

diffpair_test_routed

Design Report

Rev 1 | 2026-06-16 | jlcpcb

kicad-tools 0.13.0

Board Summary

Property	Value
Layers	4 copper (F.Cu, In1.Cu, In2.Cu, B.Cu)
Footprints	7 (5 SMD, 2 THT, 0 other)
Nets	26
Traces	938 segments
Vias	172
Board Size	100.0 x 80.0 mm

Design Overview

Theory of Operation

Differential Pair Test Board

Multi-protocol HSDI regression testbench

Epic #2556 Phase 4L (issue #2658)

Communication Interfaces

Protocol	Signals
USB	USB2_D+, USB2_D-, VBUS_USB

Power Architecture

Power Rails: PWR_FLAG

Assembly Notes

4 fine-pitch components

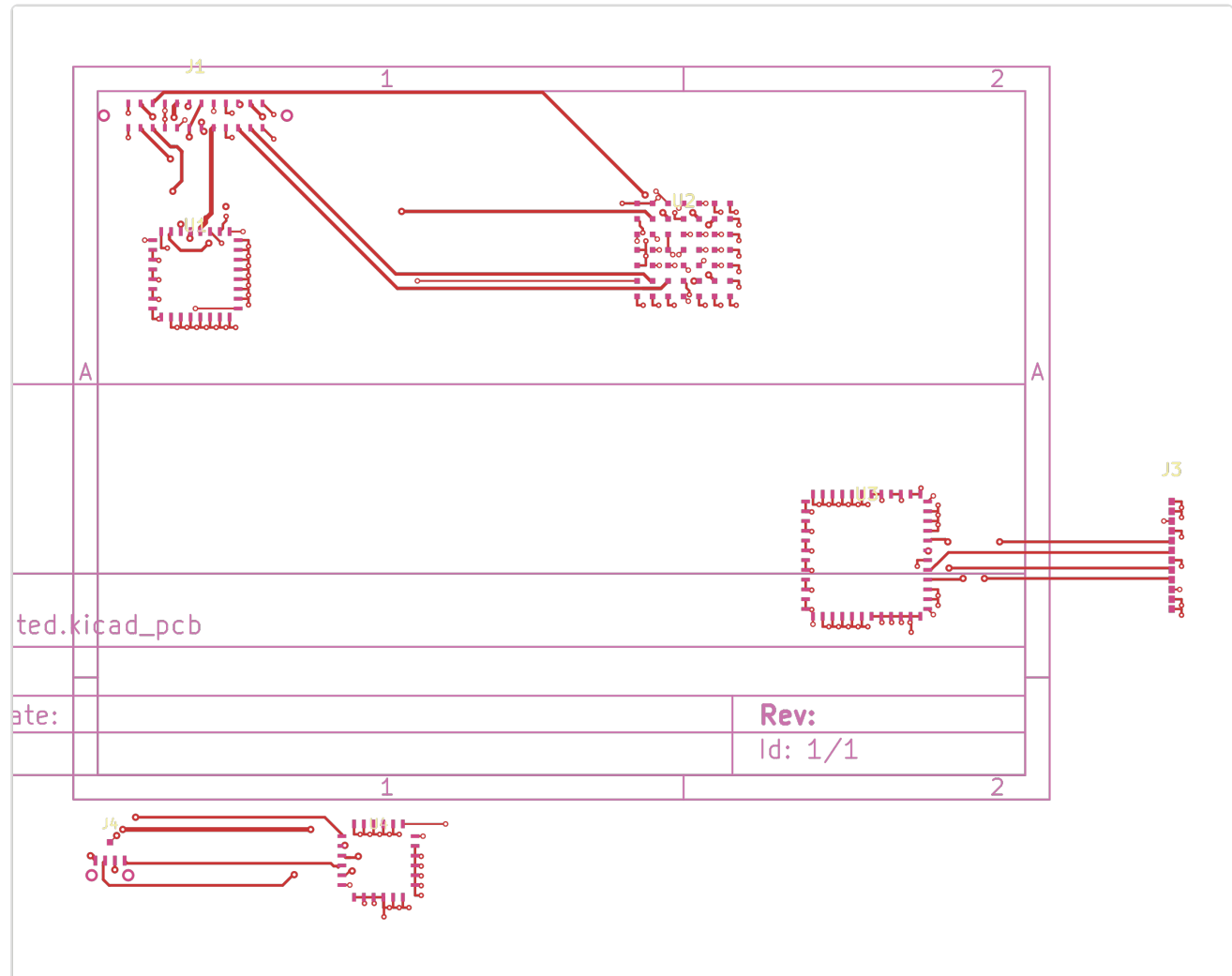
- **Fine-pitch components:** 4 (U4, U2, U1, U3)

