1. Description

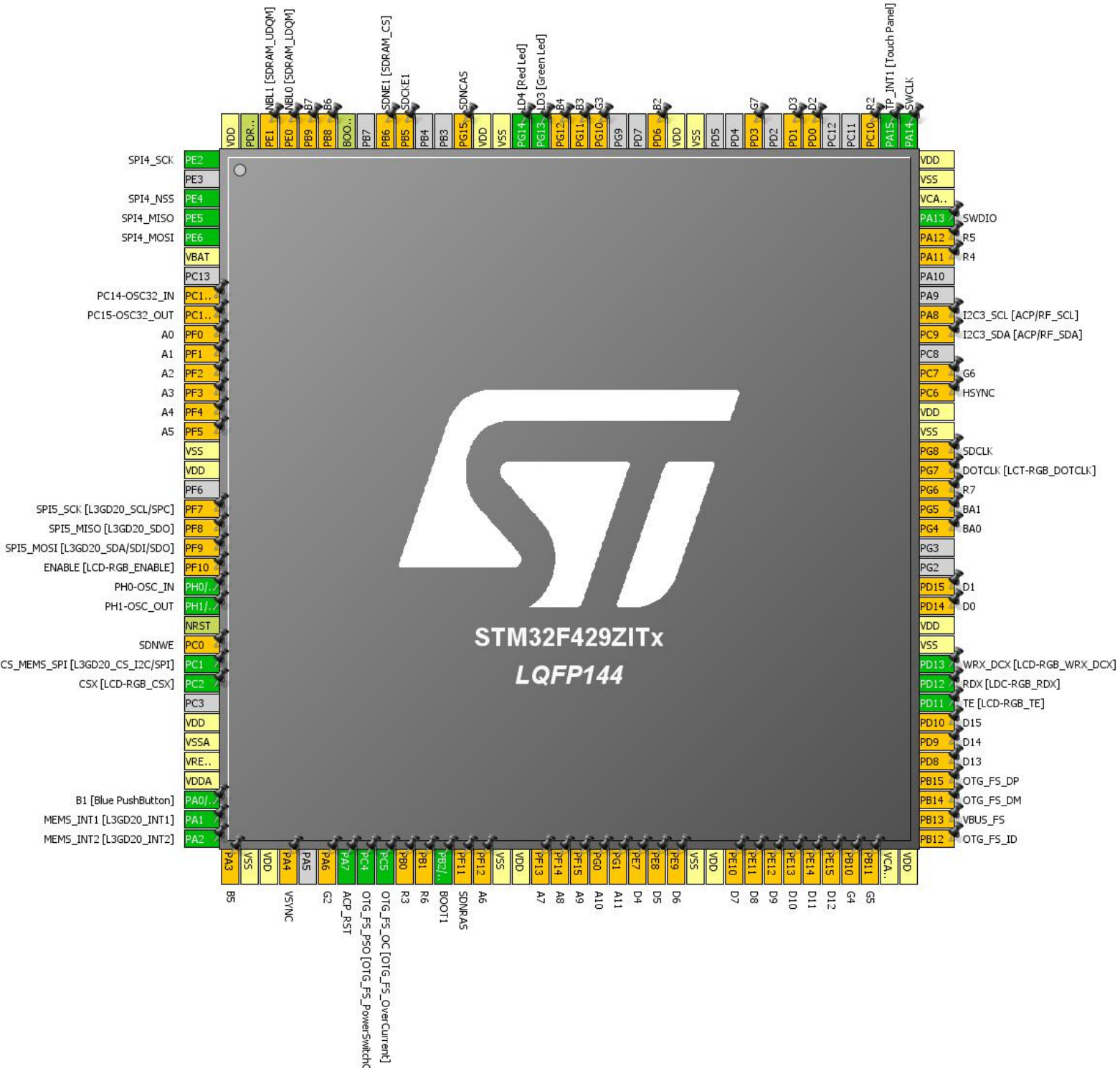
1.1. Project

Project Name	RFID_DETECTOR
Board Name	STM32F429I-DISCO
Generated with:	STM32CubeMX 4.9.0
Date	10/01/2015

