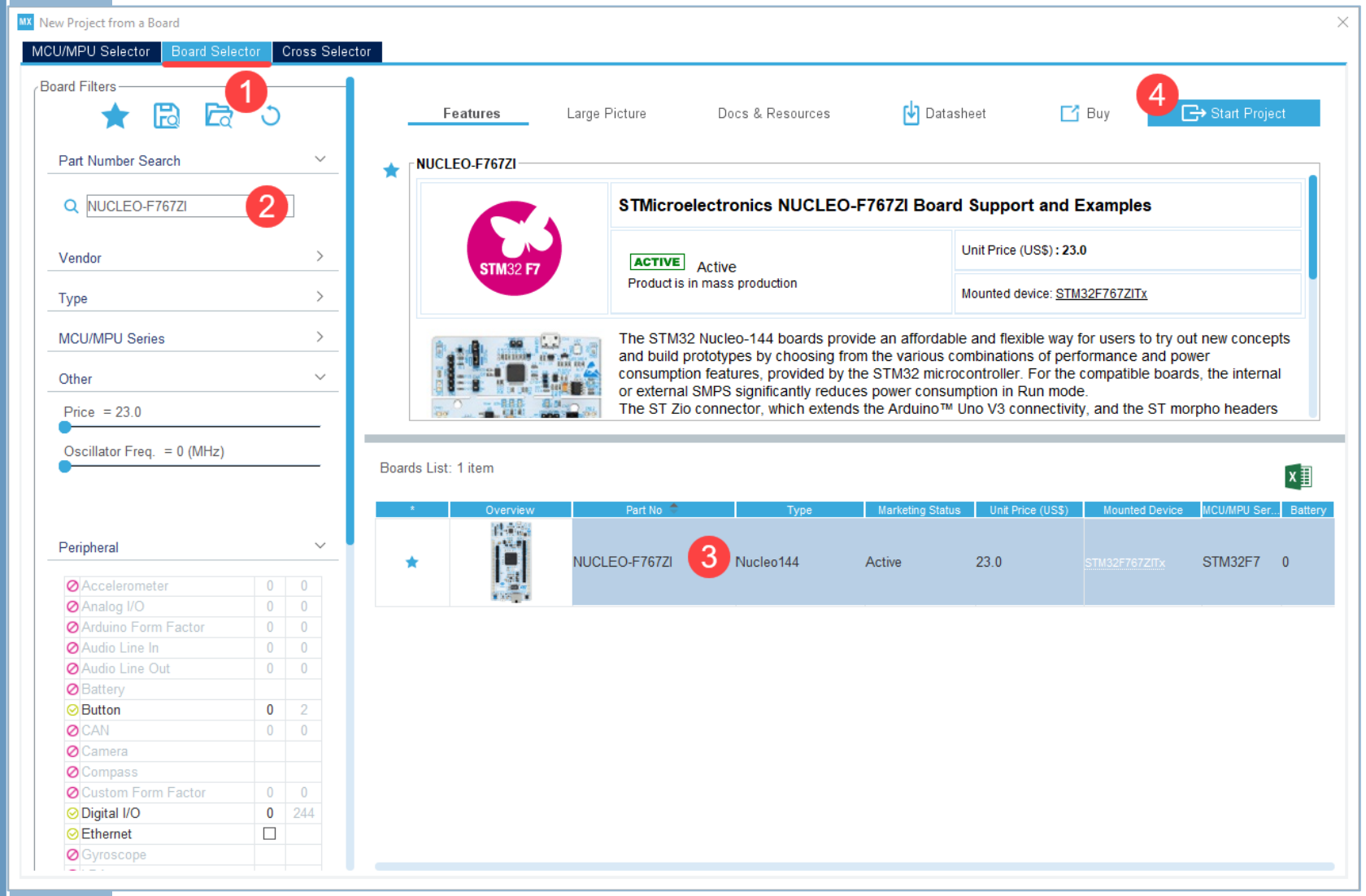
STM32CubeMX Board Selector

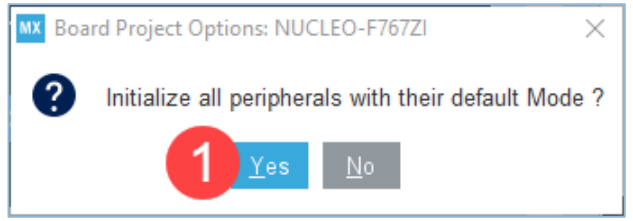
Microcontroller Application and Development 2564

