SAFETY COMPLIANCE TESTING FOR
FMVSS 124
ACCELERATOR CONTROL SYSTEMS

HONDA MOTOR CO.,
2007 HONDA FIT,
4-DOOR PASSENGER CAR
NHTSA NO. C75300

GENERAL TESTING LABORATORIES, INC.
1623 LEEDSTOWN ROAD
COLONIAL BEACH, VIRGINIA 22443

NOVEMBER 27, 2007
FINAL REPORT

PREPARED FOR

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
1200 NEW JERSEY AVE, SE
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Compliance tests were conducted on the subject 2007 Honda Fit 4-door Passenger Car in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-124-06 for the determination of FMVSS 124 compliance.

Test failures identified were as follows: None
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</tr>
</tbody>
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SECTION 1
PURPOSE OF COMPLIANCE TEST

FMVSS 124 specifies requirements for the return of a vehicle’s throttle to the idle position when the driver removes the actuating force from the accelerator control, or in the event of a severance or disconnection in the accelerator control system. The purpose of FMVSS 124 is to reduce the number of deaths and injuries resulting from engine overspeed caused by malfunctions in the accelerator control system. This standard applies to passenger cars, multipurpose passenger vehicles (MPV’s), trucks and buses.
Compliance testing was conducted on a 2007 Honda Fit 4-door Passenger Car, NHTSA No. C75201 in accordance with the National Highway Traffic Safety Administration (NHTSA) Laboratory Procedure TP-124-06.

The vehicle is equipped with an electronic throttle control system with an Accelerator Pedal Position Sensor (APS), a Throttle Plate Position Sensor (TPS), an Electronic control Module (ECM) and an Air Throttle Plate Actuator Motor.

Output from the vehicle throttle position sensor on the air throttle plate shaft was used to measure throttle position and data was recorded at 100 HZ with GTL’s data acquisition system. Testing was conducted to simulate the normal removal of the driver’s foot from the accelerator pedal. This was performed by depressing the accelerator with a gloved hand which incorporated an electrical contact strip in the depressing forefinger. The accelerator was depressed to the required amount and then the forefinger was quickly removed from the pedal, releasing the accelerator and activating the contact strip for time zero. Failures were induced simultaneously with release of the accelerator pedal. Testing was performed with the vehicle in park and the engine running. Return to idle times were determined for four throttle plate positions (25%, 50%, 75% and 100%) with the accelerator control system complete and with each of the two APS return springs in the accelerator pedal assembly independently disconnected. With each of the wires to the APS and throttle plate position sensor disconnected and shorted to ground, return to idle times were determined at the worst case
condition – wide open throttle (100%). In addition, tests were conducted with the APS and TPS connectors disconnected.

Some system faults resulted in no data output as the TPS used for throttle position data was itself disconnected for that part of the test. For these cases, return to idle state was determined by laboratory personnel observation. A number of induced failures resulted in the throttle plate return to or below the idle state then shifting to a Limp-Home mode position which allows the vehicle to be removed from the roadway.

This testing was performed at mid ambient temperature of 10º C to 46º C, in accordance with the NHTSA Test Procedure TP-124-06.
SECTION 3
COMPLIANCE TEST DATA

Test data for this test can be found on the following pages. Photographs are found in Section 5 and Test Plots are found in Section 6.
VEHICLE MY/MAKE/MODEL/BODY STYLE: 2007 HONDA FIT PASSENGER CAR
VEHICLE NHTSA NO.: C75300
VEHICLE VIN: JHMGD37647S056969
DATE OF TEST: SEPTEMBER 11-13, 2007
TEST LAB: GENERAL TESTING LABORATORIES

VEHICLE ENGINE TYPE: GAS
GVWR: 1563 KG

VEHICLE ENGINE SIZE: 1.5 L 4 CYL.

VEHICLE ACCEL. CONTROL SYSTEM (ACS) (Air or Fuel Throttled): AIR
MAX. BHP ENGINE SPEED: N/A
MFR. IDLE RPM: 750 RPM
FUEL METERING DEVICE (Carburetor, fuel injection, etc): FUEL INJECTION

REMARKS: Engine throttle body was not disassembled for failed spring tests due to unit being a sealed, non-serviceable assembly.

