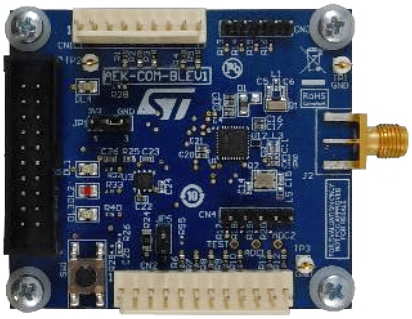
AEK-COM-BLEV1

Data brief

Bluetooth communication board based on BlueNRG-1



Features

- Based on the BlueNRG-1 Bluetooth low energy system on chip
- Associated STSW-BLUENRG-DK (BlueNRG-1 development kit software package) including firmware and documentation
- Up to +8 dBm available output power (at antenna connector)
- Excellent receiver sensitivity (-88 dBm)
- Very low power consumption: 7.7 mA RX and 8.2 mA TX at +0 dBm
- Bluetooth® low energy compliant: supports master, slave and simultaneous master-and-slave roles
- New integrated balun BALF-NRG-02D3 which integrates a matching network and harmonics filter
- 3 user LEDs
- JTAG debug connector
- Pre-programmed as network processor
- Board size: 60 x 40 mm.
- Part of the AutoDevKit™ initiative
- RoHS and WEEE compliant

Description

The AEK-COM-BLEV1 evaluation board is based on the BlueNRG-1 low power Bluetooth® smart system on chip, compliant with the Bluetooth® specification.

The evaluation board can be connected to a microcontroller via a 12-pin or alternative 9-pin male connector for SPI, serial interface or I²C communication.

The BlueNRG-1 device is supplied with the network processor software loaded and ready to process Bluetooth commands. The software image (DTM_UART.hex) is available in the BlueNRG design kit.

The STSW-AEKBLE firmware provides a straightforward demonstration of the AEK-COM-BLEV1 board functionality used in conjunction with the AEK-MCU-C4MLIT1 evaluation board with microcontroller.

Product summary	
Bluetooth communication board based on the BlueNRG-1	AEK-COM-BLEV1
Firmware for AEK-COM-BLEV1 testing	STSW-AEKBLE
Bluetooth® low energy system-on-chip	BlueNRG-1
Setup for BlueNRG kits	STSW-BLUENRG-DK
50 Ω, conjugate match balun to BlueNRG transceiver, with integrated harmonic filter	BALF-NRG-02D3
Applications	Factory Automation Bluetooth Low Energy Mobility Services

1 Loading firmware onto the BlueNRG-1 chip

Follow the procedure below to restore the factor firmware on the BlueNRG-1 device.

1.1 Hardware and software requirements

- ST-LINK/V2 programmer/debugger, which is connected through the evaluation board JTAG port
- STSW-LINK007 - ST-LINK/V2 firmware upgrade
- STSW-LINK009 - ST-LINK/V2 Windows driver
- STSW-BNRG1STLINK - ST-LINK utility required to burn the code in the BlueNRG-1
- STSW-BLUENRG-DK - design kit containing the Flash image for the BlueNRG-1. After installing the design kit, go to the installation directory ([**Firmware**]>[**BLE_Examples**]>[**DTM**]>[**BlueNRG-1**]) to find the “DTM_UART.hex” file