1.2. MCU

MCU Series	STM32F4
MCU Line	STM32F429/439
MCU name	STM32F429ZITx
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	
3	PE4	I/O	SPI4_NSS	
4	PE5	I/O	SPI4_MISO	
5	PE6	I/O	SPI4_MOSI	
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	PF0 *	I/O	FMC_A0	A0
11	PF1 *	I/O	FMC_A1	A1
12	PF2 *	I/O	FMC_A2	A2
13	PF3 *	I/O	FMC_A3	A3
14	PF4 *	I/O	FMC_A4	A4
15	PF5 *	I/O	FMC_A5	A5
16	VSS	Power		
17	VDD	Power		
19	PF7 *	I/O	SPI5_SCK	SPI5_SCK [L3GD20_SCL/SPC]
20	PF8 *	I/O	SPI5_MISO	SPI5_MISO [L3GD20_SDO]
21	PF9 *	I/O	SPI5_MOSI	SPI5_MOSI [L3GD20_SDA/SDI/SDO]
22	PF10 *	I/O	LTDC_DE	ENABLE [LCD-RGB_ENABLE]
23	PH0/OSC_IN	I/O	RCC_OSC_IN	PH0-OSC_IN
24	PH1/OSC_OUT	I/O	RCC_OSC_OUT	PH1-OSC_OUT
25	NRST	Reset		
26	PC0 *	I/O	FMC_SDNWE	SDNWE
27	PC1 **	I/O	GPIO_Output	NCS_MEMS_SPI [L3GD20_CS_I2C/SPI]
28	PC2 **	I/O	GPIO_Output	CSX [LCD-RGB_CSX]
30	VDD	Power		
31	VSSA	Power		
32	VREF+	Power		
33	VDDA	Power		
34	PA0/WKUP	I/O	GPIO_EXTI0	B1 [Blue PushButton]
35	PA1	I/O	GPIO_EXTI1	MEMS_INT1 [L3GD20_INT1]

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
36	PA2	I/O	GPIO_EXTI2	MEMS_INT2 [L3GD20_INT2]
37	PA3 *	I/O	LTDC_B5	B5
38	VSS	Power		
39	VDD	Power		
40	PA4 *	I/O	LTDC_VSYNC	VSYNC
42	PA6 *	I/O	LTDC_G2	G2
43	PA7 **	I/O	GPIO_Output	ACP_RST
44	PC4 **	I/O	GPIO_Output	OTG_FS_PSO [OTG_FS_PowerSwitchOn]
45	PC5	I/O	GPIO_EXTI5	OTG_FS_OC [OTG_FS_OverCurrent]
46	PB0 *	I/O	LTDC_R3	R3
47	PB1 *	I/O	LTDC_R6	R6
48	PB2/BOOT1 **	I/O	GPIO_Input	BOOT1
49	PF11 *	I/O	FMC_SDNRAS	SDNRAS
50	PF12 *	I/O	FMC_A6	A6
51	VSS	Power		
52	VDD	Power		
53	PF13 *	I/O	FMC_A7	A7
54	PF14 *	I/O	FMC_A8	A8
55	PF15 *	I/O	FMC_A9	A9
56	PG0 *	I/O	FMC_A10	A10
57	PG1 *	I/O	FMC_A11	A11
58	PE7 *	I/O	FMC_D4	D4
59	PE8 *	I/O	FMC_D5	D5
60	PE9 *	I/O	FMC_D6	D6
61	VSS	Power		
62	VDD	Power		
63	PE10 *	I/O	FMC_D7	D7
64	PE11 *	I/O	FMC_D8	D8
65	PE12 *	I/O	FMC_D9	D9
66	PE13 *	I/O	FMC_D10	D10
67	PE14 *	I/O	FMC_D11	D11
68	PE15 *	I/O	FMC_D12	D12
69	PB10 *	I/O	LTDC_G4	G4
70	PB11 *	I/O	LTDC_G5	G5
71	VCAP_1	Power		
72	VDD	Power		
73	PB12 *	I/O	USB_OTG_HS_ID	OTG_FS_ID

