1. Description

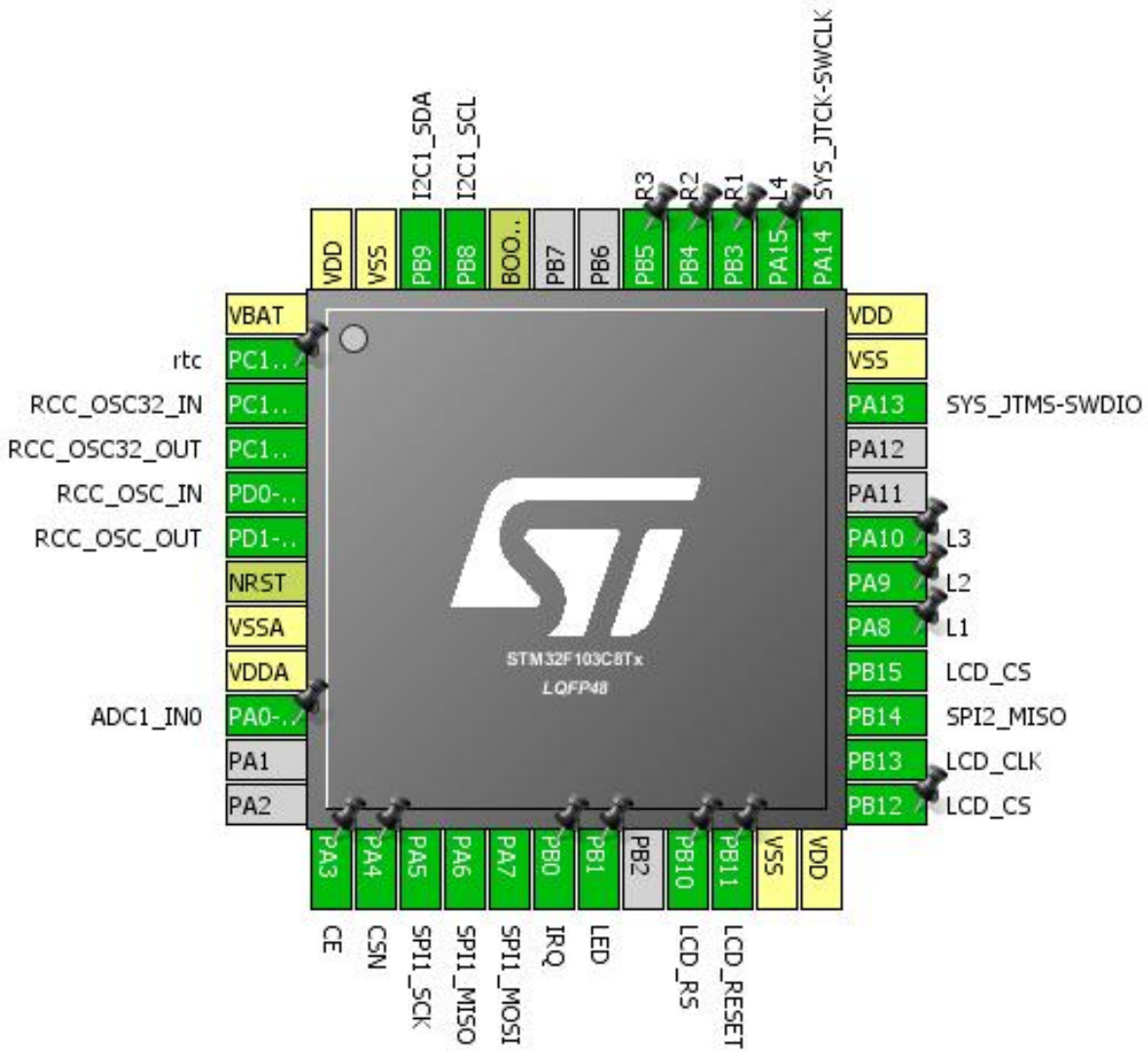
1.1. Project

Project Name	RF
Board Name	RF
Generated with:	STM32CubeMX 4.19.0
Date	01/29/2017

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F103
MCU name	STM32F103C8Tx
MCU Package	LQFP48
MCU Pin number	48