RECORDED BY: G. FARRAND  DATE: 09/11/07
APPROVED BY: D. MESSICK
DATA SHEET 2
NORMAL OPERATION TEST
(fully operational system)

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2007 HONDA FIT PASSENGER CAR
VEHICLE NHTSA NO.: C75300
DATE OF TEST: SEPTEMBER 11, 2007

Check one:
Mid Temp. Test: X  Low Temp. Test:   High Temp. Test: 

SYSTEM CONDITION: COMPLETE (no modifications) Normal Operation

<table>
<thead>
<tr>
<th>GTL #</th>
<th>ACCELERATOR POSITION % WIDE OPEN THROTTLE (WOT)</th>
<th>THROTTLE POSITION SENSOR READING</th>
<th>RPM</th>
<th>TEMPERATURE (ºC)</th>
<th>ENGINE COOLANT</th>
<th>AMBIENT</th>
<th>THROTTLE POSITION SENSOR READING @ IDLE (BASELINE)</th>
<th>RETURN TIME TO IDLE (Msec)</th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>5829</td>
<td>25%</td>
<td>21%</td>
<td>750</td>
<td>82</td>
<td>31</td>
<td>2%</td>
<td>70</td>
<td>P</td>
<td>PASS</td>
</tr>
<tr>
<td>5830</td>
<td>50%</td>
<td>57%</td>
<td>750</td>
<td>82</td>
<td>31</td>
<td>2%</td>
<td>150</td>
<td>P</td>
<td>PASS</td>
</tr>
<tr>
<td>5831</td>
<td>75%</td>
<td>86%</td>
<td>750</td>
<td>82</td>
<td>31</td>
<td>2%</td>
<td>120</td>
<td>P</td>
<td>PASS</td>
</tr>
<tr>
<td>5832</td>
<td>100%</td>
<td>100%</td>
<td>750</td>
<td>82</td>
<td>31</td>
<td>2%</td>
<td>150</td>
<td>P</td>
<td>PASS</td>
</tr>
</tbody>
</table>

RETURN TIME REQUIREMENTS:

1 second (1000 ms) for vehicles less than 4536 kg.
2 seconds (2000 ms) for vehicles more than 4536 kg.
3 seconds (3000 ms) for vehicles exposed to -18º C or less

PASS _______ X _______ FAIL ____________

REMARKS: None

RECORDED BY: G. FARRAND DATE: 09/11/07
APPROVED BY: D. MESSICK
FAIL-SAFE OPERATION DISCONNECTION

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2007 HONDA FIT PASSENGER CAR
VEHICLE NHTSA NO.: C75300
DATE OF TEST: SEPTEMBER 11, 2007

Check one:
Mid Temp. Test: X Low Temp. Test: High Temp. Test: 

SYSTEM CONDITION: #1 SPRING DISCONNECTED APS INSIDE SPRING REMOVED

<table>
<thead>
<tr>
<th>GTL #</th>
<th>ACCELERATOR POSITION</th>
<th>THROTTLE POSITION SENSOR READING</th>
<th>RPM</th>
<th>TEMPERATURE (°C)</th>
<th>ENGINE COOLANT</th>
<th>AMBIENT</th>
<th>THROTTLE POSITION SENSOR READING @ IDLE (BASELINE)</th>
<th>RETURN TIME TO IDLE (Msec)</th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>5857</td>
<td>25%</td>
<td>26%</td>
<td>750</td>
<td>83</td>
<td>32</td>
<td>2%</td>
<td>80</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>5858</td>
<td>50%</td>
<td>59%</td>
<td>750</td>
<td>83</td>
<td>32</td>
<td>2%</td>
<td>60</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>5859</td>
<td>75%</td>
<td>81%</td>
<td>750</td>
<td>83</td>
<td>32</td>
<td>2%</td>
<td>180</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>5860</td>
<td>100%</td>
<td>98%</td>
<td>750</td>
<td>83</td>
<td>32</td>
<td>2%</td>
<td>240</td>
<td>P</td>
<td></td>
</tr>
</tbody>
</table>

RETURN TIME REQUIREMENTS:

1 second (1000 ms) for vehicles less than 4536 kg.
2 seconds (2000 ms) for vehicles more than 4536 kg.
3 seconds (3000 ms) for vehicles exposed to -18° C or less

PASS X FAIL

REMARKS: None

RECORDED BY: G. FARRAND DATE: 09/13/07
APPROVED BY: D. MESSICK
FAIL-SAFE OPERATION DISCONNECTION

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2007 HONDA FIT PASSENGER CAR

VEHICLE NHTSA NO.: C75300

DATE OF TEST: SEPTEMBER 13, 2007

Check one:

Mid Temp. Test: X  Low Temp. Test:  High Temp. Test: 

SYSTEM CONDITION: #2 SPRING DISCONNECTED

APS OUTSIDE SPRING REMOVED

<table>
<thead>
<tr>
<th>GTL #</th>
<th>ACCELERATOR POSITION % WIDE OPEN THROTTLE (WOT)</th>
<th>THROTTLE POSITION SENSOR READING</th>
<th>RPM</th>
<th>TEMPERATURE (°C)</th>
<th>THROTTLE POSITION SENSOR READING @ IDLE (BASELINE)</th>
<th>RETURN TIME TO IDLE (Msec)</th>
<th>PASS/FAIL</th>
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</thead>
<tbody>
<tr>
<td>5861</td>
<td>25%</td>
<td>34%</td>
<td>750</td>
<td>83</td>
<td>32</td>
<td>2%</td>
<td>60</td>
</tr>
<tr>
<td>5862</td>
<td>50%</td>
<td>53%</td>
<td>750</td>
<td>83</td>
<td>32</td>
<td>2%</td>
<td>80</td>
</tr>
<tr>
<td>5863</td>
<td>75%</td>
<td>83%</td>
<td>750</td>
<td>83</td>
<td>32</td>
<td>2%</td>
<td>130</td>
</tr>
<tr>
<td>5864</td>
<td>100%</td>
<td>99%</td>
<td>750</td>
<td>83</td>
<td>32</td>
<td>2%</td>
<td>290</td>
</tr>
</tbody>
</table>

RETURN TIME REQUIREMENTS:

1 second (1000 ms) for vehicles less than 4536 kg.
2 seconds (2000 ms) for vehicles more than 4536 kg.
3 seconds (3000 ms) for vehicles exposed to -18° C or less

