1. Description

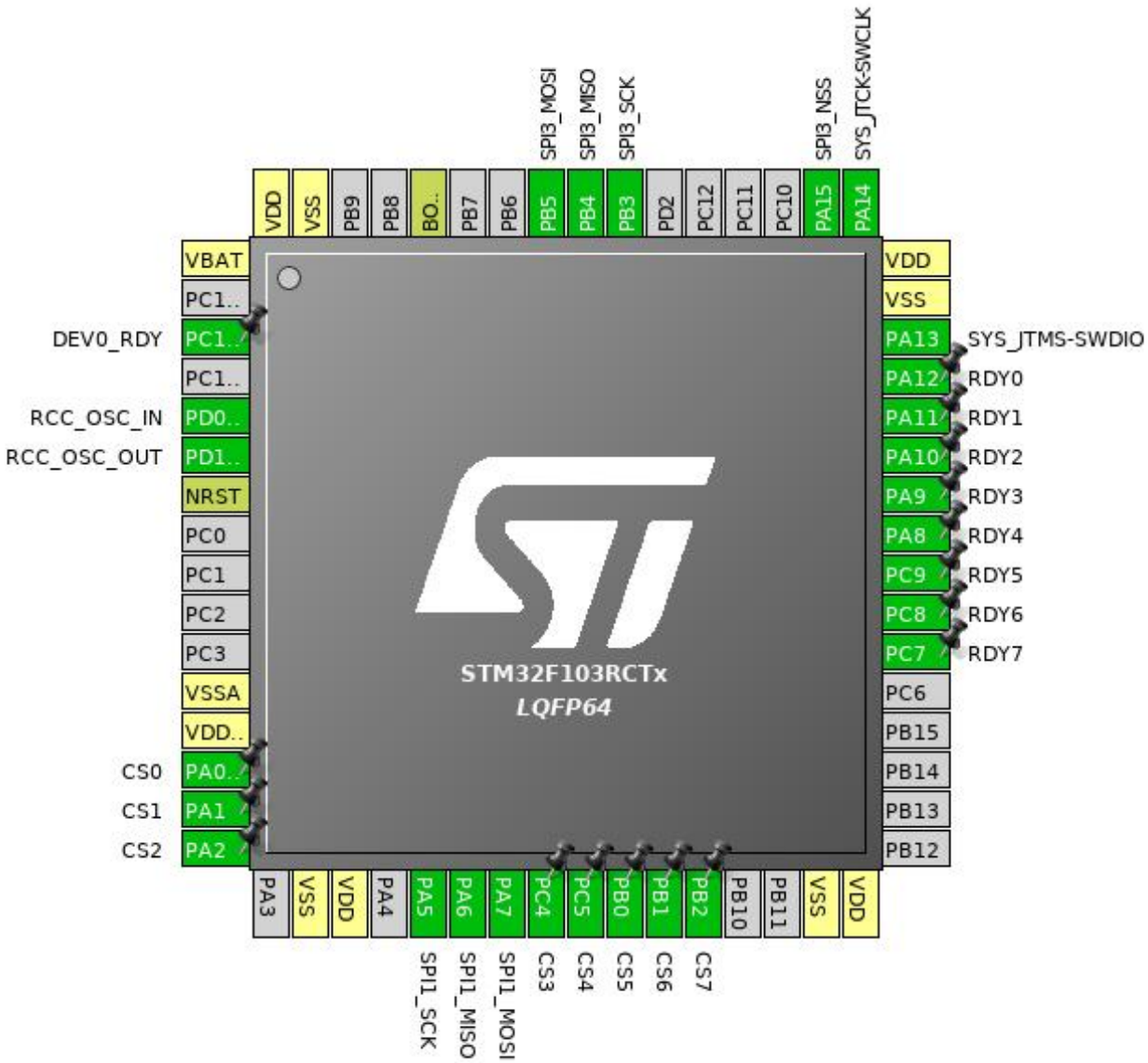
1.1. Project

Project Name	Glowing_FW
Board Name	Glowing_FW
Generated with:	STM32CubeMX 4.21.0
Date	06/04/2018

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F103
MCU name	STM32F103RCTx
MCU Package	LQFP64
MCU Pin number	64

