

## 1. Description

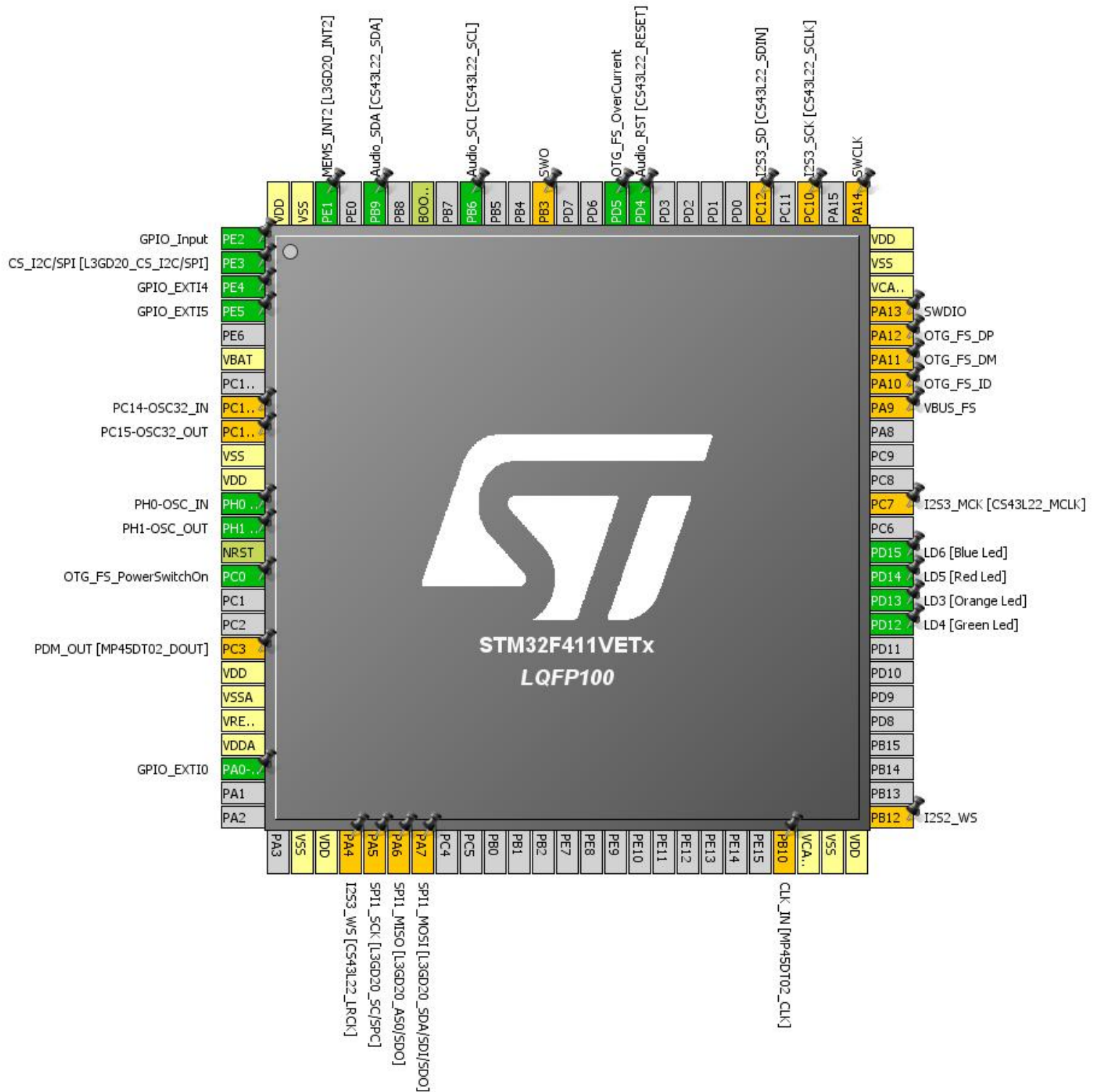
### 1.1. Project

Project Name	i2cAccelTest
Board Name	STM32F411E-DISCO
Generated with:	STM32CubeMX 4.21.0
Date	07/11/2017

