



# STEVAL-CCA021V1

## USB audio demonstration board based on the STM32F103RE and TS4657

Data brief

### Features

- STM32F103RE performance line microcontroller
- 16 MHz crystal unit
- USB connector and ESD protection
- Two LEDs driven by the microcontroller
- Push button to control the firmware mode
- TS4657 - single supply stereo digital audio line driver with 2.2 V<sub>RMS</sub> capless outputs:
  - 16- to 24-bit audio data format stereo DAC, 32 to 48 kHz sample rate
  - I<sup>2</sup>S, right or left-justified compatible digital audio interface
- TS2012 - filter-free stereo 2x2.8 W class D audio power amplifier
- TS4962 - 2.8 W filter-free mono class D audio power amplifier
  - Output available either through mono jack connector or to on-board speaker
- TS472 - very low noise microphone preamplifier with 2.0 V bias output and active low standby mode
  - Single-ended output available for connection to ADC of a microcontroller
- On-board microphone and small speaker
- RoHS compliant



### Description

The STEVAL-CCA021V1 demonstration board implements a USB audio card based on the STM32F103RE microcontroller and the TS4657 audio digital-to-analog converter (decoder). The complete system consists of a controller board driven by the STM32F103RE microcontroller, and a TS4657-based audio board.

Mono audio output is available either through the TS4962-driven on-board speaker or via the mono jack connector, and stereo output is possible through the TS2012 stereo audio amplifier which can drive external speakers. Both audio amplifiers are class D.

For audio input, an on-board microphone is connected through the TS472 microphone pre-amplifier to the ADC input of the microcontroller. It is possible to disconnect the controller section from the audio section to use the boards individually for other applications.

