126-DRI-10-004
SAFETY COMPLIANCE TESTING FOR FMVSS 126
Electronic Stability Control Systems

Nissan Motor Co., Ltd.
2010 Nissan Rogue
NHTSA No. CA5207

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26 May, 2010

Final Report

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

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
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16. Abstract A test was conducted on a 2010 Nissan Rogue , NHTSA No. CA5207, 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 Nissan Rogue, 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 Nissan Rogue 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 (CONTD)

Data Summary Sheet (Page 1 of 2)

Vehicle: *2010 Nissan Rogue*

NHTSA No. *CA5207* VIN: *JN8AS5MT1AW503961*

Vehicle Type: *MPV* Manufacture Date: *12/09*

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 Nissan Rogue MPV*

NHTSA No. *CA5207* Data Sheet Completion Date: *2/22/2010*

VIN *JN8AS5MT1AW503961* Manufacture Date: *12/09*

GVWR (kg): *1968.2* Front GAWR (kg): *1038.7* Rear GAWR (kg): *948.9*

Seating Positions Front: *2* Mid: Rear: *3*

Odometer reading at time of inspection: *5 miles (8 km)*

DESIGNATED TIRE SIZE(S) FROM VEHICLE LABELING:

Front axle: *P225/60 R17* Rear axle: *P225/60 R17*

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

		Front Axle		Rear Axle
	Tire Manufacturer:	*Continental*		*Continental*
	Tire Model:	*4x4 Contact*		*4x4 Contact*
	Tire Size:	*P225/60 R17*		*P225/60 R17*
TIN	Left Front:	*FDFC 3AK 4909*	Right Front:	*FDFC 3AK 4909*
	Left Rear:	*FDFC 3AK 4909*	Right Rear:	*FDFC 3AK 4909*

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: *FWD*
Mode: *Normal*
Drive Configuration:
Mode:
Drive Configuration:
Mode:

VEHICLE STABILITY SYSTEMS (Check applicable technologies):

List other systems:

- [X] ESC
- [X] Traction Control
- [X] Roll Stability Control
- [ ] Active Suspension
- [X] Electronic Throttle Control
- [ ] Active Steering
- [X] ABS

REMARKS:

RECORDED BY: *J Lenkeit* DATE RECORDED: *2/22/2010*
APPROVED BY: *B Kebschull* DATE APPROVED: *3/4/2010*

3.0 TEST DATA (CONTD)

Data Sheet 2 (Page 1 of 2)
ESC SYSTEM HARDWARE AND OPERATIONAL CHARACTERISTICS

Vehicle: *2010 Nissan Rogue MPV*

NHTSA No *CA5207* Data Sheet Completion Date: *4/6/2010*

ESC SYSTEM IDENTIFICATION

Manufacturer/Model *Hitachi Automotive Systems ABS/VDC/TCS/ LX5-VDC*

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: *ABS motor, pump, valves and accumulators*

ESC OPERATIONAL CHARACTERISTICS

System is capable of generating brake torque at each wheel — [X] Yes (Pass) [ ] No (Fail)
Brief explanation: *ABS motor and pump supplies brake actuating pressure, routed through individual brake circuit and wheel valves, under control of ESC component of ECU*

System is capable of determining yaw rate — [X] Yes (Pass) [ ] No (Fail)
Brief explanation: *Yaw rate sensor*

System is capable of monitoring driver steering input — [X] Yes (Pass) [ ] No (Fail)
Brief explanation: *Steering angle sensor*

System is capable of estimating side slip or side slip derivative — [X] Yes (Pass) [ ] No (Fail)
Brief explanation: *A vehicle slip angle model is used to estimate the vehicle's slip angle from measured steering angle, yaw rate, lateral acceleration and estimated vehicle speed data.*

3.0 TEST DATA (CONTD)

Data Sheet 2 (Page 2 of 2)
ESC SYSTEM HARDWARE AND OPERATIONAL CHARACTERISTICS

ESC OPERATIONAL CHARACTERISTICS (continued)

System is capable of modifying engine torque during ESC activation. **X** Yes (Pass) ___ No (Fail)

Method used to modify torque: *The engine controller module receives the engine torque request from the ESC controller unit and modifies the engine torque by differentiating the throttle opening and fuel delivery.*

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) ___ No (Fail)

- acceleration
- braking
- coasting
- during activation of ABS or traction control

Driving phases during which ESC is capable of activation:
The ESC system is active during ALL of the following driving phases: acceleration, deceleration, coasting, during activation of the ABS or traction control. The ESC system will not activate during backwards driving, low velocity, or when ESC OFF switch is activated.

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: *J Lenkeit* DATE RECORDED: *4/6/2010*
APPROVED BY: *B Kebschull* DATE APPROVED: *4/6/2010*

3.0 TEST DATA (CONTD)

Data Sheet 3 (Page 1 of 2)
ESC MALFUNCTION AND OFF TELLTALES

Vehicle: *2010 Nissan Rogue MPV*

NHTSA No. *CA5207* Data Sheet completion date: *3/1/2010*

ESC Malfunction Telltale

Vehicle is equipped with malfunction telltale? *Yes*

Telltale Location: *Center of tachometer (see Figure 5.6)*

Telltale Color: *Amber*

Telltale symbol or abbreviation used

 or **ESC**

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

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

If a malfunction occurs in the system, both the "Slip" indicator (shown above left) and the VDC OFF indicators illuminate (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 "Slip" indicator (shown above left) blinks when ESC is operating (see Figure 5.6)

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 Malfunction" telltale utilizing a two part telltale? *No*

Telltale Location: *Center of tachometer (see Figure 5.6)*

Telltale Color: *Amber*

Telltale symbol or abbreviation used

or **ESC OFF**

- [ ] Vehicle uses this symbol
- [ ] Vehicle uses this abbreviation
- [x] Neither symbol or abbreviation is used

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

Is telltale part of a common space? *No*

DATA INDICATES COMPLIANCE *Yes*

(Vehicle is compliant if equipped with a malfunction telltale)

Remarks: *"VDC OFF" illuminates when ESC is switched off; "Slip" indicator blinks when ESC is activated; "VDC OFF" and "Slip" indicators illuminate when there is a system malfunction*

RECORDED BY:	*J Lenkeit*	DATE RECORDED:	*3/1/2010*
APPROVED BY:	*B Kebschull*	DATE APPROVED:	*3/8/2010*

3.0 TEST DATA (CONTD)

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

Vehicle: *2010 Nissan Rogue MPV*

NHTSA No. *CA5207* Data Sheet completion date: *3/1/2010*

"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? (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 *Lower left of steering column, (see Figure 5.7)*
Labeling *VDC OFF*
Modes *Turns ESC on and off*

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

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.

Control Mode	"ESC Off" telltale illuminates upon activation of control? (Yes/No)	"ESC Off" telltale extinguishes upon cycling ignition? (Yes/No)
NA		

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 _X_ No

Ancillary Control: System None

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.

Ancillary Control	Control Activates "ESC Off" Telltale? (Yes/No)	Warnings or Messages Provided
None		

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

Ancillary Control	"ESC Off" telltale extinguishes upon cycling ignition? (Yes/No)
None	

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: *J Lenkeit* DATE RECORDED: *3/1/2010*

APPROVED BY: *B Kebschull* DATE APPROVED: *3/8/2010*

3.0 TEST DATA (CONTD)

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

Vehicle: *2010 Nissan Rogue MPV*

NHTSA No. *CA5207* Data Sheet completion date: *3/3/2010*

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* *Washers, Brakes, transmission*

Tire Pressures:

Required; Front Axle *230* KPA Rear Axle *230* KPA

Actual; LF *230* KPA RF *230* KPA

LR *230* KPA RR *230* KPA

Vehicle Dimensions: Front Track Width *154.3* cm Wheelbase *269.0* cm

Rear Track Width *153.7* cm

Vehicle Weight Ratings: GAWR Front *1038.7* KG GAWR Rear *948.9* KG

Unloaded Vehicle Weight (UVW):

Front Axle *911.3* KG Left Front *461.3* KG Right Front *450.0* KG

Rear Axle *616.5* KG Left Rear *304.4* KG Right Rear *312.1* KG

Total UVW *1527.8* KG

Baseline Weight and Outrigger Selection (only for MPVs, Trucks, Buses)

Calculated baseline weight (UVW + 73kg) *1600.8* KG

Outrigger size required ("Standard" or "Heavy") *Standard*

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 *944.8* KG Left front *479.4* KG Right front *465.4* KG

Rear axle *658.6* KG Left rear *323.4* KG Right rear *335.2* KG

Total UVW with outriggers *1603.4* KG

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

Front axle *1014.7* KG Left front *532.5* KG Right front *482.2* KG

Rear axle *730.3* KG Left rear *354.7* KG Right rear *375.6* KG

Vehicle Weight *1745.0* KG

Ballast Required =

[Total UVW with Outriggers (if applicable)]		+ *168*	KG	- [Loaded Weight w/Driver and Instrumentation)]	
= *1603.4*	KG	+ *168*	KG	- 1745.0	KG

= *26.4* KG

Total Loaded Vehicle Weight w/Driver and Instrumentation and Ballast

Front axle *1026.9* KG Left front *535.2* KG Right front *491.7* KG

Rear axle *744.8* KG Left rear *358.3* KG Right rear *386.5* KG

Total UVW *1771.7* 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:

	Center of Gravity				Inertial Sensing System			
x-distance	*44.5*	in	*113.1*	cm	*66.0*	in	*167.7*	cm
y-distance	*-0.3*	in	*-0.7*	cm	*-0.3*	in	*-0.7*	cm
z-distance	*24.6*	in	*62.6*	cm	*21.4*	in	*54.2*	cm
Roof Height					*64.9*	in	*164.7*	cm
Distance between ultrasonic sensors					*83*	in	*210.8*	cm

Remarks:

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 6 (Page 1 of 3)
BRAKE AND TIRE CONDITIONING

Vehicle: *2010 Nissan Rogue MPV*

NHTSA No. *CA5207*

Measured tire pressure: LF *232* KPA RF *234* KPA

LR *233* KPA RR *232* KPA

Wind Speed *4.2* 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)) *11.5* °C

Brake Conditioning Time: *9:10:00 AM* Date: *3/4/2010*

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	*0.80*	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:	*9:35:00 AM*		Date:	*3/4/2010*	
Measured cold tire pressure	LF	*241*	KPA	RF	*243*	KPA
	LR	*240*	KPA	RR	*238*	KPA
Wind Speed *3.8* 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)) *11.4*°C

30 meter (100 ft) Diameter Circle Maneuver				
Test Run	Steering Direction	Target Lateral Acceleration (g)	Observed Lateral Acceleration (g)	Observed Vehicle Speed (Km/h)
1-3	Clockwise	0.5 – 0.6	*0.5-0.6*	*32.8 - 33.6*
4-6	Counterclockwise	0.5 – 0.6	*0.5-0.6*	*32 - 33.6*

5-1 Hz Cycle Sinusoidal Steering Maneuver to Determine Steering Wheel Angle for 0.5-0.6 g Lateral Acceleration					
Test Run	Data File	Vehicle Speed Km/h(mph)	Steering Wheel Angle (degrees)	Target Peak Lateral Acceleration (g)	Observed Peak Lateral Acceleration (g)
1	3	56 ± 2 (35 ± 1)	*60*	0.5 - 0.6	*0.38*
2		56 ± 2 (35 ± 1)		0.5 - 0.6	
3		56 ± 2 (35 ± 1)		0.5 - 0.6	
4		56 ± 2 (35 ± 1)		0.5 - 0.6	

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

10-1 Hz Cycle Sinusoidal Steering Maneuver					
Test Run	Data File	Vehicle Speed Km/h (mph)	Steering Wheel Angle (degrees)	Target Peak Lateral Acceleration (g)	Observed Peak Lateral Acceleration (g)
1-3	*4-6*	56 ± 2 (35 ± 1)	*90* (cycles 1-10)	0.5 - 0.6	*0.51*
4	*7*	56 ± 2 (35 ± 1)	*90* (cycles 1-9)	0.5 - 0.6	*0.51*
			180 (cycle10)*	NA	*0.77*

