1. Description

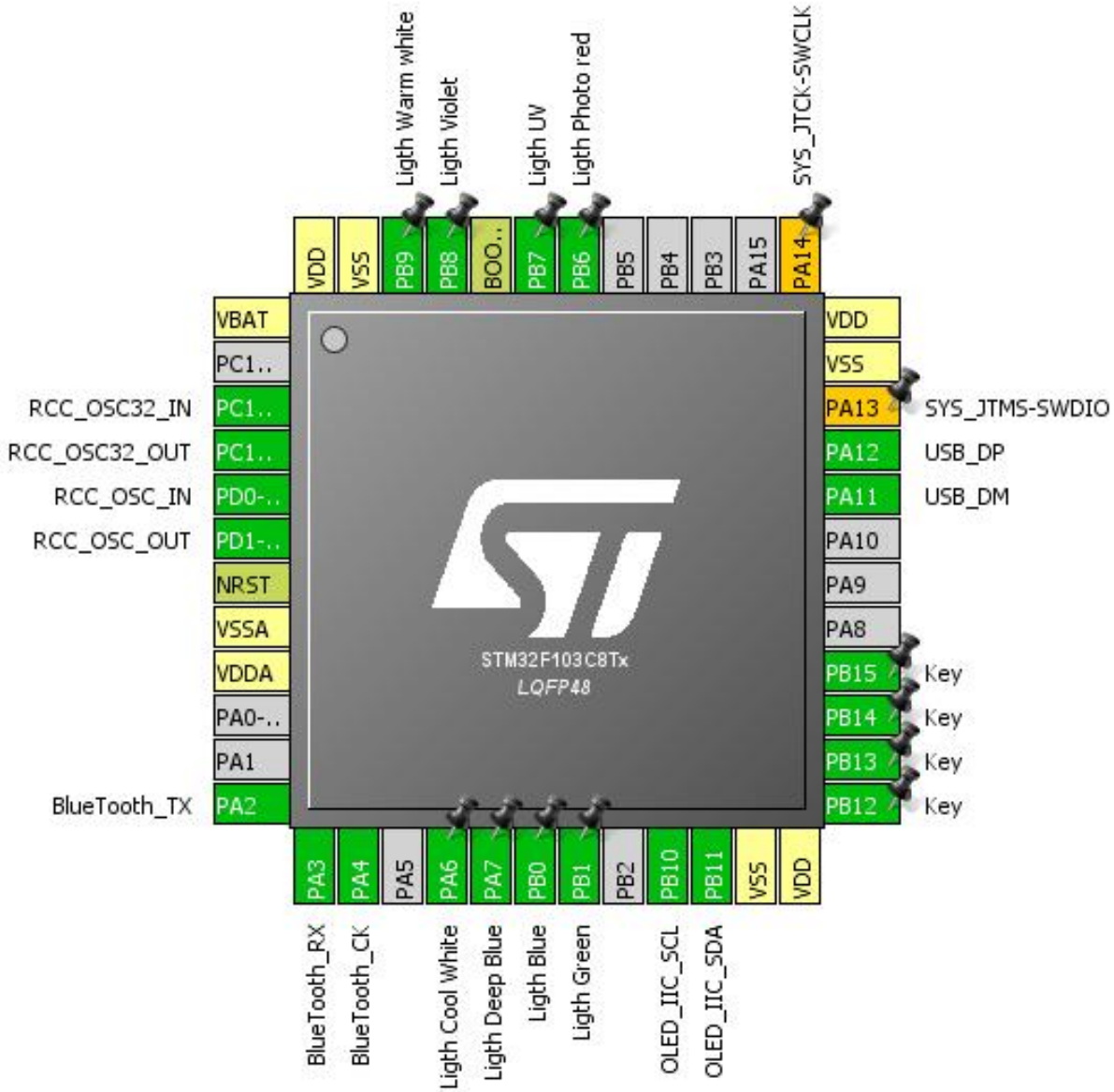
1.1. Project

Project Name	showtimeXR
Board Name	showtimeXR
Generated with:	STM32CubeMX 4.23.0
Date	05/28/2018

