1. Description

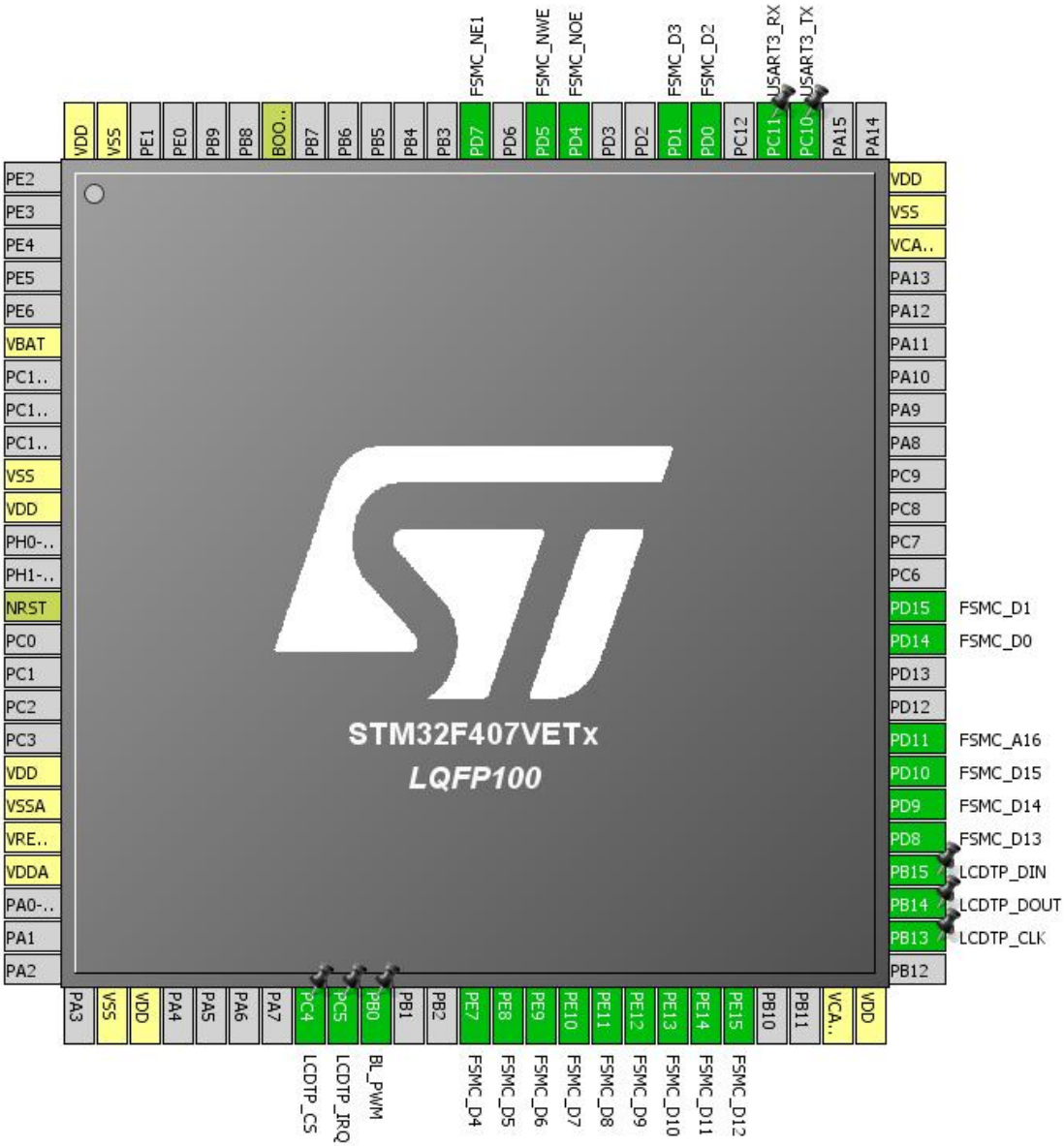
1.1. Project

Project Name	LCD
Board Name	LCD
Generated with:	STM32CubeMX 4.19.0
Date	02/10/2017

1.2. MCU

MCU Series	STM32F4
MCU Line	STM32F407/417
MCU name	STM32F407VETx
MCU Package	LQFP100
MCU Pin number	100