1.2 Firmware burning procedure

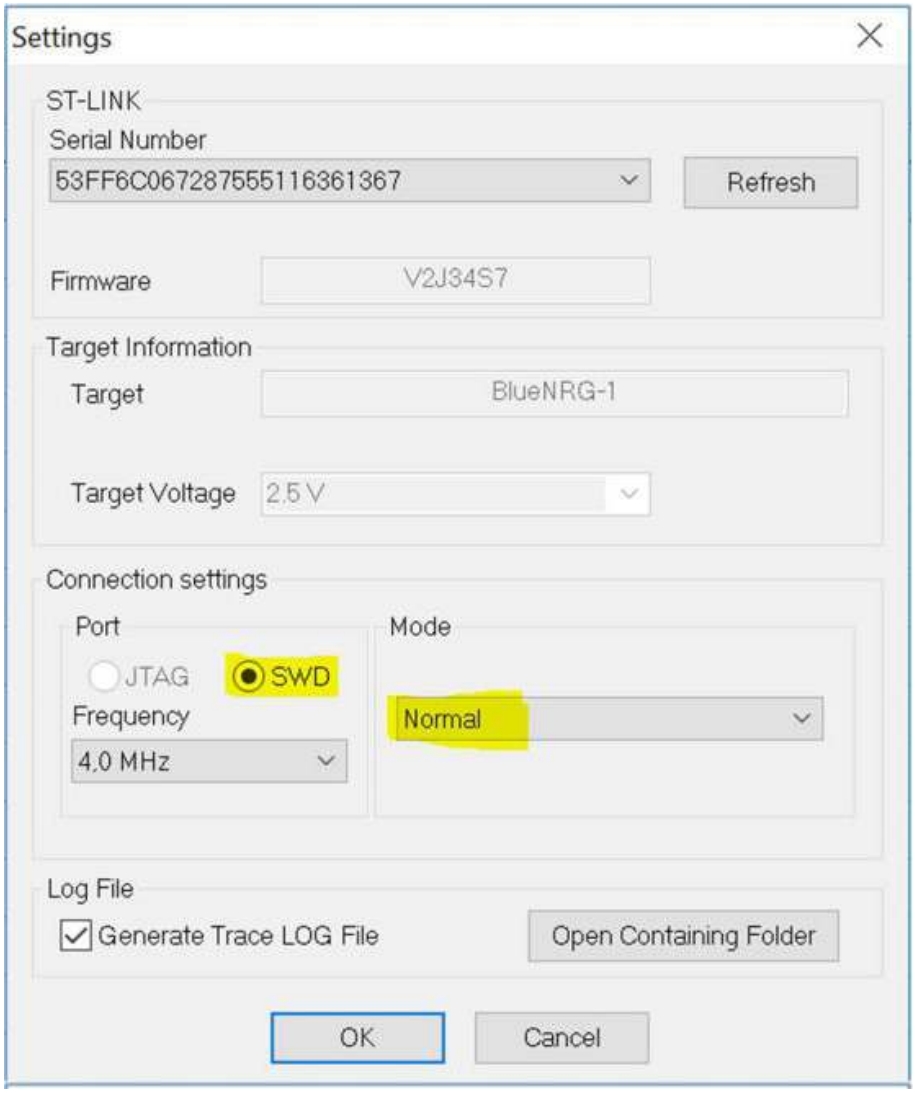
Step 1. Connect the ST-LINK/V2 to the PC via USB and to the AEK-COM-BLEV1 evaluation board JTAG port

Step 2. Run the BlueNRG-1 ST-LINK Utility

Step 3. From the top menu, select [**Target**]>[**Settings**] and ensure the following parameters are set:

