1. Description

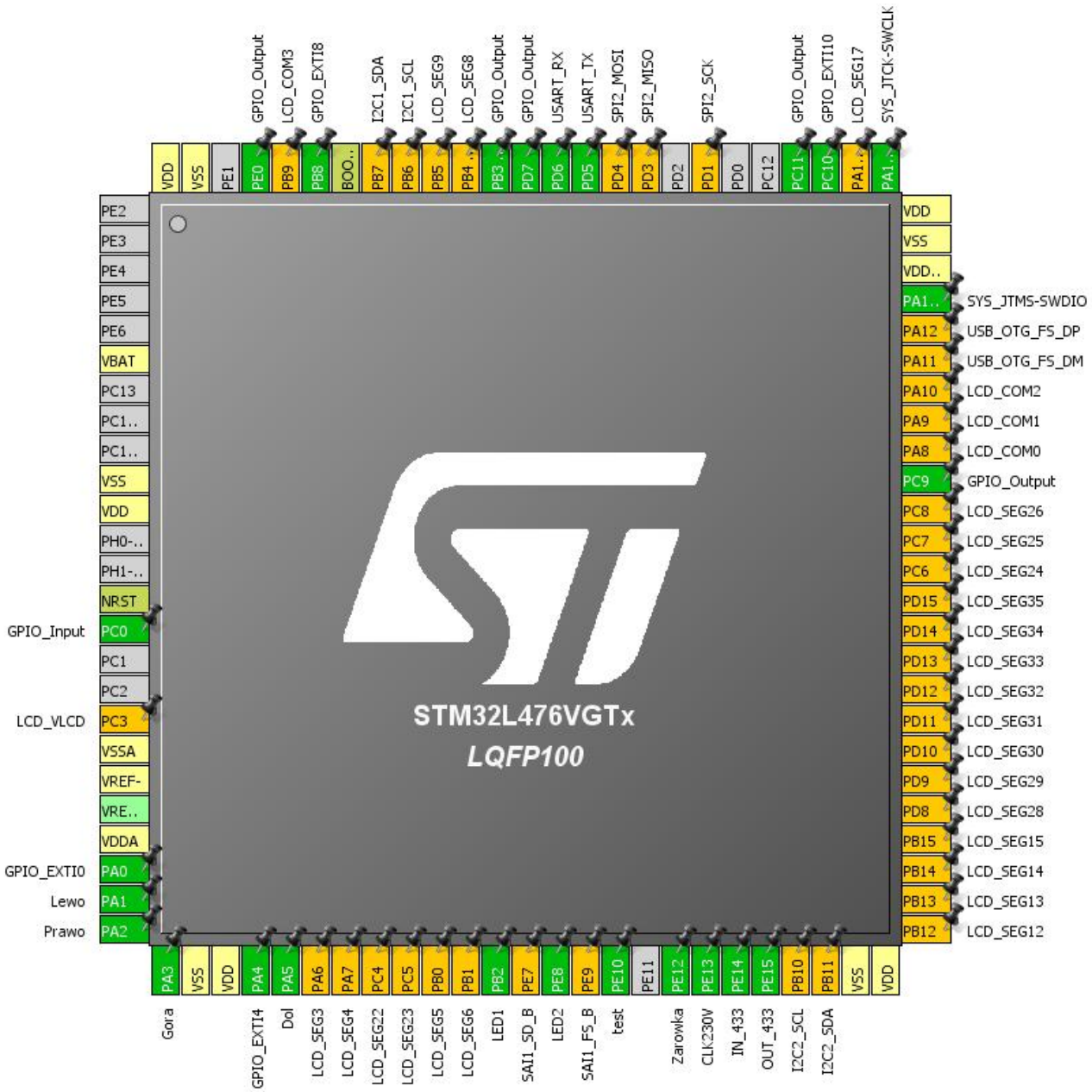
1.1. Project

Project Name	swiatlo
Board Name	32L476GDISCOVERY
Generated with:	STM32CubeMX 4.24.0
Date	06/12/2018

1.2. MCU

MCU Series	STM32L4
MCU Line	STM32L4x6
MCU name	STM32L476VGTx
MCU Package	LQFP100
MCU Pin number	100