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
74	PB13 *	I/O	USB_OTG_HS_VBUS	VBUS_FS
75	PB14 *	I/O	USB_OTG_HS_DM	OTG_FS_DM
76	PB15 *	I/O	USB_OTG_HS_DP	OTG_FS_DP
77	PD8 *	I/O	FMC_D13	D13
78	PD9 *	I/O	FMC_D14	D14
79	PD10 *	I/O	FMC_D15	D15
80	PD11 **	I/O	GPIO_Input	TE [LCD-RGB_TE]
81	PD12 **	I/O	GPIO_Output	RDX [LDC-RGB_RDX]
82	PD13 **	I/O	GPIO_Output	WRX_DCX [LCD-RGB_WRX_DCX]
83	VSS	Power		
84	VDD	Power		
85	PD14 *	I/O	FMC_D0	D0
86	PD15 *	I/O	FMC_D1	D1
89	PG4 *	I/O	FMC_BA0	BA0
90	PG5 *	I/O	FMC_BA1	BA1
91	PG6 *	I/O	LTDC_R7	R7
92	PG7 *	I/O	LTDC_CLK	DOTCLK [LCT-RGB_DOTCLK]
93	PG8 *	I/O	FMC_SDCLK	SDCLK
94	VSS	Power		
95	VDD	Power		
96	PC6 *	I/O	LTDC_HSYNC	HSYNC
97	PC7 *	I/O	LTDC_G6	G6
99	PC9 *	I/O	I2C3_SDA	I2C3_SDA [ACP/RF_SDA]
100	PA8 *	I/O	I2C3_SCL	I2C3_SCL [ACP/RF_SCL]
103	PA11 *	I/O	LTDC_R4	R4
104	PA12 *	I/O	LTDC_R5	R5
105	PA13	I/O	SYS_JTMS-SWDIO	SWDIO
106	VCAP_2	Power		
107	VSS	Power		
108	VDD	Power		
109	PA14	I/O	SYS_JTCK-SWCLK	SWCLK
110	PA15	I/O	GPIO_EXTI15	TP_INT1 [Touch Panel]
111	PC10 *	I/O	LTDC_R2	R2
114	PD0 *	I/O	FMC_D2	D2
115	PD1 *	I/O	FMC_D3	D3
117	PD3 *	I/O	LTDC_G7	G7
120	VSS	Power		
121	VDD	Power		

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
122	PD6 *	I/O	LTDC_B2	B2
125	PG10 *	I/O	LTDC_G3	G3
126	PG11 *	I/O	LTDC_B3	B3
127	PG12 *	I/O	LTDC_B4	B4
128	PG13 **	I/O	GPIO_Output	LD3 [Green Led]
129	PG14 **	I/O	GPIO_Output	LD4 [Red Led]
130	VSS	Power		
131	VDD	Power		
132	PG15 *	I/O	FMC_SDNCAS	SDNCAS
135	PB5 *	I/O	FMC_SDCKE1	SDCKE1
136	PB6 *	I/O	FMC_SDNE1	SDNE1 [SDRAM_CS]
138	BOOT0	Boot		
139	PB8 *	I/O	LTDC_B6	B6
140	PB9 *	I/O	LTDC_B7	B7
141	PE0 *	I/O	FMC_NBL0	NBL0 [SDRAM_LDQM]
142	PE1 *	I/O	FMC_NBL1	NBL1 [SDRAM_UDQM]
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. IPs and Middleware Configuration

4.1. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

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
TIM Prescaler Selection	Disabled

Power Parameters:

Power Regulatror Voltage Scale	Power Regulator Voltage Scale 1
Power Over Drive	Disabled

4.2. SPI4

Mode: Full-Duplex Master

mode: Hardware NSS Signal

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	**256 ***
Baud Rate	**328.125 KBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Output Hardware

4.3. SYS

Debug: Serial Wire Debug (SWD)