Sorayut Glomglome

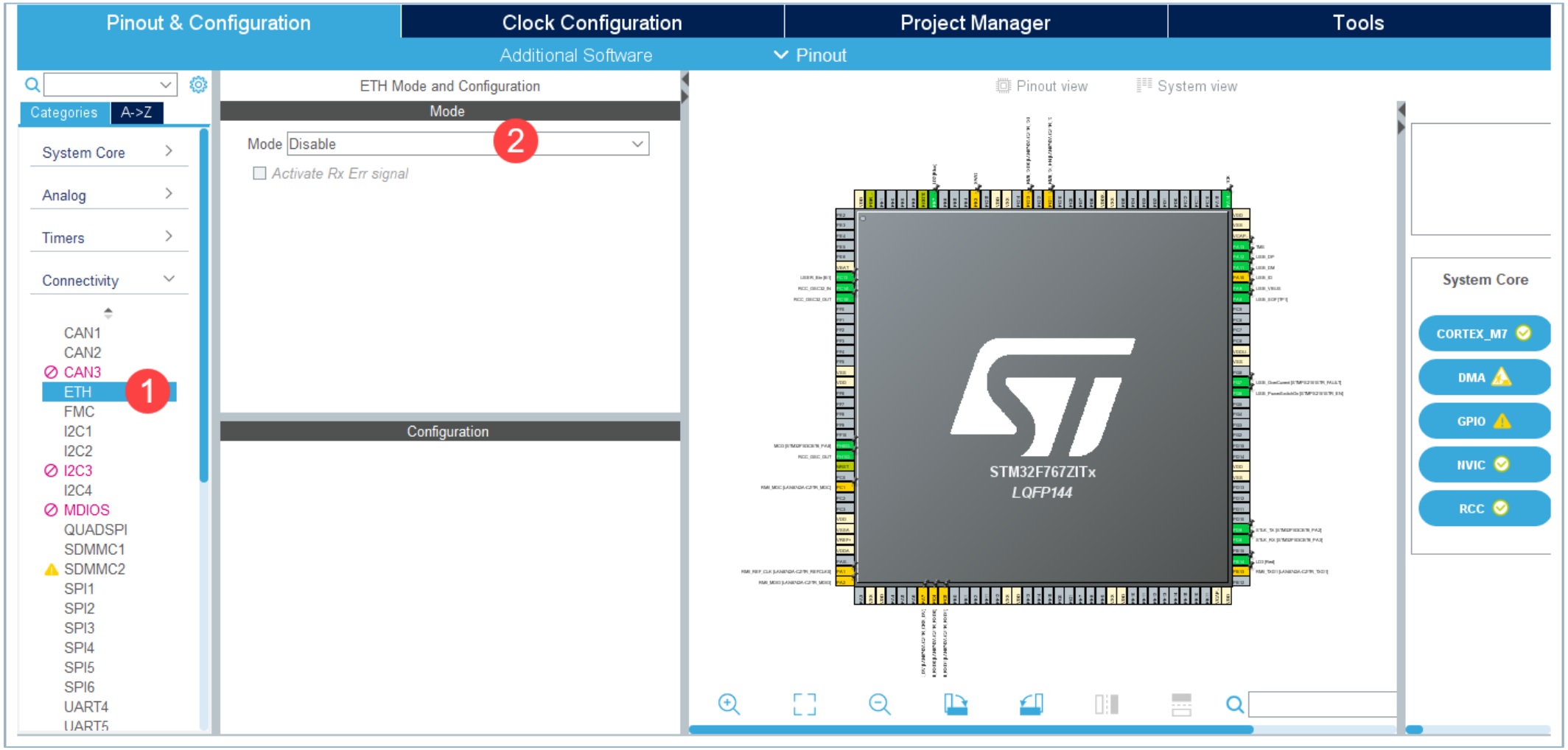
Nucleo-F767

Select Board

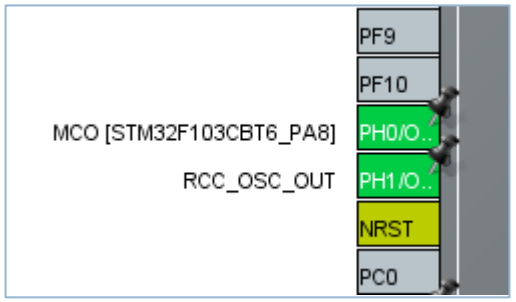


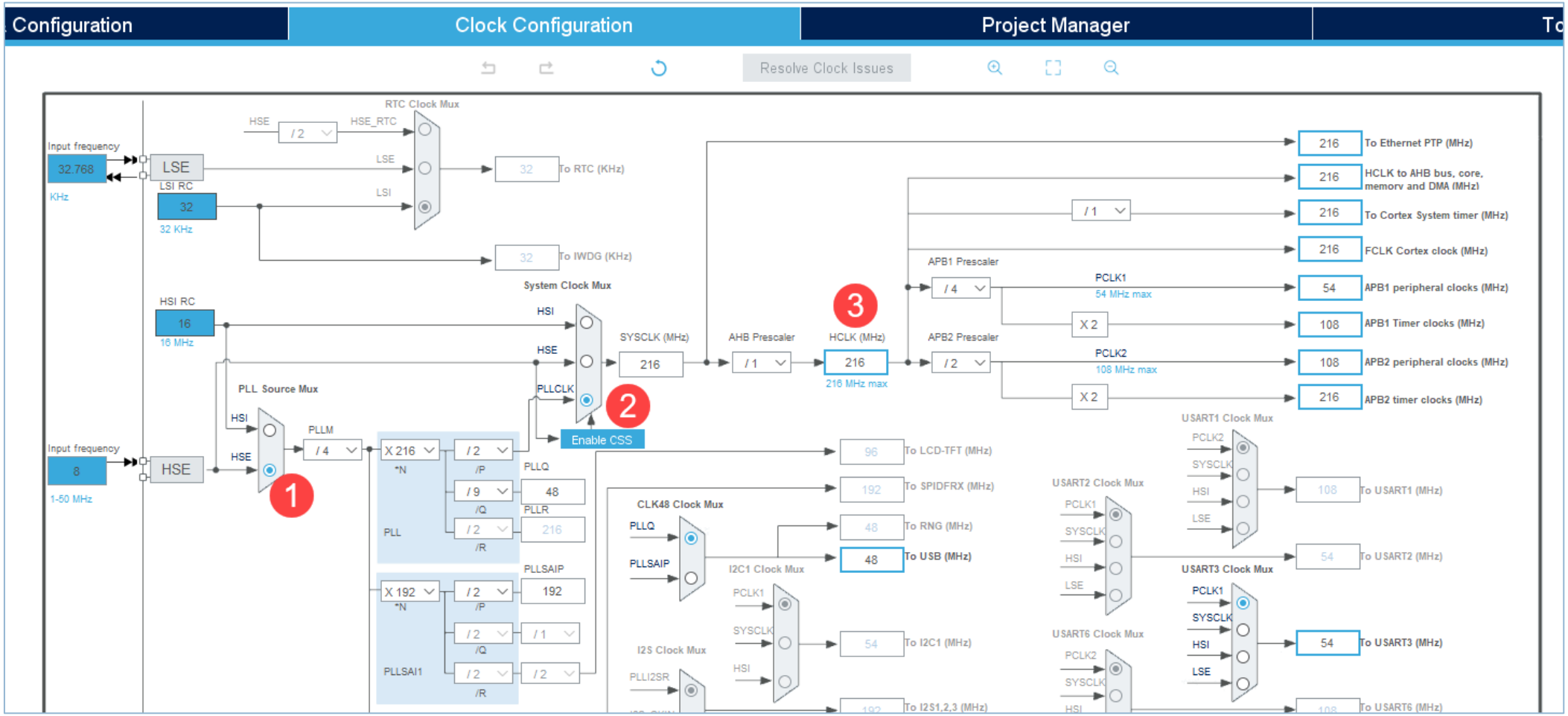


Disable Ethernet - caused slow init



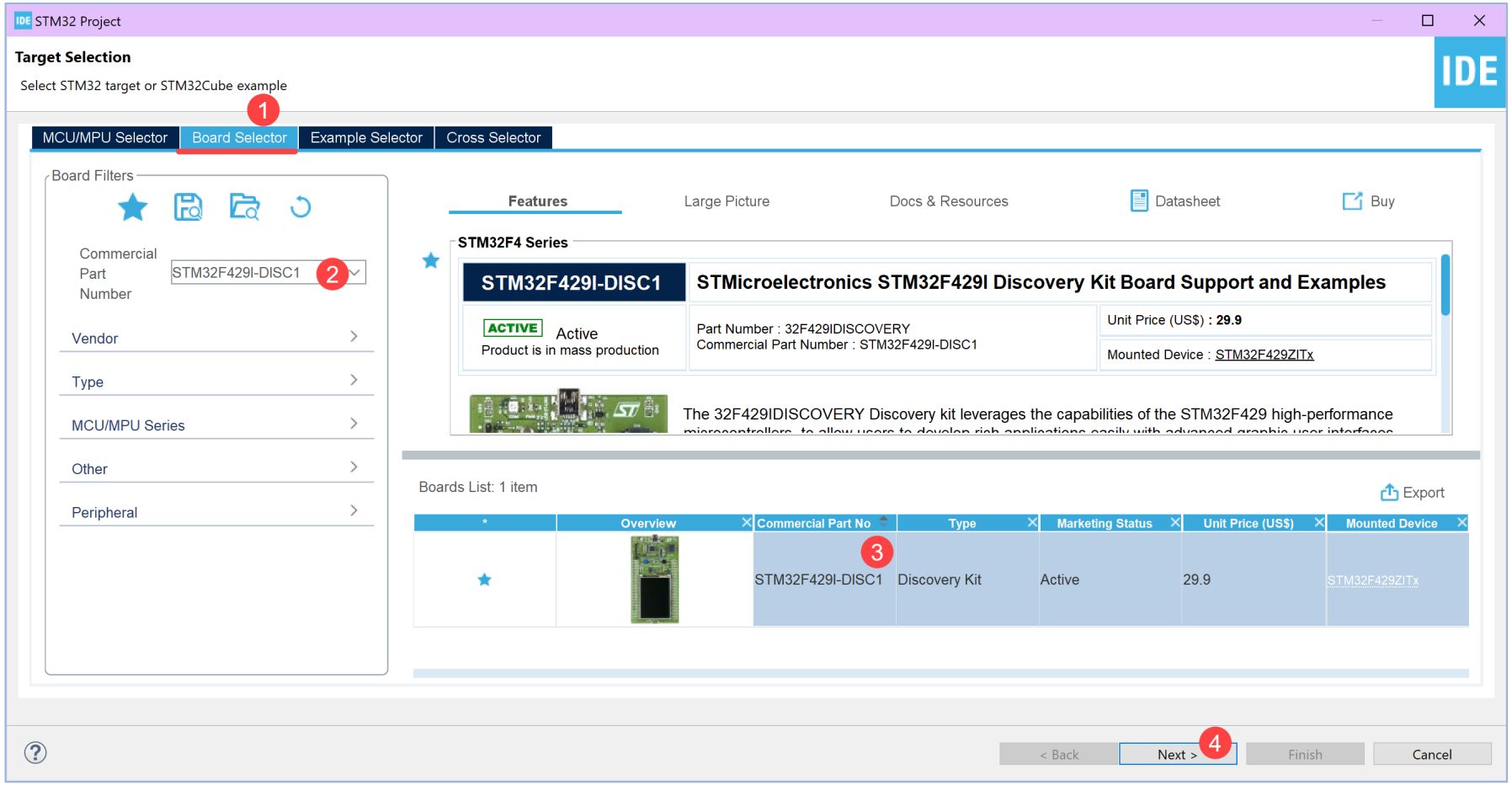
Enable HSE


MCO [STM32F103CBT6_PA8]
RCC_OSC_OUT
PF9
PF10
PH0/O..
PH1/O..
NRST
PC0

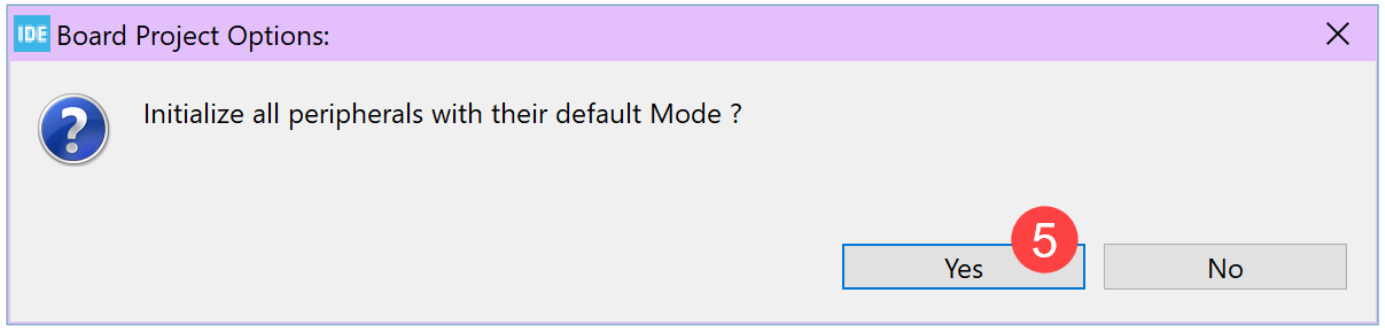

Configuration
Clock Configuration
Project Manager
Resolve Clock Issues
RTC Clock Mux
HSE
/ 2
HSE_RTC
LSE
LSI
Input frequency
32.768
KHz
LSE
LSI RC
32
32 KHz
32
To RTC (KHz)
32
To IWDG (KHz)
System Clock Mux
HSI RC
16
16 MHz
HSI
HSE
PLLCLK
SYSCLK (MHz)
216
AHB Prescaler
/ 1
HCLK (MHz)
216
216 MHz max
3
2
Enable CSS
PLL Source Mux
HSI
HSE
PLLM
/ 4
Input frequency
8
1-50 MHz
HSE
1
X 216
*N
/ 2
/P
/ 9
/Q
/ 2
/R
PLL
PLLQ
48
PLLR
216
