1. Description

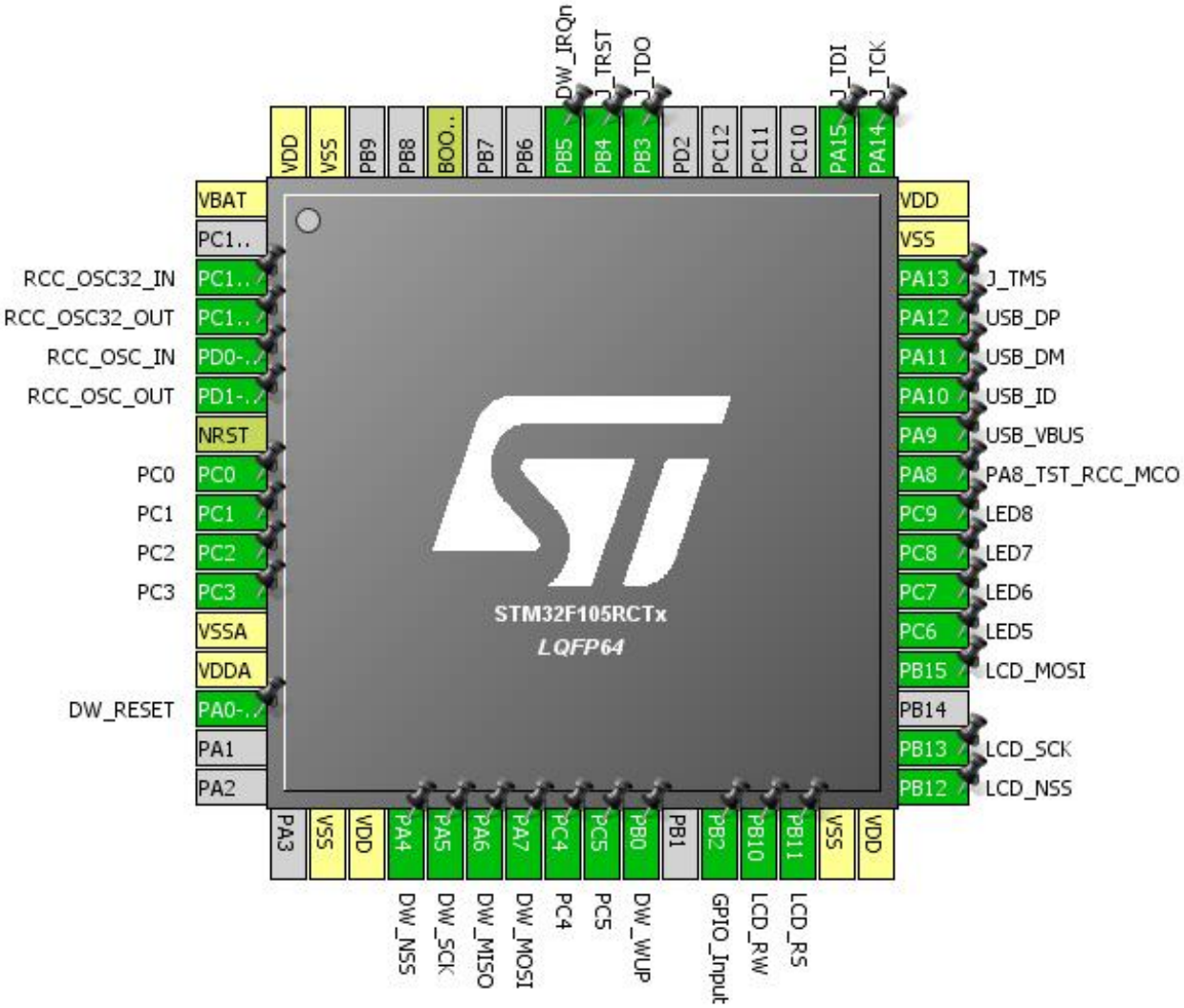
1.1. Project

Project Name	TREK1000_CubeMx
Board Name	TREK1000_CubeMx
Generated with:	STM32CubeMX 4.14.0
Date	11/23/2016

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F105/107
MCU name	STM32F105RCTx
MCU Package	LQFP64
MCU Pin number	64

