

1. Description

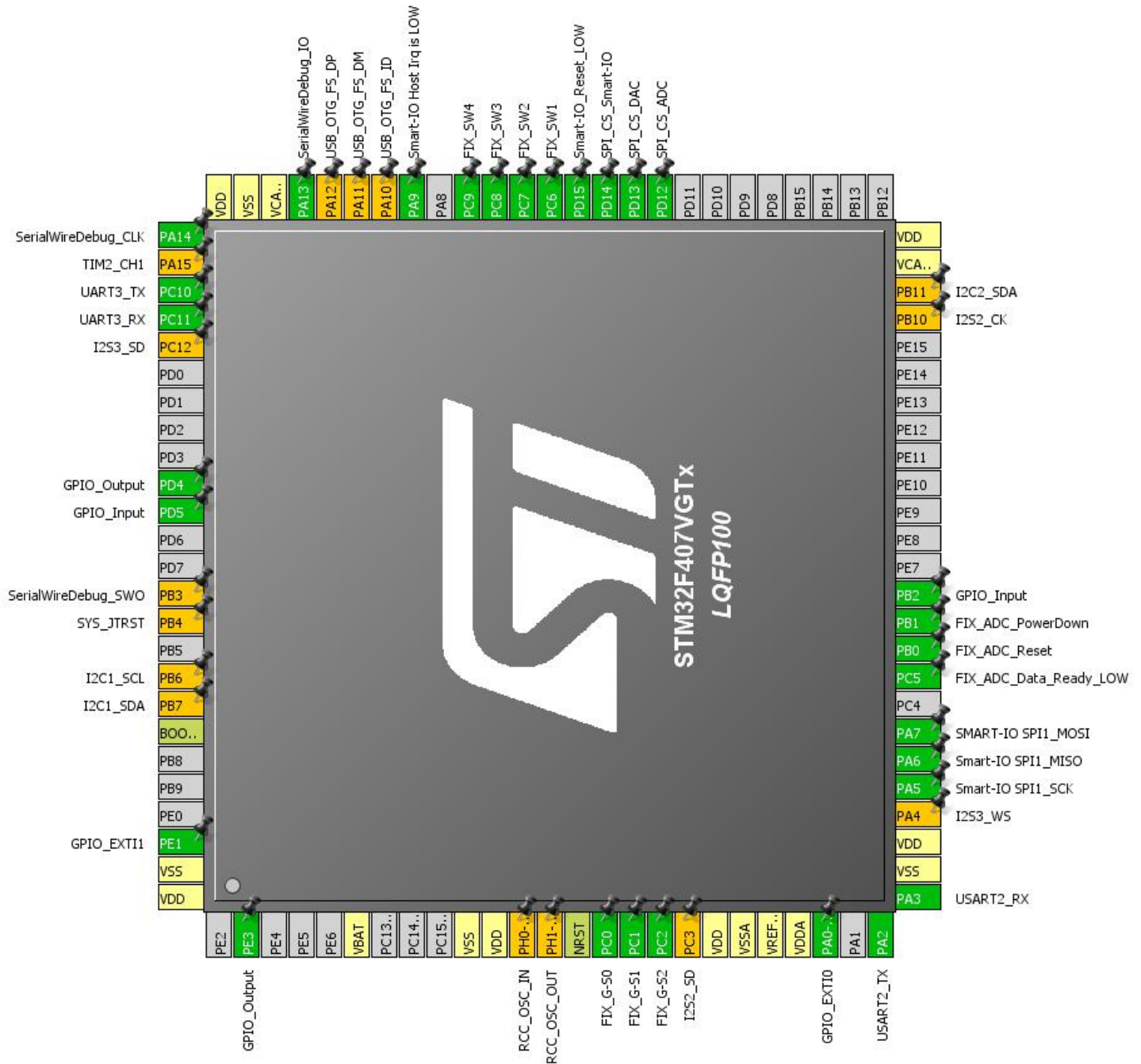
1.1. Project

Project Name	STMF407_Disco_Spi1FDM1NSS
Board Name	STM32F4DISCOVERY
Generated with:	STM32CubeMX 4.25.0
Date	03/25/2018

