
STM32
CubeMX

1. Description

1.1. Project

Project Name	L14-Click
Board Name	custom
Generated with:	STM32CubeMX 6.16.0
Date	12/21/2025

1.2. MCU

MCU Series	STM32WL
MCU Line	STM32WLEx
MCU name	STM32WLE5CCUx
MCU Package	UFQFPN48
MCU Pin number	48

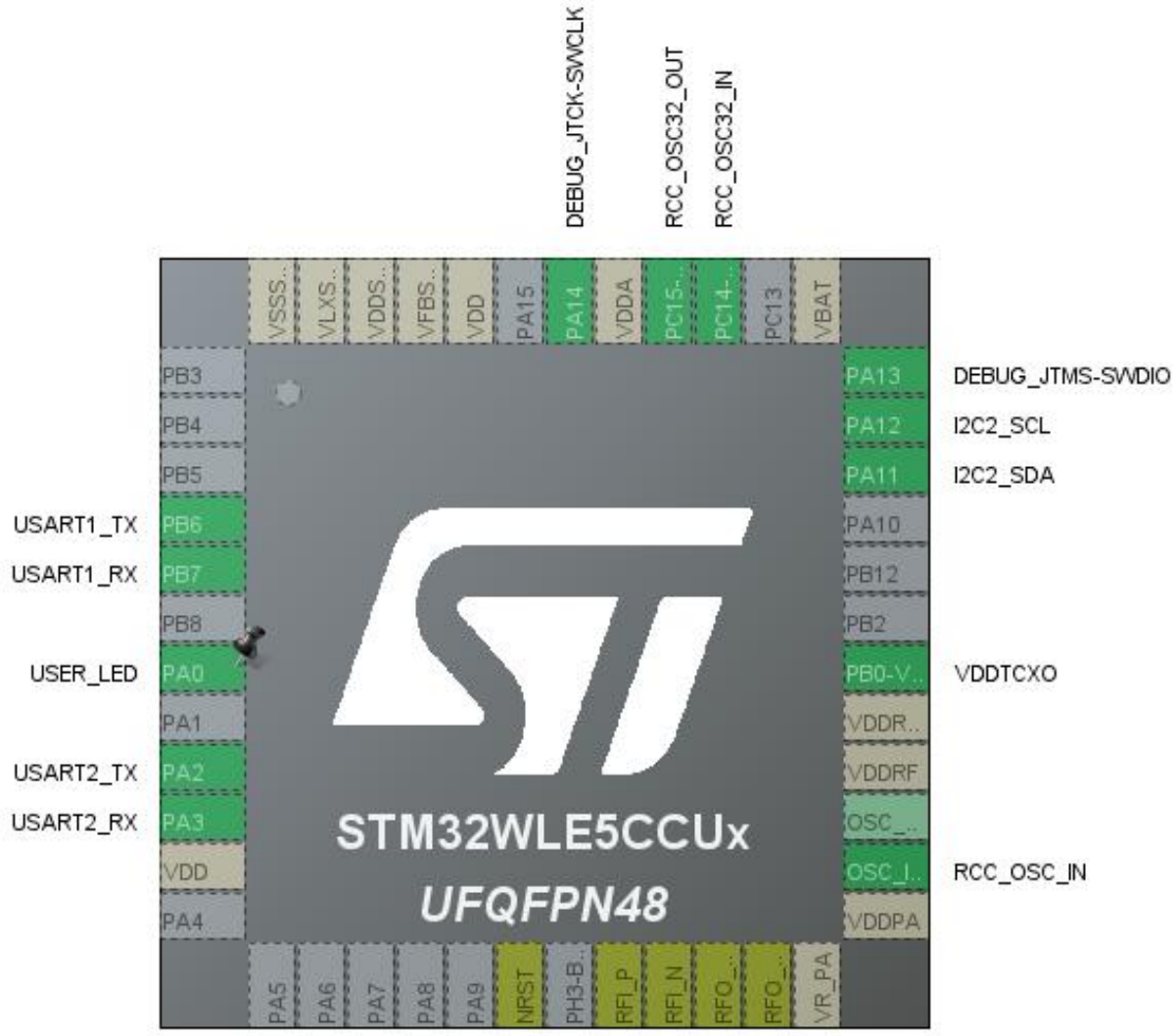
1.3. Core(s) information

Core(s)	ARM Cortex-M4

1.4. Caution

The report was generated although the configuration was in a modified state. It may be not accurate

