These are values defined in spec but can be replaced with stronger
pull-ups to reduce complexity at device end:
* CC1: Host 22kΩ pull-up to 5V and device 5.1kΩ pull-down = 0.9V
* CC2: Host 10kΩ pull-up to 5V and device 5.1kΩ pull-down = 1.7V

*Host*

J1
USB_C_Receptacle_Host

*Device*

*Pass-through USB by default (with ESD protection on both). UART_USB switches to USB UART.*

U4
USB3740B-AI2

FB1
120R/0.55A

C2 10nF    C3 100nF    C4 1uF

JP4
SIP32432DR3

U5

P1
USB_C_Plug

Solder links control logic level and VREF.
Default VTARGET from device.
Also powers analogue switches <= 10uA

SW1
SW_DIP_x04

UART_USB
SWT_RX-
SWT_RX+
RESET

VTARGET    JP5    JP6    J4 VCCIO_EXT

Don't use for RESET if using VTARGET as VCC and = 1.8V as pulled to 3V3!
Remove LED resistors to prevent this.

Needs to be a plug because no cable will supply both CC1 and CC2 (out of spec). See USB Type-C spec B.2.3.1

*USB UART*

Provides USB UART interface to device when RXD/TXD on USB-RX pins

Labels are default use for CBUS but can be configured/scripted.
All to VCCIO so require VCC; cannot use to switch DEV_ON without JP5 linked to 3V3/VEXT.
PASS_USB Vh is 1.4 even though VBUS powered, will also disconnect UART!

U1
FT230XQ

D1 TXD    D2 RXD

R1 1k    R2 1k

Default sleep is active low so will turn off device with power!
Configure as GPIO or PWREN# for VBUS control

J5
PicoBlade

*Control Dev RX Pair*

Default: SWO and NRESET for full SWD interface.
Switched: UART RXD/TXD for USB UART.
Can use JP1/2 to isolate from FT or switch RX/TX.

U2A    PI5A3157CEX
U2B    PI5A3157CEX
U3A    PI5A3157CEX
U3B    PI5A3157CEX

C5 100nF    C6 100nF

*Debug Headers*

SWD1
TC2030

J3
ARM_JTAG_SWD_10_Male

H1    H2    H3    H4

J.Whittington 2023
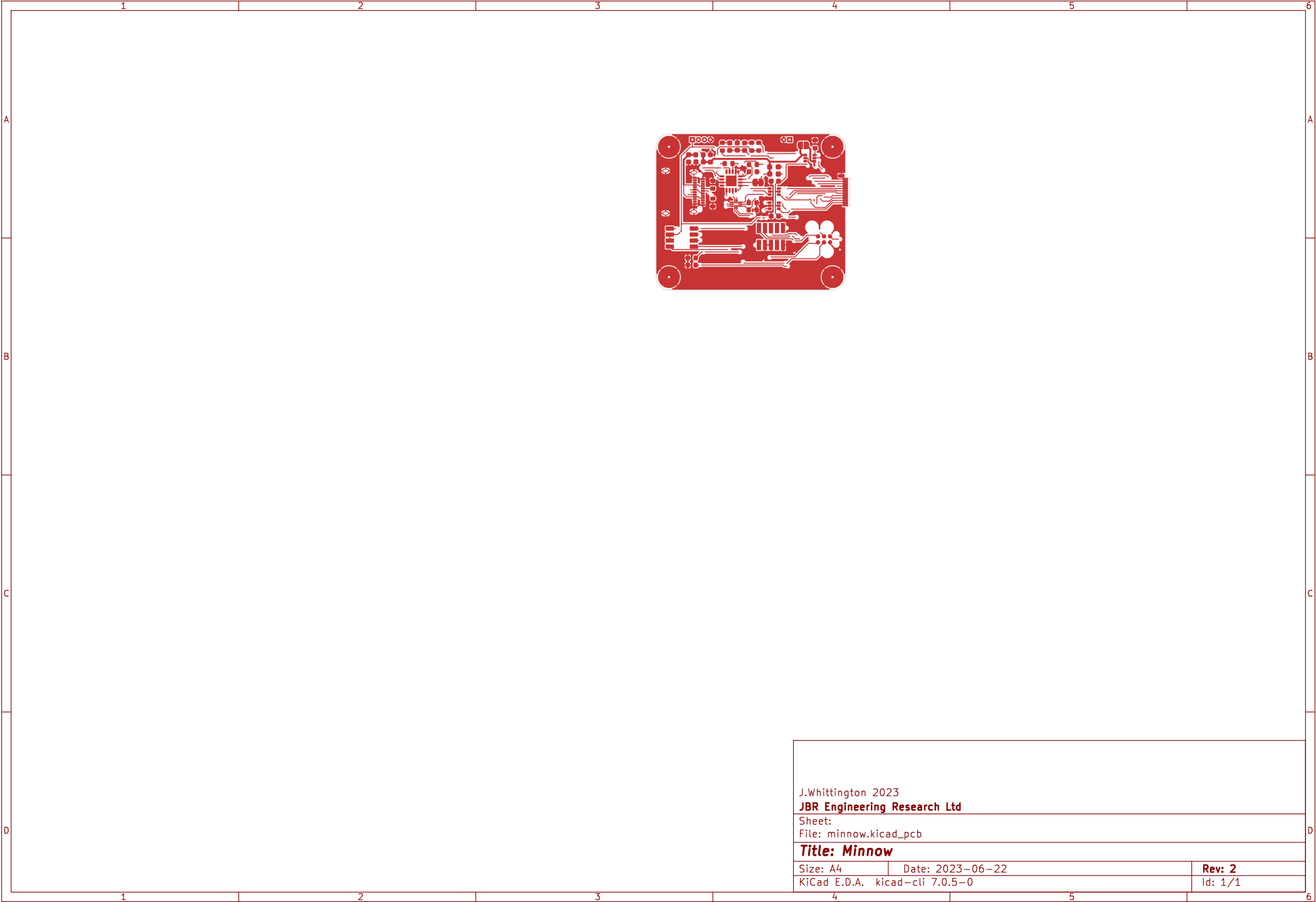**JBR Engineering Research Ltd**
Sheet: /
File: minnow.kicad_sch
**Title: Minnow – USB-C DAM Tool**
Size: A3    Date: 2023-06-22    Rev: 2
KiCad E.D.A.  kicad-cli 7.0.5-0    Id: 1/1

*Title: Minnow*

| Size: A4 | Date: 2023-06-22 | **Rev: 2** |
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File: minnow.kicad_pcb

Title: Minnow

Size: A4　　　Date: 2023-06-22　　　Rev: 2
KiCad E.D.A.　kicad-cli 7.0.5-0　　　Id: 1/1