### 1.2. MCU

MCU Series	STM32F4
MCU Line	STM32F411
MCU name	STM32F411VETx
MCU Package	LQFP100
MCU Pin number	100

## 2. Pinout Configuration



### 3. Pins Configuration

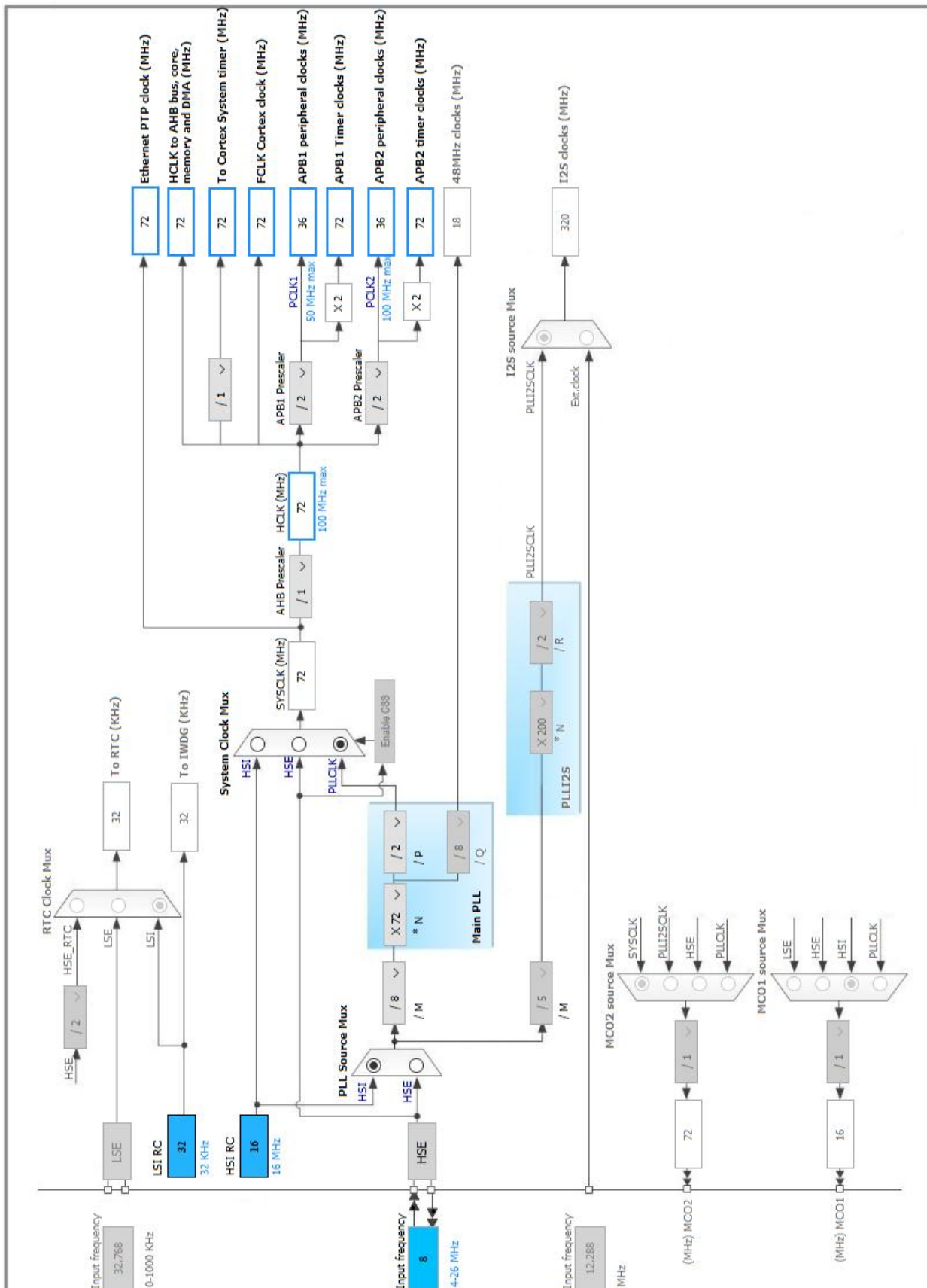
Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	PE2 *	I/O	GPIO_Input	
2	PE3 *	I/O	GPIO_Output	CS_I2C/SPI [L3GD20_CS_I2C/SPI]
3	PE4	I/O	GPIO_EXTI4	
4	PE5	I/O	GPIO_EXTI5	
6	VBAT	Power		
8	PC14-OSC32_IN **	I/O	RCC_OSC32_IN	PC14-OSC32_IN
9	PC15-OSC32_OUT **	I/O	RCC_OSC32_OUT	PC15-OSC32_OUT
10	VSS	Power		
11	VDD	Power		
12	PH0 - OSC_IN	I/O	RCC_OSC_IN	PH0-OSC_IN
13	PH1 - OSC_OUT	I/O	RCC_OSC_OUT	PH1-OSC_OUT
14	NRST	Reset		
15	PC0 *	I/O	GPIO_Output	OTG_FS_PowerSwitchOn
18	PC3 **	I/O	I2S2_SD	PDM_OUT [MP45DT02_DOUT]
19	VDD	Power		
20	VSSA	Power		
21	VREF+	Power		
22	VDDA	Power		
23	PA0-WKUP	I/O	GPIO_EXTI0	
27	VSS	Power		
28	VDD	Power		
29	PA4 **	I/O	I2S3_WS	I2S3_WS [CS43L22_LRCK]
30	PA5 **	I/O	SPI1_SCK	SPI1_SCK [L3GD20_SC/SPC]
31	PA6 **	I/O	SPI1_MISO	SPI1_MISO [L3GD20_AS0/SDO]
32	PA7 **	I/O	SPI1_MOSI	SPI1_MOSI [L3GD20_SDA/SDI/SDO]
47	PB10 **	I/O	I2S2_CK	CLK_IN [MP45DT02_CLK]
48	VCAP1	Power		
49	VSS	Power		
50	VDD	Power		
51	PB12 **	I/O	I2S2_WS	
59	PD12 *	I/O	GPIO_Output	LD4 [Green Led]
60	PD13 *	I/O	GPIO_Output	LD3 [Orange Led]

