Source A
100 Vac and 230 Vac
Anonymized Validation Record

Two charger samples | Measurements on 13-14 October 2026
Record SOURCE-A-AC-20261014 | Revision 2.1 | Issued 15 October 2026

Summary of observations

Behavior	100 Vac	230 Vac
Unit 2 high output power	Output lost at 48 V when load increased from 4.8 to 5 A, in Fixed and AVS modes. AVS 5 A voltage sweep stopped at 47 V.	Fixed and AVS 48 V current sweeps completed through 5 A. AVS 36-48 V / 5 A round trip and Fixed 48 V / 5 A 60 s hold completed.
Unit 1 high output power	Fixed 48 V current sweep, AVS 36-48 V / 5 A round trip and Fixed 48 V / 5 A 60 s hold completed.	Fixed and AVS 48 V current sweeps, AVS voltage round trip and Fixed 48 V / 5 A hold completed.
PPS 5 V and 16 V near 5 A	Both samples maintained tested 4.8 A points but did not maintain the 5 A target.	Same target-load limitation observed on both samples.
Fixed 15 V to 5 V at 0.1 A load	Low output on both samples in the analyzer-connected sequence. Unit 1 also reproduced it directly.	Both samples lost output in isolated analyzer-connected 15 V to 5 V tests.

The Unit 2 high-power behavior differed between the tested input settings. PPS near 5 A and the light-load 15 V to 5 V behavior persisted at both settings. These are separate engineering observations; a common cause or a specific protection mechanism is not established.

Reference source R completed the direct 15 V to 5 V test at 100 Vac using the same cable and ASD-PD31 [C01]. The reference was not tested at 230 Vac or in the high-current comparisons.

Test setup

Source: Source A, port C1, two units labeled Unit 1 and Unit 2. Normal path: SRC - ChargerLab PDlink 0.3 m detachable cable - CY4500-EPR - ASD-PD31. Direct path, used for T04, T05 and C01: SRC - same cable - ASD-PD31. CC2 selection; controller v5.8.8. Input settings: 100 Vac / 50 Hz and 230 Vac / 50 Hz.

DC readings are at the ASD-PD31 input and include connection-path losses. Temperature fields are ASD-PD31 internal telemetry affected by its fan operation and are excluded from evaluation. Charger temperature was not measured.

Coverage and evidence mapping

At 230 Vac each sample completed all 15 test entries: 12 met the voltage/current checks, and three did not (PPS 5 V, PPS 16 V and Fixed 15 V to 5 V). A completed sequence is not sufficient evidence that a target load was maintained.

Test / 230 Vac run number	100 Vac Unit 1	100 Vac Unit 2	230 Vac
01 Fixed voltage points, 1 A	8 points [B07]	Not recorded	8 points each
02 PPS 5-21 V, 1 A	17 points [B03]	17 points [B04]	17 points each
03 EPR AVS 15-48 V, 1 A	34 points [B05]	34 points [B06]	34 points each
04 SPR AVS 16 V current sweep	Complete [G01]	Complete [G02]	Complete, both
05 Fixed 20 V current sweep	Complete [G03]	Complete [G04]	Complete, both
06 Fixed 36 V current sweep	Not recorded	Complete [G05]	Complete, both
07 Fixed 48 V current sweep	Complete [H01]	Lost at 5 A [H02-H03]	Complete, both
08 EPR AVS 48 V current sweep	Not recorded	Lost at 5 A [H04]	Complete, both
09 EPR AVS 36-48 V, 5 A	Complete [H05]	Lost at 47 V [H06]	Complete, both
10 Fixed 48 V / 5 A, 60 s	Maintained [H07]	Not recorded	Maintained, both
11 EPR AVS 45 V / 5 A, 60 s	Not recorded	Maintained [H08]	Maintained, both
12 EPR AVS 46 V / 5 A, 60 s	Not recorded	Maintained [H09]	Maintained, both
13 PPS 5 V current sweep	5 A unmet [P03]	5 A unmet [P04]	5 A unmet, both
14 PPS 16 V current sweep	5 A unmet [P01]	5 A unmet [P02]	5 A unmet, both
15 Fixed 15 V to 5 V, 0.1 A	Low output [T01-T05]	Low output [T02]	Low output, both

230 Vac evidence IDs: V1nn is Unit 1 run nn and V2nn is Unit 2 run nn. For example, run 07 corresponds to V107 and V207. All current sweeps plan 0.2 to 5 to 0.2 A in 0.2 A steps. Complete entries include actual current near 5 A. A not-recorded entry is a gap in this dataset, not a test outcome.

