

MERIDIAN COMPLIANCE TESTING LABORATORY

ISO/IEC 17025:2017 Accredited Laboratory | Electrical, Electronic & EMC Compliance Testing

TEST REPORT

Electrical & Electronic Equipment Compliance Evaluation

 Report No.	MCL-25-0741-PS	 EUT Description	USB-C GaN Power Adapter
 Date of Issue	2026-07-10	 Model No.	XR-450
 Client / Applicant	Nova Electronics Inc.	 Serial No.	NX2026-004871
 Manufacturer	Nova Electronics (Shenzhen) Co., Ltd.	 Rated Output	20 V / 3.25 A (65 W max)
 Test Engineer	J. Alvarez, C.E.T.	 Rated Input	100–240 V~, 50/60 Hz, 1.2 A
 Technical Reviewer	M. Chen, P.Eng.	 Sample Condition	New, factory sealed

This report shall not be reproduced except in full, without the written approval of Meridian Compliance Testing Laboratory. Results relate only to the item(s) tested and were obtained under the conditions stated herein.

Revision History

Rev	Date	Description	Prepared By	Approved By
0	2026-06-28	Initial issue for internal technical review	J. Alvarez	—
1	2026-07-05	Added conducted emissions data; corrected LISN calibration date	J. Alvarez	M. Chen
2	2026-07-10	Final issue — incorporated reviewer comments	J. Alvarez	M. Chen

1 Scope and Purpose

This report documents the test methods, configurations, results, and evaluation of compliance for the Equipment Under Test (EUT) identified above, against the electromagnetic compatibility (EMC) and electrical safety standards listed in Section 4. Testing was performed at the request of the Client to support CE marking and regulatory submission of the product in the target markets of the European Union and the United Kingdom.

All measurements were performed at Meridian Compliance Testing Laboratory, Building 3 EMC Chamber and Safety Test Bay, using calibrated equipment traceable to national metrology standards. Test methods followed the referenced editions of the applicable CISPR, IEC, and EN standards current as of the date of testing.

2 Symbols, Abbreviations and Definitions

Term	Definition
EUT	Equipment Under Test
AE	Auxiliary Equipment used to exercise the EUT during testing
LISN	Line Impedance Stabilization Network
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
CISPR	Comité International Spécial des Perturbations Radioélectriques
ESD	Electrostatic Discharge
EFT	Electrical Fast Transient
RF	Radio Frequency
U	Expanded measurement uncertainty
k	Coverage factor ($k = 2$ corresponds to a 95 % confidence level)
u_i	Standard uncertainty contribution of source i
dBμV	Decibels relative to 1 microvolt

3 Equipment Under Test

3.1 General Description

The EUT is a single-port USB-C GaN (gallium nitride) power adapter intended for charging portable electronic devices. The unit accepts universal mains input and delivers regulated DC output via USB Power Delivery (PD 3.0) protocol, with a maximum continuous output of 65 W. The enclosure is flame-retardant polycarbonate (UL 94 V-0), with foldable AC prongs and a single status LED. Internal construction comprises an EMI filter stage, a primary-side GaN FET half-bridge converter, a planar transformer, and synchronous rectification on the secondary side.

Three (3) production-representative samples were submitted by the Client on 2026-06-20 and assigned laboratory sample identifiers NX2026-004871 through NX2026-004873. Sample NX2026-004871 was used for the tests reported herein unless otherwise noted.

3.2 EUT Photograph



Figure 1: Equipment Under Test — USB-C GaN Power Adapter, Model XR-450, S/N NX2026-004871.