2. Pinout Configuration



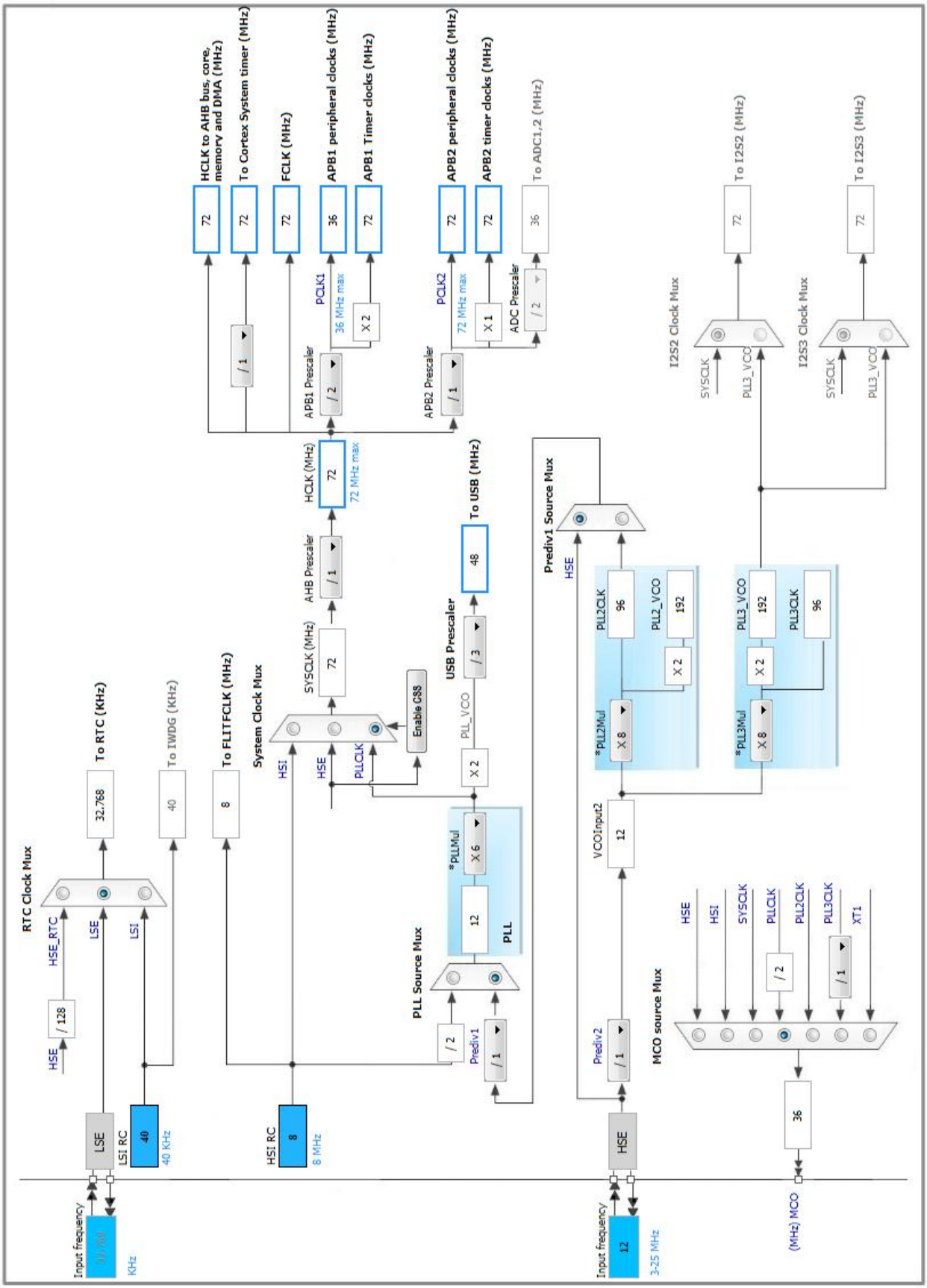
3. Pins Configuration

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
3	PC14-OSC32_IN	I/O	RCC_OSC32_IN	
4	PC15-OSC32_OUT	I/O	RCC_OSC32_OUT	
5	PD0-OSC_IN	I/O	RCC_OSC_IN	
6	PD1-OSC_OUT	I/O	RCC_OSC_OUT	
7	NRST	Reset		
8	PC0 *	I/O	GPIO_Input	PC0
9	PC1 *	I/O	GPIO_Input	PC1
10	PC2 *	I/O	GPIO_Input	PC2
11	PC3 *	I/O	GPIO_Input	PC3
12	VSSA	Power		
13	VDDA	Power		
14	PA0-WKUP *	I/O	GPIO_Output	DW_RESET
18	VSS	Power		
19	VDD	Power		
20	PA4	I/O	SPI1_NSS	DW_NSS
21	PA5	I/O	SPI1_SCK	DW_SCK
22	PA6	I/O	SPI1_MISO	DW_MISO
23	PA7	I/O	SPI1_MOSI	DW_MOSI
24	PC4 *	I/O	GPIO_Input	PC4
25	PC5 *	I/O	GPIO_Input	PC5
26	PB0 *	I/O	GPIO_Output	DW_WUP
28	PB2 *	I/O	GPIO_Input	
29	PB10 *	I/O	GPIO_Output	LCD_RW
30	PB11 *	I/O	GPIO_Output	LCD_RS
31	VSS	Power		
32	VDD	Power		
33	PB12	I/O	SPI2_NSS	LCD_NSS
34	PB13	I/O	SPI2_SCK	LCD_SCK
36	PB15	I/O	SPI2_MOSI	LCD_MOSI
37	PC6 *	I/O	GPIO_Output	LED5
38	PC7 *	I/O	GPIO_Output	LED6
39	PC8 *	I/O	GPIO_Output	LED7
40	PC9 *	I/O	GPIO_Output	LED8
41	PA8	I/O	RCC_MCO	PA8_TST_RCC_MCO
42	PA9	I/O	USB_OTG_FS_VBUS	USB_VBUS

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
43	PA10 *	I/O	GPIO_Input	USB_ID
44	PA11	I/O	USB_OTG_FS_DM	USB_DM
45	PA12	I/O	USB_OTG_FS_DP	USB_DP
46	PA13	I/O	SYS_JTMS-SWDIO	J_TMS
47	VSS	Power		
48	VDD	Power		
49	PA14	I/O	SYS_JTCK-SWCLK	J_TCK
50	PA15	I/O	SYS_JTDI	J_TDI
55	PB3	I/O	SYS_JTDO	J_TDO
56	PB4	I/O	SYS_NJTRST	J_TRST
57	PB5	I/O	GPIO_EXTI5	DW_IRQn
60	BOOT0	Boot		
63	VSS	Power		
64	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator
Low Speed Clock (LSE) : Crystal/Ceramic Resonator
mode: Master Clock Output

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

5.2. RTC

RTC OUT: No RTC Output

5.2.1. Parameter Settings:

General:

Auto Predivider Calculation	Enabled