*** 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
SPI4	PE2	SPI4_SCK	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PE4	SPI4_NSS	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PE5	SPI4_MISO	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PE6	SPI4_MOSI	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
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
	PF0	FMC_A0	Alternate Function Push Pull	No pull-up and no pull-down	High	A0
	PF1	FMC_A1	Alternate Function Push Pull	No pull-up and no pull-down	High	A1
	PF2	FMC_A2	Alternate Function Push Pull	No pull-up and no pull-down	High	A2
	PF3	FMC_A3	Alternate Function Push Pull	No pull-up and no pull-down	High	A3
	PF4	FMC_A4	Alternate Function Push Pull	No pull-up and no pull-down	High	A4
	PF5	FMC_A5	Alternate Function Push Pull	No pull-up and no pull-down	High	A5
	PF7	SPI5_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Low	SPI5_SCK [L3GD20_SCL/SPC]
	PF8	SPI5_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Low	SPI5_MISO [L3GD20_SDO]
	PF9	SPI5_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Low	SPI5_MOSI [L3GD20_SDA/SDI/SDO]
	PF10	LTDC_DE	Alternate Function Push Pull	No pull-up and no pull-down	Low	ENABLE [LCD-RGB_ENABLE]
	PC0	FMC_SDNWE	Alternate Function Push Pull	No pull-up and no pull-down	High	SDNWE
	PA3	LTDC_B5	Alternate Function Push Pull	No pull-up and no pull-down	Low	B5
	PA4	LTDC_VSYNC	Alternate Function Push Pull	No pull-up and no pull-down	Low	VSYNC
	PA6	LTDC_G2	Alternate Function Push Pull	No pull-up and no pull-down	Low	G2
	PB0	LTDC_R3	Alternate Function Push Pull	No pull-up and no pull-down	Low	R3

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PB1	LTDC_R6	Alternate Function Push Pull	No pull-up and no pull-down	Low	R6
	PF11	FMC_SDNRAS	Alternate Function Push Pull	No pull-up and no pull-down	High	SDNRAS
	PF12	FMC_A6	Alternate Function Push Pull	No pull-up and no pull-down	High	A6
	PF13	FMC_A7	Alternate Function Push Pull	No pull-up and no pull-down	High	A7
	PF14	FMC_A8	Alternate Function Push Pull	No pull-up and no pull-down	High	A8
	PF15	FMC_A9	Alternate Function Push Pull	No pull-up and no pull-down	High	A9
	PG0	FMC_A10	Alternate Function Push Pull	No pull-up and no pull-down	High	A10
	PG1	FMC_A11	Alternate Function Push Pull	No pull-up and no pull-down	High	A11
	PE7	FMC_D4	Alternate Function Push Pull	No pull-up and no pull-down	High	D4
	PE8	FMC_D5	Alternate Function Push Pull	No pull-up and no pull-down	High	D5
	PE9	FMC_D6	Alternate Function Push Pull	No pull-up and no pull-down	High	D6
	PE10	FMC_D7	Alternate Function Push Pull	No pull-up and no pull-down	High	D7
	PE11	FMC_D8	Alternate Function Push Pull	No pull-up and no pull-down	High	D8
	PE12	FMC_D9	Alternate Function Push Pull	No pull-up and no pull-down	High	D9
	PE13	FMC_D10	Alternate Function Push Pull	No pull-up and no pull-down	High	D10
	PE14	FMC_D11	Alternate Function Push Pull	No pull-up and no pull-down	High	D11
	PE15	FMC_D12	Alternate Function Push Pull	No pull-up and no pull-down	High	D12
	PB10	LTDC_G4	Alternate Function Push Pull	No pull-up and no pull-down	Low	G4
	PB11	LTDC_G5	Alternate Function Push Pull	No pull-up and no pull-down	Low	G5
	PB12	USB_OTG_HS_ID	Alternate Function Push Pull	No pull-up and no pull-down	Low	OTG_FS_ID
	PB13	USB_OTG_HS_VBUS	Input mode	No pull-up and no pull-down	n/a	VBUS_FS
	PB14	USB_OTG_HS_DM	Alternate Function Push Pull	No pull-up and no pull-down	Low	OTG_FS_DM
	PB15	USB_OTG_HS_DP	Alternate Function Push Pull	No pull-up and no pull-down	Low	OTG_FS_DP
	PD8	FMC_D13	Alternate Function Push Pull	No pull-up and no pull-down	High	D13
	PD9	FMC_D14	Alternate Function Push Pull	No pull-up and no pull-down	High	D14
	PD10	FMC_D15	Alternate Function Push Pull	No pull-up and no pull-down	High	D15
	PD14	FMC_D0	Alternate Function Push Pull	No pull-up and no pull-down	High	D0
	PD15	FMC_D1	Alternate Function Push Pull	No pull-up and no pull-down	High	D1
	PG4	FMC_BA0	Alternate Function Push Pull	No pull-up and no pull-down	High	BA0
	PG5	FMC_BA1	Alternate Function Push Pull	No pull-up and no pull-down	High	BA1
	PG6	LTDC_R7	Alternate Function Push Pull	No pull-up and no pull-down	Low	R7
	PG7	LTDC_CLK	Alternate Function Push Pull	No pull-up and no pull-down	Low	DOTCLK [LCT-RGB_DOTCLK]
	PG8	FMC_SDCLK	Alternate Function Push Pull	No pull-up and no pull-down	High	SDCLK
	PC6	LTDC_HSYNC	Alternate Function Push Pull	No pull-up and no pull-down	Low	HSYNC
	PC7	LTDC_G6	Alternate Function Push Pull	No pull-up and no pull-down	Low	G6
	PC9	I2C3_SDA	Alternate Function Open Drain	Pull-up	Low	I2C3_SDA [ACP/RF_SDA]

