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Prepared By:  __________________________

Approved By:  _________________________

Approval Date: 11 November 2011

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By:  _________________________

Acceptance Date: 11/16/11

A test was conducted on a 2011 Honda CR-Z, NHTSA No. CB5305, 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

### Sponsoring Agency Name and Address
U.S. Department of Transportation
National Highway Traffic Safety Administration Enforcement
Office of Vehicle Safety Compliance
1200 New Jersey Avenue, SE,
West Building, 4th Floor (NVS-221)
Washington, D.C. 20590

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22 August 2011 to 11 November 2011

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1.0 PURPOSE OF COMPLIANCE TEST

The purpose of this test is to determine if the test vehicle, a 2011 Honda CR-Z, 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 2011 Honda CR-Z 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).

- For steering inputs of scalar 5 and greater, 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 3,500 kg (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 (CONTD)

Data Summary Sheet (Page 1 of 2)

Vehicle: 2011 Honda CR-Z
NHTSA No. CB5305 VIN: JHMZF1D48BS016218
Vehicle Type: Passenger Car Manufacture Date: 6/11
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:  

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 3,500 kg (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: 2011 Honda CR-Z
NHTSA No. CB5305 Data Sheet Completion Date: 8/23/2011
VIN JHMZF1D48BS016218 Manufacture Date: 6/11
GVWR (kg): 1435 Front GAWR (kg): 815 Rear GAWR (kg): 625
Seating Positions Front: 2 Mid: 0 Rear: 0
Odometer reading at time of inspection: 42 miles (67.2 km)

DESIGNATED TIRE SIZE(S) FROM VEHICLE LABELING:
Front axle: P195/55R16 Rear axle: P195/55R16

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>Bridgestone</td>
<td>Bridgestone</td>
</tr>
<tr>
<td>Tire Model</td>
<td>EL470 Turanza</td>
<td>EL470 Turanza</td>
</tr>
<tr>
<td>Tire Size</td>
<td>P195/55R16</td>
<td>P195/55R16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TIN</th>
<th>Left Front: ELL3 CKM 1211</th>
<th>Right Front: ELL3 CKM 1211</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Rear: ELL3 CKM 1211</td>
<td>Right Rear: ELL3 CKM 1211</td>
<td></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)

<table>
<thead>
<tr>
<th>Drive Configuration:</th>
<th>FWD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode:</td>
<td>Default- ESC on</td>
</tr>
<tr>
<td>Drive Configuration:</td>
<td>FWD</td>
</tr>
<tr>
<td>Mode:</td>
<td>ESC off</td>
</tr>
<tr>
<td>Drive Configuration:</td>
<td></td>
</tr>
<tr>
<td>Mode:</td>
<td></td>
</tr>
</tbody>
</table>

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: 8/23/2011
APPROVED BY: B Kebschull   DATE APPROVED: 9/16/2011
3.0 TEST DATA (CONTD)

Data Sheet 2 (Page 1 of 3)

ESC SYSTEM HARDWARE AND OPERATIONAL CHARACTERISTICS

Vehicle: 2011 Honda CR-Z

NHTSA No CB5305  Data Sheet Completion Date: 9/7/2011

ESC SYSTEM IDENTIFICATION
Manufacturer/Model  Continental Automotive Corporation / MK60E1

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  
Brief explanation: VSA Modulator (ESC Computer) estimates understeer and oversteer based on various sensor signals and brake fluid pressure is adjusted at each of the four individual wheels. For example, when understeer occurs the necessary braking control pressure is calculated and applied to the rear wheel inside the turn to bring the lateral acceleration from the traveling direction close to the target traveling direction.

[X] Yes (Pass)  
___ No (Fail)

System is capable of determining yaw rate  
Brief explanation: Yaw rate is measured by a yaw rate sensor

[X] Yes (Pass)  
___ No (Fail)

System is capable of monitoring driver steering input  
Brief explanation: Steering angle is measured by a steering angle sensor

[X] Yes (Pass)  
___ No (Fail)
ESC OPERATIONAL CHARACTERISTICS (continued)

System is capable of estimating side slip or side slip derivative
Brief explanation: 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

A proprietary algorithm is used to calculate vehicle side slip
derivative (with respect to time) from the signals listed above.

System is capable of modifying engine torque during ESC activation.
Method used to modify torque: VSA Modulator (ESC Computer) calculates vehicle speed and wheel slip based on various sensor
signals and requires Fuel Injection Electronic Control Unit (FI-ECU) to
adjust engine torque (TCS function). For example, if understeer
occurs by the wheel acceleration slippage, TCS reduces the engine
torque to decrease the difference between the traveling direction
and the target traveling direction. FI-ECU estimates to change
ignition timing and/or cut fuel delivery after the request of VSA
Modulator.

System is capable of activation at speeds of 20 km/h (12.4 mph)
and higher
Speed system becomes active: 15 km/h

System is capable of activation during the following driving phases:
- acceleration
- braking
- coasting
- during activation of ABS or traction control
ESC OPERATIONAL CHARACTERISTICS (continued)

Driving phases during which ESC is capable of activation:
*Acceleration, deceleration, coasting, during activation of ABS, during activation of traction control.* ESC cannot operate during 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: *ESC is called "Vehicle Stability Assist (VSA)" in owner’s manual*
3.0 TEST DATA (CONTD)

Data Sheet 3 (Page 1 of 2)

ESC MALFUNCTION AND OFF TELLTALES

Vehicle: **2011 Honda CR-Z**

NHTSA No. **CB5305** Data Sheet completion date: **9/7/2011**

---

**ESC Malfunction Telltale**

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

Telltale Location: **Top left portion of instrument panel**

Telltale Color: **Yellow**

Telltale symbol or abbreviation used

![Car and ESC symbol]  