2. Pinout Configuration



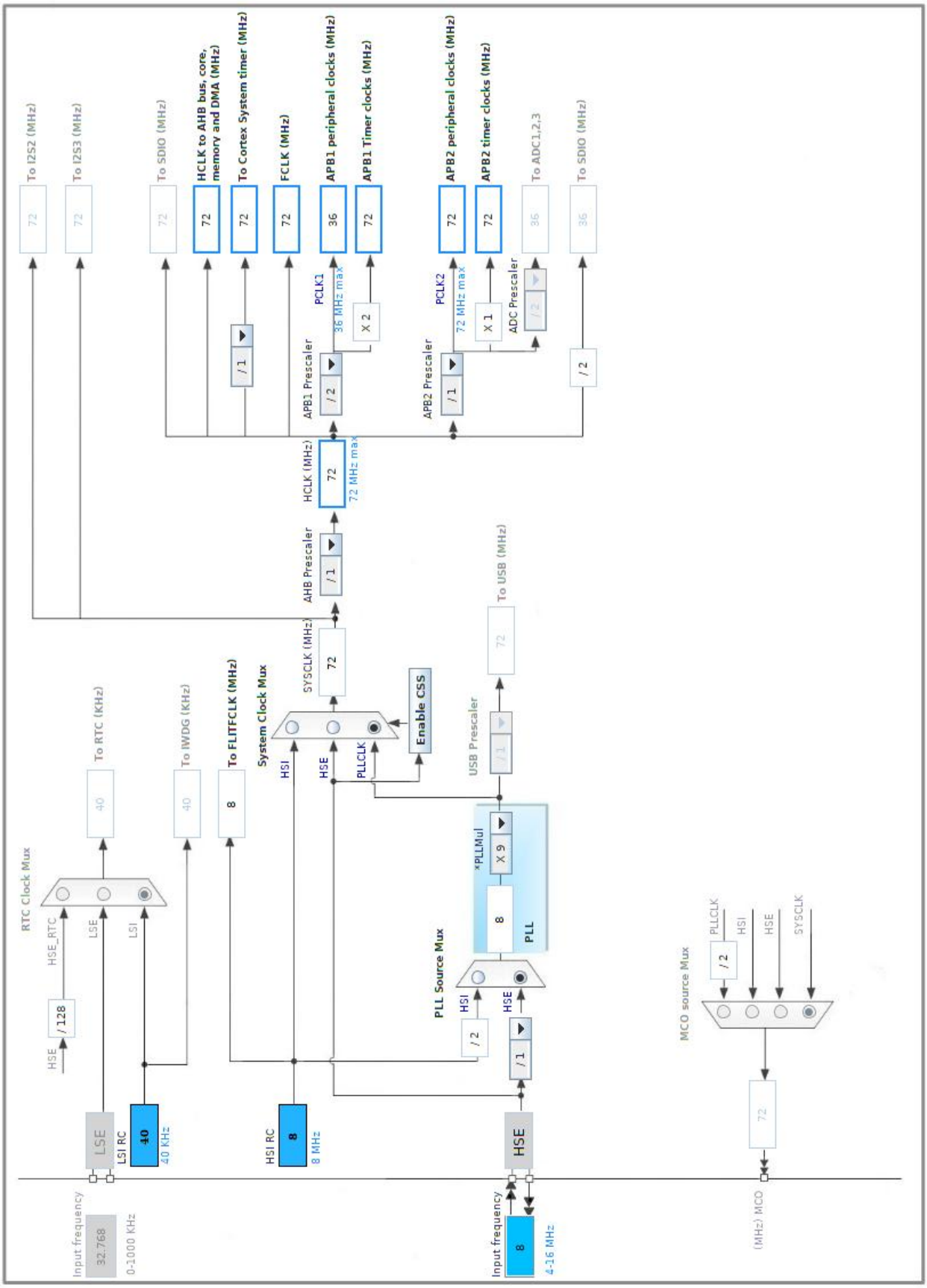
3. Pins Configuration

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
3	PC14-OSC32_IN *	I/O	GPIO_Input	DEV0_RDY
5	PD0-OSC_IN	I/O	RCC_OSC_IN	
6	PD1-OSC_OUT	I/O	RCC_OSC_OUT	
7	NRST	Reset		
12	VSSA	Power		
13	VDDA	Power		
14	PA0-WKUP *	I/O	GPIO_Output	CS0
15	PA1 *	I/O	GPIO_Output	CS1
16	PA2 *	I/O	GPIO_Output	CS2
18	VSS	Power		
19	VDD	Power		
21	PA5	I/O	SPI1_SCK	
22	PA6	I/O	SPI1_MISO	
23	PA7	I/O	SPI1_MOSI	
24	PC4 *	I/O	GPIO_Output	CS3
25	PC5 *	I/O	GPIO_Output	CS4
26	PB0 *	I/O	GPIO_Output	CS5
27	PB1 *	I/O	GPIO_Output	CS6
28	PB2 *	I/O	GPIO_Output	CS7
31	VSS	Power		
32	VDD	Power		
38	PC7 *	I/O	GPIO_Input	RDY7
39	PC8 *	I/O	GPIO_Input	RDY6
40	PC9 *	I/O	GPIO_Input	RDY5
41	PA8 *	I/O	GPIO_Input	RDY4
42	PA9 *	I/O	GPIO_Input	RDY3
43	PA10 *	I/O	GPIO_Input	RDY2
44	PA11 *	I/O	GPIO_Input	RDY1
45	PA12 *	I/O	GPIO_Input	RDY0
46	PA13	I/O	SYS_JTMS-SWDIO	
47	VSS	Power		
48	VDD	Power		
49	PA14	I/O	SYS_JTCK-SWCLK	
50	PA15	I/O	SPI3_NSS	
55	PB3	I/O	SPI3_SCK	

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
56	PB4	I/O	SPI3_MISO	
57	PB5	I/O	SPI3_MOSI	
60	BOOT0	Boot		
63	VSS	Power		
64	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

5.1.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Prefetch Buffer	Enabled
Flash Latency(WS)	2 WS (3 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

5.2. SPI1

Mode: Full-Duplex Master

5.2.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	**4 ***
Baud Rate	**18.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	**2 Edge ***

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

5.3. SPI3

Mode: Full-Duplex Slave

Hardware NSS Signal: Hardware NSS Input Signal

5.3.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	2
Baud Rate	**18.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	**2 Edge ***

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Input Hardware

5.4. SYS

Debug: Serial Wire

Timebase Source: SysTick

*** 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	PD0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PD1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SPI1	PA5	SPI1_SCK	Alternate Function Push Pull	n/a	**High ***	
	PA6	SPI1_MISO	Input mode	No pull-up and no pull-down	**n/a**	
	PA7	SPI1_MOSI	Alternate Function Push Pull	n/a	**High ***	
