

## 1. Description

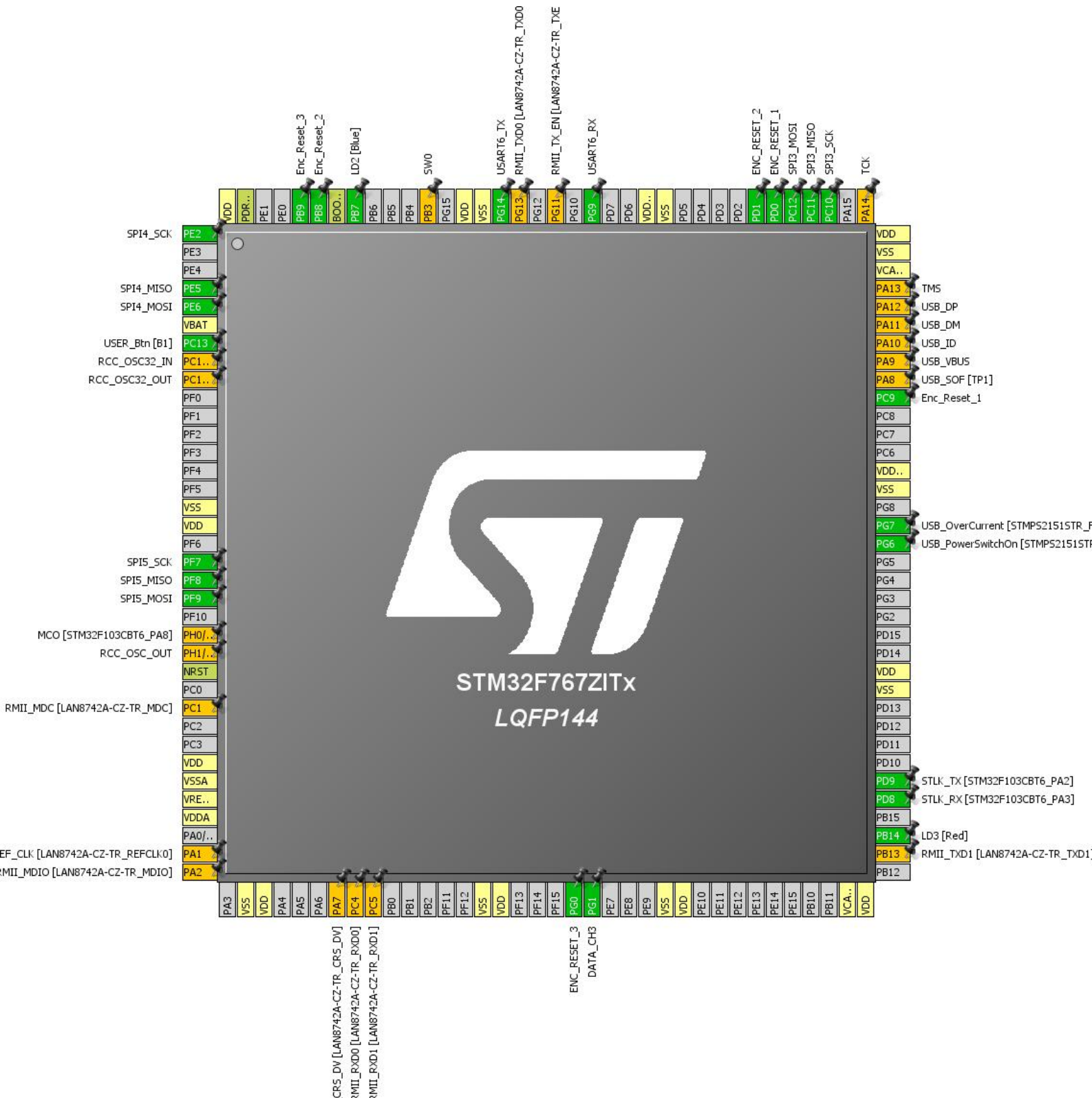
### 1.1. Project

Project Name	kiritsu
Board Name	NUCLEO-F767ZI
Generated with:	STM32CubeMX 4.23.0
Date	02/06/2018