Vehicle uses this symbol: **X**

Vehicle uses this abbreviation: **☐**

Neither symbol or abbreviation is used: **☐**

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

---

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:

**Telltale blinks when VSA (ESC) is active**
3.0 TEST DATA (CONTD)

Data Sheet 3 (Page 2 of 2)
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 Malfuction" telltale utilizing a two part telltale? No

Telltale Location: Top left portion of instrument panel (directly beneath ESC telltale)

Telltale Color: Yellow

Telltale symbol or abbreviation used

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>✔</td>
<td>Vehicle uses this symbol</td>
</tr>
<tr>
<td></td>
<td>Vehicle uses this abbreviation</td>
</tr>
<tr>
<td></td>
<td>Neither symbol or abbreviation is used</td>
</tr>
</tbody>
</table>

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

Is telltale part of a common space? No

DATA INDICATES COMPLIANCE Yes
(Vehicle is compliant if equipped with a malfunction telltale)

Remarks:

RECORDED BY: B Kebschull DATE RECORDED: 9/7/2011
APPROVED BY: J Lenkeit DATE APPROVED: 9/16/2011
3.0 TEST DATA (CONT'D)

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

Vehicle: 2011 Honda CR-Z
NHTSA No. CB5305 Data Sheet completion date: 9/7/2011

“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? (mark all that apply)

- [X] 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 Left side of instrument panel
Labeling ESC symbol with "OFF" beneath it
Modes On/off (Press and hold until beep is heard)

Second Control: Location NA
Labeling 
Modes 

Identify standard or default drive configuration

Front wheel drive

Verify standard or default drive configuration

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?

_____ NA  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?

_____ NA  X Yes ___ No (Fail)

If no, describe how the “Off” control functions
3.0 TEST DATA (CONTD)

Data Sheet 4 (Page 2 of 3)
ESC AND ANCILLARY SYSTEM CONTROLS

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?

_X_ 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 ancillary 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 ancillary 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.

___ Yes ___ No (Fail) X NA

DATA INDICATES COMPLIANCE: PASS

Remarks:

______________________________________________________________________________

RECORDED BY: B Kebschull DATE RECRODED: 9/7/2011
APPROVED BY: J Lenkeit DATE APPROVED: 9/16/2011
3.0 TEST DATA (CONTD)

Data Sheet 5 (Page 1 of 3)
TEST TRACK AND VEHICLE DATA

Vehicle: 2011 Honda CR-Z
NHTSA No. CB5305 Data Sheet completion date: 9/8/2011

Test Track Requirements:
Test surface slope (0-1%): 0.5%
Peak Friction Coefficient (at least 0.9) 0.926
Test track data meets requirements: Yes If no, explain:

Full Fluid Levels:
Fuel Yes Other Fluids Yes (specify)
Coolant Yes Oil, Washer Fluid, Brake Fluid

Tire Pressures:
Required; Front Axle 210 kPa Rear Axle 210 kPa
Actual; LF 210 kPa RF 210 kPa
LR 210 kPa RR 210 kPa

Vehicle Dimensions:
Front Track Width 150.8 cm Wheelbase 242.8 cm
Rear Track Width 149.6 cm

Vehicle Weight Ratings:
GAWR Front 815 kg GAWR Rear 625 kg

Unloaded Vehicle Weight (UVW):
Front Axle 728.9 kg Left Front 364.2 kg Right Front 364.7 kg
Rear Axle 490.4 kg Left Rear 256.3 kg Right Rear 234.1 kg
Total UVW 1219.3 kg

Baseline Weight and Outrigger Selection (only for MPVs, Trucks, Buses)
Calculated baseline weight (UVW + 73kg) 1292.3 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)

<table>
<thead>
<tr>
<th></th>
<th>Front axle</th>
<th>Left front</th>
<th>Right front</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Rear axle</th>
<th>Left rear</th>
<th>Right rear</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Total UVW with outriggers NA kg

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

<table>
<thead>
<tr>
<th></th>
<th>Front axle</th>
<th>Left front</th>
<th>Right front</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>803.8 kg</td>
<td>427.3 kg</td>
<td>376.5 kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Rear axle</th>
<th>Left rear</th>
<th>Right rear</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>560.2 kg</td>
<td>285.3 kg</td>
<td>274.9 kg</td>
</tr>
</tbody>
</table>

Vehicle Weight 1364.0 kg

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

\[
= \frac{1219.3 \text{ kg} + 168 \text{ kg}}{- 1364.0 \text{ kg}}
\]

\[
= 23.3 \text{ kg}
\]

Total Loaded Vehicle Weight w/Driver and Instrumentation and Ballast

<table>
<thead>
<tr>
<th></th>
<th>Front axle</th>
<th>Left front</th>
<th>Right front</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>808.3 kg</td>
<td>427.7 kg</td>
<td>380.6 kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Rear axle</th>
<th>Left rear</th>
<th>Right rear</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>578.8 kg</td>
<td>292.1 kg</td>
<td>286.7 kg</td>
</tr>
</tbody>
</table>

Total LVW 1387.1 kg
3.0 TEST DATA (CONTD)

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.)

y-distance (lateral)  Point of reference is the vehicle centerline.  
(Positive from the center toward the right.)

z-distance (vertical)  Point of reference is the ground plane.  
(Positive from the ground up.)

