Environmental Protection Agency

§ 86.1439 Certification Short Test emission test procedures—EPA.

(a) The portions of the performance warranty test procedures described in part 85, subpart W of this chapter designated as “second-chance” which are analogous to the CST emission test procedures do not apply to the testing performed in accordance with this subpart. The Administrator selects from among the CST emission test procedures listed in paragraphs (b) through (f) of this section, which are incorporated into the vehicle test run at the point described in §86.1438(f); that is, after the requirements of §86.1438(e) have been satisfied.

(b) CST—Two-speed idle test. This test consists of an idle sampling mode followed immediately by a high-speed sampling mode. The test timer starts (tt=0) when the conditions specified in §86.1438(e) are met. The overall maximum test time is 290 seconds (tt=290). The test terminates immediately upon reaching the overall maximum test time. A vehicle that has not yielded passing results by the expiration of the overall test time fails the test.

(1) Idle mode. (i) The mode timer starts (mt=0) when the vehicle engine speed is between 350 and 1100 rpm. If engine speed exceeds 1100 rpm or falls below 350 rpm, the mode timer resets to zero and resumes timing. The minimum idle mode length is 90 seconds elapsed time (mt=90).

(ii) The pass/fail analysis begins after an elapsed time of ten seconds (mt=10). A pass or fail determination is made for the vehicle and the mode terminated as described in paragraphs (b)(1)(ii)(A) and (B) of this section.

(A) The vehicle passes the idle mode if the measured values are less than or equal to the applicable short test standards as described in §86.1438(d)(4) prior to an elapsed time of 90 seconds (mt=90). If the vehicle passes, the mode...
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terminates immediately, or after an elapsed time of 30 seconds (mt=30), whichever comes second.

(B) The vehicle fails the idle mode and the test is immediately terminated if the requirements of paragraph (b)(1)(i)(A) of this section are not satisfied by an elapsed time of 90 seconds (mt=90).

(2) High-speed mode. This mode follows immediately upon termination of the idle mode.

(i) The mode timer resets (mt=0) when the vehicle engine speed is between 2200 and 2800 rpm. If engine speed falls below 2200 rpm or exceeds 2800 rpm for more than two seconds in one excursion, or more than six seconds over all excursions within 30 seconds of the final measured value used in pass/fail determination, the measured value is invalidated and the mode continued. If any excursion lasts for more than ten seconds, the mode timer resets to zero (mt=0) and timing resumes. The minimum high-speed mode length is determined as described in paragraph (b)(2)(ii) of this section. The maximum high-speed mode length is 90 seconds elapsed time (mt=90).

(ii) The pass/fail analysis begins after an elapsed time of ten seconds (mt=10). A pass or fail determination is made for the vehicle and the mode is terminated in accordance with paragraphs (c)(2)(i) and (ii) of this section.

(A) The vehicle passes the high-speed mode and the test is immediately terminated if, at any point prior to an elapsed time of 90 seconds (mt=90), the measured values are less than or equal to the applicable short test standards as described in §86.1438(d)(4).

(B) The vehicle fails the high-speed mode and the test is terminated if the requirements of paragraph (c)(2)(i) of this section are not satisfied by an elapsed time of 90 seconds (mt=90).

(c) CST—Idle test. This test consists of an idle sampling mode only. The test timer starts when the conditions specified in §86.1438(e) are met. The overall maximum test time is 145 seconds (tt=145). The test terminates immediately upon reaching the overall maximum test time. A vehicle that has not yielded passing results by the expiration of the overall test time fails the test.

(1) The mode timer starts (mt=0) when the vehicle engine speed is between 350 and 1100 rpm. If engine speed exceeds 1100 rpm or falls below 350 rpm, the mode timer resets to zero and resumes timing. The minimum mode length is determined as described under paragraph (c)(2) of this section. The maximum mode length is 90 seconds elapsed time (mt=90).

(2) The pass/fail analysis begins after an elapsed time of ten seconds (mt=10). A pass or fail determination is made for the vehicle and the mode is terminated if the requirements of paragraph (c)(2)(i) of this section are not satisfied by an elapsed time of 90 seconds (mt=90).