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

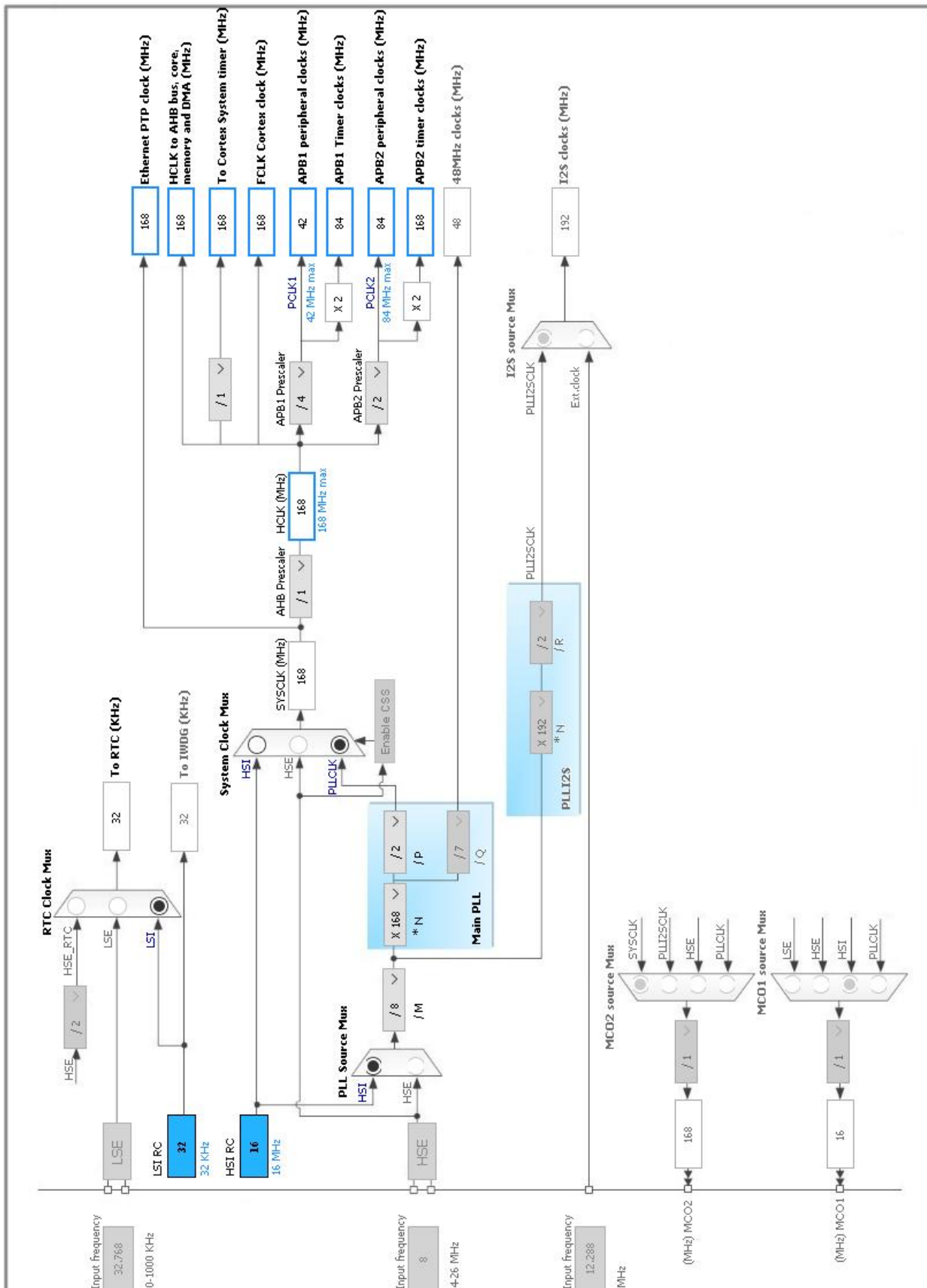
Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
2	PE3 *	I/O	GPIO_Output	
6	VBAT	Power		
10	VSS	Power		
11	VDD	Power		
12	PH0-OSC_IN **	I/O	RCC_OSC_IN	
13	PH1-OSC_OUT **	I/O	RCC_OSC_OUT	
14	NRST	Reset		
15	PC0 *	I/O	GPIO_Output	FIX_G-S0
16	PC1 *	I/O	GPIO_Output	FIX_G-S1
17	PC2 *	I/O	GPIO_Output	FIX_G-S2
18	PC3 **	I/O	I2S2_SD	
19	VDD	Power		
20	VSSA	Power		
21	VREF+	Power		
22	VDDA	Power		
23	PA0-WKUP	I/O	GPIO_EXTI0	
25	PA2	I/O	USART2_TX	
26	PA3	I/O	USART2_RX	
27	VSS	Power		
28	VDD	Power		
29	PA4 **	I/O	I2S3_WS	
30	PA5	I/O	SPI1_SCK	Smart-IO SPI1_SCK
31	PA6	I/O	SPI1_MISO	Smart-IO SPI1_MISO
32	PA7	I/O	SPI1_MOSI	SMART-IO SPI1_MOSI
34	PC5 *	I/O	GPIO_Input	FIX_ADC_Data_Ready_LO W
35	PB0 *	I/O	GPIO_Output	FIX_ADC_Reset
36	PB1 *	I/O	GPIO_Output	FIX_ADC_PowerDown
37	PB2 *	I/O	GPIO_Input	
47	PB10 **	I/O	I2S2_CK	
48	PB11 **	I/O	I2C2_SDA	
49	VCAP_1	Power		
50	VDD	Power		
59	PD12 *	I/O	GPIO_Output	SPI_CS_ADC
60	PD13 *	I/O	GPIO_Output	SPI_CS_DAC
61	PD14 *	I/O	GPIO_Output	SPI_CS_Smart-IO