2. Pinout Configuration

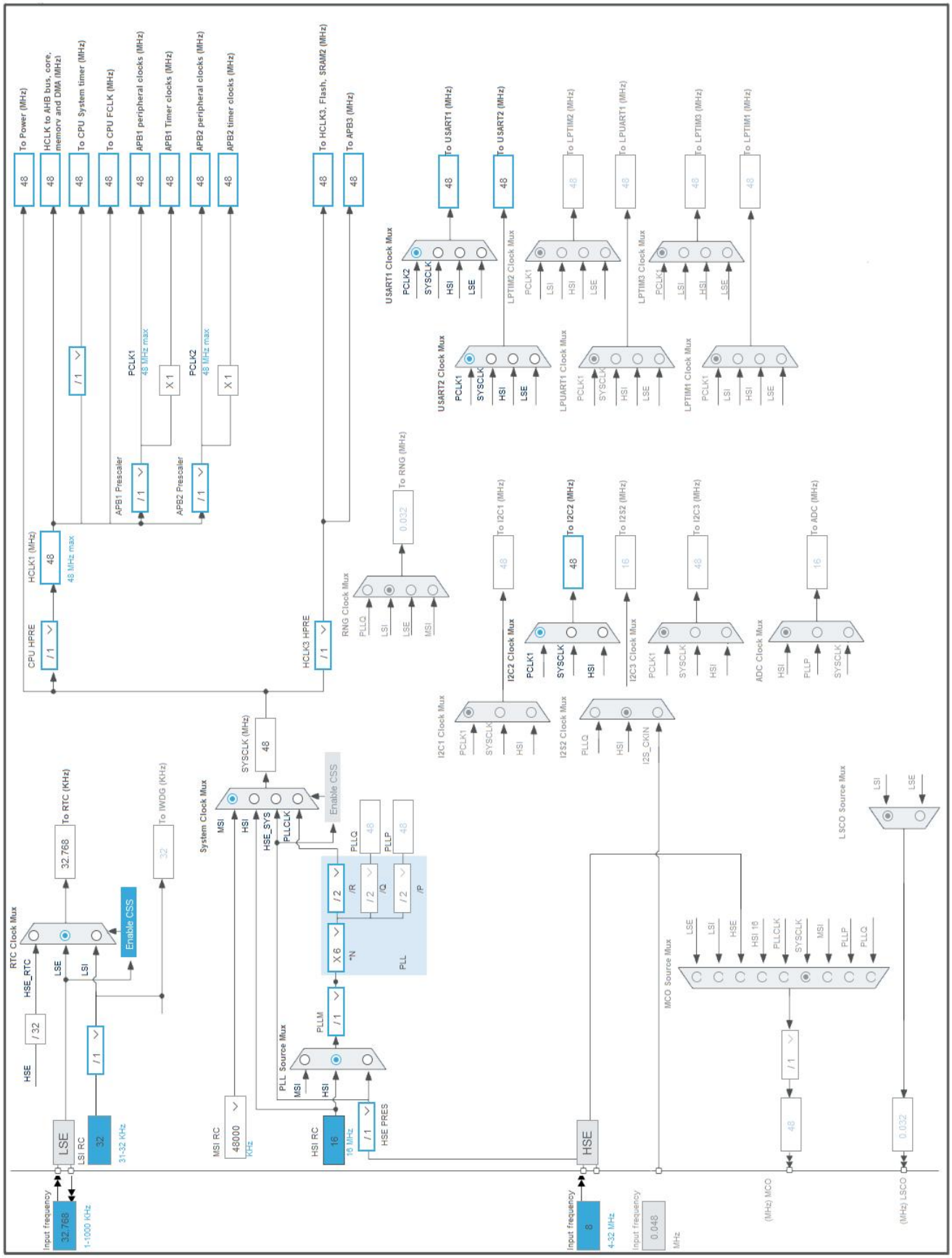


3. Pins Configuration

Pin Number UFQFPN48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
4	PB6	I/O	USART1_TX	
5	PB7	I/O	USART1_RX	
7	PA0 *	I/O	GPIO_Output	USER_LED
9	PA2	I/O	USART2_TX	
10	PA3	I/O	USART2_RX	
11	VDD	Power		
18	NRST	Reset		
20	RFI_P	MonoIO		
21	RFI_N	MonoIO		
22	RFO_LP	MonoIO		
23	RFO_HP	MonoIO		
24	VR_PA	Power		
25	VDDPA	Power		
26	OSC_IN	MonoIO	RCC_OSC_IN	
28	VDDRF	Power		
29	VDDRF1V55	Power		
30	PB0-VDD_TCXO	I/O	VDDTCXO	
34	PA11	I/O	I2C2_SDA	
35	PA12	I/O	I2C2_SCL	
36	PA13	I/O	DEBUG_JTMS-SWDIO	
37	VBAT	Power		
39	PC14-OSC32_IN	I/O	RCC_OSC32_IN	
40	PC15-OSC32_OUT	I/O	RCC_OSC32_OUT	
41	VDDA	Power		
42	PA14	I/O	DEBUG_JTCK-SWCLK	
44	VDD	Power		
45	VFBSMPS	Power		
46	VDDSMPS	Power		
47	VLXSMPS	Power		
48	VSSSMPS	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



