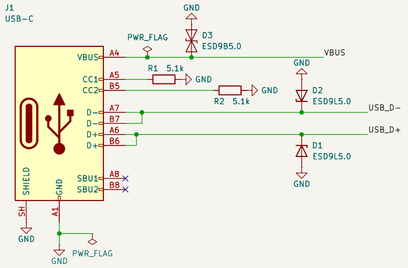
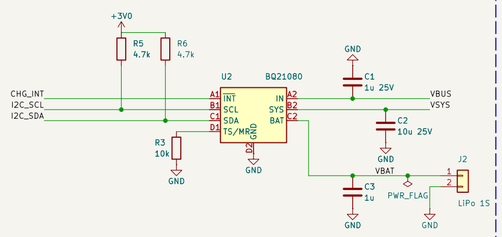
USB-C (USB 2.0 device + 5 V charging input)



CC1 / CC2: separate 5.1 k (sink). D+ / D−: 90 ohm pair, ESD at the connector.
Shield to GND at the connector.

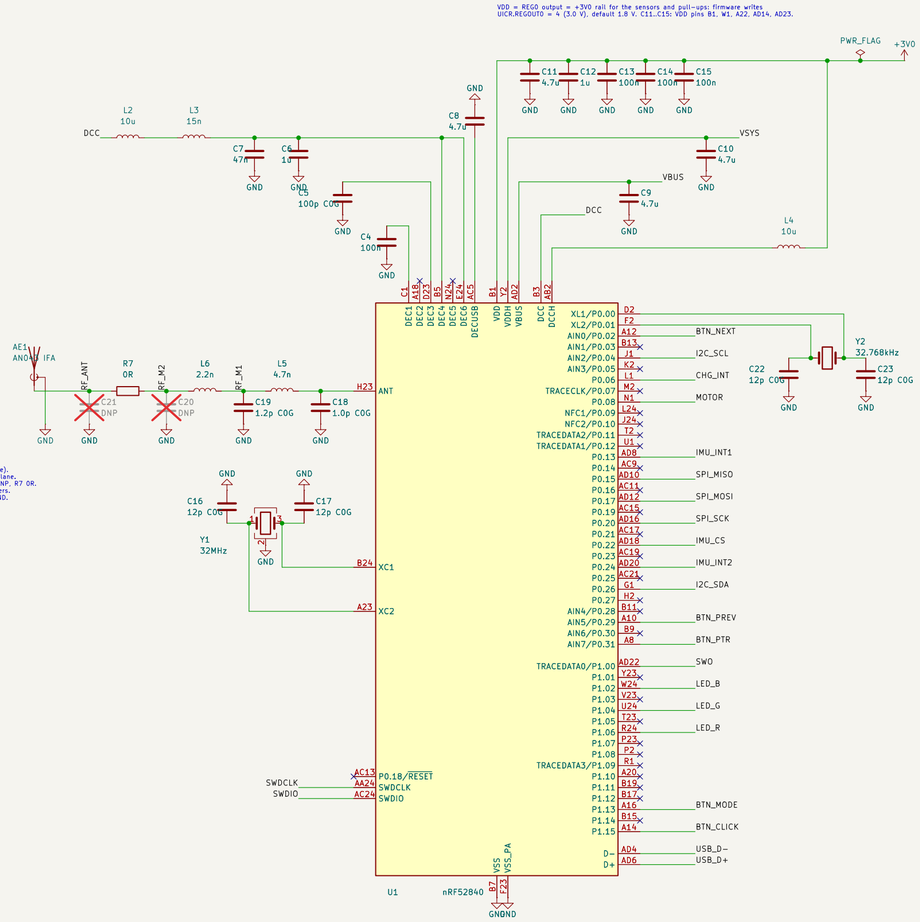
CHARGER BQ21080 (150 mA, power path) + LiPo



BQ21080: I2C 0x6A. Firmware: ICHG 150 mA (0x04 = 0x2A).
watchdog off or serviced (160 s default resets ICHG to 10 mA).
/INT is open drain: nRF internal pull-up on CHG_INT. R5 / R6 sit at the magnetometer end of the bus.