PLLSAIP
192
X 192
*N
/ 2
/P
/ 2
/Q
/ 1
/ 2
/R
PLLSAI1
APB1 Prescaler
/ 4
PCLK1
54 MHz max
X 2
APB2 Prescaler
/ 2
PCLK2
108 MHz max
X 2
/ 1
216
To Ethernet PTP (MHz)
216
HCLK to AHB bus, core, memory and DMA (MHz)
216
To Cortex System timer (MHz)
216
FCLK Cortex clock (MHz)
54
APB1 peripheral clocks (MHz)
108
APB1 Timer clocks (MHz)
108
APB2 peripheral clocks (MHz)
216
APB2 timer clocks (MHz)
96
To LCD-TFT (MHz)
192
To SPIDFRX (MHz)
48
To RNG (MHz)
48
To USB (MHz)
CLK48 Clock Mux
PLLQ
PLLSAIP
I2C1 Clock Mux
PCLK1
SYSCLK
HSI
54
To I2C1 (MHz)
I2S Clock Mux
PLLI2SR
HSI
To I2S1,2,3 (MHz)
USART1 Clock Mux
PCLK2
SYSCLK
HSI
LSE
108
To USART1 (MHz)
USART2 Clock Mux
PCLK1
SYSCLK
HSI
LSE
54
To USART2 (MHz)
USART3 Clock Mux
PCLK1
SYSCLK
HSI
LSE
54
To USART3 (MHz)
USART6 Clock Mux
PCLK2
SYSCLK
HSI
To USART6 (MHz)