PASS X FAIL

REMARKS: None

RECORDED BY: G. FARRAND DATE: 09/13/07

APPROVED BY: D. MESSICK
### DATA SHEET 4
FMVSS 124

**VEHICLE MY/MAKE/MODEL/BODY STYLE:** 2007 HONDA FIT PASSENGER CAR

**VEHICLE NHTSA NO.:** C75300

**DATE OF TEST:** SEPTEMBER 11, 2007

<table>
<thead>
<tr>
<th>GTL #</th>
<th>CONNECTOR</th>
<th>WIRE/PIN DESCRIPTION</th>
<th>FAULT CONDITION</th>
<th>ENGINE TEMP. ºC</th>
<th>% THROTTLE/RETURN TIME (MS)</th>
<th>PASS/FAIL/NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>5833</td>
<td>APS</td>
<td>#1/ORANGE</td>
<td>OPEN</td>
<td>83</td>
<td>100/220</td>
<td>P</td>
</tr>
<tr>
<td>5834</td>
<td>APS</td>
<td>#2/PINK</td>
<td>OPEN</td>
<td>83</td>
<td>100/220</td>
<td>P</td>
</tr>
<tr>
<td>5835</td>
<td>APS</td>
<td>#3/BLUE</td>
<td>OPEN</td>
<td>83</td>
<td>100/210</td>
<td>P</td>
</tr>
<tr>
<td>5836</td>
<td>APS</td>
<td>#4/BROWN</td>
<td>OPEN</td>
<td>83</td>
<td>100/130</td>
<td>P</td>
</tr>
<tr>
<td>5837</td>
<td>APS</td>
<td>#5/BLACK</td>
<td>OPEN</td>
<td>83</td>
<td>100/200</td>
<td>P</td>
</tr>
<tr>
<td>5838</td>
<td>APS</td>
<td>#6/PURPLE</td>
<td>OPEN</td>
<td>83</td>
<td>100/30</td>
<td>P</td>
</tr>
<tr>
<td>5839</td>
<td>APS</td>
<td>#1/ORANGE</td>
<td>SHORT</td>
<td>83</td>
<td>100/480</td>
<td>P Engine Stopped</td>
</tr>
<tr>
<td>5840</td>
<td>APS</td>
<td>#2/PINK</td>
<td>SHORT</td>
<td>83</td>
<td>100/120</td>
<td>P</td>
</tr>
<tr>
<td>5841</td>
<td>APS</td>
<td>#3/BLUE</td>
<td>SHORT</td>
<td>83</td>
<td>100/110</td>
<td>P</td>
</tr>
<tr>
<td>5842</td>
<td>APS</td>
<td>#4/BROWN</td>
<td>SHORT</td>
<td>83</td>
<td>100/450</td>
<td>Engine Stopped</td>
</tr>
<tr>
<td>5843</td>
<td>APS</td>
<td>#5/BLACK</td>
<td>SHORT</td>
<td>83</td>
<td>100/120</td>
<td>P</td>
</tr>
<tr>
<td>5844</td>
<td>APS</td>
<td>#6/PURPLE</td>
<td>SHORT</td>
<td>83</td>
<td>100/120</td>
<td>P</td>
</tr>
<tr>
<td>5845</td>
<td>TPS</td>
<td>#7/YEL/RED</td>
<td>OPEN</td>
<td>83</td>
<td>100/60</td>
<td>P Limp Home Mode</td>
</tr>
<tr>
<td>5846</td>
<td>TPS</td>
<td>#8/YELLOW</td>
<td>OPEN</td>
<td>83</td>
<td>100/70</td>
<td>P</td>
</tr>
<tr>
<td>5847</td>
<td>TPS</td>
<td>#9/BLUE</td>
<td>OPEN</td>
<td>83</td>
<td>100/890</td>
<td>Limp Home Mode</td>
</tr>
<tr>
<td>5848</td>
<td>TPS</td>
<td>#10/RED</td>
<td>OPEN</td>
<td>83</td>
<td>100/120</td>
<td>P</td>
</tr>
<tr>
<td>5849</td>
<td>TPS</td>
<td>#11/GREEN</td>
<td>OPEN</td>
<td>83</td>
<td>100/20</td>
<td>Limp Home Mode</td>
</tr>
<tr>
<td>5850</td>
<td>TPS</td>
<td>#12 RED/BLACK</td>
<td>OPEN</td>
<td>83</td>
<td>100/0</td>
<td>*Engine went to idle but no data</td>
</tr>
<tr>
<td>5851</td>
<td>TPS</td>
<td>#7/YEL/RED</td>
<td>SHORT</td>
<td>83</td>
<td>100/580</td>
<td>P</td>
</tr>
<tr>
<td>5852</td>
<td>TPS</td>
<td>#8/YELLOW</td>
<td>SHORT</td>
<td>83</td>
<td>100/260</td>
<td>P</td>
</tr>
<tr>
<td>5853</td>
<td>TPS</td>
<td>#9/BLUE</td>
<td>SHORT</td>
<td>83</td>
<td>100/190</td>
<td>P</td>
</tr>
<tr>
<td>5854</td>
<td>TPS</td>
<td>#10/RED</td>
<td>SHORT</td>
<td>83</td>
<td>100/200</td>
<td>P</td>
</tr>
<tr>
<td>5855</td>
<td>TPS</td>
<td>#11/GREEN</td>
<td>SHORT</td>
<td>83</td>
<td>100/0</td>
<td>*Limp Home Mode</td>
</tr>
<tr>
<td>5856</td>
<td>TPS</td>
<td>#12/RED/BLACK</td>
<td>SHORT</td>
<td>83</td>
<td>100/0</td>
<td>Engine Stopped</td>
</tr>
<tr>
<td>5865</td>
<td>APS</td>
<td>CONNECTOR</td>
<td>DISCONNECT</td>
<td>83</td>
<td>100/480</td>
<td>P Engine Stopped</td>
</tr>
<tr>
<td>5866</td>
<td>TPS</td>
<td>CONNECTOR</td>
<td>DISCONNECT</td>
<td>83</td>
<td>100/20</td>
<td>P Limp Home Mode</td>
</tr>
</tbody>
</table>

