

Risk Assessment for EU-Type Examination according to DIRECTIVE 2014/30/EU

Products: Name: **QCIOT ZSSC PMOD™ Boards Test Setup**
Models: **QCIOT-USB2SERDEMOZ rev A.,**
US082-SSC3240EVZ rev. A,
US082-SSZ3224EVZ rev. A,
QCIOT-DA7212EVZ rev.A

1. Product Description

1.1. The product is comprised of several independent boards that are a new designs of different sensor signal conditioners, a USB to serial converter with a standard Pmod™ connection and an audio codec board connected to an MCU evaluation Kit acting as a carrier board.

1.1.1. **QCIOT-USB2SERDEMOZ** – USB to serial (UART, SPI, I2C, I3C) converter board. Key components:

- 1.1.1.1. RA4E2 MCU running at 40 MHz
- 1.1.1.2. Wide input LDO RAA2142504
- 1.1.1.3. Programmable mixed signal matrix SLG46538V

1.1.2. **US082-SSC3240EVZ** –sensor signal conditioning evaluation Pmod™ board for precise resistance measurement. It contains one key component, ZSSC3240.

1.1.3. **US082-SSZ3224EVZ** – high accuracy differential or pseudo differential signal conditioning evaluation Pmod™ board. It contains one key component, ZSSC3224.

1.1.4. **QCIOT-DA7212EVZ** – audio codec evaluation board. Key component is DA7212 audio codec that is clocked at 12.228MHz.

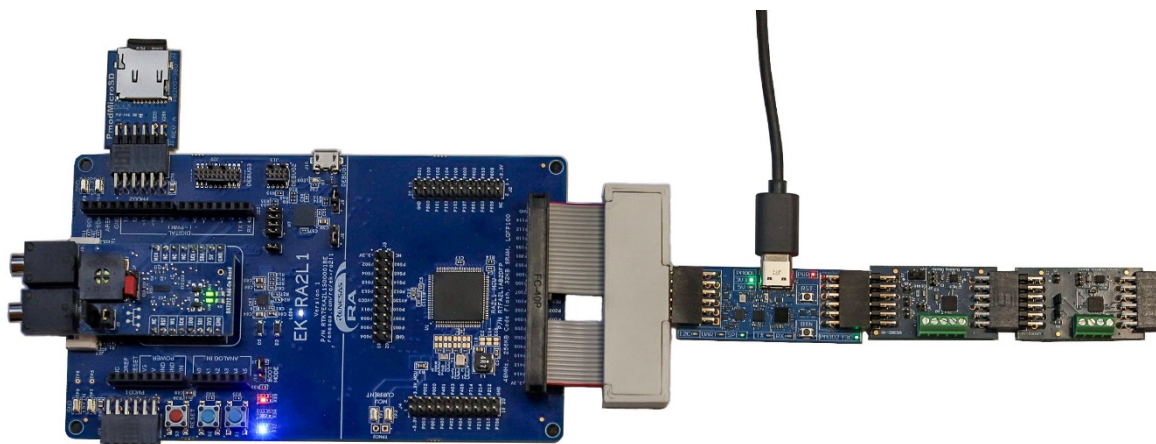


Figure 1 QCIOT ZSSC PMOD™ Boards Setup

2. Test Setup Description

2.1.1. The test setup block diagram is shown in *Figure 2*.

- The test program is running on the QCIOT-USB2SERDEMOZ board that is based on the ARM Cortex M33 clocked at 40MHz.

- Two sensor signal conditioner Pmod™ boards are connected in series to PMOD2 connector of the QCIOT-USB2SERDEMOZ board. Communication is implemented using a standard 100kHz I2C interface.
- QCIOT-DA7212EVZ audio codec is connected to the EK-RA2L1 board using 10MHz SPI and 100kHz I2C. The board itself acts as a carrier for the QCIOT-DA7212EVZ and runs voice recognition and audio playback program. Using standard 115200 bps UART on J1 header it is connected to PMOD1 connector of QCIOT-USB2SERDEMOZ board.
- The setup doesn't need any additional configuration. After QCIOT-USB2SERDEMOZ has power (via USB Type C connector) it starts executing the code.

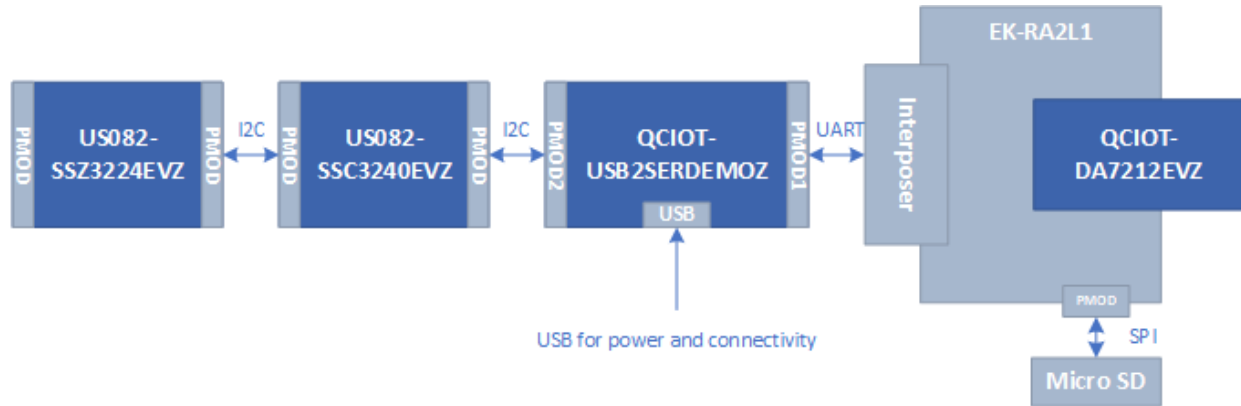


Figure 2. Test setup block diagram

3. Risk evaluation:
 - 3.1. The products mentioned above are intended for use solely by skilled personnel.
 - 3.2. The devices can be sensitive to ESD. They are marked accordingly. To avoid damage, they should be used in an electrostatic free environment.
 - 3.3. The USB connection is used to power and control the setup.
 - 3.4. None of the boards has radio emitters.
 - 3.5. The devices are intended to be used in a laboratory environment with cables shorter than 1 m.
4. Tests selection:
 - 4.1. EN55032 / CISPR 32: Radiated Emissions.
 - 4.2. IEC61000-4-3/EN61000-4-3: Radiated Immunity.
 - 4.3. IEC61000-4-8/EN61000-4-8: Power Frequency Magnetic Field Immunity.
 - 4.4. IEC61000-4-2/EN61000-4-2: ESD (only informative and only indirect discharge).
5. The related test report(s) applies, Renesas_2394 of the independent and accredited EMC Test Laboratory: IMST GmbH, Carl-Friedrich-Gauss-Str. 2-4, 47475 Kamp-Lintfort, Germany

6. Conclusion

With described tests, including their restrictions and the selection of the test object, the worst case was determined to prove the essential requirements of the EMC Directive 2014/30/EU, so that the risk of an EMC violation (non-compliance with the essential requirements) is low.

Manager

Date

Signature