### 1.2. MCU

MCU Series	STM32F7
MCU Line	STM32F7x7
MCU name	STM32F767ZITx
MCU Package	LQFP144
MCU Pin number	144

## 2. Pinout Configuration



### 3. Pins Configuration

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	PE2	I/O	SPI4_SCK	
4	PE5	I/O	SPI4_MISO	
5	PE6	I/O	SPI4_MOSI	
6	VBAT	Power		
7	PC13	I/O	GPIO_EXTI13	USER_Btn [B1]
8	PC14/OSC32_IN *	I/O	RCC_OSC32_IN	
9	PC15/OSC32_OUT *	I/O	RCC_OSC32_OUT	
16	VSS	Power		
17	VDD	Power		
19	PF7	I/O	SPI5_SCK	
20	PF8	I/O	SPI5_MISO	
21	PF9	I/O	SPI5_MOSI	
23	PH0/OSC_IN *	I/O	RCC_OSC_IN	MCO [STM32F103CBT6_PA8]
24	PH1/OSC_OUT *	I/O	RCC_OSC_OUT	
25	NRST	Reset		
27	PC1 *	I/O	ETH_MDC	RMII_MDC [LAN8742A-CZ- TR_MDC]
30	VDD	Power		
31	VSSA	Power		
32	VREF+	Power		
33	VDDA	Power		
35	PA1 *	I/O	ETH_REF_CLK	RMII_REF_CLK [LAN8742A-CZ- TR_REFCLK0]
36	PA2 *	I/O	ETH_MDIO	RMII_MDIO [LAN8742A-CZ- TR_MDIO]
38	VSS	Power		
39	VDD	Power		
43	PA7 *	I/O	ETH_CRS_DV	RMII_CRS_DV [LAN8742A- CZ-TR_CRS_DV]
44	PC4 *	I/O	ETH_RXD0	RMII_RXD0 [LAN8742A-CZ- TR_RXD0]
45	PC5 *	I/O	ETH_RXD1	RMII_RXD1 [LAN8742A-CZ- TR_RXD1]
51	VSS	Power		
52	VDD	Power		