**REMARKS:** Limp Home Mode is 1500 RPM and very limited throttle control.

* By Laboratory Observation

**RECORDED BY:** G. FARRAND
**DATE:** 09/11/07

**APPROVED BY:** D. MESSICK
## TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

<table>
<thead>
<tr>
<th>EQUIPMENT</th>
<th>DESCRIPTION</th>
<th>MODEL/ SERIAL NO.</th>
<th>CAL. DATE</th>
<th>NEXT CAL. DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTINUOUS RECORDER</td>
<td>OMEGA</td>
<td>CT485</td>
<td>06/07</td>
<td>06/08</td>
</tr>
<tr>
<td>ENGINE RECORDING</td>
<td>GTL COMPUTER</td>
<td>CPU1</td>
<td>BEFORE USE</td>
<td>BEFORE USE</td>
</tr>
<tr>
<td>ENGINE RECORDING</td>
<td>MONARCH</td>
<td>1444664</td>
<td>08/07</td>
<td>08/08</td>
</tr>
<tr>
<td>SOFTWARE</td>
<td>GTL</td>
<td>N/A</td>
<td>BEFORE USE</td>
<td>BEFORE USE</td>
</tr>
<tr>
<td>CHAMBER</td>
<td>GTL</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>EXHAUST DUCT</td>
<td>GTL</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.2
LEFT SIDE VIEW OF VEHICLE
2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.3
RIGHT SIDE VIEW OF VEHICLE
MFD. IN JAPAN BY HONDA MOTOR CO., LTD; 6/’07
GVWR 3446LBS  GAWR F 1876LBS  R 1587LBS
THIS VEHICLE CONFORMS TO ALL APPLICABLE
FEDERAL MOTOR VEHICLE SAFETY, BUMPER,
AND THEFT PREVENTION STANDARDS IN EFFECT
ON THE DATE OF MANUFACTURE SHOWN ABOVE.

V.I.N. JHMGD37647S056969

PASSENGER CAR
<table>
<thead>
<tr>
<th>TIRE</th>
<th>SIZE</th>
<th>COLD TIRE PRESSURE</th>
<th>SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRONT</td>
<td>P195/55R15</td>
<td>220KPA, 32PSI</td>
<td></td>
</tr>
<tr>
<td>REAR</td>
<td>T125/70D14</td>
<td>220KPA, 32PSI</td>
<td></td>
</tr>
<tr>
<td>SPARE</td>
<td>T125/70D14</td>
<td>420KPA, 60PSI</td>
<td></td>
</tr>
</tbody>
</table>

The combined weight of occupants and cargo should never exceed 385kg or 850lbs.

2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.5
CLOSE-UP VIEW OF VEHICLE PLACARD
2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.8
ACCELERATOR PEDAL ASSEMBLY
2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.10
ACCELERATOR PEDAL ASSEMBLY
2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.11
APS SPRINGS #1 AND #2
ACCELERATOR RETURN SPRING

#1 INSIDE

#2 OUTSIDE

FIGURE 5.12
APS SPRINGS #1 AND #2 CLOSE-UP
SECTION 6
PLOTS
GTL 5829, FMVSS 124

Normal Operation, 25% Throttle.

% Throttle & Foot Release.

Time in Seconds
GTL 5830, FMVSS 124
Normal Operation, 50% Throttle.

% Throttle % Foot Release

Time in Seconds
GTL 5831, FMVSS 124
Normal Operation, 75% Throttle.
GTL 5833, FMVSS 124

APS Wire 1 Open, 100% Throttle.

% Throttle & Foot Release.

Time in Seconds
GTL 5834, FMVSS 124
APS Wire 2 Open, 100% Throttle.

Time in Seconds

% Throttle & Foot Release.
GTL 5835, FMVSS 124

APS Wire 3 Open, 100% Throttle.

% Throttle & Foot Release.

Time in Seconds
GTL 5836, FMVSS 124
APS Wire 4 Open, 100% Throttle.

% Throttle & Foot Release.

Time in Seconds
GTL 5837, FMVSS 124
APS Wire 5 Open, 100% Throttle.

% Throttle & Foot Release vs Time in Seconds
GTL 5838, FMVSS 124
APS Wire 6 Open, 100% Throttle.

% Throttle & Foot Release.

Time in Seconds
GTL 5840, FMVSS 124
APS Wire 2 Shorted, 100% Throttle.

% Throttle & Foot Release.

Time in Seconds
GTL 5841, FMVSS 124
APS Wire 3 Shorted, 100% Throttle.

% Throttle & Foot Release.

Time in Seconds
GTL 5844, FMVSS 124
APS Wire 6 Shorted, 100% Throttle.

% Throttle & Foot Release.

Time in Seconds
GTL 5852, FMVSS 124
TPS Wire 8 Shorted, 100% Throttle.

% Throttle & Foot Release.

Time in Seconds
GTL 5853, FMVSS 124

TPS Wire 9 Shorted, 100% Throttle.
GTL 5855, FMVSS 124
TPS Wire 11 Shorted, 100% Throttle.
GTL 5858, FMVSS 124
APS Spring 1 Removed, 50% Throttle.

% Throttle & Foot Release.

