Commercial Vans

Safety Assist

Test & Assessment Protocol

March 2021

Version 1.0

Contents

Definitions

Throughout this protocol the following terms are used:

Commercial Van (CV) – means a Light Commercial Vehicle of the category N1 (excluding M1 based panel vans).

Vehicle under test (VUT) – means the vehicle tested according to this protocol with a pre-crash collision mitigation or avoidance system on board.

Global Vehicle Target (GVT) – means the vehicle target used in this protocol as defined in TB025 - Global Vehicle Target specification for Euro NCAP v1.0.

Time to Collision (TTC) – means the remaining time before the VUT strikes the GVT, assuming that the VUT and GVT would continue to travel with the speed it is travelling.

Speed Assist System (SAS) –a system that informs or warns the driver and/or controls the vehicle speed.

Speed Limit Information Function (SLIF) – a function with which the vehicle knows and communicates the speed limit.

Speed Limitation Function (SCF) – a system which allows the driver to set a vehicle speed to which he wishes the speed of his car to be limited and above which he wishes to be warned.

Adaptive Cruise Control (ACC) – a system that controls the vehicle speed while maintaining a set distance to vehicles ahead.

Intelligent Adaptive Cruise Control (iACC) – iACC is an ACC combined with SLIF, where the speed is set by the SLIF with or without driver confirmation.

Autonomous Emergency Braking (AEB) – braking that is applied automatically by the vehicle in response to the detection of a likely collision to reduce the vehicle speed and potentially avoid the collision.

Forward Collision Warning (FCW) – an audio-visual warning that is provided automatically by the vehicle in response to the detection of a likely collision to alert the driver.

Car-to-Car Rear Stationary (CCRs) – a collision in which a vehicle travels forwards towards another stationary vehicle and the frontal structure of the vehicle strikes the rear structure of the other.

Car-to-Car Rear Moving (CCRm) – a collision in which a vehicle travels forwards towards another vehicle that is travelling at constant speed and the frontal structure of the vehicle strikes the rear structure of the other.

Car-to-Car Rear Braking (CCRb) – a collision in which a vehicle travels forwards towards another vehicle that is travelling at constant speed and then decelerates, and the frontal structure of the vehicle strikes the rear structure of the other.

Lane Support System (LSS) – a system that correct the vehicle heading to keep the vehicle within its driving lane and/or warns the driver.

Emergency Lane Keeping (ELK) – default ON heading correction that is applied automatically by the vehicle in response to the detection of the vehicle that is about to drift beyond a solid lane marking, the edge of the road or into oncoming or overtaking traffic in the adjacent lane.

Lane Keeping Assist (LKA) – heading correction that is applied automatically by the vehicle in response to the detection of the vehicle that is about to drift beyond a delineated edge line of the current travel lane.

Lane Departure Warning (LDW) – a warning that is provided automatically by the vehicle in response to the vehicle that is about to drift beyond a delineated edge line of the current travel lane.

Blind Spot Information System (BLIS) – a warning that is provided automatically by the vehicle in response to the detection of overtaking traffic in the adjacent lane.

1 Introduction

Euro NCAP's Commercial Van Safety ratings are designed to encourage wider fitment of ADAS, promote robust performance and help fleet operator and business owners to make safer choices. More precisely, the van ratings aim to:

- Accelerate standardisation of safety functions on commercial vans ahead of, and over and beyond, the basic requirements of the General Safety Regulation 2;
- Improve performance of advanced driver assistance systems (ADAS) on commercial vans, to match the state-of-the-art technology fitted to passenger cars;
- Call on fleet operators to take responsibility for the safety of their drivers and to demand a minimum silver-level performance in Euro NCAP's new ranking scheme when making purchasing decisions;
- Improve information from commercial van manufacturers, on websites and in marketing material, regarding the safety features available on their vehicles.

This Commercial Vans Test and Assessment Protocol is an addendum to the existing passenger car safety testing protocols and details specific requirements relating to the safety testing of Commercial Vans. It also describes the details of the overall scoring of Commercial Vans.

1.1 Scope

The tests in scope for the 2020/2021 assessment of CVs are based on those applicable for the safety rating of passenger cars from 1st January 2018, namely:

Table 1. Protocol reference table.

SAFETY FUNCTION	TEST PROTOCOL	ASSESSMENT PROTOCOL
AEB Car-to-Car	AEB C2C Test Protocol v2.0.1	Assessment Protocol – SA v8.0.4
AEB Pedestrian	AEB VRU Test Protocol v2.0.2	Assessment Protocol – PP 9.0.3
AEB Cyclist		
Lane Support System	LSS Test Protocol v2.0.2	Assessment Protocol – SA v8.0.4
Speed Assist System	SAS Test Protocol v2.0	
Occupant Status Monitoring		

Where this addendum conflicts with the original passenger car safety testing protocol, the details in this addendum shall be applied.

1.2 Fitment Overview

Detailed fitment information of Advanced Driver Assistance Systems is provided (where possible) in the biggest European markets (France, Germany, Italy, Spain and UK), plus Sweden, the Netherlands and Luxembourg. The availability (standard, optional or not available) is shown in a graphical format with a corresponding table for each van, system and market respectively on the Euro NCAP website.