1. Power Consumption Calculator report

1.1. Microcontroller Selection

Series	STM32WL
Line	STM32WLEx
MCU	STM32WLE5CCUx
Datasheet	DS13105_Rev7

1.2. Parameter Selection

Temperature	25
Vdd	3.0

1.3. Battery Selection

Battery	Li-SOCL2(AAA700)
Capacity	700.0 mAh
Self Discharge	0.08 %/month
Nominal Voltage	3.6 V
Max Cont Current	10.0 mA
Max Pulse Current	30.0 mA
Cells in series	1
Cells in parallel	1

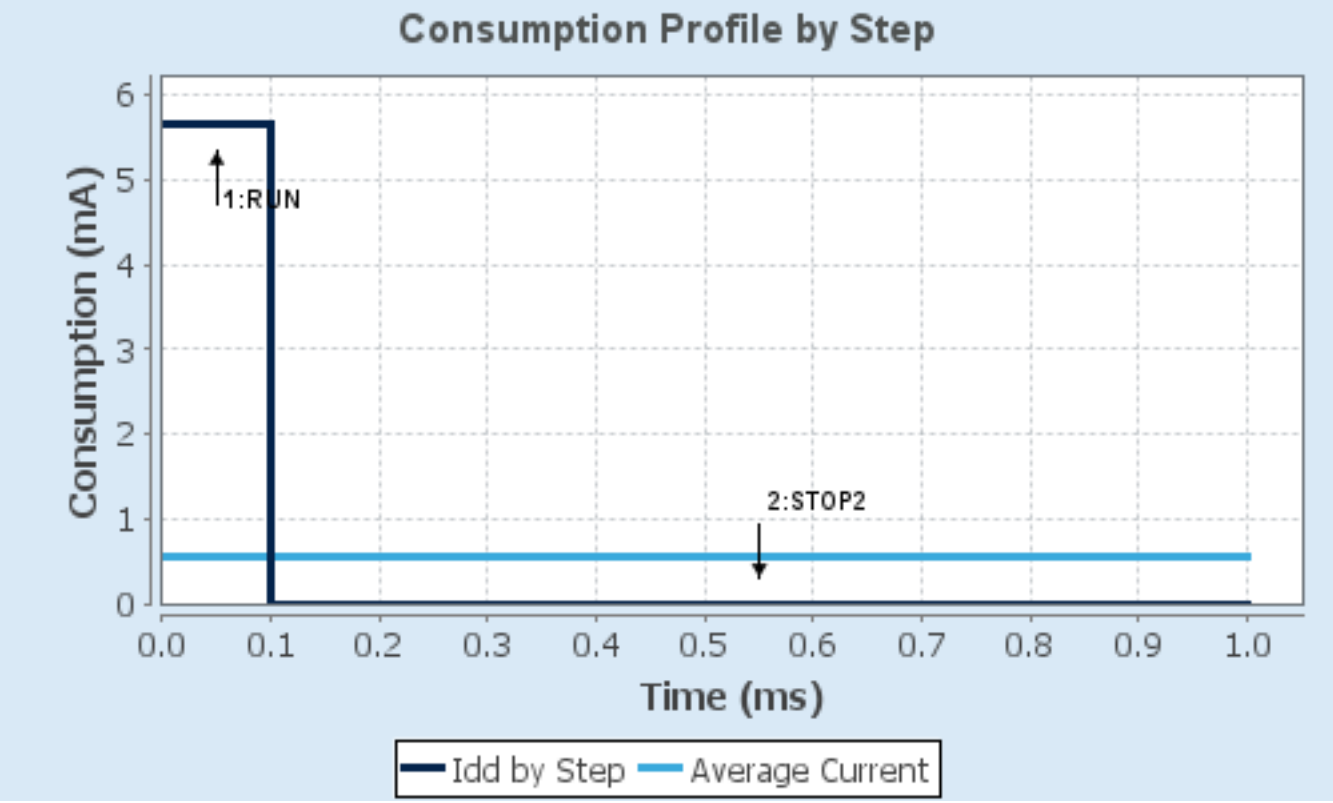
1.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP2
Vdd	3.0	3.0
Voltage Source	Battery	Battery
Range	Range1-Medium/SMPS-OFF	NoRange
Fetch Type	SRAM1	NA
CPU Frequency	48 MHz	0 Hz
Clock Configuration	MSI	ALL_CLOCKS_OFF
Clock Source Frequency	48 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	5.65 mA	885 nA
Duration	0.1 ms	0.9 ms
DMIPS	60.0	0.0
Ta Max	124.53	125
Category	In DS Table	In DS Table