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
62	PD15 *	I/O	GPIO_Output	Smart-IO_Reset_LOW
63	PC6 *	I/O	GPIO_Input	FIX_SW1
64	PC7 *	I/O	GPIO_Input	FIX_SW2
65	PC8 *	I/O	GPIO_Input	FIX_SW3
66	PC9 *	I/O	GPIO_Input	FIX_SW4
68	PA9	I/O	GPIO_EXTI9	Smart-IO Host Irq is LOW
69	PA10 **	I/O	USB_OTG_FS_ID	
70	PA11 **	I/O	USB_OTG_FS_DM	
71	PA12 **	I/O	USB_OTG_FS_DP	
72	PA13	I/O	SYS_JTMS-SWDIO	SerialWireDebug_IO
73	VCAP_2	Power		
74	VSS	Power		
75	VDD	Power		
76	PA14	I/O	SYS_JTCK-SWCLK	SerialWireDebug_CLK
77	PA15 **	I/O	TIM2_CH1	
78	PC10	I/O	USART3_TX	UART3_TX
79	PC11	I/O	USART3_RX	UART3_RX
80	PC12 **	I/O	I2S3_SD	
85	PD4 *	I/O	GPIO_Output	
86	PD5 *	I/O	GPIO_Input	
89	PB3 **	I/O	SYS_JTDO-SWO	SerialWireDebug_SWO
90	PB4 **	I/O	SYS_JTRST	
92	PB6 **	I/O	I2C1_SCL	
93	PB7 **	I/O	I2C1_SDA	
94	BOOT0	Boot		
98	PE1	I/O	GPIO_EXTI1	
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. RTC

mode: Activate Clock Source

mode: Activate Calendar

5.1.1. Parameter Settings:

General:

Hour Format	Hourformat 24
Asynchronous Predivider value	127
Synchronous Predivider value	255

Calendar Time:

Data Format	BCD data format
Hours	0
Minutes	0
Seconds	0
Day Light Saving: value of hour adjustment	Daylightsaving None
Store Operation	Storeoperation Reset

Calendar Date:

Week Day	Monday
Month	January
Date	1
Year	0

5.2. SPI1

Mode: Full-Duplex Master

5.2.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	128 *
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Baud Rate	656.25 KBits/s *
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge
Advanced Parameters:	
CRC Calculation	Disabled
NSS Signal Type	Software

