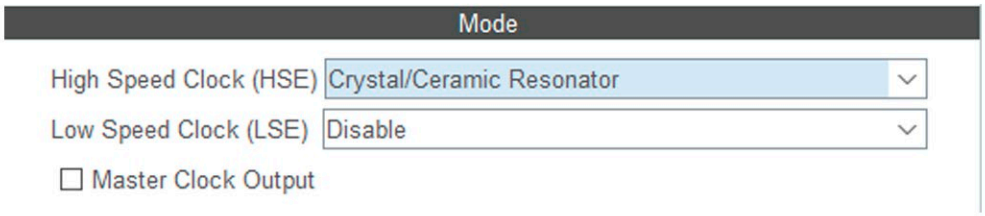
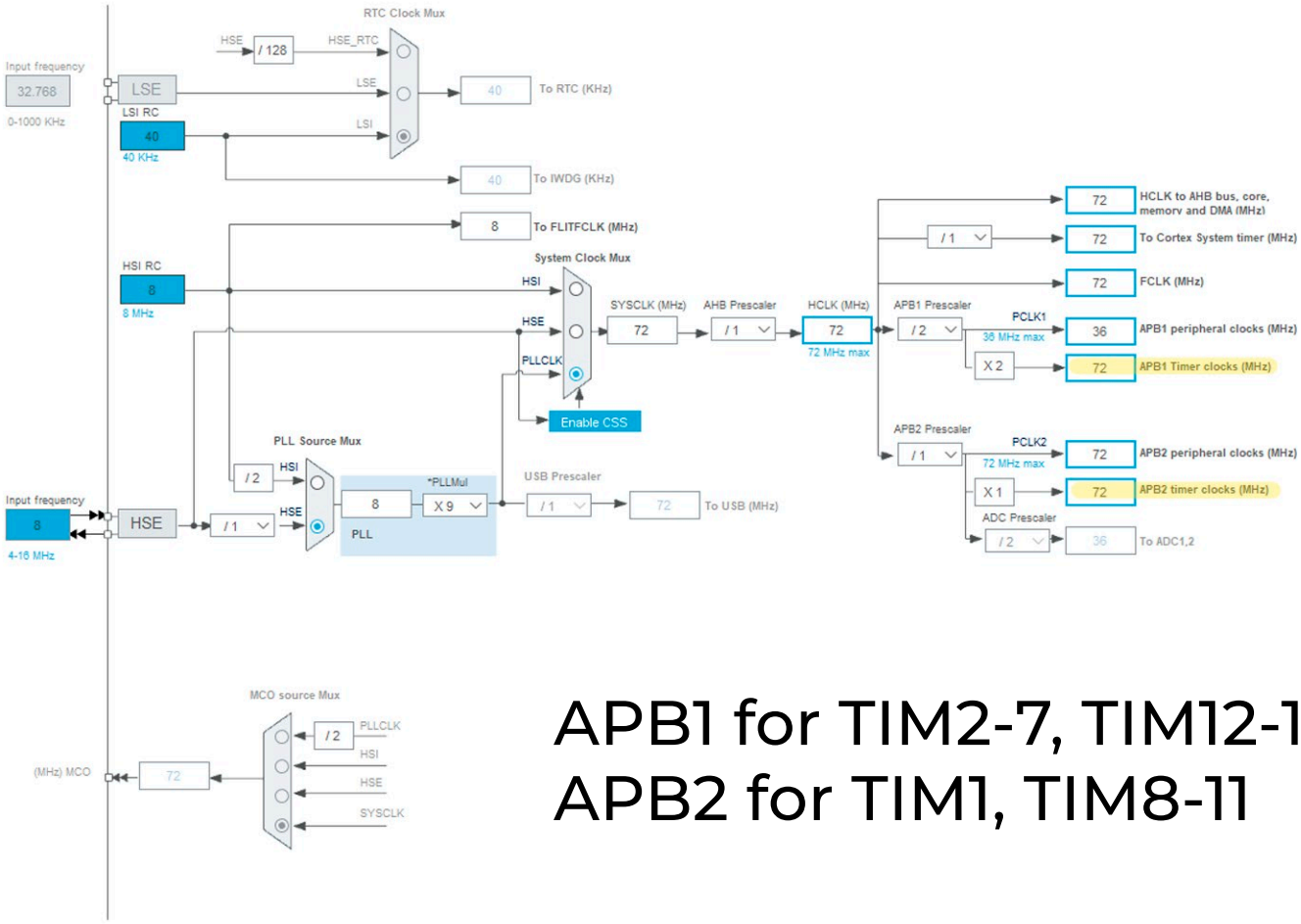
Installing of a WS2812b library