1.5. Results

Sequence Time	1 ms	Average Current	565.8 µA
Battery Life	1 month, 21 days, 1 hour	Average DMIPS	60.0 DMIPS

1.6. Chart


Consumption Profile by Step
Consumption (mA)
6
5
4
3
2
1
0
1:RUN
2:STOP2
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Time (ms)
Idd by Step
Average Current

2. Software Project

2.1. Project Settings

Name	Value
Project Name	L14-Click
Project Folder	E:\Amica\Projekty\Sensory\stm\LR14-Click
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_WL V1.4.0
Application Structure	Advanced
Generate Under Root	Yes
Do not generate the main()	No
Minimum Heap Size	0x200
Minimum Stack Size	0x400

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_SUBGHZ_Init	SUBGHZ
4	MX_LoRaWAN_Init	LORAWAN
5	MX_RTC_Init	RTC
6	MX_I2C2_Init	I2C2
7	MX_USART1_UART_Init	USART1
8	MX_USART2_UART_Init	USART2

3. Peripherals and Middlewares Configuration

3.1. ADV_TRACE

mode: Enabled

3.2. DEBUG

JTAG and Trace: Serial Wire

3.3. I2C2

I2C: I2C

3.3.1. Parameter Settings:

Timing configuration:

I2C Speed Mode	Standard Mode
I2C Speed Frequency (KHz)	100
Rise Time (ns)	100
Fall Time (ns)	100
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	**0x10805D88 ***

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

3.4. MISC

mode: Enabled

3.5. RCC

High Speed Clock (HSE): TCXO

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

3.5.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3

Instruction Cache	Enabled
Prefetch Buffer	Disabled
Data Cache	Enabled
Flash Latency(WS)	2 WS (3 CPU cycle)

RCC Parameters:

HSI Calibration Value	64
MSI Calibration Value	0
MSI Auto Calibration	Enabled
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000
LSE Drive Capability	LSE oscillator low drive capability

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1

3.6. RTC

mode: Activate Clock Source

3.6.1. Parameter Settings:

General:

Hour Format	Hourformat 24
Asynchronous Predivider value	127
Synchronous Predivider value	255
Bin Mode	Free running BCD calender mode