Locations:

<table>
<thead>
<tr>
<th>Center of Gravity</th>
<th>Inertial Sensing System</th>
</tr>
</thead>
<tbody>
<tr>
<td>x-distance</td>
<td>39.9 in 101.3 cm</td>
</tr>
<tr>
<td>y-distance</td>
<td>-1.1 in -2.9 cm</td>
</tr>
<tr>
<td>z-distance</td>
<td>20.1 in 50.9 cm</td>
</tr>
<tr>
<td>Roof Height</td>
<td>52.783 in 134.1 cm</td>
</tr>
<tr>
<td>Distance</td>
<td>82.0 in 208.3 cm</td>
</tr>
</tbody>
</table>

Remarks:

RECORDED BY:  P Broen  DATE RECORDED:  9/8/2011
APPROVED BY:  B Kebschull  DATE APPROVED:  9/12/2011
Vehicle: 2011 Honda CR-Z
NHTSA No. CB5305

Measured tire pressure:

- LF 217 kPa
- RF 221 kPa
- LR 213 kPa
- RR 212 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)) 24.7 °C

Brake Conditioning Time: 8:20:00 AM Date: 9/8/2011

56 km/h (35 mph) Brake Stops

- Number of stops executed (10 required) 10 Stops
- Observed deceleration range (0.5g target) 0.5 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 range 0.9-1.0 g

72 km/h (45 mph) Brake Cool Down Period

- Duration of cool down period (5 minutes min.) 5 Minutes
3.0 TEST DATA (CONT'D)

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

Tire Conditioning series No. 1

Time: 8:27:00 AM  Date: 9/8/2011

Measured cold tire pressure

<table>
<thead>
<tr>
<th></th>
<th>LF 227 kPa</th>
<th>RF 236 kPa</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LR 220 kPa</td>
<td>RR 221 kPa</td>
</tr>
</tbody>
</table>

Wind Speed 1.2 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)) 25.9°C

<table>
<thead>
<tr>
<th>30 meter (100 ft) Diameter Circle Maneuver 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>30.4 - 32</td>
</tr>
<tr>
<td>4-6</td>
<td>Counterclockwise</td>
<td>0.5 – 0.6</td>
<td>0.5-0.6</td>
<td>30.4 - 32</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>2</td>
<td>56 ± 2 (35 ± 1)</td>
<td>60</td>
<td>0.5 - 0.6</td>
<td>0.5</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>56 ± 2 (35 ± 1)</td>
<td>70</td>
<td>0.5 - 0.6</td>
<td>0.55</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: 70 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>4-6</td>
<td>56 ± 2 (35 ± 1)</td>
<td>70 (cycles 1-10)</td>
<td>0.5 - 0.6</td>
<td>0.55</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>56 ± 2 (35 ± 1)</td>
<td>70 (cycles 1-9)</td>
<td>0.5 - 0.6</td>
<td>0.55</td>
</tr>
</tbody>
</table>

|   |   | 140 (cycle10)* | NA | 0.85 |

* 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:  9:45:00 AM  Date:  9/8/2011
Measured cold tire pressure  LF  236 kPa  RF  246 kPa
                    LR  223 kPa  RR  224 kPa
Wind Speed  1.1 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))  29.4 °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>30.4 - 32</td>
</tr>
<tr>
<td>4-6</td>
<td>Counterclockwise</td>
<td>0.5 - 0.6</td>
<td>0.5-0.6</td>
<td>30.4 - 32</td>
</tr>
</tbody>
</table>

Steering wheel angle that corresponds to a peak 0.5-0.6 g lateral acceleration: 70 degrees

<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>70 (cycles 1-10)</td>
<td>0.5 - 0.6</td>
<td>0.55</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td>56 ± 2 (35 ± 1)</td>
<td>70 (cycles 1-9)</td>
<td>0.5 - 0.6</td>
<td>0.55</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>140 (cycle 10)*</td>
<td>NA</td>
<td>0.85</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:  P Broen  DATE RECORDED:  9/8/2011
APPROVED BY:  J Lenkeit  DATE APPROVED:  9/16/2011
3.0 TEST DATA (CONTD)

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

Vehicle: 2011 Honda CR-Z
NHTSA No. CB5305

Measured tire pressure:

<table>
<thead>
<tr>
<th></th>
<th>LF</th>
<th>RF</th>
<th>LR</th>
<th>RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>kPa</td>
<td>228</td>
<td>235</td>
<td>219</td>
<td>221</td>
</tr>
</tbody>
</table>

Wind Speed 0.6 m/s
(10 m/sec (22 mph) max for passenger cars; 5 m/sec (11 mph) max for MPVs and trucks)

Ambient Temperature (7°C (45°F) - 40°C (104°F)) 28.4 °C

Selected drive configuration FWD
Selected Mode: Default - ESC on

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

\[ a_{y,30\text{degrees}} = 0.4 \text{ g} \]

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

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

\[ \delta_{\text{SIS}} = 41.2 \text{ degrees (at .55g)} \]

\[ \delta_{\text{SIS}} = 40 \text{ degrees (rounded)} \]

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>9:08</td>
<td>-25.4</td>
<td>10</td>
<td>NG</td>
</tr>
<tr>
<td>2</td>
<td>Left</td>
<td>9:18</td>
<td>-25.4</td>
<td>11</td>
<td>Good</td>
</tr>
<tr>
<td>3</td>
<td>Left</td>
<td>9:19</td>
<td>-25.4</td>
<td>12</td>
<td>Good</td>
</tr>
<tr>
<td>4</td>
<td>Left</td>
<td>9:23</td>
<td>-25.4</td>
<td>13</td>
<td>Good</td>
</tr>
<tr>
<td>5</td>
<td>Left</td>
<td>9:26</td>
<td>24.0</td>
<td>14</td>
<td>Good</td>
</tr>
<tr>
<td>1</td>
<td>Right</td>
<td>9:26</td>
<td>24.0</td>
<td>14</td>
<td>Good</td>
</tr>
<tr>
<td>2</td>
<td>Right</td>
<td>9:29</td>
<td>23.8</td>
<td>15</td>
<td>Good</td>
</tr>
<tr>
<td>3</td>
<td>Right</td>
<td>9:32</td>
<td>24.1</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 (CONT'D)