- Frequency: 4.0 MHz
- Mode: Normal
- Port: SWD

Figure 1. BlueNRG-1 ST-LINK Utility settings



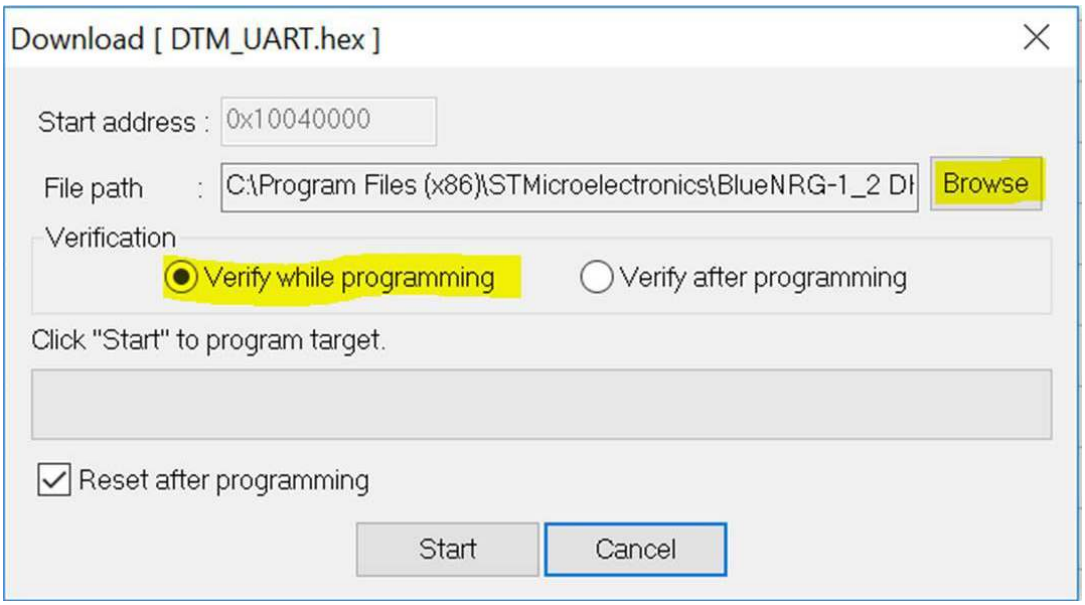
Step 4. Press [**OK**] to confirm

Step 5. From the main menu, select [**Target**]>[**Connect**] to connect the programmer
The ST-LINK/V2 LED starts blinking

Step 6. From main menu, select [**Target**]>[**Program Verify**]

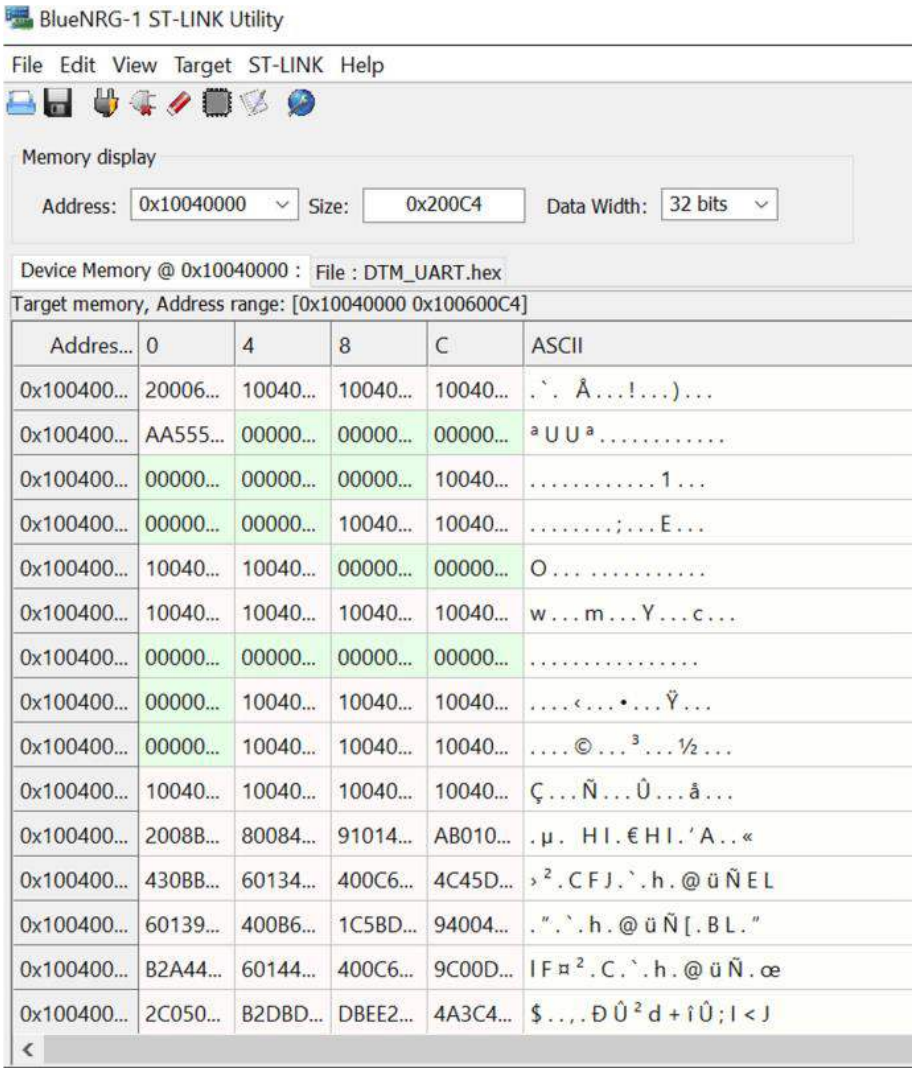
Step 7. Press [**Browse**] and select DTM_UART.hex from the disk to download it

