COTEVOS

Specification of the COTEVOS Infrastructure for unified conformance testing of the interoperability

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Abstract

One main objective of COTEVOS is to achieve test means to assess conformity and, therefore, interoperability of electric vehicles. The deliverable 5.1 aims to specify COTEVOS infrastructure for unified conformance testing and interoperability at EV-EVSE level. In order to assess interoperability, this document addresses the mostly implemented standards for the interface EV-EVSE, specifically the ISO/IEC 15118.

The ISO/IEC 15118 is aiming to be the basis for the future EV-EVSE communication and therefore the key components are studied in depth in this document. The standard is supported by a set of protocols which allows High Level Communications (HLC) to interact with the future smart grid to allow requirements like energy management, scheduling and Plug-and-Charge. Communication between vehicle and charging station is provided in different layers of the ISO/OSI reference model by the HomePlug Green PHY system with Signal Level Attenuation Characterization (SLAC) mechanism and Vehicle to Grid communication (V2G), which are treated in this document.

After studying the relevant standards, an interlaboratory test infrastructure to be implemented in conformance test laboratories is proposed. Considering the test cases and requirements defined in the ISO/IEC 15118-4 an example conformance test implementation of the ISO/IEC 15118-1, with detailed hardware and software components, is presented in this document. The example implementation is mean to be used as a starting point, and later be adequate for testing institutions and round robin tests, which in the future should assess conformance of EVs and EVSEs according to the ISO/IEC 15118-1 standard. It must be noted that, since the time when the COTEVOS project was defined, the development of the standard has continued advancing and for the objectives of this project only the available versions at the time of implementation have been used.

Additionally in this deliverable, a study on wireless charging systems is carried out. The study includes an overview of other applicable standards regarding radiation of electromagnetic fields and safety for humans as well as a review of standardization groups aiming to produce documents to regulate wireless charging. Special focus is set to different technologies, coil topologies, communications and electromagnetic compatibility (EMC) tests for wireless charging according to the COTEVOS description of work (DOW). A reference test procedure and a reference test setup are presented.