4 Applicable Standards and Reference Documents

Standard	Title
EN 55032:2015+A11:2020	Electromagnetic compatibility of multimedia equipment — Emission requirements
EN 55035:2017+A11:2020	Electromagnetic compatibility of multimedia equipment — Immunity requirements
EN IEC 61000-3-2:2019	Limits for harmonic current emissions (≤ 16 A per phase)
EN 61000-3-3:2013+A2:2021	Limitation of voltage changes, fluctuations and flicker
IEC 62368-1:2018+AMD1:2020	Audio/video, information and communication technology equipment — Safety requirements
CISPR 16-4-2:2020	Uncertainty, statistics and limit modeling — Measurement instrumentation uncertainty

5 Test Facility and Setup

5.1 Test Configuration

Conducted emissions measurements were performed with the EUT operating at rated output (20 V / 3.25 A) into a resistive load, positioned 0.4 m above a bonded ground reference plane on a non-conductive support, in accordance with CISPR 32 and CISPR 16-2-1. The AE (electronic load and USB-PD trigger board) was placed 0.1 m from the EUT and connected via a 0.8 m USB-C cable. Mains power was supplied through a two-line V-network LISN, with the unused monitoring port terminated in 50 Ω.

5.2 Test Setup Diagram

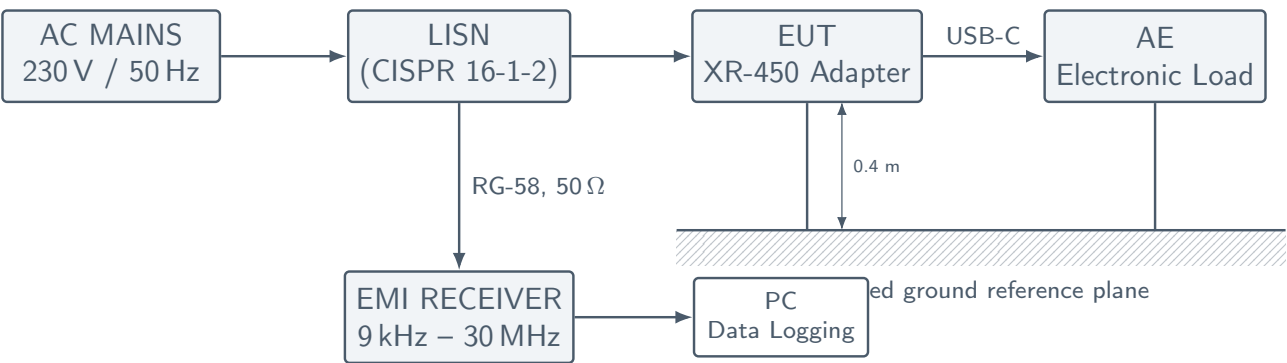


Figure 2: Conducted emissions test setup (CISPR 32 / CISPR 16-2-1 configuration).

6 Measurement Uncertainty Budget

The expanded measurement uncertainty for conducted emissions measurements was evaluated in accordance with CISPR 16-4-2. Table 1 summarizes the individual uncertainty contributions, evaluated at 1 MHz for the quasi-peak detector.

Source of Uncertainty	± Value	Distrib.	Divisor	c_i	u_i (dB)
LISN–EUT mismatch	0.50	U-shape	1.41	1.00	0.35
LISN–Receiver mismatch	0.30	U-shape	1.41	1.00	0.21
LISN insertion loss / voltage div.	0.30	Normal	2.00	1.00	0.15
LISN impedance deviation	0.68	Rectang.	1.73	1.00	0.39
Connecting cable loss	0.20	Rectang.	1.73	1.00	0.12
Receiver sine-wave reading	1.00	Normal	1.00	1.00	1.00
Receiver noise floor proximity	0.50	U-shape	1.41	1.00	0.35
Ambient temperature / humidity	0.20	Rectang.	1.73	1.00	0.12
Pulse amplitude repeatability	0.30	Normal	1.00	1.00	0.30
Combined standard uncertainty, $u_c = \sqrt{\sum u_i^2}$					1.24
Expanded uncertainty, $U = k \cdot u_c$ ($k = 2$, 95 % confidence)					2.48

Table 1: Conducted emissions measurement uncertainty budget (all values in dB).