Figure 2. DTM_UART.hex file downloading



Step 8. Press [**Start**] to Flash the image onto the BlueNRG-1 memory

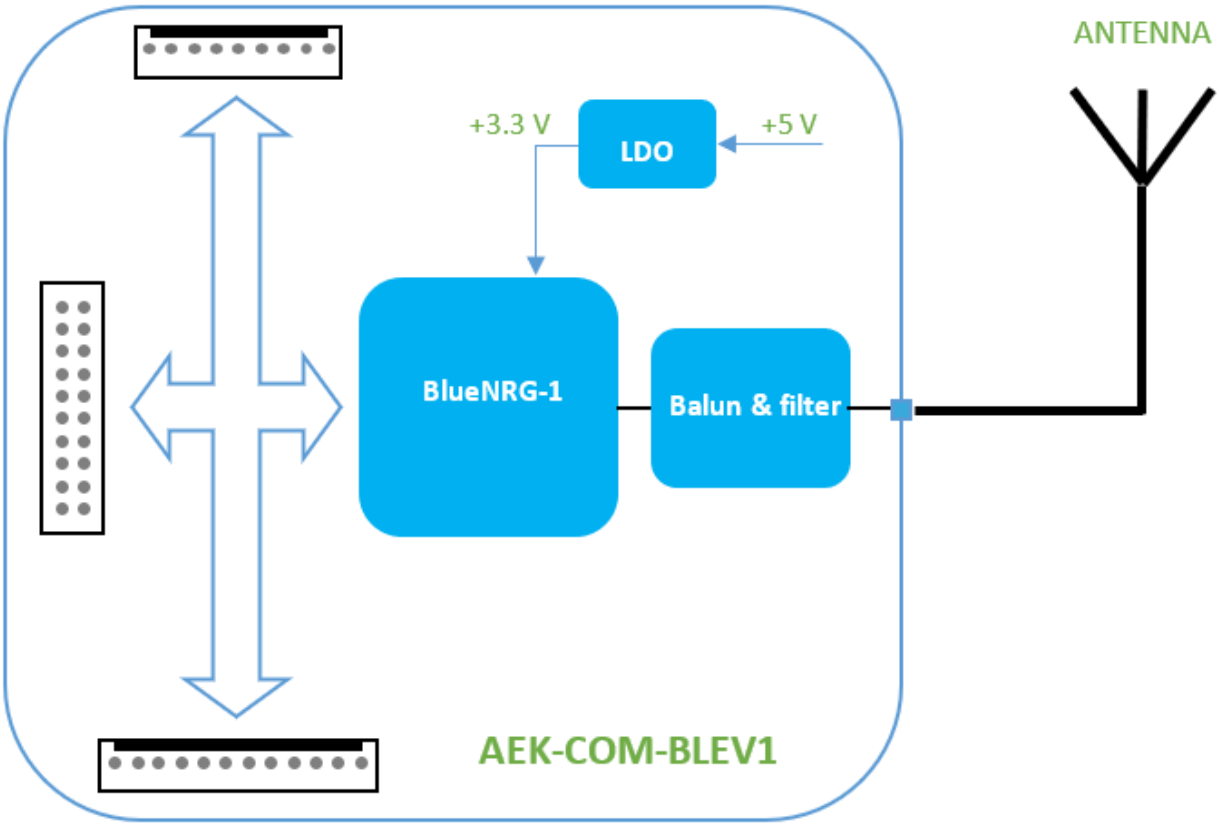
Figure 3. BlueNRG-1 ST LINK Utility device memory



Step 9. From the main menu, select[]>[**Target**]>[**Disconnect**] to disconnect the programmer

