1. Description

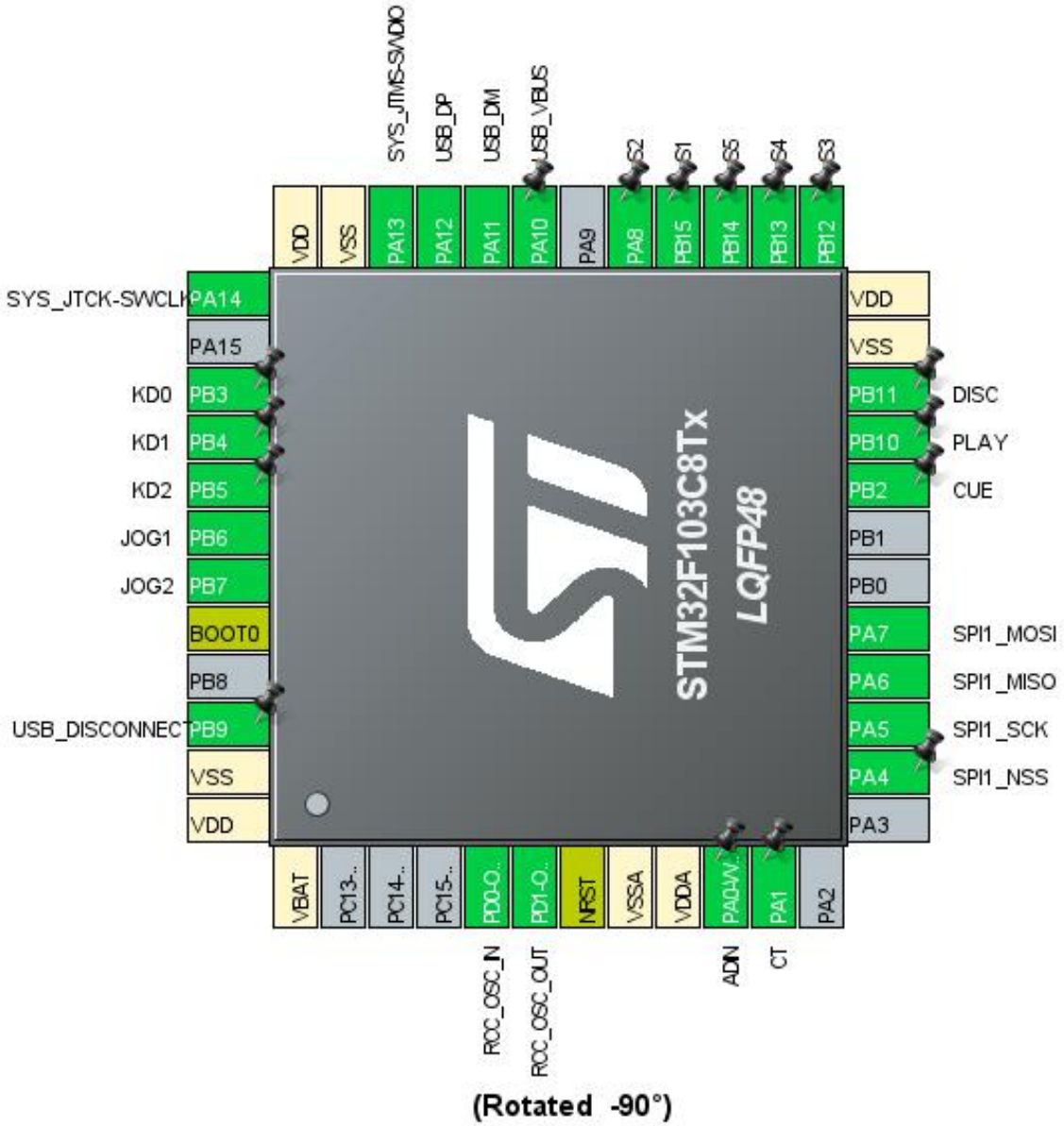
1.1. Project

Project Name	CDJ_Control_C8
Board Name	custom
Generated with:	STM32CubeMX 5.4.0
Date	11/10/2019