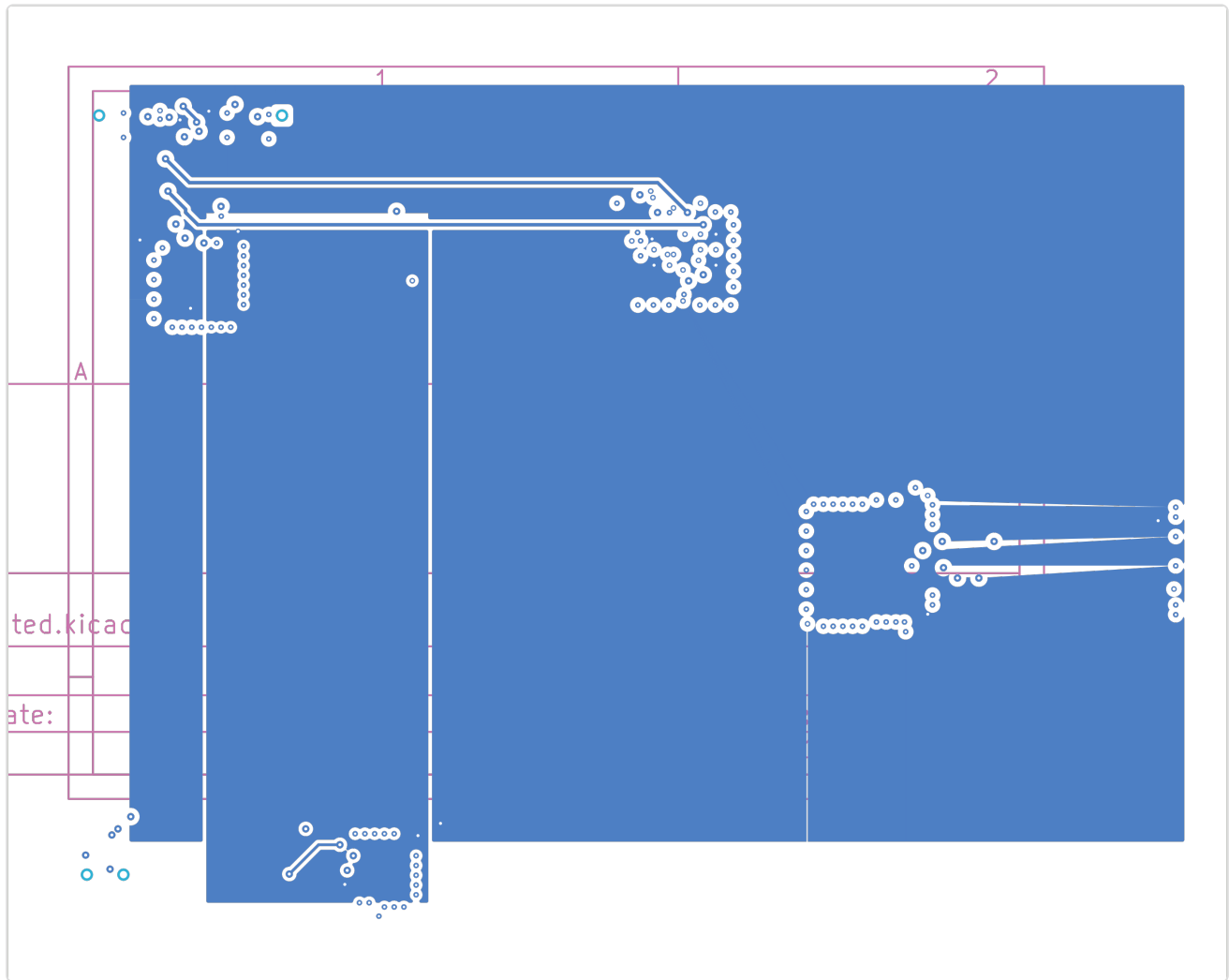
ERC Status

Metric	Count
Errors	0
Warnings	0

