



## 1. Description

### 1.1. Project

|                 |                    |
|-----------------|--------------------|
| Project Name    | right_project      |
| Board Name      | B-L475E-IOT01A1    |
| Generated with: | STM32CubeMX 6.15.0 |
| Date            | 10/08/2025         |

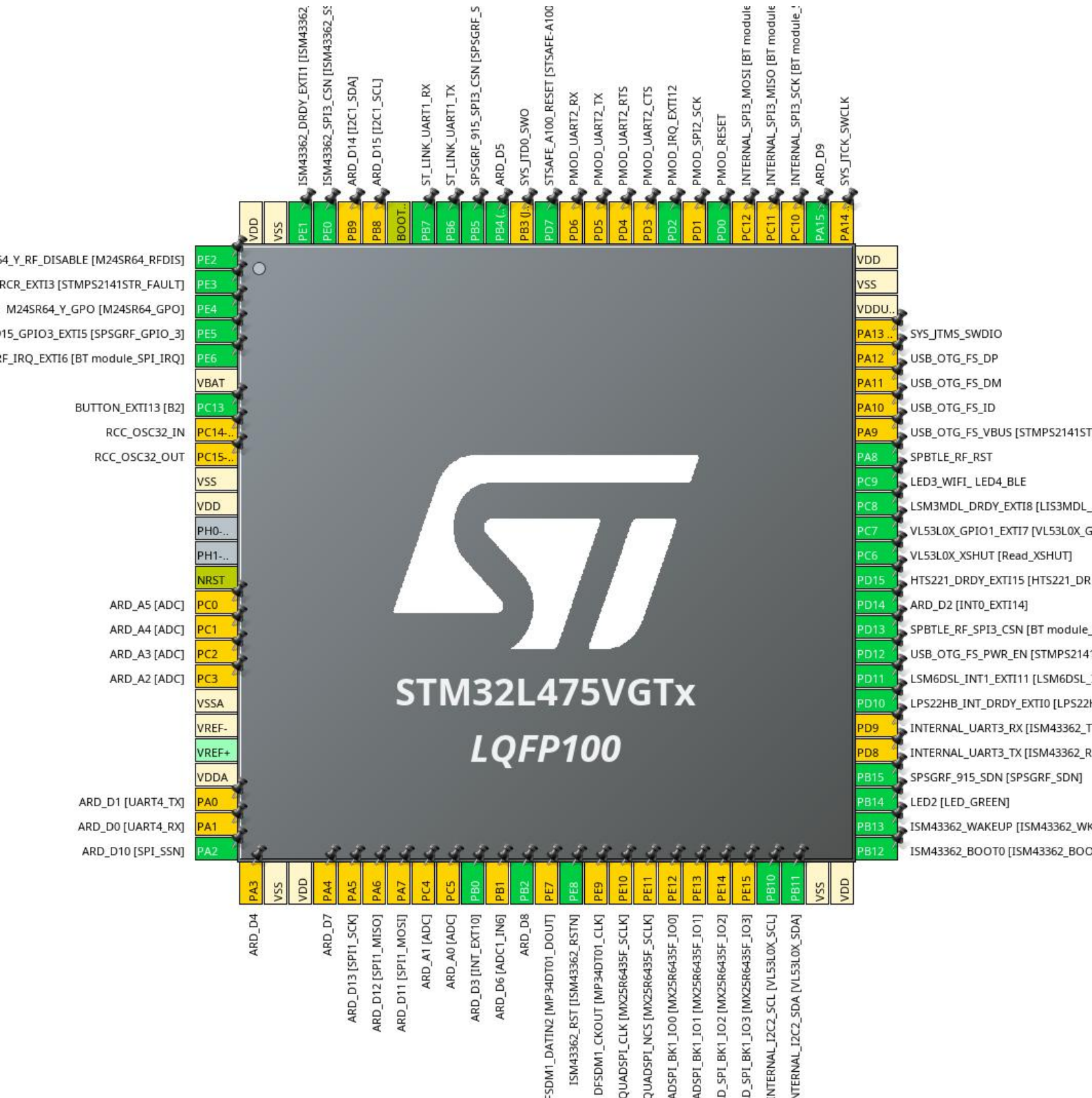
### 1.2. MCU

|                |               |
|----------------|---------------|
| MCU Series     | STM32L4       |
| MCU Line       | STM32L4x5     |
| MCU name       | STM32L475VGTx |
| MCU Package    | LQFP100       |
| MCU Pin number | 100           |

### 1.3. Core(s) information

|         |               |
|---------|---------------|
| Core(s) | Arm Cortex-M4 |
|---------|---------------|

## 2. Pinout Configuration



### 3. Pins Configuration

| Pin Number<br>LQFP100 | Pin Name<br>(function after<br>reset) | Pin Type | Alternate<br>Function(s) | Label  |
|-----------------------|---------------------------------------|----------|--------------------------|--|
| 1                     | PE2 *                                 | I/O      | GPIO_Output              | M24SR64_Y_RF_DISABLE<br>[M24SR64_RFDIS]            |
| 2                     | PE3                                   | I/O      | GPIO_EXTI3               | USB_OTG_FS_OVRCR_EX<br>TI3<br>[STMPS2141STR_FAULT] |
| 3                     | PE4 *                                 | I/O      | GPIO_Output              | M24SR64_Y_GPO<br>[M24SR64_GPO]                     |
| 4                     | PE5                                   | I/O      | GPIO_EXTI5               | SPSGRF_915_GPIO3_EXTI<br>5 [SPSGRF_GPIO_3]         |
| 5                     | PE6                                   | I/O      | GPIO_EXTI6               | SPBTLE_RF_IRQ_EXTI6<br>[BT module_SPI_IRQ]         |
| 6                     | VBAT                                  | Power    |                          |  |
| 7                     | PC13                                  | I/O      | GPIO_EXTI13              | BUTTON_EXTI13 [B2]                                 |
| 8                     | PC14-OSC32_IN (PC14) **               | I/O      | RCC_OSC32_IN             |  |
| 9                     | PC15-OSC32_OUT (PC15)<br>**           | I/O      | RCC_OSC32_OUT            |  |
| 10                    | VSS                                   | Power    |                          |  |
| 11                    | VDD                                   | Power    |                          |  |
| 14                    | NRST                                  | Reset    |                          |  |
| 15                    | PC0 **                                | I/O      | ADC1_IN1                 | ARD_A5 [ADC]                                       |
| 16                    | PC1 **                                | I/O      | ADC1_IN2                 | ARD_A4 [ADC]                                       |
| 17                    | PC2 **                                | I/O      | ADC1_IN3                 | ARD_A3 [ADC]                                       |
| 18                    | PC3 **                                | I/O      | ADC1_IN4                 | ARD_A2 [ADC]                                       |
| 19                    | VSSA                                  | Power    |                          |  |
| 20                    | VREF-                                 | Power    |                          |  |
| 22                    | VDDA                                  | Power    |                          |  |
| 23                    | PA0 **                                | I/O      | UART4_TX                 | ARD_D1 [UART4_TX]                                  |
| 24                    | PA1 **                                | I/O      | UART4_RX                 | ARD_D0 [UART4_RX]                                  |
| 25                    | PA2 *                                 | I/O      | GPIO_Output              | ARD_D10 [SPI_SSN]                                  |
| 26                    | PA3 **                                | I/O      | TIM2_CH4                 | ARD_D4   |
| 27                    | VSS                                   | Power    |                          |  |
| 28                    | VDD                                   | Power    |                          |  |
| 29                    | PA4 **                                | I/O      | ADC1_IN9                 | ARD_D7   |
| 30                    | PA5 **                                | I/O      | SPI1_SCK                 | ARD_D13 [SPI1_SCK]                                 |
| 31                    | PA6 **                                | I/O      | SPI1_MISO                | ARD_D12 [SPI1_MISO]                                |
| 32                    | PA7 **                                | I/O      | SPI1_MOSI                | ARD_D11 [SPI1_MOSI]                                |
| 33                    | PC4 **                                | I/O      | ADC1_IN13                | ARD_A1 [ADC]                                       |

