1. Description

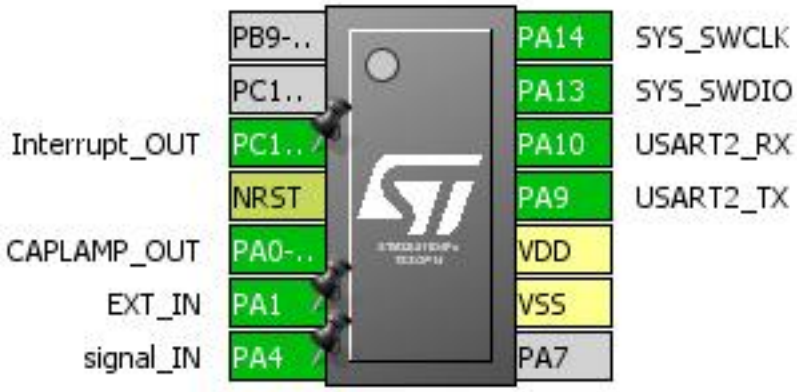
1.1. Project

Project Name	reciev
Board Name	reciev.06
Generated with:	STM32CubeMX 4.18.0
Date	05/13/2017

1.2. MCU

MCU Series	STM32L0
MCU Line	STM32L0x1
MCU name	STM32L011D4Px
MCU Package	TSSOP14
MCU Pin number	14

