1. Description

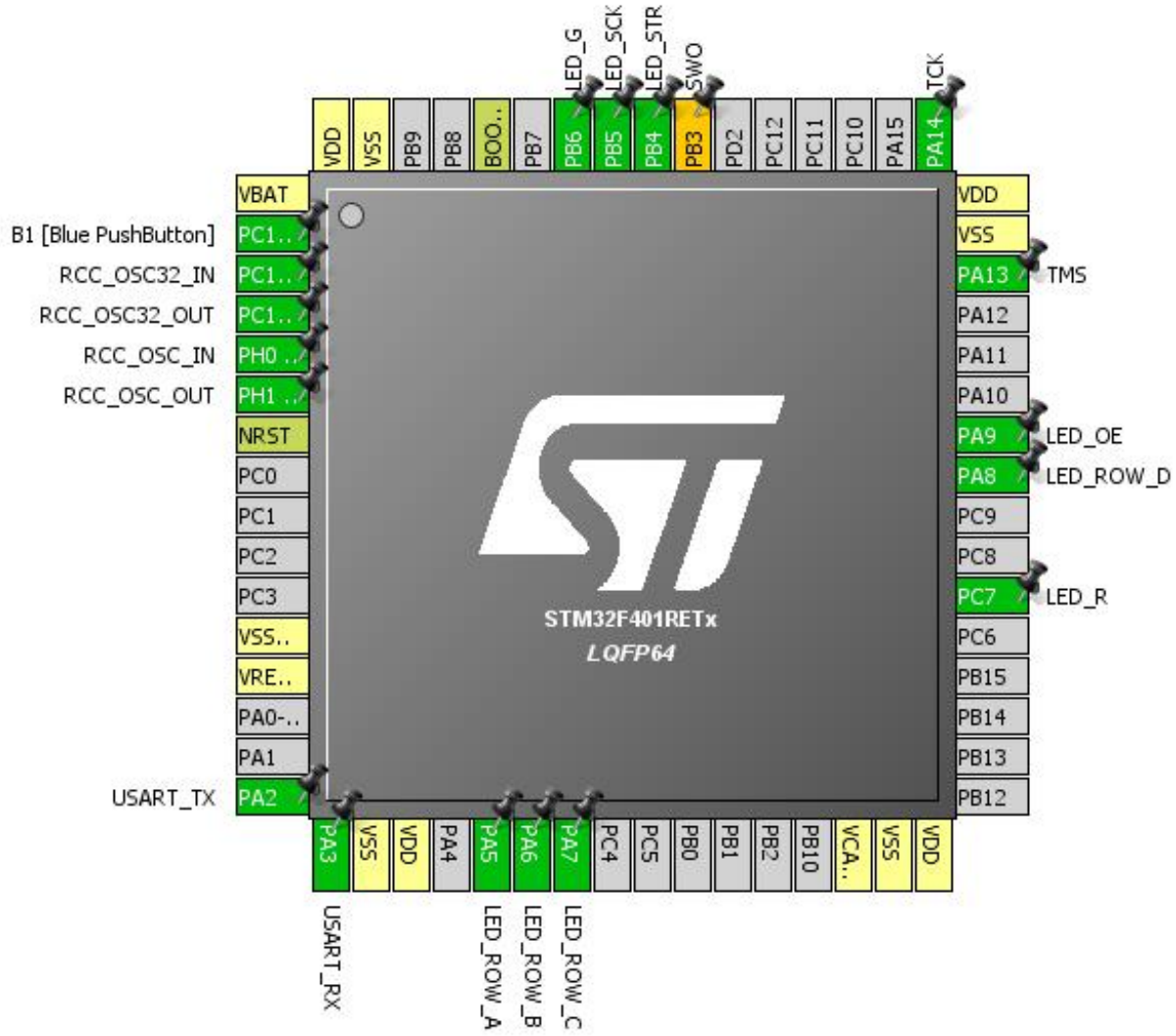
1.1. Project

Project Name	nucleo_f4_grid
Board Name	NUCLEO-F401RE
Generated with:	STM32CubeMX 4.16.0
Date	08/30/2016

1.2. MCU

MCU Series	STM32F4
MCU Line	STM32F401
MCU name	STM32F401RETx
MCU Package	LQFP64
MCU Pin number	64

