126-DRI-10-003
SAFETY COMPLIANCE TESTING FOR FMVSS 126
Electronic Stability Control Systems

Honda of America Manufacturing, Inc
2010 Honda Accord
NHTSA No. CA5307

DYNAMIC RESEARCH, INC.
355 Van Ness Avenue, STE 200
Torrance, California 90501

29 November, 2010

Final Report

Prepared Under Contract No.: DTNH22-08-D-00098

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
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West Building, 4th Floor (NVS-221)
Washington, DC 20590
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John F. Lenkeit, Technical Director  
Brian Kebschull, Principal Engineer

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355 Van Ness Ave, STE 200  
Torrance, CA 90501

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16. Abstract

A test was conducted on a 2010 Honda Accord, NHTSA No. CA5307, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-126-02 for the determination of FMVSS 126 compliance. Test failures identified were as follows: None

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1.0 PURPOSE OF COMPLIANCE TEST

The purpose of this test is to determine if the test vehicle, a 2010 Honda Accord, meets the minimum equipment and performance requirements stated in Federal Motor Vehicle Safety Standard (FMVSS) 126, "Electronic Stability Control Systems."

2.0 TEST PROCEDURE AND DISCUSSION OF RESULTS

Testing of the 2010 Honda Accord was conducted at Dynamic Research, Inc (DRI) in accordance with NHTSA TP-126-02, dated November 19, 2008.

The vehicle was inspected to ensure it was equipped with an ESC system that:

- Augments vehicle directional stability by applying and adjusting brake torques individually at each wheel to induce a correcting yaw moment to a vehicle;

- Is computer controlled with the computer using a closed-loop algorithm to limit vehicle oversteer and to limit vehicle understeer;

- Has a means to determine the vehicle’s yaw rate and to estimate its side slip or side slip derivative with respect to time;

- Has a means to monitor driver steering inputs;

- Has an algorithm to determine the need, and a means to modify engine torque, as necessary, to assist the driver in maintaining control of the vehicle; and

- Is operational over the full speed range of the vehicle (except at vehicle speeds less than 20 km/h (12.4 mph), when being driven in reverse, or during system initialization).

The vehicle was subjected to a 0.7 Hz Sine with Dwell steering maneuver to ensure that it would meet the stability and responsiveness requirements of the standard as follows:

- At 1.0 second after completion of a required Sine with Dwell steering input, the yaw rate of the vehicle must not exceed 35 percent of the first peak value of yaw rate recorded after the steering wheel angle changes sign (between first and second peaks during the same test run).
2.0 TEST PROCEDURE AND DISCUSSION OF RESULTS (CONTINUED)

- At 1.75 seconds after completion of a required Sine with Dwell steering input, the yaw rate of the vehicle must not exceed 20 percent of the first peak value of yaw rate recorded after the steering wheel angle changes sign (between first and second peaks during the same test run).

- The lateral displacement of the vehicle center of gravity with respect to its initial straight path must be at least 1.83 m (6 feet) (for vehicles with a GVWR of 3,500kg (7,716 lb) or less) when computed 1.07 seconds after the Beginning of Steer (BOS) at the specified steering wheel angles.

System malfunction simulations were executed to verify vehicle could identify and indicate a malfunction.

The vehicle's ESC System appears to meet the performance and equipment requirements as required by FMVSS 126. The test results are summarized on the following summary sheet.
2.0 TEST PROCEDURE AND DISCUSSION OF RESULTS (CONT'D)

Data Summary Sheet (Page 1 of 2)

Vehicle: 2010 Honda Accord

NHTSA No. CA5307       VIN: 1HGCP2F80AA083721
Vehicle Type: Passenger Car       Manufacture Date: 1/10

Laboratory: Dynamic Research, Inc.

REQUIREMENTS: PASS/FAIL

ESC Equipment and Operational Characteristics (Data Sheet 2)
- The vehicle is to be equipped with an ESC system that meets the equipment and operational characteristics requirements.  
  (S126, S5.1, S5.6)  
  PASS

ESC Malfunction Telltale (Data Sheet 3)
- Vehicle is equipped with a telltale that indicates one or more ESC system malfunctions.  
  (S126, S5.3)  
  PASS

"ESC Off" and other System Controls and Telltale (Data Sheet 3,4)
- Vehicle is equipped with an ESC off telltale indicating the vehicle has been put into a mode that renders the ESC system unable to satisfy the performance requirements of the standard, if such a mode exists.  
  (S5.5.1)  
  PASS

If provided, off control and other system controls as well as the ESC off telltale meets the operational requirements (S126, S5.4, S5.4.1,S5.4.2, S5.5.4, and S5.5.9)  
  PASS
2.0 TEST PROCEDURE AND DISCUSSION OF RESULTS (CONTD)

Data Summary Sheet (Page 2 of 2)

__________________________________________________________________________

REQUIREMENTS: PASS/FAIL

Vehicle Lateral Stability (Data Sheet 8)

Yaw Rate Ratio at 1 second after COS is less than 35% of peak value. (S126, S5.2.1)

- PASS

Yaw Rate Ratio at 1.75 seconds after COS is less than 20% of peak value. (S126, S5.2.2)

- PASS

Vehicle Responsiveness (Data Sheet 8)

Lateral displacement at 1.07 seconds after BOS is at least 1.83 m (6 feet) for vehicles with a GVWR of 3,500kg (7,716 lb) or less, and 1.52 m (5 feet) for vehicles with a GVWR greater than 3,500 Kg (7,716 lb). (S126, S5.2.3)

- PASS

ESC Malfunction Warning (Data Sheet 9)

Warning is provided to driver after malfunction occurrence. (S126, S5.3)

- PASS

Malfunction telltale stayed illuminated as long as malfunction existed and must extinguish after malfunction was corrected. (S126, S5.3.7)

- PASS
3.0 TEST DATA

Data Sheet 1 (Page 1 of 2)
TEST VEHICLE INSPECTION AND TEST PREPARATION

Vehicle: 2010 Honda Accord Passenger Car
NHTSA No. CA5307  Data Sheet Completion Date: 2/19/2010
VIN 1HGCP2F80AA083721  Manufacture Date: 1/10
GVWR (kg): 2010  Front GAWR (kg): 1090  Rear GAWR (kg): 935
Seating Positions  Front: 2  Mid: 3  Rear: 3
Odometer reading at time of inspection: 19 miles (30.4 km)

DESIGNATED TIRE SIZE(S) FROM VEHICLE LABELING:
Front axle: P225/50 R17  Rear axle: P225/50 R17

INSTALLED TIRE SIZE(S) ON VEHICLE (from tire sidewall)

<table>
<thead>
<tr>
<th></th>
<th>Front Axle</th>
<th>Rear Axle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tire Manufacturer:</td>
<td>Michelin</td>
<td>Michelin</td>
</tr>
<tr>
<td>Tire Model:</td>
<td>Pilot HXMXM4</td>
<td>Pilot HXMXM4</td>
</tr>
<tr>
<td>Tire Size:</td>
<td>P225/50 R17</td>
<td>P225/50 R17</td>
</tr>
<tr>
<td>TIN</td>
<td>Left Front: B90A VJLX 0210</td>
<td>Right Front: B90A VJLX 0210</td>
</tr>
<tr>
<td></td>
<td>Left Rear: B90A VJLX 0210</td>
<td>Right Rear: B90A VJLX 0210</td>
</tr>
</tbody>
</table>

Are installed tire sizes same as labeled tire sizes? Yes
If no, contact COTR for further guidance

DRIVE CONFIGURATION(S):(mark all that apply)

- [X] Two Wheel Drive (2WD)  [X] Front Wheel Drive  [ ] Rear Wheel Drive
- [ ] All Wheel Drive (AWD)
- [ ] Four Wheel Drive Automatic - differential no locked full time (4WD Automatic)
- [ ] Four Wheel Drive (High Gear Locked Differential 4WD HGLD)
- [ ] Four Wheel Drive Low Gear (4WD Low)
- [ ] Other (Describe)
3.0 TEST DATA (CONTD)

Data Sheet 1 (Page 2 of 2)
TEST VEHICLE INSPECTION AND TEST PREPARATION

DRIVE CONFIGURATIONS AND MODES: (ex. default, performance, off)
(For each of the vehicle's drive configurations identify available operating modes)

Drive Configuration: Front Wheel Drive - Default
Mode: Default - ESC on

Drive Configuration: _________________
Mode: _________________

Drive Configuration: _________________
Mode: _________________

VEHICLE STABILITY SYSTEMS (Check applicable technologies):
List other systems:

☒ ESC ☒ Traction Control ☐ Roll Stability Control
☐ Active Suspension ☒ Electronic Throttle Control ☐ Active Steering

☒ ABS

REMARKS:

RECORDED BY: J Lenkeit DATE RECORDED: 2/19/2010
APPROVED BY: B Kebschull DATE APPROVED: 2/22/2010
3.0 TEST DATA (CONTD)