1.2. MCU

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

2. Pinout Configuration

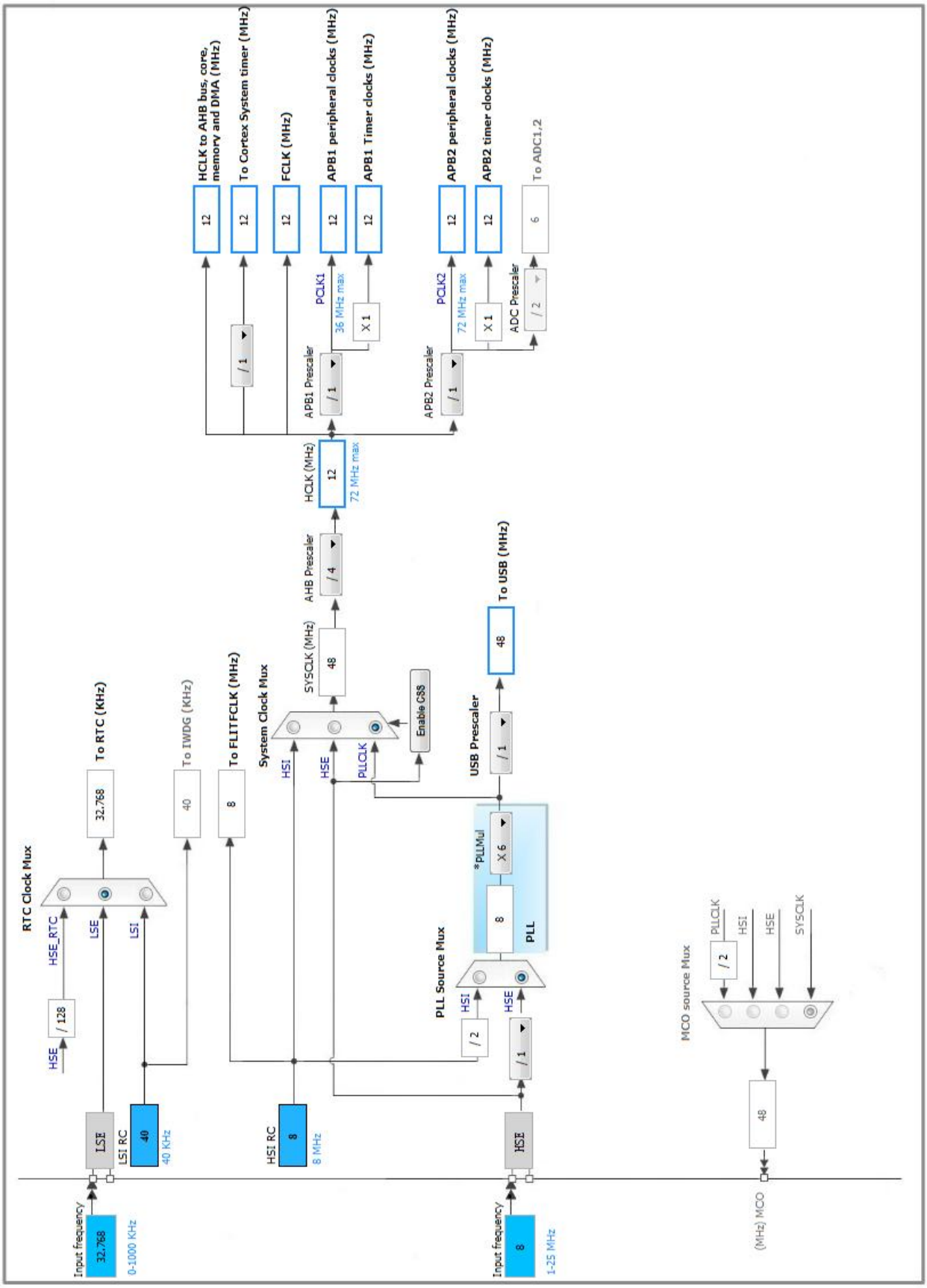


3. Pins Configuration

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
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		
12	PA2	I/O	USART2_TX	BlueTooth_TX
13	PA3	I/O	USART2_RX	BlueTooth_RX
14	PA4	I/O	USART2_CK	BlueTooth_CK
16	PA6	I/O	TIM3_CH1	Ligth Cool White
17	PA7	I/O	TIM3_CH2	Ligth Deep Blue
18	PB0	I/O	TIM3_CH3	Ligth Blue
19	PB1	I/O	TIM3_CH4	Ligth Green
21	PB10	I/O	I2C2_SCL	OLED_IIC_SCL
22	PB11	I/O	I2C2_SDA	OLED_IIC_SDA
23	VSS	Power		
24	VDD	Power		
25	PB12 *	I/O	GPIO_Input	Key
26	PB13 *	I/O	GPIO_Input	Key
27	PB14 *	I/O	GPIO_Input	Key
28	PB15 *	I/O	GPIO_Input	Key
32	PA11	I/O	USB_DM	
33	PA12	I/O	USB_DP	
34	PA13 **	I/O	SYS_JTMS-SWDIO	
35	VSS	Power		
36	VDD	Power		
37	PA14 **	I/O	SYS_JTCK-SWCLK	
42	PB6	I/O	TIM4_CH1	Ligth Photo red
43	PB7	I/O	TIM4_CH2	Ligth UV
44	BOOT0	Boot		
45	PB8	I/O	TIM4_CH3	Ligth Violet
46	PB9	I/O	TIM4_CH4	Ligth Warm white
47	VSS	Power		
48	VDD	Power		