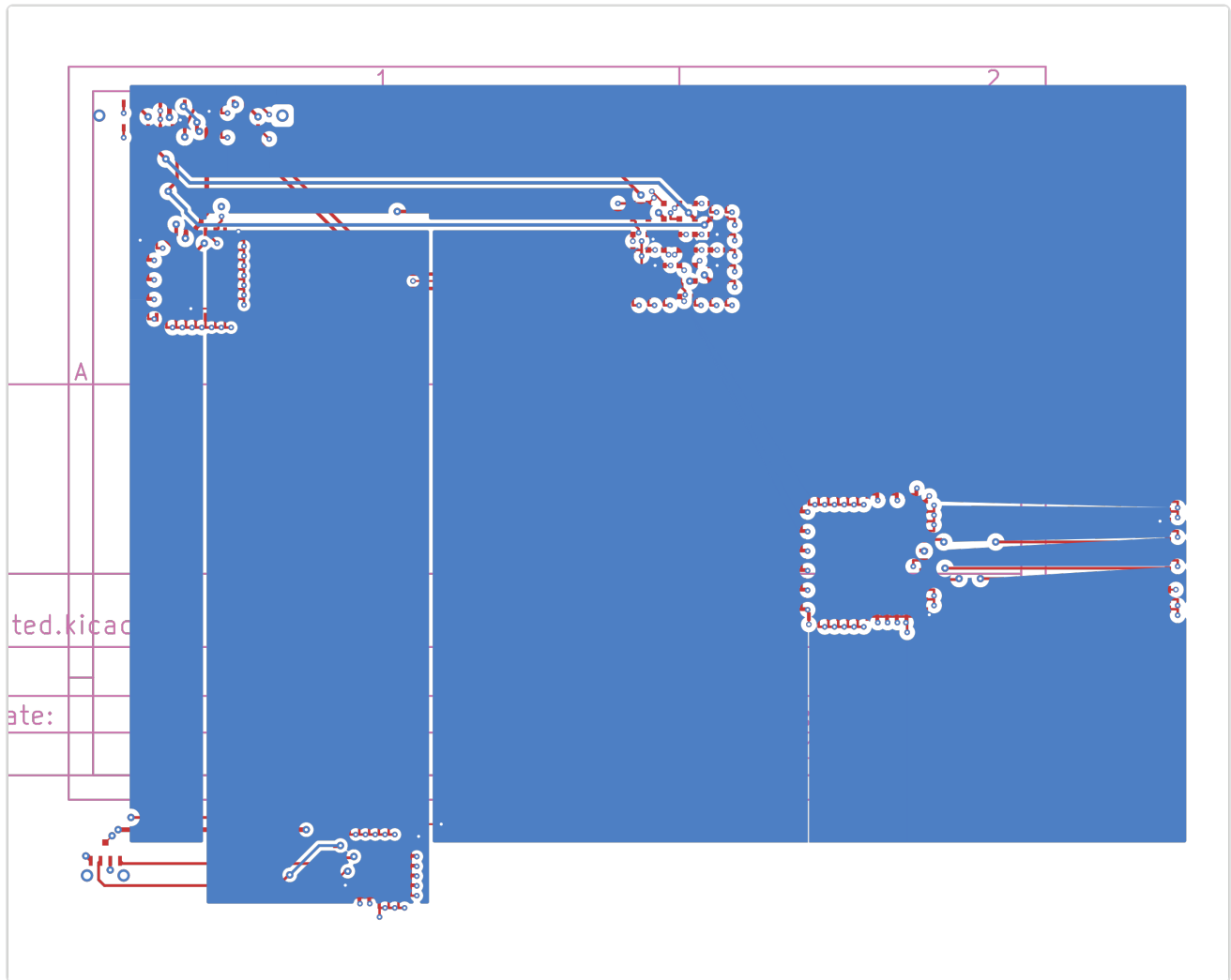
Status: SKIPPED -- ERC skipped by user request