Data Sheet 2 (Page 1 of 2)

ESC SYSTEM HARDWARE AND OPERATIONAL CHARACTERISTICS

Vehicle: 2010 Honda Accord Passenger Car

NHTSA No CA5307  Data Sheet Completion Date: 3/2/2010

ESC SYSTEM IDENTIFICATION

Manufacturer/Model: Nissin Kogyo Co, Ltd/NK21V

ESC SYSTEM HARDWARE (Check applicable hardware)

[X] Electronic Control Unit  [X] Hydraulic Control Unit
[X] Wheel Speed Sensors  [X] Steering Angle Sensor
[X] Yaw Rate Sensor  [X] Lateral Acceleration Sensor

List other Components: 

ESC OPERATIONAL CHARACTERISTICS

System is capable of generating brake torque at each wheel
List and describe Components: Brake control modulator - controls pressure to each wheel independently  
[ ] Yes (Pass)  [ ] No (Fail)

System is capable of determining yaw rate
List and describe Components: Yaw Rate Sensor  
[ ] Yes (Pass)  [ ] No (Fail)

System is capable of monitoring driver steering input
List and describe Components: Steering Wheel Sensor  
[ ] Yes (Pass)  [ ] No (Fail)

System is capable of estimating side slip or side slip derivative
List and describe Components: VSA Modulator (ESC Computer) collects actual vehicle data as follows: Vehicle speed from wheel speed sensor; Steering angle from steering angle sensor; Lateral acceleration and Yaw rate from yaw rate – lateral acceleration sensor. Vehicle side slip derivative (with respect to time) is calculated from these signals. 
[ ] Yes (Pass)  [ ] No (Fail)
ESC OPERATIONAL CHARACTERISTICS (continued)

System is capable of modifying engine torque during ESC activation. Method used to modify torque: Engine torque is modified by modifying ignition timing and/or fuel delivery. X Yes (Pass) __ No (Fail)

System is capable of activation at speeds of 20 km/h (12.4 mph) and higher X Yes (Pass) __ No (Fail)

Speed system becomes active: 15 km/h

System is capable of activation during the following driving phases: X Yes (Pass)  
- acceleration  
- braking  
- coasting  
- during activation of ABS or traction control  __ No (Fail)

Driving phases during which ESC is capable of activation:  
Acceleration, Deceleration, Coasting, ABS operation, Traction control operation. Not reverse driving

Vehicle manufacturer submitted documentation explaining how the ESC mitigates understeer X Yes (Pass) __ No (Fail)

DATA INDICATES COMPLIANCE: X Yes (Pass) __ No (Fail)

REMARKS:

__________________________________________

RECORDED BY: P Broen DATE RECORDED: 3/2/2010
APPROVED BY: J Lenkeit DATE APPROVED: 3/8/2010
ESC MALFUNCTION AND OFF TELTTEALES

Vehicle: **2010 Honda Accord Passenger Car**

NHTSA No. **CA5307**  
Data Sheet completion date: **3/5/2010**

---

**ESC Malfunction Telltale**

Vehicle is equipped with malfunction telltale? **Yes**

Telltale Location:  *Instrument Cluster, lower center of tachometer (Fig 5.6).*

Telltale Color:  *Amber*

If different than identified above, make note of any message, symbol or abbreviation used.

Two telltales illuminated simultaneously indicate a system malfunction. The first telltale “VSA” is the Vehicle Stability Assist indicator and the second is the VSA activation indicator represented by a triangle with an exclamation point inside (see Figure 5.6)

Is telltale part of a common space?  **No**

Is telltale also used to indicate activation of the ESC system?  **Yes**

If yes explain telltale operation during ESC activation:

The VSA activation indicator (triangle with exclamation) comes on during ESC activation
ESC MALFUNCTION AND OFF TELLTALES

"ESC OFF" Telltale (if provided)

Vehicle is equipped with "ESC OFF" telltale? Yes

Is "ESC Off" telltale combined with "ESC Malfunction" telltale utilizing a two part telltale? No

Telltale Location: Instrument Cluster, lower center of tachometer (Fig 5.6).

Telltale Color: Amber

Telltale symbol or abbreviation used

☐ Vehicle uses this symbol
☐ Vehicle uses this abbreviation
☒ Neither symbol or abbreviation is used

If different than identified above, make note of any message, symbol or abbreviation used. The VSA activation indicator (triangle with exclamation point) comes on when the VSA system is turned off.

Is telltale part of a common space? No

DATA INDICATES COMPLIANCE Yes

(Vehicle is compliant if equipped with a malfunction telltale)

Remarks:

RECORDED BY: P Broen DATE RECORDED: 3/5/2010
APPROVED BY: J Lenkei DATE APPROVED: 3/12/2010
3.0 TEST DATA (CONT'D)

Data Sheet 4 (Page 1 of 3)
ESC AND ANCILLARY SYSTEM CONTROLS

Vehicle: 2010 Honda Accord Passenger Car
NHTSA No. CA5307 Data Sheet completion date: 3/4/2010

"ESC OFF" Controls Identification and Operational Check:

Is the vehicle equipped with a control or controls whose purpose is to deactivate the ESC system or place the ESC system in a mode or modes that may no longer satisfy the performance requirements of the standard?  X  Yes  ___  No

Type of control or controls provided?

☑ Dedicated “ESC Off” Control
☐ Multi-functional control with an “ESC Off” mode
☐ Other (describe)

Identify each control location, labeling and selectable modes.

First Control: Location  Lower left of dash (Fig 5.7)
Labeling  VSA OFF
Modes  ESC off/on

Second Control: Location  
Labeling  
Modes  

Identify standard or default drive configuration  FWD

Verify standard or default drive configuration selected  X  Yes  ___  No

Does the “ESC Off” telltale illuminate upon activation of the dedicated ESC off control or selection of the “ESC Off” mode on the multi-function control?  X  Yes  ___  No (Fail)

Does the “ESC Off” telltale extinguish when the ignition is cycled from “on” (“Run”) to “Lock” or “Off” and then back again to the “On” (“Run”) position?  X  Yes  ___  No (Fail)

If no, describe how the “Off” control functions
If a multi-function control is provided, cycle through each mode setting on the control and record which modes illuminate the “ESC Off” telltale. Also, for those modes that illuminate the ESC Off” telltale identify if the telltale extinguishes upon cycling the ignition system.

<table>
<thead>
<tr>
<th>Control Mode</th>
<th>&quot;ESC Off&quot; telltale illuminates upon activation of control? (Yes/No)</th>
<th>&quot;ESC Off&quot; telltale extinguishes upon cycling ignition? (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For each mode that illuminates the “ESC Off” telltale, did the telltale extinguish when the ignition was cycled from “On” (“Run”) to “Lock” or “Off” and then back again to the “On” (“Run”) position?  

___ NA ___ Yes ___ No

**Other System Controls that have an ancillary effect on ESC Operation:**

Is the vehicle equipped with any ancillary controls that upon activation may deactivate the ESC system or place the ESC system in a mode or modes that may no longer satisfy the performance requirements of the standard?  

___ Yes ___ No

Ancillary Control: System NA  
Control Description ___________________________________________  
Labeling ____________________________________________________

Ancillary Control: System ______________________________________  
Control Description __________________________________________  
Labeling ____________________________________________________

Ancillary Control: System ______________________________________  
Control Description __________________________________________  
Labeling ____________________________________________________

Ancillary Control: System ______________________________________  
Control Description __________________________________________  
Labeling ____________________________________________________
3.0 TEST DATA (CONTD)

Data Sheet 4 (Page 3 of 3)
ESC AND ANCILLARY SYSTEM CONTROLS

Activate each control listed above and record whether the control illuminates the “ESC Off” telltale. Also, record warnings or messages provided regarding the ESC system.

<table>
<thead>
<tr>
<th>Ancillary Control</th>
<th>Control Activates “ESC Off” Telltale? (Yes/No)</th>
<th>Warnings or Messages Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For those controls that illuminate the “ESC Off” telltale above identify if the “ESC Off” telltale extinguishes upon cycling the ignition system.

<table>
<thead>
<tr>
<th>Ancillary Control</th>
<th>“ESC Off” telltale extinguishes upon cycling ignition? (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

For each control that illuminates the “ESC Off” telltale, did the telltale extinguish when the ignition is cycled from “On” (“Run”) to “Lock” or “Off” and then back again to the “On” (“Run”) position? If activating the control places the vehicle into a low-range four-wheel drive configuration designed for low-speed, off-road driving, the ESC system may remain turned off after the ignition has been cycled off and then back on and therefore the “ESC Off” telltale may not extinguish.