SPI3	PA15	SPI3_NSS	Input mode	No pull-up and no pull-down	n/a	
	PB3	SPI3_SCK	Input mode	No pull-up and no pull-down	n/a	
	PB4	SPI3_MISO	Alternate Function Push Pull	n/a	**High ***	
	PB5	SPI3_MOSI	Input mode	No pull-up and no pull-down	**n/a**	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
GPIO	PC14-OSC32_IN	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DEV0_RDY
	PA0-WKUP	GPIO_Output	Output Push Pull	n/a	Low	CS0
	PA1	GPIO_Output	Output Push Pull	n/a	Low	CS1
	PA2	GPIO_Output	Output Push Pull	n/a	Low	CS2
	PC4	GPIO_Output	Output Push Pull	n/a	Low	CS3
	PC5	GPIO_Output	Output Push Pull	n/a	Low	CS4
	PB0	GPIO_Output	Output Push Pull	n/a	Low	CS5
	PB1	GPIO_Output	Output Push Pull	n/a	Low	CS6
	PB2	GPIO_Output	Output Push Pull	n/a	Low	CS7
	PC7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	RDY7
	PC8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	RDY6
	PC9	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	RDY5
	PA8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	RDY4
	PA9	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	RDY3
	PA10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	RDY2
	PA11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	RDY1
	PA12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	RDY0

6.2. DMA configuration

DMA request	Stream	Direction	Priority
SPI3_RX	DMA2_Channel1	Peripheral To Memory	**Very High ***
SPI3_TX	DMA2_Channel2	Memory To Peripheral	**Very High ***

SPI3_RX: DMA2_Channel1 DMA request Settings:

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

SPI3_TX: DMA2_Channel2 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	1	0
Pendable request for system service	true	0	0
System tick timer	true	0	0
SPI1 global interrupt	true	1	0
SPI3 global interrupt	true	0	0
DMA2 channel1 global interrupt	true	1	0
DMA2 channel2 global interrupt	true	1	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F1
Line	STM32F103
MCU	STM32F103RCTx
Datasheet	14611_Rev12

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	Glowing_FW
Project Folder	/home/user/workspaces/eclipse_workspace/load_cell_controller_firmware
Toolchain / IDE	SW4STM32
Firmware Package Name and Version	STM32Cube FW_F1 V1.4.0

8.2. Code Generation Settings

Name	Value
STM32Cube Firmware Library Package	Copy only the necessary library files
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)	Yes