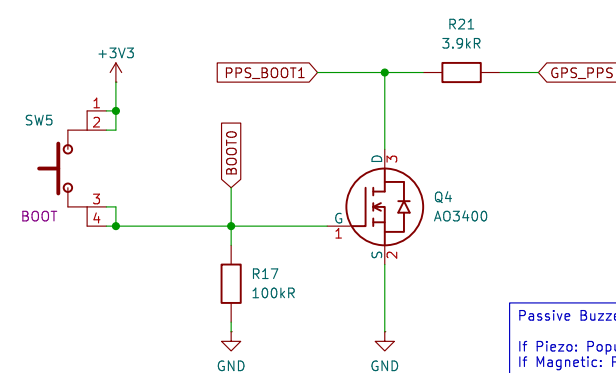
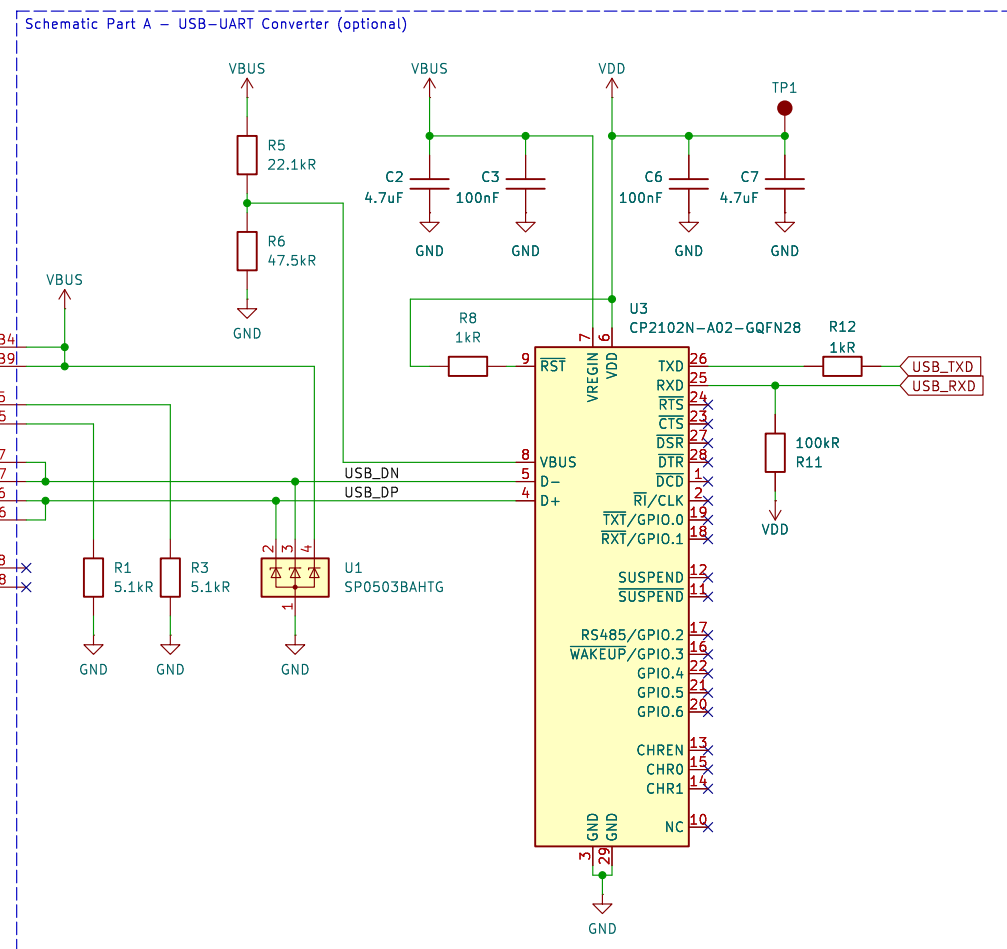
