1. Description

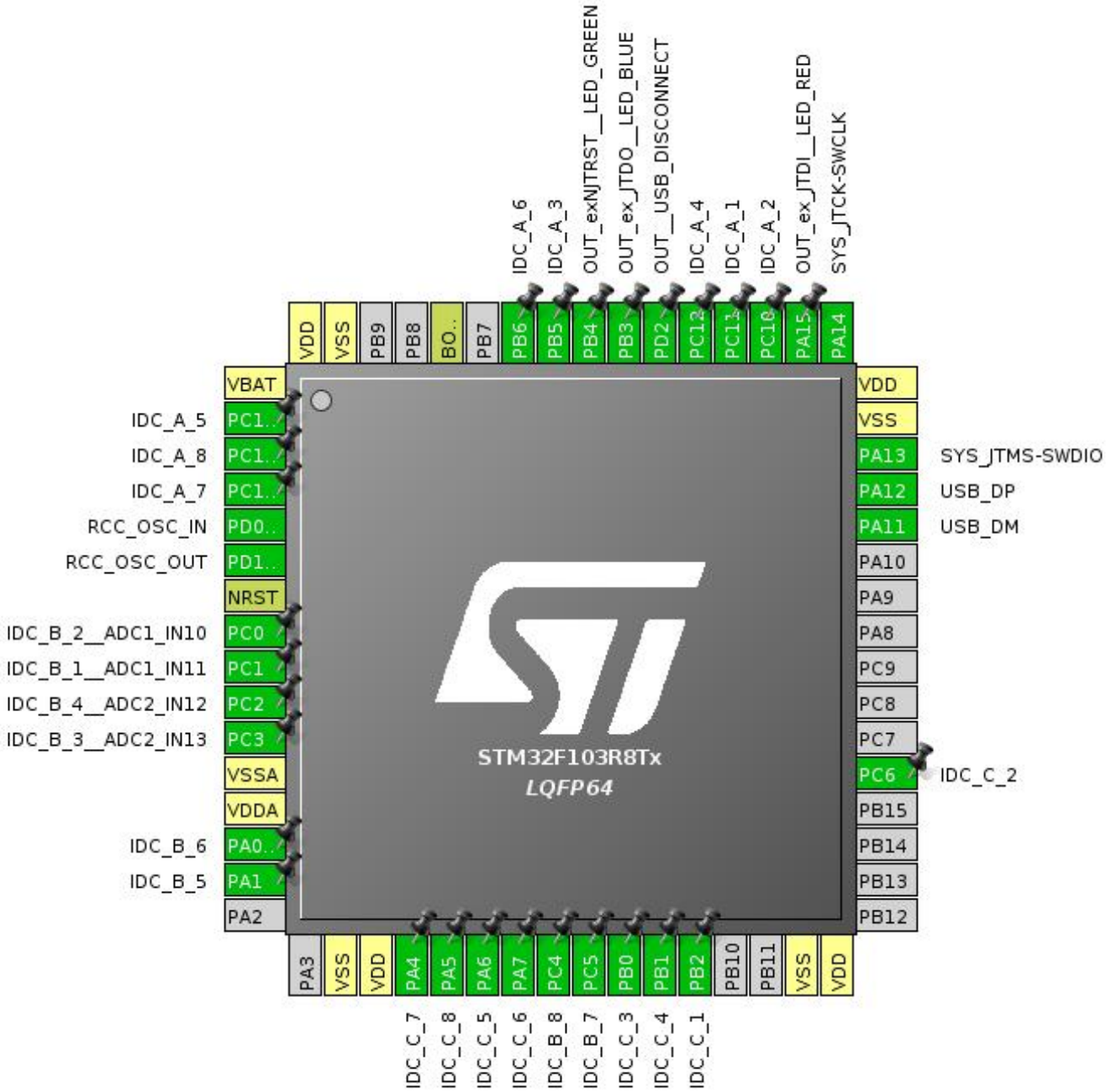
1.1. Project

Project Name	fw_atollic__stm32f103r8__board_usb32io__usb_hid_template
Board Name	fw_atollic__stm32f103r8__board_usb32io__usb_hid_template
Generated with:	STM32CubeMX 4.25.1
Date	09/24/2018

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F103
MCU name	STM32F103R8Tx
MCU Package	LQFP64
MCU Pin number	64