3.7. SEQUENCER

mode: Enabled

3.8. SUBGHZ

mode: Activated

3.8.1. Parameter Settings:

Baudrate Prescaler Value	8

3.9. SYS

Timebase Source: SysTick

3.10. TIMER

mode: Enabled

3.11. TINY_LPM

mode: Enabled

3.12. USART1

Mode: Asynchronous

3.12.1. 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
ClockPrescaler	1
Fifo Mode	Disable
Txfifo Threshold	1 eighth full configuration
Rxfifo Threshold	1 eighth full configuration

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

3.13. USART2

Mode: Asynchronous

3.13.1. 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
ClockPrescaler	1
Fifo Mode	Disable
Txfifo Threshold	1 eighth full configuration
Rxfifo Threshold	1 eighth full configuration

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

3.14. LORAWAN
mode: Enabled

3.14.1. LoRaWAN application:

Application selection:

Application	User defined skeleton
Application configuration recommendations	!! Please read carefully Information panel below!!
Use ADC for T° and battery management	false
Use RTC for Timer	false
Use UART for Trace	false
Configure Low Power Mode	false

board settings:

Send Tx on Timer or Button Evt	TX_ON_TIMER

3.14.2. LoRaWAN commissioning:

Commissioning:

Public network	true
Current network ID	0

se-identity:

LoRaWAN device EUI	00,00,00,00,00,00,00,00
App/Join EUI	01,01,01,01,01,01,01,01
Application key	2B,7E,15,16,28,AE,D2,A6,AB,F7,15,88,09,CF,4F,3C
Network key	2B,7E,15,16,28,AE,D2,A6,AB,F7,15,88,09,CF,4F,3C
Device Address	00,00,00,00
Network session key	2B,7E,15,16,28,AE,D2,A6,AB,F7,15,88,09,CF,4F,3C
Application session key	2B,7E,15,16,28,AE,D2,A6,AB,F7,15,88,09,CF,4F,3C

3.14.3. LoRaWAN middleware:

lorawan_conf:

Region(s) selection	please select the desired region(s) in the list below
Region Asia freq: 923	false
Region Australia freq: 915	false
Region China freq: 470	false
Region China freq: 779	false
Region Europe freq: 433	false
Region Europe freq: 868	true
Region Korea freq: 920	false
Region India freq: 865	false
Region USA freq: 915	true
Region Russia freq: 864	false
Enable Hybrid mode	false
Enable LoRaMAC ClassB	false
Select the LoRaWAN Link Layer specification version	v1.0.4

radio_conf:

Radio maximum wakeup time (in ms)	1

radio_board_if:

Select radio Driver	User Board
TCXO support	true

DCDC support	true
Tx Rfo Config	CONF_RFO_LP_HP

mw_log_conf:

Enable Middleware log	true

*** User modified value**

4. System Configuration

4.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
DEBUG	PA13	DEBUG_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	DEBUG_JTCK-SWCLK	n/a	n/a	n/a	
I2C2	PA11	I2C2_SDA	Alternate Function Open Drain	No pull-up and no pull-down	Low	
	PA12	I2C2_SCL	Alternate Function Open Drain	No pull-up and no pull-down	Low	
RCC	OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PB0-VDD_TCXO	VDDTCXO	n/a	n/a	n/a	
	PC14-OSC32_IN	RCC_OSC32_IN	n/a	n/a	n/a	
	PC15-OSC32_OUT	RCC_OSC32_OUT	n/a	n/a	n/a	
USART1	PB6	USART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB7	USART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
USART2	PA2	USART2_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA3	USART2_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
GPIO	PA0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	USER_LED

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	15	0
PVD and PVM detector	unused		
FLASH (CFI) global Interrupt	unused		
RCC Interrupt	unused		
I2C2 Event Interrupt	unused		
I2C2 Error Interrupt	unused		
USART1 Interrupt	unused		
USART2 Interrupt	unused		
SUBGHZ Radio Interrupt	unused		