2. Pinout Configuration

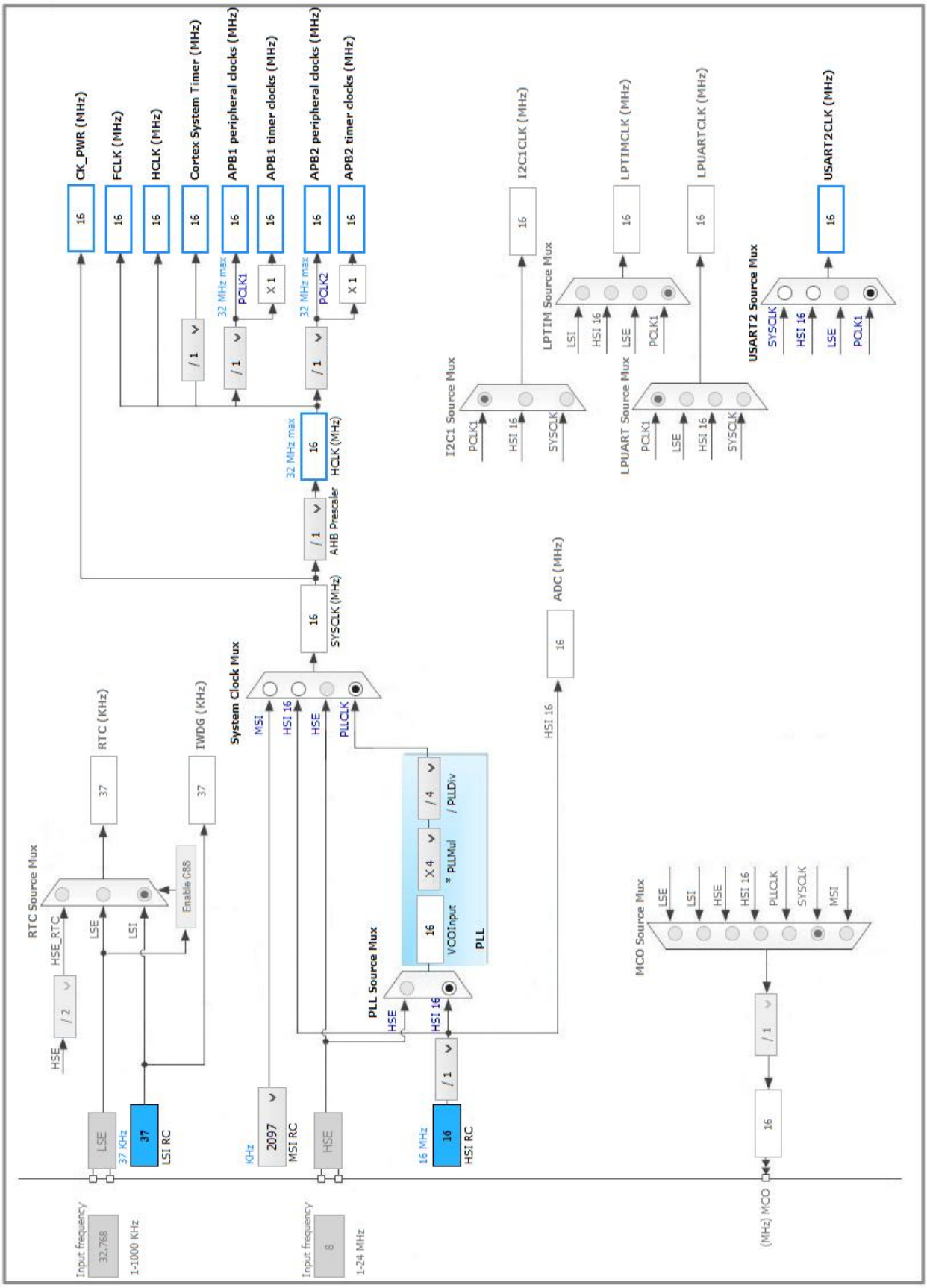


3. Pins Configuration

Pin Number TSSOP14	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
3	PC15-OSC32_OUT *	I/O	GPIO_Output	Interrupt_OUT
4	NRST	Reset		
5	PA0-CK_IN	I/O	TIM2_CH1	CAPLAMP_OUT
6	PA1	I/O	GPIO_EXTI1	EXT_IN
7	PA4	I/O	ADC_IN4	signal_IN
9	VSS	Power		
10	VDD	Power		
11	PA9	I/O	USART2_TX	
12	PA10	I/O	USART2_RX	
13	PA13	I/O	SYS_SWDIO	
14	PA14	I/O	SYS_SWCLK	

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. ADC

mode: IN4

5.1.1. Parameter Settings:

ADC_Settings:

Clock Prescaler	**Synchronous clock mode divided by 4 ***
Resolution	ADC 12-bit resolution
Data Alignment	Right alignment
Scan Direction	Forward
Continuous Conversion Mode	**Enabled ***
Discontinuous Conversion Mode	Disabled
DMA Continuous Requests	**Enabled ***
End Of Conversion Selection	End of single conversion
Overrun behaviour	Overrun data preserved
Low Power Auto Wait	Disabled
Low Frequency Mode	Disabled
Auto Off	Disabled
Oversampling Mode	**Enabled ***
Right Bit Shift	No bit shift
Ratio	**Oversampling ratio 16x ***
Triggered Mode	Single trigger

ADC_Regular_ConversionMode:

Sampling Time	**7.5 Cycles ***
External Trigger Conversion Source	Regular Conversion launched by software
External Trigger Conversion Edge	None

WatchDog:

Enable Analog WatchDog Mode	false

5.2. SYS

mode: Debug Serial Wire

Timebase Source: SysTick

5.3. TIM2

Clock Source : Internal Clock

Channel1: PWM Generation CH1

5.3.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**4000-1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**1000 ***
Internal Clock Division (CKD)	**Division by 4 ***

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)	**500 ***
Fast Mode	Disable
CH Polarity	High

5.4. TIM21

Slave Mode: Trigger Mode

Trigger Source: ITR0

Clock Source : Internal Clock

5.4.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**2-1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**2500 ***
Internal Clock Division (CKD)	No Division
Slave Mode Controller	Trigger Mode

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)

5.5. USART2

Mode: Asynchronous

5.5.1. 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:

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
ADC	PA4	ADC_IN4	Analog mode	No pull-up and no pull-down	n/a	signal_IN
SYS	PA13	SYS_SWDIO	n/a	n/a	n/a	
	PA14	SYS_SWCLK	n/a	n/a	n/a	
TIM2	PA0-CK_IN	TIM2_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	CAPLAMP_OUT
USART2	PA9	USART2_TX	Alternate Function Push Pull	Pull-up	**Very High ***	
	PA10	USART2_RX	Alternate Function Push Pull	Pull-up	**Very High ***	
GPIO	PC15-OSC32_OUT	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Interrupt_OUT
	PA1	GPIO_EXTI1	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	EXT_IN

6.2. DMA configuration

DMA request	Stream	Direction	Priority
USART2_TX	DMA1_Channel2	Memory To Peripheral	Low
TIM2_CH1	DMA1_Channel5	Memory To Peripheral	Low
ADC	DMA1_Channel1	Peripheral To Memory	Low

USART2_TX: DMA1_Channel2 DMA request Settings:

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

TIM2_CH1: DMA1_Channel5 DMA request Settings:

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

ADC: DMA1_Channel1 DMA request Settings:

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

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 1 interrupt	true	0	0
DMA1 channel 2 and channel 3 interrupts	true	0	0
DMA1 channel 4, channel 5, channel 6 and channel 7 interrupts	true	0	0
ADC1, COMP1 and COMP2 interrupts (COMP interrupts through EXTI lines 21 and 22)	true	0	0
TIM2 global interrupt	true	0	0
TIM21 global interrupt	true	0	0
USART2 global interrupt / USART2 wake-up interrupt through EXTI line 26	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash and EEPROM global interrupt	unused		
RCC global interrupt	unused		
EXTI line 0 and line 1 interrupts	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32L0
Line	STM32L0x1
MCU	STM32L011D4Px
Datasheet	027973_Rev4

