |                          |                           |
| 19                     | PA9                                   | I/O      | USART1_TX                | MCU_TXD                   |
| 20                     | PA10                                  | I/O      | USART1_RX                | MCU_RXD                   |
| 23                     | PA13 (JTMS-SWDIO)                     | I/O      | SYS_JTMS-SWDIO           | SWDIO                     |
| 24                     | PA14 (JTCK-SWCLK)                     | I/O      | SYS_JTCK-SWCLK           | SWCLK                     |
| 25                     | PA15 (JTDI)                           | I/O      | USART2_RX                | STLINK_UART_RX            |
| 26                     | PB3 (JTDO-TRACESWO) **                | I/O      | GPIO_Output              | LD3 [Green]               |
| 27                     | PB4 (NJTRST) **                       | I/O      | GPIO_Output              | AP_READY_EN               |
| 28                     | PB5 **                                | I/O      | GPIO_Output              | WAKEUP_AP                 |
| 29                     | PB6 **                                | I/O      | GPIO_Output              | WAKEUP_NB_EN              |
| 30                     | PB7 **                                | I/O      | GPIO_Output              | POWER_ON_EN               |
| 32                     | VSS                                   | Power    |                          |                           |

\*\* The pin is affected with an I/O function

\* The pin is affected with a peripheral function but no peripheral mode is activated

## 4. Clock Tree Configuration



## 5. IPs and Middleware Configuration

### 5.1. RCC

#### Low Speed Clock (LSE) : Crystal/Ceramic Resonator

##### 5.1.1. Parameter Settings:

###### System Parameters:

|                   |                    |
|-------------------|--------------------|
| VDD voltage (V)   | 3.3                |
| Instruction Cache | Enabled            |
| Prefetch Buffer   | <b>Enabled *</b>   |
| Data Cache        | Enabled            |
| Flash Latency(WS) | 4 WS (5 CPU cycle) |

###### RCC Parameters:

|                                |          |
|--------------------------------|----------|
| HSI Calibration Value          | 16       |
| MSI Calibration Value          | 0        |
| MSI Auto Calibration           | Disabled |
| HSE Startup Timeout Value (ms) | 100      |
| LSE Startup Timeout Value (ms) | 5000     |

###### Power Parameters:

|                               |                                 |
|-------------------------------|---------------------------------|
| Power Regulator Voltage Scale | Power Regulator Voltage Scale 1 |
|-------------------------------|---------------------------------|

### 5.2. SYS

#### Debug: Serial Wire

#### Timebase Source: TIM16

### 5.3. USART1

#### Mode: Asynchronous

##### 5.3.1. Parameter Settings:

###### Basic Parameters:

|             |                           |
|-------------|---------------------------|
| Baud Rate   | 115200                    |
| Word Length | 8 Bits (including Parity) |
| Parity      | None                      |
| Stop Bits   | 1                         |

###### Advanced Parameters:

|                |                      |
|----------------|----------------------|
| Data Direction | Receive and Transmit |
| Over Sampling  | 16 Samples           |
| Single Sample  | Disable              |

**Advanced Features:**

|                               |         |
|-------------------------------|---------|
| Auto Baudrate                 | Disable |
| TX Pin Active Level Inversion | Disable |
| RX Pin Active Level Inversion | Disable |
| Data Inversion                | Disable |
| TX and RX Pins Swapping       | Disable |
| Overrun                       | Enable  |
| DMA on RX Error               | Enable  |
| MSB First                     | Disable |

## 5.4. USART2

**Mode: Asynchronous**

### 5.4.1. Parameter Settings:

**Basic Parameters:**

|             |                           |
|-------------|---------------------------|
| Baud Rate   | 115200                    |
| Word Length | 8 Bits (including Parity) |
| Parity      | None                      |
| Stop Bits   | 1                         |

**Advanced Parameters:**

|                |                      |
|----------------|----------------------|
| Data Direction | Receive and Transmit |
| Over Sampling  | 16 Samples           |
| Single Sample  | Disable              |

**Advanced Features:**

|                               |         |
|-------------------------------|---------|
| Auto Baudrate                 | Disable |
| TX Pin Active Level Inversion | Disable |
| RX Pin Active Level Inversion | Disable |
| Data Inversion                | Disable |
| TX and RX Pins Swapping       | Disable |
| Overrun                       | Enable  |
| DMA on RX Error               | Enable  |
| MSB First                     | Disable |

