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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 18386.1-2021

Replacing GB/T 18386-2017

**Test methods for energy consumption and range of electric
vehicles - Part 1: Light-duty vehicles**

电动汽车能量消耗量和续驶里程试验方法 第1部分：轻型汽车

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1 Scope

GB/T 18386.1-2021 is the Chinese national standard on test methods for energy consumption and range of electric vehicles - part 1: light-duty vehicles, in the field of road vehicles engineering. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 9 March 2021 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 October 2021. Classification: ICS

43.020, CCS T47. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the test methods for energy consumption and range of pure electric vehicles. This document is applicable to category N1 vehicles; categories M1 and M2 vehicles with the maximum design total mass not exceeding 3500 kg. Categories M1 and L5 vehicles with a maximum design total mass of more than 3500 kg may refer to it for implementation.

2 Normative references

The contents of the following documents, through normative references in this text, constitute indispensable provisions of this document. Among them, for dated references, only the edition corresponding to that date applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 15089 Classification of power-driven vehicles and trailers

GB 18352.6-2016 Limits and measurement methods for emissions from light-duty vehicles (CHINA 6)

GB/T 19233-2020 Measurement methods of fuel consumption for light-duty vehicles

GB/T 19596 Terminology of electric vehicles

GB/T 38146.1-2019 China automotive test cycle - Part

3 Terms and definitions

The terms and definitions defined in GB/T 15089, GB/T 19596, GB 18352.6- 2016 and GB/T 38146.1-2019 apply to this document.

4.1 Environmental requirements

4.1.1 The temperature of the test room shall be set to 23 °C. The allowable deviation is ± 5 °C.

4.1.2 The temperature of the immersion area shall be set to 23 °C. The allowable deviation is ± 3 °C.

4.1.3 USE the moving arithmetic mean of every 5 min. There is no system deviation from the set temperature. The temperature shall be measured continuously. The sampling time interval shall not be greater than 1 min.

4.2 Test equipment

4.2.1 The equipment used for the test shall meet the relevant requirements of CD.1, CD.2 and CD.5 in GB 18352.6-2016.

4.2.2 See Table 1 for the requirements of other related parameters.

4.3 Test vehicles

4.3.1 All parts and components of the test vehicle shall meet the mass production requirements. If the test vehicle is different from mass production, a detailed explanation is required.

4.3.2 The vehicle manufacturer or its authorized agent shall submit a vehicle, which represents the model under test, to the inspection agency responsible for the type test. If the vehicle manufacturer or its authorized agent chooses to use the interpolation family, it shall choose a representative vehicle in the interpolation family. The same test vehicle should be used to represent vehicle H and vehicle L through different road load settings.

4.3.3 The test vehicle can be run-in according to the needs of the vehicle manufacturer or its authorized agent. And ensure that the machinery is in good condition. At the same time, under the condition of installing REESS, a certain range shall be run-in. The range must be greater than 300 km. At the same time, REESS shall experience at least one process from full charge to the lowest value of the state of charge (SOC).

4.3.4 The lubricant, specified by the vehicle manufacturer, shall be used and indicated in the test result report.

4.3.5 Except for drive purposes, all energy storage systems shall be charged to the maximum values (electric energy, hydraulic pressure, air pressure, etc.), specified by the vehicle manufacturer.

5 Test-related parameters and accuracy

The related parameters and accuracy of the test results shall meet the requirements of Table

2. When calculating in accordance with the provisions of Clause 7, unless otherwise specified, the process data shall not be rounded.

6.1 General requirements

6.1.1 Road load measurement and dynamometer settings shall be carried out in accordance with the provisions of Attachment CC of GB 18352.6-2016. The maximum reference speed specified in CC.2.2 of the document is adjusted to 120 km/h in this document. If the driving resistance curve is provided by the vehicle manufacturer, a test

report, calculation report or other relevant information shall be provided; and the inspection agency shall determine. The test cycle and related data in the relevant clauses of GB 18352.6-2016, cited in this document, shall be adjusted to CLTC.

6.1.2 Before the test, the vehicle manufacturer shall, in accordance with the provisions of 7.3, provide the BER information of the test vehicle to the inspection agency. If interpolation method is used, the BER of vehicle H in the interpolation family shall be provided.

6.1.3 The starting of the power system shall be carried out in accordance with the regulations of the vehicle manufacturer.

6.1.4 The vehicle shall be tested in accordance with the test cycle specified in 4.4. The vehicle shall be properly controlled, to accurately track the test cycle curve. The speed tolerance of each test cycle shall meet the requirements of C.1.2.6.6 in GB 18352.6-2016. For the situation in

6.2 Conditions for termination of tests

6.2.1 When conducting the test specified in 6.3.3, when the following conditions occur, the test shall be stopped.

a) When testing in accordance with the conventional working condition method specified in 6.3.3.3; if the maximum vehicle speed declared for the vehicle is not less than the maximum vehicle speed of the CLTC and cannot meet the tolerance requirements specified in 6.1.4; the test shall be stopped.

b) When testing in accordance with the conventional working condition method specified in 6.3.3.3; if the maximum speed declared for the vehicle is less than the maximum speed of CLTC; for the part exceeding the maximum speed declared for the vehicle, the test cycle shall be amended in accordance with the provisions of CA.5 in GB 18352.6-2016. At this time, the driver is required to depress the accelerator pedal to the end. The actual vehicle speed is allowed to exceed the upper tolerance limit specified in 6.1.4. However, when the lower tolerance limit requirements specified in

6.1.4 cannot be met, the test shall be stopped. When the target vehicle speed does not exceed the maximum speed declared for the vehicle, and the tolerance requirements specified in

6.1.4 cannot be met, the test shall be stopped.

c) When testing in accordance with the shortening method specified in 6.3.3.4; in the constant-speed segment CSSE, if the vehicle fails to meet the lower tolerance limit requirements specified in

6.1.4 for 4 consecutive seconds; the test shall be stopped.

6.2.2 When the conditions for the end of the test are reached, the gear remains unchanged.