

JJG

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AC Charge Spots for Electric Vehicles(for Trial Implementation) (English Translation)

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1 Scope

This Regulation applies to the first verification, follow-up verification and in-use inspection for AC charge spots for electric vehicles.

The verification of AC charge spots for electric vehicles based on the statistical sampling method can be carried out in accordance with this Regulation.

2 Normative references

This Regulation refers to the following documents:

JJG 596, Verification Regulation of Electrical Meters for Measuring Alternating- current

Electrical Energy

JJG 597, Verification Regulation of Verification Equipment for AC Electrical Energy

Meters

JJF 1139, Principle and method for determination verification period of measuring instruments

For the dated documents, only the versions with the dates indicated are applicable to this Regulation; for the undated documents, only the latest version (including all the amendments) is applicable to this Regulation.

3 Terms

The following terms and definitions apply to this document.

3.1 AC charge spot

A special device that uses conduction method to provide AC power for electric vehicles with on-board charging equipment, it has the functions of measuring and storing AC power and providing results to users.

3.2 connection point

A connection point that the AC charge spot is connected to electric vehicle.

NOTE: If the output cable is a fixed part of the AC charge spot, this point is defined as the connector at the end of the cable. Otherwise, the connection point is defined as the cable insertion point of the AC charge spot.

3.3 real load test method

A method of verification using the actual operating load.

3.4 virtual load test method

A method that uses the virtual load provided by the AC charge spot verification device for verification.

3.5 operate error

AC power measurement error of AC charge spot under working conditions.

3.6 test output

A device that provides pulses corresponding to the AC power measured by the AC charge spot.

3.7 constant

A numerical value representing the relationship between the electric energy recorded by the AC charge spot and the corresponding test output value.

3.8 nominal voltage

The output voltage of the AC charge spot specified by the manufacturer during normal operation.

4 Overview

An AC charge spot (hereinafter referred to as charge spot) is a metering device that provides AC power for electric vehicles. It is mainly composed of spot body, connecting device for conductive charging, control unit, metering module, display interface or data transmission interface and other parts. The schematic diagram of the charge spot is shown in Figure 1.

The charge spot provides the required AC power for the electric vehicle through the control unit. The electric energy is transmitted to the electric vehicle through the connection device for conductive charging to meet the charging demand. The metering module completes the metering of electric energy, and outputs the measured quantity to the display interface or data transmission interface.

2 For charge spots installed before January 1, 2023, if the accuracy level is not marked, it will be implemented as level 2.

6.2 Testing interface

The technical indicators of the test output and communication interface of the charge spot for verification shall meet the requirements of relevant standards.

6.3 Constant

The charge spot shall have a pulse output corresponding to the measured AC power, which shall be consistent with the constant marked on the nameplate.

6.4 Minimum power variable

The minimum electric energy variable shall be 0.001kW·h.

6.5 Display of charging energy

The charge spot shall be able to display the charging energy. The number of digits displayed for electric energy shall not be less than 6 (including at least 3 decimal places).

For charge spots with time-of-use billing function, the clock time display resolution is not greater than 1s.

7.1 First verification, follow-up verification and in-use inspection

The first verification is a verification of charge spots that have not been verified. The follow-up verification is any verification after the first verification. Repaired charge spots must be verified as the first verification. In-use inspection is an inspection to find out whether the verification mark or verification certificate of the charge spot is valid, and whether the verified charge spot has been significantly modified.

7.2.1 Ambient conditions for verification

When verifying the charge spot, the following conditions shall be met:

- Verification conditions and their deviations do not exceed those specified in Table 3.

- There shall be no appreciable shock load. The seal of the charge spot is complete.

the electric energy values measured simultaneously by the verification device and the charge spot under verification, so as to determine the operate error of the charge spot under verification.

Method I:

When both the charge spot calibrator and the charge spot under verification are working continuously, use the pulse output by the charge spot under verification to control the counting of the calibrator to determine the operate error of the charge spot under verification. When using this method, apply method II to check whether the charge spot constant is correct.

The operate error γ of the verified charge spot is calculated according to (1).

Where, m - the measured pulse number;

m_0 - the calculated and determined pulse number, calculated according to formula (2).

Where,

N - the number of pulses of the verified charge spot;

C_0 - the constant of calibrator, imp/ (kW·h);

C_L - the constant of the verified charge spot, imp/ (kW·h).

NOTE: Select the appropriate pulse number N of the charge spot under verification, so that the quantification error of the calculation and determination of the number of pulses is not greater than 1/10 of the grade index of the charge spot under verification.

Method II:

When both the charge spot calibrator and the charge spot under verification are working