(d) CST—Loaded test. This test consists of a loaded sampling mode followed immediately by an idle sampling mode. The test timer starts (tt=0) when the conditions specified in §86.1438(e) are met, and the gear selector is in ‘drive’ for automatic transmissions, or in second gear (or third gear if more appropriate) for manual transmissions. The overall maximum test time is 240 seconds (tt=240). The test terminates immediately upon reaching the overall maximum test time. A vehicle that has not yielded passing results by the expiration of the overall test time fails the test.

(1) Loaded mode. (i) The mode timer starts (mt=0) when the dynamometer speed is within the limits specified for the vehicle engine size according to the following schedule. If the dynamometer speed falls outside the limits for more than five seconds in one excursion, or 15 seconds over all excursions, the mode timer resets to zero and resumes timing. The minimum mode length is determined as described in paragraph (d)(1)(i) of this section. The maximum mode length is 90 seconds elapsed time (mt=90).

(ii) The vehicle fails the loaded mode and the test is immediately terminated if, at any point prior to an elapsed time of 90 seconds (mt=90), the measured values are less than or equal to the applicable short test standards as described in §86.1438(d)(4).
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DYNAMOMETER TEST SCHEDULE

<table>
<thead>
<tr>
<th>Gasoline engine size, no. cylinders</th>
<th>Roll speed, mph (kph)</th>
<th>Normal loading, brake hp (kilowatts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 or less</td>
<td>22–25 (35–40)</td>
<td>2.8–4.1 (2.1–3.1)</td>
</tr>
<tr>
<td>5–6</td>
<td>29–32 (47–52)</td>
<td>6.8–8.4 (5.1–6.3)</td>
</tr>
<tr>
<td>7 or more</td>
<td>32–35 (52–56)</td>
<td>8.4–10.8 (6.3–8.1)</td>
</tr>
</tbody>
</table>

(ii) The pass/fail analysis begins after an elapsed time of ten seconds (mt=10). A pass or fail determination is made for the vehicle and the mode is terminated in accordance with paragraphs (d)(1)(i)(A) and (B) of this section.

(A) The vehicle passes the loaded mode if the measured values are less than or equal to the applicable short test standards as described in §86.1438(d)(4) prior to an elapsed time of 90 seconds (mt=90). If the vehicle passes, the mode terminates immediately, or after an elapsed time of 30 seconds (mt=30), whichever comes second.

(B) The vehicle fails the loaded mode and the test is terminated if the requirements of paragraph (d)(1)(i)(A) of this section are not satisfied by an elapsed time of 90 seconds (mt=90).

(2) Idle mode. (i) The mode timer starts (mt=0) when the vehicle engine speed is between 350 and 1100 rpm. If engine speed exceeds 1100 rpm or falls below 350 rpm, the mode timer resets to zero and resumes timing. The minimum idle mode length is determined as described in paragraph (e)(2)(ii) of this section. The maximum idle mode length is 90 seconds elapsed time (mt=90).

(ii) The pass/fail analysis begins after an elapsed time of ten seconds (mt=10). A pass or fail determination is made for the vehicle and the mode terminates as described in paragraphs (e)(2)(ii) (A) and (B) of this section.

(A) The vehicle passes the idle mode and the test is immediately terminated if, at any point prior to an elapsed time of 90 seconds (mt=90), the measured values are less than or equal to the applicable short test standards as described in §86.1438(d)(4).

(B) The vehicle fails the idle mode and the test terminates if the requirements of paragraph (e)(2)(ii)(A) of this section are not satisfied by an elapsed time of 90 seconds (mt=90).

(e) CST—Preconditioned idle test. This test consists of a high-speed preconditioning mode followed immediately by an idle sampling mode. The test timer starts (tt=0) when the conditions specified in §86.1438(e) are met. The overall maximum test time is 200 seconds (tt=200). The test terminates immediately upon reaching the overall maximum test time. A vehicle that has not yielded passing results by the expiration of the overall test time fails the test.

(1) Preconditioning mode. The mode timer starts (mt=0) when the engine speed is between 2200 and 2800 rpm. The mode continues for an elapsed time of 30 seconds (mt=30). If engine speed falls below 2200 rpm or exceeds 2800 rpm for more than five seconds in any one excursion, or 15 seconds over all excursions, the mode timer resets to zero and resumes timing.