7.2. Parameter Selection

Temperature	25
Vdd	3.6

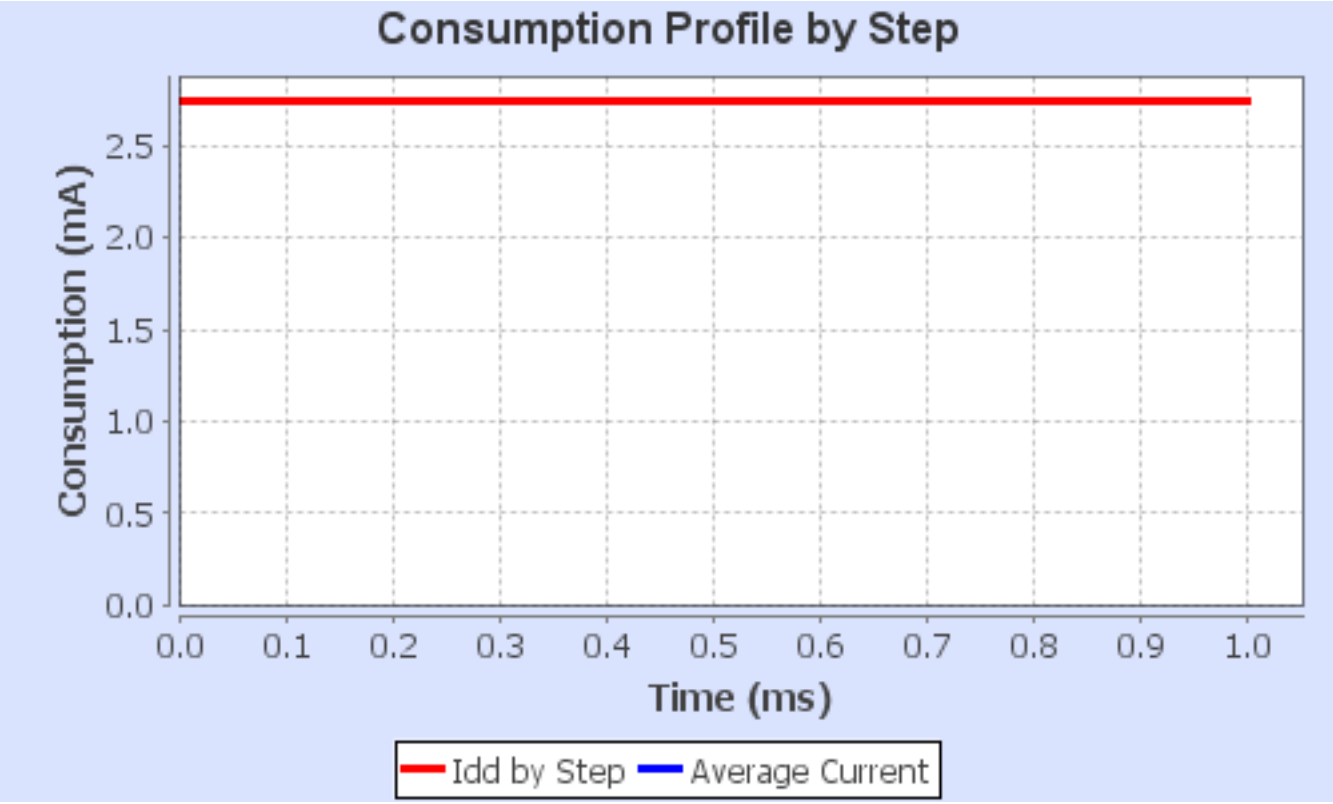
7.3. Sequence

Step	Step1
Mode	RUN
Vdd	3.6
Voltage Source	Battery
Range	Range1-High
Fetch Type	FLASH
Clock Configuration	HSE Flash-ON
Clock Source Frequency	16.0 MHz
CPU Frequency	16.0 MHz
Peripherals	ADC:fs_10_ksps DMA LPUART1 TIM2 TIM21
Additional Cons.	0 mA
Average Current	2.74 mA
Duration	1 ms
DMIPS	15.2
Ta Max	104.06
Category	Measurements

7.4. RESULTS

Sequence Time	1 ms	Average Current	2.74 mA
Battery Life	0	Average DMIPS	15.2 DMIPS

7.5. Chart



8. Software Project

8.1. Project Settings

Name	Value
Project Name	reciev.06
Project Folder	X:\Projects\ 1\ \receiver\work\reciev.06
Toolchain / IDE	MDK-ARM V5
Firmware Package Name and Version	STM32Cube FW_L0 V1.7.0

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	Yes
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	Yes