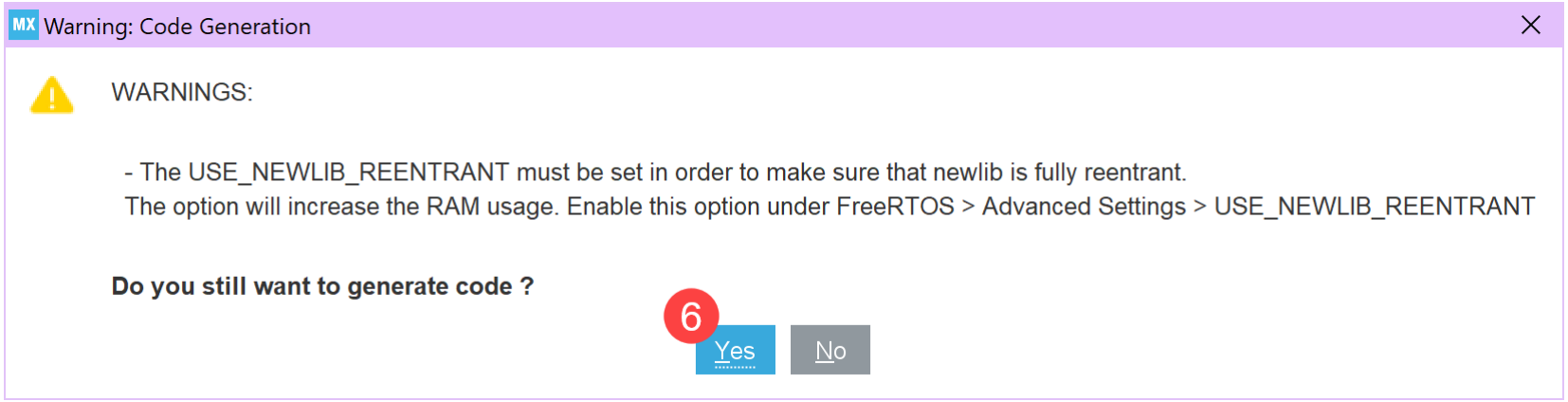
STM32F429-DISC1

Select Board

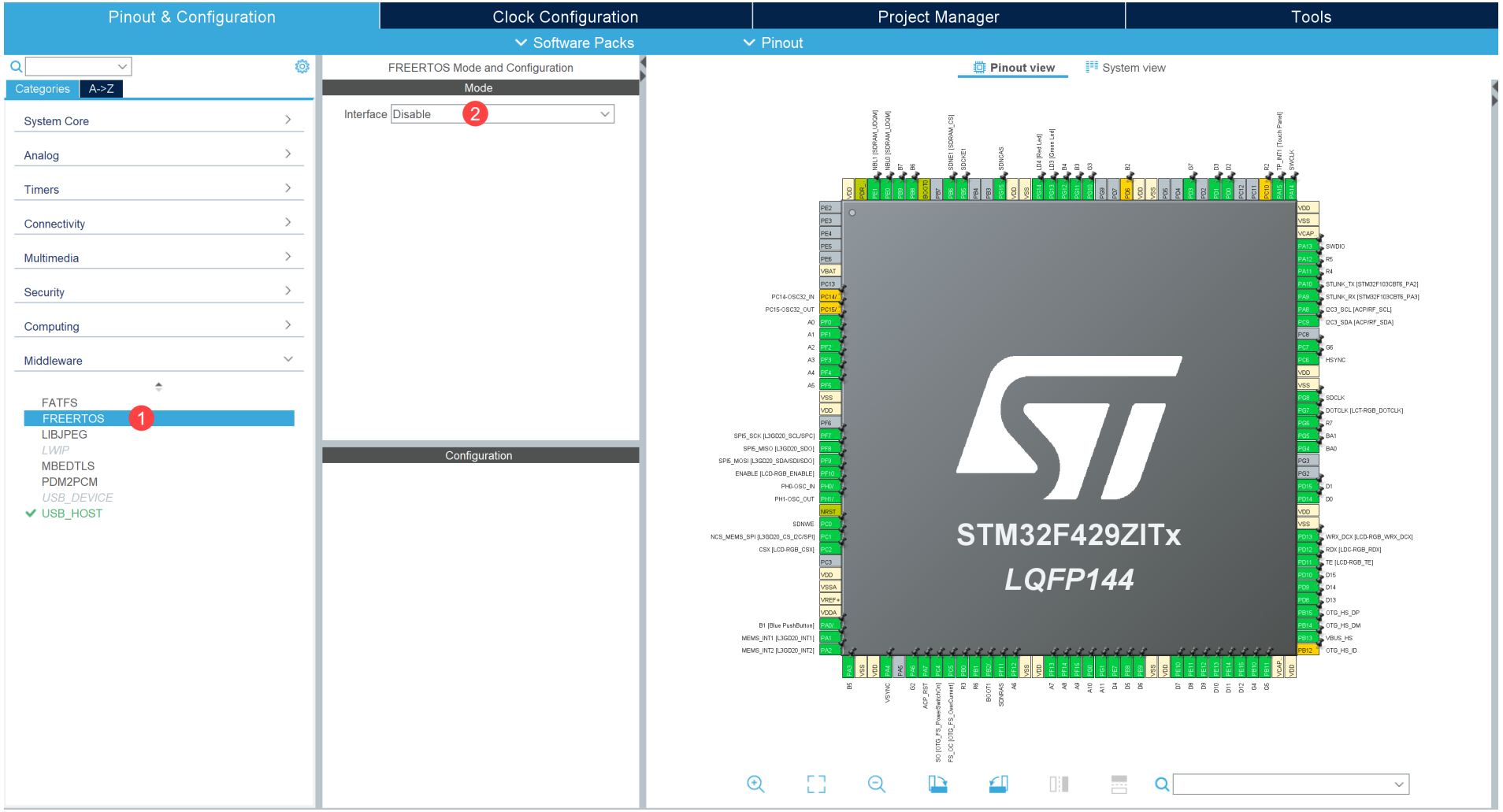


Select Board

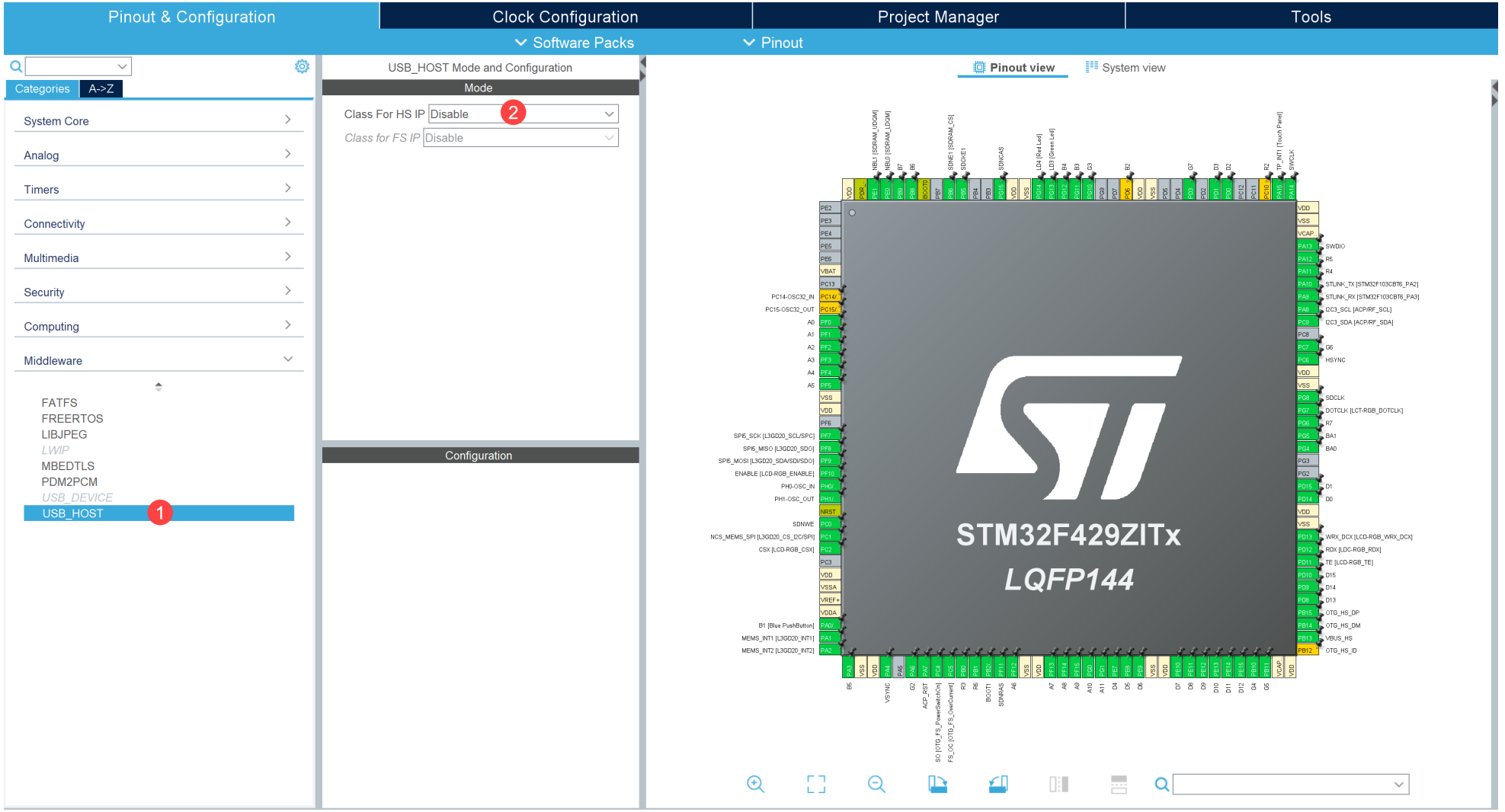




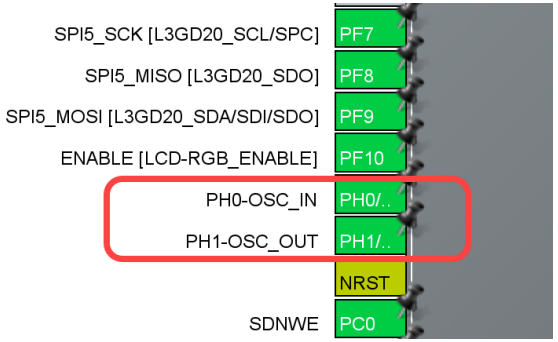
Disable FreeRTOS

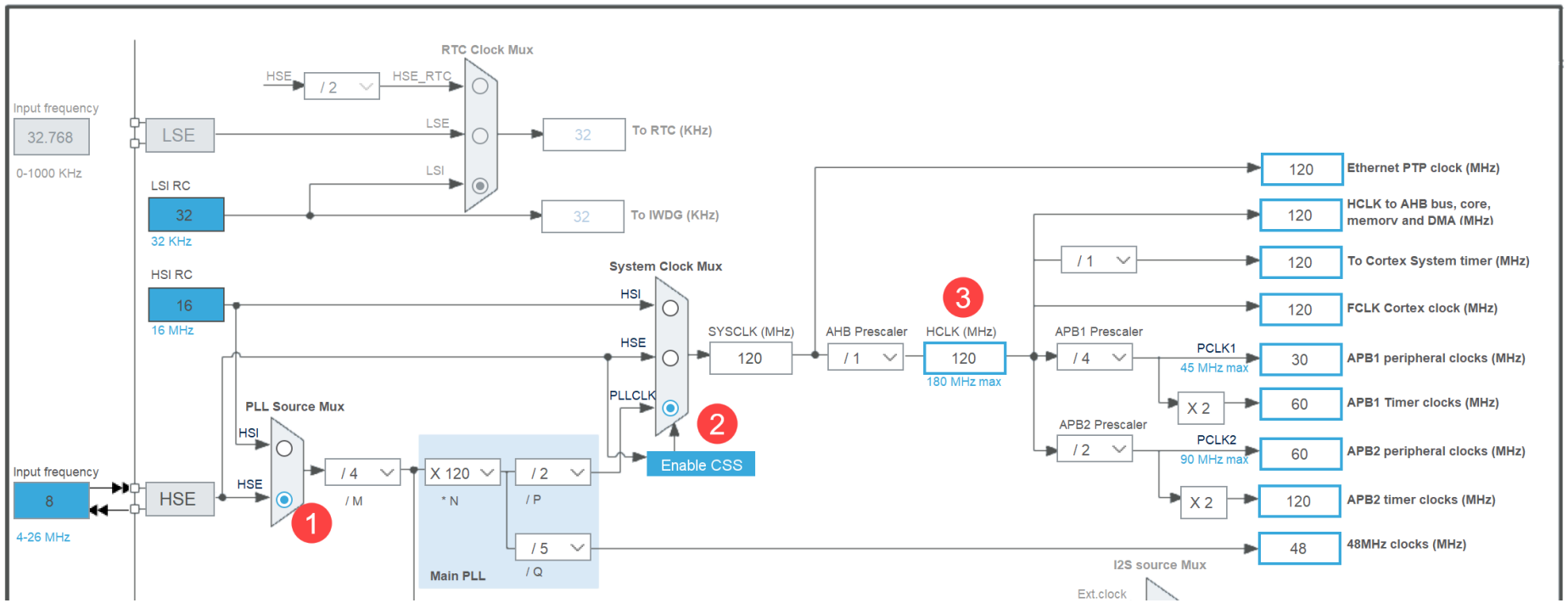


Disable USB_RTOS



Enable HSE


SPI5_SCK [L3GD20_SCL/SPC]
PF7
SPI5_MISO [L3GD20_SDO]
