

## 1. Description

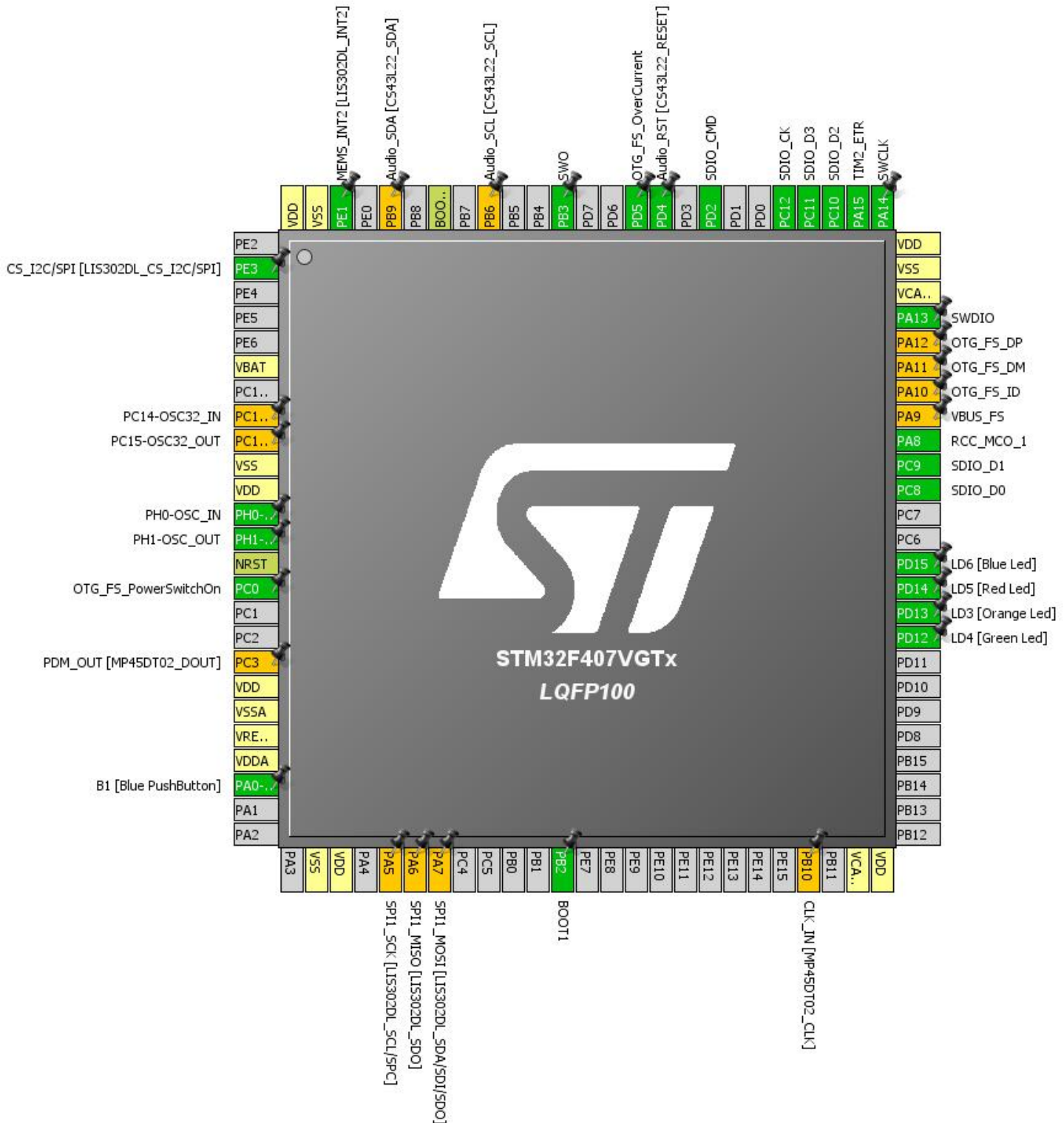
### 1.1. Project

Project Name	LaBola2
Board Name	STM32F4DISCOVERY
Generated with:	STM32CubeMX 4.9.0
Date	07/21/2015