(2) Idle mode. (i) The mode timer starts (mt=0) when the vehicle engine speed is between 350 and 1100 rpm. If engine speed exceeds 1100 rpm or falls below 350 rpm, the mode timer resets to zero and resumes timing. The minimum idle mode length is determined as described in paragraph (e)(2)(ii) of this section. The maximum idle mode length is 90 seconds elapsed time (mt=90).

(ii) The pass/fail analysis begins after an elapsed time of ten seconds (mt=10). A pass or fail determination is made for the vehicle and the mode terminates as described in paragraphs (e)(2)(ii) (A) and (B) of this section.

(A) The vehicle passes the idle mode and the test is immediately terminated if, at any point prior to an elapsed time of 90 seconds (mt=90), the measured values are less than or equal to the applicable short test standards as described in §86.1438(d)(4).

(B) The vehicle fails the idle mode and the test terminates if the requirements of paragraph (e)(2)(ii)(A) of this section are not satisfied by an elapsed time of 90 seconds (mt=90).

(f) CST—Preconditioned two-speed idle test. This test consists of a high-speed sampling mode followed immediately by an idle sampling mode. The test timer starts (tt=0) when the conditions specified in §86.1438(e) are met. The overall maximum test time is 290 seconds (tt=290). The test terminates immediately upon reaching the overall maximum test time. A vehicle that has
not yielded passing results by the expiration of the overall test time fails the test.

(1) **High-speed mode.** (i) The mode timer starts \((mt=0)\) when the vehicle engine speed is between 2200 and 2800 rpm. If the engine speed falls below 2200 rpm or exceeds 2800 rpm for more than two seconds in one excursion, or more than six seconds over all excursions within 30 seconds of the final measured value used in the pass/fail determination, the measured value is invalidated and the mode continued. If any excursion lasts for more than ten seconds, the mode timer resets to zero \((mt=0)\) and timing resumes. The high-speed mode length is 90 seconds elapsed time \((mt=90)\).

(ii) The pass/fail analysis begins after an elapsed time of ten seconds \((mt=10)\). A pass or fail determination is made for the vehicle and the mode is terminated in accordance with paragraphs (f)(1)(ii)(A) and (B) of this section.

(A) The vehicle passes the high-speed mode and the mode is terminated at an elapsed time of 90 seconds \((mt=90)\) if any measured values are less than or equal to the applicable short test standards as described in §86.1438(d).

(B) The vehicle fails the high-speed mode and the test is terminated if the requirements of paragraphs (f)(2)(ii)(A) of this section are not satisfied by an elapsed time of 90 seconds \((mt=90)\).

[58 FR 58426, Nov. 1, 1993; 59 FR 33913, 33914, July 1, 1994]

§§ 86.1440–86.1441 [Reserved]

§ 86.1442 Information required.

(a) **General data.** The information listed in paragraphs (a) (1) through (14) of this section must be recorded with respect to each CST. Elements of this general data may be located separately from the CST emission data, as long as the general data can easily be presented together with the CST emission data when a complete data set for the vehicle is desired.

(1) Test number.

(2) Vehicle description, including engine family code, vehicle ID number, version number, manufacturer, number of cylinders, equivalent test weight, weight class and odometer reading.

(3) Date and time of day for the test.

(4) Driver and equipment operator IDs.

(5) Gas analyzers: Analyzer bench ID, analyzer ranges, recordings of analyzer output during zero, span, and sample readings.

(6) Recorder charts or computer printouts: Test number, date, vehicle ID, operator ID, and identification of the measurements recorded.

(7) Soak area ambient temperature \(\left(°F\right)\).

(8) Test cell ambient temperature \(\left(°F\right)\), barometric pressure, and humidity. (A central laboratory barometer may be used, provided that individual test cell barometric pressures are shown to be within ±0.1 percent of the barometric pressure at the central barometer location.)

(9) Test fuel: RVP and type (Otto-cycle test fuel or Cold CO test fuel).

(10) Warmup operation performed, for example, none, full Urban Dynamometer Driving Schedule (UDDS), first 505 seconds of the UDDS, other confirmatory test procedure, other transient operation.