2. Pinout Configuration



3. Pins Configuration

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
6	VBAT	Power		
10	VSS	Power		
11	VDD	Power		
14	NRST	Reset		
15	PC0 *	I/O	GPIO_Input	
18	PC3 **	I/O	LCD_VLCD	
19	VSSA	Power		
20	VREF-	Power		
22	VDDA	Power		
23	PA0	I/O	GPIO_EXTI0	
24	PA1	I/O	GPIO_EXTI1	Lewo
25	PA2	I/O	GPIO_EXTI2	Prawo
26	PA3	I/O	GPIO_EXTI3	Gora
27	VSS	Power		
28	VDD	Power		
29	PA4	I/O	GPIO_EXTI4	
30	PA5	I/O	GPIO_EXTI5	Dol
31	PA6 **	I/O	LCD_SEG3	
32	PA7 **	I/O	LCD_SEG4	
33	PC4 **	I/O	LCD_SEG22	
34	PC5 **	I/O	LCD_SEG23	
35	PB0 **	I/O	LCD_SEG5	
36	PB1 **	I/O	LCD_SEG6	
37	PB2 *	I/O	GPIO_Output	LED1
38	PE7 **	I/O	SAI1_SD_B	
39	PE8 *	I/O	GPIO_Output	LED2
40	PE9 **	I/O	SAI1_FS_B	
41	PE10 *	I/O	GPIO_Input	test
43	PE12 *	I/O	GPIO_Output	Zarowka
44	PE13	I/O	GPIO_EXTI13	CLK230V
45	PE14 *	I/O	GPIO_Input	IN_433
46	PE15 *	I/O	GPIO_Output	OUT_433
47	PB10 **	I/O	I2C2_SCL	
48	PB11 **	I/O	I2C2_SDA	
49	VSS	Power		
50	VDD	Power		