### 1.2. MCU

MCU Series	STM32F4
MCU Line	STM32F407/417
MCU name	STM32F407VGTx
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
2	PE3 *	I/O	GPIO_Output	CS_I2C/SPI [LIS302DL_CS_I2C/SPI]
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	B1 [Blue PushButton]
27	VSS	Power		
28	VDD	Power		
30	PA5 **	I/O	SPI1_SCK	SPI1_SCK [LIS302DL_SCL/SPC]
31	PA6 **	I/O	SPI1_MISO	SPI1_MISO [LIS302DL_SDO]
32	PA7 **	I/O	SPI1_MOSI	SPI1_MOSI [LIS302DL_SDA/SDI/SDO]
37	PB2 *	I/O	GPIO_Input	BOOT1
47	PB10 **	I/O	I2S2_CK	CLK_IN [MP45DT02_CLK]
49	VCAP_1	Power		
50	VDD	Power		
59	PD12 *	I/O	GPIO_Output	LD4 [Green Led]
60	PD13 *	I/O	GPIO_Output	LD3 [Orange Led]
61	PD14 *	I/O	GPIO_Output	LD5 [Red Led]
62	PD15 *	I/O	GPIO_Output	LD6 [Blue Led]
65	PC8	I/O	SDIO_D0	
66	PC9	I/O	SDIO_D1	
67	PA8	I/O	RCC_MCO_1	

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
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	VCAP_2	Power		
74	VSS	Power		
75	VDD	Power		
76	PA14	I/O	SYS_JTCK-SWCLK	SWCLK
77	PA15	I/O	TIM2_ETR	
78	PC10	I/O	SDIO_D2	
79	PC11	I/O	SDIO_D3	
80	PC12	I/O	SDIO_CK	
83	PD2	I/O	SDIO_CMD	
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 [LIS302DL_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. IPs and Middleware Configuration

### 4.1. CRC

mode: Activated

### 4.2. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

mode: Master Clock Output 1

#### System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Enabled
Data Cache	Enabled
Flash Latency(WS)	5 WS (6 CPU cycle)

#### RCC Parameters:

HSI Calibration Value	16
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#### Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1
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### 4.3. SDIO

Mode: SD 4 bits Wide bus

#### SDIO parameters:

SDIOCLK clock divide factor	0
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### 4.4. SYS

Debug: SWD and Asynchronous Trace

### 4.5. TIM2

Clock Source : ETR2

## Channel1: Output Compare No Output

### Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 32 bits value )	0
Internal Clock Division (CKD)	No Division

### 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)

### Clock:

Clock Filter (4 bits value)	0
Clock Polarity	non inverted
Clock Prescaler	Prescaler not used

### Output Compare No Output Channel 1:

Mode	Frozen (used for Timing base)
Pulse (32 bits value)	0
CH Polarity	High

## 4.6. TIM6

### mode: Activated

### Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value )	0

### Trigger Output (TRGO) Parameters:

Trigger Event Selection	Reset (UG bit from TIMx_EGR)
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## 4.7. FATFS

### mode: SD Card

### Version:

FATFS version	R0.10b
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### Function Parameters:

FS_TINY (Tiny mode)	Disabled
FS_READONLY (Read-only mode)	Disabled

FS_MINIMIZE (Minimization level)	Disabled
USE_STRFUNC (String functions)	Enabled with LF -> CRLF conversion
USE_MKFS (Make filesystem function)	Enabled
USE_FORWARD (Forward function)	Disabled
USE_LABEL (Volume label functions)	Disabled
USE_FASTSEEK (Fast seek function)	Enabled

### Locale and Namespace Parameters:

CODE_PAGE (Code page on target)	Latin 1 (Windows)
USE_LFN (Use Long Filename)	Enabled with dynamic working buffer on the HEAP
MAX_LFN (Max Long Filename)	255
LFN_UNICODE (Enable Unicode)	ANSI/OEM
STRF_ENCODE (Character encoding)	UTF-8
FS_RPATH (Relative Path)	Disabled

