1. Description

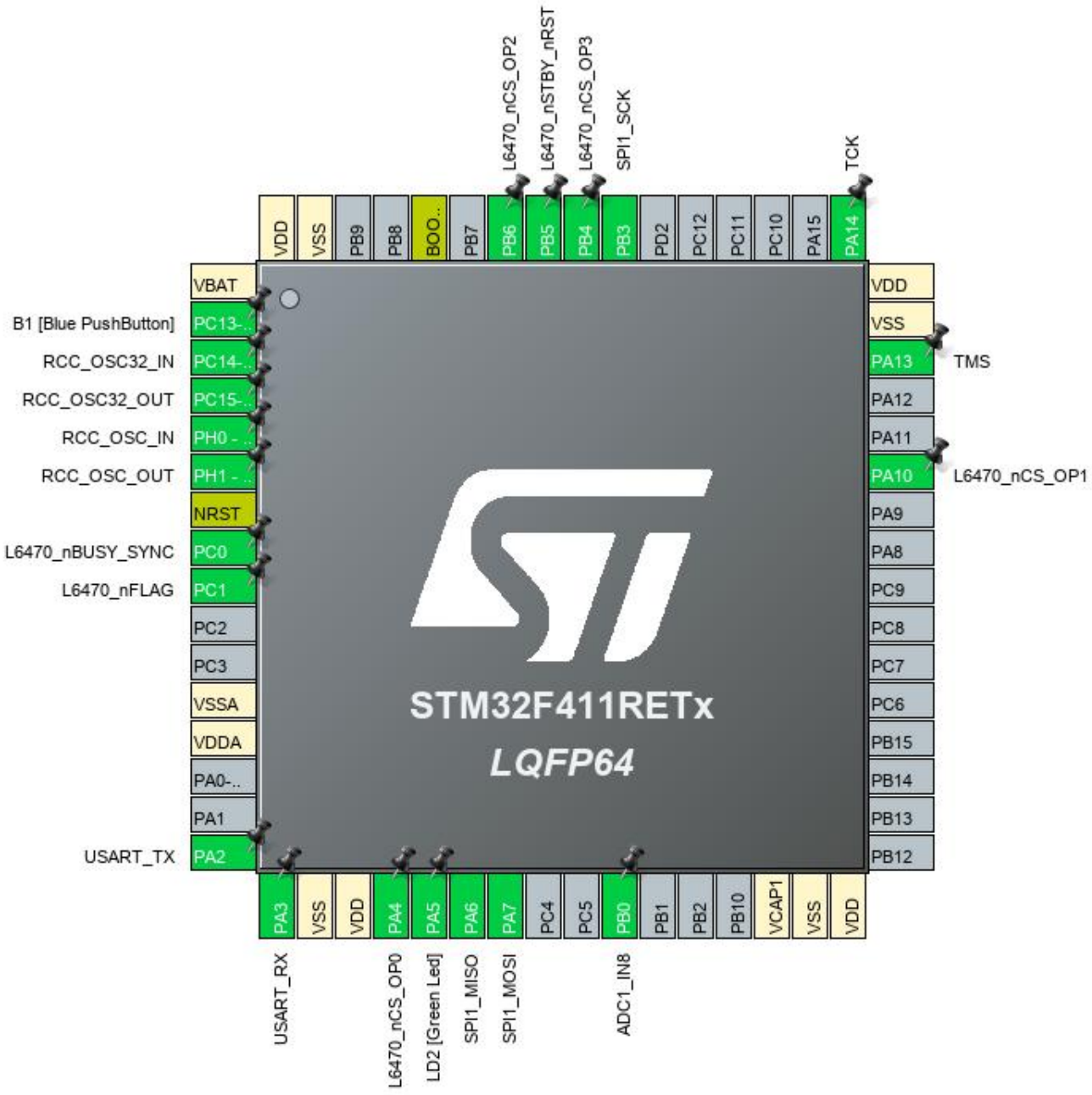
1.1. Project

Project Name	Nucleo_F411RE_StepperMotor_IHM02a1_v1
Board Name	NUCLEO-F411RE
Generated with:	STM32CubeMX 5.5.0
Date	03/03/2020

1.2. MCU

MCU Series	STM32F4
MCU Line	STM32F411
MCU name	STM32F411RETx
MCU Package	LQFP64
MCU Pin number	64