2. Pinout Configuration



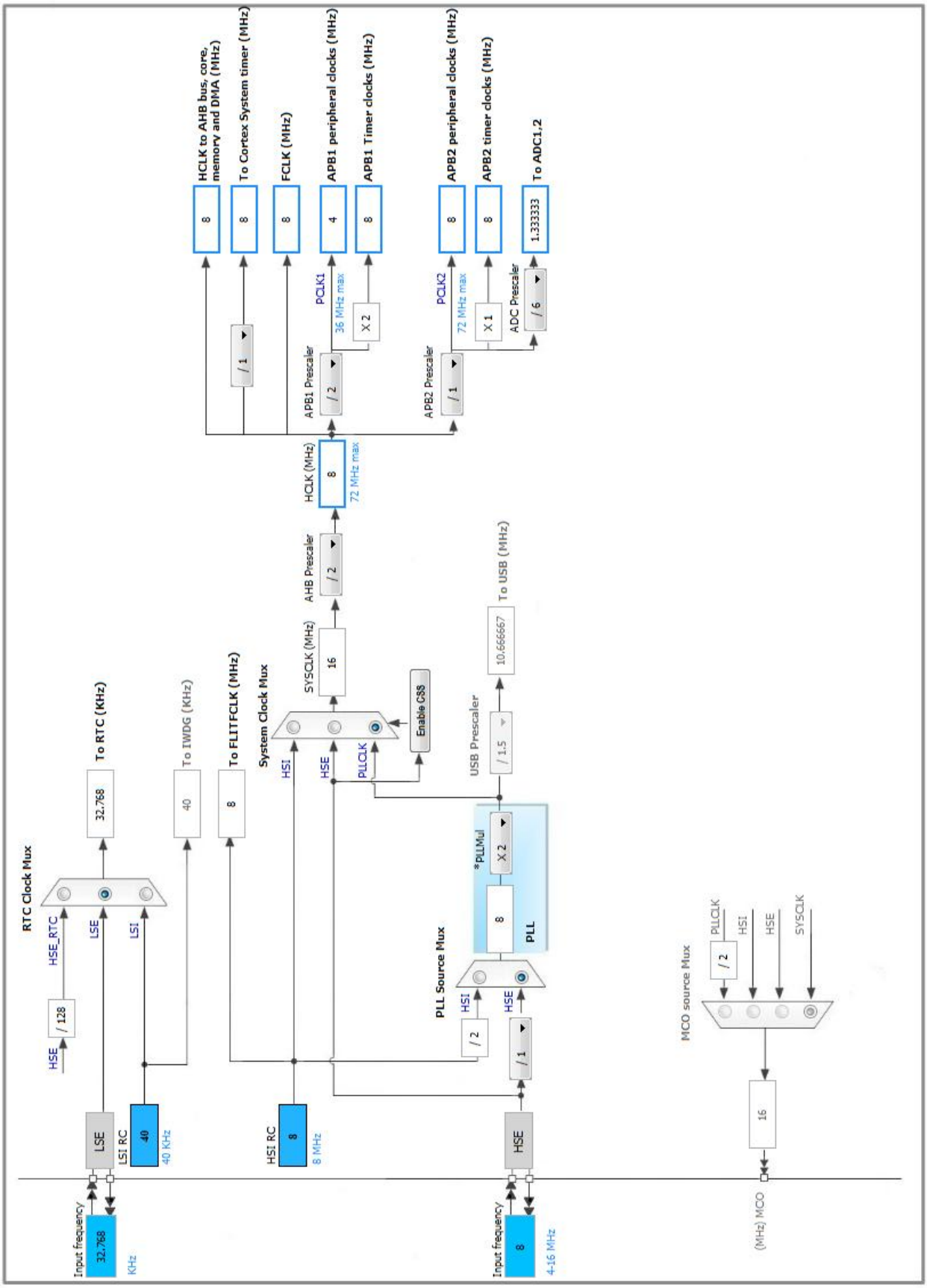
3. Pins Configuration

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
2	PC13-TAMPER-RTC *	I/O	GPIO_Output	rtc
3	PC14-OSC32_IN	I/O	RCC_OSC32_IN	
4	PC15-OSC32_OUT	I/O	RCC_OSC32_OUT	
5	PD0-OSC_IN	I/O	RCC_OSC_IN	
6	PD1-OSC_OUT	I/O	RCC_OSC_OUT	
7	NRST	Reset		
8	VSSA	Power		
9	VDDA	Power		
10	PA0-WKUP	I/O	ADC1_IN0	
13	PA3 *	I/O	GPIO_Output	CE
14	PA4 *	I/O	GPIO_Output	CSN
15	PA5	I/O	SPI1_SCK	
16	PA6	I/O	SPI1_MISO	
17	PA7	I/O	SPI1_MOSI	
18	PB0	I/O	GPIO_EXTI0	IRQ
19	PB1 *	I/O	GPIO_Output	LED
21	PB10 *	I/O	GPIO_Output	LCD_RS
22	PB11 *	I/O	GPIO_Output	LCD_RESET
23	VSS	Power		
24	VDD	Power		
25	PB12 *	I/O	GPIO_Output	LCD_CS
26	PB13	I/O	SPI2_SCK	LCD_CLK
27	PB14	I/O	SPI2_MISO	
28	PB15	I/O	SPI2_MOSI	LCD_CS
29	PA8	I/O	GPIO_EXTI8	L1
30	PA9	I/O	GPIO_EXTI9	L2
31	PA10	I/O	GPIO_EXTI10	L3
34	PA13	I/O	SYS_JTMS-SWDIO	
35	VSS	Power		
36	VDD	Power		
37	PA14	I/O	SYS_JTCK-SWCLK	
38	PA15	I/O	GPIO_EXTI15	L4
39	PB3 *	I/O	GPIO_Output	R1
40	PB4 *	I/O	GPIO_Output	R2
41	PB5 *	I/O	GPIO_Output	R3

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
44	BOOT0	Boot		
45	PB8	I/O	I2C1_SCL	
46	PB9	I/O	I2C1_SDA	
47	VSS	Power		
48	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. ADC1