PF8
SPI5_MOSI [L3GD20_SDA/SDI/SDO]
PF9
ENABLE [LCD-RGB_ENABLE]
PF10
PH0-OSC_IN
PH0/..
PH1-OSC_OUT
PH1/..
NRST
SDNWE
PC0


RTC Clock Mux
HSE
/ 2
HSE_RTC
LSE
32
To RTC (KHz)
LSI
32
To IWDG (KHz)
Input frequency
32.768
0-1000 KHz
LSE
LSI RC
32
32 KHz
HSI RC
16
16 MHz
System Clock Mux
HSI
HSE
PLLCLK
SYSCLK (MHz)
120
AHB Prescaler
/ 1
HCLK (MHz)
120
180 MHz max
3
APB1 Prescaler
/ 4
PCLK1
45 MHz max
APB2 Prescaler
/ 2
PCLK2
90 MHz max
/ 1
120
Ethernet PTP clock (MHz)
120
HCLK to AHB bus, core, memory and DMA (MHz)
120
To Cortex System timer (MHz)
120
FCLK Cortex clock (MHz)
30
APB1 peripheral clocks (MHz)
X 2
60
APB1 Timer clocks (MHz)
60
APB2 peripheral clocks (MHz)
X 2
120
APB2 timer clocks (MHz)