4.3.2. NVIC Code generation

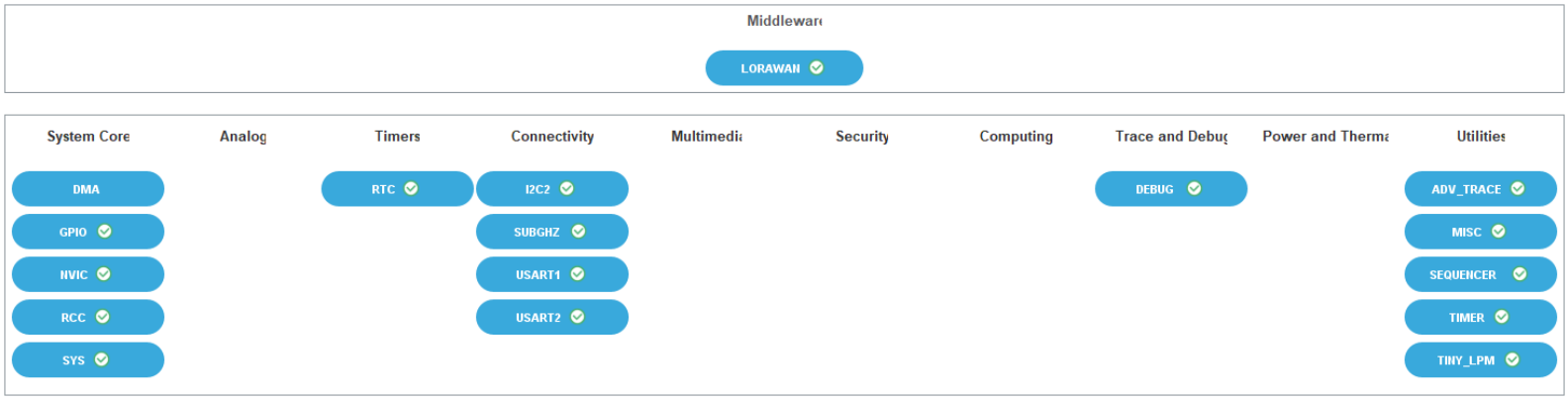
Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
Non maskable interrupt	false	true	false
Hard fault interrupt	false	true	false
Memory management fault	false	true	false
Prefetch fault, memory access fault	false	true	false
Undefined instruction or illegal 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

*** User modified value**

5. System Views

5.1. Category view

5.1.1. Current



6. Docs & Resources

Type	Link
BSDL files	https://www.st.com/resource/en/bsdl_model/stm32wl_bsdl.zip
HW Models	https://www.st.com/resource/en/hw_model/stm32wl_reference_board_mb1720-xo_ios_shield.7z
IBIS models	https://www.st.com/resource/en/ibis_model/stm32wl_ibis.zip
System View Description	https://www.st.com/resource/en/svd/stm32wl_svd.zip
System View Description	https://www.st.com/resource/en/svd/stm32wl-svd.zip
Bill of Materials	https://www.st.com/resource/en/bill_of_materials/mb1720_bom.zip
Bill of Materials	https://www.st.com/resource/en/bill_of_materials/mb1789_hp_bom.zip
Bill of Materials	https://www.st.com/resource/en/bill_of_materials/mb1789_lp_bom.zip
Bill of Materials	https://www.st.com/resource/en/bill_of_materials/mb1791_bom.zip
Bill of Materials	https://www.st.com/resource/en/bill_of_materials/mb1792_bom.zip
Bill of Materials	https://www.st.com/resource/en/bill_of_materials/mb1842-bom.zip
Board Manufacturing Specifications	https://www.st.com/resource/en/board_manufacturing_specification/mb1720_bdp.zip
Board Manufacturing Specifications	https://www.st.com/resource/en/board_manufacturing_specification/mb1720_manufacturing.zip
Board Manufacturing Specifications	https://www.st.com/resource/en/board_manufacturing_specification/mb1789_hp_bdp.zip
Board Manufacturing Specifications	https://www.st.com/resource/en/board_manufacturing_specification/mb1789_hp_manufacturing.zip
Board Manufacturing Specifications	https://www.st.com/resource/en/board_manufacturing_specification/mb1789_lp_bdp.zip