# 1 Schematic diagrams

Figure 1. Schematic diagram of the STM32F103RE-based controller board

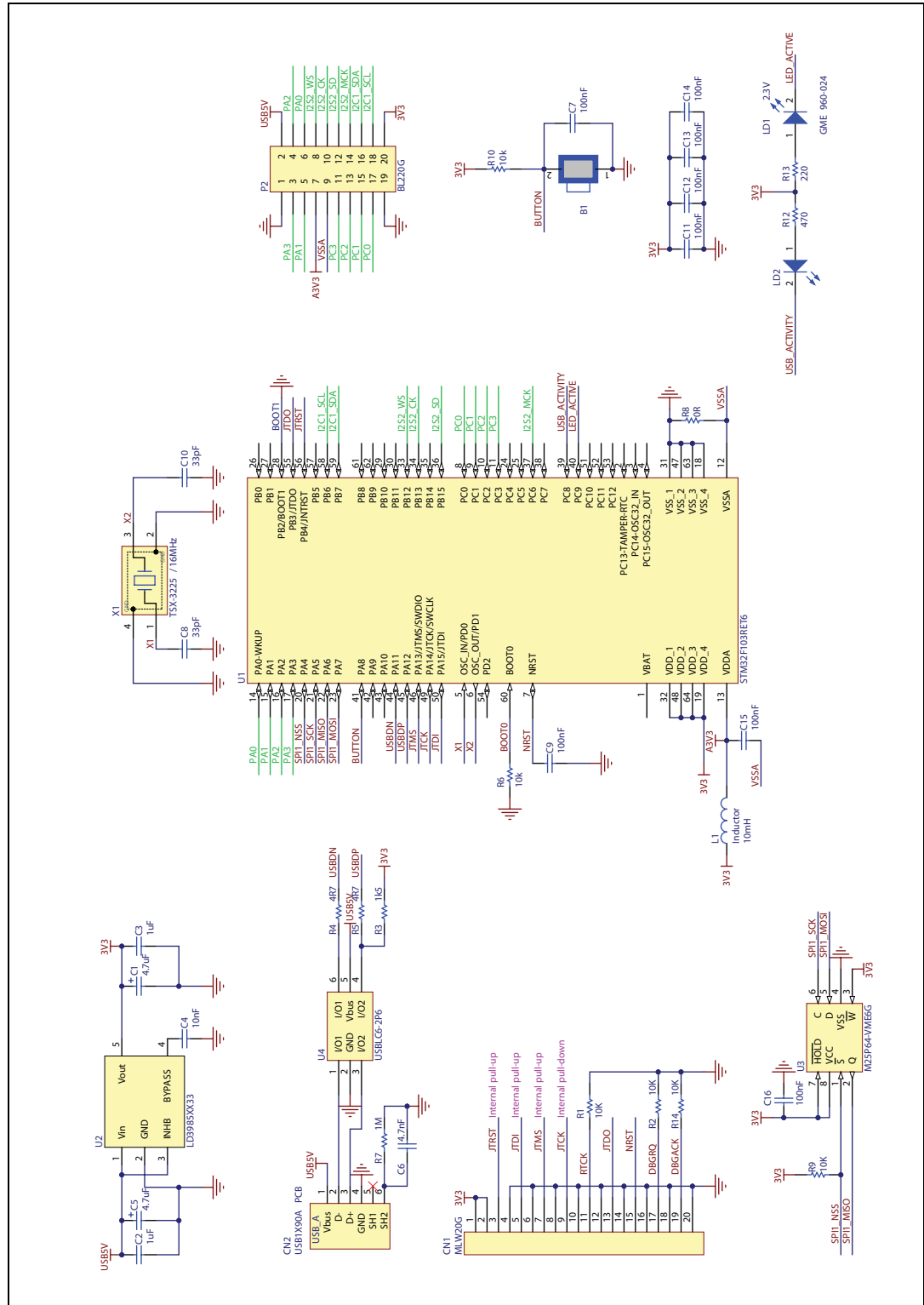
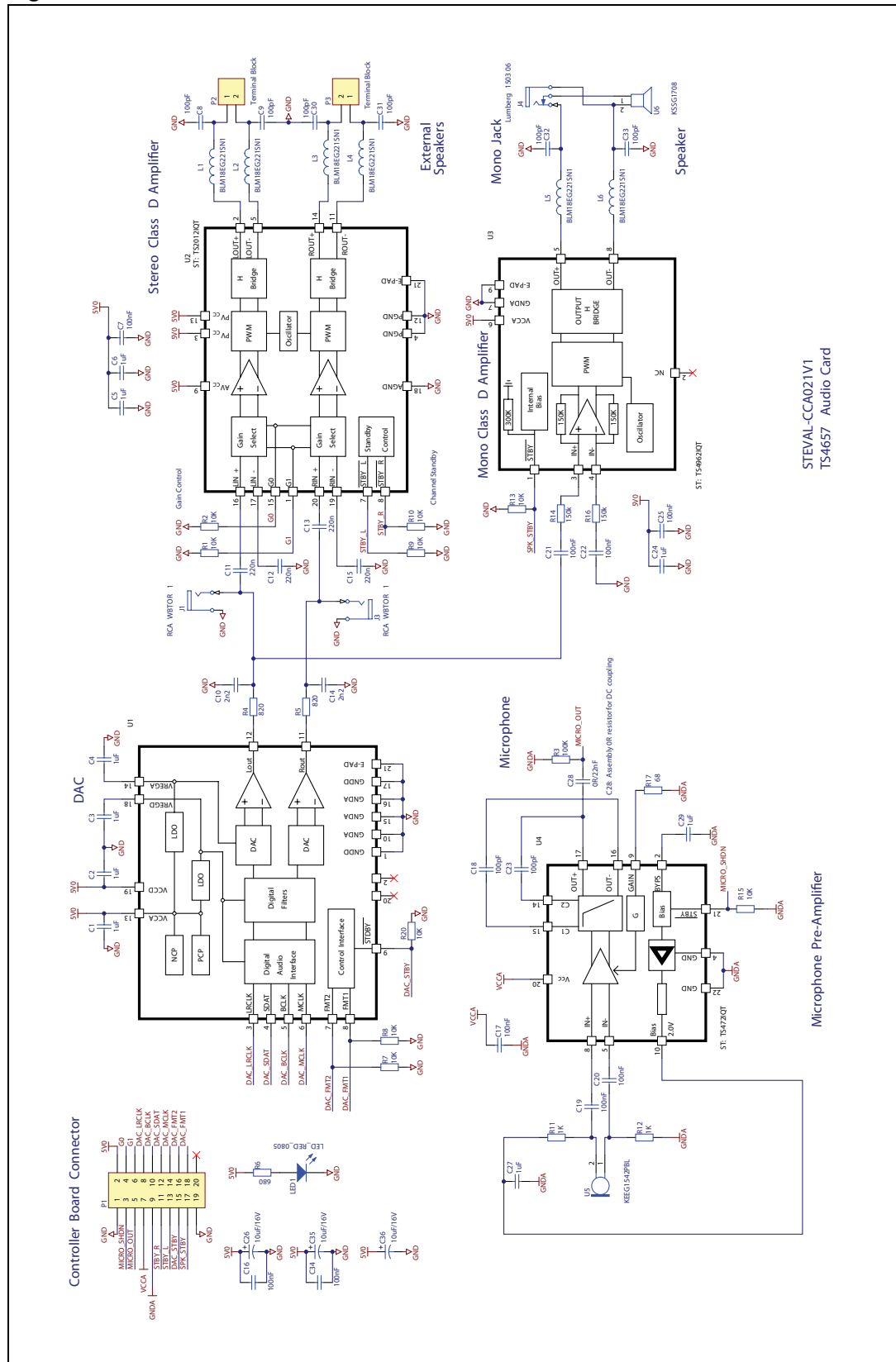


Figure 2. Schematic circuit of the TS4657-based audio board



STEVAL-CCA021V1  
TS4657 Audio Card

## 2 Revision history

**Table 1. Document revision history**

Date	Revision	Changes
29-Sep-2009	1	Initial release.

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