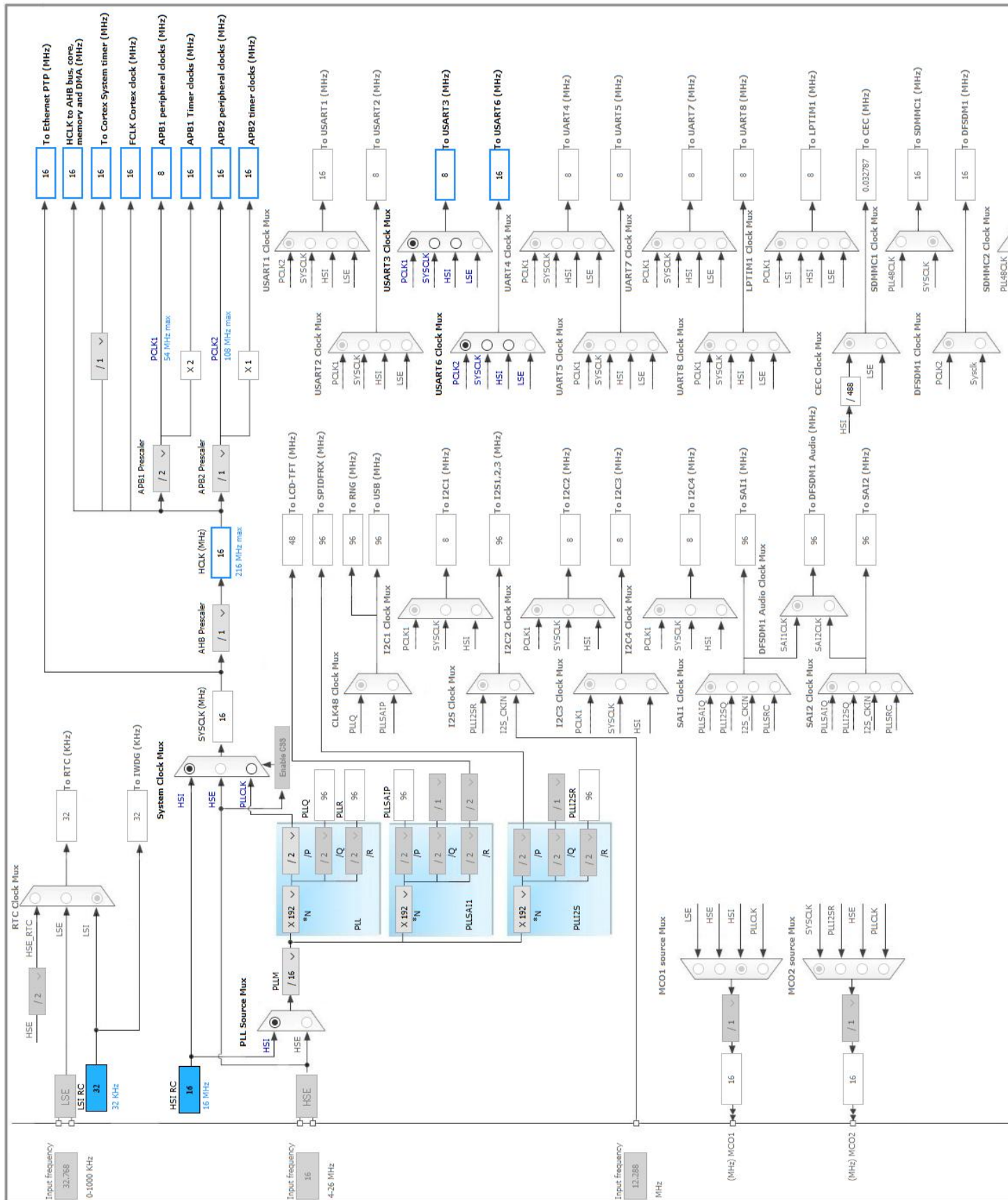
Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
56	PG0 **	I/O	GPIO_Output	ENC_RESET_3
57	PG1 **	I/O	GPIO_Input	DATA_CH3
61	VSS	Power		
62	VDD	Power		
71	VCAP_1	Power		
72	VDD	Power		
74	PB13 *	I/O	ETH_TXD1	RMII_TXD1 [LAN8742A-CZ- TR_TXD1]
75	PB14 **	I/O	GPIO_Output	LD3 [Red]
77	PD8	I/O	USART3_TX	STLK_RX [STM32F103CBT6_PA3]
78	PD9	I/O	USART3_RX	STLK_TX [STM32F103CBT6_PA2]
83	VSS	Power		
84	VDD	Power		
91	PG6 **	I/O	GPIO_Output	USB_PowerSwitchOn [STMP2151STR_EN]
92	PG7 **	I/O	GPIO_Input	USB_OverCurrent [STMP2151STR_FAULT]
94	VSS	Power		
95	VDDUSB	Power		
99	PC9 **	I/O	GPIO_Output	Enc_Reset_1
100	PA8 *	I/O	USB_OTG_FS_SOF	USB_SOF [TP1]
101	PA9 *	I/O	USB_OTG_FS_VBUS	USB_VBUS
102	PA10 *	I/O	USB_OTG_FS_ID	USB_ID
103	PA11 *	I/O	USB_OTG_FS_DM	USB_DM
104	PA12 *	I/O	USB_OTG_FS_DP	USB_DP
105	PA13 *	I/O	SYS_JTMS-SWDIO	TMS
106	VCAP_2	Power		
107	VSS	Power		
108	VDD	Power		
109	PA14 *	I/O	SYS_JTCK-SWCLK	TCK
111	PC10	I/O	SPI3_SCK	
112	PC11	I/O	SPI3_MISO	
113	PC12	I/O	SPI3_MOSI	
114	PD0 **	I/O	GPIO_Output	ENC_RESET_1
115	PD1 **	I/O	GPIO_Output	ENC_RESET_2
120	VSS	Power		
121	VDDSDMMC	Power		
124	PG9	I/O	USART6_RX	