2. Pinout Configuration



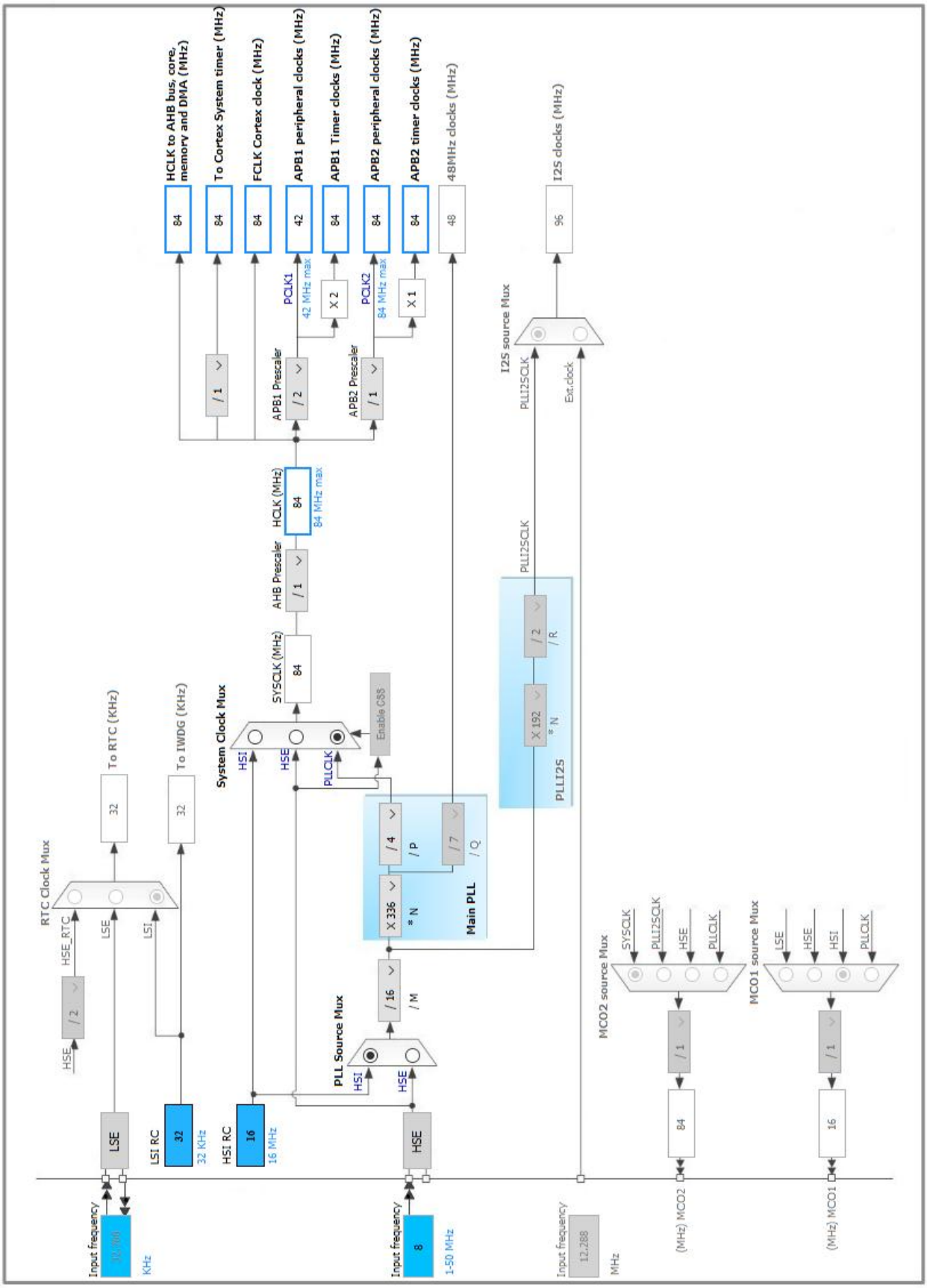
3. Pins Configuration

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
2	PC13-ANTI_TAMP	I/O	GPIO_EXTI13	B1 [Blue PushButton]
3	PC14-OSC32_IN	I/O	RCC_OSC32_IN	
4	PC15-OSC32_OUT	I/O	RCC_OSC32_OUT	
5	PH0 - OSC_IN	I/O	RCC_OSC_IN	
6	PH1 - OSC_OUT	I/O	RCC_OSC_OUT	
7	NRST	Reset		
12	VSSA/VREF-	Power		
13	VREF+	Power		
16	PA2	I/O	USART2_TX	USART_TX
17	PA3	I/O	USART2_RX	USART_RX
18	VSS	Power		
19	VDD	Power		
21	PA5 *	I/O	GPIO_Output	LED_ROW_A
22	PA6 *	I/O	GPIO_Output	LED_ROW_B
23	PA7 *	I/O	GPIO_Output	LED_ROW_C
30	VCAP1	Power		
31	VSS	Power		
32	VDD	Power		
38	PC7 *	I/O	GPIO_Output	LED_R
41	PA8 *	I/O	GPIO_Output	LED_ROW_D
42	PA9 *	I/O	GPIO_Output	LED_OE
46	PA13	I/O	SYS_JTMS-SWDIO	TMS
47	VSS	Power		
48	VDD	Power		
49	PA14	I/O	SYS_JTCK-SWCLK	TCK
55	PB3 **	I/O	SYS_JTDO-SWO	SWO
56	PB4 *	I/O	GPIO_Output	LED_STR
57	PB5 *	I/O	GPIO_Output	LED_SCK
58	PB6 *	I/O	GPIO_Output	LED_G
60	BOOT0	Boot		
63	VSS	Power		
64	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. RCC

High Speed Clock (HSE): BYPASS Clock Source

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

5.1.1. Parameter Settings:

System Parameters:	
VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Enabled
Data Cache	Enabled
Flash Latency(WS)	2 WS (3 CPU cycle)
RCC Parameters:	
HSI Calibration Value	16
TIM Prescaler Selection	Disabled
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000
Power Parameters:	
Power Regulatror Voltage Scale	Power Regulator Voltage Scale 2

5.2. SYS

Debug: Serial Wire

Timebase Source: SysTick

5.3. TIM2

Trigger Source: ITR0

5.3.1. Parameter Settings:

Counter Settings:	
Prescaler (PSC - 16 bits value)	**5000 ***
Counter Mode	Up
Counter Period (AutoReload Register - 32 bits value)	**500 ***

Internal Clock Division (CKD)	No Division