1. Start your CubeMX Project, set debug and set RCC to External resonator.



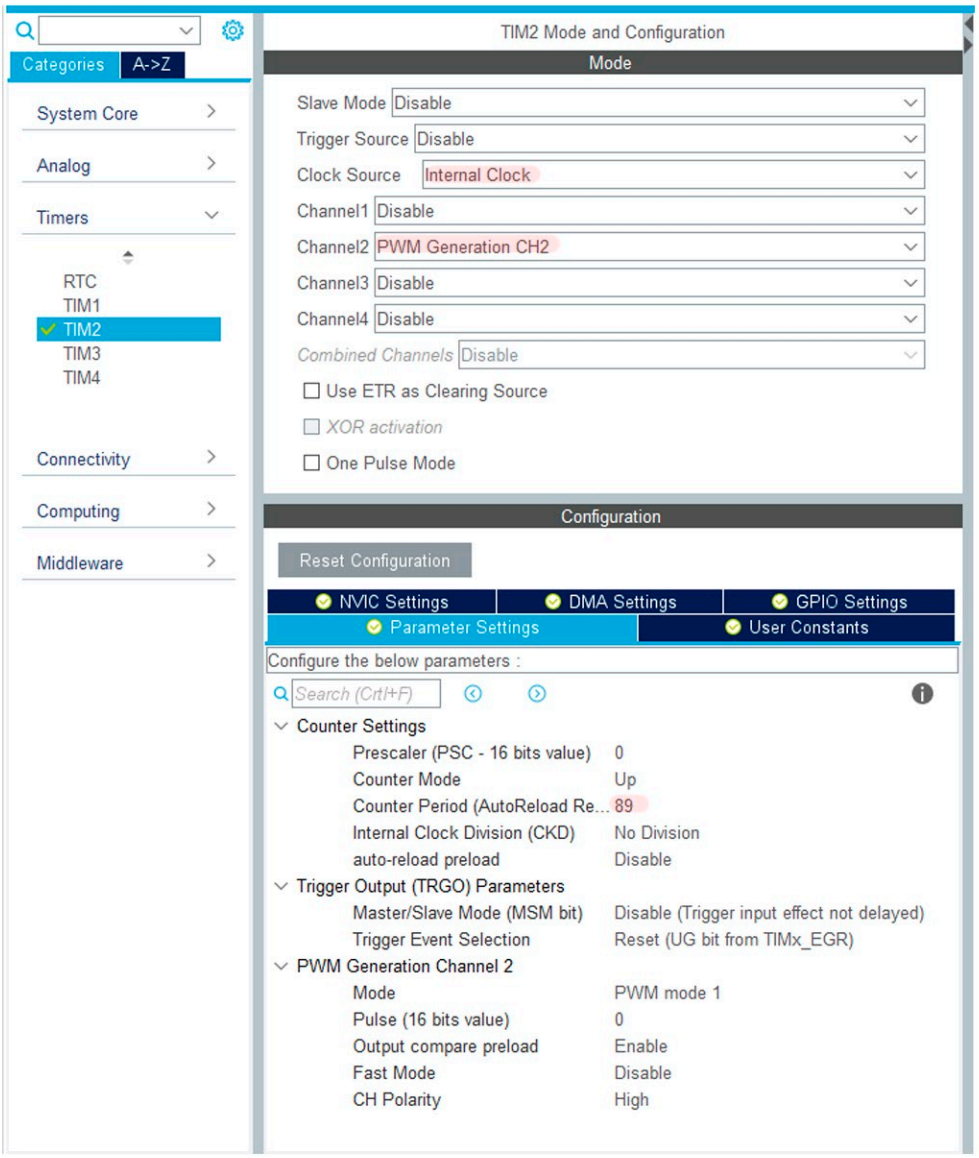
2. Set APBx clocks to 72 MHz



APB1 for TIM2-7, TIM12-14
APB2 for TIM1, TIM8-11

Installing of a WS2812b library

3. Configure preferred timer and channel.
4. Set Timer counter to 89.



Why 89? You have 800 kHz LED signal freq. You need to divide APB clock by signal fq. APB speed is 72 MHz, i.e $72*10^6$ Hz.