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

Average Overall Steering Wheel Angle:

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

\[ \delta_{0.3 \text{ g, overall}} = \frac{24.7}{ \text{degrees} } \]

[to nearest 0.1 degree]

Remarks:

______________________________________________________________________________

RECORDED BY: P Broen DATE RECORDED: 9/8/2011
APPROVED BY: J Lenkeit DATE APPROVED: 9/16/2011
3.0 TEST DATA (CONTD)

Data Sheet 8 (Page 1 of 3)

VEHICLE LATERAL STABILITY AND RESPONSIVENESS

Vehicle: 2011 Honda CR-Z
NHTSA No. CB5305
Data sheet completion date: 9/8/2011

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:  FWD
Selected Mode:  Default - ESC on
Overall steering wheel angle (δ₀.₃ g, overall)  24.7  degrees

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

<table>
<thead>
<tr>
<th>Maneuver #</th>
<th>Clock Time (1.5 – 5.0 min max between runs)</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>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Scalar (δ₀.₃ g)</td>
<td>Angle (degrees)</td>
<td>ψPeak</td>
<td>ψ₁.₀sec</td>
</tr>
<tr>
<td>26</td>
<td>10:36</td>
<td>1.5</td>
<td>37</td>
<td>13.03</td>
<td>-0.23</td>
</tr>
<tr>
<td>27</td>
<td>10:41</td>
<td>2.0</td>
<td>49</td>
<td>16.90</td>
<td>-0.28</td>
</tr>
<tr>
<td>28</td>
<td>10:46</td>
<td>2.5</td>
<td>62</td>
<td>21.19</td>
<td>-0.34</td>
</tr>
<tr>
<td>29</td>
<td>10:49</td>
<td>3.0</td>
<td>74</td>
<td>25.92</td>
<td>-0.21</td>
</tr>
<tr>
<td>36</td>
<td>11:07</td>
<td>3.5</td>
<td>86</td>
<td>32.19</td>
<td>-0.18</td>
</tr>
<tr>
<td>37</td>
<td>11:10</td>
<td>4.0</td>
<td>99</td>
<td>38.33</td>
<td>-0.57</td>
</tr>
<tr>
<td>38</td>
<td>11:12</td>
<td>4.5</td>
<td>111</td>
<td>41.36</td>
<td>-0.33</td>
</tr>
<tr>
<td>39</td>
<td>11:15</td>
<td>5.0</td>
<td>124</td>
<td>47.28</td>
<td>-0.44</td>
</tr>
<tr>
<td>40</td>
<td>11:20</td>
<td>5.5</td>
<td>136</td>
<td>52.41</td>
<td>-0.10</td>
</tr>
<tr>
<td>41</td>
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<td>6.0</td>
<td>148</td>
<td>54.69</td>
<td>-0.23</td>
</tr>
<tr>
<td>42</td>
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<td>60.99</td>
<td>-0.21</td>
</tr>
<tr>
<td>43</td>
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<td>7.0</td>
<td>173</td>
<td>61.93</td>
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</tr>
<tr>
<td>44</td>
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<td>185</td>
<td>62.30</td>
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</tr>
<tr>
<td>47</td>
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<td>8.0</td>
<td>198</td>
<td>66.58</td>
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</tr>
<tr>
<td>48</td>
<td>11:44</td>
<td>8.5</td>
<td>210</td>
<td>65.38</td>
<td>-0.26</td>
</tr>
<tr>
<td>49</td>
<td>11:47</td>
<td>9.0</td>
<td>222</td>
<td>64.35</td>
<td>-0.82</td>
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<tr>
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<td>62.73</td>
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<td>54</td>
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<td>14.0</td>
<td>270</td>
<td>63.10</td>
<td>-0.23</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.
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>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>12:06</td>
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<td>37</td>
<td>-13.46</td>
<td>-0.10</td>
</tr>
<tr>
<td>56</td>
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<td>49</td>
<td>-17.85</td>
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<td>57</td>
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<td>2.5</td>
<td>62</td>
<td>-22.49</td>
<td>0.18</td>
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<td>58</td>
<td>12:16</td>
<td>3.0</td>
<td>74</td>
<td>-28.09</td>
<td>0.21</td>
</tr>
<tr>
<td>59</td>
<td>12:19</td>
<td>3.5</td>
<td>86</td>
<td>-33.09</td>
<td>0.22</td>
</tr>
<tr>
<td>60</td>
<td>12:22</td>
<td>4.0</td>
<td>99</td>
<td>-40.49</td>
<td>0.16</td>
</tr>
<tr>
<td>61</td>
<td>12:26</td>
<td>4.5</td>
<td>111</td>
<td>-41.86</td>
<td>0.15</td>
</tr>
<tr>
<td>62</td>
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<td>5.0</td>
<td>124</td>
<td>-49.17</td>
<td>0.17</td>
</tr>
<tr>
<td>63</td>
<td>12:31</td>
<td>5.5</td>
<td>136</td>
<td>-53.30</td>
<td>0.60</td>
</tr>
<tr>
<td>64</td>
<td>12:35</td>
<td>6.0</td>
<td>148</td>
<td>-60.76</td>
<td>0.24</td>
</tr>
<tr>
<td>65</td>
<td>12:38</td>
<td>6.5</td>
<td>161</td>
<td>-61.54</td>
<td>0.99</td>
</tr>
<tr>
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<td>7.0</td>
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<td>-66.58</td>
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<tr>
<td>67</td>
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<td>7.5</td>
<td>185</td>
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<td>-1.38</td>
</tr>
<tr>
<td>68</td>
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<td>8.0</td>
<td>198</td>
<td>-73.29</td>
<td>4.12</td>
</tr>
<tr>
<td>69</td>
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<td>4.66</td>
</tr>
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<td>222</td>
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<td>-0.01</td>
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<td>235</td>
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<td>0.38</td>
</tr>
<tr>
<td>72</td>
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<td>-1.34</td>
</tr>
<tr>
<td>73</td>
<td>13:10</td>
<td>10.5</td>
<td>259</td>
<td>-68.56</td>
<td>-0.13</td>
</tr>
<tr>
<td>74</td>
<td>13:13</td>
<td>11</td>
<td>270</td>
<td>-68.08</td>
<td>-0.01</td>
</tr>
</tbody>
</table>