| Pin Number<br>LQFP100 | Pin Name<br>(function after<br>reset) | Pin Type | Alternate<br>Function(s) | Label   |
|-----------------------|---------------------------------------|----------|--------------------------|---|
| 34                    | PC5 **                                | I/O      | ADC1_IN14                | ARD_A0 [ADC]                                  |
| 35                    | PB0                                   | I/O      | GPIO_EXTI0               | ARD_D3 [INT_EXT10]                            |
| 36                    | PB1 **                                | I/O      | ADC1_IN16                | ARD_D6 [ADC1_IN6]                             |
| 37                    | PB2 *                                 | I/O      | GPIO_Output              | ARD_D8  |
| 38                    | PE7 **                                | I/O      | DFSDM1_DATIN2            | DFSDM1_DATIN2<br>[MP34DT01_DOUT]              |
| 39                    | PE8 *                                 | I/O      | GPIO_Output              | ISM43362_RST<br>[ISM43362_RSTN]               |
| 40                    | PE9 **                                | I/O      | DFSDM1_CKOUT             | DFSDM1_CKOUT<br>[MP34DT01_CLK]                |
| 41                    | PE10 **                               | I/O      | QUADSPI_CLK              | QUADSPI_CLK<br>[MX25R6435F_SCLK]              |
| 42                    | PE11 **                               | I/O      | QUADSPI_NCS              | QUADSPI_NCS<br>[MX25R6435F_SCLK]              |
| 43                    | PE12 **                               | I/O      | QUADSPI_BK1_IO0          | OQUADSPI_BK1_IO0<br>[MX25R6435F_IO0]          |
| 44                    | PE13 **                               | I/O      | QUADSPI_BK1_IO1          | QUADSPI_BK1_IO1<br>[MX25R6435F_IO1]           |
| 45                    | PE14 **                               | I/O      | QUADSPI_BK1_IO2          | QUAD_SPI_BK1_IO2<br>[MX25R6435F_IO2]          |
| 46                    | PE15 **                               | I/O      | QUADSPI_BK1_IO3          | QUAD_SPI_BK1_IO3<br>[MX25R6435F_IO3]          |
| 47                    | PB10                                  | I/O      | I2C2_SCL                 | INTERNAL_I2C2_SCL<br>[VL53L0X_SCL]            |
| 48                    | PB11                                  | I/O      | I2C2_SDA                 | INTERNAL_I2C2_SDA<br>[VL53L0X_SDA]            |
| 49                    | VSS                                   | Power    |                          |   |
| 50                    | VDD                                   | Power    |                          |   |
| 51                    | PB12 *                                | I/O      | GPIO_Output              | ISM43362_BOOT0<br>[ISM43362_BOOT]             |
| 52                    | PB13 *                                | I/O      | GPIO_Output              | ISM43362_WAKEUP<br>[ISM43362_WKUP]            |
| 53                    | PB14 *                                | I/O      | GPIO_Output              | LED2 [LED_GREEN]                              |
| 54                    | PB15 *                                | I/O      | GPIO_Output              | SPSGRF_915_SDN<br>[SPSGRF_SDN]                |
| 55                    | PD8 **                                | I/O      | USART3_TX                | INTERNAL_UART3_TX<br>[ISM43362_RX]            |
| 56                    | PD9 **                                | I/O      | USART3_RX                | INTERNAL_UART3_RX<br>[ISM43362_TX]            |
| 57                    | PD10                                  | I/O      | GPIO_EXTI10              | LPS22HB_INT_DRDY_EXTI<br>0 [LPS22HB_INT_DRDY] |
| 58                    | PD11                                  | I/O      | GPIO_EXTI11              | LSM6DSL_INT1_EXTI11<br>[LSM6DSL_INT1]         |