* 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: *11:12:00 AM* Date: *3/4/2010*

Measured cold tire pressure LF *240* KPA RF *245* KPA

LR *235* KPA RR *235* KPA

Wind Speed *2.6* 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)) *12.8* °C

30 meter (100 ft) Diameter Circle Maneuver				
Test Run	Steering Direction	Target Lateral Acceleration (g)	Observed Lateral Acceleration (g)	Observed Vehicle Speed (Km/h)
1-3	Clockwise	0.5 - 0.6	*0.5-0.6*	*32.8 - 33.6*
4-6	Counterclockwise	0.5 - 0.6	*0.5-0.6*	*32.8 - 33.6*

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

87 **degrees**

10-1 Hz Cycle Sinusoidal Steering Maneuver					
Test Run	Data File	Vehicle Speed Km/h (mph)	Steering Wheel Angle (degrees)	Target Peak Lateral Acceleration (g)	Observed Peak Lateral Acceleration (g)
1-3	*18-20*	56 ± 2 (35 ± 1)	*90* (cycles 1-10)	0.5 - 0.6	*0.51*
4	*21*	56 ± 2 (35 ± 1)	*90* (cycles 1-9)	0.5 - 0.6	*0.51*
			180 (cycle 10)*	NA	*0.77*

* 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: *3/4/2010*

APPROVED BY: *J Lenkeit* DATE APPROVED: *3/8/2010*

3.0 TEST DATA (CONTD)

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

Vehicle: *2010 Nissan Rogue MPV*

NHTSA No. *CA5207*

Measured tire pressure: LF *240* KPA RF *239* KPA

LR *238* KPA RR *234* KPA

Wind Speed *4.8* 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)) *13.1* °C

Selected drive configuration *FWD*

Selected Mode: *Default*

Preliminary Left Steer Maneuver:

Lateral Acceleration measured at 30 degrees steering wheel angle

$a_{y,30degrees}$ = *0.29* g

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

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

δ_{sis} = *56.9* degrees (@.55g)

δ_{sis} = *60* degrees (rounded)

Steering Wheel Angle at Corrected 0.3g Lateral Acceleration:

Maneuver	Initial Steer Direction	Time Clock (5 min max between runs)	Steering Wheel Angle to nearest 0.1° (degrees)	Data Run	Good/NG
1	Left	*10:12:00 AM*		*10*	*NG*
2	Left	*10:17:00 AM*	*32.6*	*11*	*Good*
3	Left	*10:22:00 AM*	*32.9*	*12*	*Good*
4	Left	*10:27:00 AM*	*32.4*	*13*	*Good*
5	Left				
1	Right	*10:32:00 AM*	*32.2*	*14*	*Good*
2	Right	*10:37:00 AM*	*32.7*	*15*	*Good*
3	Right	*10:41:00 AM*		*16*	*NG*
4	Right	*10:45:00 AM*	*32.9*	*17*	*Good*
5	Right				

3.0 TEST DATA (CONTD)

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

Average Overall Steering Wheel Angle:

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

$\delta_{0.3\,g,\,overall}$ = *32.6* degrees

[to nearest 0.1 degree]

Remarks:

RECORDED BY: *B Kebschull* DATE RECORDED: *3/4/2010*

APPROVED BY: *J Lenkeit* DATE APPROVED: *3/8/2010*

3.0 TEST DATA (CONTD)

Data Sheet 8 (Page 1 of 3)
VEHICLE LATERAL STABILITY AND RESPONSIVENESS

Vehicle: *2010 Nissan Rogue MPV*

NHTSA No. *CA5207* Data sheet completion date: *3/4/2010*

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*

Overall steering wheel angle ($\delta_{0.3\ g,\ overall}$) *32.6* degrees

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

Maneuver #	Clock Time (1.5 – 5.0 min max between runs)	Commanded Steering Wheel Angle[1]		Yaw Rates (degrees/sec)			YRR at 1.0 sec after COS [< 35%]		YRR at 1.75 sec after COS [< 20%]	
		Scalar (* $\delta_{0.3\ g}$)	Angle (degrees)	$\dot{\psi}_{Peak}$	$\dot{\psi}_{1.0sec}$	$\dot{\psi}_{1.75sec}$	%	Pass/Fail	%	Pass/Fail
23	11:23 AM	1.5	49	12.3	-0.0	-0.1	-0.3	PASS	-0.8	PASS
24	11:25 AM	2.0	65	15.9	-0.0	-0.2	-0.3	PASS	-1.2	PASS
25	11:30 AM	2.5	82	20.6	-0.2	-0.2	-0.9	PASS	-0.7	PASS
26	11:33 AM	3.0	98	24.3	-0.2	-0.1	-1.0	PASS	-0.5	PASS
27	11:36 AM	3.5	114	28.5	-0.2	-0.1	-0.7	PASS	-0.3	PASS
28	11:39 AM	4.0	130	33.9	-0.2	-0.1	-0.6	PASS	-0.2	PASS
29	11:44 AM	4.5	147	40.2	-0.1	0.0	-0.2	PASS	0.0	PASS
30	11:48 AM	5.0	163	44.9	0.3	0.0	0.6	PASS	0.1	PASS
31	11:50 AM	5.5	179	49.9	1.0	-0.1	2.1	PASS	-0.3	PASS
32	11:53 AM	6.0	196	48.6	-0.3	-0.1	-0.5	PASS	-0.2	PASS
33	11:55 AM	6.5	212	48.9	0.6	0.8	1.3	PASS	1.6	PASS
34	11:58 AM	7.0	228	54.0	0.2	0.1	0.4	PASS	0.1	PASS
35	12:01 PM	7.5	245	52.4	-0.9	-0.9	-1.8	PASS	-1.7	PASS
36	12:05 PM	8.0	261	51.5	-0.6	-0.4	-1.1	PASS	-0.8	PASS
37	12:09 PM	-	270	48.4	-0.2	-0.1	-0.3	PASS	-0.1	PASS

1. Maneuver execution should continue until a steering wheel angle magnitude factor of $6.5*\delta_{0.3\ g,\ overall}$ or 270 degrees is utilized, whichever is greater provided the calculated magnitude of $6.5*\delta_{0.3\ g,\ overall}$ is less than or equal to 300 degrees. If $6.5*\delta_{0.3\ g,\ overall}$ is less than 270 degrees maneuver execution should continue by increasing the steering wheel angle magnitude by multiples of $0.5*\delta_{0.3\ g,\ overall}$ without exceeding the 270 degree steering wheel angle.

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

Maneuver #	Clock Time (1.5 – 5.0 min max between runs)	Commanded Steering Wheel Angle[1]		Yaw Rates (degrees/sec)			YRR at 1.0 sec after COS [≤ 35%]		YRR at 1.75 sec after COS [≤ 20%]	
		Scalar (* $\delta_{0.3\,g}$)	Angle (degrees)	$\dot{\psi}_{Peak}$	$\dot{\psi}_{1.0sec}$	$\dot{\psi}_{1.75sec}$	%	Pass/Fail	%	Pass/Fail
38	12:11 PM	1.5	49	-12.4	0.0	-0.0	-0.3	PASS	0.3	PASS
39	12:15 PM	2.0	65	-16.5	0.1	-0.0	-0.8	PASS	0.1	PASS
40	12:19 PM	2.5	82	-21.0	0.1	0.1	-0.6	PASS	-0.4	PASS
41	12:21 PM	3.0	98	-25.9	0.2	0.1	-0.8	PASS	-0.4	PASS
42	12:24 PM	3.5	114	-29.7	0.6	0.4	-1.8	PASS	-1.3	PASS
43	12:29 PM	4.0	130	-35.2	-0.0	0.1	0.1	PASS	-0.2	PASS
44	12:31 PM	4.5	147	-39.9	0.3	0.2	-0.9	PASS	-0.6	PASS
45	12:34 PM	5.0	163	-45.1	0.3	0.3	-0.7	PASS	-0.7	PASS
48	12:36 PM	5.5	179	-46.2	0.6	0.5	-1.4	PASS	-1.0	PASS
49	12:41 PM	6.0	196	-49.0	0.5	0.4	-1.1	PASS	-0.8	PASS
51	12:43 PM	6.5	212	-49.7	1.1	1.0	-2.3	PASS	-2.0	PASS
52	12:47 PM	7.0	228	-50.8	1.9	1.6	-3.8	PASS	-3.2	PASS
54	12:50 PM	7.5	245	-52.8	0.3	0.1	-0.5	PASS	-0.1	PASS
55	12:53 PM	8.0	261	-52.0	0.3	0.1	-0.5	PASS	-0.1	PASS
56	12:57 PM	-	270	-51.1	0.2	0.0	-0.3	PASS	-0.0	PASS

1. Maneuver execution should continue until a steering wheel angle magnitude factor of 6.5*$\delta_{0.3\,g,\,overall}$ or 270 degrees is utilized, whichever is greater provided the calculated 6.5*$\delta_{0.3\,g,\,overall}$ is less than or equal to 300 degrees. If 6.5*$\delta_{0.3\,g,\,overall}$ is less than 270 degrees maneuver execution should continue by increasing the steering wheel angle magnitude by multiples of 0.5*$\delta_{0.3\,g,\,overall}$ 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.

3.0 TEST DATA (CONTD)

DATA SHEET 8 (3 of 3)
VEHICLE LATERAL STABILITY AND RESPONSIVENESS

Responsiveness – Lateral Displacement

Maneuver #	Initial Steer Direction	Commanded Steering Wheel Angle (5.0*$\delta_{0.3\ g,\ overall}$ or greater)		Calculated Lateral Displacement[1]	
		Scalar *$\delta_{0.3\ g}$	Angle (degrees)	Distance (m)	Pass/Fail
30	Counter Clockwise	5.0	163	-3.1	*PASS*
31	Counter Clockwise	5.5	179	-3.2	*PASS*
32	Counter Clockwise	6.0	196	-3.3	*PASS*
33	Counter Clockwise	6.5	212	-3.4	*PASS*
34	Counter Clockwise	7.0	228	-3.4	*PASS*
35	Counter Clockwise	7.5	245	-3.3	*PASS*
36	Counter Clockwise	8.0	261	-3.4	*PASS*
37	Counter Clockwise	-	270	-3.4	*PASS*
45	Clockwise	5.0	165	3.0	*PASS*
48	Clockwise	5.5	182	3.2	*PASS*
49	Clockwise	6.0	198	3.2	*PASS*
51	Clockwise	6.5	218	3.3	*PASS*
52	Clockwise	7.0	238	3.2	*PASS*
54	Clockwise	7.5	246	3.3	*PASS*
55	Clockwise	8.0	262	3.3	*PASS*
56	Clockwise	-	271	3.3	*PASS*

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: ☑ PASS ☐ FAIL

Remarks:

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 1 of 2)
MALFUNCTION WARNING TESTS

Vehicle: *2010 Nissan Rogue MPV*

NHTSA No. *CA5207* Data Sheet Completion Date: *3/4/2010*

TEST 1

MALFUNCTION SIMULATION: Describe method of malfunction simulation

Disconnected the LF 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 as specified in section 13.12.B.

[X] Yes [ ] No

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

0 Seconds (must be within 2 minutes) [X] Pass [ ] Fail

ESC SYSTEM RESTORATION

Telltale extinguishes after ignition locking system is activated and if necessary the vehicle is driven at least 2 minutes as specified in section 13.12.B

[X] Yes [ ] No

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

0 Seconds (must be within 2 minutes) [X] Pass [ ] Fail

TEST 1 DATA INDICATES COMPLIANCE: *PASS*

Remarks: *"VDC Off" and standard ESC telltales (car with curved lines below) both illuminated immediately upon turning the ignition on, after malfunction was caused (ABS telltale also illuminated). All three extinguished immediately upon ignition, after system was restored. No driving was required.*

RECORDED BY: *B Kebschull* DATE RECORDED: *3/4/2010*

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 Nissan Rogue MPV*

NHTSA No. *CA5207* Data Sheet Completion Date: *3/4/2010*

TEST 2

MALFUNCTION SIMULATION: Describe method of malfunction simulation

Disconnected steering angle 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 as specified in section 13.12.B.