Board Manufacturing Specifications	https://www.st.com/resource/en/board_manufacturing_specification/mb1789_lp_manufacturing.zip
Board Manufacturing Specifications	https://www.st.com/resource/en/board_manufacturing_specification/mb1791_bdp.zip
Board Manufacturing Specifications	https://www.st.com/resource/en/board_manufacturing_specification/mb1791_manufacturing.zip
Board Manufacturing Specifications	https://www.st.com/resource/en/board_manufacturing_specification/mb1792_bdp.zip
Board Manufacturing Specifications	https://www.st.com/resource/en/board_manufacturing_specification/mb1792_manufacturing.zip
Board Manufacturing Specifications	https://www.st.com/resource/en/board_manufacturing_specification/mb1842-bdp.zip
Board Manufacturing Specifications	https://www.st.com/resource/en/board_manufacturing_specification/mb1842-manufacturing.zip
Schematic Pack	https://www.st.com/resource/en/schematic_pack/mb1720_schematics.zip
Schematic Pack	https://www.st.com/resource/en/schematic_pack/mb1789_hp_schematic.zip
Schematic Pack	https://www.st.com/resource/en/schematic_pack/mb1789_lp_schematic.zip
Schematic Pack	https://www.st.com/resource/en/schematic_pack/mb1791_schematic.zip
Schematic Pack	https://www.st.com/resource/en/schematic_pack/mb1792_schematic.zip
Schematic Pack	https://www.st.com/resource/en/schematic_pack/mb1842-schematic.zip
Presentations	https://www.st.com/resource/en/product_presentation/stm32-stm8_embedded_software_solutions.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32_eval-tools_portfolio.pdf

Presentations	https://www.st.com/resource/en/product_presentation/stm32_stm8_functional-safety-packages.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32-stm8_software_development_tools.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32cubemonitor-wireless-longrange_rftest.pdf
Presentations	https://www.st.com/resource/en/product_presentation/microcontrollers-stm32-family-overview.pdf
Presentations	https://www.st.com/resource/en/product_presentation/microcontrollers-stm32wl5x-ex-product-line-overview.pdf
Brochures	https://www.st.com/resource/en/brochure/beyond-the-wires-exploring-bluetooth-and-lorawan-connectivity.pdf
Flyers	https://www.st.com/resource/en/flyer/flnucleolrwan.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32nucleo.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32wl5ex.pdf
Security Bulletin	https://www.st.com/resource/en/technical_note/tn1489-security-bulletin-tn1489stpsirt-physical-attacks-on-stm32-and-stm32cube-firmware-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an1709-emc-design-guide-for-stm8-stm32-and-legacy-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3126-audio-and-waveform-generation-using-the-dac-in-stm32-products-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3155-usart-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4286-spi-protocol-used-in-the-stm32-bootloader-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
Application Notes	https://www.st.com/resource/en/application_note/an4750-handling-of-soft-errors-in-stm32-applications-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4776-generalpurpose-

	timer-cookbook-for-stm32-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4803-highspeed-si-simulations-using-ibis-and-boardlevel-simulations-using-hyperlynx-si-on-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5027-interfacing-pdm-digital-microphones-using-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5406-how-to-build-a-lora-application-with-stm32cubewl-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5409-stm32cube-mcu-package-examples-for-stm32wl-series-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5457-rf-matching-network-design-guide-for-stm32wl-series-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5480-how-to-build-a-sigfox-application-with-stm32cubewl-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4899-stm32-microcontroller-gpio-hardware-settings-and-lowpower-consumption-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5612-esd-protection-of-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5042-how-to-calibrate-the-hse-clock-for-rf-applications-on-stm32-wireless-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5225-introduction-to-usb-typec-power-delivery-for-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4894-how-to-use-eeprom-emulation-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5407-how-to-optimize-the-rf-board-layout-for-stm32wl5xex-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5886-guidelines-for-design-and-board-assembly-of-land-grid-array-packages-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5646-how-to-select-a-