* The pin is affected with an I/O function
** The pin is affected with a peripheral function but no peripheral mode is activated

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. I2C2

I2C: I2C

5.1.1. 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

5.2. RCC

High Speed Clock (HSE): BYPASS Clock Source

Low Speed Clock (LSE) : BYPASS Clock Source

5.2.1. 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

5.3. RTC

mode: Activate Clock Source
mode: Activate Calendar

5.3.1. Parameter Settings:

Calendar Time:

Data Format	BCD data format
Hours	1
Minutes	0
Seconds	0

General:

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

Calendar Date:

Week Day	Monday
Month	January
Date	1
Year	0

5.4. SYS

Debug: No Debug
Timebase Source: SysTick

5.5. TIM3

Channel1: PWM Generation CH1
Channel2: PWM Generation CH2
Channel3: PWM Generation CH3
Channel4: PWM Generation CH4

5.5.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	0
Internal Clock Division (CKD)	No Division

auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

PWM Generation Channel 1:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 2:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 3:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 4:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High

5.6. TIM4

Channel1: PWM Generation CH1
Channel2: PWM Generation CH2
Channel3: PWM Generation CH3
Channel4: PWM Generation CH4

5.6.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	0
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

PWM Generation Channel 1:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 2:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 3:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 4:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High

5.7. USART2

Mode: Synchronous

5.7.1. 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

Clock Parameters:

Clock Polarity	Low
Clock Phase	One Edge

Clock Last Bit	Disable

5.8. USB

mode: Device (FS)

5.8.1. Parameter Settings:

Basic Parameters:

Speed	Full Speed 12MBit/s
Endpoint 0 Max Packet size	8 Bytes

Power Parameters:

Low Power	Disabled
Link Power Management	Disabled
Battery Charging	Disabled

*** User modified value**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
I2C2	PB10	I2C2_SCL	Alternate Function Open Drain	n/a	**High ***	OLED_IIC_SCL
	PB11	I2C2_SDA	Alternate Function Open Drain	n/a	**High ***	OLED_IIC_SDA
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	
TIM3	PA6	TIM3_CH1	Alternate Function Push Pull	n/a	Low	Ligth Cool White
	PA7	TIM3_CH2	Alternate Function Push Pull	n/a	Low	Ligth Deep Blue
	PB0	TIM3_CH3	Alternate Function Push Pull	n/a	Low	Ligth Blue
	PB1	TIM3_CH4	Alternate Function Push Pull	n/a	Low	Ligth Green
TIM4	PB6	TIM4_CH1	Alternate Function Push Pull	n/a	Low	Ligth Photo red
	PB7	TIM4_CH2	Alternate Function Push Pull	n/a	Low	Ligth UV
	PB8	TIM4_CH3	Alternate Function Push Pull	n/a	Low	Ligth Violet
	PB9	TIM4_CH4	Alternate Function Push Pull	n/a	Low	Ligth Warm white
USART2	PA2	USART2_TX	Alternate Function Push Pull	n/a	**High ***	BlueTooth_TX
	PA3	USART2_RX	Input mode	No pull-up and no pull-down	**n/a**	BlueTooth_RX
	PA4	USART2_CK	Alternate Function Push Pull	n/a	**High ***	BlueTooth_CK
USB	PA11	USB_DM	n/a	n/a	n/a	
	PA12	USB_DP	n/a	n/a	n/a	
Single Mapped Signals	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
GPIO	PB12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Key
	PB13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Key
	PB14	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Key
	PB15	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Key

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
PVD interrupt through EXTI line 16	unused		
RTC global interrupt	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
USB high priority or CAN TX interrupts	unused		
USB low priority or CAN RX0 interrupts	unused		
TIM3 global interrupt	unused		
TIM4 global interrupt	unused		
I2C2 event interrupt	unused		
I2C2 error interrupt	unused		
USART2 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	showtimeXR
Project Folder	D:\docs\DIY\ARMsister\github\showtimeXR
Toolchain / IDE	MDK-ARM V5
Firmware Package Name and Version	STM32Cube FW_F1 V1.6.1

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	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