2. Pinout Configuration



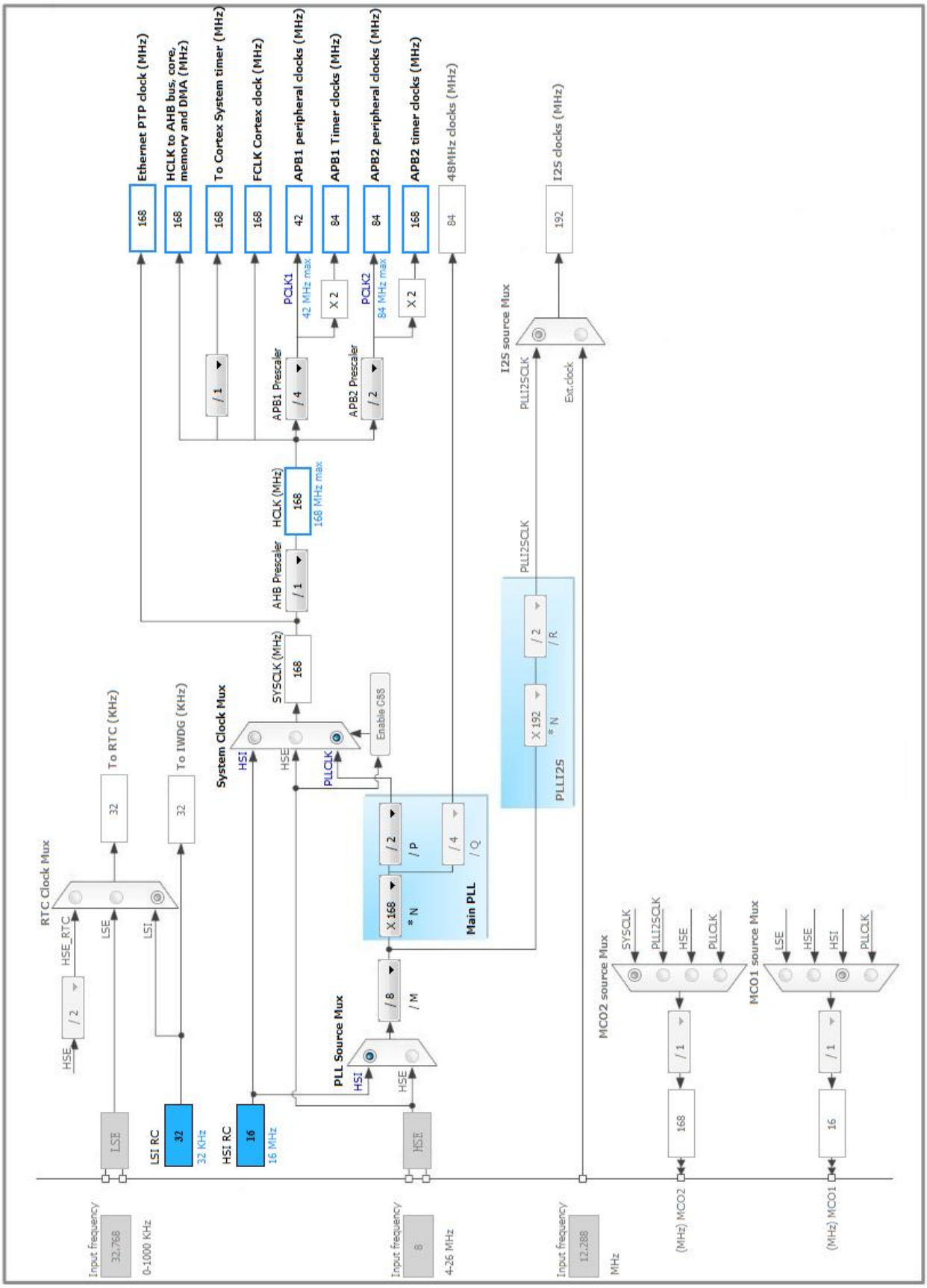
3. Pins Configuration

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		
19	VDD	Power		
20	VSSA	Power		
21	VREF+	Power		
22	VDDA	Power		
27	VSS	Power		
28	VDD	Power		
33	PC4 *	I/O	GPIO_Output	LCDTP_CS
34	PC5 *	I/O	GPIO_Input	LCDTP_IRQ
35	PB0 *	I/O	GPIO_Output	BL_PWM
38	PE7	I/O	FSMC_D4	
39	PE8	I/O	FSMC_D5	
40	PE9	I/O	FSMC_D6	
41	PE10	I/O	FSMC_D7	
42	PE11	I/O	FSMC_D8	
43	PE12	I/O	FSMC_D9	
44	PE13	I/O	FSMC_D10	
45	PE14	I/O	FSMC_D11	
46	PE15	I/O	FSMC_D12	
49	VCAP_1	Power		
50	VDD	Power		
52	PB13	I/O	SPI2_SCK	LCDTP_CLK
53	PB14	I/O	SPI2_MISO	LCDTP_DOUT
54	PB15	I/O	SPI2_MOSI	LCDTP_DIN
55	PD8	I/O	FSMC_D13	
56	PD9	I/O	FSMC_D14	
57	PD10	I/O	FSMC_D15	
58	PD11	I/O	FSMC_A16	
61	PD14	I/O	FSMC_D0	
62	PD15	I/O	FSMC_D1	
73	VCAP_2	Power		
74	VSS	Power		
75	VDD	Power		

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
78	PC10	I/O	USART3_TX	
79	PC11	I/O	USART3_RX	
81	PD0	I/O	FSMC_D2	
82	PD1	I/O	FSMC_D3	
85	PD4	I/O	FSMC_NOE	
86	PD5	I/O	FSMC_NWE	
88	PD7	I/O	FSMC_NE1	
94	BOOT0	Boot		
99	VSS	Power		
100	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. FSMC

NOR Flash/PSRAM/SRAM/ROM/LCD 1

Chip Select: set

Memory type: LCD Interface

LCD Register Select: A16

Data: 16 bits

5.1.1. NOR/PSRAM 1:

NOR/PSRAM control:	
Memory type	LCD Interface
Bank	Bank 1 NOR/PSRAM 1
Write operation	Enabled
Extended mode	Disabled
NOR/PSRAM timing:	
Address setup time in HCLK clock cycles	**0x02 ***
Data setup time in HCLK clock cycles	**0x05 ***
Bus turn around time in HCLK clock cycles	**0x00 ***

5.2. SPI2

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)	**32 ***
Baud Rate	**1.3125 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

5.3. SYS

Timebase Source: SysTick

5.4. USART3

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

