



July 26, 2024

CharIN North America
1300 Eye Street NW, Suite 400E
Washington, DC 20005

California Air Resources Board
Attn: Belinda Chen
Manager, ACC II Amendments Rulemaking
1001 I Street
Sacramento, CA 95814

RE: Advanced Clean Cars II Amendments: Proposed Zero-Emission Vehicle Assurance Measures

Dear Members of the Board:

The Charging Interface Initiative (CharIN) appreciates the opportunity to provide input on Zero-Emission Vehicle (ZEV) Assurance Standards in response to the Public Workshop on Amendments to the Advanced Clean Cars II Regulations on June 26, 2024. During the workshop, CARB staff highlighted that for Model Year (MY) 2028, it intends to require DIN Spec 70121 and ISO 15118-2 focused on the implementation of the Plug and Charge feature. Furthermore, it was noted that conformance testing will be incorporated; however, it is still unclear to what extent and how.

Given CharIN's expertise in enabling conformance testing use cases, we submit the following comments:

- CharIN supports basing requirements no sooner than 2028 MY and later on DIN SPEC 70121 and ISO 15118-2 and the implementation of Plug and Charge feature.
- CharIN encourages CARB to avoid redundancy in conformance testing requirements for DIN and ISO standards by recognizing existing efforts, such as CharIN's CCS Extended development of test use cases for ISO 15118 -4/-5, and CharIN's interoperability testing events (also known as Testivals)
- CharIN urges CARB to recognize the standardization of SAE J3400 and amend the rules to include SAE J3400 as an equally satisfactory charger inlet option for MY 2026 and subsequent vehicles.
- CharIN recommends that CARB allow interoperability certification through two options: first-party self-demonstration through completion of required test cases and appropriate reporting, or third-party certification.

Background

CharIN is the largest global association focused on the electrification of all forms of transportation based on the seamless and interoperable charging experience enabled by the Combined Charging System (CCS) and the Megawatt Charging System (MCS), as well as communications standards especially between chargers and electric vehicles. CCS and MCS are the global standards for charging vehicles of all kinds, with ISO 15118 supporting them on the communications protocols. CharIN also recognizes and takes an active role facilitating the transition to the SAE J3400 standard in North America. An inclusive, industrywide coalition, CharIN represents more than 300 leading e-mobility stakeholders, from automakers to utilities, grid operators, component suppliers, and charger and charging station developers. Nearly 75 of these members are based in North America. A complete list of members may be found on our website at www.charin.global.

CharIN Testivals – Driving Interoperability

Interoperability is key for user acceptance of electric vehicles and economies of scale. However, the huge variety of implementations, use cases, and requirements of the diverse global market creates significant technical barriers to the emergence of a seamless network industry aspires to. In response, CharIN and its members are dedicated to enabling interoperability of EV charging through intra-industry collaboration, the cornerstone of which is hands-on testing through events called “Testivals.”

The CharIN Testival confronts technical challenges head on and brings together companies from the smart charging community and their technology experts to conduct conformance and interoperability tests for electric vehicle electronic control units and charging infrastructure communication controllers. Multiday Testivals allow round-robin testing by dozens of companies and are open to all. CharIN is the premier community of experts providing the highest level of technical input, creating a collaborative, informed, and consistently updated global knowledge base.

Testivals provide global industry the opportunity to conduct a variety of tests, including those CARB has identified as priorities for California. Industry is able to directly test ISO 15118 interoperability, and CharIN is now creating a set of ISO 15118 EV test cases (known as CharIN CCS Extended), which will be ready for self-declaration of conformity that will address industry needs while also allowing for maximum future flexibility as the standard evolves. These test cases are aligned with those being evaluated under SAE J2953/3s proposed for communication standards conformance. As a global organization, our outputs will be open and free for anyone to use, creating a fair and level playing field.

In addition, participants can test bidirectional power transfer, vehicle-to-grid capabilities, and cybersecurity protections such as certificate handling to ensure secure and interoperable Public Key Infrastructure. Participants can test both current and pre-market products. Each Testival results in significant improvements to interoperability made by both vehicle and charger technical teams resulting in tangible interoperability benefits for consumers.

However, the interpretation of data from these events requires some considerations. Slide 58 from the workshop materials depicts a pie chart detailing the causes of charging failures as reported at the 2023 VOLTS Testing Event. It is important to recognize that these failure modes and their frequencies do not accurately reflect the real-world issues currently faced or anticipated in the near future. These testing events serve as a platform for EV and EVSE manufacturers to evaluate products at various stages of development, often with the primary aim of gathering in-depth diagnostic data rather than simply achieving a successful charging session. Consequently, the data from the VOLTS Testing Event should not be leveraged as a basis for establishing new regulatory requirements.

The auto industry is global, and CharIN Festivals take place across the world. This year, CharIN conducted Festivals in North America, Europe and Asia. The 14th Festival just happened last month in Cleveland, Ohio. CharIN has hosted and collaborated in multiple testing events in the United States each year since 2021, including events in California such as the 2021 CharIN Festival North America hosted by Lucid in Newark, California and the 2023 Vehicle Interoperability Testing Symposium (VOLTS), which CharIN organized in Long Beach under contract to the California Energy Commission. Our next event in North America will be in San Bernardino, CA at the WattEV Depot the week of November 18, 2024.

Addressing Testing Needs

As CARB looks to the future of ZEV assurance measures, we urge you to recognize and work with industry to enhance existing platforms, such as Festivals, which are already making a significant contribution to interoperability. CharIN's CCS Extended is addressing the testing needs of the global industry. We encourage CARB to work with CharIN to identify opportunities for how to best pull in existing conformance testing efforts rather than creating redundant or unnecessary requirements.

Adapter Safety and SAE J3400 Inclusion

Another key contributor to interoperability and a seamless charging experience for EV drivers is the safety and performance of adapters. The absence of safety certification requirements in CARB's existing adapter regulations risks creating further safety and performance issues for drivers utilizing adapters to access existing charging infrastructure. CARB can strengthen adapter standards by leveraging industry-led efforts, such as Underwriter Laboratories (UL) work to develop adapter safety standards under UL 2252 once these are finalized. A clear path for consumer safety regarding EV charging adapters is needed and CharIN is actively engaged to help move those efforts forward, recommending use of only UL 2252 certified and/or Original Equipment Manufacturer (OEM) approved adapters.

It is important for CARB to recognize the standardization of SAE J3400 as an equally satisfactory charger inlet option for MY 2026 and subsequent vehicles. Recognizing the standardization and adoption of SAE J3400, CharIN has established the North America Charging Interoperability (NACI) Task Force to support EV ecosystem interoperability for SAE J3400 and accelerate EV market adoption. The primary objective of the NACI Task Force is to guarantee seamless compatibility and interoperability of SAE J3400 by establishing industry-standard, system-level charging specifications and definitions, such as ensuring interoperability with ISO 15118/DIN SPEC 70121 standards, developing implementation guidelines promoting best practices, and establishing certification processes for interoperable products.

Thank you for your consideration and please let us know if we can answer any additional questions.

Sincerely,



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Appendix: CharIN CCS Extended Update