1. Description

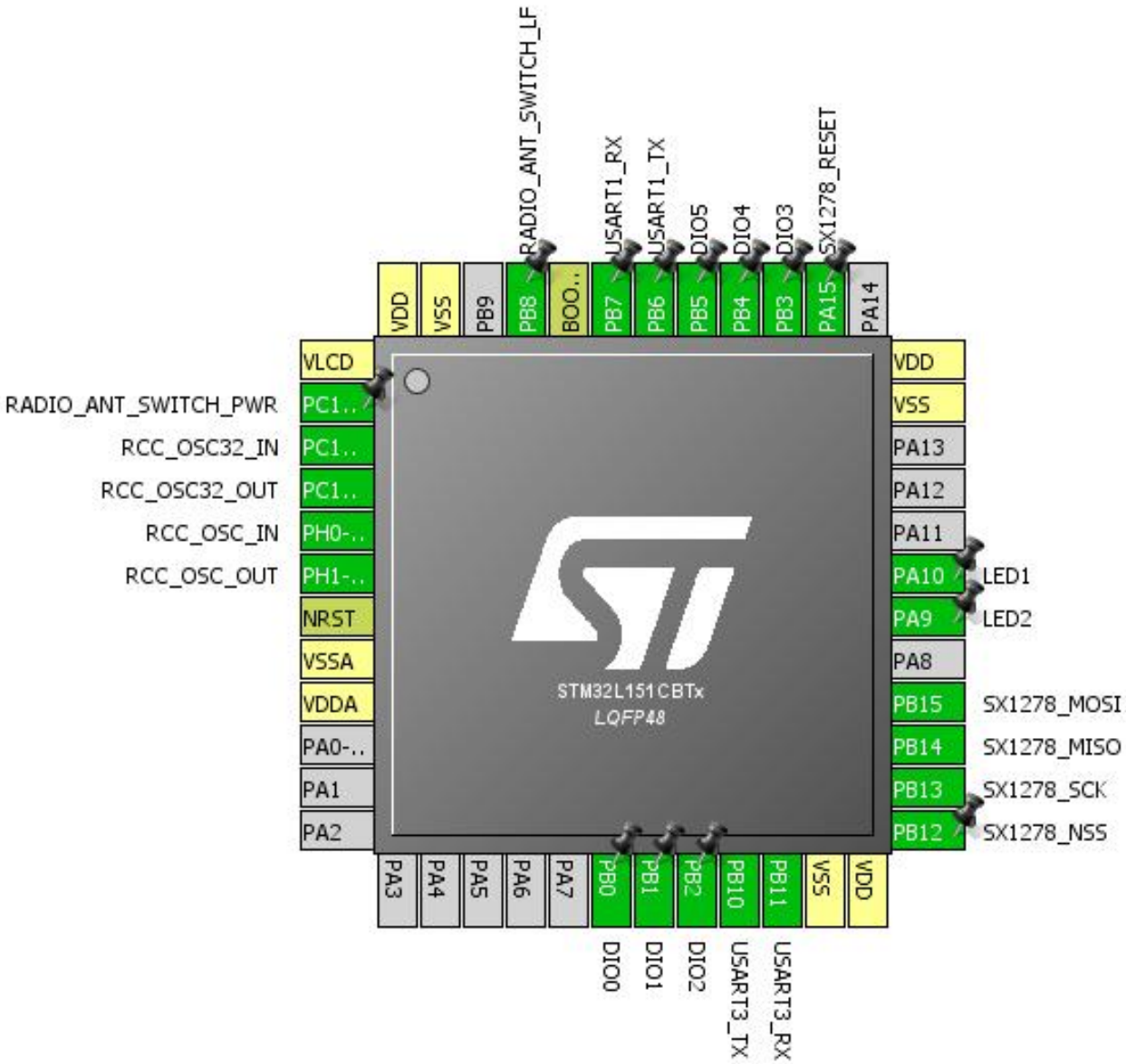
1.1. Project

Project Name	STM32L151CBTX
Board Name	STM32L151CBTX
Generated with:	STM32CubeMX 4.19.0
Date	10/25/2017

1.2. MCU

MCU Series	STM32L1
MCU Line	STM32L151/152
MCU name	STM32L151CBTx
MCU Package	LQFP48
MCU Pin number	48

