



**EUROPEAN NEW CAR ASSESSMENT PROGRAMME
(Euro NCAP)**



TEST PROTOCOL – SPEED ASSIST SYSTEMS

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1 DEFINITIONS

Throughout this protocol the following terms are used:

Vindicated – The velocity the car travels as displayed to the driver by the speedometer as in ECE R39.

Vadj – Adjustable speed Vadj means the voluntarily set speed for the MSA/ISA, which is based on **Vindicated** and includes the offset set by the driver.

MSA – Manual Speed Assistance. MSA means a system which allows the driver to set a vehicle speed Vadj, to which he wishes the speed of his car to be limited and/or above which he wishes to be warned.

SLIF - Speed Limit Information Function. SLIF means a function with which the vehicle knows and communicates the speed limit.

ISA – Intelligent Speed Assistance. ISA is a MSA combined with SLIF, where the Vadj is set by the SLIF with or without driver confirmation.

The following terms are used for the assessment of the Speed Limitation function:

Vstab – Stabilised speed Vstab means the mean actual vehicle speed when operating. Vstab is calculated as the average actual vehicle speed over a time interval of 20 seconds beginning 10 seconds after first reaching Vadj – 10 km/h.

2 MEASURING EQUIPMENT

2.1 Instantaneous vehicle speed shall be recorded using a GPS sensor with the following minimum specifications:

- Accuracy 0.1 km/h (averaged over 4 samples)
- Units: km/h or mph
- Update rate: 100Hz
- Resolution: 0.01 km/h

2.2 The velocity data needs to be recorded with a sampling rate of 100Hz for at least at and 40 seconds after reaching $V_{adj} - 10$ km/h

3 TEST CONDITIONS

3.1 Vehicle preparation

3.1.1 The tyres shall be bedded and the pressure shall be as specified by the manufacturer for the vehicle.

3.1.2 The vehicle mass shall be no less than the minimum kerb weight declared by the manufacturer.

3.2 Characteristics of the test track

3.2.1 The test surface shall be suitable for enabling stabilized speed to be maintained and shall be free from uneven patches. Gradients shall not exceed 2 percent.

3.2.2 The test surface shall be free from standing water, snow or ice.

3.3 Ambient wind conditions

3.3.1 The mean wind speed measured at a height of at least 1m above the ground shall be less than 6 m/s with gusts not exceeding 10m/s.

4 TEST PROCEDURE

4.1 Test for the SLIF

Drive around for at least 100km on public roads, covering urban and rural roads and highways. During the drive, the reaction of the SLIF with respect to conditional speed limits needs to be verified and recorded.

The car should be driven in both manual and cruise control mode.

Identify any major discrepancies between the signed speed limit and the speed limit indicated by the SLIF.

4.2 Test for the MSA/ISA Warning function

4.2.1 The tests will be performed at the following test speeds:

- 50km/h or 30mph (urban roads)
- 80km/h or 50mph (rural roads)
- 120km/h or 70mph (highways)

4.2.2 The vehicle shall be accelerated up to a speed at least 10km/h greater than V_{adj} .

4.2.3 This speed shall be maintained long enough to be able to assess the complete warning sequence.

4.2.4 As a final test for the Warning function, set V_{adj} to a speed that is 30km/h lower than the current speed and measure the time delay before the warning starts.

4.2.5 In case the vehicle does not have a Warning only mode, the system will be tested in an overrun condition with V_{adj} set to 50km/h or a speed applicable at the road where the vehicle is tested.

4.3 Test for the MSA/ISA Speed limitation function

4.3.1 The tests will be performed at three different test speeds:

- 50km/h or 30mph (urban roads)
- 80km/h or 50mph (rural roads)
- 120km/h or 70mph (highways)

4.3.2 With the MSA activated and set at V_{adj} , the vehicle shall be run at a speed of 15km/h below V_{adj} . The vehicle shall then be accelerated to engage the MSA, without applying the positive action.

4.3.3 As a final test for the MSA, set V_{adj} to 120km/h and accelerate the vehicle to engage

the MSA. Lower V_{adj} to 90km/h and measure how long it takes for the vehicle to reduce the speed to the new V_{adj} .