

USB-C cable power-path validation

ChargerLab PDLink / 0.3 m / c_sample1

16 October 2026 | 100 Vac / 50 Hz | Record: PDLINK-20261016-100V-01 | Rev 02

PASS EVIDENCE FOR ALL 29 CASES, ACROSS TWO RUNS. Not a single uninterrupted or single-version completion.

Selected cases	120 s holds	48 V / 5 A
29 / 29 PASS	7 / 7 PASS	PASS

All nine resumed cases passed. The 120 s hold at the 48 V / 5 A setpoint recorded median ASD input values of 47.283 V / 5.000 A / 236.415 W. The nominal 240 W setpoint is not a measurement of 240 W at the ASD input.

Test setup

Item	Recorded setup
Cable	ChargerLab PDLink, 0.3 m, detachable; c_sample1
Operator-entered rating	240 W; CH32 advertised range: 5 A / 48 V
Connected source	Framework FRANDVCH00, C1; FRANDVCH00_s_sample1; 240 W port rating
Power path	SRC > PDLink > CY4500-EPR > ASD-PD31
Control path	COM3 with an RS232 isolator (operator-reported)
AC condition	100 Vac / 50 Hz (operator-entered metadata)
Orientation	as-connected; ASD cable-set cc2; physical reversal not covered
Suite settings	full; current step 0.2 A; 3 readings/step; holds 120 s; inter-case wait 5 s
Software	M01: v5.8.9, immediate hold sampling; M02: v5.8.10, hold-settle 1 s

Screening checks: voltage within +/-1.0 V of setpoint; current within +/-max(2% of the load setpoint, 0.050 A). Safety ceilings: 252 W, 5.25 A and 80 degrees C ASD internal temperature. These are procedure settings, not USB certification criteria.

Selected cases contain 1,779 steady and seven precheck readings. The original stop, duplicate measurements and earlier interruption remain separate from selected statistics. All nine resumed cases verified LOAD_OFF on cleanup.

Loaded holds and path metrics

Each hold was configured for 120 s with 120 readings at 1 s intervals spanning 119 s. M02 adds a 1 s wait after LOAD_ON, outside the hold duration. Voltage, current and power are measured at the ASD input.

Run	Target V/A	V min	V median	V max	I median	P median W	N
M01	5/3	4.994	4.999	5.003	3.000	14.997	120
M01	9/3	8.701	8.705	8.709	3.000	26.115	120
M01	15/3	14.696	14.700	14.705	3.000	44.100	120
M01	20/5	19.410	19.417	19.433	5.000	97.085	120
M01	28/5	27.295	27.309	27.324	5.000	136.545	120
M02	36/5	35.271	35.278	35.293	5.000	176.390	120
M02	48/5	47.272	47.283	47.301	5.000	236.415	120

Droop using before/after light-load baselines

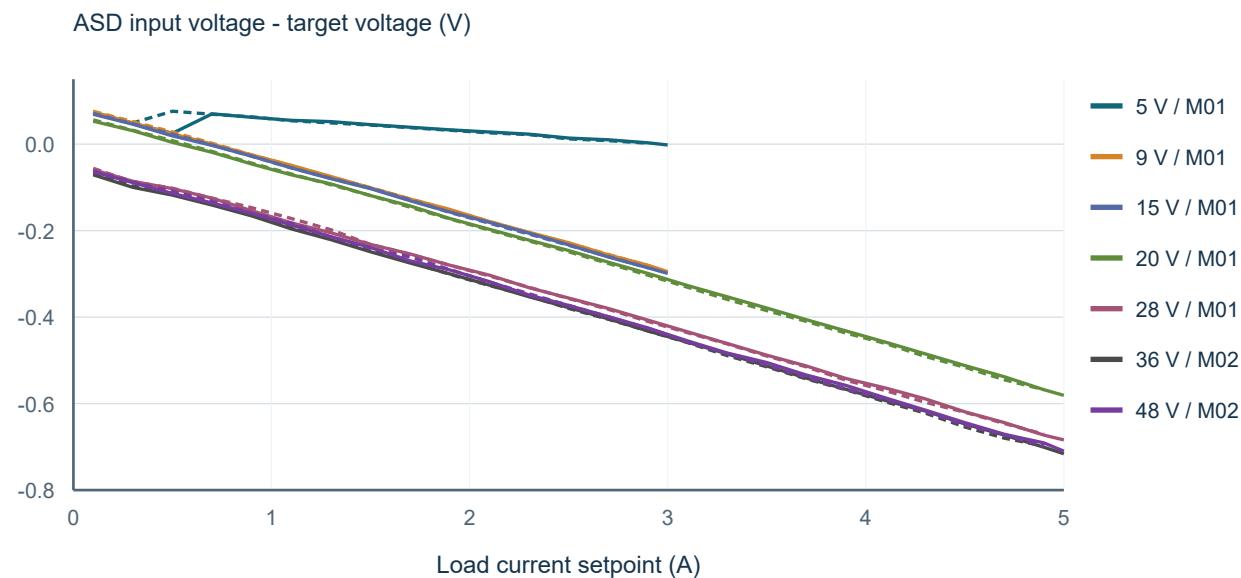
Run	Target V	Droop V	Apparent path mΩ	Baseline drift mV
M01	5	0.0745	25.69	-1.0
M01	9	0.3705	127.76	-1.0
M01	15	0.3700	127.59	+2.0
M01	20	0.6380	130.20	+4.0
M01	28	0.6350	129.61	+1.0
M02	36	0.6565	133.98	+5.0
M02	48	0.6570	134.08	+2.0