2. Pinout Configuration

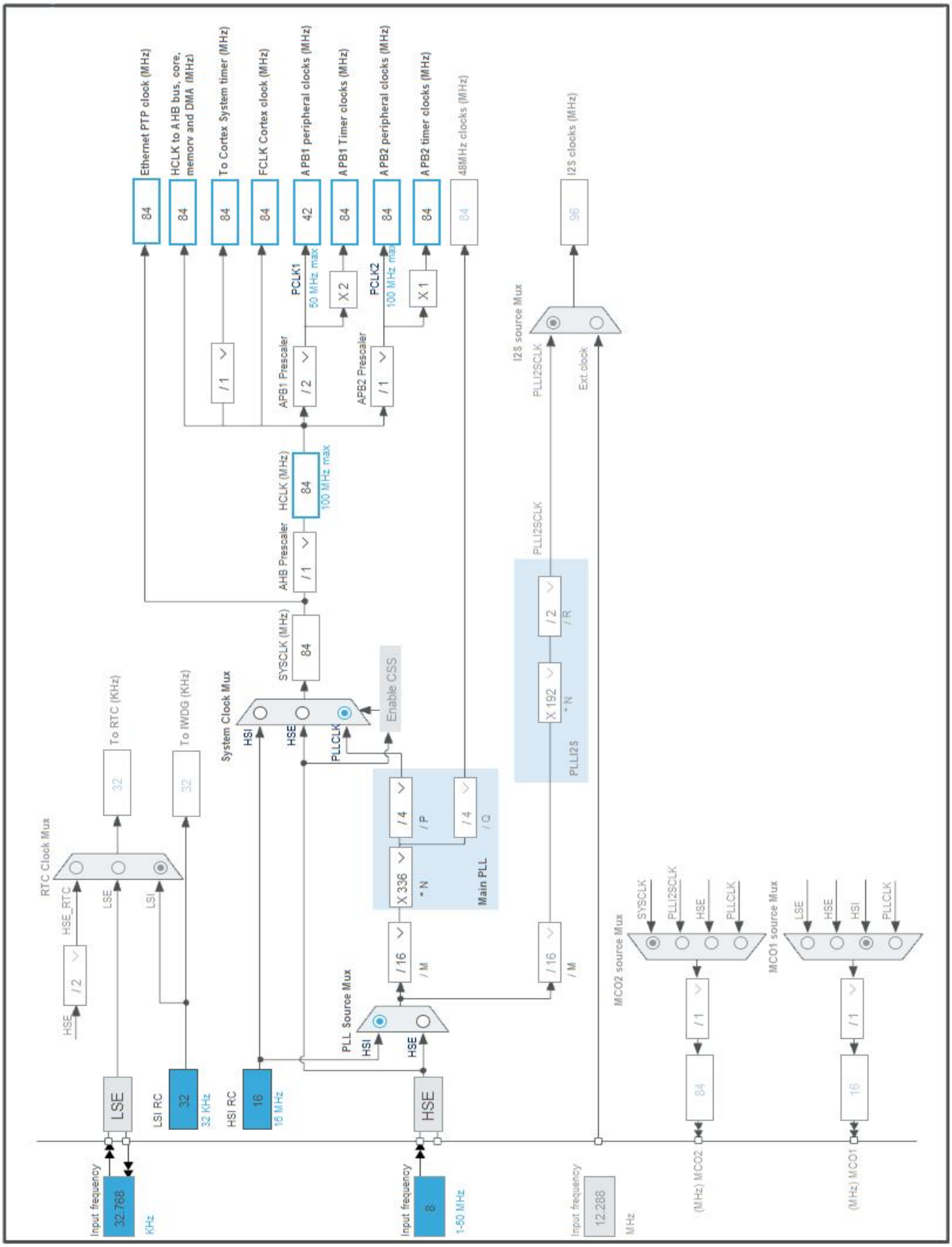


3. Pins Configuration

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
2	PC13-ANTI_TAMP	I/O	GPIO_EXTI13	B1 [Blue PushButton]
3	PC14-OSC32_IN	I/O	RCC_OSC32_IN	
4	PC15-OSC32_OUT	I/O	RCC_OSC32_OUT	
5	PH0 - OSC_IN	I/O	RCC_OSC_IN	
6	PH1 - OSC_OUT	I/O	RCC_OSC_OUT	
7	NRST	Reset		
8	PC0 *	I/O	GPIO_Output	L6470_nBUSY_SYNC
9	PC1	I/O	GPIO_EXTI1	L6470_nFLAG
12	VSSA	Power		
13	VDDA	Power		
16	PA2	I/O	USART2_TX	USART_TX
17	PA3	I/O	USART2_RX	USART_RX
18	VSS	Power		
19	VDD	Power		
20	PA4 *	I/O	GPIO_Output	L6470_nCS_OP0
21	PA5 *	I/O	GPIO_Output	LD2 [Green Led]
22	PA6	I/O	SPI1_MISO	
23	PA7	I/O	SPI1_MOSI	
26	PB0	I/O	ADC1_IN8	
30	VCAP1	Power		
31	VSS	Power		
32	VDD	Power		
43	PA10 *	I/O	GPIO_Output	L6470_nCS_OP1
46	PA13	I/O	SYS_JTMS-SWDIO	TMS
47	VSS	Power		
48	VDD	Power		
49	PA14	I/O	SYS_JTCK-SWCLK	TCK
55	PB3	I/O	SPI1_SCK	
56	PB4 *	I/O	GPIO_Output	L6470_nCS_OP3
57	PB5	I/O	GPIO_EXTI5	L6470_nSTBY_nRST
58	PB6 *	I/O	GPIO_Output	L6470_nCS_OP2
60	BOOT0	Boot		
63	VSS	Power		
64	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. Software Project