mode: IN0

5.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode	Independent mode

ADC_Settings:

Data Alignment	Right alignment
Scan Conversion Mode	Disabled
Continuous Conversion Mode	**Enabled ***
Discontinuous Conversion Mode	Disabled

ADC_Regular_ConversionMode:

Enable Regular Conversions	Enable
Number Of Conversion	1
External Trigger Conversion Source	Regular Conversion launched by software
Rank	1
Channel	Channel 0
Sampling Time	**239.5 Cycles ***

ADC_Injected_ConversionMode:

Number Of Conversions	0

WatchDog:

Enable Analog WatchDog Mode	false

5.2. I2C1

I2C: I2C

5.2.1. Parameter Settings:

Master Features:

I2C Speed Mode	Standard Mode
I2C Clock Speed (Hz)	100000

Slave Features:

Clock No Stretch Mode	Disabled

Primary Address Length selection	7-bit
Dual Address Acknowledged	Disabled
Primary slave address	0
General Call address detection	Disabled

5.3. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

5.3.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Prefetch Buffer	Enabled
Flash Latency(WS)	0 WS (1 CPU cycle)

RCC Parameters:

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

5.4. RTC

mode: Activate Clock Source

5.4.1. Parameter Settings:

Calendar Time:

Data Format	BCD data format

General:

Auto Predivider Calculation	Enabled
Asynchronous Predivider value	Automatic Predivider Calculation Enabled
Output	Alarm pulse signal on the TAMPER pin

5.5. SPI1

Mode: Full-Duplex Master

5.5.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	2
Baud Rate	**4.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

5.6. SPI2

Mode: Full-Duplex Master

5.6.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	2
Baud Rate	**2.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

5.7. SYS

Debug: Serial Wire

Timebase Source: SysTick

5.8. TIM1

Clock Source : Internal Clock

5.8.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**7999 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**1000 ***
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection	**Update Event ***

*** User modified value**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ADC1	PA0-WKUP	ADC1_IN0	Analog mode	n/a	n/a	
I2C1	PB8	I2C1_SCL	Alternate Function Open Drain	n/a	**High ***	
	PB9	I2C1_SDA	Alternate Function Open Drain	n/a	**High ***	
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	
	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 ***	
SPI2	PB13	SPI2_SCK	Alternate Function Push Pull	n/a	**High ***	LCD_CLK
	PB14	SPI2_MISO	Input mode	No pull-up and no pull-down	**n/a**	
	PB15	SPI2_MOSI	Alternate Function Push Pull	n/a	**High ***	LCD_CS
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
GPIO	PC13-TAMPER-RTC	GPIO_Output	Output Push Pull	n/a	Low	rtc
	PA3	GPIO_Output	Output Push Pull	n/a	Low	CE
	PA4	GPIO_Output	Output Push Pull	n/a	Low	CSN
	PB0	GPIO_EXTI0	External Interrupt Mode with Rising edge trigger detection	**Pull-up ***	n/a	IRQ
	PB1	GPIO_Output	Output Push Pull	**n/a**	Low	LED
	PB10	GPIO_Output	Output Push Pull	**n/a**	Low	LCD_RS
	PB11	GPIO_Output	Output Push Pull	**n/a**	Low	LCD_RESET
	PB12	GPIO_Output	Output Push Pull		Low	LCD_CS

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
				n/a		
	PA8	GPIO_EXTI8	**External Interrupt Mode with Falling edge trigger detection**	**Pull-up ***	n/a	L1
	PA9	GPIO_EXTI9	**External Interrupt Mode with Falling edge trigger detection**	**Pull-up ***	n/a	L2
	PA10	GPIO_EXTI10	**External Interrupt Mode with Falling edge trigger detection**	**Pull-up ***	n/a	L3
	PA15	GPIO_EXTI15	**External Interrupt Mode with Falling edge trigger detection**	**Pull-up ***	n/a	L4
	PB3	GPIO_Output	**Output Open Drain ***	**n/a**	Low	R1
	PB4	GPIO_Output	**Output Open Drain ***	**n/a**	Low	R2
	PB5	GPIO_Output	**Output Open Drain ***	**n/a**	Low	R3

6.2. DMA configuration

nothing configured in DMA service

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	0	0
Pendable request for system service	true	0	0
System tick timer	true	0	0
EXTI line0 interrupt	true	0	0
EXTI line[9:5] interrupts	true	1	0
TIM1 update interrupt	true	2	0
EXTI line[15:10] interrupts	true	1	0
PVD interrupt through EXTI line 16	unused		
RTC global interrupt	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1 and ADC2 global interrupts	unused		
TIM1 break interrupt	unused		
TIM1 trigger and commutation interrupts	unused		
TIM1 capture compare interrupt	unused		
I2C1 event interrupt	unused		
I2C1 error interrupt	unused		
SPI1 global interrupt	unused		
SPI2 global interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F1
Line	STM32F103
MCU	STM32F103C8Tx
Datasheet	13587_Rev17

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	RF
Project Folder	F:\MC\STM\Cube\RF\RF
Toolchain / IDE	MDK-ARM V4
Firmware Package Name and Version	STM32Cube FW_F1 V1.4.0

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)	Yes