

# Overall Assessment Protocol

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## **PREFACE**

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# 1 EURO NCAP OVERALL RATING SCHEME

The overall rating is composed of scores achieved in the four areas of assessment, also referred to as “stages”: Safe Driving, Crash Avoidance, Crash Protection and Post-crash Safety. The score in each stage is based on the car performance in the different tests and assessments in each area. Each test has been allocated a maximum score as indicated in the table below. The total score of each stage equals the sum of the test scores, with a maximum of 100. A vehicle must achieve the necessary points score in each stage to be eligible for a certain star rating as explained in section 2. Furthermore, additional constraints, known as backstops, may limit the overall star rating, even if the point scores satisfy the thresholds. Finally, each of the stages is also given a weight, however these are used solely to calculate a weighted average score used for the annual Best in Class ranking (see section 2.3).

Safe Driving		Crash Avoidance		Crash Protection		Post-Crash	
Occupant Monitoring	30	Frontal Collisions	60	Frontal Impact	40	Rescue Information	40
Driver Engagement	30	Lane Departure Collisions	20	Side Impact	35	Post-Crash Intervention	25
Vehicle Assistance	40	Low Speed Collisions	20	Rear Impact	5	Vehicle Extrication	35
				VRU Impacts	20		
Weight: 20	100	Weight: 20	100	Weight: 50	100	Weight: 10	100

## 1.1 Fitment requirements

Unless otherwise noted, all tested safety equipment needs to be installed either as standard throughout the Euro NCAP Application Area for a vehicle (for base ratings) or must meet agreed fitment installation rates (for optional rating) to be eligible for scoring under the new rating system. See the “Vehicle Specification, Sponsorship, Testing and Retesting” (VSSTR) protocol for more information about test variants, Dual Rating and fitment requirements.

## 1.2 Language requirements

For all elements in the rating that include language requirements, Technical Bulletin G001 on Euro NCAP Application Area and Official Languages applies.

### 1.3 Safe Driving

The Safe Driving stage covers technology that supports the driver and occupants for a safe and comfortable journey. This stage is divided into three main elements as shown below. Further details can be found in the Safe Driving protocols and technical bulletins.

Safe Driving	Points
<b>Occupant Monitoring</b>	<b>30</b>
Seatbelt usage	10
Occupant classification	10
Occupant presence	10
<b>Driver Engagement</b>	<b>30</b>
Driver monitoring	25
Driving controls	5
<b>Vehicle Assistance</b>	<b>40</b>
Speed assistance	20
ACC performance	15
Steering assistance	5

Steering assistance will only be assessed in combination with ACC, thus will not be assessed when offered as a standalone feature. Driver supervision is essential for assisted driving systems to be used safely. A safety risk is introduced by vehicles that do not sufficiently ensure that the driver is engaged while the Assisted Driving system is operating. Poor levels of assistance engagement will therefore be penalised under Safe Driving, Driver Engagement, whether such technology is offered as standard or optional.

## 1.4 Crash Avoidance

For safety critical situations, Euro NCAP encourages the fitment of crash avoidance technology that will mitigate or avoid crashes by warning the driver or by automatic interventions. This stage is divided into three main elements as shown below. Further details can be found in the Crash Avoidance protocols and technical bulletins.

Crash Avoidance	Points
<b>Frontal Collisions</b>	<b>60</b>
Car & PTW	40
Pedestrian & Cyclist	20
<b>Lane Departure Collisions</b>	<b>20</b>
Lane departure	10
Car & PTW	10
<b>Low Speed Collisions</b>	<b>20</b>
Car & PTW	10
Pedestrian & Cyclist	10

To ensure that cooperation between passive and active safety measures is maintained in this area, a minimum performance is required in subsystem testing to be eligible of scoring points in pedestrian and cyclist scenarios in Frontal Collisions under Crash Avoidance.

## 1.5 Crash Protection

Traditional crash protection systems, such as seatbelt, airbags, crash structures and head restraints, designed to mitigate occupant injuries in a crash are assessed in the Crash Protection stage. Under the new rating, also passive protection measures for vulnerable road user are included. This stage is divided into four main elements as shown below. Further details can be found in the Crash Protection protocols and technical bulletins.

<b>Crash Protection</b>	<b>Points</b>
<b>Frontal Impact</b>	<b>40</b>
Offset	20
Full Width	10
VT & Sled	10
<b>Side Impact</b>	<b>35</b>
MDB	15
Pole	10
Farside	10
<b>Rear Impact</b>	<b>5</b>
<b>VRU Impact</b>	<b>20</b>
Head impact	10
Pelvis & Leg impact	10

A vehicle that meets the balance criteria for a 5-star overall rating cannot have any red rated body regions after modifiers are applied. In such case, the vehicle is limited to a maximum of 4-stars.

## 1.6 Post-Crash Safety

After the crash, clear information and technologies will help emergency services to respond to the crash within the “golden hour”. This stage is divided into three main elements as shown below. Further details can be found in the Post-Crash protocol and technical bulletins.

<b>Post-Crash</b>	<b>Points</b>
<b>Rescue Information</b>	<b>40</b>
Rescue sheets	35
Rescue guide	5
<b>Post-Crash Intervention</b>	<b>25</b>
Advanced eCall	20
Multi-Collision Brake	5
<b>Vehicle Extrication</b>	<b>35</b>
Energy management	20
Occupant extrication	15

## 2 OVERALL RATING REQUIREMENTS

An overview of the rating scheme is given in the table below. The overall rating is calculated based on balance thresholds as detailed below.