X Yes ___ No (Fail)

DATA INDICATES COMPLIANCE: PASS

Remarks:

______________________________________________________________________________

RECORDED BY: P Broen DATE RECORDED: 3/4/2010
APPROVED BY: J Lenkeit DATE APPROVED: 3/12/2010
### 3.0 TEST DATA (CONT'D)

**Data Sheet 5 (Page 1 of 3)**

**TEST TRACK AND VEHICLE DATA**

<table>
<thead>
<tr>
<th>Vehicle:</th>
<th>2010 Honda Accord Passenger Car</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHTSA No.</td>
<td>CA5307</td>
</tr>
<tr>
<td>Data Sheet completion date:</td>
<td>3/3/2010</td>
</tr>
</tbody>
</table>

**Test Track Requirements:**
- Test surface slope (0-1%): 0.5%
- Peak Friction Coefficient (at least 0.9): 0.93

Test track data meets requirements: Yes

If no, explain:

**Full Fluid Levels:**
- Fuel: Yes
- Other Fluids: Yes (specify)
- Coolant: Yes

**Oil, Washer, transmission, brakes**

**Tire Pressures:**
- Required; Front Axle: 220 KPA
- Required; Rear Axle: 220 KPA
- Actual; LF: 220 KPA
- Actual; RF: 220 KPA
- Actual; LR: 220 KPA
- Actual; RR: 220 KPA

**Vehicle Dimensions:**
- Front Track Width: 157.8 cm
- Wheelbase: 279.9 cm
- Rear Track Width: 157.8 cm

**Vehicle Weight Ratings:**
- GAWR Front: 1090.0 KG
- GAWR Rear: 935.0 KG

**Unloaded Vehicle Weight (UVW):**
- Front Axle: 930.8 KG
- Left Front: 474.0 KG
- Right Front: 456.8 KG
- Rear Axle: 608.3 KG
- Left Rear: 302.1 KG
- Right Rear: 306.2 KG
- Total UVW: 1539.1 KG

**Baseline Weight and Outrigger Selection** (only for MPVs, Trucks, Buses)
- Calculated baseline weight (UVW + 73kg): 1612.1 KG
- Outrigger size required ("Standard" or "Heavy"): None

Standard - Baseline weight under 2772 kg (6000 lb)
Heavy - Baseline weight equal to or greater than 2772 kg (6000 lb)
3.0 TEST DATA (CONTD)

Data Sheet 5 (Page 2 of 3)
TEST TRACK AND VEHICLE DATA

UVW with Outriggers: (only for MPVs, Trucks, Buses)

Front axle  **NA**  KG  Left front  **NA**  KG  Right front  **NA**  KG
Rear axle  **NA**  KG  Left rear  **NA**  KG  Right rear  **NA**  KG

Total UVW with outriggers  **NA**  KG

Loaded Vehicle Weight w/Driver and Instrumentation (no Ballast)

Front axle  **996.5**  KG  Left front  **519.8**  KG  Right front  **476.7**  KG
Rear axle  **681.8**  KG  Left rear  **341.6**  KG  Right rear  **340.2**  KG

Vehicle Weight  **1678.3**  KG

Ballast Required =  
\[
\frac{\text{[Total UVW with Outriggers (if applicable)]}}{\text{+ 168 KG}} - \frac{\text{[Loaded Weight w/Driver and Instrumentation]}}{\text{- 1678.3 KG}}
\]

\[
= \frac{1539.1 \text{ KG}}{\text{+ 168 KG}} - \frac{1678.3 \text{ KG}}{\text{28.8 KG}}
\]

Total Loaded Vehicle Weight w/Driver and Instrumentation and Ballast

Front axle  **1011.1**  KG  Left front  **524.8**  KG  Right front  **486.3**  KG
Rear axle  **698.1**  KG  Left rear  **345.2**  KG  Right rear  **352.9**  KG

Total UVW  **1709.2**  KG
3.0 TEST DATA (CONT'D)

Data Sheet 5 (Page 3 of 3)
TEST TRACK AND VEHICLE DATA

Center of Gravity and Inertial Sensing System Location at Loaded Vehicle Condition:

- **x-distance (longitudinal)**: Point of reference is the front axle centerline. (Positive from front axle toward rear of vehicle.)
  - **45.0 in** 114.3 cm
  - **69.7 in** 177.0 cm
- **y-distance (lateral)**: Point of reference is the vehicle centerline. (Positive from the center toward the right.)
  - **-0.6 in** -1.5 cm
  - **-0.2 in** -0.5 cm
- **z-distance (vertical)**: Point of reference is the ground plane. (Positive from the ground up.)
  - **22.2 in** 56.4 cm
  - **10.0 in** 25.4 cm

**Roof Height**: 58.452 in 148.5 cm

**Distance between ultrasonic sensors**: 90.5 in 229.9 cm

Remarks: *Ballast consisted of barbell weights positioned on rear passenger floor*

---

RECORDED BY: B. Kebschull  
DATE RECORDED: 3/3/2010

APPROVED BY: J Lenkeit  
DATE APPROVED: 3/5/2010
3.0 TEST DATA (CONTD)

Data Sheet 6 (Page 1 of 3)
BRAKE AND TIRE CONDITIONING

Vehicle: 2010 Honda Accord Passenger Car
NHTSA No. CA5307

Measured tire pressure: LF 240 KPA RF 233 KPA
                      LR 234 KPA RR 243 KPA

Wind Speed 1.5 m/s (10 m/sec (22 mph) max for passenger cars;
             5m/sec (11 mph) max for MPVs and trucks)

Ambient Temperature (7°C (45°F) - 40°C (104°F)) 19°C

Brake Conditioning Time: 10:25:00 AM Date: 3/3/2010

56 km/h (35 mph) Brake Stops
   Number of stops executed (10 required) 10 Stops
   Observed deceleration rate range (.5g target) 0.45 - 0.55 g

72 km/h (45 mph) Brake Stops
   Number of stops executed (3 required) 3 Stops
   Number of stops ABS activated (3 required) 3 Stops
   Observed deceleration rate range 0.85 - 0.95 g

72 km/h (45 mph) Brake Cool Down Period
   Duration of cool down period (5 minutes min.) 5 Minutes
3.0 TEST DATA (CONTD)

Data Sheet 6 (Page 2 of 3)
BRAKE AND TIRE CONDITIONING

Tire Conditioning series No. 1  Time: 11:00:00 AM  Date: 3/3/2010

Measured cold tire pressure
LF  243 KPA  RF  248 KPA
LR  242 KPA  RR  238 KPA

Wind Speed 0.7 m/s  (10 m/sec (22 mph) max for passenger cars; 5m/sec (11 mph) max for MPVs and trucks)

Ambient Temperature (7°C (45°F) - 40°C (104°F))  20.5°C

<table>
<thead>
<tr>
<th>Test Run</th>
<th>Steering Direction</th>
<th>Target Lateral Acceleration (g)</th>
<th>Observed Lateral Acceleration (g)</th>
<th>Observed Vehicle Speed (Km/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>Clockwise</td>
<td>0.5 – 0.6</td>
<td>0.5 - 0.6</td>
<td>32.8 - 33.6</td>
</tr>
<tr>
<td>4-6</td>
<td>Counterclockwise</td>
<td>0.5 – 0.6</td>
<td>0.5 - 0.6</td>
<td>32.0 - 33.6</td>
</tr>
</tbody>
</table>

5-1 Hz Cycle Sinusoidal Steering Maneuver to Determine Steering Wheel Angle for 0.5-0.6 g Lateral Acceleration

<table>
<thead>
<tr>
<th>Test Run</th>
<th>Data File</th>
<th>Vehicle Speed Km/h(mph)</th>
<th>Steering Wheel Angle (degrees)</th>
<th>Target Peak Lateral Acceleration (g)</th>
<th>Observed Peak Lateral Acceleration (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>56 ± 2 (35 ± 1)</td>
<td>60</td>
<td>0.5 - 0.6</td>
<td>0.44</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>56 ± 2 (35 ± 1)</td>
<td>80</td>
<td>0.5 - 0.6</td>
<td>0.54</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>56 ± 2 (35 ± 1)</td>
<td></td>
<td>0.5 - 0.6</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>56 ± 2 (35 ± 1)</td>
<td></td>
<td>0.5 - 0.6</td>
<td></td>
</tr>
</tbody>
</table>

Steering wheel angle that corresponds to a peak 0.5-0.6 g lateral acceleration: 80 degrees

10-1 Hz Cycle Sinusoidal Steering Maneuver

<table>
<thead>
<tr>
<th>Test Run</th>
<th>Data File</th>
<th>Vehicle Speed Km/h(mph)</th>
<th>Steering Wheel Angle (degrees)</th>
<th>Target Peak Lateral Acceleration (g)</th>
<th>Observed Peak Lateral Acceleration (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>5-7</td>
<td>56 ± 2 (35 ± 1)</td>
<td>80 (cycles 1-10)</td>
<td>0.5 - 0.6</td>
<td>0.54</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>56 ± 2 (35 ± 1)</td>
<td>80 (cycles 1-9)</td>
<td>0.5 - 0.6</td>
<td>0.54</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>160 (cycle10)*</td>
<td>NA</td>
<td>0.80</td>
</tr>
</tbody>
</table>