### Physical Drive Parameters:

VOLUMES (Logical drives)	1
MAX_SS (Maximum Sector Size)	512
MIN_SS (Minimum Sector Size)	512
MULTI_PARTITION (Volume partitions feature)	Disabled
USE_ERASE (Erase feature)	Disabled
FS_NOFSINFO (Force full FAT scan)	0

### System Parameters:

WORD_ACCESS (Platform dependent access option)	Byte access
FS_REENTRANT (Re-Entrancy)	Disabled
FS_TIMEOUT (Timeout ticks)	1000
SYNC_t (O/S sync object)	osSemaphoreId
FS_LOCK (Number of files opened simultaneously)	2

### SDIO:

SDIO instance	SDIO1
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\* **User modified value**

## 5. System Configuration

### 5.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
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
	PA8	RCC_MCO_1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
SDIO	PC8	SDIO_D0	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PC9	SDIO_D1	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PC10	SDIO_D2	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PC11	SDIO_D3	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PC12	SDIO_CK	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PD2	SDIO_CMD	Alternate Function Push Pull	No pull-up and no pull-down	High	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	SWDIO
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	SWCLK
	PB3	SYS_JTDO-SWO	n/a	n/a	n/a	SWO
TIM2	PA15	TIM2_ETR	Alternate Function Push Pull	No pull-up and no pull-down	Low	
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]
	PA5	SPI1_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Low	SPI1_SCK [LIS302DL_SCL/SPC]
	PA6	SPI1_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Low	SPI1_MISO [LIS302DL_SDO]
	PA7	SPI1_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Low	SPI1_MOSI [LIS302DL_SDA/SDI/SDO]
	PB10	I2S2_CK	Alternate Function Push Pull	No pull-up and no pull-down	Low	CLK_IN [MP45DT02_CLK]
	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	Low	OTG_FS_ID
	PA11	USB_OTG_FS_DM	Alternate Function Push Pull	No pull-up and no pull-down	Low	OTG_FS_DM



IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
		DM				
	PA12	USB_OTG_FS_DP	Alternate Function Push Pull	No pull-up and no pull-down	Low	OTG_FS_DP
	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]
GPIO	PE3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	CS_I2C/SPI [LIS302DL_CS_I2C/SPI]
	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	B1 [Blue PushButton]
	PB2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BOOT1
	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 [LIS302DL_INT2]

## 5.2. DMA configuration

DMA request	Stream	Direction	Priority
SDIO_RX	DMA2_Stream3	Peripheral To Memory	<b>High *</b>
SDIO_TX	DMA2_Stream6	Memory To Peripheral	<b>Very High *</b>

### SDIO\_RX: DMA2\_Stream3 DMA request Settings:

Mode: Normal  
Use fifo: Disable  
PeripheralIncrement: Disable  
MemoryIncrement: Disable  
Peripheral Data Width: Byte