### 2.1 Star rating limits

A vehicle must achieve the necessary points score in each stage in order to be eligible for a certain star rating, the so-called *worst score* principle. For this purpose, balance thresholds are introduced as follows.

Star Rating	Safe Driving	Crash Avoidance	Crash Protection	Post-Crash
<b>5-stars</b>	80%	80%	80%	80%
<b>4-stars</b>	70%	70%	70%	70%
<b>3-stars</b>	60%	60%	60%	60%
<b>2-stars</b>	50%	50%	50%	50%
<b>1-stars</b>	40%	40%	40%	40%

#### 2.1.1 Soft landing for 2026 & 2027

To account for sufficient lead time, the balance thresholds set for each star level include a soft landing in the first two years of introduction of the new rating scheme. This applies only to the Safe Driving and Crash Avoidance stages.

Star Rating	Safe Driving		Crash Avoidance	
	2026	2027	2026	2027
<b>5-stars</b>	60%	70%	70%	80%
<b>4-stars</b>	50%	60%	60%	70%
<b>3-stars</b>	40%	50%	50%	60%
<b>2-stars</b>	30%	40%	40%	50%
<b>1-stars</b>	20%	30%	30%	40%

#### 2.1.2 Compensation rule

Within the first three stages, a maximum of 5 points can be used for compensation of the adjacent stage when needed to achieve a higher star level. A surplus of points can only be used for compensation of an adjacent stage and only used once. For instance, this means that Safe Driving and Crash Protection cannot compensate each other. However, a 5-point surplus in Crash Avoidance can be split between Safe Driving and Crash Protection. This rule is a new feature of the rating scheme, created primarily to improve the mathematical stability of the rating. It also reflects the fact that technology in two adjacent stages to some extent can address similar crashes in the real world.

## 2.2 Prerequisites and links between stage elements

Any rating system that relies on calculating the relative performance levels of cars based on a variety of tests and criteria can introduce unintended consequences. The following backstop procedures and prerequisites are introduced to stop this from happening.

### 2.2.1 Safe Driving

For vehicles offering an Assisted Driving system, as an option or standard fit, the Driver Engagement points are only available in case the Assisted Engagement of the Assisted Driving System is sufficient. This means that under the AD Grading protocol applicable in the year of test, the AD system should score at least 50% of the available points for Driver Monitoring and 50% of the available points for Driving Collaboration.

Occupant Stature Classification points have to be awarded to allow restraint adaptivity in the Crash Protection Frontal Impact elements.

Crash Occupancy Information points have to be awarded to be eligible for the potential number of occupants points under 112 eCall in Post-Crash.

### 2.2.2 Crash Avoidance

In the new rating approach, front-end countermeasures to reduce injuries to pedestrians and cyclists and avoidance technologies addressing vulnerable road user crashes end up in different stages. Although both safety measures may address comparable crashes, in practise they work better together than separately.

To ensure that cooperation between passive and active safety measures is maintained in this area, a minimum of 10 points need to be scored within VRU impacts in Crash Protection to be eligible of scoring points in pedestrian and cyclist scenarios in Frontal Collisions under Crash Avoidance.

### 2.2.3 Crash Protection

A car that satisfies all of the balancing thresholds for a 5-star overall rating cannot have any body parts that are red, after modifiers are applied. The car can only receive a maximum rating of four stars in this situation. This backstop for 5-star overall ratings is applied to all official full scale and sub-system tests, excluding Virtual Testing, under Crash Protection.

Crash Protection	Body Regions		
	Driver	Front Passenger	Rear Passenger(s)
Frontal Impact	Head & Neck Chest & Abdomen	Head & Neck Chest & Abdomen	Head & Neck Chest & Abdomen
Side Impact	Head & Neck Chest Abdomen Pelvis	Head & Neck	Head & Neck
Rear Impact			

For VRU Protection, this rule is applied when all grid points within the body region are red.

VRU Protection	Body Regions		
	Child/Small Adult	Adult	Cyclist
Head impact	Head	Head	Head
Pelvis & Leg impact		Pelvis Femur Knee & Tibia	

### 2.2.3.1 Child Occupant Protection

Technical Bulletin CP 008-1 describes the vehicle provision assessment for the safe carriage of children. Where the prerequisite score as detailed in the TB are not met, the shortage of points is deducted from the Crash Protection Score.

## 2.3 Weight Factors for Best in Class

The weighted overall score is calculated from the individual assessment scores using weight factors as shown in the table in chapter 1. These weight factors reflect the relative importance of the four stages. The weighted overall score, determined by taking the weighted average of the scores in the four stages, is only used to rank cars for determining the best in class vehicles at the end of each year. The rules for determining Euro NCAP Best in Class can be found on Euro NCAP's website.

## 2.4 Calculation rules

The following rounding rules will be applied in the calculation of the overall rating.

Star Rating	Number of decimals	Examples
<b>Input values</b>	2	354.25503 -> 354.26
<b>Intermediate calculations</b>	N/A	
<b>Criteria scores</b>	2	67.66667 -> 67.67
<b>Body region scores</b>	4	0.31333 -> 0.3133
<b>Dummy scores</b>	4	0.83333 -> 0.8333
<b>Test scores</b>	3	8.86667 -> 8.867
<b>Stage scores</b>	0, floored	79.879 -> 79