* The steering wheel angle used for cycle 10 should be twice the angle used for cycles 1-9
3.0 TEST DATA (CONTD)

Data Sheet 6 (Page 3 of 3)
BRAKE AND TIRE CONDITIONING

Tire Conditioning series No. 2  Time: 12:38:00 PM  Date: 3/3/2010
Measured cold tire pressure

<table>
<thead>
<tr>
<th></th>
<th>LF</th>
<th>RF</th>
<th>LR</th>
<th>RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure (KPA)</td>
<td>249</td>
<td>254</td>
<td>246</td>
<td>244</td>
</tr>
</tbody>
</table>

Wind Speed _1.7_ m/s  (10 m/sec (22 mph) max for passenger cars; 5m/sec (11 mph) max for MPVs and trucks)

Ambient Temperature (_7°C (45°F) - 40°C (104°F)_) _19.8_ °C

<table>
<thead>
<tr>
<th>30 meter (100 ft) Diameter Circle Maneuver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Run</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>1-3</td>
</tr>
<tr>
<td>4-6</td>
</tr>
</tbody>
</table>

Steering wheel angle that corresponds to a peak 0.5-0.6 g lateral acceleration: _80_ degrees

10-1 Hz Cycle Sinusoidal Steering Maneuver

<table>
<thead>
<tr>
<th>Test Run</th>
<th>Data File</th>
<th>Vehicle Speed Km/h (mph)</th>
<th>Steering Wheel Angle (degrees)</th>
<th>Target Peak Lateral Acceleration (g)</th>
<th>Observed Peak Lateral Acceleration (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>17-19</td>
<td>56 ± 2 (35 ± 1)</td>
<td><em>80</em> (cycles 1-10)</td>
<td>0.5 - 0.6</td>
<td><em>0.54</em></td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td>56 ± 2 (35 ± 1)</td>
<td><em>80</em> (cycles 1-9)</td>
<td>0.5 - 0.6</td>
<td><em>0.54</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>160</em> (cycle 10)*</td>
<td>NA</td>
<td><em>0.80</em></td>
</tr>
</tbody>
</table>

* The steering wheel angle used for cycle 10 should be twice the angle used for cycles 1-9

Remarks:

RECORDED BY:  B. Kebschull  DATE RECORDED:  3/3/2010
APPROVED BY:  J Lenkeit  DATE APPROVED:  3/12/2010
3.0 TEST DATA (CONT'D)

Data Sheet 7 (Page 1 of 2)
SLOWLY INCREASING STEER (SIS) MANEUVER

Vehicle: 2010 Honda Accord Passenger Car
NHTSA No. CA5307

Measured tire pressure: 
<table>
<thead>
<tr>
<th></th>
<th>KPA</th>
<th></th>
<th>KPA</th>
<th></th>
<th>KPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>LF</td>
<td>244</td>
<td>RF</td>
<td>242</td>
<td>LR</td>
<td>249</td>
</tr>
</tbody>
</table>

Wind Speed 0.9 m/s
(10 m/sec (22 mph) max for passenger cars; 5m/sec (11 mph) max for MPVs and trucks)

Ambient Temperature (7 °C (45 °F) - 40 °C (104 °F)) 20.2 °C

Selected drive configuration Default (FWD)

Selected Mode: Default ESC on

Preliminary Left Steer Maneuver:
Lateral Acceleration measured at 30 degrees steering wheel angle

\[ a_{y,30^\text{degrees}} = 0.35 \text{ g} \]

Assuming a linear relationship the following ratio should be used to calculate the steering wheel angle at 0.55g:

\[ \frac{30 \text{ degrees}}{0.55 \text{ g}} = \delta_{\text{SIS}} \]

\[ \delta_{\text{SIS}} = \frac{47.1}{\text{ degrees (at .55g)}} \]

Steering Wheel Angle at Corrected 0.3g Lateral Acceleration:

<table>
<thead>
<tr>
<th>Maneuver</th>
<th>Initial Steer Direction</th>
<th>Time Clock (5 min max between runs)</th>
<th>Steering Wheel Angle to nearest 0.1° (degrees)</th>
<th>Data Run</th>
<th>Good/NG</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Left</td>
<td>11:45:00 AM</td>
<td>28.7</td>
<td>11</td>
<td>Good</td>
</tr>
<tr>
<td>2</td>
<td>Left</td>
<td>11:49:00 AM</td>
<td>28.7</td>
<td>12</td>
<td>Good</td>
</tr>
<tr>
<td>3</td>
<td>Left</td>
<td>11:55:00 AM</td>
<td>29.0</td>
<td>13</td>
<td>Good</td>
</tr>
<tr>
<td>4</td>
<td>Left</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Left</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Right</td>
<td>12:00:00 PM</td>
<td>28.1</td>
<td>14</td>
<td>Good</td>
</tr>
<tr>
<td>2</td>
<td>Right</td>
<td>12:03:00 PM</td>
<td>28.7</td>
<td>15</td>
<td>Good</td>
</tr>
<tr>
<td>3</td>
<td>Right</td>
<td>12:08:00 PM</td>
<td>28.2</td>
<td>16</td>
<td>Good</td>
</tr>
<tr>
<td>4</td>
<td>Right</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Right</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.0 TEST DATA (CONTD)

Data Sheet 7 (Page 2 of 2)
SLOWLY INCREASING STEER (SIS) MANEUVER

Average Overall Steering Wheel Angle:

\[ \delta_{0.3 \text{g, overall}} = \frac{\left| \delta_{0.3 \text{g, left (1)}} \right| + \left| \delta_{0.3 \text{g, left (2)}} \right| + \left| \delta_{0.3 \text{g, left (3)}} \right| + \delta_{0.3 \text{g, right (1)}} + \delta_{0.3 \text{g, right (2)}} + \delta_{0.3 \text{g, right (3)}}}{6} \]

\[ \delta_{0.3 \text{g, overall}} = \frac{28.6\text{ degrees}}{6} \]

[to nearest 0.1 degree]

Remarks:

______________________________________________________________________________

RECORDED BY:  B. Kebschull DATE RECORDED:  3/3/2010
APPROVED BY:  J Lenkeit DATE APPROVED:  3/12/2010
3.0 TEST DATA (CONTD)

Data Sheet 8 (Page 1 of 3)

VEHICLE LATERAL STABILITY AND RESPONSIVENESS

Vehicle: **2010 Honda Accord Passenger Car**

NHTSA No. **CA5307**

Data sheet completion date: **3/3/2010**

<table>
<thead>
<tr>
<th>Maneuver #</th>
<th>Clock Time (1.5 – 5.0 min max between runs)</th>
<th>Commanded Steering Wheel Angle¹ (°δ0.3 g)</th>
<th>Yaw Rates (degrees/sec)</th>
<th>YRR at 1.0 sec after COS [&lt; 35%]</th>
<th>YRR at 1.75 sec after COS [&lt; 20%]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Scalar (* δ0.3 g)</td>
<td>Angle (degrees)</td>
<td>ψ&lt;sub&gt;Peak&lt;/sub&gt;</td>
<td>ψ&lt;sub&gt;1.0sec&lt;/sub&gt;</td>
</tr>
<tr>
<td>22</td>
<td>12:56 PM</td>
<td>1.5</td>
<td>43.0</td>
<td>12.89</td>
<td>-0.19</td>
</tr>
<tr>
<td>23</td>
<td>12:59 PM</td>
<td>2.0</td>
<td>57.2</td>
<td>16.64</td>
<td>-0.46</td>
</tr>
<tr>
<td>24</td>
<td>1:04 PM</td>
<td>2.5</td>
<td>72.1</td>
<td>20.98</td>
<td>-0.14</td>
</tr>
<tr>
<td>25</td>
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<td>3.0</td>
<td>86.2</td>
<td>24.97</td>
<td>-0.19</td>
</tr>
<tr>
<td>26</td>
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<td>3.5</td>
<td>99.9</td>
<td>29.66</td>
<td>-0.20</td>
</tr>
<tr>
<td>27</td>
<td>1:13 PM</td>
<td>4.0</td>
<td>114.0</td>
<td>35.07</td>
<td>-0.51</td>
</tr>
<tr>
<td>28</td>
<td>1:16 PM</td>
<td>4.5</td>
<td>129.1</td>
<td>39.21</td>
<td>0.02</td>
</tr>
<tr>
<td>29</td>
<td>1:21 PM</td>
<td>5.0</td>
<td>143.0</td>
<td>43.41</td>
<td>0.03</td>
</tr>
<tr>
<td>30</td>
<td>1:24 PM</td>
<td>5.5</td>
<td>157.1</td>
<td>45.08</td>
<td>0.04</td>
</tr>
<tr>
<td>31</td>
<td>1:27 PM</td>
<td>6.0</td>
<td>171.9</td>
<td>48.87</td>
<td>0.00</td>
</tr>
<tr>
<td>32</td>
<td>1:29 PM</td>
<td>6.5</td>
<td>186.0</td>
<td>51.41</td>
<td>-0.09</td>
</tr>
<tr>
<td>33</td>
<td>1:32 PM</td>
<td>7.0</td>
<td>199.9</td>
<td>53.68</td>
<td>-0.12</td>
</tr>
<tr>
<td>34</td>
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<td>7.5</td>
<td>213.8</td>
<td>54.04</td>
<td>0.07</td>
</tr>
<tr>
<td>35</td>
<td>1:39 PM</td>
<td>8.0</td>
<td>228.9</td>
<td>55.42</td>
<td>0.06</td>
</tr>
<tr>
<td>36</td>
<td>1:41 PM</td>
<td>8.5</td>
<td>242.7</td>
<td>57.51</td>
<td>0.55</td>
</tr>
<tr>
<td>37</td>
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<td>256.6</td>
<td>58.94</td>
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<tr>
<td>38</td>
<td>1:49 PM</td>
<td>-</td>
<td>269.7</td>
<td>59.11</td>
<td>0.01</td>
</tr>
</tbody>
</table>