PLL Source Mux
HSI
HSE
/ 4
/ M
X 120
* N
/ 2
/ P
/ 5
/ Q
Main PLL
2
Enable CSS
Input frequency
8
4-26 MHz
HSE
1
48
48MHz clocks (MHz)
I2S source Mux
Ext.clock

ADC with TIM - Nucleo-F767

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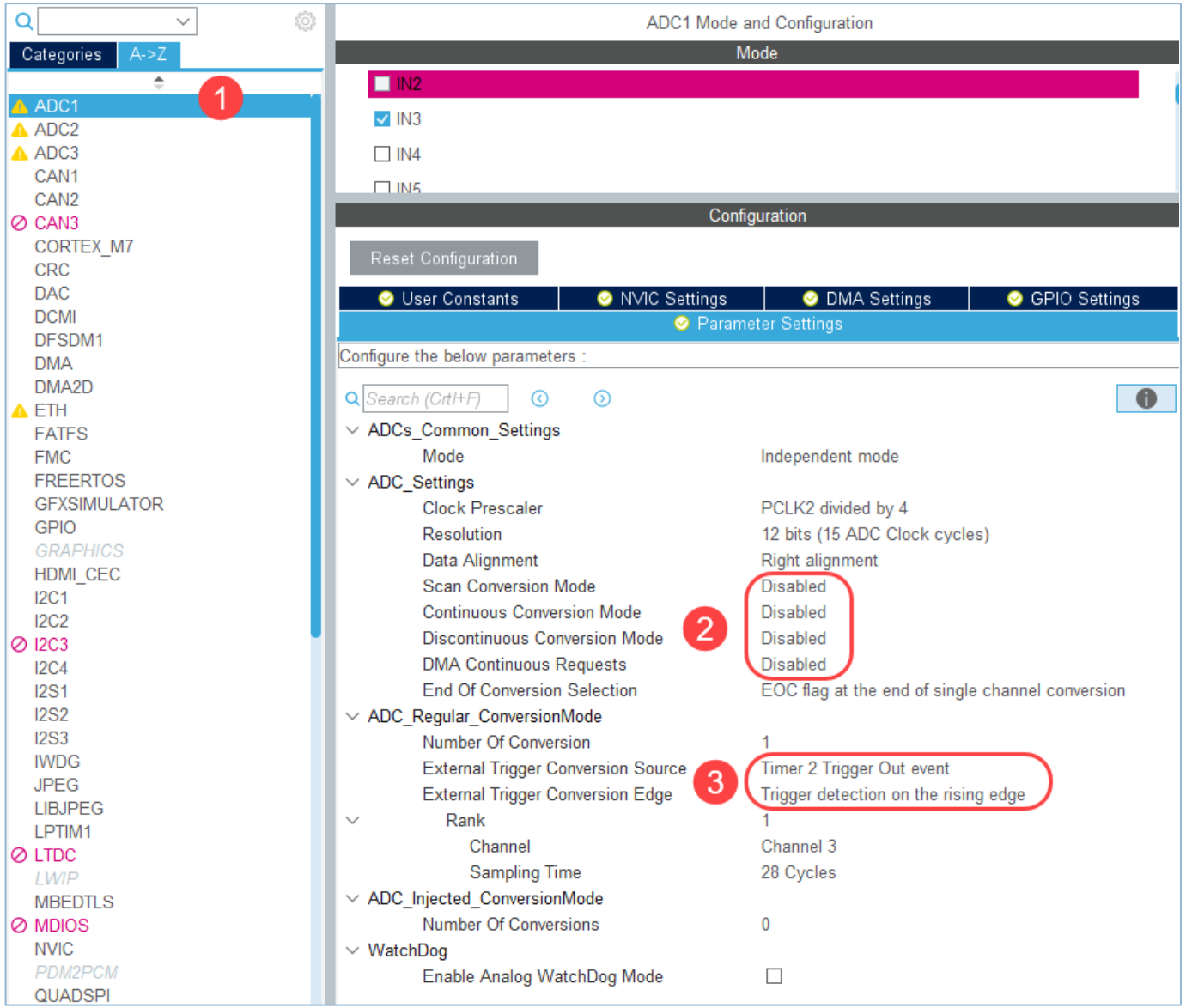
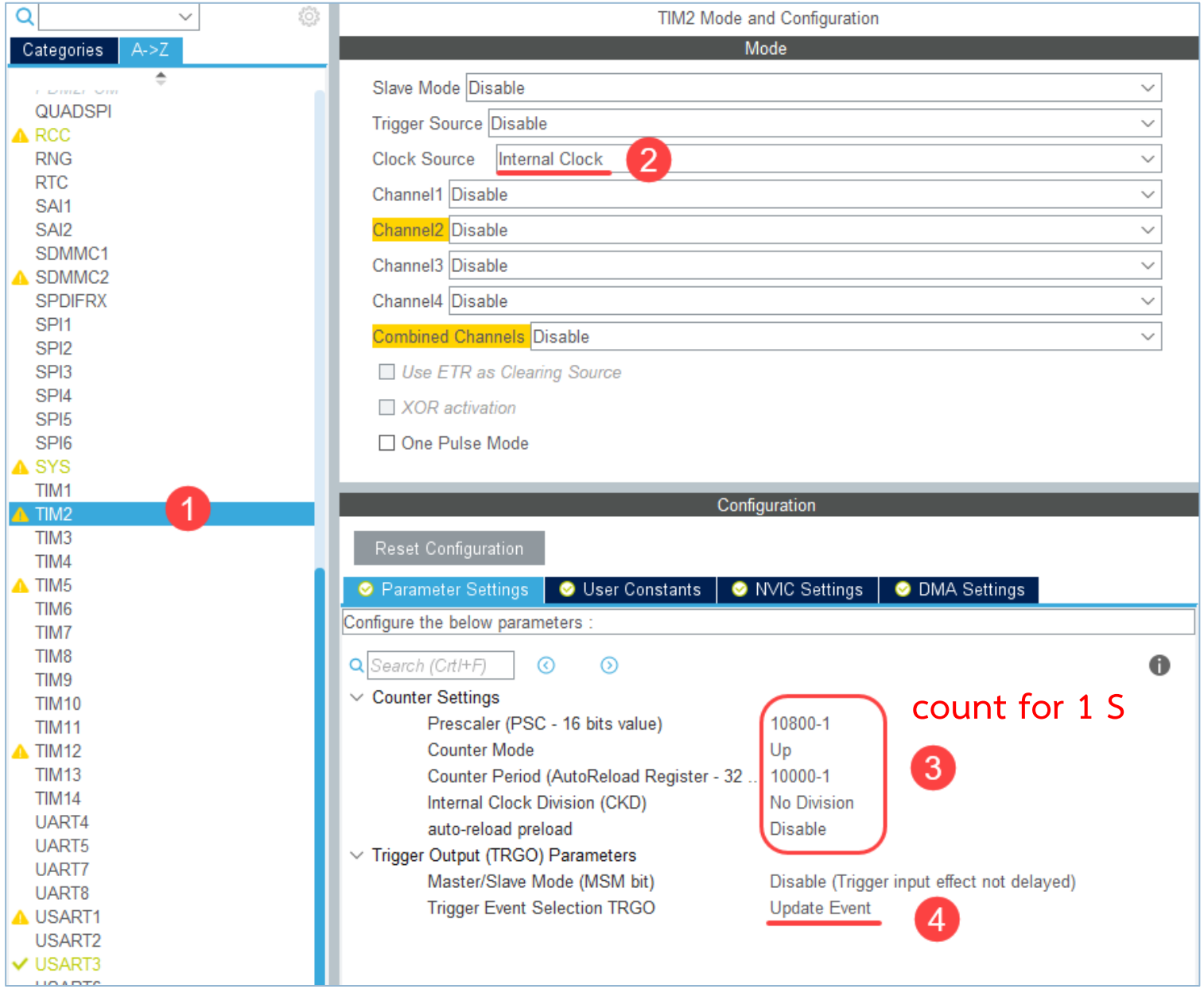
Sorayut Glomglome