[X] Yes [ ] No

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

0 Seconds (must be within 2 minutes) [X] Pass [ ] Fail

ESC SYSTEM RESTORATION

Telltale extinguishes after ignition locking system is activated and if necessary the vehicle is driven at least 2 minutes as specified in section 13.12.B

[X] Yes [ ] No

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

0 Seconds (must be within 2 minutes) [X] Pass [ ] Fail

TEST 2 DATA INDICATES COMPLIANCE: PASS

Remarks: "VDC Off" and standard ESC telltales (car with curved lines below) both illuminated immediately upon turning the ignition on, after malfunction was caused. Both extinguished immediately upon ignition, after system was restored. No driving was required.

RECORDED BY: *B Kebschull* DATE RECORDED: 3/4/2010

APPROVED BY: *J Lenkeit* DATE APPROVED *3/8/2010*

4.0 TEST EQUIPMENT LIST AND CALIBRATION INFORMATION (1 OF 2)

TABLE 1. TEST INSTRUMENTATION

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

4.0 TEST EQUIPMENT LIST AND CALIBRATION INFORMATION (2 OF 2)

TABLE 1. TEST INSTRUMENTATION (CONTD)

Type	Output	Range	Resolution	Accuracy	Specifics	Serial Number	Calibration
Data Acquisition System [Includes amplification, anti-aliasing, and analog to digital conversion.]	Record Time; Velocity; Distance; Lateral, Longitudinal, and Vertical Accelerations; Roll, Yaw, and Pitch Rates; Steering Wheel Angle.	Sufficient to meet or exceed individual sensors	200 Hz	Sufficient to meet or exceed individual sensors	SoMat eDaq ECPU processor	MSHLB.03-2476	By: DRI Date:2/9/10 Due: 2/9/11
					SoMat High level Board EHLS	MSHLS.03-3182	By: DRI Date: 2/9/10 Due: 2/9/11
Load Cell	Vehicle Brake Pedal Force	0-300 lb 0-1.33 kN	1 lb 4.44 N	±0.05% of full scale	Lebow 3663-300	767	Functionally verified by DRi prior to test
Coordinate Measurement Machine	Inertial Sensing System Coordinates	0-8 ft 0-2.4 m	±.0020 in. ±.051 mm	±.0020 in. ±.051 mm (Single point articulation accuracy)	Faro Arm Fusion	UO8-05-08-06636	By: Faro Date: 8/18/09 Due: 8/18/10
Outriggers	No output. Safety Item.	N/A	N/A	N/A	DRI manufactured Aluminum meeting the weight and MOI specifications of Docket 2007-27662-11	N/A	N/A

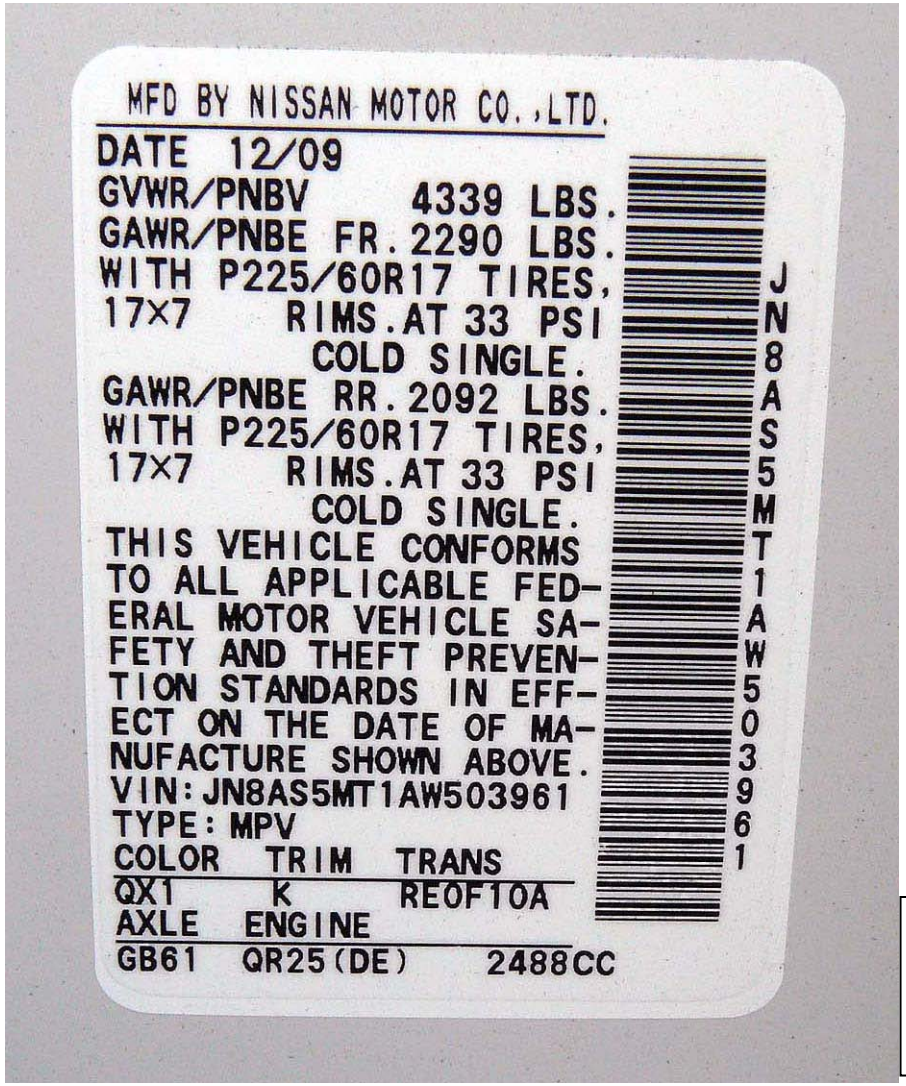
5.0 PHOTOGRAPHS (1 of 14)

Figure 5.1. Front View of Test Vehicle

5.0 PHOTOGRAPHS (2 of 14)

Figure 5.2. Rear View of Test Vehicle

5.0 PHOTOGRAPHS (3 of 14)



2010 Nissan Rogue
FMVSS No. 126
NHTSA NO.: CA5207
March 2010

Figure 5.3. Vehicle Certification Label

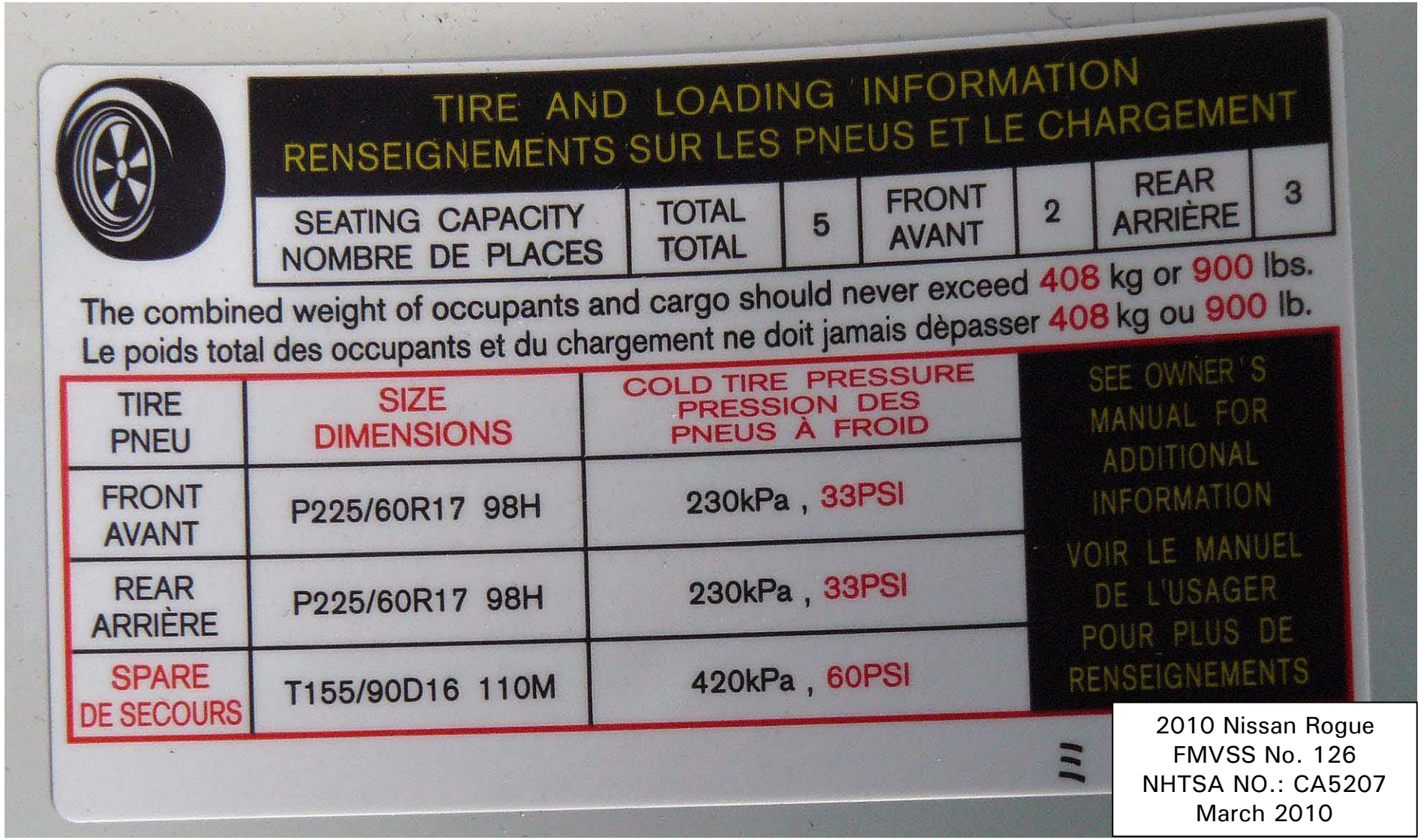
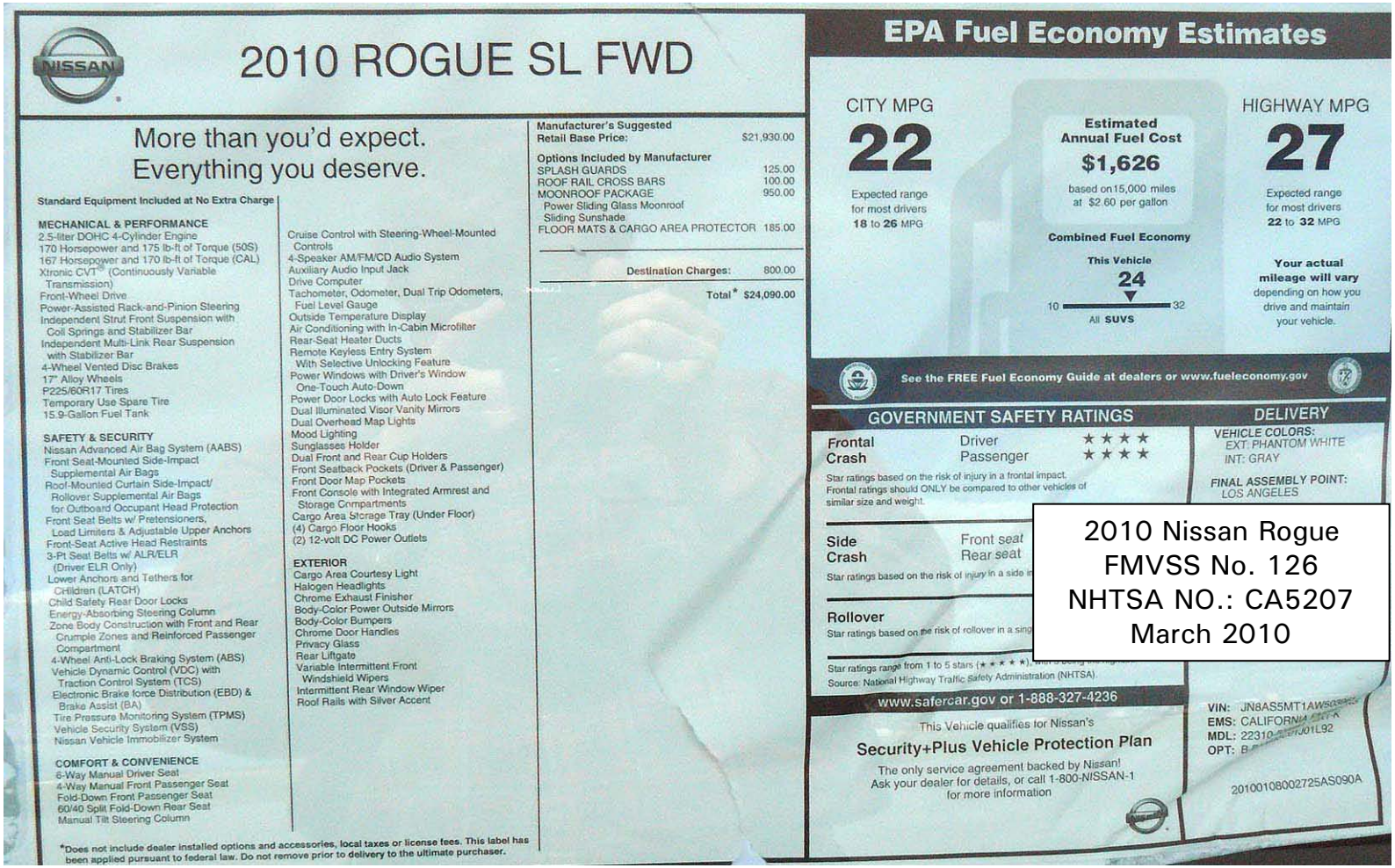