$$\frac{72*10^6\ \text{Hz}}{8*10^5\ \text{Hz}} = 90 \Rightarrow 89$$, coz' variable starts from 0

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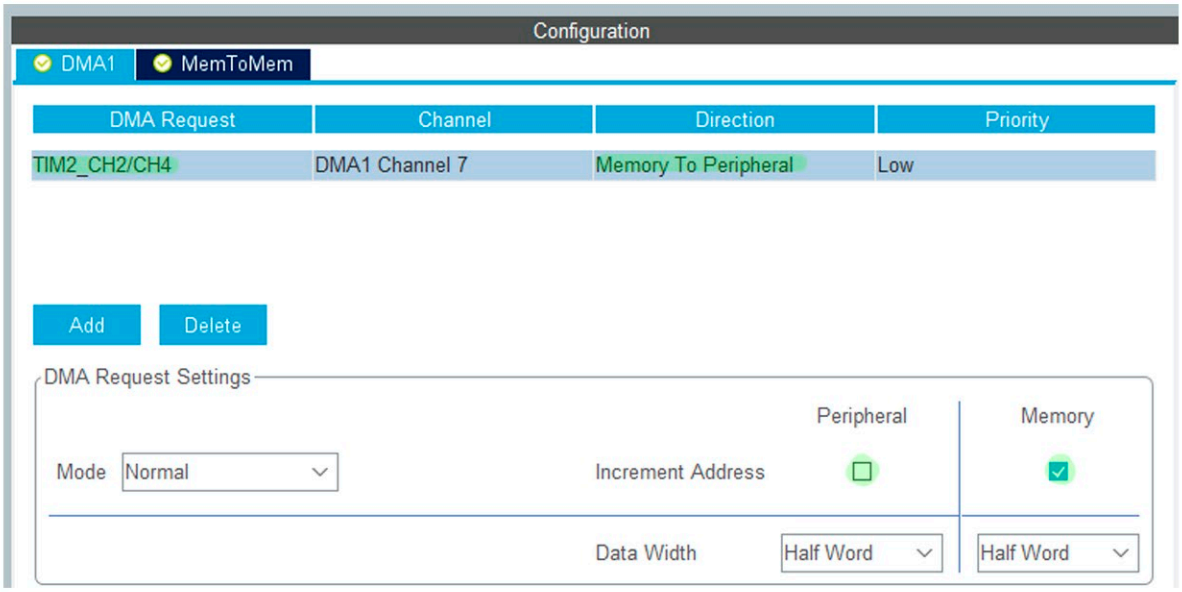
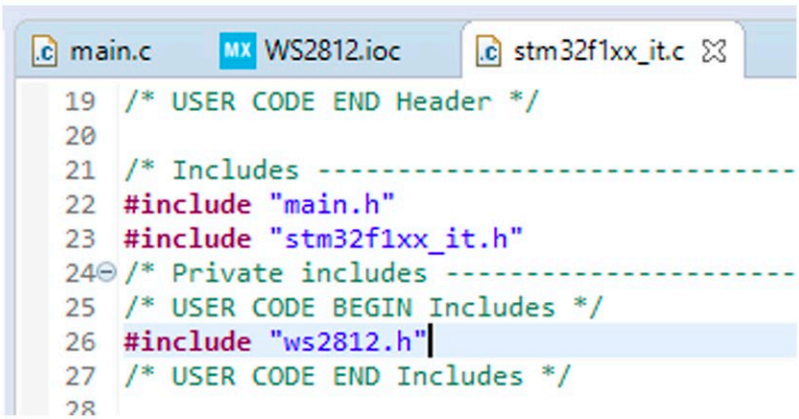
5. Set up DMA channel.