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
61	PD14 *	I/O	GPIO_Output	LD5 [Red Led]
62	PD15 *	I/O	GPIO_Output	LD6 [Blue Led]
64	PC7 **	I/O	I2S3_MCK	I2S3_MCK [CS43L22_MCLK]
68	PA9 **	I/O	USB_OTG_FS_VBUS	VBUS_FS
69	PA10 **	I/O	USB_OTG_FS_ID	OTG_FS_ID
70	PA11 **	I/O	USB_OTG_FS_DM	OTG_FS_DM
71	PA12 **	I/O	USB_OTG_FS_DP	OTG_FS_DP
72	PA13 **	I/O	SYS_JTMS-SWDIO	SWDIO
73	VCAP2	Power		
74	VSS	Power		
75	VDD	Power		
76	PA14 **	I/O	SYS_JTCK-SWCLK	SWCLK
78	PC10 **	I/O	I2S3_CK	I2S3_SCK [CS43L22_SCLK]
80	PC12 **	I/O	I2S3_SD	I2S3_SD [CS43L22_SDIN]
85	PD4 *	I/O	GPIO_Output	Audio_RST [CS43L22_RESET]
86	PD5 *	I/O	GPIO_Input	OTG_FS_OverCurrent
89	PB3 **	I/O	SYS_JTDO-SWO	SWO
92	PB6	I/O	I2C1_SCL	Audio_SCL [CS43L22_SCL]
94	BOOT0	Boot		
96	PB9	I/O	I2C1_SDA	Audio_SDA [CS43L22_SDA]
98	PE1	I/O	GPIO_EXTI1	MEMS_INT2 [L3GD20_INT2]
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. I2C1

#### 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): Crystal/Ceramic Resonator

##### 5.2.1. Parameter Settings:

###### System Parameters:

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

###### RCC Parameters:

HSI Calibration Value	16
TIM Prescaler Selection	Disabled
HSE Startup Timeout Value (ms)	100
LSE Startup Timeout Value (ms)	5000

###### Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1
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### 5.3. SYS