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
126	PG11 *	I/O	ETH_TX_EN	RMII_TX_EN [LAN8742A- CZ-TR_TXEN]
128	PG13 *	I/O	ETH_TXD0	RMII_TXD0 [LAN8742A-CZ- TR_TXD0]
129	PG14	I/O	USART6_TX	
130	VSS	Power		
131	VDD	Power		
133	PB3 *	I/O	SYS_JTDO-SWO	SW0
137	PB7 **	I/O	GPIO_Output	LD2 [Blue]
138	BOOT0	Boot		
139	PB8 **	I/O	GPIO_Output	Enc_Reset_2
140	PB9 **	I/O	GPIO_Output	Enc_Reset_3
143	PDR_ON	Reset		
144	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. SPI3

**Mode: Full-Duplex Master**

#### 5.1.1. Parameter Settings:

##### Basic Parameters:

Frame Format	Motorola
Data Size	<b>8 Bits *</b>
First Bit	MSB First

##### Clock Parameters:

Prescaler (for Baud Rate)	<b>16 *</b>
Baud Rate	<b>500.0 KBits/s *</b>
Clock Polarity (CPOL)	<b>High *</b>
Clock Phase (CPHA)	<b>2 Edge *</b>

##### Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

### 5.2. SPI4

**Mode: Full-Duplex Master**

#### 5.2.1. Parameter Settings:

##### Basic Parameters:

Frame Format	Motorola
Data Size	<b>8 Bits *</b>
First Bit	MSB First

##### Clock Parameters:

Prescaler (for Baud Rate)	<b>16 *</b>
Baud Rate	<b>1000.0 KBits/s *</b>
Clock Polarity (CPOL)	<b>High *</b>
Clock Phase (CPHA)	<b>2 Edge *</b>

**Advanced Parameters:**

CRC Calculation	Disabled
NSS Signal Type	Software

### 5.3. SPI5

**Mode: Full-Duplex Master**

#### 5.3.1. Parameter Settings:

**Basic Parameters:**

Frame Format	Motorola
Data Size	<b>8 Bits *</b>
First Bit	MSB First

**Clock Parameters:**

Prescaler (for Baud Rate)	<b>16 *</b>
Baud Rate	<b>1000.0 KBits/s *</b>
Clock Polarity (CPOL)	<b>High *</b>
Clock Phase (CPHA)	<b>2 Edge *</b>

**Advanced Parameters:**

CRC Calculation	Disabled
NSS Signal Type	Software

### 5.4. SYS

**Timebase Source: SysTick**

### 5.5. USART3

**Mode: Asynchronous**

#### 5.5.1. Parameter Settings:

**Basic Parameters:**

Baud Rate	115200
Word Length	<b>8 Bits (including Parity) *</b>
Parity	None
Stop Bits	1



**Advanced Parameters:**

Data Direction	Receive and Transmit
Over Sampling	16 Samples
Single Sample	Disable

**Advanced Features:**

Auto Baudrate	Disable
TX Pin Active Level Inversion	Disable
RX Pin Active Level Inversion	Disable
Data Inversion	Disable
TX and RX Pins Swapping	Disable
Overrun	Enable
DMA on RX Error	Enable
MSB First	Disable

## 5.6. USART6

**Mode: Asynchronous**

### 5.6.1. Parameter Settings:

**Basic Parameters:**

Baud Rate	115200
Word Length	<b>8 Bits (including Parity) *</b>
Parity	None
Stop Bits	1

**Advanced Parameters:**

Data Direction	Receive and Transmit
Over Sampling	16 Samples
Single Sample	Disable

**Advanced Features:**

Auto Baudrate	Disable
TX Pin Active Level Inversion	Disable
RX Pin Active Level Inversion	Disable
Data Inversion	Disable
TX and RX Pins Swapping	Disable
Overrun	Enable
DMA on RX Error	Enable
MSB First	Disable