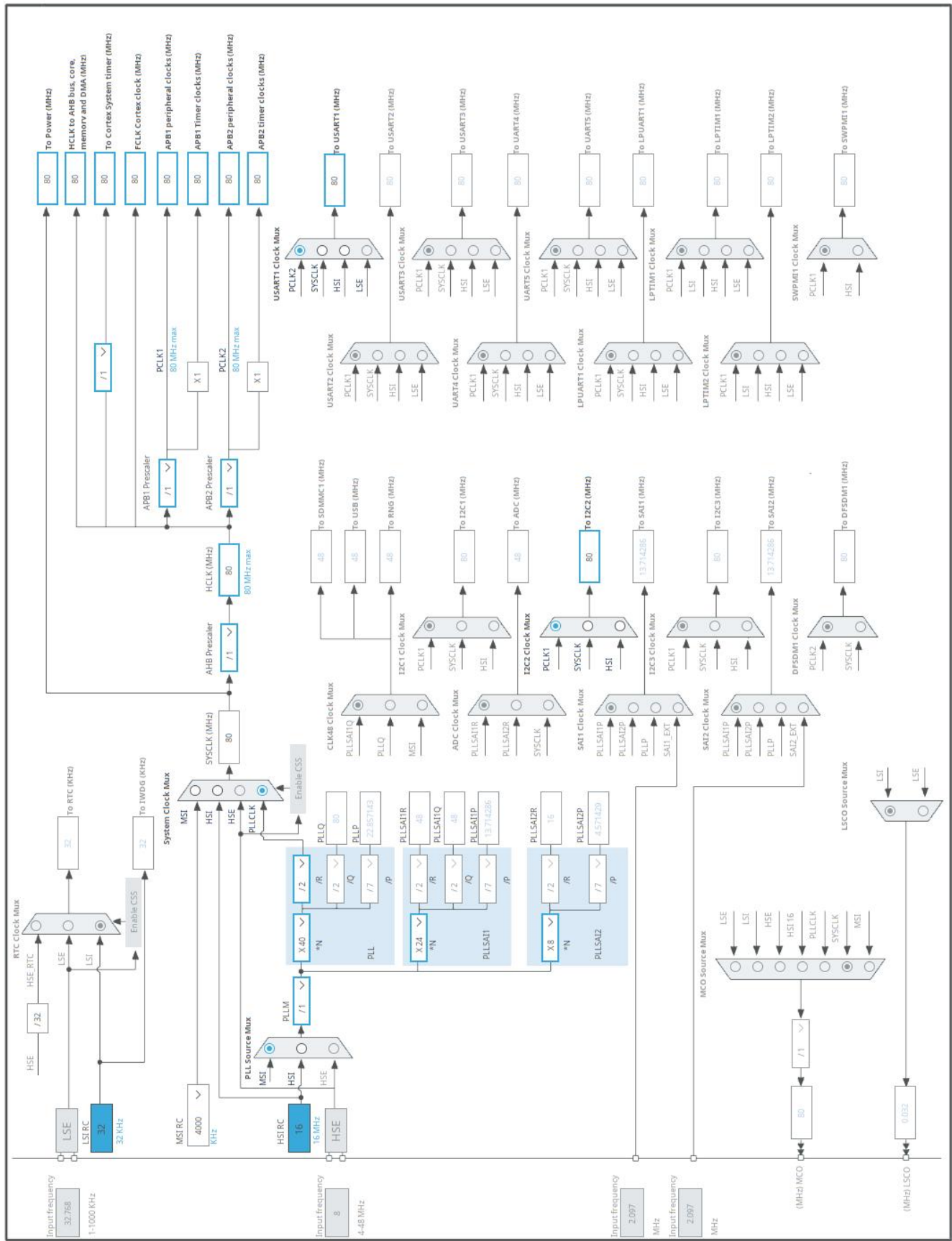
| Pin Number<br>LQFP100 | Pin Name<br>(function after<br>reset) | Pin Type | Alternate<br>Function(s) | Label   |
|-----------------------|---------------------------------------|----------|--------------------------|---|
| 59                    | PD12 *                                | I/O      | GPIO_Output              | USB_OTG_FS_PWR_EN<br>[STMP2141STR_EN]                         |
| 60                    | PD13 *                                | I/O      | GPIO_Output              | SPBTLE_RF_SPI3_CSN<br>[BT module_SPI_CS]                      |
| 61                    | PD14                                  | I/O      | GPIO_EXTI14              | ARD_D2 [INT0_EXTI14]  |
| 62                    | PD15                                  | I/O      | GPIO_EXTI15              | HTS221_DRDY_EXTI15<br>[HTS221_DRDY]                           |
| 63                    | PC6 *                                 | I/O      | GPIO_Output              | VL53L0X_XSHUT<br>[Read_XSHUT]                                 |
| 64                    | PC7                                   | I/O      | GPIO_EXTI7               | VL53L0X_GPIO1_EXTI7<br>[VL53L0X_GPIO1]                        |
| 65                    | PC8                                   | I/O      | GPIO_EXTI8               | LSM3MDL_DRDY_EXTI8<br>[LIS3MDL_DRDY]                          |
| 66                    | PC9 *                                 | I/O      | GPIO_Output              | LED3_WIFI_LED4_BLE  |
| 67                    | PA8 *                                 | I/O      | GPIO_Output              | SPBTLE_RF_RST   |
| 68                    | PA9 **                                | I/O      | USB_OTG_FS_VBUS          | USB_OTG_FS_VBUS<br>[STMP2141STR_OUT]                          |
| 69                    | PA10 **                               | I/O      | USB_OTG_FS_ID            | USB_OTG_FS_ID   |
| 70                    | PA11 **                               | I/O      | USB_OTG_FS_DM            | USB_OTG_FS_DM   |
| 71                    | PA12 **                               | I/O      | USB_OTG_FS_DP            | USB_OTG_FS_DP   |
| 72                    | PA13 (JTMS-SWDIO) **                  | I/O      | SYS_JTMS-SWDIO           | SYS_JTMS_SWDIO  |
| 73                    | VDDUSB                                | Power    |                          |   |
| 74                    | VSS                                   | Power    |                          |   |
| 75                    | VDD                                   | Power    |                          |   |
| 76                    | PA14 (JTCK-SWCLK) **                  | I/O      | SYS_JTCK-SWCLK           | SYS_JTCK_SWCLK  |
| 77                    | PA15 (JTDI) *                         | I/O      | GPIO_Output              | ARD_D9  |
| 78                    | PC10 **                               | I/O      | SPI3_SCK                 | INTERNAL_SPI3_SCK [BT<br>module_SPI_SCLK]<br>[ISM43362_SCK]   |
| 79                    | PC11 **                               | I/O      | SPI3_MISO                | INTERNAL_SPI3_MISO [BT<br>module_SPI_MISO]<br>[ISM43362_MISO] |
| 80                    | PC12 **                               | I/O      | SPI3_MOSI                | INTERNAL_SPI3_MOSI [BT<br>module_SPI_MOSI]<br>[ISM43362_MOSI] |
| 81                    | PD0 *                                 | I/O      | GPIO_Output              | PMOD_RESET  |
| 82                    | PD1 **                                | I/O      | SPI2_SCK                 | PMOD_SPI2_SCK   |
| 83                    | PD2                                   | I/O      | GPIO_EXTI2               | PMOD_IRQ_EXTI12   |
| 84                    | PD3 **                                | I/O      | USART2_CTS               | PMOD_UART2_CTS  |
| 85                    | PD4 **                                | I/O      | USART2_RTS               | PMOD_UART2_RTS  |
| 86                    | PD5 **                                | I/O      | USART2_TX                | PMOD_UART2_TX   |
| 87                    | PD6 **                                | I/O      | USART2_RX                | PMOD_UART2_RX   |

| Pin Number<br>LQFP100 | Pin Name<br>(function after<br>reset) | Pin Type | Alternate<br>Function(s) | Label                                     |
|-----------------------|---------------------------------------|----------|--------------------------|---|
| 88                    | PD7 *                                 | I/O      | GPIO_Output              | STSAFE_A100_RESET<br>[STSAFE-A100_RESET]  |
| 89                    | PB3 (JTDO-TRACESWO) **                | I/O      | SYS_JTDO-SWO             | SYS_JTD0_SWO                              |
| 90                    | PB4 (NJTRST) *                        | I/O      | GPIO_Output              | ARD_D5                                    |
| 91                    | PB5 *                                 | I/O      | GPIO_Output              | SPSGRF_915_SPI3_CSN<br>[SPSGRF_SPI_CS]    |
| 92                    | PB6                                   | I/O      | USART1_TX                | ST_LINK_UART1_TX                          |
| 93                    | PB7                                   | I/O      | USART1_RX                | ST_LINK_UART1_RX                          |
| 94                    | BOOT0                                 | Boot     |                          |   |
| 95                    | PB8 **                                | I/O      | I2C1_SCL                 | ARD_D15 [I2C1_SCL]                        |
| 96                    | PB9 **                                | I/O      | I2C1_SDA                 | ARD_D14 [I2C1_SDA]                        |
| 97                    | PE0 *                                 | I/O      | GPIO_Output              | ISM43362_SPI3_CSN<br>[ISM43362_SSN]       |
| 98                    | PE1                                   | I/O      | GPIO_EXTI1               | ISM43362_DRDY_EXTI1<br>[ISM43362_DATARDY] |
| 99                    | VSS                                   | Power    |                          |   |
| 100                   | VDD                                   | 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





## 1. Power Consumption Calculator report

### 1.1. Microcontroller Selection

|           |               |
|-----------|---------------|
| Series    | STM32L4       |
| Line      | STM32L4x5     |
| MCU       | STM32L475VGTx |
| Datasheet | DS10969_Rev2  |

### 1.2. Parameter Selection

|             |     |
|-------------|-----|
| Temperature | 25  |
| Vdd         | 3.0 |