**\* User modified value**

## 6. System Configuration

### 6.1. GPIO configuration

| IP                    | Pin                   | Signal         | GPIO mode                    | GPIO pull/up pull down      | Max Speed       | User Label                |
|-----------------------|-----------------------|----------------|------------------------------|-----------------------------|-----------------|---------------------------|
| RCC                   | PC14-OSC32_IN (PC14)  | RCC_OSC32_IN   | n/a                          | n/a                         | n/a             |                           |
|                       | PC15-OSC32_OUT (PC15) | RCC_OSC32_OUT  | n/a                          | n/a                         | n/a             |                           |
| SYS                   | PA13 (JTMS-SWDIO)     | SYS_JTMS-SWDIO | n/a                          | n/a                         | n/a             | SWDIO                     |
|                       | PA14 (JTCK-SWCLK)     | SYS_JTCK-SWCLK | n/a                          | n/a                         | n/a             | SWCLK                     |
| USART1                | PA9                   | USART1_TX      | Alternate Function Push Pull | No pull-up and no pull-down | <b>Medium</b> * | MCU_TXD                   |
|                       | PA10                  | USART1_RX      | Alternate Function Push Pull | No pull-up and no pull-down | <b>Medium</b> * | MCU_RXD                   |
| USART2                | PA2                   | USART2_TX      | Alternate Function Push Pull | No pull-up and no pull-down | <b>Medium</b> * | STLINK_UART_TX            |
|                       | PA15 (JTDI)           | USART2_RX      | Alternate Function Push Pull | No pull-up and no pull-down | <b>Medium</b> * | STLINK_UART_RX            |
| Single Mapped Signals | PA0                   | RCC_CK_IN      | n/a                          | n/a                         | n/a             | MCO [High speed clock in] |
| GPIO                  | PB0                   | GPIO_Output    | Output Push Pull             | No pull-up and no pull-down | Low             | NB_RST_EN                 |
|                       | PB3 (JTDO-TRACESWO)   | GPIO_Output    | Output Push Pull             | No pull-up and no pull-down | Low             | LD3 [Green]               |
|                       | PB4 (NJTRST)          | GPIO_Output    | Output Push Pull             | No pull-up and no pull-down | Low             | AP_READY_EN               |
|                       | PB5                   | GPIO_Output    | Output Push Pull             | No pull-up and no pull-down | Low             | WAKEUP_AP                 |
|                       | PB6                   | GPIO_Output    | Output Push Pull             | No pull-up and no pull-down | Low             | WAKEUP_NB_EN              |
|                       | PB7                   | GPIO_Output    | Output Push Pull             | No pull-up and no pull-down | Low             | POWER_ON_EN               |

## 6.2. DMA configuration

| DMA request | Stream        | Direction            | Priority        |
|-------------|---------------|----------------------|-----------------|
| USART1_TX   | DMA1_Channel4 | Memory To Peripheral | <b>Medium *</b> |
| USART2_TX   | DMA1_Channel7 | Memory To Peripheral | <b>High *</b>   |
| USART2_RX   | DMA1_Channel6 | Peripheral To Memory | <b>High *</b>   |

### USART1\_TX: DMA1\_Channel4 DMA request Settings:

Mode: Normal  
Peripheral Increment: Disable  
Memory Increment: **Enable \***  
Peripheral Data Width: Byte  
Memory Data Width: Byte

### USART2\_TX: DMA1\_Channel7 DMA request Settings:

Mode: Normal  
Peripheral Increment: Disable  
Memory Increment: **Enable \***  
Peripheral Data Width: Byte  
Memory Data Width: Byte

### USART2\_RX: DMA1\_Channel6 DMA request Settings:

Mode: Normal  
Peripheral Increment: Disable  
Memory Increment: **Enable \***  
Peripheral Data Width: Byte  
Memory Data Width: Byte



### 6.3. NVIC configuration

| Interrupt Table  | Enable | Preenmption Priority | SubPriority |
|--|--------|----------------------|-------------|
| Non maskable interrupt   | true   | 0                    | 0           |
| Hard fault interrupt   | true   | 0                    | 0           |
| Memory management fault  | true   | 0                    | 0           |
| Prefetch fault, memory access fault                                  | true   | 0                    | 0           |
| Undefined instruction or illegal state                               | true   | 0                    | 0           |
| System service call via SWI instruction                              | true   | 0                    | 0           |
| Debug monitor  | true   | 0                    | 0           |
| Pendable request for system service                                  | true   | 0                    | 0           |
| System tick timer  | true   | 0                    | 0           |
| DMA1 channel4 global interrupt                                       | true   | 0                    | 0           |
| DMA1 channel6 global interrupt                                       | true   | 0                    | 0           |
| DMA1 channel7 global interrupt                                       | true   | 0                    | 0           |
| TIM1 update interrupt and TIM16 global interrupt                     | true   | 0                    | 0           |
| USART1 global interrupt  | true   | 3                    | 0           |
| USART2 global interrupt  | true   | 2                    | 0           |
| PVD/PVM1/PVM2/PVM3/PVM4 interrupts through EXTI lines 16/35/36/37/38 | unused |                      |             |
| Flash global interrupt   | unused |                      |             |
| RCC global interrupt   | unused |                      |             |
| FPU global interrupt   | unused |                      |             |

\* User modified value

## 7. Power Consumption Calculator report

### 7.1. Microcontroller Selection

|           |               |
|-----------|---------------|
| Series    | STM32L4       |
| Line      | STM32L4x2     |
| MCU       | STM32L432KCUx |
| Datasheet | 028798_Rev2   |

### 7.2. Parameter Selection

|             |      |
|-------------|------|
| Temperature | 25   |
| Vdd         | null |

## 8. Software Project

### 8.1. Project Settings

| Name                              | Value  |
|-----------------------------------|--|
| Project Name                      | STM32L432_ME3616   |
| Project Folder                    | C:\Users\Simon\Desktop\STM32L432_ME3616\STM32L432_ME3616 |
| Toolchain / IDE                   | EWARM V8   |
| Firmware Package Name and Version | STM32Cube FW_L4 V1.13.0                                  |

### 8.2. Code Generation Settings

| Name  | Value   |
|---|---|
| STM32Cube Firmware Library Package                              | Copy all used libraries into the project folder |
| Generate peripheral initialization as a pair of '.c/.h' files   | Yes   |
| Backup previously generated files when re-generating            | No  |
| Delete previously generated files when not re-generated         | Yes   |
| Set all free pins as analog (to optimize the power consumption) | No  |

## ***9. Software Pack Report***