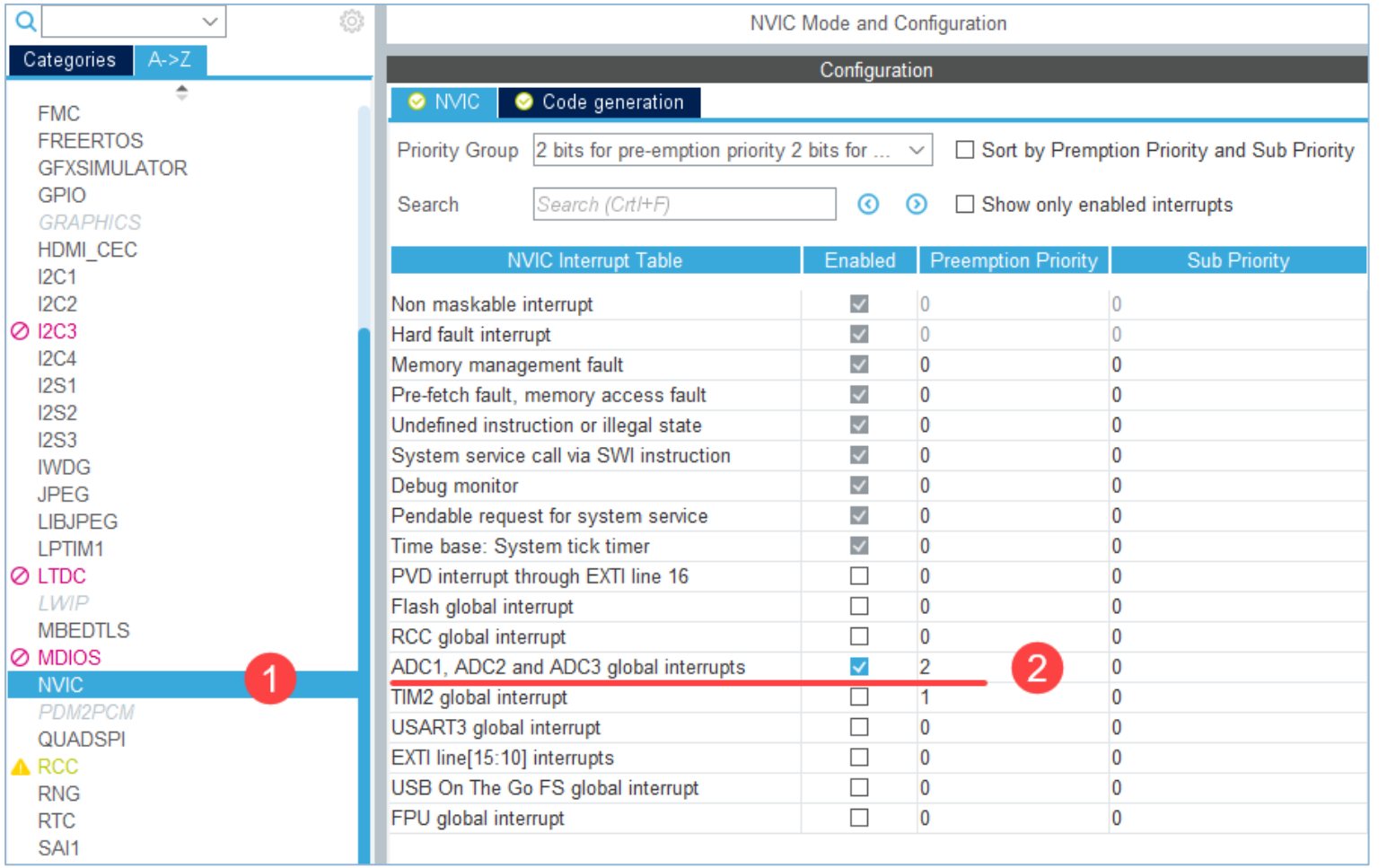
Config ADC1


Categories
A->Z
1
ADC1
ADC2
ADC3
CAN1
CAN2
CAN3
CORTEX_M7
CRC
DAC
DCMI
DFSDM1
DMA
DMA2D
ETH
FATFS
FMC
FREERTOS
GFXSIMULATOR
GPIO
GRAPHICS
HDMI_CEC
I2C1
I2C2
I2C3
I2C4
I2S1
I2S2
I2S3
IWDG
JPEG
LIBJPEG
LPTIM1
LTDC
LWIP
MBEDTLS
MDIOS
NVIC
PDM2PCM
QUADSPI
ADC1 Mode and Configuration
Mode
IN2
IN3
IN4
IN5
Configuration
Reset Configuration
User Constants
NVIC Settings
DMA Settings
GPIO Settings
Parameter Settings
Configure the below parameters :
Search (Crtl+F)
ADCs_Common_Settings
Mode
Independent mode
ADC_Settings
Clock Prescaler
PCLK2 divided by 4
Resolution
12 bits (15 ADC Clock cycles)
Data Alignment
Right alignment
Scan Conversion Mode
Disabled
Continuous Conversion Mode
Disabled
Discontinuous Conversion Mode
Disabled
DMA Continuous Requests
Disabled
2
End Of Conversion Selection
EOC flag at the end of single channel conversion
ADC_Regular_ConversionMode
Number Of Conversion
1
External Trigger Conversion Source
Timer 2 Trigger Out event
External Trigger Conversion Edge
Trigger detection on the rising edge
3
Rank
1
Channel
Channel 3
Sampling Time
28 Cycles
ADC_Injected_ConversionMode
Number Of Conversions
0
WatchDog
Enable Analog WatchDog Mode

Config TIM2


Categories
A->Z
QUADSPI
RCC
RNG
RTC
SAI1
SAI2
SDMMC1
SDMMC2
SPDIFRX
SPI1
SPI2
SPI3
SPI4
SPI5
SPI6
SYS
TIM1
TIM2
TIM3
TIM4
TIM5
TIM6
TIM7
TIM8
TIM9
TIM10
TIM11
TIM12
TIM13
TIM14
UART4
UART5
UART7
UART8
USART1
USART2
USART3
1
TIM2 Mode and Configuration
Mode
Slave Mode Disable
Trigger Source Disable
Clock Source Internal Clock
2
Channel1 Disable
Channel2 Disable
Channel3 Disable
Channel4 Disable
Combined Channels Disable
Use ETR as Clearing Source
XOR activation
One Pulse Mode
Configuration
Reset Configuration
Parameter Settings
User Constants
NVIC Settings
DMA Settings
Configure the below parameters :
Search (Crtl+F)
Counter Settings
Prescaler (PSC - 16 bits value) 10800-1
Counter Mode Up
Counter Period (AutoReload Register - 32 .. 10000-1
Internal Clock Division (CKD) No Division
auto-reload preload Disable
count for 1 S
3
Trigger Output (TRGO) Parameters
Master/Slave Mode (MSM bit) Disable (Trigger input effect not delayed)
Trigger Event Selection TRGO Update Event
4

Config NVIC


Categories
A->Z
FMC
FREERTOS
GFXSIMULATOR
GPIO
GRAPHICS
HDMI_CEC
I2C1
I2C2
I2C3
I2C4
I2S1
I2S2
I2S3
IWDG
JPEG
LIBJPEG
LPTIM1
LTDC
LWIP
MBEDTLS
MDIOS
NVIC
PDM2PCM
QUADSPI
RCC
RNG
RTC
SAI1
1
NVIC Mode and Configuration
Configuration
NVIC
Code generation
Priority Group
2 bits for pre-emption priority 2 bits for ...
Sort by Premption Priority and Sub Priority
Search
Search (Crtl+F)
Show only enabled interrupts
NVIC Interrupt Table
Enabled
Preemption Priority
Sub Priority
Non maskable interrupt 0 0
Hard fault interrupt 0 0
Memory management fault 0 0
Pre-fetch fault, memory access fault 0 0
Undefined instruction or illegal state 0 0
System service call via SWI instruction 0 0
Debug monitor 0 0
Pendable request for system service 0 0
Time base: System tick timer 0 0
PVD interrupt through EXTI line 16 0 0
Flash global interrupt 0 0
RCC global interrupt 0 0
ADC1, ADC2 and ADC3 global interrupts 2 0
2
TIM2 global interrupt 1 0
USART3 global interrupt 0 0
EXTI line[15:10] interrupts 0 0
USB On The Go FS global interrupt 0 0
FPU global interrupt 0 0

Start TIM2 & ADC_IT in main.c

```
/* USER CODE BEGIN 2 */

HAL_TIM_Base_Start(&htim2);
HAL_ADC_Start_IT(&hadc1);

/* USER CODE END 2 */

/* Infinite loop */
/* USER CODE BEGIN WHILE */
while (1)
{
  /* USER CODE END WHILE */

  /* USER CODE BEGIN 3 */
}
/* USER CODE END 3 */
```

ADC Callback in main.c

- Read ADC value
- Show result by UART3

```
/* USER CODE BEGIN 4 */
void HAL_ADC_ConvCpltCallback(ADC_HandleTypeDef* hadc)
{
  uint32_t adcVal;
  char  adcResult[30];

  HAL_GPIO_TogglePin(GPIOB, GPIO_PIN_7);

  adcVal = HAL_ADC_GetValue(hadc);

  sprintf(adcResult, "ADC_Val = 0x%010X\n\r", adcVal);
  HAL_UART_Transmit(&huart3, (uint8_t *) adcResult, strlen(adcResult), 100);
}
/* USER CODE END 4 */
```