### 1.3. Battery Selection

|                   |                 |
|-------------------|-----------------|
| Battery           | Li-SOCL2(A3400) |
| Capacity          | 3400.0 mAh      |
| Self Discharge    | 0.08 %/month    |
| Nominal Voltage   | 3.6 V           |
| Max Cont Current  | 100.0 mA        |
| Max Pulse Current | 200.0 mA        |
| Cells in series   | 1               |
| Cells in parallel | 1               |

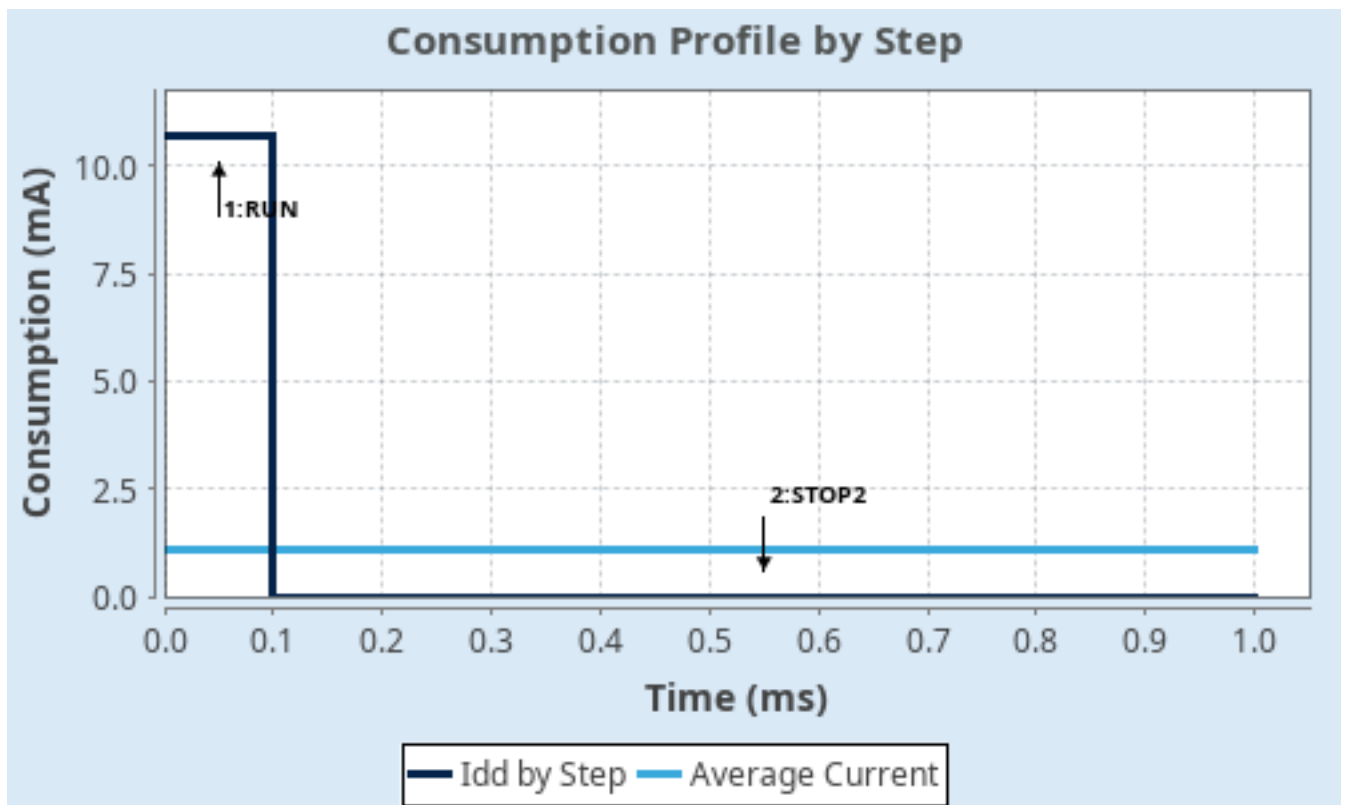
#### 1.4. Sequence

|                               |             |                |
|-------------------------------|-------------|----------------|
| <b>Step</b>                   | Step1       | Step2          |
| <b>Mode</b>                   | RUN         | STOP2          |
| <b>Vdd</b>                    | 3.0         | 3.0            |
| <b>Voltage Source</b>         | Battery     | Battery        |
| <b>Range</b>                  | Range1-High | NoRange        |
| <b>Fetch Type</b>             | SRAM2       | n/a            |
| <b>CPU Frequency</b>          | 80 MHz      | 0 Hz           |
| <b>Clock Configuration</b>    | HSE PLL     | ALL CLOCKS OFF |
| <b>Clock Source Frequency</b> | 4 MHz       | 0 Hz           |
| <b>Peripherals</b>            |             |                |
| <b>Additional Cons.</b>       | 0 mA        | 0 mA           |
| <b>Average Current</b>        | 10.7 mA     | 1.18 $\mu$ A   |
| <b>Duration</b>               | 0.1 ms      | 0.9 ms         |
| <b>DMIPS</b>                  | 100.0       | 0.0            |
| <b>Ta Max</b>                 | 103.65      | 105            |
| <b>Category</b>               | In DS Table | In DS Table    |

#### 1.5. Results

|               |                            |                 |             |
|---------------|----------------------------|-----------------|-------------|
| Sequence Time | 1 ms                       | Average Current | 1.07 mA     |
| Battery Life  | 4 months, 10 days, 3 hours | Average DMIPS   | 100.0 DMIPS |

#### 1.6. Chart



## 2. Software Project

### 2.1. Project Settings

| Name                              | Value  |
|-----------------------------------|--|
| Project Name                      | right_project  |
| Project Folder                    | /home/solomia/STM32CubeIDE/workspace_1.19.0/my_store/right_project |
| Toolchain / IDE                   | STM32CubeIDE   |
| Firmware Package Name and Version | STM32Cube FW_L4 V1.18.1  |
| Application Structure             | Advanced   |
| Generate Under Root               | Yes  |
| Do not generate the main()        | No   |
| Minimum Heap Size                 | 0x800  |
| Minimum Stack Size                | 0x800  |

### 2.2. Code Generation Settings

| Name  | Value                                 |
|---|---------------------------------------|
| STM32Cube MCU packages and embedded software                    | Copy only the necessary library files |
| Generate peripheral initialization as a pair of '.c/.h' files   | No                                    |
| Backup previously generated files when re-generating            | No                                    |
| Keep User Code when re-generating                               | Yes                                   |
| Delete previously generated files when not re-generated         | Yes                                   |
| Set all free pins as analog (to optimize the power consumption) | No                                    |
| Enable Full Assert  | No                                    |

### 2.3. Advanced Settings - Generated Function Calls

| Rank | Function Name       | Peripheral Instance Name |
|------|---------------------|--------------------------|
| 1    | SystemClock_Config  | RCC                      |
| 2    | MX_GPIO_Init        | GPIO                     |
| 3    | MX_USART1_UART_Init | USART1                   |