2 Block diagram

Figure 4. **AEK-COM-BLEV1 block diagram**



3 Schematic diagrams

Figure 5. **AEK-COM-BLEV1 schematic diagram (1 of 4)**

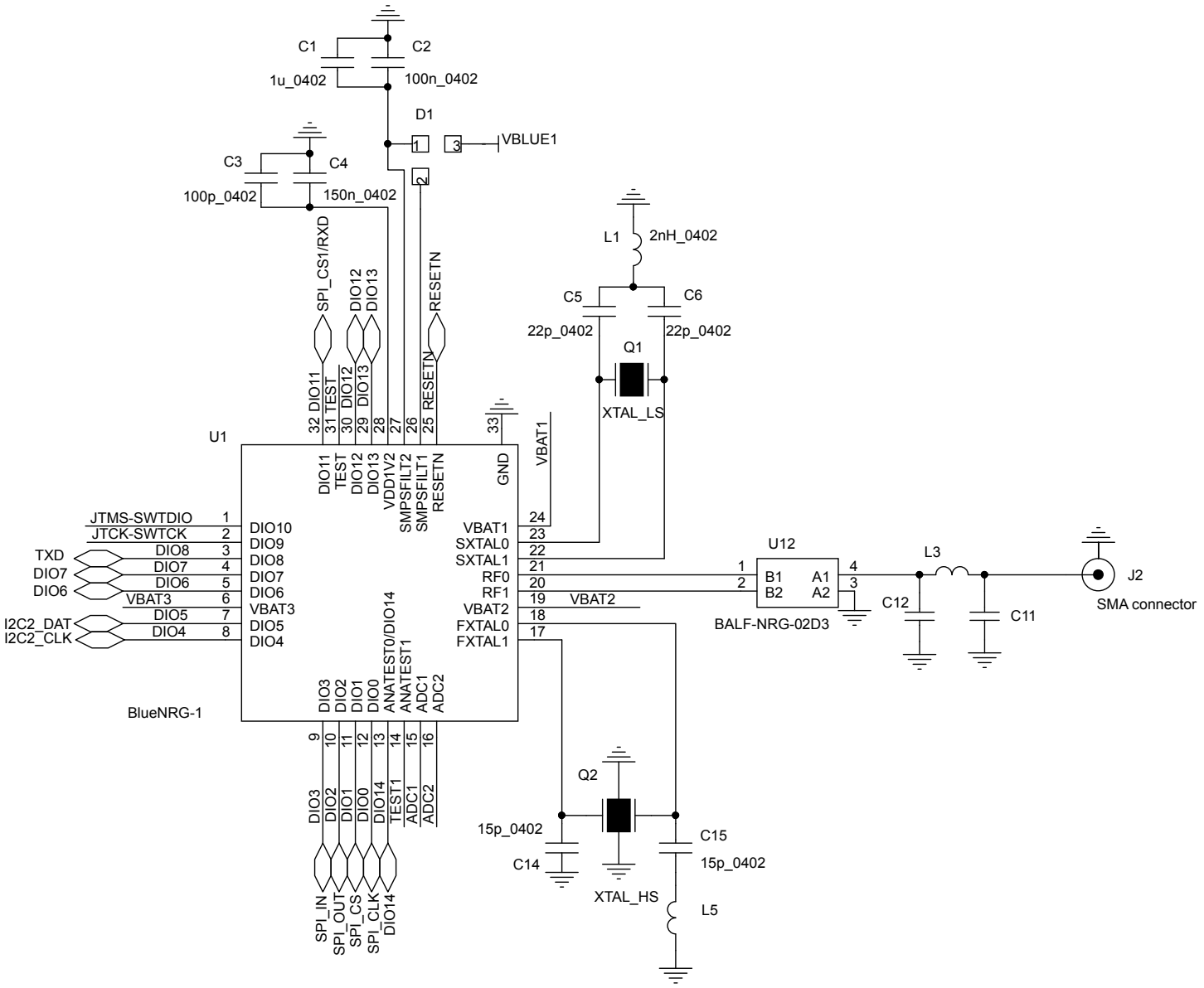


Figure 6. **AEK-COM-BLEV1 schematic diagram (2 of 4)**