1. Maneuver execution should continue until a steering wheel angle magnitude factor of 6.5° d0.3 g, overall or 270 degrees is utilized, whichever is greater provided the calculated 6.5° d0.3 g, overall is less than or equal to 300 degrees. If 6.5° d0.3 g, overall is less than 270 degrees maneuver execution should continue by increasing the steering wheel angle magnitude by multiples of 0.5° d0.3 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?

- Rim-to-pavement contact [ ] Yes [x] No
- Tire debeading [ ] Yes [x] No
- Loss of pavement contact of vehicle tires [ ] Yes [x] No
- Did the test driver experience any vehicle loss of control or spinout? [ ] Yes [x] No

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°Δ0.3 g, overall or greater)</th>
<th>Calculated Lateral Displacement¹</th>
<th>Pass/Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>Counter Clockwise</td>
<td>5.0° 124</td>
<td>-3.27</td>
<td>PASS</td>
</tr>
<tr>
<td>40</td>
<td>Counter Clockwise</td>
<td>5.5° 136</td>
<td>-3.37</td>
<td>PASS</td>
</tr>
<tr>
<td>41</td>
<td>Counter Clockwise</td>
<td>6.0° 148</td>
<td>-3.40</td>
<td>PASS</td>
</tr>
<tr>
<td>42</td>
<td>Counter Clockwise</td>
<td>6.5° 161</td>
<td>-3.51</td>
<td>PASS</td>
</tr>
<tr>
<td>43</td>
<td>Counter Clockwise</td>
<td>7.0° 173</td>
<td>-3.49</td>
<td>PASS</td>
</tr>
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<td>44</td>
<td>Counter Clockwise</td>
<td>7.5° 185</td>
<td>-3.47</td>
<td>PASS</td>
</tr>
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<td>47</td>
<td>Counter Clockwise</td>
<td>8.0° 198</td>
<td>-3.53</td>
<td>PASS</td>
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<td>48</td>
<td>Counter Clockwise</td>
<td>8.5° 210</td>
<td>-3.57</td>
<td>PASS</td>
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<td>49</td>
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<td>50</td>
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<td>9.5° 235</td>
<td>-3.47</td>
<td>PASS</td>
</tr>
<tr>
<td>51</td>
<td>Counter Clockwise</td>
<td>10.0° 247</td>
<td>-3.47</td>
<td>PASS</td>
</tr>
<tr>
<td>52</td>
<td>Counter Clockwise</td>
<td>10.5° 259</td>
<td>-3.49</td>
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<tr>
<td>54</td>
<td>Counter Clockwise</td>
<td>- 270</td>
<td>-3.45</td>
<td>PASS</td>
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<tr>
<td>62</td>
<td>Clockwise</td>
<td>5.0° 124</td>
<td>3.16</td>
<td>PASS</td>
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<tr>
<td>63</td>
<td>Clockwise</td>
<td>5.5° 136</td>
<td>3.25</td>
<td>PASS</td>
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<tr>
<td>64</td>
<td>Clockwise</td>
<td>6.0° 148</td>
<td>3.26</td>
<td>PASS</td>
</tr>
<tr>
<td>65</td>
<td>Clockwise</td>
<td>6.5° 161</td>
<td>3.36</td>
<td>PASS</td>
</tr>
<tr>
<td>68</td>
<td>Clockwise</td>
<td>7.0° 173</td>
<td>3.24</td>
<td>PASS</td>
</tr>
<tr>
<td>69</td>
<td>Clockwise</td>
<td>7.5° 185</td>
<td>3.38</td>
<td>PASS</td>
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<tr>
<td>70</td>
<td>Clockwise</td>
<td>8.0° 198</td>
<td>3.44</td>
<td>PASS</td>
</tr>
<tr>
<td>71</td>
<td>Clockwise</td>
<td>8.5° 210</td>
<td>3.39</td>
<td>PASS</td>
</tr>
<tr>
<td>73</td>
<td>Clockwise</td>
<td>9.0° 222</td>
<td>3.47</td>
<td>PASS</td>
</tr>
<tr>
<td>74</td>
<td>Clockwise</td>
<td>9.5° 235</td>
<td>3.36</td>
<td>PASS</td>
</tr>
<tr>
<td>75</td>
<td>Clockwise</td>
<td>10.0° 247</td>
<td>3.35</td>
<td>PASS</td>
</tr>
<tr>
<td>76</td>
<td>Clockwise</td>
<td>10.5° 259</td>
<td>3.36</td>
<td>PASS</td>
</tr>
<tr>
<td>77</td>
<td>Clockwise</td>
<td>- 270</td>
<td>3.34</td>
<td>PASS</td>
</tr>
</tbody>
</table>

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

**DATA INDICATES COMPLIANCE:**

- [X] PASS
- [ ] FAIL

**Remarks:** Runs 30-35 were no good, incorrect steering angles were used. Runs 45, 46, 53, 66, 67 and 72 were no good due to equipment issues and difficulty with speed regulation. In all cases a 5 minute interval between runs was maintained.