## 3. Peripherals and Middlewares Configuration

### 3.1. I2C2

#### I2C: I2C

##### 3.1.1. Parameter Settings:

###### Timing configuration:

|                               |                     |
|-------------------------------|---------------------|
| Custom Timing                 | Disabled            |
| I2C Speed Mode                | <b>Fast Mode *</b>  |
| I2C Speed Frequency (KHz)     | 400                 |
| Rise Time (ns)                | 100                 |
| Fall Time (ns)                | 100                 |
| Coefficient of Digital Filter | 0                   |
| Analog Filter                 | Enabled             |
| Timing                        | <b>0x00F12981 *</b> |

###### Slave Features:

|                                  |          |
|----------------------------------|----------|
| Clock No Stretch Mode            | Disabled |
| General Call Address Detection   | Disabled |
| Primary Address Length selection | 7-bit    |
| Dual Address Acknowledged        | Disabled |
| Primary slave address            | 0        |

### 3.2. RCC

##### 3.2.1. Parameter Settings:

###### System Parameters:

|                   |                    |
|-------------------|--------------------|
| VDD voltage (V)   | 3.3                |
| Instruction Cache | Enabled            |
| Prefetch Buffer   | Disabled           |
| 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 |
|-------------------------------|---------------------------------|

### 3.3. SYS

**Timebase Source: SysTick**

### 3.4. USART1

**Mode: Asynchronous**

#### 3.4.1. 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 |

### **3.5. *STMicroelectronics.X-CUBE-AI.10.2.0***

### **3.6. STMicroelectronics.X-CUBE-MEMS1.11.3.0**

**mode: BoardOoPartJjAccGyr**

#### 3.6.1. Platform Settings:

|                       |      |
|-----------------------|------|
| LSM6DSL BUS IO driver | I2C2 |
|-----------------------|------|

**\* User modified value**

## 4. System Configuration

### 4.1. GPIO configuration

| IP                    | Pin                   | Signal        | GPIO mode                      | GPIO pull/up pull down      | Max Speed   | User Label                      |
|-----------------------|-----------------------|---------------|--------------------------------|-----------------------------|-------------|---------------------------------|
| I2C2                  | PB10                  | I2C2_SCL      | Alternate Function Open Drain  | No pull-up and no pull-down | Very High * | INTERNAL_I2C2_SCL [VL53L0X_SCL] |
|                       | PB11                  | I2C2_SDA      | Alternate Function Open Drain  | No pull-up and no pull-down | Very High * | INTERNAL_I2C2_SDA [VL53L0X_SDA] |
| USART1                | PB6                   | USART1_TX     | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | ST_LINK_UART1_TX                |
|                       | PB7                   | USART1_RX     | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | ST_LINK_UART1_RX                |
| Single Mapped Signals | 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         |                                 |
|                       | PC0                   | ADC1_IN1      | Analog mode for ADC conversion | No pull-up and no pull-down | n/a         | ARD_A5 [ADC]                    |
|                       | PC1                   | ADC1_IN2      | Analog mode for ADC conversion | No pull-up and no pull-down | n/a         | ARD_A4 [ADC]                    |
|                       | PC2                   | ADC1_IN3      | Analog mode for ADC conversion | No pull-up and no pull-down | n/a         | ARD_A3 [ADC]                    |
|                       | PC3                   | ADC1_IN4      | Analog mode for ADC conversion | No pull-up and no pull-down | n/a         | ARD_A2 [ADC]                    |
|                       | PA0                   | UART4_TX      | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | ARD_D1 [UART4_TX]               |
|                       | PA1                   | UART4_RX      | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | ARD_D0 [UART4_RX]               |
|                       | PA3                   | TIM2_CH4      | Alternate Function Push Pull   | No pull-up and no pull-down | Low         | ARD_D4                          |
|                       | PA4                   | ADC1_IN9      | Analog mode for ADC conversion | No pull-up and no pull-down | n/a         | ARD_D7                          |
|                       | PA5                   | SPI1_SCK      | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | ARD_D13 [SPI1_SCK]              |
|                       | PA6                   | SPI1_MISO     | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | ARD_D12 [SPI1_MISO]             |
|                       | PA7                   | SPI1_MOSI     | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | ARD_D11 [SPI1_MOSI]             |
|                       | PC4                   | ADC1_IN13     | Analog mode for ADC            | No pull-up and no pull-down | n/a         | ARD_A1 [ADC]                    |



| IP | Pin               | Signal          | GPIO mode                      | GPIO pull/up pull down      | Max Speed   | User Label                             |
|----|-------------------|-----------------|--------------------------------|-----------------------------|-------------|--|
|    |                   |                 | conversion                     |                             |             |  |
|    | PC5               | ADC1_IN14       | Analog mode for ADC conversion | No pull-up and no pull-down | n/a         | ARD_A0 [ADC]                           |
|    | PB1               | ADC1_IN16       | Analog mode for ADC conversion | No pull-up and no pull-down | n/a         | ARD_D6 [ADC1_IN6]                      |
|    | PE7               | DFSDM1_DATIN2   | Alternate Function Push Pull   | No pull-up and no pull-down | Low         | DFSDM1_DATIN2 [MP34DT01_DOUT]          |
|    | PE9               | DFSDM1_CKOUT    | Alternate Function Push Pull   | No pull-up and no pull-down | Low         | DFSDM1_CKOUT [MP34DT01_CLK]            |
|    | PE10              | QUADSPI_CLK     | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | QUADSPI_CLK [MX25R6435F_SCLK]          |
|    | PE11              | QUADSPI_NCS     | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | QUADSPI_NCS [MX25R6435F_SCLK]          |
|    | PE12              | QUADSPI_BK1_IO0 | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | QUADSPI_BK1_IO0 [MX25R6435F_IO0]       |
|    | PE13              | QUADSPI_BK1_IO1 | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | QUADSPI_BK1_IO1 [MX25R6435F_IO1]       |
|    | PE14              | QUADSPI_BK1_IO2 | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | QUADSPI_BK1_IO2 [MX25R6435F_IO2]       |
|    | PE15              | QUADSPI_BK1_IO3 | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | QUADSPI_BK1_IO3 [MX25R6435F_IO3]       |
|    | PD8               | USART3_TX       | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | INTERNAL_UART3_TX [ISM43362_RX]        |
|    | PD9               | USART3_RX       | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | INTERNAL_UART3_RX [ISM43362_TX]        |
|    | PA9               | USB_OTG_FS_VBUS | Input mode                     | No pull-up and no pull-down | n/a         | USB_OTG_FS_VBUS [STMP2141STR_OUT]      |
|    | PA10              | USB_OTG_FS_ID   | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | USB_OTG_FS_ID                          |
|    | PA11              | USB_OTG_FS_DM   | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | USB_OTG_FS_DM                          |
|    | PA12              | USB_OTG_FS_DP   | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | USB_OTG_FS_DP                          |
|    | PA13 (JTMS-SWDIO) | SYS_JTMS-SWDIO  | n/a                            | n/a                         | n/a         | SYS_JTMS_SWDIO                         |
|    | PA14 (JTCK-SWCLK) | SYS_JTCK-SWCLK  | n/a                            | n/a                         | n/a         | SYS_JTCK_SWCLK                         |
|    | PC10              | SPI3_SCK        | Alternate Function Push Pull   | No pull-up and no pull-down | Very High * | INTERNAL_SPI3_SCK [BT module_SPI_SCLK] |