Supplementary 100 Vac baselines: B01 and B02 contain PPS 5-8 V / 1 A, four points and 20 steady readings each. B07 is a partial Unit 1 overview: all eight Fixed points were measured before the programmable sequence was interrupted. Later phases in that acquisition do not establish independent failures. C01 is the Reference source R direct control.

High output power and AC input

Unit 2 maintained the tested high-power points at 230 Vac that it had not maintained at 100 Vac. The 100 Vac Fixed 48 V result reproduced in a second acquisition. The two input conditions were tested sequentially; this record does not establish the exact input-voltage boundary or exclude conditioning effects.

Evidence / unit / input	Mode	At 4.8 A	At 5 A target	Sequence
H02 Unit 2 / 100 Vac	Fixed 48 V	47.298-47.331 V	0.122 V / 0.000 A	Stopped
H03 Unit 2 / 100 Vac	Fixed 48 V	47.325-47.333 V	0.661 V / 0.000 A	Stopped
V207 Unit 2 / 230 Vac	Fixed 48 V	47.327-47.339 V	47.294-47.307 V / 5.000 A	Round trip
H04 Unit 2 / 100 Vac	AVS 48 V	47.309-47.342 V	0.117 V / 0.000 A	Stopped
V208 Unit 2 / 230 Vac	AVS 48 V	47.322-47.332 V	47.307-47.316 V / 5.000 A	Round trip

Five measurements were planned at every current point. The three 100 Vac Unit 2 sequences stopped on the first 5 A reading. These observations bound the change between the tested 4.8 A and 5.0 A settings and do not identify an exact trip threshold.

Unit 2 AVS voltage sweep at a 5 A load

Requested voltage	100 Vac [H06]	230 Vac [V209]
45 V	44.305-44.316 V / 4.999-5.000 A	44.299-44.311 V / 5.000 A
46 V	45.261-45.265 V / 5.000 A	45.303-45.313 V / 5.000 A
47 V	0.082 V / 0.000 A	46.300-46.304 V / 5.000 A
48 V	Not reached	47.297-47.301 V / 5.000 A

The voltage sweeps used 36 to 48 to 36 V in 1 V steps, 1.25 s settling, at least 5 s per point and three steady readings per point. At 100 Vac Unit 2 lost output on the first 47 V reading. At 230 Vac it reached 48 V and completed the return to 36 V.

Unit 1 comparison

Input	Fixed 48 V at 5 A	AVS sweep 48 V at 5 A
100 Vac	47.313-47.327 V / 5.000 A [H01]	47.303-47.307 V / 5.000 A [H05]
230 Vac	47.314-47.326 V / 5.000-5.001 A [V107]	47.308-47.315 V / 5.000 A [V109]

Unit 1 also completed the dedicated AVS 48 V current sweep at 230 Vac [V108]. The corresponding dedicated 100 Vac AVS current sweep was not recorded.

Short holds at established output

Each nominal 60 s hold contains 60 steady measurements at approximately 1 s intervals. All nine recorded holds maintained actual current near 5 A. These measurements do not establish long-duration full-power capability.