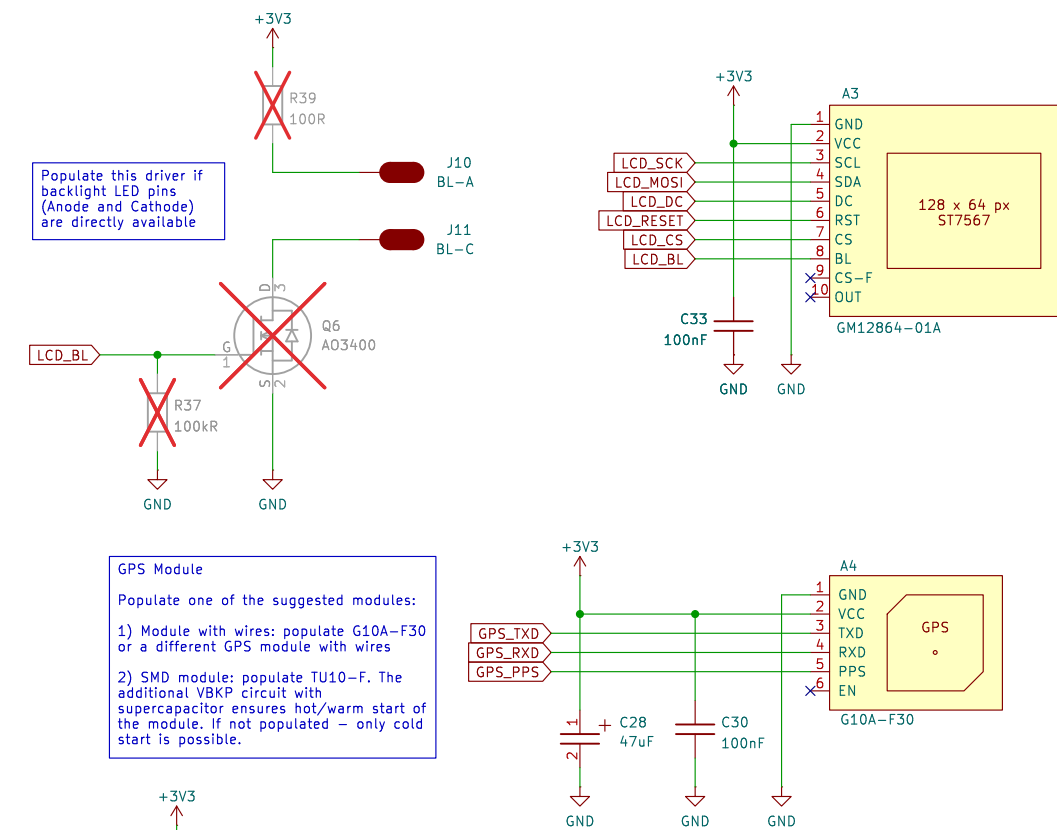
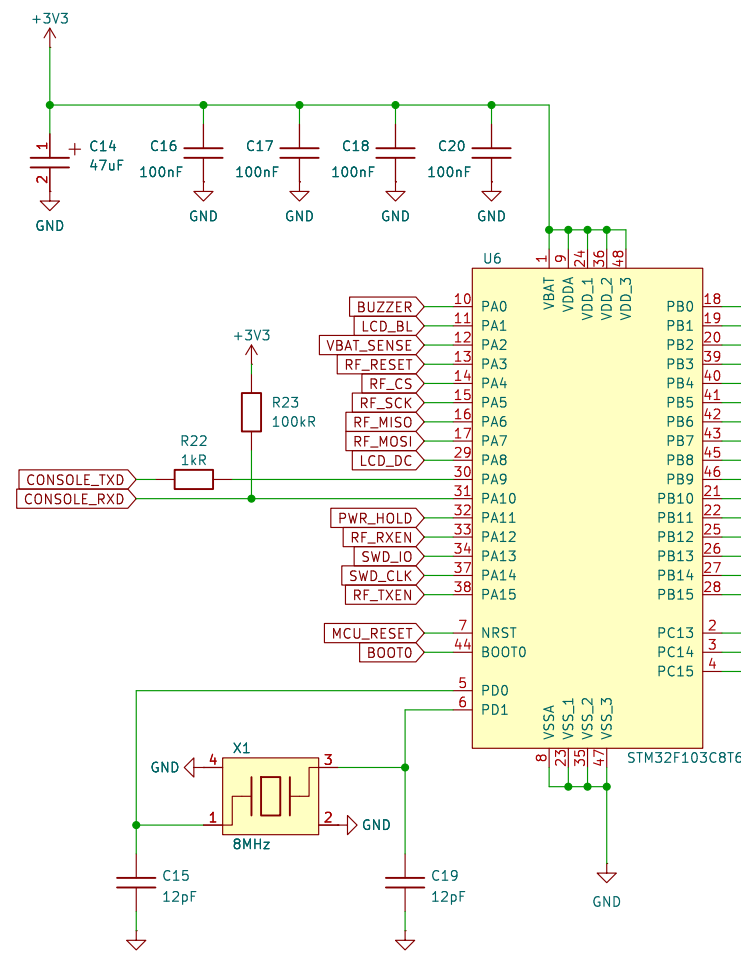
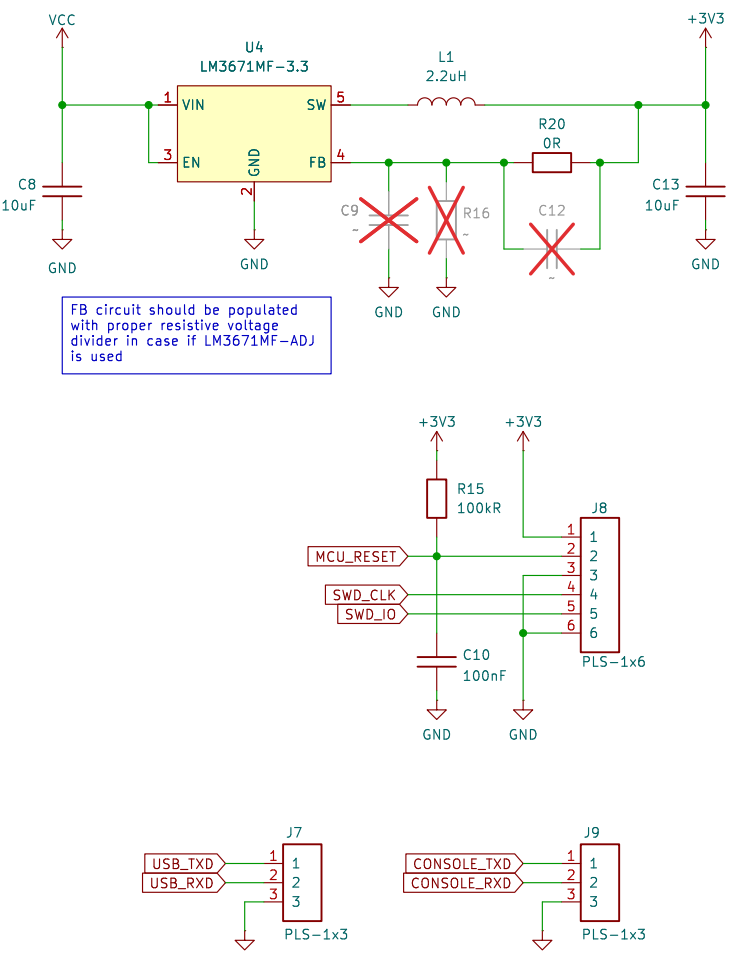