Timebase Source: TIM1

\* User modified value

## 6. System Configuration

### 6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
I2C1	PB6	I2C1_SCL	Alternate Function Open Drain	Pull-up	Low	Audio_SCL [CS43L22_SCL]
	PB9	I2C1_SDA	Alternate Function Open Drain	Pull-up	Low	Audio_SDA [CS43L22_SDA]
RCC	PH0 - OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	PH0-OSC_IN
	PH1 - OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	PH1-OSC_OUT
Single Mapped Signals	PC14-OSC32_IN	RCC_OSC32_IN	n/a	n/a	n/a	PC14-OSC32_IN
	PC15-OSC32_OUT	RCC_OSC32_OUT	n/a	n/a	n/a	PC15-OSC32_OUT
	PC3	I2S2_SD	Alternate Function Push Pull	No pull-up and no pull-down	Low	PDM_OUT [MP45DT02_DOUT]
	PA4	I2S3_WS	Alternate Function Push Pull	No pull-up and no pull-down	Low	I2S3_WS [CS43L22_LRCK]
	PA5	SPI1_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	SPI1_SCK [L3GD20_SC/SPC]
	PA6	SPI1_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	SPI1_MISO [L3GD20_AS0/SDO]
	PA7	SPI1_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	SPI1_MOSI [L3GD20_SDA/SDI/SDO]
	PB10	I2S2_CK	Alternate Function Push Pull	No pull-up and no pull-down	Low	CLK_IN [MP45DT02_CLK]
	PB12	I2S2_WS	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC7	I2S3_MCK	Alternate Function Push Pull	No pull-up and no pull-down	Low	I2S3_MCK [CS43L22_MCLK]
	PA9	USB_OTG_FS_VBUS	Input mode	No pull-up and no pull-down	n/a	VBUS_FS
	PA10	USB_OTG_FS_ID	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	OTG_FS_ID
	PA11	USB_OTG_FS_DM	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	OTG_FS_DM
	PA12	USB_OTG_FS_DP	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	OTG_FS_DP



IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	SWDIO
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	SWCLK
	PC10	I2S3_CK	Alternate Function Push Pull	No pull-up and no pull-down	Low	I2S3_SCK [CS43L22_SCLK]
	PC12	I2S3_SD	Alternate Function Push Pull	No pull-up and no pull-down	Low	I2S3_SD [CS43L22_SDIN]
	PB3	SYS_JTDO-SWO	n/a	n/a	n/a	SWO
GPIO	PE2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PE3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	CS_I2C/SPI [L3GD20_CS_I2C/SPI]
	PE4	GPIO_EXTI4	External Event Mode with Rising edge trigger detection *	No pull-up and no pull-down	n/a	
	PE5	GPIO_EXTI5	External Event Mode with Rising edge trigger detection *	No pull-up and no pull-down	n/a	
	PC0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	OTG_FS_PowerSwitchOn
	PA0-WKUP	GPIO_EXTI0	External Event Mode with Rising edge trigger detection *	No pull-up and no pull-down	n/a	
	PD12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD4 [Green Led]
	PD13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD3 [Orange Led]
	PD14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD5 [Red Led]
	PD15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD6 [Blue Led]
	PD4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Audio_RST [CS43L22_RESET]
	PD5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	OTG_FS_OverCurrent
	PE1	GPIO_EXTI1	External Event Mode with Rising edge trigger detection *	No pull-up and no pull-down	n/a	MEMS_INT2 [L3GD20_INT2]

## 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
Pre-fetch 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
TIM1 update interrupt and TIM10 global interrupt	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
I2C1 event interrupt	unused		
I2C1 error interrupt	unused		
FPU global interrupt	unused		

\* User modified value

## ***7. Power Consumption Calculator report***

### 7.1. Microcontroller Selection

Series	STM32F4
Line	STM32F411
MCU	STM32F411VETx
Datasheet	026289_Rev4

### 7.2. Parameter Selection

Temperature	25
Vdd	null

## 8. Software Project

### 8.1. Project Settings

Name	Value
Project Name	i2cAccelTest
Project Folder	C:\Users\Obelisk\Desktop\RobotWorkspace\i2cAccelTest
Toolchain / IDE	SW4STM32
Firmware Package Name and Version	STM32Cube FW_F4 V1.16.0

### 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	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