Droop is the mean of before/after 0.1 A voltage medians minus the loaded median. Apparent resistance divides droop by measured high/low current difference. Baseline drift is after minus before voltage. Each baseline/hold/baseline group comes from one run; M01 and M02 are never paired across runs.

This is not isolated cable resistance. Source regulation, connectors, CY4500-EPR and the ASD input contribute. No matched reference-cable comparison was performed. Apparent values differ at 5 V, and software/settling conditions differ between runs.

Current sweeps and recheck results

Each point is the median of three readings. Solid/dashed traces show the sweep legs; the legend identifies the selected run. Deviation from nominal does not isolate cable loss. The 36 V and 48 V curves use resumed run M02.



Original stop versus resumed measurements

Record	Condition	Measured current	Result
M01 T24	36 V / 0.1 A, first hold reading	0.049 A	FAIL
M02 T21	36 V / 0.1 A, before, 3 readings	0.100 A (all)	PASS
M02 T24	36 V / 0.1 A, after, 3 readings	0.100 A (all)	PASS
M02 T29	48 V to 5 V, three return readings	0.100 - 0.101 A	PASS

M02 36 V light-load voltages were 35.928 - 35.934 V before and 35.933 - 35.937 V after. The final 5 V return measured 5.068 - 5.082 V. Both 36 V and 48 V sweeps reached 5 A in both legs, followed by 120-reading loaded holds.

The earlier light-load stop did not recur with 1 s settling. This supports startup-timing sensitivity, but is not an independent measurement or a repeated comparison varying only the settling time; it does not isolate the responsible component or establish a cable-defect finding.

Stop history, procedure change and control log

Run	Attempted cases	Raw status	Hold startup
W01	1 PASS / 1 interrupted	INTERRUPTED	v5.8.9; no explicit wait
M01	23 PASS / 1 failed	FAILED	v5.8.9; no explicit wait
M02	9 PASS / 0 failed	INCOMPLETE	v5.8.10; 1 s wait

M01 T24: first-reading stop at 36 V light load

At 36 V / 0.100 A, the first reading was 35.899 V / 0.049 A. The -0.051 A error exceeded +/-0.050 A, triggering a stop at the first reading logged at t=0.2 s. Measurement CRC and LOAD_OFF verification were normal. Persistence of the under-current was not measured.

LOAD_OFF and a 5 V recovery check occurred between T23 and T24; 36 V was requested afresh. This was not a continuous 5 A-to-0.1 A load step. CY4500 recorded Source PS_RDY (Sno 72; VBUS 35.341 V), which is not a transition-timing or voltage-accuracy compliance verdict.

M02: timed holds start after 1 s settling

Version v5.8.10 waits 1 s after LOAD_ON before the first reading and hold clock. Tolerances and voltage/power/current-limit checks on acquired samples remain unchanged. No ADC values are acquired during the wait. All nine resumed cases passed and verified LOAD_OFF on cleanup.

