USB-C cable validation record

Framework USB-C Cable - EPR / 2.0 m / c_sample1

19 October 2026 | 100 Vac / 50 Hz | FW-CABLE-20261019-01

Finding: successful evidence for all 29 cases across two runs

R01 passed 28 cases. A CY4500 USB capture stall interrupted the final case during its guard check, before the actual transition measurement. R02 passed the resumed 48 V to 5 V case, providing successful evidence for all 29 cases. This is composite coverage, not an uninterrupted full run.

The 120 s hold at the 48 V / 5 A setpoint delivered median ASD input readings of 47.177 V / 5.000 A / 235.885 W. Nominal 240 W is the setpoint product, distinct from measured ASD input power.

Setup and specimen identification

Item	Record
DUT	Framework USB-C Cable - EPR; 2.0 m; detachable; entered rating 240 W
Specimen name	Framework_EPR_2m_FRANCQCHA653360XSS_c_sample1
Physical tag	FRANCQCHA / 653360XSS; full label FRANCQCHA653360XSS
SRC	Framework FRANDVCH00_s_sample1; C1; entered maximum 240 W
Power path	SRC > DUT Cable > CY4500-EPR > ASD-PD31
AC / orientation	100 Vac / 50 Hz; operator-entered; as-connected; ASD cc2
Procedure	full; 0.1 A start, 0.2 A steps; 3 readings/point; 120 s holds; hold-settle 1 s; cooldown 5 s
Capture / control	Mandatory CY4500 live guard; ASD controller v5.8.13; COM3 USB Type-B

The manufacturer meaning of the two label lines is unconfirmed. The full string is retained as a specimen label. The source/load assignment of the straight and right-angle ends was not recorded.

Loaded holds and reference comparison

R01 completed all seven 120 s holds with 120 readings each at 1 s intervals. Values are steady ASD input readings. The 1 s wait after LOAD_ON is outside the hold duration.

Target V/A	V min	V median	V max	I median	P median W
5/3	4.925	4.928	4.932	3.000	14.784
9/3	8.627	8.631	8.634	3.000	25.893
15/3	14.623	14.627	14.631	3.000	43.881
20/5	19.291	19.297	19.304	5.000	96.487
28/5	27.183	27.191	27.199	5.000	135.955
36/5	35.166	35.176	35.186	5.000	175.880
48/5	47.167	47.177	47.187	5.000	235.885

Comparison with Reference A 1.0 m

Target V/A	DUT droop V	Ref droop V	Delta mV	Apparent path delta mOhm
5/3	0.1470	0.0985	+48.5	+16.72
9/3	0.4485	0.4005	+48.0	+16.55
15/3	0.4455	0.3990	+46.5	+16.03
20/5	0.7625	0.6800	+82.5	+16.84
28/5	0.7590	0.6765	+82.5	+16.85
36/5	0.7595	0.6775	+82.0	+16.73
48/5	0.7615	0.6790	+82.5	+16.84