*** User modified value**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
FSMC	PE7	FSMC_D4	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PE8	FSMC_D5	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PE9	FSMC_D6	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PE10	FSMC_D7	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PE11	FSMC_D8	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PE12	FSMC_D9	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PE13	FSMC_D10	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PE14	FSMC_D11	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PE15	FSMC_D12	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD8	FSMC_D13	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD9	FSMC_D14	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD10	FSMC_D15	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD11	FSMC_A16	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD14	FSMC_D0	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD15	FSMC_D1	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD0	FSMC_D2	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD1	FSMC_D3	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD4	FSMC_NOE	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD5	FSMC_NWE	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD7	FSMC_NE1	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
SPI2	PB13	SPI2_SCK	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	LCDTP_CLK
	PB14	SPI2_MISO	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	LCDTP_DOUT
	PB15	SPI2_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	LCDTP_DIN
USART3	PC10	USART3_TX	Alternate Function Push Pull	Pull-up	**Very High ***	
	PC11	USART3_RX	Alternate Function Push Pull	Pull-up	**Very High ***	
GPIO	PC4	GPIO_Output	Output Push Pull	**Pull-down ***	Low	LCDTP_CS
	PC5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	LCDTP_IRQ
	PB0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	BL_PWM

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
SPI2 global interrupt	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC 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	STM32F407VETx
Datasheet	022152_Rev7

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	LCD
Project Folder	D:\Open407V-C-Demo-HAL\23.LCD_Touch\LCD
Toolchain / IDE	MDK-ARM V5
Firmware Package Name and Version	STM32Cube FW_F4 V1.14.0

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)	No