Figure 5.4. Vehicle Placard

5.0 PHOTOGRAPHS (5 of 14)



2010 ROGUE SL FWD

More than you'd expect.
Everything you deserve.

Standard Equipment Included at No Extra Charge

MECHANICAL & PERFORMANCE
2.5-liter DOHC 4-Cylinder Engine
170 Horsepower and 175 lb-ft of Torque (50S)
167 Horsepower and 170 lb-ft of Torque (CAL)
Xtronic CVT® (Continuously Variable Transmission)
Front-Wheel Drive
Power-Assisted Rack-and-Pinion Steering
Independent Strut Front Suspension with Coil Springs and Stabilizer Bar
Independent Multi-Link Rear Suspension with Stabilizer Bar
4-Wheel Vented Disc Brakes
17" Alloy Wheels
P225/60R17 Tires
Temporary Use Spare Tire
15.9-Gallon Fuel Tank

SAFETY & SECURITY
Nissan Advanced Air Bag System (AABS)
Front Seat-Mounted Side-Impact Supplemental Air Bags
Roof-Mounted Curtain Side-Impact/Rollover Supplemental Air Bags for Outboard Occupant Head Protection
Front Seat Belts w/ Pretensioners, Load Limiters & Adjustable Upper Anchors
Front-Seat Active Head Restraints
3-Pt Seat Belts w/ ALR/ELR (Driver ELR Only)
Lower Anchors and Tethers for CHildren (LATCH)
Child Safety Rear Door Locks
Energy-Absorbing Steering Column
Zone Body Construction with Front and Rear Crumple Zones and Reinforced Passenger Compartment
4-Wheel Anti-Lock Braking System (ABS)
Vehicle Dynamic Control (VDC) with Traction Control System (TCS)
Electronic Brake force Distribution (EBD) & Brake Assist (BA)
Tire Pressure Monitoring System (TPMS)
Vehicle Security System (VSS)
Nissan Vehicle Immobilizer System

COMFORT & CONVENIENCE
6-Way Manual Driver Seat
4-Way Manual Front Passenger Seat
Fold-Down Front Passenger Seat
60/40 Split Fold-Down Rear Seat
Manual Tilt Steering Column
Cruise Control with Steering-Wheel-Mounted Controls
4-Speaker AM/FM/CD Audio System
Auxiliary Audio Input Jack
Drive Computer
Tachometer, Odometer, Dual Trip Odometers, Fuel Level Gauge
Outside Temperature Display
Air Conditioning with In-Cabin Microfilter
Rear-Seat Heater Ducts
Remote Keyless Entry System With Selective Unlocking Feature
Power Windows with Driver's Window One-Touch Auto-Down
Power Door Locks with Auto Lock Feature
Dual Illuminated Visor Vanity Mirrors
Dual Overhead Map Lights
Mood Lighting
Sunglasses Holder
Dual Front and Rear Cup Holders
Front Seatback Pockets (Driver & Passenger)
Front Door Map Pockets
Front Console with Integrated Armrest and Storage Compartments
Cargo Area Storage Tray (Under Floor)
(4) Cargo Floor Hooks
(2) 12-volt DC Power Outlets

EXTERIOR
Cargo Area Courtesy Light
Halogen Headlights
Chrome Exhaust Finisher
Body-Color Power Outside Mirrors
Body-Color Bumpers
Chrome Door Handles
Privacy Glass
Rear Liftgate
Variable Intermittent Front Windshield Wipers
Intermittent Rear Window Wiper
Roof Rails with Silver Accent

Manufacturer's Suggested Retail Base Price:	$21,930.00
Options Included by Manufacturer	
SPLASH GUARDS	125.00
ROOF RAIL CROSS BARS	100.00
MOONROOF PACKAGE	950.00
Power Sliding Glass Moonroof	
Sliding Sunshade	
FLOOR MATS & CARGO AREA PROTECTOR	185.00
Destination Charges:	800.00
Total*	$24,090.00

*Does not include dealer installed options and accessories, local taxes or license fees. This label has been applied pursuant to federal law. Do not remove prior to delivery to the ultimate purchaser.

EPA Fuel Economy Estimates

CITY MPG
22
Expected range for most drivers 18 to 26 MPG

Estimated Annual Fuel Cost
$1,626
based on 15,000 miles at $2.60 per gallon

HIGHWAY MPG
27
Expected range for most drivers 22 to 32 MPG

Combined Fuel Economy
This Vehicle 24
10 — 32
All SUVs

Your actual mileage will vary depending on how you drive and maintain your vehicle.

See the FREE Fuel Economy Guide at dealers or www.fueleconomy.gov

GOVERNMENT SAFETY RATINGS

Frontal Crash — Driver ★★★★ Passenger ★★★★
Star ratings based on the risk of injury in a frontal impact. Frontal ratings should ONLY be compared to other vehicles of similar size and weight.

Side Crash — Front seat Rear seat
Star ratings based on the risk of injury in a side i

Rollover
Star ratings based on the risk of rollover in a sing

Star ratings range from 1 to 5 stars (★★★★★)
Source: National Highway Traffic Safety Administration (NHTSA)

www.safercar.gov or 1-888-327-4236

This Vehicle qualifies for Nissan's
Security+Plus Vehicle Protection Plan
The only service agreement backed by Nissan!
Ask your dealer for details, or call 1-800-NISSAN-1 for more information

DELIVERY
VEHICLE COLORS:
EXT: PHANTOM WHITE
INT: GRAY
FINAL ASSEMBLY POINT:
LOS ANGELES

2010 Nissan Rogue
FMVSS No. 126
NHTSA NO.: CA5207
March 2010

VIN: JN8AS5MT1AW
EMS: CALIFORN
MDL: 22310
OPT: B
20100108002725AS090A

Figure 5.5. Window Sticker (Monroney Label)

5.0 PHOTOGRAPHS (6 of 14)

Figure 5.6. Telltale for ESC Malfunction and ESC Off

5.0 PHOTOGRAPHS (7 of 14)

Figure 5.7. ESC Off Control Switch

5.0 PHOTOGRAPHS (8 of 14)

Figure 5.8. Front View of Vehicle As-Tested

5.0 PHOTOGRAPHS (9 of 14)

Figure 5.9. Rear View of Vehicle As-Tested

5.0 PHOTOGRAPHS (10 of 14)

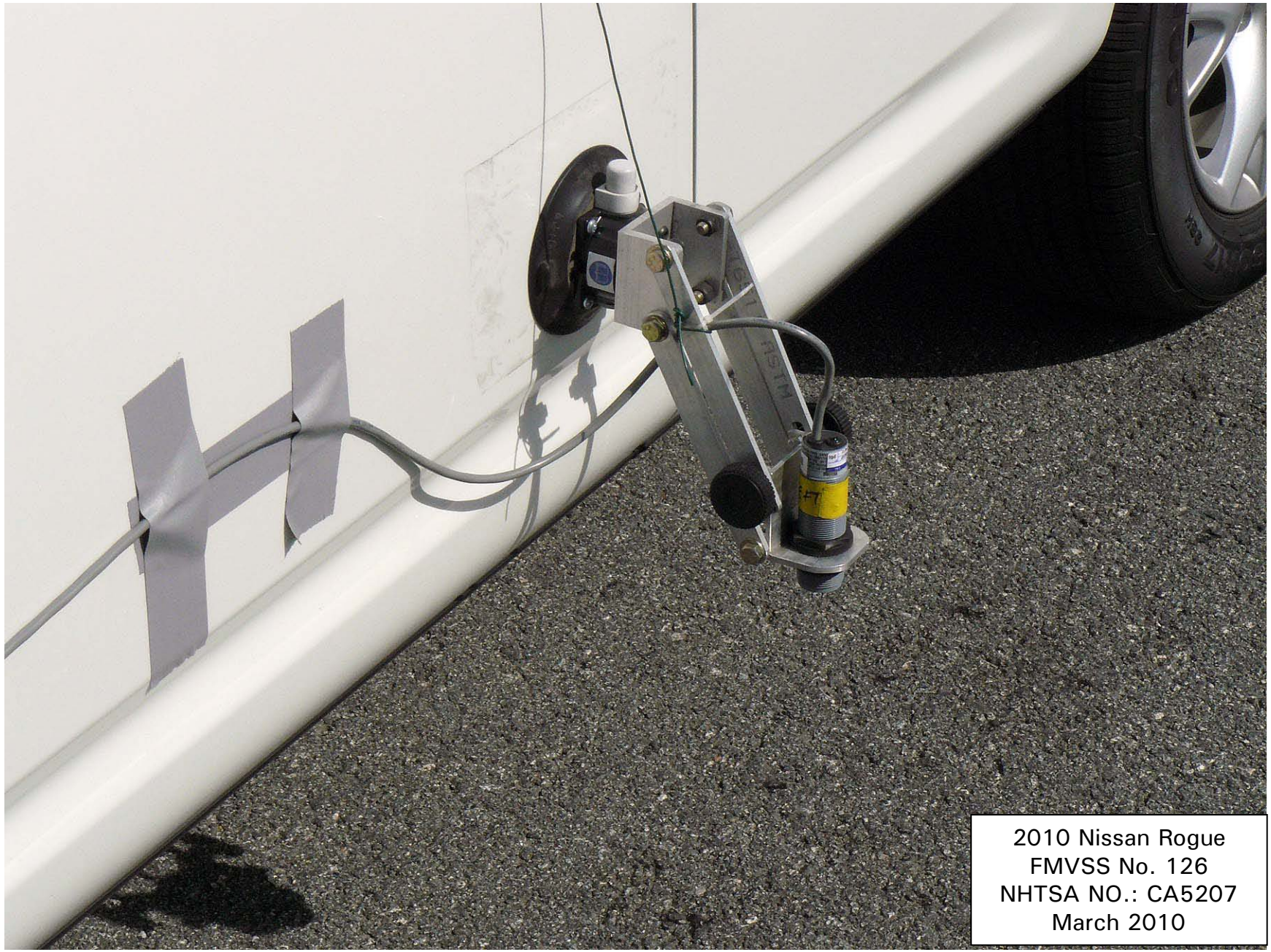


Figure 5.10. Ultrasonic Height Sensor Mounted on Left Side of Vehicle for Determining Body Roll Angle