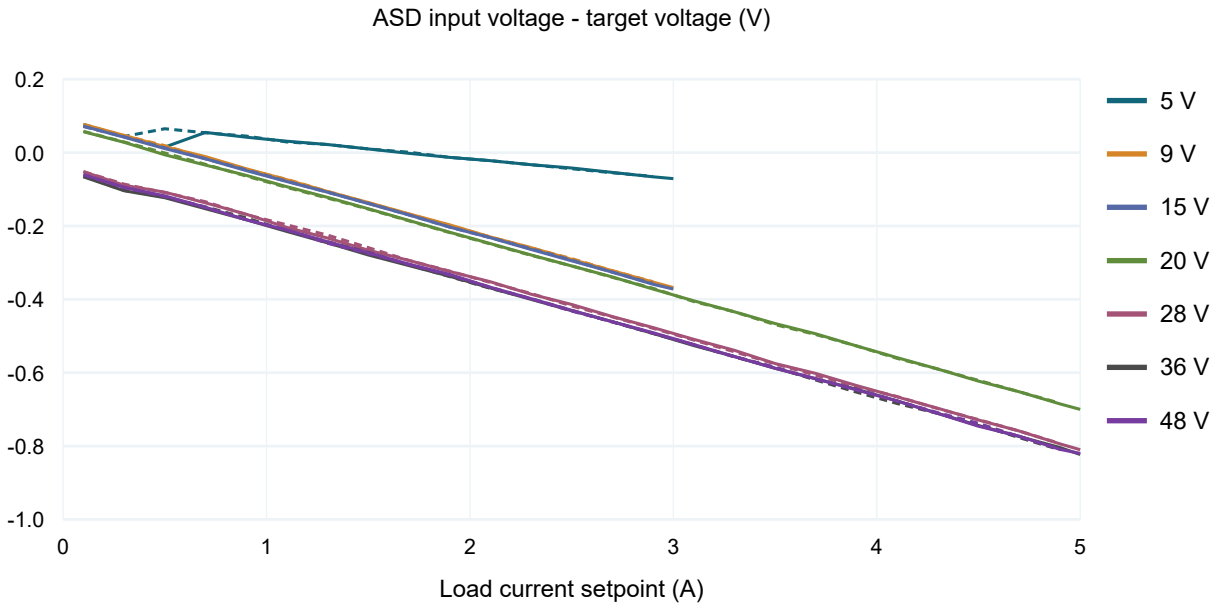
The reference is the 17 October 2026 full run of Reference A / 1.0 m / c_sample1 (29/29 PASS).
Source, AC metadata, cc2 and procedure settings match. It is a same-bench working reference, not a calibration standard or independently verified USB-IF certification.

Droop = mean of before/after 0.1 A voltage medians minus the loaded-hold median. Apparent path resistance = droop / measured high-low current difference. All pairs were independently reproduced within R01. DUT droop was approximately 47 - 83 mV greater than reference; cable lengths also differ, 2 m versus 1 m.

Source regulation, contacts, CY4500, the ASD input path and differences between acquisition times contribute. These are not isolated cable resistance, conductor resistivity or resistance per unit length. The reference used RS232 ASD control; this test used USB Type-B. This control-path difference is retained.

Current sweeps and final return

All seven current round trips completed, reaching 3 A at 5 / 9 / 15 V and 5 A at 20 / 28 / 36 / 48 V. Traces show medians of three readings per point; solid and dashed lines distinguish the two legs.



R02: light-load return from Fixed 48 V to 5 V

Setpoint	Read voltages V	Read currents A	Result
48 V / 0.1 A	47.936, 47.935, 47.937	0.100, 0.100, 0.100	PASS
5 V / 0.1 A	5.080, 5.079, 5.077	0.100, 0.100, 0.100	PASS

R02 ran only the final case after fresh discovery, 5 V preflight and mandatory live-capture checks. The configured endpoint delay was 2 s. This verifies settled endpoints, not USB-PD transition-time compliance.

Tracking checks use +/-1 V and +/-max(0.050 A, 2% of load setpoint). Independent checks found no violations among selected steady or precheck rows. These are screening-procedure checks, not cable-standard compliance limits.

Run history and data audit

ID	Original outcome	Use in this report
R01	FAILED	T01 - T28 PASS. T29 stopped during capture guard.
R02	INCOMPLETE	T29 PASS. A resumed subset cannot establish full coverage by itself.
H01	Discovery interrupted	Immediately preceding attempt; excluded from measurement statistics.

During R01 final-case startup, USB reads stopped advancing in the zero-load 5 V live-capture guard. STOP also returned LIBUSB_ERROR_TIMEOUT [-7]. The actual 48 V to 5 V test had not begun, so this is not classified as a cable voltage failure. No GUI conflict was established. Root cause remains unconfirmed.

ASD and CY4500 each used an externally powered WCH CH319M-MagIso-R0 on their PC USB paths. Logs retain LOAD_OFF and near-zero-current verification after the stop and normal completion. Original R01/R02 statuses remain unchanged; the 29-case composite assessment is separate.

Audit item	Result
Case / selected preflight rows	1,786 / 58; steady=1,779, precheck=7
Raw responses / power	All selected ADC CRCs and V/I decodes verified; P versus V x I within 0.00101 W.
Instrument versions	62 snapshots match; controller v5.8.13.
Exported PD CSVs	61
PD rows / requests / PS_RDY	15,036 / 427 / 427
HARD_RESET / REJECT / WAIT	0 / 0 / 0
Control receive CRC audit	3,069 buffers recomputed; 3 concatenated buffer(s) have valid constituent-frame CRCs.