**\* User modified value**

## 6. System Configuration

### 6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
SPI3	PC10	SPI3_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PC11	SPI3_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PC12	SPI3_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
SPI4	PE2	SPI4_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PE5	SPI4_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PE6	SPI4_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
SPI5	PF7	SPI5_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PF8	SPI5_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PF9	SPI5_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
USART3	PD8	USART3_TX	Alternate Function Push Pull	Pull-up	Very High *	STLK_RX [STM32F103CBT6_PA3]
	PD9	USART3_RX	Alternate Function Push Pull	Pull-up	Very High *	STLK_TX [STM32F103CBT6_PA2]
USART6	PG9	USART6_RX	Alternate Function Push Pull	Pull-up	Very High *	
	PG14	USART6_TX	Alternate Function Push Pull	Pull-up	Very High *	
Single Mapped Signals	PC14/OSC32_IN	RCC_OSC32_IN	n/a	n/a	n/a	
	PC15/OSC32_OUT	RCC_OSC32_OUT	n/a	n/a	n/a	
	PH0/OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	MCO [STM32F103CBT6_PA8]

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PH1/OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
	PC1	ETH_MDC	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_MDC [LAN8742A-CZ-TR_MDC]
	PA1	ETH_REF_CLK	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_REF_CLK [LAN8742A-CZ-TR_REFCLK0]
	PA2	ETH_MDIO	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_MDIO [LAN8742A-CZ-TR_MDIO]
	PA7	ETH_CRS_DV	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_CRS_DV [LAN8742A-CZ-TR_CRS_DV]
	PC4	ETH_RXD0	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_RXD0 [LAN8742A-CZ-TR_RXD0]
	PC5	ETH_RXD1	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_RXD1 [LAN8742A-CZ-TR_RXD1]
	PB13	ETH_TXD1	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_TXD1 [LAN8742A-CZ-TR_TXD1]
	PA8	USB_OTG_FS_SOF	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	USB_SOF [TP1]
	PA9	USB_OTG_FS_VBUS	Input mode	No pull-up and no pull-down	n/a	USB_VBUS
	PA10	USB_OTG_FS_ID	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	USB_ID
	PA11	USB_OTG_FS_DM	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	USB_DM
	PA12	USB_OTG_FS_DP	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	USB_DP
	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	TMS
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	TCK
	PG11	ETH_TX_EN	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_TX_EN [LAN8742A-CZ-TR_TXEN]
	PG13	ETH_TXD0	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_TXD0 [LAN8742A-CZ-TR_TXD0]
	PB3	SYS_JTDO-SWO	n/a	n/a	n/a	SW0
GPIO	PC13	GPIO_EXTI13	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	USER_Btn [B1]

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PG0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ENC_RESET_3
	PG1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DATA_CH3
	PB14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD3 [Red]
	PG6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	USB_PowerSwitchOn [STMPS2151STR_EN]
	PG7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	USB_OverCurrent [STMPS2151STR_FAULT]
	PC9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Enc_Reset_1
	PD0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ENC_RESET_1
	PD1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ENC_RESET_2
	PB7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD2 [Blue]
	PB8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Enc_Reset_2
	PB9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Enc_Reset_3

## 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		
EXTI line[15:10] interrupts	unused		
SPI3 global interrupt	unused		
USART6 global interrupt	unused		
FPU global interrupt	unused		
SPI4 global interrupt	unused		
SPI5 global interrupt	unused		

\* User modified value

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

### 7.1. Microcontroller Selection

Series	STM32F7
Line	STM32F7x7
MCU	STM32F767ZITx
Datasheet	029041_Rev4

### 7.2. Parameter Selection

Temperature	25
Vdd	3.6

## 8. Software Project

### 8.1. Project Settings

Name	Value
Project Name	kiritsu
Project Folder	C:\Users\morita\Desktop\NUCLEO-F767-CubeX\kiritsu
Toolchain / IDE	SW4STM32
Firmware Package Name and Version	STM32Cube FW_F7 V1.8.0

### 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