	32-mhz-hse-oscillator-for-stm32wl5xex-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5036-guidelines-for-thermal-management-on-stm32-applications-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5690-how-to-use-vrefbuf-peripheral-on-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4230-introduction-to-random-number-generation-validation-using-the-nist-statistical-test-suite-for-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2867-guidelines-for-oscillator-design-on-stm8afals-and-stm32-mcusmpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4013-introduction-to-timers-for-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4277-how-to-use-pwm-shutdown-for-motor-control-and-digital-power-conversion-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4759-introduction-to-using-the-hardware-realtime-clock-rtc-and-the-tamper-management-unit-tamp-with-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4908-getting-started-with-usart-automatic-baud-rater-detection-for-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5156-introduction-to-security-for-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5543-guidelines-for-enhanced-spi-communication-on-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/cd00211314-how-to-optimize-the-adc-accuracy-in-the-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2639-soldering-recommendations-and-package-information-for-leadfree-ecopack2-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5568-ultralowpower-

	features-of-stm32wl5xex-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5664-rssi-and-snr-for-lora-modulation-on-stm32wl5xex-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5796-stm32wl5xex-microcontrollers-rf-bench-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5408-migrating-from-stm32l0-stm32l1-and-stm32l4-series-associated-with-sx12xx-transceiver-to-stm32wl5xex-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2606-introduction-to-system-memory-boot-mode-on-stm32-mcus-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4657-stm32-inapplication-programming-iap-using-the-usart-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4841-digital-signal-processing-for-stm32-microcontrollers-using-cmsis-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5360-getting-started-with-projects-based-on-the-stm32mp1-series-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5361-getting-started-with-projects-based-on-dualcore-stm32h7-microcontrollers-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5394-getting-started-with-projects-based-on-the-stm32l5-series-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5406-how-to-build-a-lora-application-with-stm32cubewl-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5409-stm32cube-mcu-package-examples-for-stm32wl-series-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5418-how-to-build-a-simple-usbpd-sink-application-with-stm32cubemx-stmicroelectronics.pdf

Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5426-migrating-graphics-middleware-projects-from-stm32cubemx-540-to-stm32cubemx-550-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5480-how-to-build-a-sigfox-application-with-stm32cubewl-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5481-lorawan-at-commands-for-stm32cubewl-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5544-integration-guide-of-sbsfu-on-stm32cubewl-including-kms-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5554-lorawan-firmware-update-over-the-air-with-stm32cubewl-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5564-getting-started-with-projects-based-on-dualcore-stm32wl-microcontrollers-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5682-how-to-secure-lorawan-and-sigfox-with-stm32cubewl-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5687-longpacket-operation-with-stm32cubewl-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5731-stm32cubemx-and-stm32cubeide-threadsafe-solution-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4502-stm32-smbuspmbus-expansion-package-for-stm32cube-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5042-how-to-calibrate-the-hse-clock-for-rf-applications-on-stm32-wireless-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5952-how-to-use-

for related Tools & Software	cmake-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4894-how-to-use-eeprom-emulation-on-stm32-mcus-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5054-how-to-perform-secure-programming-using-stm32cubeprogrammer-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an6127-getting-started-with-stm32h7rx7sx-mcus-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an6265-getting-started-with-stm32n6-mcus-in-stm32cubeide-stmicroelectronics.pdf
Errata Sheets	https://www.st.com/resource/en/errata_sheet/es0506-stm32wle5xx-stm32wle4xx-device-errata-stmicroelectronics.pdf
Datasheet	https://www.st.com/resource/en/datasheet/dm00648230.pdf
Programming Manuals	https://www.st.com/resource/en/programming_manual/pm0214-stm32-cortexm4-mcus-and-mpus-programming-manual-stmicroelectronics.pdf
Reference Manuals	https://www.st.com/resource/en/reference_manual/rm0461-stm32wlex-advanced-armbased-32bit-mcus-with-subghz-radio-solution-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1163-description-of-wlcsp-for-microcontrollers-and-recommendations-for-its-use-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1204-tape-and-reel-shipping-media-for-stm32-microcontrollers-in-bga-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1205-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-fpn-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1206-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-qfp-packages-stmicroelectronics.pdf

Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1207-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-so-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1208-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-tssop-and-ssop-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1433-reference-device-marking-schematics-for-stm32-microcontrollers-and-microprocessors-stmicroelectronics.pdf
User Manuals	https://www.st.com/resource/en/user_manual/um3191-stm32wl-series-ulcsaiec-607301603351-selftest-library-user-guide-stmicroelectronics.pdf
User Manuals	https://www.st.com/resource/en/user_manual/um3400-stm32cubewiseradioexplorer-software-description-stmicroelectronics.pdf