**RECORDED BY:** P Broen  
**DATE RECORDED:** 9/8/2011

**APPROVED BY:** J Lenkeit  
**DATE APPROVED:** 9/16/2011
3.0 TEST DATA (CONT'D)

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

Vehicle: 2011 Honda CR-Z
NHTSA No. CB5305________ Data Sheet Completion Date: 9/8/2011

TEST 1

MALFUNCTION SIMULATION: Describe method of malfunction simulation

Disconnected left front wheel speed sensor.

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

\[
\begin{array}{ll}
\text{X Yes} & \text{No}
\end{array}
\]

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

\[
\begin{array}{l}
0 \text{ Seconds (must be within 2 minutes)}
\end{array}
\]

\[
\begin{array}{ll}
\text{X Pass} & \text{Fail}
\end{array}
\]

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

\[
\begin{array}{ll}
\text{X Yes} & \text{No}
\end{array}
\]

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

\[
\begin{array}{l}
0 \text{ Seconds (must be within 2 minutes)}
\end{array}
\]

\[
\begin{array}{ll}
\text{X Pass} & \text{Fail}
\end{array}
\]

TEST 1 DATA INDICATES COMPLIANCE: PASS

Remarks: ESC icon illuminated when ignition was switched on, no driving was
required. In common display area, "check ABS system" and "check VSA
system" were displayed. When sensor was reconnected the icon extinguished
at the conclusion of the normal bulb check. No information in common area.

RECORDED BY: P Broen DATE RECORDED: 9/8/2011
APPROVED BY: J Lenkeit DATE APPROVED: 9/16/11
3.0 TEST DATA (CONTD)

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

Vehicle: 2011 Honda CR-Z
NHTSA No. CB5305 Data Sheet Completion Date:

TEST 2

MALFUNCTION SIMULATION: Describe method of malfunction simulation

Disconnect steering wheel angle sensor

MALFUNCTION TELTALTE ILLUMINATION:
Telltales illuminate and remains illuminated after ignition locking system is activated and if necessary the vehicle is driven at least 2 minutes.

_ X_ Yes  _ No

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

___0___ Seconds (must be within 2 minutes)  _ X_ Pass  _ No

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

_ X_ Yes  _ No

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

___0___ Seconds (must be within 2 minutes)  _ X_ Pass  _ No

TEST 2 DATA INDICATES COMPLIANCE: PASS

Remarks: _ESC telltale illuminated when ignition was switched on, no driving was required. In common display area, “check VSA system” with skidding car was displayed. When sensor was reconnected the telltale extinguished at the conclusion of the normal bulb check. No information in common area._

RECORDED BY: P Broen DATE RECORDED: 9/8/11
APPROVED BY: J Lenkeit DATE APPROVED 9/16/11
# 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</td>
<td>1 psi</td>
<td>0.5 psi</td>
<td>Ashcroft D1005PS</td>
<td>1039350</td>
<td>By: DRI Date: 2/22/11 Due: 2/22/12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0-690 kPa</td>
<td>6.89 kPa</td>
<td>3.45 kPa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platform Scales</td>
<td>Vehicle Total, Wheel, and Axle Load</td>
<td>8000 lb</td>
<td>0.5 lb</td>
<td>± 1.0% of applied load</td>
<td>Intercomp Model SWII</td>
<td>24032361</td>
<td>By: DRI Date: 2/23/11 Due: 2/23/12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35.6 kN</td>
<td>2.2 N</td>
<td></td>
<td></td>
<td></td>
<td></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: 3/30/11 Due: 3/30/12</td>
</tr>
<tr>
<td>Multi-Axis Inertial Sensing System</td>
<td>Longitudinal, Lateral, and Vertical Acceleration Roll, Yaw, and Pitch Rate</td>
<td>Accelerometer: ±2 g</td>
<td>Accelerometers: ≤10 ug</td>
<td>Accelerometers: ±0.05% of full range</td>
<td>BEI Technologies Model: MotionPAK MP-1</td>
<td>0767</td>
<td>By: Systron Donner Date: 3/8/11 Due: 3/8/12</td>
</tr>
<tr>
<td></td>
<td>Angle Sensors: ±100 deg/s</td>
<td>Acceleration Sensors: ≤0.004 deg/s</td>
<td>Angular Rate Sensors: 0.05% of full range</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Radar Speed Sensor and Dashboard Display</td>
<td>Vehicle Speed</td>
<td>0-125 mph</td>
<td>0.009 mph</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: 5/3/11 Due: 5/3/12</td>
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<tr>
<td></td>
<td></td>
<td>0-200 km/h</td>
<td>.014 km/h</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ultrasonic Distance Measuring System</td>
<td>Left and Right Side</td>
<td>5-24 inches</td>
<td>0.01 inches</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: 2/22/11 Due: 2/21/12</td>
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<tr>
<td></td>
<td>Vehicle Height</td>
<td>127-610 mm</td>
<td>.254 mm</td>
<td></td>
<td></td>
<td>DOT-NHTSA D3272</td>
<td>By: DRI Date: 2/22/11 Due: 2/22/12</td>
</tr>
</tbody>
</table>
### 4.0 TEST EQUIPMENT LIST AND CALIBRATION INFORMATION (2 OF 2)

**TABLE 1. TEST INSTRUMENTATION (CONTD)**

<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</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: 3/29/11 Due: 3/29/12</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SoMat High level Board EHLS</td>
<td>MSHLS.03-3182</td>
<td>By: DRI Date: 3/29/11 Due: 3/29/12</td>
</tr>
<tr>
<td>Load Cell</td>
<td>Vehicle Brake Pedal Force</td>
<td>0-300 lb</td>
<td>1 lb</td>
<td>±0.05% of full scale</td>
<td>Lebow 3663-300</td>
<td>767</td>
<td>Operationally verified by DRI prior to test</td>
</tr>
<tr>
<td>Coordinate Measurement Machine</td>
<td>Inertial Sensing System Coordinates</td>
<td>0-8 ft</td>
<td>±.0020 in.</td>
<td>±0.051 mm (Single point articulation accuracy)</td>
<td>Faro Arm Fusion</td>
<td>UO8-05-08-06636</td>
<td>By: DRI Date: 11/7/10 Due: 11/7/11</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>
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</tbody>
</table>
Figure 5.1. Front View of Test Vehicle
Figure 5.2. Rear View of Test Vehicle

