# 1. Description

1.1. Project

| | |
|---|---|
| Project Name | Receive_sound |
| Board Name | custom |
| Generated with: | STM32CubeMX 5.4.0 |
| Date | 12/04/2019 |

1.2. MCU

| | |
|---|---|
| MCU Series | STM32F1 |
| MCU Line | STM32F103 |
| MCU name | STM32F103RCTx |
| 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 | | |
| 5 | PD0-OSC_IN | I/O | RCC_OSC_IN | |
| 6 | PD1-OSC_OUT | I/O | RCC_OSC_OUT | |
| 7 | NRST | Reset | | |
| 12 | VSSA | Power | | |
| 13 | VDDA | Power | | |
| 18 | VSS | Power | | |
| 19 | VDD | Power | | |
| 20 | PA4 | I/O | DAC_OUT1 | |
| 31 | VSS | Power | | |
| 32 | VDD | Power | | |
| 33 | PB12 * | I/O | GPIO_Output | |
| 34 | PB13 | I/O | SPI2_SCK | |
| 35 | PB14 | I/O | SPI2_MISO | |
| 36 | PB15 | I/O | SPI2_MOSI | |
| 37 | PC6 * | I/O | GPIO_Output | |
| 41 | PA8 | I/O | TIM1_CH1 | |
| 42 | PA9 | I/O | USART1_TX | |
| 43 | PA10 | I/O | USART1_RX | |
| 46 | PA13 | I/O | SYS_JTMS-SWDIO | |
| 47 | VSS | Power | | |
| 48 | VDD | Power | | |
| 49 | PA14 | I/O | SYS_JTCK-SWCLK | |
| 60 | BOOT0 | Boot | | |
| 63 | VSS | Power | | |
| 64 | VDD | Power | | |