2. Pinout Configuration

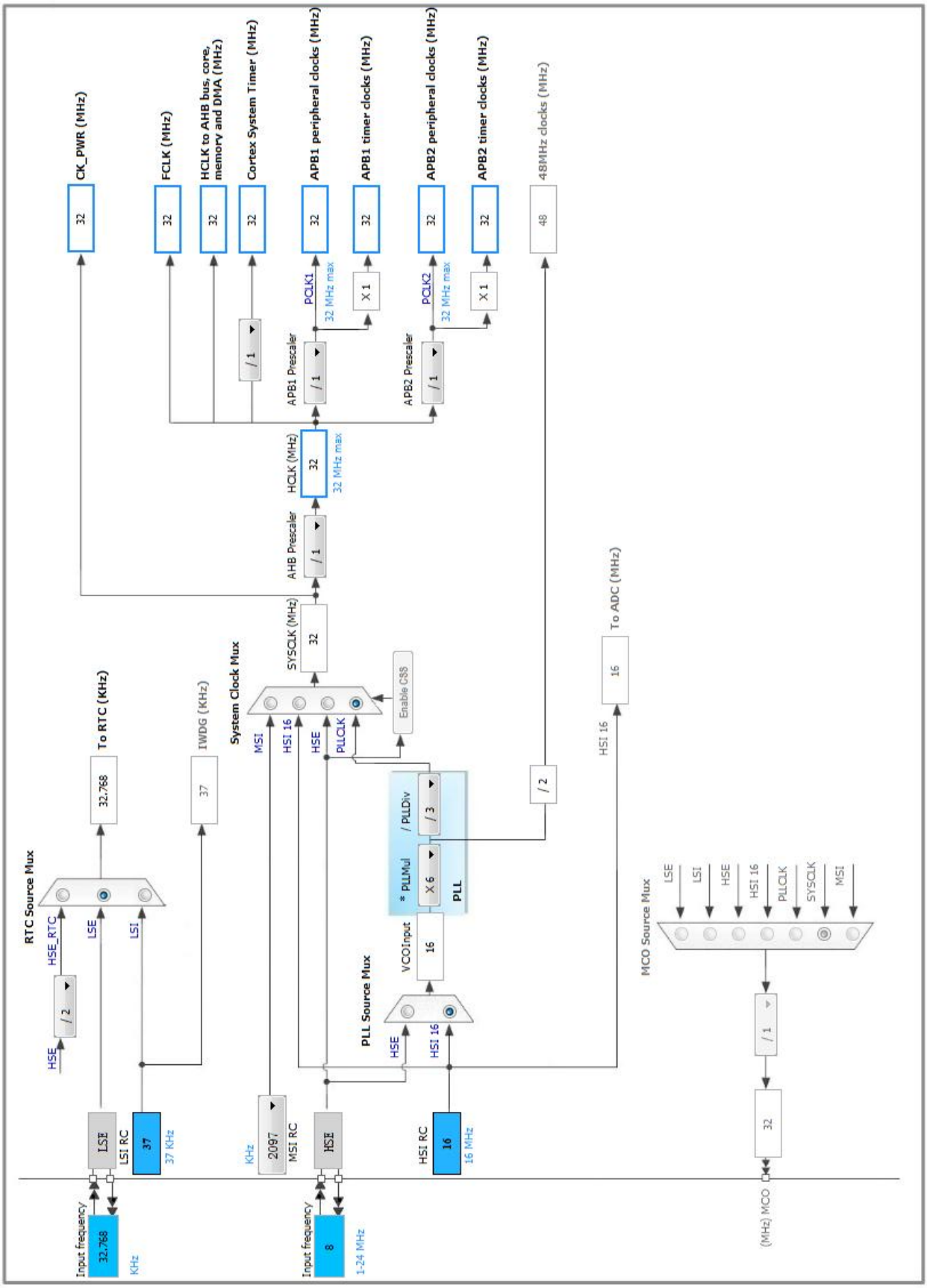


3. Pins Configuration

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VLCD	Power		
2	PC13-WKUP2 *	I/O	GPIO_Output	RADIO_ANT_SWITCH_PWR
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	VSSA	Power		
9	VDDA	Power		
18	PB0 *	I/O	GPIO_Input	DIO0
19	PB1 *	I/O	GPIO_Input	DIO1
20	PB2 *	I/O	GPIO_Input	DIO2
21	PB10	I/O	USART3_TX	
22	PB11	I/O	USART3_RX	
23	VSS	Power		
24	VDD	Power		
25	PB12 *	I/O	GPIO_Output	SX1278_NSS
26	PB13	I/O	SPI2_SCK	SX1278_SCK
27	PB14	I/O	SPI2_MISO	SX1278_MISO
28	PB15	I/O	SPI2_MOSI	SX1278_MOSI
30	PA9 *	I/O	GPIO_Output	LED2
31	PA10 *	I/O	GPIO_Output	LED1
35	VSS	Power		
36	VDD	Power		
38	PA15 *	I/O	GPIO_Output	SX1278_RESET
39	PB3 *	I/O	GPIO_Input	DIO3
40	PB4 *	I/O	GPIO_Input	DIO4
41	PB5 *	I/O	GPIO_Input	DIO5
42	PB6	I/O	USART1_TX	
43	PB7	I/O	USART1_RX	
44	BOOT0	Boot		
45	PB8 *	I/O	GPIO_Output	RADIO_ANT_SWITCH_LF
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. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