1. Maneuver execution should continue until a steering wheel angle magnitude factor of 6.5*δ0.3 g, overall or 270 degrees is utilized, whichever is greater provided the calculated magnitude of 6.5*δ0.3 g, overall is less than or equal to 300 degrees. If 6.5*δ0.3 g, overall is less than 270 degrees maneuver execution should continue by increasing the steering wheel angle magnitude by multiples of 0.5*δ0.3 g, overall without exceeding the 270 degree steering wheel angle.

---

Tire conditioning completed [X] Yes [ ] No
ESC system is enabled [X] Yes [ ] No
On track calibration checks have been completed [X] Yes [ ] No
On track static data file for each sensor obtained [X] Yes [ ] No

Selected Drive Configuration: **Default (FWD)**
Selected Mode: **Default - ESC on**

Overall steering wheel angle (δ0.3 g, overall) **28.6** degrees
## 3.0 TEST DATA (CONTD)

### DATA SHEET 8 (2 of 3)

**VEHICLE LATERAL STABILITY AND RESPONSIVENESS**

**LATERAL STABILITY TEST SERIES NO. 2 – Clockwise Initial Steer Direction**

<table>
<thead>
<tr>
<th>Maneuver #</th>
<th>Clock Time</th>
<th>Commanded Steering Wheel Angle¹</th>
<th>Yaw Rates (degrees/sec)</th>
<th>YRR at 1.0 sec after COS [&lt; 35%]</th>
<th>YRR at 1.75 sec after COS [&lt; 20%]</th>
<th>% Pass/Fail</th>
<th>% Pass/Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Scalar (* δ₀.3 g)</td>
<td>Angle (degrees)</td>
<td>ψ₁₀ sec</td>
<td>ψ₁.75 sec</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>1:52 PM</td>
<td>1.5</td>
<td>43.7</td>
<td>-13.29</td>
<td>0.09</td>
<td>0.10</td>
<td>-0.68</td>
</tr>
<tr>
<td>40</td>
<td>1:55 PM</td>
<td>2.0</td>
<td>57.7</td>
<td>-17.84</td>
<td>0.05</td>
<td>0.00</td>
<td>-0.30</td>
</tr>
<tr>
<td>41</td>
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<td>2.5</td>
<td>72.6</td>
<td>-22.36</td>
<td>0.17</td>
<td>0.00</td>
<td>-0.77</td>
</tr>
<tr>
<td>42</td>
<td>2:01 PM</td>
<td>3.0</td>
<td>86.7</td>
<td>-26.16</td>
<td>0.27</td>
<td>0.24</td>
<td>-1.03</td>
</tr>
<tr>
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<td>2:04 PM</td>
<td>3.5</td>
<td>100.7</td>
<td>-30.69</td>
<td>0.23</td>
<td>0.16</td>
<td>-0.76</td>
</tr>
<tr>
<td>44</td>
<td>2:08 PM</td>
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<td>114.6</td>
<td>-36.43</td>
<td>0.12</td>
<td>-0.02</td>
<td>-0.34</td>
</tr>
<tr>
<td>45</td>
<td>2:12 PM</td>
<td>4.5</td>
<td>129.8</td>
<td>-40.53</td>
<td>0.11</td>
<td>0.06</td>
<td>-0.27</td>
</tr>
<tr>
<td>46</td>
<td>2:15 PM</td>
<td>5.0</td>
<td>143.9</td>
<td>-45.49</td>
<td>0.15</td>
<td>-0.02</td>
<td>-0.32</td>
</tr>
<tr>
<td>47</td>
<td>2:17 PM</td>
<td>5.5</td>
<td>157.9</td>
<td>-49.50</td>
<td>0.15</td>
<td>-0.02</td>
<td>-0.31</td>
</tr>
<tr>
<td>48</td>
<td>2:21 PM</td>
<td>6.0</td>
<td>172.8</td>
<td>-54.02</td>
<td>0.00</td>
<td>-0.09</td>
<td>0.00</td>
</tr>
<tr>
<td>49</td>
<td>2:24 PM</td>
<td>6.5</td>
<td>186.8</td>
<td>-56.81</td>
<td>-0.24</td>
<td>0.02</td>
<td>0.42</td>
</tr>
<tr>
<td>50</td>
<td>2:27 PM</td>
<td>7.0</td>
<td>200.8</td>
<td>-60.01</td>
<td>-0.61</td>
<td>-0.11</td>
<td>1.02</td>
</tr>
<tr>
<td>51</td>
<td>2:31 PM</td>
<td>7.5</td>
<td>214.9</td>
<td>-62.32</td>
<td>2.01</td>
<td>-0.12</td>
<td>-3.23</td>
</tr>
<tr>
<td>52</td>
<td>2:35 PM</td>
<td>8.0</td>
<td>230.0</td>
<td>-64.31</td>
<td>4.54</td>
<td>0.17</td>
<td>-7.07</td>
</tr>
<tr>
<td>53</td>
<td>2:39 PM</td>
<td>8.5</td>
<td>243.9</td>
<td>-66.63</td>
<td>2.84</td>
<td>0.02</td>
<td>-4.26</td>
</tr>
<tr>
<td>54</td>
<td>2:43 PM</td>
<td>9.0</td>
<td>257.8</td>
<td>-67.45</td>
<td>4.34</td>
<td>0.10</td>
<td>-6.43</td>
</tr>
<tr>
<td>55</td>
<td>2:48 PM</td>
<td>-</td>
<td>270.6</td>
<td>-68.99</td>
<td>5.43</td>
<td>0.06</td>
<td>-7.87</td>
</tr>
</tbody>
</table>

1. Maneuver execution should continue until a steering wheel angle magnitude factor of 6.5*δ₀.3 g, overall or 270 degrees is utilized, whichever is greater provided the calculated 6.5*δ₀.3 g, overall is less than or equal to 300 degrees. If 6.5*δ₀.3 g, overall is less than 270 degrees maneuver execution should continue by increasing the steering wheel angle magnitude by multiples of 0.5*δ₀.3 g, overall without exceeding the 270 degree steering wheel angle.

During execution of the Sine with Dwell maneuvers were any of the following events observed?

<table>
<thead>
<tr>
<th>Event</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rim-to-pavement contact</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Tire debeading</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Loss of pavement contact of vehicle tires</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Did the test driver experience any vehicle loss of control or spinout?</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

If “Yes” explain the event and consult with the COTR.
### Responsiveness – Lateral Displacement

<table>
<thead>
<tr>
<th>Maneuver #</th>
<th>Initial Steer Direction</th>
<th>Commanded Steering Wheel Angle ((5.0^*\delta_{0.3 , g}, \text{overall or greater}))</th>
<th>Calculated Lateral Displacement(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Scalar (\delta_{0.3 , g})</td>
<td>Angle (degrees)</td>
</tr>
<tr>
<td>29</td>
<td>Counter Clockwise</td>
<td>5.0</td>
<td>143.0</td>
</tr>
<tr>
<td>30</td>
<td>Counter Clockwise</td>
<td>5.5</td>
<td>157.1</td>
</tr>
<tr>
<td>31</td>
<td>Counter Clockwise</td>
<td>6.0</td>
<td>171.9</td>
</tr>
<tr>
<td>32</td>
<td>Counter Clockwise</td>
<td>6.5</td>
<td>186.0</td>
</tr>
<tr>
<td>33</td>
<td>Counter Clockwise</td>
<td>7.0</td>
<td>199.9</td>
</tr>
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<td>7.5</td>
<td>213.8</td>
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<td>35</td>
<td>Counter Clockwise</td>
<td>8.0</td>
<td>228.9</td>
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<tr>
<td>36</td>
<td>Counter Clockwise</td>
<td>8.5</td>
<td>242.7</td>
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<tr>
<td>37</td>
<td>Counter Clockwise</td>
<td>9.0</td>
<td>256.6</td>
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<td>38</td>
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<td>-</td>
<td>269.7</td>
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<td>157.9</td>
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<td>Clockwise</td>
<td>6.0</td>
<td>172.8</td>
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<td>8.5</td>
<td>243.9</td>
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<tr>
<td>55</td>
<td>Clockwise</td>
<td>9.0</td>
<td>257.8</td>
</tr>
<tr>
<td>56</td>
<td>Clockwise</td>
<td>-</td>
<td>270.6</td>
</tr>
</tbody>
</table>

1. Lateral displacement should be \(\geq 1.83 \text{ m (6 ft)}\) for vehicle with a GVWR of 3,500 kg (7,716 lb) or less; and \(\geq 1.52 \text{ m (5 ft)}\) for vehicles with GVWR greater than 3,500 kg (7,716 lb).