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PA8	I2C3_SCL	Alternate Function Open Drain	Pull-up	Low	I2C3_SCL [ACP/RF_SCL]
	PA11	LTDC_R4	Alternate Function Push Pull	No pull-up and no pull-down	Low	R4
	PA12	LTDC_R5	Alternate Function Push Pull	No pull-up and no pull-down	Low	R5
	PC10	LTDC_R2	Alternate Function Push Pull	No pull-up and no pull-down	Low	R2
	PD0	FMC_D2	Alternate Function Push Pull	No pull-up and no pull-down	High	D2
	PD1	FMC_D3	Alternate Function Push Pull	No pull-up and no pull-down	High	D3
	PD3	LTDC_G7	Alternate Function Push Pull	No pull-up and no pull-down	Low	G7
	PD6	LTDC_B2	Alternate Function Push Pull	No pull-up and no pull-down	Low	B2
	PG10	LTDC_G3	Alternate Function Push Pull	No pull-up and no pull-down	Low	G3
	PG11	LTDC_B3	Alternate Function Push Pull	No pull-up and no pull-down	Low	B3
	PG12	LTDC_B4	Alternate Function Push Pull	No pull-up and no pull-down	Low	B4
	PG15	FMC_SDNCAS	Alternate Function Push Pull	No pull-up and no pull-down	High	SDNCAS
	PB5	FMC_SDCKE1	Alternate Function Push Pull	No pull-up and no pull-down	High	SDCKE1
	PB6	FMC_SDNE1	Alternate Function Push Pull	No pull-up and no pull-down	High	SDNE1 [SDRAM_CS]
	PB8	LTDC_B6	Alternate Function Push Pull	No pull-up and no pull-down	Low	B6
	PB9	LTDC_B7	Alternate Function Push Pull	No pull-up and no pull-down	Low	B7
	PE0	FMC_NBL0	Alternate Function Push Pull	No pull-up and no pull-down	High	NBL0 [SDRAM_LDQM]
	PE1	FMC_NBL1	Alternate Function Push Pull	No pull-up and no pull-down	High	NBL1 [SDRAM_UDQM]
GPIO	PC1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	NCS_MEMS_SPI [L3GD20_CS_I2C/SPI]
	PC2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	CSX [LCD-RGB_CSX]
	PA0/WKUP	GPIO_EXTI0	External Event Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	B1 [Blue PushButton]
	PA1	GPIO_EXTI1	External Event Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	MEMS_INT1 [L3GD20_INT1]
	PA2	GPIO_EXTI2	External Event Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	MEMS_INT2 [L3GD20_INT2]
	PA7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ACP_RST
	PC4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	OTG_FS_PSO [OTG_FS_PowerSwitchOn]
	PC5	GPIO_EXTI5	External Event Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	OTG_FS_OC [OTG_FS_OverCurrent]
	PB2/BOOT1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BOOT1
	PD11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	TE [LCD-RGB_TE]
	PD12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	RDX [LDC-RGB_RDX]
	PD13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	WRX_DCX [LCD-RGB_WRX_DCX]
	PA15	GPIO_EXTI15	External Event Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	TP_INT1 [Touch Panel]
	PG13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD3 [Green Led]

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PG14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD4 [Red Led]