Time in Seconds
GTL 5859, FMVSS 124
APS Spring 1 Removed, 75% Throttle.
GTL 5860, FMVSS 124
APS Spring 1 Removed, 100% Throttle.

% Throttle & Foot Release

Time in Seconds
GTL 5862, FMVSS 124
APS Spring 2 Removed, 50% Throttle.
GTL 5864, FMVSS 124
APS Spring 2 Removed, 100% Throttle.

% Throttle & Foot Release.

Time in Seconds
GTL 5865, FMVSS 124
APS Connector Disconnect, 100% Throttle.

% Throttle & Foot Release

Time in Seconds

-1 -0.8 -0.6 -0.4 -0.2 0 0.2 0.4 0.6 0.8 1
SECTION 7
MANUFACTURER’S DRAWINGS
VEHICLE INFORMATION / TEST SPECIFICATIONS
FMVSS No. 124

Requested Information:

1. A sketch of the driver operated accelerator control system (ACS) starting from the accelerator pedal up to and including the fuel metering device (carburetor, fuel injectors, fuel distributor, or fuel injection pump).

Refer to Fig. 1.

Fig. 1 Accelerator control system of 07MY Fit

2. For Normal ACS operation, the method utilized to determine the engine idle state (air throttle plate position, fuel delivery rate, other).

Air throttle plate position is used.
3. For Fail-Safe operation of the ACS (disconnection or severance), the method utilized to determine return of engine power to the idle state (air throttle plate position, fuel delivery rate, air intake, engine rpm, other)

Air throttle plate position is used.

4. Is the vehicle ACS equipped with any of the following:

   A. Accelerator Pedal Position Sensor (APS)
   B. Throttle Plate Position Sensor (TPS)
   C. Electronic Control Module (ECM)
   D. Air throttle plate actuator motor

A, B, C and D.

5. If air throttle plate equipped, is there a procedure which can be utilized by the test laboratory to measure the position of the throttle plate by tapping into the TPS or ECM? If so, please describe.

Please see Fig.2 below. The pin at right side of Throttle body 6P connector is a signal source of Throttle plate position sensor (TPS). Therefore, by receiving its signal to X-Y recorder and connecting minus side to a body, this system can measure a throttle position. And also, it can measure the switching rate when the idle positions voltage is measured and determined as 0% and the full throttle voltage is 100%. By recording the voltage differences of (TPS), it can measure the return speed of accelerator.

Fig.2 Throttle body 6P connector (TPS signal)
Example of the throttle return

6. Point(s) chosen to demonstrate compliance with FMVSS No. 124 for single point disconnect and severance.

1. Primary return spring (Refer Fig. 4)
2. Secondary return spring (Refer Fig. 4)
3. Throttle body return spring (Refer Fig. 5)
4. Air throttle plate actuator motor (Refer Fig. 5)

7. Where applicable, were connections in the ACS beyond the ECM such as the fuel injectors tested for disconnection and severance? If yes, provide details.

No

8. Where applicable, were idle return times tested for electrical severance accompanied by shorting to ground? If yes, please provide details.

Please see Fig. 3 below. The pin at the left side of Throttle body 6P connector is the supply voltages. Therefore, by blocking this voltage, the electronic disconnection can be repeated.

Fig. 3 Throttle Body 6P Connector (The supply voltage to plate actuator motor)

The supply voltage to Air throttle plate actuator motor

Wire side of female terminals
9. All sources of return energy (springs) for the accelerator pedal and if applicable, the air throttle plate.

- The primary and secondary springs of Accelerator position sensor (Fig. 4)

Fig. 4 Accelerator position sensor

- Throttle body return spring (Fig. 5)

Fig. 5 Throttle body spring

10. If fuel delivery rate is used to demonstrate return to idle state, provide:

   A. The method used to measure this signal i.e. connection to standard SAE J1587 data bus.
   B. Equipment required to measure signal.

N.A

11. Fuel rate signal output range at the idle state.

N.A

12. Is the ACS equipped with a limp home mode? If yes, provide operation description.

It can be operated by removing the Accelerator position sensor connector or
Throttle body 6Pconnector.

13. Method by which the test laboratory can record engine RPM by connection to ECM, OBD connector, etc.

Fig. 6 shows ECM connector (31 pin). The information from the pin No. 7 of this connector is the signal from CKP (Crankshaft position sensor). The frequency is expressed by the conversion rate, 100 [rpm] = 1.67 [Hz], when a cycle is 13 pulse.

Fig. 6 ECM connector (31 pin)