5.1.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Disabled
Data Cache	Enabled
Flash Latency(WS)	1 WS (2 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
MSI Calibration Value	0
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1

5.2. RTC

mode: Activate Clock Source

mode: Activate Calendar

WakeUp: Internal WakeUp

5.2.1. Parameter Settings:

General:

Hour Format	Hourformat 24
Asynchronous Predivider value	127
Synchronous Predivider value	255

Calendar Time:

Data Format	BCD data format
Hours	0

Minutes	0
Seconds	0
Day Light Saving: value of hour adjustment	Daylightsaving None
Store Operation	Storeoperation Reset

Calendar Date:

Week Day	**Sunday ***
Month	**October ***
Date	**22 ***
Year	**17 ***

Wake UP:

Wake Up Clock	RTCCLK / 16
Wake Up Counter	0

5.3. SPI2

Mode: Full-Duplex Master

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	**16.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

5.4. SYS

Timebase Source: SysTick

5.5. USART1

Mode: Asynchronous

5.5.1. Parameter Settings:

Basic Parameters:

Baud Rate	**2400 ***
Word Length	8 Bits (including Parity)
Parity	**Even ***
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples

5.6. USART3

Mode: Asynchronous

5.6.1. 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**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
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	
SPI2	PB13	SPI2_SCK	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	SX1278_SCK
	PB14	SPI2_MISO	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	SX1278_MISO
	PB15	SPI2_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	SX1278_MOSI
USART1	PB6	USART1_TX	Alternate Function Push Pull	Pull-up	**High ***	
	PB7	USART1_RX	Alternate Function Push Pull	Pull-up	**High ***	
USART3	PB10	USART3_TX	Alternate Function Push Pull	Pull-up	**High ***	
	PB11	USART3_RX	Alternate Function Push Pull	Pull-up	**High ***	
GPIO	PC13-WKUP2	GPIO_Output	Output Push Pull	**Pull-up ***	Very Low	RADIO_ANT_SWITCH_PWR
	PB0	GPIO_Input	Input mode	**Pull-down ***	n/a	DIO0
	PB1	GPIO_Input	Input mode	**Pull-down ***	n/a	DIO1
	PB2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIO2
	PB12	GPIO_Output	Output Push Pull	**Pull-down ***	Very Low	SX1278_NSS
	PA9	GPIO_Output	Output Push Pull	**Pull-down ***	Very Low	LED2
	PA10	GPIO_Output	Output Push Pull	**Pull-down ***	Very Low	LED1
	PA15	GPIO_Output	Output Push Pull	**Pull-up ***	Very Low	SX1278_RESET
	PB3	GPIO_Input	Input mode	**Pull-down ***	n/a	DIO3
	PB4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIO4
	PB5	GPIO_Input	Input mode	**Pull-down ***	n/a	DIO5
	PB8	GPIO_Output	Output Push Pull	**Pull-up ***	Very Low	RADIO_ANT_SWITCH_LF

6.2. DMA configuration

DMA request	Stream	Direction	Priority
USART1_RX	DMA1_Channel5	Peripheral To Memory	Low
USART3_RX	DMA1_Channel3	Peripheral To Memory	Low

USART1_RX: DMA1_Channel5 DMA request Settings:

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

USART3_RX: 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
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	9	0
DMA1 channel3 global interrupt	true	6	0
DMA1 channel5 global interrupt	true	5	0
USART1 global interrupt	true	8	0
USART3 global interrupt	true	7	0
RTC wake-up interrupt through EXTI line 20	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
SPI2 global interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32L1
Line	STM32L151/152
MCU	STM32L151CBTx
Datasheet	17659_Rev12

7.2. Parameter Selection

Temperature	25
Vdd	3.6

8. Software Project

8.1. Project Settings

Name	Value
Project Name	STM32L151CBTX
Project Folder	E:\STM32\Stm32CubeMx_Proj_L151CB
Toolchain / IDE	MDK-ARM V5
Firmware Package Name and Version	STM32Cube FW_L1 V1.6.0

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	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)	No