| IP   | Pin                 | Signal       | GPIO mode  | GPIO pull/up pull down      | Max Speed   | User Label  |
|------|---------------------|--------------|--|-----------------------------|-------------|---|
|      |                     |              |  |                             |             | [ISM43362_SCK]  |
|      | PC11                | SPI3_MISO    | Alternate Function Push Pull                                       | No pull-up and no pull-down | Very High * | INTERNAL_SPI3_MISO [BT module_SPI_MISO] [ISM43362_MISO] |
|      | PC12                | SPI3_MOSI    | Alternate Function Push Pull                                       | No pull-up and no pull-down | Very High * | INTERNAL_SPI3_MOSI [BT module_SPI_MOSI] [ISM43362_MOSI] |
|      | PD1                 | SPI2_SCK     | Alternate Function Push Pull                                       | No pull-up and no pull-down | Very High * | PMOD_SPI2_SCK   |
|      | PD3                 | USART2_CTS   | Alternate Function Push Pull                                       | No pull-up and no pull-down | Very High * | PMOD_UART2_CTS  |
|      | PD4                 | USART2_RTS   | Alternate Function Push Pull                                       | No pull-up and no pull-down | Very High * | PMOD_UART2_RTS  |
|      | PD5                 | USART2_TX    | Alternate Function Push Pull                                       | No pull-up and no pull-down | Very High * | PMOD_UART2_TX   |
|      | PD6                 | USART2_RX    | Alternate Function Push Pull                                       | No pull-up and no pull-down | Very High * | PMOD_UART2_RX   |
|      | PB3 (JTDO-TRACESWO) | SYS_JTDO-SWO | n/a  | n/a                         | n/a         | SYS_JTDO_SWO  |
|      | PB8                 | I2C1_SCL     | Alternate Function Open Drain                                      | No pull-up and no pull-down | Very High * | ARD_D15 [I2C1_SCL]                                      |
|      | PB9                 | I2C1_SDA     | Alternate Function Open Drain                                      | No pull-up and no pull-down | Very High * | ARD_D14 [I2C1_SDA]                                      |
| GPIO | PE2                 | GPIO_Output  | Output Push Pull   | No pull-up and no pull-down | Low         | M24SR64_Y_RF_DISABLER [M24SR64_RFDIS]                   |
|      | PE3                 | GPIO_EXTI3   | External Interrupt Mode with Rising edge trigger detection         | No pull-up and no pull-down | n/a         | USB_OTG_FS_OVRERR_EXTI3 [STMP2141STR_FAULT]             |
|      | PE4                 | GPIO_Output  | Output Push Pull   | No pull-up and no pull-down | Low         | M24SR64_Y_GPIO [M24SR64_GPO]                            |
|      | PE5                 | GPIO_EXTI5   | External Interrupt Mode with Rising edge trigger detection         | No pull-up and no pull-down | n/a         | SPSGRF_915_GPIO3_EXTI5 [SPSGRF_GPIO_3]                  |
|      | PE6                 | GPIO_EXTI6   | External Interrupt Mode with Rising edge trigger detection         | No pull-up and no pull-down | n/a         | SPBTLE_RF_IRQ_EXTI6 [BT module_SPI_IRQ]                 |
|      | PC13                | GPIO_EXTI13  | <b>External Interrupt Mode with Falling edge trigger detection</b> | No pull-up and no pull-down | n/a         | BUTTON_EXTI13 [B2]                                      |
|      | PA2                 | GPIO_Output  | Output Push Pull   | No pull-up and no pull-down | Low         | ARD_D10 [SPI_SSN]                                       |
|      | PB0                 | GPIO_EXTI0   | External Interrupt Mode with Rising edge trigger detection         | No pull-up and no pull-down | n/a         | ARD_D3 [INT_EXTI0]                                      |
|      |                     |              |  |                             |             |   |

| IP | Pin          | Signal      | GPIO mode  | GPIO pull/up pull down      | Max Speed | User Label                                       |
|----|--------------|-------------|--|-----------------------------|-----------|--|
|    | PB2          | GPIO_Output | Output Push Pull   | No pull-up and no pull-down | Low       | ARD_D8   |
|    | PE8          | GPIO_Output | Output Push Pull   | No pull-up and no pull-down | Low       | ISM43362_RST<br>[ISM43362_RSTN]                  |
|    | PB12         | GPIO_Output | Output Push Pull   | No pull-up and no pull-down | Low       | ISM43362_BOOT0<br>[ISM43362_BOOT]                |
|    | PB13         | GPIO_Output | Output Push Pull   | No pull-up and no pull-down | Low       | ISM43362_WAKEUP<br>[ISM43362_WKUP]               |
|    | PB14         | GPIO_Output | Output Push Pull   | No pull-up and no pull-down | Low       | LED2 [LED_GREEN]                                 |
|    | PB15         | GPIO_Output | Output Push Pull   | No pull-up and no pull-down | Low       | SPSGRF_915_SDN<br>[SPSGRF_SDN]                   |
|    | PD10         | GPIO_EXTI10 | External Interrupt Mode with Rising edge trigger detection | No pull-up and no pull-down | n/a       | LPS22HB_INT_DRDY_EX<br>TIO<br>[LPS22HB_INT_DRDY] |
|    | PD11         | GPIO_EXTI11 | External Interrupt Mode with Rising edge trigger detection | No pull-up and no pull-down | n/a       | LSM6DSL_INT1_EXTI11<br>[LSM6DSL_INT1]            |
|    | PD12         | GPIO_Output | Output Push Pull   | No pull-up and no pull-down | Low       | USB_OTG_FS_PWR_EN<br>[STMP52141STR_EN]           |
|    | PD13         | GPIO_Output | Output Push Pull   | No pull-up and no pull-down | Low       | SPBTLE_RF_SPI3_CSN<br>[BT module_SPI_CS]         |
|    | PD14         | GPIO_EXTI14 | External Interrupt Mode with Rising edge trigger detection | No pull-up and no pull-down | n/a       | ARD_D2 [INT0_EXTI14]                             |
|    | PD15         | GPIO_EXTI15 | External Interrupt Mode with Rising edge trigger detection | No pull-up and no pull-down | n/a       | HTS221_DRDY_EXTI15<br>[HTS221_DRDY]              |
|    | PC6          | GPIO_Output | Output Push Pull   | No pull-up and no pull-down | Low       | VL53L0X_XSHUT<br>[Read_XSHUT]                    |
|    | PC7          | GPIO_EXTI7  | External Interrupt Mode with Rising edge trigger detection | No pull-up and no pull-down | n/a       | VL53L0X_GPIO1_EXTI7<br>[VL53L0X_GPIO1]           |
|    | PC8          | GPIO_EXTI8  | External Interrupt Mode with Rising edge trigger detection | No pull-up and no pull-down | n/a       | LSM3MDL_DRDY_EXTI8<br>[LIS3MDL_DRDY]             |
|    | PC9          | GPIO_Output | Output Push Pull   | No pull-up and no pull-down | Low       | LED3_WIFI_LED4_BLE                               |
|    | PA8          | GPIO_Output | Output Push Pull   | No pull-up and no pull-down | Low       | SPBTLE_RF_RST                                    |
|    | PA15 (JTDI)  | GPIO_Output | Output Push Pull   | No pull-up and no pull-down | Low       | ARD_D9   |
|    | PD0          | GPIO_Output | Output Push Pull   | No pull-up and no pull-down | Low       | PMOD_RESET                                       |
|    | PD2          | GPIO_EXTI2  | External Interrupt Mode with Rising edge trigger detection | No pull-up and no pull-down | n/a       | PMOD_IRQ_EXTI12                                  |
|    | PD7          | GPIO_Output | Output Push Pull   | No pull-up and no pull-down | Low       | STSAFE_A100_RESET<br>[STSAFE-A100_RESET]         |
|    | PB4 (NJTRST) | GPIO_Output | Output Push Pull   | No pull-up and no pull-down | Low       | ARD_D5   |
|    | PB5          | GPIO_Output | Output Push Pull   | No pull-up and no pull-down | Low       | SPSGRF_915_SPI3_CSN<br>[SPSGRF_SPI_CS]           |
|    | PE0          | GPIO_Output | Output Push Pull   | No pull-up and no pull-down | Low       | ISM43362_SPI3_CSN<br>[ISM43362_SSN]              |
|    | PE1          | GPIO_EXTI1  | External Interrupt Mode with                               | No pull-up and no pull-down | n/a       | ISM43362_DRDY_EXTI1                              |

