1. Description

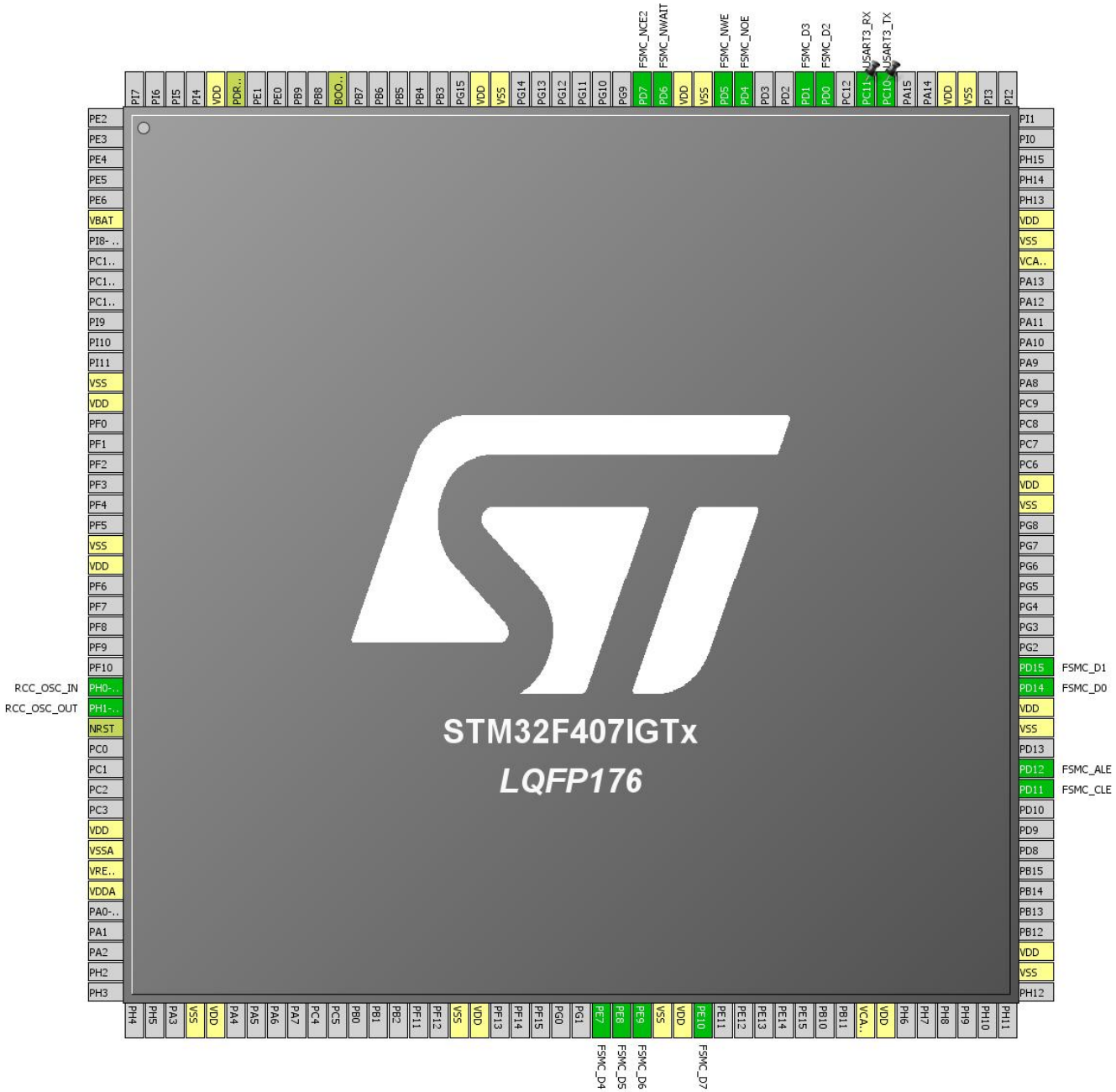
1.1. Project

Project Name	NAND
Board Name	NAND
Generated with:	STM32CubeMX 4.19.0
Date	03/15/2017