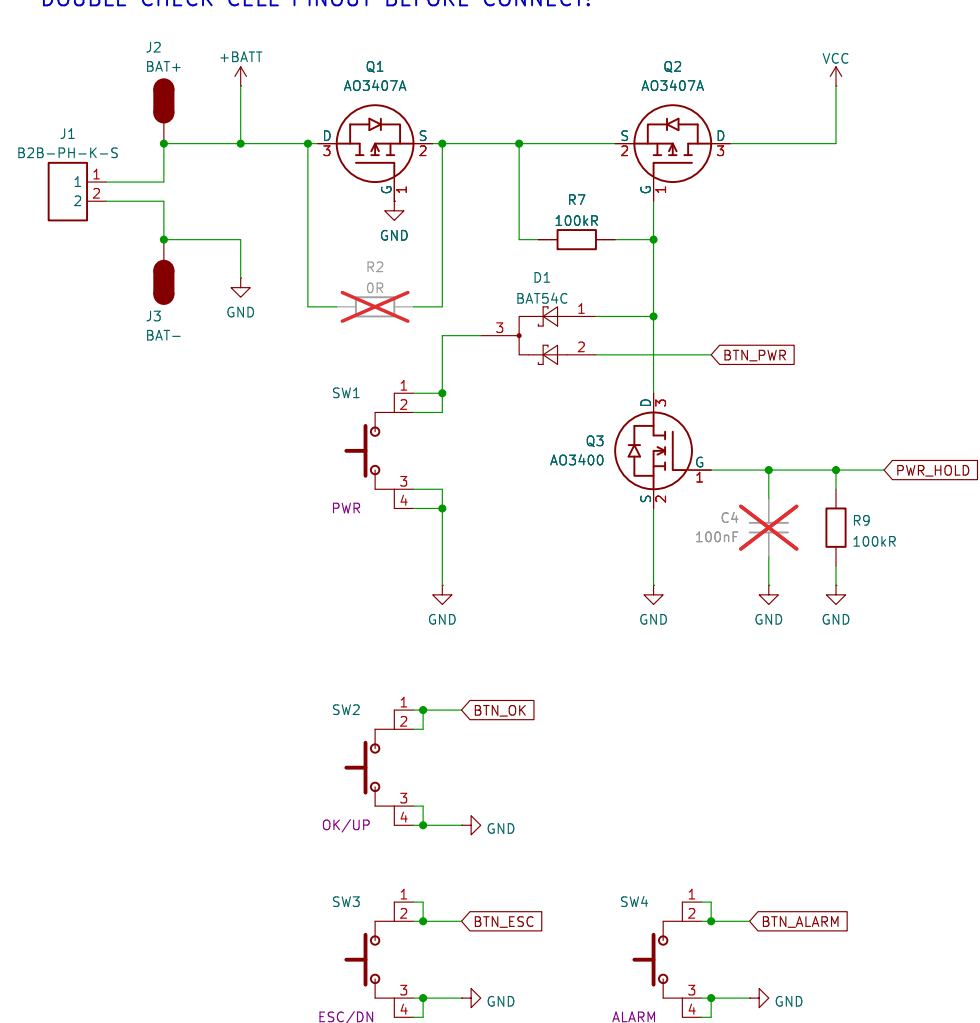
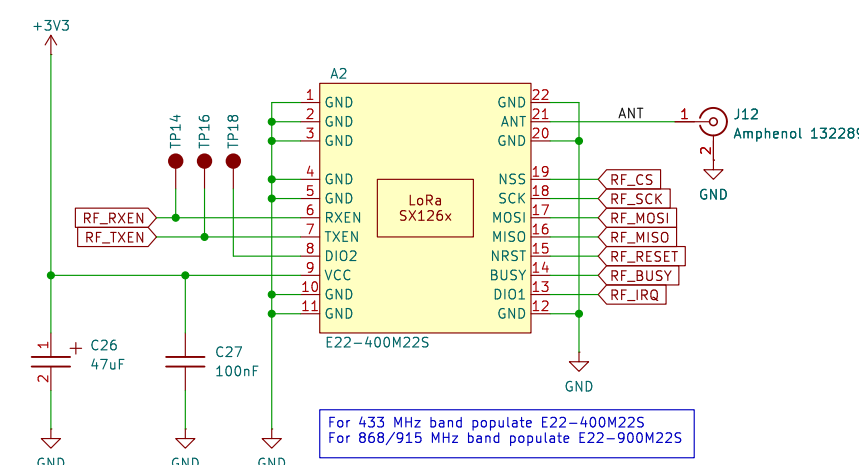