CC-selection response warning in the final preflight

The T29 recovery-check log contains one CRC ok: False result for a 38-byte SET_CC_LINE_SELECTION response and an unconfirmed-ACK warning. The next standalone status response was CRC-valid and reported CC2; the recovery check and final case passed. This warning remains in the originals and log_warnings.csv; this record does not claim warning-free control communications.

Original FAILED / INCOMPLETE / INTERRUPTED statuses are preserved. M02 is only the resumed subset and remains INCOMPLETE despite nine passing cases. W01 is supplementary interrupted evidence and excluded from case statistics.

Selected evidence for all 29 cases

Select the latest complete passing four-case voltage block from one run: before, sweep, hold and after. The final transition uses M02. All 33 M01/M02 attempts, including failure/duplicates, remain in attempt_ledger.csv; W01 has a separate two-attempt supplementary ledger.

ID	Target V	Phase	Run	Steady N
T01	5	Low-load before	M01	3
T02	5	Current round trip	M01	93
T03	5	Loaded hold, 120 s	M01	120
T04	5	Low-load after	M01	3
T05	9	Low-load before	M01	3
T06	9	Current round trip	M01	93
T07	9	Loaded hold, 120 s	M01	120
T08	9	Low-load after	M01	3
T09	15	Low-load before	M01	3
T10	15	Current round trip	M01	93
T11	15	Loaded hold, 120 s	M01	120
T12	15	Low-load after	M01	3
T13	20	Low-load before	M01	3
T14	20	Current round trip	M01	153
T15	20	Loaded hold, 120 s	M01	120
T16	20	Low-load after	M01	3
T17	28	Low-load before	M01	3
T18	28	Current round trip	M01	153
T19	28	Loaded hold, 120 s	M01	120
T20	28	Low-load after	M01	3
T21	36	Low-load before	M02	3
T22	36	Current round trip	M02	153
T23	36	Loaded hold, 120 s	M02	120
T24	36	Low-load after	M02	3
T25	48	Low-load before	M02	3
T26	48	Current round trip	M02	153
T27	48	Loaded hold, 120 s	M02	120
T28	48	Low-load after	M02	3
T29	48	48 V to 5 V return	M02	6

Every case in this table is PASS. M01 supplies T01 - T20; M02 supplies T21 - T29. Detailed CSVs include version, settling and original relative paths. M01 T21 - T23 passing duplicates and the T24 failure remain outside selected statistics.

Identity, measurement basis and scope

Item	CH32 observation
Cable	Passive; 5 A; maximum PD voltage 48 V
VID / PID	0x367E / 0x8488
Cable VDO	0x000A2644
USB speed field	usb4_gen4 (advertised only; data transfer untested)
Sessions	C01 session_0001 / CC2; C02 session_0002 / CC1; same reported VDO
Physical association	CH32 asset labels are blank; operator notes bind this physical c_sample1.

ASD-PD31 did not read the E-Marker. CH32 Identity and loaded measurements are separate evidence. The operator-entered 240 W rating is not independent verification of retail labeling. Two CH32 CC observations do not establish loaded coverage of all plug orientations.

Data populations

Population	Readings	Treatment
Selected 29 cases	1,779 steady + 7 precheck	Hold/sweep statistics
All 33 M01/M02 attempts	2,056 steady + 8 precheck	Includes failure/duplicates
5 V recovery checks	66 total; 58 selected	Separate from cases
W01 earlier interruption	2 attempts; 3 case + 2 preflight rows	Supplementary; excluded

Steady analysis excludes original modes ending in -precheck or -ramp; no original mode is literally steady. Normalized measurement_phase is available; original mode, line and relative path remain. Originals are copied unchanged; manifest_sha256.csv records file sizes and SHA-256.

Items outside this record

ASD internal temperature is fan-dependent and was not used to assess source/cable/plug heating. PPS/AVS loading, USB data performance, insulation/endurance, certification, all orientations, 230 Vac and matched reference-cable comparisons are outside this record.

Revision 02 updates the earlier partial-coverage finding with acquired cross-run evidence. For a single-condition uninterrupted record or automatic reference baseline, rerun full from the start with matched software and settling. Original outcomes were not rewritten as a single-run pass.