Evidence / unit / input	Operating point	ASD voltage	ASD power
H07 Unit 1 / 100 Vac	Fixed 48 V / 5 A	47.307-47.334 V	236.535-236.707 W
H08 Unit 2 / 100 Vac	AVS 45 V / 5 A	44.308-44.333 V	221.540-221.679 W
H09 Unit 2 / 100 Vac	AVS 46 V / 5 A	45.260-45.339 V	226.300-226.695 W
V110 Unit 1 / 230 Vac	Fixed 48 V / 5 A	47.302-47.326 V	236.503-236.662 W
V111 Unit 1 / 230 Vac	AVS 45 V / 5 A	44.291-44.316 V	221.455-221.580 W
V112 Unit 1 / 230 Vac	AVS 46 V / 5 A	45.287-45.306 V	226.435-226.530 W
V210 Unit 2 / 230 Vac	Fixed 48 V / 5 A	47.287-47.316 V	236.435-236.580 W
V211 Unit 2 / 230 Vac	AVS 45 V / 5 A	44.295-44.324 V	221.475-221.664 W
V212 Unit 2 / 230 Vac	AVS 46 V / 5 A	45.299-45.322 V	226.495-226.610 W

Unit 2 ripple indication at the 46 V / 5 A point

Evidence	Input	Acquisition	ASD ripple indication
H06	100 Vac	Sweep point	689-830 mV
H09	100 Vac	60 s hold	219-443 mV
V209	230 Vac	Sweep point	164-170 mV
V212	230 Vac	60 s hold	162-173 mV

These values are the ASD indication. They are not oscilloscope ripple measurements with a specified bandwidth, probe configuration or uncertainty. They can be compared as recorded indications but do not establish a ripple specification violation.

The reported voltage and power are at the sink end of the cable and analyzer. Source-terminal regulation, conversion efficiency and charger thermal behavior were not measured. ASD internal temperature is excluded from evaluation.

PPS near the 5 A load setting

Both samples maintained tested 4.8 A points but did not maintain the next 5 A point at either AC input setting. This differs from the SPR AVS 16 V and Fixed 20 V current sweeps, which completed at both settings with actual current near 5 A [G01-G04, V104-V105, V204-V205].

PPS 16 V

Evidence / unit / input	At 4.8 A load	At 5 A target load
P01 Unit 1 / 100 Vac	15.363-15.384 V / 4.800-4.801 A	0.000 V / 0.000 A
P02 Unit 2 / 100 Vac	15.380-15.393 V / 4.800 A	4.984 V / 0.000 A
V114 Unit 1 / 230 Vac	15.377-15.392 V / 4.800 A	0.000 V / 0.000 A
V214 Unit 2 / 230 Vac	15.378-15.391 V / 4.800 A	4.987 V / 0.000 A

PPS 5 V

Evidence / unit / input	At 4.8 A load	At 5 A target load
P03 Unit 1 / 100 Vac	4.360-4.372 V / 4.799-4.800 A	4.394-4.977 V / 0.000-0.776 A
P04 Unit 2 / 100 Vac	4.381-4.395 V / 4.800-4.801 A	4.430-4.986 V / 0.000-0.740 A
V113 Unit 1 / 230 Vac	4.360-4.378 V / 4.800 A	0.000 V / 1.986 A
V213 Unit 2 / 230 Vac	4.371-4.385 V / 4.800 A	4.358-4.990 V / 0.000-0.820 A

At 16 V, all four acquisitions stopped on their first 5 A reading. At 5 V, both 100 Vac sequences and the 230 Vac Unit 2 sequence recorded five 5 A readings and completed the return sweep. The 230 Vac Unit 1 sequence stopped after one 5 A reading. These are endpoint samples around output loss; they do not describe a stable shutdown waveform.

Actual current at the PPS 5 V / 5 A point

Evidence / unit / input	1 (A)	2 (A)	3 (A)	4 (A)	5 (A)
P03 Unit 1 / 100 Vac	0.776	0.438	0.191	0.033	0.000
P04 Unit 2 / 100 Vac	0.740	0.000	0.000	0.000	0.000
V113 Unit 1 / 230 Vac	1.986	Not recorded	Not recorded	Not recorded	Not recorded
V213 Unit 2 / 230 Vac	0.820	0.000	0.000	0.000	0.000

The V113 shutdown sample contains 0.000 V and 1.986 A in the same ASD response. It is retained as recorded, not interpreted as a stable operating point. No later 5 A samples exist for that sequence. In V213, the first return 4.8 A reading was 4.596 A; the next four readings were 4.800 A. In P03 and P04, all five return 4.8 A readings were approximately 4.8 A.