**DATA INDICATES COMPLIANCE:**

☑ PASS ☐ FAIL

**Remarks:**

---

**RECORDED BY:**  
B. Kebschull  
**DATE RECORDED:** 3/3/2010

**APPROVED BY:**  
J Lenkeit  
**DATE APPROVED:** 3/12/2010
3.0 TEST DATA (CONTD)

Data Sheet 9 (Page 1 of 2)
MALFUNCTION WARNING TESTS

Vehicle: 2010 Honda Accord Passenger Car
NHTSA No. CA5307 Data Sheet Completion Date: 3/3/2010

TEST 1

MALFUNCTION SIMULATION: Describe method of malfunction simulation

Disconnected Left front wheel speed sensor

MALFUNCTION TELLTALE ILLUMINATION:
Telltale illuminates and remains illuminated after ignition locking system is activated and if necessary the vehicle is driven at least 2 minutes.

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Time for telltale to illuminate after ignition system is activated and vehicle speed of 48 ± 8 km/h (30 ± 5mph) is reached.

<table>
<thead>
<tr>
<th>Seconds (must be within 2 minutes)</th>
<th>Pass</th>
<th>Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

ESC SYSTEM RESTORATION
Telltale extinguishes after ignition locking system is activated and if necessary the vehicle is driven at least 2 minutes.

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Time for telltale to extinguish after ignition system is activated and vehicle speed of 48 ± 8 km/h (30 ± 5mph) is reached.

<table>
<thead>
<tr>
<th>Seconds (must be within 2 minutes)</th>
<th>Pass</th>
<th>Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

TEST 1 DATA INDICATES COMPLIANCE: PASS

Remarks: Both the "VSA" telltale and the triangle (with a "!" inside it) telltale illuminated immediately upon ignition after the malfunction was caused. The ABS telltale illuminated as well. When the ESC system was restored, both telltales immediately extinguished upon ignition. No driving was required.

RECORDED BY: B. Kebschull DATE RECORDED: 3/3/2010
APPROVED BY: J Lenkeit DATE APPROVED 3/8/2010
3.0 TEST DATA (CONTD)

Data Sheet 9 (Page 2 of 2)
MALFUNCTION WARNING TESTS

Vehicle: 2010 Honda Accord Passenger Car
NHTSA No. CA5307 Data Sheet Completion Date: 3/3/2010

<table>
<thead>
<tr>
<th>TEST 2</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>MALFUNCTION SIMULATION: Describe method of malfunction simulation</td>
<td>Disconnected steering angle sensor</td>
</tr>
<tr>
<td>MALFUNCTION TELLTALE ILLUMINATION:</td>
<td>Telltale illuminates and remains illuminated after ignition locking system is activated and if necessary the vehicle is driven at least 2 minutes.</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Time for telltale to illuminate after ignition system is activated and vehicle speed of 48 ± 8 km/h (30 ± 5mph) is reached.</td>
<td>0 Seconds (must be within 2 minutes)</td>
</tr>
<tr>
<td>ESC SYSTEM RESTORATION</td>
<td>Telltale extinguishes after ignition locking system is activated and if necessary the vehicle is driven at least 2 minutes.</td>
</tr>
<tr>
<td>Time for telltale to extinguish after ignition system is activated and vehicle speed of 48 ± 8 km/h (30 ± 5mph) is reached.</td>
<td>0 Seconds (must be within 2 minutes)</td>
</tr>
</tbody>
</table>

TEST 2 DATA INDICATES COMPLIANCE: PASS

Remarks: Both the “VSA” and the triangle with exclamation point telltales illuminated immediately upon ignition. After the system was restored, both telltales extinguished immediately upon ignition. No driving was required.

RECORDED BY: B Kebschull DATE RECORDED: 3/3/2010
APPROVED BY: J Lenkeit DATE APPROVED: 3/8/2010
# 4.0 Test Equipment List and Calibration Information (1 of 2)

## Table 1. Test Instrumentation

<table>
<thead>
<tr>
<th>Type</th>
<th>Output</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
<th>Specifics</th>
<th>Serial Number</th>
<th>Calibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tire Pressure Gauge</td>
<td>Vehicle Tire Pressure</td>
<td>0-100 psi 0-690 kPa</td>
<td>1 psi 6.89 kPa</td>
<td>0.5 psi 3.45 kPa</td>
<td>Ashcroft D1005PS</td>
<td>1039350</td>
<td>By: DRI Date: 2/25/10 Due: 2/25/11</td>
</tr>
<tr>
<td>Platform Scales</td>
<td>Vehicle Total, Wheel, and Axle Load</td>
<td>8000 lb 35.6 kN</td>
<td>0.5 lb 2.2 N</td>
<td>± 1.0% of applied load</td>
<td>Intercomp Model SWII</td>
<td>24032361</td>
<td>By: American Scale Date: 2/25/10 Due: 2/25/11</td>
</tr>
<tr>
<td>Automated Steering Machine with Steering Angle Encoder</td>
<td>Handwheel Angle</td>
<td>± 800 deg</td>
<td>0.25 deg</td>
<td>± 0.25 deg</td>
<td>Heitz Automotive Testing Model: Sprint 3</td>
<td>60304</td>
<td>By: DRI Date: 2/25/10 Due: 2/25/11</td>
</tr>
<tr>
<td>Multi-Axis Inertial Sensing System</td>
<td>Longitudinal, Lateral, and Vertical Acceleration Roll, Yaw, and Pitch Rate</td>
<td>Accelerometer s: ± 2 g Angular Rate Sensors: ± 100 deg/s</td>
<td>Accelerometers: ± 0.004 deg/s</td>
<td>Accelerometers: ± 0.05% of full range Angular Rate Sensors: 0.05% of full range</td>
<td>BEI Technologies Model: MotionPAK MP-1</td>
<td>0767</td>
<td>By: Systron Donner Date: 11/23/09 Due: 11/23/10</td>
</tr>
<tr>
<td>Radar Speed Sensor and Dashboard Display</td>
<td>Vehicle Speed</td>
<td>0-125 mph 0-200 km/h</td>
<td>0.009 mph .014 km/h</td>
<td>± 0.25% of full scale</td>
<td>A-DAT Corp. Radar Model: DRS-6 Display Model: RD-2</td>
<td>1400.604</td>
<td>By: DRI Date: 3/2/10 Due: 3/2/11</td>
</tr>
<tr>
<td>Ultrasonic Distance Measuring System</td>
<td>Left and Right Side Vehicle Height</td>
<td>5-24 inches 127-610 mm</td>
<td>0.01 inches .254 mm</td>
<td>± 0.25% of maximum distance</td>
<td>Massa Products Corporation Model: M-5000/220</td>
<td>DOT-NHTSA D2646</td>
<td>By: DRI Date: 2/26/10 Due: 2/26/11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DOT-NHTSA D3272</td>
<td></td>
<td>By: DRI Date: 2/26/10 Due: 2/26/11</td>
</tr>
</tbody>
</table>
### 4.0 TEST EQUIPMENT LIST AND CALIBRATION INFORMATION (2 OF 2)

**TABLE 1. TEST INSTRUMENTATION (CONT'D)**

<table>
<thead>
<tr>
<th>Type</th>
<th>Output</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
<th>Specifics</th>
<th>Serial Number</th>
<th>Calibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Acquisition System [Includes amplification, anti-aliasing, and analog to digital conversion.]</td>
<td>Record Time; Velocity; Distance; Lateral, Longitudinal, and Vertical Accelerations; Roll, Yaw, and Pitch Rates; Steering Wheel Angle.</td>
<td>Sufficient to meet or exceed individual sensors</td>
<td>200 Hz</td>
<td>Sufficient to meet or exceed individual sensors</td>
<td>SoMat eDaq ECPU processor</td>
<td>MSHLB.03-2476</td>
<td>By: DRI Date: 2/9/10 Due: 2/9/11</td>
</tr>
<tr>
<td>Load Cell</td>
<td>Vehicle Brake Pedal Force</td>
<td>0-300 lb 0-1.33 kN</td>
<td>1 lb 4.44 N</td>
<td>±0.05% of full scale</td>
<td>Lebow 3663-300</td>
<td>767</td>
<td>Operationally verified on test date</td>
</tr>
<tr>
<td>Coordinate Measurement Machine</td>
<td>Inertial Sensing System Coordinates</td>
<td>0-8 ft 0-2.4 m</td>
<td>±.0020 in. ±.051 mm</td>
<td>±.0020 in. ±.051 mm (Single point articulation accuracy)</td>
<td>Faro Arm Fusion</td>
<td>UO8-05-08-06636</td>
<td>By: Faro Date: 8/18/09 Due: 8/18/10</td>
</tr>
<tr>
<td>Outriggers</td>
<td>No output. Safety Item.</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>DRI manufactured Aluminum meeting the weight and MOI specifications of Docket 2007-27662-11</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>
Figure 5.1. Front View of Test Vehicle As-Delivered
Figure 5.2. Rear View of Test Vehicle As-Delivered
Figure 5.3. Vehicle Certification Label
Figure 5.4. Vehicle Placard