| IP | Pin | Signal | GPIO mode                     | GPIO pull/up pull<br>down | Max<br>Speed | User Label         |
|----|-----|--------|-------------------------------|---------------------------|--------------|--------------------|
|    |     |        | Rising edge trigger detection |                           |              | [ISM43362_DATARDY] |

#### 4.2. DMA configuration

nothing configured in DMA service

### 4.3. NVIC configuration

#### 4.3.1. NVIC

| 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           |
| EXTI line[9:5] interrupts  | true   | 0                    | 0           |
| EXTI line[15:10] interrupts  | true   | 0                    | 0           |
| PVD/PVM1/PVM2/PVM3/PVM4 interrupts through EXTI lines 16/35/36/37/38 | unused |                      |             |
| Flash global interrupt   | unused |                      |             |
| RCC global interrupt   | unused |                      |             |
| EXTI line0 interrupt   | unused |                      |             |
| EXTI line1 interrupt   | unused |                      |             |
| EXTI line2 interrupt   | unused |                      |             |
| EXTI line3 interrupt   | unused |                      |             |
| I2C2 event interrupt   | unused |                      |             |
| I2C2 error interrupt   | unused |                      |             |
| USART1 global interrupt  | unused |                      |             |
| FPU global interrupt   | unused |                      |             |

#### 4.3.2. NVIC Code generation

| Enabled interrupt Table                 | Select for init sequence ordering | Generate IRQ handler | Call HAL handler |
|---|-----------------------------------|----------------------|------------------|
| Non maskable interrupt                  | false                             | true                 | false            |
| Hard fault interrupt                    | false                             | true                 | false            |
| Memory management fault                 | false                             | true                 | false            |
| Prefetch fault, memory access fault     | false                             | true                 | false            |
| Undefined instruction or illegal state  | false                             | true                 | false            |
| System service call via SWI instruction | false                             | true                 | false            |
| Debug monitor                           | false                             | true                 | false            |
| Pendable request for system service     | false                             | true                 | false            |
| System tick timer                       | false                             | true                 | true             |
| EXTI line[9:5] interrupts               | false                             | true                 | true             |
|   |                                   |                      |                  |

| Enabled interrupt Table     | Select for init<br>sequence ordering | Generate IRQ<br>handler | Call HAL handler |
|-----------------------------|--------------------------------------|-------------------------|------------------|
| EXTI line[15:10] interrupts | false                                | true                    | true             |

\* User modified value

## 5. System Views

### 5.1. Category view

#### 5.1.1. Current

Middleware

Software Packs

X-CUBE-AI



X-CUBE-MEMS1



System Core

Analog

Timers

Connectivity

Multimedia

Security

Computing

DMA

GPIO



NVIC



RCC



SYS



I2C2



USART1



## 6. Software Pack Report

### 6.1. Software Pack selected

| Vendor             | Name         | Version | Component  |
|--------------------|--------------|---------|--|
| STMicroelectronics | X-CUBE-AI    | 10.2.0  | Class : Artificial Intelligence<br>Group : Core<br>Version : 10.2.0                            |
| STMicroelectronics | X-CUBE-MEMS1 | 11.3.0  | Class : Board Part<br>Group : AccGyr<br>SubGroup : LSM6DSL<br>Variant : I2C<br>Version : 5.6.0 |



## 7. Docs & Resources

| Type                       | Link  |
|----------------------------|---|
| BSDL files                 | <a href="https://www.st.com/resource/en/bsdl_model/stm32l4_bsd1.zip">https://www.st.com/resource/en/bsdl_model/stm32l4_bsd1.zip</a>   |
| IBIS models                | <a href="https://www.st.com/resource/en/ibis_model/stm32l4_ibis.zip">https://www.st.com/resource/en/ibis_model/stm32l4_ibis.zip</a>   |
| System View<br>Description | <a href="https://www.st.com/resource/en/svd/stm32l4_svd.zip">https://www.st.com/resource/en/svd/stm32l4_svd.zip</a>   |
| Presentations              | <a href="https://www.st.com/resource/en/product_presentation/stm32-stm8_embedded_software_solutions.pdf">https://www.st.com/resource/en/product_presentation/stm32-stm8_embedded_software_solutions.pdf</a>                     |
| Presentations              | <a href="https://www.st.com/resource/en/product_presentation/stm32_eval-tools_portfolio.pdf">https://www.st.com/resource/en/product_presentation/stm32_eval-tools_portfolio.pdf</a>   |
| Presentations              | <a href="https://www.st.com/resource/en/product_presentation/stm32_stm8_functional-safety-packages.pdf">https://www.st.com/resource/en/product_presentation/stm32_stm8_functional-safety-packages.pdf</a>                       |
| Presentations              | <a href="https://www.st.com/resource/en/product_presentation/stm32-stm8_software_development_tools.pdf">https://www.st.com/resource/en/product_presentation/stm32-stm8_software_development_tools.pdf</a>                       |
| Presentations              | <a href="https://www.st.com/resource/en/product_presentation/microcontrollers-stm32-family-overview.pdf">https://www.st.com/resource/en/product_presentation/microcontrollers-stm32-family-overview.pdf</a>                     |
| Presentations              | <a href="https://www.st.com/resource/en/product_presentation/microcontrollers-stm32l4-series-product-overview.pdf">https://www.st.com/resource/en/product_presentation/microcontrollers-stm32l4-series-product-overview.pdf</a> |
| Brochures                  | <a href="https://www.st.com/resource/en/brochure/brstm32ulp.pdf">https://www.st.com/resource/en/brochure/brstm32ulp.pdf</a>   |
| Flyers                     | <a href="https://www.st.com/resource/en/flyer/flstm32l4.pdf">https://www.st.com/resource/en/flyer/flstm32l4.pdf</a>   |
| Flyers                     | <a href="https://www.st.com/resource/en/flyer/flstm32nucleo.pdf">https://www.st.com/resource/en/flyer/flstm32nucleo.pdf</a>   |
| Flyers                     | <a href="https://www.st.com/resource/en/flyer/flstm32trust.pdf">https://www.st.com/resource/en/flyer/flstm32trust.pdf</a>   |
| Flyers                     | <a href="https://www.st.com/resource/en/flyer/flstm32gui.pdf">https://www.st.com/resource/en/flyer/flstm32gui.pdf</a>   |
| Magazine Articles          | <a href="https://www.st.com/resource/en/magazine/design-elektronik_august2017.pdf">https://www.st.com/resource/en/magazine/design-elektronik_august2017.pdf</a>   |
| Magazine Articles          | <a href="https://www.st.com/resource/en/magazine/design-elektronik_october2016.pdf">https://www.st.com/resource/en/magazine/design-elektronik_october2016.pdf</a>   |
| Product<br>Certifications  | <a href="https://www.st.com/resource/en/certification_document/sesip-2000002-01-cert.pdf">https://www.st.com/resource/en/certification_document/sesip-2000002-01-cert.pdf</a>   |
| Product<br>Certifications  | <a href="https://www.st.com/resource/en/certification_document/sesip-2000002-01-st2.pdf">https://www.st.com/resource/en/certification_document/sesip-2000002-01-st2.pdf</a>   |