2011 Honda CR-Z
FMVSS No. 126
NHTSA NO.: CB5305
Figure 5.3. Vehicle Certification Label

2011 Honda CR-Z
FMVSS No. 126
NHTSA NO.: CB5305
Figure 5.4. Vehicle Placard

2011 Honda CR-Z
FMVSS No. 126
NHTSA NO.: CB5305
3.0 PHOTOGRAPHS (5 of 15)

Figure 5.5. Window Sticker (Monroney Label)

2011 Honda CR-Z
FMVSS No. 126
NHTSA NO.: CB5305
Figure 5.6. Front View of Vehicle as Tested

2011 Honda CR-Z
FMVSS No. 126
NHTSA NO.: CB5305
5.0 PHOTOGRAPHES (7 of 15)

Figure 5.7. Rear View of Vehicle as Tested

2011 Honda CR-Z
FMVSS No. 126
NHTSA NO.: CB5305
Figure 5.8. Ultrasonic Height Sensor Mounted on Side of Vehicle for Determining Body Roll Angle
Figure 5.9. Rear Mounted Speed Sensor

2011 Honda CR-Z
FMVSS No. 126
NHTSA NO.: CB5305
Figure 5.10. Steering Controller and Data Acquisition Computer
Figure 5.11. Inertial Measurement Unit Mounted in Vehicle

2011 Honda CR-Z
FMVSS No. 126
NHTSA NO.: CB5305
Figure 5.12. Brake Pedal Load Cell
Figure 5.13. Telltales for ESC Activation and Malfunction

2011 Honda CR-Z
FMVSS No. 126
NHTSA NO.: CB5305
Figure 5.14. Telltale for ESC Off
Figure 5.15. ESC Off Control Switch
Figure 6.1. Steering Wheel Angle, Yaw Rate and Lateral Displacement for L-R Series
6.0 DATA PLOTS (2 of 4)

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
Instrument Panel

Gauges ➔ P.81

Multi-Information Display ➔ P.83

System Indicators ➔ P.68

Lights Reminders
- Lights On Indicator
- High Beam Indicator
- Fog Light Indicator*

System Indicators
- Malfunction Indicator Lamp
- Low Oil Pressure Indicator
- 12 Volt Battery Charging System Indicator
- Anti-lock Brake System (ABS) Indicator
- Vehicle Stability Assist (VSA) System Indicator
- VSA OFF Indicator
- Turn Signal and Hazard Warning Indicators
- Electric Power Steering (EPS) Indicator
- IMA System Indicator
- Auto Idle Stop Indicator

System Indicators
- CHRG/ASST Indicators
- IMA Battery Charge Level Indicator

System Indicators
- Ambient Meter
- Tachometer
- Speedometer
- Fuel Gauge
- Security Alarm System Indicator
- Instant Fuel Economy Gauge
- Shift Lever Position Indicator
- Shift Up/Down Indicator*

System Indicators
- 7-Speed Manual Shift Mode Indicator*

System Indicators
- Seat Belt Reminder Indicator
- Immobilizer System Indicator
- Parking Brake and Brake System Indicator
- Supplemental Restraint System Indicator
- Side Airbag Off Indicator
- Low Tire Pressure/TPMS Indicator
- Door/Hatch Open Indicator
- Cruise Main Indicator
- System Message Indicator
- ECON Mode Indicator

System Indicators
- SPORT Mode Indicator
- NORMAL Mode Indicator
VSA® Off Button  P.215
- The vehicle stability assist (VSA®) system helps stabilize the vehicle during sharp cornering, and helps maintain traction while accelerating on loose or slippery road surfaces.
- VSA® comes on automatically every time you start the engine.
- To turn VSA® on or off, press and hold the button until you hear a beep.

Cruise Control  P.211
- Cruise control allows you to maintain a set speed without keeping your foot on the accelerator pedal.
- To use cruise control, press the CRUISE button, then press the DECEL/SET button when the vehicle speed is above 25 mph (40 km/h).

Tire Pressure Monitoring System (TPMS)  P.216
U.S. models only
- TPMS monitors tire pressure.
- TPMS is turned on automatically every time you start the engine.

Refueling  P.231
Fuel recommendation: Unleaded gasoline with a pump octane number 87 or higher

Fuel tank capacity: 10.6 US gal (40 L)