2. Pinout Configuration



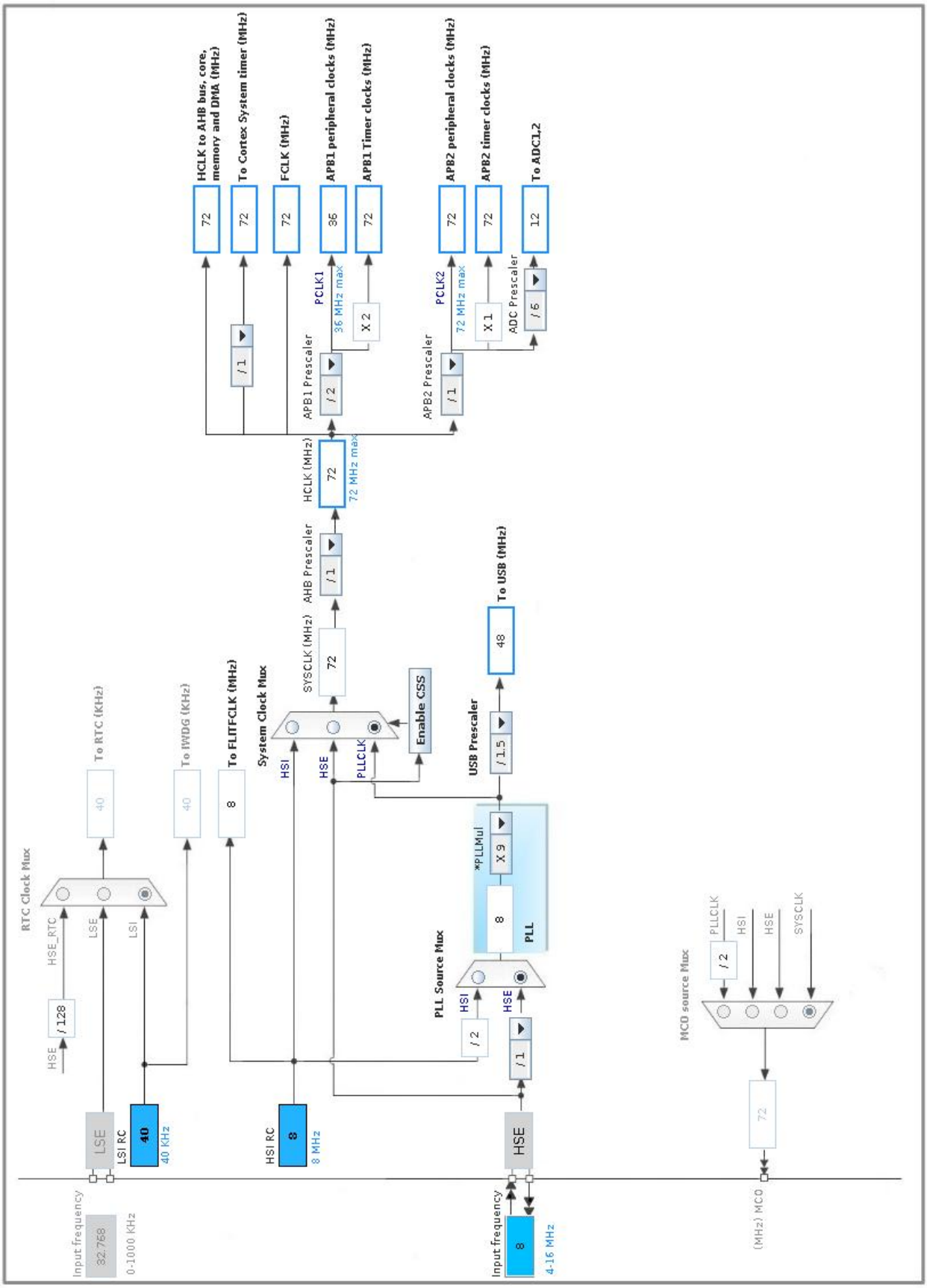
3. Pins Configuration

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
2	PC13-TAMPER-RTC *	I/O	GPIO_Input	IDC_A_5
3	PC14-OSC32_IN *	I/O	GPIO_Input	IDC_A_8
4	PC15-OSC32_OUT *	I/O	GPIO_Input	IDC_A_7
5	PD0-OSC_IN	I/O	RCC_OSC_IN	
6	PD1-OSC_OUT	I/O	RCC_OSC_OUT	
7	NRST	Reset		
8	PC0	I/O	ADC1_IN10	IDC_B_2__ADC1_IN10
9	PC1	I/O	ADC1_IN11	IDC_B_1__ADC1_IN11
10	PC2	I/O	ADC2_IN12	IDC_B_4__ADC2_IN12
11	PC3	I/O	ADC2_IN13	IDC_B_3__ADC2_IN13
12	VSSA	Power		
13	VDDA	Power		
14	PA0-WKUP *	I/O	GPIO_Input	IDC_B_6
15	PA1 *	I/O	GPIO_Input	IDC_B_5
18	VSS	Power		
19	VDD	Power		
20	PA4 *	I/O	GPIO_Input	IDC_C_7
21	PA5 *	I/O	GPIO_Input	IDC_C_8
22	PA6 *	I/O	GPIO_Input	IDC_C_5
23	PA7 *	I/O	GPIO_Input	IDC_C_6
24	PC4 *	I/O	GPIO_Input	IDC_B_8
25	PC5 *	I/O	GPIO_Input	IDC_B_7
26	PB0 *	I/O	GPIO_Input	IDC_C_3
27	PB1 *	I/O	GPIO_Input	IDC_C_4
28	PB2 *	I/O	GPIO_Input	IDC_C_1
31	VSS	Power		
32	VDD	Power		
37	PC6 *	I/O	GPIO_Input	IDC_C_2
44	PA11	I/O	USB_DM	
45	PA12	I/O	USB_DP	
46	PA13	I/O	SYS_JTMS-SWDIO	
47	VSS	Power		
48	VDD	Power		
49	PA14	I/O	SYS_JTCK-SWCLK	
50	PA15 *	I/O	GPIO_Output	OUT_ex_JTDI__LED_RED

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
51	PC10 *	I/O	GPIO_Input	IDC_A_2
52	PC11 *	I/O	GPIO_Input	IDC_A_1
53	PC12 *	I/O	GPIO_Input	IDC_A_4
54	PD2 *	I/O	GPIO_Output	OUT__USB_DISCONNECT
55	PB3 *	I/O	GPIO_Output	OUT_ex_JTDO__LED_BLUE
56	PB4 *	I/O	GPIO_Output	OUT_exNJTRST__LED_GREEN
57	PB5 *	I/O	GPIO_Input	IDC_A_3
58	PB6 *	I/O	GPIO_Input	IDC_A_6
60	BOOT0	Boot		
63	VSS	Power		
64	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. ADC1

mode: IN10

mode: IN11

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	**2 ***