PD totals cover discovery, preflight and case exports from R01/R02, excluding the capture that could not export after the USB stall. A later PS_RDY exists in the same capture for every request. This is not strict one-to-one transaction matching or protocol certification. Full warnings are retained in analysis/control_warnings.csv.

Selection map for all 29 cases

Case	Phase	Target V/A	Run	Result
T01	low_before	5/0.1	R01	PASS
T02	current	5/3	R01	PASS
T03	loaded_hold	5/3	R01	PASS
T04	low_after	5/0.1	R01	PASS
T05	low_before	9/0.1	R01	PASS
T06	current	9/3	R01	PASS
T07	loaded_hold	9/3	R01	PASS
T08	low_after	9/0.1	R01	PASS
T09	low_before	15/0.1	R01	PASS
T10	current	15/3	R01	PASS
T11	loaded_hold	15/3	R01	PASS
T12	low_after	15/0.1	R01	PASS
T13	low_before	20/0.1	R01	PASS
T14	current	20/5	R01	PASS
T15	loaded_hold	20/5	R01	PASS
T16	low_after	20/0.1	R01	PASS
T17	low_before	28/0.1	R01	PASS
T18	current	28/5	R01	PASS
T19	loaded_hold	28/5	R01	PASS
T20	low_after	28/0.1	R01	PASS
T21	low_before	36/0.1	R01	PASS
T22	current	36/5	R01	PASS
T23	loaded_hold	36/5	R01	PASS
T24	low_after	36/0.1	R01	PASS
T25	low_before	48/0.1	R01	PASS
T26	current	48/5	R01	PASS
T27	loaded_hold	48/5	R01	PASS
T28	low_after	48/0.1	R01	PASS
T29	transition	48/0.1	R02	PASS

Each low_before / current / loaded_hold / low_after voltage block comes wholly from R01. Before/after baselines are not paired across runs. Only T29 is supplied by R02.

E-Marker evidence and assessment scope

Item	CH32 observation
Cable	Passive; 5 A; maximum 48 V; USB 2.0 advertised
VID / PID	0x32AC / 0x000F
ID Header / Product VDO	0x180032AC / 0x000F0000
Cable VDO	0x000A6640
CH32 sessions	C01 session_0001; C02 session_0002

C01/C02 cable identities agree. Physical association is operator-declared through the entered specimen name. CH32 CC2/CC1 observations support identity; they do not establish loaded tests in every orientation. The 5 A / 48 V and USB 2.0 declarations are E-Marker information, not measured data-speed qualification.

Supported conclusion

For this specimen, all 29 Fixed 5 - 48 V cases were demonstrated across two runs on the recorded 100 Vac setup and orientation. The loaded holds and current round trips showed no stop attributable to the cable, and the final light-load return passed on resumption.

Unmeasured scope and interpretation limits

This is screening of one specimen under one condition. PPS/AVS loaded sweeps, other orientations, USB data speed, temperature rise, insulation withstand, mechanical durability, long-duration operation and USB-IF certification were not evaluated. This cable procedure is Fixed-PDO based; the source absence of PPS is not a missing case in this procedure.

Temperature columns are ASD-PD31 internal temperature, not source, cable or plug temperature. Fan cycling affects these readings; they are not used for thermal evaluation. ASD ripple readings lack independent bandwidth/calibration verification and are not used for compliance. Traceable calibration evidence and independent AC meter logs are not included.

Package guide

reports contains Japanese/English PDFs and Markdown. analysis contains selected cases, ADC/preflight rows, holds, sweeps, path/reference comparisons and PD/CRC/warning audits. evidence retains anonymized R01/R02 originals, USB-stall diagnostics, CH32 observations, the Reference A reference and the preceding discovery interruption. Original mode has no literal steady value; measured rows without -precheck / -ramp suffixes are classified as steady.

evidence_index.csv maps evidence IDs; source_manifest.csv records copy sources and hashes; manifest_sha256.csv lists file sizes and SHA-256. Normalized CSV source_csv and source_csv_line trace each row to its packaged original.