### SDIO\_TX: DMA2\_Stream6 DMA request Settings:

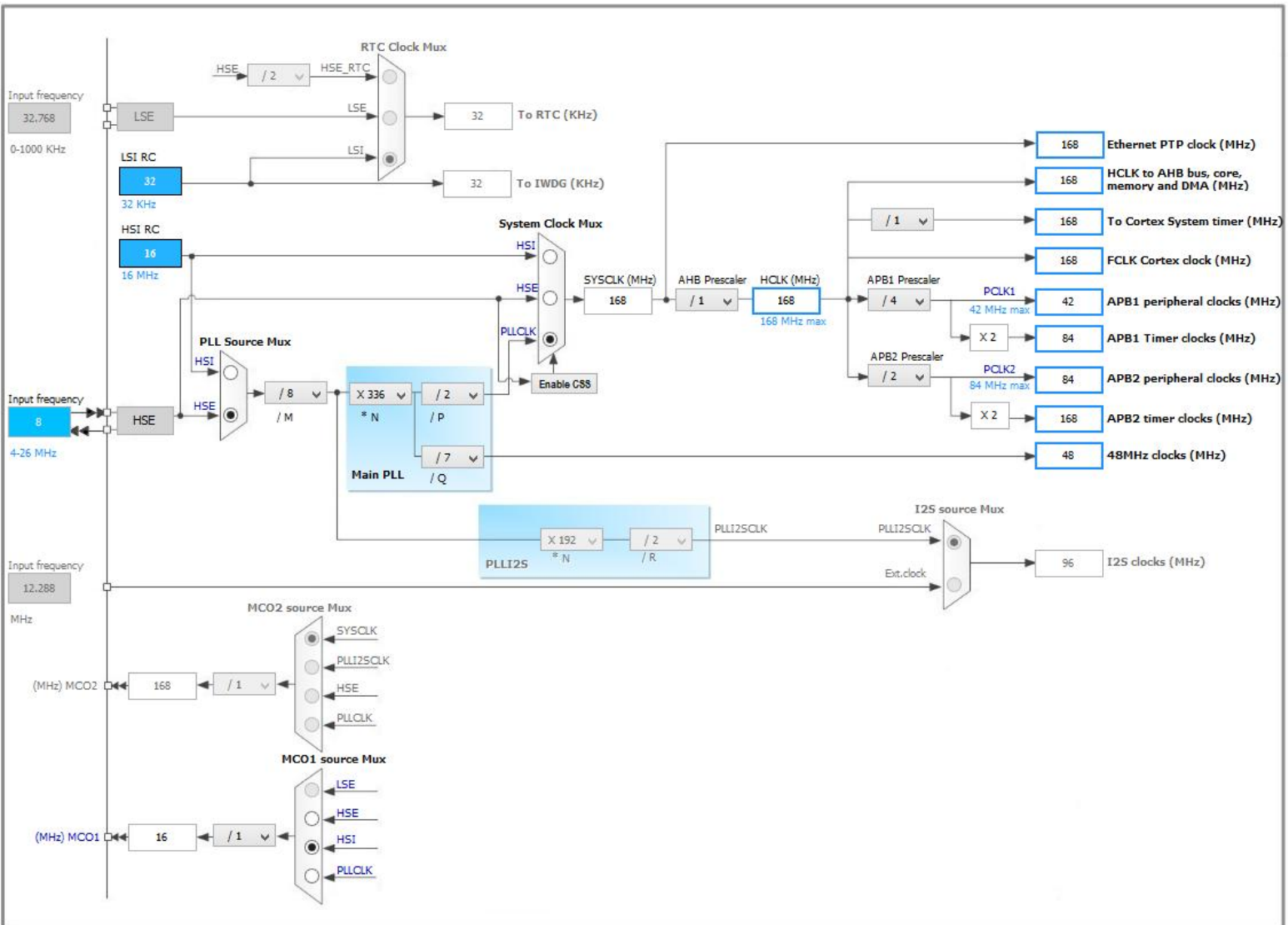
Mode: Normal  
Use fifo: Disable  
PeripheralIncrement: Disable  
MemoryIncrement: Disable  
Peripheral Data Width: Byte

### 5.3. NVIC configuration

Interrupt Table	Enable	Preenmption Priority	SubPriority
System tick timer	true	0	0
DMA2 Stream3 global interrupt	true	0	0
DMA2 Stream6 global interrupt	true	0	0
Non Maskable Interrupt	unused		
Memory management fault	unused		
Pre-fetch fault, memory access fault	unused		
Undefined instruction or illegal state	unused		
Debug Monitor	unused		
RCC global interrupt	unused		
TIM2 global interrupt	unused		
SDIO global interrupt	unused		
TIM6 global interrupt, DAC1 and DAC2 underrun error interrupts	unused		

\* User modified value

## 6. Clock Tree Configuration



## ***7. Power Plugin report***

### 7.1. Microcontroller Selection

Series	STM32F4
Line	STM32F407/417
MCU	STM32F407VGTx
Datasheet	022152_Rev5

### 7.2. Parameter Selection

Temperature	25
Vdd	3.3

## 8. Software Project

### 8.1. Project Settings

Name	Value
Project Name	LaBola2
Project Folder	C:\Users\Javier\EclipseSTM32\LaBola2
Toolchain / IDE	SW4STM32
Firmware Package Name and Version	STM32Cube FW_F4 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	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

### 8.3. Toolchains Settings

Name	Value
Compiler Optimizations	Balanced Size/Speed