The reported expanded uncertainty of $U = \pm 2.48$ dB ($k = 2$) has been applied for information only; compliance decisions in Section 7 are based on the measured value against the specified limit without uncertainty margin, per the Client's request and the applicable CISPR 16-4-2 decision rule.

7 Test Results and Compliance Matrix

Clause	Requirement	Test Method	Result	Remarks
EN 55032 §6.1	Conducted emissions, 150 kHz–30 MHz, AC mains port	CISPR 16-1-1/-2-1	✓ PASS	Margin $\geq$ 4.2 dB at all frequencies
EN 55032 §6.2	Radiated emissions, 30 MHz–1 GHz, 3 m semi-anechoic	CISPR 16-1-4/-2-3	✓ PASS	Margin $\geq$ 3.1 dB
IEC 61000-3-2	Harmonic current emissions, Class D	IEC 61000-3-2 Annex C	✓ PASS	Worst harmonic (h=3) at 61 % of limit
IEC 61000-3-3	Voltage change, fluctuation and flicker	P_{st} , P_{lt} , d_{max} , d_c	✓ PASS	$P_{lt} = 0.14$ (limit 0.65)
IEC 61000-4-2	ESD immunity, ± 8 kV contact / ± 15 kV air	Performance criterion B	✓ PASS	No loss of function observed
IEC 61000-4-3	Radiated RF immunity, 80 MHz–6 GHz, 3 V/m	Performance criterion A	✓ PASS	See Note 1, Section 8
IEC 61000-4-4	EFT/burst immunity, AC port, ± 2 kV	Performance criterion B	✓ PASS	5/50 ns burst, 100 kHz
IEC 61000-4-5	Surge immunity, L-N ± 1 kV, L/N-PE ± 2 kV	Performance criterion B	✓ PASS	Output ripple within limits post-surge
IEC 62368-1 §5.4.9	Dielectric withstand (Hipot), primary–secondary	3000 V AC, 60 s	✓ PASS	Leakage current < 1 mA
IEC 62368-1 §5.7	Touch current, normal condition	AC input energized	✓ PASS	Measured 0.08 mA (limit 0.25 mA)

8 Deviations and Observations

- Note 1.** During radiated RF immunity testing (IEC 61000-4-3), ambient chamber temperature was recorded at 24.8 °C, marginally above the standard's recommended range midpoint but within the permitted overall range of 15–35 °C. This deviation is not considered to have influenced the test outcome and is noted for traceability only.
- Note 2.** The Client-supplied AE (electronic load) required a firmware update (v2.3.1) prior to testing to correctly negotiate USB-PD 3.0 contracts; this update did not alter the EUT and is documented for reproducibility.

No other deviations from the specified test methods were observed. All test equipment used was within its current calibration interval; calibration certificates are retained on file under laboratory QMS record MCL-CAL-2026-0114.

9 Conclusion and Statement of Compliance

Statement of Compliance

Based on the tests performed and results obtained, the EUT (USB-C GaN Power Adapter, Model XR-450) **COMPLIES** with the requirements of EN 55032:2015+A11:2020, EN 55035:2017+A11:2020, EN IEC 61000-3-2:2019, EN 61000-3-3:2013+A2:2021, and IEC 62368-1:2018+AMD1:2020, as evaluated under the test configuration described in Section 5.

This report applies only to the sample(s) tested and does not, by itself, imply certification or ongoing regulatory approval of the product. Any modification to the EUT design, construction, or rated operating conditions may invalidate the conclusions of this report.

10 Approval and Signatures

Role	Name	Signature	Date
Tested By	J. Alvarez, C.E.T.	_____	2026-07-08
Reviewed By	M. Chen, P.Eng.	_____	2026-07-09
Approved By	S. Whitfield, Laboratory Manager	_____	2026-07-10

Meridian Compliance Testing Laboratory | 1275 Innovation Parkway, Suite 400, Austin, TX 78729 | Accreditation No. A2LA-9284.01 | www.meridianctl.example