1. Description

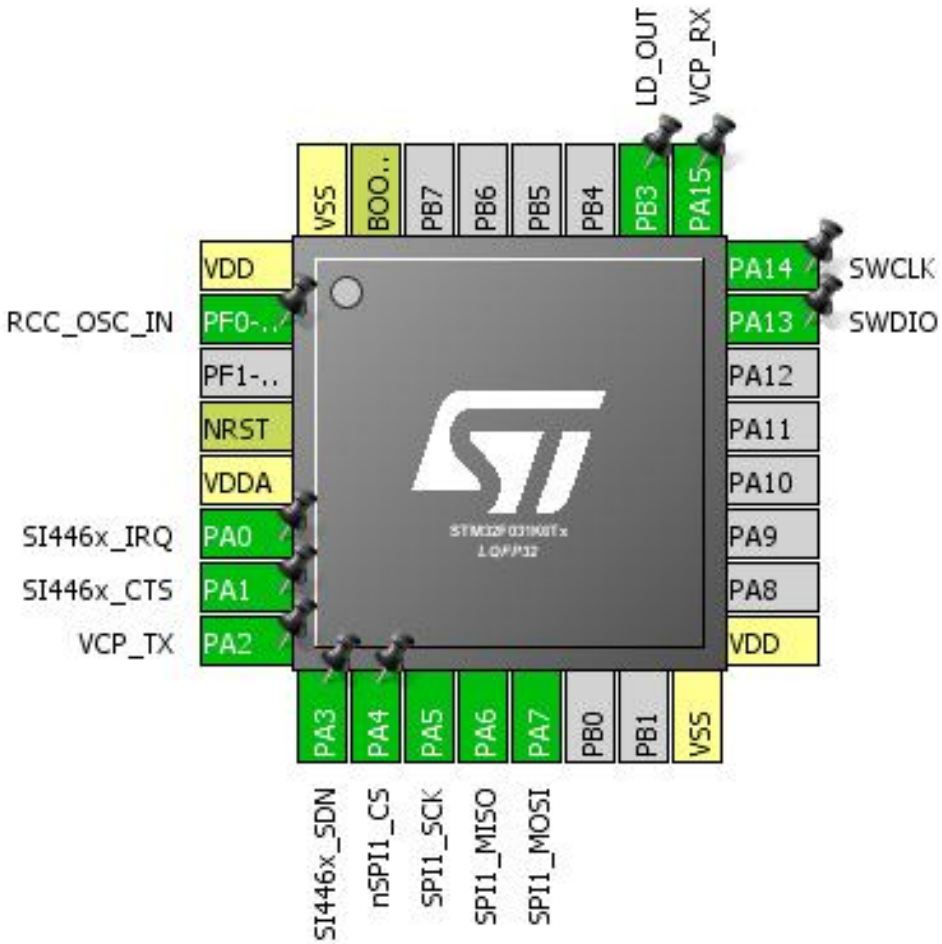
1.1. Project

Project Name	si446x_f0_rx
Board Name	NUCLEO-F031K6
Generated with:	STM32CubeMX 4.26.1
Date	07/31/2018

1.2. MCU

MCU Series	STM32F0
MCU Line	STM32F0x1
MCU name	STM32F031K6Tx
MCU Package	LQFP32
MCU Pin number	32