Asynchronous Predivider value	Automatic Predivider Calculation Enabled
Output	No output on the TAMPER pin

Calendar Time:

Data Format	BCD data format
Hours	1
Minutes	0
Seconds	0

Calendar Date:

Week Day	Monday
Month	January
Date	1

Year	0

5.3. SPI1

Mode: Full-Duplex Master

Hardware NSS Signal: Hardware NSS Output Signal

5.3.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	**32 ***
Baud Rate	**2.25 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Output Hardware

5.4. SPI2

Mode: Transmit Only Master

Hardware NSS Signal: Hardware NSS Output Signal

5.4.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	2
Baud Rate	**18.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Output Hardware

5.5. SYS

Debug: JTAG(5-pins)

Timebase Source: SysTick

5.6. USB_OTG_FS

Mode: Device_Only

mode: Activate_VBUS

5.6.1. Parameter Settings:

Speed	Device Full Speed 12MBit/s
Endpoint 0 Max Packet size	64 Bytes
Low power	Disabled
VBUS sensing	Disabled

5.7. USB_DEVICE

Class For FS IP: Communication Device Class (Virtual Port Com)

5.7.1. Parameter Settings:

Basic Parameters:

USBD_MAX_NUM_INTERFACES (Maximum number of supported interfaces)	1
USBD_MAX_NUM_CONFIGURATION (Maximum number of supported configuration)	1
USBD_MAX_STR_DESC_SIZ (Maximum size for the string descriptors)	512
USBD_SUPPORT_USER_STRING (Enable user string descriptor)	Disabled
USBD_SELF_POWERED (Enabled self power)	Enabled
USBD_DEBUG_LEVEL (USBD Debug Level)	0: No debug message

Class Parameters:

USBD_CDC_INTERVAL (Number of micro-frames interval)	1000

5.7.2. Device Descriptor:

Device Descriptor:

VID (Vendor IDentifier)	1155
LANGID_STRING (Language Identifier)	English(United States)
MANUFACTURER_STRING (Manufacturer Identifier)	**Virtual ComPort Driver on STM32F1xx ***

Device Descriptor FS:

PID (Product IDentifier)	22336
PRODUCT_STRING (Product Identifier)	STM32 Virtual ComPort
SERIALNUMBER_STRING (Serial number)	00000000001A
CONFIGURATION_STRING (Configuration Identifier)	CDC Config
INTERFACE_STRING (Interface Identifier)	CDC Interface

*** 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	
	PD0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PD1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
	PA8	RCC_MCO	Alternate Function Push Pull	n/a	Low	PA8_TST_RCC_MCO
SPI1	PA4	SPI1_NSS	Alternate Function Push Pull	n/a	**High ***	DW_NSS
	PA5	SPI1_SCK	Alternate Function Push Pull	n/a	**High ***	DW_SCK
	PA6	SPI1_MISO	Input mode	No pull-up and no pull-down	**n/a**	DW_MISO
	PA7	SPI1_MOSI	Alternate Function Push Pull	n/a	**High ***	DW_MOSI
SPI2	PB12	SPI2_NSS	Alternate Function Push Pull	n/a	**High ***	LCD_NSS
	PB13	SPI2_SCK	Alternate Function Push Pull	n/a	**High ***	LCD_SCK
	PB15	SPI2_MOSI	Alternate Function Push Pull	n/a	**High ***	LCD_MOSI
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	J_TMS
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	J_TCK
	PA15	SYS_JTDI	n/a	n/a	n/a	J_TDI
	PB3	SYS_JTDO	n/a	n/a	n/a	J_TDO
	PB4	SYS_NJTRST	n/a	n/a	n/a	J_TRST
USB_OTG_FS	PA9	USB_OTG_FS_VBUS	Input mode	No pull-up and no pull-down	n/a	USB_VBUS
	PA11	USB_OTG_FS_DM	n/a	n/a	n/a	USB_DM
	PA12	USB_OTG_FS_DP	n/a	n/a	n/a	USB_DP
GPIO	PC0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	PC0
	PC1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	PC1
	PC2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	PC2
	PC3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	PC3
	PA0-WKUP	GPIO_Output		n/a	Low	DW_RESET

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
			Output Open Drain *			
	PC4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	PC4
	PC5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	PC5
	PB0	GPIO_Output	**Output Open Drain ***	n/a	**Medium ***	DW_WUP
	PB2	GPIO_Input	Input mode	No pull-up and no pull-down	**n/a**	
	PB10	GPIO_Output	Output Push Pull	n/a	Low	LCD_RW
	PB11	GPIO_Output	Output Push Pull	n/a	Low	LCD_RS
	PC6	GPIO_Output	Output Push Pull	n/a	Low	LED5
	PC7	GPIO_Output	Output Push Pull	n/a	Low	LED6
	PC8	GPIO_Output	Output Push Pull	n/a	Low	LED7
	PC9	GPIO_Output	Output Push Pull	n/a	Low	LED8
	PA10	GPIO_Input	Input mode	**Pull-down ***	n/a	USB_ID
	PB5	GPIO_EXTI5	External Interrupt Mode with Rising edge trigger detection	**Pull-down ***	n/a	DW_IRQn

6.2. DMA configuration

DMA request	Stream	Direction	Priority
SPI2_TX	DMA1_Channel5	Memory To Peripheral	Low

SPI2_TX: DMA1_Channel5 DMA request Settings:

Mode:	Normal
Peripheral Increment:	Disable
Memory Increment:	**Enable ***
Peripheral Data Width:	Byte
Memory Data Width:	Byte

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
Prefetch fault, memory access fault	true	0	0
Undefined instruction or illegal state	true	0	0
Debug monitor	true	0	0
System tick timer	true	0	0
DMA1 channel5 global interrupt	true	0	0
SPI2 global interrupt	true	0	0
USB OTG FS global interrupt	true	0	0
PVD interrupt through EXTI line 16	unused		
RTC global interrupt	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
EXTI line[9:5] interrupts	unused		
SPI1 global interrupt	unused		
RTC alarm interrupt through EXTI line 17	unused		

*** User modified value**

7. Power Plugin report

7.1. Microcontroller Selection

Series	STM32F1
Line	STM32F105/107
MCU	STM32F105RCTx
Datasheet	15274_Rev9

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	TREK1000_CubeMx
Project Folder	C:\Users\a.ivanov\workspace\Cortex\3-TREK\new_port\TREK1000_CubeMx
Toolchain / IDE	SW4STM32
Firmware Package Name and Version	STM32Cube FW_F1 V1.3.1

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)	Yes