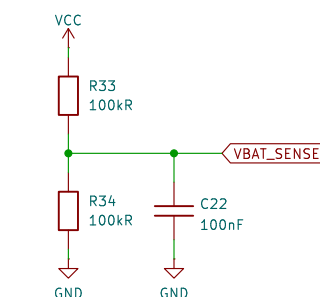
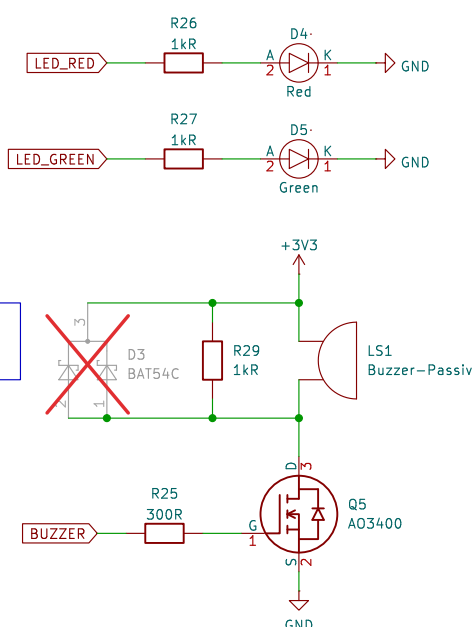