2. Pinout Configuration

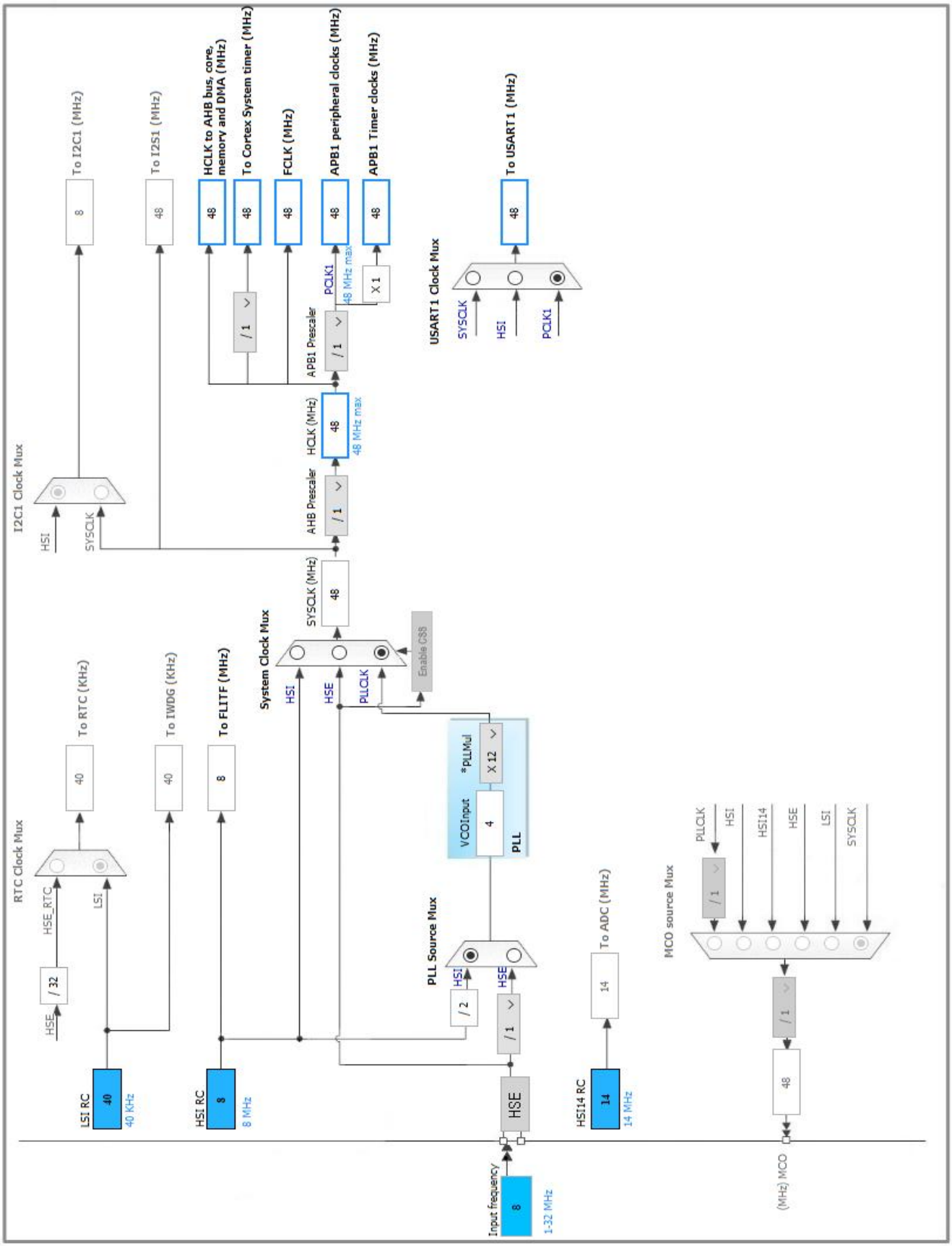


3. Pins Configuration

Pin Number LQFP32	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VDD	Power		
2	PF0-OSC_IN	I/O	RCC_OSC_IN	
4	NRST	Reset		
5	VDDA	Power		
6	PA0 *	I/O	GPIO_Input	SI446x_IRQ
7	PA1 *	I/O	GPIO_Input	SI446x_CTS
8	PA2	I/O	USART1_TX	VCP_TX
9	PA3 *	I/O	GPIO_Output	SI446x_SDN
10	PA4 *	I/O	GPIO_Output	nSPI1_CS
11	PA5	I/O	SPI1_SCK	
12	PA6	I/O	SPI1_MISO	
13	PA7	I/O	SPI1_MOSI	
16	VSS	Power		
17	VDD	Power		
23	PA13	I/O	SYS_SWDIO	SWDIO
24	PA14	I/O	SYS_SWCLK	SWCLK
25	PA15	I/O	USART1_RX	VCP_RX
26	PB3 *	I/O	GPIO_Output	LD_OUT
31	BOOT0	Boot		
32	VSS	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): BYPASS Clock Source

5.1.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Prefetch Buffer	Enabled
Flash Latency(WS)	1 WS (2 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)	**128 ***
Baud Rate	**375.0 KBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSSP Mode	Enabled
NSS Signal Type	Software

5.3. SYS

mode: Debug Serial Wire

Timebase Source: SysTick

5.4. USART1

Mode: Asynchronous

5.4.1. Parameter Settings:

Basic Parameters:

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

Advanced Parameters:

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

Advanced Features:

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

*** User modified value**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
RCC	PF0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
SPI1	PA5	SPI1_SCK	Alternate Function Push Pull	**Pull-up ***	**High ***	
	PA6	SPI1_MISO	Alternate Function Push Pull	**Pull-up ***	**High ***	
	PA7	SPI1_MOSI	Alternate Function Push Pull	**Pull-up ***	**High ***	
SYS	PA13	SYS_SWDIO	n/a	n/a	n/a	SWDIO
	PA14	SYS_SWCLK	n/a	n/a	n/a	SWCLK
USART1	PA2	USART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	VCP_TX
	PA15	USART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	VCP_RX
GPIO	PA0	GPIO_Input	Input mode	**Pull-up ***	n/a	SI446x_IRQ
	PA1	GPIO_Input	Input mode	**Pull-up ***	n/a	SI446x_CTS
	PA3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SI446x_SDN
	PA4	GPIO_Output	Output Push Pull	**Pull-up ***	Low	nSPI1_CS
	PB3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD_OUT

6.2. DMA configuration

DMA request	Stream	Direction	Priority
SPI1_RX	DMA1_Channel2	Peripheral To Memory	Low
SPI1_TX	DMA1_Channel3	Memory To Peripheral	Low

SPI1_RX: DMA1_Channel2 DMA request Settings:

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

SPI1_TX: DMA1_Channel3 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
System service call via SWI instruction	true	0	0
Pendable request for system service	true	0	0
System tick timer	true	0	0
DMA1 channel 2 and 3 interrupts	true	1	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
SPI1 global interrupt	unused		
USART1 global interrupt / USART1 wake-up interrupt through EXTI line 25	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F0
Line	STM32F0x1
MCU	STM32F031K6Tx
Datasheet	025743_Rev6

7.2. Parameter Selection

Temperature	25
Vdd	3.6

8. Software Project

8.1. Project Settings

Name	Value
Project Name	si446x_f0_rx
Project Folder	D:\work\smartlogic\si4463_test\dev_f0_rx\si446x_f0_rx
Toolchain / IDE	MDK-ARM V5
Firmware Package Name and Version	STM32Cube FW_F0 V1.9.0

8.2. Code Generation Settings

Name	Value
STM32Cube Firmware Library Package	Copy all used libraries into the project folder
Generate peripheral initialization as a pair of '.c/.h' files	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

9. Software Pack Report