Completing the PPS 5 V sequence did not mean that its 5 A target load was achieved. The data do not distinguish source current limiting, a transient/protection response or interaction with the ASD-PD31 load.

Fixed 15 V to 5 V at light load

A 0.1 A electronic load was established at Fixed 15 V before selecting Fixed 5 V. Both samples lost output in the recorded transition at 100 Vac and at 230 Vac. Unit 1 reproduced the 100 Vac behavior with the analyzer removed.

Evidence	Source / input / arrangement	Wait	First 5 V reading
T01	Unit 1 / 100 Vac / analyzer sequence	0.5 s	0.270 V / 0.000 A
T02	Unit 2 / 100 Vac / analyzer sequence	0.5 s	0.269 V / 0.000 A
T03	Unit 1 / 100 Vac / analyzer sequence	2 s	0.072 V / 0.000 A
T04	Unit 1 / 100 Vac / direct sequence	2 s	0.225 V / 0.000 A
T05	Unit 1 / 100 Vac / isolated direct test	2 s	0.173 V / 0.000 A
V115	Unit 1 / 230 Vac / isolated analyzer test	2 s	0.000 V / 0.000 A
V215	Unit 2 / 230 Vac / isolated analyzer test	2 s	0.000 V / 0.000 A

The isolated 230 Vac tests recorded three established 15 V readings before the 5 V request. For Unit 1 they were 14.976 V / 0.100 A. For Unit 2 they were 14.982 V / 0.100-0.101 A. Each independent 230 Vac test also had a preceding healthy 5 V / 0.1 A check, supplied in its evidence folder.

Direct source comparison at 100 Vac

Source	15 V point	5 V point	Evidence
Source A Unit 1	14.975 V / 0.100 A, three readings	0.173 V / 0.000 A, first reading; stopped	T05
Reference source R	15.075-15.078 V / 0.100 A, three readings	5.078-5.083 V / 0.100 A, three readings	C01

The direct comparison used the same cable, ASD-PD31, CC2 and voltage-based procedure. Source A selected Fixed 15 V Object 4, whereas Reference source R selected Object 3. Actual RDOs were not captured in these direct tests and cannot be assumed identical.

Interpretation of the repeated observations

The Reference source R result shows a different outcome after changing the source in this setup. Together with the isolated Source A tests, it shows that a long transition sequence and analyzer insertion were not necessary to reproduce the 100 Vac Unit 1 behavior. Responsibility between the charger, sink control and their interaction remains unresolved.

T02 includes low-voltage rows after the first 15 V to 5 V event. Because their starting conditions were not established, they are not counted as independent failures.

PD request evidence and measurement basis

Load current and negotiated request current

In the analyzer-connected Unit 1 100 Vac transition [T01] and both isolated 230 Vac tests [V115, V215], the actual electronic load at 15 V was approximately 0.1 A. The controller-command current parameter was 0.1 A, while the captured Fixed RDOs requested the following currents:

Requested point	RDO bytes, little-endian	RDO value	Operating / maximum
15 V, Object 4	f4 d1 47 40	0x4047D1F4	5.00 A / 5.00 A
5 V, Object 1	2c b1 44 10	0x1044B12C	3.00 A / 3.00 A

The RDO operating current is bits 19..10 and maximum current is bits 9..0, each in 10 mA units. These currents are within the corresponding recorded source capabilities. The command parameter, PD contract request and actual electronic load current must be distinguished.

Accepted request followed by low VBUS events

Evidence	Request / Accept / PS_RDY packet Sno	First later VBUS event below 1 V	Gap from PS_RDY start
T01	112 / 114 / 116	0.747141 V	135.655 ms
V115	45 / 47 / 49	0.747141 V	139.405 ms
V215	45 / 47 / 49	0.747141 V	140.295 ms

These are gaps between recorded event timestamps, not measured output transition durations. The captures show an accepted 5 V request and subsequent low-voltage events. The later ASD endpoint measurements also show low output. Packet-event VBUS values may precede a later voltage update and are not a continuous waveform. Transition timing compliance was not evaluated.