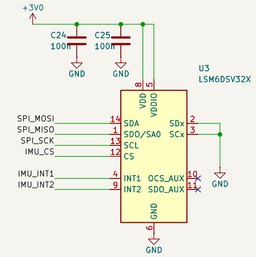
J2: 1 = cell +, 2 = cell − (check every battery lot).

nRF52840 (Config 7: VDDH supply, REG0 + REG1 DC/DC, USB) + RF + PCB ANTENNA

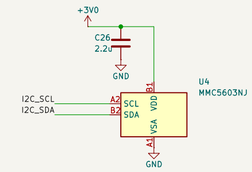


Config 7 match C18 / L5 / C19 / L6 (Nordic reference).
C18 ground pad to the VSS_PA ball (F23), not to the plane.
C20 / R7 / C21: antenna tuning pi: rev A: C20/ C21 DNP, R7 0R.
AE1: TI ANA43 IFA, 5.2 mm ground-free end on all layers.
Feed: 50 ohm CPWG 0.155 / 0.3 mm on L1 over L2 GND.

MOTION SENSORS: LSM6DSV32X (SPI) + MMC5603NJ (I2C), +3V0

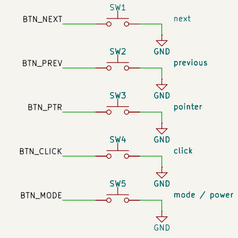


LSM6DSV32X: SPI mode 3, <= 10 MHz; write IF_CFG.I2C_I3C_disable = 1.
SFLP game rotation vector + gyro bias from the FIFO.

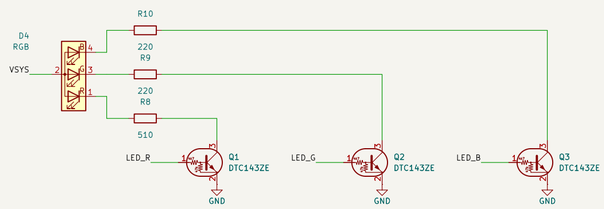


MMC5603NJ: I2C 0x30, 400 kHz (shared with the charger, pull-ups R5 / R6).
Keep it away from the motor, the cell and the DC/DC inductors.

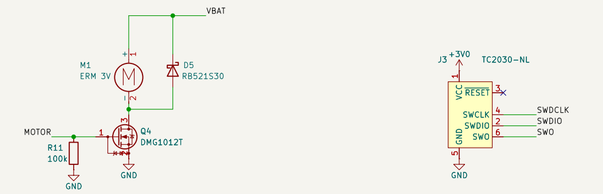
USER INTERFACE: 5 BUTTONS, RGB LED, VIBRATION MOTOR, SWD



Buttons active low, internal pull-ups: GPIO SENSE wakes System OFF.



LED: anode on VSYS (green / blue Vf up to 3.1 V): R tuned for ~3 mA at 3.8 V.
DTC143ZE: built-in 4.7 k base / 47 k base-emitter resistors (off when the GPIO floats).



M1: coin ERM (8–10 mm, 3 V, ~80 mA) on two pads, wired by hand, from the cell (VBAT).
PWM duty <= 70 % at VBAT 4.2 V (~3 V average).

4L JLC04161H-3313, 50 ohm CPWG 0.155 / 0.3 mm, JLCPCB PCBA
BLE + USB HID; IMU on SPI; magnetometer + charger on I2C
nRF52840 Config 7: VDDH from SYS, REG0 + REG1 DC/DC, VDD 3.0 V

Sheet: /
File: ble_air_presenter.kicad_sch

Title: BLE air-mouse presenter: nRF52840 + LSM6DSV32X + MMC5603NJ

Size: A2	Date: 2026-11-02	Rev: 2
KiCad E.D.A. 10.0.4		Id: 1/1