1.2. MCU

MCU Series	STM32F4
MCU Line	STM32F407/417
MCU name	STM32F407IGTx
MCU Package	LQFP176
MCU Pin number	176

2. Pinout Configuration

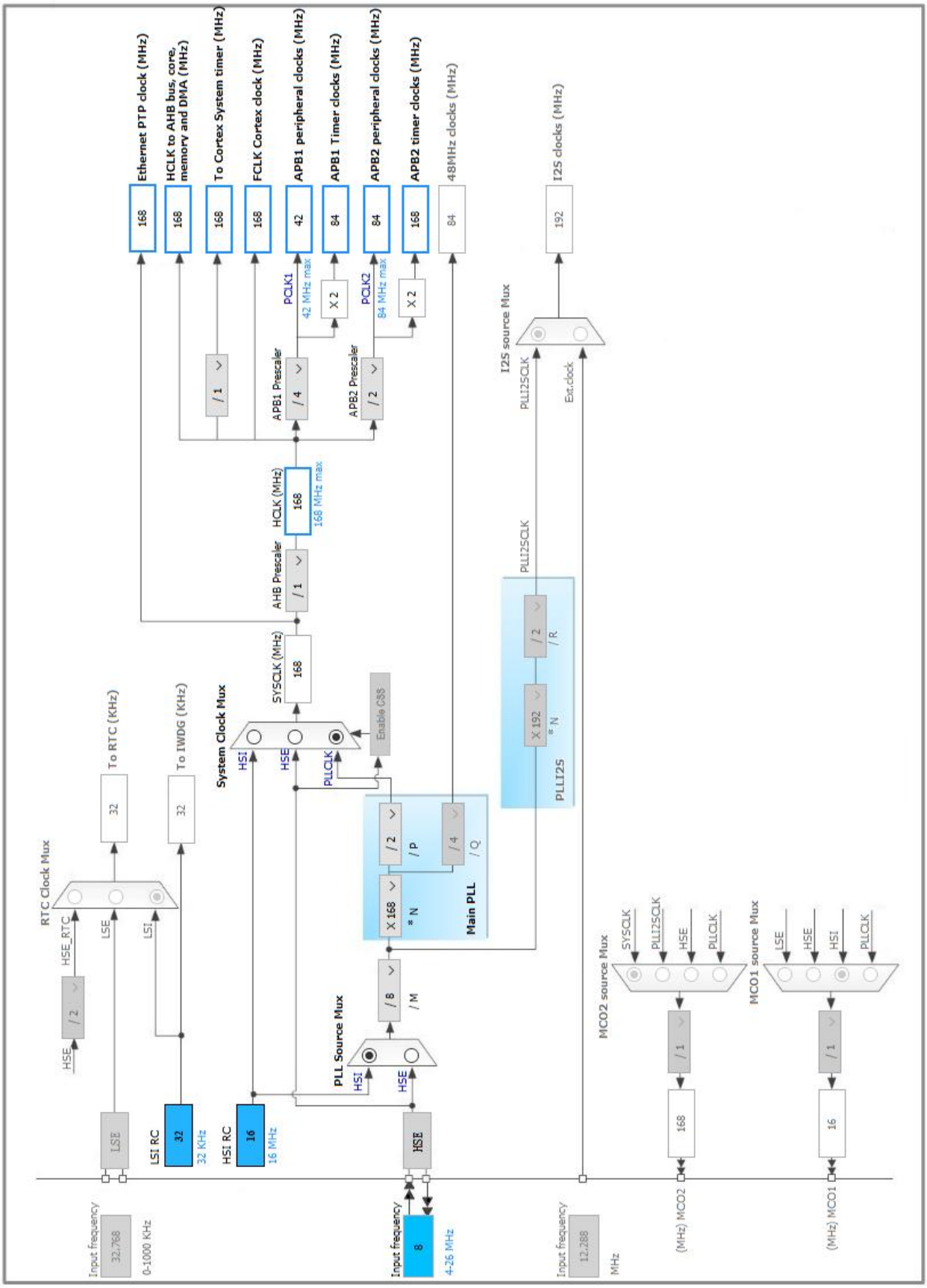


3. Pins Configuration

Pin Number LQFP176	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
6	VBAT	Power		
14	VSS	Power		
15	VDD	Power		
22	VSS	Power		
23	VDD	Power		
29	PH0-OSC_IN	I/O	RCC_OSC_IN	
30	PH1-OSC_OUT	I/O	RCC_OSC_OUT	
31	NRST	Reset		
36	VDD	Power		
37	VSSA	Power		
38	VREF+	Power		
39	VDDA	Power		
48	VSS	Power		
49	VDD	Power		
61	VSS	Power		
62	VDD	Power		
68	PE7	I/O	FSMC_D4	
69	PE8	I/O	FSMC_D5	
70	PE9	I/O	FSMC_D6	
71	VSS	Power		
72	VDD	Power		
73	PE10	I/O	FSMC_D7	
81	VCAP_1	Power		
82	VDD	Power		
90	VSS	Power		
91	VDD	Power		
99	PD11	I/O	FSMC_CLE	
100	PD12	I/O	FSMC_ALE	
102	VSS	Power		
103	VDD	Power		
104	PD14	I/O	FSMC_D0	
105	PD15	I/O	FSMC_D1	
113	VSS	Power		
114	VDD	Power		
125	VCAP_2	Power		
126	VSS	Power		

Pin Number LQFP176	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
127	VDD	Power		
135	VSS	Power		
136	VDD	Power		
139	PC10	I/O	USART3_TX	
140	PC11	I/O	USART3_RX	
142	PD0	I/O	FSMC_D2	
143	PD1	I/O	FSMC_D3	
146	PD4	I/O	FSMC_NOE	
147	PD5	I/O	FSMC_NWE	
148	VSS	Power		
149	VDD	Power		
150	PD6	I/O	FSMC_NWAIT	
151	PD7	I/O	FSMC_NCE2	
158	VSS	Power		
159	VDD	Power		
166	BOOT0	Boot		
171	PDR_ON	Reset		
172	VDD	Power		

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. FSMC

NAND Flash 1

Chip Select: NCE2

Data/Address: 8 bits

Ready or busy: NWAIT

5.1.1. NAND 1:

NAND control:

Bank	NAND bank 2
ECC computation	**Enabled ***
ECC page size	**2048 bytes ***
CLE low to RE low delay in HCLK cycles	**1 ***
ALE low to RE low delay in HCLK cycles	**1 ***

NAND common space timing in HCLK cycles:

Common space setup time	**1 ***
Common space wait time	**3 ***
Common space hold time	**3 ***
Common space Hi-Z time	**2 ***

NAND attribute space timing in HCLK cycles:

Attribute space setup time	**1 ***
Attribute space wait time	**3 ***
Attribute space hold time	**3 ***
Attribute space Hi-Z time	**2 ***

NAND characteristic information:

Page size	**0x0800 ***
Spare area size	**0x0040 ***
Block size	**0x0040 ***
Block number	**0x0400 ***
Zone size	**0x0400 ***

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)	5 WS (6 CPU cycle)

RCC Parameters:

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

Power Parameters:

Power Regulatror Voltage Scale	Power Regulator Voltage Scale 1

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	
	PD11	FSMC_CLE	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD12	FSMC_ALE	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	
	PD6	FSMC_NWAIT	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD7	FSMC_NCE2	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
RCC	PH0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PH1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
USART3	PC10	USART3_TX	Alternate Function Push Pull	Pull-up	**Very High ***	
	PC11	USART3_RX	Alternate Function Push Pull	Pull-up	**Very High ***	

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
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
USART3 global interrupt	unused		
FSMC 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	STM32F407IGTx
Datasheet	022152_Rev7

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	NAND
Project Folder	E:\EVK407I-Demo-HAL\6.NAND\NAND
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