5.2. DMA configuration

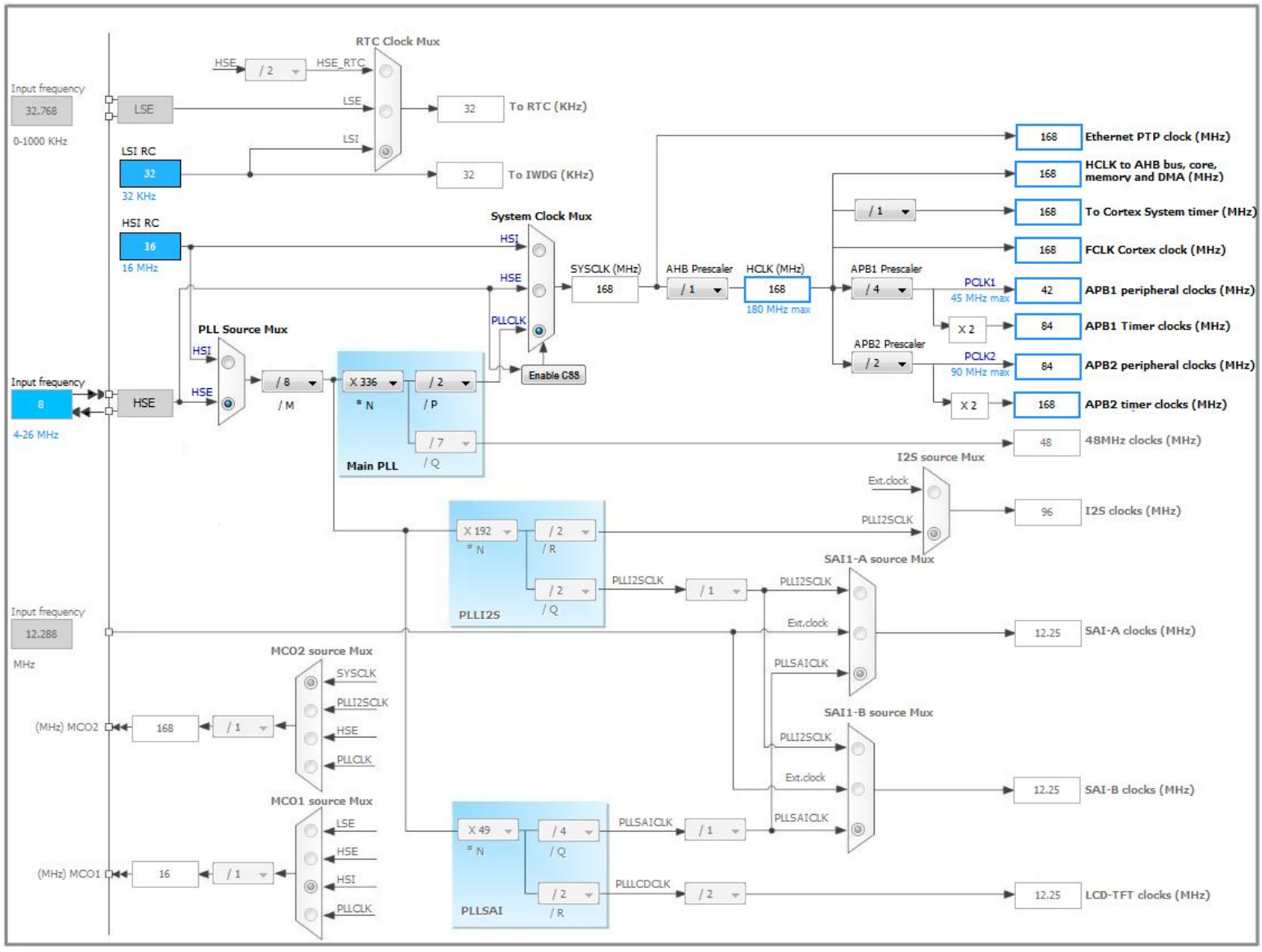
nothing configured in DMA service

5.3. NVIC configuration

Interrupt Table	Enable	Preenmption Priority	SubPriority
System tick timer	true	0	0
SPI4 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		
PVD through EXTI Line16 interrupt	unused		
RCC global interrupt	unused		

*** User modified value**

6. Clock Tree Configuration



7. Power Plugin report

7.1. Microcontroller Selection

Series	STM32F4
Line	STM32F429/439
MCU	STM32F429ZITx
Datasheet	024030_Rev5

7.2. Parameter Selection

Temperature	25
Vdd	null