1. Description

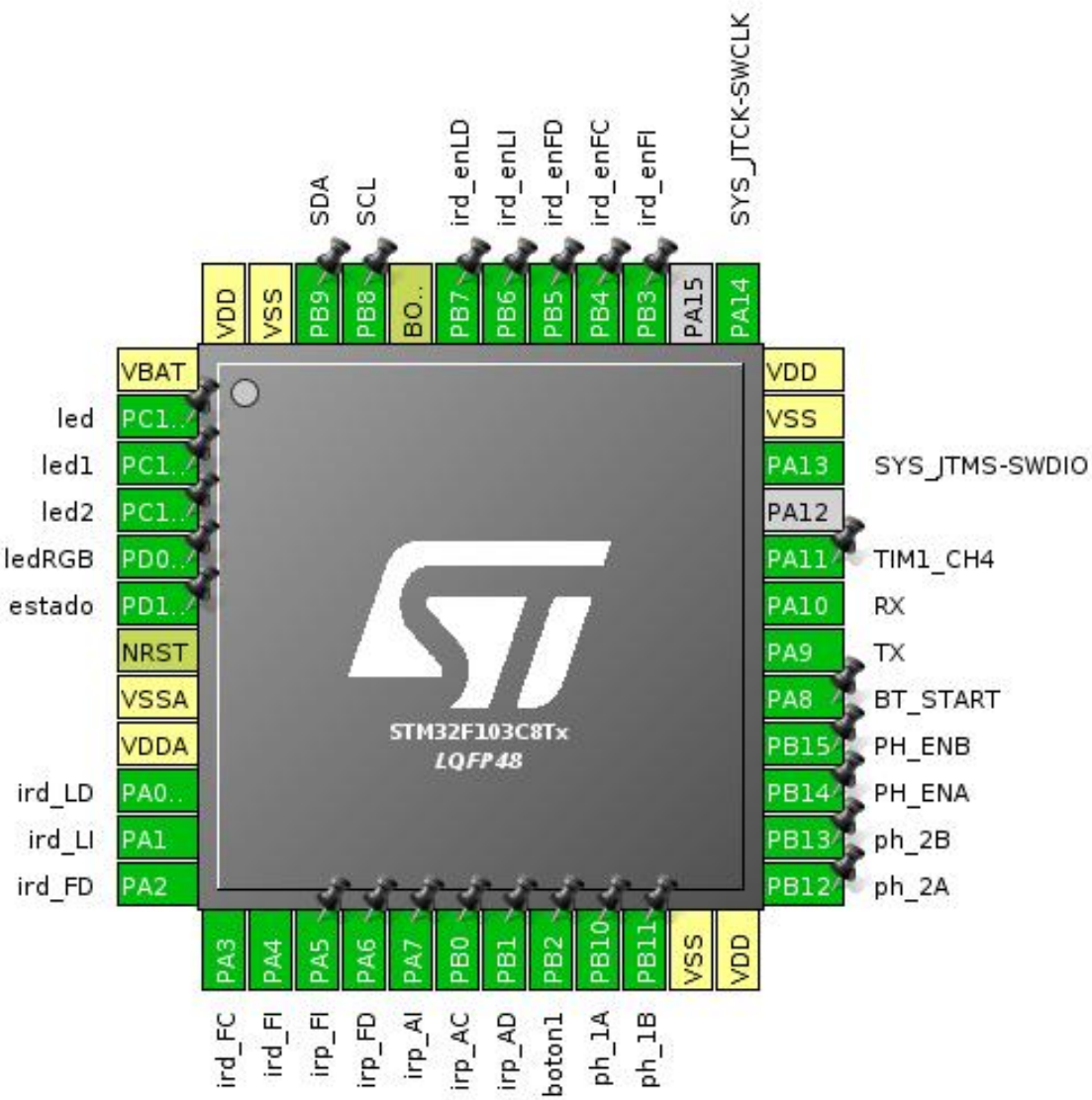
1.1. Project

Project Name	minisumo-stm32
Board Name	custom
Generated with:	STM32CubeMX 4.27.0
Date	10/02/2018