Recorded capabilities and instrument identity

Source A captures include Fixed 5 V / 3 A, 9 V / 3 A, 12 V / 5 A, 15 V / 5 A, 20 V / 5 A, and EPR Fixed 28 V / 5 A, 36 V / 5 A and 48 V / 5 A. Programmable entries include PPS 5-21 V / 5 A, SPR AVS 9-20 V, and EPR AVS 15-48 V / 240 W. Raw capability packets are included in the PD captures. Cable e-marker capability was not independently qualified in this record.

ASD type 05.54. Power firmware/hardware 09.18/05.01; protocol firmware/hardware 04.77/04.00; display firmware/hardware 01.74/00.02. These instrument versions are consistent across all included main runs. Source firmware and manufacturing serial numbers were not recorded; Unit 1 and Unit 2 are test identifiers.

The AC values are recorded bench settings, without an independent logged input waveform. Ambient and charger temperatures were not measured. ASD internal temperature is affected by its fan cycling and is not an evaluation metric. DC readings include cable/analyzer losses; source-terminal regulation and efficiency were not evaluated. This engineering record does not assign USB-IF certification status.

Reproduction and evidence guide

Reproduction settings

1. Test each physical sample at 100 Vac / 50 Hz and 230 Vac / 50 Hz with the stated cable and CC2. Query source capabilities and establish a healthy starting output before every independent sequence. Preserve actual RDOs and source-side waveforms around the event when available.

2. High power: Fixed 48 V and EPR AVS 48 V, electronic load 0.2 to 5 to 0.2 A in 0.2 A steps, five measurements per point. For the AVS voltage sequence, use 36 to 48 to 36 V at 5 A in 1 V steps, 1.25 s settling, at least 5 s per point and three measurements per point. Nominal 60 s holds use approximately 1 s sample intervals.

3. PPS: select 16 V and separately 5 V, use a 5 A controller request parameter and the same 0.2 A current steps with five measurements per point and a planned return sweep. Compare with SPR AVS 16 V and Fixed 20 V. Inspect actual current at the 5 A point even when the sequence completes.

4. Light load: select Fixed 15 V at a 0.1 A electronic load, take three measurements at 2 s intervals, then select Fixed 5 V in the same session with the load setting retained. The controller-command current parameter is 0.1 A. Use the direct path for the 100 Vac isolated control and the analyzer path for the recorded 230 Vac comparisons. Per-run test_parameters.json files retain the exact acquisition options.

Requested engineering review

Please review the Unit 2 high-power difference between AC input conditions separately from the PPS boundary response and the Fixed 15 V to 5 V light-load behavior. Source voltage/current waveforms, negotiated RDOs and source state/protection records would help determine the mechanisms. A 100 Vac recheck after the 230 Vac run, with an independent load and recorded source firmware, would help test repeatability and conditioning effects.

Evidence package

The package contains 61 main measurement runs: 31 at 100 Vac (30 Source A and one Reference source R control) and 30 at 230 Vac (15 per Source A sample). It also contains 30 preceding 5 V / 0.1 A starting-condition checks. Those checks are supporting data and are not counted as additional main test runs.

evidence_index.csv links every ID to the sample, AC setting, test, observation, timestamp and anonymous evidence path. B/G/H/P/T/C IDs retain the 100 Vac mapping. V1nn and V2nn identify the 230 Vac Unit 1 and Unit 2 runs. Each folder contains ASD measurements, instrument versions and test parameters; PD captures are present where recorded. The 230 Vac folders also contain their starting-condition measurements and settings.

file_manifest.csv records anonymous evidence paths, exported SHA-256 hashes and transformations. SHA256SUMS.txt covers all package files except itself. Source identity labels and original filenames are withheld. All measurement rows, electrical values, status fields and raw ASD responses are retained. PD captures are byte-for-byte copies. README.md explains exact mode filtering and the anonymity scope.

Times are Japan Standard Time (UTC+09:00). The integrated record supersedes the 100 Vac-only narrative for this dataset. The source acquisitions remain separate and traceable by input condition.