5.0 PHOTOGRAPHS (11 of 14)

Figure 5.11. Rear Outrigger, Mount and Speed Sensor

5.0 PHOTOGRAPHS (12 of 14)

2010 Nissan Rogue
FMVSS No. 126
NHTSA NO.: CA5207
March 2010

Figure 5.12. Steering Controller and Data Acquisition Computer

5.0 PHOTOGRAPHS (13 of 14)

Figure 5.13. Inertial Measurement Unit Mounted in Vehicle

5.0 PHOTOGRAPHS (14 of 14)

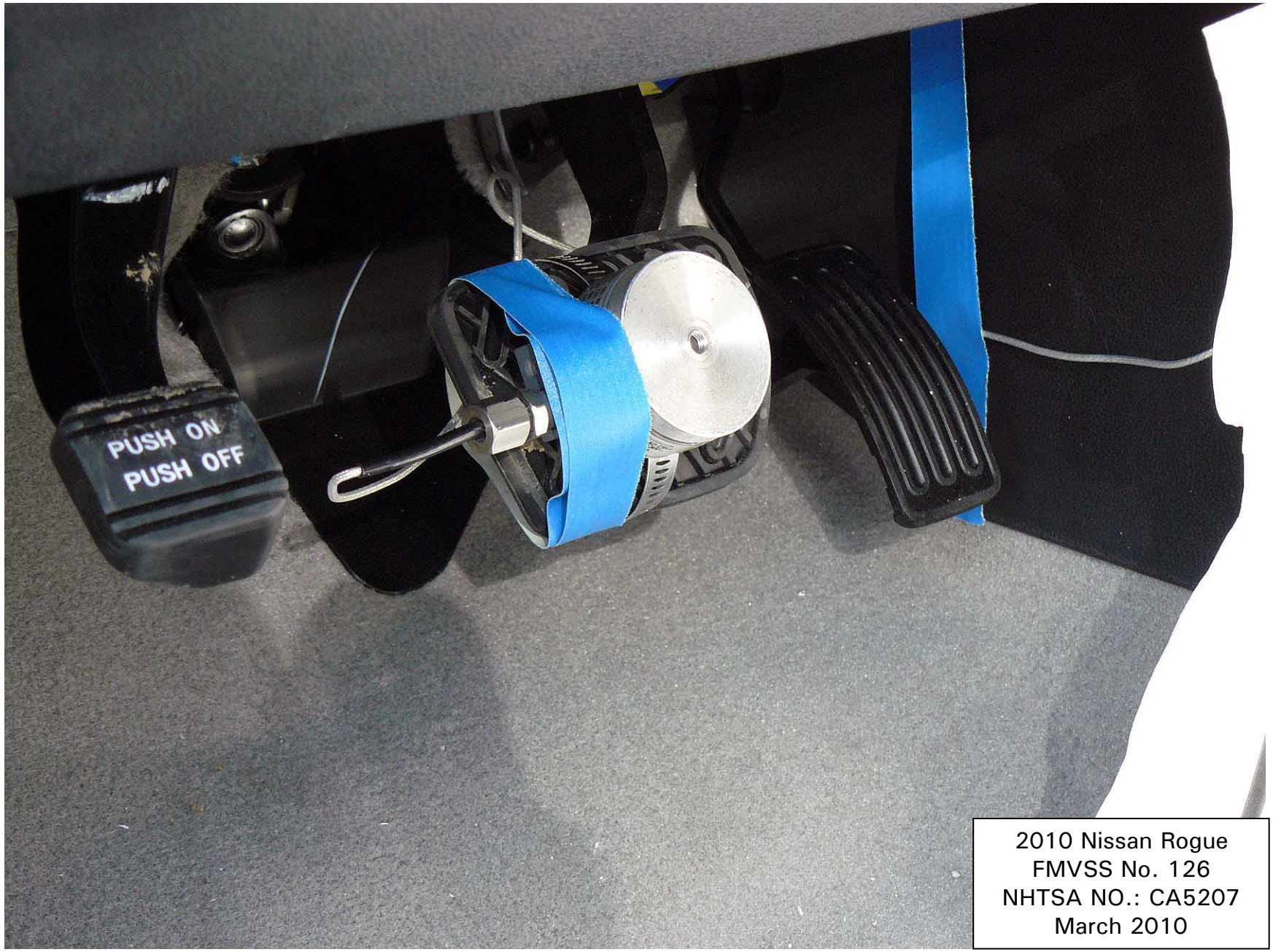


Figure 5.14. Brake Pedal Load Cell

6.0 DATA PLOTS (1 of 4)

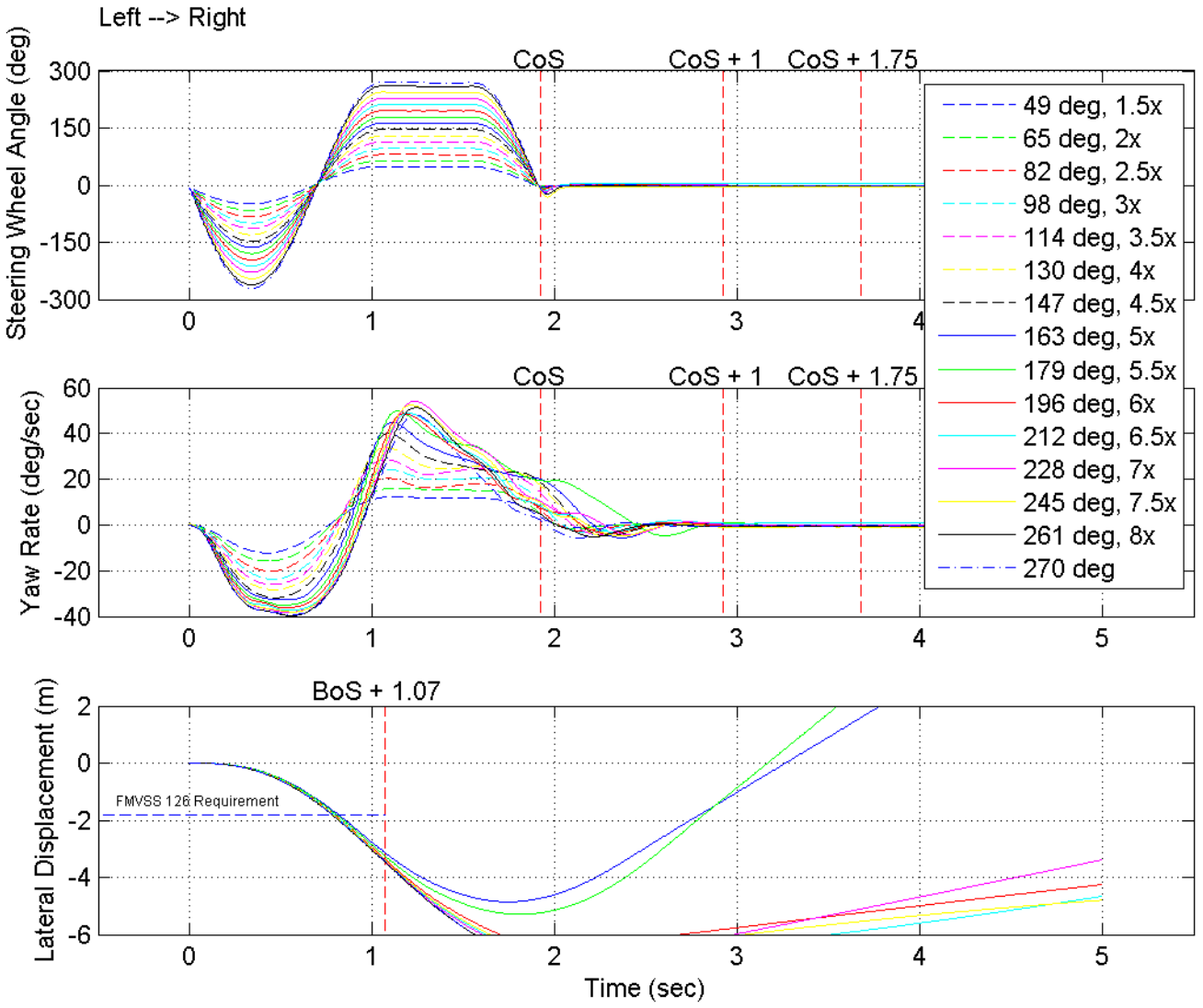


Figure 6.1. Steering Wheel Angle, Yaw Rate and Lateral Displacement for L-R Series

6.0 DATA PLOTS (2 of 4)

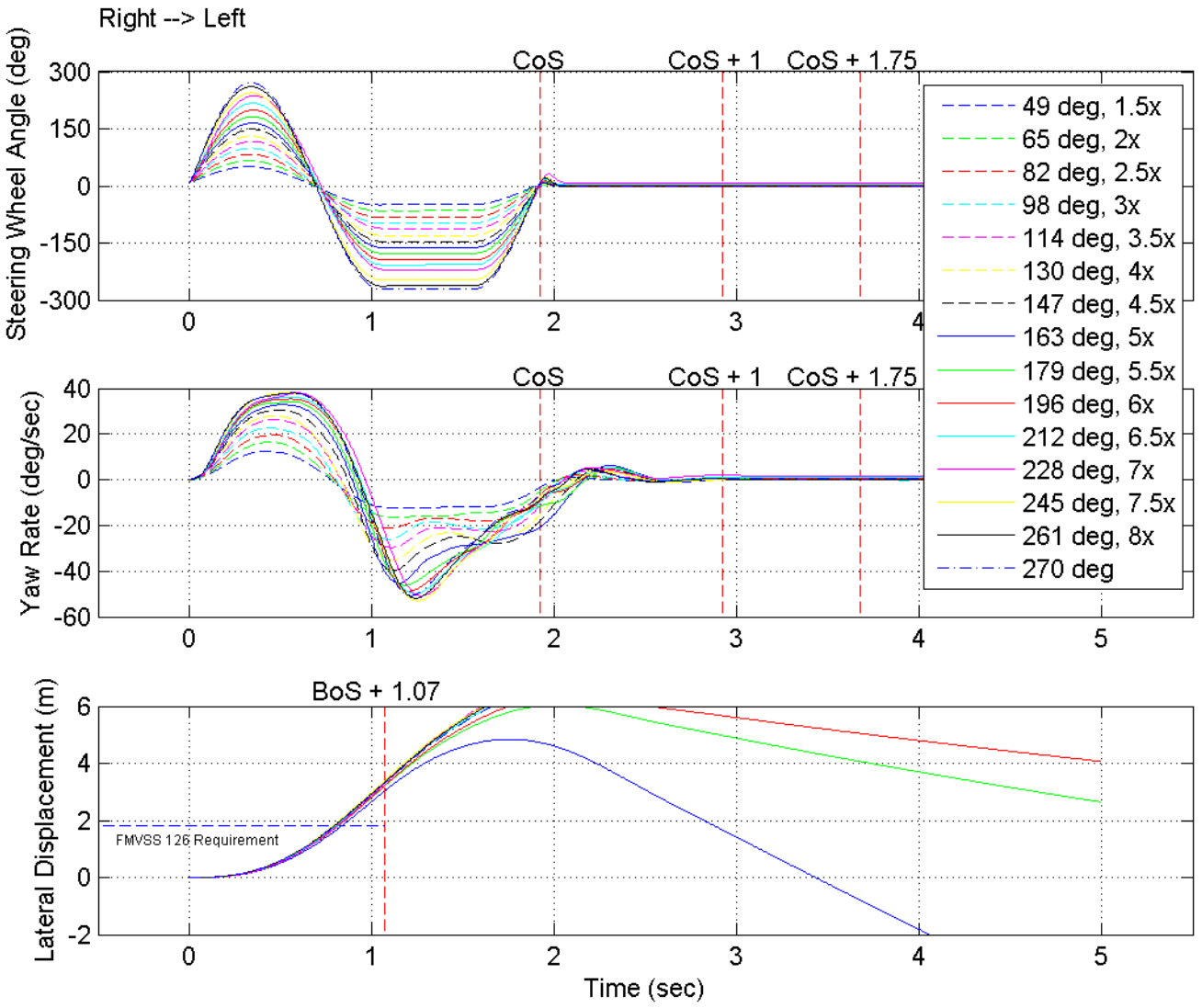


Figure 6.2. Steering Wheel Angle, Yaw Rate and Lateral Displacement for R-L Series