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F103
MCU name	STM32F103C8Tx
MCU Package	LQFP48
MCU Pin number	48

2. Pinout Configuration



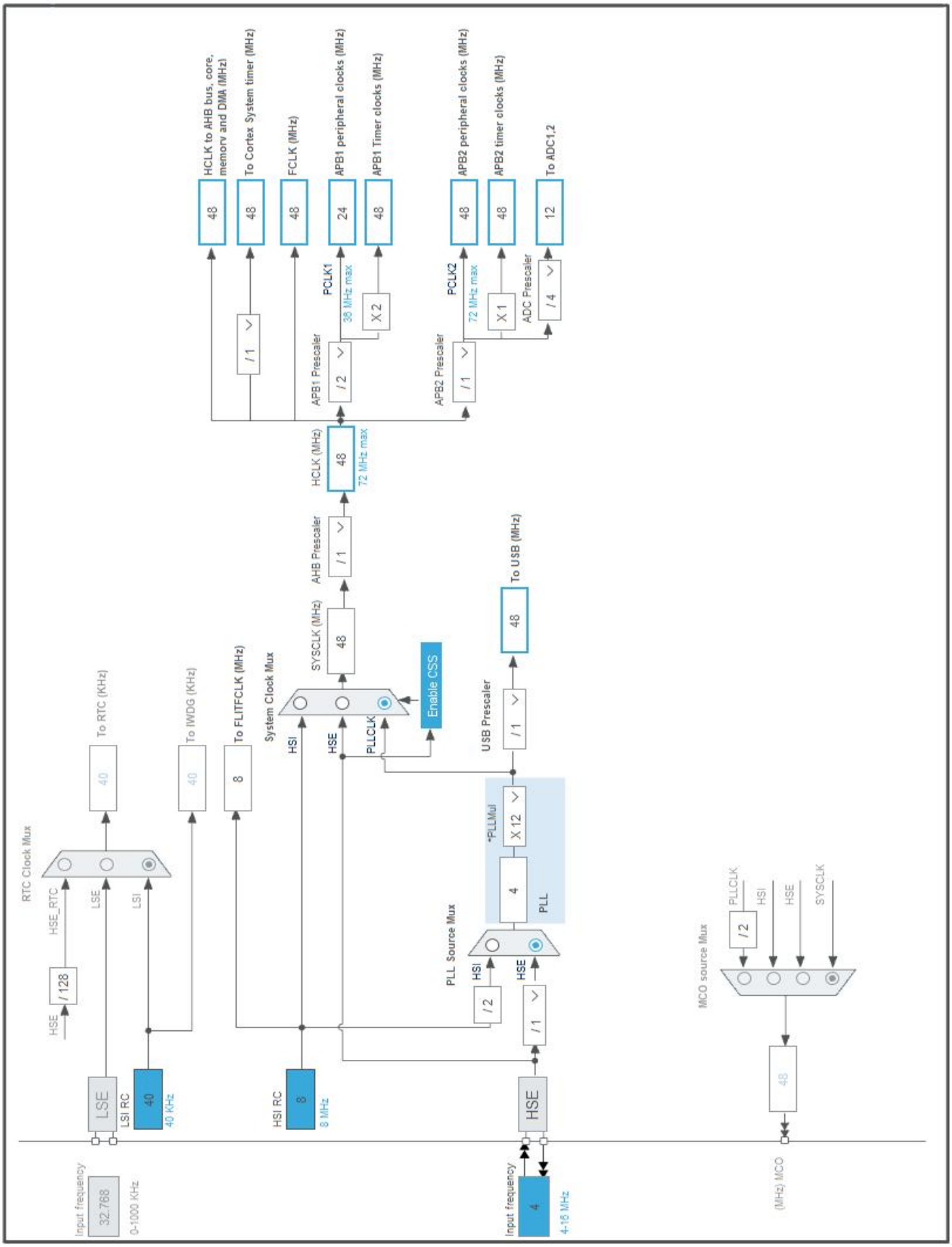
3. Pins Configuration

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
5	PD0-OSC_IN	I/O	RCC_OSC_IN	
6	PD1-OSC_OUT	I/O	RCC_OSC_OUT	
7	NRST	Reset		
8	VSSA	Power		
9	VDDA	Power		
10	PA0-WKUP	I/O	ADC1_IN0	ADIN
11	PA1	I/O	ADC1_IN1	CT
14	PA4 *	I/O	GPIO_Output	SPI1_NSS
15	PA5	I/O	SPI1_SCK	
16	PA6	I/O	SPI1_MISO	
17	PA7	I/O	SPI1_MOSI	
20	PB2 *	I/O	GPIO_Output	CUE
21	PB10 *	I/O	GPIO_Output	PLAY
22	PB11 *	I/O	GPIO_Output	DISC
23	VSS	Power		
24	VDD	Power		
25	PB12 *	I/O	GPIO_Output	S3
26	PB13 *	I/O	GPIO_Output	S4
27	PB14 *	I/O	GPIO_Output	S5
28	PB15 *	I/O	GPIO_Output	S1
29	PA8 *	I/O	GPIO_Output	S2
31	PA10	I/O	GPIO_EXTI10	USB_VBUS
32	PA11	I/O	USB_DM	
33	PA12	I/O	USB_DP	
34	PA13	I/O	SYS_JTMS-SWDIO	
35	VSS	Power		
36	VDD	Power		
37	PA14	I/O	SYS_JTCK-SWCLK	
39	PB3 *	I/O	GPIO_Input	KD0
40	PB4 *	I/O	GPIO_Input	KD1
41	PB5 *	I/O	GPIO_Input	KD2
42	PB6	I/O	TIM4_CH1	JOG1
43	PB7	I/O	TIM4_CH2	JOG2
44	BOOT0	Boot		
46	PB9 *	I/O	GPIO_Output	USB_DISCONNECT

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
47	VSS	Power		
48	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. Software Project

5.1. Project Settings

Name	Value
Project Name	CDJ_Control_C8
Project Folder	C:\workspace\CDJ_Control_C8
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_F1 V1.8.0

5.2. Code Generation Settings

Name	Value
STM32Cube MCU packages and embedded software	Copy only the necessary library files
Generate peripheral initialization as a pair of '.c/.h' files	Yes
Backup previously generated files when re-generating	Yes