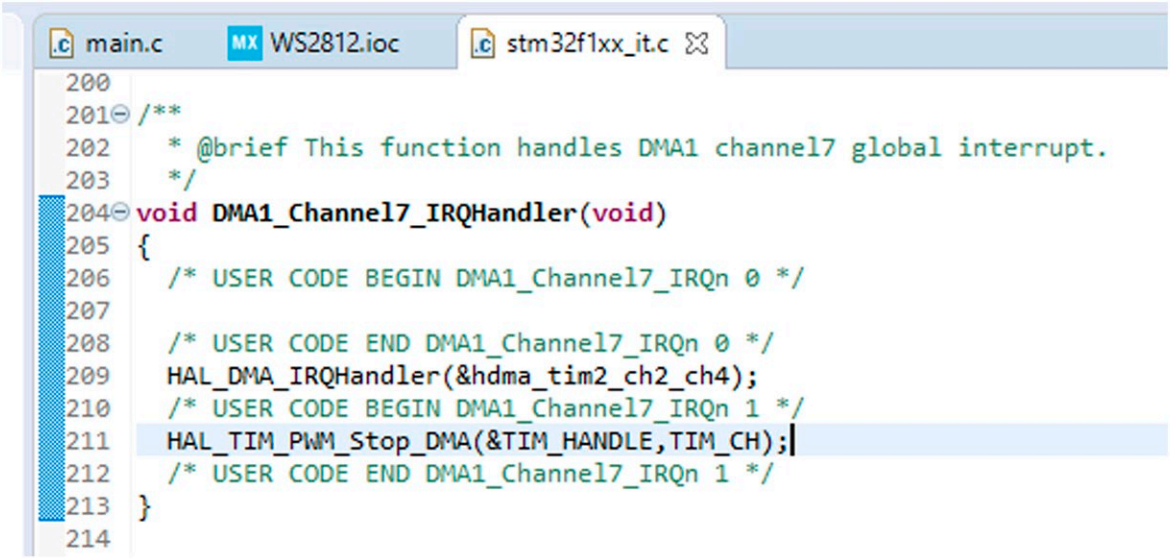


6. Now save .ioc file and generate code.
7. Add the library to your source destination.
8. Search for stm32xxxx.c file.
9. Include lib header file.



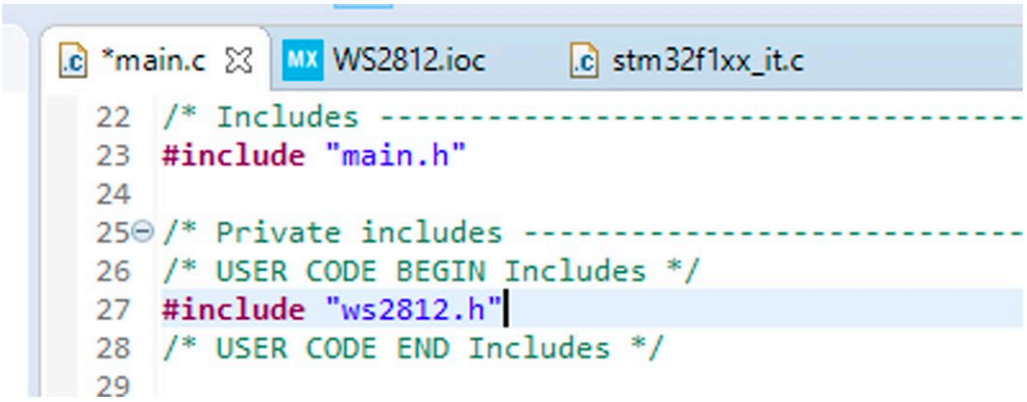
Installing of a WS2812b library

10. Search for your IRQ Handler and add:



HAL_TIM_PWM_Stop_DMA(&TIM_HANDLE,TIM_CH);

11. Add library to your main.c file.



12. Now it is ready to work!

Settings of a WS2812b library

1. All settings located in header file.
2. To change settings search for string 22.

```
21 //------------------------------------------------
22 /*USR SETTINGS*/
23 #define LED_COUNT 12                    // Count of led in your strip
24 #define BRIGHT 10                       // 0-255
25 #define TIM_HANDLE  htim2               // use "htimX", where X is number of ur timer
26 #define TIM_CH  TIM_CHANNEL_2           // use "TIM_CHANNEL_X", where X is number of ur channel
27 //------------------------------------------------
```

3. In string 23 set up number of your LEDs.
4. In string 24 you can change brightness.
5. String 25 defines your timer handler, change only number of timer.
For example: if you use TIM2, it'll be htim2
6. String 26 defines number of your channel in HAL format.
7. Function reference located in readme.md