6.0 DATA PLOTS (3 of 4)

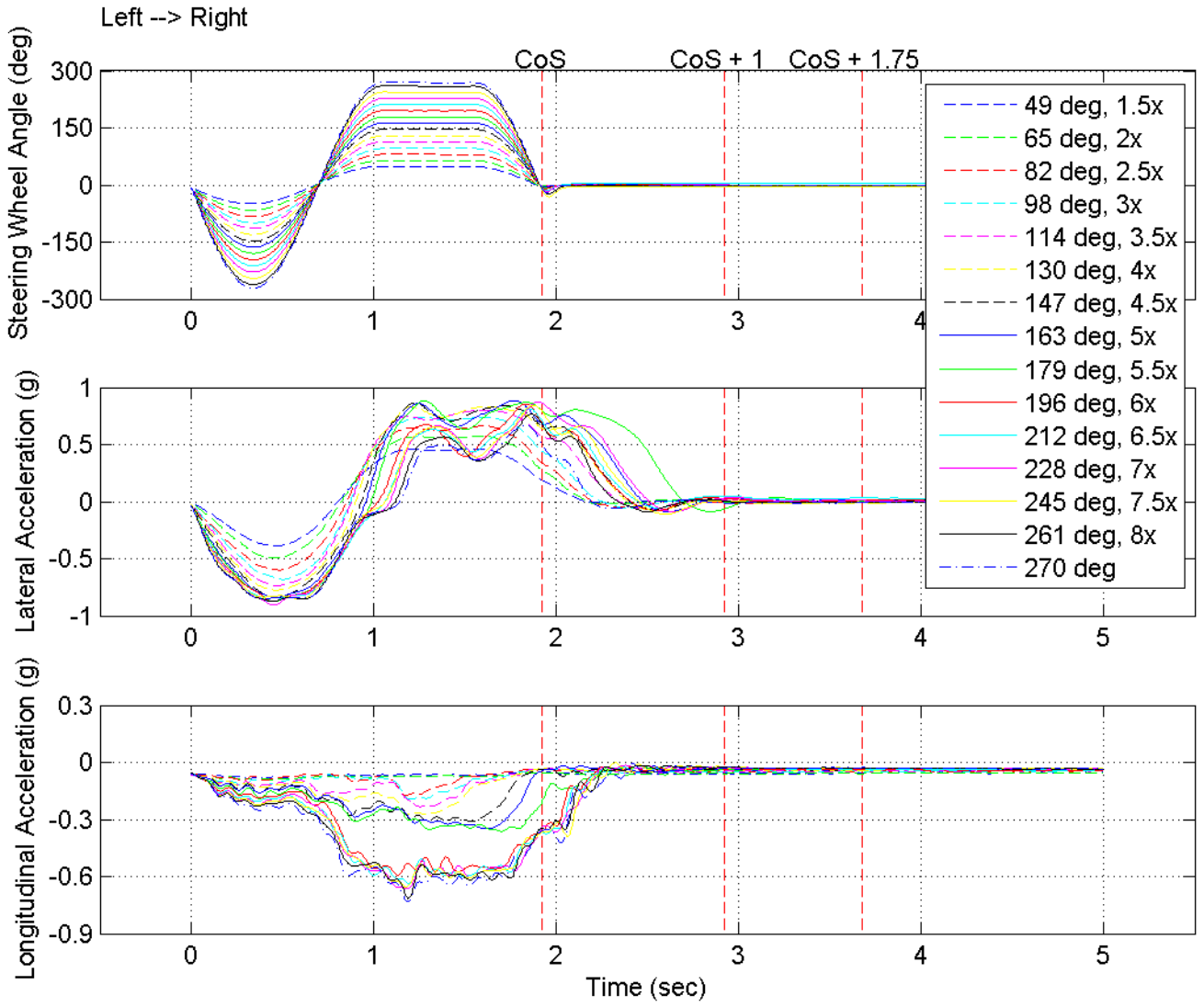


Figure 6.3. Steering Wheel Angle, Lateral Acceleration and Longitudinal Acceleration for L-R Series

6.0 DATA PLOTS (4 of 4)

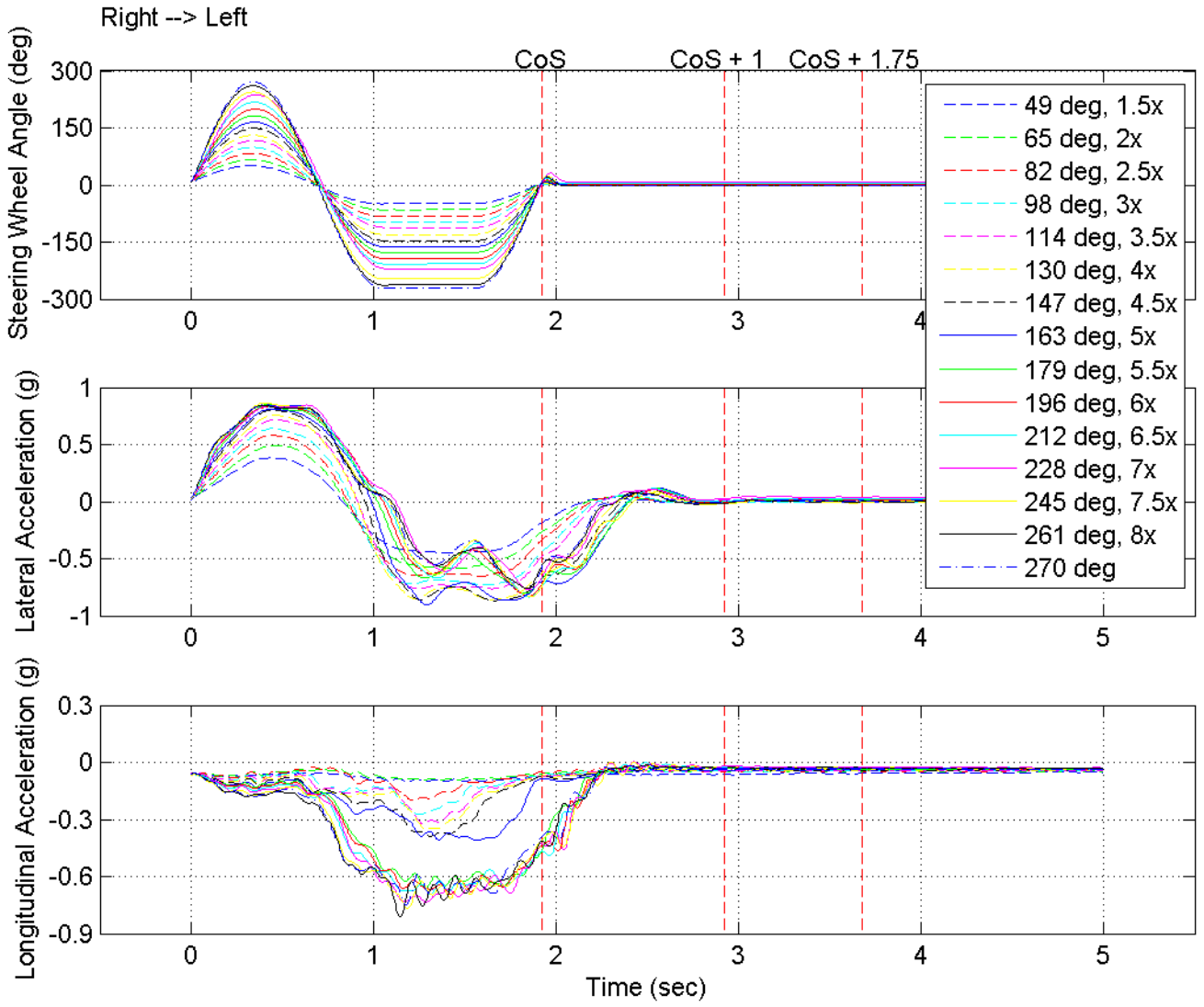


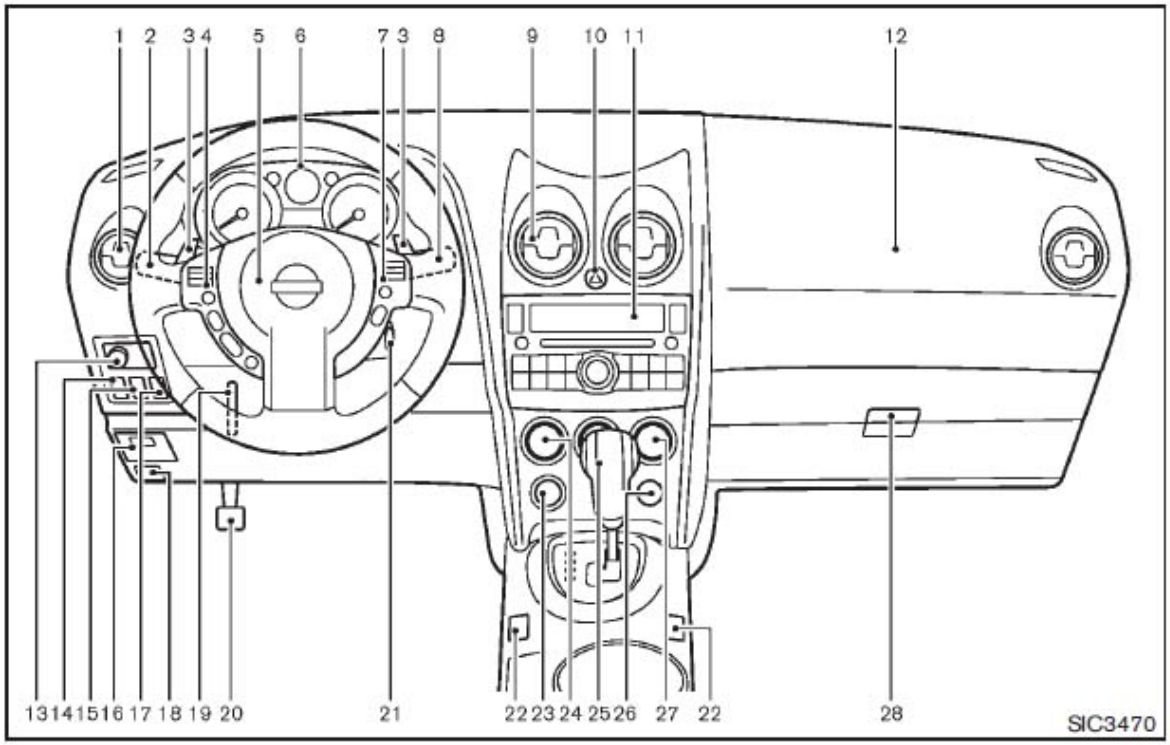
Figure 6.4. Steering Wheel Angle, Lateral Acceleration and Longitudinal Acceleration for R-L Series

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

7.1 OWNER'S MANUAL PAGES

INSTRUMENT PANEL



1. Side ventilator
2. Headlight, fog light (if so equipped) and turn signal switch
3. Paddle shifter (if so equipped)
4. Steering-wheel-mounted controls (left side)
   — Audio control
   — Bluetooth® Hands-Free Phone system control
5. Steering wheel
   — Horn
   — Driver supplemental air bag
6. Meters and gauges
7. Steering-wheel-mounted controls (right side)
   — Cruise control switches
8. Wiper and washer switch
9. Center ventilator
10. Hazard warning flasher switch
11. Audio system
    — Clock
12. Front passenger supplemental air bag
13. Outside remote mirror control switch
14. Headlight aiming control (if so equipped)
15. All-Wheel Drive (AWD) LOCK switch (if so equipped)
16. Fuse box cover
17. Vehicle Dynamic Control (VDC) OFF switch
18. Hood release handle
19. Tilting steering wheel lever
20. Parking brake
21. Ignition switch
22. Heated seat switch (if so equipped)
23. Power outlet
24. Heater/air conditioner control
25. Selector lever
26. Front passenger air bag status light
27. Rear window and outside mirror (if so equipped) defroster switch
28. Glove box