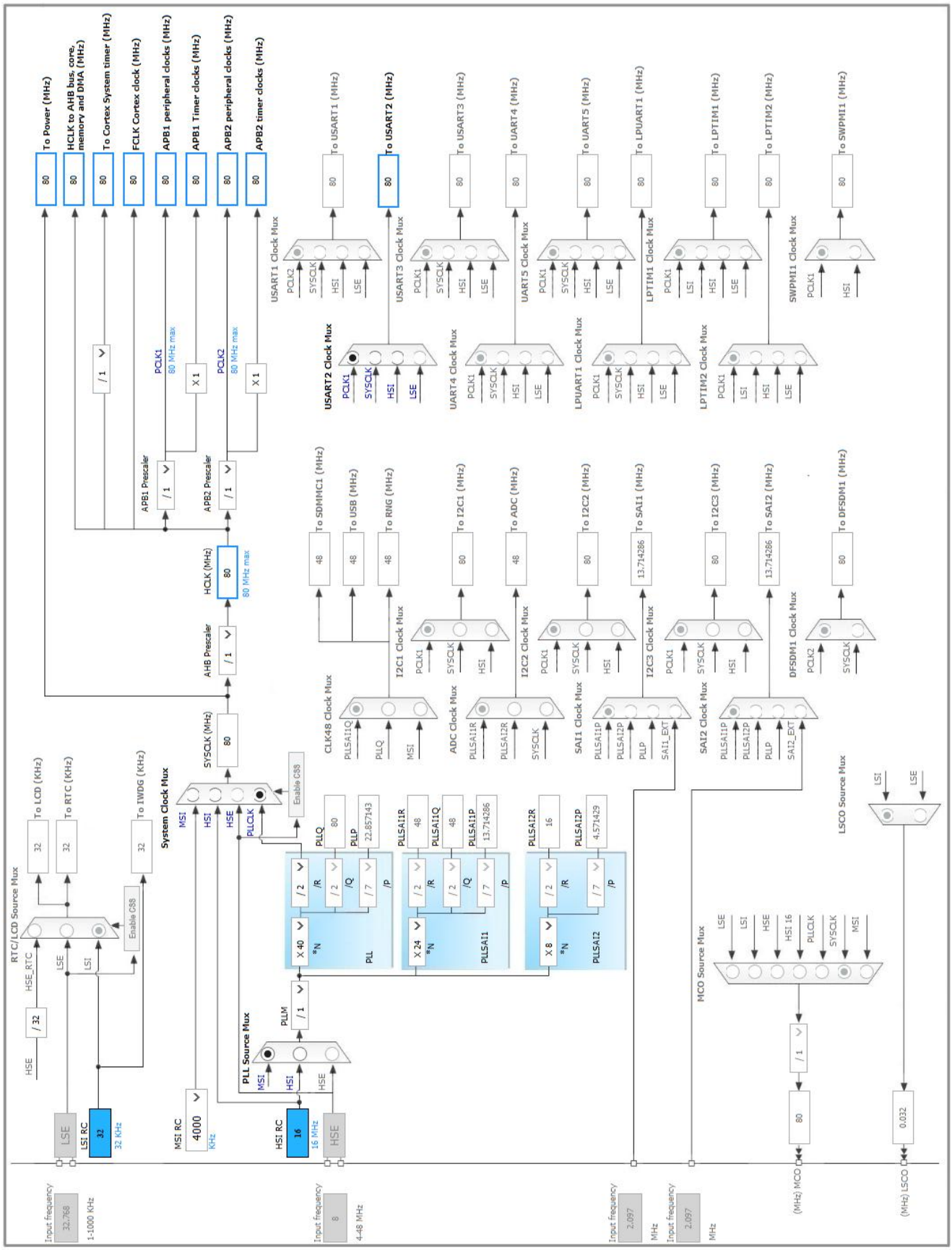
Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
51	PB12 **	I/O	LCD_SEG12	
52	PB13 **	I/O	LCD_SEG13	
53	PB14 **	I/O	LCD_SEG14	
54	PB15 **	I/O	LCD_SEG15	
55	PD8 **	I/O	LCD_SEG28	
56	PD9 **	I/O	LCD_SEG29	
57	PD10 **	I/O	LCD_SEG30	
58	PD11 **	I/O	LCD_SEG31	
59	PD12 **	I/O	LCD_SEG32	
60	PD13 **	I/O	LCD_SEG33	
61	PD14 **	I/O	LCD_SEG34	
62	PD15 **	I/O	LCD_SEG35	
63	PC6 **	I/O	LCD_SEG24	
64	PC7 **	I/O	LCD_SEG25	
65	PC8 **	I/O	LCD_SEG26	
66	PC9 *	I/O	GPIO_Output	
67	PA8 **	I/O	LCD_COM0	
68	PA9 **	I/O	LCD_COM1	
69	PA10 **	I/O	LCD_COM2	
70	PA11 **	I/O	USB_OTG_FS_DM	
71	PA12 **	I/O	USB_OTG_FS_DP	
72	PA13 (JTMS-SWDIO)	I/O	SYS_JTMS-SWDIO	
73	VDDUSB	Power		
74	VSS	Power		
75	VDD	Power		
76	PA14 (JTCK-SWCLK)	I/O	SYS_JTCK-SWCLK	
77	PA15 (JTDI) **	I/O	LCD_SEG17	
78	PC10	I/O	GPIO_EXTI10	
79	PC11 *	I/O	GPIO_Output	
82	PD1 **	I/O	SPI2_SCK	
84	PD3 **	I/O	SPI2_MISO	
85	PD4 **	I/O	SPI2_MOSI	
86	PD5	I/O	USART2_TX	USART_TX
87	PD6	I/O	USART2_RX	USART_RX
88	PD7 *	I/O	GPIO_Output	
89	PB3 (JTDO-TRACESWO) *	I/O	GPIO_Output	
90	PB4 (NJTRST) **	I/O	LCD_SEG8	
91	PB5 **	I/O	LCD_SEG9	
92	PB6 **	I/O	I2C1_SCL	

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
93	PB7 **	I/O	I2C1_SDA	
94	BOOT0	Boot		
95	PB8	I/O	GPIO_EXTI8	
96	PB9 **	I/O	LCD_COM3	
97	PE0 *	I/O	GPIO_Output	
99	VSS	Power		
100	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. SYS

Debug: Serial Wire

Timebase Source: SysTick

5.2. TIM6

mode: Activated

5.2.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**80 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**100 ***
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Trigger Event Selection	Reset (UG bit from TIMx_EGR)

5.3. TIM7

mode: Activated

5.3.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**250 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**10 ***
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Trigger Event Selection	Reset (UG bit from TIMx_EGR)

5.4. USART2

Mode: Asynchronous

5.4.1. 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:

Auto Baudrate	Disable
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
SYS	PA13 (JTMS-SWDIO)	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14 (JTCK-SWCLK)	SYS_JTCK-SWCLK	n/a	n/a	n/a	
USART2	PD5	USART2_TX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	USART_TX
	PD6	USART2_RX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	USART_RX
Single Mapped Signals	PC3	LCD_VLCD	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA6	LCD_SEG3	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA7	LCD_SEG4	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC4	LCD_SEG22	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC5	LCD_SEG23	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB0	LCD_SEG5	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB1	LCD_SEG6	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PE7	SAI1_SD_B	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PE9	SAI1_FS_B	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB10	I2C2_SCL	Alternate Function Open Drain	Pull-up	**Very High ***	
	PB11	I2C2_SDA	Alternate Function Open Drain	Pull-up	**Very High ***	
	PB12	LCD_SEG12	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB13	LCD_SEG13	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB14	LCD_SEG14	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB15	LCD_SEG15	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PD8	LCD_SEG28	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PD9	LCD_SEG29	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PD10	LCD_SEG30	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PD11	LCD_SEG31	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PD12	LCD_SEG32	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PD13	LCD_SEG33	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PD14	LCD_SEG34	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PD15	LCD_SEG35	Alternate Function Push Pull	No pull-up and no pull-down	Low	

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PC6	LCD_SEG24	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC7	LCD_SEG25	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC8	LCD_SEG26	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA8	LCD_COM0	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA9	LCD_COM1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA10	LCD_COM2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA11	USB_OTG_FS_DM	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	
	PA12	USB_OTG_FS_DP	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	
	PA15 (JTDI)	LCD_SEG17	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PD1	SPI2_SCK	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	
	PD3	SPI2_MISO	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	
	PD4	SPI2_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	
	PB4 (NJTRST)	LCD_SEG8	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB5	LCD_SEG9	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB6	I2C1_SCL	Alternate Function Open Drain	Pull-up	**Very High ***	
	PB7	I2C1_SDA	Alternate Function Open Drain	Pull-up	**Very High ***	
	PB9	LCD_COM3	Alternate Function Push Pull	No pull-up and no pull-down	Low	
GPIO	PC0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PA0	GPIO_EXTI0	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	
	PA1	GPIO_EXTI1	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	Lewo
	PA2	GPIO_EXTI2	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	Prawo
	PA3	GPIO_EXTI3	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	Gora
	PA4	GPIO_EXTI4	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	
	PA5	GPIO_EXTI5	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	Dol
	PB2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED1
	PE8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED2

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PE10	GPIO_Input	Input mode	**Pull-down ***	n/a	test
	PE12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Zarowka
	PE13	GPIO_EXTI13	**External Interrupt Mode with Falling edge trigger detection**	No pull-up and no pull-down	n/a	CLK230V
	PE14	GPIO_Input	Input mode	**Pull-up ***	n/a	IN_433
	PE15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	OUT_433
	PC9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PC10	GPIO_EXTI10	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	
	PC11	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PD7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PB3 (JTDO-TRACESWO)	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PB8	GPIO_EXTI8	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	
	PE0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	

6.2. DMA configuration

DMA request	Stream	Direction	Priority
USART2_RX	DMA1_Channel6	Peripheral To Memory	Low
USART2_TX	DMA1_Channel7	Memory To Peripheral	Low

USART2_RX: DMA1_Channel6 DMA request Settings:

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

USART2_TX: DMA1_Channel7 DMA request Settings:

Mode:	**Circular ***
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	0	0
System tick timer	true	0	0
PVD/PVM1/PVM2/PVM3/PVM4 interrupts through EXTI lines 16/35/36/37/38	true	0	0
EXTI line0 interrupt	true	0	0
EXTI line1 interrupt	true	0	0
EXTI line2 interrupt	true	0	0
EXTI line3 interrupt	true	0	0
EXTI line4 interrupt	true	0	0
DMA1 channel6 global interrupt	true	0	0
DMA1 channel7 global interrupt	true	0	0
EXTI line[9:5] interrupts	true	0	0
USART2 global interrupt	true	0	0
EXTI line[15:10] interrupts	true	0	0
TIM6 global interrupt, DAC channel1 and channel2 underrun error interrupts	true	0	0
TIM7 global interrupt	true	0	0
Flash global interrupt	unused		
RCC global interrupt	unused		
FPU global interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32L4
Line	STM32L4x6
MCU	STM32L476VGTx
Datasheet	025976_Rev4

7.2. Parameter Selection

Temperature	25
Vdd	null

8. Software Project

8.1. Project Settings

Name	Value
Project Name	swiatlo
Project Folder	D:\projekty\swiatlo
Toolchain / IDE	TrueSTUDIO
Firmware Package Name and Version	STM32Cube FW_L4 V1.11.0

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	Yes
Backup previously generated files when re-generating	No
Delete previously generated files when not re-generated	No
Set all free pins as analog (to optimize the power consumption)	No

9. Software Pack Report