Single Li-Ion cell
DOUBLE CHECK CELL PINOUT BEFORE CONNECT!

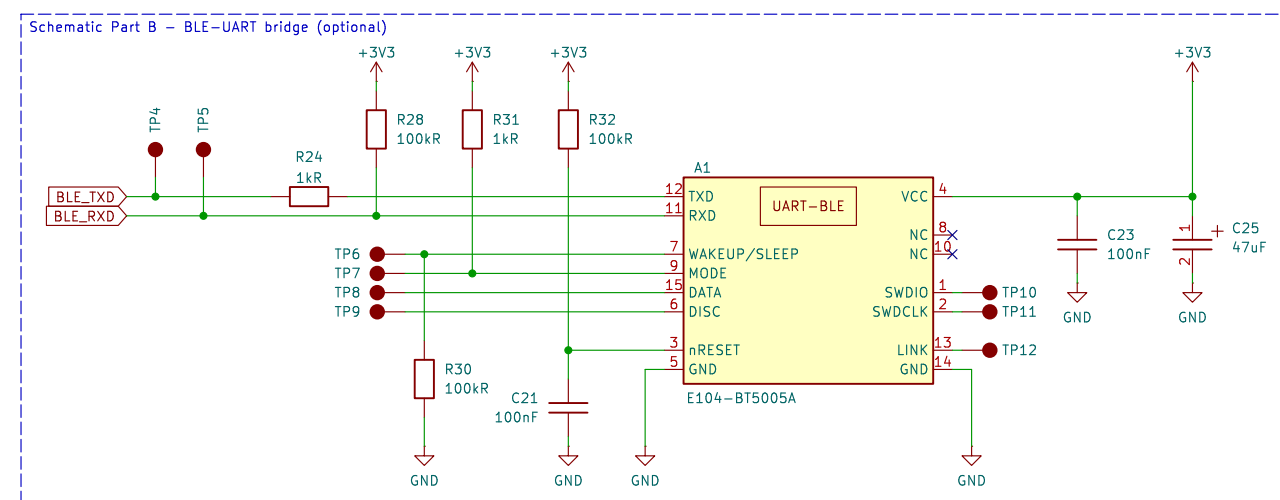
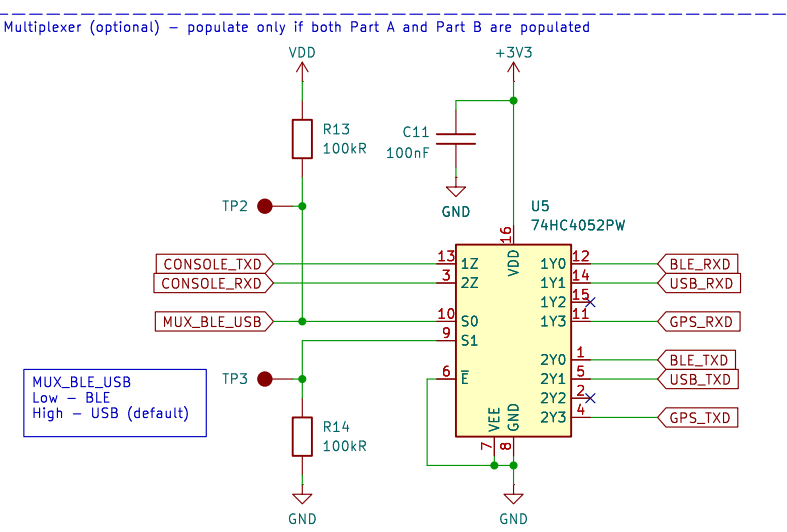
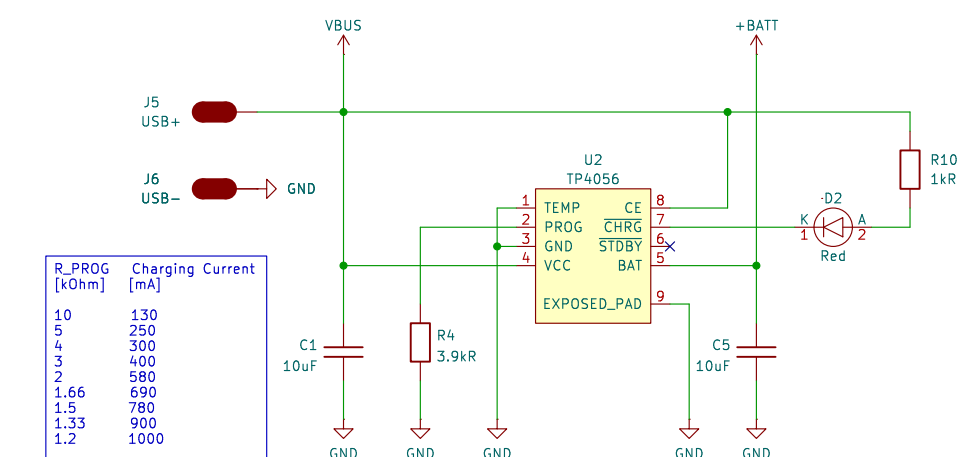
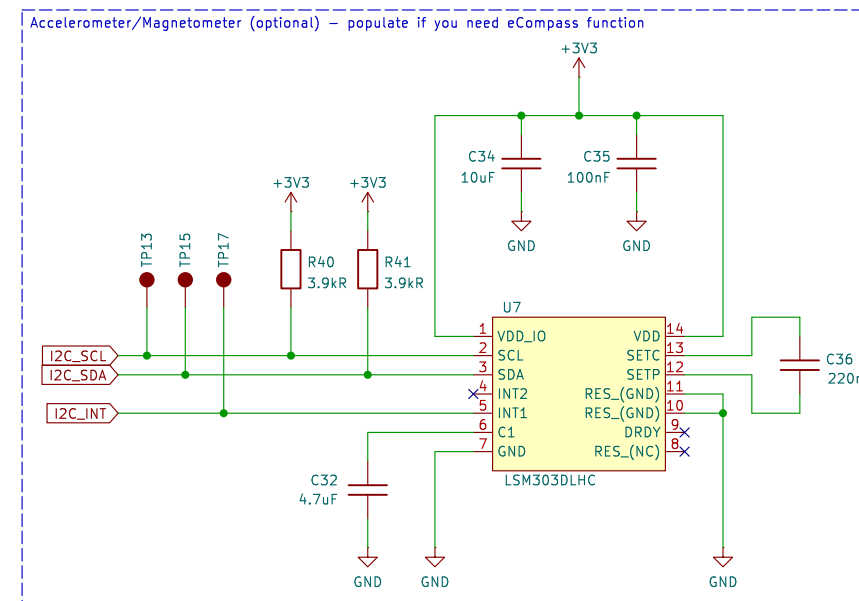
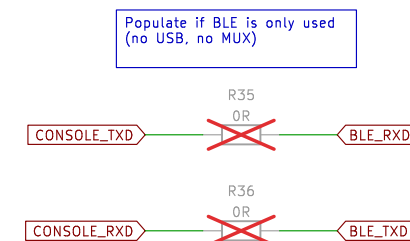