2-2 **Instruments and controls**

WARNING/INDICATOR LIGHTS AND AUDIBLE REMINDERS

AWD	All-Wheel Drive (AWD) warning light (AWD models)*		Low fuel warning light		High beam indicator light
ABS	Anti-lock Braking System (ABS) warning light		Low tire pressure warning light	SERVICE ENGINE SOON	Malfunction Indicator Light (MIL)
			Low washer fluid warning light*	O/D OFF	Overdrive off indicator light*
BRAKE	Brake warning light	P SHIFT	P position selecting warning light*		Security indicator light
			Seat belt warning light		Slip indicator light
	Charge warning light		Supplemental air bag warning light		Small light indicator light
	Door open warning light	OFF	Front passenger air bag status light		Turn signal/hazard indicator lights
PS	Electric power steering warning light	AWD LOCK	All-Wheel Drive (AWD) LOCK indicator light (AWD models)*	VDC OFF	Vehicle Dynamic Control (VDC) off indicator light
	Engine oil pressure warning light	CRUISE	Cruise main switch indicator light		
KEY	Intelligent Key system warning light*	SET	Cruise set indicator light	*: if so equipped	

CHECKING BULBS

With all doors closed, apply the parking brake and turn the ignition switch to the ON position without starting the engine. The following lights will come on:

, BRAKE or , , SERVICE ENGINE SOON, , AWD, PS

The following lights come on briefly and then go off (if so equipped):

, ABS or , , VDC OFF, , , O/D OFF, AWD LOCK, P SHIFT

If any light does not come on, it may indicate a burned-out bulb or an open circuit in the electrical system. Have the system checked by a NISSAN dealer.

Security indicator light

The light blinks when the ignition switch is in the ACC, OFF or LOCK position. This function indicates the security system equipped on the vehicle is operational.

If the security system is malfunctioning, this light will remain on while the ignition switch is in the ON position. For additional information, see "SECURITY SYSTEMS" later in this section.

Slip indicator light

The light will blink when the Vehicle Dynamic Control (VDC) system is operating, thus alerting the driver to the fact that the road surface may be slippery and the vehicle is nearing its traction limits.

Small light indicator light

The light illuminates when the headlight switch is turned to the position.

Turn signal/hazard indicator lights

The light flashes when the turn signal switch lever or hazard switch is turned on.

Vehicle Dynamic Control (VDC) off indicator light

The light illuminates when the Vehicle Dynamic Control (VDC) off switch is pushed to OFF. This indicates that the VDC system is not operating. When the VDC off indicator light and slip indicator light illuminate with the VDC system turned on, this light alerts the driver to the fact that the VDC system's fail-safe mode is operating, for example the VDC system may not be functioning properly. Have the system checked by a NISSAN dealer. If a malfunction occurs in the system, the VDC system function will be canceled but the vehicle is still driveable. For additional information, see "VEHICLE DYNAMIC CONTROL (VDC) SYSTEM" in the "5. Starting and driving" section of this manual.

AUDIBLE REMINDERS

Key reminder chime

The key reminder chime sounds if the driver's side door is opened while the key is left in the ignition switch and the ignition switch is in the ACC, OFF or LOCK position. Remove the key and take it with you when leaving the vehicle.

Light reminder chime

The light reminder chime will sound when the driver side door is opened with the light switch in the or position, and the ignition switch is in the ACC, OFF or LOCK position.

Turn the light switch off when you leave the vehicle.

Brake pad wear warning

The disc brake pads have audible wear warnings. When a brake pad requires replacement, it will make a high pitched scraping sound when the vehicle is in motion. This scraping sound will first occur only when the brake pedal is depressed. After more wear of the brake pad, the sound will always be heard even if the brake pedal is not depressed. Have the brakes checked as soon as possible if the warning sound is heard.

Parking brake reminder chime

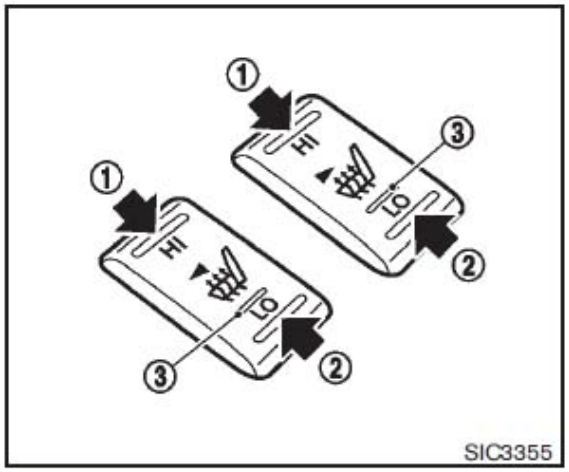
The parking brake reminder chime will sound if the vehicle is driven at more than 4 MPH (7 km/h) with the parking brake applied. Stop the vehicle and release the parking brake.

Seat belt warning chime

The seat belt warning chime will sound for about 6 seconds unless the driver's seat belt is securely fastened.

Intelligent Key door buzzer (if so equipped)

When the chime or buzzer sounds from inside and outside the vehicle, check for the following:



The front seats are warmed by built-in heaters. The switches located on the center console can be operated independently of each other.

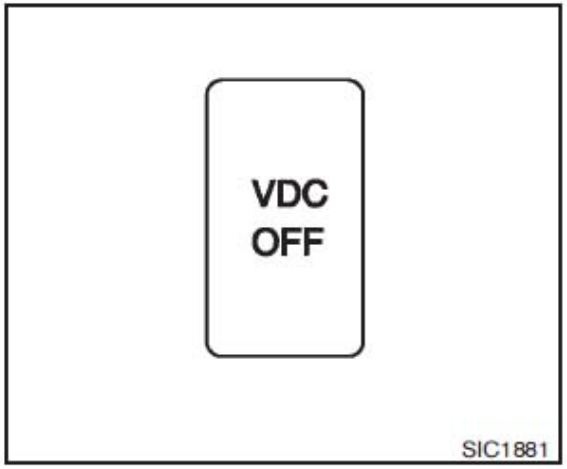
1. Start the engine.
2. Select heat range.
   - ① For high heat, push the HI (High) side of the switch.
   - ② For low heat, push the LO (Low) side of the switch.

   The indicator light in the switch ③ will illuminate when low or high is selected.
3. To turn off the heater, return the switch to the level position. Make sure the indicator light goes off.

The heater is controlled by a thermostat, automatically turning the heater on and off. The indicator light will remain on as long as the switch is on.

When the vehicle's interior is warmed, or before you leave the vehicle, be sure to turn off the switch.

VEHICLE DYNAMIC CONTROL (VDC) OFF SWITCH



The vehicle should be driven with the Vehicle Dynamic Control (VDC) system on for most driving conditions.

If the vehicle is stuck in mud or snow, the VDC system reduces the engine output to reduce wheel spin. The engine speed will be reduced even if the accelerator is depressed to the floor. If maximum engine power is needed to free a stuck vehicle, turn the VDC system off.

To turn off the VDC system, push the VDC OFF switch. The VDC OFF indicator will illuminate.

Push the VDC OFF switch again or restart the engine to turn on the system. (See "VEHICLE DYNAMIC CONTROL (VDC) SYSTEM" in the "5. Starting and driving" section.)

locking up. Steer the vehicle to avoid obstacles.

⚠ WARNING

Do not pump the brake pedal. Doing so may result in increased stopping distances.

Self-test feature

The ABS includes electronic sensors, electric pumps, hydraulic solenoids and a computer. The computer has a built-in diagnostic feature that tests the system each time you start the engine and move the vehicle at a low speed in forward or reverse. When the self-test occurs, you may hear a "clunk" noise and/or feel a pulsation in the brake pedal. This is normal and does not indicate a malfunction. If the computer senses a malfunction, it switches the ABS off and illuminates the ABS warning light on the instrument panel. The brake system then operates normally, but without anti-lock assistance.

If the ABS warning light illuminates during the self-test or while driving, have the vehicle checked by a NISSAN dealer.

Normal operation

The ABS operates at speeds above 3 to 6 MPH (5 to 10 km/h). The speed varies according to road conditions.

When the ABS senses that one or more wheels are close to locking up, the actuator rapidly applies and releases hydraulic pressure. This action is similar to pumping the brakes very quickly. You may feel a pulsation in the brake pedal and hear a noise from under the hood or feel a vibration from the actuator when it is operating. This is normal and indicates that the ABS is operating properly. However, the pulsation may indicate that road conditions are hazardous and extra care is required while driving.

VEHICLE DYNAMIC CONTROL (VDC) SYSTEM

When accelerating or driving on slippery surfaces, the tires may spin or slide. With the Vehicle Dynamic Control (VDC) system, sensors detect these movements and control the braking and engine output to help improve vehicle stability.

- When the VDC system is operating, the "SLIP" indicator in the instrument panel blinks.
- If the "SLIP" indicator blinks, the road conditions are slippery. Be sure to adjust your speed and driving to these conditions. Be sure to drive carefully. (See "Slip indicator light" in the "2. Instruments and controls" section, and "Vehicle Dynamic Control (VDC) off indicator light" in the "2. Instruments and controls" section.)
- Indicator light

  If a malfunction occurs in the system, the "SLIP" and "VDC OFF" indicator lights illuminate in the instrument panel. As long as these indicators are illuminated, the VDC system function is canceled.

The VDC system uses an Active Brake Limited Slip (ABLS) function to improve vehicle traction. The ABLS system works when one of the driving wheels is spinning on a slippery surface. The ABLS system brakes the spinning wheel, which distributes the driving power to the other drive

wheel. If the vehicle is operated with the VDC OFF switch pushed and the VDC system turned off, all VDC systems will be turned off. The ABLS system and ABS will still operate with the VDC system off. If the ABLS system is activated, the "SLIP" indicator will blink and you may hear a clunk noise and/or feel a pulsation in the brake pedal. This is normal and is not an indication of a malfunction.

While the VDC system is operating, you may feel a pulsation in the brake pedal and hear a noise or feel a vibration from under the hood. This is normal and indicates that the VDC system is working properly.

The VDC system computer has a built-in diagnostic feature that tests the system each time you start the engine and move the vehicle at a low speed forward or backward. When the self-test occurs, you may hear a "clunk" noise and/or feel a pulsation in the brake pedal. This is normal and is not an indication of a malfunction.

⚠ WARNING

- **The VDC system is designed to help improve driving stability but does not prevent accidents due to abrupt steering operation at high speeds or due to careless or dangerous driving techniques. Reduce vehicle speed and be especially careful when driving and cornering on slippery surfaces and always drive carefully.**
- **Do not modify the vehicle's suspension. If suspension parts such as shock absorbers, struts, springs, stabilizer bars and bushings and wheels are not NISSAN approved or are extremely deteriorated the VDC system may not operate properly. This could adversely affect vehicle handling performance, and the "VDC OFF" indicator or "SLIP" indicator or both indicator lights may illuminate.**
- **If brake related parts such as brake pads, rotors and calipers are not standard equipment or are extremely deteriorated, the "VDC OFF" indicator or "SLIP" indicator or both indicator lights may illuminate.**
- **If engine related parts such as muffler are not standard equipment or are extremely deteriorated, the "VDC OFF" indicator or "SLIP" indicator or both indicator lights may illuminate.**
- **When driving on extremely inclined surfaces such as higher banked corners, the VDC system may not operate properly and the "VDC OFF" indicator or "SLIP" indicator or both indicator lights may illuminate. Do not drive on these types of roads.**
- **When driving on unstable surfaces such as a turntable, ferry, elevator or ramp, the "VDC OFF" indicator or "SLIP" indicator or both indicator lights may illuminate. This is not a malfunction. Restart the engine after driving onto a stable surface.**
- **If wheels or tires other than those recommended are used, the VDC system may not operate properly and "VDC OFF" indicator or "SLIP" indicator or both indicator lights may illuminate.**
- **The VDC system is not a substitute for winter tires or tire chains on a snow covered road.**

hooks.