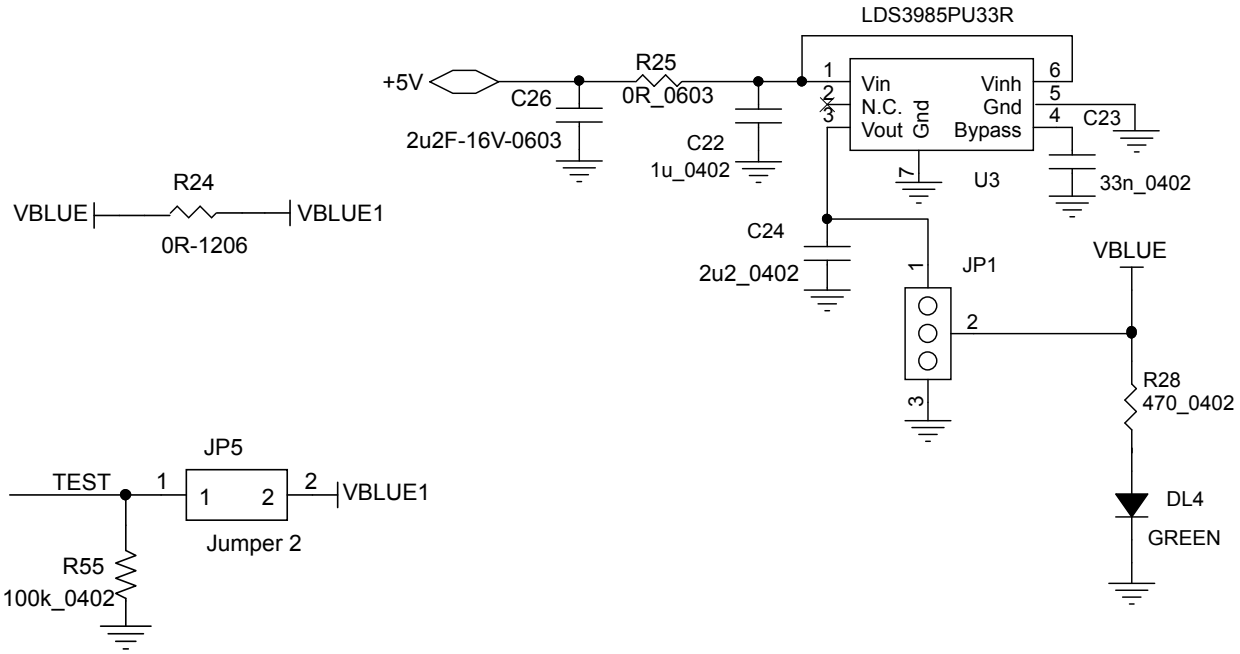


Figure 7. **AEK-COM-BLEV1 schematic diagram (3 of 4)**

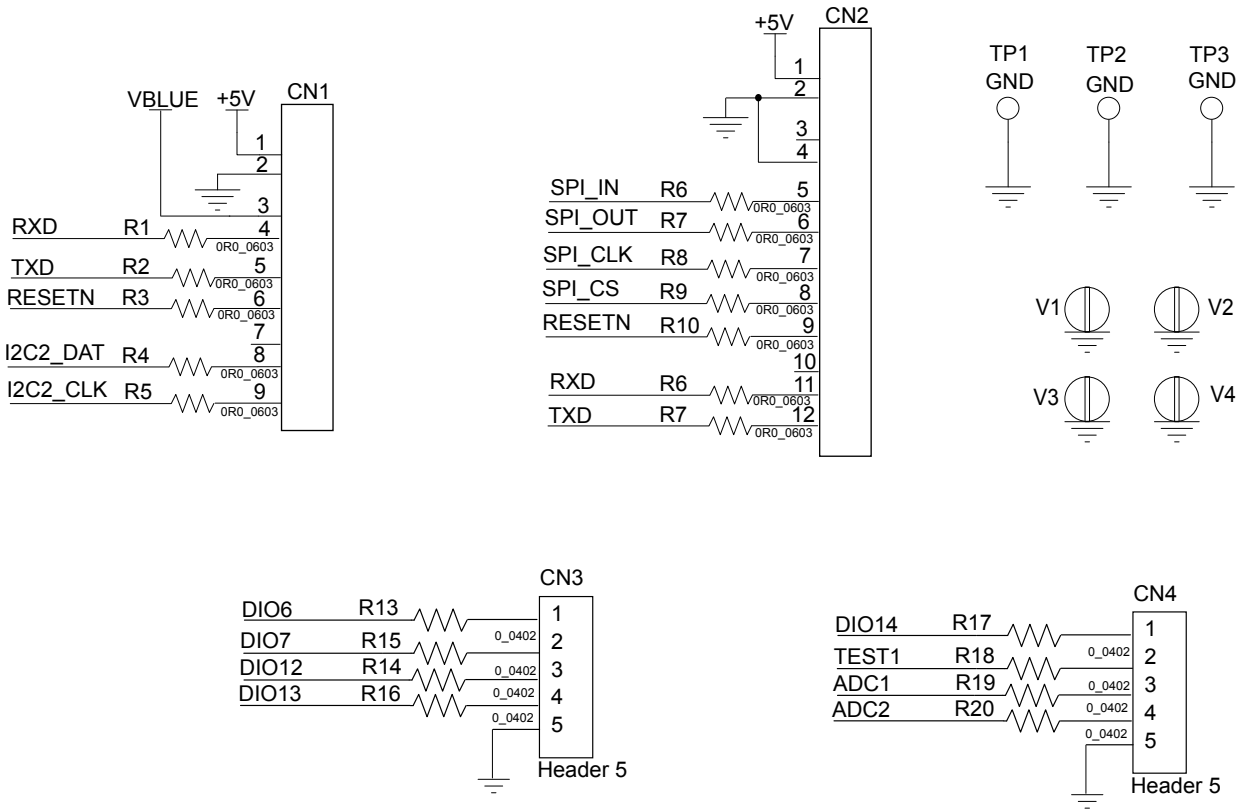
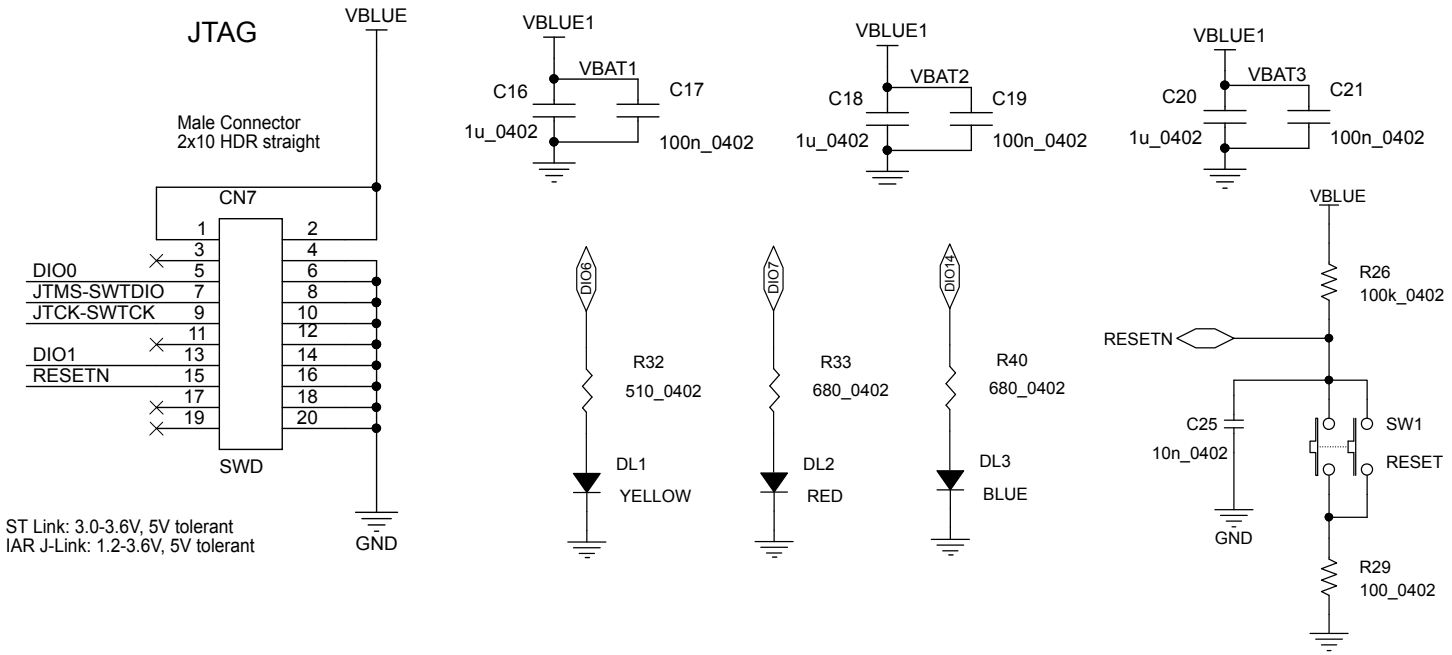


Figure 8. **AEK-COM-BLEV1 schematic diagram (4 of 4)**



Revision history

Table 1. **Document revision history**

Date	Version	Changes
19-Feb-2020	1	Initial release.

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