1.2. MCU

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

2. Pinout Configuration



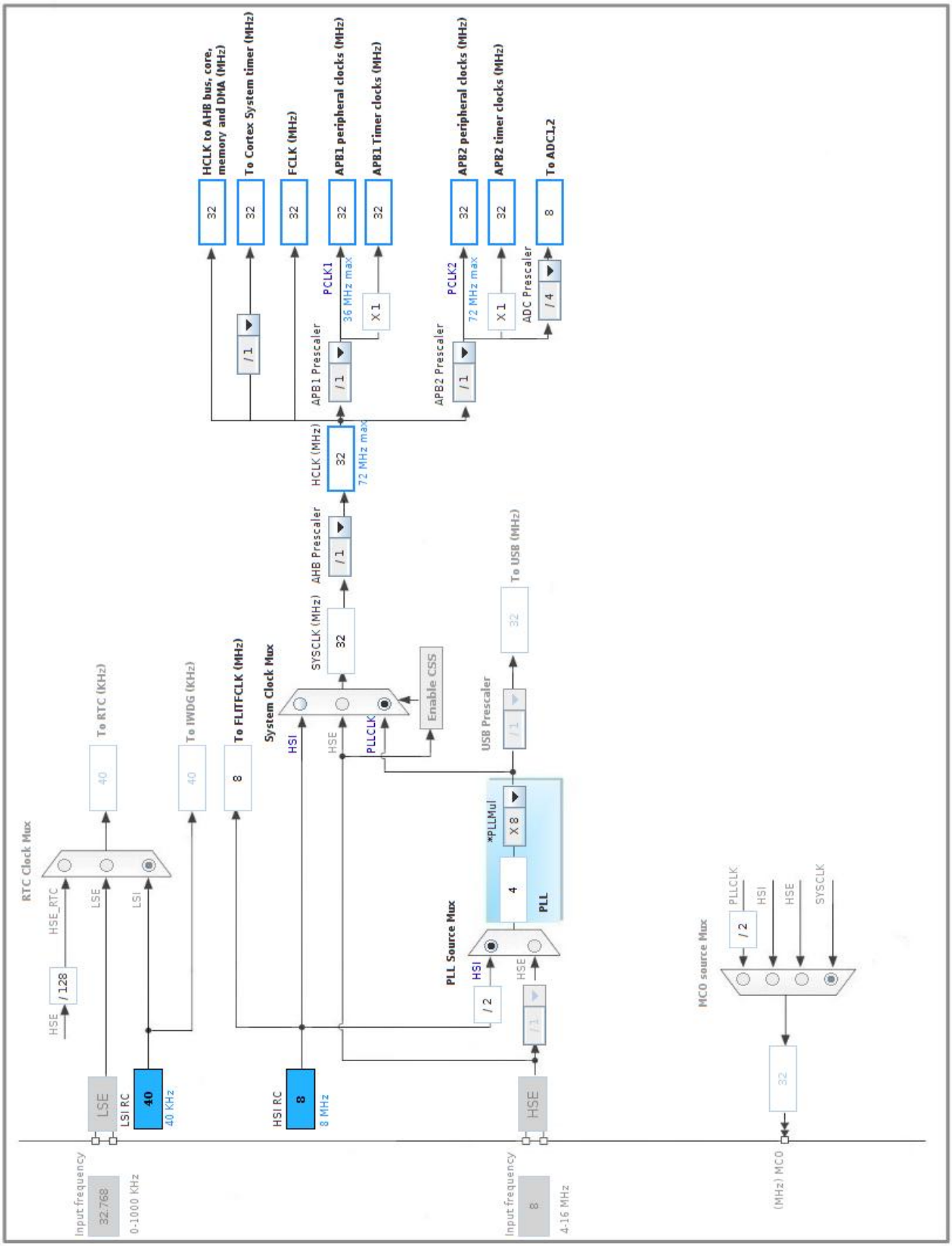
3. Pins Configuration

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
2	PC13-TAMPER-RTC *	I/O	GPIO_Output	led
3	PC14-OSC32_IN *	I/O	GPIO_Output	led1
4	PC15-OSC32_OUT *	I/O	GPIO_Output	led2
5	PD0-OSC_IN *	I/O	GPIO_Output	ledRGB
6	PD1-OSC_OUT *	I/O	GPIO_Input	estado
7	NRST	Reset		
8	VSSA	Power		
9	VDDA	Power		
10	PA0-WKUP	I/O	ADC1_IN0	ird_LD
11	PA1	I/O	ADC1_IN1	ird_LI
12	PA2	I/O	ADC1_IN2	ird_FD
13	PA3	I/O	ADC1_IN3	ird_FC
14	PA4	I/O	ADC1_IN4	ird_FI
15	PA5	I/O	ADC2_IN5	irp_FI
16	PA6	I/O	ADC2_IN6	irp_FD
17	PA7	I/O	ADC2_IN7	irp_AI
18	PB0	I/O	ADC2_IN8	irp_AC
19	PB1	I/O	ADC2_IN9	irp_AD
20	PB2 *	I/O	GPIO_Input	boton1
21	PB10 *	I/O	GPIO_Output	ph_1A
22	PB11 *	I/O	GPIO_Output	ph_1B
23	VSS	Power		
24	VDD	Power		
25	PB12 *	I/O	GPIO_Output	ph_2A
26	PB13 *	I/O	GPIO_Output	ph_2B
27	PB14	I/O	TIM1_CH2N	PH_ENA
28	PB15	I/O	TIM1_CH3N	PH_ENB
29	PA8 *	I/O	GPIO_Input	BT_START
30	PA9	I/O	USART1_TX	TX
31	PA10	I/O	USART1_RX	RX
32	PA11	I/O	TIM1_CH4	
34	PA13	I/O	SYS_JTMS-SWDIO	
35	VSS	Power		
36	VDD	Power		
37	PA14	I/O	SYS_JTCK-SWCLK	

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
39	PB3 *	I/O	GPIO_Output	ird_enFI
40	PB4 *	I/O	GPIO_Output	ird_enFC
41	PB5 *	I/O	GPIO_Output	ird_enFD
42	PB6 *	I/O	GPIO_Output	ird_enLI