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	Yes

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32F1
Line	STM32F103
MCU	STM32F103C8Tx
Datasheet	13587_Rev17

6.2. Parameter Selection

Temperature	25
Vdd	3.3

7. IPs and Middleware Configuration

7.1. ADC1

mode: IN0

mode: IN1

7.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode	Independent mode

ADC_Settings:

Data Alignment	Right alignment
Scan Conversion Mode	Enabled
Continuous Conversion Mode	**Enabled ***
Discontinuous Conversion Mode	Disabled

ADC_Regular_ConversionMode:

Enable Regular Conversions	Enable
Number Of Conversion	**2 ***
External Trigger Conversion Source	**Timer 3 Trigger Out event ***
Rank	1
Channel	Channel 0
Sampling Time	**13.5 Cycles ***
Rank	**2 ***
Channel	**Channel 1 ***
Sampling Time	**13.5 Cycles ***

ADC_Injected_ConversionMode:

Enable Injected Conversions	Disable

WatchDog:

Enable Analog WatchDog Mode	false

7.2. GPIO

7.3. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

7.3.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Prefetch Buffer	Enabled
Flash Latency(WS)	1 WS (2 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

7.4. SPI1

Mode: Full-Duplex Master

7.4.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	**32 ***
Baud Rate	**1.5 MBits/s ***
Clock Polarity (CPOL)	**High ***
Clock Phase (CPHA)	**2 Edge ***

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

7.5. SYS

Debug: Serial Wire

Timebase Source: SysTick

7.6. TIM3

mode: Clock Source

7.6.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**47 ***

Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**199 ***
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)
Trigger Event Selection	**Update Event ***