|                   |   |
|-------------------|---|
| Product           | <a href="https://www.st.com/resource/en/certification_document/psa-certificate_stm32l4.pdf">https://www.st.com/resource/en/certification_document/psa-certificate_stm32l4.pdf</a>   |
| Certifications    |   |
| Security Bulletin | <a href="https://www.st.com/resource/en/technical_note/tn1489-security-bulletin-tn1489stpsirt-physical-attacks-on-stm32-and-stm32cube-firmware-stmicroelectronics.pdf">https://www.st.com/resource/en/technical_note/tn1489-security-bulletin-tn1489stpsirt-physical-attacks-on-stm32-and-stm32cube-firmware-stmicroelectronics.pdf</a>   |
| Application Notes | <a href="https://www.st.com/resource/en/application_note/an1709-emc-design-guide-for-stm8-stm32-and-legacy-mcus-stmicroelectronics.pdf">https://www.st.com/resource/en/application_note/an1709-emc-design-guide-for-stm8-stm32-and-legacy-mcus-stmicroelectronics.pdf</a>   |
| Application Notes | <a href="https://www.st.com/resource/en/application_note/an2606-stm32-microcontroller-system-memory-boot-mode-stmicroelectronics.pdf">https://www.st.com/resource/en/application_note/an2606-stm32-microcontroller-system-memory-boot-mode-stmicroelectronics.pdf</a>   |
| Application Notes | <a href="https://www.st.com/resource/en/application_note/an3126-audio-and-waveform-generation-using-the-dac-in-stm32-products-stmicroelectronics.pdf">https://www.st.com/resource/en/application_note/an3126-audio-and-waveform-generation-using-the-dac-in-stm32-products-stmicroelectronics.pdf</a>   |
| Application Notes | <a href="https://www.st.com/resource/en/application_note/an3155-uart-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf">https://www.st.com/resource/en/application_note/an3155-uart-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf</a>   |
| Application Notes | <a href="https://www.st.com/resource/en/application_note/an3156-usb-dfu-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf">https://www.st.com/resource/en/application_note/an3156-usb-dfu-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf</a>   |
| Application Notes | <a href="https://www.st.com/resource/en/application_note/an4221-i2c-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf">https://www.st.com/resource/en/application_note/an4221-i2c-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf</a>   |
| Application Notes | <a href="https://www.st.com/resource/en/application_note/an4286-spi-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf">https://www.st.com/resource/en/application_note/an4286-spi-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf</a>   |
| Application Notes | <a href="https://www.st.com/resource/en/application_note/an4555-getting-started-with-stm32l4-series-and-stm32l4-series-hardware-development-stmicroelectronics.pdf">https://www.st.com/resource/en/application_note/an4555-getting-started-with-stm32l4-series-and-stm32l4-series-hardware-development-stmicroelectronics.pdf</a>   |
| Application Notes | <a href="https://www.st.com/resource/en/application_note/an4612-migrating-from-stm32l1-series-to-stm32l4-series-and-stm32l4-series-microcontrollers-stmicroelectronics.pdf">https://www.st.com/resource/en/application_note/an4612-migrating-from-stm32l1-series-to-stm32l4-series-and-stm32l4-series-microcontrollers-stmicroelectronics.pdf</a>                               |
| Application Notes | <a href="https://www.st.com/resource/en/application_note/an4616-migrating-from-stm32f401-and-stm32f411-lines-to-stm32l4-series-and-stm32l4-series-microcontrollers-stmicroelectronics.pdf">https://www.st.com/resource/en/application_note/an4616-migrating-from-stm32f401-and-stm32f411-lines-to-stm32l4-series-and-stm32l4-series-microcontrollers-stmicroelectronics.pdf</a> |
| Application Notes | <a href="https://www.st.com/resource/en/application_note/an4621-stm32l4-and-stm32l4-ultralowpower-features-overview-stmicroelectronics.pdf">https://www.st.com/resource/en/application_note/an4621-stm32l4-and-stm32l4-ultralowpower-features-overview-stmicroelectronics.pdf</a>   |
| Application Notes | <a href="https://www.st.com/resource/en/application_note/an4629-adc-hardware-oversampling-for-microcontrollers-of-the-stm32-l0-and-l4-series-">https://www.st.com/resource/en/application_note/an4629-adc-hardware-oversampling-for-microcontrollers-of-the-stm32-l0-and-l4-series-</a>   |

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- Application Notes [https://www.st.com/resource/en/application\\_note/an4649-migrating-from-stm32f1-series-to-stm32l4-series--stm32l4-series-microcontrollers-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an4649-migrating-from-stm32f1-series-to-stm32l4-series--stm32l4-series-microcontrollers-stmicroelectronics.pdf)
- Application Notes [https://www.st.com/resource/en/application\\_note/an4655-virtually-increasing-the-number-of-serial-communication-peripherals-in-stm32-applications-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an4655-virtually-increasing-the-number-of-serial-communication-peripherals-in-stm32-applications-stmicroelectronics.pdf)
- Application Notes [https://www.st.com/resource/en/application\\_note/an4726-stm32cube-firmware-examples-for-stm32l4-series-and-stm32l4-series-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an4726-stm32cube-firmware-examples-for-stm32l4-series-and-stm32l4-series-stmicroelectronics.pdf)
- Application Notes [https://www.st.com/resource/en/application\\_note/an4729-stm32l0l4-firewall-overview-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an4729-stm32l0l4-firewall-overview-stmicroelectronics.pdf)
- Application Notes [https://www.st.com/resource/en/application\\_note/an4730-using-the-firewall-embedded-in-stm32l0l4l4-series-mcus-for-secure-access-to-sensitive-parts-of-code-and-data-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an4730-using-the-firewall-embedded-in-stm32l0l4l4-series-mcus-for-secure-access-to-sensitive-parts-of-code-and-data-stmicroelectronics.pdf)
- Application Notes [https://www.st.com/resource/en/application\\_note/an4746-optimizing-power-and-performance-with-stm32l4-and-stm32l4-series-microcontrollers-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an4746-optimizing-power-and-performance-with-stm32l4-and-stm32l4-series-microcontrollers-stmicroelectronics.pdf)
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