1. Press and release the center of the rear edge of the fuel fill door. You hear a click. The door pops open slightly.

2. Turn the fuel fill cap slowly to remove the cap.

3. Place the cap in the holder on the fuel fill door.

4. After refueling, screw the cap back on until it clicks at least once.
## 7.1 OWNER’S MANUAL PAGES

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Name</th>
<th>On/Blinking</th>
<th>Explanation</th>
<th>Message</th>
</tr>
</thead>
</table>
| ![Supplemental Restraint System Indicator](image) | Supplemental Restraint System Indicator | • Comes on for a few seconds when you turn the ignition switch to ON \( II \) then goes off.  
• Comes on if a problem with any of the following is detected:  
  - Supplemental restraint system  
  - Side airbag system  
  - Side curtain airbag system  
  - Seat belt tensioner | **Stays on constantly or does not come on at all** - Have the vehicle checked by a dealer. | ![Check Airbag System](image) |
| ![VSA® (Vehicle Stability Assist) System Indicator](image) | VSA® (Vehicle Stability Assist) System Indicator | • Comes on for a few seconds when you turn the ignition switch to ON \( II \) then goes off.  
• Blinks when VSA® is active.  
• Comes on if there is a problem with the VSA® system.  
• Comes on if there is a problem with the hill start assist system.  
• Comes on if there is a problem with the creep aid system (CVT) or the brake assist system. | **Stays on constantly** - Have the vehicle checked by a dealer.  
VSA® (Vehicle Stability Assist) System P.214 | ![Check VSA System](image) ![Check Hill Start Assist System](image) |
| ![VSA® (Vehicle Stability Assist) OFF Indicator](image) | VSA® (Vehicle Stability Assist) OFF Indicator | • Comes on for a few seconds when you turn the ignition switch to ON \( II \) then goes off.  
• Comes on when you deactivate VSA®. | VSA® (Vehicle Stability Assist) System P.215 | — |
When Driving

**VSA® (Vehicle Stability Assist), aka ESC (Electronic Stability Control), System**

VSA® helps to stabilize the vehicle during cornering if the vehicle turns more or less than what was intended. It also assists in maintaining traction on slippery surfaces. It does so by regulating engine output and selectively applying the brakes.

**VSA® Operation**

When VSA® activates, you may notice that the engine does not respond to the accelerator. You may also notice some noise from the hydraulic system. You will also see the indicator blink.

The VSA® may not function properly if tire type and size are mixed. Make sure to use the same size and type of tire, and the air pressures as specified.

When the VSA® indicator comes on and stays on while driving, there may be a problem with the system. While this may not interfere with normal driving, have your vehicle checked by a dealer immediately.

VSA® cannot enhance stability in all driving situations and does not control the entire braking system. You still need to drive and corner at speeds appropriate for the conditions and always leave a sufficient margin of safety.

The main function of the VSA® system is generally known as Electronic Stability Control (ESC). The system also includes a traction control function.
When Driving ▶ VSA® (Vehicle Stability Assist), aka ESC (Electronic Stability Control), System

### VSA® On and Off

![VSA indicator](image)

This button is on the driver side control panel. To turn the VSA® system on and off, press and hold it until you hear a beep.

VSA® will stop and the indicator will come on.

To turn it on again, press the VSA® OFF button until you hear a beep.

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

### VSA® (Vehicle Stability Assist), aka ESC (Electronic Stability Control), System

Without VSA®, your vehicle will have normal braking and cornering ability, but it will not have VSA® traction and stability enhancement.

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 VSA® on again. We do not recommend driving your vehicle with the VSA® and traction control systems switched off.

If the low tire pressure/TPMS indicator comes on or blinks, the VSA® system comes on automatically. In this case, you cannot turn the system off by pressing the VSA® button.

You may hear a motor sound coming from the engine compartment while system checks are being performed immediately after starting the engine or while driving. This is normal.
7.2 VEHICLE ARRIVAL CONDITION REPORT

CONTRACT NO.: DTNH22-08-D-00098
DATE: 8/24/11

From: Automotive Allies
Purpose: ☑ Initial Receipt
Received via Transfer

To: Dynamic Research, Inc
Present Vehicle Condition

Vehicle VIN: JHMZF1D48BS016218 NHTSA NO.: CB5305
Model Year: 2011 Odometer Reading: 42 Miles
Make: Honda Body Style: Passenger Car
Model: CR-Z Body Color: Silver
Manufacturer Date: 6/11 Dealer: Automotive Allies
GVWR (kg/lb) 1435/3164 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:

RECORDED BY: J Lenkeit DATE RECORDED: 8/22/2011
APPROVED BY: P Broen DATE APPROVED: 8/23/2011
7.3 VEHICLE COMPLETION CONDITION REPORT

CONTRACT NO.: DTNH22-08-D-00098
DATE: 9/16/2011

<table>
<thead>
<tr>
<th>Vehicle VIN: JHMZF1D48BS016218</th>
<th>NHTSA NO.: CB5305</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Year: 2011</td>
<td>Odometer Reading: 98 Miles</td>
</tr>
<tr>
<td>Make: Honda</td>
<td>Body Style: Passenger Car</td>
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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:

None

Explanation for equipment removal:

NA

Test Vehicle Condition:

As-delivered, like new

RECORDED BY: J Lenkeit DATE RECORDED: 9/16/2011

APPROVED BY: B Kebschull DATE APPROVED: 9/16/2011
### 7.4 SINE WITH DWELL TEST RESULTS

**2011 Honda CR-Z**

NHTSA No.: [CB5305](#)

Date of Test: **9/8/2011**

Date Created: **9/12/11**

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

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### 7.5 SLOWLY INCREASING STEER TEST RESULTS

2011 Honda CR-Z  
NHTSA No.: **CB5305**  
Date of Test: **9/8/2011**  
Date Created: **9/8/2011**

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Averages  
24.683  
0.306
7.6 INERTIAL SENSING SYSTEM LOCATION COORDINATES

Vehicle: 2011 Honda CR-Z
Wheelbase: 95.6 Inches
Measurement date: 8/25/2011

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

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<tr>
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<th>Ref Z</th>
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<td>M_Point_ROOF</td>
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Motion Pak reference point taken from mid height of unit left side
Motion Pak Width = 3.05"  ==>  1/2 W = 1.525
Motion_PAK_Location

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<thead>
<tr>
<th>Reference</th>
<th>X</th>
<th>Y</th>
<th>Z</th>
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<tbody>
<tr>
<td>X</td>
<td>12.797</td>
<td>47.771</td>
<td>-20.539</td>
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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

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<th>Reference</th>
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<th>Z</th>
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<tbody>
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<td>Motion_PAK_Location in S7D (Matlab program) coordinate system</td>
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<td>20.539</td>
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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).