

APPENDIX L. TEST REPORT FORMAT

Task 5 – Develop a Test Report Format

The following presents a format for reporting testing conducted in support of the consumer braking program for the National Highway Traffic Safety Administration (NHTSA). The format is structured in outline form in an effort to standardize the method in which brake stop results are reported.

I. Objective

The objective of the test was to perform brake performance tests with vehicles equipped with four-wheel anti-lock brake systems (ABS) and to determine the capability of the vehicle to stop under conditions simulating a real-world emergency brake event. The results are to be reported to the National Highway Traffic Safety Administration (NHTSA) in support of the consumer braking program.

II. Procedure

The procedure should be carried out in accordance with the standards presented in FMVSS 135, Passenger Car Brake Systems. It should also comply with the proposed supplements to the overall test methodology included in this report to minimize stopping distance variability. The following presents an outline of the information that should be included in the procedure:

A. General

1. Summary of Brake Stop Test Characteristics
 - a. Target speed [100 km/hr (62 mph)].
 - b. Payload configuration used during testing (empty, full, etc.).
 - c. Surface conditions used during testing (dry or wet).
 - d. Test driver experience.
2. Summary of Vehicle(s) Tested
 - a. Make, model and vehicle identification number.
 - b. Mileage.
 - c. Tire specifications.
 - d. Brake specifications.

B. Setup and Instrumentation

1. Vehicle Setup
 - a. Tire pressure, brake component inspection
 - b. Summary of vehicle operation.
 - c. Description of payload method and conditions.
 - d. Weight distribution and center of gravity determination method.
2. Vehicle Instrumentation Details
 - a. Data acquisition system.
 - b. Speed and distance transducer.
 - c. Pedal effort transducer.
 - d. Sampling rate.
 - e. Normalization procedure.
3. Other Instrumentation
 - a. Brake component temperature measurement.
 - b. Ambient and road surface temperature measurement.
 - c. Wind conditions.

B. Brake Stop Results

The brake stop results obtained from testing should be reported as shown in Table 4.

TABLE 4. BRAKE STOP RESULTS FROM 100 KM/HR (62 MPH)

Stop No.	Measurement					
	Stopping Distance		Deceleration Rate		Pedal effort at 0.1 sec	
	m	ft	m/sec ²	ft/sec ²	N	lb
Dry surface without payload						
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
Average						
Dry surface with payload						
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
Average						
Wet surface without payload						
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
Average						
Wet surface with payload						
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
Average						

C. Recorded Brake Temperatures

All brake temperatures recorded prior to each brake stop after the cool down procedure (if necessary) should be included as shown in Table 5.

TABLE 5. BRAKE COMPONENT TEMPERATURES

Stop No.	Measurement							
	Left front		Right front		Left rear		Right rear	
	°C	°F	°C	°F	°C	°F	°C	°F
Dry surface without payload								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
Dry surface with payload								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
Wet surface without payload								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
Wet surface with payload								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

D. Environmental Data

The recorded environmental test data should be presented as shown in Tables 6 and 7. Temperature and wind measurements shown in Table 6 should be taken every 15 to 30 minutes during testing. Surface friction results obtained within a week of the date of testing should be presented as shown in Table 7.

TABLE 6. ENVIRONMENTAL TEST DATA

Test configuration	Date	Time	Measurement								
			Ambient temperature		Road surface Temperature		Average wind speed		Peak speed		Avg wind direction (degrees)
			°C	°F	°C	°F	km/hr	mph	km/hr	mph	

TABLE 7. AVERAGE RESULTS FROM CHIRP TESTING

Date	Measurement									
	Frictional coefficient	Dry surface				Wet surface				
		Test speed		Ambient temperature		Frictional coefficient	Test speed		Ambient temperature	
		km/hr	mph	°C	°F		km/hr	mph	°C	°F

E. Notes and Comments

Any notes or comments documented during testing should be reported in this section. Specifically, a list and explanation of the observations recorded regarding vehicle performance, modifications in test procedure, or the effect of test conditions on data accuracy and variability should be included.

IV. Analysis – Final Statistics

The average stopping distance, standard deviation and 95th-percentile stopping distance of the individual brake stops for each test configuration should be calculated and presented in Table 8.

TABLE 8. FINAL STATISTICS

Test configuration	Average stopping distance		Standard deviation		95th-percentile stopping distance	
	m	ft	m	ft	m	ft
Dry surface without payload						
Dry surface with payload						
Wet surface without payload						
Wet surface with payload						

V. Conclusion

A brief summary of the overall test method, performance results and final statistics should be included in this section. Final comments or deductions regarding the brake performance of the test items or the validity of the data should also be included.