5.3. SYS

Debug: Serial Wire

Timebase Source: SysTick

5.4. TIM1

Clock Source : Internal Clock

5.4.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	0
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0

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. TIM2

Clock Source : Internal Clock

5.5.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 32 bits value)	0
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)

5.6. TIM3

Clock Source : Internal Clock

5.6.1. Parameter Settings:

Counter Settings:

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

5.7. USART2

Mode: Asynchronous

5.7.1. Parameter Settings:

Basic Parameters:

Baud Rate	9600 *
Word Length	8 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples

5.8. USART3

Mode: Asynchronous

5.8.1. Parameter Settings:

Basic Parameters:

Baud Rate	9600 *
Word Length	8 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples

*** User modified value**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
SPI1	PA5	SPI1_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	Smart-IO SPI1_SCK
	PA6	SPI1_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	Smart-IO SPI1_MISO
	PA7	SPI1_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	SMART-IO SPI1_MOSI
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	SerialWireDebug_IO
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	SerialWireDebug_CLK
USART2	PA2	USART2_TX	Alternate Function Push Pull	Pull-up	Very High *	
	PA3	USART2_RX	Alternate Function Push Pull	Pull-up	Very High *	
USART3	PC10	USART3_TX	Alternate Function Push Pull	Pull-up	Very High *	UART3_TX
	PC11	USART3_RX	Alternate Function Push Pull	Pull-up	Very High *	UART3_RX
Single Mapped Signals	PH0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PH1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
	PC3	I2S2_SD	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA4	I2S3_WS	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB10	I2S2_CK	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB11	I2C2_SDA	Alternate Function Open Drain	Pull-up	Very High *	
	PA10	USB_OTG_FS_ID	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	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 *	

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PA15	TIM2_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC12	I2S3_SD	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB3	SYS_JTDO-SWO	n/a	n/a	n/a	SerialWireDebug_SWO
	PB4	SYS_JTRST	n/a	n/a	n/a	
	PB6	I2C1_SCL	Alternate Function Open Drain	Pull-up	Very High *	
	PB7	I2C1_SDA	Alternate Function Open Drain	Pull-up	Very High *	
GPIO	PE3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PC0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FIX_G-S0
	PC1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FIX_G-S1
	PC2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FIX_G-S2
	PA0-WKUP	GPIO_EXTI0	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	
	PC5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	FIX_ADC_Data_Ready_LOW
	PB0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FIX_ADC_Reset
	PB1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FIX_ADC_PowerDown
	PB2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PD12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SPI_CS_ADC
	PD13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SPI_CS_DAC
	PD14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SPI_CS_Smart-IO
	PD15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Smart-IO_Reset_LOW
	PC6	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	FIX_SW1
	PC7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	FIX_SW2
	PC8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	FIX_SW3
	PC9	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	FIX_SW4
	PA9	GPIO_EXTI9	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	Smart-IO Host Irq is LOW
	PD4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PD5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PE1	GPIO_EXTI1	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	

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
EXTI line0 interrupt	true	0	0
EXTI line1 interrupt	true	0	0
TIM2 global interrupt	true	0	0
SPI1 global interrupt	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
EXTI line[9:5] interrupts	unused		
TIM1 break interrupt and TIM9 global interrupt	unused		
TIM1 update interrupt and TIM10 global interrupt	unused		
TIM1 trigger and commutation interrupts and TIM11 global interrupt	unused		
TIM1 capture compare interrupt	unused		
TIM3 global interrupt	unused		
USART2 global interrupt	unused		
USART3 global interrupt	unused		
FPU global interrupt	unused		

* User modified value

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F4
Line	STM32F407/417
MCU	STM32F407VGTx
Datasheet	022152_Rev8

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	STMF407_Disco_Spi1FDM1NSS
Project Folder	C:\Users\Clyde W Phillips Jr\Documents\FISH-Forth\FISH
Toolchain / IDE	EWARM
Firmware Package Name and Version	STM32Cube FW_F4 V1.18.0

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

9. Software Pack Report