1.3 Safety Assist Score

The protocol test scores for AEB Car-to-Car, AEB Pedestrian, AEB Cyclist, LSS, SAS and OSM are scaled using the following maximum scores per safety function:

SAFETY FUNCTION	MAXIMUM SCORE
AEB Car-to-Car	30
AEB Pedestrian	10
AEB Cyclist	10
Lane Support Systems	20
Speed Assist Systems	15
Occupant Status Monitoring	15
TOTAL	**100**

1.3.1 Overall performance

The scores of each safety function are summed up and combined into an overall score for each van (maximum 100, or 100%). This overall performance score places each van tested in one of the following categories.

CATEGORY	SCORE REQUIRED
PLATINUM	≥ 80%
GOLD	≥ 60%
SILVER	≥ 40%
BRONZE	≥ 20%
NOT RECOMMENDED	< 20%

2 VUT Preparation

2.1 Tyres

Acknowledging the test vehicle may be used rather than brand new, the tyres used for testing must be representative of those fitted by the OEM. They may be used providing they are a matching set in roadworthy condition (no visible damage) and all have a tread depth of at least 5mm across the central three quarters of the tyre width. Use inflation pressures corresponding to the half laden testing condition.

2.2 Wheel Alignment

Acknowledging the test vehicle may be used rather than brand new, subject it to a vehicle (in-line) geometry check to ensure the geometry is within the tolerances set by the OEM. Where the geometry is not within the manufacturers tolerances the test laboratory should undertake remedial work to return the geometry to within the OEM tolerances.

2.3 Loading

Complete testing with the vehicle half laden to represent typical N1 operation, with 'as tested' mass half way between the unladen kerb mass and the gross vehicle weight.

a. Measure the front and rear axle masses and determine the total mass of the vehicle. The total mass is the 'unladen kerb mass' of the vehicle. Record this mass in the test details.
b. Fit the on-board test equipment and instrumentation in the vehicle. Also fit any associated cables, cabling boxes and power sources.
c. With the driver in the vehicle, weigh the front and rear axle loads of the vehicle.
d. Compare these loads with the 'unladen kerb mass'.
e. Add additional ballast to increase the mass 'as tested' to half laden with an overall tolerance of ±1%. Locate the centre of mass of the ballast centrally within the cargo space (longitudinally, laterally and vertically) as far as is as practically possible. If the vertical limit of the cargo space is undefined (e.g. in the case of a flatbed or tipping body) locate the centre of mass of the ballast [0.6]m above the load bed. Ballast must be securely attached to the VuT. If water is used as ballast, it should be used in full containers to prevent the movement under acceleration.
f. Note the 'as tested' front/rear axle load distribution may not necessarily remain within 5% of the front/rear axle load distribution of the original 'unladen kerb mass', which is acceptable for this testing.

3 Testing

Available ADAS functions (whether optional or standard) on each commercial van are tested using Euro NCAP Safety Assist protocols (see Table 1), adapted to commercial vans where needed.

3.1 AEB CCR

Prerequisites for scoring points, such as whiplash score and headform and legform scores do not apply. Perform pre-requisite tests and continue with the test protocol irrespective of the outcome.

3.1.1 Standard procedure

Where a manufacturer provides a grid prediction, follow the standard protocol.

3.1.2 Back-up procedure

Given the absence of grid performance predictions, proceed with AEB CCR offset testing as follows:

a. Randomly select the direction of offset and begin with the 50% overlap scenario commencing testing at the lowest VUT test speed. When there is complete avoidance, the subsequent test speed for the next test is incremented with 10km/h. When there is contact, first perform a test at a test speed 5km/h less than the test speed where contact occurred. After this test continue to perform the remainder of the tests with speed increments of 5km/h. Stop testing when the speed reduction seen in the test is less than 5km/h, or the relative impact speed is greater than 20km/h for two consecutive test speeds.
b. Continue with the 75% overlap test scenario offset in the opposite direction to that used for the 50% overlap test. Commence testing at the lowest test speed for the scenario or highest 50% overlap avoidance speed, whichever is greater. Increment subsequent test speeds as described in 4.1.1.
c. Continue with the 100% overlap test scenario. Commence testing at the lowest test speed for the scenario or highest 75% overlap avoidance speed, whichever is greater. Increment subsequent test speeds as described in 4.1.1.
d. For FCW system tests, follow the process outlined in 4.1.1 to 4.1.3 for AEB testing. Only perform tests at the test speeds where there was no avoidance in the AEB function tests for applicable scenarios.
e. To ensure symmetry, retest the 50% and 75% two highest avoidance speeds. Where there is a difference in performance, perform all tests on the other direction of offset.

3.2 AEB VRU

Complete all test scenarios except for those at night-time. Where there are no predicted results, 7.4.6 can be disregarded. Stop testing when the speed reduction seen in the test is less

than 5km/h, or the relative impact speed is greater than 20km/h for two consecutive test speeds.

3.3 LSS

No changes, follow the standard protocol.

3.4 SAS

No changes, follow the standard protocol.

3.5 OSM

Only the driver and front row outboard passenger seat will be assessed for SBR.