2010 Honda Accord
FMVSS No. 126
NHTSA NO.: CA5307
March 2010
**5.0 PHOTOGRAPHS (5 of 14)**

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**Figure 5.5. Window Sticker (Monroney Label)**

---

**Environmental Performance**

Protect the environment, choose vehicles with higher scores:

<table>
<thead>
<tr>
<th>Global Warming Score</th>
<th>Smog Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>9</td>
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</tbody>
</table>

---

**2010 Honda Accord**

**FMVSS No. 126**

**NHTSA NO.: CA5307**

**March 2010**
Figure 5.6. Telltale for ESC Malfunction and ESC Off
Figure 5.7. ESC Off Control Switch
Figure 5.8. Front View of Vehicle As-Tested
Figure 5.9. Rear View of Vehicle As-Tested
Figure 5.10. Ultrasonic Height Sensor Mounted on Left side of Vehicle for Determining Body Roll Angle
Figure 5.11. Speed Sensor Mounted on Rear Bumper
Figure 5.12. Steering Controller and Data Acquisition Computer
Figure 5.13. Inertial Measurement Unit Mounted in Vehicle
Figure 5.14. Brake Pedal Load Cell
Figure 6.1. Steering Wheel Angle, Yaw Rate and Lateral Displacement for L-R Series
Figure 6.2. Steering Wheel Angle, Yaw Rate and Lateral Displacement for R-L Series
Figure 6.3. Steering Wheel Angle, Lateral Acceleration and Longitudinal Acceleration for L-R Series
Figure 6.4. Steering Wheel Angle, Lateral Acceleration and Longitudinal Acceleration for R-L Series
7.0 OTHER DOCUMENTATION

7.1 OWNER’S MANUAL PAGES
7.2 VEHICLE ARRIVAL CONDITION REPORT
7.3 VEHICLE COMPLETION CONDITION REPORT
7.4 SINE WITH DWELL TEST RESULTS
7.5 SLOWLY INCREASING STEER TEST RESULTS
7.6 INERTIAL SENSING SYSTEM LOCATION COORDINATES
The U.S. instrument panel is shown. Differences for the Canadian models are noted in the text.
Instrument Panel Indicators

Anti-lock Brake System (ABS) Indicator
This indicator normally comes on for a few seconds when you turn the ignition switch to the ON (II) position. If it comes on at any other time, there is a problem with the ABS. If this happens, have your vehicle checked at a dealer. With this indicator on, your vehicle still has normal braking ability but no anti-lock function. For more information, see page 287.

Vehicle Stability Assist (VSA) System Indicator
This indicator normally comes on for a few seconds when you turn the ignition switch to the ON (II) position.

If it comes on and stays on at any other time, or if it does not come on when you turn the ignition switch to the ON (II) position, there is a problem with the VSA system. Take your vehicle to a dealer to have it checked. Without VSA, your vehicle still has normal driving ability, but will not have VSA traction and stability enhancement. See page 289 for more information on the VSA system.

VSA Activation Indicator
This indicator has three functions:

1. It comes on as a reminder that you have turned off the vehicle stability assist (VSA) system.

2. It flashes when VSA is active (see page 289).

3. It comes on along with the VSA system indicator if there is a problem with the VSA system.

This indicator normally comes on for a few seconds when you turn the ignition switch to the ON (II) position. For more information, see page 289.
Controls Near the Steering Wheel

*1: To use the horn, press the center pad of the steering wheel.
*2: If equipped
*3: Only on vehicles equipped with navigation system. Refer to the navigation system manual.
Vehicle Stability Assist (VSA®), aka Electronic Stability Control (ESC), System

The vehicle stability assist (VSA) system helps to stabilize the vehicle during cornering if the vehicle turns more or less than desired. It also assists you in maintaining traction while accelerating on loose or slippery road surfaces. It does this by regulating the engine’s output and by selectively applying the brakes.

When VSA activates, you may notice that the engine does not respond to the accelerator in the same way it does at other times. There may also be some noise from the VSA hydraulic system. You will also see the VSA activation indicator blink.

The VSA system cannot enhance the vehicle’s driving stability in all situations and does not control your vehicle’s entire braking system. It is still your responsibility to drive and corner at reasonable speeds and to leave a sufficient margin of safety.

**VSA Activation Indicator**

When VSA activates, you will see the VSA activation indicator blink.

**Vehicle Stability Assist (VSA) System Indicator**

If this indicator comes on while driving, pull to the side of the road when it is safe, and turn off the engine. Reset the system by restarting the engine. If the VSA system indicator stays on or comes back on while driving, have the VSA system inspected by your dealer.

**NOTE:** The main function of the VSA system is generally known as Electronic Stability Control (ESC). The system also includes a traction control function.

If the indicator does not come on when the ignition switch is turned to the ON (II) position, there may be a problem with the VSA system. Have your dealer inspect your vehicle as soon as possible.

If the low tire pressure indicator or TPMS indicator comes on, the VSA system automatically turns on even if the VSA system is turned off by pressing the VSA OFF switch (see page 290). If this happens, you cannot turn the VSA system off by pressing the VSA OFF switch again.

Without VSA, your vehicle will have normal braking and cornering ability, but it will not have VSA traction and stability enhancement.
Vehicle Stability Assist (VSA®), aka Electronic Stability Control (ESC), System

VSA OFF Switch

VSA OFF SWITCH

This switch is under the driver's side vent. To turn the VSA system on and off, press and hold it until you hear a beep.

When VSA is off, the VSA activation indicator comes on as a reminder. Press and hold the switch again. It turns the system back on.

VSA is turned on every time you start the engine, even if you turned it off the last time you drove the vehicle.

In certain unusual conditions when your vehicle gets stuck in shallow mud or fresh snow, it may be easier to free it with the VSA temporarily switched off. When the VSA system is off, the traction control system is also off. You should only attempt to free your vehicle with the VSA off if you are not able to free it when the VSA is on.

Immediately after freeing your vehicle, be sure to switch the VSA on again. We do not recommend driving your vehicle with the VSA and traction control systems switched off.

VSA and Tire Sizes

Driving with varying tire or wheel sizes may cause the VSA to malfunction. When replacing tires, make sure they are of the same size and type as your original tires (see page 344).

If you install winter tires, make sure they are the same size as those that were originally supplied with your vehicle. Exercise the same caution during winter driving as you would if your vehicle was not equipped with VSA.
7.2 VEHICLE ARRIVAL CONDITION REPORT

CONTRACT NO.: DTNH22-08-D-00098
DATE:

From: Automotive Allies
Purpose: Initial Receipt
Received via Transfer

To: Dynamic Research, Inc
Present Vehicle Condition

Vehicle VIN: 1HGCP2F80AA083721 NHTSA NO.: CA5307
Model Year: 2010 Odometer Reading: 19 Miles
Make: Honda Body Style: Passenger Car
Model: Accord Body Color: Silver
Manufacture Date: 1/10 Dealer: Automotive Allies
GVWR (kg/lb) 2010/4431 Price: Leased

☒ All options listed on the "Window Sticker" are present on the test vehicle
☒ Tires and wheel rims are new and the same as listed
☒ There are no dents or other interior or exterior flaws
☒ The vehicle has been properly prepared and is in running condition
☒ The glove box contains an owner’s manual, warranty document, consumer information, and extra set of keys

☒ Proper fuel filler cap is supplied on the test vehicle
☒ Place vehicle in storage area
☒ Inspect the vehicle’s interior and exterior, including all windows, seats, doors, etc., to confirm that each system is complete and functional per the manufacturer’s specifications. Any damage, misadjustment, or other unusual condition that could influence the test program or test results shall be recorded. Report any abnormal condition to the NHTSA COTR before beginning any test.