 * The pin is affected with an I/O function

# 4. Clock Tree Configuration
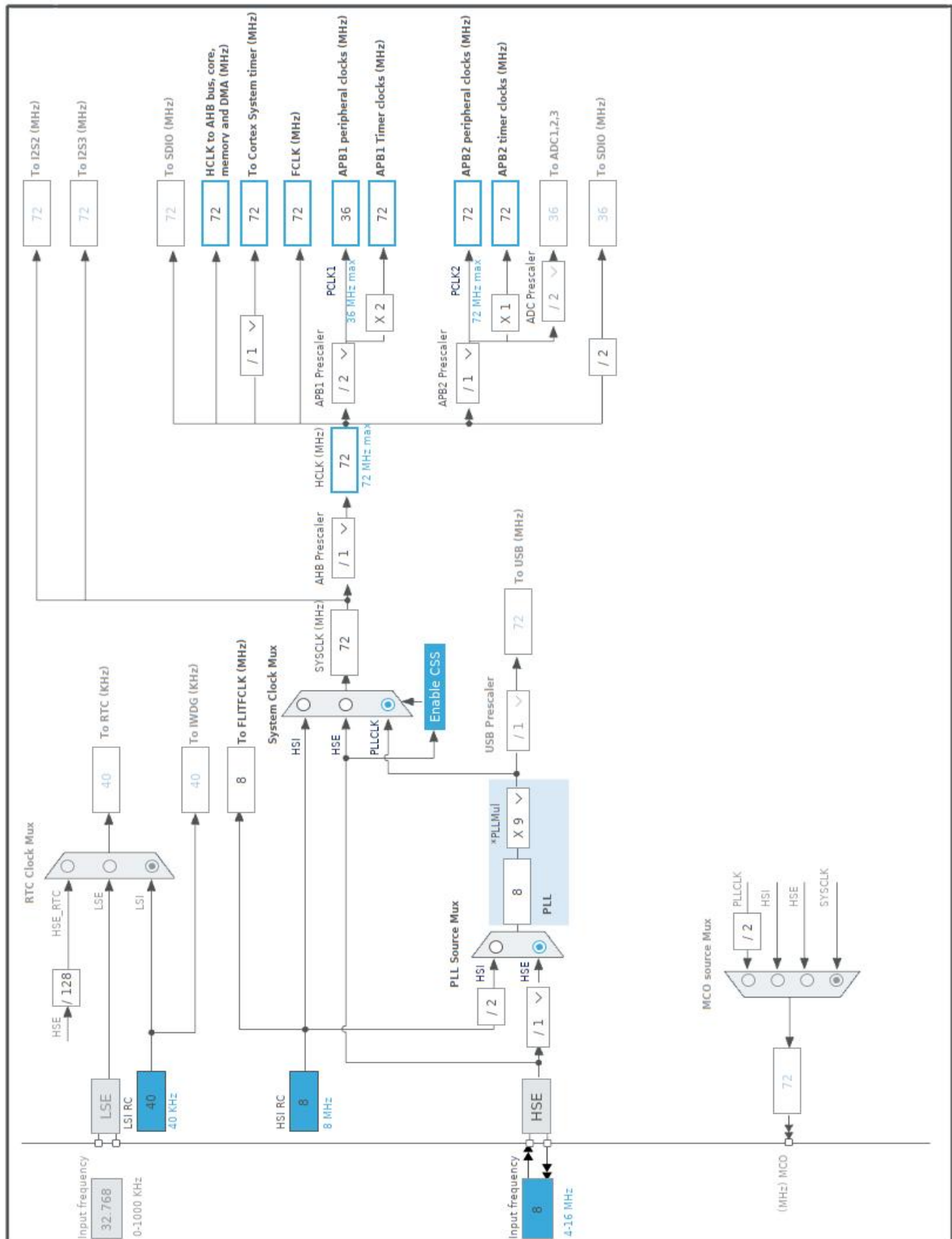
# 5. Software Project

## 5.1. Project Settings

| Name | Value |
|---|---|
| Project Name | Receive_sound |
| Project Folder | /home/danglamtung/STM32CubeIDE/workspace_1.0.2/Receive_sound |
| 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 | 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 |

# 6. Power Consumption Calculator report

6.1. Microcontroller Selection

| | |
|---|---|
| Series | STM32F1 |
| Line | STM32F103 |
| MCU | STM32F103RCTx |
| Datasheet | 14611_Rev12 |

6.2. Parameter Selection

| | |
|---|---|
| Temperature | 25 |
| Vdd | 3.3 |

Configuration Report

# 7. IPs and Middleware Configuration

## 7.1. DAC

**mode: OUT1 Configuration**

**7.1.1. Parameter Settings:**

**DAC Out1 Settings:**

| | |
|---|---|
| Output Buffer | Enable |
| Trigger | None |

## 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) | 2 WS (3 CPU cycle) |

**RCC Parameters:**

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

## 7.4. SPI2

**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) | 2 |
| Baud Rate | **18.0 MBits/s *** |

| | |
|---|---|
| Clock Polarity (CPOL) | Low |
| Clock Phase (CPHA) | 1 Edge |

**Advanced Parameters:**

| | |
|---|---|
| CRC Calculation | Disabled |
| NSS Signal Type | Software |

## 7.5. SYS

**Debug: Serial Wire**
**Timebase Source: SysTick**

## 7.6. TIM1

**Clock Source   : Internal Clock**
**Channel1: PWM Generation CH1**
**7.6.1. Parameter Settings:**

**Counter Settings:**

| | |
|---|---|
| Prescaler (PSC - 16 bits value) | **2 \*** |
| Counter Mode | Up |
| Counter Period (AutoReload Register - 16 bits value ) | **2000 \*** |
| Internal Clock Division (CKD) | No Division |
| Repetition Counter (RCR - 8 bits value) | 0 |
| 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) |

**Break And Dead Time management - BRK Configuration:**

| | |
|---|---|
| BRK State | Disable |
| BRK Polarity | High |

**Break And Dead Time management - Output Configuration:**

| | |
|---|---|
| Automatic Output State | Disable |
| Off State Selection for Run Mode (OSSR) | Disable |
| Off State Selection for Idle Mode (OSSI) | Disable |
| Lock Configuration | Off |

**PWM Generation Channel 1:**

| | |
|---|---|
| Mode | PWM mode 1 |
| Pulse (16 bits value) | 0 |
| Output compare preload | Enable |
| Fast Mode | Disable |

CH Polarity                              High
CH Idle State                            Reset


## 7.7. USART1

**Mode: Asynchronous**

**7.7.1. 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**

# 8. System Configuration

## 8.1. GPIO configuration

| IP | Pin | Signal | GPIO mode | GPIO pull/up pull down | Max Speed | User Label |
|---|---|---|---|---|---|---|
| DAC | PA4 | DAC_OUT1 | Analog mode | n/a | n/a | |
| 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 | |
| SPI2 | PB13 | SPI2_SCK | Alternate Function Push Pull | n/a | **High \*** | |
| | PB14 | SPI2_MISO | Input mode | No pull-up and no pull-down | **n/a** | |
| | PB15 | SPI2_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 | |
| TIM1 | PA8 | TIM1_CH1 | Alternate Function Push Pull | n/a | Low | |
| USART1 | PA9 | USART1_TX | Alternate Function Push Pull | n/a | **High \*** | |
| | PA10 | USART1_RX | Input mode | No pull-up and no pull-down | **n/a** | |
| GPIO | PB12 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | **Medium \*** | |
| | PC6 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | **Medium \*** | |

## 8.2. DMA configuration

nothing configured in DMA service

## 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 |
| USART1 global interrupt | true | 0 | 0 |
| PVD interrupt through EXTI line 16 | unused | | |
| Flash global interrupt | unused | | |
| RCC global interrupt | unused | | |
| TIM1 break interrupt | unused | | |
| TIM1 update interrupt | unused | | |
| TIM1 trigger and commutation interrupts | unused | | |
| TIM1 capture compare interrupt | unused | | |
| SPI2 global interrupt | unused | | |

**\* User modified value**

# *9. Software Pack Report*