7.7. TIM4

Combined Channels: Encoder Mode

7.7.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**119 ***
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

Encoder:

Encoder Mode	Encoder Mode TI1
____ Parameters for Channel 1 ____	
Polarity	**Falling Edge ***
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter	**0xf ***
____ Parameters for Channel 2 ____	
Polarity	**Falling Edge ***
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter	**0xf ***

7.8. USB

mode: Device (FS)

7.8.1. Parameter Settings:

Basic Parameters:

Speed	Full Speed 12MBit/s

Power Parameters:

Low Power	Disabled
Link Power Management	Disabled
Battery Charging	Disabled

7.9. USB_DEVICE

Class For FS IP: Audio Device Class

7.9.1. 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_SELF_POWERED (Enabled self power)	Enabled
USBD_DEBUG_LEVEL (USBD Debug Level)	0: No debug message

Class Parameters:

USBD_AUDIO_FREQ (Audio sample frequency rate)	22100

7.9.2. Device Descriptor:

Device Descriptor:

VID (Vendor IDentifier)	**1154 ***
LANGID_STRING (Language Identifier)	English(United States)
MANUFACTURER_STRING (Manufacturer Identifier)	STMicroelectronics

Device Descriptor FS:

PID (Product IDentifier)	22336
PRODUCT_STRING (Product Identifier)	**Pioneer CDJ-100S ***
CONFIGURATION_STRING (Configuration Identifier)	AUDIO Config
INTERFACE_STRING (Interface Identifier)	AUDIO Interface

*** User modified value**

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ADC1	PA0-WKUP	ADC1_IN0	Analog mode	n/a	n/a	ADIN
	PA1	ADC1_IN1	Analog mode	n/a	n/a	CT
RCC	PD0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PD1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SPI1	PA5	SPI1_SCK	Alternate Function Push Pull	n/a	**High ***	
	PA6	SPI1_MISO	Input mode	No pull-up and no pull-down	**n/a**	
	PA7	SPI1_MOSI	Alternate Function Push Pull	n/a	**High ***	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
TIM4	PB6	TIM4_CH1	Input mode	No pull-up and no pull-down	n/a	JOG1
	PB7	TIM4_CH2	Input mode	No pull-up and no pull-down	n/a	JOG2
USB	PA11	USB_DM	n/a	n/a	n/a	
	PA12	USB_DP	n/a	n/a	n/a	
GPIO	PA4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SPI1_NSS
	PB2	GPIO_Output	**Output Open Drain ***	No pull-up and no pull-down	Low	CUE
	PB10	GPIO_Output	**Output Open Drain ***	No pull-up and no pull-down	Low	PLAY
	PB11	GPIO_Output	**Output Open Drain ***	No pull-up and no pull-down	Low	DISC
	PB12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	S3
	PB13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	S4
	PB14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	S5
	PB15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	S1
	PA8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	S2
	PA10	GPIO_EXTI10	**External Interrupt Mode with Rising/Falling edge**	**Pull-down ***	n/a	USB_VBUS
	PB3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	KD0
	PB4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	KD1
	PB5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	KD2
	PB9	GPIO_Output	**Output Open Drain ***	No pull-up and no pull-down	Low	USB_DISCONNECT

8.2. DMA configuration

DMA request	Stream	Direction	Priority
ADC1	DMA1_Channel1	Peripheral To Memory	Low

ADC1: DMA1_Channel1 DMA request Settings:

Mode:	**Circular ***
Peripheral Increment:	Disable
Memory Increment:	**Enable ***
Peripheral Data Width:	Half Word
Memory Data Width:	Half Word

8.3. 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
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
DMA1 channel1 global interrupt	true	1	0
USB low priority or CAN RX0 interrupts	true	0	0
TIM3 global interrupt	true	1	0
TIM4 global interrupt	true	1	0
EXTI line[15:10] interrupts	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1 and ADC2 global interrupts	unused		
USB high priority or CAN TX interrupts	unused		
SPI1 global interrupt	unused		

*** User modified value**

9. Software Pack Report