Slave Mode Controller	Slave mode disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

5.4. USART2

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
RCC	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	
	PH1 - OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	TMS
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	TCK
USART2	PA2	USART2_TX	Alternate Function Push Pull	*	Low	USART_TX
	PA3	USART2_RX	Alternate Function Push Pull	*	Low	USART_RX
Single Mapped Signals	PB3	SYS_JTDO-SWO	n/a	n/a	n/a	SWO
GPIO	PC13-ANTI_TAMP	GPIO_EXTI13	**External Event Mode with Rising edge trigger detection ***	No pull-up and no pull-down	n/a	B1 [Blue PushButton]
	PA5	GPIO_Output	Output Push Pull	**Pull-down ***	Low	LED_ROW_A
	PA6	GPIO_Output	Output Push Pull	**Pull-down ***	Low	LED_ROW_B
	PA7	GPIO_Output	Output Push Pull	**Pull-down ***	Low	LED_ROW_C
	PC7	GPIO_Output	Output Push Pull	**Pull-down ***	Low	LED_R
	PA8	GPIO_Output	Output Push Pull	**Pull-down ***	Low	LED_ROW_D
	PA9	GPIO_Output	Output Push Pull	**Pull-down ***	Low	LED_OE
	PB4	GPIO_Output	Output Push Pull	**Pull-down ***	Low	LED_STR
	PB5	GPIO_Output	Output Push Pull	**Pull-down ***	Low	LED_SCK
	PB6	GPIO_Output	Output Push Pull	**Pull-down ***	Low	LED_G

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
TIM2 global interrupt	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
USART2 global interrupt	unused		
FPU global interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F4
Line	STM32F401
MCU	STM32F401RETx
Datasheet	025644_Rev3

7.2. Parameter Selection

Temperature	25
Vdd	null

8. Software Project

8.1. Project Settings

Name	Value
Project Name	nucleo_f4_grid
Project Folder	C:\Users\Francis\STM32\workspace\nucleo_f4_grid
Toolchain / IDE	SW4STM32
Firmware Package Name and Version	STM32Cube FW_F4 V1.13.0

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