Passive Buzzer
If Piezo: Populate resistor only
If Magnetic: Populate diode only



Part A populated:
- Spoke can be programmed via USB and STM32 UART bootloader without a need of a programmer. This is actual even for the very first programming.
- Spoke console with live navigational data is available to a PC via USB.
- Other Spoke devices can be programmed via this USB-UART converter if connected by wires to it.
- Additionally, configuration of GPS receiver and BLE module are possible by accessing their UART pins at the MCU console pins after appropriate MUX channel switching.
- If the Part B is not populated, then Multiplexer IC is not needed and can be depopulated. Populate 0 Ohm jumpers between UART lines for console and USB.

Part B populated:
- Spoke console with live navigational data is available in your smartphone over BLE. This is planned to be used for Spoke Map application and for Spoke remote control/configuration.
- If part A is not populated, then Multiplexer IC is not needed and can be depopulated. Populate 0 Ohm jumpers between UART lines for console and BLE.



GPS CONFIG MODE
1) Full Erase MCU
2) Pull MUX_S1 high
3) Access GPS TX line at CONSOLE_TXD (see pin header)
4) Access GPS RX line at CONSOLE_RXD (see pin header)
5) Optionally, jumper wire them to USB TX/RX pin header to access via USB-UART

BLE-UART CONFIG MODE
1) Full Erase MCU
2) Pull MUX_BLE_USB low
3) Access BLE TX line at CONSOLE_RXD (see pin header)
4) Access BLE RX line at CONSOLE_TXD (see pin header)
5) Optionally, jumper wire them to USB TX/RX pin header to access via USB-UART

<https://github.com/FeruzTopalov>

Sheet: /

File: Spoke.kicad_sch

Title: LRNS SPOKE

Size: A2 Date: 2026-01-17

KiCad E.D.A. 9.0.4

Rev: 2.1

Id: 1/1