- **Always pull the cable straight out from the front of the vehicle. Never pull on the vehicle at an angle.**
- **Pulling devices should be routed so they do not touch any part of the suspension, steering, brake or cooling systems.**
- **Pulling devices such as ropes or canvas straps are not recommended for use in vehicle towing or recovery.**

Rocking a stuck vehicle

If your vehicle is stuck in sand, snow, mud, etc., use the following procedure:

1. Turn off the Vehicle Dynamic Control (VDC) system.
2. Make sure the area in front and behind the vehicle is clear of obstructions.
3. Turn the steering wheel right and left to clear an area around the front tires.
4. Slowly rock the vehicle forward and backward.
   - Shift back and forth between R (Reverse) and D (Drive).
   - Apply the accelerator as little as possible to maintain the rocking motion.
   - Release the accelerator pedal before shifting between R and D.
   - Do not spin the tires above 35 MPH (55 km/h).
5. If the vehicle cannot be freed after a few tries, contact a professional towing service to remove the vehicle.

7.2 VEHICLE ARRIVAL CONDITION REPORT

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

From: *Automotive Allies*

To: Dynamic Research, Inc

Purpose ☒ Initial Receipt
☐ Received via Transfer
☐ Present Vehicle Condition

Vehicle VIN: *JN8AS5MT1AW503961* NHTSA NO.: *CA5207*
Model Year: *2010* Odometer Reading: *5* Miles
Make *Nissan* Body Style: *MPV*
Model: *Rogue* Body Color: *White*
Manufacture Date: *12/09* Dealer: *Automotive Allies*
GVWR (kg/lb) *1968/4339* 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: *3/24/2010*

Vehicle VIN: *JN8AS5MT1AW503961* NHTSA NO.: *CA5207*
Model Year: *2010* Odometer Reading: *149* Miles
Make: *Nissan* Body Style: *MPV*
Model: *Rogue* Body Color: *White*
Manufacture Date: *12/09* Dealer:
GVWR (kg/lb) *1968 (4339)* 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: *3/24/2010*

APPROVED BY: *P Broen* DATE APPROVED: *3/23/2010*

7.4 SINE WITH DWELL TEST RESULTS

2010 Nissan Rogue MPV
NHTSA No.: CA5207
Date of Test: *3/4/2010*
Date Created: *3/4/2010*

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

File	SWA @ 5deg Ct	MES	Time @ 5deg	COS	Time @ COS	MOS	Time @ MOS	YRR1	YR1	YRR 1 Ct	YRR 175	YR175	YRR17 5 Ct	2nd Yaw Peak	2nd Yaw Peak Ct	Lat Disp	Lat. Acc. 1.07 s	1st SWA Peak	1st SWA Peak Ct	2nd SWA Mean
	(deg)	(mph)	(s)		(s)		(sec)	(%)	(deg/s)		(%)	(deg/s)		(deg/s)		(ft)	(g)	(deg)		(deg)
23	710	50.28	3.542	1091	5.447	847	4.227	-0.29	-0.04	1291	-0.75	-0.09	1441	12.31	939	-3.87	0.39	49.0	775	48.96
24	709	50.19	3.536	1091	5.447	847	4.226	-0.26	-0.04	1291	-1.19	-0.19	1441	15.87	934	-5.15	0.47	64.8	775	64.84
25	708	50.31	3.531	1091	5.446	847	4.226	-0.9	-0.18	1291	-0.72	-0.15	1441	20.6	926	-6.28	0.55	81.8	775	81.9
26	707	50.36	3.528	1090	5.445	847	4.226	-0.97	-0.24	1290	-0.53	-0.13	1440	24.27	927	-7.31	0.58	97.7	775	97.81
27	707	50.13	3.526	1090	5.443	846	4.225	-0.67	-0.19	1290	-0.33	-0.09	1440	28.46	922	-8.14	0.61	113.6	775	113.69
28	706	50.28	3.524	1090	5.443	846	4.225	-0.59	-0.2	1290	-0.2	-0.07	1440	33.85	922	-8.89	0.62	129.7	775	129.66
29	706	50.21	3.524	1090	5.443	847	4.226	-0.24	-0.1	1290	0.03	0.01	1440	40.19	925	-9.54	0.6	146.8	775	146.62
30	706	50.1	3.523	1090	5.442	846	4.225	0.62	0.28	1290	0.08	0.04	1440	44.88	930	-10.15	0.53	162.8	775	162.54
31	706	50.18	3.523	1090	5.444	847	4.226	2.08	1.04	1290	-0.26	-0.13	1440	49.86	935	-10.5	0.41	178.9	775	178.48
32	706	50.25	3.522	1090	5.441	846	4.225	-0.52	-0.25	1290	-0.24	-0.11	1440	48.55	942	-10.84	0.1	195.9	775	195.47
33	706	50.11	3.523	1090	5.441	847	4.227	1.32	0.64	1290	1.55	0.76	1440	48.86	947	-11	0	211.9	775	211.46
34	706	50.14	3.523	1090	5.441	847	4.226	0.38	0.2	1290	0.1	0.05	1440	54.04	954	-11.11	-0.07	228.1	775	227.55
35	706	50.34	3.523	1090	5.441	847	4.226	-1.79	-0.94	1290	-1.71	-0.9	1440	52.44	950	-10.99	-0.01	245.0	775	244.53
36	706	50.22	3.524	1090	5.443	847	4.227	-1.07	-0.55	1290	-0.77	-0.39	1440	51.49	955	-11.21	-0.08	261.0	775	260.48
37	706	50.24	3.523	1090	5.443	847	4.227	-0.3	-0.15	1290	-0.14	-0.07	1440	48.42	954	-11.11	-0.07	270.0	775	269.48

7.4 SINE WITH DWELL TEST RESULTS

2010 Nissan Rogue MPV
NHTSA No.: CA5207
Date of Test: *3/4/2010*
Date Created: *3/4/2010*

Lateral Stability Test Series No. 2 – Clockwise Initial Steer Direction

File	SWA @ 5deg Ct	MES	Time @ 5deg	COS	Time @ COS	MOS	Time @ MOS	YRR1	YR1	YRR 1 Ct	YRR 175	YR175	YRR17 5 Ct	2nd Yaw Peak	2nd Yaw Peak Ct	Lat Disp	Lat. Acc. 1.07 s	1st SWA Peak	1st SWA Peak Ct	2nd SWA Mean
	(deg)	(mph)	(s)		(s)		(sec)	(%)	(deg/s)		(%)	(deg/s)		(deg/s)		(ft)	(g)	(deg)		(deg)
38	710	50.33	3.541	1091	5.447	847	4.227	-0.33	0.04	1291	0.28	-0.03	1441	-12.4	935	3.98	-0.37	49.7	775	49.54
39	708	50.2	3.535	1091	5.446	847	4.227	-0.8	0.13	1291	0.14	-0.02	1441	-16.51	936	5.1	-0.45	65.7	775	65.41
40	707	50.23	3.53	1090	5.445	847	4.226	-0.61	0.13	1290	-0.36	0.08	1440	-21.02	928	6.19	-0.52	82.6	775	82.33
41	707	50.14	3.528	1091	5.446	847	4.226	-0.76	0.2	1291	-0.41	0.11	1441	-25.9	927	7.07	-0.57	98.5	775	98.36
42	707	50.14	3.527	1091	5.446	849	4.236	-1.83	0.55	1291	-1.33	0.4	1441	-29.73	928	8.01	-0.55	115.8	777	112.77
43	706	50.32	3.523	1090	5.443	846	4.225	0.07	-0.03	1290	-0.22	0.08	1440	-35.18	929	8.56	-0.6	130.4	775	130.37
44	706	50.42	3.523	1091	5.446	848	4.234	-0.85	0.34	1291	-0.56	0.22	1441	-39.9	930	9.26	-0.52	148.8	776	145.94
45	707	50.09	3.528	1091	5.449	849	4.24	-0.74	0.33	1291	-0.67	0.3	1441	-45.11	938	9.8	-0.36	165.2	777	161.53
48	707	50.36	3.529	1091	5.448	850	4.241	-1.38	0.64	1291	-1.03	0.48	1441	-46.19	944	10.36	-0.15	181.9	778	176.92
49	706	50.32	3.522	1090	5.444	849	4.236	-1.07	0.53	1290	-0.8	0.39	1440	-49.04	947	10.47	-0.06	198.5	776	194.25
51	707	50.23	3.526	1091	5.446	850	4.245	-2.28	1.14	1291	-2.02	1.01	1441	-49.71	955	10.68	0.02	217.9	778	206.82
52	707	50.04	3.526	1092	5.453	853	4.259	-3.76	1.91	1292	-3.18	1.61	1442	-50.79	962	10.58	0.1	237.8	780	219.13
54	706	50.14	3.522	1089	5.439	847	4.226	-0.47	0.25	1289	-0.14	0.08	1439	-52.79	958	10.97	0.05	245.7	775	245.19
55	706	50.24	3.522	1090	5.441	847	4.226	-0.54	0.28	1290	-0.12	0.06	1440	-51.99	955	10.78	0.04	261.6	775	261.17
56	706	50.14	3.522	1090	5.442	847	4.227	-0.32	0.16	1290	-0.01	0.01	1440	-51.07	950	10.7	0.02	270.6	775	270.13

7.5 SLOWLY INCREASING STEER TEST RESULTS

2010 Nissan Rogue MPV
NHTSA No.: *CA5207*
Date of Test: *3/4/2010*
Date Created: *3/4/2010*

File	EventPt	DOS	MES	Mean SPD	AYcount_3	THETAENCF_3	AYCG_CD2_3	r_squared	ZeroBegin	ZeroEnd
			(mph)	(mph)		(deg)	(g)			
11	716	1	49.531	49.4767	1190	-32.5985	-0.30727	0.996907	516	716
12	700	1	50.138	50.38277	1195	-32.8666	-0.29673	0.994882	500	700
13	637	1	49.272	50.47689	1185	-32.3636	-0.30574	0.998168	437	637
14	716	0	49.421	50.14148	1181	32.24218	0.310336	0.990134	516	716
15	700	0	50.116	50.01676	1187	32.69659	0.308198	0.982114	500	700
17	695	0	50.157	50.28188	1190	32.8555	0.296305	0.994742	495	695
				Averages		32.6	0.304096			

Scalars	Steering Angles (deg)
1.5	49
2.0	65
2.5	82
3.0	98
3.5	114
4.0	130
4.5	147
5.0	163

Scalars	Steering Angles (deg)
5.5	179
6.0	196
6.5	212
7.0	228
7.5	245
8.0	261
-	270

7.6 INERTIAL SENSING SYSTEM LOCATION COORDINATES

Vehicle:	**2010 Nissan Rogue MPV**	NHTSA No.:	CA5207
Wheelbase:	105.9 Inches	Faro Arm S/N:	U08-05-08-06636
Measurement date:	2/26/2010	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

	Ref X	Ref Y	Ref Z
M_PLANE001_Ground_Plane	-	-	0.000
M_Line_Y_Axis	-1.537	-3.928	0.000
M_Point_48_Ref	0.000	0.000	-
M_CIRCLE001_I_Left_Rear_Wheel_Axle	-38.530	13.625	-13.332
M_Point_IMU_side	1.342	46.182	-21.357
M_Point_ROOF	-	-	-64.862
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	1.342	47.707	-21.357

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

	Ref X	Ref Y	Ref Z
Motion_PAK_Location in S7D (Matlab program) coordinate system	**66.028**	**-0.293**	**21.357**

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).