43	PB7 *	I/O	GPIO_Output	ird_enLD
44	BOOT0	Boot		
45	PB8	I/O	I2C1_SCL	SCL
46	PB9	I/O	I2C1_SDA	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

mode: IN1

mode: IN2

mode: IN3

mode: IN4

5.1.1. Parameter Settings:

ADCs_Common_Settings:	
Mode	Independent mode
ADC_Settings:	
Data Alignment	Right alignment
Scan Conversion Mode	Enabled
Continuous Conversion Mode	Disabled
Discontinuous Conversion Mode	Disabled
ADC_Regular_ConversionMode:	
Enable Regular Conversions	Enable
Number Of Conversion	**5 ***
External Trigger Conversion Source	Regular Conversion launched by software
Rank	1
Channel	Channel 0
Sampling Time	1.5 Cycles
Rank	**2 ***
Channel	**Channel 1 ***
Sampling Time	1.5 Cycles
Rank	**3 ***
Channel	Channel 0
Sampling Time	1.5 Cycles
Rank	**4 ***
Channel	Channel 0
Sampling Time	1.5 Cycles
Rank	**5 ***
Channel	Channel 0
Sampling Time	1.5 Cycles
Rank	**2 ***
Channel	**Channel 1 ***
Sampling Time	1.5 Cycles

Rank	**3 ***
Channel	**Channel 2 ***
Sampling Time	1.5 Cycles
Rank	**4 ***
Channel	**Channel 3 ***
Sampling Time	1.5 Cycles
Rank	**5 ***
Channel	**Channel 4 ***
Sampling Time	1.5 Cycles

ADC_Injected_ConversionMode:

Number Of Conversions	0

WatchDog:

Enable Analog WatchDog Mode	false

5.2. ADC2

mode: IN5

mode: IN6

mode: IN7

mode: IN8

mode: IN9

5.2.1. Parameter Settings:

ADCs_Common_Settings:

Mode	Independent mode

ADC_Settings:

Data Alignment	Right alignment
Scan Conversion Mode	Disabled
Continuous Conversion Mode	Disabled
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 5
Sampling Time	1.5 Cycles

ADC_Injected_ConversionMode:

Number Of Conversions	0

WatchDog:

Enable Analog WatchDog Mode	false

5.3. I2C1

I2C: I2C

5.3.1. 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

5.4. SYS

Debug: Serial Wire

Timebase Source: SysTick

5.5. TIM1

Clock Source : Internal Clock

Channel2: PWM Generation CH2N

Channel3: PWM Generation CH3N

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)	**321 ***
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

Break And Dead Time management - BRK Configuration:

BRK State	Disable
BRK Polarity	High

Break And Dead Time management - Output Configuration:

Automatic Output State	Disable
Off State Selection for Run Mode (OSSR)	Disable
Off State Selection for Idle Mode (OSSI)	Disable
Lock Configuration	Off

PWM Generation Channel 2N:

Mode	PWM mode 1
Pulse (16 bits value)	**161 ***
Fast Mode	Disable
CHN Polarity	High
CHN Idle State	Reset

PWM Generation Channel 3N:

Mode	**PWM mode 2 ***
Pulse (16 bits value)	**320 ***
Fast Mode	Disable
CHN Polarity	High
CHN Idle State	Reset

PWM Generation Channel 4:

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

5.6. USART1

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

5.7. FREERTOS

mode: Enabled

5.7.1. Config parameters:

Versions:

FreeRTOS version	9.0.0
CMSIS-RTOS version	1.02

Kernel settings:

USE_PREEMPTION	Enabled
CPU_CLOCK_HZ	SystemCoreClock
TICK_RATE_HZ	1000
MAX_PRIORITIES	7
MINIMAL_STACK_SIZE	**64 ***
MAX_TASK_NAME_LEN	16
USE_16_BIT_TICKS	Disabled
IDLE_SHOULD_YIELD	Enabled
USE_MUTEXES	Enabled
USE_RECURSIVE_MUTEXES	Disabled
USE_COUNTING_SEMAPHORES	Disabled
QUEUE_REGISTRY_SIZE	8
USE_APPLICATION_TASK_TAG	Disabled
ENABLE_BACKWARD_COMPATIBILITY	Enabled
USE_PORT_OPTIMISED_TASK_SELECTION	Enabled
USE_TICKLESS_IDLE	Disabled
USE_TASK_NOTIFICATIONS	Enabled

Memory management settings:

Memory Allocation	**Dynamic / Static ***
TOTAL_HEAP_SIZE	3072
Memory Management scheme	heap_4

Hook function related definitions:

USE_IDLE_HOOK	Disabled
USE_TICK_HOOK	Disabled
USE_MALLOC_FAILED_HOOK	Disabled
USE_DAEMON_TASK_STARTUP_HOOK	Disabled
CHECK_FOR_STACK_OVERFLOW	Disabled

Run time and task stats gathering related definitions:

GENERATE_RUN_TIME_STATS	Disabled
USE_TRACE_FACILITY	Disabled
USE_STATS_FORMATTING_FUNCTIONS	Disabled

Co-routine related definitions:

USE_CO_ROUTINES	Disabled
MAX_CO_ROUTINE_PRIORITIES	2

Software timer definitions:

USE_TIMERS	Disabled

Interrupt nesting behaviour configuration:

LIBRARY_LOWEST_INTERRUPT_PRIORITY	15
LIBRARY_MAX_SYSCALL_INTERRUPT_PRIORITY	5

5.7.2. Include parameters:

Include definitions:

vTaskPrioritySet	Enabled
uxTaskPriorityGet	Enabled
vTaskDelete	Enabled
vTaskCleanUpResources	Disabled
vTaskSuspend	Enabled
vTaskDelayUntil	Disabled
vTaskDelay	Enabled
xTaskGetSchedulerState	Enabled
xTaskResumeFromISR	Enabled
xQueueGetMutexHolder	Disabled
xSemaphoreGetMutexHolder	Disabled
pcTaskGetTaskName	Disabled
uxTaskGetStackHighWaterMark	Disabled
xTaskGetCurrentTaskHandle	Disabled
eTaskGetState	Disabled
xEventGroupSetBitFromISR	Disabled
xTimerPendFunctionCall	Disabled
xTaskAbortDelay	Disabled
xTaskGetHandle	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
ADC1	PA0-WKUP	ADC1_IN0	Analog mode	n/a	n/a	ird_LD
	PA1	ADC1_IN1	Analog mode	n/a	n/a	ird_LI
	PA2	ADC1_IN2	Analog mode	n/a	n/a	ird_FD
	PA3	ADC1_IN3	Analog mode	n/a	n/a	ird_FC
	PA4	ADC1_IN4	Analog mode	n/a	n/a	ird_FI
ADC2	PA5	ADC2_IN5	Analog mode	n/a	n/a	irp_FI
	PA6	ADC2_IN6	Analog mode	n/a	n/a	irp_FD
	PA7	ADC2_IN7	Analog mode	n/a	n/a	irp_AI
	PB0	ADC2_IN8	Analog mode	n/a	n/a	irp_AC
	PB1	ADC2_IN9	Analog mode	n/a	n/a	irp_AD
I2C1	PB8	I2C1_SCL	Alternate Function Open Drain	n/a	**High ***	SCL
	PB9	I2C1_SDA	Alternate Function Open Drain	n/a	**High ***	SDA
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
TIM1	PB14	TIM1_CH2N	Alternate Function Push Pull	n/a	**Medium ***	PH_ENA
	PB15	TIM1_CH3N	Alternate Function Push Pull	n/a	**Medium ***	PH_ENB
	PA11	TIM1_CH4	Alternate Function Push Pull	n/a	Low	
USART1	PA9	USART1_TX	Alternate Function Push Pull	n/a	**High ***	TX
	PA10	USART1_RX	Input mode	No pull-up and no pull-down	**n/a**	RX
GPIO	PC13-TAMPER-RTC	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	led
	PC14-OSC32_IN	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	led1
	PC15-OSC32_OUT	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	led2
	PD0-OSC_IN	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ledRGB
	PD1-OSC_OUT	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	estado
	PB2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	boton1
	PB10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ph_1A

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PB11	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ph_1B
	PB12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ph_2A
	PB13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ph_2B
	PA8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BT_START
	PB3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ird_enFI
	PB4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ird_enFC
	PB5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ird_enFD
	PB6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ird_enLI
	PB7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ird_enLD

6.2. DMA configuration

DMA request	Stream	Direction	Priority
ADC1	DMA1_Channel1	Peripheral To Memory	Low
USART1_RX	DMA1_Channel5	Peripheral To Memory	Low
USART1_TX	DMA1_Channel4	Memory To Peripheral	Low

ADC1: DMA1_Channel1 DMA request Settings:

Mode:	**Circular ***
Peripheral Increment:	Disable
Memory Increment:	**Enable ***
Peripheral Data Width:	Half Word
Memory Data Width:	Half Word

USART1_RX: DMA1_Channel5 DMA request Settings:

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

USART1_TX: DMA1_Channel4 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	0	0
Pendable request for system service	true	15	0
System tick timer	true	15	0
DMA1 channel1 global interrupt	true	5	0
DMA1 channel4 global interrupt	true	5	0
DMA1 channel5 global interrupt	true	5	0
ADC1 and ADC2 global interrupts	true	5	0
USART1 global interrupt	true	5	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
TIM1 break interrupt	unused		
TIM1 update interrupt	unused		
TIM1 trigger and commutation interrupts	unused		
TIM1 capture compare interrupt	unused		
I2C1 event interrupt	unused		
I2C1 error 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 Pack Report

9. Software Project

9.1. Project Settings

Name	Value
Project Name	minisumo-stm32
Project Folder	/home/hector/Documentos/Robotica/firmware/minisumo-stm32
Toolchain / IDE	SW4STM32
Firmware Package Name and Version	STM32Cube FW_F1 V1.6.1

9.2. 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)	No