PCB Layout

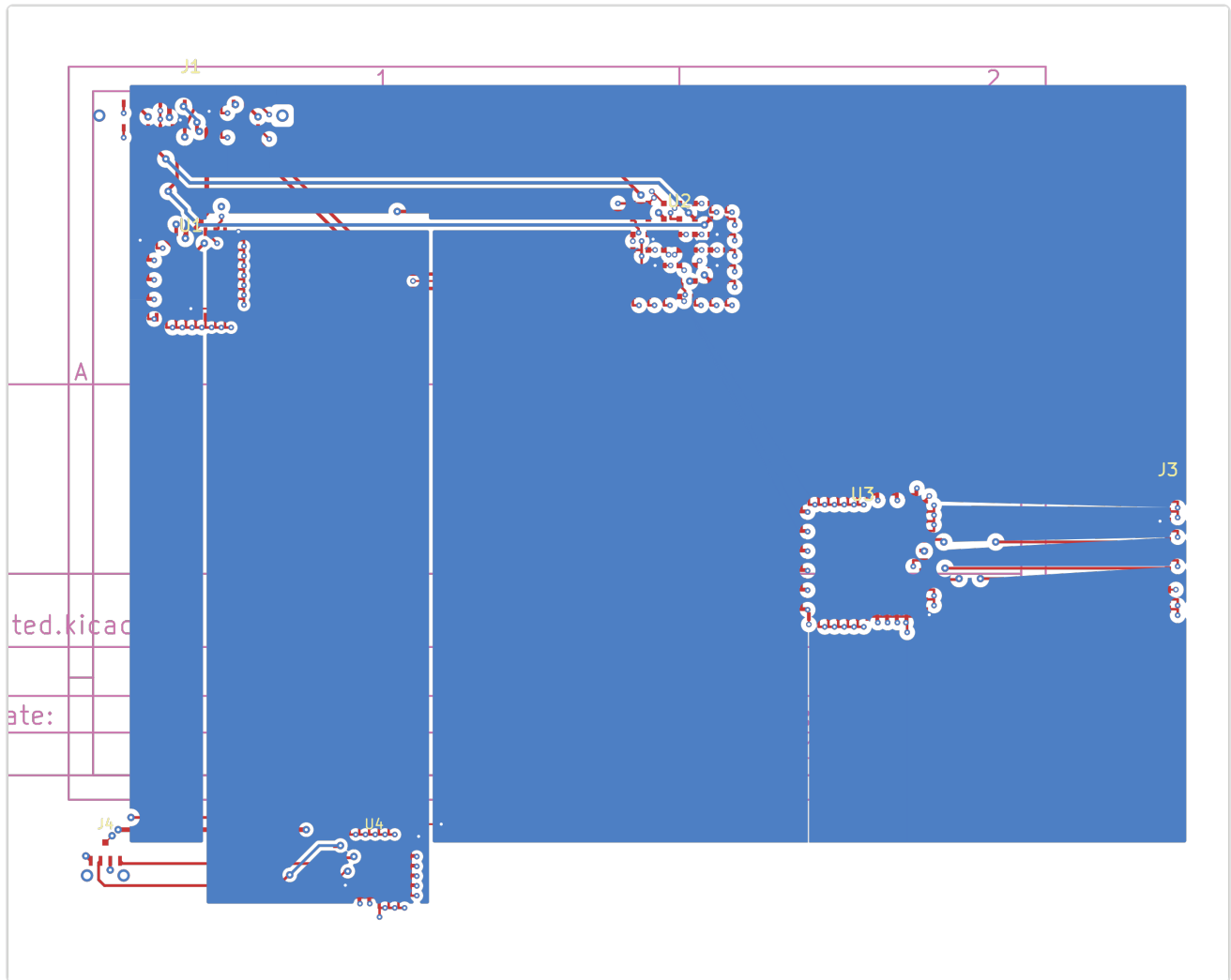




Copper

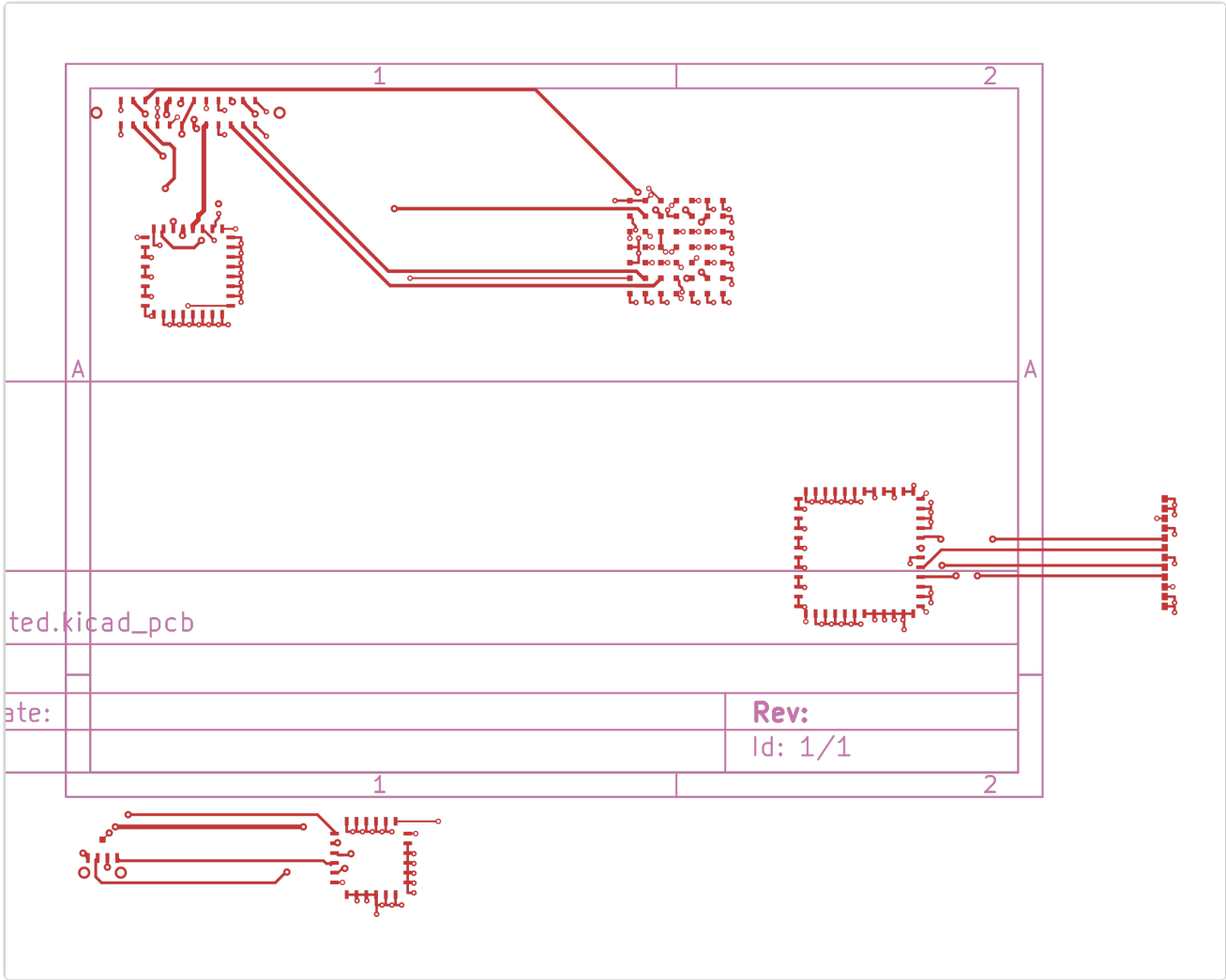


Assembly

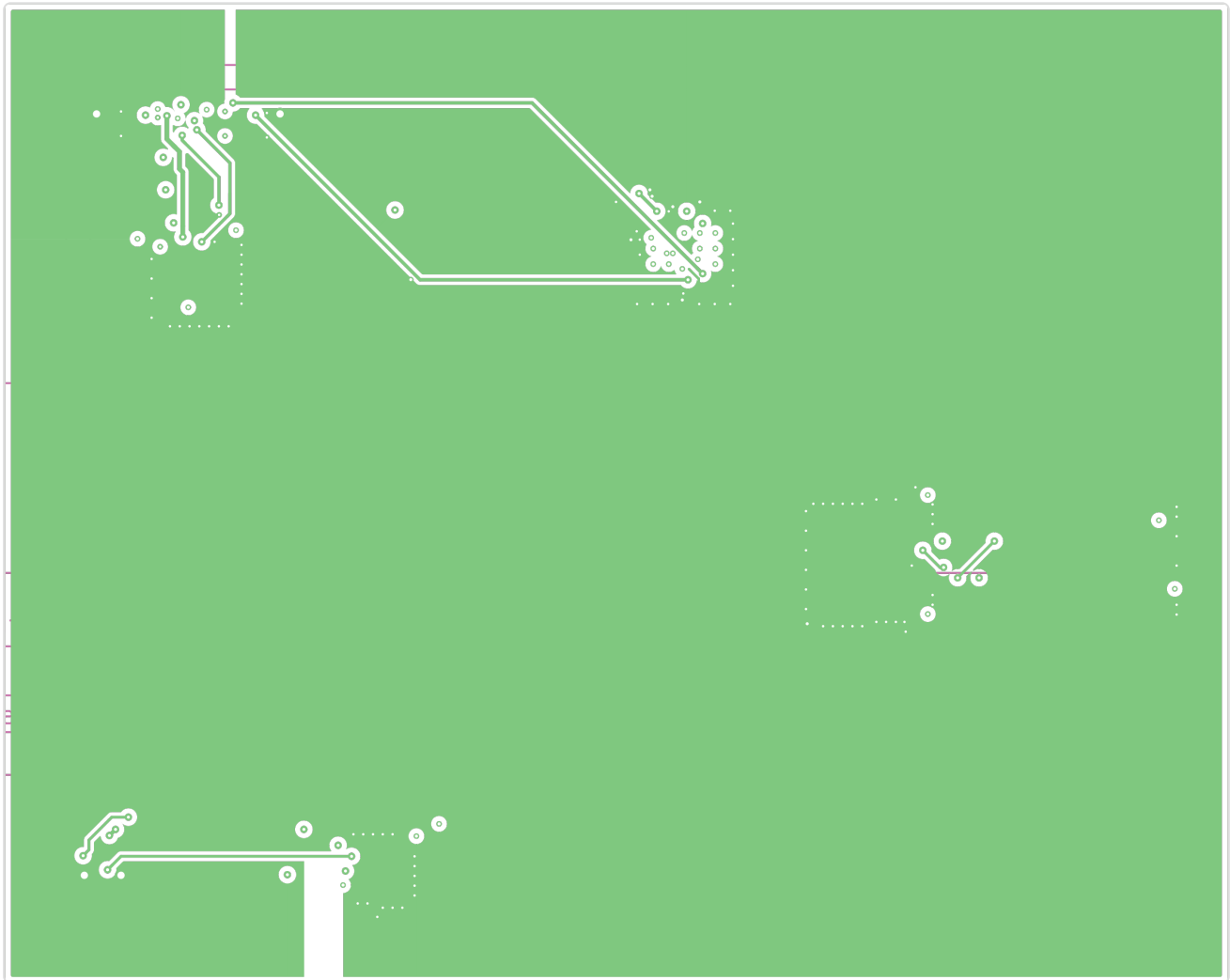


Copper Layers

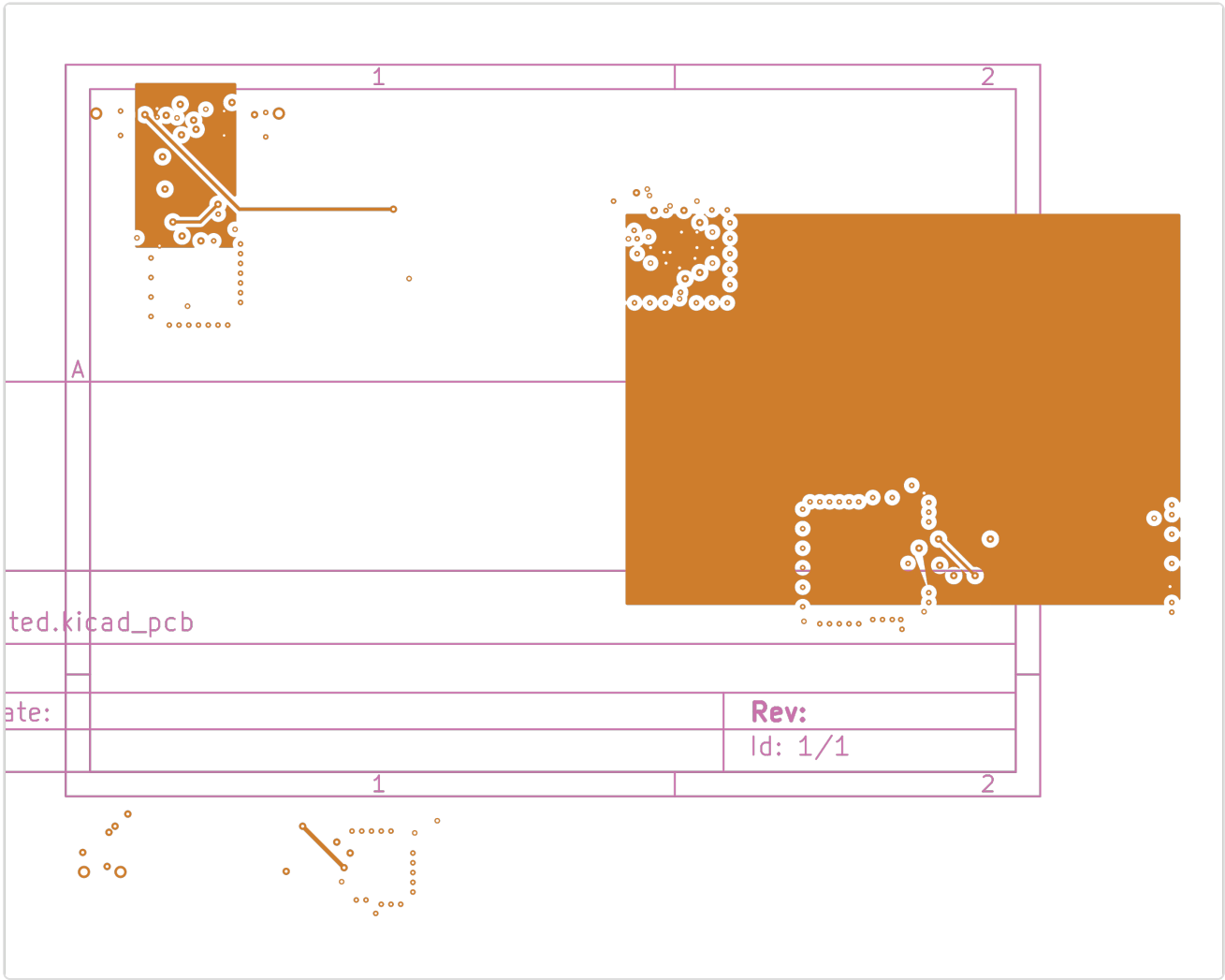
F.Cu



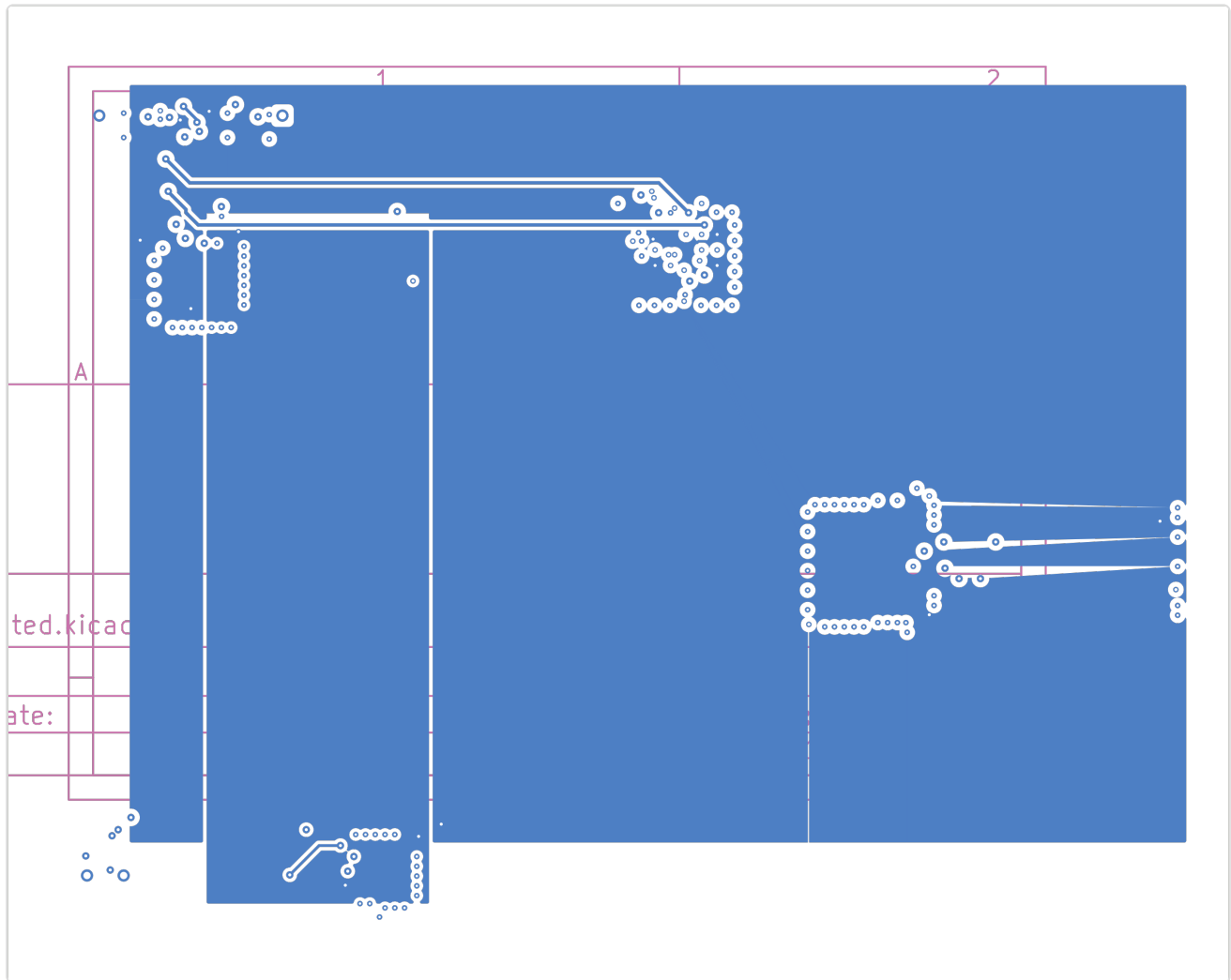
In1.Cu



In2.Cu