External Trigger Conversion Source	**Timer 3 Trigger Out event ***
Rank	1
Channel	**Channel 11 ***
Sampling Time	**71.5 Cycles ***
Rank	**2 ***
Channel	Channel 10
Sampling Time	**71.5 Cycles ***
ADC_Injected_ConversionMode:	
Number Of Conversions	0
WatchDog:	
Enable Analog WatchDog Mode	false

5.2. ADC2

mode: IN12

mode: IN13

5.2.1. 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	**2 ***
External Trigger Conversion Source	**Timer 3 Trigger Out event ***
Rank	1
Channel	**Channel 13 ***
Sampling Time	**71.5 Cycles ***
Rank	**2 ***
Channel	Channel 12
Sampling Time	**71.5 Cycles ***

ADC_Injected_ConversionMode:

Number Of Conversions	0

WatchDog:

Enable Analog WatchDog Mode	false

5.3. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

5.3.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Prefetch Buffer	Enabled
Flash Latency(WS)	2 WS (3 CPU cycle)

RCC Parameters:

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

5.4. SYS

Debug: Serial Wire

Timebase Source: SysTick

5.5. TIM3

Clock Source : Internal Clock

5.5.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**71 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**1000 ***
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)
Trigger Event Selection	**Update Event ***

5.6. TIM4

Channel4: Output Compare No Output

5.6.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**71 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**1000 ***
Internal Clock Division (CKD)	No Division
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)

Output Compare No Output Channel 4:

Mode	**Toggle on match ***
Pulse (16 bits value)	**500 ***
CH Polarity	**Low ***

5.7. USB

mode: Device (FS)

5.7.1. Parameter Settings:

Basic Parameters:

Speed	Full Speed 12MBit/s
Endpoint 0 Max Packet size	**64 Bytes ***

Power Parameters:

Low Power	Disabled
Link Power Management	Disabled
Battery Charging	Disabled

5.8. USB_DEVICE

Class For FS IP: Custom Human Interface Device Class (HID)

5.8.1. Parameter Settings:

Basic Parameters:

USBD_MAX_NUM_INTERFACES (Maximum number of supported interfaces)	1
USBD_MAX_NUM_CONFIGURATION (Maximum number of supported configuration)	1
USBD_MAX_STR_DESC_SIZ (Maximum size for the string descriptors)	512
USBD_SUPPORT_USER_STRING (Enable user string descriptor)	Enabled
USBD_SELF_POWERED (Enabled self power)	Enabled
USBD_DEBUG_LEVEL (USBD Debug Level)	0: No debug message

Class Parameters:

USBD_CUSTOM_HID_REPORT_DESC_SIZE (Total length for Report descriptor (IN ENDPOINT))	**64 ***
USBD_CUSTOMHID_OUTREPORT_BUF_SIZE (Maximum report buffer size (OUT ENDPOINT))	**64 ***

5.8.2. Device Descriptor:

Device Descriptor:

VID (Vendor IDentifier)	1155
LANGID_STRING (Language Identifier)	English(United States)
MANUFACTURER_STRING (Manufacturer Identifier)	**AAC ***

Device Descriptor FS:

PID (Product IDentifier)	**22352 ***
PRODUCT_STRING (Product Identifier)	**STM32_USB32IO_HID ***
SERIALNUMBER_STRING (Serial number)	00000000001A
CONFIGURATION_STRING (Configuration Identifier)	Custom HID Config
INTERFACE_STRING (Interface Identifier)	Custom HID Interface

*** 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	PC0	ADC1_IN10	Analog mode	n/a	n/a	IDC_B_2__ADC1_IN10
	PC1	ADC1_IN11	Analog mode	n/a	n/a	IDC_B_1__ADC1_IN11
ADC2	PC2	ADC2_IN12	Analog mode	n/a	n/a	IDC_B_4__ADC2_IN12
	PC3	ADC2_IN13	Analog mode	n/a	n/a	IDC_B_3__ADC2_IN13
RCC	PD0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PD1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
USB	PA11	USB_DM	n/a	n/a	n/a	
	PA12	USB_DP	n/a	n/a	n/a	
GPIO	PC13-TAMPER-RTC	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_A_5
	PC14-OSC32_IN	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_A_8
	PC15-OSC32_OUT	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_A_7
	PA0-WKUP	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_B_6
	PA1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_B_5
	PA4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_C_7
	PA5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_C_8
	PA6	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_C_5
	PA7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_C_6
	PC4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_B_8
	PC5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_B_7
	PB0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_C_3
	PB1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_C_4
	PB2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_C_1
	PC6	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_C_2
	PA15	GPIO_Output	Output Push Pull	n/a	Low	OUT_ex_JTDI__LED_RED
	PC10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_A_2

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PC11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_A_1
	PC12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_A_4
	PD2	GPIO_Output	Output Push Pull	n/a	Low	OUT__USB_DISCONNECT
	PB3	GPIO_Output	Output Push Pull	n/a	Low	OUT_ex_JTDO__LED_BLUE
	PB4	GPIO_Output	Output Push Pull	n/a	Low	OUT_exNJTRST__LED_GREEN
	PB5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_A_3
	PB6	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IDC_A_6

6.2. DMA configuration

DMA request	Stream	Direction	Priority
ADC1	DMA1_Channel1	Peripheral To Memory	**High ***

ADC1: DMA1_Channel1 DMA request Settings:

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

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
DMA1 channel1 global interrupt	true	0	0
USB low priority or CAN RX0 interrupts	true	0	0
TIM4 global interrupt	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1 and ADC2 global interrupts	unused		
USB high priority or CAN TX interrupts	unused		
TIM3 global interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F1
Line	STM32F103
MCU	STM32F103R8Tx
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	fw_atollic__stm32f103r8__board_usb32io__usb_hid_template
Project Folder	/run/media/ozgurbas/ws_a/ws_atollic_stm32_B/fw_stm32_usb_scope__eclipse_a
Toolchain / IDE	TrueSTUDIO
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	Yes
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No