NOTES: No extra key

RECORDED BY: J Lenkeit DATE RECORDED: 2/19/2010
APPROVED BY: B Kebschull DATE APPROVED: 2/22/2010
7.3 VEHICLE COMPLETION CONDITION REPORT

CONTRACT NO.:  DTNH22-08-D-00098
DATE:  __3/23/2010__

Vehicle VIN:  1HGCP2F80AA083721  NHTSA NO.:  CA5307
Model Year:  2010  Odometer Reading:  105  Miles
Make:  Honda  Body Style:  Passenger Car
Model:  Accord  Body Color:  Silver
Manufacture Date:  Dealer:
GVWR (kg/lb)  2010 (4431)  Price:  Leased

LIST OF FMVSS TESTS PERFORMED BY THIS LAB:  126

- ❑ THERE ARE NO DENTS OR OTHER INTERIOR OR EXTERIOR FLAWS
- ❑ THE VEHICLE HAS BEEN PROPERLY MAINTAINED AND IS IN RUNNING CONDITION
- ❑ THE GLOVE BOX CONTAINS AN OWNER’S MANUAL, WARRANTY DOCUMENT, CONSUMER INFORMATION, AND EXTRA SET OF KEYS
- ❑ PROPER FUEL FILLER CAP IS SUPPLIED ON THE TEST VEHICLE

REMARKS:

Equipment that is no longer on the test vehicle as noted on Vehicle Arrival Condition Report:

Explanation for equipment removal:

Test Vehicle Condition:

As delivered, as new

RECORDED BY:  J Lenkeit  DATE RECORDED:  3/23/2010
APPROVED BY:  P Broen  DATE APPROVED:  3/23/2010
### 7.4 SINE WITH DWELL TEST RESULTS

2010 Honda Accord Passenger Car
NHTSA No.: CA5307
Date of Test: 3/3/2010
Date Created: 3/3/2010

Lateral Stability Test Series No. 1 – Counterclockwise Initial Steer Direction

<table>
<thead>
<tr>
<th>File</th>
<th>SWA @ 5deg Ct</th>
<th>MES</th>
<th>Time @ 5deg</th>
<th>COS</th>
<th>MOS</th>
<th>Time @ COS</th>
<th>MO S</th>
<th>Time @ MOS</th>
<th>Time</th>
<th>YRR1</th>
<th>YR1</th>
<th>YRR 1 Ct</th>
<th>YRR 175</th>
<th>YRR17 5 Ct</th>
<th>2nd Yaw Peak</th>
<th>2nd Yaw Peak Ct</th>
<th>Lat Disp</th>
<th>Lat. Acc. 1.07 s</th>
<th>1st SWA Peak</th>
<th>1st SWA Peak Ct</th>
<th>2nd SWA Mean</th>
</tr>
</thead>
<tbody>
<tr>
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<td>(deg)</td>
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<td>(s)</td>
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<td>0.57</td>
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### 7.4 SINE WITH DWELL TEST RESULTS

**NHTSA No.: CA5307**  
**Date of Test:** 3/3/2010  
**Date Created:** 3/3/2010

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### 7.5 SLOWLY INCREASING STEER TEST RESULTS

2010 Honda Accord Passenger Car

**NHTSA No.: CA5307**

**Date of Test:** 3/3/2010  
**Date Created:** 3/3/2010

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<td>700</td>
</tr>
<tr>
<td>14</td>
<td>722</td>
<td>0</td>
<td>49.979</td>
<td>49.94619</td>
<td>1120</td>
<td>28.12899</td>
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<td>0.997894</td>
<td>522</td>
<td>722</td>
</tr>
<tr>
<td>15</td>
<td>696</td>
<td>0</td>
<td>49.787</td>
<td>49.8006</td>
<td>1132</td>
<td>28.68067</td>
<td>0.30388</td>
<td>0.995064</td>
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<td>696</td>
</tr>
<tr>
<td>16</td>
<td>700</td>
<td>0</td>
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<td>49.92895</td>
<td>1120</td>
<td>28.15335</td>
<td>0.299434</td>
<td>0.998452</td>
<td>500</td>
<td>700</td>
</tr>
</tbody>
</table>

**Averages**

28.6  0.300388

### Scalars vs. Steering Angles

<table>
<thead>
<tr>
<th>Scalars</th>
<th>Steering Angles (deg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>43</td>
</tr>
<tr>
<td>2.0</td>
<td>57</td>
</tr>
<tr>
<td>2.5</td>
<td>72</td>
</tr>
<tr>
<td>3.0</td>
<td>86</td>
</tr>
<tr>
<td>3.5</td>
<td>100</td>
</tr>
<tr>
<td>4.0</td>
<td>114</td>
</tr>
<tr>
<td>4.5</td>
<td>129</td>
</tr>
<tr>
<td>5.0</td>
<td>143</td>
</tr>
<tr>
<td>5.5</td>
<td>157</td>
</tr>
</tbody>
</table>

### Scalars vs. Steering Angles

<table>
<thead>
<tr>
<th>Scalars</th>
<th>Steering Angles (deg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0</td>
<td>172</td>
</tr>
<tr>
<td>6.5</td>
<td>186</td>
</tr>
<tr>
<td>7.0</td>
<td>200</td>
</tr>
<tr>
<td>7.5</td>
<td>214</td>
</tr>
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<td>8.0</td>
<td>229</td>
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<tr>
<td>8.5</td>
<td>243</td>
</tr>
<tr>
<td>9.0</td>
<td>257</td>
</tr>
<tr>
<td>9.4</td>
<td>270</td>
</tr>
</tbody>
</table>
7.6 INERTIAL SENSING SYSTEM LOCATION COORDINATES

Vehicle: 2010 Honda Accord Passenger Car
Wheelbase: 110.2 Inches
Measurement date: 2/26/2010

NHTSA No.: CA5307
Faro Arm S/N: U08-05-08-06636
Certification date: 8/18/2009

CMM Measurements

Coordinate system: SAE (X,Y,Z positive forward, to the right, and downward, respectively)
Origin defined at 48" point on lateral arm of measurement fixture, projected onto the ground plane

<table>
<thead>
<tr>
<th>Ref</th>
<th>X</th>
<th>Y</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>M_PLANE001_Ground_Plane</td>
<td>-</td>
<td>-</td>
<td>0.000</td>
</tr>
<tr>
<td>M_Line_Y_Axis</td>
<td>-1.538</td>
<td>-3.469</td>
<td>0.000</td>
</tr>
<tr>
<td>M_Point_48_Ref</td>
<td>0.000</td>
<td>0.000</td>
<td>-</td>
</tr>
<tr>
<td>M_CIRCLE001_L_Left_Rear_Wheel_Axle</td>
<td>-41.989</td>
<td>12.576</td>
<td>-12.618</td>
</tr>
<tr>
<td>M_Point_IMU_side</td>
<td>-1.455</td>
<td>46.305</td>
<td>-18.048</td>
</tr>
<tr>
<td>M_Point_ROOF</td>
<td>-</td>
<td>-</td>
<td>-58.452</td>
</tr>
</tbody>
</table>

Motion Pak reference point taken from mid height of unit left side
Motion Pak Width = 3.05"  \[\Rightarrow\]  1/2 W = 1.525
Motion_PAK_Location

<table>
<thead>
<tr>
<th>Ref X</th>
<th>Ref Y</th>
<th>Ref Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1.455</td>
<td>47.830</td>
<td>-18.048</td>
</tr>
</tbody>
</table>

Measurement Notes
1. The Faro arm is positioned just to the left of the vehicle, near the rear door.
2. A "centerline jig" is used in the Faro arm measurement. The jig consists of a long beam with a 4 ft lateral arm that is perpendicular to the beam. The jig is placed on the ground underneath the vehicle with the long beam positioned along the centerline of the vehicle, such that the lateral arm extends to the left, slightly forward of the left rear tire. The lateral arm has a marked indentation point which is located 48.00" from the edge of the centerline beam.
3. The Faro arm is used to make the following measurements:
   - Three points on the ground, which establishes the ground plane.
   - Two points along the lateral arm, and projected onto the ground plane. This establishes the y axis.
   - One point at the 48 inch reference point on the lateral arm. This establishes the origin.
   - Three points on the left rear wheel or wheel cover. The Faro arm then computes the center point of the wheel.
   - One point to establish the height of the highest point on the roof of the vehicle.

Coordinate Measurements Calculated for S7D (Matlab Program)

Coordinate system: X,Y,Z positive rearward, to the right, and upward, respectively
Origin defined as follows: X axis: front axle, Y axis: vehicle centerline, Z axis: ground plane

<table>
<thead>
<tr>
<th>Ref</th>
<th>X</th>
<th>Y</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motion_PAK_Location in S7D (Matlab program) coordinate system</td>
<td>69.666</td>
<td>-0.170</td>
<td>18.048</td>
</tr>
</tbody>
</table>

Calculation Notes:
1. X axis value is the difference between the wheelbase and the calculated distance from the rear axle centerline to the IMU (the value must be positive and less than the wheelbase).
2. Y axis value is -48.00 (the Y axis offset of the measurement origin in the S7D coordinate system) plus the measured Y axis value (a negative value indicates the IMU is to the left of the vehicle centerline, and a positive value indicates it is to the right)
3. Z axis value is from the ground plane up to the center of the IMU (value must be positive).