B.Cu



Bill of Materials

Value	Package	Qty	References
FFC4	FFC_4P_0.5mm	1	J4
MiniPCle	PCIE_Mini_Edge	1	J3
USB-C	USB_C_Receptacle_US B2.0	1	J1
BGA49_USB3	BGA-49_5.0x5.0mm_La yout7x7_P0.5mm	1	U2
QFN24_MIPI	QFN-24-1EP_4x4mm_P 0.5mm	1	U4
QFN32_USB2	QFN-32-1EP_5x5mm_P 0.5mm	1	U1
QFP48_PCle	LQFP-48_7x7mm_P0.5 mm	1	U3

DRC Status

Metric	Count
Errors	0
Warnings	3
Blocking	0

Status: PASS

Violations by Type

Violation Type	Count
connectivity	2
silkscreen_text_height	2
silkscreen_over_pad	1

Manufacturing Readiness

Verdict: WARNING

Action Items

- **[OPTIONAL]** Verify zone fill in KiCad for 5 zone-connected nets
- **[OPTIONAL]** Review 3 DRC warnings

Routing Status

Metric	Value
Signal Net Completion	100.0% (21/21)
Overall Completion	92.3%
Complete Nets	24 / 26
Zone-Connected Nets	5
Incomplete Nets	2
Unconnected Pads	15

Zone-Connected Nets

- +1V2
- +1V8
- +3V3
- GND
- VBUS_USB

Incomplete Nets

- +1V2
- GND

Cost Estimate

Metric	Per Board (estimated)
PCB Fabrication	~3.6 USD
Components (estimated)	~2.3 USD
Assembly (estimated)	~2.05 USD
Total (estimated)	~7.95 USD
Batch Quantity	5
Batch Total (estimated)	~39.74 USD