5.1. Project Settings

Name	Value
Project Name	Nucleo_F411RE_StepperMotor_IHM02a1_v1
Project Folder	C:\Users\toussaij\Documents\STM32dev\Nucleo_F411RE_StepperMotor_IHM02
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_F4 V1.24.2

5.2. 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
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32F4
Line	STM32F411
MCU	STM32F411RETx
Datasheet	026289_Rev6

6.2. Parameter Selection

Temperature	25
Vdd	null

7. IPs and Middleware Configuration

7.1. ADC1

mode: IN8

7.1.1. Parameter Settings:

ADC_Settings:

Clock Prescaler	PCLK2 divided by 4
Resolution	12 bits (15 ADC Clock cycles)
Data Alignment	Right alignment
Scan Conversion Mode	Disabled
Continuous Conversion Mode	Disabled
Discontinuous Conversion Mode	Disabled
DMA Continuous Requests	Disabled
End Of Conversion Selection	EOC flag at the end of single channel conversion

ADC_Regular_ConversionMode:

Number Of Conversion	1
External Trigger Conversion Source	Regular Conversion launched by software
External Trigger Conversion Edge	None
Rank	1
Channel	Channel 8
Sampling Time	3 Cycles

ADC_Injected_ConversionMode:

Number Of Conversions	0

WatchDog:

Enable Analog WatchDog Mode	false

7.2. GPIO

7.3. RCC

High Speed Clock (HSE): BYPASS Clock Source

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

7.3.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Enabled

Data Cache	Enabled
Flash Latency(WS)	2 WS (3 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
TIM Prescaler Selection	Disabled
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1

7.4. SPI1

Mode: Full-Duplex Master

7.4.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	**16 ***
Baud Rate	**5.25 MBits/s ***
Clock Polarity (CPOL)	**High ***
Clock Phase (CPHA)	**2 Edge ***

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

7.5. SYS

Debug: Serial Wire

Timebase Source: SysTick

7.6. USART2

Mode: Asynchronous

7.6.1. 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

*** User modified value**

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ADC1	PB0	ADC1_IN8	Analog mode	No pull-up and no pull-down	n/a	
RCC	PC14-OSC32_IN	RCC_OSC32_IN	n/a	n/a	n/a	
	PC15-OSC32_OUT	RCC_OSC32_OUT	n/a	n/a	n/a	
	PH0 - OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PH1 - OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SPI1	PA6	SPI1_MISO	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PA7	SPI1_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PB3	SPI1_SCK	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	TMS
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	TCK
USART2	PA2	USART2_TX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	USART_TX
	PA3	USART2_RX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	USART_RX
GPIO	PC13-ANTI_TAMP	GPIO_EXTI13	**External Interrupt Mode with Falling edge trigger detection**	No pull-up and no pull-down	n/a	B1 [Blue PushButton]
	PC0	GPIO_Output	**Output Open Drain ***	No pull-up and no pull-down	**High ***	L6470_nBUSY_SYNC
	PC1	GPIO_EXTI1	**External Interrupt Mode with Falling edge trigger detection**	No pull-up and no pull-down	**n/a**	L6470_nFLAG
	PA4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	L6470_nCS_OP0
	PA5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD2 [Green Led]
	PA10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	**High ***	L6470_nCS_OP1
	PB4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	L6470_nCS_OP3
	PB5	GPIO_EXTI5	**External Interrupt Mode with Falling edge trigger detection**	No pull-up and no pull-down	n/a	L6470_nSTBY_nRST

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PB6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	L6470_nCS_OP2

8.2. DMA configuration

nothing configured in DMA service

8.3. 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
Pre-fetch 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[15:10] interrupts	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
EXTI line1 interrupt	unused		
ADC1 global interrupt	unused		
EXTI line[9:5] interrupts	unused		
SPI1 global interrupt	unused		
USART2 global interrupt	unused		
FPU global interrupt	unused		

*** User modified value**

9. Software Pack Report